



RF TEST REPORT

Product Name: wireless mouse

Model Name: M203, M203pro, M204, M205, M206pro, M207, M208pro, M209, M209pro

FCC ID: 2BF2L-M203

Issued For : Shenzhen MiGueR Technology Co.LTD

1501A, Liantai Building, No.3, Zizhu Sixth Road, Zhulin Community, Xiangmihu Street, Futian District, Shenzhen

Issued By : Shenzhen LGT Test Service Co., Ltd.

Room 205, Building 13, Zone B, Chen Hsong Industrial Park, No.177 Renmin West Road, Jinsha Community, Kengzi Street, Pingshan New District, Shenzhen, China

Report Number: LGT24C164RF02

Sample Received Date: Mar. 28, 2024

Date of Test: Mar. 28, 2024 – Apr. 29, 2024

Date of Issue: Apr. 29, 2024

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TEST REPORT CERTIFICATION

Applicant: Shenzhen MiGueR Technology Co.LTD
Address: 1501A, Liantai Building, No.3, Zizhu Sixth Road, Zhulin Community, Xiangmihu Street, Futian District, Shenzhen

Manufacturer: Huizhou Binghai Intelligent Electrical Appliance Co.,Ltd
Address: No. 158, Mingyue 2nd Road, Shiwan Town, Boluo County, Huizhou City, Guangdong Province, China

Product Name: wireless mouse

Trademark: mbule

Model Name: M203, M203pro, M204, M205, M206pro, M207, M208pro, M209, M209pro

Sample Status: Normal

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC Part 15.249, Subpart C ANSI C63.10-2013	PASS

Prepared by:

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Vita Li

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Technical Director





Table of Contents

	Page
1. SUMMARY OF TEST RESULTS	5
1.1 TEST FACTORY	6
1.2 MEASUREMENT UNCERTAINTY	6
2. GENERAL INFORMATION	7
2.1 GENERAL DESCRIPTION OF THE EUT	7
2.2 DESCRIPTION OF THE TEST MODES	8
2.3 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS	9
2.4 EQUIPMENTS LIST	10
3. EMC EMISSION TEST	11
3.1 CONDUCTED EMISSION MEASUREMENT	11
3.2 TEST PROCEDURE	12
3.3 TEST SETUP	12
3.4 EUT OPERATING CONDITIONS	12
3.5 TEST RESULTS	13
4. RADIATED EMISSION MEASUREMENT	15
4.1 RADIATED EMISSION LIMITS	15
4.2 TEST PROCEDURE	16
4.3 TEST SETUP	17
4.4 EUT OPERATING CONDITIONS	17
4.5 FIELD STRENGTH CALCULATION	18
4.6 TEST RESULTS	19
4.7 TEST RESULTS (BAND EDGE REQUIREMENTS)	25
5. BANDWIDTH TEST	27
5.1 TEST PROCEDURE	27
5.2 TEST SETUP	27
5.3 EUT OPERATION CONDITIONS	27
5.4 TEST RESULTS	27
6. ANTENNA REQUIREMENT	29
6.1 STANDARD REQUIREMENT	29
6.2 EUT ANTENNA	29



Revision History

Rev.	Issue Date	Contents
00	Apr. 29, 2024	Initial Issue



1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part 15.249, Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	--
15.249	Radiated Spurious Emission	PASS	--
15.205	Restricted Band Edge Emission	PASS	--
15.215	20dB Bandwidth	Pass	--
15.203	Antenna Requirement	PASS	--

NOTE:

(1) 'N/A' denotes test is not applicable in this Test Report.

(2) All tests are according to ANSI C63.10-2013.



1.1 TEST FACTORY

Company Name:	Shenzhen LGT Test Service Co., Ltd.
Address:	Room 205, Building 13, Zone B, Chen Hsong Industrial Park, No.177 Renmin West Road, Jinsha Community, Kengzi Street, Pingshan New District, Shenzhen, China
Accreditation Certificate	A2LA Certificate No.: 6727.01
	FCC Registration No.: 746540
	CAB ID: CN0136

1.2 MEASUREMENT UNCERTAINTY

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

No.	Item	Uncertainty
1	RF output power, conducted	$\pm 0.68\text{dB}$
2	Unwanted Emissions, conducted	$\pm 2.988\text{dB}$
3	All emissions, radiated 9K-30MHz	$\pm 2.84\text{dB}$
4	All emissions, radiated 30M-1GHz	$\pm 4.39\text{dB}$
5	All emissions, radiated 1G-6GHz	$\pm 5.10\text{dB}$
6	All emissions, radiated>6G	$\pm 5.48\text{dB}$
7	Conducted Emission (9KHz-150KHz)	$\pm 2.79\text{dB}$
8	Conducted Emission (150KHz-30MHz)	$\pm 2.80\text{dB}$



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

Product Name:	wireless mouse										
Trademark:	mbule										
Model Name:	M203										
Series Model:	M203pro, M204, M205, M206pro, M207, M208pro, M209, M209pro										
Model Difference:	Only the model is different.										
Product Description:	<table border="1"><tr><td>Operation Frequency:</td><td>2402~2480 MHz</td></tr><tr><td>Modulation Type:</td><td>GFSK</td></tr><tr><td>Number Of Channel:</td><td>16</td></tr><tr><td>Antenna Type:</td><td>PCB Antenna</td></tr><tr><td>Antenna Gain (dBi):</td><td>-1.52dBi</td></tr></table>	Operation Frequency:	2402~2480 MHz	Modulation Type:	GFSK	Number Of Channel:	16	Antenna Type:	PCB Antenna	Antenna Gain (dBi):	-1.52dBi
Operation Frequency:	2402~2480 MHz										
Modulation Type:	GFSK										
Number Of Channel:	16										
Antenna Type:	PCB Antenna										
Antenna Gain (dBi):	-1.52dBi										
Channel List:	Please refer to the Note 3.										
Rating:	Input: DC 5V										
Battery:	Capacity: 250mAh Rated Voltage: 3.7V										
Hardware Version:	N/A										
Software Version:	N/A										
Connecting I/O Port(s):	Please refer to the Note 1.										

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User Manual.
2. The antenna information refers to the manufacturer provide report, applicable only to the tested sample identified in the report. Due to the incorrect antenna information, a series of problems such as the accuracy of the test results will be borne by the customer.



Channel List	
Channel	Frequency (MHz)
00	2402
01	2404
02	2410
03	2412
04	2418
05	2428
06	2432
07	2440
08	2448
09	2450
10	2454
11	2464
12	2468
13	2470
14	2476
15	2480

2.2 DESCRIPTION OF THE TEST MODES

For conducted test items and radiated spurious emissions

Each of these EUT operation mode(s) or test configuration mode(s) mentioned below was evaluated respectively.

Worst Mode	Description	Data/Modulation
Mode 1	TX CH00(2402MHz)	GFSK
Mode 2	TX CH07(2440MHz)	GFSK
Mode 3	TX CH15(2480MHz)	GFSK

Note:

- (1) All above mode has been measurement, only worst data was reported.
- (2) We have been tested for all available U.S. voltage and frequency (For 120V, 50/60Hz and 240V, 50/60Hz) for which the device is capable of operation, and the worst case of 120V/60Hz is shown in the report.
- (3) The battery is fully-charged during the radiated and RF conducted test.



