

RF Exposure Evaluation Report

Report Reference No......: **MTEB24040034-H**

FCC ID.....: **2AD6G-RP415**

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

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Applicant's name.....: **Rongta Technology (Xiamen) Group Co., Ltd.**

Address: No.88, Tonghui South Road, Tongan, Xiamen,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: RONGTA

Model/Type reference.....: RP415

Listed Models: RP415A、RP415B、RP415C、RP415D、RP415E、RP415G、
RP415H、RP415M、RP415N、RP415S、RP415U、RP415W、
RP415Y、RP415Z、RP415HD、RP425、RP435、RP455、
RP405

Modulation Type: b: DSSS ,CCK ; g/n: BPSK,QPSK,QAM
GFSK, π/4DQPSK, 8DPSK

Operation Frequency.....: From 2412MHz~2462MHz
2402MHz to 2480MHz

Hardware Version.....: RP310USEBW_GD_V1.1_231021

Software Version: RP410_GD207_BOOT_V1.0_210131.bin

Rating: DC 24V by Adapter

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

TEST REPORT

Equipment under Test : Label Printer

Model /Type : RP415

Listed Models : RP415A、RP415B、RP415C、RP415D、RP415E、RP415G、RP415H、RP415M、RP415N、RP415S、RP415U、RP415W、RP415Y、RP415Z、RP415HD、RP425、RP435、RP455、RP405

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 : Rongta Technology (Xiamen) Group Co., Ltd.

Address : No.88, Tonghui South Road, Tongan, Xiamen, China.

Manufacturer : Rongta Technology (Xiamen) Group Co., Ltd.

Address : No.88, Tonghui South Road, Tongan, Xiamen, 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	2024.04.02	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

BLE

GFSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402 MHz)	0.298	0.298 ± 1	1.298
Middle(2440MHz)	0.870	0.870 ± 1	1.87
Highest(2480MHz)	1.613	1.613 ± 1	2.613

BLE

Worst case: GFSK						
Channel	Maximum tune-up Power (dBm)	Maximum tune-up Power (MW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
Highest(2480MHz)	2.613	1.83	-0.58	0.0003	1.0	Pass

Note: 1) Refer to report MTEB24040034-R for EUT test Max Conducted average Output Power value.

Note: 2) $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2) = (1.83 \cdot 0.87) / (4 \cdot 3.1416 \cdot 20^2) = 0.0003$

WIFI 2.4G

802.11b			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2412MHz)	10.42	10.42 ± 1	11.42
Middle(2437MHz)	10.64	10.64 ± 1	11.64
Highest(2462MHz)	11.35	11.35 ± 1	12.35

802.11g			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2412MHz)	12.38	12.38 ± 1	13.38
Middle(2437MHz)	12.50	12.50 ± 1	13.5
Highest(2462MHz)	13.08	13.08 ± 1	14.08

802.11n(H20)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2412MHz)	11.91	11.91 ± 1	12.91
Middle(2437MHz)	11.90	11.90 ± 1	12.9
Highest(2462MHz)	12.67	12.67 ± 1	13.67

802.11n(H40)			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2422MHz)	11.74	11.74 ± 1	12.74
Middle(2437MHz)	12.09	12.09 ± 1	13.09
Highest(2452MHz)	12.23	12.23 ± 1	13.23

WIFI 2.4G

Worst case: 802.11g						
Channel	Maximum tune-up Power (dBm)	Maximum tune-up Power (MW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
Highest(2462MHz)	14.08	25.59	-2.3181	0.0030	1.0	Pass

Note: 1) Refer to report MTEB24040034-R2 for EUT test Max Conducted average Output Power value.

Note: 2) $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2) = (25.59 \cdot 0.59) / (4 \cdot 3.1416 \cdot 20^2) = 0.0030$

BT classic

GFSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402MHz)	0.322	0.322 ± 1	1.322
Middle(2441MHz)	1.137	1.137 ± 1	2.137
Highest(2480MHz)	1.703	1.703 ± 1	2.703

$\pi/4$ DQPSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402MHz)	0.297	0.297 ± 1	1.297
Middle(2441MHz)	1.081	1.081 ± 1	2.081
Highest(2480MHz)	1.695	1.695 ± 1	2.695

8DPSK			
Test channel	Peak Output Power (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power
			(dBm)
Lowest(2402MHz)	0.221	0.221 ± 1	1.221
Middle(2441MHz)	1.023	1.023 ± 1	2.023
Highest(2480MHz)	1.630	1.630 ± 1	2.63

Worst case: GFSK						
Channel	Maximum tune-up Power (dBm)	Maximum tune-up Power (MW)	Antenna Gain (dBi)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
Highest(2480MHz)	2.703	1.86	-0.58	0.0003	1.0	Pass

Note: 1) Refer to report MTEB24040034-R1 for EUT test Max Conducted average Output Power value.

Note: 2) $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2) = (1.86 \cdot 0.87) / (4 \cdot 3.1416 \cdot 20^2) = 0.0003$

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

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