

НИИ ВОСХОД
СИСТЕМНЫЕ ИННОВАЦИИ

Межведомственный Центр технологической экспертизы
базовых аппаратно-программных решений и аттестации
отраслевых центров тестирования

Ноутбук ICL RAYbook Si1407

Протокол тестирования

№ 00012/1/1

ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ АВТОНОМНОЕ УЧРЕЖДЕНИЕ
НАУЧНО-ИССЛЕДОВАТЕЛЬСКИЙ ИНСТИТУТ «ВОСХОД»



Минцифры
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электронной подписью

СВЕДЕНИЯ О СЕРТИФИКАТЕ ЭП

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Перечень сокращений и определений

Сокращение	Значение
Центр технологической экспертизы	Центр технологической экспертизы базовых аппаратно-программных решений и аттестации отраслевых центров тестирования
ПЭВМ	Персональная электронно-вычислительная машина
ОС	Операционная система
ОЗУ	Оперативное запоминающее устройство
ПЗУ	Постоянное запоминающее устройство
ПО	Программное обеспечение
ЦП	Центральный процессор

1. НАИМЕНОВАНИЕ ОБЪЕКТА ИСПЫТАНИЙ

Объектом испытаний является ноутбук ICL RAYbook Si1407 производства ООО «АйСиЭл Техно» с установленной ОС Astra Linux Special Edition 1.7.3 и набором специального и прикладного программного обеспечения, а также фирменная док-станция ICL.

2. СПИСОК ДОЛЖНОСТНЫХ ЛИЦ, ПРОВОДИВШИХ ИСПЫТАНИЕ

Руководитель тестирования:	Трубников И.И., руководитель центра проектирования инфраструктуры
Методолог:	Головин Г.С., начальник отдела проектирования
Архитектор:	Алтухов Н.Е., ведущий архитектор инфраструктурных решений
Специалист по тестированию	Гуров И.А., специалист по тестированию
Специалист по тестированию	Викулин Н.А., специалист по тестированию

3. ЦЕЛЬ ИСПЫТАНИЙ

Цели проведения испытаний:

- тестирование производительности аппаратного обеспечения;
- проверка на соответствие аппаратных характеристик заявленным значениям.

4. ДОКУМЕНТ, В СООТВЕТСТВИИ С КОТОРЫМ ПРОВОДЯТСЯ ИСПЫТАНИЯ

Испытания проводятся в соответствии с техническим сценарием тестирования «Ноутбук ICL RAYbook Si1407 Технический сценарий тестирования ТС 00012/1».

5. ОПИСАНИЕ ИСПЫТАТЕЛЬНОГО СТЕНДА И МАТЕРИАЛЬНО-ТЕХНИЧЕСКОГО ОБЕСПЕЧЕНИЯ

На тестирование предоставлен испытательный стенд в соответствии со схемой, отображенной на рисунке 1.

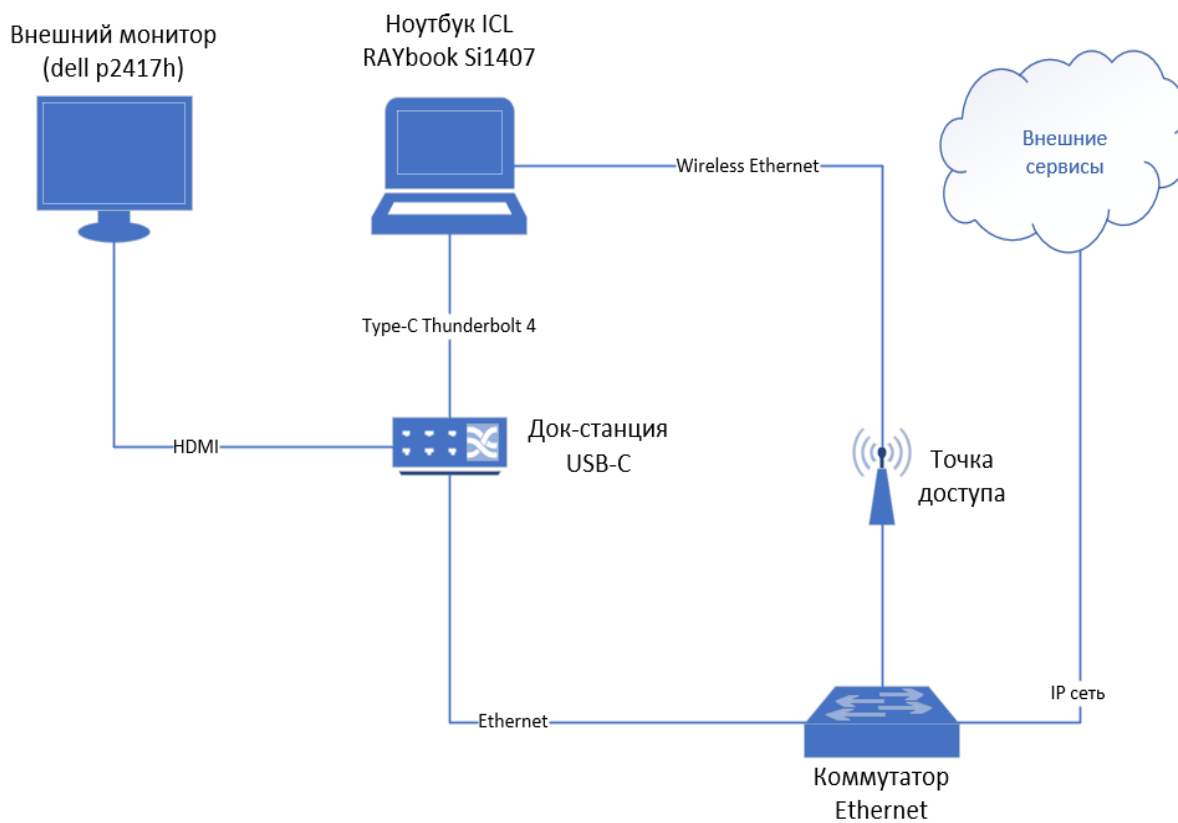


Рисунок 1. Схема стенда

Конфигурация ноутбука ICL RAYbook Si1407 представлена в таблице 1.

Таблица 1. Конфигурация ноутбука ICL RAYbook Si1407

Характеристика	Значение
Процессор	Intel Core i5-1235U (1.3 ГГц, 12 МБ кэш, 10 (2P+8E) ядер)
Оперативная память	Встроенная память DDR4 8 ГБ 1 слот DDR4 SO-DIMM Поддержка до 40 ГБ DDR4 3200 МГц
Видеоконтроллер	Intel UHD/Iris Xe Graphics (встроен в процессор)
Экран	14" 1920x1080, семейство IPS
Звуковая система	Интегрированный HD-кодек Встроенные динамики Встроенный микрофон
Накопители информации	Поддержка 1 устройства M.2 PCIe Gen4x4 Картридер MicroSD
Сетевой контроллер	Wi-Fi 802.11ac / 802.11ax (опционально) Bluetooth 5.2 LTE модуль (опционально)
Встроенные устройства	Веб-камера 1 МП/2 МП (опционально)
Порты ввода-вывода	1 x USB 3.2 Gen1 Type-A 1 x USB 3.2 Gen2 Type-A 1 x Thunderbolt 4 Type-C 1 x HDMI 1 x Комбинированный аудио разъем
Поддержка ОС	Windows/Linux
Источник питания	Сетевой блок питания 110-240 В Аккумуляторная батарея Li-Ion 73 Втч (опционально)
Размеры и вес	322×217×17 мм, 0,99 кг (с батареей 36 Втч)/1,15 кг (с батареей 73 Втч)
Дополнительно	Поддержка док-станции USB-C с зарядкой
Порты ввода-вывода док-станции	1 x RJ-45 1 x SD/MicroSD card reader 1 x USB 3.2 Gen 1 Type-C 1 x USB 3.2 Gen 1 Type-A с функцией быстрой зарядки 2 x USB 3.2 Gen 1 Type-A 2 x HDMI 1 x DisplayPort 1 x VGA 1 x Комбинированный аудио разъем
Источник питания док-станции	Сетевой блок питания 110-240 В 100Вт

Общий вид ноутбука ICL RAYbook Si1407 в комплекте с док-станцией представлен на рисунке 2.



Рисунок 2. Внешний вид ноутбука ICL RAYbook Si1407

Вспомогательные аппаратные средства для проведения испытаний:

- внешний монитор DELL P2417H 23,6 дюйма и разрешением 1920x1080;
- коммутатор Ethernet стенда Центра технологической экспертизы;
- беспроводная точка доступа стенда Центра технологической экспертизы.

Программные средства проведения испытаний:

- ОС Astra Linux Special Edition 1.7.3;
- набор автоматизированных проверок производительности.

6. ВЫВОДЫ И РЕКОМЕНДАЦИИ

Все заявленные параметры ноутбука соответствуют технической конфигурации аппаратных средств. ОС Astra Linux Special Edition 1.7.3 совместима с устройством и имеет полный набор необходимых драйверов устройств.

Результаты тестов производительности аппаратного обеспечения ноутбука (оперативная память, центральный процессор, дисковая подсистема) позволяют сделать вывод, что данное устройство может быть рекомендовано для использования в задачах, не требовательных к высоким нагрузкам. Производительность ноутбука соответствует схожим по техническим характеристикам устройствам. Основной спектр применения –

просмотр веб-страниц, потокового видео, использование средств ВКС и офисных приложений. Весь набор необходимых для таких целей аппаратных компонентов присутствует, дополнительным удобством является наличие док-станции, позволяющей повысить удобство и мобильность устройства.

Рекомендуется проведение дополнительного тестирования совместимости с прикладным программным обеспечением.

7. ЗАМЕЧАНИЯ

В процессе испытаний замечаний не выявлено.

