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## Bluetooth module BK3254 manual



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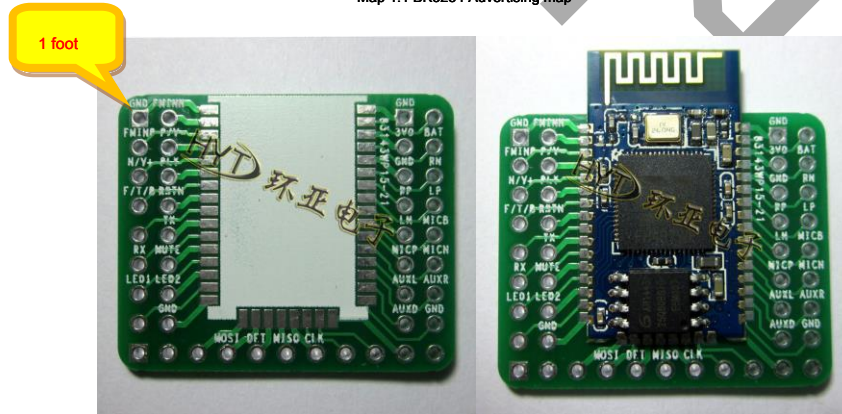
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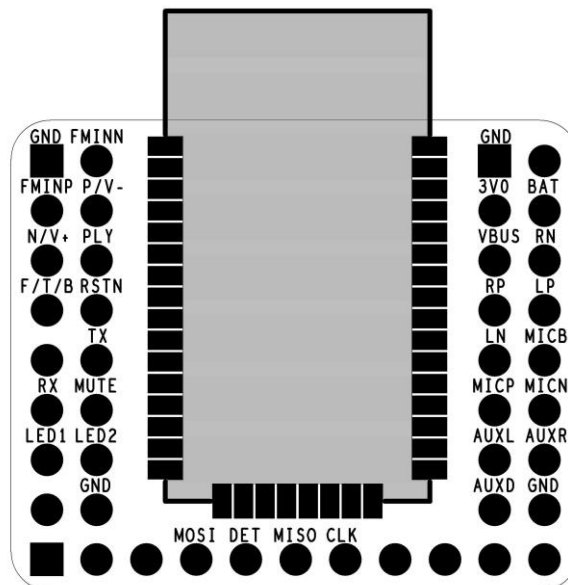
# 1. BK3254



Map 1.1 BK3254 Advertising map



Map 1.2 BK3254 Adapter plate ( 2.4x3.1cm )



Map 1.3 BK3254 Pin definitions

## 1.1 Module Description

This module uses the master Beken (Broadcom) of BK3254 Chip module provides a high sound quality and compatibility, superior overall performance. Bluetooth module uses driver-free way, customers just need to block access to applications, you can quickly achieve wireless transmission of music, enjoy wireless music, It supports both buttons and AT Serial command control. Support intelligent Chinese / English voice prompts; integration SD / TF Player, MP3 / WMA / WAV Music formats; Support U Disk player, internal support LINE-IN Internal support FM Radio, support for infrared remote control. Can be stored 6 A paired device, the module automatically switched back to the last connected device pairing. in case 6 Paired devices simultaneously opened, the device automatically connects the last pairing .

stand by AT Modify the Bluetooth name , 16 Characters or less, see AT Instructions.

## 1.2 Applications

The module is mainly used for short distance transmission of music, you can easily and notebook computers, mobile phones, PDA And other digital products connected to Bluetooth devices, wireless transmission of music.

- 1) Bluetooth stereo speakers;
- 2) Stereo Bluetooth headset;
- 3) Bluetooth phone;
- 4) Bluetooth control and multimedia equipment.

