

FCC PART 15B

TEST REPORT

For

XIAMEN RONGTA TECHNOLOGY CO.,LTD.

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FCC ID: 2AD6G-ACE-G1YW

Report Type: Original Report	Product Type: Thermal Receipt Printer
Report Number:	RXM180327051-00
Report Date:	2018-05-04
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:		ACE G1Y
Multiple Model:		ACE G1A, ACE G1B, ACE G1C, ACE G1D, ACE G1E, ACE G1F, ACE G1H, ACE G1I, ACE G1J
FCC ID:		2AD6G-ACE-G1YW
Rated Input Voltage:		9VDC from adapter
Adapter Information	Model:	DJ-U30S-9
	Input:	100-240V~50/60Hz 0.8A MAX
	Output:	9VDC 3A
The Highest Operating Frequency:		2462MHz
External Dimension:		Length(163mm)*Width(115mm)*High(105mm)
Serial Number:		180327051
EUT Received Date:		2018.04.03

Note: The series product, model ACE G1A, ACE G1B, ACE G1C, ACE G1D, ACE G1E, ACE G1F, ACE G1H, ACE G1I, ACE G1J is electrically identical with model ACE G1Y, we selected ACE G1Y 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.

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 tested in printing mode.

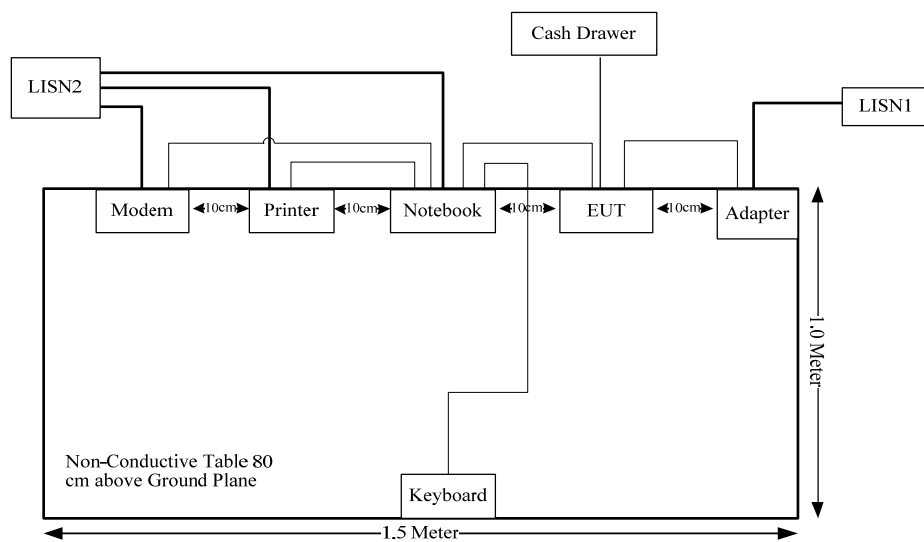
Equipment Modifications

No modification was made to the EUT.

EUT Exercise Software

No software was used to testing.

Block Diagram of Test Setup



Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
MAKEN	Cash Drawer	MT-350T	/
DELL	Notebook	PP11L	HLKYGB1
DELL	Keyboard	SK-8115	CN-0J4628-71616-52H-0RT6
HP	Printer	C3990A	JPZW030603
SAST	Modem	AEM-2100	90200213

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
RJ11 Cable	No	No	2.00	Cash Drawer	EUT
Parallel Cable	Yes	No	1.2	Parallel port of notebook	Printer
Serial Cable	Yes	No	1.2	Serial port of notebook	Modem

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
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
R&S	EMI Test Receiver	ESCI	100224	2017-12-11	2018-12-11
HP	Amplifier	8447D	2727A05902	2017-09-05	2018-09-05
N/A	Coaxial Cable	C-NJNJ-50	C-0400-01	2017-09-05	2018-09-05
N/A	Coaxial Cable	C-NJNJ-50	C-0075-01	2017-09-05	2018-09-05
N/A	Coaxial Cable	C-NJNJ-50	C-1000-01	2017-09-05	2018-09-05
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
ETS-Lindgren	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-04
Agilent	Spectrum Analyzer	E4440A	SG43360054	2018-01-04	2019-01-04
N/A	Coaxial Cable	C-SJSJ-50	C-0800-01	2017-09-05	2018-09-05
MITEQ	Amplifier	AFS42-00101800-25-S-42	2001271	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

