

产品高低温测试报告

深圳市深蓝宇科技有限公司

产品类型：整机

产品型号：PCX-9502

样品 试产 量产

测试结果：PASS 结果处理： 改进 改版 小批量

编制 高冬峰 日期 2020/7/15


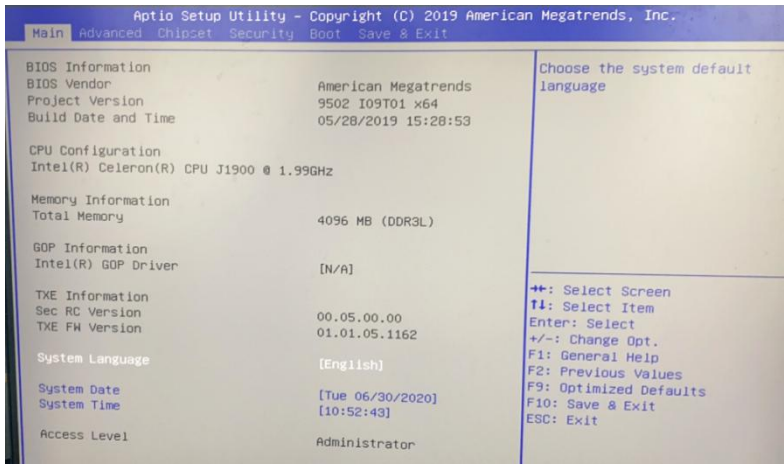
审核 何忠焰 日期 2020/7/20

批准 梁符 日期 2020/7/21

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1. 产品描述

产品型号	PCX-9502	
硬盘	江波龙 64G	
CPU	J1900	
内存	4G	
BIOS	9502I09T01	
验证系统	WIN7x64	产品图

2. 测试环境

- 环境试验箱



- 显示及相关部件



3. 测试要求

3.1 测试项目

项目序号	验证环境	验证项目	验证内容	验证时间
1	低温	温度: -20℃	断电冰冻	12h
2	低温	温度: -20℃	软重启	24h
3	低温	温度: -20℃	非法断电	24h
4	高温	温度: 70℃	BurnIntest100%老化	48h
5	高温	温度: 70℃	软重启	48h
6	高温	温度: 70℃	非法断电	24h

3.2 通过标准

- 串口通讯正常，无乱码
- USB 读写速度无异常

测试项目	结果	备注
接口结构检查	PASS	
一脚、防呆检查	PASS	
USB 2.0 读写测试	PASS	


```

CrystalDiskMark 4 Dev5 (C) 2007-2015 hiyohiyo
Crystal Dew World : http://crystalmark.info/

* MB/s = 1,000,000 bytes/s [SATA/600 = 600,000,000 bytes/s]
* KB = 1000 bytes, KiB = 1024 bytes

Sequential Read (Q=32,T= 1) : 39.217 MB/s
Sequential Write (Q=32,T= 1) : 12.058 MB/s
Random Read 4KiB (Q=32,T= 1) : 4.670 MB/s [ 1140.1 IOPS]
Random Write 4KiB (Q=32,T= 1) : 0.766 MB/s [ 187.0 IOPS]
Sequential Read (Q= 1,T= 1) : 38.273 MB/s
Sequential Write (Q= 1,T= 1) : 10.276 MB/s
Random Read 512KiB (Q= 1,T= 1) : 31.196 MB/s
Random Write 512KiB (Q= 1,T= 1) : 14.890 MB/s
Random Read 4KiB (Q= 1,T= 1) : 4.495 MB/s [ 1097.4 IOPS]
Random Write 4KiB (Q= 1,T= 1) : 0.365 MB/s [ 89.1 IOPS]

Test : 1000 MiB [H: 69.7% (40.2/57.6 GB)] (x5) [1]
    
```

接口结构检查	PASS
一脚、防呆检查	PASS
USB 3.0 读写测试	PASS

CrystalDiskMark 4 Dev5 (C) 2007-2015 hiyohiyo
Crystal Dew World : <http://crystalmark.info/>

* MB/s = 1,000,000 bytes/s [SATA/600 = 600,000,000 bytes/s]
* KB = 1000 bytes, KiB = 1024 bytes

Sequential Read (Q=32,T=1) : 70.150 MB/s
Sequential Write (Q=32,T=1) : 16.568 MB/s
Random Read 4KiB (Q=32,T=1) : 5.167 MB/s [1261.5 IOPS]
Random Write 4KiB (Q=32,T=1) : 0.926 MB/s [226.1 IOPS]
Sequential Read (Q=1,T=1) : 69.734 MB/s
Sequential Write (Q=1,T=1) : 13.947 MB/s
Random Read 512KiB (Q=1,T=1) : 45.827 MB/s
Random Write 512KiB (Q=1,T=1) : 10.276 MB/s
Random Read 4KiB (Q=1,T=1) : 4.773 MB/s [1165.3 IOPS]
Random Write 4KiB (Q=1,T=1) : 1.179 MB/s [287.8 IOPS]

Test : 1000 MiB [H: 69.7% (40.2/57.6 GB)] (x5) [1]

- 网络无丢包
- VGA&HDMI 切换正常

4. 测试结果

4.1 测试数据和记录

S/N	S/N:FBDBCAKGA096		
低温-20℃ (断电冰冻)	开始时间: 2020/6/25 18:25	结束时间: 2020/6/26 9:10	验证时间: 14 小时 45 分
	串口通讯		
	USB2.0 读写速度		

