

# FCC Test Report

Product Name	ROG Gladius II Wireless Gaming Mouse
Model No.	P702
FCC ID	EMJMP702

Applicant	Primax Electronics Ltd
Address	669 Ruey Kuang Road Neihu 114, Taipei, Taiwan

Date of Receipt	Jul. 04, 2018
Issued Date	Aug. 15, 2018
Report No.	1870049R-RFUSP15V00
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

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# Test Report

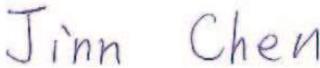
Issued Date: Aug. 15, 2018

Report No.: 1870049R-RFUSP15V00



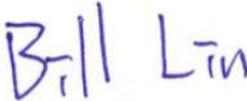
Product Name	ROG Gladius II Wireless Gaming Mouse
Applicant	Primax Electronics Ltd
Address	669 Ruey Kuang Road Neihu 114, Taipei, Taiwan
Manufacturer	Primax Electronics Ltd
Model No.	P702
FCC ID.	EMJMP702
EUT Rated Voltage	DC 3.7V (Power by Battery)
EUT Test Voltage	DC 3.7V (Power by Battery)
Trade Name	ASUS
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2017 ANSI C63.4: 2014, ANSI C63.10: 2013
Test Result	Complied

Documented By :



( Senior Adm. Specialist / Jinn Chen )

Tested By :



( Engineer / Bill Lin )

Approved By :



( Director / Vincent Lin )

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## 1. GENERAL INFORMATION

### 1.1. EUT Description

Product Name	ROG Gladius II Wireless Gaming Mouse
Trade Name	ASUS
Model No.	P702
FCC ID	EMJMP702
Frequency Range	2402~2479MHz
Channel Number	78CH
Type of Modulation	GFSK
Antenna Type	PIFA Antenna
Channel Control	Auto
Antenna Gain	Refer to the table “Antenna List”

#### Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	Primax	651000040370	PIFA Antenna	1.67dBi for 2.4 GHz

Note: The antenna of EUT is conform to FCC 15.203

**Center Frequency of Each Channel:**

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 02:	2402 MHz	Channel 22:	2422 MHz	Channel 42:	2442 MHz	Channel 62:	2462 MHz
Channel 03:	2403 MHz	Channel 23:	2423 MHz	Channel 43:	2443 MHz	Channel 63:	2463 MHz
Channel 04:	2404 MHz	Channel 24:	2424 MHz	Channel 44:	2444 MHz	Channel 64:	2464 MHz
Channel 05:	2405 MHz	Channel 25:	2425 MHz	Channel 45:	2445 MHz	Channel 65:	2465 MHz
Channel 06:	2406 MHz	Channel 26:	2426 MHz	Channel 46:	2446 MHz	Channel 66:	2466 MHz
Channel 07:	2407 MHz	Channel 27:	2427 MHz	Channel 47:	2447 MHz	Channel 67:	2467 MHz
Channel 08:	2408 MHz	Channel 28:	2428 MHz	Channel 48:	2448 MHz	Channel 68:	2468 MHz
Channel 09:	2409 MHz	Channel 29:	2429 MHz	Channel 49:	2449 MHz	Channel 69:	2469 MHz
Channel 10:	2410 MHz	Channel 30:	2430 MHz	Channel 50:	2450 MHz	Channel 70:	2470 MHz
Channel 11:	2411 MHz	Channel 31:	2431 MHz	Channel 51:	2451 MHz	Channel 71:	2471 MHz
Channel 12:	2412 MHz	Channel 32:	2432 MHz	Channel 52:	2452 MHz	Channel 72:	2472 MHz
Channel 13:	2413 MHz	Channel 33:	2433 MHz	Channel 53:	2453 MHz	Channel 73:	2473 MHz
Channel 14:	2414 MHz	Channel 34:	2434 MHz	Channel 54:	2454 MHz	Channel 74:	2474 MHz
Channel 15:	2415 MHz	Channel 35:	2435 MHz	Channel 55:	2455 MHz	Channel 75:	2475 MHz
Channel 16:	2416 MHz	Channel 36:	2436 MHz	Channel 56:	2456 MHz	Channel 76:	2476 MHz
Channel 17:	2417 MHz	Channel 37:	2437 MHz	Channel 57:	2457 MHz	Channel 77:	2477 MHz
Channel 18:	2418 MHz	Channel 38:	2438 MHz	Channel 58:	2458 MHz	Channel 78:	2478 MHz
Channel 19:	2419 MHz	Channel 39:	2439 MHz	Channel 59:	2459 MHz	Channel 79:	2479 MHz
Channel 20:	2420 MHz	Channel 40:	2440 MHz	Channel 60:	2460 MHz		
Channel 21:	2421 MHz	Channel 41:	2441 MHz	Channel 61:	2461 MHz		

Note:

1. The EUT is a ROG Gladius II Wireless Gaming Mouse with a built-in 2.4GHz wireless transceiver.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. These tests are conducted on a sample of the equipment for the purpose of demonstrating compliance of transmitter with Part 15 Subpart C Paragraph 15.249 for spread spectrum devices.
4. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test Mode	Mode 1: Transmit
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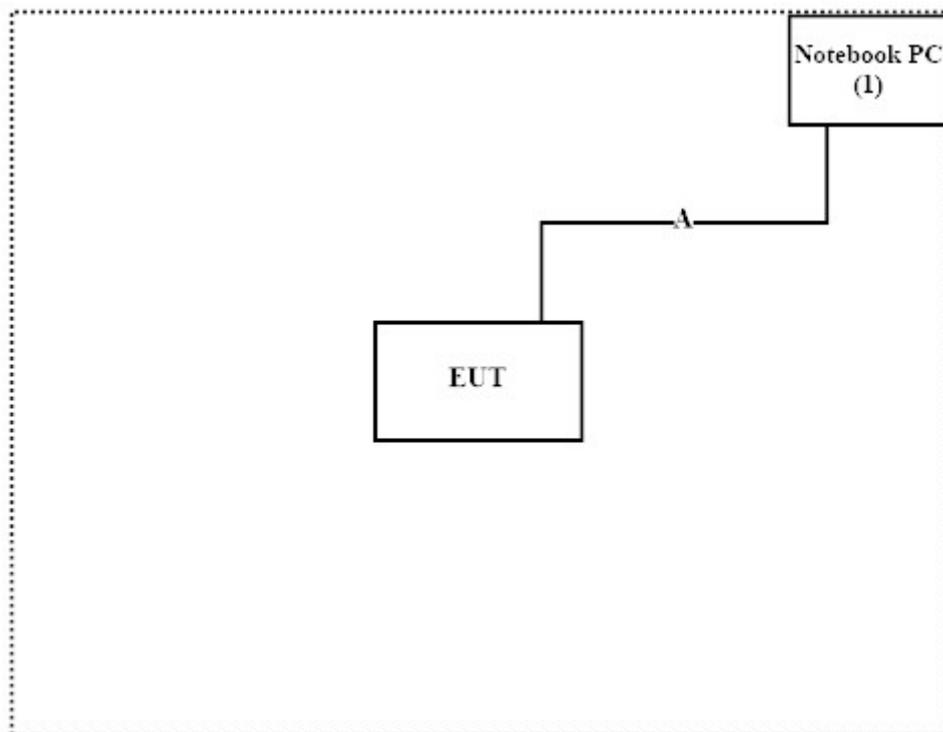
### 1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	Power Cord
1   Notebook PC	DELL	P62G	CY9FJC2	N/A

