



# FCC TEST REPORT

**Report No.:** PYU-ESH-P20092485B-2

**FCC ID:** 2AHGM-S-PFW01-U

**Product:** WIFI socket

**Test Model:** smart-PFW01-U

**Received:** Oct.10, 2020

**ISSUED:** Dec.23, 2020

**Applicant:** NINGBO YUSING LIGHTING CO.,LTD

**Address:** NO.1199 Mingguang Road, Jiangshan Town,Ningbo,China

**Issued By:** BUREAU VERITAS ADT (Shanghai) Corporation

**Lab Location:** No. 829, Xinzhuan Road, Shanghai, P.R.China (201612)

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# Contents

<b>1. TEST PROGRAM.....</b>	<b>3</b>
<b>2. Summary of Test Procedure and Test Results .....</b>	<b>4</b>
<b>3. Test Configuration of Equipment under Test .....</b>	<b>5</b>
3.1 Manufacturer information.....	5
3.2 Feature of Equipment under Test.....	5
3.3 Description of support units .....	5
3.4 Measurement Uncertainty .....	6
<b>4 Test of Conducted Emission .....</b>	<b>7</b>
4.1 Test Limit .....	7
4.2 Test Procedures .....	8
4.3 Typical Test Setup .....	8
4.4 Measurement Equipment .....	9
4.5 Test Result and Data .....	10
4.6 Test Photographs .....	12
<b>5 Test of Radiated Emission .....</b>	<b>13</b>
5.1 Test Limit .....	13
5.2 Test Procedures .....	14
5.3 Typical Test Setup .....	14
5.4 Measurement Equipment .....	15
5.5 Test Result and Data (30MHz ~ 1GHz).....	16
5.6 Test Result and Data (1GHz ~ 18GHz).....	18
5.7 Test Photographs (30MHz ~ 1000MHz).....	20
5.8 Test Photographs (1000MHz ~ 18000MHz).....	21
<b>6 Photographs of EUT .....</b>	<b>22</b>

## 1. TEST PROGRAM

**PRODUCT:** WIFI socket  
**TEST MODEL:** smart-PFW01-U  
**APPLICANT:** NINGBO YUSING LIGHTING CO.,LTD  
**TESTED:** Oct.11 to Dec.22, 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.23, 2020  
Yuan ZHANG  
Project Engineer

**APPROVED BY :** Daniel SUN, **DATE:** Dec.23, 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



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### 3. Test Configuration of Equipment under Test

#### 3.1 Manufacturer information

Manufacturer : NINGBO YUSING LIGHTING CO.,LTD

Address : NO.1199 Mingguang Road, Jiangshan Town,Ningbo,China

#### 3.2 Feature of Equipment under Test

<b>Product Name:</b>	WIFI socket
<b>Test Model:</b>	smart-PFW01-U
<b>Model Discrepancy:</b>	--
<b>EUT Power Rating:</b>	110-130V~,10A

Note:

1. Please refer to user manual.

#### 3.3 Description of support units

NO.	PRODUCT	BRAND	MODEL NO.
1	Mobile Phone	Vivo	--

### 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)**

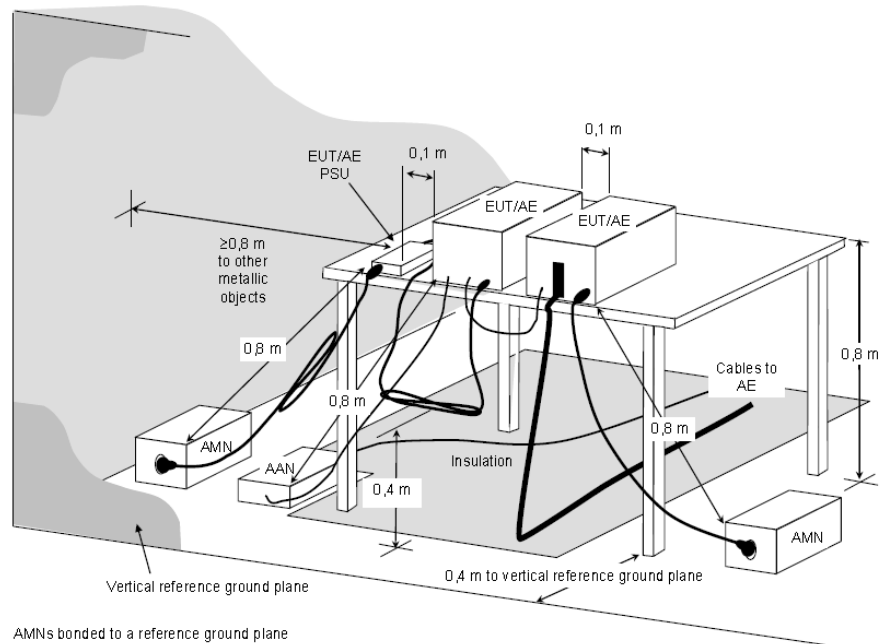
FREQUENCY (MHz)	Class A (dB $\mu$ V)		Class B (dB $\mu$ V)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

- 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



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





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#### 4.4 Measurement Equipment

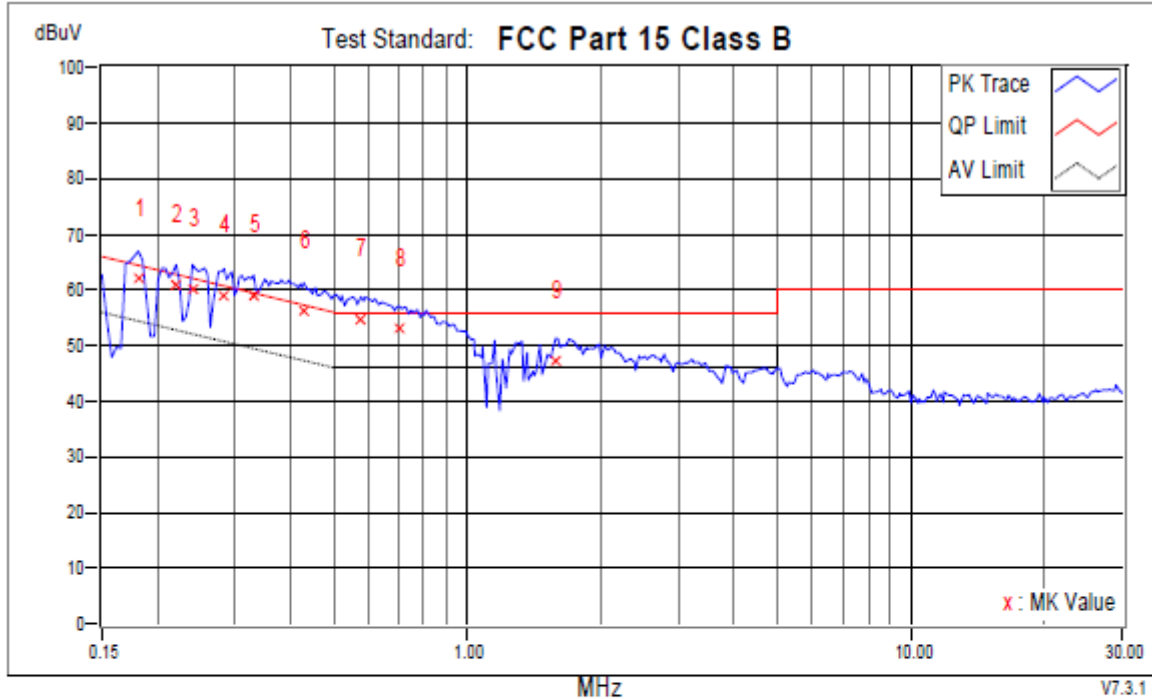
DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	E1R1001	Mar.11, 2021
LISN ROHDE & SCHWARZ	ENV216	E1L1011	Mar.11, 2021
Software ADT	ADT_Cond_V7.3.0	N/A	N/A



