CUSTOMER： TPVison

DATE： 2012.08.15

VERSION： V 0.5

FR4CE Sensor Module Specification

需方条目 Customer	需方部品名称 Customer's Product Part Name	FR4CE Sensor Module
	需方部品代号 Customer's Product Part Number	① ② ③
	需 方 认 可 Customer Comments	
	接 收 Received by	审 查 Checked by / 批 准 Approved by

供方条目 Supplier	供方部品名称 Supplier's Product Part Name	RF 接收模块
	供方部品代号 Supplier's Product Part Number	1．YKJ2081-R01 2．散件：YKJ2081-R01CKD 3．散件：YKJ2081-R01SKD
	供 方 认 可 Supplier Comments	
	设计 Designed by	审 核 Checked by / 批 准 Approved by
	我李杰	殷克俊 / 江士龙

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Record of modification

Version	Date	DESCRIPTION	Remarks
0.0	2012.06.05	Draft	
0.1	2012.07.10	Add also the spacer+double sided adhesive	
0.2	2012.07.30	Add mechanical and specification for spacer + adhesive	
0.3	2012.08.06	Update the adhesive from “one” to “two” for Page 10	
0.4	2012.08.08	Add HuiTong’s type number YKJ2081-R01CKD	
0.5	2012.08.15	Update spacer drawing Add HuiTong’s type number YKJ2081-R01SKD Add EMC standards (CE ANATEL CNC FCC)	

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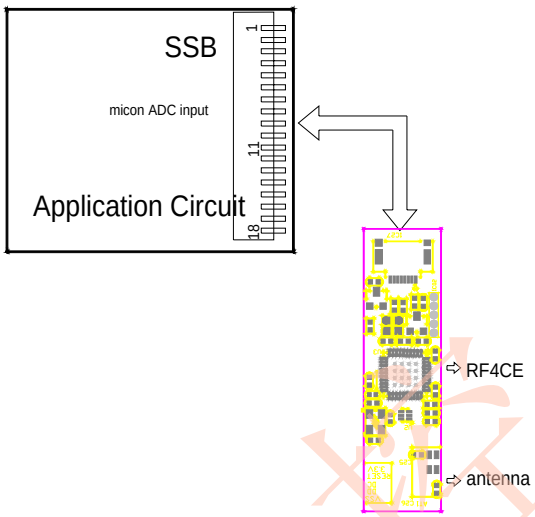
1. 适用范围　　Scope

本技术说明适用于 2013 TPV F240 液晶电视 RF4CE 控制板。

This document defines the functional requirement and technical performance specifications for 2K13 RF4CE Module across all the projects. For Platform

The 2K13 across Module has the following functions:

- RF4CE



2. 外观形状　　Appearance and structure

根据设计图纸。According to designing drawing

3. 使用材料　　Components and materials

根据设计要求。According to designing Specification

The module complies with ROHS and Philips Banned Substances. Must obey RoHS and PVC&BFR Free. Plastic material fulfills UL-V0 or real V1 classification. Refer to XTP-0063/04 for the BG CD flammability policy.

4. 连接器接口　Connector Pin Description

Connector 1C21 8pin Mo	Description
PIN 1	+3.3V
PIN 2	NG
PIN 3	IR-IRQ-RXD-RF4CE
PIN 4	GND
PIN 5	RXD-RF4CE
PIN 6	GND
PIN 7	TXD-RF4CE
PIN 8	RESETn

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5. 电气特性　　Electrical performances

