

# Product Certification Report

Release No : 06E010003

Product Model	<h2>EMB-945T</h2>
Product Description	Intel 945GM (Calistoga) + ICH7M Mini ITX Board
Test Environment	<p><input checked="" type="checkbox"/>New product</p> <p><input checked="" type="checkbox"/>PCB : EMB-945T Rev.A.1.0</p> <p><input checked="" type="checkbox"/>BIOS(1) : EMB-945T BIOS Rev:1.0 (02/20/2006) for 24bit,48bit LVDS</p> <p><input checked="" type="checkbox"/>BIOS(2) : EMB-945T BIOS Rev:1.0 (03/06/2006) for 18bit,36bit LVDS</p> <p><input checked="" type="checkbox"/>Chipset :</p> <p><input checked="" type="checkbox"/>CPU Type : Intel® Core Duo T2500 2.0GHz</p> <p><input checked="" type="checkbox"/>North Bridge : Intel 945GM</p> <p><input checked="" type="checkbox"/>South Bridge : Intel ICH7M</p> <p><input checked="" type="checkbox"/>VGA Chipset : Intel 945GM</p> <p><input checked="" type="checkbox"/>Audio Chipset : Realtek ALC655</p> <p><input checked="" type="checkbox"/>Ethernet Chipset : Marvell 88E8053</p> <p><input checked="" type="checkbox"/>I/O Chipset : ITE 8712 + F81216D</p> <p><input checked="" type="checkbox"/>TV Chipset : Intel 945GM</p> <p><input checked="" type="checkbox"/>Remark :P5 REPORT FOR EMB-945T</p>

2006/03/10

Wenyuan Yang

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Issue date

Manager

Test Engineer

**Platform Information:**

<b>PCB Model / Version</b>	EMB-945T Rev:A1.0	
<b>Driver</b>	Chipset Software	
	Graphics Media	
	Lan Driver	
	Audio Driver	
<b>Operating System</b>	Linux-RedHat 9.0 / Kernel 2.4.20-8	
	Windows Server 2003 English Version / Standard Edition 5.2.3790	N/A
	Windows XP Professional English Version V2002 with Service Pack 2	1,3,6,7,8,9,10,11,12,13
	Windows 2000 Professional English Version V5.00.2195 with Service Pack 4	N/A
	Windows 98SE English Version V4.10.2222A	N/A
	Windows NT Workstation 4.0 English Version with Service Pack6	N/A
	MS-DOS 6.22	2,4,5
<b>Primary IDE Master</b>	IBM / IC35L060AVV207-0 /61.4GB / ATA33	
<b>Primary IDE Slave</b>	TEAC / CD-540E / 40X	
<b>CRT</b>	ViewSonic E773	
<b>LCD</b>	Hyundai HT12X11-200 / 12.1" / 1024*768 / 18bit	
<b>Compact Flash</b>	Type-1 PQI FC512 512MB	
<b>Riser Card</b>	PER-R04P Rev:A1.0-A	
<b>Power Supply</b>	ATX Power	1,2,3,4,5,6,7,8,9,10,11,12,13
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There are 3 test results in this document; they are described as follows:

Pass: Function worked perfectly

Fail: Function failed and must be modified in the next version

## Test Result for Certification

### 1. Dynamic / Boot\_UP Burn\_In Test

Test Method	Test Condition	Result
Diagnostics Software Burn-In Test.	0°C~60°C, 48 hrs	Pass
Power On/Off Test.	0°C~60°C, 24hrs	Pass

### 2. Voltage Range Test

Test Method	Test Condition	Result
Power On/Off Test in DO-100V Power Function Test	10 times in Room Temperature	Pass
Power On/Off Test in DOS-210V Power Function Test	10 times in Room Temperature	Pass
KB Reset in Dos Mode-100V Power Function Test	10 times in Room Temperature	Pass
Hardware Reset in Dos Mode-110V Power Function Test	10 times in Room Temperature	Pass

