

FCC PART 15B

TEST REPORT

For

XIAMEN RONGTA TECHNOLOGY CO.,LTD.

3F-1/E Building, No.195 Gaoqishe, Gaodian Village, Dianqian Street Office, Huli District, Xiamen City, China

FCC ID: 2AD6G-RP410C

Report Type: Original Report	Product Type: Thermal Receipt Printer
Report Number:	RXM180719051-00
Report Date:	2018-08-31
Reviewed By:	Jerry Zhang EMC Manager 
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:		Thermal Receipt Printer
EUT Model:		RP410C
Multiple Model:		RP410C-U, RP410C-USE, RP410C-BU, RP410C-USEB, RP410C-WUSE, RP76V, RP410C-WU, RP76IV
FCC ID:		2AD6G-RP410C
Rated Input Voltage:		24 Vdc from adapter
Adapter Information	Model:	DJ-240250-SA
	Input:	100-240Vac~50/60Hz 1.5A
	Output:	24V, 2.5A
External Dimension:		244 mm(L)*182 mm(W)*174 mm(H)
The Highest Operating Frequency:		Below 108MHz
Serial Number:		180719051
EUT Received Date:		2018.07.20

Note: The series product, model RP410C-U, RP410C-USE, RP410C-BU, RP410C-USEB, RP410C-WUSE, RP76V, RP410C-WU, RP76IV are electrically identical with model RP410C, we selected RP410C for fully testing, the differences details was explained in the declaration letter.

Objective

This report is prepared on behalf of XIAMEN RONGTA TECHNOLOGY CO.,LTD. in accordance with FCC Part 15B Part 2, Part J, and Part 15, Subpart A and B of the Federal Communications Commission's rules..

The objective is to determine the compliance of EUT with:
FCC Part 15B Class B.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014 American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

Measurement Uncertainty

Parameter	Measurement Uncertainty
Unwanted Emissions, radiated	30M~200MHz: 4.55 dB, 200M~1GHz: 5.92 dB, 1G~6GHz: 4.98 dB, 6G~18GHz: 5.89 dB, 18G~26.5G:5.47 dB, 26.5G~40G:5.63 dB
Temperature	±1℃
Humidity	±5%
AC Power Lines Conducted Emission	3.12 dB (150 kHz to 30 MHz)

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 897218,the FCC Designation No. : CN1220.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062D.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a typical fashion (as normally used by a typical user).

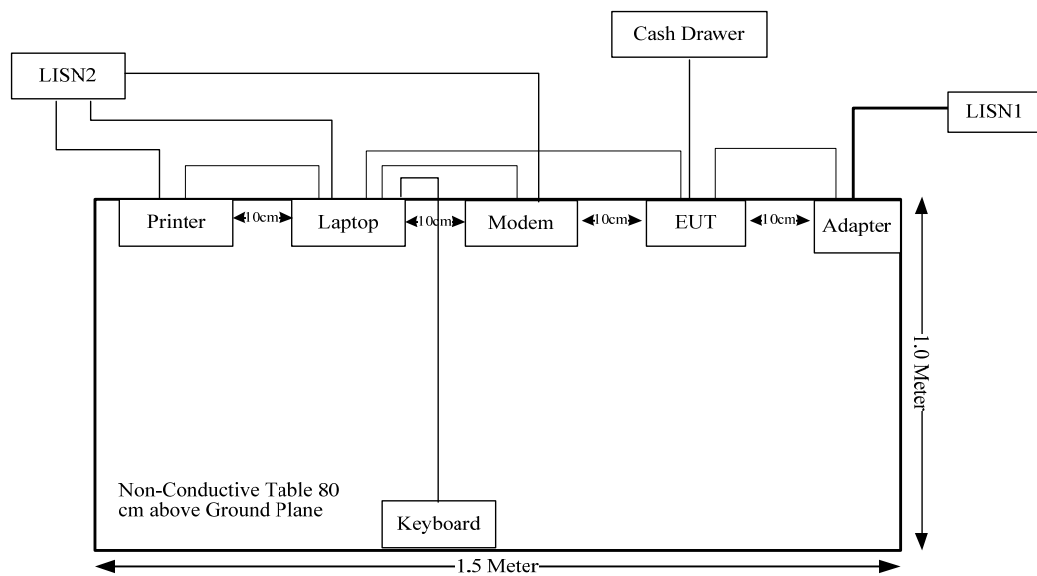
Equipment Modifications

No modification was made to the EUT.

