Application for FCC Certificate
On Behalf of
Ricoh Co., Ltd. Technology Center .

Printer

Model No.: RICOH Ri 100
RICOH Ri 100 Pink
RICOH Ri 100 Green

FCC ID : BBP-PRRI1001

Prepared For : Ricoh Co., Ltd. Technology Center .
2-7-1 Izumi, Ebina City, Kanagawa, Japan.

Prepared By : Audix Technology (Wujiang) Co., Ltd.
No.1289, Jiangxing East Rd., The Eastern Part of
Wujiang Economic Development Zone, JiangSu 215200,
China

Tel : +86-512-63403993
Fax : +86-512-63403339

TESTING
NVLAP LAB CODE 200786-0

Report No. : ACWE-F1712006
Date of Test : Sep 14-Nov 25, 2017
Date of Report : Dec 12, 2017

The statement is based on a single evaluation of one sample of the above-mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab logo.
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.

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TEST REPORT FOR FCC CERTIFICATE

Applicant	:	Ricoh Co., Ltd. Technology Center .
Manufacturer	:	Ricoh Co., Ltd. Technology Center .
Factory	:	RICOH COMPONENTS & PRODUCTS (SHENZHEN) LTD.
EUT Description	:	Printer
		(A) Model No. : Refer to Sec2.1
		(B) Power Supply : 120V/60Hz

Test Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B
AND ANSI C63.4-2014
(ICES-003 Issue 6 Jun. 2016 Class B)

The device described above is tested by Audix Technology (Wujiang) 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 (Wujiang) 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 Sep 14-Nov 25, 2017 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 (Wujiang) Co., Ltd.

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 : Sep 14-Nov 25, 2017 Date of Report : Dec 12, 2017

Producer : Emma Hu

EMMA HU / Assistant Administrator

Signatory : Ken Lu

KEN LU / 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 AND ANSI C63.4-2014 ICES-003 ISSUE 6 JUN. 2016	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B AND ANSI C63.4-2014 ICES-003 ISSUE 6 JUN. 2016	15.109(a) Class B	Pass

2 GENERAL INFORMATION

2.1 Description of Equipment Under Test

Description : Printer

Type of EUT : ☐ Production ☑ Pre-product ☐ Pro-type

Model No. : RICOH Ri 100, RICOH Ri 100 Pink
RICOH Ri 100 Green

Note#1 : Above models are all the same except for appearance color. So RICOH Ri 100 was tested and recorded in the report.

Note#2 : The modified histories of report are as follows:

Report No.	Model No.	Rev. Summary	Edition No.	Data of Rev.
F16306	RICOH Ri 100	Original Report	0	Feb 23, 2017
F16306A1	RICOH Ri 100 **RICOH Ri 100 Pink** **RICOH Ri 100 Green**	To add two models	Rev. A1	Sep 19, 2017
F1712006	RICOH Ri 100 RICOH Ri 100 Pink RICOH Ri 100 Green	To change one fan and one relay board.	0	Dec 12, 2017

Highest working Frequency : 2.4G

Note#3 : Test printing with paper, and printing shirt when load is the same

Applicant : Ricoh Co., Ltd. Technology Center .
2-7-1 Izumi, Ebina City, Kanagawa, Japan.

Manufacturer : Same as applicant.

Factory : RICOH COMPONENTS & PRODUCTS (SHENZHEN) LTD .
RICOH Industry group,HaoYe Road, HePing Community Fuyong Town Baoan Distric, shenzhen, Guangdong, 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

2.2 Peripherals

The peripherals from Site #1

2.2.1 Notebook

Manufacturer	:	DELL
Model Number	:	PP38L
Serial Number	:	87N68K1
Certificate	:	C-Tick, FCC DoC, CE/EMC, VCCI

The peripherals from Site #2

2.2.2 PC

Manufacturer	:	HP
Model Number	:	Pro3340
Serial Number	:	6CR2512VFD
Certificate	:	C-Tick, FCC DoC, CE/EMC, VCCI

2.2.3 Keyboard

Manufacturer	:	Microsoft
Model Number	:	RT2300
Serial Number	:	7668200662248
Data Cable	:	Shielded, Detachable, 1.5m
Certificate	:	CE/EMC, FCC DoC, VCCI, MIC, C-Tick, BSMI

2.2.4 Mouse

Manufacturer	:	Microsoft
Model Number	:	RT2300
Serial Number	:	6965712071551
Data Cable	:	Shielded, Detachable, 1.5m.
Certificate	:	CE/EMC, FCC DoC, VCCI, MIC, C-Tick, BSMI

2.2.5 LCD Monitor

Manufacturer	:	ASUS
Model Number	:	VE228
Power Cord	:	Unshielded, Detachable, 1.8m
Certificate	:	CE/EMC ,BSMI, FCC DOC,VCCI, MIC, C-Tick

2.3 Cable list

No.	Name	Length (m)	Cable Shield	Connector Shield	Remark
1	USB Cable	1.8	Unshielded	Detachable	-
2	LAN Cable	1.8	Unshielded	Detachable	-
3	LAN Cable	1.8	Shielded	Detachable	-
4	Power cord	1.9	Unshielded	Detachable	3C

2.4 Description of Test Facility

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

Site Location : No.1289, Jiangxing East Rd., The Eastern Part of Wujiang Economic Development Zone, JiangSu 215200, China

Accredited by NVLAP, Lab Code : 200786-0

Registration Number : 252588

2.5 Measurement Uncertainty

Conducted Disturbance Test Uncertainty: U = 2.65dB
Radiated Emission Expanded Uncertainty (30M-1000MHz):
U = 3.65dB (Horizontal)
U = 3.74 dB (Vertical)
Radiated Emission Expanded Uncertainty (1GHz-6GHz):
U = 4.73 dB

