VPC1040CD

Design Verification Report

Initiated by	Max Chen	**Job Title**	Supervisor	**Originate Date**	2014/9/20
Reviewed by	Simon Lin	**Job Title**	Manager	**Revision**	QQ4-037 Rev.A7
Approved by	Simon Lin	**Job Title**	Manager	**DMR Task Number** 版本	T25597-00 A1

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Product Information

DMR Task Number T25597-00

版本 A1

	Test Unit Information		
Model	VPC1040CD		
Description	10.4" Fanless Multifunctional Touch Panel Computer		
PCB version	EBM-BYT A1		
BIOS version	(LPC129I9)LPC/SPC-1009/1209(I) 1024x768x18 BIOS rev.1.2 Date:09/19/2014		
Product phase	DVT		
Produced by	Max Chen		
Core Chipset	Intel® Bay Trail-M/D		
VGA Chipset	Intel® HD Graphics		
LAN1 chipset	Intel® I210 Gigabit Network Connection	Connector location	CN1
LAN2 chipset	Intel® I210 Gigabit Network Connection	Connector location	CN2
CPU	Onboard Intel® Atom Quad-Core E3845 1.91GHz with integrated chipset		
Audio	Realtek AL892		
Touch	eGalax Touch 5 Wires resistive		
Test O.S.	Windows 8.1		

Product image

Summary

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Item	Descriptions	Result
Product Spec Verification	Specification Check	**Pass**
Function check	I/O Function Test & Check	**Pass**
LED check	LED indicator check (Power / HDD / LED / Others)	**Pass**
BIOS & Display Port check	Product ID,Load BIOS default,Display Port Output Test & Check	**Pass**
Memory Compatibility Test	1.Memtest86 + (3 cycles burn-in) 2.BurnIn Test Pro (15 Min)	**Pass**
Display Compatibility Test	Check Display Clone & Extend mode	**Pass**
Performance	CPU, Memory, IDE, SATA, Graphics, LAN,USB	**Pass**
Power Consumption		**Pass**
AC Power Margin test	AC power source Upper / Middle / Low limit test	**Pass**
DC Power Margin test	DC power source Upper / Middle / Low limit test	**Pass**
Power interruption test	100/200/500/1000ms	**Pass**
Room temperature Power on/off test	Room temperature / 4000times for system level	**Pass**
High Temperature Test	70℃/24hrs IEC 60068-2-2 Test:Bb	**Pass**
Low Temperature Test	-30℃/24hrs IEC 60068-2-1 Test:Ab	**Pass**
Temperature cycle test	-30℃~70℃ RH95% 6 cycles for system level IEC 60068-2-14 Test:N	**Pass**

Power on cycle test	-30℃ / 1000times for system level IEC 60068-2-1 Test:Ab	**Pass**
	70℃ / 1000times for system level IEC 60068-2-2 Test:Bb	**Pass**
Storage test	-30℃ 24hrs 70℃/ RH95% 24hrs IEC 60068-2-3 Test:Ca	**Pass**
Random Vibration Operation	1. PSD: 0.00454G²/Hz , 1.5 Grms 2. operation mode 3. Test Frequency : 5-500Hz 4. Test Axis : X,Y and Z axis 5. 30 minutes per each axis 6. IEC 60068-2-64 Test:Fh 7. Storage : CF or SSD	**Pass**
Sine Vibration test (Non-operation)	1 Test Acceleration : 2G 2 Test frequency : 5~500 Hz 3 Sweep：1 Oct/ per one minute. (logarithmic) 4 Test Axis : X,Y and Z axis 5 Test time :10 min. each axis 6 System condition : Non-Operating mode 7. Reference IEC 60068-2-6 Testing procedures	**Pass**
Package vibration test	1. PSD: 0.026G²/Hz , 2.16 Grms 2. Non-operation mode 3. Test Frequency : 5-500Hz 4. Test Axis : X,Y and Z axis 5. 30 min. per each axis 6. IEC 60068-2-64 Test:Fh	**Pass**
Bump Test	1. Wave form：Half Sine wave 2. Acceleration Rate：10g for operation mode 3. Duration Time：11ms 4. No. of Shock：Z axis 1000 times 5. Test Axis: Z axis 6. Operation mode 7. Reference IEC 60068-2-29 Testing procedures Test Eb : Bump Test	**Pass**
Package drop test	1 One corner , three edges, six faces 2 ISTA 2A, IEC-60068-2-32 Test:Ed	**Pass**
Misuse Test		**Pass**
Short Test		**Pass**
Thermal	1 Max. Loading at Room Temperature & 70℃ for system level 2 Capacitor life time calculation 3 IEC 60068-2-2 Test:Bb	**Pass**

** Notes: Test items and test contents depend on spec.

Product Spec Verification

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Title	VPC1040CD 10.4" Fanless Multifunctional Touch Panel Computer	Check
Features	Fanless Onboard Intel® Atom Quad-Core E3845 1.91GHz with Integrated Chipset	☑
	One 204-pin DDR3L SODIMM Socket Supports Up to 8GB DDR3L 1333 SDRAM	☑
	1 CF, 2 USB, 1 COM	☑
	Dual Intel I210IT Gigabit LAN (Co-lay w/ Intel I211AT)	☑
	Wide Voltage +12V ~ +26V Input, ErP Power	☑
	Backlight Controlled by PWM	☑
	IP65 Compliant Front Panel	☑
	Timer-Power-On	☑
Specifications		
Panel		
LCD size	10.4", 4:3	☑
Display Type	XGA TFT	☑
Resolution	1024 x 768	☑
Pixel pitch	0.0685mm(H) x 0.2055mm(V)	☑
Luminance	500 cd/m²	☑
Contrast ratio	1200	☑
Viewing angle	88(U), 88(D), 88(L), 88(R)	☑
Response time	25 ms	☑
Backlight	LED	☑
Touch Type	5 Wires resistive	☑
Touch Light transmission	80	☑
Touch Interface	USB (EETI)	☑
System		
Board	EBM-BYT	☑
CPU	Onboard Intel® Atom Quad-Core E3845 1.91GHz with Integrated Chipset	☑
System Chipset	----------	
I/O Chip	E/C IT8528E	☑
System Memory	One 204-pin DDR3L SODIMM Socket Supports Up to 8GB DDR3L 1333 SDRAM	☑
SSD	One CompactFlash Type I/ II Socket (Support optional InnoDisk CF-SATA)	☑
Hard Driver Bay	One 2.5" SATA HDD	☑
Watchdog Timer	H/W Reset, 1sec. ~ 65535sec./1sec.step	☑
H/W Status Monitor	Monitoring system temperature, voltage, and cooling fan status. Auto throttling control when CPU overheats	☑
Expansion	1 x Mini PCIe slot, optional supports mSATA	☑
Rear I/O		
Serial Port	1 x RS-232	☑
Ethernet	2 x RJ-45	☑
VGA	N/A	
HDMI	1 x HDMI	☑
Audio port	1 x Line-out	☑
USB	1 x USB 3.0, 1 x USB 2.0 (Optional Extra 2 x USB 2.0)	☑
Speaker	n/a	
Mouse & K/B	n/a	

Display		
Chipset	Intel Bay Trail SoC Integrated Graphics	☑
Display Memory	----------	
Resolution	HDMI 1.4a resolutions up to 1920x1200@ 60 24bpp	☑
Dual Display	LVDS + HDMI	☑
LVDS		
TV-out	----------	
Audio		
AC97 Codec	Realtek ALC892 supports 5.1-CH Audio	
Audio Interface	Connector: Line out	☑
Ethernet		
LAN Chip	Dual Intel I210IT PCI-E Gigabit LAN (Colay w/ Intel I211AT)	☑
Ethernet Interface	10/100/1000 Base-Tx Fast Ethernet compatible	☑
Mechanical & Environmental		
Color	Front Silver & Rear panel Black	☑
Mounting	Wall/Stand/VESA 75 mm x 75 mm	☑
System Power Requirement	+12 V ~ +26 V	☑
Power Adapter	Input: 100~240 V / 50~60 Hz Output: +12 Vdc / 5 A (60W)	☑
ACPI	n/a	
Power Type	AT/ATX	☑
Operating Temp.	-30 to 70°C	☑
Storage Temp.	-30 to 70°C	☑
Operating Humidity	5%~90% relative humidity, non-condensing	☑
Dimensions	259 x 196 x 41 mm	☑
Weight	2.11 Kgs	☑

Function check

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	OS	Note
☐	**Windows XP+SP3**	
☑	**Windows 8.1**	
☐	**Fedora Core 12 (Linux)**	

Subject	Test Item	Pass	Fail	Note
Install OS	Install OS	✓		
Install M/B Driver	Chipset Driver	✓		
	Video Driver	✓		
	Audio Driver	✓		
	LAN Driver	✓		
	Touch Driver	✓		
Screen Printing Verification	Check Location I/O	✓		
	Check Device Number by OS	✓		
External Display Brightness (Graphics Driver)	0%	✓		
	20%	✓		
	40%	✓		
	60%	✓		
	100%	✓		
Display Setting (Graphics Driver)	800*600 32Bit	NA		
	1024*768 16Bit	NA		
	1024*768 32Bit	✓		
	1280*1024 32Bit	NA		
	1600*1200 32Bit	NA		
	1920*1200 32Bit	NA		
	DVI -1	NA		
	DVI -2	NA		
	HDMI	✓		
	CRT	NA		
	Display	NA		
	TV-Out AV port	NA		
	TV-Out S-Terminal	NA		
Display Test : DMW-NEW	Video Obstacle Course	✓		
	Geometry and Distortion	✓		
	Sharpness and Resolution	✓		
	Screen Pixel and Resolution	✓		
	Color and Gray-scale	✓		
	Misscellaneous Effects	✓		
Audio Function	HDMI Audio Test	✓		
	Display Audio Test	NA		
	Line Out Test (Amplifier Speaker discontinue)	✓		
	Line Out Nosie Check (No any voice output)	✓		
	MIC In Test	NA		
	Sound Record Test	NA		
	Player CD Audio (Left /Right speaker check)	✓		

Audio Function (Amplifier Speaker)	Amplifier Speaker Spec Check	NA		
	Amplifier Speaker Volume control (Left /Right speaker check)	NA		
	Amplifier Speaker Noise Check (No any voice output)	NA		
	Amplifier Speaker 30% Volume Test	NA		Must be no noise
	Amplifier Speaker 50% Volume Test	NA		Must be no noise
	Amplifier Speaker 70% Volume Test	NA		Must be no noise
	Amplifier Speaker 100% Volume Test	NA		Must be no noise
	Amplifier Speaker % Volume Quality Check	NA		
LAN Function	Network Setting	✓		
	Transmission Data	✓		
	Internet Test	✓		
	Wake Up By S5	✓		
Touch function	Touch function test	✓		
	Wake up from S3	✓		
ACPI function (S3)	Wake up from USB Keyboard	✓		
	Wake up from USB Mouse	✓		
	Wake up from Power Button	✓		
IR Function	Transmission Data	NA		
USB1 Interface Device	Check USB Keyboard	✓		
	Check USB Mouse	✓		
USB2 Interface Device	Check USB Keyboard	✓		
	Check USB Mouse	✓		
COM Port1 Interface Device	Check Modem	✓		
	Modem Ring By S5	✓		
LPT Port Interface Device	Check Printer	NA		
Warm boot test	Software reset (Passmark Rebooter test)	✓		Under Win8.1+SP1+drivers test at room temperature for 100 duration cycles, Time Out Before Reboot:10-20secs
RTC Timer Wake up from S5	Check DOS Mode & Windows Mode	✓		

LED indicator check

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	OS	Note
☐	Windows XP+SP3	
☑	Windows 8.1	
☐	Fedora Core 12 (Linux)	

7.8.1 Colours of indicator lights

The colours of indicator lights and their meanings shall comply with Table 2.

NOTE IEC 60601-1-8 contains specific requirement for the colour, flashing frequency and DUTY CYCLE of alarm indicator lights.

Dot-matrix and other alphanumeric displays are not considered to be indicator lights.

