

RF Exposure Report

Report No.: SA190429C33

FCC ID: M82-WISE-1840

Test Model: WISE-1840

Received Date: Apr. 29, 2019

Test Date: May 17 ~ May 29, 2019
Aug. 28, 2019

Issued Date: Sep. 03, 2019

Applicant: ADVANTECH CO., LTD

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Release Control Record

Issue No.	Description	Date Issued
SA190429C33	Original release	Sep. 03, 2019

1 Certificate of Conformity

Product: Mini-PCIe EPD control card

Brand: Advantech

Test Model: WISE-1840

Sample Status: Engineering sample

Applicant: ADVANTECH CO., LTD

Test Date: May 17 ~ May 29, 2019
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Standards: FCC Part 2 (Section 2.1091)
KDB 447498 D01 General RF Exposure Guidance v06

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

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Approved by : Bruce Chen , **Date:** Sep. 03, 2019
Bruce Chen / Project Engineer

2 RF Exposure

2.1 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 (minutes)
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
300-1500	...	...	f/1500	30
1500-100,000	...	...	1.0	30

f = Frequency in MHz; *Plane-wave equivalent power density

2.2 MPE Calculation Formula

$$P_d = (P_{out} * G) / (4 * \pi * r^2)$$

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

2.3 Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as Mobile Device.

3 Calculation Result of Maximum Conducted Power

Module	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
1	15.68	5.03	20	0.023	1
2	14.64	5.03	20	0.018	1

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

Conclusion:

The formula of calculated the MPE is:

$$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

$$\text{Module 1} + \text{Module 2} = 0.023 / 1 + 0.018 / 1 = 0.041 < 1$$

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