

User Manual

PRODUCT NAME : RF Module

MODEL NAME : ETWCERBS01

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REG. DATE : 2021.04.23

SPECIFICATION

REV.NO : 1.0

REV. DATE : 2021.04.23

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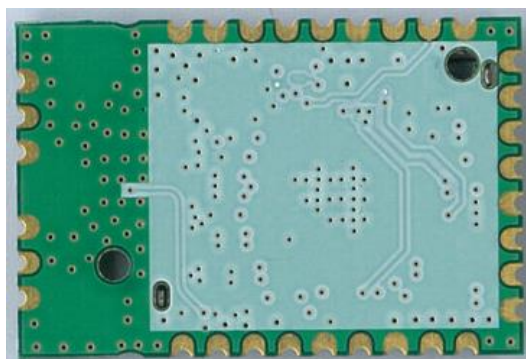
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1. Features

ETWCERBS01 is the small size and low power module for IEEE 802.11ac wireless LAN & BT5.0 + HS. ETWCERBS01 is based on Realtek RTL8822CU solution.

- IEEE 802.11 a/b/g/n/ac 2T2R Dual Band MIMO
- Bluetooth 5.0+ HS , BLE
- Size : 18.4 x 27.0 x 2.9mm
- Two stream spatial multiplexing up to 300Mbps(802.11n) / 867Mbps(802.11ac)
- Use on-chip OTP (One-Time Programmable)
- Host Interface : USB2.0 (WLAN & BT)
 - This model is using the common USB2.0 to control WLAN and BT
- Security : WAPI, WPA, WPA2
- QoS support of WMM

