

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

Printer

Model No.: RICOH Ri 100

FCC ID : BBP-PRRI1001

Prepared For : Ricoh Co., Ltd.  
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Japan.

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Report No. : ACI-F16306  
Date of Test : Nov 18,2016-Feb 15, 2017  
Date of Report : Feb 23, 2017

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## TEST REPORT FOR FCC CERTIFICATE

Applicant : Ricoh Co., Ltd.  
 Manufacturer : Ricoh Co., Ltd.  
 Factory : Shanghai Ricoh Digital Equipment Co., Ltd.  
 EUT Description : Printer  
                   (A) Model No. : RICOH Ri 100  
                   (B) Power Supply : 120V/60Hz

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2015  
 AND ANSI C63.4-2014  
 (ICES-003 Issue 6 Jun. 2016 Class B)*

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 Nov 18,2016-Feb 15, 2017 is technically compliance with the FCC official limits also.

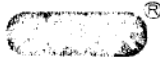
This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shanghai) Co., Ltd.

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 : Nov 18,2016-Feb 15, 2017      Date of Report : Feb 23, 2017

Producer : Hui Min Yan  
                   HUI MIN YAN / Assistant

Review : Byron Wu  
                   BYRON WU / Deputy Assistant Manager

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

Signatory :   
 Authorized Signature EMC BYRON 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
<b>EMISSION</b>			
Conducted Disturbance at the Mains Terminal	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2015 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 OCTOBER 2015 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

Highest working Frequency : 1.6G

S/N : SJ089Q17006

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

Applicant : Ricoh Co., Ltd.  
810, Shimoimaizumi Ebina City, Kanagawa 243-0460, Japan.

Manufacturer : Same as applicant.

Factory : Shanghai Ricoh Digital Equipment Co., Ltd.  
No.887 Jingang 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

### 2.2 Peripherals

#### 2.2.1 PC

Manufacturer : HP

Model Number : DX8200MT

Serial Number : CNG1243RC9

Certificate : C-Tick, FCC DoC, CE/EMC, VCCI

### 2.2.2 Keyboard

Manufacturer : HP  
Model Number : KU-0316  
Serial Number : BEXKN0AVB9NLMP  
Data Cable : Shielded, Detachable, 1.5m  
Certificate : CE/EMC, FCC DoC, VCCI, MIC,  
C-Tick, BSMI

### 2.2.3 Mouse

Manufacturer : HP  
Model Number : SM-2002  
Serial Number : FCMHH0C9Z20GXR  
Data Cable : Shielded, Detachable, 1.5m.  
Certificate : CE/EMC, FCC DoC, VCCI, MIC,  
C-Tick, BSMI

### 2.2.4 LCD Monitor

Manufacturer : HP  
Model Number : P2415Q  
Serial Number : CN-OFTFKN-74261  
Power Cord : Unshielded, Detachable, 1.0m  
Certificate : CE/EMC ,BSMI, FCC DOC,VCCI

## The peripherals from Site #2

### 2.2.5 Notebook

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

### 2.2.6 Cassette

Model Number : A4 Cassette

## 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	Power cord	1.9	Unshielded	Detachable	3C

## 2.4 Description of Test Facility

Site #1:

Site Description : Sept. 17, 1998 file on  
(Semi-Anechoic Chamber) : Jan.15, 2015 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

Site #2:

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

NVLAP Lab Code : 200371-0

**Note: The radiated disturbance test was tested in Site #2, and the conducted emission test was tested in Site #1.**

## 2.5 Measurement Uncertainty

Conducted Disturbance Test Uncertainty: U = 3.4 dB

Radiated Emission Expanded Uncertainty (30M-300MHz):

U = 3.28 dB (Horizontal)

U = 3.28 dB (Vertical)

Radiated Emission Expanded Uncertainty (300M-1GHz):

U = 3.15 dB (Horizontal)

U = 3.16 dB (Vertical)

Radiated Emission Expanded Uncertainty (Above 1GHz):