### 4.5 Test Result and Data

#### Conducted Emission Test Data

Phase : LINE



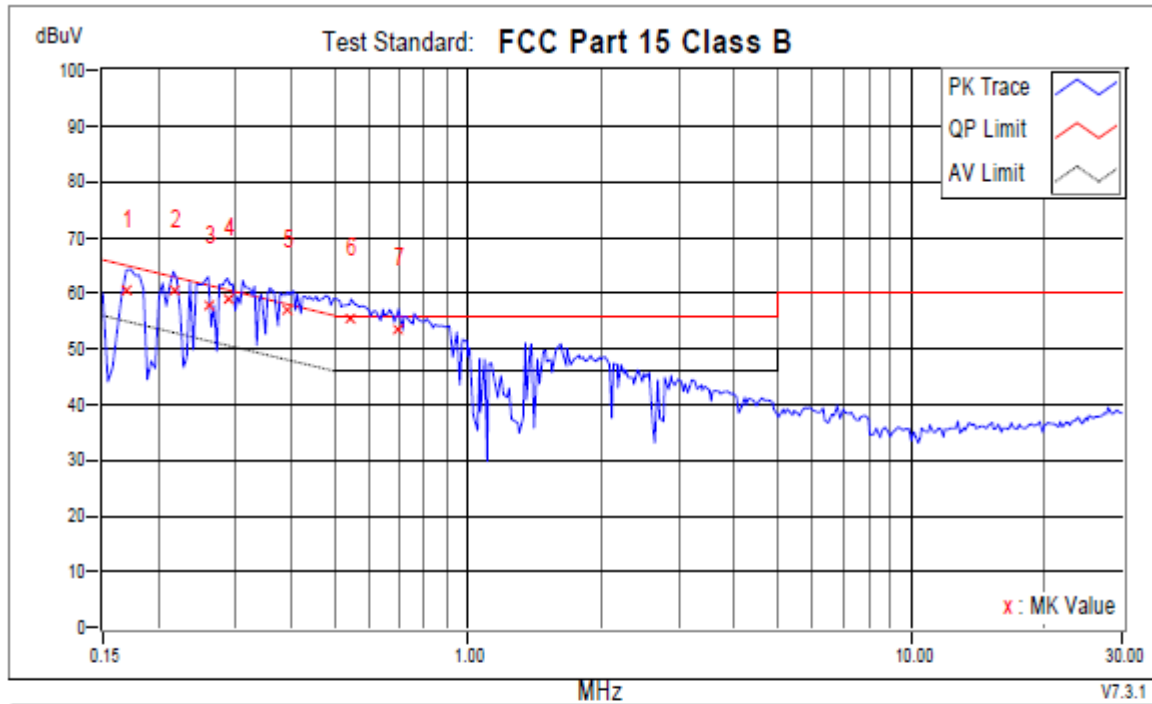
No.	Frequency MHz	Corr. Factor dB	Reading dBuV		Emission dBuV		Limit dBuV		Margins dB		Notes
			QP	AV	QP	AV	QP	AV	QP	AV	
1	0.18128	9.88	52.27	30.98	62.15	40.86	64.43	54.43	-2.27	-13.56	
2	0.22038	9.86	51.04	26.89	60.90	36.75	62.80	52.80	-1.91	-16.06	
3	0.23993	9.83	50.42	28.35	60.25	38.18	62.10	52.10	-1.85	-13.92	
4	0.28294	9.76	49.35	28.52	59.11	38.28	60.73	50.73	-1.62	-12.45	
+5	0.32986	9.74	49.07	26.62	58.81	36.36	59.45	49.45	-0.65	-13.10	
6	0.42761	9.75	46.41	25.03	56.16	34.78	57.30	47.30	-1.14	-12.52	
7	0.57619	9.70	45.02	27.15	54.72	36.85	56.00	46.00	-1.28	-9.15	
8	0.70131	9.62	43.46	25.37	53.08	34.99	56.00	46.00	-2.92	-11.01	
9	1.58259	9.72	37.70	26.54	47.42	36.26	56.00	46.00	-8.58	-9.74	