2. Picture of Product

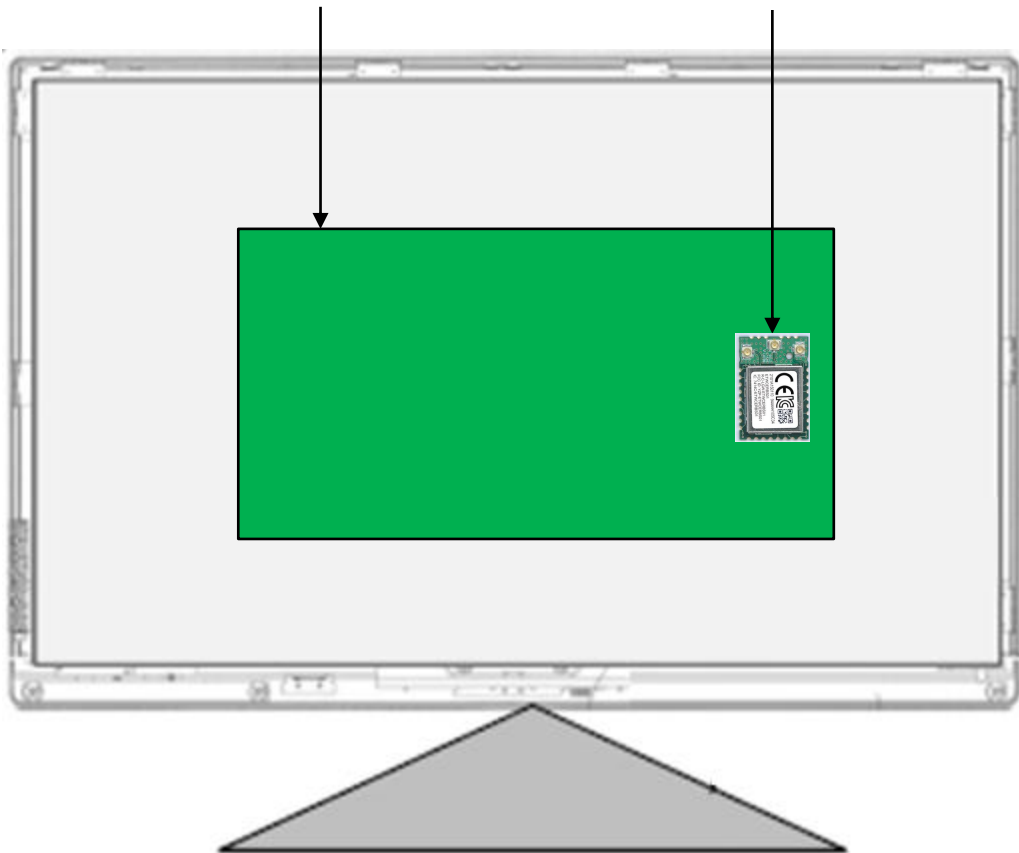


3. Installation Manual

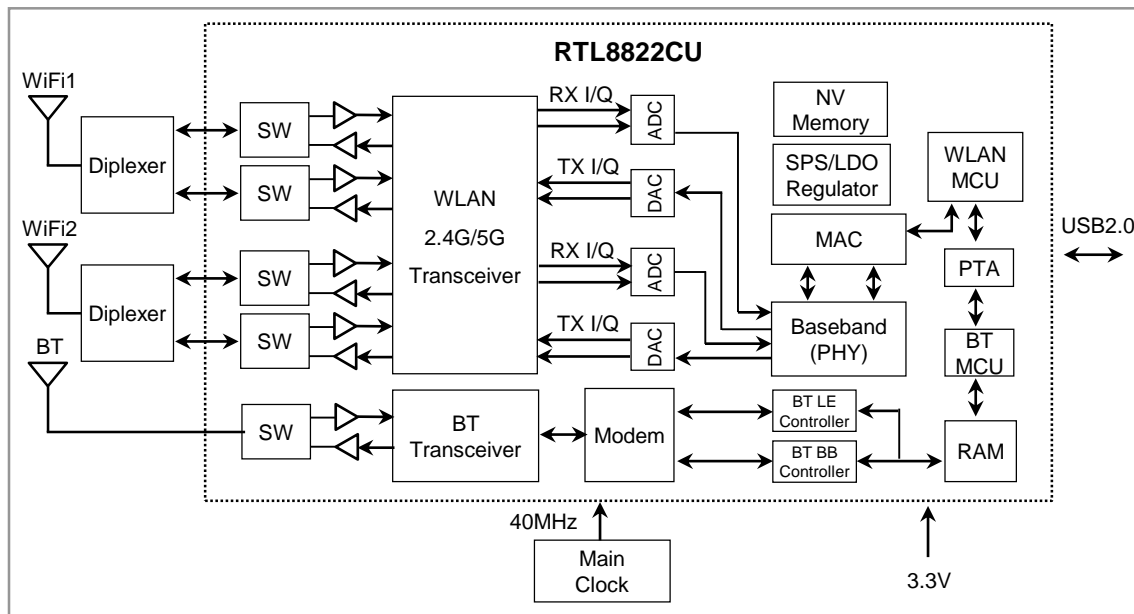
Install the module like below in the back of the TV

TV Main Board

ETWCERBS01 installed position



4. Block Diagram



5. Absolute Maximum Ratings

Caution : The specifications in Table 1 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.

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

< Table 1 >

. 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%.
- 3) Assemble the modules within 6 months. Check the soldering ability in case of 6 months over.

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6. Operating Conditions

Parameter	Min	Typ	Max	Unit
Ambient Temperature	0	-	70	°C
Ambient Humidity (40°C)	-	-	85	%
Supply Voltage	3.135	3.3	3.6	Vdc

7. Standard Test Conditions

The Test for electrical specification shall be performed under the following condition
 Otherwise this following conditions, not guaranteed this performance.

