

Prüfbericht-Nr.: <i>Test Report No.:</i>	50063611 001	Auftrags-Nr.: <i>Order No.:</i>	164077661	Seite 1 von 22 <i>Page 1 of 22</i>
Kunden-Referenz-Nr.: <i>Client Reference No.:</i>	334006	Auftragsdatum: <i>Order date:</i>	02.11.2016	
Auftraggeber: <i>Client:</i>	Primax Electronics Ltd., No. 669, Ruey Kuang Rd., Neihsu, Taipei 114, Taiwan, R.O.C.			
Prüfgegenstand: <i>Test item:</i>	Lenovo Essential Wireless Mouse			
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	MORFKHO			
Auftrags-Inhalt: <i>Order content:</i>	FCC & IC approval			
Prüfgrundlage: <i>Test specification:</i>	CFR47 FCC Part 15: Subpart C Section 15.249 RSS-210 Issue 9 August 2016 RSS-Gen Issue 4 November 2014			
Wareneingangsdatum: <i>Date of receipt:</i>	01.11.2016	Refer to photo document		
Prüfmuster-Nr.: <i>Test sample No.:</i>	A000448902-043, A000448902-045			
Prüfzeitraum: <i>Testing period:</i>	09.11.2016 - 25.11.2016			
Ort der Prüfung: <i>Place of testing:</i>	Accurate Technology Co., Ltd.			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von / tested by:		kontrolliert von / reviewed by:		
25.11.2016	Sam Lin / Assistant Manager	25.11.2016	Winnie Hou / Technical Certifier	
Datum <i>Date</i>	Name / Stellung <i>Name / Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name / Stellung <i>Name / Position</i>
				Unterschrift <i>Signature</i>
Sonstiges / Other: This report is for DXX equipment class. FCC ID: EMJMMORFKHO IC: 4251A-MMORFKHO HVIN: MORFKHO				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>		
* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend
	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
Legend:	1 = very good	2 = good	3 = satisfactory	4 = sufficient
	P(ass) = passed a.m. test specification(s)	F(ail) = failed a.m. test specification(s)	N/A = not applicable	N/T = not tested
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

Prüfbericht - Nr.: 50063611 001
Test Report No.

Seite 2 von 22
Page 2 of 22

TEST SUMMARY

5.1.1 ANTENNA REQUIREMENT

RESULT: Pass

5.1.2 FIELD STRENGTH OF FUNDAMENTAL AND HARMONICS

RESULT: Pass

5.1.3 20dB BANDWIDTH AND 99% BANDWIDTH

RESULT: Pass

5.1.4 OUT-OF-BAND EMISSIONS

RESULT: Pass

CONTENTS

1.	GENERAL REMARKS	4
1.1	COMPLEMENTARY MATERIALS	4
2.	TEST SITES	4
2.1	TEST FACILITIES	4
2.2	LIST OF TEST AND MEASUREMENT INSTRUMENTS.....	5
2.3	TRACEABILITY	6
2.4	CALIBRATION	6
2.5	MEASUREMENT UNCERTAINTY.....	6
2.6	LOCATION OF ORIGINAL DATA.....	6
2.7	STATUS OF FACILITY USED FOR TESTING.....	6
3.	GENERAL PRODUCT INFORMATION	7
3.1	PRODUCT FUNCTION AND INTENDED USE.....	7
3.2	RATINGS AND SYSTEM DETAILS	7
3.3	INDEPENDENT OPERATION MODES	8
3.4	NOISE GENERATING AND NOISE SUPPRESSING PARTS	9
3.5	SUBMITTED DOCUMENTS	9
4.	TEST SET-UP AND OPERATION MODES	9
4.1	PRINCIPLE OF CONFIGURATION SELECTION.....	9
4.2	TEST OPERATION AND TEST SOFTWARE	9
4.3	SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT	10
4.4	COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE.....	10
4.5	TEST SETUP DIAGRAM	11
5.	TEST RESULTS	13
5.1	TRANSMITTER REQUIREMENT & TEST SUITES	13
5.1.1	Antenna Requirement	13
5.1.2	Field strength of fundamental and harmonics.....	14
5.1.3	20dB Bandwidth and 99% Bandwidth.....	16
5.1.4	Out-of-band emissions	19
6.	PHOTOGRAPHS OF THE TEST SET-UP	20
7.	LIST OF TABLES	22
8.	LIST OF PHOTOGRAPHS	22

1. General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Test Results of 2.4 GHz Wireless mode

2. Test Sites

2.1 Test Facilities

Accurate Technology Co., Ltd.

(FCC Registration No.: 752051 & IC Registration Number: 5077A-2)

F1, Bldg A, Changyuan New Material Port, Keyuan Rd., Science & Industry Park,
Nanshan District, Shenzhen, 518057, P.R. China

The tests at the test site have been conducted under the supervision of a TÜV engineer.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Manufacturer	Type	S/N	Calibrated until
Radio Spectrum Test				
Spectrum Analyzer	Rohde & Schwarz	FSV40	101495	Jan. 09, 2017
Radiated emissions				
Spectrum Analyzer	Rohde & Schwarz	FSV40	101495	Jan. 09, 2017
Test Receiver	Rohde& Schwarz	ESCS30	100307	Jul. 09, 2017
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan.14, 2017
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 14, 2017
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 14, 2017
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 14, 2017
RF Switching Unit+PreAMP	Compliance Direction	RSU-M2	38322	Jan. 09, 2017
Pre-Amplifier	Rohde&Schwarz	CBLU1183540-01	3791	Jan. 09, 2017

2.3 Traceability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table,

Items		Extended Uncertainty
CE	Disturbance Voltage (dBuV)	U=1.94dB, k=2, σ =95%
RE (9kHz-30MHz)	Field strength (dBuV/m)	U=3.08dB, k=2, σ =95%
RE (30-1000MHz)	Field strength (dBuV/m)	U=4.42dB, k=2, σ =95%
RE (above 1000MHz)	Field strength (dBuV/m)	U=4.06dB, k=2, σ =95%

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

The Accurate Technology Co., Ltd. facility located at F1, Bldg A, Changyuan New Material Port, Keyuan Rd., Science & Industry Park, Nanshan District, Shenzhen, 518057, P.R. China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3. General Product Information

3.1 Product Function and Intended Use

The EUT is Lenovo 2.4GHz wireless mouse.

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

Technical Specification	Value
Kind of Equipment:	Lenovo Essential Wireless Mouse
Type Designation:	MORFKHO
FCC ID:	EMJMMORFKHO
IC:	4251A-MMORFKHO
HVIN:	MORFKHO
Type of Equipment:	Class B digital equipment
Equipment Class:	DXX
Wireless Technology:	2.4 GHz Wireless
Rated output power:	0 dBm
Operating Frequency Range:	2402-2479 MHz for 2.4 GHz Wireless
Channel Number:	78 channels for 2.4 GHz Wireless
Channel Separation:	1 MHz for 2.4 GHz Wireless
Type of Modulation:	GFSK
Operating Voltage:	DC 1.5V via AA ALKALINE battery
Operating Temperature Range:	0°C to 40°C
Antenna Type:	Printed PCB Antenna for 2.4 GHz
Smart Antenna Systems:	Not Applicable
Number of Antenna:	1
Antenna Gain:	Max. -0.78dBi

Table 3: List of Radio Frequency Channel, 2.4 GHz Wireless

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
0	2402.00	21	2423.00	42	2444.00	63	2465.00
1	2403.00	22	2424.00	43	2445.00	64	2466.00
2	2404.00	23	2425.00	44	2446.00	65	2467.00
3	2405.00	24	2426.00	45	2447.00	66	2468.00
4	2406.00	25	2427.00	46	2448.00	67	2469.00
5	2407.00	26	2428.00	47	2449.00	68	2470.00
6	2408.00	27	2429.00	48	2450.00	69	2471.00
7	2409.00	28	2430.00	49	2451.00	70	2472.00
8	2410.00	29	2431.00	50	2452.00	71	2473.00
9	2411.00	30	2432.00	51	2453.00	72	2474.00
10	2412.00	31	2433.00	52	2454.00	73	2475.00
11	2413.00	32	2434.00	53	2455.00	74	2476.00
12	2414.00	33	2435.00	54	2456.00	75	2477.00
13	2415.00	34	2436.00	55	2457.00	76	2478.00
14	2416.00	35	2437.00	56	2458.00	77	2479.00
15	2417.00	36	2438.00	57	2459.00	--	--
16	2418.00	37	2439.00	58	2460.00	--	--
17	2419.00	38	2440.00	59	2461.00	--	--
18	2420.00	39	2441.00	60	2462.00	--	--
19	2421.00	40	2442.00	61	2463.00	--	--
20	2422.00	41	2443.00	62	2464.00	--	--

3.3 Independent Operation Modes

The basic operation modes are:

- A. 2.4GHz Wireless operating
 - 1. Transmitting
 - a. Low channel
 - b. Middle channel
 - c. High channel
 - 2. Receiving
 - a. Low channel
 - b. Middle channel
 - c. High channel
- B. Standby
- C. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.5 Submitted Documents

- Bill of Material	- Circuit Diagram
- PCB Layout	- Instruction Manual
- Photo Document	- Rating Label

4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5.

Table 4: List of Frequencies under Test, 2.4 GHz Wireless operation

RF channel of 2.4 GHz Wireless			
Test Channel	Channel Number	Frequency (MHz)	Remark
Low	0	2402.00	Max. output power level
Middle	39	2441.00	Max. output power level
High	77	2479.00	Max. output power level

4.3 Special Accessories and Auxiliary Equipment

Table 5: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating
Laptop	Lenovo	ThinkPad X240	PD-01UAM3	Input: DC 20V, 3.25A
Printer	HP	HP Laserjet 1015	CNFG030424	--
2.4 GHz USB Dongle	Lenovo	MORFFHL-D	--	Input: DC 5V

4.4 Countermeasures to achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Constructional Data Form or the Technical Construction File. No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test below 1 GHz

