

Benchmark Test GPOS

B&R Industrial PCs

Date: September 11, 2023

Project Number: Benchmark GPOS

I Publishing Information

B&R Industrial Automation GmbH
B&R-Strasse 1
5142 Eggelsberg
Austria
Telephone: +43 7748 6586-0
Fax: +43 7748 6586-26
office@br-automation.com
www.br-automation.com

We reserve the right to change the content of this manual without prior notice. The information contained herein is believed to be accurate as of the date of publication, however, B&R makes no warranty, expressed or implied, with regards to the products or the documentation contained within this document. B&R shall not be liable in the event if incidental or consequential damages in connection with or arising from the furnishing, performance or use of these products. The software names, hardware names and trademarks used in this document are registered by the respective companies.

II Versions

Version	Date	Comment	Edited by
4.0	08/28/2018	See www.br-automation.com, BenchmarkTestsIndustriePC_E_V4_0.pdf.	MIK
5.0	08/31/2023	- Following HW + related tests removed: - PP100/200 - PP300/400 - PP500 (only available in the Passmark Performance Test 7 comparison) - IPC2001 - IPC5000C - APC680 - APC620/PPC700 - APC810/PPC800 (only available in the Passmark Performance Test 7 comparison) - Document renamed to, BenchmarkTestsIndustriePC_GPOS_E_V5_0.pdf. - Benchmark enhancements with Passmark Performance Test 9 for APC910/PPC900, APC3100/PPC3100 and APC4100.	MIK

Table 1: Versions

III Distribution

This Application Note is intended for technically qualified staff.

IV Safety Notices

Safety notices in this document are organized as follows:

Safety notice	Description
Danger!	Disregarding the safety regulations and guidelines can be life-threatening.
Warning!	Disregarding the safety regulations and guidelines can result in severe injury or heavy damage to material.
Caution!	Disregarding the safety regulations and guidelines can result in injury or damage to material.
Information:	Important information used to prevent errors.

Table 2: Safety notices

V Test Locations

No.	Company	Street	Post Code	Place	Phone	Contact
1	B&R Industrial Automation	B&R Straße 1	A-5142	Eggelsberg	+43/7748/6586-0	

Table 3: Test locations

VI Terminology

Some of the following terms may be used throughout this document.

Term	Description
BIOS	BIOS: Basic Input Output System. BIOS is actually firmware, the software that is programmed into a ROM (Read-Only Memory) chip built onto the motherboard of a computer.
Flash	A special type of EEPROM (Electrically Erasable Read Only Memory) that can be erased and reprogrammed in blocks instead of one byte at a time. Many modern PCs have their BIOS stored on a flash memory chip so that it can easily be updated if necessary.
POST	Power-on Self Test. A diagnostic testing sequence run by a computer's BIOS as the computer's power is initially turned on. The POST will determine if the computer's RAM, disk drives, peripheral devices and other hardware components are properly working.
CMOS	CMOS: Complimentary Metal Oxide Semiconductor. Specifies a memory chip on the mainboard, where the BIOS will store the setup data for the PC.
UEFI	Unified Extensible Firmware Interface
GPOS	GeneralPurposeOperatingSystem
RTOS	RealtimeOperatingSystem
HDD	HardDiskDrives
SSD	SolidStateDrives
CF card	CompactFlash Card with PATA Interface
CFast card	CompactFlash Card with SATA Interface
CFexpress card	CompactFlash Card with PCIe Interface (NVMe)
PP500	PowerPanel 500 Series
APC810	Automation PC 810 Series
PPC800	Panel PC 800 Series
APC910	Automation PC 910 Series
PPC900	Panel PC 900 Series
TS77	QM77/HM76 based CPU modules with Core I and Celeron Prozessor for APC910/PPC900
TS17	QM170/HM170/CM236 based CPU modules with XEON, Core I and Celeron Prozessor for APC910/PPC900
APC2100	Automation PC 2100 Series
PPC2100	Panel PC 2100 Series
APC2200	Automation PC 2200 Series
PPC2300	Panel PC 2200 Series
APC3100	Automation PC 3100 Series
PPC3100	Panel PC 3100 Series
APC4100	Automation PC 4100 Series

Table 4: Terminology

VII Table of Contents

1 Introduction.....	6
2 Hardware	7
2.1 Devices under test	7
2.2 Harddisks / removeable disks	8
3 Software	10
3.1 Benchmark programs.....	10
3.2 Operating system	10
4 Results.....	11
4.1 Passmark Performance Test 7.0	11
4.1.1 APC910/PPC900 (TS77)	11
4.1.1.1 Passmark Rating	11
4.1.1.2 CPU Mark.....	13
4.1.1.3 2D Graphics Mark	15
4.1.1.4 3D Graphics Mark	17
4.1.1.5 Memory Mark	19
4.1.1.6 Disk Mark	21
4.1.2 APC910/PPC900 (TS17)	23
4.1.2.1 Passmark Rating	23
4.1.2.2 CPU Mark.....	25
4.1.2.3 2D Graphics Mark	27
4.1.2.4 3D Graphics Mark	29
4.1.2.5 Memory Mark	31
4.1.2.6 Disk Mark	33
4.1.3 APC2100/PPC2100	35
4.1.3.1 Passmark Rating	35
4.1.3.2 CPU Mark.....	36
4.1.3.3 2D Graphics Mark	37
4.1.3.4 3D Graphics Mark	38
4.1.3.5 Memory Mark	39
4.1.3.6 Disk Mark	40
4.1.4 APC3100/PPC3100	41
4.1.4.1 Passmark Rating	41
4.1.4.2 CPU Mark.....	42
4.1.4.3 2D Graphics Mark	43
4.1.4.4 3D Graphics Mark	44
4.1.4.5 Memory Mark	45
4.1.4.6 Disk Mark	46
4.1.5 APC2200/PPC2200	47
4.1.5.1 Passmark Rating	47
4.1.5.2 CPU Mark.....	48
4.1.5.3 2D Graphics Mark	49
4.1.5.4 3D Graphics Mark	50
4.1.5.5 Memory Mark	51
4.1.5.6 Disk Mark	52
4.1.6 Comparison PP500, APC810/PPC800, APC910/PPC900, APC2100/PPC2100, APC3100/PPC3100 and APC2200/PPC2200	53
4.2 Passmark Performance Test 9.0	56
4.2.1 APC910/PPC900 (TS17)	57
4.2.1.1 Passmark Rating	57
4.2.1.2 CPU Mark.....	58
4.2.1.3 2D Graphics Mark	59
4.2.1.5 3D Graphics Mark	60
4.2.1.6 Memory Mark	61
4.2.1.7 Disk Mark	62

4.2.2 APC3100/PPC3100	63
4.2.2.1 Passmark Rating	63
4.2.2.2 CPU Mark.....	64
4.2.2.3 2D Graphics Mark	65
4.2.2.4 3D Graphics Mark	66
4.2.2.5 Memory Mark	67
4.2.2.6 Disk Mark	68
4.2.3 APC4100.....	69
4.2.3.1 Passmark Rating	69
4.2.3.2 CPU Mark.....	71
4.2.3.3 2D Graphics Mark	73
4.2.3.4 3D Graphics Mark	75
4.2.3.5 Memory Mark	77
4.2.3.6 Disk Mark	79
4.2.4 Comparison APC910/PPC900, APC3100/PPC3100 and APC4100	81
5 Figure Index	84
6 Table Index.....	86
7 Index	88

1 Introduction

This document is meant to show how the performance of different B&R industrial PCs compare to each other, using GPOS operating systems.

A **benchmark** is a standard of comparison. **Benchmarking** refers to the comparative analysis of results or processes with a specified reference value or reference process.

In many fields, the **reference value** is a specific physical quantity or number that is used for comparisons.

Information:

All results provided cannot be interpreted and used as absolute values. They should be considered as comparison values that can vary slightly depending on the operating system and computer being used.

All benchmark tests were carried out at an ambient temperature of 25°C.

Information:

From this version of the GPOS benchmark document, EOL products and thus all associated tests have been removed.

These can still be read in the document BenchmarkingtestsIndustriePC_E_V4_0.pdf (www.br-automation.com).

Benchmark tests under RTOS (AR) can be found in the document BenchmarkingtestsIndustryPC_AR_E_Vx_x.pdf (www.br-automation.com).

2 Hardware

The following hardware was used for the benchmark tests:

2.1 Devices under test

#	CPU	RAM	VGA controller	Manuf.
APC810/PPC800 with Intel GM45 Chipset + Intel T9400				
30	Core 2 Duo 2,53GHz, 1066 MHz FSB, 6MB Cache	2 x 2048MB DDR3-SODIMM	Intel GM45	B&R
APC910/PPC900 with Intel QM77 Chipset				
37	i7-3615QE 4C 2.3/1.6GHz 6MB 45W	2 x 4096MB DDR3-SODIMM 1067MHz	Intel HD 4000	B&R
38	i7-3615QE 4C 2.3/1.6GHz 6MB 45W	2 x 4096MB DDR3-SODIMM 1600MHz	Intel HD 4000	B&R
39	i7-3612QE 4C 2.1/1.6GHz 6MB 35W	2 x 4096MB DDR3-SODIMM 1067MHz	Intel HD 4000	B&R
40	i7-3612QE 4C 2.1/1.6GHz 6MB 35W	2 x 4096MB DDR3-SODIMM 1600MHz	Intel HD 4000	B&R
41	i7-3555LE 2C 2.5/1.6GHz 4MB 25W	4096MB DDR3-SODIMM 1067MHz	Intel HD 4000	B&R
42	i7-3555LE 2C 2.5/1.6GHz 4MB 25W	4096MB DDR3-SODIMM 1600MHz	Intel HD 4000	B&R
43	i7-3555LE 2C 2.5/1.6GHz 4MB 25W	2 x 2048MB DDR3-SODIMM 1067MHz	Intel HD 4000	B&R
44	i7-3555LE 2C 2.5/1.6GHz 4MB 25W	2 x 4096MB DDR3-SODIMM 1600MHz	Intel HD 4000	B&R
45	i7-3517UE 2C 1.7/1.6GHz 4MB 17W	2 x 2048MB DDR3-SODIMM 1067MHz	Intel HD 4000	B&R
46	i7-3517UE 2C 1.7/1.6GHz 4MB 17W	2 x 4096MB DDR3-SODIMM 1600MHz	Intel HD 4000	B&R
47	i5-3610ME 2C 2.7/1.6GHz 3MB 35W	2 x 2048MB DDR3-SODIMM 1067MHz	Intel HD 4000	B&R
48	i5-3610ME 2C 2.7/1.6GHz 3MB 35W	2 x 4096MB DDR3-SODIMM 1600MHz	Intel HD 4000	B&R
49	i3-3120ME 2C 2.4/1.6GHz 3MB 35W	2 x 2048MB DDR3-SODIMM 1067MHz	Intel HD 4000	B&R
50	i3-3120ME 2C 2.4/1.6GHz 3MB 35W	2 x 4096MB DDR3-SODIMM 1600MHz	Intel HD 4000	B&R
51	i3-3217UE 2C 1.6/1.6GHz 3MB 17W	2 x 2048MB DDR3-SODIMM 1067MHz	Intel HD 4000	B&R
52	i3-3217UE 2C 1.6/1.6GHz 3MB 17W	2 x 4096MB DDR3-SODIMM 1600MHz	Intel HD 4000	B&R
APC910/PPC900 with Intel HM76 Chipset				
53	C-847 2C 1.1/1.3GHz 2MB 17W	2 x 2048MB DDR3-SODIMM 1067MHz	Intel HD 4000	B&R
54	C-847 2C 1.1/1.3GHz 2MB 17W	2 x 4096MB DDR3-SODIMM 1333MHz	Intel HD 4000	B&R
55	C-827E 1C 1.4/1.3GHz 1.5MB 17W	2 x 2048MB DDR3-SODIMM 1067MHz	Intel HD 4000	B&R
56	C-827E 1C 1.4/1.3GHz 1.5MB 17W	2 x 4096MB DDR3-SODIMM 1333MHz	Intel HD 4000	B&R
58	C-1047UE 2C 1.4/1.6GHz 2MB 17W	2 x 4096MB DDR3-SODIMM 1600MHz	Intel HD Graphics	B&R
59	C-1020E 2C 2.2/1.6GHz 2MB 35W	2 x 4096MB DDR3-SODIMM 1600MHz	Intel HD Graphics	B&R

#	CPU	RAM	VGA controller	Manuf.
APC2100/PPC2100 with Intel Bay Trail				
60	E3815 1C 1.46GHz 512kB 5W 1GB	1 x 1024 MB DDR3L-1067	Intel HD Graphics (BayTrail)	B&R
61	E3825 2C 1.33GHz 1MB 6W 1GB	1 x 1024 MB DDR3L-1067	Intel HD Graphics (BayTrail)	B&R
62	E3826 2C 1.46GHz 1MB 7W 2GB	1 x 2048 MB DDR3L-1067	Intel HD Graphics (BayTrail)	B&R
63	E3827 2C 1.75GHz 1MB 8W 4GB	1 x 4096 MB DDR3L-1333	Intel HD Graphics (BayTrail)	B&R
64	E3845 4C 1.91GHz 2MB 10W 4GB	1 x 4096 MB DDR3L-1333	Intel HD Graphics (BayTrail)	B&R
65	E3845 4C 1.91GHz 2MB 10W 8GB	2 x 4096 MB DDR3L-1333	Intel HD Graphics (BayTrail)	B&R
APC910/PPC900 with Intel QM170 Chipset				
66	i5-6440EQ 4C 2.7GHz 6MB 45W	2 x 4096 MB DDR4 2133MHz	Intel HD Graphics 530	B&R
67	i7-6820EQ 4C 2.8GHz 8MB 45W	2 x 8192 MB DDR4 2133MHz	Intel HD Graphics 530	B&R
APC910/PPC900 with Intel HM170 Chipset				
68	i3-6100E 2C 2.7GHz 3MB 35W	2 x 4096 MB DDR4 2133MHz	Intel HD Graphics 530	B&R
69	i3-6100E 2C 1.9GHz 3MB 35W	2 x 8192 MB DDR4 2133MHz	Intel HD Graphics 530	B&R
70	C-G3900E 2C 2.4GHz 2MB 35W	2 x 8192 MB DDR4 2133MHz	Intel HD Graphics 510	B&R
71	C-G3900E 2C 1.7GHz 2MB 35W	2 x 8192 MB DDR4 2133MHz	Intel HD Graphics 510	B&R
APC910 with Intel CM236 Chipset				
72	E3-1515MV5 4C 2,8GHz 8MB 45W	2 x 8192 MB DDR4 2133MHz	Intel Iris Pro Graphics 580	B&R
APC3100/PPC3100 with Intel Kabylake-U				
73	C-3965U 2C 2.2GHz 2MB 15W	2 x 8192 MB DDR4 2133MHz	Intel HD Graphics 610	B&R
74	i3-7100U 2C 2.4GHz 3MB 15W	2 x 8192 MB DDR4 2133MHz	Intel HD Graphics 620	B&R
75	i5-7300U 2C 2.6GHz 3MB 15W	2 x 8192 MB DDR4 2133MHz	Intel HD Graphics 620	B&R
76	i7-7600U 2C 2.8GHz 4MB 15W	2 x 8192 MB DDR4 2133MHz	Intel HD Graphics 620	B&R
APC2200/PPC2200 with Intel Apollo Lake				
77	E3930 2C 1.30GHz 2MB 6.5W 2GB	1 x 2048 MB LPDDR4 2133MHz	Intel HD Graphics (IGFXGen9)	B&R
78	E3930 2C 1.30GHz 2MB 6.5W 4GB	1 x 4096 MB LPDDR4 2133MHz	Intel HD Graphics (IGFXGen9)	B&R
79	E3940 4C 1.60GHz 2MB 9.5W 4GB	1 x 4096 MB LPDDR4 2133MHz	Intel HD Graphics (IGFXGen9)	B&R
80	E3940 4C 1.60GHz 2MB 9.5W 8GB	2 x 4096 MB LPDDR4 2133MHz	Intel HD Graphics (IGFXGen9)	B&R
APC4100 with Intel HM570E Chipset				
81	C-6600HLE 2C 2.1GHz 8MB 25W	2 x 8192 MB DDR4 3200MHz	Intel UHD Gfx 16	B&R
APC4100 with Intel RM590E Chipset				
82	i3-11100HE 4C 2.4GHz 8MB 45W	2 x 8192 MB DDR4 3200MHz	Intel UHD Gfx 16	B&R
83	i5-11500HE 6C 2.6GHz 12MB 45W	2 x 8192 MB DDR4 3200MHz	Intel UHD Gfx 32	B&R
84	w-11155MRE 4C 2.4GHz 8MB 45W	2 x 8192 MB DDR4 3200MHz	Intel UHD Gfx 16	B&R
85	w-11865MRE 8C 2.6GHz 24MB 45W	2 x 8192 MB DDR4 3200MHz	Intel UHD Gfx 32	B&R

Table 5: Devices under test

2.2 Harddisks / removeable disks

#	Name	Storage capacity	Rotary speed / cache	Manufacturer
APC810/PPC800 HDD				
8	ST940817SM	40GB	5400 (U/min) / 8 MB	Seagate
APC910/PPC900 SSD				
11	5AC901.CSSD-01	60GB	-	INTEL
12	5AC901.CSSD-04	128GB	-	Toshiba
ACP2100/PPC2100 CFast				
13	5CFast.064G-10	64GB	-	Innodisk
ACP3100/PPC3100 CFast				

#	Name	Storage capacity	Rotary speed / cache	Manufacturer
14	5CFAST.032G-10	32GB	-	Swissbit
APC4100 CFexpress				
15	5CFXPR.120G-20	120GB	-	Swissbit

Table 6: Harddisks / removeable disks

3 Software

The following software products were used for the tests:

3.1 Benchmark programs

#	Name	Manufacturer	WEB link
13	Performance Test 7.0	Passmark	http://www.passmark.com
14	Performance Test 9.0	Passmark	http://www.passmark.com

Table 7: Benchmark programs used and the corresponding WEB links

3.2 Operating system

- Microsoft Windows 7 Ultimate (32 or 64Bit, depending on the CPU) was used for the Passmark Performance Test 7 on APC910/PPC900.
- Microsoft Windows 8.1 Industry (32 or 64Bit, depending on the CPU or rather memory size) was used for the Passmark Performance Test 7 on APC2100/PPC2100.
- Microsoft Windows 10 LTSC 2016 64Bit was used for the Passmark Performance Test 7 on APC3100/PPC3100 and APC2200/PPC2200.
- Microsoft Windows 10 LTSC 2021 64Bit was used for the Passmark Performance Test 9 on APC910/PPC900, APC3100/PPC3100 and APC4100.

4 Results

4.1 Passmark Performance Test 7.0

4.1.1 APC910/PPC900 (TS77)

4.1.1.1 Passmark Rating

The PassMark rating is weighted average of all the other test results and gives a single overall indication of the computers performance. The bigger the number, the faster the computer. The PassMark rating can only be calculated if the results from all other tests are available. The value is calculated using a series of weighted averages where some components are considered to be more important than others: Disk 21%, CD/DVD 5%, Memory 19%, 3D Graphics 12%, 2D Graphics 14% and CPU 29%.

Higher scores are better

#	Test device	Passmark Rating
APC810/PPC800 with INTEL GM45 Chipset		
30	Core 2 Duo 2,53 GHz, 2x2048MB DDR3-SODIMM	979,6
APC910/PPC900 with INTEL QM77 Chipset		
37	i7-3615QE 4C 2.3/1.6GHz 6MB 45W 2x4096MB DDR3-SODIMM 1067MHz	2255,4
38	i7-3615QE 4C 2.3/1.6GHz 6MB 45W 2x4096MB DDR3-SODIMM 1600MHz	2299,3
39	i7-3612QE 4C 2.1/1.6GHz 6MB 35W, 2x4096MB DDR3-SODIMM 1067MHz	1940,8
40	i7-3612QE 4C 2.1/1.6GHz 6MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	2156,8
41	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 4096MB DDR3-SODIMM 1067MHz	1508,6
42	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 4096MB DDR3-SODIMM 1600MHz	1644,6
43	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 2x2048MB DDR3-SODIMM 1067MHz	1670,4
44	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 2x4096MB DDR3-SODIMM 1600MHz	1836,8
45	i7-3517UE 2C 1.7/1.6GHz 4MB 17W, 2x2048MB DDR3-SODIMM 1067MHz	1490,2
46	i7-3517UE 2C 1.7/1.6GHz 4MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	1640,8
47	i5-3610ME 2C 2.7/1.6GHz 3MB 35W, 2x2048MB DDR3-SODIMM 1067MHz	1706,9
48	i5-3610ME 2C 2.7/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	1889
49	i3-3120ME 2C 2.4/1.6GHz 3MB 35W, 2x2048MB DDR3-SODIMM 1067MHz	1487,7
50	i3-3120ME 2C 2.4/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	1641,5
51	i3-3217UE 2C 1.6/1.6GHz 3MB 17W, 2x2048MB DDR3-SODIMM 1067MHz	1051,3
52	i3-3217UE 2C 1.6/1.6GHz 3MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	1140,4
APC910/PPC900 with INTEL HM76 Chipset		
53	C-847E 2C 1.1/1.3GHz 2MB 17W 2x2048MB DDR3-SODIMM 1067MHz	600,5
54	C-847E 2C 1.1/1.3GHz 2MB 17W 2x4096MB DDR3-SODIMM 1333MHz	645
55	C-827E 1C 1.4/1.3GHz 1.5MB 17W 2x2048MB DDR3-SODIMM 1067MHz	495,9
56	C-827E 1C 1.4/1.3GHz 1.5MB 17W 2x4096MB DDR3-SODIMM 1333MHz	538
58	C-1047UE 2C 1.4/1.6GHz 2MB 17W 2x4096MB DDR3-SODIMM 1600MHz	876
59	C-1020E 2C 2.2/1.6GHz 2MB 35W 2x4096MB DDR3-SODIMM 1600MHz	1257,9

Table 8: Results for Passmark Performance Test 7.0, Passmark Rating – APC910/PPC900 (TS77)

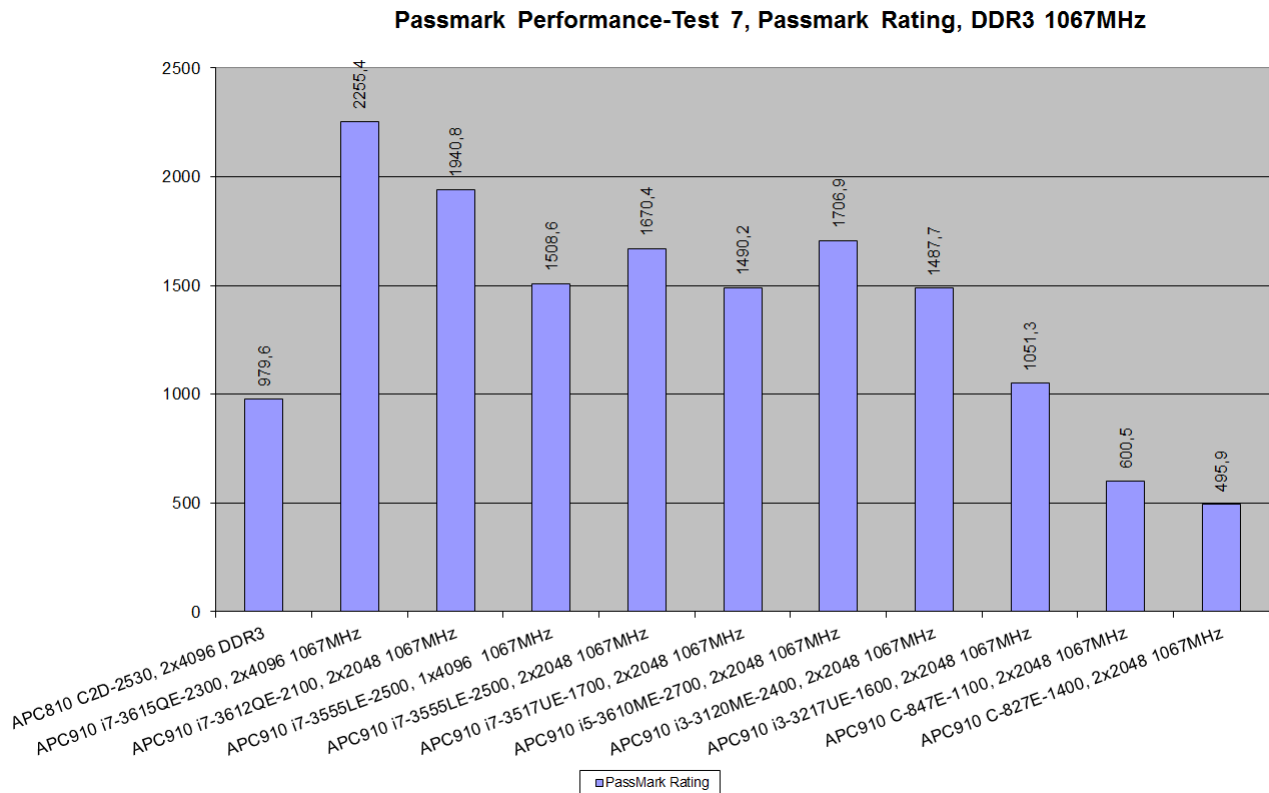


Figure 1: Results for Passmark Performance Test 7.0, Passmark Rating, DDR3 1067MHz – APC910/PPC900 (TS77)

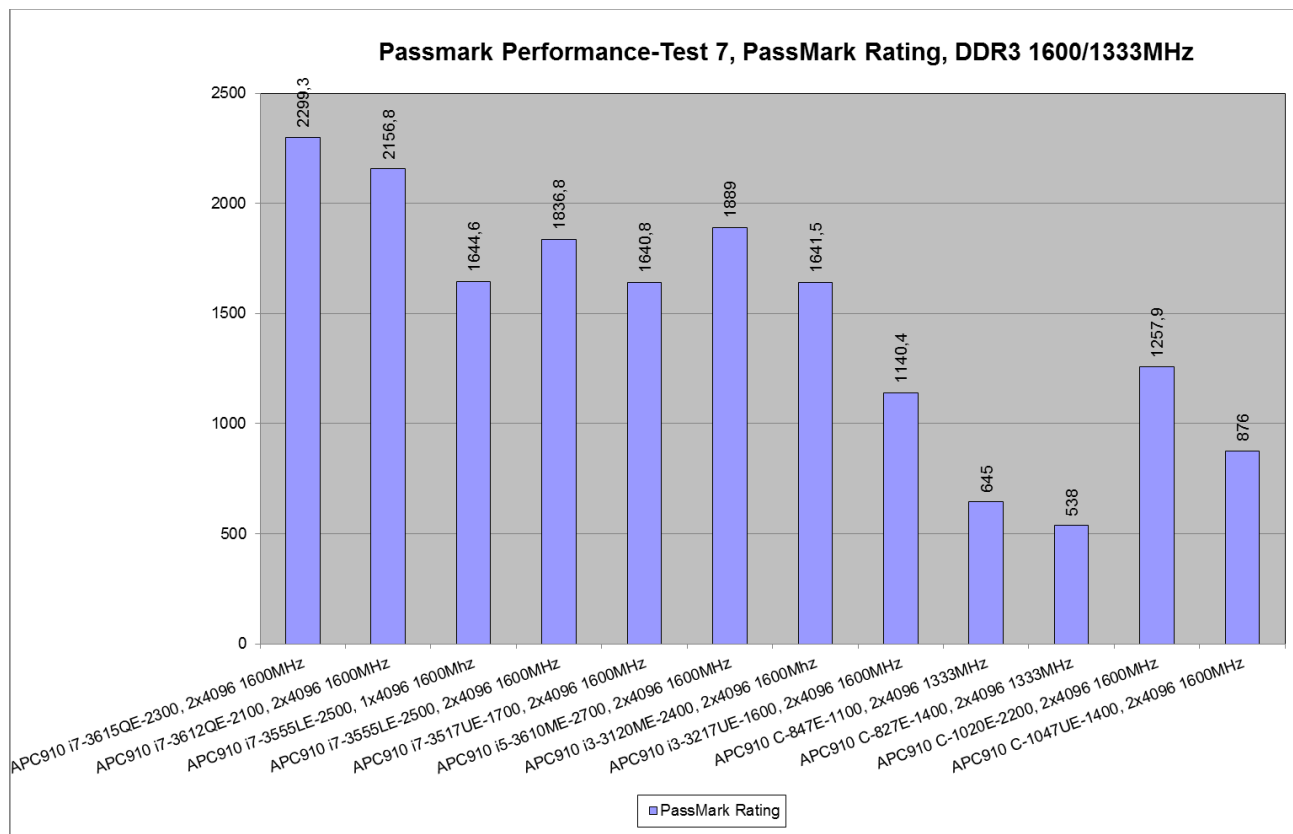


Figure 2: Results for Passmark Performance Test 7.0, Passmark Rating, DDR3 1600/1333MHz – APC910/PPC900 (TS77)

4.1.1.2 CPU Mark

This suite contains multi-process CPU tests. The number of CPU test processes is configurable in Preferences. The following tests make up the suite: Integer (addition, subtraction, multiplication, division), Floating Point (addition, subtraction, multiplication, division), Multimedia Instructions (128-bit SSE operations such as addition, subtraction and multiplication), Find Prime numbers, Compression, Encryption, Physics, Random String Sorting

Higher scores are better

#	Test device	CPU Mark
APC810/PPC800 with INTEL GM45 Chipset		
30	Core 2 Duo 2,53 GHz, 2x2048MB DDR3-SODIMM	2269,1
APC910/PPC900 with INTEL QM77 Chipset		
37	i7-3615QE 4C 2.3/1.6GHz 6MB 45W 2x4096MB DDR3-SODIMM 1067MHz	8790,4
38	i7-3615QE 4C 2.3/1.6GHz 6MB 45W 2x4096MB DDR3-SODIMM 1600MHz	8921,9
39	i7-3612QE 4C 2.1/1.6GHz 6MB 35W, 2x4096MB DDR3-SODIMM 1067MHz	7945,4
40	i7-3612QE 4C 2.1/1.6GHz 6MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	8107,9
41	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 4096MB DDR3-SODIMM 1067MHz	4356,8
42	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 4096MB DDR3-SODIMM 1600MHz	4431,9
43	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 2x2048MB DDR3-SODIMM 1067MHz	4378,2
44	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 2x4096MB DDR3-SODIMM 1600MHz	4480,3
45	i7-3517UE 2C 1.7/1.6GHz 4MB 17W, 2x2048MB DDR3-SODIMM 1067MHz	3860,4
46	i7-3517UE 2C 1.7/1.6GHz 4MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	3899,9
47	i5-3610ME 2C 2.7/1.6GHz 3MB 35W, 2x2048MB DDR3-SODIMM 1067MHz	4533,4
48	i5-3610ME 2C 2.7/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	4587,3
49	i3-3120ME 2C 2.4/1.6GHz 3MB 35W, 2x2048MB DDR3-SODIMM 1067MHz	3688,5
50	i3-3120ME 2C 2.4/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	3724,1
51	i3-3217UE 2C 1.6/1.6GHz 3MB 17W, 2x2048MB DDR3-SODIMM 1067MHz	2396,2
52	i3-3217UE 2C 1.6/1.6GHz 3MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	2407,5
APC910/PPC900 with INTEL HM76 Chipset		
53	C-847E 2C 1.1/1.3GHz 2MB 17W 2x2048MB DDR3-SODIMM 1067MHz	1146,7
54	C-847E 2C 1.1/1.3GHz 2MB 17W 2x4096MB DDR3-SODIMM 1333MHz	1175,5
55	C-827E 1C 1.4/1.3GHz 1.5MB 17W 2x2048MB DDR3-SODIMM 1067MHz	771,3
56	C-827E 1C 1.4/1.3GHz 1.5MB 17W 2x4096MB DDR3-SODIMM 1333MHz	771,9
58	C-1047UE 2C 1.4/1.6GHz 2MB 17W 2x4096MB DDR3-SODIMM 1600MHz	1601,8
59	C-1020E 2C 2.2/1.6GHz 2MB 35W 2x4096MB DDR3-SODIMM 1600MHz	2512,7

Table 9: Results for Passmark Performance Test 7.0, CPU Mark – APC910/PPC900 (TS77)

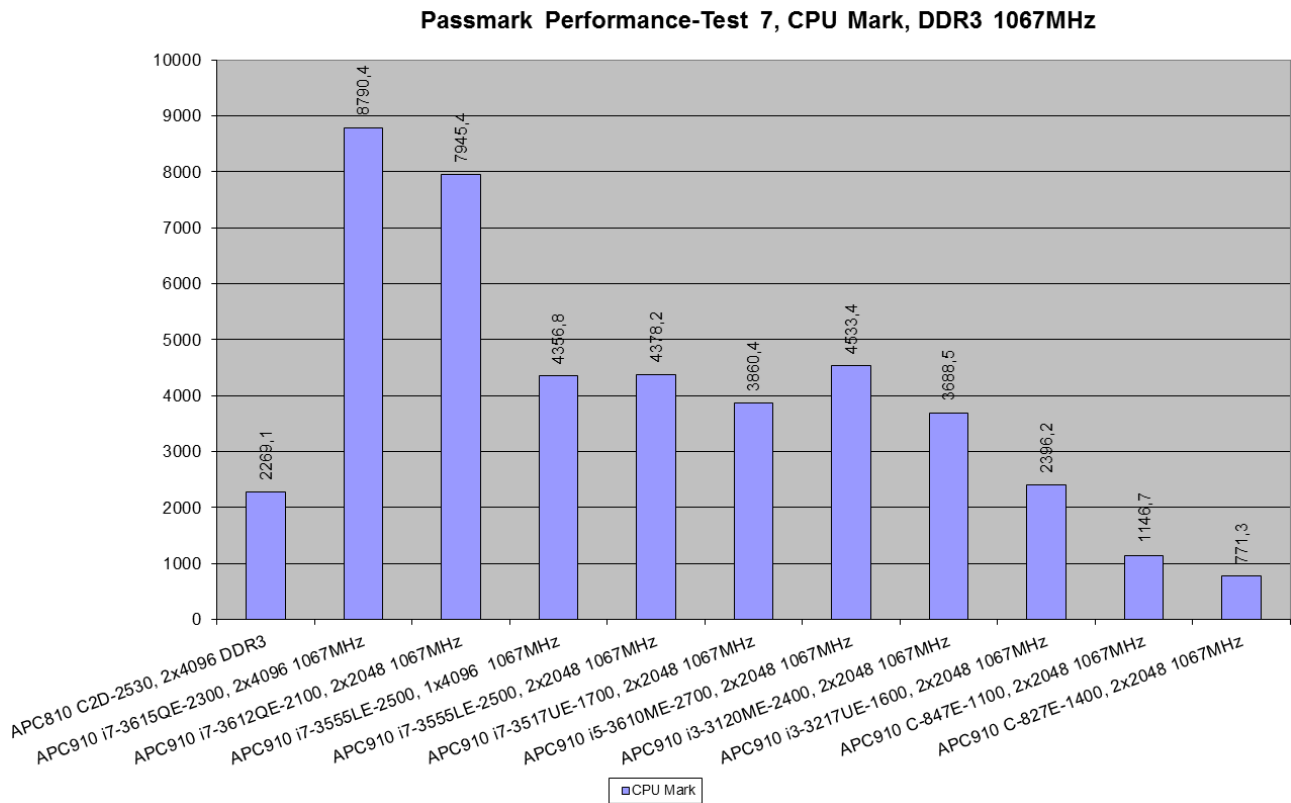


Figure 3: Results for Passmark Performance Test 7.0, CPU Mark, DDR3 1067MHz – APC910/PPC900 (TS77)

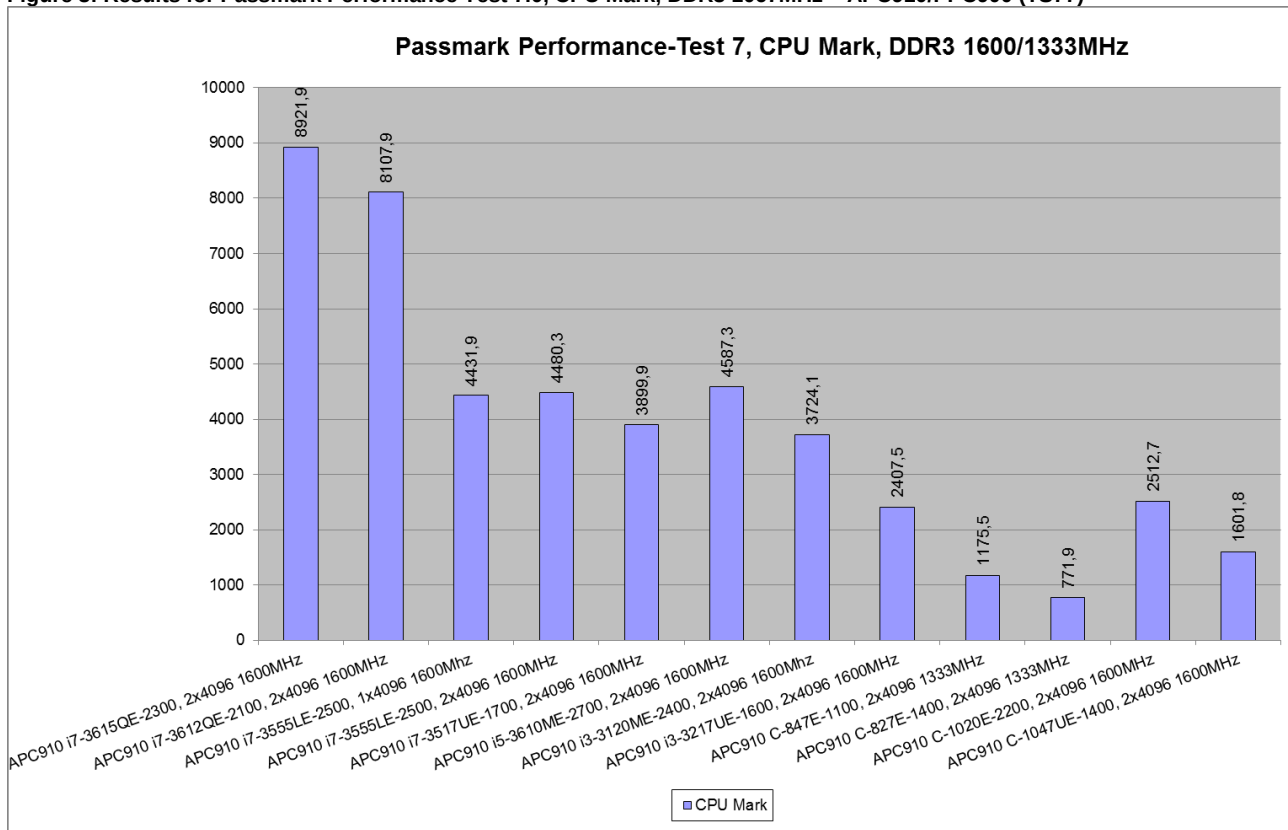


Figure 4: Results for Passmark Performance Test 7.0, CPU Mark, DDR3 1600/1333MHz – APC910/PPC900 (TS77)

4.1.1.3 2D Graphics Mark

This suite contains a number of tests that exercise the standard Windows graphics functions. The results from this suite depend on the speed at which the video card can carry out 2D graphics operations and the color depth currently in use. This suite contains: Solid Vectors, Transparent Vectors, Complex Vectors, Fonts and Text, Windows Interface, Image Filters, Image Rendering.