CrystalDiskMark 4 Dev5 (C) 2007-2015 hivohivo
Crystal Dew World : <http://crystalmark.info/>

* MB/s = 1,000,000 bytes/s [SATA/600 = 600,000,000 bytes/s]
* KB = 1000 bytes, KiB = 1024 bytes

Sequential Read (Q=32, T= 1) : 35.025 MB/s
Sequential Write (Q=32, T= 1) : 11.534 MB/s
Random Read 4KiB (Q=32, T= 1) : 5.532 MB/s [1350.6 IOPS]
Random Write 4KiB (Q=32, T= 1) : 1.081 MB/s [263.9 IOPS]
Sequential Read (Q= 1, T= 1) : 34.816 MB/s
Sequential Write (Q= 1, T= 1) : 11.010 MB/s
Random Read 512KiB (Q= 1, T= 1) : 30.252 MB/s
Random Write 512KiB (Q= 1, T= 1) : 12.741 MB/s
Random Read 4KiB (Q= 1, T= 1) : 4.389 MB/s [1071.5 IOPS]
Random Write 4KiB (Q= 1, T= 1) : 0.922 MB/s [225.1 IOPS]
Test : 1000 MiB [G: 62.2% (35.8/57.6 GB)] (x5) [1]

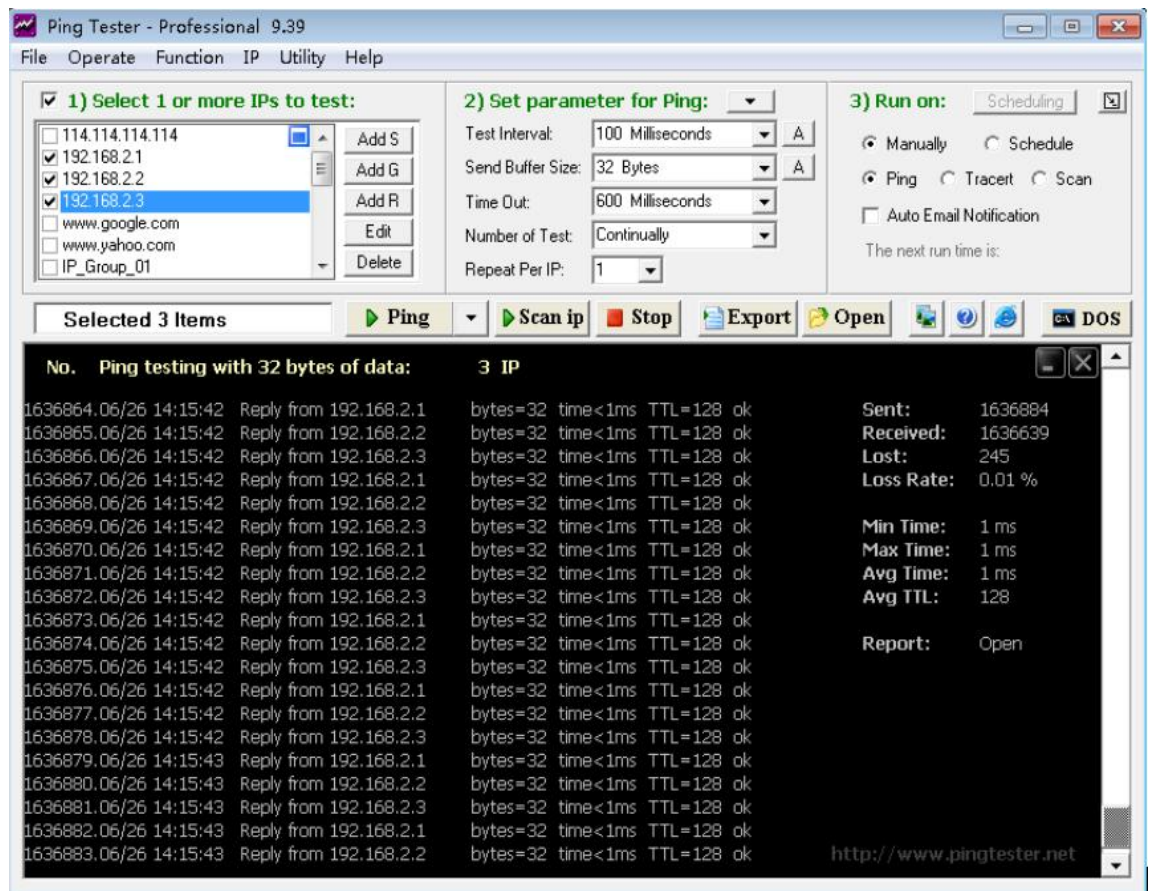
USB3.0 读写速度

CrystalDiskMark 4 Dev5 (C) 2007-2015 hivohivo
Crystal Dew World : <http://crystalmark.info/>

* MB/s = 1,000,000 bytes/s [SATA/600 = 600,000,000 bytes/s]
* KB = 1000 bytes, KiB = 1024 bytes

Sequential Read (Q=32, T= 1) : 90.294 MB/s
Sequential Write (Q=32, T= 1) : 11.744 MB/s
Random Read 4KiB (Q=32, T= 1) : 4.960 MB/s [1210.9 IOPS]
Random Write 4KiB (Q=32, T= 1) : 0.607 MB/s [148.2 IOPS]
Sequential Read (Q= 1, T= 1) : 88.929 MB/s
Sequential Write (Q= 1, T= 1) : 14.995 MB/s
Random Read 512KiB (Q= 1, T= 1) : 49.338 MB/s
Random Write 512KiB (Q= 1, T= 1) : 9.700 MB/s
Random Read 4KiB (Q= 1, T= 1) : 4.745 MB/s [1158.4 IOPS]
Random Write 4KiB (Q= 1, T= 1) : 1.117 MB/s [272.7 IOPS]
Test : 1000 MiB [G: 62.2% (35.8/57.6 GB)] (x5) [1]

