TEST REPORT

No. 2013TAR727

for

TCT Mobile Limited

HSDPA/HSUPA/UMTS Tri bands / GSM quad bands/LTE Bi bands

mobile phone

Model Name: A851L

Marketing Name: A851L

FCC ID: RAD361

with

Hardware Version: 05

Software Version: VAC6

Issued Date: Nov. 4th, 2013

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of TMC Beijing.

Test Laboratory:

FCC 2.948 Listed: No.733176

IC O.A.T.S listed: No.6629B-1

TMC Beijing, Telecommunication Metrology Center of Ministry of Industry and Information Technology

No. 52, Huayuan Bei Road, Haidian District, Beijing, P. R. China 100191

Tel: +86(0)10-62304633-2561, Fax: +86(0)10-62304633-2504 Email:welcome@emcite.com. www.emcite.com

CONTENTS

1. Test Laboratory

1.1. Testing Location

Location A

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT
Address: No 52, Huayuan Bei Road, Haidian District, Beijing, P.R. China
Postal Code: 100191

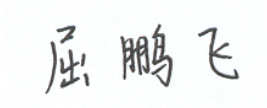
1.2. Testing Environment

Normal Temperature: 15-35℃
Relative Humidity: 20-75%

1.3. Project data

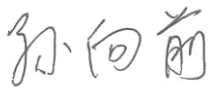
Testing Start Date: Oct. 28th, 2013
Testing End Date: Nov. 3rd, 2013

1.4. Signature



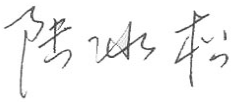
Qu Pengfei

(Prepared this test report)



Sun Xiangqian

(Reviewed this test report)



Lu Bingsong

Deputy Director of the laboratory

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	TCT Mobile Limited
Address /Post:	5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China.
City:	Shanghai
Postal Code:	201203
Country:	China
Contact Person:	Gong Zhizhou
Contact Email	zhizhou.gong@jrdcom.com
Telephone:	0086-21-61460890
Fax:	0086-21-61460602

2.2. Manufacturer Information

Company Name:	TCT Mobile Limited
Address /Post:	5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China.
City:	Shanghai
Postal Code:	201203
Country:	China
Telephone:	0086-21-61460890
Fax:	0086-21-61460602

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	HSDPA/HSUPA/UMTS Tri bands / GSM quad bands/LTE Bi bands mobile phone
Model Name	A851L
Marketing Name	A851L
FCC ID	RAD361
Extreme vol. Limits	3.5VDC to 4.2VDC (nominal: 3.9VDC)

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of Telecommunication Metrology Center of MIIT of People's Republic of China.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	013639000216226	05	VAC6
EUT2	013639000215798	05	VAC6

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	SN	Remarks
AE1	Battery	B2200000C3Y003IT	TCT-B-1637
AE2	Battery	B2200000C3Y00561	TCT-B-1621
AE3	Battery	B2200000C3Y0034H	TCT-B-1840
AE4	Battery	B2200000C3Y004M2	TCT-B-1838
AE5	Battery	B2200000C3Y0034U	TCT-B-1839
AE6	Travel charger	/	13E10CHR01
AE7	Travel charger	/	13E10CHR08
AE8	USB cable	/	13E10DC01
AE9	USB cable	/	13E10DC05

AE1, AE2, AE3, AE4, AE5

Model	TLi022A2
Manufacturer	SCUD
Capacitance	2200 mAh
Nominal voltage	3.8V

AE6, AE7

Model	CBA3000AG0C1
Manufacturer	Tenpao
Length of cable	/

AE8, AE9

Model	CDA3122005C1
Manufacturer	shenghua
Length of cable	100 cm

*AE ID: is used to identify the test sample in the lab internally.