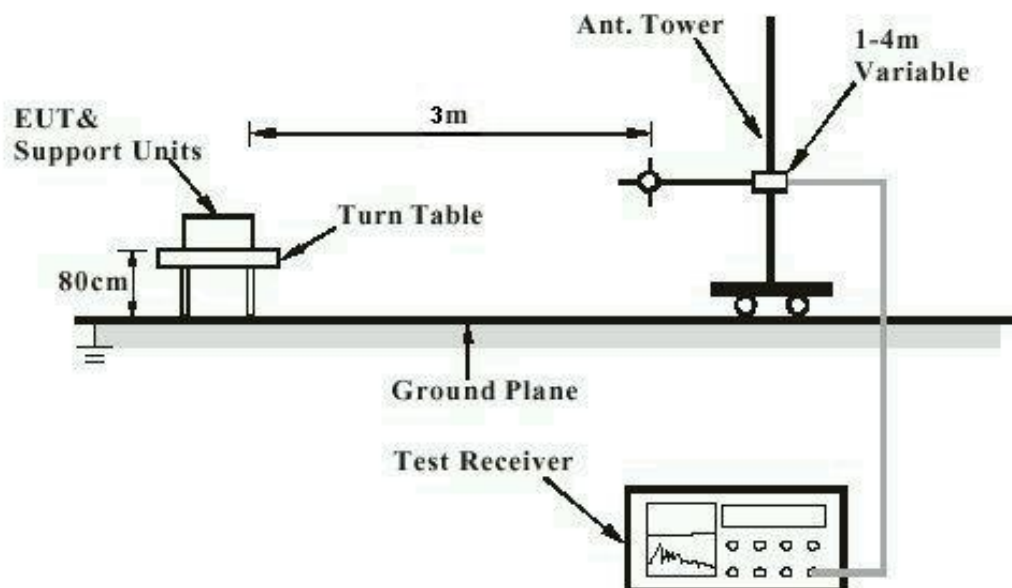


Diagram of Measurement Configuration for Radiation Test above 1 GHz

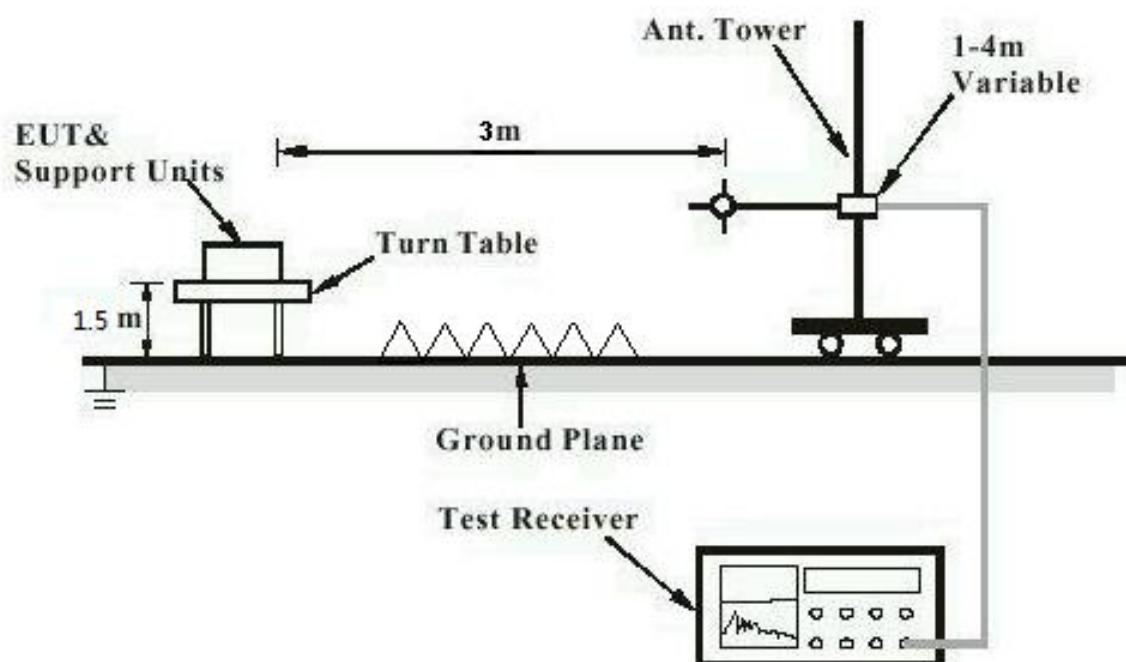


Diagram of Measurement Equipment Configuration for Conduction Measurement

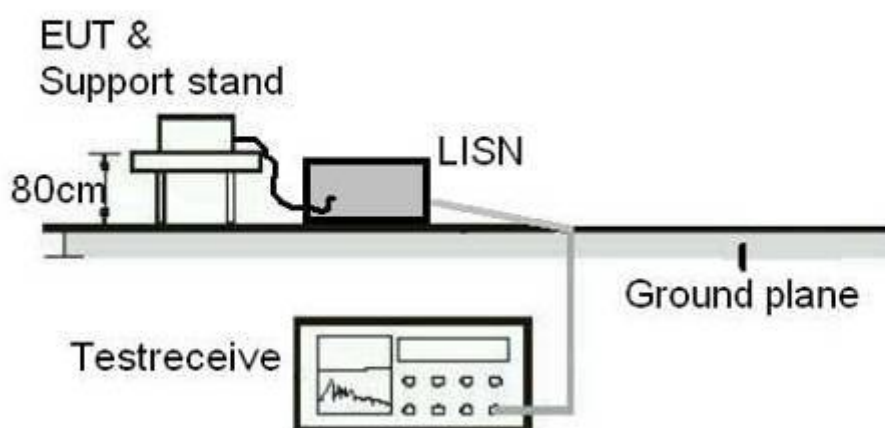
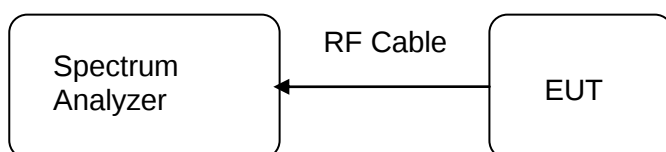


Diagram of Measurement Equipment Configuration for Transmitter Measurement



5. Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT:**Pass**

Test date : 2016-11-09 to 2016-11-25
Test standard : Part 15.203

According to the manufacturer declared, the EUT has an internal antenna, the directional gain of antenna is -0.78 dBi for 2.4 GHz, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to compliance the provision.

Refer to EUT photo for details.

5.1.2 Field strength of fundamental and harmonics

RESULT:

Pass

Date of testing	:	2016-11-09 to 2016-11-25
Test standard	:	FCC part 15.249(a) Annex B.10(a) of RSS-210
Basic standard	:	ANSI C63.10:2013
Limits	:	Refer to 15.249(a) Annex B.10(a) of RSS-210
Kind of test site	:	3m Semi-Anechoic Chamber

Test setup

Test Channel	:	Low/ Middle/ High
Operation mode	:	A.1
Ambient temperature	:	23°C
Relative humidity	:	48%
Atmospheric pressure	:	101.0 kPa

Table 6: Test result of Field strength of fundamental and harmonics, 2.4 GHz Wireless operation

2.4 GHz Wireless								
Test Channel	Frequency (MHz)	Measured Result (dBuV/m)	Limit (dBuV/m)	Detector	Polarity	Verdict		
Low	2402	91.46	114	Peak	Horizontal	Pass		
		90.06	94	Average				
	4804	50.56	114	Peak			Vertical	Pass
		43.25	94	Average				
	2402	81.84	114	Peak	Vertical	Pass		
		80.44	94	Average				
	4804	49.93	114	Peak			Vertical	Pass
		40.57	94	Average				
Middle	2441	91.75	114	Peak	Horizontal	Pass		
		90.45	94	Average				
	4882	49.45	114	Peak			Vertical	Pass
		41.33	94	Average				
	2441	81.78	114	Peak	Vertical	Pass		
		80.48	94	Average				
	4882	48.56	114	Peak			Vertical	Pass
		40.55	94	Average				
High	2479	91.50	114	Peak	Horizontal	Pass		
		90.30	94	Average				

Prüfbericht - Nr.: 50063611 001
Test Report No.
Seite 15 von 22
Page 15 of 22

	4985	50.06	114	Peak		
		42.37	94	Average		
	2479	82.27	114	Peak	Vertical	Pass
		81.07	94	Average		
	4985	48.17	114	Peak		
		40.37	94	Average		

5.1.3 20dB Bandwidth and 99% Bandwidth

RESULT:**Pass**

Date of testing : 2016-11-09 to 2016-11-25
Test standard : FCC part 15.215
Clause 6.6 of RSS-Gen
Basic standard : ANSI C63.10:2013
Kind of test site : Shielded room

Test setup

Test Channel : Low/ Middle/ High
Operation mode : A.1
Ambient temperature : 23°C
Relative humidity : 48%
Atmospheric pressure : 101.0 kPa

Table 7: Test result of 20dB Bandwidth and 99% Bandwidth, 2.4 GHz Wireless operation

2.4 GHz Wireless				
Channel	Channel Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)	Verdict
Low Channel	2402	903.00	1439.94	Pass
Mid Channel	2439	1701.8	1751.09	Pass
High Channel	2479	2097.00	1931.98	Pass

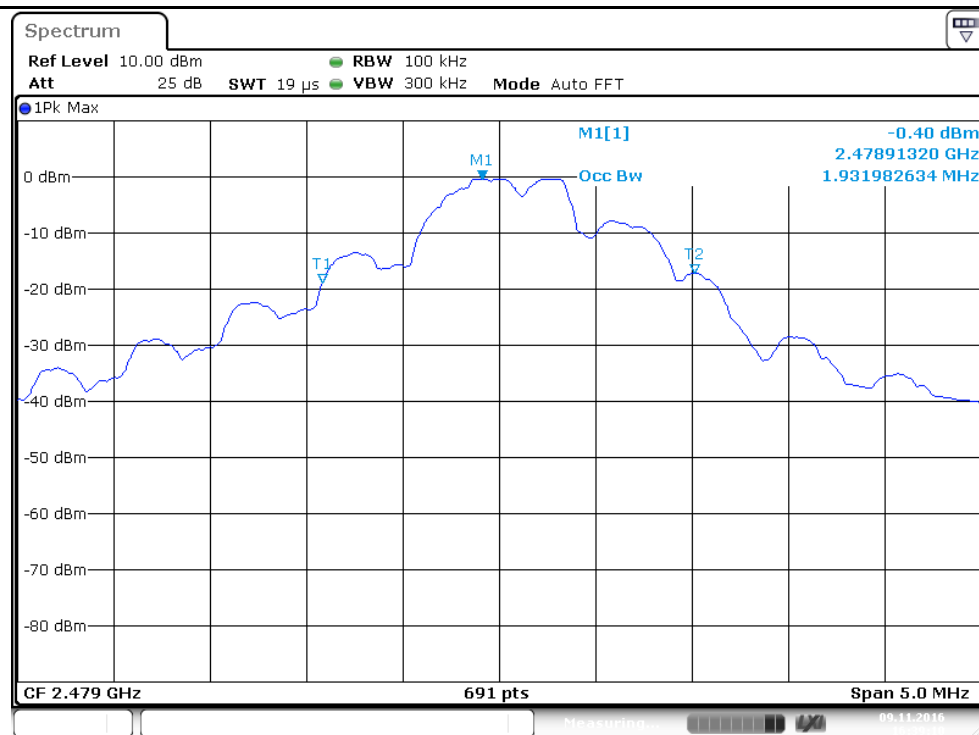
Test Graph of 99% Bandwidth, 2.4 GHz Wireless mode

Low Channel



Middle Channel



High Channel


Date: 9.NOV.2016 16:39:10

5.1.4 Out-of-band emissions

RESULT:**Pass**

Date of testing	:	2016-11-09 to 2016-11-25
Test standard	:	FCC part 15.249(d) Annex B.10(b) of RSS-210
Basic standard	:	ANSI C63.10:2013
Limits	:	Refer to 15.249(d) Annex B.10(b) of RSS-210
Kind of test site	:	3m Semi-Anechoic Chamber

Test setup

Test Channel	:	Low/ Middle/ High
Operation mode	:	A.1
Ambient temperature	:	23°C
Relative humidity	:	48%
Atmospheric pressure	:	101.0 kPa

Refer to attached Appendix A for details.