3 CONDUCTED EMISSION TEST

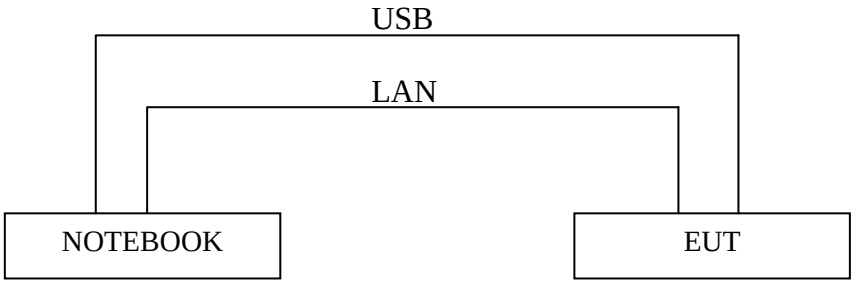
3.1 Test Equipment

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

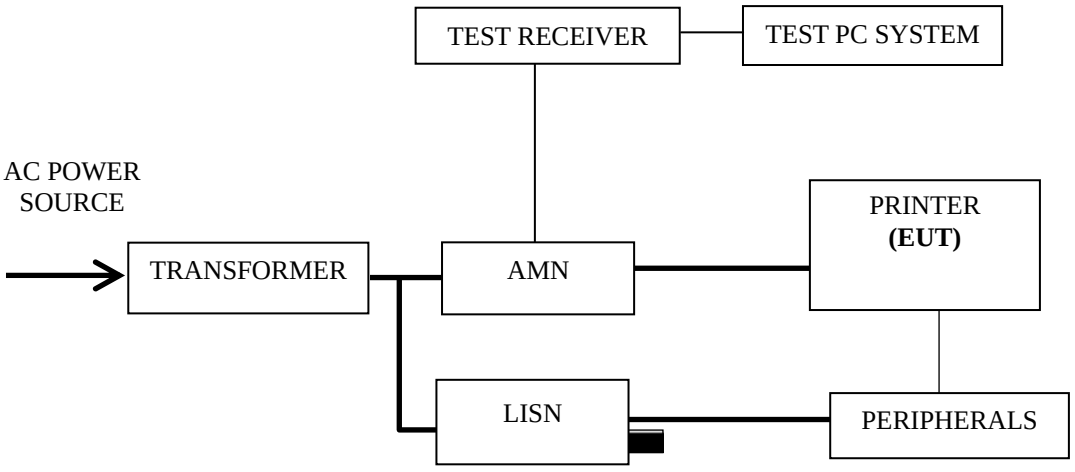
Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Test receiver	R & S	ESCI	100351	Jun 23, 2017	Jun 22, 2018
2.	A.M.N	R & S	ESH2-Z5	100153	Aug 21, 2017	Aug 20, 2018
3.	L.I.S.N	Kyoritsu	KNW-407	8-1793-3	Jun 23, 2017	Jun 22, 2018
4.	Pulse Limiter	R & S	ESH3-Z2	100605	Aug 21, 2017	Aug 20, 2018
3.	RF cable	ShenXuan	RG400	Cable 59/1+Switch	Jun 04, 2017	Jun 03, 2018
4.	Software	e3(6.7.0313)				

3.2 Block Diagram of Test Setup

3.2.1 EUT & Peripherals



3.2.2 Conducted Disturbance Test Setup



—— : Signal Line
—— : Power Line
▬ : 50 ohm Terminator

3.3 Conducted Emission Limit [FCC Part 15 Subpart B 15.107(a) (ICES-003 Issue 6)]

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: 2014 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.

M/N	Test Mode	Data Page
RICOH Ri 100	Standby	P11
	LAN Print (600dpi)	P12
	USB Print (1200dpi)	P13
	LAN(STP)	P14
	Wifi Print (600dpi)	P15

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 Standby test mode. The worst emission is detected at 0.153 MHz (Average Value) with corrected signal level of 55.82dB (μV) (limit is 10.59dB (μV)), when the Line of the EUT is connected to AMN.

EUT	:	Printer	Temperature :	22℃
Model No.	:	RICOH Ri 100	Humidity	: 48%RH
Test Mode	:	Standby	Date of Test	: Sep14, 2017

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.153	42.81	53.40	65.82	10.59	12.42	QP
	0.190	35.80	46.35	64.02	10.55	17.67	
	0.219	31.40	41.92	62.88	10.52	20.96	
	0.289	29.50	39.95	60.54	10.45	20.59	
	0.579	18.00	28.39	56.00	10.39	27.61	
	14.986	20.40	30.86	60.00	10.46	29.14	
	0.153	**40.81**	**51.40**	**55.82**	**10.59**	**4.42**	AV
	0.190	31.00	41.55	54.02	10.55	12.47	
	0.219	27.90	38.42	52.88	10.52	14.46	
	0.289	25.20	35.65	50.54	10.45	14.89	
	0.579	14.30	24.69	46.00	10.39	21.31	
	14.986	16.20	26.66	50.00	10.46	23.34	
Neutral	0.157	42.91	53.42	65.60	10.51	12.18	QP
	0.188	34.50	45.00	64.11	10.50	19.11	
	0.221	30.60	41.07	62.79	10.47	21.72	
	0.289	28.30	38.73	60.54	10.43	21.81	
	0.573	18.10	28.49	56.00	10.39	27.51	
	16.661	24.10	34.60	60.00	10.50	25.40	
	0.157	**40.30**	**50.81**	**55.60**	**10.51**	**4.79**	AV
	0.188	31.10	41.60	54.11	10.50	12.51	
	0.221	26.70	37.17	52.79	10.47	15.62	
	0.289	24.20	34.63	50.54	10.43	15.91	
	0.573	13.30	23.69	46.00	10.39	22.31	
	16.661	20.20	30.70	50.00	10.50	19.30	

TEST ENGINEER: ZHANGWEI

EUT	:	Printer	Temperature :	22℃	
Model No.	:	RICOH Ri 100	Humidity	:	48%RH
Test Mode	:	LAN Print (600dpi)	Date of Test	:	Sep14, 2017

