



无锡威达智能电子股份有限公司

产
品
规
格
书

蓝牙遥控器产品规格书

BLE remote control product specification

客户单位: _____
Client unit
客户料号: _____
Customer Material Num.
威达料号: _____ WH-8233B BLE
WeiDa Material NO.
产品类型: _____ 红外学习+蓝牙语音+模鼠+背光
Product Type
日期: _____ 2026-1-30
Day period
拟制: _____ 张洁
Proposed
批准: _____ 郑文戈
Batch registration

承制方: 无锡威达智能电子股份有限公司

Party to the contractor: Wuxi Weida Intelligent Electronics Co., Ltd.

地址: 江苏省无锡市梁溪区飞宏路 85 号

Address: 3th Floor, No. 85 Feihong Road, Liangxi District, Wuxi City, Jiangsu Province, China

网址: <http://www.cnwddz.com>

MAIL : <http://www.cnwddz.com>

规格书变更履历表

Change of specification book resume

日期 Date	版本 Version	修改章节 Modify Chapter	描述 Describe	拟制 Quasi-system	备注 Note
2026-1-31	V1.0		创建	张洁	

目录

一、遥控器测试条件及参数.....	5
Remote Control test conditions and parameters.....	5
二、遥控器产品效果图.....	12
Effect picture of remote controller product.....	12
带配重.....	12
三、遥控器键值.....	13
Remote control key value.....	13
四、遥控器按键操作说明.....	14
Remote Control key action Description.....	14
五、遥控器设计原理图.....	20
Schematic diagram of remote controller design.....	20
六、遥控器 PCB 设计图.....	21
Remote control PCB design.....	21
七、遥控器 2D 图.....	22
2D diagram of remote control.....	22

一、遥控器测试条件及参数

Remote Control test conditions and parameters

1、 硬件要求

Hardware requirements

序号 NO.	说明项目 Description Project	技术规格 Technical Specifications	备注 Note
1	按键数 Number of keys	46 键 46 Keys	
2	遥控器尺寸 Remote control size	180*45*20.7mm(含按键高度)±0.5	
3	按键自由高度 Button Free Height	≤2mm	
4	按键作用后高度 The height after the key action	≥0.5mm	
5	按键作用力 Key force	160g±30gf	低手感
6	外壳塑胶材质 Shell Plastic Material	ABS 原料（无味、不掺回料），厚度 ≥2.0mm ABS raw material (tasteless, no blending), thickness ≥2.0mm	
7	外壳颜色 Shell Color	实色注塑白色 Solid color injection white,	
8	丝印 Screen printing	耐酸耐醇耐磨 Acid-resistant and alcohol-resistant	
9	PCB 电路板材质 PCB Circuit board Material	FR-4, OSP, 按键碳油	
10	PCB 布线线宽及	≥0.3mm	

	间距 PCB Cabling line width and spacing		
11	表面涂敷处理 Surface Coating Treatment	详细见遥控器《外观及工艺要求》 See the remote control "appearance and process requirements" in detail	
		表面应平整牢固, 不允许有划痕, 斑疵、流挂、脱落和破损 Surface should be flat and firm, not allowed to have scratches, spot defects, flow hanging, peeling and breakage	
12	电路板制作要求 Board Production requirements	所有印刷电路板均应防腐蚀 All printed circuit boards shall be corrosion resistant	
		不允许有飞线 No flying lines are allowed	
		焊点饱满, 无虚焊、脱焊、连锡 Solder joints full, no virtual welding, off welding, Lianxi	
13	按键要求 Key requirements	按键胶边缘结构需增加“防水墙”, 以达到按键装配后, 用手指扣时不 能脱出胶壳按键孔; 按键面定位过 孔采用硅胶包塑胶设计, 使整个硅 胶按键面没有破孔, 以保证长时间 使用板面整洁, 硅胶按键需偏硬 Key adhesive edge structure should be added "waterproof wall", in order to achieve the key assembly, the finger buckle can not be out of the plastic shell button hole, key surface positioning through the hole using silicone rubber bag plastic design, so that the entire silicone button	

