

# User Manual

**PRODUCT NAME :** Wireless audio Module

**MODEL NAME :** WL1SB21

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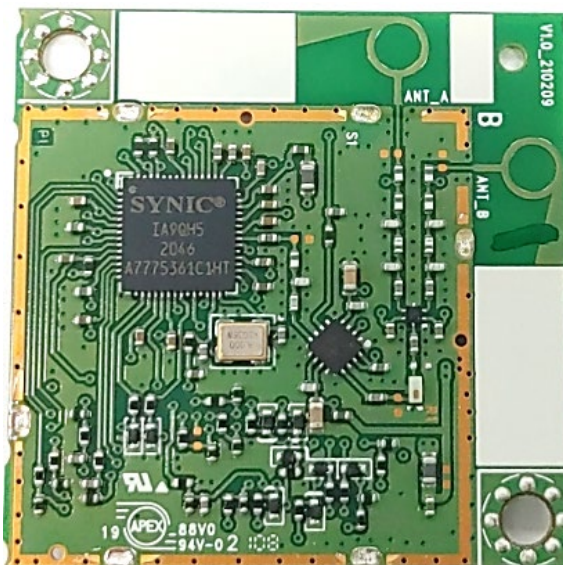
## 1. Features

ETWADYEC02 is the small size and low power module for Wireless Audio.

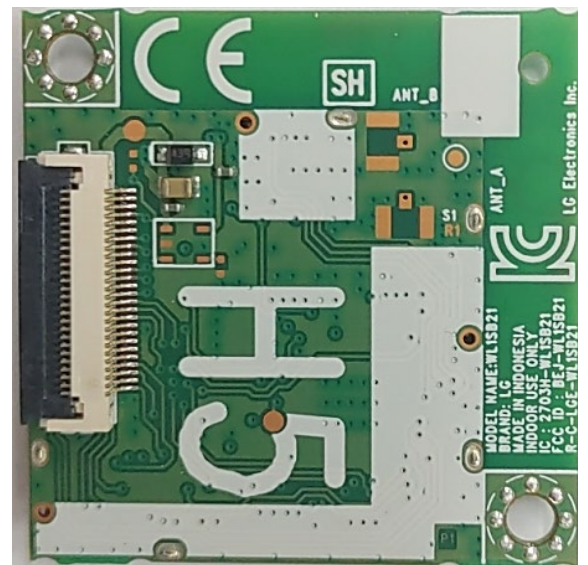
ETWADYEC02 is based on Syncomm IA9QH.

- 5.2/5.8GHz GFSK Modulation
- Size : 35mm x 35mm x 5.03 mm
- Internal PCB Printed Antenna
- I2S digital audio interface
- I2C control with external device
- Low audio delay time < 20ms
- Application : Wireless Speaker, Woofer, TV Theater