Table 2 – Colours of indicator lights and their meaning for ME EQUIPMENT

Colour	Meaning
Red	Warning – immediate response by the OPERATOR is required
Yellow	Caution – prompt response by the OPERATOR is required
Green	Ready for use
Any other colour	Meaning other than that of red, yellow or green

Subject	Test Item	Pass	Fail	Note
Power LED indicator (LED indicator must be in the darkroom confirmation)	Power on LED color check	✓		
	Power LED Dark for system off	✓		Can't have Micro-Light lamp
	Power LED Light for system turn on	✓		
	Power LED Flash for standby with ATX power	✓		
HDD LED indicator (LED indicator must be in the darkroom confirmation)	HDD LED Flash for HDD active Read / Write	✓		
	HDD LED Dark for HDD no active	✓		Can't have Micro-Light lamp
Ethernet LED indicator	Data Rate , Off => 10Mbits/sec	✓		
	Data Rate , Green => 100Mbits/sec	✓		
	Data Rate , Orange => 1000Mbits/sec	✓		
	Link / ACT , Off => not established	✓		
	Link / ACT , Yellow On => established	✓		
	Link / ACT , Yellow Blinking => activity	✓		

BIOS & Display Port check

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BIOS Version	(LPC129I9)LPC/SPC-1009/1209(I) 1024x768x18 BIOS rev.1.2 Date:09/19/2014	

Subject	Test Item	Pass	Fail	Note
BIOS Boot System Product ID	(LPC129I9)LPC/SPC-1009/1209(I) 1024x768x18 BIOS rev.1.2 Date:09/19/2014	✓		
CPU Temperature	CPU BIOS Data / Meter Measure Data	✓		40 ℃ / 43 ℃
System Temperature	System BIOS Data / Meter Measure Data	✓		38 ℃ / 40 ℃
HDMI Audio	Default Enable	✓		
Backlight PWM Duty Cycle	00% ~ 100%	✓		
Load BIOS default (For System Product Setting)	Panel Resolution	✓		1024x768 18
	Graphics Memory Size	✓		256
	Boot Type	✓		
Single Display Port Output (BIOS / DOS TXT Mode)	VBIOS Default	✓		
	LVDS	✓		
	CRT	NA		
	DVI -1	NA		
	DVI -2	NA		
	HDMI	✓		
	Display port	NA		
	TV-Out AV port	NA		
	TV-Out S-Terminal	NA		
Multi Display Port Output (BIOS / DOS TXT Mode)	VBIOS Default	NA		
	LVDS+CRT	NA		
	LVDS+HDMI	✓		Only have HDMI on DOS Mode
	LVDS+DVI1	NA		
	LVDS+DVI2	NA		
	CRT+LVDS	NA		
	CRT+HDMI	NA		
	CRT+DVI1	NA		
	CRT+DVI2	NA		
	DVI1+LVDS	NA		
	DVI1+HDMI	NA		
	DVI1+CRT	NA		
	DVI1+DVI2	NA		
	DVI2+LVDS	NA		
	DVI2+HDMI	NA		
	DVI2+CRT	NA		
	DVI2+DVI1	NA		

Memory Compatibility Test

DMR Task Number T25597-00

版本 A1

Test Engineer	Max Chen	Date	2014/8/23		Result	Pass

Test Configuration			
Model name	VPC1040CD		
Description	10.4" Fanless Multifunctional Touch Panel Computer		
Hardware PCB version	A1		
BIOS version	LPC129I9.BIN		
CPU Type	Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz)		
Memory type and size	as below		
Backplane	N/A		
Power(or Adapter)	FSP FSP060-DBAE1 12V/5A 60W Adapter		
HDD Model/Spec	PLEXTOR PW64G-5S 64GB 2.5" SSD		
CD-ROM Model/Spec	N/A		
Chipset	Intel® Bay Trail-M/D	Driver Ver	10.0.14
VGA	Intel® HD Graphics	Driver Ver	10.18.10.3925
LAN	Intel® Ethernet Controller I210-iT	Driver Ver	12.8.26.0 (18.7)
Audio	Realtek ALC892	Driver Ver	6.0.1.7083(R273)
Touch	eGalax Touch	Driver Ver	5.12.0.10220
Other	N/A	Driver Ver	N/A
Test program	Memtest86 + (3 cycles burn-in)	Version	V5.1
ACPI Test	S3 / S4	Version	N/A
Backplane	BurnInTest Standard	Version	V7.0
Produced by	Max Chen		

*** Blue item need to burn-in 12 hours**

*** All Test item need to test ACPI status**

SODIMM DDR3L

Brand	Size	Speed	Type	ECC	Vendor PN	S/N	Memory	Result	Note/Issue ID
Transcend	4GB	DDR3L 1600	SODIMM DDR3	N	TS512MSK64W6H-I	B33407-0063	SEC 404 BYK0 K4B4G0846D	Pass	
InnoDisk	2GB	DDR3L 1600	SODIMM DDR3	N	M2A11309050010006WE	M3S0-2GHJCLPC	hynix H5TC2G83EFR	Pass	
	4GB	DDR3L 1600	SODIMM DDR3	N	MOS11309030030002WA	M3S0-4GHSCLPC	hynix H5TC4G83AFR	Pass	
	8GB	DDR3L 1600	SODIMM DDR3	N	MOS11311200040004WA	M3S0-8GHSDLPC	hynix H5TC4G83AFR	Pass	

Display Compatibility Check

DMR Task Number T25597-00

版本 A1

Test Engineer	Max Chen	Date	2014/8/23	Pass	Fail	Limit.
Test Configuration				37	0	0
Item		Description		Description		
Model name	VPC1040CD			DVT		
CPU type	Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz)					
BIOS type	AMI EFI	BIOS version	LPC129I9.BIN			
DRAM type	Transcend DDR3L 1600 4GB TS512MSK64W6H-I					
Power type	FSP FSP060-DBAE1 12V/5A 60W Adapter					
HDD type	PLEXTOR PW64G-5S 64GB 2.5" SSD			Master/Slave		
LAN Driver	Intel® Ethernet Controller I210-iT			Version	12.8.26.0 (18.7)	
VGA Driver	Intel® HD Graphics			Version	10.18.10.3925	
Audio Driver	Realtek ALC892			Version	6.0.1.7083(R273)	
OS type	Windows 8.1			SP version	N/A	
Test program	BurnInTest Standard			Version	V7.0	
Produced by	Max Chen					

LCD Display Full Screen Check (Clone & Extend Mode Check)

Brand and Model	Signal type	Test Item		Result	Note/Issue ID
Acer S235HL	Digital (HDMI)	System power on initial test		Pass	
		Resolution	800x600	Pass	
			1024x768	Pass	
			1280x1024	Pass	
			1600x1200	Pass	
			Max Resolution	Pass	1920 x 1080 (Extend Mode)
ASUS VK246	Digital (HDMI)	System power on initial test		Pass	
		Resolution	800x600	Pass	
			1024x768	Pass	
			1280x1024	Pass	
			1600x1200	Pass	
			Max Resolution	Pass	1920 x 1080 (Extend Mode)
acer A243WA	Digital (HDMI)	System power on initial test		Pass	
		Resolution	800x600	Pass	
			1024x768	Pass	
			1280x1024	Pass	
			1600x1200	Pass	
			Max Resolution	Pass	1920 x 1200 (Extend Mode)

DELL U2410	Digital (HDMI)	System power on initial test		Pass	
		Resolution	800x600	Pass	
			1024x768	Pass	
			1280x1024	Pass	
			1600x1200	Pass	
			Max Resolution	Pass	1920 x 1200 (Extend Mode)
DELL 3008WFP	Digital (HDMI)	System power on initial test		Pass	
		Resolution	800x600	Pass	
			1024x768	Pass	
			1280x1024	Pass	
			1600x1200	Pass	
			Max Resolution	Pass	1920 x 1080 (Extend Mode)

Driver Feature						
Item	**Resolution**	**Comment**	**Test Stage**	**Result**	**Note/Issue ID**	
Rotation	Win 8.1		DVT	Pass		
Color Correction	Win 8.1		DVT	Pass		
Dual display (clone)	Win 8.1		DVT	Pass		
Dual display (Extend)	Win 8.1		DVT	Pass		
Extended mode LVDS + HDMI	LVDS primary		DVT	Pass		
	HDMI primary		DVT	Pass		
2 Display Full Screen Test	LVDS + HDMI		DVT	Pass		

Performance Benchmark

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Test Engineer	Max Chen	Date	2014/8/7	Result	Pass

DUT Testing Configuration Definition		DUT Testing Configuration
CPU type /ID	**Highest CPU Spec.**	Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz)
Memory type	Max. Memory Size	Transcend TS512MSK64W6H DDR3L 1600 4GB
VGA	AGP/PCI/PCI-E VGA interface (Chipset)	Intel® HD Graphics
VGA Memory	Max. shared memory of 256MB or On board memory size	256MB
HDD type	IDE or SATA/SATAII HDD	PLEXTOR PW64G-5S 64GB 2.5" SSD
ODD type	IDE or SATA/SATAII DVD-ROM	NA
Installation Driver	1. INF driver	10.0.14
	2. RAID driver	N/A
	3. VGA driver	10.18.10.3925
	4. Audio driver	6.0.1.7083(R273)
	5. USB2.0 driver	N/A
	6. LAN driver (Chipset)	12.8.26.0 (18.7)
	7. Direct X	Direct X11
O.S.	Windows 8.1 ,1024 × 768 in 32bit colors	

System Performance				
Item	**Comment / (unit)**	**Software**	**E3845**	
CPU	CPU Arithmetic Benchmark-ALU / (GIPS)	SiSoftware Sandra 2011.5.17.47	**23.34**	
	CPU Arithmetic Benchmark-FPU / (GFLOPS)		**18**	
	Procesor Multi-Media Int (Mpixel/s)		**37.45**	
	Procesor Multi-Media Float (Mpixel/s)		**26.71**	
	Multi-Core Efficiency-Inter-Core Bandwidth (GB/sec)		**1.24**	
	Multi-Core Efficiency-Inter-Core Latency (ns) (smaller is better)		**155.6**	
Memory	Memory Bandwidth-Int Buff'd (GB/sec)	SiSoftware Sandra 2011.5.17.47	**5.25**	
	Memory Bandwidth Float Buff'd (GB/sec)		**5.23**	
	Memory Latency (ns) (smaller is better)		**127.1**	
	Speed Factor (smaller is better)		**81**	
Disk (SATA)	Transfer Rate / Average (MB/s)	HD Tune Pro 4.6	**150.4**	
	Access Time (ms)		**0.109**	
	Burst Time (MB/s)		**156.5**	
	CPU Usage (%)		**9.9**	
Graphics	3DMark / (3DMarks)	3DMark 11 / build 105	**P41**	
LAN1	Average (Mbps) (all pairs)	IxChariot 6.7	**513.89**	
	Maximum (Mbps) (all pairs)		**727.28**	
	Minimum (Mbps) (all pairs)		**266.669**	

PCMark 2005	Score	Score
Score	**4393**	
CPU	**3907**	
Memory	**3041**	
Graphic	**1387**	
HDD	**11252**	

Passmark Performance Test Pro (v8.0 Build 1026)	Score	Score
CPU Mark	1173.3	
2D Graphic Mark	163.6	
3D Graphic Mark	152.7	
Memory Mark	481.6	
Disk Mark	466.8	
Passmark Rating(Complete Result)	547.5	

CrystalMark 2008 Test (0.8.96.200)	Score	Score
Mark	114647	
ALU	29049	
FPU	17787	
MEM	41217	
HDD	13953	
GDI	9280	
D2D	3361	

AC Power margin Test

DMR Task Number T25597-00

版本 A1

Test Engineer	Max Chen	Date	2014/8/22	Result	Pass
Test Configuration					
Model name	VPC1040CD				
Description	10.4" Fanless Multifunctional Touch Panel Computer				
Hardware PCB version	EBM-BYT A1				
BIOS version	LPC129I9.BIN				
CPU Type	Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz)				
Memory type and size	Transcend DDR3L 1600 4GB TS512MSK64W6H-I				
Backplane	N/A				
Power(or Adapter)	FSP FSP060-DBAE1 12V/5A 60W Adapter				
HDD Model/Spec	PLEXTOR PW64G-5S 64GB 2.5" SSD				
CD-ROM Model/Spec	N/A				

AC Power margin Test

Item		Voltage					
AC power low limit		90V / 60Hz	100V	-10%	DVT	Pass	
		90V / 50Hz	100V	-10%	DVT	Pass	
AC power middle value		180V / 60Hz	(upper limit + low limit) /2		DVT	Pass	
		180V / 50Hz	(upper limit + low limit) /2		DVT	Pass	
AC power upper limit		264V / 60Hz	240V	+10%	DVT	Pass	
		264V / 50Hz	240V	+10%	DVT	Pass	

1. Adjust AC power source to specified voltage with Upper/Low limit.
2. ON/OFF test 10 cycles (1 minute ON and 1 minute OFF constitute 1 cycle)
3. Turn on the system and startup into the OS Windows 8.1 professional and make the product to maximum loaded condition with running Pass Mark Burn in test program 7.0

DC Power margin Test

DMR Task Number T25597-00

版本 A1

Test Engineer	Max Chen	Date	2014/8/22	Result	Pass
Test Configuration					
Model name	VPC1040CD				
Description	10.4" Fanless Multifunctional Touch Panel Computer				
Hardware PCB version	EBM-BYT A1				
BIOS version	LPC129I9.BIN				
CPU Type	Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz)				
Memory type and size	Transcend DDR3L 1600 4GB TS512MSK64W6H-I				
Backplane	N/A				
Power(or Adapter)	DC power source				
HDD Model/Spec	PLEXTOR PW64G-5S 64GB 2.5" SSD				
CD-ROM Model/Spec	N/A				

Power margin Test

Item		Voltage					
DC power upper limit		27.30V	26V	+5%	DVT	Pass	
DC power middle value		19V	(upper limit + low limit) /2		DVT	Pass	
DC power low limit		11.40V	12V	-5%	DVT	Pass	

1. Adjust DC power source to specified voltage with Upper/Low limit.
2. ON/OFF test 10 cycles (1 minute ON and 1 minute OFF constitute 1 cycle)
3. Turn on the system and startup into the OS Windows 8.1 and make the product to maximum loaded condition with running Pass Mark Burn in test program 7.0