EUT Exercise Software

The PrintTool.exe was used for testing.

Block Diagram of Test Setup



Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Laptop	PP11L	HLKYG81
Beelta	Cash Box	BK-405	N/A
HP	Printer	C3990A	JPZW030603
SAST	Modem	AEM-2100	090200213
DELL	Adapter	LA90PS0-00	N/A

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
RJ45 Cable	No	No	2	EUT	Cash box
Power Cable	No	Yes	1.52	Adapter	EUT
Power Cable	No	No	1.2	Adapter	AC Mains
USB Cable	No	Yes	1.46	EUT	Laptop
Serial Cable	No	No	1.4	Serial Port of Laptop	Modem
USB Cable	No	No	2	USB Port of Laptop	Keyboard
Parallel Cable	No	No	1.4	Parallel Port of Laptop	Printer

Test Equipment List

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2017-12-11	2018-12-11
N/A	Coaxial Cable	C-NJNJ-50	C-0200-01	2017-09-05	2018-09-05
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A
R&S	Two-line V-network	ENV 216	101614	2017-12-08	2018-12-08
R&S	L.I.S.N	ESH2-Z5	892107/021	2019-09-19	2019-09-18
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
R&S	EMI Test Receiver	ESCI	100035	2017-08-04	2018-08-04
				2018-08-05	2019-08-03
Sunol Sciences	Antenna	JB3	A060611-3	2017-07-21	2019-07-21
HP	Amplifier	8447F	2443A01912	2017-09-05	2018-09-05
N/A	Coaxial Cable	C-NJNJ-50	C-0400-02	2017-09-05	2018-09-05
N/A	Coaxial Cable	C-NJNJ-50	C-0075-02	2017-09-05	2018-09-05
N/A	Coaxial Cable	C-NJNJ-50	C-2200-01	2017-09-05	2018-09-05

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Environmental Conditions

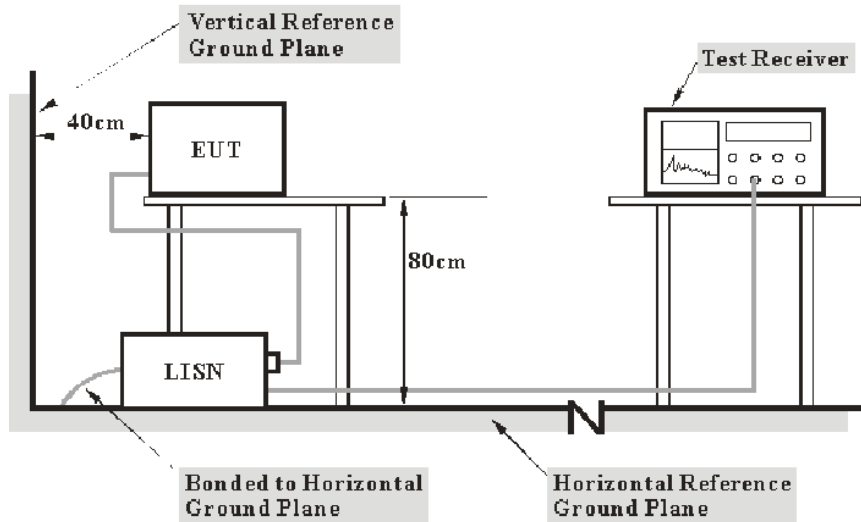
Temperature:	25.4~28.5°C
Relative Humidity:	56~61%
ATM Pressure:	99.5~100.2kPa
Tester:	Sider Huang, Vito Chen
Test Date:	2018.07.20~2018.08.27

SUMMARY OF TEST RESULTS

SN	Rule and Clause	Description of Test	Test Result
1	FCC §15.107	Conducted emissions	Compliance
2	FCC §15.109	Radiated emissions	Compliance

1 - CONDUCTED EMISSIONS

EUT Setup



Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15 B Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter of EUT was connected to the outlet of the first LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result (QuasiPeak or Average) = Meter Reading + Corr.