Higher scores are better

#	Test device	2D Graphics Mark
APC810/PPC800 with INTEL GM45 Chipset		
30	Core 2 Duo 2,53 GHz, 2x2048MB DDR3-SODIMM	288,8
APC910/PPC900 with INTEL QM77 Chipset		
37	i7-3615QE 4C 2.3/1.6GHz 6MB 45W 2x4096MB DDR3-SODIMM 1067MHz	456,1
38	i7-3615QE 4C 2.3/1.6GHz 6MB 45W 2x4096MB DDR3-SODIMM 1600MHz	459,4
39	i7-3612QE 4C 2.1/1.6GHz 6MB 35W, 2x4096MB DDR3-SODIMM 1067MHz	402,6
40	i7-3612QE 4C 2.1/1.6GHz 6MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	405,7
41	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 4096MB DDR3-SODIMM 1067MHz	381,8
42	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 4096MB DDR3-SODIMM 1600MHz	409,7
43	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 2x2048MB DDR3-SODIMM 1067MHz	403
44	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 2x4096MB DDR3-SODIMM 1600MHz	416,3
45	i7-3517UE 2C 1.7/1.6GHz 4MB 17W, 2x2048MB DDR3-SODIMM 1067MHz	344,6
46	i7-3517UE 2C 1.7/1.6GHz 4MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	352,3
47	i5-3610ME 2C 2.7/1.6GHz 3MB 35W, 2x2048MB DDR3-SODIMM 1067MHz	426,5
48	i5-3610ME 2C 2.7/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	436,6
49	i3-3120ME 2C 2.4/1.6GHz 3MB 35W, 2x2048MB DDR3-SODIMM 1067MHz	360,4
50	i3-3120ME 2C 2.4/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	374,1
51	i3-3217UE 2C 1.6/1.6GHz 3MB 17W, 2x2048MB DDR3-SODIMM 1067MHz	237,2
52	i3-3217UE 2C 1.6/1.6GHz 3MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	236,6
APC910/PPC900 with INTEL HM76 Chipset		
53	C-847E 2C 1.1/1.3GHz 2MB 17W 2x2048MB DDR3 1067MHz	155,2
54	C-847E 2C 1.1/1.3GHz 2MB 17W 2x4096MB DDR3 1333MHz	157,3
55	C-827E 1C 1.4/1.3GHz 1.5MB 17W 2x2048MB DDR3 1067MHz	170,5
56	C-827E 1C 1.4/1.3GHz 1.5MB 17W 2x4096MB DDR3 1333MHz	172,4
58	C-1047UE 2C 1.4/1.6GHz 2MB 17W 2x4096MB DDR3-SODIMM 1600MHz	225,9
59	C-1020E 2C 2.2/1.6GHz 2MB 35W 2x4096MB DDR3-SODIMM 1600MHz	349,7

Table 10: Results for Passmark Performance Test 7.0, 2D Graphics Mark – APC910/PPC900 (TS77)

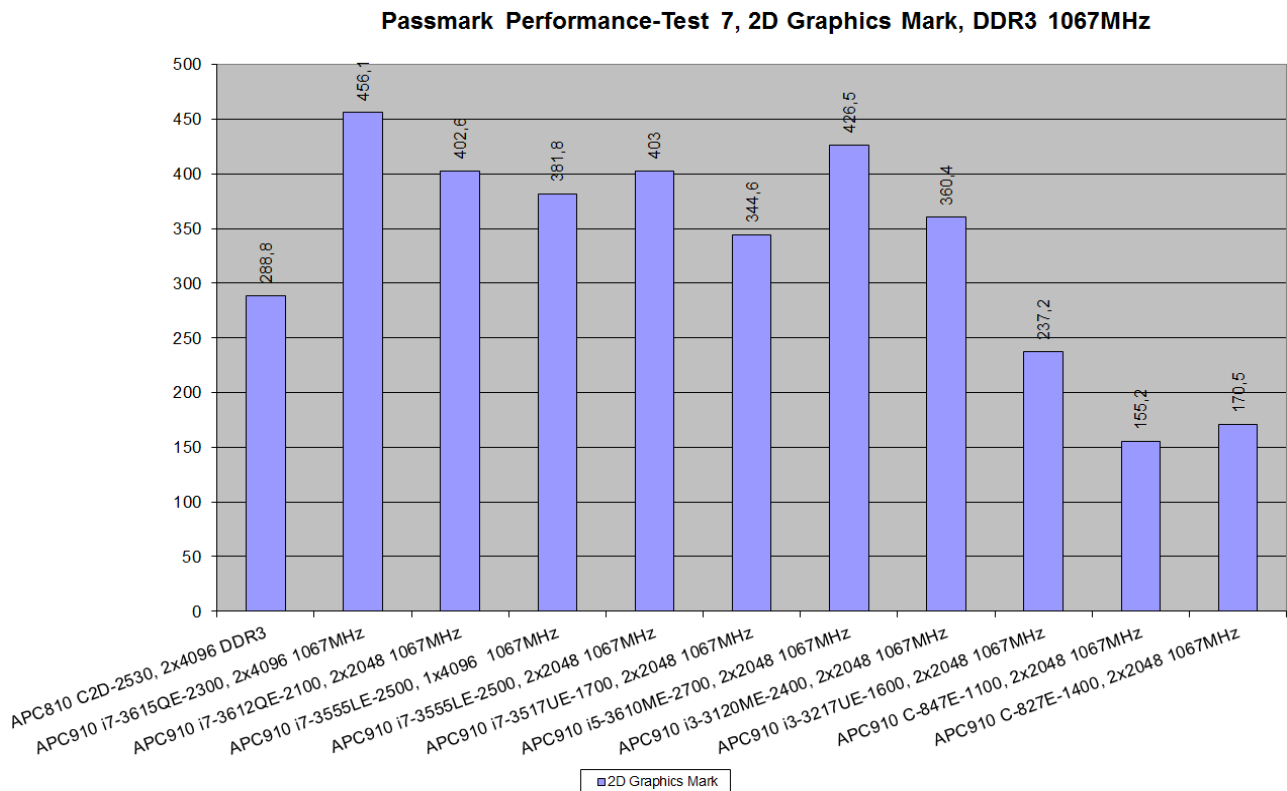


Figure 5: Results for Passmark Performance Test 7.0, 2D Graphics Mark, DDR3 1067MHz – APC910/PPC900 (TS77)

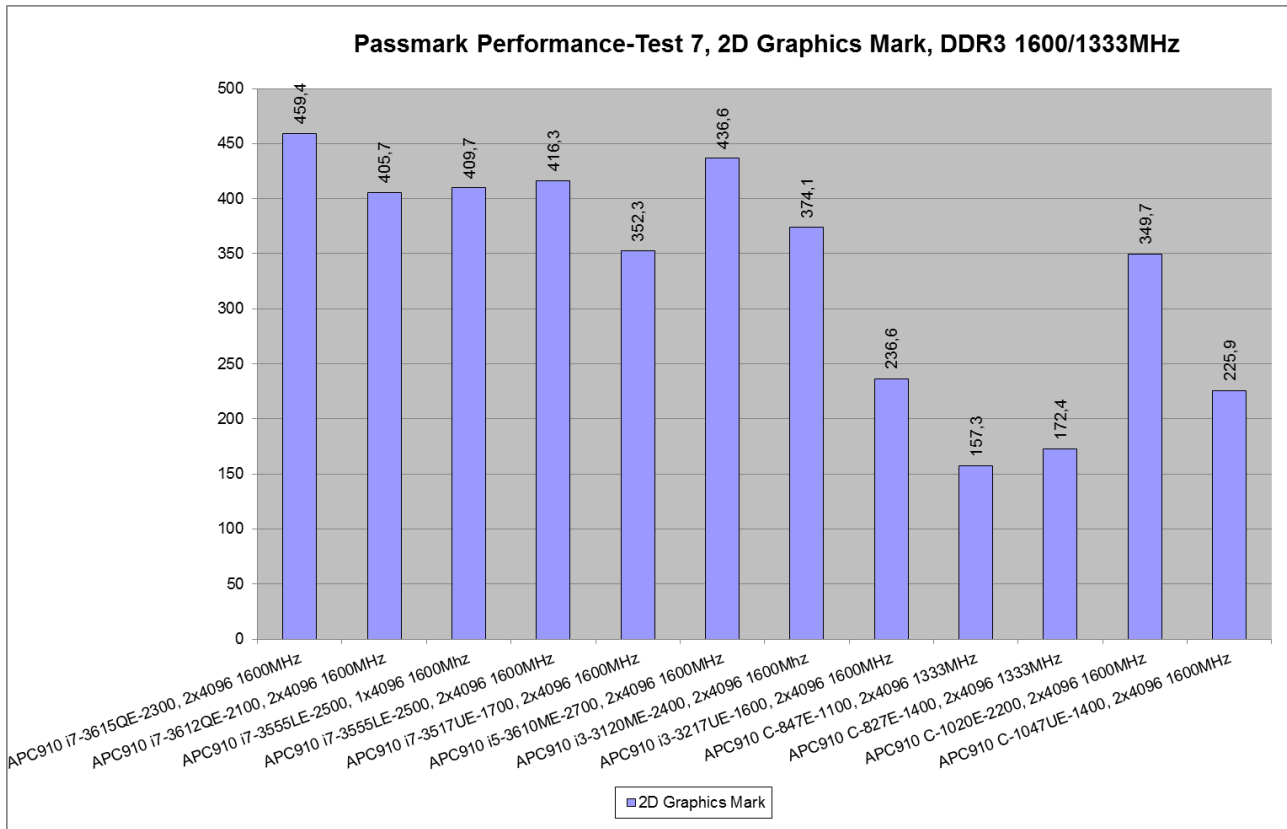


Figure 6: Results for Passmark Performance Test 7.0, 2D Graphics Mark, DDR3 1600/1333MHz – APC910/PPC900 (TS77)

4.1.1.4 3D Graphics Mark

This test suite attempts to measure the performance of the 3D graphics hardware installed in the machine. This test suite makes full use of version 9 of the Microsoft DirectX 3D library. Without DirectX 9.0 or above it will not be possible to run these tests. Three standard tests have been defined: Simple, Medium, and Complex.

Higher scores are better

#	Test device	3D Graphics Mark
APC810/PPC800 with INTEL GM45 Chipset		
30	Core 2 Duo 2,53 GHz, 2x2048MB DDR3-SODIMM	188
APC910/PPC900 with INTEL QM77 Chipset		
37	i7-3615QE 4C 2.3/1.6GHz 6MB 45W 2x4096MB DDR3-SODIMM 1067MHz	434,6
38	i7-3615QE 4C 2.3/1.6GHz 6MB 45W 2x4096MB DDR3-SODIMM 1600MHz	461,9
39	i7-3612QE 4C 2.1/1.6GHz 6MB 35W, 2x4096MB DDR3-SODIMM 1067MHz	420,7
40	i7-3612QE 4C 2.1/1.6GHz 6MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	461,2
41	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 4096MB DDR3-SODIMM 1067MHz	271,6
42	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 4096MB DDR3-SODIMM 1600MHz	334,5
43	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 2x2048MB DDR3-SODIMM 1067MHz	370
44	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 2x4096MB DDR3-SODIMM 1600MHz	414,6
45	i7-3517UE 2C 1.7/1.6GHz 4MB 17W, 2x2048MB DDR3-SODIMM 1067MHz	353,1
46	i7-3517UE 2C 1.7/1.6GHz 4MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	390,8
47	i5-3610ME 2C 2.7/1.6GHz 3MB 35W, 2x2048MB DDR3-SODIMM 1067MHz	362,4
48	i5-3610ME 2C 2.7/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	411,6
49	i3-3120ME 2C 2.4/1.6GHz 3MB 35W, 2x2048MB DDR3-SODIMM 1067MHz	351,2
50	i3-3120ME 2C 2.4/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	390,7
51	i3-3217UE 2C 1.6/1.6GHz 3MB 17W, 2x2048MB DDR3-SODIMM 1067MHz	334,5
52	i3-3217UE 2C 1.6/1.6GHz 3MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	366,1
APC910/PPC900 with INTEL HM76 Chipset		
53	C-847E 2C 1.1/1.3GHz 2MB 17W 2x2048MB DDR3 1067MHz	168,4
54	C-847E 2C 1.1/1.3GHz 2MB 17W 2x4096MB DDR3 1333MHz	171,3
55	C-827E 1C 1.4/1.3GHz 1.5MB 17W 2x2048MB DDR3 1067MHz	140,8
56	C-827E 1C 1.4/1.3GHz 1.5MB 17W 2x4096MB DDR3 1333MHz	143,4
58	C-1047UE 2C 1.4/1.6GHz 2MB 17W 2x4096MB DDR3-SODIMM 1600MHz	228,4
59	C-1020E 2C 2.2/1.6GHz 2MB 35W 2x4096MB DDR3-SODIMM 1600MHz	263

Table 11: Results for Passmark Performance Test 7.0, 3D Graphics Mark – APC910/PPC900 (TS77)

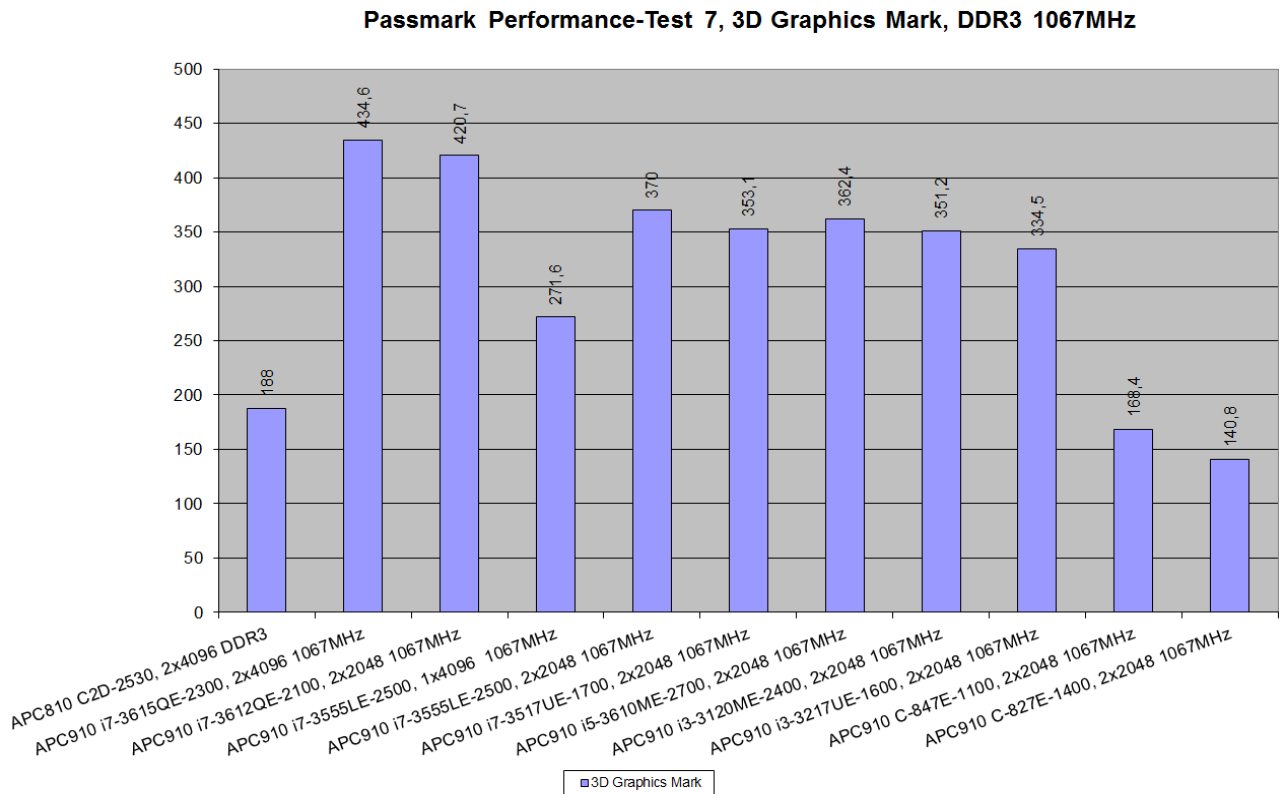


Figure 7: Results for Passmark Performance Test 7.0, 3D Graphics Mark, DDR3 1067MHz – APC910/PPC900 (TS77)

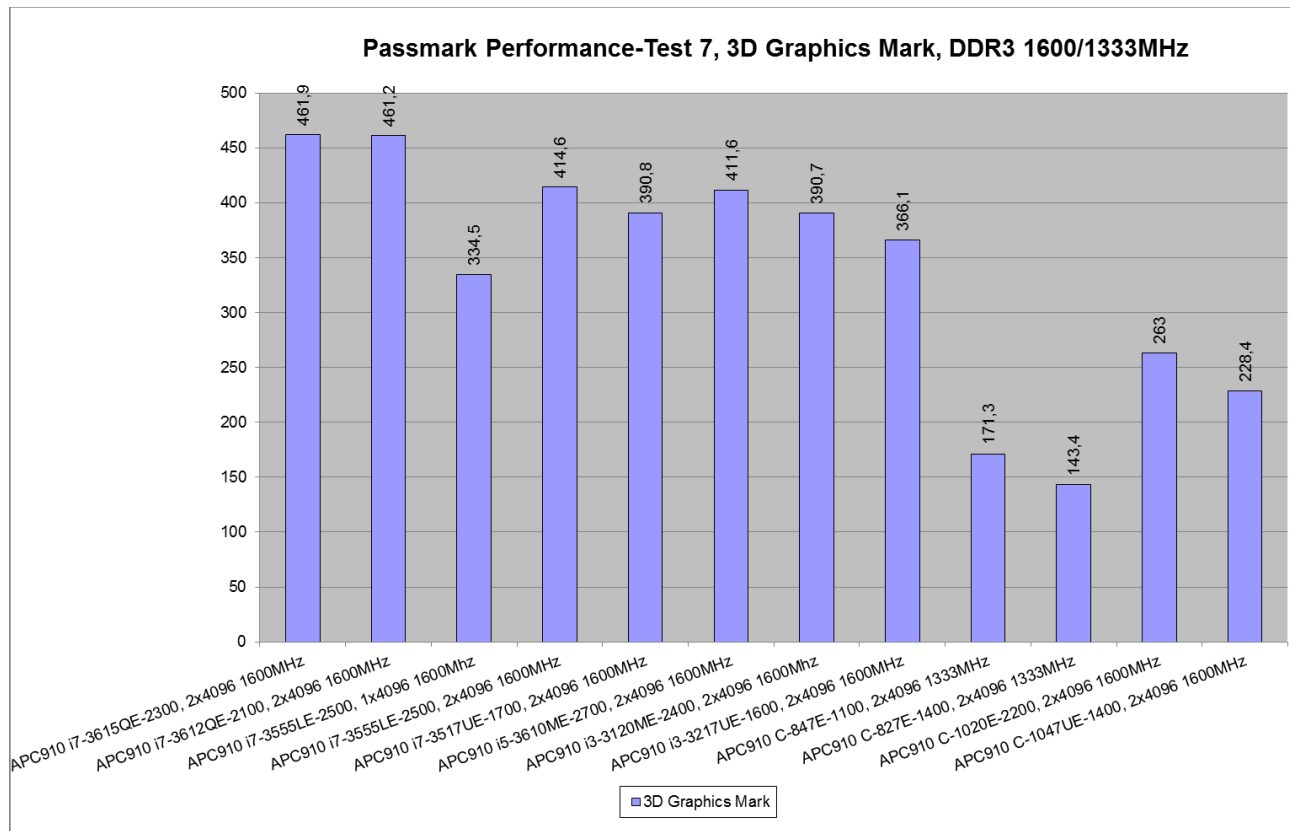


Figure 8: Results for Passmark Performance Test 7.0, 3D Graphics Mark, DDR3 1600/1333MHz – APC910/PPC900 (TS77)

4.1.1.5 Memory Mark

This test suite contains a number of tests that exercise the memory sub-system of the computer. All tests use a combination of 32-bit and 64-bit data when reading or writing from or to RAM. It contains: Memory-Allocate small block, Memory-Cached, Memory-UnCached, Memory-Write and Memory-Large RAM.

Higher scores are better

#	Test device	Memory Mark
APC810/PPC800 with INTEL GM45 Chipset		
30	Core 2 Duo 2,53 GHz, 2x2048MB DDR3-SODIMM	1461,7
APC910/PPC900 with INTEL QM77 Chipset		
37	i7-3615QE 4C 2.3/1.6GHz 6MB 45W 2x4096MB DDR3-SODIMM 1067MHz	2246,8
38	i7-3615QE 4C 2.3/1.6GHz 6MB 45W 2x4096MB DDR3-SODIMM 1600MHz	2250
39	i7-3612QE 4C 2.1/1.6GHz 6MB 35W, 2x4096MB DDR3-SODIMM 1067MHz	1337,2
40	i7-3612QE 4C 2.1/1.6GHz 6MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	2139,6
41	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 4096MB DDR3-SODIMM 1067MHz	1395,7
42	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 4096MB DDR3-SODIMM 1600MHz	1442,5
43	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 2x2048MB DDR3-SODIMM 1067MHz	1420,1
44	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 2x4096MB DDR3-SODIMM 1600MHz	2109,8
45	i7-3517UE 2C 1.7/1.6GHz 4MB 17W, 2x2048MB DDR3-SODIMM 1067MHz	1226,2
46	i7-3517UE 2C 1.7/1.6GHz 4MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	1972,3
47	i5-3610ME 2C 2.7/1.6GHz 3MB 35W, 2x2048MB DDR3-SODIMM 1067MHz	1443,7
48	i5-3610ME 2C 2.7/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	2287,4
49	i3-3120ME 2C 2.4/1.6GHz 3MB 35W, 2x2048MB DDR3-SODIMM 1067MHz	1224
50	i3-3120ME 2C 2.4/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	1921,6
51	i3-3217UE 2C 1.6/1.6GHz 3MB 17W, 2x2048MB DDR3-SODIMM 1067MHz	752,5
52	i3-3217UE 2C 1.6/1.6GHz 3MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	1114,6
APC910/PPC900 with INTEL HM76 Chipset		
53	C-847E 2C 1.1/1.3GHz 2MB 17W 2x2048MB DDR3 1067MHz	508,7
54	C-847E 2C 1.1/1.3GHz 2MB 17W 2x4096MB DDR3 1333MHz	770,1
55	C-827E 1C 1.4/1.3GHz 1.5MB 17W 2x2048MB DDR3 1067MHz	458,5
56	C-827E 1C 1.4/1.3GHz 1.5MB 17W 2x4096MB DDR3 1333MHz	935,9
58	C-1047UE 2C 1.4/1.6GHz 2MB 17W 2x4096MB DDR3-SODIMM 1600MHz	992,4
59	C-1020E 2C 2.2/1.6GHz 2MB 35W 2x4096MB DDR3-SODIMM 1600MHz	1537,9

Table 12: Results for Passmark Performance Test 7.0, Memory Mark – APC910/PPC900 (TS77)

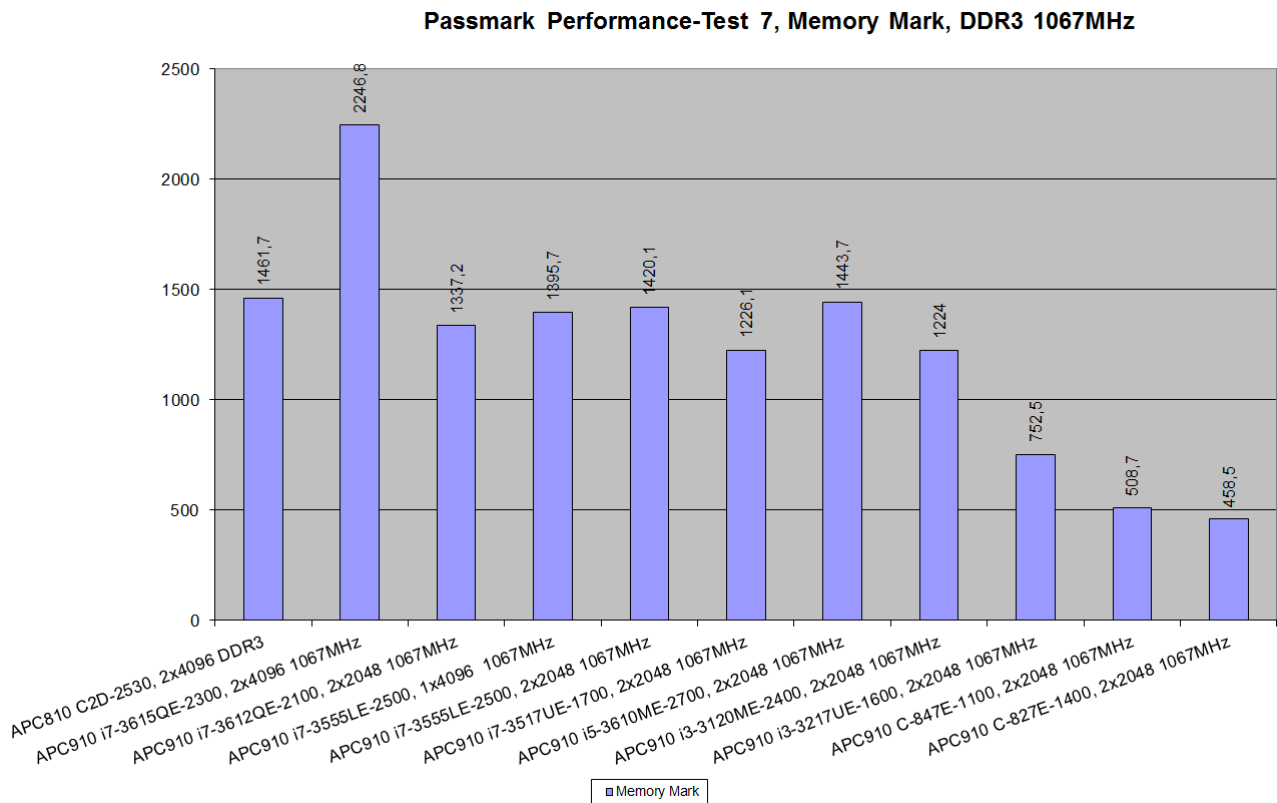


Figure 9: Results for Passmark Performance Test 7.0, Memory Mark, DDR3 1067MHz – APC910/PPC900 (TS77)

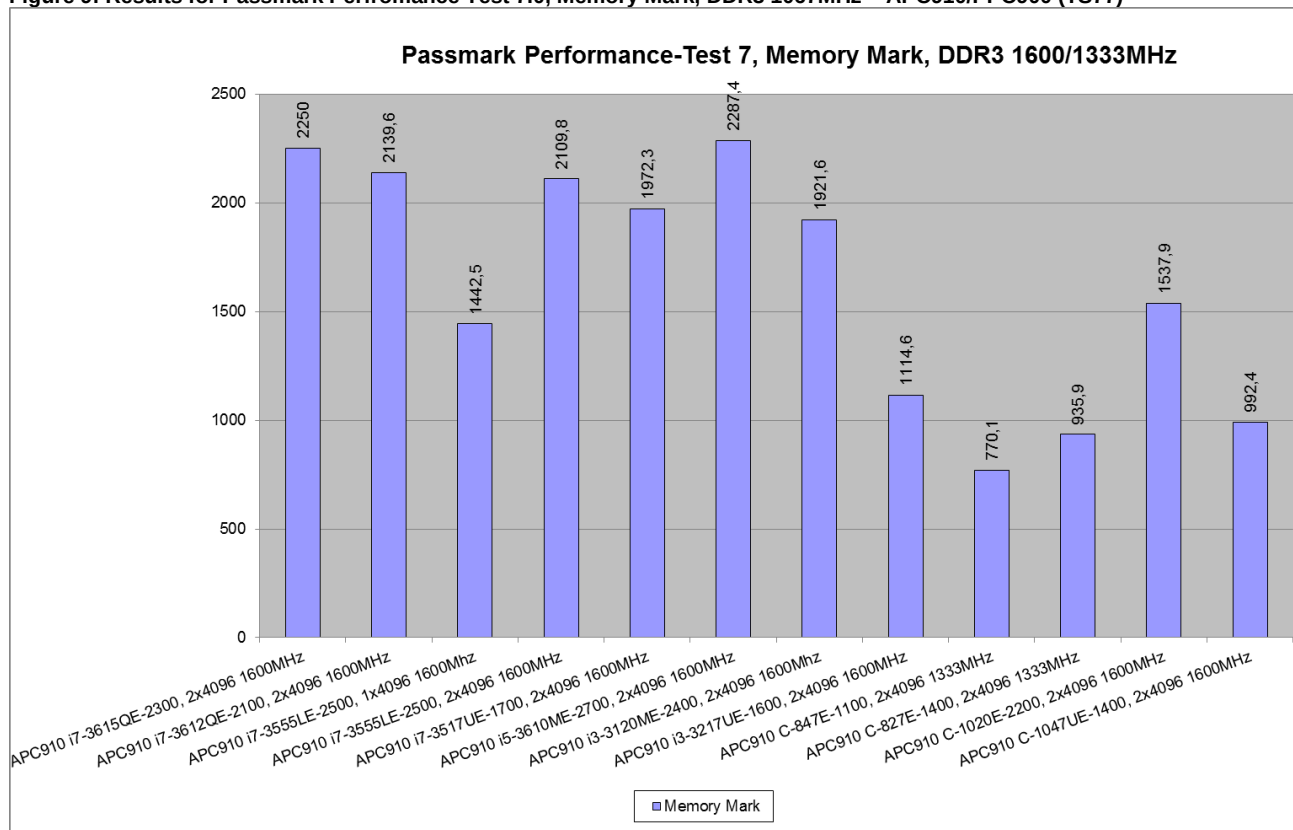


Figure 10: Results for Passmark Performance Test 7.0, Memory Mark, DDR3 1600/1333MHz – APC910/PPC900 (TS77)

4.1.1.6 Disk Mark

This suite contains a number of tests that exercise the mass storage units connected to the computer. By default, the current user's application directory is used for the test. This suite contains: Disk Sequential Read, Disk Sequential Write and Disk Random Seek RW.

Higher scores are better

#	Test device	Disk Mark
APC810/PPC800 with INTEL GM45 Chipset		
30	Core 2 Duo 2,53 GHz, 2x2048MB DDR3-SODIMM	947,4
APC910/PPC900 with INTEL QM77 Chipset		
37	i7-3615QE 4C 2.3/1.6GHz 6MB 45W 2x4096MB DDR3-SODIMM 1067MHz	3156,1
38	i7-3615QE 4C 2.3/1.6GHz 6MB 45W 2x4096MB DDR3-SODIMM 1600MHz	3152,9
39	i7-3612QE 4C 2.1/1.6GHz 6MB 35W, 2x4096MB DDR3-SODIMM 1067MHz	3066,7
40	i7-3612QE 4C 2.1/1.6GHz 6MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	3088,8
41	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 4096MB DDR3-SODIMM 1067MHz	2991,8
42	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 4096MB DDR3-SODIMM 1600MHz	3041,4
43	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 2x2048MB DDR3-SODIMM 1067MHz	3108,2
44	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 2x4096MB DDR3-SODIMM 1600MHz	3029,3
45	i7-3517UE 2C 1.7/1.6GHz 4MB 17W, 2x2048MB DDR3-SODIMM 1067MHz	3097,3
46	i7-3517UE 2C 1.7/1.6GHz 4MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	3093
47	i5-3610ME 2C 2.7/1.6GHz 3MB 35W, 2x2048MB DDR3-SODIMM 1067MHz	3031,2
48	i5-3610ME 2C 2.7/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	2996,3
49	i3-3120ME 2C 2.4/1.6GHz 3MB 35W, 2x2048MB DDR3-SODIMM 1067MHz	3070,9
50	i3-3120ME 2C 2.4/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	3023,6
51	i3-3217UE 2C 1.6/1.6GHz 3MB 17W, 2x2048MB DDR3-SODIMM 1067MHz	3043,2
52	i3-3217UE 2C 1.6/1.6GHz 3MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	3021,7
APC910/PPC900 with INTEL HM76 Chipset		
53	C-847E 2C 1.1/1.3GHz 2MB 17W 2x2048MB DDR3 1067MHz	3128,6
54	C-847E 2C 1.1/1.3GHz 2MB 17W 2x4096MB DDR3 1333MHz	3091,9
55	C-827E 1C 1.4/1.3GHz 1.5MB 17W 2x2048MB DDR3 1067MHz	3112,1
56	C-827E 1C 1.4/1.3GHz 1.5MB 17W 2x4096MB DDR3 1333MHz	2856,4
58	C-1047UE 2C 1.4/1.6GHz 2MB 17W 2x4096MB DDR3-SODIMM 1600MHz	3108,3
59	C-1020E 2C 2.2/1.6GHz 2MB 35W 2x4096MB DDR3-SODIMM 1600MHz	3142,4

Table 13: Results for Passmark Performance Test 7.0, Disk Mark – APC910/PPC900 (TS77)

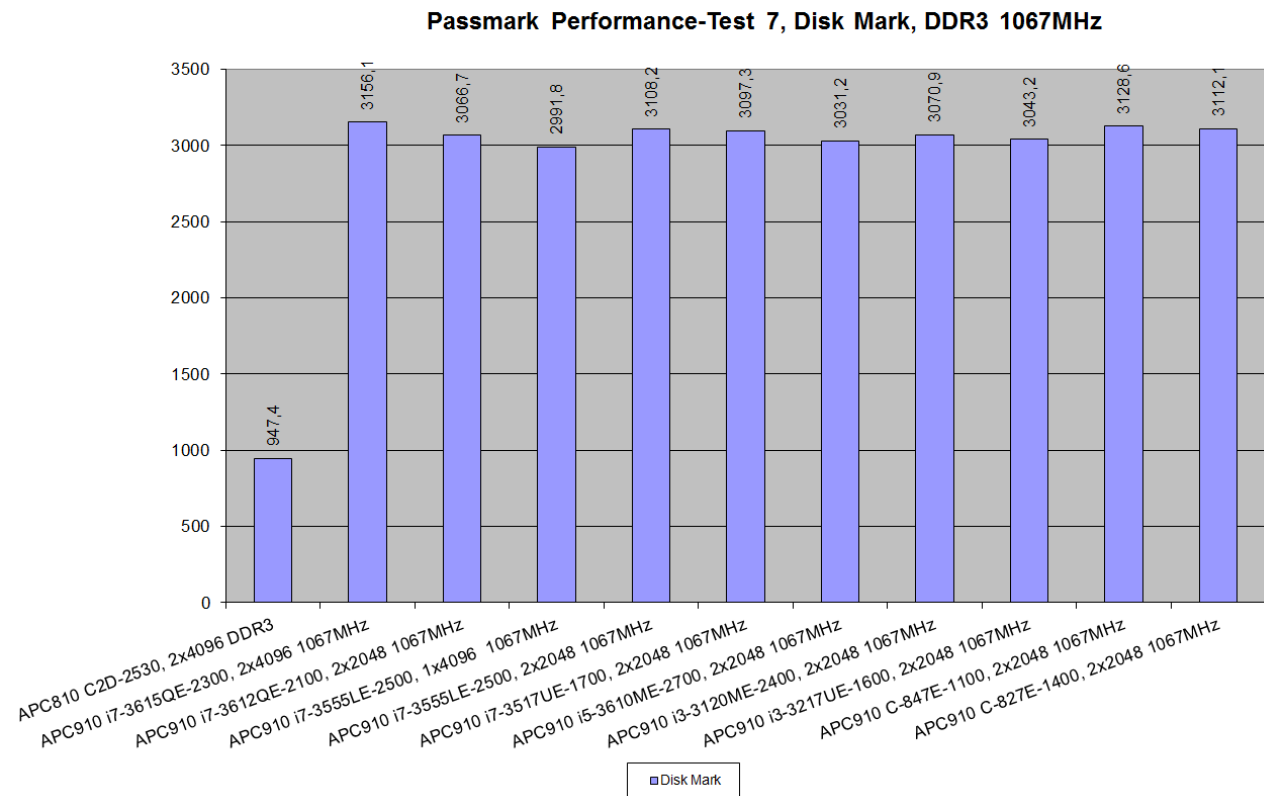


Figure 11: Results Passmark Performance Test 7.0, Disk Mark, DDR3 1067MHz – APC910/PPC900 (TS77)

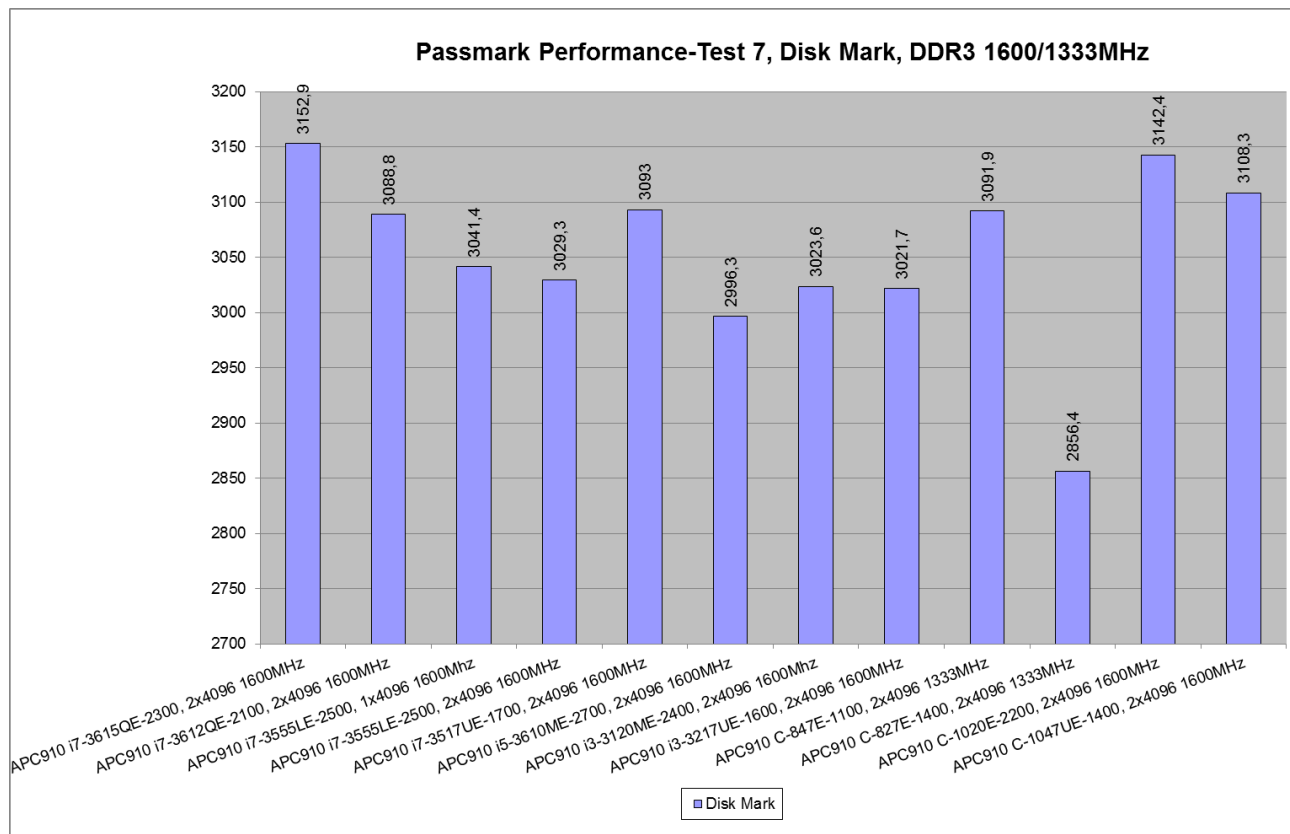


Figure 12: Results Passmark Performance Test 7.0, Disk Mark, DDR3 1600/1333MHz – APC910/PPC900 (TS77)

4.1.2 APC910/PPC900 (TS17)

4.1.2.1 Passmark Rating

The PassMark rating is weighted average of all the other test results and gives a single overall indication of the computers performance. The bigger the number, the faster the computer. The PassMark rating can only be calculated if the results from all other tests are available. The value is calculated using a series of weighted averages where some components are considered to be more important than others: Disk 21%, CD/DVD 5%, Memory 19%, 3D Graphics 12%, 2D Graphics 14% and CPU 29%.