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.159	40.11	50.69	65.52	10.58	14.83	QP
	0.186	39.39	49.95	64.20	10.56	14.25	
	0.223	29.80	40.31	62.70	10.51	22.39	
	0.283	27.70	38.15	60.72	10.45	22.57	
	0.564	20.00	30.39	56.00	10.39	25.61	
	15.885	21.00	31.45	60.00	10.45	28.55	
	0.159	37.21	47.79	55.52	10.58	7.73	AV
	0.186	**38.39**	**48.95**	**54.20**	**10.56**	**5.25**	
	0.223	25.40	35.91	52.70	10.51	16.79	
	0.283	26.70	37.15	50.72	10.45	13.57	
	0.564	20.80	31.19	46.00	10.39	14.81	
	15.885	18.00	28.45	50.00	10.45	21.55	
Neutral	0.156	41.41	51.92	65.65	10.51	13.73	QP
	0.190	38.40	48.90	64.02	10.50	15.12	
	0.226	30.20	40.67	62.61	10.47	21.94	
	0.286	24.00	34.43	60.63	10.43	26.20	
	0.565	20.40	30.79	56.00	10.39	25.21	
	16.839	25.30	35.80	60.00	10.50	24.20	
	0.156	**38.81**	**49.32**	**55.65**	**10.51**	**6.33**	AV
	0.190	35.60	46.10	54.02	10.50	7.92	
	0.226	25.70	36.17	52.61	10.47	16.44	
	0.286	21.60	32.03	50.63	10.43	18.60	
	0.565	20.00	30.39	46.00	10.39	15.61	
	16.839	21.40	31.90	50.00	10.50	18.10	

TEST ENGINEER: ZHANGWEI

EUT	:	Printer	Temperature :	22℃	
Model No.	:	RICOH Ri 100	Humidity	:	48%RH
Test Mode	:	USB Print (1200dpi)	Date of Test	:	Sep14, 2017

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.155	36.70	47.29	65.74	10.59	18.45	QP
	0.186	39.29	49.85	64.20	10.56	14.35	
	0.215	26.10	36.62	63.01	10.52	26.39	
	0.280	27.60	38.06	60.81	10.46	22.75	
	0.564	19.90	30.29	56.00	10.39	25.71	
	16.486	23.60	34.04	60.00	10.44	25.96	
	0.155	36.40	46.99	55.74	10.59	8.75	AV
	0.186	**38.19**	**48.75**	**54.20**	**10.56**	**5.45**	
	0.215	25.20	35.72	53.01	10.52	17.29	
	0.280	27.00	37.46	50.81	10.46	13.35	
	0.564	19.60	29.99	46.00	10.39	16.01	
	16.486	19.80	30.24	50.00	10.44	19.76	
Neutral	0.161	40.40	50.91	65.43	10.51	14.52	QP
	0.192	35.19	45.69	63.93	10.50	18.24	
	0.223	28.10	38.57	62.70	10.47	24.13	
	0.280	24.10	34.53	60.81	10.43	26.28	
	0.564	19.70	30.09	56.00	10.39	25.91	
	17.568	26.09	36.59	60.00	10.50	23.41	
	0.161	**37.60**	**48.11**	**55.43**	**10.51**	**7.32**	AV
	0.192	32.39	42.89	53.93	10.50	11.04	
	0.223	24.10	34.57	52.70	10.47	18.13	
	0.280	20.90	31.33	50.81	10.43	19.48	
	0.564	19.20	29.59	46.00	10.39	16.41	
	17.568	22.19	32.69	50.00	10.50	17.31	

TEST ENGINEER: ZHANGWEI

EUT	:	Printer	Temperature :	22℃	
Model No.	:	RICOH Ri 100	Humidity	:	48%RH
Test Mode	:	LAN Print (STP)	Date of Test	:	Sep14, 2017

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.157	37.30	47.89	65.60	10.59	17.71	QP
	0.184	37.41	47.96	64.28	10.55	16.32	
	0.226	27.70	38.21	62.61	10.51	24.40	
	0.280	27.60	38.06	60.81	10.46	22.75	
	0.564	19.50	29.89	56.00	10.39	26.11	
	15.552	23.70	34.15	60.00	10.45	25.85	
	0.157	35.80	46.39	55.60	10.59	9.21	AV
	0.184	**36.51**	**47.06**	**54.28**	**10.55**	**7.22**	
	0.226	23.40	33.91	52.61	10.51	18.70	
	0.280	27.40	37.86	50.81	10.46	12.95	
	0.564	18.80	29.19	46.00	10.39	16.81	
	15.552	20.70	31.15	50.00	10.45	18.85	
Neutral	0.159	39.40	49.91	65.52	10.51	15.61	QP
	0.192	34.89	45.39	63.93	10.50	18.54	
	0.221	29.20	39.67	62.79	10.47	23.12	
	0.286	22.90	33.33	60.63	10.43	27.30	
	0.564	19.70	30.09	56.00	10.39	25.91	
	17.755	26.30	36.79	60.00	10.49	23.21	
	0.159	**37.20**	**47.71**	**55.52**	**10.51**	**7.81**	AV
	0.192	32.79	43.29	53.93	10.50	10.64	
	0.221	25.00	35.47	52.79	10.47	17.32	
	0.286	21.90	32.33	50.63	10.43	18.30	
	0.564	19.10	29.49	46.00	10.39	16.51	
	17.755	22.60	33.09	50.00	10.49	16.91	

TEST ENGINEER: ZHANGWEI

EUT	:	Printer	Temperature :	22℃	
Model No.	:	RICOH Ri 100	Humidity	:	48%RH
Test Mode	:	Wifi Print (600dpi)	Date of Test	:	Sep 14, 2017

