

RF Exposure Evaluation Report

Report Reference No...... : **MTEB24090200-H**

FCC ID..... : **2A397-HS330U**

Compiled by

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Date of issue..... : **Sep. 14, 2024**

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

Address..... : No.5, 2nd Langshan Road, North District, Hi-tech Industrial Park,
Nanshan, Shenzhen, Guangdong, China.

Applicant's name..... : **QINGDAO HISTONE INTELLIGENT COMMERCIAL SYSTEM CO., LTD.**

Address..... : Wisdom Valley, No.8 Shengshui Road, Laoshan District, Qingdao City, 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..... : Self-Checkout Terminal

Trade Mark..... : Histone

Model/Type reference..... : HS330U (Products may be available in a variety of color combinations according to customer needs)

Listed Models : N/A

Modulation Type..... : ASK

Operation Frequency..... : 13.56MHz

Hardware Version..... : GM-11

Software Version..... : GTGU010

Rating..... : 100-120V~/200-240V~, 50/60Hz, 3A/1.7A

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

TEST REPORT

Equipment under Test : Self-Checkout Terminal

Model /Type : HS330U

Listed Models : N/A

Remark : N/A

Applicant : QINGDAO HISTONE INTELLIGENT COMMERCIAL SYSTEM CO., LTD.

Address : Wisdom Valley, No.8 Shengshui Road, Laoshan District, Qingdao City, China

Manufacturer : QINGDAO HISTONE INTELLIGENT COMMERCIAL SYSTEM CO., LTD.

Address : Wisdom Valley, No.8 Shengshui Road, Laoshan District, Qingdao City, 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	2024.09.14	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: $P_d = (P_{out} * G) / (4 * \pi * R^2)$ 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.

2.1.3 EUT RF Exposure

NFC:

The worst case (refer to report **MTEB24090200-R**) is below:

$$E = \text{EIRP} - 20 \log d + 104.8$$

E: is the electric field strength in dBuV/m

EIRP: is the equivalent isotropically radiated power in dBm

d: is the specified measurement distance in m

d=3m

$$\text{EIRP} = 78.6 + 20 \log 3 - 104.8 = -16.66 \text{ dBm}$$

13.56 MHz < 30 MHz, Add a 6DB maximum ground factor.

$$\text{EIRP} = -16.66 \text{ dBm} + 6 = -10.66 \text{ dBm}$$

Channel	EIRP	Tune up tolerance (dBm)	Maximum tune-up Power (dBm)	Maximum tune-up Power (MW)	Power Density at R = 20 cm (mW/cm ²)	Limit	Result
13.56 MHz	-10.66 dBm	± 1	-9.66	0.108	0.0000215	0.9789	Pass

Note: 1) Refer to report **MTEB24090200-R** for EUT test Max Conducted average Output Power value.

Note: 2) $P_d = (\text{EIRP}) / (4 * \pi * R^2) = (0.108) / (4 * 3.1416 * 20^2) = 0.0000215$

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