



RF Exposure Evaluation Report

Application No.: DNT241451R1859-4987

Applicant: Shenzhen Huitong Botai digital technology Co., LTD.

Address of Applicant: 6F A, Building 7, Rundongsheng Industrial Park, Longzhu Community, Xixiang Street, Baoan District, Shenzhen

EUT Description: Gamepad
Lenovo S01,Lenovo S02,Lenovo S03,Lenovo S04,Lenovo S05,
Lenovo S06,Lenovo S07,Lenovo S08,Lenovo S09,Lenovo S10,

Model No.: Lenovo S01 Pro,Lenovo S02 Pro,Lenovo S03 Pro,Lenovo S04 Pro,
Lenovo S05 Pro,Lenovo S06 Pro,Lenovo S07 Pro,Lenovo S08 Pro,
Lenovo S09 Pro,Lenovo S10 Pro

FCC ID: 2BHNR-LENOVOS01

Power supply DC 3.7V From Battery; DC 5V From Adapter

Charging Voltage: DC 5V

Standards: 47 CFR Part 2.1093
FCC KDB 447498 D04 v01

Trade Mark: Lenovo

Date of Receipt: 2024/06/26

Date of Test: 2024/06/26 to 2024/07/09

Date of Issue: 2024/07/10

Test Result: **PASS**

Prepared By: Wayne Lin (Testing Engineer)

Reviewed By: Pengfei Chen (Project Engineer)

Approved By: Heise Chen (Manager)



Dongguan DN Testing Co., Ltd.

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Date: July 10, 2024

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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V2.0	/	Jul.10, 2024	Valid	Original Report



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1 General Information

1.1 Test Location

Company:	Dongguan DN Testing Co., Ltd
Address:	No. 1, West Fourth Street, South Xinfu Road, Wusha Liwu, Chang 'an Town, Dongguan City, Guangdong P.R.China
Test engineer:	Wayne Lin

1.2 General Description of EUT

Manufacturer:	Shenzhen Huitong Botai digital technology Co., LTD.
Address of Manufacturer:	6F A, Building 7, Rundongsheng Industrial Park, Longzhu Community, Xixiang Street, Baoan District, Shenzhen
EUT Description:	Gamepad
Test Model No.:	Lenovo S01
Additional Model(s):	Lenovo S02,Lenovo S03,Lenovo S04,Lenovo S05, Lenovo S06, Lenovo S07, Lenovo S08,Lenovo S09,Lenovo S10,Lenovo S01 Pro, Lenovo S02 Pro, Lenovo S03 Pro,Lenovo S04 Pro,Lenovo S05 Pro,Lenovo S06 Pro, Lenovo S07 Pro,Lenovo S08 Pro,Lenovo S09 Pro,Lenovo S10 Pro
Chip Type:	ZC32RF1M QFN40
Serial number:	PR241451R1859
Power Supply:	DC 3.7V From Battery; DC 5V From Adapter
Charging Voltage:	DC 5V
Trade Mark:	Lenovo
Hardware Version:	V1.0
Software Version:	V1.0
Sample Type:	☒ Portable Device, ☐ Module, ☐ Mobile Device
Antenna Type:	☐ External, ☒ Integrated
Antenna Gain:	☒ Provided by applicant -2.3dBi

Remark:

*Since the above data and/or information is provided by the applicant relevant results or conclusions of this report are only made for these data and/or information , DNT is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.



2 RF Exposure Evaluation

2.1 RF Exposure Compliance Requirement

2.1.1 Limits

Human exposure to RF emissions from portable devices (47 CFR §2.1093), as defined by the FCC, must be evaluated with respect to the FCC-adopted limits for SAR. Evaluation of mobile devices, as defined by the FCC, may also be performed with respect to SAR limits, but in such cases it is usually simpler and more cost-effective to evaluate compliance with respect to field strength or power density limits. For certain devices that are designed to be used in both mobile and portable configurations similar to those described in 47 CFR §2.1091(d)(4), such as certain desktop phones and wireless modem modules, compliance for mobile configurations is also satisfied when the same device is evaluated for SAR compliance in portable configurations.

Refer to 47 CFR §2.1093:

A portable device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that the RF source's radiating structure(s) is/are within 20 centimeters of the body of the user.

Evaluation of compliance with the exposure limits in § 1.1310 of this chapter, and preparation of an EA if the limits are exceeded, is necessary for portable devices having single RF sources with more than an available maximum time-averaged power of 1 mW, more than the ERP listed in Table 1 to § 1.1307(b)(3)(i)(C), or more than the P_{th} in the following formula, whichever is greater. The following formula shall only be used in conjunction with portable devices not exempt by § 1.1307(b)(3)(i)(C) at distances from 0.5 centimeters to 20 centimeters and frequencies from 0.3 GHz to 6 GHz.



$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}}(d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases} \quad (\text{B.2})$$

where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right)$$

and f is in GHz, d is the separation distance (cm), and $ERP_{20 \text{ cm}}$ is per Formula (B.1). The example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

Frequency (MHz)	Distance (mm)										
		5	10	15	20	25	30	35	40	45	50
	300	39	65	88	110	129	148	166	184	201	217
	450	22	44	67	89	112	135	158	180	203	226
	835	9	25	44	66	90	116	145	175	207	240
	1900	3	12	26	44	66	92	122	157	195	236
	2450	3	10	22	38	59	83	111	143	179	219
	3600	2	8	18	32	49	71	96	125	158	195
	5800	1	6	14	25	40	58	80	106	136	169

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 300 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.



2.1.2 Test Procedure

Software provided by client enabled the EUT to transmit data at lowest, middle and highest channel individually

2.1.3 EUT RF Exposure Evaluation

Mode	Fre (MHz)	Peak Conducted output Power (dBm)	Target power (dBm)	Antenna Gain (dBi)	Max. E.R.P (dBm)	Max. Target power (mW)	SAR Test Exemption Limit (mW)
GFSK	2402	-1.38	-1±1	-2.3	-4.45	0.359	3
	2441	-2.70	-2±1	-2.3	-5.45	0.285	3
	2480	-4.25	-4±1	-2.3	-7.45	0.180	3
π/4-DQPSK	2402	1.07	1±1	-2.3	-2.45	0.569	3
	2441	-0.69	0±1	-2.3	-3.45	0.452	3
	2480	-2.21	-2±1	-2.3	-5.45	0.285	3
8DPSK	2402	1.75	1±1	-2.3	-2.45	0.569	3
	2441	0.12	0±1	-2.3	-3.45	0.452	3
	2480	-1.58	-1±1	-2.3	-4.45	0.359	3
BLE 1M	2402	-1.44	-1±1	-2.3	-4.45	0.359	3
	2440	-2.67	-2±1	-2.3	-5.45	0.285	3
	2480	-4.30	-4±1	-2.3	-7.45	0.180	3

Note:

1. E.R.P=Conducted output Power+Antenna Gain -2.15.
2. SAR Test Exclusion Thresholds is 3mW for separation distance 5mm. Therefore, SAR test is not required.

The End Report