



# User MANUAL

PLL DIVERSITY WIRELESS SYSTEM

## Note:

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As the products quality are being improved, advanced materials, components and innovative production techniques will be brought in our products constantly, so the parameter may be changed without further notice.

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**Operation Note**

Thank you for using this product, please read the user manual carefully before installing this product. This device is professional wireless microphone system, which requests professional qualified person to install or maintain.

**Application**

This wireless microphone system apply to Karaoke Box and other entertainments.

**Environment Factors**

This wireless microphone system works through radio frequency, which will be disturbed by external wireless signals easily. We promise all the products will be tested strictly before delivery. If signal losing happens instantaneously during installation, mostly the system frequency is disturbed by external wireless signals. If above phenomenon happens, please check external and internal installation environment interference factors as below, and adjust environment and system setup accordingly.

- ◆ Whether there is a Television Tower, large-scale mobile phone transmitter station or other strong interference source around this wireless microphone application place.
- ◆ Whether mobile phone signal amplifier is installed in this wireless microphone application place.
- ◆ Whether there is high frequency band wireless interphone system in this wireless microphone application place or whether other brand wireless microphone system work in the same application place.
- ◆ Whether there are other metal objects which may shield or weaken wireless signal around wireless microphone system.
- ◆ Whether receiver antenna close to computer, PC song-order device or the other RF disturb machines.

- ◆ Whether there is obvious obstacle between receiver and transmitter.
- ◆ Whether the wireless microphone system surroundings is too wet.

**WARNING**

If above situations happen, please improve internal environment and adjust main receiver frequency to perfect system receiving signal, or call local authorized distributor or service for technology support.

**Definition**

**UHF**-----Ultra High Frequency, refers to 300~3000MHz ultra high frequency wireless radio wave.

**PLL**----- Phase Locked Loop, during wireless microphone transmitting and receiving signal, adopts frequency synthesis method, which can receive signal in one frequency band. In this frequency band can switch any working channel.

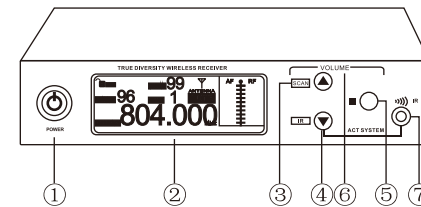
**Diversity**-----Diversity receiving, that is a way to use two or more antennas and receivers to decrease or remove multi-path frequency losing. This is a common method which includes dual antennas phase-switching, dual receivers audio switching and “radio diversity” audio combination. The most effective method is radio diversity combination.

**Squelch**-----When receiver of wireless microphone haven't received signal or the signal is weak, in order to avoid noise output, system will cut off the signal output automatically, this function is called squelch.

**Frequency losing**-----When transmitter is placed at somewhere of a room, if carrier wave signal and sound are lost instantaneously, or background noise is increased. Move transmitter (even only few inches), the sound will be returned to normal.

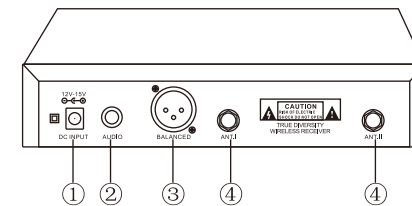
**System Instruction**

**A. Receiver (Front panel)**



1. Power switch—Press the key, information screen will be on, then the device can be used and operated.
2. LCD screen—Information screen, display the frequency point, battery level and other information.
3. Up—Adjust up receiver frequency and sweep frequency automatically.
4. Down—Adjust down receiver frequency and frequency sync automatically.
5. SET—Press the key can set up receiver frequency.
6. Volume—Twist the knob can adjust the receiver volume.
7. IR frequency sync interface.

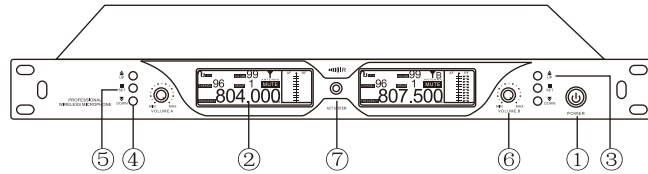
**A. Receiver (Rear panel)**



1. DC input socket—Power input socket, connect accessory power adapter.
2. 6.3mm mono port—Connect balanced/unbalanced audio devices.
3. XLR balanced output socket—Connect balanced audio device.
4. Antenna input socket—Insert accessory dual antennas into the sockets.

