FCC TEST REPORT

Report No.:	BIXN-ESH-P20100365B-2
FCC ID:	2AXP2-WDK1
Product:	Wireless Mouse Dongle Kit
Test Model:	GLO-ACC-MS-WDK-MB, GLO-ACC-MS-WDK-MW
Received:	Nov.16, 2020
ISSUED:	Dec.14. 2020
Applicant:	GLORIOUS PC GAMING RACE LLC
Address:	13809 Research Blvd Suite 500 PMB 93206 Austin, TX 78750, USA
Issued By:	BUREAU VERITAS ADT (Shanghai) Corporation
Lab Location:	No. 829, Xinzhuan Road, Shanghai, P.R.China (201612)

ACCREDITED
Test Lab
Cert 2343.01

Contents

1. TEST PROGRAM

PRODUCT: Wireless Mouse Dongle Kit

BRAND: GLORIOUS PC GAMING RACE

TEST MODEL: GLO-ACC-MS-WDK-MB, GLO-ACC-MS-WDK-MW

APPLICANT: GLORIOUS PC GAMING RACE LLC

TESTED: Nov.17 to Dec.13. 2020

STANDARDS: 47 CFR FCC Part15, Subpart B, Class B
ANSI C63.4:2014

We, BUREAU VERITAS ADT (Shanghai) Corporation, declare that the equipment above has been tested and found compliance with the requirement limits of applicable standards. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate under the standards herein specified.

PREPARED BY : Yuan Zhang , **DATE:** Dec.14. 2020

Yuan ZHANG
Project Engineer

APPROVED BY : , **DATE:** Dec.14. 2020

Daniel Sun
EMC Lab Manager

2. Summary of Test Procedure and Test Results

EMISSION (47 CFR FCC Part15, Subpart B)		
Test Item	Normative References	Test Result
Conducted Emission	47 CFR FCC Part15, Subpart B 15.107	Meets the Class B requirements
Radiated Emission	47 CFR FCC Part15, Subpart B 15.109	Meets the Class B requirements

3. Test Configuration of Equipment under Test

3.1 Manufacturer information

Manufacturer : Dongguan Chuand Electronics Technology Co., Ltd.

Address : Xihe Industrial Area, Sijia Village, Shijie Town, Dongguan City 523297, Guangdong Province, China

3.2 Feature of Equipment under Test

Product Name:	Wireless Mouse Dongle Kit
Test Model:	GLO-ACC-MS-WDK-MB, GLO-ACC-MS-WDK-MW
Model Discrepancy:	All models have the same PCB layout, electrical principles and components used. The only difference is the color.
FCC ID:	2AXP2-WDK1
EUT Power Rating:	Powered by USB

Note:
1. Please refer to user manual.
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3.3 Description of support units

NO.	PRODUCT	BRAND	MODEL NO.
1	PC	LENOVO	ThinkPad L470

3.4 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT:

This listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

Measurement		Value
Conducted emissions		2.55 dB
Radiated emissions	30 MHz ~ 1GHz	3.22 dB
	Above 1GHz	2.89 dB

4 Test of Conducted Emission

4.1 Test Limit

TEST STANDARD:

CFR 47 FCC Part 15, Subpart B (Section: 15.107)

FREQUENCY (MHz)	Class A (dBµV)		Class B (dBµV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

NOTES: 1.The lower limit shall apply at the transition frequencies.

