

# SPECIFICATIONS

**PRODUCT NAME : BLE Module**

**MODEL NAME : ETWBCLDC01(LGIT), LGSBT12(LGE)**

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Designed	Checked	Approved	<b>LG Innotek Co., Ltd.</b>	
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2021.02.03	2021.02.03	2021.02.03	DOCUMENT No.	2021-PLM-D013
			PAGE	14

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## 1. Features

ETWBCLDC01 is the small size and low power module for BLE on TV

ETWBCLDC01 is based on Nordic nRF52820 solution.

▪ Main specification

- BT5.1 LE, single band (2.4GHz), 1T1R
- Main chipset: Nordic nRF52820

▪ Customer requirement

- Size: 40 x 27 mm
- Host interface: SPI
- Antenna: Metal press antenna
- Certification: FCC, IC, CE, KC, RCM
- 2ea 1set (display + box pairing)

## 2. Ordering Information

Model	Description
ETWBCLDC01	BLE for LGE TV

## 3. Label marking



① Customer P/N : EAT65179501

② Model No. : ETWBCLDC01

④ Serial Number QR code

⑤ Serial Number

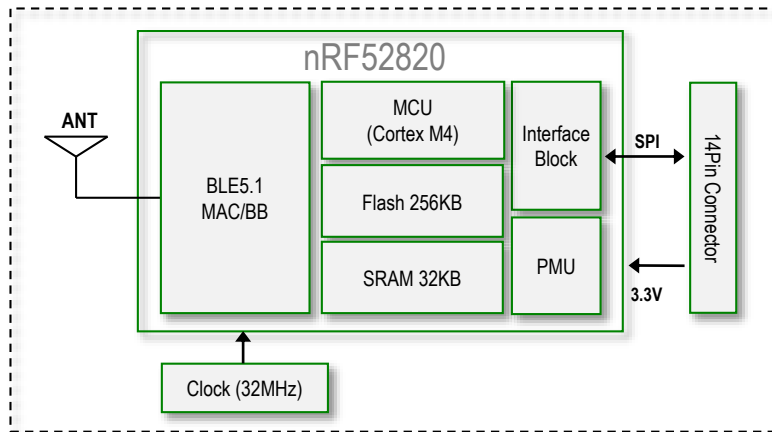
③ Product Lot No. : ex)2103A020110

21 : Year      02 : Date

03 : Month    01: Manufactured Process

A : Lot No    10 : Change history of Revision

## 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	%

< 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	-	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 power	Supply Voltage
VDD_3.3V	3.135 ~ 3.6V

### 7-3. Current consumption

Current Consumption	Min.	Typ.	Max.	Unit
TX Mode	-	12	25	mA
Idle and Associated state	-	4		

Note 1 : This figure is the RMS(root mean square) Value.

### 7-4. ESD Information

Human Body Model (HBM)	Min.	Max.	Unit
Contact	-	± 4	kV
Air	-	± 15	

Note 1 : IEC 61000-4-2 (150pF, 330R)

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## 8. Electrical Specifications for BLE

### 8-1. RF Characteristics for BLE

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Receiver sensitivity	1 Mbps BLE ideal transmitter, Packet length<=255 bytes, BER= 0.1%	-	-90	-80 CTQ	dBm
Maximum output power	Conducted Test	4	7	8 CTQ	dBm
Modulation Characteristics 1 Mbps BLE	delta F1 average	225	250	275	kHz
	ratio(delta F2/delta F1 )	80	-	-	%

\* Normal Condition : 25°C, VDD=3.3V.

Note 1. This varies by regulatory domain.

Refer to the product documentation for specific details for each regulatory domain.

Note 2. The maximum power setting will vary by channel and according to individual country regulations.

Refer to the product documentation for specific details.

