FCC Part 15B TEST REPORT

Product Name : PPM 360 Meter

Model Name : DA120A

Prepared for:

Nielsen Audio, inc.
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TEL: /
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Prepared by:

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Report Number	**:**	UL05420170520FCC019-4
Date of Report	**:**	06-15-2017
Date of Test	**:**	05-25-2017~06-14-2017

Notes：

The test results only relate to these samples which have been tested.
Partly using this report will not be admitted unless been allowed by Unilab.
Unilab is only responsible for the complete report with the reported stamp of Unilab.

Applicant:	Nielsen Audio, inc. 7000 Columbia Gateway Drive, Suite 200, Columbia Maryland, USA 21046.
Manufacturer:	Nielsen Audio, inc. 7000 Columbia Gateway Drive, Suite 200, Columbia Maryland, USA 21046.
Product Name:	PPM 360 Meter
Brand Name:	Nielsen
Model Name:	DA120A
FCC ID:	IGKDA120A
EUT Voltage:	Extreme Low:3.5V Nominal:3.7V Extreme High:4.2V
Date of Receipt:	05-20-2017
Test Standard:	FCC CFR Tile 47 Part 15 Subpart B
Test Result:	Pass
Date of Test	05-25-2017-06-14-2017

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(Technical Engineer: Wayne Wu)

Reviewed by : Forest cao
(Senior Engineer: Forest Cao)

Approved by : Eva wang
(Supervisor: Eva Wang)

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1. TECHNIACL SUMMARY

1.1 SUMMARY OF STANDARDS AND TEST RESULTS

The EUT have been tested according to the applicable standards as referenced below:

Test Item	FCC	Result
Conducted disturbance	FCC 15.107	P*
Radiated disturbance	FCC 15.109	P

Note: P means pass, F means failure, N/A means not applicable

1.2 TEST UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test item	Value (dB)
Conducted disturbance	3.4
Radiated disturbance	4.2

1.3 TEST EQUIPMENT LIST

Equipment	Manufacturer	Model	Serial No.	Due Date	Cal interval
Receiver	Agilent	N9038A	MY51210142	11/05/2018	1 year
LISN	R&S	ENV216	100069	06/07/2018	1 year
ESG Vector Signal Generator	Agilent	E4438C	MY42081708	09/22/2019	3 years
Bilog Antenna	Schwarzbeck	VULB9160	9160-3316	09/08/2017	2 years
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-943	09/08/2017	2 years
Microwave Preamplifier	EM Electronics	EM30180	3008A02425	02/25/2018	1 year

1.4 TEST MODE AND DESCRIPTION

Test mode	Idle

1.5 TEST FACILITY

All test facilities used to collect the test data are located at No. 1350, Lianxi Rd. Pudong New District, Shanghai, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4: 2009, CISPR 16-1-1 and other equivalent standards. The laboratory is compliance with the requirements of the ISO/IEC/EN17025.

1.6 TEST SETUP CONFIGURATION

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

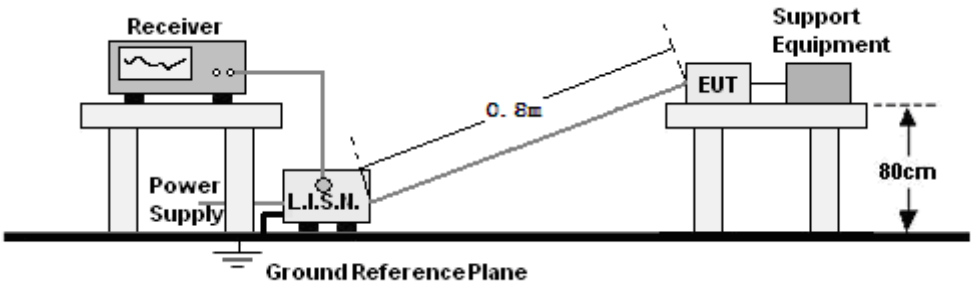
Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
3. All the tests were carried out with the EUT in normal operation. Which was shown in this test report is the worst test mode.

