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# FCC Test Report

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Report No.: AGC13040231202FR01

**FCC ID** : 2AELM-50075  
**APPLICATION PURPOSE** : Original Equipment  
**PRODUCT DESIGNATION** : Wireless Mouse  
**BRAND NAME** : Purekeys  
**MODEL NAME** : PK-MRF-02, 50075  
**APPLICANT** : Purekeys BV  
**DATE OF ISSUE** : Jan. 22, 2024  
**STANDARD(S)** : FCC Part 15 Rules  
**TEST PROCEDURE(S)**  
**REPORT VERSION** : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd



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Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: <http://www.agccert.com/>



### REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Jan. 22, 2024	Valid	Initial Release

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## TABLE OF CONTENTS

<b>1. VERIFICATION OF CONFORMITY .....</b>	<b>5</b>
<b>2. GENERAL INFORMATION .....</b>	<b>6</b>
2.1. PRODUCT DESCRIPTION .....	6
2.2. TABLE OF CARRIER FREQUENCY .....	6
2.3. ANTENNA REQUIREMENT .....	6
<b>4. DESCRIPTION OF TEST MODES .....</b>	<b>8</b>
<b>5. SYSTEM TEST CONFIGURATION .....</b>	<b>9</b>
5.1. CONFIGURATION OF EUT SYSTEM.....	9
5.2 EQUIPMENT USED IN TESTED SYSTEM.....	9
5.3. SUMMARY OF TEST RESULTS.....	9
<b>6. TEST FACILITY .....</b>	<b>10</b>
<b>7. RADIATED EMISSION .....</b>	<b>12</b>
7.1. TEST LIMIT.....	12
7.2. MEASUREMENT PROCEDURE .....	13
7.3. TEST SETUP .....	15
7.4. TEST RESULT .....	16
<b>8. BAND EDGE EMISSION.....</b>	<b>22</b>
8.1. MEASUREMENT PROCEDURE .....	22
8.2. TEST SETUP .....	22
8.3 RADIATED TEST RESULT .....	22
<b>9. 20DB BANDWIDTH .....</b>	<b>31</b>
9.1. MEASUREMENT PROCEDURE .....	31
9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION).....	31
9.3. MEASUREMENT RESULTS.....	32
<b>10. FCC LINE CONDUCTED EMISSION TEST .....</b>	<b>34</b>
10.1. LIMITS OF LINE CONDUCTED EMISSION TEST .....	34
10.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST.....	34
10.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST .....	35
10.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST .....	35
10.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST.....	35

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**APPENDIX A: PHOTOGRAPHS OF TEST SETUP..... 36**

**APPENDIX B: PHOTOGRAPHS OF THE EUT..... 36**

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### 1. VERIFICATION OF CONFORMITY

<b>Applicant</b>	Purekeys BV
<b>Address</b>	Rouaanstraat 23 C 9723 CC Groningen Netherlands
<b>Manufacturer</b>	Zhuhai Heng Yu New Technology Company Limited
<b>Address</b>	No. 10, Yingyue Road, Yunong Village North, Sanzao Town, Zhuhai, Guangdong, P.R. China
<b>Factory</b>	N/A
<b>Address</b>	N/A
<b>Product Designation</b>	Wireless Mouse
<b>Brand Name</b>	Purekeys
<b>Test Model</b>	PK-MRF-02
<b>Series Model(s)</b>	50075
<b>Difference Description</b>	All the series models are the same as the test model except for the model names.
<b>Date of receipt of test item</b>	Dec. 18, 2023
<b>Date of test</b>	Dec. 18, 2023 to Jan. 22, 2024
<b>Deviation</b>	No any deviation from the test method
<b>Condition of Test Sample</b>	Normal
<b>Test Result</b>	Pass
<b>Report Template</b>	AGCRT-US-2.4G/RF

Note: The test results of this report relate only to the tested sample identified in this report.

Prepared By



Jack Gui  
(Project Engineer)

Jan. 22, 2024

Reviewed By



Calvin Liu  
(Reviewer)

Jan. 22, 2024

Approved By



Max Zhang  
Authorized Officer

Jan. 22, 2024

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## 2. GENERAL INFORMATION

### 2.1. PRODUCT DESCRIPTION

A major technical description of EUT is described as following

<b>Operation Frequency</b>	2402MHz-2480MHz
<b>Maximum field strength</b>	88.27dBuV/m(Peak)@3m
<b>Modulation</b>	GFSK
<b>Number of channels</b>	79 Channels
<b>Antenna Gain</b>	1.87dBi
<b>Antenna Designation</b>	PCB Antenna
<b>Hardware Version</b>	HY-HM802A-2-01-02 2023.10.25
<b>Software Version</b>	S3402V141
<b>Power Supply</b>	DC 3V by battery

### 2.2. TABLE OF CARRIER FREQUENCY

Frequency Band	Channel Number	Frequency
2400~2483.5MHz	0	2402 MHz
	1	2403 MHz
	:	:
	40	2442MHz
	:	:
	77	2479 MHz
	78	2480 MHz

Note:  $f = 2402 + 1k \text{ MHz}$ ,  $k = 0, \dots, 79$ ; “f” is the operating frequency (MHz); “k” is the operating channel.

### 2.3. ANTENNA REQUIREMENT

This intentional radiator is designed with a permanently attached antenna of an antenna to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

For more information of the antenna, please refer to the APPENDIX B: PHOTOGRAPHS OF EUT.

### 3. MEASUREMENT UNCERTAINTY

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%.

Item	Measurement Uncertainty
Uncertainty of Conducted Emission for AC Port	$U_c = \pm 2.9$ dB
Uncertainty of Radiated Emission below 1GHz	$U_c = \pm 3.9$ dB
Uncertainty of Radiated Emission above 1GHz	$U_c = \pm 4.9$ dB
Uncertainty of Occupied Channel Bandwidth	$U_c = \pm 2$ %

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#### 4. DESCRIPTION OF TEST MODES

Summary Table of Test Cases	
Test Item	Equipment type / Modulation
	2.4G / GFSK
Radiated Test Cases	Mode 1: 2.4G Tx CH00_2402 MHz (Battery powered) Mode 2: 2.4G Tx CH40_2442 MHz (Battery powered) Mode 3: 2.4G Tx CH78_2480 MHz (Battery powered)
AC Conducted Emission	N/A

Note:

1. Only the result of the worst case was recorded in the report, if no other cases.
2. The battery is full-charged during the test.
3. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
4. Set the EUT into the individual test modes by pressing the EUT buttons.

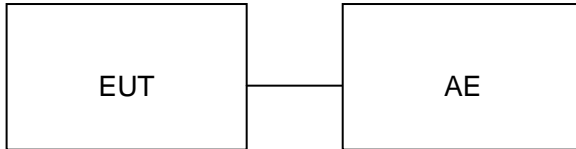
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## 5. SYSTEM TEST CONFIGURATION

### 5.1. CONFIGURATION OF EUT SYSTEM

Radiated Emission Configure:



### 5.2 EQUIPMENT USED IN TESTED SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	Wireless Mouse	PK-MRF-02	2AELM-50075	EUT
2	Redmi Notebook PC	XMA2002-AB	N/A	AE

### 5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.249&15.209	Radiated Emission	Compliant
§15.249	Band Edges	Compliant
§15.215	20dB bandwidth	Compliant
§15.207	Conducted Emission	Not applicable

Note: The conducted emission tests at AC port are not required for devices which only employ battery power for operation.

