

Prüfbericht-Nr.: Test Report No.:	50085575 001	Auftrags-Nr.: Order No.:	164089351	Seite 1 von 60 Page 1 of 60
Kunden-Referenz-Nr.: Client Reference No.:	N/A	Auftragsdatum: Order date:	29.03.2017	
Auftraggeber: Client:	Lenovo (Beijing) Limited, No.6 Chuang Ye Road, Shangdi Information Industry Base, Haidian District, Beijing, China			
Prüfgegenstand: Test item:	Lenovo Wireless Mouse			
Bezeichnung / Typ-Nr.: Identification / Type No.:	N3903 (Lenovo)			
Auftrags-Inhalt: Order content:	FCC Certification			
Prüfgrundlage: Test specification:	CFR47 FCC Part 15: Subpart C Section 15.249 RSS-210 Issue 9 August 2016 FCC KDB Publication 447498 D01 v06		CFR47 FCC Part 15: Subpart C Section 15.209 RSS-Gen Issue 4 November 2014 RSS-102 Issue 5 March 2015	
Wareneingangsdatum: Date of receipt:	29.03.2017			
Prüfmuster-Nr.: Test sample No.:	A000518921-005, A000518921-006			
Prüfzeitraum: Testing period:	13.04.2017 - 22.04.2017			
Ort der Prüfung: Place of testing:	Accurate Technology Co., Ltd.			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: Test result*:	Pass			
geprüft von / tested by:			kontrolliert von / reviewed by:	
07.06.2017 Andy Yan/Project Manager			07.06.2017 Owen Tian/Technical Certifier	
Datum Date	Name / Stellung Name / Position	Unterschrift Signature	Datum Date	Name / Stellung Name / Position
Sonstiges / Other:	FCC ID: A5MN3903 IC: 5903G-N3903			
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged			
* Legende:	1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft			
Legend:	1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor			
	P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet			
	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. 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.				

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TEST SUMMARY

5.1.1 ANTENNA REQUIREMENT

RESULT: Pass

5.1.2 20dB BANDWIDTH AND 99% BANDWIDTH

RESULT: Pass

5.1.3 FUNDAMENTAL & HARMONICS RADIATED EMISSION

RESULT: Pass

5.1.4 RADIATED EMISSIONS OUTSIDE OF THE BAND

RESULT: Pass

6.1.1 ELECTROMAGNETIC FIELDS

RESULT: Pass

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1. General Remarks

1.1 Complementary Materials

None.

2. Test Sites

2.1 Test Facilities

Accurate Technology Co., Ltd.

(FCC Registration No.: 752051)

(Test site Industry Canada No.: 5077A-2)

F1, Bldg. A, Changyuan New Material Port
Keyuan Rd., Science & Industry Park, Nanshan
Shenzhen, 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
Transmitter spurious emissions				
Spectrum Analyzer	Rohde & Schwarz	FSV40	101495	2018-01-06
Test Receiver	Rohde & Schwarz	ESCS30	100307	2018-01-06
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	2018-01-09
Loop Antenna	Schwarzbeck	FMZB1516	1516131	2018-01-09
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	2018-01-09
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	2018-01-09
RF Switching Unit+PreAMP	Compliance Direction	RSU-M2	38322	2018-01-06
Pre-Amplifier	Rohde&Schwarz	CBLU11835 40-01	3791	2018-01-06
50 Coaxial Switch	Anritsu Corp	MP59B	6200506474	2018-01-06
RF Coaxial Cable	SUHNER	N-3m	No.8	2018-01-06
RF Coaxial Cable	RESENBERGER	N-3.5m	No.9	2018-01-06
RF Coaxial Cable	SUHNER	N-6m	No.10	2018-01-06
RF Coaxial Cable	RESENBERGER	N-12m	No.11	2018-01-06
RF Coaxial Cable	RESENBERGER	N-0.5m	No.12	2018-01-06
Radio Spectrum Test				
Spectrum Analyzer	Rohde & Schwarz	FSV40	101495	2018-01-06
Vector Signal Generator	Rohde & Schwarz	SMBV100A	260434	2018-01-06
Signal Generator	Rohde & Schwarz	SMB100A	108362	2018-01-06
Open Switch and Control Unit	Rohde & Schwarz	OSP120 + OSP-B157	101244 + 100866	2018-01-06

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

Table 2: Measurement Uncertainty

Parameter	Uncertainty
Radio Spectrum	$< \pm 0.60$ dB
Radiated emission of transmitter, valid up to 26.5 GHz	$< \pm 4.42$ dB
Conducted Emission	$< \pm 2.23$ dB
Radiated Emission	$< \pm 4.42$ dB

2.6 Location of Original Data

The original copies of all test data taken during actual testing were retained in the TÜV Rheinland (Shenzhen) file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

Accurate Technology Co., Ltd. test facility located at F1, Bldg. A, Changyuan New Material Port Keyuan Rd., Science & Industry Park, Nanshan, Shenzhen, 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 a wireless mouse, it operates at 2.4GHz ISM band.
For details refer to the User Manual and Circuit Diagram.

3.2 Ratings and System Details

Table 3: Technical Specification of EUT

Technical Specification	Value
Kind of Equipment	Lenovo Wireless Mouse
Type Designation	N3903
FCC ID	A5MN3903
IC	5903G-N3903
Operating Frequency Band	2400MHz ~ 2483.5MHz
Operating Frequency	2403MHz ~ 2479MHz
Number of Channel	16
Channel Frequency	2403MHz, 2426MHz, 2441MHz, 2463MHz, 2407MHz, 2422MHz, 2445MHz, 2466MHz, 2414MHz, 2436MHz, 2459MHz, 2473MHz, 2419MHz, 2439MHz, 2453MHz, 2479MHz
Extreme Temperature Range	0~+40°C
Operation Voltage	DC 1.5V (via 'AA' size battery)
Modulation	GFSK
Antenna Gain	2.805dBi

3.3 Independent Operation Modes

The basic operation modes are:

- A. On
 - 1. Transmitting
 - 2. Receiving
- B. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

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3.5 Submitted Documents

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

4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

The equipment under test (EUT) was configured to measure its maximum power 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. All testing were performed according to the procedures in ANSI C63.10: 2013.

4.3 Special Accessories and Auxiliary Equipment

None.

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 for below 1GHz

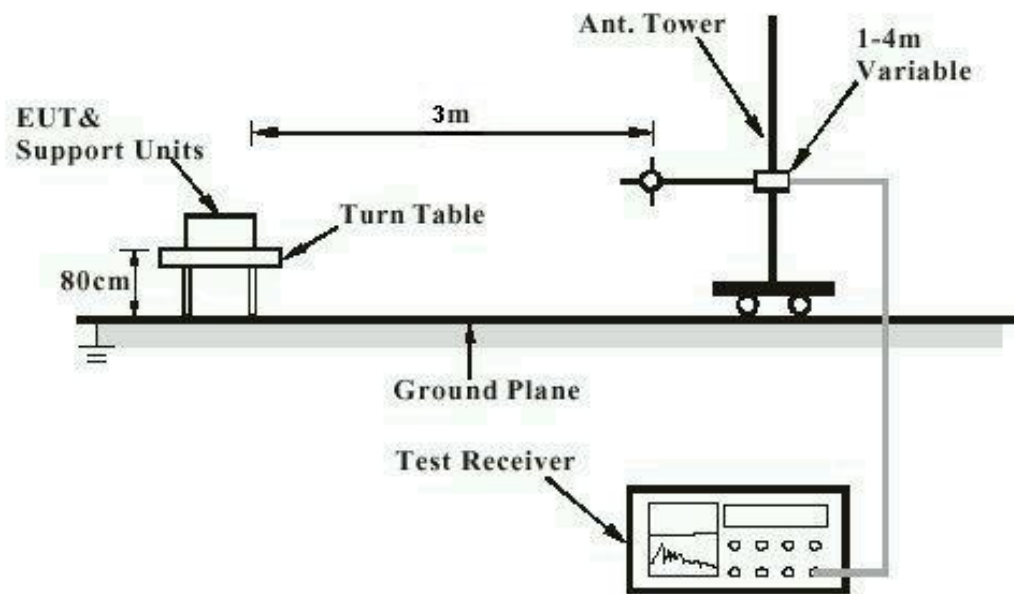


Diagram of Measurement Configuration for Radiation Test for above 1GHz

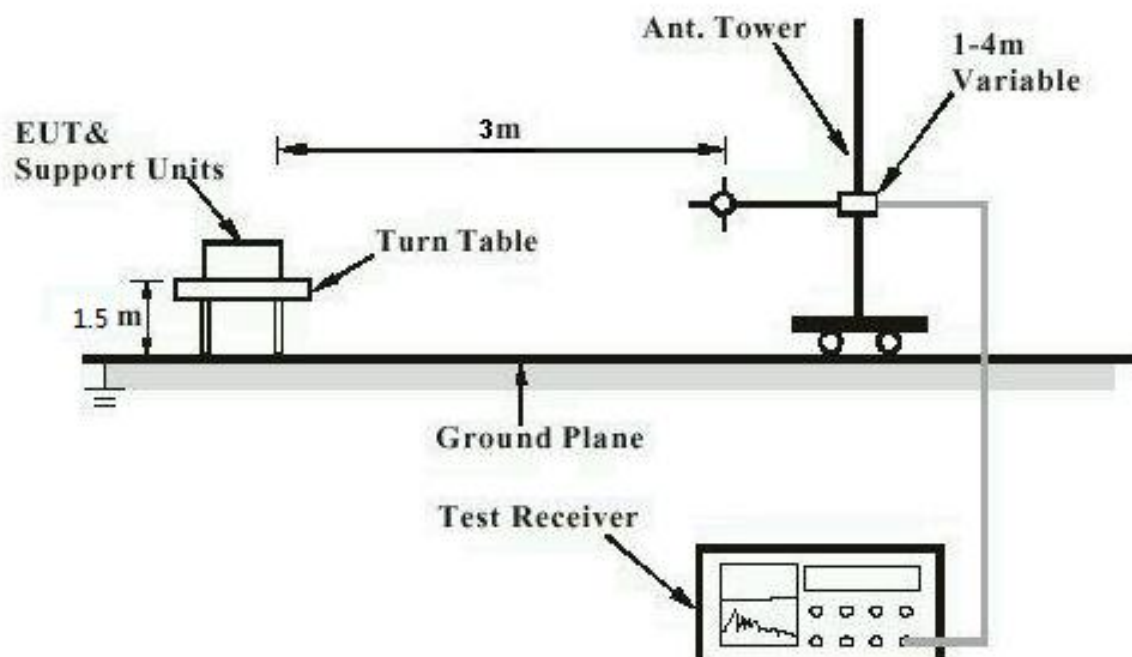
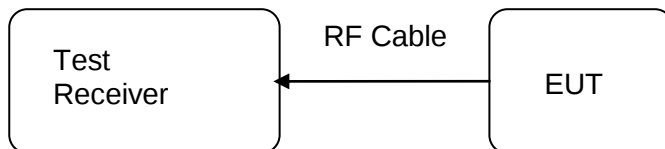


Diagram of Measurement Equipment Configuration for Transmitter Measurement



5. Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT:**Pass**

Test standard	:	Part 15.203 RSS-Gen 8.3
Limit	:	the use of antennas with directional gains that do not exceed 6dBi

According to the manufacturer declared, the EUT has an internal antenna, the directional gain of antenna is 2.805dBi, therefore the EUT is considered sufficient to comply with the provision.

