

Test Report

Verified code: 579648

Report No.: E20240827121501-5EN

Customer: GUANGZHOU RANTION TECHNOLOGY CO., LTD.

Address: Room 7002 and 7003,7th Floor,Digital Entertainment Industrial Park,Greater Bay Area,No. 28 Huangpu Park West Road,Huangpu District,Guangzhou,China.

Sample Name: Donner OURA Piano

Sample Model: R300

Receive Sample Date: Sep.09,2024

Test Date: Sep.14,2024 ~ Nov.18,2024

Reference Document: 47 CFR, FCC Part 2.1091 Radio frequency radiation exposure evaluation: mobile devices

Test Result: Pass

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GRG METROLOGY & TEST GROUP CO., LTD.

Issued Date: 2024-12-02

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REPORT ISSUED HISTORY

Report Version	Report No.	Description	Compile Date
1.0	E20240827121501-5EN	Original Issue	2024-11-25

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1. GENERAL DESCRIPTION OF EUT

1.1 APPLICANT

Name: GUANGZHOU RANTION TECHNOLOGY CO., LTD.
Address: Room 7002 and 7003,7th Floor,Digital Entertainment Industrial Park,Greater Bay Area,No. 28 Huangpu Park West Road,Huangpu District,Guangzhou,China.

1.2 MANUFACTURER

Name: GUANGZHOU RANTION TECHNOLOGY CO., LTD.
Address: Room 7002 and 7003,7th Floor,Digital Entertainment Industrial Park,Greater Bay Area,No. 28 Huangpu Park West Road,Huangpu District,Guangzhou,China.

1.3 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Product Name: Donner OURA Piano
Product Model: R300
Trade Name: DONNER
Additional Model: S100, R100, S200, R200, S300, S400, R400
Model difference descriptions: The main model no. R300 and the family models no. S100, R100, S200, R200, S300, S400, R400 have the same technical construction-including circuit-diagram, PCB-LAYOUT, hardware version and software version identical, the model names are different, which does not affect electromagnetic compatibility and electrical safety performance.
Power Supply: DC 12V by adapter
Adapter: Model: GQ36-120300-AX
Input: 100-240V~ 50/60Hz 1.0A Max, Output: 12V 3.0A 36.0W
FCC ID: 2AV7N-OURA
Frequency Band: 2402MHz - 2480MHz for Bluetooth LE with 1M & 2M
2402MHz - 2480MHz for Bluetooth GFSK, $\pi/4$ -DQPSK, 8DPSK
Bluetooth LE for 1Mbps: -1.31dBm
Bluetooth LE for 2Mbps: -1.28dBm
Transmit Power: Bluetooth for GFSK: -2.11dBm
Bluetooth for $\pi/4$ -DQPSK: -0.52dBm
Bluetooth for 8DPSK: -0.30dBm
Modulation type: GFSK for Bluetooth LE, GFSK& $\pi/4$ -DQPSK&8DPSK for Bluetooth
Antenna Type: PCB printed antenna with 1.9dBi (Max.)
Temperature Range: 0℃ ~ 38℃
Hardware Version: V1.1
Software Version: V1.1
Sample No: E20240827121501-0001, E20240827121501-0002

Note:

The EUT antenna gain is provided by the applicant. This report is made solely on the basis of such data and/or information. We accept no responsibility for the authenticity and completeness of the above data and information and the validity of the results and/or conclusions. After evaluated the difference descriptions of the models, the test model is R300.

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2. LABORATORY

2.1 LABORATORY

The tests & measurements refer to this report were performed by Shenzhen EMC Laboratory of GRG METROLOGY & TEST GROUP CO., LTD.

Add.: No.1301 Guanguang Road Xinlan Community, Guanlan Street, Longhua District
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2.2 ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to GB/T 27025(ISO/IEC 17025:2017)

USA A2LA(Certificate #2861.01)

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada ISED (Company Number: 24897, CAB identifier:CN0069)

USA FCC (Registration Number: 759402, Designation Number:CN1198)

Copies of granted accreditation certificates are available for downloading from our web site,

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3. LIMITS FOR GENERAL POPULATION/UNCONTROLLED EXPOSURE

General

According to the KDB 447498 D04 Interim General RF Exposure Guidance v01, General frequency and separation-distance dependent MPE-based effective radiated power (ERP) thresholds are in Table 4.1 to support an exemption from further evaluation from 300 kHz through 100 GHz.

