MM6108 Overview

IEEE 802.11ah Sub-1 GHz 1/2/4/8 MHz BW MAC/PHY/Radio Wi-Fi HaLow SoC

Overview

The MM6108 System on Chip (SoC) is a single-chip solution providing complete Wi-Fi HaLow® connectivity through Radio, PHY, and MAC sections.

Designed in accordance with the IEEE 802.11ah standard, the SoC supports data rates up to 32.5 Mbps, and provides operation in the sub-1 GHz range (licence exempt from RF bands worldwide).

The RF interface for the MM6108 includes the option to use either the on-chip amplification for typical low-power, low-cost devices, or in conjunction with an external PCB-mount power amplifier (PA) or Front-End Module (FEM) for ultra-long-reach applications.
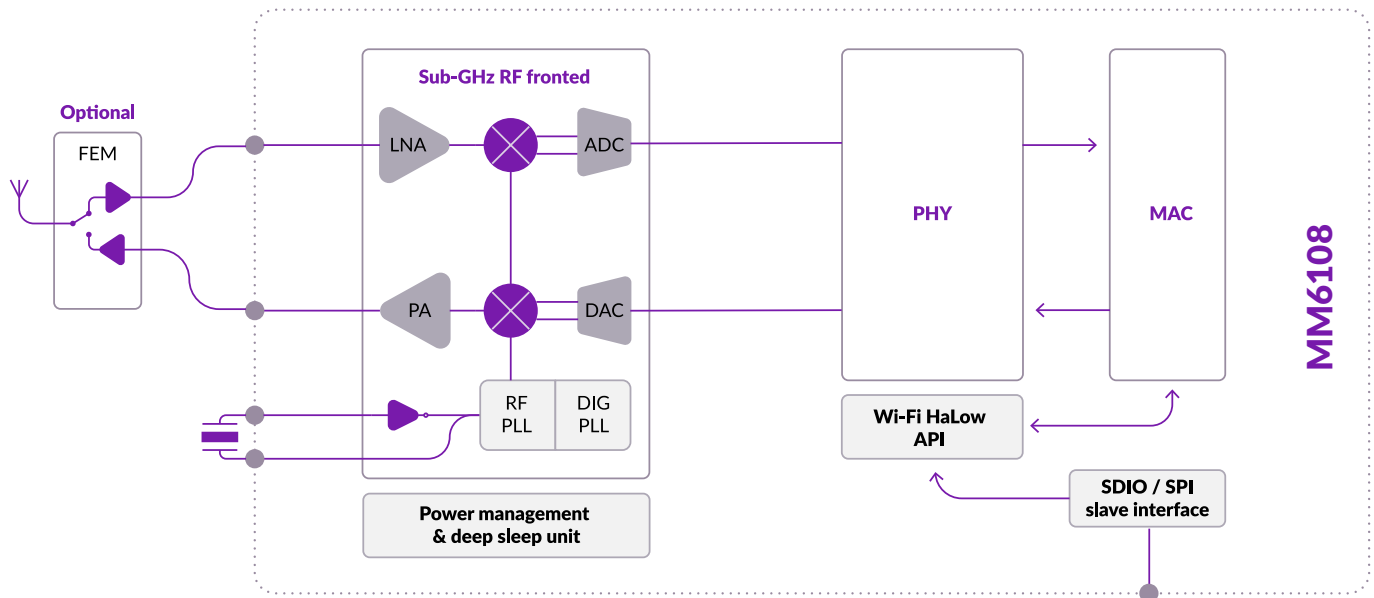
The RF receiver features a high linearity LNA, making the use of external filters unnecessary in many applications.

Battery-operated applications are supported by a combination of features in the MM6108. The IEEE 802.11ah standard provides for extended sleep times of battery-operated STA client devices, with longer durations than other prior IEEE 802.11a/b/g/n/ac generations.

For Internet of Things (IoT) and Machine-to-Machine (M2M) applications:

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- Surveillance cameras and sensors
- Cloud connectivity
- Building automation systems (BAS)
- Machine performance monitors and sensors
- Building access control & security
- Drone video and navigation communications
- Rural internet access

- Utility smart meter and intelligent grids
- Industrial automation controls
- Smart home automation
- Wi-Fi HaLow® access points and bridges
- Wi-Fi HaLow® client adapters/dongles
- Smart city networks

Sub-GHz RF fronted

Optional

FEM

LNA   ADC

PA   DAC

RF PLL   DIG PLL

PHY   MAC

Wi-Fi HaLow API

SDIO / SPI slave interface

Power management & deep sleep unit

MM6108

Single-chip IEEE802.11ah Wi-Fi HaLow® transceiver for low-power, long-reach IoT

Radio supporting worldwide sub 1GHz bands

Single-stream max data rate of 32.5 Mbps

On-chip power amplifier, external FEM option

6 x 6 x 0.85 mm QFN48 package

Power management unit (PMU) supporting ultra-low-power operation

SDIO 2.0 and SPI host interface options

GPIO/UART/I2C/PWM peripheral options

WPA3 security

1/2/4/8 MHz channel bandwidth

Wi-Fi HaLow Modulation and Coding Scheme

MCS index	Modulation scheme	Coding rate	PHY rate (kbps) per BW			
			1 MHz	2 MHz	4 MHz	8 MHz
10	BPSK	1/2 x 2	167		N/A	
0	BPSK	1/2	333	722	1500	3250
1	QPSK	1/2	667	1444	3000	6500
2	QPSK	3/4	1000	2167	4500	9750
3	16-QAM	1/2	1333	2889	6000	13000
4	16-QAM	3/4	2000	4333	9000	19500
5	64-QAM	2/3	2667	5778	12000	26000
6	64-QAM	3/4	3000	6500	13500	29250
7	64-QAM	5/6	3333	7222	15000	32500

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