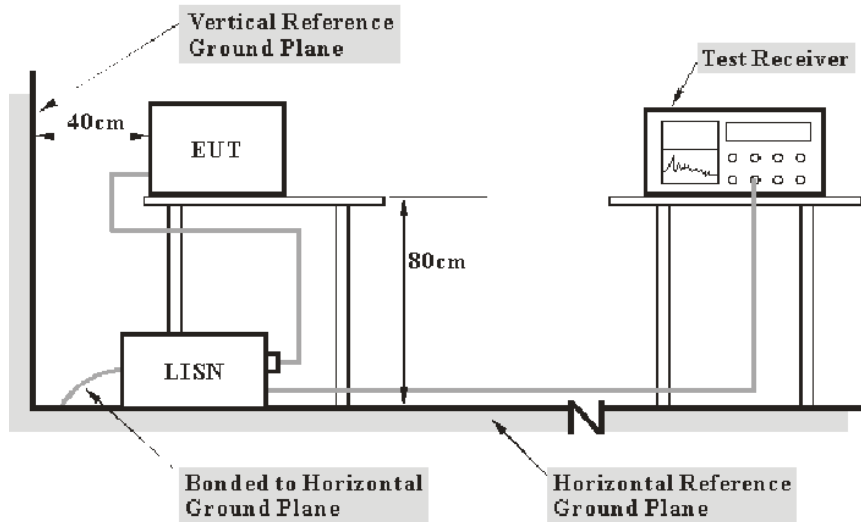
Temperature:	24.3 °C
Relative Humidity:	41%
ATM Pressure:	100.8~101.4kPa
Tester:	Steven Zuo, Vern Shen
Test Date:	2018.04.20-2018.04.22

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

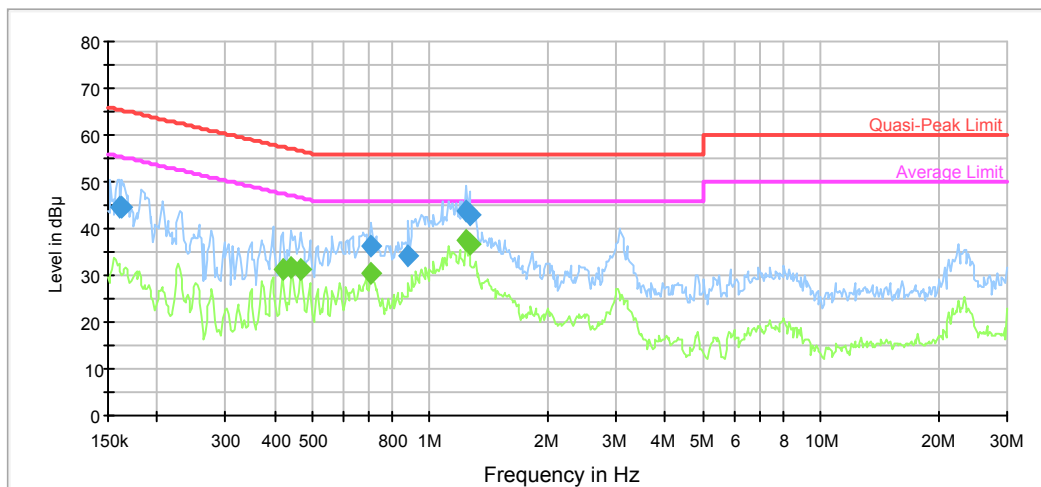
The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

Margin = Limit – Result

Test Data

Please refer to following table and plots:

Model Number: ACE G1Y
 Port: L
 Test Mode: printing
 Power Source: AC 120V/60Hz



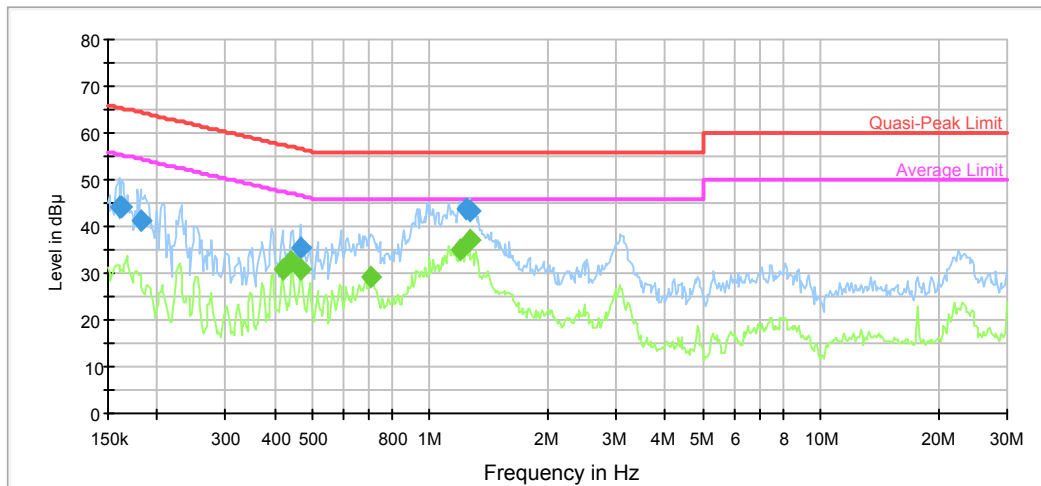
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.159873	44.4	9.000	L1	11.1	21.1	65.5
0.162441	44.4	9.000	L1	11.0	20.9	65.3
0.709407	36.3	9.000	L1	9.8	19.7	56.0
0.879690	34.1	9.000	L1	9.8	21.9	56.0
1.239175	43.8	9.000	L1	9.8	12.2	56.0
1.259081	43.1	9.000	L1	9.8	12.9	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.419276	31.1	9.000	L1	10.0	16.4	47.5
0.443327	31.5	9.000	L1	9.9	15.5	47.0
0.468757	31.3	9.000	L1	9.9	15.3	46.5
0.709407	30.5	9.000	L1	9.8	15.5	46.0
1.239175	37.4	9.000	L1	9.8	8.6	46.0
1.259081	36.7	9.000	L1	9.8	9.3	46.0

Model Number: ACE G1Y
 Port: N
 Test Mode: printing
 Power Source: AC 120V/60Hz



Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.159873	44.3	9.000	N	11.0	21.2	65.5
0.162441	44.2	9.000	N	11.0	21.1	65.3
0.181612	41.1	9.000	N	10.8	23.3	64.4
0.465037	35.3	9.000	N	9.9	21.3	56.6
1.239175	43.6	9.000	N	9.8	12.4	56.0
1.259081	43.5	9.000	N	9.8	12.5	56.0

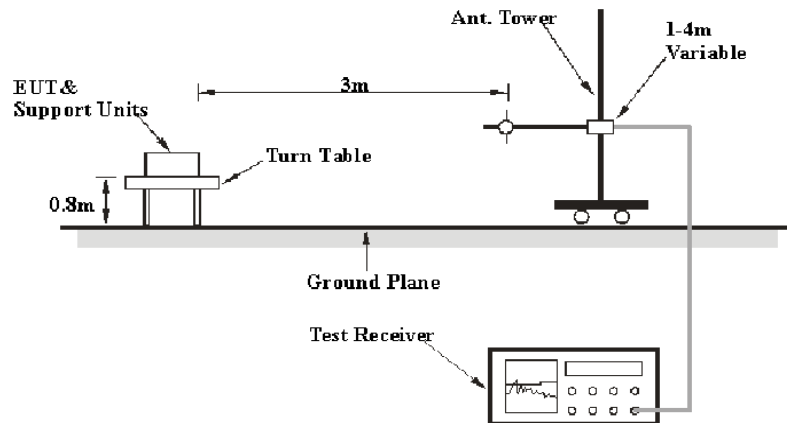
Final Result 2

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.419276	30.8	9.000	N	10.0	16.7	47.5
0.443327	32.6	9.000	N	9.9	14.4	47.0
0.468757	30.9	9.000	N	9.9	15.6	46.5
0.709407	29.3	9.000	N	9.8	16.7	46.0
1.190776	35.0	9.000	N	9.8	11.0	46.0
1.259081	37.1	9.000	N	9.8	8.9	46.0

