

FCC PART 15B

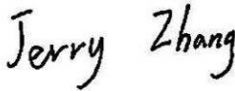
TEST REPORT

For

Kyocera Corporation

2-1-1 Kagahara, Tsuzuki-ku, Yokohama-shi, Kanagawa, Japan, 224-8502

FCC ID: JOYCB64

Report Type: Original Report	Product Type: GSM/WCDMA/LTE Mobile Telephone
Report Number:	RDG190709011-00E
Report Date:	2019-07-29
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

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Dongguan).

TABLE OF CONTENTS

GENERAL INFORMATION	3
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	3
OBJECTIVE	3
TEST METHODOLOGY	3
MEASUREMENT UNCERTAINTY	3
TEST FACILITY	4
SUMMARY OF TEST RESULTS	5
SYSTEM TEST CONFIGURATION	6
DESCRIPTION OF TEST CONFIGURATION.....	6
EQUIPMENT MODIFICATIONS.....	6
EUT EXERCISE SOFTWARE	6
LOCAL SUPPORT EQUIPMENT LIST AND DETAILS	6
SUPPORT CABLE LIST AND DETAILS.....	6
BLOCK DIAGRAM OF TEST SETUP	7
TEST EQUIPMENT LIST	8
ENVIRONMENTAL CONDITIONS	9
RADIATED EMISSIONS	10
EUT SETUP	10
EMI TEST RECEIVER SETUP	11
TEST PROCEDURE.....	11
CORRECTED AMPLITUDE & MARGIN CALCULATION.....	11
TEST DATA.....	12

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:		GSM/WCDMA/LTE Mobile Telephone
EUT Model:		CB64
Rated Input Voltage:		DC 3.85V from battery or DC 5V from adapter
Hardware Version:		CB64
Software Version:		msm8937_64-userdebug 9
Adapter Information	Model:	KYCAV1
	Input:	AC 100-240V 50/60 0.3A
	Output:	DC 5.0V 1.2A
External Dimension:		156mm(L)*76mm(W)*9mm(H)
Serial Number:		190709011
IMEI Number:		356283100010182
EUT Received Date:		2019-07-11

Objective

This report is prepared on behalf of **Kyocera Corporation** in accordance with FCC Part 15B Part 2, sub-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, section 15.109 radiation spurious emissions.

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 °C
Humidity	±5%

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 lab has been recognized as the FCC accredited lab 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 lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier : CN0022.

FINAL

SUMMARY OF TEST RESULTS

Rule and Clause	Description of Test	Test Result
FCC §15.109	Radiated emissions	Compliance

FINAL

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in downloading mode.

Equipment Modifications

No modification was made to the EUT.

EUT Exercise Software

TFGen.exe was used in test.

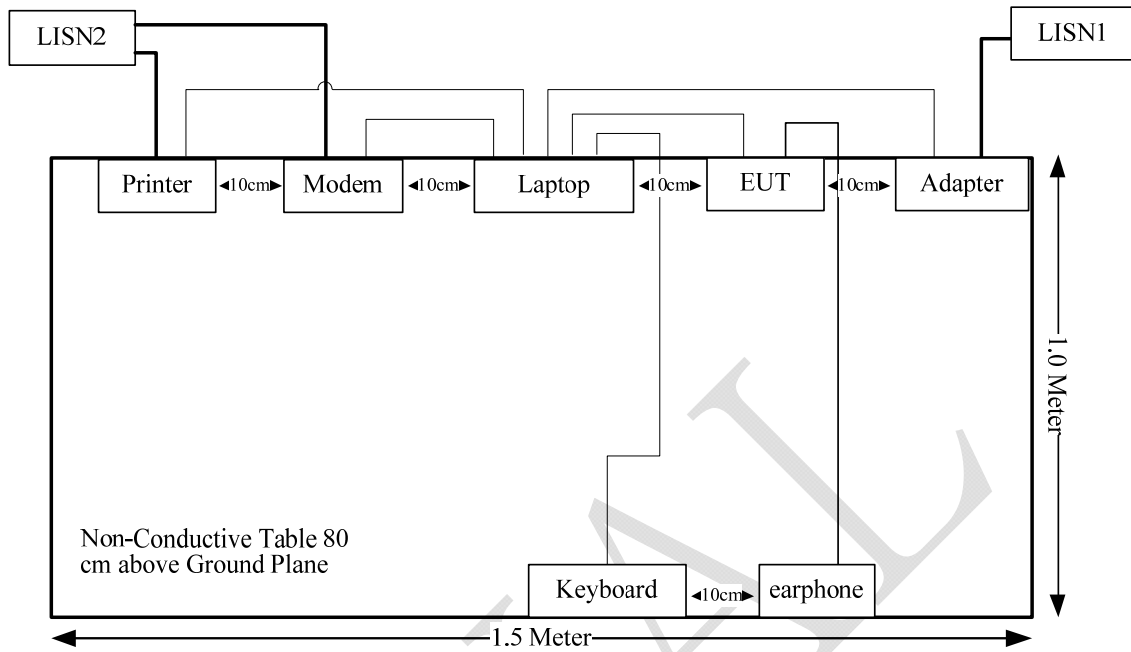
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Laptop	PP11L	1CVM0C1
SAST	modem	AEM-2100	90200213
DELL	Keyboard	SK-8115	CN-0J4628-71616-52H-0RT6
HP	Printer	C3941A	JPTV013237

