

# 无锡威达智能电子股份有限公司

## 规格书

### SPECIFICATION FOR APPROVAL

供应商名称: SUPPLIER:	无锡威达智能电子股份有限公司
制造商名称: MANUFACTURER:	无锡威达智能电子股份有限公司
部品品牌: PART LOGO:	
部品名称: PART NAME:	蓝牙语音遥控器
厂家型号: SPEC. TYPE:	WH-7095_BLE
单体净重: MONOMER NET WEIGHT:	
制表日期: DATE:	
质量等级: QUALITY GRADE:	I <input checked="" type="checkbox"/> II <input type="checkbox"/> III <input type="checkbox"/>
芯片方案: CHIP PROGRAM	WNF171
固件版本: FIRMWARE VERSIONS:	RC2164_RC_TEST_WNF171_F966_V1004_20220412_YX

<h2>承制方</h2> <h3>MANUFACTURER</h3>		
拟制 DRAFTER	审核 CHECK	批准 APPROVER
Gause Huang	lilinyu	zhengwenge

承制方名称（盖章）：无锡威达智能电子股份有限公司

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厂家名称 Manufacturer's name	遥控器规格书 Remote Control Specifications	规格书编号 Specification number data2021.12.21
产品名称: product name:	蓝牙语音遥控器 Bluetooth voice remote control	
产品型号: Product number:	WH-7095	
样品数量: Number of samples:	7	
样品参照: Sample reference:	客户资料 customer information	
是否符合 ROHS: Is it ROHS compliant:	是 Yes	
电池型号: battery model:	7 号	
是否自带说明书: (外置说明书和背贴说明书) Whether it comes with a manual: (External manual and back sticker manual)	否	
按键颜色种类 Key color type	6	
按键导电材料 (全锅仔/部分锅仔/非锅仔) Button conductive material (full pot / part pot / non-pot)	全锅仔 full pot	
表面处理方式 surface treatment	上下细纹 fine lines up and down	
是否带铭牌 (丝印/贴纸)	无	

Whether with a nameplate (screen printing/sticker)		
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客户名称/Customer :

公司编号/CO. P/N:

EDE 编号/EDE P/N :

客户编号/CUSTOMER P/N :

日期/Date:

日期/Date: 2022. 3. 25

遥控器厂家签名:

Remote control manufacturer's signature:

INSPECTED BY

VERIFIED BY

APPROVED BY

检查: 黄伟

审核: 厉林玉

批准: 郑文戈

备注 Remark:
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目录:

content:

1. 规格书封面
1. Specification cover
2. 目录
2. Directory
3. 原材料要求
3. Raw material requirements
4. 检验内容及要求
4. Inspection content and requirements
5. 遥控器外观图及码值
- 5. Remote control appearance and code value**
6. 遥控器关键原材料清单及物料图片
6. Remote control key raw materials list and material pictures
7. 遥控器原理图
- 7. Remote control schematic**
8. 遥控器尺寸图
- 8. Remote control dimension diagram**
9. 遥控器 PCB 半成品实物图 (正反两面)
9. Remote control PCB semi-finished product real map (positive opposite sides)
10. 遥控器包装图
10. Remote control packaging
11. 遥控器样品测试报告
- 11. Remote control sample test report**

### 3、原材料要求 Raw material requirements:

NO	项目 project	测试要求 Testing requirements
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3.1	发射管晶圆尺寸 Launch tube wafer size	发射管芯片尺寸。不小于12mil。 Launch tube chip size. Not less than 12 mil.
3.2	Pcb板材品牌 PCB sheet brand	PCB品牌应为KB PCB brand should be KB
3.3	Pcb板厚度要求 PCB plate thickness requirements	PCB板厚度1.6mm±0.1mm(特殊结构板材要求需确认) PCB plate thickness 1.6mm ± 0.1mm (special structural sheet requirements need to be confirmed)
3.4	Pcb板铜箔厚度要求 PCB plate copper foil thickness requirements	PCB铜箔厚度： 大于25um 。 PCB copper foil thickness: greater than 25 um.
3.5	导电胶按键手感系数 Conductive glue button	k>20%。（锅仔片遥控器除外，特殊情况以实际封样为主） K> 20%. (Except for the pot remover, special cases are the actual seal)
3.6	碳阻值 Carbon resistance	用0.5*0.5mm线宽栅型测试板测试，500g正压力，要求碳粒阻值小于100ohm，碳油阻值小于200ohm。 Tested with 0.5 * 0.5mm wire width, 500g positive pressure, requiring a carbon grain resistance to less than 100 ohm, and the carbon resistance is less than 200 ohm.
3.7	壳料原材料 Shell material	ABS+≤10%的水口料 ABS + ≤ 10% water port

#### 4、检验内容及要求 Test content and requirements

##### 4.1 电气性能要求 Electrical performance requirements

NO	项目 project	测试要求 Testing requirements
4.1.1	遥控器的红外光峰值辐照度 Remote control of infrared light peak irradiance	在自然光或荧光灯200±50lx的环境照度下遥控器所用电源电压为额定工作电压条件下，用红外光峰值辐照度计进行测量。在遥控器发射点与峰值辐照度计受光点的水平垂直轴线距离0.5m处，按压遥控器各按键发射红外光信号。直线IR Power≥40uW/cm²，左右水平30°，IR Power≥20uW/cm²。 Under the ambient illuminance of natural light or fluorescent light 200 ± 50LX, the power supply voltage used in the remote control is rated at a rated operating voltage, and the measurement is performed with an infrared light peak irradiance meter. At the horizontal vertical axis distance of 0.5 m in the

		horizontal vertical axis distance of the light point, the horizontal vertical axis distance of the spot is 0.5 m, the pressing remote control is transmitted to the infrared light signal. Line IR POWER $\geq 40\text{uw} / \text{cm}^2$ , left and right levels $30^\circ$ , IR POWER $\geq 20\text{UW} / \text{Cm}^2$ .
4.1.2	遥控距离 Remote control distance	遥控直线距离 $\geq 8$ 米 水平左右方向 $45^\circ$ 距离 $\geq 5$ 米, 垂直上下方向 $45^\circ$ , 距离 $\geq 5$ 米 Remote line distance $\geq 8$ meters The horizontal direction $45^\circ$ distance is $\geq 5$ meters, vertically $45^\circ$ , distance $\geq 5$ meters
4.1.3	动态电流 Dynamic current	控器的电源电压为额定工作值, 瞬时间按压任意功能键时, 用电流表测量工作电流 $\leq 30\text{mA}$ 。 The power supply voltage of the controller is a rated working value. When the current is pressed, the operating current is measured with the current table to measure the operating current $\leq 30 \text{ mA}$ .
4.1.4	静态电流 Quiescent Current	测量静态电流。平均值为: $\leq 3\text{uA}$ Measuring the static current. The average value is: $\leq 3\text{ua}$
4.1.5	高低工作电压测试 High and low work voltage test	在2.4V-3.6V电压范围内, 要求在功能正常。(包括能正常学习、遥控) During the 2.4V-3.6V voltage range, it is required to function properly. (Including normal learning, remote control)
4.1.6	遥控器按键电池寿命实验 Remote control button battery life experiment	将遥控器装入电池放在按键寿命测试仪上, 按 100 次/分钟和 300g 压力测试50万次, 取下后能正常工作; Put the remote control into the battery is placed on the button life tester. Press 100 / minute and 300g pressure to test 500,000 times, and will work properly after removal;
4.1.7	放电测试 Discharge test	空气电压= $\pm 8\text{K}$ 伏, 接触放电= $\pm 4\text{K}$ 伏, 电容: 150PF, 电阻: 3300hm 功能及部件无损坏。 Air voltage = $\pm 8\text{K}$ volts, contact discharge = $\pm 4\text{K}$ volts, capacitance: 150pf, resistance: 3300HM function And parts are not damaged.
4.1.8	电池辐射抗干扰及电池辐射EM Battery radiation anti-interference and battery radiation EM	根据EN 55013, EN61000. -4-2, EN61000-4-3, 。 Refer to EN55013, EN61000. -4-2, EN61000-4-3。 According to EN 55013, EN61000. -4-2, EN61000-4-3, . REFER TO EN55013, EN61000. -4-2, EN61000-4-3.
4.1.9	红外线载波频 Infrared carrier frequency	用PC 测试仪, 载波频率为: $38\text{kHz} \pm 500\text{Hz}$ 。 $36\text{kHz} \pm 500\text{Hz}$ With a PC tester, the carrier frequency is: $38\text{kHz} \pm 500 \text{ Hz}$ . $36\text{kHz} \pm 500\text{Hz}$
4.1.10	电池反接 Battery	反装电池 1min 后, 拔下电池, 重新以正确的方式装入电池, 检测遥控器工作状态, 遥控器能正常工作, 反装测试不导通。 After the battery is 1min, unplug the battery, re-put the battery in the correct way, check The operating conditions of the remote control, the remote control can work properly, and the reverse test is not turned on.