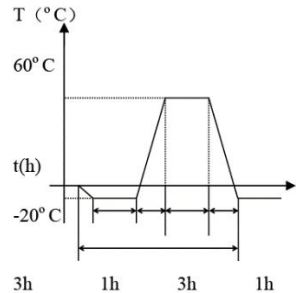
		surface has no holes to ensure that the use of a long plate surface neat, silicone key need to be hard	
14	导电胶材质 Conductive adhesive Material	必须使用硅胶原料（不加粉），并且没有刺激性气味 Must use silicone material (no powder) and no pungent odor	
15	Metal dome（锅仔片） Metal Dome (pot slices)	遥控器所有按键采用 metal dome 按键，并且寿命必须 ≥ 100 万次，连续按压测试次数 ≥ 50 万次，可恢复到原荷重 Remote control all keys to use the metal Dome button, and the life must be $\geq$ million times, continuous press test number $\geq$ million times, can restore to the original load	低手感 导光膜

2、 产品规格（红外部分）

Product Specifications (IR Part)

序号 NO.	项目 Project	规格参数 Specification parameter	备注]
1	工作温度 Operating temperature	0~50℃	
2	相对湿度 Relative humidity	$\leq 95\%$	
3	大气压力 Atmospheric pressure	86~106Kpa	
4	环境照度 Ambient illumination	自然光或荧光灯 200±50LX Natural light or fluorescent lights 200± 50LX	
5	主控 MCU	WNF2308	
6	外壳材料	ABS	

	Shell material		
7	样品颜色 Sample Color	参考客户需求规格 Reference Customer Requirements Specifications	
8	电池规格 Battery specification	AAA 1.5*2	
9	红外波长 Infrared wavelength	950±50nm	
10	红外载波频率 IR Carrier Frequency	38.0±0.5KHz	
11	平均工作电流 Average working current	≤40mA	
12	平均静态电流 Average static current	≤5uA	
13	工作电压范围 Operating voltage Range	2.4~3.6V	
14	遥控距离 Remote distance	L≥12M L ≥12M	
15	自由跌落试验 Free Drop test	从 80cm 高度, 六面依次自由跌落 在不小于 3cm 厚大理石地板, 三个循环。 From 80cm height, six-sided free fall in no less than 3cm thick marble floor, three cycles.	
16	静电环境试验 Electrostatic environment test	±8KV	
17	高温储存试验 High Temperature Storage test	70℃	
18	低温储存试验 Low Temperature storage test	-20℃	
19	恒定湿热试验 Constant damp heat test	40℃相对湿度 90±2% 40℃ Relative Humidity 90± 2%	

20	温度循环变化试验 Temperature Cycle Change Test		
21	验收标准 Acceptance criteria MIL-STD-105E-LEVEL (II) AQL	重缺陷 (A 类) AQL=0.65 Heavy defects (A Class) aql=0.65 轻缺陷 (C 类) AQL=1.5 Light defect (C Class) aql=1.5	
22	遥控器运输及储存条件 Remote control transport and storage conditions	运输途中应避免雨雪直接侵袭或者强烈冲击。 遥控器应储存在环境温度 $-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$，相对湿度不大于 80%，周围没有强磁场、腐蚀物质和其它有害气体的库房中，储存期为一年。超过一年的产品经重新评估合格后，方可流入市场。 In transit should avoid direct attack of rain or snow or strong impact. The remote control should be stored at ambient temperature $-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$, the relative humidity is not greater than the 80%, with no strong magnetic field, corrosive substances and other harmful gases in the storehouse, the storage period is one year. After the product has been reassessed for more than one year, it can be brought into the market.	

3、 产品规格（蓝牙部分）

Product Specifications (BLE Part)