7-1. Ambient condition

Temperature	25 ± 5°C
Humidity	65 ± 5%

7-2. Power supply voltages

Input power	Supply Voltage
VDD_3.3V	3.135 ~ 3.6V

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8. Pin Description

Pin	SYMBOL	I/O	DESCRIPTION	Pin	SYMBOL	I/O	DESCRIPTION
1	NC	-	Not Connect	17	NC	-	Not Connect
2	NC	-	Not Connect	18	GND	-	GND
3	NC	-	Not Connect	19	NC	-	Not Connect
4	NC	-	Not Connect	20	GND	-	GND
5	GND	-	GND	21	GND	-	GND
6	WL_USB_DP	I/O	USB D+	22	NC	-	Not Connect
7	WL_USB_DN	I/O	USB D-	23	GND	-	GND
8	GND	-	GND	24	GND	-	GND
9	NC		Not Connect	25	GND	-	GND
10	NC		Not Connect	26	WLAN_WAKE_HOST	O	WLAN CHIP WAKES UP HOST
11	GND		GND	27	NC	-	Not Connect
12	NC		Not Connect	28	CHIP_EN	I	Shutdown CHIP
13	GND		GND	29	GND	-	GND
14	BT_WAKE_HOST		BT CHIP WAKES UP HOST	30	VDD33	I	3.3V
15	HOST_WAKE_BT		HOST WAKES UP BT CHIP	31	GPIO5	I/O	General Purpose Input/Output Pin
16	NC		Not Connect	32	GND	-	GND

Note 1. Pin 14 (BT_WAKE_HOST) is pulled up to 3.3V, the port should be configured to be active low

Note 2. Pin 15 (HOST_WAKE_BT) is no pull-up or pull-down inside the module

Note 3. Pin 26 (WLAN_WAKE_HOST) is pulled up to 3.3V, the port should be configured to be active low

Note 4. Pin 28 (CHIP_EN) is pulled up to 3.3V, do not pull up on Host

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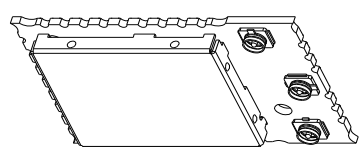
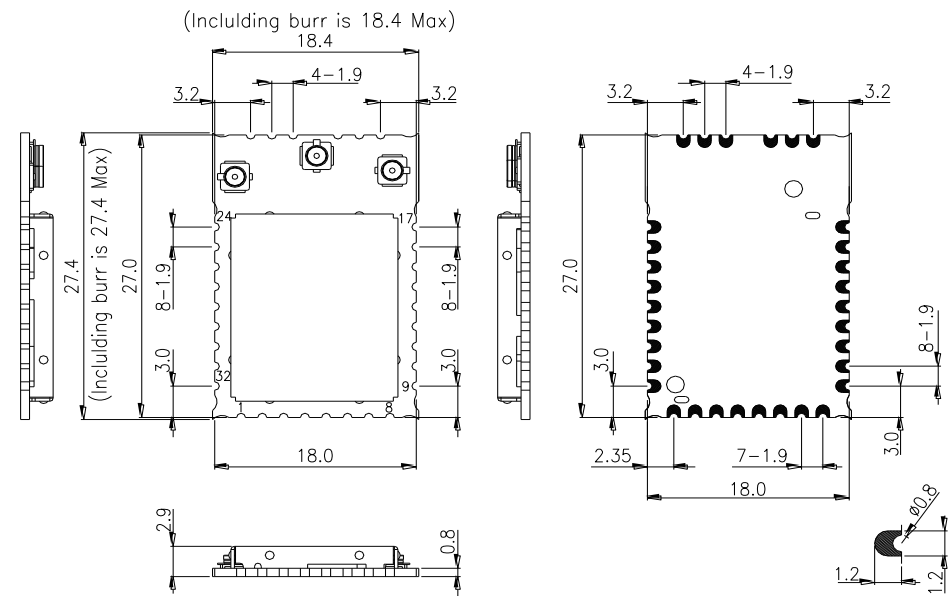
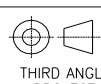

