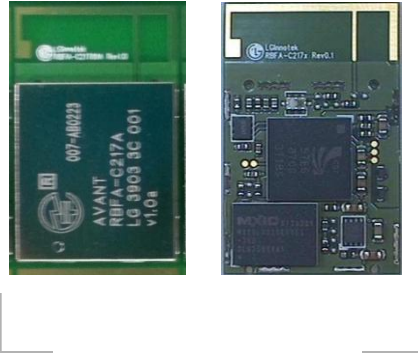• **Product Information**

Description

This product is applied to Class 2 Bluetooth Multimedia Module RBFA-C217/8/9A which includes the CSR BC5-MM chipset and the integrated pattern antenna.
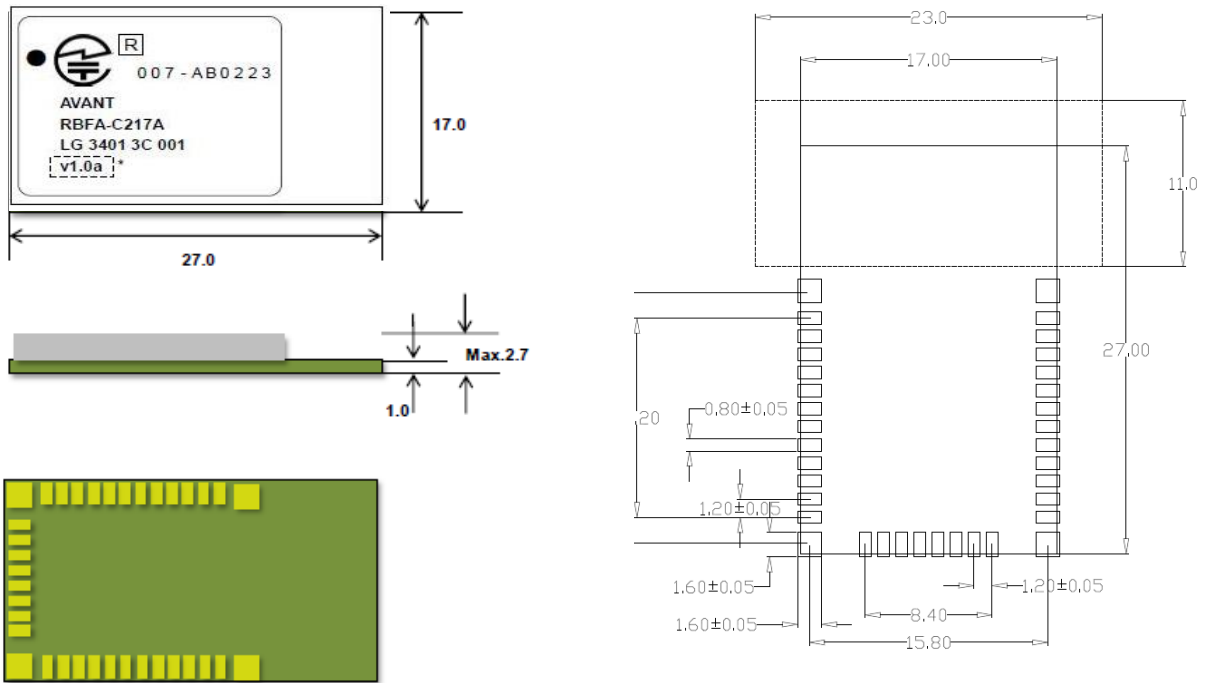
Features

- Sensitivity : Typ. -88dBm
- Output Power : Typ. +2dBm Class 2
- Temperature Range : -40℃ ~ +85℃
- Supply Voltage : VDD – 3.1V to 3.6V
- Interface : UART, USB
- Audio Interface : Analog In/Out, Digital In/Out(I2S)
- Bluetooth Specification v3.0 with EDR Compliant

Applications

- Handsfree
- Bluetooth automotive wireless gateways

Dimensions

PART NO.		NAME		MATERIAL	SPEC				FINISH		SIZE

| APPD | | | | | ⊕ ◁ | | | UNIT | SCALE | | |

Changes	`13.10.10 Initialize				DRAW	DSGD	CHKD	APPD	TITLE		
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* Power Supply Specification

The power of DC3.1V ~ 3.6V is should be supplied to the Bluetooth module power(VDD). The module supplies the power to the each block depending on the function. Module input power in excess of the rated input power may cause damage to the internal components. And the influx of Surge and ESD also may lead to the damage of the modem in the vehicle. For the prevention of this, the module is necessary to design block the infloux of Sugre and EDS.

Pin NO.	Signal Name	Function (Module case)	MIN	TYP	MAX
13.14	VDD	In	3.1V	3.3V	3.6V

* Memory Interface

① Memory Management Unit

The MMU provides a number of dynamically allocated ring buffers that hold the data that is in transit between the host, the air or the Kalimba DSP. The dynamic allocation of memory ensures efficient use of the available RAM and is performed by a hardware MMU to minimise the overheads on the processor during data/voice transfers.