**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		Emission dBuV		Limit dBuV		Margins dB		Notes
			QP	AV	QP	AV	QP	AV	QP	AV	
1	0.16955	9.86	50.60	27.47	60.46	37.33	64.98	54.98	-4.52	-17.65	
2	0.21647	9.84	50.85	28.22	60.69	38.06	62.95	52.95	-2.26	-14.89	
3	0.25948	9.87	48.03	20.35	57.90	30.22	61.45	51.45	-3.55	-21.23	
4	0.28685	9.89	49.17	26.06	59.06	35.95	60.62	50.62	-1.55	-14.66	
5	0.39242	9.90	46.95	21.76	56.85	31.66	58.01	48.01	-1.17	-16.36	
+6	0.54491	9.86	45.75	24.13	55.61	33.99	56.00	46.00	-0.39	-12.01	
7	0.69740	9.83	43.74	21.00	53.57	30.83	56.00	46.00	-2.43	-15.17	

**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.



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## 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)	
	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
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

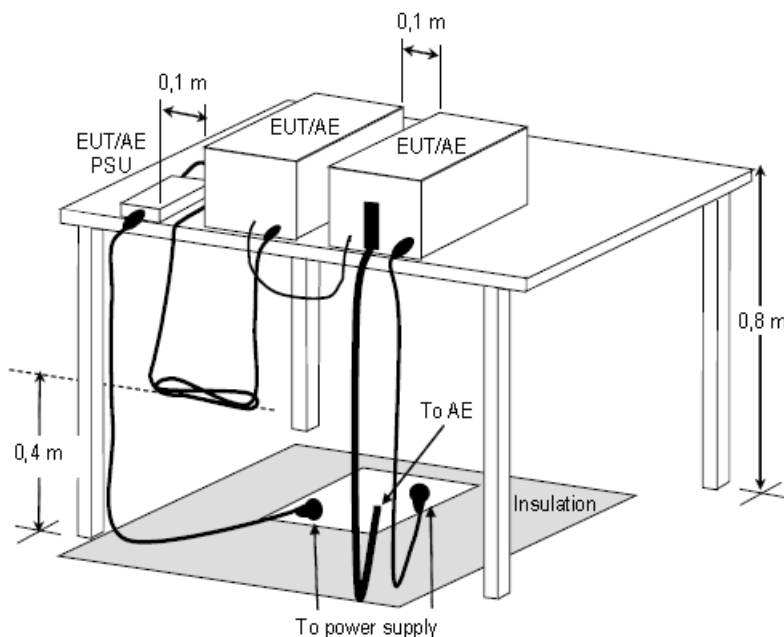
FREQUENCY (MHz)	Class A ( $\text{dB}\mu\text{V/m}$ ) (at 3m)		Class B ( $\text{dB}\mu\text{V/m}$ ) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80.0	60.0	74.0	54.0

- Note:**
1. The lower limit shall apply at the transition frequencies.
  2. Emission level ( $\text{dB}\mu\text{V/m}$ ) =  $20 \log$  Emission level ( $\mu\text{V/m}$ ).
  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)**



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## 5.4 Measurement Equipment