3.4. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT1+ AE1+ AE6 + AE8	Charger
Set.2	EUT1+ AE1+ AE8	USB

4. Reference Documents

4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 15, Subpart B	Radio frequency devices - Unintentional Radiators	10-1-12 Edition
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low - Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2009

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber SAC-1 (23 meters×17meters×10meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ˚C**,** Max. = 35 ˚C
Relative humidity	Min. = 15 %**,** Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω
Normalised site attenuation (NSA)	**<** ±4 dB, 3 m distance
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 6GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

Shielded room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ˚C, Max. = 35 ˚C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz, >60dB; 1MHz－1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω

6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:		
Verdict Column	P	Pass
	NA	Not applicable
	F	Fail
Location Column	A/B/C/D	The test is performed in test location A, B, C or D which are described in section 1.1 of this report

Clause	List	Clause in FCC rules	Verdict	Location
1	Radiated Emission	15.109(a)	P	A
2	Conducted Emission	15.107(a)	P	A

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE
1	Test Receiver	ESCI 7	100948	R&S	2014-07-18
2	Test Receiver	FSV	101047	R&S	2014-06-30
3	Test Receiver	ESCI	100344	R&S	2014-03-28
4	Universal Radio Communication Tester	CMU200	109914	R&S	2014-04-21
5	Universal Radio Communication Tester	CMU200	116455	R&S	2014-05-19
6	EMI Antenna	VULB 9163	9163-483	Schwarzbeck	2014-02-16
7	EMI Antenna	3115	6914	ETS-Lindgren	2014-12-15
8	LISN	ESH2-Z5	829991/012	R&S	2014-04-14
9	PC	OPTIPLEX 380	2X1YV2X	DELL	N/A
10	Monitor	E178FPc	CN-OWR979-64180-7AJ-D2MS	DELL	N/A
11	Printer	P1606dn	Vnc3l52122	HP	N/A
12	Keyboard	L100	CN0RH659658907ATOI40	DELL	N/A
13	Mouse	M-UAE119	LZ935220ZRC	Lenovo	N/A

ANNEX A: MEASUREMENT RESULTS

A.1 Radiated Emission (§15.109(a))

A.1.1 Method of measurement

The field strength of radiated emissions from the unintentional radiator (USB mode of MS and charging mode of MS) at a distance of 3 meters is tested. Tested in accordance with the procedures of ANSI C63.4 - 2003, section 8.3.

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

A.1.2 EUT Operating Mode:

The MS is operating in the USB mode and charging mode. During the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of charging mode. The model of the PC is DELL OPTIPLEX 755, and the serial number of the PC is 3908243625. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

A.1.3 Measurement Limit

Frequency range (MHz)	Field strength limit (μV/m)		
	Quasi-peak	Average	Peak
30-88	100		
88-216	150		
216-960	200		
960-1000	500		
>1000		500	5000

A.1.4 Test Condition

Frequency range (MHz)	RBW/VBW	Sweep Time (s)	Detector
30-1000	120kHz (IF Bandwidth)	5	Peak/Quasi-peak
Above 1000	1MHz/1MHz	15	Peak, Average

A.1.5 Measurement Results

A "reference path loss" is established and the A_{Rpl} is the attenuation of “reference path loss”. It includes the antenna factor of receive antenna and the path loss.

The measurement results are obtained as described below:

Result = P_{Mea} + A_{Rpl} = P_{Mea} + G_A + G_{PL}

Where

G_A: Antenna factor of receive antenna

G_{PL}: Path Loss

P_{Mea}: Measurement result on receiver.

Measurement uncertainty (worst case): U = 4.3 dB, k=2.

Measurement result for Set.1:

Charging Mode/Average detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
9153.438	42.1	-26.1	38.4	29.800	HORIZONTAL
8774.875	41.5	-26.8	38.0	30.300	HORIZONTAL
9631.563	41.5	-25.4	38.0	28.900	HORIZONTAL
9017.031	41.4	-26.7	38.4	29.700	HORIZONTAL
9657.719	41.4	-25.4	38.0	28.800	HORIZONTAL
9928.281	41.4	-24.9	38.0	28.300	HORIZONTAL

Charging Mode/Peak detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
9138.250	47.3	-28.4	33.8	41.872	HORIZONTAL
9138.531	47.3	-28.4	33.8	41.872	HORIZONTAL
9967.375	46.4	-28.4	33.8	40.972	HORIZONTAL
9877.938	46.3	-28.4	33.8	40.872	HORIZONTAL
9967.094	45.9	-28.4	33.8	40.472	HORIZONTAL
9928.281	45.8	-28.4	33.8	40.372	HORIZONTAL