网络通讯



VGA&HDMI 切换
测试正常

低温-20℃ (软
重启 2000 次)

开始时间: 2020/6/26 9:20 结束时间: 2020/6/27 17:45 验证时间: 32 小时 25 分

串口通讯



USB2.0 读写速度


```
CrystalDiskMark 4 Dev5 (C) 2007-2015 hiyohiyo
Crystal Dew World : http://crystalmark.info/
-----
* MB/s = 1,000,000 bytes/s [SATA/600 = 600,000,000 bytes/s]
* KB = 1000 bytes, KiB = 1024 bytes

Sequential Read (Q=32, T= 1) : 32.025 MB/s
Sequential Write (Q=32, T= 1) : 13.534 MB/s
Random Read 4KiB (Q=32, T= 1) : 5.532 MB/s [ 1350.6 IOPS]
Random Write 4KiB (Q=32, T= 1) : 1.081 MB/s [ 263.9 IOPS]
Sequential Read (Q= 1, T= 1) : 31.816 MB/s
Sequential Write (Q= 1, T= 1) : 12.010 MB/s
Random Read 512KiB (Q= 1, T= 1) : 31.252 MB/s
Random Write 512KiB (Q= 1, T= 1) : 13.741 MB/s
Random Read 4KiB (Q= 1, T= 1) : 4.489 MB/s [ 1071.5 IOPS]
Random Write 4KiB (Q= 1, T= 1) : 0.922 MB/s [ 225.1 IOPS]
Test : 1000 MiB [G: 62.2% (35.8/57.6 GB)] (x5) [1]
```

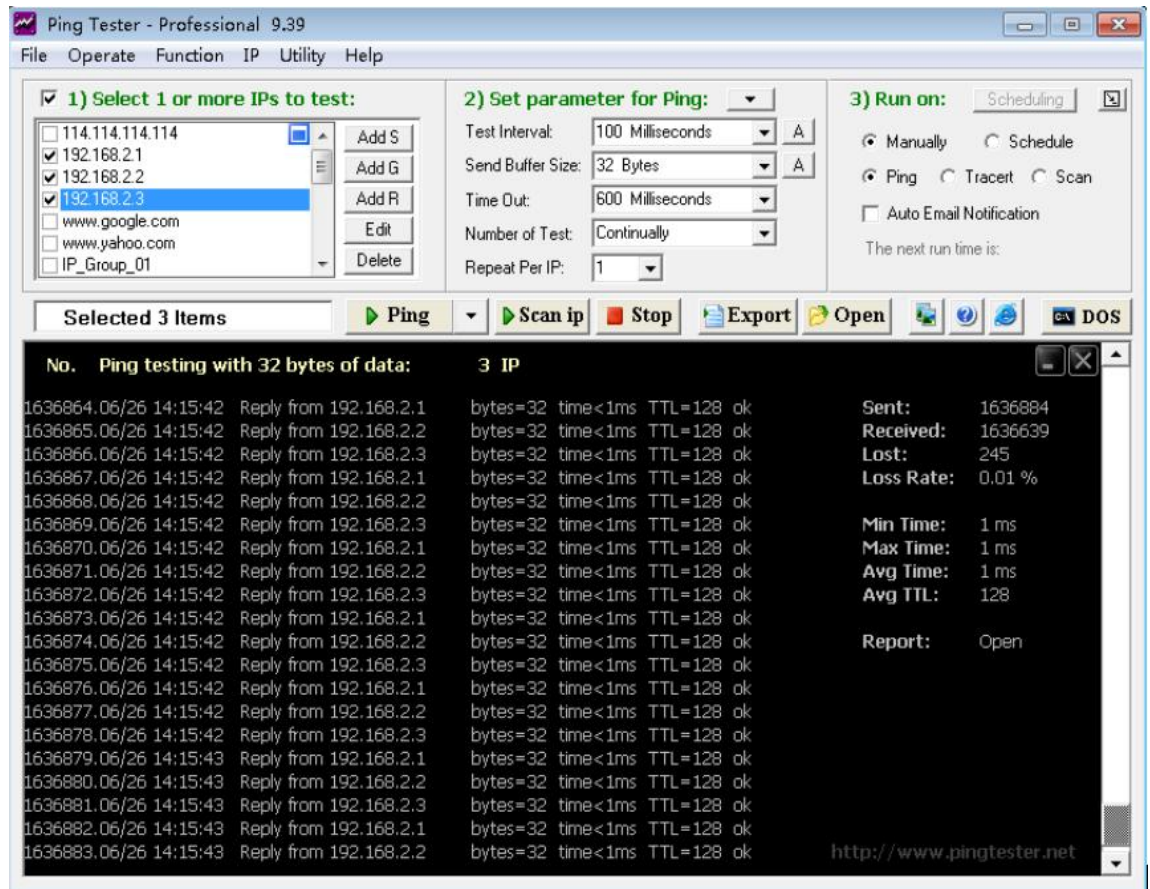
USB3.0 读写速度

```
CrystalDiskMark 4 Dev5 (C) 2007-2015 hiyohiyo
Crystal Dew World : http://crystalmark.info/
-----
* MB/s = 1,000,000 bytes/s [SATA/600 = 600,000,000 bytes/s]
* KB = 1000 bytes, KiB = 1024 bytes

Sequential Read (Q=32, T= 1) : 93.294 MB/s
Sequential Write (Q=32, T= 1) : 14.744 MB/s
Random Read 4KiB (Q=32, T= 1) : 5.960 MB/s [ 1210.9 IOPS]
Random Write 4KiB (Q=32, T= 1) : 0.607 MB/s [ 148.2 IOPS]
Sequential Read (Q= 1, T= 1) : 89.929 MB/s
Sequential Write (Q= 1, T= 1) : 14.995 MB/s
Random Read 512KiB (Q= 1, T= 1) : 49.738 MB/s
Random Write 512KiB (Q= 1, T= 1) : 9.700 MB/s
Random Read 4KiB (Q= 1, T= 1) : 4.745 MB/s [ 1158.4 IOPS]
Random Write 4KiB (Q= 1, T= 1) : 1.117 MB/s [ 272.7 IOPS]

Test : 1000 MiB [G: 62.2% (35.8/57.6 GB)] (x5) [1]
```

