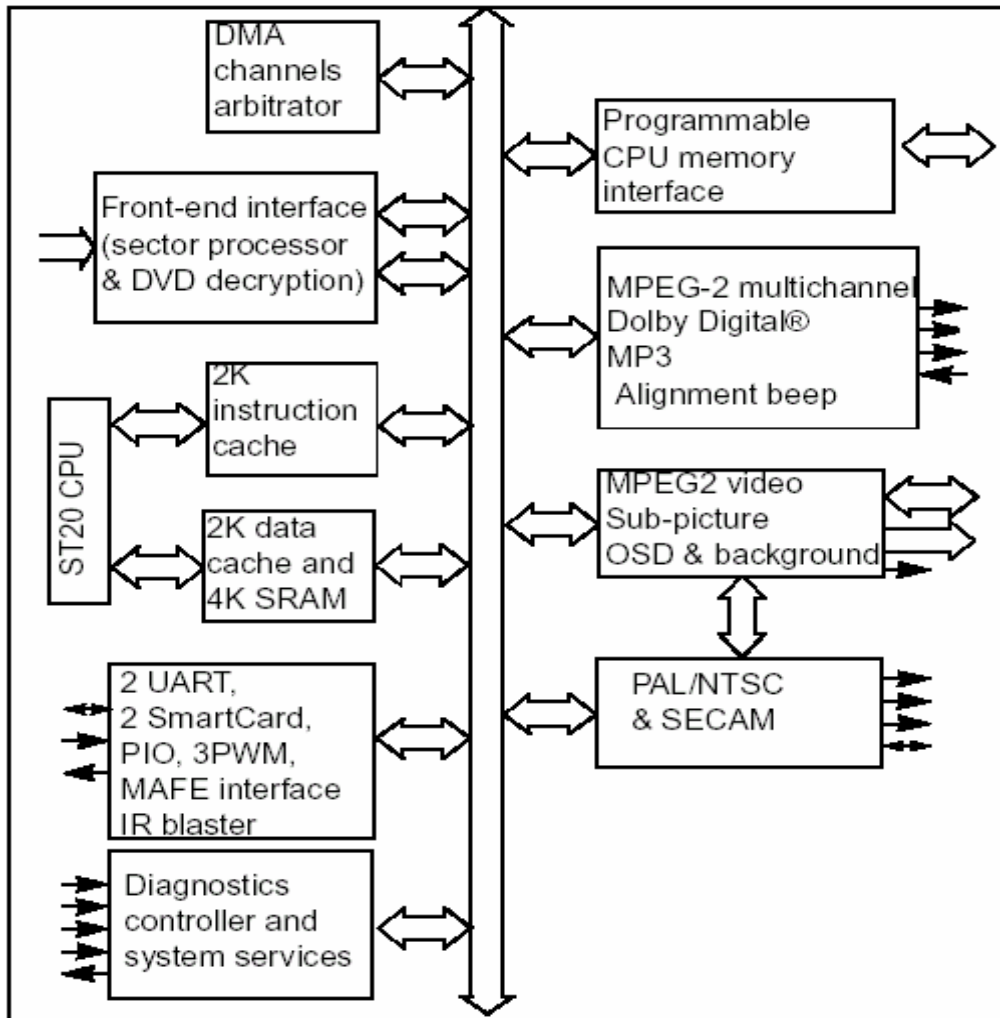# I.   Operation Description

1. STI 5518 Related

2. Front-End Interface

3. A/V Interface

4. Modem Interface

6. Power Supply Interface

1. STI5518 Related

(1) Configuration

Picture 1. Sti5518 Block Diagram

STI5518 is 1 chip for DVB, DSS Set Top Box including 32bit host CPU, A/V Demux, Video Encoder, Multi PIO, Cache RAM etc⋯.
Summarized features by Block parts are as follows;

- Function improvment by using 32bit host CPU Core of maximum 81MHZ Clock.
- Uses inner buffer of 4KB SRAM, 2KB ICACHE, 2KB DCACHE.
- Built-in Video Decoder Supporting MPEG-2 MP@ML, Letter box

Video.
- Built-in MPEG Layer1, 2 Audio Decoder.
- IEC60958 digital output having AC3 by-pass function.
- Supports 2 – 8bit/pixel OSD.
- Built-in Video Encoder for RGB, CVBS, Y/C Video Output.
- CPU & Decoder performance improvement by supporting maximum 64Mbit SDRAM.
- Variable outer interface memory support (4 Banks).
- H/W DMUX, Serial parallel Input, 32Pid Support.
- 8 Level INT Support.
- DMA & Multi PID Support.