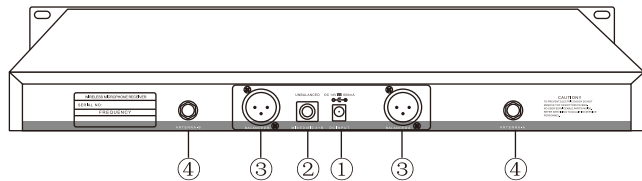
## System Instruction

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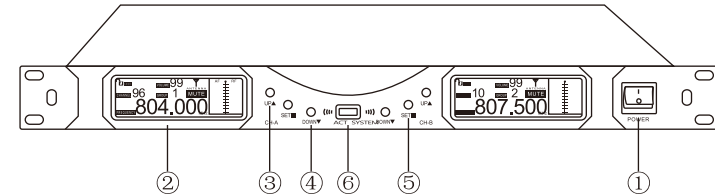
### B. Receiver (Rear panel)



1. DC input socket—Power input jack, connect accessory power adapter.
2. 6.3mm mixture port—Mix channels A and B audio output.
3. XLR balanced output socket—Connect balanced audio device.
4. Antenna input socket—Insert accessory dual antennas into the sockets.

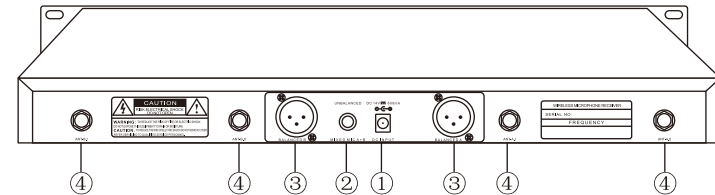
## System Instruction

### C. Receiver (Front panel)



1. Power switch—Press the key, information screen will be on, then the device can be used and operated.
2. LCD screen—Information screen, display the frequency point, battery level and other information.
3. Up—Adjust up receiver frequency and sweep frequency automatically.
4. Down—Adjust down receiver frequency and frequency sync automatically.
5. SET—Press the key can set up receiver frequency.
6. IR frequency sync interface

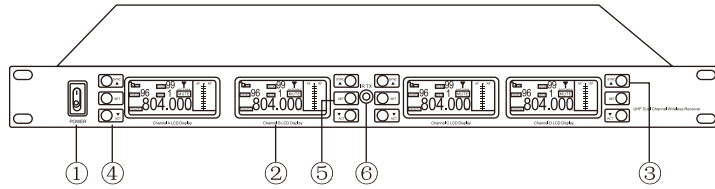
### C. Receiver (Rear panel)



1. DC input socket—Power input jack, connect accessory power adapter.
2. 6.3mm mixture port—Mix channels A and B audio output.
3. XLR balanced output socket—Connect balanced audio device.
4. Antenna input socket—Insert accessory dual antennas into the sockets.

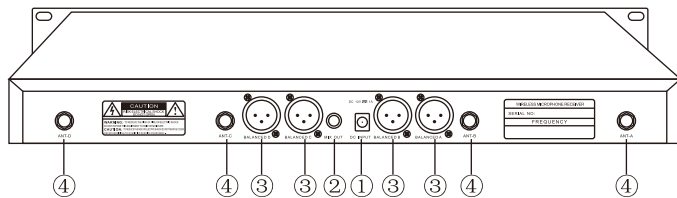
## System Instruction

### D. Receiver (Front panel)



1. Power switch—Press the key, information screen will be on, then the device can be used and operated.
2. LCD screen—Information screen, display the frequency point, battery level and other information.
3. Up—Adjust up receiver frequency and sweep frequency automatically.
4. Down—Adjust down receiver frequency and frequency sync automatically.
5. SET—Press the key can set up receiver frequency.
6. IR frequency sync interface