U = 4.47 dB

### 3 CONDUCTED EMISSION TEST

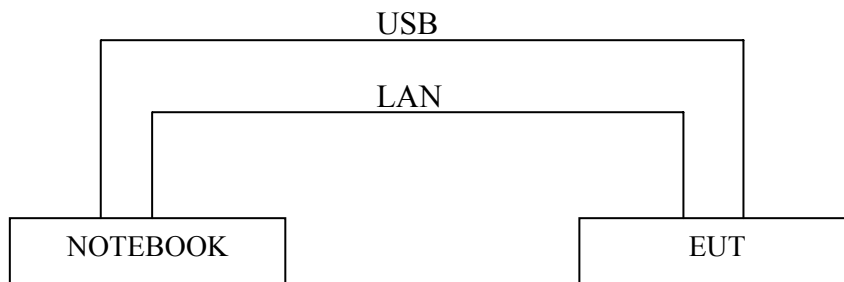
#### 3.1 Test Equipment

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

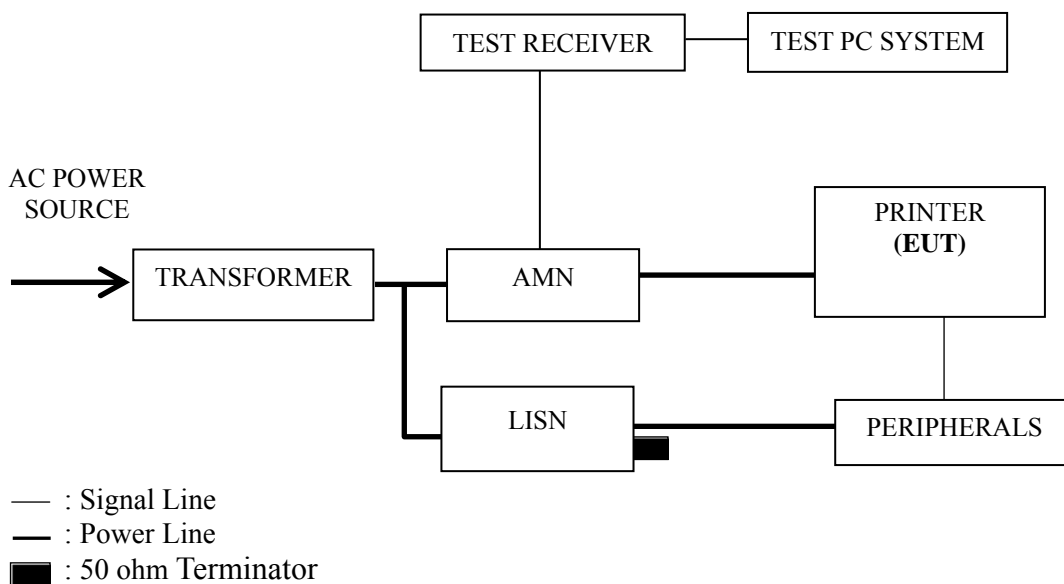
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Jul 03, 2016	Jul 02, 2017
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 27, 2016	Jun 26, 2017
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-5	Mar 20, 2016	Mar 19, 2017
4.	50Ω Terminator	Anritsu	BNC	001	Sep 18, 2016	Mar 17, 2017
5.	Software	Audix	e3	6.2009-1-15	--	--

#### 3.2 Block Diagram of Test Setup

##### 3.2.1 EUT & Peripherals



##### 3.2.2 Conducted Disturbance Test Setup





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

Frequency Range (MHz)	Limits dB ( $\mu$ V)	
	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	P12
	USB Print	P13
	WLAN Print	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 WLAN Print test mode. The worst emission is detected at 17.350 MHz (Average Value) with corrected signal level of 42.58 dB (μV) (limit is 50.00 dB (μV)), when the Line of the EUT is connected to AMN.

EUT : Printer Temperature : 22°C

Model No. : RICOH Ri 100 Humidity : 48%RH

Test Mode : Standby Date of Test : Nov 18, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark	
Line	0.161	39.11	10.57	49.68	65.42	15.74	QP	
	0.195	35.00	10.54	45.54	63.84	18.30		
	0.579	16.40	10.40	26.80	56.00	29.20		
	1.929	13.60	10.41	24.01	56.00	31.99		
	9.759	9.40	10.49	19.89	60.00	40.11		
	17.860	22.10	10.58	32.68	60.00	27.32		
		<b>0.161</b>	<b>36.61</b>	<b>10.57</b>	<b>47.18</b>	<b>55.42</b>	<b>8.24</b>	AV
		0.195	30.90	10.54	41.44	53.84	12.40	
		0.579	13.20	10.40	23.60	46.00	22.40	
		1.929	11.00	10.41	21.41	46.00	24.59	
		9.759	5.70	10.49	16.19	50.00	33.81	
		17.860	17.80	10.58	28.38	50.00	21.62	
Neutral	0.162	39.40	10.56	49.96	65.34	15.38	QP	
	0.193	34.30	10.53	44.83	63.92	19.09		
	0.579	15.30	10.39	25.69	56.00	30.31		
	2.310	15.20	10.44	25.64	56.00	30.36		
	9.109	5.00	10.56	15.56	60.00	44.44		
	17.860	22.60	10.69	33.29	60.00	26.71		
		0.162	36.50	10.56	47.06	55.34	8.28	AV
		0.193	30.70	10.53	41.23	53.92	12.69	
		0.579	11.80	10.39	22.19	46.00	23.81	
		2.310	11.20	10.44	21.64	46.00	24.36	
		9.109	1.80	10.56	12.36	50.00	37.64	
		17.860	18.50	10.69	29.19	50.00	20.81	