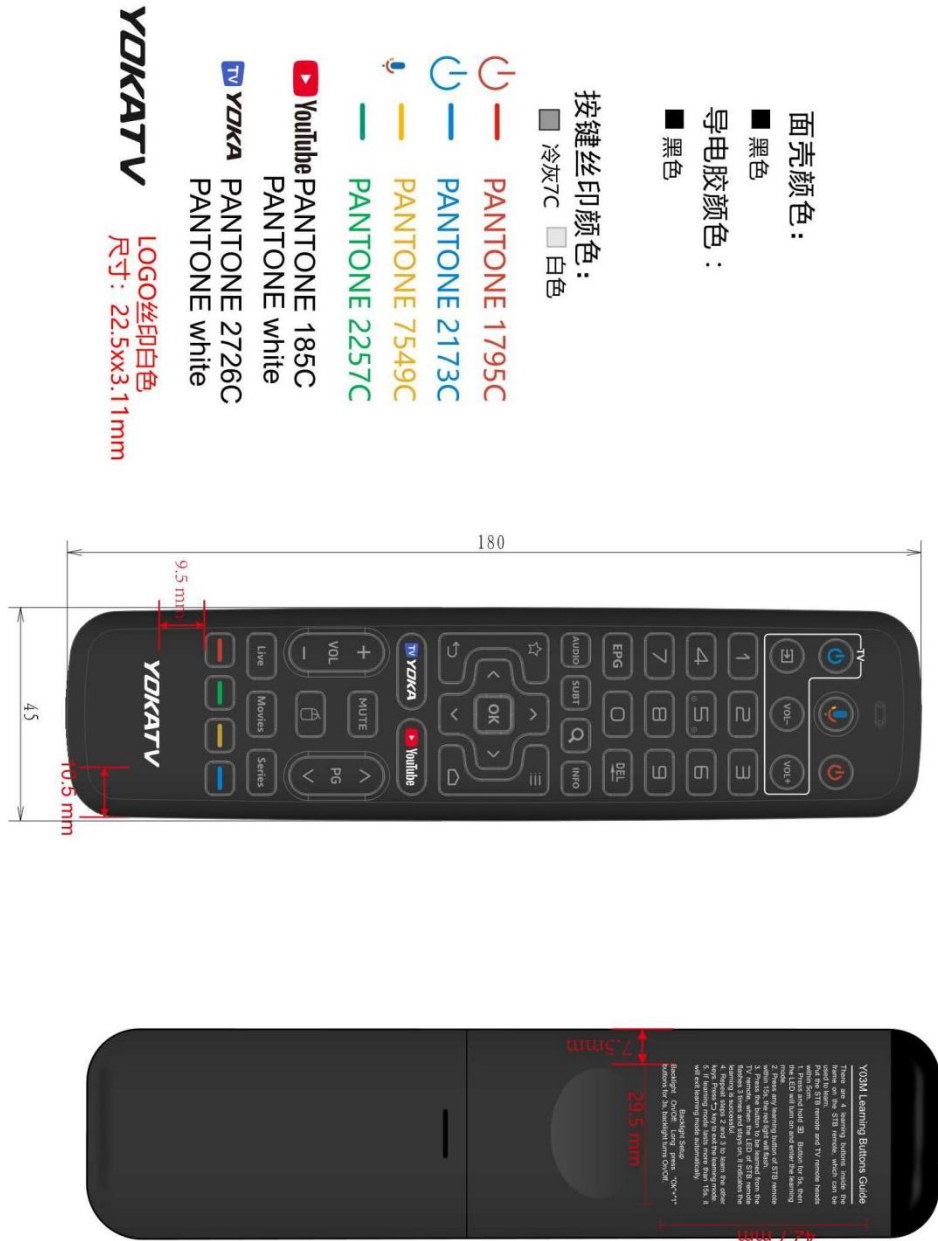
序号 No.	项目 Project	描述 Describe	备注 Note
1	使用电池 Use battery	碱性环保电池 Alkaline Environmental Protection Battery	
2	供电电压 Supply voltage	2.4-3.6V	
3	电流描述 Current description	$\leq 100\mu\text{A}$ 待机功耗 $\leq 100\mu\text{A}$ standby power $\leq 5\text{mA}$ 发射功耗（常规按键） $\leq 5\text{mA}$ emission power consumption (general key)	
4	传输距离（蓝牙） Transmission Distance (Bluetooth)	$\geq 12\text{m}$ （周围无遮挡物） $\geq 12\text{m}$ (no shelter around)	
5	蓝牙协议（蓝牙） Bluetooth protocol (Bluetooth)	蓝牙 5.0 协议 Bluetooth 5.0 Protocol	
6	信号要求（蓝牙） Signal requirements (Bluetooth)	满足通信传输距离要求，同时符合蓝牙 BQB 认证要求 Meet the communication transmission distance requirements, while complying with the Bluetooth BQBCertification Requirements	
7	连接响应（蓝牙）	$\leq 200\text{ms}$ ，这里是指恢复连接速度，通过	