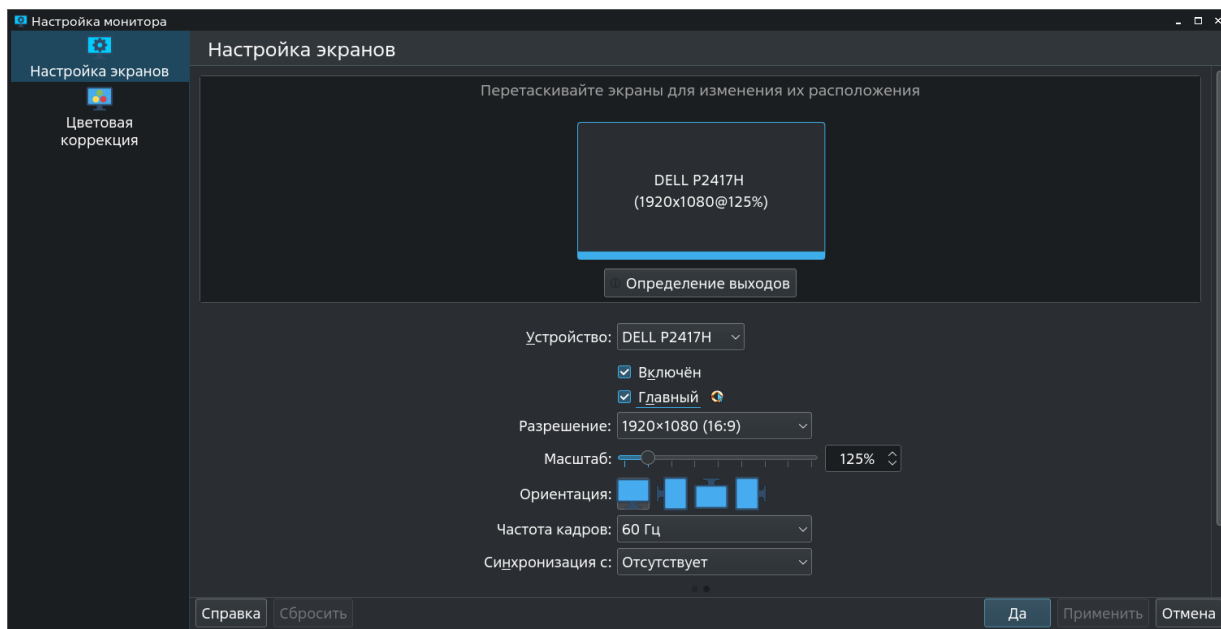
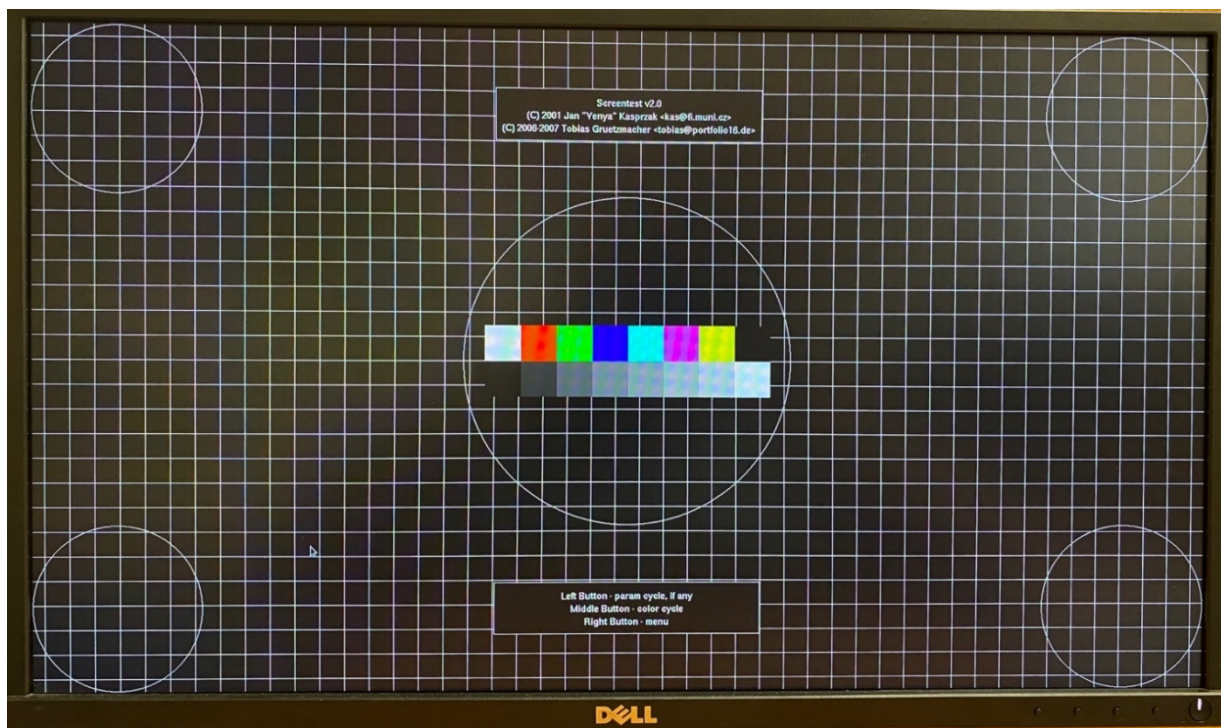
8. РЕЗУЛЬТАТЫ ТЕСТИРОВАНИЯ

№ ТС	Описание проверки	Результат	Примечание
1	Проверка работоспособности внешнего монитора и встроенного порта HDMi	Выполнено успешно	
2	Проверка работоспособности встроенных USB – интерфейсов	Выполнено успешно	
3	Проверка (тест) на производительность встроенных USB – интерфейсов	Выполнено успешно	
4	Проверка работоспособности аудио-выхода mini-jack (3,5)	Выполнено успешно	
5	Проверка работоспособности аудио-динамиков	Выполнено успешно	
6	Проверка работоспособности микрофона	Выполнено успешно	
7	Проверка работоспособности встроенного Bluetooth модуля	Выполнено успешно	
8	Проверка работоспособности беспроводного сетевого интерфейса	Выполнено успешно	
9	Проверка (тест) на производительность беспроводного сетевого интерфейса	Выполнено успешно	Загрузка из сети 42 мбит/сек
	Загрузка в сеть 93 мбит/сек		
10	Проверка работоспособности проводного сетевого интерфейса	Выполнено успешно	
11	Проверка (тест) на производительность встроенного сетевого интерфейса	Выполнено успешно	Загрузка из сети 62 мбит/сек
12	Проверка работоспособности и тест экрана ноутбука	Выполнено успешно	
13	Проверка работоспособности и тест usb-концентратора (фирменной док-станции ICL)	Выполнено успешно	
14	Проверка (тест) на производительность RAM	Выполнено успешно	ram full bogo ops/s (real time) 187588,59
15	Проверка (тест) на производительность CPU	Выполнено успешно	cpu bogo ops/s (real

№ ТС	Описание проверки	Результат	Примечание
			time) 1449.38
16	Проверка (тест) на производительность GPU	Выполнено успешно	GImark Score: 137
17	Проверка (тест) на производительность SSD/HDD	Выполнено успешно	hdd bogo ops/s (real time) 15664,37
18	Проверка работоспособности web-камеры	Выполнено успешно	
19	Проверка (тест) характеристик web-камеры	Выполнено успешно	

9. ЛИСТИНГ ИСПЫТАНИЙ

9.1 Проверка работоспособности внешнего монитора и встроенного порта HDMI



9.2 Проверка работоспособности встроенных USB – интерфейсов

```
astra@Astra:~$  
astra@Astra:~$ lsusb  
Bus 006 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub  
Bus 005 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub  
Bus 004 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub  
Bus 003 Device 004: ID 5985:214c Acer, Inc  
Bus 003 Device 002: ID 248a:8366 Maxxter Wireless Optical Mouse ACT-MUSW-002  
Bus 003 Device 005: ID 8087:0026 Intel Corp.  
Bus 003 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub  
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub  
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
```

9.3 Проверка (тест) на производительность встроенных USB – интерфейсов

```
astral@astra:~$ lsusb.py
WARNING: Failure to read usb.ids
usb1 1d6b:0002 09 11F [USB 2.00, 480 Mbps, 0mA] (xhci-hcd 0000:00:0d.0) hub
usb2 1d6b:0003 09 11F [USB 3.10, 20000 Mbps, 0mA] (xhci-hcd 0000:00:0d.0) hub
 2-1 2109:0817 09 11F [USB 3.10, 5000 Mbps, 0mA] (VIA Labs, Inc. USB3.0 Hub) hub
 2-1.1 05e3:0749 00 11F [USB 3.20, 5000 Mbps, 896mA] (Generic USB3.0 Card Reader 000000001539)
 2-1.3 2109:0817 09 11F [USB 3.10, 5000 Mbps, 0mA] (VIA Labs, Inc. USB3.0 Hub) hub
 2-1.4 0bda:8153 00 11F [USB 3.00, 5000 Mbps, 288mA] (Realtek USB 10/100/1000 LAN 000001)
usb3 1d6b:0002 09 11F [USB 2.00, 480 Mbps, 0mA] (xhci-hcd 0000:00:14.0) hub
 3-2 248a:8366 00 11F [USB 1.10, 12 Mbps, 50mA] (Telink SVEN Wireless Mouse)
 3-3 2109:2817 09 11F [USB 2.10, 480 Mbps, 0mA] (VIA Labs, Inc. USB2.0 Hub) hub
 3-3.2 14cd:8601 09 11F [USB 2.00, 480 Mbps, 100mA] (USB Device USB 2.0 Hub) hub
 3-3.2.3 0d0c:0014 00 41Fs [USB 1.10, 12 Mbps, 100mA] (C-Media Electronics Inc. USB Audio Device)
 3-3.3 2109:2817 09 11F [USB 2.10, 480 Mbps, 0mA] (VIA Labs, Inc. USB2.0 Hub) hub
 3-3.5 2109:8808 11 11F [USB 2.01, 480 Mbps, 100mA] (VIA Labs, Inc. PD3.0 USB-C Device 0000000000000001)
 3-7 5986:214c ef 21Fs [USB 2.01, 480 Mbps, 500mA] (SunplusIT Inc BisonCam,NB Pro 01.00.00)
 3-10 8087:0026 e0 21Fs [USB 2.01, 12 Mbps, 100mA] ( )
usb4 1d6b:0003 09 11F [USB 3.10, 10000 Mbps, 0mA] (xhci-hcd 0000:00:14.0) hub
usb5 1d6b:0002 09 11F [USB 2.00, 480 Mbps, 0mA] (Linux 5.15.0-33-generic xhci_hcd USB/IP Virtual Host Controller xhci_hcd.0) hub
usb6 1d6b:0003 09 11F [USB 3.00, 5000 Mbps, 0mA] (Linux 5.15.0-33-generic xhci_hcd USB/IP Virtual Host Controller xhci_hcd.0) hub
```

9.4 Проверка работоспособности аудио-выхода mini-jack (3,5)

Аудиовыход работает корректно.

9.5 Проверка работоспособности аудио-динамиков

Внешние микрофоны ноутбука работают.