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Earphone Cable	No	No	1.0	EUT	Earphone
USB Cable	Yes	No	0.8	USB Port of Laptop	EUT
Serial Cable	Yes	No	1.2	Serial Port of Laptop	Modem
Parallel Cable	Yes	No	1.2	Parallel Port of Laptop	Printer
Keyboard Cable	Yes	No	1.8	USB Port of Laptop	Keyboard

Block Diagram of Test Setup



Test Equipment List

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated emissions below 1GHz					
R&S	EMI Test Receiver	ESR3	102453	2019-06-26	2020-06-26
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2019-05-06	2020-05-06
HP	Amplifier	8447D	2727A05902	2018-09-05	2019-09-05
Radiated emissions above 1GHz					
Agilent	Spectrum Analyzer	E4440A	SG43360054	2019-01-04	2020-01-04
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
MITEQ	Amplifier	AFS42-00101800-2 5-S-42	2001271	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-2.4J2.4J-50	C-0700-02	2019-06-27	2020-06-27
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-01 1304	2016-11-18	2019-11-18
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2019-06-27	2020-06-27
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
R&S	Spectrum Analyzer	FSP 38	100478	2019-05-09	2020-05-09
Ducommun Technologies	Horn Antenna	ARH-2823-02	1007726-01 1302	2016-11-18	2019-11-18

* 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

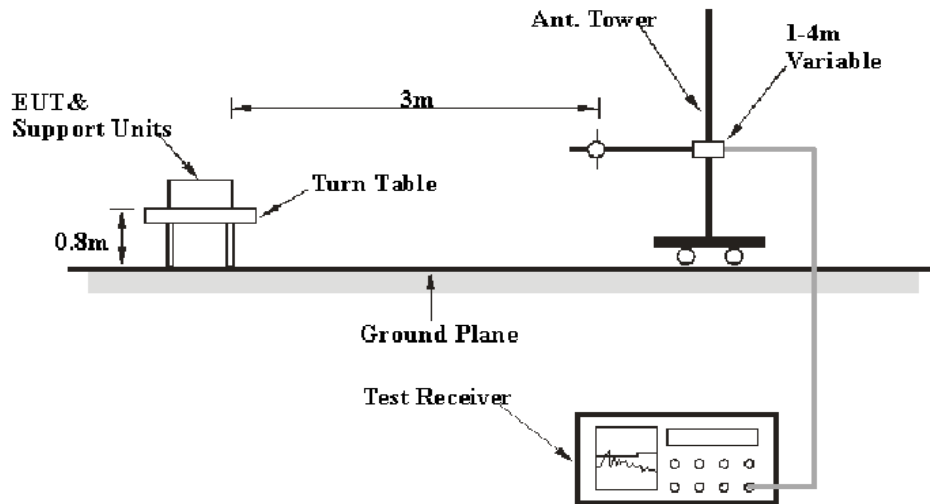
Test Items:	Radiated emissions below 1GHz	Radiated emissions above 1GHz
Temperature:	27.2°C	27.6°C
Relative Humidity:	50%	52%
ATM Pressure:	100.1kPa	100.2kPa
Test by:	Tyler Pan	Lucy Lu
Test Date:	2019-07-24	2019-07-25

FINAL

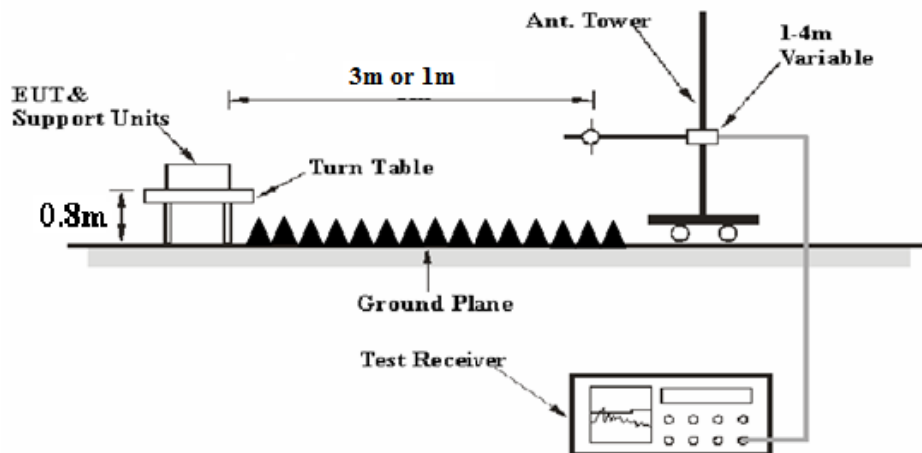
RADIATED EMISSIONS

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission below 1GHz tests were performed in the 3 meters chamber test site A, above 1GHz tests were performed in the 3 meters chamber test site B, 1GHz-26.5GHz were performed at the 3 m distance and 26.5-30 GHz was performed at 1 m distance, using the setup accordance with the ANSI C63.4-2014. The specification used was with the FCC Part 15 B Class B limits.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 30 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	Reduced video bandwidth	/	AVG

If the maximized peak measured value complies with under the QP/Average limit more than 6dB, then it is unnecessary to perform an QP/Average measurement.