Signal Cable Type	Signal cable Description
A   Micro USB to USB Cable	Shielded, 0.9m

### 1.4. Configuration of Test System



### 1.5. EUT Exercise Software

- (1) Setup the EUT as shown in Section 1.4.
- (2) Press the test button.
- (3) Configure the test mode and the test channel
- (4) Start the continuous Transmit.
- (5) Verify that the EUT works properly.

## 1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site:

<http://www.dekra.com.tw/english/about/certificates.aspx?bval=5>

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FCC Accreditation Number: TW0023

## 1.7. List of Test Equipment

### For Conduction measurements /ASR1

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	EMI Test Receiver	R&S	ESR7	101601	2018.02.08	2019.02.07
X	Two-Line V-Network	R&S	ENV216	101306	2018.03.09	2019.03.08
X	Two-Line V-Network	R&S	ENV216	101307	2018.03.20	2019.03.19
X	Coaxial Cable	Quietek	RG400_BNC	RF001	2018.05.24	2019.05.23

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with "X" are used to measure the final test results.
3. Test Software version : QuieTek EMI 2.0 V2.1.113

### For Conducted measurements /ASR4

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	Spectrum Analyzer	R&S	FSV30	103464	2018.01.23	2019.01.22
	Power Meter	Anritsu	ML2496A	1548003	2017.12.11	2018.12.10
	Power Sensor	Anritsu	MA2411B	1531024	2017.12.11	2018.12.10
	Power Sensor	Anritsu	MA2411B	1531025	2017.12.11	2018.12.10
	Bluetooth Tester	R&S	CBT	101238	2018.01.18	2019.01.17

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with "X" are used to measure the final test results.
3. Test Software version : DEKRA Conduction Test System V9.0.1

### For Radiated measurements /ACB1

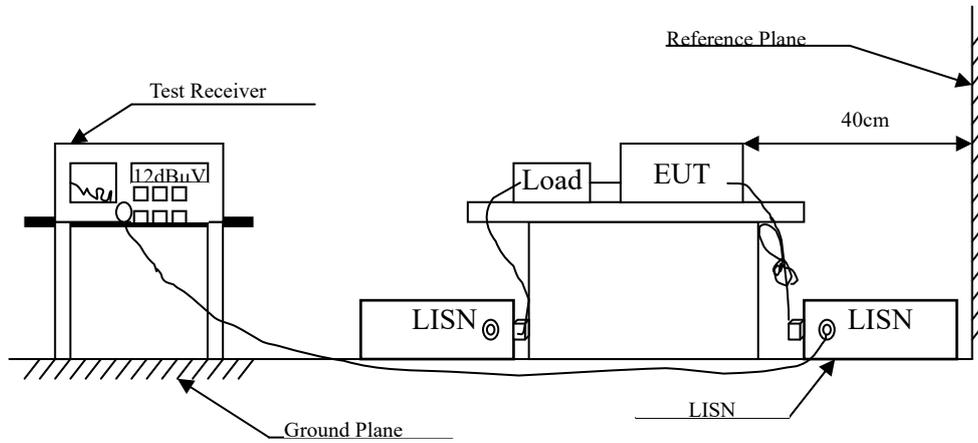
	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	Loop Antenna	AMETEK	HLA6121	49611	2018.01.26	2019.01.25
X	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-674	2018.04.02	2019.04.01
X	Horn Antenna	ETS-Lindgren	3117	00203800	2017.11.10	2018.11.09
X	Horn Antenna	Com-Power	AH-840	101087	2018.06.01	2019.05.31
X	Pre-Amplifier	EMCI	EMC001330	980316	2018.06.01	2019.05.31
X	Pre-Amplifier	EMCI	EMC051835SE	980311	2018.06.04	2019.06.03
X	Pre-Amplifier	EMCI	EMC05820SE	980310	2018.06.04	2019.06.03
X	Pre-Amplifier	EMCI	EMC184045SE	980314	2018.05.16	2019.05.15
X	Filter	MICRO TRONICS	BRM50702	G251	2017.08.30	2018.08.29
	Filter	MICRO TRONICS	BRM50716	G188	2017.08.30	2018.08.29
X	EMI Test Receiver	R&S	ESR7	101602	2017.12.11	2018.12.10
X	Spectrum Analyzer	R&S	FSV40	101148	2018.02.08	2019.02.07
X	Coaxial Cable	SUHNER	SUCOFLEX 106	RF002	2018.05.25	2019.05.24
X	Mircoflex Cable	HUBER SUHNER	SUCOFLEX 102	MY3381/2	2018.05.16	2019.05.15

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with "X" are used to measure the final test results.
3. Test Software version : QuieTek EMI 2.0 V2.1.113

## 2. Conducted Emission

### 2.1. Test Setup



### 2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dB $\mu$ V) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

### 2.3. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

### 2.4. Uncertainty

± 2.35 dB

## 2.5. Test Result of Conducted Emission

Product : ROG Gladius II Wireless Gaming Mouse  
 Test Item : Conducted Emission Test  
 Power Line : Line 1  
 Test Date : 2018/07/26  
 Test Mode : Mode 1: Transmit (2441MHz) \_Charge Mode

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V	Margin dB	Limit dB $\mu$ V
<b>Line 1</b>					
<b>Quasi-Peak</b>					
0.161	9.610	44.688	54.298	-11.388	65.686
0.406	9.624	22.575	32.198	-26.488	58.686
0.496	9.629	28.757	38.386	-17.728	56.114
3.683	9.707	22.504	32.211	-23.789	56.000
10.052	9.840	23.213	33.053	-26.947	60.000
18.816	9.964	12.996	22.960	-37.040	60.000
<b>Average</b>					
0.161	9.610	28.019	37.629	-18.057	55.686
0.406	9.624	8.943	18.567	-30.119	48.686
0.496	9.629	14.618	24.247	-21.867	46.114
3.683	9.707	12.914	22.621	-23.379	46.000
10.052	9.840	17.666	27.506	-22.494	50.000
18.816	9.964	7.210	17.174	-32.826	50.000