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9. Outline Drawing

LG Innotek Confidential		2	3	4													
F	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="2">DIMENSIONAL TOLERANCE</th> </tr> <tr> <td>~ up to 6</td> <td>±0.3</td> </tr> <tr> <td>over 6 up to 30</td> <td>±0.5</td> </tr> <tr> <td>over 30 up to 120</td> <td>±0.5</td> </tr> <tr> <td colspan="2" style="text-align: center;">UNLESS OTHERWISE SPECIFIED</td> </tr> </table>		DIMENSIONAL TOLERANCE		~ up to 6	±0.3	over 6 up to 30	±0.5	over 30 up to 120	±0.5	UNLESS OTHERWISE SPECIFIED		C H A N G E S	REV. NO.	DATE (YY MM DD)	SIGNATURE	CHANGE CONTENTS
	DIMENSIONAL TOLERANCE																
	~ up to 6	±0.3															
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<p>RELEASING THIS DRAWING WITHOUT PERMISSION OF LG Innotek SHOULD BE ACCUSED ACCORDING TO THE LAWS AND COMPANY RULES</p>																	
<p>3D View</p> 																	
																	
<p>Notes</p> <ol style="list-style-type: none"> Tolerances are ±0.3, Radii are 0.5, unless otherwise specified. Lot No. shall be conformed to LGIT standard specification. As long as the outer appearance doesn't affect the performance of the product, it can be changed without prior notice. '[X.XX]': these dimensions inside of the square are cutting area. Label information is based on specification 																	
A	RELATED P/N	 <p>THIRD ANGLE PROJECT</p>	SCALE	UNIT	DESIGN	TITLE											
			2:1	mm	<i>KS Lee</i>	Outline Drawing											
					CHECKED	<i>T.G Jang</i>	PART NO										
					APPROVED	<i>SD Chol</i>	8822CU SMD										
						DWG NO											
LGIT_STD A4_VER		2	3	LG Innotek Co., Ltd.													

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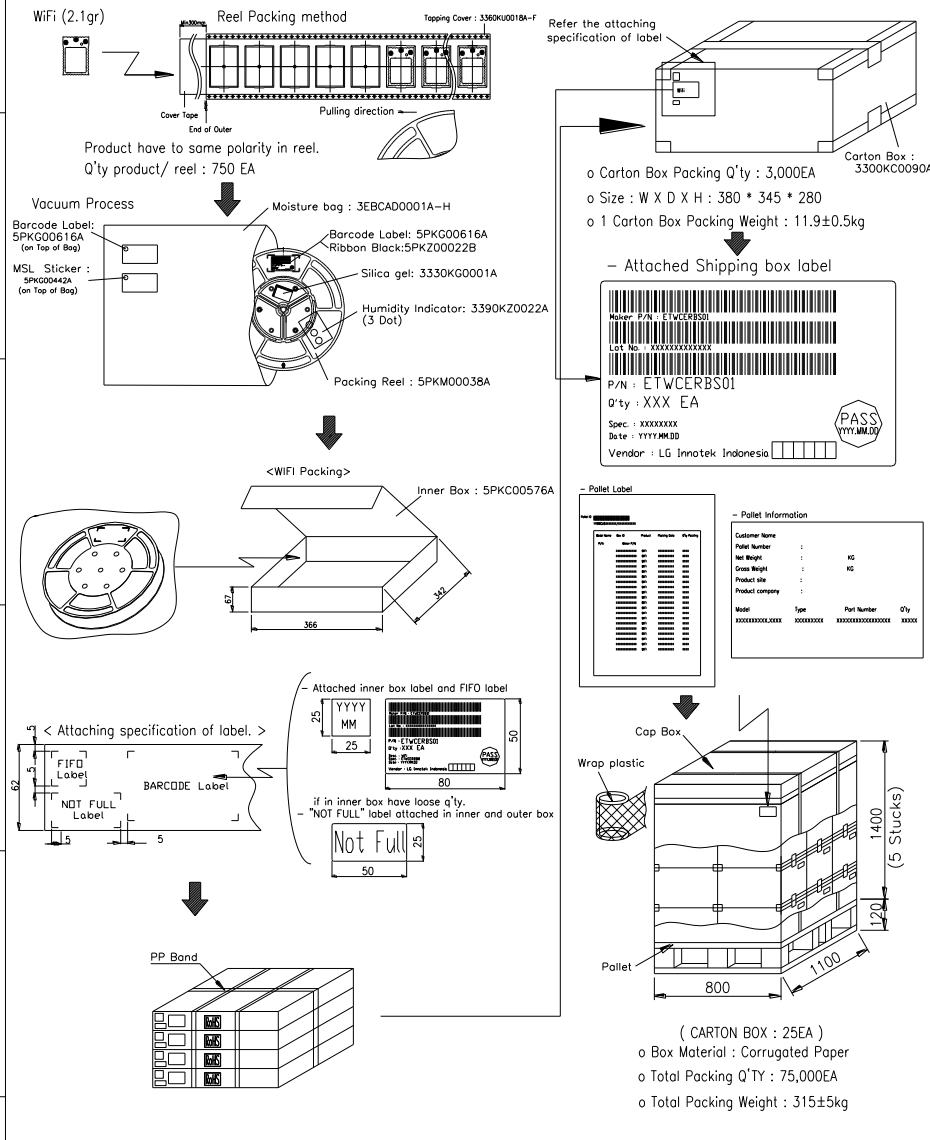
10.Packing Information