2.3 DESCRIPTION OF NECESSARY ACCESSORIES AND 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.

Accessories Equipment

Description	Manufacturer	Model	S/N	Rating

Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating
Laptop	Lenovo	HKF-16	N/A	N/A
Adapter	Tenpao	S005CAU05001 00	N/A	Input: 100-240V ~ 50/60Hz 0.2A Output: 5V, 1A
USB-A to USB-C Cable	UGREEN	US287	N/A	1m, shielded, without ferrite core
USB extension cable	N/A	N/A	N/A	N/A

Note:

- (1) For detachable type I/O cable should be specified the length in cm in «Length» column.
- (2) "YES" is means "with core"; "NO" is means "without core".



2.4 EQUIPMENTS LIST

Conducted Emission					
Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Until
EMI Test Receiver	R&S	ESU8	100372	2024.03.09	2025.03.08
LISN	COM-POWER	LI-115	02032	2024.03.09	2025.03.08
LISN	SCHWARZBECK	NNLK 8122	00160	2024.03.09	2025.03.08
Transient Limiter	CYBERTEK	EM5010A	E2250100049	2024.03.09	2025.03.08
Temperature & Humidity	KTJ	TA218B	N.A	2024.03.09	2025.03.08
Testing Software	EMC-I_V1.4.0.3_SKET				

Radiated Test equipment					
Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Until
EMI Test Receiver	R&S	ESU8	100372	2024.03.09	2025.03.08
Active loop Antenna	ETS	6502	00049544	2023.10.13	2025.10.12
Spectrum Analyzer	Keysight	N9010B	MY60242508	2023.08.14	2024.08.13
Bilog Antenna(30M-1G)	SCHWARZBECK	VULB 9168	2705	2022.12.12	2025.12.11
Horn Antenna(1-18G)	SCHWARZBECK	3115	10SL0060	2022.06.02	2025.06.01
Horn Antenna(18-40G)	A-INFO	LB-180400-KF	J211060273	2022.06.08	2025.06.07
Pre-amplifier(30M-1G)	EMtrace	RP01A	02019	2024.03.09	2025.03.08
Pre-amplifier(1-26.5G)	Agilent	8449B	3008A4722	2024.03.09	2025.03.08
Pre-amplifier(18-40G)	com-mw	LNPA_18-40-01	18050003	2024.03.09	2025.03.08
Wireless Communications Test Set	R&S	CMW 500	137737	2024.03.09	2025.03.08
Temperature & Humidity	JINGCHUANG	BT-3	N.A	2024.03.11	2025.03.10
Testing Software	EMC-I_V1.4.0.3_SKET				

RF Conducted Test equipment					
Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Until
Signal Analyzer	Keysight	N9010B	MY60242508	2023.08.14	2024.08.13
Signal Analyzer	Keysight	N9020A	MY50530994	2024.03.09	2025.03.08
RF Automatic Test system	MW	MW100-RFCB	MW220322LG-033	2024.03.09	2025.03.08
MXG Vector Signal Generator	Keysight	N5182B	MY59100717	2024.03.09	2025.03.08
Temperature& Humidity test chamber	AISRY	LX-1000L	171200018	2024.03.09	2025.03.08
Attenuator	eastsheep	90db	N.A	2024.03.09	2025.03.08
Temperature & Humidity	JINGCHUANG	BT-3	N.A	2024.03.11	2025.03.10
Digital multimeter	MASTECH	MS8261	MBGBC83053	2024.03.09	2025.03.08
Testing Software	MTS8310_V2.0.0.0_MW				



3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION LIMITS

The radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table.

FREQUENCY (MHz)	Conducted Emission limit (dBuV)	
	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of “ * ” marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

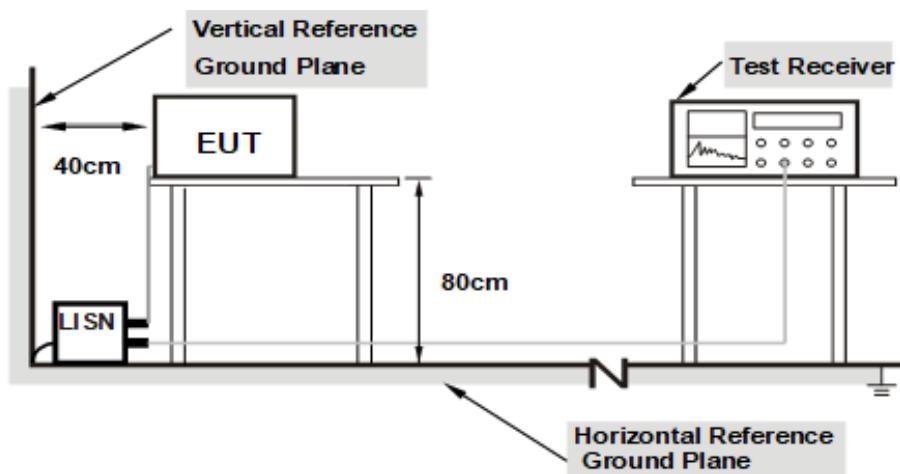
Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz



3.2 TEST PROCEDURE

- a. The EUT is 0.8 m from the horizontal ground plane and 0.4 m from the vertical ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments are powered from additional LISN(s). The LISN provides 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN is at least 80 cm from the nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.3 TEST SETUP



Note:

1. Support units were connected to second LISN.
2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes support units.

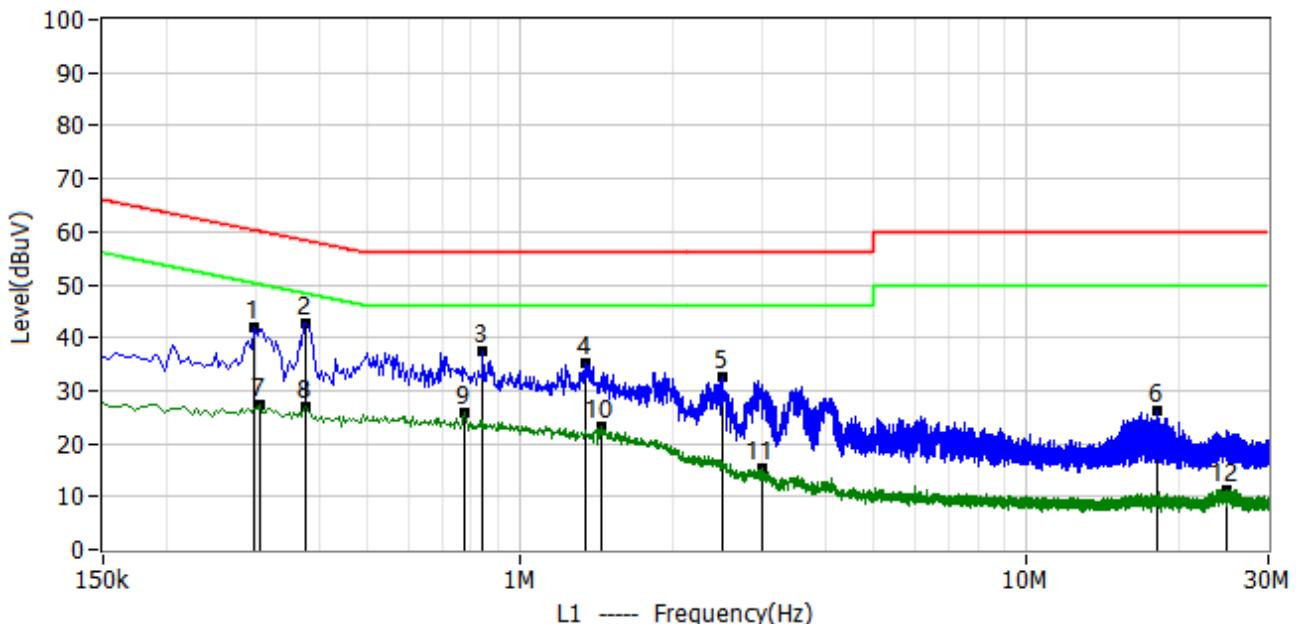
3.4 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.