### Note:

1. All Reading Levels are Quasi-Peak and average value.
2. "■" means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : ROG Gladius II Wireless Gaming Mouse  
 Test Item : Conducted Emission Test  
 Power Line : Line 2  
 Test Date : 2018/07/26  
 Test Mode : Mode 1: Transmit (2441MHz) \_Charge Mode

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V	Margin dB	Limit dB $\mu$ V
<b>Line 2</b>					
<b>Quasi-Peak</b>					
0.157	9.602	44.679	54.281	-11.519	65.800
0.263	9.612	29.122	38.734	-24.037	62.771
0.436	9.618	22.902	32.520	-25.309	57.829
3.745	9.708	23.373	33.081	-22.919	56.000
9.908	9.839	19.464	29.303	-30.697	60.000
24.576	10.050	16.534	26.584	-33.416	60.000
<b>Average</b>					
0.157	9.602	28.328	37.930	-17.870	55.800
0.263	9.612	17.558	27.171	-25.600	52.771
0.436	9.618	11.962	21.581	-26.248	47.829
3.745	9.708	12.159	21.867	-24.133	46.000
9.908	9.839	13.266	23.105	-26.895	50.000
24.576	10.050	16.002	26.052	-23.948	50.000

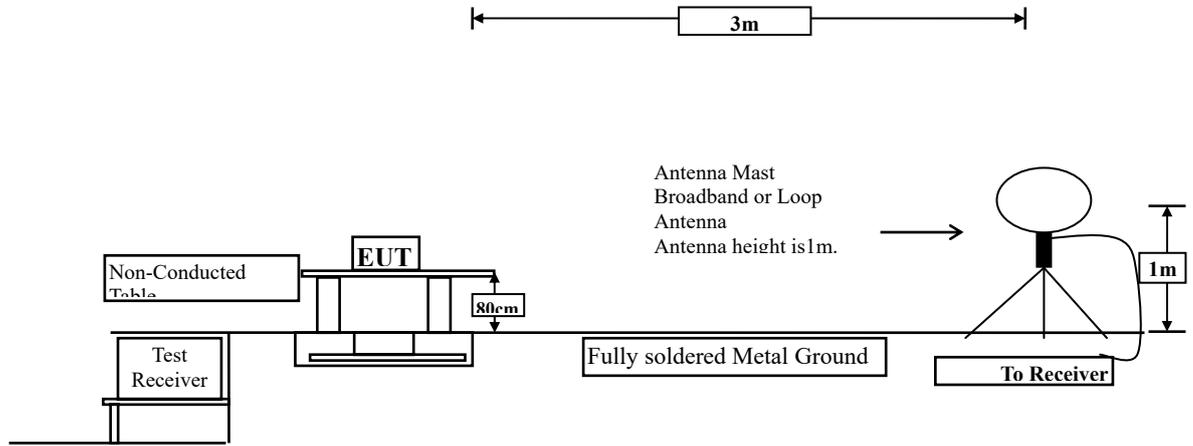
## Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