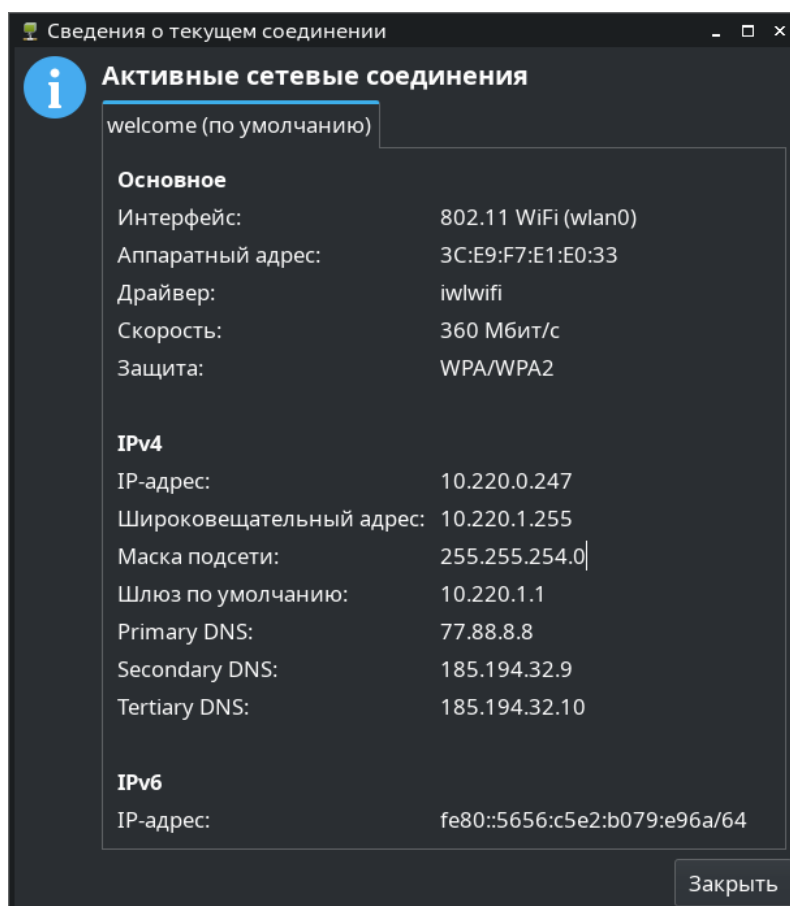
9.6 Проверка работоспособности микрофона

Запись с микрофона воспроизводится.

9.7 Проверка работоспособности встроенного Bluetooth модуля

Звук на гарнитуру передается корректно, соединение стабильное.

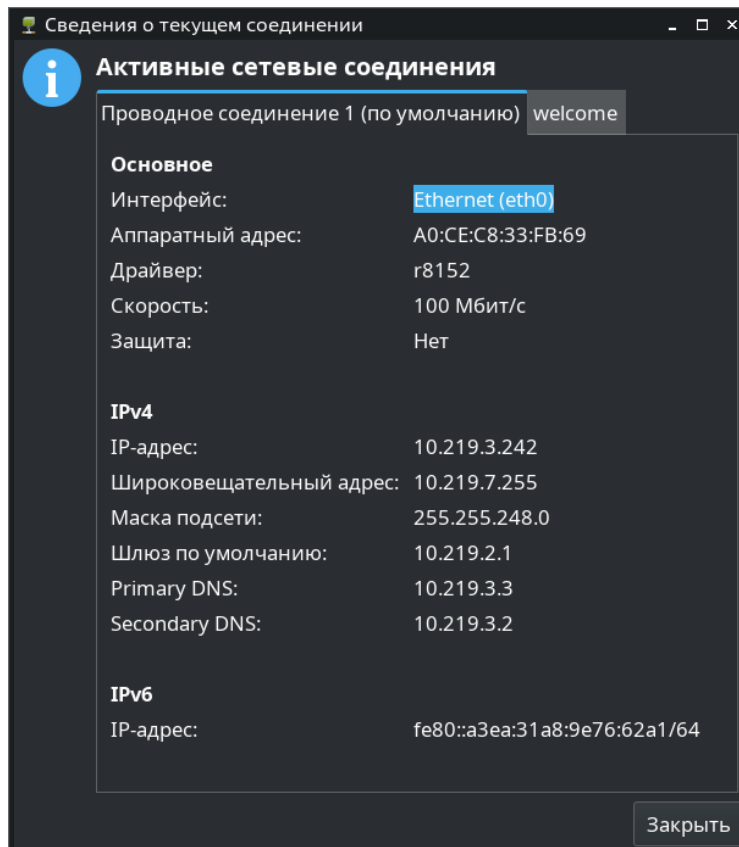
9.8 Проверка работоспособности беспроводного сетевого интерфейса



9.9 Проверка (тест) на производительность беспроводного сетевого интерфейса

```
astra@Astra:~$ speedtest-cli
Retrieving speedtest.net configuration...
Testing from Federal State Institution Research and Development (185.194.32.30)...
Retrieving speedtest.net server list...
Selecting best server based on ping...
Hosted by EXTREME LTD (Moscow) [0.38 km]: 10.036 ms
Testing download speed.....
Download: 42.14 Mbit/s
Testing upload speed.....
Upload: 93.96 Mbit/s
```

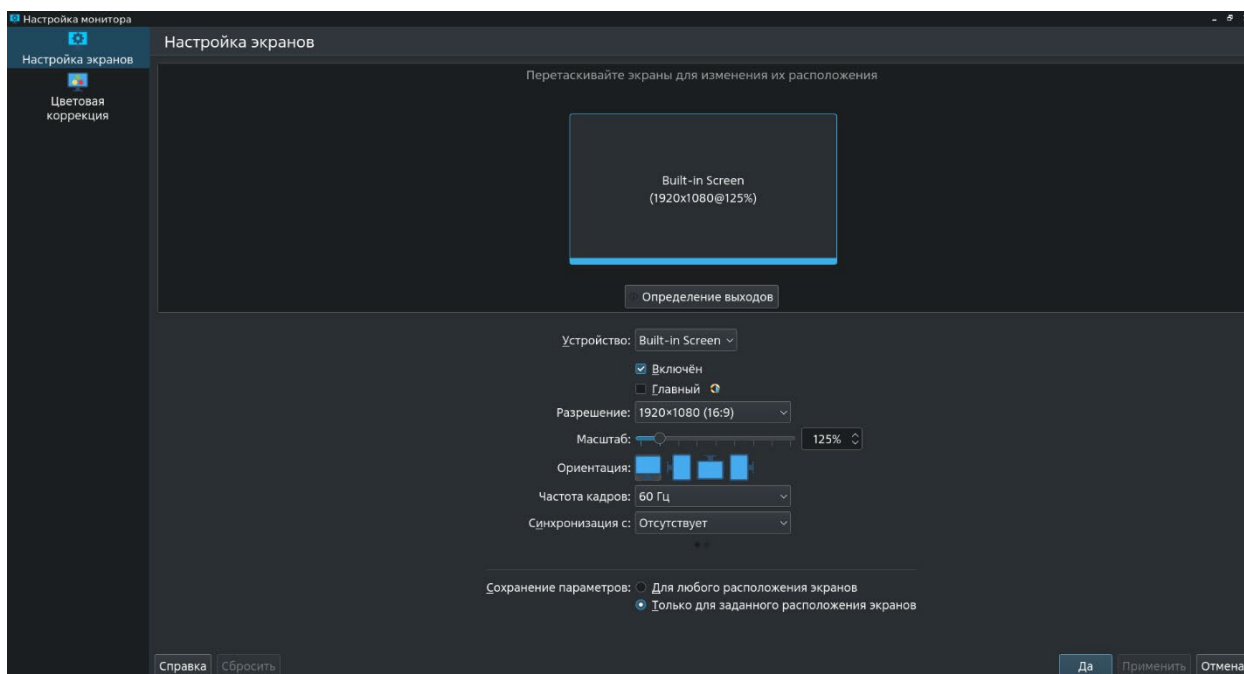
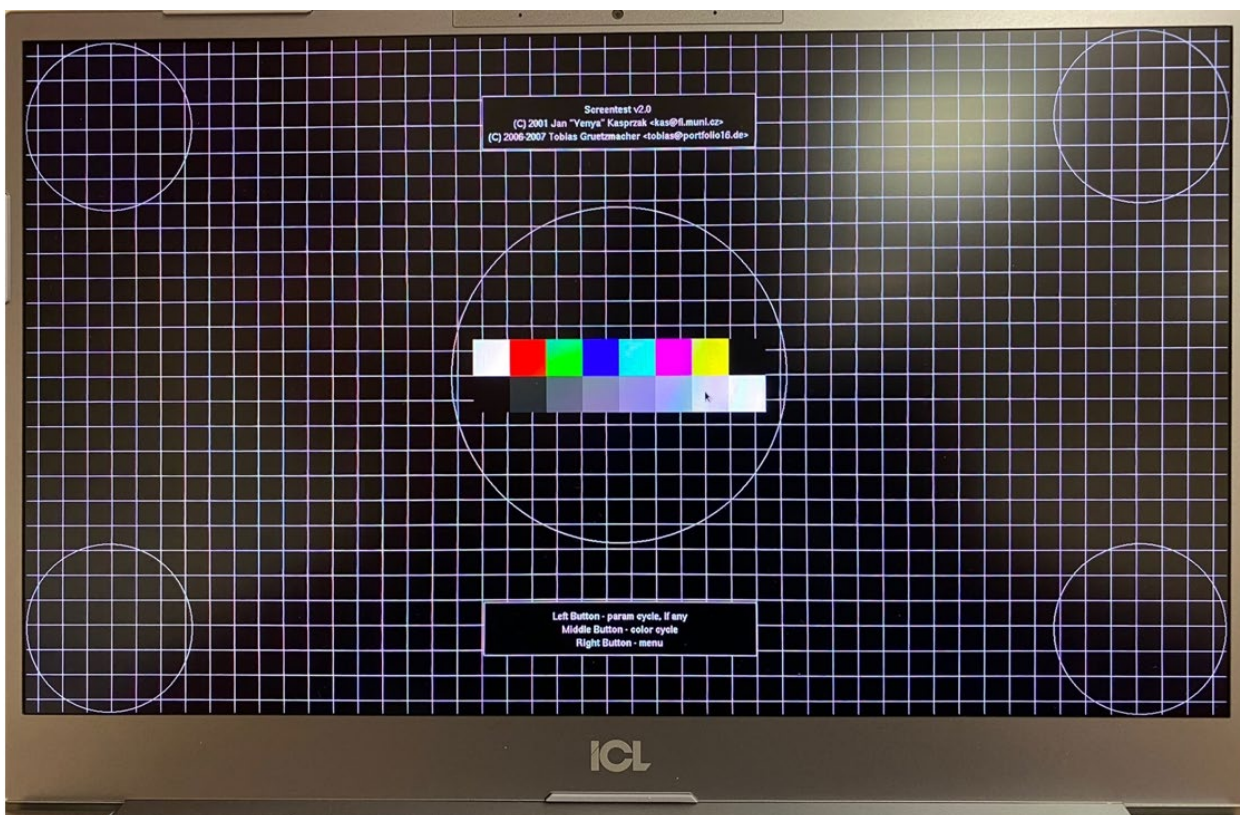
9.10 Проверка работоспособности проводного сетевого интерфейса