Power Consumption

DMR Task Number T25597-00

版本 A1

Test Engineer	Max Chen	Date	2014/8/22	Result	Pass
Test Configuration					
Item				**Description**	
Model name	VPC1040CD			DVT	
BIOS version	LPC129I9.BIN				
Hardware PCB version	EBM-BYT A1				
CPU type	Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz)				
DRAM type	Transcend DDR3L 1600 4GB TS512MSK64W6H-I				
HDD/ODD Model/Spec	PLEXTOR PW64G-5S 64GB 2.5" SSD			Master/Slave	
Chipset	Intel® Bay Trail-M/D	Driver Ver	10.0.14		
VGA	Intel® HD Graphics	Driver Ver	10.18.10.3925		
LAN	Intel® Ethernet Controller I210-IT	Driver Ver	12.8.26.0 (18.7)		
Audio	Realtek ALC892	Driver Ver	6.0.1.7083(R273)		
Touch	eGalax Touch	Driver Ver	5.12.0.10220		
other	N/A	Driver Ver	N/A		
Power(or Adapter)	DC power source				
OS type	**Windows 8.1**	SP version	N/A		
Test program	3D Mark	Version	V11		
Backplane	N/A	Version	N/A		
Produced by	**Max**				

Testing Software (MAX. load)

1 *MaxPower and 3D graphic both supported: Maxpower + 3DMark 11*

2 *MaxPower cannot support but K power suported: K power*4 + 3DMark 11*

3 *K Power suported but 3D graphic cannot suported: K power*

4 *MaxPower and K power both cannot supported: Hot CPU pro 4.22.*

****If LAN is on board function, all LAN ports have to connect to a switch HUB through CAT5e LAN cable, but don't need to do data transfer, or through a cross over cable connect two LAN ports is acceptable**

Condition:

Power on - Boot sequency: *Measure the maximum current value of between system power on and boot-up to O.S.*

DOS Idle mode: *Measure the current value when system in DOS mode and without running any program*

Win. Idle mode: *Measure the current value when system in windows mode and without running any program*

Max. load: *Measure the maximum current value which system under maximum load (CPU: Top speed ,RAM & Graphic: Full loading)*

Condition	Power Consumption (A or mA)							Note/Issue ID
Voltage/Condition	Power on - Boot procedure	Idle mode		S3	S5	Max. load	Testing Software	
+12V	1.99	1.73		0.139	0.13	2.3577	2	
Total	23.88	20.76		1.67	1.50	28.29	**W**	
+19V	1.2975	1.10		0.10	0.09	1.495	**2**	
Total	24.65	20.90		1.96	1.77	28.41	**W**	
+24V	1.07	0.92		0.090	0.10	1.2439	**2**	
Total	25.68	22.08		2.16	2.40	29.85	**W**	

Condition		ERP Test (off mode ＜ 0.50W)				
		Voltage Condition		Current (A)	Watt (W)	
Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz)	☑	12V	12	0.0143	0.17	
	☑	19V	19	0.0151	0.29	
	☑	24V	24	0.0156	0.37	

Power interruption Test

DMR Task Number T25597-00

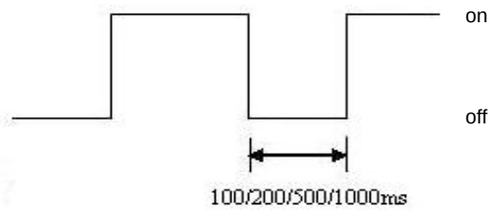
版本 A1

Test Engineer	Max Chen	Date	2014/8/23	Result	Pass
Test Configuration					
Model name	VPC1040CD				
Description	10.4" Fanless Multifunctional Touch Panel Computer				
Hardware PCB version	EBM-BYT A1				
BIOS version	LPC129I9.BIN				
CPU Type	Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz)				
Memory type and size	Transcend DDR3L 1600 4GB TS512MSK64W6H-I				
Backplane	N/A				
Power(or Adapter)	FSP FSP060-DBAE1 12V/5A 60W Adapter				
HDD Model/Spec	PLEXTOR PW64G-5S 64GB 2.5" SSD				
CD-ROM Model/Spec	N/A				

Power interruption test

Test Condition：
Environment：25℃± 2℃ ambient Humidity：50 ± 10% RH
Test time：10 times
Interval time 100ms/200ms/500ms/1000ms

Procedure：
1 Input the AC voltage
2 system boot up
3 Apply switching main power switch with the specified conditions.
(In case of the products equipped with the voltage-switch unit, installed them)



Judgment Criteria：
1 There must be no danger of fire.
2 It must not catch fire or produce smoke.
3 There should be no abnormal phenomenon (ex. auto-boot up)
4. There should be no abnormalities affecting the product's functions and performance

Power interruption Test

Item	Adapter	interval time	Mode	Test Stage	Result	Note/Issue ID
Power interruption Test	FSP060-DBAE1	100ms	ATX	DVT	Pass	
	FSP060-DBAE1	200ms	ATX	DVT	Pass	
	FSP060-DBAE1	500ms	ATX	DVT	Pass	
	FSP060-DBAE1	1000ms	ATX	DVT	Pass	

Room Temp Power On/Off Test

DMR Task Number T25597-00

版本 A1

Test Engineer	Max Chen	Date	2014/8/24	Result	Pass
Model name		VPC1040CD			
Description		10.4" Fanless Multifunctional Touch Panel Computer			
Hardware PCB version		EBM-BYT A1			
BIOS version		LPC129I9.BIN			
CPU Type		Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz)			
Memory type and size		Transcend DDR3L 1600 4GB TS512MSK64W6H-I			
Backplane		N/A			
Power(or Adapter)		FSP FSP060-DBAE1 12V/5A 60W Adapter			
HDD Model/Spec		PLEXTOR PW64G-5S 64GB 2.5" SSD			
CD-ROM Model/Spec		N/A			

Room Temp Power On/Off Test

Test Condition：

Condition

1 Test temperature : Room temperature

2 Number of test : 4000 times

3 Test software : MS DOS

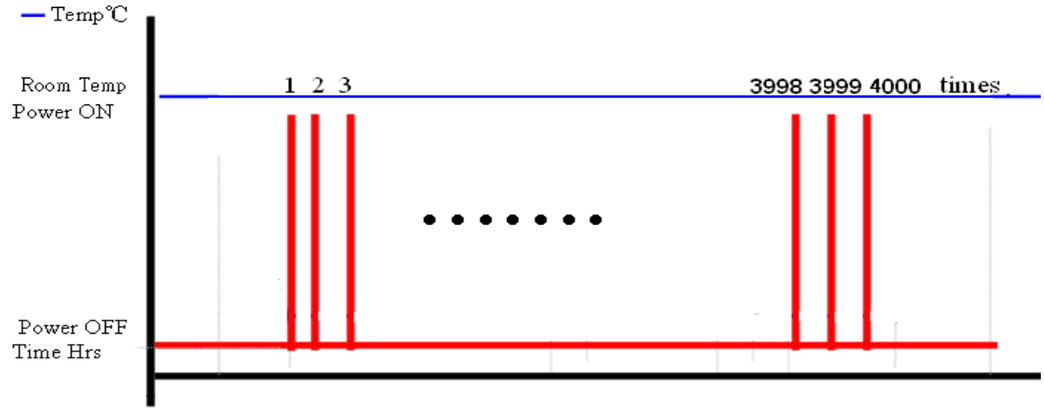
4 Step : A) System power on, record the count number then system power off

B) After 1 minutes, system power on again.

C) Recycle step A and B for 4000 times.

5 Test environment curve :

Test environment curve :



Performance criteria：

1 All system functions must be checked with appropriate testing programs and should pass the inspection.

2 There should be no abnormalities, which couldn't affect the product specified functions and performances.

Test result：

There is no damage in electronic and mechanical functions.

Degradation has no been found.

Performance is maintained with no incurable physical damage or degradation.

Temperature	Power mode	
Room temperature	AT	ATX
Result	N/A	Pass

Test picture：

High Temperature Operation Test

DMR Task Number T25597-00

版本 A1

Test Engineer	Max	Date	2014/8/26	Result	Pass
Model name	VPC1040CD				
Description	10.4" Fanless Multifunctional Touch Panel Computer				
Hardware PCB version	EBM-BYT A1				
BIOS version	LPC129I9.BIN				
CPU Type	Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz)				
Memory type and size	Transcend DDR3L 1600 4GB TS512MSK64W6H-I				
Backplane	N/A				
Power(or Adapter)	FSP FSP060-DBAE1 12V/5A 60W Adapter				
HDD Model/Spec	PLEXTOR PW64G-5S 64GB 2.5" SSD				
CD-ROM Model/Spec	N/A				

High Temperature Operation Test

Test Standard： Reference IEC60068-2-2 Testing procedures

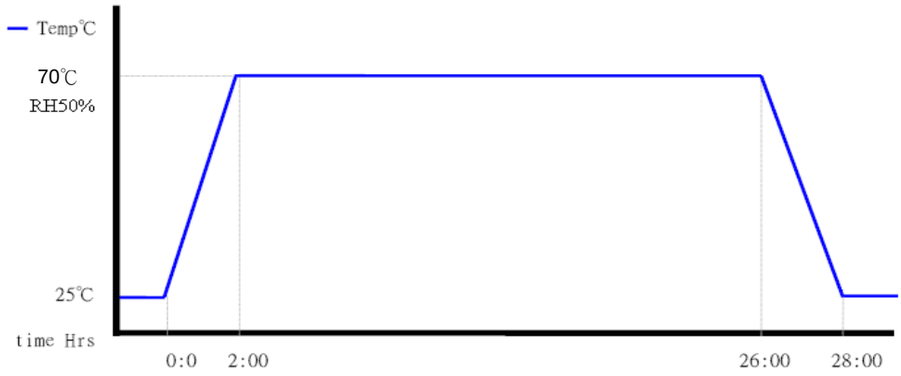
Test Bb : Dry Heat Test

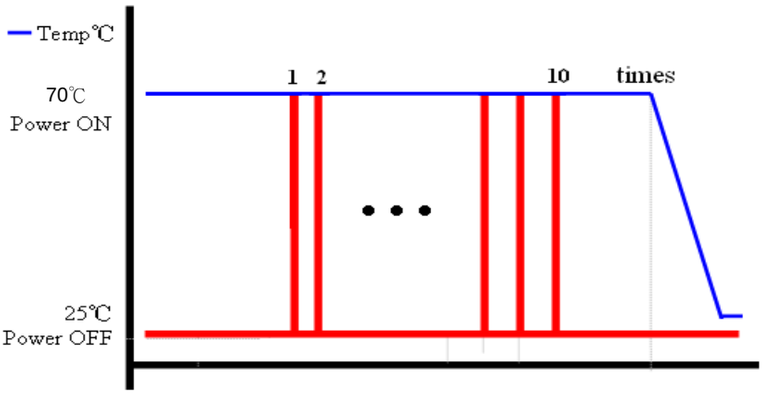
Test Condition： 1 Test Temperature : 70℃ for system level

2 Test Time : 24 hours

3 Test software : PassMark Burn in test 7.0 in Win 8.1

4 Executing on/off test 10 times after running burn in test 24 hours





Test equipment： Programmable temperature & humidity chamber

use chamber				V
Model:	Ten Billion FX1004	THS-D4T-150	THS-D4T-150+LN2	KSON THS-A4T-100
Date of calibration :	2013/12/20	2014/6/24	2014/6/24	2013/12/20

Performance criteria：

1 All system functions must be checked with appropriate testing programs and should pass the inspection.

2 There should be no abnormalities, which couldn't affect the product specified functions and performances.

Test result：

There is no damage in electronic and mechanical functions.

Degradation has no been found.

Performance is maintained with no incurable physical damage or degradation.