	牙) Connection response (Bluetooth)	遥控器端测试开始广播到被连接上的时 间间隔 $\leq 200\text{ms}$, this refers to the speed at which the connection is restored, the time interval at which the test begins broadcasting to the connected	
8	其他通用蓝 牙设备影响 Other common Bluetooth device impact	HOST 端适配的驱动, 要不影响原有的蓝牙 通用设备支持, 如蓝牙耳机/音响 (HSP/HFP, A2DP 等), 蓝牙键盘, 蓝牙鼠 标, 游戏手柄等。 HOST End Adapter driver, or affect the original Bluetooth universal device support, such as Bluetooth headset /Audio (HSP/HFP, A2DP , etc.), Bluetooth keyboard, Bluetooth mouse, game handles and so on.	

二、遥控器产品效果图

Effect picture of remote controller product

带配重



遥控器背部丝印内容
丝印颜色白色

Y03M Learning Buttons Guide

There are 4 learning buttons inside the frame on the STB remote, which can be used to learn.

1. Press the STB remote and TV remote heads within 5cm.
2. Press any learning button of STB remote within 15s, the red light will flash.
3. Press the button to be learned from the TV remote, when the LED of STB remote flashes 3 times and stays on, it indicates the learning is successful.
4. Repeat steps 2 and 3 to learn the other keys. Press $\leftarrow$ key to exit the learning mode.
5. If learning mode lasts more than 15s, it will exit learning mode automatically.

Backlight Setup
Backlight On/Off: Long press "OK"+"1" buttons for 3s, backlight turns On/Off.

三、遥控器键值

Remote control key value

用户码: 0x00FF 协议: NEC 键数: 46键

功能	IR code	BT usage page	BT usage ID
POWER 	0x59	0x07	0x0066
MUTE 静音	0x19	0x0C	0x00E2
	0x59	学习键	
	0x0D		
VOL-	0x17		
VOL+	0x13		
SERIES	0x7B	0x0C	0x000D
INFO	0x02	0x0C	0x0240
LIVE	0x79	0x0C	0x000B
MOVIE	0x7A	0x0C	0x000C
SEARCH 	0x81	0x0C	0x0013
字幕 SUBT	0x09	0x0C	0x0061
音轨 AUDIO	0x01	0x0C	0x01B7
红色	0x42	0x0C	0x0069
绿色	0x40	0x0C	0x006A
黄色	0x00	0x0C	0x006C
蓝色	0x03	0x0C	0x006B
yokatv	0x11	0x0C	0x0089
Youtube	0x71	0x0C	0x0007
☆ FAV	0x1F	0x0C	0x0122
HOME	0x0D	0x0C	0x0223
上	0x06	0x0C	0x0042
下	0x16	0x0C	0x0043
左	0x5A	0x0C	0x0044
右	0x1B	0x0C	0x0045
OK	0x1A	0x0C	0x0041
	0x12	0x0C	0x012B
Exit	0x05	0x0C	0x0224
VOL+	0x13	0x0C	0x00E9
VOL-	0x17	0x0C	0x00EA
MENU 菜单	0x45	0x07	0x0065
EPG	0x4D	0x0C	0x001A
PG+	0x55	0x07	0x004B
PG-	0x15	0x07	0x004E
1	0x52	0x07	0x001E
2	0x50	0x07	0x001F
3	0x10	0x07	0x0020
4	0x56	0x07	0x0021
5	0x54	0x07	0x0022
6	0x14	0x07	0x0023
7	0x4E	0x07	0x0024
8	0x4C	0x07	0x0025
9	0x0C	0x07	0x0026
0	0x0F	0x07	0x0027
语音 	0x22	0x0C	0x0221
Del	0x51	0x07	0x002A

四、遥控器按键操作说明

Remote Control key action Description

- 1、当连上机顶盒蓝牙，遥控器发送蓝牙键值，未连上蓝牙模块，则发红外键值。

When the set-top box is connected with Bluetooth, the remote control sends the Bluetooth key value. If the Bluetooth module is not connected, the infrared key value is sent;

- 2、红外状态下：按住按键持续发射码值，发一次指示灯闪一下，直到弹起或一分钟后停止，指示灯为红色；

Infrared State: Press and hold the key to continue the launch code value, send a light flash, until the bounce or a minute to stop, The light is red.