Test Procedure

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.

According to C63.4, the above 1G test result shall be extrapolated to the specified distance using an extrapolation factor of 20dB/decade from 3m to 1 m

Distance extrapolation factor = $20 \log (\text{specific distance [3m]}/\text{test distance [1m]})$ dB = 9.54 dB

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 + Distance extrapolation factor - 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:

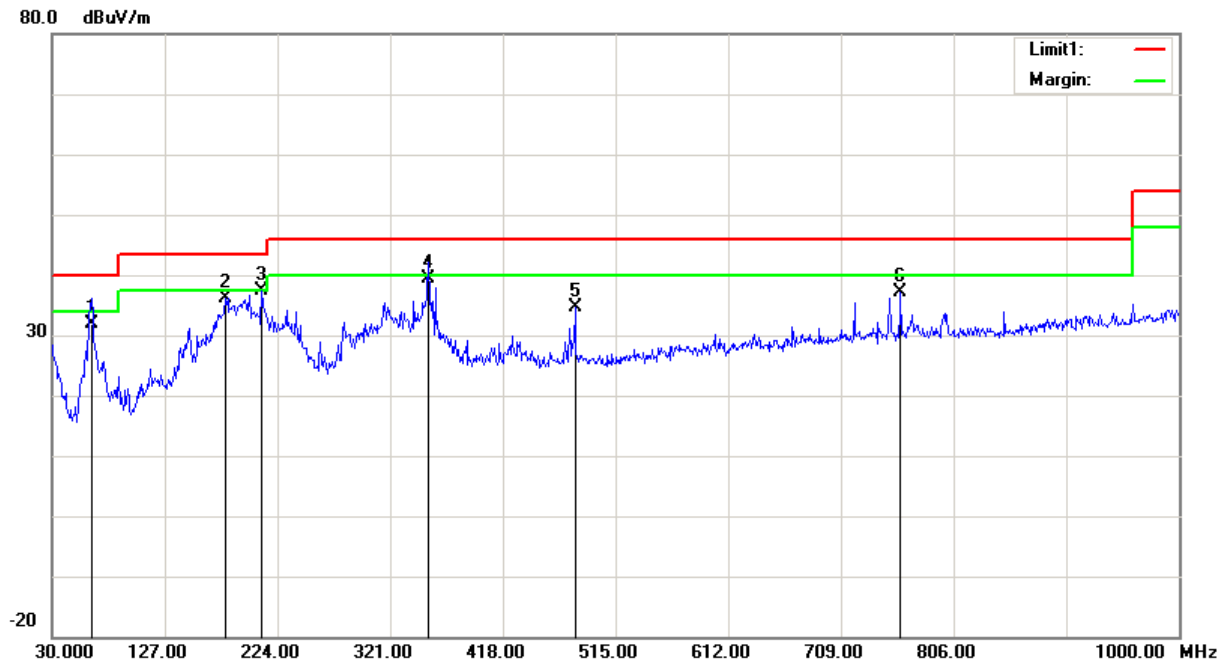
$$\text{Margin} = \text{Limit} - \text{Result}$$

Test Data

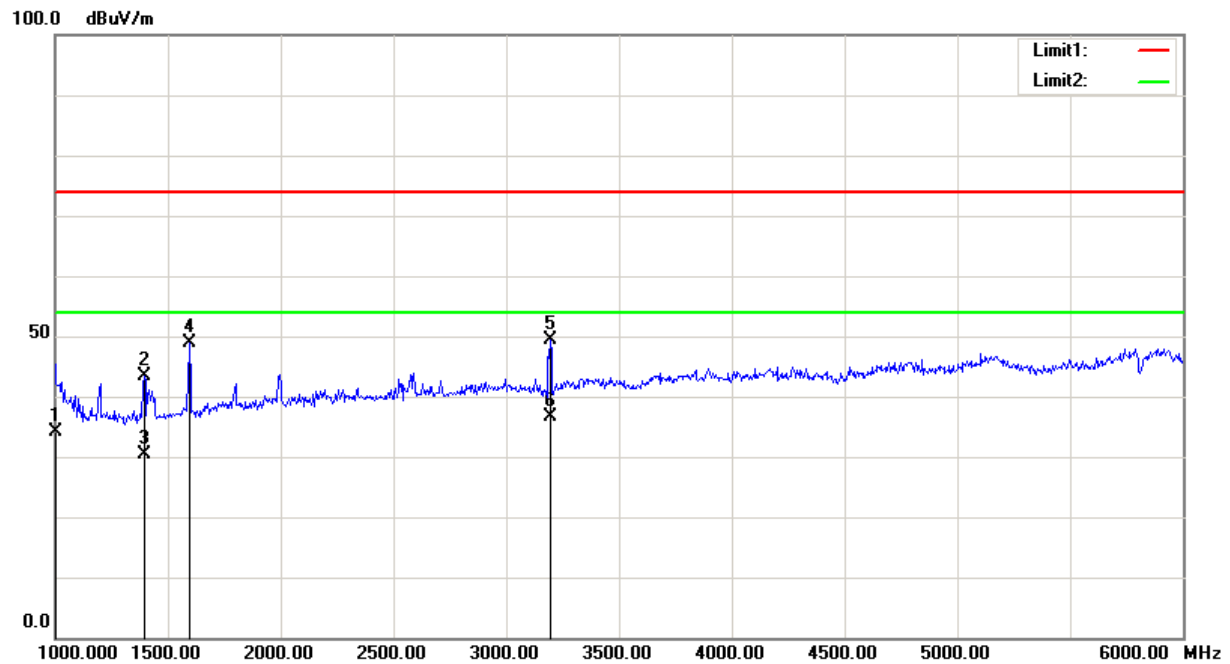
Please refer to following table and plots:

Condition: FCC Part 15 Class B
Test Mode: Downloading

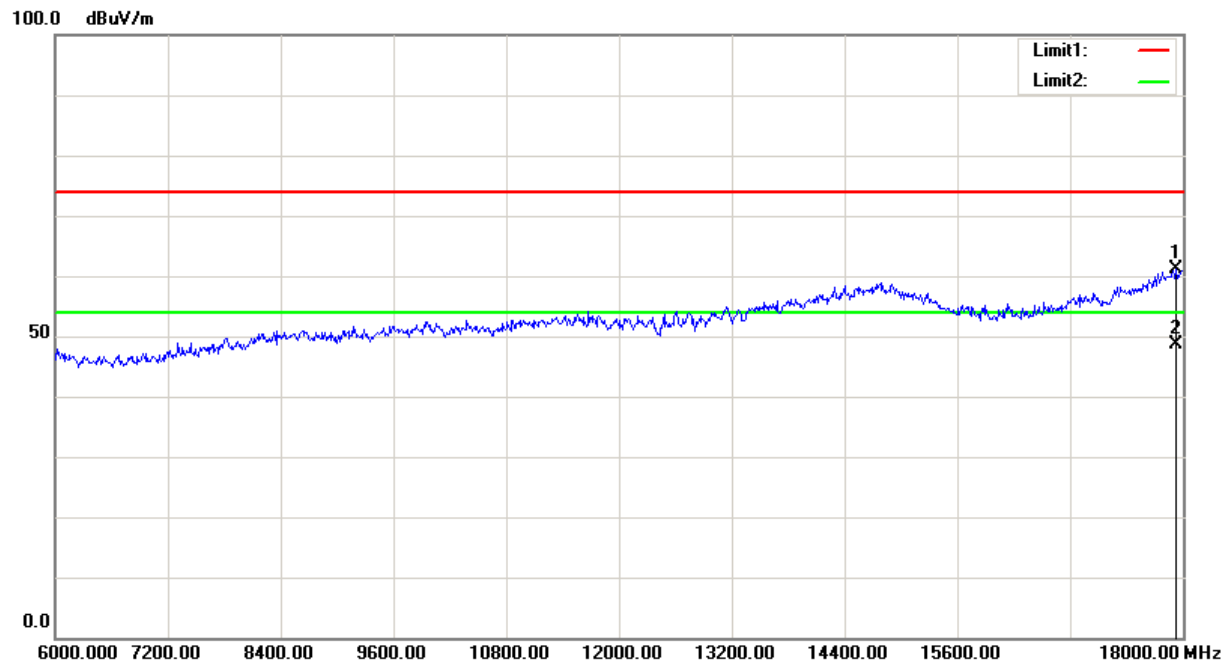
Polarization: Horizontal
Power: AC 120V/60Hz



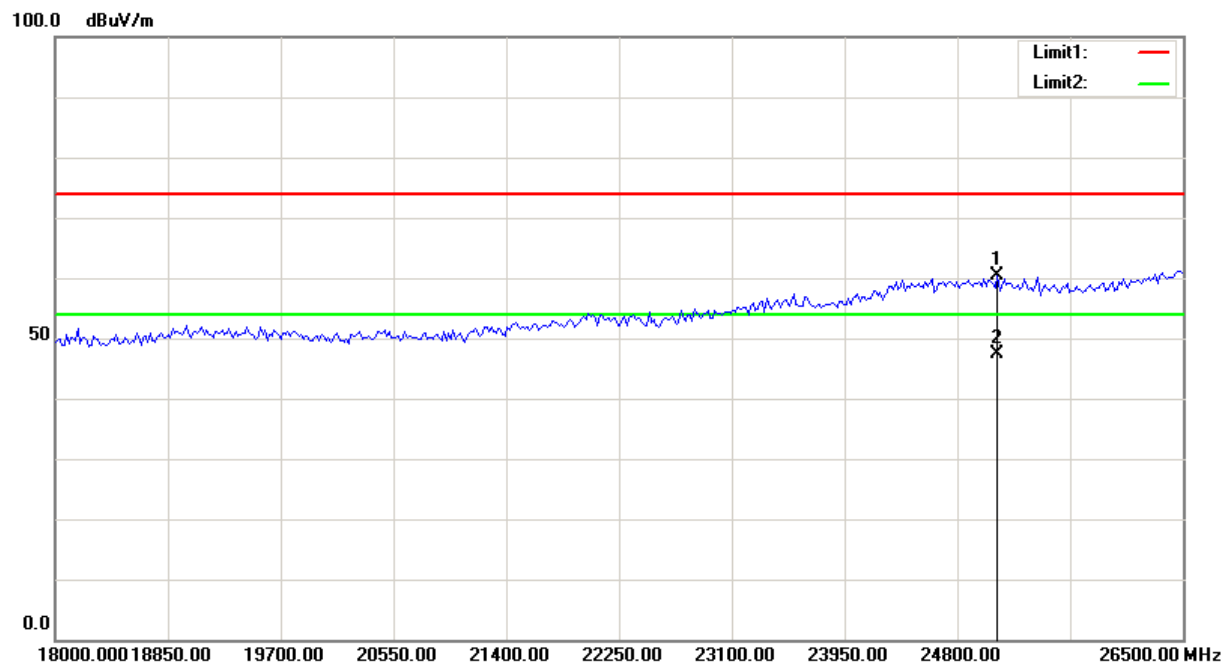
Frequency (MHz)	Reading (dB μ V)	Detector	Corrected dB/m	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
63.9500	43.64	QP	-11.70	31.94	40.00	8.06
179.3800	43.30	peak	-7.12	36.18	43.50	7.32
210.4200	44.66	peak	-7.37	37.29	43.50	6.21
353.9800	42.35	QP	-2.90	39.45	46.00	6.55
480.0800	34.94	peak	-0.27	34.67	46.00	11.33
760.4100	33.12	peak	3.98	37.10	46.00	8.90