Higher scores are better

#	Test device	Passmark Rating
APC910/PPC900 with INTEL QM77 Chipset		
38	i7-3615QE 4C 2.3/1.6GHz 6MB 45W 2x4096MB DDR3-SODIMM 1600MHz	2299,3
40	i7-3612QE 4C 2.1/1.6GHz 6MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	2156,8
42	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 4096MB DDR3-SODIMM 1600MHz	1644,6
44	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 2x4096MB DDR3-SODIMM 1600MHz	1836,8
46	i7-3517UE 2C 1.7/1.6GHz 4MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	1640,8
48	i5-3610ME 2C 2.7/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	1889
50	i3-3120ME 2C 2.4/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	1641,5
52	i3-3217UE 2C 1.6/1.6GHz 3MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	1140,4
APC910/PPC900 with INTEL HM76 Chipset		
54	C-847E 2C 1.1/1.3GHz 2MB 17W, 2x4096MB DDR3-SODIMM 1333MHz	645
56	C-827E 1C 1.4/1.3GHz 1.5MB 17W, 2x4096MB DDR3-SODIMM 1333MHz	538
58	C-1047UE 2C 1.4/1.6GHz 2MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	876
59	C-1020E 2C 2.2/1.6GHz 2MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	1257,9
APC910/PPC900 with INTEL QM170 Chipset		
66	i5-6440EQ 4C 2.7GHz 6MB 45W, 2 x 4096 MB DDR4-SODIMM 2133MHz	2644,3
67	i7-6820EQ 4C 2.8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2950,8
APC910/PPC900 with INTEL HM170 Chipset		
68	i3-6100E 2C 2.7GHz 3MB 35W, 2 x 4096 MB DDR4-SODIMM 2133MHz	2224,1
69	i3-6100E 2C 1.9GHz 3MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1766,5
70	C-G3900E 2C 2.4GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1854,3
71	C-G3900E 2C 1.7GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1383,7
APC910 with INTEL CM236 Chipset		
72	E3-1515MV5 4C 2,8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	3359,2

Table 14: Results for Passmark Performance Test 7.0, Passmark Rating – APC910/PPC900 (TS17)

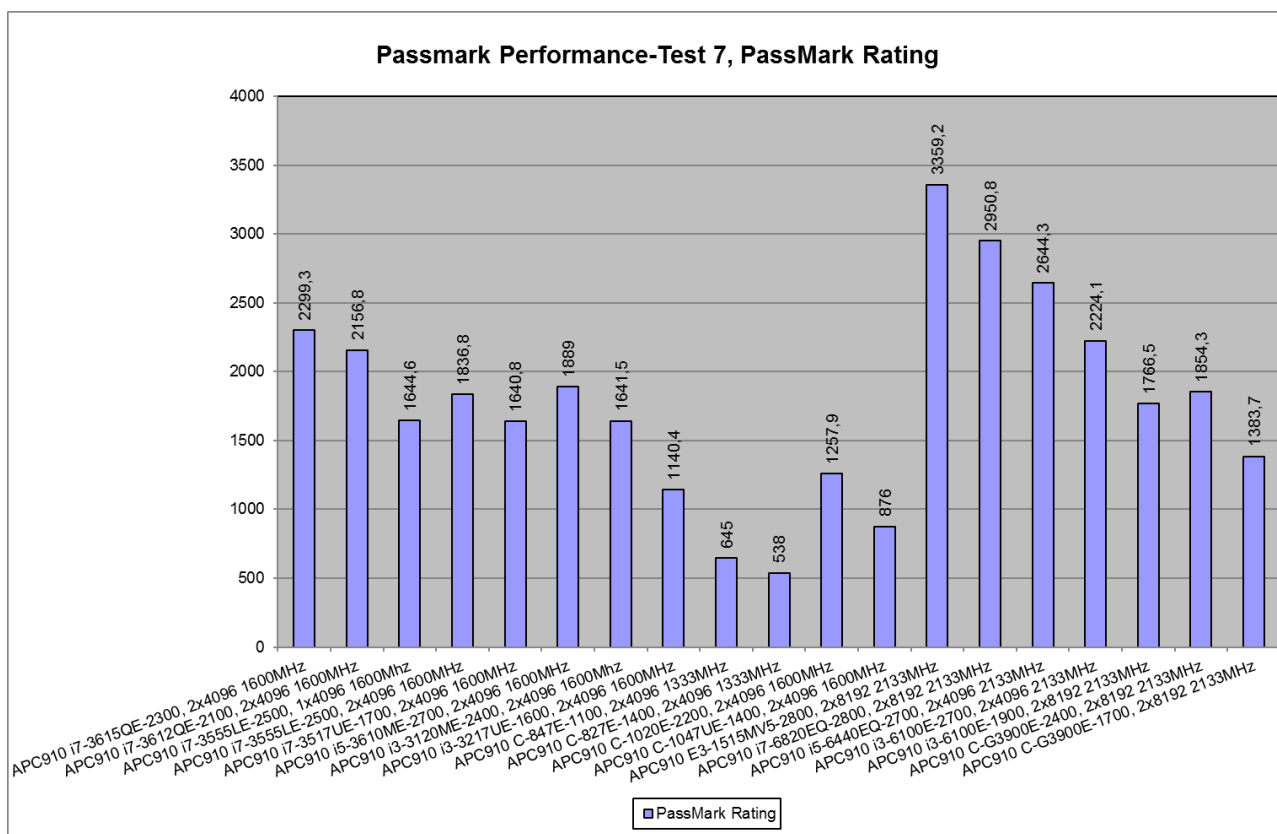


Figure 13: Results for Passmark Performance Test 7.0, Passmark Rating – APC910/PPC900 (TS17)

4.1.2.2 CPU Mark

This suite contains multi-process CPU tests. The number of CPU test processes is configurable in Preferences. The following tests make up the suite: Integer (addition, subtraction, multiplication, division), Floating Point (addition, subtraction, multiplication, division), Multimedia Instructions (128-bit SSE operations such as addition, subtraction and multiplication), Find Prime numbers, Compression, Encryption, Physics, Random String Sorting

Higher scores are better

#	Test device	CPU Mark
APC910/PPC900 with INTEL QM77 Chipset		
38	i7-3615QE 4C 2.3/1.6GHz 6MB 45W 2x4096MB DDR3-SODIMM 1600MHz	8921,9
40	i7-3612QE 4C 2.1/1.6GHz 6MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	8107,9
42	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 4096MB DDR3-SODIMM 1600MHz	4431,9
44	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 2x4096MB DDR3-SODIMM 1600MHz	4480,3
46	i7-3517UE 2C 1.7/1.6GHz 4MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	3899,9
48	i5-3610ME 2C 2.7/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	4587,3
50	i3-3120ME 2C 2.4/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	3724,1
52	i3-3217UE 2C 1.6/1.6GHz 3MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	2407,5
APC910/PPC900 with INTEL HM76 Chipset		
54	C-847E 2C 1.1/1.3GHz 2MB 17W 2x4096MB DDR3-SODIMM 1333MHz	1175,5
56	C-827E 1C 1.4/1.3GHz 1.5MB 17W 2x4096MB DDR3-SODIMM 1333MHz	771,9
58	C-1047UE 2C 1.4/1.6GHz 2MB 17W 2x4096MB DDR3-SODIMM 1600MHz	1601,8
59	C-1020E 2C 2.2/1.6GHz 2MB 35W 2x4096MB DDR3-SODIMM 1600MHz	2512,7
APC910/PPC900 with INTEL QM170 Chipset		
66	i5-6440EQ 4C 2.7GHz 6MB 45W, 2 x 4096 MB DDR4-SODIMM 2133MHz	6500,8
67	i7-6820EQ 4C 2.8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	9291,4
APC910/PPC900 with INTEL HM170 Chipset		
68	i3-6100E 2C 2.7GHz 3MB 35W, 2 x 4096 MB DDR4-SODIMM 2133MHz	4651,3
69	i3-6100E 2C 1.9GHz 3MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	3303,7
70	C-G3900E 2C 2.4GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	3133,1
71	C-G3900E 2C 1.7GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2233,1
APC910 with INTEL CM236 Chipset		
72	E3-1515MV5 4C 2,8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	9583,8

Table 15: Results for Passmark Performance Test 7.0, CPU Mark – APC910/PPC900 (TS17)

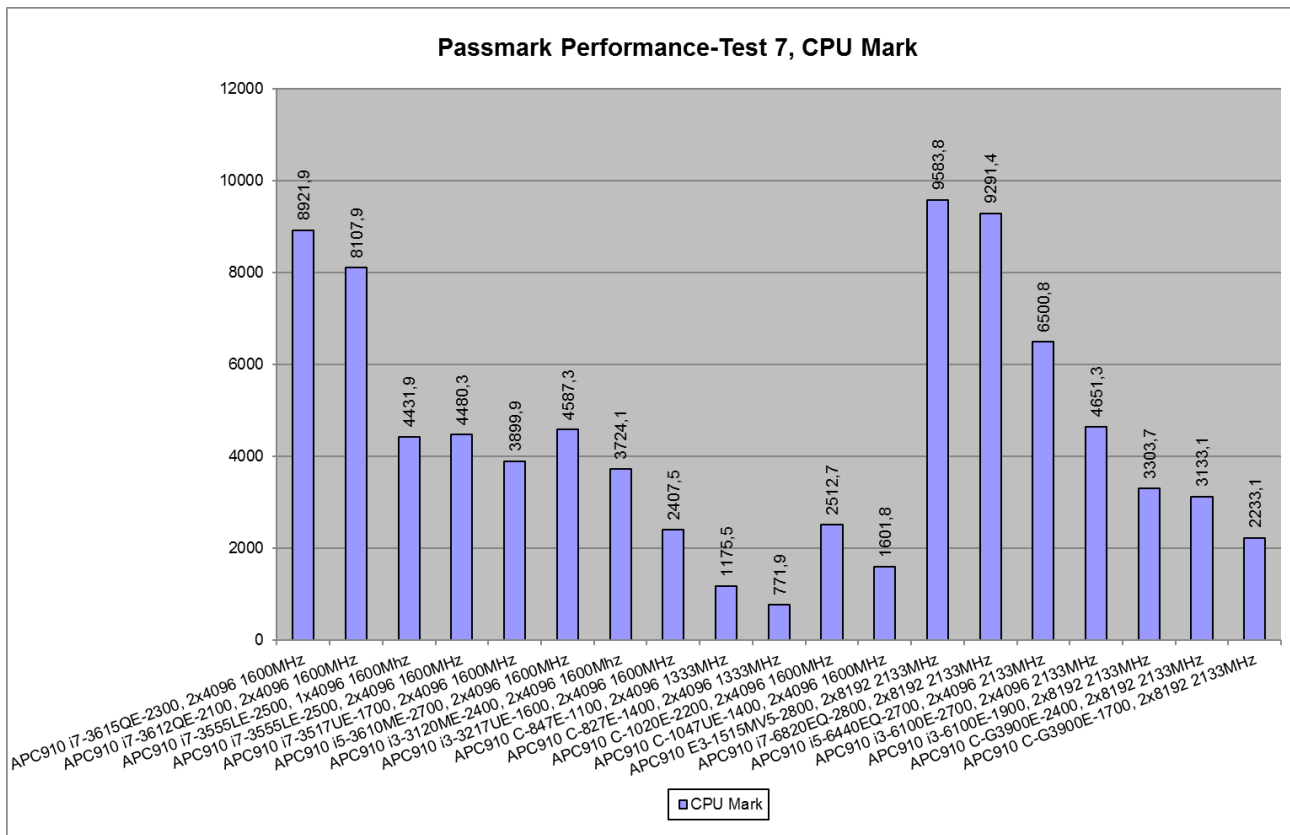


Figure 14: Results for Passmark Performance Test 7.0, CPU Mark – APC910/PPC900 (TS17)

4.1.2.3 2D Graphics Mark

This suite contains a number of tests that exercise the standard Windows graphics functions. The results from this suite depend on the speed at which the video card can carry out 2D graphics operations and the color depth currently in use. This suite contains: Solid Vectors, Transparent Vectors, Complex Vectors, Fonts and Text, Windows Interface, Image Filters, Image Rendering.

Higher scores are better

#	Test device	2D Graphics Mark
APC910/PPC900 with INTEL QM77 Chipset		
38	i7-3615QE 4C 2.3/1.6GHz 6MB 45W 2x4096MB DDR3-SODIMM 1600MHz	459,4
40	i7-3612QE 4C 2.1/1.6GHz 6MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	405,7
42	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 4096MB DDR3-SODIMM 1600MHz	409,7
44	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 2x4096MB DDR3-SODIMM 1600MHz	416,3
46	i7-3517UE 2C 1.7/1.6GHz 4MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	352,3
48	i5-3610ME 2C 2.7/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	436,6
50	i3-3120ME 2C 2.4/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	374,1
52	i3-3217UE 2C 1.6/1.6GHz 3MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	236,6
APC910/PPC900 with INTEL HM76 Chipset		
54	C-847E 2C 1.1/1.3GHz 2MB 17W 2x4096MB DDR3 1333MHz	157,3
56	C-827E 1C 1.4/1.3GHz 1.5MB 17W 2x4096MB DDR3 1333MHz	172,4
58	C-1047UE 2C 1.4/1.6GHz 2MB 17W 2x4096MB DDR3-SODIMM 1600MHz	225,9
59	C-1020E 2C 2.2/1.6GHz 2MB 35W 2x4096MB DDR3-SODIMM 1600MHz	349,7
APC910/PPC900 with INTEL QM170 Chipset		
66	i5-6440EQ 4C 2.7GHz 6MB 45W, 2 x 4096 MB DDR4-SODIMM 2133MHz	540,5
67	i7-6820EQ 4C 2.8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	518,2
APC910/PPC900 with INTEL HM170 Chipset		
68	i3-6100E 2C 2.7GHz 3MB 35W, 2 x 4096 MB DDR4-SODIMM 2133MHz	491,9
69	i3-6100E 2C 1.9GHz 3MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	350,7
70	C-G3900E 2C 2.4GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	428,3
71	C-G3900E 2C 1.7GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	304,4
APC910 with INTEL CM236 Chipset		
72	E3-1515MV5 4C 2,8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	519,7

Table 16: Results for Passmark Performance Test 7.0, 2D Graphics Mark – APC910/PPC900 (TS17)

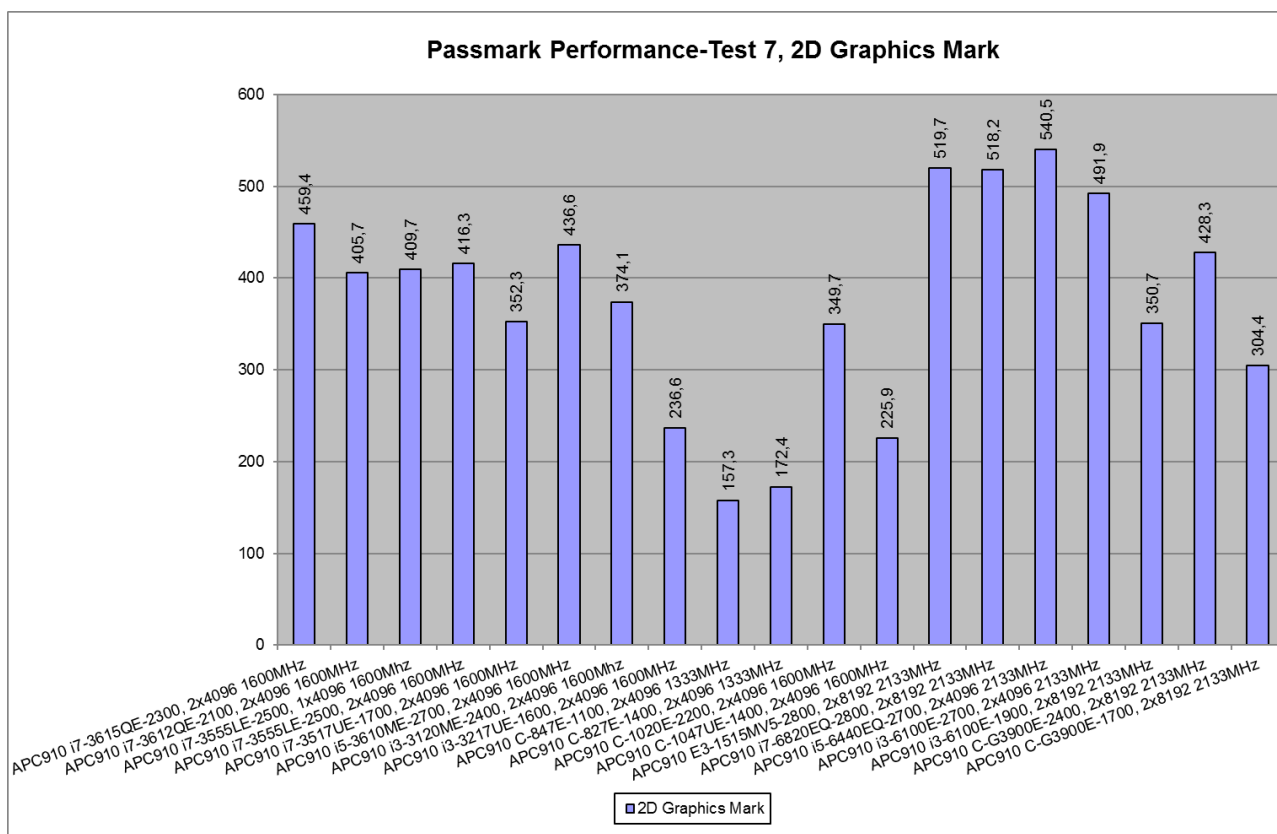


Figure 15: Results for Passmark Performance Test 7.0, 2D Graphics Mark – APC910/PPC900 (TS17)

4.1.2.4 3D Graphics Mark

This test suite attempts to measure the performance of the 3D graphics hardware installed in the machine. This test suite makes full use of version 9 of the Microsoft DirectX 3D library. Without DirectX 9.0 or above it will not be possible to run these tests. Three standard tests have been defined: Simple, Medium, and Complex.

Higher scores are better

#	Test device	3D Graphics Mark
APC910/PPC900 with INTEL QM77 Chipset		
38	i7-3615QE 4C 2.3/1.6GHz 6MB 45W 2x4096MB DDR3-SODIMM 1600MHz	461,9
40	i7-3612QE 4C 2.1/1.6GHz 6MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	461,2
42	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 4096MB DDR3-SODIMM 1600MHz	334,5
44	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 2x4096MB DDR3-SODIMM 1600MHz	414,6
46	i7-3517UE 2C 1.7/1.6GHz 4MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	390,8
48	i5-3610ME 2C 2.7/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	411,6
50	i3-3120ME 2C 2.4/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	390,7
52	i3-3217UE 2C 1.6/1.6GHz 3MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	366,1
APC910/PPC900 with INTEL HM76 Chipset		
54	C-847E 2C 1.1/1.3GHz 2MB 17W 2x4096MB DDR3 1333MHz	171,3
56	C-827E 1C 1.4/1.3GHz 1.5MB 17W 2x4096MB DDR3 1333MHz	143,4
58	C-1047UE 2C 1.4/1.6GHz 2MB 17W 2x4096MB DDR3-SODIMM 1600MHz	228,4
59	C-1020E 2C 2.2/1.6GHz 2MB 35W 2x4096MB DDR3-SODIMM 1600MHz	263
APC910/PPC900 with INTEL QM170 Chipset		
66	i5-6440EQ 4C 2.7GHz 6MB 45W, 2 x 4096 MB DDR4-SODIMM 2133MHz	837,4
67	i7-6820EQ 4C 2.8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	819,7
APC910/PPC900 with INTEL HM170 Chipset		
68	i3-6100E 2C 2.7GHz 3MB 35W, 2 x 4096 MB DDR4-SODIMM 2133MHz	749,9
69	i3-6100E 2C 1.9GHz 3MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	726,4
70	C-G3900E 2C 2.4GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	628,4
71	C-G3900E 2C 1.7GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	577,1
APC910 with INTEL CM236 Chipset		
72	E3-1515MV5 4C 2,8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1712

Table 17: Results for Passmark Performance Test 7.0, 3D Graphics Mark – APC910/PPC900 (TS17)

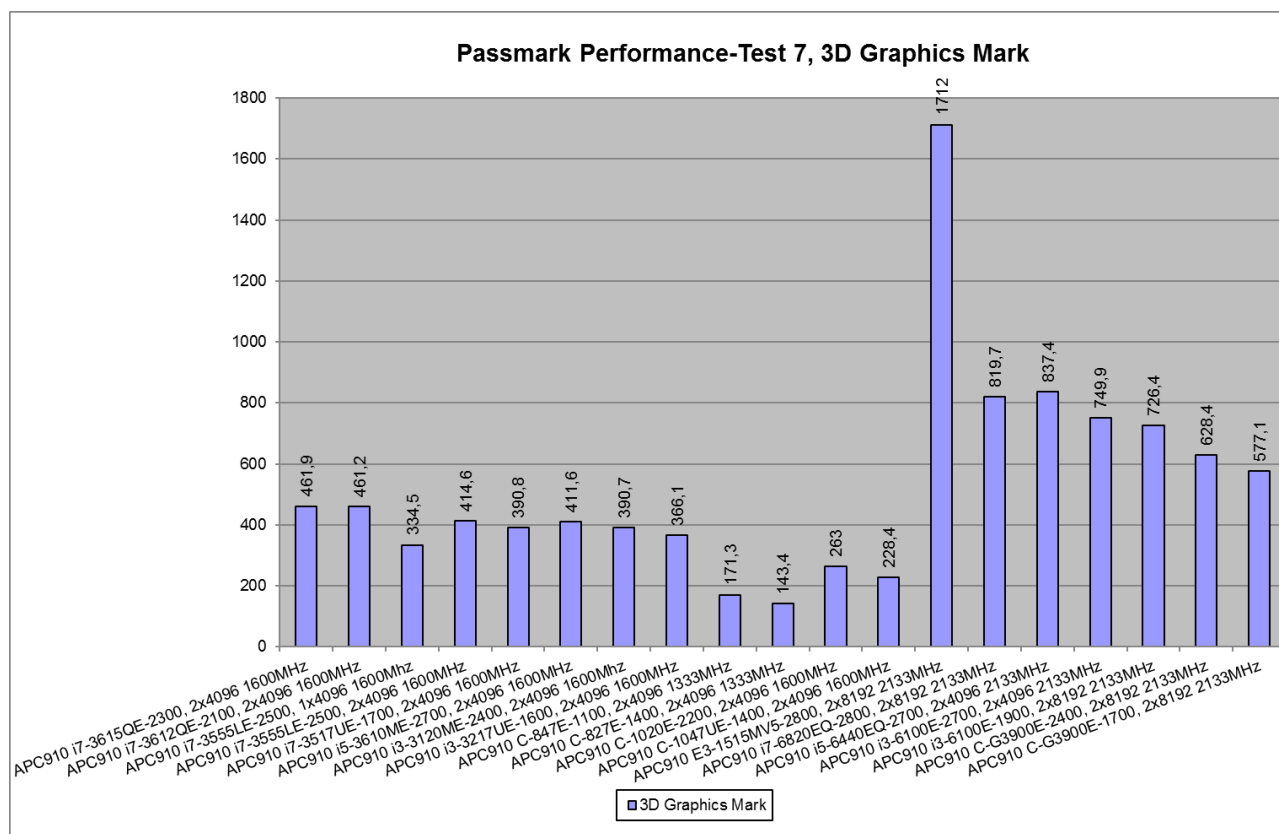


Figure 16: Results for Passmark Performance Test 7.0, 3D Graphics Mark – APC910/PPC900 (TS17)

4.1.2.5 Memory Mark

This test suite contains a number of tests that exercise the memory sub-system of the computer. All tests use a combination of 32-bit and 64-bit data when reading or writing from or to RAM. It contains: Memory-Allocate small block, Memory-Cached, Memory-UnCached, Memory-Write and Memory-Large RAM.

Higher scores are better

#	Test device	Memory Mark
APC910/PPC900 with INTEL QM77 Chipset		
38	i7-3615QE 4C 2.3/1.6GHz 6MB 45W 2x4096MB DDR3-SODIMM 1600MHz	2250
40	i7-3612QE 4C 2.1/1.6GHz 6MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	2139,6
42	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 4096MB DDR3-SODIMM 1600MHz	1442,5
44	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 2x4096MB DDR3-SODIMM 1600MHz	2109,8
46	i7-3517UE 2C 1.7/1.6GHz 4MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	1972,3
48	i5-3610ME 2C 2.7/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	2287,4
50	i3-3120ME 2C 2.4/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	1921,6
52	i3-3217UE 2C 1.6/1.6GHz 3MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	1114,6
APC910/PPC900 with INTEL HM76 Chipset		
54	C-847E 2C 1.1/1.3GHz 2MB 17W 2x4096MB DDR3 1333MHz	770,1
56	C-827E 1C 1.4/1.3GHz 1.5MB 17W 2x4096MB DDR3 1333MHz	935,9
58	C-1047UE 2C 1.4/1.6GHz 2MB 17W 2x4096MB DDR3-SODIMM 1600MHz	992,4
59	C-1020E 2C 2.2/1.6GHz 2MB 35W 2x4096MB DDR3-SODIMM 1600MHz	1537,9
APC910/PPC900 with INTEL QM170 Chipset		
66	i5-6440EQ 4C 2.7GHz 6MB 45W, 2 x 4096 MB DDR4-SODIMM 2133MHz	2258,2
67	i7-6820EQ 4C 2.8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	3215,4
APC910/PPC900 with INTEL HM170 Chipset		
68	i3-6100E 2C 2.7GHz 3MB 35W, 2 x 4096 MB DDR4-SODIMM 2133MHz	1974
69	i3-6100E 2C 1.9GHz 3MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2229,2
70	C-G3900E 2C 2.4GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2802,1
71	C-G3900E 2C 1.7GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1998,5
APC910 with INTEL CM236 Chipset		
72	E3-1515MV5 4C 2,8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	3272,3

Table 18: Results for Passmark Performance Test 7.0, Memory Mark – APC910/PPC900 (TS17)

Information:

The Passmark Performance Test 7 Memory Mark results are heavily dependent on the CPU frequency and the amount of installed main memory. Passmark already realized this fact and has done some improvements regarding the Memory Mark in Performance Test version 8 and 9. The actual test results shows this circumstances.

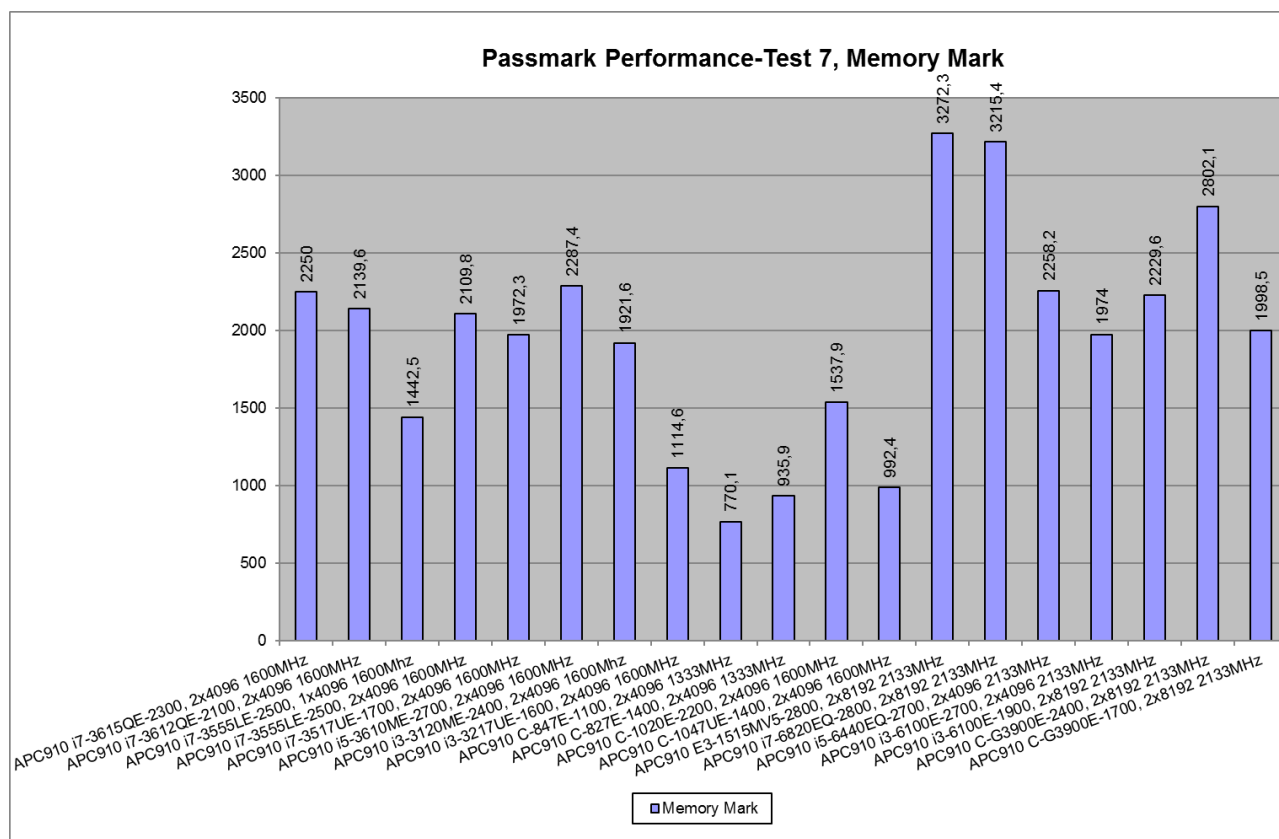


Figure 17: Results for Passmark Performance Test 7.0, Memory Mark – APC910/PPC900 (TS17)

4.1.2.6 Disk Mark

This suite contains a number of tests that exercise the mass storage units connected to the computer. By default, the current user's application directory is used for the test. This suite contains: Disk Sequential Read, Disk Sequential Write and Disk Random Seek RW.

Higher scores are better

#	Test device	Disk Mark
APC910/PPC900 with INTEL QM77 Chipset		
38	i7-3615QE 4C 2.3/1.6GHz 6MB 45W 2x4096MB DDR3-SODIMM 1600MHz	3152,9
40	i7-3612QE 4C 2.1/1.6GHz 6MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	3088,8
42	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 4096MB DDR3-SODIMM 1600MHz	3041,4
44	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 2x4096MB DDR3-SODIMM 1600MHz	3029,3
46	i7-3517UE 2C 1.7/1.6GHz 4MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	3093
48	i5-3610ME 2C 2.7/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	2996,3
50	i3-3120ME 2C 2.4/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	3023,6
52	i3-3217UE 2C 1.6/1.6GHz 3MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	3021,7
APC910/PPC900 with INTEL HM76 Chipset		
54	C-847E 2C 1.1/1.3GHz 2MB 17W 2x4096MB DDR3 1333MHz	3091,9
56	C-827E 1C 1.4/1.3GHz 1.5MB 17W 2x4096MB DDR3 1333MHz	2856,4
58	C-1047UE 2C 1.4/1.6GHz 2MB 17W 2x4096MB DDR3-SODIMM 1600MHz	3108,3
59	C-1020E 2C 2.2/1.6GHz 2MB 35W 2x4096MB DDR3-SODIMM 1600MHz	3142,4
APC910/PPC900 with INTEL QM170 Chipset		
66	i5-6440EQ 4C 2.7GHz 6MB 45W, 2 x 4096 MB DDR4-SODIMM 2133MHz	4718,9
67	i7-6820EQ 4C 2.8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	4852,3
APC910/PPC900 with INTEL HM170 Chipset		
68	i3-6100E 2C 2.7GHz 3MB 35W, 2 x 4096 MB DDR4-SODIMM 2133MHz	4805,4
69	i3-6100E 2C 1.9GHz 3MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	4114,8
70	C-G3900E 2C 2.4GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	4476,2
71	C-G3900E 2C 1.7GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	4113,5
APC910 with INTEL CM236 Chipset		
72	E3-1515MV5 4C 2,8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	4787,5

Table 19: Results for Passmark Performance Test 7.0, Disk Mark – APC910/PPC900 (TS17)

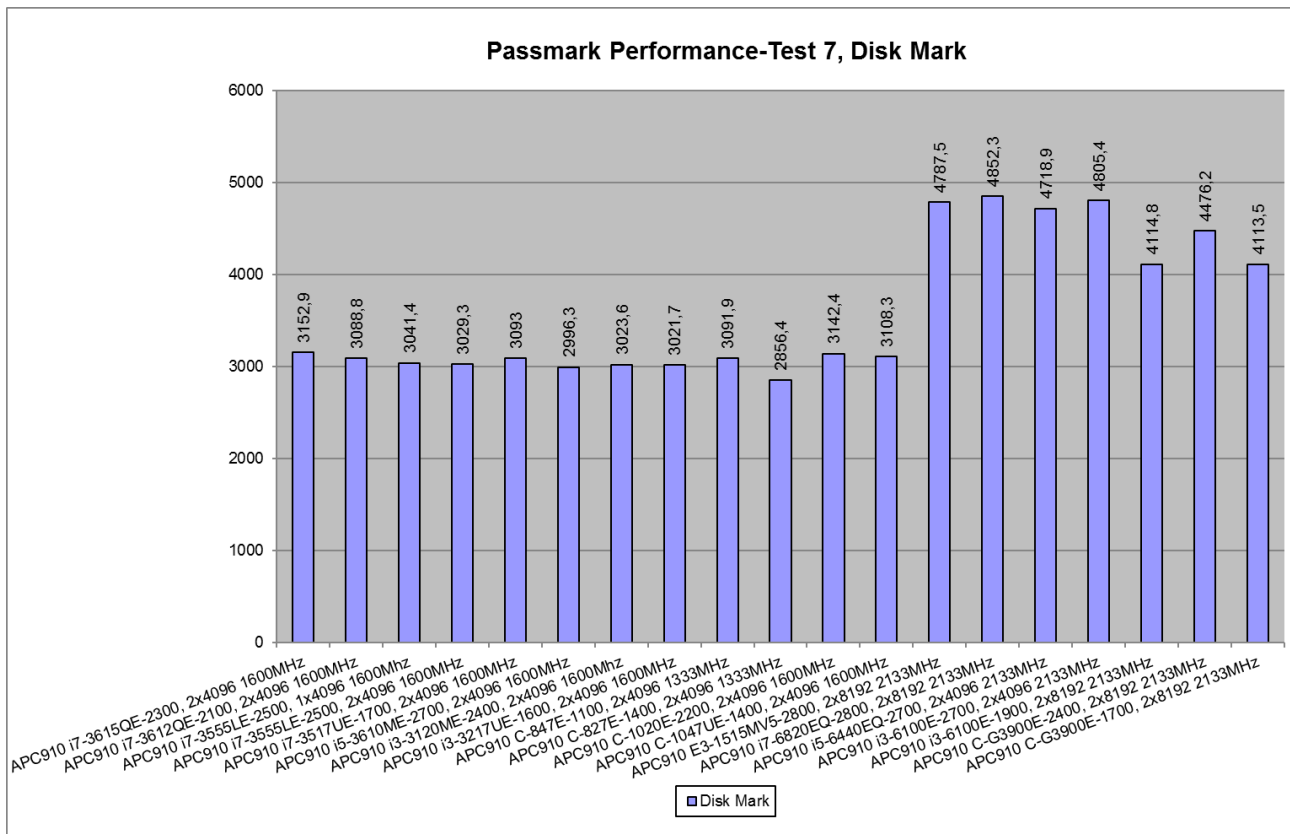


Figure 18: Results Passmark Performance Test 7.0, Disk Mark – APC910/PPC900 (TS17)

4.1.3 APC2100/PPC2100

4.1.3.1 Passmark Rating

The PassMark rating is weighted average of all the other test results and gives a single overall indication of the computers performance. The bigger the number, the faster the computer. The PassMark rating can only be calculated if the results from all other tests are available. The value is calculated using a series of weighted averages where some components are considered to be more important than others: Disk 21%, CD/DVD 5%, Memory 19%, 3D Graphics 12%, 2D Graphics 14% and CPU 29%.