- 3、电池电量不足提醒：当电量低于 2.2V 时，指示灯快速闪烁，只要还在操作，就一直保持闪烁状态，当不再对遥控器进行操作后，闪烁 5 次或闪烁 3 秒后，停止闪烁并熄灭停止；

Low Battery Reminder: When the power is less than 2.2V, the LED flashes fast, and as long as it is still operating, it remains blinking, flashing 5 times or flashing 3 seconds after the remote control is no longer operating Stop blinking and turn off the stop;

- 4、配对功能：当同时按住“OK “和” Vol- “键并持续三秒，同时指示灯闪烁；

Pairing function: When the "OK" and " Vol- " keys are kept down for three seconds, while the LEDs are blinking;

- 5、清除配对信息组合键：当同时按住“OK “和” Vol+ “键并持续三秒，同时指示灯闪烁三次；

Clear pairing information combination key: When pressing and holding the "OK" and "Vol +" keys for three seconds, the indicator light flashes three times at the same time;

- 6、恢复出厂设置：

- (1) 当同时按住“mute+back+menu”键并持续 8 秒，等待指示灯闪烁 3 下后，表示此时遥控器以及恢复出厂设置，并清除配对信息；

Rest factory settings: When you press and hold the " mute+back+menu" buttons at the same time for 8s, and wait for the LED to flash 3 times, it means that the remote control and factory settings are rested, And clear the pairing

information。

(2) 按下组合键 “OK+0”，LED 闪烁 3 下恢复出厂设置

Press the key combination “OK 0”, the LED flashes 3 times to restore the factory settings

Connection interval<12ms;

遥控器距离>10m;

Remote control distance >10m;

7、蓝牙 OTA 功能，能通过 app 对蓝牙遥控器固件升级

Bluetooth OTA function, the firmware of the Bluetooth remote control can be upgraded through the app

8、蓝牙设备名：Y03M。

Bluetooth device Name:Y03M。

9、遥控器锁键功能：

Remote control key lock function

长按遥控器按键 60s，遥控器停止发码；抬起按键即恢复正常状态；

Long press the button on the remote control for 60s, the remote control stops sending codes; raise the button and it will return to normal status;

10、遥控器支持 OK+Back 机制

The remote control supports OK+Back mechanism

11、遥控器其他要求：

other remote control requirements:

- 1、配对功能要求：不得存在扫描不到蓝牙设备或配对不上（包括短时间内连续按配对键）的问题，请验证 50 次确保无问题；

The pairing feature requires that no Bluetooth devices be scanned or not paired up (including a continuous press pairing key for a short period of time), verify that ensure no problem;

- 2、BT 长连接：遥控器不主动断开蓝牙连接，断开连接后若回连超时则进入深度休眠模式，待下次按键唤醒回连；不得存在回连不上的问题，包括盒子断电回连，遥控器断电回连，静置 2 小时回连等，请验证 50 次确保无问题；

BT Long connection: The remote does not actively disconnect the Bluetooth connection, disconnect if the return timeout to enter the deep sleep mode,

the Next button to wake up the connection, no return to the problem, including the box power back, remote control power back, static 2 hour back, please verify that times to ensure no problems;

- 3、 抗干扰功能要求: 不得存在非常影响主机 WIFI 吞吐量的问题, 请确保连接遥控器时主机端 WIFI 吞吐量正常;

anti-jamming features require: there must be no problem with a very strong host WiFi throughput, make sure that the host side WiFi throughput is normal when the remote is connected;

- 4、 性能要求: 要求支持 $\leq 10m$, 丢失以及遥控器按键卡顿、丢码或连键等问题;

Performance requirements: Require support $\leq 10m$, lost and the remote control button cotton, missing code or even key problems;

- 5、 功耗要求: 遥控器可持续使用至少 6 个月以上。

Power Requirements: Remote control can be used consistently for at least 6 months or more.

