

# TEST REPORT

<b>Product Name</b>	:	True wireless Bluetooth
<b>Brand Mark</b>	:	Lenovo, thinkplus
<b>Model No.</b>	:	LenovoLP1
		Lenovo K4, Lenovo K6, Lenovo TS13 K3 pro, K8, TS40 pro, K7, Lenovo GM1, Lenovo X3, Lenovo X4, Lenovo LP1, Lenovo LP3 pro, GM1, Lenovo LP1S, LP3, TW 50, X3 pro, T40, LP75, LP10, LP80 pro, LP80 pro RGB, GM2 pro, thinkplus T50, LP8 pro,
<b>Extension model</b>	:	HE05Pro, thinkplus M10, TC10, G82C, G86C, Lenovo X6, TS41, LP6 pro, LP15, LP19, Lenovo T60, TW60W, TW60B, Lenovo M30, LP17, TW70, Lenovo K10, AM04, TS43, TS5, K20A, TH10BE, TH 10B, Lenovo X7, LP40B, Lenovo K30, LenovoLP1, LP40 II , TH40
<b>Report Number</b>	:	BLA-EMC-202301-A1302
<b>FCC ID</b>	:	2A8SE-22090002
<b>Date of Sample Receipt</b>	:	2023/1/6
<b>Date of Test</b>	:	2023/1/6 to 2023/1/13
<b>Date of Issue</b>	:	2023/1/13
<b>Test Standard</b>	:	47 CFR Part 15, Subpart C 15.247
<b>Test Result</b>	:	Pass

Prepared for:

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Prepared by:

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Date:

2023/1/13



#### REPORT REVISE RECORD

Version No.	Date	Description
00	2023/1/13	Original

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## 1 TEST SUMMARY

Test item	Test Requirement	Test Method	Class/Severity	Result
Antenna Requirement	47 CFR Part 15, Subpart C 15.247	N/A	47 CFR Part 15, Subpart C 15.203 & 15.247(c)	Pass
Conducted Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.6 & Section 11.11	47 CFR Part 15, Subpart C 15.247(d)	Pass
20dB Bandwidth	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.7	47 CFR Part 15, Subpart C 15.247(a)(1)	Pass
Conducted Peak Output Power	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.5	47 CFR Part 15, Subpart C 15.247(b)(3)	Pass
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass
Radiated Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.4,6.5,6.6	47 CFR Part 15, Subpart C 15.209 & 15.247(d)	Pass
Radiated Emissions which fall in the restricted bands	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.10.5	47 CFR Part 15, Subpart C 15.209 & 15.247(d)	Pass
Conducted Band Edges Measurement	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.8 & Section 11.13.3.2	47 CFR Part 15, Subpart C 15.247(d)	Pass
Dwell Time	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.4	47 CFR Part 15, Subpart C 15.247a(1)(iii)	Pass
Hopping Channel Number	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.3	47 CFR Part 15, Subpart C 15.247a(1)(iii)	Pass
Carrier Frequencies Separation	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.2	47 CFR Part 15, Subpart C 15.247a(1)	Pass

## 2 GENERAL INFORMATION

<b>Applicant</b>	Lenovo(Beijing)Co.,Ltd
<b>Address</b>	Building 2, Building 2, No.6, Xindi West Road, Haidong District, Beijing
<b>Manufacturer</b>	Lenovo(Beijing)Co.,Ltd
<b>Address</b>	Building 2, Building 2, No.6, Xindi West Road, Haidong District, Beijing
<b>Factory</b>	Lenovo(Beijing)Co.,Ltd
<b>Address</b>	Building 2, Building 2, No.6, Xindi West Road, Haidong District, Beijing
<b>Product Name</b>	True wireless Bluetooth
<b>Test Model No.</b>	LenovoLP1
<b>Extension model</b>	Lenovo K4, Lenovo K6, Lenovo TS13 K3 pro, K8, TS40 pro, K7, Lenovo GM1, Lenovo X3, Lenovo X4, Lenovo LP1, Lenovo LP3 pro, GM1, Lenovo LP1S, LP3, TW 50, X3 pro, T40, LP75, LP10, LP80 pro, LP80 pro RGB, GM2 pro, thinkplus T50, LP8 pro, HE05Pro, thinkplus M10, TC10, G82C, G86C, Lenovo X6, TS41, LP6 pro, LP15, LP19, Lenovo T60, TW60W, TW60B, Lenovo M30, LP17, TW70, Lenovo K10, AM04, TS43, TS5, K20A, TH10BE, TH 10B, Lenovo X7, LP40B, Lenovo K30, LenovoLP1, LP40 II, TH40
<b>Note</b>	All above models are identical in the same PCB layout, interior structure and electrical circuits. The differences are model name for commercial purpose.

## 3 GENERAL DESCRIPTION OF E.U.T.

<b>Hardware Version</b>	V25
<b>Software Version</b>	V1
<b>Operation Frequency:</b>	2402MHz-2480MHz
<b>Modulation Type:</b>	GFSK, pi/4DQPSK
<b>Channel Spacing:</b>	1MHz
<b>Number of Channels:</b>	79
<b>Antenna Type:</b>	Chip Antenna
<b>Antenna Gain:</b>	2.67dBi (Provided by the applicant)

#### 4 TEST ENVIRONMENT

Environment	Temperature	Voltage
Normal	25°C	3.7Vdc

#### 5 TEST MODE

TEST MODE	TEST MODE DESCRIPTION
Transmitting mode	Keep the EUT in continuously transmitting mode with modulation. (hopping and non hopping mode all have been tested, non hopping mode is worse case for RE )
Remark: Full battery is used during all test except ac conducted emission, DH1,DH3, DH5 all have been tested, during the test, GFSK, Pi/4QPSK modulation were all pre-scanned only GFSK worse case is reported.	