Higher scores are better

#	Test device	Passmark Rating
APC2100/PPC2100 with INTEL Bay Trail		
60	E3815 1C 1.46GHz 512kB 5W, 1GB-1067MHz	213,6
61	E3825 2C 1.33GHz 1MB 6W, 1GB-1067MHz	285,2
62	E3826 2C 1.46GHz 1MB 7W, 2GB-1067MHz	401,7
63	E3827 2C 1.75GHz 1MB 8W, 4GB-1333MHz	488,1
64	E3845 4C 1.91GHz 2MB 10W, 4GB-1333MHz	666,2
65	E3845 4C 1.91GHz 2MB 10W, 8GB-1333MHz	709,6

Table 20: Results for Passmark Performance Test 7.0, Passmark Rating – APC2100/PPC2100

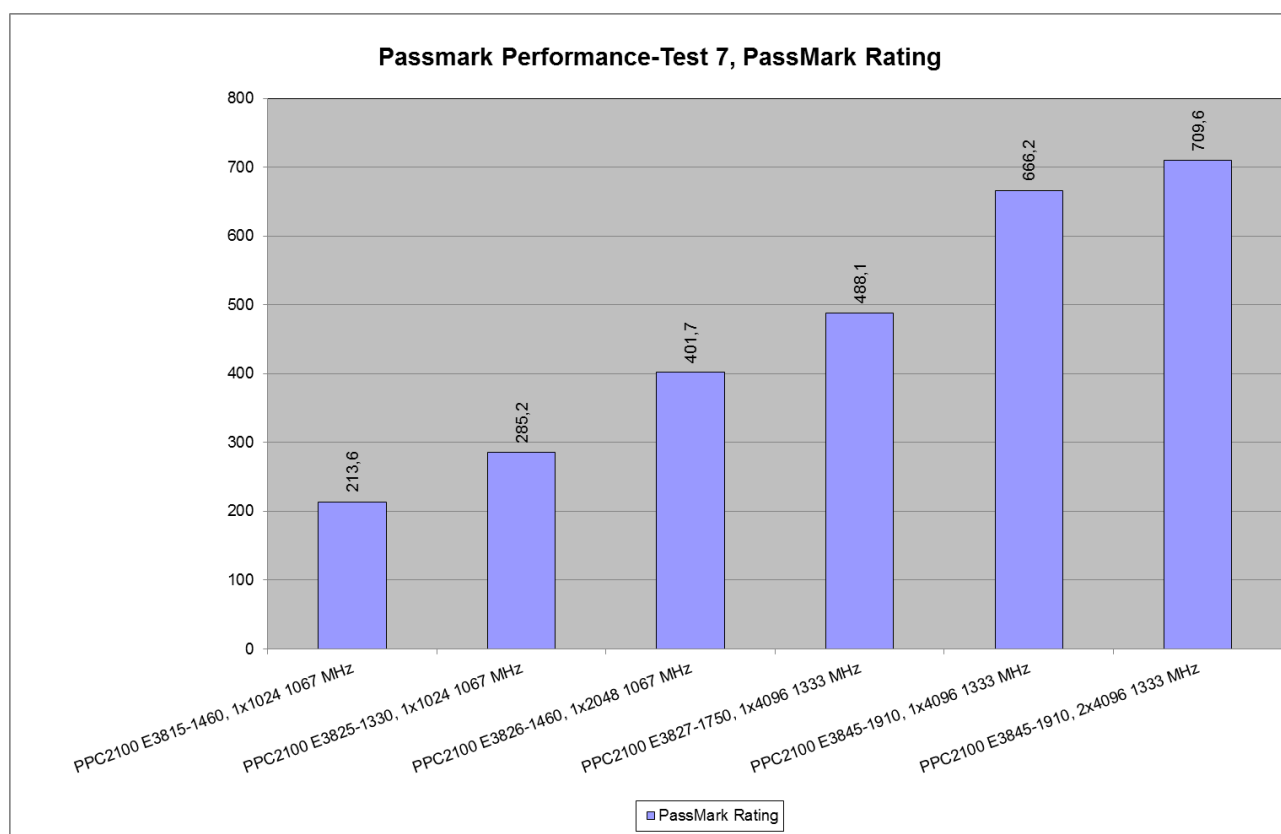


Figure 19: Results for Passmark Performance Test 7.0, Passmark Rating – APC2100/PPC2100

4.1.3.2 CPU Mark

This suite contains multi-process CPU tests. The number of CPU test processes is configurable in Preferences. The following tests make up the suite: Integer (addition, subtraction, multiplication, division), Floating Point (addition, subtraction, multiplication, division), Multimedia Instructions (128-bit SSE operations such as addition, subtraction and multiplication), Find Prime numbers, Compression, Encryption, Physics, Random String Sorting

Higher scores are better

#	Test device	CPU Mark
APC2100/PPC2100 with INTEL Bay Trail		
60	E3815 1C 1.46GHz 512kB 5W, 1GB-1067MHz	260,3
61	E3825 2C 1.33GHz 1MB 6W, 1GB-1067MHz	459,5
62	E3826 2C 1.46GHz 1MB 7W, 2GB-1067MHz	742,7
63	E3827 2C 1.75GHz 1MB 8W, 4GB-1333MHz	880,1
64	E3845 4C 1.91GHz 2MB 10W, 4GB-1333MHz	1848,2
65	E3845 4C 1.91GHz 2MB 10W, 8GB-1333MHz	1810,9

Table 21: Results for Passmark Performance Test 7.0, CPU Mark – APC2100/PPC2100

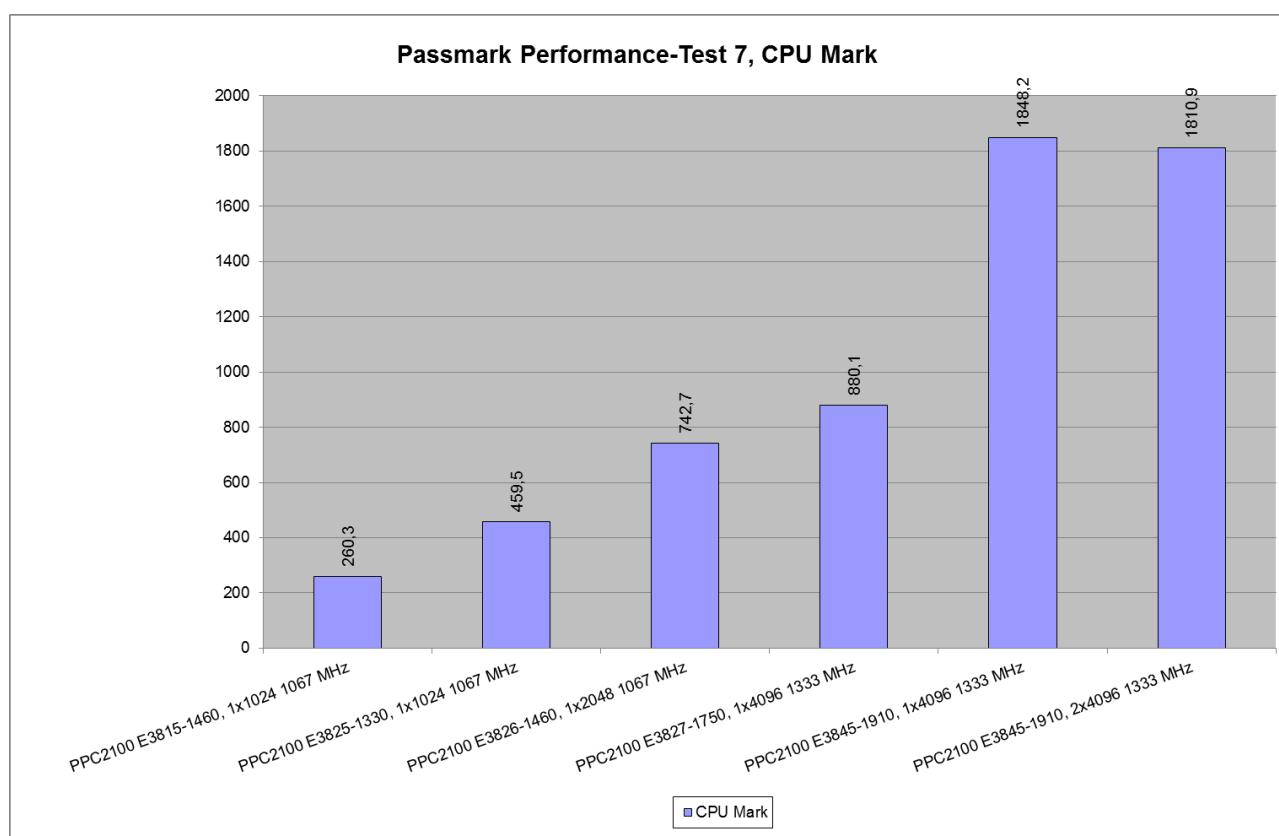


Figure 20: Results for Passmark Performance Test 7.0, CPU Mark – APC2100/PPC2100

4.1.3.3 2D Graphics Mark

This suite contains a number of tests that exercise the standard Windows graphics functions. The results from this suite depend on the speed at which the video card can carry out 2D graphics operations and the color depth currently in use. This suite contains: Solid Vectors, Transparent Vectors, Complex Vectors, Fonts and Text, Windows Interface, Image Filters, Image Rendering.

Higher scores are better

#	Test device	2D Graphics Mark
APC2100/PPC2100 with INTEL Bay Trail		
60	E3815 1C 1.46GHz 512kB 5W, 1GB-1067MHz	108,8
61	E3825 2C 1.33GHz 1MB 6W, 1GB-1067MHz	93,5
62	E3826 2C 1.46GHz 1MB 7W, 2GB-1067MHz	117,5
63	E3827 2C 1.75GHz 1MB 8W, 4GB-1333MHz	131,1
64	E3845 4C 1.91GHz 2MB 10W, 4GB-1333MHz	160,5
65	E3845 4C 1.91GHz 2MB 10W, 8GB-1333MHz	161,3

Table 22: Results for Passmark Performance Test 7.0, 2D Graphics Mark – APC2100/PPC2100

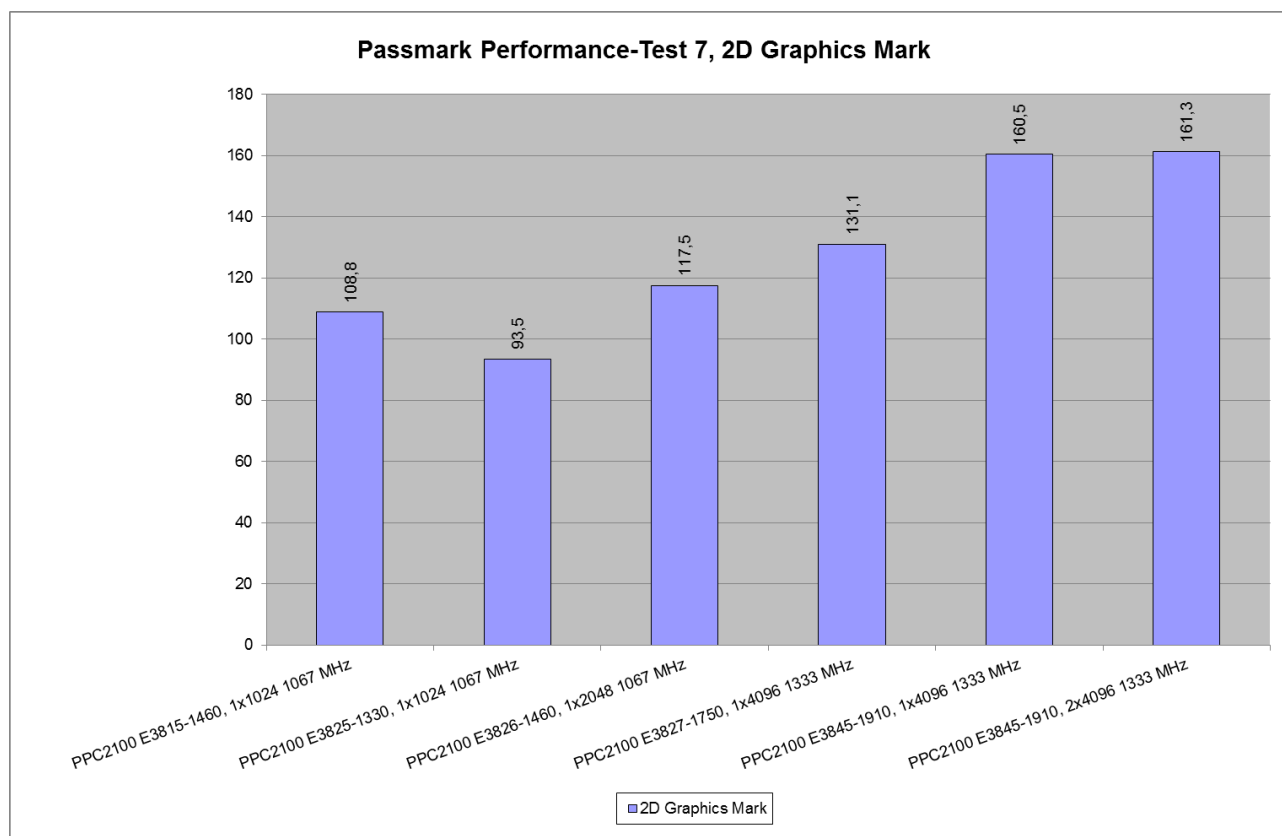


Figure 21: Results for Passmark Performance Test 7.0, 2D Graphics Mark – APC2100/PPC2100

4.1.3.4 3D Graphics Mark

This test suite attempts to measure the performance of the 3D graphics hardware installed in the machine. This test suite makes full use of version 9 of the Microsoft DirectX 3D library. Without DirectX 9.0 or above it will not be possible to run these tests. Three standard tests have been defined: Simple, Medium, and Complex.

Higher scores are better

#	Test device	3D Graphics Mark
APC2100/PPC2100 with INTEL Bay Trail		
60	E3815 1C 1.46GHz 512kB 5W, 1GB-1067MHz	94,8
61	E3825 2C 1.33GHz 1MB 6W, 1GB-1067MHz	113,8
62	E3826 2C 1.46GHz 1MB 7W, 2GB-1067MHz	127,4
63	E3827 2C 1.75GHz 1MB 8W, 4GB-1333MHz	147,5
64	E3845 4C 1.91GHz 2MB 10W, 4GB-1333MHz	149,4
65	E3845 4C 1.91GHz 2MB 10W, 8GB-1333MHz	167,8

Table 23: Results for Passmark Performance Test 7.0, 3D Graphics Mark – APC2100/PPC2100

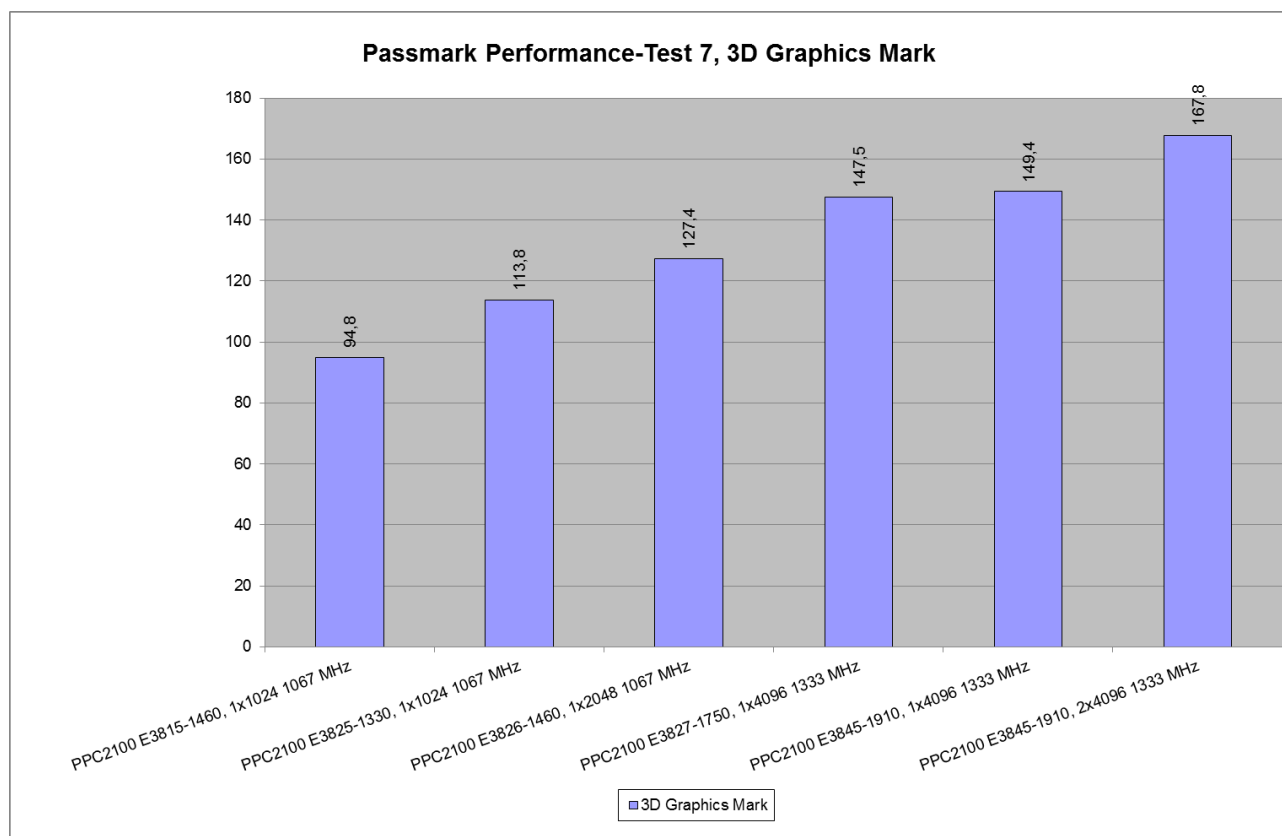


Figure 22: Results for Passmark Performance Test 7.0, 3D Graphics Mark – APC2100/PPC2100

4.1.3.5 Memory Mark

This test suite contains a number of tests that exercise the memory sub-system of the computer. All tests use a combination of 32-bit and 64-bit data when reading or writing from or to RAM. It contains: Memory-Allocate small block, Memory-Cached, Memory-UnCached, Memory-Write and Memory-Large RAM.

Higher scores are better

#	Test device	Memory Mark
APC2100/PPC2100 with INTEL Bay Trail		
60	E3815 1C 1.46GHz 512kB 5W, 1GB-1067MHz	201,6
61	E3825 2C 1.33GHz 1MB 6W, 1GB-1067MHz	201,4
62	E3826 2C 1.46GHz 1MB 7W, 2GB-1067MHz	295,3
63	E3827 2C 1.75GHz 1MB 8W, 4GB-1333MHz	482,2
64	E3845 4C 1.91GHz 2MB 10W, 4GB-1333MHz	529,4
65	E3845 4C 1.91GHz 2MB 10W, 8GB-1333MHz	811,4

Table 24: Results for Passmark Performance Test 7.0, Memory Mark – APC2100/PPC2100

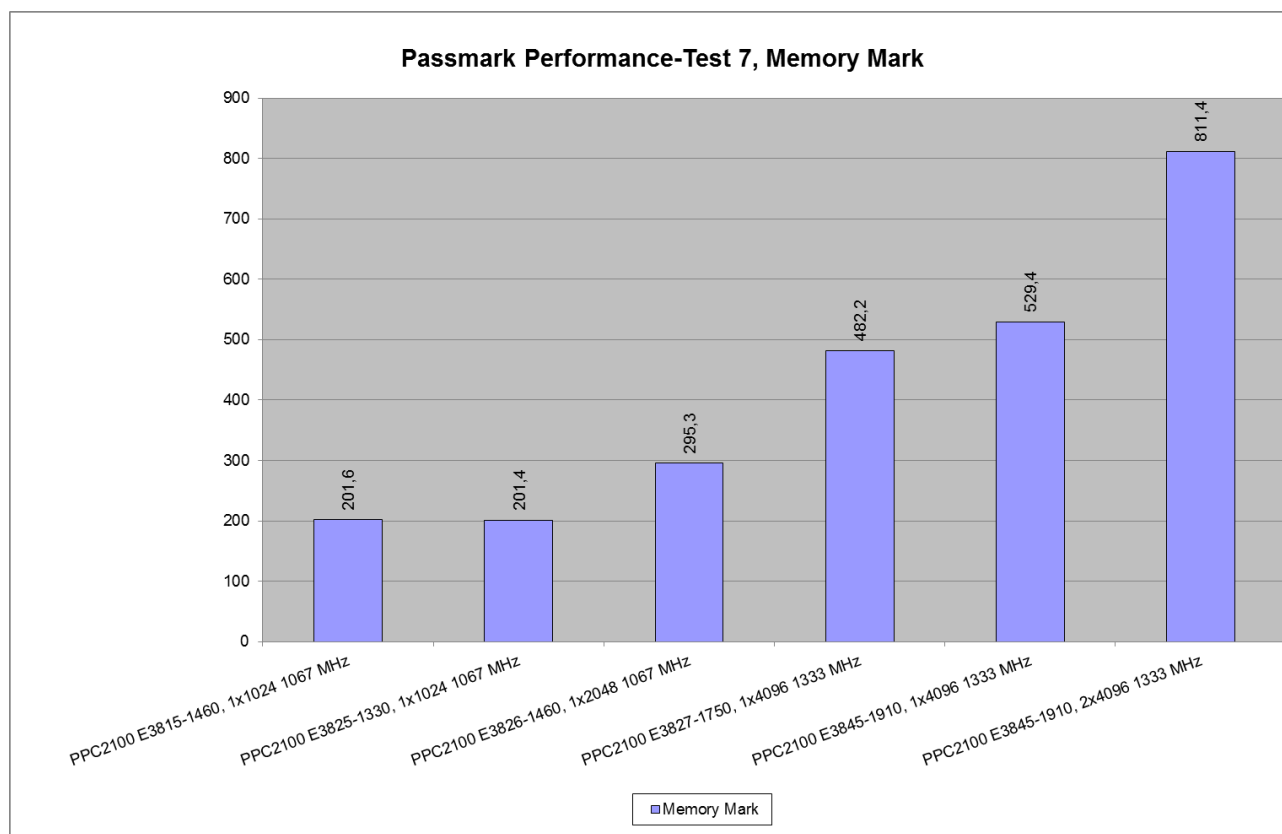


Figure 23: Results for Passmark Performance Test 7.0, Memory Mark – APC2100/PPC2100

4.1.3.6 Disk Mark

This suite contains a number of tests that exercise the mass storage units connected to the computer. By default, the current user's application directory is used for the test. This suite contains: Disk Sequential Read, Disk Sequential Write and Disk Random Seek RW.

Higher scores are better

#	Test device	Disk Mark
APC2100/PPC2100 with INTEL Bay Trail		
60	E3815 1C 1.46GHz 512kB 5W, 1GB-1067MHz	827,7
61	E3825 2C 1.33GHz 1MB 6W, 1GB-1067MHz	919,6
62	E3826 2C 1.46GHz 1MB 7W, 2GB-1067MHz	1105,8
63	E3827 2C 1.75GHz 1MB 8W, 4GB-1333MHz	1101
64	E3845 4C 1.91GHz 2MB 10W, 4GB-1333MHz	1100,7
65	E3845 4C 1.91GHz 2MB 10W, 8GB-1333MHz	1099,1

Table 25: Results for Passmark Performance Test 7.0, Disk Mark – APC2100/PPC2100

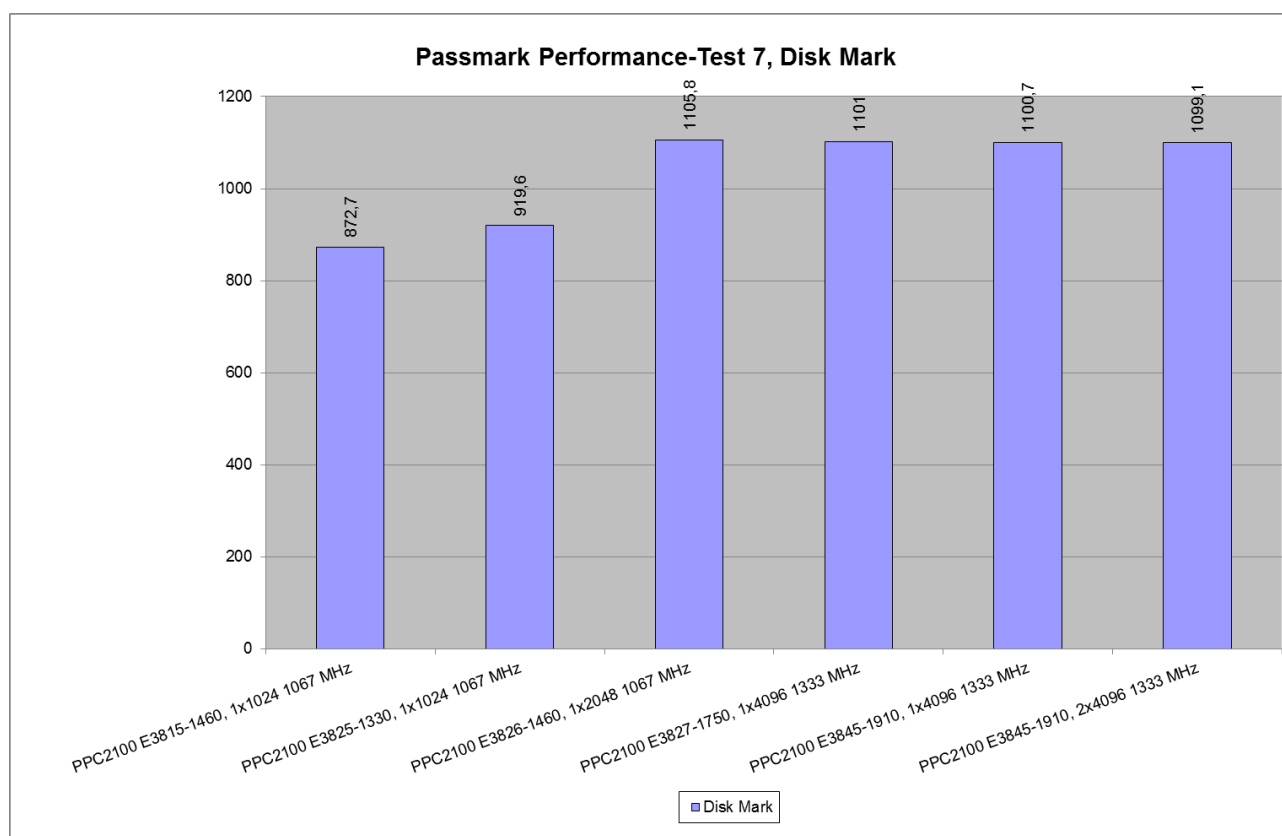


Figure 24: Results Passmark Performance Test 7.0, Disk Mark – APC2100/PPC2100

4.1.4 APC3100/PPC3100

4.1.4.1 Passmark Rating

The PassMark rating is weighted average of all the other test results and gives a single overall indication of the computers performance. The bigger the number, the faster the computer. The PassMark rating can only be calculated if the results from all other tests are available. The value is calculated using a series of weighted averages where some components are considered to be more important than others: Disk 21%, CD/DVD 5%, Memory 19%, 3D Graphics 12%, 2D Graphics 14% and CPU 29%.

Higher scores are better

#	Test device	Passmark Rating
APC3100/PPC3100 with INTEL Kabylake-U		
73	C-3965U 2C 2.2GHz 2MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1490,7
74	i3-7100U 2C 2.4GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1803,9
75	i5-7300U 2C 2.6GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2360,7
76	i7-7600U 2C 2.8GHz 4MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2535,6

Table 26: Results for Passmark Performance Test 7.0, Passmark Rating – APC3100/PPC3100

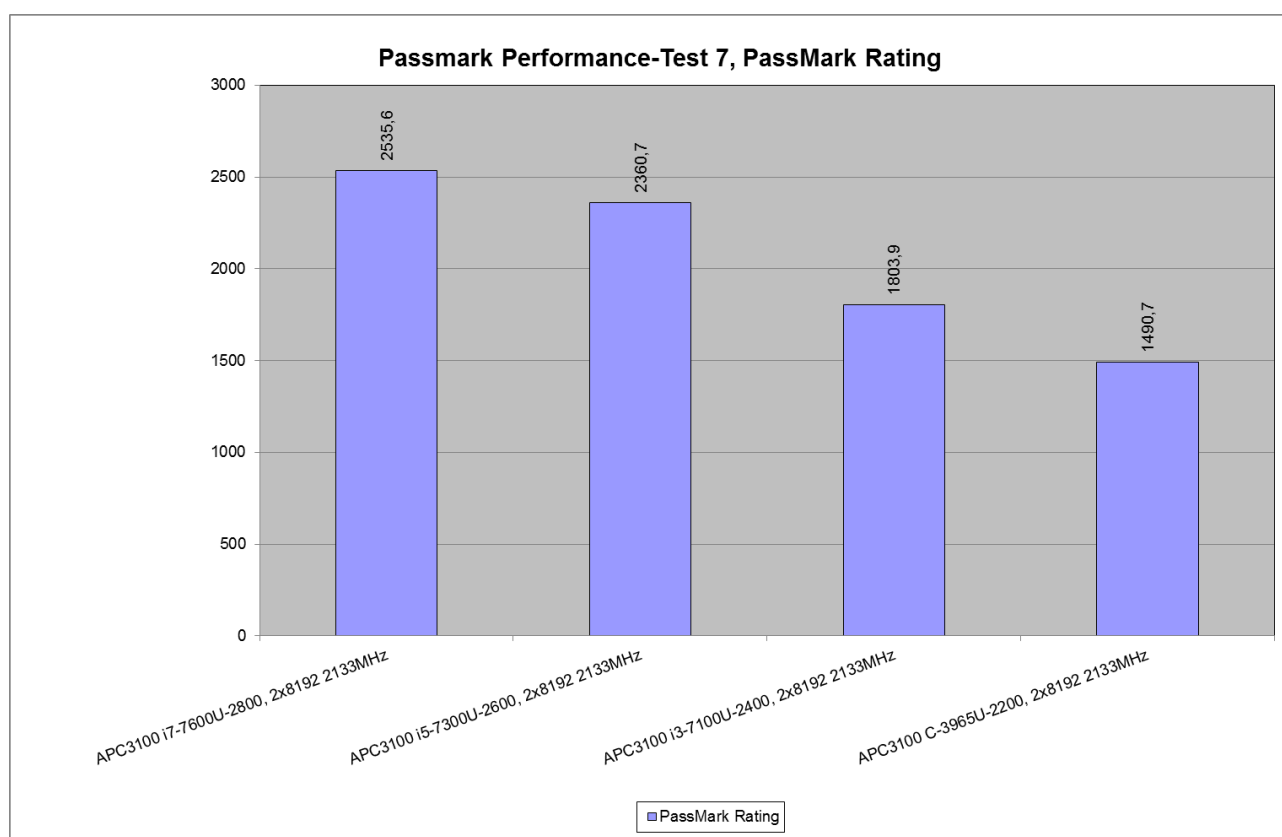


Figure 25: Results for Passmark Performance Test 7.0, Passmark Rating – APC3100/PPC3100

4.1.4.2 CPU Mark

This suite contains multi-process CPU tests. The number of CPU test processes is configurable in Preferences. The following tests make up the suite: Integer (addition, subtraction, multiplication, division), Floating Point (addition, subtraction, multiplication, division), Multimedia Instructions (128-bit SSE operations such as addition, subtraction and multiplication), Find Prime numbers, Compression, Encryption, Physics, Random String Sorting

Higher scores are better

#	Test device	CPU Mark
APC3100/PPC3100 with INTEL Kabylake-U		
73	C-3965U 2C 2.2GHz 2MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2894,5
74	i3-7100U 2C 2.4GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	4159,8
75	i5-7300U 2C 2.6GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	5989,3
76	i7-7600U 2C 2.8GHz 4MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	6708,2

Table 27: Results for Passmark Performance Test 7.0, CPU Mark – APC3100/PPC3100

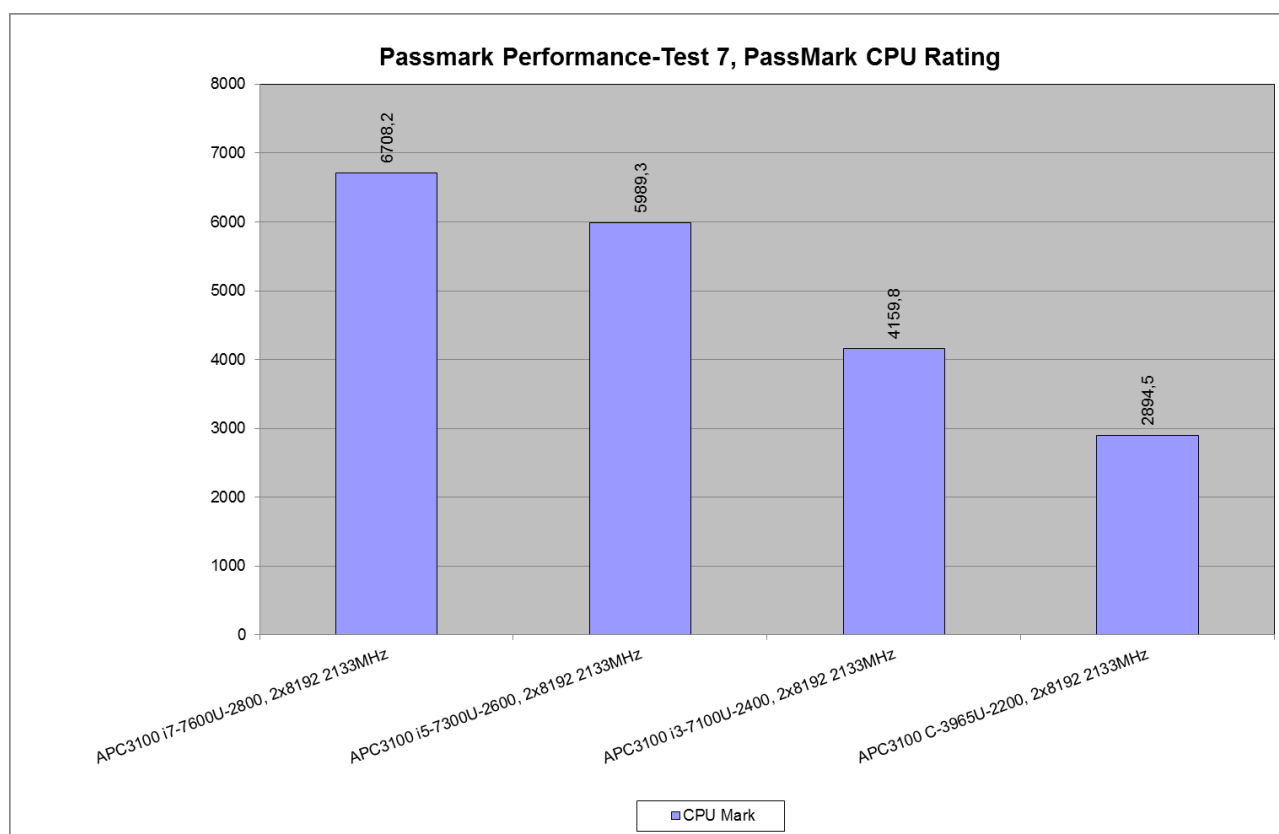


Figure 26: Results for Passmark Performance Test 7.0, CPU Mark – APC3100/PPC3100

4.1.4.3 2D Graphics Mark

This suite contains a number of tests that exercise the standard Windows graphics functions. The results from this suite depend on the speed at which the video card can carry out 2D graphics operations and the color depth currently in use. This suite contains: Solid Vectors, Transparent Vectors, Complex Vectors, Fonts and Text, Windows Interface, Image Filters, Image Rendering.

Higher scores are better

#	Test device	2D Graphics Mark
APC3100/PPC3100 with INTEL Kabylake-U		
73	C-3965U 2C 2.2GHz 2MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	298,7
74	i3-7100U 2C 2.4GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	325,1
75	i5-7300U 2C 2.6GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	447,6
76	i7-7600U 2C 2.8GHz 4MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	487,1

Table 28: Results for Passmark Performance Test 7.0, 2D Graphics Mark – APC3100/PPC3100

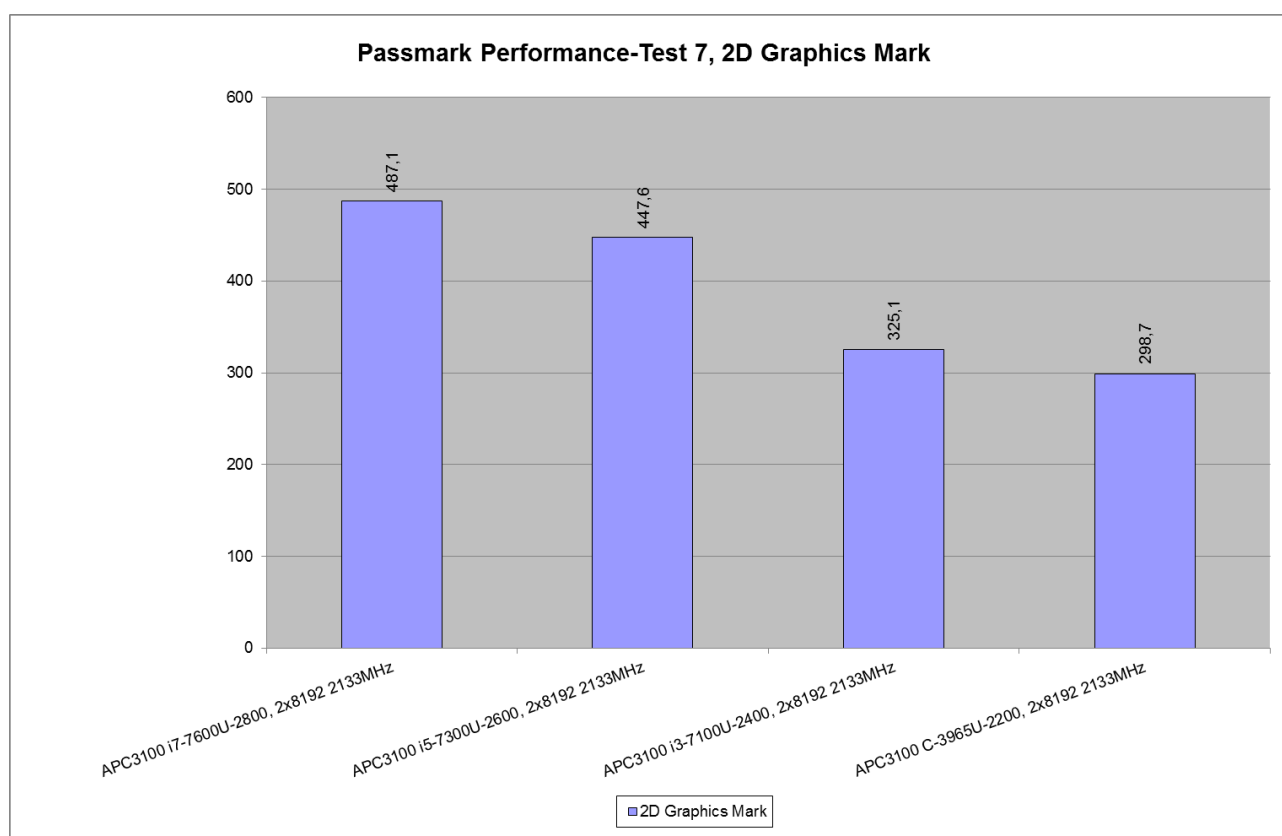


Figure 27: Results for Passmark Performance Test 7.0, 2D Graphics Mark – APC3100/PPC3100

4.1.4.4 3D Graphics Mark

This test suite attempts to measure the performance of the 3D graphics hardware installed in the machine. This test suite makes full use of version 9 of the Microsoft DirectX 3D library. Without DirectX 9.0 or above it will not be possible to run these tests. Three standard tests have been defined: Simple, Medium, and Complex.