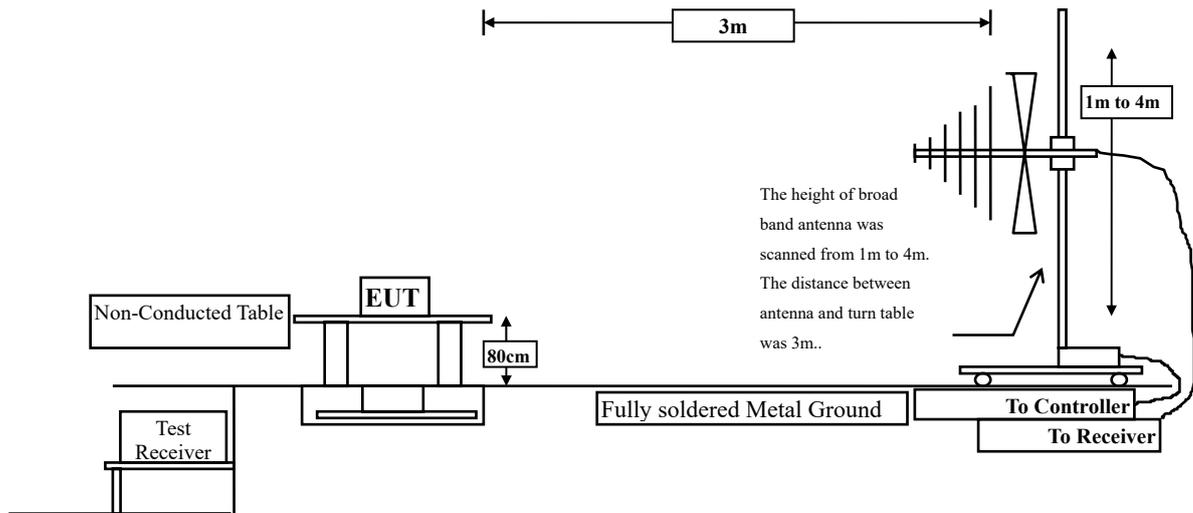
### 3. Radiated Emission

#### 3.1. Test Setup

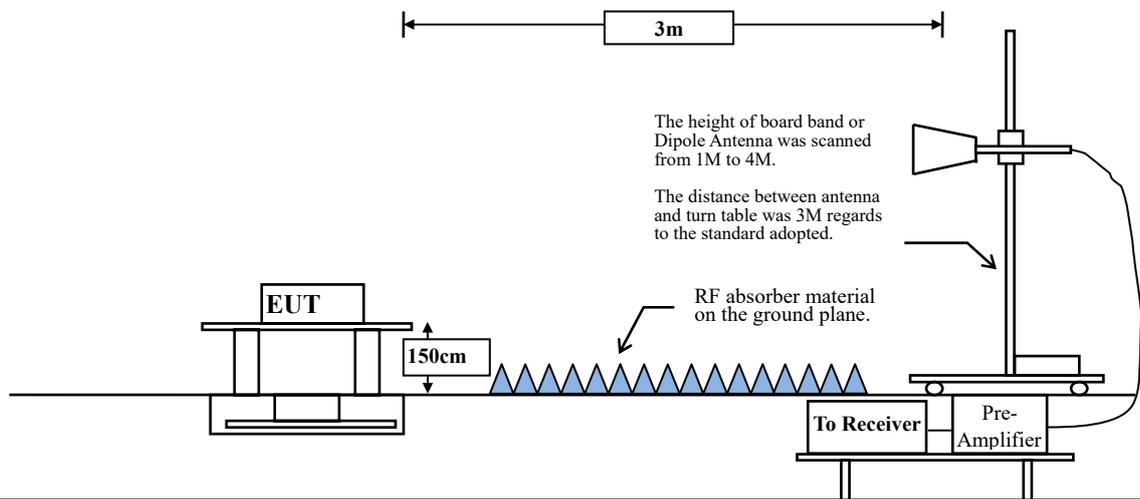
Radiated Emission Under 30MHz



Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



### 3.2. Limits

#### ➤ Fundamental and Harmonics Emission Limits

FCC Part 15 Subpart C Paragraph 15.249 Limits				
Frequency MHz	Field Strength of Fundamental		Field Strength of Harmonics	
	(mV/m @3m)	(dB $\mu$ V /m @3m)	(uV/m @3m)	(dB $\mu$ V /m @3m)
902-928	50	94	500	54
2400-2483.5	50	94	500	54
5725-5875	50	94	500	54

- Remarks :
1. RF Voltage (dB $\mu$ V /m) = 20 log RF Voltage (uV/m)
  2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

#### ➤ General Radiated Emission Limits

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

FCC Part 15 Subpart C Paragraph 15.209(a) Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks: E field strength (dB $\mu$ V /m) = 20 log E field strength (uV/m)

### 3.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested compliance to FCC 47CFR 15.249 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground, when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level.

This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna. The measurement frequency range from 9kHz - 10th Harmonic of fundamental was investigated.

### 3.4. Uncertainty

Horizontal :

30-300MHz:  $\pm 4.08$ dB ; 300M-1GHz:  $\pm 3.86$ dB ; 1-18GHz:  $\pm 3.77$ dB ; 18-40GHz:  $\pm 3.98$ dB ◦

Vertical :

30-300MHz:  $\pm 4.81$ dB ; 300M-1GHz:  $\pm 3.87$ dB ; 1-18GHz:  $\pm 3.83$ dB ; 18-40GHz:  $\pm 3.98$ dB ◦

### 3.5. Test Result of Radiated Emission

Product : ROG Gladius II Wireless Gaming Mouse  
 Test Item : Fundamental Radiated Emission  
 Test Date : 2018/07/21  
 Test Mode : Mode 1: Transmit (X-Axis)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
2402.000	-8.907	103.210	94.304	-19.696	114.000
2441.000	-8.761	102.430	93.670	-20.330	114.000
2479.000	-8.620	103.380	94.760	-19.240	114.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
2402.000	-8.907	94.140	85.234	-28.766	114.000
2441.000	-8.761	95.410	86.650	-27.350	114.000
2479.000	-8.620	93.280	84.660	-29.340	114.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Measurement Level = Reading Level + Correct Factor.
4. Correct Factor = Antenna factor + Cable loss – Amplifier gain.

Frequency MHz	Peak Measurement dB $\mu$ V /m	Duty Cycle Correct Factor dB	Measurement Level dB $\mu$ V /m	Margin dB	Limit dB $\mu$ V /m
<b>Horizontal</b>					
<b>Average Detector:</b>					
2402	94.304	-24.437	69.867	-24.133	94.000
2441	93.67	-24.437	69.233	-24.767	94.000
2479	94.76	-24.437	70.323	-23.677	94.000
<b>Vertical</b>					
<b>Average Detector:</b>					
2402	85.234	-24.437	60.797	-33.203	94.000
2441	86.65	-24.437	62.213	-31.787	94.000
2479	84.66	-24.437	60.223	-33.777	94.000

## Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.

Product : ROG Gladius II Wireless Gaming Mouse  
 Test Item : Fundamental Radiated Emission  
 Test Date : 2018/07/21  
 Test Mode : Mode 1: Transmit (Y-Axis)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V /m	Margin dB	Limit dB $\mu$ V /m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
2402.000	-8.907	99.860	90.954	-23.046	114.000
2441.000	-8.761	98.860	90.100	-23.900	114.000
2479.000	-8.620	99.360	90.740	-23.260	114.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
2402.000	-8.907	103.010	94.104	-19.896	114.000
2441.000	-8.761	102.590	93.830	-20.170	114.000
2479.000	-8.620	101.060	92.440	-21.560	114.000

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Measurement Level = Reading Level + Correct Factor.
4. Correct Factor = Antenna factor + Cable loss – Amplifier gain.

Frequency MHz	Peak Measurement dB $\mu$ V /m	Duty Cycle Correct Factor dB	Measurement Level dB $\mu$ V /m	Margin dB	Limit dB $\mu$ V /m
<b>Horizontal</b>					
<b>Average Detector:</b>					
2402	90.954	-24.437	66.517	-27.483	94.000
2441	90.100	-24.437	65.663	-28.337	94.000
2479	90.740	-24.437	66.303	-27.697	94.000
<b>Vertical</b>					
<b>Average Detector:</b>					
2402	94.104	-24.437	69.667	-24.333	94.000
2441	93.830	-24.437	69.393	-24.607	94.000
2479	92.440	-24.437	68.003	-25.997	94.000

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.

Product : ROG Gladius II Wireless Gaming Mouse  
 Test Item : Fundamental Radiated Emission  
 Test Date : 2018/07/21  
 Test Mode : Mode 1: Transmit (Z-Axis)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
2402.000	-8.907	101.220	92.314	-21.686	114.000
2441.000	-8.761	101.370	92.610	-21.390	114.000
2479.000	-8.620	101.080	92.460	-21.540	114.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
2402.000	-8.907	101.620	92.714	-21.286	114.000
2441.000	-8.761	101.890	93.130	-20.870	114.000
2479.000	-8.620	101.330	92.710	-21.290	114.000

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Measurement Level = Reading Level + Correct Factor.
4. Correct Factor = Antenna factor + Cable loss – Amplifier gain.

Frequency MHz	Peak Measurement dB $\mu$ V /m	Duty Cycle Correct Factor dB	Measurement Level dB $\mu$ V /m	Margin dB	Limit dB $\mu$ V /m
<b>Horizontal</b>					
<b>Average Detector:</b>					
2402	92.314	-24.437	67.877	-26.123	94.000
2441	92.610	-24.437	68.173	-25.827	94.000
2479	92.460	-24.437	68.023	-25.977	94.000
<b>Vertical</b>					
<b>Average Detector:</b>					
2402	92.714	-24.437	68.277	-25.723	94.000
2441	93.130	-24.437	68.693	-25.307	94.000
2479	92.710	-24.437	68.273	-25.727	94.000

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.

