

Circuit description

Camera Unit:

The MB9BF106N is the main processor of the Camera unit. It controlled the RF module PM222, Image processor module QP9D111, IR LEDs, audio codec NAU8814, and power management network.

The PM222 RF module consists of 2 transceiver to utilizes RF transceivers operating at high data throughput. Each transceiver will contain its own packet ID and same data packet format, i.e. 32bit preamble, 32 bit ID, Max. payload 128 byte. On each transceiver, there are 32 non overlapping channels, and will adopt FHSS modulation according to the frequency table below. The hopping table follows a pseudo random hopping sequence controlled by MCU. Hopping frequency is about 1000 time per second, packet length duration is from 80us to 660us. is operated in 2.4GHz ISM band and used FSK modulation with up to 4Mbps data rate. This module is controlled by the MB9BF106N through the SPI bus and 16MHz clock is provided by the GPIO pin.

The image processor QP9D111 is controlled by the MB9BF106N from the 8bit parallel data bus and I2C bus. And the MB9BF106N will encode the image data from the COMS sensor module QP9D111. The MB9BF106N will provide the 4MHz to the D111 used the GPIO pin. And MB9BF106N controlled 8 x IRLED and 1 x power LED for night version operation.

The audio codec IC NAU8814, which is used for encode and decode the in/output audio signal.

Also, the power management network of the handset is handled by the MB9BF106N. The power management network converts the 5V input from DC adaptor to 3.3V, 2.8V, and 1.8V power rail. These different power rails are used to power up different parts of the system. The MB9BF106N can be reset by the Reset RC circuit