

**WS-AUDIO24-0009-TX**  
**WS-AUDIO24-0009-RX**

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Wireless Microphone Module

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**Version History**

Version	Date	Changes
V1.0	FEB.21, 2011	1 <sup>st</sup> . Edition

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## 1. Features

2.4GHz ISM Band  
GFSK modulation  
Low BOM cost  
distance > 20m (Line of sight)  
Broadcasting mode  
RF frequency hopping in 8 channels  
Digital I2S audio interface  
Support no audio detection function  
Programmable delay time 20ms  
Audio format 16bit , 38.4KHz sampling rate  
Low power consumption  
No RF induced audio noise  
Battery Life > 20 hours , Ni-MH 2000mAh , AAx2  
Dynamic or Condenser microphone cartridge used

## 2. Application

KTV  
Home  
Conference Room  
Classroom



### 3. RF Specification

Item	Min	Typ	Max	Unit	Note
Channel Range	2404	—	2476	MHz	
Available Channel	—	—	16	CH	
-3dB bandwidth	—	2	—	MHz	
RF Output Power	8	10	12	dBm	Peak power at Antenna port
RX sensitivity	-78	-76	—	dBm	The smaller, the better

### 4. Audio Specification

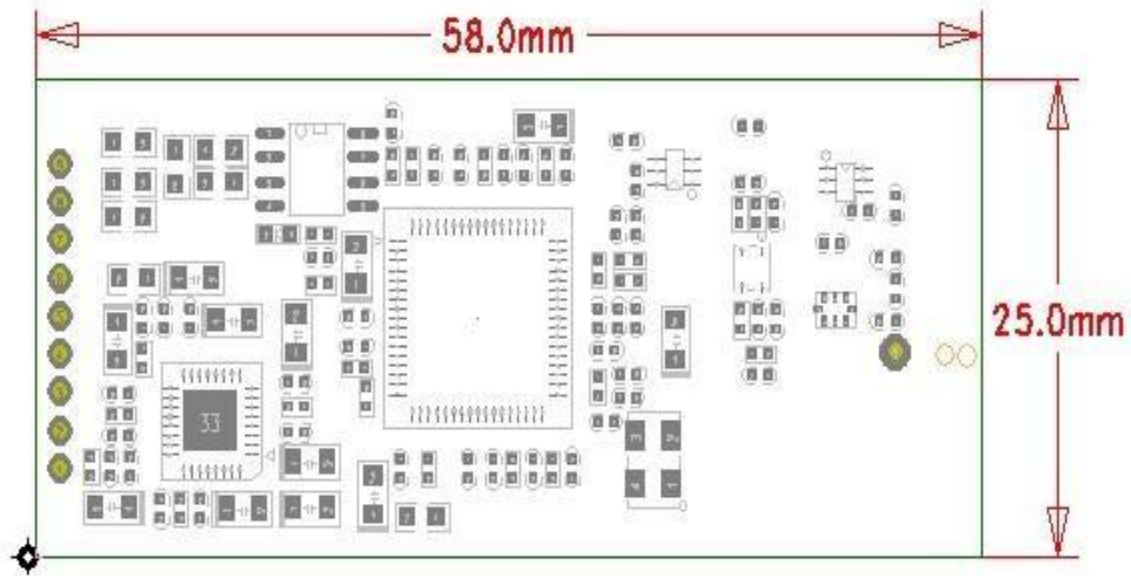
Item	Min	Typ	Max	Unit	Note
SNR	84	85	86	dB	@1KHz
THD + N	-71	-70	-69	dB	@1KHz, the smaller, the better
Dynamic Range	84	85	86	dB	@1KHz, the smaller, the better
Frequency Response	-3	0	+1	dB	50 ~15KHz
FSM		300		mVrms	ADC input (Pre-amp gain 18dB)
FSOV		540 540		mVrms mVrms	Line out (6.3ø Mono Phone Jack) Differential out (XLR)

