


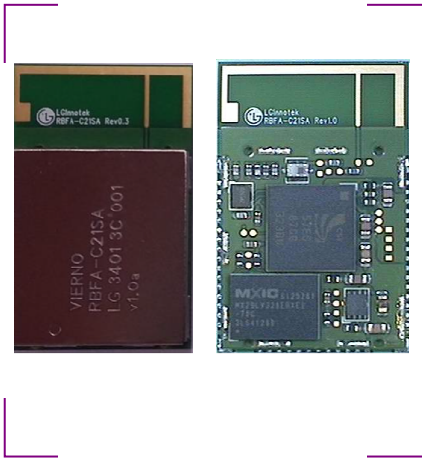
## OPERATION DESCRIPTION

Model: RBFA-C21SA

FCC ID: YZP-RBFAC21SA

<b>Company</b>	<b>LG INNOTEK CO.,LTD</b>
<b>Signature</b>	
<b>Date</b>	<b>2014.10.06</b>
<b>Name</b>	<b>J.S.SEO</b>
<b>Title</b>	<b>Engineer</b>

• **Product Information**



**Description**

This product is applied to Class 2 Bluetooth Multimedia Module RBFA-C21SA which includes the CSR BC5-MM chipset and the integrated pattern antenna.

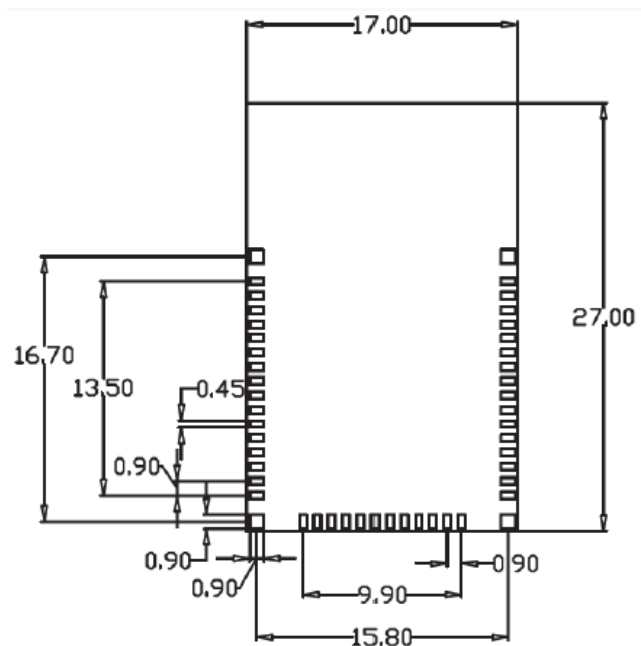
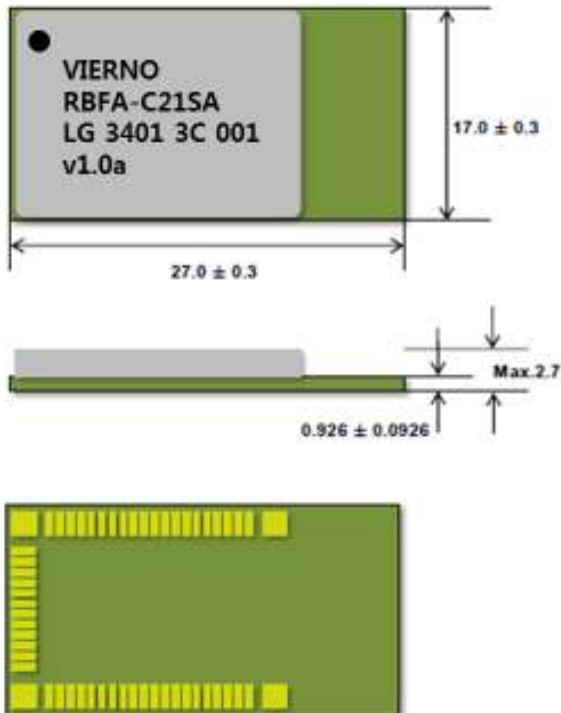
**Features**

- Sensitivity : Typ. -88dBm
- Output Power : Typ. +2dBm Class 2
- Temperature Range : -40°C ~ +85°C
- Supply Voltage : VDD – 3.1V to 3.6V
- Interface : UART, USB
- Bluetooth Specification v3.0 with EDR Compliant