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5.1.2 20dB Bandwidth and 99% Bandwidth**RESULT:****Pass**

Date of testing : 2017-04-13
Test standard : FCC Part 15.215 (c)
RSS-Gen clause 6.6
Basic standard : ANSI C63.10: 2013
Kind of test site : Shielded room

Test setup

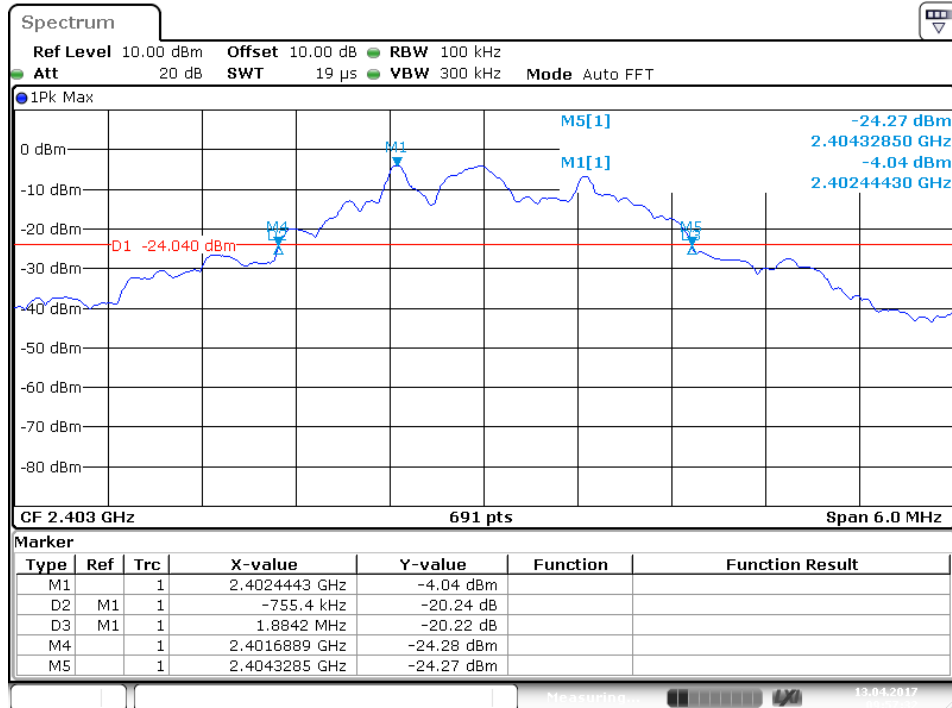
Test Channel : Low/ Middle/ High
Operation Mode : A.1
Ambient temperature : 21°C
Relative humidity : 60%
Atmospheric pressure : 101kPa

Table 4: Test result of 20dB & 99% Bandwidth

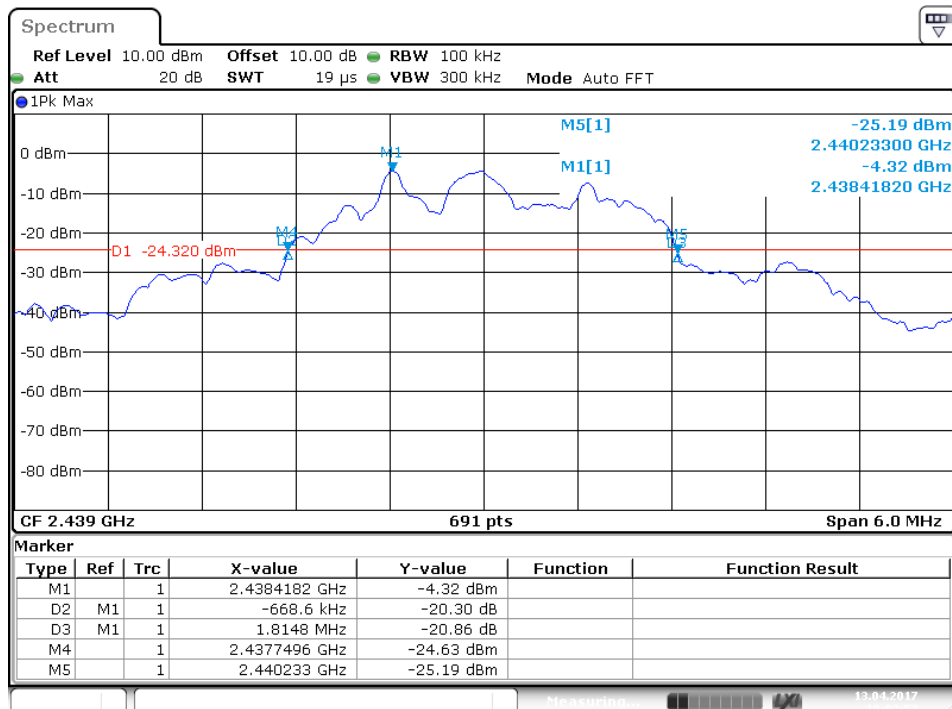
Channel	Channel Frequency (MHz)	20dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low Channel	2403	2.640	2.648
Mid Channel	2439	2.483	2.457
High Channel	2479	2.414	2.431

For details refer to following test plot.