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DIMENSIONAL TOLERANCE		C H A N G E S	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				△		



RELATED P/N	THIRD ANGLE PROJECT	SCALE	UNIT	DESIGN 2021.01.15 <i>Kap Soul Lee.</i>	TITLE EXP. Packing Specification
		-	mm	CHECKED 2021.01.15 <i>Tae Gyeong Jang</i>	PART NO
				APPROVED 2021.01.15 <i>Seok Dong Choi.</i>	MODEL ETWCERBS01
				DWG NO	(1/2)

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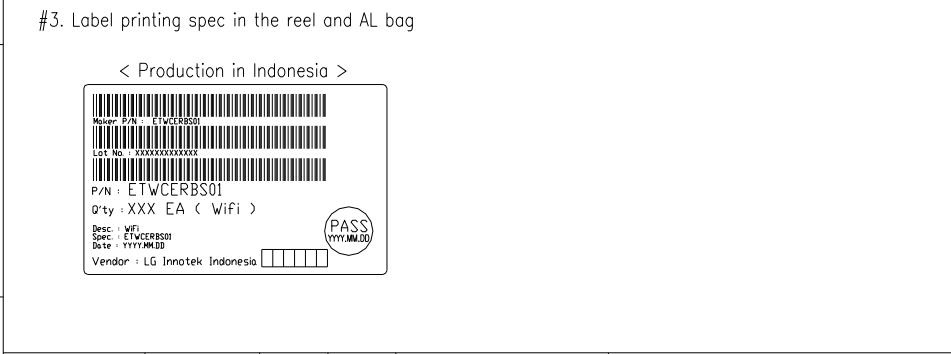
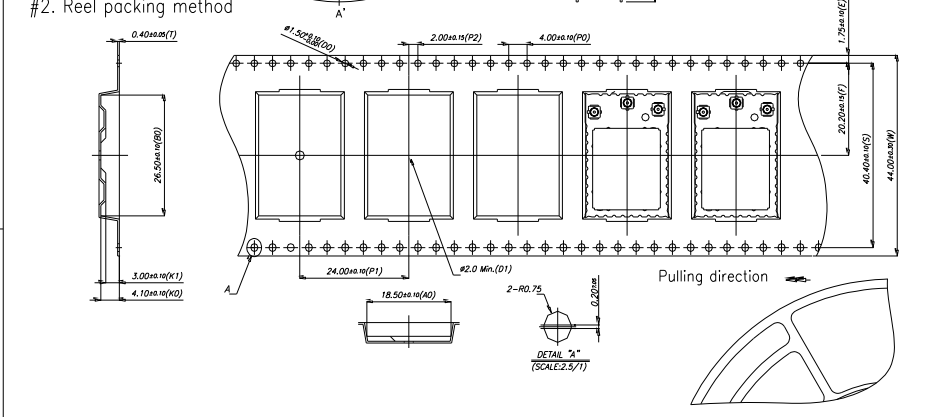
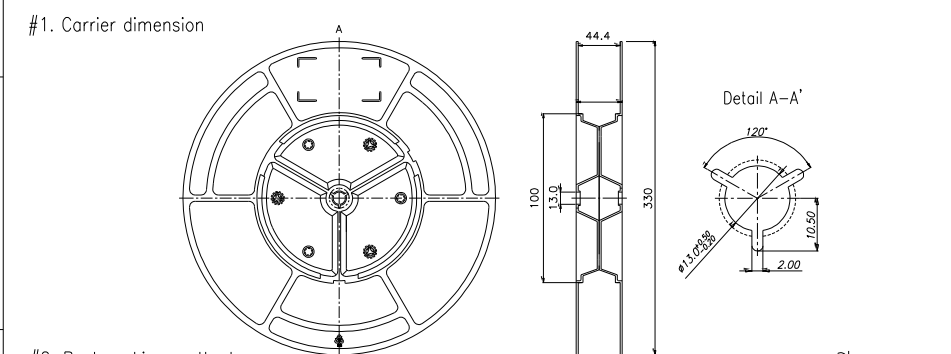
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DIMENSIONAL TOLERANCE	~ up to 6	±0.3	CHANGES	REV NO.	DATE (YY MM DD)	SIGNATURE	CHANGE CONTENTS
	over 6 up to 30	±0.5					
	over 30 up to 120	±0.5					
	UNLESS OTHERWISE SPECIFIED						