Note:

Corr. = Cable loss + Factor of coupling device

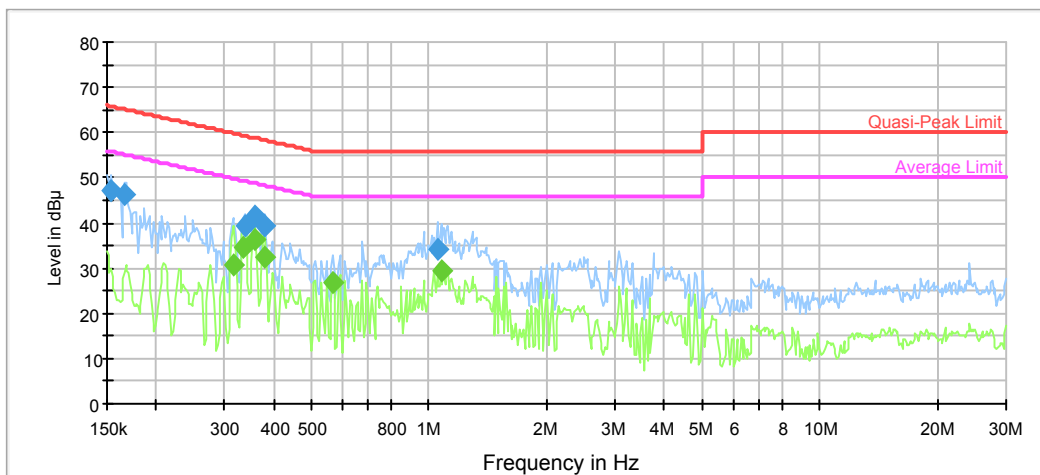
The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

Margin = Limit – Result

Test Data

Please refer to following table and plots:

Model Number: RP410C
 Port: L
 Test Mode: Printing
 Power Source: AC 120V/60Hz
 Note:



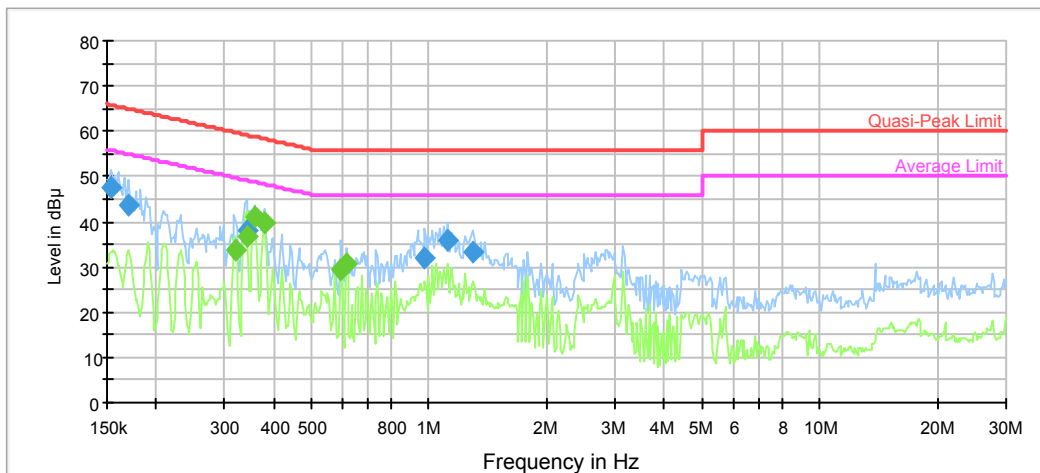
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.153629	47.0	9.000	L1	11.1	18.8	65.8
0.166371	46.1	9.000	L1	11.0	19.0	65.1
0.338116	39.2	9.000	L1	10.1	20.0	59.2
0.357511	41.4	9.000	L1	10.0	17.4	58.8
0.378019	39.3	9.000	L1	10.0	19.0	58.3
1.048242	34.3	9.000	L1	9.8	21.7	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.314718	30.7	9.000	L1	10.1	19.1	49.8
0.335433	34.4	9.000	L1	10.1	14.9	49.3
0.357511	36.5	9.000	L1	10.0	12.3	48.8
0.378019	32.6	9.000	L1	10.0	15.7	48.3
0.567545	27.0	9.000	L1	9.8	19.0	46.0
1.073601	29.4	9.000	L1	9.8	16.6	46.0

Model Number: RP410C
Port: N
Test Mode: Printing
Power Source: AC 120V/60Hz
Note:



Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.153629	47.6	9.000	N	11.1	18.2	65.8
0.170396	43.5	9.000	N	10.9	21.4	64.9
0.340821	38.2	9.000	N	10.1	21.0	59.2
0.975701	31.9	9.000	N	9.8	24.1	56.0
1.117238	36.1	9.000	N	9.8	19.9	56.0
1.299858	33.4	9.000	N	9.8	22.6	56.0

