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Module Specification

Of

ALM-800

BC03-MM-External

Product Name	**Module Specification Of ALM-800 (BC03-MM-External)**
Customer	**TBD**
Revision	**R1.1**

Product Development Department		**DATE**
Prepared By	**Kevin**	**2007-4-13**

Approved By	Winson	2008-11-19

DOCUMENT CHANGE HISTORY

Version	Date	Person	Remarks
R1.0	2007-4-13	Kevin	First release
R1.1	2008-11-11	winson	Format changed

Directory

1. Introduction

1.1 Product Introduction

The ALM-800 is a high performance Bluetooth module for embedded AV Bluetooth applications. Integrated with Flash, Crystal, Radio, Link control, Codec, DSP, Flash and MCU, This all-in-one module provides the potential to cost down client's BOM cost. The only external components needed are antenna, Microphone, Speaker ,Charger IC and components for power supply and UI circuitry.

ALM-800 is also designed for low power applications including sleep and deep sleep modes, and operates from a single 1.8V or 3.3V supply. It supports AV/Headset/Handsfree profile. With compliance to Bluetooth V2.0 standard, the ALM-800 provides a fully compliant Bluetooth system for data and voice communications. The integrated Stereo CODEC and an open platform digital signal process or (DSP) co-process or allows for support of enhanced audio applications in more compact designs. Further more, ALM-800 is able to provide faster connection, Adaptive Frequency Hopping (AFH) and extended SCO link, The latter two features help on improving voice quality. ALM-800 offers great flexibility by configurable PIO pins. With free choice of suitable definitions of PIO pins, Customers can easily fit ALM-800 into their product design and greatly shorten time-to-markt.

1.2 Applications

1.2.1 High-quality Stereo Headset

1.2.2 Hands-free Car Kits

1.2.3A/V USB Dongle

1.2.4 GPS BT

1.2.5 Wireless Speakers

1.2.6 VolP Handsets

1.2.7.Automotive Wireless Gateways

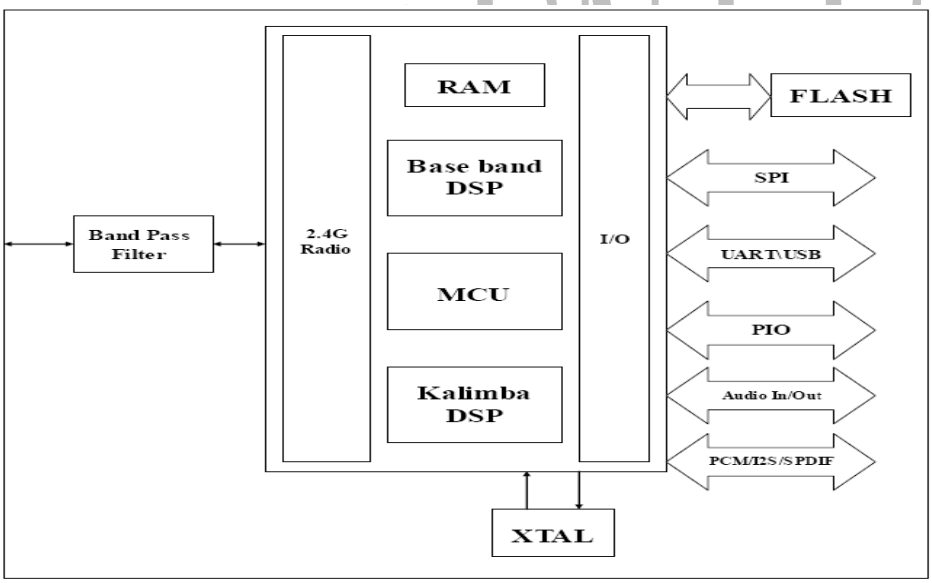
2. Specification

2.1 Features

- Communication Standard: Bluetooth Spec. V1.1/V1.2/V2.0 Compliant
- Support Mode: A2DP-SINK, AVRCP,Headset, Hands Free
- Operating Frequency Band: 2.402GHz to 2.483GHz unlicensed ISMBand
- OutputPower: -6 dBm to 4dBm(Class 2)
- Link Mode: SCO, ACL