### 1.3 Basic characteristics

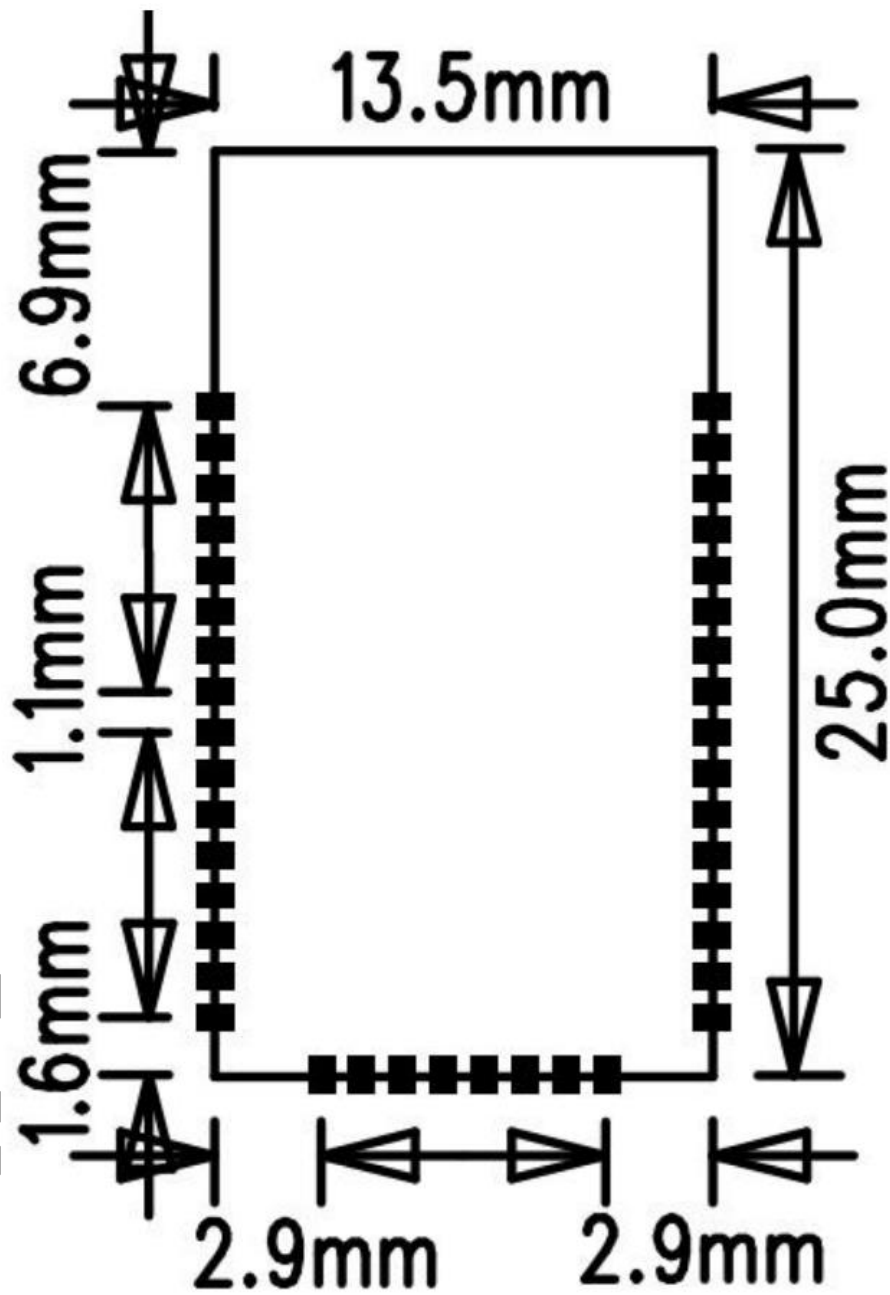
- 1) Bluetooth v4.1 + EDR ;
- 2) A2DP v1.2 ;
- 3) AVRCP v1.0 ;
- 4) HFP v1.5 ;
- 5) GAVDP1.2 ;
- 6) HSP1.2 ;

