

User manual

1. Functional Description

CM01BHS11MDWCE is the module for BLE at embedded and Digital appliance applications. It is based on PHY+ PHY6212 solution which comprises single chip with integrated BLE 5.0.

2. Features

- BLE - compliant
- Supports Adaptive Frequency Hopping
- On chip support for serial peripheral interface (master and slave modes)
- Compact dimension: BLE Module(PHY+): 24.5mm x 11mm / H : 3.0 mm
- Host Interfaces: UART Interface
- RoHS compliant
- Supply voltage range
VCC 3.3V(2.97V ~ 3.63V)
- Power Consumption: 200mW

3. Electrical Characteristics

-Absolute Maximum Ratings

Symbol	Parameter	Min.	Max.	Unit
VDD	DC Supply Voltage	2.97	3.63	V

-Power Consumption

Parameter	Conditions	Min.	Nom.	Max.	Unit
Tx mode (Max current)					
TX Power	5V, 0dBm(+/-5dB) Tx Power			40	mA

-Recommended Operating Conditions

Symbol	Parameter	Conditions	Min.	Nom.	Max.	Unit
VDD	BLE Module(PHY+) Voltage	-	+2.97	+3.3	+3.63	V
Top	Operating temperature(Ambient)	-	-20	-	+85	°C

-Environmental Characteristics

Symbol	Parameter	Conditions	Min.	Max.	Unit
ESD	Electro-static discharge voltage	IC Level	-2K	+2K	V
		Module Level	-4K	+4K	V
		Connector Level	-8K	+8K	V
Top	Operating temperature	-	-20	+85	°C
Tstg	Storage temperature	-	-30	+85	°C

4. RF Specifications

All measurements are made under nominal supply voltage, room temperature, and conducted conditions at each antenna port except antenna.

Parameter	Conditions	Min	Typ.	Max	Unit
Frequency Range	2402+K*2MHz (K=0~39)	2402	-	2480	MHz
Receiver					
Sensitivity (PER)	PER ≤30.8%	-	-	-70	dBm
Transmitter					
Output Power		-	0	2.0	dBm
ICFT		-150	-	150	kHz
Frequency Drift		-50	-	50	
Drift rate		-	-	20	kHz/50us
Frequency Deviation	Avg (payload sequence 11110000)	225	-	275	kHz
	Max (payload sequence 10101010)	185	-	-	kHz

1) FCC Compliance Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

2) FCC Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

3) FCC Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

4) FCC Radiation Exposure Statement :

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

1) Industry Canada Statement

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radio électrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

2) Industry Canada Radiation Exposure Statement (Déclaration d'exposition aux radiations) :

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body.

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

IMPORTANT NOTE:

This module is intended for OEM integrator. The OEM integrator is still responsible for the FCC compliance requirement of the end product, which integrates this module.

20cm minimum distance has to be able to be maintained between the antenna and the users for the host this module is integrated into. Under such configuration, the FCC

radiation exposure limits set forth for an population/uncontrolled environment can be satisfied.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

The OEM integrator is responsible for the compliance to all the rules that apply to the product in to which this certified RF module is integrated.

This module must be integrated into a device where the user cannot access the antenna connector and should not be able to remove or install the module.

USERS MANUAL OF THE END PRODUCT:

In the users manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the FCC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied. The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment. If the size of the end product is smaller than 8x10cm, then additional FCC part 15.19 statement is required to be available in the users manual: This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

LABEL OF THE END PRODUCT:

The final end product must be labeled in a visible area with the following " Contains TX FCC ID: A3LCBAP210A ". If the size of the end product is larger than 8x10cm, then the following FCC part 15.19 statement has to also be available on the label: This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

IC Statement

This Class B digital apparatus complies with Canadian ICES-003.

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.

The device could automatically discontinue transmission in case of absence of information to transmit, or operational failure. Note that this is not intended to prohibit transmission of control or signaling information or the use of repetitive codes where required by the technology.

IMPORTANT NOTE:

This module is intended for OEM integrator. The OEM integrator is still responsible for the IC compliance requirement of the end product, which integrates this module.

20cm minimum distance has to be able to be maintained between the antenna and the users for the host this module is integrated into. Under such configuration, the IC RSS-102 radiation exposure limits set forth for an population/uncontrolled environment can be satisfied.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

USERS MANUAL OF THE END PRODUCT:

In the users manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the IC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied. The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment. IC statement is required to be available in the users manual: This Class B digital apparatus complies with Canadian ICES-003. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

LABEL OF THE END PRODUCT:

The final end product must be labeled in a visible area with the following " Contains TX IC : 649E-CBAR210P ".