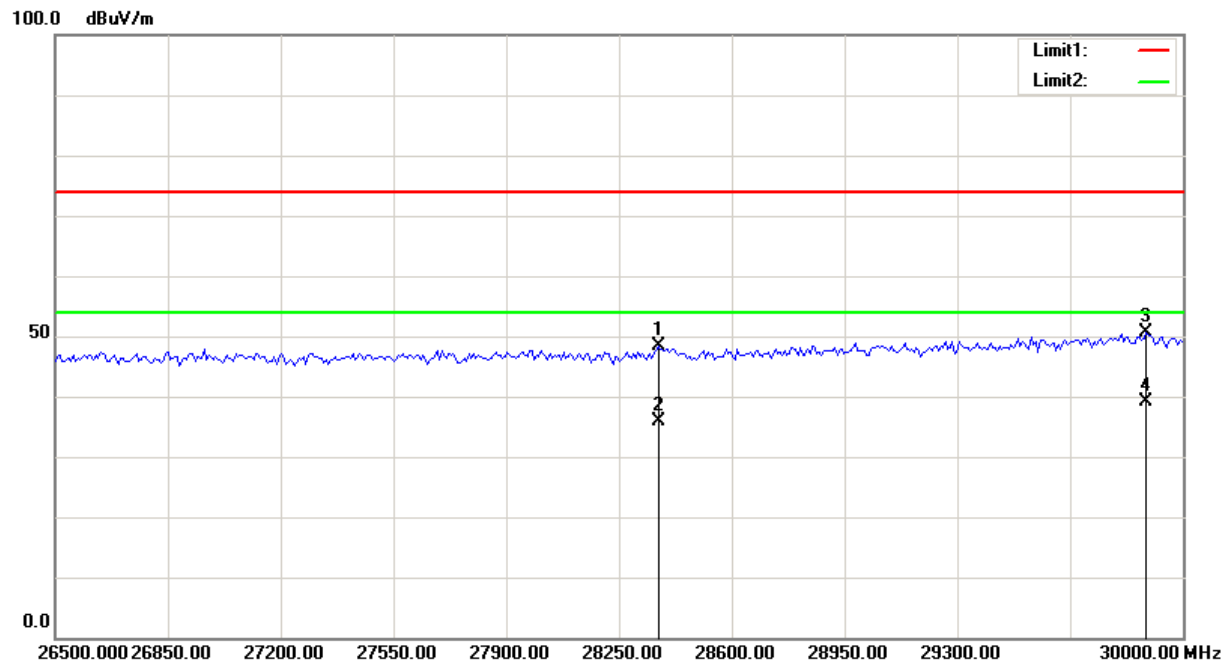
Frequency (MHz)	Reading (dB μ V)	Detector	Corrected dB/m	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1000.0000	44.88	AVG	-10.77	34.11	54.00	19.89
1397.500	52.91	peak	-9.54	43.37	74.00	30.63
1397.500	40.00	AVG	-9.54	30.46	54.00	23.54
1595.000	57.69	peak	-8.74	48.95	74.00	25.05
3195.000	53.57	peak	-4.22	49.35	74.00	24.65
3195.000	40.90	AVG	-4.22	36.68	54.00	17.32



Frequency (MHz)	Reading (dB μ V)	Detector	Corrected dB/m	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
17934.000	44.53	peak	16.68	61.21	74.00	12.79
17934.000	31.88	AVG	16.68	48.56	54.00	5.44