#### 6 MEASUREMENT UNCERTAINTY

Parameter	Expanded Uncertainty (Confidence of 95%)
Radiated Emission(9kHz-30MHz)	±4.34dB
Radiated Emission(30Mz-1000MHz)	±4.24dB
Radiated Emission(1GHz-18GHz)	±4.68dB
AC Power Line Conducted Emission(150kHz-30MHz)	±3.45dB

Parameter	Expanded Uncertainty (Confidence of 95%)
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±1.5 dB
Power Spectral Density, conducted	±3.0 dB
Unwanted Emissions, conducted	±3.0 dB
Temperature	±3 °C
Supply voltages	±3 %
Time	±5 %
Unwanted Radiated Emission (30MHz ~ 1000MHz)	±4.35 dB
Unwanted Radiated Emission (1GHz ~ 18GHz)	±4.44 dB

## 7 DESCRIPTION OF SUPPORT UNIT

Device Type	Manufacturer	Model Name	Serial No.	Remark
AC Adapter	UGREEN	CD112	N/A	N/A

## 8 LABORATORY LOCATION

All tests were performed at:

BlueAsia Technical Services(Shenzhen) Co.,Ltd.

No.41, South of Beihuan Road, Shangwu Community, Shiyan Subdistrict, Bao'an District,  
Shenzhen,Guangdong ,China

Telephone: TEL: +86-755-28682673 FAX: +86-755-28682673

## 9 TEST INSTRUMENTS LIST

Test Equipment Of Radiated Spurious Emissions					
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Chamber 1	SKET	966	N/A	2020/11/10	2023/11/9
Chamber 2	SKET	966	N/A	2021/07/20	2024/07/19
Spectrum	R&S	FSP40	100817	2022/09/15	2023/09/14
Receiver	R&S	ESR7	101199	2022/09/15	2023/09/14
Receiver	R&S	ESPI7	101477	2022/07/16	2023/07/15
broadband Antenna	Schwarzbeck	VULB9168	00836 P:00227	2022/09/15	2023/09/14
Horn Antenna	Schwarzbeck	BBHA9120D	01892 P:00331	2022/09/13	2025/09/12
Amplifier	SKET	LNPA_30M01G-30	SK2021060801	2022/07/16	2023/07/15
Amplifier	SKET	PA-000318G-45	N/A	2022/09/13	2023/09/12
Amplifier	SKET	LNPA_18G40G-50	SK2022071301	2022/07/14	2023/07/13
Filter group	SKET	2.4G/5G Filter group r	N/A	2022/07/16	2023/07/15
EMI software	EZ	EZ-EMC	EEMC-3A1	N/A	N/A
Loop antenna	SCHNARZBECK	FMZB1519B	00102	2022/9/14	2025/9/13
Controller	SKET	N/A	N/A	N/A	N/A
Coaxial Cable	BlueAsia	BLA-XC-02	N/A	N/A	N/A
Coaxial Cable	BlueAsia	BLA-XC-03	N/A	N/A	N/A
Coaxial Cable	BlueAsia	BLA-XC-01	N/A	N/A	N/A

Test Equipment Of Conducted Emissions at AC Power Line (150kHz-30MHz)					
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Shield room	SKET	833	N/A	2020/11/25	2023/11/24
Receiver	R&S	ESPI3	101082	2022/09/14	2023/09/13
LISN	R&S	ENV216	3560.6550.15	2022/09/14	2023/09/13
LISN	AT	AT166-2	AKK1806000003	2022/09/14	2023/09/13
ISN	TESEQ	ISNT8-cat6	53580	2022/09/14	2023/09/13
Single-channel vehicle artificial power network	Schwarzbeck	NNBM 8124	01045	2022/08/17	2023/08/16
Single-channel vehicle artificial power network	Schwarzbeck	NNBM 8124	01075	2022/08/17	2023/08/16
EMI software	EZ	EZ-EMC	EEMC-3A1	N/A	N/A

Test Equipment Of RF Conducted Test					
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Spectrum	R&S	FSP40	100817	2022/09/15	2023/09/14
Spectrum	Agilent	N9020A	MY49100060	2022/09/07	2023/09/06
Spectrum	KEYSIGHT	N9030A	MY52350152	2022/07/01	2023/06/30
Spectrum	KEYSIGHT	N9010A	MY54330814	2022/07/01	2023/06/30
Signal Generator	Agilent	N5182A	MY47420955	2022/09/07	2023/09/06
Signal Generator	Agilent	E8257D	MY44320250	2022/07/01	2023/06/30
Signal Generator	Agilent	N5181A	MY46240904	2022/08/02	2023/08/01
Signal Generator	R&S	CMW500	132429	2022/09/07	2023/09/06
BluetoothTester	Anritsu	MT8852B	06262047872	2022/09/07	2023/09/06
Power probe	DARE	RPR3006W	14I00889SN042	2022/09/07	2023/09/06
DCPowersupply	zhaoxin	KXN-305D	20K305D1221363	2022/09/14	2023/09/13
DCPowersupply	zhaoxin	RXN-1505D	19R1505D050168	2022/09/14	2023/09/13
2.4GHz/5GHz RF Test software	MTS	MTS 8310	Version 2.0.0.0	N/A	N/A
Audio Analyzer	Audioprecision	N/A	ATSI-41094	2022/7/1	2023/6/30

