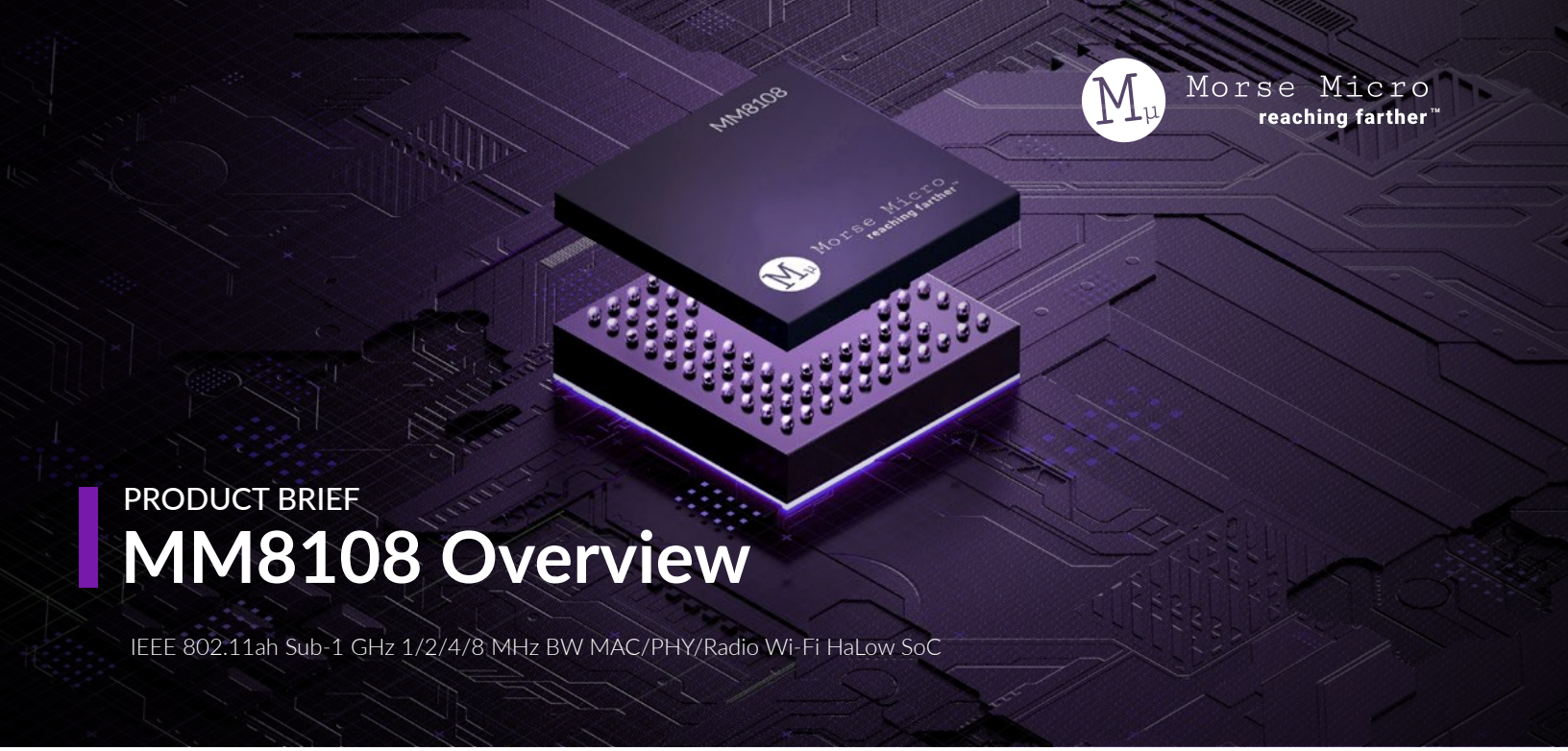

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PRODUCT BRIEF

MM8108 Overview

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

Overview

The MM8108 System-on-Chip (SoC) is a highly integrated, ultra low power, single chip solution that delivers the latest Wi-Fi HaLow® compliant connectivity. Built to the IEEE 802.11ah standard, the SoC integrates complete MAC and PHY functions, supporting data rates up to 43.33 Mbps, in the sub-1 GHz licence-exempt bands worldwide.