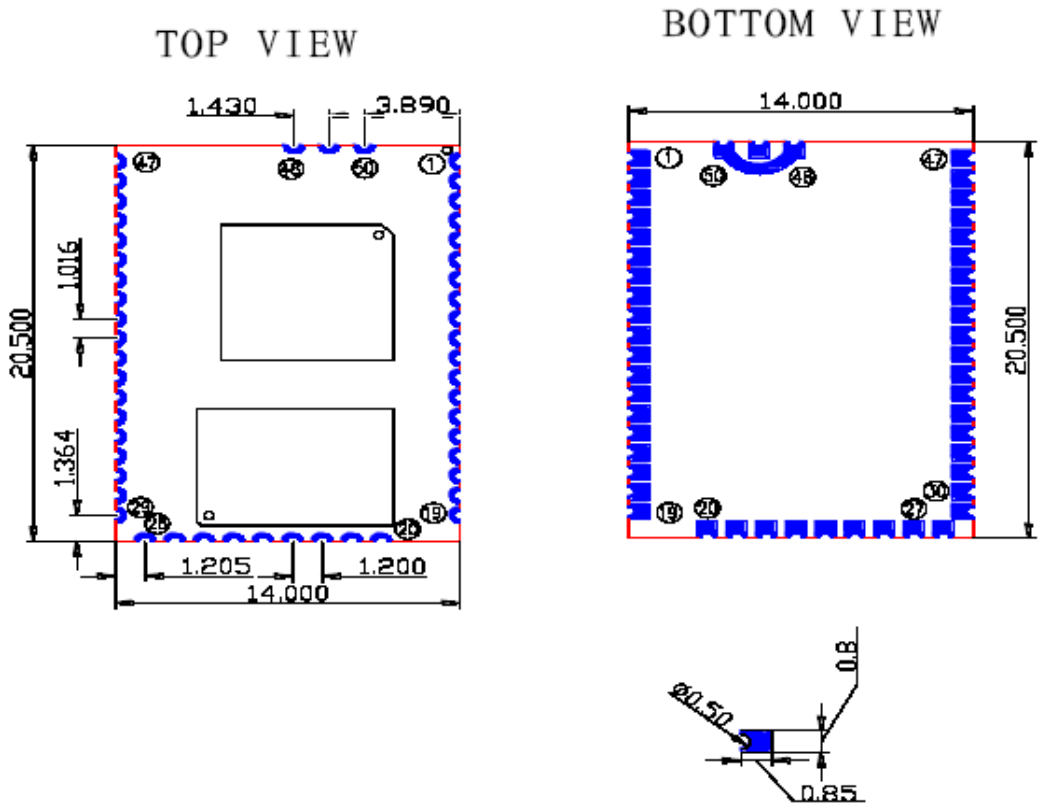
- Audio Codec: Integrated 16-bit linear Aduio Codec,S/N Ratio>70dB
- Low Power Mode Support: Park, Sniff, Hold and Deep Sleep
- Built-in 16-bit stereo codec.
- May drive speaker by 150mW, and do not need connect audio amplifier
- Integrative stereo appropriative Kalimba DSP
- It's high integration and periphery circuit is easy