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.161	38.51	49.09	65.43	10.58	16.34	QP
	0.190	37.70	48.25	64.02	10.55	15.77	
	0.226	28.60	39.11	62.61	10.51	23.50	
	0.280	29.40	39.86	60.81	10.46	20.95	
	0.564	19.50	29.89	56.00	10.39	26.11	
	10.233	22.80	33.29	60.00	10.49	26.71	
	0.161	37.11	47.69	55.43	10.58	7.74	AV
	0.190	**36.20**	**46.75**	**54.02**	**10.55**	**7.27**	
	0.226	24.10	34.61	52.61	10.51	18.00	
	0.280	27.70	38.16	50.81	10.46	12.65	
	0.564	18.50	28.89	46.00	10.39	17.11	
	10.233	18.40	28.89	50.00	10.49	21.11	
Neutral	0.157	38.21	48.72	65.60	10.51	16.88	QP
	0.190	35.90	46.40	64.02	10.50	17.62	
	0.221	28.40	38.87	62.79	10.47	23.92	
	0.283	25.20	35.63	60.72	10.43	25.09	
	0.564	19.50	29.89	56.00	10.39	26.11	
	16.839	18.90	29.40	60.00	10.50	30.60	
	0.157	**37.00**	**47.51**	**55.60**	**10.51**	**8.09**	AV
	0.190	33.60	44.10	54.02	10.50	9.92	
	0.221	24.40	34.87	52.79	10.47	17.92	
	0.283	21.90	32.33	50.72	10.43	18.39	
	0.564	18.50	28.89	46.00	10.39	17.11	
	16.839	15.10	25.60	50.00	10.50	24.40	

TEST ENGINEER: ZHANGWEI

4 RADIATED EMISSION TEST

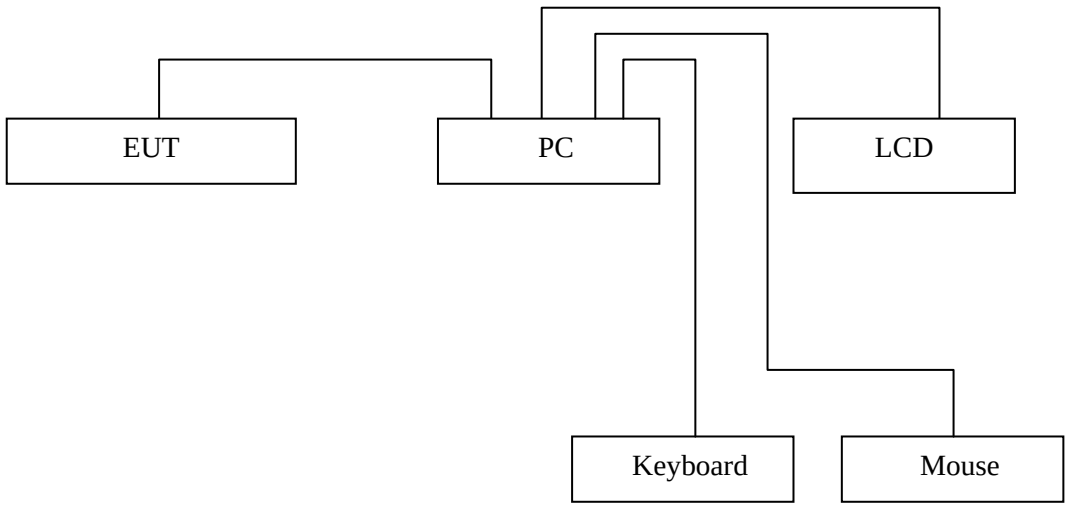
4.1 Test Equipment

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.	Spectrum Analyzer	Agilent	E7405A	MY45107028	Jan 06, 2017	Jan 05, 2018
2.	PSA signal analyzer	Agilent	N9030A	MY53120367	Jun 23, 2017	Jun 22, 2018
3.	Pre-Amplifier	Chengyi dianzi	EMC 9135	980374	Jan 03, 2017	Jan 02, 2018
4.	Pre-Amplifier	Chengyi dianzi	EMC 9135	980373	Jan 03, 2017	Jan 02, 2018
5.	Bi-log Antenna (Horizontal)	Schaffner	VULB 9168	704	Jul 20, 2017	Jul 19, 2018
6.	Bi-log Antenna (Vertical)	Schaffner	VULB 9168	706	May 14, 2017	May 13, 2018
7.	Microwave Preamplifier	Agilent	8449B	3008A02234	Jan 04,2017	Jan 03,2018
8.	Horn Antenna	ETS	3115	00062593	Aug 18 2017	Aug 17, 2018
9.	Test Receiver	R&S	ESCI	100839	Jan 04, 2017	Jan 03, 2018
10.	Software	Audix	e3	6.2007-9-10	--	--