4.1.11	碳粒/碳油阻值测试 Carbon / carbon resistance test	用0.5*0.5mm线宽栅型测试板测试, 500g正压力, 要求碳粒阻值小于100ohm, 碳油阻值小于200ohm。 Tested with 0.5 * 0.5mm wire width, 500g positive pressure, requiring a carbon grain resistance to less than 100 ohm, and the carbon resistance is less than 200 ohm.
4.1.12	遥控器学习功能可靠性 Remote control learning function reliability	1、能学习各种编码格式的遥控器; 2、电压从0V调至2.2V-4.2V范围内能正常学习、发码; 3、在各种气候条件下能正常学习、发码; 4、在长期操作下, 已学习的内容不易丢失; (只适用于带学习功能遥控器) 1. Learn the remote control of various coding formats; 2, the voltage can be accessed normally from 0V to 2.2V-4.2V. 3, can learn normally under various climatic conditions; 4. Under long-term operation, the content of the learned is not easy to lose; (Only available for learning-based remote control)
4.1.13	学习距离 Learning distance	手持遥控器, 发射管头对头准学习样机, 能够正常学习的距离, 应大于5cm (只适用于学习功能的遥控器) Handheld remote control, launch pipe head to the primary learning prototype, can learn from normal, should be greater than 5cm (Remote control for learning features)
4.1.14	学习角度 Learning angle	分布以测试遥控器和普通电视机遥控器的基点, 正常实现学习功能指令时的最大角度, 水平方向左、右均应大于5度; 垂直方向上、下均应大于5度, 距离>3cm Distributed to test the base point of the remote control and ordinary TV remote control, the maximum angle when learning functional instructions are properly realized, the horizontal direction is left, the right should be greater than 5 degrees; vertical direction, lower than 5 degrees, distance > 3cm

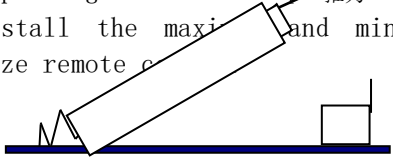
#### 4.2 机械性能要求 Mechanical performance requirements

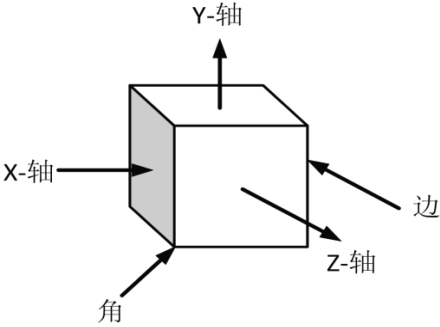
编号 Numbering	类目 Class	规格 Specification	要求 Require
4.2.1	外观 - 所有外观件 Appearance - All appearance parts	在正前方视线 30 厘米处, 肉眼查看 At 30 cm in front of the front, see the naked eye	参照我司遥控器质量规范要求 Refer to our remote control quality standard requirements
4.2.2	酒精测试 (针对普通漆及丝印产品) Alcohol test (for ordinary	用载重 500g 的实验棒 (底部包裹无尘布) 浸湿 95% 酒精压在试样上, 以 40 次/min 的速度, 来回擦拭, 测试距离 20mm 左右。测试后无掉色、起皮, 露底材现象。 喷漆、丝印 50 圈: UV、PU 漆 100 圈: Decoction of 500 g of 500g (bottom	耐醇测试后喷油件无掉色、起皮, 不漏底材现象; 丝印件无丝印断笔, 无擦花, 清晰可见为合格。 (参照我司遥控器质量规范要求)



	paint and silk print products)	wrapped dust-free cloth) wet 95% alcohol pressure in the sample, wiped back and forth, and the test distance is about 20 mm. There is no hair loss, juboate, and dew in the test. Spray paint, silk screen 50 laps: UV, PU paint 100 laps:	The injector is no color, the fuel injection, no leakage of the bottom after melement resistance, and the silk screen is free, and it is clear. (Refer to our remote control quality specification requirements)
4.2.3	铅笔硬度测试 (针对普通漆产品) Pencil hardness test (for ordinary paint products)	将铅笔装在专用的铅笔硬度测试仪上(载重 750g, 铅笔与水平面的夹角为 45°), 推动铅笔 5mm 距离, 共划 5 条(不同位置), 再用橡皮擦将铅笔痕擦拭干净。没有涂膜损伤痕迹, 允许起始位置的微小压痕。 普通漆 HB 硬度; UV 漆 2H 硬度。 Put pencils on a dedicated pencil hardness tester (750g, the pencil and the horizontal angle of 45 °), push the pencil 5mm distance, coexist 5 (different positions), and then wipe the penar marks clean. There is no trace of coating damage, allowing minimal indentation of the starting position. Ordinary paint HB hardness; UV paint 2H hardness.	不可磨穿涂层, 不可露底漆, 不可露底材。丝印无断笔、擦花、褪色等缺陷。无断笔、擦花、褪色等缺陷。(参照我司遥控器质量规范要求) Do not polish the coating, can not be reversed, and the substrate is not optimized. Silk screen is free, faded and other defects. No shortcomings, wipe, fading and other defects. (Refer to our remote control quality specification requirements)
4.2.4	橡皮耐磨测试 (针对普通漆及丝印产品) Rubber wear test (for ordinary paint and silk printing products)	用载重 500g 的实验棒底部装上 FABER-CASTELL 7017R 橡皮, 以 40 次/min 的速度来回擦拭, 测试距离 20mm 左右。表面无明显退色、透底 (露出底材)。 丝印 30 圈: UV、PU 漆 100 圈: The Faber-Castell 7017R eraser is loaded with a 500g experimental rod, wiped back and forth at a speed of 40 / min, and the test distance is about 20mm. There is no obvious surface of the surface, and the bottom (exposed substrate). Silk print 30 laps: UV, PU paint 100 laps:	无起皮, 漏底材现象; 丝印件无丝印断笔, 无擦花, 清晰可见为合格。(参照我司遥控器质量规范要求) There is no skin, leakage bottom phenomenon; silk screen wireless screen pen, no polish, clear and clearly qualified. (Refer to our remote control quality specification requirements)
4.2.5	3M 胶纸测试 (针对丝印) 3M adhesive test (for silk screen)	用 3M600 胶带完全粘合丝印的区域, 将胶带呈 45° 角 1 秒内撕起。粘揭 3 次, 每次使用新胶带。 The tape is torn within 1 second in a 45 ° angle with a 3M600 tape. Paste 3 times, using a new tape each time.	第一、二次不能掉丝印漆第三次脱落油漆面积 ≤ 5% (参照我司遥控器质量规范要求) First, secondary unable to pull the silk printing, the third declined paint area is ≤ 5% (refer to our remote control quality specification requirements)
4.2.6	耐化妆品测试 (丝印) Cosmetic test (silk screen)	将 Nivea cream 涂于印刷图案上, 覆盖欲测试印刷图案 15*15mm, 静置 24 小时后, 擦拭干净, 进行外观检。 Applying NIVEA CREAM to the print pattern, covering the test print pattern 15 * 15mm, after standing for 24 hours, wiping clean, perform an external examination	擦拭纱布上不可沾有印刷油墨 印刷图案应清晰可辨识、不可剥落及断线。(参照我司遥控器质量规范要求) No printing ink on the wiping gauze  The printed pattern should be clearly recognized, non-peeling and disconnection. (Refer to our remote control quality specification requirements)
4.2.7	耐人工汗测试 (丝印) Practice sweat	测试条件: a)、测试溶液成分为: 纯净水 400ml、氯化钠 8g、氯化铵 7g、尿素 2g、醋酸 1ml、乳酸 6ml、少许氢氧化钠, PH=4.7; b)、将浸泡溶液的滤纸贴在样品表面及背面, 把产品密封在滤纸中, 然后置于温度	判定标准: 滤纸不允许有染色, 外表面不允许有腐蚀和脱层的现象为合格。(参照我司遥控器质量规范要求) Judgment Standard: The filter paper is