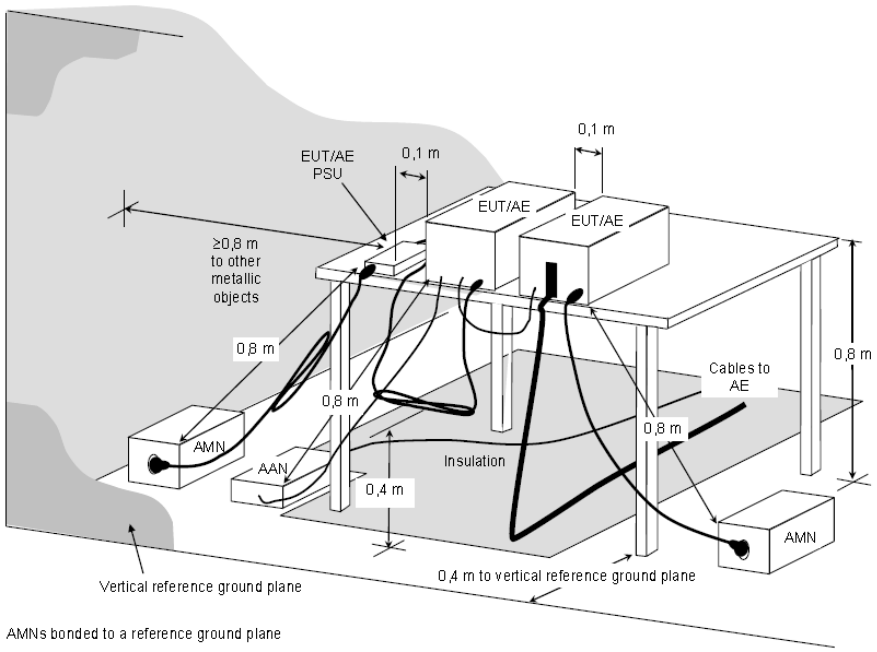
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.2 Test Procedures

1. The EUT was placed on a desk 0.8 meter height from the metal ground plane and 0.4 meter from the conducting wall of the shielding room and it was kept at least 0.8 meters from any other grounded conducting surface.
2. Connect EUT to the power mains through a Artificial Mains Network (AMN).
3. All the support units are connecting to the other AMN.
4. The AMN provides 50 ohm coupling impedance for the measuring instrument.
5. The CISPR states that a 50 ohm, 50 micro-Henry AMN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched
8. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

4.3 Typical Test Setup



NOTE The 0,8 m distance specified between EUT/AE/PSU and AMN/AAN, is applicable only to the EUT being measured. If the device is AE then it shall be ≥0,8 m.

Figure D.2 – Example measurement arrangement for table-top EUT (Conducted emission measurement – alternative 1)