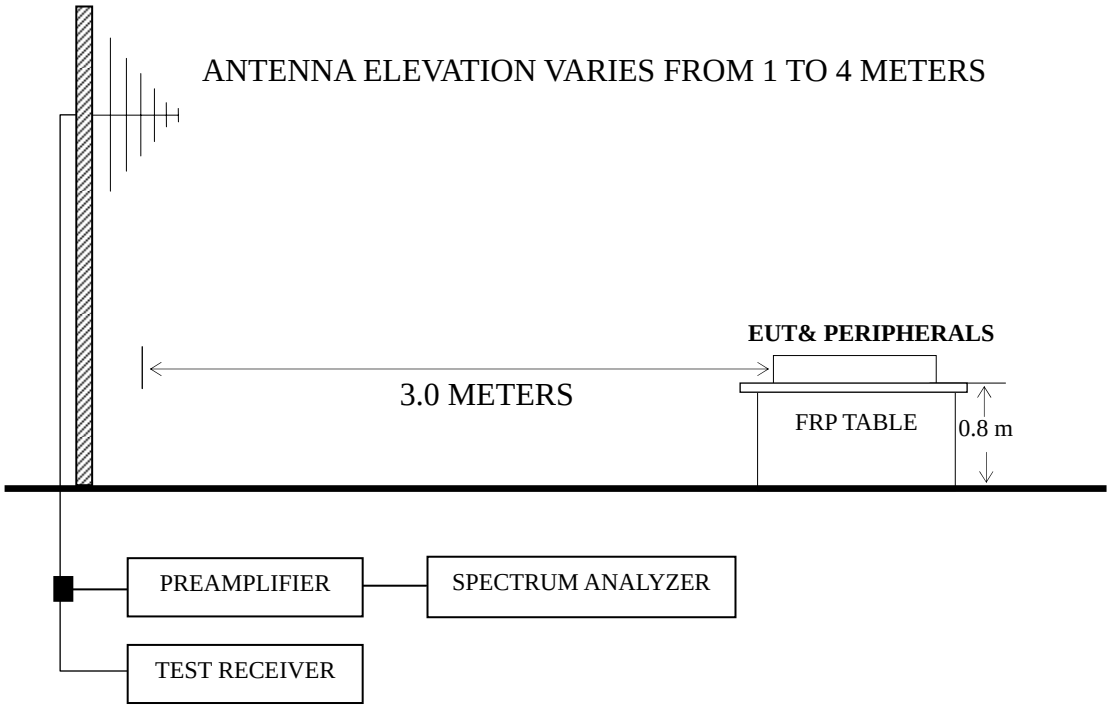
4.2 Block Diagram of Test Setup

4.2.1 EUT & Peripherals



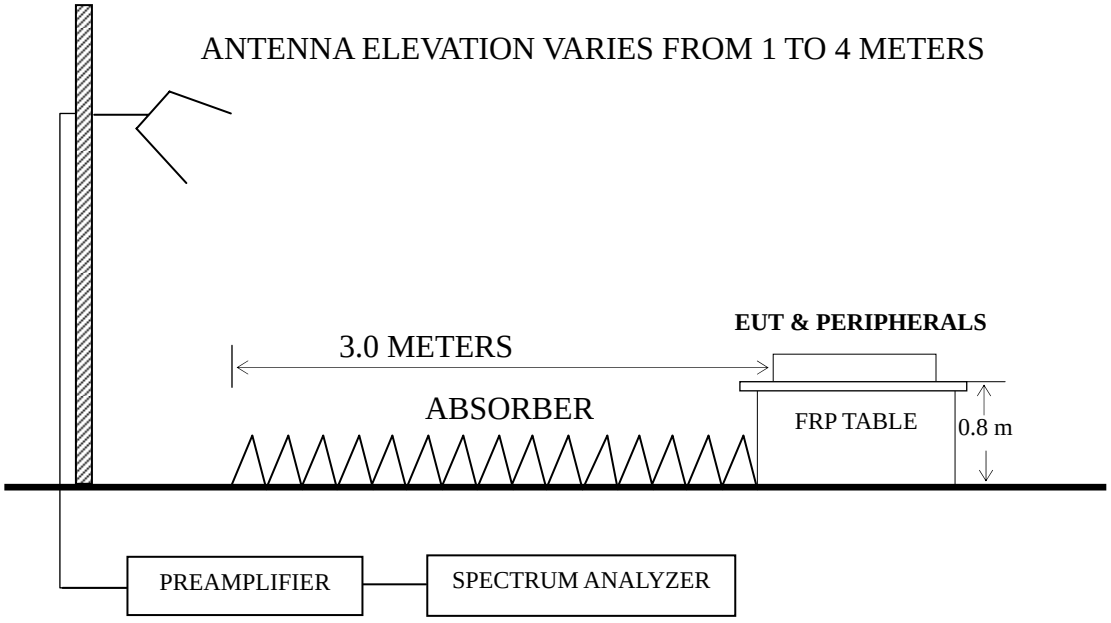
4.2.2 Radiated emission test setup

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) ICES-003 Issue 6]

Frequency (MHz)	Distance (m)	Field strength limits	
		(μV/m)	dB (μV/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 (μV/m) = 20 log Emission Level (μV/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 C63.4:2014 requirements during radiated emission test.

The I.F. bandwidth of Test Receiver R&S ESCI was set at 120 kHz and The Spectrum Agilent N9030A was set at 1MHz above 1GHz.

The frequency range from 30 MHz to 15 GHz 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.

Frequency	M/N	Test Mode	Data Page
30MHz~8GHz	RICOH Ri 100	Standby	P20-P21
		LAN Print(600dpi)	P22-P23
		USB Print(1200dpi)	P24-P25
		LAN (STP)	P26-P27
		Wifi Print (600dpi)	P28-P29

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 USB Print test mode. The worst emission at horizontal polarization was detected at 169.230 MHz with corrected signal level of 21.64 dB (μV/m) (limit is 30.00 dB (μV/m)), when the antenna was 1.50 m height and the turntable was at 50°. The worst emission at vertical polarization was detected at 217.330MHz with corrected signal level of 25.77dB (μV/m) (limit is 30.00 dB (μV/m)), when the antenna was 1.00 m height and the turntable was at 270°.

EUT	:	Printer	Temperature :	22℃
Model No.	:	RICOH Ri 100	Humidity	: 60%RH
Test Mode	:	Standby	Date of Test	: Nov 25, 2017