7. List of Tables

Table 1: List of Test and Measurement Equipment	5
Table 2: Technical Specification of EUT	7
Table 3: List of Radio Frequency Channel, 2.4 GHz Wireless	8
Table 4: List of Frequencies under Test, 2.4 GHz Wireless operation	9
Table 5: List of Accessories and Auxiliary Equipment	10
Table 6: Test result of Field strength of fundamental and harmonics, 2.4 GHz Wireless operation	14
Table 7: Test result of 20dB Bandwidth and 99% Bandwidth, 2.4 GHz Wireless operation	16

8. List of Photographs

Photograph 1: Set-up for Spurious Emissions (9kHz-30MHz)	20
Photograph 2: Set-up for Spurious Emissions (30MHz-1GHz)	20
Photograph 3: Set-up for Spurious Emissions (1GHz-18GHz)	21
Photograph 4: Set-up for Spurious Emissions (18GHz-26GHz)	21

Appendix A

Test Results of 2.4 GHz Wireless Mode

APPENDIX A.1: SPURIOUS EMISSIONS OF 2.4 GHZ WIRELESS OPERATION 2

Low Channel..... 2

Middle Channel..... 11

High Channel..... 20

APPENDIX A.2: RADIATED EMISSIONS IN RESTRICTED BANDS - 2.4 GHZ WIRELESS OPERATION 29

Low Channel..... 29

High Channel..... 31

Appendix A.1: Spurious Emissions of 2.4 GHz Wireless operation Low Channel

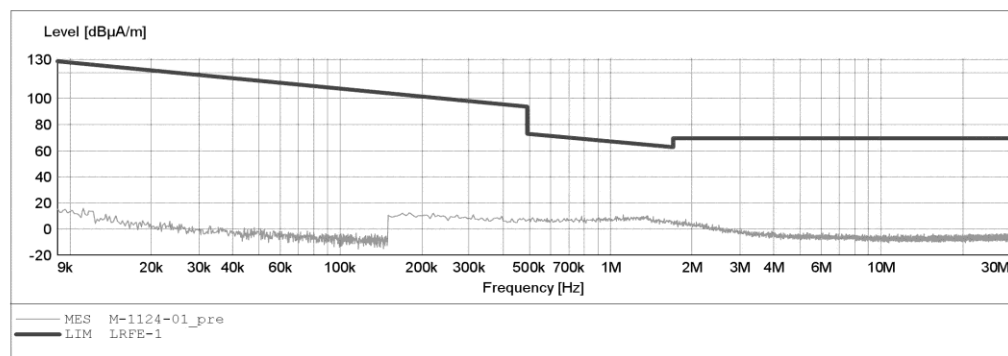
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: Lenovo Essential Wireless Mouse M/N:MORFKHO
 Manufacturer: Lenovo
 Operating Condition: TX 2402MHz
 Test Site: 2# Chamber
 Operator: LGWADE
 Test Specification: DC 1.5V
 Comment: X
 Start of Test: 2016-11-24 /

SCAN TABLE: "LFRE Fin"

Short Description:			_SUB_STD_VTERM2 1.70			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



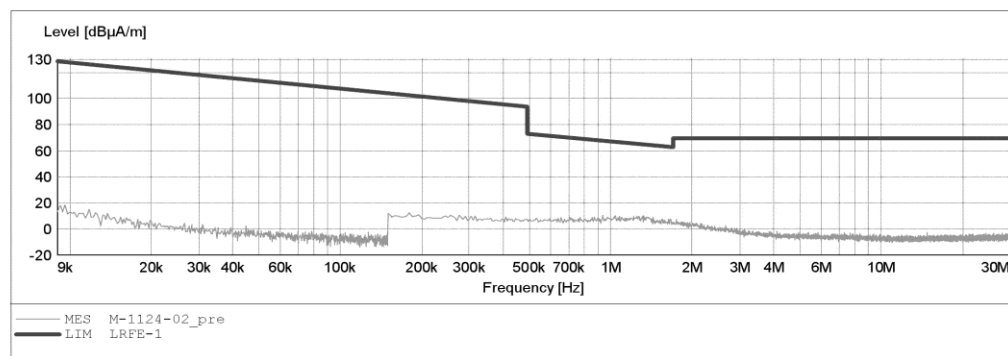
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: Lenovo Essential Wireless Mouse M/N:MORFKHO
 Manufacturer: Lenovo
 Operating Condition: TX 2402MHz
 Test Site: 2# Chamber
 Operator: LGWADE
 Test Specification: DC 1.5V
 Comment: Y
 Start of Test: 2016-11-24 /

SCAN TABLE: "LFRE Fin"

Short Description:			_SUB_STD_VTERM2 1.70		IF	Transducer
Start	Stop	Step	Detector	Meas. Time	Bandw.	
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



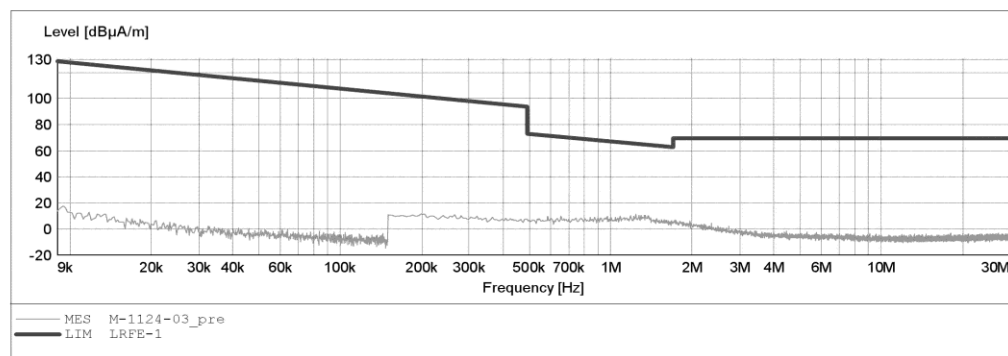
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: Lenovo Essential Wireless Mouse M/N:MORFKHO
 Manufacturer: Lenovo
 Operating Condition: TX 2402MHz
 Test Site: 2# Chamber
 Operator: LGWADE
 Test Specification: DC 1.5V
 Comment: Z
 Start of Test: 2016-11-24 /

SCAN TABLE: "LFRE Fin"

Short Description:			_SUB_STD_VTERM2 1.70			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



**ACCURATE TECHNOLOGY CO., LTD.**
 F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1472

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Lenovo Essential Wireless Mouse

Mode: TX 2402MHz

Model: MORFKHO

Manufacturer: Lenovo

Polarization: Horizontal

Power Source: DC 1.5V

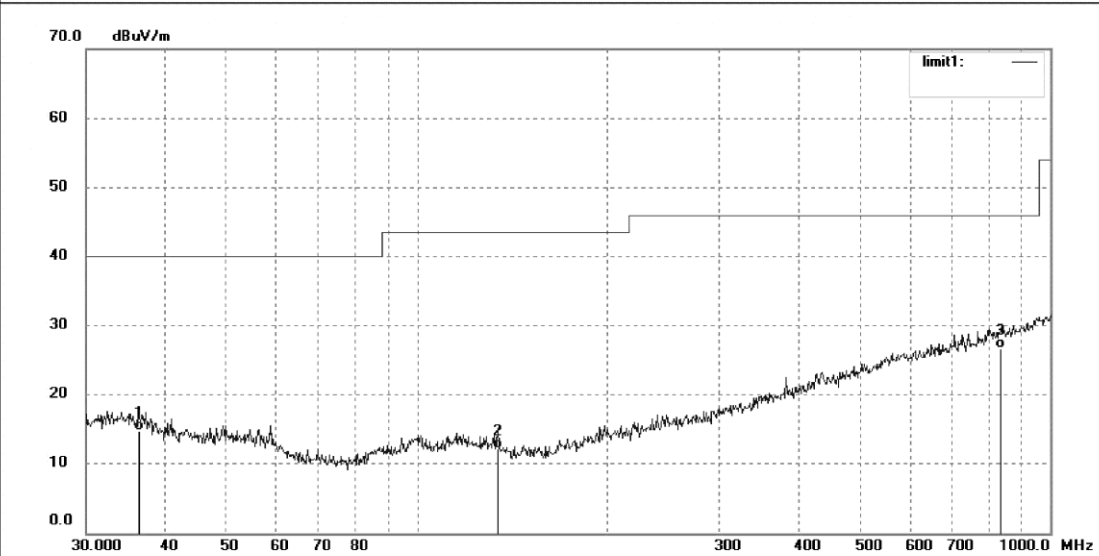
Date: 16/11/25/

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	36.3813	25.46	-10.72	14.74	40.00	-25.26	QP			
2	134.0882	26.01	-13.92	12.09	43.50	-31.41	QP			
3	836.2441	25.30	1.45	26.75	46.00	-19.25	QP			

**ACCURATE TECHNOLOGY CO., LTD.**
 F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1473

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Lenovo Essential Wireless Mouse

Mode: TX 2402MHz

Model: MORFKHO

Manufacturer: Lenovo

Polarization: Vertical

Power Source: DC 1.5V

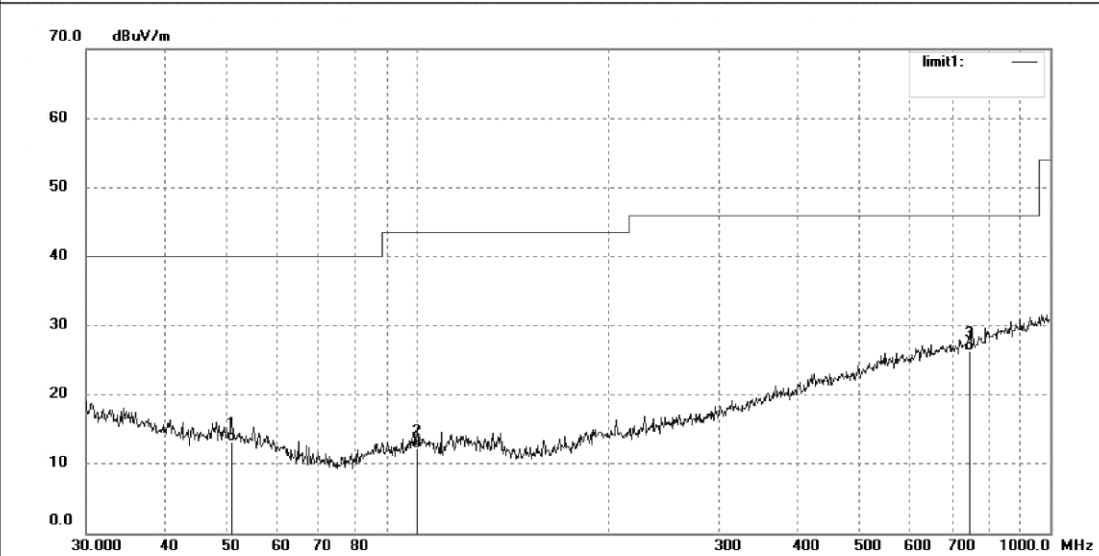
Date: 16/11/25/

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	50.9420	25.84	-12.65	13.19	40.00	-26.81	QP			
2	99.8777	25.17	-13.09	12.08	43.50	-31.42	QP			
3	747.4825	26.68	-0.33	26.35	46.00	-19.65	QP			

**ACCURATE TECHNOLOGY CO., LTD.**
 F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1456

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Lenovo Essential Wireless Mouse