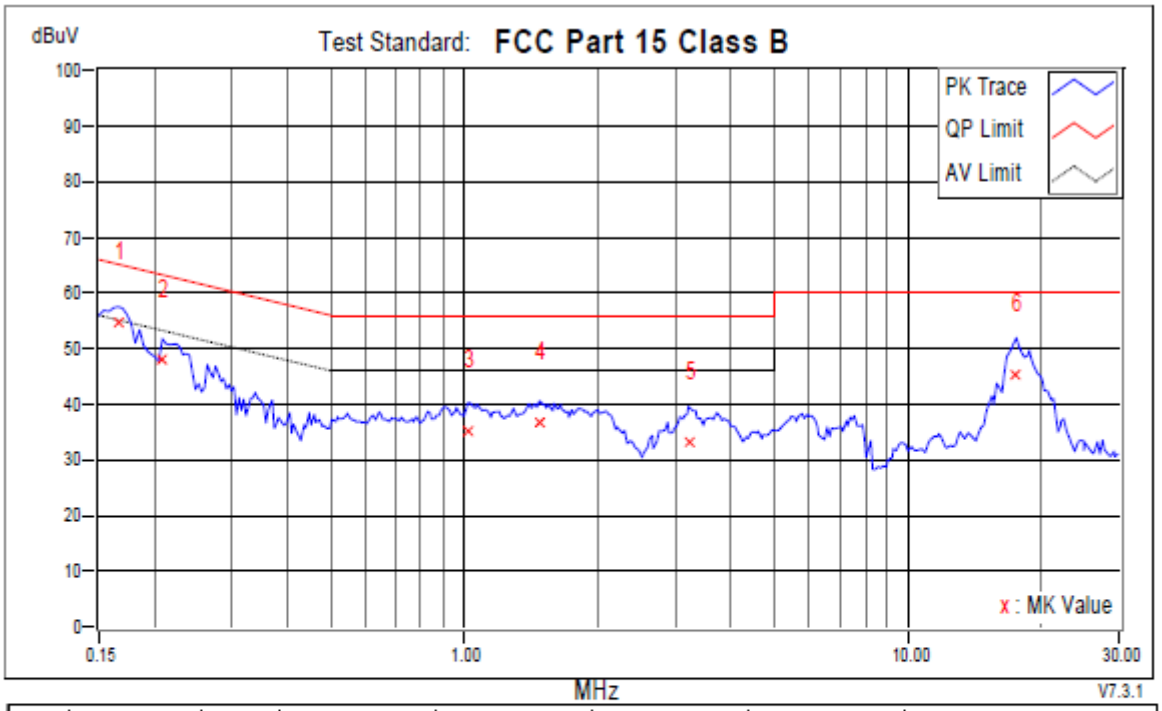
4.4 Measurement Equipment

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	E1R1001	Mar.11, 2021
LISN ROHDE & SCHWARZ	ENV216	E1L1011	Mar.11, 2021
Software ADT	ADT_Cond_V7.3.0	N/A	N/A

