

Application for FCC Certificate
On Behalf of
Ricoh Company Ltd

Printer

Model No.: SP C250DN/SP C252DN

FCC ID : BBP-PRSPC252DN1

Prepared For : Ricoh Company Ltd
810, Shimoimaizumi Ebina-shi, Kanagawa,
243-0460 Japan

Prepared By : Audix Technology (Shanghai) Co., Ltd.
3F and 4F, 34Bldg 680 Guiping Rd,
Caohejing Hi-Tech Park,
Shanghai 200233, China

Tel: +86-21-64955500
Fax: +86-21-64955491

Report No. : ACI-F13194
Date of Test : Oct 28 – Nov 01, 2013
Date of Report : Nov 07, 2013

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TEST REPORT FOR FCC CERTIFICATE

Applicant : Ricoh Company Ltd
 Manufacturer : Ricoh Company Ltd
 Factory : Shanghai Ricoh Digital Equipment Co., Ltd.
 EUT Description : Printer
 (A) Model No. : SP C250DN/SP C252DN
 (B) Power Supply : 120V/60Hz

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2012
AND ANSI C63.4-2003*

The device described above is tested by Audix Technology (Shanghai) 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 radiated and conducted emissions.

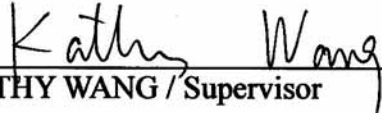
The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. This report shows that the EUT (M/N: Refer to Sec2.1) which was tested in 3m anechoic chamber Oct 28 – Nov 01, 2013 is technically compliance with the FCC official limits also.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shanghai) Co., Ltd.


This report contains data that are not covered by the NVLAP accreditation.


This 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 : Oct 28 – Nov 01, 2013 Date of Report : Nov 07, 2013

Producer : 
 KATHY WANG / Supervisor

Review : 
 DIO YANG / Assistant Manager

 For and on behalf of
 Audix Technology (Shanghai) Co., Ltd.

Signatory : 
 Authorized Signature EMCBYRON KWO / Assistant General 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:

Description of Test Item	Standard	Limits	Results
EMISSION			
Conducted Disturbance at the Mains Terminal	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2012 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2012 AND ANSI C63.4-2003	15.109(a) Class B	Pass

2 GENERAL INFORMATION

2.1 Description of Equipment Under Test

Description	:	Printer
Type of EUT	:	<input type="checkbox"/> Production <input checked="" type="checkbox"/> Pre-product <input type="checkbox"/> Pro-type
Model No.	:	SP C250DN/SP C252DN
Note	:	The above two models are essentially the same, except for their type designations and marking plates. SP C252DN model (Serial No.: X093P817008) was tested and recorded in the report.
Highest working Frequency	:	532MHz (Except for Wi-Fi module)
Bank Unit (TK1010)	:	Model Number : G849-27 Serial Number : Q9438500393
Applicant	:	Ricoh Company Ltd 810, Shimoimaizumi Ebina-shi, Kanagawa, 243-0460 Japan
Manufacturer	:	Ricoh Company Ltd 810, Shimoimaizumi Ebina-shi, Kanagawa, 243-0460 Japan
Factory	:	Shanghai Ricoh Digital Equipment Co., Ltd. No.887 Jinggang Road, Jinqiao Export Processing Zone, Pudong New Area, Shanghai, China

Remark:

The EUT is a Printer which input/output ports as follows:

- (1) One LAN Port : Connected with PC
- (2) One USB Port : Connected with PC
- (3) One USB Port : Connected with Digital Camera or U-Disk

2.2 Peripherals

2.2.1 Notebook PC

Manufacturer : LENOVO
 Model Number : ThinkPad X220i
 Serial Number : R9-NZEBP
 Certificate : CCC, FCC DoC, CE/EMC, VCCI

2.2.2 Digital Camera

Manufacturer : Panasonic
 Model Number : DMC-FHIGK
 Serial Number : WJ0HA001877
 Data Cable : Shielded, Undetachable, 1.5m

2.2.3 U-Disk

Manufacturer : TOSHIBA
 Model Number : UHYBS-016GH
 Serial Number : 1327DB1395L2UMK

2.3 Cable list

No.	Name	Length (m)	Cable Shield	Connector Shield	Remark
1	USB Cable	1.5	Shielded	Shielded	-
2	Mini USB Cable	1.2	Shielded	Shielded	-
3	LAN Cable	1.6	Unshielded	Unshielded	
4	AC Input Cable	1.9	Unshielded	Unshielded	-

2.4 Description of Test Facility

Site Description (No.3 3m Chamber) : Sept. 17, 1998 file on
 Mar 16, 2012 Renewed
 Federal Communications Commission
 FCC Engineering Laboratory
 7435 Oakland Mills Road
 Columbia, MD 21046, USA

Name of Firm : Audix Technology (Shanghai) Co., Ltd.

