# Operational Description

## Product Description

This product integrated a Bluetooth chipset to support the Bluetooth 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 ceramic antenna.
2. Power of the whole body is provided by 5VDC.
3. Aux in port is to connect audio source by line in cable to input audio signal. ON/OFF button is to turn on or turn off the speaker.
4. PAM8403 is to amplify audio signal provided by master control IC and motivate loudspeakers.
5. The chipset of BT is CSR 8645, BT version is 3.0+EDR, modulation types are GFSK, (π/4)DQPSK, 8DPSK, The data rate is 1Mbps,2Mbps or 3Mbps.
6. The USB interface of this product is used for charging purpose only without data exchange function.

## Technical Description of FHSS

The Bluetooth standard describes a frequency hopping spread spectrum system (FHSS). The frequency hopping sequence is governed by one unit known as the master in any group of units communicating together. The group is known as a piconet, and all units other than the master are known as slaves. The master determines the pseudo random hopping sequence internally and without reference to any external information, there is no co-ordination with any other Bluetooth or other FHSS systems to avoid simultaneous occupancy of hopping channels. Bluetooth uses re-transmission, interleaving and coding techniques to mitigate against lost transmissions when simultaneous occupancy of a channel cause loss of data. The pseudo random hopping sequence is initialized at the start of a new connection between master and slave to a random frequency ( hopping channel ), and the hopping sequence is generated such that an equal time is spent in each of 79 channels throughout the duration of the connection.

The antenna supplied with ceramic antenna with a max gain of 2 dBi. The antenna is an integral part of the device.

The peak power of the transceiver is approximately 5 dBm, and the maximum EIRP is approximately 7 dBm.