Theory of Operation/Technical Description – FCC ID: 2AHV9-HP1110-C1

RF circuit function:

HP1110-C1 operates as an IEEE 802.11b transceiver. It can transmit and receive RF signals in the 2.4GHz ISM Band. The Transmitter can transmit 0.85dBm (Measured value), while the receiver tries to optimize the sensitivity close the noise floor.

RF signal flow:

HP1110-C1 transmits and received RF signals in the 2.4GHz ISM Band using a custom IC (HC1100)

In the Tx chain, digital baseband samples are first converted to analog baseband using a DAC. Suitable filtering is applied to suppress the aliases. The analog baseband signal is then up-converted to the desired center frequency, and then amplified using a Power Amplifier. The amplified signal is then routed to an out-of-chip antenna using an in-chip TR Switch.

In the Rx chain, the antenna feeds the 2.4GHz signal through the TR switch to a front-end LNA. After a direct-conversion to the baseband, by programming the PLL to the desired center frequency, the signal is then sampled using IQ ADCs for further processing in the digital domain.

Description of Antenna system (Baluns, Multiplexers)

The custom IC HC1100 has an internal TR Switch and Balun. The chip is connected to an on-board chip antenna (ABM5020B1) which has peak design gain of 3.7dBi

Show compliance with 15.203 antenna requirements:

The on-board chip antenna is permanently attached to rest of the circuit during the board assembly. An additional RF test connector is concealed from the end-user through the packaging of the product.

Description of all modulation schemes used in the product:

1Mbps : DBPSK with DSSS
2Mbps : DQPSK with DSSS
5.5Mbps : DQPSK with CCK
11Mbps : DQPSK with CCK