Site Location : 3F 34Bldg 680 Guiping Rd,
 Caohejing Hi-Tech Park,
 Shanghai 200233, China

NVLAP Lab Code : 200371-0

2.5 Measurement Uncertainty

Conducted Emission Expanded Uncertainty:	U = 3.02 dB
Radiated Emission Expanded Uncertainty (30-200MHz):	U = 4.17 dB (Horizontal)
	U = 4.02 dB (Vertical)
Radiated Emission Expanded Uncertainty (200M-1GHz):	U = 3.38 dB (Horizontal)
	U = 3.28 dB (Vertical)
Radiated Emission Expanded Uncertainty (Above 1GHz):	U = 4.68 dB (Horizontal)
	U = 4.87 dB (Vertical)

3 CONDUCTED EMISSION TEST

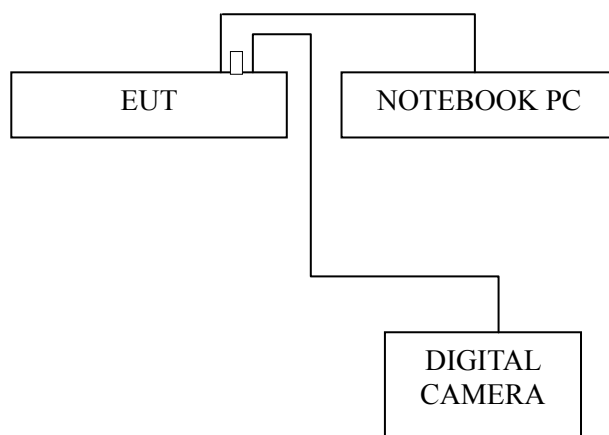
3.1 Test Equipment

The following test equipments are used during the conducted emission test in a shielded room:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	100841	Mar 20, 2013	Mar 19, 2014
2.	Artificial Mains Network (AMN)	R&S	ESH2-Z5	843890/011	Feb 25, 2013	Feb 24, 2014
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Mar 20, 2013	Mar 19, 2014
4.	50Ω Coaxial Switch	Anritsu	MP59B	6200426389	Sep 18, 2013	Mar 17, 2014
5.	50Ω Terminator	Anritsu	BNC	001	Mar 20, 2013	Mar 19, 2014
6.	Software	Audix	E3	6.2009-1-15	--	--

3.2 Block Diagram of Test Setup

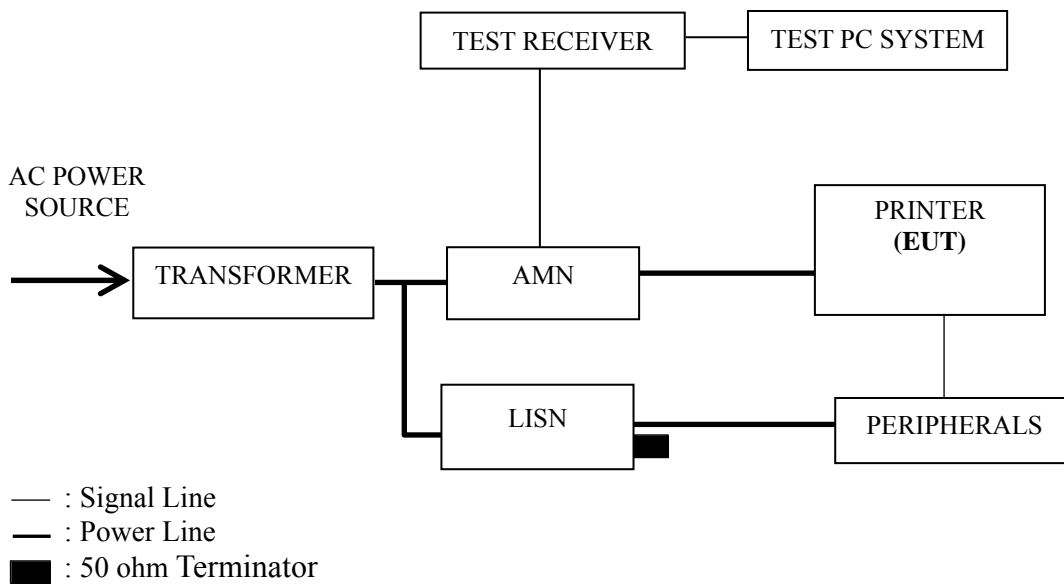
3.2.1 EUT & Peripherals



□ : U-Disk

Note: The U-Disk and Digital Camera were connected separately for different test mode.

3.2.2 Conducted Disturbance Test Setup



3.3 Conducted Emission Limit [FCC Part 15 Subpart B 15.107(a)]

Frequency Range (MHz)	Limits dB (μV)	
	Quasi-peak	Average
0.15 ~ 0.5	66~56	56~46
0.5 ~ 5	56	46
5 ~ 30	60	50

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

3.4 Test Configuration

The EUT (listed in Sec.2.1) and the peripherals (listed in Sec 2.2) were installed as shown on Sec.3.2 to meet FCC requirement and operating in a manner that tends to maximize its emission level in a normal application.

3.5 Operating Condition of EUT

- 3.5.1 Setup the EUT and peripherals as shown in Sec. 3.2.
- 3.5.2 Turn on the power of all equipments and the EUT.
- 3.5.3 Set the EUT on the test mode and then test.

3.6 Test Procedures

The EUT and peripherals were connected to the power mains through an Artificial Mains Network (AMN). This provided a 50 ohm coupling impedance for the measuring equipment.

Both sides of AC line (Line & Neutral) were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed or manipulated according to ANSI C63.4:2003 during conducted emission test.

The bandwidth of R&S Test Receiver ESCI was set at 9 kHz.

The frequency range from 150 kHz to 30 MHz was checked.

The test modes were done on conducted disturbance test and all the test results are listed in Sec. 3.7.

3.7 Test Results

< **PASS** >

The frequency and amplitude of the highest conducted emission relative to the limit is reported. All emissions not reported below are too low against the prescribed limits.