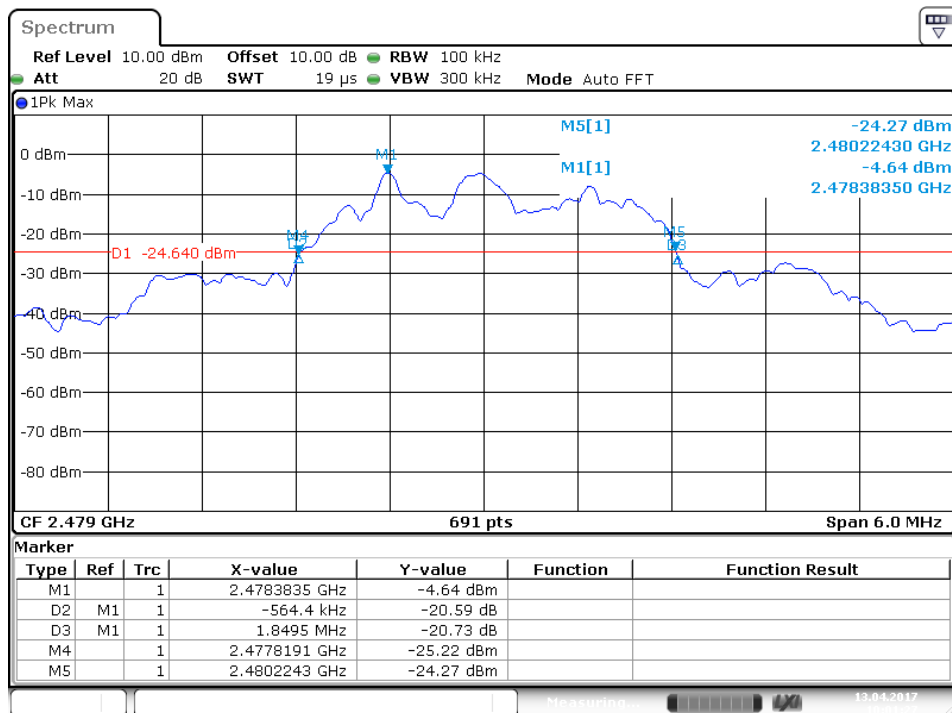
Test Plot of 20dB Bandwidth



Date: 13.APR.2017 09:57:33

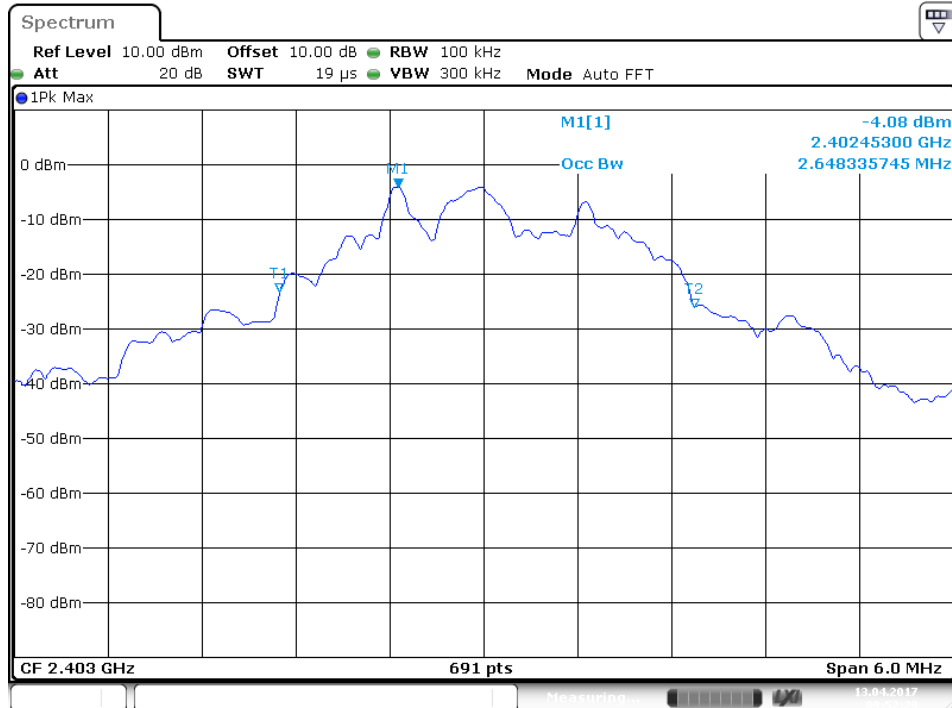


Date: 13.APR.2017 10:02:53

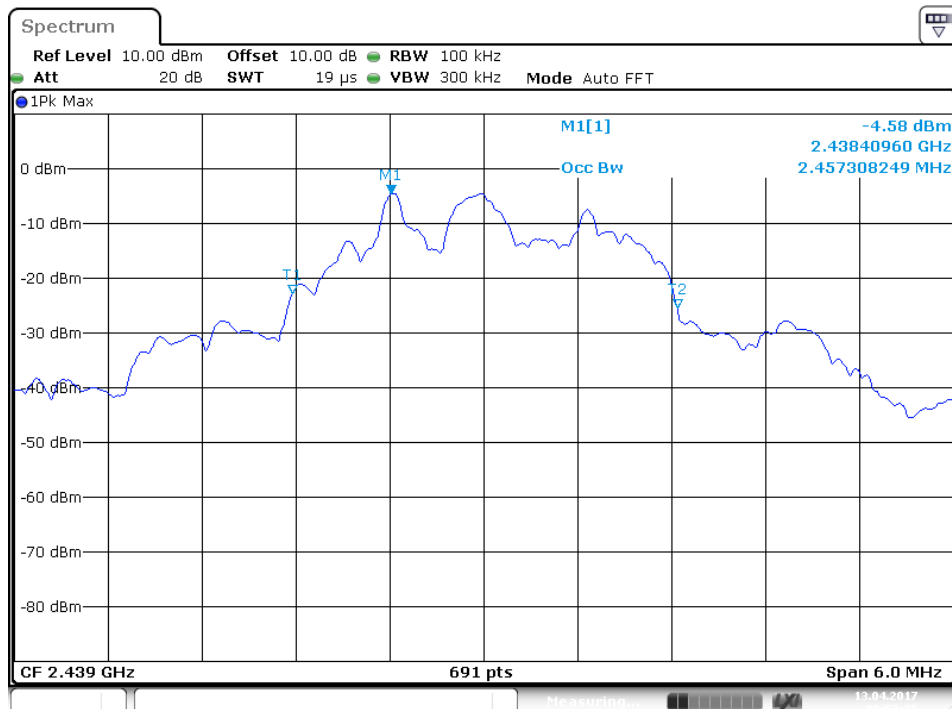


Date: 13.APR.2017 10:01:27

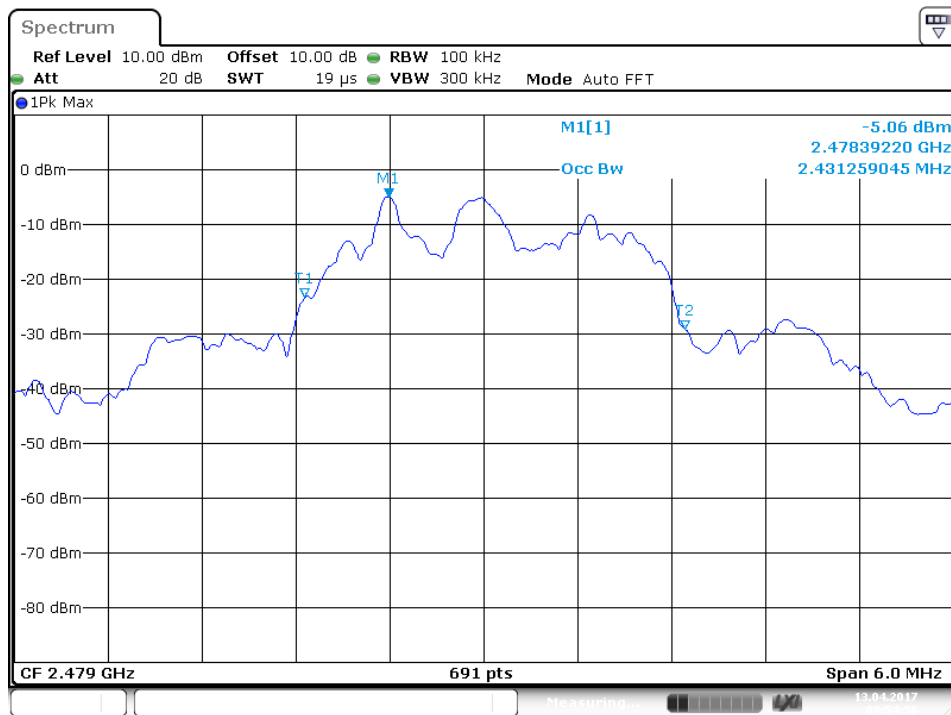
Test Plot of 99% Bandwidth



Date: 13.APR.2017 09:52:30



Date: 13.APR.2017 09:53:25



Date: 13.APR.2017 09:54:57


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Site: 2# Chamber

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Job No.: lenovo #1639

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Lenovo Wireless Mouse

Mode: TX 2403MHz

Model: N3903

Manufacturer: Lenovo

Polarization: Horizontal

Power Source: DC 1.5V

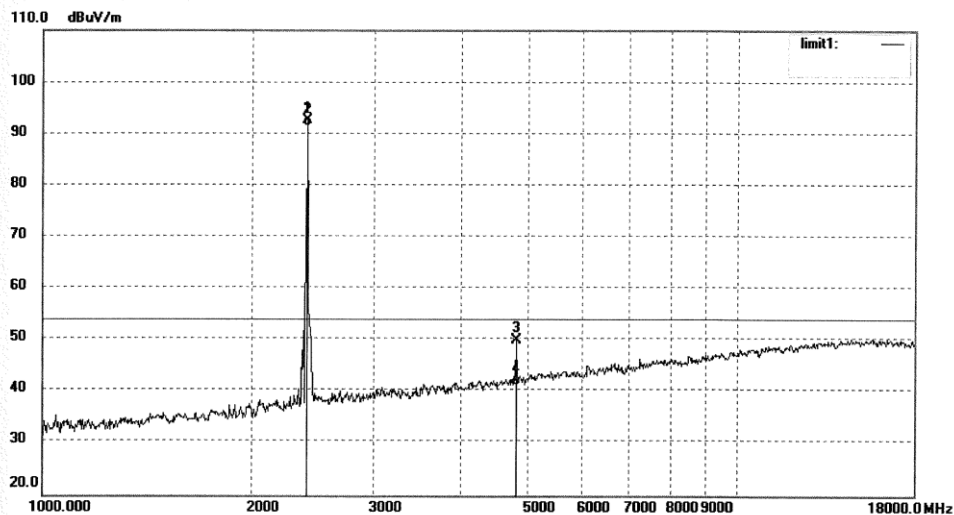
Date: 17/04/15/

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	2403.000	94.26	-1.61	92.65	114.00	-21.35	peak			
2	2403.000	92.96	-1.61	91.35	94.00	-2.65	AVG			
3	4804.027	45.22	4.90	50.12	74.00	-23.88	peak			
4	4804.027	36.44	4.90	41.34	54.00	-12.66	AVG			


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Job No.: lenovo #1640

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Lenovo Wireless Mouse

Mode: TX 2403MHz

Model: N3903

Manufacturer: Lenovo

Polarization: Vertical

Power Source: DC 1.5V

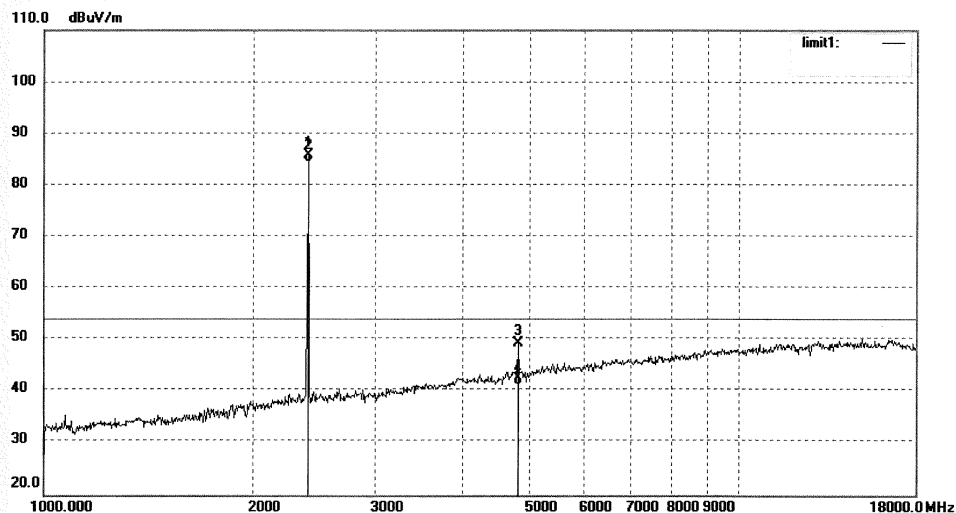
Date: 17/04/15/

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	2403.000	87.42	-1.61	85.81	114.00	-28.19	peak			
2	2403.000	86.12	-1.61	84.51	94.00	-9.49	AVG			
3	4806.026	44.52	4.92	49.44	74.00	-24.56	peak			
4	4806.026	36.41	4.92	41.33	54.00	-12.67	AVG			


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Site: 2# Chamber

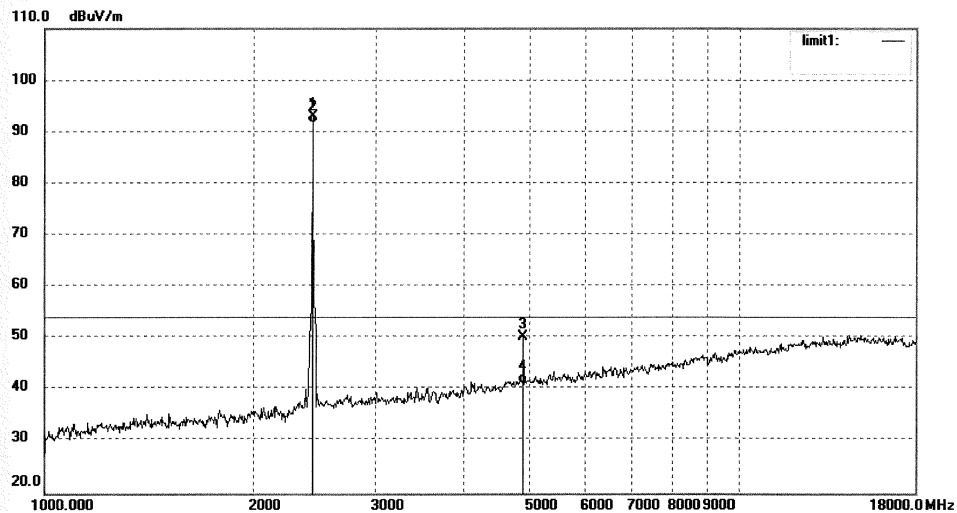
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1643
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Lenovo Wireless Mouse
Mode: TX 2439MHz
Model: N3903
Manufacturer: Lenovo

Polarization: Horizontal
Power Source: DC 1.5V
Date: 17/04/15/
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	2439.000	94.54	-1.46	93.08	114.00	-20.92	peak			
2	2439.000	93.04	-1.46	91.58	94.00	-2.42	AVG			
3	4878.024	44.73	5.57	50.30	74.00	-23.70	peak			
4	4878.024	35.64	5.57	41.21	54.00	-12.79	AVG			


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Fax:+86-0755-26503396

Job No.: lenovo #1644

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Lenovo Wireless Mouse

Mode: TX 2439MHz

Model: N3903

Manufacturer: Lenovo

Polarization: Vertical

Power Source: DC 1.5V

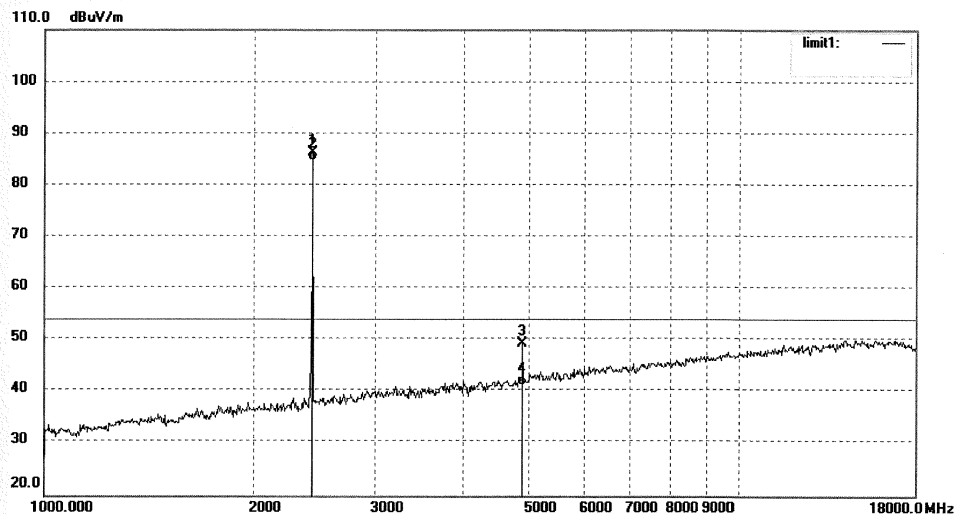
Date: 17/04/15/

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	2439.000	87.74	-1.46	86.28	114.00	-27.72	peak			
2	2439.000	86.24	-1.46	84.78	94.00	-9.22	AVG			
3	4878.026	43.76	5.57	49.33	74.00	-24.67	peak			
4	4878.026	35.77	5.57	41.34	54.00	-12.66	AVG			


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Job No.: lenovo #1646

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Lenovo Wireless Mouse

Mode: TX 2479MHz

Model: N3903

Manufacturer: Lenovo

Polarization: Horizontal

Power Source: DC 1.5V

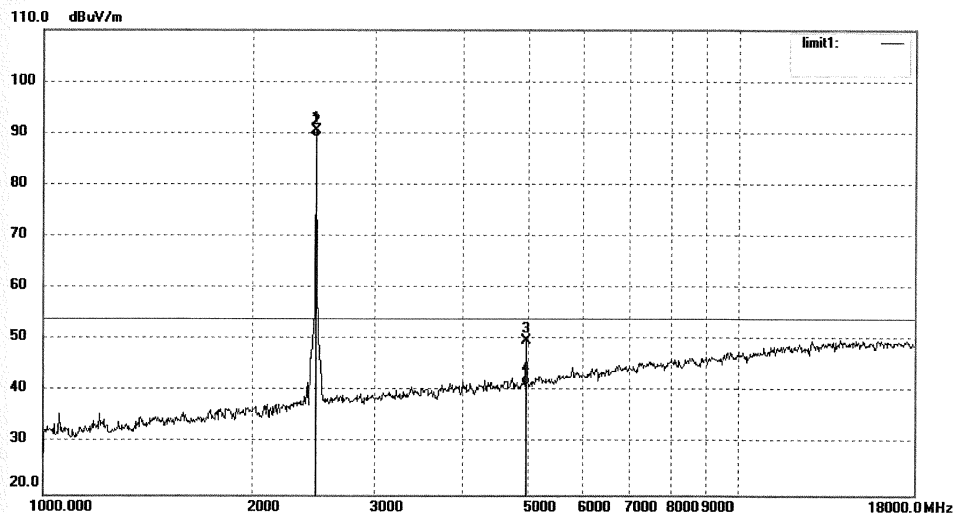
Date: 17/04/15/

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	91.95	-1.40	90.55	114.00	-23.45	peak			
2	2479.000	90.55	-1.40	89.15	94.00	-4.85	AVG			
3	4958.028	43.70	6.08	49.78	74.00	-24.22	peak			
4	4958.028	35.27	6.08	41.35	54.00	-12.65	AVG			


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Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1645

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Lenovo Wireless Mouse

Mode: TX 2479MHz

Model: N3903

Manufacturer: Lenovo

Polarization: Vertical

Power Source: DC 1.5V

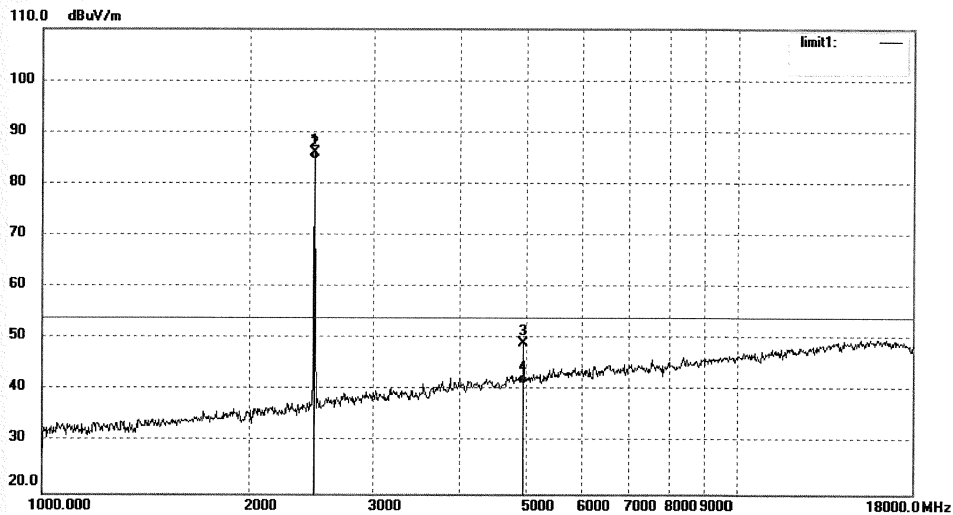
Date: 17/04/15/

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	87.41	-1.40	86.01	114.00	-27.99	peak			
2	2479.000	86.00	-1.40	84.60	94.00	-9.40	AVG			
3	4958.025	43.09	6.08	49.17	74.00	-24.83	peak			
4	4958.025	35.27	6.08	41.35	54.00	-12.65	AVG			

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5.1.4 Radiated emissions outside of the band**RESULT:****Pass**

Date of testing	:	2017-04-15 to 2017-04-22
Test standard	:	FCC Part 15.209(a) FCC Part 15.249(d) RSS-210 Clause B.10(b)
Basic standard	:	ANSI C63.10: 2013
Frequency range	:	0.009 – 26500MHz*
Limits	:	FCC Part 15.209(a) FCC Part 15.249(d)
Kind of test site	:	3m Semi-Anechoic Chamber & Anechoic Chamber

Test Setup

Test channel	:	Low/ Middle/ High
Operation mode	:	A.1
Ambient temperature	:	23°C
Relative humidity	:	48%
Atmospheric pressure	:	101kPa

For details refer to following test plot.

