



Neutron Engineering Inc.

FCC Radio Test Report

FCC ID: H4IMS8863

This report concerns (check one) : ☒ Original Grant ☐ Class II Change

Issued Date : Feb. 25, 2014
Project No. : 1402013
Equipment : Lenovo wireless zone touch mouse
Model Name : ZTM600

Applicant : LITE-ON TECHNOLOGY CORP.
Address : 18F, 392, Ruey Kuang Road, NeiHu,
Taipei 11492, Taiwan, R.O.C

Tested by: Neutron Engineering Inc. EMC Laboratory
Date of Receipt: Feb. 05, 2014
Date of Test: Feb. 05, 2014 ~ Feb. 24, 2014

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Declaration

Neutron represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (**NML**) of **R.O.C.**, or National Institute of Standards and Technology (**NIST**) of **U.S.A.**

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Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.



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REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
NEI-FCCP-1-1402013	Original Issue.	Feb. 25, 2014



1 CERTIFICATION

Equipment : Lenovo wireless zone touch mouse
Brand Name : Lenovo
Model Name : ZTM600
Applicant : LITE-ON TECHNOLOGY CORP.
Date of Test : Feb. 05, 2014 ~ Feb. 24, 2014
Standard(s) : FCC Part 15, Subpart C(15.249): 2012
ANSI C63.4- 2009

The above equipment has been tested and found compliance with the requirement of the relative standards by Neutron Engineering Inc. EMC Laboratory.

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. NEI-FCCP-1-1402013) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).



2. SUMMARY OF TEST RESULTS

FCC Part 15, Subpart C(15.249): 2012		
Standard Clause	Test Item	Result
15.207	Conducted Emission	N/A
15.249(d) or 15.209	Radiated Spurious Emission	PASS
15.205	Restricted Bands	PASS

NOTE:

(1) N/A: denotes test is not applicable in this test report.



2.1 TEST FACILITY

The test facilities used to collect the test data in this report:

Radiated emission Test (Below 1 GHz):

CB08: (FCC RN: 614388; FCC DN: TW1054; IC Assigned Code: 4428C-1)
1F., No. 61, Ln. 77, Sing-ai Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)

Radiated emission Test (Above 1 GHz):

CB08: (VCCI RN: G-91; FCC RN: 614388; FCC DN: TW1054; IC Assigned Code: 4428C-1)
1F., No. 61, Ln. 77, Sing-ai Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)

2.2 MEASUREMENT UNCERTAINTY

The measurement uncertainty is not specified by FCC rules and for reference only.

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately **95%**.

The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2.

Radiated emission test:

Test Site	Item	Measurement Frequency Range	Uncertainty	NOTE
CB08	Radiated emission at 3m	Horizontal Polarization	30 - 200MHz	3.35 dB
			200 - 1000MHz	3.11 dB
			1 - 18GHz	3.97 dB
			18 - 40GHz	4.01 dB
		Vertical Polarization	30 - 200MHz	3.22 dB
			200 - 1000MHz	3.24 dB
			1 - 18GHz	4.05 dB
			18 - 40GHz	4.04 dB

Our calculated Measurement Instrumentation Uncertainty is shown in the tables above. These are our U_{lab} values in CISPR 16-4-2 terminology.

Since Table 1 of CISPR 16-4-2 has values of measurement instrumentation uncertainty, called U_{CISPR} , as follows:

Conducted Disturbance (mains port) – 150 kHz – 30 MHz: 3.6 dB

Radiated Disturbance (electric field strength on an open area test site or alternative test site) – 30 MHz – 1000 MHz: 5.2 dB

It can be seen that our U_{lab} values are smaller than U_{CISPR} .

If U_{lab} is less than or equal to U_{CISPR} , then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{CISPR} , then:

- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{CISPR})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{CISPR})$, exceeds the disturbance limit.



3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Lenovo wireless zone touch mouse	
Brand Name	Lenovo	
Model Name	ZTM600	
OEM Brand/Model Name	N/A	
Model Difference	N/A	
Product Description	Operation Frequency	2403 MHz to 2480 MHz
	Modulation Type	GFSK
	Bit Rate of Transmitter	2 Mbps
	Number Of Channel	Please refer to the Note 2.(Page 9)
	Antenna Designation	Please refer to the Note 3.(Page 9)
	Antenna Gain(Peak)	
	Field strength	64.23dBuV@3m
Power Source	Battery supplied.	
Power Rating	DC 1.5V	
Connecting I/O Port(s)	Please refer to the User's Manual	



NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2. Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2403	27	2429	53	2455
02	2404	28	2430	54	2456
03	2405	29	2431	55	2457
04	2406	30	2432	56	2458
05	2407	31	2433	57	2459
06	2408	32	2434	58	2460
07	2409	33	2435	59	2461
08	2410	34	2436	60	2462
09	2411	35	2437	61	2463
10	2412	36	2438	62	2464
11	2413	37	2439	63	2465
12	2414	38	2440	64	2466
13	2415	39	2441	65	2467
14	2416	40	2442	66	2468
15	2417	41	2443	67	2469
16	2418	42	2444	68	2470
17	2419	43	2445	69	2471
18	2420	44	2446	70	2472
19	2421	45	2447	71	2473
20	2422	46	2448	72	2474
21	2423	47	2449	73	2475
22	2424	48	2450	74	2476
23	2425	49	2451	75	2477
24	2426	50	2452	76	2478
25	2427	51	2453	77	2479
26	2428	52	2454	78	2480

3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	Printed	N/A	2.34



3.2 DESCRIPTION OF TEST MODES

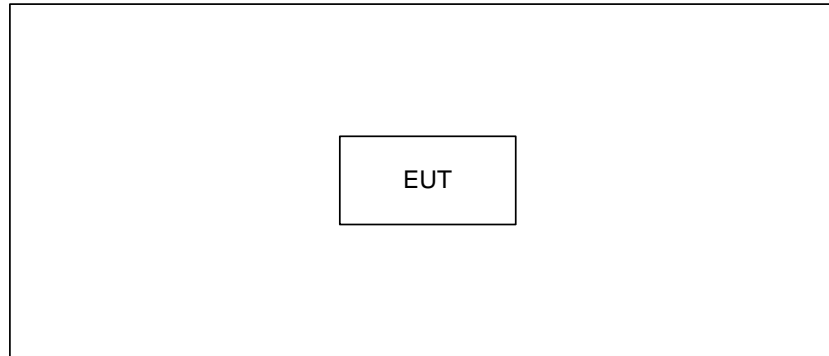
To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Test Items	Mode	Data Rate	Channel	Note
Radiated Spurious Emission (30 MHz to 1 GHz)	GFSK	2 Mbps	2441 MHz	
Radiated Spurious Emission (above 1 GHz)	GFSK	2 Mbps	2403 MHz / 2441 MHz / 2480 MHz	
Restricted Bands	GFSK	2 Mbps	2403 MHz / 2441 MHz / 2480 MHz	

NOTE: The measurements are performed at the high, middle, low available channels.



3.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED





3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
E-1	Lenovo wireless zone touch mouse	Lenovo	ZTM600	H4IMS8863	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note
N/A	-	-	-	-

NOTE: The support equipment was authorized by Declaration of Conformity (DOC).



4 RADIATED SPURIOUS EMISSION (9 KHZ TO 1 GHZ)

4.1 LIMIT

20 dB in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequency Range: 9 kHz to 1 GHz		
FREQUENCY (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
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

Frequency Range: above 1 GHz				
FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
above 1 GHz	80	60	74	54

NOTE:

1. The limit for radiated test was performed according to FCC PART 15B.
2. The tighter limit applies at the band edges.
3. Emission level (dBuV/m)=20log Emission level (uV/m).
4. The test result calculated as following:
 Measurement Value = Reading Level + Correct Factor
 Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain (if use)
 Margin Level = Measurement Value – Limit Value

FCC Part15, Subpart C (15.249)	
Limit	Frequency Range (MHz)
Field strength of fundamental 50000 μ V/m (94 dB μ V/m) @ 3 m	2400-2483.5
Field strength of harmonics 500 μ V/m (54 dB μ V/m) @ 3 m	Above 2483.5



4.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Oct. 14, 2014
2	Horn Antenna	Schwarzbeck	BBHA 9120	D-325	Apr. 15, 2014
3	Microwave Pre_amplifier	Agilent	8449B	3008A01714	Apr. 16, 2014
4	Microflex Cable	N/A	27478LL142	1m	May. 14, 2014
5	Microflex Cable	AISI	S104-SMAP-1	8m	May. 14, 2014
6	Microflex Cable	N/A	27478LL142	3m	May. 14, 2014
7	Test Cable	N/A	LMR-400	966_12m	May. 14, 2014
8	Test Cable	N/A	LMR-400	966_3m	May. 14, 2014
9	Pre-Amplifier	EMC	MH648A	M92649	Jun. 18, 2014
10	Log-Bicon Antenna	Schwarzbeck	VULB9168-352	9168-352	Jun. 18, 2014

Remark: "N/A" denotes No Model Name, No Serial No. or No Calibration specified.