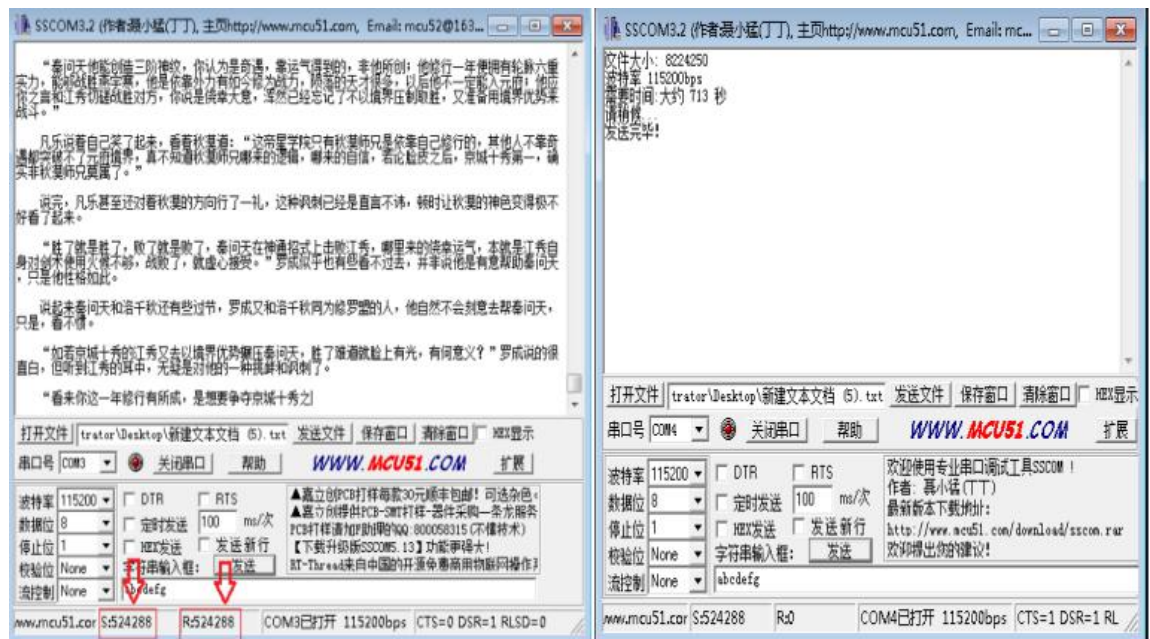
网络通讯



VGA&HDMI 切换
测试正常

高温 70℃ (BurnIntest1 00%老化) 开始时间: 2020/6/27 18:30 结束时间: 2020/6/30 9:10 验证时间: 62 小时

串口通讯



USB2.0 读写速度

```

CrystalDiskMark 4 Dev5 (C) 2007-2015 hiyohiyo
                        Crystal Dew World : http://crystalmark.info/
-----
* MB/s = 1,000,000 bytes/s [SATA/600 = 600,000,000 bytes/s]
* KB = 1000 bytes, KiB = 1024 bytes

    Sequential Read (Q=32, T= 1) :    32.025 MB/s
    Sequential Write (Q=32, T= 1) :    13.534 MB/s
    Random Read 4KiB (Q=32, T= 1) :    5.532 MB/s [ 1350.6 IOPS]
    Random Write 4KiB (Q=32, T= 1) :    1.081 MB/s [ 263.9 IOPS]
    Sequential Read (Q= 1, T= 1) :    31.816 MB/s
    Sequential Write (Q= 1, T= 1) :    12.010 MB/s
    Random Read 512KiB (Q= 1, T= 1) :   31.252 MB/s
    Random Write 512KiB (Q= 1, T= 1) :   13.741 MB/s
    Random Read 4KiB (Q= 1, T= 1) :    4.489 MB/s [ 1071.5 IOPS]
    Random Write 4KiB (Q= 1, T= 1) :    0.922 MB/s [ 225.1 IOPS]
    Test : 1000 MiB [G: 62.2% (35.8/57.6 GB)] (x5) [1]
    
```