4.5 Test Result and Data

Conducted Emission Test Data

Phase : LINE

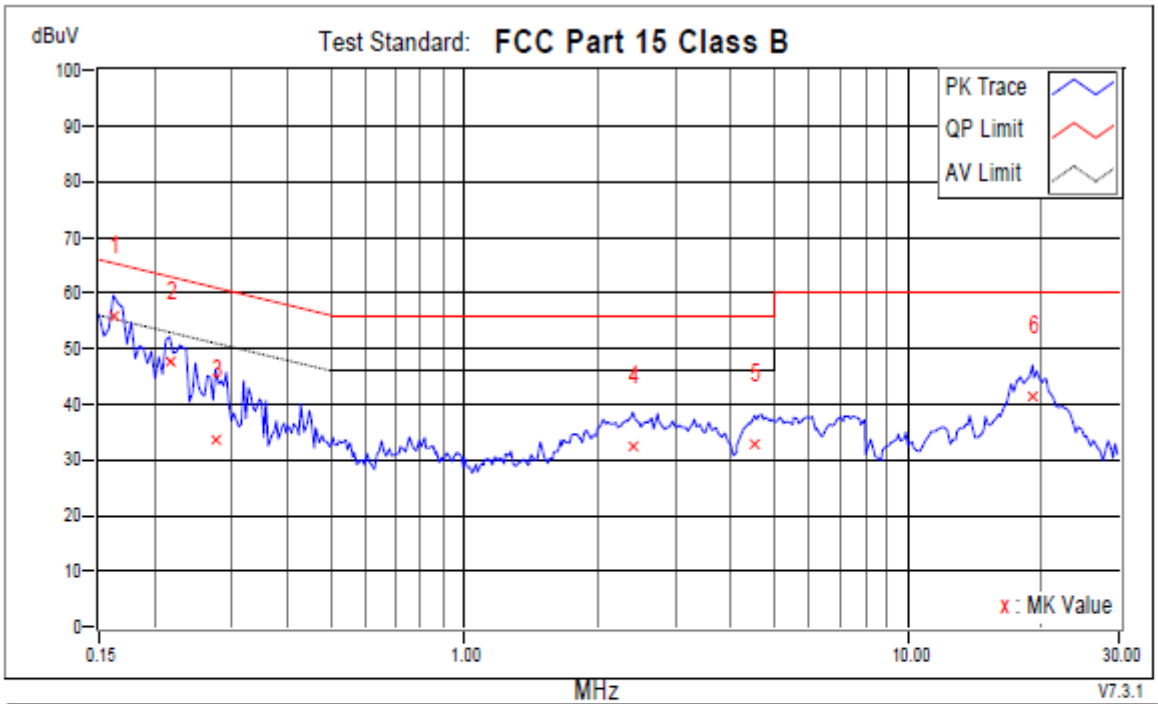


No.	Frequency MHz	Corr. Factor dB	Reading dBuV QP	Reading dBuV AV	Emission dBuV QP	Emission dBuV AV	Limit dBuV QP	Limit dBuV AV	Margins dB QP	Margins dB AV	Notes
+1	0.16564	9.88	44.87	28.31	54.75	38.19	65.18	55.18	-10.43	-16.99	
2	0.20865	9.88	38.03	17.23	47.91	27.11	63.26	53.26	-15.35	-26.15	
3	1.01955	9.61	25.58	14.62	35.19	24.23	56.00	46.00	-20.81	-21.77	
4	1.47702	9.70	27.19	17.21	36.89	26.91	56.00	46.00	-19.11	-19.09	
5	3.20133	9.90	23.23	14.64	33.13	24.54	56.00	46.00	-22.87	-21.46	
6	17.55412	10.31	34.92	24.40	45.23	34.71	60.00	50.00	-14.77	-15.29	

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

Phase : NEUTRAL



No.	Frequency MHz	Corr. Factor dB	Reading dBuV QP	Reading dBuV AV	Emission dBuV QP	Emission dBuV AV	Limit dBuV QP	Limit dBuV AV	Margins dB QP	Margins dB AV	Notes
+1	0.16173	9.87	45.96	25.81	55.83	35.68	65.37	55.37	-9.55	-19.70	
2	0.21647	9.84	37.66	10.09	47.50	19.93	62.95	52.95	-15.45	-33.02	
3	0.27512	9.88	23.61	8.67	33.49	18.55	60.96	50.96	-27.47	-32.41	
4	2.39587	9.99	22.31	13.83	32.30	23.82	56.00	46.00	-23.70	-22.18	
5	4.51118	9.81	22.97	15.83	32.78	25.64	56.00	46.00	-23.22	-20.36	
6	19.10248	10.41	30.95	22.81	41.36	33.22	60.00	50.00	-18.64	-16.78	

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

4.6 Test Photographs

Please refer to the attached file (Test Setup Photo).

5 Test of Radiated Emission

5.1 Test Limit

TEST STANDARD:

CFR 47 FCC Part 15, Subpart B (Section: 15.109)

FOR FREQUENCY BELOW 1000 MHz

FREQUENCY (MHz)	Class A (at 10m)		Class B (at 3m)	
	μV/m	dBμV/m	μV/m	dBμV/m
30 – 88	90	39.1	100	40.0
88 – 216	150	43.5	150	43.5
216 – 960	210	46.4	200	46.0
960 – 1000	300	49.5	500	54.0

LIMIT OF RADIATED EMISSION OF FCC PART 15, SUBPART B FOR FREQUENCY ABOVE 1000 MHz

FREQUENCY (MHz)	Class A (dBμV/m) (at 3m)		Class B (dBμV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80.0	60.0	74.0	54.0

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

2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

5.2 Test Procedures

1. The EUT was placed on a rotatable table top 0.8 meter above ground.
2. The EUT was set 3/10 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a half wave dipole and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
5. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
7. If the emission level of the EUT in peak mode was 3 dB lower than the 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 and reported.

