# Operational Description

**Product name: FIRE ELF Bluetooth Flashlight Speaker(Including PowerBank)**
**Model name: AF-A1BC**

1. U1, CSR BC8 is a Bluetooth's CPU, It is mainly used for audio data transmission
2. U2, FM24C512 is a E2, it used to store programs.
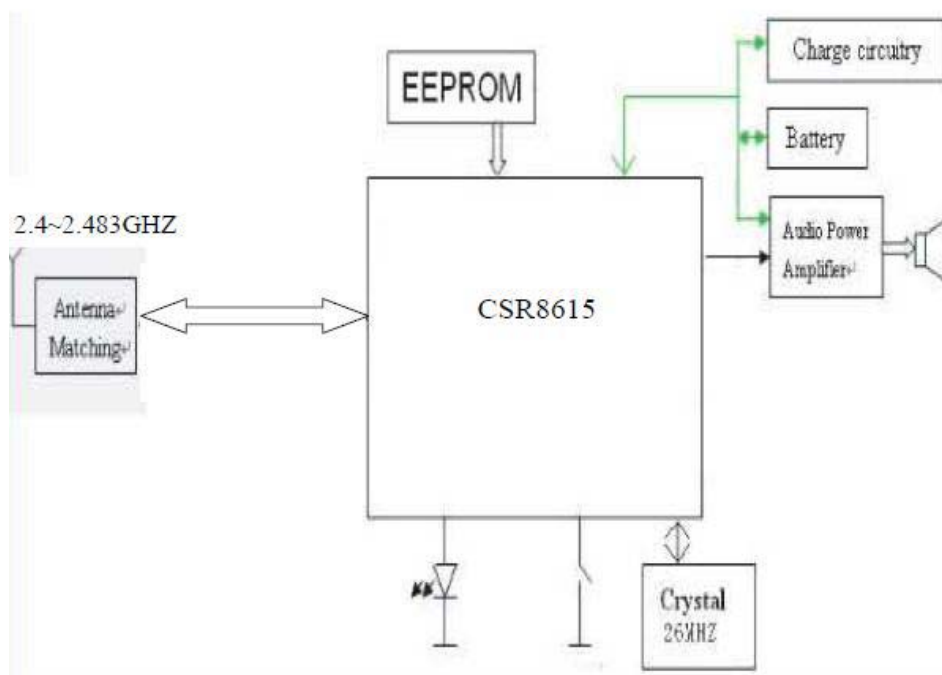
## Operation Descriptions

The transmitter is a RADIO operating at 2400-2480MHz band. The transmitter is powered by a 3.7V battery and the transmitting frequency is crystal controlled. The operation is achieved by different combinations of form pulse modulating signal on the 2400MHz carrier frequency.

The 26MHZ crystal oscillator drives the base of U1（CSR BC8）.
The modulation provided by U1(CSR BC8)

Antenna, Ground and Power Source

The antenna consists of a 2.4GHz Single dipole antenna coil Wire antenna, There is no external ground connection. Electric current is supplied by a 3.7 V primary battery

**Block diagram**

**Performance parameters**

| | |
|---|---|
| Operating frequency: | BT4.0 / 2.4GHz~2.48GHz |
| Channel number: | 79 Channels |
| Modulation type: | GFSK, π /4 DQPSK, 8DPSK |
| Antenna Type: | Wire antenna with -0.61dBi gain (Max) |
| Bluetooth protocol | HFP V1.6, HSP V1.2, A2DP V1.2, AVRCP V1.4, DI V1.3 |
| Transmission distance | 10M |
| Sensitivity | -80dBm<0.1%BER |

**Bluetooth**

| GFSK-BLE (Peak) | | | |
|---|---|---|---|
| Channel | Channel 00 | Channel 19 | Channel 39 |
| Target (dBm) | -2.0 | -0.2 | 0.7 |
| Tolerance ±(dB) | 1.0 | 1.0 | 1.0 |
| GFSK (Peak) | | | |
| Channel | Channel 00 | Channel 39 | Channel 78 |
| Target (dBm) | -1.0 | -0.1 | 0.8 |
| Tolerance ±(dB) | 1.0 | 1.0 | 1.0 |
| 8DPSK (Peak) | | | |
| Channel | Channel 00 | Channel 39 | Channel 78 |
| Target (dBm) | -3.0 | -0.6 | 0.3 |
| Tolerance ±(dB) | 1.0 | 1.0 | 1.0 |
| π/4DQPSK (Peak) | | | |
| Channel | Channel 00 | Channel 39 | Channel 78 |
| Target (dBm) | -2.0 | -0.2 | 0.7 |
| Tolerance ±(dB) | 1.0 | 1.0 | 1.0 |