Test picture：

Low Temperature Operation Test

DMR Task Number T25597-00

版本 A1

Test Engineer	Max	Date	2014/8/27	Result	Pass
Model name		VPC1040CD			
Description		10.4" Fanless Multifunctional Touch Panel Computer			
Hardware PCB version		EBM-BYT A1			
BIOS version		LPC129I9.BIN			
CPU Type		Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz)			
Memory type and size		Transcend DDR3L 1600 4GB TS512MSK64W6H-I			
Backplane		N/A			
Power(or Adapter)		FSP FSP060-DBAE1 12V/5A 60W Adapter			
HDD Model/Spec		PLEXTOR PW64G-5S 64GB 2.5" SSD			
CD-ROM Model/Spec		N/A			

Low Temperature Operation Test

Test Standard： Reference IEC60068-2-1 Testing procedures

Test Ab : Cold Test

Test Condition： 1 Test Temperature : -30℃

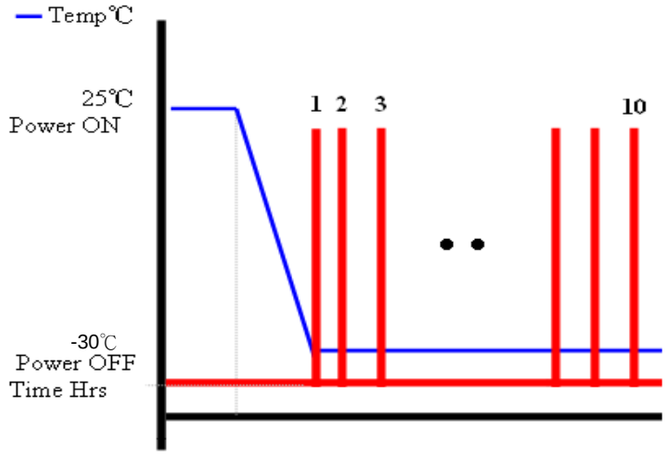
2 Test Time : 24 hours

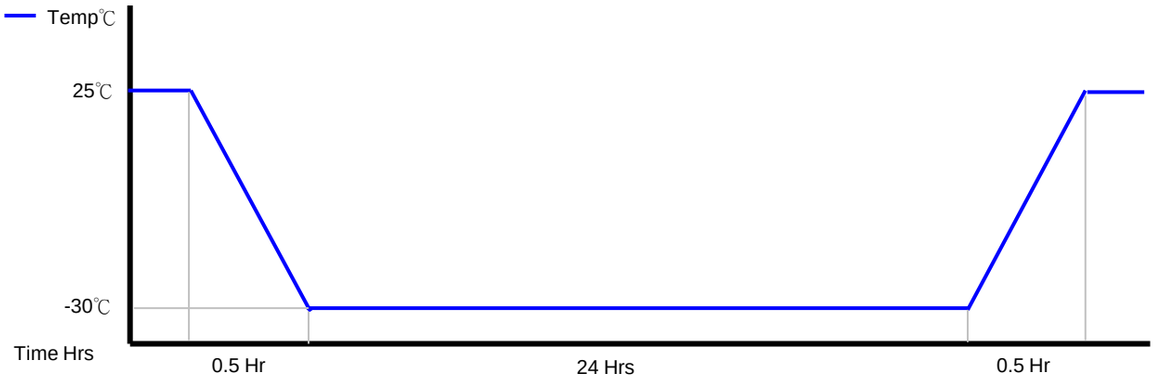
3 Test software : PassMark Burn in test 7.0 in Win 8.1

Test procedure： 1 Power on at -30℃ into Win 8.1 by manually and check device manager list, there are should be no " ! " or " ? " mark display

2 Peripheral check : 10 times

3 After peripheral chek is finish, keep lower chamber temperature at -30℃ and running test program.





Test equipment：

Programmable temperature & humidity chamber

use chamber				V
Model:	Ten Billion FX1004	THS-D4T-150	THS-D4T-150+LN2	KSON THS-A4T-100
Date of calibration :	2013/12/20	2014/6/24	2014/6/24	2013/12/20

Performance criteria：

1 All system functions must be checked with appropriate testing programs and should pass the inspection.

2 There should be no abnormalities, which couldn't affect the product specified functions and performances.

Test result：

There are should be no " ! " or " ? " mark display at device manager

There is no damage in electronic and mechanical functions.

Degradation has no been found.

Performance is maintained with no incurable physical damage or degradation.

Test picture：

Note: 1.Panel's backlight obvious brighten on -30℃

2.System response lag on -30℃

Temperature cycle test

DMR Task Number T25597-00

版本 A1

Test Engineer	Max	Date	2014/8/28	Result	Pass
Test Configuration					
Model name	VPC1040CD				
Description	10.4" Fanless Multifunctional Touch Panel Computer				
Hardware PCB version	EBM-BYT A1				
BIOS version	LPC129I9.BIN				
CPU Type	Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz)				
Memory type and size	Transcend DDR3L 1600 4GB TS512MSK64W6H-I				
Backplane	N/A				
Power(or Adapter)	FSP FSP060-DBAE1 12V/5A 60W Adapter				
HDD Model/Spec	PLEXTOR PW64G-5S 64GB 2.5" SSD				
CD-ROM Model/Spec	N/A				

Temperature cycle test

Test Standard： Reference IEC60068-2-14 Testing procedures

Test N : Change of temperature test

Test Condition： 1 Test Temperature : High temperature 70℃ RH95% / Low temperature -30℃

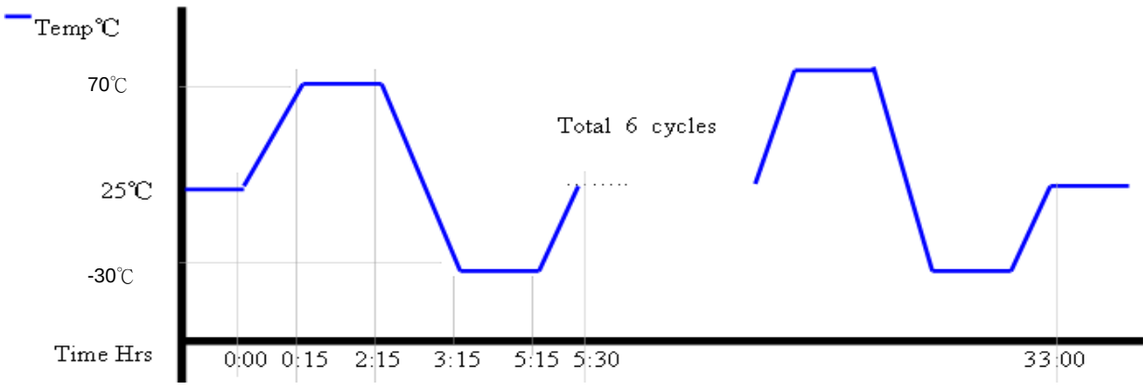
2 Test dwell Time : 2 hours

3 Temperature slope : heating 1 hour, cooling 1 hour

4 Test cycle : 6 cycles

5 Test software : PassMark Burn in test 7.0 in Win 8.1

6 Test environment curve



Test equipment： Programmable temperature & humidity chamber

use chamber				V
Model:	Ten Billion FX1004	THS-D4T-150	THS-D4T-150+LN2	KSON THS-A4T-100
Date of calibration :	2013/12/20	2014/6/24	2014/6/24	2013/12/20

Performance criteria：

1 All system functions must be checked with appropriate testing programs and should pass the inspection.

2 There should be no abnormalities, which couldn't affect the product specified functions and performances.

Test result：

There is no damage in electronic and mechanical functions.

Degradation has no been found.

Performance is maintained with no incurable physical damage or degradation.

Test picture：

Note: 1.Panel's backlight obvious brighten on -30℃

2.System response lag on -30℃

Power on cycle test

DMR Task Number T25597-00

版本 A1

Test Engineer	Max Chen	Date	2014/8/26~2014/08/27	-30℃Result	Pass
Test Configuration				70℃Result	Pass
Model name	VPC1040CD				
Description	10.4" Fanless Multifunctional Touch Panel Computer				
Hardware PCB version	EBM-BYT A1				
BIOS version	LPC129I9.BIN				
CPU Type	Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz)				
Memory type and size	Transcend DDR3L 1600 4GB TS512MSK64W6H-I				
Backplane	N/A				
Power(or Adapter)	FSP FSP060-DBAE1 12V/5A 60W Adapter				
HDD Model/Spec	PLEXTOR PW64G-5S 64GB 2.5" SSD				
CD-ROM Model/Spec	N/A				

Power On/Off Test

Test Standard： Reference IEC60068-2-2 Testing procedures Test Bb : Dry Heat test

Reference IEC60068-2-1 Testing procedures Test Ab : Cold test

Test Condition： Condition

1 Test temperature : -30℃

2 Number of test : 1000 times

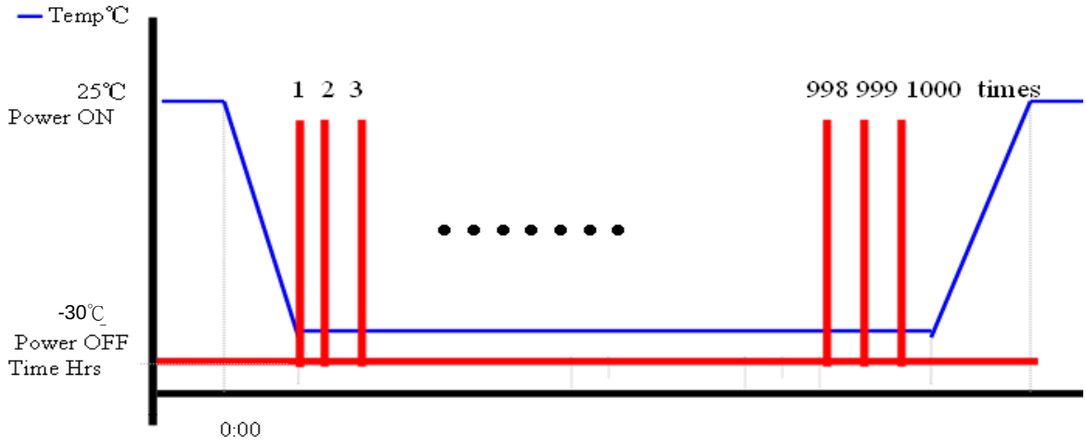
3 Test software : MS DOS

4 Step : A) System power on, record the count number then system power off

B) After 1 minutes, system power on again.

C) Recycle step A and B for 1000 times.

5 Test environment curve :



Condition II

1 Test temperature : 70℃

2 Number of test : 1000 times

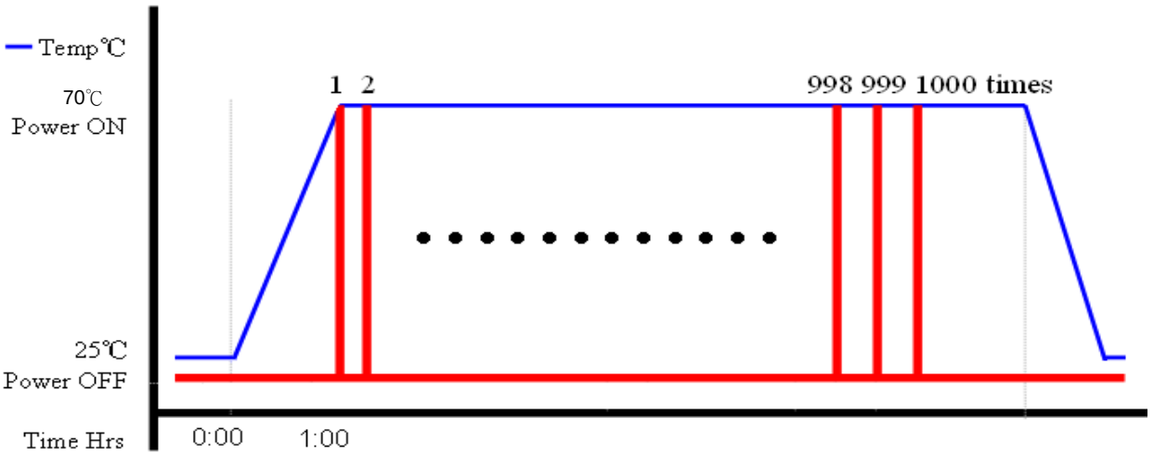
3 Test software : MS DOS

4 Step : A) System power on, record the count number then system power off

B) After 1 minute, system power on again.

C) Recycle step A and B for 1000 times.

5 Test environment curve :



Test equipment：

Programmable temperature & humidity chamber

use chamber		V		
Model:	Ten Billion FX1004	THS-D4T-150	THS-D4T-150+LN2	KSON THS-A4T-100
Date of cali	2013/12/20	2014/6/24	2014/6/24	2013/12/20

Performance criteria：

1 All system functions must be checked with appropriate testing programs and should pass the inspection.

2 There should be no abnormalities, which couldn't affect the product specified functions and performances.

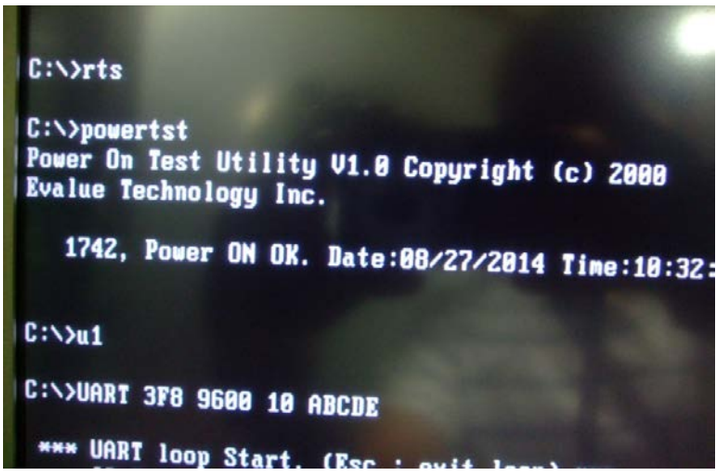
Test result：

There is no damage in electronic and mechanical functions.

Degradation has no been found.

Performance is maintained with no incurable physical damage or degradation.


