

Product name: Wireless Speaker
Model : L161

Operational Description

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This product integrated a Bluetooth chipset and a Wi-Fi chipset to support the Bluetooth function and Wi-Fi function that allows users to use it as a speaker as the primary usage of this device.

The brief introduction of the circuit

1. The Bluetooth signal is transmitted and received through the antenna system consists of the FPCB antenna. The Wi-Fi signal is transmitted and received through the antenna system consists of the Dipole antenna
2. The speaker L161 is powered by internal Li-Ion battery (3.7V@2250mAh) and can be charged via an external USB adapter. USB Charge Port is used for Charge. The USB Charge Port can not exchange data with the computer.
3. The speaker can be operated using 2 keys. power key is on the side, A small hole in the corresponding base is reset key.
4. Need to set the Bluetooth and wifi function, press the power key twice
5. Release the Bluetooth pairing operation: long press power key, turn on the LED light to light a lamp and then release the button, Has Release the original Bluetooth pairing..
6. MCU master control IC, it is use to button control, input Switch among Bluetooth, Wi-Fi, output audio source to amplifier IC.
7. TPA3130D2 is to amplify audio signal provided by master control transistor and motivate loudspeakers.
8. The chipset of BT is CSR8670C, BT version is 4.1, modulation types are GFSK, $(\pi/4)$ DQPSK, 8DPSK, The data rate is 1Mbps,2Mbps or 3Mbps.
9. The chipset of Wi-Fi is Linkplay A31, modulation types are 802.11 b, 802.11 g, 802.11 n (HT20) and 802.11 n (HT40) The data rate is 1-11Mbps, 6-54Mbps or up to 300Mbps.
10. The clock of BT Module is 26 MHz, and Wi-Fi module is 40MHz.

Technical Description of FHSS

- a. When power on, this device will loop scan the whole frequency until a connection command from the partner is received
- b. This device transmits a response signal.
- c. The partner receives the response signal and recognizes it, then send a connection command to establish the connection.
- d. After the connection establish successfully, the data transmission is beginning. At the same time, the partner and this device will shift frequencies in synchronization per a same pseudo randomly ordered list of hopping frequencies, the hopping rate is 1600 times per second. This device conform to the criteria in FCC Public NoticeDA00-705.
- e. The bandwidth of the this device, which is set to a fixed width by the software, match the hopping channel bandwidth of their corresponding partner. This device is a true frequency hopping system and does not have the capability to be coordinated with other FHSS systems in an effort to avoid the simultaneous occupancy of individual hopping frequencies by multiple transmitters.

There are 79 channels in total for Bluetooth. The channels hopping from one channel to another channel during the pseudorandom selection process. The hopping interval is 12 millisecond. This system frequency hops between 79 channels. If it is determined that one of the 79 hopping channels is found to be noisy or poor due to other RF interference, then a new channel is selected from the 78 unused channels and the one noisy channel is released to the unused group. This repeats whenever a noisy or poor channel is detected. For example, for the hop pattern of 2414MHz,2434MHz,2444MHz,2434MHz,2451MHz,2441MHz,2454MHz,2434MHz, 2427MHz,2461MHz,2461MHz,2444MHz,2414MHz,2448MHz,2451MHz,2417MHz, 2478MHz,2469MHz,2473MHz,2403MHz,etc. The sequential hops can not follow any order, is completely random.

For the Bluetooth module, the max. gain of the antenna is 2.54 dBi. The antenna is an integral part of the device.

The peak power of the transceiver is approximately 8.71 dBm, and the maximum EIRP is approximately 11.54 dBm for classic mode.

The peak power of the transceiver is approximately 8.31 dBm, and the maximum EIRP is approximately 10.85 dBm for BLE mode.

There are 11 channels in total for Wi-Fi. The channels hopping from one channel to another channel during the pseudorandom selection process. The hopping interval is 12 millisecond. This system frequency hops between 11 channels. If it is determined that one of the 11 hopping channels is found to be noisy or poor due to other RF interference, then a new channel is selected from the 10 unused channels and the one noisy channel is released to the unused group. This` repeats whenever a noisy or poor channel is detected. For example, for the hop pattern of 2442MHz, 2432MHz, 2447MHz, 2437MHz, 2452MHz, 2412MHz etc. The sequential hops can not follow any order, is completely random.

For the WiFi module, the max. gain of the antenna is 2.66 dBi. The antenna is an integral part of the device.

The peak power of the transceiver is approximately 18.51 dBm, and the maximum EIRP is approximately 21.17 dBm for 802.11 b Highest channel (2.462GHz)