



APPLICATION OF CERTIFICATION

For

Ricoh Co., Ltd

Printer

Model Number
SP311DNw, SP311DN, SP310DNw, SP310DN

FCC ID: BBP-PRSP311DNW1

Prepared for : Ricoh Co., Ltd
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Report Number : ACS- F13021
Date of Test : Jan.06~16, 2013
Date of Report : Feb.26, 2013

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TEST REPORT CERTIFICATION

Applicant : Ricoh Co., Ltd
Manufacturer : Ricoh Co., Ltd
EUT Description : Printer
FCC ID : BBP-PRSP311DNW1
(A) Model No. : SP311DNw , SP311DN, SP310DNw, SP310DN
(B) Power Supply : AC 120V/60Hz
(C) Test Voltage : AC 120V/60Hz

Measurement Standard Used:

FCC Rules and Regulations Part 15 Subpart B Class B 2011

The device described above is tested by AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart B Class B limits both conducted and radiated emissions. The test results are contained in this test report and AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. is assumed of full responsibility for the accuracy and completeness of these tests. This report contains data that are not covered by the NVLAP accreditation.

After the test, our opinion is that EUT compliance with the requirement of the above standards.

This Report is made under FCC Part 2.1075. No modifications were required during testing to bring this product into compliance.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Date of Test : Jan.06~16, 2013 Report of date: Feb.26, 2013Prepared by : Miya Zhou (for) Reviewed by : Bensun Chen
Sherry Zhuo/ Assistant Bensun Chen/Assistant ManagerApproved & Authorized Signer : Ken Lu / Manager

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

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

EMISSION			
Description of Test Item	Standard	Results	Remarks
Power Line Conducted Emission Test	FCC Part 15: 2011 ANSI C63.4: 2009	PASS	Meets Class B Limit Minimum passing margin is 3.02dB at 0.15000MHz
Radiated Emission Test (30-1000MHz)	FCC Part 15: 2011 ANSI C63.4: 2009	PASS	Meets Class B Limit Minimum passing margin is 6.99dB at 500.000MHz
Radiated Emission Test (1-15GHz)	FCC Part 15: 2011 ANSI C63.4: 2009	PASS	Meets Class B Limit Minimum passing margin is 12.69dB at 1996.355MHz

2. GENERAL INFORMATION

2.1. Equipment under test (EUT)

2.1.1. Emission test:

Kind of equipment	Manufacturer	Model name	Serial number	Remarks
EUT	RICOH	SP 311DNw	SS155170023	

2.1.2. Highest Frequency Generated or Used in The Device or on Which the Device Operates(MHz)

Kind of equipment	Mode name	Operates Frequency	Remark
EUT	SP 311DNw	480MHz	USB

2.1.3. Short description of the Equipment under Test (EUT)

The EUT is a laser printer.

Model Difference: They are similar, except 2 sides as follow.

1. There is a WIFI module in SP 310DNw and SP 311DNw except SP 310DN and SP 311DN.
2. SP 310DN / SP 310DNw and SP 311DN / SP 311DNw are similar, but different from the mechanical structure which does not affect EMC.

Unless otherwise indicated, all tests were conducted on SP311DNw.

Tests performed on SP 311DNw were considered to be representative of SP 311DN / SP 310DN / SP 310DNw.

2.2. Tested Supporting System Details

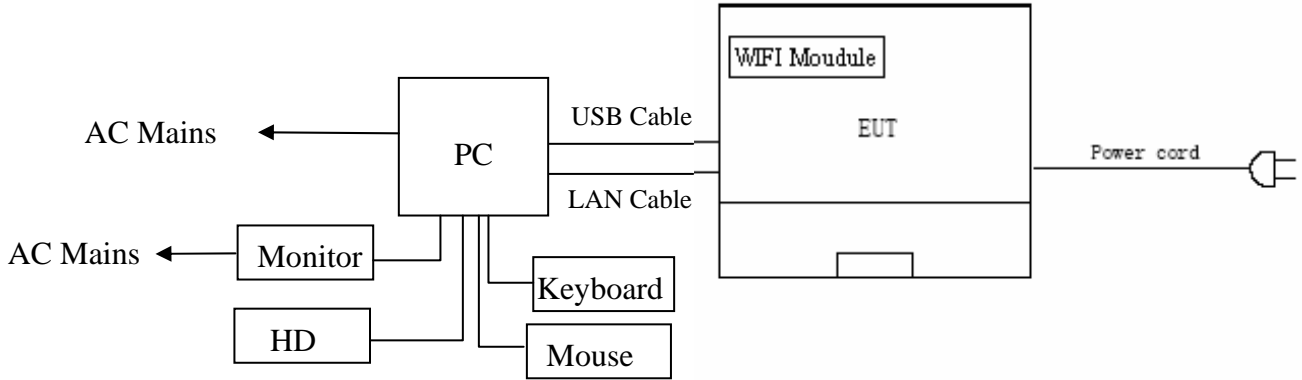
2.2.1. Emission test:

1.	Personal Computer	Test PC M	DELL	Studio 540	224XK2X	<input checked="" type="checkbox"/> FCC DoC
		Power Cord: Unshielded, Detachable, 1.8m Display Card: HD3450 (DVI+VGA+HDMI)				
2.	Monitor	ACS-EMC-LM04R	DELL	1907FPt	CN-009759-71618-6 AP-ACPP	<input checked="" type="checkbox"/> FCC DoC
		Power Cord: Unshielded, Detachable, 1.8m VGA Cable: Shielded, Detachable, 2.0m (with two cores) DVI Cable: Shielded, Detachable, 2.0m (with two cores)				
3.	USB Keyboard	ACS-EMC- K04R	DELL	SK-8115	CN-ODJ313-71616-6 BB-049J	<input checked="" type="checkbox"/> FCC DoC
		Power Cord: shielded, Undetachable, 2.0m				
4.	USB Mouse	ACS-EMC-M04R	DELL	M056UO	512024282	<input checked="" type="checkbox"/> FCC DoC
		Power Cord: shielded, Undetachable, 1.8m				
5.	HDD	ACS-EMC-HDD04	Terasys	F12-UF	A0100215-5390002	<input checked="" type="checkbox"/> FCC DoC
		USB Cable: Shielded, Detachable, 1.8m				

2.3. Block diagram of connection between the EUT and simulators

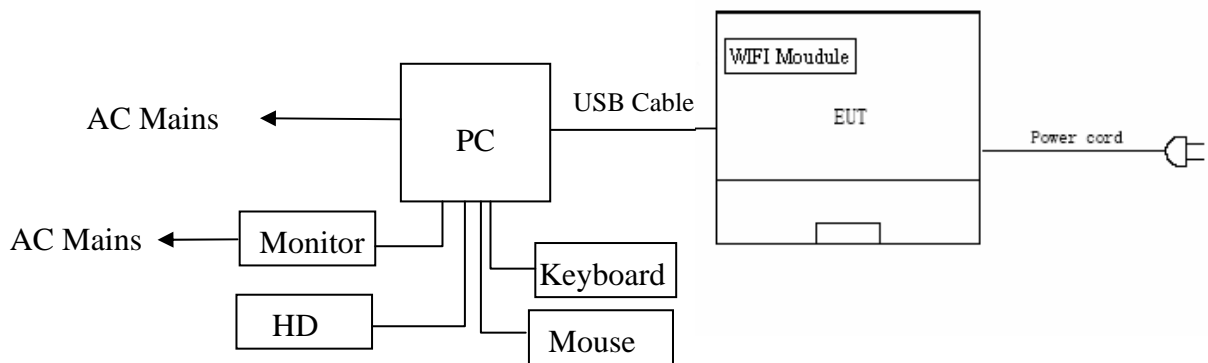
2.3.1. Configuration of E.U.T

Mode 1,2,3



2.3.2. Configuration of E.U.T

Mode 4



(EUT: Printer)

	Cable Name	Length	Shielded	Maker	Remarks
1	USB Cable	2m	YES	RICOH	
2	NIC Cable	3m	No	Black Box	
3	Power Cable	1.5m	No	LONGWELL	

2.4. Test Facility

Site Description

- Name of Firm : Audix Technology (Shenzhen) Co., Ltd.
No. 6, Ke Feng Rd., 52 Block, Shenzhen Science & Industrial Park, Nantou, Shenzhen, Guangdong, China
- 3m Anechoic Chamber : Certificated by FCC, USA
Registration Number: 90454
Valid Date: Feb.22, 2015
- 3m & 10m Anechoic Chamber : Certificated by FCC, USA
Registration Number: 794232
Valid Date: Oct.31, 2015
- EMC Lab. : Certificated by DAkkS, Germany
Registration No: D-PL-12151-01-01
Valid Date: Feb.01, 2014
- Accredited by NVLAP, USA
NVLAP Code: 200372-0
Valid Date: Mar.31, 2013

2.5. Measurement Uncertainty (95% confidence levels, k=2)

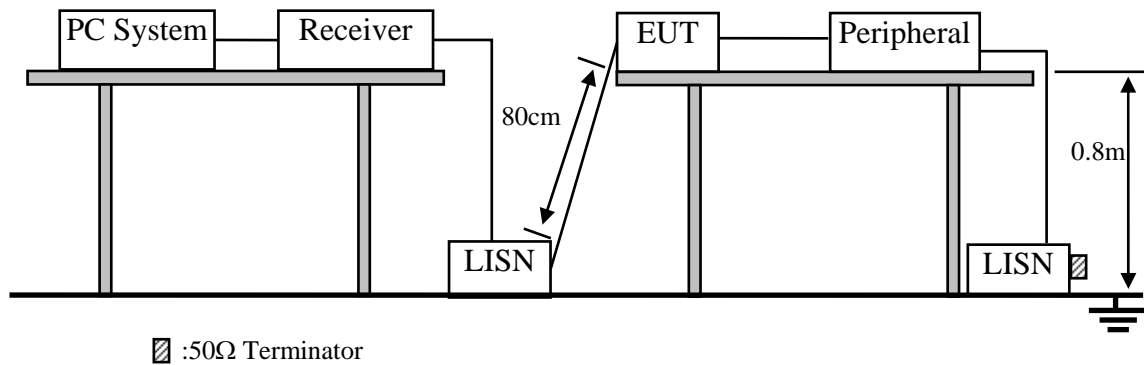
Test Item	Uncertainty
Uncertainty for Conduction emission test in No. 2 Conduction	3.2 dB(150KHz to 30MHz)
Uncertainty for Radiation Emission test in 3m chamber	3.6 dB(30~200MHz, Polarize: H)
	3.8 dB(30~200MHz, Polarize: V)
	4.2 dB(200M~1GHz, Polarize: H)
	3.8 dB(200M~1GHz, Polarize: V)
Uncertainty for Radiation Emission test in 3m chamber (1GHz-18GHz)	3.1dB(Distance: 3m Polarize: V)
	3.7 dB(Distance: 3m Polarize: H)
Uncertainty for test site temperature and humidity	3%
	0.6°C

3. POWER LINE CONDUCTED EMISSION MEASUREMENT

3.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Test Receiver	Rohde & Schwarz	ESHS20	836600/006	May.08, 12	1 Year
2	L.I.S.N.#1	Rohde & Schwarz	ENV4200	100041	May.08, 12	1 Year
3	L.I.S.N.#2	Kyoritsu	KNW-407	8-1628-5	May.08, 12	1 Year
4	Terminator	Hubersuhner	50Ω	No. 1	May.08, 12	1 Year
5	Terminator	Hubersuhner	50Ω	No. 2	May.08, 12	1 Year
6	RF Cable	Fujikura	3D-2W	No.2	May.08, 12	1 Year
7	Coaxial Switch	Anritsu	MP59B	6200298346	May.08, 12	1 Year
8	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100340	May.08, 12	1 Year

3.2. Block Diagram of Test Setup



3.3. Power Line Conducted Emission Test Limits

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

- Notes: 1. * Decreasing linearly with logarithm of frequency.
 2. The lower limit shall apply at the transition frequencies.

3.4. Configuration of EUT on Test

The following equipment are installed on Power Line Conducted Emission Test to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

3.4.1. Printer (EUT)

Model Number : SP311DNw
 Serial Number : N/A

3.4.2. Support Equipment : As Tested Supporting System Detail, in Section 2.2.

3.5. Operating Condition of EUT

3.5.1. Setup the EUT and simulator as shown as Section 3.2.

3.5.2. Turn on the power of all equipment.

3.6. Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N. 1#). This provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#3). Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4: 2009 on conducted Emission test.

The bandwidth of test receiver (R&S TEST RECEIVER ESHS10) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked. The test result are reported on Section 3.7.

3.7. Conducted Emission at Mains Terminals Test Results

PASS. (All emissions not reported below are too low against the prescribed limits.)

The EUT with the following test modes were tested and selected to read Q.P values and average values, all the test results are listed in next pages.