Measurement result for Set.2:

USB Mode/Average detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{mea}(dBμV)	Polarity
9980.313	42.6	-24.2	38.0	28.800	HORIZONTAL
1498.375	42.2	-40.3	24.1	58.400	HORIZONTAL
9717.906	42.1	-24.5	38.0	28.600	HORIZONTAL
9944.594	42.1	-24.9	38.0	29.000	HORIZONTAL
9604.000	42.0	-25.4	38.0	29.400	HORIZONTAL
9796.375	41.9	-24.8	38.0	28.700	HORIZONTAL

USB Mode/ Peak detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{mea}(dBμV)	Polarity
9874.000	47.5	-24.9	38.0	34.400	HORIZONTAL
9933.063	46.9	-24.9	38.0	33.800	HORIZONTAL
9736.188	46.3	-24.5	38.0	32.800	HORIZONTAL
9946.563	46.3	-24.9	38.0	33.200	HORIZONTAL
9818.875	46.1	-24.8	38.0	32.900	HORIZONTAL
9991.844	46.1	-24.2	38.0	32.300	HORIZONTAL

Charging Mode, Set.1

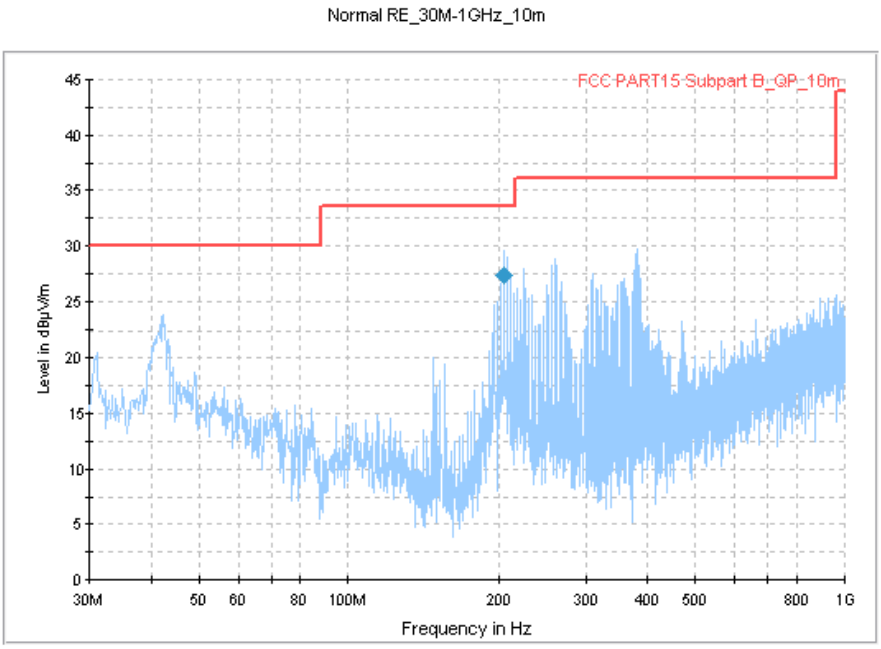


Figure A.1 Radiated Emission from 30MHz to 1GHz

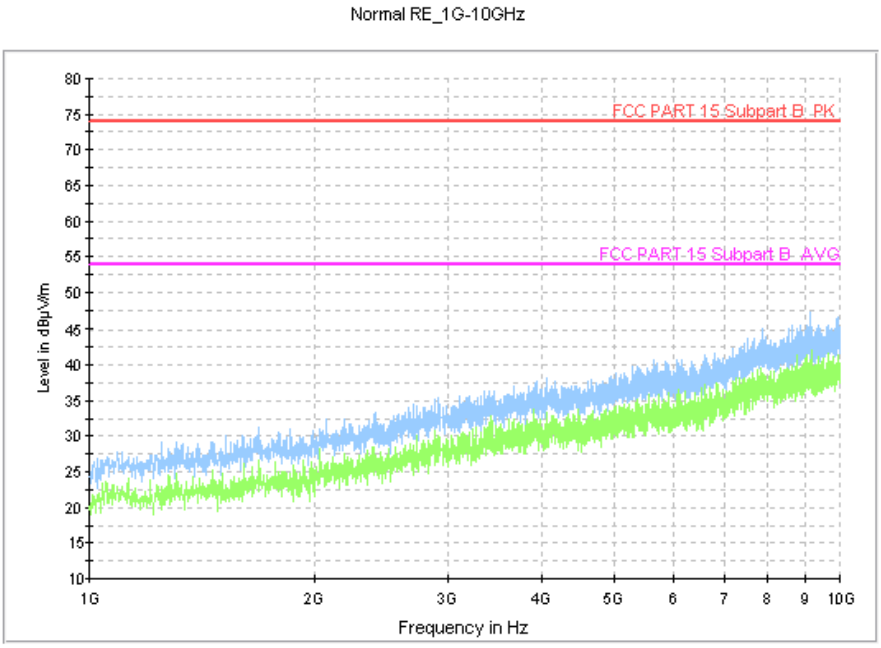


Figure A.2 Radiated Emission from 1GHz to 10GHz

USB Mode, Set.2

