

保密等级：机密

# SPECIFICATION

## 产品规格书

产品型号：**T.SK106A.03**

销售区域：亚太

产品形态：TV

产品类型：基本型|ATV

文档编码：20050705

| Approved by Shikun |                    |                |
|--------------------|--------------------|----------------|
| Checked by HW      | Rechecked by SW/DC | Approved by DC |
| 刘少飞                | 邓源萍                | 张怡晴            |

Please send the original back to us after you have approved and signed.

客户承认签章后敬请寄回正本一份。

| Approved by customer |                  |                   |
|----------------------|------------------|-------------------|
| Comments 确认意见        | Approved by 批准签字 | Company's seal 盖章 |
|                      |                  |                   |
| Customer's Name:     |                  |                   |

## REVISION HISTORY

| VERSION | DATE       | BOARD ID              | PAGE | DESCRIPTION                | AUTHOR |
|---------|------------|-----------------------|------|----------------------------|--------|
| V0      | 2020.04.30 | T.SK106A.03<br>A20035 | All  | First Issued.              | Yve    |
| V1      | 2020.05.07 | T.SK106A.03<br>B20165 | 2    | Modified Board<br>Picture. | Yve    |
|         |            |                       |      |                            |        |
|         |            |                       |      |                            |        |
|         |            |                       |      |                            |        |
|         |            |                       |      |                            |        |

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## 1. STANDARD CONFIGURATION (标准配置)

下表为我们主推的标准配置:

|                          |  |
|--------------------------|--|
| 标准配置一                    | 亚太纯模拟，单层 <b>USB</b>  |
| <b>FUNCTIONS</b>         | 【03_A1】VGA,HDMI,CVBS/AUDIO IN,PC AUDIO IN,EARPHONE OUT,USB,ATV                     |
| <b>Notes</b>             | --   |
| <b>FRONT VIEW</b>        |  |
| <b>OPTIONAL FUNCTION</b> | --   |

**备注:** 如以上表格不包含您需要的配置，请单独向我司销售人员进行申请。

**Note:** If the configurations above can't meet your demand, please apply to our sales stuff.

## 2. BOARD PICTURE (板卡外观图)

Pictures are for reference only, specific to prevail in kind.

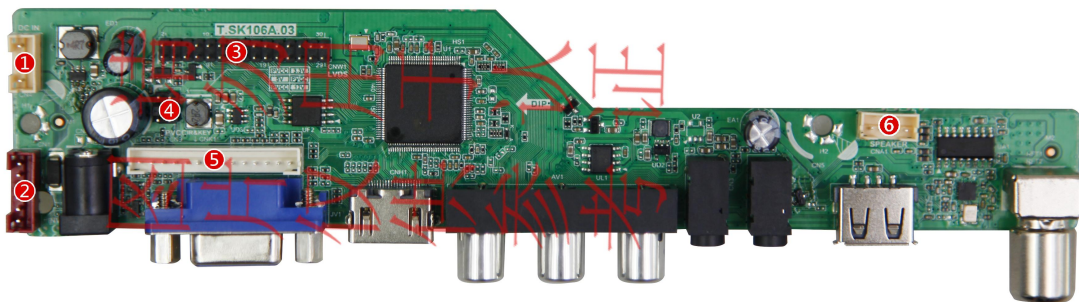
The optional connectors and functions are marked with “\*”.

以下图片仅供参考，请以【结构图】或【实物】为准。

可选的接口或者功能都以“\*”标示。

尺寸: 188mm(L)\*37mm(W)\*1.2mm(H) (H 为 PCB 厚度)

| No. | Position | Description |
|-----|----------|-------------|
| 1   | CN4      | DC IN       |
| 2   | CN1      | INVERTER    |
| 3   | CNW1     | LVDS        |
| 4   | CN9      | PVCC        |
| 5   | CNK1     | IR&KEY      |
| 6   | CNA2     | SPEAKER     |



备注: 耳机输出不能用于 Line Out.