Test Plot of Radiated emissions outside band

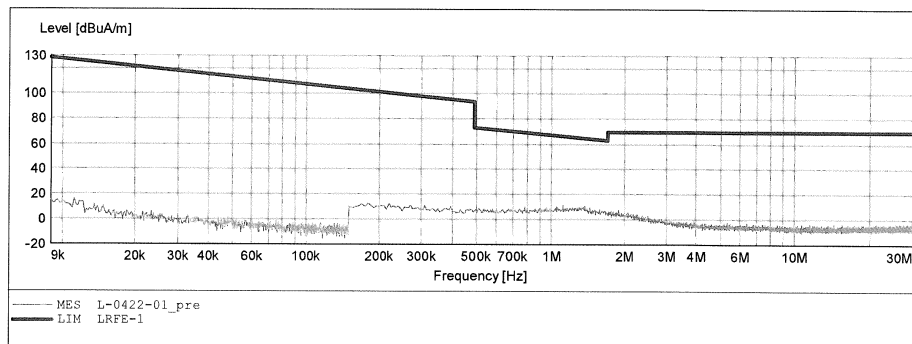
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: Lenovo Wireless Mouse M/N:N3903
 Manufacturer:
 Operating Condition: TX 2403MHz
 Test Site: 2# Chamber
 Operator: LGWADE
 Test Specification: DC 1.5V
 Comment: X
 Start of Test: 2017-4-22 /

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



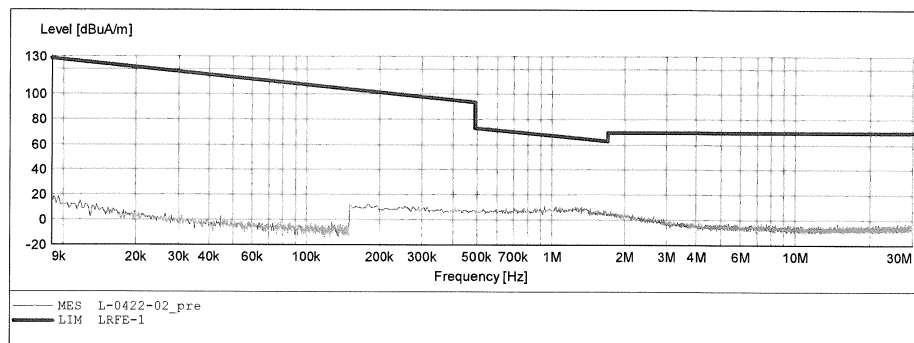
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: Lenovo Wireless Mouse M/N:N3903
 Manufacturer:
 Operating Condition: TX 2403MHz
 Test Site: 2# Chamber
 Operator: LGWADE
 Test Specification: DC 1.5V
 Comment: Y
 Start of Test: 2017-4-22 /

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



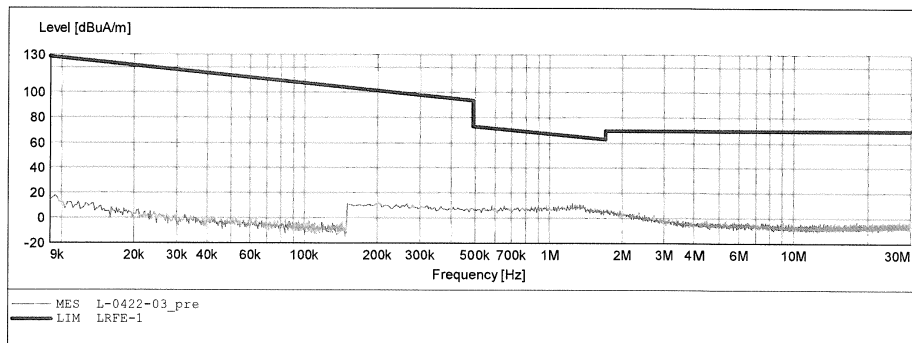
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: Lenovo Wireless Mouse M/N:N3903
 Manufacturer:
 Operating Condition: TX 2403MHz
 Test Site: 2# Chamber
 Operator: LGWADE
 Test Specification: DC 1.5V
 Comment: Z
 Start of Test: 2017-4-22 /

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

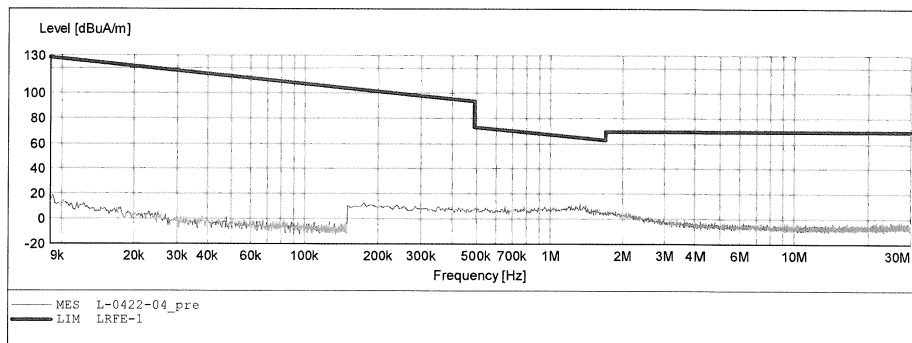


ACCURATE TECHNOLOGY CO.,LTD
FCC Class B 3M Radiated

EUT: Lenovo Wireless Mouse M/N:N3903
 Manufacturer:
 Operating Condition: TX 2439MHz
 Test Site: 2# Chamber
 Operator: LGWADE
 Test Specification: DC 1.5V
 Comment: X
 Start of Test: 2017-4-22 /

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



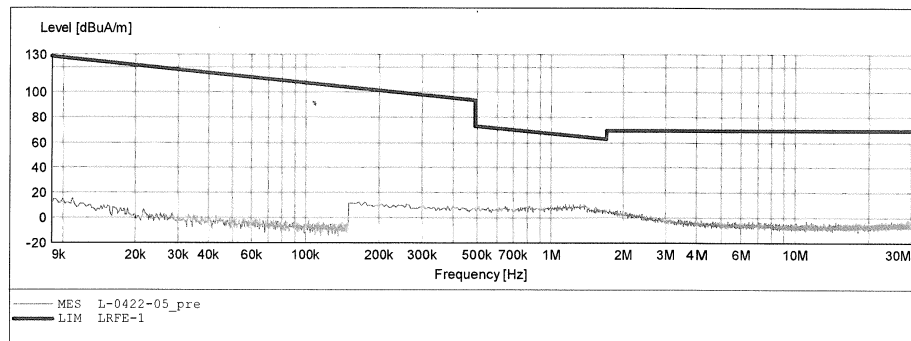
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: Lenovo Wireless Mouse M/N:N3903
 Manufacturer:
 Operating Condition: TX 2439MHz
 Test Site: 2# Chamber
 Operator: LGWADE
 Test Specification: DC 1.5V
 Comment: Y
 Start of Test: 2017-4-22 /

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

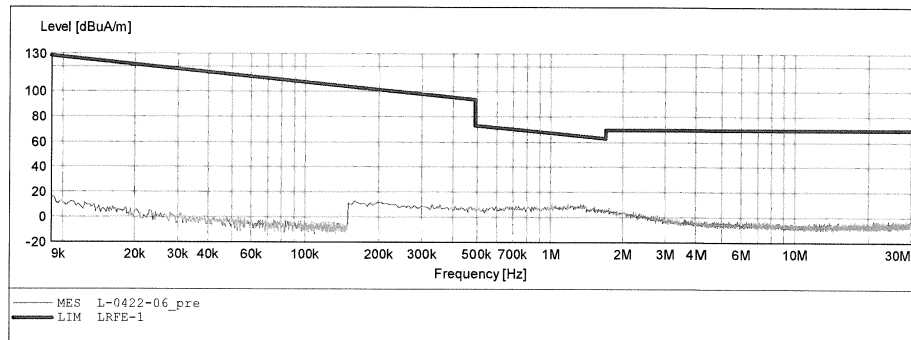


ACCURATE TECHNOLOGY CO.,LTD
FCC Class B 3M Radiated

EUT: Lenovo Wireless Mouse M/N:N3903
 Manufacturer:
 Operating Condition: TX 2439MHz
 Test Site: 2# Chamber
 Operator: LGWADE
 Test Specification: DC 1.5V
 Comment: Z
 Start of Test: 2017-4-22 /

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

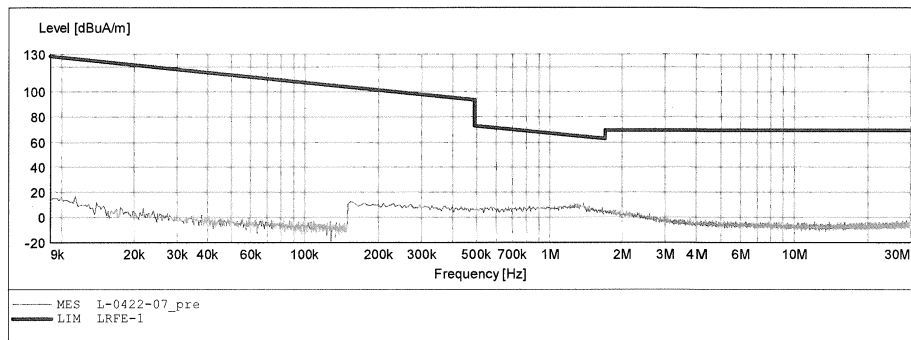


ACCURATE TECHNOLOGY CO.,LTD
FCC Class B 3M Radiated

EUT: Lenovo Wireless Mouse M/N:N3903
 Manufacturer:
 Operating Condition: TX 2479MHz
 Test Site: 2# Chamber
 Operator: LGWADE
 Test Specification: DC 1.5V
 Comment: X
 Start of Test: 2017-4-22 /

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



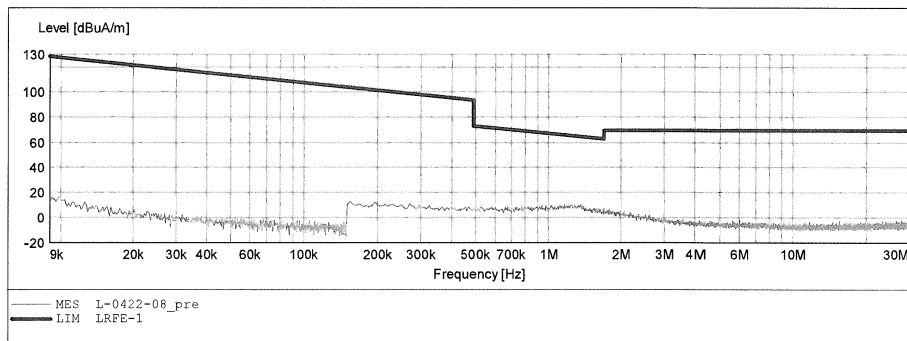
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: Lenovo Wireless Mouse M/N:N3903
 Manufacturer:
 Operating Condition: TX 2479MHz
 Test Site: 2# Chamber
 Operator: LGWADE
 Test Specification: DC 1.5V
 Comment: Y
 Start of Test: 2017-4-22 /