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## 9. Environment Tests

Item	Test Conditions	Specifications
Heat Load Test	Initial values are measured at standard test condition. Leave samples in $60^{\circ}\text{C} \pm 3^{\circ}\text{C}$ for $200 \pm 5$ hours, and in standard test condition for 30 minutes, then take measurements within 2 hour. - Supply voltage : standard $\pm 5\%$	<ul style="list-style-type: none"> <li>•TX Power : <math>\pm 4\text{dB Max}</math></li> <li>• Min Input Level : <math>\pm 4\text{dB Max}</math></li> </ul>
Humidity Load Test	Initial values are measured at standard test condition. Leave samples in $40^{\circ}\text{C} \pm 3^{\circ}\text{C}$ , 95% RH for $96 \pm 5$ hours, and in standard test condition for 30 minutes, then take measurements within 2 hour. - Supply voltage : standard + 5%	
Heat Test	Initial values are measured at standard test condition. Leave samples in $70^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for $96 \pm 5$ hours, and in standard ambient for 1 hour with standard power Supply then take measurements within 1 hour.	
Cold Test	Initial values are measured at standard test condition. Leave samples in $-25^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for $96 \pm 5$ hours, and in standard ambient for 1 hour with standard power Supply then take measurements within 1 hour.	
Temperature Shock	Take measurements in standard test condition. Temp. : $-45^{\circ}\text{C} \sim +125^{\circ}\text{C}$ Duration : 30 min Ramp-up & Ramp-down for 5 min Cycle : 200cycle.	
Vibration Test	Initial value measure at standard test condition. Sweep rate : 1 single sweep/ minute Amplitude : 1.5 mm Frequency : 10-55Hz Duration : 1 Hours per direction (X,Y,Z)	

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**10. Life Test Conditions**

item	Main Content																																																																												
Life Time	MTBF(B1) : 60,000Hr's @ Ambient 25°C Judgment : TX Power : ±4dB Max																																																																												
Life Calculation	$T_{life} = A_{fv} \times A_{ft} \times T_{stress}$ $A_{fv} = e^{\gamma \times (V_{stress} - V_{operation})}$ $A_{ft} = e^{\frac{E_a}{K} \times \left( \frac{1}{T_{operation}} - \frac{1}{T_{stress}} \right)}$ <p> <b>T<sub>life</sub></b> : operation lifetime  <b>A<sub>fv</sub></b> : voltage acceleration factor  <b>Gamma (γ)</b> : voltage acceleration  <b>V<sub>stress</sub></b> : stress voltage  <b>T<sub>stress</sub></b> : stress temperature  <b>K</b> : Boltzman's constant                 </p> <p> <b>T<sub>stress</sub></b> : stress time  <b>A<sub>ft</sub></b> : temperature acceleration factor  <b>E<sub>a</sub></b> : temperature acceleration  <b>V<sub>operation</sub></b> : operation voltage  <b>T<sub>operation</sub></b> : operation temperature                 </p>																																																																												
Test Condition	B1 Life : 63,842Hour's <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>item</th> <th>Data Input</th> <th>Unit</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Volt</td> <td>STRESS CONDITION</td> <td>3</td> <td>Volt (Vs)</td> </tr> <tr> <td>OPERATION CONDITION</td> <td>3</td> <td>Volt (Vo)</td> </tr> <tr> <td rowspan="2">Temp</td> <td>STRESS CONDITION</td> <td>90</td> <td>°C (Ts)</td> </tr> <tr> <td>OPERATION CONDITION</td> <td>40</td> <td>°C (To)</td> </tr> <tr> <td>β (Voltage Acceleration Factor)</td> <td>1</td> <td>cm/MV</td> <td>According to Fab. Data</td> </tr> <tr> <td>ACTIVATION ENERGY (Ea)</td> <td>0.7</td> <td>eV</td> <td>activation energy; 0.7 eV is a typical value, actual values depend on failure mechanism and range from -0.2 to 1.4 eV)</td> </tr> <tr> <td>Sample Size</td> <td>78</td> <td>ea</td> <td></td> </tr> <tr> <td>Test Time</td> <td>2,088</td> <td>Hours</td> <td>321 Days</td> </tr> <tr> <td>k(Boltzman Coefficient)</td> <td>8.61716E-05</td> <td>eV/K</td> <td></td> </tr> <tr> <td>VAF (Voltage Acceleration Factor)</td> <td>1.0</td> <td></td> <td></td> </tr> <tr> <td>TAF (Temperature Acceleration Factor)</td> <td>35.7</td> <td></td> <td></td> </tr> <tr> <td rowspan="2">Device Hours = (SS × Hours) × TAF × VAF</td> <td>5,812,253</td> <td>Hours</td> <td></td> </tr> <tr> <td>663.5</td> <td>Years</td> <td></td> </tr> <tr> <td>α (Confidence Level=60%)</td> <td>1.83</td> <td></td> <td>defect 0 : 1.83, 1 : 4.04</td> </tr> <tr> <td rowspan="2">Failure Rate</td> <td>1.57426E-07</td> <td></td> <td></td> </tr> <tr> <td>157</td> <td>FIT (Failures/10^9hours)</td> <td></td> </tr> <tr> <td>MTTF</td> <td>6,352,189</td> <td>Hours</td> <td></td> </tr> <tr> <td>B1 life</td> <td>63,842</td> <td>Hours</td> <td></td> </tr> <tr> <td><b>Judgement</b></td> <td><b>Pass</b></td> <td></td> <td></td> </tr> </tbody> </table> <p> <span style="background-color: yellow; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> : Input Value  <span style="background-color: #d9ead3; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> : Don't input. Calculation Value  <span style="background-color: #f2f2f2; border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> : Don't input. Fixed value                 </p>	item	Data Input	Unit	Remarks	Volt	STRESS CONDITION	3	Volt (Vs)	OPERATION CONDITION	3	Volt (Vo)	Temp	STRESS CONDITION	90	°C (Ts)	OPERATION CONDITION	40	°C (To)	β (Voltage Acceleration Factor)	1	cm/MV	According to Fab. Data	ACTIVATION ENERGY (Ea)	0.7	eV	activation energy; 0.7 eV is a typical value, actual values depend on failure mechanism and range from -0.2 to 1.4 eV)	Sample Size	78	ea		Test Time	2,088	Hours	321 Days	k(Boltzman Coefficient)	8.61716E-05	eV/K		VAF (Voltage Acceleration Factor)	1.0			TAF (Temperature Acceleration Factor)	35.7			Device Hours = (SS × Hours) × TAF × VAF	5,812,253	Hours		663.5	Years		α (Confidence Level=60%)	1.83		defect 0 : 1.83, 1 : 4.04	Failure Rate	1.57426E-07			157	FIT (Failures/10^9hours)		MTTF	6,352,189	Hours		B1 life	63,842	Hours		<b>Judgement</b>	<b>Pass</b>		
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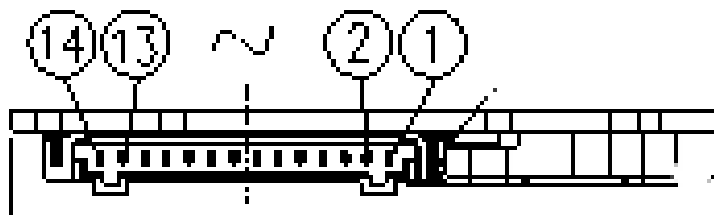
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## 11. Pin Description