3.5 TEST RESULTS

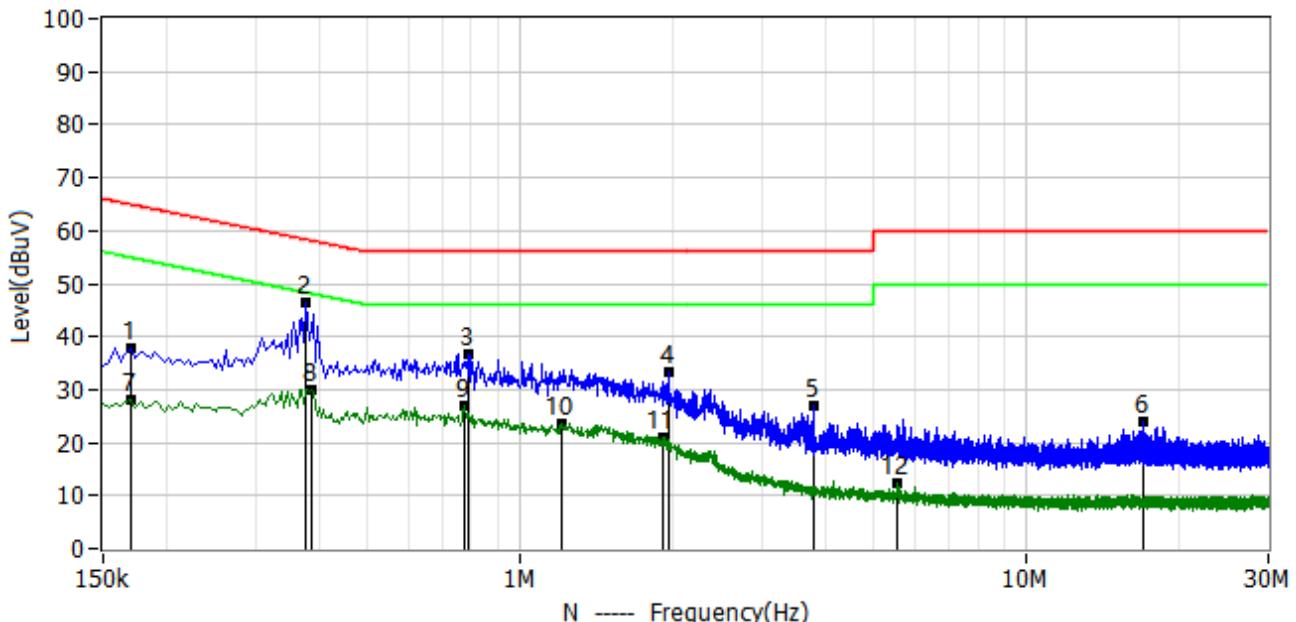
Project: LGT24C164	Test Engineer: LiuH
EUT: wireless mouse	Temperature: 25.5°C
M/N: M203	Humidity: 69%RH
Test Voltage: AC 120V/60Hz	Test Data: 2024-04-02
Test Mode: TX	
Note:	



No.	Frequency MHz	Reading dBuV	Factor dB	Level dBuV	Limit dBuV	Margin dB	Detector	Polar
1*	0.298	31.35	10.49	41.84	60.30	-18.46	QP	L1
2*	0.378	32.35	10.49	42.84	58.32	-15.48	QP	L1
3*	0.842	27.11	10.51	37.62	56.00	-18.38	QP	L1
4*	1.350	24.59	10.59	35.18	56.00	-20.82	QP	L1
5*	2.502	21.95	10.73	32.68	56.00	-23.32	QP	L1
6*	18.150	15.28	11.11	26.39	60.00	-33.61	QP	L1
7*	0.306	16.98	10.49	27.47	50.08	-22.61	AV	L1
8*	0.378	16.36	10.49	26.85	48.32	-21.48	AV	L1
9*	0.778	15.47	10.51	25.98	46.00	-20.02	AV	L1
10*	1.446	12.49	10.61	23.10	46.00	-22.90	AV	L1
11*	3.006	4.43	10.75	15.18	46.00	-30.82	AV	L1
12*	24.930	0.19	11.20	11.39	50.00	-38.61	AV	L1



Project: LGT24C164	Test Engineer: LiuH
EUT: wireless mouse	Temperature: 25.5°C
M/N: M203	Humidity: 69%RH
Test Voltage: AC 120V/60Hz	Test Data: 2024-04-02
Test Mode: TX	
Note:	



No.	Frequency MHz	Reading dBuV	Factor dB	Level dBuV	Limit dBuV	Margin dB	Detector	Polar
1*	0.170	27.43	10.49	37.92	64.96	-27.04	QP	N
2*	0.378	35.91	10.49	46.40	58.32	-11.93	QP	N
3*	0.786	26.37	10.51	36.88	56.00	-19.12	QP	N
4*	1.966	22.63	10.71	33.34	56.00	-22.66	QP	N
5*	3.790	16.24	10.77	27.01	56.00	-28.99	QP	N
6*	17.014	12.66	11.15	23.81	60.00	-36.19	QP	N
7*	0.170	17.66	10.49	28.15	54.96	-26.81	AV	N
8*	0.386	19.60	10.49	30.09	48.15	-18.06	AV	N
9*	0.778	16.32	10.51	26.83	46.00	-19.17	AV	N
10*	1.202	13.00	10.56	23.56	46.00	-22.44	AV	N
11*	1.906	10.44	10.70	21.14	46.00	-24.86	AV	N
12*	5.538	1.47	10.82	12.29	50.00	-37.71	AV	N



4. RADIATED EMISSION MEASUREMENT

4.1 RADIATED EMISSION LIMITS

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on Part 15.249, Part 15.209(a) limit in the table below has to be followed.

Standard FCC 15.209

Frequencies (MHz)	Field Strength (micorvolts/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
960~1000	500	3
Above 1000	Other:74.0 dB(μ V)/m (Peak) 54.0 dB(μ V)/m (Average)	3

Standard FCC 15.249

Frequency of Emission (MHz)	Field Strength of fundamental (millivolts /meter)	Field Strength of Harmonics (microvolts/meter)
900~928	50	500
2400~2483.5	50	500
5725~5875	50	500
24000~242500	250	2500

Notes:

- (1) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Spectrum Parameter	Setting
Detector	Peak/AV
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB (emission in restricted band)	>20BW
VB (emission in restricted band)	=3xRB



Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz / RB 200Hz for PK & AV
	90kHz~110kHz / RB 200Hz for QP
	110kHz~490kHz / RB 200Hz for PK & AV
	490kHz~30MHz / RB 9kHz for QP
	30MHz~1000MHz / RB 120kHz for QP