### 1.4 Performance parameters

model	BK3254
Bluetooth Specification	Bluetooth V4.1
Supply voltage	DC2.8-4.2V , $\leq 2.9V$ Automatic shutdown, $\leq 3.1V$ Call the police
Bluetooth protocol support	HFPV1.5 , A2DPV1.2 , AVRCPV1.4 , HSP1.2 , GAVDP1.2
Working current	$\leq 45mA$
stand-by current	$<500\mu A$
temperature range	$-40^{\circ}C \sim +85^{\circ}C$
Wireless transmission range	$\leq 10$ Meters
transmit power	Class2 4dbm
Sensitivity	$-80dBm <0.1\%$ BER
Frequency Range	2.402GHz ~ 2.480GHz
External Interface	Serial ( TTL Level), and PC Connection requires conversion level, such as CH340G , USB turn TTL
Audio Performance	SBC decoding
Audio signal to noise ratio	$\geq 75dB$
Module size	25x13.5x1.8mm
Size adapter plate	24x29mm

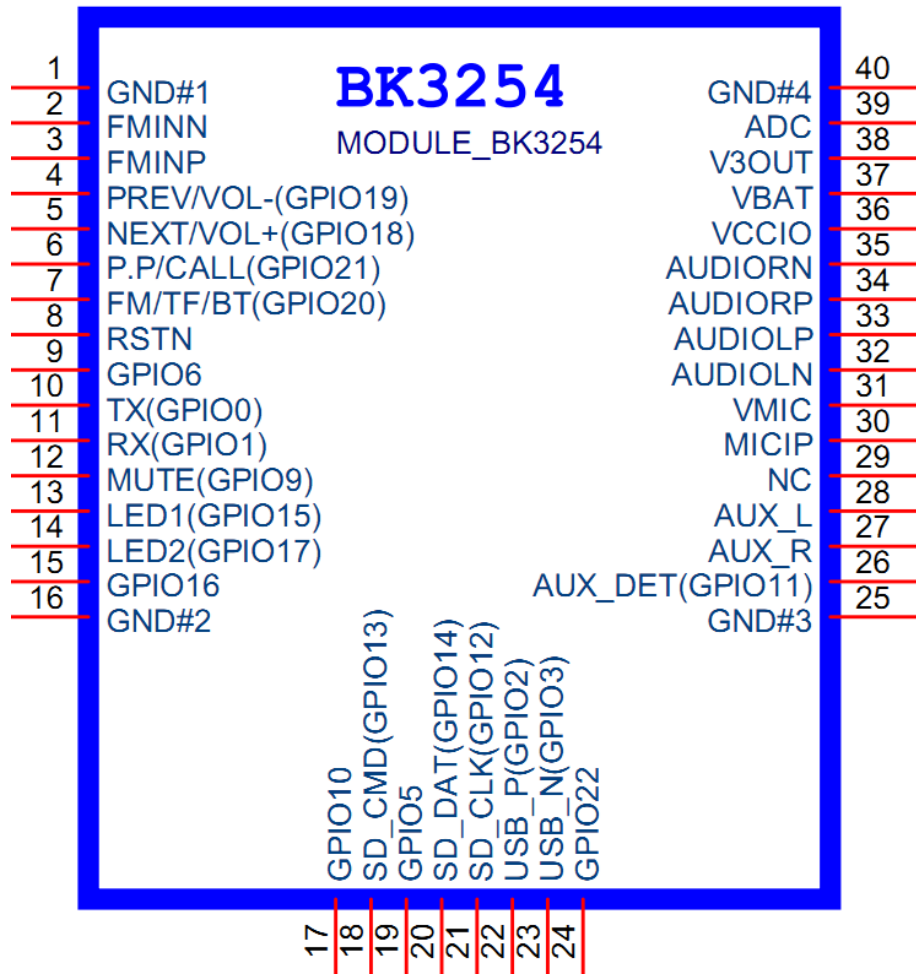
## 1.5 Module size

Pad size: 1.6x0.8mm



Map 1.4 BK3254 Dimensions

## 1.6 IO definition



Map 1.5 BK3254 Pin definitions

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IO Numbering	IO name	IO description
1	GND	The antenna _
2	FMINN	FM The negative terminal of the antenna
3	FMINP	FM The positive terminal of the antenna
4	PREV / VOL- (TMS)	Click on the one / long press volume down
5	NEXT / VOL + (TCK)	Click the Next / long press the volume increase
6	PP / CALL (TDO)	Play / Pause / Take hang / releases / re-pair
7	CHG_MODE (TDI)	<b>BT / FM / TF / U plate/ AUX Mode switch</b>
8	RSTN	Reset (active low)
9	VOL- (GPIO6)	Click the volume down
10	TX (GPIO0)	<b>Serial ports TX ( TTL Level 3.3V )</b>
11	RX (GPIO1)	<b>Serial ports RX ( TTL Level 3.3V )</b>
12	MUTE (GPIO9)	<u>Mute Control (mute output low), the control terminal of the power amplifier</u>
13	LED0 (GPIO15)	Status Indicator
14	LED1 (GPIO17)	Status Indicator
15	VOL + (GPIO16)	Click the volume up
16	GND	Power Ground
17	FM_DISABLE (GPIO10)	<p>FM Close Foot</p> <p>(High level: FM Effective; low: FM Failure)</p> <p>High default</p> <p>Note: Before powering effective control, control is disabled after power</p>
18	SPI_MOSI (GPIO13)	SD / TF of SPI interface
19	GPIO5	Unused
20	SPI_MISO (GPIO14)	SD / TF of SPI interface
twenty one	SPI_CLK (GPIO12)	SD / TF of SPI Clock lines TF Open insertion detection
twenty two	USB_P ( GPIO2 )	USB positive
twenty three	USB_N ( GPIO3 )	USB negative
twenty four	IR ( GPIO22 )	Infrared interface
25	GND	Power Ground
26	AUX_DET (GPIO11)	AUX Insertion detection (default high, active low)
27	AUX_R	AUX Right channel input
28	AUX_L	AUX Left channel input
