
Product specifications

(Bluetooth module)

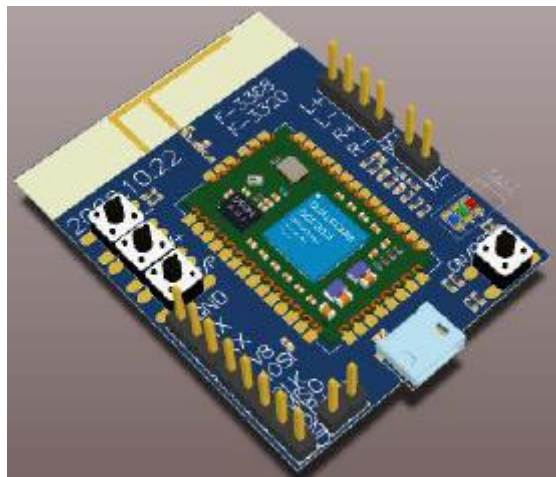
Product Model: F-3368

Document number: XZX_RD_SP_F 3368V1.0

Hardware version: V1.0

File version: V 1.0

Entry into force :2020-10-26



(Picture for reference only)

Documents containing (C-CHIP) confidential documents may not be passed on without permission

File include (C-CHIP) classified documents, with out permission, can not be excluded

Change record Change History:

Change record					
Version	Revised content	Page	Revision date	Revision	Auditor
V1.0	New construction	12	2020-10-26	Li Jian	

Attention

the products, services or features you purchase shall be subject to the commercial contract and terms of xiamen sixin micro-tech co., ltd. all or part of the products, services or features described in this document may not be within the scope of your purchase or use. Unless otherwise agreed in the contract, Xiamen Sixin Micro Technology Co., Ltd. does not make any express or implied statement or guarantee of the contents of this document.

Due to product version upgrades or other reasons, the contents of this document will be updated on a regular basis. Unless otherwise agreed, this document serves only as guidance for use and all statements, information and recommendations in this document do not constitute any express or implied warranty.

1. Summary

F-3368 (BK3268E-40P) Bluetooth module is an intelligent wireless audio data transmission product developed by our company, Is a low-cost, high-cost stereo wireless transmission scheme, The module adopts BEKEN BK3268E chip QFN40 package design. F-3368 Bluetooth module is driver-free, The customer only needs to connect the module to the application product, You can quickly wirelessly transmit music, Enjoy wireless music, And support simple data transmission function. Support intelligent voice prompt and number function, Integrated TF card playback, Integrated mobile U playback, Support internal LINE-IN, Support for internal MIC calls.

2. Basic characteristics

Bluetooth Profiles

- * Bluetooth V5.0 specification support
- mA average current for A2DP 9
- 0.8 uA deep sleep current
- * Bluetooth 4.2 classic and low energy
- * A2DP v1.3, AVRCP v1.6, HFP v1.7, HID v1.1, AVCTP v1.4, AVDTP v1.3, and SPP v1.2
- * True wireless stereo and two active link
- * Two wires UART download interface
- 16 bits stereo ADC and DAC
- * Stereo line in and dual microphone
- * Five bands digital hardware equalizer
- * SPI, UART, I2C, SDIO and USB
- * I2S master and slave interface with MCLK output
- * Interface for external PA and LNA
- * Up to 220mA battery charge controller

3. Applications

- Bluetooth Audio
- Bluetooth headset
- No phone calls
- Bluetooth Wireless Audio
- Bluetooth Digital Transmission Application
- Support for mobile interconnection peripherals
- Bluetooth Smartphone