② System RAM

48Kbyte of on-chip RAM supports the RISC MCU and is shared between the ring buffers used to hold voice/data for each active connection and the general-purpose memory required by the Bluetooth stack.
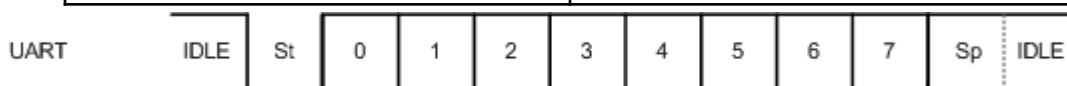
③ Kalimba DSP RAM

Additional on-chip RAM is provided to support the Kalimba DSP:

■ 16K x 24-bit for data memory 1 (DM1)
■ 12K x 24-bit for data memory 2 (DM2)
■ 6K x 32-bit for program memory (PM)

* UART Interface

RBFA-C21XX UART interface provides a simple mechanism for communicating with other serial devices using the RS232 protocol. UART configuration parameters, such as baud rate and packet format, are set using LGIT firmware.

Parameter	Value
Baud rate	115,200 baud
Flow control	None
Parity	None
Number of stop bits	1
Bits per byte	8

UART		IDLE	St	0	1	2	3	4	5	6	7	Sp	IDLE

PART NO.	NAME	MATERIAL	SPEC			FINISH	SIZE

APPD					UNIT	SCALE	

Changes	`13.10.10 Initialize			DRAW	DSGD	CHKD	APPD	TITLE **User Manual(2/5)**
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NO.	1. 0.							DOCUMENT NO. **RBFA-C217/8/9A(1-2)**

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General Features

1) Bluetooth Module Features
- • Bluetooth Power Class 2
- • Embedded Fully Bluetooth v2.0/v2.1 + EDR System Compliant
- • Embedded Bluetooth Profile
- • Embedded AEC/NR Algorithm for Handsfree
- • Full-speed Bluetooth Operation with Full Piconet Support
- • Operation Voltage is 3.3V Single Power Rail
- • Excellent Compatibility with Cellular Telephones
- • Command and data Interface is UART and USB
- • 16-bit Internal Stereo CODEC
- • Support for 802.11 Co-existence
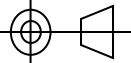- • RoHS Compliant

2) Functionality Key Features : 2.1+EDR
- • Secure simple pairing
- • Sniff subrating
- • Encryption pause resume
- • Packet boundary flags
- • Encryption
- • Extended inquiry response

3) Functionality Key Features : 2.0+EDR
- • AFH, including classifier
- • Faster connection: enhanced inquiry scan (immediate FHS response)
- • LMP improvements
- • Parameter ranges
- • AFH as master and automatic channel classification
- • Fast connect: interlaced inquiry and page scan plus RSSI during inquiry
- • eSCO, eV3 + CRC, eV4, eV5
- • SCO handle
- • Synchronization.
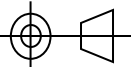
4) RBFA-C21xxFirmware Support Profile
- -. HFP1.6
- -. AVRCP1.4
- -. SPP1.1
- -. GAP
- -. OPP
- -. PBAP1.0
- -. GAVDP1.3
- -. HID
- -. MAP1.0
- -. PAN(USER)

PART NO.	NAME	MATERIAL	SPEC		FINISH	SIZE

					UNIT	SCALE		

NO.	Changes				DRAW	DSGD	CHKD	APPD	TITLE
APPD									
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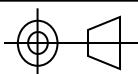
PIN Descriptions

No.	Pin Name	I/O	Pad Type	Description
1	UART_Tx	O	Bidirectional CMOS output, tristate, with weak internal pull-up	UART data output - Recommended external 4.7kΩ Pull-up resistor.
2	UART_Rx	I	CMOS input with weak internal pull-down	UART data input
3	UART_RTS	O	Bidirectional CMOS output, tristate, with weak internal pull-up	UART request to send active low
4	UART_CTS	I	CMOS input with weak internal pull-down	UART clear to send active low
5	GND	-	-	Ground
6	RESET#	I	CMOS input with weak internal pull-up	Reset if low. Input debounced so must be low for >5ms to cause a reset Recommended external 4.7kΩ Pull-up resistor & stability capacitor
7	GND	-	-	Ground
8	VDD_3V3	I	VDD	Positive supply for Module - Supply voltage : Typical 3.3V.
9	RESERVED	-	-	TBD
10	RESERVED	-	-	TBD
11	Internal MIC Bias	-	Analog	Internal microphone bias
12	GND	-	-	Ground
13	AGND	-	-	Analog Ground
14	MIC_A_P	I	Analog	Microphone input positive, left
15	MIC_A_N	I	Analog	Microphone input negative, left - Must be use external ESD protection
16	AGND	-	-	Analog Ground
17	SPK_B_N	O	Analog	Speaker output negative, right
18	SPK_B_P	O	Analog	Speaker output positive, right
19	SPK_A_N	O	Analog	Speaker output negative, left
20	SPK_A_P	O	Analog	Speaker output positive, left
21	GND	-	-	Ground
22	GND	-	-	Ground
23	GND	-	-	Ground