	test (silk screen)	为 40±2℃的恒温水浴箱中， 试验时间 48 小时； Test conditions: a), the test solution is: pure water 400ml, sodium chloride 8g, 1 ml of ammonium chloride, 1 mL of acetic acid, 6 ml of lactic acid, less sodium hydroxide, pH = 4.7; b), soak solution The filter paper is attached to the surface of the sample and the back, and the product is sealed in the filter paper, and then placed in a constant temperature water bath of 40 ± 2 ° C, the test time is 48 hours;	not allowed to be dyed, and the outer surface does not allow corrosion and delamination. (Refer to our remote control quality specification requirements)
4.2.8	百格测试 (表面喷漆) Baige test (Surface painting)	用百格刀，间隔 1mm 左右，横竖各划 11 条，形成 100 个小方格。使用毛刷或将划线处的喷涂粉屑消除干净。用 3M600 胶带完全粘合百格区，将胶带呈 45° 角 1 秒内撕起。粘揭 3 次，每次使用新胶带。 With a hundredger knife, the interval is about 1 mm, and there are 11 strokes to form 100 small squares. Use a brush or eliminate the discharging of the scribe. With a 3m600 tape, Bonded Brightness, torn it in a 45 ° angle of 45 ° in 1 second. Paste 3 times, using a new tape each time.	百格测试划线边沿平整，脱落面积 ≤ 5 % (当测试面积不够 100 个小方格，则脱落面积按等比例判定) (参照我司遥控器质量规范要求) Baige test scriberal edge is flat, the shedding area is ≤ 5% (when the test area is not 100 small square, the shedding area is determined by the equivalent proportion) (refer to our remote control quality specification requirements)
4.2.9	按键操作力 Button operation	用一个直径 4mm 的测试头在按键中心垂直下压测试其操作力 Test its operating force with a test head of 4mm in diameter.	所有按键: 1.5±0.3N All buttons: 1.5 ± 0.3n
4.2.10	按键回弹 Press button rebound	按压任意按键的任意位置 Press any position of any button	按键不可以卡在上盖上 Button can not be card on the cover
4.2.11	按键寿命 Button life	装有普通电池遥控器放在按键寿命机器上，使用顺序模式，分别测试 OK 键和任意一个其他按键，测试后，遥控器应还能正常发码；遥控器按键手感正常，无异常。(参照等级标准) With ordinary battery remote control, on the button life machine, use the order mode, test the OK key and any other button, after testing, the remote control should also issue normally; the remote control button is normal, no abnormality. (Reference grade standard)	不可有机械，电气，功能的失效 Do not have mechanical, electrical and functional failure
4.2.12	电池盖开合寿命 Battery cover opening life	连续开合电池盖 100 次 Continuously open the battery cover 100 times	电池开合力不可有大的改变，无异常 Battery is not changed, no abnormalities
4.2.13	电池盖开合 Battery cover	电池盖正常用力能打开扣上 The battery cover is normal to open the buckle	应能顺利打开而不借助任何工具 It should be open to open without any tools.

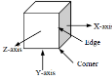
4.2.14	电池接触弹力 Battery contact stretch	将负极弹簧压缩至最小尺寸电池所能压缩到的高度时测试弹簧回弹力。 Tested the spring back elasticity when the negative spring is compressed to a minimum size battery.	回弹力不应小于 3N。 The rebound power should not be less than 3 N.
4.2.15	电池安装 Battery installation	依下图试安装最大及最小尺寸的遥控器 Depending on the picture to install the maximum and minimum size remote control 	电池应能顺利安装 Battery should be installed smoothly
4.2.16	跌落测试 Fall test	将装电池的遥控器，从 100cm 的高度，自由跌落 6 个面 4 个角在不小于 3cm 厚的木质地板上。 The remote control of the battery will be free from the height of 100 cm, and 4 angles freely dropped 4 angles in a wooden floor of not less than 3 cm thick.	卡钩跌开但是能够安装回去遥控器能正常工作视为通过。检查外观与功能应无异常。 The hook has fallen, but it can be installed back to the remote control. Check the appearance and function should have no abnormalities.
4.2.17	包装振动测试 Packaging vibration test	将完好包装的整箱遥控器放置于振动测试台上，以 10HZ-30HZ-10HZ 的频率，以 1.5mm 的振幅做振动测试，振动方向：垂直，实验时间 2H。 Place a completely packaged full box of remote control on the vibration test bench, vibration test at a frequency of 1.5 mm, vibration direction: vertical, experimental time 2 h.	测试后的遥控器不可有功能失效 Remote control after testing does not have functional failure

4.2.18	包装跌落测试: Packaging drop test:	<p>将完好包装的整箱遥控器放置于跌落测试台上, 从 60cm 的高度跌落至台面上。</p> <p>需测试三面, 一边, 一角。</p> <p>测试顺序: X,Y,Z,边,角</p> <p>Place the finished full box of remote controls on the drop test bench, falling from the height of 60 cm to the countertop.</p> <p>It is necessary to test three sides, one side, one corner.</p> <p>Test sequence: x, y, z, edge, angle</p>  <p>The diagram shows a 3D perspective of a rectangular box. Four arrows point to different parts of the box: 'Y-轴' (Y-axis) points upwards from the top face; 'X-轴' (X-axis) points to the left from the front face; 'Z-轴' (Z-axis) points to the right from the front face; and '角' (corner) points to the bottom-left-front corner. A label '边' (edge) points to the right edge of the front face.</p>	测试后的遥控器不可有功能失效 Remote control after testing does not have functional failure
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#### 4.3 环境测试要求 Environmental test requirements

编号 Numbering	类目 Class	测试条件 Test Conditions	规格要求 Specification requirements
4.3.1	<b>高温贮存试验</b> High temperature storage test	温度: 60° C 湿度: NA 存储时间: 48 hours 样品数: 5PCs 常温放置一小时, 没有出现功能和外观问题 Temperature: 60° C Humidity: NA Storage time: 48 Hours Sample number: 5PCS Place an hour, no function and appearance problem	用以下测试条件测试之后, 检查电子及机械功能都能符合本规格书要求 After testing the following test conditions, check the electronic and mechanical functionality can comply with the requirements of this specification.