 THIRD ANGLE PROJECT	SCALE	UNIT	DESIGN	2021.01.15	TITLE	EXP. Packing Specification
	-	mm	CHECKED	2021.01.15	PART NO	
			APPROVED	2021.01.15	MODEL	ETWCERBS01
					DWG NO	(2/2)

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11.Certification

- Brand : LG Innotek
- Manufacturer Address : E1/E3, 30, Magokjungang 10-ro, Gangseo-gu, Seoul, 07796, Korea
- Product Name : WiFi
- Factory : PT. LG INNOTEK INDONESIA
- Factory Address : Bekasi International Industrial Estate, Blok C8 NO. 12 & 12 A,
Desa Cibatu, Cikarang Selatan, Bekasi 17750 – Indonesia

- 상호명 : 엘지이노텍(주)
- 기자재명칭(모델명) : 특정소출력 무선기기(무선데이터통신시스템용 무선기기)
(ETWCERBS01)
- 제조년월: 2021. 07
- 제조자 및 제조국가 : 엘지이노텍(주) / 인도네시아
- 인증번호 : R-C-LGW-ETWCERBS01
- 무선 시험 온도: -20 ~ 50 ° C

* Connection and use of this communications equipment is permitted by the Nigerian Communications Commission

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12. Regulatory Statement (FCC)

Part 15.19 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.

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.

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. This device must not be co-located or operating in conjunction with any other antenna or transmitter.

Responsible Party Information (Supplier's Declaration of Conformity)

LG Innotek USA Inc.
Street Address
2540 N 1st ST STE 400 SAN JOSE, CA 95131-1016
PHONE : +1-408-350-7661 / FAX : +1-408-955-0329

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12. Regulatory Statement (FCC)

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 (15.247)

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 in this instruction manual.

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.

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12. Regulatory Statement (FCC)

Antennas list

This module is certified with the following external antenna.

