

# User Manual

**PRODUCT NAME : RF Module**

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**MODEL NAME : LGSBWAX12**

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**User Manual**

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LGSBWAX12(LGE)**

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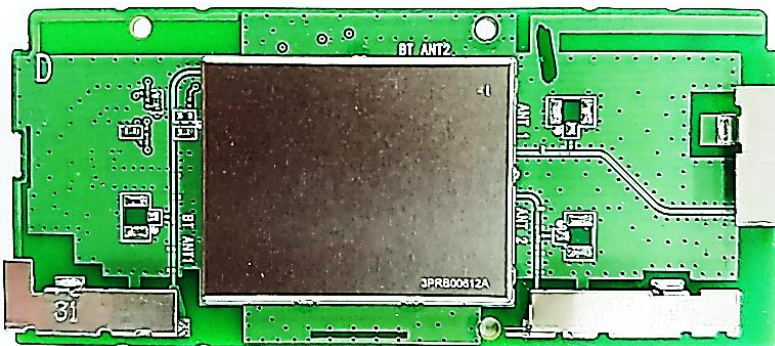
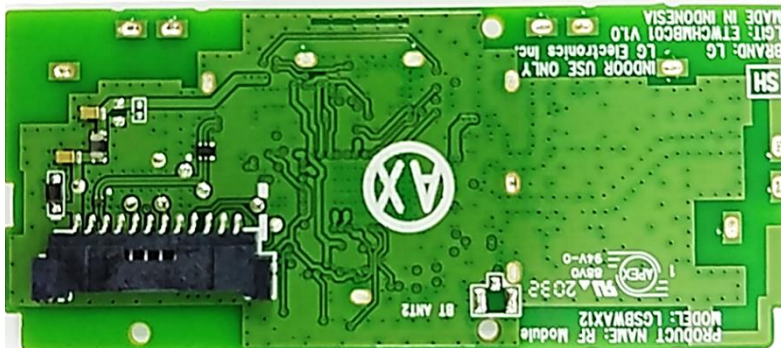
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## 1. Features

LGSBWAX12 is the small size and low power module for WiFi6E wireless LAN & BT5.2 + HS. LGSBWAX12 is based on Mediatek MT7921AUN solution.

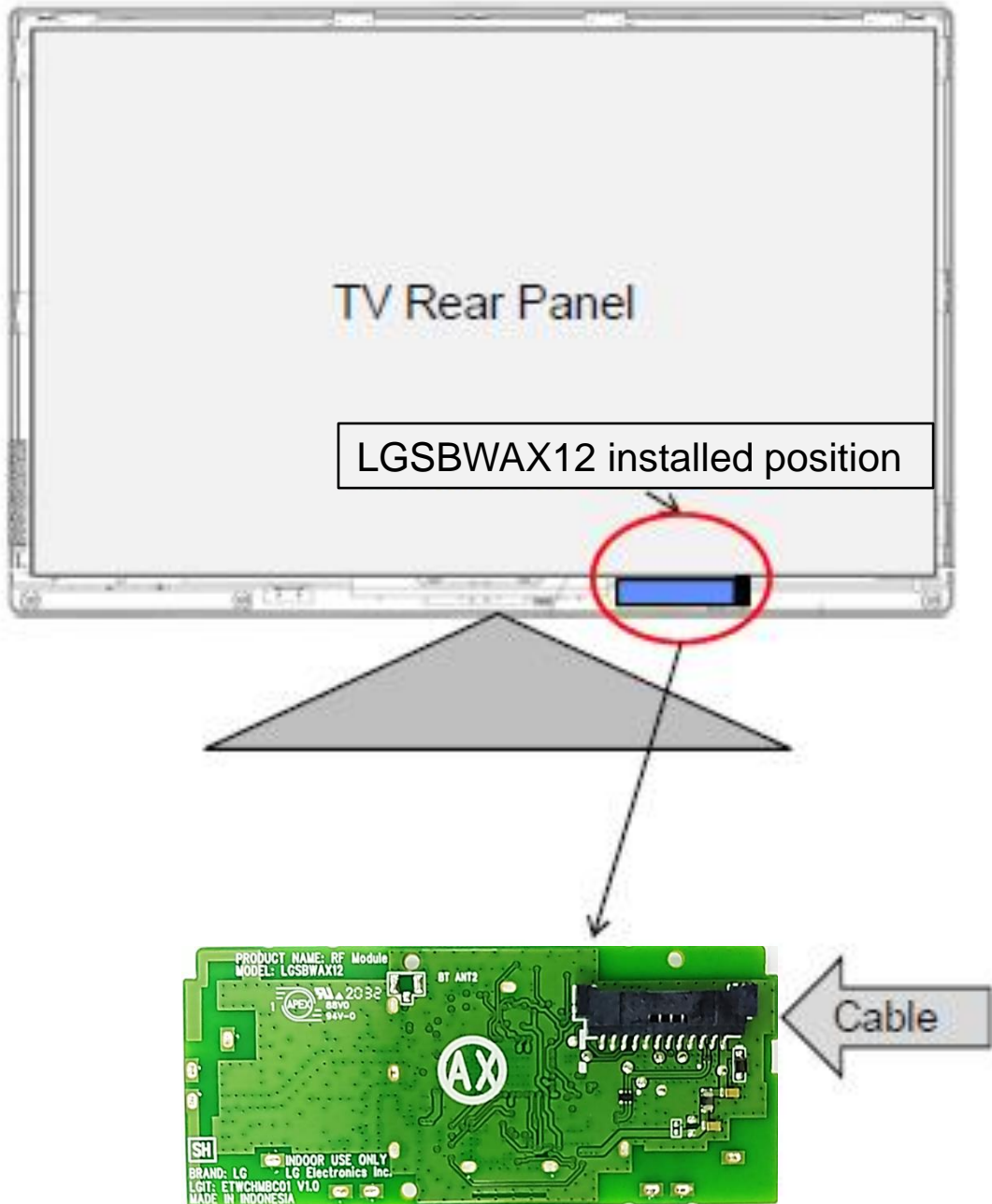
- IEEE 802.11 a/b/g/n/ac/ax Dual Band Dual Concurrent (DBDC)
- Support 20/40/80MHz bandwidth in 2.4GHz, 5GHz, 6GHz band
- Bluetooth 5.2+ HS, BLE
- Size : 68 x 30 x 7.7mm
- Use on-chip OTP (One-Time Programmable)
- Host Interface : USB2.0 (WLAN & BT)
  - This model is using the common USB2.0 to control WLAN and BT
- Security : WAPI, WEP, WPA, WPA2, WMM, AES, TKIP, CKP
- Application: DTV, DVR, HD DVD Player, Blue-ray Disk Player, STB

