PV8900-FULL-B Full Function
TCC8900/TCC8901/TCC8902 Development Board
Specification

1. Overview:

PV8900-FULL-B Development Board is based on Telechips TCC8900/TCC8901/TCC8902 Multimedia Application Processor with full TCC8900 function, such as HDMI, SATA, CF card, SD card, LCD display, dual channels LVDS, USB 2.0 HS Host/Device/OTG, USB 1.1 FS Host, 10/100M Ethernet, Audio Codec, Audio amplifier, RTC, WDT, RS232&UARTs, Power On/Power Off circuits, AV in, WIFI interface, GPIOs, etc.

The PV8900-FULL-B Development Board is implemented by means of one PV8900-CORE CPU Module and one Main Carrier Board, with this method the Main Carrier Board will be simple and easy to design. For detail information please check PV8900-CORE CPU Module datasheet.

The TCC8900 is a system LSI for digital multimedia applications based on ARM1176JZF-S, an ARM's proprietary RISC CPU core. It is designed for high-end multimedia entertainment devices such as car AVN, portable multimedia player and home entertainment. To enrich multimedia experience, multi-format video CODEC (JPEG / MPEG1 / MPEG2 / MPEG4 / H.264 / VC-1) and audio CODEC (MP3 / WMA / EAAC+ / AC3, etc) are also incorporated into software and hardware to bring vivid Full HD (1080P) contents to life on various screens and digital TV through HDMI output .

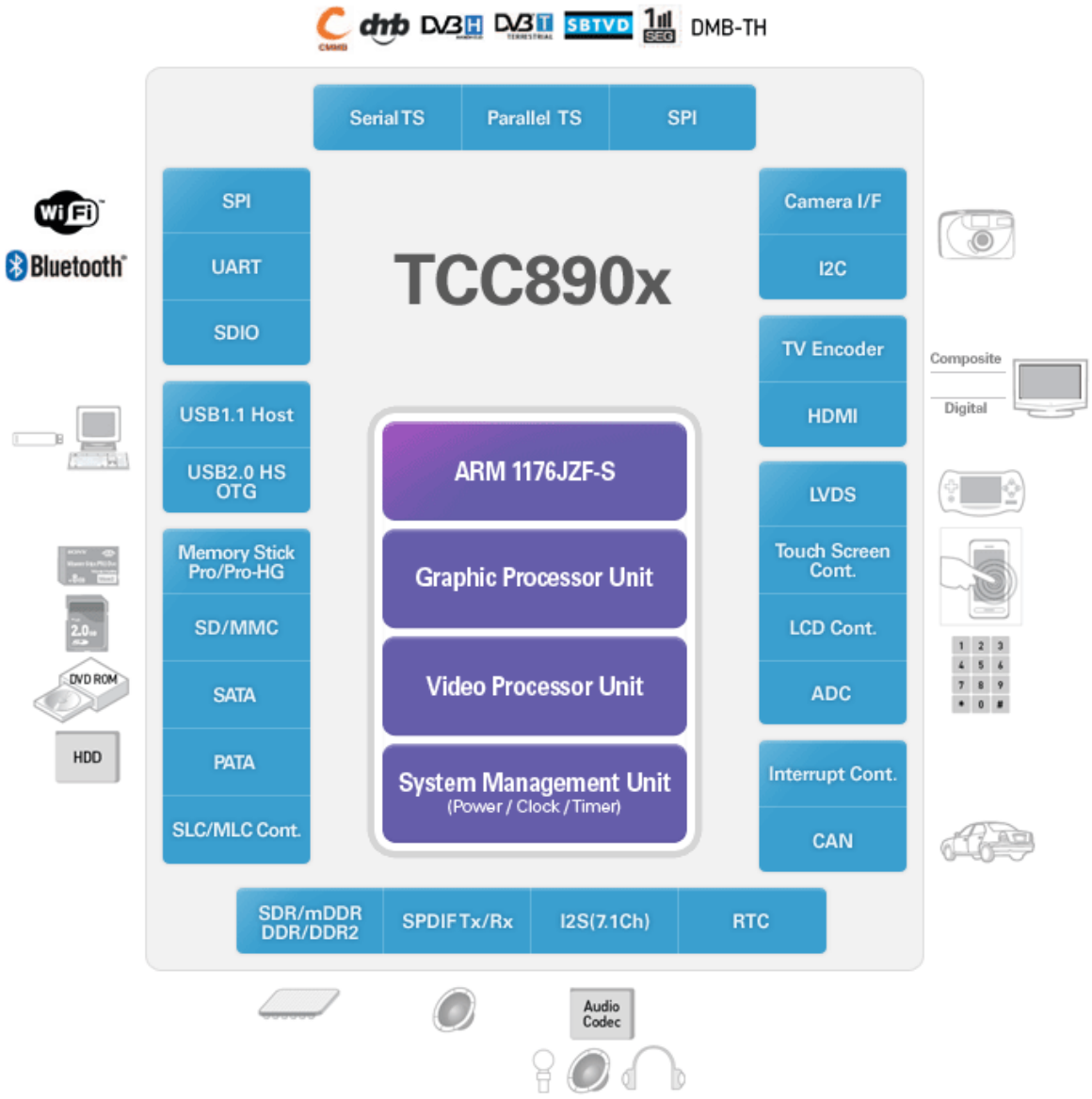
In addition, TCC8900 offers a hardwired 3D graphic accelerator (Mali200 from ARM) to enrich next generation GUI and other graphical applications.