USB3.0 读写速度

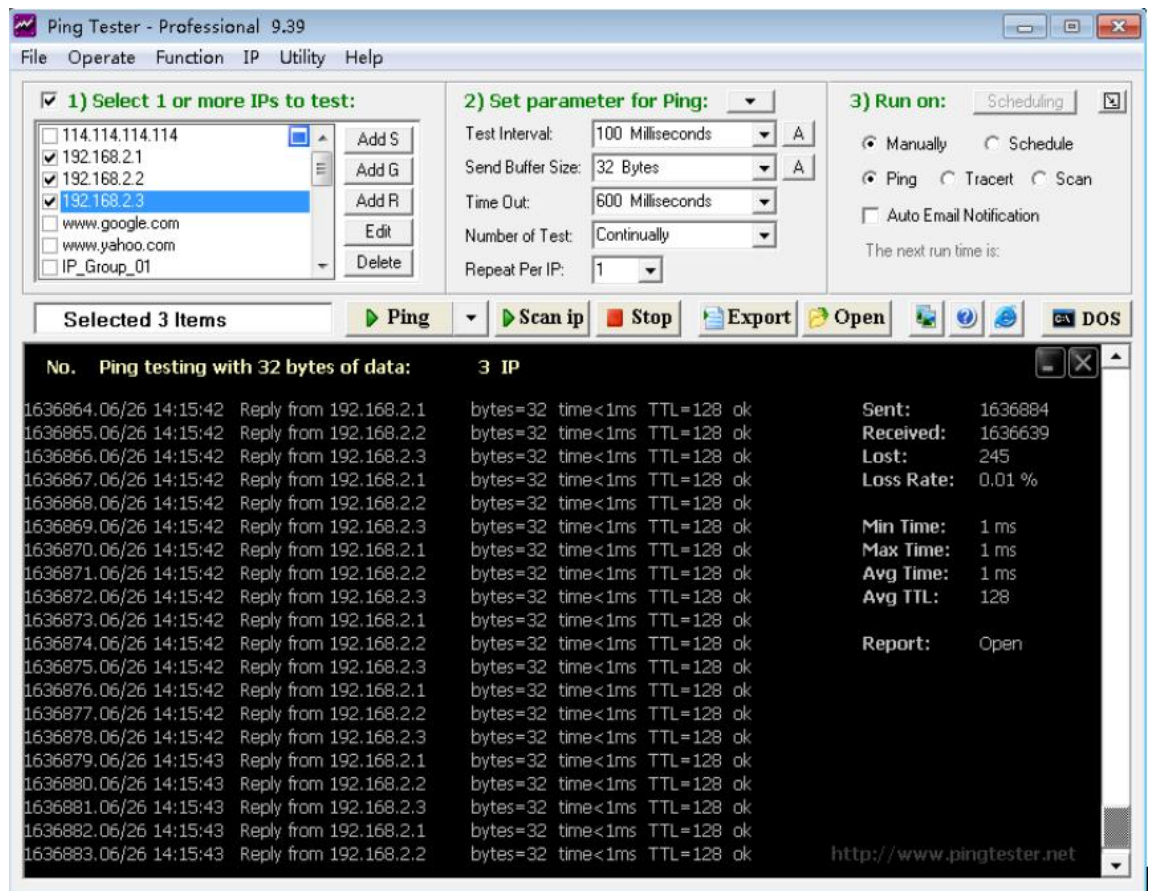
```

CrystalDiskMark 4 Dev5 (C) 2007-2015 hiyohiyo
                        Crystal Dew World : http://crystalmark.info/
-----
* MB/s = 1,000,000 bytes/s [SATA/600 = 600,000,000 bytes/s]
* KB = 1000 bytes, KiB = 1024 bytes

    Sequential Read (Q=32, T= 1) :    93.294 MB/s
    Sequential Write (Q=32, T= 1) :    14.744 MB/s
    Random Read 4KiB (Q=32, T= 1) :    5.960 MB/s [ 1210.9 IOPS]
    Random Write 4KiB (Q=32, T= 1) :    0.607 MB/s [ 148.2 IOPS]
    Sequential Read (Q= 1, T= 1) :    89.929 MB/s
    Sequential Write (Q= 1, T= 1) :    14.995 MB/s
    Random Read 512KiB (Q= 1, T= 1) :   49.738 MB/s
    Random Write 512KiB (Q= 1, T= 1) :    9.700 MB/s
    Random Read 4KiB (Q= 1, T= 1) :    4.745 MB/s [ 1158.4 IOPS]
    Random Write 4KiB (Q= 1, T= 1) :    1.117 MB/s [ 272.7 IOPS]

    Test : 1000 MiB [G: 62.2% (35.8/57.6 GB)] (x5) [1]
    
```