5.3 Typical Test Setup

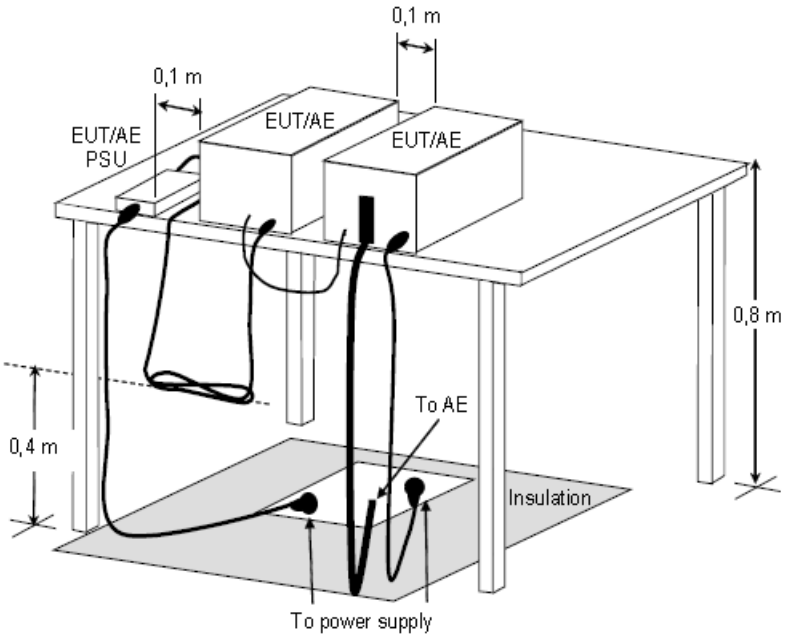


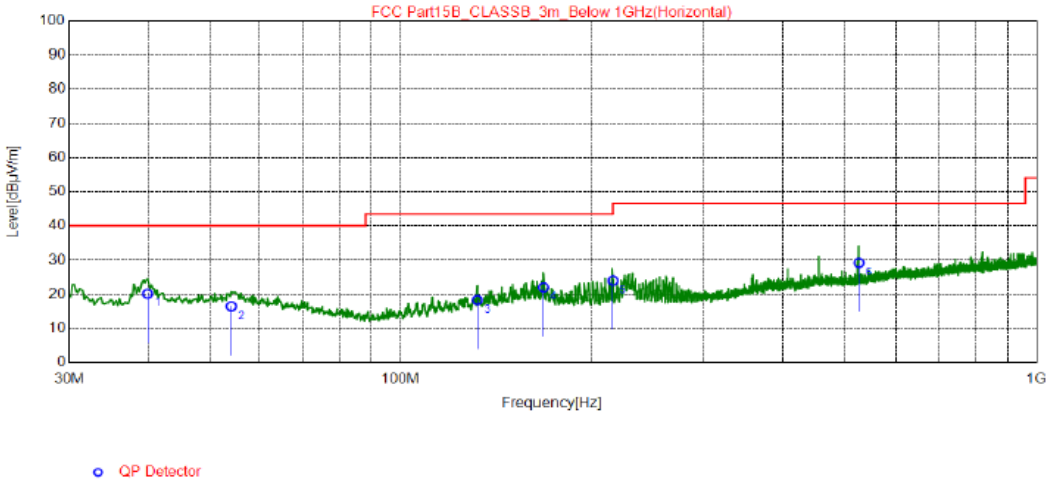
Figure D.8 – Example measurement arrangement for table-top EUT (Radiated emission measurement)

5.4 Measurement Equipment

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
EMI Test Spectrum ROHDE & SCHWARZ	ESR7	E1R1005	May.11, 2021
Spectrum Analyzer Keysight	N9030B	E1S1003	Aug.03, 2021
Broad-Band Antenna Schwarzbeck	VULB9168	E1A1012	Jul.27, 2021
Double Riaged Vroadband Horn Antenna Schwarzbeck	BBHA9120D	E1A1017	Jan.25, 2021
Preamplifier Agilent	8447D	E1A2001	Apr.19, 2021
Preamplifier Agilent	EMC051845SE	E1A2009	Jul.05, 2021