4.3.2	<b>低温贮存试验</b> Low temperature storage test	温度: -25° C 湿度: NA 存储时间: 48 hours 样品数: 5PCs 常温放置一小时, 没有出现功能和外观问题 Temperature: -25 ° C Humidity: NA Storage time: 48 Hours Sample number: 5PCS Place an hour, no function and appearance problem	用以下测试条件测试之后, 检查电子及机械功能都能符合本规格书要求  After testing the following test conditions, check the electronic and mechanical functionality can comply with the requirements of this specification.
4.3.3	<b>恒定湿热存储</b> Constant wet heat storage	温度: 55° C 湿度: 93±3% 存储时间: 96 hours 样品数: 5PCs 常温放置一小时, 没有出现功能和外观问题 Temperature: 55 ° C Humidity: 93 ± 3% Storage time: 96 Hours Sample number: 5PCS Place an hour, no function and appearance problem	用以下测试条件测试之后, 检查电子及机械功能都能符合本规格书要求  After testing the following test conditions, check the electronic and mechanical functionality can comply with the requirements of this specification.
4.3.4	<b>温度冲击存储测试</b> Temperature impact storage test	高温 60° C (2 小时), 低温 -30° C (2 小时), 切换时间 (3 分钟), 5 个循环 1. 常温放置一小时后测试, 不许有功能缺失。 2. 涂层外观无异常, 无脱落, 无裂纹, 无变色等异常。 High temperature is 60 ° C (2 hours), Low temperature -30 ° C (2 hours), Switch time (3 minutes), 5 cycles 1. Test for an hour after normal temperature, and do not have functional missing. 2. The appearance of the coating is abnormal, no abnormality such as cracking, no cracks, no discoloration.	用以下测试条件测试之后, 检查电子及机械功能都能符合本规格书要求  After testing the following test conditions, check the electronic and mechanical functionality can comply with the requirements of this specification.

4.3.5	<p><b>盐雾测试</b> Salt spray test</p>	<p>温度: +35° C ± 2° C 湿度: 85% RH 密度: 1.030 and 1.040 水平面收集的量: 2 ± 1 ml/h /80cm<sup>2</sup> NaCl 浓度: 5% Ph= 6.5~7.2 持续时间: 24 小时 干燥时间: 24 小时 Temperature: + 35 ° C ± 2 ° C Humidity: 85% RH Density: 1.030 and 1.040 Water level collection: 2 ± 1 ml / h / 80cm<sup>2</sup> NaCl concentration: 5% PH = 6.5 ~ 7.2 Duration: 24 hours Drying time: 24 hours</p>	<p>所有金属器件没有锈蚀, 切口可以有锈蚀</p> <p>All metal devices have no rust, and the incision can be rusted.</p>
4.3.6	<p><b>包装运输试验: 跌落试验</b> Packaging and transportation test: drop test</p>	<p>将整箱产品从 60cm 高度跌落到地面, 对其中三个轴向, 1 边和 1 个角进行试验 如下图: Test the full box of products from 60 cm to the ground, test three axial, 1 sides and 1 angle As shown below:</p>	
4.3.7	<p><b>包装要求</b> Packaging requirements</p>	<p>遥控器的 PE 袋必须符合环保要求, 带回收标识丝印, 且要求增加条码规范管控 The PE bag of the remote control must meet environmental requirements, with recycled marking silk screen, and requires increased barcode regulation control</p>	
4.3.8	<p><b>RoHS</b></p>	<p>RoHS 检测应符合环保要求。(例行试验) RoHS detection should meet environmental requirements. (Routine tests)</p>	

5、遥控器外观图及码值

外观：



PCB:



















键值 Key value:



编码格式 Encoding format: NEC

载波 Carrier: 38KHz

客户码 Customer code: 08F7

No.	Funtion	IR	Usage Page	Usage ID
1		0X0A	0X0C	0X0030
2		0X66	0X0C	0X01A2
3		0X1B	0X0C	0X022A
4		0XA0	0X0C	0X00A1
5		0X61	0X07	0X006E
6	UP	0X00	0X0C	0X0042
7	Down	0X01	0X0C	0X0043
8	Left	0X03	0X0C	0X0044
9	Right	0X02	0X0C	0X0045
10	OK	0X1F	0X0C	0X0041
11	Back	0X1C	0X0C	0X0224
12	Home	0X0C	0X0C	0X0223
13		0X1E	0X0C	0X008D
14	Volume up	0X58	0X0C	0X00E9
15	Volume down	0X5D	0X0C	0X00EA
16	Mute	0X0D	0X0C	0X00E2
17	Channle up	0X5A	0X0C	0X009C
18	Channle down	0X5F	0X0C	0X009D
19		0X1A	0X0C	0X001A
20		0X4A	0X0C	0X004A
21		0X2E	0X07	0X004B
22		0X08	0X07	0X004E
23	1	0X11	0X07	0X001E
24	2	0X12	0X07	0X001F
25	3	0X13	0X07	0X0020
26	4	0X14	0X07	0X0021
27	5	0X15	0X07	0X0022
28	6	0X16	0X07	0X0023
29	7	0X17	0X07	0X0024
30	8	0X18	0X07	0X0025
31	9	0X19	0X07	0X0026
32	0	0X10	0X07	0X0027
33		0X77	0X07	0X0031
34		0X30	0X0C	0X026A
35		0X05	0X07	0X00AA
36		0X09	0X07	0X00AB
37		0X42	0X07	0X00AC
38		0X43	0X07	0X00AD

## 1. 遥控器基本要求 Basic requirements for remote control

1).当连上蓝牙，遥控器发送蓝牙键值；未连接上蓝牙，则发送红外键值。

1). When Bluetooth is connected, the remote control sends the Bluetooth key value; when Bluetooth is not connected, the infrared key value is sent.

2).指示灯：红色，每按一次按键，指示灯闪一下。

2). Indicator light: red, each time you press the button, the indicator light flashes.

3). 低电压提醒：电量低于 2.4V 时，指示灯快速闪烁，只要还在操作，就一直保持闪耀状态，当不再对遥控器进行操作后，闪烁 5 次或闪烁 3 秒后，停止并熄灭。

3). Low voltage reminder: When the battery is lower than 2.4V, the indicator light flashes quickly, as long as it is still in operation, it will keep flashing. When the remote control is no longer operated, it flashes 5 times or flashes for 3 seconds and then stops And goes out.

