RF Exposure Evaluation Report

Product	Personal Computer
Machine Type / Model No.	IdeaCentre A540-27ICB
FCC ID.	A5MA540-27ICBWC

Applicant	Lenovo (Beijing) Ltd.
Address	201-H2-6, Floor 2, Building 2, No.6 Shangdi West Road, Haidian District, Beijing, China 100085

Date of Receipt	May 17, 2019
Date of Declaration	June 25, 2019
Report No.	1950273R-RFUSP02V00

Issued Date: June 25, 2019
Report No.: 1950273R-RFUSP02V00

Product	Personal Computer
Applicant	Lenovo (Beijing) Ltd.
Address	201-H2-6, Floor 2, Building 2, No.6 Shangdi West Road, Haidian District, Beijing, China 100085
Manufacturer	1.Asia Vital Components (Dongguan) Co., Ltd. 2.Lenovo Centro Technologico S DE RL DE CV
Machine Type / Model No.	IdeaCentre A540-27ICB
FCC ID.	A5MA540-27ICBWC
EUT Rated Voltage	AC 100-240V, 50-60Hz
EUT Test Voltage	AC 110V, 50Hz
Trade Name	Lenovo
Applicable Standard	FCC 47 CFR 1.1310 KDB 680106 D01
Test Result	Complied

Documented By : Rita Huang

(Senior Adm. Specialist / Rita Huang)

Tested By : Anson Lu

(Engineer / Anson Lu)

Approved By :

(Director / Vincent Lin)

1. RF Exposure Evaluation

1.1. Test Equipment

Equipment		Manufacturer	Model No./Serial No.	Last Cal.
X	EM Field Meter	ENAC	SMP2 / 18SN0747	Apr., 2019

1.2. Limits

According to FCC 1.1310: 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 1.1307(b)

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)
(A) Limits for Occupational/ Control 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	6
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/F	2.19/F	*($180/F^2$)	30
300-1500	27.5	0.073	0.2	30
300-1500	--	--	F/1500	30
1500-100,000	--	--	1	30

Note:

1. RF Exposure evaluation should be conducted assuming a separation distance of 10 cm
2. The EUT is including four models for different marketing requirement.

1.3. Test Procedure

The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils per the FCC 's request. (reference KDB 680106 D01 RF Exposure Wireless Charging Apps v03)

The temperature and related humidity: 18℃and 62％ RH.

1.4. Test Result of RF Exposure Evaluation for WPT

DC 5V	
Items to be covered	***Answer from applicant***
Power transfer frequency is less than 1 MHz.	Operation frequency range is 110~145kHz
Output power from each primary coil is less than or equal to 15 watts.	15W (Max)
The transfer system includes only single primary and secondary coils. This includes charging systems that may have multiple primary coils and clients that are able to detect and allow coupling only between individual pairs of coils.	Yes, allow coupling only between individual pairs of coils.
Client device is placed directly in contact with the transmitter.	Yes, meet the requirements.
Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).	Yes, meet the requirements.
The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.	*Electric Field Strength (V/m) @15cm = 0.610 V/m (< 307 V/m) MPE Limit (614 V/m) *50% =307 V/m *Magnetic Field Strength (A/m) @15cm =0.250 A/m (< 0.815 A/m) MPE Limit (1.63 A/m) *50%= 0.815 A/m

DC 12V	
Items to be covered	***Answer from applicant***
Power transfer frequency is less than 1 MHz.	Operation frequency range is 110~145kHz
Output power from each primary coil is less than or equal to 15 watts.	15W (Max)
The transfer system includes only single primary and secondary coils. This includes charging systems that may have multiple primary coils and clients that are able to detect and allow coupling only between individual pairs of coils.	Yes, allow coupling only between individual pairs of coils.
Client device is placed directly in contact with the transmitter.	Yes, meet the requirements.
Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).	Yes, meet the requirements.
The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.	*Electric Field Strength (V/m) @15cm = 0.730 V/m (< 307 V/m) MPE Limit (614 V/m) *50% =307 V/m *Magnetic Field Strength (A/m) @15cm =0.140 A/m (< 0.815 A/m) MPE Limit (1.63 A/m) *50%= 0.815 A/m

Product : Personal Computer
Test Item : RF Exposure Evaluation
Test Site : No.7 Chamber
Test Date : 2019/06/06

DC 5V

E-Field Emissions

Test Position	Frequency (MHz)	Measurement Level @15cm (V/m)	Limit (V/m)	50% Limit (V/m)	Result
Side 1	0.12700	0.480	614.0	307.0	PASS
Side 2	0.12700	0.500	614.0	307.0	PASS
Side 3	0.12700	0.480	614.0	307.0	PASS
Side 4	0.12700	0.490	614.0	307.0	PASS