2. Hardware Specifications

CPU	Telechips TCC8900, up to 720MHz@1.42V. 65nm CMOS Process ARM1176JZF-S architecture processor. Full HD (1920x1080) video decoding(H.264, MPEG 1/2, MPEG 4 , VC-1, Real Video 8/9/10, H.263). 1280x720 video encoding(H.263, MPEG 4, H.264). Support 2D/3D graphic acceleration (ARM's Mali200) with Open VG 1.1 and Open GL ES 1.1/2.0, also support Overlay Mixer function. Open OS Support: Linux 2.6.28, Windows CE 6.0, Android 2.1.	PV8900-FULL-B development board also can support TCC8902 and TCC8901 chips
Memory	256MB DDR2 SDRAM (32bit data bus)	Option for 128MB
	256MB NandFlash (8bit data bus can support SLC & MLC)	Option for 128MB or 2GB
Storage	One SD/SDHC card socket with a maximum capacity of 32GB	
	One CF card socket (operation in PATA true IDE mode)	Hardware jump select 3.3V or 5V power supply
	One SATA port (support SATA HDD)	SATA disk is powered by PV8900-FULL-B board
	One USB 2.0 High Speed Host port (support USB Disk)	
USB	One USB 2.0 High Speed Host port (USB A type), can be hardware jump set as USB Host port or USB Device port or USB OTG port	Can download software from PC in USB Device mode
	One USB 1.1 Full Speed Host port (USB A type)	Can support to connect USB mouse or the high-speed EDGE, HSDPA, etc. network adapter (3G modules)
Video Output	One FULLHD 1080P HDMI 1.3 output port	This port also can support to connect to DVI monitor
	One Generic 24bit color TTL LCD interface port with touch panel interface (50-pin FPC connector)	Can connect to external TCON sub-board to support 7"(800 x 480), 8"(800x600), etc. LCD Panel with 4-wire resistance touch panel or connect to VGA sub-board for VGA display
	One Dual channels 24bit color LVDS output port (implemented by external chip outside CPU) The Power supply of LVDS LCD Panel can be hardware set by jumper form 12V, 5V and 3.3V power supply CCFL Inverter or LED backlight interface circuit	Can support up to 1080P LCD Panel, this port can support single channel or dual channels LVDS interface LCD Panel
	One Single channel 18bit/24bit LVDS (which is directly output from CPU) The Power supply of LVDS LCD Panel can be hardware set by jumper form 12V, 5V and 3.3V power supply CCFL Inverter or LED backlight interface circuit	Can support up to 720P and single channel LVDS interface LCD Panel
	One TV Out port (AV Out, CVBS output, Composite TV-Out (NTSC / PAL)	
Video Input	2ch AV In (CVBS In), can be switched by I2C	
	Generic digital Camera/TS input interface CCIR601/656 input, Input Image Scaler (up to 4080x4080) Up to 12Mpixel Camera (YUV)	can support TS function by connected external DVB-C, CMMB or other modules
Audio	One 3.5mm earphone Jack (audio output)	
	One On board microphone (audio input)	

	2ch Line-out (used for AV OUT)	
	2ch Line-in (used for AV IN)	
	One SPDIF output port	
Audio amplifier	2ch, 6W/ch, can connect to two 8omh 6W speakers directly	Option for 2ch 10W/ch
Ethernet	One 10/100M Ethernet interface (RJ45) Support wakeup function from remote network to power on the board	
Wireless	IEEE 802.11 b/g/n network SDIO 2.0 interface 1 transmitter and 2 receivers	This is one option function, not default function
RS232&UARTs	One RS232 port (RS232 level) or UART ports (TTL level) (CPU's UART0), which usage can be selected by jumper Three UART ports (TTL level) (CPU's UART1, UART4, UART5)	
Key	One Analog Key Board interface 12 Keys on Analog Key Board: Power On, STOP, REW, FF, REC, MENU, EQ/MODE, A-B, SPEED, +, -, PLAY	
External RTC	Use EPSON RX-8025SA RTC chip With CR2032 Lithium Coin Backup Battery The wakeup of external RTC can power on the system power supply	
Remote IR(Infra-Red) Receiver interface	Support external 5V Remote IR Receiver Support two LEDs: Green LED and Red LED by one GPIO.	
JTAG	One 10-pin JTAG interface	
BUZZER	One on board BUZZER	
RESET&WDT	External WDT and RESET circuit	
Peripherals & Other Features	One EHI (External Host Interface) port shared with CF card interface GPIOs 5 LEDs: VSYS_5V power LED, 5VSTB power LED, VDD33D power LED, CF access active LED, SATA access active LED	VSYS_5V: system 5V power supply, which can be power off 5VSTB: Standby 5V, always on
Boot Mode	4 Jumps for CPU Boot Mode setting Support three boot mode: USB Boot, SD4 Boot, NandFlash Boot,	
Dimensions	165mm(length) ×120mm(width)	
Operation Temperature	Default: 0°C to 70°C，Can Support -40°C to 85°C if customer order	
Power supply	12V@0.6A (normal condition), can up to 12V@3A or 12V@4A when drive large LCD Panel, CCFL inverter and two 8omh 6W~10W speakers.	
Accessories	Power adapter(DC 12V@2A), HDMI cable, USB A type cable, RS232 cable, RJ45 Ethernet cable, Key board, 2 jumpers, DVD	
Option Accessories	7" LCD Panel(800x480) + Touch Panel + TCON LCD IF sub board 8" LCD Panel(800x600) + Touch Panel + TCON LCD IF sub board	
Target Application	STB, PVR, PMP, Portable Navigation, Car AV / AVN, Jukebox	
Warranty	One year	
Delivery	Within 2-3 working days after payment confirmed	