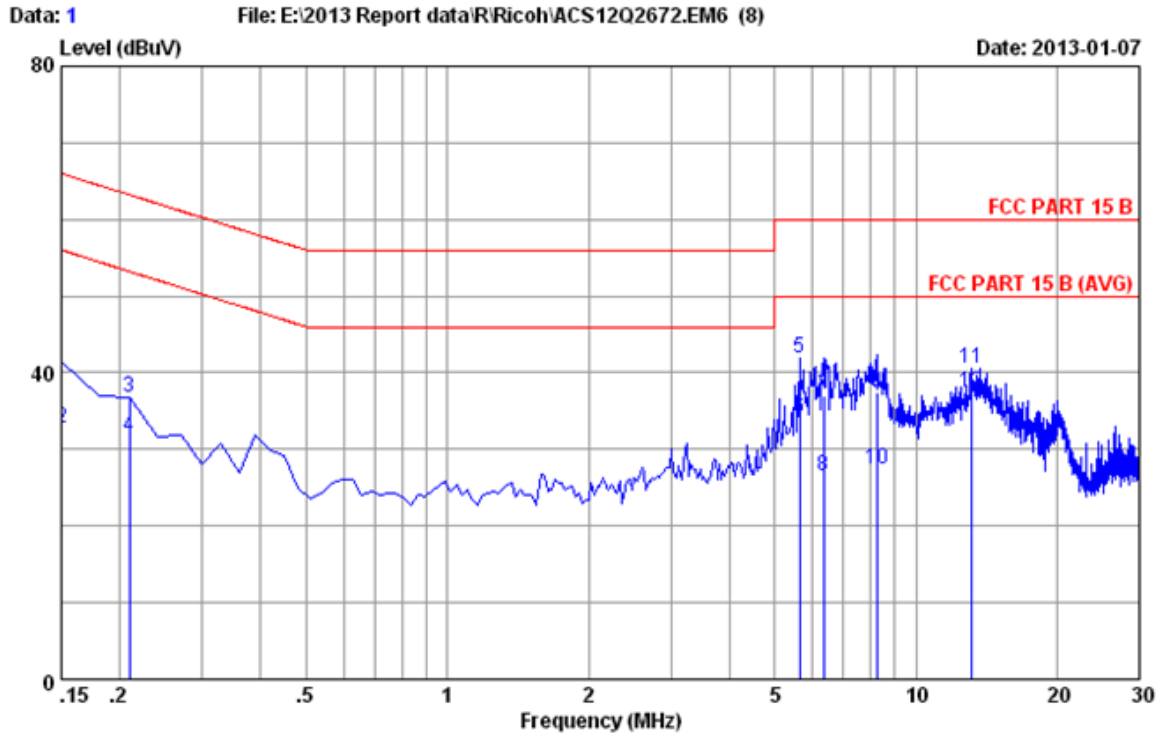
EUT: Printer

Model No. : SP311DNw

Test Date: Jan.07, 2013 Temperature: 23.4°C Humidity: 44%

3.7.1. Operating modes :

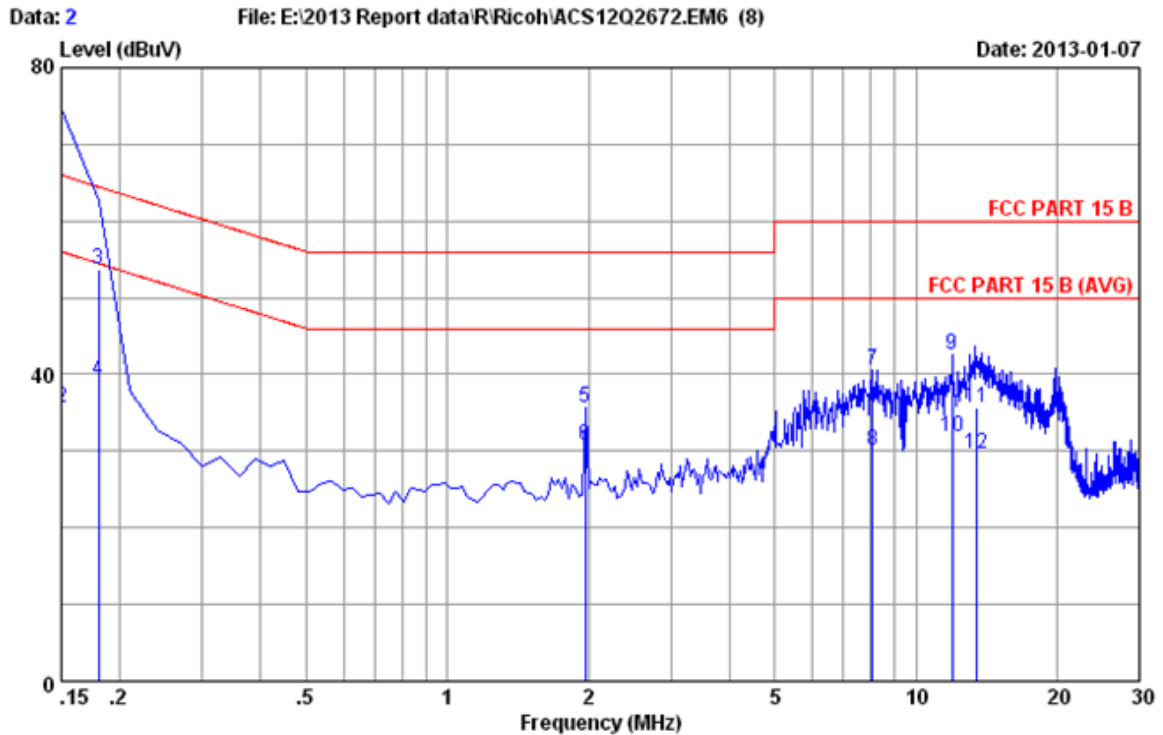
1.	Standby	(CE)
2.	USB Print	(CE)
3.	NIC Print	(CE)
4.	WIFI Print	(CE)



Site no :Audix No.2 Conduction Data No :1
 Dis./Lisn **: 12 ENV4200 L1 LISN phase:LINE
 Limit :FCC PART 15 B
 Env./Ins. :23.3°C/44% Engineer :Jerry
 EUT :Printer
 Power Rating :AC 120V/60Hz
 Test Mode :StandBy
 M/N:SP311DNw

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15000	9.95	9.93	43.10	62.98	66.00	3.02	QP
2	0.15000	9.95	9.93	12.80	32.68	56.00	23.32	Average
3	0.20970	9.89	9.94	16.92	36.75	63.22	26.47	QP
4	0.20970	9.89	9.94	11.89	31.72	53.22	21.50	Average
5	5.642	9.79	9.95	22.12	41.86	60.00	18.14	QP
6	5.642	9.79	9.95	14.25	33.99	50.00	16.01	Average
7	6.359	9.79	9.96	17.19	36.94	60.00	23.06	QP
8	6.359	9.79	9.96	6.70	26.45	50.00	23.55	Average
9	8.239	9.81	9.97	17.65	37.43	60.00	22.57	QP
10	8.239	9.81	9.97	7.59	27.37	50.00	22.63	Average
11	13.194	9.94	10.00	20.52	40.46	60.00	19.54	QP
12	13.194	9.94	10.00	17.54	37.48	50.00	12.52	Average

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)+Reading.
 2.If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

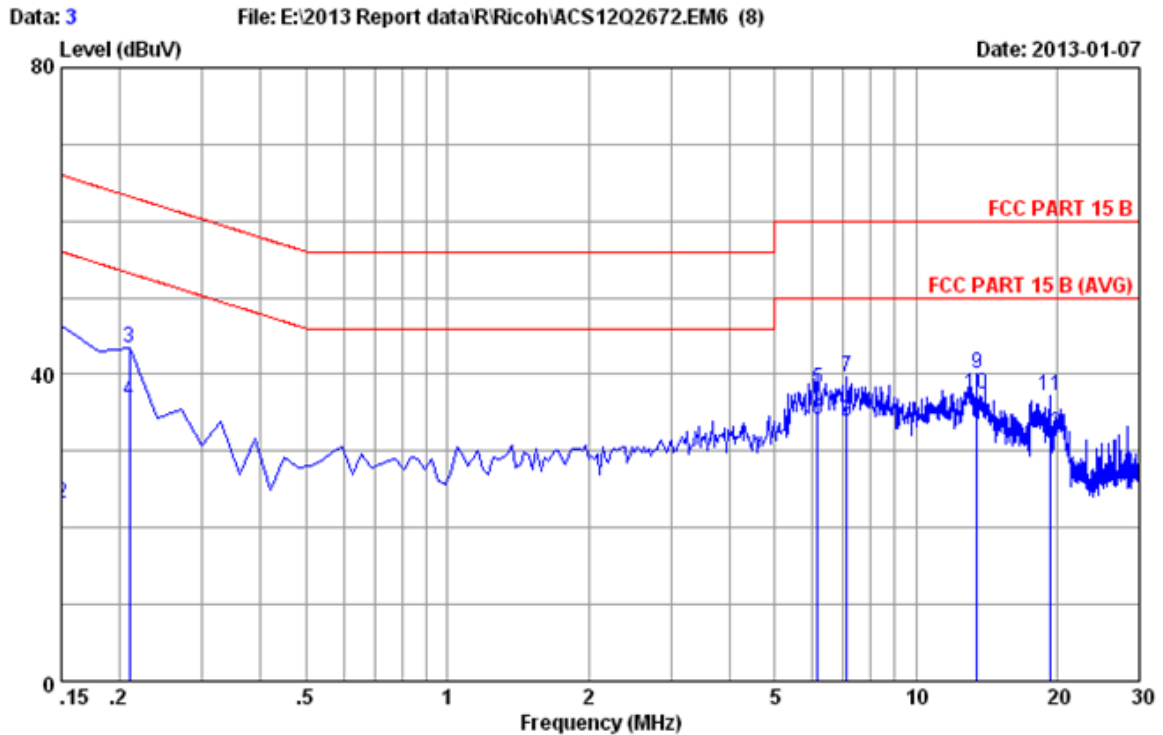


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Site no      :Audix No.2 Conduction      Data No     :2
Dis./Lisn   **: 12 ENV4200 N             LISN phase:NEUTRAL
Limit        :FCC PART 15 B
Env./Ins.    :23.3*C/44%                Engineer    :Jerry
EUT          :Printer
Power Rating :AC 120V/60Hz
Test Mode    :StandBy
M/N:SP311DNw
    
```

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV)	Limits (dBUV)	Margin (dB)	Remark
1	0.15000	9.95	9.93	43.00	62.88	66.00	3.12	QP
2	0.15000	9.95	9.93	15.70	35.58	56.00	20.42	Average
3	0.17985	9.91	9.93	33.87	53.71	64.49	10.78	QP
4	0.17985	9.91	9.93	19.30	39.14	54.49	15.35	Average
5	1.971	9.76	9.95	16.06	35.77	56.00	20.23	QP
6	1.971	9.76	9.95	10.95	30.66	46.00	15.34	Average
7	8.090	9.80	9.97	20.83	40.60	60.00	19.40	QP
8	8.090	9.80	9.97	10.24	30.01	50.00	19.99	Average
9	11.971	9.90	9.99	22.75	42.64	60.00	17.36	QP
10	11.971	9.90	9.99	11.95	31.84	50.00	18.16	Average
11	13.423	9.95	10.00	15.80	35.75	60.00	24.25	QP
12	13.423	9.95	10.00	9.70	29.65	50.00	20.35	Average

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)+Reading.
 2.If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

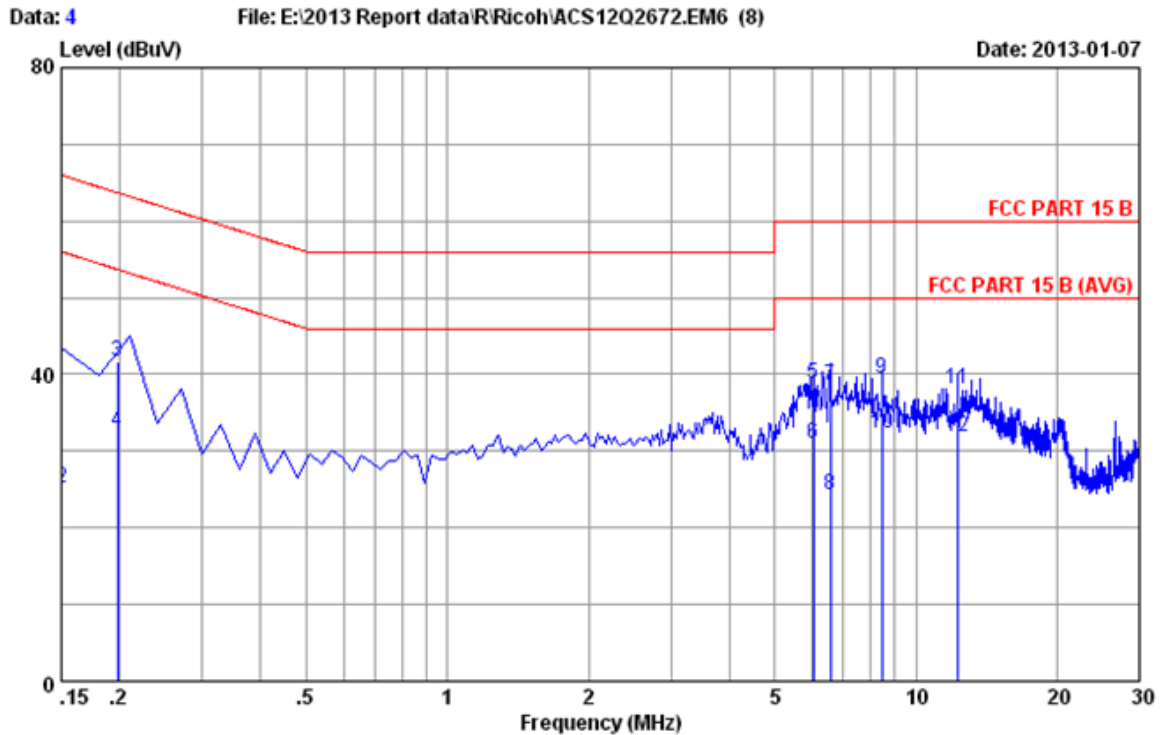


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Site no      :Audix No.2 Conduction      Data No     :3
Dis./Lisn   **: 12 ENV4200 L1           LISN phase  :LINE
Limit       :FCC PART 15 B
Env./Ins.   :23.3*C/44%                Engineer   :Jerry
EUT         :Printer
Power Rating :AC 120V/60Hz
Test Mode   :USB PRINT
M/N:SP311DNw
    
```

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV)	Limits (dBUV)	Margin (dB)	Remark
1	0.15000	9.95	9.93	18.90	38.78	66.00	27.22	QP
2	0.15000	9.95	9.93	3.20	23.08	56.00	32.92	Average
3	0.20970	9.89	9.94	23.53	43.36	63.22	19.86	QP
4	0.20970	9.89	9.94	16.73	36.56	63.22	26.66	QP
5	6.180	9.79	9.95	18.32	38.06	60.00	21.94	QP
6	6.180	9.79	9.95	14.29	34.03	50.00	15.97	Average
7	7.135	9.79	9.96	19.81	39.56	60.00	20.44	QP
8	7.135	9.79	9.96	14.21	33.96	50.00	16.04	Average
9	13.493	9.95	10.00	20.11	40.06	60.00	19.94	QP
10	13.493	9.95	10.00	17.59	37.54	50.00	12.46	Average
11	19.314	9.99	10.05	17.27	37.31	60.00	22.69	QP
12	19.314	9.99	10.05	12.36	32.40	50.00	17.60	Average

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)+Reading.
 2.If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