**Applications**

- Automotive
- Bluetooth automotive wireless gateways

**Dimensions**



**\* 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 influx of Surge and ESD.

Pin No.	Signal Name	Function (Module case)	MIN	TYP	MAX
11	VDD_3V3	In	3.1V	3.3V	3.6V

**\* RESET**

The RESETB pin is an active low reset and is internally filtered using the internal low frequency clock oscillator. A reset in performed between 1.5 and 4.0ms following RESETB being active. LGIT recommends that RESETB be applied for a period greater than 5ms between the falling and the rising threshold voltage.

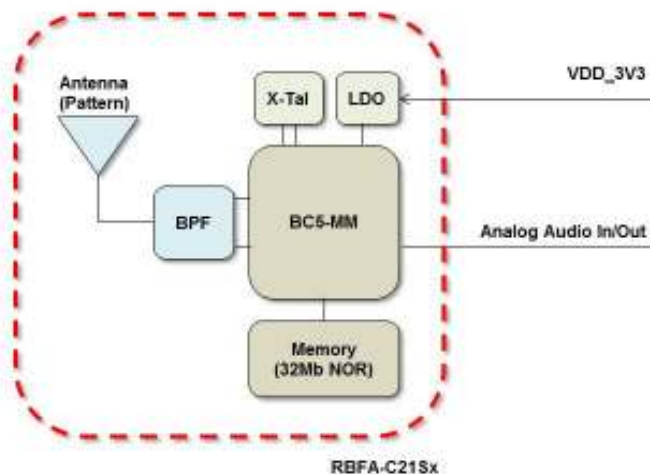


Power-on-reset	Min.	Typ.	Max.	Unit
Falling Threshold	1.13	1.25	1.30	V
Rising Threshold	1.20	1.30	1.35	V

## General Features

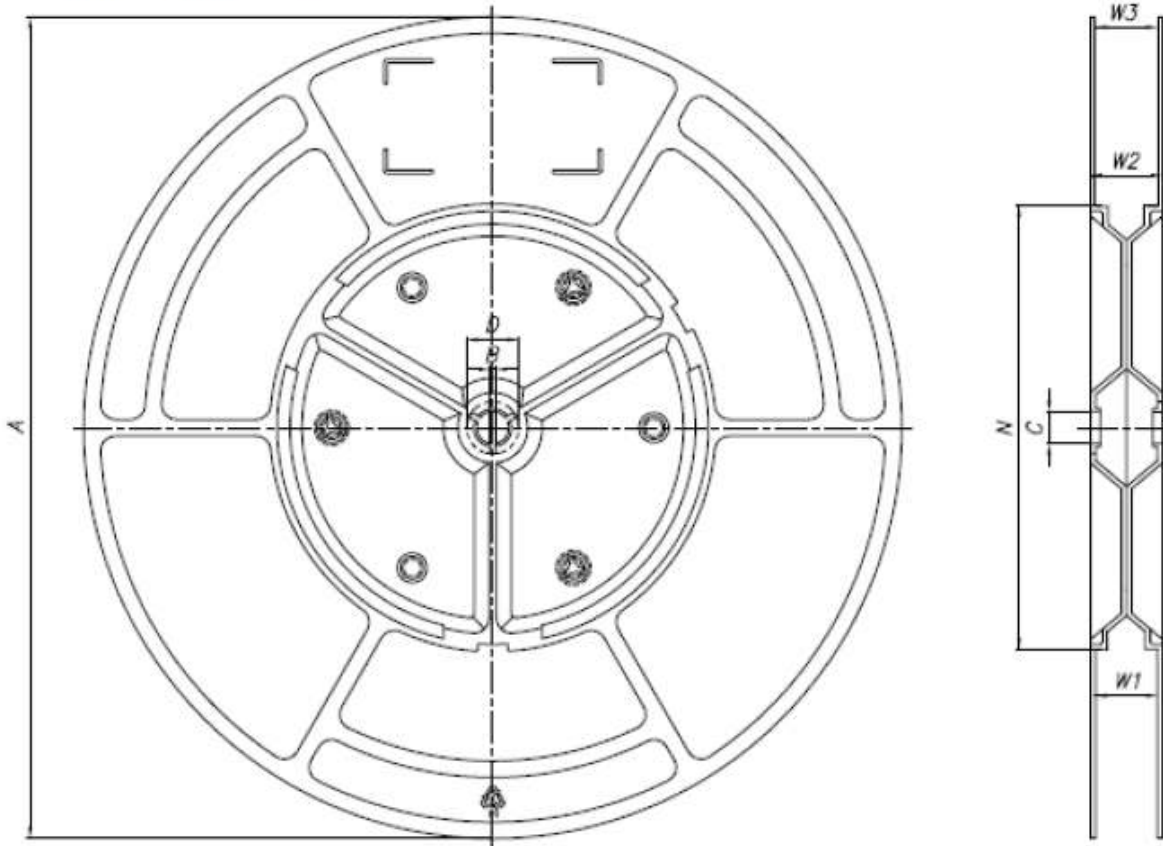
- 1) Bluetooth Module Features
  - Bluetooth Power Class 2
  - Embedded Fully Bluetooth v2.0/v2.1/v3.0 + EDR System Compliant
  - Embedded Bluetooth Profile
  - Embedded AEC/NR Algorithm for Handsfree
  - Full-speed Bluetooth Operation with Full Piconet Support
  - Operation Voltage is 3.3V Single Power 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-C21SX Firmware Support Profile
  - . A2DP1.2 with apt-X and AAC
  - . AVRCP1.5(Controller)