	项目 Item	条件 Condition	规格 Specification	数量 Qty
5-1	Operating voltage 工作电压	Normal operating 该设备正常工作	DC 3.3V±5%	5
	Ripple (+3.3V)	+3V3 DC supply Ripple and Voltage drop/rise sustainability	The module should be sustainable to a power su pply ripple of (0~330 m Vp-p) , frequency range of 0Hz ~ 250KHz. All fu nctions w ork normally, no fu nctional di sruption noticable	
		Pollution ripple from LE to +3V3 DC supply line in Operation mode	≤50mVp-p	
		'Pollution ripple from LE to +3V3 DC supply line in Standby mode	≤50mVp-p	
5-2	Operating current 消耗电流	Constant voltage DC 3.3V 恒定电压　直流 3.3V	3.3V : max 50mA	5
5-3	quiescent current 静态电流	3.3V DC	typ <3.2mA	5
5-4	RF4CE	Co-existance with Wifi and Wireless Router	PER< 10% @ 70dB pathloss Tested with Wifi and Wireless Router in a shield room	5
		RF4CE Control distance*	≥ 14 meter (tbc) Tested with reference RF4CE remote Controller, the TV shall be well functioning without noticeable delay for at least 14 meters away from TV regardless RC firing	
		Test with sensor board and RF4CE RC (measured on 2425MHZ ch15, 2450MHz ch20, 2475MHz ch25):	Monitor received packets on the sensor board from RC at 10 meter distance: Max 70dB pathloss (= free-air pathloss, 60dB + combined antenna losses in RC+sensor board <10dB) with max 10%PER	
5-5	Resistance Test on PCB UN-D1235 线路板绝缘电阻	Megaohmmeter, 1KV DC, 50 - 100mm apart	Resistance must exceeded 50M ohms ≥ 50M Ω	5

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5-6	Power cycling On/Off test 通断	300,000 cycles On/Off with 1 sec per cycle. Supply voltage of module set at nominal. 额定电压下,300000 次通\断,1 秒 1 次	No electrical and functionality failures. 无电性能损坏	5
5-7	MTBF (Mean Time Between Failure) 寿命	Rating voltage DC5.0V/3.3V 额定电压　　直流 5.0V /3.3V	100ppm = 10 000 000hr	5
5-8	Cold Test at -10degC IEC68-2- 1, UAN- D636 低温测试	Set the cold chamber to -10°C and place the product in the chamber for 15hrs. Then, switch on the product under -10°C for 1hr with min, max and nominal supply voltages, i.e, 4.75V/3.14V、5.0V/3.3V and 5.25V/3.46V. -10℃存储 15 小时后，在-10℃用三种电压 4.75V/3.14V,5.0V/3.3V,5.25V/3.46V 接通 1 小时	No electrical and functionality failures. 无电性能损坏	5
5-9	Thermal cyclic 热循环试验	Thermal cyclic between -20°C and +85°C with 5°C/min transition and 30 minutes dwell time (stopped after 8 cycles) Monitoring output voltage from LE in operating mode. Remark: operational tested	No false triggering or malfunction, to be tested on Module level 无错误的触发及电性能损坏	5
5-10	Electric Discharge Test to IEC61000-4-2 静电测试	Air discharge: ±(4 to 15)KV in steps of 1KV; 25 ±5 degrees, < 50%RH, 2KV to 8KV in steps of 1KV, 10x discharge +ve & -ve. Interval 1 sec min. between discharges. Both "ON" & "Standby" mode.	No electrical arcing. No functional default or parts damaged. 无飞弧放电现象 无任何功能或零部件的损坏	5
5-11	EM immunity and radiation EM 抗干扰和辐射	According to Emission-EN55013, Immunity-EN55020, Mains Harmonic-EN61000-3-2/3, EMF-EN62311, Radiated P-EN300328 1.7.1, EMC-EN301489-1/17 CE (including Russia). ANATEL(Brazil) CNC (Argentina) FCC (Uruguay and Paraguay)	No functional default and noninterference with other equipment. In order to guarantee EMI system level compliance, the reference value for modules is to comply with 6dB margin (QP). 无任何功能的损坏，不干扰其他设备	5
5-12	Safety 安全性	According to IEC/EN60065 and Burs or sharp edges must be rem oved in order to av oid inj uries dur ing han dling of the products. Plastic material fulfills UL-V0 or real V1 clas sification. Refer to XTP-0063/04 for the BG CD flammability policy.	Fulfill international standard 符合标准	5