Frequency	Antenna type & Peak gain
2402 ~ 2480 MHz (BT)	HQ Antenna type: Dipole antenna (Peak Gain : 2.93 dBi) IP Antenna type: Dipole antenna (Peak Gain : 2 dB)
2412 ~ 2472 MHz (WLAN 2.4 GHz)	01 Antenna type: Planar Inverted F antenna (Peak Gain : 3.35 dBi) A7 Antenna type: Dipole antenna (Peak Gain: 2 dBi)
5180 ~ 5825 MHz (WLAN 5 GHz)	01 Antenna type: Planar Inverted F antenna : 5.37 dBi(UNII 1)/ 5.57 dBi(UNII 2A) : 5.63 dBi(UNII 2C)/ 5.39 dBi(UNII 3) A7 Antenna type: Dipole antenna (Peak Gain: 2 dBi) : 2.00 dBi(UNII 1) / 2.00 dBi(UNII 2A)/ : 2.00 dBi(UNII 2C)/ 2.00 dBi(UNII 3)

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: YZP-ETWCERBS01
- Contains IC: 7414C- ETWCERBS01

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.

OEM integrator must install this transmitter module inside the enclosure of host device not to be user accessible to compliance with antenna requirements in FCC Rule Section

15.203.

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13. Regulatory Statement (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.

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.

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.

Étiquetage du produit final (IC)

Le module ETWCERBS01 est étiqueté avec sa propre identification FCC et son propre numéro de certification IC. Si l'identification FCC 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 identification FCC ID: YZP-ETWCERBS01

Contient module émetteur IC : 7414C-ETWCERBS01

“The 5150-5250 MHz band is restricted to indoor use only.”

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5180 ~ 5825 MHz (WLAN 5 GHz)	O1 Antenna type: Planar Inverted F antenna : 5.37 dBi(UNII 1)/ 5.57 dBi(UNII 2A) : 5.63 dBi(UNII 2C)/ 5.39 dBi(UNII 3) A7 Antenna type: Dipole antenna (Peak Gain: 2 dBi) : 2.00 dBi(UNII 1) / 2.00 dBi(UNII 2A)/ : 2.00 dBi(UNII 2C)/ 2.00 dBi(UNII 3)

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14. Regulatory Statement (CE)

Simplified EU Declaration of Conformity

"Hereby, LG Innotek Co., Ltd. declares that the radio equipment type RF Module is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: <http://www.lginnotek.com/en/compliance-information>.

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.

This device must not be collocated or operating in conjunction with any other antenna or transmitter. The host manufacturer integrating this module should be assessed total compliance with all essential requirements regarding this radio module.

The use of the 5150 –5350 MHz band is restricted to indoor use only. This restriction will be applied in all member states.

The host manufacturer has the responsibility that the host device should be compliance with all essential requirement of RED.

The product is compliant with the RED Article 10(2) because the product is operated at least one Member State without infringing applicable requirements on the use of radio spectrum.

Manufacturer Name: LG Innotek Co., Ltd.

Manufacturer Address: 26, Hanamsandan 5beon-ro, Gwangsan-gu,
Gwangju, 506-731, Korea

LG Innotek Co., Ltd, Europe Branch

Am Limespark 2 (Innovapark) 65843 Sulzbach am Taunus, Germany

TEL 49-(0)6196-64038-70 / hkkima@lginnotek.com

Output power Tune-up value (CE)

Item	Frequency	Target. Power (EIRP, Sum)	Tolerance
Standard		IEEE 802.11 a/b/g/n/ac	
Frequency	2.4 G	2 412 ~ 2 472 MHz	16.5 dBm
	5G Low	5 150 ~ 5 250 MHz	19.5 dBm
		5 250 ~ 5 350 MHz 5 470 ~ 5 725 MHz	16.9 dBm
	5G High	5 725 ~ 5 850 MHz	10.6 dBm
			±3dBm
Item	Frequency	Target. Power (EIRP)	
BT	2 402 ~ 2 480 MHz	6.5 dBm	±3dBm
BT LE	2 402 ~ 2 480 MHz	4.5 dBm	