

RF EXPOSURE REPORT



Report No.: 17070315-FCC-H2

Supersede Report No.: N/A

Applicant	Advantech Co Ltd	
Product Name	Mobile Data Terminal	
Model No.	PWS-472	
Serial No.	MICA-052, D300	
Test Standard	FCC 2.1093:2016	
Test Date	April 22 to May 04, 2017	
Issue Date	May 05, 2017	
Test Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail	
Equipment complied with the specification	<input checked="" type="checkbox"/>	
Equipment did not comply with the specification	<input type="checkbox"/>	
		
Loren Luo Test Engineer	David Huang Checked By	
This test report may be reproduced in full only Test result presented in this test report is applicable to the tested sample only		

Issued by:

SIEMIC (SHENZHEN-CHINA) LABORATORIES

Zone A, Floor 1, Building 2 Wan Ye Long Technology Park

South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108

Phone: +86 0755 2601 4629801 Email: China@siemic.com.cn

Laboratories Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.



In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

Country/Region	Scope
USA	EMC, RF/Wireless, SAR, Telecom
Canada	EMC, RF/Wireless, SAR, Telecom
Taiwan	EMC, RF, Telecom, SAR, Safety
Hong Kong	RF/Wireless, SAR, Telecom
Australia	EMC, RF, Telecom, SAR, Safety
Korea	EMI, EMS, RF, SAR, Telecom, Safety
Japan	EMI, RF/Wireless, SAR, Telecom
Singapore	EMC, RF, SAR, Telecom
Europe	EMC, RF, SAR, Telecom, Safety

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1. Report Revision History

Report No.	Report Version	Description	Issue Date
17070315-FCC-H2	NONE	Original	May 05, 2017

2. Customer information

Applicant Name	Advantech Co Ltd
Applicant Add	No. 1, Alley 20, Lane 26, Rueiguang Road , Neihu District, Taipei , Taiwan
Manufacturer	DOFUNTECH CO., LTD.
Manufacturer Add	A401, No.189 Xinjunhuan Rd., Pujiang Town, Minhang District, Shanghai, China.

3. Test site information

Lab performing tests	SIEMIC (Shenzhen-China) LABORATORIES
Lab Address	Zone A, Floor 1, Building 2 Wan Ye Long Technology Park South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108
FCC Test Site No.	718246
IC Test Site No.	4842E-1
Test Software	Radiated Emission Program-To Shenzhen v2.0

4. Equipment under Test (EUT) Information

Description of EUT:	Mobile Data Terminal
Main Model:	PWS-472
Serial Model:	MICA-052, D300
Date EUT received:	April 21, 2017
Test Date(s):	April 22 to May 04, 2017
Antenna Gain:	BLE/Bluetooth(2.4G): 2.13dBi WIFI(2.4G): 2.13dBi WIFI(5150-5250MHz): 1.92dBi
Antenna Type:	PIFA antenna
Type of Modulation:	Bluetooth: GFSK, π /4DQPSK, 8DPSK 802.11b: DSSS 802.11a/g/n20/n40: OFDM BLE: GFSK
RF Operating Frequency (ies):	Bluetooth/BLE: 2402-2480 MHz 802.11b/g: 2412-2462 MHz (TX/RX) 802.11n20: 2412-2462MHz ; (TX/RX) 802.11n40: 2422-2452 MHz (TX/RX); 802.11 a: 5150-5250 MHz; (TX/RX)
Number of Channels:	Bluetooth: 79CH WIFI :802.11b/g: 11CH WIFI :802.11a: 24CH WIFI :802.11n20: 11CH(2.4GHz); 24CH(5GHz) WIFI :802.11n40: 9CH(2.4GHz); 12CH(5GHz) BLE: 40CH
Port:	USB Port

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Adapter:

Model: JHD-AP013U-050200BB-A

Input: AC100-240V~50/60Hz,0.35A

Output: DC 5.0V,2000mA

Input Power:

Battery:

Model: LBP300A

Spec : 3.7V,3200mAh,11.84Wh

Maximum chargeable voltage: 4.2V

Trade Name :

ADVANTECH

FCC ID:

M82-PWS472

5. FCC §2.1093 - Radiofrequency radiation exposure evaluation: portable devices.

5.1 RF Exposure

Standard Requirement:

According to §15.247 (i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission' s guidelines.

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{\text{(GHz)}}}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR,¹⁶ where

- $f_{\text{(GHz)}}$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation¹⁷
- The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum *test separation distance* is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum *test separation distance* is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

Routine SAR evaluation refers to that specifically required by § 2.1093, using measurements or computer simulation. When routine SAR evaluation is not required, portable transmitters with output power greater than the applicable low threshold require SAR evaluation to qualify for TCB approval.

$$\text{result} = P\sqrt{F} / D$$

P= Maximum turn-up power in mW

F= Channel frequency in GHz

D= Minimum test separation distance in mm

5.2 Test Result

Bluetooth Mode:

Modulation	CH	Frequency (MHz)	Conducted Power (dBm)	Tune Up Power (dBm)	Max Tune Up Power (dBm)	Max Tune Up Power (mW)	Result	Limit
GFSK	Low	2402	2.678	2.5±1	3.5	2.239	0.69	3
	Mid	2441	3.454	2.5±1	3.5	2.239	0.70	3
	High	2480	2.754	2.5±1	3.5	2.239	0.71	3
π /4 DQPSK	Low	2402	1.841	2.5±1	3.5	2.239	0.69	3
	Mid	2441	2.677	2.5±1	3.5	2.239	0.70	3
	High	2480	1.903	2.5±1	3.5	2.239	0.71	3
8-DPSK	Low	2402	1.985	2.5±1	3.5	2.239	0.69	3
	Mid	2441	2.868	2.5±1	3.5	2.239	0.70	3
	High	2480	2.046	2.5±1	3.5	2.239	0.71	3

BLE Mode:

Modulation	CH	Freq (MHz)	Conducted Power (dBm)	Tune Up Power (dBm)	Max Tune Up Power (dBm)	Max Tune Up Power (mW)	Result	Limit
GFSK	Low	2402	-4.759	-4.5±1	-3.5	0.447	0.14	3
	Mid	2440	-4.128	-4.5±1	-3.5	0.447	0.14	3
	High	2480	-5.246	-4.5±1	-3.5	0.447	0.14	3

Result: Compliance

No SAR measurement is required.