## 2. Picture of Product

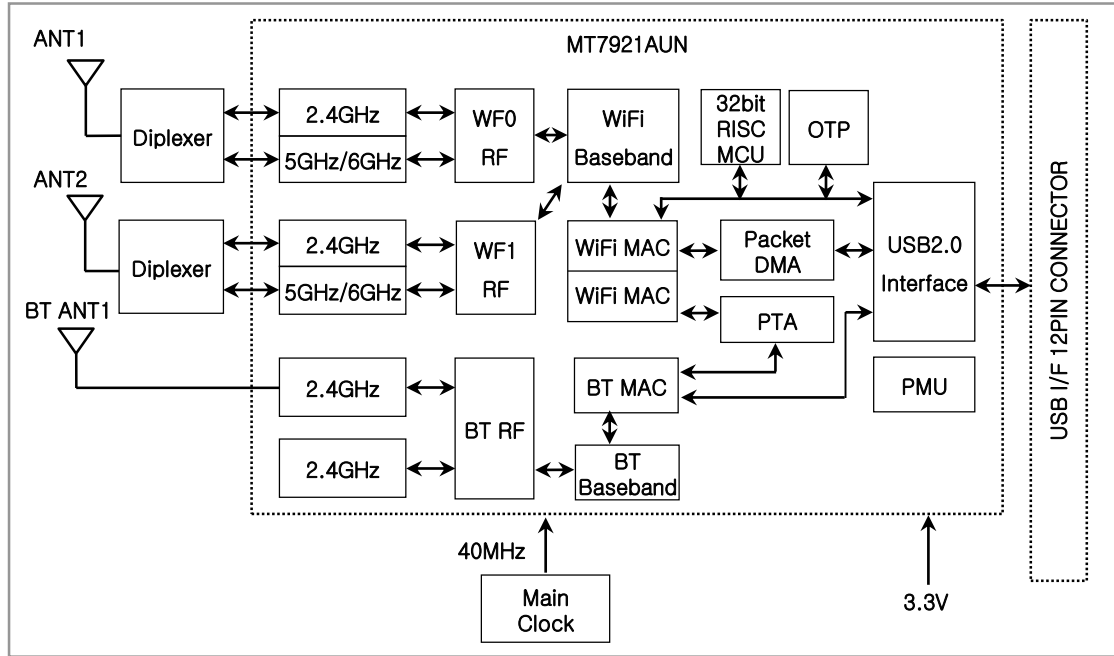


### 3. Installation Manual

Install the module like below in the back of the TV



## 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	-20	+80	°C
Storage Humidity (40°C)	-	90	%

. 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	-	60	°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