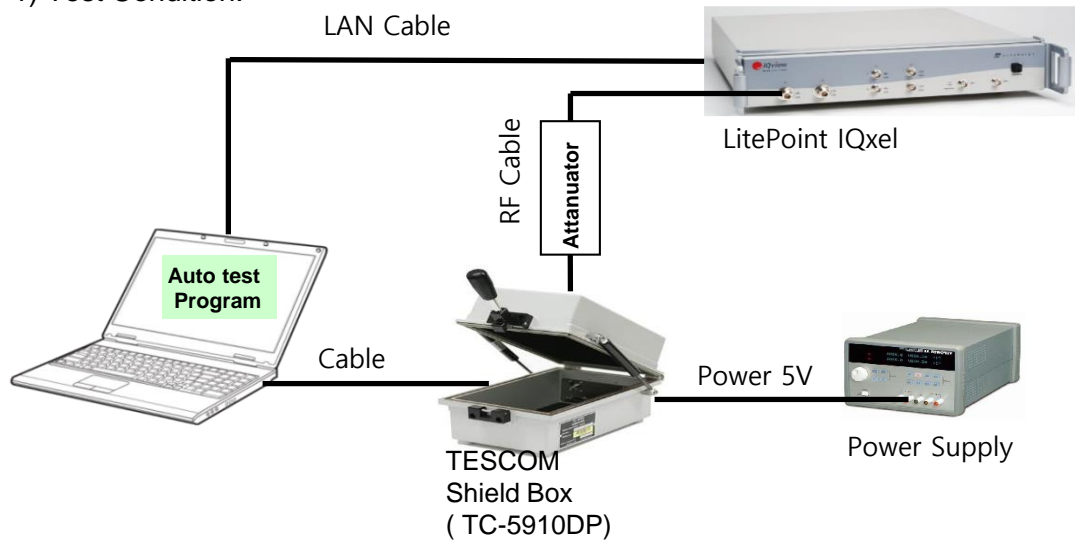
Pin No.	Pin Name	I/O	Pin Description
1	VCC	I	VDD 3.3V
2	BT_SCL(Uart Tx)	I/O	SPI_SCL
3	BT_SDA(Uart Rx)	I/O	SPI_SDA
4	GND	-	GND
5	Key_DET	I	BT_Wake up
6	VCC	I	VDD 3.3V
7	BDP_DET	I	BDP_DET
8	GND	-	GND
9	NRESET	I	Reset
10	IR_DET	I	IR_DET
11	BLE_FW_MODE	I	FW MODE
12	BLE_CHECK_MODE	I	CHECK_MODE
13	GPIO_PREPARE_A	I/O	Spare GPIO
14	GPIO_PREPARE_B	I/O	Spare GPIO