TEST ENGINEER: BYRON WU

EUT : Printer Temperature : 22°C

Model No. : RICOH Ri 100 Humidity : 48%RH

Test Mode : LAN Print Date of Test : Nov 18, 2016

Test Line	Frequency (MHz)	Meter Reading dB( $\mu$ V)	Factor (dB)	Emission Level dB( $\mu$ V)	Limits dB( $\mu$ V)	Margin (dB)	Remark
Line	0.162	38.70	10.57	49.27	65.34	16.07	QP
	0.195	36.80	10.54	47.34	63.84	16.50	
	0.553	16.80	10.40	27.20	56.00	28.80	
	2.382	18.70	10.42	29.12	56.00	26.88	
	5.363	9.80	10.45	20.25	60.00	39.75	
	17.190	32.00	10.57	42.57	60.00	17.43	
	0.162	35.60	10.57	46.17	55.34	9.17	AV
	0.195	34.70	10.54	45.24	53.84	8.60	
	0.553	15.30	10.40	25.70	46.00	20.30	
	2.382	15.80	10.42	26.22	46.00	19.78	
	5.363	7.00	10.45	17.45	50.00	32.55	
	17.190	31.00	10.57	41.57	50.00	8.43	
Neutral	0.164	38.60	10.56	49.16	65.25	16.09	QP
	0.199	32.50	10.52	43.02	63.66	20.64	
	0.665	14.60	10.39	24.99	56.00	31.01	
	2.286	16.00	10.44	26.44	56.00	29.56	
	12.260	22.29	10.62	32.91	60.00	27.09	
	17.220	29.91	10.67	40.58	60.00	19.42	
	<b>0.164</b>	<b>36.30</b>	<b>10.56</b>	<b>46.86</b>	<b>55.25</b>	<b>8.39</b>	AV
	0.199	29.10	10.52	39.62	53.66	14.04	
	0.665	15.50	10.39	25.89	46.00	20.11	
	2.286	13.00	10.44	23.44	46.00	22.56	
	12.260	22.49	10.62	33.11	50.00	16.89	
	17.220	28.31	10.67	38.98	50.00	11.02	

TEST ENGINEER: BYRON WU

EUT : Printer Temperature : 22°C

Model No. : RICOH Ri 100 Humidity : 48%RH

Test Mode : USB Print Date of Test : Nov 18, 2016

Test Line	Frequency (MHz)	Meter Reading dB( $\mu$ V)	Factor (dB)	Emission Level dB( $\mu$ V)	Limits dB( $\mu$ V)	Margin (dB)	Remark
Line	0.152	32.20	10.59	42.79	65.91	23.12	QP
	0.245	25.40	10.50	35.90	61.94	26.04	
	0.579	16.40	10.40	26.80	56.00	29.20	
	2.213	16.79	10.42	27.21	56.00	28.79	
	11.780	14.20	10.51	24.71	60.00	35.29	
	17.780	22.50	10.58	33.08	60.00	26.92	
	0.152	22.30	10.59	32.89	55.91	23.02	AV
	0.245	20.00	10.50	30.50	51.94	21.44	
	0.579	12.60	10.40	23.00	46.00	23.00	
	2.213	11.59	10.42	22.01	46.00	23.99	
	11.780	10.80	10.51	21.31	50.00	28.69	
	17.780	18.20	10.58	28.78	50.00	21.22	
Neutral	0.150	33.20	10.58	43.78	66.00	22.22	QP
	0.245	24.50	10.49	34.99	61.93	26.94	
	0.564	19.00	10.39	29.39	56.00	26.61	
	2.292	19.00	10.44	29.44	56.00	26.56	
	11.480	19.00	10.60	29.60	60.00	30.40	
	18.850	18.01	10.69	28.70	60.00	31.30	
	<b>0.150</b>	<b>30.00</b>	<b>10.58</b>	<b>40.58</b>	<b>56.00</b>	<b>15.42</b>	AV
	0.245	19.00	10.49	29.49	51.93	22.44	
	0.564	15.00	10.39	25.39	46.00	20.61	
	2.292	17.00	10.44	27.44	46.00	18.56	
	11.480	16.00	10.60	26.60	50.00	23.40	
	18.850	14.01	10.69	24.70	50.00	25.30	

TEST ENGINEER: BYRON WU

EUT : Printer Temperature : 22°C

Model No. : RICOH Ri 100 Humidity : 48%RH

Test Mode : WLAN Print Date of Test : Nov 18, 2016

Test Line	Frequency (MHz)	Meter Reading dB( $\mu$ V)	Factor (dB)	Emission Level dB( $\mu$ V)	Limits dB( $\mu$ V)	Margin (dB)	Remark
Line	0.150	35.00	10.59	45.59	65.99	20.40	QP
	0.286	32.01	10.47	42.48	60.63	18.15	
	0.553	15.50	10.40	25.90	56.00	30.10	
	2.386	19.00	10.42	29.42	56.00	26.58	
	11.210	22.21	10.50	32.71	60.00	27.29	
	17.350	33.00	10.58	43.58	60.00	16.42	
	0.150	32.00	10.59	42.59	55.99	13.40	AV
	0.286	28.61	10.47	39.08	50.63	11.55	
	0.553	15.10	10.40	25.50	46.00	20.50	
	2.386	17.00	10.42	27.42	46.00	18.58	
	11.210	19.91	10.50	30.41	50.00	19.59	
	<b>17.350</b>	<b>32.00</b>	<b>10.58</b>	<b>42.58</b>	<b>50.00</b>	<b>7.42</b>	
Neutral	0.152	35.50	10.58	46.08	65.90	19.82	QP
	0.287	28.71	10.46	39.17	60.62	21.45	
	0.553	14.00	10.39	24.39	56.00	31.61	
	0.953	22.00	10.40	32.40	56.00	23.60	
	2.383	20.40	10.44	30.84	56.00	25.16	
	17.400	28.99	10.69	39.68	60.00	20.32	
	0.152	31.60	10.58	42.18	55.90	13.72	AV
	0.287	24.11	10.46	34.57	50.62	16.05	
	0.553	13.20	10.39	23.59	46.00	22.41	
	0.953	20.30	10.40	30.70	46.00	15.30	
	2.383	17.90	10.44	28.34	46.00	17.66	
	17.400	28.59	10.69	39.28	50.00	10.72	