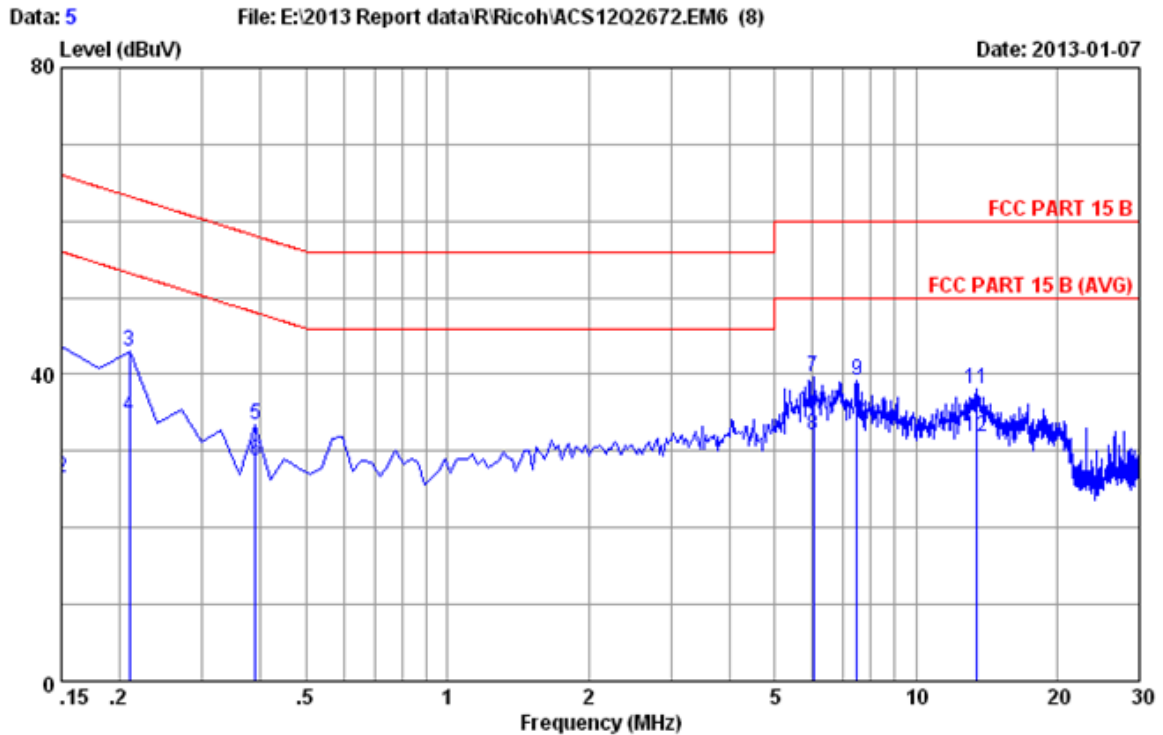


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Site no      :Audix No.2 Conduction      Data No   :4
Dis./Lisn   **: 12 ENV4200 N             LISN phase:NEUTRAL
Limit       :FCC PART 15 B
Env./Ins.   :23.3*C/44%                 Engineer  :Jerry
EUT         :Printer
Power Rating :AC 120V/60Hz
Test Mode   :USB PRINT
M/N:SP311DNw
    
```

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15000	9.95	9.93	19.80	39.68	66.00	26.32	QP
2	0.15000	9.95	9.93	5.30	25.18	56.00	30.82	Average
3	0.19800	9.89	9.93	21.91	41.73	63.69	21.96	QP
4	0.19800	9.89	9.93	12.81	32.63	53.69	21.06	Average
5	6.030	9.79	9.95	19.12	38.86	60.00	21.14	QP
6	6.030	9.79	9.95	11.22	30.96	50.00	19.04	Average
7	6.568	9.79	9.96	18.75	38.50	60.00	21.50	QP
8	6.568	9.79	9.96	4.49	24.24	50.00	25.76	Average
9	8.478	9.81	9.97	19.73	39.51	60.00	20.49	QP
10	8.478	9.81	9.97	12.64	32.42	50.00	17.58	Average
11	12.299	9.91	9.99	18.26	38.16	60.00	21.84	QP
12	12.299	9.91	9.99	11.95	31.85	50.00	18.15	Average

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)+Reading.
 2.If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

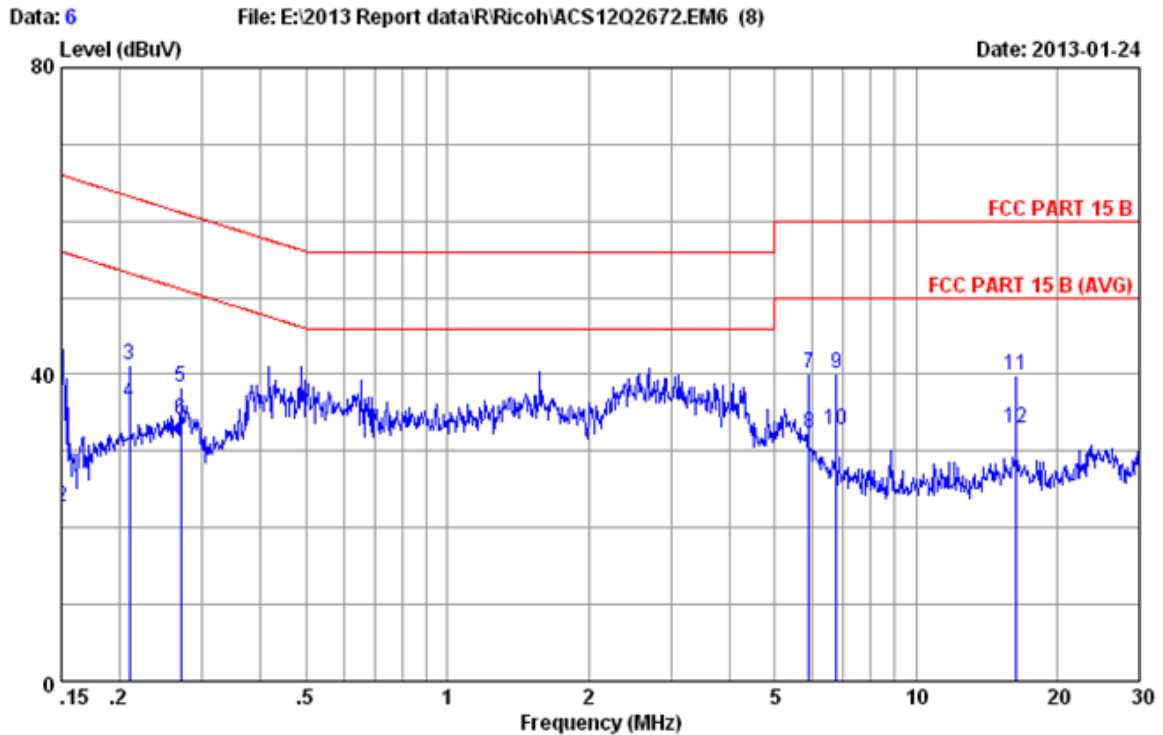


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Site no      :Audix No.2 Conduction      Data No     :5
Dis./Lisn   **: 12 ENV4200 L1           LISN phase:LINE
Limit       :FCC PART 15 B
Env./Ins.   :23.3*C/44%                Engineer    :Jerry
EUT         :Printer
Power Rating:AC 120V/60Hz
Test Mode   :NIC PRINT
M/N:SP311DNw
    
```

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV)	Limits (dBUV)	Margin (dB)	Remark
1	0.15000	9.95	9.93	19.60	39.48	66.00	26.52	QP
2	0.15000	9.95	9.93	6.60	26.48	56.00	29.52	Average
3	0.20970	9.89	9.94	23.27	43.10	63.22	20.12	QP
4	0.20970	9.89	9.94	14.63	34.46	53.22	18.76	Average
5	0.38880	9.83	9.94	13.72	33.49	58.09	24.60	QP
6	0.38880	9.83	9.94	8.94	28.71	48.09	19.38	Average
7	6.030	9.79	9.95	19.87	39.61	60.00	20.39	QP
8	6.030	9.79	9.95	12.36	32.10	50.00	17.90	Average
9	7.493	9.80	9.96	19.55	39.31	60.00	20.69	QP
10	7.493	9.80	9.96	13.65	33.41	50.00	16.59	Average
11	13.433	9.95	10.00	18.25	38.20	60.00	21.80	QP
12	13.433	9.95	10.00	11.95	31.90	50.00	18.10	Average

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)+Reading.
 2.If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

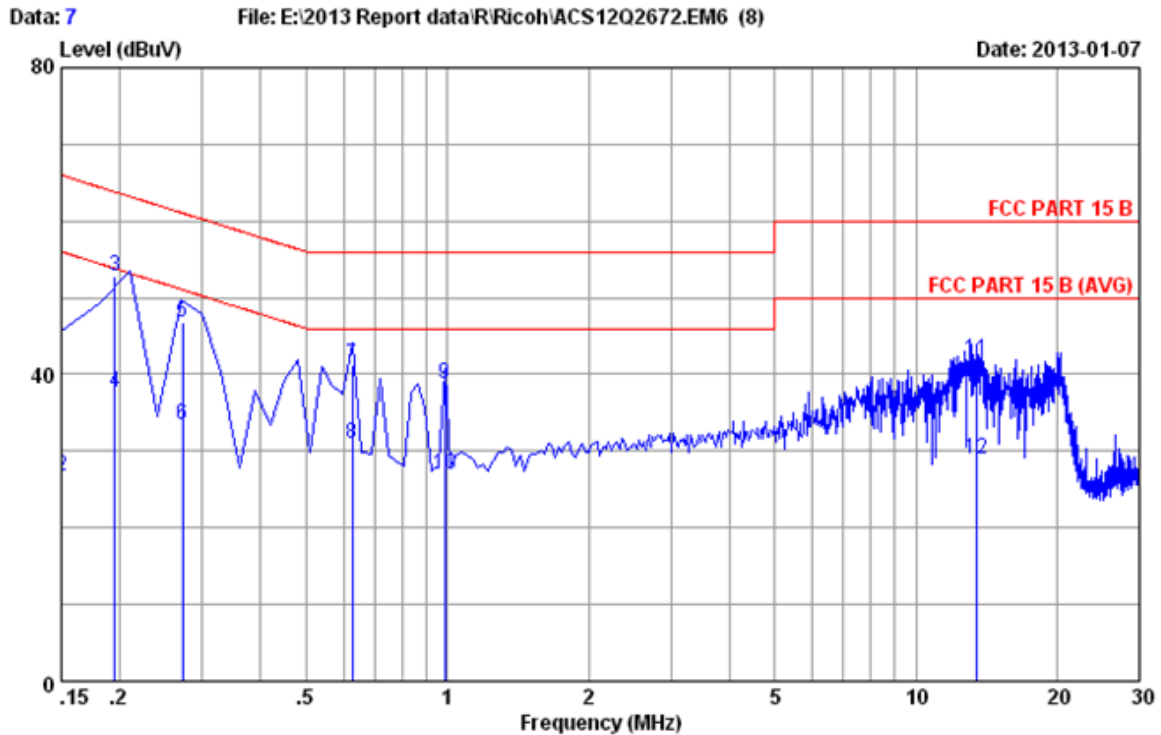


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Site no      :Audix No.2 Conduction      Data No     :6
Dis./Lisn   **: 12 ENV4200 N             LISN phase:NEUTRAL
Limit       :FCC PART 15 B
Env./Ins.   :23.3*C/44%                Engineer    :Jerry
EUT         :Printer
Power Rating :AC 120V/60Hz
Test Mode   :NIC PRINT
M/N:SP311DNw
    
```

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV)	Limits (dBUV)	Margin (dB)	Remark
1	0.15000	9.95	9.93	18.40	38.28	66.00	27.72	QP
2	0.15000	9.95	9.93	2.80	22.68	56.00	33.32	Average
3	0.20970	9.89	9.94	21.43	41.26	63.22	21.96	QP
4	0.20970	9.89	9.94	16.53	36.36	53.22	16.86	Average
5	0.26940	9.87	9.94	18.58	38.39	61.14	22.75	QP
6	0.26940	9.87	9.94	14.32	34.13	51.14	17.01	Average
7	5.911	9.78	9.95	20.28	40.01	60.00	19.99	QP
8	5.911	9.78	9.95	12.67	32.40	50.00	17.60	Average
9	6.777	9.79	9.96	20.30	40.05	60.00	19.95	QP
10	6.777	9.79	9.96	12.97	32.72	50.00	17.28	Average
11	16.418	9.99	10.02	19.88	39.89	60.00	20.11	QP
12	16.418	9.99	10.02	12.88	32.89	50.00	17.11	Average

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)+Reading.
 2.If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

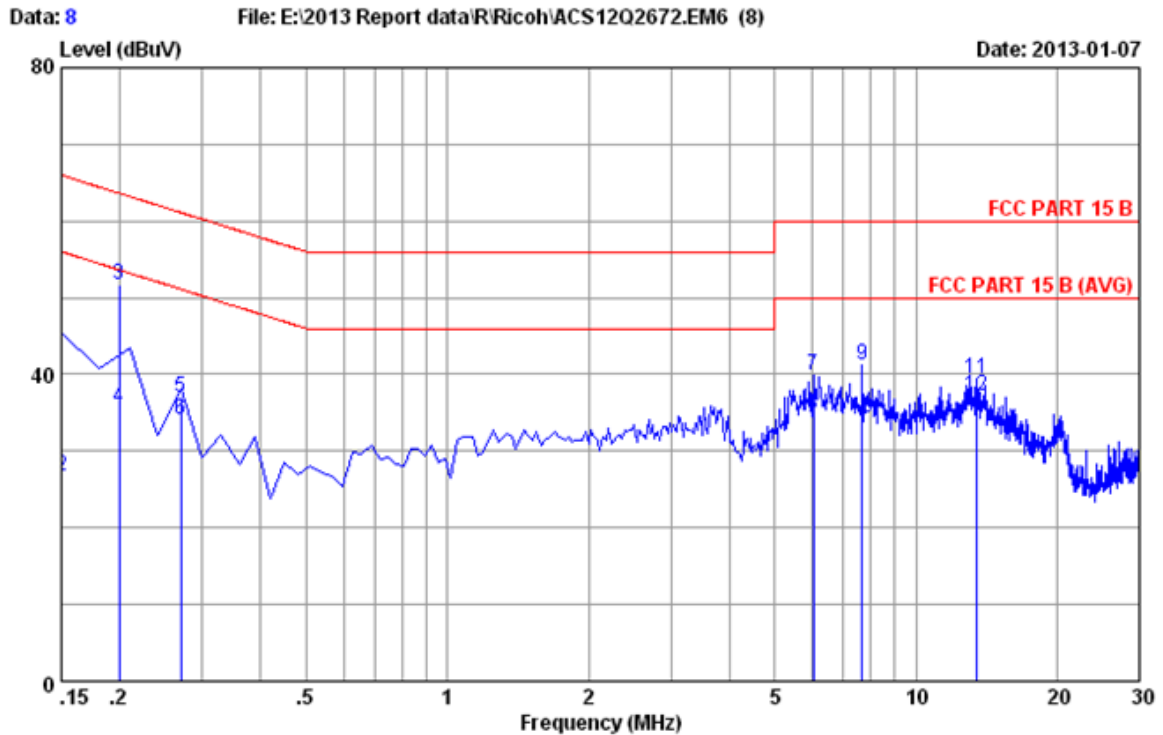


```

Site no      :Audix No.2 Conduction      Data No     :7
Dis./Lisn   **: 12 ENV4200 L1           LISN phase:LINE
Limit        :FCC PART 15 B
Env./Ins.    :23.3*C/44%                Engineer    :Jerry
EUT          :Printer
Power Rating :AC 120V/60Hz
Test Mode    :WIFI PRINT
              M/N:SP311DNw
    
```

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV)	Limits (dBUV)	Margin (dB)	Remark
1	0.15000	9.95	9.93	26.80	46.68	66.00	19.32	QP
2	0.15000	9.95	9.93	6.90	26.78	56.00	29.22	Average
3	0.19500	9.90	9.93	32.90	52.73	63.82	11.09	QP
4	0.19500	9.90	9.93	17.80	37.63	53.82	16.19	Average
5	0.27200	9.87	9.94	26.89	46.70	61.06	14.36	QP
6	0.27200	9.87	9.94	13.69	33.50	51.06	17.56	Average
7	0.62760	9.77	9.93	21.47	41.17	56.00	14.83	QP
8	0.62760	9.77	9.93	11.31	31.01	46.00	14.99	Average
9	0.98580	9.76	9.95	19.07	38.78	56.00	17.22	QP
10	0.98580	9.76	9.95	7.22	26.93	46.00	19.07	Average
11	13.523	9.95	10.00	21.91	41.86	60.00	18.14	QP
12	13.523	9.95	10.00	8.95	28.90	50.00	21.10	Average

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)+Reading.
 2.If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.