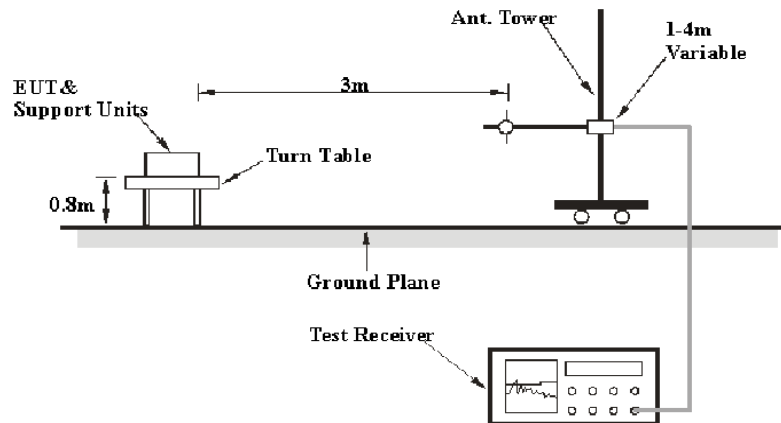
Final Result 2

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.319773	33.5	9.000	N	10.1	16.2	49.7
0.340821	36.8	9.000	N	10.1	12.4	49.2
0.357511	41.2	9.000	N	10.0	7.6	48.8
0.378019	39.7	9.000	N	10.0	8.6	48.3
0.595338	29.3	9.000	N	9.8	16.7	46.0
0.614619	30.9	9.000	N	9.8	15.1	46.0

2 - RADIATED EMISSIONS

EUT Setup

Below 1GHz:



The radiated emission tests were performed at the 3 meters distance, using the setup accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15.109 Class B limits.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 1 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP

Test Procedure

During the radiated emissions, the adapter was connected to the first AC floor outlet and the other support equipments were connected to the second AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The data was recorded in the Quasi-peak detection mode for below 1 GHz.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Meter Reading+ Corrected

Note:

Corrected = Antenna Factor + Cable Loss - Amplifier Gain

or

Corrected = Antenna Factor + Cable Loss + Insertion loss of attenuator - Amplifier Gain

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

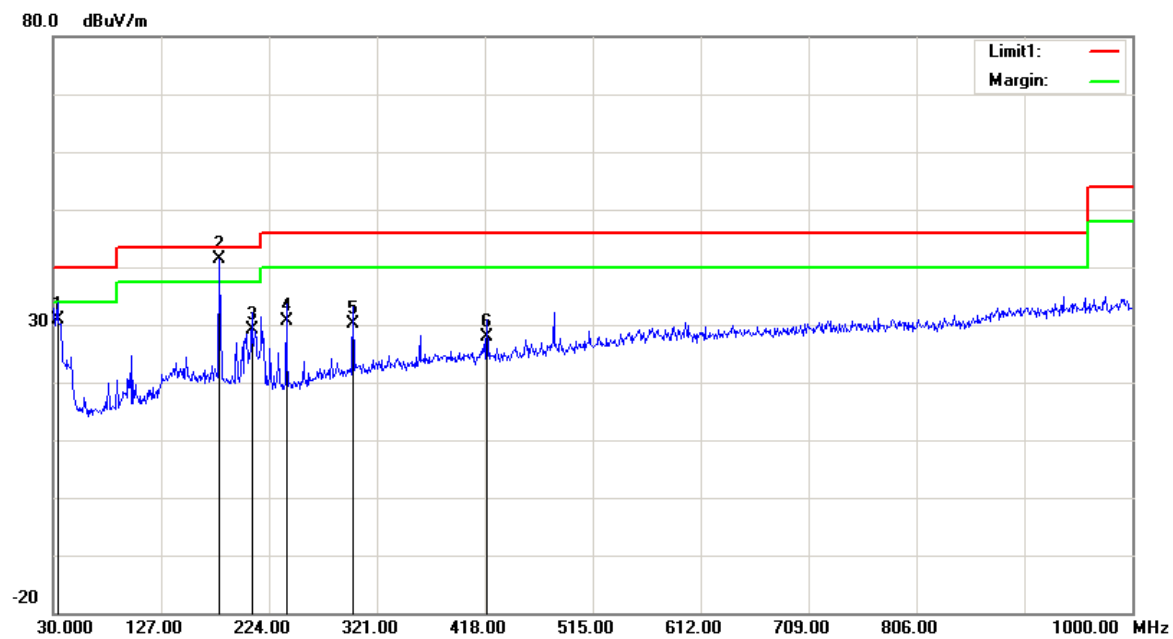
$$\text{Margin} = \text{Limit} - \text{Result}$$