## Block Diagram



## Packing Information

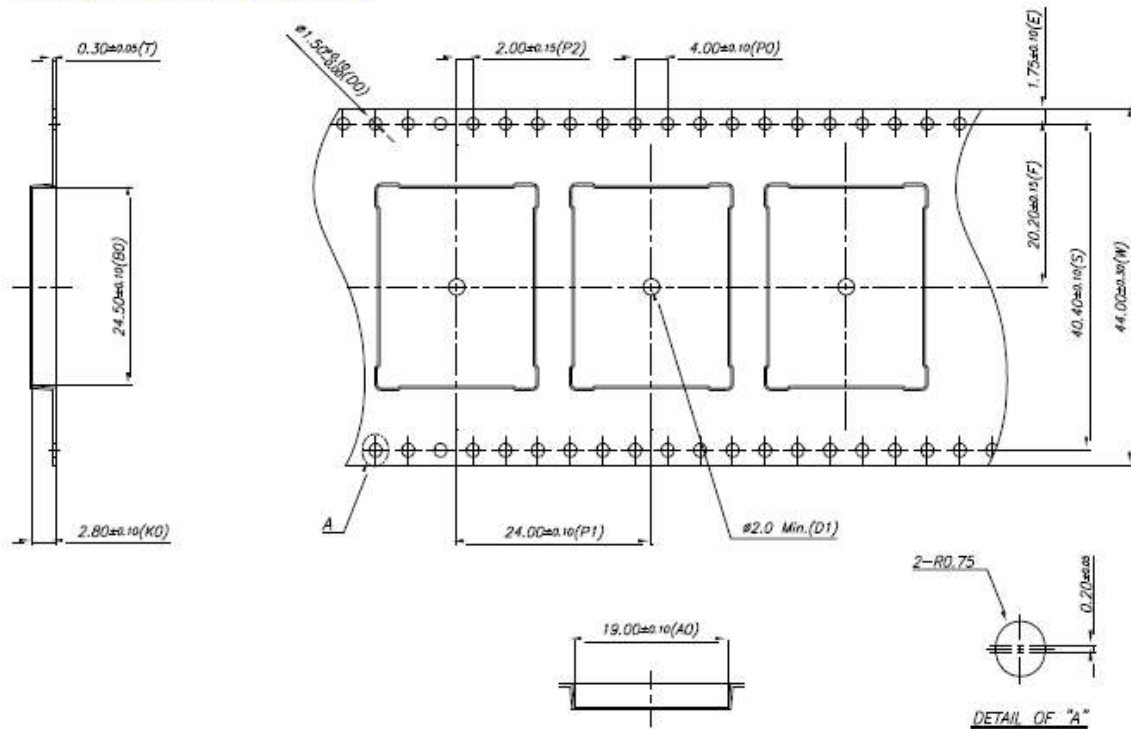
### 1) Carrier Dimension.