TEST ENGINEER: BYRON WU

## 4 RADIATED EMISSION TEST

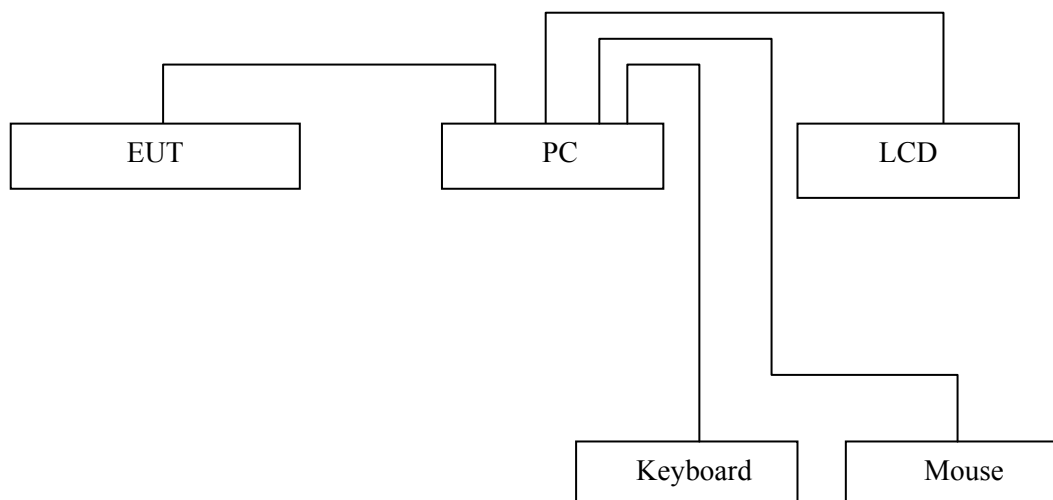
### 4.1 Test Equipment

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 05, 2016	Jan 04, 2017
2.	PSA signal analyzer	Agilent	N9030A	MY53120367	Jun 23, 2016	Jun 22, 2017
3.	Pre-Amplifier	Agilent	8447D	2944A10923	Jul 30, 2016	Jul 29, 2017
4.	Pre-Amplifier	Agilent	8447D	2944A10922	Jul 30, 2016	Jul 29, 2017
5.	Bi-log Antenna (Horizontal)	Schaffner	CBL6112D	22251	Aug 03, 2016	Aug 03, 2017
6.	Bi-log Antenna (Vertical)	Schaffner	CBL6112D	22253	Aug 03, 2016	Aug 03, 2017
7.	Microwave Preamplifier	Agilent	8449B	3008A02234	Jan 04,2016	Jan 03,2017
8.	Horn Antenna	ETS	3115	00062593	Aug 18 2016	Aug 17, 2017
9.	Test Receiver	R&S	ESCI	100351	Jul 03, 2016	Jul 02, 2017
10.	Software	Audix	e3	6.2007-9-10	--	--