2. CONDUCTED DISTURBANCE

2.1 TEST SETUP

For mains port:



2.2 LIMITS

Limits for Class B digital devices

Frequency range (MHz)	Limits dB(μV)	
	Quasi-peak	Average
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50

NOTE: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz.

2.3 TEST PROCEDURE

For mains port:

a. The EUT and support equipment were placed on a nonconductive table 0.8m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane. The EUT connected to the main through Line Impedance Stability Network (L.I.S.N) to provide a 50 Ω/50uH coupling impedance for the measuring equipment. The support equipment is also connected to the main power through a LISN that provides a 50 Ω/50uH coupling impedance with 50 Ω terminations. Both sides of AC line (Line & Neutral) were checked to find out the maximum conducted emission.

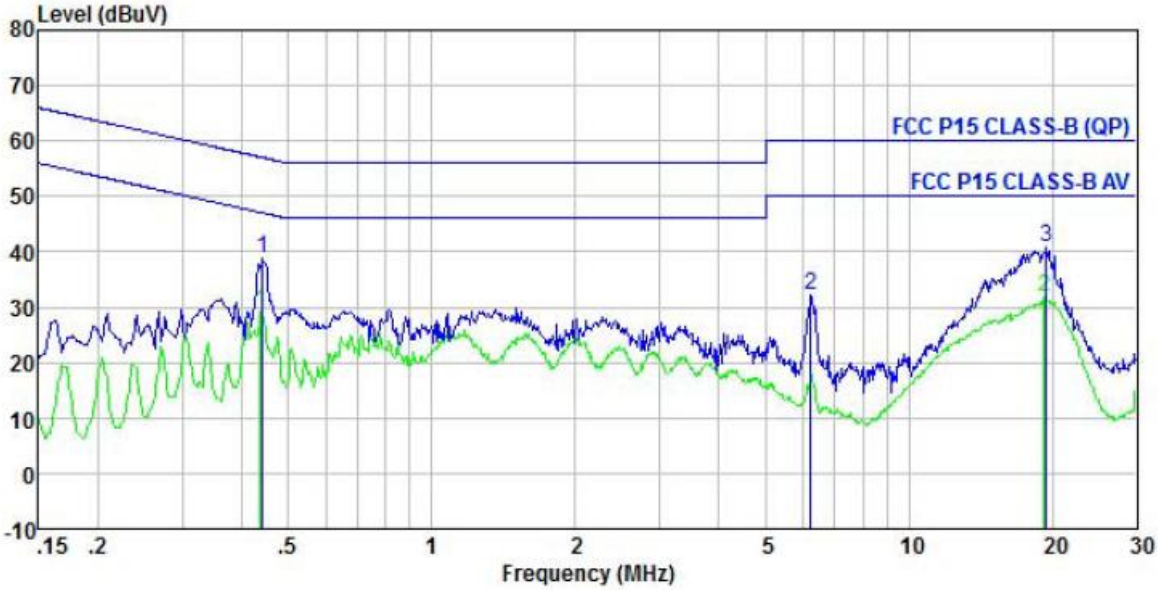
b. The RBW of the receiver was set at 9 kHz. The frequency range from 150 kHz to 30 MHz was checked. Run the receiver's pre-scan to record the maximum disturbance generated from EUT in all power lines in the full band.

c. For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

2.4 TEST RESULT

For mains port:

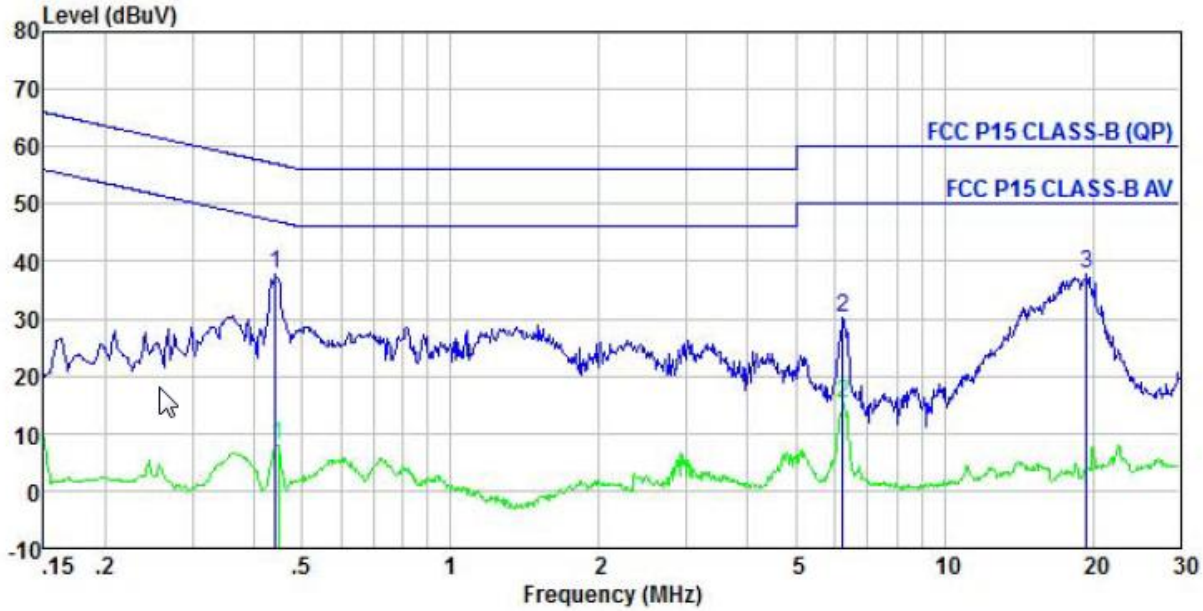
TEST MODE: idle mode **LISN: LINE**



Site : chamber
Condition : FCC P15 CLASS-B (QP) ENV216(L) LINE
EUT :
Model Name : DA120
Temp/Humi : 23.8 ℃ / 53%
Power Rating: AC220V/50Hz
Mode :
Memo : IDLE

	Freq	Read Level	LISN Factor	Cable Loss	Preamp Factor	Limit Level	Over Line	Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB	
1 pp	0.44	28.90	9.69	0.13	0.00	38.72	57.02	-18.30	Peak
2	6.22	22.24	9.64	0.25	0.00	32.13	60.00	-27.87	Peak
3	19.43	30.95	9.73	0.10	0.00	40.78	60.00	-19.22	Peak

TEST MODE: idle mode **LISN: NEUTRAL**



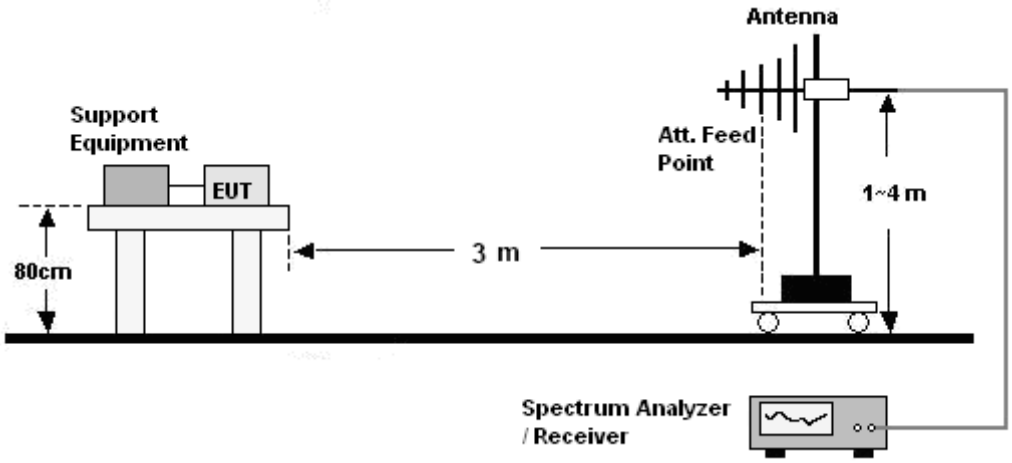
Site : chamber
Condition : FCC P15 CLASS-B (QP) ENV216(N) NEUTRAL
EUT :
Model Name : DA120
Temp/Humi : 23.8 ℃ / 53%
Power Rating: AC220V/50Hz
Mode :
Memo : IDLE