**Note:** Earphone output can not be used for Line Out.

## 3. FEATURES (特性说明)

|                               |                    |                     |                      |
|-------------------------------|--------------------|---------------------|----------------------|
| <b>MAIN CHIPSET</b><br>主芯片    | Hi3731ARQCV1100N0N |                     |                      |
| <b>OSD LANGUAGE</b><br>OSD 语言 | Asia               | English,Chinese     |                      |
| <b>PANEL</b> 面板               | Panel Type         | TFT LCD             |                      |
|                               | Interface          | Dual LVDS(8bit)     |                      |
|                               | Max Resolution     | 1920*1080           |                      |
| <b>VIDEO INPUT</b><br>视频输入    | TV                 | ATV(PAL/SECAM/NTSC) |                      |
|                               | PC-RGB             | Format              | Up to 1920×1080@60Hz |
|                               |                    | Video System        | PAL/NTSC             |
|                               | CVBS               | Video level         | 1.0 Vp-p±10%         |

|  |  |  |  |
|--|--|--|--|
|  | HDMI   | 480i, 480p, 720p, 1080i, 1080p                                 |  |
|  |  | *CEC, *ARC   |  |
|  |  | HDCP Version   | 1.4  |
| <b>AUDIO INPUT</b><br>音频输入   | PC Audio   | PC Audio Input   | 0.2 ~ 2.0 V <sub>RMS</sub>                   |
|  | CVBS   | L/R RCA input  | 0.2 - 2.0V <sub>RMS</sub>                    |
| <b>AUDIO OUTPUT</b><br>音频输出  | Earphone   | Earphone output  | 130 ~ 150mV <sub>RMS</sub>                   |
|  | Frequency response   | Speaker  | 100Hz-15KHz @±3dB(1KHz 0dB reference signal) |
|  |  | Earphone   | 150Hz-15KHz @±3dB(1KHz 0dB reference signal) |
|  | Max Output power   | 2×3W(4Ω) THD+N<10%@1KHz<br>(Audio Input: 0.5V <sub>RMS</sub> ) |  |
| <b>POWER TO PANEL</b><br>驱屏电压  | 3.3V,5V, 12V   |  |  |
| <b>Management</b><br>电源管理  | Standby Power Consumption < 0.2W(Board Only)<br>待机功耗< 0.2W (仅主板) |  |  |
| <b>USB FUNCTION</b><br>USB 功能  | software upgrade, multimedia play<br>软件升级, 多媒体播放                 |  |  |
| <b>Button Types</b><br>按键类型  | Ground Key Interface<br>对地按键接口                                   |  |  |
| <p><b>Note:</b> 1. Licenses involved in specifications above are supposed to be obtained by customers themselves.<br/>                 2. When 3.3V panel Irush≥1000mA, Inormal≥600mA,please contact CVTE engineers to confirm 3.3V panel power supply component selection.<br/>                 3. Max current of USB2.0: 500mA. Large impact current of USB device(exceeds 500mA) may lead to board abnormal work;<br/>                 4. The normal operating current of 5V panel ≤ 1500mA.</p> <p><b>注意:</b> 1. 以上规格涉及 License 部分需要客户自己获取;<br/>                 2. 当 3.3V 屏冲击电流大于 1A, 正常电流大于 600mA, 请联系 CVTE 工程师确认 3.3V 屏供电器件选型;<br/>                 3. USB2.0 最大电流: 500mA, 如果 USB 设备冲击电流过大 (超过 500mA) 将可能导致板卡工作异常;<br/>                 4. 5V 屏正常工作电流小于 1500mA。</p> |  |  |  |

### 3.1 CRITICAL MATERIALS of TV Part (TV 部分关键物料清单)

The table is for reference only, specific to prevail in kind. 此表仅供参考, 请以实物为准。

| NAME<br>物料名称     | TYPE<br>型号   | BRAND<br>品牌 | BACKUP<br>备用型号 | BACKUP<br>备用品牌 |
|------------------|--|-------------|----------------|----------------|
| <b>TUNER</b>     | ATBM253  | AltoBeam    | --             | --             |
| <b>AMPLIFIER</b> | CS85636S   | CHIPSTAR    | --             | --             |
| <b>FLASH</b>     | W25Q32JVSSIQ   | Winbond     | --             | --             |
| <b>SPXO</b>      | SPXO,24MHz,±10ppm,<br>12pF,SMD3225,SMD,<br>SX32Y024000BC1T-Z | TKD         | --             | --             |