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



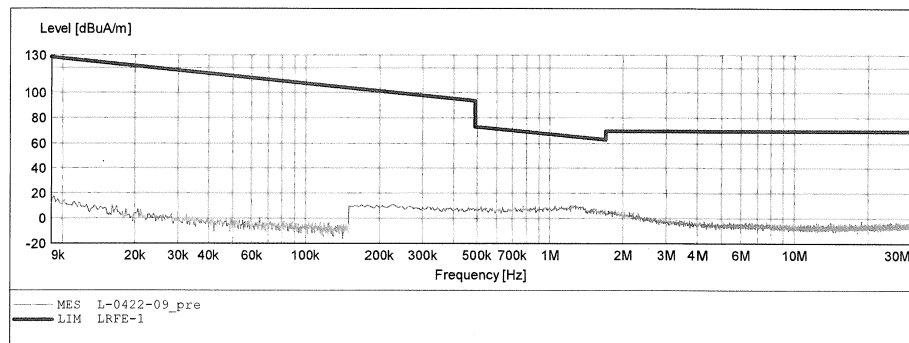
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: Lenovo Wireless Mouse M/N:N3903
 Manufacturer:
 Operating Condition: TX 2479MHz
 Test Site: 2# Chamber
 Operator: LGWADE
 Test Specification: DC 1.5V
 Comment: Z
 Start of Test: 2017-4-22 /

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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Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1655

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Lenovo Wireless Mouse

Mode: TX 2403MHz

Model: N3903

Manufacturer: Lenovo

Polarization: Horizontal

Power Source: DC 1.5V

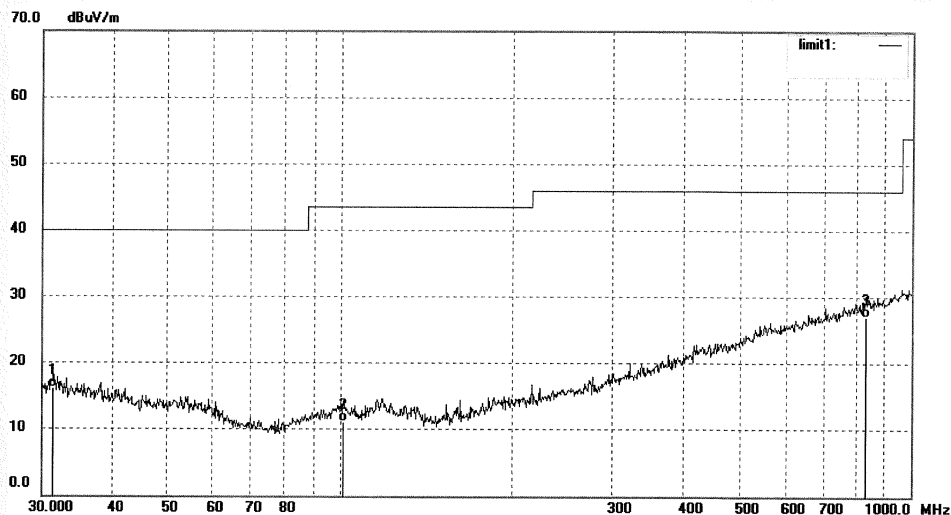
Date: 17/04/15/

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	31.3992	26.25	-10.06	16.19	40.00	-23.81	QP			
2	101.2883	24.44	-13.26	11.18	43.50	-32.32	QP			
3	830.4002	25.73	1.37	27.10	46.00	-18.90	QP			


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Fax:+86-0755-26503396

Job No.: lenovo #1656

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Lenovo Wireless Mouse

Mode: TX 2403MHz

Model: N3903

Manufacturer: Lenovo

Polarization: Vertical

Power Source: DC 1.5V

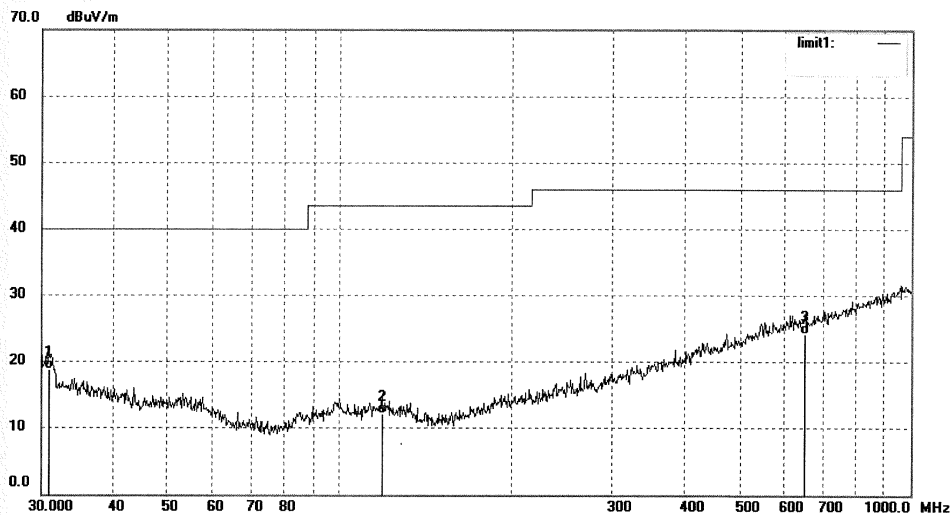
Date: 17/04/15/

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	30.9618	28.07	-9.21	18.86	40.00	-21.14	QP			
2	118.6013	25.27	-13.05	12.22	43.50	-31.28	QP			
3	651.9416	25.96	-1.76	24.20	46.00	-21.80	QP			


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Fax:+86-0755-26503396

Job No.: lenovo #1658

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Lenovo Wireless Mouse

Mode: TX 2439MHz

Model: N3903

Manufacturer: Lenovo

Polarization: Horizontal

Power Source: DC 1.5V

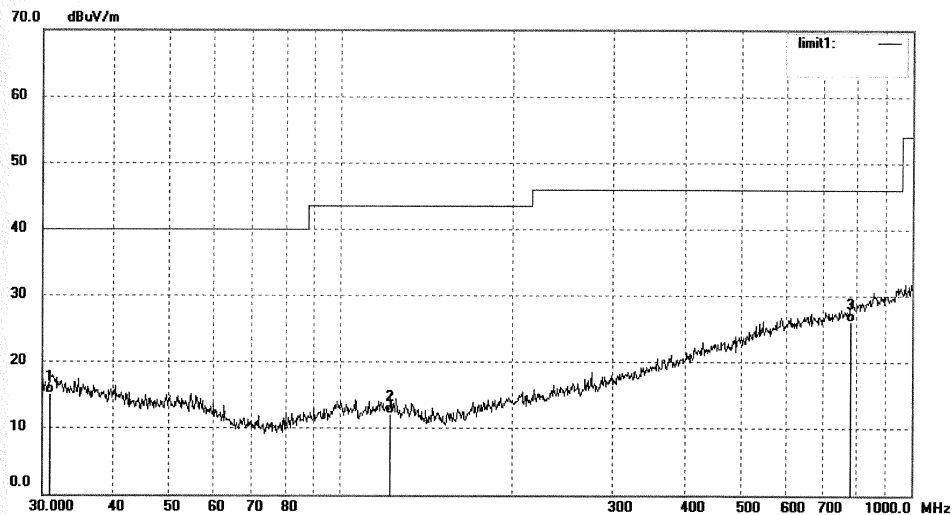
Date: 17/04/15/

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	30.9618	25.22	-10.02	15.20	40.00	-24.80	QP			
2	122.4039	25.49	-13.33	12.16	43.50	-31.34	QP			
3	782.3452	25.76	0.41	26.17	46.00	-19.83	QP			


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Fax:+86-0755-26503396

Job No.: lenovo #1657

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Lenovo Wireless Mouse

Mode: TX 2439MHz

Model: N3903

Manufacturer: Lenovo

Polarization: Vertical

Power Source: DC 1.5V

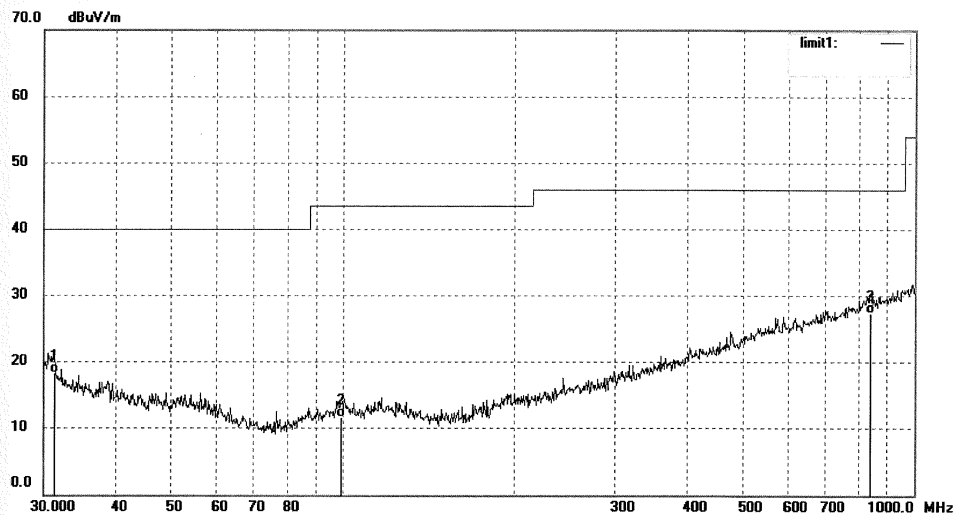
Date: 17/04/15/

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	31.3992	27.69	-9.34	18.35	40.00	-21.65	QP			
2	99.5279	24.84	-13.21	11.63	43.50	-31.87	QP			
3	839.1817	25.93	1.47	27.40	46.00	-18.60	QP			


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Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1659

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Lenovo Wireless Mouse

Mode: TX 2479MHz

Model: N3903

Manufacturer: Lenovo

Polarization: Horizontal

Power Source: DC 1.5V

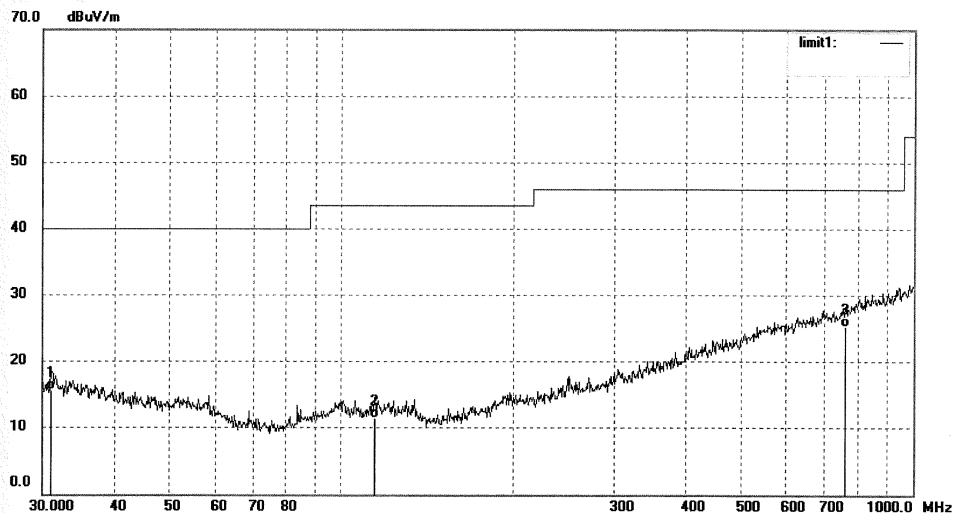
Date: 17/04/15/

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	31.0705	25.63	-10.03	15.60	40.00	-24.40	QP			
2	114.5146	24.69	-13.14	11.55	43.50	-31.95	QP			
3	760.7036	25.35	-0.11	25.24	46.00	-20.76	QP			


