

# TEST REPORT

of

FCC CFR 47 part 1, 1.1307(b), 1.1310

FCC ID: RVBXWB100

Equipment Under Test : CMS Gateway  
Model Name : XWB100  
Variant Model Name(s) : -  
Applicant : Chois Technology Co., Ltd.  
Manufacturer : Chois Technology Co., Ltd.  
Date of Receipt : 2021.04.30  
Date of Test(s) : 2021.04.30 ~ 2021.05.27  
Date of Issue : 2021.06.08

In the configuration tested, the EUT complied with the standards specified above. This test report does not assure KOLAS accreditation.

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- 2) The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received.
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Tested by:



Nancy Park

Technical  
Manager:



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**SGS Korea Co., Ltd. Gunpo Laboratory**



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## 1. General Information

### 1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

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- Designation number: KR0150

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### 1.2. Details of Applicant

Applicant : Chois Technology Co., Ltd.  
 Address : S-1404, 32, Songdogwahak-ro, Yeonsu-gu, Incheon, South Korea, 21984  
 Contact Person : Nam, Sang-hwan  
 Phone No. : +82 32 246 3404

### 1.3. Details of Manufacturer

Company : Same as applicant  
 Address : Same as applicant

### 1.4. Description of EUT

<b>Kind of Product</b>	CMS Gateway
<b>Model Name</b>	XWB100
<b>Serial Number</b>	Conducted: 001, Radiated: 002
<b>Power Supply</b>	DC 5.0 V
<b>Frequency Range</b>	2 402 MHz ~ 2 480 MHz (Bluetooth Low Energy)
<b>Modulation Technique</b>	GFSK
<b>Number of Channels</b>	40 channels (Bluetooth Low Energy)
<b>Antenna Type</b>	External Antenna
<b>Antenna Gain</b>	2.23 dBi
<b>H/W Version</b>	REV1.0
<b>S/W Version</b>	REV1.0

### 1.5. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501-RF-RTL002231	2021.06.08	Initial

## 2. RF Exposure Evaluation

### 2.1. Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(b), 1.1310

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f <sup>2</sup>	6
30-300	61.4	0.163	1.0	6
300-1 500	-	-	f/300	6
1 500-100 000	-	-	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f <sup>2</sup>	30
30-300	27.5	0.073	0.2	30
300-1 500	-	-	f/1500	30
<b><u>1 500-100 000</u></b>	-	-	<b><u>1.0</u></b>	<b><u>30</u></b>

#### 2.1.1. Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where  $P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

$\pi$  = 3.1416

R = distance between observation point and center of the radiator in cm

$P_d$  the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

### 2.1.2. Test Result of RF Exposure Evaluation

Test Item : RF Exposure Evaluation Data  
 Test Mode : Normal Operation

### 2.1.3. Output Power into Antenna & RF Exposure Evaluation Distance

#### Bluetooth Low Energy

##### - Maximum tune up tolerance

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
2 400 ~ 2 483.5	-1	2.23	0.000 264	1

#### WLAN (2.4G)

##### - Maximum tune up tolerance

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
2 400 ~ 2 483.5	17	2.23	0.016 662	1

#### Note;

- The power density Pd (5th column) at a distance of 20 cm calculated from the friis transmission formula is far below the limit of 1 mW/cm<sup>2</sup>.
- This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
- This equipment should be installed and operated with minimum 20 cm between the radiator and your body.
- The antenna gain of this transmitter is less than 6 dB i and must not be collocated or operating in conjunction with any other antenna or transmitter unless authorized to do so by the FCC.
- According to KDB 447498 D01 RF Exposure Guidance 4.1.

#### Simultaneous transmission of RF Exposure test exclusion for worst case configuration.

Bluetooth Low Energy: the ratio is 0.000 264 / 1

WLAN: the ratio is 0.016 662 / 1

Confirm the sum result of individual MPEs ratio is ≤ 1.0;

Bluetooth Low Energy + WLAN: (0.000 264 / 1) + (0.016 662 / 1) = 0.016 926 ≤ 1.0

**- End of the Test Report -**