TABLE 4.1—THRESHOLDS FOR SINGLE RF SOURCES SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION

RF Source Frequency			Minimum Distance			Threshold ERP
f_L MHz		f_H MHz	$\lambda_L / 2\pi$		$\lambda_H / 2\pi$	W
0.3	–	1.34	159 m	–	35.6 m	$1,920 R^2$
1.34	–	30	35.6 m	–	1.6 m	$3,450 R^2/f^2$
30	–	300	1.6 m	–	159 mm	$3.83 R^2$
300	–	1,500	159 mm	–	31.8 mm	$0.0128 R^2 f$
1,500	–	100,000	31.8 mm	–	0.5 mm	$19.2 R^2$
Subscripts L and H are low and high; λ is wavelength. From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns.						

For mobile devices that are not exempt per Table 4.1 at distances from 20 cm to 40 cm and in 0.3 GHz to 6 GHz, evaluation of compliance with the exposure limits in §1.1310 is necessary if the ERP of the device is greater than $ERP_{20\text{cm}}$ in Formula (4.1).

Formula (4.1):

$$P_{\text{th}} (\text{mW}) = ERP_{20 \text{ cm}} (\text{mW}) = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

4. CALCULATION METHOD

Predication of MPE limit at a given distance

$EIRP(dBm) = \text{Maximum Tune-up Output power (dBm)} + \text{Maximum antenna gain(dBi)}$

$ERP(dBm) = EIRP(dBm) - 2.15$

R=minimum distance to the center of radiation of the antenna

From the EUT RF output power, the minimum mobile separation distance, $d=20\text{cm}$, as well as the maximum gain of the used as following information, the RF power ERP can be obtained.

Table 1 Antenna Specification

Mode	Antenna type	Internal Identification	Maximum antenna gain
Bluetooth LE	PCB printed antenna	Antenna 1	1.9dBi
Bluetooth	PCB printed antenna	Antenna 1	1.9dBi

Table 2 Transmit Power

Mode	Maximum Output Power (dBm)	Maximum Tune-up Output power (dBm)
Bluetooth LE 1M	-1.31	-1.00 ± 1.00
Bluetooth LE 2M	-1.28	-1.00 ± 1.00
Bluetooth DH5	-2.11	-2.00 ± 1.00
Bluetooth 2DH5	-0.52	0.00 ± 1.00
Bluetooth 3DH5	-0.30	0.00 ± 1.00

5. ESTIMATION RESULT

5.1 MEASUREMENT RESULTS

STANDALONE MPE

Mode	Frequency (MHz)	Maximum Tune-up Output power (dBm)	Antenna Gain (dBi)	Maximum Tune-up EIRP (dBm)	ERP (dBm)	Maximum Tune-up ERP (W)	Threshold ERP(W)
BLE 1M	2402- 2480	0.00	1.9	1.9	-0.25	0.0009	0.768
BLE 2M	2402- 2480	0.00	1.9	1.9	-0.25	0.0009	0.768
BT DH5	2402- 2480	-1.00	1.9	0.9	-1.25	0.0007	0.768
BT 2DH5	2402- 2480	1.00	1.9	2.9	0.75	0.0012	0.768
BT 3DH5	2402- 2480	1.00	1.9	2.9	0.75	0.0012	0.768

Remark:

1. RF Exposure use distance is 20cm from manufacturer declaration of user manual.
2. Threshold $ERP(W) = 19.2R^{-2}(W) = 19.2 \times 0.2^2(W) = 0.768(W)$.
3. The BLE and BT do not support simultaneous transmission.
4. $ERP(dBm) = EIRP(dBm) - 2.15$

6. CONCLUSION

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

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