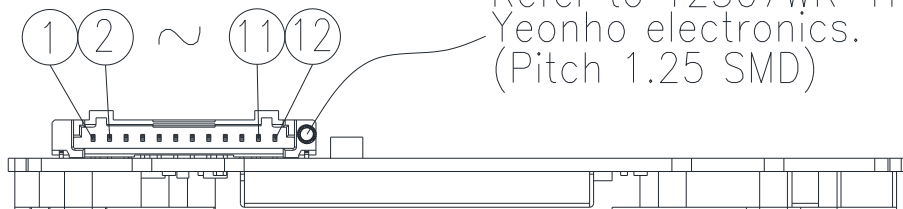
Temperature	25 ± 5°C
Humidity	65 ± 5%

### 7-2. Power supply voltages

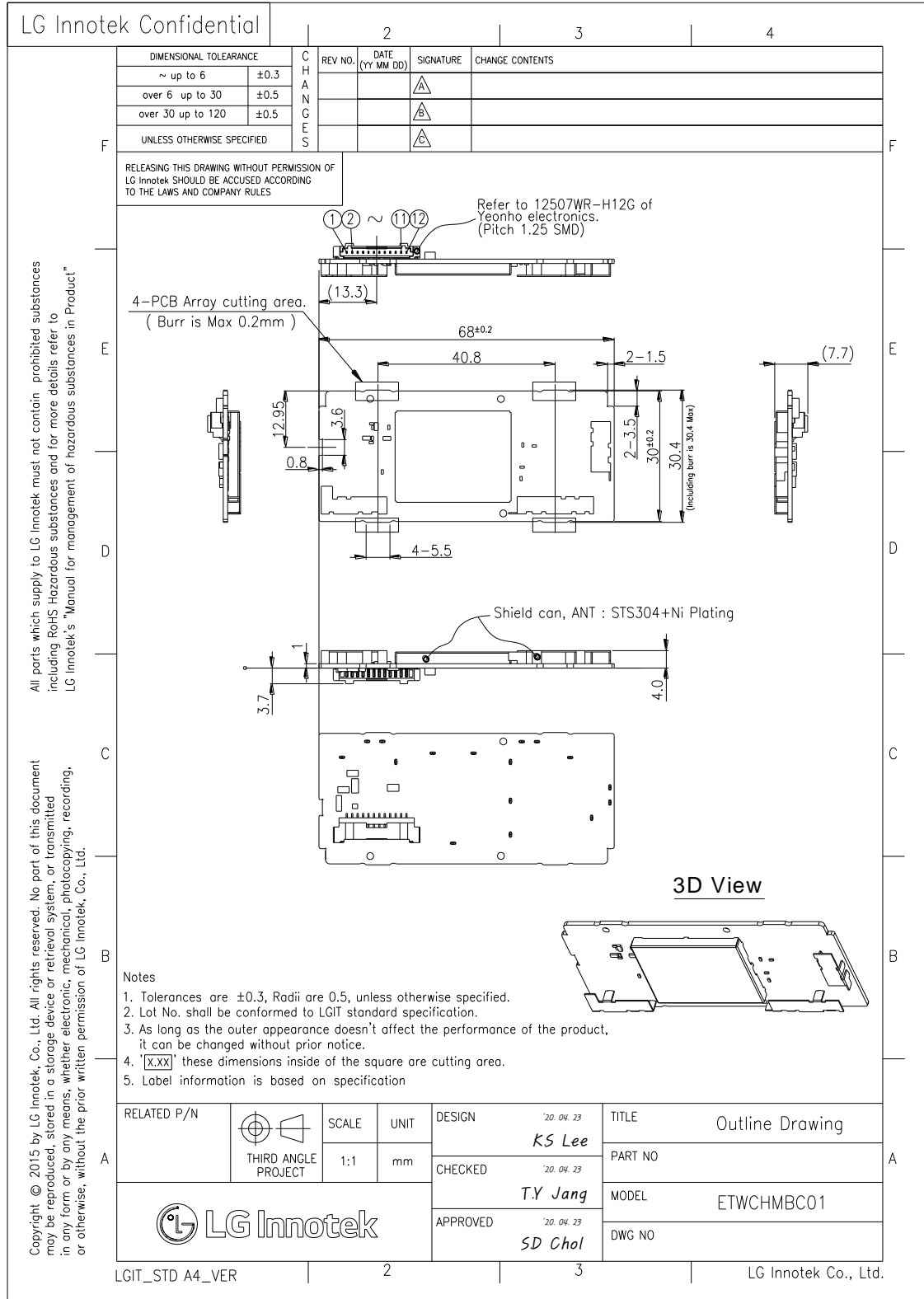
Input Voltage	Supply Voltage
VDD_3.3V	3.135 ~ 3.6V