	Freq	Read Level	LISN Factor	Cable Loss	Preamp Factor	Limit Level	Over Line	Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB	
1	0.44	28.10	9.49	0.13	0.00	37.72	57.02	-19.30	Peak
2 pp	6.22	20.31	9.57	0.25	0.00	30.13	60.00	-29.87	Peak
3	19.43	27.83	9.85	0.10	0.00	37.78	60.00	-22.22	Peak

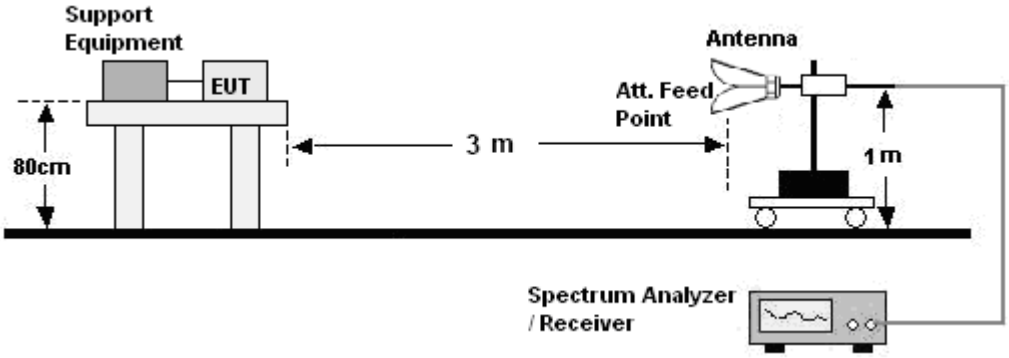
3. RADIATED DISTURBANCE (RE)

3.1 TEST SETUP

30MHz ~ 1GHz:



Above 1GHz:



3.2 LIMITS

Limits for Class B digital devices

Frequency (MHz)	limits at 3m dB(μV/m)
30-88	40.0
88-216	43.5
216-960	46.0
Above 960	54.0

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

2. The limits shown above are based on measuring equipment employing a CISPR quasi-peak detector function for frequencies below or equal to 1000MHz.

3. The limits shown above are based on measuring equipment employing an average detector function for frequencies above 1000MHz.

3.3 TEST PROCEDURE

30MHz ~ 1GHz:

a. The EUT and support equipment were placed on the non-conductive turntable 0.8m above the horizontal metal ground plane at a chamber. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. Broadband antenna (Calibrated Bilog Antenna) was used as receiving antenna.

b. The frequency range from 30MHz to 1GHz was checked. The RBW of the receiver was set at 120kHz. Set the receiver in Peak detector, Max Hold mode. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

c. For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where EUT radiated the maximum emission, then set the test frequency receiver to QP Detector and record the maximum value.

Above 1GHz:

a. The EUT and support equipment were placed on the non-conductive turntable 0.8m above the ground at a chamber. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. Horn antenna was used as receiving antenna.