4. Performance parameters

4.1. Module parameters

Module parameters	
Wireless standards	Bluetooth Bluetooth V5.0
Antenna	PCB Antenna
Frequency range	2.402 GHz-2.480GHz
Transmission power	CLASS2, 4dbm
Receiving sensitivity	-81 dBm<0.1 BER per cent
Extended interface	PIO, SPI, AIO, UART, USB, I2S, I2C, PWM, MIC, LIN, SPK (L/R)
Support systems:	Support for Android (android), Apple (IOS) and windows systems
Audio decoding output:	SBC decoding (decode)
Module dimensions	15 mm *24mm*2mm (LxWxH) SMD
Certification information	-
Support Bluetooth Protocol	A2DP v1.2, AVRCP v1.5, HFP v1.7, AVCTP v1.4, AVDTP v1.2

4.2. Recommended working conditions

Scope of operation	Min	Typical	Max	Unit
Operating temperature range	-40	-	+85	° C
VCC4BAT	3.0	3.7	4.2	V
5V (USB VBUS)	4.75	5.0	5.75	V
Digital I/O	1.7	1.8	3.6	V
VCC3XTAL	2.8	-	3.8	V
VCCAUD	1.6	-	2.4	V
VCCBT	1.6	-	2.4	V
PRX RX input power	-	10	-	dB

4.3. Battery Input Pin Specification

BAT	Min	Typical	Max	Unit
Operating voltage	2.8	3.7	4.2	V
Software power-off threshold	-	3	-	V
Under voltage lockout rising threshold	2.47	2.6	2.73	V
Under voltage lockout hysteresis	50	-	120	mV
USB dead/weak battery rising threshold	3.14	3.3	3.46	V
USB dead/weak battery hysteresis	50	-	120	mV

4.4. Charger Input Pin Specification

VCHG	Min	Typical	Max	Unit
Operating voltage (full device specification)	4.75	5.0	5.75	V
Operating voltage (reduced charger specification)	4.0	5.0	5.75	V
VCHG_PRESENT rising threshold	3.4	3.6	4.0	V
VCHG_PRESENT hysteresis	70	–	150	mV
Full operating range	VCHG_PRESENT	–	5.75	V
On chip pull-down (disabled when VCHG_PRESENT =1)	10	20	30	k Ω

4.5. System LDO

Parameter Description	Min	Typical	Max	Unit
VCC4BAT Battery input voltage	2.8	–	4.2	V
VCC3SYS LDO output voltage	2.8	3.2	3.3	V
Load Current	–	–	200	mA

4.6. USB LDO

Parameter Description	Min	Typical	Max	Unit
VCC5USB USB Input voltage	2.8	–	4.2	V
VCC3SYS LDO output voltage	–	3.3	–	V
Load Current	–	–	200	mA

4.7. BATTERY CHARGE

Parameter Description	Min	Typical	Max	Unit
VCC5USB Charger input voltage	4.75	5.0	5.75	V
I_trickle Charge Current at trickle mode as percent of fast charge mode	–	10	–	%
I_fast Charge current at fast charge mode	40	–	220	mA
V_end (Need Calibrated) VBAT voltage when Charge End	–	4.2	–	V

4.8. Analog LDO/BUCK

Parameter Description	Min	Typical	Max	Unit
Analog LDO				
VDDANA Analog LDO output voltage	1.6	1.8	2.4	V

Load Current	–	–	150	mA
Analog BUCK				
Analog BUCK output voltage	1.6	1.8	2.4	V
Load Current	–	–	150	mA
Switching frequency BUCK modulationfrequency	0.5	1	1.6	MHZ

4.9. Digital LDO/BUCK

Parameter Description	Min	Typical	Max	Unit
Digital LDO				
VDDDIG Digital LDO output voltage	1.0	1.2	1.35	V
Load Current	–	–	40	mA
Digital BUCK				
Digital BUCK output voltage	1.0	1.2	1.35	V
Load Current	–	–	40	mA
Switching frequency BUCK modulationfrequency	0.5	1	1.6	MHZ

4.10. Crystal and Reference Clock

Parameter Description	Min	Typical	Max	Unit
Frequency Crystal and Reference frequency	–	26	–	MHZ
Tolerance Crystal and Reference frequency tolerance	–10	–	+10	ppm
I_fast Charge current at fast charge mode	40	–	220	mA
XI Pin Input voltage range for reference clock input	0.3	–	3.6	V