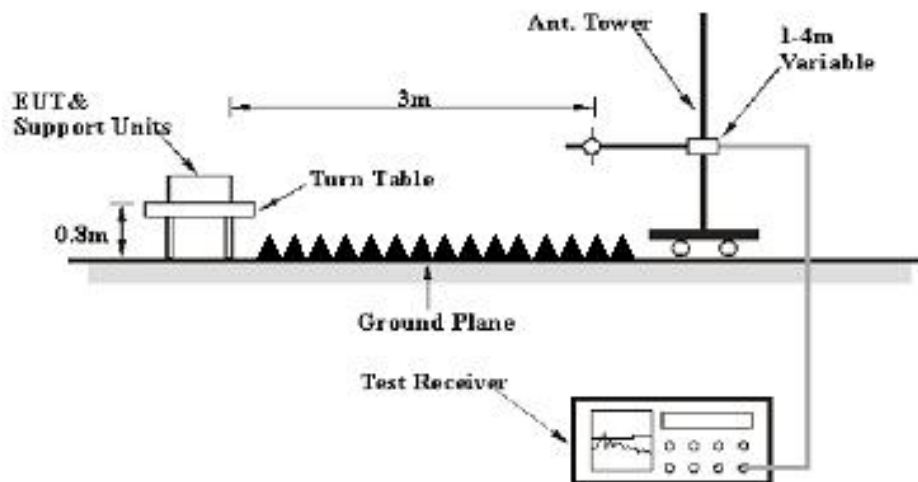
2 - RADIATED EMISSIONS

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed at the 3 meters distance, above 1GHz were performed at the 3 meters, 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 13 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
Above 1 GHz	1 MHz	3 MHz	/	Peak
	1 MHz	10Hz	/	AVG

Test Procedure

During the radiated emissions, the adapter of laptop 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, peak and average detection mode above 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:

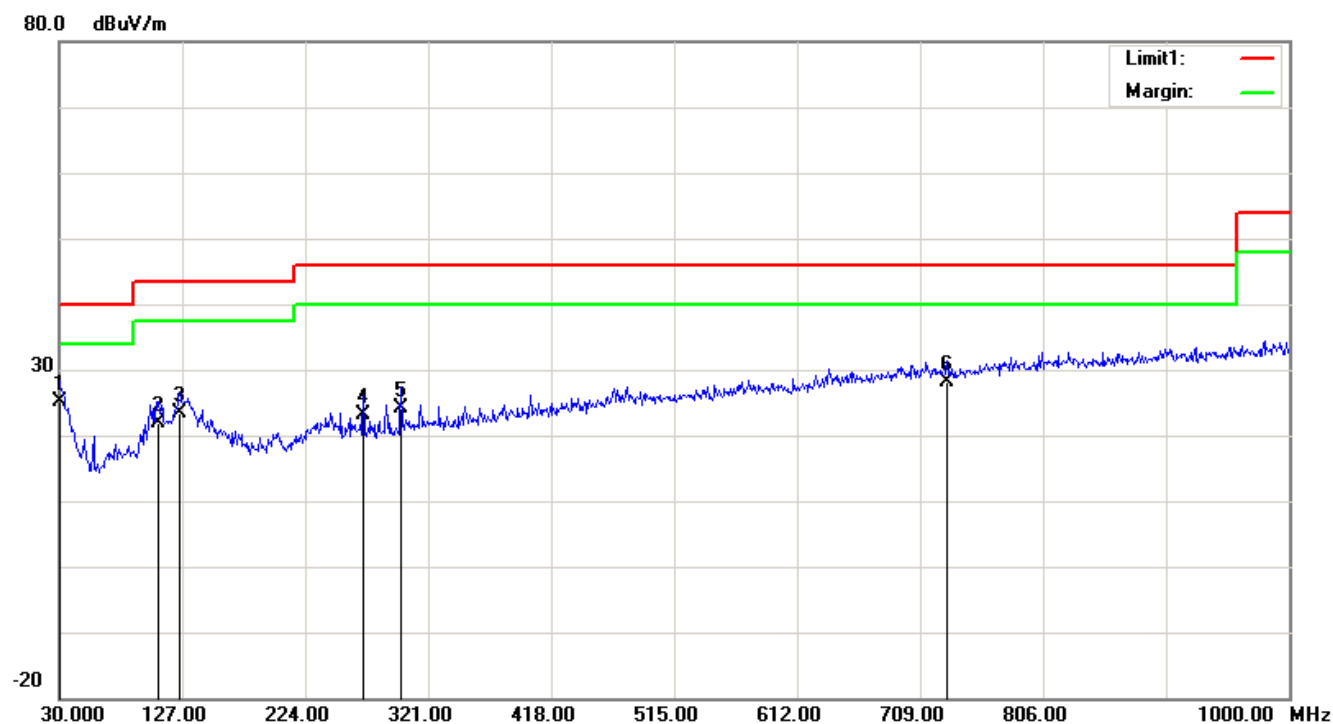
$$\text{Margin} = \text{Limit} - \text{Result}$$