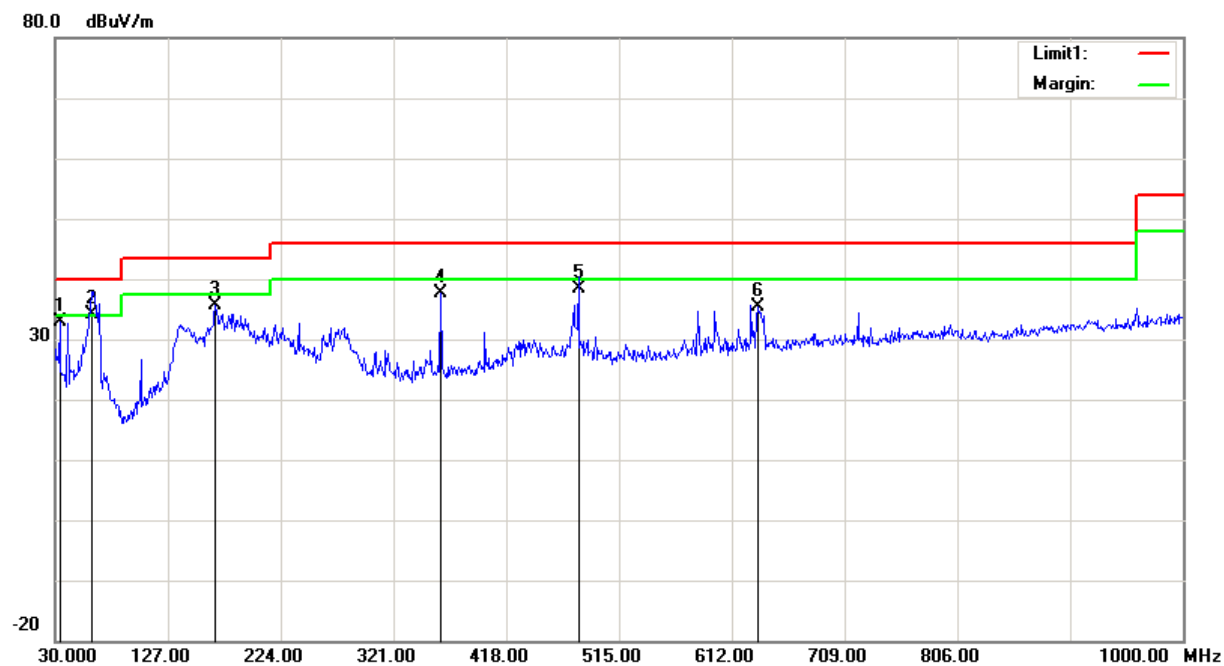
Frequency (MHz)	Reading (dB μ V)	Detector	Corrected dB/m	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
25103.206	39.90	peak	20.38	60.28	74.00	13.72
25103.206	27.10	AVG	20.38	47.48	54.00	6.52



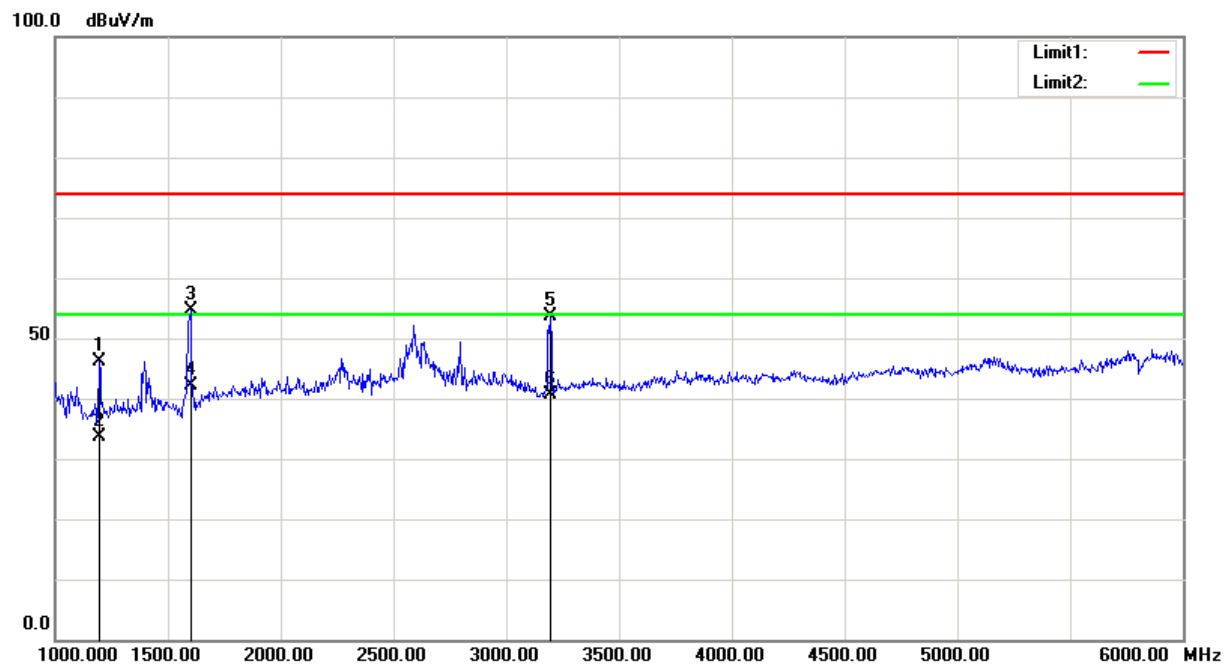
Frequency (MHz)	Reading (dB μ V)	Detector	Corrected dB/m	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
28372.746	46.22	peak	2.17	48.39	74.00	25.61
28372.746	33.69	AVG	2.17	35.86	54.00	18.14
29887.776	45.40	peak	5.28	50.68	74.00	23.32
29887.776	33.87	AVG	5.28	39.15	54.00	14.85