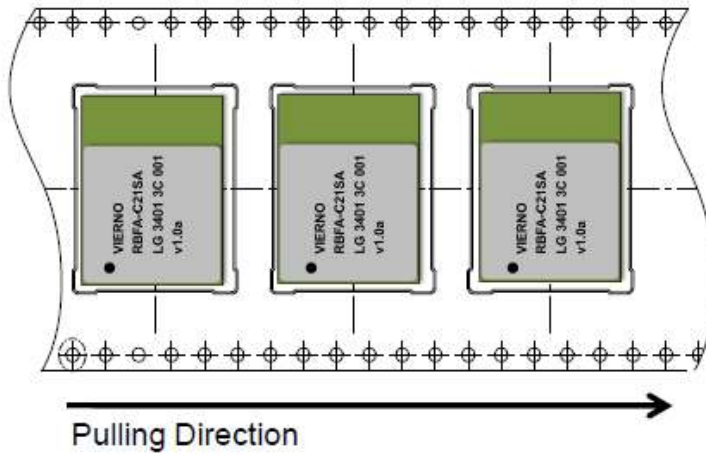
ITEM	Length	Tolerance
A	330	±2
B	Min. 1.5	
C	13	±0.5
D	Min. 20.2	
W1	44.4	+3/-0
W2	48.4	±2
W3	45.65	±2

<Unit : mm>

### 2) Taping Carrier Dimension.



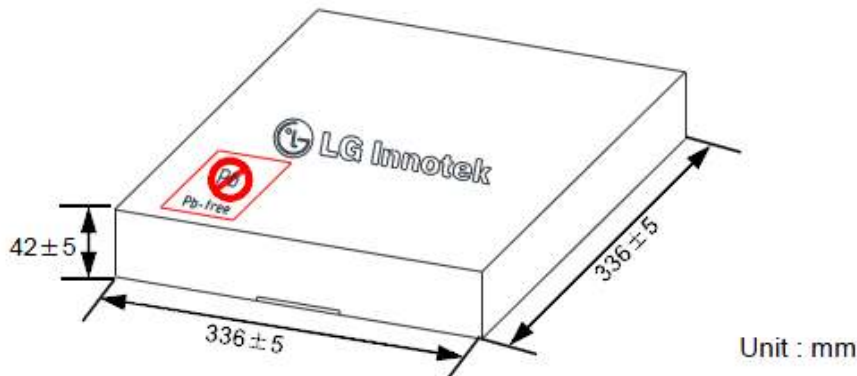
### 3) Parts Direction.



<Unit : mm>

#### 4) Inner Box

< Inner box : 1 Reel (Module Quantity – 500 EA)>



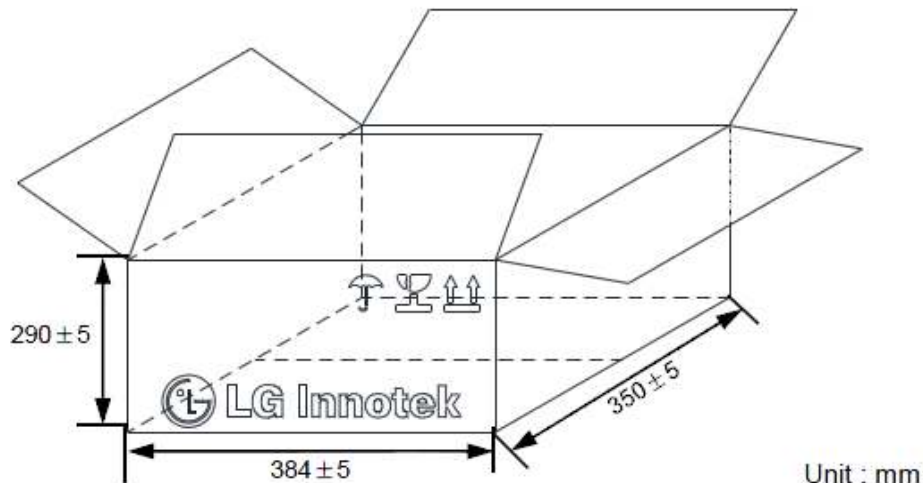
Note1) Recommendation : 168-hour floor time ( $\leq 30^\circ\text{C} / 60\% \text{RH}$ )

Note2) Recommendation: Bake at 125 for 7-hour before reflow soldering if any of the following occurs below.