## 2. Module Photo

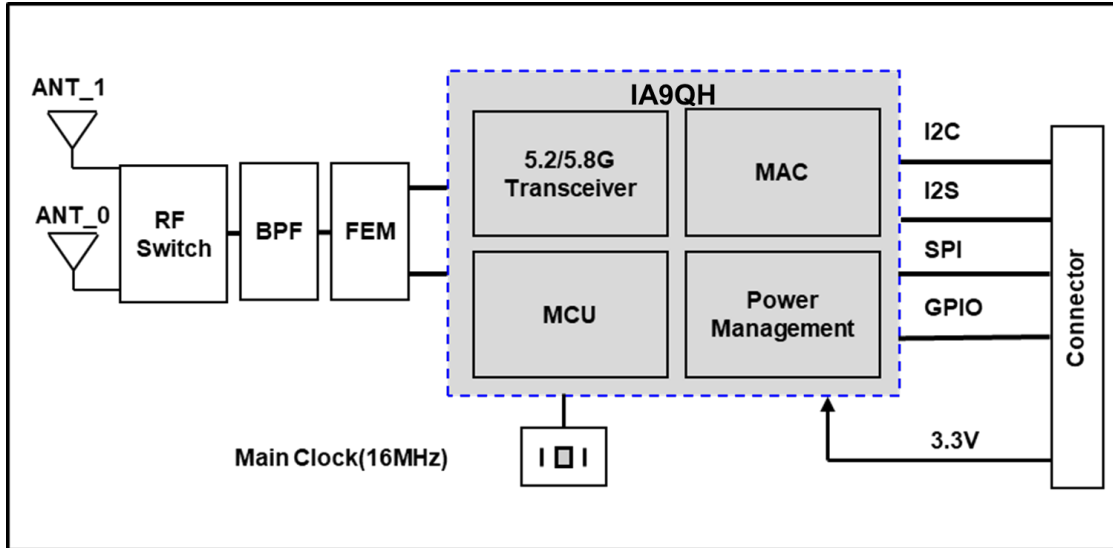


<Top view>



<Bottom view>

### 3. Block Diagram



## 4. Storage Conditions

Parameter	Min	Max	Unit
Storage Temperature	-10	+80	°C
Storage Humidity (@ 40°C)	-	90	%

**Caution** : The specifications above the Table define levels at which permanent damage to the device can occur. Function operation is not guaranteed under these conditions. Operating at absolute maximum conditions for extend periods can adversely affect the long-term reliability of the device.

- Other conditions

- 1) Do not use or store modules in the corrosive atmosphere, especially where chloride gas, sulfide gas, acid, alkali, salt or the like are contained.

Also, avoid exposure to moisture.

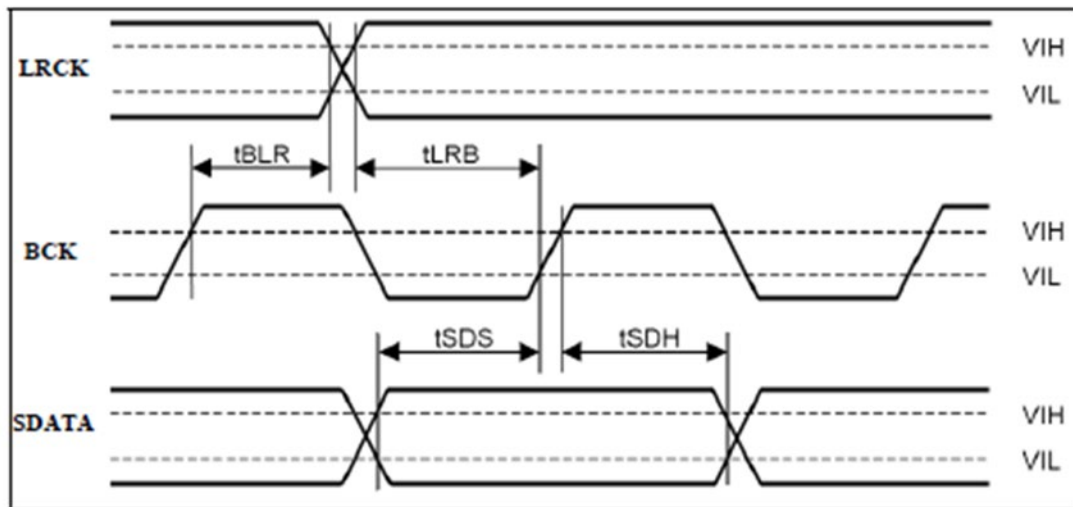
- 2) Store the modules where the temperature and relative humidity do not exceed 5 to 40°C and 20 to 60%.

## 5. Operating Conditions

Parameter	Min	Typ	Max	Unit
Ambient Temperature	0	-	+60	°C
Operating Humidity (40°C)	-	-	85	%
Supply Voltage	3.15	3.3	3.45	Vdc

## 6. Interface Specification

### 1) I2S Timing

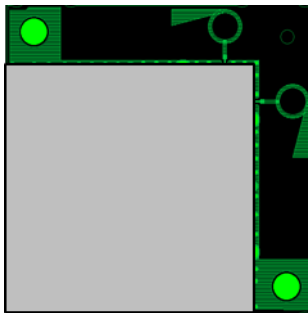


Symbol	Parameter	Min	Typ	Max	Unit
$t_{BLR}$	BCK rising to LRCK edge	60			ns
$t_{LRB}$	LRCK edge to BCK rise	60			ns
$t_{SDS}$	SDATA setup time	60			ns
$t_{SDH}$	SDATA hold time	60			ns