Mode: TX 2402MHz

Model: MORFKHO

Manufacturer: Lenovo

Polarization: Horizontal

Power Source: DC 1.5V

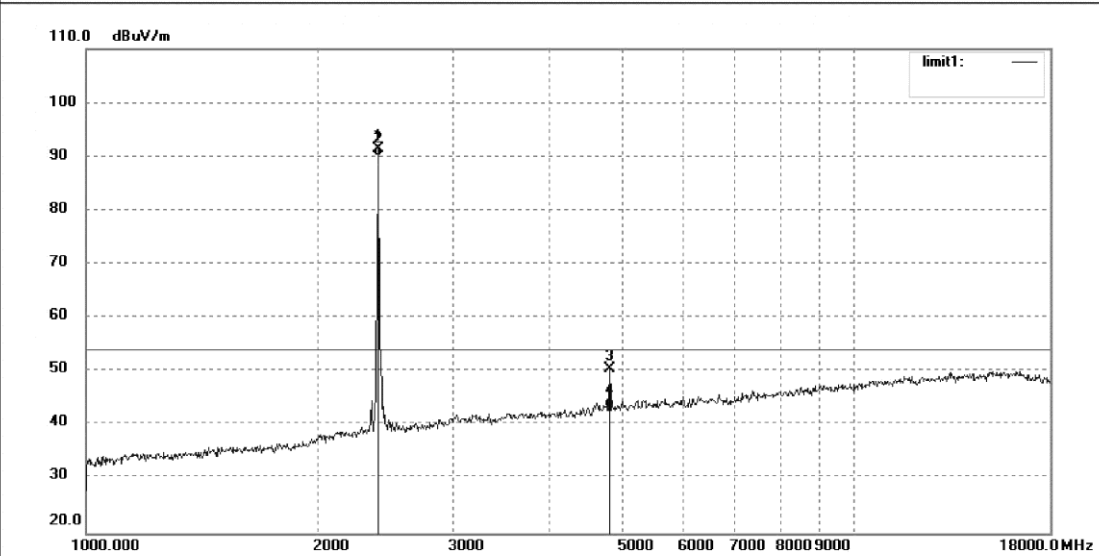
Date: 16/11/25/

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.000	93.07	-1.61	91.46	114.00	-22.54	peak			
2	2402.000	91.67	-1.61	90.06	94.00	-3.94	AVG			
3	4804.025	45.66	4.90	50.56	74.00	-23.44	peak			
4	4804.025	38.35	4.90	43.25	54.00	-10.75	AVG			

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 Science & Industry Park,Nanshan Shenzhen,P.R.China

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Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1457

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Lenovo Essential Wireless Mouse

Mode: TX 2402MHz

Model: MORFKHO

Manufacturer: Lenovo

Polarization: Vertical

Power Source: DC 1.5V

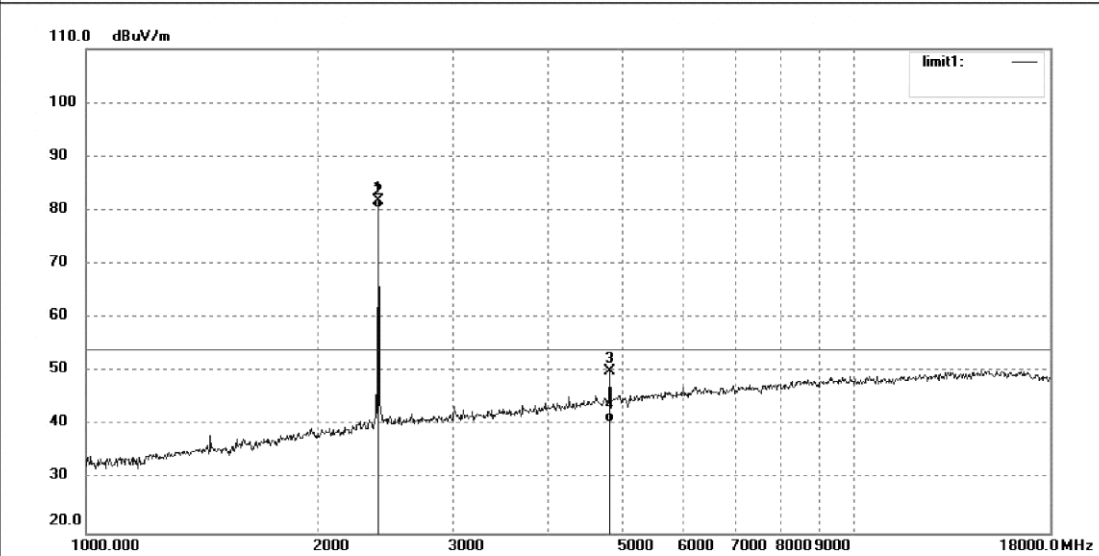
Date: 16/11/25/

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.000	83.45	-1.61	81.84	114.00	-32.16	peak			
2	2402.000	82.05	-1.61	80.44	94.00	-13.56	AVG			
3	4804.028	45.03	4.90	49.93	74.00	-24.07	peak			
4	4804.028	35.67	4.90	40.57	54.00	-13.43	AVG			

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Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1466

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Lenovo Essential Wireless Mouse

Mode: TX 2402MHz

Model: MORFKHO

Manufacturer: Lenovo

Polarization: Vertical

Power Source: DC 1.5V

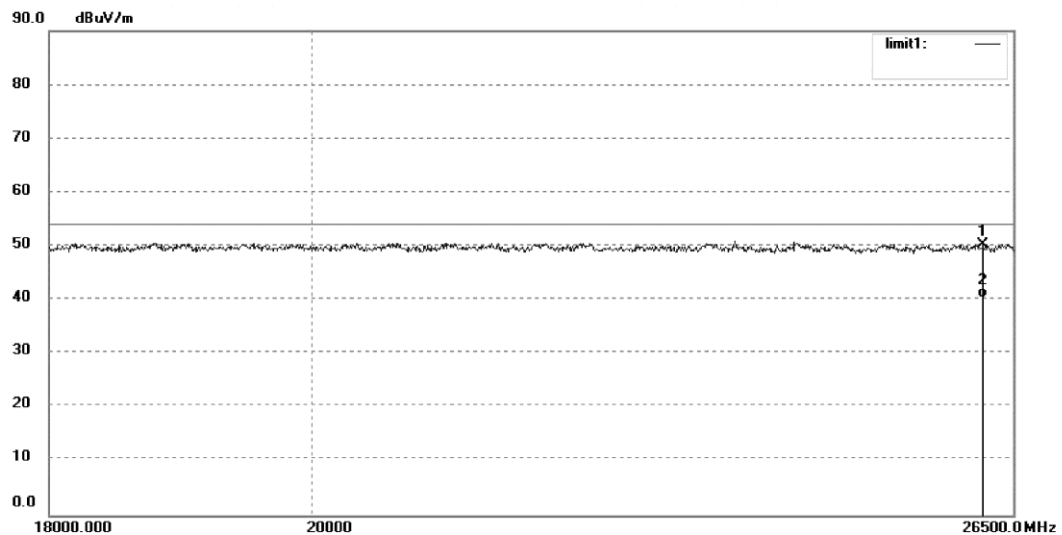
Date: 16/11/25/

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26184.163	9.32	40.95	50.27	74.00	-23.73	peak			
2	26184.163	-0.61	40.95	40.34	54.00	-13.66	AVG			

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Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1467

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Lenovo Essential Wireless Mouse

Mode: TX 2402MHz

Model: MORFKHO

Manufacturer: Lenovo

Polarization: Horizontal

Power Source: DC 1.5V

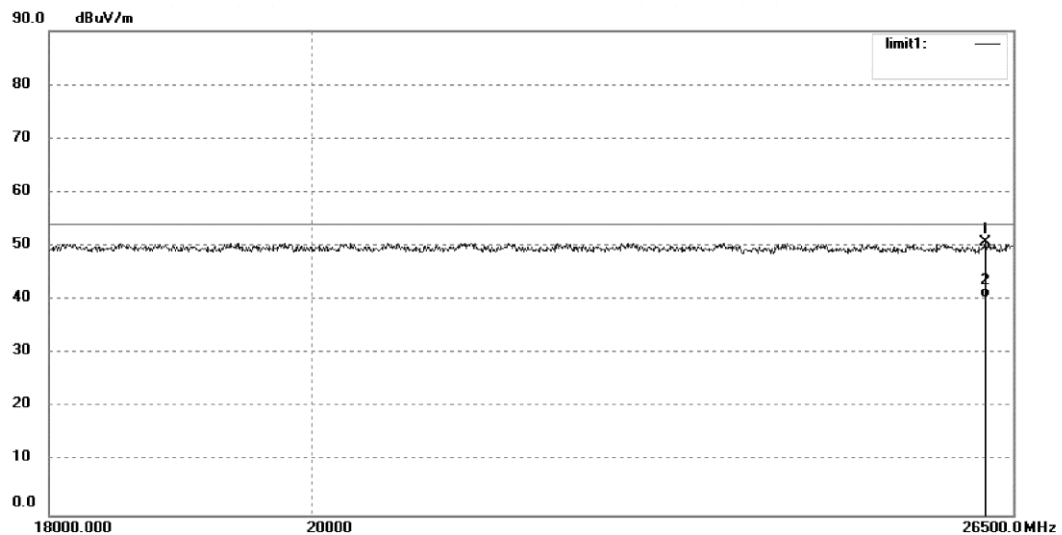
Date: 16/11/25/

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26204.426	10.31	40.35	50.66	74.00	-23.34	peak			
2	26204.426	-0.01	40.35	40.34	54.00	-13.66	AVG			

Middle Channel

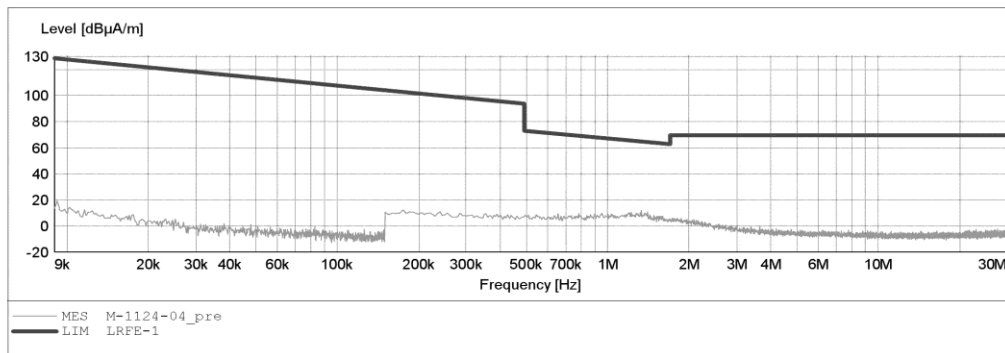
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: Lenovo Essential Wireless Mouse M/N:MORFKHO
 Manufacturer: Lenovo
 Operating Condition: TX 2441MHz
 Test Site: 2# Chamber
 Operator: LGWADE
 Test Specification: DC 1.5V
 Comment: X
 Start of Test: 2016-11-24 /

SCAN TABLE: "LFRE Fin"

Short Description:			_SUB_STD_VTERM2 1.70			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



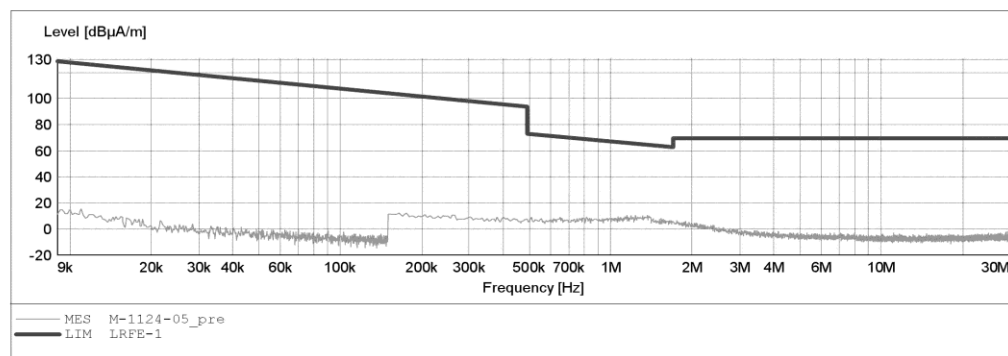
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: Lenovo Essential Wireless Mouse M/N:MORFKHO
 Manufacturer: Lenovo
 Operating Condition: TX 2441MHz
 Test Site: 2# Chamber
 Operator: LGWADE
 Test Specification: DC 1.5V
 Comment: Y
 Start of Test: 2016-11-24 /