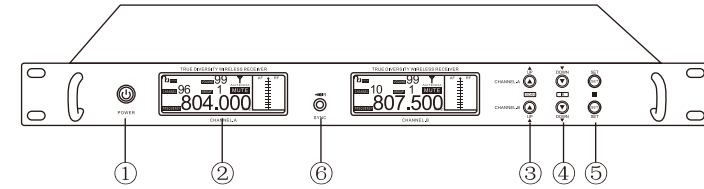
### D. Receiver (Rear panel)



1. DC input socket—Power input jack, connect accessory power adapter.
2. 6.3mm mixture port—Mix channels A and B audio output.
3. XLR balanced output socket—Connect balanced audio device.
4. Antenna input socket—Insert accessory dual antennas into the sockets.

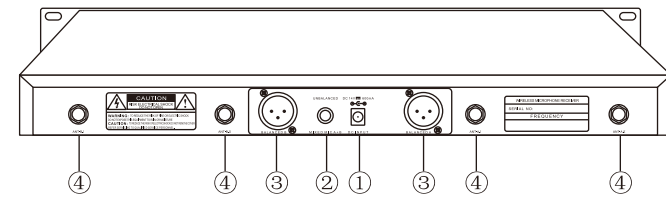
## System Instruction

### E. Receiver (Front panel)



1. Power switch—Press the key, information screen will be on, then the device can be used and operated.
2. LCD screen—Information screen, display the frequency point, battery level and other information.
3. Up—Adjust up receiver frequency and sweep frequency automatically.
4. Down—Adjust down receiver frequency and frequency sync automatically.
5. SET—Press the key can set up receiver frequency.
6. IR frequency sync interface

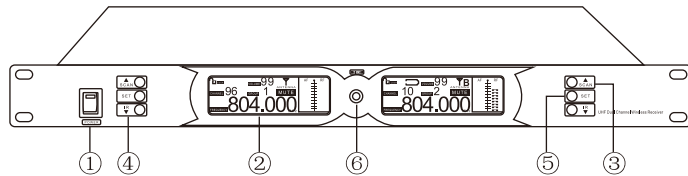
### E. Receiver (Rear panel)



1. DC input socket—Power input jack, connect accessory power adapter.
2. 6.3mm mixture port—Mix channels A and B audio output.
3. XLR balanced output socket—Connect balanced audio device.
4. Antenna input socket—Insert accessory dual antennas into the sockets.

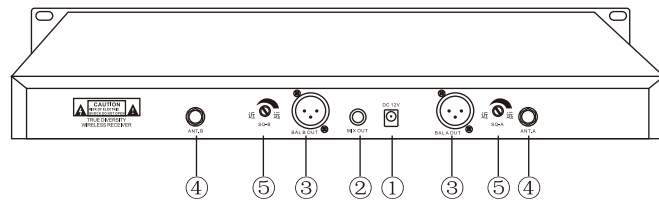
## System Instruction

### F. Receiver (Front panel)



1. Power switch—Press the key, information screen will be on, then the device can be used and operated.
2. LCD screen—Information screen, display the frequency point, battery level and other information.
3. Up—Adjust up receiver frequency and sweep frequency automatically.
4. Down—Adjust down receiver frequency and frequency sync automatically.
5. SET—Press the key can set up receiver frequency.
6. IR frequency sync interface

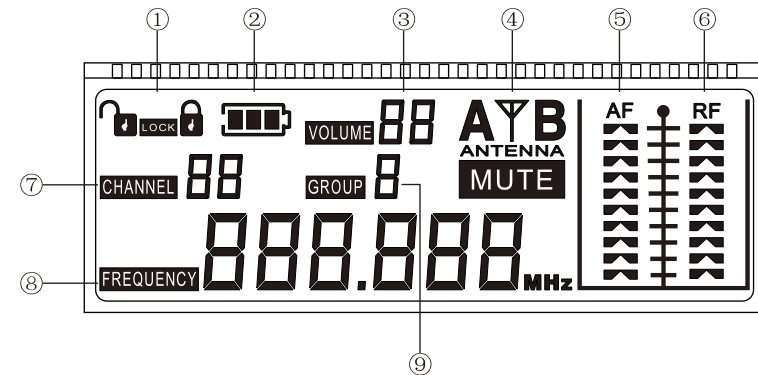
### F. Receiver (Rear panel)



1. DC input socket—Power input jack, connect accessory power adapter.
2. 6.3mm mixture port—Mix channels A and B audio output.
3. XLR balanced output socket—Connect balanced audio device.
4. Antenna input socket—Insert accessory dual antennas into the sockets.