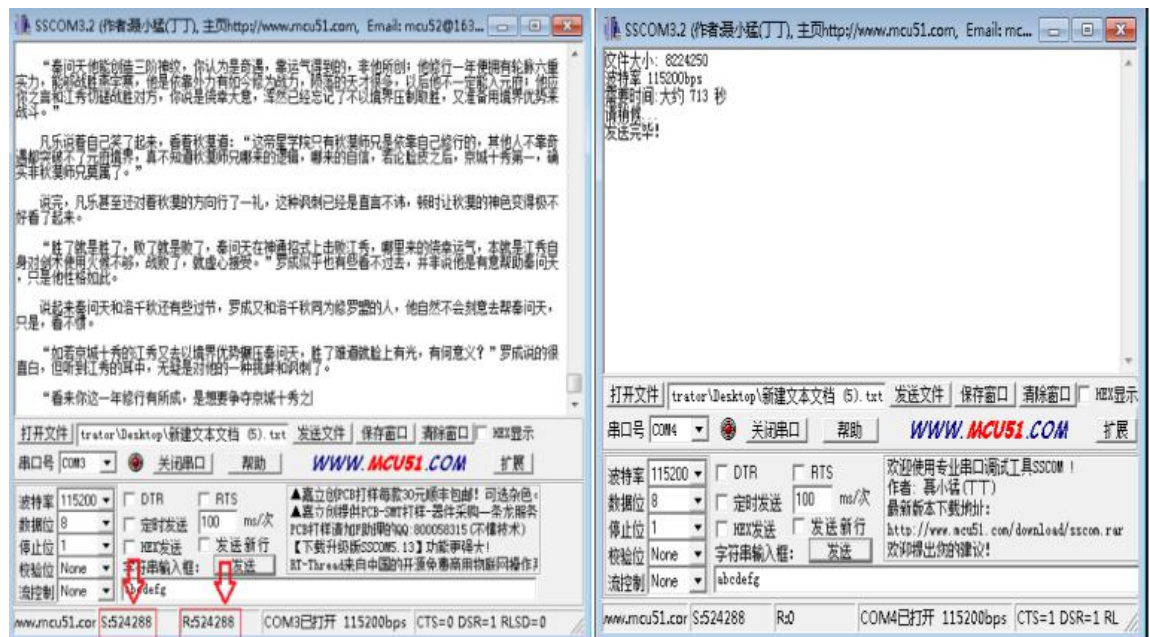
网络通讯



VGA&HDMI 切换:
测试正常

高温 70℃ (软
重启 2000 次)

开始时间: 2020/7/1 9:15 结束时间: 2020/7/3 11:10 验证时间: 49 小时 55 分
串口通讯



USB2.0 读写速度

```
CrystalDiskMark 4 Dev5 (C) 2007-2015 hiyohiyo
Crystal Dew World : http://crystalmark.info/
-----
* MB/s = 1,000,000 bytes/s [SATA/600 = 600,000,000 bytes/s]
* KB = 1000 bytes, KiB = 1024 bytes

Sequential Read (Q=32, T= 1) : 32.025 MB/s
Sequential Write (Q=32, T= 1) : 13.534 MB/s
Random Read 4KiB (Q=32, T= 1) : 5.532 MB/s [ 1350.6 IOPS]
Random Write 4KiB (Q=32, T= 1) : 1.081 MB/s [ 263.9 IOPS]
Sequential Read (Q= 1, T= 1) : 31.816 MB/s
Sequential Write (Q= 1, T= 1) : 12.010 MB/s
Random Read 512KiB (Q= 1, T= 1) : 31.252 MB/s
Random Write 512KiB (Q= 1, T= 1) : 13.741 MB/s
Random Read 4KiB (Q= 1, T= 1) : 4.489 MB/s [ 1071.5 IOPS]
Random Write 4KiB (Q= 1, T= 1) : 0.922 MB/s [ 225.1 IOPS]
Test : 1000 MiB [G: 62.2% (35.8/57.6 GB)] (x5) [1]
```

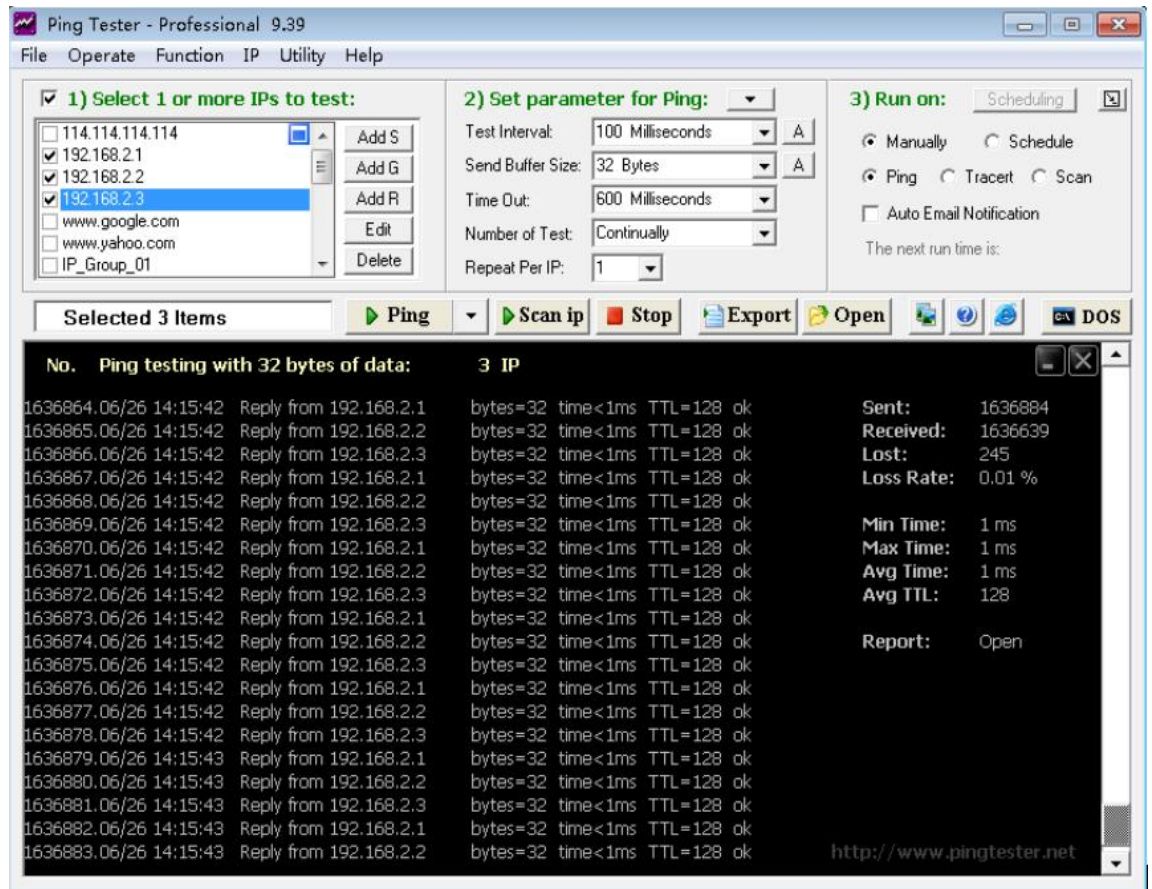
USB3.0 读写速度

```
CrystalDiskMark 4 Dev5 (C) 2007-2015 hiyohiyo
Crystal Dew World : http://crystalmark.info/
-----
* MB/s = 1,000,000 bytes/s [SATA/600 = 600,000,000 bytes/s]
* KB = 1000 bytes, KiB = 1024 bytes

Sequential Read (Q=32, T= 1) : 93.294 MB/s
Sequential Write (Q=32, T= 1) : 14.744 MB/s
Random Read 4KiB (Q=32, T= 1) : 5.960 MB/s [ 1210.9 IOPS]
Random Write 4KiB (Q=32, T= 1) : 0.607 MB/s [ 148.2 IOPS]
Sequential Read (Q= 1, T= 1) : 89.929 MB/s
Sequential Write (Q= 1, T= 1) : 14.995 MB/s
Random Read 512KiB (Q= 1, T= 1) : 49.738 MB/s
Random Write 512KiB (Q= 1, T= 1) : 9.700 MB/s
Random Read 4KiB (Q= 1, T= 1) : 4.745 MB/s [ 1158.4 IOPS]
Random Write 4KiB (Q= 1, T= 1) : 1.117 MB/s [ 272.7 IOPS]

Test : 1000 MiB [G: 62.2% (35.8/57.6 GB)] (x5) [1]
```