4.11. Typical Power Consumption

State Description	Min	Typical	Max	Unit
Shut Down Software sets device into shut down mode, wake up from GPIO15	–	0.4	0.8	uA
Standby Software sets device into standby mode, wake up from GPIO and RTC timer	–	4	6	uA
Idle-Sniff Idle state at Sniff mode	–	300	–	uA
Active (A2DP) 2DH5	–	9	–	mA
Active (HFP) HV1	–	9.5	–	mA

4.12. Audio Characteristics

Paramete	Conditions	Min	Typ	Max	Unit
----------	------------	-----	-----	-----	------

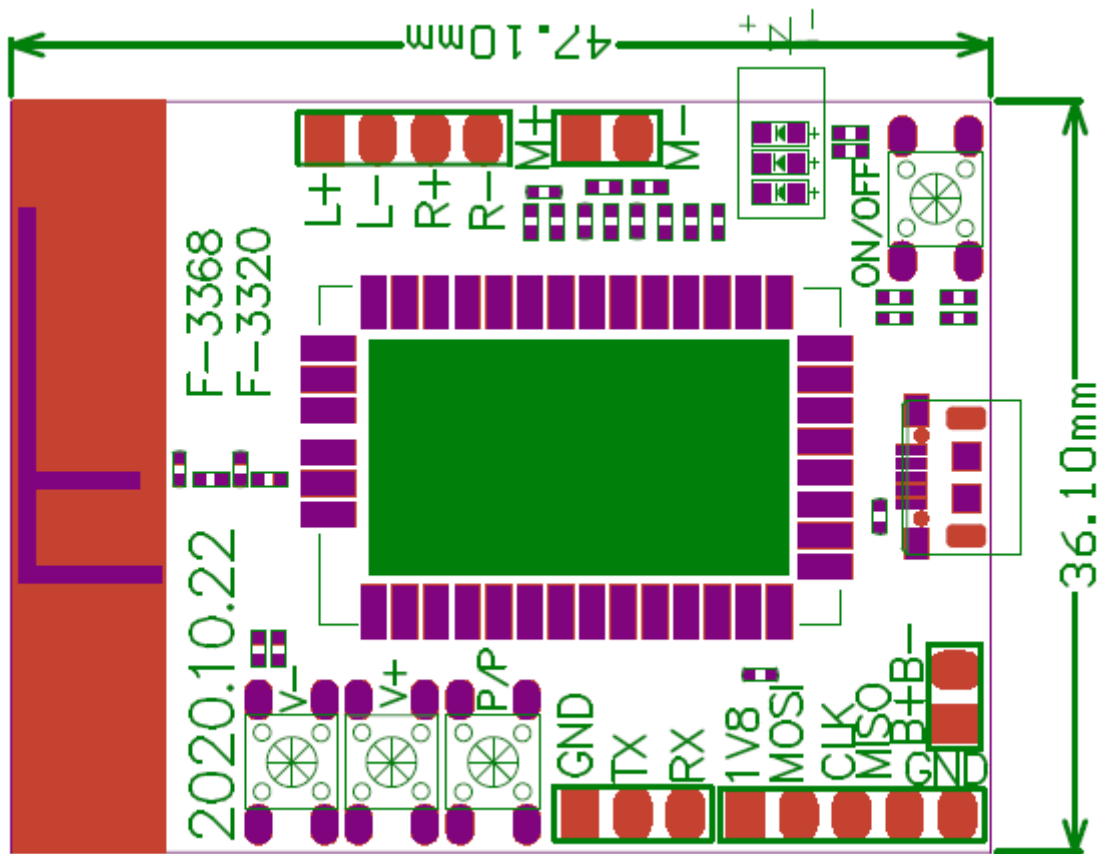
Input Sample Width	–	–	–	16	Bits
Input Sample Rate, Fsample	–	8	–	48	kHz
Load	–	16	32	600	Ω
DAC Diff.Output	dBFS, 32 Ω , and 16 Ω load 0	0.9	–	1	V
SNR	kHz fin =1 48 kHz Fsample B/W =20 Hz B/W =20 kHz A-Weighted -1 dBFS 32 Ω load	–	98	–	dBA
THD+N	kHz fin =1 48 kHz Fsample B/W =20 Hz B/W =20 kHz dBFS 32 Ω load 0	–	-75	–	dB
DAC Diff.Output THD	dBFS, 32 Ω , and 16 Ω load 0	–	–	0.1	%
Stereo separation (rosstalk)	–	80	–	–	dB