4).配对方法：

a.同时按住“OK”+“VOL-”键3秒，指示灯闪烁，配对成功指示灯常亮3秒后熄灭。

b.没配对成功时，如果还在按OK+VOL-键就要一直发配对广播，以便用户可以配对。

c.按一次OK+VOL-键就要能配对成功，不要反复清除配对再配对。一次按键配对成功后可以不再发配对广播，直到下次重新按键。

d. Connection interval < 12ms

4). Pairing method:

a. Press and hold the "OK" + "VOL-" keys at the same time for 3 seconds, the indicator light flashes, and the pairing success indicator light is always on for 3 seconds and then goes out.

b. When the pairing is not successful, if you still press the OK+VOL- key, you must keep sending the pairing broadcast so that the user can pair.

c. Press the OK+VOL- button once to be able to pair successfully, do not clear the pairing repeatedly and then pair. After a key pairing is successful, the pairing broadcast can no longer be sent until the key is pressed again next time.

d. Connection interval < 12ms

5).遥控距离：≥10m

5). Remote control distance: ≥10m

6). 蓝牙设备名称：RemoteB044-171

6). Bluetooth device name: RemoteB044-171

7).支持OK+Back上报功能

7). Support OK+Back reporting function

8).支持蓝牙状态下能玩PAC Man游戏

8). Play PAC Man games in Bluetooth mode

9).支持连接蓝牙版本为5.0的设备

9). Support to connect to devices with Bluetooth version 5.0

10).同时按下“OK+音量+”取消蓝牙配对

10). Press "OK+Volume+" at the same time to cancel Bluetooth pairing

11) 私有语音

12).唤醒包

12). Wake-up package

Element	Byte	Value	Description
Adv Type Flags	Byte0	0x02	Length of the following payload bytes in this data block
	Byte1	0x01	The data type = Advertising Type Flags
	Byte2	0x04	EDR_NOT_SUPPORTED(0x04)
UUID 16Bits	Byte3	0x03	Length of the following payload bytes in this data block
	Byte4	0x03	The data type = Complete list of 16-bit UUIDS
	Byte5	0x12	LSB of UUID value
	Byte6	0x18	MSB of UUID value
Appearance	Byte7	0x03	Length of the following payload bytes in this data block
	Byte8	0x19	The data type = Appearance
	Byte9	0x80	LSB of Appearance value (Generic: Remote Control)
	Byte10	0x01	MSB of Appearance value (Generic: Remote Control)
Manufacturer Specific	Byte 11	0x0d	Length of the following payload bytes in this data block
	Byte12	0xff	The data type = Manufacturer Specific
	Byte13-Byte14	0x5d,0x00	Manufacturer ID
	Byte15-Byte17	0x03,0x00,0x01	Additional Data <b>0x01: for power key</b>
	Byte18	0x01	Key Press Counter <b>0x02: for netflix wakeup</b>
	Byte19-Byte24	STB BT Address	STB BT Address

12).在不使用语音的时候 Interval 为 20ms,使用语音的时候 interval 为 10ms;语音采样为 8K  
 12). Interval is 20ms when voice is not used, and 10ms when voice is used; voice sampling is 8K

连接参数		
工作模式\参数	非语音状态	语音状态
Interval	20ms	10ms(根据方案调整)
Slave latency	49	0
Supervision timeout	2.2	1

## 2. 遥控器其他要求

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;

1). Pairing function requirements: there must be no problems that the Bluetooth device cannot be scanned or paired (including continuous pressing of the pairing key within a short period of time), please verify 50 times to ensure that there is no problem;

2). 回连功能要求: 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;

2). Reconnection function requirements: there must be no problems with the connection failure, including the box power failure and the connection, the remote control power failure and the connection, stand for 2 hours to reconnect, etc., please verify 50 times to ensure that there is no problem;

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;

3). Anti-interference function requirements: there must be no problems that greatly affect the host's WIFI throughput, please ensure that the host's WIFI throughput is normal when connecting the remote control;

4).性能要求: 要求支持 $\leq 10m$ , 不得存在语音通话卡顿, 丢失以及遥控器按键卡顿、丢码或连键等问题;

4). Performance requirements: It is required to support  $\leq 10m$ , and there must be no voice call jams, loss, and remote control button jams, missing codes, or continuous keys;

5).功耗要求: 遥控器可持续使用至少 6 个月以上

5). Power consumption requirements: the remote control can be used continuously for at least 6 months

6). 语音: 16Khz voice sample with 16-bit sampling, 短按语音键 (彩色键) 可以开始录音, 遥控器收到语音引擎下发的停止录音指令后停止录音。语音超时 30s 保护, 强制退出录音。

6). Voice: 16Khz voice sample with 16-bit sampling, short press the voice button (color button) to start recording, and the remote control will stop recording after receiving the stop recording command from the voice engine. The voice timeout is protected for 30s, and the recording is forced to exit.

7).盒子软件可以控制 MIC 打开及关闭。

7). The box software can control the opening and closing of the MIC.

8).支持遥控器 MIC 和其他 MIC (如手机 apk 上的录音键) 交替、切换语音输入。

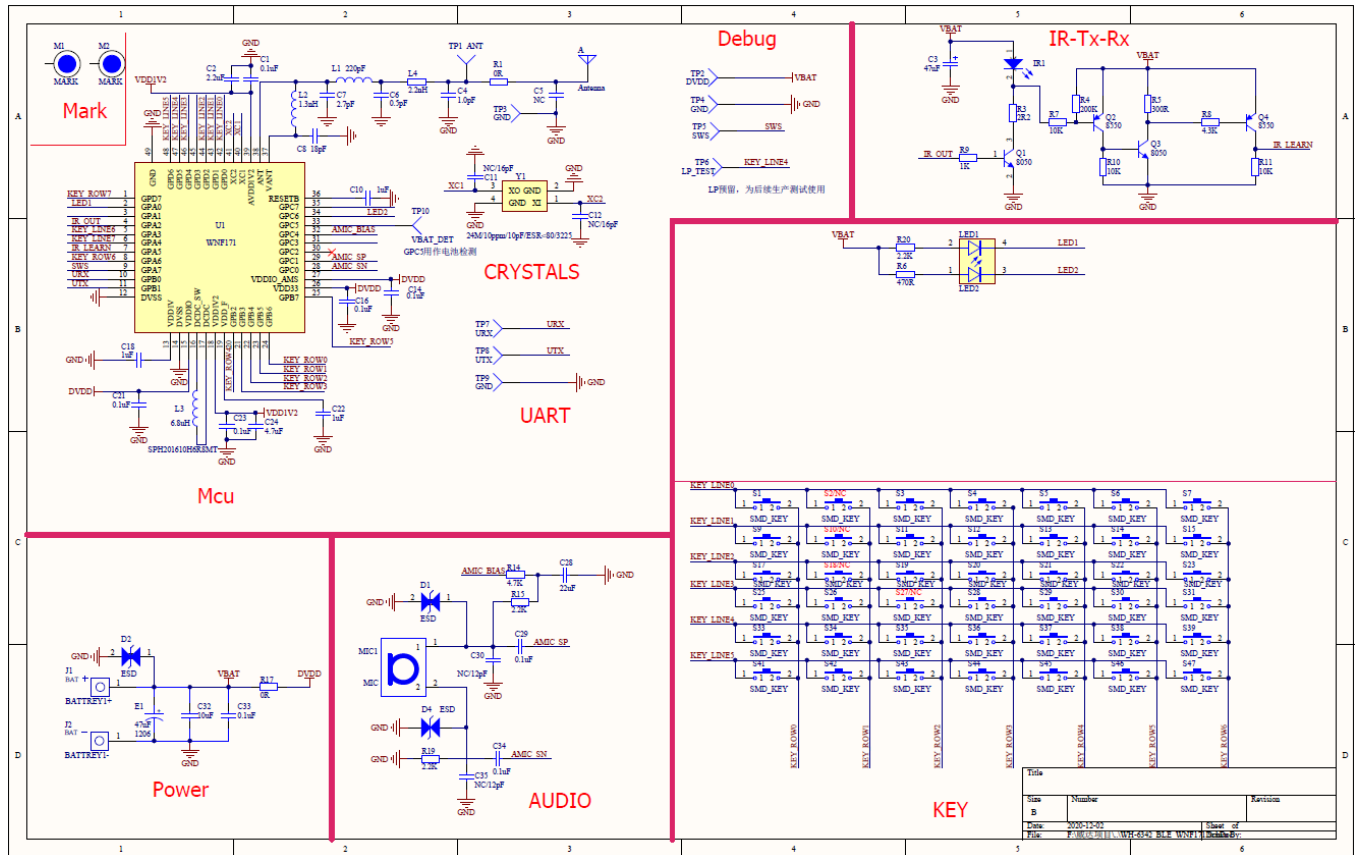
8). Support the remote control MIC and other MIC (such as the recording key on the phone apk) to alternate and switch voice input.