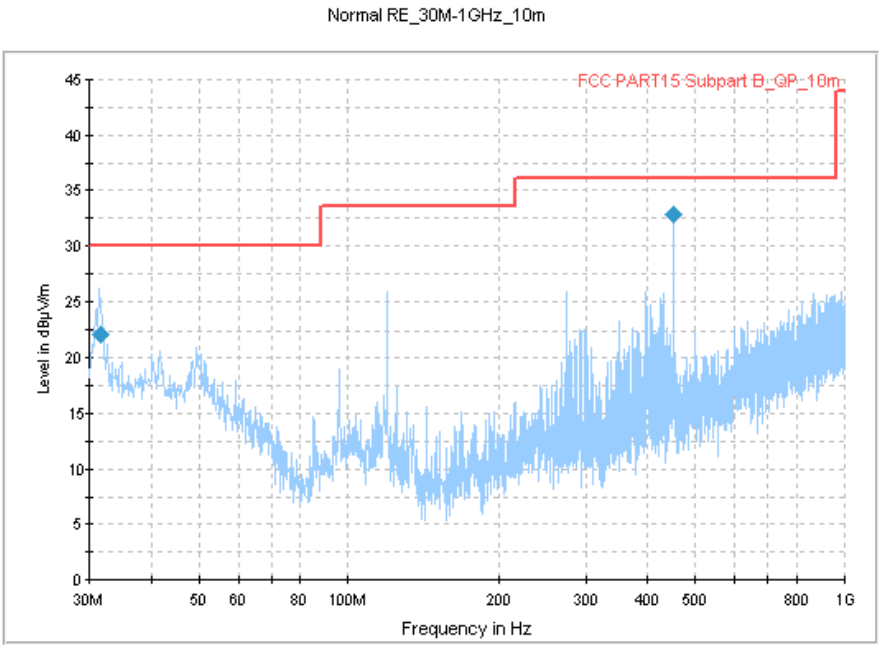


Figure A.3 Radiated Emission from 30MHz to 1GHz

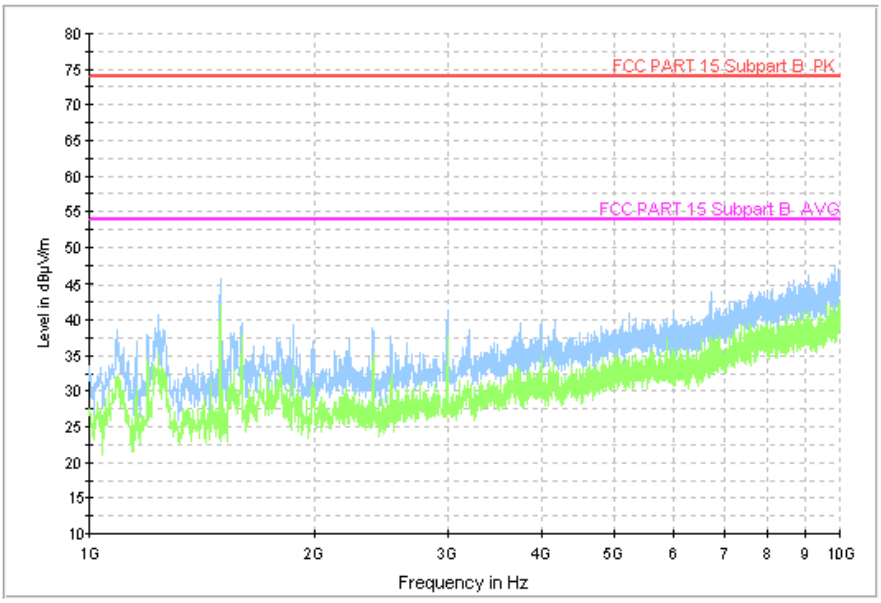


Figure A.4 Radiated Emission from 1GHz to 10GHz

A.2 Conducted Emission (§15.107(a))

A.2.1 Method of measurement

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits. Tested in accordance with the procedures of ANSI C63.4 - 2003, section 7.2.

A.2.2 EUT Operating Mode

The MS is operating in the USB mode and charging mode. During the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of charging mode. The model of the PC is DELL OPTIPLEX 755, and the serial number of the PC is 3908243625. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

A.2.3 Measurement Limit

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with the logarithm of the frequency		

A.2.4 Test Condition in charging mode

Voltage（V）	Frequency（Hz）
120	60

RBW/IF bandwidth	Sweep Time(s)
9kHz	1

A.2.5 Measurement Results

Measurement uncertainty: *U*= 2.9 dB, *k*=2.