Test Data

Please refer to following table and plots:

Condition: FCC Class B 3M Radiation
EUT: Thermal Receipt Printer
Model: ACE G1Y
Test Mode: printing

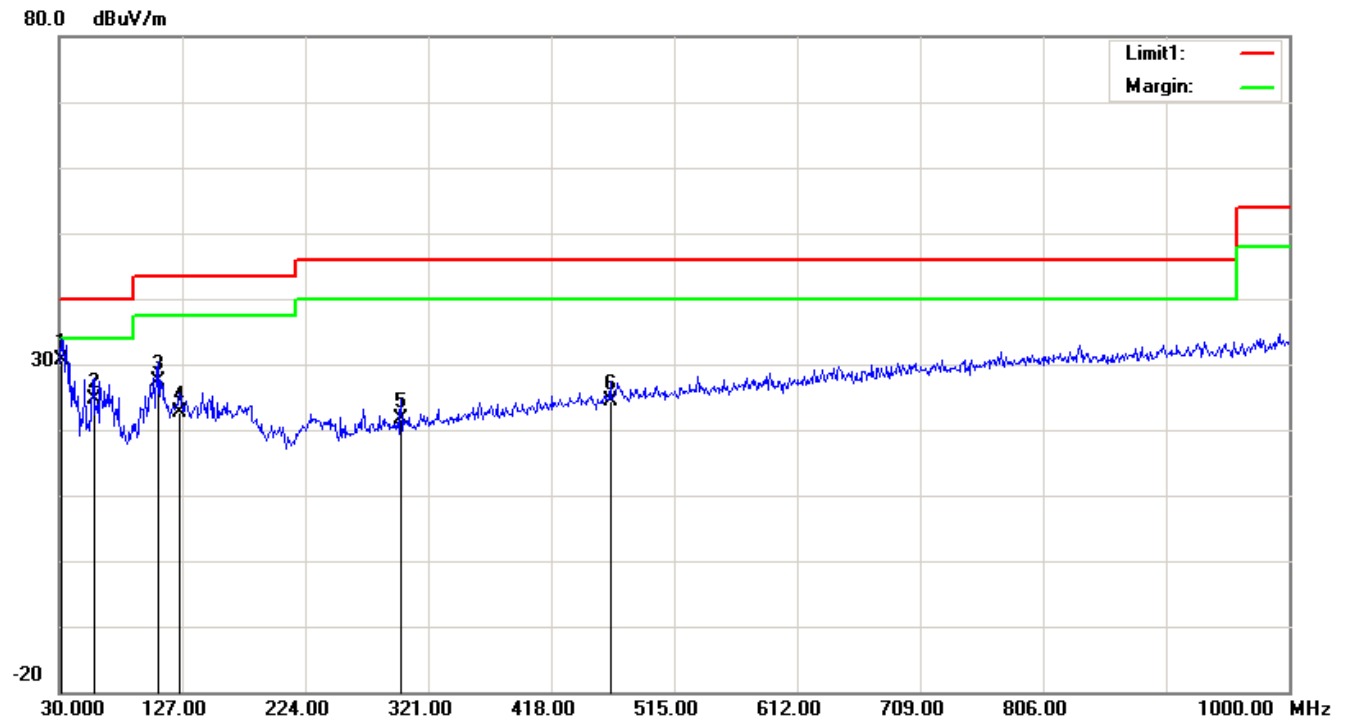
Polarization: Horizontal
Power: AC 120V/60Hz
Distance: 3m



No.	Frequency (MHz)	Reading (dB μ V)	Detector	Corrected dB/m	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1	30.0000	23.66	QP	1.54	25.20	40.00	14.80
2	108.5700	28.77	QP	-6.77	22.00	43.50	21.50
3	125.0600	28.27	QP	-4.77	23.50	43.50	20.00
4	269.5900	27.44	QP	-4.34	23.10	46.00	22.90
5	299.6600	28.24	QP	-4.04	24.20	46.00	21.80
6	730.3400	24.85	QP	3.35	28.20	46.00	17.80

