SPK-6145-A Bluetooth Module

OEM/Integrators Installation Manual

VER: 1.2

20130926

This module is limited to OEM Installation only.

一. Module Introduction

SPK-6145-A Bluetooth audio module main chip company CSR BC6 British design. High integration, small size and other characteristics, with only a few external components will be able to achieve its powerful features.

二. Module Features

- Built-in lithium battery charging circuit, reducing the external circuit
- Powerful built-in noise canceling circuit,clearer voice calls
- Built-in high-quality DAC converter circuit:SNR95dB
- Built-in EEPROM can set up personalized voice prompts, but also plug-in serial FLASH

.Powerful embedded functions Kalimba DSP data processor, complete a variety of digital speech processing

.Small module size: 12x19.5mm, compatible with all the product structure

- Higher Bluetooth version: Bluetooth V3.0,high software compatibility
- Very low power consumption: 100mAlithium battery can continuouslycall10 hours
- Very far transmission distance:Class2RFpower levels of up to20 meters
- With a powerful echo cancellation

- With high-quality audio transmission protocol: A2DP V1.2
- Have multiple audio decoding function: SBC, MP3, AAC
- With HFP V1.5 / HSP V1.2:Support to connect two phones simultaneously

三. Module Applications

.All kinds of high-quality Bluetooth stereo headset

.All kinds of high-quality Bluetooth stereo speakers,stereo

.All kinds of high-quality Bluetooth handsfree device

.All kinds of high-quality Bluetooth wireless stereo audio receiving equipment

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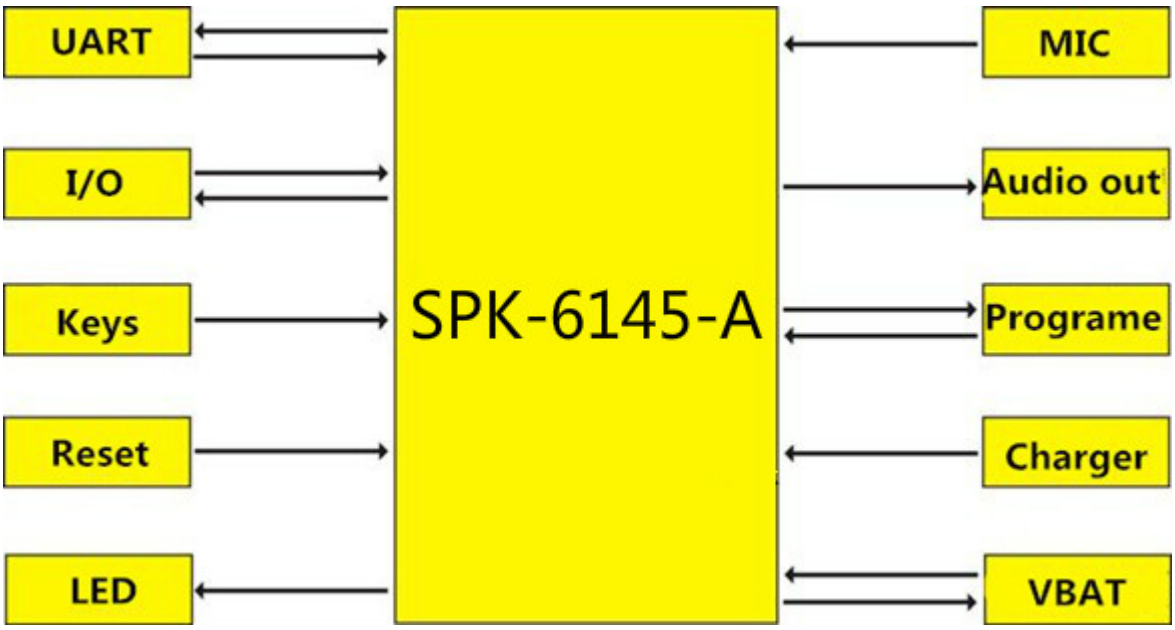
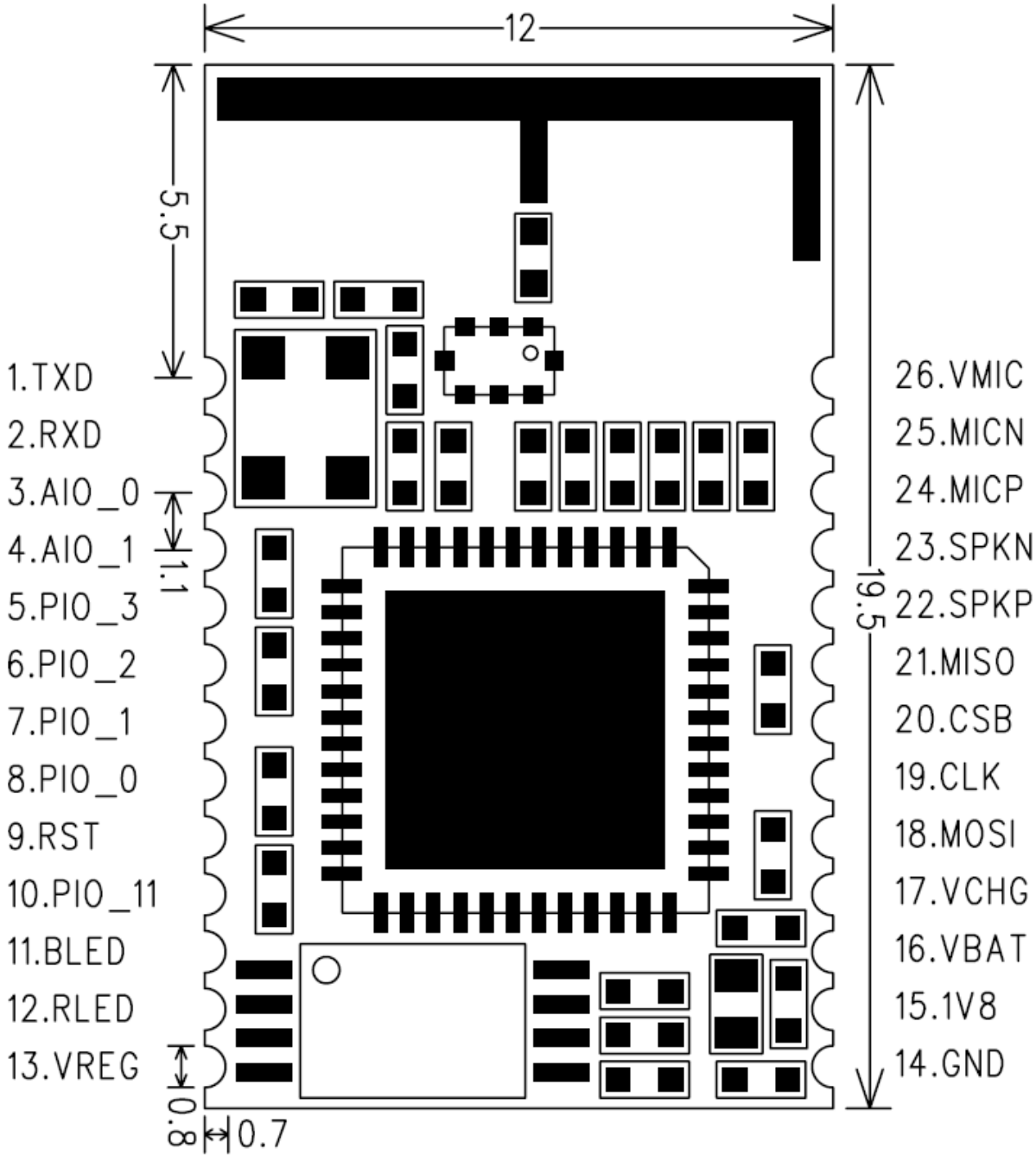
四. Module Functional Block Diagram