5. RF parameters

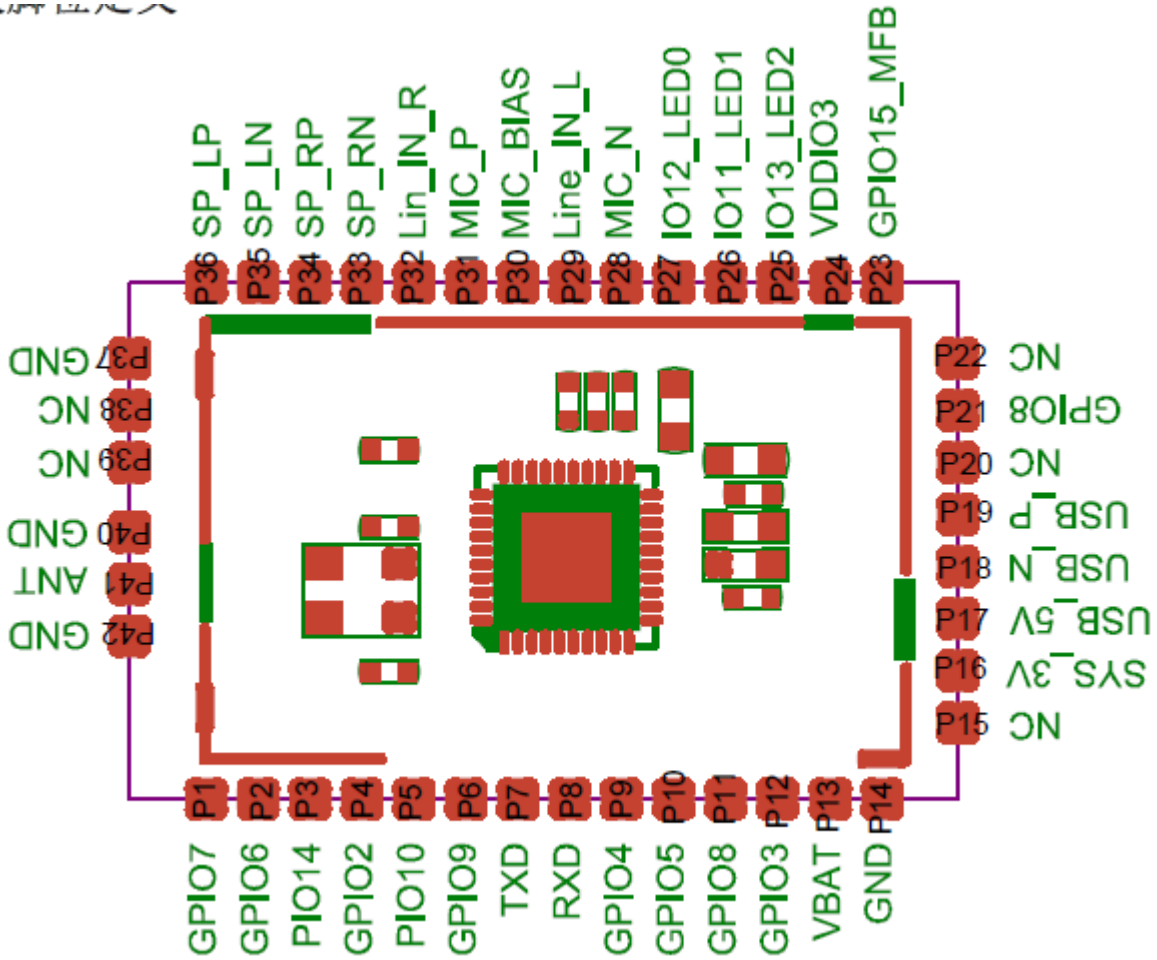
Parameters	Test conditions	Minimum	Typical	Maximum	Unit
FOP	Working frequency	2402		2480	MHz
FXTAL	Crystal frequency		26		MHz
Launch					
RF TRP	Output power		8		dBm
PBW	Modulation bandwidth			1	MHz
Dev	Frequency offset		± 10		kHz
RF Power Control Range		30			dB
Receiving					
RXSENS-1Mbps	BER=0.001		-88		dBm
RXSENS-2Mbps	BER=0.0001		-91		dBm
RXSENS-3Mbps	BER=0.001		-83		dBm
All of the above test results test results are °C room temperature 3.3 V power supply mode					

