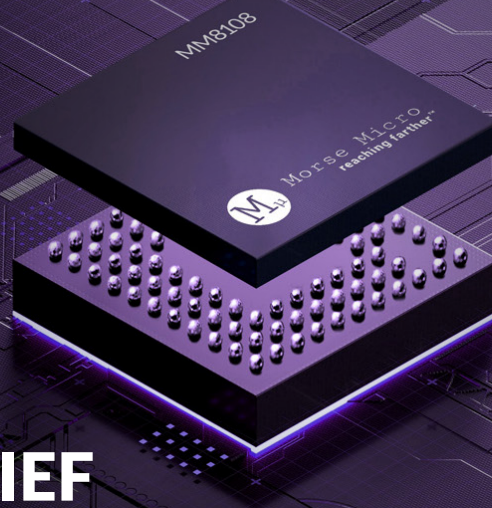# PRODUCT BRIEF
MM8108 OVERVIEW

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

Overview

MM8108 is a highly integrated, ultra low power, single chip Wi-Fi HaLow® compliant connectivity System-on-Chip (SoC) solution. Designed in accordance with the IEEE 802.11ah standard, the SoC integrates full MAC and PHY implementations and supports data rates up to 43.33 Mbps at 8 MHz bandwidth over the air in the sub-1 GHz licence-exempt bands worldwide.

Integrated high efficiency PA and high linearity LNA enable low cost and low area solutions. The RF interface may be used in conjunction with an external PCB-mount PA or Front-End Module (FEM) for ultra-long-reach applications. A MIPI RFFE interface permits seamless integration and interoperability with multi-radio systems which share a FEM.

Battery-operated applications are supported by a combination of features in the MM8108. The IEEE 802.11ah standard provides for extended sleep times of battery-operated STA client devices, with longer durations than prior IEEE 802.11a/b/g/n/ac generations. Ultra low current consumption during sleep modes permits extremely low average current draw whilst remaining associated with an access point and available for low latency wakeup events over the air.

Next generation Wi-Fi Halow® security features are fully supported by MM8108, such as WPA3 with Simultaneous Authentication of Equals (SAE) and GCMP ciphers to ensure your link layer communications start and remain protected.

MM8108 provides High Speed USB 2.0, SDIO 2.0 and SPI device interfaces. A high degree of host offload is enabled by the complete on-chip 802.11ah MAC layer, further reducing overall system power.

An on-chip RISC-V MCU for customer programmability enables complete integration of solutions in a highly secure execution environment including AES-XTS encrypted XIP via cache from external flash memory. Morse Micro customers can migrate their operational code to run on the platform for the most highly-integrated SoC solution to minimize PCB size and costs for Wi-Fi HaLow® applications.

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 grids
- Industrial automation controls
- Smart home automation
- Wi-Fi HaLow® access points and bridges
- Wi-Fi HaLow® client adapters/dongles
- Smart city networks
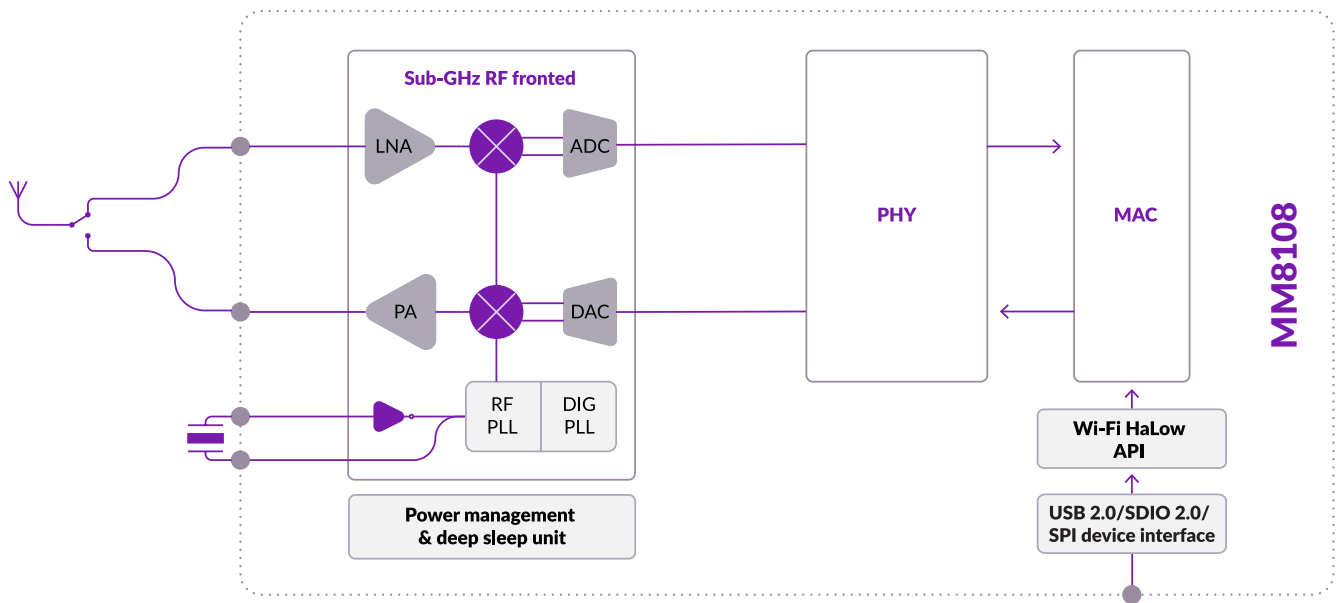
Single-chip IEEE802.11ah Wi-Fi HaLow® transceiver for low-power, long-reach IoT

Radio supporting worldwide sub 1GHz bands

Single-stream max data rate of 43.33 Mbps

On-chip power amplifier, external FEM option

5 x 5 mm BGA package

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

USB 2.0, SDIO 2.0, and SPI host interface options

GPIO/UART/I2C/PWM/MIPI 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
8	256-QAM	3/4	4000	8667	18000	39000
9	256-QAM	5/6	4444	-	20000	43333

Contact us

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