SCAN TABLE: "LFRE Fin"

Short Description:			_SUB_STD_VTERM2 1.70			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



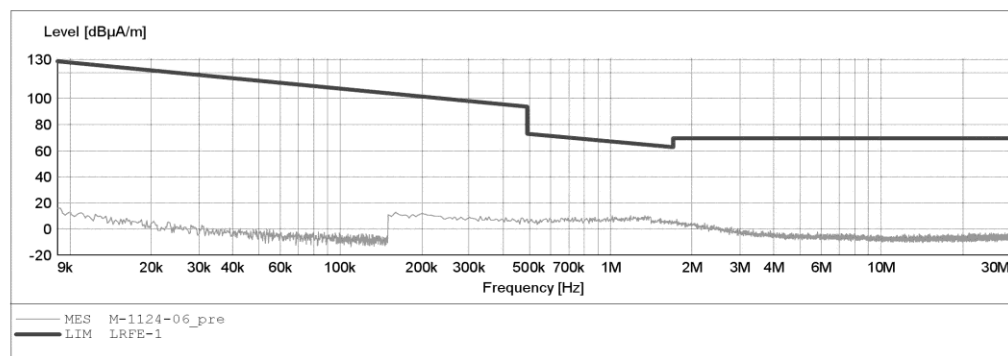
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: Lenovo Essential Wireless Mouse M/N:MORFKHO
 Manufacturer: Lenovo
 Operating Condition: TX 2441MHz
 Test Site: 2# Chamber
 Operator: LGWADE
 Test Specification: DC 1.5V
 Comment: Z
 Start of Test: 2016-11-24 /

SCAN TABLE: "LFRE Fin"

Short Description:			_SUB_STD_VTERM2 1.70			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1474

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Lenovo Essential Wireless Mouse

Mode: TX 2441MHz

Model: MORFKHO

Manufacturer: Lenovo

Polarization: Vertical

Power Source: DC 1.5V

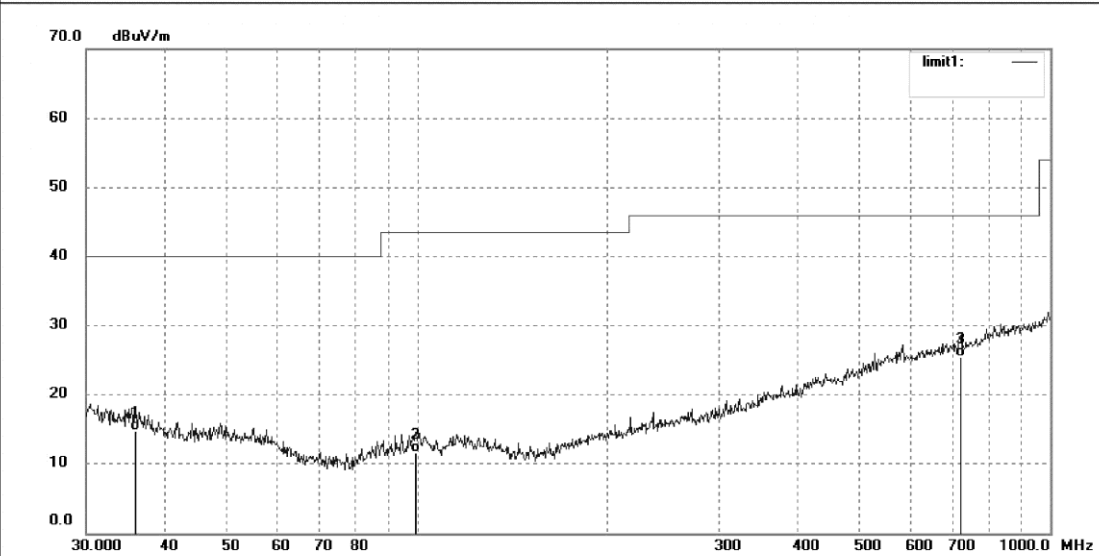
Date: 16/11/25/

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	35.8746	25.41	-10.61	14.80	40.00	-25.20	QP			
2	99.5279	24.83	-13.21	11.62	43.50	-31.88	QP			
3	721.7259	26.28	-0.75	25.53	46.00	-20.47	QP			

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Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1475

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Lenovo Essential Wireless Mouse

Mode: TX 2441MHz

Model: MORFKHO

Manufacturer: Lenovo

Polarization: Horizontal

Power Source: DC 1.5V

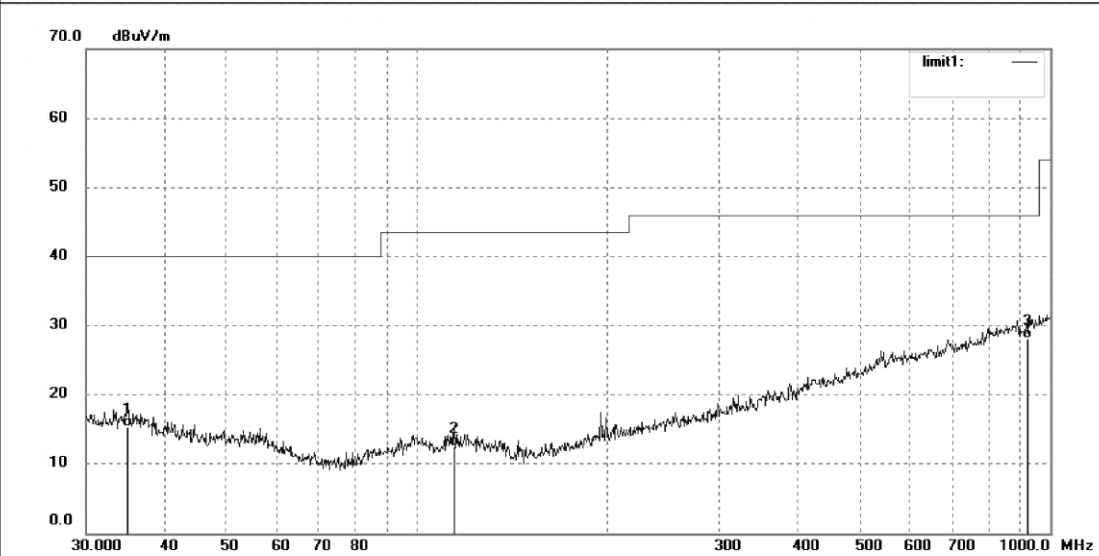
Date: 16/11/25/

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	34.8823	25.66	-10.40	15.26	40.00	-24.74	QP			
2	114.5146	25.59	-13.14	12.45	43.50	-31.05	QP			
3	919.2866	25.59	2.49	28.08	46.00	-17.92	QP			

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Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1460

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Lenovo Essential Wireless Mouse

Mode: TX 2441MHz

Model: MORFKHO

Manufacturer: Lenovo

Polarization: Horizontal

Power Source: DC 1.5V

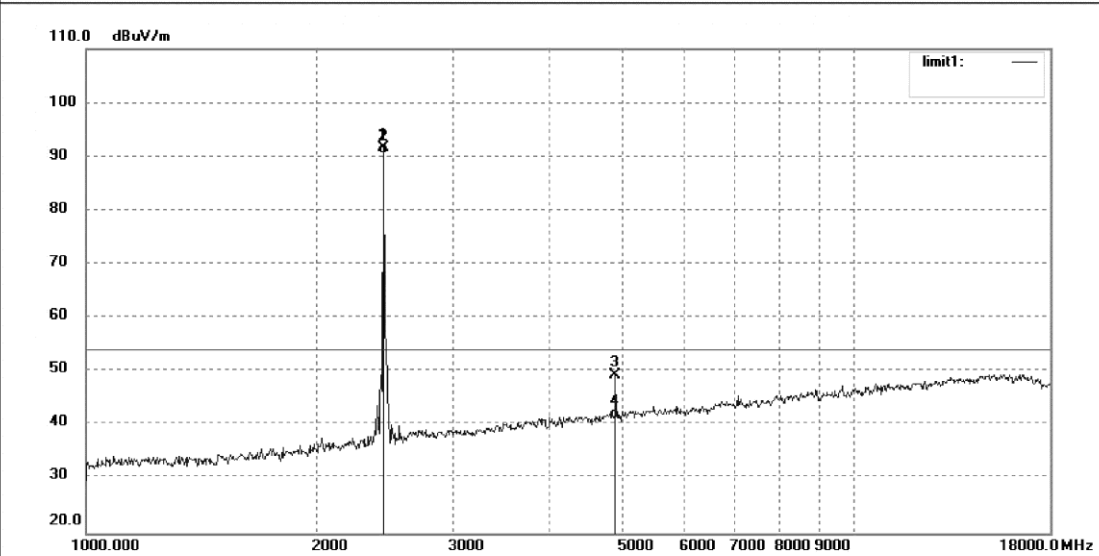
Date: 16/11/25/

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2441.000	93.19	-1.44	91.75	114.00	-22.25	peak			
2	2441.000	91.89	-1.44	90.45	94.00	-3.55	AVG			
3	4882.024	43.84	5.61	49.45	74.00	-24.55	peak			
4	4882.024	35.72	5.61	41.33	54.00	-12.67	AVG			

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Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1461

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Lenovo Essential Wireless Mouse

Mode: TX 2441MHz

Model: MORFKHO

Manufacturer: Lenovo

Polarization: Vertical

Power Source: DC 1.5V

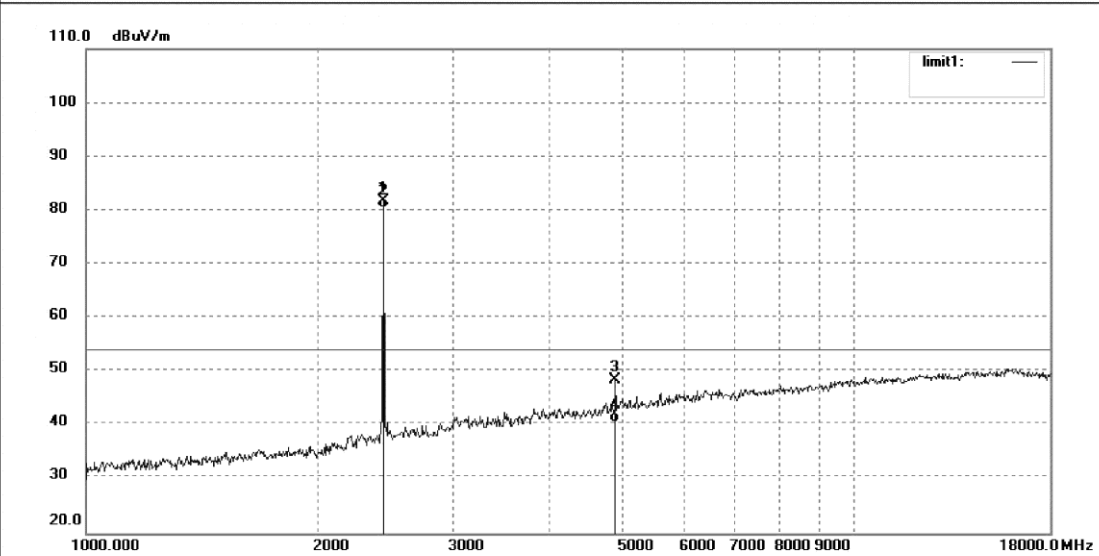
Date: 16/11/25/

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2441.000	83.22	-1.44	81.78	114.00	-32.22	peak			
2	2441.000	81.92	-1.44	80.48	94.00	-13.52	AVG			
3	4882.025	42.95	5.61	48.56	74.00	-25.44	peak			
4	4882.025	34.94	5.61	40.55	54.00	-13.45	AVG			