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Fax:+86-0755-26503396

Job No.: lenovo #1660

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Lenovo Wireless Mouse

Mode: TX 2479MHz

Model: N3903

Manufacturer: Lenovo

Polarization: Vertical

Power Source: DC 1.5V

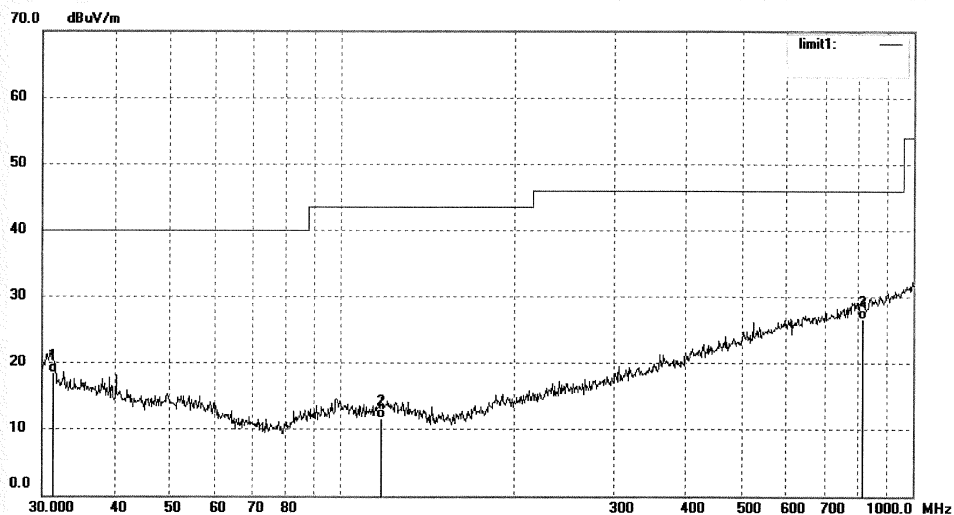
Date: 17/04/15/

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	31.2893	27.77	-9.31	18.46	40.00	-21.54	QP			
2	117.7724	24.76	-13.05	11.71	43.50	-31.79	QP			
3	815.9678	25.65	1.08	26.73	46.00	-19.27	QP			


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Job No.: lenovo #1639

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Lenovo Wireless Mouse

Mode: TX 2403MHz

Model: N3903

Manufacturer: Lenovo

Polarization: Horizontal

Power Source: DC 1.5V

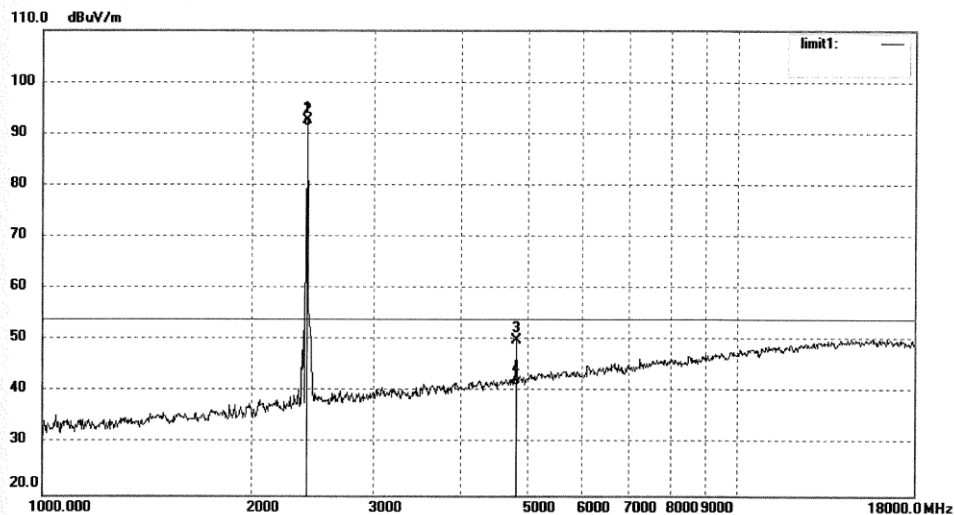
Date: 17/04/15/

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	2403.000	94.26	-1.61	92.65	114.00	-21.35	peak			
2	2403.000	92.96	-1.61	91.35	94.00	-2.65	AVG			
3	4804.027	45.22	4.90	50.12	74.00	-23.88	peak			
4	4804.027	36.44	4.90	41.34	54.00	-12.66	AVG			


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Site: 2# Chamber

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Fax:+86-0755-26503396

Job No.: lenovo #1640

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Lenovo Wireless Mouse

Mode: TX 2403MHz

Model: N3903

Manufacturer: Lenovo

Polarization: Vertical

Power Source: DC 1.5V

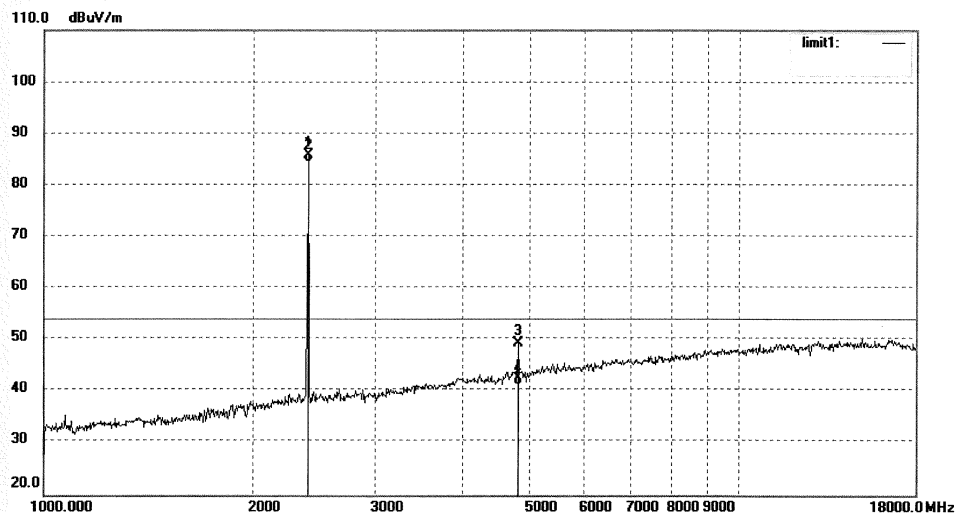
Date: 17/04/15/

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	2403.000	87.42	-1.61	85.81	114.00	-28.19	peak			
2	2403.000	86.12	-1.61	84.51	94.00	-9.49	AVG			
3	4806.026	44.52	4.92	49.44	74.00	-24.56	peak			
4	4806.026	36.41	4.92	41.33	54.00	-12.67	AVG			


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Site: 2# Chamber

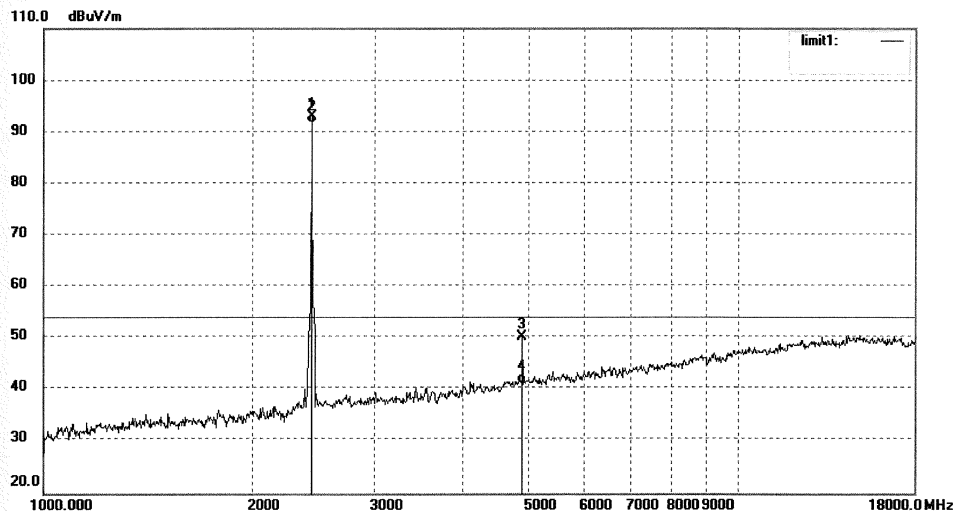
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1643
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Lenovo Wireless Mouse
Mode: TX 2439MHz
Model: N3903
Manufacturer: Lenovo

Polarization: Horizontal
Power Source: DC 1.5V
Date: 17/04/15/
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	2439.000	94.54	-1.46	93.08	114.00	-20.92	peak			
2	2439.000	93.04	-1.46	91.58	94.00	-2.42	AVG			
3	4878.024	44.73	5.57	50.30	74.00	-23.70	peak			
4	4878.024	35.64	5.57	41.21	54.00	-12.79	AVG			


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Job No.: lenovo #1644

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Lenovo Wireless Mouse

Mode: TX 2439MHz

Model: N3903

Manufacturer: Lenovo

Polarization: Vertical

Power Source: DC 1.5V

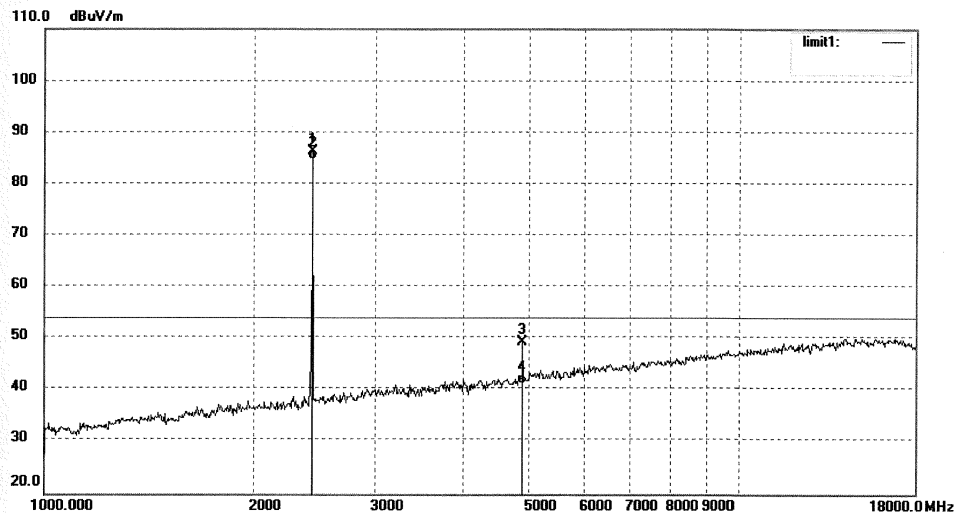
Date: 17/04/15/

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	2439.000	87.74	-1.46	86.28	114.00	-27.72	peak			
2	2439.000	86.24	-1.46	84.78	94.00	-9.22	AVG			
3	4878.026	43.76	5.57	49.33	74.00	-24.67	peak			
4	4878.026	35.77	5.57	41.34	54.00	-12.66	AVG			


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Site: 2# Chamber

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Fax:+86-0755-26503396

Job No.: lenovo #1646

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Lenovo Wireless Mouse

Mode: TX 2479MHz

Model: N3903

Manufacturer: Lenovo

Polarization: Horizontal

Power Source: DC 1.5V

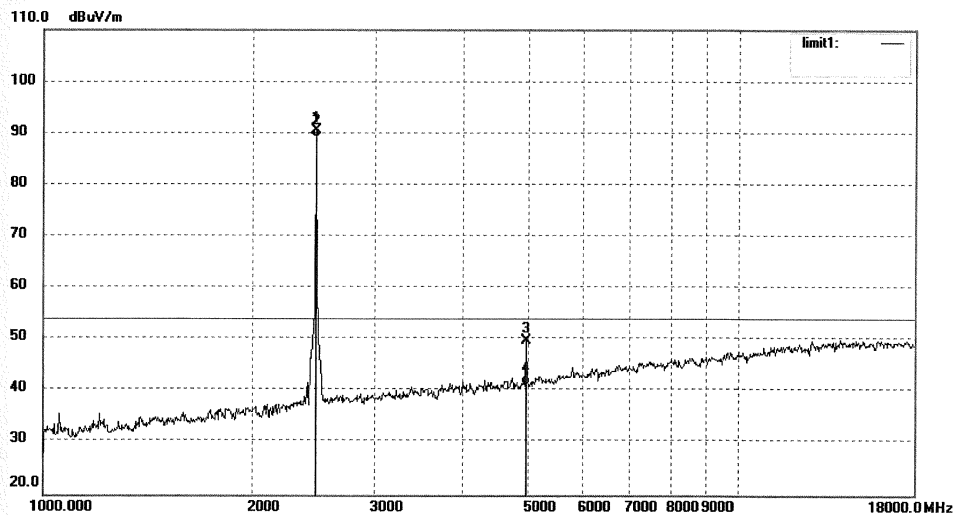
Date: 17/04/15/

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	91.95	-1.40	90.55	114.00	-23.45	peak			
2	2479.000	90.55	-1.40	89.15	94.00	-4.85	AVG			
3	4958.028	43.70	6.08	49.78	74.00	-24.22	peak			
4	4958.028	35.27	6.08	41.35	54.00	-12.65	AVG			