29	NC	No connection
30	MICIP	MIC Input positive terminal
31	VMIC	MIC Bias voltage
32	AUDIOLN	Audio left differential output negative end
33	AUDIOLP	Audio left positive differential output terminal
34	AUDIORP	Audio right differential output positive terminal
35	AUDIORN	Audio right differential output negative end
36	VDD3IO	IR Power supply interface
37	VBAT	<b>power input( 3.3V ~ 4.2V )</b>
38	3VOUT	<b>3V Output, SD / TF power supply</b>
39	ADC	<b>ADC Input (not enabled)</b>
40	GND	Power Ground



## 1.7 Precautions

1. Application of the process module, please avoid influence of interference source amplifier, a booster circuit of other module, for avoidance module  
An electrical series circuit with the power loop forming circuit means, in order to improve the whole SNR .
2. About Bluetooth wireless environment, wireless signal including Bluetooth applications are greatly affected by the surrounding environment, such as tree  
Wood, metal and other obstructions will absorb a certain radio signal, so that in practical application, the distance data transmission by a certain extent.
3. Since Bluetooth module supporting the existing system should be placed in the housing. Since the metal housing of the radio frequency signal  
There is a shielding effect. It is recommended not installed in a metal housing.
4. **PCB Layout:** Bluetooth module antenna portion is PCB Antenna, since the metal would impair the functioning of the antenna, when a layout of the module, the module floor and below the antenna traces prohibited, if hollowed out better.

## 1.8 AT instruction

### 1.8.1 Serial Configuration

1. Baud Rate 9600 ;
- 2.8 Data bits;
3. No parity bit;
4. One stop bit.

### 1.8.2 Instruction format

Control Instruction format: COM + <CMD> [<param>] \r \n

Feedback data format: <IND> [<param>] \n

Description: The instruction is a control panel to control the Bluetooth control commands to " COM + "Back to start followed by < CMD> Control instruction, if the instruction to continue the transmission parameters, the instruction immediately < param> Parameters, and finally to "\r \n"End.

The feedback data is Bluetooth data and various status information back to the host, < IND> A feedback command, if desired parameters, then followed < IND> After continuing transmission < param> parameter.

note:

- \R \n : Character is Wrap (keyboard "Enter" key) , Hexadecimal 0x0D , 0x0A .