Test Data

Please refer to following table and plots:

Condition: FCC Class B 3m Radiation
EUT: Thermal Receipt Printer
Model: RP410C
Test Mode: Printing

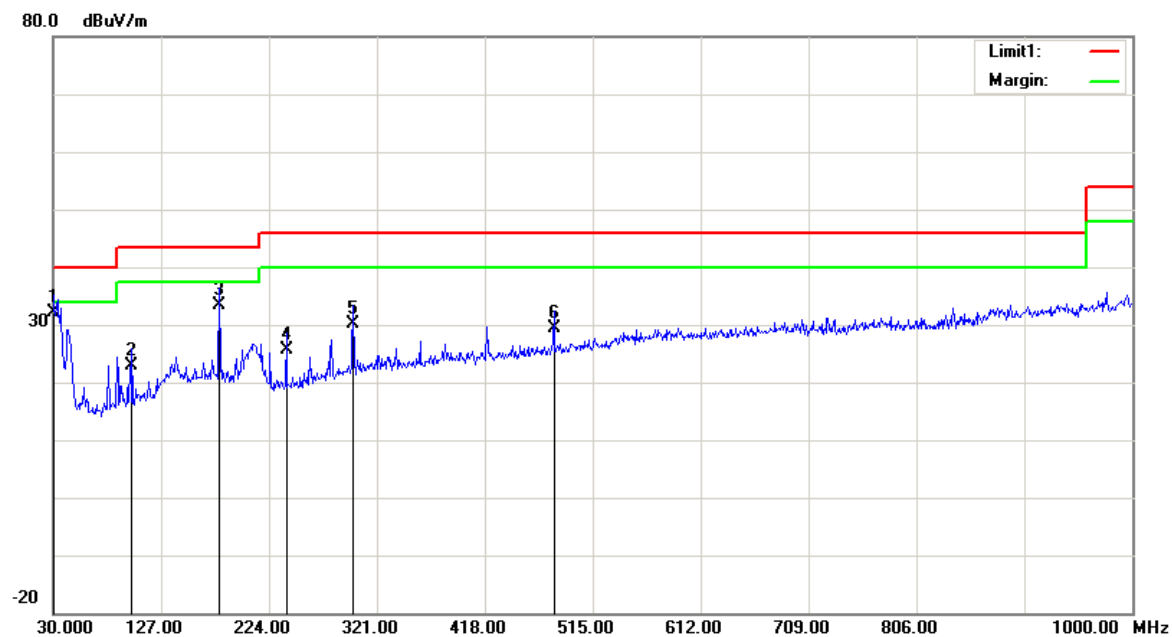
Polarization: Horizontal
Power: AC 120V/60Hz
Distance: 3m



No.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	33.8800	34.68	QP	-3.88	30.80	40.00	9.20
2	179.3800	48.95	QP	-7.55	41.40	43.50	2.10
3	208.4800	37.86	QP	-8.76	29.10	43.50	14.40
4	239.5200	38.32	QP	-7.72	30.60	46.00	15.40
5	299.6600	35.22	QP	-5.02	30.20	46.00	15.80
6	419.9400	29.89	QP	-2.09	27.80	46.00	18.20

Condition: FCC Class B 3m Radiation
EUT: Thermal Receipt Printer
Model: RP410C
Test Mode: Printing

Polarization: Vertical
Power: AC 120V/60Hz
Distance: 3m



No.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	30.0000	34.09	QP	-1.99	32.10	40.00	7.90
2	100.8100	34.42	QP	-11.62	22.80	43.50	20.70
3	179.3800	40.95	QP	-7.55	33.40	43.50	10.10
4	239.5200	33.42	QP	-7.72	25.70	46.00	20.30
5	299.6600	35.22	QP	-5.02	30.20	46.00	15.80
6	480.0800	30.12	QP	-0.72	29.40	46.00	16.60

*****END OF REPORT*****