

MA3222 Circuit description:

RF DECT 6.0

RX Front

Antenna: Radio signals are received and transmitted via antenna.

BPF: BPF selects the pass band frequencies in DECT operation and rejects others frequencies other than 1880~1930MHz specified for DECT operations in US and in EU and the rest of the world.

LNA: The internal LNA amplifies the weak RF signal level received via antenna. It provides selectivity and sensitivity required by system operation.

Mixer: The mixer combines the received RF signal to that of LO and down converts the RF signal into the IF frequency.

Baseband: The detected signal is then processed by the ADC and pre-conditioned to recover the information (voice/data).

The recovered and pre-conditioned information (data/voice) is then passed to the ADPCM codec and the subsequent baseband circuitry to recover the voice information which will then be passed to a series of filters to get the desired audio information.

MA3222 utilizes the DCX79 RF and baseband controller in a single package.

Transmitter

VCO: The VCO generates the LO needed for up-conversion.

LO & Mixer: The LO and mixer up-converts the VCO into the transmit frequency of 1880~1930MHz.

PA: The power amplifier amplifies the signal level to correspond to the power levels specified in ETSI and FCC at 1880~1930MHz. 21dBm for US and 24dBm for EU operation.

The voice/data signals are processed by the modulator and subsequent filtering to meet the ETSI/US requirement of BT0.5

BlueTooth RF

The BlueTooth device used in MA3222 is a CSR device BC6145 a standalone Bluetooth device utilizing CSR's latest radio and baseband configuration to meet the EU and US standards.

Small overall dimension (25mm x 35mm x 2mm) RF module and complies with BT specification V3.0. Both class 2 and class 3 are supported. It has a built in RF combo filter and integrated 26M Crystal. The device supports HSP, HFP & A2DP(mono) profile. It is compatible with CSR cVc software echo cancellation solution. No radio signal interference, support for 802.11 (WiFi) co-existence.

Audio signal processing :

There are two paths for the audio signals for both DECT and Bluetooth devices and is controlled by U9 analog switching IC. The device can operate in either DECT mode and BT mode independently depending on the configuration of U9.

MA3222 also supports conference mode by enabling both paths simultaneously via U9.

Charging:

Battery charging is achieved by plugging a 5V USB port to the charger input provided in the device. The charger is controlled by Q2, Q1 & Q4 working in conjunction with the DCX PWM1 output to enter 3 charging modes (Monitor mode, Trickle charge mode & Continuous Voltage mode) depending on the battery charge levels which is determined thru the voltage divider circuit formed by R22 and R23.

Monitor mode(Shutdown mode): In monitor mode, the charger is idle and this condition is set when battery voltage reaches 4.3V.

Trickle charge mode: Is the charging mode to which the charger rapidly charges the battery by giving a series of pulses of high's & low's until the battery voltage reaches 4.0V.

CV or Continuous voltage mode: When a fully drained battery is detected via charge detect and the voltage sensor formed by R22 & R23, the charger engages the battery to a continuous charging mode until the battery voltage is sufficient enough to enter trickle charge operation.