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## 6. TEST FACILITY

<b>Test Site</b>	Attestation of Global Compliance (Shenzhen) Co., Ltd
<b>Location</b>	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
<b>Designation Number</b>	CN1259
<b>FCC Test Firm Registration Number</b>	975832
<b>A2LA Cert. No.</b>	5054.02
<b>Description</b>	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA

● Radiated Spurious Emission							
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
<input checked="" type="checkbox"/>	AGC-EM-E046	EMI Test Receiver	R&S	ESCI	10096	2023-02-18	2024-02-17
<input type="checkbox"/>	AGC-EM-E116	EMI Test Receiver	R&S	ESCI	100034	2023-06-03	2024-06-02
<input checked="" type="checkbox"/>	AGC-EM-E061	Spectrum Analyzer	Agilent	N9010A	MY53470504	2023-06-01	2024-05-31
<input checked="" type="checkbox"/>	AGC-EM-E086	Loop Antenna	ZHINAN	ZN30900C	18051	2022-03-12	2024-03-11
<input checked="" type="checkbox"/>	AGC-EM-E001	Wideband Antenna	SCHWARZBECK	VULB9168	D69250	2023-05-11	2025-05-10
<input checked="" type="checkbox"/>	AGC-EM-E029	Broadband Ridged Horn Antenna	ETS	3117	00034609	2023-03-23	2024-03-22
<input checked="" type="checkbox"/>	AGC-EM-E082	Horn Antenna	SCHWARZBECK	BBHA 9170	#768	2023-09-24	2025-09-23
<input checked="" type="checkbox"/>	AGC-EM-E146	Pre-amplifier	ETS	3117-PA	00246148	2022-08-04	2024-08-03
<input checked="" type="checkbox"/>	AGC-EM-A119	2.4G Filter	SongYi	N/A	N/A	2023-06-01	2024-05-31
<input checked="" type="checkbox"/>	AGC-EM-A138	6dB Attenuator	Eeatssheep	LM-XX-6-5W	N/A	2023-06-09	2024-06-08
<input type="checkbox"/>	AGC-EM-A139	6dB Attenuator	Eeatssheep	LM-XX-6-5W	N/A	2023-06-09	2024-06-08

● AC Power Line Conducted Emission							
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
<input type="checkbox"/>	AGC-EM-E045	EMI Test Receiver	R&S	ESPI	101206	2023-06-03	2024-06-02
<input type="checkbox"/>	AGC-EM-A130	6dB Attenuator	Eeatssheep	LM-XX-6-5W	DC-6GZ	2023-06-09	2024-06-08
<input type="checkbox"/>	AGC-EM-E023	AMN	R&S	100086	ESH2-Z5	2023-06-03	2024/06/02

● Test Software					
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Version Information
<input checked="" type="checkbox"/>	AGC-EM-S004	RE Test System	Tonscend	TS+ Ver2.1(JS32-RE)	4.0.0.0
<input checked="" type="checkbox"/>	AGC-EM-S011	RSE Test System	Tonscend	TS+ Ver2.1(JS36-RSE)	4.0.0.0

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<input type="checkbox"/>	AGC-EM-S001	CE Test System	R&S	ES-K1	V1.71
<input checked="" type="checkbox"/>	AGC-ER-S009	BT/WIFI Test System	Tonscend	JS1120-3	2.6.77.0518

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## 7. RADIATED EMISSION

### 7.1. TEST LIMIT

#### Standard FCC15.249

Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
900-928MHz	50	500
2400-2483.5MHz	50	500
5725-5875MHz	50	500
24.0-24.25GHz	250	2500

#### Standard FCC 15.209

Frequency (MHz)	Distance Meters	Field Strengths Limit	
		$\mu$ V/m	dB( $\mu$ V)/m
0.009 ~ 0.490	300	2400/F(kHz)	---
0.490 ~ 1.705	30	24000/F(kHz)	---
1.705 ~ 30	30	30	---
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	Other:74.0 dB( $\mu$ V)/m (Peak) 54.0 dB( $\mu$ V)/m (Average)	

Remark: (1) Emission level dB  $\mu$  V = 20 log Emission level  $\mu$  V/m.  
 (2) The smaller limit shall apply at the cross point between two frequency bands.  
 (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

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## 7.2. MEASUREMENT PROCEDURE

1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use minimum resolution bandwidth of 1 MHz. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

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The following table is the setting of spectrum analyzer and receiver.

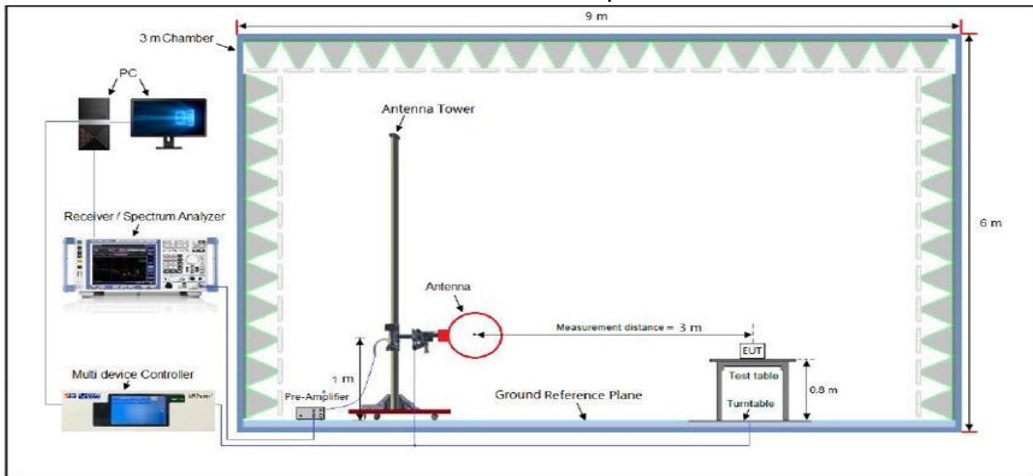
Spectrum Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
Start ~Stop Frequency	1GHz~26.5GHz RBW 2.4MHz/ VBW 8MHz for Peak, RBW 2.4MHz/3MHz for Average

Receiver Parameter	Setting
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

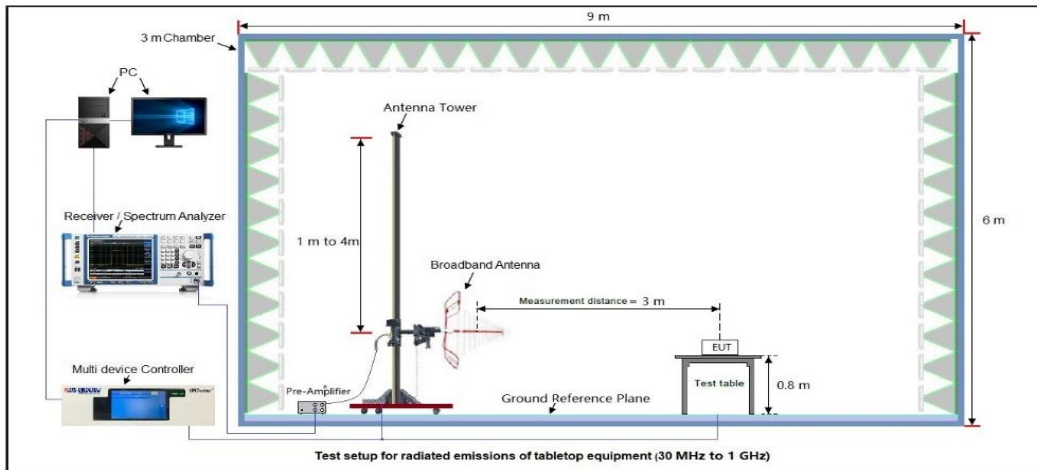
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### 7.3. TEST SETUP