9.11 Проверка (тест) на производительность встроенного сетевого интерфейса

```
astra@Astra:~$ speedtest-cli
Retrieving speedtest.net configuration...
Testing from Federal State Institution Research and Development (185.194.32.30)...
Retrieving speedtest.net server list...
Selecting best server based on ping...
Hosted by Rostelecom (Moscow) [0.38 km]: 2.229 ms
Testing download speed.....
Download: 62.77 Mbit/s
Testing upload speed.....
Upload: 93.69 Mbit/s
```

9.12 Проверка работоспособности и тест экрана ноутбука



9.13 Проверка работоспособности и тест usb-концентратора (фирменной док-станции ICL)

```
astra@Astra:~$ lsusb
Bus 006 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 005 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 004 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 003 Device 003: ID 5986:214c Acer, Inc
Bus 003 Device 015: ID 2109:8888 VIA Labs, Inc.
Bus 003 Device 013: ID 2109:2817 VIA Labs, Inc.
Bus 003 Device 014: ID 0d8c:0014 C-Media Electronics, Inc. Audio Adapter (Unitek Y-247A)
Bus 003 Device 012: ID 14cd:8601 Super Top 4-Port hub
Bus 003 Device 011: ID 2109:2817 VIA Labs, Inc.
Bus 003 Device 002: ID 248a:8366 Maxxter Wireless Optical Mouse ACT-MUSW-002
Bus 003 Device 004: ID 8087:0026 Intel Corp.
Bus 003 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 002 Device 009: ID 0bda:8153 Realtek Semiconductor Corp. RTL8153 Gigabit Ethernet Adapter
Bus 002 Device 008: ID 2109:0817 VIA Labs, Inc.
Bus 002 Device 007: ID 05e3:0749 Genesys Logic, Inc.
Bus 002 Device 006: ID 2109:0817 VIA Labs, Inc.
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
```

```
astra@Astra:~$ lsusb -t
/: Bus 06.Port 1: Dev 1, Class=root_hub, Driver=vhci_hcd/8p, 5000M
/: Bus 05.Port 1: Dev 1, Class=root_hub, Driver=vhci_hcd/8p, 480M
/: Bus 04.Port 1: Dev 1, Class=root_hub, Driver=xhci_hcd/4p, 10000M
/: Bus 03.Port 1: Dev 1, Class=root_hub, Driver=xhci_hcd/12p, 480M
   |__ Port 2: Dev 2, If 0, Class=Human Interface Device, Driver=usbhid, 12M
   |__ Port 3: Dev 26, If 0, Class=Hub, Driver=hub/5p, 480M
       |__ Port 5: Dev 30, If 0, Class=, Driver=, 480M
       |__ Port 3: Dev 28, If 0, Class=Hub, Driver=hub/4p, 480M
       |__ Port 2: Dev 27, If 0, Class=Hub, Driver=hub/4p, 480M
           |__ Port 3: Dev 29, If 3, Class=Human Interface Device, Driver=usbhid, 12M
           |__ Port 3: Dev 29, If 1, Class=Audio, Driver=snd-usb-audio, 12M
           |__ Port 3: Dev 29, If 2, Class=Audio, Driver=snd-usb-audio, 12M
           |__ Port 3: Dev 29, If 0, Class=Audio, Driver=snd-usb-audio, 12M
   |__ Port 7: Dev 3, If 0, Class=Video, Driver=uvcdvideo, 480M
   |__ Port 7: Dev 3, If 1, Class=Video, Driver=uvcdvideo, 480M
   |__ Port 10: Dev 4, If 0, Class=Wireless, Driver=btusb, 12M
   |__ Port 10: Dev 4, If 1, Class=Wireless, Driver=btusb, 12M
/: Bus 02.Port 1: Dev 1, Class=root_hub, Driver=xhci_hcd/1p, 20000M
   |__ Port 1: Dev 18, If 0, Class=Hub, Driver=hub/4p, 5000M
       |__ Port 1: Dev 21, If 0, Class=Mass Storage, Driver=usb-storage, 5000M
       |__ Port 3: Dev 19, If 0, Class=Hub, Driver=hub/4p, 5000M
       |__ Port 4: Dev 20, If 0, Class=Vendor Specific Class, Driver=r8152, 5000M
/: Bus 01.Port 1: Dev 1, Class=root_hub, Driver=xhci_hcd/1p, 480M
```

9.14 Проверка (тест) на производительность RAM

```
System Information

PROCESSOR:          Intel Core i5-1235U @ 3.10GHz
  Core Count:      10
  Thread Count:    12
  Extensions:      SSE 4.2 + AVX2 + AVX + RDRAND + FSGSBASE
  Cache Size:      12 MB
  Microcode:       0x421
  Core Family:     Alder Lake
  Scaling Driver:   intel_pstate powersave (EPP: balance_performance)

GRAPHICS:           llvmpipe
  Frequency:       1200MHz
  OpenGL:          4.5 Mesa 20.3.5 (LLVM 11.0.1 256 bits)
  Monitor:         DELL P2417H
  Screen:          3840x1080

MOTHERBOARD:       ICL L140PU
  BIOS Version:    1.07.06TIK
  Chipset:         Intel Device 51ef
  Audio:           Realtek ALC256
  Network:         Intel Device 51f0

MEMORY:            2 x 8 GB DDR4-2667MT/s Samsung P4AAF165WA-BCWDE

DISK:              256GB FOXLINE FLSSD256M00E13TCX5
  File-System:     ext4
  Mount Options:   errors=remount-ro relatime rw
  Disk Scheduler:  NONE
  Disk Details:    Block Size: 4096

OPERATING SYSTEM:  AstraLinux 1.7_x86-64
  Kernel:          5.15.0-33-generic (x86_64)
  Display Server:  X Server
  Compiler:        GCC 8.3.0
  Security:        itlb_multihit: Not affected
```

```
RAMspeed SMP 3.5.0:
pls/ramspeed-1.4.3 [Type: Add - Benchmark: Integer]
Test 2 of 15
Estimated Trial Run Count: 3
Estimated Test Run-Time: 10 Minutes
Estimated Time To Completion: 1 Hour, 55 Minutes [15:11 MSK]
  Started Run 1 @ 13:16:39
  Started Run 2 @ 13:18:11
  Started Run 3 @ 13:19:45

Type: Add - Benchmark: Integer:
  20062.54
  20570.1
  20419.04

Average: 20617.23 MB/s
Deviation: 1.09%

Comparison of 4,730 OpenBenchmarking.org samples since 26 February 2011: median result: 10269 MB/s. Box plot of samples:
[-----*!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!*-----]
                                     This Result (57th Percentile): 20617 ^
0 x 8192: 11556 ^ 8 x 16384 MB DDR4-2400MHz M393A2K43BB1-CT0: 25432 ^ 16 x 32 GB DDR4-2400MT: 33644 ^
4 x 16384 MB DDR4-2133MHz Micron 36ASF2672P2-2G1A2: 24641 ^
8 x 16384 MB DDR3-1600MHz: 23903 ^
8 x 16384 MB 2133MHz: 23586 ^
                                                                                                     4 x 3
```



```
RAMspeed SMP 3.5.0:
pts/ramspeed-1.4.3 [Type: Average - Benchmark: Integer]
Test 6 of 15
Estimated Trial Run Count: 3
Estimated Test Run-Time: 5 Minutes
Estimated Time To Completion: 52 Minutes [14:27 MSK]
  Started Run 1 @ 13:35:56
  Started Run 2 @ 13:37:28
  Started Run 3 @ 13:39:01

Type: Average - Benchmark: Integer:
19422.31
19358.86
19396.34

Average: 19389.84 MB/s
Deviation: 0.19%

Comparison of 5,598 OpenBenchmarking.org samples since 26 February 2011; median result: 17127 MB/s.
[ ]-----#*#*#*#####*#####!#####*#####
This Result (60th Percentile): 19398 ^
6 x 4096 MB 1333MHz Nanya: 15862 ^ 6 x 16384 MB DDR4-2666MHz Micron
4 x 8192 MB DDR3-1600MHz Kingston: 14314 ^
2 x 8192 MB DDR3-1600MHz: 13593 ^
2 x 4096 MB DDR4-2400MT: 13114 ^
```

```
RAMspeed SMP 3.5.0:
pts/ramspeed-1.4.3 [Type: Add - Benchmark: Floating Point]
Test 7 of 15
Estimated Trial Run Count: 3
Estimated Test Run-Time: 5 Minutes
Estimated Time To Completion: 47 Minutes [14:27 MSK]
  Started Run 1 @ 13:40:41
  Started Run 2 @ 13:42:14
  Started Run 3 @ 13:43:47

Type: Add - Benchmark: Floating Point:
20641.86
20725.95
20585.03

Average: 20650.95 MB/s
Deviation: 0.34%

Comparison of 4,353 OpenBenchmarking.org samples since 26 February 2011; median result: 18118 MB/s. Box
[ ]-----#*#*#*#####!#####*#####*#####*#####*---*---*---*
This Result (59th Percentile): 20651 ^
6 x 4096 MB 1333MHz Nanya: 16737 ^ 12 x 8192 MB DDR4-2666MT: 26603 ^
4 x 16384 MB DDR4-2666MT: 26126 ^
8 x 16384 MB DDR4-2400MHz M393A2K43B81-CTD: 25310 ^
12 x 8192 MB DDR3-1600MHz 689911-071: 24531 ^
```

```
RAMspeed SMP 3.5.0:
pts/ramspeed-1.4.3 [Type: Copy - Benchmark: Floating Point]
Test 8 of 15
Estimated Trial Run Count: 3
Estimated Test Run-Time: 5 Minutes
Estimated Time To Completion: 43 Minutes [14:27 MSK]
  Started Run 1 @ 13:45:28
  Started Run 2 @ 13:47:01
  Started Run 3 @ 13:48:35

Type: Copy - Benchmark: Floating Point:
18153.31
17812.64
17574.78

Average: 17846.91 MB/s
Deviation: 1.63%

Comparison of 4,471 OpenBenchmarking.org samples since 26 February 2011; median result: 15404 MB/s. Box plot
[ ]-----#*#*#*#####!#####*#####*#####*#####*---*---*---*
This Result (65th Percentile): 17847 ^
7.875 x 65536 MB DDR4-2666MHz Samsung: 20741 ^ 12 x 32 GB DDR4-3200MT: 29655
8 x 6B DDR4-3200MT: 28420 ^
6 x 32 GB DDR4-2933MT: 27869 ^
6 x 4096 MB DDR4-2666MT: 26574 ^
```

```

RAMspeed SMP 3.5.0:
pts/ramspeed-1.4.3 [Type: Scale - Benchmark: Floating Point]
Test 9 of 15
Estimated Trial Run Count: 3
Estimated Test Run-Time: 5 Minutes
Estimated Time To Completion: 39 Minutes [14:28 MSK]
  Started Run 1 @ 13:50:18
  Started Run 2 @ 13:51:53
  Started Run 3 @ 13:53:29

Type: Scale - Benchmark: Floating Point:
17520.79
17512.8
17510.64

Average: 17514.74 MB/s
Deviation: 0.03%

Comparison of 4,355 OpenBenchmarking.org samples since 26 February 2011; median result: 15413 MB/s.
[ |-----*-----!*****]
          This Result (66th Percentile): 17515 ^
          2 x 8192 MB 1333MHz Kingston: 11689 ^ 12 x 32 GB DDR4-2666MHz HMA84GR7AFR4N-VK: 24306 ^
          8 x 8192 MB DDR4-2400MHz: 23673 ^
          4 x 16384 MB DDR3-1866MT: 23020 ^
          2 x 8192 MB DDR4-3600MT: 22556 ^