```

Site no      :Audix No.2 Conduction      Data No     :8
Dis./Lisn   **: 12 ENV4200 N             LISN phase:NEUTRAL
Limit       :FCC PART 15 B
Env./Ins.   :23.3*C/44%                 Engineer    :Jerry
EUT         :Printer
Power Rating:AC 120V/60Hz
Test Mode   :WIFI PRINT
            M/N:SP311DNw
    
```

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV)	Limits (dBUV)	Margin (dB)	Remark
1	0.15000	9.95	9.93	26.80	46.68	66.00	19.32	QP
2	0.15000	9.95	9.93	6.80	26.68	56.00	29.32	Average
3	0.19905	9.89	9.93	31.81	51.63	63.65	12.02	QP
4	0.19905	9.89	9.93	15.91	35.73	53.65	17.92	Average
5	0.26940	9.87	9.94	17.23	37.04	61.14	24.10	QP
6	0.26940	9.87	9.94	14.29	34.10	51.14	17.04	Average
7	6.030	9.79	9.95	20.26	40.00	60.00	20.00	QP
8	6.030	9.79	9.95	14.95	34.69	50.00	15.31	Average
9	7.672	9.80	9.96	21.56	41.32	60.00	18.68	QP
10	7.672	9.80	9.96	14.64	34.40	50.00	15.60	Average
11	13.493	9.95	10.00	19.60	39.55	60.00	20.45	QP
12	13.493	9.95	10.00	17.24	37.19	50.00	12.81	Average

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)+Reading.
 2.If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

4. RADIATED EMISSION TEST

4.1. Test Equipment

4.1.1. For frequency range 30MHz~1000MHz

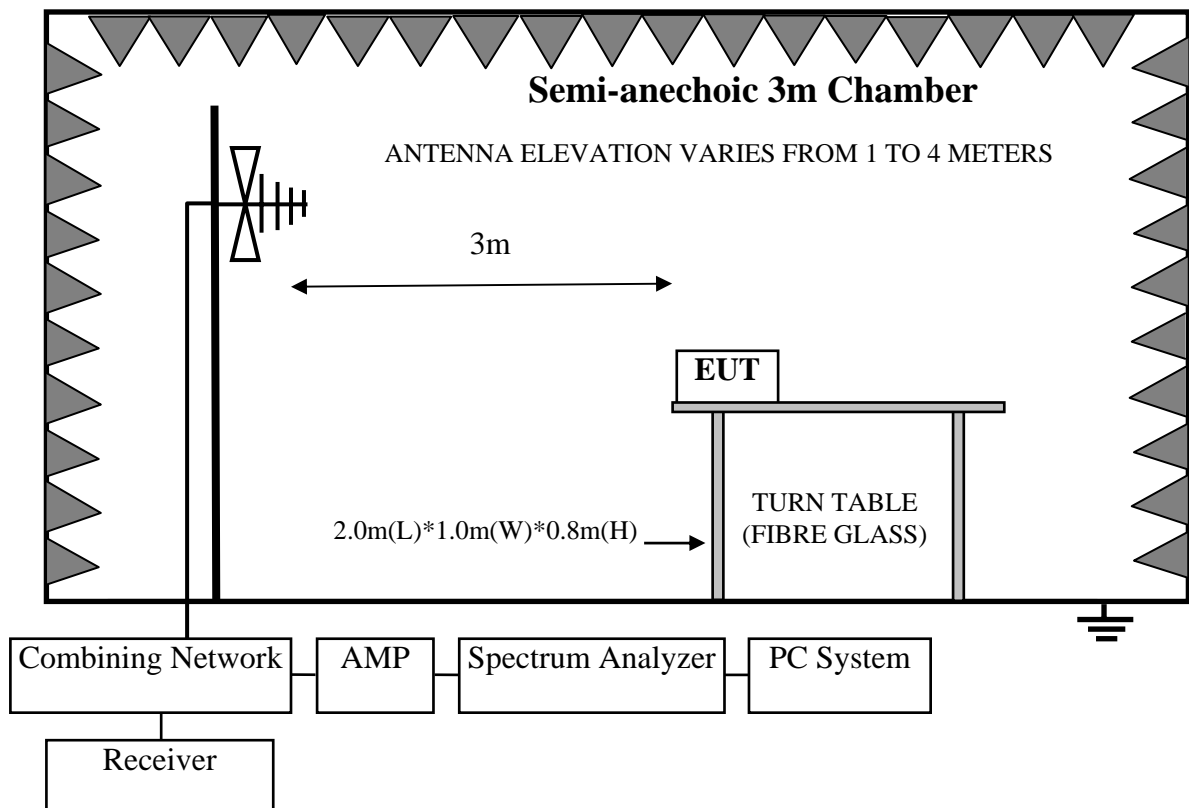
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	3#Chamber	AUDIX	N/A	N/A	Nov.24,12	1 Year
2	EMI Spectrum	Agilent	E4407B	MY41440292	May.08, 12	1 Year
3	Test Receiver	Rohde & Schwarz	ESVS10	834468/011	May.08, 12	1 Year
4	Amplifier	HP	8447D	2648A04738	May.08, 12	1 Year
5	Trilog-Broadband Antenna	SCHWARZBECK	VULB 9168	9168-429	Nov.27, 12	1.0 Year
6	RF Cable	MIYAZAKI	CFD400-NL	3# Chamber No.1	May.08, 12	1 Year
7	Coaxial Switch	Anritsu	MP59B	M74389	May.08, 12	1 Year

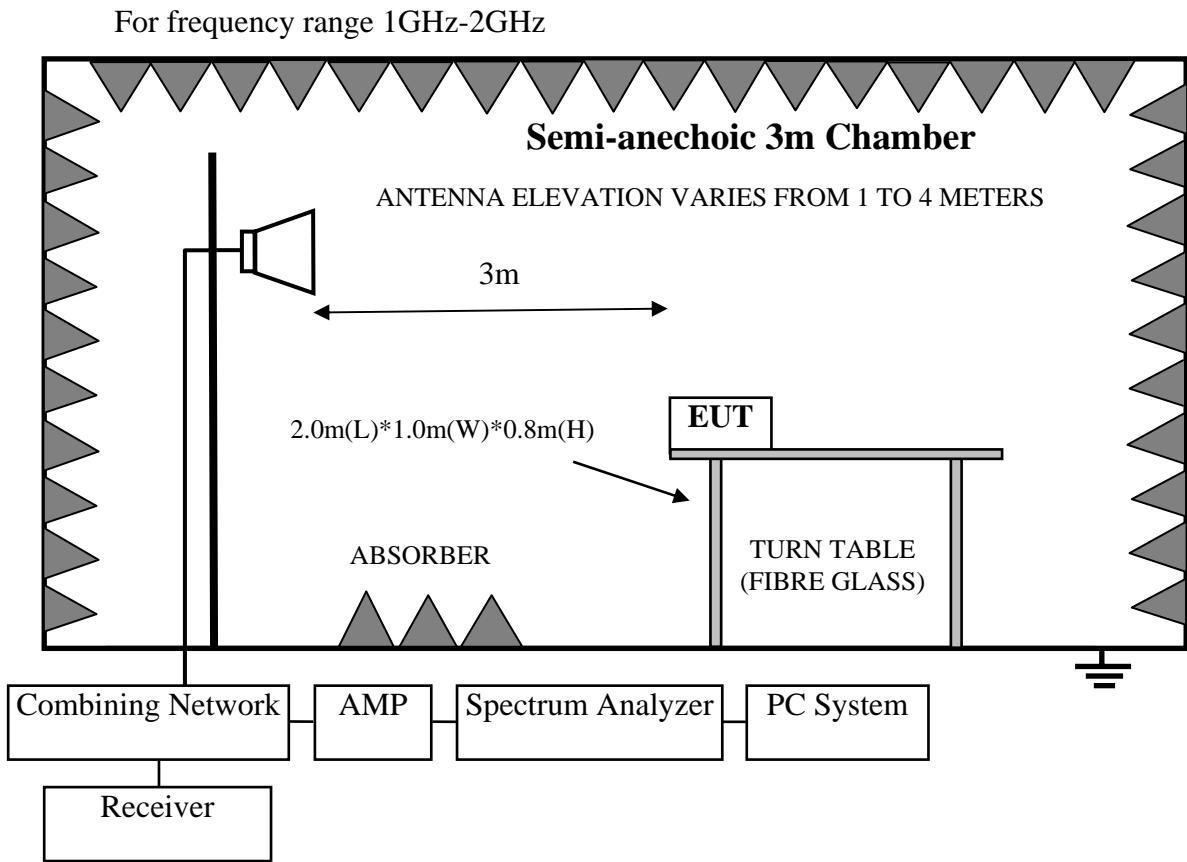
4.1.2. For frequency range 1GHz~2GHz

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E4407B	MY41440292	May.08, 12	1 Year
2	Horn Antenna	EMCO	3115	9510-4580	June.05, 12	1 Year
3	Amplifier	Agilent	8449B	3008A00863	May.08, 12	1 Year
4	RF Cable	Hubersuhner	SUCOFLEX106	77980/6	May.08, 12	1 Year
5	RF Cable	Hubersuhner	SUCOFLEX106	77977/6	May.08, 12	1 Year

4.2. Block Diagram of Test Setup

For frequency range 30MHz-1000Mz





4.3. Radiated Emission Limit

Frequency MHz	Distance (Meters)	Field Strengths Limits dB(μV)/m
30 ~ 88	3	40.0
88 ~ 216	3	43.5
216 ~ 960	3	46.0
960 ~ 1000	3	54.0
Above 1000	3	74(Peak)54(Average)

- Remark: (1) Emission level = Antenna Factor + Cable Loss + Reading
Emission level = Antenna Factor - Amp Factor + Cable Loss + Reading (above 1000MHz)
- (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.

4.4. EUT Configuration on Test

The configurations of EUT are listed in Section 3.4

4.5. Operating Condition of EUT

Same as Conducted Emission test that is listed in Section 3.5. except the test set up replaced by Section 4.2.

4.6. Test Procedure

The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. An antenna was located 3m from the EUT on an adjustable mast. A pre-scan was first performed in order to find prominent radiated emissions. For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4: 2009 on Radiated Emission test.

The bandwidth of the EMI test receiver (R&S ESVS10) is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's RBW is set at 1MHz and VBW is set at 3MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz.

4.7. Radiated Disturbance Test Results

PASS. (All emissions not reported below are too low against the prescribed limits.)

EUT: Printer Model No. : SP311DNw

For frequency range 30MHz~1000MHz

The EUT with the following test modes were tested and selected to read Q.P values, all the test results are listed in next pages.

Test Date: Jan.06, 2013 Temperature: 24°C Humidity: 56%

4.7.1. Operating modes :

1	Standby	(RE)