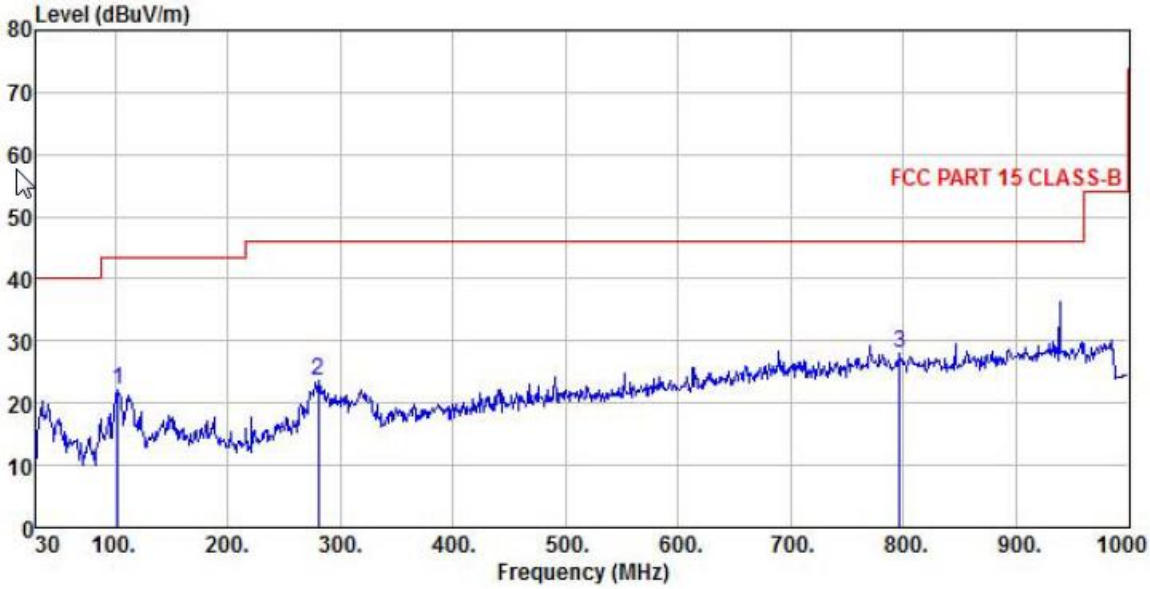
b. The frequency range above 1GHz was checked. The RBW of the receiver was set at 1MHz. Set the receiver in Peak detector, Max Hold mode. Record the maximum field strength of all the pre-scan process in the full band when the antenna is 1m and varied in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.

c. For each frequency whose maximum record was higher or close to limit, measure its Average value: rotate the turntable from 0 to 360 degrees to find the degree where EUT radiated the maximum emission, then set the test frequency receiver to EMI Average Detector and record the maximum value.

3.4 TEST RESULT

30MHz ~ 1GHz:

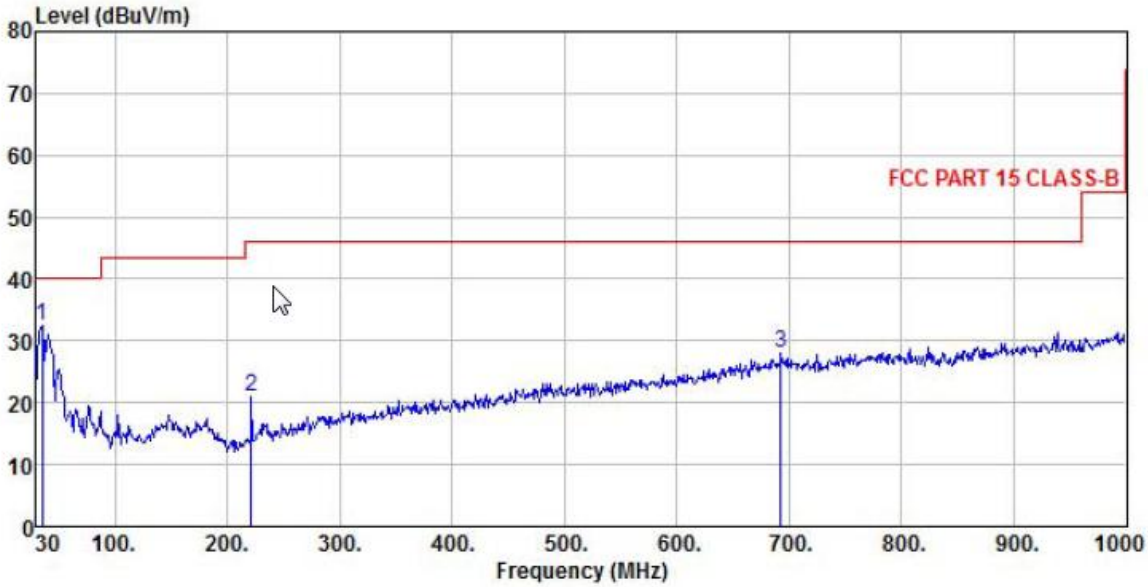
Test Mode: idle mode **Antenna Polarity: Horizontal**