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6. 机械性能　Mechanical Performance test

	项目 Item	条件 Condition	规格 Specification	数量 Qty
6-1	Thermal Cyclic + Vibration test 热振动	1. T1 = +85°C, T2 = -20°C Temp. change rate: ± 3°C per minute 25 cycles, period time: 50 min ± 10 min 2. Follow by Chassis Vibration test (non operational, fix to table) Frequency: 10 - 55 - 10 Hz No. of cycles: 6 Amplitude: 0.35mm (0-P) Direction: X, Y, Z Test duration: 30 min per direction 3. Repeat pt. (1) and (2). Total: 2 cycles Remark: non-operational tested	No functional failure or mechanical damages on the products is allowed 产品无功能和机械性能的损坏	5
6-2	Shock Test 冲击	Module Unpack Test Pulse shape: half sine Pulse duration: 11 msec No. of shocks: 3 per direction No. of direction: 6 Peak acceleration: 80g, 11 msec Remark: non-operational tested	No functional failure or mechanical damages on the products is allowed 产品无功能和机械性能的损坏	5
6-3	10g Bump Test 连续冲击	Non operational, fix to table 10g, 16ms, 1000 times, No. of direction: 1 1 - 3 bump / sec Remark: non-operational tested	No functional failure or mechanical damages on the products is allowed 产品无功能和机械性能的损坏	5

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7. 环境性能　Environmental test

	项目 Item	条件 Condition	规格 Specification	数量 Qty
7-1	Interference Test 抗干扰测试	Check that function is not affected by the respective wireless signal at less than 5 meter from module in all direction: 1. Infra-Red transmission from Remote Control 2. Personal Computer controlling the router (Wi-Fi) link. Real-time spectrum analyzer , Personal Computer, Wi-Fi Router, TV Remote Controller.	No interference to the expected function of the key.	5
7-2	Temperature Cycle Storage Test acc. To IEC68-2-14 Nb 高低温循环	Place the product in the temperature and humidity chamber. And set chamber as follows: Every cycle last for 6hrs with 3hrs at -25℃ & 3hrs at +70℃.Repeat the test for 5 cycles. 3 小时-25℃，3 小时 70℃，5 次循环 Remark: non-operational tested	No functional failure is allowed after 1hrs recovery at ambient temperature. 常温恢复 1 小时后无功能损坏	5
7-3	High Temperature Storage Test acc. To IEC89-2-2 Ba 高温	Set the heat chamber to 70℃ and place the functional product in the chamber for 96 hrs. 在+70℃环境下放置 96 小时 Remark: non-operational tested	No functional failure is allowed after 1 hrs recovery at ambient temperature. 常温恢复 1 小时后无功能损坏	5
7-4	Cyclic Humidity 潮湿循环	40 °C. 93%RH for 12 hrs; 25 °C. 98%RH for 12 hrs (Check Module 1 hr/day). Nominal supply voltage. Duration: 21 days.	No water vapour condensation, corrosion on PCBA. According to XTW-0053. No major defect, malfunction & data corruption.	5
7-5	Cyclic Environment / Stress Test 环境循环/应力测试	24hrs On/Off switching cycle (4-1-4-1-4-1-4-5); 55 °C 40%RH for 14hrs (day), then +5 °C 85%RH for 10hrs (night). Nominal supply voltage.	No major failure as in XTW-0053, no data corruption & hardware failure.	5

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<table>
<tr><td>7-6</td><td>Low Temperature Storage Test acc. To IEC68-2-1 Ab
低温</td><td>Set the cold chamber to –25℃ and place the functional product in the chamber for 96 hrs.
在–25℃环境下放置 96 小时
Remark: non-operational tested</td><td>No functional failure is allowed after 1 hrs recovery at ambient temperature.