Condition: FCC Part 15 Class B
Test Mode: Downloading

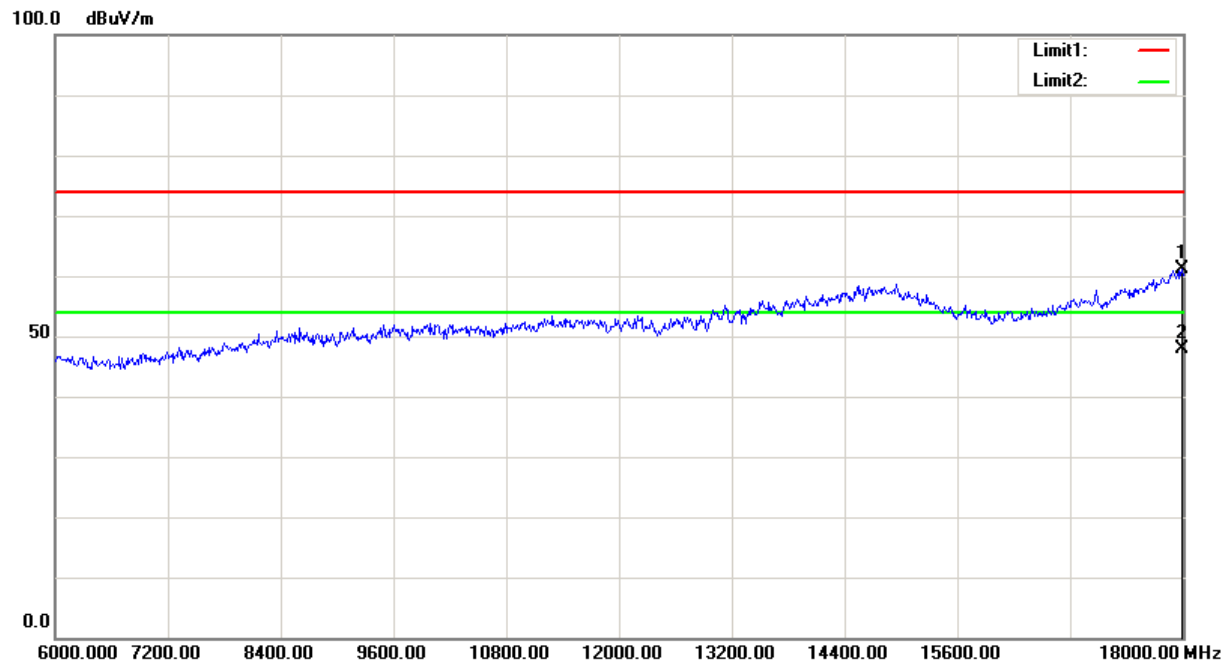
Polarization: Vertical
Power: AC 120V/60Hz



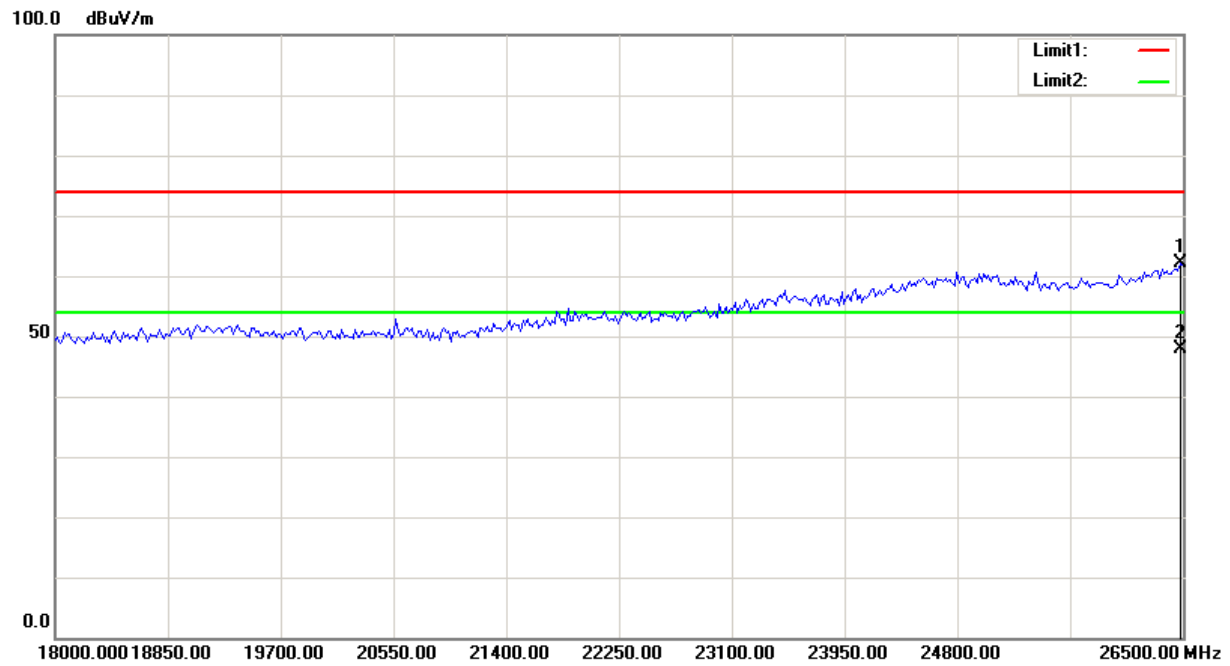
Frequency (MHz)	Reading (dB μ V)	Detector	Corrected dB/m	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
33.8800	34.12	peak	-1.29	32.83	40.00	7.17
62.0100	46.21	QP	-12.01	34.20	40.00	5.80
167.7400	42.13	peak	-6.38	35.75	43.50	7.75
361.7400	40.42	peak	-2.80	37.62	46.00	8.38
480.0800	38.67	QP	-0.27	38.40	46.00	7.60
634.3100	33.17	peak	2.14	35.31	46.00	10.69