12、指示灯状态:

LEDs Status:

- 1、 按键:

Keys:

红外按键: 红灯;

IR keys: red light;;

蓝牙按键: 红灯,

BT keys: red light;

- 2、 配对状态:

Paring Status:

配对状态: 红灯, 亮 250ms, 灭 250ms, 蓝牙连接成功或失败结束, 发现时间 120S。

Paring status: red light, bright 250ms, go out 250ms, BT connection successful or failed end, The discovery time was 120s.

配对成功: 红灯, 亮 3s 后熄灭;

Pairing successful: red light, turned on for 3s and extinguished;

配对失败: 红灯, 亮 500ms, 灭 500ms, 闪烁 3 次;

Paring fail: red light, bright 500ms, go out 500ms, flashing 3 times;

- 3、 低电状态:

Low Power Status:

低电状态: 红灯, 亮 300ms, 灭 300ms, 闪烁 5 次;

Low power Status: red light, bright 300ms, go out 300ms, flashing 5 times.

13、vendor=0x000d, product=0x3838

14、开机唤醒包：

Wake up package:

0x02, 0x01, 0x05,
0x03, 0x19, 0x80, 0x01,
0x03, 0x02, 0x12, 0x18,
0x13, 0xFF, 0x46, 0x00,
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0xFF, 0xFF, 0xFF, 0xFF,
0x43, 0x52, 0x4B, 0x54, 0x4D

15、模拟鼠标功能：按下“鼠标”键打开或关闭鼠标功能，可通过方向键和 OK 键进行移动鼠标控制，并满足以下要求。

Press "mouse" to turn the mouse on or off, you can use the key and OK keys to move the mouse control. And meet the following requirements.

(1) 短按鼠标按键，打开鼠标功能，按键 1S 方向键的精度为 36，长按键 2S，方向键精度是 108；长按键 3S，方向键精度为 252；长按键 4S，方向键精度 540；长按键 5S，方向键精度 1116；

Press the mouse button to turn on the mouse function. The precision of the 1S arrow key is 36, the precision of the arrow key is 108 if the long button is 2S; the precision of the arrow key is 252 if the long key is 3S; the precision of the arrow key is 540 if the long button is 4S; Long press for 5S, direction key accuracy 1116;

(2) 音量+加方向键，步长 8；音量-加方向键，左右步长 400，上下步长 300。

Vol+ and arrow keys, step size 8; Vol- and arrow keys, step size 400 left and right, step size 300 up and down.

(3) 鼠标模式下：长按“VOL+或VOL-”做上下小幅度拖拽功能；长按“page+、或page-”做上下大幅度拖拽功能；“红/蓝”键做左右大幅度拖动；“绿/黄”做小幅度拖动；（大幅度就按照正常的做，小幅度约大幅度的1/2左右）。

In mouse mode: long press "VOL+ or VOL-" to do small drag up and down function; Long press "page+, or page-" to do the function of dragging up and down significantly; The "red/blue" keys are dragged left and right; "Green/Yellow" do a small drag; (Large is done according to normal, small is about 1/2 of large scale).

(4) 鼠标模式关闭时会发送 0x0C/0x012B 键值, 用于隐藏鼠标 UI

(4) When the mouse mode is off, the 0x0C/0x012B key value is sent to hide the mouse UI

16、“OK” + “1” 长按 3s 打开/关闭背光; 背光灯亮 3s。

16、long press "OK"+ "1" for 3s to turn on/off backlight; the backlight is on for 3s

17、input () , 长按 3s 进入学习模式.

17、Long press input, 3s to enter learning mode.

Y03M Learning Buttons Guide

There are 4 learning buttons inside the frame on the STB remote, which can be used to learn.

Put the STB remote and TV remote heads within 5cm.

1. Press and hold  Button for 5s, then the LED will turn on and enter the learning mode.

2. Press any learning button of STB remote within 15s, the red light will flash.

3. Press the button to be learned from the TV remote, when the LED of STB remote flashes 3 times and stays on, it indicates the learning is successful.

4. Repeat steps 2 and 3 to learn the other keys. Press  key to exit the learning mode.

5. If learning mode lasts more than 15s, it will exit learning mode automatically.

Backlight Setup

Backlight On/Off: Long press "Ok"+"1" buttons for 3s, backlight turns On/Off.

