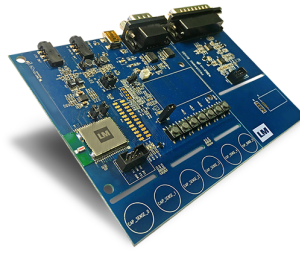# LM558 Bluetooth® Evaluation Kit

For LM746 Multimedia Module

USER GUIDE

1. Overview

The LM558 evaluation kit is designed for users to evaluate the LM746 performance or develop the Bluetooth® software on it. The LM746 series is a CSR based Bluetooth® multimedia module, suitable for HSP, HFP, A2DP, AVRCP, PBAP, and SPP applications. It also allows implementation of advanced functions including noise cancellation and high resolution audio streaming such as aptX and AAC. This user guide will introduce the settings and interfaces of LM746 and how to implement wireless stereo applications.
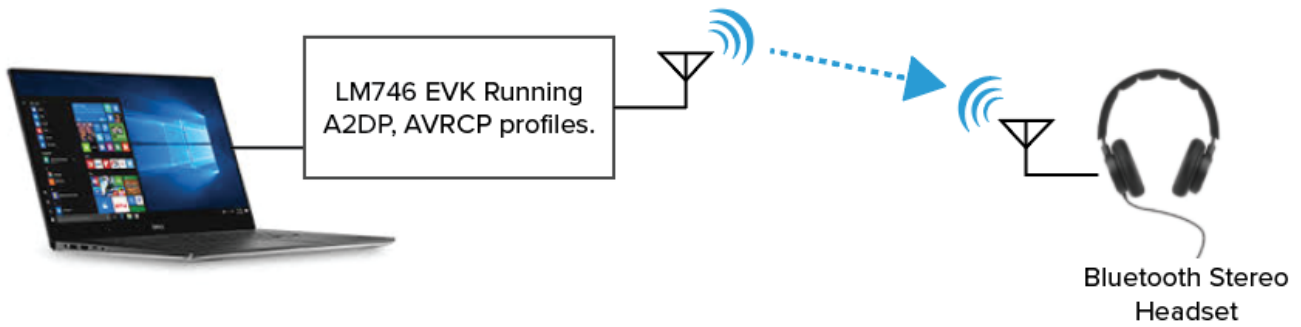
Stereo Headset Mode
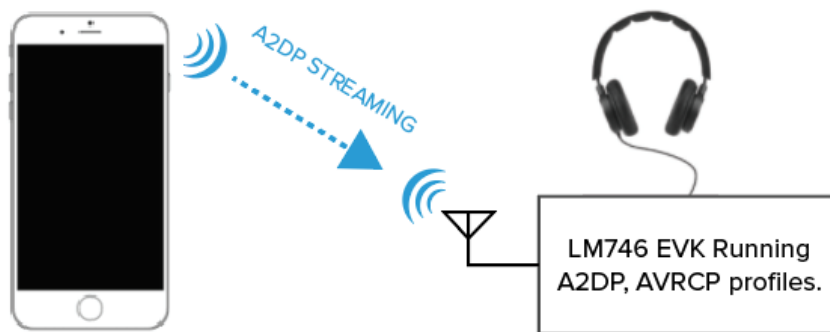
Stereo Transmitter Mode

USB Audio Device

LM746 EVK Running A2DP, AVRCP profiles.

Bluetooth Stereo Headset
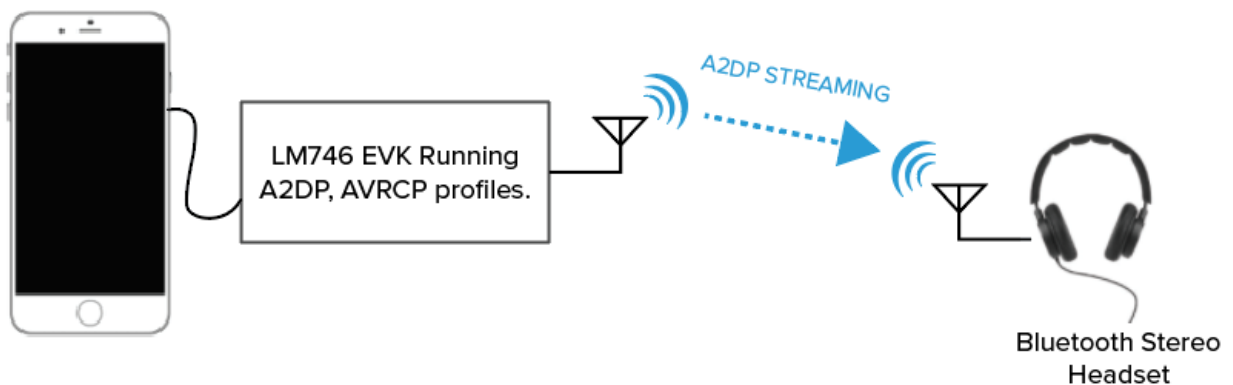
2. Stereo Headset Mode

