Overview of RF

This section presents a brief overview of the RF circuitry within MBH2BT01.
The RF circuit of MBH2BT01 is using BC01b(CSR company make) of Bluetooth RF CHIP.

1. Transmitter Architecture

The transmitter uses a conventional IQ modulator as shown in
Figure 1. The baseband Bluetooth signal is generated digitally. It is possible to add a transmit frequency offset of up to 1MHz to the digital baseband signal.
The baseband signal is up-converted in the IQ modulator to 2.4GHz. An RF amplifier then boosts the signal level and drives a differential output. The TX_A and TX_B signals are combined by using a balun. It is inputted into a transceiver antenna change circuit.

A conventional PLL (Phase Lock Loop) synthesiser provides the local oscillator drive to the IQ modulator. The synthesiser produces signals at around 1.2GHz, which are doubled to 2.4GHz.
The 2.4GHz signal passes through a 90° phase splitter to provide the IQ drive to the modulator.
The loop filter components for the PLL synthesiser are external to the chip.
It is inputted into a transceiver antenna change circuit.

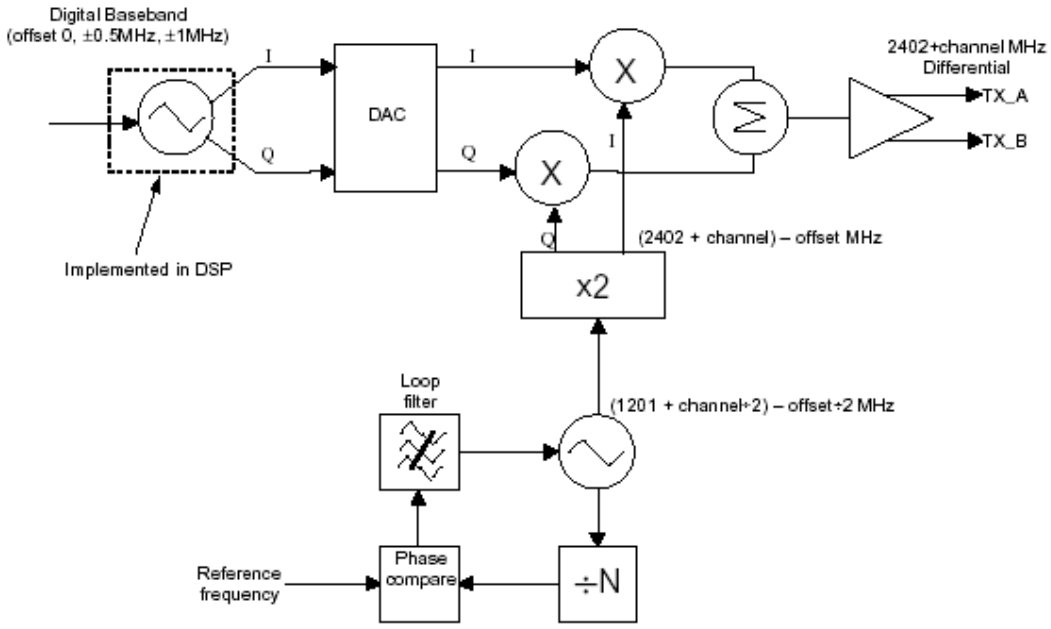

Figure 1: Overview of Transmitter Architecture

Frequency is inputted from a 16MHz Clock oscillator.

2. Receiver Architecture

The receiver shown in Figure 2 is a double conversion design and uses the same synthesiser as the transmitter described in section 1. The received signal is amplified by a low noise amplifier (LNA) and passed to an IQ mixer where it is down-converted to a first IF of 1.5MHz. This signal is amplified and filtered before undergoing a second quadrature mix to 2.5MHz. The 2.5MHz signal is further amplifier and filtered. The signal is limited, sampled and then digitally demodulated. The 2.5MHz IF block also provides an RSSI (received signal strength indicator) indication.

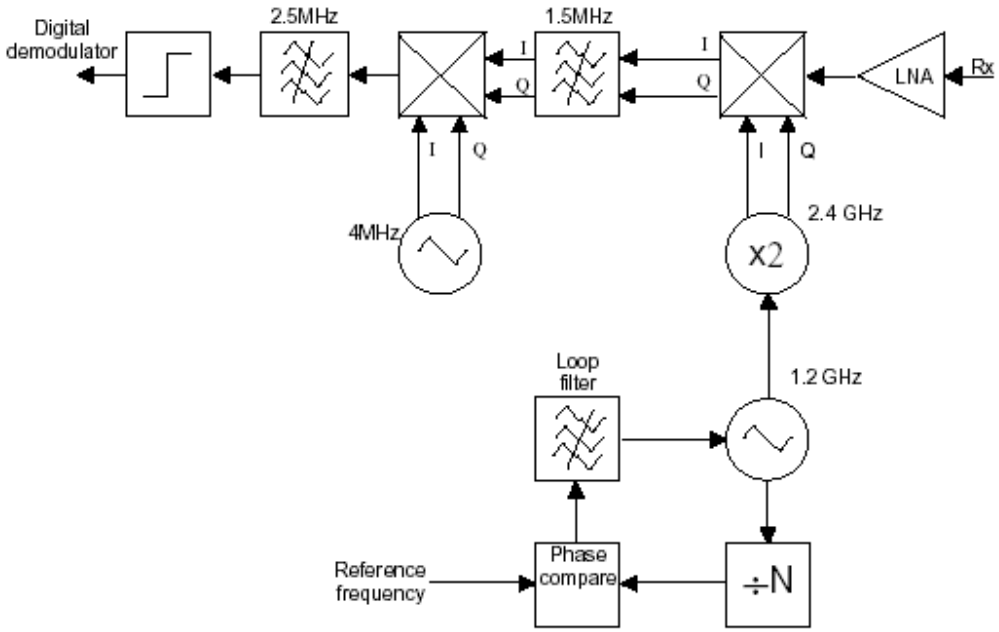

Figure 2: Overview of Receiver Architecture

Frequency is inputted from a 16MHz Clock oscillator.