4.3 MEASURING INSTRUMENTS SETTING

EMI Test Receiver	Parameter Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP



DUTY CYCLE: TX 2403 MHz (2 Mbps)

Dwell time = ON/ON+OFF

ON: 0.41 msec

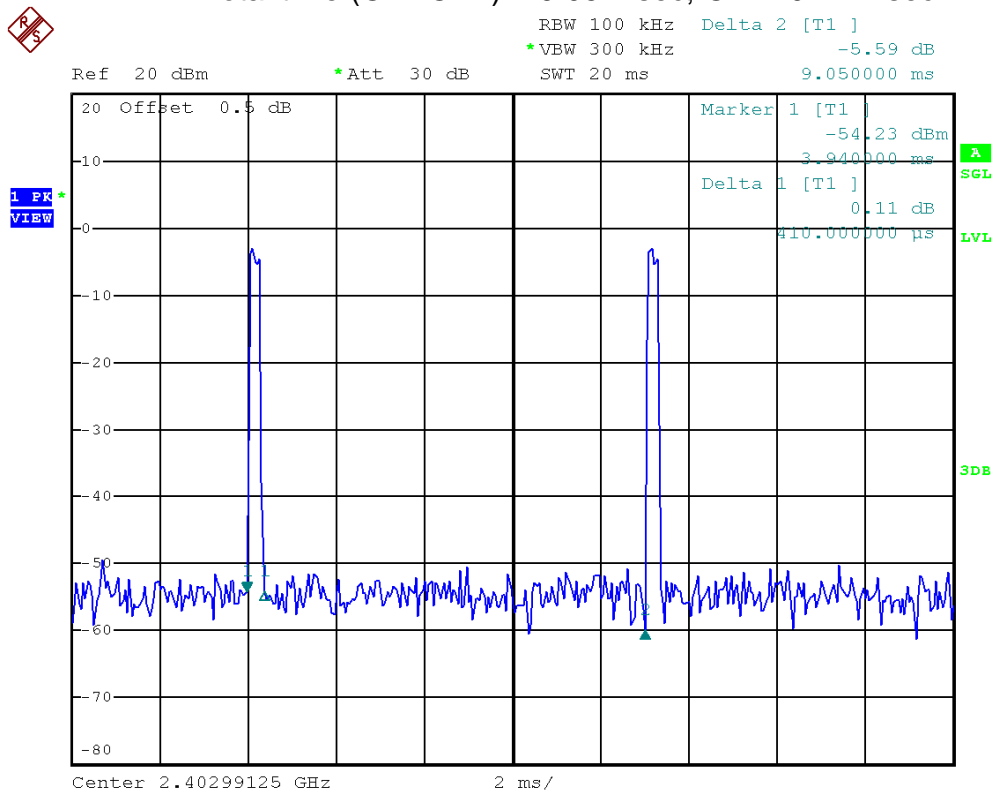
ON+OFF (total time): 9.05 msec

Dwell time: 4.53%

AV = PK + 20 log(Dwell time)

AV = PK -26.88

Total time (ON+OFF) = 9.05 msec; ON = 0.41 msec



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4.4 TEST PROCEDURES

- The measuring distance of at 3 m shall be used for measurements at frequency up to 1 GHz. For frequencies above 1 GHz, any suitable measuring distance may be used.
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m Semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.
- The testing follows the guidelines in ANSI C63.4 and FCC Public Notice DA 00-705 Measurement Guidelines. In case the emission is fail due to the used RBW/VBW is too wide, marker-delta method of FCC Public Notice DA 00-705 will be followed.

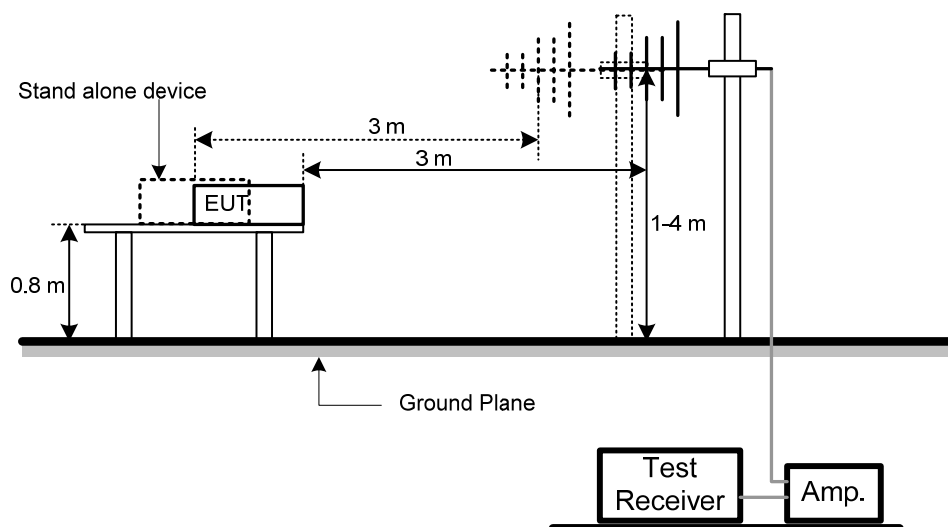
NOTE:

- Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode with Detector BW=120 kHz; SPA setting in RBW=100 kHz, VBW =100 kHz, Swp. Time = 0.3 sec./ MHz.
- All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.

4.5 DEVIATION FROM TEST STANDARD

No deviation

4.6 TEST SETUP LAYOUT





4.7 EUT OPERATING CONDITIONS

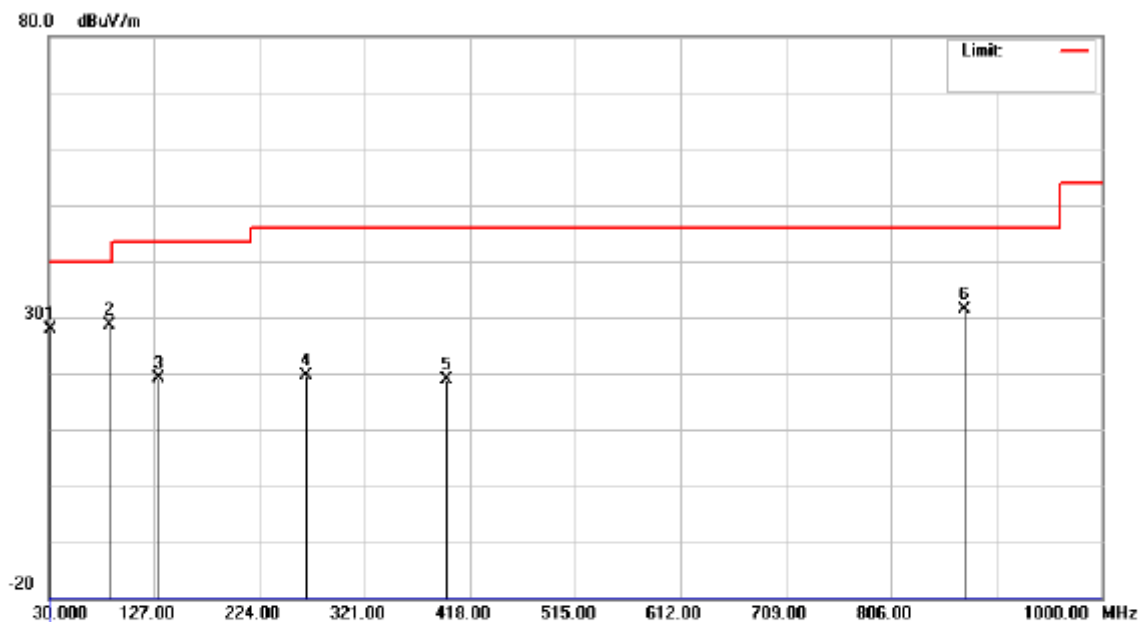
The EUT was programmed to be in continuously transmitting mode.



4.8 TEST RESULTS

E.U.T	Lenovo wireless zone touch mouse	Model Name	ZTM600
Temperature	22°C	Relative Humidity	60%
Test Voltage	DC 1.5V		
Test Mode	2441 MHz		

Polarization: Vertical

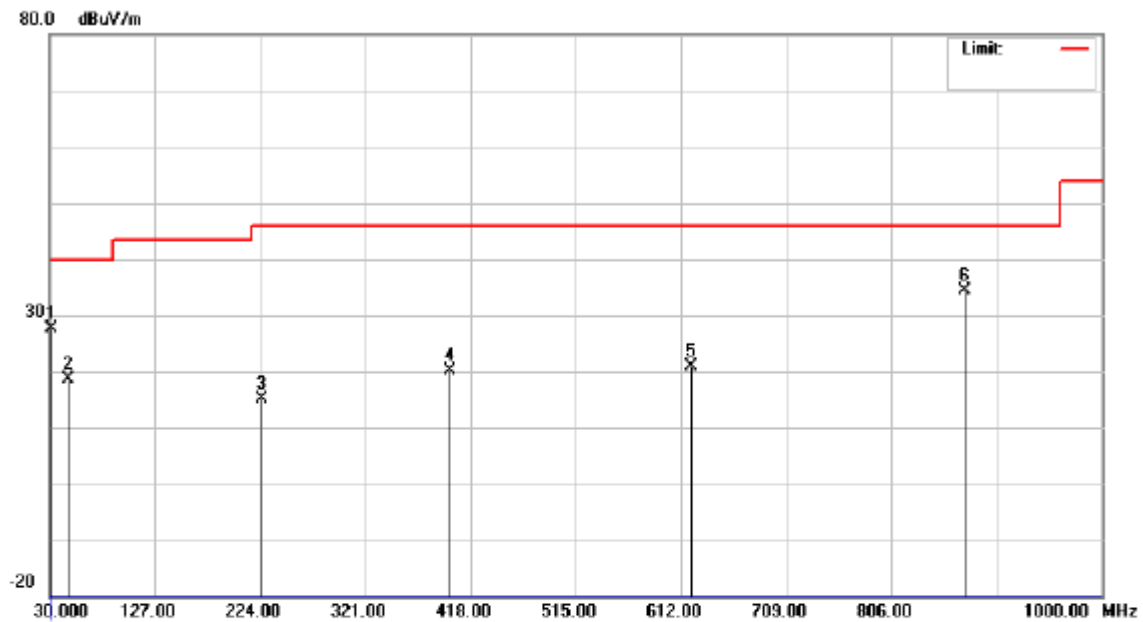


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		32.4250	43.32	-15.49	27.83	40.00	-12.17	peak	
2	*	85.7750	49.15	-20.43	28.72	40.00	-11.28	peak	
3		131.8500	35.70	-16.62	19.08	43.50	-24.42	peak	
4		267.6500	35.55	-15.95	19.60	46.00	-26.40	peak	
5		396.1750	31.86	-13.08	18.78	46.00	-27.22	peak	
6		873.9000	37.77	-6.29	31.48	46.00	-14.52	peak	