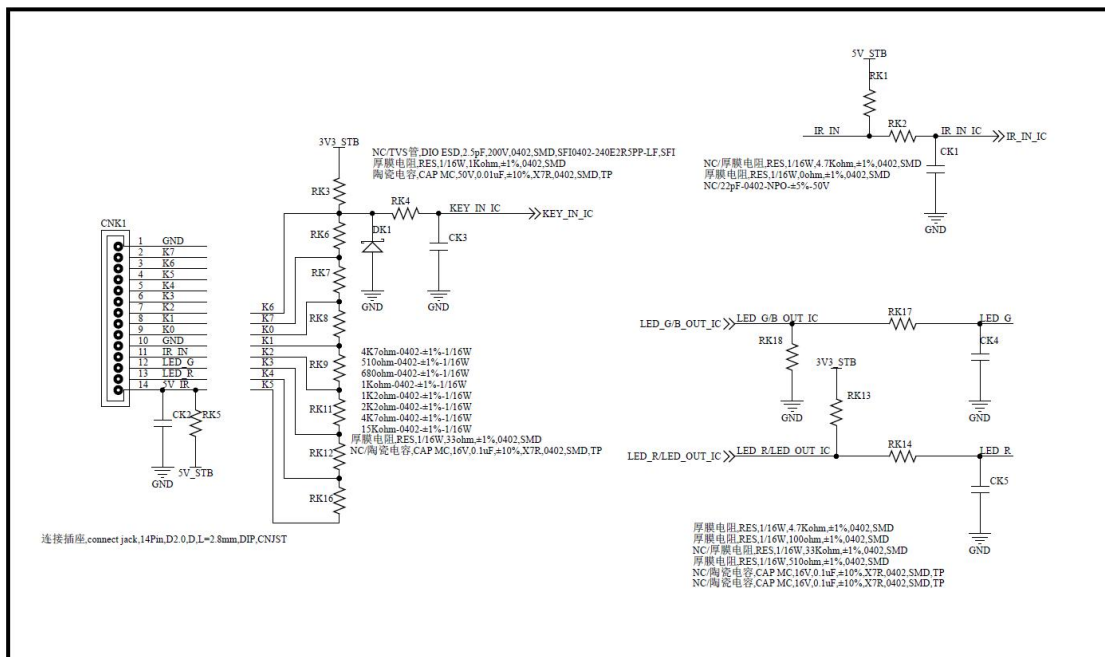
## 3.2 ELECTRICAL CHARACTERISTICS & REQUIREMENTS

(电气特性和要求)

| Sym bol | Voltage Range |      |                   | Ripple                 | Total curre nt   | MAX. current(mA) of Individual part |        |       |        |
|---------|---------------|------|-------------------|------------------------|------------------|-------------------------------------|--------|-------|--------|
|         | MIN           | TYP  | MAX               | Voltage                |                  | Mainboard                           | AMP    | USB   | Panel  |
| 12V     | 11            | 12   | 13                | 1200 mV <sub>p-p</sub> | Ct1 <sup>②</sup> | -                                   | -      | -     | IPANEL |
| 5V      | 4.9           | 5    | 5.25 <sup>①</sup> | 250 mV <sub>p-p</sub>  | Ct2 <sup>②</sup> | -                                   | 1500mA | 500mA | IPANEL |
| 3.3V    | 3.135         | 3.3  | 3.465             | 100 mV <sub>p-p</sub>  | Ct3 <sup>②</sup> | 300mA                               | -      | -     | IPANEL |
| 1.8V    | 1.746         | 1.8  | 1.854             | 200 mV <sub>p-p</sub>  | Ct4 <sup>②</sup> | 450mA                               | -      | -     | -      |
| 0.9V    | 0.89          | 0.92 | 0.95              | 100mV <sub>p-p</sub>   | Ct5 <sup>②</sup> | 650mA                               | -      | -     | -      |

Note<sup>①</sup>: Don't exceed 5.25V when make the certification practice test.  
 Note<sup>②</sup>: CtN = The sum of MAX. current(mA) of individual part.