Product : ROG Gladius II Wireless Gaming Mouse  
 Test Item : Harmonic Radiated Emission Data  
 Test Date : 2018/07/21  
 Test Mode : Mode 1: Transmit (2402MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V /m	Margin dB	Limit dB $\mu$ V /m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
4804.000	-6.081	54.180	48.099	-25.901	74.000
7206.000	-3.033	59.400	56.367	-17.633	74.000
9608.000	-0.774	46.110	45.337	-28.663	74.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Measurement Level = Reading Level + Correct Factor.
4. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
5. The average measurement was not performed when the peak measured data under the limit of average detection.
6. The emission levels of other frequencies are very lower than the limit and not show in test report.

Frequency MHz	Peak Measurement dB $\mu$ V /m	Duty Cycle Correct Factor dB	Measurement Level dB $\mu$ V /m	Margin dB	Limit dB $\mu$ V /m
<b>Horizontal</b>					
<b>Average Detector:</b>					
4804.000	48.099	-24.437	23.662	-30.338	54.000
7206.000	56.367	-24.437	31.930	-22.070	54.000
9608.000	45.337	-24.437	20.900	-33.100	54.000

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.

Product : ROG Gladius II Wireless Gaming Mouse  
 Test Item : Harmonic Radiated Emission Data  
 Test Date : 2018/07/21  
 Test Mode : Mode 1: Transmit (2402MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V /m	Margin dB	Limit dB $\mu$ V /m
<b>Vertical</b>					
<b>Peak Detector:</b>					
4804.000	-6.081	47.020	40.939	-33.061	74.000
7206.000	-3.033	60.390	57.357	-16.643	74.000
9608.000	-0.774	49.990	49.217	-24.783	74.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Measurement Level = Reading Level + Correct Factor.
4. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
5. The average measurement was not performed when the peak measured data under the limit of average detection.
6. The emission levels of other frequencies are very lower than the limit and not show in test report.

Frequency MHz	Peak Measurement dB $\mu$ V /m	Duty Cycle Correct Factor dB	Measurement Level dB $\mu$ V /m	Margin dB	Limit dB $\mu$ V /m
<b>Vertical</b>					
<b>Average Detector:</b>					
4804.000	40.939	-24.437	16.502	-37.498	54.000
7206.000	57.357	-24.437	32.920	-21.080	54.000
9608.000	49.217	-24.437	24.780	-29.220	54.000

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.

Product : ROG Gladius II Wireless Gaming Mouse  
 Test Item : Harmonic Radiated Emission Data  
 Test Date : 2018/07/21  
 Test Mode : Mode 1: Transmit (2441MHz)

Frequency MHz	Correct Factor Db	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V /m	Margin Db	Limit dB $\mu$ V /m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
4882.000	-6.042	50.440	44.398	-29.602	74.000
7323.000	-2.954	61.260	58.306	-15.694	74.000
9764.000	-0.487	46.530	46.043	-27.957	74.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Measurement Level = Reading Level + Correct Factor.
4. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
5. The average measurement was not performed when the peak measured data under the limit of average detection.
6. The emission levels of other frequencies are very lower than the limit and not show in test report.

Frequency MHz	Peak Measurement dB $\mu$ V /m	Duty Cycle Correct Factor dB	Measurement Level dB $\mu$ V /m	Margin dB	Limit dB $\mu$ V /m
<b>Horizontal</b>					
<b>Average Detector:</b>					
4882.000	44.398	-24.437	19.961	-34.039	54.000
7323.000	58.306	-24.437	33.869	-20.131	54.000
9764.000	46.043	-24.437	21.606	-32.394	54.000

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.

Product : ROG Gladius II Wireless Gaming Mouse  
 Test Item : Harmonic Radiated Emission Data  
 Test Date : 2018/07/21  
 Test Mode : Mode 1: Transmit (2441MHz)

Frequency MHz	Correct Factor Db	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V /m	Margin Db	Limit dB $\mu$ V /m
<b>Vertical</b>					
<b>Peak Detector:</b>					
4882.000	-6.042	51.270	45.228	-28.772	74.000
7323.000	-2.954	62.000	59.046	-14.954	74.000
9764.000	-0.487	46.280	45.793	-28.207	74.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Measurement Level = Reading Level + Correct Factor.
4. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
5. The average measurement was not performed when the peak measured data under the limit of average detection.
6. The emission levels of other frequencies are very lower than the limit and not show in test report.

Frequency MHz	Peak Measurement dB $\mu$ V /m	Duty Cycle Correct Factor dB	Measurement Level dB $\mu$ V /m	Margin dB	Limit dB $\mu$ V /m
<b>Vertical</b>					
<b>Average Detector:</b>					
4882.000	45.228	-24.437	20.791	-33.209	54.000
7323.000	59.046	-24.437	34.609	-19.391	54.000
9764.000	45.793	-24.437	21.356	-32.644	54.000

Note:

1. AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
2. The Duty Cycle is refer to section 5.

Product : ROG Gladius II Wireless Gaming Mouse  
 Test Item : Harmonic Radiated Emission Data  
 Test Date : 2018/07/21  
 Test Mode : Mode 1: Transmit (2479MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V /m	Margin dB	Limit dB $\mu$ V /m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
4958.000	-6.041	53.260	47.219	-26.781	74.000
7437.000	-2.813	62.050	59.237	-14.763	74.000
9916.000	-0.278	45.730	45.452	-28.548	74.000

Note:

- All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- Measurement Level = Reading Level + Correct Factor.
- Correct Factor = Antenna factor + Cable loss – Amplifier gain.
- The average measurement was not performed when the peak measured data under the limit of average detection.
- The emission levels of other frequencies are very lower than the limit and not show in test report.

Frequency MHz	Peak Measurement dB $\mu$ V /m	Duty Cycle Correct Factor dB	Measurement Level dB $\mu$ V /m	Margin dB	Limit dB $\mu$ V /m
<b>Horizontal</b>					
<b>Average Detector:</b>					
4958.000	47.219	-24.437	22.782	-31.218	54.000
7437.000	59.237	-24.437	34.800	-19.200	54.000
9916.000	45.452	-24.437	21.015	-32.985	54.000

Note:

- AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
- The Duty Cycle is refer to section 5.

Product : ROG Gladius II Wireless Gaming Mouse  
 Test Item : Harmonic Radiated Emission Data  
 Test Date : 2018/07/21  
 Test Mode : Mode 1: Transmit (2479MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V /m	Margin dB	Limit dB $\mu$ V /m
<b>Vertical</b>					
<b>Peak Detector:</b>					
4958.000	-6.041	51.300	45.259	-28.741	74.000
7437.000	-2.813	62.090	59.277	-14.723	74.000
9916.000	-0.278	45.040	44.762	-29.238	74.000

Note:

- All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- Measurement Level = Reading Level + Correct Factor.
- Correct Factor = Antenna factor + Cable loss – Amplifier gain.
- The average measurement was not performed when the peak measured data under the limit of average detection.
- The emission levels of other frequencies are very lower than the limit and not show in test report.

