



Morse Micro  
reaching farther

## PRODUCT BRIEF

# MM8108-EKH19 Evaluation Kit

Multi-region Wi-Fi HaLow® / IEEE 802.11ah Sub-1GHz USB 2.0 Network Adapter

## Overview

Wi-Fi HaLow® (pronounced HEYlow) is the first global Wi-Fi standard (IEEE 802.11ah) tailored to meet the Internet of Things (IoT) needs. It's an open standard wireless network technology operating in the sub-1 GHz license-exempt RF bands (850-950 MHz range), so it doesn't incur ongoing monthly costs like cellular/mobile network connections. By operating in the sub-GHz range, this ultra-low-power wireless protocol can connect more IoT devices at much longer distances and much lower power than traditional Wi-Fi.

Morse Micro, the world's leading Wi-Fi HaLow® (802.11ah) solutions provider, offers several Wi-Fi HaLow® connectivity solutions. The MM8108 SoC is a single-chip solution with radio, PHY, and MAC functions that are compliant with the

IEEE 802.11ah standard. It supports unmatched transmit performance and energy efficiency with on-chip amplification of up to 26dBm and data rates up to 43.3 Mbps using world-first 256-QAM modulation at an 8 MHz bandwidth. It's ideal for high-speed agricultural, mining, industrial, home, and city applications.

The MM8108-EKH19 is an evaluation kit containing a USB 2.0 Network Adapter Reference Design based on the MM8108, an SMA Wi-Fi HaLow antenna and a GL-MT3000 router. It demonstrates the simplicity and cost-effectiveness of adding Morse Micro's world-leading Wi-Fi HaLow® technology to an existing or new design using a USB 2.0 interface.

## Key features of the long-range, low-power Wi-Fi HaLow USB 2.0 Network Adapter Reference Design include:



802.11ah compliant  
OFDM PHY supporting  
MCS0-10



Radio supporting  
worldwide sub 1GHz bands  
(850-950 MHz, max output  
power 26dBm)



Single-stream max PHY  
rate of 43.33 Mbps at  
8MHz with 256-QAM



Extremely high efficiency  
integrated PA with 35%  
efficiency at the maximum  
26 dBm (400 mW)  
output power



Configurable as an Access  
Point or a Station



Wi-Fi Alliance  
HaLow (802.11ah)  
certification compliant



1/2/4/8 MHz channel  
bandwidth in the sub-1  
GHz licence-exempt  
bands worldwide



Support for Linux and  
OpenWrt with OSx  
and Windows support  
coming soon

# Applications

- ✓ Long range security cameras
- ✓ Smart Grid and AMI 2.0
- ✓ Smart city networks
- ✓ Smart buildings
- ✓ Long-range APs
- ✓ Smart door locks and access control
- ✓ Smart home automation and connected appliances
- ✓ Smart agricultural sensors
- ✓ Retail or warehouse smart shelving

## The Most Versatile Wi-Fi HaLow Evaluation Platform

With its USB 2.0 interface and the compact size, the MM8108-EKH19 is ideal for early-stage rapid prototyping.



### Adding Wi-Fi HaLow to a router/gateway:

Demonstrate rapid roll out of Wi-Fi HaLow across a fleet of devices without redesigning hardware.

### Adding Wi-Fi HaLow to your devices:

Use the EKH19 during early-stage rapid prototyping by using spare USB port on your development board or platform.

## Wi-Fi HaLow® Modulation and Coding Scheme

MCS index	Modulation scheme	Coding rate	PHY rate (Mbps) per BW			
			1 MHz	2 MHz	4 MHz	8 MHz
10	BPSK	1/2 x 2	0.17	-	-	-
0	BPSK	1/2	0.33	0.72	1.5	3.25
1	QPSK	1/2	0.67	1.44	3.0	6.50
2	QPSK	3/4	1.0	2.17	4.5	9.75
3	16-QAM	1/2	1.33	2.89	6.0	13.0
4	16-QAM	3/4	2.0	4.33	9.0	19.5
5	64-QAM	2/3	2.67	5.78	12.0	26.0
6	64-QAM	3/4	3.0	6.5	13.5	29.3
7	64-QAM	5/6	3.34	7.22	15.0	32.5
8	256-QAM	3/4	4.0	8.67	18.0	39.0
9	256-QAM	5/6	4.4	-	20.0	43.3

For more product information: [www.morsemicro.com](http://www.morsemicro.com)

Copyright © 2025 Morse Micro. All Rights Reserved. Morse Micro® is the trademark of Morse Micro. Any other trademarks or trade names mentioned are the property of their respective owners.



Morse Micro  
reaching farther™