

1 Product Overview

1.1 Introduction

Morse Micro provides a complete Wi-Fi HaLow connectivity solution. The MM6108-MF16858 is a fully integrated Wi-Fi HaLow® module featuring the MM6108 Wi-Fi HaLow SoC. It offers long-range, low-power consumption, and superior RF performance.

The MM6108-MF16858 module is designed in compliance with the IEEE 802.11ah standard. It supports data rates up to 32.5 Mbps and has programmable operation between 902 MHz and 928 MHz.

This module includes an ultra-long-reach PA, a high linearity LNA, a SAW filter, a T/R switch, and a 32 MHz crystal oscillator. It has been designed for a simplified Wi-Fi HaLow connection to an external host for applications where customers want to replace their prior RF technology with a Wi-Fi HaLow connection while using the latest WPA3 security protocol.

1.2 Features

Ultra-long-range, low-power Wi-Fi HaLow module for IoT applications:

- Channel bandwidth options of 1/2/4/8 MHz
- Single-stream max. data rate of 32.5 Mbps @ 8 MHz or 15 Mbps @ 4 MHz channel
- Radio supporting Sub-1 GHz frequency bands
 - Frequency range: 902-928 MHz
 - Max output power: 29 dBm
- 802.11ah OFDM PHY supporting WFA HaLow certification
 - BPSK & QPSK, 16-QAM & 64-QAM Modulation
 - Automatic frequency and gain control
 - Packet detect and channel equalization
 - Forward Error Correction (FEC) coding and decoding
 - Support for Modulation and Coding Scheme (MCS) rates MCS 0-7 and MCS 10
 - Support for 1 MHz and 2 MHz duplicate modes
 - Support for Traveling Pilots and Short Guard Intervals
- 802.11ah MAC supporting WFA HaLow certification
 - Support for STA and AP roles
 - Listen-Before-Talk (LBT) access with energy detect
 - 802.11 power save
 - 802.11 fragmentation and defragmentation
 - Packet aggregation
 - Power-Saving Target Wake Time (TWT) support for long battery life
 - Restricted Access Window (RAW)
 - Automatic and manual MCS rate selection
- Support for various interface options
 - SDIO 2.0 compliant host/slave interface
 - 2 x UARTs
- Power Management Unit (PMU) for various modes of operation
 - Power-down (interrupt driven wake)
 - Hibernate mode (internal / external wake)
 - Active receive / transmit mode
 - Integrated DC-DC converter supporting a voltage supply from 3.0V to 3.6V
- Wide spectrum of security features
 - AES encryption engine
 - Hardware support for SHA1 and SHA2 hash functions (SHA-256, SHA-384, SHA-512)
 - WPA3 including Protected Management Frames (PMF)
 - Opportunistic Wireless Encryption (OWE)