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	114.320	3.01	1.25	16.06	--	14.30	30.00	15.70	QP
	143.230	**2.99**	**1.38**	**18.81**	**--**	**17.20**	**30.00**	**12.80**	
	227.190	3.01	1.75	16.14	--	14.88	30.00	15.12	
	322.230	4.00	2.11	19.67	--	17.78	37.00	19.22	
	576.130	6.00	2.95	25.01	--	21.96	37.00	15.04	
	624.130	5.00	3.10	25.77	--	23.87	37.00	13.13	
	2133.000	42.10	28.22	2.23	33.55	39.00	74.00	35.00	PK
	3398.000	39.29	30.89	2.89	33.04	40.03	74.00	33.97	
	4003.000	38.69	32.40	3.18	32.80	41.47	74.00	32.53	
	5257.000	37.84	33.25	3.69	32.36	42.42	74.00	31.58	
	6544.000	36.29	34.28	4.14	32.65	42.06	74.00	31.94	
	7358.000	35.98	36.24	4.41	33.45	43.18	74.00	30.82	
	2122.360	36.03	28.23	2.23	33.55	32.94	54.00	21.06	AV
	3409.250	31.89	30.94	2.89	33.04	32.68	54.00	21.32	
	4014.190	31.52	32.40	3.18	32.79	34.31	54.00	19.69	
	5268.850	30.26	33.29	3.69	32.35	34.89	54.00	19.11	
	6555.740	28.10	34.31	4.15	32.65	33.91	54.00	20.09	
	7347.230	28.73	36.20	4.41	33.45	35.89	54.00	18.11	

TEST ENGINEER: SAM

EUT	:	Printer	Temperature :	22℃	
Model No.	:	RICOH Ri 100	Humidity	:	60%RH
Test Mode	:	Standby	Date of Test :	Nov 25, 2017	

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	72.190	3.20	0.79	16.91	--	20.90	30.00	9.10	QP
	113.190	3.21	0.99	16.23	--	20.43	30.00	9.57	
	141.190	**4.50**	**1.10**	**18.77**	**--**	**24.37**	**30.00**	**5.63**	
	199.290	1.30	1.33	15.70	--	18.33	30.00	11.67	
	321.250	0.00	1.70	19.67	--	21.37	37.00	15.63	
	564.220	3.00	2.29	24.81	--	24.10	37.00	12.90	
	1330.000	46.67	25.55	1.69	34.54	39.37	74.00	34.63	PK
	2067.000	43.09	28.26	2.20	33.57	39.98	74.00	34.02	
	2496.000	41.52	28.00	2.43	33.40	38.55	74.00	35.45	
	2958.000	40.29	29.53	2.68	33.22	39.28	74.00	34.72	
	3838.000	39.18	32.03	3.09	32.86	41.44	74.00	32.56	
	5180.000	37.09	33.10	3.66	32.39	41.46	74.00	32.54	
	1319.360	38.73	25.55	1.69	34.54	31.43	54.00	22.57	AV
	2078.520	35.24	28.26	2.20	33.57	32.13	54.00	21.87	
	2485.870	35.22	28.01	2.42	33.41	32.24	54.00	21.76	
	2969.980	33.74	29.59	2.68	33.21	32.80	54.00	21.20	
	3838.250	31.18	32.03	3.09	32.86	33.44	54.00	20.56	
	5180.190	30.09	33.10	3.66	32.39	34.46	54.00	19.54	

TEST ENGINEER: SAM

EUT	:	Printer	Temperature :	22℃
Model No.	:	RICOH Ri 100	Humidity	: 60%RH
Test Mode	:	LAN Print (600dpi)	Date of Test	: Nov 25, 2017

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	73.130	0.89	1.01	16.82	--	18.72	30.00	11.28	QP
	137.220	2.90	1.35	18.49	--	22.74	30.00	7.26	
	171.220	2.90	1.51	18.39	--	22.80	30.00	7.20	
	222.330	**6.60**	**1.73**	**15.61**	**--**	**23.94**	**30.00**	**6.06**	
	624.130	6.00	3.10	25.77	--	22.87	37.00	14.13	
	798.000	5.00	3.67	28.27	--	26.94	37.00	10.06	
	1484.000	54.91	25.96	1.80	34.33	48.34	74.00	25.66	PK
	1825.000	48.21	27.53	2.03	33.84	43.93	74.00	30.07	
	2166.000	46.93	28.20	2.26	33.53	43.86	74.00	30.14	
	2485.000	56.09	28.01	2.42	33.41	53.11	74.00	20.89	
	2991.000	49.16	29.64	2.69	33.20	48.29	74.00	25.71	
	4553.000	42.28	32.34	3.40	32.61	45.41	74.00	28.59	
	1495.140	37.29	26.00	1.80	34.30	30.79	54.00	23.21	AV
	1836.850	37.91	27.53	2.05	33.84	33.65	54.00	20.35	
	2155.250	35.35	28.21	2.24	33.54	32.26	54.00	21.74	
	2474.520	39.39	28.01	2.42	33.41	36.41	54.00	17.59	
	2980.160	35.97	29.59	2.69	33.21	35.04	54.00	18.96	
	4542.320	31.60	32.33	3.40	32.61	34.72	54.00	19.28	

TEST ENGINEER: SAM

EUT	:	Printer	Temperature :	22℃	
Model No.	:	RICOH Ri 100	Humidity	:	60%RH
Test Mode	:	LAN Print(600dpi)	Date of Test	:	Nov 25, 2017

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	3.40	0.55	18.10	--	22.05	30.00	7.95	QP
	71.190	5.30	0.79	17.15	--	23.24	30.00	6.76	
	121.330	5.91	1.02	17.08	--	24.01	30.00	5.99	
	166.580	**5.50**	**1.20**	**18.80**	**--**	**25.50**	**30.00**	**4.50**	
	224.600	3.30	1.41	16.20	--	20.91	30.00	9.09	
	240.190	8.60	1.46	17.42	--	27.48	37.00	9.52	
	1385.000	58.09	25.73	1.73	34.47	51.08	74.00	22.92	PK
	2023.000	55.33	28.29	2.17	33.59	52.20	74.00	21.80	
	2397.000	56.60	28.06	2.38	33.44	53.60	74.00	20.40	
	2947.000	52.75	29.53	2.66	33.22	51.72	74.00	22.28	
	3123.000	55.62	30.06	2.75	33.15	55.28	74.00	18.72	
	4300.000	44.72	32.34	3.29	32.69	47.66	74.00	26.34	
	1396.320	44.05	25.73	1.75	34.44	37.09	54.00	16.91	AV
	2056.150	40.59	28.27	2.19	33.58	37.47	54.00	16.53	
	2408.250	41.97	28.05	2.38	33.44	38.96	54.00	15.04	
	2936.390	37.36	29.47	2.66	33.23	36.26	54.00	17.74	
	3134.850	37.38	30.11	2.76	33.15	37.10	54.00	16.90	
	4300.190	34.72	32.34	3.29	32.69	37.66	54.00	16.34	