Test Mode	Data Page
LAN Print +USB Print	P11
Pictbridge Print	P12
Wifi Print	P13
Standby	P14

NOTE 1 – Factor = Cable Loss + AMN Factor.

NOTE 2 – Emission Level = Meter Reading + Factor.

NOTE 3 – “QP” means “Quasi-Peak” values, “AV” means “Average” values.

NOTE 4 – The worst case is for Wifi Print test mode. The worst emission is detected at 0.180 MHz (Average Value) with corrected signal level of 48.18 dB (μ V) (limit is 54.50 dB (μ V)), when the Neutral of the EUT is connected to AMN.

EUT : Printer Temperature : 22

Model No. : SP C252DN Humidity : 48%RH

Test Mode : LAN Print +USB Print Date of Test : Oct 28, 2013

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.179	51.99	0.14	52.13	64.54	12.41	QP
	0.307	40.30	0.05	40.35	60.06	19.71	
	0.614	37.90	0.05	37.95	56.00	18.05	
	0.921	32.99	0.07	33.06	56.00	22.94	
	1.842	29.60	0.07	29.67	56.00	26.33	
	7.342	40.60	0.26	40.86	60.00	19.14	
	0.179	46.29	0.14	46.43	54.54	8.11	AV
	0.307	40.60	0.05	40.65	50.06	9.41	
	0.614	38.10	0.05	38.15	46.00	7.85	
	0.921	33.19	0.07	33.26	46.00	12.74	
	1.842	30.00	0.07	30.07	46.00	15.93	
	7.342	37.50	0.26	37.76	50.00	12.24	
Neutral	0.179	44.01	0.17	44.18	64.54	20.36	QP
	0.307	40.10	0.22	40.32	60.06	19.74	
	0.614	36.80	0.15	36.95	56.00	19.05	
	0.921	30.80	0.17	30.97	56.00	25.03	
	7.162	41.31	0.33	41.64	60.00	18.36	
	10.490	37.09	0.42	37.51	60.00	22.49	
	0.179	40.11	0.17	40.28	54.54	14.26	AV
	0.307	40.40	0.22	40.62	50.06	9.44	
	0.614	37.10	0.15	37.25	46.00	8.75	
	0.921	31.10	0.17	31.27	46.00	14.73	
	7.162	39.01	0.33	39.34	50.00	10.66	
	10.490	36.19	0.42	36.61	50.00	13.39	

TEST ENGINEER: ERIC TANG

EUT : Printer Temperature : 22

Model No. : SP C252DN Humidity : 48%RH

Test Mode : Pictbridge Print Date of Test : Oct 28, 2013

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.153	56.40	0.15	56.55	65.85	9.30	QP
	0.177	52.70	0.13	52.83	64.63	11.80	
	0.308	40.00	0.05	40.05	60.02	19.97	
	0.615	37.00	0.05	37.05	56.00	18.95	
	6.449	41.00	0.24	41.24	60.00	18.76	
	10.510	40.50	0.17	40.67	60.00	19.33	
	AV	0.153	37.40	0.15	37.55	55.85	18.30
		0.177	41.70	0.13	41.83	54.63	12.80
		0.308	40.40	0.05	40.45	50.02	9.57
		0.615	37.30	0.05	37.35	46.00	8.65
6.449		40.00	0.24	40.24	50.00	9.76	
10.510		37.78	0.17	37.95	50.00	12.05	
Neutral	0.150	57.70	0.15	57.85	65.98	8.13	QP
	0.180	45.60	0.18	45.78	64.50	18.72	
	0.309	39.90	0.22	40.12	60.01	19.89	
	0.615	38.90	0.15	39.05	56.00	16.95	
	7.342	43.61	0.34	43.95	60.00	16.05	
	20.660	26.79	0.82	27.61	60.00	32.39	
	AV	0.150	42.00	0.15	42.15	55.98	13.83
		0.180	44.00	0.18	44.18	54.50	10.32
		0.309	40.30	0.22	40.52	50.01	9.49
		0.615	37.20	0.15	37.35	46.00	8.65
7.342		41.91	0.34	42.25	50.00	7.75	
20.660	21.89	0.82	22.71	50.00	27.29		

TEST ENGINEER: ERIC TANG

EUT : Printer Temperature : 22

Model No. : SP C252DN Humidity : 48%RH

Test Mode : Wifi Print Date of Test : Oct 28, 2013

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark
Line	0.151	55.00	0.16	55.16	65.97	10.81	QP
	0.178	43.90	0.13	44.03	64.59	20.56	
	0.307	40.00	0.05	40.05	60.05	20.00	
	0.615	38.90	0.05	38.95	56.00	17.05	
	2.747	25.01	0.10	25.11	56.00	30.89	
	7.342	42.30	0.26	42.56	60.00	17.44	
	0.151	40.60	0.16	40.76	55.97	15.21	AV
	0.178	40.30	0.13	40.43	54.59	14.16	
	0.307	40.50	0.05	40.55	50.05	9.50	
	0.615	37.80	0.05	37.85	46.00	8.15	
2.747	21.61	0.10	21.71	46.00	24.29		
7.342	40.10	0.26	40.36	50.00	9.64		
Neutral	0.152	57.60	0.15	57.75	65.91	8.16	QP
	0.180	53.40	0.18	53.58	64.50	10.92	
	0.308	41.30	0.22	41.52	60.04	18.52	
	0.615	38.90	0.15	39.05	56.00	16.95	
	2.624	24.70	0.17	24.87	56.00	31.13	
	8.416	37.80	0.40	38.20	60.00	21.80	
	0.152	39.60	0.15	39.75	55.91	16.16	AV
	0.180	48.00	0.18	48.18	54.50	6.32	
	0.308	40.60	0.22	40.82	50.04	9.22	
	0.615	38.20	0.15	38.35	46.00	7.65	
2.624	21.30	0.17	21.47	46.00	24.53		
8.416	34.50	0.40	34.90	50.00	15.10		