Frequency MHz	Peak Measurement dB $\mu$ V /m	Duty Cycle Correct Factor dB	Measurement Level dB $\mu$ V /m	Margin dB	Limit dB $\mu$ V /m
<b>Vertical</b>					
<b>Average Detector:</b>					
4958.000	45.259	-24.437	20.822	-33.178	54.000
7437.000	59.277	-24.437	34.840	-19.160	54.000
9916.000	44.762	-24.437	20.325	-33.675	54.000

Note:

- AVG Measurement=Peak Measurement + Duty Cycle Correct Factor
- The Duty Cycle is refer to section 5.

Product : ROG Gladius II Wireless Gaming Mouse  
 Test Item : General Radiated Emission Data  
 Test Date : 2018/07/26  
 Test Mode : Mode 1: Transmit (2441MHz) \_ Charge Mode

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V /m	Margin dB	Limit dB $\mu$ V /m
<b>Horizontal</b>					
79.203	-15.483	39.982	24.499	-15.501	40.000
198.696	-13.710	46.922	33.212	-10.288	43.500
236.652	-12.455	42.962	30.507	-15.493	46.000
311.159	-10.076	35.853	25.777	-20.223	46.000
633.087	-3.802	31.068	27.267	-18.733	46.000
967.667	0.585	31.221	31.806	-22.194	54.000
<b>Vertical</b>					
38.435	-11.346	37.745	26.398	-13.602	40.000
79.203	-15.483	44.548	29.065	-10.935	40.000
195.884	-13.667	36.773	23.106	-20.394	43.500
239.464	-12.250	43.695	31.444	-14.556	46.000
360.362	-8.943	33.691	24.749	-21.251	46.000
887.536	-0.369	30.919	30.550	-15.450	46.000

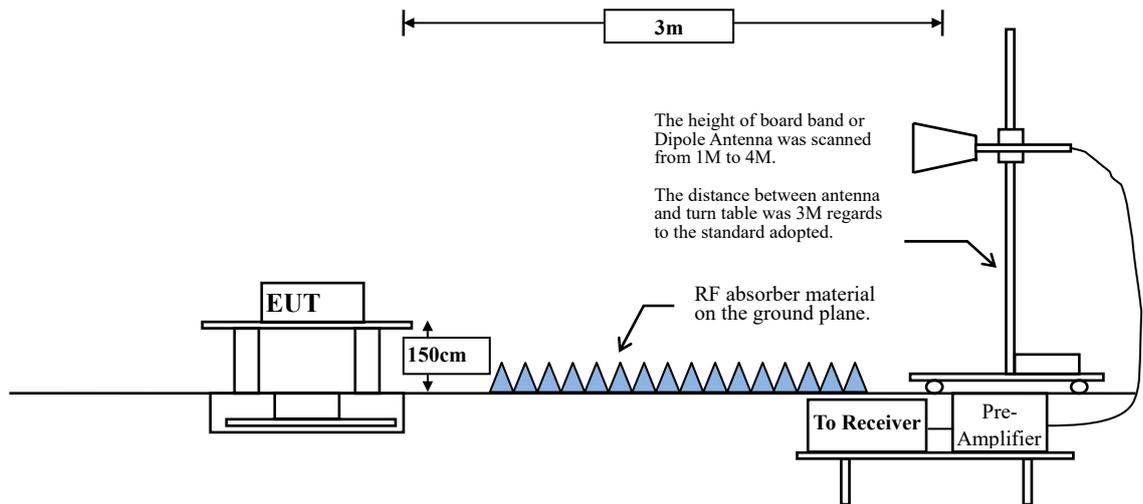
Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Measurement Level = Reading Level + Correct Factor.
4. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
5. The average measurement was not performed when the peak measured data under the limit of average detection.
6. The emission levels of other frequencies are very lower than the limit and not show in test report.
7. No emission found between lowest internal used/generated frequency to 30MHz.

#### 4. Band Edge

##### 4.1. Test Setup

###### RF Radiated Measurement:



##### 4.2. Limits

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

FCC Part 15 Subpart C Paragraph 15.209(a) Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks: E field strength (dBμV /m) = 20 log E field strength (uV/m)

### 4.3. Test Procedure

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

The bandwidth setting below 1GHz and above 1GHz on the field strength meter is 120 kHz and 1MHz, respectively.

### 4.4. Uncertainty

Horizontal polarization : 1-18GHz:  $\pm 3.77$ dB

Vertical polarization : 1-18GHz :  $\pm 3.83$ dB

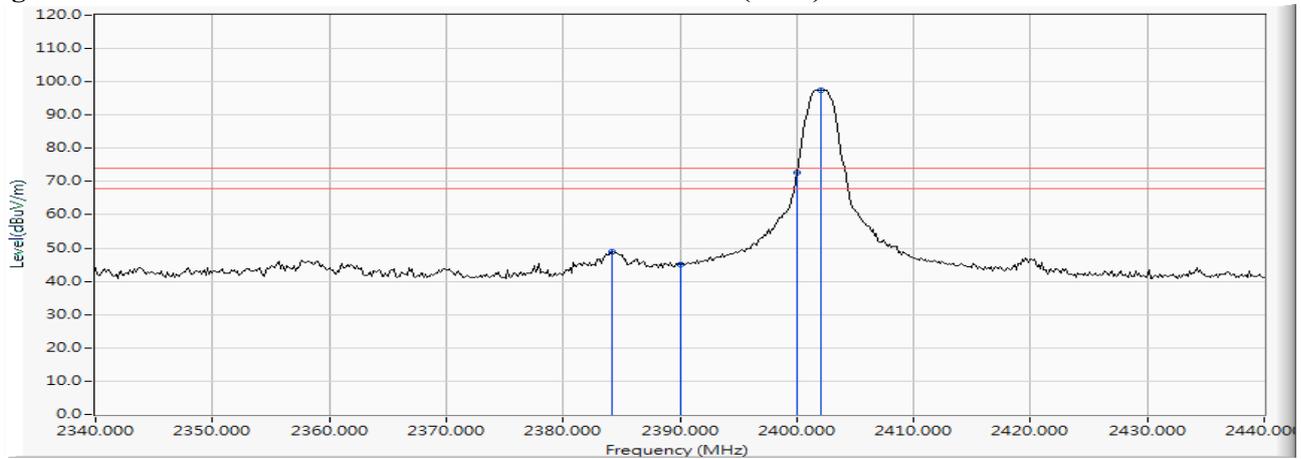
### 4.5. Test Result of Band Edge

Product : ROG Gladius II Wireless Gaming Mouse  
 Test Item : Band Edge Data  
 Test Date : 2018/07/21  
 Test Mode : Mode 1: Transmit (2402MHz)

#### RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV /m)	Peak Limit (dBμV /m)	Average Limit (dBμV /m)	Result
02 (Peak)	2384.203	10.816	37.976	48.792	74.00	54.00	Pass
02 (Peak)	2390.000	10.841	34.068	44.909	74.00	54.00	Pass
02 (Peak)	2400.000	10.884	61.804	72.688	74.00	54.00	Pass
02 (Peak)	2402.029	10.893	86.642	97.534	--	--	--

Figure Channel 02: Horizontal (Peak)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Channel No.	Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Average Measurement (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
02 (Average)	2384.203	48.79	-24.437	24.355	74.00	54.00	Pass
02 (Average)	2390.000	44.91	-24.437	20.472	74.00	54.00	Pass
02 (Average)	2400.000	72.69	-24.437	48.251	74.00	54.00	Pass

Note:

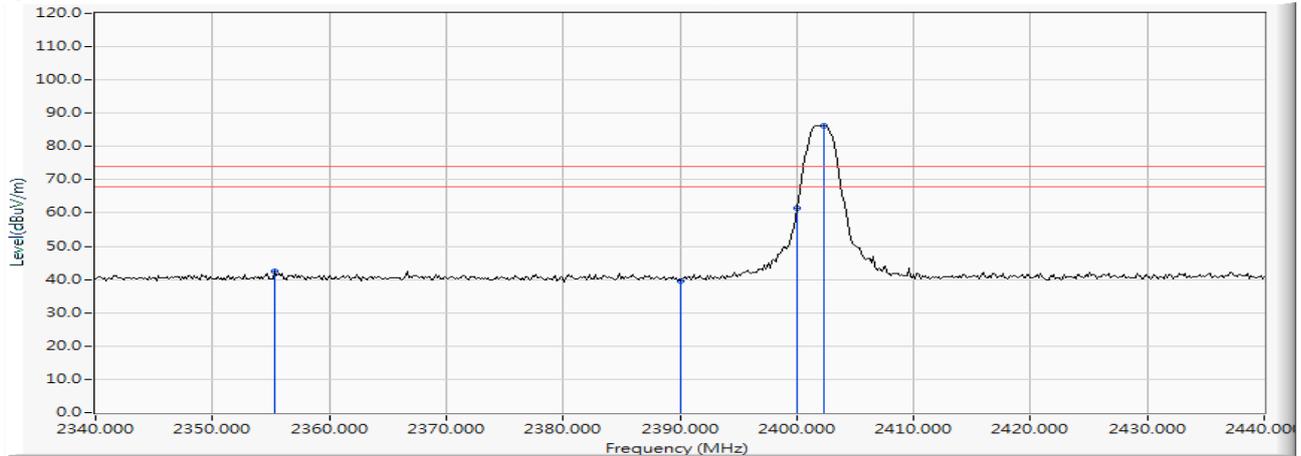
1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 5.

Product : ROG Gladius II Wireless Gaming Mouse  
 Test Item : Band Edge Data  
 Test Date : 2018/07/21  
 Test Mode : Mode 1: Transmit (2402MHz)

**RF Radiated Measurement (Vertical):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
02 (Peak)	2355.362	10.695	31.907	42.602	74.00	54.00	Pass
02 (Peak)	2390.000	10.841	28.775	39.616	74.00	54.00	Pass
02 (Peak)	2400.000	10.884	50.480	61.364	74.00	54.00	Pass
02 (Peak)	2402.319	10.893	75.465	86.358	--	--	--

**Figure Channel 02: Vertical (Peak)**



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Channel No.	Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Average Measurement (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
02 (Average)	2355.362	42.60	-24.437	18.165	74.00	54.00	Pass
02 (Average)	2390.000	39.62	-24.437	15.179	74.00	54.00	Pass
02 (Average)	2400.000	61.36	-24.437	36.927	74.00	54.00	Pass

Note:

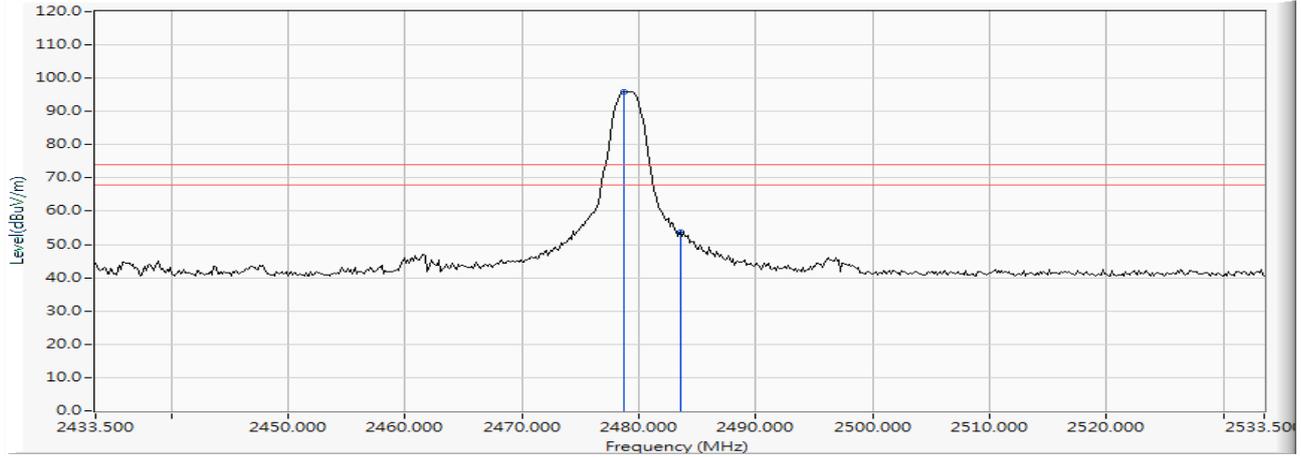
1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 5.