Higher scores are better

#	Test device	3D Graphics Mark
APC3100/PPC3100 with INTEL Kabylake-U		
73	C-3965U 2C 2.2GHz 2MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	657,3
74	i3-7100U 2C 2.4GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	856,1
75	i5-7300U 2C 2.6GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	926,8
76	i7-7600U 2C 2.8GHz 4MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	931,4

Table 29: Results for Passmark Performance Test 7.0, 3D Graphics Mark – APC3100/PPC3100

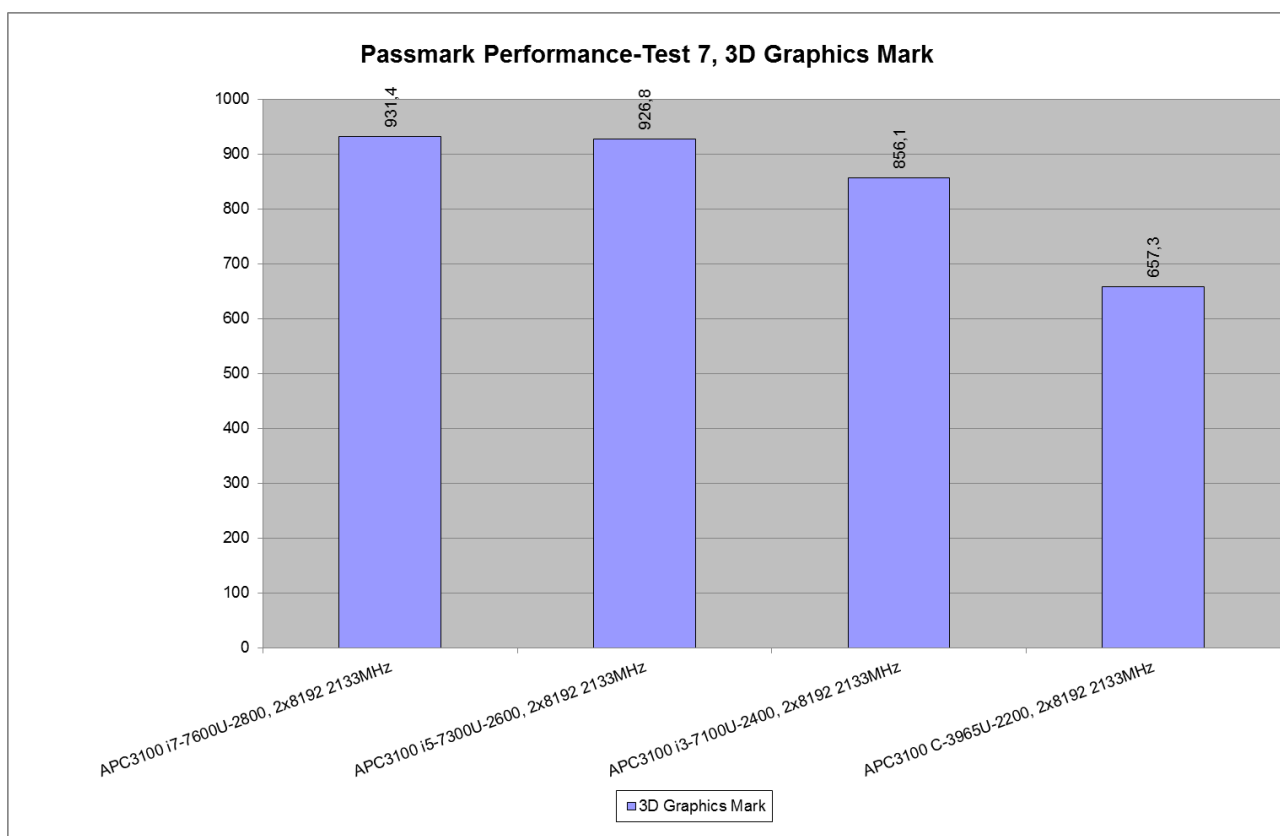


Figure 28: Results for Passmark Performance Test 7.0, 3D Graphics Mark – APC3100/PPC3100

4.1.4.5 Memory Mark

This test suite contains a number of tests that exercise the memory sub-system of the computer. All tests use a combination of 32-bit and 64-bit data when reading or writing from or to RAM. It contains: Memory-Allocate small block, Memory-Cached, Memory-UnCached, Memory-Write and Memory-Large RAM.

Higher scores are better

#	Test device	Memory Mark
APC3100/PPC3100 with INTEL Kabylake-U		
73	C-3965U 2C 2.2GHz 2MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2490,2
74	i3-7100U 2C 2.4GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2707,4
75	i5-7300U 2C 2.6GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	3938,6
76	i7-7600U 2C 2.8GHz 4MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	4465,2

Table 30: Results for Passmark Performance Test 7.0, Memory Mark – APC3100/PPC3100

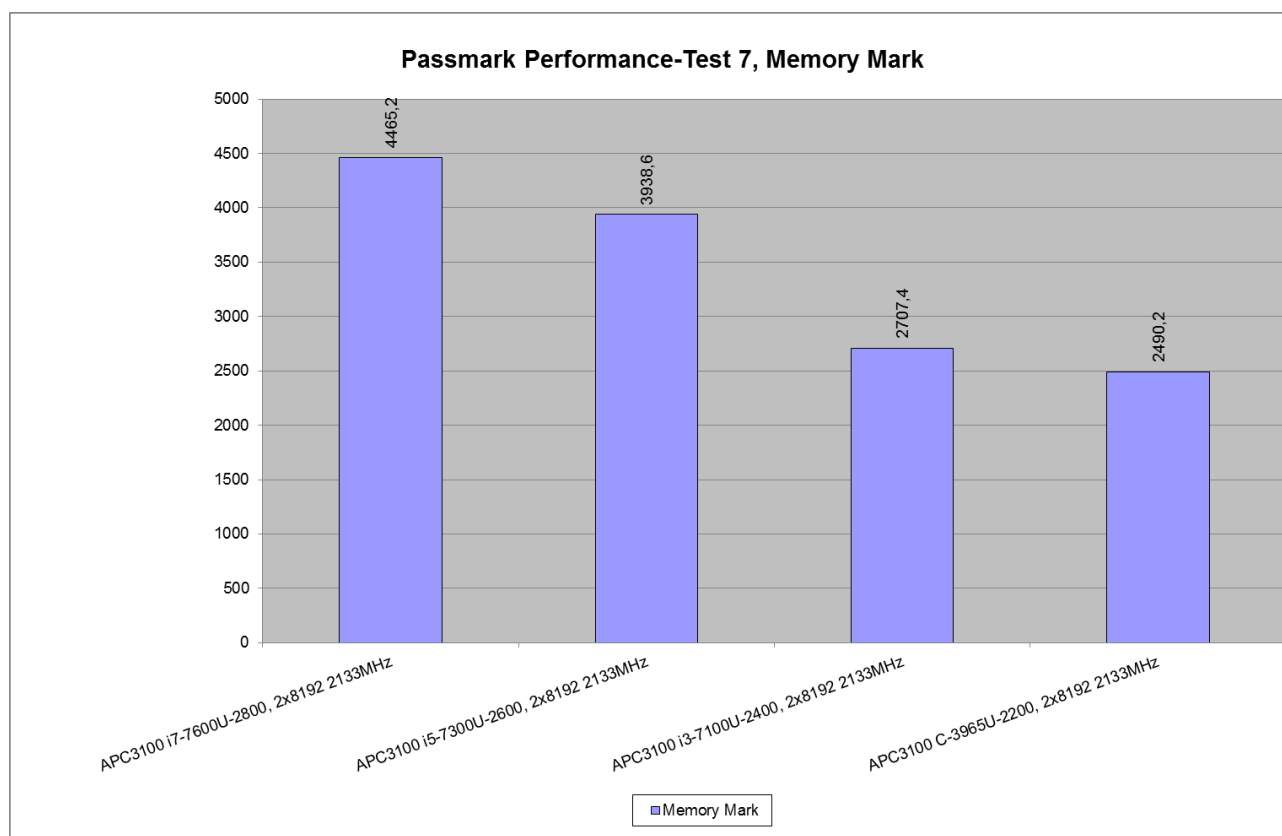


Figure 29: Results for Passmark Performance Test 7.0, Memory Mark – APC3100/PPC3100

4.1.4.6 Disk Mark

This suite contains a number of tests that exercise the mass storage units connected to the computer. By default, the current user's application directory is used for the test. This suite contains: Disk Sequential Read, Disk Sequential Write and Disk Random Seek RW.

Higher scores are better

#	Test device	Disk Mark
APC3100/PPC3100 with INTEL Kabylake-U		
73	C-3965U 2C 2.2GHz 2MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1533,9
74	i3-7100U 2C 2.4GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1545,5
75	i5-7300U 2C 2.6GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1560,7
76	i7-7600U 2C 2.8GHz 4MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1555

Table 31: Results for Passmark Performance Test 7.0, Disk Mark – APC3100/PPC3100

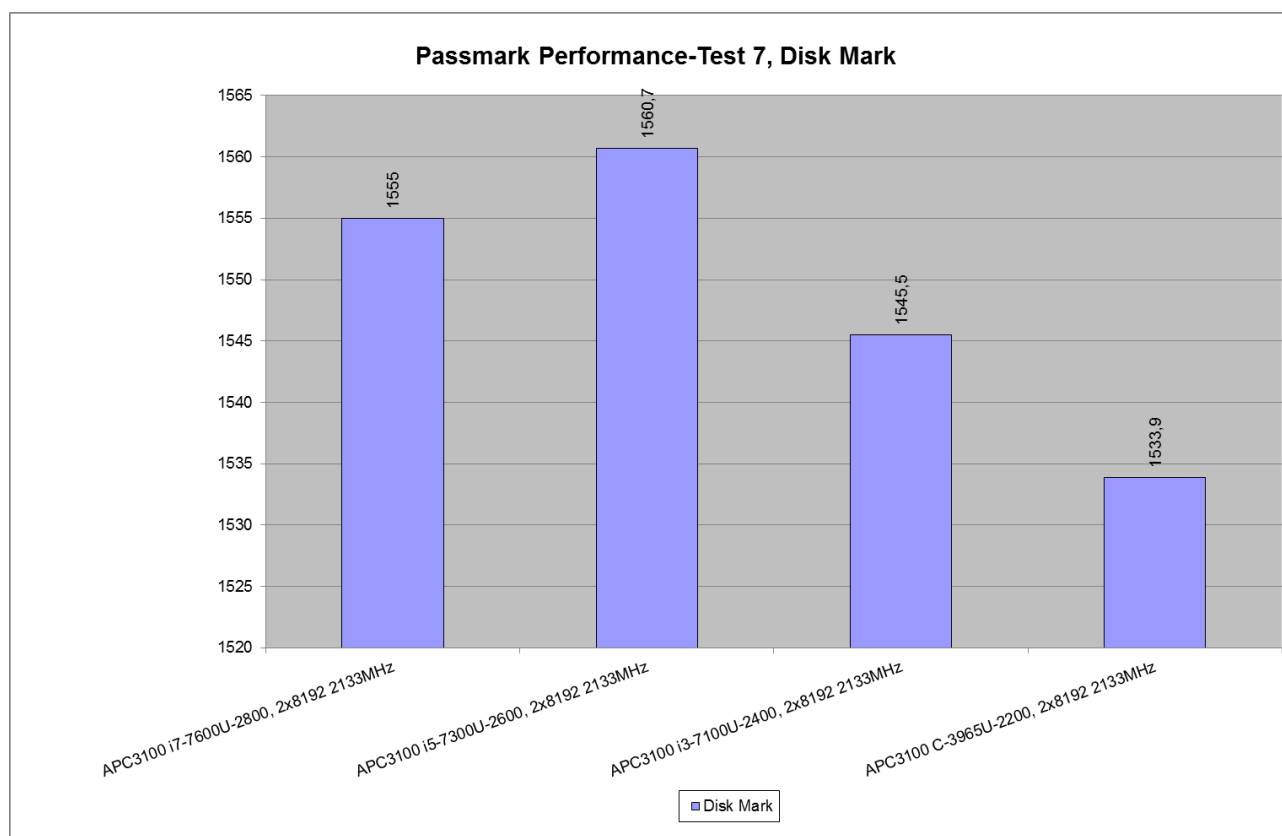


Figure 30: Results Passmark Performance Test 7.0, Disk Mark – APC3100/PPC3100

4.1.5 APC2200/PPC2200

4.1.5.1 Passmark Rating

The PassMark rating is weighted average of all the other test results and gives a single overall indication of the computers performance. The bigger the number, the faster the computer. The PassMark rating can only be calculated if the results from all other tests are available. The value is calculated using a series of weighted averages where some components are considered to be more important than others: Disk 21%, CD/DVD 5%, Memory 19%, 3D Graphics 12%, 2D Graphics 14% and CPU 29%.

Higher scores are better

#	Test device	Passmark Rating
APC2200/PPC2200 with INTEL Apollo Lake		
77	E3930 2C 1.30GHz 2MB 6.5W 2GB, 1 x 2048 MB LPDDR4 2133MHz	621,6
78	E3930 2C 1.30GHz 2MB 6.5W 4GB, 1 x 4096 MB LPDDR4 2133MHz	705,6
79	E3940 4C 1.60GHz 2MB 9.5W 4GB, 1 x 4096 MB LPDDR4 2133MHz	799,7
80	E3940 4C 1.60GHz 2MB 9.5W 8GB, 2 x 4096 MB LPDDR4 2133MHz	889,7

Table 32: Results for Passmark Performance Test 7.0, Passmark Rating – APC2200/PPC2200

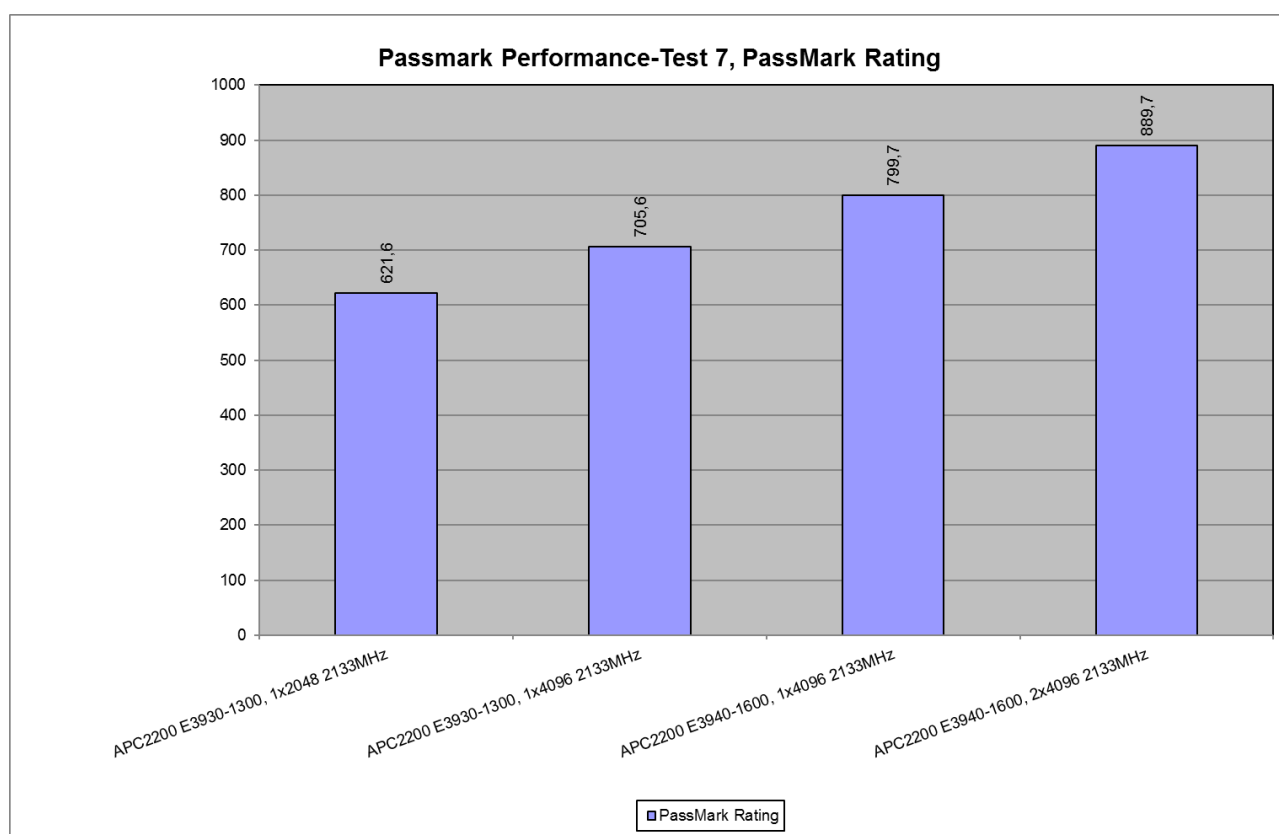


Figure 31: Results for Passmark Performance Test 7.0, Passmark Rating – APC2200/PPC2200

4.1.5.2 CPU Mark

This suite contains multi-process CPU tests. The number of CPU test processes is configurable in Preferences. The following tests make up the suite: Integer (addition, subtraction, multiplication, division), Floating Point (addition, subtraction, multiplication, division), Multimedia Instructions (128-bit SSE operations such as addition, subtraction and multiplication), Find Prime numbers, Compression, Encryption, Physics, Random String Sorting

Higher scores are better

#	Test device	CPU Mark
APC2200/PPC2200 with INTEL Apollo Lake		
77	E3930 2C 1.30GHz 2MB 6.5W 2GB, 1 x 2048 MB LPDDR4 2133MHz	1895,4
78	E3930 2C 1.30GHz 2MB 6.5W 4GB, 1 x 4096 MB LPDDR4 2133MHz	1889,8
79	E3940 4C 1.60GHz 2MB 9.5W 4GB, 1 x 4096 MB LPDDR4 2133MHz	3489,8
80	E3940 4C 1.60GHz 2MB 9.5W 8GB, 2 x 4096 MB LPDDR4 2133MHz	3486,3

Table 33: Results for Passmark Performance Test 7.0, CPU Mark – APC2200/PPC2200

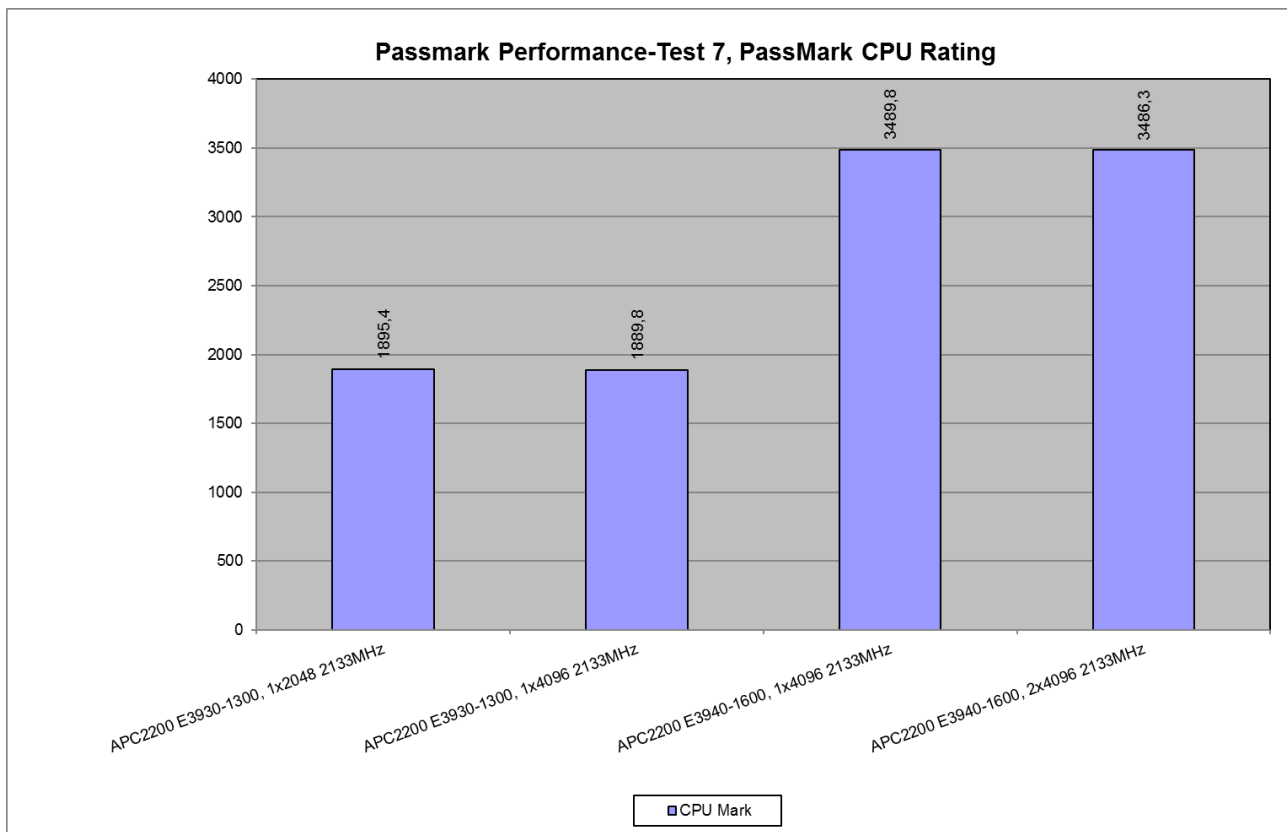


Figure 32: Results for Passmark Performance Test 7.0, CPU Mark – APC2200/PPC2200

4.1.5.3 2D Graphics Mark

This suite contains a number of tests that exercise the standard Windows graphics functions. The results from this suite depend on the speed at which the video card can carry out 2D graphics operations and the color depth currently in use. This suite contains: Solid Vectors, Transparent Vectors, Complex Vectors, Fonts and Text, Windows Interface, Image Filters, Image Rendering.

Higher scores are better

#	Test device	2D Graphics Mark
APC2200/PPC2200 with INTEL Apollo Lake		
77	E3930 2C 1.30GHz 2MB 6.5W 2GB, 1 x 2048 MB LPDDR4 2133MHz	110,9
78	E3930 2C 1.30GHz 2MB 6.5W 4GB, 1 x 4096 MB LPDDR4 2133MHz	135,9
79	E3940 4C 1.60GHz 2MB 9.5W 4GB, 1 x 4096 MB LPDDR4 2133MHz	138,4
80	E3940 4C 1.60GHz 2MB 9.5W 8GB, 2 x 4096 MB LPDDR4 2133MHz	139,4

Table 34: Results for Passmark Performance Test 7.0, 2D Graphics Mark – APC2200/PPC2200

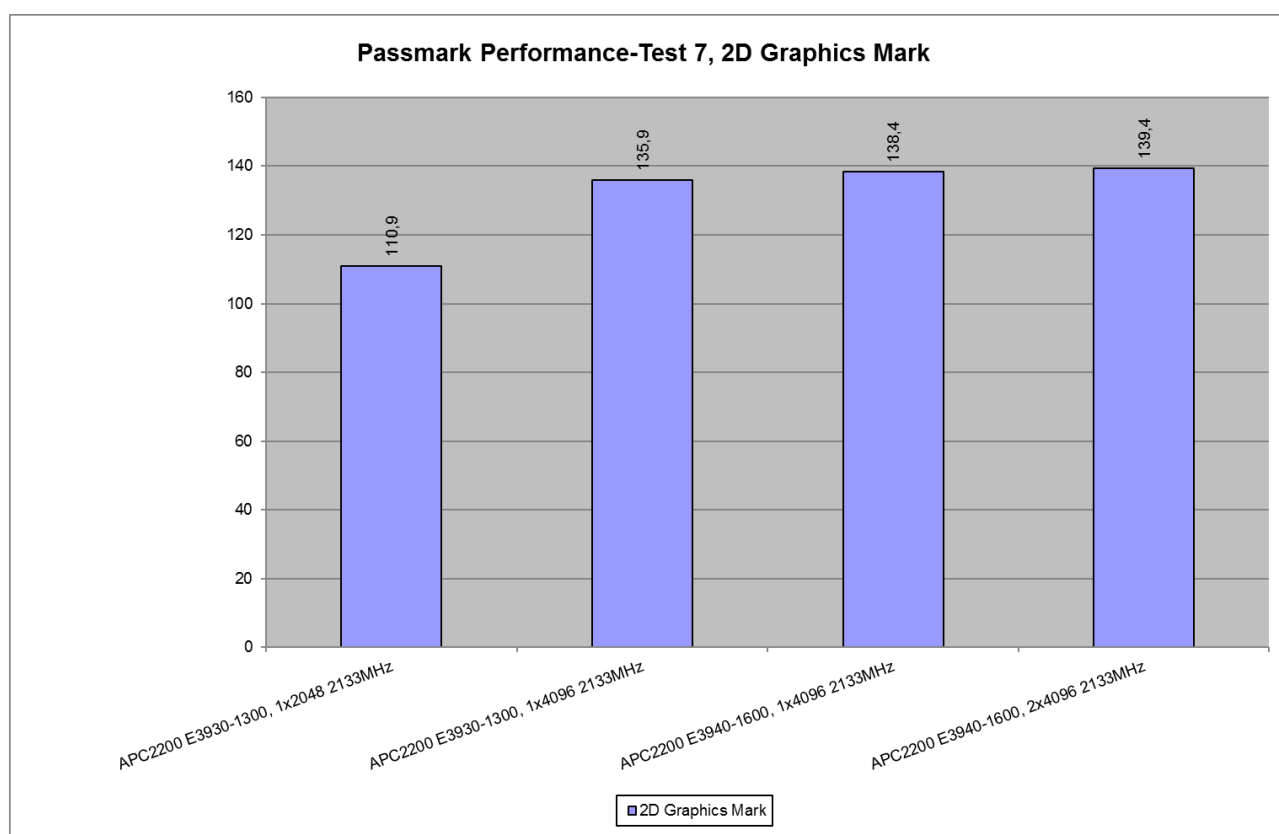


Figure 33: Results for Passmark Performance Test 7.0, 2D Graphics Mark – APC2200/PPC2200

4.1.5.4 3D Graphics Mark

This test suite attempts to measure the performance of the 3D graphics hardware installed in the machine. This test suite makes full use of version 9 of the Microsoft DirectX 3D library. Without DirectX 9.0 or above it will not be possible to run these tests. Three standard tests have been defined: Simple, Medium, and Complex.

Higher scores are better

#	Test device	3D Graphics Mark
APC2200/PPC2200 with INTEL Apollo Lake		
77	E3930 2C 1.30GHz 2MB 6.5W 2GB, 1 x 2048 MB LPDDR4 2133MHz	242
78	E3930 2C 1.30GHz 2MB 6.5W 4GB, 1 x 4096 MB LPDDR4 2133MHz	260,9
79	E3940 4C 1.60GHz 2MB 9.5W 4GB, 1 x 4096 MB LPDDR4 2133MHz	267,7
80	E3940 4C 1.60GHz 2MB 9.5W 8GB, 2 x 4096 MB LPDDR4 2133MHz	330,2

Table 35: Results for Passmark Performance Test 7.0, 3D Graphics Mark – APC2200/PPC2200

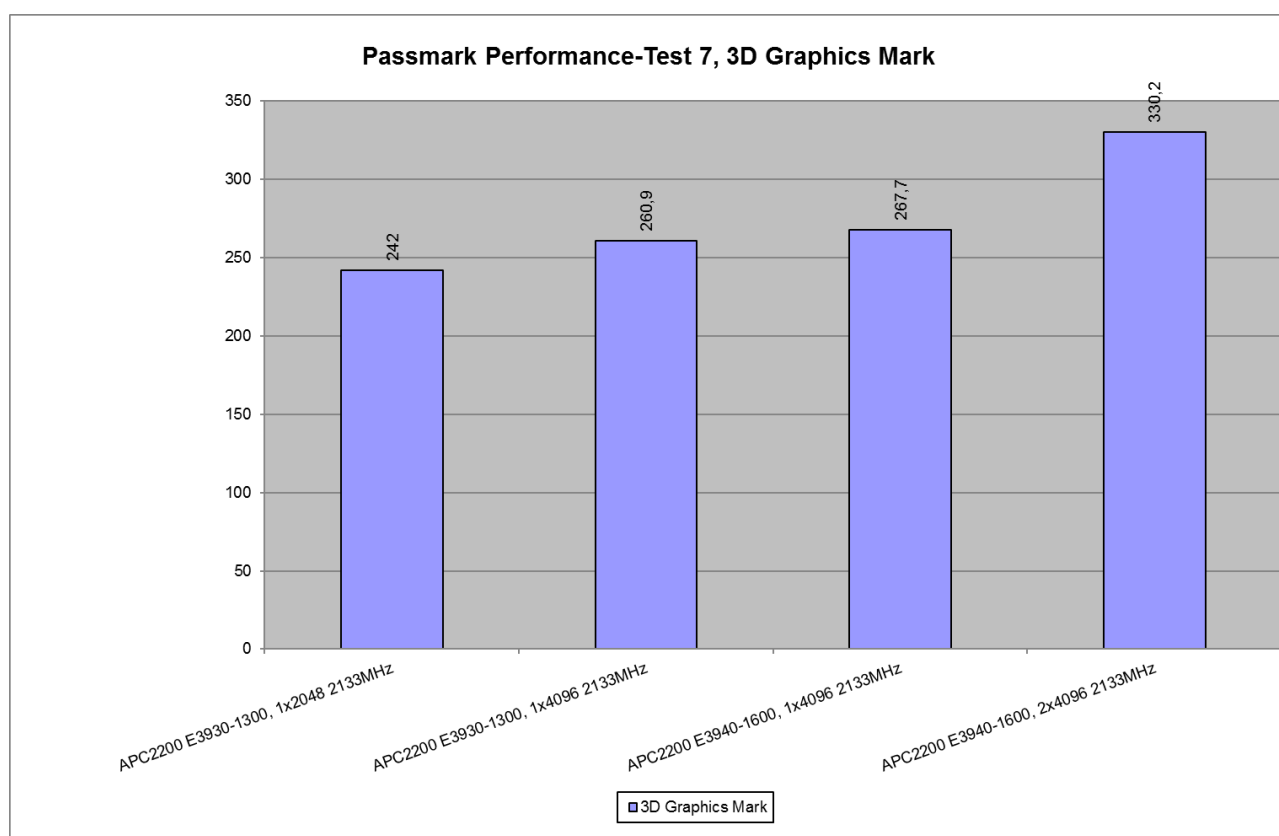


Figure 34: Results for Passmark Performance Test 7.0, 3D Graphics Mark – APC2200/PPC2200

4.1.5.5 Memory Mark

This test suite contains a number of tests that exercise the memory sub-system of the computer. All tests use a combination of 32-bit and 64-bit data when reading or writing from or to RAM. It contains: Memory-Allocate small block, Memory-Cached, Memory-UnCached, Memory-Write and Memory-Large RAM.

Higher scores are better

#	Test device	Memory Mark
APC2200/PPC2200 with INTEL Apollo Lake		
77	E3930 2C 1.30GHz 2MB 6.5W 2GB, 1 x 2048 MB LPDDR4 2133MHz	409,2
78	E3930 2C 1.30GHz 2MB 6.5W 4GB, 1 x 4096 MB LPDDR4 2133MHz	540,3
79	E3940 4C 1.60GHz 2MB 9.5W 4GB, 1 x 4096 MB LPDDR4 2133MHz	541,2
80	E3940 4C 1.60GHz 2MB 9.5W 8GB, 2 x 4096 MB LPDDR4 2133MHz	852,1

Table 36: Results for Passmark Performance Test 7.0, Memory Mark – APC2200/PPC2200

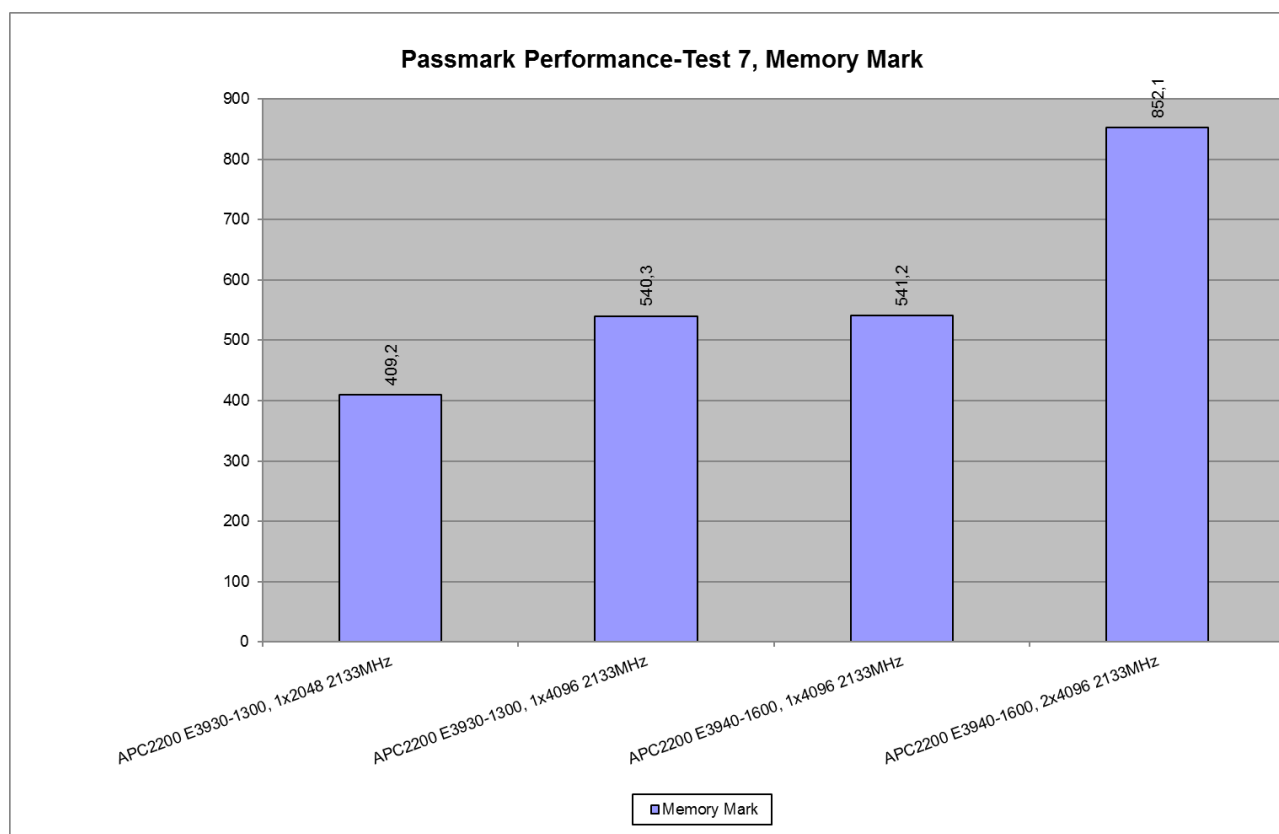


Figure 35: Results for Passmark Performance Test 7.0, Memory Mark – APC2200/PPC2200

4.1.5.6 Disk Mark

This suite contains a number of tests that exercise the mass storage units connected to the computer. By default, the current user's application directory is used for the test. This suite contains: Disk Sequential Read, Disk Sequential Write and Disk Random Seek RW.

Higher scores are better

#	Test device	Disk Mark
APC2200/PPC2200 with INTEL Apollo Lake		
77	E3930 2C 1.30GHz 2MB 6.5W 2GB, 1 x 2048 MB LPDDR4 2133MHz	909,8
78	E3930 2C 1.30GHz 2MB 6.5W 4GB, 1 x 4096 MB LPDDR4 2133MHz	899,3
79	E3940 4C 1.60GHz 2MB 9.5W 4GB, 1 x 4096 MB LPDDR4 2133MHz	879,8
80	E3940 4C 1.60GHz 2MB 9.5W 8GB, 2 x 4096 MB LPDDR4 2133MHz	852,9

Table 37: Results for Passmark Performance Test 7.0, Disk Mark – APC2200/PPC2200

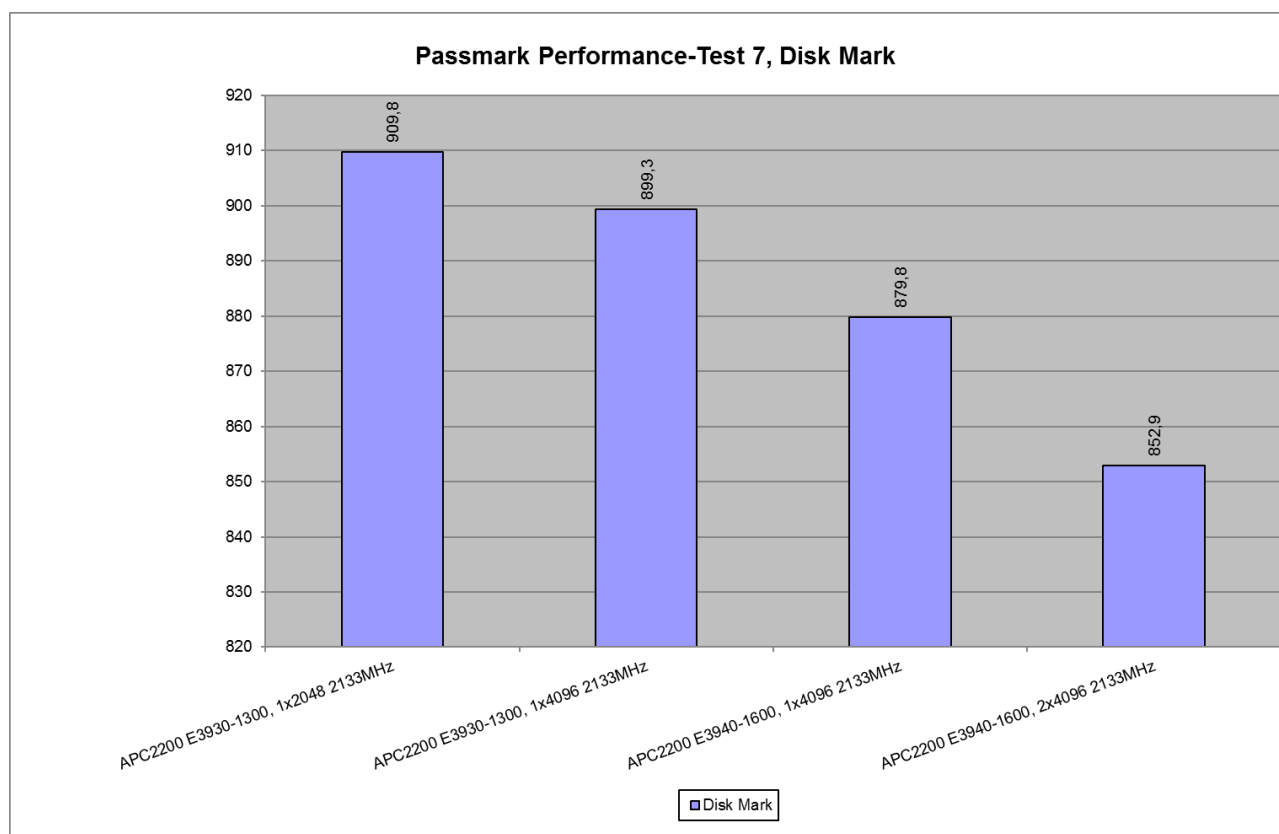


Figure 36: Results Passmark Performance Test 7.0, Disk Mark – APC2200/PPC2200

4.1.6 Comparison PP500, APC810/PPC800, APC910/PPC900, APC2100/PPC2100, APC3100/PPC3100 and APC2200/PPC2200

The PassMark rating is weighted average of all the other test results and gives a single overall indication of the computers performance. The bigger the number, the faster the computer. The PassMark rating can only be calculated if the results from all other tests are available. The value is calculated using a series of weighted averages where some components are considered to be more important than others: Disk 21%, CD/DVD 5%, Memory 19%, 3D Graphics 12%, 2D Graphics 14% and CPU 29%.