```

```

RAMspeed SMP 3.5.0:
pts/ramspeed-1.4.3 [Type: Triad - Benchmark: Floating Point]
Test 10 of 15
Estimated Trial Run Count: 3
Estimated Test Run-Time: 5 Minutes
Estimated Time To Completion: 34 Minutes [14:28 MSK]
  Started Run 1 @ 13:55:11
  Started Run 2 @ 13:56:47
  Started Run 3 @ 13:58:22

Type: Triad - Benchmark: Floating Point:
20136.18
20143.71
20144.56

Average: 20141.48 MB/s
Deviation: 0.02%

Comparison of 4,357 OpenBenchmarking.org samples since 26 February 2011; median result: 18027 MB/s.
[ |-----*-----!*****]
          This Result (58th Percentile): 20141 ^
          2 x 4096 MB DDR3-1333MHz: 12903 ^ 12 x 8192 MB DDR3-1333MHz: 22394 ^ 16 x 32 GB
          8 x 8192 MB DDR4-2133MHz Samsung M393A1G40DB0-CPB: 21794 ^
          8 x 8192 MB DDR3-1333MHz Samsung: 21330 ^
          8 x 2048 MB DDR3-1600MT: 20704 ^ 4 x 81

```

```

RAMspeed SMP 3.5.0:
pts/ramspeed-1.4.3 [Type: Average - Benchmark: Floating Point]
Test 11 of 15
Estimated Trial Run Count: 3
Estimated Test Run-Time: 5 Minutes
Estimated Time To Completion: 30 Minutes [14:29 MSK]
  Started Run 1 @ 14:00:04
  Started Run 2 @ 14:01:40
  Started Run 3 @ 14:03:15

Type: Average - Benchmark: Floating Point:
18835.68
18902.08
18795.11

Average: 18844.29 MB/s
Deviation: 0.29%

Comparison of 5,537 OpenBenchmarking.org samples since 26 February 2011; median result: 15955 MB/s.
[ |-----*-----!*****]
          This Result (67th Percentile): 18844 ^
          2 x 4096 MB DDR3 Kingston SL4D316E11D8HE: 14766 ^ 4 x 16384 MB DDR3-1866MT: 23000 ^ 4
          2 x 8192 MB DDR4-2667MT: 22582 ^
          8 x 8192 MB DDR3-1600MHz Kingston: 22191 ^
          16 x 16384 MB DDR3-1866MHz: 21560 ^

```

```

astra@Astra:~$ sudo stress-ng --sequential 0 --class memory --timeout 60s --metrics brief
stress-ng: info: [4787] disabled 'oom-pipe' as it may hang or reboot the machine (enable it w
stress-ng: info: [4787] dispatching hogs: 12 atomic, 12 bad-alloc, 12 bsearch, 12 context,
12 membarrier, 12 memcpy, 12 memfd, 12 memrate, 12 memtrash, 12 mergesort, 12 mincore, 12 nul
ckmmap, 12 str, 12 stream, 12 tlb-shootdown, 12 tmpfs, 12 tree, 12 tsearch, 12 vm, 12 vm-addr,
stress-ng: info: [15839] stress-ng-memrate: write64: 1763.34 MB/sec
stress-ng: info: [15839] stress-ng-memrate: read64: 1625.43 MB/sec
stress-ng: info: [15839] stress-ng-memrate: write32: 1713.22 MB/sec
stress-ng: info: [15839] stress-ng-memrate: read32: 1579.46 MB/sec
stress-ng: info: [15839] stress-ng-memrate: write16: 1706.40 MB/sec
stress-ng: info: [15839] stress-ng-memrate: read16: 1617.85 MB/sec
stress-ng: info: [15839] stress-ng-memrate: write8: 1612.80 MB/sec
stress-ng: info: [15840] stress-ng-memrate: write64: 1768.24 MB/sec
stress-ng: info: [15840] stress-ng-memrate: read64: 1848.06 MB/sec
stress-ng: info: [15840] stress-ng-memrate: write32: 1594.64 MB/sec
stress-ng: info: [15840] stress-ng-memrate: read32: 1622.49 MB/sec
stress-ng: info: [15840] stress-ng-memrate: write16: 1599.29 MB/sec
stress-ng: info: [15840] stress-ng-memrate: read16: 1625.76 MB/sec
stress-ng: info: [15840] stress-ng-memrate: write8: 1564.29 MB/sec
stress-ng: info: [15840] stress-ng-memrate: read8: 1538.57 MB/sec
stress-ng: info: [15837] stress-ng-memrate: write64: 1758.25 MB/sec
stress-ng: info: [15837] stress-ng-memrate: read64: 1635.74 MB/sec
stress-ng: info: [15837] stress-ng-memrate: write32: 1699.53 MB/sec
stress-ng: info: [15837] stress-ng-memrate: read32: 1587.93 MB/sec
stress-ng: info: [15837] stress-ng-memrate: write16: 1697.23 MB/sec
stress-ng: info: [15837] stress-ng-memrate: read16: 1622.93 MB/sec
stress-ng: info: [15837] stress-ng-memrate: write8: 1607.13 MB/sec
stress-ng: info: [15837] stress-ng-memrate: read8: 1462.73 MB/sec
stress-ng: info: [15839] stress-ng-memrate: read8: 1453.53 MB/sec
stress-ng: info: [15844] stress-ng-memrate: write64: 1778.29 MB/sec
stress-ng: info: [15844] stress-ng-memrate: read64: 1684.80 MB/sec
stress-ng: info: [15844] stress-ng-memrate: write32: 1652.00 MB/sec
stress-ng: info: [15844] stress-ng-memrate: read32: 1583.07 MB/sec
stress-ng: info: [15844] stress-ng-memrate: write16: 1707.13 MB/sec
stress-ng: info: [15844] stress-ng-memrate: read16: 1577.48 MB/sec
stress-ng: info: [15844] stress-ng-memrate: write8: 1639.91 MB/sec
stress-ng: info: [15844] stress-ng-memrate: read8: 1472.04 MB/sec
stress-ng: info: [15838] stress-ng-memrate: write64: 4802.30 MB/sec
stress-ng: info: [15838] stress-ng-memrate: read64: 1622.99 MB/sec
stress-ng: info: [15838] stress-ng-memrate: write32: 4341.79 MB/sec
stress-ng: info: [15838] stress-ng-memrate: read32: 1651.91 MB/sec
stress-ng: info: [15838] stress-ng-memrate: write16: 3200.68 MB/sec
stress-ng: info: [15838] stress-ng-memrate: read16: 1532.32 MB/sec

```

```

stress-ng: info: [15853] stress-ng-memrate: read32: 1546.09 MB/sec
stress-ng: info: [15855] stress-ng-memrate: write64: 3985.49 MB/sec
stress-ng: info: [15845] stress-ng-memrate: read32: 1595.73 MB/sec
stress-ng: info: [15853] stress-ng-memrate: write16: 1746.41 MB/sec
stress-ng: info: [15845] stress-ng-memrate: write16: 3174.12 MB/sec
stress-ng: info: [15853] stress-ng-memrate: read16: 1573.48 MB/sec
stress-ng: info: [15855] stress-ng-memrate: read64: 1704.21 MB/sec
stress-ng: info: [15845] stress-ng-memrate: read16: 1612.12 MB/sec
stress-ng: info: [15853] stress-ng-memrate: write8: 1638.76 MB/sec
stress-ng: info: [15855] stress-ng-memrate: write32: 3543.45 MB/sec
stress-ng: info: [15845] stress-ng-memrate: write8: 1807.97 MB/sec
stress-ng: info: [15853] stress-ng-memrate: read8: 1432.01 MB/sec
stress-ng: info: [15855] stress-ng-memrate: read32: 1681.33 MB/sec
stress-ng: info: [15845] stress-ng-memrate: read8: 1405.04 MB/sec
stress-ng: info: [15855] stress-ng-memrate: write16: 2771.19 MB/sec
stress-ng: info: [15855] stress-ng-memrate: read16: 1519.48 MB/sec
stress-ng: info: [15855] stress-ng-memrate: write8: 1720.54 MB/sec
stress-ng: info: [15855] stress-ng-memrate: read8: 1358.81 MB/sec
stress-ng: info: [15863] stress-ng-memthrash: starting 1 thread on each of the 12 stressors on a 12 CPU system
stress-ng: info: [15976] stress-ng- numa: system has 1 of a maximum 8 memory NUMA nodes
stress-ng: fail: [13317] stress-ng-rmap: mkdir './tmp-stress-ng-rmap-13317-0' failed, errno=28 (No space left on device)
stress-ng: fail: [13318] stress-ng-rmap: mkdir './tmp-stress-ng-rmap-13318-1' failed, errno=28 (No space left on device)
stress-ng: fail: [13319] stress-ng-rmap: mkdir './tmp-stress-ng-rmap-13319-2' failed, errno=28 (No space left on device)
stress-ng: fail: [13320] stress-ng-rmap: mkdir './tmp-stress-ng-rmap-13320-3' failed, errno=28 (No space left on device)
stress-ng: fail: [13321] stress-ng-rmap: mkdir './tmp-stress-ng-rmap-13321-4' failed, errno=28 (No space left on device)
stress-ng: fail: [13322] stress-ng-rmap: mkdir './tmp-stress-ng-rmap-13322-5' failed, errno=28 (No space left on device)
stress-ng: fail: [13323] stress-ng-rmap: mkdir './tmp-stress-ng-rmap-13323-6' failed, errno=28 (No space left on device)
stress-ng: fail: [13324] stress-ng-rmap: mkdir './tmp-stress-ng-rmap-13324-7' failed, errno=28 (No space left on device)
stress-ng: fail: [13325] stress-ng-rmap: mkdir './tmp-stress-ng-rmap-13325-8' failed, errno=28 (No space left on device)
stress-ng: fail: [13326] stress-ng-rmap: mkdir './tmp-stress-ng-rmap-13326-9' failed, errno=28 (No space left on device)
stress-ng: error: [4787] process [13317] (stress-ng-rmap) aborted early, out of system resources
stress-ng: error: [4787] process [13318] (stress-ng-rmap) aborted early, out of system resources
stress-ng: error: [4787] process [13319] (stress-ng-rmap) aborted early, out of system resources
stress-ng: error: [4787] process [13320] (stress-ng-rmap) aborted early, out of system resources
stress-ng: error: [4787] process [13321] (stress-ng-rmap) aborted early, out of system resources
stress-ng: error: [4787] process [13322] (stress-ng-rmap) aborted early, out of system resources
stress-ng: error: [4787] process [13323] (stress-ng-rmap) aborted early, out of system resources
stress-ng: fail: [13327] stress-ng-rmap: mkdir './tmp-stress-ng-rmap-13327-10' failed, errno=28 (No space left on device)
stress-ng: error: [4787] process [13324] (stress-ng-rmap) aborted early, out of system resources
stress-ng: error: [4787] process [13325] (stress-ng-rmap) aborted early, out of system resources
stress-ng: error: [4787] process [13326] (stress-ng-rmap) aborted early, out of system resources
stress-ng: fail: [13328] stress-ng-rmap: mkdir './tmp-stress-ng-rmap-13328-11' failed, errno=28 (No space left on device)
stress-ng: error: [4787] process [13327] (stress-ng-rmap) aborted early, out of system resources
stress-ng: error: [4787] process [13328] (stress-ng-rmap) aborted early, out of system resources