TEST ENGINEER: SAM

EUT	:	Printer	Temperature :	22℃
Model No.	:	RICOH Ri 100	Humidity	: 60%RH
Test Mode	:	USB Print(1200dpi)	Date of Test	: Nov 25, 2017

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	50.130	0.90	0.85	19.60	--	21.35	30.00	8.65	QP
	99.230	3.20	1.17	14.57	--	18.94	30.00	11.06	
	149.320	0.59	1.41	18.99	--	20.99	30.00	9.01	
	169.230	**1.60**	**1.50**	**18.54**	--	**21.64**	**30.00**	**8.36**	
	233.190	4.90	1.77	16.76	--	23.43	37.00	13.57	
	655.130	6.00	3.18	26.10	--	23.28	37.00	13.72	
	1385.000	59.12	25.73	1.73	34.47	52.11	74.00	21.89	PK
	1902.000	50.91	27.84	2.09	33.74	47.10	74.00	26.90	
	2485.000	54.44	28.01	2.42	33.41	51.46	74.00	22.54	
	3288.000	47.52	30.58	2.84	33.08	47.86	74.00	26.14	
	3563.000	44.61	31.37	2.97	32.97	45.98	74.00	28.02	
	5268.000	37.28	33.29	3.69	32.35	41.91	74.00	32.09	
	1385.320	45.12	25.73	1.73	34.47	38.11	54.00	15.89	AV
	1891.150	37.30	27.76	2.09	33.74	33.41	54.00	20.59	
	2474.620	39.33	28.01	2.42	33.41	36.35	54.00	17.65	
	3288.980	35.52	30.58	2.84	33.08	35.86	54.00	18.14	
	3552.550	34.19	31.32	2.96	32.98	35.49	54.00	18.51	
	5257.250	29.74	33.25	3.69	32.36	34.32	54.00	19.68	

TEST ENGINEER: SAM

EUT	:	Printer	Temperature :	22℃
Model No.	:	RICOH Ri 100	Humidity :	60%RH
Test Mode	:	USB Print(1200dpi)	Date of Test :	Nov 25, 2017

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	50.400	5.00	0.70	19.80	--	25.50	30.00	4.50	QP
	136.950	2.01	1.08	18.44	--	21.53	30.00	8.47	
	166.540	5.60	1.20	18.80	--	25.60	30.00	4.40	
	190.960	1.99	1.30	16.56	--	19.85	30.00	10.15	
	217.330	**8.60**	**1.38**	**15.79**	**--**	**25.77**	**30.00**	**4.23**	
	242.170	10.32	1.46	17.47	--	29.25	37.00	7.75	
	1055.000	57.54	24.83	1.50	34.93	48.94	74.00	25.06	PK
	1462.000	52.99	25.91	1.78	34.37	46.31	74.00	27.69	
	1605.000	56.43	26.54	1.89	34.16	50.70	74.00	23.30	
	2144.000	48.45	28.22	2.24	33.54	45.37	74.00	28.63	
	2485.000	59.79	28.01	2.42	33.41	56.81	74.00	17.19	
	3387.000	50.53	30.84	2.89	33.05	51.21	74.00	22.79	
	1055.970	46.54	24.83	1.50	34.93	37.94	54.00	16.06	AV
	1451.320	41.38	25.91	1.78	34.37	34.70	54.00	19.30	
	1594.550	43.91	26.46	1.87	34.16	38.08	54.00	15.92	
	2133.970	38.27	28.22	2.23	33.55	35.17	54.00	18.83	
	2474.150	39.90	28.01	2.42	33.41	36.92	54.00	17.08	
	3376.320	34.40	30.84	2.87	33.05	35.06	54.00	18.94	

TEST ENGINEER: SAM

EUT	:	Printer	Temperature :	22℃
Model No.	:	RICOH Ri 100	Humidity	: 60%RH
Test Mode	:	LAN Print(STP)	Date of Test	: Nov 25, 2017

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	72.190	2.89	1.00	17.05	--	20.94	30.00	9.06	QP
	131.250	2.60	1.32	17.76	--	21.68	30.00	8.32	
	171.330	**2.60**	**1.51**	**18.39**	**--**	**22.50**	**30.00**	**7.50**	
	242.190	4.59	1.81	17.56	--	23.96	37.00	13.04	
	624.130	3.00	3.10	25.77	--	25.87	37.00	11.13	
	797.130	7.00	3.67	28.25	--	24.92	37.00	12.08	
	1517.000	52.06	26.08	1.82	34.26	45.70	74.00	28.30	PK
	2210.000	57.21	28.18	2.27	33.52	54.14	74.00	19.86	
	2430.000	58.23	28.04	2.39	33.43	55.23	74.00	18.77	
	2771.000	56.89	28.91	2.57	33.29	55.08	74.00	18.92	
	2892.000	56.51	29.30	2.64	33.24	55.21	74.00	18.79	
	4410.000	44.95	32.32	3.34	32.66	47.95	74.00	26.05	
	1506.230	43.16	26.08	1.82	34.30	36.76	54.00	17.24	AV
	2221.250	38.51	28.17	2.28	33.51	35.45	54.00	18.55	
	2430.980	39.23	28.04	2.39	33.43	36.23	54.00	17.77	
	2782.980	37.10	28.96	2.58	33.29	35.35	54.00	18.65	
	2881.130	37.62	29.30	2.64	33.25	36.31	54.00	17.69	
	4410.25	34.95	32.32	3.34	32.66	37.95	54.00	16.05	

