



TEST REPORT

No. 2013TAR803

for

TCT Mobile Limited

GSM Quad band UMTS Tri-band mobile phone

Model Name: Tango+ 3G

Marketing Name: ALCATEL A383G

FCC ID: RAD422

with

Hardware Version: PIO2

Software Version: B32

Issued Date: Dec. 9th, 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.6629A-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

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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%

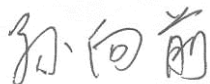
1.3. Project data

Testing Start Date: Dec. 14th, 2013
Testing End Date: Dec. 15th, 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
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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	GSM Quad band UMTS Tri-band mobile phone
Model Name	Tango+ 3G
Marketing Name	ALCATEL A383G
FCC ID	RAD422
Extreme vol. Limits	3.5VDC to 4.2VDC (nominal: 3.8VDC)

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
EUT3	013859000001960	PIO2	B32

*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	/	TCT-B-0194
AE2	Battery	/	TCT-B-0210
AE3	Battery	/	TCT-B-0493
AE4	Battery	/	TCT-B-1026
AE5	Travel charger	/	TCT-CHR-0645
AE6	Travel charger	/	TCT-CHR-0964
AE7	USB cable	/	TCT-DC-0239
AE8	USB cable	/	TCT-DC-0523

AE1, AE2, AE3, AE4

Model	CAB31L0000C1
Manufacturer	BYD
Capacitance	1000 mAh
Nominal voltage	3.8V

AE5, AE6

Model	CBA3007AG0C1
Manufacturer	BYD
Length of cable	/

AE7, AE8

Model	CDA3122002C2
Manufacturer	Shenghua
Length of cable	/

*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.5	EUT3+AE3+AE6+AE8	Charger
Set.6	EUT3+AE3+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, 10 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	100344	R&S	2014-03-28
2	Test Receiver	ESCI 7	100948	R&S	2014-07-18
3	Universal Radio Communication Tester	CMU200	116455	R&S	2014-05-19
4	LISN	ESH2-Z5	829991/012	R&S	2014-04-14
5	EMI Antenna	VULB 9163	9163-483	Schwarzbeck	2014-02-16
6	EMI Antenna	3115	9614	ETS-Lindgren	2014-12-15
7	PC	OPTIPLEX 380	2X1YV2X	DELL	N/A
8	Monitor	E178FPc	CN-OWR979-6 4180-7AJ-D2M S	DELL	N/A
9	Printer	P1606dn	VNC3L52122	HP	N/A
10	Keyboard	L100	CN0RH659658 907ATOI40	DELL	N/A
11	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 10 meters is tested. Tested in accordance with the procedures of ANSI C63.4 - 2009, section 8.3.

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 10 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 380, and the serial number of the PC is 2X1YV2X. 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 ($\mu\text{V/m}$)		
	Quasi-peak	Average	Peak
30-88	100		
88-216	150		
216-960	200		
960-1000	500		
>1000		500	5000

Note: the above limit is for 3 meters test distance. 10 meters' limit is got by converting.

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:

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

Where

G_A : Antenna factor of receive antenna

G_{PL} : Path Loss

P_{Mea} : Measurement result on receiver.

Measurement uncertainty (worst case): $U = 4.3 \text{ dB}$, $k=2$.

Measurement result for Set.5:

Charging Mode/Average detector

Frequency(MHz)	Result(dB μ V/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dB μ V)	Polarity
5643.750	29.2	-34.4	35.1	28.500	VERTICAL
5925.000	29.2	-34.1	35.1	28.200	VERTICAL
5646.250	29.2	-34.4	35.1	28.500	HORIZONTAL
5923.750	29.2	-34.1	35.1	28.200	HORIZONTAL
5898.750	29.2	-34.1	35.1	28.200	HORIZONTAL
5662.500	29.2	-34.2	35.1	28.300	VERTICAL

Charging Mode/Peak detector

Frequency(MHz)	Result(dB μ V/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea} (dB μ V)	Polarity
5385.000	41.6	-34.3	34.6	41.300	VERTICAL
5947.500	41.4	-33.5	35.1	39.800	HORIZONTAL
5873.750	41.3	-33.8	35.1	40.000	VERTICAL
5847.500	41.2	-33.8	35.1	39.900	VERTICAL
5656.250	41.1	-34.2	35.1	40.200	HORIZONTAL
5613.750	41.0	-34.4	35.1	40.300	HORIZONTAL