5.5 Test Result and Data (30MHz ~ 1GHz)

Position: Horizontal

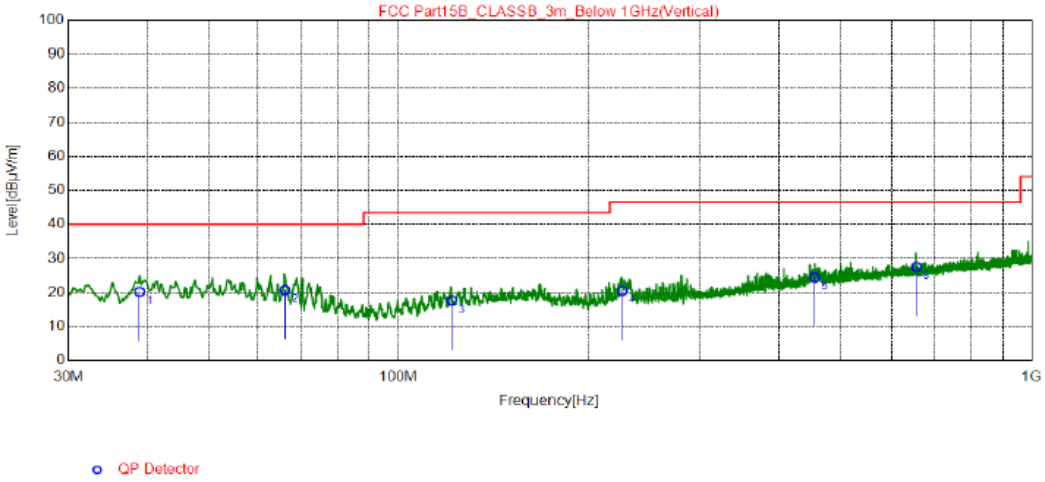


NO.	Freq. [MHz]	QP Reading [dBµV/m]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	39.89	30.58	-10.45	20.13	40.00	19.87	200	20	Horizontal
2	54.05	26.35	-9.93	16.42	40.00	23.58	200	289	Horizontal
3	132.0	29.45	-11.19	18.26	43.50	25.24	200	263	Horizontal
4	167.9	32.21	-10.21	22.00	43.50	21.50	200	281	Horizontal
5	216.0	35.79	-11.82	23.97	46.50	22.53	200	281	Horizontal
6	527.2	33.27	-4.08	29.19	46.50	17.31	200	241	Horizontal

REMARKS:

1. Q.P. is abbreviation of quasi-peak individually.
2. The emission levels of other frequencies were very low against the limit.
3. QP Margin value = QP Limit value – QP value.
4. Factor = Antenna Factor + Amplifier Factor + Cable loss.
5. QP value = Factor + Reading Value.

Position: Vertical



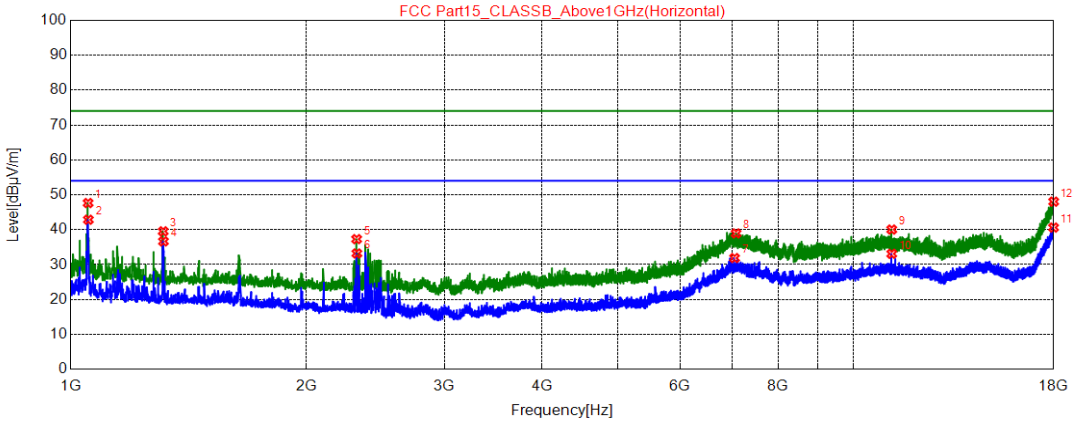
NO.	Freq. [MHz]	QP Reading [dBµV/m]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	38.92	30.74	-10.57	20.17	40.00	19.83	100	20	Vertical
2	66.08	32.01	-11.35	20.66	40.00	19.34	100	261	Vertical
3	121.3	29.97	-12.35	17.62	43.50	25.88	100	120	Vertical
4	225.9	32.01	-11.54	20.47	46.50	26.03	100	269	Vertical
5	456.0	29.48	-5.06	24.42	46.50	22.08	100	210	Vertical
6	657.0	29.53	-2.01	27.52	46.50	18.98	100	325	Vertical