18、SSU 功能: TV power、input、vol+、vol-

18、SSU function:TV power、input、vol+、vol-

19、私有语音协议

19、 Private voice protocol

FCC STATEMENT :

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

This device may not cause harmful interference, and

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

Warning: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: 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 or more 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.

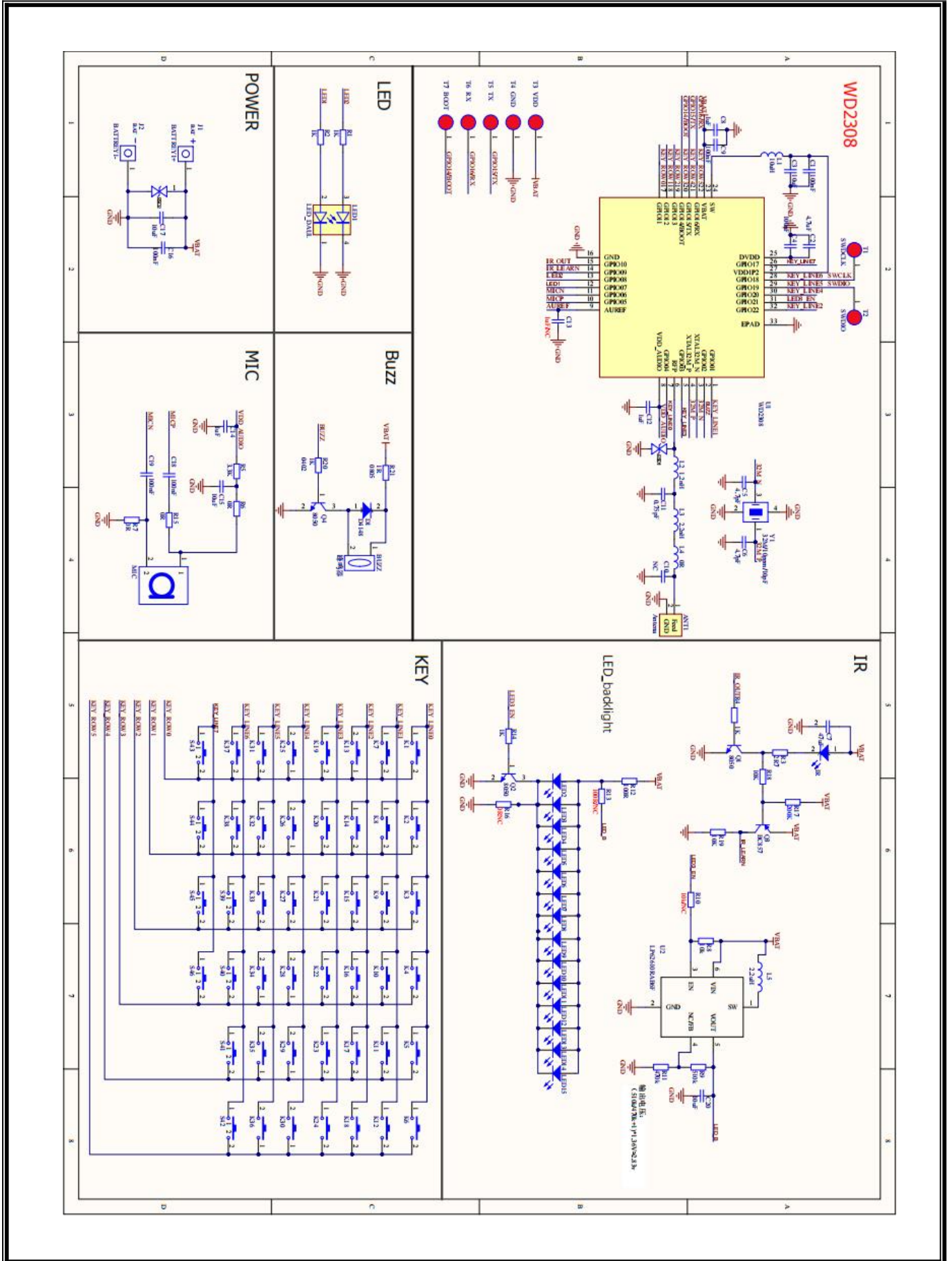
Consult the dealer or an experienced radio/TV technician for help.

