

RF Exposure Report

Report No.: SA180912C10

FCC ID: M82-ZENOCU000

Test Model: ZenoCCU

Received Date: Aug. 28, 2018

Test Date: Aug. 30 ~ Nov. 22, 2018

Issued Date: Nov. 27, 2018

Applicant: ADVANTECH CO., LTD

Address: No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei, Taiwan 114

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.

Test Location: No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)

**FCC Registration /
Designation Number:** 788550 / TW0003



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specifically mentioned, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

Table of Contents

Release Control Record	3
1 Certificate of Conformity	4
2 RF Exposure	5
2.1 Limits for Maximum Permissible Exposure (MPE).....	5
2.2 MPE Calculation Formula	5
2.3 Classification	5
3 Calculation Result of Maximum Conducted Power	6



Release Control Record

Issue No.	Description	Date Issued
SA180912C10	Original release.	Nov. 27, 2018

1 Certificate of Conformity

Product: IPC

Brand: Zenoway

Test Model: ZenoCCU

Sample Status: Engineering Sample

Applicant: ADVANTECH CO., LTD

Test Date: Aug. 30 ~ Nov. 22, 2018

Standards: FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1-1992

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.

Prepared by : Pettie Chen , **Date:** Nov. 27, 2018
Pettie Chen / Senior Specialist

Approved by : Bruce Chen , **Date:** Nov. 27, 2018
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				
300-1500	F/1500	30
1500-100,000	1.0	30

F = Frequency in MHz

2.2 MPE Calculation Formula

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

where

Pd = power density in mW/cm²

Pout = 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

Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
WLAN 2412~2462	21.85	5.58	20	0.110	1
WLAN 5180~5240	20.56	4.39	20	0.062	1
WLAN 5260~5320	20.31	4.39	20	0.059	1
WLAN 5500~5700	20.14	4.39	20	0.056	1
WLAN 5745~5825	21.17	4.39	20	0.072	1
BT LE 2402~2480	2.20	2.57	20	0.001	1
BT EDR 2402~2480	7.52	2.57	20	0.002	1

For 2.4GHz Band: Directional Gain = 2.57dBi + 10log(2) = 5.58dBi

For 5.0GHz Band: Directional Gain = 1.38dBi + 10log(2) = 4.39dBi

Frequency Band	Max. Power (dBm)			Total Power (dBm)	Power Limit (dBm)
	WLAN 2.4GHz	BT LE	BT EDR		
2.4GHz	21.85	2.20	-	21.90	30
2.4GHz	21.85	-	7.52	22.01	30

Conclusion:

The formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 +etc. < 1

CPD = Calculation power density

LPD = Limit of power density

*2.4G and 5G WLAN cannot transmit simultaneously.

WLAN 2.4GHz + BT = 0.110/1 + 0.002/1 = 0.112

WLAN 5.0GHz + BT = 0.072/1 + 0.002/1 = 0.074

Therefore, the maximum calculations of above situations are less than the "1" limit.

---END---