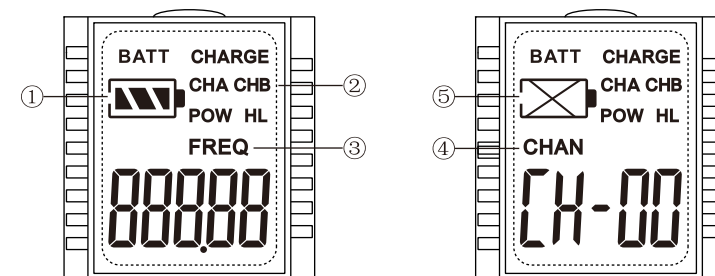
## System Instruction

### Screen Description



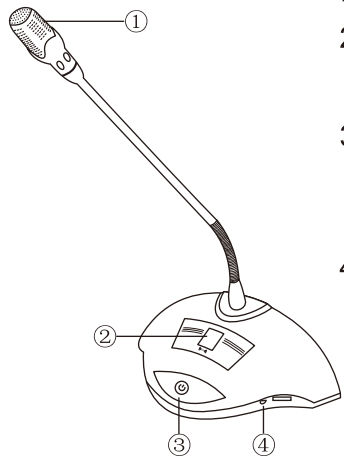
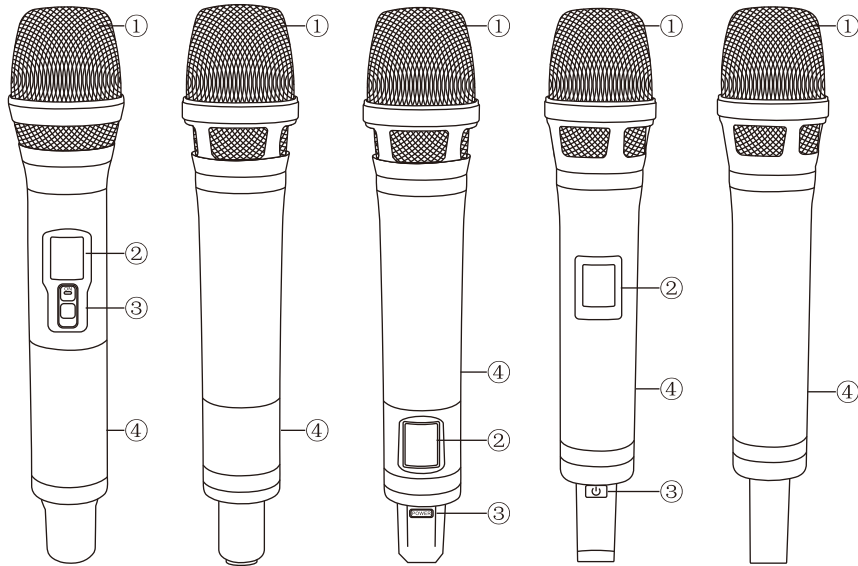
1. Display channel lock (Lock/unlock icon)
2. Display microphone battery level
3. Display channel volume (00-99)
4. A/B antenna strong and weak signal switch
5. Display strong and weak dynamic of channel audio
6. Indicate channel strong and weak signal receiving
7. Display channels (00-99)
8. Display frequency
9. Display groups selection

### Transmitter Screen



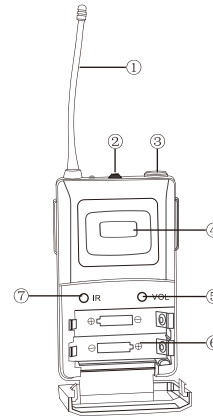
1. Display battery level
2. Channels, channel A & B
3. Display frequency
4. Display channels
5. "☒" Twinkle circularly means low battery, please change battery

## System Instruction Transmitter



1. Cartridge module.
2. LCD screen——Indicate frequency point, battery level and other information.
3. Power switch——After inserting battery, press this button, the screen will be on, then can use and operate the microphone.
4. Battery compartment——Screw the cover then insert two pieces of batteries into the socket.