## 10 ANTENNA REQUIREMENT

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	N/A

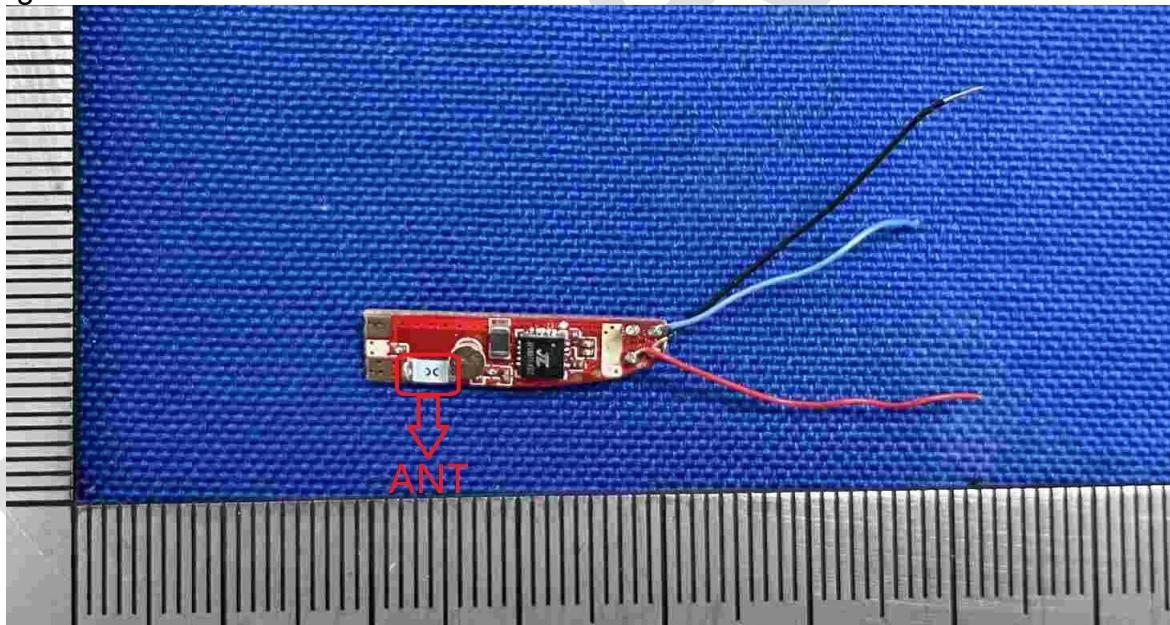
### 10.1 CONCLUSION

Standard Requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit permanently attached antenna or of an so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 2.67dBi.



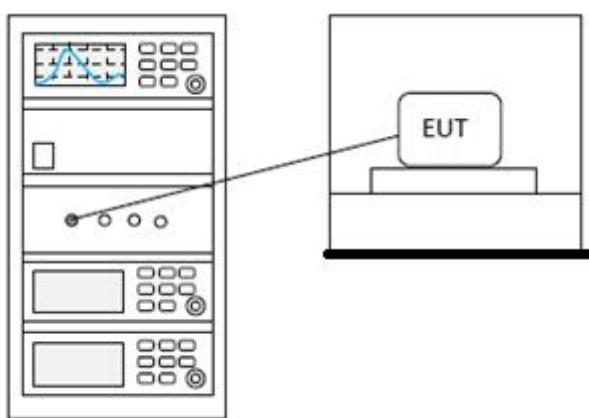
## 11 CONDUCTED SPURIOUS EMISSIONS

<b>Test Standard</b>	47 CFR Part 15, Subpart C 15.247
<b>Test Method</b>	ANSI C63.10 (2013) Section 7.8.6 & Section 11.11
<b>Test Mode (Pre-Scan)</b>	TX
<b>Test Mode (Final Test)</b>	TX
<b>Tester</b>	Jozu
<b>Temperature</b>	25 °C
<b>Humidity</b>	60%

### 11.1 LIMITS

<b>Limit:</b>	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).
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### 11.2 BLOCK DIAGRAM OF TEST SETUP



### 11.3 TEST DATA

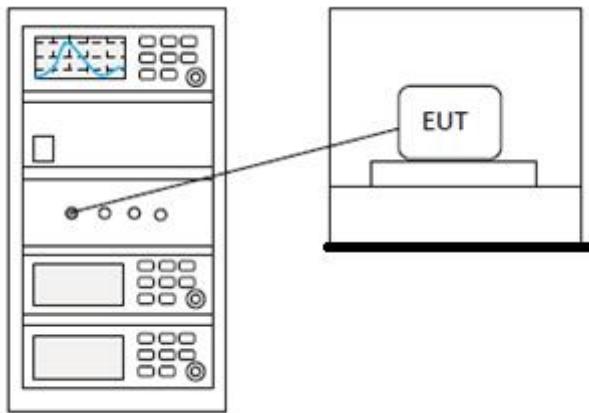
**Pass: Please Refer To Appendix: Appendix1 For Details**

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## 12 20DB BANDWIDTH

<b>Test Standard</b>	47 CFR Part 15, Subpart C 15.247
<b>Test Method</b>	ANSI C63.10 (2013) Section 7.8.7
<b>Test Mode (Pre-Scan)</b>	TX
<b>Test Mode (Final Test)</b>	TX
<b>Tester</b>	Jozu
<b>Temperature</b>	25 °C
<b>Humidity</b>	60%

### 12.1 BLOCK DIAGRAM OF TEST SETUP



### 12.2 TEST DATA

**Pass: Please Refer To Appendix: Appendix1 For Details**

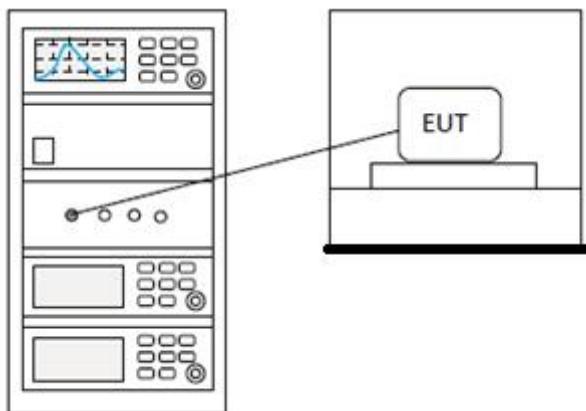
## 13 CONDUCTED PEAK OUTPUT POWER

<b>Test Standard</b>	47 CFR Part 15, Subpart C 15.247
<b>Test Method</b>	ANSI C63.10 (2013) Section 7.8.5
<b>Test Mode (Pre-Scan)</b>	TX
<b>Test Mode (Final Test)</b>	TX
<b>Tester</b>	Jozu
<b>Temperature</b>	25 °C
<b>Humidity</b>	60%