TEST ENGINEER: ERIC TANG

EUT : Printer Temperature : 22

Model No. : SP C252DN Humidity : 48%RH

Test Mode : Standby Date of Test : Oct 28, 2013

Test Line	Frequency (MHz)	Meter Reading dB(μ V)	Factor (dB)	Emission Level dB(μ V)	Limits dB(μ V)	Margin (dB)	Remark		
Line	0.179	49.40	0.13	49.53	64.55	15.02	QP		
	0.306	40.20	0.05	40.25	60.08	19.83			
	0.613	37.40	0.04	37.44	56.00	18.56			
	1.836	30.10	0.07	30.17	56.00	25.83			
	4.284	30.00	0.18	30.18	56.00	25.82			
	9.763	27.00	0.21	27.21	60.00	32.79			
	0.179	46.60	0.13	46.73	54.55	7.82	AV		
	0.306	40.40	0.05	40.45	50.08	9.63			
	0.613	37.80	0.04	37.84	46.00	8.16			
	1.836	30.50	0.07	30.57	46.00	15.43			
	4.284	30.20	0.18	30.38	46.00	15.62			
	9.763	20.00	0.21	20.21	50.00	29.79			
	Neutral	0.178	43.41	0.17	43.58	64.56		20.98	QP
		0.306	40.00	0.22	40.22	60.08		19.86	
0.612		36.80	0.15	36.95	56.00	19.05			
0.918		31.09	0.17	31.26	56.00	24.74			
8.409		31.50	0.40	31.90	60.00	28.10			
10.500		33.10	0.42	33.52	60.00	26.48			
0.178		40.41	0.17	40.58	54.56	13.98	AV		
0.306		40.30	0.22	40.52	50.08	9.56			
0.612		37.20	0.15	37.35	46.00	8.65			
0.918		31.19	0.17	31.36	46.00	14.64			
8.409		26.90	0.40	27.30	50.00	22.70			
10.500		30.00	0.42	30.42	50.00	19.58			

TEST ENGINEER: ERIC TANG

4 RADIATED EMISSION TEST

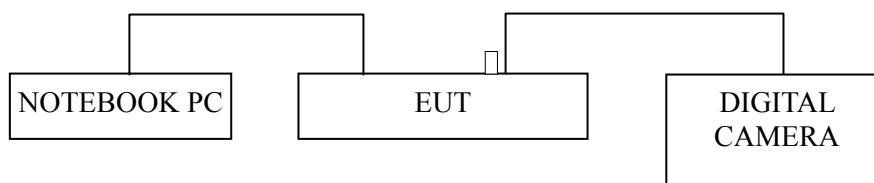
4.1 Test Equipment

The following test equipments are used during the radiated emission test in a semi-anechoic chamber:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Sep 03, 2013	Sep 02, 2014
2.	Preamplifier	Agilent	8447D	2944A10548	Sep 18, 2013	Mar 17, 2014
3.	Preamplifier	HP	8449B	3008A00864	Mar 20, 2013	Mar 19, 2014
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 03, 2013	May 02, 2014
5.	Horn Antenna	EMCO	3115	9607-4878	May 11, 2013	May 10, 2014
6.	Spectrum	Agilent	E7405A	MY45106600	Dec 17, 2012	Dec 16, 2013
7.	50 Coaxial Switch	Anritsu	MP59B	6200426390	Sep 18, 2013	Mar 17, 2014
8.	Software	Audix	E3	6.2007-9-10	--	--

