

MPE REPORT

FCC ID: 2AOAA-DM-210

Date of issue: Dec. 30, 2020

Report number:	MTi201203002-04E3
Sample description:	DIGITAL DRUM KIT
Model(s):	DM-210, DM-200, DM-200K, DM-200S, DM-200X, DM-210K, DM-210S, DM-210X
Applicant:	Cherub Technology Co., Ltd
Address:	Room507, Block 1, Nanhai E-Cool, No. 6 Xinghua Road, Shekou, Nanshan District, Shenzhen City, Guangdong Province, China, 518067
Date of test:	Dec. 10, 2020 to Dec. 30, 2020

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>

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TEST RESULT CERTIFICATION	
Applicant's name:	Cherub Technology Co., Ltd
Address:	Room507, Block 1, Nanhai E-Cool, No. 6 Xinghua Road, Shekou, Nanshan District, Shenzhen City, Guangdong Province, China, 518067
Manufacture's name:	Cherub Technology Co., Ltd
Address:	Room507, Block 1, Nanhai E-Cool, No. 6 Xinghua Road, Shekou, Nanshan District, Shenzhen City, Guangdong Province, China, 518067
Factory's name:	Cherub Technology Co., Ltd (Zhuhai High-tech Park)
Address:	No.10, Keji No.9Rd, Tangjiawan Town, Zhuhai National Hi-tech Industrial Development Zone, Zhuhai City, Guangdong Province, China, 519080
Product name:	DIGITAL DRUM KIT
Trademark:	NUX
Model and/or type reference:	DM-210
Serial model:	DM-200, DM-200K, DM-200S, DM-200X, DM-210K, DM-210S, DM-210X
RF exposure procedures:	KDB 447498 D01 v06

This device described above has been tested by Shenzhen Microtest Co., Ltd and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

Tested by:

Demi Mu

Dec. 30, 2020

Reviewed by:

Leo Su

Dec. 30, 2020

Approved by:

Tom Xue

Dec. 30, 2020



RF EXPOSURE EVALUATION

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) Radiation as specified in §1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(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
1,500-100,000			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/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

MPE Calculation Method

Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where

P_d = Power density in mW/cm²

P_{out} = output power to antenna in mW

G = Numeric gain of the antenna relative to isotropic antenna

π = 3.1415926

R = distance between observation point and center of the radiator in cm(20cm)

P_d the limit of MPE, 1mW/cm². If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.



Measurement Result

BLE:

Operation Frequency: BLE GFSK: 2402-2480MHz

BT:

Operation Frequency: BT GFSK, $\pi/4$ -DQPSK, 8DPSK: 2402-2480MHz

Power density limited: 1mW/ cm²

Antenna Type: PCB Antenna;

antenna gain: 1.5dBi

R=20cm

$mW=10^{(dBm/10)}$

antenna gain Numeric= $10^{(dBi/10)}=10^{(1.5/10)}=1.41$

BLE:

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
		(dBm)		tune-up power		Gain		(mW/cm2)	(mW/cm2)
				(dBm)	(mW)	(dBi)	Numeric		
2402	GFSK	3.087	4±1	5	3.162	1.5	1.41	0.0009	1
2440		4.641	4±1	5	3.162	1.5	1.41	0.0009	1
2480		4.652	4±1	5	3.162	1.5	1.41	0.0009	1

BT:

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
		(dBm)		tune-up power		Gain		(mW/cm2)	(mW/cm2)
				(dBm)	(mW)	(dBi)	Numeric		
2402	GFSK	4.882	5±1	6	3.981	1.50	1.41	0.0011	1
2441		4.504	5±1	6	3.981	1.50	1.41	0.0011	1
2480		4.567	5±1	6	3.981	1.50	1.41	0.0011	1
2402	π/4-DQPSK	4.297	5±1	6	3.981	1.50	1.41	0.0011	1
2441		5.76	5±1	6	3.981	1.50	1.41	0.0011	1
2480		5.64	5±1	6	3.981	1.50	1.41	0.0011	1
2402	8DPSK	4.426	5±1	6	3.981	1.50	1.41	0.0011	1
2441		5.897	5±1	6	3.981	1.50	1.41	0.0011	1
2480		5.678	5±1	6	3.981	1.50	1.41	0.0011	1



Simultaneous transmit

$BT+BLE=0.0011+0.0009=0.002$

Conclusion:

For the max result: $0.002 \leq 1.0$ for 1g SAR, No SAR is required.

----END OF REPORT----