RF EXPOSURE REPORT

Applicant	Lenovo (Shanghai) Electronics Technology Co., Ltd.
Address	Section 304-305, Building No. 4, # 222, Meiyue Road, China (Shanghai) Pilot Free Trade Zone

Manufacturer or Supplier	Lenovo PC HK Limited
Address	23/F, Lincoln House, Taikoo Place 979 King's Road, Quarry Bay, Hong Kong, P.R.China
Product	Lenovo Smart Frame
Brand Name	Lenovo
Model	Lenovo CD-3L501F
Additional Model & Model Difference	N/A
Date of tests	Apr. 07, 2020 ~ Apr. 27, 2020

☒ **FCC Part 2 (Section 2.1091)**
☒ **KDB 447498 D01**
☒ **IEEE C95.1**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Tested by Andy Zhu Project Engineer / EMC Department	Approved by Glyn He Assistant Manager / EMC Department
	 Date: May 13, 2020

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
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1. CERTIFICATION

PRODUCT:	Lenovo Smart Frame
BRAND NAME:	Lenovo
MODEL NO.:	Lenovo CD-3L501F
ADDITIONAL MODEL:	N/A
FCC ID:	O57CD3L501F
TEST SAMPLE:	ENGINEERING SAMPLE
APPLICANT:	Lenovo (Shanghai) Electronics Technology Co., Ltd.
TESTED DATES:	Apr. 07, 2020 ~ Apr. 27, 2020
STANDARDS:	FCC Part 2 (Section 2.1091) KDB 447498 D01 IEEE C95.1

2. RF EXPOSURE LIMIT

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

FREQUENCY RANGE (MHz)	ELECTRIC FIELD STRENGTH (V/m)	MAGNETIC FIELD STRENGTH (A/m)	POWER DENSITY (mW/cm^2)	AVERAGE TIME (minutes)
LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE				
300-1500	…	…	F/1500	30
1500-100,000	…	…	1.0	30

F = Frequency in MHz

3. MPE CALCULATION FORMULA

$Pd = (Pout*G) / (4*pi*r^2)$

where

Pd = power density in mW/cm^2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

4. CLASSIFICATION

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as **Mobile Device**.

5. ANTENNA GAIN

The antennas provided to the EUT, please refer to the following table:

Frequency Band	Antenna Gain (dBi)	Antenna Type
BT 2.4GHz	4.86	PIFA Antenna
Wi-Fi 2.4GHz	3.84	PIFA Antenna
Wi-Fi 5GHz (5150-5250MHz)	4.94	PIFA Antenna
Wi-Fi 5GHz (5250-5350MHz)	4.94	PIFA Antenna
Wi-Fi 5GHz (5500-5725MHz)	4.94	PIFA Antenna
Wi-Fi 5GHz (5725-5850MHz)	4.94	PIFA Antenna

6. CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

The tuned conducted Average Power (declared by client)

Mode	Frequency (MHz)	Target Power (dBm)	Tolerance (dBm)	Lower Tolerance (dBm)	Upper Tolerance (dBm)
BT (GFSK)	2402-2480MHz	4	+-2	2	6
BT (8DPSK)	2402-2480MHz	4	+-2	2	6
BT-LE (GFSK)	2402-2480MHz	4	+-2	2	6
802.11b	2412-2462MHz	13	+-2	11	15
802.11g	2412-2462MHz	15	+-2	13	17
802.11n HT20	2412-2462MHz	15	+-2	13	17
802.11n HT40	2422-2452MHz	14	+-2	12	16
Wi-Fi 5GHz(Band1)	5150-5250MHz	14	+-2	12	16
Wi-Fi 5GHz(Band2)	5250-5350MHz	13	+-2	11	15
Wi-Fi 5GHz(Band3)	5500-5725MHz	13	+-2	11	15
Wi-Fi 5GHz(Band4)	5725-5850MHz	13	+-2	11	15

The measured conducted Average Power

Mode	Frequency (MHz)	Averaged Power (dBm)
BT (GFSK)	2441	4.85
BT (8DPSK)	2441	4.88
BT-LE (GFSK)	2480	4.29
802.11b	2462	13.74
802.11g	2462	15.68
802.11n HT20	2412	15.88
802.11n HT40	2452	14.39
Wi-Fi 5GHz(Band1)	5190	14.40
Wi-Fi 5GHz(Band2)	5290	13.42
Wi-Fi 5GHz(Band3)	5610	13.42
Wi-Fi 5GHz(Band4)	5785	13.57

FREQUENCY BAND (MHz)	MAX AVERAGE POWER (dBm)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm^2)	LIMIT (mW/cm^2)
BT	6	4.86	20	0.003849	1.0
Wi-Fi 2.4GHz	17	3.84	20	0.038288	1.0
Wi-Fi 5GHz	16	4.94	20	0.039125	1.0

CONCLUSION:

The BT and Wi-Fi can transmit simultaneously, but Wi-Fi 2.4G and Wi-Fi 5G can not transmit simultaneously, the formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + ……etc. < 1

CPD = Calculation power density

LPD = Limit of power density

(0.003849/1)+(0.039125 /1) = 0.042974 <1, which is less than the “1” limit.

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