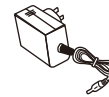
## System Instruction Transmitter



1. Antenna
2. Power switch, long press the button for 2 seconds the power will be ON, then long press the button for 2 seconds the power will be OFF. Click the power button, then can switch frequency and channels. .
3. Audio connection cable output.
4. Screen
5. Volume adjustment
6. Battery compartment
7. IR frequency point sync

### Accessory

Power adapter



Audio cable



Anti-slip ring



Disposable battery  
for testing





### Warming

All the components and accessories of this system request strict default technique match, please make sure to use our dedicated accessories. If use other brand accessories may cause system out of operation or cause other quality problems. If need accessories, please contact local authorized distributor to offer.

### System Setup




Warming: Please set up receiver firstly, then turn on transmitter.

## Receiver operation


1. Before turning on the device, make sure the receiver is matched with original adapter. Then turn on the power, the LCD will display the related information, such as frequency, volume, channels and so on.
2. Select channel A, turn on the microphone, then put the IR frequency point close to the receiver IR transmitting indicator, press the left side IR key, “IR---” icon will display circularly on the LCD during matching frequency, until “ $\overline{A} \overline{B}$ ” AB icon and “RF” signal amplitude “” indicator and battery level icons come out that means frequency match successfully.
3. Select channel B, turn on the microphone, then put the IR frequency point close to the receiver IR transmitting indicator, press the right side IR key, “IR---” icon will display circularly on the LCD during matching frequency, until “ $\overline{A} \overline{B}$ ” AB icon and “RF” signal amplitude “” indicator and battery level icons come out that means frequency match successfully.

## System Setup



### Transmitter

1. Buttons functions & description
  - Click “” (SCAN) can sweep clean signal which is with least interference source automatically to use
  - Click “” (SET) to confirm and select functions
  - Click “” (IR) to realize receiver and transmitter’s frequency sync match

## 2. LCD panel description



Frequency matching operation: Turn on the receiver, when receiver works normally, then turn on microphone. After pressing the “IR” key of receiver, put microphone IR receiving window point to the receiver IR transmitting IR tube. When frequency match successfully, signal “ $\overline{A} \overline{B}$ ” icon, “RF” signal amplitude “” indicator and battery level icon will display on the receiving terminal.

## 3. Channel/Frequency adjustment

Click “SET” button, the sign “00-99” will twinkle on the LCD, then press “” and “” to adjust channel / frequency. After changing channel frequency, then press “SET” to confirm the frequency. (Change channel frequency each time, microphone can’t work until match frequency accordingly again.)

4. Channel A lock button, setup is to see top left corner icon of LCD. (Long press “” for 3 seconds means lock, long press “” for 3 second means unlock)

## 5. Volume adjustment

Increase and decrease volume setup, click SET function key, channel number will twinkle on the LCD, then click the key again, sign “VOL-99” will twinkle on the screen. Press () button to increase volume, or press () to decrease volume, long press the buttons for 2 seconds, progressive increase or decrease volume will show on the LCD, after finish adjusting volume, please press “SET” key to confirm the volume.



## System Installation

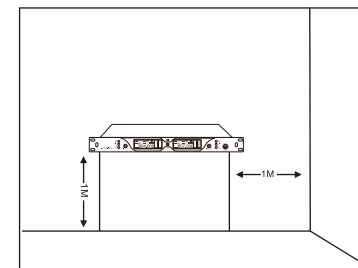
### Installation Note

Before installing this system, please refer to the items “Operation Note” and “Environment Factors”, preclude possible interference source which affect external wireless receiving effect and which exist internal installation environment.