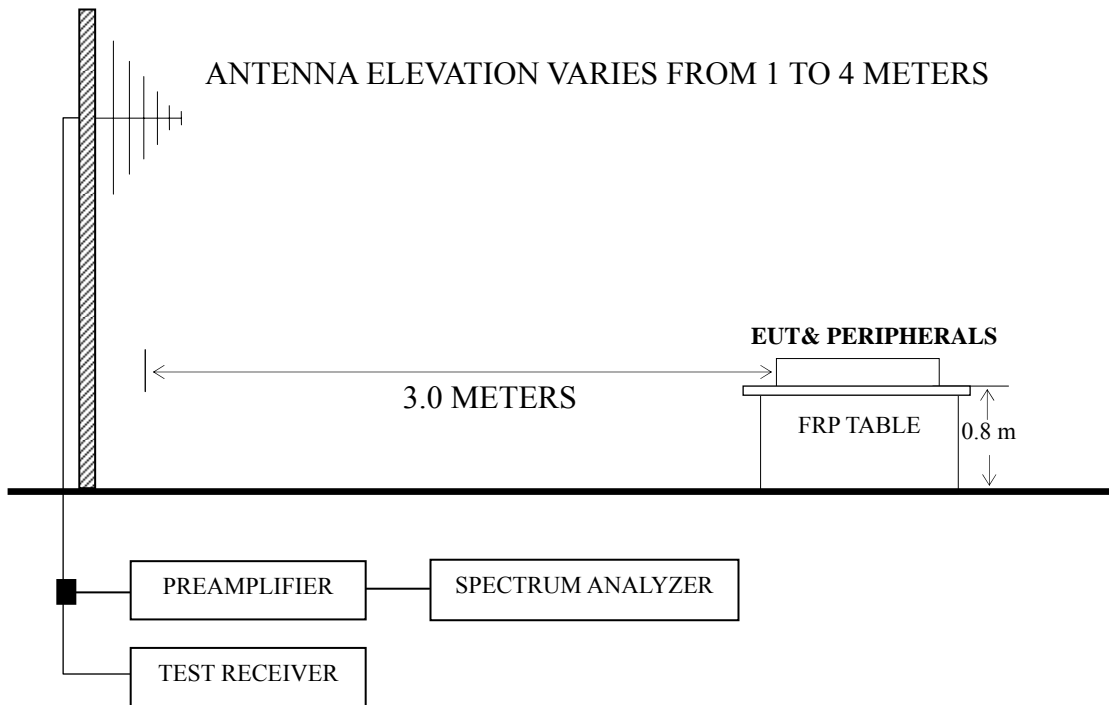
### 4.2 Block Diagram of Test Setup

#### 4.2.1 EUT & Peripherals



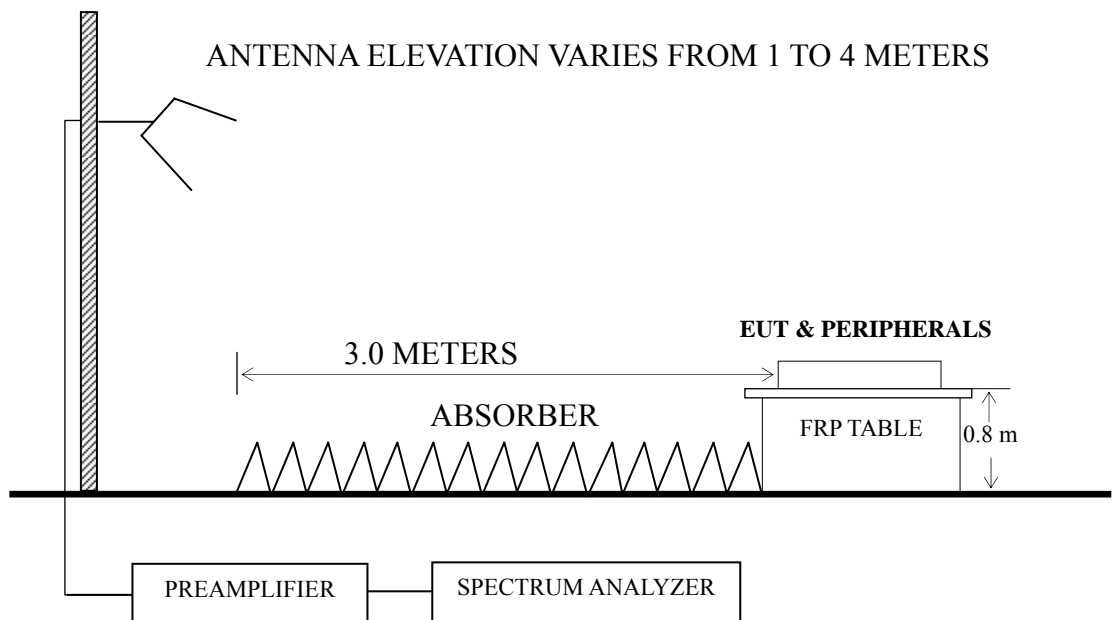
### 4.2.2 Radiated emission test setup

#### 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	
		( $\mu\text{V/m}$ )	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 C63.4:2014 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	P19-P20
		LAN Print	P21-P22
		USB Print	P23-P24
		WLAN Print	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 USB Print test mode. The worst emission at horizontal polarization was detected at 174.630 MHz with corrected signal level of 25.95 dB ( $\mu\text{V}/\text{m}$ ) (limit is 30.00 dB ( $\mu\text{V}/\text{m}$ )), when the antenna was 1.50 m height and the turntable was at 50°. The worst emission at vertical polarization was detected at 961.140 MHz with corrected signal level of 31.68 dB ( $\mu\text{V}/\text{m}$ ) (limit is 37.00 dB ( $\mu\text{V}/\text{m}$ )), when the antenna was 1.00 m height and the turntable was at 270°.