SET
Display
STOP (FULL)
Count= 1742
6AcOn= 25.0
Timer= 16.4
ADD
SUB


C:\>rts
C:\>powertst
Power On Test Utility V1.0 Copyright (c) 2000
Evalue Technology Inc.
1742, Power ON OK. Date:08/27/2014 Time:10:32:
C:\>u1
C:\>UART 3F8 9600 10 ABCDE
*** UART loop Start. (Esc : exit loop)

Storage test

DMR Task Number T25597-00

版本 A1

Test Engineer	Max Chen	Date	2014/8/29	Result	Pass
Test Configuration					
Model name	VPC1040CD				
Description	10.4" Fanless Multifunctional Touch Panel Computer				
Hardware PCB version	EBM-BYT A1				
BIOS version	LPC129I9.BIN				
CPU Type	Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz)				
Memory type and size	Transcend DDR3L 1600 4GB TS512MSK64W6H-I				
Backplane	N/A				
Power(or Adapter)	FSP FSP060-DBAE1 12V/5A 60W Adapter				
HDD Model/Spec	PLEXTOR PW64G-5S 64GB 2.5" SSD				
CD-ROM Model/Spec	N/A				

Storage Test

Test Standard： Reference IEC60068-2-3 High temperature & Humidity storage test Test : Ca

Reference IEC60068-2-1 Cold test Test : Ab

Test Condition： Condition

Low temperature setup

1 Test temperature : -30℃ (if system has LCD panel,storage temperature depend on panel spec.)

2 Test time : 24 hours

3 Temperature gradient 1℃/minute

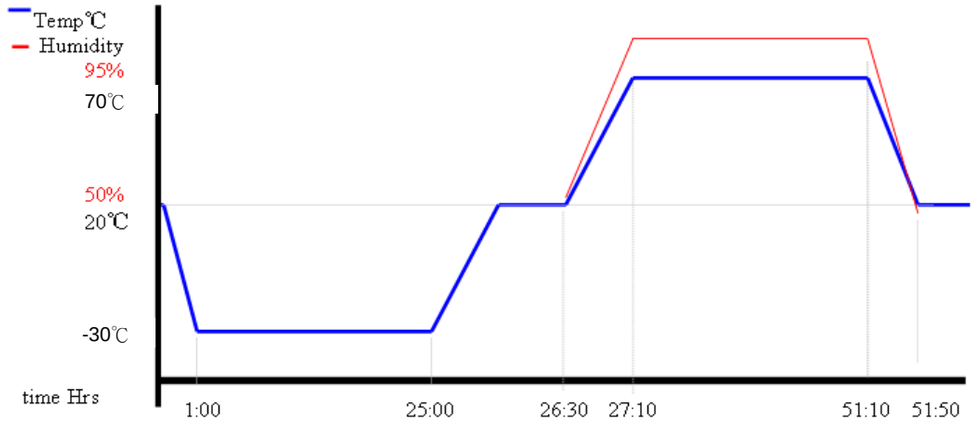
High temperature setup

1 Test temperature : 70℃

2 Test humidity : RH 95%

3 Test time : 24 hours

4 Temperature gradient 1℃/minute



Test equipment： Programmable temperature & humidity chamber

use chamber		V		
Model:	Ten Billion FX1004	THS-D4T-150	THS-D4T-150+LN2	KSON THS-A4T-100
Date of calibrati	2013/12/20	2014/6/24	2014/6/24	2013/12/20

Performance criteria： 1 All system functions must be checked with appropriate testing programs and should pass the inspection.

2 There should be no abnormalities, which couldn't affect the product specified functions and performances.

Test result：

There is no damage in electronic and mechanical functions.

Degradation has no been found.

Performance is maintained with no incurable physical damage or degradation.

Test picture：

Random Vibration Operation

DMR Task Number T25597-00

版本 A1

Test Engineer	Max Chen	Date	2014/8/30	Result	Pass
Test Configuration					
Model name	VPC1040CD				
Description	10.4" Fanless Multifunctional Touch Panel Computer				
Hardware PCB version	EBM-BYT A1				
BIOS version	LPC129I9.BIN				
CPU Type	Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz)				
Memory type and size	Transcend DDR3L 1600 4GB TS512MSK64W6H-I				
Backplane	N/A				
Power(or Adapter)	FSP FSP060-DBAE1 12V/5A 60W Adapter				
HDD Model/Spec	PLEXTOR PW64G-5S 64GB 2.5" SSD				
CD-ROM Model/Spec	N/A				

Random Vibration Operation

Test Standard： Reference IEC60068-2-64 Testing procedures

Test Fh : Vibration boardband random Test

Test Condition： 1 Test PSD : 0.00454G²/Hz , 1.5 Grms

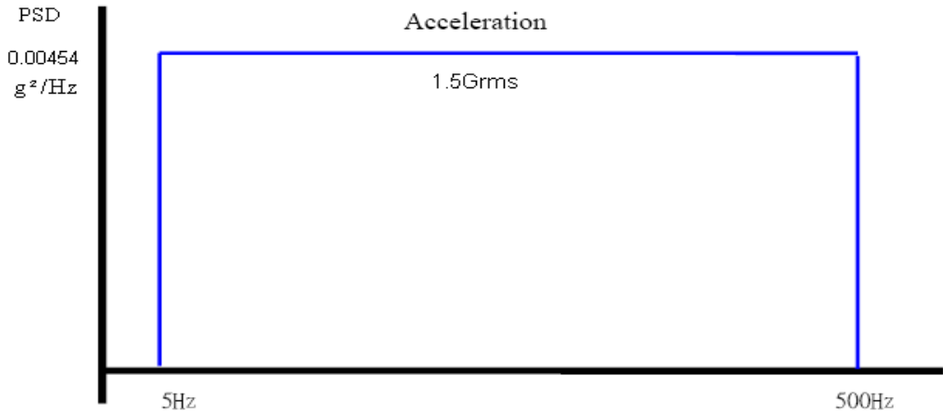
2 Test frequency : 5~500 Hz

3 Test axis : X,Y and Z axis

4 Test time : 30 minutes each axis

5 System condition : operation mode

6 Test curve



Test equipment： Vibration simulator system

Model : VS-300VH

Date of calibration : 2014/8/18

Performance criteria： 1 All system functions must be checked with appropriate testing programs and should pass the inspection

2 There should be no abnormalities, which couldn't affect the product specified functions and performances

3 The cover and connectors should work properly without any interference

4 All screws should be tightened up appropriately

5 All gaps on the surface are appropriately

6 The assembling / disassembling of the system enclosure must be smooth and no deformed parts should be found

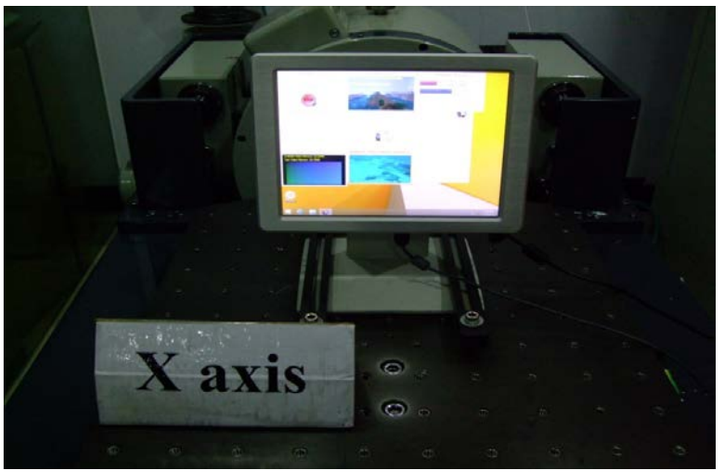
Test result：

There is no damage in electronic and mechanical functions.

Degradation has no been found.

Performance is maintained with no incurable physical damage or degradation.

Test picture：



Sine Vibration test (Non-operation)

DMR Task Number T25597-00

版本 A1

Test Engineer	Max Chen	Date	2014/8/30	Result	Pass
Test Configuration					
Model name	VPC1040CD				
Description	10.4" Fanless Multifunctional Touch Panel Computer				
Hardware PCB version	EBM-BYT A1				
BIOS version	LPC129I9.BIN				
CPU Type	Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz)				
Memory type and size	Transcend DDR3L 1600 4GB TS512MSK64W6H-I				
Backplane	N/A				
Power(or Adapter)	FSP FSP060-DBAE1 12V/5A 60W Adapter				
HDD Model/Spec	PLEXTOR PW64G-5S 64GB 2.5" SSD				
CD-ROM Model/Spec	N/A				

Random Vibration Operation

Test Standard： Reference IEC60068-2-6 Testing procedures

Test Fc : Vibration sinusoidal

Test Condition： 1 Test Acceleration : 2G

2 Test frequency : 5~500 Hz

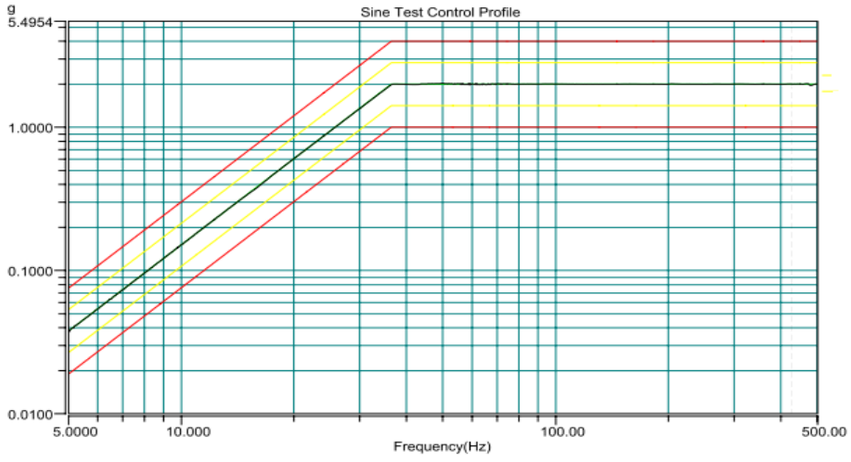
3 Sweep：1 Oct/ per one minute. (logarithmic)

4 Test axis : X,Y and Z axis

5 Test time :10 min. each axis

6 System condition : Non-Operating mode

7 Test curve



Test equipment： Vibration simulator system

Model : VS-300VH

Date of calibration : 2014/8/18

Performance criteria： 1 All system functions must be checked with appropriate testing programs and should pass the inspection

2 There should be no abnormalities, which couldn't affect the product specified functions and performances

3 The cover and connectors should work properly without any interference

4 All screws should be tightened up appropriately

5 All gaps on the surface are appropriately

6 The assembling / disassembling of the system enclosure must be smooth and no deformed parts should be found

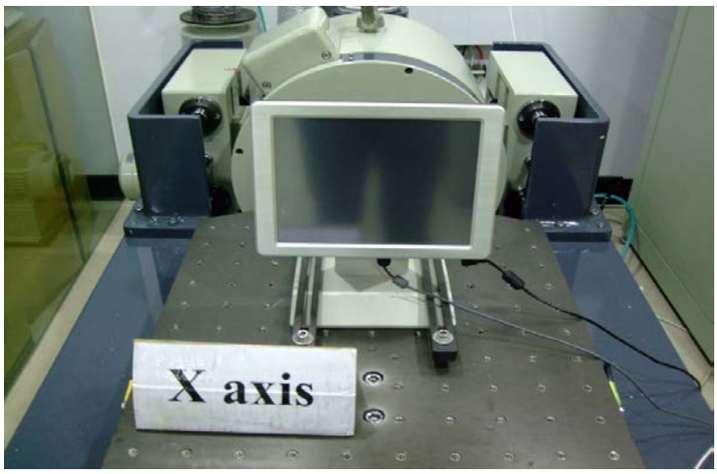
Test result：

There is no damage in electronic and mechanical functions.

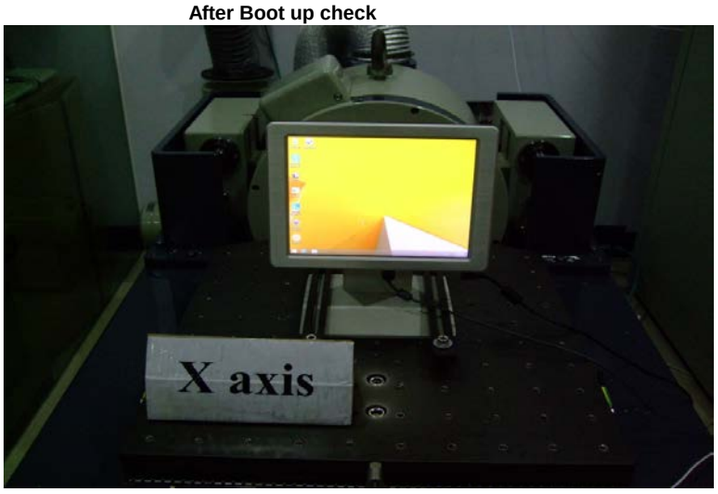
Degradation has no been found.

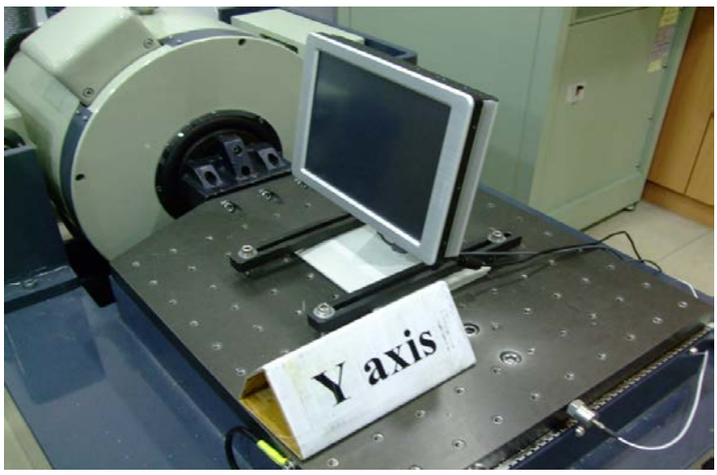
Performance is maintained with no incurable physical damage or degradation.