3. TCC890x Function Block Diagram

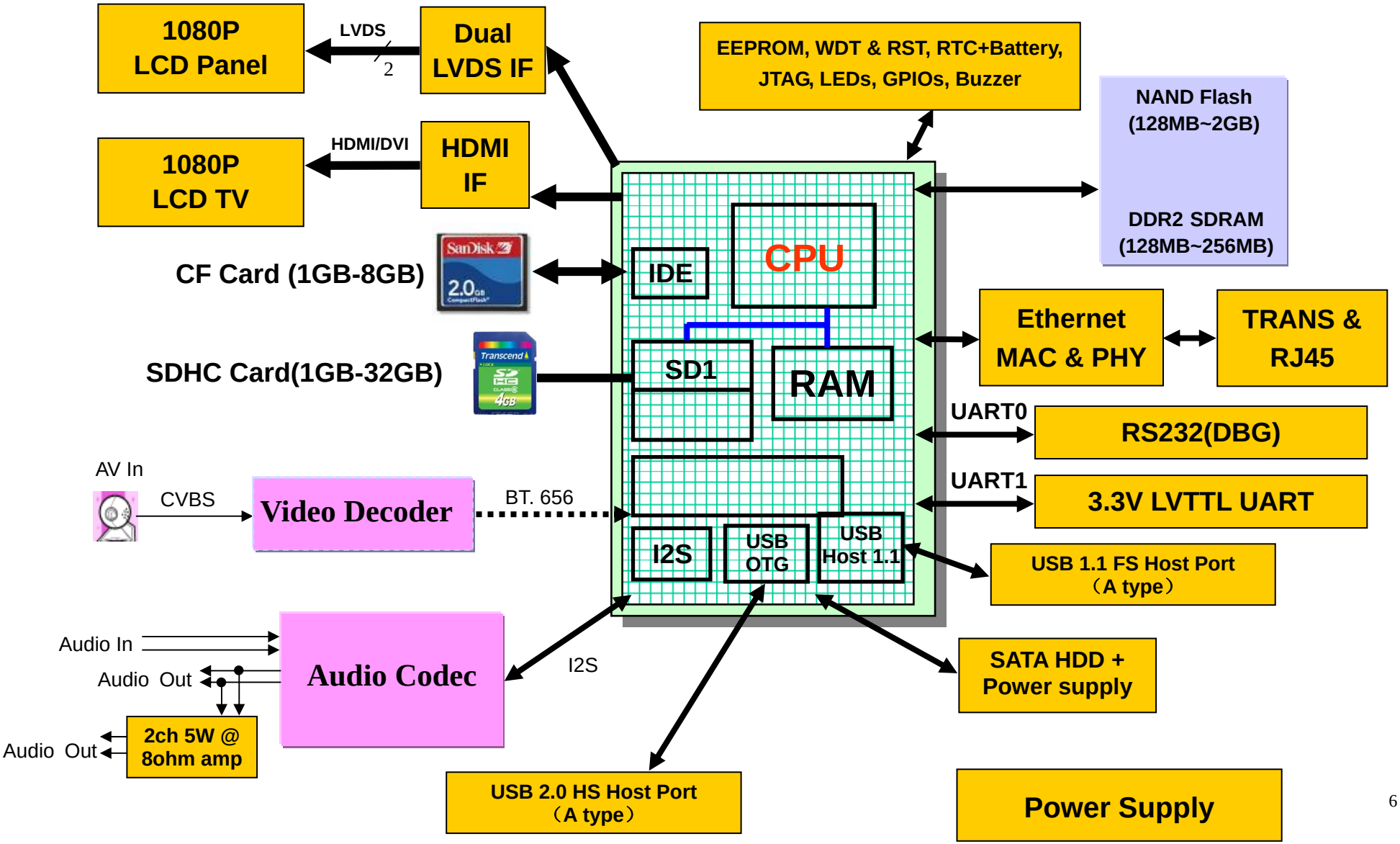


4. Company Information

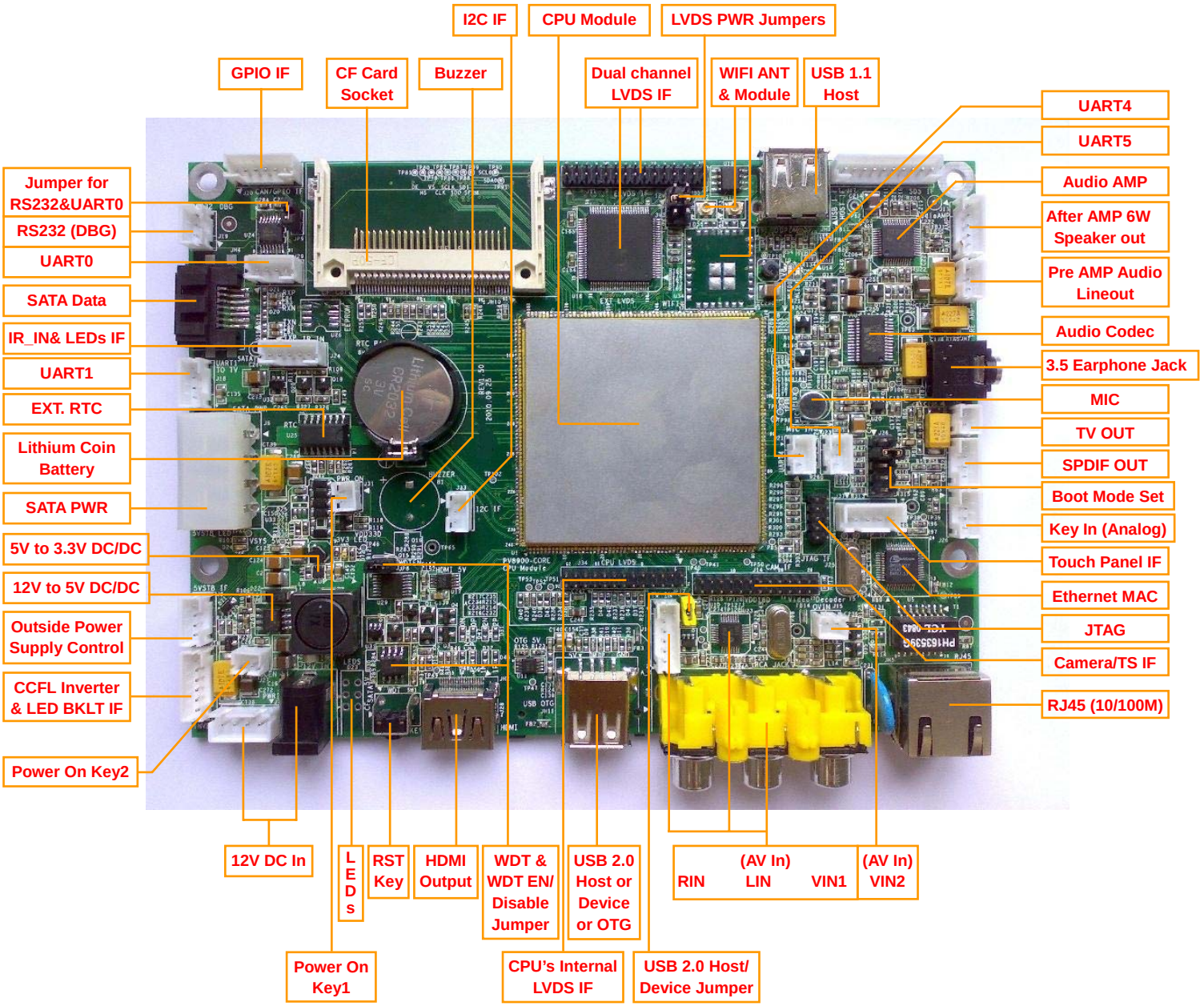