E.U.T	Lenovo wireless zone touch mouse	Model Name	ZTM600
Temperature	22°C	Relative Humidity	60%
Test Voltage	DC 1.5V		
Test Mode	2441 MHz		

Polarization: Horizontal



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	32.4250	43.23	-15.49	27.74	40.00	-12.26	peak	
2	46.9750	33.05	-14.48	18.57	40.00	-21.43	peak	
3	226.4250	32.92	-17.68	15.24	46.00	-30.76	peak	
4	398.6000	33.16	-13.00	20.16	46.00	-25.84	peak	
5	621.7000	29.86	-9.01	20.85	46.00	-25.15	peak	
6 *	873.9000	40.68	-6.29	34.39	46.00	-11.61	peak	



5 RADIATED SPURIOUS EMISSION (ABOVE 1 GHZ)

5.1 LIMIT

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequency Range: 9 kHz to 1 GHz		
FREQUENCY (MHz)	Field Strength (micровolts/meter)	Measurement Distance (meters)
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

Frequency Range: above 1 GHz				
FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
above 1 GHz	80	60	74	54

NOTE:

- (1) The limit for radiated test was performed according to FCC PART 15B.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).
- (4) The test result calculated as following:
 Measurement Value = Reading Level + Correct Factor
 Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain(if use)
 Margin Level = Measurement Value – Limit Value



5.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Oct. 14, 2014
2	Horn Antenna	Schwarzbeck	BBHA 9120	D-325	Apr. 15, 2014
3	Microwave Pre_amplifier	Agilent	8449B	3008A01714	Apr. 16, 2014
4	Microflex Cable	N/A	27478LL142	1m	May. 14, 2014
5	Microflex Cable	AISI	S104-SMAP-1	8m	May. 14, 2014
6	Microflex Cable	N/A	27478LL142	3m	May. 14, 2014
7	Test Cable	N/A	LMR-400	966_12m	May. 14, 2014
8	Test Cable	N/A	LMR-400	966_3m	May. 14, 2014
9	Pre-Amplifier	EMC	MH648A	M92649	Jun. 18, 2014
10	Log-Bicon Antenna	Schwarzbeck	VULB9168-352	9168-352	Jun. 18, 2014

Remark: "N/A" denotes No Model Name, No Serial No. or No Calibration specified.

5.3 MEASURING INSTRUMENTS SETTING

Spectrum Analyzer	Parameter Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (other emission)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average



5.4 TEST PROCEDURES

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m Semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.
- The testing follows the guidelines in ANSI C63.4 and FCC Public Notice DA 00-705 Measurement Guidelines. In case the emission is fail due to the used RBW/VBW is too wide, marker-delta method of FCC Public Notice DA 00-705 will be followed.

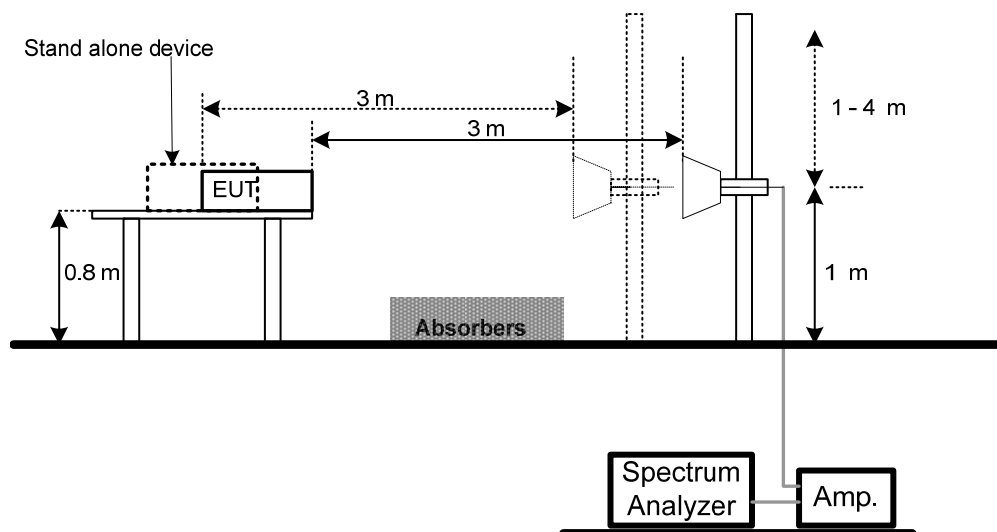
NOTE:

- Reading in which marked as Peak means measurements by using are Peak Mode with instrument setting in RBW= 1 MHz, VBW= 1 MHz, Swp. Time = Auto.
Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW= 1 MHz, VBW= 10 Hz, Swp. Time = Auto.
- All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn't perform.

5.5 DEVIATION FROM TEST STANDARD

No deviation

5.6 TEST SETUP LAYOUT





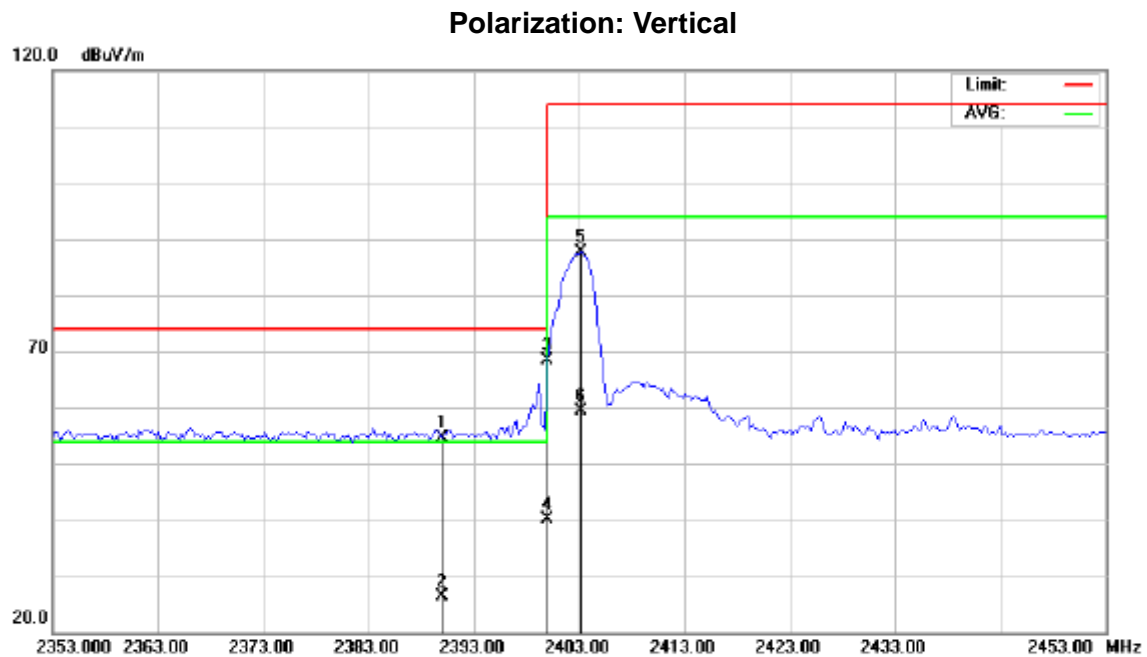
5.7 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 4.6 Unless otherwise a special operating condition is specified in the follows during the testing.



5.8 TEST RESULTS

E.U.T	Lenovo wireless zone touch mouse	Model Name	ZTM600
Temperature	22°C	Relative Humidity	60%
Test Voltage	DC 1.5V		
Test Mode	2403 MHz		

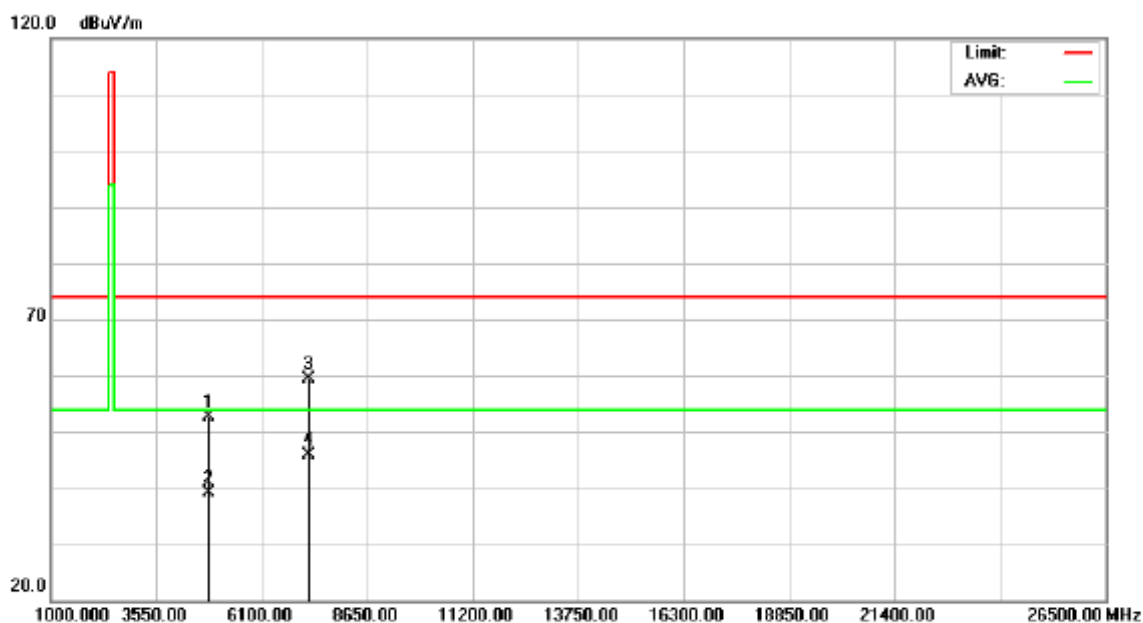


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	22.74	31.81	54.55	74.00	-19.45	peak	
2		2390.000	-5.51	31.81	26.30	54.00	-27.70	AVG	
3	*	2400.000	36.65	31.85	68.50	74.00	-5.50	peak	
4		2400.000	8.40	31.85	40.25	54.00	-13.75	AVG	
5		2403.250	55.67	31.87	87.54	114.0	-26.46	peak	
6		2403.250	27.42	31.87	59.29	94.00	-34.71	AVG	