2	USB Print	(RE)
3	NIC Print	(RE)
4	WIFI Print	(RE)

For frequency range 1GHz~2GHz

The EUT with below test mode were measured within Anechoic Chamber and the test results listed in next pages

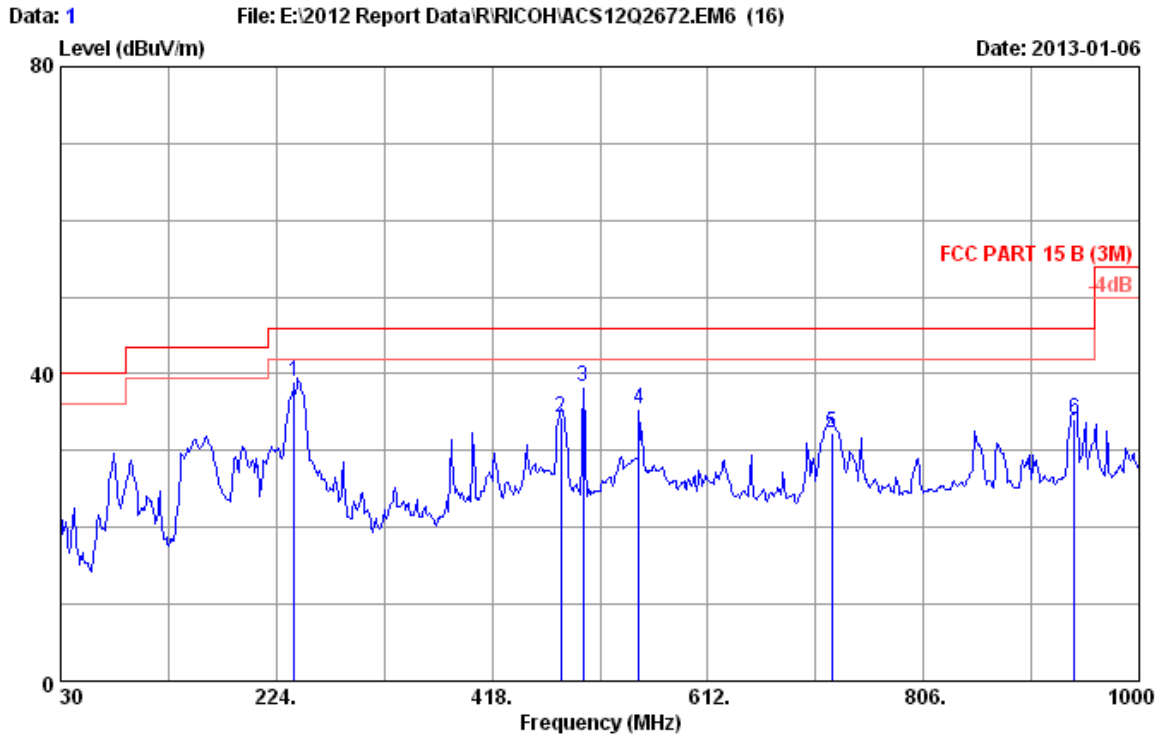
Note: For all the emissions above 1GHz, the peak measured level comply with peak limit, so the average level were deemed to comply with average limit.

Test Date: Jan.06, 2013 Temperature: 24°C Humidity: 56%

4.7.2.Operating modes :

1	Standby	(RE)
2	USB Print	(RE)
3	NIC Print	(RE)
4	WIFI Print	(RE)

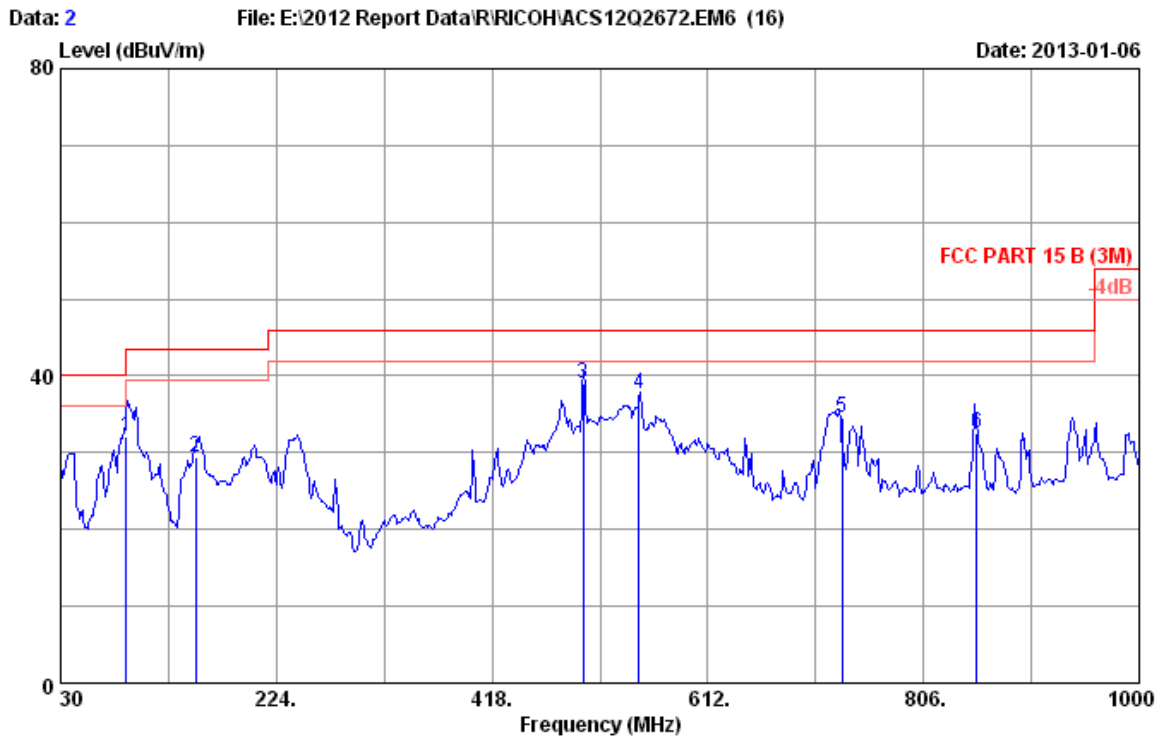
30MHz~1000MHz



Site no. : 3m Chamber Data no. : 1
 Dis. / Ant. : 3m 2012 CBL6111C 2598 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 B (3M)
 Env. / Ins. : 24°C/56% Engineer : Even_Deng
 EUT : Printer
 Power rating : AC 120/60Hz
 Test Mode : StandBy
 M/N:SP311DNw

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	240.030	11.65	1.15	26.10	38.90	46.00	7.10	QP
2	480.050	18.22	1.77	14.30	34.29	46.00	11.71	QP
3	500.000	19.08	1.83	17.50	38.41	46.00	7.59	QP
4	550.000	19.24	1.97	14.30	35.51	46.00	10.49	QP
5	723.300	21.53	2.48	8.30	32.31	46.00	13.69	QP
6	941.810	24.64	2.85	6.60	34.09	46.00	11.91	QP

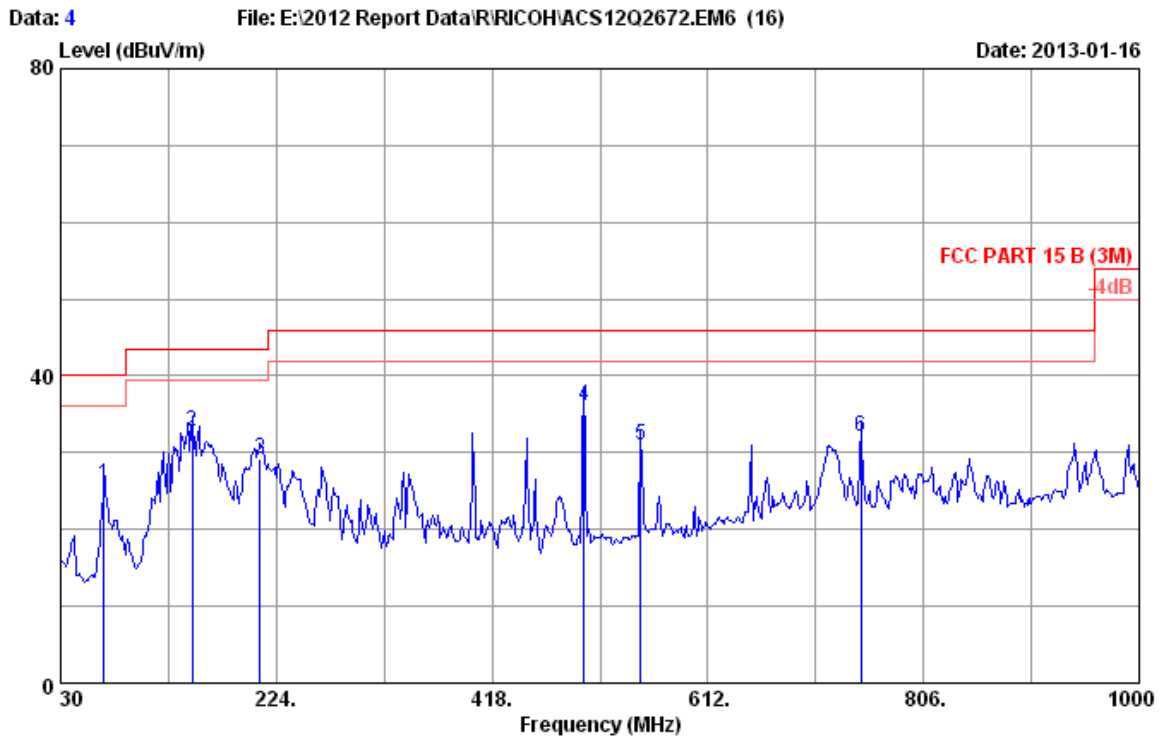
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 2
 Dis. / Ant. : 3m 2012 CBL6111C 2598 Ant. pol. : VERTICAL
 Limit : FCC PART 15 B (3M)
 Env. / Ins. : 24°C/56% Engineer : Even_Deng
 EUT : Printer
 Power rating : AC 120/60Hz
 Test Mode : StandBy
 M/N:SP311DNw

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark
1	89.170	8.09	0.79	23.10	31.98	43.50	11.52	QP
2	151.630	10.89	0.96	17.59	29.44	43.50	14.06	QP
3	500.030	19.08	1.83	18.00	38.91	46.00	7.09	QP
4	550.001	19.24	1.97	16.50	37.71	46.00	8.29	QP
5	732.850	21.86	2.50	10.10	34.46	46.00	11.54	QP
6	853.930	23.31	2.76	6.50	32.57	46.00	13.43	QP

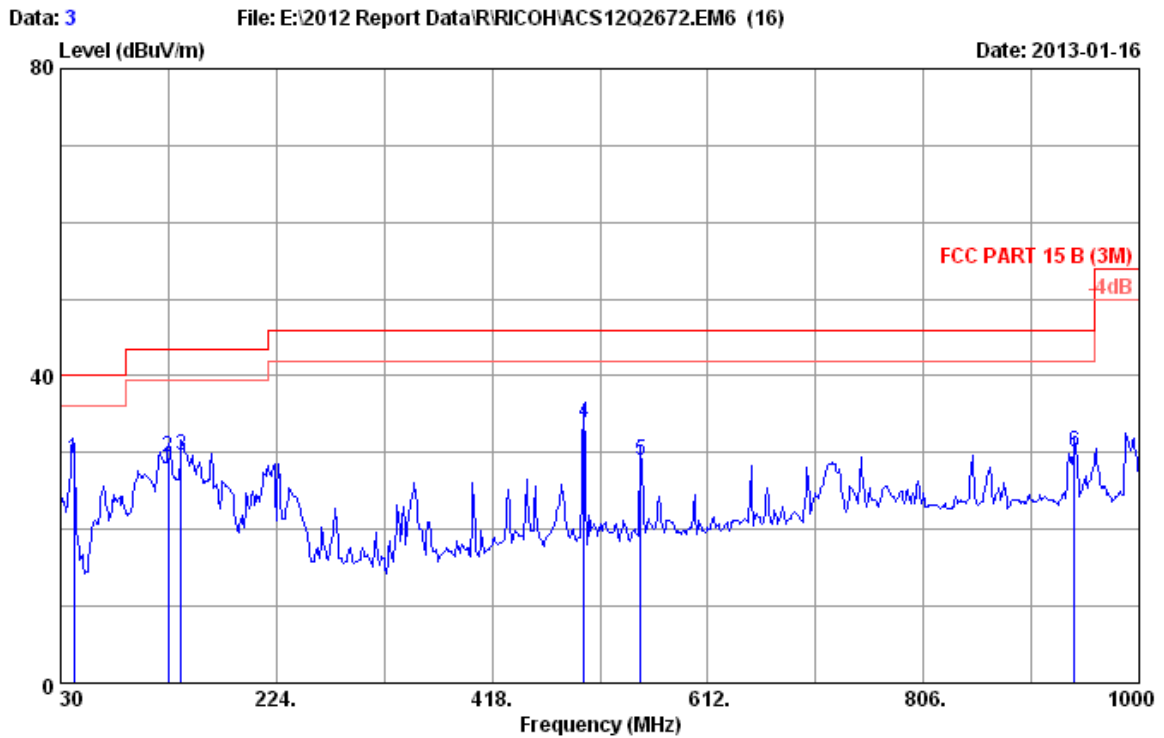
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber	Data no. : 4
Dis. / Ant. : 3m 9168-429	Ant. pol. : HORIZONTAL
Limit : FCC PART 15 B (3M)	
Env. / Ins. : 24°C/56%	Engineer : Even_Deng
EUT : Printer	
Power rating : AC 120/60Hz	
Test Mode : USB print	
M/N:SP311DNw	

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark
1	68.800	11.05	0.69	14.19	25.93	40.00	14.07	QP
2	148.340	14.05	0.96	17.76	32.77	43.50	10.73	QP
3	209.450	10.06	1.09	18.02	29.17	43.50	14.33	QP
4	500.450	16.52	1.83	17.74	36.09	46.00	9.91	QP
5	551.860	17.42	1.99	11.62	31.03	46.00	14.97	QP
6	749.740	20.27	2.56	9.34	32.17	46.00	13.83	QP

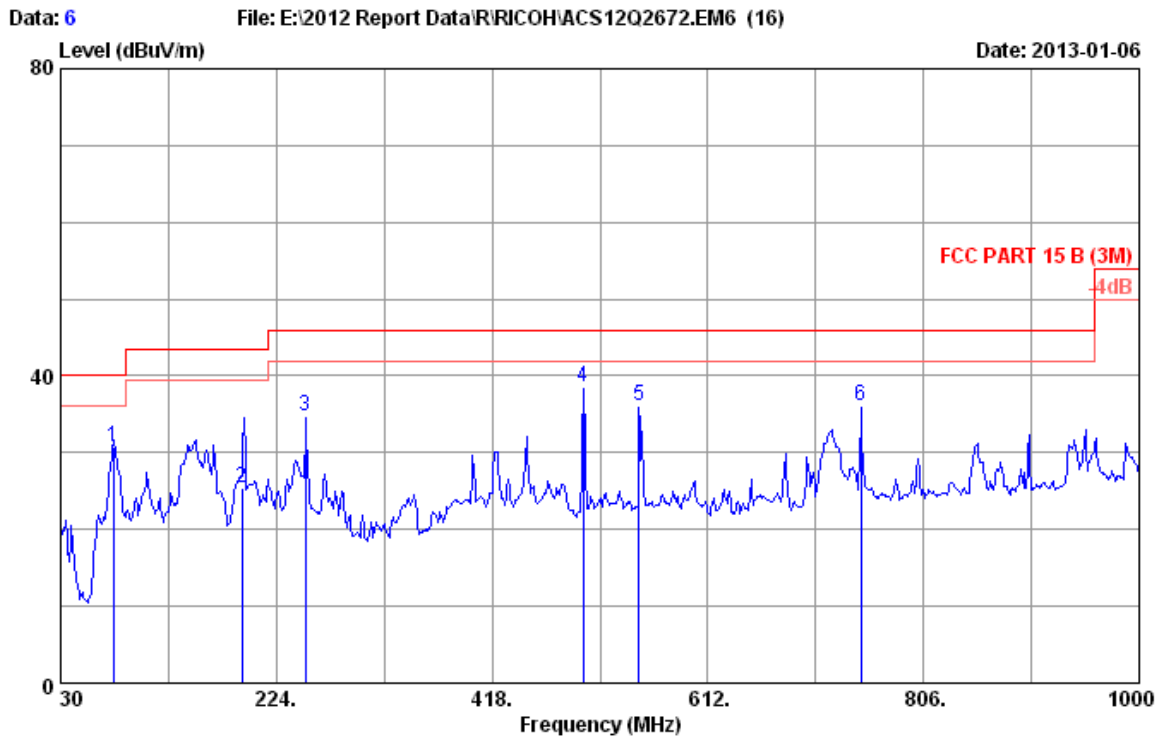
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no.	: 3m Chamber	Data no.	: 3
Dis. / Ant.	: 3m 9168-429	Ant. pol.	: VERTICAL
Limit	: FCC PART 15 B (3M)		
Env. / Ins.	: 24°C/56%	Engineer	: Even_Deng
EUT	: Printer		
Power rating	: AC 120/60Hz		
Test Mode	: USB print		
	M/N:SP311DNw		

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark
1	41.640	13.93	0.57	14.62	29.12	40.00	10.88	QP
2	127.000	12.62	0.91	15.78	29.31	43.50	14.19	QP
3	138.640	13.41	0.93	15.21	29.55	43.50	13.95	QP
4	500.450	16.52	1.83	15.57	33.92	46.00	12.08	QP
5	551.860	17.42	1.99	9.63	29.04	46.00	16.96	QP
6	941.800	22.08	2.85	5.26	30.19	46.00	15.81	QP

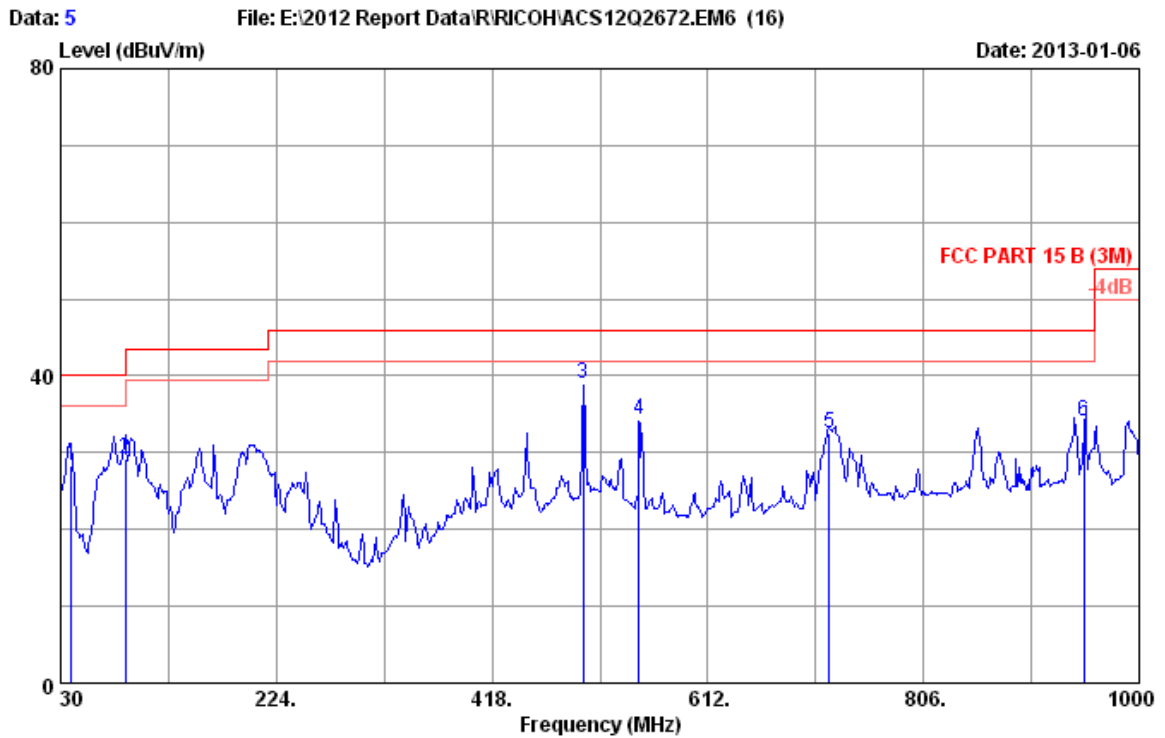
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 6
 Dis. / Ant. : 3m 2012 CBL6111C 2598 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 B (3M)
 Env. / Ins. : 24°C/56% Engineer : Even_Deng
 EUT : Printer
 Power rating : AC 120/60Hz
 Test Mode : NIC print
 M/N:SP311DNw

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark
1	77.210	6.80	0.76	23.20	30.76	40.00	9.24	QP
2	193.390	8.92	1.04	15.51	25.47	43.50	18.03	QP
3	250.000	12.67	1.16	20.91	34.74	46.00	11.26	QP
4	500.000	19.08	1.83	17.60	38.51	46.00	7.49	QP
5	550.000	19.24	1.97	14.80	36.01	46.00	9.99	QP