```

```

stress-ng: info: [15200] stress-ng-stream: Using CPU cache size of 12288K
stress-ng: info: [15209] stress-ng-stream: memory rate: 1568.65 MB/sec, 627.46 Mflop/sec (instance 9)
stress-ng: info: [15205] stress-ng-stream: memory rate: 2101.00 MB/sec, 840.43 Mflop/sec (instance 5)
stress-ng: info: [15201] stress-ng-stream: memory rate: 2078.22 MB/sec, 831.29 Mflop/sec (instance 1)
stress-ng: info: [15202] stress-ng-stream: memory rate: 1577.05 MB/sec, 630.82 Mflop/sec (instance 2)
stress-ng: info: [15206] stress-ng-stream: memory rate: 1578.38 MB/sec, 631.35 Mflop/sec (instance 6)
stress-ng: info: [15210] stress-ng-stream: memory rate: 1575.74 MB/sec, 630.30 Mflop/sec (instance 10)
stress-ng: info: [15207] stress-ng-stream: memory rate: 1571.05 MB/sec, 628.42 Mflop/sec (instance 7)
stress-ng: info: [15200] stress-ng-stream: memory rate: 1569.00 MB/sec, 627.60 Mflop/sec (instance 0)
stress-ng: info: [15203] stress-ng-stream: memory rate: 1586.92 MB/sec, 634.77 Mflop/sec (instance 3)
stress-ng: info: [15208] stress-ng-stream: memory rate: 1581.02 MB/sec, 632.41 Mflop/sec (instance 8)
stress-ng: info: [15211] stress-ng-stream: memory rate: 2078.03 MB/sec, 831.21 Mflop/sec (instance 11)
stress-ng: info: [15204] stress-ng-stream: memory rate: 2044.14 MB/sec, 817.65 Mflop/sec (instance 4)
stress-ng: info: [20235] stress-ng-zlib: instance 0: compression ratio: 55.47% (1.20 MB/sec)
stress-ng: info: [20239] stress-ng-zlib: instance 4: compression ratio: 56.24% (1.17 MB/sec)
stress-ng: info: [20246] stress-ng-zlib: instance 7: compression ratio: 54.58% (1.20 MB/sec)
stress-ng: info: [20253] stress-ng-zlib: instance 10: compression ratio: 56.78% (1.15 MB/sec)
stress-ng: info: [20236] stress-ng-zlib: instance 1: compression ratio: 53.60% (1.06 MB/sec)
stress-ng: info: [20244] stress-ng-zlib: instance 6: compression ratio: 55.77% (1.32 MB/sec)
stress-ng: info: [20251] stress-ng-zlib: instance 9: compression ratio: 56.33% (1.21 MB/sec)
stress-ng: info: [20248] stress-ng-zlib: instance 8: compression ratio: 55.73% (1.12 MB/sec)
stress-ng: info: [20238] stress-ng-zlib: instance 3: compression ratio: 53.91% (1.10 MB/sec)
stress-ng: info: [20242] stress-ng-zlib: instance 5: compression ratio: 57.60% (1.31 MB/sec)
stress-ng: info: [20255] stress-ng-zlib: instance 11: compression ratio: 56.22% (1.22 MB/sec)
stress-ng: info: [20237] stress-ng-zlib: instance 2: compression ratio: 56.78% (1.08 MB/sec)
stress-ng: info: [4787] successful run completed in 2401.40s (40 mins, 1.40 secs)
stress-ng: info: [4787] stressor      bogo ops real time  usr time  sys time  bogo ops/s  bogo ops/s
stress-ng: info: [4787]                (secs)      (secs)      (secs)      (real time) (usr+sys time)
stress-ng: info: [4787] atomic      7410321      60.00      719.85      0.00      123505.50   10294.26
stress-ng: info: [4787] bad-alloc   720118       60.00      320.66     200.67     12001.90    1301.31
stress-ng: info: [4787] bsearch    139311       60.00      680.00      0.02     2321.77     204.62
stress-ng: info: [4787] context     78848        60.00      17.61      701.19     1314.14     109.69
stress-ng: info: [4787] full       11255259     60.00      35.21      683.16     187588.59   15667.77
stress-ng: info: [4787] heapsort    1611         60.00      719.83      0.00       26.85       2.24
stress-ng: info: [4787] hsearch    1912109      60.00      719.22      0.00     31868.51    2658.59
stress-ng: info: [4787] lockbus    889449481   60.01      719.42      0.24     14821461.85 1235930.14
stress-ng: info: [4787] lsearch    2791         60.00      719.73      0.00       46.52       3.88
stress-ng: info: [4787] malloc     1592230371  60.01      718.70      0.88     26532379.75 2212721.83
stress-ng: info: [4787] matrix     944516       60.00      719.85      0.00     15741.95    1312.10
stress-ng: info: [4787] mcontend   168473       60.01      697.64      1.19     2807.32     241.08
stress-ng: info: [4787] membarrier 17018        60.07      4.02       0.97       203.29     2939.21

```

stress-ng: info: [4787]		(secs)	(secs)	(secs)	(real time)	(usr+sys time)
stress-ng: info: [4787] atomic	7410321	60.00	719.85	0.00	123505.50	10294.26
stress-ng: info: [4787] bad-alloc	720118	60.00	320.66	200.67	12001.90	1301.31
stress-ng: info: [4787] bsearch	139311	60.00	600.00	0.02	2321.77	204.62
stress-ng: info: [4787] context	78848	60.00	17.61	701.19	1314.14	109.69
stress-ng: info: [4787] full	11255259	60.00	35.21	603.16	107508.59	15667.77
stress-ng: info: [4787] heapsort	1611	60.00	719.83	0.00	26.85	2.24
stress-ng: info: [4787] hsearch	1912109	60.00	719.22	0.00	31868.51	2658.59
stress-ng: info: [4787] lockbus	889449481	60.01	719.42	0.24	14821461.85	1235930.14
stress-ng: info: [4787] lsearch	2791	60.00	719.73	0.00	46.52	3.88
stress-ng: info: [4787] malloc	1592230371	60.01	718.70	0.08	26532379.75	2212721.83
stress-ng: info: [4787] matrix	944516	60.00	719.85	0.00	15741.95	1312.10
stress-ng: info: [4787] mcontent	168473	60.01	697.64	1.19	2007.32	241.08
stress-ng: info: [4787] membarrier	17018	60.07	4.82	0.97	283.29	2939.21
stress-ng: info: [4787] memcpy	79138	60.00	719.10	0.00	1318.91	110.05
stress-ng: info: [4787] memfd	17491	60.01	9.10	707.25	291.46	24.42
stress-ng: info: [4787] memrate	607	60.05	716.66	3.55	10.11	0.84
stress-ng: info: [4787] memthrash	10630	60.05	715.52	3.23	310.26	25.92
stress-ng: info: [4787] mergesort	7589	60.00	719.70	0.00	126.48	10.54
stress-ng: info: [4787] mincore	763071	60.00	7.04	712.72	12717.93	1060.17
stress-ng: info: [4787] null	20080661	60.00	16.16	703.44	334679.02	27905.31
stress-ng: info: [4787] numa	9155	60.00	604.51	80.36	152.58	13.21
stress-ng: info: [4787] pipe	39955223	60.00	22.41	697.21	665921.33	55522.67
stress-ng: info: [4787] qsort	4059	60.00	719.83	0.00	67.65	5.64
stress-ng: info: [4787] radixsort	5605	60.00	719.37	0.00	93.42	7.79
stress-ng: info: [4787] remap	39556	60.01	11.06	707.97	659.20	54.95
stress-ng: info: [4787] resources	1123338	60.00	371.94	204.43	18722.27	1711.44
stress-ng: info: [4787] rmap	0	0.00	0.00	0.00	0.00	0.00
stress-ng: info: [4787] stack	256065	60.23	6.63	518.76	4251.27	487.38
stress-ng: info: [4787] stackmap	1648	60.01	4.05	7.67	27.46	140.61
stress-ng: info: [4787] str	10505234	60.00	719.65	0.00	175007.66	14597.70
stress-ng: info: [4787] stream	31330	60.01	717.49	0.47	522.07	43.64
stress-ng: info: [4787] tlb-shootdown	9205	60.00	34.65	647.77	153.41	13.49
stress-ng: info: [4787] tmpfs	428	60.04	132.13	587.70	7.13	0.59
stress-ng: info: [4787] tree	414	60.01	718.02	0.11	6.90	0.58
stress-ng: info: [4787] tsearch	4682	60.05	720.41	0.00	77.97	6.50
stress-ng: info: [4787] vm	3292984	60.00	710.85	7.41	54878.61	4504.67
stress-ng: info: [4787] vm-addr	12	0.02	0.11	0.02	552.50	92.31
stress-ng: info: [4787] vm-rw	221167	60.00	2.31	717.20	3686.02	307.39
stress-ng: info: [4787] vm-segv	1282266	60.00	345.62	247.76	21371.07	2160.95
stress-ng: info: [4787] wcs	6016031	60.00	719.39	0.00	100200.63	8363.00
stress-ng: info: [4787] zero	19899905	60.00	11.05	706.95	331666.27	27604.90
stress-ng: info: [4787] zlib	16046	60.18	720.43	0.18	266.64	22.27

