verify No.453096517979

cert.qnqkorea.com:8080 위변조방지/진위확인

TEST REPORT

Eurofins KCTL Co.,Ltd. 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea TEL: 82-70-4904-0113 FAX: 82-505-299-8311 www.kctl.co.kr	Report No.: KR25-SRF0134 Page (1) of (10)	eurofins KCTL

1. Client

- Name : EVERINT Co., Ltd.
- Address : 129, Chungjusandan 1-ro, Chungju-si, Chungcheongbuk-do, Republic of Korea
- Date of Receipt : 2025-05-21

2. Use of Report : Certification

3. Name of Product / Model : Wi-Fi and Bluetooth Combo Module / WBT-MSO

4. Manufacturer / Country of Origin : EVERINT Co., Ltd. / Korea

5. FCC ID : 2AKMF-WBT-MSO

6. IC Certificate No. : 22266-WBTMSO

7. Date of Test : 2025-06-04 to 2025-07-01

8. Location of Test : ■ Permanent Testing Lab ☐ On Site Testing
(Address:65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea)

9. Test method used : 47 CRF Part 1.1310
RSS-102 Issue 6 December 2023

10. Test Result : Refer to the test result in the test report

Affirmation	Tested by Name : Minki Kim (Signature)	Technical Manager Name : Harim Lee (Signature)

2025-07-23

Eurofins KCTL Co.,Ltd.

As a test result of the sample which was submitted from the client, this report does not guarantee the whole product quality. This test report should not be used and copied without a written agreement by Eurofins KCTL Co.,Ltd.

REPORT REVISION HISTORY

Date	Revision	Page No
2025-07-23	Originally issued	-

This report shall not be reproduced except in full, without the written approval of Eurofins KCTL Co.,Ltd. This document may be altered or revised by Eurofins KCTL Co.,Ltd. personnel only, and shall be noted in the revision section of the document. Any alteration of this document not carried out by Eurofins KCTL Co.,Ltd. will constitute fraud and shall nullify the document. This test report is a general report that does not use the KOLAS accreditation mark and is not related to KS Q ISO/IEC 17025 and KOLAS accreditation.

General remarks for test reports

Statement concerning the uncertainty of the measurement systems used for the tests

(may be required by the product standard or client)

☐ **Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:**

Procedure number, issue date and title:

Calculations leading to the reported values are on file with the testing laboratory that conducted the testing.

☒ **Statement not required by the standard or client used for type testing**

CONTENTS

1. General information 4
2. Device information 4
2.1. Frequency/channel operations.....5
3. RF Exposure.....7
3.1. Test results.....9

1. General information

Client	:	EVERINT Co., Ltd.
Address	:	129, Chungjusandan 1-ro, Chungju-si, Chungcheongbuk-do, Republic of Korea
Manufacturer	:	EVERINT Co., Ltd.
Address	:	129, Chungjusandan 1-ro, Chungju-si, Chungcheongbuk-do, Republic of Korea
Laboratory	:	Eurofins KCTL Co.,Ltd.
Address	:	65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea
Accreditations	:	FCC Site Designation No: KR0040, FCC Site Registration No: 687132 VCCI Registration No. : R-20080, G-20078, C-20059, T-20056 CAB Identifier: KR0040, ISED Number: 8035A KOLAS No.: KT231