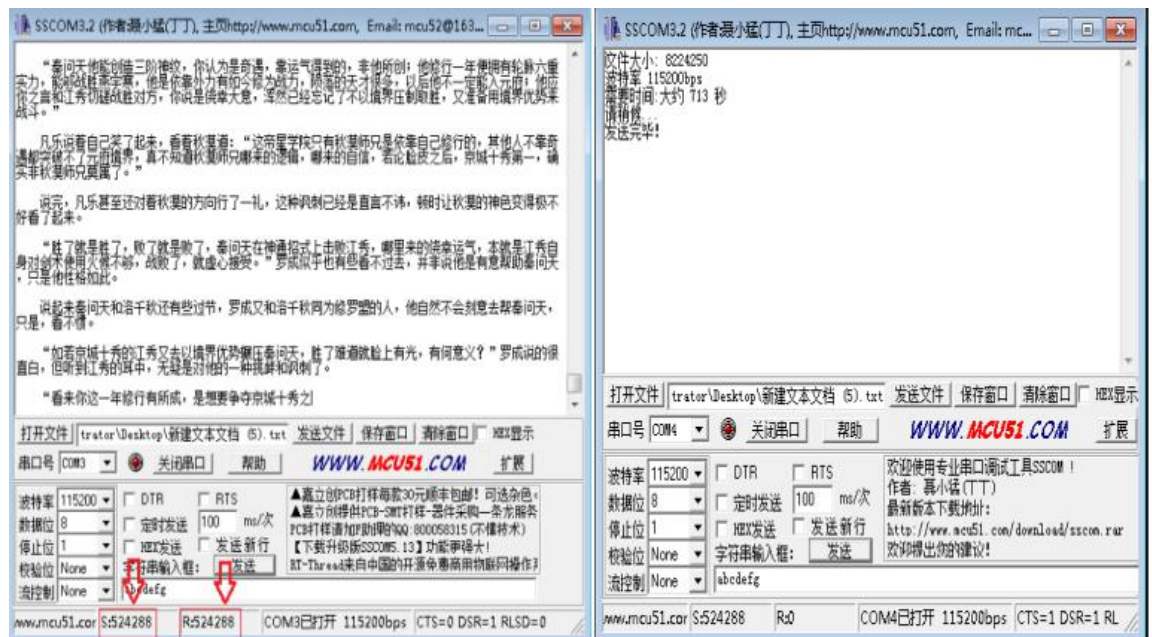
网络通讯



VGA&HDMI 切换
测试正常

高温 70℃ (非
法断电 1000
次)

开始时间: 2020/7/3 11:35 结束时间: 2020/7/4 18:45 验证时间: 31 小时 10 分
串口通讯



USB2.0 读写速度

CrystalDiskMark 4 Dev5 (C) 2007-2015 hiyohiyo
Crystal Dew World : <http://crystalmark.info/>

* MB/s = 1,000,000 bytes/s [SATA/600 = 600,000,000 bytes/s]
* KB = 1000 bytes, KiB = 1024 bytes