### 3. I/O Peripheral Function Test

I/O Peripheral Function Test –I/O Function	Result
Primary IDE Master	Pass
Primary IDE Slave	Pass
SATA1 / Serial ATA Connector 1	Pass
SATA2 / Serial ATA Connector 2	Pass
Compact Flash - Type I	Pass
Compact Flash - Type II	Pass
DOM (Disk On Module) - 44 Pin	Pass
COM 1	Pass
COM 2-232	Pass
COM 2-422	Pass
COM 2-485	Pass
COM 2-Ring /+5V /+12V	Pass
COM 3	Pass
COM 4	Pass
COM 5	Pass
COM 6	Pass
Clear CMOS	Pass
PS/2 Mouse & Keyboard (Internal)	Pass
PS/2 Mouse (External)	Pass
PS/2 Keyboard (External)	Pass
Audio Connector	Pass
Audio 5.1 Channel / S/P DIF	Pass
VLCD Voltage (5V or 3.3V)	Pass

LPT 1	Pass
SIR / 115.2 Kbps	Pass
USB 1&2 Ports	Pass
USB 3&4 Ports	Pass
USB 5 Ports	Pass
USB 6 Ports	Pass
USB 2.0 1 & 2 Ports	Pass
USB 2.0 3 & 4 Ports	Pass
USB 2.0 5 Ports	Pass
USB 2.0 6 Ports	Pass
DVI Function	Pass
DIO Connector	Pass
LCD / LVDS / Channel 1	Pass
LCD / LVDS / Channel 2	Pass
TV-out / AV	Pass
TV-out / S Port Output	Pass
DIMM Slots	Pass
Internal KB & Mouse	Pass
Watchdog Software Control	Pass
<b>I/O Peripheral Function Test –Front Panel and Other connector</b>	<b>Result</b>
Power On Button	Pass
IDE LED	Pass
External Buzzer	Pass
On Board Buzzer	Pass
Power LED	Pass
Reset Switch	Pass
Ext. K/B Connector	Pass
Internal K/B Connector	Pass
CPU FAN Connector	Pass
<b>I/O Peripheral Function Test – Power Connector &amp; Function</b>	<b>Result</b>
ATX Power Connector	Pass
<b>I/O Peripheral Function Test – LAN Connector &amp; Function</b>	<b>Result</b>
LAN Speed LED	Pass
LAN Active LED	Pass
LAN Link LED	Pass
LAN 10/100 Ethernet	Pass
LAN 1G Ethernet	Pass
<b>I/O Peripheral Function Test – PCI Connector &amp; Function</b>	<b>Result</b>
PCI Slots	Pass
PCI Express	Pass

#### 4. Power Consumption Test (Burring-In Speed200 Program)

	ATX Power: AOpen / FSP300-60ATV / 300W		AT Power:			
	CPU: Intel Core Duo T2500 (2.0GHz)	CPU:	CPU:	CPU:	CPU:	CPU:
Normal Mode (+5V)	2.34	A	A	A	A	A
Suspend Mode (+5V)	2.19	A	A	A	A	A
5VSB in Power Off Mode (ATX Mode)	0.31	A	A	-----	A	-----
5VSB in Power On Mode (ATX Mode)	0.2	A	A	-----	A	-----
Normal Mode (+12V)	1.27	A	A	A	A	A
Suspend Mode (+12V)	0.77	A	A	A	A	A
Normal Mode (+3.3V) (ATX Mode)	1.08	A	A	-----	A	-----
Suspend Mode (+3.3V) (ATX Mode)	0.61	A	A	-----	A	-----
Normal Mode (-12V)		A	A	A	A	A
Suspend Mode (-12V)		A	A	A	A	A
Normal Mode (-5V)		A	A	A	A	A
Suspend Mode (-5V)		A	A	A	A	A

#### 5. Power Connector Test (110V / 220V )

Test Method	Result
ATX Connector Power On/Off for 10 times in DOS	Pass

#### 6. Timer Accuracy Test

System Clock & RTC Clock Test		
Test Method	Margin for error	Result
System Clock in Power On Mode	±1 second during 24 hours	Pass
RTC Clock in Power On Mode	±1 second during 24 hours	Pass
RTC Clock in Power Off Mode	±1 second during 24 hours	Pass
Watchdog Timer Test		Result
Time-out Interval	10 sec	Pass
	60 sec	Pass
	255 sec	Pass