4.2 TEST PROCEDURE

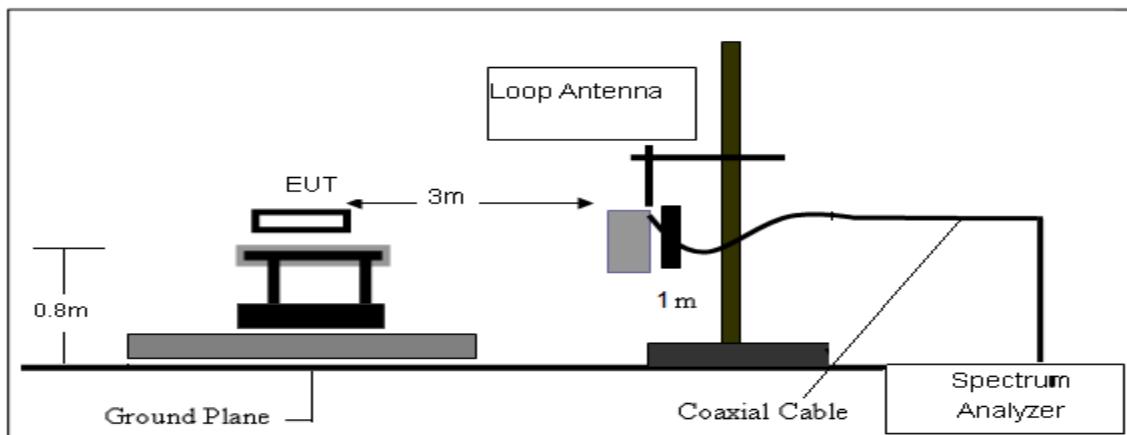
- a. The measuring distance at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz, and above 1GHz.
- b. The EUT was placed on the top of a rotating table 0.8 m (above 1GHz is 1.5 m) above the ground at a 3 m anechoic chamber test site. The table was rotated 360 degree to determine the position of the highest radiation.
- c. The height of the equipment shall be 0.8 m (above 1GHz is 1.5 m); the height of the test antenna shall vary between 1 m to 4 m. Horizontal and vertical polarization of the antenna are set to make the measurement.
- d. 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 QuasiPeak detector mode will be re-measured.
- e. If the Peak Mode measured value is compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and no additional QP Mode measurement was performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

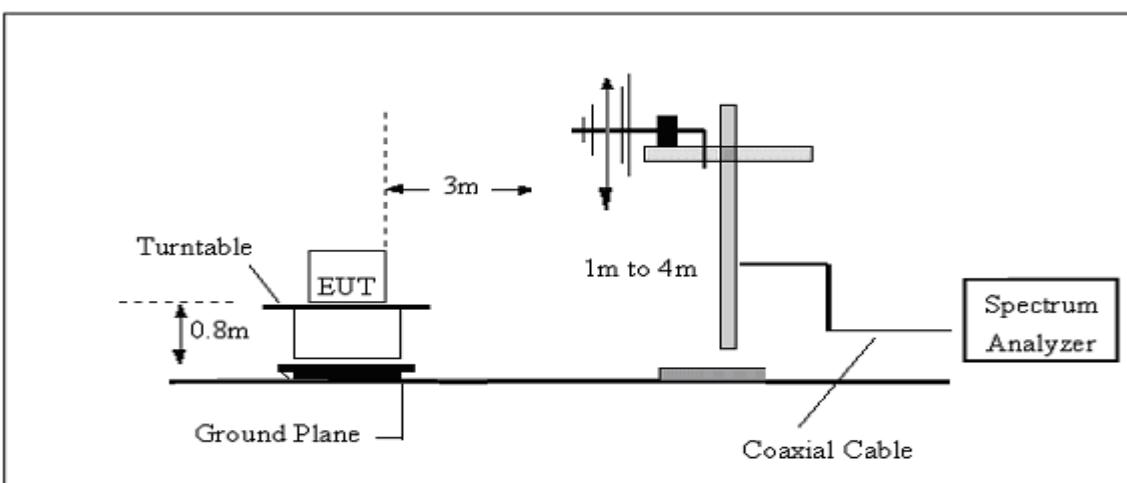
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

4.3 TEST SETUP

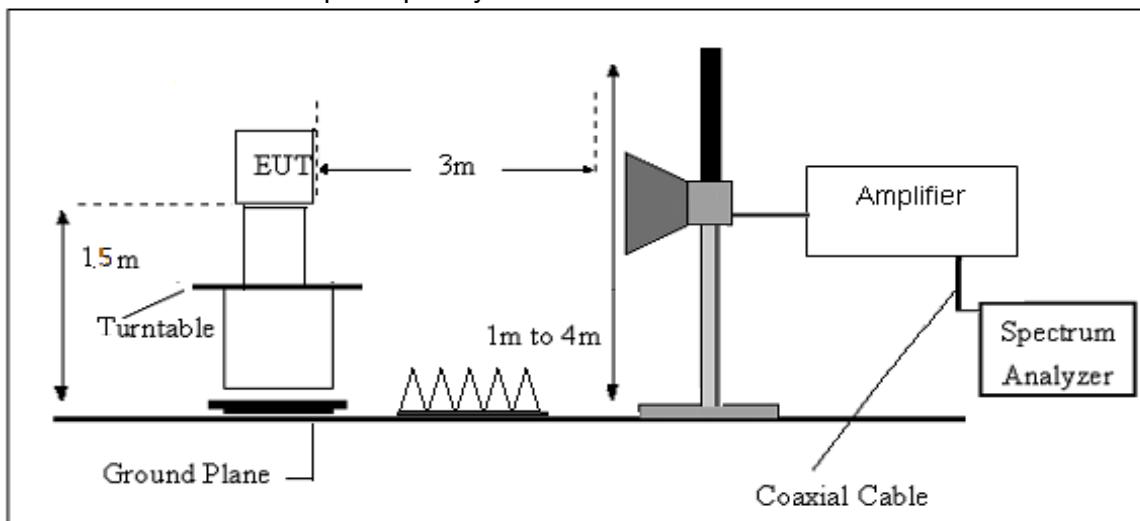
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



4.4 EUT OPERATING CONDITIONS

Please refer to section 3.4 of this report.



4.5 FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where

FS = Field Strength

CL = Cable Attenuation Factor (Cable Loss)

RA = Reading Amplitude

AG = Amplifier Gain

AF = Antenna Factor

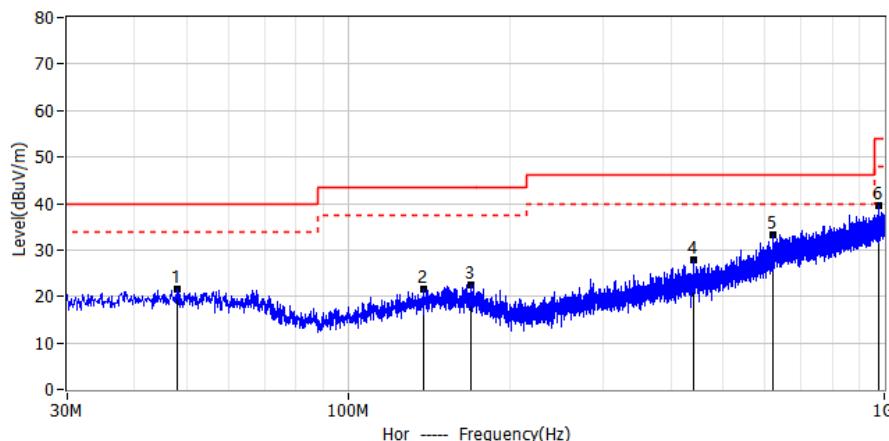
For example

Frequency (MHz)	FS (dB μ V/m)	RA (dB μ V/m)	AF (dB)	CL (dB)	AG (dB)	Factor (dB)
300	40	58.1	12.2	1.6	31.9	-18.1