5. Software Specifications

Support OS: Linux 2.6.28、Windows CE 6.0、Android 2.1

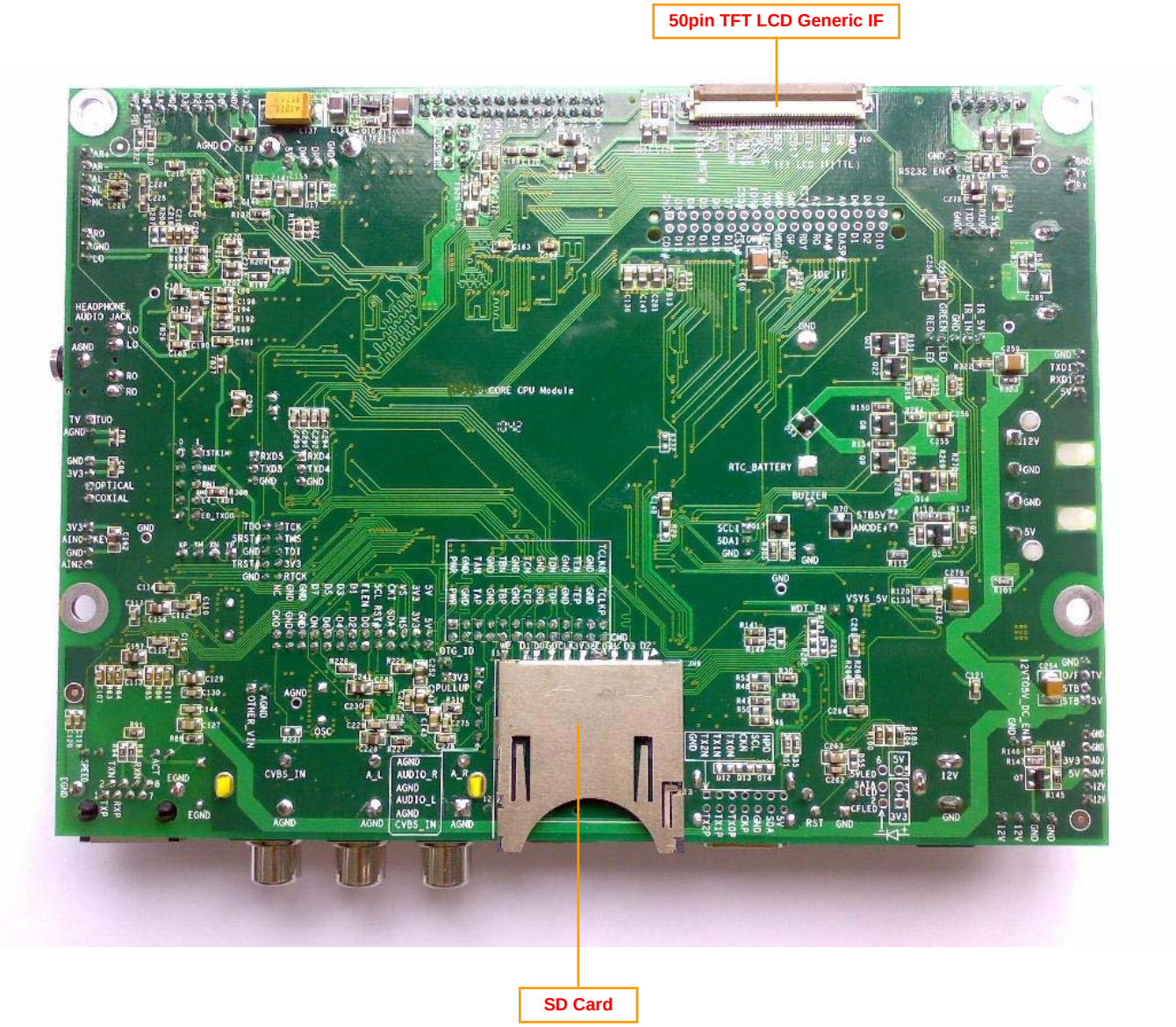
6. System Diagram:



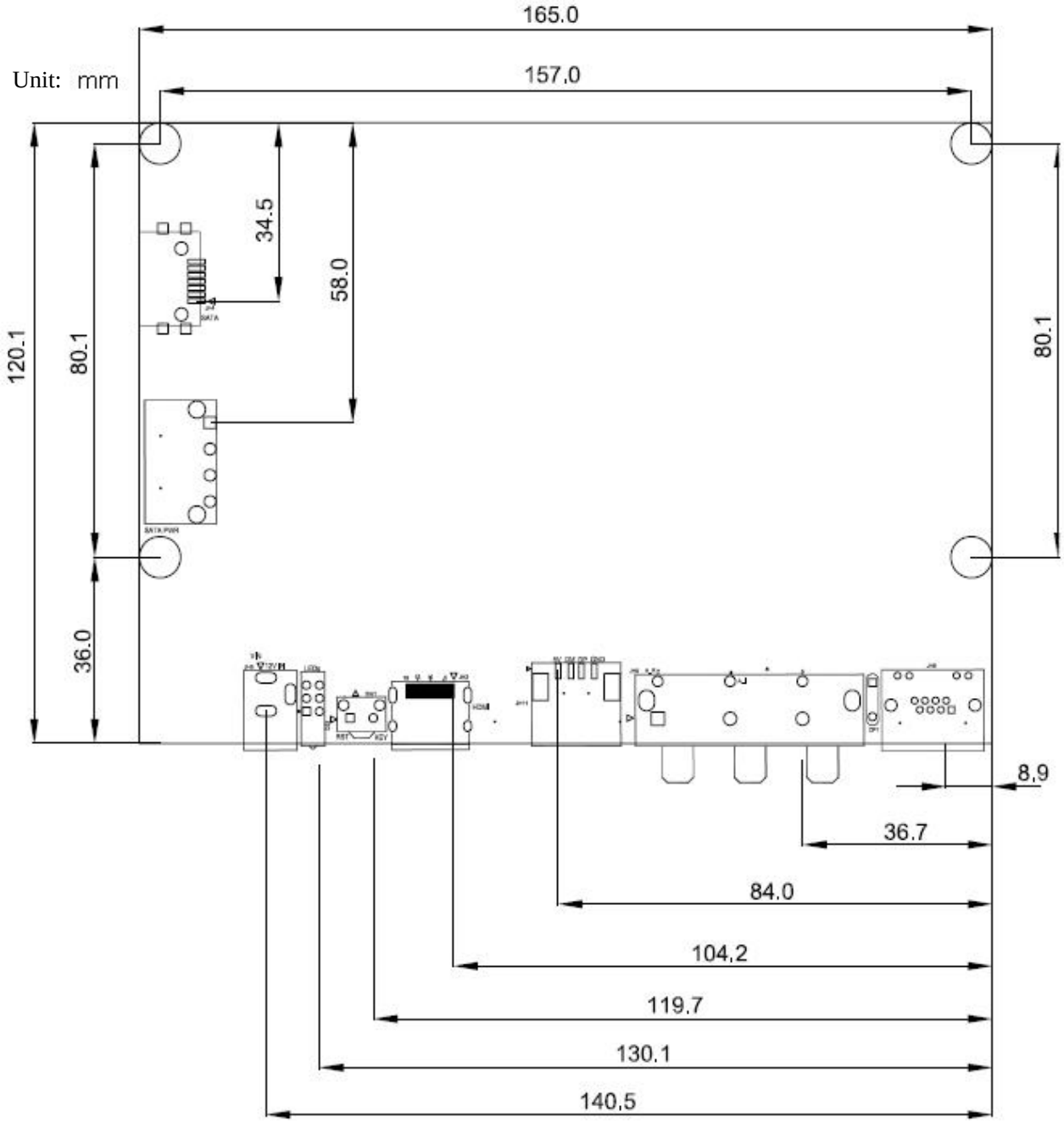
7. Top side of PV8900-FULL-B：



8. Bottom side of PV8900-FULL-B：



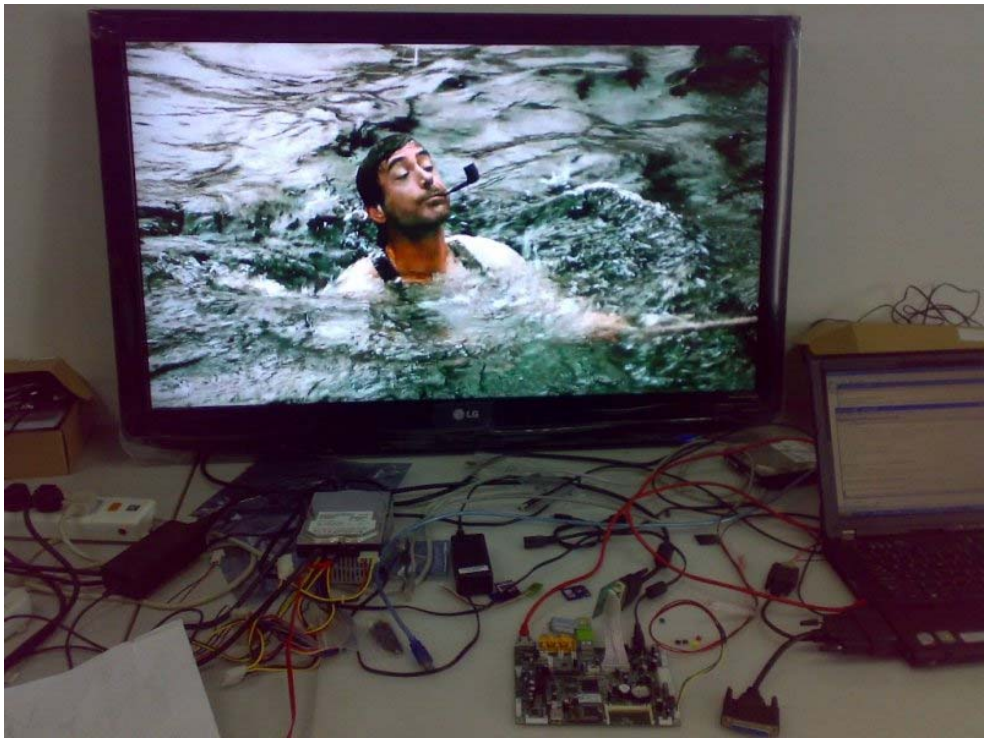
9. Dimension:


Unit: mm
165.0
157.0
120.1
80.1
34.5
58.0
80.1
36.0
8.9
36.7
84.0
104.2
119.7
130.1
140.5

10. Dual display mode: 7” LCD Panel display UI + 42” LCD TV display video:

11. 8” LCD Panel AT080TN52 (800*600, 4:3) display (Windows CE 6.0):

12. 42” FULLHD(1920*1080P) LCD TV display:



13. 7” LCD Panel AT070TN83(800*480, 16:9) display (Android 2.1):

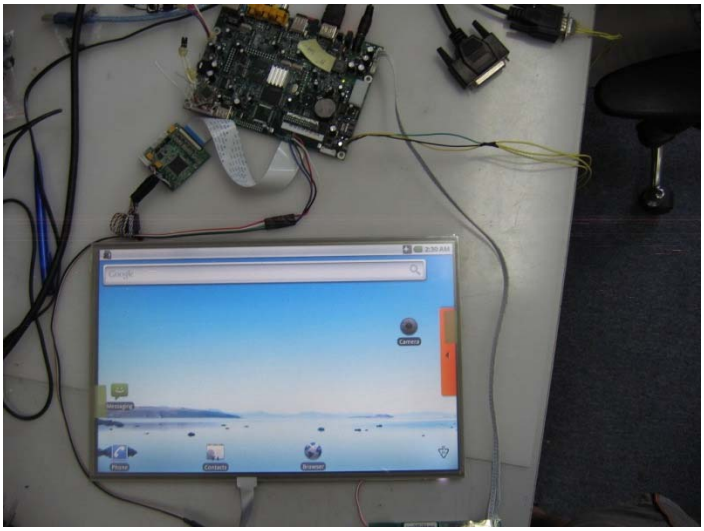
14. 8” LCD Panel AT080TN52 (800*600, 4:3) display (Android 2.1 + SDIO WIFI module):

