

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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Report Number: F690501-RF-RTL002231

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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

Kind of Product	CMS Gateway
Model Name	XWB100
Serial Number	Conducted: 001, Radiated: 002
Power Supply	DC 5.0 V
Frequency Range	2 402 MHz ~ 2 480 MHz (Bluetooth Low Energy)
Modulation Technique	GFSK
Number of Channels	40 channels (Bluetooth Low Energy)
Antenna Type	External Antenna
Antenna Gain	2.23 dB i
H/W Version	REV1.0
S/W Version	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 ²)	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 ²	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 ²	30
30-300	27.5	0.073	0.2	30
300-1 500	-	-	f/1500	30
<u>1 500-100 000</u>	-	-	<u>1.0</u>	<u>30</u>

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/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

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

P_d the limit of MPE, 1 mW/cm². 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 ²)	Limits (mW/cm ²)
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 ²)	Limits (mW/cm ²)
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/cm².
- 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 -