E.U.T	Lenovo wireless zone touch mouse	Model Name	ZTM600
Temperature	22°C	Relative Humidity	60%
Test Voltage	DC 1.5V		
Test Mode	2403 MHz		

Polarization: Vertical

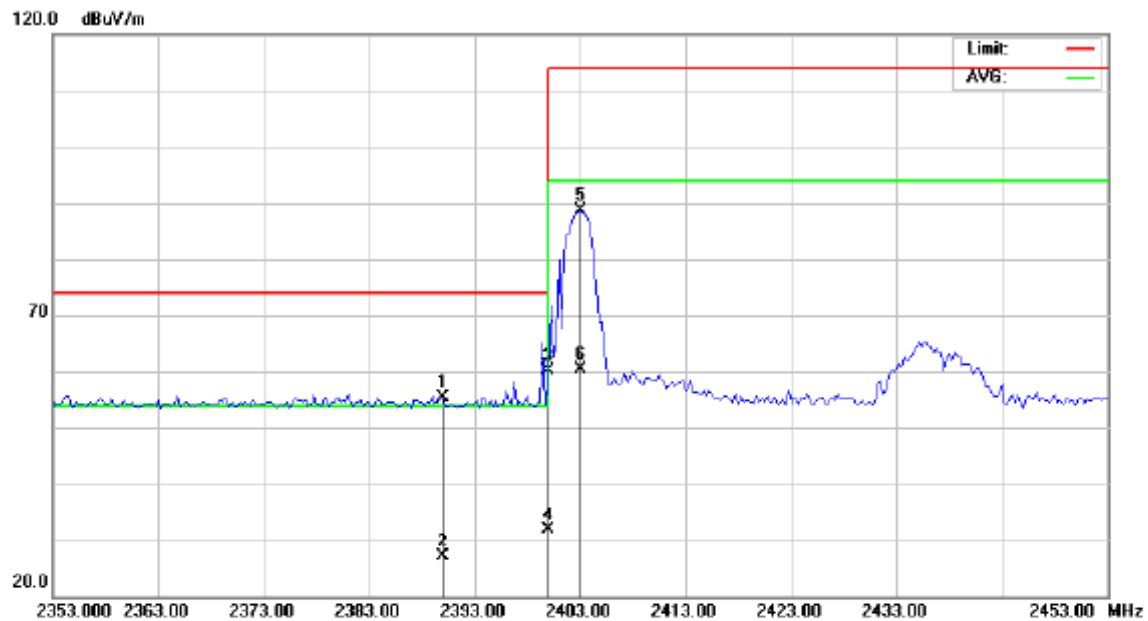


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	4805.960	46.55	6.19	52.74	74.00	-21.26	peak	
2	4805.960	33.02	6.19	39.21	54.00	-14.79	AVG	
3	7209.045	47.11	12.39	59.50	74.00	-14.50	peak	
4 *	7209.045	33.58	12.39	45.97	54.00	-8.03	AVG	



E.U.T	Lenovo wireless zone touch mouse	Model Name	ZTM600
Temperature	22°C	Relative Humidity	60%
Test Voltage	DC 1.5V		
Test Mode	2403 MHz		

Polarization: Horizontal

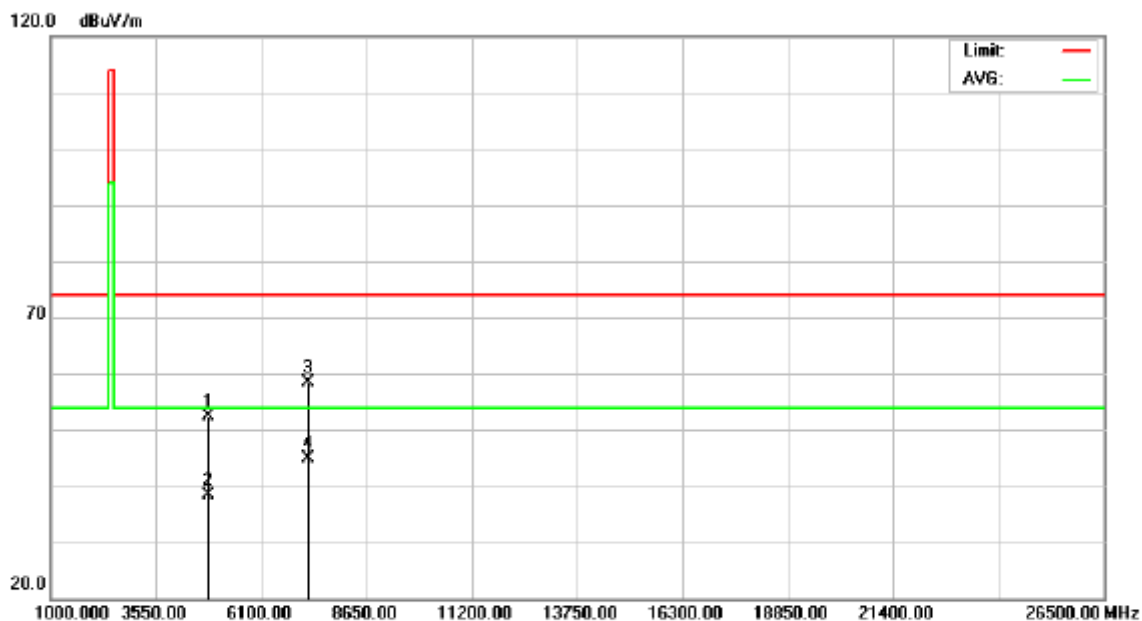


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	23.68	31.81	55.49	74.00	-18.51	peak	
2		2390.000	-4.57	31.81	27.24	54.00	-26.76	AVG	
3	*	2400.000	28.16	31.85	60.01	74.00	-13.99	peak	
4		2400.000	-0.09	31.85	31.76	54.00	-22.24	AVG	
5		2403.000	56.66	31.86	88.52	114.0	-25.48	peak	
6		2403.000	28.41	31.86	60.27	94.00	-33.73	AVG	



E.U.T	Lenovo wireless zone touch mouse	Model Name	ZTM600
Temperature	22°C	Relative Humidity	60%
Test Voltage	DC 1.5V		
Test Mode	2403 MHz		

Polarization: Horizontal

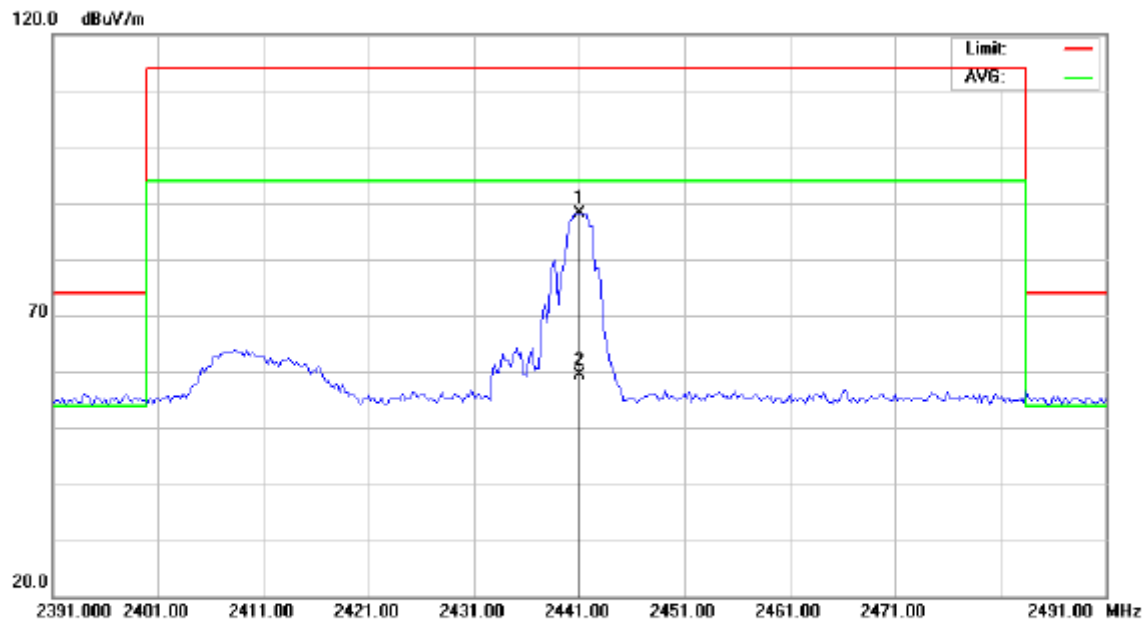


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4805.970	46.14	6.19	52.33	74.00	-21.67	peak	
2		4805.970	32.07	6.19	38.26	54.00	-15.74	AVG	
3		7208.945	46.09	12.39	58.48	74.00	-15.52	peak	
4	*	7208.945	32.56	12.39	44.95	54.00	-9.05	AVG	