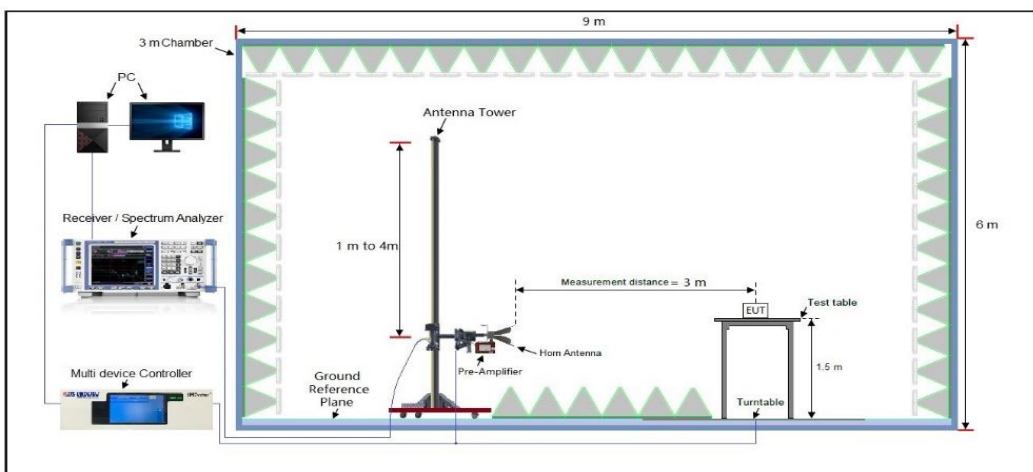
Radiated Emission Test Setup 9KHz-30MHz



Radiated Emission Test Setup 30MHz-1000MHz



Radiated Emission Test Setup Above 1000MHz



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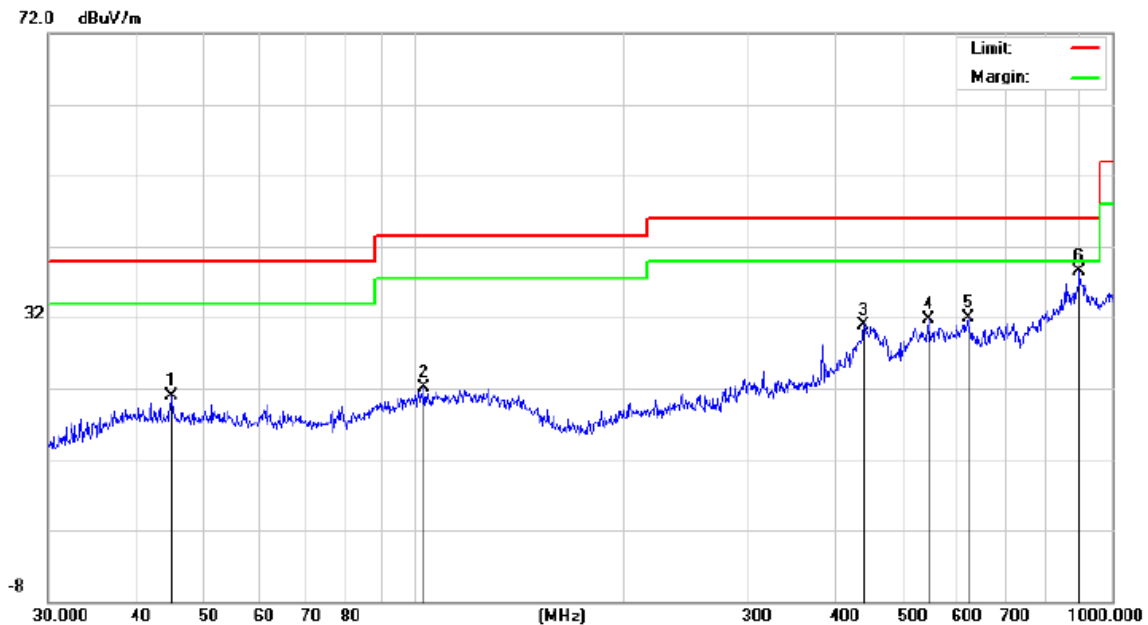
### 7.4. TEST RESULT

#### RADIATED EMISSION BELOW 30MHZ

The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.

#### RADIATED EMISSION 30MHZ- 1GHZ

<b>EUT</b>	Wireless Mouse	<b>Model Name</b>	PK-MRF-02
<b>Temperature</b>	22.8°C	<b>Relative Humidity</b>	59.7%
<b>Pressure</b>	985kPa	<b>Test Voltage</b>	DC 3V by battery
<b>Test Mode</b>	Mode 1	<b>Polarization</b>	Horizontal



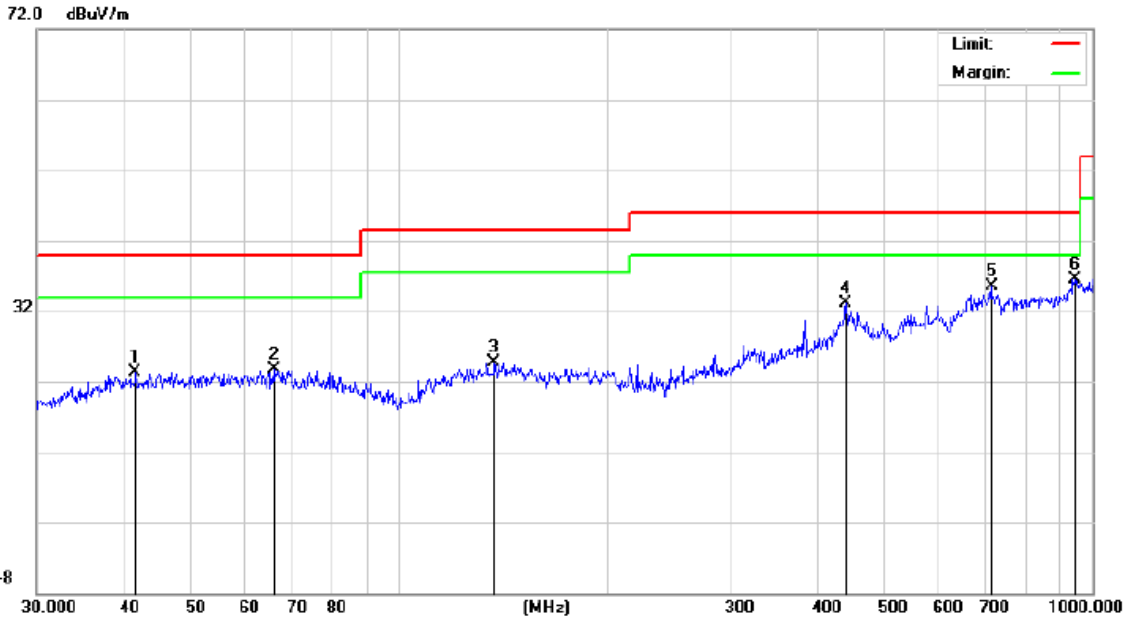
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		44.9004	7.30	13.56	20.86	40.00	-19.14	peak
2		103.4419	5.91	16.23	22.14	43.50	-21.36	peak
3		440.1963	5.91	25.09	31.00	46.00	-15.00	peak
4		545.1825	7.76	23.98	31.74	46.00	-14.26	peak
5		620.7096	6.75	25.13	31.88	46.00	-14.12	peak
6	*	896.9964	7.13	31.42	38.55	46.00	-7.45	peak

### RESULT: PASS

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<b>EUT</b>	Wireless Mouse	<b>Model Name</b>	PK-MRF-02
<b>Temperature</b>	22.8°C	<b>Relative Humidity</b>	59.7%
<b>Pressure</b>	985kPa	<b>Test Voltage</b>	DC 3V by battery
<b>Test Mode</b>	Mode 1	<b>Polarization</b>	Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		41.5670	6.46	16.92	23.38	40.00	-16.62	peak
2		65.8031	6.65	17.04	23.69	40.00	-16.31	peak
3		136.9391	6.65	18.12	24.77	43.50	-18.73	peak
4		440.1963	7.00	26.09	33.09	46.00	-12.91	peak
5		714.1734	6.81	28.60	35.41	46.00	-10.59	peak
6	*	942.1305	5.64	30.91	36.55	46.00	-9.45	peak

**RESULT: PASS**

**Note:** Factor=Antenna Factor + Cable loss, Margin=Limit-Level.

The "Factor" value can be calculated automatically by software of measurement system.