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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1468

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Lenovo Essential Wireless Mouse

Mode: TX 2441MHz

Model: MORFKHO

Manufacturer: Lenovo

Polarization: Horizontal

Power Source: DC 1.5V

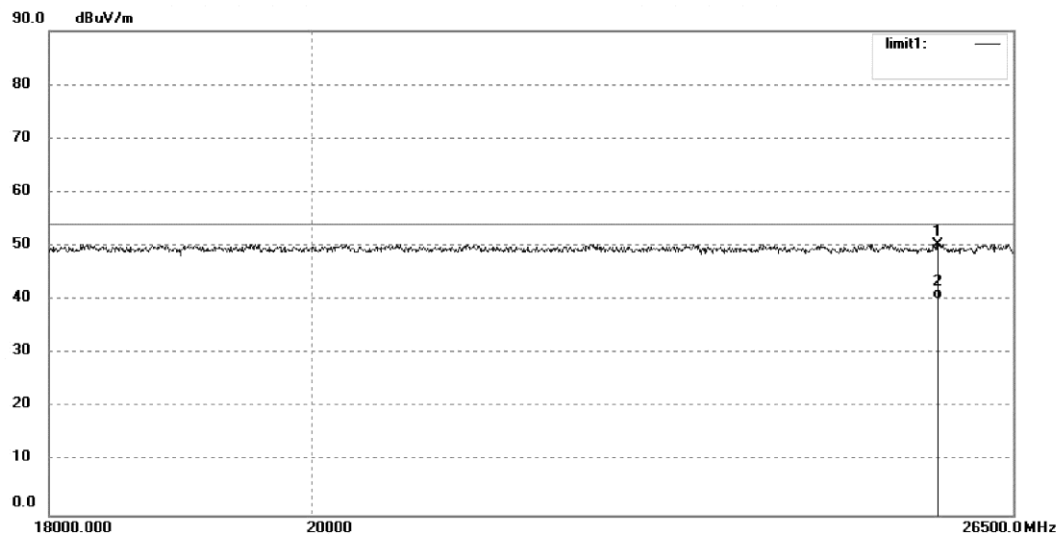
Date: 16/11/25/

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	25712.479	10.15	40.10	50.25	74.00	-23.75	peak			
2	25712.479	0.14	40.10	40.24	54.00	-13.76	AVG			

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Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1469

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Lenovo Essential Wireless Mouse

Mode: TX 2441MHz

Model: MORFKHO

Manufacturer: Lenovo

Polarization: Vertical

Power Source: DC 1.5V

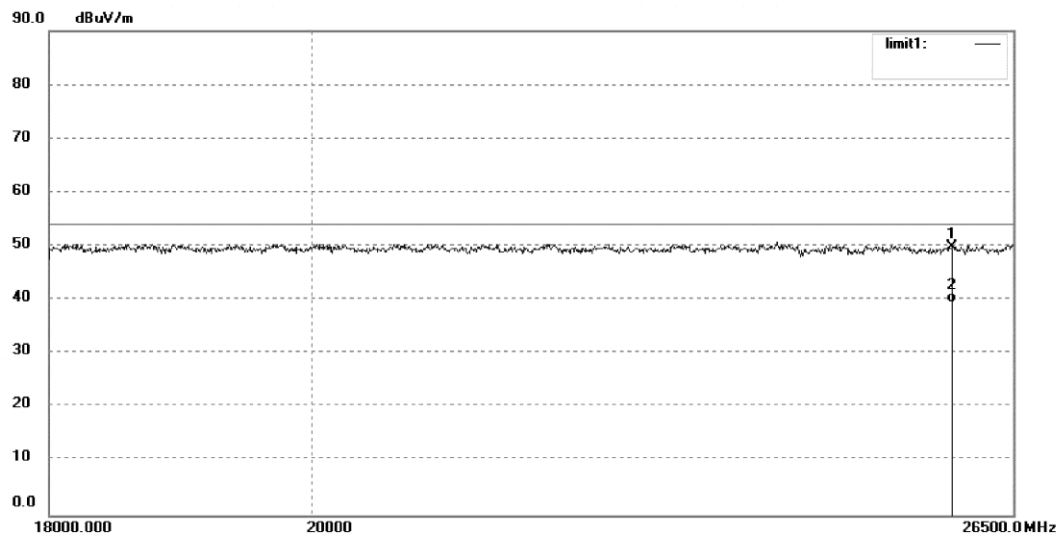
Date: 16/11/25/

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	25862.086	8.91	41.00	49.91	74.00	-24.09	peak			
2	25862.086	-1.55	41.00	39.45	54.00	-14.55	AVG			

High Channel

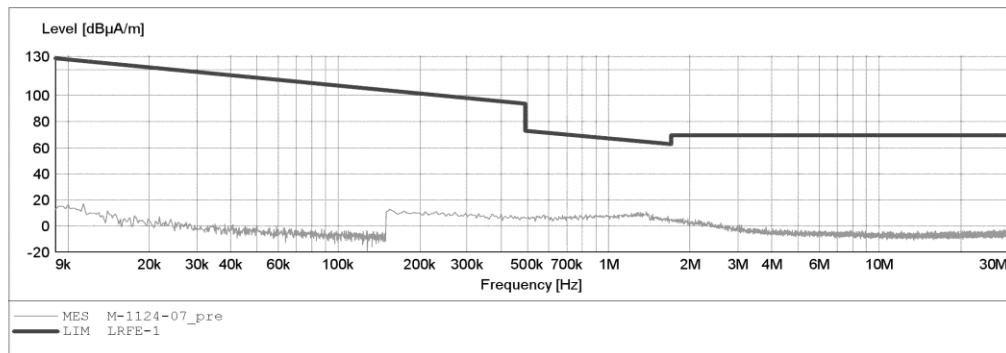
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FCC Class B 3M Radiated

EUT: Lenovo Essential Wireless Mouse M/N:MORFKHO
 Manufacturer: Lenovo
 Operating Condition: TX 2479MHz
 Test Site: 2# Chamber
 Operator: LGWADE
 Test Specification: DC 1.5V
 Comment: X
 Start of Test: 2016-11-24 /

SCAN TABLE: "LFRE Fin"

Short Description:			_SUB_STD_VTERM2 1.70			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



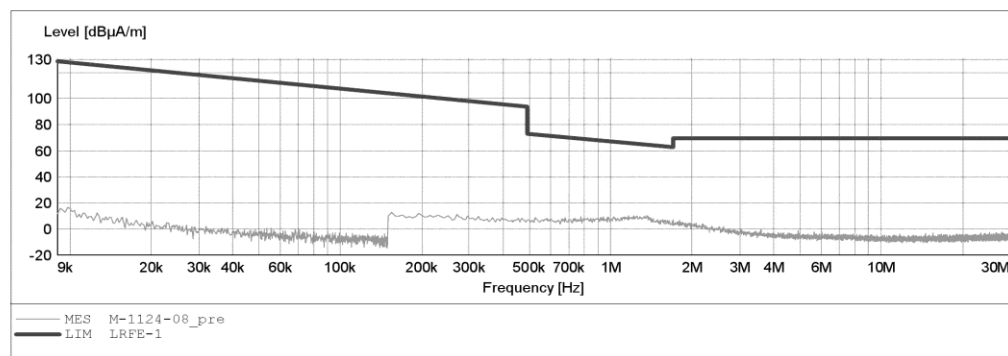
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: Lenovo Essential Wireless Mouse M/N:MORFKHO
 Manufacturer: Lenovo
 Operating Condition: TX 2479MHz
 Test Site: 2# Chamber
 Operator: LGWADE
 Test Specification: DC 1.5V
 Comment: Y
 Start of Test: 2016-11-24 /

SCAN TABLE: "LFRE Fin"

Short Description:			_SUB_STD_VTERM2 1.70			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



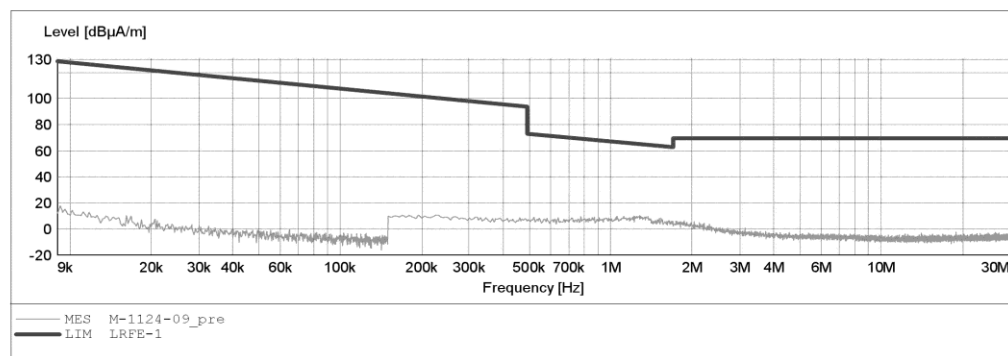
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FCC Class B 3M Radiated

EUT: Lenovo Essential Wireless Mouse M/N:MORFKHO
 Manufacturer: Lenovo
 Operating Condition: TX 2479MHz
 Test Site: 2# Chamber
 Operator: LGWADE
 Test Specification: DC 1.5V
 Comment: Z
 Start of Test: 2016-11-24 /

SCAN TABLE: "LFRE Fin"

Short Description:				_SUB_STD_VTERM2 1.70		
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1476

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Lenovo Essential Wireless Mouse

Mode: TX 2479MHz

Model: MORFKHO

Manufacturer: Lenovo

Polarization: Horizontal

Power Source: DC 1.5V

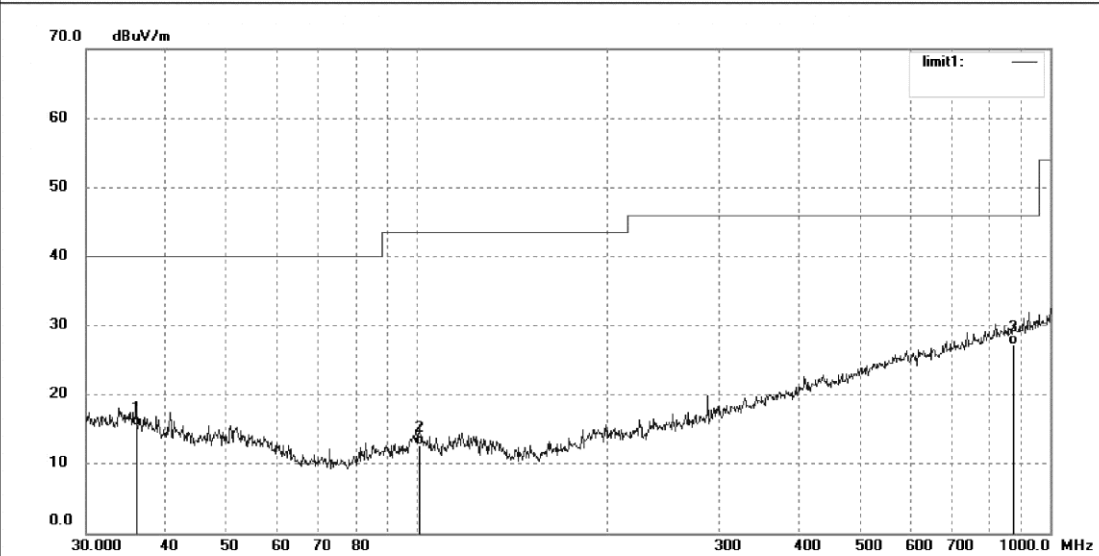
Date: 16/11/25/

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	36.0007	26.06	-10.64	15.42	40.00	-24.58	QP			
2	100.9338	25.93	-13.21	12.72	43.50	-30.78	QP			
3	875.2468	25.29	1.98	27.27	46.00	-18.73	QP			