五. Module pin definitions and dimensions

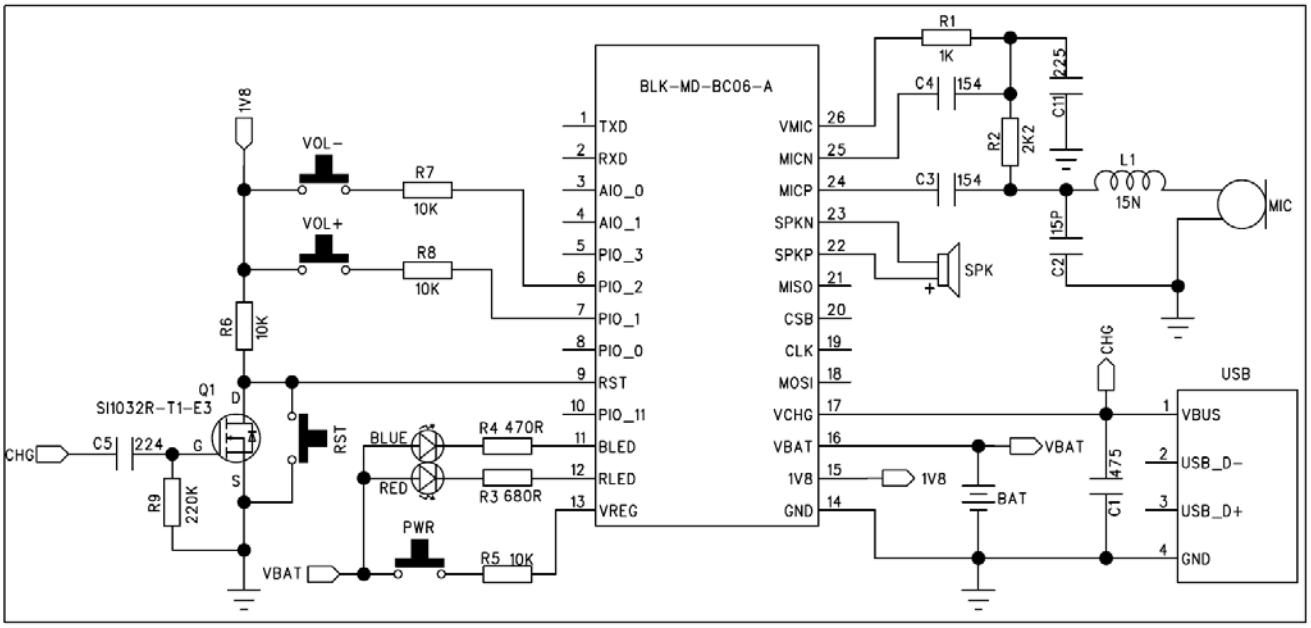


六. Module pin functions described

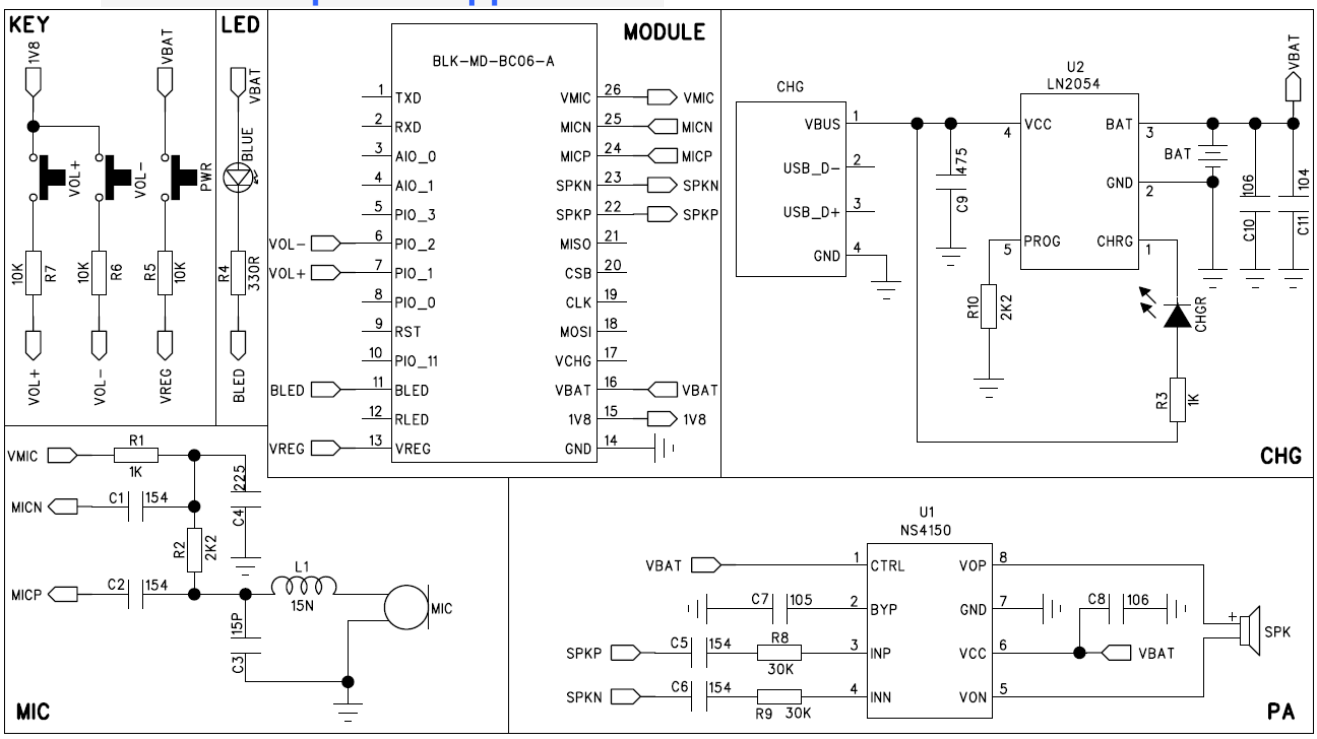
Pin Number	Pin Definitions	Input/Output	Pin Function Description
1	TXD	Input/Output	Serial Transmit /programmable interface PIO_23
2	RXD	Input/Output	Serial Transmit /programmable interface PIO_20
3	AIO_0	Input/Output	Programmable interface AIO_0
4	AIO_1	Input/Output	Programmable interface AIO_1
5	PIO_3	Input/Output	Programmable interface AIO_3
6	PIO_2	Input	Volume down control port
7	PIO_1	Input	Volume increased control port
8	PIO_0	Input/Output	Programmable interface AIO_0
9	RST	Input	Reset Interface(active low)
10	PIO_11	Input/Output	Programmable interface PIO_11
11	BLED	Output	LED1 /usually take blue light
12	RLED	Output	LED0 /usually pick red
13	VREG	Input	Multifunction button interface
14	GND	Input/Output	Grounding
15	1V8	Output	1.8Vpower supply output
16	VBAT	Input/Output	Power input(3.3V-4.2V) /lithium battery charging output terminal
17	VCHG	Input	Lithium battery charging input(connected5V)
18	MOSI	Output	Programming Interface(application NC)
19	CLK	Input	Programming Interface(application NC)
20	CSB	Input	Programming Interface(application NC)
21	MISO	Input	Programming Interface(application NC)
22	SPKP	Output	Stereo differential output positive terminal
23	SPKN	Output	Stereo differential output negative terminal
24	MICP	Input	The positive terminal of the differential microphone inputs
25	MICN	Input	Negative differential microphone input terminal
26	VMIC	Output	Microphone Power