4.2 Block Diagram of Test Setup

4.2.1 EUT & Peripherals

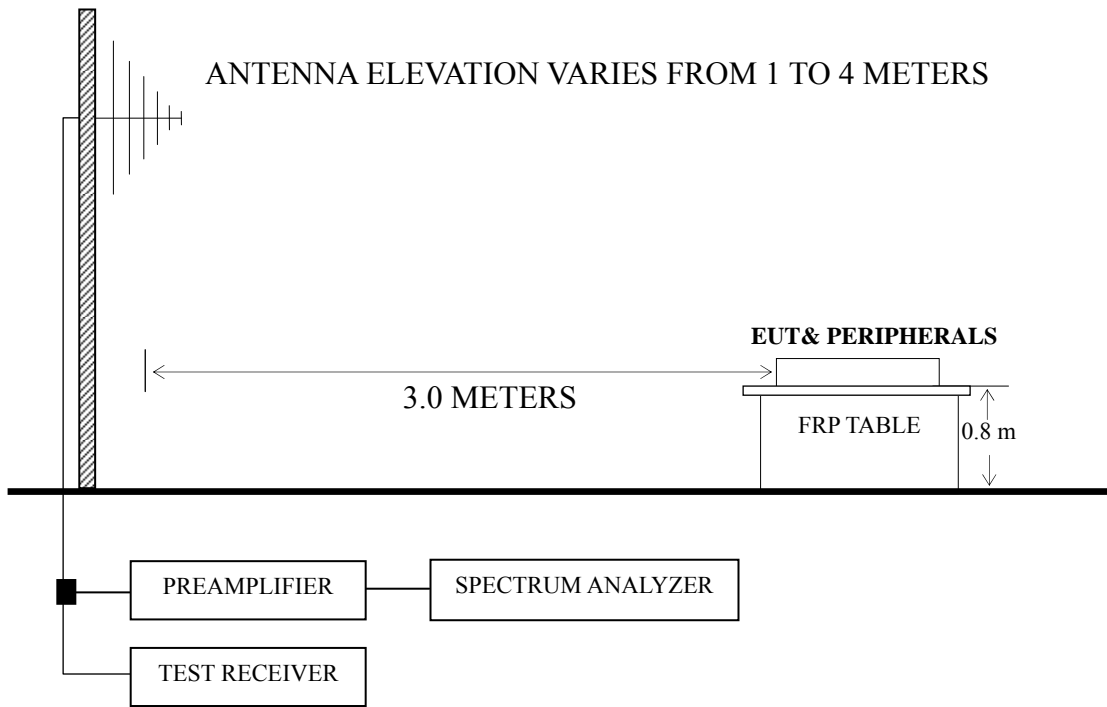


□ : U-Disk

Note: The U-Disk and Digital Camera were connected separately for different test mode.

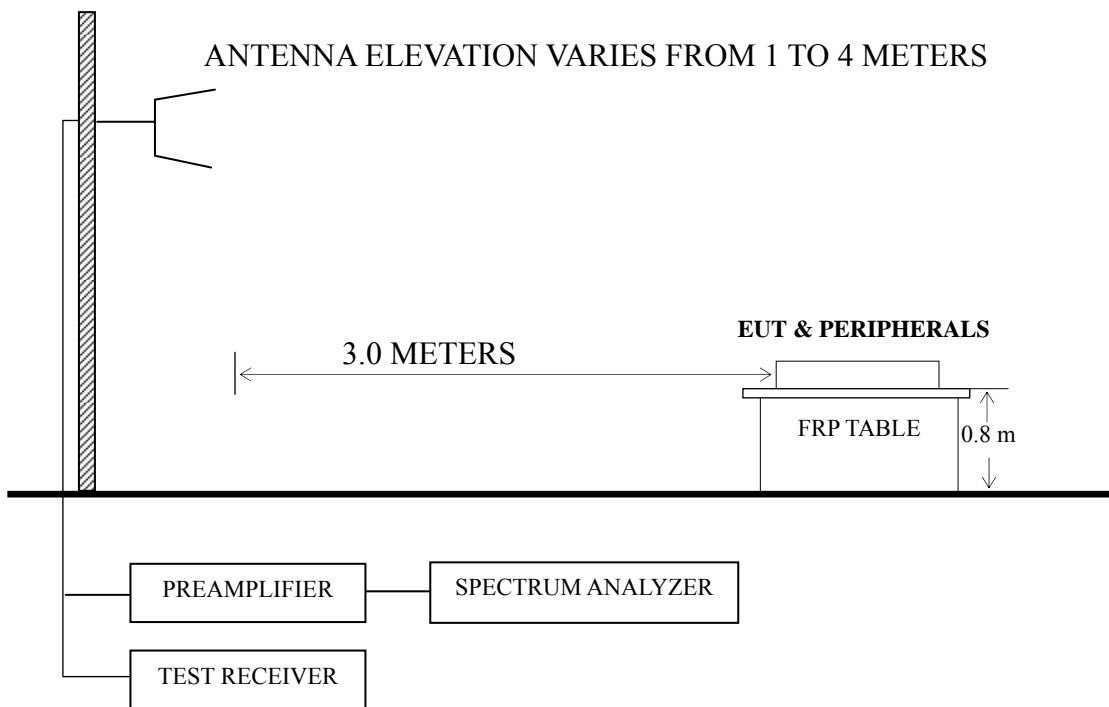
4.2.2 Radiated emission test setup

4.2.2.1 Below 1GHz



■ : 50 ohm Coaxial Switch

4.2.2.2 Above 1GHz



4.3 Radiated Emission Limit [FCC Part 15 Subpart B 15.109(a)]

Frequency (MHz)	Distance (m)	Field strength limits	
		($\mu\text{V/m}$)	dB ($\mu\text{V/m}$)
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0

NOTE 1 - Emission Level dB ($\mu\text{V/m}$) = 20 log Emission Level ($\mu\text{V/m}$)
 NOTE 2 - The tighter limit applies at the band edges.
 NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
 NOTE 4 - The limits shown are based on Quasi-peak value detector.
 NOTE 5 - Above 1 GHz, the limit on peak emission is 20 dB above the maximum permitted average emission limit applicable to the EUT.

4.4 Test Configuration

The configuration of the EUT and peripherals are same as those used in conducted emission test.

Please refer to Sec.3.4.

4.5 Operating Condition of EUT

Same as conducted emission test which is listed in Sec.3.5, except for the test setup replaced by Sec.4.2.

4.6 Test Procedures

The EUT and peripherals were placed on a FRP turntable that is 0.8 meter above ground. The FRP turntable rotated 360 degrees to determine the position of the maximum emission level. 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. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarizations of the antenna were set on measurement. In order to find the maximum emission, all of the interference cables were manipulated according to ANSI C63.4:2003 requirements during radiated emission test.

The I.F. bandwidth of Test Receiver R&S ESCI was set at 120 kHz and The Spectrum Agilent E7405A was set at 1MHz above 1GHz.