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Job No.: lenovo #1645

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Lenovo Wireless Mouse

Mode: TX 2479MHz

Model: N3903

Manufacturer: Lenovo

Polarization: Vertical

Power Source: DC 1.5V

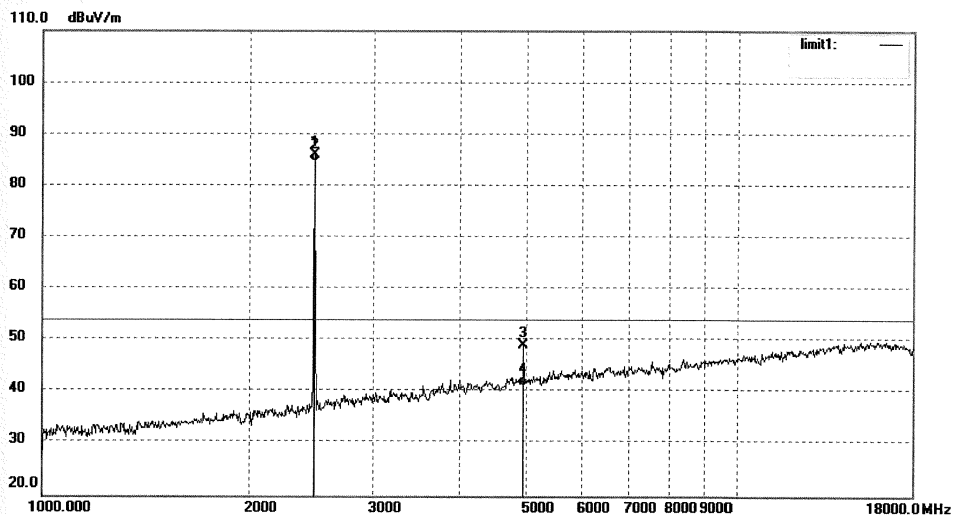
Date: 17/04/15/

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	87.41	-1.40	86.01	114.00	-27.99	peak			
2	2479.000	86.00	-1.40	84.60	94.00	-9.40	AVG			
3	4958.025	43.09	6.08	49.17	74.00	-24.83	peak			
4	4958.025	35.27	6.08	41.35	54.00	-12.65	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 #1650

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Lenovo Wireless Mouse

Mode: TX 2403MHz

Model: N3903

Manufacturer: Lenovo

Polarization: Horizontal

Power Source: DC 1.5V

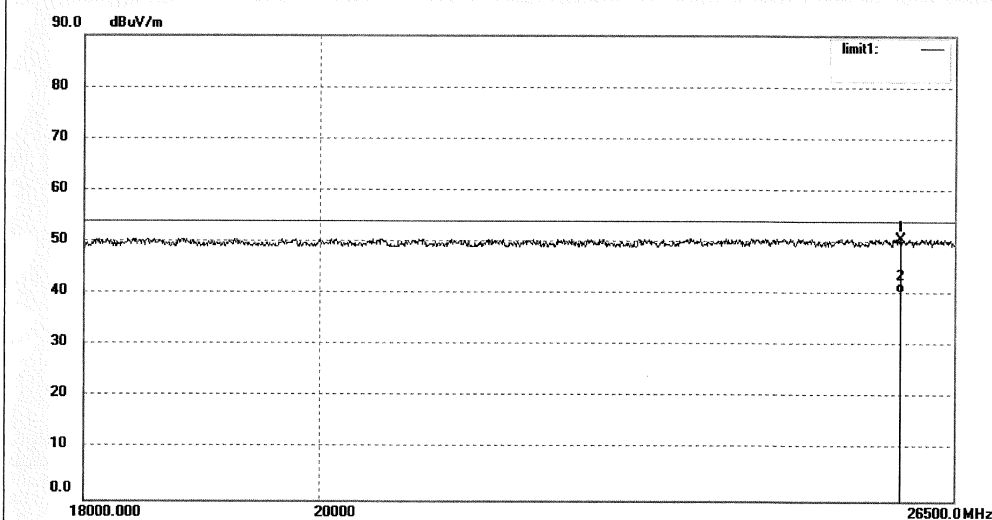
Date: 17/04/15/

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	25872.091	10.54	40.18	50.72	74.00	-23.28	peak			
2	25872.091	0.13	40.18	40.31	54.00	-13.69	AVG			


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Site: 2# Chamber

Tel:+86-0755-26503290

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Job No.: lenovo #1649

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Lenovo Wireless Mouse

Mode: TX 2403MHz

Model: N3903

Manufacturer: Lenovo

Polarization: Vertical

Power Source: DC 1.5V

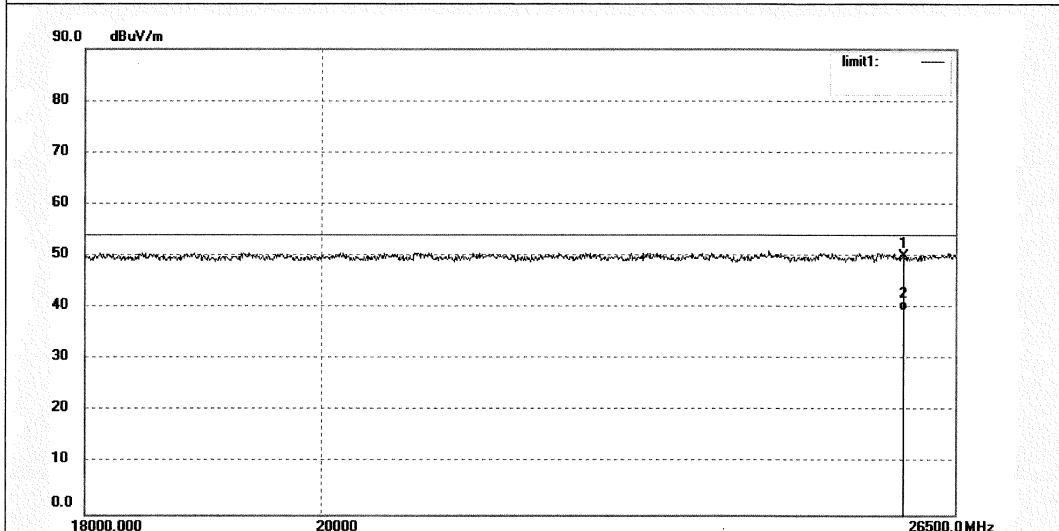
Date: 17/04/15/

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	25892.112	8.96	41.00	49.96	74.00	-24.04	peak			
2	25892.112	-1.56	41.00	39.44	54.00	-14.56	AVG			


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Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1651

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Lenovo Wireless Mouse

Mode: TX 2439MHz

Model: N3903

Manufacturer: Lenovo

Polarization: Horizontal

Power Source: DC 1.5V

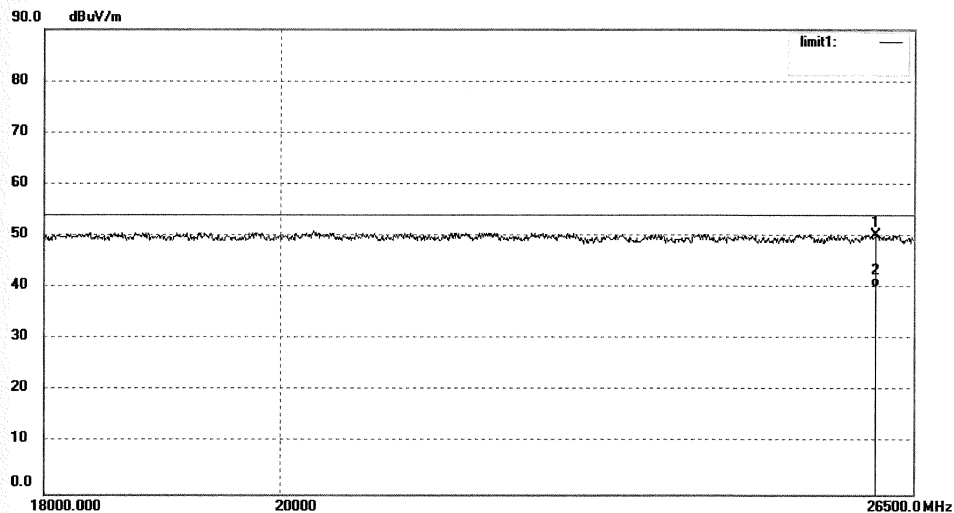
Date: 17/04/15/

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	26062.917	9.92	40.28	50.20	74.00	-23.80	peak			
2	26062.917	-0.03	40.28	40.25	54.00	-13.75	AVG			

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 Test Report No.

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Site: 2# Chamber

Tel:+86-0755-26503290

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Job No.: lenovo #1652

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Lenovo Wireless Mouse

Mode: TX 2439MHz

Model: N3903

Manufacturer: Lenovo

Polarization: Vertical

Power Source: DC 1.5V

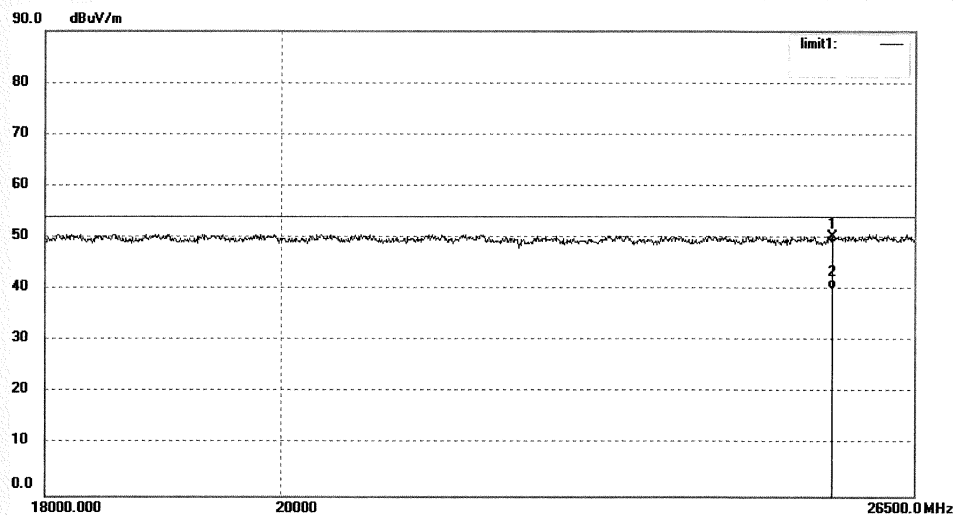
Date: 17/04/15/

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	25553.852	9.21	41.05	50.26	74.00	-23.74	peak			
2	25553.852	-0.93	41.05	40.12	54.00	-13.88	AVG			


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Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1654

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Lenovo Wireless Mouse

Mode: TX 2479MHz

Model: N3903

Manufacturer: Lenovo

Polarization: Horizontal

Power Source: DC 1.5V

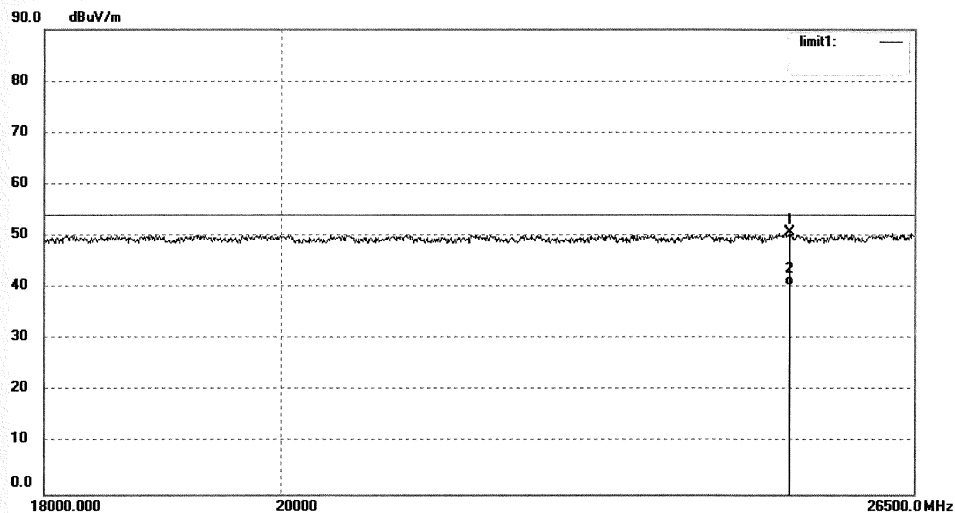
Date: 17/04/15/

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	25074.119	10.91	39.78	50.69	74.00	-23.31	peak			
2	25074.119	0.53	39.78	40.31	54.00	-13.69	AVG			