2. Device information

Equipment under test	:	Wi-Fi and Bluetooth Combo Module			
Model	:	WBT-MSO			
Modulation technique	:	Bluetooth(BDR/EDR)_GFSK, π/4DQPSK, 8DPSK			
		Bluetooth(BLE)_GFSK			
		WLAN(802.11b/g/n/a/ac)_DSSS, OFDM, OFDMA			
Number of channels	:	BT/LE	:	79 ch(BDR/EDR), 40 ch(BLE)	
		2.4 GHz band	:	11 ch (20 MHz), 9 ch (40 MHz)	
		5 GHz band			
		UNII-1	:	4 ch (20 MHz), 2 ch (40 MHz), 1 ch (80 MHz)	
		UNII-2A	:	4 ch (20 MHz), 2 ch (40 MHz), 1 ch (80 MHz)	
		UNII-2C	:	12 ch (20 MHz), 6 ch (40 MHz), 3 ch (80 MHz)	
		UNII-3	:	5 ch (20 MHz), 2 ch (40 MHz), 1 ch (80 MHz)	
Power source	:	DC 3.3 V			
Antenna type	:	BT/LE : Ceramic chip Antenna			
		WLAN : Chip Antenna			
Antenna gain	:	BT/LE	:	0.01 dBi	
				Antenna 1	Antenna 2
		2.4 GHz band	:	0.27 dBi	0.27 dBi
		5 GHz band			
		UNII-1	:	0.38 dBi	0.38 dBi
		UNII-2A	:	0.27 dBi	0.27 dBi
		UNII-2C	:	0.82 dBi	0.82 dBi
		UNII-3	:	1.34 dBi	1.34 dBi
Frequency range	:	2.4 GHz band	:	2 402 MHz ~ 2 480 MHz	(Bluetooth/BLE)
				2 412 MHz ~ 2 462 MHz	(802.11b/g/n_HT20)
				2 422 MHz ~ 2 452 MHz	(802.11n_HT40)
		5 GHz band			
		UNII-1	:	5 180 MHz ~ 5 240 MHz	(802.11a/n/ac_HT20/VHT20)
			:	5 190 MHz ~ 5 230 MHz	(802.11n/ac_HT40/VHT40)
			:	5 210 MHz	(802.11ac_VHT80)
		UNII-2A	:	5 260 MHz ~ 5 320 MHz	(802.11a/n/ac _HT20/VHT20)
			:	5 270 MHz ~ 5 310 MHz	(802.11n/ac_HT40/VHT40)
			:	5 290 MHz	(802.11ac_VHT80)
		UNII-2C	:	5 500 MHz ~ 5 720 MHz	(802.11a/n/ac_HT20/VHT20)
			:	5 510 MHz ~ 5 710 MHz	(802.11n/ac_HT40/VHT40)
			:	5 530 MHz ~ 5 690 MHz	(802.11ac _VHT80)
		UNII-3	:	5 745 MHz ~ 5 825 MHz	(802.11a/n/ac_HT20/VHT20)
			:	5 755 MHz ~ 5 795 MHz	(802.11n/ac _HT40/VHT40)
			:	5 775 MHz	(802.11ac_VHT80)
Software version	:	V001			
Hardware version	:	V001			
Test device serial No.	:	WBTMSO00001			
Operation temperature	:	0 ℃ ~ 70 ℃			

1. This product does not support simultaneous operation under all conditions.

2.1. Frequency/channel operations

This device contains the following capabilities:
Bluetooth(BDR, EDR), Bluetooth Low Energy(1 Mbps, 2 Mbps),
WLAN 2.4 ㎓_802.11b/g/n(HT20/40), WLAN 5 ㎓_802.11a/n(HT20/40)/ac(VHT20/40/80)

Ch.	Frequency (㎒)
00	2 402
. .	. .
39	2 441
. .	. .
78	2 480

Table 2.1.1. Bluetooth(BDR/EDR)

Ch.	Frequency (㎒)
00	2 402
. .	. .
19	2 440
. .	. .
39	2 480

Table 2.1.2. Bluetooth Low Energy(1/2 Mbps)

Ch.	Frequency (㎒)
01	2 412
. .	. .
06	2 437
. .	. .
11	2 462

Table 2.1.3. 802.11b/g/n HT20 mode

Ch.	Frequency (㎒)
03	2 422
. .	. .
06	2 437
. .	. .
09	2 452

Table 2.1.4. 802.11n HT40 mode

UNII-1		UNII-2A		UNII-2C		UNII-3	
Ch.	Frequency (㎒)	Ch.	Frequency (㎒)	Ch.	Frequency (㎒)	Ch.	Frequency (㎒)
36	5 180	52	5 260	100	5 500	149	5 745
40	5 200	56	5 280	120	5 580	157	5 785
48	5 240	64	5 320	140	5 700	165	5 825
				144	5 720		