E.U.T	Lenovo wireless zone touch mouse	Model Name	ZTM600
Temperature	22°C	Relative Humidity	60%
Test Voltage	DC 1.5V		
Test Mode	2441 MHz		

Polarization: Vertical

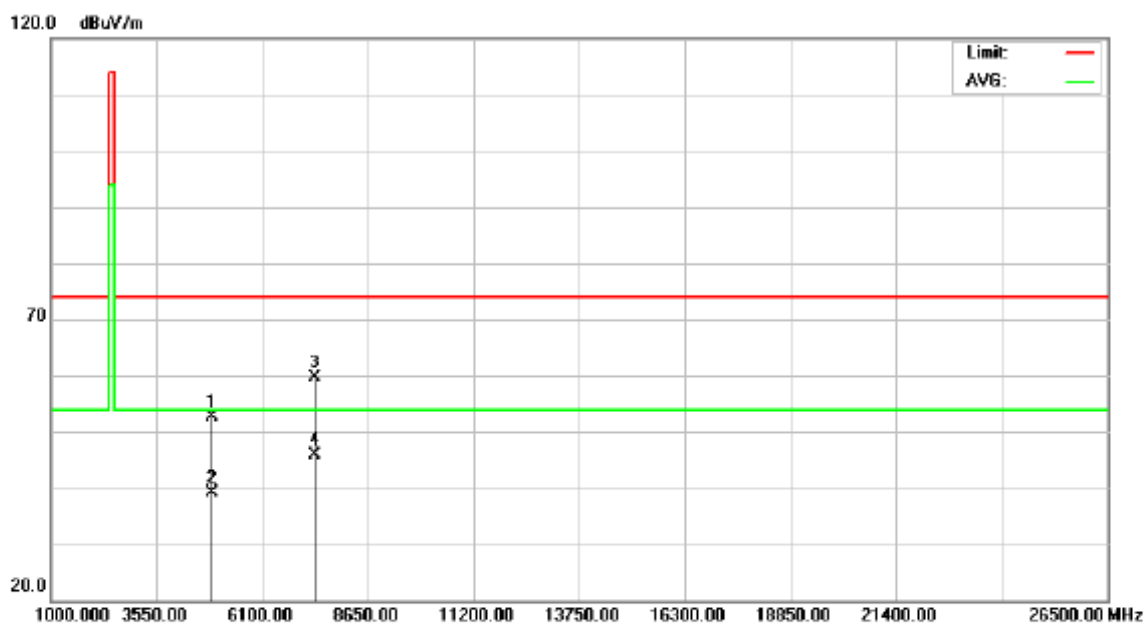


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	2441.000	56.20	32.02	88.22	114.0	-25.78	peak	
2		2441.000	27.29	32.02	59.31	94.00	-34.69	AVG	



E.U.T	Lenovo wireless zone touch mouse	Model Name	ZTM600
Temperature	22°C	Relative Humidity	60%
Test Voltage	DC 1.5V		
Test Mode	2441 MHz		

Polarization: Vertical

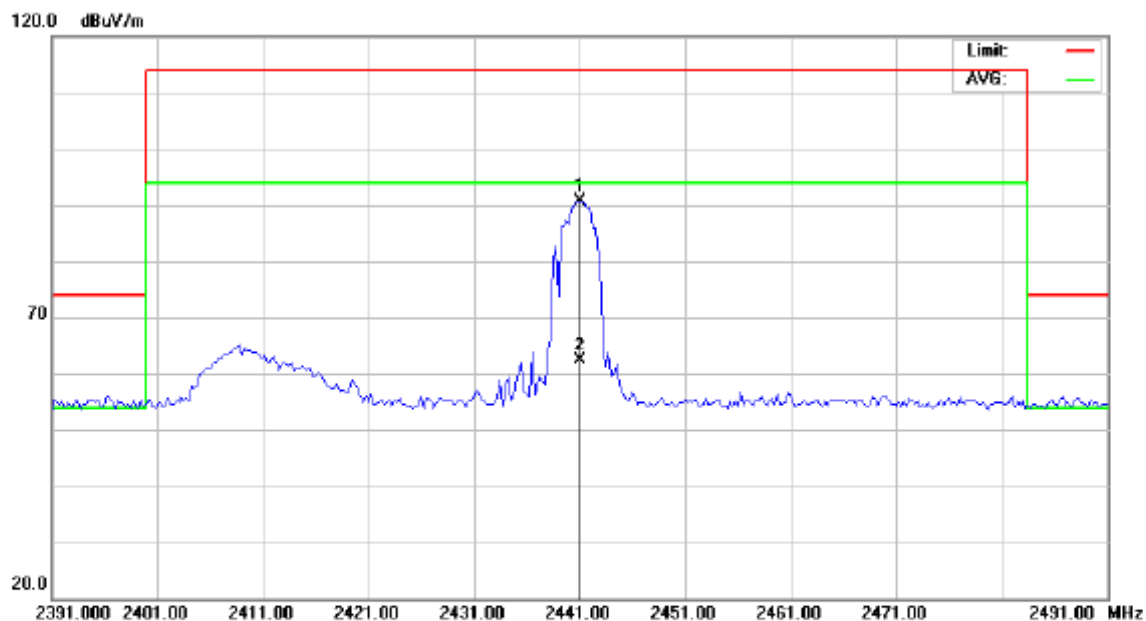


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4882.175	46.33	6.29	52.62	74.00	-21.38	peak	
2		4882.175	32.80	6.29	39.09	54.00	-14.91	AVG	
3		7322.862	46.70	12.81	59.51	74.00	-14.49	peak	
4	*	7322.862	33.17	12.81	45.98	54.00	-8.02	AVG	



E.U.T	Lenovo wireless zone touch mouse	Model Name	ZTM600
Temperature	22°C	Relative Humidity	60%
Test Voltage	DC 1.5V		
Test Mode	2441 MHz		

Polarization: Horizontal

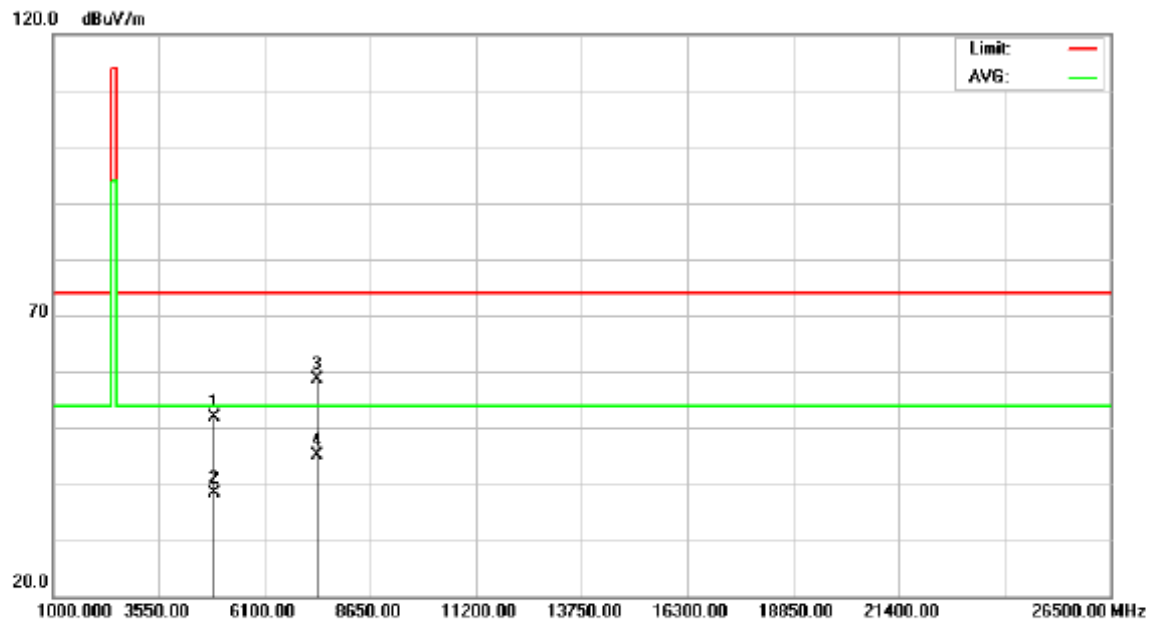


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	2441.000	58.64	32.02	90.66	114.0	-23.34	peak	
2		2441.000	30.39	32.02	62.41	94.00	-31.59	AVG	



E.U.T	Lenovo wireless zone touch mouse	Model Name	ZTM600
Temperature	22°C	Relative Humidity	60%
Test Voltage	DC 1.5V		
Test Mode	2441 MHz		