Measurement result for Set.6:
USB Mode/Average detector

Frequency(MHz)	Result(dB μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{mea} (dB μ V)	Polarity
1493.750	30.1	-40.3	24.1	46.300	HORIZONTAL
1495.000	29.6	-40.3	24.1	45.800	VERTICAL
5930.000	29.4	-34.1	35.1	28.400	HORIZONTAL
5935.000	29.4	-34.1	35.1	28.400	VERTICAL
1492.500	29.4	-40.3	24.1	45.600	VERTICAL
5888.750	29.3	-34.1	35.1	28.300	HORIZONTAL

USB Mode/ Peak detector

Frequency(MHz)	Result(dB μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{mea} (dB μ V)	Polarity
1492.500	46.5	-40.3	24.1	62.700	VERTICAL
2373.750	46.2	-38.8	27.7	57.300	HORIZONTAL
1493.750	45.8	-40.3	24.1	62.000	HORIZONTAL
2375.000	45.2	-38.8	27.7	56.300	VERTICAL
2396.250	45.1	-38.8	27.7	56.200	VERTICAL
1497.500	45.1	-40.3	24.1	61.300	HORIZONTAL

Charging Mode, Set.5

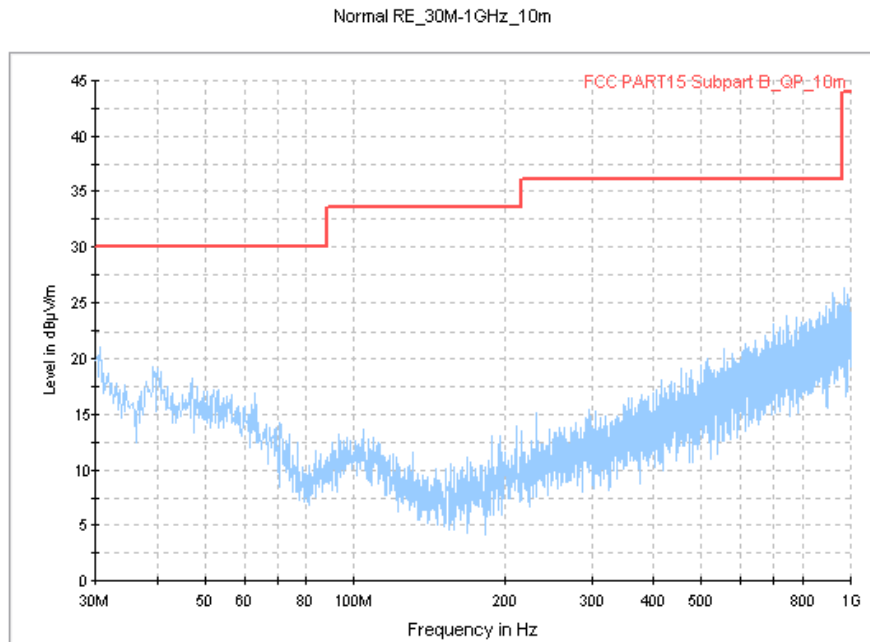


Figure A.1 Radiated Emission from 30MHz to 1GHz

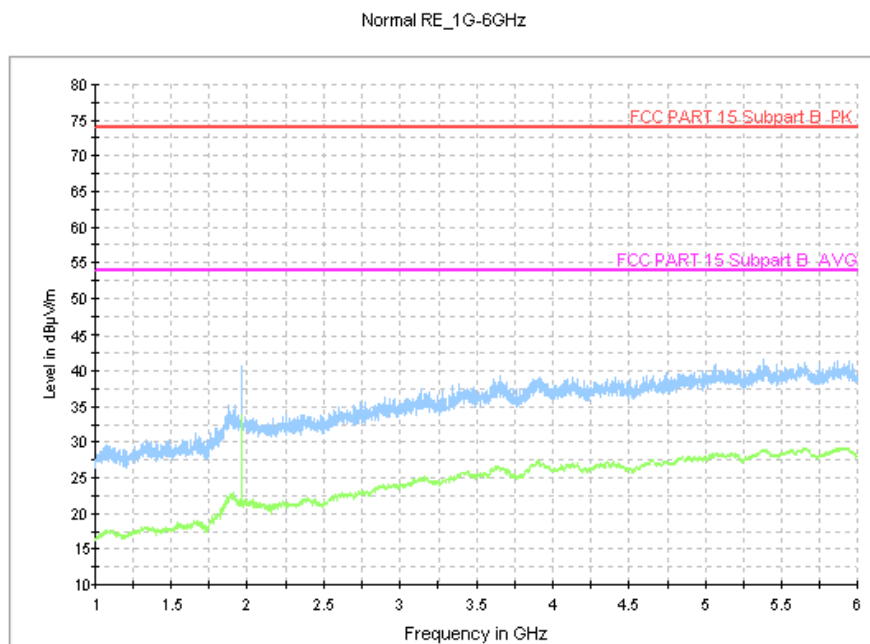


Figure A.2 Radiated Emission from 1GHz to 6GHz

USB Mode, Set.6

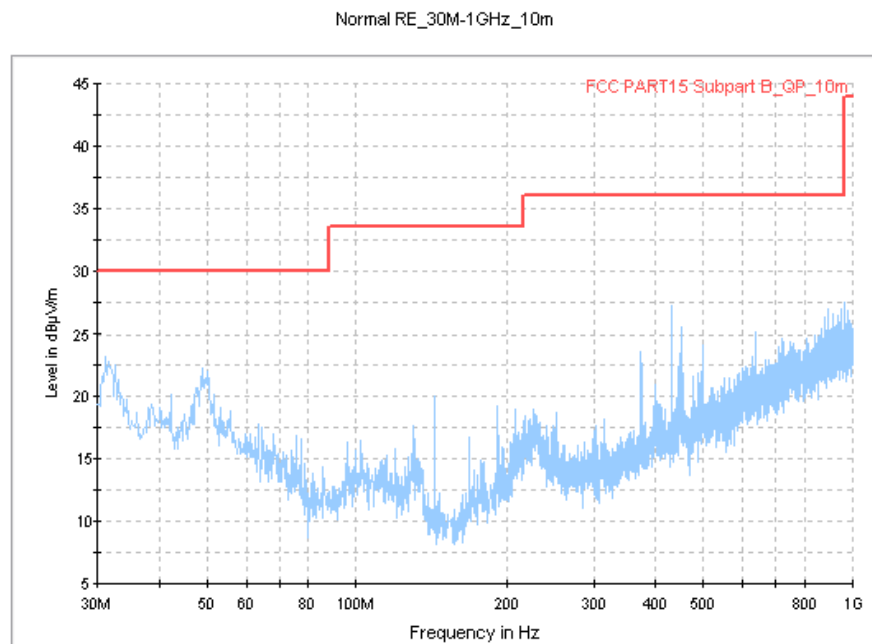


Figure A.3 Radiated Emission from 30MHz to 1GHz

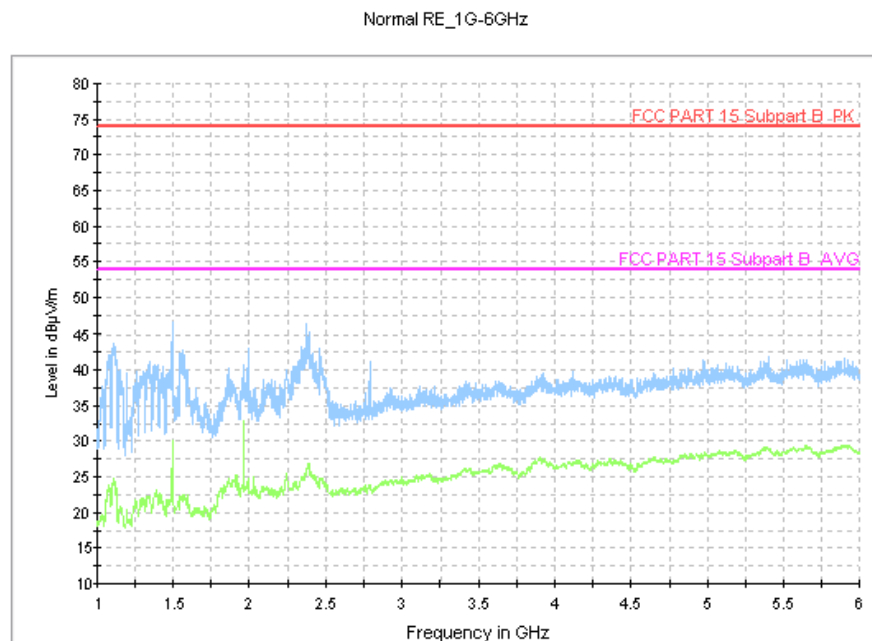


Figure A.4 Radiated Emission from 1GHz to 6GHz

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 - 2009, 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 380, and the serial number of the PC is 2X1YV2X. 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: $U= 2.9 \text{ dB}$, $k=2$.