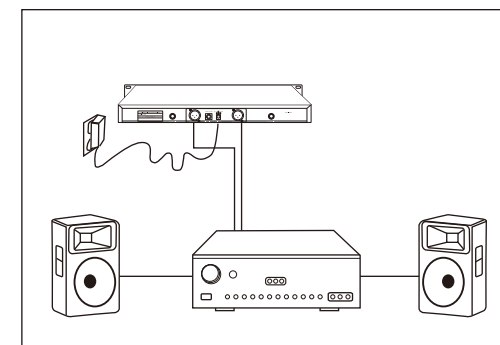
### Placement Request

- (1) Please keep proper distance between receivers, keep 2 meters at least.
- (2) Please reduce barrier between transmitter and receiver, no barrier in the line of sight will be best.
- (3) When operate more than one receiver, receiver frequency should keep reasonable interval, keep 6MHz frequency space will be better.
- (4) Accessory antennas should be inserted to the socket of receiver rear panel, and place the antennas as “L” glyph vertical angle.
- (5) Connect power adapter to the receiver power socket.
- (6) In order to make sure system work in the best status and reduce reflection dead point, the receiver should be kept 1 meter away from the ground and the wall or metal surface. (as picture below)

## System Installation



### System Connection



There are two kinds of audio output in the receiver rear panel, XLR socket (balanced) and 6.3mm jack (unbalanced). Balanced audio cable connect mixer, if mixer with XLR balanced input, suggest using receiver rear panel XLR balanced output; if the input port of mixer is 6.3mm jack, suggest connecting 6.3mm output port of receiver rear panel, these two group output can work at the same time.

## Operation Guide

### 1. How to use handheld wireless microphone correctly

- (1) Should hold the middle part of microphone, if too close to the microphone head will affect the cartridge effect; if too close to the bottom antenna will decrease microphone transmitting efficiency, shorten the available distance.
- (2) Adjust the distance between microphone and mouth, can increase and decrease high & low sound.
- (3) Microphone adopt built-in antenna, don't close to the large metal object, or decrease microphone sound effect.
- (4) When battery level shows one grid on the microphone screen, please change new battery in time, or microphone will turn off automatically.

### 2. How to operate receiver correctly

- (1) When work receiver, please screw receiver antenna tightly.
- (2) When receiver adopt omni antenna, antenna should be kept 0.5 meter away from the wall (especially metal objects).
- (3) Avoid placing receiver at the bottom of speaker, should install receiver over 1 meter away from the ground.
- (4) Receiving range refers to many factors and with many changes. If there is no large metal objects block at the transmitting direction, which will gain better transmitting effect.
- (5) If conditions are not ideal, can use extension cord to connect external high gain antenna, even antenna amplifier to achieve obvious longer distance effect.

### 3. How to operate more than one set of wireless microphone in the same place correctly

- (1) Operate more than one set of microphone in the same place, please don't use the same channel and frequency, to avoid disturbing each other.
- (2) Operate many sets of microphone at the same time, each microphone should be apart 20 cm. Under meeting transmitting conditions, should use miniwatt to avoid disturbing each other.
- (3) More than one set of microphones work at the same time, suggest installing high gain antenna, antenna amplifier and receiving splitter. ◦
- (4) If microphone is set up via miniwatt, these places will not be with quantity limitation, such as KTV Box, classroom etc.
- (5) If test each channel whether is dedicated or not, can adjust receiver channel accordingly, if two grids signal shows on the receiver screen, that means signal is occupied.

## Receiver

### System Specifications

Carrier Wave Frequency range	780MHz--830MHz
Frequency Oscillation Mode	PLL module locked loop design
Channels	200CH
Frequency Responses	50Hz--15KHz
Working distance	100feet
Frequency Space	250KHz
Band Width	50MHz
Carrier Wave stability	$\pm 5\text{PPm} \leq 10\text{KHz}$
Image Interference Ratio	>80dB
S/N Ratio	>105dB(1KHz-A)
Sensitivity	-105dBm(12dB S/N AD)
T.H.D. (1KHz)	<0.5%@1kHz
AF Output Impedance	2.2k $\Omega$
Audio Output Level	-12dB
Mute	Mute & locked loop circuit
Display	LCD
Operations Voltage	12V -14V DC ,600mA
Output Connector	1 XLR Balanced Socket Unbalance TRS $\varnothing$ 6.3mm Socket