## 1.8.3 Serial demo

Figure 1.6 Below:



Map 1.6 Serial Open

#### 1.8.4 Control command table

Serial command	Parameter Description	Instruction Description Function	For example
+ SNAME +	For example: COM + SNAME + BTBLUE \r \n " \r \n On behalf of a carriage return line feed, debugging assistant entered ( Enter key)" BTBLUE Is the name after the modification	Modify the Bluetooth name	COM + SNAME + XXXX \r \n XXXX :most 16 Characters correctly: OK \n error: ERR \n Off effect after restart
TONExx	xx : " ON "On Tone xx : " OFF "Close support power-down to save beep tone is enabled by default	Tone settings	COM + TONEON \r \n Open tone COM + TONEOFF \r \n Close tone effect immediately
MTONE		Query Tones	COM + MTONE \r \n ON: TOMEON \n shut down: TOMEOFF \n
GOBACKxx	xx : " ON "Even back open xx : " OFF "Off time even support power-down to save power is turned back on by default even	Power-on time even setting	COM + GOBACKON \r \n The power is turned back even COM + GOBACKOFF \r \n Turn off the power back on and even take effect immediately
MGOBACK		Query back to even the set	COM + MGOBACK \r \n ON: GOBACKON \n shut down: GOBACKOFF \n
CALLxx	xx : " ON "Open calls xx : " OFF "Close call function enabled by default to support power-down save function calls	Call feature set	COM + CALLON \r \n Open calls COM + GOBACKOFF \r \n Close call feature power restart to take effect
MCALL		Query Call	COM + MCALL \r \n ON: CALLON \n shut down: CALLOFF \n
MP3AUTOP LYxx	U plate/ TF Mode: xx : " ON "On Autoplay xx : " OFF "Turn off Autoplay support power-down to save the default open automatically play	Autoplay settings	COM + MP3AUTOPLYON \r \n Autoplay On COM + MP3AUTOPLYOFF \r \n Turn off Autoplay effective immediately
MP3AUTOP LY		Query Autoplay Set up	COM + MP3AUTOPLY \r \n ON: MP3AUTOPLYON \n shut down: MP3AUTOPLYOFF \n
PR		Pairing	BT + PR \r \n
AC		Finally Paired connection Equipment	BT + AC \r \n
DC		Disconnect	BT + DC \r \n
CA		Answer the call	BT + CA \r \n
CJ		To reject a call	BT + CJ \r \n
CE		Hang up the phone	BT + CE \r \n
CR		Last Number Redial	BT + CR \r \n
PP		Music Play / Pause	COM + PP \r \n

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PA		play music	COM + PA \r \n
PU		Music paused	COM + PU \r \n
PN		next track/ FM The next station	COM + PN \r \n
PV		previous piece/ FM Previous station	COM + PV \r \n
VP		Volume Up	COM + VP \r \n
CD		Volume down	COM + VD \r \n
SETTSx	x : ( 0-AF ) Serial port settings to support power-down save	Setting the tone volume	COM + SETTSx \r \n correct: TSx \n error: ERR \n
MTS	x : ( 0-15 )	Query the current tone volume	COM + MTS \r \n correct: TSx \n error: ERR \n
VOLx	x : ( 0-AF ) Buttons, infrared, serial port settings Support power-down save	Set the volume	COM + VOLx \r \n correct: VOLx \n error: ERR \n
MVOL	x : ( 0-15 )	Query current volume	COM + MVOL \r \n correct: VOLx \n error: ERR \n
PWD	Only power is turned on again	Shutdown	COM + PWD \r \n
PWDS		Soft-Off	COM + PWDS \r \n
PWOS		Soft Power	COM + PWOS \r \n
REBOOT	This is equivalent to power restart Restart	Restart	COM + REBOOT \r \n
MC		Switch to the next job mode	COM + MC \r \n
MBT		Bluetooth mode	COM + MBT \r \n
MSD		TF Mode (if there is effect)	COM + MSD \r \n
MAX		AUX Mode (if effective)	COM + MAX \r \n
MFM		FM Mode (if effective)	COM + MFM \r \n
MUD		U Disk mode (if effective)	COM + MUD \r \n
IQ		Query the current mode and status	COM + IQ \r \n
MPM0	The default play mode PLAY_M0	Repeat All Tracks ( TF / U Disk mode under)	COM + MPM0 \r \n correct: PLAY_M0 \n error: ERR \n
MPM1		Single loop ( TF / U Disk mode under)	COM + MPM1 \r \n correct: PLAY_M1 \n error: ERR \n
MPM2		No single loop ( TF / U Disk mode under)	COM + MPM2 \r \n correct: PLAY_M2 \n error: ERR \n
MPMC		The current inquiry MP3 Playback mode ( TF / U Disk mode under)	COM + MPMC \r \n All cycle: PLAY_M0 \n Single cycle: PLAY_M1 \n No single cycle: PLAY_M2 \n