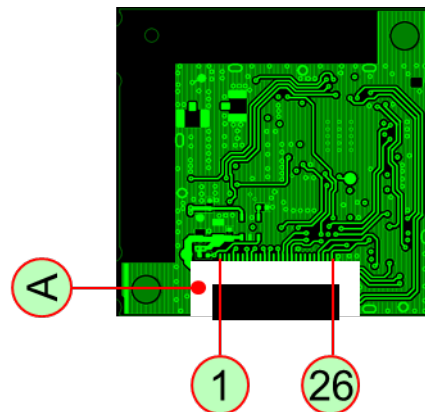
## 7. Pin Description

Pin No.	Pin Name	I/O	Pin Description	Pin No.	Pin Name	I/O	Pin Description
1	VCCIO	PWR	VCC supply	14	SPI_CLK	I/O	Clock pin of SPI interface
2	GND	GND	Ground	15	SPI_CS	I/O	Chip select pin of SPI interface
3	GND	GND	Ground	16	SPI_WP	I/O	Write protect pin of SPI interface, low active
4	BLUE_LED	I/O	GPIO	17	RESET	I	Reset pin, low active
5	RED_LED	I/O	GPIO	18	P_SENSE	I/O	GPIO
6	GND	GND	Ground	19	P_CTL	I/O	GPIO
7	I2S_DATA_B	I/O	Data pin of I2S signal	20	PWM_RST	I/O	GPIO
8	I2S_DATA_A	I/O	Data pin of I2S signal	21	AMP_PDN	I/O	GPIO
9	GND	GND	Ground	22	AMP_SD	I/O	GPIO
10	I2C_CLK	I/O	Clock pin I2C control signal	23	PARING_SW	I/O	GPIO
11	I2C_DATA	I/O	Data pin I2C control signal	24	I2S_BCK	I/O	BCK pin of I2S signal
12	SPI_DI	I/O	Data input pin of SPI interface	25	GNS	GND	Ground
13	SPI_DO	I/O	Data out pin of SPI interface	26	I2S_LRCK	I/O	LRCK pin of I2S

