

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 Clock Essential
Brand Name	Lenovo
Model	Lenovo CD-4N341Y
Additional Model & Model Difference	N/A
Date of tests	Apr. 30, 2020 ~ Jun. 28, 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: Jul. 06, 2020

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Test Report No.: FM200430N014

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FM200430N014	Original release	Jul. 06, 2020



Test Report No.: FM200430N014

1. CERTIFICATION

PRODUCT: Lenovo Smart Clock Essential

BRAND NAME: Lenovo

MODEL NO.: Lenovo CD-4N341Y

ADDITIONAL MODEL: N/A

FCC ID: O57CD4N341Y

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

$$P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$$

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

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	2.6	PIFA Antenna
Wi-Fi 2.4GHz	2.6	PIFA Antenna
Wi-Fi 5GHz (5150-5250MHz)	2.96	PIFA Antenna
Wi-Fi 5GHz (5250-5350MHz)	2.96	PIFA Antenna
Wi-Fi 5GHz (5500-5725MHz)	2.96	PIFA Antenna
Wi-Fi 5GHz (5725-5850MHz)	2.96	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	7	+2	5	9
BT (8DPSK)	2402-2480MHz	3	+2	1	5
BT-LE (GFSK)	2402-2480MHz	5	+2	3	7
802.11b	2412-2462MHz	15	+2	13	17
802.11g	2412-2462MHz	16	+2	14	18
802.11n HT20	2412-2462MHz	16	+2	14	18
Wi-Fi 5GHz(Band1)	5150-5250MHz	16	+4	12	20
Wi-Fi 5GHz(Band2)	5250-5350MHz	16	+4	16	20
Wi-Fi 5GHz(Band3)	5500-5725MHz	16	+4	12	20
Wi-Fi 5GHz(Band4)	5725-5850MHz	16	+4	12	20

The measured conducted Average Power

Mode	Frequency (MHz)	Averaged Power (dBm)
BT (GFSK)	2441	8.61
BT (8DPSK)	2402	4.56
BT-LE (GFSK)	2402	6.48
802.11b	2412	15.51
802.11g	2437	17.07
802.11n HT20	2412	17.51
Wi-Fi 5GHz(Band1)	5190	18.99
Wi-Fi 5GHz(Band2)	5290	19.05
Wi-Fi 5GHz(Band3)	5610	18.91
Wi-Fi 5GHz(Band4)	5785	18.72

FREQUENCY BAND (MHz)	MAX AVERAGE POWER (dBm)	ANTENNA GAIN (dBi)	DISTANCE (cm)	POWER DENSITY (mW/cm ²)	LIMIT (mW/cm ²)
BT	9	2.6	20	0.002876	1.0
Wi-Fi 2.4GHz	18	2.96	20	0.024816	1.0
Wi-Fi 5GHz	20	2.96	20	0.039330	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

$$(0.002876/1)+(0.039330/1) = 0.042206 < 1, \text{ which is less than the "1" limit.}$$

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