### 13.1 LIMITS

<b>Frequency range(MHz)</b>	<b>Output power of the intentional radiator(watt)</b>
902-928	1 for $\geq 50$ hopping channels
	0.25 for $25 \leq$ hopping channels $< 50$
	1 for digital modulation
2400-2483.5	1 for $\geq 75$ non-overlapping hopping channels
	0.125 for all other frequency hopping systems
	1 for digital modulation
5725-5850	1 for frequency hopping systems and digital modulation

### 13.2 BLOCK DIAGRAM OF TEST SETUP



### 13.3 TEST DATA

**Pass: Please Refer To Appendix: Appendix1 For Details**

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## 14 CONDUCTED EMISSIONS AT AC POWER LINE (150KHZ-30MHZ)

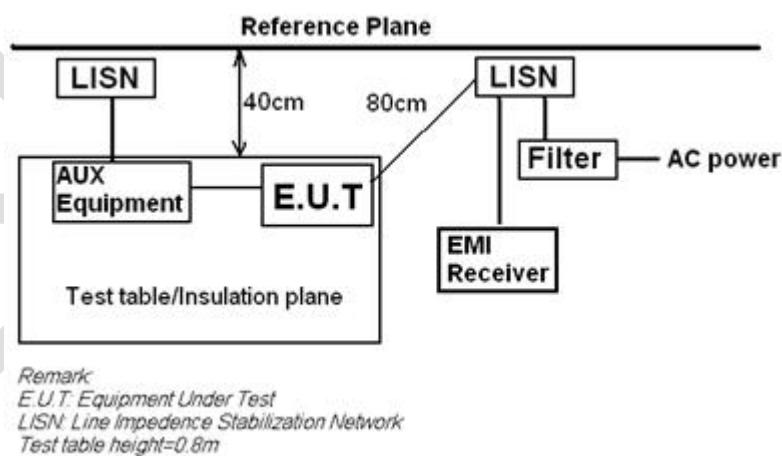
<b>Test Standard</b>	47 CFR Part 15, Subpart C 15.247
<b>Test Method</b>	ANSI C63.10 (2013) Section 6.2
<b>Test Mode (Pre-Scan)</b>	BT mode
<b>Test Mode (Final Test)</b>	BT mode
<b>Tester</b>	Jozu
<b>Temperature</b>	25°C
<b>Humidity</b>	60%

### 14.1 LIMITS

Frequency of emission(MHz)	Conducted limit(dB $\mu$ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\*Decreases with the logarithm of the frequency.

### 14.2 BLOCK DIAGRAM OF TEST SETUP



### 14.3 PROCEDURE

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50H + 50hm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.

- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

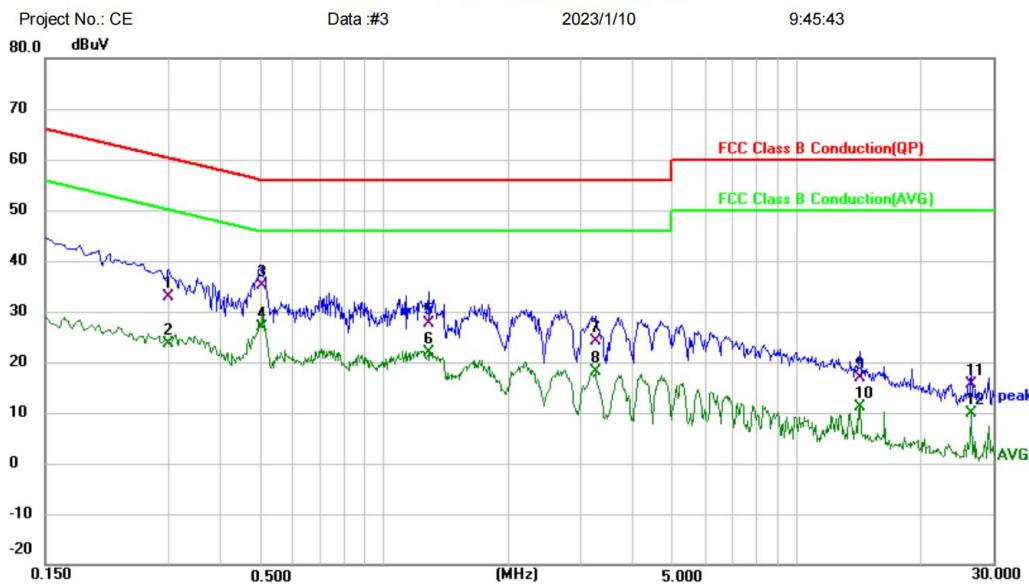
Remark: LISN=Read Level+ Cable Loss+ LISN Factor

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#### 14.4 TEST DATA

[TestMode: BT mode]; [Line: Line] ;[Power:AC120V/60Hz]

##### Conducted Emission Measurement



Site	Phase:	<b>L1</b>	Temperature: (C)
Limit: FCC Class B Conduction(QP)	Power:	Humidity: %RH	
EUT: thinkplus LivePods			
M/N: LenovoLP1			
Mode: TX mode			
Note:			

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dB	Detector	Comment
1		0.2980	22.72	10.07	32.79	60.30	-27.51	QP
2		0.2980	13.64	10.07	23.71	50.30	-26.59	AVG
3		0.5020	25.08	10.08	35.16	56.00	-20.84	QP
4 *		0.5020	16.87	10.08	26.95	46.00	-19.05	AVG
5		1.2780	17.42	10.17	27.59	56.00	-28.41	QP
6		1.2780	11.78	10.17	21.95	46.00	-24.05	AVG
7		3.2580	13.97	10.18	24.15	56.00	-31.85	QP
8		3.2580	8.04	10.18	18.22	46.00	-27.78	AVG
9		14.2140	7.02	9.98	17.00	60.00	-43.00	QP
10		14.2140	1.12	9.98	11.10	50.00	-38.90	AVG
11		26.4900	5.62	9.99	15.61	60.00	-44.39	QP
12		26.4900	-0.19	9.99	9.80	50.00	-40.20	AVG