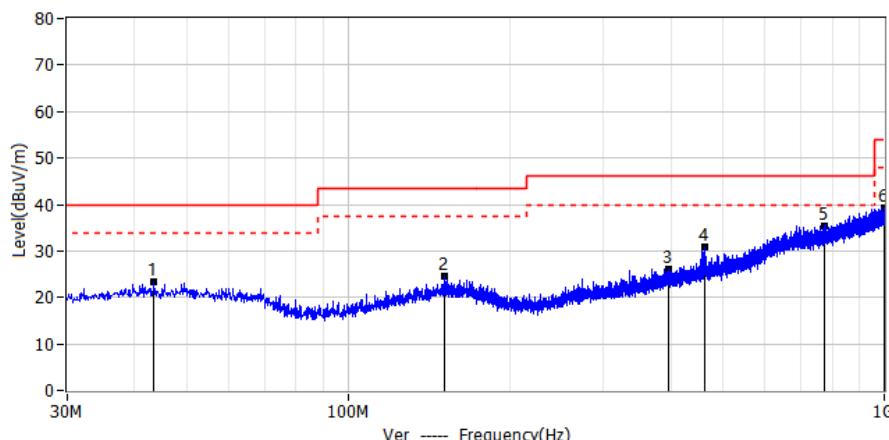
Factor=AF+CL-AG

4.6 TEST RESULTS

Project: LGT24C164	Test Engineer: Xiangdong Ma
EUT: wireless mouse	Temperature: 28.6°C
M/N: M203	Humidity: 50%RH
Test Voltage: DC 5V	Test Data: 2024-04-08
Test Mode: TX	
Note:	



No.	Frequency MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	48.188	2.25	19.31	21.56	40.00	-18.40	QP	Hor
2*	138.519	2.48	18.97	21.45	43.50	-22.10	QP	Hor
3*	169.195	2.69	19.79	22.48	43.50	-21.00	QP	Hor
4*	440.189	4.25	23.57	27.82	46.00	-18.20	QP	Hor
5*	619.518	4.76	28.40	33.16	46.00	-12.80	QP	Hor
6*	974.416	5.05	34.43	39.48	54.00	-14.50	QP	Hor

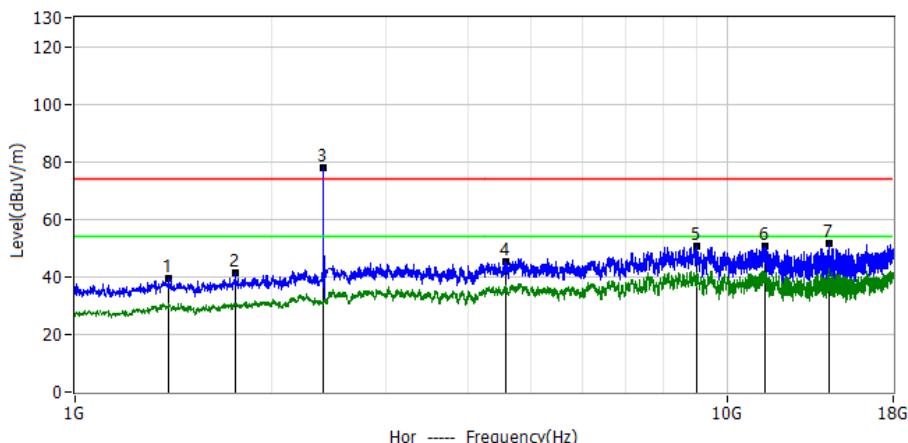


No.	Frequency MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	43.459	4.00	19.27	23.27	40.00	-16.73	QP	Ver
2*	151.129	4.47	19.97	24.44	43.50	-19.06	QP	Ver
3*	395.933	3.27	22.72	25.99	46.00	-20.01	QP	Ver
4*	463.833	6.65	24.17	30.82	46.00	-15.18	QP	Ver
5*	774.960	4.52	30.85	35.37	46.00	-10.63	QP	Ver
6*	999.030	4.79	34.57	39.36	54.00	-14.64	QP	Ver

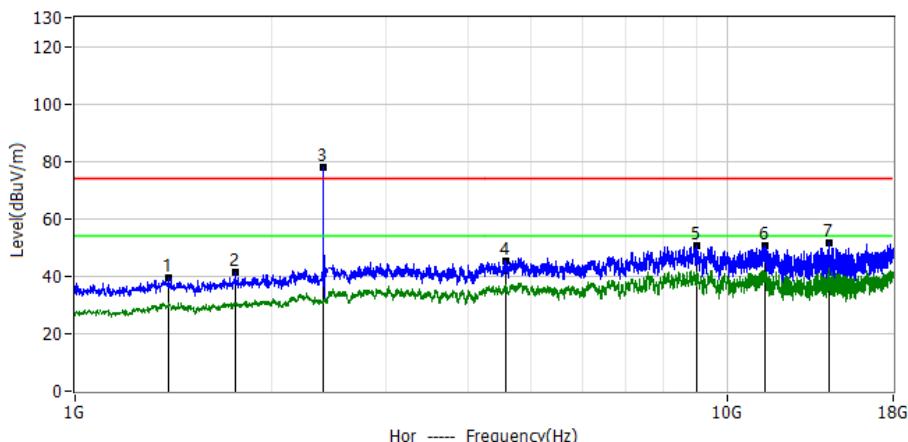


Above 1G Radiation Spurious

Project: LGT24C164	Test Engineer: Xiangdong Ma
EUT: wireless mouse	Temperature: 25°C
M/N: M203	Humidity: 55%RH
Test Voltage: DC 5V	Test Data: 2024-04-28
Test Mode: TX 2402	
Note: Worst Case	



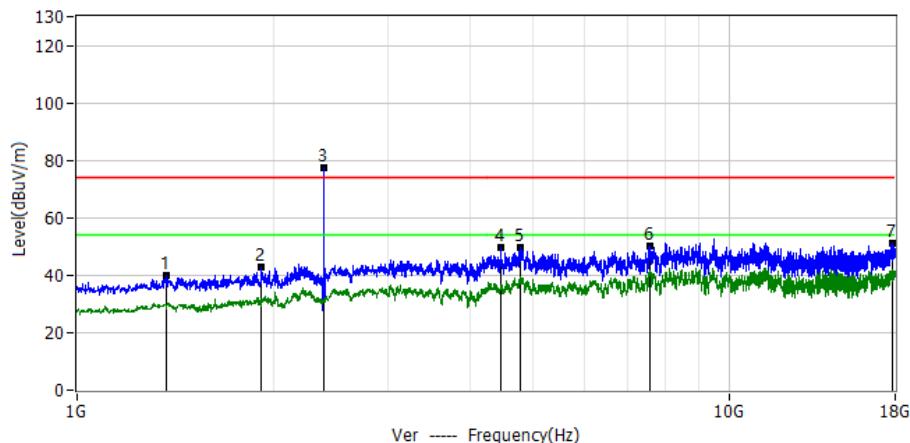
No.	Frequency MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	1391.0000	60.79	-21.54	39.25	74.00	-34.80	PK	Hor
2*	1760.7000	59.95	-18.79	41.16	74.00	-32.80	PK	Hor
!3*	2402.6000	90.23	-12.29	77.94	-	-	PK	Hor
4*	4580.6000	51.87	-6.58	45.29	74.00	-28.70	PK	Hor
5*	9007.0000	54.09	-3.67	50.42	74.00	-23.60	PK	Hor
6*	11463.5000	52.34	-1.83	50.51	74.00	-23.50	PK	Hor
7*	14359.9000	50.93	0.72	51.65	74.00	-22.40	PK	Hor