6	750.000	22.29	2.56	11.30	36.15	46.00	9.85	QP

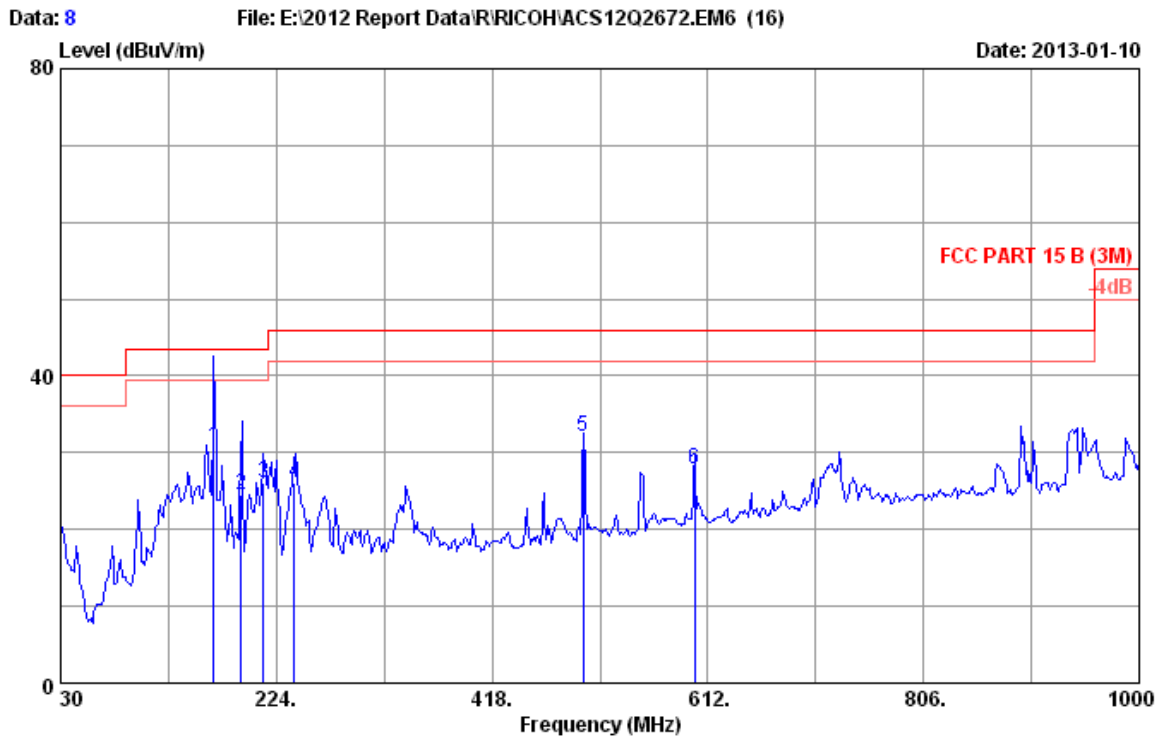
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 5
 Dis. / Ant. : 3m 2012 CBL6111C 2598 Ant. pol. : VERTICAL
 Limit : FCC PART 15 B (3M)
 Env. / Ins. : 24°C/56% Engineer : Even_Deng
 EUT : Printer
 Power rating : AC 120/60Hz
 Test Mode : NIC print
 M/N:SP311DNw

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark
1	39.530	13.52	0.51	14.30	28.33	40.00	11.67	QP
2	87.970	7.94	0.79	20.49	29.22	40.00	10.78	QP
3	500.000	19.08	1.83	18.10	39.01	46.00	6.99	QP
4	550.000	19.24	1.97	13.10	34.31	46.00	11.69	QP
5	720.930	21.47	2.48	8.59	32.54	46.00	13.46	QP
6	950.020	24.71	2.86	6.60	34.17	46.00	11.83	QP

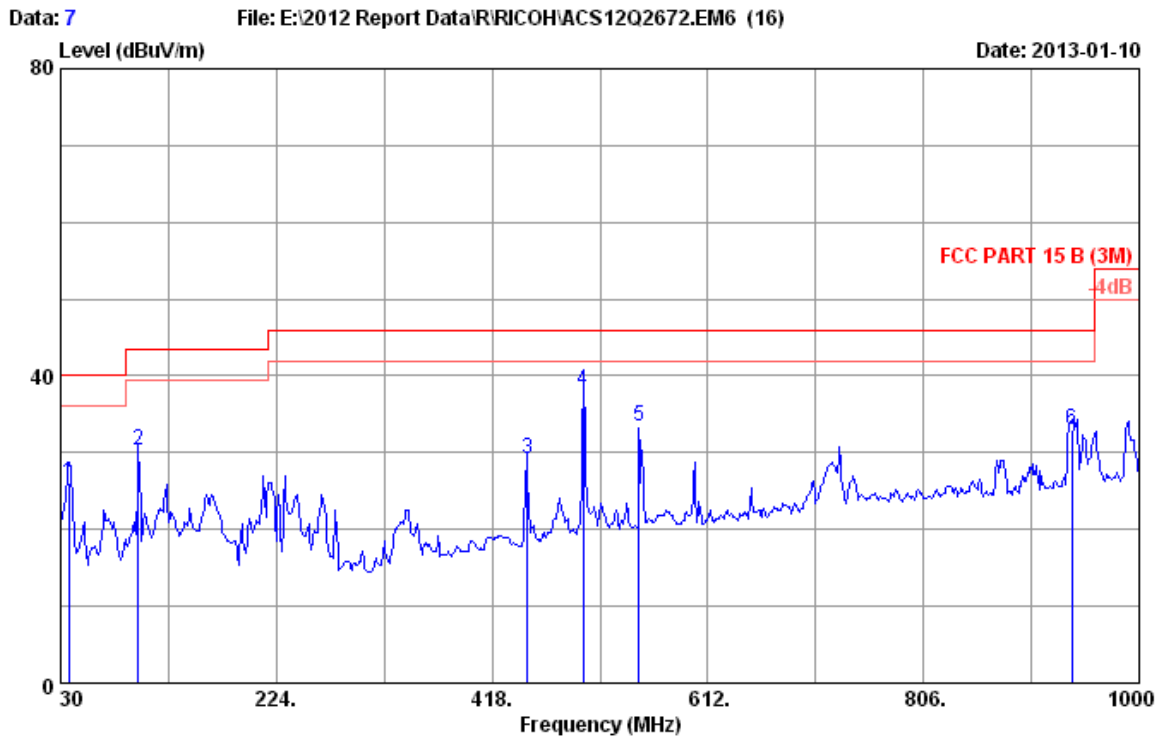
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 8
 Dis. / Ant. : 3m 2012 CBL6111C 2598 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 B (3M)
 Env. / Ins. : 24°C/56% Engineer : Even_Deng
 EUT : Printer
 Power rating : AC 120/60Hz
 Test Mode : WIFI print
 M/N:SP311DNw

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark
1	167.350	9.93	1.00	19.81	30.74	43.50	12.76	QP
2	192.350	8.88	1.04	14.50	24.42	43.50	19.08	QP
3	212.350	9.77	1.09	15.30	26.16	43.50	17.34	QP
4	240.000	11.65	1.15	13.20	26.00	46.00	20.00	QP
5	500.000	19.08	1.83	11.20	32.11	46.00	13.89	QP
6	600.000	20.20	2.11	5.50	27.81	46.00	18.19	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

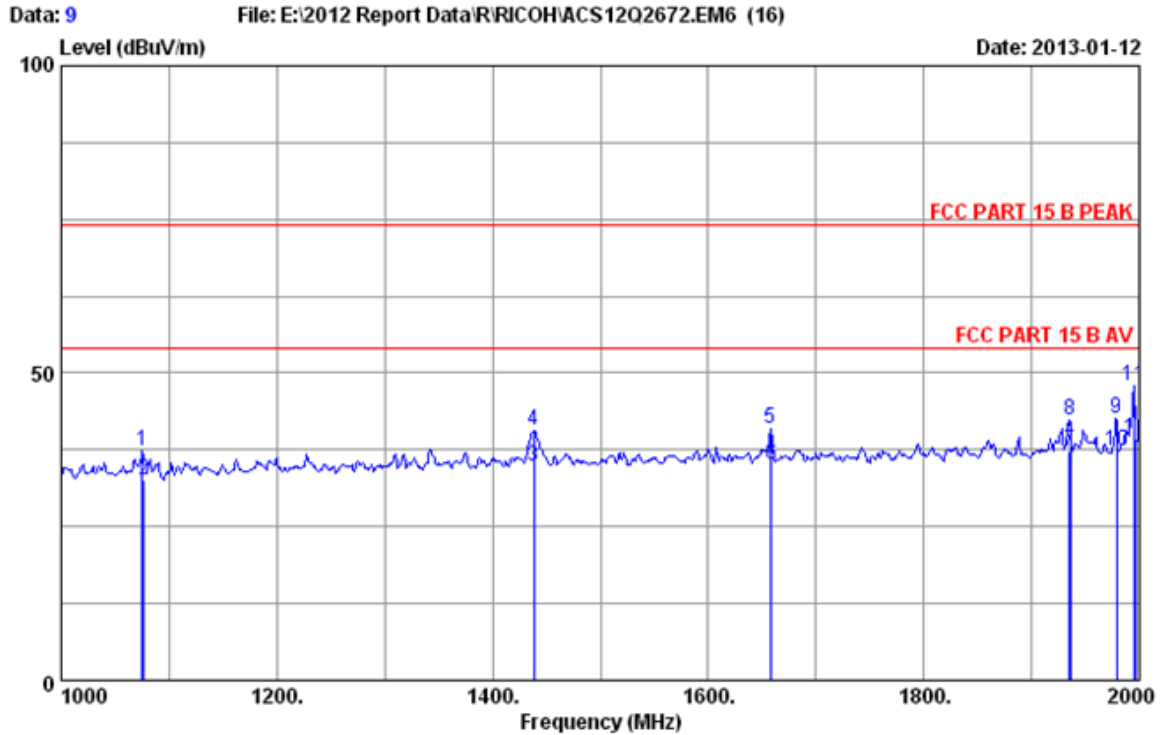


Site no. : 3m Chamber Data no. : 7
 Dis. / Ant. : 3m 2012 CBL6111C 2598 Ant. pol. : VERTICAL
 Limit : FCC PART 15 B (3M)
 Env. / Ins. : 24°C/56% Engineer : Even_Deng
 EUT : Printer
 Power rating : AC 120/60Hz
 Test Mode : WIFI print
 M/N:SP311DNw

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark
1	37.590	14.53	0.51	11.10	26.14	40.00	13.86	QP
2	99.890	9.55	0.85	20.00	30.40	43.50	13.10	QP
3	449.980	17.73	1.69	9.80	29.22	46.00	16.78	QP
4	500.000	19.08	1.83	17.30	38.21	46.00	7.79	QP
5	550.000	19.24	1.97	12.30	33.51	46.00	12.49	QP
6	939.650	24.60	2.85	5.50	32.95	46.00	13.05	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

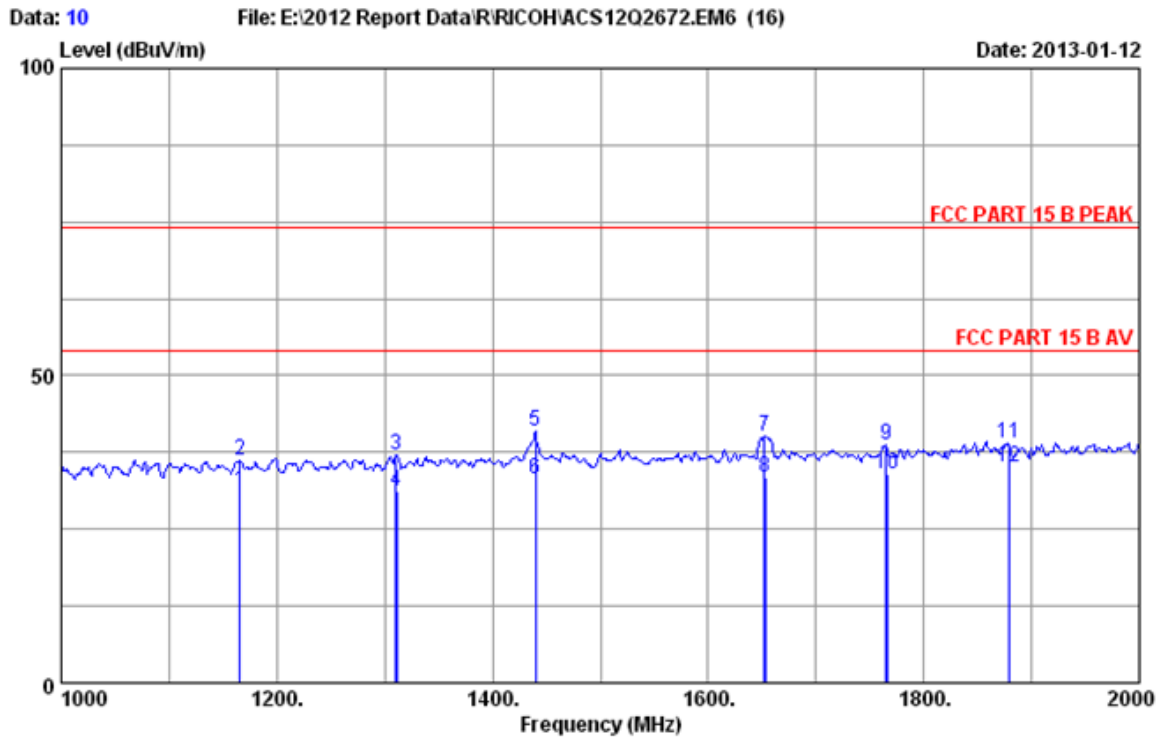
1GHz~2GHz



Site no. : 3m Chamber Data no. : 9
 Dis. / Ant. : 3m 2011 3115 9607-4877 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 B PEAK
 Env. / Ins. : 24°C/56% Engineer : Even_Deng
 EUT : Printer
 Power Rating : AC 120/60Hz
 Test Mode : Standby
 M/N:SP311DNw

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	1075.057	23.53	0.96	34.08	46.80	37.21	74.00	36.79	Peak
2	1076.355	23.53	0.96	34.08	42.15	32.56	54.00	21.44	Average
3	1438.255	25.35	1.01	34.01	42.33	34.68	54.00	19.32	Average
4	1438.412	25.35	1.01	34.01	48.35	40.70	74.00	33.30	Peak
5	1658.025	26.23	1.06	33.91	47.47	40.85	74.00	33.15	Peak
6	1658.945	26.23	1.06	33.90	41.67	35.06	54.00	18.94	Average
7	1935.245	27.25	1.12	33.74	42.60	37.23	54.00	16.77	Average
8	1935.845	27.25	1.12	33.74	47.76	42.39	74.00	31.61	Peak
9	1978.841	27.44	1.13	33.71	47.65	42.51	74.00	31.49	Peak
10	1979.355	27.44	1.13	33.71	42.54	37.40	54.00	16.60	Average
11	1995.054	27.50	1.13	33.70	53.04	47.97	74.00	26.03	Peak
12	1996.354	27.50	1.13	33.70	44.34	39.27	54.00	14.73	Average

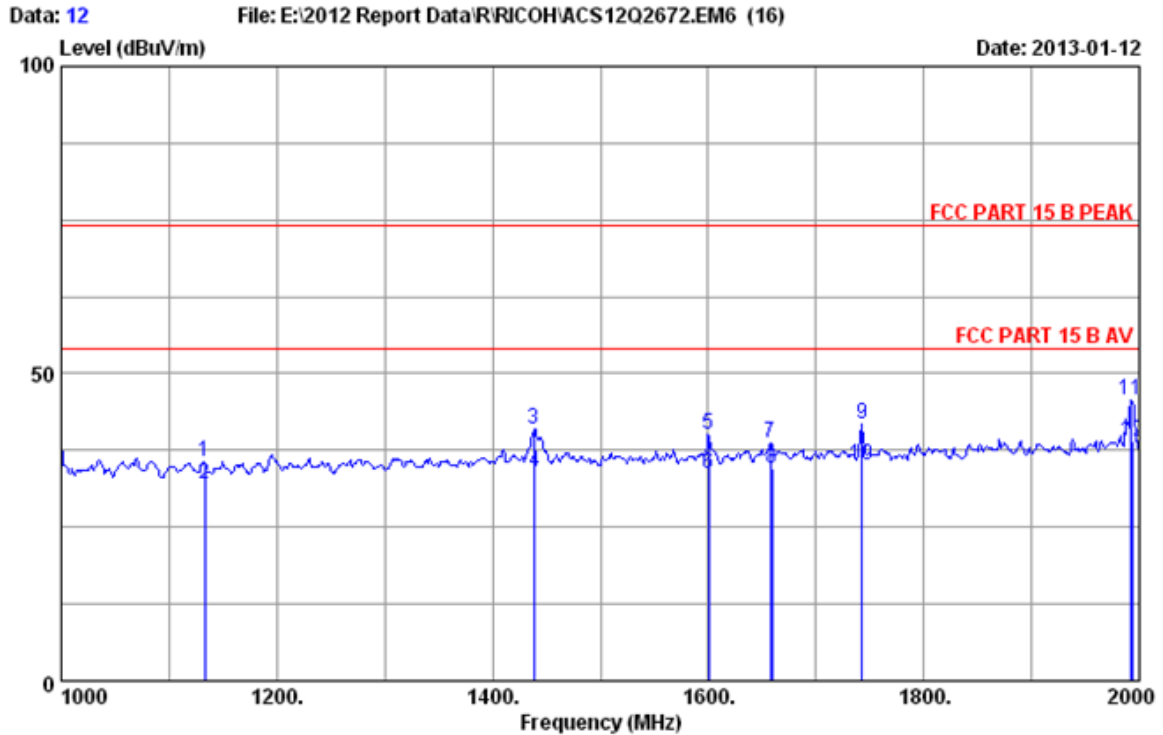
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp Factor
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 10
 Dis. / Ant. : 3m 2011 3115 9607-4877 Ant. pol. : VERTICAL
 Limit : FCC PART 15 B PEAK
 Env. / Ins. : 24°C/56% Engineer : Even_Deng
 EUT : Printer
 Power Rating : AC 120/60Hz
 Test Mode : Standby
 M/N:SP311DNw

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	1165.456	24.03	0.97	34.07	40.13	31.06	54.00	22.94	Average
2	1165.874	24.03	0.97	34.07	45.19	36.12	74.00	37.88	Peak
3	1310.155	24.69	0.99	34.04	45.30	36.94	74.00	37.06	Peak