EUT : Printer Temperature : 22°C

Model No. : RICOH Ri 100 Humidity : 60%RH

Test Mode : Standby Date of Test : Feb 15, 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	46.590	7.28	1.39	9.84	0.00	18.51	30.00	11.49	QP
	129.150	6.26	2.40	11.87	0.00	20.53	30.00	9.47	
	147.690	10.00	2.58	10.68	0.00	23.26	30.00	6.74	
	<b>152.180</b>	<b>11.57</b>	<b>2.63</b>	<b>10.42</b>	<b>0.00</b>	<b>24.62</b>	<b>30.00</b>	<b>5.38</b>	
	500.090	3.28	5.09	17.30	0.00	25.67	37.00	11.33	
	625.130	0.89	5.79	18.63	0.00	25.31	37.00	11.69	
	1609.000	50.40	25.58	4.63	35.25	45.36	74.00	28.64	PK
	2400.000	45.95	28.45	5.80	34.84	45.36	74.00	28.64	
	4080.000	40.23	32.63	8.05	34.53	46.38	74.00	27.62	
	6404.000	40.42	34.44	10.23	34.43	50.66	74.00	23.34	
	7265.000	42.41	36.26	10.75	34.53	54.89	74.00	19.11	
	7559.000	41.58	36.83	11.01	34.60	54.82	74.00	19.18	
	1611.870	34.33	25.58	4.63	35.25	29.29	54.00	24.71	AV
	2402.690	32.10	28.49	5.80	34.84	31.55	54.00	22.45	
	4080.780	27.17	32.63	8.05	34.53	33.32	54.00	20.68	
	6403.290	26.74	34.44	10.23	34.43	36.98	54.00	17.02	
7264.980	27.70	36.26	10.75	34.53	40.18	54.00	13.82		
7559.170	30.19	36.83	11.01	34.60	43.43	54.00	10.57		

TEST ENGINEER: LEO TIAN

EUT : Printer Temperature : 22°C

Model No. : RICOH Ri 100 Humidity : 60%RH

Test Mode : Standby Date of Test : Feb 15, 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	48.360	11.96	1.26	9.03	0.00	22.25	30.00	7.75	QP
	60.090	15.83	1.41	6.40	0.00	23.64	30.00	6.36	
	133.190	8.45	2.16	11.78	0.00	22.39	30.00	7.61	
	<b>160.000</b>	<b>11.83</b>	<b>2.40</b>	<b>10.20</b>	<b>0.00</b>	<b>24.43</b>	<b>30.00</b>	<b>5.57</b>	
	500.070	3.79	4.52	17.40	0.00	25.71	37.00	11.29	
	625.000	6.24	5.13	18.75	0.00	30.12	37.00	6.88	
	1602.000	54.01	25.50	4.63	35.25	48.89	74.00	25.11	PK
	2400.000	50.20	28.45	5.80	34.84	49.61	74.00	24.39	
	4934.000	45.42	33.08	8.68	34.45	52.73	74.00	21.27	
	6334.000	41.18	34.40	10.20	34.43	51.35	74.00	22.65	
	7482.000	40.56	36.76	10.94	34.58	53.68	74.00	20.32	
	7734.000	40.29	36.89	11.18	34.65	53.71	74.00	20.29	
	1602.630	35.33	25.50	4.63	35.25	30.21	54.00	23.79	AV
	2402.630	34.84	28.49	5.80	34.84	34.29	54.00	19.71	
	4933.690	29.54	33.08	8.68	34.45	36.85	54.00	17.15	
	6333.590	28.86	34.40	10.20	34.43	39.03	54.00	14.97	
	7481.690	25.70	36.76	10.94	34.58	38.82	54.00	15.18	
	7732.640	26.83	36.89	11.18	34.65	40.25	54.00	13.75	

TEST ENGINEER: LEO TIAN

EUT : Printer Temperature : 22°C  
 Model No. : RICOH Ri 100 Humidity : 60%RH  
 Test Mode : LAN Print Date of Test : Feb 15, 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	108.250	8.86	2.20	11.53	0.00	22.59	30.00	7.41	QP
	127.250	7.55	2.38	12.01	0.00	21.94	30.00	8.06	
	159.360	10.78	2.70	10.05	0.00	23.53	30.00	6.47	
	<b>174.658</b>	<b>11.97</b>	<b>2.85</b>	<b>9.43</b>	<b>0.00</b>	<b>24.25</b>	<b>30.00</b>	<b>5.75</b>	
	479.150	8.11	4.96	16.98	0.00	30.05	37.00	6.95	
	835.520	2.35	6.76	19.91	0.00	29.02	37.00	7.98	
	1350.000	59.74	24.53	4.21	35.51	52.97	74.00	21.03	PK
	1602.000	57.54	25.50	4.63	35.25	52.42	74.00	21.58	
	2162.000	56.97	27.87	5.50	34.85	55.49	74.00	18.51	
	2456.000	56.31	28.62	5.86	34.83	55.96	74.00	18.04	
	2701.000	53.69	29.26	6.20	34.82	54.33	74.00	19.67	
	2953.000	56.97	29.96	6.54	34.80	58.67	74.00	15.33	
	1350.410	34.83	24.53	4.21	35.51	28.06	54.00	25.94	AV
	1602.180	33.33	25.50	4.63	35.25	28.21	54.00	25.79	
	2161.590	34.94	27.87	5.50	34.85	33.46	54.00	20.54	
	2456.140	32.64	28.62	5.86	34.83	32.29	54.00	21.71	
2701.340	34.76	29.26	6.20	34.82	35.40	54.00	18.60		
2952.620	34.46	29.96	6.54	34.80	36.16	54.00	17.84		