Higher scores are better

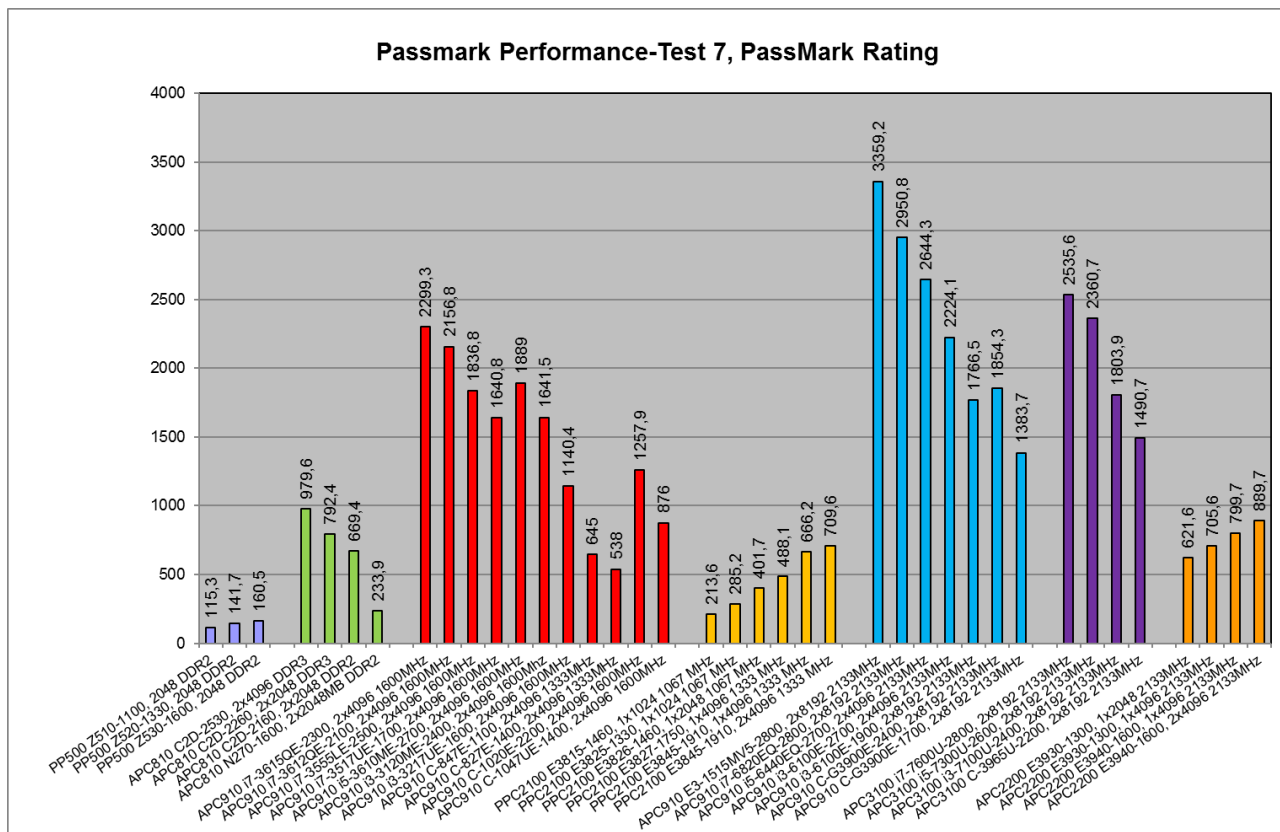


Figure 37: Comparison for Passmark Performance Test 7.0, Passmark Rating

#	Test device	Passmark Rating
PP500 with INTEL US15W Chipset		
34	Atom Z520 1,33GHz, 2048MB DDR2-SDRAM	141,7
35	Atom Z530 1,6GHz, 2048MB DDR2-SDRAM	160,5
36	Atom Z510 1,1GHz, 2048MB DDR2-SDRAM	115,3
APC810/PPC800 with INTEL 945GME Chipset		
27	Core 2 Duo T7400 2,16GHz, 2x2048MB DDR2-SDRAM (667MHz FSB)	669,4
29	Atom N270 1,6GHz, 2x2048MB DDR2-SDRAM (533MHz FSB)	233,9
APC810/PPC800 with INTEL GM45 Chipset		
30	Core 2 Duo T9400 2,53GHz, 2x4096MB DDR3-SODIMM (1066 MHz FSB)	979,6
32	Core 2 Duo P8400 2,26GHz, 2x2048MB DDR3-SODIMM (1066 MHz FSB)	792,4
APC910/PPC900 with INTEL QM77 Chipset		
38	i7-3615QE 4C 2.3/1.6GHz 6MB 45W 2x4096MB DDR3-SODIMM 1600MHz	2299,3
40	i7-3612QE 4C 2.1/1.6GHz 6MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	2156,8
44	i7-3555LE 2C 2.5/1.6GHz 4MB 25W, 2x4096MB DDR3-SODIMM 1600MHz	1836,8
46	i7-3517UE 2C 1.7/1.6GHz 4MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	1640,8
48	i5-3610ME 2C 2.7/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	1899
50	i3-3120ME 2C 2.4/1.6GHz 3MB 35W, 2x4096MB DDR3-SODIMM 1600MHz	1641,5
52	i3-3217UE 2C 1.6/1.6GHz 3MB 17W, 2x4096MB DDR3-SODIMM 1600MHz	1140,4
APC910/PPC900 with INTEL HM76 Chipset		
54	C-847E 2C 1.1/1.3GHz 2MB 17W 2x4096MB DDR3-SODIMM 1333MHz	645
56	C-827E 1C 1.4/1.3GHz 1.5MB 17W 2x4096MB DDR3 1333MHz	538
58	C-1047UE 2C 1.4/1.6GHz 2MB 17W 2x4096MB DDR3-SODIMM 1600MHz	876
59	C-1020E 2C 2.2/1.6GHz 2MB 35W 2x4096MB DDR3-SODIMM 1600MHz	1257,9
APC2100/PPC2100 with INTEL Bay Trail		
60	E3815 1C 1.46GHz 512kB 5W, 1GB-1067MHz	213,6
61	E3825 2C 1.33GHz 1MB 6W, 1GB-1067MHz	285,2
62	E3826 2C 1.46GHz 1MB 7W, 2GB-1067MHz	401,7
63	E3827 2C 1.75GHz 1MB 8W, 4GB-1333MHz	488,1
64	E3845 4C 1.91GHz 2MB 10W, 4GB-1333MHz	666,2
65	E3845 4C 1.91GHz 2MB 10W, 8GB-1333MHz	709,6
APC910 with INTEL QM170 Chipset		
66	i5-6440EQ 4C 2.7GHz 6MB 45W, 2 x 4096 MB DDR4-SODIMM 2133MHz	2644,3
67	i7-6820EQ 4C 2.8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2950,8
APC910 with INTEL HM170 Chipset		
68	i3-6100E 2C 2.7GHz 3MB 35W, 2 x 4096 MB DDR4-SODIMM 2133MHz	2224,1
69	i3-6100E 2C 1.9GHz 3MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1766,5
70	C-G3900E 2C 2.4GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1854,3
71	C-G3900E 2C 1.7GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1383,7
APC910 with INTEL CM236 Chipset		
72	E3-1515MV5 4C 2,8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	3359,2
APC3100/PPC3100 with INTEL KabyLake-U		
73	C-3965U 2C 2.2GHz 2MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1490,7
74	i3-7100U 2C 2.4GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1803,9
75	i5-7300U 2C 2.6GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2360,7
76	i7-7600U 2C 2.8GHz 4MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2535,6
APC2200/PPC2200 with INTEL Apollo Lake		

77	E3930 2C 1.30GHz 2MB 6.5W 2GB, 1 x 2048 MB LPDDR4 2133MHz	621,6
78	E3930 2C 1.30GHz 2MB 6.5W 4GB, 1 x 4096 MB LPDDR4 2133MHz	705,6
79	E3940 4C 1.60GHz 2MB 9.5W 4GB, 1 x 4096 MB LPDDR4 2133MHz	799,7
80	E3940 4C 1.60GHz 2MB 9.5W 8GB, 2 x 4096 MB LPDDR4 2133MHz	889,7

Table 38: Comparison for Passmark Performance Test 7.0, Passmark Rating (higher scores are better)

4.2 Passmark Performance Test 9.0

PerformanceTest is a simple, easy-to-use software benchmarking tool that allows users to quickly assess the performance of their PC and compare it to the rest of the world.

Several standard test suites are built into the software. Each of these test suites contains a number of different tests designed to measure different aspects of your computer system. These tests can be run as a group or as individual tests. The result of each test is presented using a particular unit of measurements. The following standard test suites are currently available:

- **CPU-Testsuite**
This suite contains multi-process CPU tests. The number of CPU test processes is configurable in Preferences. The following tests make up the suite: Integer (32bit and 64bit addition, subtraction, multiplication, division), Floating Point (32bit and 64bit addition, subtraction, multiplication, division), Multimedia Instructions (128-bit SSE operations suchs as addition, subtraction and multiplication), Find Prime numbers, Compression, Encryption, Physics, Random String Sorting.
- **2D-Grafik-Testsuite**
This suite contains a number of tests that exercise the standard Windows graphics functions. The results from this suite depend on the speed at which the video card can carry out 2D graphics operations and the color depth currently in use. This suite contains: Solid Vectors, Transparent Vectors, Complex Vectors, Fonts and Text, Windows Interface, Image Filters, Image Rendering.
- **3D-Grafik-Testsuite**
This test suite attempts to measure the performance of the 3D graphics hardware installed in the machine. These tests make use of the Direct3D portion of different versions of the DirectX libraries. There are four tests defined, DirectX 9, 10, 11 and 12.
- **Memory-Testsuite**
This test suite contains a number of tests that exercise the memory sub-system of the computer. All tests use a combination of 32-bit and 64-bit data when reading or writing from or to RAM. It contains: Memory-Allocate small block, Memory-Cached, Memory-UnCached, Memory-Write and Memory-Large RAM.
- **Disk-Testsuite**
This suite contains a number of tests that exercise the mass storage units connected to the computer. By default, the current user's application directory is used for the test. This suite contains: Disk Sequential Read, Disk Sequential Write and Disk Random Seek RW.

The "PassMark Rating" is a combination of the CPU, 2D, 3D, Memory and Disk Ratings, the bigger the number, the faster the computer.

The exact formula for this calculation is as follows:

$$1 / (((1 / (\text{CPU Rating} * 0.396566187)) + (1 / (\text{2D Rating} * 3.178718116)) + (1 / (\text{3D Rating} * 2.525195879)) + (1 / (\text{Memory Rating} * 1.757085479)) + (1 / (\text{Disk Rating} * 1.668158805))))/5$$

4.2.1 APC910/PPC900 (TS17)

TM = Turbo Mode – CPU Turbo enabled in BIOS of APC910/PPC900.

4.2.1.1 Passmark Rating

Higher scores are better

#	Test device	Passmark Rating
APC910/PPC900 with INTEL QM170 Chipsatz		
66	i5-6440EQ 4C 2.7GHz 6MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	3041
66	i5-6440EQ 4C 2.7GHz 6MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz, TM (Turbo Mode)	3378,2
67	i7-6820EQ 4C 2.8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	3335,1
67	i7-6820EQ 4C 2.8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz, TM (Turbo Mode)	3595,6
APC910/PPC900 with INTEL HM170 Chipsatz		
68	i3-6100E 2C 2.7GHz 3MB 35W, 2 x 8192MB DDR4-SODIMM 2133MHz	2744,4
69	i3-6100E 2C 1.9GHz 3MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2184,1
70	C-G3900E 2C 2.4GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2014,3
71	C-G3900E 2C 1.7GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1598,1
APC910 with INTEL CM236 Chipsatz		
72	E3-1515MV5 4C 2,8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	3798,4
72	E3-1515MV5 4C 2,8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz, TM (Turbo Mode)	4203,8

Table 39: Results for Passmark Performance Test 9.0, Passmark Rating – APC910/PPC900 (TS17)

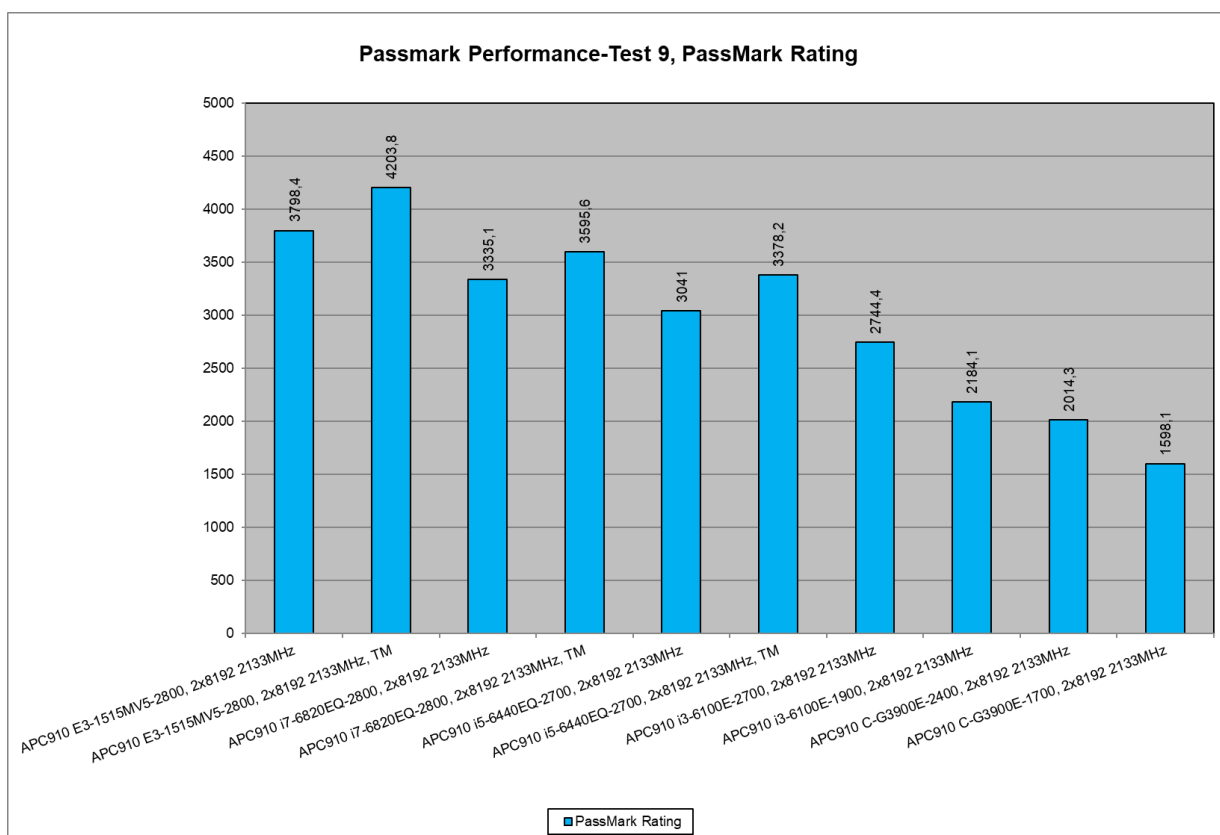


Figure 38: Results for Passmark Performance Test 9.0, Passmark Rating – APC910/PPC900 (TS17)

4.2.1.2 CPU Mark

Higher scores are better

#	Test device	CPU Mark
APC910/PPC900 with INTEL QM170 Chipsatz		
66	i5-6440EQ 4C 2.7GHz 6MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	6607,6
66	i5-6440EQ 4C 2.7GHz 6MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz, TM (Turbo Mode)	7531,3
67	i7-6820EQ 4C 2.8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	8366,5
67	i7-6820EQ 4C 2.8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz, TM (Turbo Mode)	9381,9
APC910/PPC900 with INTEL HM170 Chipsatz		
68	i3-6100E 2C 2.7GHz 3MB 35W, 2 x 8192MB DDR4-SODIMM 2133MHz	4602,1
69	i3-6100E 2C 1.9GHz 3MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	3307,3
70	C-G3900E 2C 2.4GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2729,4
71	C-G3900E 2C 1.7GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1972,1
APC910 with INTEL CM236 Chipsatz		
72	E3-1515MV5 4C 2,8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	8688,4
72	E3-1515MV5 4C 2,8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz, TM (Turbo Mode)	10090,8

Table 40: Results for Passmark Performance Test 9.0, CPU Mark – APC910/PPC900 (TS17)

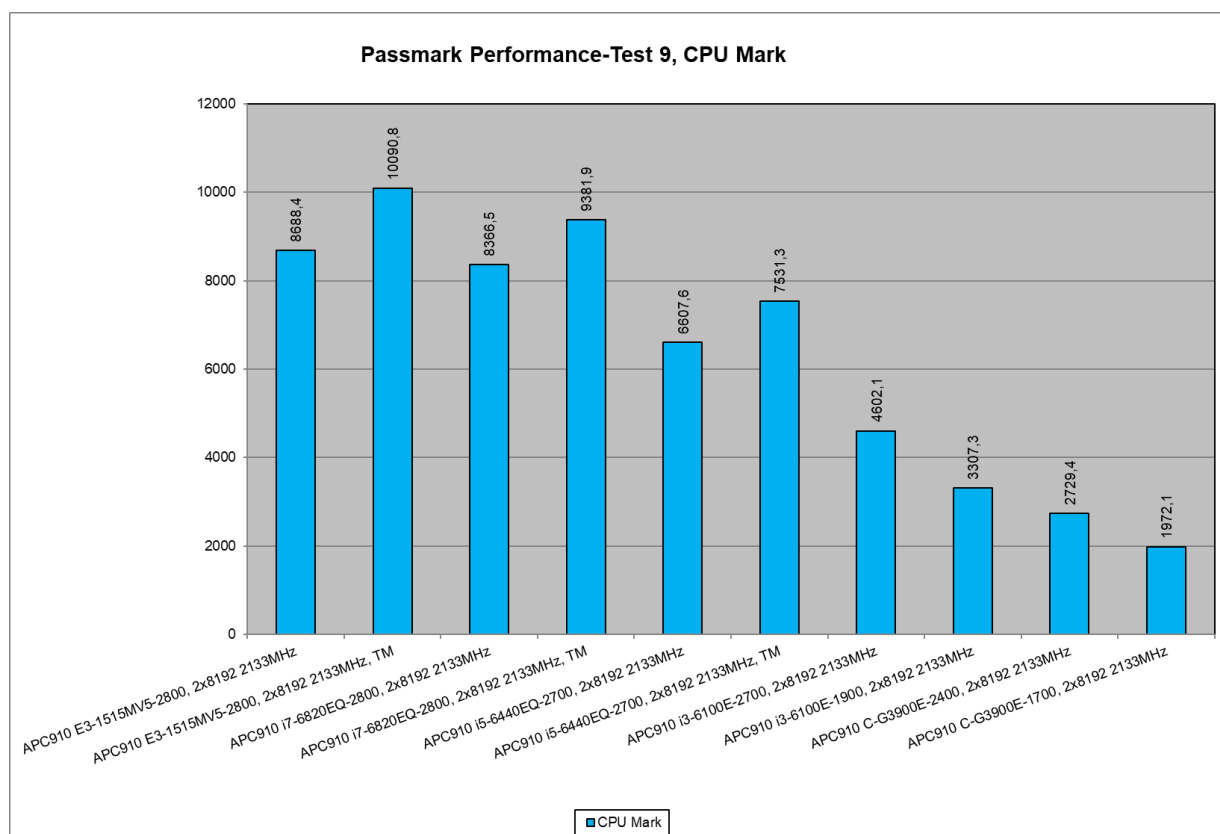


Figure 39: Results for Passmark Performance Test 9.0, CPU Mark – APC910/PPC900 (TS17)

4.2.1.3 2D Graphics Mark

Higher scores are better

#	Test device	2D Graphics Mark
APC910/PPC900 with INTEL QM170 Chipsatz		
66	i5-6440EQ 4C 2.7GHz 6MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	561,3
66	i5-6440EQ 4C 2.7GHz 6MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz, TM (Turbo Mode)	682,2
67	i7-6820EQ 4C 2.8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	626,8
67	i7-6820EQ 4C 2.8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz, TM (Turbo Mode)	709,9
APC910/PPC900 with INTEL HM170 Chipsatz		
68	i3-6100E 2C 2.7GHz 3MB 35W, 2 x 8192MB DDR4-SODIMM 2133MHz	614,9
69	i3-6100E 2C 1.9GHz 3MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	450,7
70	C-G3900E 2C 2.4GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	540,4
71	C-G3900E 2C 1.7GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	396,6
APC910 with INTEL CM236 Chipsatz		
72	E3-1515MV5 4C 2,8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	629
72	E3-1515MV5 4C 2,8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz, TM (Turbo Mode)	725,7

Table 41: Results for Passmark Performance Test 9.0, 2D Graphics Mark – APC910/PPC900 (TS17)

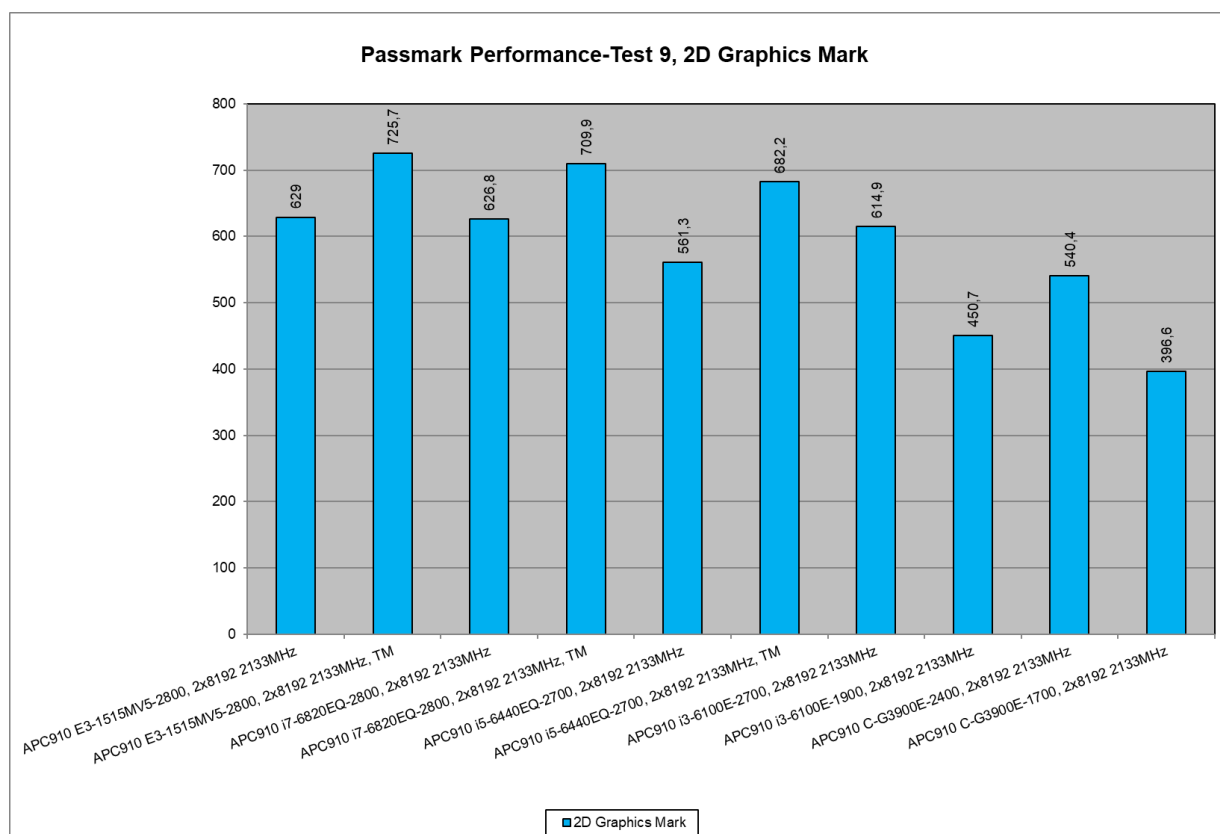


Figure 40: Results for Passmark Performance Test 9.0, 2D Graphics Mark – APC910/PPC900 (TS17)

4.2.1.5 3D Graphics Mark

Higher scores are better

#	Test device	3D Graphics Mark
APC910/PPC900 with INTEL QM170 Chipsatz		
66	i5-6440EQ 4C 2.7GHz 6MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1147,3
66	i5-6440EQ 4C 2.7GHz 6MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz, TM (Turbo Mode)	1149,6
67	i7-6820EQ 4C 2.8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1148,2
67	i7-6820EQ 4C 2.8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz, TM (Turbo Mode)	1151
APC910/PPC900 with INTEL HM170 Chipsatz		
68	i3-6100E 2C 2.7GHz 3MB 35W, 2 x 8192MB DDR4-SODIMM 2133MHz	972
69	i3-6100E 2C 1.9GHz 3MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	961,4
70	C-G3900E 2C 2.4GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	671
71	C-G3900E 2C 1.7GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	663,7
APC910 with INTEL CM236 Chipsatz		
72	E3-1515MV5 4C 2,8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2486,6
72	E3-1515MV5 4C 2,8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz, TM (Turbo Mode)	2459,6

Table 42: Results for Passmark Performance Test 9.0, 3D Graphics Mark – APC910/PPC900 (TS17)

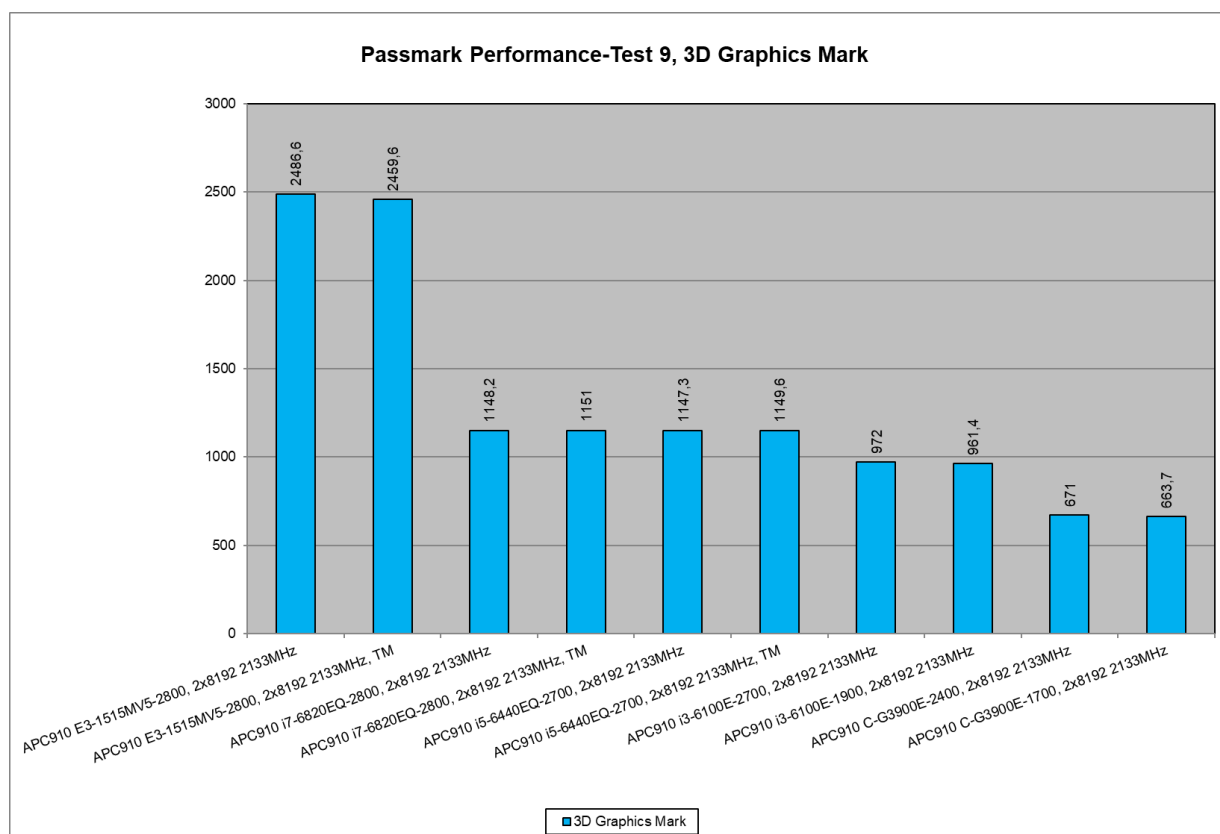


Figure 41: Results for Passmark Performance Test 9.0, 3D Graphics Mark – APC910/PPC900 (TS17)

4.2.1.6 Memory Mark

Higher scores are better

#	Test device	Memory Mark
APC910/PPC900 with INTEL QM170 Chipsatz		
66	i5-6440EQ 4C 2.7GHz 6MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2395,2
66	i5-6440EQ 4C 2.7GHz 6MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz, TM (Turbo Mode)	2583,4
67	i7-6820EQ 4C 2.8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2457,7
67	i7-6820EQ 4C 2.8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz, TM (Turbo Mode)	2643,3
APC910/PPC900 with INTEL HM170 Chipsatz		
68	i3-6100E 2C 2.7GHz 3MB 35W, 2 x 8192MB DDR4-SODIMM 2133MHz	2443,9
69	i3-6100E 2C 1.9GHz 3MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1929
70	C-G3900E 2C 2.4GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2220
71	C-G3900E 2C 1.7GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1695,6
APC910 with INTEL CM236 Chipsatz		
72	E3-1515MV5 4C 2,8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2304,8
72	E3-1515MV5 4C 2,8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz, TM (Turbo Mode)	2527,8

Table 43: Results for Passmark Performance Test 9.0, Memory Mark – APC910/PPC900 (TS17)

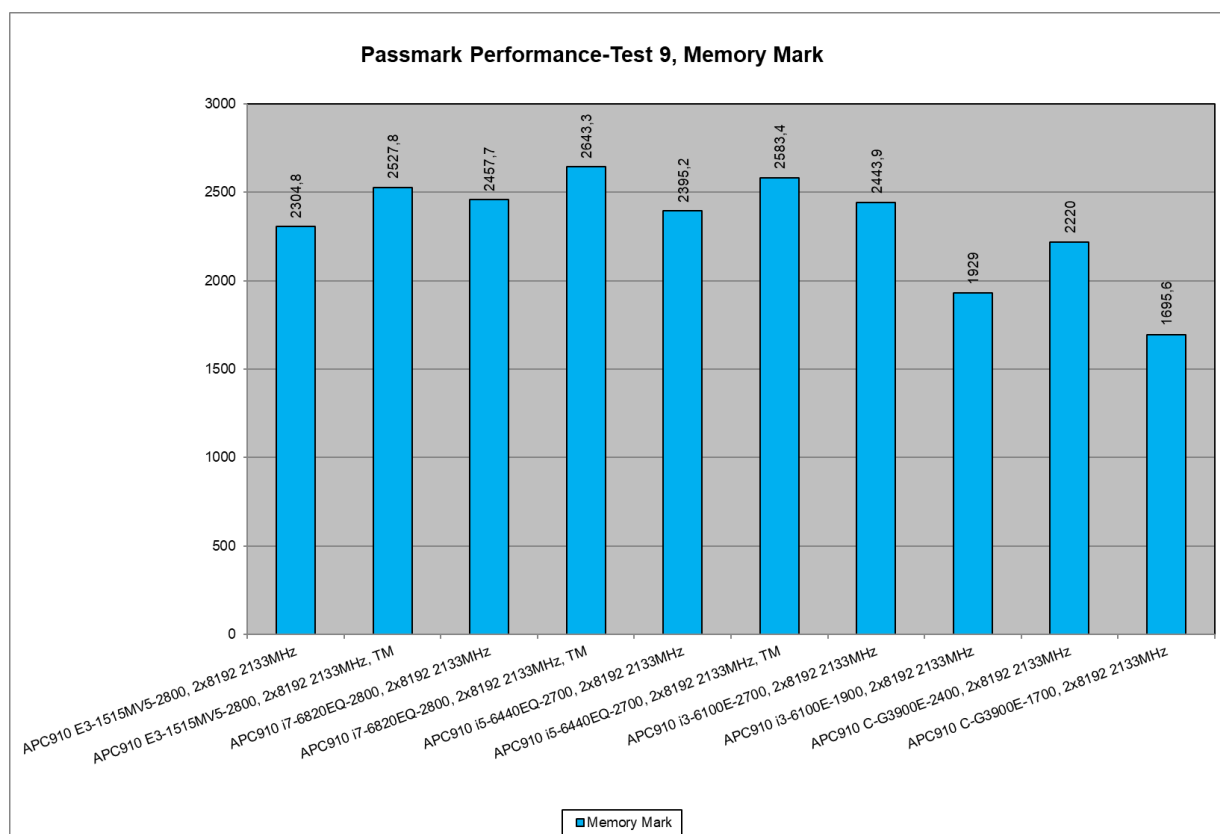


Figure 42: Results for Passmark Performance Test 9.0, Memory Mark – APC910/PPC900 (TS17)

4.2.1.7 Disk Mark

Higher scores are better

#	Test device	Disk Mark
APC910/PPC900 with INTEL QM170 Chipsatz		
66	i5-6440EQ 4C 2.7GHz 6MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	5024,5
66	i5-6440EQ 4C 2.7GHz 6MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz, TM (Turbo Mode)	5022,7
67	i7-6820EQ 4C 2.8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	5017,7
67	i7-6820EQ 4C 2.8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz, TM (Turbo Mode)	5024,3
APC910/PPC900 with INTEL HM170 Chipsatz		
68	i3-6100E 2C 2.7GHz 3MB 35W, 2 x 8192MB DDR4-SODIMM 2133MHz	4911,1
69	i3-6100E 2C 1.9GHz 3MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	4921,4
70	C-G3900E 2C 2.4GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	4802,2
71	C-G3900E 2C 1.7GHz 2MB 35W, 2 x 8192 MB DDR4-SODIMM 2133MHz	4800,9
APC910 with INTEL CM236 Chipsatz		
72	E3-1515MV5 4C 2,8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz	5004,2
72	E3-1515MV5 4C 2,8GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 2133MHz, TM (Turbo Mode)	5002,9

Table 44: Results for Passmark Performance Test 9.0, Disk Mark – APC910/PPC900 (TS17)

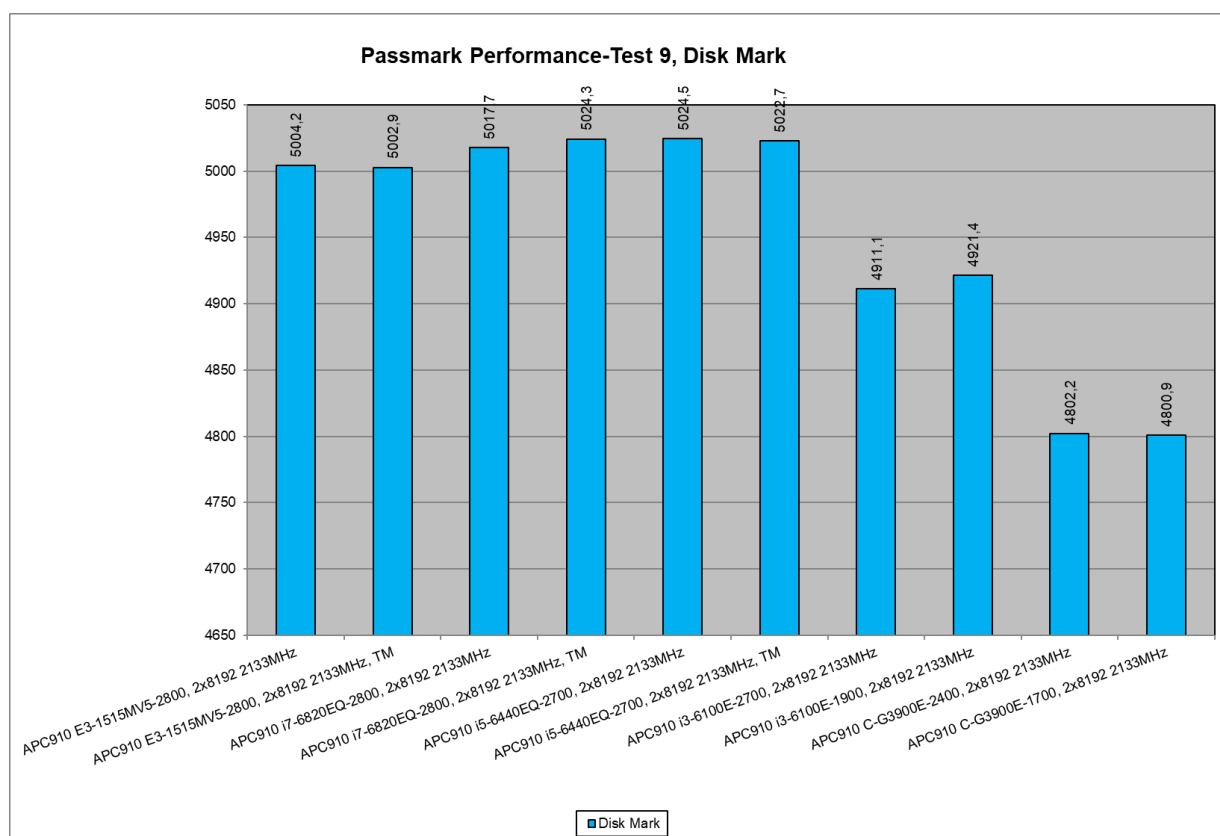


Figure 43: Results Passmark Performance Test 9.0, Disk Mark – APC910/PPC900 (TS17)

4.2.2 APC3100/PPC3100

4.2.2.1 Passmark Rating

Higher scores are better

#	Test device	Passmark Rating
APC3100/PPC3100 with INTEL Kabylake-U		
73	C-3965U 2C 2.2GHz 2MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1742,1
74	i3-7100U 2C 2.4GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2200,3
75	i5-7300U 2C 2.6GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2806,4
76	i7-7600U 2C 2.8GHz 4MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2920

Table 45: Results for Passmark Performance Test 9.0, Passmark Rating – APC3100/PPC3100