4	1311.445	24.69	0.99	34.04	39.56	31.20	54.00	22.80	Average
5	1440.045	25.35	1.01	34.01	48.68	41.03	74.00	32.97	Peak
6	1440.258	25.35	1.01	34.01	40.78	33.13	54.00	20.87	Average
7	1652.441	26.17	1.05	33.91	46.88	40.19	74.00	33.81	Peak
8	1652.745	26.17	1.05	33.91	40.13	33.44	54.00	20.56	Average
9	1765.015	26.61	1.08	33.84	44.86	38.71	74.00	35.29	Peak
10	1766.645	26.61	1.08	33.84	40.05	33.90	54.00	20.10	Average
11	1878.541	27.06	1.10	33.77	44.55	38.94	74.00	35.06	Peak
12	1879.052	27.06	1.10	33.77	40.65	35.04	54.00	18.96	Average

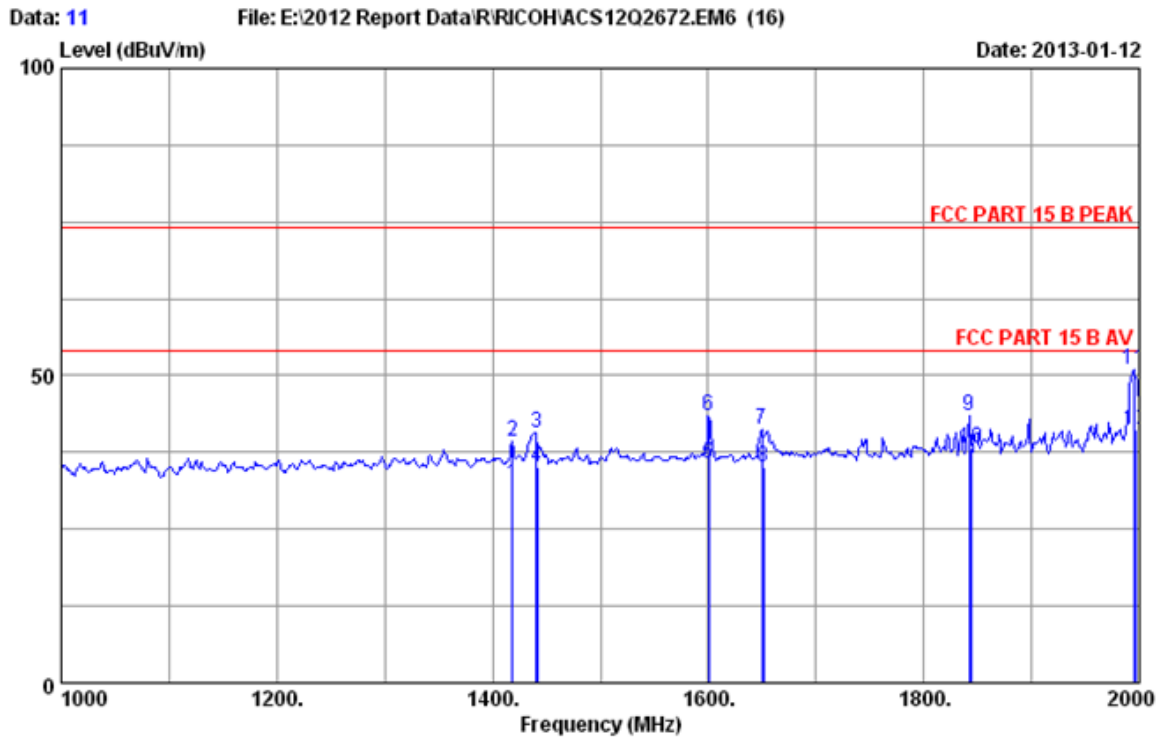
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp Factor
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 12
 Dis. / Ant. : 3m 2011 3115 9607-4877 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 B PEAK
 Env. / Ins. : 24°C/56% Engineer : Even_Deng
 EUT : Printer
 Power Rating : AC 120/60Hz
 Test Mode : USB print
 M/N:SP311DNw

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark
1	1132.854	23.86	0.97	34.07	45.02	35.78	74.00	38.22	Peak
2	1132.858	23.86	0.97	34.07	41.15	31.91	54.00	22.09	Average
3	1438.012	25.35	1.01	34.01	48.63	40.98	74.00	33.02	Peak
4	1439.554	25.35	1.01	34.01	41.66	34.01	54.00	19.99	Average
5	1600.545	25.98	1.04	33.94	46.98	40.06	74.00	33.94	Peak
6	1600.588	25.98	1.04	33.94	40.64	33.72	54.00	20.28	Average
7	1658.025	26.23	1.06	33.91	45.47	38.85	74.00	35.15	Peak
8	1659.355	26.23	1.06	33.90	41.03	34.42	54.00	19.58	Average
9	1742.840	26.55	1.08	33.85	47.92	41.70	74.00	32.30	Peak
10	1743.005	26.55	1.08	33.85	41.18	34.96	54.00	19.04	Average
11	1992.045	27.44	1.13	33.70	50.76	45.63	74.00	28.37	Peak
12	1993.665	27.44	1.13	33.70	44.18	39.05	54.00	14.95	Average

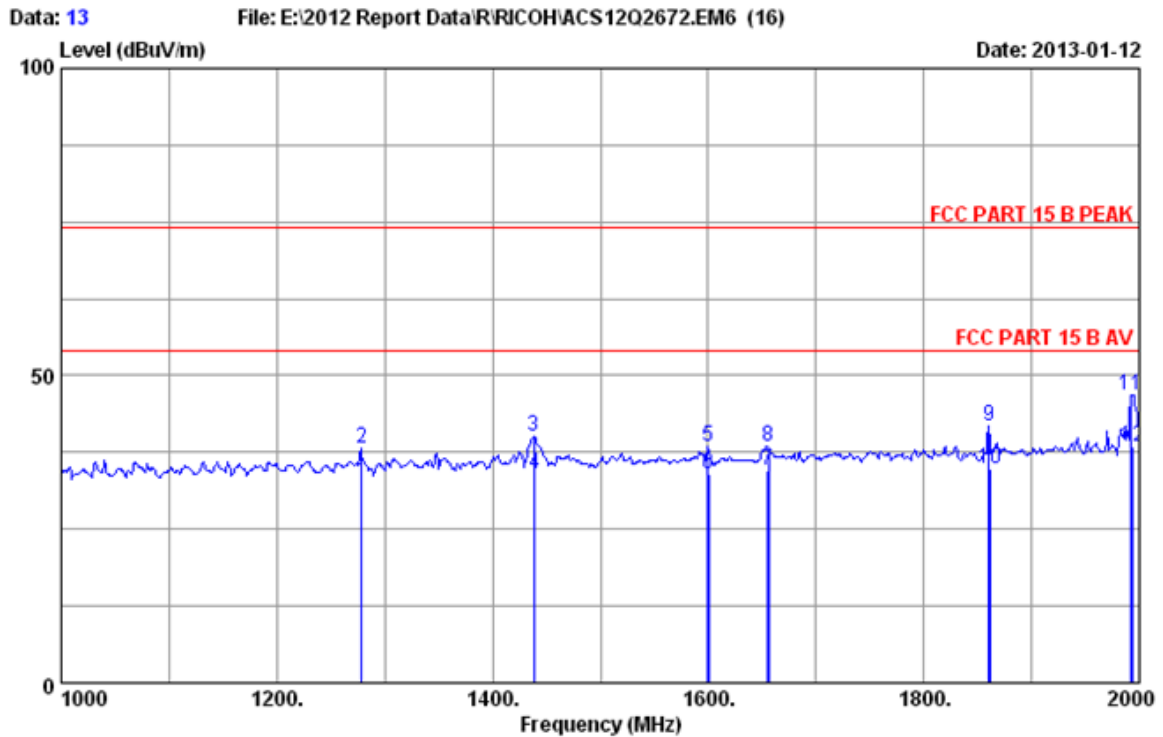
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp Factor
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 11
 Dis. / Ant. : 3m 2011 3115 9607-4877 Ant. pol. : VERTICAL
 Limit : FCC PART 15 B PEAK
 Env. / Ins. : 24°C/56% Engineer : Even_Deng
 EUT : Printer
 Power Rating : AC 120/60Hz
 Test Mode : USB print
 M/N:SP311DNw

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	1418.320	25.27	1.01	34.02	40.16	32.42	54.00	21.58	Average
2	1418.845	25.27	1.01	34.02	46.93	39.19	74.00	34.81	Peak
3	1440.885	25.35	1.01	34.01	48.33	40.68	74.00	33.32	Peak
4	1441.348	25.35	1.01	34.01	42.66	35.01	54.00	18.99	Average
5	1600.844	25.98	1.04	33.94	42.67	35.75	54.00	18.25	Average
6	1600.844	25.98	1.04	33.94	50.26	43.34	74.00	30.66	Peak
7	1650.024	26.17	1.05	33.91	47.99	41.30	74.00	32.70	Peak
8	1651.255	26.17	1.05	33.91	41.68	34.99	54.00	19.01	Average
9	1842.052	26.93	1.10	33.79	49.27	43.51	74.00	30.49	Peak
10	1843.778	26.93	1.10	33.79	43.80	38.04	54.00	15.96	Average
11	1995.856	27.50	1.13	33.70	56.05	50.98	74.00	23.02	Peak
12	1996.355	27.50	1.13	33.70	46.38	41.31	54.00	12.69	Average

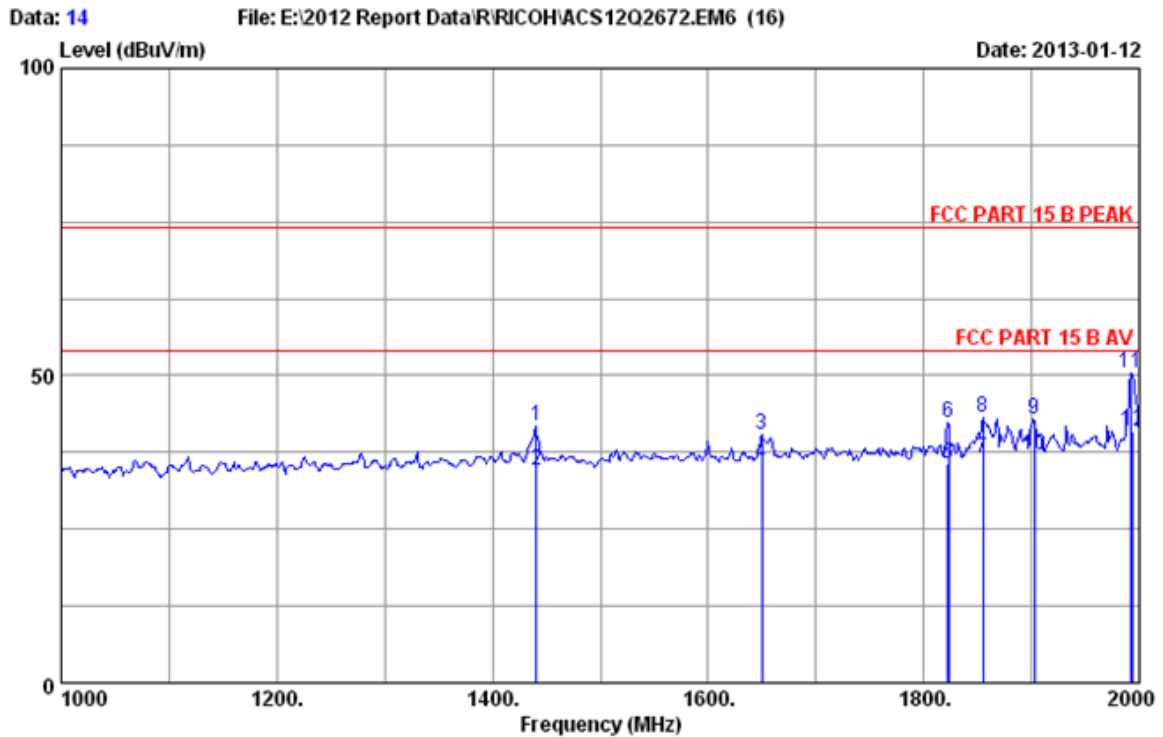
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp Factor
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 13
 Dis. / Ant. : 3m 2011 3115 9607-4877 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 B PEAK
 Env. / Ins. : 24°C/56% Engineer : Even_Deng
 EUT : Printer
 Power Rating : AC 120/60Hz
 Test Mode : NIC print
 M/N:SP311DNw

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	1278.364	24.52	0.99	34.04	41.09	32.56	54.00	21.44	Average
2	1278.844	24.52	0.99	34.04	46.63	38.10	74.00	35.90	Peak
3	1438.112	25.35	1.01	34.01	47.70	40.05	74.00	33.95	Peak
4	1439.333	25.35	1.01	34.01	41.51	33.86	54.00	20.14	Average
5	1600.125	25.98	1.04	33.94	45.32	38.40	74.00	35.60	Peak
6	1600.410	25.98	1.04	33.94	41.03	34.11	54.00	19.89	Average
7	1655.312	26.23	1.06	33.91	41.16	34.54	54.00	19.46	Average
8	1655.875	26.23	1.06	33.91	45.10	38.48	74.00	35.52	Peak
9	1860.456	26.99	1.10	33.78	47.59	41.90	74.00	32.10	Peak