七. Typical Application Circuit

1.Bluetooth Headset



2.Bluetooth Speaker Applications

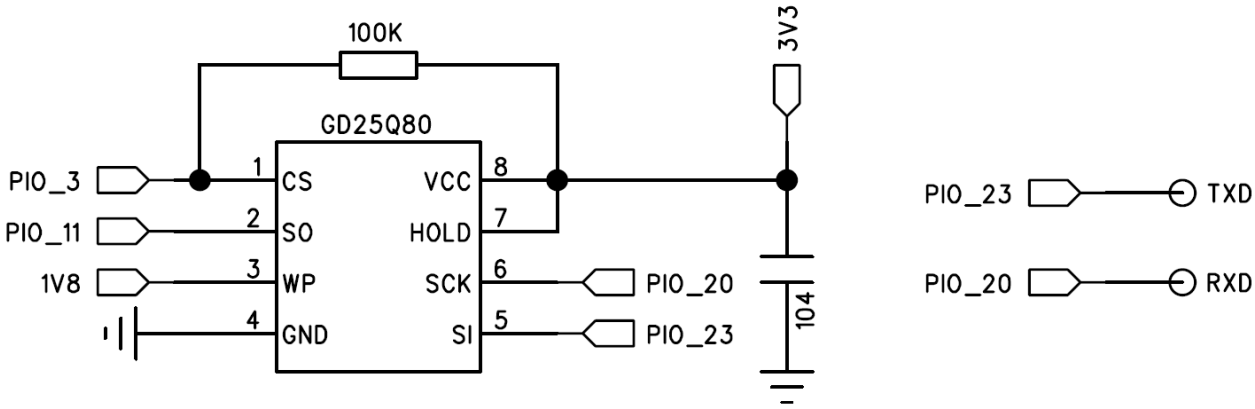


Note: When the product application must pick up or put a differential input amplifier, or will cause interference and impact sound.

If you need to turnon the power automatically, set the PWR button can be short-circuited.

八. Extended Application Module

Plug Serial FLASH，You can store voice　　Serial Interface



九. Module parameters

Project	Min	Typical values	Limits
VBAT	3.2V	3.7V	4.4V
VCHG	4.5V	5V	6.5V
PIO	-0.2V	1.8V	3.6V

十. Layout Precautions

1. Place the module is important to note:the antenna below(including the back of the PCB)and around can not have any traces and devices,the antenna should be placed in the open without shelter in place to ensure that the

antenna for optimal performance.Recommended antenna PCB milling empty or below the antenna protruding plate edges.

2.To ensure the integrity of the ground, the proposed large area paved, multi-punched.Since Bluetooth to work in the high-frequency band,poor ground will bring the current sound.All ground network please mains earth as a reference point.