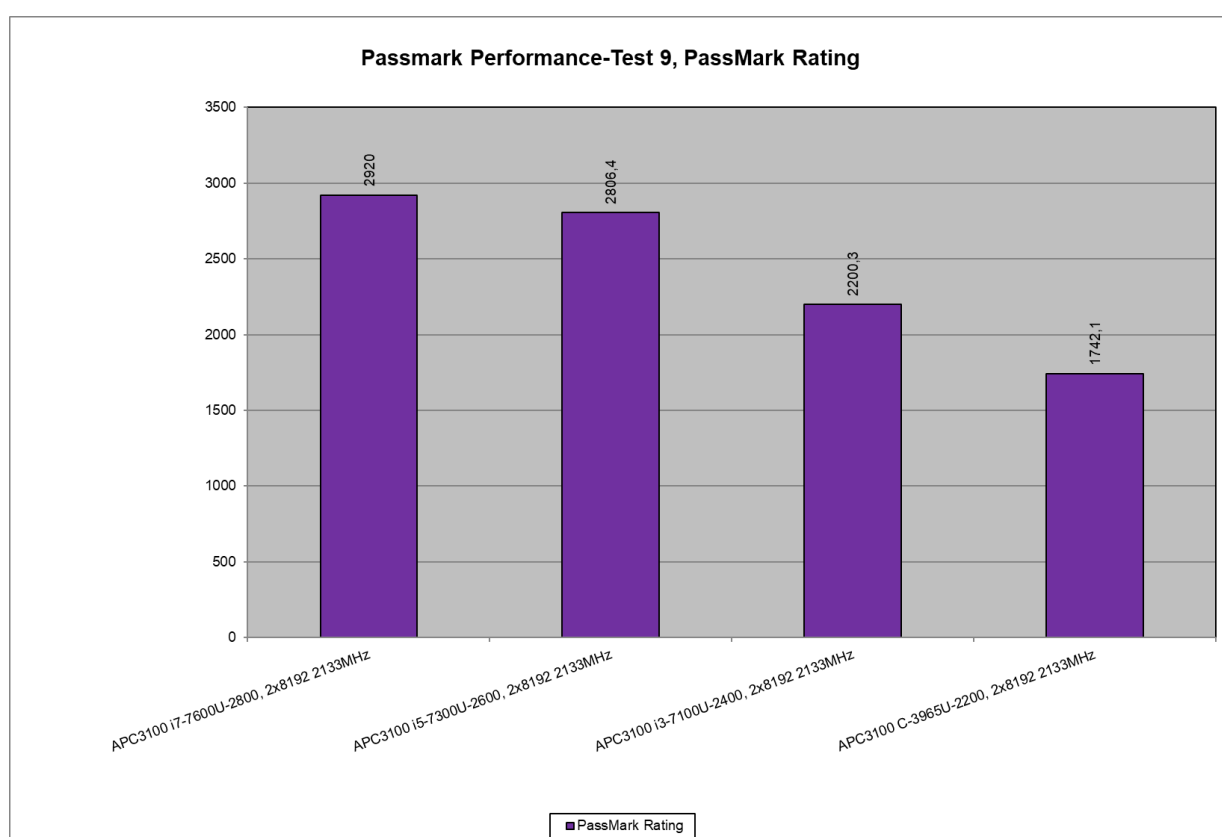


Figure 44: Results for Passmark Performance Test 9.0, Passmark Rating – APC3100/PPC3100

4.2.2.2 CPU Mark

Higher scores are better

#	Test device	CPU Mark
APC3100/PPC3100 with INTEL Kabylake-U		
73	C-3965U 2C 2.2GHz 2MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2495,6
74	i3-7100U 2C 2.4GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	3822,2
75	i5-7300U 2C 2.6GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	5585,9
76	i7-7600U 2C 2.8GHz 4MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	5915,6

Table 46: Results for Passmark Performance Test 9.0, CPU Mark – APC3100/PPC3100

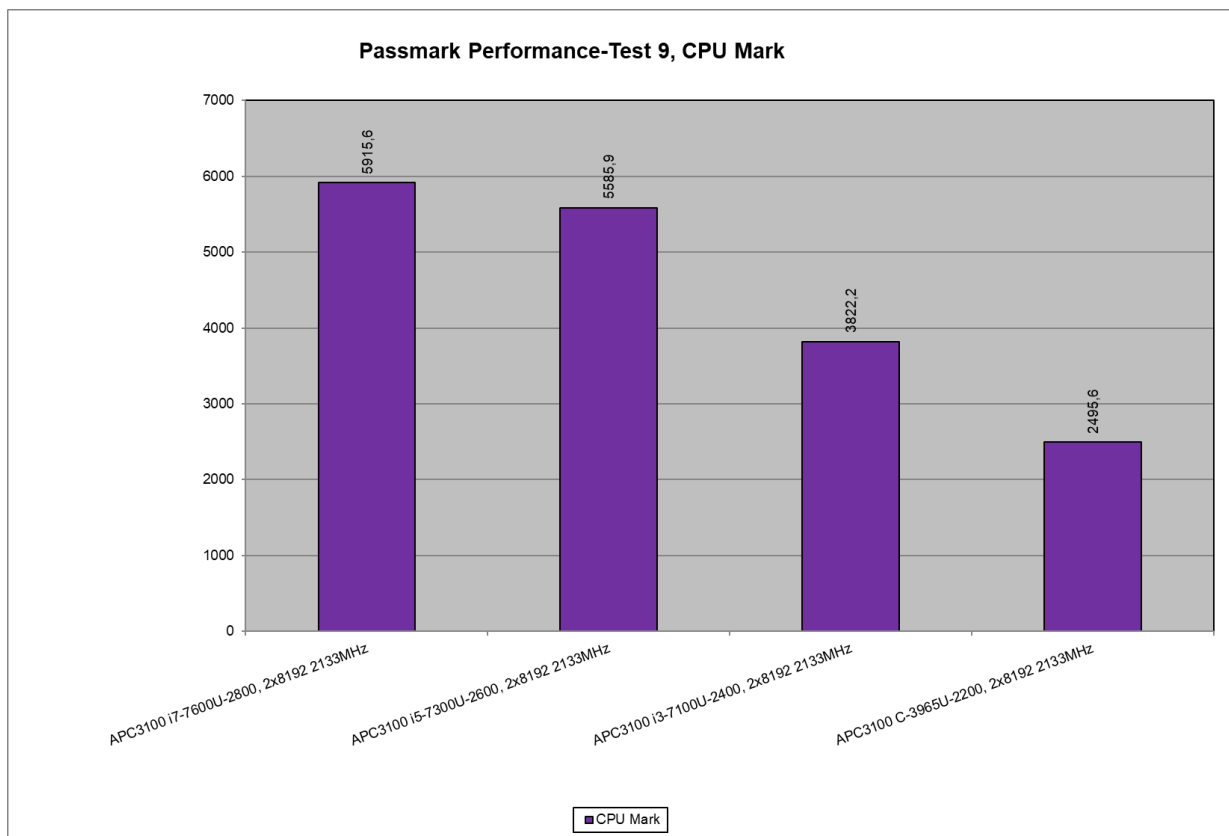


Figure 45: Results for Passmark Performance Test 9.0, CPU Mark – APC3100/PPC3100

4.2.2.3 2D Graphics Mark

Higher scores are better

#	Test device	2D Graphics Mark
APC3100/PPC3100 with INTEL Kabylake-U		
73	C-3965U 2C 2.2GHz 2MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	459,1
74	i3-7100U 2C 2.4GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	498,4
75	i5-7300U 2C 2.6GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	746,9
76	i7-7600U 2C 2.8GHz 4MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	794,7

Table 47: Results for Passmark Performance Test 9.0, 2D Graphics Mark – APC3100/PPC3100

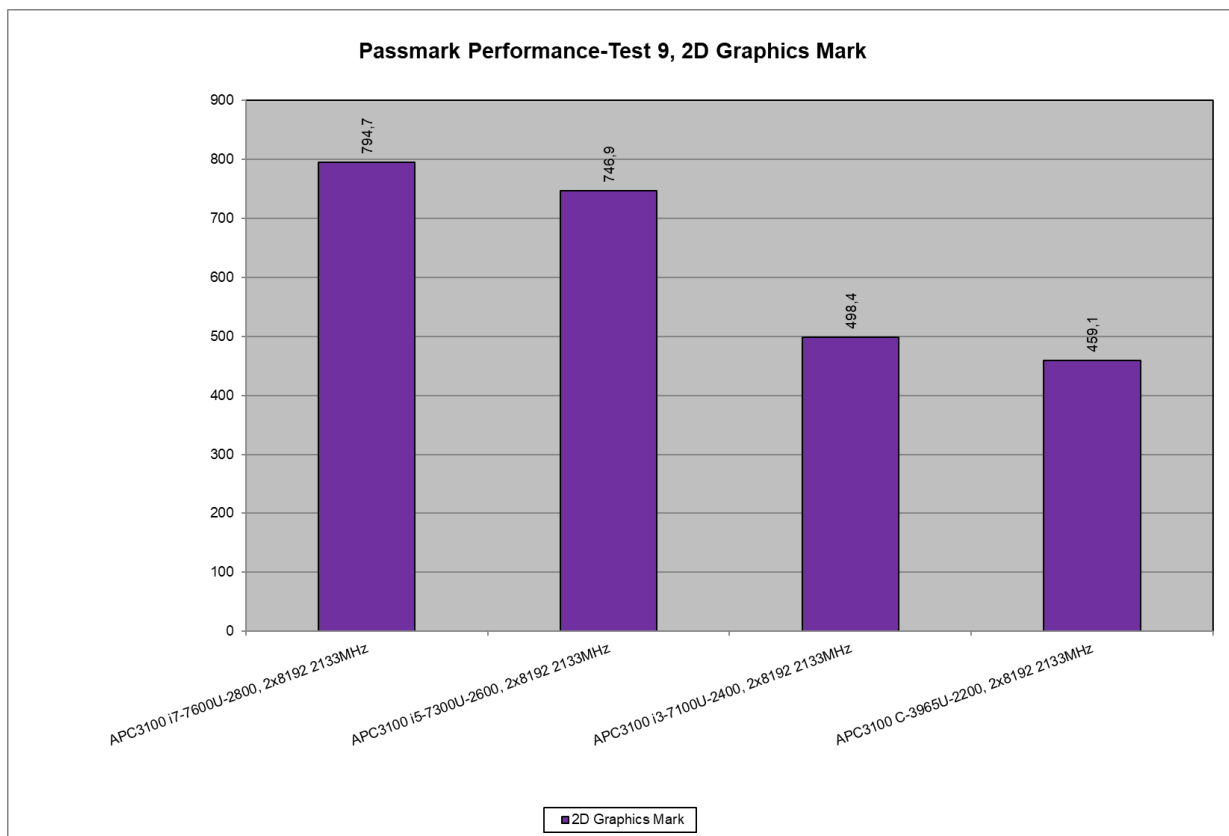


Figure 46: Results for Passmark Performance Test 9.0, 2D Graphics Mark – APC3100/PPC3100

4.2.2.4 3D Graphics Mark

Higher scores are better

#	Test device	3D Graphics Mark
APC3100/PPC3100 with INTEL Kabylake-U		
73	C-3965U 2C 2.2GHz 2MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	779,4
74	i3-7100U 2C 2.4GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1173,9
75	i5-7300U 2C 2.6GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1249,8
76	i7-7600U 2C 2.8GHz 4MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1276,6

Table 48: Results for Passmark Performance Test 9.0, 3D Graphics Mark – APC3100/PPC3100

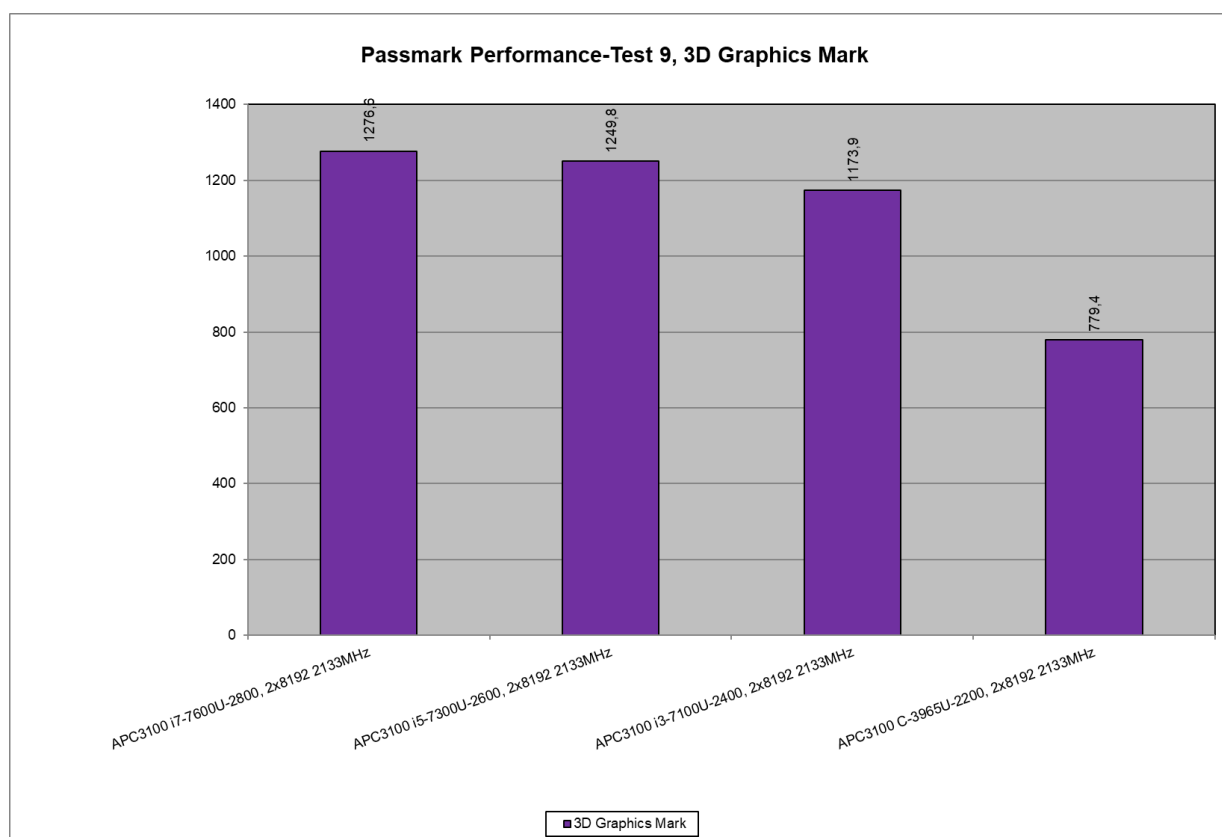


Figure 47: Results for Passmark Performance Test 9.0, 3D Graphics Mark – APC3100/PPC3100

4.2.2.5 Memory Mark

Higher scores are better

#	Test device	Memory Mark
APC3100/PPC3100 with INTEL Kabylake-U		
73	C-3965U 2C 2.2GHz 2MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1980,3
74	i3-7100U 2C 2.4GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2145
75	i5-7300U 2C 2.6GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2688
76	i7-7600U 2C 2.8GHz 4MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	2864,2

Table 49: Results for Passmark Performance Test 9.0, Memory Mark – APC3100/PPC3100

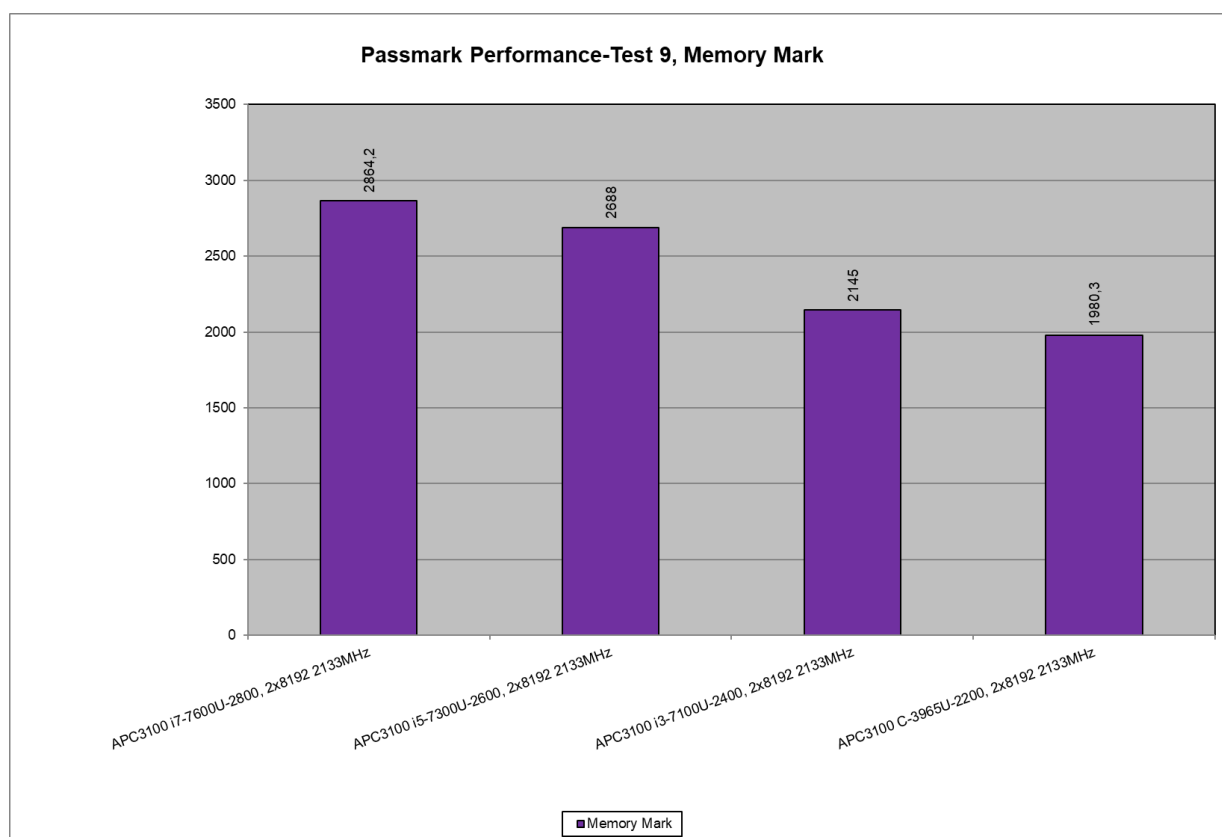


Figure 48: Results for Passmark Performance Test 9.0, Memory Mark – APC3100/PPC3100

4.2.2.6 Disk Mark

Higher scores are better

#	Test device	Disk Mark
APC3100/PPC3100 with INTEL Kabylake-U		
73	C-3965U 2C 2.2GHz 2MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1582,4
74	i3-7100U 2C 2.4GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1582,6
75	i5-7300U 2C 2.6GHz 3MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1575,6
76	i7-7600U 2C 2.8GHz 4MB 15W, 2 x 8192 MB DDR4-SODIMM 2133MHz	1572,1

Table 50: Results for Passmark Performance Test 9.0, Disk Mark – APC3100/PPC3100

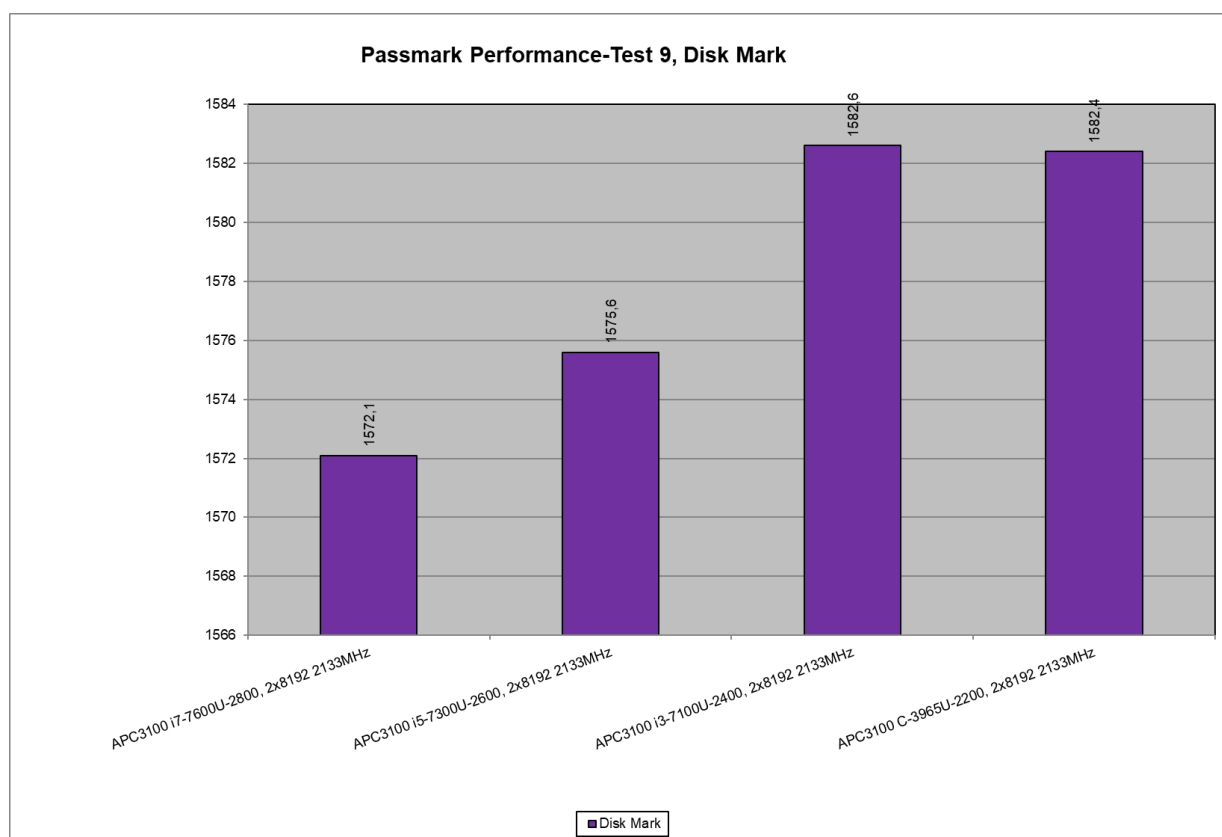


Figure 49: Results Passmark Performance Test 9.0, Disk Mark – APC3100/PPC3100

4.2.3 APC4100

The APC4100 was tested with all 4 "Power & Performance Profiles" defined in the BIOS (for details, see the APC4100 user manual):

- SPM = Maximum System Performance Mode
- CPM = Maximum CPU Performance Mode
- BPM = Balanced Performance Mode
- IUC = Industrial Use Condition Mode

ECC = Error Correction Code, this memory was additionally used in the w-11865MRE.

4.2.3.1 Passmark Rating

Higher scores are better

#	Test device	Passmark Rating
APC4100 with Intel HM570E Chipsatz		
81	C-6600HLE 2C 2.1GHz 8MB 25W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	2292,2
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	2343,6
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	1670,6
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	2327
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	1670
APC4100 with Intel RM590E Chipsatz		
82	i3-11100HE 4C 2.4GHz 8MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	4217,2
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	4528,7
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	2494,2
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	3295,5
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	2075,9
83	i5-11500HE 6C 2.6GHz 12MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	4974,6
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	5479,6
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	3274,3
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	3995,6
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	2679,8
84	w-11155MRE 4C 2.4GHz 8MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	4123,7
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	4435,3
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	2473,5
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	3218,4
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	2041
85	w-11865MRE 8C 2.6GHz 24MB 45W, 1 x 32768 MB DDR4-SODIMM 3200MHz, SPM	5424,3
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 32768 MB DDR4-SODIMM 3200MHz, SPM	5844,2
85	w-11865MRE 8C 2.6GHz 24MB 45W, 1 x 16384 MB DDR4-SODIMM 3200MHz, SPM	5388,5
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 16384 MB DDR4-SODIMM 3200MHz, SPM	5871,4
85	w-11865MRE 8C 2.6GHz 24MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	5229,6
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz ECC, SPM	5812,9
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	5796,8
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	3388,5
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	4295,1
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	2840,2

Table 51: Results for Passmark Performance Test 9.0, Passmark Rating – APC4100

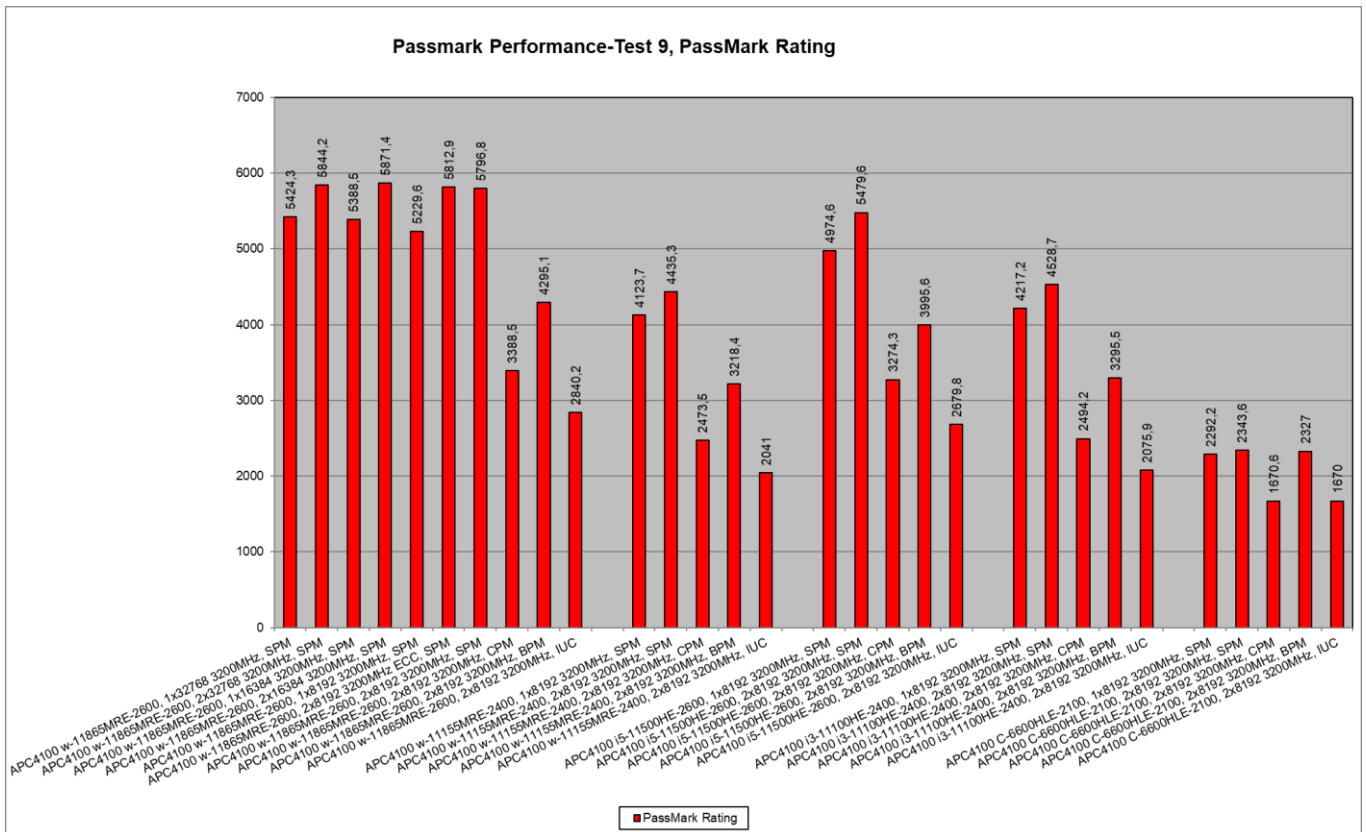


Figure 50: Results for Passmark Performance Test 9.0, Passmark Rating – APC4100

4.2.3.2 CPU Mark

Higher scores are better

#	Test device	CPU Mark
APC4100 with Intel HM570E Chipsatz		
81	C-6600HLE 2C 2.1GHz 8MB 25W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	3223
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	3229,4
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	3166,4
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	3167,8
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	3164
APC4100 with Intel RM590E Chipsatz		
82	i3-11100HE 4C 2.4GHz 8MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	12123,2
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	13359,5
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	13259,9
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	8198,9
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	8175,4
83	i5-11500HE 6C 2.6GHz 12MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	15197,4
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	17409,9
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	17731,2
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	11687,4
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	11722,8
84	w-11155MRE 4C 2.4GHz 8MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	11049,8
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	12478,4
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	12538,1
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	7906,9
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	7888,3
85	w-11865MRE 8C 2.6GHz 24MB 45W, 1 x 32768 MB DDR4-SODIMM 3200MHz, SPM	18238,4
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 32768 MB DDR4-SODIMM 3200MHz, SPM	21424,6
85	w-11865MRE 8C 2.6GHz 24MB 45W, 1 x 16384 MB DDR4-SODIMM 3200MHz, SPM	18015,2
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 16384 MB DDR4-SODIMM 3200MHz, SPM	21478,9
85	w-11865MRE 8C 2.6GHz 24MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	17171,9
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz ECC, SPM	21339,8
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	20695,7
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	21428,7
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	13969,6
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	13993,3

Table 52: Results for Passmark Performance Test 9.0, CPU Mark – APC4100

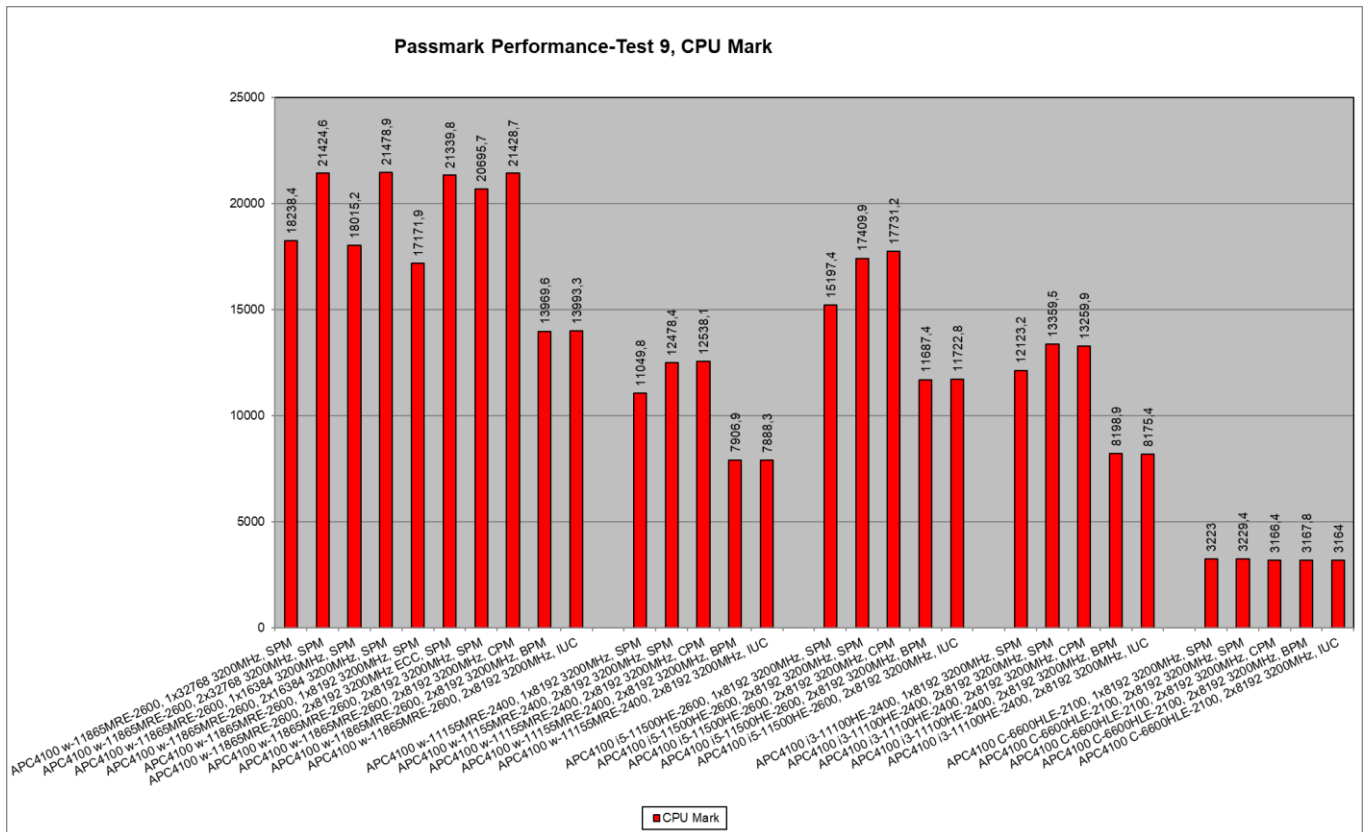


Figure 51: Results for Passmark Performance Test 9.0, CPU Mark – APC4100

4.2.3.3 2D Graphics Mark

Higher scores are better

Nr.	Prüfling	2D Graphics Mark
APC4100 with Intel HM570E Chipsatz		
81	C-6600HLE 2C 2.1GHz 8MB 25W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	573,3
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	577,2
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	513,3
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	575,7
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	512,9
APC4100 with Intel RM590E Chipsatz		
82	i3-11100HE 4C 2.4GHz 8MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	1118,9
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	1121,9
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	851,9
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	663,8
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	571,3
83	i5-11500HE 6C 2.6GHz 12MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	1195,8
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	1204,4
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	940,2
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	722,9
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	622,5
84	w-11155MRE 4C 2.4GHz 8MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	1093,1
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	1102,3
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	849,2
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	652,7
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	558,8
85	w-11865MRE 8C 2.6GHz 24MB 45W, 1 x 32768 MB DDR4-SODIMM 3200MHz, SPM	1254,8
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 32768 MB DDR4-SODIMM 3200MHz, SPM	1250,5
85	w-11865MRE 8C 2.6GHz 24MB 45W, 1 x 16384 MB DDR4-SODIMM 3200MHz, SPM	1250,4
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 16384 MB DDR4-SODIMM 3200MHz, SPM	1254,3
85	w-11865MRE 8C 2.6GHz 24MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	1255,8
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz ECC, SPM	1257,6
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	1262,5
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	978,4
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	741,6
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	660,6

Table 53: Results for Passmark Performance Test 9.0, 2D Graphics Mark – APC4100

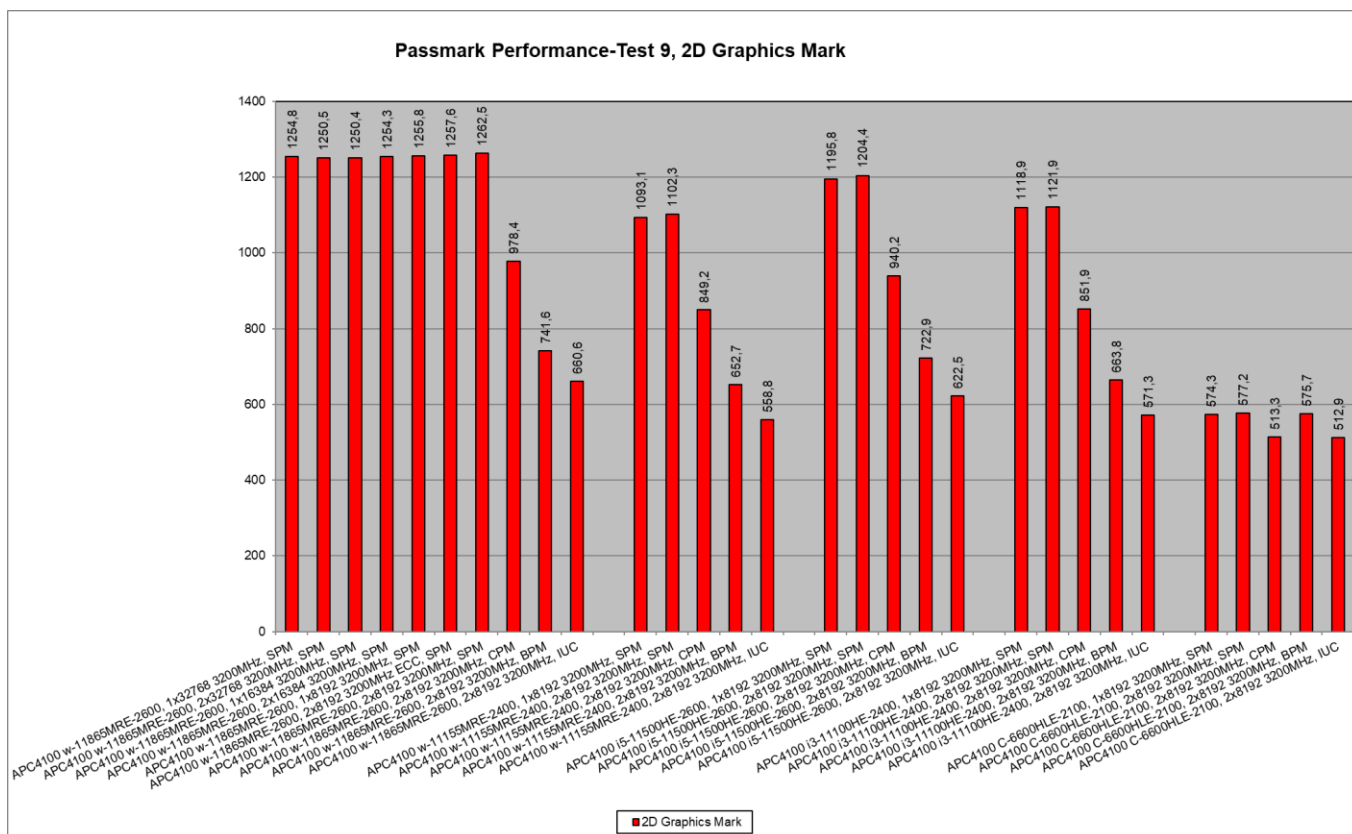


Figure 52: Results for Passmark Performance Test 9.0, 2D Graphics Mark – APC4100

4.2.3.4 3D Graphics Mark

Higher scores are better

#	Test device	3D Graphics Mark
APC4100 with Intel HM570E Chipsatz		
81	C-6600HLE 2C 2.1GHz 8MB 25W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	977
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	1022,8
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	340,2
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	1022,2
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	340,3
APC4100 with Intel RM590E Chipsatz		
82	i3-11100HE 4C 2.4GHz 8MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	1119
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	1170,6
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	344,6
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	1151,1
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	341,7
83	i5-11500HE 6C 2.6GHz 12MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	1692,8
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	1882,7
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	526,1
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	1851,1
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	520,9
84	w-11155MRE 4C 2.4GHz 8MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	1120,3
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	1171
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	344,7
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	1149,3
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	341
85	w-11865MRE 8C 2.6GHz 24MB 45W, 1 x 32768 MB DDR4-SODIMM 3200MHz, SPM	1763,2
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 32768 MB DDR4-SODIMM 3200MHz, SPM	1931,9
85	w-11865MRE 8C 2.6GHz 24MB 45W, 1 x 16384 MB DDR4-SODIMM 3200MHz, SPM	1778,2
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 16384 MB DDR4-SODIMM 3200MHz, SPM	1951,9
85	w-11865MRE 8C 2.6GHz 24MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	1756,5
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz ECC, SPM	1955,6
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	1937,5
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	530
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	1924,1
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	527,4