Polarization: Horizontal

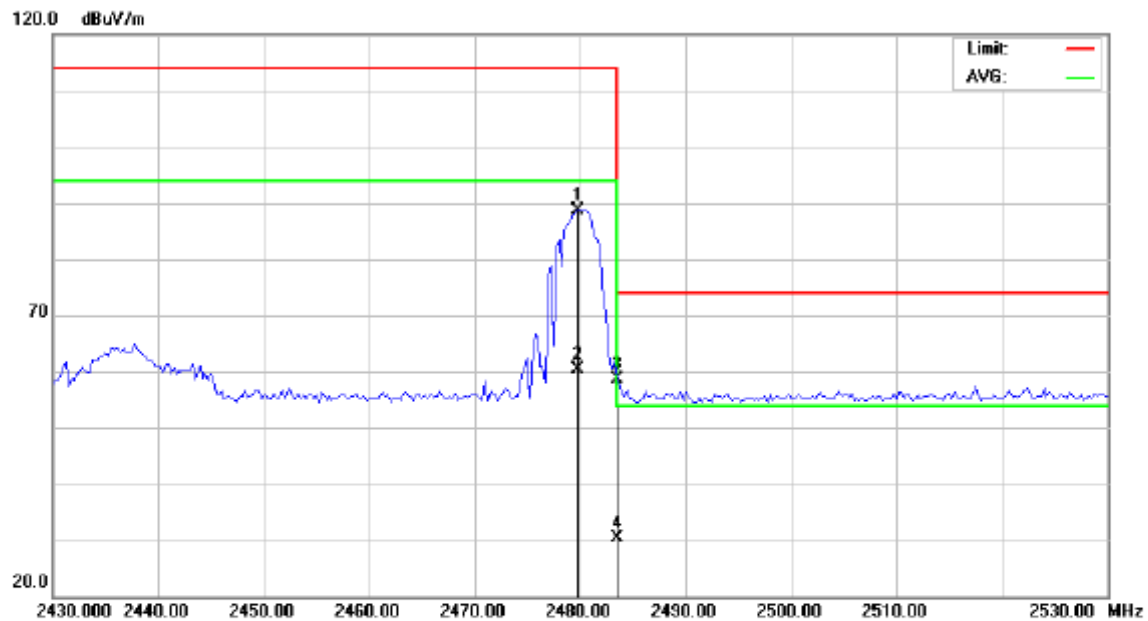


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	4882.337	45.71	6.29	52.00	74.00	-22.00	peak	
2	4882.337	32.18	6.29	38.47	54.00	-15.53	AVG	
3	7323.138	45.84	12.81	58.65	74.00	-15.35	peak	
4 *	7323.138	32.31	12.81	45.12	54.00	-8.88	AVG	



E.U.T	Lenovo wireless zone touch mouse	Model Name	ZTM600
Temperature	22°C	Relative Humidity	60%
Test Voltage	DC 1.5V		
Test Mode	2480 MHz		

Polarization: Vertical

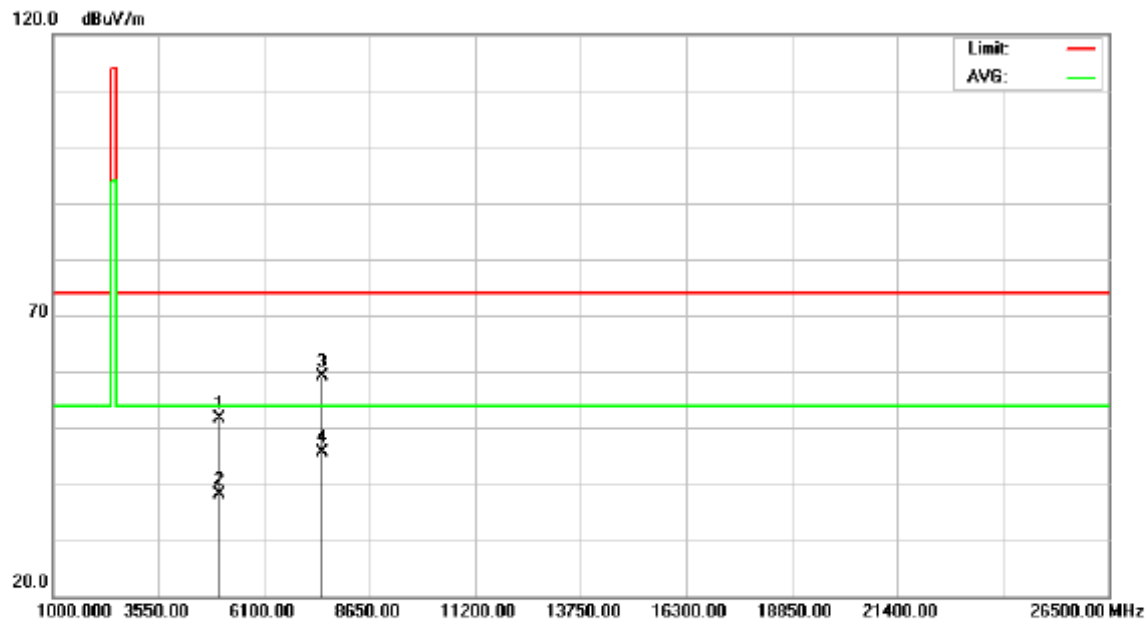


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2479.750	56.51	32.18	88.69	114.0	-25.31	peak	
2		2479.750	28.26	32.18	60.44	94.00	-33.56	AVG	
3	*	2483.500	26.45	32.19	58.64	74.00	-15.36	peak	
4		2483.500	-1.80	32.19	30.39	54.00	-23.61	AVG	



E.U.T	Lenovo wireless zone touch mouse	Model Name	ZTM600
Temperature	22°C	Relative Humidity	60%
Test Voltage	DC 1.5V		
Test Mode	2480 MHz		

Polarization: Vertical

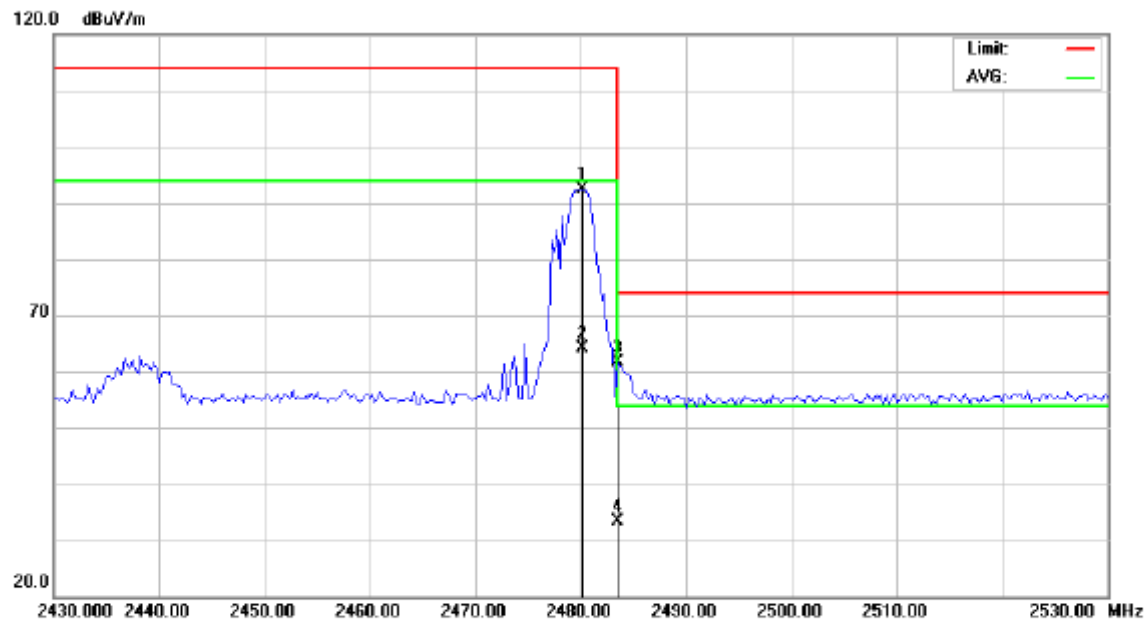


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4960.150	45.30	6.39	51.69	74.00	-22.31	peak	
2		4960.150	31.77	6.39	38.16	54.00	-15.84	AVG	
3		7440.850	45.89	13.25	59.14	74.00	-14.86	peak	
4	*	7440.850	32.36	13.25	45.61	54.00	-8.39	AVG	



E.U.T	Lenovo wireless zone touch mouse	Model Name	ZTM600
Temperature	22°C	Relative Humidity	60%
Test Voltage	DC 1.5V		
Test Mode	2480 MHz		

Polarization: Horizontal

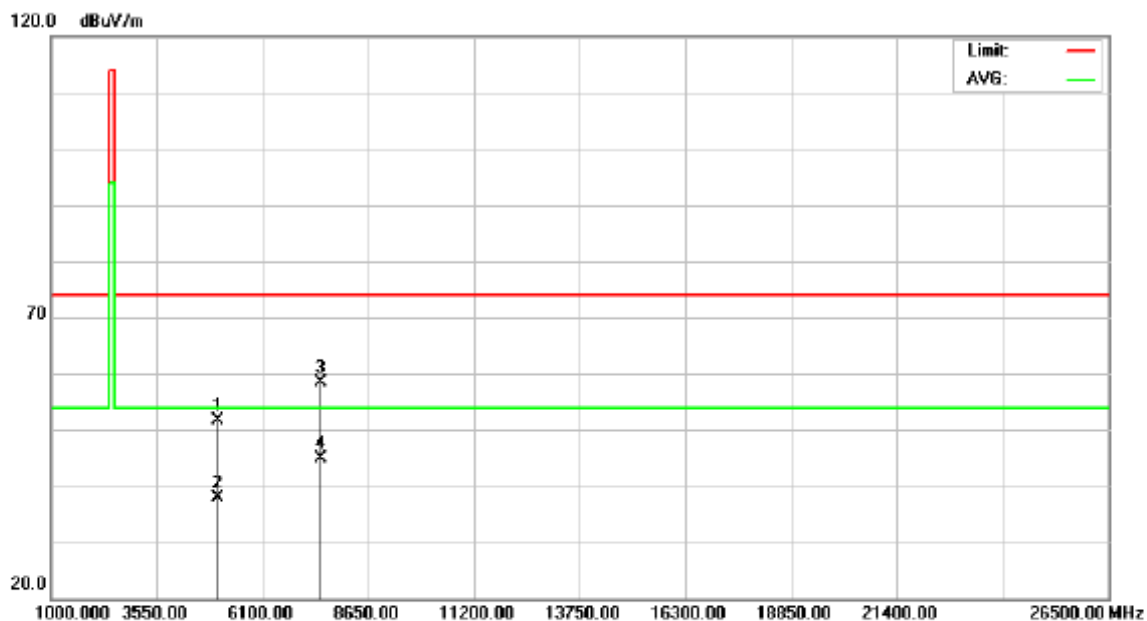


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2480.250	60.30	32.18	92.48	114.0	-21.52	peak	
2		2480.250	32.05	32.18	64.23	94.00	-29.77	AVG	
3	*	2483.500	29.51	32.19	61.70	74.00	-12.30	peak	
4		2483.500	1.26	32.19	33.45	54.00	-20.55	AVG	