Test Position	Frequency (MHz)	Measurement Level @20cm (V/m)	Limit (V/m)	50% Limit (V/m)	Result
Top	0.12700	0.610	614.0	307.0	PASS
Bottom	0.12700	0.470	614.0	307.0	PASS

H-Field Emissions

Test Position	Frequency (MHz)	Measurement Level @15cm (A/m)	Limit (A/m)	50% Limit (A/m)	Result
Side 1	0.12700	0.060	1.63	0.815	PASS
Side 2	0.12700	0.120	1.63	0.815	PASS
Side 3	0.12700	0.040	1.63	0.815	PASS
Side 4	0.12700	0.090	1.63	0.815	PASS

Test Position	Frequency (MHz)	Measurement Level @20cm (A/m)	Limit (A/m)	50% Limit (A/m)	Result
Top	0.12700	0.250	1.63	0.815	PASS
Bottom	0.12700	0.040	1.63	0.815	PASS

Product : Personal Computer
Test Item : RF Exposure Evaluation
Test Site : No.7 Chamber
Test Date : 2019/06/06

DC 12V

E-Field Emissions

Test Position	Frequency (MHz)	Measurement Level @15cm (V/m)	Limit (V/m)	50% Limit (V/m)	Result
Side 1	0.12700	0.550	614.0	307.0	PASS
Side 2	0.12700	0.590	614.0	307.0	PASS
Side 3	0.12700	0.480	614.0	307.0	PASS
Side 4	0.12700	0.580	614.0	307.0	PASS

Test Position	Frequency (MHz)	Measurement Level @20cm (V/m)	Limit (V/m)	50% Limit (V/m)	Result
Top	0.12700	0.730	614.0	307.0	PASS
Bottom	0.12700	0.480	614.0	307.0	PASS

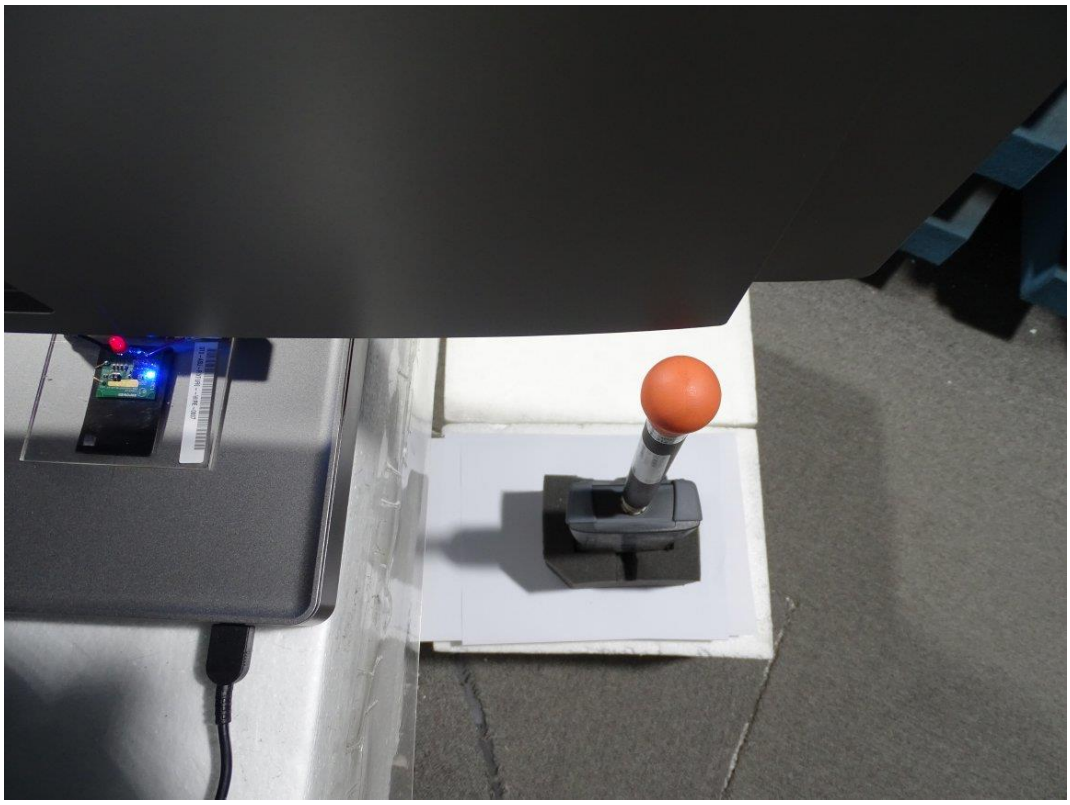
H-Field Emissions

Test Position	Frequency (MHz)	Measurement Level @15cm (A/m)	Limit (A/m)	50% Limit (A/m)	Result
Side 1	0.12700	0.090	1.63	0.815	PASS
Side 2	0.12700	0.040	1.63	0.815	PASS
Side 3	0.12700	0.050	1.63	0.815	PASS
Side 4	0.12700	0.040	1.63	0.815	PASS