PART NO.	NAME	MATERIAL	SPEC	FINISH	SIZE

					UNIT	SCALE		
APPD								
Changes	`13.10.10 Initialize				DRAW B H Choi	DSGD	CHKD I P Park	APPD K S Kim	TITLE **User Manual(4/5)**
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PIN Descriptions

No.	Pin Name	I/O	Pad Type	Description
24	PCM_IN	I	CMOS input, with weak internal pull-down	Synchronous data input - The same pin as the I2S interface : SD_IN
25	PCM_OUT	O	CMOS output, with weak internal pull-down	Synchronous data output - The same pin as the I2S interface : SD_OUT
26	PCM_SYNC	I/O	Bidirectional with weak internal pull-down	Synchronous data Sync - The same pin as the I2S interface : WS
27	PCM_CLK	I/O	Bidirectional with weak internal pull-down	Synchronous data clock - The same pin as the I2S interface : SCK
28	EC/NR Logger	O	Bidirectional with programmable strength internal pull-up/down	Programmable input/output line - Using the AEC/NR data logger
29	SPI_MISO	O	CMOS output, tristate, with weak internal pull-down	SPI data output - Used to program and configure (PS Keys), and debug the BC5-MM
30	SPI_MOSI	I	CMOS input, with weak internal pull-down	SPI data input - Used to program and configure (PS Keys), and debug the BC5-MM
31	SPI_CSB	I/O	Input with weak internal pull-up	Chip select for SPI, active low - Used to program and configure (PS Keys), and debug the BC5-MM
32	SPI_CLK	I/O	Input with weak internal pull-down	SPI clock - Used to program and configure (PS Keys), and debug the BC5-MM
33	GND	-	-	Ground
34	GND	-	-	Ground
35	GND	-	-	Ground
36	GND	-	-	Ground

PART NO.	NAME	MATERIAL	SPEC	FINISH	SIZE

				UNIT	SCALE		
APPD							
Changes	`13.10.10 Initialize			DRAW B H Choi	DSGD	CHKD I P Park	APPD K S Kim	TITLE **User Manual(5/5)**
NO.	1. 0.							DOCUMENT NO. **RBFA-C217/8/9A(1-2)**

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RSS-GEN 7.1.3 User manual Notice for Licence-Exempt Radio Appartus.

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.

L'exploitation est autoris e 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 lectrique subi, m me si le brouillage est susceptible d'en compromettre le fonctionnement.

FCC Statement
FCC Part 15.19
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

FCC Part 15.21
Any changes or modifications (including the antennas) to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment.

Part 15.105 (B)
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.

Modifications not expressly approved by the manufacturer could void your authority to operate the equipment under FCC rules.

RF Exposure Statement (2.1091)
FCC RF Radiation Exposure Statement: FCC RF Radiation Exposure Statement: This equipment complies with FCC RF Radiation exposure limits set forth for an uncontrolled environment. This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body.

RF du FCC d'exposition aux radiations: Cet équipement est conforme à l'exposition de la FCC rayonnements RF limites établies pour un environnement non contrôlé. L'antenne pour ce transmetteur ne doit pas être même endroit avec d'autres émetteurs sauf conformément à la FCC procédures de produits Multi-émetteur.
Cet équipement doit être installé et utilisé avec une distance minimale de 20cm entre le radiateur et votre corps.

* Information for OEM integrator
The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user manual of the end product.
The user manual which is provided by OEM integrators for end users must include the following information in a prominent location.
"To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter."
Label for end product must include "Contains FCC ID: YZP-RBFAC21XX, IC: 7414A-RBFAC21XX" or " A RF transmitter inside, FCC ID: YZP-RBFAC21XX, IC: 7414A-RBFAC21XX".

* Information pour les OEM intégrateur
 L'intégrateur OEM doit être conscient de ne pas fournir des informations à l'utilisateur final concernant la façon d'installer ou de retirer ce module RF dans le manuel utilisateur du produit final.
 Le manuel de l'utilisateur qui est fourni par les intégrateurs OEM pour les utilisateurs finaux doivent inclure les renseignements suivants dans un endroit bien en vue.
 «Pour se conformer aux exigences de conformité d'exposition RF de la FCC, l'antenne utilisée pour ce transmetteur doit être installé pour fournir une distance de séparation d'au moins 20 cm de toute personne et ne doit pas être co-localisés ou fonctionnant en conjonction avec une autre antenne ou transmetteur. "
 Étiquette pour le produit final doit inclure "Contient FCC ID: YZP-RBFAC21XX, IC: 7414A-RBFAC21XX" ou "A l'intérieur du transmetteur RF, FCC ID: YZP-RBFAC21XX, IC: 7414A-RBFAC21XX".