OPERATIONAL DESCRIPTION

1.1. EUT description

ALPWISE Wireless Solutions

ALPW-BLEM103
Bluetooth® SMART HCI module

Description

The ALPW-BLEM103 module is a complete ready-to-use single mode *Bluetooth*® Smart HCI specification compliant.

The ALPW-BLEM103 module enables to develop a full *Bluetooth*® Smart solution together with an existing host microcontroller which supports the *Bluetooth*® protocol stack.

Alpwise provides the relevant *Bluetooth*® protocol stack which fits with user application needs.

Alpwise solutions benefit from best-in-class product from leading wireless controller manufacturer.

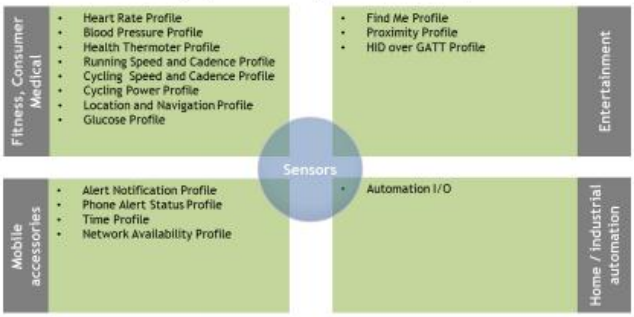
Main Features

- Ready-to-use *Bluetooth*® Smart module
- Very small form factor
- Complete Power Down 1 µA
- Autonomy for 1 year on a coin cell battery
- EM9301 2,4 GHz *Bluetooth*® Smart controller
- Optional UFL connector for external antenna
- Easy connection via SPI or UART to any Host MCU, running core stack, profiles and applications

Bluetooth SMART

User Applications

The ALPW-BLEM103 facilitates the integration of cost-effective and low power consumption wireless technologies for the following application segments, thanks to a continously updated and qualified list of profiles:



Contact

Alpwise Headquarter

4 avenue Doyen Louis Weil
38000 Grenoble, FRANCE
T: +33 4 76 22 22 50
F: +33 4 76 22 15 64
alpwisesales@alpwise.com
www.alpwise.com

Alpwise Worldwide

You can buy our products through our International distributors. You will find the distributors details on our website on the contact page.

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Technical Data

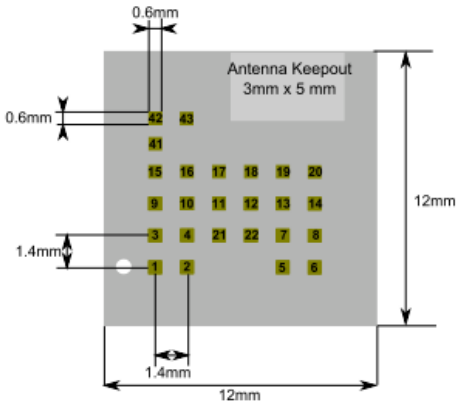
Bluetooth® controller	EM9301
Module Dimensions (mm)	12 x 12 x 1.6 without shielding 12 x 12 x 2.4 with shielding
Frequency Range	2.4 GHz
TX Output Power	-18 dBm to +3 dBm
RX Sensitivity	-80 dBm
Operating Temperature	-40°C to +85°C
Power Supply	2.0 to 3.3 V

Connectivity	SPI/UART
Certifications	CE, IC, FCC, MIC, BT SIG
Options	UFL antenna, shielding

Module Pin-Out

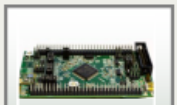
PAD1	GND	PAD12	NC
PAD2	NC	PAD13	NC
PAD3	NC	PAD14	GND
PAD4	NC	PAD15	RESET
PAD5	UART RTS/IRQ	PAD16	UART RX/ SPI_MOSI
PAD6	UART CTS/SPI SCK	PAD17	SEL
PAD7	WU/CSN	PAD18	NC
PAD8	VDD 3V	PAD19	NC
PAD9	GND	PAD20	NC
PAD10	NC	PAD21	GND
PAD11	UART TX/ SPI_MISO	PAD22	GND

Dimensions



More detailed technical data will be available in the coming weeks, please contact Alpwise for more information.

You may also be interested in these products



ALPW-BLEDVKCM3
Development Kit

ALPW-BLESDK
Protocol Stack and tools

ALPW-BLESDKiOS
Stack for iOS

Along with the ALPW-BLEM103 module, Alpwise provides all the tools and facilities to easily implement your *Bluetooth*® application: development kit, SDK, SDK for iOS

Please contact us to know more about our complete offer.

1.2. Related Submittal(s) / Grant(s)

All host equipment used in the test configuration are FCC granted, when relevant.

1.3. Tested System Details

The system was configured for testing in a typical fashion (as a customer would normally use it). All configurations of EUT is considered, worst cases are presented in this test report.

BLEM103 is a Bluetooth Low Energy module.
To perform tests, manufacturer provided test board to configure module: Easykit
All I/O of module are out of test board by 10cm length of cable.

Power supply:
- Provided by test PCB, 3.0VDC nominal.
During all the tests, EUT is supplied by test board powered by 5VDC USB.

Input/output and cable:
- 1 x MicroUSB, shielded, length: 1.5m
- X x I/O, used on test PCB with 10cm length

Auxiliaries used for testing:
- DVKCM3, BLEM3-B-131101
- Laptop of laboratory for software (HP Pavillon, sn: 5CD244603W) and its power supply (Carrefour CPS01, sn: 1305523282)

Equipment information: (Declared by provider)

- Frequency band:	[2400.0 – 2483.5] MHz		
- Standard:	☐Wifi	☒Bluetooth	☐Zigbee
- Spectrum Modulation:	☒FHSS		☒DSSS
	Bluetooth low energy is tested like a DSSS.		
- Modulation type:	☒GFSK		
Packet type:	37, length of the payload data		
- Number of channel:	39, 3 for advertisement		
- Channel separation:	☐5MHz	☒2MHz	☐1MHz
- Channel bandwidth:	☐10MHz	☐20MHz	☒1MHz
- Channel tested:	Full test on 2404MHz, 2442MHz and 2480MHz		
- Sub-band REC7003:	Annex 3(a)		
- RF mode:	☒TX/RX	☒RX	
- Antenna type:	Ceramic 0.9dBi		
- Antenna connector:	☐Permanent external	☐Permanent internal	
	☒None	☒Temporary (only for tests)	

Firmware tested:	Application:	DataExchange 1.0 based on ALPW-BLESDE 1.0.0 for Cortex M3
	RF test:	HCIMode-M3 1.0
Revision:	RevA	

1.4. Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4-2003 FCC Part 15 Subpart B and C.
Radiated testing was performed at an antenna to EUT distance of 10 meters. During testing, all equipment's and cables were moved relative to each other in order to identify the worst case set-up.

1.5. Test facility

Tests have been performed from February 11th to 14th, 2014.

This test facility has been fully described in a report and accepted by FCC as compliant with the radiated and AC line conducted test site criteria in ANSI C63.4-2003 in a letter dated March 25th, 2008 (registration number 94821). This test facility has also been accredited by COFRAC (French accreditation authority for European Union test lab accreditation organization) according to NF EN ISO/IEC 17025, accreditation number 1-1633 as compliant with test site criteria and competence in 47 CFR Part 15/ANSI C63.4 and EN55022/CISPR22 norms for 89/336/EEC European EMC Directive application. All pertinent data for this test facility remains unchanged.