Test picture：



After Boot up check





Package vibration test

DMR Task Number T25597-00

版本 A1

Test Engineer	Max Chen	Date	2014/8/30	Result	Pass
Test Configuration					
Model name	VPC1040CD				
Description	10.4" Fanless Multifunctional Touch Panel Computer				
Hardware PCB version	EBM-BYT A1				
BIOS version	LPC129I9.BIN				
CPU Type	Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz)				
Memory type and size	Transcend DDR3L 1600 4GB TS512MSK64W6H-I				
Backplane	N/A				
Power(or Adapter)	FSP FSP060-DBAE1 12V/5A 60W Adapter				
HDD Model/Spec	PLEXTOR PW64G-5S 64GB 2.5" SSD				
CD-ROM Model/Spec	N/A				

Package Vibration Test

Test Standard：Reference IEC60068-2-64 Testing procedures

Test Fh : Vibration boardband random Test

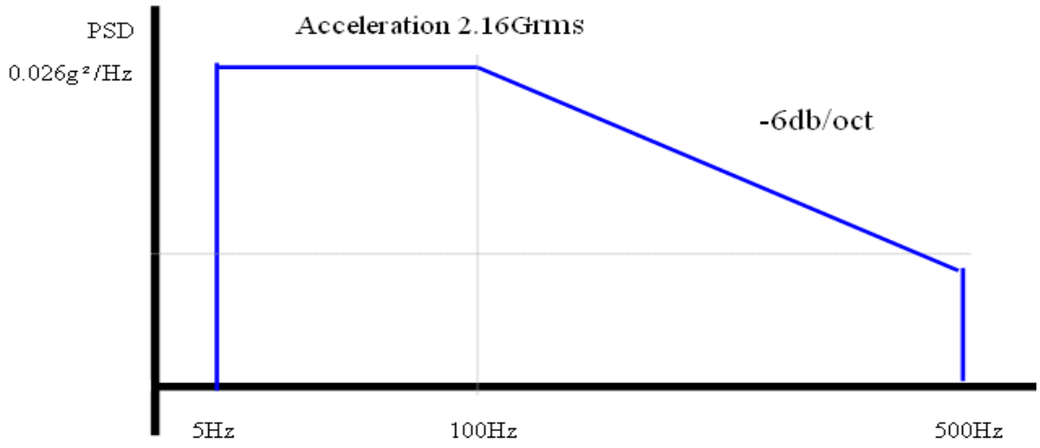
Test Condition：1 Test PSD : 0.026G²/Hz , 2.16 Grms

2 Test frequency : 5~500 Hz

3 Test axis : X,Y and Z axis

4 Test time : 30 minutes each axis

5 Test curve



Test equipment：Vibration simulator system

Model : VS-300VH

Date of calibration : 2014/8/18

Performance criteria：1 All system functions must be checked with appropriate testing programs and should pass the inspection

2 There should be no abnormalities, which couldn't affect the product specified functions and performances

3 The cover and connectors should work properly without any interference

4 All screws should be tightened up appropriately

5 All gaps on the surface are appropriately

6 The assembling / disassembling of the system enclosure must be smooth and no deformed parts should be found

Test result：

There is no damage in electronic and mechanical functions.

Degradation has no been found.

Performance is maintained with no incurable physical damage or degradation.

Test picture：

After Boot up check

Bump Test

DMR Task Number T25597-00

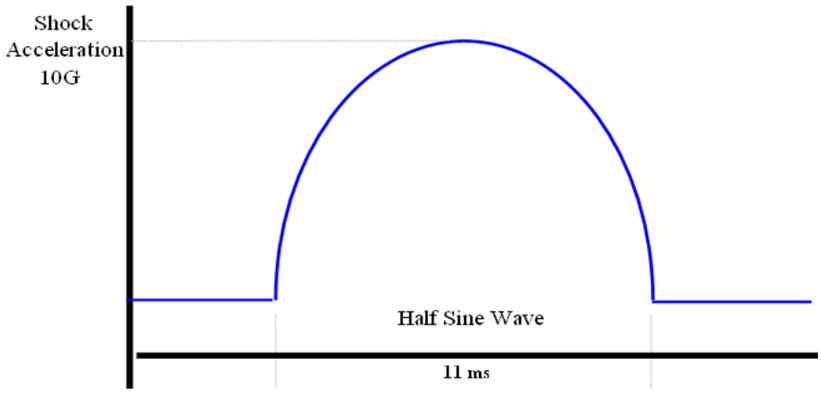
版本 A1

Test Engineer	Max Chen	Date	2014/8/30	Result	Pass
Test Configuration					
Model name	VPC1040CD				
Description	10.4" Fanless Multifunctional Touch Panel Computer				
Hardware PCB version	EBM-BYT A1				
BIOS version	LPC129I9.BIN				
CPU Type	Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz)				
Memory type and size	Transcend DDR3L 1600 4GB TS512MSK64W6H-I				
Backplane	N/A				
Power(or Adapter)	FSP FSP060-DBAE1 12V/5A 60W Adapter				
HDD Model/Spec	PLEXTOR PW64G-5S 64GB 2.5" SSD				
CD-ROM Model/Spec	N/A				

Test Standard： Reference IEC 60068-2-29 Testing procedures
Test Eb : Bump Test

Test Condition： Wave form：Half Sine wave
Acceleration Rate：10g
Duration Time：11ms
No. of Shock：Z axis 1000 times
Test Axis: Z axis
System condition : operation (running burn in test program)

Test curve：



Test equipment： Shock tester
Model : VS-300VH
Date of calibration : 2014/8/18

Performance criteria：
1 All system functions must be checked with appropriate testing programs and should pass the inspection
2 There should be no abnormalities, which couldn't affect the product specified functions and performances
3 The cover and connectors should work properly without any interference
4 All screws should be tightened up appropriately
5 All gaps on the surface are appropriately
6 The assembling / disassembling of the system enclosure must be smooth and no deformed parts should be found

Test result： There is no damage in electronic and mechanical functions.
Degradation has no been found.
Performance is maintained with no incurable physical damage or degradation.

Test picture：

Package Drop Test

DMR Task Number T25597-00

版本 A1

Test Engineer	Max Chen	Date	2014/8/18	Result	Pass
Test Configuration					
Model name	VPC1040CD				
Description	10.4" Fanless Multifunctional Touch Panel Computer				
Hardware PCB version	EBM-BYT A1				
BIOS version	LPC129I9.BIN				
CPU Type	Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz)				
Memory type and size	Transcend DDR3L 1600 4GB TS512MSK64W6H-I				
Backplane	N/A				
Power(or Adapter)	FSP FSP060-DBAE1 12V/5A 60W Adapter				
HDD Model/Spec	PLEXTOR PW64G-5S 64GB 2.5" SSD				
CD-ROM Model/Spec	N/A				

Package Drop Test

Test Standard： Reference ISTA 2A, Method : IEC-60068-2-32 Test:Ed

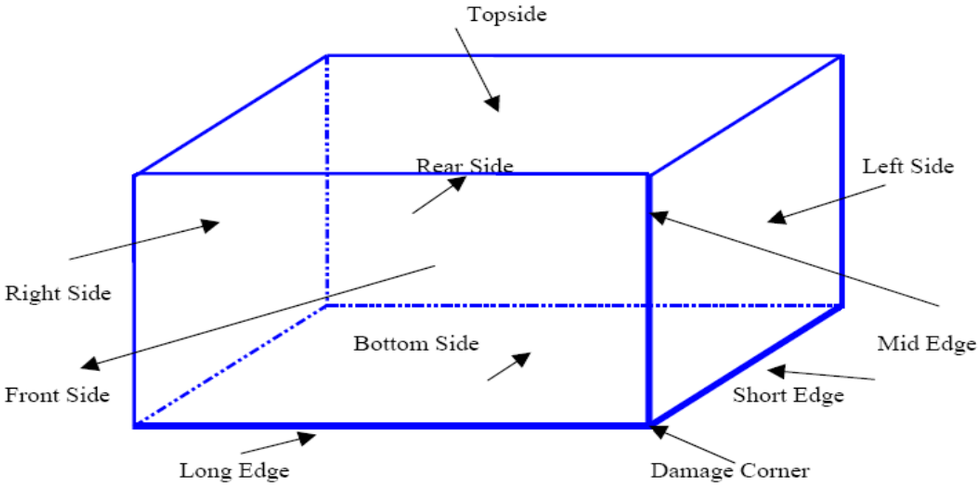
Test Ea : Drop Test

Test Condition： 1 Test phase : One corner, three edges, six faces

2 Test high : 96.5 cm

3 Package weight : 3.87 kg

4 Test drawing



Test equipment： Drop test machine

J.T.M Tech.

Model : JTM-1775

Performance criteria： 1 All system functions must be checked with appropriate testing programs and should pass the inspection

2 There should be no abnormalities, which couldn't affect the product specified functions and performances

3 The cover and connectors should work properly without any interference

4 All screws should be tightened up appropriately

5 All gaps on the surface are appropriately

6 The assembling / disassembling of the system enclosure must be smooth and no deformed parts should be found

Test result： There is no damage in electronic and mechanical functions.

Degradation has no been found.

Performance is maintained with no incurable physical damage or degradation.

Test picture：

After Boot up check

Misuse Test

DMR Task Number T25597-00

版本 A1

Test Engineer	Max Chen	Date	2014/9/1	Result	Pass
Model	VPC1040CD				
Description	10.4" Fanless Multifunctional Touch Panel Computer				
PCB version	EBM-BYT A1				
BIOS version	LPC129I9.BIN				
CPU Type	Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz)				
Memory type and size	Transcend DDR3L 1600 4GB TS512MSK64W6H-I				
Backplane	N/A				
Power(or Adapter)	FSP FSP060-DBAE1 12V/5A 60W Adapter				
HDD Model/Spec	PLEXTOR PW64G-5S 64GB 2.5" SSD				
CD-ROM Model/Spec	N/A				

Purpose: To evaluate whether the functions are maintained in a stable condition after the product is implement misuse test.

Conditions: Perform all types of misuses including the following which could take place in operation.

1) Simultaneous operation
2) Opposite operation
3) Halfway operation
4) Incomplete operation
5) Procedure omission
6) Wrong procedure

Test Procedure:

1 Simultaneous operation
- 1-1 Turn on the system and press any two keys simultaneous until system into OS.
- 1-2 Turn on the system and press mouse right and left keys simultaneous until system into OS.
- 1-3 Turn on the system and press touch panel simultaneous until system into OS.

2 Opposite operation
- 2-1 PS/2 keyboard connector connect with PS/2 mouse then power on and boot into the OS.
- 2-2 PS/2 mouse connector connect with PS/2 keyboard then power on and boot into the OS.
- 2-3 Audio line out connector connect with MIC then turn on system and play music file.
- 2-4 Cash drawer cable RJ11 connect to RJ45 connector then power on and boot into the OS.

3 Halfway
- 3-1 Directly turn off power at system starting boot up into OS.
- 3-2 Insert devices at system starting boot up.
- 3-3 Removed devices at system executing closing.

4 Incomplete operation
- 4-1 Insert power cord to power supply socket incompletely then perform the on/off test.
- 4-2 Insert devices to specified connector incompletely then power on and boot into OS.

5 Procedure omission
- 5-1 Directly power off without OS shutdown rule.
- 5-2 Adapter with DC output then directly plug to system DC jack and boot up system ten times.

6 Wrong procedure
- 6-1 System mode is S5 then press and hold push button until system stop operation.
- 6-2 System mode is S0 then press and hold push button until system stop operation.

Judgment Criteria:

The product shall operate normally and no any damage after the test.

Item	sub-Item	Device	Manufacture /PN	Test stage	Result	Note/Issue ID
Simultaneous operation	1-1	Keyboard		DVT	NA	
	1-2	Mouse		DVT	NA	
	1-3	Touch		DVT	Pass	
Opposite operation	2-1	Mouse		DVT	NA	
	2-2	Keyboard		DVT	NA	
	2-3	Audio		DVT	Pass	
	2-4	RJ45	RJ11 cable	DVT	Pass	
Halfway	3-1			DVT	Pass	
	3-2	USB Key/Mous		DVT	Pass	
	3-3	USB Key/Mous		DVT	Pass	
Incomplete operation	4-1			DVT	Pass	
	4-2	USB Key/Mous		DVT	Pass	
Procedure omission	5-1			DVT	Pass	
	5-2	12V		DVT	Pass	
		19V		DVT	Pass	
		24V		DVT	Pass	
Wrong procedure	6-1			DVT	Pass	
	6-2			DVT	Pass	

Short Test

DMR Task Number T25597-00

版本 A1

Test Engineer	Max Chen	Date	2014/9/1	Result	Pass
Model	VPC1040CD				
Description	10.4" Fanless Multifunctional Touch Panel Computer				
PCB version	EBM-BYT A1				
BIOS version	LPC129I9.BIN				
CPU Type	Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz)				
Memory type and size	Transcend DDR3L 1600 4GB TS512MSK64W6H-I				
Backplane	N/A				
Power(or Adapter)	FSP FSP060-DBAE1 12V/5A 60W Adapter				
HDD Model/Spec	PLEXTOR PW64G-5S 64GB 2.5" SSD				
CD-ROM Model/Spec	N/A				

Purpose: To check that there is no risk of fire or electric shock in abnormal situations caused by the failure of an internal component of the product.

