

RF Exposure Evaluation Report

Report Reference No......: **MTWG22040330-H**

FCC ID.....: **2AOCU-MATT85-GD**

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Representative Laboratory Name.: **Shenzhen Most Technology Service Co., Ltd.**

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Applicant's name.....: **CMC Group, Inc.**

Address: 12836 S Dixie Hwy, Bowling Green, OH, 43402

Test specification/ Standard: **47 CFR Part 1.1307**

47 CFR Part 2.1093

TRF Originator.....: Shenzhen Most Technology Service Co., Ltd.

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Test item description: Label Printer

Trade Mark: DayMark

Manufacturer: **CMC Group, Inc.**

Model/Type reference.....: MATT85

Listed Models: N/A

Modulation Type: GFSK, $\pi/4$ DQPSK, 8DPSK

Operation Frequency.....: From 2402MHz to 2480MHz

Hardware Version.....: RP310USEBW_GD_V1.0_210521 22AZ.BAZEBA

Software Version: RP410(MATT85)_BU(BR8051)_GD207_203DPI_
ZPL_F8R32_V1.00_211203.bin

Rating: DC 24V,2.5A,60W (byAdapter:AC100-240V,50/60Hz)

Result.....: **PASS**

TEST REPORT

Equipment under Test : Label Printer

Model /Type : MATT85

Listed Models : N/A

Remark : N/A

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Test Result	PASS

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

1. Revision History

Revision	Issue Date	Revisions	Revised By
00	2022.05.09	Initial Issue	Alisa Luo

2. SAR Evaluation

RF Exposure Compliance Requirement

Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06

4.3.1. Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

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.

EUT RF Exposure

BT classic

GFSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402MHz)	-0.992	-0.992 ± 1	0.008
Middle(2441MHz)	1.563	1.563 ± 1	2.563
Highest(2480MHz)	-0.335	-0.335 ± 1	0.665

$\pi/4$ DQPSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402MHz)	-0.950	-0.950 ± 1	0.050
Middle(2441MHz)	1.586	1.586 ± 1	2.586
Highest(2480MHz)	-1.322	-1.322 ± 1	-0.322

8DPSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402MHz)	-0.953	-0.953 ± 1	0.047
Middle(2441MHz)	1.063	1.063 ± 1	2.063
Highest(2480MHz)	-0.325	-0.325 ± 1	0.675

Worst case: GFSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Maximum Peak Conducted Output Power (MW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
Highest(2441 MHz)	2.586	1.81	0	0.0003	1.0	Pass

Note: 1) Refer to report **MTWG22040322-R1** for EUT test Max Conducted average Output Power value.

Note: 2) $P_d = (P_{out} * G) / (4 * \pi * R^2) = (1.81 * 1) / (4 * 3.1416 * 20^2) = 0.0003$

Note: 3) EUT's Bluetooth module is more than 20cm away from the human body.

BLE

GFSK				
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
			(dBm)	(mW)
Lowest(2402MHz)	-1.767	-1.767 ± 1	-0.767	0.83
Middle(2440MHz)	2.798	2.798 ± 1	3.798	2.39
Highest(2480MHz)	0.421	0.421 ± 1	1.421	1.38

Worst case: GFSK						
Channel	Maximum Peak Conducted Output Power (dBm)	Maximum Peak Conducted Output Power (mW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
Highest(2440 MHz)	3.798	2.39	0	0.0004	1.0	Pass

Note: 1) Refer to report **MTWG22040322-R2** for EUT test Max Conducted average Output Power value.

Note: 2) $P_d = (P_{out} * G) / (4 * \pi * R^2) = (2.39 * 1) / (4 * 3.1416 * 20^2) = 0.0004$

Note: 3) EUT's Bluetooth module is more than 20cm away from the human body.

.....THE END OF REPORT.....