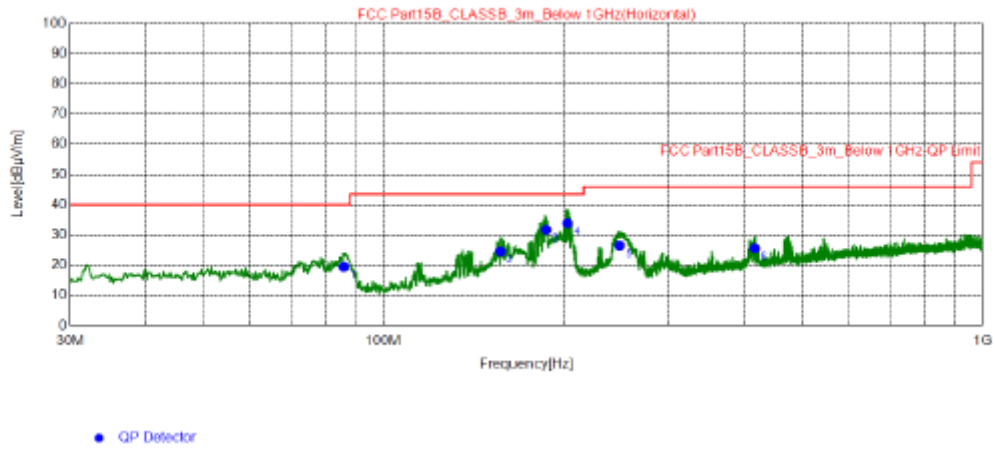
DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
EMI Test Spectrum ROHDE & SCHWARZ	ESR7	E1R1005	May.11, 2021
Spectrum Analyzer Keysight	N9030B	E1S1003	Aug.03, 2021
Broad-Band Antenna Schwarzbeck	VULB9168	E1A1012	Jul.27, 2021
Double Riaged Vroadband Horn Antenna Schwarzbeck	BBHA9120D	E1A1017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



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

Position: Horizontal



### Final Data List

NO.	Freq. [MHz]	QP Reading [dB μV/m]	Factor [dB]	QP Value [dB μV/m]	QP Limit [dB μV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	85.87	34.7	-15.25	19.45	40.00	20.55	200	90	Horizontal
2	156.8	34.43	-9.85	24.58	43.50	18.92	200	158	Horizontal
3	186.9	43.03	-11.32	31.71	43.50	11.79	200	349	Horizontal
4	203.0	45.98	-12.07	33.91	43.50	9.59	200	313	Horizontal
5	247.8	37.18	-10.68	26.50	46.00	19.50	200	54	Horizontal
6	417.0	31.47	-5.90	25.57	46.00	20.43	200	235	Horizontal

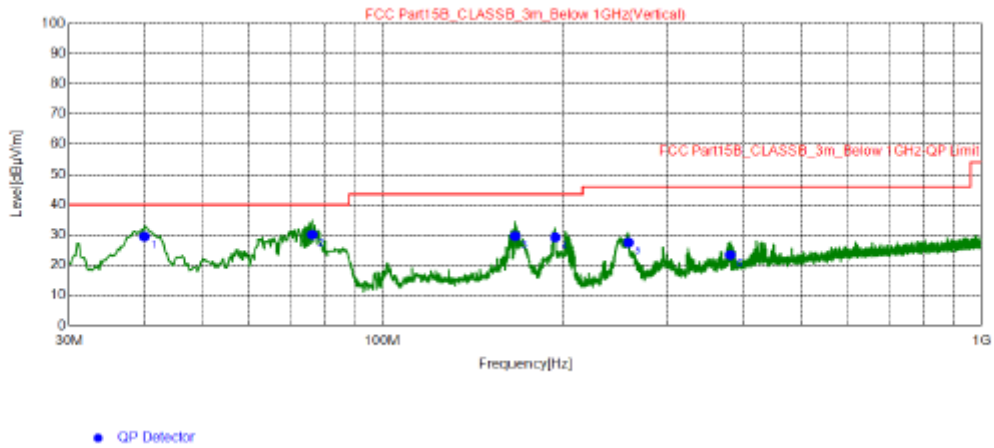
### REMARKS:

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



Final Data List									
NO.	Freq. [MHz]	QP Reading [dB µV/m]	Factor [dB]	QP Value [dB µV/m]	QP Limit [dB µV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	40.08	39.89	-10.43	29.46	40.00	10.54	100	196	Vertical
2	76.36	43.61	-13.50	30.11	40.00	9.89	100	238	Vertical
3	166.5	39.75	-10.13	29.62	43.50	13.88	100	40	Vertical
4	194.5	40.98	-11.79	29.19	43.50	14.31	100	212	Vertical
5	257.7	37.73	-10.19	27.54	46.00	18.46	100	76	Vertical
6	381.1	29.97	-6.59	23.38	46.00	22.62	100	181	Vertical