## 4. SCHEMATICS OF IR & KEY BOARD (遥控按键原理图)



**按键功能:** 信号源, 菜单, 音量+, 音量-, 频道+, 频道-, 电源


**KEY FUNCTION:** TV/AV, MENU, VOL+, VOL-, CH+, CH-, POWER

**Note:** The dividing resistor which is corresponding to the power key must be zero (equivalent to the voltage is zero). Otherwise, the board will not work. K6 is default power.

## 5. INTERFACE DEFINITION (接口定义)

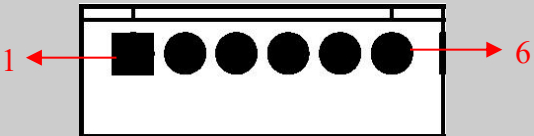
The optional connectors and terminals are marked with "\*".标“\*”的为可选。

### ◆ CN4(4PIN/2.0): DC IN CONNECTOR (直流电输入接口)



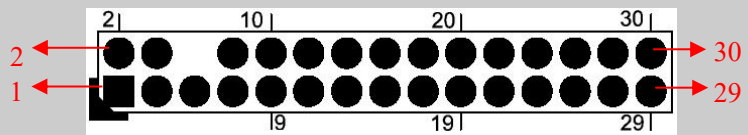
| NO. | SYMBOL | DESCRIPTION          |
|-----|--------|----------------------|
| 1   | 12V    | +12V DC Power Supply |
| 2   | 12V    |                      |
| 3   | GND    | Ground               |
| 4   | GND    |                      |

### ◆ CN1(6PIN/2.0): INVERTER CONNECTOR (INVERTER 接口)



| NO. | SYMBOL | DESCRIPTION                         |
|-----|--------|-------------------------------------|
| 1   | GND    | Ground                              |
| 2   | GND    |                                     |
| 3   | ADJ    | Brightness Adjustment for Panel     |
| 4   | BLO    | Back-Light ON/OFF Control for Panel |
| 5   | 12V    | +12V DC Power Supply                |
| 6   | 12V    |                                     |

### ◆ CNW1(2×15PIN/2.0): LVDS CONNECTOR (LVDS 接口)



| NO. | SYMBOL    | DESCRIPTION            |
|-----|-----------|------------------------|
| 1   | VCC-Panel | Power Supply for Panel |
| 2   | VCC-Panel |                        |
| 3   | VCC-Panel |                        |
| 4   | GND       | Ground                 |
| 5   | GND       |                        |
| 6   | NC        | No Connection          |
| 7   | RX00-     | LVDS ODD 0- Signal     |
| 8   | RX00+     | LVDS ODD 0+ Signal     |

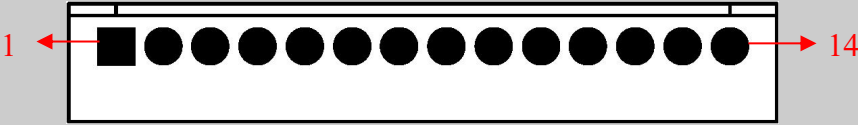


|    |       |                         |
|----|-------|-------------------------|
| 9  | RXO1- | LVDS ODD 1- Signal      |
| 10 | RXO1+ | LVDS ODD 1+ Signal      |
| 11 | RXO2- | LVDS ODD 2- Signal      |
| 12 | RXO2+ | LVDS ODD 2+ Signal      |
| 13 | GND   | Ground                  |
| 14 | GND   |                         |
| 15 | RXEC- | LVDS EVEN Clock- Signal |
| 16 | RXEC+ | LVDS EVEN Clock+ Signal |
| 17 | RXO3- | LVDS ODD 3- Signal      |
| 18 | RXO3+ | LVDS ODD 3+ Signal      |
| 19 | RXE0- | LVDS EVEN 0- Signal     |
| 20 | RXE0+ | LVDS EVEN 0+ Signal     |
| 21 | RXE1- | LVDS EVEN 1- Signal     |
| 22 | RXE1+ | LVDS EVEN 1+ Signal     |
| 23 | RXE2- | LVDS EVEN 2- Signal     |
| 24 | RXE2+ | LVDS EVEN 2+ Signal     |
| 25 | GND   | Ground                  |
| 26 | GND   |                         |
| 27 | RXEC- | LVDS EVEN Clock- Signal |
| 28 | RXEC+ | LVDS EVEN Clock+ Signal |
| 29 | RXE3- | LVDS EVEN 3- Signal     |
| 30 | RXE3+ | LVDS EVEN 3+ Signal     |