### 5. Electrical Specification

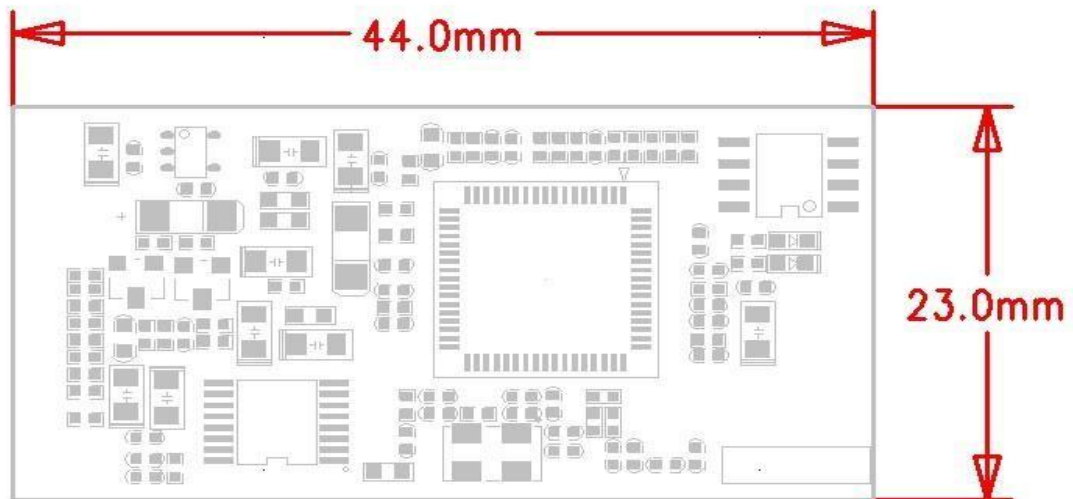
Item	Min	Typ	Max	Unit	Note
Power Supply Voltage (TX)	2.0	2.4	3.0	V	NiMH AA Rechargeable Battery or ALKALINE AA Battery
Power Supply Current (TX)	—	60		mA	2.0V~3.0V
Power Supply Voltage (RX)	—	5.0	—	V	DC Input
Power Supply Current (RX)	—	50	—	mA	
Operating Temperature	0	25	50	°C	Ambient temperature

## 6. Mechanical Dimension

### 6.1 Microphone TX



### 6.2 Microphone RX



## 7. Product Appearance

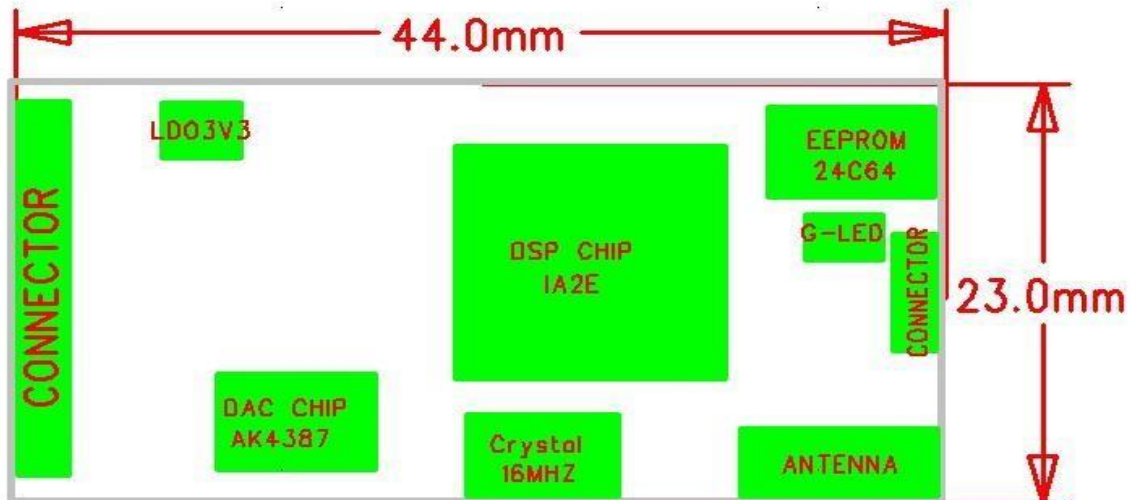
### 7.1 Transmitter module's Architecture Drawing