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**FIELD STRENGTH OF FUNDAMENTAL**

<b>EUT</b>	Wireless Mouse	<b>Model Name</b>	PK-MRF-02
<b>Temperature</b>	23.2°C	<b>Relative Humidity</b>	61.5%
<b>Pressure</b>	985kPa	<b>Test Voltage</b>	DC 3V by battery
<b>Test Modulation</b>	GFSK	<b>Polarization</b>	Horizontal

Frequency (MHz)	Meter Reading (dBµV)	Factor (dB)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Value Type
2402	39.22	49.05	88.27	114.00	-25.73	peak
2402	28.71	49.05	77.76	94.00	-16.24	AVG
2442	37.82	49.12	86.94	114.00	-27.06	peak
2442	28.13	49.12	77.25	94.00	-16.75	AVG
2480	38.81	49.25	88.06	114.00	-25.94	peak
2480	29.32	49.25	78.57	94.00	-15.43	AVG
<b>Remark:</b>						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

<b>EUT</b>	Wireless Mouse	<b>Model Name</b>	PK-MRF-02
<b>Temperature</b>	23.2°C	<b>Relative Humidity</b>	61.5%
<b>Pressure</b>	985kPa	<b>Test Voltage</b>	DC 3V by battery
<b>Test Modulation</b>	GFSK	<b>Polarization</b>	Vertical

Frequency (MHz)	Meter Reading (dBµV)	Factor (dB)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Value Type
2402	44.37	49.05	81.25	114.00	-32.75	peak
2402	29.51	49.05	71.14	94.00	-22.86	AVG
2442	45.31	49.12	79.64	114.00	-34.36	peak
2442	30.11	49.12	71.26	94.00	-22.74	AVG
2480	40.78	49.25	80.88	114.00	-33.12	peak
2480	30.48	49.25	71.45	94.00	-22.55	AVG
<b>Remark:</b>						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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**RADIATED EMISSION ABOVE 1GHZ**

<b>EUT</b>	Wireless Mouse	<b>Model Name</b>	PK-MRF-02
<b>Temperature</b>	23.2°C	<b>Relative Humidity</b>	61.5%
<b>Pressure</b>	985kPa	<b>Test Voltage</b>	DC 3V by battery
<b>Test Mode</b>	Mode 1	<b>Polarization</b>	Horizontal

Frequency (MHz)	Meter Reading (dBµV)	Factor (dB)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Value Type
4804	47.62	3.76	51.38	74.00	-22.62	peak
4804	38.42	3.76	42.18	54.00	-11.82	AVG
7206	41.67	8.17	49.84	74.00	-24.16	peak
7206	31.65	8.17	39.82	54.00	-14.18	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

<b>EUT</b>	Wireless Mouse	<b>Model Name</b>	PK-MRF-02
<b>Temperature</b>	23.2°C	<b>Relative Humidity</b>	61.5%
<b>Pressure</b>	985kPa	<b>Test Voltage</b>	DC 3V by battery
<b>Test Mode</b>	Mode 1	<b>Polarization</b>	Vertical

Frequency (MHz)	Meter Reading (dBµV)	Factor (dB)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Value Type
4804	47.91	3.76	51.67	74.00	-22.33	peak
4804	38.25	3.76	42.01	54.00	-11.99	AVG
7206	42.19	8.17	50.36	74.00	-23.64	peak
7206	32.54	8.17	40.71	54.00	-13.29	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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<b>EUT</b>	Wireless Mouse	<b>Model Name</b>	PK-MRF-02
<b>Temperature</b>	23.2°C	<b>Relative Humidity</b>	61.5%
<b>Pressure</b>	985kPa	<b>Test Voltage</b>	DC 3V by battery
<b>Test Mode</b>	Mode 2	<b>Polarization</b>	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4884	47.64	3.78	51.42	74.00	-22.58	peak
4884	38.42	3.78	42.20	54.00	-11.80	AVG
7326	42.16	8.23	50.39	74.00	-23.61	peak
7326	31.26	8.23	39.49	54.00	-14.51	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

<b>EUT</b>	Wireless Mouse	<b>Model Name</b>	PK-MRF-02
<b>Temperature</b>	23.2°C	<b>Relative Humidity</b>	61.5%
<b>Pressure</b>	985kPa	<b>Test Voltage</b>	DC 3V by battery
<b>Test Mode</b>	Mode 2	<b>Polarization</b>	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4884	46.29	3.78	50.07	74.00	-23.93	peak
4884	38.71	3.78	42.49	54.00	-11.51	AVG
7326	42.16	8.23	50.39	74.00	-23.61	peak
7326	32.43	8.23	40.66	54.00	-13.34	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

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<b>EUT</b>	Wireless Mouse	<b>Model Name</b>	PK-MRF-02
<b>Temperature</b>	23.2°C	<b>Relative Humidity</b>	61.5%
<b>Pressure</b>	985kPa	<b>Test Voltage</b>	DC 3V by battery
<b>Test Mode</b>	Mode 3	<b>Polarization</b>	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4960	47.62	3.81	51.43	74.00	-22.57	peak
4960	38.24	3.81	42.05	54.00	-11.95	AVG
7440	40.59	8.27	48.86	74.00	-25.14	peak
7440	31.22	8.27	39.49	54.00	-14.51	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

<b>EUT</b>	Wireless Mouse	<b>Model Name</b>	PK-MRF-02
<b>Temperature</b>	23.2°C	<b>Relative Humidity</b>	61.5%
<b>Pressure</b>	985kPa	<b>Test Voltage</b>	DC 3V by battery
<b>Test Mode</b>	Mode 3	<b>Polarization</b>	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4960	46.35	3.81	50.16	74.00	-23.84	peak
4960	37.42	3.81	41.23	54.00	-12.77	AVG
7440	41.49	8.27	49.76	74.00	-24.24	peak
7440	32.18	8.27	40.45	54.00	-13.55	AVG
Remark:						
Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

**RESULT: PASS**

**Note:** The amplitude of other spurious emissions from 1G to 25 GHz which are attenuated more than 20 dB below the permissible value need not be reported.

Factor=Antenna Factor + Cable loss - Amplifier gain, Margin=Emission Level-Limit.

The “Factor” value can be calculated automatically by software of measurement system.

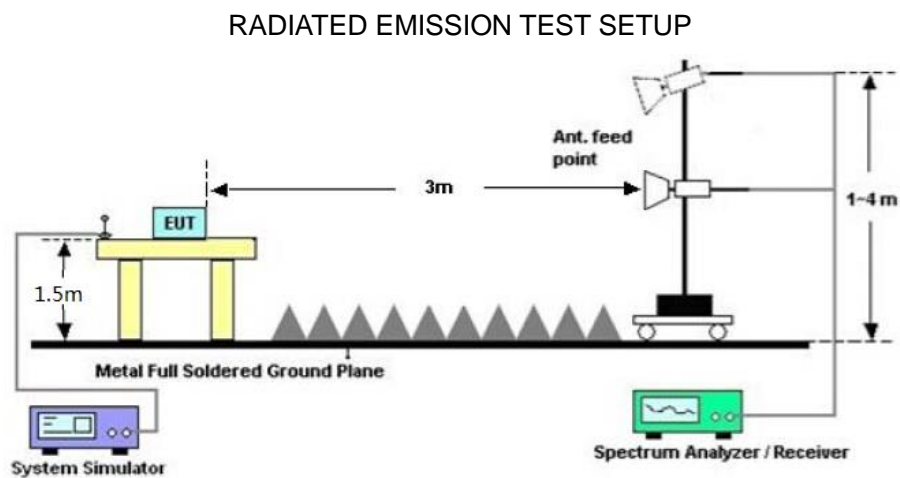
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## 8. BAND EDGE EMISSION

### 8.1. MEASUREMENT PROCEDURE

1. The EUT operates at transmitting mode. The operate channel is tested to verify the largest transmission and spurious emissions power at the continuous transmission mode.
2. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission: (a) PEAK: RBW=1MHz, VBW=3MHz / Sweep=AUTO  
(b) AVERAGE: RBW=1MHz; VBW=3MHz / Sweep=AUTO
3. Other procedures refer to clause 7.2.