Charging Mode, Set.1

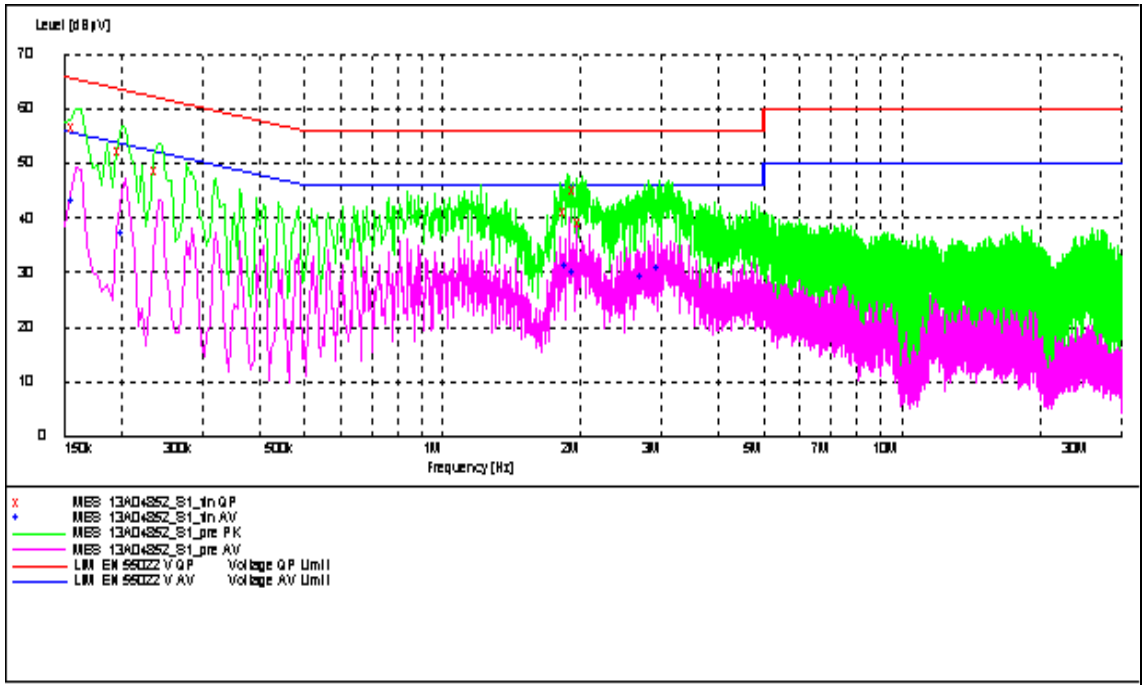


Figure A.5 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.159000	56.40	GND	L1	9.8	9.1	66
0.199500	52.20	GND	N	9.8	11.5	64
0.240000	48.50	GND	N	9.8	13.6	62
1.864500	41.20	GND	L1	9.7	14.8	56
1.959000	44.80	GND	L1	9.7	11.2	56
2.013500	39.10	GND	L1	9.7	16.9	56

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.159000	43.20	GND	L1	9.8	12.3	56
0.204000	37.20	GND	L1	9.8	16.2	53
1.882500	30.90	GND	L1	9.7	15.1	46
1.959000	30.00	GND	N	9.7	16.0	46
2.765000	28.90	GND	L1	9.7	17.1	46
2.999000	30.70	GND	L1	9.7	15.3	46

USB Mode, Set.2