## 12. Test method

This is a conducted test method of WiFi RF performance.

### 1) Test Condition.



### 2) Test Set-up List.

- Instrument : LitePoint IQxel
- Shield Box : Tescom TC-5910DP
- RF Cable : TESCOM 4011-0011
- Attenuator : Mini-Circuit 15542 10dB attenuator
- USB Cable, LAN Cable, Murata RF Cable : MXHT83QE3000 or MXHS83QE3000
- Power Supply

### 3) Test Flow

- Install the test set-up.
- Power OFF.
- Open the Shield box and install the DUT for test.
- Close the shield box.
- Power ON.
- Check the driver icon.
- Start testing.

### #. Notes.

- Be careful that you can consider a RF cable LOSS.

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### 13. Mechanical Characteristics

#### 1) Outline view

Item	Test Conditions
Assembly	No defects of wiring, soldering and assembling
Appearance	No dirt, rust, corrosion or foreign material

#### 2) Appearance structure

Item	Test Conditions
Dimension	As assembly drawing
Mounting	As assembly drawing
Weight	4.45g

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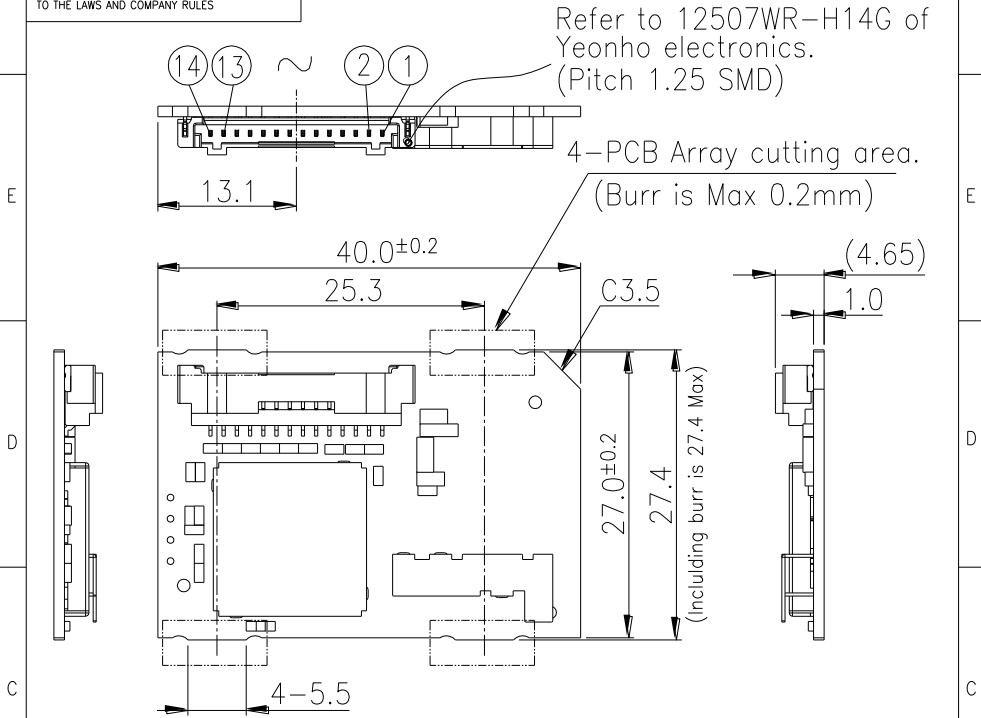
**14. Outline Drawing**