6. Module definition

6.1. Module Size Chart



6.2. Module foot definition



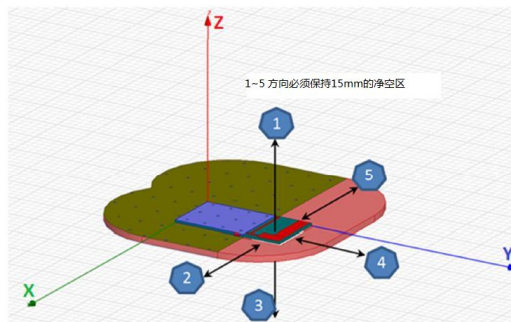
6.3. Module Pin Function Description

Pin	Symb	I/O	Description
P1	USB_DN	Digital I/O	GPIO7,PWM1/USBN
P2	USB_DP	Digital I/O	GPIO6,PWM0/USBP
P3	GPIO14	Digital I/O	GPI O14,JTAG_TDO/PWM5/ADC7/PCM_DOU T
P4	GPIO2	Digital I/O	GPIO2,SPI_CSN/ADC1/IrDA/Capture Time
P5	GPIO10	Digital I/O	GPIO10,SD_DATA0/RX_EN/SPI2_MISO
P6	GPIO9	Digital I/O	GPIO9,SD_CMD/TX_EN/SPI2_MOSI
P7	TXD	Digital I/O	GPIO0,UART_TXD/I2C_SCL,Download port
P8	RXD	Digital I/O	GPIO1,UART_RXD/I2C_SDA,Download port
P9	GPIO4	Digital I/O	GPIO4,SPI_MOSI//I2C_SCL
P10	GPIO5	Digital I/O	GPIO5,SPI_MISO//I2C_SDA
P11	GPIO8	Digital I/O	GPIO8,SD_CLK//SPI2_SCK
P12	GPIO3	Digital I/O	GPIO3,SPI_SCK/ADC2/CLKOUT
P13	VBAT	Power supply	Power supply (3.3V-4.2V)
P14	GND	GND	GND
P15	NC	NC	NC
P16	VCC3YS	Power	SYS 3V OUTPUT
P17	VUSB	Power	VUSB (4.7-5.2V)