### UHF PLL Handheld Transmitter

Carrier Wave Frequency range	780MHz--830MHz
Channels	200CH
Band Width	50MHz
Frequency Space	250KHz
Dynamic Range	>110dB
Stability	$\pm 0.005\%$
Frequency Deviation	$\pm 48\text{KHz}$
Spurious Emissions	<-60dBc
Radio Frequenc Output Power	10mW
Power Consumed	$\leq 120\text{mA}@3\text{V}$
Battery	UM3.AA 1.5v X2
Display	LCD
Element	Dynamic Microphone

## Warming

- (1) Transmitter and transmitter antenna should be kept in accessible line relative position.
- (2) Do not put receiver close to the metal surface or close to the place with any digital devices ( e. g. CD player, computer etc. )
- (3) Receiver should be installed over 1 meter away from the ground, try not close to the wall. For ventilate fully, the minimum clearance should be not less 20cm around the devices.
- (4) Vent hole should not be covered by paper, desk and curtain etc. , these objects will block ventilation.
- (5) Cell phone and two-way radio equipments etc. will disturb audio transmitting.
- (6) Device body should avoid sunshine, water drops and water splatter, and should not put the device at the place close to such as vase or other similar container fill with liquid.
- (7) Please do not disassemble device by yourself.
- (8) Do not place fire source such as alight candle on the receiver.
- (9) Do not throw abandoned battery at random, please put them into specified recycling bins.

### Trouble Shooting

Problems	Indicator (light) status	Solutions
No sound or weak sound	When transmitter on, backlight is not bright	Turn on transmitter power; Make sure battery port +/- signs match with transmitter port.
	Receiver power backlight is not bright	Make sure whether one end of AC power adapter insert power socket, and whether another end insert receiver rear panel input socket; Make sure whether AC power socket is ok and confirm whether supply voltage is normal.
	Receiver RF signal light is on	Turn up receiver volume control; Turn up transmitter gain switch setup; Check cable connection between receiver and amplifier or mixer.
	Receiver RF signal light is not bright, when turn on transmitter, indicator flash	Remove metal objects from receiver, check whether there is barriers between receiver and transmitter; Place transmitter close to receiver, check whether receiver and transmitter use the same frequency.
	Low voltage indicator of transmitter is on	Change transmitter battery
Distortion or noise	RF signal indicator of receiver is on	Remove nearby RF interference source (e.g. CD player, computer, digital equipments, earphone monitor system etc.) Adjust receiver and transmitter use different frequency; Lower transmitter gain; Change transmitter battery; If use many systems, can increase the frequency space of each system
Distortion level increase	Low voltage indicator of transmitter is on	Change transmitter battery

### Important Safety & Warranty Instruction

- (1) Before installing and operating the device, please read the safety operation rules carefully, and keep it for reference in the future.
- (2) Device cleaning: Before doing cleaning, please switch off the power, please use dry soft cloth to wipe the device.
- (3) Without manufacturer's permission, please do not use any unmatched accessories.
- (4) Please do not place device in the wet place or near high temperature equipments, to avoid danger happen.
- (5) Supply voltage: America, Japan AC 110~120V 60Hz; Eurasia: AC 220V~240V 50Hz.
- (6) In case of thunder and lightning, please pull power plug to protect device.
- (7) Long-term unused, please turn off power, it's better to pull power plug, and remove transmitter battery.
- (8) If device need repair or any after service problem, do not disassemble by yourself, please contact local distributor.

### Warranty Rules

- (1) All the products will be offered 12 months free warranty period, except man-made factors, such as
  - A. Device is broken by man-made;
  - B. Device is damaged by improper operation;
  - C. Part of components are damaged or losing due to disassemble by oneself;
  - D. Warranty card is missing.
- (2) Transportation cost should be charged by customer.
- (3) Manufacturer will charge reasonable fee to offer service for those damaged product beyond warranty period or by man-made.

### Other Assistance

If user meet some technology or installation problems can't be solved during installation, please contact installation engineering or call local authorized distributor for professional technique support, we will offer you sincere service in the first time!