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Report Template Version: V04

Report Template Revision Date: 2018-07-06

RF Exposure Evaluation Report

Report No. : CQASZ20210500724E-03

Applicant: Meihengtong Intelligent Electronics (Guangzhou)Co.,Ltd.

Address of Applicant: 2nd Floor, Factory#A, No.140, Taipingyang Ind.Zone, Xintang Town, Zengcheng, GuangZhou, China

Equipment Under Test (EUT):

Product: Label Printer

Model No.: MHT-L1081, MHT-L1082, MHT-L1083, MHT-L1084, MHT-L1085, MHT-L1086, MHT-L1087, MHT-L1088, MHT-L1089, MHT-L8001, MHT-L8002, MHT-L8003, MHT-L8004, MHT-L8005, MHT-L8006, MHT-L8007, MHT-L8008, MHT-L8009

Test Model No. MHT-L1081

Brand Name: N/A

FCC ID: 2AR8RMHT-L1081

Standards: 47 CFR Part 1.1307
47 CFR Part 1.1310
KDB447498D01 General RF Exposure Guidance v06

Date of Receipt: 2021-05-24

Date of Test: 2021-05-24 to 2021-06-11

Date of Issue: 2021-06-11

Test Result : **PASS***

*In the configuration tested, the EUT complied with the standards specified above

Tested By: Lewis Zhou
(Lewis Zhou)

Reviewed By: Juh Li
(Ares Liu)

Approved By: Sheek Luo
(Sheek Luo)



1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20210500724E-03	Rev.01	Initial report	2021-06-11

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3 General Information

3.1 Client Information

Applicant:	Meihengtong Intelligent Electronics (Guangzhou)Co.,Ltd.
Address of Applicant:	2nd Floor, Factory#A, No.140, Taipingyang Ind.Zone, Xintang Town, Zengcheng, GuangZhou, China
Manufacturer:	Meihengtong Intelligent Electronics (Guangzhou)Co.,Ltd.
Address of Manufacturer:	2nd Floor, Factory#A, No.140, Taipingyang Ind.Zone, Xintang Town, Zengcheng, GuangZhou, China
Factory:	Meihengtong Intelligent Electronics (Guangzhou)Co.,Ltd.
Address of Factory:	2nd Floor, Factory#A, No.140, Taipingyang Ind.Zone, Xintang Town, Zengcheng, GuangZhou, China

3.2 General Description of EUT

Product Name:	Label Printer	
All Model No.:	MHT-L1081, MHT-L1082, MHT-L1083, MHT-L1084, MHT-L1085, MHT-L1086, MHT-L1087, MHT-L1088, MHT-L1089, MHT-L8001, MHT-L8002, MHT-L8003, MHT-L8004, MHT-L8005, MHT-L8006, MHT-L8007, MHT-L8008, MHT-L8009	
Test Model No.:	MHT-L1081	
Trade Mark:	N/A	
EUT Supports Radios application	BT and BLE: 2402-2480MHz	
Hardware Version:	MHT-L1081WBU_GD_V1.0_201113_22AZ.BZAAAC	
Software Version:	MHT-L1081_BU_GD303VCT6_200DPI_TSC_EPL2_BT(BR8051)_F4R2_V4.31_210409.bin	
Power Supply:	Mode:ADP 60D24 Input:100-240V~ 50/60Hz 1.5MAX	
Product Type:	☐ Mobile ☐ Portable ☒ Fix Location	
Test Software of EUT:	BR8051A01	
Antenna Type:	PCB antenna	
Antenna Gain:	BLE (for REALTEK chip)	0dBi
	BT (for CSR chip)	0dBi

4 RF Exposure Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Limits

According to FCC Part1.1310: 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 part1.1307(b)

TABLE 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)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
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
300–1500			f/300	6
1500–100,000			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
300–1500			f/1500	30
1500–100,000			1.0	30

F= Frequency in MHz

Friis Formula

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 = gain of antenna in linear scale

π = 3.1416

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

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

4.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

4.1.3 EUT RF Exposure Evaluation standalone operations

1) For BLE (for REALTEK chip)

Antenna Gain: 0dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.7 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Measurement Data

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-0.3	-1±1	0	1.000
Middle(2440MHz)	-0.13	-1±1	0	1.000
Highest(2480MHz)	0.06	-0.5±1	0.5	1.112

The worst case:

Maximum tune-up Power (mW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
1.112	0	0.00022	1.0	PASS

Note: 1) Refer to report No. CQASZ20210500724E-01 for EUT test Max Conducted Peak Output Power value.

2) $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2) = (1.112 \cdot 1) / (4 \cdot 3.1416 \cdot 20^2) = 0.00022$

2) For BT Classic (for CSR chip)

Antenna Gain: 0dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Measurement Data

GFSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-0.060	-1±1	0	1
Middle(2441MHz)	-0.930	-1±1	-1	0.794
Highest(2480MHz)	-1.540	-2.5±1	-1.5	0.708
π/4DQPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	2.370	1.5±1	2.5	1.778
Middle(2441MHz)	1.450	0.5±1	1.5	1.413
Highest(2480MHz)	0.800	0±1	1	1.259
8DPSK mode				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	2.890	2±1	3	1.995
Middle(2441MHz)	1.920	1±1	2	1.585
Highest(2480MHz)	1.260	0.5±1	1.5	1.413

The worst case:

Maximum tune-up Power (mW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
1.995	0	0.0004	1.0	PASS

Note: 1) Refer to report No. CQASZ20210500724E-02 for EUT test Max Conducted Peak Output Power value.

2) $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2) = (1.995 \cdot 1) / (4 \cdot 3.1416 \cdot 20^2) = 0.0004$