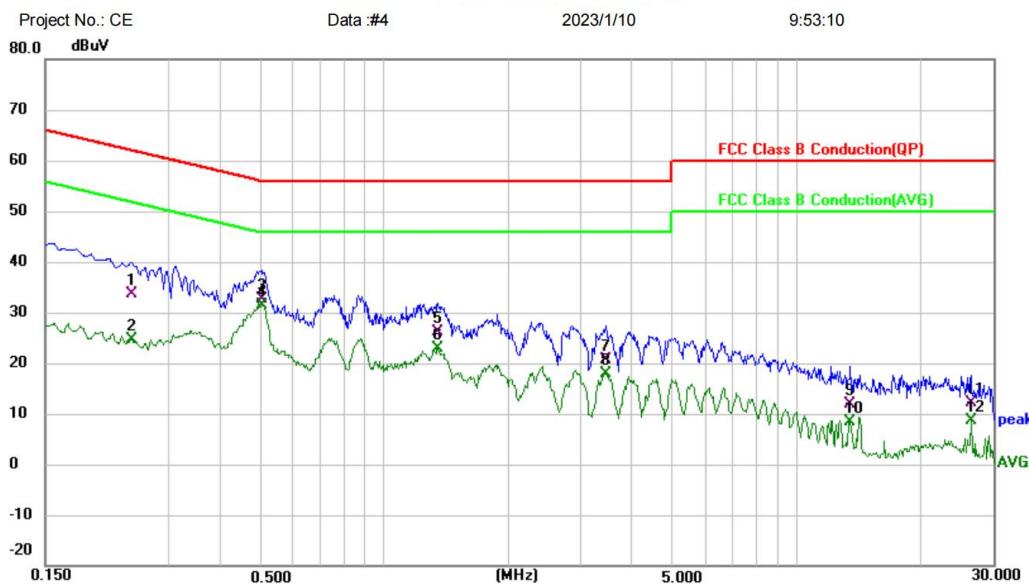
\*:Maximum data    x:Over limit    !:over margin

(Reference Only)

**Test Result: Pass**

[TestMethod: BT mode]; [Line: Nutral] ;[Power:AC120V/60Hz]

## Conducted Emission Measurement



Site	Phase:	<b>N</b>	Temperature: (C)
Limit: FCC Class B Conduction(QP)	Power:		Humidity: %RH
EUT: thinkplus LivePods			
M/N: LenovoLP1			
Mode: TX mode			
Note:			

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.2420	23.01	10.55	33.56	62.03	-28.47	QP	
2		0.2420	14.02	10.55	24.57	52.03	-27.46	AVG	
3		0.5020	22.62	10.05	32.67	56.00	-23.33	QP	
4 *		0.5020	21.28	10.05	31.33	46.00	-14.67	AVG	
5		1.3460	16.01	10.04	26.05	56.00	-29.95	QP	
6		1.3460	12.77	10.04	22.81	46.00	-23.19	AVG	
7		3.4380	10.69	9.97	20.66	56.00	-35.34	QP	
8		3.4380	8.02	9.97	17.99	46.00	-28.01	AVG	
9		13.4820	1.91	10.01	11.92	60.00	-48.08	QP	
10		13.4820	-1.70	10.01	8.31	50.00	-41.69	AVG	
11		26.5500	2.22	9.93	12.15	60.00	-47.85	QP	
12		26.5500	-1.42	9.93	8.51	50.00	-41.49	AVG	

\*:Maximum data    x:Over limit    !:over margin

⟨Reference Only⟩

## Test Result: Pass

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss.

BlueAsia

## 15 RADIATED SPURIOUS EMISSIONS

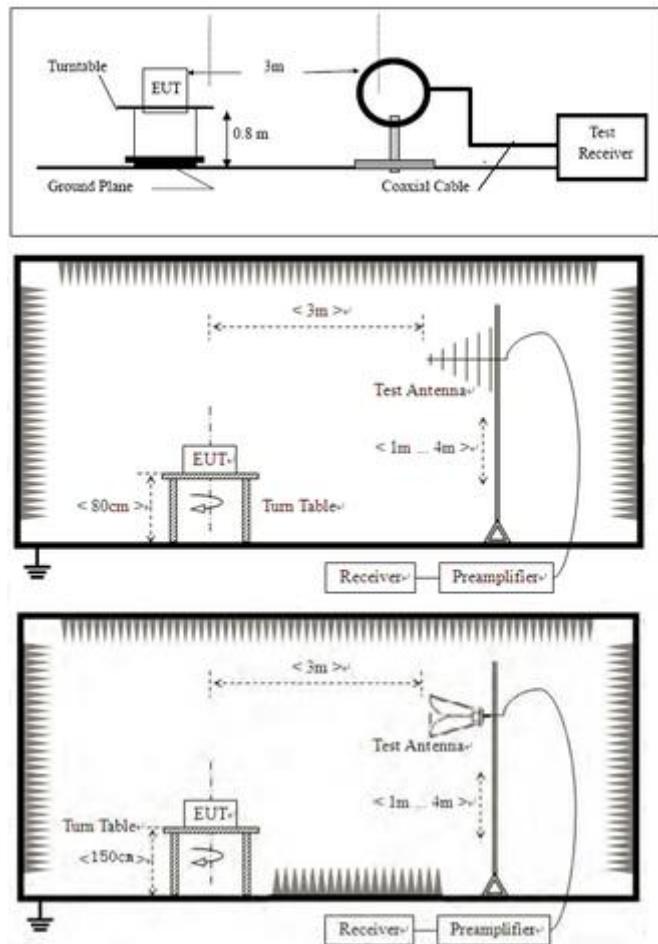
<b>Test Standard</b>	47 CFR Part 15, Subpart C 15.247
<b>Test Method</b>	ANSI C63.10 (2013) Section 6.4,6.5,6.6
<b>Test Mode (Pre-Scan)</b>	TX
<b>Test Mode (Final Test)</b>	TX
<b>Tester</b>	Jozu
<b>Temperature</b>	25 °C
<b>Humidity</b>	60%

### 15.1 LIMITS

<b>Frequency(MHz)</b>	<b>Field strength(microvolts/meter)</b>	<b>Measurement distance(meters)</b>
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