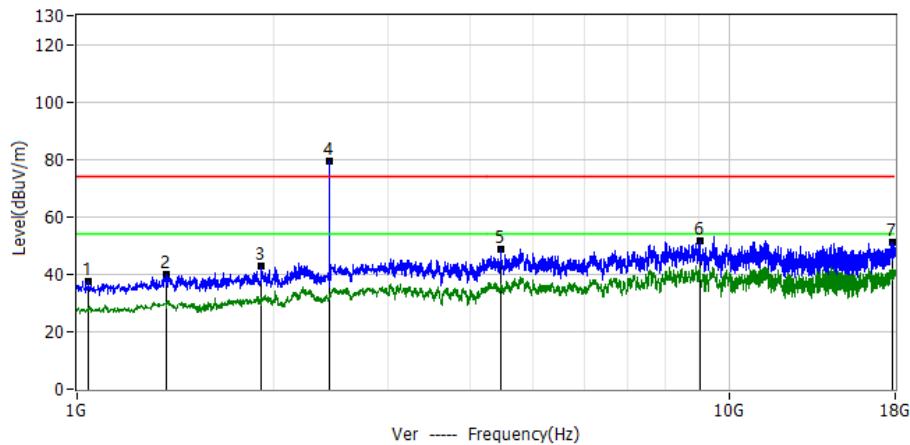
No.	Frequency MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	1391.0000	60.79	-21.54	39.25	74.00	-34.80	PK	Hor
2*	1760.7000	59.95	-18.79	41.16	74.00	-32.80	PK	Hor
!3*	2402.6000	90.09	-12.29	77.80	-	-	PK	Hor
4*	4580.6000	51.87	-6.58	45.29	74.00	-28.70	PK	Hor
5*	9007.0000	54.09	-3.67	50.42	74.00	-23.60	PK	Hor
6*	11463.5000	52.34	-1.83	50.51	74.00	-23.50	PK	Hor
7*	14359.9000	50.93	0.72	51.65	74.00	-22.40	PK	Hor



Project: LGT24C164	Test Engineer: Xiangdong Ma
EUT: wireless mouse	Temperature: 25°C
M/N: M203	Humidity: 55%RH
Test Voltage: DC 5V	Test Data: 2024-04-28
Test Mode: TX 2440	
Note: Worst Case	



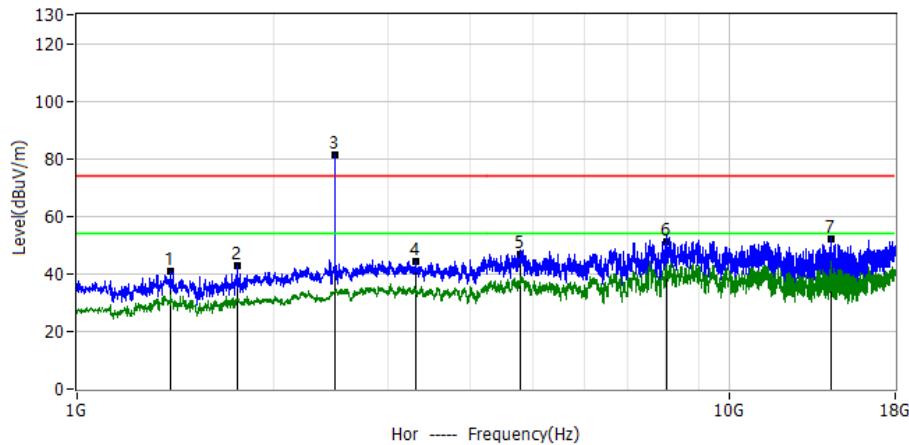
No.	Frequency MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	1369.7000	61.49	-21.70	39.79	74.00	-34.21	PK	Ver
2*	1913.7000	60.21	-17.30	42.91	74.00	-31.09	PK	Ver
!3*	2440.6000	89.65	-11.92	77.73	-	-	PK	Ver
4*	4472.2000	56.49	-6.62	49.87	74.00	-24.13	PK	Ver
5*	4786.7000	56.66	-6.79	49.87	74.00	-24.13	PK	Ver
6*	7570.5000	55.90	-5.66	50.24	74.00	-23.76	PK	Ver
7*	17842.7000	48.96	1.95	50.91	74.00	-23.09	PK	Ver



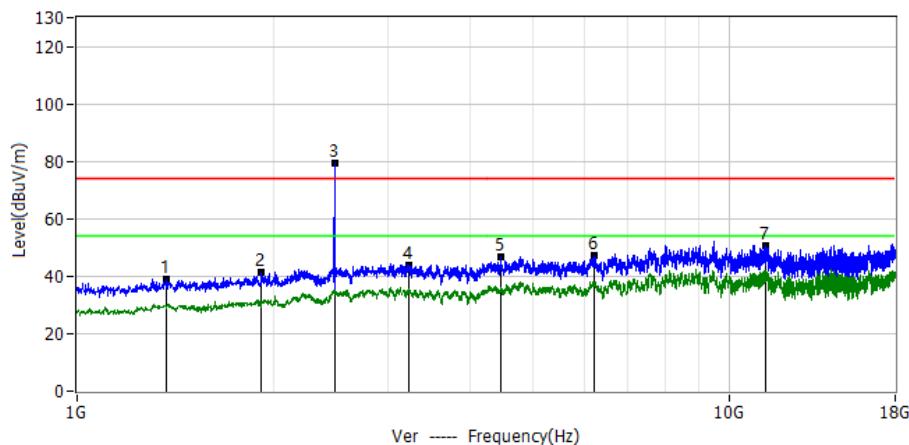
No.	Frequency MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	1040.4000	62.11	-24.40	37.71	74.00	-36.29	PK	Ver
2*	1369.7000	61.86	-21.70	40.16	74.00	-33.84	PK	Ver
3*	1913.7000	60.21	-17.30	42.91	74.00	-31.09	PK	Ver
!4*	2440.7000	91.13	-11.92	79.21	-	-	PK	Ver
5*	4472.2000	55.21	-6.62	48.59	74.00	-25.41	PK	Ver
6*	9013.4000	55.20	-3.68	51.52	74.00	-22.48	PK	Ver
7*	17842.7000	48.96	1.95	50.91	74.00	-23.09	PK	Ver



Project: LGT24C164	Test Engineer: Xiangdong Ma
EUT: wireless mouse	Temperature: 25°C
M/N: M203	Humidity: 55%RH
Test Voltage: DC 5V	Test Data: 2024-04-28
Test Mode TX 2480	
Note: Worst Case	



No.	Frequency MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	1391.0000	62.43	-21.54	40.89	74.00	-33.11	PK	Hor
2*	1760.7000	61.70	-18.79	42.91	74.00	-31.09	PK	Hor
!3*	2480.5000	92.66	-11.43	81.23	-	-	PK	Hor
4*	3303.5000	53.46	-8.93	44.53	74.00	-29.47	PK	Hor
5*	4780.4000	53.72	-6.78	46.94	74.00	-27.06	PK	Hor
6*	8008.2000	56.64	-5.48	51.16	74.00	-22.84	PK	Hor
7*	14359.9000	51.54	0.72	52.26	74.00	-21.74	PK	Hor



No.	Frequency MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	1369.7000	60.59	-21.70	38.89	74.00	-35.11	PK	Ver
2*	1913.7000	58.86	-17.30	41.56	74.00	-32.44	PK	Ver
!3*	2480.1000	91.08	-11.50	79.58	-	-	PK	Ver
4*	3231.2000	52.90	-8.89	44.01	74.00	-29.99	PK	Ver
5*	4472.2000	53.55	-6.62	46.93	74.00	-27.07	PK	Ver
6*	6225.4000	55.59	-8.22	47.37	74.00	-26.63	PK	Ver
7*	11374.2000	52.56	-1.84	50.72	74.00	-23.28	PK	Ver

Note: 1. In frequency ranges 18~25GHz no any other harmonic emissions detected which are tested to compliance with the limit. No recording in the test report. No any other emissions level which are attenuated less than 20dB below the limit. No recording in the test report.