十一. Issue Introduction

V1.0: Creation Date: 20130409

V1.1: Updated: 20130512

New module physical picture

V1.2: Updated: 20130926

Change the name of the module:SPK-6145-A

FCC RF Exposure Requirement

1. At least 20cm separation distance between the antenna and the user's body must be maintained at all times. And must not transmit simultaneously with any other antenna or transmitter, except in accordance with FCC multi transmitter product procedures.

2. To comply with FCC regulations limiting both maximum RF output power and human exposure to RF radiation, the maximum antenna gain including cable loss in a mobile-only exposure condition must not exceed 0dBi in the 2.4G band.

3. A user manual with the end product must clearly indicate the operating requirements and conditions that must be observed to ensure compliance with current FCC RF exposure guidelines.

Please be noticed following information and instructions should be placed in the end-user's operating manual

The Module has been granted as single modular approval for mobile applications. This Module must be installed in the designated host as specified in this manual.
1. Separate approval is required for all other operating configurations, including portable configurations with respect to 2.1093 and different antenna configurations.
2. The Module and its antenna must not be co-located or operating in conjunction with any other transmitter or antenna within a host device. This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.
3. A label must be affixed to the outside of the end product into which the module is incorporated, with a statement similar to the following: For SPK-6145-A: This device contains FCC ID: 2AB4GSPK-6145-A.
4. The module shall be in non-detachable construction protection into the finished products, so that the end-user has to destroy the module while remove or install it.
5. This module is to be installed only in mobile or fixed applications. According to FCC part 2.1091(b) definition of mobile and fixed devices is:

Mobile device:
A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. In this context, the term ‘‘fixed location’’ means that the device is physically secured at one location and is not able to be easily moved to another location.

Portable device:
For purposes of this section, a portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user.
6. Separate approval is required for all other operating configurations, including portable configurations with respect to FCC Part 2.1093 and different antenna configurations.
7. A certified modular has the option to use a permanently affixed label, or an electronic label. For a permanently affixed label, the module must be labelled with an FCC ID: 2AB4GSPK-6145-A. The OEM

manual must provide clear instructions explaining to the OEM the labelling requirements, options and OEM user manual instructions that are required.

For a host using a this FCC certified modular with a standard fixed label, if (1) the module's FCC ID is not visible when installed in the host, or (2) if the host is marketed so that end users do not have straightforward commonly used methods for access to remove the module so that the FCC ID of the module is visible; then an additional permanent label referring to the enclosed module: "Contains Transmitter Module FCC ID: 2AB4GSPK-6145-A" or "Contains FCC ID: 2AB4GSPK-6145-A" must be used. The host OEM user manual must also contain clear instructions on how end users can find and/or access the module and the FCC ID.

8. Host product is required to comply with all applicable FCC equipment authorizations regulations, requirements and equipment functions not associated with the transmitter module portion. Compliance must be demonstrated to regulations for other transmitter components within the host product; to requirements for unintentional radiators (Part 15B). To ensure compliance with all non-transmitter functions the host manufacturer is responsible for ensuring compliance with the module(s) installed and fully operational. If a host was previously authorized as an unintentional radiator under the Declaration of Conformity procedure without a transmitter certified module and a module is added, the host manufacturer is responsible for ensuring that the after the module is installed and operational the host continues to be compliant with the Part 15B unintentional radiator requirements. Since this may depend on the details of how the module is integrated with the host, we suggest the host device to recertify part 15B to ensure complete compliance with FCC requirement: Part 2 Subpart J Equipment Authorization Procedures , KDB784748 D01 v07, and KDB 997198 about importation of radio frequency devices into the United States.

FCC Certification Requirement:

The end product with an embedded Module may also need to pass the FCC Part 15 unintentional emission testing requirements and be properly authorized per FCC Part 15.

Note: If this module is intended for use in a portable device, you are responsible for separate approval to satisfy the SAR requirements of FCC Part 2.1093.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications made to this equipment not expressly approved by Shenzhen Minew Technologies Co.,Ltd. may void the FCC authorization to operate this equipment.

Warning: Changes or modifications made to this device not expressly approved by **Shenzhen Bolutek Electronical Technology Co.,Ltd** may void the FCC authorization to operate this device.

Note: The manufacturer is not responsible for any radio or tv interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

The OEM integrator is responsible for the compliance to all the rules that apply to the product into which this certified RF module is integrated.

Bolutek will assist by providing guidance to you if you have difficulties with compliance to Part 15B requirements."

Manual Information To the End User:
The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as show in this manual.

This device is intended only for OEM integrators under the following conditions:
The antenna must be installed such that 20 cm is maintained between the antenna and users, and The transmitter module may not be co-located with any other transmitter or antenna. As long as 2 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

IMPORTANT NOTE:
In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.