P18	USB_DN/NC	Digital I/O	GPIO7,PWM1/USBN./NC
P19	USB_DP/NC	Digital I/O	GPIO6,PWM0/USBP./NC
P20	NC	NC	NC
P21	GPIO8	Digital I/O	GPIO8,SD_CLK//SPI2_SCK
P22	NC	NC	NC
P23	GPIO15	Digital I/O	GPIO15,Soft shut down and wake up (active high)
P24	VCC3IO	VCCSD	SD POWER
P25	GPIO13_SDO	Digital I/O	GPIO13,JTAG_TDI/PWM4/ADC6/PCM_DIN/SD_DATA0/SPI2_MISO
P26	GPIO11_CLK	Digital I/O	GPIO11,JTAG_TCK/PWM2/ADC4/PCM_SYNC/SD_CLK//SPI2_SCK
P27	GPIO12_CMD	Digital I/O	GPIO12,JTAG_TMS/PWM3/PCM_CLK/SD_CMD/SPI2_MOSI
P28	MICINN	MIC-NC	Microphone input negative./NC
P29	LIN_L	AUX_INPUT	LINL
P30	V2MICBIAS	VMIC	Microphone reference voltage
P31	MICINP	MIC+	Microphone input positive
P32	LIN_R	AUX_INPUT	LINR
P33	AUDIORN	Audio output	Audio right channel negative
P34	AUDIORP	Audio output	Audio right channel positive
P35	AUDIOLP	Audio output	Audio left channel positive
P36	AUDIOLN	Audio output	Audio left channel negative
P37	GND	GND	Ground connect battery negative
P38	NC	NC	NC
P39	NC	NC	NC
P40	GND	GND	RF_GND
P41	RFPI	RF	RF_OUT/NC
P42	GND	GND	RF_GND

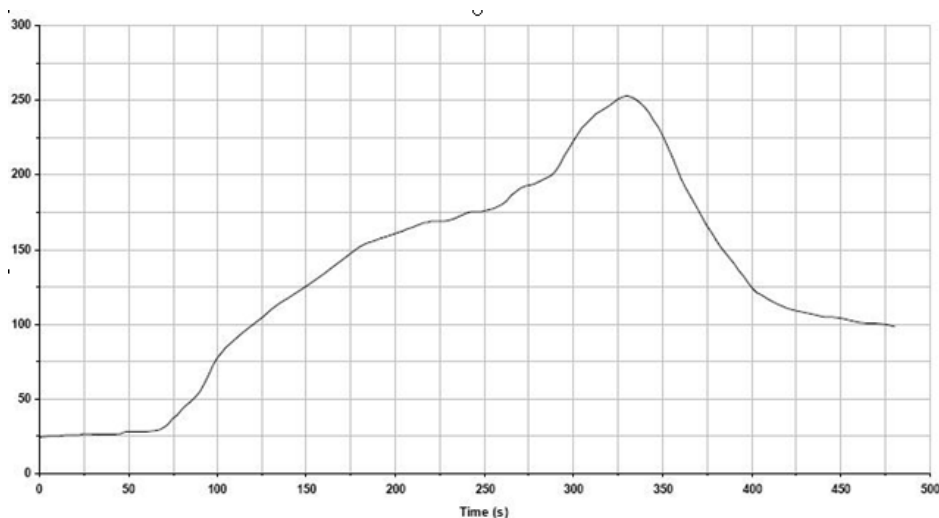
7. Notes

- A. During the use of the module, please pay attention to avoid the influence of interference sources such as power amplifier, boost circuit and DC/DC circuit on the module, and avoid the module power supply circuit forming series circuit with high power circuit unit to reduce the interference
- B. If there are batteries, metal objects, LCD screens, horns, etc. next to the module antenna, the distance from the antenna is required to be at least 15 mm (as shown)



-
-
- C. PCB board: because metal will weaken the function of the antenna, when giving the module board, it is strictly forbidden to lay the ground and line under the module antenna.
- D. Because the metal case is shielding the RF signal, it is recommended not to install it in the metal case
- E. With regard to the use environment, wireless signals are easily affected by the surrounding environment, such as trees, metals and other obstacles will have a certain absorption of wireless signals, so in practical applications, the distance of data transmission is affected to a certain extent

8. Recommended reflow temperature



Key features of the profile:

- Initial Ramp=1-2.5°C/ sec to 175°C equilibrium
- Equilibrium time=60 to 80seconds
- Ramp to Maximum temperature (250°C)=3°C/ sec Max
- Time above liquidus temperature(217°C seconds 45-90
- Device absolute maximum reflow temperature: 250°C

(OEM) Integrator has to assure compliance of the entire end-product incl. the integrated RF Module. For 15 B (§15.107 and if applicable §15.109) compliance, the host manufacturer is required to show compliance with 15 while the module is installed and operating.