REMARKS:

1. Q.P. is abbreviation of quasi-peak individually.
2. The emission levels of other frequencies were very low against the limit.
3. QP Margin value = QP Limit value – QP value
4. Factor = Antenna Factor + Amplifier Factor + Cable loss
5. QP value = Factor + Reading Value.

5.6 Test Result and Data (1GHz ~ 18GHz)

Position: Horizontal

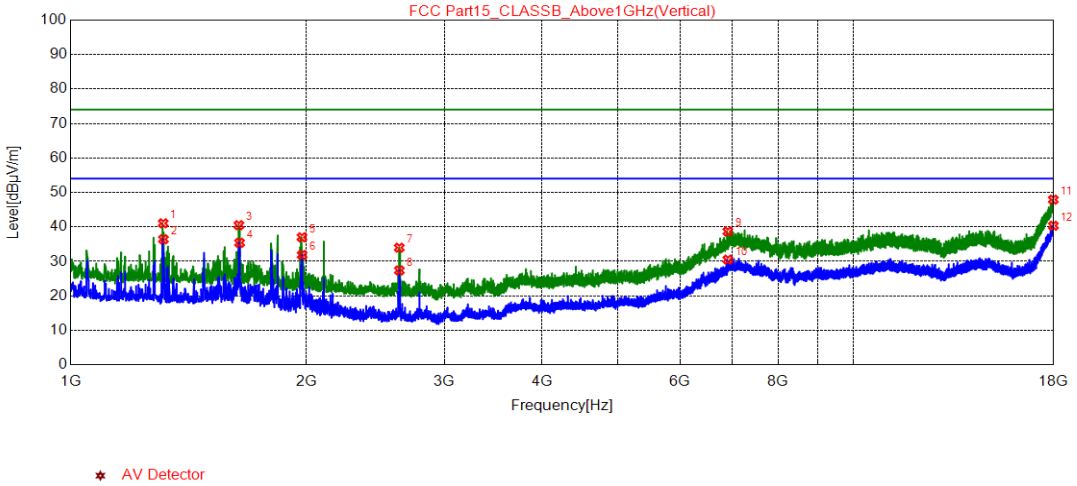


NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1052.7	67.99	-20.3	47.64	74.00	26.36	100	261	Horizontal
2	1053.5	63.20	-20.3	42.86	54.00	11.14	100	300	Horizontal
3	1312.8	59.01	-19.4	39.53	74.00	34.47	100	261	Horizontal
4	1313.6	56.11	-19.4	36.64	54.00	17.36	100	300	Horizontal
5	2318.3	53.37	-16.0	37.29	74.00	36.71	100	222	Horizontal
6	2320.0	49.26	-16.0	33.19	54.00	20.81	100	106	Horizontal
7	7042.6	32.04	-0.17	31.87	54.00	22.13	100	340	Horizontal
8	7074.1	39.18	-0.25	38.93	74.00	35.07	100	106	Horizontal
9	11180.	39.54	0.50	40.04	74.00	33.96	100	106	Horizontal
10	11181.	32.59	0.50	33.09	54.00	20.91	100	106	Horizontal
11	17990.	25.90	14.71	40.61	54.00	13.39	100	183	Horizontal
12	17997.	33.25	14.78	48.03	74.00	25.97	100	144	Horizontal