### 8.2. TEST SETUP



### 8.3 RADIATED TEST RESULT

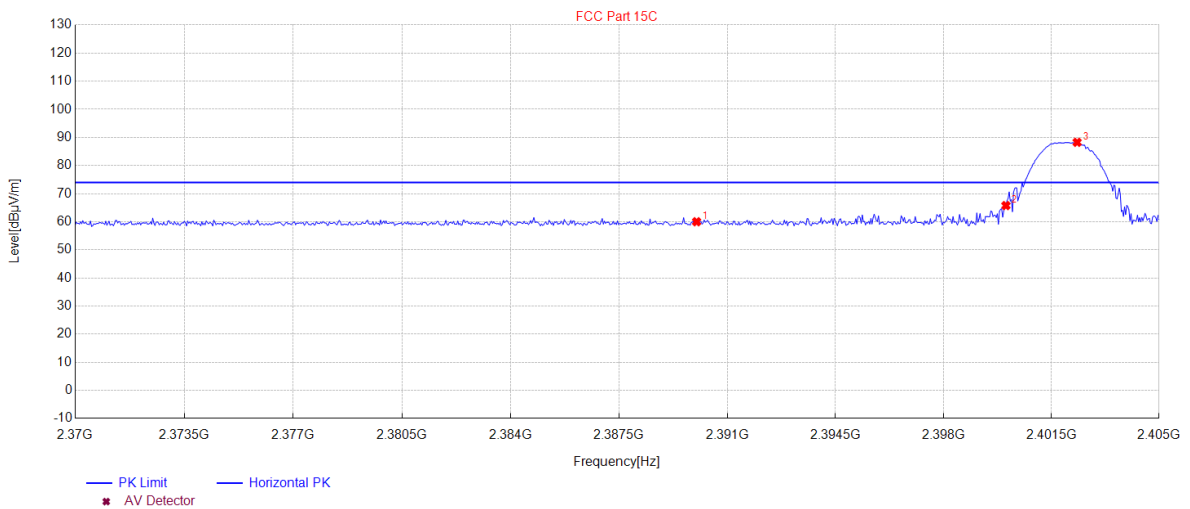
**Note:**

1. Factor=Antenna Factor + Cable loss - Amplifier gain. Field Strength=Factor + Reading level
2. The factor had been edited in the "Input Correction" of the Spectrum Analyzer. So the Amplitude of test plots is equal to Reading level plus the Factor in dB. Use the A dB( $\mu$ V) to represent the Amplitude. Use the F dB( $\mu$ V/m) to represent the Field Strength. So A=F.

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<b>EUT</b>	Wireless Mouse	<b>Model Name</b>	PK-MRF-02
<b>Temperature</b>	22.8°C	<b>Relative Humidity</b>	59.7%
<b>Pressure</b>	985kPa	<b>Test Voltage</b>	DC 3V by battery
<b>Test Mode</b>	Mode 1	<b>Polarization</b>	Horizontal

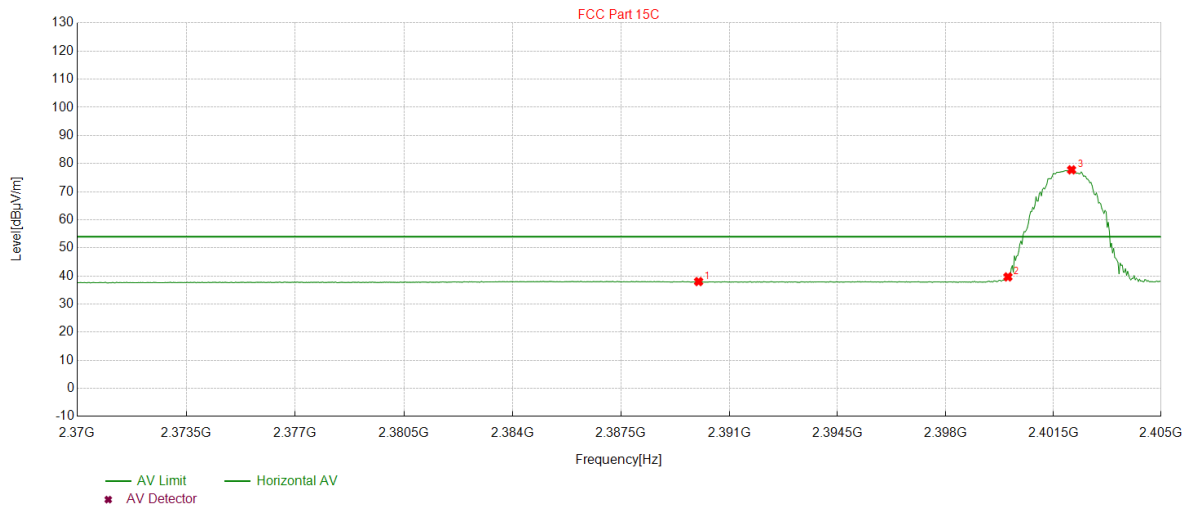
Peak Value



NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2390.005	60.01	34.40	74.00	13.99	150	270	Horizontal
2	2400.025	65.76	34.43	74.00	8.24	150	130	Horizontal
3	2402.3373	88.27	34.44	114.00	25.73	150	192	Horizontal

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### Average Value



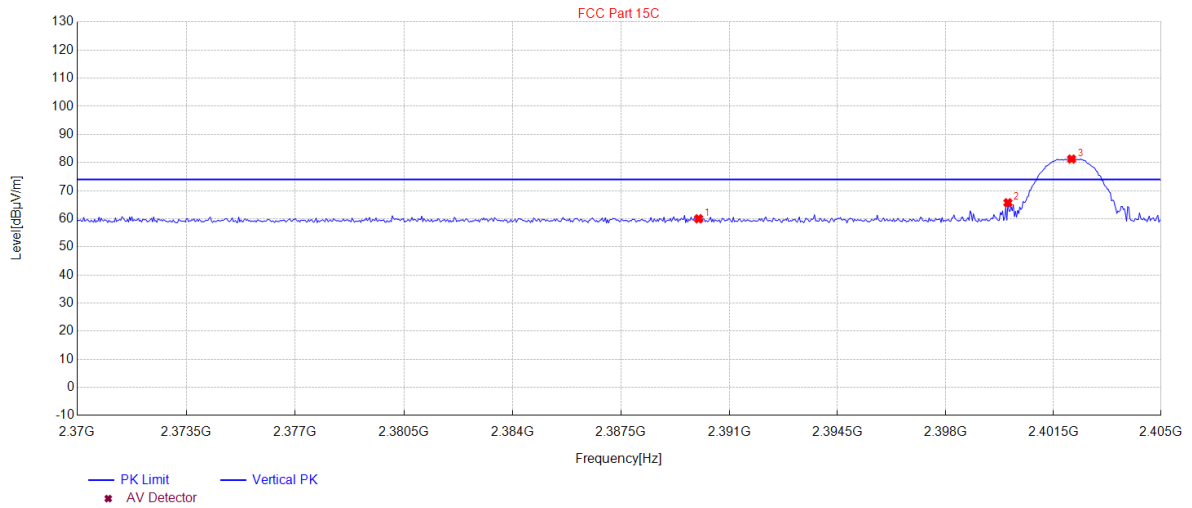
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2390.005	38.00	34.40	54.00	16.00	150	195	Horizontal
2	2400.025	39.67	34.43	54.00	14.33	150	137	Horizontal
3	2402.0921	77.76	34.44	94.00	16.24	150	182	Horizontal

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<b>EUT</b>	Wireless Mouse	<b>Model Name</b>	PK-MRF-02
<b>Temperature</b>	22.8°C	<b>Relative Humidity</b>	59.7%
<b>Pressure</b>	985kPa	<b>Test Voltage</b>	DC 3V by battery
<b>Test Mode</b>	Mode 1	<b>Polarization</b>	Vertical