The integrated very high efficiency PA and high linearity LNA enable cost-effective and compact solutions. The RF interface can be paired with an external PCB-mount PA or Front-End Module (FEM) for ultra-long-reach applications. A MIPI RFFE interface ensures seamless integration with multi-radio systems that share a FEM.

The MM8108 is optimized for battery-operated applications, leveraging the IEEE 802.11ah standard's extended sleep times, which are significantly longer than those of earlier Wi-Fi generations. Its ultra-low current consumption in sleep modes allows for minimal average power usage while maintaining internet connectivity and being responsive to low-latency wakeup events.

Next-generation Wi-Fi HaLow® security features are fully supported, including WPA3 with Simultaneous Authentication of Equals (SAE) and GCMP ciphers, ensuring robust, secure link layer protection.

The MM8108 provides High-Speed USB 2.0, SDIO 2.0, and SPI device interfaces. Its fully integrated 802.11ah MAC layer supports extensive host offload, further reducing system power consumption.

Long-range, low-power Wi-Fi HaLow SoC

- 802.11ah OFDM PHY supporting MCS0-10
- Radio supporting worldwide sub 1GHz bands (850-950 MHz, max output power 26dBm)
- Single-stream max data rate of 43.33 Mbps (at 8MHz with 256-QAM)
- Extremely high efficiency integrated PA with maximum 26dBm (400mW) output power at 35% efficiency
- Small footprint with 5 x 5 mm BGA package
- Low power consumption with Integrated Power Management Unit (PMU) for optimised power and low BOM
- USB 2.0, SDIO 2.0, and SPI host interface options
- Support for STA and AP roles; AP with SoftMAC, STA with SoftMAC or FullMAC
- WFA HaLow certification options available
- 1/2/4/8 MHz channel bandwidth in the sub-1 GHz licence-exempt bands worldwide

Transmit Performance

MCS index	Transmit output power (dBm)				Power consumption (mW)			
	1 MHz	2 MHz	4 MHz	8 MHz	1 MHz	2 MHz	4 MHz	8 MHz
0	26	26	23	23	1110	1110	690	740
1	26	26	23	23	1110	1110	690	740
2	26	26	23	23	1110	1110	690	740
3	26	26	23	23	1110	1110	690	740
4	25	25	23	23	900	900	690	740
5	24	23	23	23	760	640	690	740
6	23	22	22	22	640	590	610	660
7	20	21	21	21	430	500	520	570
8	17	19	19	19	330	420	440	470
9	15	N/A	18	18	290	N/A	390	450
10	26	N/A	N/A	N/A	1110	N/A	N/A	N/A

Wi-Fi HaLow® Modulation and Coding Scheme and Sensitivity

MCS index	PHY Rate (kbps) per BW / Minimum Receive Sensitivity (dBm)			
	1 MHz	2 MHz	4 MHz	8 MHz
0	333 / -106	722 / -103	1500 / -102	3250 / -97
1	667 / -105	1444 / -102	3000 / -99	6500 / -94
2	1000 / -102	2167 / -99	4500 / -96	9750 / -92
3	1333 / -99	2889 / -96	6000 / -94	13000 / -90
4	2000 / -96	4333 / -93	9000 / -90	19500 / -87
5	2667 / -92	5778 / -89	12000 / -86	26000 / -83
6	3000 / -91	6500 / -88	13500 / -85	29250 / -80
7	3333 / -89	7222 / -86	15000 / -83	32500 / -79
8	4000 / -85	8667 / -82	18000 / -79	39000 / -75
9	4444 / -83	N/A	20000 / -77	43333 / -73
10	167 / -109	N/A	N/A	N/A

Mode	3.3V Current (mA)			
	1 MHz	2 MHz	4 MHz	8 MHz
Listen	18	19	22	27
Active Receive MCS9	19	21 (MCS8)	25	33
Active Receive MCS0	19	20	24	30

For more product information: www.morsemicro.com

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