Profiles：A2DP-Sink, AVRCP, HFP/HSP

Description: Stereo Headset Mode enables the LM558 evaluation board to receive A2DP streaming from an audio source as well as answering phone call with HFP/HSP. When receiving or making a phone call the music playback will automatically be paused and resumes after the call is ended. When the device is switched on it will attempt to connect with the last connected Bluetooth® device.

3. Stereo Transmitter Mode

Profiles：A2DP-Source, AVRCP

Description: Stereo Transmitter Mode enables the LM558 evaluation board to transmit A2DP streaming to a connected Bluetooth® device such as stereo headset. When the device is switched on it will attempt to connect with the last connected Bluetooth® device.
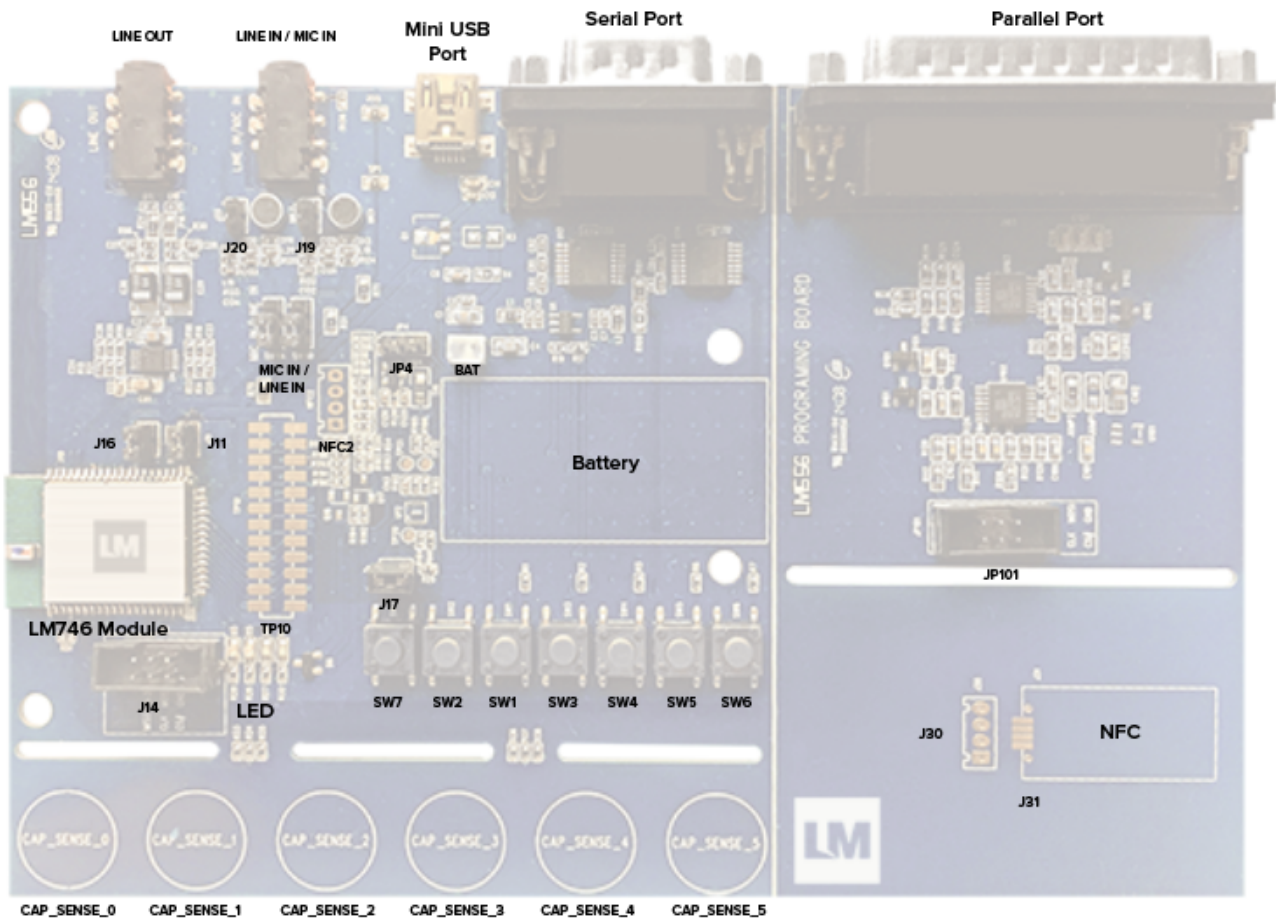
4. USB Audio Device