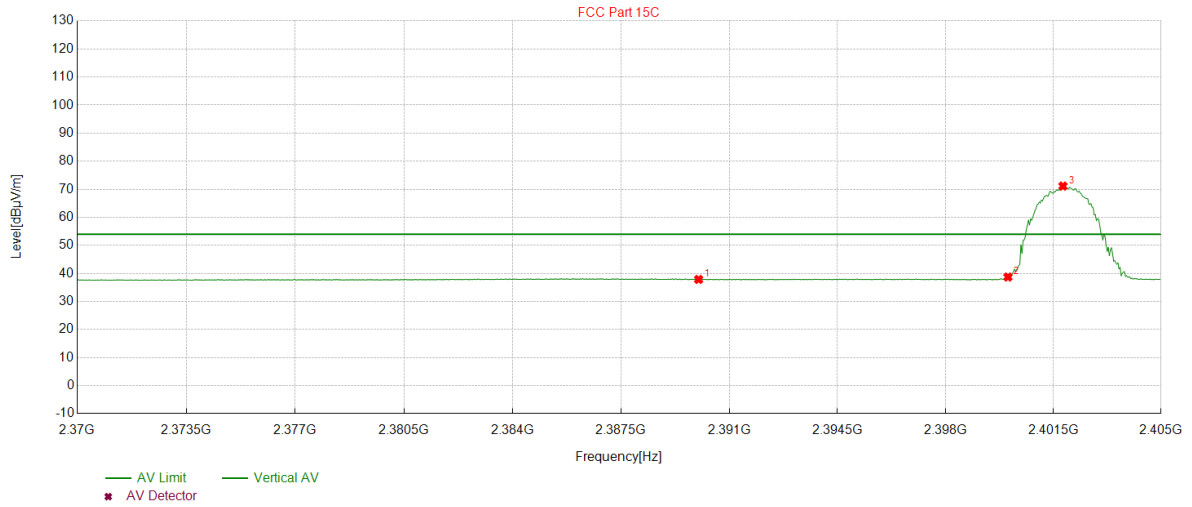
Peak Value



NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2390.005	60.00	34.40	74.00	14.00	150	334	Vertical
2	2400.025	65.70	34.43	74.00	8.30	150	148	Vertical
3	2402.0921	81.25	34.44	114.00	32.75	150	156	Vertical

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### Average Value

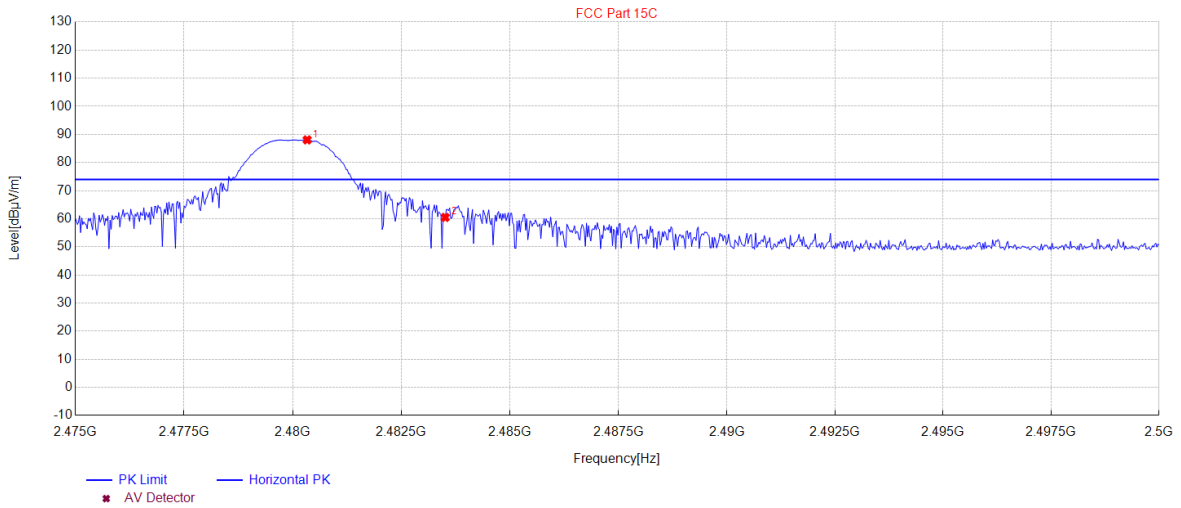


NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2390.005	37.86	34.40	54.00	16.14	150	359	Vertical
2	2400.025	38.72	34.43	54.00	15.28	150	132	Vertical
3	2401.8118	71.14	34.44	94.00	22.86	150	144	Vertical

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<b>EUT</b>	Wireless Mouse	<b>Model Name</b>	PK-MRF-02
<b>Temperature</b>	22.8°C	<b>Relative Humidity</b>	59.7%
<b>Pressure</b>	985kPa	<b>Test Voltage</b>	DC 3V by battery
<b>Test Mode</b>	Mode 3	<b>Polarization</b>	Horizontal

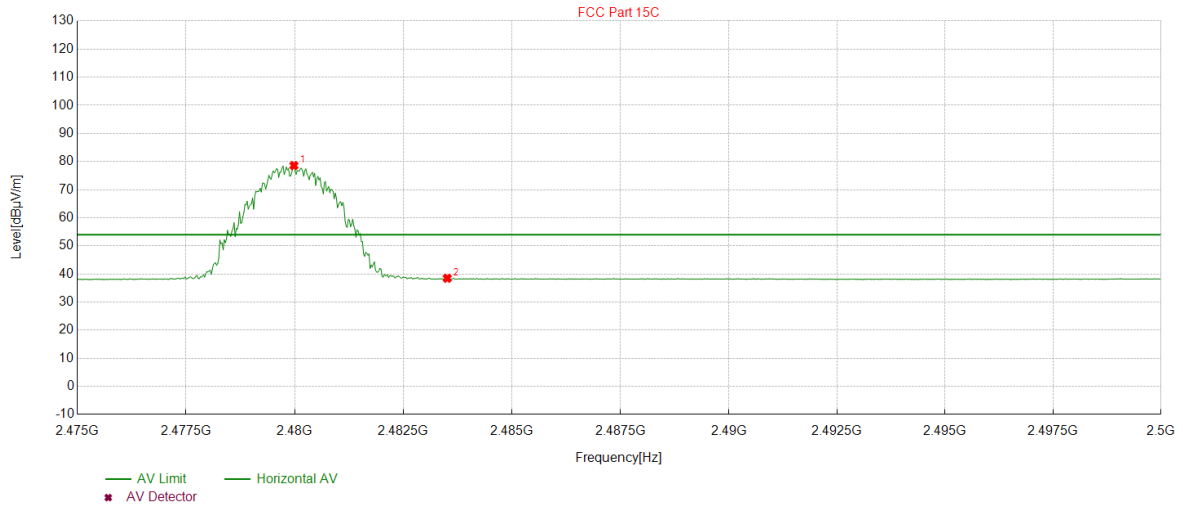
Peak Value



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.3303	88.06	34.65	114.00	25.94	150	213	Horizontal
2	2483.5085	60.48	34.66	74.00	13.52	150	333	Horizontal

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### Average Value

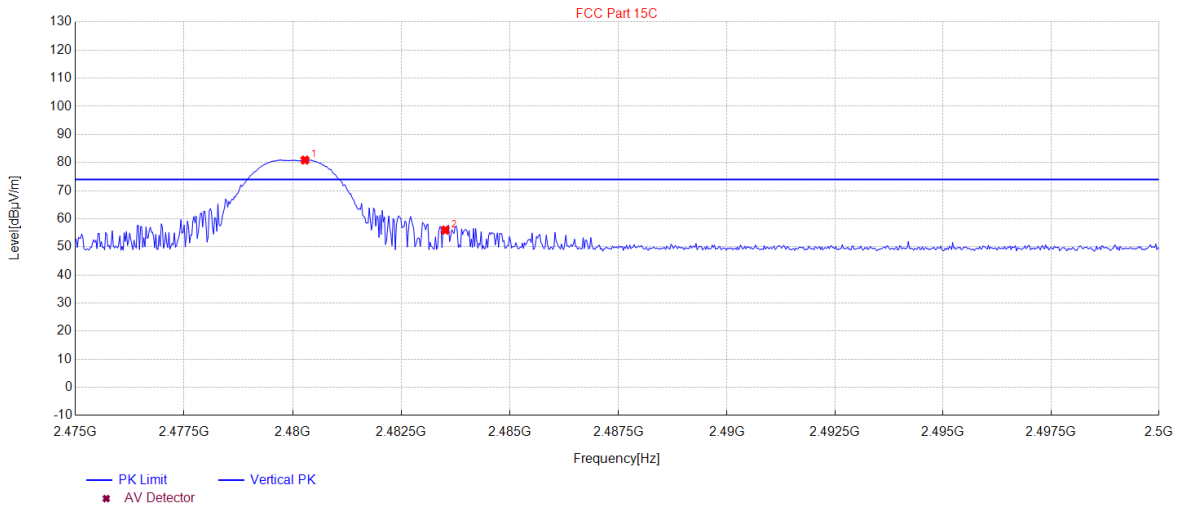


NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2479.98	78.57	34.65	94.00	15.43	150	192	Horizontal
2	2483.5085	38.46	34.66	54.00	15.54	150	222	Horizontal