E.U.T	Lenovo wireless zone touch mouse	Model Name	ZTM600
Temperature	22°C	Relative Humidity	60%
Test Voltage	DC 1.5V		
Test Mode	2480 MHz		

Polarization: Horizontal

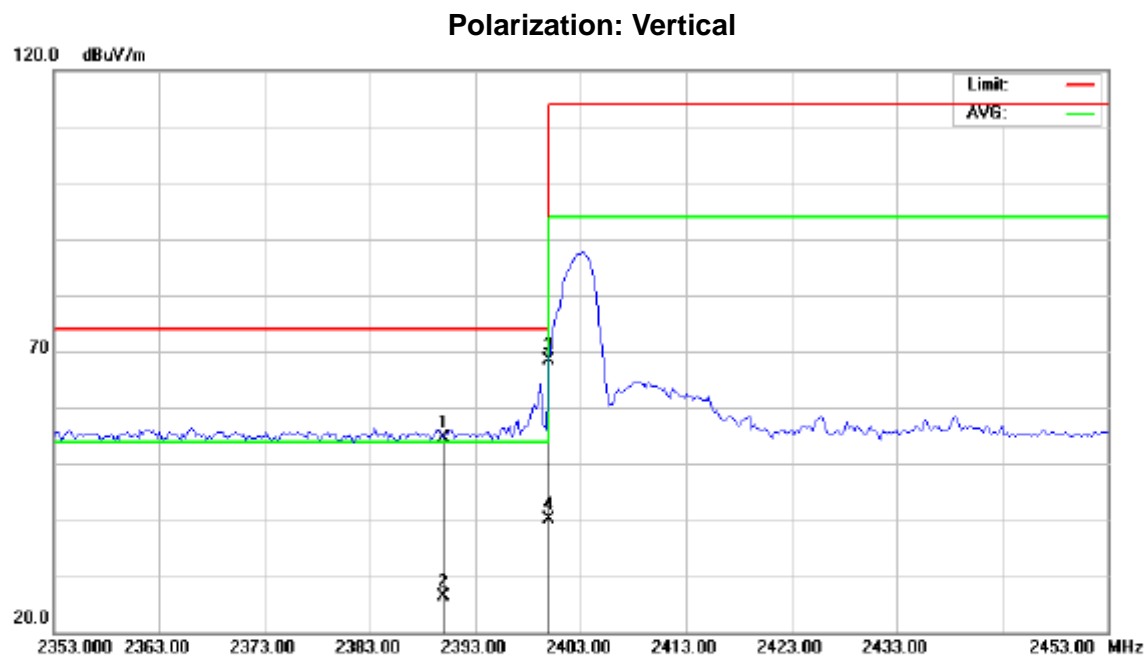


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	4960.450	45.13	6.39	51.52	74.00	-22.48	peak	
2	4960.450	31.60	6.39	37.99	54.00	-16.01	AVG	
3	7440.600	45.20	13.25	58.45	74.00	-15.55	peak	
4 *	7440.600	31.67	13.25	44.92	54.00	-9.08	AVG	



5.9 TEST RESULTS (RESTRICTED BANDS)

E.U.T	Lenovo wireless zone touch mouse	Model Name	ZTM600
Temperature	24°C	Relative Humidity	46%
Test Voltage	DC 1.5V		
Test Mode	2403 MHz		
NOTE	The transmitter was setup to transmit at the lowest channel and the field strength was measured at 2310-2390 MHz.		

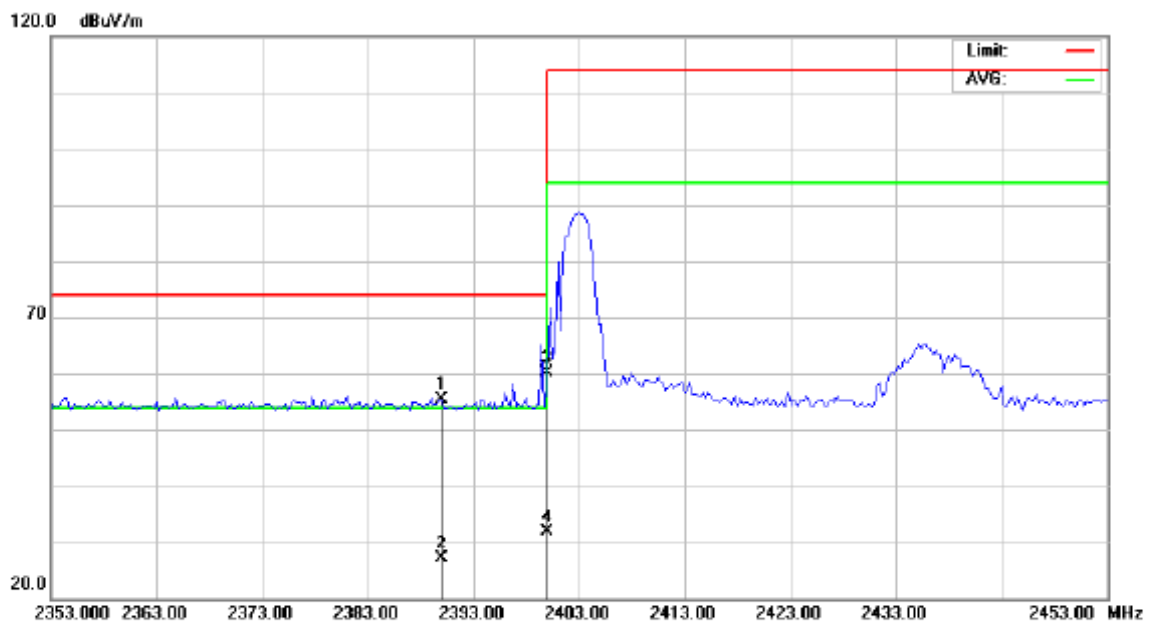


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	2390.000	22.74	31.81	54.55	74.00	-19.45	peak	
2	2390.000	-5.51	31.81	26.30	54.00	-27.70	AVG	
3 *	2400.000	36.65	31.85	68.50	74.00	-5.50	peak	
4	2400.000	8.40	31.85	40.25	54.00	-13.75	AVG	



E.U.T	Lenovo wireless zone touch mouse	Model Name	ZTM600
Temperature	24°C	Relative Humidity	46%
Test Voltage	DC 1.5V		
Test Mode	2403 MHz		
NOTE	The transmitter was setup to transmit at the lowest channel and the field strength was measured at 2310-2390 MHz.		

Polarization: Horizontal

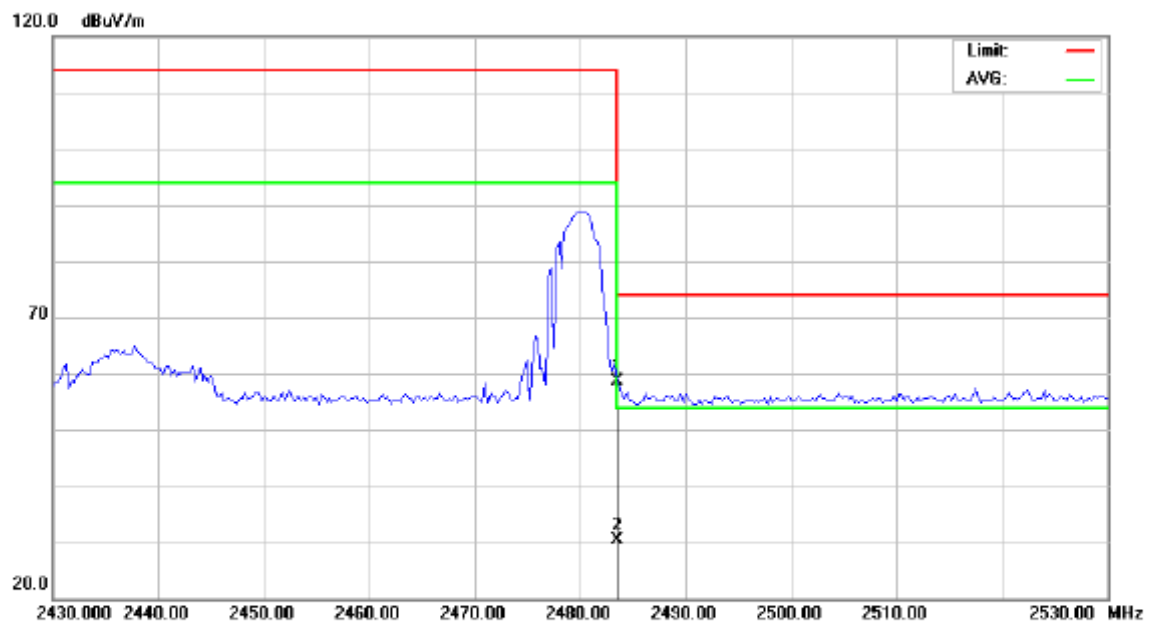


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		2390.000	23.68	31.81	55.49	74.00	-18.51	peak	
2		2390.000	-4.57	31.81	27.24	54.00	-26.76	AVG	
3	*	2400.000	28.16	31.85	60.01	74.00	-13.99	peak	
4		2400.000	-0.09	31.85	31.76	54.00	-22.24	AVG	



E.U.T	Lenovo wireless zone touch mouse	Model Name	ZTM600
Temperature	24°C	Relative Humidity	46%
Test Voltage	DC 1.5V		
Test Mode	2480 MHz		
NOTE	The transmitter was setup to transmit at the highest channel and the field strength was measured at 2483.5-2500 MHz.		