Profiles：A2DP-Source, AVRCP, HFP, HSP

Description: The USB interface enables the LM746 evaluation board to act as an USB Audio device for a host computer. It supports standard USB Audio Class protocol that is completely plug and play. The firmware includes A2DP-Source, AVRCP, HFP and HSP as well as supporting two way communication. It can be connected with Mono (or Stereo) Bluetooth® headset that allow the user to make/receive VoIP calls or listen to music playing from the host computer. Every time the device is switched on it will attempt to connect to the paired Bluetooth® device.

5. Touch sensor

■ Supports up to 6 capacitive touch sensing electrodes:

■ Printed on the development board

■ Made from flex PCB

■ Configuration for individual buttons

■ Configuration for a wipe-type arrangement where 2 or more pads sense taps at each end or a wipe from one side to the other

■ Operates in deep sleep mode and is a programmable source for wake-up

6. Hardware Interfaces

Function of the interfaces:

Interface	Function	Description
Parallel Port	SPI interface	The parallel port is connected to the SPI interface of the LM746, dedicated for module debugging and programming purposes.
Serial Port	RS232 Interface	The serial port is connected to the UART port of LM746 with flow control signals.
Mini USB port	USB client interface	The USB port is connected to the USB client interface of LM746. The USB power can also charge the on board battery. **Warning:** The USB charging can only be enabled when the battery is connected via BAT. Otherwise, it may damage the DC regulator of the LM746.
LINE IN/ MIC IN	Line input/ Microphone input	∅3.5mm phone jack for stereo audio input
LINE OUT	Line output	∅3.5mm phone jack for stereo audio output
SW1	Button switches	Generic button switch inputs: PIO2
SW2	Reset	To reset the LM746 module.
SW3	Power On/Off	To power on/off the LM746 EVK.
SW4	Button switches	Generic button switch inputs: PIO0
SW5	Button switches	Generic button switch inputs: PIO4
SW6	Button switches	Generic button switch inputs: PIO3
SW7	Button switches	Generic button switch inputs: PIO1
MIC IN/ LINE IN	Microphone input/ Line input	The MIC IN/LINE IN are used to select the input sources for LM746's audio inputs. There are two options: (Reference Figure 1 below) (A) Stereo audio input from Microphone. (B) Stereo audio input from LINE IN/MIC IN phone jack.

| JP101/ J14	SPI connector	Using the supplied ribbon cable to connect the SPI interface of LM558 and SPI programming board. The SPI programming board can then be connected to PC for debugging/programming purposes.
J19/J20	Microphone	Mono microphone input to MIC1 input. While the MIC2 is left open.
J17	Power	Keep the power on connect
JP4	Switch connector	The JP4 is the Temperature detection and MFI function switch for PIO5.
J11	Test points	The test points allow user to connect a meter to measure the current consumption of the LM746.
J16	Test points	The test points allow user to connect a meter to measure the current consumption of the battery charging.
NFC2/J30	NFC connector	Connect the NFC2 of LM558 EVK to J30 (no firmware available).
LED	LED Section	D3: 3.3V power supply for the LM558 EVK. D5: LED0 function from CSR chip. D7: LED1 function from CSR chip. D4: LED2 function from CSR chip.
CAP_ SENSE (0 - 5)	Touch sensor	Capacitive touch sense provides the touch sensor functionality.
TP10	Module Peripheral Pins	The TP10 connector gives access to LM746's peripherals like UART, LED, Analog IO, GPIOs, PCM/I2S digital audio interface pins.

Figure 1: MIC IN/LINE IN function
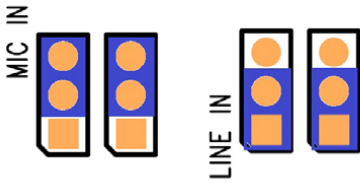
Figure 2: LM558 EVK (with LM746 soldered)