#### 7. Network HUB / LAN Connection Test

Location	LED Type	Result
OnBoard LAN LED	Active LED	Pass
	Link LED	Pass
	Speed LED	Pass

Location	Speed	HUB Type	HUB Speed	Result
LAN	10/100 Mbps	HP J4095A 24 Ports	100 Mbps	Pass
		D-Link DGS-1008T	1Gbps	Pass
		Intel InBusiness 8 Ports	10 Mbps	Pass
		LEMEL LM-S5 5 Ports	100 Mbps	Pass
		Accton Desktop-3005	100 Mbps	Pass
		SVEC FD916H	10 Mbps	Pass
	1Gbps	D-Link DGS-1008T	1Gbps	Pass
		D-Link DGS-1008T	1Gbps	Pass

## 8. Hardware Compatibility

CPU Compatible Test				
Type	Speed	FSB	Prime95 Version	Result
Intel Core Duo T2500 2.0GHz		533/667MHz	V	Pass
Memory Compatibility Test				
Brand / Memory Size	Chipset	Frequency	MemTest86 Version	Result
KINGMAX	ELPIDA/E5108AE-5C-E	533	1GB	Pass
KINGMAX	ELPIDA/E5108AE-5C-E	533	1GB	Pass
KINGMAX	ELPIDA/E5108AB	533	512MB	Pass
KINGMAX	ELPIDA/E5108AB	533	512MB	Pass
Transcend	SAMSUNG/K4T56083QF	533	256MB	Pass
Transcend	SAMSUNG/K4T56083QF	533	256MB	Pass
On Board Audio Function Test				
Audio Basic Function Test				Result
System Sound				Pass
Play CD_IN				Pass
Play Sound Recorder				Pass
Line Out				Pass
Line In				Pass
Line In Sound Record				Pass
MIC Speaker	Dynamic			Pass
	Condenser			Pass
MIC Sound Recorder	Dynamic			Pass
	Condenser			Pass

Audio 5.1 Channel with S/P DIF Function Test			Result
Speaker configuration			Pass
2-channel mode for stereo speaker output			Pass
4-channel mode for 4 speaker output			Pass
6-channel mode for 5.1 speaker output			Pass
S/P DIF function Test	Input		Pass
	Output		Pass
On Board TV Function Test			Result
NTSC	AV Port		Pass
	S Port		Pass
PAL	AV Port		Pass
On Board LCD Function Test			
TFT LCD	Type	Voltage	Result
LVDS	AU B104SN02 / 10.4" / 800*600 / 18bit	3.3V	Pass
	Hyundai HT12X11-200 / 12.1" / 1024*768 / 18bit	3.3V	Pass
	Samsung LTM150XH-L04 / 1024*768 / 24bit	3.3V	Pass
PCI Slot Function (PCI Adapter Card) Test			
Model	Type	Result	
EP-P80P Rev:0.1: PCI Debug Card	Debug Card	Pass	
Matrox G450	VGA Card	Pass	
CHAINTECH NVIDIA GeForce4 MX440-8X	VGA Card	Pass	
SC3000 CMI8738/C3DX	Sound Card	Pass	
Takram DC-395U V1.02	SCSI Card	Pass	
D-Link FE-530TX Fast Ethernet Adapter	LAN Card	Pass	
Intel SB82559 (10/100Mbps)	LAN Card	Pass	
D-Link DGE-530T 1000BASE-T Gigabit Ethernet Adapter	LAN Card	Pass	
D-Link DWL-520+ Wireless LAN	LAN Card	Pass	
Genuine GM56-AMI2019	Modem Card	Pass	
ABIT HotRod 100 Pro	RAID Card	Pass	
D-Link DU-520 USB 2.0	Other Card	Pass	
Tekram TR-822 Serial ATA 150 [SA-001] + SATA HAA Seagate ST312 0026AS 120GB [ID-200305]	Other Card	Pass	
PCI-Express Function Test			
Model	Result		
SksKconnect SK-9E21D 10/100/1000Base-T Adapter PCI-Express LAN Card	Pass		
HDD Compatible Test			
Model	Result		
Hitachi / HDS722525VLAT80 / 250GB / ATA-100	Pass		
IBM / DTLA-307045 / 46.1GB / ATA-100	Pass		
FUJITSU / MPE 3136AH / 13.6GB / ATA-66	Pass		
Maxtor / 4G160J8 / 160GB / ATA-133	Pass		



