

EMF TEST REPORT

Report number		RAPA23-O-019
Applicant	Name	Innonet Co., Ltd.
	Logo	N/A
	Address	Building C, Office 417, Munjeong Hyundai Knowledge Industry Center, 7, Beobwon-ro 11-gil, Songpa-gu, Seoul 05836
Manufacturer	Name	Innonet Co., Ltd.
	Address	Building C, Office 417, Munjeong Hyundai Knowledge Industry Center, 7, Beobwon-ro 11-gil, Songpa-gu, Seoul 05836
Type of equipment		TVWS Backpack Wi-Fi
Basic model name		BTCPE10
Multi model name		N/A
Serial number		N/A
FCC ID		2A9R3-BTCPE10
Test duration		March 9, 2023 to March 23, 2023
Date of issue		March 31, 2023
Total page		7 Pages (including this page)

SUMMARY

The equipment complies with the regulation; FCC Part 15 Subpart C Section 15.247

This test report only contains the result of a single test of the sample supplied for the examination.
It is not a general valid assessment of the features of the respective products of the mass-production.

March 31, 2023

March 31, 2023

김민구

류우열

Tested by MinGu Ji
Tester

Reviewed by Wooyeol- Ryu
Executive Manager

Test Report Version History

Version	Date	Reason for revision
1.0	March 31, 2023	Original Document

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1. Description of EUT

1.1 Applicant

- Company name : Innonet Co., Ltd.
- Address : Building C, Office 417, Munjeong Hyundai Knowledge Industry Center, 7, Beobwon-ro 11-gil, Songpa-gu, Seoul 05836
- Contact person : Tae Hyun Kim / Researcher / thkim@innonet.net
- Phone/Fax : +82-2-406-8849 / +82-2-3012-8101

1.2 Manufacturer

- Company name : Innonet Co., Ltd.
- Address : Building C, Office 417, Munjeong Hyundai Knowledge Industry Center, 7, Beobwon-ro 11-gil, Songpa-gu, Seoul 05836
- Phone/Fax : +82-2-406-8849 / +82-2-3012-8101

1.3 Basic description

- Product name : TVWS Backpack Wi-Fi
- Basic model name : BTCPE10
- Alternative model name : N/A

1.4 General description

- EQUIPMENT CLASS : DTS – Digital Transmission Systems
- Frequency Range : 2 412 MHz ~ 2 462 MHz (802.11n(HT20))
- Output Power : WLAN : 22.82 dBm
- Modulation Type : QPSK, 16QAM
- Antenna Type : WLAN : Dipole Antenna
- Antenna Gain : WLAN : SISO : 5.54 dBi ,
MIMO(ANT0+ANT1) : 8.55 dBi
- Power Supply : AC 110.0 ~ 230.0 V

1.5 Alternative type(s)/model(s)

There is no alternative type(s) and/or model(s).

2. General information of test

2.1 Test standards and results

Applied Standards : FCC Part 15 Subpart C		
Section	Description of Test	Result
15.247 (a) (2)	Minimum 6 dB Bandwidth	Pass
15.247 (b) (3)	Maximum Peak Conducted Output Power	Pass
15.247 (d)	100 kHz Bandwidth Outside the Frequency Band	Pass
	Radiated Emission which fall in the Restricted Band	Pass
15.247 (e)	Peak Power Spectral Density	Pass
15.207	Conducted Limits	Pass
15.209	Radiated Emission Limits	Pass
15.203	Antenna Requirement	Pass

2.2 Description of EUT during the test

During the test, keep the EUT in continuously transmitting mode.

There was no mechanical or circuitry modification to improve RF and spurious characteristic, and any RF and spurious suppression device(s) was not added against the device tested.

The EUT was moved throughout the X, Y, and Z axis and worst case data was recorded in this report.

2.3 Test configuration

• Type of peripheral equipment used

Model	Manufacturer	Description	Connected to
650G1	HP	Notebook	EUT
PA-1900-32HT	LITE-ON TECHNOLOGY(CHANGZHOU_Co., Ltd.	Power Adapter	Notebook

2.4 Test Facility

- FCC Registration No: 927453
- IC Company address code: 9355B
- RRA Designation Number: KR0027

• Place of Test

Anyang Test Site(RF Test Room)

#101 & B104 Anyang Megavalley, 268, Hagui-ro, Dongan-gu, Anyang-si, Gyeonggi-do, 14056, Korea

3. MAXIMUM PERMISSIBLE EXPOSURE

3.1 RF Exposure Calculation

KDB 447498 was used as the guidance.

3.2 EUT Description

Kind of EUT	TVWS Backpack Wi-Fi
Operating Frequency Band	<input type="checkbox"/> Wireless Microphone: 494.000 MHz ~ 501.000 MHz and 498.200 MHz ~ 505.200 MHz <input checked="" type="checkbox"/> WLAN: 2 412 MHz ~ 2 462 MHz <input type="checkbox"/> WLAN: 5 180 MHz ~ 5 240 MHz <input type="checkbox"/> WLAN: 5 745 MHz ~ 5 825 MHz <input type="checkbox"/> Bluetooth: 2 402 MHz ~ 2 480 MHz <input type="checkbox"/> Bluetooth BLE: 2 402 MHz ~ 2 480 MHz <input type="checkbox"/> Other : 2410 MHz ~ 2 480 MHz
MAX. RF OUTPUT POWER	22.82 dBm
Antenna Gain	8.55 dBi
Exposure Evaluation Applied	<input checked="" type="checkbox"/> MPE <input type="checkbox"/> SAR Exclusion <input type="checkbox"/> N/A

3.3 Calculated MPE Safe Distance

According to above equation, the following result was obtained.

Operating Freq. Band (MHz)	Operating Mode	Target Power W/tolerance	Max tune up power		Antenna Gain		Safe Distance (cm)	Power Density (mW/cm ²) @ 20 cm Separation	Limit (mW/cm ²)
		(dBm)	(dBm)	(mW)	Log	Linear			
2 412 ~ 2 462	802.11n(HT20)	22.32 ± 0.5	22.82	191.43	8.55	7.161	10.44	0.272 7	1.00

According to above table, for 2 400 ~ 2 483.5 MHz Band, safe distance,

$$D = 0.282 * \sqrt{(191.43 * 7.161)/1.00} = 10.44 \text{ cm}$$

For getting power density at 20 cm separation in above table, following formula was used.

$$S = P * G / (4\pi * R^2) = 191.43 * 7.161 / (4 * 3.14 * 20^2) = 0.272 7$$

Where:

S = Power Density,

P = Power input to the external antenna (Output power from the EUT antenna port (dBm) – cable loss (dB)),

G = Gain of Transmit Antenna (linear gain), R = Distance from Transmitting Antenna

2.937

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