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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1477

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Lenovo Essential Wireless Mouse

Mode: TX 2479MHz

Model: MORFKHO

Manufacturer: Lenovo

Polarization: Vertical

Power Source: DC 1.5V

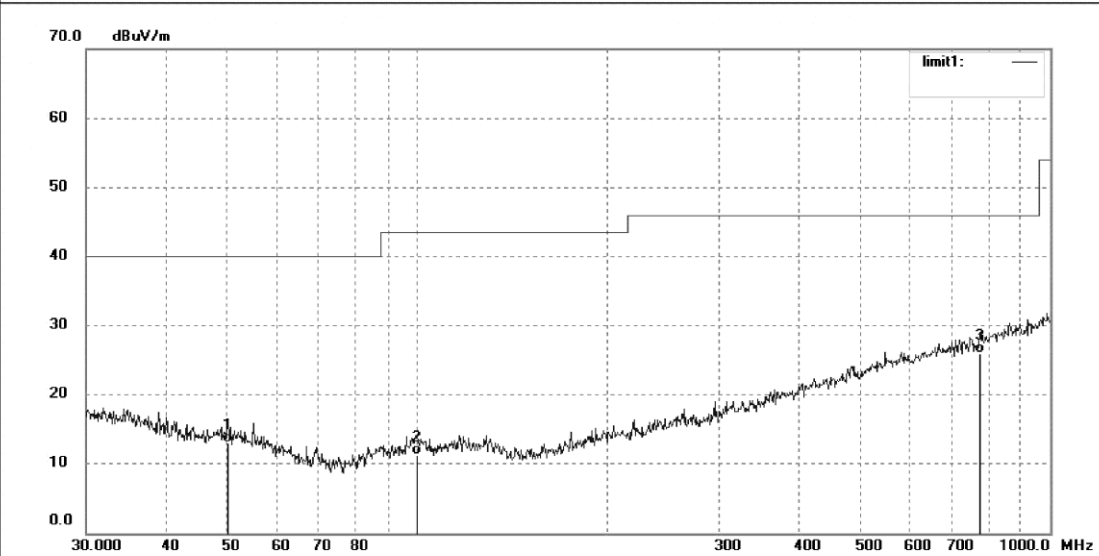
Date: 16/11/25/

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	50.2324	25.71	-12.60	13.11	40.00	-26.89	QP			
2	99.8777	24.40	-13.09	11.31	43.50	-32.19	QP			
3	774.1584	25.79	0.19	25.98	46.00	-20.02	QP			

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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1462

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Lenovo Essential Wireless Mouse

Mode: TX 2479MHz

Model: MORFKHO

Manufacturer: Lenovo

Polarization: Vertical

Power Source: DC 1.5V

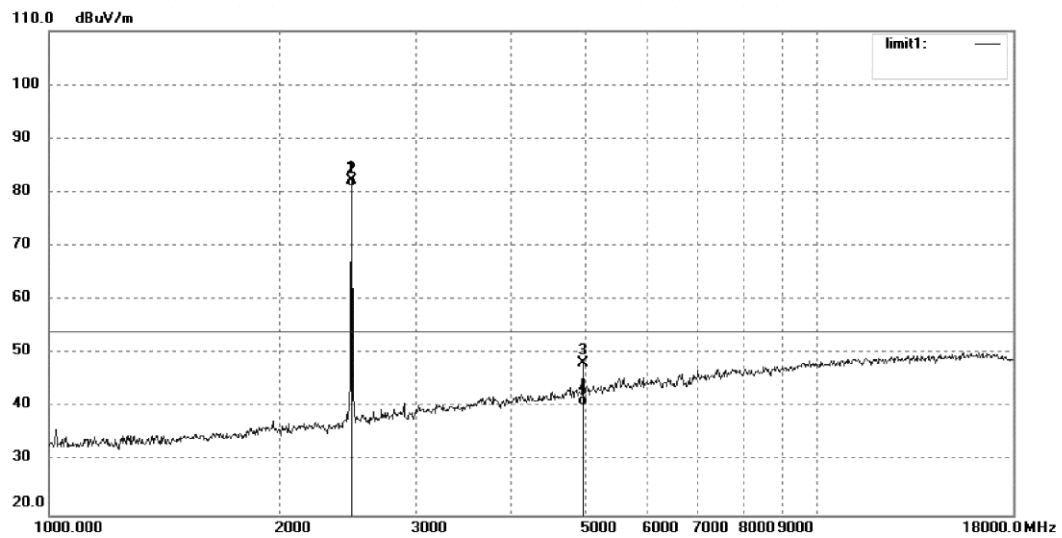
Date: 16/11/25/

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2479.000	83.67	-1.40	82.27	114.00	-31.73	peak			
2	2479.000	82.47	-1.40	81.07	94.00	-12.93	AVG			
3	4958.026	42.09	6.08	48.17	74.00	-25.83	peak			
4	4958.026	34.29	6.08	40.37	54.00	-13.63	AVG			

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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1463

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Lenovo Essential Wireless Mouse

Mode: TX 2479MHz

Model: MORFKHO

Manufacturer: Lenovo

Polarization: Horizontal

Power Source: DC 1.5V

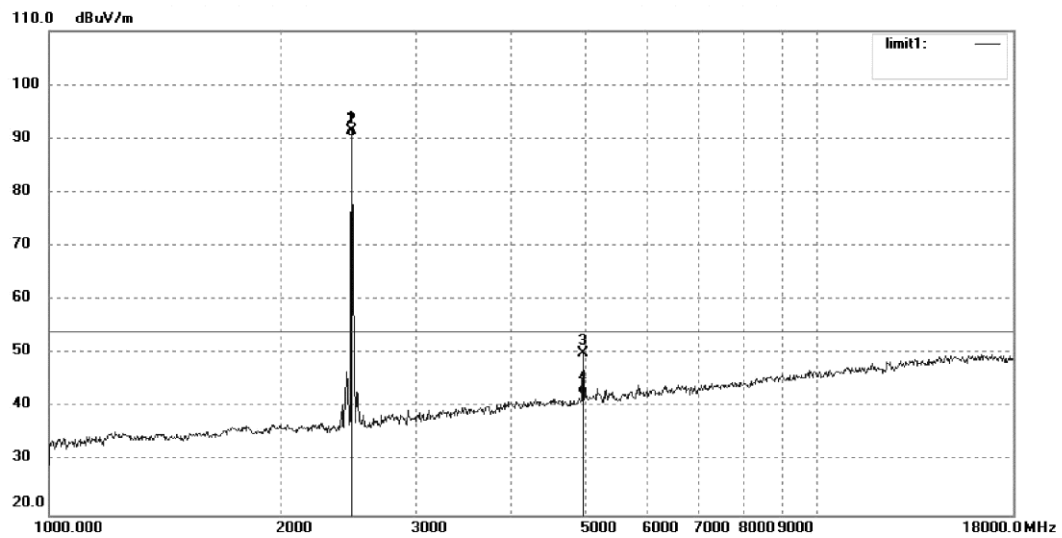
Date: 16/11/25/

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2479.000	92.90	-1.40	91.50	114.00	-22.50	peak			
2	2479.000	91.70	-1.40	90.30	94.00	-3.70	AVG			
3	4958.027	43.98	6.08	50.06	74.00	-23.94	peak			
4	4958.027	36.29	6.08	42.37	54.00	-11.63	AVG			

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 F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1470

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Lenovo Essential Wireless Mouse

Mode: TX 2479MHz

Model: MORFKHO

Manufacturer: Lenovo

Polarization: Vertical

Power Source: DC 1.5V

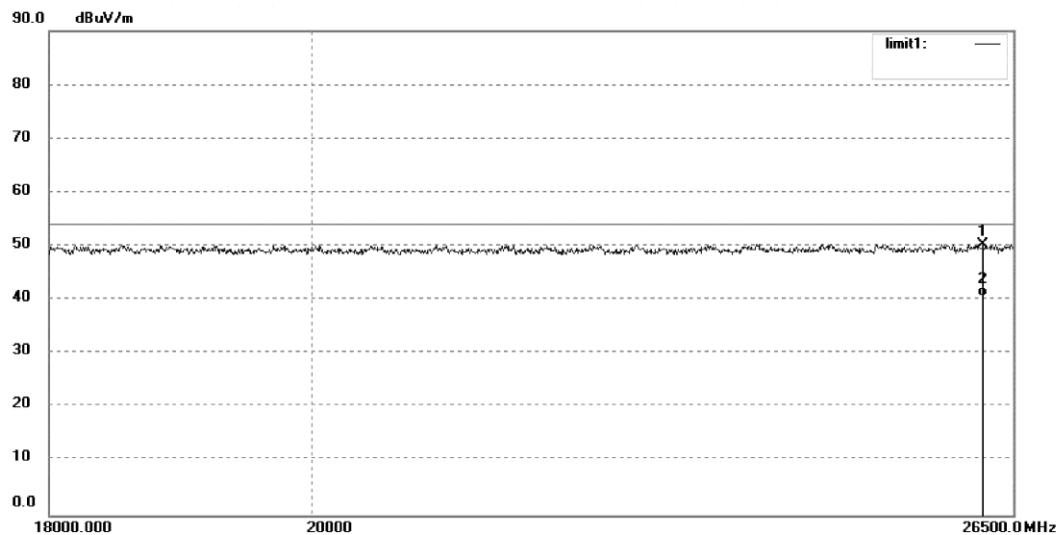
Date: 16/11/25/

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26184.163	9.43	40.95	50.38	74.00	-23.62	peak			
2	26184.163	-0.28	40.95	40.67	54.00	-13.33	AVG			

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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1471

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Lenovo Essential Wireless Mouse

Mode: TX 2479MHz

Model: MORFKHO

Manufacturer: Lenovo

Polarization: Horizontal

Power Source: DC 1.5V

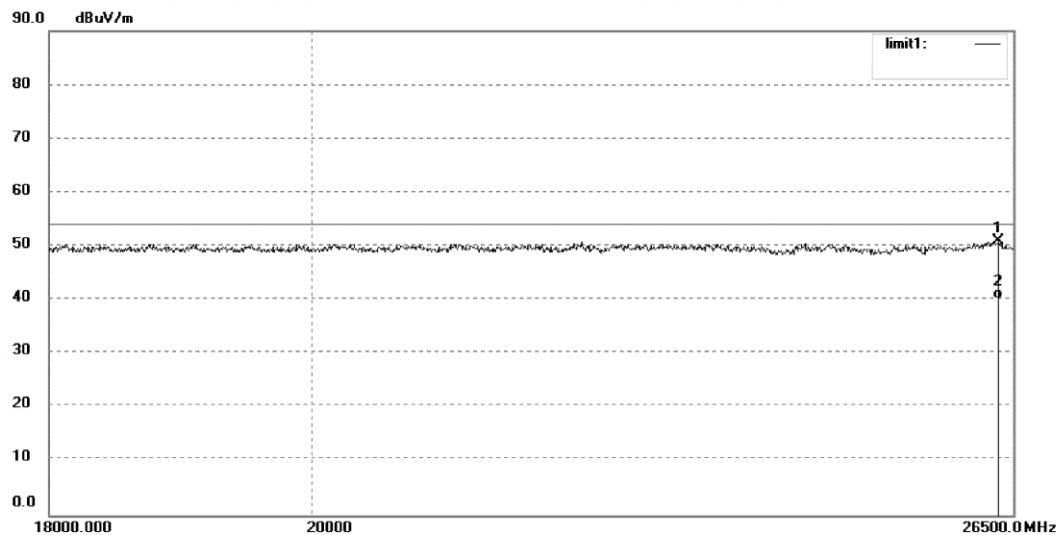
Date: 16/11/25/

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26346.703	10.44	40.42	50.86	74.00	-23.14	peak			
2	26346.703	-0.20	40.42	40.22	54.00	-13.78	AVG			