Quantum / Fireball Plug AS / 30GB / ATA-100	Pass	
Seagate / ST310210A / 10.2GB / ATA-66	Pass	
Western / WD400BB-75DEA0 / 40GB / ATA-100	Pass	
Seagate / ST3120026AS / 120GB / ATA-100 / S-ATA	Pass	
<b>CD/DVD-ROM Compatibility Test</b>		
<b>Model</b>	<b>Result</b>	
Acer DVP1640A / 16X / DVD-ROM	Pass	
Creative DVD1240E / 12X / DVD-ROM	Pass	
IBM HL-DT-ST / GCR-8480B / 48X / CD-ROM	Pass	
Pioneer / DVD-121 / 16X / DVD-ROM	Pass	
PHILIPS CDD5301 / PBC03210G / 32X10X40 / 12X DVD / CD-RW / DVD-ROM	Pass	
SAMSUNG / SH-W08 / DVD+R 8X / DVD-R 8X / CD-R 32X	Pass	
NEC / ND-2500A / DVD R/RW / +R8X-R8X	Pass	
TEAC / CD-540E / 40X / CD-ROM	Pass	
<b>IDE Cable Function test</b>		
<b>IDE Model</b>	<b>Result</b>	
44 Pin Cable ATA33	Pass	
<b>USB Function Test</b>		
<b>USB Basic Function Test</b>	<b>Result</b>	
USB Controller	Pass	
USB 2.0 Controller	Pass	
USB Keyboard Support	Pass	
<b>USB 1.1 Compatible Test</b>	<b>Result</b>	
USB 1.1 Compatible Test	Pass	
<b>USB 2.0 Compatible Test</b>	<b>Result</b>	
USB 2.0 Compatible Test	Pass	
<b>USB 2.0 Function Test</b>	<b>Result</b>	
Use High Speed Device USB2.0 CD-R/W Ben-Q / 4824W1-ON2 to play Nero CD/DVD Speed	Pass	
<b>USB Extension Devices Function Test</b>		
<b>Model</b>	<b>Type</b>	<b>Result</b>
Cyber Link Power DVD XP4.0	Remote Control	Pass
BENQ 4824WI-ON2	CD-RW	Pass
PLEXTOR PX-S88TU	CD-RW	Pass
USB HDD IBM DARA-206000 6GB [ID-200401] (include USB2.0 2.5" External USB Box)	HDD	Pass
IO-MEGA ZIP 100MB	ZIP	Pass
Mitsumi FL3.5D353GUE/FUE	Floppy	Pass
IO-Mega ZIP100	ZIP	Pass

Peripheral Compatibility-Storage Device			
Model	Interface	Result	
IO-Mega zip 100 parallel port	Parallel	Pass	
IO-Mega zip 100MB Internal ATAPI Drive	IDE	Pass	
PQI FC512 512MB	Type-I CF Card	Pass	
HITACHI / HMS360402D5CF00	Type- II CF Card	Pass	
Digital I/O Connector Test		Result	
Input Address: ( 801H )		Pass	
Output Address: ( 801H )		Pass	
DIO-1 Function Test		Pass	
COM Port Send / Receive Test		Result	
Use software program: COMTEST.exe		Pass	
Use software program: LL5.exe		Pass	
Disk On Module [DOM] Compatibility Test			
Model	Interface	Result	
DOM-064-426P Rev: A2A11	IDE 44 Pin	Pass	
Mini PCI Card Compatibility Test			
Model	Interface	Result	
RTL-8180L Mini PCI Card	Wireless LAN	Pass	
AAEON PER-C100 Mini PCI Card	RTL-8100C 10/100M	LAN Module	Pass
	RTL-8100S 10/100/1000M	LAN Module	Pass
	Intel 82551QM 10/100M	LAN Module	Pass
	Intel 82541G1 10/100/1000M	LAN Module	Pass
AAEON PER-C200 Mini PCI Card	USB Module	Pass	
COM/LPT Ports & RS-232/422/485 Function Test		Result	
RS-422 for COM2		Pass	
RS-485 for COM2		Pass	
COM1		Pass	
COM2		Pass	
COM3		Pass	
COM4		Pass	
COM5		Pass	
COM6		Pass	
LPT1		Pass	