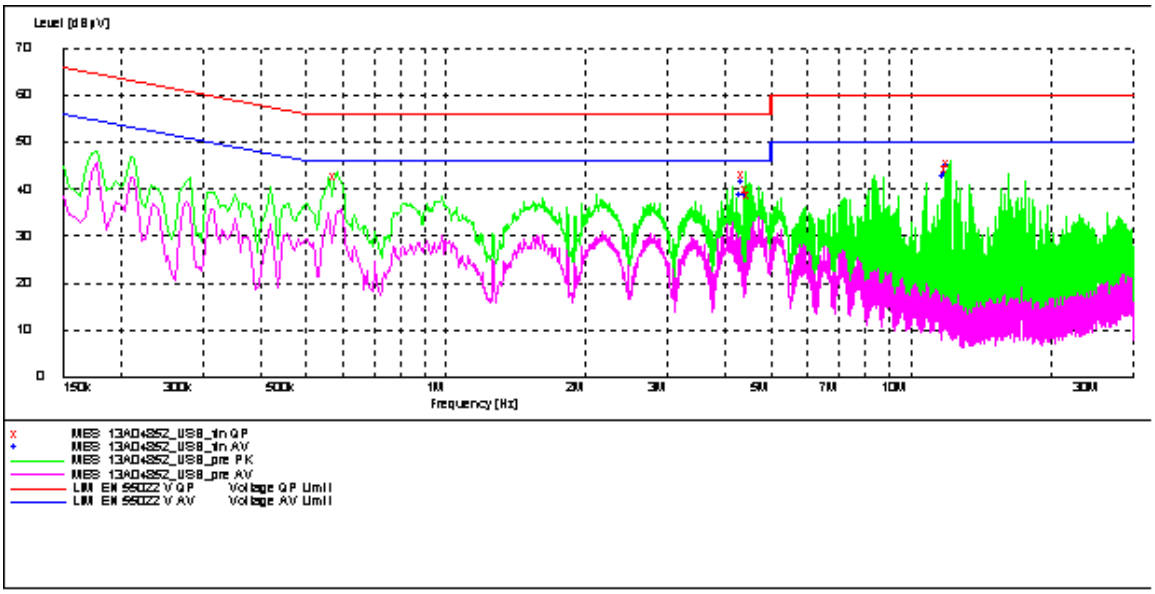


Figure A.6 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.582000	42.80	GND	L1	9.8	13.2	56
4.412000	42.90	GND	L1	9.8	13.1	56
4.475000	39.80	GND	N	9.8	16.2	56
4.533500	38.70	GND	L1	9.8	17.3	56
12.138500	44.10	GND	N	9.6	15.9	60
12.197000	45.50	GND	N	9.6	14.5	60

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
4.380500	38.80	GND	N	9.8	7.2	46
4.412000	41.60	GND	N	9.8	4.4	46
4.475000	38.80	GND	N	9.8	7.2	46
11.954000	42.80	GND	N	9.6	7.2	50
12.138500	43.40	GND	N	9.6	6.6	50
12.197000	45.00	GND	N	9.6	5.0	50

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