RF warning statement:

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

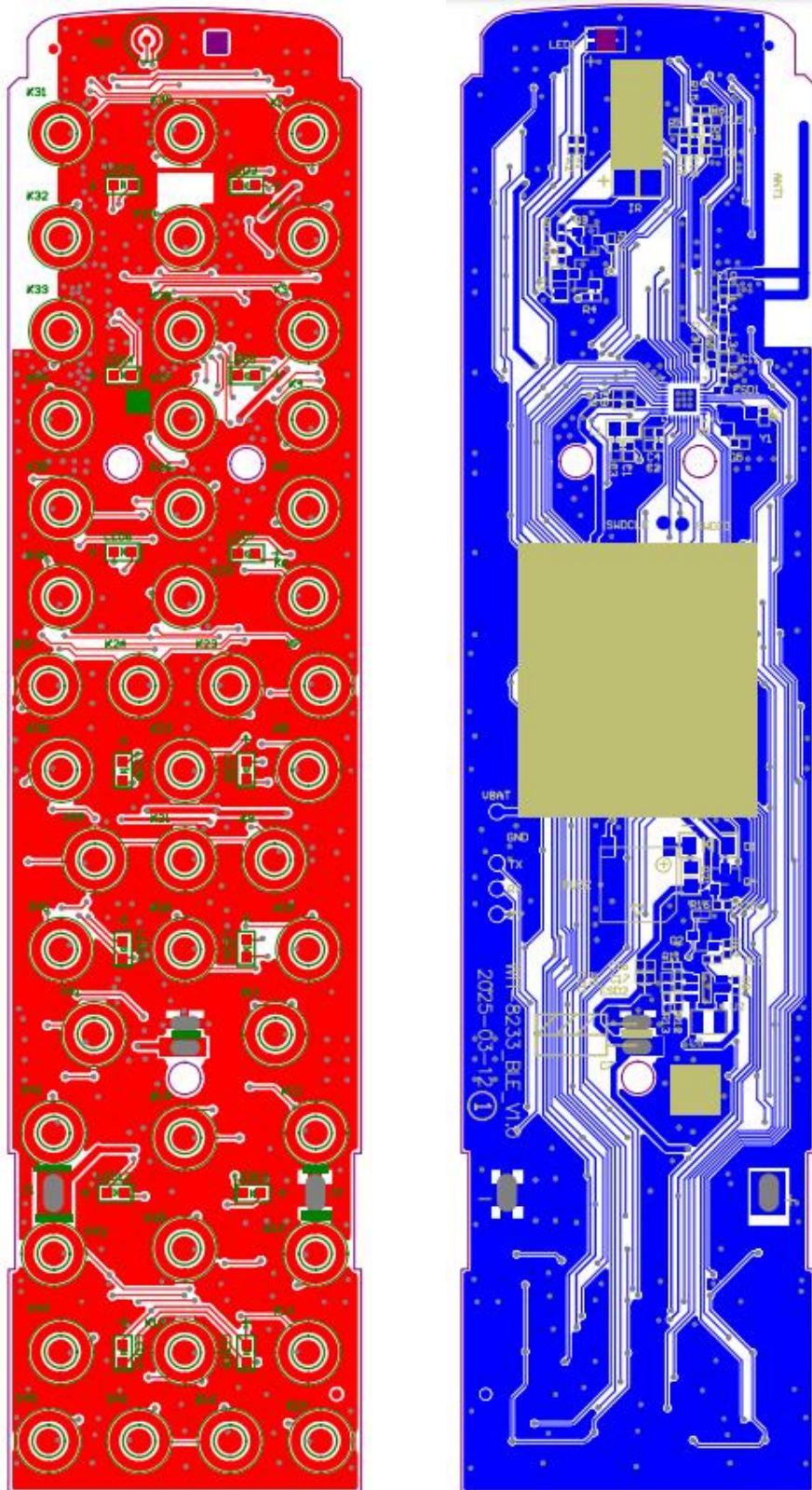
五、遥控器设计原理图

Schematic diagram of remote controller design



六、遥控器 PCB 设计图

Remote control PCB design



七、遥控器 2D 图

2D diagram of remote control