## 9.O.S. Compatibility Test

Installation Operation System Compatible Test		Result	
Linux-Red-Hat 9.0 / Kernel 2.4.20-8		Pass	
Windows XP Professional English Version V2002 with Service Pack 2		Pass	
DOS 6.22		Pass	
Utility and Driver Test			
OS	Drivers Version	Result	
Linux-Red-Hat 9.0 / Kernel 2.4.20-8	VGA	Default	Pass
	LAN	Default	Pass
	Audio	Default	Pass
Windows XP Professional English Version V2002 with Service Pack 2	VGA	Mobile Intel 945GM Express Ver : 6.14.10.4444	Pass
	LAN	Marvell Yukon 88E8053 PCI-E Gigabit Ver : 7.24.1.3	Pass
	Audio	Realtek AC97 Audio Ver:5.10.0.6020	Pass
DOS 6.22		Pass	

## 10.BIOS Function Test

Test Item	Result
Standard CMOS Setup Test	Pass
Boot Sequence Test	Pass
Power Management Test	
APM Power Management Test	Pass
ACPI Power Management Test	Pass
Power On Function Test	Pass
Wake Up Event Test	Pass
Power On after Power Failure Test	Pass
CMOS Backup / Clear CMOS Test	Pass
Boot ROM Test (RPL/PXE)	Pass
Supervisor / User Password Test	Pass
CRT / LCD / TV Function Test	Pass
TV Standard Function Test	Pass
Init Display First Function Test	Pass
On-Chip Serial ATA Function Test	Pass
SATA Mode-IDE/RAID Function Test	Pass
PC Health Status	
Voltage Monitor Test	Pass
FAN Speed Monitor Test	Pass
Temperature Monitor Test	Pass
Swap Floppy Drive & Boot up Floppy Seek Function Test	
USB Onboard Device Function Test	Pass
COM Address / IRQ Test	Pass
LPT Address / IRQ Test	Pass
BIOS AWDFLASH Program Test	Pass

## 11.Touch Screen LCD for Serial Ports Test

Port Number	Address	IRQ	Result
COM1	3F8	IRQ4	Pass
COM2	2F8	IRQ3	Pass
COM3	3E8	IRQ10	Pass
COM4	2E8	IRQ11	Pass
COM5	2E0	IRQ10	Pass
COM6	2F0	IRQ11	Pass

## 12.Performance Test

English Windows XP Professional with SP2 V2002 + 1024x768x32bit / 60Hz + Direct 9.0		
ZD WinBench 99 V2.0		Unit
Business Disk WinMark99	2230	Thousand bytes/sec
High-End Disk WinMark99	14000	Thousand bytes/sec
Business Graphics WinMark99	333	
High-End Graphics WinMark99	1060	
Final Reality V1.01—BenchMark Test (Reality Marks)		
2D Image	42.02	
3D	6.53	
Bus transfer	69.51	
Overall	26.62	Reality marks
ZD 3D Winbench 2000 V1.1		
3D WinMark 2000	125	Frames / sec
ZD Multimedia Content Creation Winstone 2004 V1.0.1		
Multimedia Content Creation Winstone 2004		30.7
3Dmark2001SE Pro (Demo version)		
3DMark2001SE Build 330_Benchmark mode		4805
English Windows XP Professional with SP2 V2002 + 1024x768x32bit / 60Hz + Direct 9.0		
Business Winstone 2004 v1.0.1		
Business Winstone2004		24.3

## 13.System Integrated Application Test

Test Method	Result
A. System Integrated Application Test (Burn-In 8 Hrs):	Pass