10	1861.025	26.99	1.10	33.78	40.64	34.95	54.00	19.05	Average
11	1992.810	27.44	1.13	33.70	51.97	46.84	74.00	27.16	Peak
12	1993.612	27.44	1.13	33.70	43.63	38.50	54.00	15.50	Average

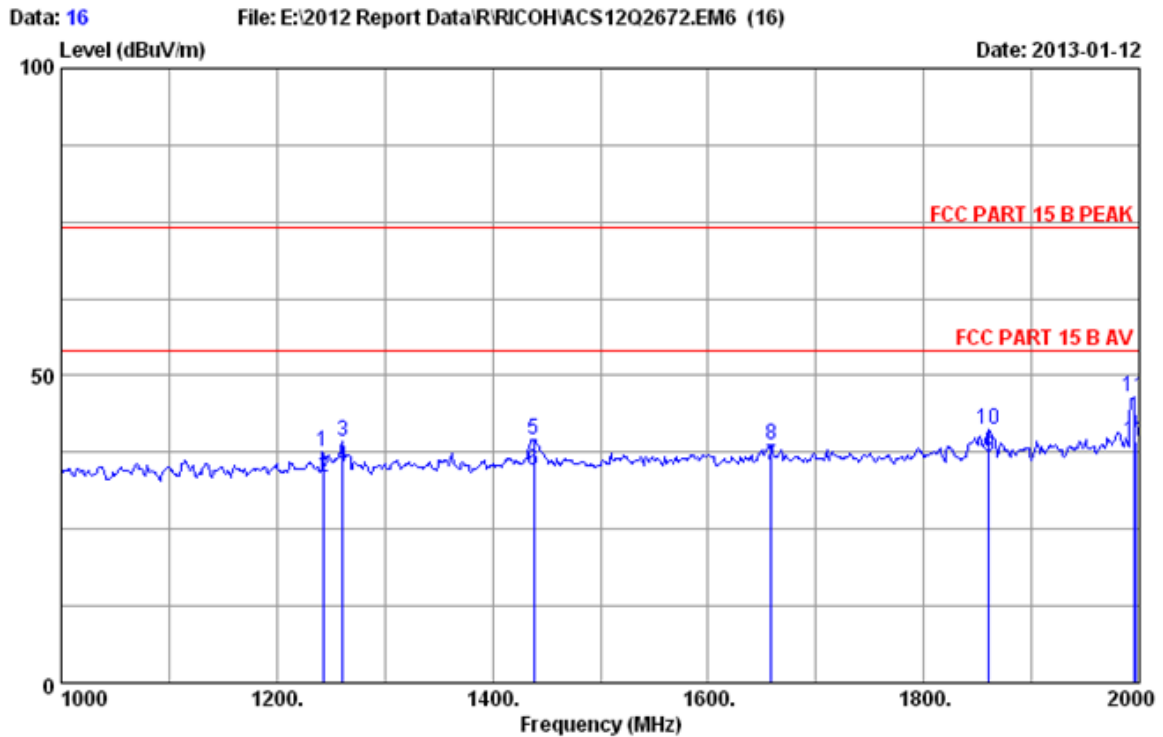
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp Factor
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 14
 Dis. / Ant. : 3m 2011 3115 9607-4877 Ant. pol. : VERTICAL
 Limit : FCC PART 15 B PEAK
 Env. / Ins. : 24°C/56% Engineer : Even_Deng
 EUT : Printer
 Power Rating : AC 120/60Hz
 Test Mode : NIC print
 M/N:SP311DNw

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark
1	1440.844	25.35	1.01	34.01	49.53	41.88	74.00	32.12	Peak
2	1440.945	25.35	1.01	34.01	42.08	34.43	54.00	19.57	Average
3	1650.117	26.17	1.05	33.91	46.97	40.28	74.00	33.72	Peak
4	1650.228	26.17	1.05	33.91	42.22	35.53	54.00	18.47	Average
5	1822.350	26.80	1.09	33.81	41.66	35.74	54.00	18.26	Average
6	1822.849	26.80	1.09	33.81	48.19	42.27	74.00	31.73	Peak
7	1855.052	26.93	1.10	33.79	42.28	36.52	54.00	17.48	Average
8	1855.124	26.93	1.10	33.79	48.87	43.11	74.00	30.89	Peak
9	1902.840	27.12	1.11	33.76	48.44	42.91	74.00	31.09	Peak
10	1903.025	27.12	1.11	33.76	42.69	37.16	54.00	16.84	Average
11	1992.025	27.44	1.13	33.70	55.57	50.44	74.00	23.56	Peak
12	1993.654	27.44	1.13	33.70	46.04	40.91	54.00	13.09	Average

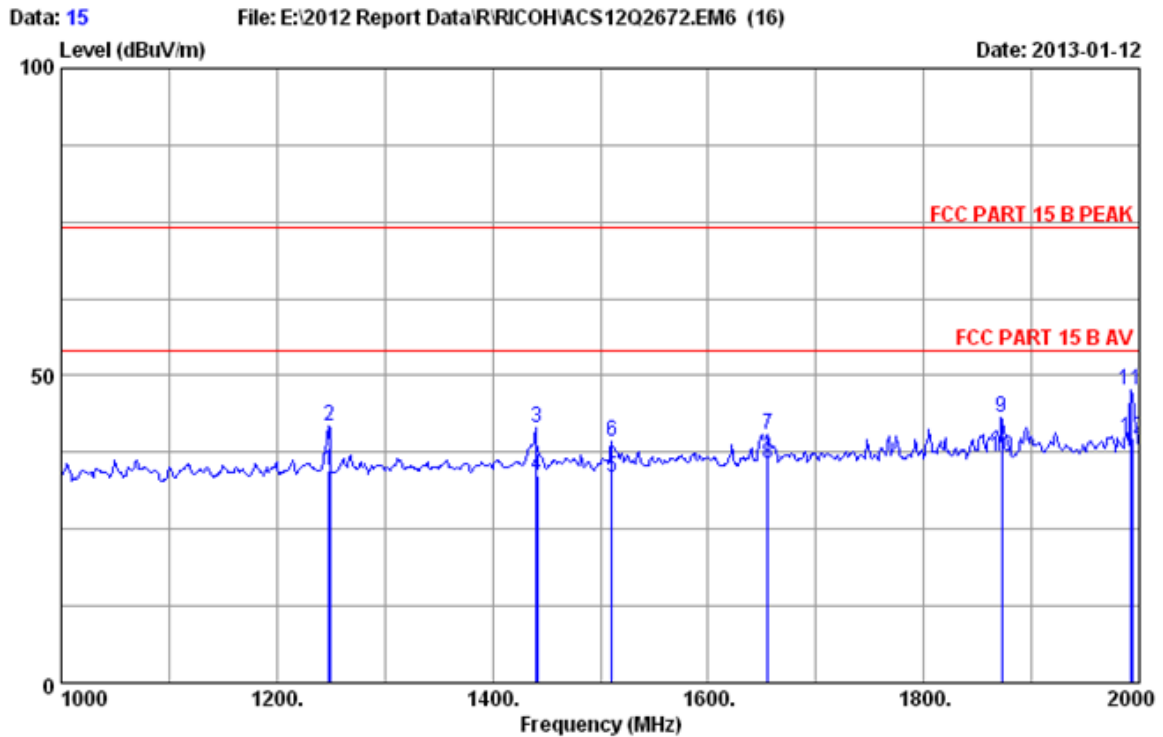
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp Factor
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 16
 Dis. / Ant. : 3m 2011 3115 9607-4877 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 B PEAK
 Env. / Ins. : 24°C/56% Engineer : Even_Deng
 EUT : Printer
 Power Rating : AC 120/60Hz
 Test Mode : WIFI print
 M/N:SP311DNw

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark
1	1242.741	24.36	0.98	34.05	46.39	37.68	74.00	36.32	Peak
2	1243.646	24.36	0.98	34.05	42.16	33.45	54.00	20.55	Average
3	1260.945	24.44	0.99	34.05	47.93	39.31	74.00	34.69	Peak
4	1261.355	24.44	0.99	34.05	43.58	34.96	54.00	19.04	Average
5	1438.026	25.35	1.01	34.01	47.25	39.60	74.00	34.40	Peak
6	1438.556	25.35	1.01	34.01	42.06	34.41	54.00	19.59	Average
7	1658.640	26.23	1.06	33.90	42.08	35.47	54.00	18.53	Average
8	1658.844	26.23	1.06	33.90	45.35	38.74	74.00	35.26	Peak
9	1860.345	26.99	1.10	33.78	42.38	36.69	54.00	17.31	Average
10	1860.741	26.99	1.10	33.78	46.94	41.25	74.00	32.75	Peak
11	1995.845	27.50	1.13	33.70	51.53	46.46	74.00	27.54	Peak
12	1996.350	27.50	1.13	33.70	44.47	39.40	54.00	14.60	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp Factor
 2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 15
 Dis. / Ant. : 3m 2011 3115 9607-4877 Ant. pol. : VERTICAL
 Limit : FCC PART 15 B PEAK
 Env. / Ins. : 24°C/56% Engineer : Even_Deng
 EUT : Printer
 Power Rating : AC 120/60Hz
 Test Mode : WIFI print
 M/N:SP311DNw

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark
1	1248.365	24.44	0.99	34.05	43.16	34.54	54.00	19.46	Average
2	1248.974	24.44	0.99	34.05	50.44	41.82	74.00	32.18	Peak
3	1440.875	25.35	1.01	34.01	49.11	41.46	74.00	32.54	Peak
4	1441.365	25.35	1.01	34.01	41.35	33.70	54.00	20.30	Average
5	1510.365	25.66	1.02	33.99	40.64	33.33	54.00	20.67	Average
6	1510.587	25.66	1.02	33.99	46.55	39.24	74.00	34.76	Peak
7	1655.354	26.23	1.06	33.91	47.11	40.49	74.00	33.51	Peak
8	1655.385	26.23	1.06	33.91	42.35	35.73	54.00	18.27	Average
9	1872.144	26.99	1.10	33.78	48.77	43.08	74.00	30.92	Peak
10	1873.350	26.99	1.10	33.78	42.39	36.70	54.00	17.30	Average
11	1992.545	27.44	1.13	33.70	52.75	47.62	74.00	26.38	Peak
12	1993.025	27.44	1.13	33.70	44.84	39.71	54.00	14.29	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading - Amp Factor
 2. The emission levels that are 20dB below the official limit are not reported.

5. DEVIATION TO TEST SPECIFICATIONS

[NONE]