Sequential Read (Q=32, T= 1) : 32.025 MB/s
Sequential Write (Q=32, T= 1) : 13.534 MB/s
Random Read 4KiB (Q=32, T= 1) : 5.532 MB/s [1350.6 IOPS]
Random Write 4KiB (Q=32, T= 1) : 1.081 MB/s [263.9 IOPS]
Sequential Read (Q= 1, T= 1) : 31.816 MB/s
Sequential Write (Q= 1, T= 1) : 12.010 MB/s
Random Read 512KiB (Q= 1, T= 1) : 31.252 MB/s
Random Write 512KiB (Q= 1, T= 1) : 13.741 MB/s
Random Read 4KiB (Q= 1, T= 1) : 4.489 MB/s [1071.5 IOPS]
Random Write 4KiB (Q= 1, T= 1) : 0.922 MB/s [225.1 IOPS]
Test : 1000 MiB [G: 62.2% (35.8/57.6 GB)] (x5) [1]

USB3.0 读写速度

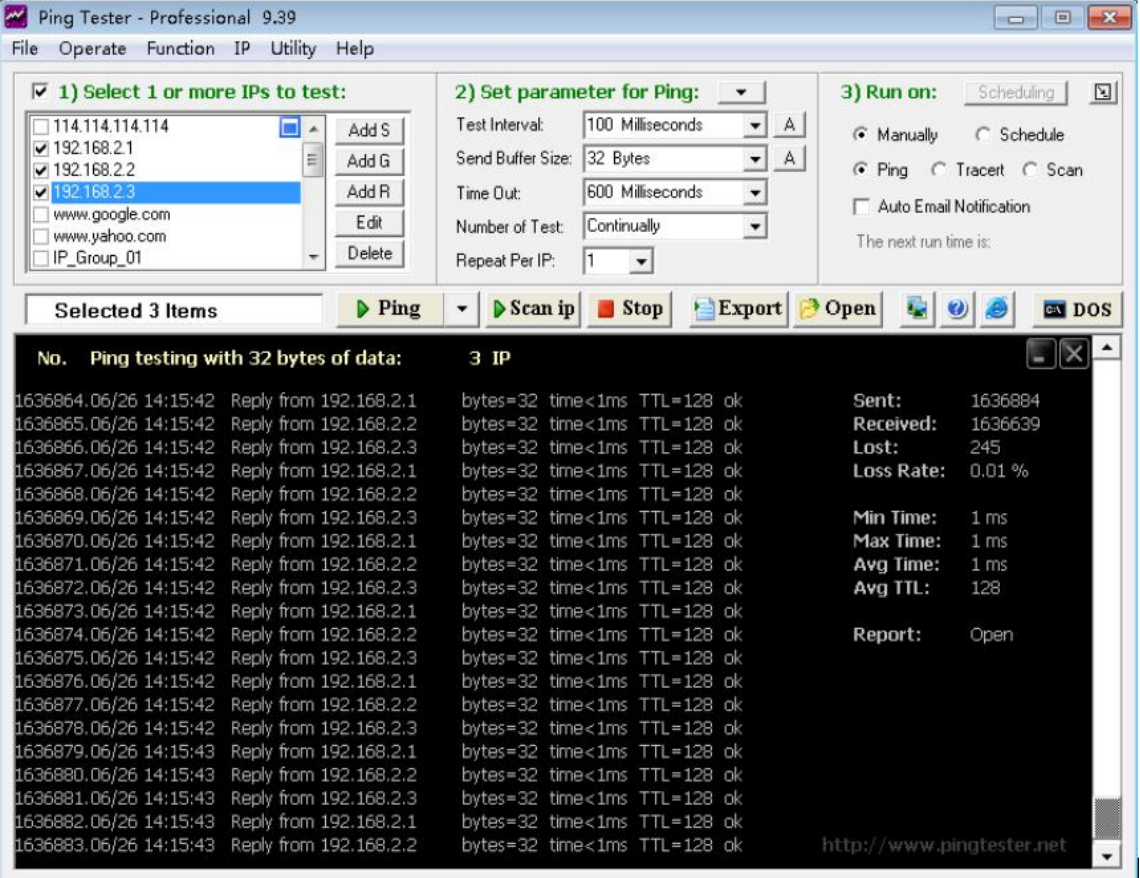
CrystalDiskMark 4 Dev5 (C) 2007-2015 hiyohiyo
Crystal Dew World : <http://crystalmark.info/>

* MB/s = 1,000,000 bytes/s [SATA/600 = 600,000,000 bytes/s]
* KB = 1000 bytes, KiB = 1024 bytes

Sequential Read (Q=32, T= 1) : 93.294 MB/s
Sequential Write (Q=32, T= 1) : 14.744 MB/s
Random Read 4KiB (Q=32, T= 1) : 5.960 MB/s [1210.9 IOPS]
Random Write 4KiB (Q=32, T= 1) : 0.607 MB/s [148.2 IOPS]
Sequential Read (Q= 1, T= 1) : 89.929 MB/s
Sequential Write (Q= 1, T= 1) : 14.995 MB/s
Random Read 512KiB (Q= 1, T= 1) : 49.738 MB/s
Random Write 512KiB (Q= 1, T= 1) : 9.700 MB/s
Random Read 4KiB (Q= 1, T= 1) : 4.745 MB/s [1158.4 IOPS]
Random Write 4KiB (Q= 1, T= 1) : 1.117 MB/s [272.7 IOPS]

Test : 1000 MiB [G: 62.2% (35.8/57.6 GB)] (x5) [1]

网络通讯

	 <p>VGA&HDMI 切换 测试正常</p>
结果	测试验证通过

4.2 结论：从以上验证结果表明，PCX-9502 整机低温-20 度，高温 70 度测试验证无出现任何问题，验证通过。