## 8. Pin Description

Pin No.	Pin Name	I/O	Pin Description
1	VCC	I	VDD 3.3V
2	D-	I/O	USB Communication signal USB_DN
3	D+	I/O	USB Communication signal USB_DP
4	GND	-	GND
5	WOWL	O	Wake On WLAN
6	VCC	I	VDD 3.3V
7	RESUME	I	SUSPEND_RESUME
8	GND	-	GND
9	RESET	I	Bluetooth device wake up (option)
10	WOBLE	O	Host wake up. (Signal from Wi-Fi module to the host)
11	GND	-	GND
12	VCC	-	VDD 3.3V



### 9. Outline Drawing





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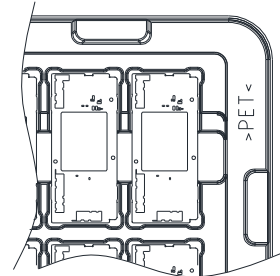
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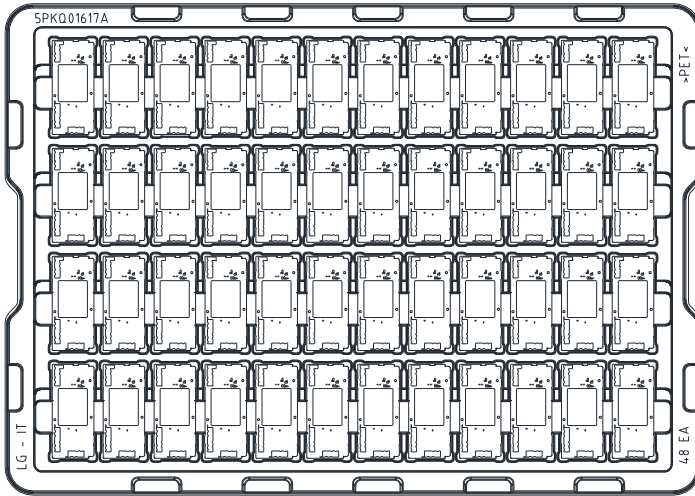
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### 10. Packing Information

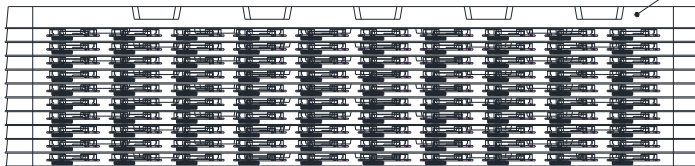
#### PACKING SPECIFICATION



o Module packing direction



Empty tray on top



Zigzag stack

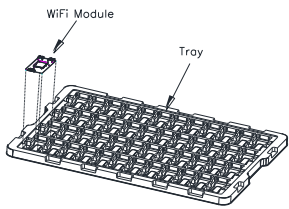
PART NO.		NAME		MATERIAL		SPEC.		FINISH		A4 SIZE
						UNIT mm	SCALE N/A	ETWCHMBC01		
						APPD.	CHKD.	DSGD.	DRAW.	TITLE EXP. Packing Specification
							20.06.03 Lee K. S.		20.06.03 Lee K. S.	DOCUMENT NO.
ZONE	SYMB	DATE OR NO.	APPD	CHKD	DSGD					

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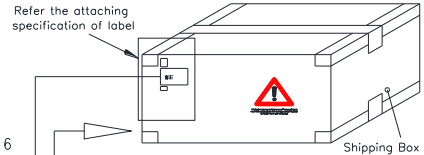
DIMENSIONAL TOLERANCE	C H A N G E S	REV NO.	DATE (YY MM DD)	SIGNATURE	CHANGE CONTENTS
		~ up to 6	±0.3		
		over 6 up to 30	±0.5		
		over 30 up to 120	±0.5		
UNLESS OTHERWISE SPECIFIED					

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"

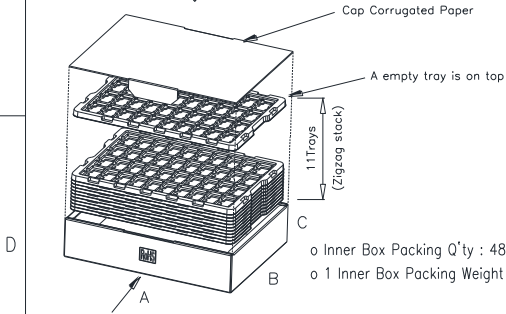
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- o 1 Tray Packing Q'ty : 48EA
- o Size : W X D X H : 503 \* 355 \* 16
- o 1 Tray Packing Weight : 0.6±0.1kg (1 Module Weight : 8.3±1g)