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<b>EUT</b>	Wireless Mouse	<b>Model Name</b>	PK-MRF-02
<b>Temperature</b>	22.8°C	<b>Relative Humidity</b>	59.7%
<b>Pressure</b>	985kPa	<b>Test Voltage</b>	DC 3V by battery
<b>Test Mode</b>	Mode 3	<b>Polarization</b>	Vertical

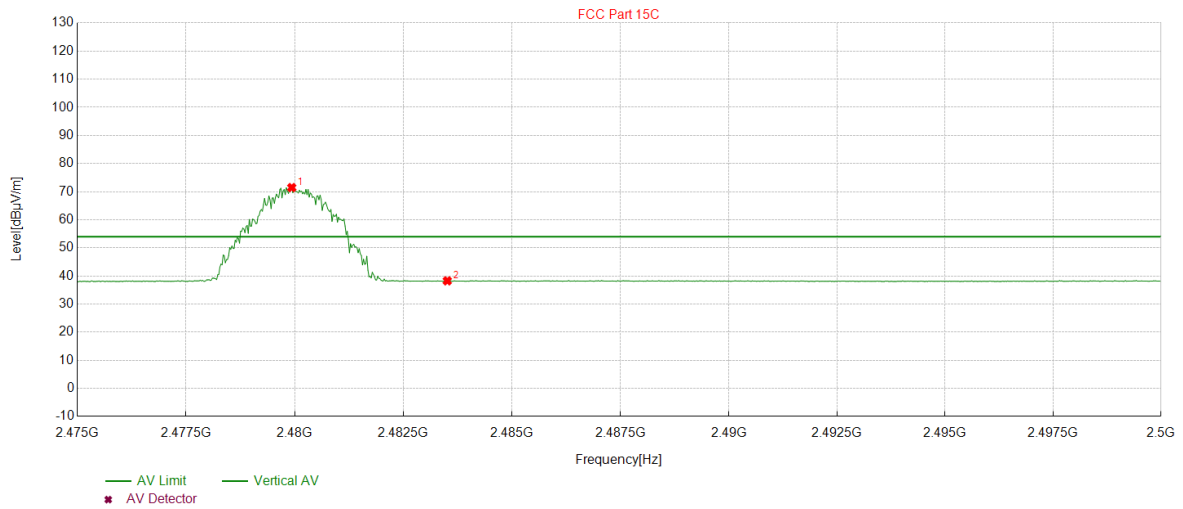
Peak Value



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.2803	80.88	34.65	114.00	33.12	150	154	Vertical
2	2483.5085	55.96	34.66	74.00	18.04	150	180	Vertical

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### Average Value



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2479.9299	71.45	34.65	94.00	22.55	150	148	Vertical
2	2483.5085	38.27	34.66	54.00	15.73	150	113	Vertical

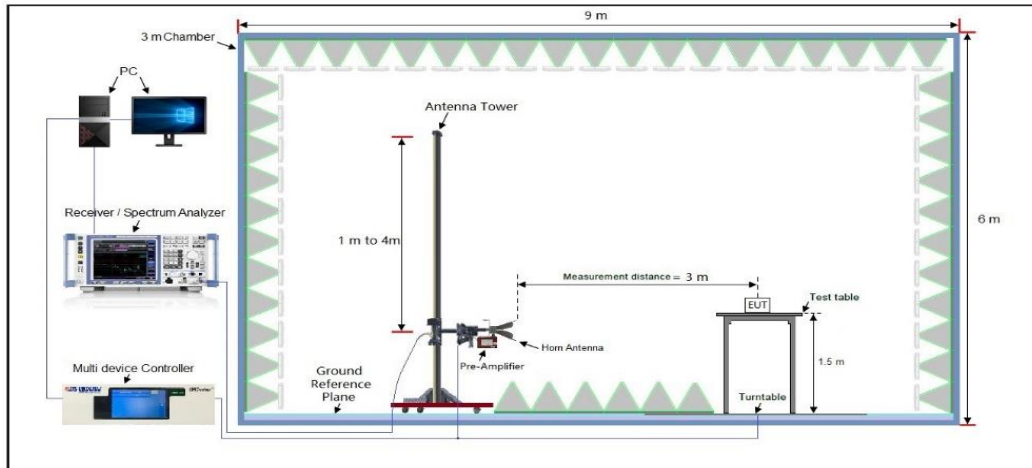
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## 9. 20DB BANDWIDTH

### 9.1. MEASUREMENT PROCEDURE

1. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
2. Set SPA Centre Frequency = Operation Frequency, RBW= 30 KHz, VBW $\geq$ 3 $\times$ RBW.
3. Set SPA Trace 1 Max hold, then View.

### 9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



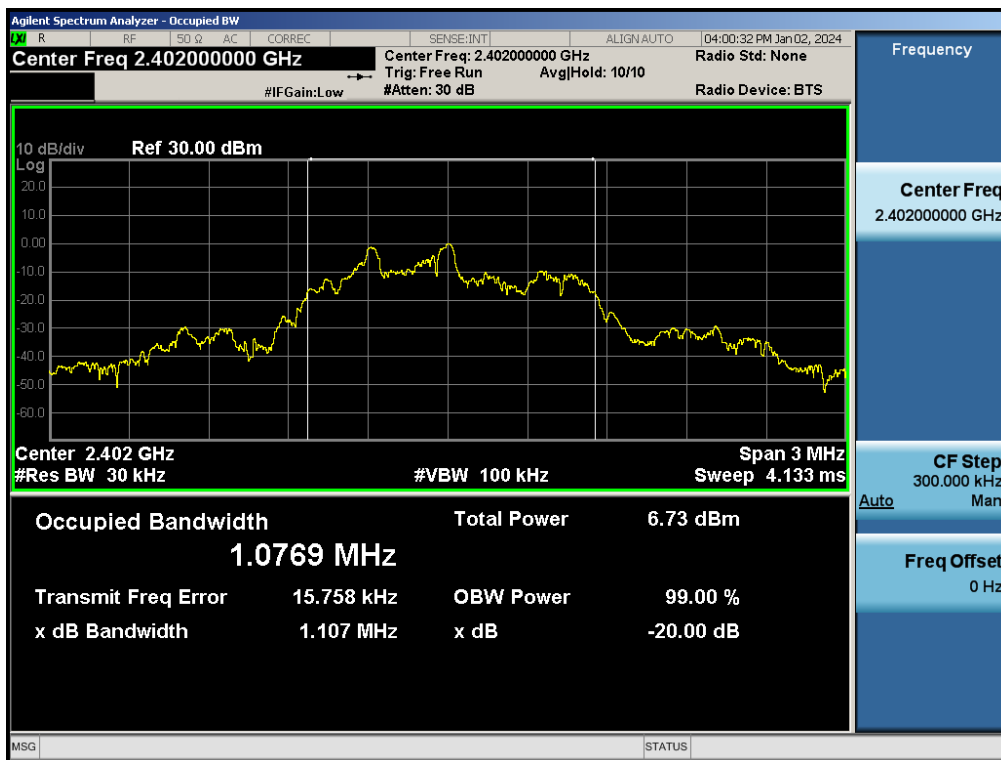
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### 9.3. MEASUREMENT RESULTS

TEST ITEM	20DB BANDWIDTH
TEST MODULATION	GFSK

Test Channel (MHz)	20DB BANDWIDTH (MHz)	99% BANDWIDTH (MHz)	Criteria
2402	1.107	1.0769	PASS
2442	1.142	1.3313	PASS
2480	1.097	1.0638	PASS

