VMG03 operational description

The VMG03 is MiniGate connects to the PC via USB interface and communicates with all Tested model has carrier frequency 915 MHz.

The VMG03 dimensions: 9 cm x 2.5 cm x 1.5 cm.

The VMG03 is powered via USB cable from PC's USB slot 5V.
The current consumption of the VMG03 is up to 100 mA

The VMG03 block diagram and RF transceiver block diagram are shown in Figures 1 and 2, respectively.

The VMG03 transceiver is based on chipset Chipcon CC1020.
The transceiver uses one channel.
Integrated antenna – printed circuit board (PCB).
The antenna cannot be de-attached or changed by the user.

RF communication frequency:	915 MHz.
Output transmission power:	-1 dBm (EIRP)
Baud rate:	9.6 Kbps
Modulation type:	FSK
Bandwidth:	50 kHz

The VMG03 field strength is less than 50 mV/m at 3 meters and meets the requirements of paragraph (a) of section 15.249.

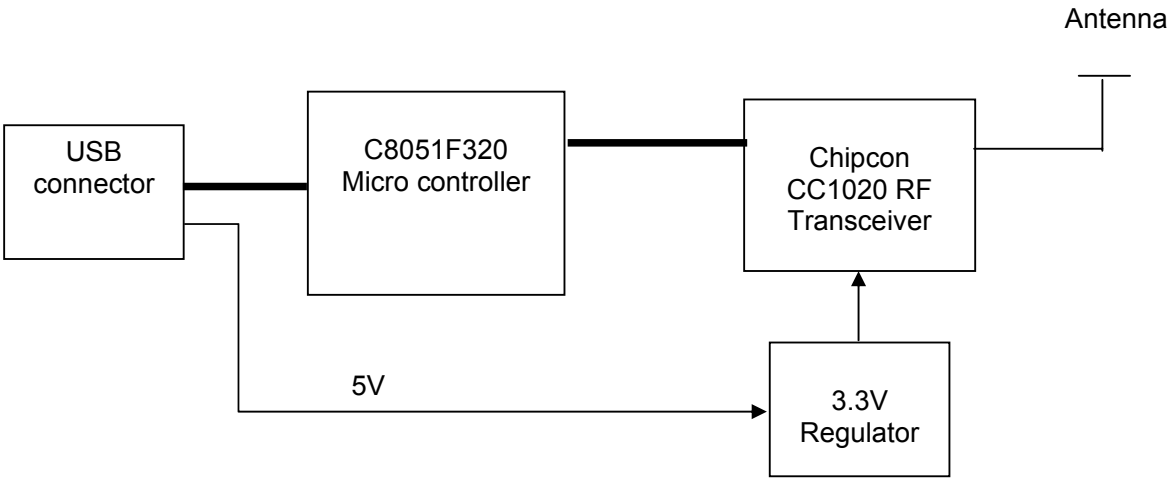


Figure 1. VMG03 block diagram

The following are the main components shown in the block diagram:

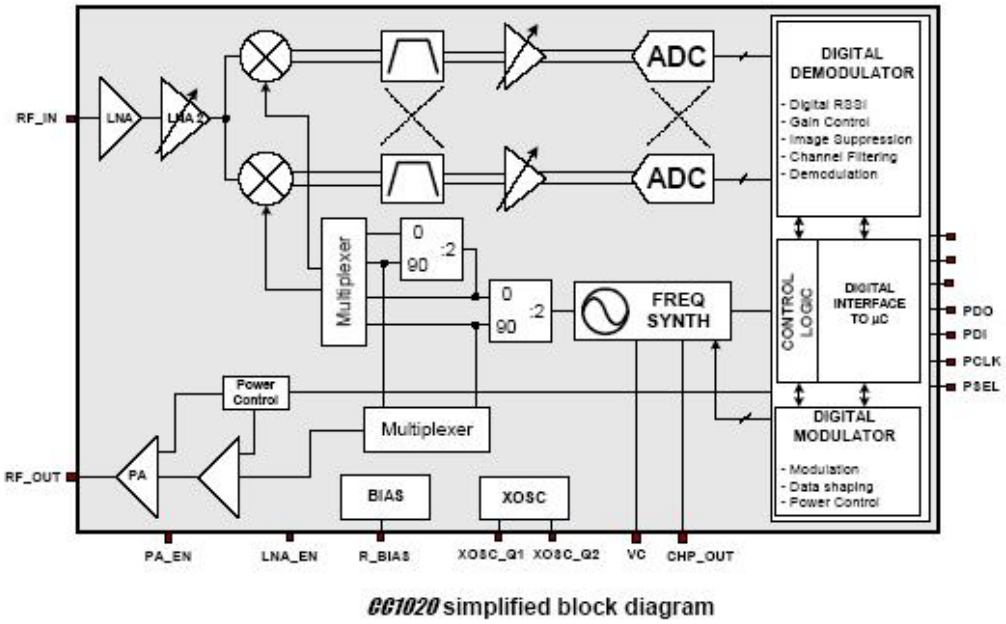
* The Silicon Labs C8051F320 USB interface Micro Controller (single chip) has the following features:
    - 16K byte FLASH memory
    - 2304 byte RAM
    - 8 bit architecture
    - Up to 25 MIPS (25 MHz)
    - 10 bit A/D converter
    - Four 16 bit timers
    - UART/SPI/SMBus serial ports
    - USB 2.0 Interface
    - 25 digital I/O control lines

* The C8051F320 is the CPU of the VMG-03, and performs the following tasks:
    - Communicates with the Chipcon CC1020 RF transceiver
    - Communicates with the PC via USB 2.0 full speed (12 Mbps)
    - Green LED output
    - Red LED output

* The Chipcon CC1020 is an RF transceiver supporting up to 153.6Kbps. In the VMG03 project it operates at 9.6Kbps at 915MHz.

* 3.3V regulator – a low drop regulator that regulates the voltage supplied by the USB controller (5V input, USB bus powered) into a stable and noise-reduced 3.3V.

Circuit Description



CC1020 simplified block diagram

Figure 2. Tx-Rx block diagram