9.15 Проверка (тест) на производительность CPU

```

OpenSSL 3.0:
pts/openssl-3.0.1 [Algorithm: SHA256]
Test 12 of 15
Estimated Trial Run Count: 3
Estimated Test Run-Time: 9 Minutes
Estimated Time To Completion: 25 Minutes [14:29 MSK]
Started Run 1 @ 14:04:58
Started Run 2 @ 14:08:02
Started Run 3 @ 14:11:06

Algorithm: SHA256:
5773425460
5785181790
5703042090

Average: 5754149700 byte/s
Deviation: 0.76%

Comparison of 2,528 OpenBenchmarking.org samples since 26 February 2011; median result: 5074969070 byte/s. Box plot of samples:
[#####]
^ This Result (51st Percentile): 5754149700
  ^ 2 x Intel Xeon Platinum 8380: 58395863534 ^
    ^ 2 x Intel Xeon Platinum 8362: 51438200596 ^
      ^ Intel Xeon Platinum 8380: 2869042685 ^
        ^ 2 x AMD EPYC 9634: 115090419940 ^
          ^ 2 x AMD EPYC 7763: 154508520740 ^
            ^ 2 x AMD EPYC 7713: 132971973944 ^
              ^ 2 x AMD EPYC 7663: 12580060033

```

```
OpenSSL 3.0:
pts/openssl-3.0.1 [Algorithm: RSA4096]
Test 13 of 15
Estimated Trial Run Count: 3
Estimated Test Run-Time: 10 Minutes
Estimated Time To Completion: 17 Minutes [14:30 MSK]
Started Run 1 @ 14:14:17
Started Run 2 @ 14:15:22
Started Run 3 @ 14:16:26

Algorithm: RSA4096:
754.1
754.8
755.6

Average: 754.8 sign/s
Deviation: 0.18%

Comparison of 2,739 OpenBenchmarking.org samples since 26 February 2011; median result: 1136 sign/s. Box plot of samples:
[#####!### #####]-----|-----x-----|
^ This Result (40th Percentile): 755
AMD Ryzen 7 PRO 6850U: 1798
2 x Intel Xeon Platinum 8380: 17729 ^ 2 x AMD EPYC 7663: 22825 ^
2 x Intel Xeon Platinum 8362: 16878
2 x AMD EPYC 7763: 27381 ^
2 x Intel Xeon Platinum 8280: 13624 ^
2 x AMD EPYC 7742: 25159
Intel Xeon Platinum 8380: 8518 ^ AMD EPYC 9654: 24633 ^

Algorithm: RSA4096:
49257.7
49218.4
49225.5

Average: 49231.2 verify/s
Deviation: 0.05%

Comparison of 2,789 OpenBenchmarking.org samples since 26 February 2011; median result: 75726 verify/s. Box plot of samples:
[#####!### #####]-----|-----x-----|
^ This Result (48th Percentile): 49231
AMD Ryzen 7 PRO 6850U: 114816
2 x Intel Xeon Platinum 8380: 1189929 ^
2 x AMD EPYC 7742: 1634587 ^
2 x Intel Xeon Platinum 8362: 1066573 ^
2 x AMD EPYC 7663: 1488884 ^
2 x Intel Xeon Platinum 8280: 908876 ^
AMD EPYC 9634: 1369717 ^
```

```
root@Astra:~# stress-ng --cpu 10 --cpu-method matrixprod --metrics --timeout 80s
stress-ng: info: [2405] dispatching hogs: 10 cpu
stress-ng: info: [2405] successful run completed in 80.01s (1 min, 20.01 secs)
stress-ng: info: [2405] stressor          bogo ops real time  usr time  sys time   bogo ops/s   bogo ops/s
stress-ng: info: [2405]                    (secs)   (secs)   (secs) (real time) (usr+sys time)
stress-ng: info: [2405] cpu                115957    80.00    799.98    0.00      1449.38      144.95
```

9.16 Проверка (тест) на производительность GPU

```
astra@Astra:~$ glmark2 -s 1920x1080
** GLX does not support GLX_EXT_swap_control or GLX_MESA_swap_control!
** Failed to set swap interval. Results may be bounded above by refresh rate.
=====
    glmark2 2021.12
=====
    OpenGL Information
    GL_VENDOR:      Mesa/X.org
    GL_RENDERER:    llvmpipe (LLVM 11.0.1, 256 bits)
    GL_VERSION:     3.1 Mesa 20.3.5
    Surface Config: buf=32 r=8 g=8 b=8 a=8 depth=32 stencil=0
    Surface Size:   1920x1080 windowed
=====
** GLX does not support GLX_EXT_swap_control or GLX_MESA_swap_control!
** Failed to set swap interval. Results may be bounded above by refresh rate.
[build] use-vbo=false: FPS: 172 FrameTime: 5.814 ms
** GLX does not support GLX_EXT_swap_control or GLX_MESA_swap_control!
** Failed to set swap interval. Results may be bounded above by refresh rate.
[build] use-vbo=true: FPS: 173 FrameTime: 5.780 ms
** GLX does not support GLX_EXT_swap_control or GLX_MESA_swap_control!
** Failed to set swap interval. Results may be bounded above by refresh rate.
[texture] texture-filter=nearest: FPS: 188 FrameTime: 5.319 ms
** GLX does not support GLX_EXT_swap_control or GLX_MESA_swap_control!
** Failed to set swap interval. Results may be bounded above by refresh rate.
[texture] texture-filter=linear: FPS: 184 FrameTime: 5.435 ms
** GLX does not support GLX_EXT_swap_control or GLX_MESA_swap_control!
** Failed to set swap interval. Results may be bounded above by refresh rate.
[texture] texture-filter=mipmap: FPS: 182 FrameTime: 5.495 ms
** GLX does not support GLX_EXT_swap_control or GLX_MESA_swap_control!
** Failed to set swap interval. Results may be bounded above by refresh rate.
[shading] shading=gouraud: FPS: 159 FrameTime: 6.289 ms
** GLX does not support GLX_EXT_swap_control or GLX_MESA_swap_control!
** Failed to set swap interval. Results may be bounded above by refresh rate.
[shading] shading=blinn-phong-inf: FPS: 151 FrameTime: 6.623 ms
** GLX does not support GLX_EXT_swap_control or GLX_MESA_swap_control!
** Failed to set swap interval. Results may be bounded above by refresh rate.
```

```

** Failed to set swap interval. Results may be bounded above by refresh rate.
[terrain] <default>: FPS: 7 FrameTime: 142.857 ms
** GLX does not support GLX_EXT_swap_control or GLX_MESA_swap_control!
** Failed to set swap interval. Results may be bounded above by refresh rate.
[shadow] <default>: FPS: 88 FrameTime: 11.364 ms
** GLX does not support GLX_EXT_swap_control or GLX_MESA_swap_control!
** Failed to set swap interval. Results may be bounded above by refresh rate.
[refract] <default>: FPS: 21 FrameTime: 47.619 ms
** GLX does not support GLX_EXT_swap_control or GLX_MESA_swap_control!
** Failed to set swap interval. Results may be bounded above by refresh rate.
[conditionals] fragment-steps=0:vertex-steps=0: FPS: 167 FrameTime: 5.988 ms
** GLX does not support GLX_EXT_swap_control or GLX_MESA_swap_control!
** Failed to set swap interval. Results may be bounded above by refresh rate.
[conditionals] fragment-steps=5:vertex-steps=0: FPS: 160 FrameTime: 6.250 ms
** GLX does not support GLX_EXT_swap_control or GLX_MESA_swap_control!
** Failed to set swap interval. Results may be bounded above by refresh rate.
[conditionals] fragment-steps=0:vertex-steps=5: FPS: 167 FrameTime: 5.988 ms
** GLX does not support GLX_EXT_swap_control or GLX_MESA_swap_control!
** Failed to set swap interval. Results may be bounded above by refresh rate.
[function] fragment-complexity=low:fragment-steps=5: FPS: 164 FrameTime: 6.098 ms
** GLX does not support GLX_EXT_swap_control or GLX_MESA_swap_control!
** Failed to set swap interval. Results may be bounded above by refresh rate.
[function] fragment-complexity=medium:fragment-steps=5: FPS: 156 FrameTime: 6.410 ms
** GLX does not support GLX_EXT_swap_control or GLX_MESA_swap_control!
** Failed to set swap interval. Results may be bounded above by refresh rate.
[loop] fragment-loop=false:fragment-steps=5:vertex-steps=5: FPS: 165 FrameTime: 6.061 ms
** GLX does not support GLX_EXT_swap_control or GLX_MESA_swap_control!
** Failed to set swap interval. Results may be bounded above by refresh rate.
[loop] fragment-steps=5:fragment-uniform=false:vertex-steps=5: FPS: 165 FrameTime: 6.061 ms
** GLX does not support GLX_EXT_swap_control or GLX_MESA_swap_control!
** Failed to set swap interval. Results may be bounded above by refresh rate.
[loop] fragment-steps=5:fragment-uniform=true:vertex-steps=5: FPS: 157 FrameTime: 6.369 ms
=====
                               glmark2 Score: 137
=====