Condition: FCC Class B 3M Radiation
EUT: Thermal Receipt Printer
Model: ACE G1Y
Test Mode: printing

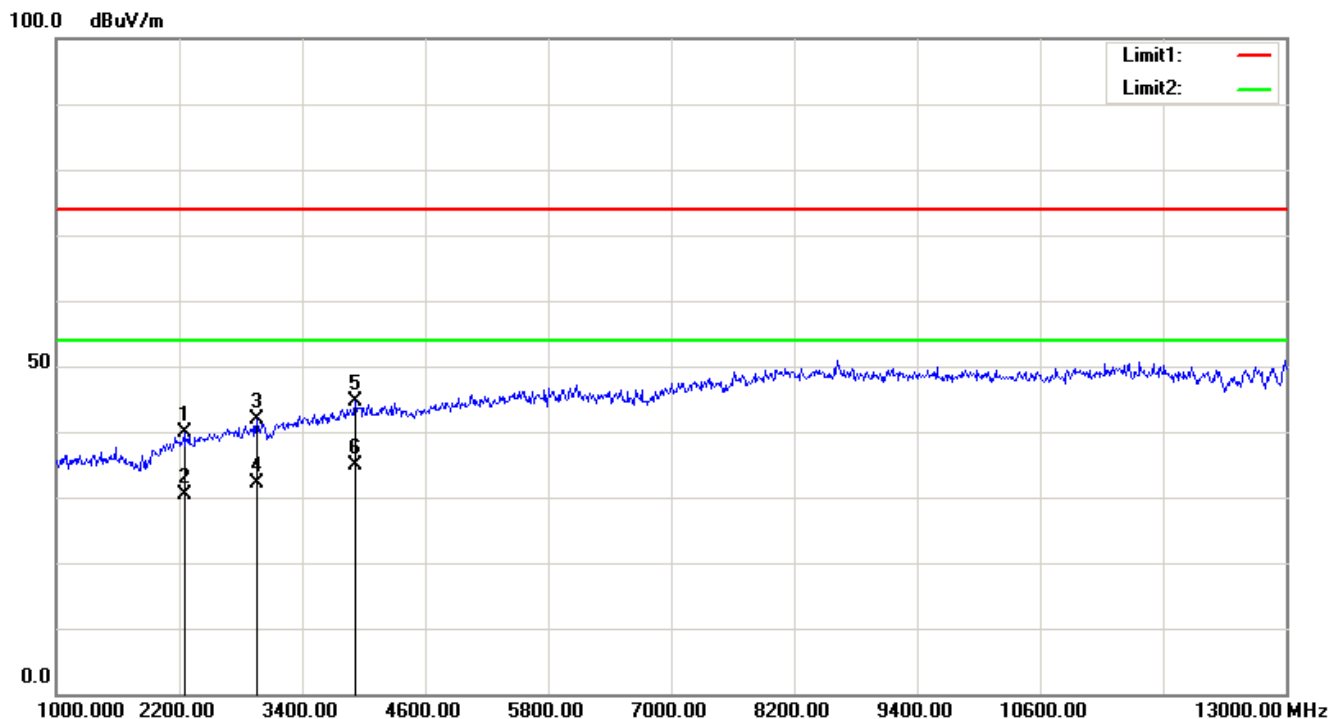
Polarization: Vertical
Power: AC 120V/60Hz
Distance: 3m



No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1	31.9400	30.60	QP	0.10	30.70	40.00	9.30
2	57.1600	37.05	QP	-12.35	24.70	40.00	15.30
3	108.5700	34.17	QP	-6.77	27.40	43.50	16.10
4	125.0600	27.47	QP	-4.77	22.70	43.50	20.80
5	299.6600	25.74	QP	-4.04	21.70	46.00	24.30
6	464.5600	25.06	QP	-0.66	24.40	46.00	21.60

Condition: FCC Part 15 Class B
EUT: Thermal Receipt Printer
Model: ACE G1Y
Test Mode: printing