## 15.2 BLOCK DIAGRAM OF TEST SETUP



## 15.3 PROCEDURE

- For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

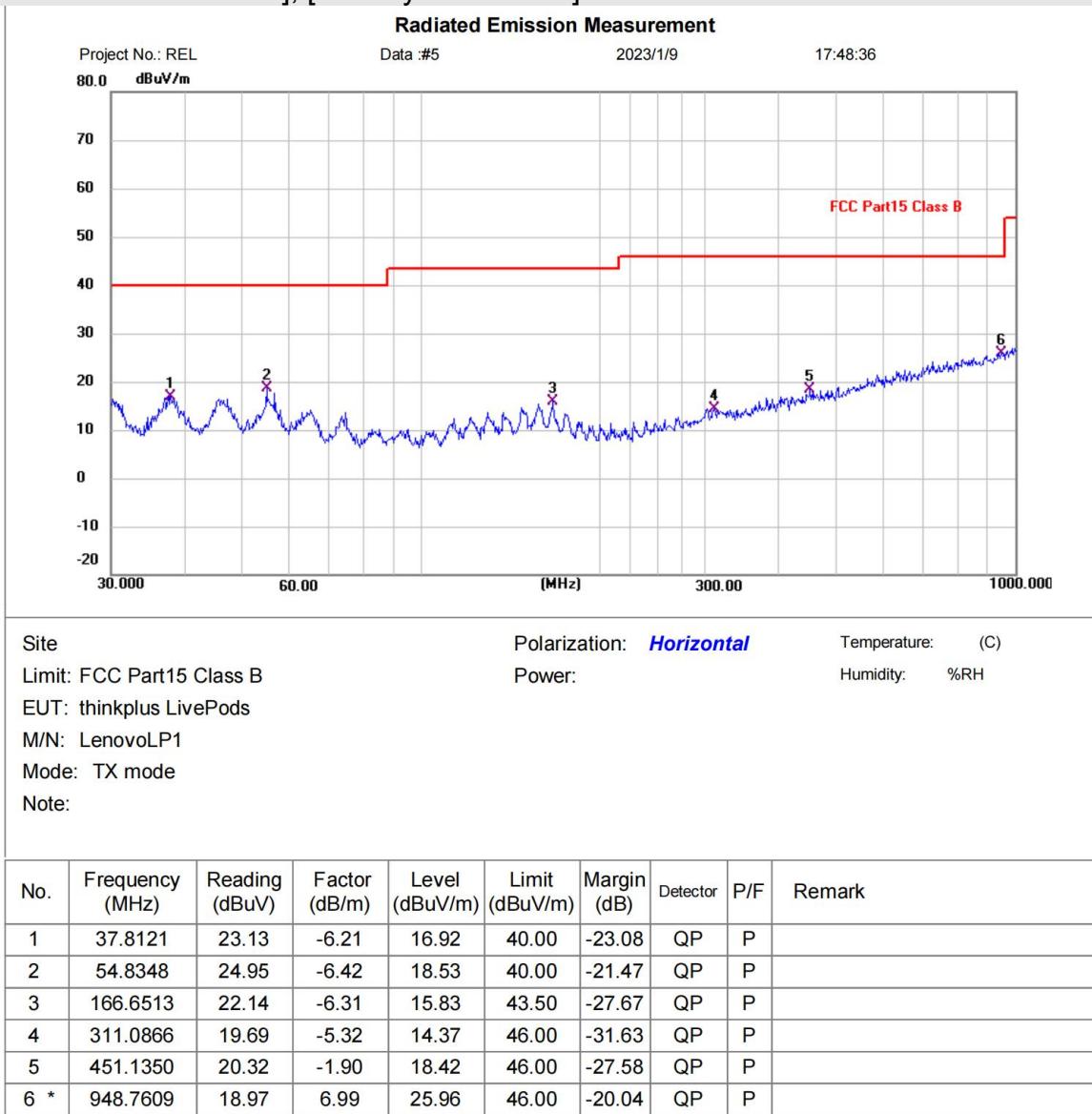
- h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

Remark:

- 1) For emission below 1GHz, through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.
- 2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:  
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor
- 3) Scan from 9kHz to 25GHz, the disturbance above 12.75GHz and below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported. fundamental frequency is blocked by filter, and only spurious emission is shown.
- 4) For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

