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FM5202 Z-WAVE MODULE CIRCUIT DESCRIPTION

The FM5202 Z-Wave module is built around the Sigma Designs ZM5202 RF transceiver module.
This Sigma Designs ZM5202 contains a standard SPI serial data interface to an external data source. The data source will typically be a microcontroller which may also support the application for the product that uses the FM5202 Z-Wave module.
The FM5202 Z-Wave module includes a voltage regulator which provides regulated power for the Sigma Designs ZM5202 RF transceiver module. This also extends the usable voltage range for the FM5202 Z-Wave module.
The Sigma Designs ZM5202 RF transceiver module also includes a voltage regulator which provides regulated power to all of the internal circuits on the Sigma Designs ZM5202 RF transceiver module. Bypass capacitors are provided around the Sigma Designs ZM5202 RF transceiver module as needed.
An external crystal at 32.000 MHz generates the clock for all of the digital circuitry on the Sigma Designs ZM5202 RF transceiver module. It also serves as a reference for the frequency synthesizer used to generate the RF carrier. This is the only clock source for the Sigma Design ZM5202.

The transmitter function of the Sigma Designs ZM5202 takes the data from the external data source over the SPI interface, and creates packets per the Z-Wave protocol standard in the baseband processor. It has an RF signal source and modulator to create the 908.4MHz RF output signal.
The receiver function of the Sigma Designs ZM5202 takes a signal into the Sigma Designs ZM5202 and performs a down conversion to base band where the data is taken out of the incoming packets and passed to the external data unit over the SPI interface.
At the RF interface to the Sigma Designs ZM5202 an external ceramic filter is provided to reduce harmonics and to match the impedance to the antenna. The antenna is a combination of ceramic filter and printed pattern on the module printed circuit board.
An integrated shield is built into the four-layer PCB. The second layer is a contiguous ground plane to ensure that it does not have to rely upon the shielding provided by the device into which it is installed in order for all modular transmitter emissions to comply with Part 15 limits. It is also intended to prevent coupling between the RF circuitry of the module and any wires or circuits in the device into which the module is installed.