< TOP View >



< Bottom View >



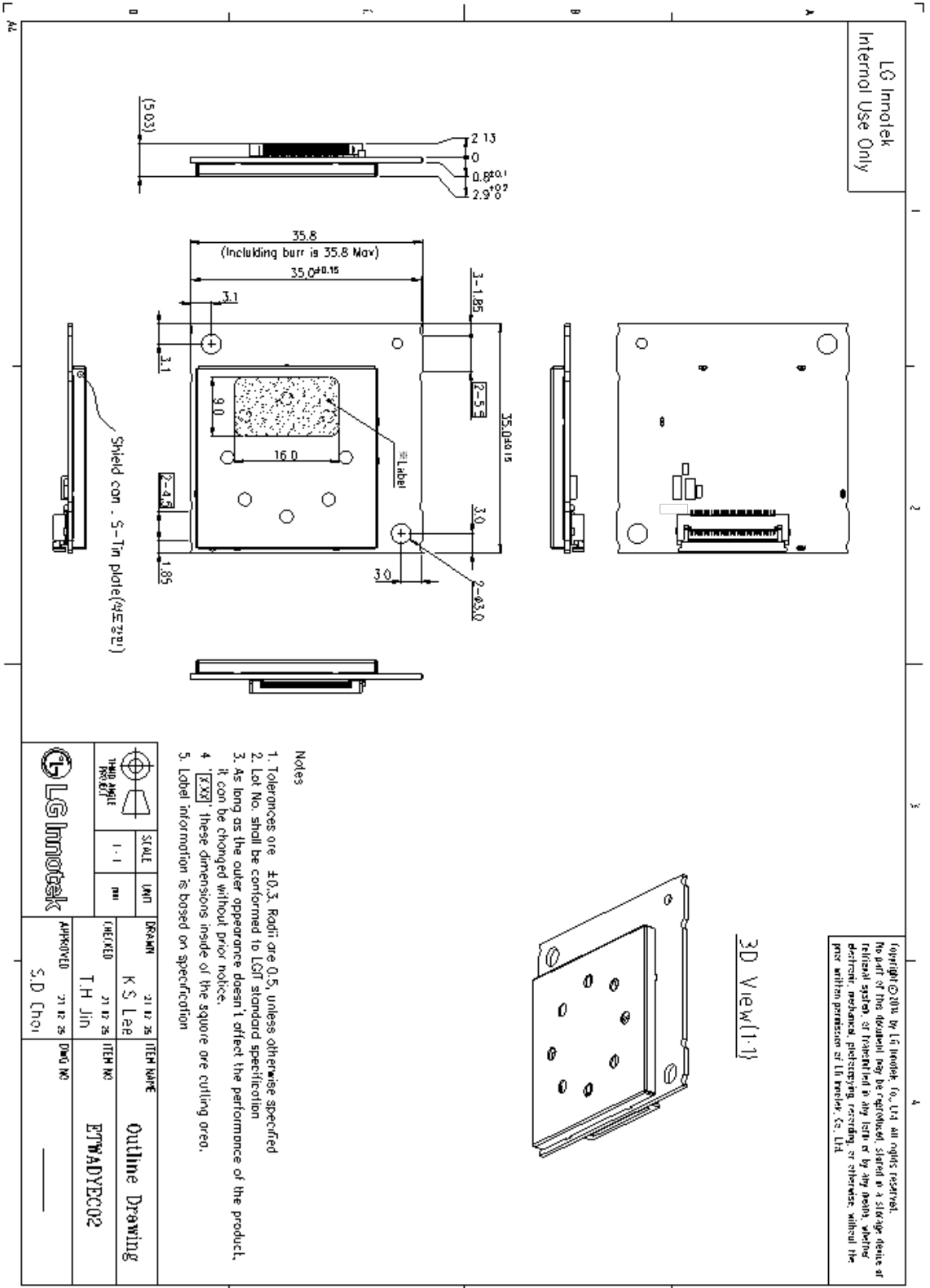
**Note.**

- 1) Recommend a Module install sequence for prevent operation failure  
- Supply 3.3V power

(A)

- 2) Connector: 26Pin SMD Connector

## 8. Outline Drawing



**Notes**

1. Tolerances are ±0.3. Radii are 0.5, unless otherwise specified
2. Lot No. shall be conformed to LGIT standard specification
3. As long as the outer appearance doesn't affect the performance of the product, it can be changed without prior notice.
4. "[XX]" these dimensions inside of the square are cutting area.
5. Label information is based on specification

	SCALE	UNIT		DRAWN	DATE	ITEM NAME <b>Outline Drawing</b>
	1:1	mm		CHECKED	DATE	
				APPROVED S.D. Choi	21.12.25 21.12.25	ETWADYEC02

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## 9. Packing Information

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DIMENSIONAL TOLERANCE	CHANGES	REV. NO.	DATE (YY MM DD)	SIGNATURE	CHANGE CONTENTS
~ up to 6	±0.3				
over 6 up to 30	±0.5				
over 30 up to 120	±0.5				
UNLESS OTHERWISE SPECIFIED					

**WIFI Module**  
Tray(5PKQ00818A)

- 1 Tray Packing Q'ty : 70 EA
- Size : W X D X H : 503 \* 355 \* (t)
- 1 Tray Packing Weight : 0.52±0.05g (1 Module Weight : 5.24±1g)

1 Inner Box SILICA GEL-5EA

Cap Corrugated Paper

Empty tray on top

13Trays (zigzag stack)

Inner Box

- 1 Inner Box Packing Q'ty : 840EA
- Size : A X B X C : 512 \* 378 \* 121.5
- 1 Inner Box Packing Weight : 6.8±0.5kg

< Attaching specification of label. >

FIFO Label

BARCODE Label

NOT FULL Label

PP Band

Attached inner box label and FIFO label

NOT FULL label attached in inner and outer box if in inner box have loose q'ty.

VP Band

VCI Film

Refer the attaching specification of label

Shipping Box

- Carton Box Packing Q'ty : 1,680EA
- Size : W X D X H : 514 \* 394 \* 248
- 1 Carton Box Packing Weight : 14.3±0.8kg

Attached shipping information label

Cap Box

Wrap plastic

Pallet

( CARTON BOX : 20EA )

- Box Material : Corrugated Paper
- Total Packing Q'TY : 33,600EA
- Total Packing Weight : 301±10kg

RELATED P/N	SCALE	UNIT	DESIGN	TITLE
<p>THIRD ANGLE PROJECT</p>	-	mm	21.02.15 Lee Kap Soul.	EXP. Packing Specification
			21.02.15 Jin Tae Hoon.	PART NO
			21.02.15 Choi Seok Dong.	MODEL ETWADYEC02
				DWG NO

LGIT\_STD A4\_VER
2
3
LG Innotek Co., Ltd.