## 15.4 TEST DATA

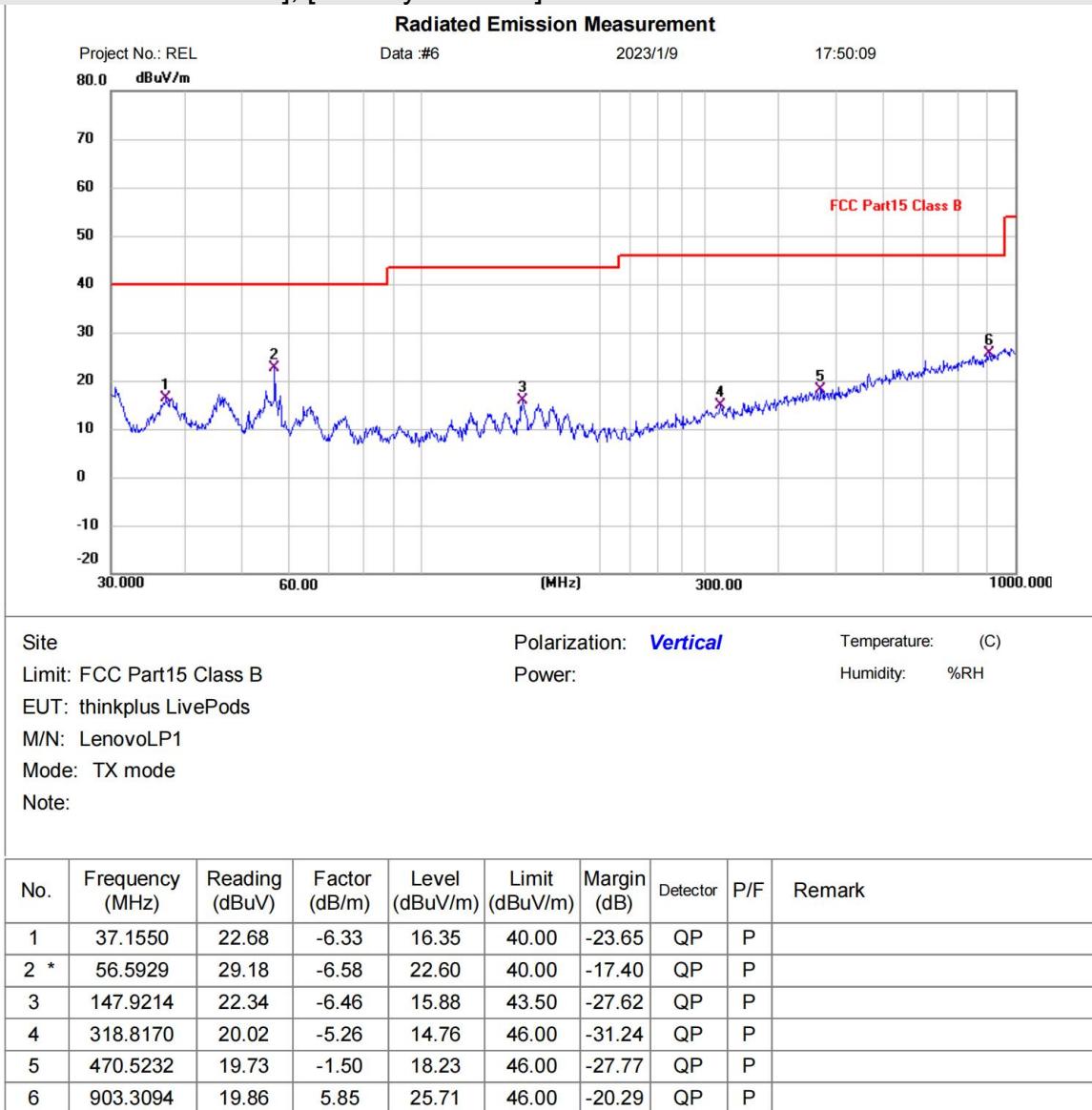
[TestMode: TX below 1G]; [Polarity: Horizontal]



\*:Maximum data    x:Over limit    !:over margin

**Test Result: Pass**

[TestMode: TX below 1G]; [Polarity: Vertical]



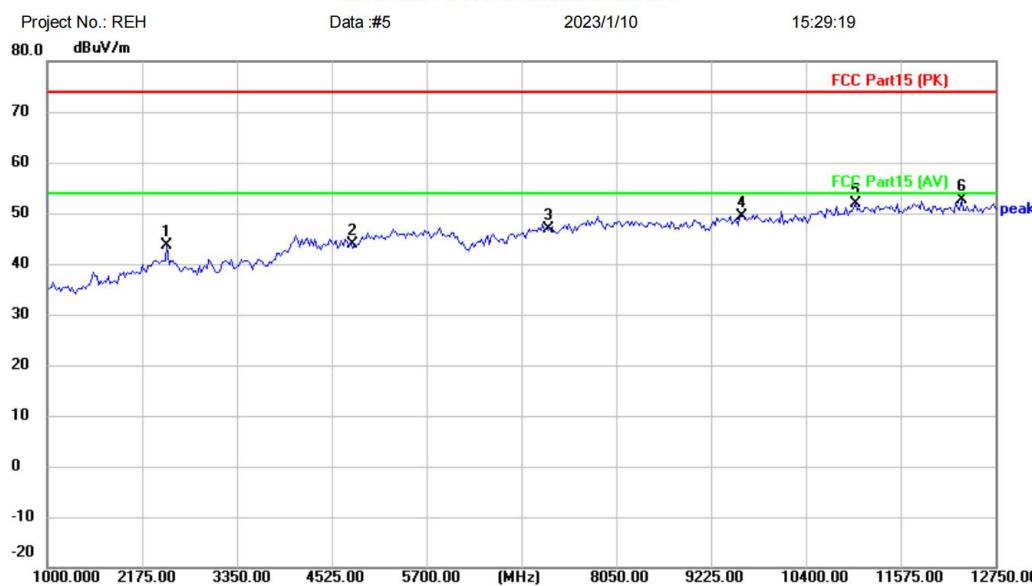
\*:Maximum data    x:Over limit    !:over margin

**Test Result: Pass**

Above 1GHz:

[TestMode: TX low channel]; [Polarity: Horizontal]

#### Radiated Emission Measurement



Site    Polarization: **Horizontal**    Temperature: (C)

Limit: FCC Part15 (PK)    Power:    Humidity: %RH

EUT: thinkplus LivePods

M/N: LenovoLP1

Mode: TX-L

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2480.500	45.72	-2.05	43.67	74.00	-30.33	peak	
2		4804.000	39.89	4.05	43.94	74.00	-30.06	peak	
3		7206.000	38.85	7.93	46.78	74.00	-27.22	peak	
4		9608.000	38.37	10.90	49.27	74.00	-24.73	peak	
5		11011.000	38.43	13.45	51.88	74.00	-22.12	peak	
6	*	12327.000	38.64	13.88	52.52	74.00	-21.48	peak	

\*:Maximum data    x:Over limit    !:over margin

(Reference Only)

#### Test Result: Pass

[TestMethod: TX low channel]; [Polarity: Vertical]

**Radiated Emission Measurement**


Site	Polarization:	<b>Vertical</b>	Temperature:	(C)
Limit: FCC Part15 (PK)	Power:		Humidity:	%RH
EUT: thinkplus LivePods				
M/N: LenovoLP1				
Mode: TX-L				
Note:				

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2386.500	46.75	-1.11	45.64	74.00	-28.36	peak	
2		4102.00	42.03	2.75	44.78	74.00	-29.22	peak	
3		5841.00	40.29	6.78	47.07	74.00	-26.93	peak	
4		7885.500	40.35	8.84	49.19	74.00	-24.81	peak	
5		11011.000	38.79	13.45	52.24	74.00	-21.76	peak	
6	*	12139.000	38.36	13.89	52.25	74.00	-21.75	peak	