The frequency range from 30 MHz to 12.5 GHz (Up to 5th harmonics of the EUT's 2.4GHz WIFI function fundamental frequency) was checked.

The test modes were done on radiated disturbance test and all the test results are listed in Sec.4.7.

4.7 Test Results

<PASS>

The frequency and amplitude of the highest radiated emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

Test Mode	Data Page
LAN Print +USB Print	P19 – P20
Pictbridge Print	P21 – P22
Wifi Print	P23 – P24
Standby	P25 – P26

- NOTE 1 – Emission Level = Antenna Factor + Cable Loss + Meter Reading. (< 1GHz);
Emission Level = Antenna Factor + Cable Loss – Preamp Factor + Meter Reading. (> 1GHz)
- NOTE 2 – All readings are Quasi-Peak values below or equal to 1GHz, Peak and Average values above 1GHz.
- NOTE 3 – 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.
- NOTE 4 – The worst case is for LAN Print +USB Print test mode. The worst emission at horizontal polarization was detected at 915.000 MHz with corrected signal level of 40.16 dB ($\mu\text{V}/\text{m}$) (limit is 46.00 dB ($\mu\text{V}/\text{m}$)), when the antenna was 2.00 m height and the turntable was at 200°. The worst emission at vertical polarization was detected at 843.400 MHz with corrected signal level of 39.58 dB ($\mu\text{V}/\text{m}$) (limit is 46.00 dB ($\mu\text{V}/\text{m}$)), when the antenna was 1.00 m height and the turntable was at 125°.

EUT : Printer Temperature : 22

Model No. : SP C252DN Humidity : 60%RH

Test Mode : LAN Print +USB Print Date of Test : Nov 01, 2013

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	35.820	3.68	15.35	0.71	--	19.74	40.00	20.26	QP
	94.020	21.20	9.14	1.18	--	31.52	43.50	11.98	
	131.850	18.34	11.66	1.43	--	31.43	43.50	12.07	
	147.370	20.45	10.45	1.51	--	32.41	43.50	11.09	
	397.630	15.89	15.57	2.68	--	34.14	46.00	11.86	
	915.000	15.40	20.20	4.56	--	40.16	46.00	5.84	
	1245.000	52.24	25.23	3.60	36.77	44.30	74.00	29.70	PK
	1385.000	52.36	25.91	3.69	36.56	45.40	74.00	28.60	
	1670.000	51.82	27.94	4.05	36.16	47.65	74.00	26.35	
	1884.000	58.44	30.13	4.24	35.98	56.83	74.00	17.17	
	2100.000	52.95	30.43	4.50	35.91	51.97	74.00	22.03	
	2800.000	50.06	29.03	5.46	35.99	48.56	74.00	25.44	
	1245.000	30.26	25.23	3.60	36.77	22.32	54.00	31.68	AV
	1385.000	31.09	25.91	3.69	36.56	24.13	54.00	29.87	
	1670.000	31.44	27.94	4.05	36.16	27.27	54.00	26.73	
	1884.000	51.07	30.13	4.24	35.98	49.46	54.00	4.54	
	2100.000	32.07	30.43	4.50	35.91	31.09	54.00	22.91	
	2800.000	31.69	29.03	5.46	35.99	30.19	54.00	23.81	

TEST ENGINEER: NEAL WANG

EUT : Printer Temperature : 22

Model No. : SP C252DN Humidity : 60%RH

Test Mode : LAN Print + USB Print Date of Test : Nov 01, 2013

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Vertical	30.000	11.34	19.10	0.63	--	31.07	40.00	8.93	QP
	36.790	14.52	14.66	0.72	--	29.90	40.00	10.10	
	95.960	21.08	9.60	1.19	--	31.87	43.50	11.63	
	131.850	17.95	11.66	1.43	--	31.04	43.50	12.46	
	288.020	13.69	12.80	2.41	--	28.90	46.00	17.10	
	843.400	15.50	20.10	3.98	--	39.58	46.00	6.42	
	1240.000	51.47	25.19	3.60	36.78	43.48	74.00	30.52	PK
	1410.000	49.97	26.00	3.70	36.51	43.16	74.00	30.84	
	1515.000	52.91	26.46	3.82	36.34	46.85	74.00	27.15	
	1885.000	55.73	30.13	4.24	35.98	54.12	74.00	19.88	
	2075.000	63.32	30.57	4.47	35.91	62.45	74.00	11.55	
	2960.000	46.65	29.41	5.74	36.00	45.80	74.00	28.20	
	1240.000	30.26	25.19	3.60	36.78	22.27	54.00	31.73	AV
	1410.000	30.39	26.00	3.70	36.51	23.58	54.00	30.42	
	1515.000	31.55	26.46	3.82	36.34	25.49	54.00	28.51	
	1885.000	32.16	30.13	4.24	35.98	30.55	54.00	23.45	
	2068.000	30.93	30.64	4.47	35.91	30.13	54.00	23.87	
	2960.000	30.12	29.41	5.74	36.00	29.27	54.00	24.73	