Table 2.1.5. WLAN 5 ㎓(802.11a/n/ac HT20/VHT20)

UNII-1		UNII-2A		UNII-2C		UNII-3	
Ch.	Frequency (㎒)	Ch.	Frequency (㎒)	Ch.	Frequency (㎒)	Ch.	Frequency (㎒)
38	5 190	54	5 270	102	5 510	151	5 755
46	5 230	62	5 310	118	5 590	159	5 795
				134	5 670		
				142	5 710		

Table 2.1.6. WLAN 5 ㎓(802.11n/ac HT40/VHT40)

UNII-1

Ch.	Frequency (MHz)
42	5 210

UNII-2A

Ch.	Frequency (MHz)
58	5 290

UNII-2C

Ch.	Frequency (MHz)
106	5 530
122	5 610
138	5 690

UNII-3

Ch.	Frequency (MHz)
155	5 775

Table 2.1.7. WLAN 5 GHz(802.11ac_VHT80)

3. RF Exposure

FCC Regulation

This document is prepared to show compliance with the RF Exposure requirements as required in §1.1310 of the FCC rules and Regulations.
The limit for Maximum Permissible Exposure (MPE), specified in FCC §1.1310, is listed in Table 1-1.
According to FCC §1.1310: the criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b).

Table 1 – Limits for Maximum Permissible Exposure (MPE)

Frequency Range (㎒)	Electric Field Strength [V/m]	Magnetic Field Strength [A/m]	Power Density [㎽/㎠]	Averaging Time [minute]
(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 ~ 15 000	/	/	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/1 500	30
1 500 ~ 15 000	/	/	1.0	30

*f=frequency in ㎒, *= plane-wave equivalent power density*

Per the guidance of KDB 680106, the E-field and H-field limits shown in the table above are extended down to 100 ㎑

IC

RF Field strength and power density limits for devices used by the general public (uncontrolled environment)

Frequency Range (MHz)	Electric Field (V_{RMS}/m rms)	Magnetic Field (A_{RMS}/m)	Power Density (W/m^2)	Reference Period (minutes)
10-20	27.46	0.072 8	2	6
20-48	58.07 / $f^{0.25}$	0.154 0 / $f^{0.25}$	8.944 / $f^{0.5}$	6
48-300	22.06	0.058 52	1.291	6
300-6 000	3.142 $f^{0.341\,7}$	0.008 335 $f^{0.341\,7}$	0.026 19 $f^{0.683\,4}$	6
6 000-15 000	61.4	0.163	10	6
15 000-150 000	61.4	0.163	10	616 000/$f^{1.2}$
150 000-300 000	0.158 $f^{0.5}$	4.21×10^{-4} $f^{0.5}$	6.67×10^{-5} f	616 000/$f^{1.2}$

Note: f is frequency in MHz.

RF field strength and power density limits for controlled-use devices (controlled environment)

Frequency Range (MHz)	Electric Field (V_{RMS}/m rms)	Magnetic Field (A_{RMS}/m)	Power Density (W/m^2)	Reference Period (minutes)
10-20	61.4	0.163	10	6
20-48	129.8 / $f^{0.25}$	0.344 4 / $f^{0.25}$	44.72 / $f^{0.5}$	6
48-100	49.33	0.130 9	6.455	6
100-6 000	15.60 $f^{0.25}$	0.041 38 $f^{0.25}$	0.645 5 $f^{0.5}$	6
6 000-15 000	137	0.364	50	6
15 000-150 000	137	0.364	50	616 000/$f^{1.2}$
150 000-300 000	0.354 $f^{0.5}$	9.40×10^{-4} $f^{0.5}$	3.33×10^{-4} f	616 000/$f^{1.2}$

Note: f is frequency in MHz.

