

MPE REPORT

FCC ID: 2AOAA-MIGHTY40BT

Date of issue: Jan. 23, 2019

Report Number:	MTi181030E129
Sample Description:	GUITAR AMPLIFIER
Model(s):	MIGHTY40BT
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:	Oct. 24, 2018 to Jan. 23, 2019

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.com>

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
Product name:	GUITAR AMPLIFIER
Trademark:	NUX
Model and/or type reference:	MIGHTY40BT
Serial Model:	N/A
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

Jan. 23, 2019

Reviewed by:



Blue Zheng

Jan. 23, 2019

Approved by:



Smith Chen

Jan. 23, 2019

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

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

BT:

Operation Frequency: BT GFSK/ π /4-DQPSK/8DPSK: 2402-2480MHz,

Power density limited: 1mW/ cm²

Antenna Type: BT Antenna: PCB Antenna;

BT antenna gain: 2dBi

R=20cm

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

antenna gain Numeric= $10^{(dBi/10)}=10^{(2/10)}=1.58$

Channel Freq. (MHz)	modulation	conducted power (dBm)	Tune-up power (dBm)	Max		Antenna		Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
				tune-up power		Gain			
				(dBm)	(mW)	(dBi)	Numeric		
2402	GFSK	-1.183	-0.5±1	0.5	1.122	2.00	1.58	0.0004	1
2441		0.215	-0.5±1	0.5	1.122	2.00	1.58	0.0004	1
2480		-0.212	-0.5±1	0.5	1.122	2.00	1.58	0.0004	1
2402	π /4-DQPSK	0.154	1.15±1	2.15	1.641	2.00	1.58	0.0005	1
2441		2.122	1.15±1	2.15	1.641	2.00	1.58	0.0005	1
2480		1.737	1.15±1	2.15	1.641	2.00	1.58	0.0005	1
2402	8DPSK	0.667	1.5±1	2.5	1.778	2.00	1.58	0.0006	1
2441		2.477	1.5±1	2.5	1.778	2.00	1.58	0.0006	1
2480		1.607	1.5±1	2.5	1.778	2.00	1.58	0.0006	1

BLE

Channel Freq. (MHz)	modulation	conducted power (dBm)	Tune-up power (dBm)	Max		Antenna		Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
				tune-up power		Gain			
				(dBm)	(mW)	(dBi)	Numeric		
2402	GFSK	-1.340	-0.5±1	0.5	1.122	2.00	1.58	0.0004	1
2440		0.462	-0.5±1	0.5	1.122	2.00	1.58	0.0004	1
2480		0.028	-0.5±1	0.5	1.122	2.00	1.58	0.0004	1

Conclusion:

For the max result: $0.0006 \leq 1.0$ for 1g SAR, No SAR is required.

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