TEST ENGINEER: NEAL WANG

EUT : Printer Temperature : 22

Model No. : SP C252DN Humidity : 60%RH

Test Mode : Pictbridge Print Date of Test : Nov 01, 2013

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	34.850	3.53	15.65	0.69	--	19.87	40.00	20.13	QP
	93.050	19.20	8.97	1.17	--	29.34	43.50	14.16	
	133.790	16.37	11.27	1.44	--	29.08	43.50	14.42	
	198.780	15.43	8.40	1.80	--	25.63	43.50	17.87	
	232.730	17.84	9.65	2.03	--	29.52	46.00	16.48	
	504.330	10.51	18.25	2.92	--	31.68	46.00	14.32	
	1255.000	51.65	25.29	3.60	36.76	43.78	74.00	30.22	PK
	1400.000	50.49	25.96	3.70	36.52	43.63	74.00	30.37	
	1690.000	52.11	28.20	4.06	36.14	48.23	74.00	25.77	
	1883.000	51.78	30.13	4.24	35.98	50.17	74.00	23.83	
	2890.000	48.67	29.26	5.60	35.99	47.54	74.00	26.46	
	3830.000	41.93	32.77	5.92	35.48	45.14	74.00	28.86	
	1255.000	31.57	25.29	3.60	36.76	23.70	54.00	30.30	AV
	1400.000	31.85	25.96	3.70	36.52	24.99	54.00	29.01	
	1690.000	32.69	28.20	4.06	36.14	28.81	54.00	25.19	
	1883.000	31.68	30.13	4.24	35.98	30.07	54.00	23.93	
2890.000	32.97	29.26	5.60	35.99	31.84	54.00	22.16		
3830.000	31.59	32.77	5.92	35.48	34.80	54.00	19.20		

TEST ENGINEER: NEAL WANG

EUT : Printer Temperature : 22

Model No. : SP C252DN Humidity : 60%RH

Test Mode : Pictbridge Print Date of Test : Nov 01, 2013

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)	Remark
Vertical	30.000	12.97	19.10	0.63	--	32.70	40.00	7.30	QP
	37.760	12.75	13.92	0.73	--	27.40	40.00	12.60	
	91.110	19.06	8.55	1.15	--	28.76	43.50	14.74	
	132.820	18.92	11.55	1.44	--	31.91	43.50	11.59	
	288.990	14.25	12.80	2.41	--	29.46	46.00	16.54	
	809.160	15.40	20.30	3.70	--	39.40	46.00	6.60	
	1245.000	55.17	25.23	3.60	36.77	47.23	74.00	26.77	PK
	1400.000	51.25	25.96	3.70	36.52	44.39	74.00	29.61	
	1510.000	53.24	26.42	3.82	36.35	47.13	74.00	26.87	
	1884.000	53.24	30.13	4.24	35.98	51.63	74.00	22.37	
	1995.000	50.49	30.96	4.39	35.90	49.94	74.00	24.06	
	2895.000	46.54	29.28	5.60	35.99	45.43	74.00	28.57	
	1245.000	31.09	25.23	3.60	36.77	23.15	54.00	30.85	AV
	1400.000	31.24	25.96	3.70	36.52	24.38	54.00	29.62	
	1510.000	31.65	26.42	3.82	36.35	25.54	54.00	28.46	
	1884.000	31.46	30.13	4.24	35.98	29.85	54.00	24.15	
	1995.000	32.63	30.96	4.39	35.90	32.08	54.00	21.92	
	2895.000	30.88	29.28	5.60	35.99	29.77	54.00	24.23	

TEST ENGINEER: NEAL WANG

EUT : Printer Temperature : 22

Model No. : SP C252DN Humidity : 60%RH

Test Mode : Wifi Print Date of Test : Nov 01, 2013

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)	Remark
Horizontal	94.990	19.28	9.30	1.19	--	29.77	43.50	13.73	QP
	133.790	15.31	11.27	1.44	--	28.02	43.50	15.48	
	190.050	23.29	7.90	1.75	--	32.94	43.50	10.56	
	375.320	21.05	14.85	2.64	--	38.54	46.00	7.46	
	528.580	16.49	18.10	3.00	--	37.59	46.00	8.41	
	826.310	15.40	20.60	3.88	--	39.88	46.00	6.12	
	1041.000	46.75	24.09	4.49	37.05	38.28	74.00	35.72	PK
	1176.000	45.51	24.80	3.66	36.87	37.10	74.00	36.90	
	1265.000	50.60	25.34	3.62	36.74	42.82	74.00	31.18	
	1700.000	49.47	28.31	4.06	36.13	45.71	74.00	28.29	
	1865.000	52.57	29.99	4.24	35.99	50.81	74.00	23.19	
	2075.000	49.61	30.57	4.47	35.91	48.74	74.00	25.26	
	1041.000	33.48	24.09	4.49	37.05	25.01	54.00	28.99	AV
	1176.000	32.80	24.80	3.66	36.87	24.39	54.00	29.61	
	1265.000	32.08	25.34	3.62	36.74	24.30	54.00	29.70	
	1700.000	32.64	28.31	4.06	36.13	28.88	54.00	25.12	
	1865.000	32.97	29.99	4.24	35.99	31.21	54.00	22.79	
	2075.000	31.53	30.57	4.47	35.91	30.66	54.00	23.34	

