Exhibit 4

Brief Description of Circuit Functions

Circuitry Description

TV Board

Tuner convert RF signal to CVBS and 2nd IF, the CVBS is given to video decoder SAA7118 and 2nd IF is given to audio decoder MSP34X0G.
video/audio connecters (SCART & YPbPr & SVHS & AV input & AV output) except PC audio are placed in this board, YPbPr own its audio input , SVHS and AV input share one audio input. SCART and YPbPr have a multiplexer circuit to switch their signals. The video signals are given to video decoder SAA7118 in main board and the audio Signals are given to audio decoder MSP34X0G vias multiplexer. The output of MSP34x0G is sent to audio amplifier TDA1517 .
All the sound effect ,volume/bass/treble/delta/etc , are made by MSP34x0G.
This board connects to Main board with 30 pins connector .

Audio Board

Audio amp TDA1517 is used, it provide 5Wx2 audio power to Audio out jack board for the connection of two external speaker boxes.

Audio out jack Board

There are three output jacks on the board. The upper two jacks are for L and R external speakers. The lowest one is for Line Out. Speakers will be mute when line out jack is plugged in.
This board is connected to Audio Board with a 10 pins connector.

Key Control Board

6 push keys & DC power switch are here, the keys signals are sent to Painter I (uP) for decoding. The DC power switch is to control the Vcc of the painter I uP

IR Board

There are infrared receiver, Light sensor and Power LED on the board. The Light sensor signal and IR signal are sent to Painter I (uP) for decoding. The Power LED is controlled by painter I (uP) to show the power supply's status.

Main Board

Video

Video decoder SAA7118 convert analog video signal to 656/8 bit to video converter FLI2300 , the FLI2300 provide the function of video de-interlacing , LTI & CTI, noise reduction, color suppression with 2D comb filter , true color enhancement and film 3:2/2:2 pull down, it is scaling the video to 1280x768 output, FLI2300 need a extra SDRAM for the memory of de-interlacing

HD YPbPr input

The TDA9883 convert analog HD signal YPbPr input to 24 bits digital output , then send this 24 bits data to FLI2300 , and the sync out from TDA9883 will be given to scaler JagASM for mode detection , the YPbPr is also sent to SAA7118 for decoding , the uP will know what kind of video is inputted.
TDA9883 will be working for progressive YPbPr and SAA7118 will be working for interlace YPbPr.

PC graphic & DVI

135MHz ADC had built inside the JagASM scaler, so PC signal directly sent to JagASM analog port ,It scales all modes to 1280x768 output.

The Sil151 will convert PC DVI digital input to 24 bit then send to digital port of JagASM scaler. It scales all modes to 1280x768 output

There are two DDC EEPROM ,one for analog PC D-sub input, the other one is for PC DVI digital input.

PIP

The JagASM need 32 bit SDRAM to memorize the video signal when PIP mode is enabled, the down Scaled video is made by FLI2300 and mix the video into PC graphic and PC DVI Digital in JagASM.

OSD

The OSD is created in JagASM scaler and mixed in JagASM.

uP

There are 2 uPs are designed in : Painter and MX10E8050.

Painter

It provide TxT & CC & V Chip library, and it also used for power saving detection and user key detection. It control the video decoder SAA7118 & Audio decoder MSP34X0G & Tuner via IIC

MX10E8050

It is responsible for the scaling part & HDTV part ,it control scaler JagASM & AD9883 via IIC, and it control the scaler JagASM via the memory mapping method.

The two uPs is communicated each other via a independent IIC

Power

Internal power board is used , supply 24VDC for Inverter and 16VDC for scaler board power and Audio amplifier, DC-DC converter are used to convert 16V to 12V for panel T-cone driver , and convert 16V to 5V/3.3V/2.5V/1.8V for chips and tuner ,a 3V3 switching power is used for painter uP for power saving purpose .

Exhibit 5

Block Diagram

300WN5 LCD Multifunction Monitor (TV model)

System Functional Block