◆ **CN9(2×3PIN/2.0): PVCC CONNECTOR (PVCC 接口)**

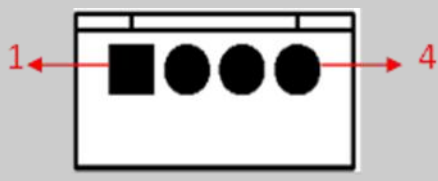
| NO. | SYMBOL | DESCRIPTION        |
|-----|--------|--------------------|
| 1   | PVCC   | PVCC               |
| 2   | 3.3V   | +3.3V Power supply |
| 3   | 5V     | +5V Power supply   |
| 4   | PVCC   | PVCC               |
| 5   | PVCC   |                    |
| 6   | 12V    | +12V Power supply  |

◆ **CNK1(14PIN/2.0): IR & KEY CONNECTOR (遥控和按键控制接口)**



| NO. | SYMBOL | DESCRIPTION   |
|-----|--------|---|
| 1   | GND    | Ground  |
| 2   | NC     | Key7(Reserved)  |
| 3   | K6     | Key6  |
| 4   | K5     | Key5  |
| 5   | K4     | Key4  |
| 6   | K3     | Key3  |
| 7   | K2     | Key2  |
| 8   | K1     | Key1  |
| 9   | K0     | Key0  |
| 10  | GND    | Ground  |
| 11  | IR     | IR Receiver, $V_{IH} \geq 2V$ , $V_{IL} \leq 1V$ , $I_{ILmin} : 1mA$ , $I_{IHmin} : 1mA$            |
| 12  | GRN    | Green Indicator, $V_{OH} \geq 2V$ ( $I_{OHMAX} : 2mA$ ), $V_{OL} \leq 0.8V$ ( $I_{OLMAX} : 2mA$ )   |
| 13  | RED    | Red Indicator, $V_{OH} \geq 2V$ ( $I_{OHMAX} : 1.3mA$ ), $V_{OL} \leq 0.8V$ ( $I_{OLMAX} : 0.5mA$ ) |
| 14  | 5V     | +5V DC Power Supply   |

◆ **CNA2(4PIN/2.0): SPEAKER CONNECTOR (喇叭输出接口)**



| NO. | SYMBOL | DESCRIPTION                 |
|-----|--------|-----------------------------|
| 1   | ROUT+  | Audio Right Channel Output+ |
| 2   | ROUT-  | Audio Right Channel Output- |
| 3   | LOUT-  | Audio Left Channel Output-  |
| 4   | LOUT+  | Audio Left Channel Output+  |

**NOTE:**

(1) 参数说明

$V_{OH}$ : 高电平输出电压;  $I_{OHMAX}$ : 高电平输出驱动电流;  $V_{OL}$ : 低电平输出电压;  $I_{OLMAX}$ : 低电平输出驱动电流;

$V_{IH}$ : 高电平输入电压;  $V_{IL}$ : 低电平输入电压;  $I_{ILmin}$ : 低电平最小输入电流;  $I_{IHmin}$ : 高电平最小输入电流;