TEST ENGINEER: LEO TIAN

EUT : Printer Temperature : 22°C

Model No. : RICOH Ri 100 Humidity : 60%RH

Test Mode : LAN Print Date of Test : Feb 15, 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	1.57	1.00	18.70	0.00	21.27	30.00	8.73	QP
	131.150	10.28	2.15	11.89	0.00	24.32	30.00	5.68	
	176.260	11.50	2.54	9.63	0.00	23.67	30.00	6.33	
	<b>488.150</b>	<b>9.99</b>	<b>4.46</b>	<b>17.20</b>	<b>0.00</b>	<b>31.65</b>	<b>37.00</b>	<b>5.35</b>	
	624.985	7.74	5.13	18.75	0.00	31.62	37.00	5.38	
	966.580	2.52	6.52	21.20	0.00	30.24	37.00	6.76	
	1077.000	59.32	23.59	3.75	35.80	50.86	74.00	23.14	PK
	1406.000	59.88	24.71	4.29	35.46	53.42	74.00	20.58	
	1959.000	55.77	27.25	5.22	34.89	53.35	74.00	20.65	
	2071.000	57.95	27.67	5.36	34.86	56.12	74.00	17.88	
	2484.000	54.01	28.66	5.90	34.83	53.74	74.00	20.26	
	3135.000	49.90	30.43	6.78	34.76	52.35	74.00	21.65	
	1073.370	35.71	23.53	3.75	35.80	27.19	54.00	26.81	AV
	1406.290	37.71	24.71	4.29	35.46	31.25	54.00	22.75	
	1958.790	34.08	27.25	5.22	34.89	31.66	54.00	22.34	
	2068.960	34.51	27.67	5.36	34.86	32.68	54.00	21.32	
2485.340	35.04	28.66	5.90	34.83	34.77	54.00	19.23		
3133.990	28.92	30.43	6.78	34.76	31.37	54.00	22.63		

TEST ENGINEER: LEO TIAN

EUT : Printer Temperature : 22°C

Model No. : RICOH Ri 100 Humidity : 60%RH

Test Mode : USB Print Date of Test : Feb 15, 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	148.130	8.31	2.59	10.63	0.00	21.53	30.00	8.47	QP
	<b>174.630</b>	<b>13.67</b>	<b>2.85</b>	<b>9.43</b>	<b>0.00</b>	<b>25.95</b>	<b>30.00</b>	<b>4.05</b>	
	441.120	11.29	4.74	16.42	0.00	32.45	37.00	4.55	
	657.050	6.70	5.93	18.66	0.00	31.29	37.00	5.71	
	831.470	4.62	6.74	19.88	0.00	31.24	37.00	5.76	
	907.300	4.39	7.18	20.56	0.00	32.13	37.00	4.87	
	1532.000	56.33	25.17	4.50	35.33	50.67	74.00	23.33	PK
	2197.000	53.72	27.96	5.53	34.85	52.36	74.00	21.64	
	2498.000	50.28	28.70	5.93	34.83	50.08	74.00	23.92	
	2596.000	53.39	28.98	6.07	34.82	53.62	74.00	20.38	
	3030.000	48.98	30.14	6.64	34.79	50.97	74.00	23.03	
	7559.000	38.68	36.83	11.01	34.60	51.92	74.00	22.08	
	1532.450	38.74	25.17	4.50	35.33	33.08	54.00	20.92	AV
	2196.890	33.48	27.96	5.53	34.85	32.12	54.00	21.88	
	2499.960	34.38	28.70	5.93	34.83	34.18	54.00	19.82	
	2595.980	33.94	28.98	6.07	34.82	34.17	54.00	19.83	
	3032.640	29.92	30.18	6.64	34.79	31.95	54.00	22.05	
	7558.780	25.30	36.83	11.01	34.60	38.54	54.00	15.46	