Conditions: Environment：25℃± 2℃ ambient Humidity：60 ± 10% RH

Test Procedure:

1 Adjust the serial port DC output to +5V by jumper cap.
2 Turn on the test item and startup into the OS win8.1
3 Perform the short test +5V to GND
4 Adjust the serial port DC output to +12V by jumper cap, then repeat step 2 and 3.
5 Turn on the test item and startup into the OS Win8.1
6 Perform the USB port short test (VCC to GND)
7 Turn on the test item and startup into the OS
8 Perform the PS/2 ports short test (VCC to GND)
9 Turn on the test item and startup into the OS Win8.1
10 Turn on the test item and startup into the OS Win8.1
11 Perform the DC IN short test. (DC IN power supply only)
12 Perform the ATX power short test (ATX Power support)

Judgment Criteria:

1 There must be no danger of fire.
2 It must not catch fire.
3 It must not produce smoke. (If the product is equipped with a protective device, smoke is allowed in an amount not exceeding that produced by the burning end of a cigarette for 10 seconds.)
4 Solder must not have been melted by heating of components.
5 The case must not deform from the generated heat.
6 The product must not present a danger of electric shock.

Test item	Nunber	Result ststement	Test stage	Result	Note/Issue ID
Serial port	COM1	System Shutdown	DVT	Pass	
USB port	USB1	No any damage	DVT	Pass	
	USB2	No any damage	DVT	Pass	
PS/2	Keyboard		DVT	NA	
	Mouse		DVT	NA	
DC IN	12 V	System Shutdown	DVT	Pass	
	19 V	System Shutdown	DVT	Pass	
	24 V	System Shutdown	DVT	Pass	

Thermal and Capacitor Life time Calculation

DMR Task Number T25597-00

版本 A1

Test Engineer	Max Chen	Date	2014/8/19	Result	Pass
Test Configuration					
Model name	**VPC1040CD**				
Description	**10.4" Fanless Multifunctional Touch Panel Computer**				
Hardware PCB version	**EBM-BYT A1**				
BIOS version	**LPC129I9.BIN**				
CPU Type	**Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz)**				
Memory type and size	**Transcend DDR3L 1600 4GB TS512MSK64W6H-I**				
Backplane	**N/A**				
Power(or Adapter)	**FSP FSP060-DBAE1 12V/5A 60W Adapter**				
HDD Model/Spec	**Innodisk Evergreen SSD 16GB**				
CD-ROM Model/Spec	**N/A**				
OS	**Windows 8.1**				
Test software	**Burn in Test V7.0 + Kpower x 4 + Ping LAN + COM Stress**				

$$Lx = Lo \times 2^{(To - Tx)/10} \times 2^{(\Delta To - \Delta Tx)/5}$$
$$= Lo \times 2^{(105 - Tx)/10} \times 2^{(5 - \Delta Tx)/5}$$

Where: Lx = Lifetime (hours) of the capacitor to be estimated
Lo = Base lifetime (hours) of the capacitor described in the specification sheet
To = Maximum rated operating temperature
Tx = Actual ambient temperature (ºC) of the capacitor within device
(This is not the environment temperature of the device, but the environment temperature of the capacitor that has been placed within the device.)
ΔTo = Rise (ºC) in core temperature of the capacitor due to rated (permissible) maximum ripple current.

$$\Delta Tx = (Ts - Tx) \times Kc$$

Where: Ts = Surface temperature (ºC) of the case
Tx = Actual ambient temperature (ºC) of the capacitor
Kc = Coefficient standing for the ratio of the ΔTx to the (Ts - Tx)
For the Kc's, refer to the table below:

Kc :

Capacitor diameter (mm)	ϕ5- ϕ8	ϕ10	ϕ12.5	ϕ16	ϕ18
Kc	1.10	1.15	1.20	1.25	1.30

Life Time Estimation Formula on PX/PXA/PS/PSA series Capacitors

$$Lx = Lo \times 10^{(To - Tx)/20}$$
$$= 2000 \times 10^{(105 - Tx)/20}$$

Where: Lx = Lifetime (hours) of the capacitor to be estimated
Lo = Base lifetime (hours) of the capacitor described in the specification sheet ; **2000hours for PX/PXA/PS/PSA series**
To = Maximum rated operating temperature ; **105ºC for PX/PXA/PS/PSA series**
Tx = Actual ambient temperature (ºC) of the capacitor within device
(This is not the environment temperature of the device, but the environment temperature of the capacitor that has been placed within the device.)

Test procedure：

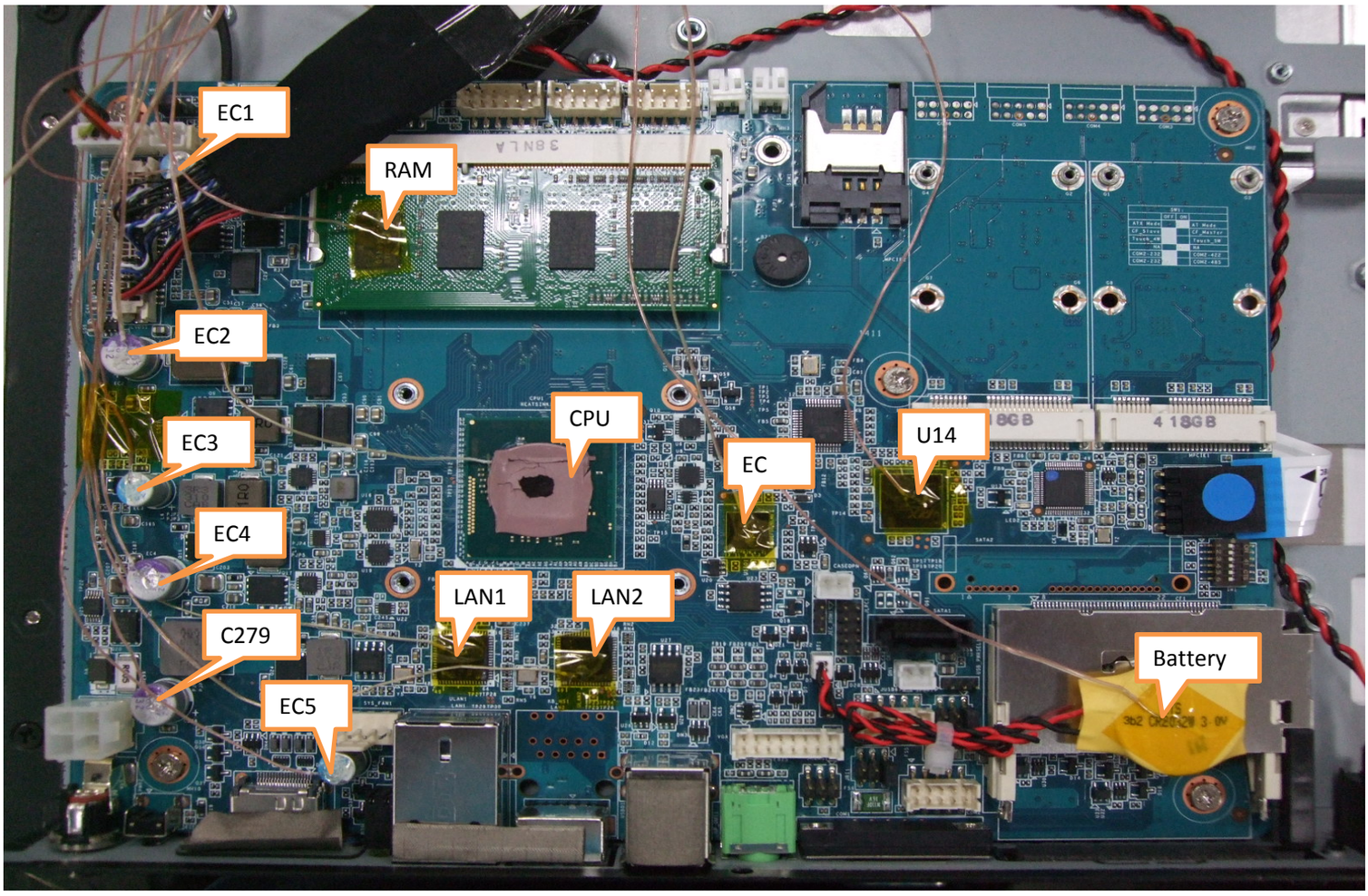
1. Room Temperature Thermal and Capacitor Life time Calculation & battery , Panel , Inverter or Converter
2. Product Spec Temperature Thermal and Capacitor Life time Calculation & battery , Panel , Inverter or Converter

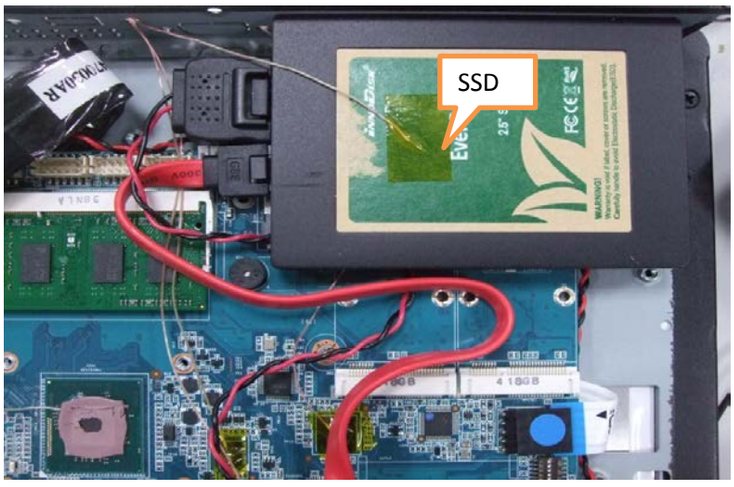
Measure in chamber 25℃

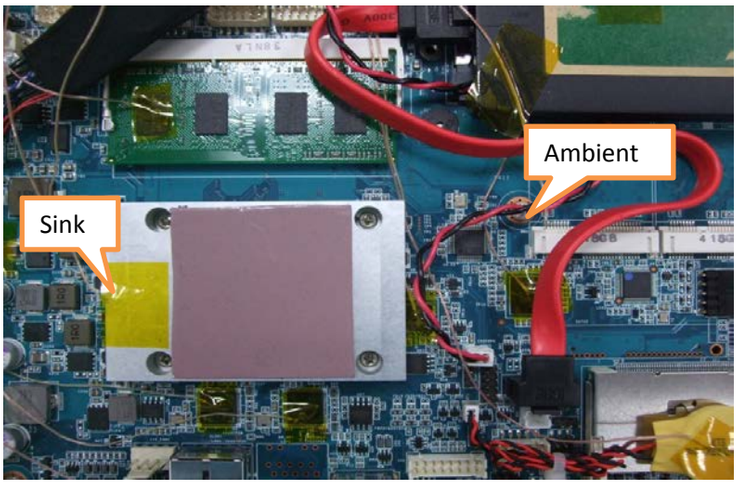
Chamber	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum			
25℃	EC1	EC2	EC3	EC4	C279	EC5			
Ts(℃)	50.40	53.70	51.40	52.20	49.70	47.90			
Tx(℃)									
Lo(hours)	2000	5000	5000	5000	5000	5000			
Kc									
ΔTx(℃)									
Lx(hours)	1074064	1836412	2393150	2182579	2910516	3580717			
Life(years)	**122.61**	**209.64**	**273.19**	**249.15**	**332.25**	**408.76**			
Result	Pass	Pass	Pass	Pass	Pass	Pass			

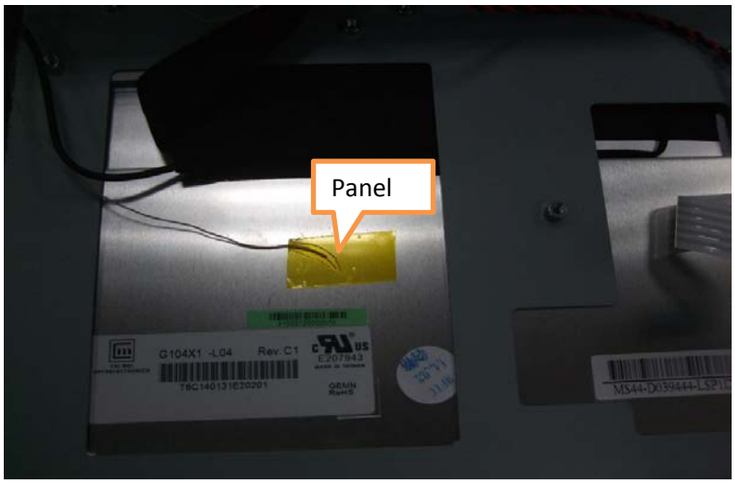
Chamber	CPU	LAN1	LAN2	Audio	Memory	EC ITE			
25℃	E3845	I210-IT	I210-IT	ALC 892		IT8528VG			
SPEC	110.00	105.00	105.00	105.00	95.00	85.00			
Ts	47.30	55.70	50.50	59.30	52.90	51.40			
SPEC - Ts	62.70	49.30	54.50	45.70	42.10	33.60			
Result	Pass	Pass	Pass	Pass	Pass	Pass			