(2) 在匹配应用时, 各控制和通讯口以及供电须在本规格书中描述的电气特性范围内, 若有特殊需求, 请与我司硬件工程师联系确认。

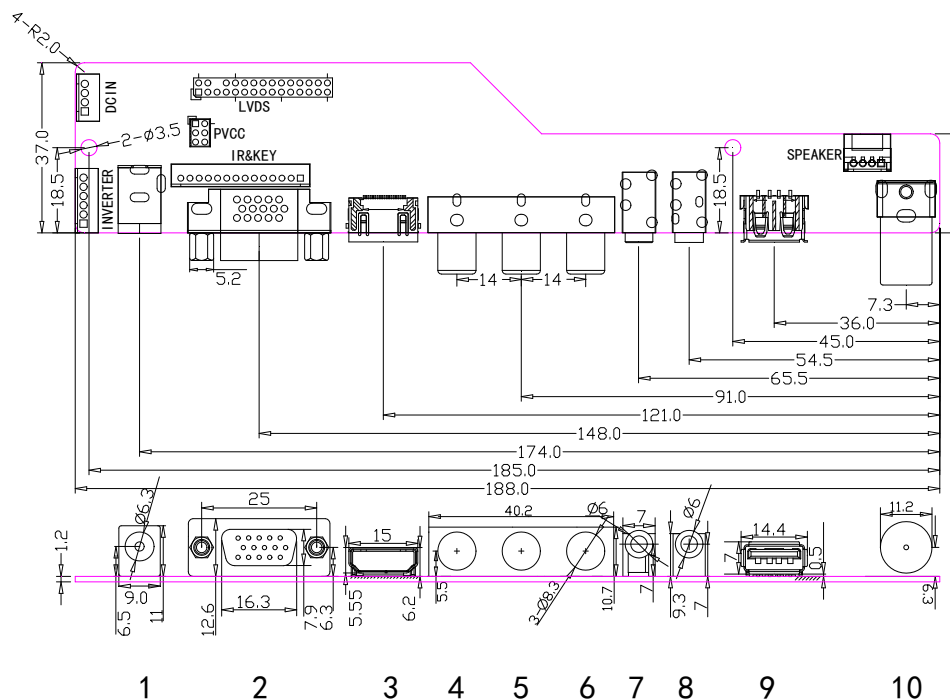
## 6. CONFIGURATION & GENERAL PRECAUTIONS

### （使用注意事项）

- Relative humidity:  $\leq 80\%$ .
- 相对湿度:  $\leq 80\%$ 。
- Storage temperature:  $-10\sim 60^{\circ}\text{C}$ .
- 存储温度:  $-10\sim 60^{\circ}\text{C}$ 。
- Operation temperature:  $0\sim 40^{\circ}\text{C}$ .
- 使用温度:  $0\sim 40^{\circ}\text{C}$ 。
- Protect the board from static electricity in case of damage to the IC.
- 请使板卡远离静电。
- Keep the board away from conductor when it is working.
- 请确保板卡工作时远离导体。
- Do not press the PCBA during transportation or placement.
- 在运输、放置时, 请勿重压板卡。
- Do not bend or deform the board during the whole machine assembling, especially when connecting the cable.
- 在整机组装过程, 特别是接插线时, 请勿使板卡弯折变形。
- Do not plug or unplug the cable while the board is working..
- 板卡工作时, 请勿插拔线材。
- Mount the board considering the heat dissipation direction of your TV set to avoid abnormal system work because of poor heat dissipation.
- 请注意结合整机散热方向安装板卡, 避免散热不佳引起系统工作异常。
- Clean the board with soft dry cloth when it's dirty.
- 如果板卡上有灰尘, 请用干布擦拭。
- Don't power on before panel is correctly connected.
- 正确接好驱屏线前请勿接通电源。
- The whole machine certification performance will be subject to the impact of the whole machine, must use the whole machine to test and confirm.
- 整机认证性能会受整机匹配的影响, 必须使用整机进行测试确认。

## 7. MECHANICAL DIMENSION (结构尺寸图)

| 配置1【03_A1】 |              |
|------------|--------------|
| Ver.       | A0           |
| N0.        | Description  |
| 1          | DC IN        |
| 2          | VGA IN       |
| 3          | HDMI IN      |
| 4          | CVBS IN      |
| 5          | CVBS LIN     |
| 6          | CVBS RIN     |
| 7          | PC AUDIO IN  |
| 8          | EARPHONE OUT |
| 9          | USB IN       |
| 10         | RF IN        |