Module feature and Interface



2.3 Module Dimension

Unit: mm



2.4 PIN Configuration

PIN	Name	Type	Function	Remark
1	PIO8	Bi-directional	Programmable Input/Output Line	
2	PIO9	Bi-directional	Programmable Input/Output Line	
3	PIO0	Bi-directional	Programmable Input/Output Line	
4	PIO2	Bi-directional	Programmable Input/Output Line	
5	PIO1	Bi-directional	Programmable Input/Output Line	
6	PIO3	Bi-directional	Programmable Input/Output Line	
7	PIO10	Bi-directional	Programmable Input/Output Line	
8	PIO11	Bi-directional	Programmable Input/Output Line	
9	RESET	CMOS Input	Reset if High	
10	SPI_MISO	CMOS Output	Serial Peripheral interface Data Output	
11	SPI_CSB	CMOS Input	Chip Select For Synchronous serial interface (Active Low)	
12	SPI_CLK	CMOS Input	Serial Peripheral interface clock	
13	SPI_MOSI	CMOS Input	Serial Peripheral interface Data input	
14	RESETB	CMOS Input	Reset if Low	
15	VCC	Power	+3.3V Supply	3.3V Version
16	PIO4	Bi-directional	Programmable Input/Output Line	
17	PIO5	Bi-directional	Programmable Input/Output Line	
18	PIO6	Bi-directional	Programmable Input/Output Line	
19	PIO7	Bi-directional	Programmable Input/Output Line	
20	PCM_OUT	CMOS Output	Synchronous Data Output	
21	PCM_SYNC	Bi-directional	Synchronous Data Sync	
22	PCM_CLK	Bi-directional	Synchronous Data Clock	
23	PCM_IN	CMOS Input	Synchronous Data Input	

24	UART_TX	CMOS Output	UART Data Output (Active Low)	
25	UART_RX	CMOS Input	UART Data input(Active High)	
26	UART_RTS	CMOS Output	UART Request to Send(Active Low)	
27	UART_CTS	CMOS Input	UART Clear to Send(Active Low)	
28	GND6	GND	Ground	
29	GND5	GND	Ground	
30	GND4	GND	Ground	
31	USB_DN	Bi-directional	USB Data Minus	
32	USB_DP	Bi-directional	USB Data Plus	
33	GND3	GND	Ground	
34	AIO1	Bi-directional	Programmable input/Output Lin	
35	GND2	GND	Ground	
36	MICR-	Analogue	Audio Line In Negative(Right Side)	
37	MICR+	Analogue	Audio Line In Positive(Right Side)	
38	MICL-	Analogue	Audio Line In Negative(Left Side)	
39	MICL+	Analogue	Audio Line In Negative(Left Side)	
40	AIO3	Bi-directional	Programmable Input/Output Line	
41	AIO0	Bi-directional	Programmable Input/Output Line	
42	GND1	GND	Ground	
43	VDD	POWER	+1.8V Supply	
44	SPKR+	Analogue	Audio Line Out Positive(Right Side)	
45	SPKR-	Analogue	Audio Line Out Negative(Right Side)	
46	SPKRL+	Analogue	Audio Line Out Positive(Left Side)	
47	SPKRL-	Analogue	Audio Line Out Negative(Left Side)	
48	GND	GND	Ground	
49	RF	RF	RF Interface Class II	Support 10m
50	GND	GND	Ground	GND

2.5 Product Specification

Items	Specification
Operating Frequency Band	2.402GHz to 2.483GHz unlicensed ISMBand
Bluetooth Specification	V1.2/V2.0
Output Power Class	Class2
Operating Voltage	1.8V or 3.3V
Host interface	USB1.1 or UART
Low Power Mode Support	Park, Sniff, Hold and Deep Sleep
Audio interface	PCM,Speaker, Microphone, I2S, SPDIF

2.6 Electrical Characteristics

Absolute Maximum Rating	**Min**	**Max**
Storage Temperature	-40℃	+85℃
1.8V Version		
Supply Voltage Vcc	-0.4V	2.2V
3.3V Version		
Supply Voltage Vcc	-0.4V	3.7V

Recommended Operating Conditions	**Min**	**Max**
Operating Temperature Range	-25℃	+75℃
1.8V Version		
Supply Voltage Vcc	1.7V	1.9V
3.3V Version		
Supply Voltage Vcc	3.1V	3.4V

Power Consumption	Units	Average
Page Scan	mW	1
Peak Current mA	45	Peak
ACL data over 115k Baud UART at mW Maximum throughput(Master)	29	Peak
ACL data over 115k Baud UART at mW Maximum throughput(Slave)	45	
ACL data over USB at maximum thro mW Ughput (Master)	134	
ACL data over USB at maximum mW Throughput (Slave)	69	
SCO correction HV1, Master mW	78	
SCO correction HV1, Slave mW	79	
SCO correction HV3, Master mW	45	
SCO correction HV3, Slave mW	54	
Connection, No data traffic master mW	17	
Connection, No data traffic master mW	39	