For both table 7 and table 8, refer to Health Canada's Safety Code 6 for relevant notes and additional information.

Field refrerence level exposure exemption limits

Field reference level (FRL) exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 ㎝ (i.e. mobile devices), except when the device operates as follows:

- below 20 ㎒ and the source-based, time-averaged maximum EIRP of the device is equal to or less than 1 W (adjusted for tune-up tolerance)
- at or above 20 ㎒ and below 48 ㎒ and the source-based, time-averaged maximum EIRP of the device is equal to or less than $4.49/f_{0.5}$ W (adjusted for tune-up tolerance), where f is in ㎒
- at or above 48 ㎒ and below 300 ㎒ and the source-based, time-averaged maximum EIRP of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance)
- at or above 300 ㎒ and below 6 ㎓ and the source-based, time-averaged maximum EIRP of the device is equal to or less than $1.31\times10_{-2}f_{0.6834}W$ (adjusted for tune-up tolerance), where f is in ㎒
- at or above 6 ㎓ and the source-based, time-averaged maximum EIRP of the device is equal to or less than 5 W (adjusted for tune-up tolerance)

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the EIRP was derived.

3.1. Test results

FCC

MPE (Maximum Permissive Exposure) Prediction

Predication of MPE limit at a given distance: Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S=PG/4\pi R^2 \quad \left(\Rightarrow R=\sqrt{PG/4\pi S}\right)$$

S = power density [㎽/㎠]
P = Power input to antenna [㎽]
G = Power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna [㎝]

IC

RF Exposure evaluation

At or above 300 ㎒ and below 6 ㎓ and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1.31 x 10^{-2} $f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in ㎒;

Calculation Result of RF exposure (FCC)

Maximum tune-up tolerance (Worst Case)

Mode	Frequency [㎒]	Max Tune-up Power [dBm]	Max Tune-up Power [㎽]	Ant Gain [dBi]	Ant Gain [㎽]	Power density at 20 ㎝ [㎽/㎠]	Limit [㎽/㎠]
Bluetooth	2 402	8.00	6.31	0.01	1.00	0.001 26	1.00
Bluetooth Low Energy	2 440	9.50	8.91	0.01	1.00	0.001 78	1.00
2.4G_802.11g_MIMO	2 412	18.50	70.79	3.28	2.13	0.029 97	1.00
5G_U-NII-1_ 802.11ac_VHT80 _MIMO	5 210	18.50	70.79	3.39	2.18	0.030 74	1.00
5G_U-NII-2A_ 802.11ac_VHT80 _MIMO	5 290	22.00	158.49	3.28	2.13	0.067 10	1.00
5G_U-NII-2C_ 802.11ac_VHT80 _MIMO	5 530	22.00	158.49	3.83	2.42	0.076 16	1.00
5G_U-NII-3_ 802.11ac_VHT20 _MIMO	5 825	21.50	141.25	4.35	2.72	0.076 51	1.00

Calculation Results of RF exposure (IC)

Maximum tune-up tolerance (Worst Case)

Mode	Frequency [㎒]	Max Tune-up Power [dBm]	Ant Gain [dBi]	E.I.R.P.		Limit [㎽]
				[dBm]	[㎽]	
Bluetooth	2 402	8.00	0.01	8.01	6.32	2 676.42
Bluetooth Low Energy	2 440	9.50	0.01	9.51	8.93	2 705.29
2.4G_802.11g_MIMO	2 412	18.50	3.28	21.78	150.66	2 684.03
5G_U-NII-1 _802.11ac_VHT80 _MIMO	5 210	18.50	3.39	21.89	154.53	4 543.16
5G_U-NII-2A _802.11ac_VHT80 _MIMO	5 290	22.00	3.28	25.28	337.29	4 590.72
5G_U-NII-2C _802.11ac_VHT80 _MIMO	5 530	22.00	3.83	25.83	382.82	4 732.05
5G_U-NII-3 _802.11ac_VHT20 _MIMO	5 825	21.50	4.35	25.85	384.59	4 903.14

End of test report