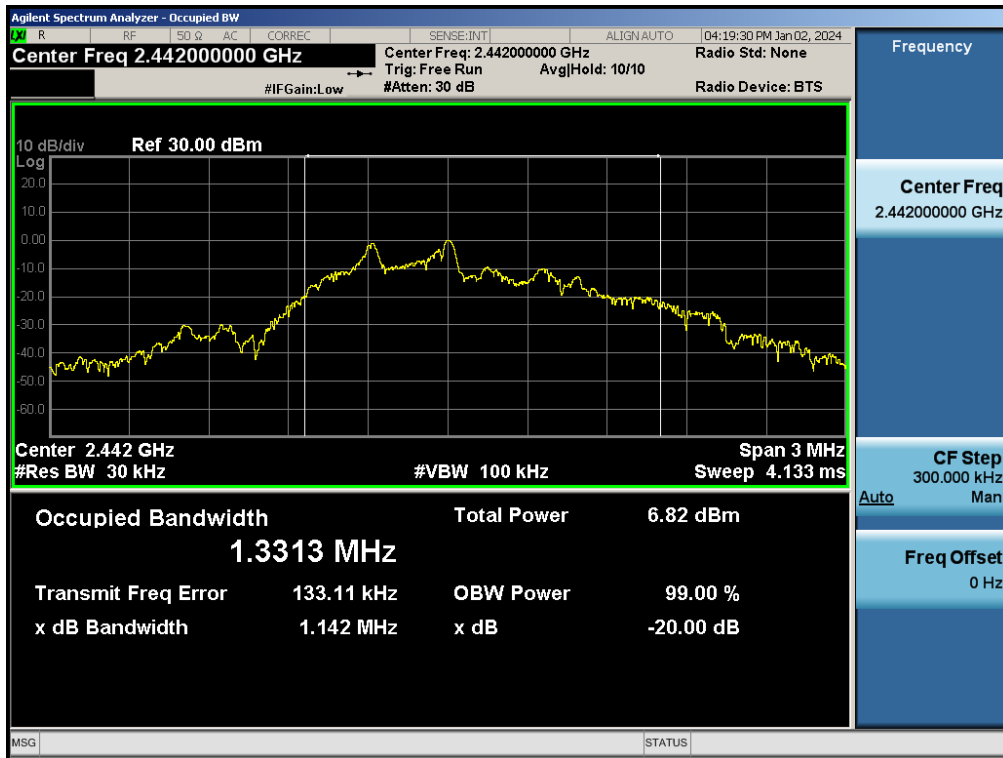
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



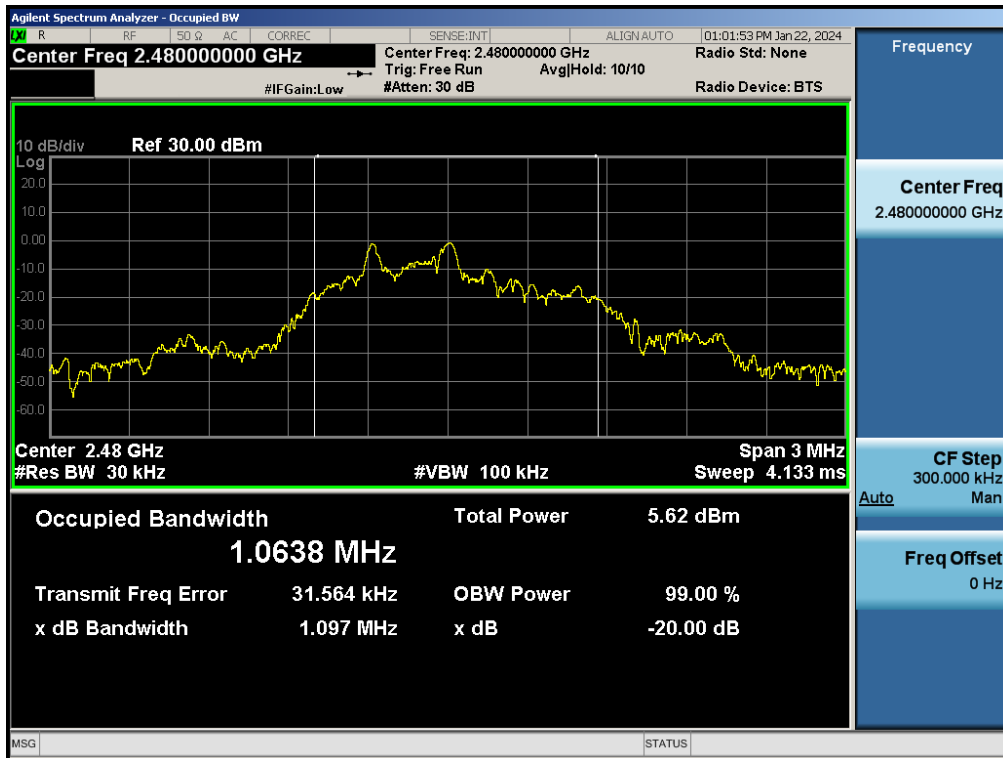
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TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



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## 10. FCC LINE CONDUCTED EMISSION TEST

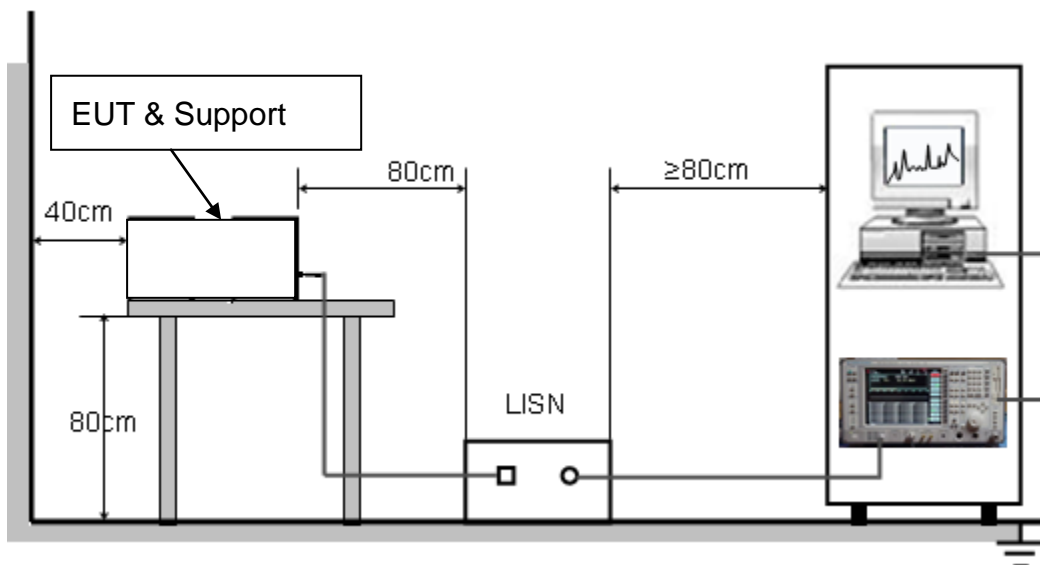
### 10.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Note: 1. The lower limit shall apply at the transition frequency.

2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

### 10.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



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### 10.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. All support equipment received AC120V/60Hz power from a LISN, if any.
5. The EUT received DC 5V power from adapter which received AC120V/60Hz power from a LISN.
6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.
9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

### 10.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
3. The test data of the worst case condition(s) was reported on the Summary Data page.

### 10.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

Note: The conducted emission tests at AC port are not required for devices which only employ battery power for operation.

**APPENDIX A: PHOTOGRAPHS OF TEST SETUP**

Refer to the Report No.: AGC13040231202AP02

**APPENDIX B: PHOTOGRAPHS OF THE EUT**

Refer to the Report No.: AGC13040231202AP03

**----END OF REPORT----**

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Attestation of Global Compliance(Shenzhen)Co., Ltd

Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd

Tel: +86-755 2523 4088 E-mail: [agc@agccert.com](mailto:agc@agccert.com) Web: <http://www.agccert.com/>



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