2.7 RF Characteristics

Transmitter	Units	Min	Type	Max	Bluetooth Spec
Output Power	dBm	-	1.03	-	-6 to 4
Power Control Range	dB	-	2.74	-	2<P<8
20dB Bandwidth	kHz	-	716.1	-	<1000
2nd Adjacent Channel Power(+/-2MHz)	dB	-	-47.57	-	<-30
3nd Adjacent Channel Power(+/-3MHz)	dB	-	-58.63	-	<-40
Modulation Characteristic	kHz	-	Df1max=163 Df1avg=171.3 Df2max=173.0 Df2avg=162.6 Df2avg/Df1avg =0.949		140<Df1max<175 Df2max>115 △f2avg/△f1avg>=0.8
ICFT	kHz	-	-7.3		ICF<75
Carrier Frequency Drift	kHz	-	DH1 -1.4 DH3/DH5 -2.3		For DH1<25 For DH3/DH5<4OK

VDD=3.3V, Operating Temperature: 25℃, Operating Frequency Band:2.402 GHz to 2.483GHz.

Transmitter	Units	Min	Typ	Max	Bluetooth Spec
Single-slot Sensitivity at 0.1% BER	dBm	-	-75	-	-70
Single-slot Sensitivity at 0.1% BER	dBm	-	-75	-	-70
Maximum Receiver Signal	dBm	-	-20	-	-20
C/I CO-Channel	dB	-	9	-	11

VDD: 3.3V, Operating Temperature: 25℃,Operating Frequency Band: 2.402 GHz to 2.483GHz.

3. Interface Part

3.1PIO Interface

PIO0-PIO11 can be used to control, display,data bus,etc.

3.2Audio Interface

SPKR and SPKL are used for external speaker. It uses a fully differential output.

Signal to Noise ratio:84dB

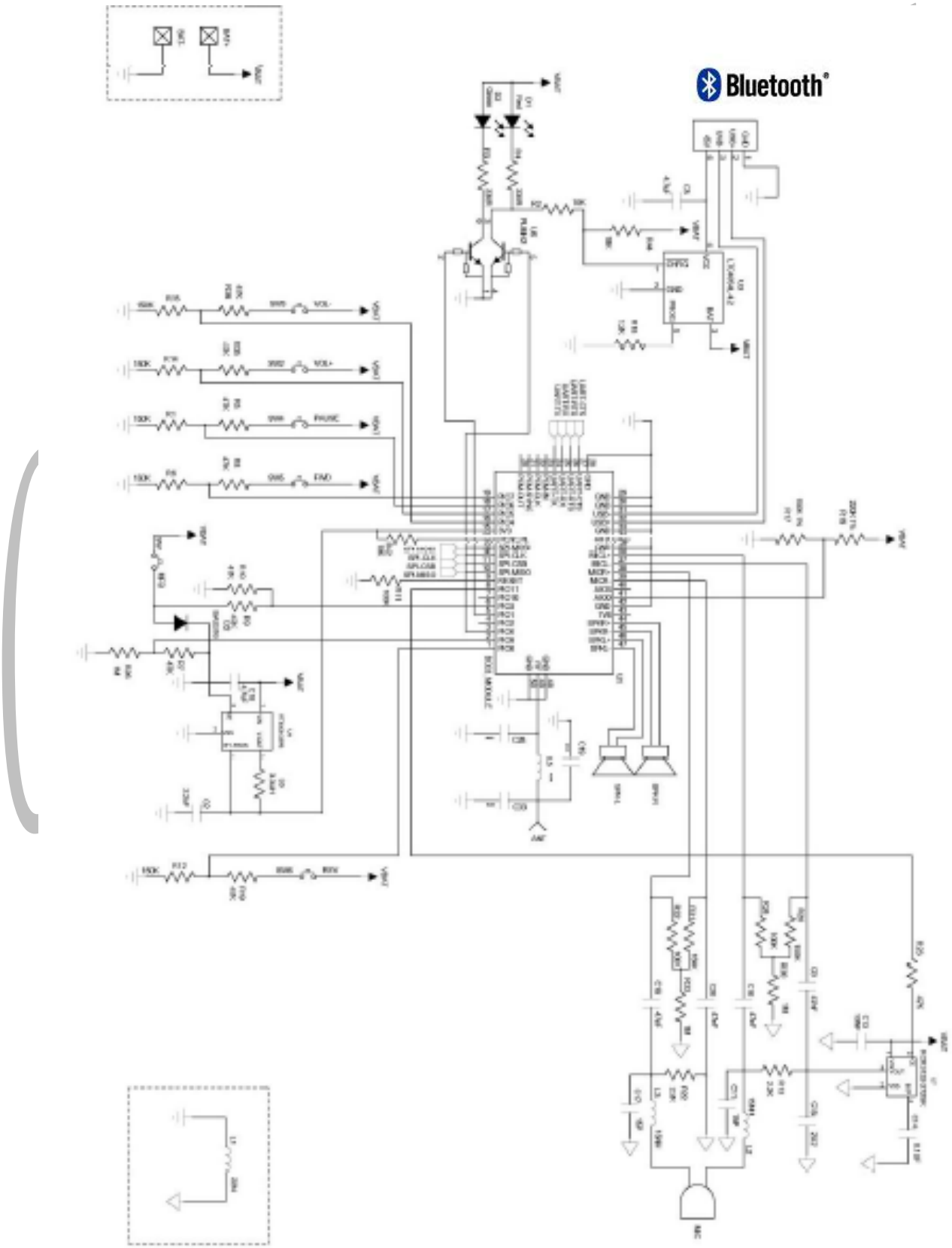
Frequency Respond:20Hz-20KHz.