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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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DIMENSIONAL TOLERANCE	~ up to 6	±0.3	C H A N G E S	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					△	

RELEASING THIS DRAWING WITHOUT PERMISSION OF LG Innotek SHOULD BE ACCUSED ACCORDING TO THE LAWS AND COMPANY RULES



Shield can, ANT : STS304+Ni Plating

**3D View**

- 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. [X.XX] these dimensions inside of the square are cutting area.
  5. Label information is based on specification

RELATED P/N	THIRD ANGLE PROJECT	SCALE	UNIT	DESIGN	'21.03.02	TITLE	Outline Drawing	
		2:1	mm		<i>KS Lee</i>	PART NO		
				CHECKED	'21.03.02		MODEL	ETWBCLDC01
				APPROVED	'21.03.02	<i>Y.U Jeong</i> <i>SD Chal</i>	DWG NO	

LGIT\_STD A4\_VER

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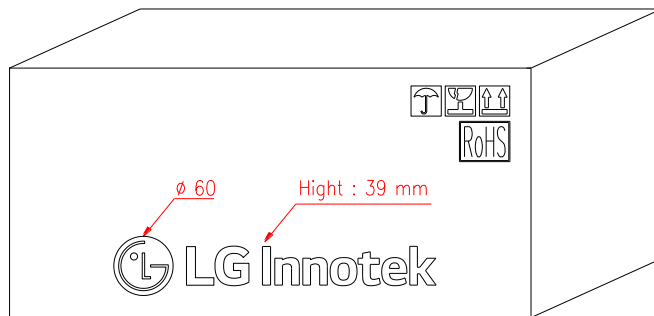
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**15. LG CI Specification.**