常温恢复 1 小时后无功能损坏</td><td>5</td></tr>
<tr><td>7-7</td><td>Overstress Test 21 days
(WI DV0003-EE-T1-W01)
21 天超载试验</td><td>Put the model in the temperature and humidity chamber. Set the chamber to 70°C and 95%RH for 21days. Then, do ON/OFF testing inside chamber for 4hrs ON and 1hr OFF
在+70℃(95% RH) 环境下放置 21 天， 循环的接通电源 4 小时，断开电源 1 小时。</td><td>No electrical and functionality failures
无电性能损坏
Note: Inspection of discoloured PCB, cracked of affected solder joints and components need to be done after the test.</td><td>5</td></tr>
<tr><td>7-8</td><td>Packed Transportation Test: Vibration Test
包装振动</td><td>Frequency: 10-55Hz (3min.each)
Accelation:14.7m/s^2
Amplitude:0.2-19.8mm
<table><tr><td>Vibrated Direction</td><td>Up to down</td><td>Right to left</td><td>Front to back</td></tr><tr><td>Test time</td><td>2h</td><td>2h</td><td>2h</td></tr></table>振动数：10-55Hz（每次 3 分钟）
加速度：14.7m/s2
振幅：0.2-19.8mm
<table><tr><td>振动方向</td><td>上下</td><td>左右</td><td>前后</td></tr><tr><td>振动时间</td><td>2h 2h 2h</td><td></td><td></td></tr></table></td><td>No functional failure or mechanical damages on the products is allowed

产品无功能和机械性能的损坏，
外观无磨损、划痕。</td><td>1</td></tr>
<tr><td>7-9</td><td>Packed Transportation Test: Drop Test
包装跌落</td><td>Place the functional products in the packaging box and drop the box from a height of 60 cm to the ground. The test is performed in 3 axis,1 corner and 1 edge.
产品装在包装箱里从 60cm 的高度跌落，3 个轴向，一个角，一条边。</td><td>No functional failure or mechanical damages on the products is allowed
包装箱无破损，产品无功能和机械性能的损坏</td><td>1</td></tr>
</table>