Site : chamber
Condition : FCC PART 15 CLASS-B 3m VULB9168 HORIZONTAL
EUT :
Model Name : DA120
Temp/Humi : 23 ℃ / 55 %
Power Rating:
Mode :
Memo : IDLE

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Limit Level	Over Line	Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB	
1	102.75	9.79	11.02	1.33	0.00	22.14	43.50	-21.36	Peak
2	280.26	7.63	13.89	2.20	0.00	23.72	46.00	-22.28	Peak
3 pp	796.30	2.20	21.94	3.80	0.00	27.94	46.00	-18.06	Peak

Test Mode: idle mode **Antenna Polarity: Vertical**

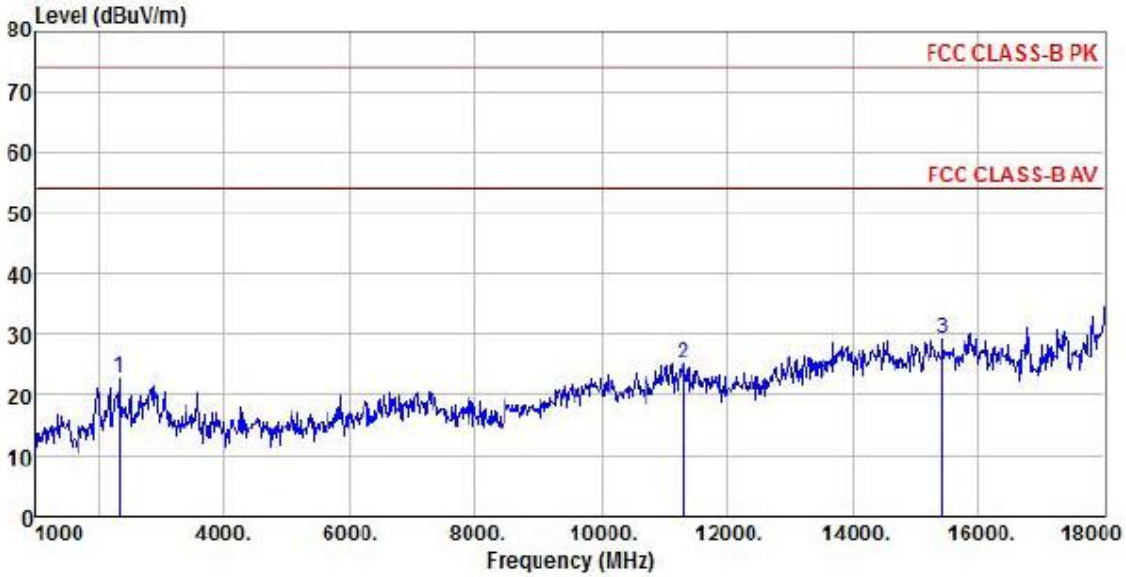


Site : chamber
Condition : FCC PART 15 CLASS-B 3m VULB9168 VERTICAL
EUT :
Model Name : DA120
Temp/Humi : 23 ℃ / 55 %
Power Rating:
Mode :
Memo : IDLE