**NOTE:**

- 除特殊说明区域，端子器件最高14.5mm，底层器件最高4mm、焊脚最高2.5mm；
- 螺丝（包括螺帽）选用需与板卡孔位及露铜匹配，避免出现装配或电气不良。CVTE推荐：螺帽直径至少为D+3mm（D为螺丝孔的直径）。
- 公板设计未预留特定的壁挂位置，请以最高器件预留安全间距设计壁挂，避免板卡迭代出现干涉问题。

| PCB Tolerance |               | Connector Tolerance       |
|---------------|---------------|---------------------------|
| PCB size      | ±0.15mm       | (Unless Otherwise Stated) |
| PCB thickness | ≤1.0mm ±0.1mm | ±0.3mm                    |
|               | >1.0mm ±10%   |                           |

## 8. NOTICE REGARDING TV MEDIA FORMAT AND INTERFACE TECHNOLOGY (TV 媒体格式与接口技术说明)

### 概述

本文档用于描述 TV 产品可能涉及的媒体格式和接口技术。

| 媒体格式                       |             | 接口技术及其他   |                       |
|----------------------------|-------------|-----------|-----------------------|
| Dolby Digital Decoder      | MPEG2/MPEG4 | HDMI      | Hbbtv2.0              |
| Dolby Digital Plus Decoder | AMR-NB      | HDCP      | Netflix               |
| Dolby MS11                 | AMR-WB      | Wi-Fi     | Freeview Play         |
| Dolby MS12                 | DRA         | USB       | NTFS                  |
| Dolby Atmos                | AAC/HEAAC   | MHL       | Seraphic Open Browser |
| Dolby Vision               | H.264       | Bluetooth | Seraphic TV Portal    |
| DTS Sound                  | H.265       | NFC       | —                     |
| DTS TruSurround            | DivX        | DVB-T2    | —                     |
| DTS HD                     | RMVB        | DVB-S2x   | —                     |
| DTS 2.0+Digital Out        | WMA         | ATSC      | —                     |
| DTS Express 5.1            | WMA Pro     | PlayReady | —                     |
| DTS Studio Sound           | dbx-tv      | MSS       | —                     |
| DTS Studio Sound II        | —           | Widevine  | —                     |

### 说明

如贵司定制/采购的液晶显示主板中包含在整机上支持上述媒体格式与接口技术的硬件（例如主控芯片、端子接口等）和/或软件，则由于该等媒体格式与接口技术中可能涉及第三方技术及 IP，视源特进行如下提示：

1. 贵司向视源支付的合作款项中不包含整机使用特定媒体格式与接口技术时应向权利人支付的授权许可费用，如权利人提出要求，贵司应自行向权利人取得有效许可并付费；
2. 如贵司需要取消对应的媒体格式或接口技术，贵司应在确认板卡规格或支付货款前书面通知视源；
3. 如贵司定制/采购的液晶显示主板不包含在整机上支持媒体格式及接口技术的硬件或软件（全部不支持或部分不支持），对于不支持的部分，则本说明对贵司不适用；
4. 媒体格式与接口技术涉及的硬件、软件及技术均由第三方提供，视源会不定期更新本说明；如贵司发现有疏漏，还请告知我们。感谢！

### Introduction

This document is used to specify media formats, interface technologies and others that may be involved in TV products.

| Media Format               |               | Interface Technology & Others |               |
|----------------------------|---------------|-------------------------------|---------------|
| Dolby Digital Decoder      | MPEG2 / MPEG4 | HDMI                          | Hbbtv2.0      |
| Dolby Digital Plus Decoder | AMR-NB        | HDCP                          | Netflix       |
| Dolby MS11                 | AMR-WB        | Wi-Fi                         | Freeview Play |
| Dolby MS12                 | DRA           | USB                           | NTFS          |

|                     |           |           |                       |
|---------------------|-----------|-----------|-----------------------|
| Dolby Atmos         | AAC/HEAAC | MHL       | Seraphic Open Browser |
| Dolby Vision        | H.264     | Bluetooth | Seraphic TV Portal    |
| DTS Sound           | H.265     | NFC       | -                     |
| DTS TruSurround     | DivX      | DVB-T2    | -                     |
| DTS HD              | RMVB      | DVB-S2x   | -                     |
| DTS 2.0+Digital Out | WMA       | ATSC      | -                     |
| DTS Express 5.1     | WMA Pro   | PlayReady | -                     |
| DTS Studio Sound    | dbx-tv    | MSS       | -                     |
| DTS Studio Sound II | -         | Widevine  | -                     |