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SMPxxx	xxx : ( 0001-9999 ) ( " 0001 " Represents the 1 first)	Play selections ( TF / U Disk mode under)	COM + SMP0040 \r \n
MRMP3	x : ( 1-9999 )	Query currently playing MP3 Song number ( TF Mode)	COM + MRMP3 \r \n correct: music_mun = x \n error: ERR \n
MMMP3	x : ( 1-9999 )	Query current mode MP3 The number of songs ( TF / U Disk mode under)	COM + MMMP3 \r \n correct: MMMPx \n error: ERR \n
MRUSB	x : ( 1-9999 )	Query currently playing U Song number plate ( U Under disk mode)	COM + MRUSB \r \n correct: music_mun = x \n error: ERR \n
SC		FM Machine start station search	FM + SC \r \n
ST		FM Stop station search	FM + ST \r \n
GF		Get the current audio collection rate FM_FQ = 875 ~ 1081 between	FM + GF \r \n
SFMxx	xx : 01-99	By sending a sequence number Select the table	COM + SFM01 \r \n correct: FM_FQ = 998 \n error: ERR \n
SETFMxxxx	xxxx : 0875 ~ 1081	set up FM frequency	COM + SETFMxxxx \r \n correct: OK \n error: ERR \n
MRFM	xxx : 875 to 1081	The current inquiry FM of frequency( FM Mode)	COM + MRFM \r \n correct: FM_FQ = xxx \n Such as: FM_FQ = 998 \n FM_FQ = 1072 \n Representing 99.8 , 107.2 error: ERR \n
MMFM	xx : 01-99	Inquire FM To search more than Small table ( FM Mode)	COM + MMFM \r \n correct: MFMxx \n error: ERR \n
MFFMxx ( xx : FM sequence number)		Inquire FM of xx Number corresponding to the frequency ( FM Mode)	COM + MFFM01 \r \n correct: FM_FQ = xxx \n error: ERR \n