Output Level: Typical 0.7V RMS, Max 1V RMS

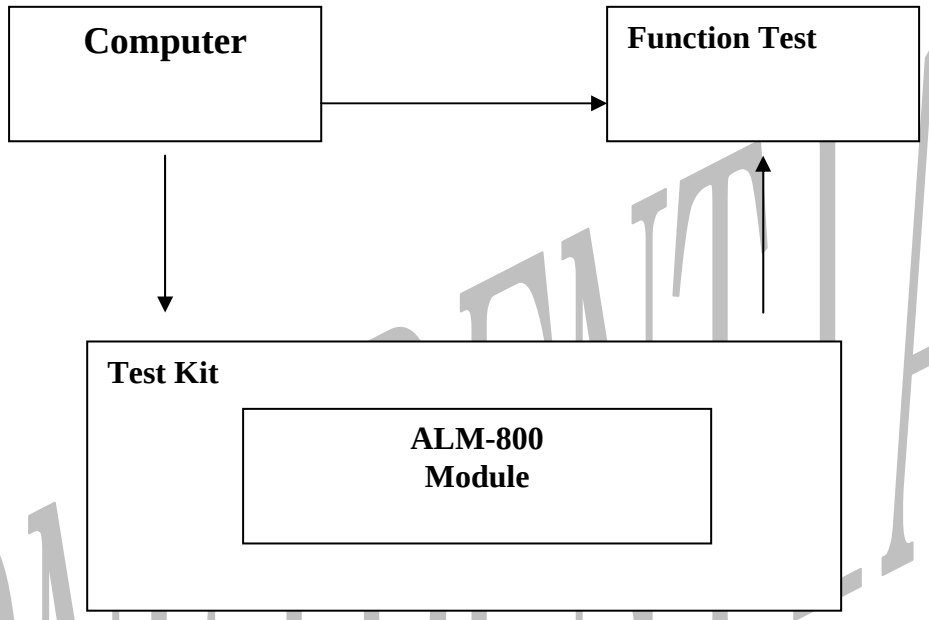
The audio input circuitry consists of a dual audio input that can be configured to be either single ended or fully differential

Input Level: Max 1V RMS

4. Typical Application Circuit Drawing



5. Function Test Drawing



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