TEST ENGINEER: LEO TIAN

EUT : Printer Temperature : 22°C

Model No. : RICOH Ri 100 Humidity : 60%RH

Test Mode : USB Print Date of Test : Feb 15, 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	4.17	1.00	18.70	0.00	23.87	30.00	6.13	QP
	73.485	14.39	1.58	6.85	0.00	22.82	30.00	7.18	
	142.120	9.70	2.25	11.23	0.00	23.18	30.00	6.82	
	207.480	11.16	2.79	9.34	0.00	23.29	30.00	6.71	
	468.110	9.19	4.36	16.89	0.00	30.44	37.00	6.56	
	<b>961.140</b>	<b>4.00</b>	<b>6.51</b>	<b>21.17</b>	<b>0.00</b>	<b>31.68</b>	<b>37.00</b>	<b>5.32</b>	
	1602.000	54.27	25.50	4.63	35.25	49.15	74.00	24.85	PK
	1735.000	55.50	26.17	4.84	35.12	51.39	74.00	22.61	
	2050.000	53.91	27.62	5.33	34.86	52.00	74.00	22.00	
	2260.000	51.96	28.12	5.60	34.84	50.84	74.00	23.16	
	2526.000	54.24	28.79	5.97	34.83	54.17	74.00	19.83	
	4815.000	44.05	32.86	8.61	34.46	51.06	74.00	22.94	
	AV	1601.890	38.30	25.50	4.63	35.25	33.18	54.00	20.82
		1734.890	37.63	26.17	4.84	35.12	33.52	54.00	20.48
		2052.250	37.53	27.62	5.33	34.86	35.62	54.00	18.38
		2260.340	33.41	28.12	5.60	34.84	32.29	54.00	21.71
2524.970		35.37	28.79	5.97	34.83	35.30	54.00	18.70	
4814.370		27.17	32.86	8.61	34.46	34.18	54.00	19.82	

TEST ENGINEER: LEO TIAN



EUT : Printer Temperature : 22°C

Model No. : RICOH Ri 100 Humidity : 60%RH

Test Mode : WLAN Print Date of Test : Feb 15, 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	146.460	10.73	5.23	2.57	0.00	18.53	30.00	11.47	QP
	<b>174.680</b>	<b>9.43</b>	<b>11.77</b>	<b>2.85</b>	<b>0.00</b>	<b>24.05</b>	<b>30.00</b>	<b>5.95</b>	
	213.660	9.30	8.74	3.20	0.00	21.24	30.00	8.76	
	291.200	13.02	5.03	3.78	0.00	21.83	37.00	15.17	
	562.350	18.11	3.34	5.45	0.00	26.90	37.00	10.10	
	837.220	19.93	2.31	6.78	0.00	29.02	37.00	7.98	
	2050.000	56.94	27.62	1.81	34.86	51.51	74.00	22.49	PK
	2330.000	56.84	28.29	1.95	34.84	52.24	74.00	21.76	
	2407.000	58.81	28.49	1.99	34.84	54.45	74.00	19.55	
	2575.000	60.12	28.93	2.09	34.82	56.32	74.00	17.68	
	2750.000	59.29	29.40	2.18	34.81	56.06	74.00	17.94	
	2946.000	59.37	29.91	2.27	34.80	56.75	74.00	17.25	
	2049.330	36.56	27.62	1.81	34.86	31.13	54.00	22.87	AV
	2331.120	32.95	28.29	1.95	34.84	28.35	54.00	25.65	
	2408.150	39.05	28.49	1.99	34.84	34.69	54.00	19.31	
	2576.690	38.48	28.93	2.09	34.82	34.68	54.00	19.32	
	2751.150	33.82	29.40	2.18	34.81	30.59	54.00	23.41	
	2947.180	36.73	29.96	2.27	34.80	34.16	54.00	19.84	

TEST ENGINEER: LEO TIAN

EUT : Printer Temperature : 22°C

Model No. : RICOH Ri 100 Humidity : 60%RH

Test Mode : WLAN Print Date of Test : Feb 15, 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	30.180	18.70	0.27	1.00	0.00	19.97	30.00	10.03	QP
	133.860	11.73	6.11	2.17	0.00	20.01	30.00	9.99	
	174.700	9.70	9.39	2.52	0.00	21.61	30.00	8.39	
	466.220	16.86	0.50	4.35	0.00	21.71	37.00	15.29	
	<b>624.960</b>	<b>18.75</b>	<b>8.64</b>	<b>5.13</b>	<b>0.00</b>	<b>32.52</b>	<b>37.00</b>	<b>4.48</b>	
	862.660	20.42	2.18	6.18	0.00	28.78	37.00	8.22	
	1665.000	58.63	25.83	1.61	35.20	50.87	74.00	23.13	PK
	1791.000	60.55	26.50	1.68	35.07	53.66	74.00	20.34	
	1819.000	63.77	26.58	1.69	35.04	57.00	74.00	17.00	
	2372.000	57.63	28.41	1.98	34.84	53.18	74.00	20.82	
	2960.000	52.40	29.96	2.29	34.80	49.85	74.00	24.15	
	4934.000	55.49	33.08	3.10	34.45	57.22	74.00	16.78	
	1666.360	44.47	25.83	1.61	35.20	36.71	54.00	17.29	AV
	1792.250	40.89	26.50	1.68	35.07	34.00	54.00	20.00	
	1820.050	34.59	26.58	1.69	35.04	27.82	54.00	26.18	
	2373.480	40.69	28.41	1.98	34.84	36.24	54.00	17.76	
	2961.110	38.74	29.96	2.29	34.80	36.19	54.00	17.81	
	4935.150	34.99	33.08	3.10	34.45	36.72	54.00	17.28	

TEST ENGINEER: LEO TIAN

## 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 21
Ferrite core	RH 7.8*18.00*4.00	Ferrico Corporation	See Appendix Figure 22

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: Wency Yang  
(WENCY YANG)

## **6 DEVIATION TO TEST SPECIFICATIONS**

None.