### 1.8.5 Query / feedback command

Serial command	description	For example	Bluetooth return information
MR	Queries Bluetooth address	AT + MR \r \n	AD: 191919191919 \r \n
MN	Bluetooth name query	AT + MN \r \n	NA: BK3254 \r \n
MO	Bluetooth connection status inquiry	AT + MO \r \n	connection succeeded: C1 \r \n no connection: C0 \r \n
MV	Bluetooth playback status inquiry	AT + MV \r \n	Play: MB \r \n time out: MA \r \n disconnect: M0 \r \n
MY	Bluetooth inquiry HFP status	AT + MY \r \n	disconnect: M0 \r \n connection: M1 \r \n Caller: M2 \r \n Outgoing: M3 \r \n calling: M4 \r \n
The following is the Bluetooth initiative sent to the state			
Serial command	description	description	Bluetooth return information
EEROR	error		EEROR \r \n
OK	Complete control instruction identifying		OK \r \n
II		connection succeeded	II \r \n
IA		disconnect	IA \r \n
PLAY_M0	Repeat All Tracks ( TF / U Under disk mode)		PLAY_M0 \r \n
PLAY_M1	Single loop ( TF / U Under disk mode)		PLAY_M1 \r \n
PLAY_M2	No single loop ( TF / U Under disk mode)		PLAY_M2 \r \n
VOLx	The current volume x level		VOLx \r \n nx On behalf of volume level
FM	Each time you switch FM Channel, the channel number automatic return		FM_FQ = 1081 \r \n
MP3	Each time you switch MP3 Songs, song number automatically returns		music_mun = 1 \r \n
USB	Each time you switch U Disk music, song number automatically returns		music_mun = 1 \r \n
IRx	( TF / U Under disk mode) Each key infrared remote control numeric keys, automatic return button value		IRx \r \n nx On behalf of the numeric keys
MUSICPLYFINISH ( TF / U Under disk mode) automatically after playing one song Spit			MUSICPLYFINISH \r \n
SY_PO		Bluetooth turned on	SY_PO \r \n
ON		Bluetooth turned on	ON \r \n
SY_PF		Bluetooth off	SY_PF \r \n
BT_AC		The current Bluetooth mode, blue Teeth are back to even	BT_AC \r \n
BT_WP		The current Bluetooth mode, blue Teeth in pairing state	BT_WP \r \n
BT_WC		The current Bluetooth mode, blue Dog is waiting for a connection state	BT_WC \r \n
BT_CN		The current Bluetooth mode, blue Teeth Connected	BT_CN \r \n
BT_PA		The current Bluetooth mode, blue Teeth are playing	BT_PA \r \n
BT_IC		The current Bluetooth mode, blue Tooth incoming call	BT_IC \r \n
BT_OC		The current Bluetooth mode, blue	BT_OC \r \n

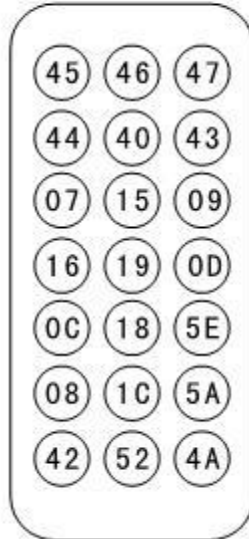
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		Teeth have played phone	
BT_EC		The current Bluetooth mode, blue Teeth are on the phone	BT_EC \n
SD_PA		Currently SD Card mode, <u>SD Card playing status</u>	SD_PA \n
SD_PU		Currently SD Card mode, <u>SD Card is paused</u>	SD_PU \n
UD_PA		Currently U Disk mode, U Disc playing status	UD_PA \n
UD_PU		Currently U Disk mode, U Disc is paused	UD_PU \n
FM_PA		Currently FM mode, FM You are listening state	FM_PA \n
FM_PU		Currently FM mode, FM In a suspended state	FM_PU \r \n
FM_SC		Currently FM mode, FM The state of being seized Taiwan	FM_SC \n
AX_PA		Currently AUX mode, <u>AUX Playing status</u>	AX_PA \n
AX_PU		Currently AUX mode, <u>AUX In a suspended state</u>	AX_PU \n



## 1.9 Infrared remote control

键位码  
用户码: "00FF"



## 1.9.1 Infrared Control Instruction List

Infrared keys	description
0x45	The switch button (short press switch, the Bluetooth module is powered on by default)
<u>Mode (0x46)</u>	Mode switching key
(0x47)	Mute button
>   (0x44)	play / Pause; FM Mode: Long press to re-search function
<< (0x40)	On the one / on a
> >   (0x43)	Next / next station
EQ (0x07)	9 Kind EQ Switch button, power-on defaults normal-> BOOST-> treble-> POP-> ROCK-> CLASSIC-> JAZZ-> DANCE-> R & P
- (0x15)	Volume down
+ (0x09)	Volume Up
0	TF / U The disk mode: numeric keys (after pressing the ejection port "IR0 \ n ")
(0x19)	TF / U The disk mode: mode switching key song cycle (full circle - single cycle)
(0x0D)	U plate/ TF Card fast switching
1-9	TF / U The disk mode: numeric keys (after pressing the ejection port "IRx \ n " x representative 1-9 )

1. in TF / U The disk mode, infrared remote control numeric keys 0-9 It has played selections (such as: Briefly press 111 , Such as a Will, to jump to the first 111 Songs played).