Table 54: Results for Passmark Performance Test 9.0, 3D Graphics Mark – APC4100

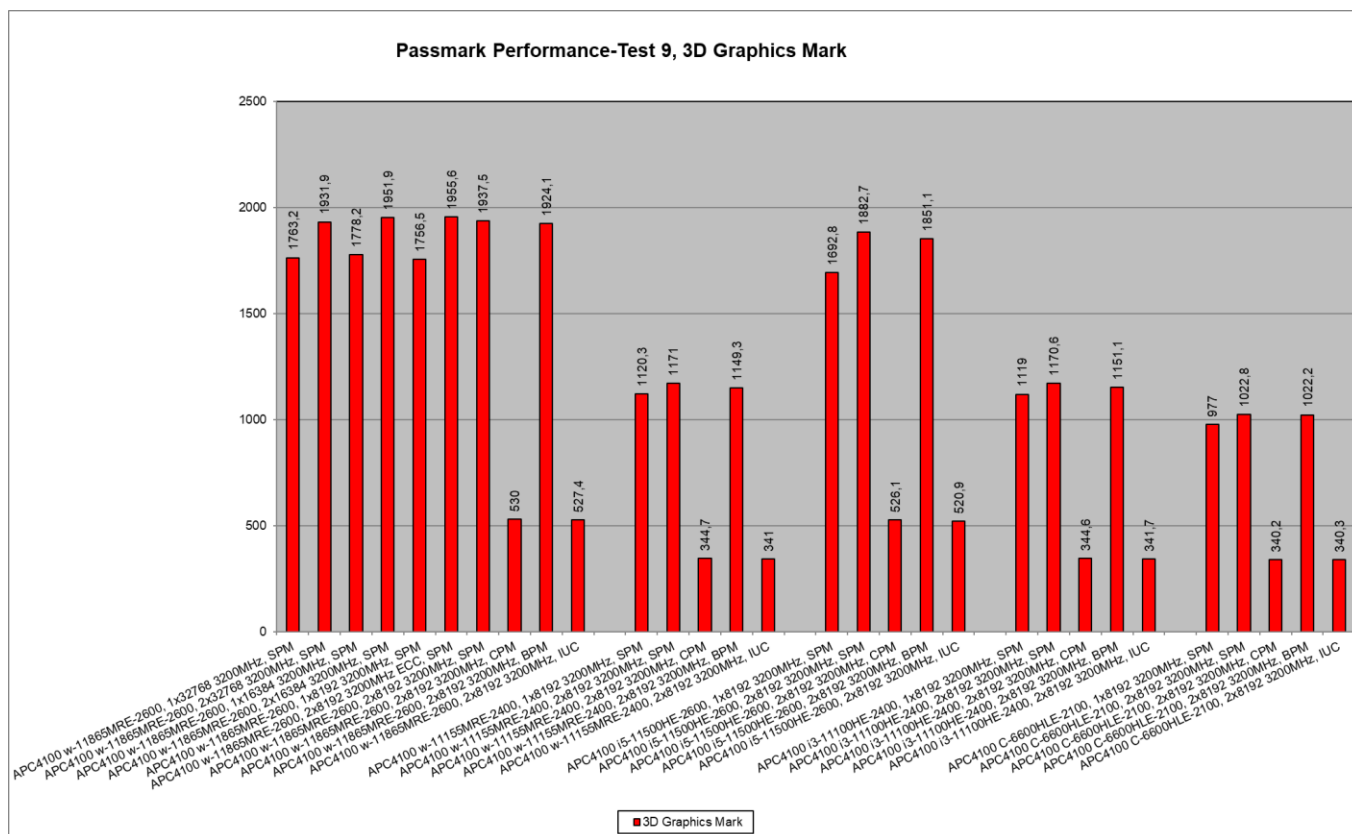


Figure 53: Results for Passmark Performance Test 9.0, 3D Graphics Mark – APC4100

4.2.3.5 Memory Mark

Higher scores are better

#	Test device	Memory Mark
APC4100 with Intel HM570E Chipsatz		
81	C-6600HLE 2C 2.1GHz 8MB 25W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	1659,7
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	1787,3
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	1790,8
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	1791,7
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	1788,6
APC4100 with Intel RM590E Chipsatz		
82	i3-11100HE 4C 2.4GHz 8MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	2356,6
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	2927,6
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	2927,7
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	1958,8
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	1967
83	i5-11500HE 6C 2.6GHz 12MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	2371,5
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	2914,9
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	2898,8
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	1993,1
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	2007,5
84	w-11155MRE 4C 2.4GHz 8MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	2354,6
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	2838
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	2847,5
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	1855,6
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	1871,1
85	w-11865MRE 8C 2.6GHz 24MB 45W, 1 x 32768 MB DDR4-SODIMM 3200MHz, SPM	2738,8
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 32768 MB DDR4-SODIMM 3200MHz, SPM	3155,7
85	w-11865MRE 8C 2.6GHz 24MB 45W, 1 x 16384 MB DDR4-SODIMM 3200MHz, SPM	2673,3
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 16384 MB DDR4-SODIMM 3200MHz, SPM	3179,8
85	w-11865MRE 8C 2.6GHz 24MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	2447,2
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz ECC, SPM	3024,8
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	3045,4
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	3032,2
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	2250,4
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	2253,1

Table 55: Results for Passmark Performance Test 9.0, Memory Mark – APC4100

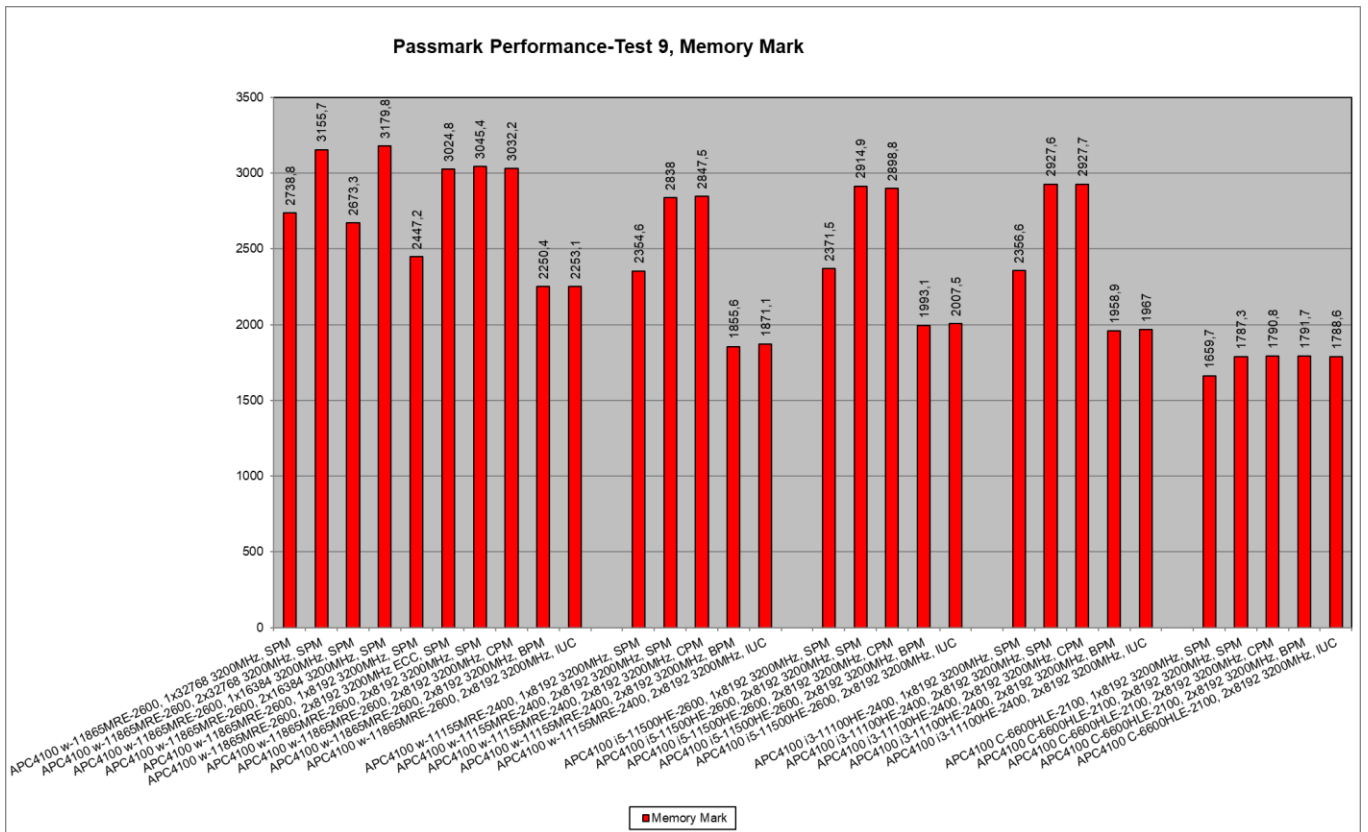


Figure 54: Results for Passmark Performance Test 9.0, Memory Mark – APC4100

4.2.3.6 Disk Mark

Higher scores are better

Nr.	Prüfling	Disk Mark
APC4100 mit Intel HM570E Chipsatz		
81	C-6600HLE 2C 2.1GHz 8MB 25W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	5825
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	5878,4
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	5885
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	5922,9
81	C-6600HLE 2C 2.1GHz 8MB 25W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	5891,5
APC4100 mit Intel RM590E Chipsatz		
82	i3-11100HE 4C 2.4GHz 8MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	5931,8
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	5865,4
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	5908,8
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	5927,2
82	i3-11100HE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	5909,4
83	i5-11500HE 6C 2.6GHz 12MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	5865,9
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	5944,2
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	5929,1
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	5935,8
83	i5-11500HE 6C 2.6GHz 12MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	5897,2
84	w-11155MRE 4C 2.4GHz 8MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	5917
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	5928,9
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	5917,8
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	5909
84	w-11155MRE 4C 2.4GHz 8MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	5998,6
85	w-11865MRE 8C 2.6GHz 24MB 45W, 1 x 32768 MB DDR4-SODIMM 3200MHz, SPM	5969,9
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 32768 MB DDR4-SODIMM 3200MHz, SPM	5938,6
85	w-11865MRE 8C 2.6GHz 24MB 45W, 1 x 16384 MB DDR4-SODIMM 3200MHz, SPM	5950,5
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 16384 MB DDR4-SODIMM 3200MHz, SPM	5905,6
85	w-11865MRE 8C 2.6GHz 24MB 45W, 1 x 8192 MB DDR4-SODIMM 3200MHz, SPM	5952,2
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz ECC, SPM	5925
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, SPM	5980,2
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, CPM	5908
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, BPM	5953,2
85	w-11865MRE 8C 2.6GHz 24MB 45W, 2 x 8192 MB DDR4-SODIMM 3200MHz, IUC	5960

Table 56: Results for Passmark Performance Test 9.0, Disk Mark – APC4100

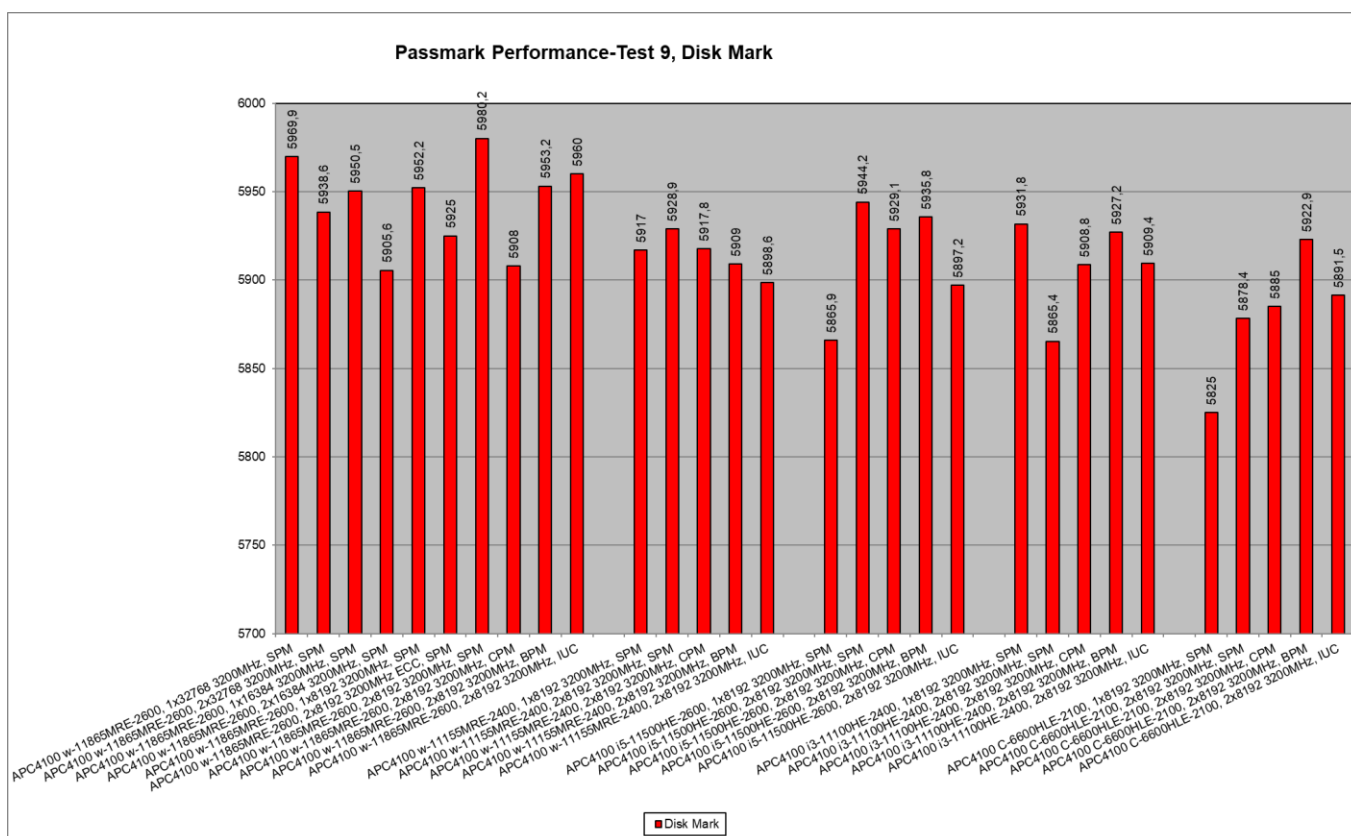


Figure 55: Results Passmark Performance Test 9.0, Disk Mark – APC4100

4.2.4 Comparison APC910/PPC900, APC3100/PPC3100 and APC4100

SPM = Maximum System Performance Mode

Higher scores are better

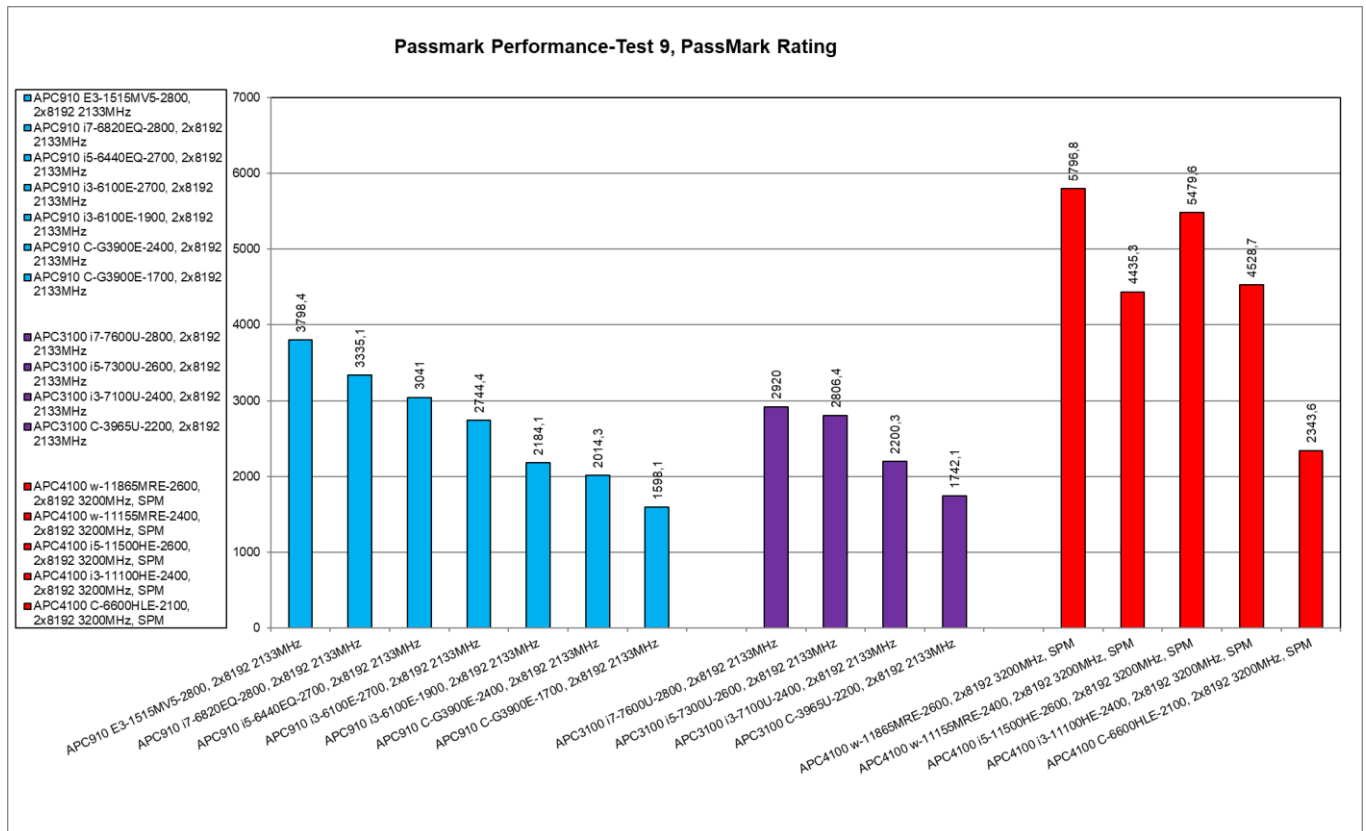


Figure 56: Comparison for Passmark Performance Test 9.0, Passmark Rating

- SPM = Maximum System Performance Mode
- CPM = Maximum CPU Performance Mode
- BPM = Balanced Performance Mode
- IUC = Industrial Use Condition Mode

Higher scores are better

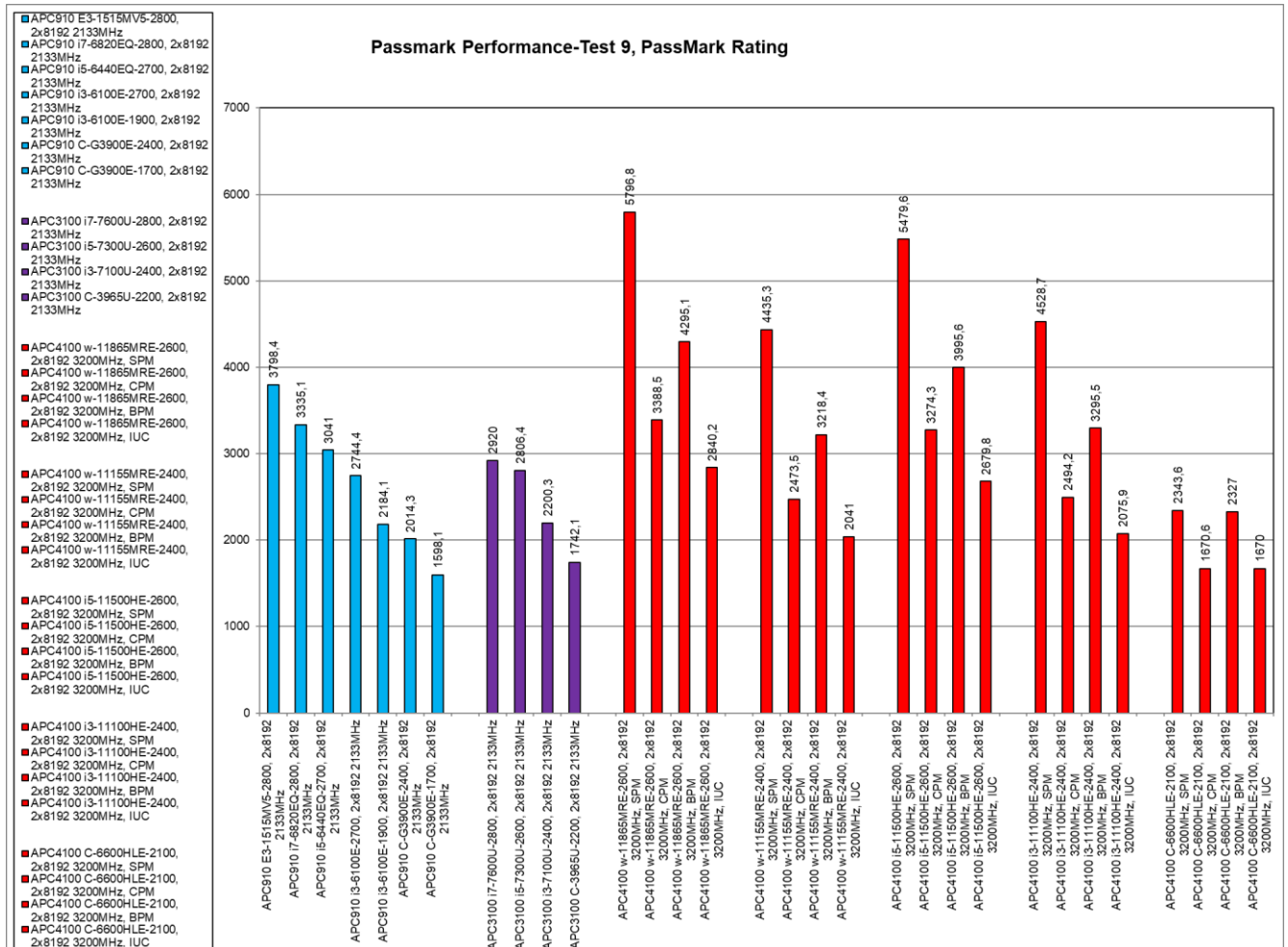


Figure 57: Comparison for Passmark Performance Test 9.0, Passmark Rating with BIOS Profiles

Benchmark Test GPOS B&R Industrial PCs

- SPM = Maximum System Performance Mode
- CPM = Maximum CPU Performance Mode
- BPM = Balanced Performance Mode
- IUC = Industrial Use Condition Mode

Higher scores are better

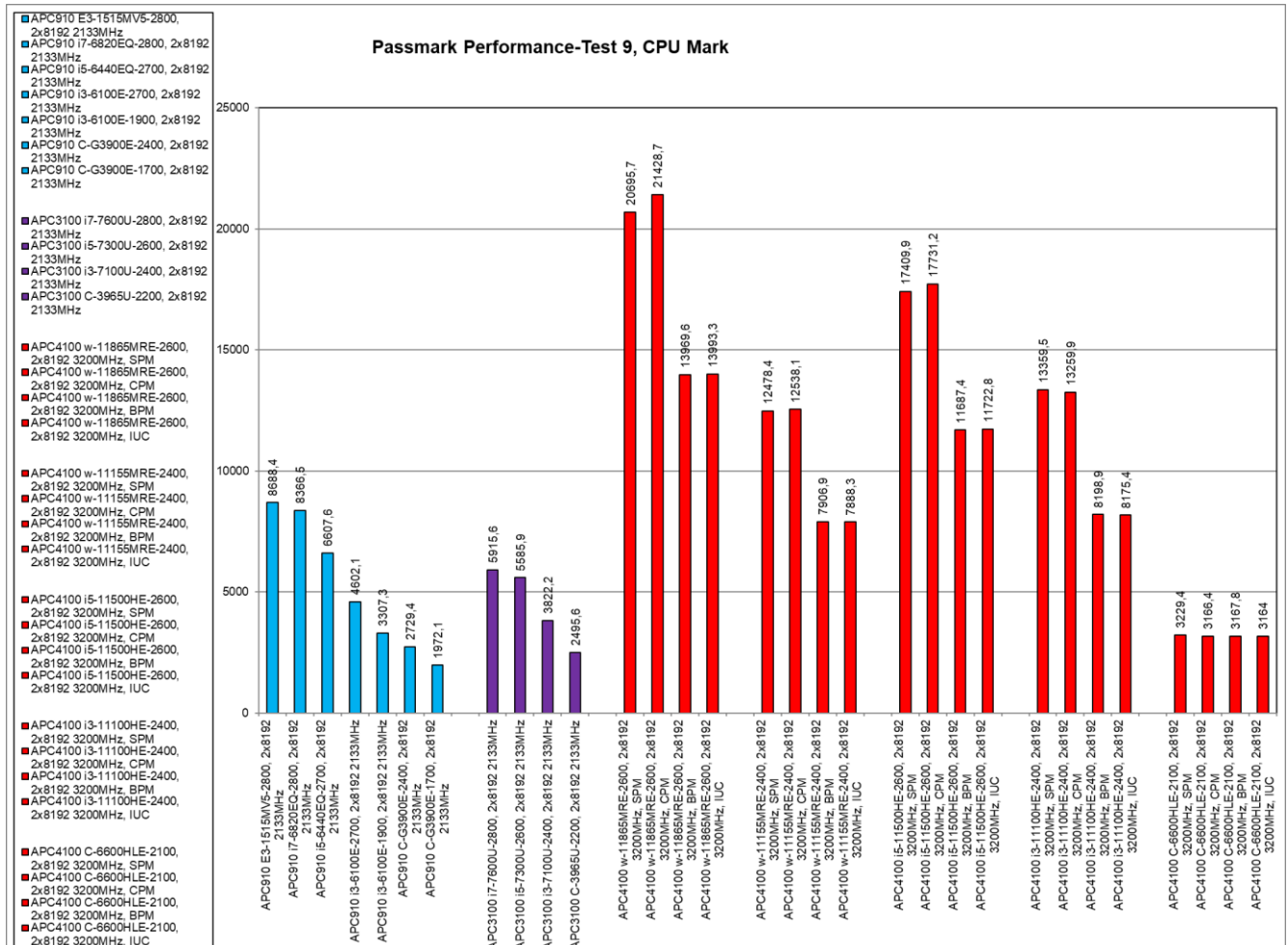


Figure 58: Comparison for Passmark Performance Test 9.0, CPU Mark with BIOS Profiles

5 Figure Index

Figure 1: Results for Passmark Performance Test 7.0, Passmark Rating, DDR3 1067MHz – APC910/PPC900 (TS77).....	12
Figure 2: Results for Passmark Performance Test 7.0, Passmark Rating, DDR3 1600/1333MHz – APC910/PPC900 (TS77).....	12
Figure 3: Results for Passmark Performance Test 7.0, CPU Mark, DDR3 1067MHz – APC910/PPC900 (TS77).....	14
Figure 4: Results for Passmark Performance Test 7.0, CPU Mark, DDR3 1600/1333MHz – APC910/PPC900 (TS77).....	14
Figure 5: Results for Passmark Performance Test 7.0, 2D Graphics Mark, DDR3 1067MHz – APC910/PPC900 (TS77).....	16
Figure 6: Results for Passmark Performance Test 7.0, 2D Graphics Mark, DDR3 1600/1333MHz – APC910/PPC900 (TS77).....	16
Figure 7: Results for Passmark Performance Test 7.0, 3D Graphics Mark, DDR3 1067MHz – APC910/PPC900 (TS77).....	18
Figure 8: Results for Passmark Performance Test 7.0, 3D Graphics Mark, DDR3 1600/1333MHz – APC910/PPC900 (TS77).....	18
Figure 9: Results for Passmark Performance Test 7.0, Memory Mark, DDR3 1067MHz – APC910/PPC900 (TS77).....	20
Figure 10: Results for Passmark Performance Test 7.0, Memory Mark, DDR3 1600/1333MHz – APC910/PPC900 (TS77).....	20
Figure 11: Results Passmark Performance Test 7.0, Disk Mark, DDR3 1067MHz – APC910/PPC900 (TS77).....	22
Figure 12: Results Passmark Performance Test 7.0, Disk Mark, DDR3 1600/1333MHz – APC910/PPC900 (TS77).....	22
Figure 13: Results for Passmark Performance Test 7.0, Passmark Rating – APC910/PPC900 (TS17).....	24
Figure 14: Results for Passmark Performance Test 7.0, CPU Mark – APC910/PPC900 (TS17)	26
Figure 15: Results for Passmark Performance Test 7.0, 2D Graphics Mark – APC910/PPC900 (TS17)	28
Figure 16: Results for Passmark Performance Test 7.0, 3D Graphics Mark – APC910/PPC900 (TS17)	30
Figure 17: Results for Passmark Performance Test 7.0, Memory Mark – APC910/PPC900 (TS17)	32
Figure 18: Results Passmark Performance Test 7.0, Disk Mark – APC910/PPC900 (TS17)	34
Figure 19: Results for Passmark Performance Test 7.0, Passmark Rating – APC2100/PPC2100.....	35
Figure 20: Results for Passmark Performance Test 7.0, CPU Mark – APC2100/PPC2100	36
Figure 21: Results for Passmark Performance Test 7.0, 2D Graphics Mark – APC2100/PPC2100	37
Figure 22: Results for Passmark Performance Test 7.0, 3D Graphics Mark – APC2100/PPC2100	38
Figure 23: Results for Passmark Performance Test 7.0, Memory Mark – APC2100/PPC2100	39
Figure 24: Results Passmark Performance Test 7.0, Disk Mark – APC2100/PPC2100	40
Figure 25: Results for Passmark Performance Test 7.0, Passmark Rating – APC3100/PPC3100.....	41
Figure 26: Results for Passmark Performance Test 7.0, CPU Mark – APC3100/PPC3100	42
Figure 27: Results for Passmark Performance Test 7.0, 2D Graphics Mark – APC3100/PPC3100	43
Figure 28: Results for Passmark Performance Test 7.0, 3D Graphics Mark – APC3100/PPC3100	44
Figure 29: Results for Passmark Performance Test 7.0, Memory Mark – APC3100/PPC3100	45
Figure 30: Results Passmark Performance Test 7.0, Disk Mark – APC3100/PPC3100	46
Figure 31: Results for Passmark Performance Test 7.0, Passmark Rating – APC2200/PPC2200.....	47
Figure 32: Results for Passmark Performance Test 7.0, CPU Mark – APC2200/PPC2200	48
Figure 33: Results for Passmark Performance Test 7.0, 2D Graphics Mark – APC2200/PPC2200	49
Figure 34: Results for Passmark Performance Test 7.0, 3D Graphics Mark – APC2200/PPC2200	50
Figure 35: Results for Passmark Performance Test 7.0, Memory Mark – APC2200/PPC2200	51
Figure 36: Results Passmark Performance Test 7.0, Disk Mark – APC2200/PPC2200	52
Figure 37: Comparison for Passmark Performance Test 7.0, Passmark Rating	53
Figure 38: Results for Passmark Performance Test 9.0, Passmark Rating – APC910/PPC900 (TS17).....	57
Figure 39: Results for Passmark Performance Test 9.0, CPU Mark – APC910/PPC900 (TS17)	58
Figure 40: Results for Passmark Performance Test 9.0, 2D Graphics Mark – APC910/PPC900 (TS17)	59
Figure 41: Results for Passmark Performance Test 9.0, 3D Graphics Mark – APC910/PPC900 (TS17)	60
Figure 42: Results for Passmark Performance Test 9.0, Memory Mark – APC910/PPC900 (TS17)	61

Figure 43: Results Passmark Performance Test 9.0, Disk Mark – APC910/PPC900 (TS17)	62
Figure 44: Results for Passmark Performance Test 9.0, Passmark Rating – APC3100/PPC3100.....	63
Figure 45: Results for Passmark Performance Test 9.0, CPU Mark – APC3100/PPC3100	64
Figure 46: Results for Passmark Performance Test 9.0, 2D Graphics Mark – APC3100/PPC3100	65
Figure 47: Results for Passmark Performance Test 9.0, 3D Graphics Mark – APC3100/PPC3100	66
Figure 48: Results for Passmark Performance Test 9.0, Memory Mark – APC3100/PPC3100	67
Figure 49: Results Passmark Performance Test 9.0, Disk Mark – APC3100/PPC3100	68
Figure 50: Results for Passmark Performance Test 9.0, Passmark Rating – APC4100	70
Figure 51: Results for Passmark Performance Test 9.0, CPU Mark – APC4100	72
Figure 52: Results for Passmark Performance Test 9.0, 2D Graphics Mark – APC4100.....	74
Figure 53: Results for Passmark Performance Test 9.0, 3D Graphics Mark – APC4100.....	76
Figure 54: Results for Passmark Performance Test 9.0, Memory Mark – APC4100.....	78
Figure 55: Results Passmark Performance Test 9.0, Disk Mark – APC4100.....	80
Figure 56: Comparison for Passmark Performance Test 9.0, Passmark Rating	81
Figure 57: Comparison for Passmark Performance Test 9.0, Passmark Rating with BIOS Profiles	82
Figure 58: Comparison for Passmark Performance Test 9.0, CPU Mark with BIOS Profiles	83

6 Table Index

Table 1: Versions.....	2
Table 2: Safety notices	2
Table 3: Test locations	2
Table 4: Terminology	3
Table 5: Devices under test.....	8
Table 6: Harddisks / removeable disks	9
Table 7: Benchmark programs used and the corresponding WEB links.....	10
Table 8: Results for Passmark Performance Test 7.0, Passmark Rating – APC910/PPC900 (TS77)	11
Table 9: Results for Passmark Performance Test 7.0, CPU Mark – APC910/PPC900 (TS77).....	13
Table 10: Results for Passmark Performance Test 7.0, 2D Graphics Mark – APC910/PPC900 (TS77) ...	15
Table 11: Results for Passmark Performance Test 7.0, 3D Graphics Mark – APC910/PPC900 (TS77) ...	17
Table 12: Results for Passmark Performance Test 7.0, Memory Mark – APC910/PPC900 (TS77)	19
Table 13: Results for Passmark Performance Test 7.0, Disk Mark – APC910/PPC900 (TS77)	21
Table 14: Results for Passmark Performance Test 7.0, Passmark Rating – APC910/PPC900 (TS17)	23
Table 15: Results for Passmark Performance Test 7.0, CPU Mark – APC910/PPC900 (TS17).....	25
Table 16: Results for Passmark Performance Test 7.0, 2D Graphics Mark – APC910/PPC900 (TS17) ...	27
Table 17: Results for Passmark Performance Test 7.0, 3D Graphics Mark – APC910/PPC900 (TS17) ...	29
Table 18: Results for Passmark Performance Test 7.0, Memory Mark – APC910/PPC900 (TS17)	31
Table 19: Results for Passmark Performance Test 7.0, Disk Mark – APC910/PPC900 (TS17)	33
Table 20: Results for Passmark Performance Test 7.0, Passmark Rating – APC2100/PPC2100	35
Table 21: Results for Passmark Performance Test 7.0, CPU Mark – APC2100/PPC2100.....	36
Table 22: Results for Passmark Performance Test 7.0, 2D Graphics Mark – APC2100/PPC2100	37
Table 23: Results for Passmark Performance Test 7.0, 3D Graphics Mark – APC2100/PPC2100	38
Table 24: Results for Passmark Performance Test 7.0, Memory Mark – APC2100/PPC2100	39
Table 25: Results for Passmark Performance Test 7.0, Disk Mark – APC2100/PPC2100	40
Table 26: Results for Passmark Performance Test 7.0, Passmark Rating – APC3100/PPC3100.....	41
Table 27: Results for Passmark Performance Test 7.0, CPU Mark – APC3100/PPC3100.....	42
Table 28: Results for Passmark Performance Test 7.0, 2D Graphics Mark – APC3100/PPC3100	43
Table 29: Results for Passmark Performance Test 7.0, 3D Graphics Mark – APC3100/PPC3100	44
Table 30: Results for Passmark Performance Test 7.0, Memory Mark – APC3100/PPC3100	45
Table 31: Results for Passmark Performance Test 7.0, Disk Mark – APC3100/PPC3100	46
Table 32: Results for Passmark Performance Test 7.0, Passmark Rating – APC2200/PPC2200	47
Table 33: Results for Passmark Performance Test 7.0, CPU Mark – APC2200/PPC2200.....	48
Table 34: Results for Passmark Performance Test 7.0, 2D Graphics Mark – APC2200/PPC2200	49
Table 35: Results for Passmark Performance Test 7.0, 3D Graphics Mark – APC2200/PPC2200	50
Table 36: Results for Passmark Performance Test 7.0, Memory Mark – APC2200/PPC2200	51
Table 37: Results for Passmark Performance Test 7.0, Disk Mark – APC2200/PPC2200	52
Table 38: Comparison for Passmark Performance Test 7.0, Passmark Rating (higher scores are better) ..	55
Table 39: Results for Passmark Performance Test 9.0, Passmark Rating – APC910/PPC900 (TS17)	57
Table 40: Results for Passmark Performance Test 9.0, CPU Mark – APC910/PPC900 (TS17).....	58
Table 41: Results for Passmark Performance Test 9.0, 2D Graphics Mark – APC910/PPC900 (TS17) ...	59
Table 42: Results for Passmark Performance Test 9.0, 3D Graphics Mark – APC910/PPC900 (TS17) ...	60
Table 43: Results for Passmark Performance Test 9.0, Memory Mark – APC910/PPC900 (TS17)	61
Table 44: Results for Passmark Performance Test 9.0, Disk Mark – APC910/PPC900 (TS17)	62
Table 45: Results for Passmark Performance Test 9.0, Passmark Rating – APC3100/PPC3100.....	63
Table 46: Results for Passmark Performance Test 9.0, CPU Mark – APC3100/PPC3100.....	64
Table 47: Results for Passmark Performance Test 9.0, 2D Graphics Mark – APC3100/PPC3100	65
Table 48: Results for Passmark Performance Test 9.0, 3D Graphics Mark – APC3100/PPC3100	66
Table 49: Results for Passmark Performance Test 9.0, Memory Mark – APC3100/PPC3100	67
Table 50: Results for Passmark Performance Test 9.0, Disk Mark – APC3100/PPC3100	68
Table 51: Results for Passmark Performance Test 9.0, Passmark Rating – APC4100	69
Table 52: Results for Passmark Performance Test 9.0, CPU Mark – APC4100	71
Table 53: Results for Passmark Performance Test 9.0, 2D Graphics Mark – APC4100.....	73
Table 54: Results for Passmark Performance Test 9.0, 3D Graphics Mark – APC4100.....	75

Table 55: Results for Passmark Performance Test 9.0, Memory Mark – APC4100	77
Table 56: Results for Passmark Performance Test 9.0, Disk Mark – APC4100	79

7 Index

	D		APC2200/PPC2200	47
			APC3100/PPC3100	41
			APC910/PPC900 (TS17)	23
			APC910/PPC900 (TS77)	11
			Comparison	53
			Passmark Performance Test 9.0	56
			APC3100/PPC3100	63
			APC4100	69
			APC910/PPC900 (TS17)	57
			Comparison	81
	F			
Figure Index				
	H			
Hardware				
Devices under test				
Harddisks / removeable disks				
	I			
Index				
Introduction				
	P			
Publishing Information				
	R			
Results				
Passmark Performance Test 7.0				
APC2100/PPC2100				
			S	
			Safety Notices	2
			Software	10
			Benchmark programs	10
			Operating system	10
			T	
			Table Index	86
			Table of Contents	4
			Terminology	3
			Test Locations	2
			V	
			Versions	2