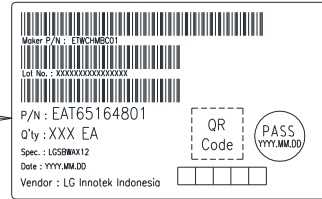


- o Carton Box Packing Q'ty : 960EA
- o Size : W X D X H : 514 \* 394 \* 248
- o 1 Carton Box Packing Weight : 14.0±0.8kg

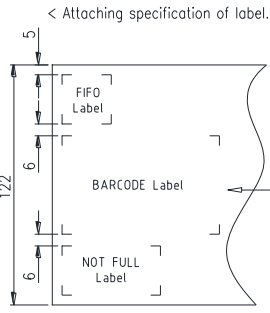


- o Inner Box Packing Q'ty : 480EA
- o 1 Inner Box Packing Weight : 6.6±0.5kg

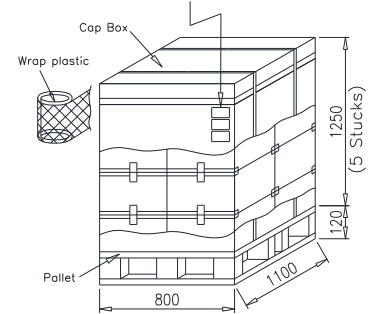
- Attached Shipping box label



- Attached shipping information label



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



- ( CARTON BOX : 20EA )
- o Box Material : Corrugated Paper
- o Total Packing Q'TY : 19,200EA
- o Total Packing Weight : 295±10kg

RELATED P/N	THIRD ANGLE PROJECT	SCALE	UNIT	DESIGN	TITLE
				CHECKED	PART NO
				APPROVED	MODEL
				20.05.27 Lee Kap Soul. 20.05.27 Jang Tae Gyeong. 20.05.27 Choi Seak Dong.	EXP. Packing Specification _____ ETWCHMBC01 _____

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## Regulation Notice

### 1. 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 15.21 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

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## Regulation Notice

### 2. Regulatory notice to host manufacturer see KDB Publication 996369 D04 for guidance.

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

- FCC Rule parts 15C(15.247 / 15.407)

#### RF exposure considerations

The end manual should include regulatory information/warnings about:

- The module must be installed and operated with a minimum distance of 20 cm between the antenna radiating structures and nearby persons.
- The module is classified as a mobile device for RF exposure purposes.
- The antenna(s) used for this module must not simultaneously with any other antenna or transmitter, except in accordance with FCC multiple transmitter product procedures.

As long as the three conditions above are followed, further FCC equipment authorizations may not be required. Refer to FCC publication 996369 D04 for guidance.

### 3. Operational restriction according to KDB 987594 D01

- The device cannot provide a direct connection to source the internet from a wired or direct connection to other devices over a 6 GHz air interface.
- The device is prohibited for control of or communications with unmanned aircraft systems, including drones.
- The device shall never operate above the maximum output power allowed by the rule: 24 dBm & -1dBm/MHz when under the control of a low-power indoor AP or subordinate and shall be lower or equal to the power advertised by the indoor low-power AP or subordinate.
- The device shall always initiate transmission under the control of a low-power indoor AP or subordinate except for brief transmissions before joining a network. These short messages will only occur if the client has detected an indoor AP or subordinate operating on a channel. These brief messages will have a time-out mechanism such that if it does not receive a response from an AP it will not continually repeat the request.

## Regulation Notice

### Antennas list

This module is certified with the following integrated antenna.

-Type: Dual Bands Wi-Fi and Bluetooth Antenna

-Max. peak Antenna gain

Frequency	Triple Band Ant1(dB)	Triple Band Ant2(dB)	BT Ant(dB)
2412 ~ 2472 MHz	-0.94	1.50	1.19
5180 ~ 5240 MHz	0.05	1.42	
5260 ~ 5320 MHz	0.98	1.45	
5500 ~ 5720 MHz	1.41	1.37	
5745 ~ 5825 MHz	1.44	1.42	
5955 ~ 6415 MHz	0.65	1.45	
6435 ~ 6515 MHz	0.65	1.45	
6535 ~ 6875MHz	0.44	1.43	
6895 ~ 7095MHz	0.91	1.43	

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: BEJLGSBWAX12
- Contains IC: 2703H-LGSBWAX12

#### 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.