■ **LG CI regulation**

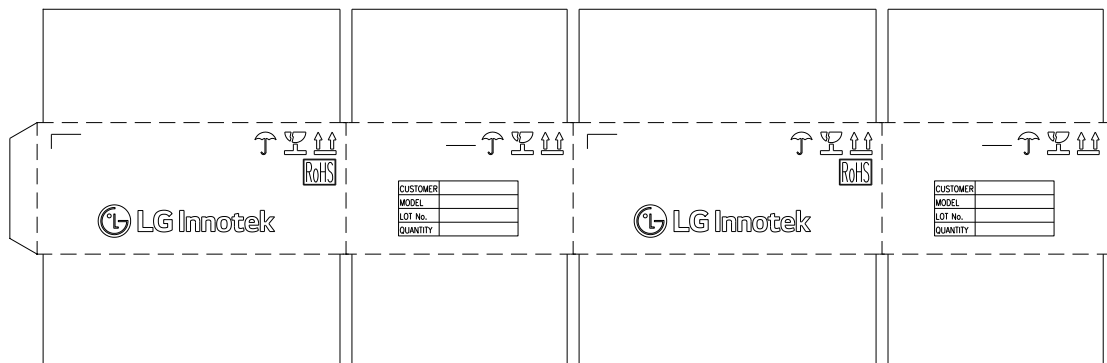


■ **LG CI print in Carton box**



Logo Ratio – 1 : 0.65  
Logo Type Color -- Black

■ **Planar figure of Carton box**



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**16. Packing Information**

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<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width:30%;">DIMENSIONAL TOLERANCE</th> <th style="width:10%;">CHANGES</th> <th style="width:10%;">REV. NO.</th> <th style="width:10%;">DATE (YY MM DD)</th> <th style="width:10%;">SIGNATURE</th> <th style="width:10%;">CHANGE CONTENTS</th> </tr> <tr> <td>~ up to 6</td> <td>±0.3</td> <td></td> <td></td> <td style="text-align: center;">A</td> <td></td> </tr> <tr> <td>over 6 up to 30</td> <td>±0.5</td> <td></td> <td></td> <td style="text-align: center;">B</td> <td></td> </tr> <tr> <td>over 30 up to 120</td> <td>±0.5</td> <td></td> <td></td> <td style="text-align: center;">C</td> <td></td> </tr> <tr> <td colspan="6">UNLESS OTHERWISE SPECIFIED</td> </tr> </table>	DIMENSIONAL TOLERANCE	CHANGES	REV. NO.	DATE (YY MM DD)	SIGNATURE	CHANGE CONTENTS	~ up to 6	±0.3			A		over 6 up to 30	±0.5			B		over 30 up to 120	±0.5			C		UNLESS OTHERWISE SPECIFIED						<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>o 1 Tray Packing Q'ty : 78EA o Size : W X D X H : 503 * 355 * 16 o 1 Tray Packing Weight : 0.6±0.1kg (1 Module Weight : 5.0±1g)</p> <p>o Inner Box Packing Q'ty : 780EA o 1 Inner Box Packing Weight : 6.3±0.5kg</p> </div> <div style="width: 45%;"> <p>specification of label Refer the attaching</p> <p>o Carton Box Packing Q'ty : 1,560EA o Size : W X D X H : 514 * 394 * 248 o 1 Carton Box Packing Weight : 12.9±0.8kg</p> <p>– Attached Shipping box label</p> <p>– Attached shipping information label</p> </div> </div> <p>&lt; Attaching specification of label &gt;</p> <p>– Attached inner box label and FIFO label</p> <p>– "NOT FULL" label attached in inner and outer box if in inner box have loose q'ty.</p>			
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UNLESS OTHERWISE SPECIFIED																																		
<p>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"</p> <p>Copyright © 2015 by LG Innotek, Co., Ltd. All rights reserved. No part of this document may be reproduced, stored in a storage device or retrieval system, or transmitted in any form or by any means, whether electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of LG Innotek, Co., Ltd.</p>	<p>( CARTON BOX : 20EA ) o Box Material : Corrugated Paper o Total Packing Q'TY : 31,200EA o Total Packing Weight : 278±10kg</p>																																	
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REG. DATE : 2021.02.03

**SPECIFICATION**

REV.NO : 1.0

REV. DATE : 2021.02.03

MODEL NAME : **ETWBCLD01 (LGIT)**  
**LGSBT12(LGE)**

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**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 Electronics USA  
1000 Sylvan Avenue Englewood Cliffs  
New Jersey, United States, 07632



REG. DATE : 2021.02.03

**SPECIFICATION**

REV.NO : 1.0

REV. DATE : 2021.02.03

MODEL NAME : **ETWBCLDC01 (LGIT)**  
**LGSBT12(LGE)**

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**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.

REG. DATE : 2021.02.03

**SPECIFICATION**

REV.NO : 1.0

REV. DATE : 2021.02.03

 MODEL NAME : **ETWBCLDC01 (LGIT)  
LGSBT12(LGE)**

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## Regulatory Statement (FCC)

- **Antennas list**

This module is certified with the following integrated antenna.

-Type: Metal Press Antenna

-Max. peak Antenna gain

Frequency	BT Ant(dB)
2402 ~ 2480 MHz	1.50

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: BEJLGSBT12
- Contains IC: 2703H-LGSBT12

- **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.

REG. DATE : 2021.02.03

**SPECIFICATION**

REV.NO : 1.0

REV. DATE : 2021.02.03

MODEL NAME : **ETWBCLDC01 (LGIT)**  
**LGSBT12(LGE)**

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**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.

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 LGSBT12 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: BEJLGSBT12

Contient module émetteur IC : 2703H-LGSBT12

REG. DATE : 2021.02.03

**SPECIFICATION**

REV.NO : 1.0

REV. DATE : 2021.02.03

MODEL NAME : **ETWBCLDC01 (LGIT)**  
**LGSBT12(LGE)**

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**4. CE Statement****Simplified EU Declaration of Conformity**

Hereby, LG Electronics Inc. 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.lg.com/global/support/cedoc/cedoc#>

**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

**Manufacturer name: LG Electronics Inc.**

The postal address: LG Electronics European Shared Service Center B.V. Krijgsman 1, 1186 DM Amstelveen, The Netherlands

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