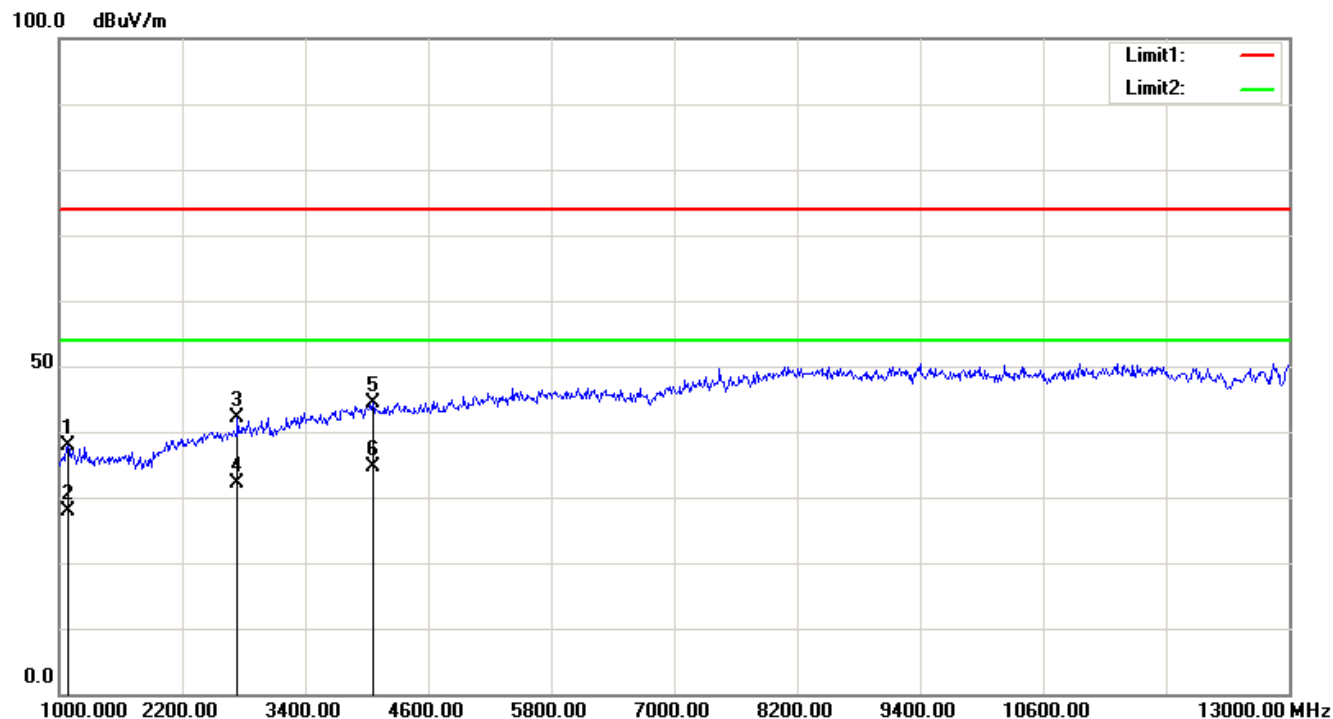
Polarization: Horizontal
Power: AC 120V/60Hz
Distance: 3m



No.	Frequency (MHz)	Reading (dB μ V)	Measurement	Corrected dB/m	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1	2254.000	46.54	peak	-6.75	39.79	74.00	34.21
2	2254.000	37.25	AVG	-6.75	30.50	54.00	23.50
3	2962.000	46.92	peak	-4.98	41.94	74.00	32.06
4	2962.000	37.15	AVG	-4.98	32.17	54.00	21.83
5	3916.000	46.86	peak	-2.14	44.72	74.00	29.28
6	3916.000	36.95	AVG	-2.14	34.81	54.00	19.19

Condition: FCC Part 15 Class B
EUT: Thermal Receipt Printer
Model: ACE G1Y
Test Mode: printing

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



No.	Frequency (MHz)	Reading (dB μ V)	Measurement	Corrected dB/m	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1	1084.000	48.27	peak	-10.36	37.91	74.00	36.09
2	1084.000	38.15	AVG	-10.36	27.79	54.00	26.21
3	2746.000	47.59	peak	-5.41	42.18	74.00	31.82
4	2746.000	37.64	AVG	-5.41	32.23	54.00	21.77
5	4060.000	46.39	peak	-1.94	44.45	74.00	29.55
6	4060.000	36.52	AVG	-1.94	34.58	54.00	19.42

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