**REMARKS:**

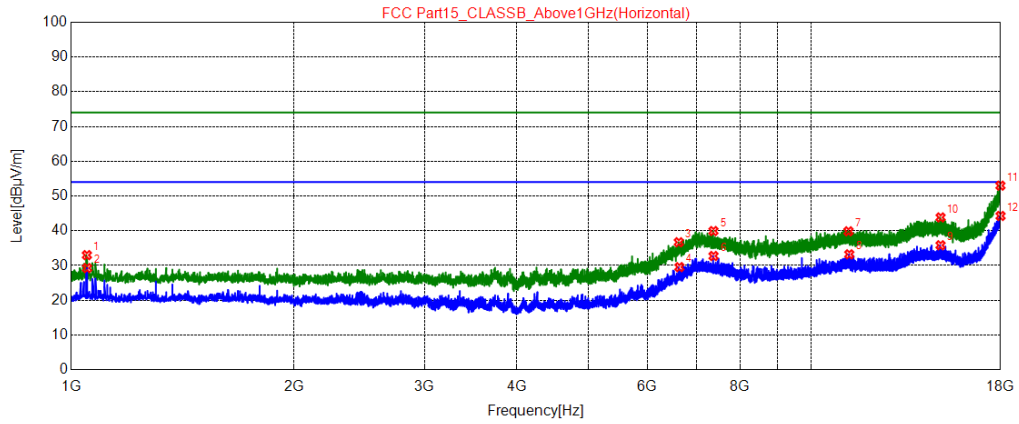
1. Q.P. is abbreviation of quasi-peak individually.
2. The emission levels of other frequencies were very low against the limit.
3. QP Margin value = QP Limit value – QP value
4. Factor = Antenna Factor + Amplifier Factor + Cable loss
5. QP value = Factor + Reading Value.



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

Position: Horizontal



\* AV Detector

NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	1050.1500	53.35	32.99	74.00	41.01	100	148	Horizontal	PK
2	1051.0000	49.61	29.26	54.00	24.74	100	225	Horizontal	AV
3	6617.6500	39.69	36.70	74.00	37.30	100	263	Horizontal	PK
4	6630.4000	32.44	29.54	54.00	24.46	100	110	Horizontal	AV
5	7370.7500	40.93	39.92	74.00	34.08	100	340	Horizontal	AV
6	7372.4500	33.74	32.73	54.00	21.27	100	340	Horizontal	PK
7	11217.000	39.35	39.84	74.00	34.16	100	148	Horizontal	PK
8	11245.900	32.76	33.22	54.00	20.78	100	301	Horizontal	AV
9	14934.900	32.46	35.83	54.00	18.17	100	263	Horizontal	PK
10	14938.300	40.46	43.84	74.00	30.16	100	340	Horizontal	AV
11	17993.200	38.24	52.98	74.00	21.02	100	33	Horizontal	PK
12	17999.150	29.46	44.26	54.00	9.74	100	225	Horizontal	AV

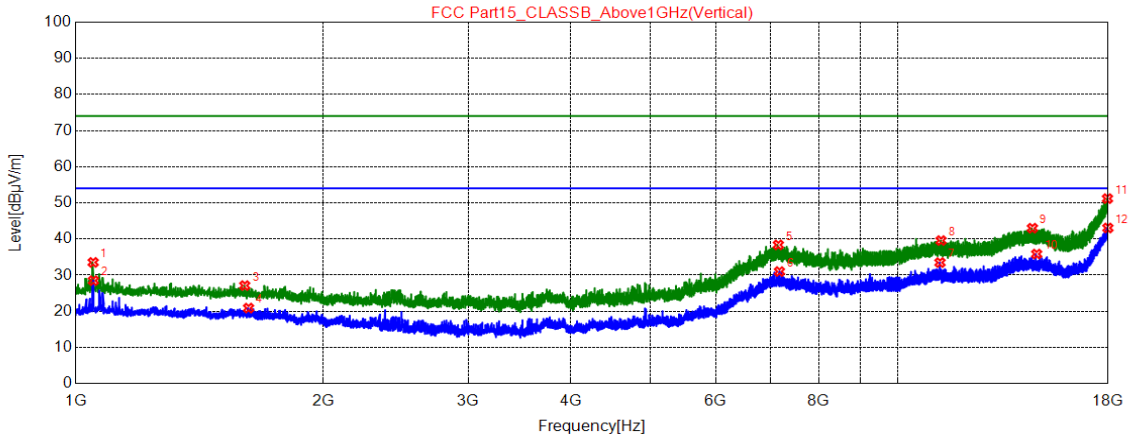
### REMARKS:

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



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Position: Vertical



\* AV Detector

NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity	Detector
1	1050.1500	53.89	33.53	74.00	40.47	100	59	Vertical	PK
2	1051.0000	48.82	28.47	54.00	25.53	100	329	Vertical	AV
3	1605.2000	45.61	27.11	74.00	46.89	100	213	Vertical	AV
4	1622.2000	39.32	20.88	54.00	33.12	100	174	Vertical	PK
5	7148.9000	38.80	38.37	74.00	35.63	100	252	Vertical	PK
6	7171.8500	31.48	30.99	54.00	23.01	100	174	Vertical	AV
7	11239.950	33.00	33.47	54.00	20.53	100	136	Vertical	PK
8	11273.100	39.14	39.57	74.00	34.43	100	329	Vertical	AV
9	14558.350	39.78	42.99	74.00	31.01	100	252	Vertical	AV
10	14733.450	32.58	35.84	54.00	18.16	100	136	Vertical	PK
11	17964.300	36.73	51.17	74.00	22.83	100	174	Vertical	AV
12	17985.550	28.39	43.05	54.00	10.95	100	59	Vertical	PK

**REMARKS:**

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



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## 5.7 Test Photographs (30MHz ~ 1000MHz)

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



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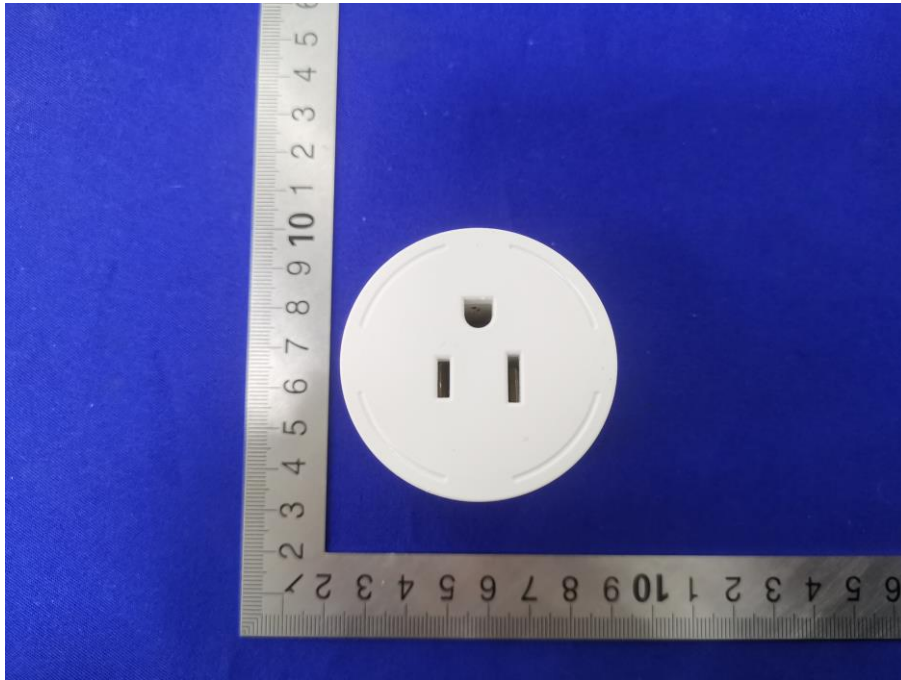
## 5.8 Test Photographs (1000MHz ~ 18000MHz)

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



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## 6 Photographs of EUT



--- END ---