(2) Reset

Every Register Values are initialized when Low Signal is approved in Reset Pin of Sti5518.

Reset Pin should be high after carrying out the follow conditions;
- After stablizing of Clock and POWER
- After not RSTPin becomes Low

When Reset Pin becomes High, CPU accomplishes booting procedure.

(3) Clock

Clock uses 27MHz and is made in VCXO.

Control Voltage of VCXO fits a Synchronous Machine of exact MPEG by using PWM of sti5518 revising and referring to PCR Value of MPEG. If this value is abnormal, Video could have no color or, Screen could be broken.

Sti5518 uses making every operation clock used inside using a outer 27MHz clock.

(4) PIO Configuration

PIO supported in Sti5518 supports 6 ports which are PIO0, PIO1, PIO2, PIO3, PIO4, PIO5. Some ports are used in compounding with S/W adding special function in general PIO function for extension.

(5) Memory Interface

Sti5518 supports 2KB Data Cache, 4KB SRAM or Data Cache, 2KB Instruction Cache, which is On-chip Memory, and ROM, DRAM, which is Outer Extension Memory. Also, Using SDRAM can be used up to 64Mbits as MPEG Memory, Now by using Code on SDRAM formula, 32Mbits of 64Mbits SDRAM is used as MPEG Buffer, and the rest 32Mbits is used as Code Buffer.

2. Front-End Interface

(1) Tuner Module
   This Cable NIM(Network Interface Module)is designed for using in DBV-C
   system. It builts in QAM-Demod IC. It covers a center frequency range
   from 50 ~ 870MHz.
   It's used to a single conversion approach with the reception frequency
   range in VHF low, VHF high and UHF.

3. A/V Interface

(1) Video
Digital Encoder of PAL/NTSC is built in Sti5518.
Digital Encoder converts Digital Video Stream, OSD, Sub-picture of
4:2:2 or 4:4:4, and makes Analogue Base band PAL/NTSC Signal
Encoder Output supports Interlace mode or Non-interlace mode.
There is 3 Analogue Video Output Pin. (CVBS, S-VHS(Y/C)). Also,
supports Teletext, closed-captions, CGMS.

1) Video Output

DMT1761 has 2 Video Output Port(RCA JACK, RF_MODULATOR).
Y,C Signal is output from S-VHS JACK through Video Buffer & LPF(Low
Pass Filter) on STI5518 Output.
CVBS Signal is output from LPF on STI5518 Output.

(2) Audio

Audio related Output of Sti5518 is possible as PCM Type and AC3
Interface Type. DMT1761 uses Serial Data of PCM Format & Digital
Audio output of SPDIF Format. PCM Data Output Format is possible as
Standard & I2S Compatible PCM Format. Interface Signal of PCM
Format is as follows;

- PCMDATA (Sti5518 Pin52)   : PCM Serial Data Output
- SCLK   (Sti5518 Pin51)   : PCM Clock Output
- LRCLK   (Sti5518 Pin56)   : Left/Right Channel select
- PCMCLK   (Sti5518 Pin55)   : PCM Clock Input(18.432Mhz)

Data of PCM Format is output from outer Output Port converting as

Analogue Signal in outer Audio DAC through Output Amplifier & AV Switch.

Analogue Audio Signal converted In Audio DAC is output from STi5518 or Buffer after amplifying 3 times in amplification level through Low Pass Filter.

In the meantime outputs Digital Audio Output having AC3 by-pass Function of SPDIF Format in PIN57 of STI5518. This is output as 1Vp-p from RCA JACK which is Output Terminal through Buffer Circuit.

4. Modem Interface

A modem modulates outgoing digital signals from a computer or other digital device to analog signals for a conventional copper twisted pair telephone line and demodulates the incoming analog signal and converts it to a digital signal for the digital device. In recent years, the 2400 bits per second modem that could carry e-mail has become obsolete.

14.4 Kbps and 28.8 Kbps modems were temporary landing places on the way to the much higher bandwidth devices and carriers of tomorrow.

From early 1998, most new personal computers came with 56 Kbps modems. By comparison, using a digital Integrated Services Digital Network adapter instead of a conventional modem, the same telephone wire can now carry up to 128 Kbps. With Digital Subscriber Line (DSL) systems, now being deployed in a number of communities, bandwidth on twisted-pair can be in the megabit range.

5. Power Supply Interface

Power Supply provides every power required in STB, and Spec is as follows.

Type	: External Adapter (90~240V AC @ 50/60Hz , 0.3A)
Main Output voltage	: 12V DC / 1.0A
Nominal power consumption	: 10W