TEST ENGINEER: SAM

EUT	:	Printer	Temperature :	22℃
Model No.	:	RICOH Ri 100	Humidity :	60%RH
Test Mode	:	LAN Print(STP)	Date of Test :	Nov 25, 2017

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	37.800	0.70	0.61	19.06	--	20.37	30.00	9.63	QP
	110.220	7.01	0.98	15.90	--	23.89	30.00	6.11	
	164.230	2.00	1.19	19.06	--	22.25	30.00	7.75	
	223.130	**8.00**	**1.40**	**16.04**	--	**25.44**	**30.00**	**4.56**	
	479.230	1.30	2.09	22.98	--	26.37	37.00	10.63	
	799.860	1.70	2.75	28.20	--	29.25	37.00	7.75	
	1594.000	57.16	26.46	1.87	34.16	51.33	74.00	22.67	PK
	2430.000	60.62	28.04	2.39	33.43	57.62	74.00	16.38	
	2925.000	56.56	29.42	2.65	33.23	55.40	74.00	18.60	
	3123.000	52.66	30.06	2.75	33.15	52.32	74.00	21.68	
	4245.000	46.02	32.35	3.27	32.71	48.93	74.00	25.07	
	4773.000	42.76	32.52	3.49	32.53	46.24	74.00	27.76	
	1605.320	42.39	26.54	1.89	34.16	36.66	54.00	17.34	AV
	2419.130	38.52	28.05	2.39	33.43	35.53	54.00	18.47	
	2914.000	39.00	29.42	2.65	33.23	37.84	54.00	16.16	
	3134.970	38.56	30.11	2.76	33.15	38.28	54.00	15.72	
	4234.520	33.08	32.35	3.27	32.72	35.98	54.00	18.02	
	4784.75	30.65	32.53	3.49	32.53	34.14	54.00	19.86	

TEST ENGINEER: SAM

EUT	:	Printer	Temperature :	22℃
Model No.	:	RICOH Ri 100	Humidity	: 60%RH
Test Mode	:	Wifi Print(600dpi)	Date of Test	: Nov 25, 2017

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	108.230	1.30	1.22	15.51	--	18.03	30.00	11.97	QP
	144.360	1.00	1.39	18.84	--	19.23	30.00	10.77	
	171.230	1.30	1.51	18.39	--	21.20	30.00	8.80	
	182.360	3.20	1.56	17.51	--	22.27	30.00	7.73	
	223.130	**5.60**	**1.73**	**15.72**	**--**	**23.05**	**30.00**	**6.95**	
	287.130	1.30	1.98	18.88	--	22.16	37.00	14.84	
	1231.000	55.16	25.33	1.62	34.69	47.42	74.00	26.58	PK
	1616.000	60.09	26.54	1.89	34.12	54.40	74.00	19.60	
	2463.000	90.58	28.02	2.40	33.41	87.59	74.00	13.59	
	2958.000	52.27	29.53	2.68	33.22	51.26	74.00	22.74	
	3101.000	52.57	30.01	2.74	33.16	52.16	74.00	21.84	
	3706.000	48.66	31.70	3.03	32.92	50.47	74.00	23.53	
	4619.000	44.28	32.40	3.43	32.58	47.53	74.00	26.47	AV
	1220.320	44.22	25.28	1.62	34.69	36.43	54.00	17.57	
	1616.250	41.09	26.54	1.89	34.12	35.40	54.00	18.60	
	2969.970	39.85	29.59	2.68	33.21	38.91	54.00	15.09	
	3112.520	38.09	30.01	2.75	33.15	37.70	54.00	16.30	
	3717.580	30.61	31.74	3.05	32.91	32.49	54.00	21.51	

TEST ENGINEER: SAM

EUT	:	Printer	Temperature :	22℃	
Model No.	:	RICOH Ri 100	Humidity	:	60%RH
Test Mode	:	Wifi Print(600dpi)	Date of Test	:	Nov 25, 2017

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	30.130	5.30	0.55	18.10	--	23.95	30.00	6.05	QP
	115.130	5.60	1.00	16.45	--	23.05	30.00	6.95	
	136.400	2.81	1.08	18.44	--	22.33	30.00	7.67	
	205.130	**7.60**	**1.35**	**15.73**	**--**	**24.68**	**30.00**	**5.32**	
	223.130	7.00	1.40	16.04	--	24.44	30.00	5.56	
	239.130	6.50	1.45	17.40	--	25.35	37.00	11.65	
	1275.000	51.84	25.42	1.66	34.61	44.31	74.00	29.69	PK
	1583.000	54.45	26.38	1.87	34.19	48.51	74.00	25.49	
	1935.000	47.78	27.99	2.12	33.70	44.19	74.00	29.81	
	2463.000	89.06	28.02	2.40	33.41	86.07	74.00	12.07	
	2716.000	48.31	28.74	2.54	33.31	46.28	74.00	27.72	
	3035.000	44.77	29.80	2.71	33.19	44.09	74.00	29.91	
	4927.000	50.19	32.64	3.55	32.48	53.90	74.00	20.10	AV
	1286.740	41.22	25.46	1.66	34.61	33.73	54.00	20.27	
	1594.250	38.98	26.46	1.87	34.16	33.15	54.00	20.85	
	1924.850	36.60	27.92	2.11	33.70	32.93	54.00	21.07	
	2705.190	33.15	28.68	2.54	33.32	31.05	54.00	22.95	
	3046.320	32.86	29.80	2.71	33.18	32.19	54.00	21.81	

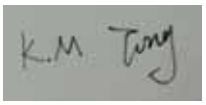
TEST ENGINEER: SAM

5 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Manufacturer	Location
Ferrite core	K3 T14.50*8.00*10.00	Ferrico Corporation	See Appendix Figure 25
Ferrite core	RH 7.8*18.00*4.00	Ferrico Corporation	See Appendix Figure 26

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: 

(K.M Tang)

6 DEVIATION TO TEST SPECIFICATIONS

None.