Single carrier: 【OK】 + 【】 + 【number 0】; Frequency 2.442G

6、遥控器关键原材料清单及物料图片 Remote control key raw material list and material picture

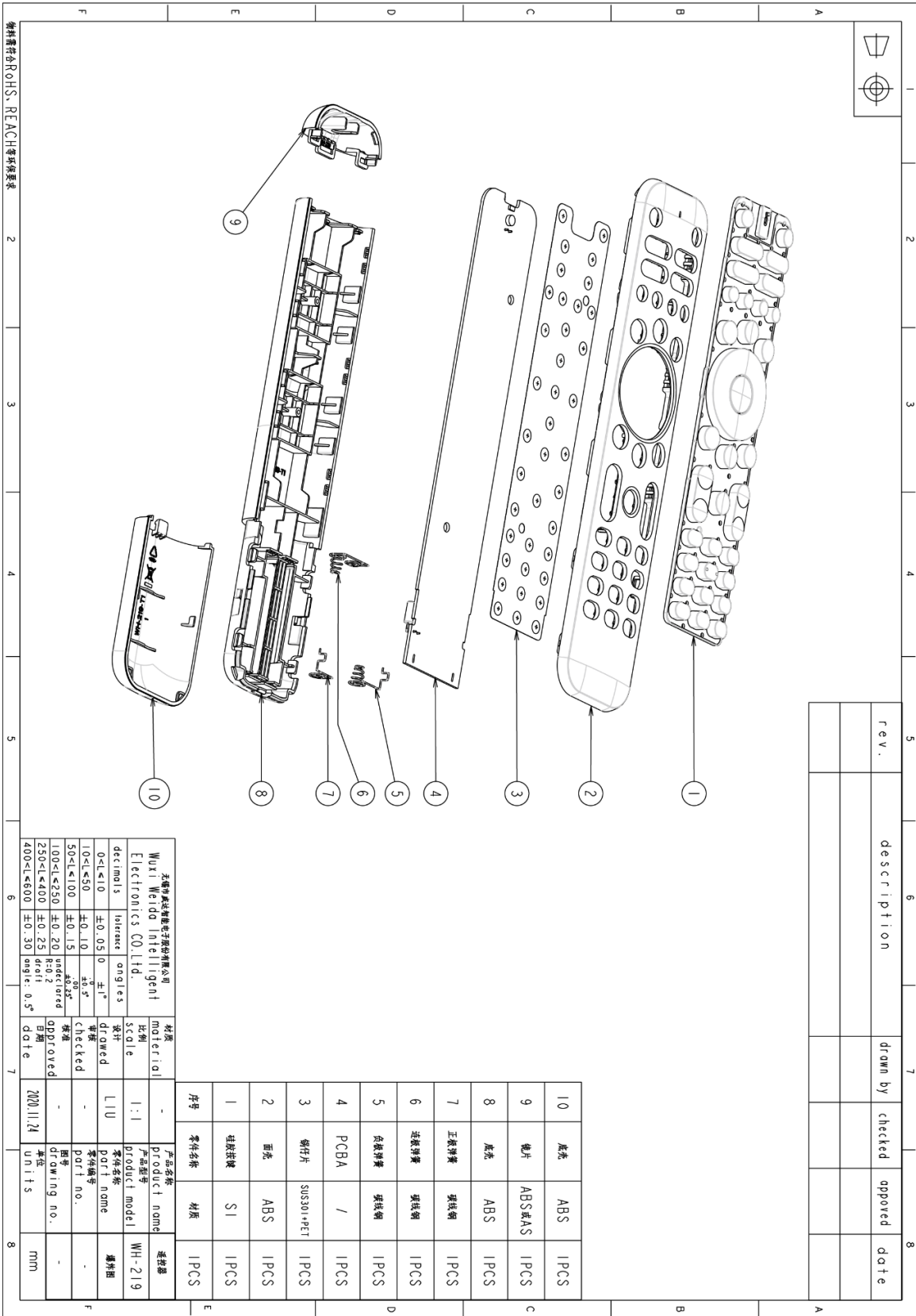
③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪
描述(材料名称型号规格)	位号	备注	单位用量	单位	环保 类别	采购 类型	开始 时间	停止 时间
线路板组件(贴片钢网 WH-6342_BLE V2.0 TOP)			0	pcs		X		
贴片发光二极管 A-SP194R6C-A01-3T(红光)(0603)	LED1		1	pcs				
贴片麦克风 HCR4013CBJ(SMD 灵敏度-38±3dB) 通华恒宇	MIC1		1	PCS				
线路板组件(贴片钢网 WH-6342_BLE V2.0 BOT)			0	pcs		X		
贴片电阻 RES-0R (0402)	R1		1	pcs				
贴片电阻 RES-0R (0805)	R17		1	pcs				
贴片电阻 RES-2R ±5% (0805)	R3		1	pcs				
贴片电阻 RES-470R±5% (0402)	R6		1	pcs				
贴片电阻 RES-100Ω ±5% (0402)	R9		1	pcs				
贴片电阻 RES-2.2K ±5% (0402)	R15, R19, R20		3	pcs				
贴片电阻 RES-4.7K ±5% (0402)	R14		1	pcs				
贴片电容器 CCAP-50V-1.0PF-±5%-COG (0402)	C4		1	PCS				
贴片电容器 CCAP-50V-1.5PF-±5%-COG (0402)	C6		1	PCS				
贴片电容器 CCAP-50V-2.7PF-±10%-COG(0402) (国巨)	C7		1	PCS				
贴片电容器 CCAP-50V-12PF-±10%-COG(0402) (国巨)	C30, C35		2	PCS				
贴片电容器 CCAP-50V-18PF-±10%-COG(0402) (国巨)	C8		1	PCS				
贴片电容器 CCAP-50V-220PF-±20%-COG(0402) (国巨)	L1		1	PCS				
贴片电容器 CCAP-16V-100nF-±10%-X7R(0402)	C1, C14, C16, C21, C23, C29, C33, C34		8	PCS				
贴片电容器 CCAP-16V-1uF-20%+80%-X5R(0402)	C10, C18, C22		3	PCS				
贴片电容器 CCAP-6.3V-4.7UF ±20% -X5R (0402)	C24		1	PCS				
贴片电容器 CCAP-6.3V-10UF ±20% -X5R (0805)	C32		1	PCS				
贴片电容器 CCAP-6.3V-22UF ±20% -X5R (0805)	C28		1	PCS				
贴片电感器 1.3nH±5% (0402) LQG15HS1N3S02D(村田)	L2		1	PCS				
贴片电感器 1nH±5% (0402) LQG15HS1N0S02D(村田)	L4		1	PCS				
贴片电感器 6.8uH±20% (0805) SPH201610H6RSMT(顺络)	L3		1	PCS				
贴片三极管 S8050D(SOT-23)(NPN)	Q1		2	pcs				
集成电路 WNF171 微纳(QFN48)	U1		1	PCS				
贴片晶振 24M ±10ppm (3225封装 负载电容CL:12.5pF) (润禧电子)	Y1		1	PCS				
双面PCB板 WH-6342_BLE V2.0 (FR-4, 板厚1.2mm, 按键喷油处理 焊盘OSP 黑油白字 环保 7拼板) 三品/信丰柏成		135.5mm*216*1.2mm	1	pcs				
红外发射管 Y1R305SBS 05 指定使用天佳发射管	IR		1	pcs				
电容 CD110-16V-100μF±20% (脚距2/05×8)	E1		1	PCS				
钢仔片 WH-219 荷重:160g 圆形 7联片 (同心键)			1	pcs				
正极弹簧 22键 WH-219 (泰兴华厦) 0.6mm钢丝			1	pcs				
负极弹簧 22键 WH-219 (泰兴华厦) 0.6mm钢丝			1	pcs				
导电橡胶 22键 WH-6783 (6种颜色 丝印7色) (唐河鸿中)			1	pcs				
WH-219上盖 22键 本黑 丝印 (WH-6783钢板)			0	pcs				
WH-219上盖 22键 本黑 素壳(凯菲)			1	pcs				
WH-219下盖 22键 本黑 素壳(凯菲)			1	pcs				
WH-220 电池盖 22键 本黑 素壳(凯菲)			1	pcs				
WH-220 透镜 22键 深色透明AS (凯菲)			1	pcs				
生产日期标签 当日生产日期(贴于电池仓右侧)			1	pcs				
封口塑料包装袋 8*24(cm) (带红色环保标记)			1	pcs				
平卡 50*28.5cm K3K材质 WH-219			2/150	pcs				
立卡 50*21cm K3K材质 WH-219			5/150	pcs				
外包装箱 51.5*30.23(cm <sup>3</sup> ) K-K WH-219		加厚加硬增加保护层	1/150	pcs				