Product : ROG Gladius II Wireless Gaming Mouse  
 Test Item : Band Edge Data  
 Test Date : 2018/07/21  
 Test Mode : Mode 1: Transmit (2479MHz)

**RF Radiated Measurement (Horizontal):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV /m)	Peak Limit (dBμV /m)	Average Limit (dBμV /m)	Result
79 (Peak)	2478.717	11.210	84.776	95.987	--	--	--
79 (Peak)	2483.500	11.229	42.598	53.828	74.00	54.00	Pass

**Figure Channel 79: Horizontal (Peak)**



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Channel No.	Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Average Measurement (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
79 (Average)	2483.5	53.83	-24.437	29.391	74.00	54.00	Pass

Note:

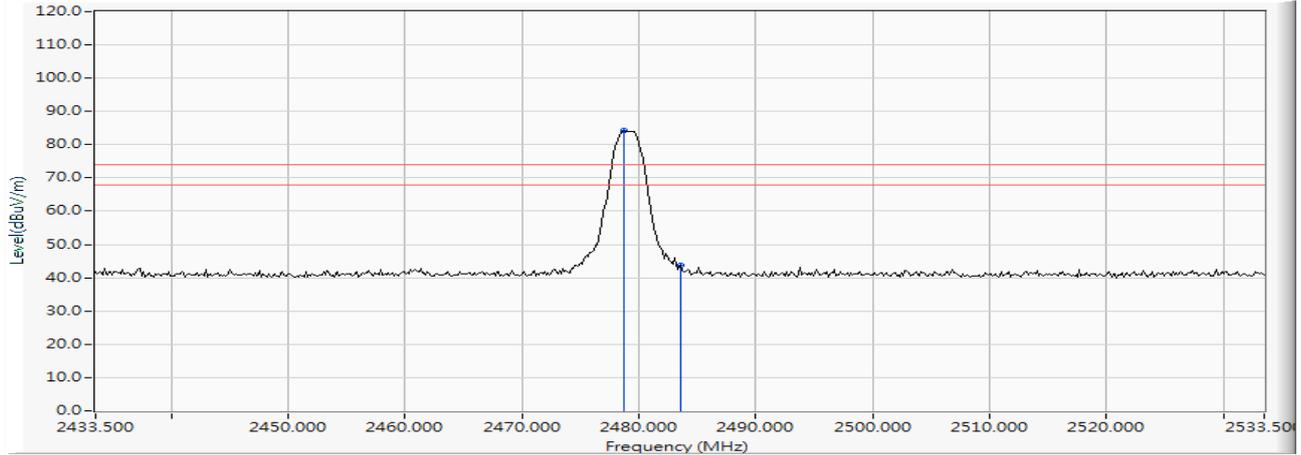
1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 5.

Product : ROG Gladius II Wireless Gaming Mouse  
 Test Item : Band Edge Data  
 Test Date : 2018/07/21  
 Test Mode : Mode 1: Transmit (2479MHz)

**RF Radiated Measurement (Vertical):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV /m)	Peak Limit (dBμV /m)	Average Limit (dBμV /m)	Result
79 (Peak)	2478.717	11.210	72.921	84.132	--	--	--
79 (Peak)	2483.500	11.229	32.364	43.594	74.00	54.00	Pass

**Figure Channel 79: Vertical (Peak)**



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

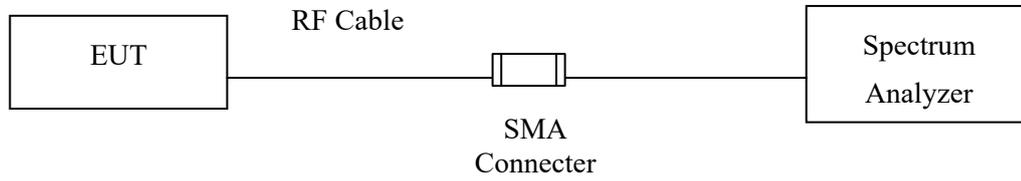
Channel No.	Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Average Measurement (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
79 (Average)	2483.5	43.59	-24.437	19.157	74.00	54.00	Pass

Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 5.

## 5. Duty Cycle

### 5.1. Test Setup

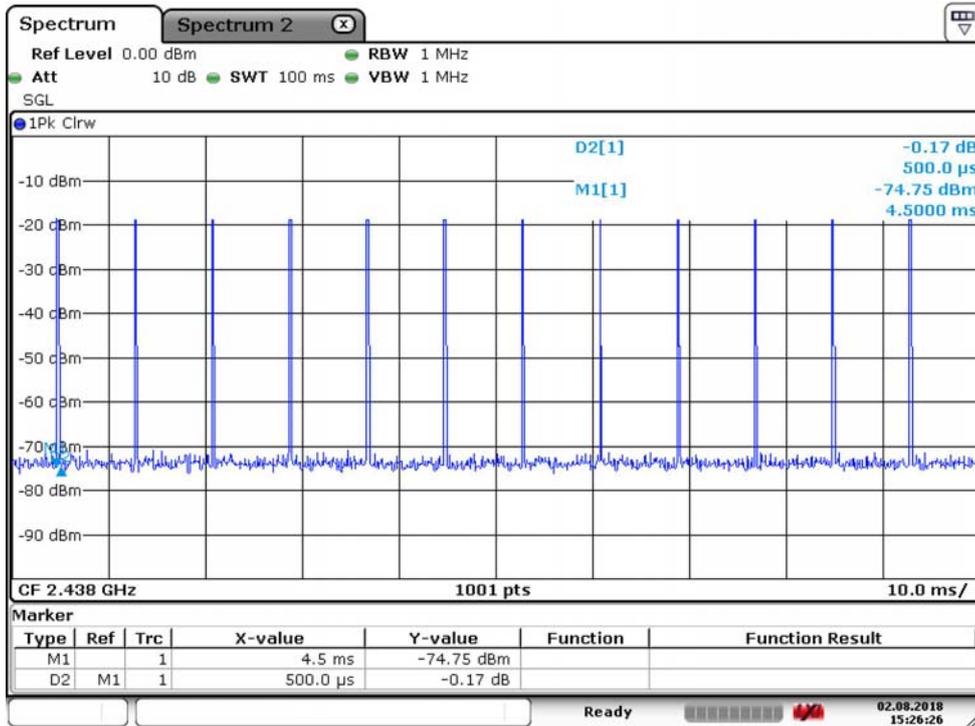


### 5.2. Uncertainty

$\pm 2.31\text{ms}$

### 5.3. Test Result of Duty Cycle

Product : ROG Gladius II Wireless Gaming Mouse  
 Test Item : Duty Cycle Data  
 Test Mode : Normal mode



Time on of 100ms= 500us\*12= 6ms

Duty Cycle=6ms / 100ms= 0.06

Duty Cycle correction factor= 20 LOG 0.06= -24.437 dB

<b>Duty Cycle correction factor</b>	<b>-24.437</b>	<b>dB</b>
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**6. EMI Reduction Method During Compliance Testing**

No modification was made during testing.