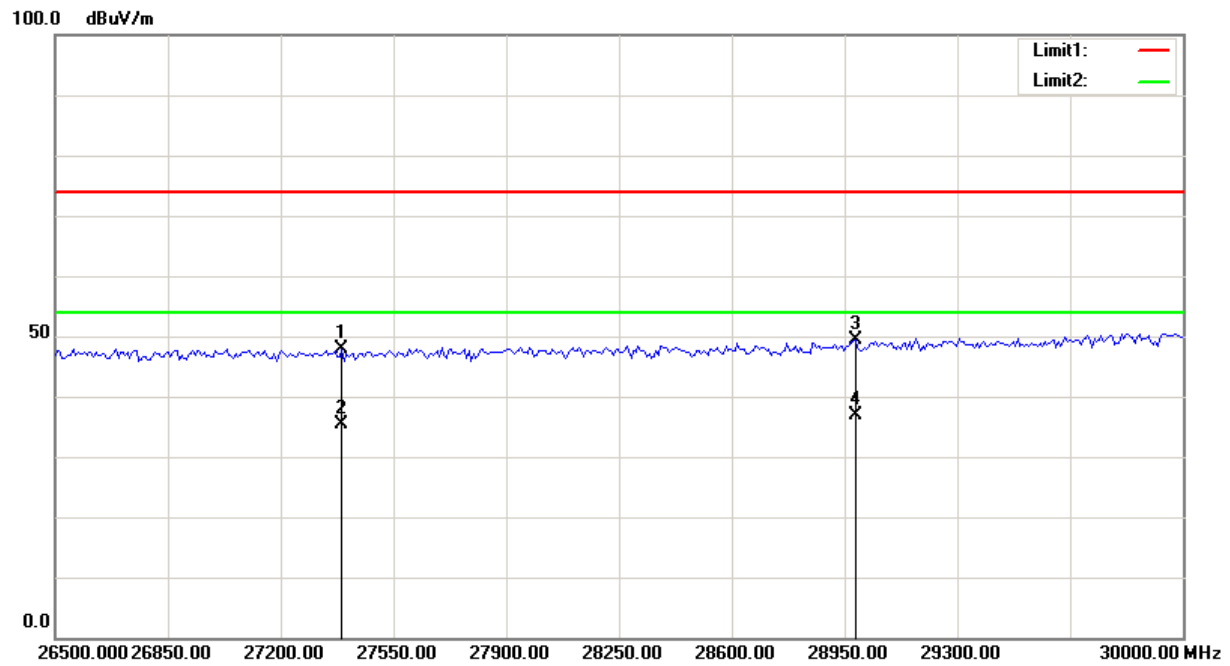
Frequency (MHz)	Reading (dB μ V)	Detector	Corrected dB/m	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1195.000	56.02	peak	-9.98	46.04	74.00	27.96
1195.000	43.55	AVG	-9.98	33.57	54.00	20.43
1600.000	63.31	peak	-8.72	54.59	74.00	19.41
1600.000	50.87	AVG	-8.72	42.15	54.00	11.85
3197.500	57.96	peak	-4.22	53.74	74.00	20.26
3197.500	44.87	AVG	-4.22	40.65	54.00	13.35



Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
17994.000	43.93	peak	17.10	61.03	74.00	12.97
17994.000	30.82	AVG	17.10	47.92	54.00	6.08



Frequency (MHz)	Reading (dB μ V)	Detector	Corrected dB/m	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
26482.966	40.36	peak	21.76	62.12	74.00	11.88
26482.966	26.10	AVG	21.76	47.86	54.00	6.14



Frequency (MHz)	Reading (dB μ V)	Detector	Corrected dB/m	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
27390.782	45.55	peak	2.22	47.77	74.00	26.23
27390.782	33.10	AVG	2.22	35.32	54.00	18.68
28982.966	46.42	peak	2.91	49.33	74.00	24.67
28982.966	33.87	AVG	2.91	36.78	54.00	17.22

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