8. 温度范围 Temperature range

保存温度 Storage temperature range -25℃~70℃，40%～95%RH

使用温度 working temperature range -10℃~60℃，40%～95%RH

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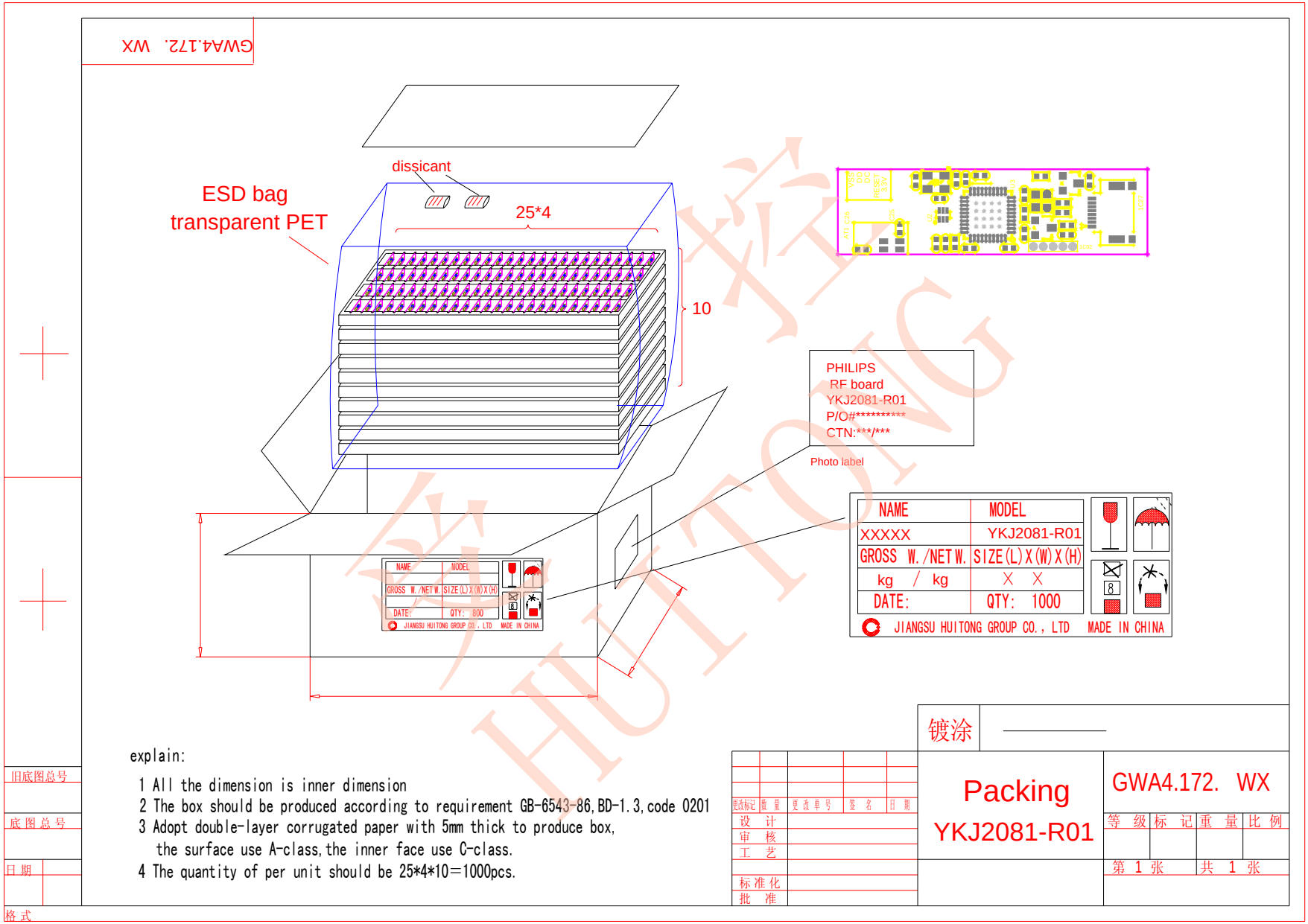
14. PACKING


GWA4.172. WX
dissicant
ESD bag
transparent PET
25*4
10
PHILIPS
RF board
YKJ2081-R01
P/O#**********
CTN:***/***
Photo label
NAME
MODEL
XXXXX
YKJ2081-R01
GROSS W./NET W.
SIZE(L)X(W)X(H)
kg / kg
X X
DATE:
QTY: 1000
JIANGSU HUITONG GROUP CO., LTD
MADE IN CHINA
explain:
1 All the dimension is inner dimension
2 The box should be produced according to requirement GB-6543-86,BD-1.3,code 0201
3 Adopt double-layer corrugated paper with 5mm thick to produce box,
the surface use A-class,the inner face use C-class.
4 The quantity of per unit should be 25*4*10=1000pcs.
镀涂
Packing
YKJ2081-R01
GWA4.172. WX
旧底图总号
底图总号
日期
格式
设计
审核
工艺
标准化
批准
等级
标记
重量
比例
第 1 张
共 1 张

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This device is intended only for OEM integrators under the following conditions:

1. The antenna must be installed such that 20 cm is maintained between the antenna and users, and

2. The transmitter module may not be co-located with any other transmitter or antenna.

Declaration the Restriction of this Limited Module Approval:

According to FCC Part 15 Subpart C Section 15.212, the radio elements of the modular transmitter must have their own shielding. However, due to the modular assembled inner TV set, it needn’t install its RF shielding, this module is granted as a Limited Modular Approval. When this Module is installed into the end product, a Class II Permissive Change or a New FCC ID submission may be required to ensure the full compliance of FCC relevant requirements.

End Product Labelling

The final end product must be labelled in a visible area with the following" Contains FCC ID: PUWJSHT-SB-2K13 ". The FCC part 15.19 statement below has to also be available on the label: This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

Manual Information to the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user’s manual of the end product which integrates this module.