TEST ENGINEER: NEAL WANG

EUT : Printer Temperature : 22

Model No. : SP C252DN Humidity : 60%RH

Test Mode : Wifi Print Date of Test : Nov 01, 2013

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Vertical	30.000	11.16	19.10	0.63	--	30.89	40.00	9.11	QP
	43.580	14.69	10.19	0.79	--	25.67	40.00	14.33	
	89.170	18.47	8.19	1.13	--	27.79	43.50	15.71	
	133.790	19.75	11.27	1.44	--	32.46	43.50	11.04	
	224.970	14.61	8.30	1.98	--	24.89	46.00	21.11	
	761.280	15.10	18.60	3.57	--	37.27	46.00	8.73	
	1150.000	45.94	24.65	3.87	36.91	37.55	74.00	36.45	PK
	1415.000	51.24	26.02	3.73	36.50	44.49	74.00	29.51	
	1640.000	64.20	27.64	4.03	36.19	59.68	74.00	14.32	
	1930.000	43.83	30.47	4.32	35.95	42.67	74.00	31.33	
	2245.000	48.37	29.52	4.64	35.93	46.60	74.00	27.40	
	3405.000	42.39	31.02	6.06	35.74	43.73	74.00	30.27	
	1150.000	32.30	24.65	3.87	36.91	23.91	54.00	30.09	AV
	1415.000	32.46	26.02	3.73	36.50	25.71	54.00	28.29	
	1640.000	32.64	27.64	4.03	36.19	28.12	54.00	25.88	
	1930.000	32.00	30.47	4.32	35.95	30.84	54.00	23.16	
	2245.000	31.98	29.52	4.64	35.93	30.21	54.00	23.79	
	3405.000	31.09	31.02	6.06	35.74	32.43	54.00	21.57	

TEST ENGINEER: NEAL WANG

EUT : Printer Temperature : 22

Model No. : SP C252DN Humidity : 60%RH

Test Mode : Standby Date of Test : Nov 01, 2013

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)	Remark
Horizontal	35.820	4.12	15.35	0.71	--	20.18	40.00	19.82	QP
	98.870	10.39	10.25	1.22	--	21.86	43.50	21.64	
	125.060	11.69	12.40	1.39	--	25.48	43.50	18.02	
	239.520	12.54	10.10	2.08	--	24.72	46.00	21.28	
	349.130	8.97	14.90	2.60	--	26.47	46.00	19.53	
	398.600	10.20	15.53	2.68	--	28.41	46.00	17.59	
	1195.000	47.79	24.93	3.56	36.85	39.43	74.00	34.57	PK
	1400.000	46.96	25.96	3.70	36.52	40.10	74.00	33.90	
	1825.000	45.96	29.61	4.17	36.02	43.72	74.00	30.28	
	1995.000	46.77	30.96	4.39	35.90	46.22	74.00	27.78	
	2745.000	46.37	28.87	5.31	35.98	44.57	74.00	29.43	
	3465.000	42.38	31.21	6.09	35.70	43.98	74.00	30.02	
	1195.000	39.50	24.93	3.56	36.85	31.14	54.00	22.86	AV
	1400.000	29.79	25.96	3.70	36.52	22.93	54.00	31.07	
	1825.000	30.05	29.61	4.17	36.02	27.81	54.00	26.19	
	1995.000	31.25	30.96	4.39	35.90	30.70	54.00	23.30	
	2745.000	32.06	28.87	5.31	35.98	30.26	54.00	23.74	
	3465.000	30.97	31.21	6.09	35.70	32.57	54.00	21.43	

TEST ENGINEER: NEAL WANG

EUT : Printer Temperature : 22

Model No. : SP C252DN Humidity : 60%RH

Test Mode : Standby Date of Test : Nov 01, 2013

Polarization	Frequency (MHz)	Meter Reading dB (μ V)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μ V/m)	Limits dB (μ V/m)	Margin (dB)	Remark
Vertical	30.000	5.47	19.10	0.63	--	25.20	40.00	14.80	QP
	125.060	15.59	12.40	1.39	--	29.38	43.50	14.12	
	145.430	14.23	10.34	1.50	--	26.07	43.50	17.43	
	288.990	13.45	12.80	2.41	--	28.66	46.00	17.34	
	430.610	8.08	17.50	2.75	--	28.33	46.00	17.67	
	531.120	14.60	18.30	3.00	--	35.90	46.00	10.10	
	1075.000	48.31	24.26	4.29	37.01	39.85	74.00	34.15	PK
	1190.000	52.83	24.88	3.56	36.85	44.42	74.00	29.58	
	1535.000	49.26	26.62	3.86	36.31	43.43	74.00	30.57	
	1995.000	49.48	30.96	4.39	35.90	48.93	74.00	25.07	
	2935.000	46.46	29.37	5.67	36.00	45.50	74.00	28.50	
	3690.000	41.54	32.15	5.99	35.56	44.12	74.00	29.88	
	1075.000	29.60	24.26	4.29	37.01	21.14	54.00	32.86	AV
	1190.000	29.90	24.88	3.56	36.85	21.49	54.00	32.51	
	1535.000	30.50	26.62	3.86	36.31	24.67	54.00	29.33	
	1995.000	31.89	30.96	4.39	35.90	31.34	54.00	22.66	
	2935.000	32.06	29.37	5.67	36.00	31.10	54.00	22.90	
	3690.000	31.41	32.15	5.99	35.56	33.99	54.00	20.01	

TEST ENGINEER: NEAL WANG

5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	Specifications (mm)	Manufacturer	Location
Ferrite core	K3 T16.00*13.00*8.00	Ferrico Corporation	See Internal Photos Figure 23

Note: We had required the applicant and manufacturer that all electrical and mechanical devices employed for spurious radiation suppression, including any modifications made during certification testing, must be incorporated in each unit marked

TEST ENGINEER:

Neal Wang

(NEAL WANG)

6 DEVIATION TO TEST SPECIFICATIONS

None.