- 1) More than 168-hour have passed since opening the bag.
- 2) The humidity indicator card is over 20% even if the bag is not opened.
- 3) 12-Month have passed since seal date.

#### 5) External Box

< External box : 4 Inner Box (Module Quantity – 2,000 EA)>



## PIN Descriptions

No.	Pin Name	I/O	Pad Type	Description
1	GND	I	-	Ground
2	UART_RTS	O	Bidirectional CMOS output, tri-state, with weak internal pull-up	UART request to send active low
3	UART_CTS	I	CMOS input with weak internal pull-down	UART clear to send active low
4	UART_Rx	I	CMOS input with weak internal pull-down	UART data input
5	UART_Tx	O	Bidirectional CMOS output, tri-state, with weak internal pull-up	UART data output - Recommended external 4.7kΩ Pull-up resistor.
6	PCM_IN	I	CMOS input, with weak internal pull-down	Synchronous data input - The same pin as the I2S interface : SD_IN
7	PCM_OUT	O	CMOS output, with weak internal pull-down	Synchronous data output - The same pin as the I2S interface : SD_OUT
8	PCM_SYNC	I/O	Bidirectional with weak internal pull-down	Synchronous data Sync - The same pin as the I2S interface : WS
9	PCM_CLK	I/O	Bidirectional with weak internal pull-down	Synchronous data clock - The same pin as the I2S interface : SCK
10	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
11	VDD_3V3	I	VDD	Positive supply for Module - Supply voltage : Typical 3.3V.
12	GND	I	-	Ground
13	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
14	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
15	SPI_CLK	I/O	Input with weak internal pull-down	SPI clock - Used to program and configure (PS Keys), and debug the BC5-MM
16	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
17	LED[1]	O	-	LED
18	LED[0]	O	-	LED
19	GND	I	-	Ground
20	AGND	-	-	Analog Ground
21	MIC_A_P	I	Analog	Microphone input positive, left
22	MIC_A_N	I	Analog	Microphone input negative, left - Must be use external ESD protection



No.	Pin Name	I/O	Pad Type	Description
23	Reserved			
24	AGND	-	-	Analog Ground
25	SPK_B_N	O	Analog	Speaker output negative, right
26	SPK_B_P	O	Analog	Speaker output positive, right
27	SPK_A_N	O	Analog	Speaker output negative, left
28	SPK_A_P	O	Analog	Speaker output positive, left
29	GND	I	-	Ground
30	GND	I	-	Ground
31	AIO[0]	I/O	-	TBD
32	PIO[0]	I/O	-	TBD
33	PIO[1]	I/O	-	TBD
34	PIO[2]	I/O	-	TBD
35	PIO[3]	I/O	-	TBD
36	USB_DN	I/O	-	USB data minus
37	USB_DP	I/O	-	USB data plus with selectable internal 1.5kΩ Pull-up resistor
38	GND	I	-	Ground
39	PIO[10]	I/O	-	TBD
40	PIO[11]	I/O	-	TBD
41	PIO[9]	I/O	-	TBD
42	PIO[15]	I/O	-	TBD
43	PIO[12]	I/O	-	TBD
44	PIO[13]	I/O	-	TBD
45	GND	I	-	Ground
46	GND	I	-	Ground
47	GND	I	-	Ground
48	GND	I	-	Ground

## FCC Information

This device complies with part 15 of the FCC Results. Operation is subject to the following two conditions :

- (1) This device may not cause harmful interface, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for CLASS B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment 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 correct the interference by one or more of the following measures:

- 1.1. Reorient or relocate the receiving antenna.
- 1.2. Increase the separation between the equipment and receiver.
- 1.3. Connect the equipment into an outlet on a circuit different from that to which receiver is connected.
- 1.4. Consult the dealer or experienced radio/TV technician for help.

## WARNING

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

## Information for OEM Integrator

This device is intended only for OEM integrators under the following conditions:

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna.

### End product labelling

The label for end product must include "Contains FCC ID: YZP-RBFAC21SA".

"CAUTION : Exposure to Radio Frequency Radiation.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment must be installed and operated with minimum distance of 20cm between the radiator and your body. This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users."