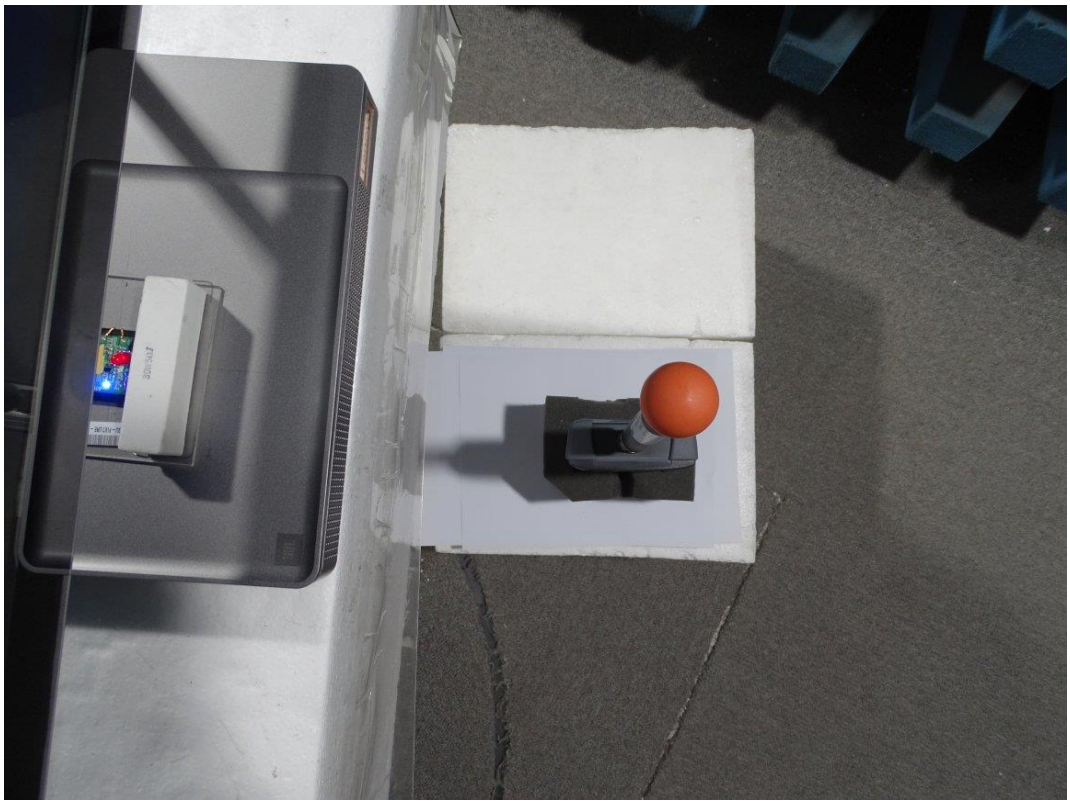
Test Position	Frequency (MHz)	Measurement Level @20cm (A/m)	Limit (A/m)	50% Limit (A/m)	Result
Top	0.12700	0.140	1.63	0.815	PASS
Bottom	0.12700	0.060	1.63	0.815	PASS