15. VOD from YOUKU through WIFI (Android 2.1)

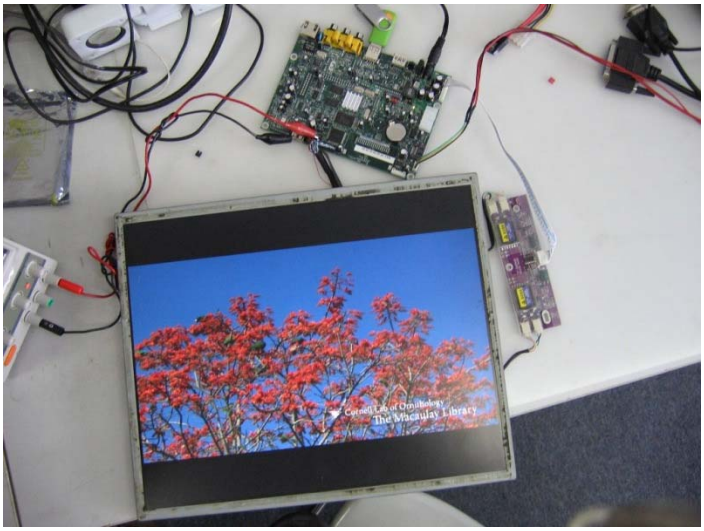
Demo1 video link: http://v.youku.com/v_show/id_XMTk2MDIwNjQw.html

Demo2 video link: http://v.youku.com/v_show/id_XMTk1OTYzNTUy.html

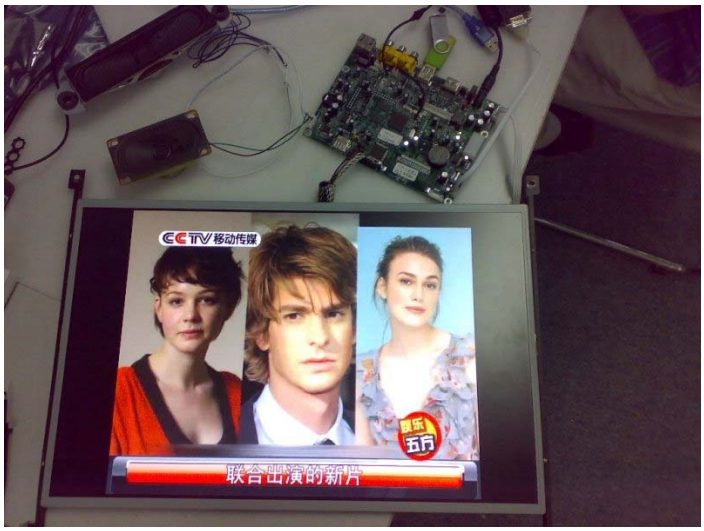
16. 15.4” LCD Panel LP154WX4 (1280*800, CCFL, 16:9) display (Android 2.1) through external 18bit color single channel LVDS subboard + CCFL inverter:



17. 17” LCD Panel M170E5-L09 Rev.C3 (1280*1024, 4:3) display (Windows CE OS) through on board 24bit color dual channels LVDS port + CCFL inverter:

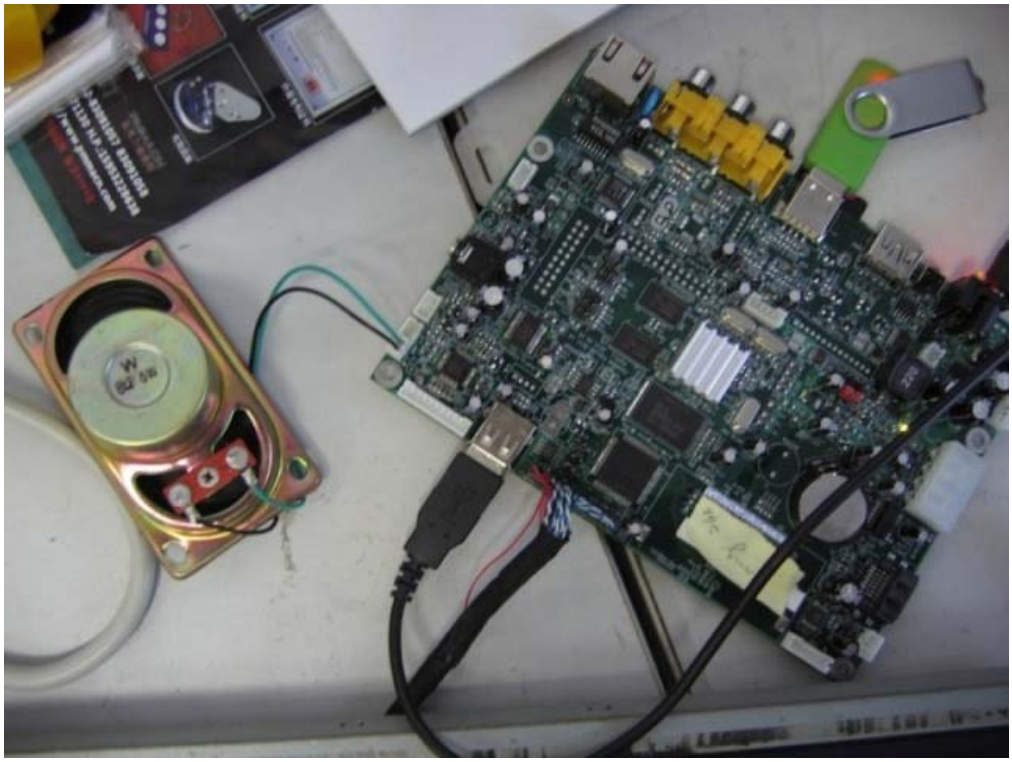


18. 19” LCD Panel (M190A1-L07, 1440*900, 16:9) display (Linux OS), through on board 24bit color dual channels LVDS port + CCFL inverter:

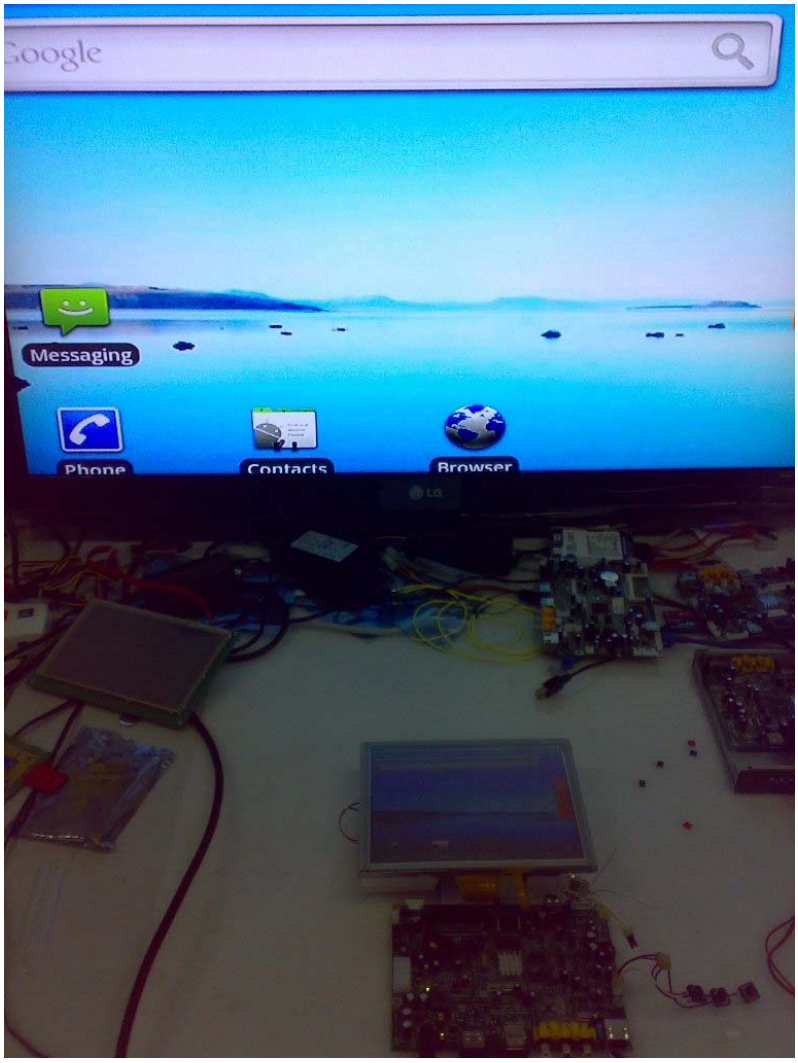


19. TV Output to 42” 1080P LCD TV display (Linux OS):

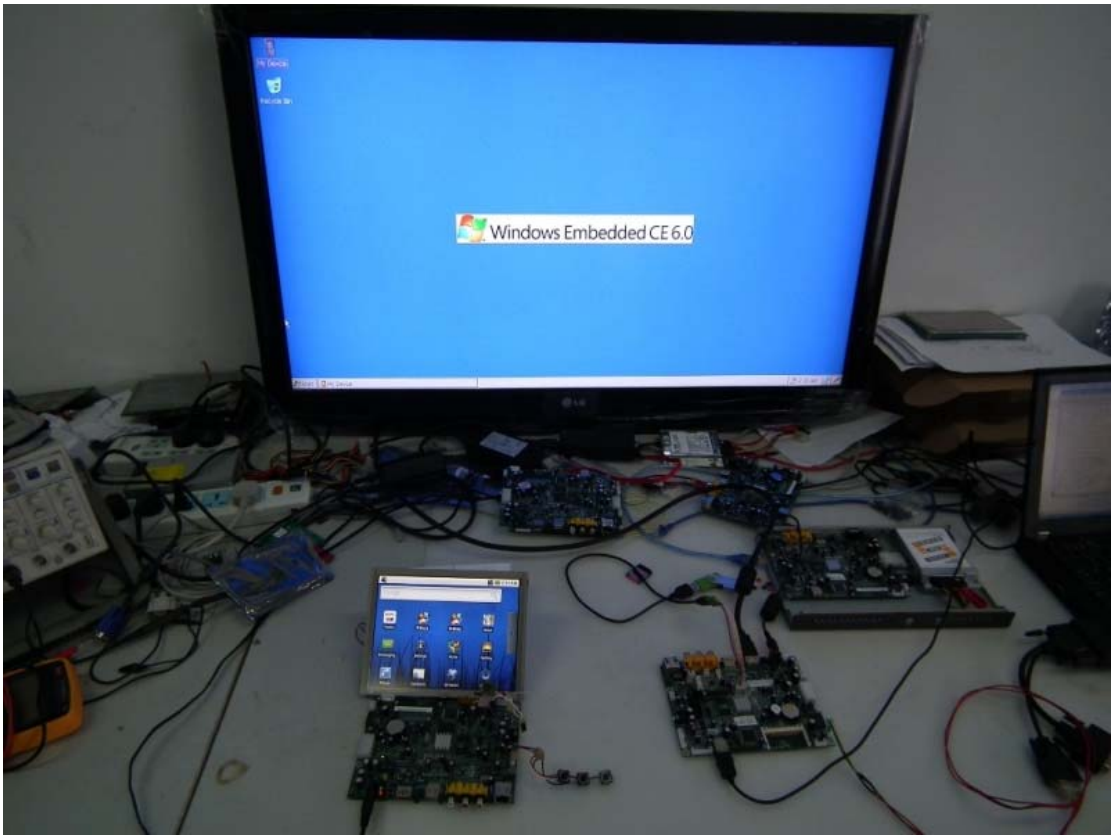
20. Directly drive 5W 8ohm speaker, on board 3.5mm earphone Jack, USB mouse connect to USB 1.1 Host port:



21. Dual display mode:Display the 8” LCD Panel’s UI to 42” LCD TV through HDMI (Android):

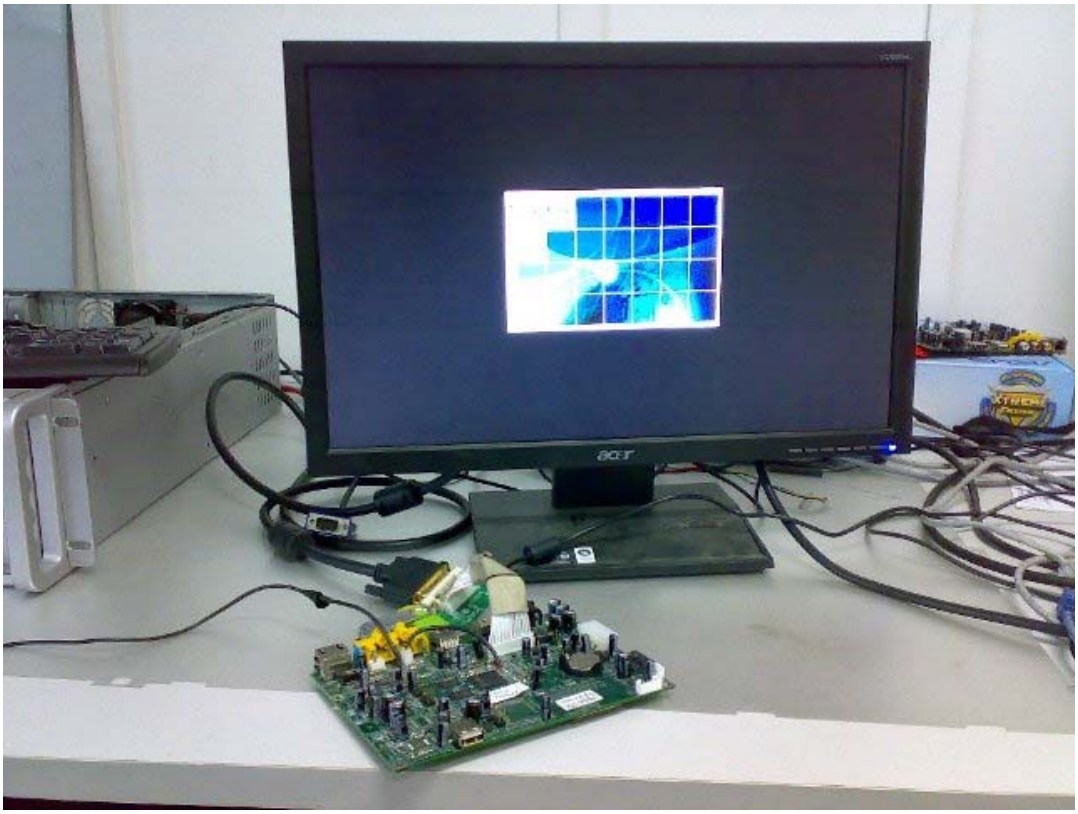


22. Display to 42” LCD TV through HDMI (Windows CE 6.0):



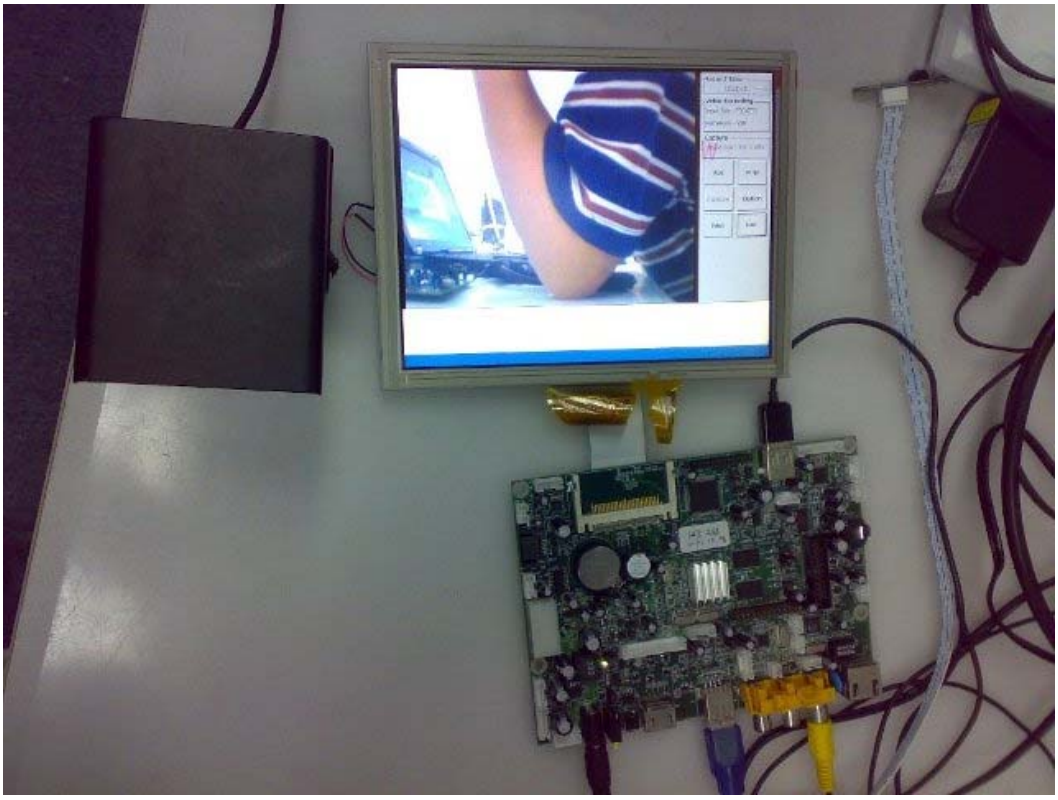
23. VGA output (1024x768) to 42” LCD TV (Linux):

24. Display DVI PC monitor through HDMI port:



25. 1080P FULLHD multi-area display (Video area, Picture area, Text area, user can define these area):

26. Analog camera AV In and display on LCD Panel in real time (D1: 720*576 resolution), use on board MIC input:



27. PV8900-FULL board in mass production (for KFC project):

28. STB in mass production (PV8900-FULL board is build-in and connect to SSD HDD through SATA interface)：

29. Product used in KFC project (PV8990-FULL is assembled in STB, STB is assembled behind the 42” LG LCD TV):