REMARKS:

1. The emission levels of other frequencies were very low against the limit.
2. Margin = Limit –Level

Position: Vertical



NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1312.8	60.54	-19.4	41.06	74.00	32.94	100	292	Vertical
2	1313.6	55.89	-19.4	36.42	54.00	17.58	100	254	Vertical
3	1640.0	58.89	-18.3	40.51	74.00	33.49	100	292	Vertical
4	1643.4	53.76	-18.3	35.39	54.00	18.61	100	20	Vertical
5	1974.1	54.33	-17.3	36.99	74.00	37.01	100	292	Vertical
6	1974.9	49.21	-17.3	31.87	54.00	22.13	100	292	Vertical
7	2627.7	48.98	-15.0	33.98	74.00	40.02	100	254	Vertical
8	2628.6	42.37	-15.0	27.37	54.00	26.63	100	254	Vertical
9	6904.9	39.48	-0.81	38.67	74.00	35.33	100	292	Vertical
10	6905.8	31.30	-0.80	30.50	54.00	23.50	100	254	Vertical
11	17977.	33.32	14.58	47.90	74.00	26.10	100	60	Vertical
12	17982.	25.72	14.62	40.34	54.00	13.66	100	292	Vertical

REMARKS:

1. The emission levels of other frequencies were very low against the limit.
2. Margin = Limit –Level

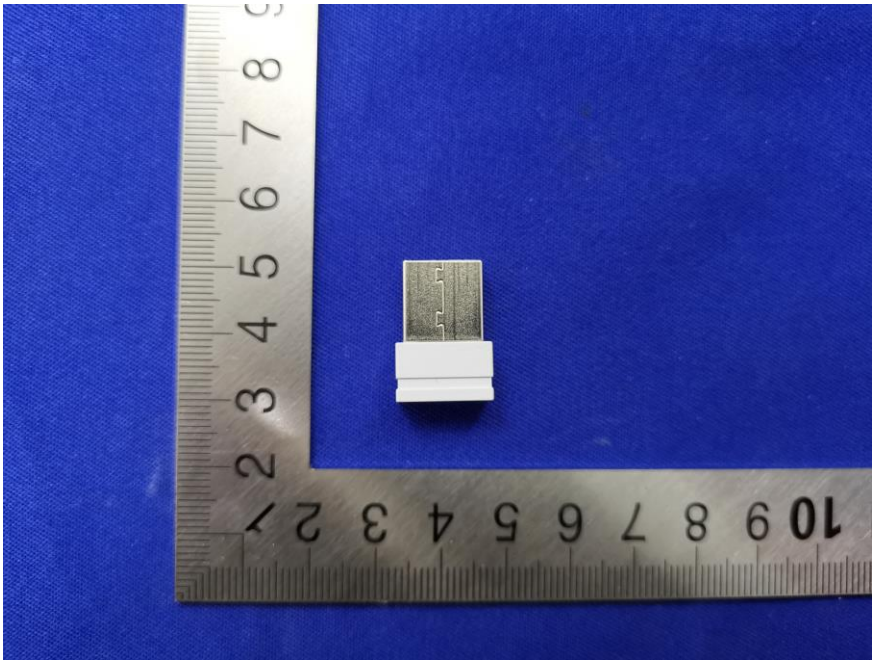
5.7 Test Photographs (30MHz ~ 1000MHz)

Please refer to the attached file (Test Setup Photo).

5.8 Test Photographs (1000MHz ~ 18000MHz)

Please refer to the attached file (Test Setup Photo).

6 Photographs of EUT



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