Chamber	Battery	Panel	SSD	U14	Ambient				
25℃									
SPEC(Ta)	80.00	80.00	85.00						
Ts	42.90	50.40	43.80	64.40	40.20				




SSD


Ambient
Sink


Panel
G104X1 -L04 Rev:C1


Audio

Thermal and Capacitor Life time Calculation

DMR Task Number T25597-00

版本 A1

Test Engineer	Max Chen	Date	2014/8/19	Result	Pass
Test Configuration					
Model name	**VPC1040CD**				
Description	**10.4" Fanless Multifunctional Touch Panel Computer**				
Hardware PCB version	**EBM-BYT A1**				
BIOS version	**LPC129I9.BIN**				
CPU Type	**Intel® Atom™ Processor E3845 (2M Cache, 1.91 GHz)**				
Memory type and size	**Transcend DDR3L 1600 4GB TS512MSK64W6H-I**				
Backplane	**N/A**				
Power(or Adapter)	**FSP FSP060-DBAE1 12V/5A 60W Adapter**				
HDD Model/Spec	**Innodisk Evergreen SSD 16GB**				
CD-ROM Model/Spec	**N/A**				
OS	**Windows 8.1**				
Test software	**Burn in Test V7.0 + Kpower x 4 + Ping LAN + COM Stress**				

$$Lx = Lo \times 2^{(To - Tx)/10} \times 2^{(\Delta To - \Delta Tx)/5}$$
$$= Lo \times 2^{(105 - Tx)/10} \times 2^{(5 - \Delta Tx)/5}$$

Where: Lx = Lifetime (hours) of the capacitor to be estimated
Lo = Base lifetime (hours) of the capacitor described in the specification sheet
To = Maximum rated operating temperature
Tx = Actual ambient temperature (ºC) of the capacitor within device
(This is not the environment temperature of the device, but the environment temperature of the capacitor that has been placed within the device.)
ΔTo = Rise (ºC) in core temperature of the capacitor due to rated (permissible) maximum ripple current.

$$\Delta Tx = (Ts - Tx) \times Kc$$

Where: Ts = Surface temperature (ºC) of the case
Tx = Actual ambient temperature (ºC) of the capacitor
Kc = Coefficient standing for the ratio of the ΔTx to the (Ts - Tx)
For the Kc's, refer to the table below:

Kc :

Capacitor diameter (mm)	ϕ5- ϕ8	ϕ10	ϕ12.5	ϕ16	ϕ18
Kc	1.10	1.15	1.20	1.25	1.30

Life Time Estimation Formula on PX/PXA/PS/PSA series Capacitors

$$Lx = Lo \times 10^{(To - Tx)/20}$$
$$= 2000 \times 10^{(105 - Tx)/20}$$

Where: Lx = Lifetime (hours) of the capacitor to be estimated
Lo = Base lifetime (hours) of the capacitor described in the specification sheet ; **2000hours for PX/PXA/PS/PSA series**
To = Maximum rated operating temperature ; **105ºC for PX/PXA/PS/PSA series**
Tx = Actual ambient temperature (ºC) of the capacitor within device
(This is not the environment temperature of the device, but the environment temperature of the capacitor that has been placed within the device.)

Test procedure： 1. Room Temperature Thermal and Capacitor Life time Calculation & battery , Panel , Inverter or Converter

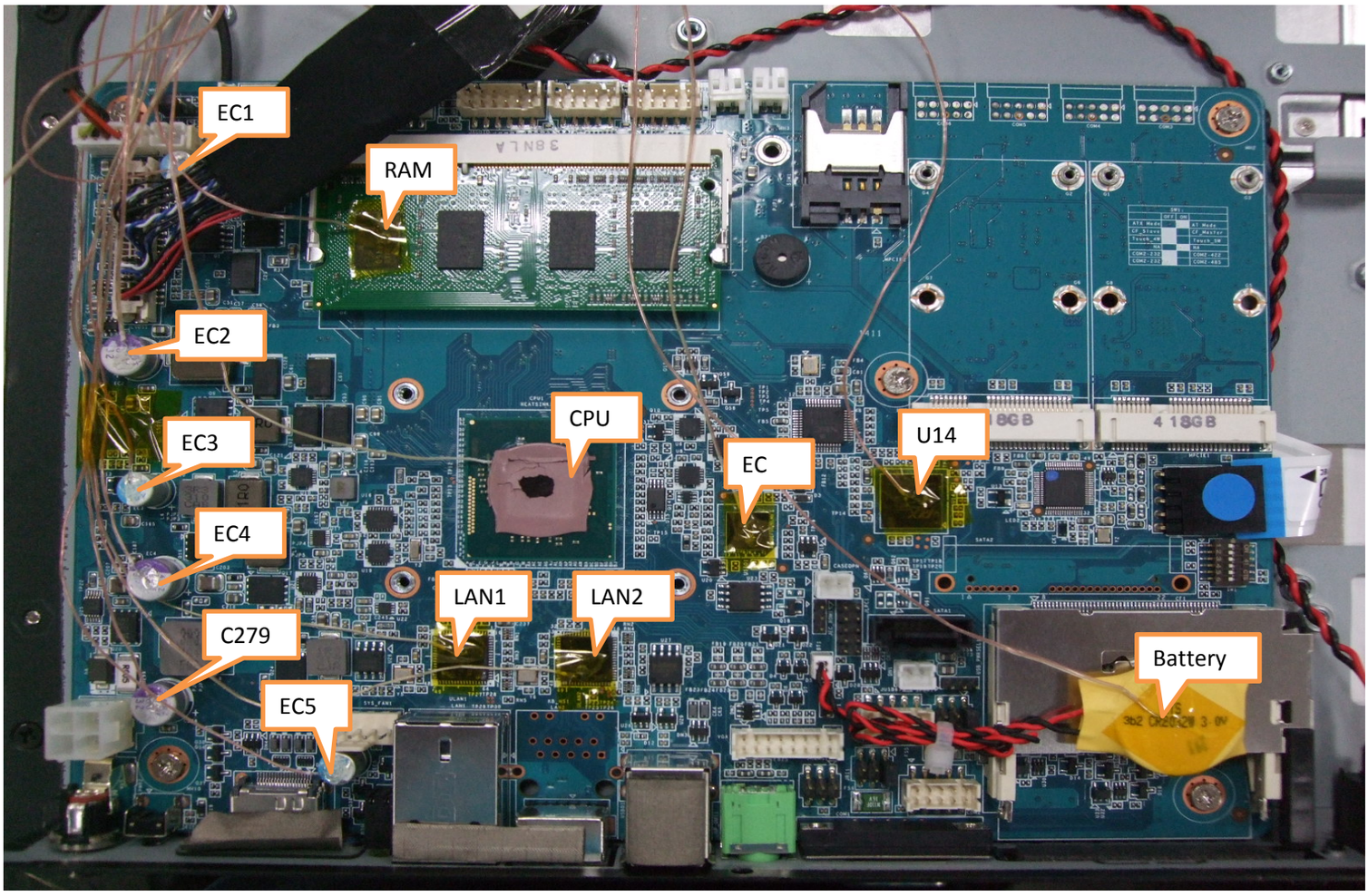
2. Product Spec Temperature Thermal and Capacitor Life time Calculation & battery , Panel , Inverter or Converter

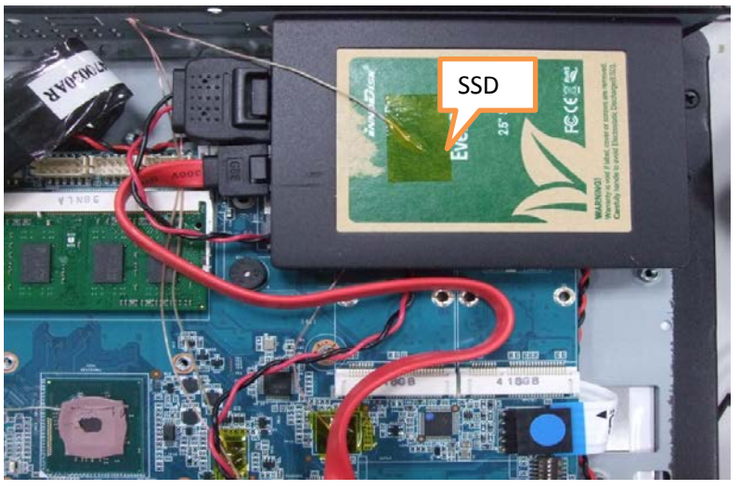
Measure in chamber 70℃

Chamber	aluminum	aluminum	aluminum	aluminum	aluminum	aluminum			
70℃	EC1	EC2	EC3	EC4	C279	EC5			
Ts(℃)	81.60	88.90	86.30	87.70	84.40	85.50			
Tx(℃)									
Lo(hours)	2000	5000	5000	5000	5000	5000			
Kc									
ΔTx(℃)									
Lx(hours)	29582	31913	43050	36641	53576	47203			
Life(years)	**3.38**	**3.64**	**4.91**	**4.18**	**6.12**	**5.39**			
Result	Pass	Pass	Pass	Pass	Pass	Pass			

Chamber	CPU	LAN1	LAN2	Audio	Memory	EC ITE			
70℃	E3845	I210-IT	I210-IT	ALC 892		IT8528VG			
SPEC	110.00	105.00	105.00	105.00	95.00	85.00			
Ts	85.40	92.70	87.50	95.10	89.70	85.00			
SPEC - Ts	24.60	12.30	17.50	9.90	5.30	0.00			
Result	Pass	Pass	Pass	Pass	Pass	Pass			

Chamber	Battery	Panel	SSD	U14	Ambient				
70℃									
SPEC(Ta)	80.00	80.00	85.00						
Ts	78.60	83.00	80.90	97.30	79.00				

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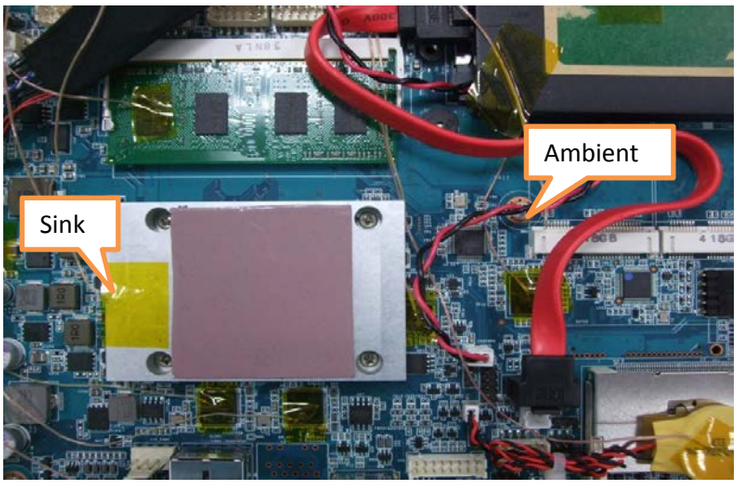
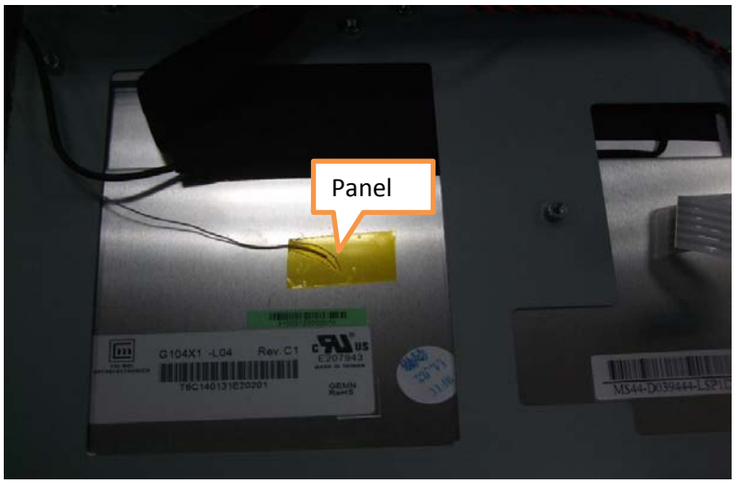
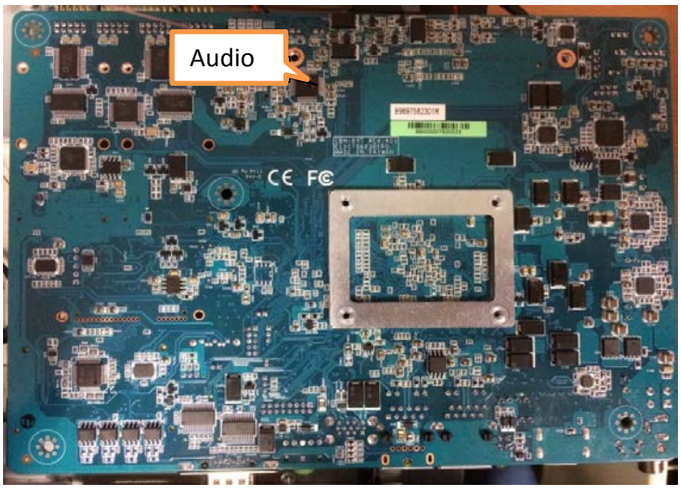

Ambient
Sink


Panel
G104X1 -L04 Rev:C1


Audio