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Fax:+86-0755-26503396

Job No.: lenovo #1653

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Lenovo Wireless Mouse

Mode: TX 2479MHz

Model: N3903

Manufacturer: Lenovo

Polarization: Vertical

Power Source: DC 1.5V

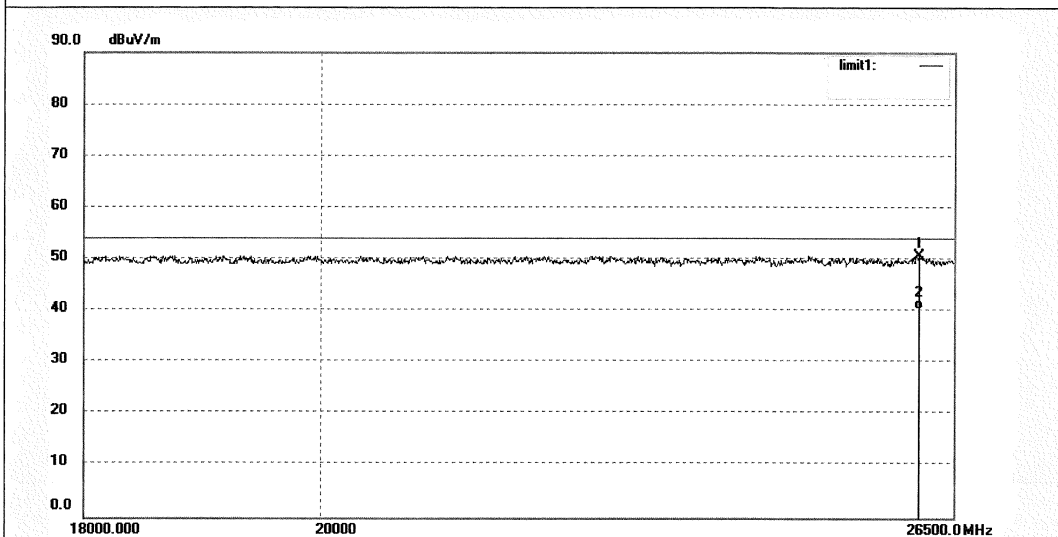
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Time:

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	26103.270	9.73	40.96	50.69	74.00	-23.31	peak			
2	26103.270	-0.62	40.96	40.34	54.00	-13.66	AVG			

Test Plot of Frequency Band Edge


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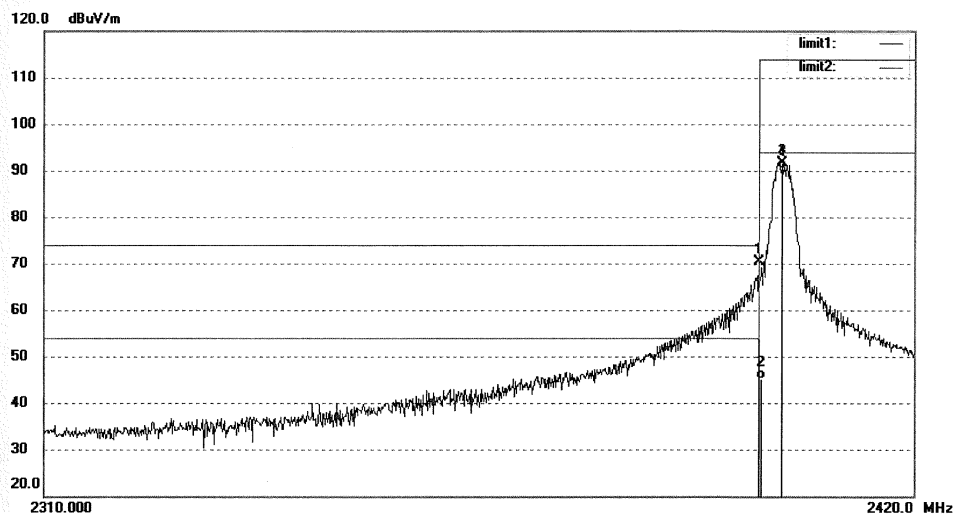
Tel: +86-0755-26503290

Fax: +86-0755-26503396

Job No.: lenovo #1642
 Standard: FCC (Band Edge)
 Test item: Radiation Test
 Temp.(C)/Hum.(%) 23 C / 48 %
 EUT: Lenovo Wireless Mouse
 Mode: TX 2403MHz
 Model: N3903
 Manufacturer: Lenovo

Polarization: Horizontal
 Power Source: DC 1.5V
 Date: 17/04/15/
 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	71.97	-1.62	70.35	74.00	-3.65	peak			
2	2400.000	46.86	-1.62	45.24	54.00	-8.76	AVG			
3	2403.000	93.24	-1.61	91.63	114.00	-22.37	peak			
4	2403.000	91.94	-1.61	90.33	94.00	-3.67	AVG			


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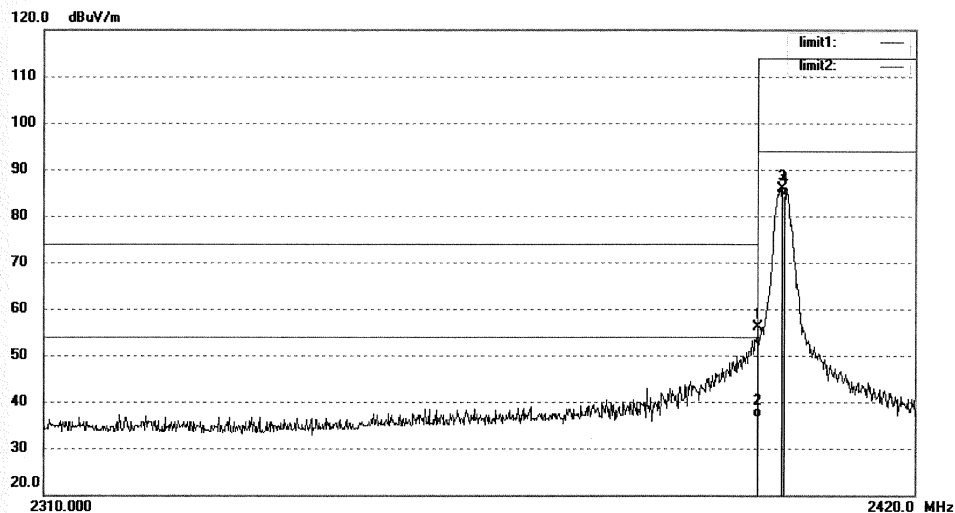
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: lenovo #1641
Standard: FCC (Band Edge)
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: Lenovo Wireless Mouse
Mode: TX 2403MHz
Model: N3903
Manufacturer: Lenovo

Polarization: Vertical
Power Source: DC 1.5V
Date: 17/04/15/
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	57.63	-1.62	56.01	74.00	-17.99	peak			
2	2400.000	38.16	-1.62	36.54	54.00	-17.46	AVG			
3	2403.000	87.41	-1.61	85.80	114.00	-28.20	peak			
4	2403.000	86.11	-1.61	84.50	94.00	-9.50	AVG			


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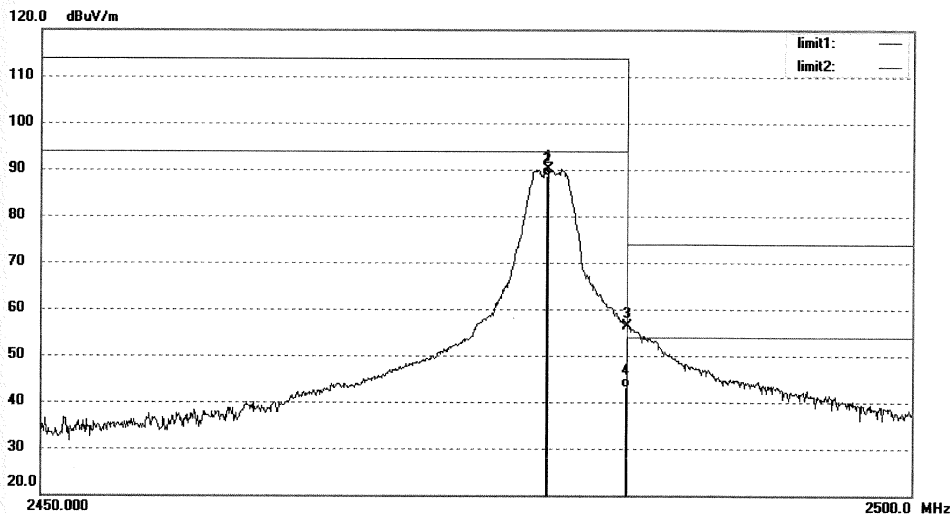
Tel:+86-0755-26503290

Fax:+86-0755-26503396

 Job No.: lenovo #1647
 Standard: FCC (Band Edge)
 Test item: Radiation Test
 Temp.(C)/Hum.(%) 23 C / 48 %
 EUT: Lenovo Wireless Mouse
 Mode: TX 2479MHz
 Model: N3903
 Manufacturer: Lenovo

 Polarization: Horizontal
 Power Source: DC 1.5V
 Date: 17/04/15/
 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	91.48	-1.40	90.08	114.00	-23.92	peak			
2	2479.000	89.98	-1.40	88.58	94.00	-5.42	AVG			
3	2483.500	57.75	-1.40	56.35	74.00	-17.65	peak			
4	2483.500	44.65	-1.40	43.25	54.00	-10.75	AVG			


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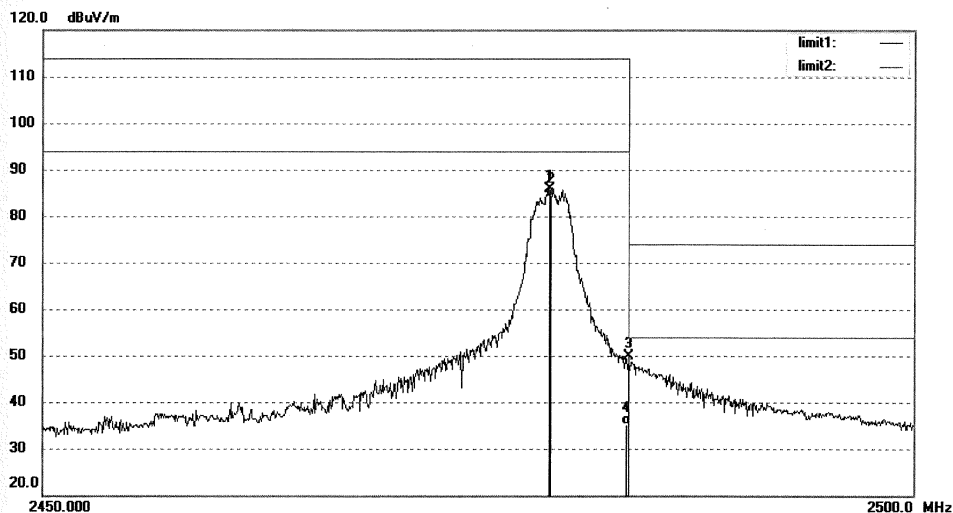
Tel:+86-0755-26503290

Fax:+86-0755-26503396

 Job No.: lenovo #1648
 Standard: FCC (Band Edge)
 Test item: Radiation Test
 Temp.(C)/Hum.(%) 23 C / 48 %
 EUT: Lenovo Wireless Mouse
 Mode: TX 2479MHz
 Model: N3903
 Manufacturer: Lenovo

 Polarization: Vertical
 Power Source: DC 1.5V
 Date: 17/04/15/
 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	87.32	-1.40	85.92	114.00	-28.08	peak			
2	2479.000	85.82	-1.40	84.42	94.00	-9.58	AVG			
3	2483.500	51.32	-1.40	49.92	74.00	-24.08	peak			
4	2483.500	36.62	-1.40	35.22	54.00	-18.78	AVG			

6. Safety Human exposure

6.1 Radio Frequency Exposure Compliance

6.1.1 Electromagnetic Fields

RESULT:**Pass**

Test standard : RSS-102 Issue 5 March 2015
FCC KDB Publication 447498 D01 v06

The maximum radiated power of the transmitter is 0.432mW (-3.65dBm) only, which less than 4mW. Hence the EUT is exempted from routine evaluation limits (SAR Evaluation) according to clause 2.5.1 of RSS-102 Issue 5.

Since maximum radiated power of the transmitter is 0.432mW<10mW, and the distance from EUT to human is 5mm, hence the EUT is excluded from SAR evaluation according to FCC KDB publication 447498 D01 General RF Exposure Guidance v06.

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