



PRODUCT BRIEF

MM6104 OVERVIEW

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



Morse Micro
reaching farther™

Overview

Morse Micro provides a complete Wi-Fi HaLow connectivity solution. The MM6104 SoC is a single-chip solution, including Radio, PHY, and MAC sections designed in accordance with the IEEE 802.11ah standard, supporting data rates up to 15 Mbps. The standard provides for operation in the sub 1GHz license-exempt RF bands. The Radio in the MM6104 supports programmable operation in these bands, worldwide, between 850MHz and 950MHz.

The RF interface for the MM6104 includes the option to use either the on-chip amplification for typical low-power,

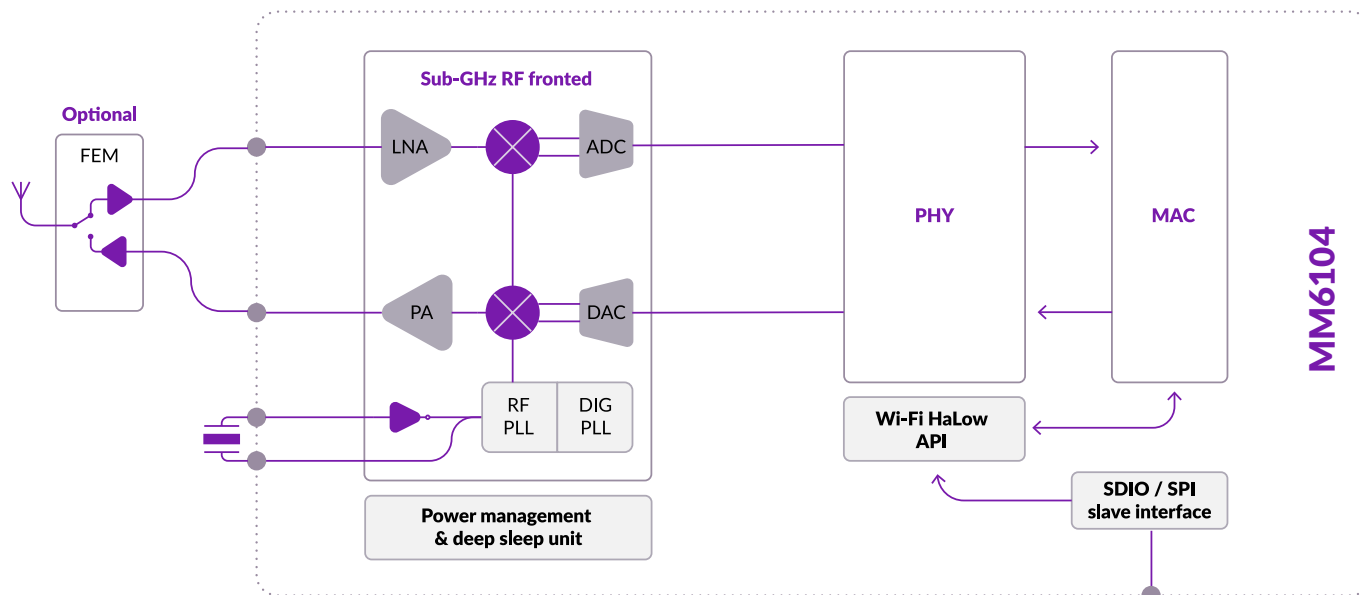
low-cost devices, or in conjunction with an external PCB-mount power amplifier (PA) or Front-End Module (FEM) for Ultra-Long-Reach applications. The RF receiver features a high linearity LNA, making the use of external filters unnecessary in many applications.

Battery-operated applications are supported by a combination of features in the MM6104. 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:



- ✓ 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 grid
- ✓ Industrial automation controls
- ✓ Smart home automation
- ✓ Wi-Fi HaLow access points and bridges
- ✓ Wi-Fi HaLow client adapters/dongles
- ✓ Smart city network



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 15 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 MHz channel bandwidth

Wi-Fi HaLow modulation and coding scheme

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

Contact us

Morse Micro Pty Ltd Corporate Headquarters

Level 8, 10-14 Waterloo Street, Surry Hills
NSW 2010, Australia

Australia: +61.2.905.45922

China: +86.571.229.30277

Japan: +81.80.4109.0207

USA: +1.949.501.7080

E-mail: sales@morsemicro.com



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www.morsemicro.com