Polarization: Vertical

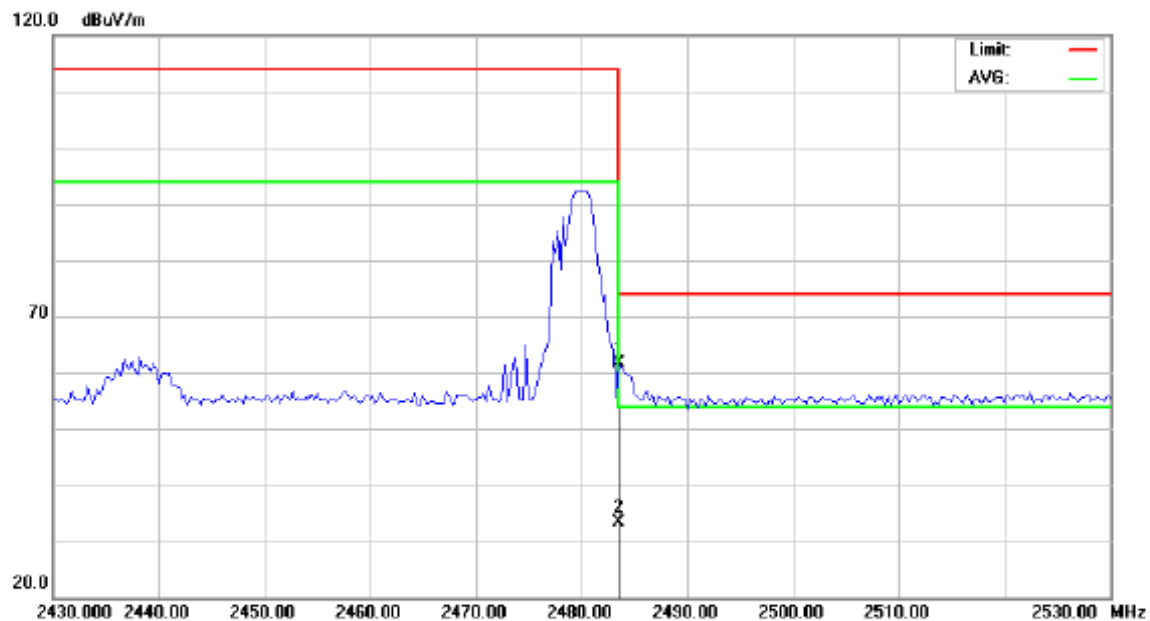


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	2483.500	26.45	32.19	58.64	74.00	-15.36	peak	
2		2483.500	-1.80	32.19	30.39	54.00	-23.61	AVG	



E.U.T	Lenovo wireless zone touch mouse	Model Name	ZTM600
Temperature	24°C	Relative Humidity	46%
Test Voltage	DC 1.5V		
Test Mode	2480 MHz		
NOTE	The transmitter was setup to transmit at the highest channel and the field strength was measured at 2483.5-2500 MHz.		

Polarization: Horizontal

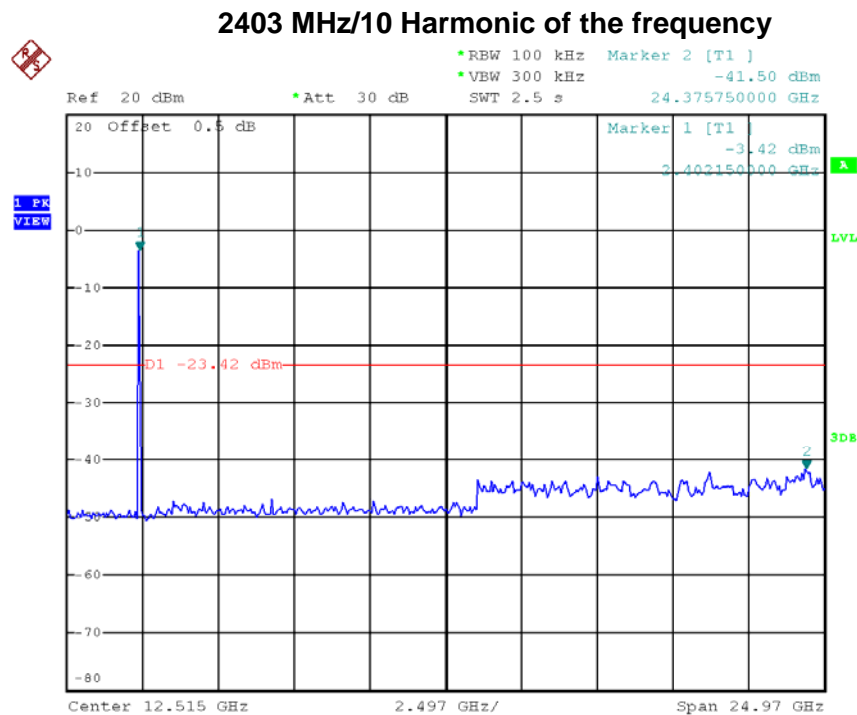


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2483.500	29.51	32.19	61.70	74.00	-12.30	peak	
2		2483.500	1.26	32.19	33.45	54.00	-20.55	AVG	



5.10 TEST RESULTS - THE TENTH HARMONIC

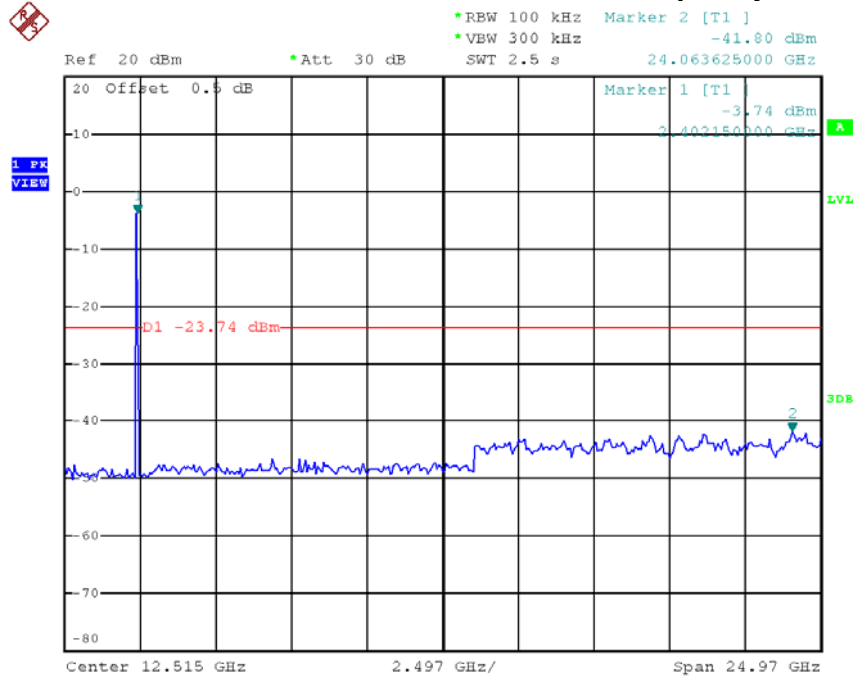
E.U.T	Lenovo wireless zone touch mouse	Model Name	ZTM600
Temperature	22°C	Relative Humidity	46%
Test Voltage	DC 1.5V		
Test Mode	2407 MHz/2441 MHz/2473 MHz		



Date: 21.FEB.2014 13:03:30

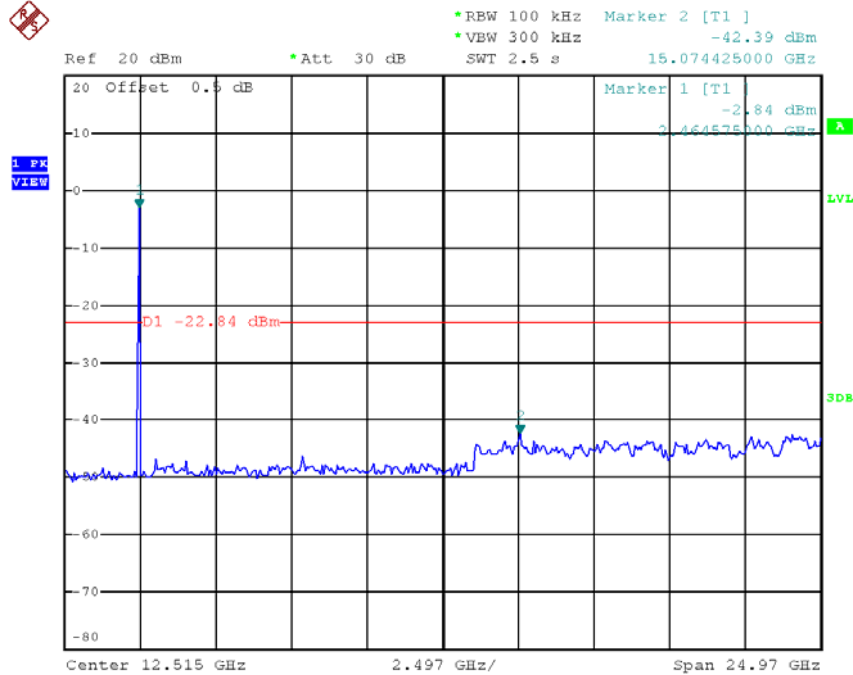


2441 MHz/10 Harmonic of the frequency



Date: 21.FEB.2014 13:05:35

2480 MHz/10 Harmonic of the frequency



Date: 21.FEB.2014 13:07:11



6 EUT TEST PHOTO

Radiated spurious emission test photos