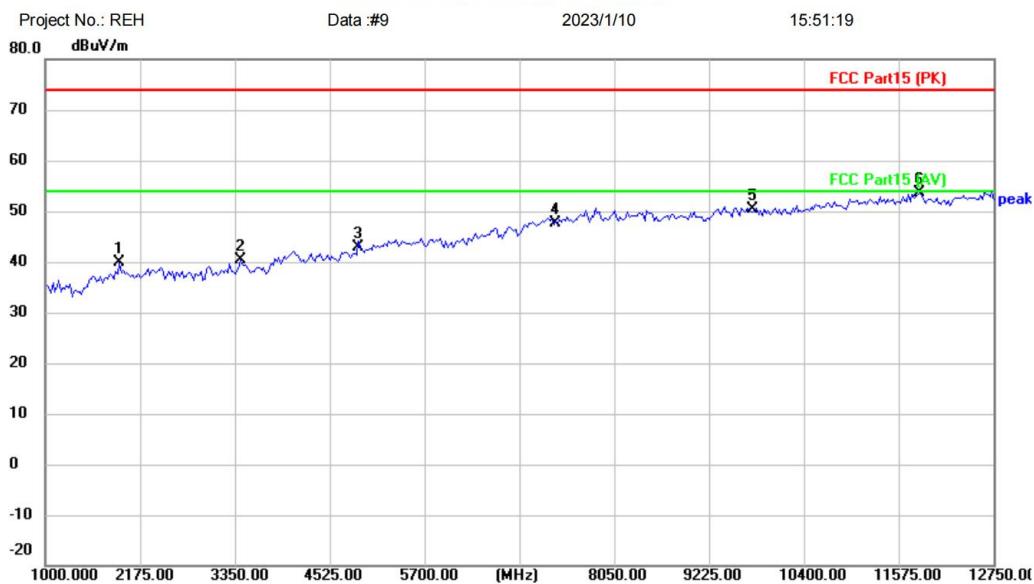
\*:Maximum data    x:Over limit    !:over margin

⟨Reference Only⟩

**Test Result: Pass**

[TestMode: TX mid channel]; [Polarity: Horizontal]

### Radiated Emission Measurement



Site	Polarization: <b>Horizontal</b>	Temperature: (C)
Limit: FCC Part15 (PK)	Power:	Humidity: %RH
EUT: thinkplus LivePods		
M/N: LenovoLP1		
Mode: TX-M		
Note:		

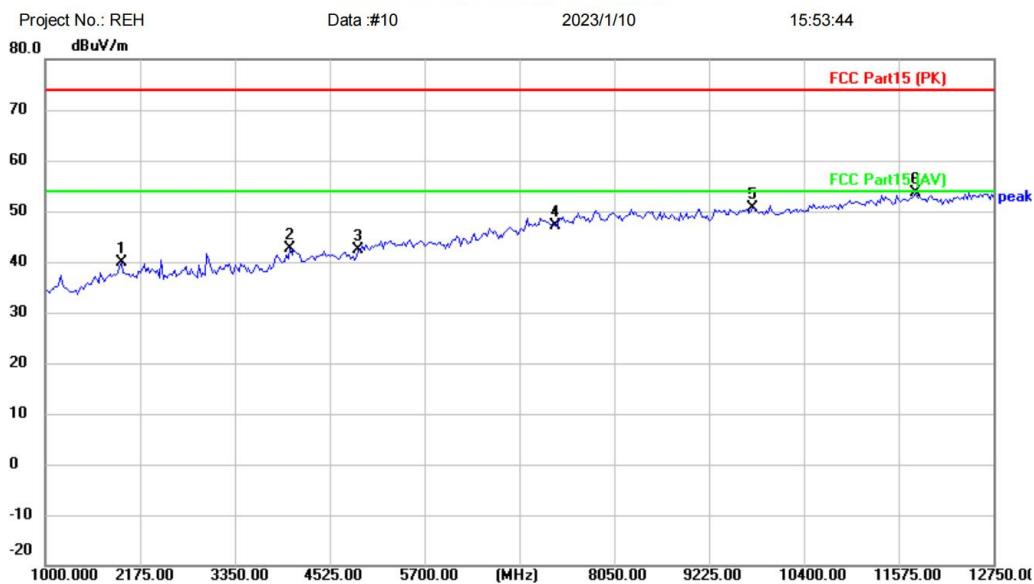
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dB	Over	Detector	Comment
1		1916.500	45.78	-5.87	39.91	74.00	-34.09	peak	
2		3420.500	43.50	-3.24	40.26	74.00	-33.74	peak	
3		4884.000	40.44	2.36	42.80	74.00	-31.20	peak	
4		7326.000	38.51	9.12	47.63	74.00	-26.37	peak	
5		9768.000	37.86	12.62	50.48	74.00	-23.52	peak	
6	*	11833.500	38.39	15.29	53.68	74.00	-20.32	peak	

\*:Maximum data    x:Over limit    !:over margin

⟨Reference Only⟩

**Test Result: Pass**

[TestMethod: TX mid channel]; [Polarity: Vertical]

**Radiated Emission Measurement**


Site	Polarization: <b>Vertical</b>	Temperature: (C)
Limit: FCC Part15 (PK)	Power:	Humidity: %RH
EUT: thinkplus LivePods		
M/N: LenovoLP1		
Mode: TX-M		
Note:		

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		1940.000	45.70	-5.80	39.90	74.00	-34.10	peak	
2		4031.500	42.47	0.16	42.63	74.00	-31.37	peak	
3		4884.000	40.13	2.36	42.49	74.00	-31.51	peak	
4		7326.000	38.00	9.12	47.12	74.00	-26.88	peak	
5		9768.000	37.94	12.62	50.56	74.00	-23.44	peak	
6	*	11786.500	38.32	15.25	53.57	74.00	-20.43	peak	

\*:Maximum data    x:Over limit    !:over margin

⟨Reference Only⟩

**Test Result: Pass**