# 7、遥控器原理图 Remote control schematic



Title			
Size	Number	Revision	
B			
Date	2020-12-20	Sheet of	
File	F:\BU\021111\WJ-G042 BLE WNF171	Schematic	

8、遥控器尺寸图（包括结构 2D 图） Remote control dimension diagram (including structure 2D)



rev.	description	drawn by	checked	approved	date

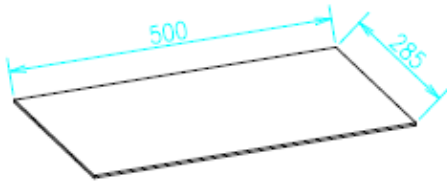
无锡威达智能电子有限公司 Wuxi Weidao Intelligent Electronics Co., Ltd.		材料 material	-	产品名称 product name	遥控器 WH-219
decimals	tolerance angles	比例 scale	1:1	产品名称 product model	遥控器 WH-219
0<L<=10	±0.05 0	设计 drawed	LIU	零件名称 part name	-
10<L<=50	±0.10	审核 checked	-	零件编号 part no.	-
50<L<=100	±0.15	检查 checked	-	图号 drawing no.	-
100<L<=250	±0.20	批准 approved	2020.11.24	单位 units	mm
250<L<=400	±0.25	日期 date	2020.11.24		
400<L<=600	±0.30	angle: 0.5°			

序号	零件名称	材料	IPC
1	硅胶按键	SI	IPCS
2	面壳	ABS	IPCS
3	弹片	SUS301+PET	IPCS
4	PCBA	/	IPCS
5	点阵排线	铜线铜	IPCS
6	点阵排线	铜线铜	IPCS
7	点阵排线	铜线铜	IPCS
8	底座	ABS	IPCS
9	垫片	ABS或AS	IPCS
10	底座	ABS	IPCS

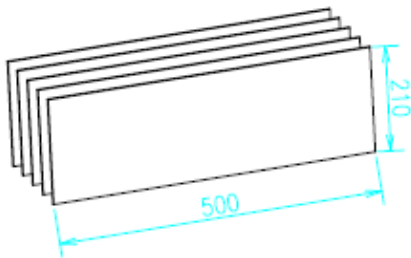
物料清单表 ROHS、REACH 等环保要求

9、遥控器包装图 Remote control packaging

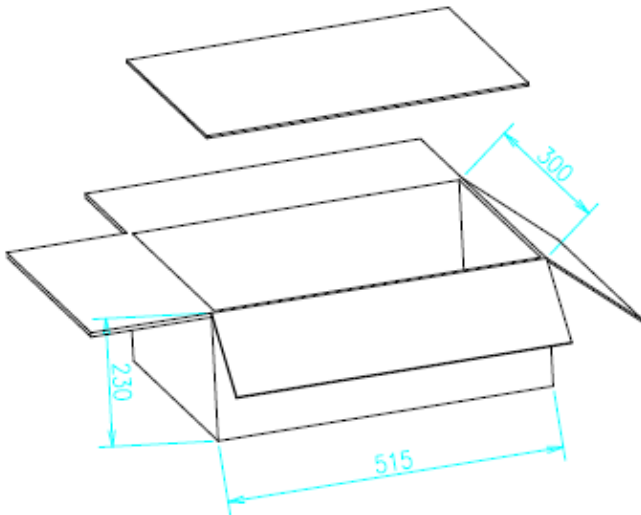
## WH-219外箱尺寸



平卡尺寸:L500\*W285mm 材质:K3K 用量:2pcs



立卡尺寸:L500\*W210mm 材质:K3K 用量:5pcs

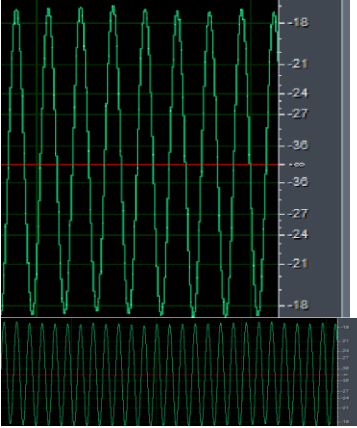


外箱尺寸:L515\*W300\*H230mm 材质:K=K  
150pcs/箱 共一层6\*25pcs=150pcs



## 10 遥控器测试报告 Remote control test report

测试项目 Test items	测试方法 testing method	判定标准 judgement standard	测试仪器 test instrume nt	实测数据 actual data	
1、晶振频偏 1, crystal vibrating frequency	用一探测针测试晶体 与芯片间的走线(不要 与引脚接触,可以绿油 接触) Use a probe to test the trailing line between the crystal and the chip (do not contact the pin, you can contact green oil)	<10PPM	频谱仪 Spectrum Analyzer	5.8ppm	
2、天线发射 功率/载 波频偏 2, antenna emission power / carrier frequency offset	按操作要求,进入遥控 器测试模式,遥控器会 发射一单载波信号,用 一探针连接频谱仪后 接触天线头部,测试其 功率,(仅限于蓝牙) According to the operation requirements, enter the remote control test mode, the remote control will transmit a single carrier signal, connect the spectrometer after connecting the spectrometer to test the antenna head, test its power, (only to Bluetooth only)	要求 PAEK 值 在 (-12 ± 3)dBm 之内, 载波频偏 <10ppm The PAEK value is required to be in (-12 ± 3) DBM, the carrier frequency is displayed <10ppm	频谱仪 Spectrum Analyzer	-10.1dbm	
3、电源纹波 Power ripple	按住语音键不放,测试 其各供电引脚纹波, Press and hold the speech button, test each of the power- to-foot ribs,	要求 VPP 小 于 150mV (仅限于蓝 牙) Require VPP less than 150mV (Bluetooth only)	示波器 Oscillos cope	100mv	