**Notice**

In the event the LCD TV Driver Boards (“Boards”) purchased or customized by your good company include any hardware(e.g. TV master chip, output connector) and/or software that support the above mentioned media formats, interface technologies & others which may involve third party technologies or intellectual properties, your company is hereby kindly reminded as follows:

1. The product price under the sale contracts between us does not include any royalties, licensing fees or expenses payable to the IP right holders for acquiring the right to use the third party technologies or the license of the third party’s intellectual properties which may be involved due to the Boards’ and relating TV sets’ supporting of the above mentioned media formats, interface technologies & others. If the IP right holders so request, you shall obtain valid license from the right holders and make payment at your own cost for such license.
2. If your company requests to reduce or cancel the media formats or interface technologies & others supported by the Boards, you shall, upon your confirmation of the Boards’ specifications, or upon payment of the contract price, whichever is earlier, notice us such requests in writing.
3. In the event the “Boards” purchased or customized by your good company do not include hardware and/or software that support part or entire of the above mentioned media formats and interface technologies & others, this Notice shall not be applicable to your company with respect to the media formats and interface technologies & others that not supported by the Boards.
4. The hardware, software and technologies related to the media formats and interface technologies & others that may be involved in the Boards are all provided by third parties . We may update this Notice from time to time. If you find any omissions, please do not hesitate to let us know.

由于在本产品技术要求确认书列明的主板产品（以下简称“主板”，包括其内含的芯片）实现的或通过主板在整机上实现的功能（含专利功能）和出厂预装的软件版本均系由买方最终确认和决定，买方负责自行向相应权利人取得资质授权、确认是否允许开通、提报交易数据并缴纳相应专利许可费用。

由于我司作为主板供应商，无法获知整机产品的性能要求或规格参数，我司仅能保证供应的主板符合双方已确认的《技术要求确认书》，请贵司自行根据最终整机产品及对应主板进行调试、测试并申请认证，以确保产品符合终端销售区域的法律法规要求。

Regarding the TV mainboard Products (following referred as “the Mainboard”), the technical requirements of which are wholly listed and defined under this Letter of Confirmation for Product Technical Requirements, due to the fact that it was ultimately confirmed and determined by the buyer regarding the software programmed to the Mainboard, and the Mainboard’s features and functions (including patented features and functions, whether the features and functions are realized and practiced through the chips embodied in the Mainboard, the Mainboard itself, or through the TV sets embodying the Mainboard), the buyer shall be responsible for obtaining appropriate licenses from the relating intellectual property right holders and other right holders, acquiring appropriate permissions to use the software programmed to the Mainboard, obtaining appropriate permissions to realize and practice the relating features and functions of the Mainboard, reporting the transaction data, arranging the payment of royalties, and performing other duties and responsibilities which are necessary to use, sell, offer for sale, import or otherwise to dispose of the Mainboard with programmed software without infringing the intellectual property rights of any third party.

As our company is specialized TV mainboard supplier and unable to acquire the performance or specifications requirements of the TV sets embodying the Mainboard, we hereby guarantee that the TV mainboard products supplied by our company are in conformance with the Letter of Confirmation for Product Technical Requirements which was confirmed in writing by both parties, and your company shall be responsible for the testing, debugging, tuning of the TV sets embodying the Mainboard, application for certifying the Mainboard and the TV sets embodying the Mainboard, and performing other duties and responsibilities which are necessary for complying with the law and regulations of the countries and regions, where the Mainboard and the TV sets embodying the Mainboard were imported and sold.