All parts which supply to LG Innotek must not contain prohibited substances including RoHS Hazardous substances and for more details refer to LG Innotek's "Manual for management of hazardous substances in Product"

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**<Regulatory notice>****FCC Statement****FCC Part 15.19 Statements:**

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 15.105 statement (Class B)**

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.

**FCC Part 15.21 statement**

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

**Responsible Party Information**

Supplier's Declaration of Conformity 47 CFR § 2.1077 Compliance Information

**Responsible Party –U.S. Contact Information**

LG Electronics USA

1000 Sylvan Avenue Englewood Cliffs

New Jersey, United States, 07632

Telephone number or internet contact information

### Regulatory notice to host manufacturer according to KDB 996369 D03 OEM Manual v01>

#### List of applicable FCC rules

This module has been granted modular approval as below listed FCC rule parts.

-FCC Rule parts 15C(15.407)

#### Summarize the specific operational use conditions

-The OEM integrator should use equivalent antennas which is the same type and equal or less gain than an antenna listed below.

#### RF exposure considerations

The module has been certified for integration into products only by OEM integrators under the following condition:

-The antenna(s) must be installed such that a minimum separation distance of at least 20 cm is maintained between the radiator (antenna) and all persons at all times.

-The transmitter module must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures.

#### -Mobile use

As long as the three conditions above are met, further transmitter testing will not be required.

OEM integrators should provide the minimum separation distance to end users in their end-product manuals.

#### Antennas list

This module is certified with the following integrated antenna.

-Type: Metal antenna (Internal Antenna)

-Max. peak Antenna gain

Frequency Band	Ant 1	Ant 2
UNII-1 (5155-5245)	1.47dBi	1.36dBi
UNII-3 (5730-5845)	1.39dBi	1.45dBi

Any new antenna type, higher gain than listed antenna should be met the requirements of FCC rule 15.203 and 2.1043 as permissive change procedure.

**Label and compliance information End Product Labeling** The module is labeled with its own FCC ID and IC Certification Number. If the FCC ID and IC Certification Number are not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. In that case, the final end product must be labeled in a visible area with the following: "Contains FCC ID: BEJ-WL1SB21" "Contains IC: 2703H-WL1SB21 "

**Information on test modes and additional testing requirements**-OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, additional transmitter in the host, etc.).

**Additional testing, Part 15 Subpart B disclaimer**-The final host product also requires Part 15 subpart B compliance testing with the modular transmitter installed to be properly authorized for operation as a Part 15 digital device.

## 2. ISED

### **RSS-GEN, Sec. 7.1.3—(licence-exempt radio apparatus)**

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 radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

**RF Exposure** The antenna (or antennas) must be installed so as to maintain at all times a distance minimum of at least **20 cm** between the radiation source (antenna) and any individual. This device may not be installed or used in conjunction with any other antenna or transmitter.

**l'exposition aux RF** L'antenne (ou les antennes) doit être installée de façon à maintenir à tout instant une distance minimum de au moins **20 cm** entre la source de radiation (l'antenne) et toute personne physique.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment. Attention: Les changements ou modifications de cet appareil non expressément approuvé par le fabricant peuvent annuler votre droit à utiliser cet équipement.

**Étiquetage du produit final (IC)** Le module WL1NB6V2 est étiqueté avec sa propre identification ISED et son propre numéro de certification IC. Si l'identification ISED et le numéro de certification IC ne sont pas visibles lorsque le module est installé à l'intérieur d'un autre dispositif, la partie externe du dispositif dans lequel le module est installé devra également présenter une étiquette faisant référence au module inclus. Dans ce cas, le produit final devra être étiqueté sur une zone visible avec les informations suivantes :

« Contient module émetteur IC : 2703H-WL1SB21 »

“The 5155-5245 MHz band is restricted to indoor use only.”