```

9.17 Проверка (тест) на производительность SSD/HDD

```

astra@Astra:~$ sudo stress-ng --sequential 0 --class io --timeout 60s --metrics-brief
stress-ng: info: [32151] dispatching hogs: 12 aio, 12 aiol, 12 hdd, 12 rawdev, 12 readahead, 12 revio, 12 seek, 12 sync-file
stress-ng: info: [1251] stress-ng-revio: average number of extents 88146.01
stress-ng: info: [1244] stress-ng-revio: average number of extents 88160.00
stress-ng: info: [1252] stress-ng-revio: average number of extents 88199.01
stress-ng: info: [1245] stress-ng-revio: average number of extents 88216.94
stress-ng: info: [1248] stress-ng-revio: average number of extents 88228.08
stress-ng: info: [1250] stress-ng-revio: average number of extents 88339.72
stress-ng: info: [1249] stress-ng-revio: average number of extents 88273.61
stress-ng: info: [1253] stress-ng-revio: average number of extents 88261.93
stress-ng: info: [1254] stress-ng-revio: average number of extents 88279.63
stress-ng: info: [1246] stress-ng-revio: average number of extents 88317.38
stress-ng: info: [1255] stress-ng-revio: average number of extents 88299.56
stress-ng: info: [1247] stress-ng-revio: average number of extents 88340.22
stress-ng: info: [32151] successful run completed in 496.08s (8 mins, 16.08 secs)
stress-ng: info: [32151] stressor      bogo ops real time  usr time  sys time  bogo ops/s  bogo ops/s
stress-ng: info: [32151]                (secs)      (secs)      (secs)      (real time) (usr+sys time)
stress-ng: info: [32151] aio          45888      60.00      0.20      2.30      764.79      18355.20
stress-ng: info: [32151] aiol       273388     60.08      79.21     161.13     4550.52     1137.51
stress-ng: info: [32151] hdd       1120120    71.51      0.17      38.93     15664.37     28647.57
stress-ng: info: [32151] rawdev    8311502   60.00      2.77      49.79     138525.38    158133.60
stress-ng: info: [32151] readahead 51809475  60.02      8.50      707.37     863230.23    72372.74
stress-ng: info: [32151] revio     41898762  60.01      9.97      702.91     698175.96    58773.93
stress-ng: info: [32151] seek      13203400  60.00      7.66      707.46     220043.93    18463.19
stress-ng: info: [32151] sync-file 19364     60.00      6.49      458.17      322.72      41.67

```



```

nfo: [3338] successful run completed in 2402.66s (40 mins, 2.66 secs)
stress-ng: info: [3338] stressor      bogo ops  real time  usr time  sys time  bogo ops/s  bogo ops/s
stress-ng: info: [3338]                (secs)    (secs)    (secs)    (real time) (usr+sys time)
stress-ng: info: [3338] access          470220    60.00     2.32     705.34    7836.96    664.47
stress-ng: info: [3338] chdir           1160     60.38     2.78     716.19    19.21     1.61
stress-ng: info: [3338] chmod          252030    60.00     1.89     691.03    4200.49    363.72
stress-ng: info: [3338] chown          2416241   60.00     2.82     704.96    40272.38   3413.83
stress-ng: info: [3338] copy-file      42269     60.09     0.46     143.96    703.39    292.68
stress-ng: info: [3338] dentry        5082178   60.09    13.57     614.98    84578.93   8085.56
stress-ng: info: [3338] dir           5505024   60.48    12.91     526.99    91029.70   10196.38
stress-ng: info: [3338] dirdeep        26723    108.22     0.20    1223.42    246.93     21.84
stress-ng: info: [3338] dnotify       578690    60.20     8.27     702.65    9613.06    814.00
stress-ng: info: [3338] dup            17694215  60.00     8.21     709.09    294907.01  24667.80
stress-ng: info: [3338] eventfd      21608145  60.00    30.09     578.39    360135.13  35511.68
stress-ng: info: [3338] fallocate      2052     60.01     2.88     43.40     34.20     44.34
stress-ng: info: [3338] fanotify     38507401  60.02     8.29     706.97    641617.80  53836.93
stress-ng: info: [3338] fcntl        2550596   60.00     9.74     694.15    42509.97    3623.57
stress-ng: info: [3338] fiemap       1166003   60.01     0.95     709.09    19431.64    1642.17
stress-ng: info: [3338] file-ioctl    6205939   60.00     7.14     709.65    103432.15   8657.96
stress-ng: info: [3338] filename     631540    60.67     9.33     699.66    10408.63     890.76
stress-ng: info: [3338] flock          52947553  60.01     8.68     708.88    882334.05   73788.33
stress-ng: info: [3338] fstat         185715    60.00     4.11     699.94    3095.24     263.78
stress-ng: info: [3338] getdent      1407695   60.00     1.91     714.40    23461.58   1965.20
stress-ng: info: [3338] handle       7218744   60.00     5.16     709.60    120312.22  10099.54
stress-ng: info: [3338] inode-flags    4231     60.15     0.77     30.68     70.34     134.53
stress-ng: info: [3338] inotify       3252     60.02     0.60     35.81     54.18     89.32
stress-ng: info: [3338] io            27380    60.01     0.22     6.41     456.26    4129.71
stress-ng: info: [3338] iomix        479980    60.03    23.91     60.55    7995.03    5682.93
stress-ng: info: [3338] ioprio       7944     60.12     2.09     55.27    132.14     138.49
stress-ng: info: [3338] lease        4784308   60.00     5.19     709.55    79738.05   6693.77
stress-ng: info: [3338] link          4585429   60.30     8.32     683.16    76042.96   6631.33
stress-ng: info: [3338] locka        52753530  60.00     9.93     706.94    879216.71  73588.70
stress-ng: info: [3338] lockf        12228843  60.00     6.62     708.87    203812.32  17091.56
stress-ng: info: [3338] lockofd     52476632  60.00    10.20     706.68    874600.64  73201.42
stress-ng: info: [3338] mknod        6476428   60.29    13.96     658.69    107427.35   9628.23
stress-ng: info: [3338] open         16617529  60.25     7.51     691.93    275809.47  23758.33

```

```

stress-ng: info: [3338] copy-file      42269     60.09     0.46     143.96    703.39    292.68
stress-ng: info: [3338] dentry        5082178   60.09    13.57     614.98    84578.93   8085.56
stress-ng: info: [3338] dir           5505024   60.48    12.91     526.99    91029.70   10196.38
stress-ng: info: [3338] dirdeep        26723    108.22     0.20    1223.42    246.93     21.84
stress-ng: info: [3338] dnotify       578690    60.20     8.27     702.65    9613.06    814.00
stress-ng: info: [3338] dup            17694215  60.00     8.21     709.09    294907.01  24667.80
stress-ng: info: [3338] eventfd      21608145  60.00    30.09     578.39    360135.13  35511.68
stress-ng: info: [3338] fallocate      2052     60.01     2.88     43.40     34.20     44.34
stress-ng: info: [3338] fanotify     38507401  60.02     8.29     706.97    641617.80  53836.93
stress-ng: info: [3338] fcntl        2550596   60.00     9.74     694.15    42509.97    3623.57
stress-ng: info: [3338] fiemap       1166003   60.01     0.95     709.09    19431.64    1642.17
stress-ng: info: [3338] file-ioctl    6205939   60.00     7.14     709.65    103432.15   8657.96
stress-ng: info: [3338] filename     631540    60.67     9.33     699.66    10408.63     890.76
stress-ng: info: [3338] flock          52947553  60.01     8.68     708.88    882334.05   73788.33
stress-ng: info: [3338] fstat         185715    60.00     4.11     699.94    3095.24     263.78
stress-ng: info: [3338] getdent      1407695   60.00     1.91     714.40    23461.58   1965.20
stress-ng: info: [3338] handle       7218744   60.00     5.16     709.60    120312.22  10099.54
stress-ng: info: [3338] inode-flags    4231     60.15     0.77     30.68     70.34     134.53
stress-ng: info: [3338] inotify       3252     60.02     0.60     35.81     54.18     89.32
stress-ng: info: [3338] io            27380    60.01     0.22     6.41     456.26    4129.71
stress-ng: info: [3338] iomix        479980    60.03    23.91     60.55    7995.03    5682.93
stress-ng: info: [3338] ioprio       7944     60.12     2.09     55.27    132.14     138.49
stress-ng: info: [3338] lease        4784308   60.00     5.19     709.55    79738.05   6693.77
stress-ng: info: [3338] link          4585429   60.30     8.32     683.16    76042.96   6631.33
stress-ng: info: [3338] locka        52753530  60.00     9.93     706.94    879216.71  73588.70
stress-ng: info: [3338] lockf        12228843  60.00     6.62     708.87    203812.32  17091.56
stress-ng: info: [3338] lockofd     52476632  60.00    10.20     706.68    874600.64  73201.42
stress-ng: info: [3338] mknod        6476428   60.29    13.96     658.69    107427.35   9628.23
stress-ng: info: [3338] open         16617529  60.25     7.51     691.93    275809.47  23758.33
stress-ng: info: [3338] procfs       133263    60.21     5.33     707.57    2213.14     186.93
stress-ng: info: [3338] rename       614011    60.00     4.89    129.40    10233.10    4572.28
stress-ng: info: [3338] symlink     3826017   60.43    10.45     632.25    63310.14    5953.04
stress-ng: info: [3338] sync-file    23916     60.00     6.54     388.33     398.58     60.57
stress-ng: info: [3338] utime       1822393   60.00     2.21     639.26    30373.23    2840.96
stress-ng: info: [3338] xattr       24260     60.01     7.26     415.28     404.28     57.41

```

9.18 Проверка работоспособности web-камеры

Web-камера работает корректно.

9.19 Проверка (тест) характеристик web-камеры

Изображение четкое, размытия отсутствуют.

9.20 Проверка (тест) батареи

```
root@Astra:~# upower -i /org/freedesktop/UPower/devices/battery_BAT0
native-path:      BAT0
vendor:          Notebook
model:           BAT
serial:          0001
power supply:    yes
updated:         Пт 23 гек 2022 16:51:24 (42 seconds ago)
has history:     yes
has statistics:  yes
battery
  present:       yes
  rechargeable:  yes
  state:         discharging
  warning-level: none
  energy:        66,22 Wh
  energy-empty:  0 Wh
  energy-full:   74,7824 Wh
  energy-full-design: 73,92 Wh
  energy-rate:   6,6297 W
  voltage:       8,375 V
  time to empty: 10,0 hours
  percentage:    88%
  capacity:      100%
  technology:    lithium-ion
  icon-name:     'battery-full-symbolic'
History (charge):
1671888092  92,000  unknown
1671887732  93,000  discharging
1671887372  94,000  discharging
1671887132  95,000  discharging
1671887012  0,000   unknown
1671885334  97,000  discharging
1671884854  98,000  discharging
1671884720  100,000 fully-charged
1671884703  98,000  charging
1671884668  100,000 fully-charged
```

9.21 Проверка работоспособности карт-ридера

```
root@Astra:/media/root/0cef4728-a037-42ce-8fc0-89441037f62c# lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
mmcblk0     179:0    0    1,96  0 disk
└─mmcblk0p1 179:1    0    1,96  0 part /media/root/0cef4728-a037-42ce-8fc0-89441037f62c
nvme0n1     259:0    0 238,56  0 disk
├─nvme0n1p1 259:1    0    512M  0 part /boot/efi
├─nvme0n1p2 259:2    0    237G  0 part /
└─nvme0n1p3 259:3    0    977M  0 part [SWAP]
```