Average measurement was not performed if peak level lower than average limit. No any other emissions level which are attenuated less than 20dB below the limit. The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part. Hence there no other emissions have been reported.



Duty cycle

Test Graphs

Duty Cycle NVNT 2.4G 2402MHz Ant1



Duty Cycle NVNT 2.4G 2440MHz Ant1



Duty Cycle NVNT 2.4G 2480MHz Ant1





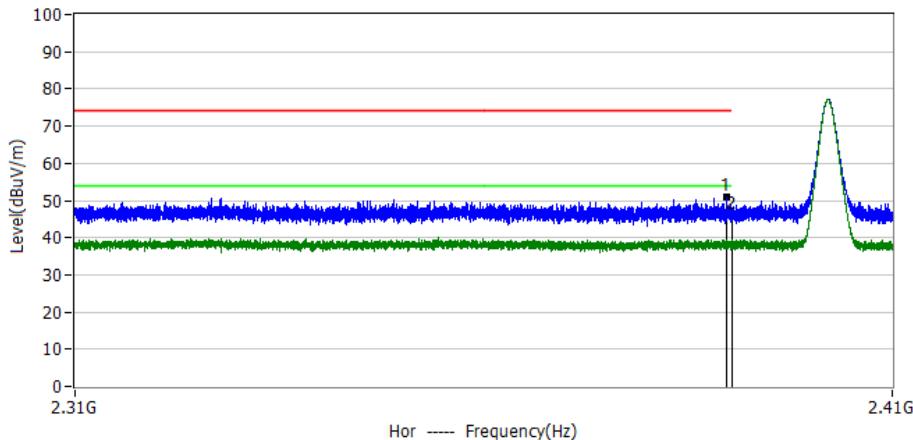
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	2.4G	2402	Ant1	1.46	18.36	17.16
NVNT	2.4G	2440	Ant1	1.46	18.36	17.16
NVNT	2.4G	2480	Ant1	1.46	18.36	17.16

Note: Duty Factor=20*LOG(Ton/Tp)

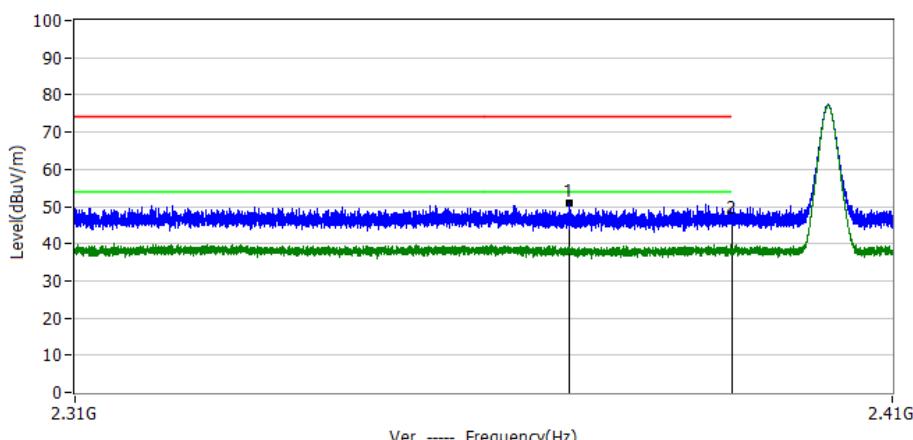


4.7 TEST RESULTS (BAND EDGE REQUIREMENTS)

Project: LGT24C164	Test Engineer: Xiangdong Ma
EUT: wireless mouse	Temperature: 28.6°C
M/N: M203	Humidity: 50%RH
Test Voltage: DC 5V	Test Data: 2024-04-08
Test Mode: 2402	
Note:	



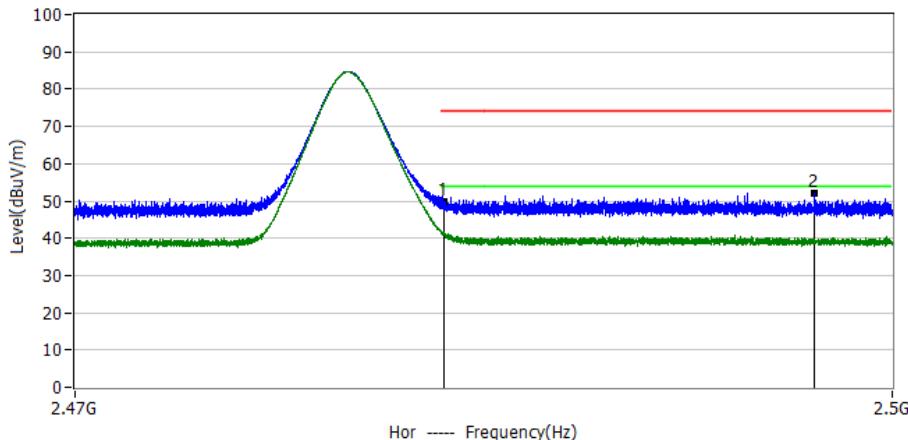
No.	Frequency MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	2389.4000	17.15	33.95	51.10	74.00	-22.90	PK	Hor
2*	2390.0000	11.95	33.95	45.90	74.00	-28.10	PK	Hor



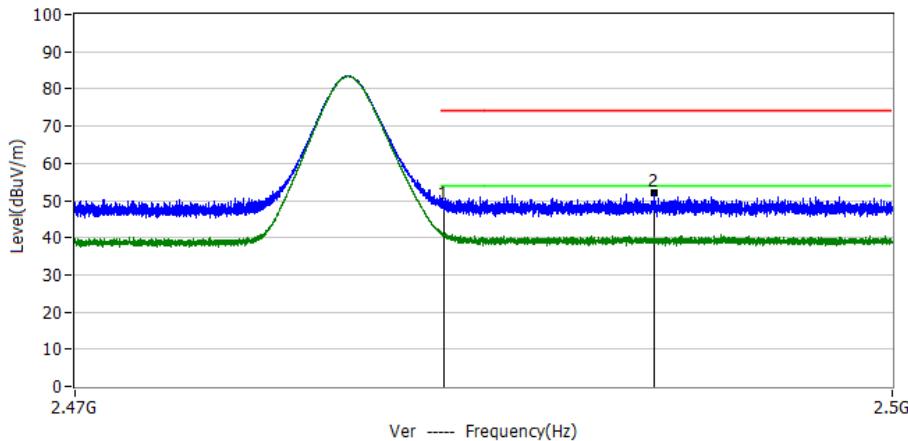
No.	Frequency MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	2370.0000	16.78	34.00	50.78	74.00	-23.22	PK	Ver
2*	2390.0000	12.45	33.95	46.40	74.00	-27.60	PK	Ver



Project: LGT24C164	Test Engineer: Xiangdong Ma
EUT: wireless mouse	Temperature: 28.6°C
M/N: M203	Humidity: 50%RH
Test Voltage: DC 5V	Test Data: 2024-04-08
Test Mode: 2480	
Note:	



No.	Frequency MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	2483.5000	15.57	34.13	49.70	74.00	-24.30	PK	Hor
2*	2497.1000	18.08	34.16	52.24	74.00	-21.76	PK	Hor



No.	Frequency MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	2483.5000	14.57	34.13	48.70	74.00	-25.30	PK	Ver
2*	2491.2000	17.75	34.14	51.89	74.00	-22.11	PK	Ver

Note:

1. Average measurement was not performed if peak level lower than average limit. No any other emissions level which are attenuated less than 20dB below the limit. The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part. Hence there no other emissions have been reported.



