

RF Exposure Evaluation Report

Report Reference No......: **MTWG22030228-H**

FCC ID..... : **2A6AR-RX416BT**

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Date of issue.....: **April 22,2022**

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

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Applicant's name.....: **Hangzhou TaoYun Technology Co.,LTD.**

Address: No.1401-1,HengXin Main Building,No.588,JiangNan
Road,Changhe Street, BinJiang Area, Hangzhou city, Zhejiang
province, China.

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

47 CFR Part 1.1310

KDB447498D01 General RF Exposure Guidance v06

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

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Test item description: Label Printer

Trade Mark: /

Manufacturer: **Hangzhou TaoYun Technology Co.,LTD.**

Model/Type reference.....: RX416BT

Listed Models: RX106BT,RX416DBT,RX106DBT,RX416SBT,RX106SBT,KM106B
T,KM106DBT,KM106SBT,KM-106BT,KM-106DBT,KM-106SBT

Modulation Type: GFSK, π /4DQPSK, 8DPSK

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

Hardware Version.....: RP421WBU_GD_V1.0_201113 22AZ.BZAAAC

Software Version: RP420B(RX416BT)_BU_GD303VCT6_200DPI_BT(BR8051)_F4R2
_high-speed_V4.31_210419.bin

Rating: DC 24V by Adapter

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

TEST REPORT

Equipment under Test : Label Printer

Model /Type : RX416BT

Listed Models : RX106BT,RX416DBT,RX106DBT,RX416SBT,RX106SBT,KM106BT,KM106DBT,KM106SBT,KM-106BT,KM-106DBT,KM-106SBT

Remark : Only the name of the product, the name of the model and the color of the appearance are different between the models, other are the same, the differences do not affect the safety and Electromagnetic compatibility of the product.

Applicant : Label Printer

Address : No.1401-1,HengXin Main Building,No.588,JiangNan Road,Changhe Street, BinJiang Area, Hangzhou city, Zhejiang province, China.

Manufacturer : **Hangzhou TaoYun Technology Co .,LTD.**

Address : No.1401-1,HengXin Main Building,No.588,JiangNan Road,Changhe Street, BinJiang Area, Hangzhou city, Zhejiang province, China.

Test Result:	PASS
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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	2022-04-22	Initial Issue	Alisa Luo

2. SAR Evaluation

2.1 RF Exposure Compliance Requirement

2.1.1 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.

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

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = 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.

2.1.3 EUT RF Exposure

Antenna Gain:0dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 0 in linear scale. Output Power Into Antenna & RF Exposure Evaluation Distance:

BLE

GFSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402 MHz)	0.205	0.205 ± 1	1.205
Middle(2440MHz)	0.150	0.150 ± 1	1.150
Highest(2480MHz)	-2.107	-2.107 ± 1	-1.107

BLE

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(2402 MHz)	1.205	1.32	0	0.0003	1.0	Pass

Note: 1) Refer to report **MTWG22030228-R2** for EUT test Max Conducted average Output Power value.

Note: 2) $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2) = (1.32 \cdot 1) / (4 \cdot 3.1416 \cdot 20^2) = 0.0003$

EDR

GFSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402 MHz)	-2.35	-2.35 ± 1	-1.35
Middle(2441MHz)	-3.55	-3.55 ± 1	-2.55
Highest(2480MHz)	-5.05	-5.05 ± 1	-4.05

$\pi/4$ DQPSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402 MHz)	-3.57	-3.57 ± 1	-2.57
Middle(2441MHz)	-4.25	-4.25 ± 1	-3.25
Highest(2480MHz)	-5.56	-5.56 ± 1	-4.56

8DPSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402 MHz)	-4.87	-4.87 ± 1	-3.87
Middle(2441MHz)	-5.85	-5.85 ± 1	-4.85
Highest(2480MHz)	-5.15	-5.15 ± 1	-4.15

EDR

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(2402 MHz)	-1.35	0.73	0	0.0002	1.0	Pass

Note: 1) Refer to report **MTWG22030228-R1** for EUT test Max Conducted average Output Power value.

Note: 2) $P_d = (P_{out} * G) / (4 * \pi * R^2) = (0.73 * 1) / (4 * 3.1416 * 20^2) = 0.0002$

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