#### Notes:

Transmitter Module Dimension: 58mm\*25mm, 2Layer PCB, PCB Thickness: 1.0mm

### 7.2 Receiver module's Architecture Drawing

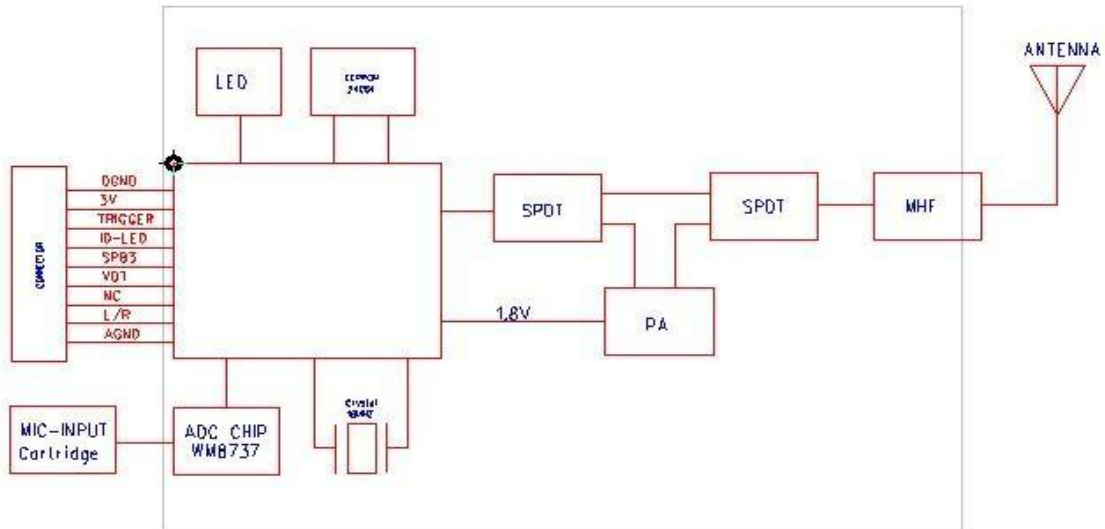


#### Notes:

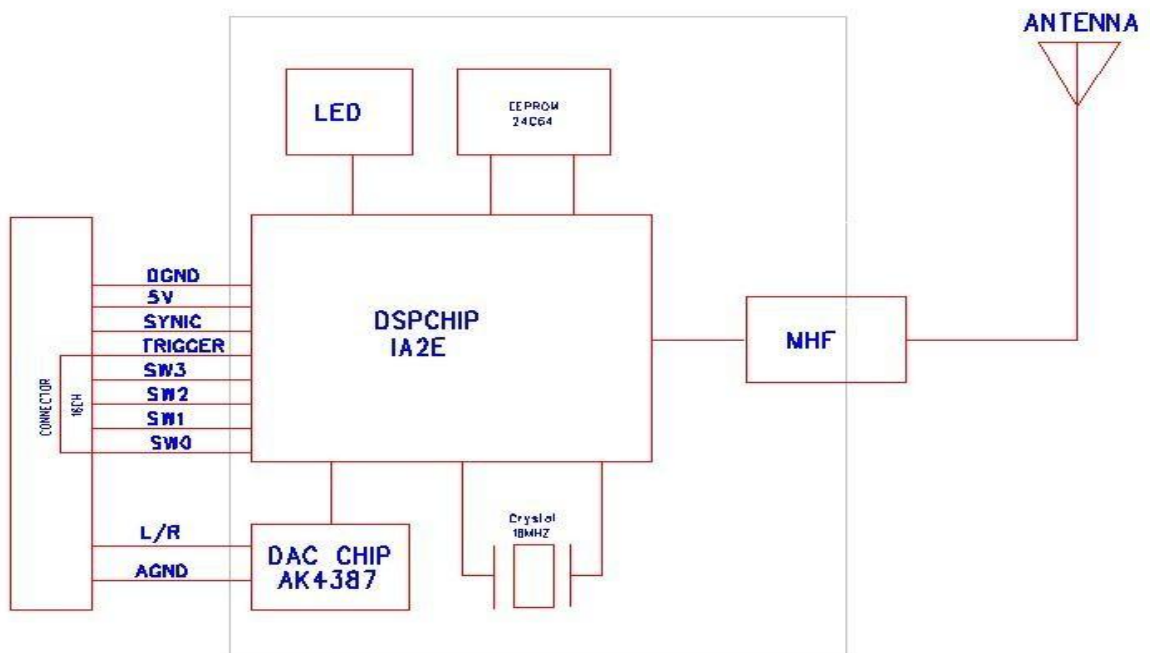
Receiver Module Dimension: 44mm\*23mm, 2Layer PCB, PCB Thickness: 1.0MM

## 8. Block Diagram

### 8.1 TX Block Diagram



### 8.2 RX Block Diagram



## 9. Interface

### Microphone TX

Connector	Function	Description
ANT1	RF output	External Dipole Antenna connector(MHF) (option)
DGND	DGND	System DGND
Vcc	VCC	Dc 2.4V for system
Trigger	ID Pairing Switch	For ID Learning function enabled (H: Normal mode; Low > 3sec for ID Learning mode)
LED	Indicator	Power Indicator & Low battery is flash on=0.5s off=0.5s When change channel -> LED blinking fast
NC	IO	Function reserved
NC	IO	Function reserved
NC	IO	Function reserved
L/R	Microphone In	See Table 10.1 Microphone Cartridge specification Reference
AGND	AGND	System AGND

### Microphone RX

Connector	Function	Description
ANT1	RF output	External Dipole Antenna connector(MHF) (option)
DGND	DGND	System DGND
5V	VCC	Dc 5V to 3.3V LDO
SYNIC	IO	1. Syncic: output low 2. No Syncic: output high
Trigger	ID Pairing Switch	For ID Learning function enabled (H: Normal mode; Low 3S for ID Learning mode)
SW 3	Chanel Select	16 Chanel Select by User (option)
SW 2	Chanel Select	16 Chanel Select by User (option)
SW 1	Chanel Select	16 Chanel Select by User (option)
SW 0	Chanel Select	16 Chanel Select by User (option)
L/R	Audio Output	L/R audio output
AGND	AGND	System AGND



## 10. Design Reference

### 10.1 Microphone Cartridge Spec

Dynamic Mc Cartridge		
Frequency Response	40Hz ~ 18KHz	
Impedance	600Ω ± 30%	
Sensitivity	-52dBV/Pa	0dB = 1V/Pa @ 1KHz
SPL	120 dB ~ 145dB	

Table 10.1 Microphone cartridge specification reference