5. BANDWIDTH TEST

5.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- Spectrum Setting : RBW= 30KHz, VBW \geq RBW, Sweep time = Auto.

5.2 TEST SETUP

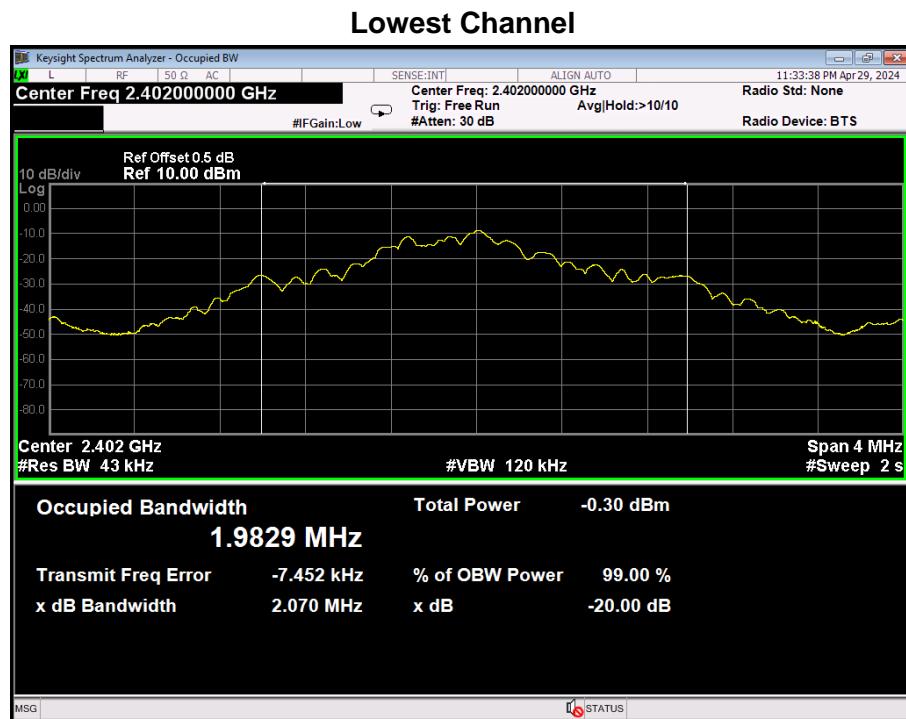


5.3 EUT OPERATION CONDITIONS

TX mode.

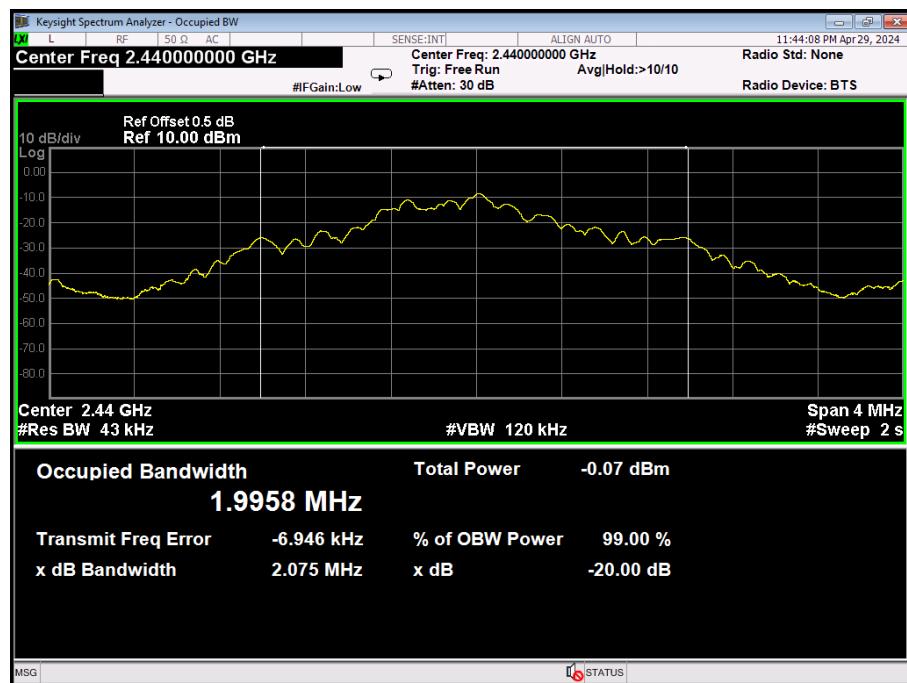
5.4 TEST RESULTS

Condition	Mode	Frequency (MHz)	Antenna	20dB BANDWIDTH (MHz)
NVNT	2.4G	2402	Ant1	2.070
NVNT	2.4G	2440	Ant1	2.075
NVNT	2.4G	2480	Ant1	2.083

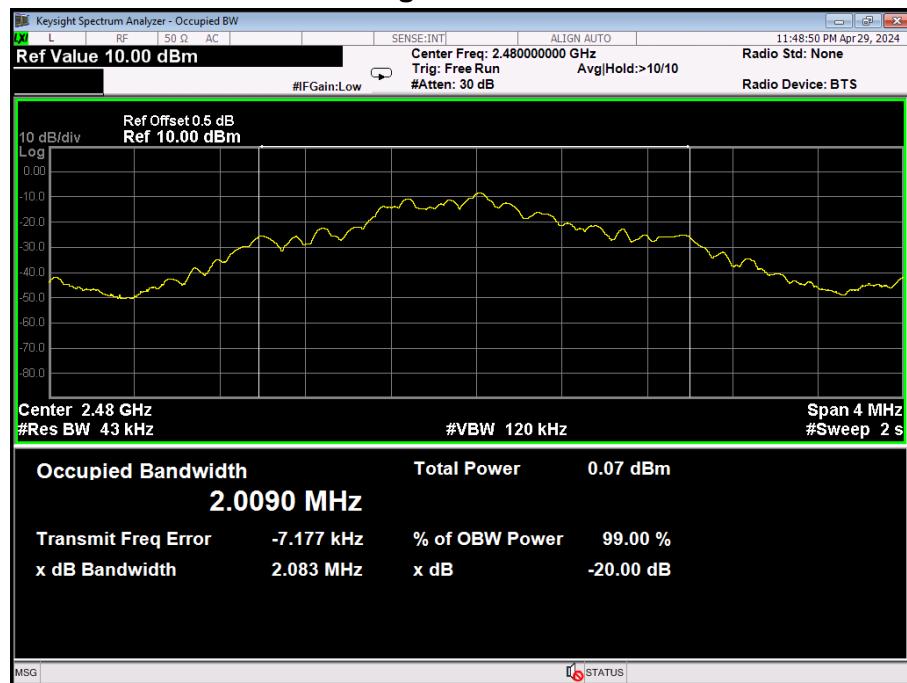




Middle Channel



High Channel





6. ANTENNA REQUIREMENT

6.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

6.2 EUT ANTENNA

The EUT antenna is PCB Antenna. It comply with the standard requirement.

※※※※END OF THE REPORT※※※※