1.5. EUT Test Setup Photographs

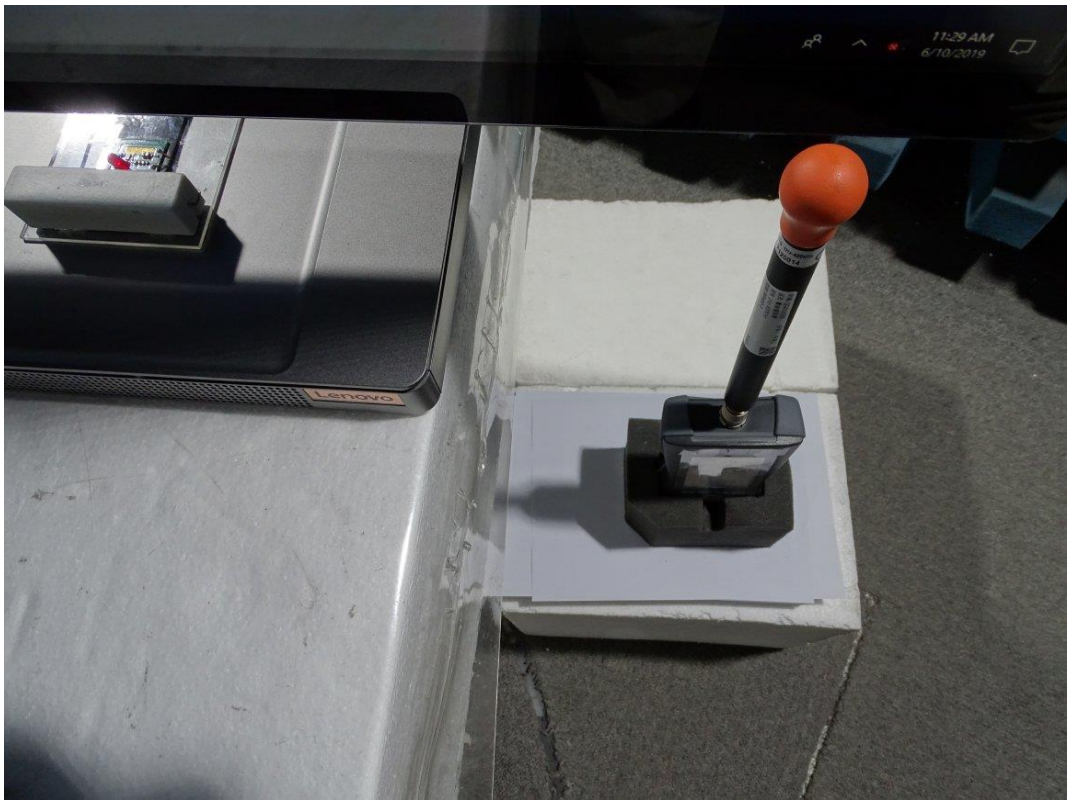
Side 1



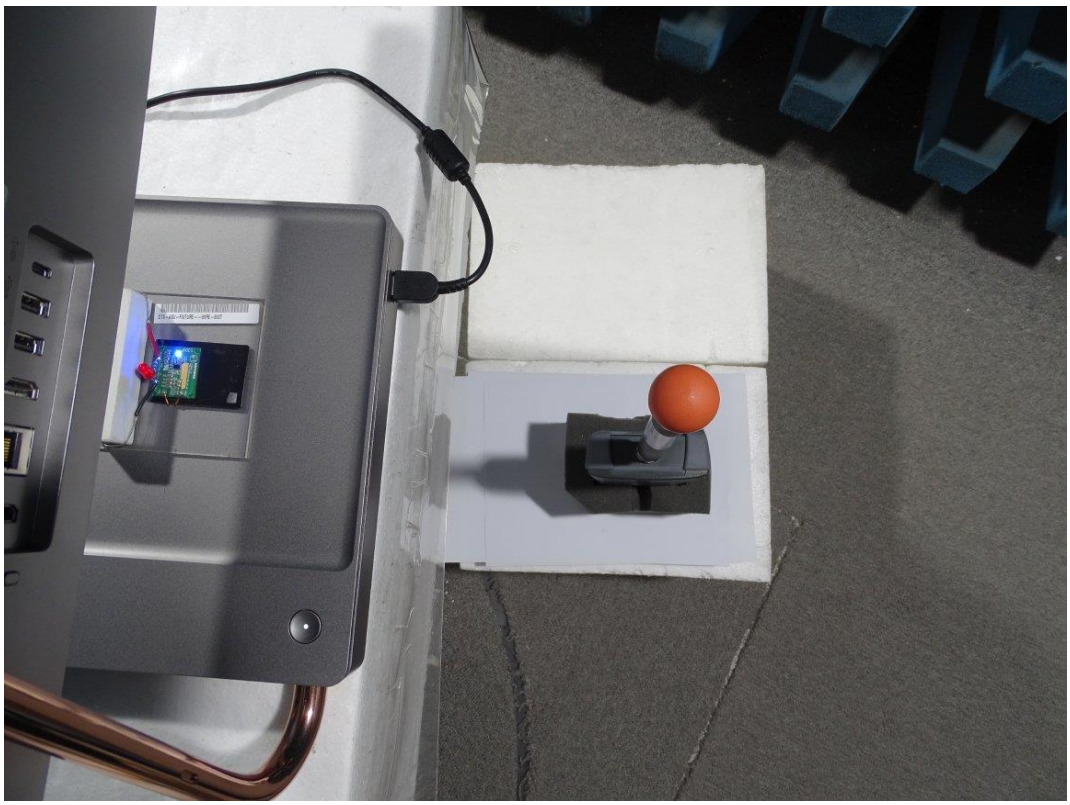
Side 2



Side 3



Side 4



Top

Bottom