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Limit Level	Over Line	Limit	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB	
1	pp 34.85	16.90	14.73	0.74	0.00	32.37	40.00	-7.63	Peak
2	221.09	7.58	11.19	2.12	0.00	20.89	46.00	-25.11	Peak
3	692.51	2.79	21.48	3.65	0.00	27.92	46.00	-18.08	Peak

Above 1GHz:

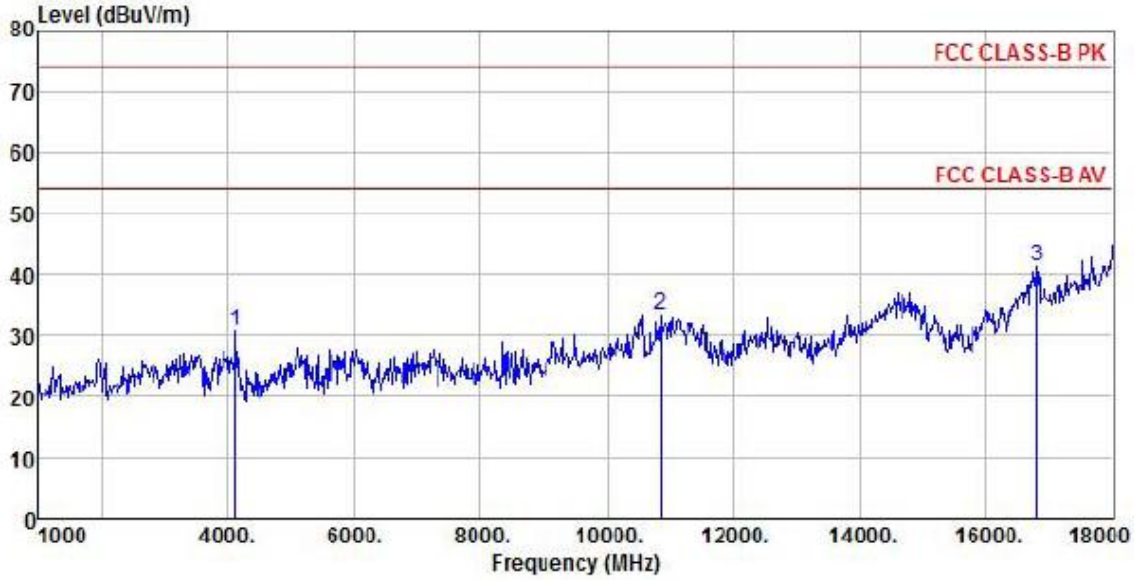
Test Mode: idle mode **Antenna Polarity: Horizontal**



Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(942) HORIZONTAL
EUT :
Model Name : DA120
Temp/Humi : 23 ℃ / 55 %
Power Rating:
Mode :
Memo : IDLE

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Limit Level	Over Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2343.00	26.35	27.80	7.22	38.54	22.83	74.00	-51.17	Peak
2	11319.00	7.54	40.02	16.11	38.51	25.16	74.00	-48.84	Peak
3 pp	15433.00	12.27	38.73	17.78	39.70	29.08	74.00	-44.92	Peak

Test Mode: idle mode **Antenna Polarity: Vertical**



Site : chamber
Condition : FCC CLASS-B PK 3m BBHA9120D(942) VERTICAL
EUT :
Model Name : DA120
Temp/Humi : 23 ℃ / 55 %
Power Rating:
Mode :
Memo : IDLE

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Limit Level	Over Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	4128.00	28.35	30.09	9.53	37.40	30.57	74.00	-43.43	Peak
2	10860.00	15.61	40.14	15.73	38.01	33.47	74.00	-40.53	Peak
3 pp	16793.00	22.90	40.62	18.27	40.39	41.40	74.00	-32.60	Peak

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

Please refer to the file named “Test Setup Photos”.

APPENDIX 2 PHOTOGRAPHS OF EUT

Please refer to the files named “EUT External Photos” and “EUT Internal Photos”.

----End of the report----