Charging Mode, Set.5

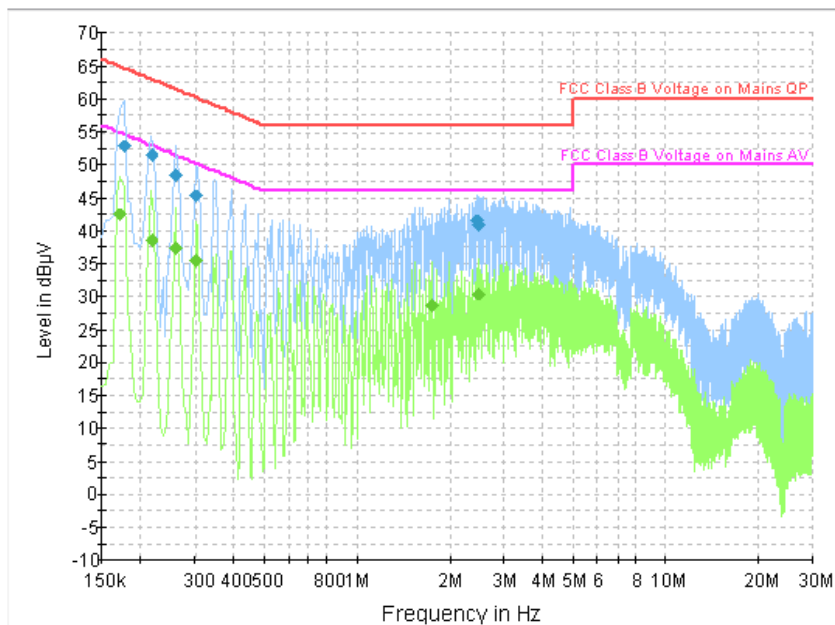


Figure A.5 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.177000	52.9	GND	L1	9.8	11.7	64.6
0.217500	51.6	GND	N	9.8	11.3	62.9
0.258000	48.5	GND	N	9.8	13.0	61.5
0.303000	45.4	GND	N	9.8	14.8	60.2
2.463000	41.6	GND	L1	9.7	14.4	56.0
2.494500	41.0	GND	L1	9.7	15.0	56.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.172500	42.5	GND	L1	9.8	12.3	54.8
0.217500	38.5	GND	N	9.8	14.4	52.9
0.258000	37.4	GND	N	9.8	14.0	51.5
0.303000	35.4	GND	N	9.8	14.8	50.2
1.765500	28.6	GND	L1	9.7	17.4	46.0
2.494500	30.4	GND	L1	9.7	15.6	46.0

USB Mode, Set.6

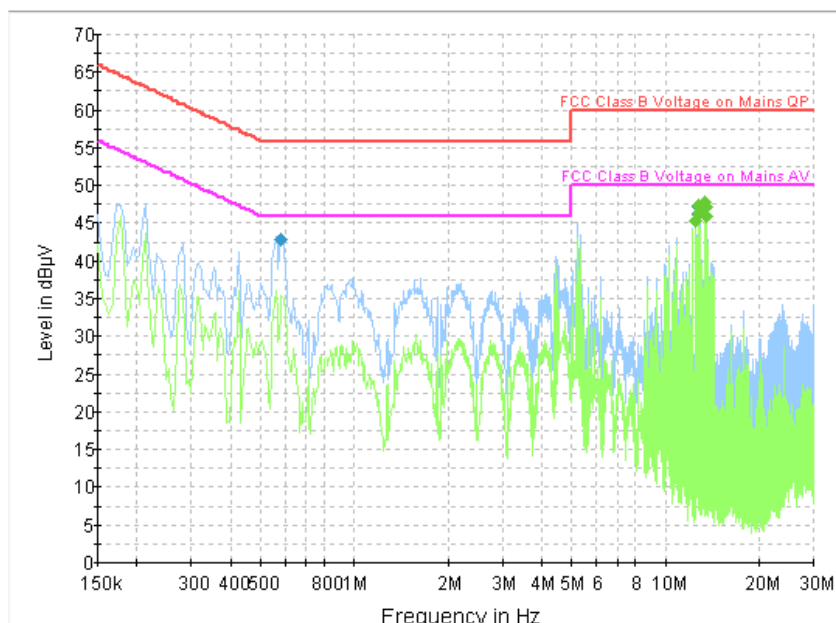


Figure A.6 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.577500	42.9	GND	L1	9.8	13.1	56.0
12.745500	46.2	GND	N	9.5	13.8	60.0
12.808500	47.3	GND	N	9.5	12.7	60.0
13.357500	47.9	GND	N	9.5	12.1	60.0
13.420500	47.3	GND	N	9.5	12.7	60.0
13.479000	46.0	GND	N	9.5	14.0	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
12.502500	45.4	GND	N	9.6	4.6	50.0
12.745500	46.3	GND	N	9.5	3.7	50.0
12.808500	47.4	GND	N	9.5	2.6	50.0
13.357500	47.9	GND	N	9.5	2.1	50.0
13.420500	47.2	GND	N	9.5	2.8	50.0
13.479000	46.0	GND	N	9.5	4.0	50.0

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