Furthermore the module should be transmitting and the evaluation should confirm that the module's intentional emissions (15C) are compliant (fundamental / out-of-band). Finally the integrator has to apply the appropriate equipment authorization (e.g. Verification) for the new host device per definition in §15.101.

Integrator is reminded to assure that these installation instructions will not be made available to the end-user of the final host device.

The final host device, into which this RF Module is integrated" has to be labeled with an auxiliary label stating the FCC ID of the RF Module, such as "Contains FCC ID: **OMCBTAUD3**

"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."

"Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment."

the Integrator will be responsible to satisfy SAR/ RF Exposure requirements, when the module integrated into the host device.

RF Exposure Warning Statements:

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

The final host device, into which this RF Module is integrated" has to be labeled with an auxiliary label stating the IC of the RF Module, such as" Contains transmitter module IC: **3673A-BTAUD3**
Le périphérique hôte final, dans lequel ce module RF est intégré "doit être étiqueté avec une étiquette auxiliaire indiquant le CI du module RF, tel que" Contient le module émetteur IC: **3673A-BTAUD3**

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique 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;
- (2) L' appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d' en compromettre le fonctionnement.

Radio Frequency Exposure Statement for IC

The device has been evaluated to meet general RF exposure requirements. The device can be used in mobile exposure conditions. The min separation distance is 20cm.

Déclaration d'exposition aux radiofréquences pour IC

L'appareil a été évalué pour répondre aux exigences générales en matière d'exposition aux RF. L'appareil peut être utilisé dans des conditions d'exposition mobiles. La distance de séparation minimale est de 20 cm.

Module statement

The single-modular transmitter is a self-contained, physically delineated, component for which compliance can be demonstrated independent of the host operating conditions, and which complies with all eight requirements of § 15.212(a)(1) as summarized below.

- 1) The radio elements have the radio frequency circuitry shielded.
- 2) The module has buffered modulation/data inputs to ensure that the device will comply with Part 15 requirements with any type of input signal.
- 3) The module contains power supply regulation on the module.
- 4) The module contains a permanently attached antenna.
- 5) The module demonstrates compliance in a stand-alone configuration.
- 6) The module is labeled with its permanently affixed FCC ID label.
- 7) The module complies with all specific rules applicable to the transmitter, including all the conditions provided in the integration instructions by the grantee.
- 8) The module complies with RF exposure requirements.

NOTE: 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 try to correct the interference by one or more 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 that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

Co-location Warning:

This equipment could not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with the FCC multi-transmitter product procedures.

Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01

2.2 List of applicable FCC rules

FCC Part 15.247

2.3 Specific operational use conditions

This transmitter/module and its antenna(s) must not be co-located or operating in conjunction with any transmitter. This information also extends to the host manufacturer's instruction manual.

2.4 Limited module procedures

Not applicable

2.5 Trace antenna designs

It is "not applicable" as trace antenna which is not used on the module.

2.6 RF exposure considerations

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This compliance to FCC radiation exposure limits for an uncontrolled environment, and minimum of 20cm separation between antenna and body.

The host product manufacturer would provide the above information to end users in their end-product manuals.

2.7 Antennas

PCB antenna; 0dBi; 2.402 GHz~2.480GHz

2.8 Label and compliance information

The end product must carry a physical label or shall use e-labeling followed KDB784748D01 and KDB 784748 stating "Contains Transmitter Module FCC ID: OMCBTAUD3".

2.9 Information on test modes and additional testing requirements

For more information on testing, please contact the manufacturer.

2.10 Additional testing, Part 15 Subpart B disclaimer

The modular transmitter is only FCC authorized for the specific rule parts (FCC Part 15.247) listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed when contains digital circuitry.