<p>4、麦克风性能测试</p> <p>4, microphone performance test</p>	<p>用一标准发声源,播入 1KHZ 的信号,距离 MIC 20CM,在 MIC 拾音端的声压为 80DB+/-3DB,接住语音键,用工具获取该语音流.</p> <p>With a standard sound source, a 1kHz signal is played, and the MIC is 20cm, the sound pressure of the MIC pickup is 80 dB +/- 3dB, and the speech key is received, and the voice stream is obtained with the tool.</p>	<p>要求语音波形不失真(采样值在 4K-7K 之间, (对应分贝值为 -13~-20DB).) (仅限于蓝牙)</p> <p>The sound waveform is required to be informally (the sampling value is between 4k-7k, (corresponding to the division value is -13 ~ -20db).) (Only Bluetooth only)</p>	<p>电脑 computer</p>		
<p>5、电池工作寿命</p> <p>5, battery work life</p>	<p>按一天使用 8 小时,待机 16 小时计算;每天按键的操作 300 次,语音每天 10 分钟,电池以 2 节 7#700MAS 计算遥控器的使用寿命</p> <p>Use 8 hours a day, standby 16 hours; 300 operations per day, 10 minutes a day, the battery calculates the service of the remote control in 27 # 700mas</p>	<p>要求&gt;7 个月</p> <p>Requirement s&gt; 7 months</p>	<p>示波器机顶盒</p> <p>Oscilloscope set top box</p>	<p>A. 16 小时待机功耗:  <math>16 * 0.0025 = 0.04\text{mah}</math>  B. 按键功耗:  <math>300 * 0.57 * 0.23\text{s} / 3600\text{s} = 0.010925\text{mah}</math>  C. 10min 语音功耗:  <math>3.36 * 10\text{min} / 60\text{min} = 0.56\text{mah}</math>  D. 7.8 小时工作静态功耗:  <math>7.8 * 0.02 = 0.156\text{mah}</math>  一天总功耗:  <math>0.04 + 0.010925 + 0.56 + 0.156 = 0.766925\text{mah}</math>  共计:  <math>700 / 0.766925 / 30 = 17.8</math> 月  A. 16 hours standby power consumption:  <math>16 * 0.0025 = 0.04\text{mAh}</math>  B. Button power consumption:  <math>300 * 0.57 * 0.23\text{S} / 3600\text{S} = 0.010925\text{mAh}</math>  C. 10min voice power consumption:</p>	

				$3.36 * 10\text{min} / 60\text{min} = 0.56\text{mAh}$ D. 7.8 hours of work static power consumption: $7.8 * 0.02 = 0.156\text{mAh}$ One day total power consumption: $0.04 + 0.010925 + 0.56 + 0.156 = 0.766925\text{mAh}$ total: $700 / 0.766925 / 30 = 17. \text{ August}$	
6、动态功耗 (1) 按键功耗 (2) 语音功耗 (3) 静态功耗 6, dynamic power consumption (1) Button power consumption (2) Voice power consumption (3) Static power consumption	(1) 按键短按操作 10 次取平均值 (2) 语间取 3 次平均值, 每次 2S 以上 (3) 无任何操作时的功耗, 10S 以内的平均值 以上操作均是在连接状态下 (1) Press the button short press to operate 10 times average (2) Take 3 averages in the language, each time 2S or more (3) No power consumption in any operation, the average of 10s The above operation is in connection	(1) 按键 <4mA*S (2) 语音 <17.5mA*S (3) 静态 <0.06mA*S (1) Press <4mA * S (2) Voice <17.5mA * S (3) Static <0.06mA * S	示波器 / 电流监测仪 Oscilloscope / current monitor	(1) 0.57MA (2) 3.36MA (3) 0.02MA	
7、静态电流 Quiescent Current	无连接状态下的电流 Current without connection	<3uA	万用表 multimeter	2.5UA	

无锡威达智能电子股份有限公司 RoHS2.0 及 REACH 符合性自我声明表

Wuxi Weida Intelligent Electronics Co., Ltd. RoHS2.0 and REACH statement of conformity

产品型号: WH-7095\_BLE

材料名称 Material name	有毒有害物质或元素 toxic and hazardous substances or elements										备注 Remarks
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)	邻苯二甲酸二丁基酯 (DBP)	邻苯二甲酸甲基丁酯 (BBP)	邻邻苯二甲酸二(2-乙基己基)酯 (DEHP)	邻苯二甲酸二异丁酯 (DIBP)	
IC	○	○	○	○	○	○	○	○	○	○	
PCB	○	○	○	○	○	○	○	○	○	○	
贴片阻容	○	○	○	○	○	○	○	○	○	○	
贴片发光管	○	○	○	○	○	○	○	○	○	○	
发射管	○	○	○	○	○	○	○	○	○	○	
电解电容	○	○	○	○	○	○	○	○	○	○	
弹簧	○	○	○	○							
塑壳	○	○	○	○	○	○	○	○	○	○	
导电胶	○	○	○	○	○	○	○	○	○	○	

○: 表示该有毒有害物质在该部件所有均质材料中的含量均在 2011/65/EU 规定的限量要求以下。

○: It indicates that the content of hazardous substance in all homogeneous materials of the component is below the limit requirement of 2011/65 / EU.

×: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 2011/65/EU 规定的限量要求。

×: It indicates that the hazardous substances are in excess of the limits requirement of 2011/65 / EU in at least one homogeneous material of the part.

(供应商应将其原材料按要求进行拆分, 并按照此表格进行详细标注, 对不能满足标准要求的零部件进行具体的原因描述)

(The supplier shall separate its raw materials according to the requirements and mark it in detail in accordance with this form, and describe the specific reasons for the parts that can not meet the standard requirements)

整体部件 Integral part		是否符合 (EC) No 1907/2006 标准要求 Compliance with (EC) No 1907/2006 standard requirements or not	
	高关注物质 (SVHC)	是	
	禁止和限制物质 “附件 17” Prohibited and Restricted Substances “Annex 17”	是	
原材料部件 Raw material components		是否符合 (EC) No 1907/2006 标准要求 Compliance with (EC) No 1907/2006 standard requirements or not	
	IC	高关注物质 (SVHC)	是
		禁止和限制物质 “附件 17” Prohibited and Restricted Substances “Annex 17”	是
	PCB	高关注物质 (SVHC)	是
		禁止和限制物质 “附件 17” Prohibited and Restricted Substances “Annex 17”	是
	贴片阻容	高关注物质 (SVHC)	是
		禁止和限制物质 “附件 17” Prohibited and Restricted Substances “Annex 17”	是
	贴片发光管	高关注物质 (SVHC)	是
		禁止和限制物质 “附件 17” Prohibited and Restricted Substances “Annex 17”	是
	发射管	高关注物质 (SVHC)	是
		禁止和限制物质 “附件 17” Prohibited and Restricted Substances “Annex 17”	是
	电解电容	高关注物质 (SVHC)	是
		禁止和限制物质 “附件 17” Prohibited and Restricted Substances “Annex 17”	是
	弹簧	高关注物质 (SVHC)	是
		禁止和限制物质 “附件 17” Prohibited and Restricted Substances “Annex 17”	是

	塑壳	高关注物质 (SVHC)	是
		禁止和限制物质 “附件 17” Prohibited and Restricted Substances “Annex 17”	是
	导电胶	高关注物质 (SVHC)	是
		禁止和限制物质 “附件 17” Prohibited and Restricted Substances “Annex 17”	是

注：1、根据 (EC) No 1907/2006 标准要求管控 SVHC（高关注物质）及禁止和限制物质，如果在标准值以内填写是，反之则填写否。

1. Control SVHC (high concern substances) and prohibited and restricted substances according to (EC) No 1907/2006 standards. Fill in Yes if in the standard, otherwise fill in No.

2、请在页面加盖公司印章。

2. Please stamp the company seal on the page.



**FCC STATEMENT :**

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.

**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.