Appendix A.2: Radiated Emissions in Restricted Bands - 2.4 GHz Wireless operation
 Low Channel
**ACCURATE TECHNOLOGY CO., LTD.**
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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1459

Standard: FCC Part 15 (Band Edge)

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Lenovo Essential Wireless Mouse

Mode: TX 2402MHz

Model: MORFKHO

Manufacturer: Lenovo

Polarization: Horizontal

Power Source: DC 1.5V

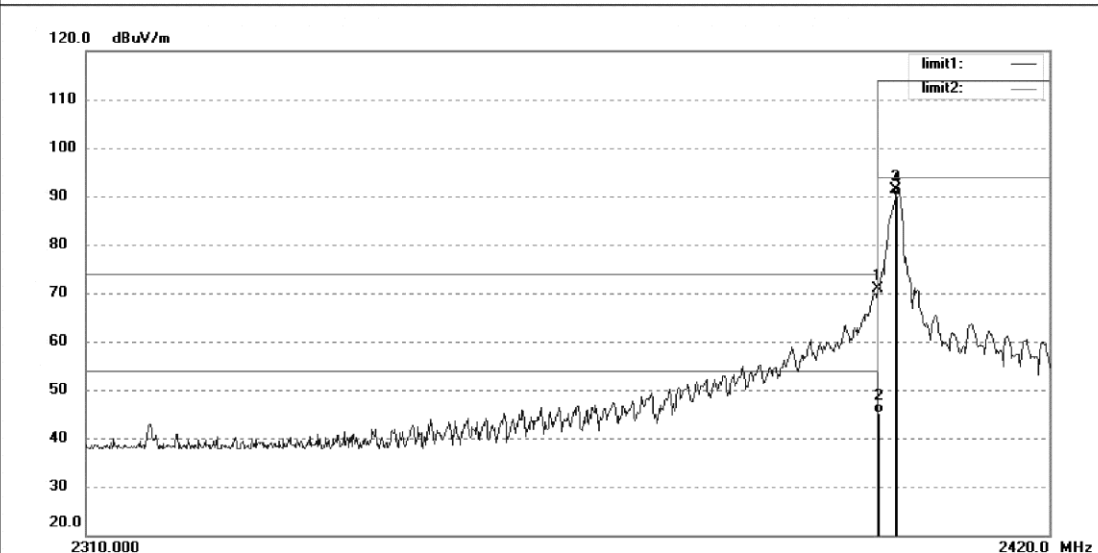
Date: 16/11/25/

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2400.000	72.57	-1.62	70.95	74.00	-3.05	peak			
2	2400.000	46.77	-1.62	45.15	54.00	-8.85	AVG			
3	2402.000	93.09	-1.61	91.48	114.00	-22.52	peak			
4	2402.000	91.69	-1.61	90.08	94.00	-3.92	AVG			

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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1458

Standard: FCC Part 15 (Band Edge)

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Lenovo Essential Wireless Mouse

Mode: TX 2402MHz

Model: MORFKHO

Manufacturer: Lenovo

Polarization: Vertical

Power Source: DC 1.5V

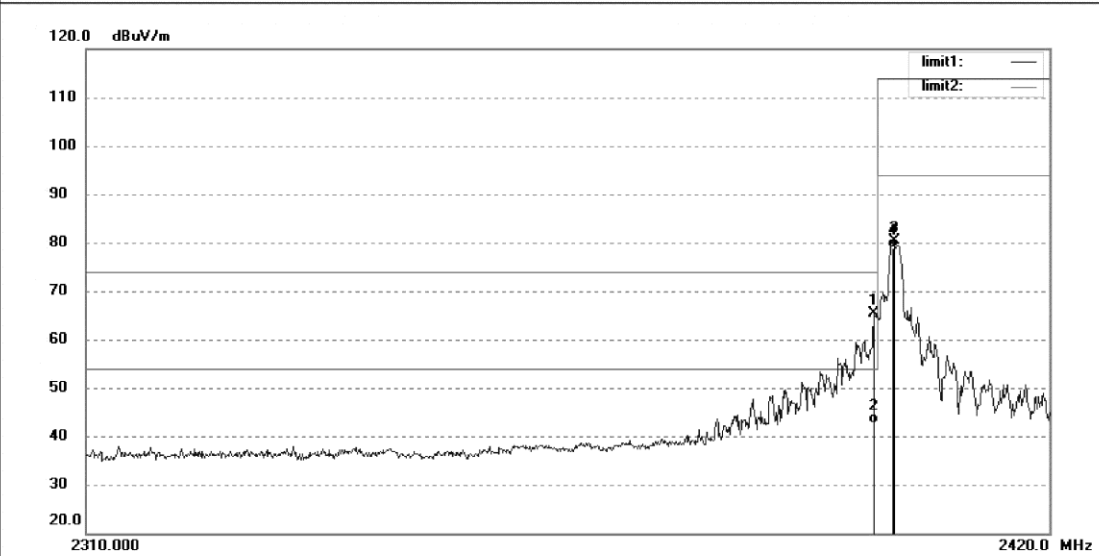
Date: 16/11/25/

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2399.650	66.95	-1.62	65.33	74.00	-8.67	peak			
2	2399.650	44.13	-1.62	42.51	54.00	-11.49	AVG			
3	2402.000	81.98	-1.61	80.37	114.00	-33.63	peak			
4	2402.000	80.58	-1.61	78.97	94.00	-15.03	AVG			

High Channel

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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1464

Standard: FCC Part 15 (Band Edge)

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Lenovo Essential Wireless Mouse

Mode: TX 2479MHz

Model: MORFKHO

Manufacturer: Lenovo

Polarization: Horizontal

Power Source: DC 1.5V

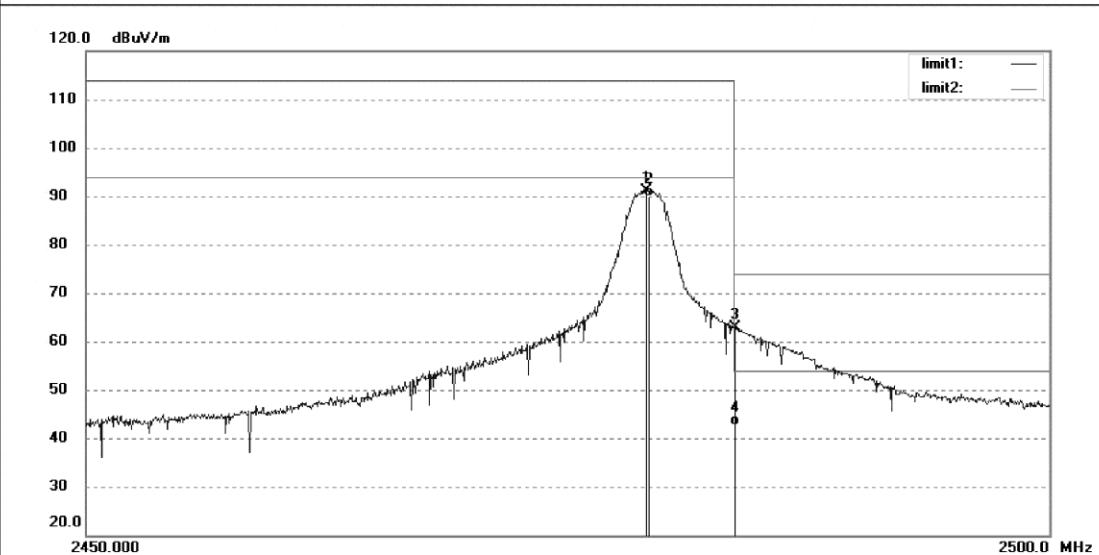
Date: 16/11/25/

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2479.000	92.59	-1.40	91.19	114.00	-22.81	peak			
2	2479.000	91.39	-1.40	89.99	94.00	-4.01	AVG			
3	2483.600	64.37	-1.40	62.97	74.00	-11.03	peak			
4	2483.600	43.91	-1.40	42.51	54.00	-11.49	AVG			

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 Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1465

Standard: FCC Part 15 (Band Edge)

Test item: Radiation Test

Temp.(C)/Hum.(%) 23 C / 48 %

EUT: Lenovo Essential Wireless Mouse

Mode: TX 2479MHz

Model: MORFKHO

Manufacturer: Lenovo

Polarization: Vertical

Power Source: DC 1.5V

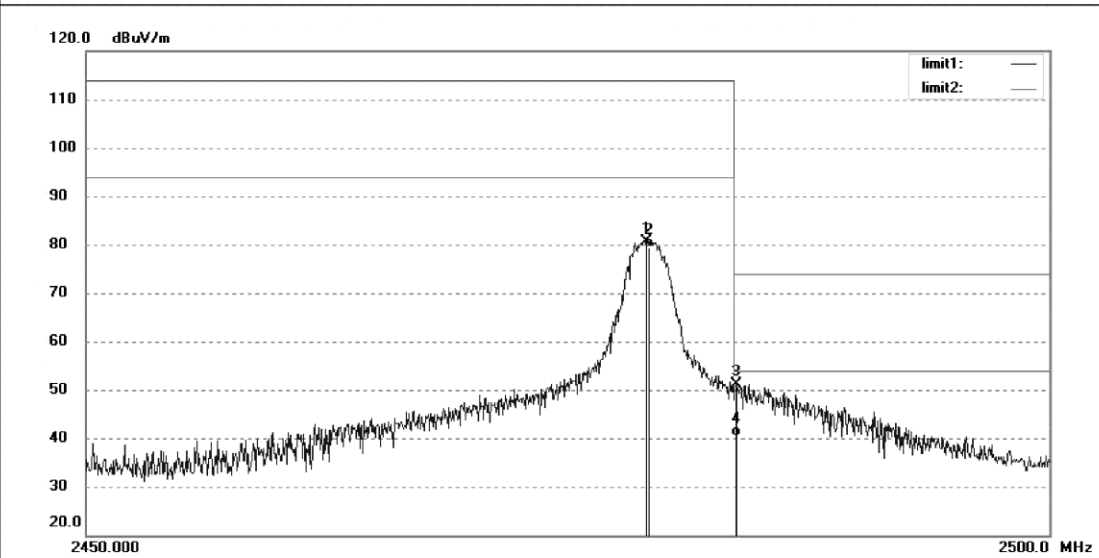
Date: 16/11/25/

Time:

Engineer Signature: LGWADE

Distance: 3m

Note:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2479.000	82.03	-1.40	80.63	114.00	-33.37	peak			
2	2479.000	80.73	-1.40	79.33	94.00	-14.67	AVG			
3	2483.650	52.41	-1.40	51.01	74.00	-22.99	peak			
4	2483.650	41.74	-1.40	40.34	54.00	-13.66	AVG			