TEST REPORT

No. I14Z49142-EMC03

for

TCT Mobile Limited

HSDPA/HSUPA/HSPA+/UMTS tri band /GSM quad band/LTE 6 band mobile phone

Model Name: VF-895N

FCC ID: RAD543

with

Hardware Version: PIO

Software Version: 020FBN2

Issued Date: 2015-01-16

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 CTTL.

Test Laboratory:

FCC 2.948 Listed: No. 525429

CTTL, Telecommunication Technology Labs, Academy of Telecommunication Research, MIIT

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I14Z49142-EMC03	Rev.0	1st edition	2015-01-16

CONTENTS

1. Test Laboratory

1.1. Testing Location

Location 1: CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191

1.2. Testing Environment

Normal Temperature: 15-35℃

Relative Humidity: 20-75%

1.3. Project data

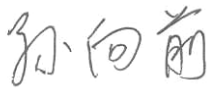
Testing Start Date: 2014-12-28

Testing End Date: 2015-01-11

1.4. Signature

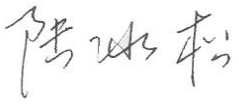
Qu Pengfei

(Prepared this test report)



Sun Xiangqian

(Reviewed this test report)



Lu Bingsong

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	HSDPA/HSUPA/HSPA+/UMTS tri band /GSM quad band/LTE 6 band mobile phone
Model Name	VF-895N
FCC ID	RAD543
Extreme vol. Limits	3.5VDC to 4.35VDC (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
EUT1	356907060009459	PIO	020FBN2

*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	/	Inbuilt
AE3	Travel charger	/	14TCT-CH-1275
AE4	Travel charger	/	14TCT-CH-1279
AE5	USB cable	/	14TCT-DC-0085
AE6	USB cable	/	14TCT-DC-0332
AE9	Travel charger	/	/
AE10	Travel charger	/	/
AE11	Travel charger	/	/
AE12	Travel charger	/	/

AE1

Model	TLP025A2
Manufacturer	SCUD
Capacitance	2500mAh
Nominal voltage	3.8V

AE3, AE4

Model	CBA3100AG0C2
Manufacturer	Tenpao
Length of cable	/

AE5

Model	CDA6050000C1
Manufacturer	JUWEI
Length of cable	98cm

AE6

Model	CDA6050000C2
Manufacturer	Shenghua
Length of cable	95cm

AE9

Model	CBA3100AB0C2
Manufacturer	Tenpao
Length of cable	/

AE10

Model	CBA3100AK0C2
Manufacturer	Tenpao
Length of cable	/

AE11

Model	CBA3100AC0C2
Manufacturer	Tenpao
Length of cable	/

AE12

Model	CBA3100AD0C2
Manufacturer	Tenpao
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.2	EUT1+ AE1 + AE3 + AE5/AE6	Charger
Set.3	EUT1+ AE1 + AE5/AE6	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	10-1-13 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	1/2/3/4	The test is performed in test location 1, 2, 3 or 4 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	1
2	Conducted Emission	15.107(a)	P	1

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	Test Receiver	ESCI	100344	R&S	2015-03-03	1 year
2	Test Receiver	ESCI 7	100948	R&S	2015-07-16	1 year
3	Universal Radio Communication Tester	CMU200	109914	R&S	2015-04-13	1 year
4	Test Receiver	FSV	101047	R&S	2015-06-27	1 year
5	LISN	ESH2-Z5	829991/012	R&S	2015-04-14	1 year
6	EMI Antenna	VULB 9163	9163-234	Schwarzbeck	2016-09-16	3 years
7	EMI Antenna	3115	9906-5827	ETS-Lindgren	2016-11-19	3 years
8	PC	OPTIPLEX 380	2X1YV2X	DELL	N/A	N/A
9	Monitor	E178FPc	CN-OWR979-64180 -7AJ-D2MS	DELL	N/A	N/A
10	Printer	P1606dn	VNC3L52122	HP	N/A	N/A
11	Keyboard	L100	CN0RH659658907 ATOI40	DELL	N/A	N/A
12	Mouse	M-UAE119	LZ935220ZRC	Lenovo	N/A	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 distances of 10 meters(for 30MHz-1GHz) and 3 meters (for above 1GHz) 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 3/10 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 (μV/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:

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 results for Set.2:

Charging Mode/Average detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
9850.938	35.6	-24.8	38.0	22.400	V
9855.438	35.5	-24.8	38.0	22.300	H
9837.438	35.5	-24.8	38.0	22.300	V
9876.813	35.5	-24.9	38.0	22.400	H
9974.688	35.4	-24.2	38.0	21.600	V
9917.875	35.3	-24.9	38.0	22.200	H

Charging Mode/Peak detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
9948.813	47.5	-24.9	38.0	34.400	V
9722.125	47.3	-24.5	38.0	33.800	V
9846.438	47.0	-24.8	38.0	33.800	V
9691.750	46.8	-24.5	38.0	33.300	H
9859.938	46.8	-24.8	38.0	33.600	V
9933.063	46.7	-24.9	38.0	33.600	H

Measurement results for Set.3:

USB Mode/Average detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
9871.750	35.3	-24.9	38.0	22.200	V
8932.938	35.2	-26.7	38.0	23.900	H
9890.875	35.2	-24.9	38.0	22.100	V
9866.688	35.1	-24.9	38.0	22.000	V
9897.063	35.1	-24.9	38.0	22.000	V
9885.250	35.1	-24.9	38.0	22.000	V

USB Mode/Peak detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
1464.063	51.6	-40.0	24.1	67.500	V
1464.625	51.3	-40.0	24.1	67.200	V
1463.500	50.5	-40.0	24.1	66.400	H
1461.813	50.1	-40.0	24.1	66.000	H
1457.875	49.5	-40.2	24.1	65.600	V
1461.250	49.4	-40.0	24.1	65.300	V

Note: The measurement results of Set.2 and Set.3 showed here are worst cases of the combinations of different USB cable.

Charging Mode, Set.2

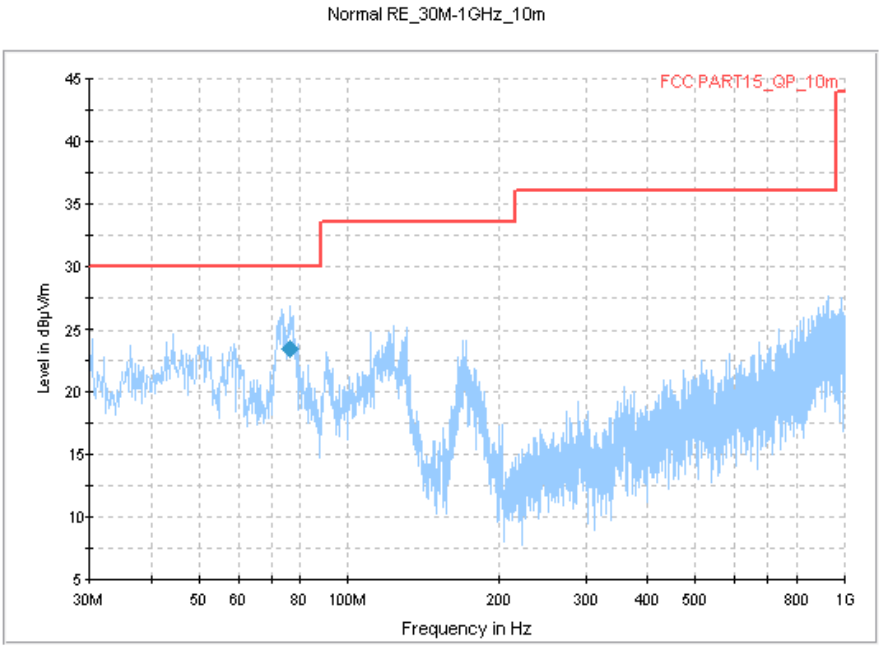

Fig.1 Radiated Emission from 30MHz to 1GHz

Final Result

Frequency MHz	QuasiPeak dBµV/m	Limit dBµV/m	Margin dB	Azimuth Deg	Polarization H/V
76.318750	23.4	30.0	6.6	150.0	V

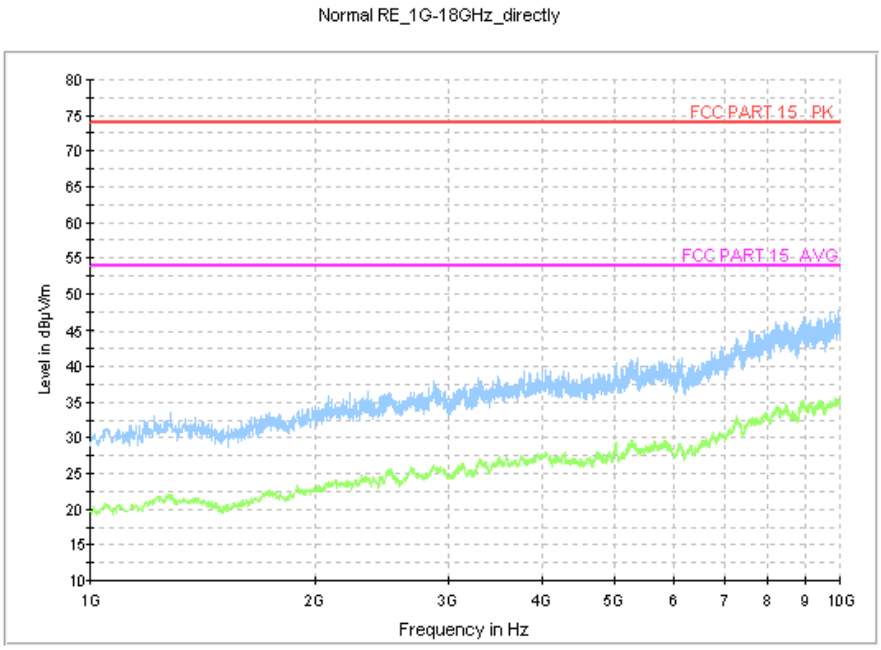

Fig.2 Radiated Emission from 1GHz to 10GHz

USB Mode, Set.3

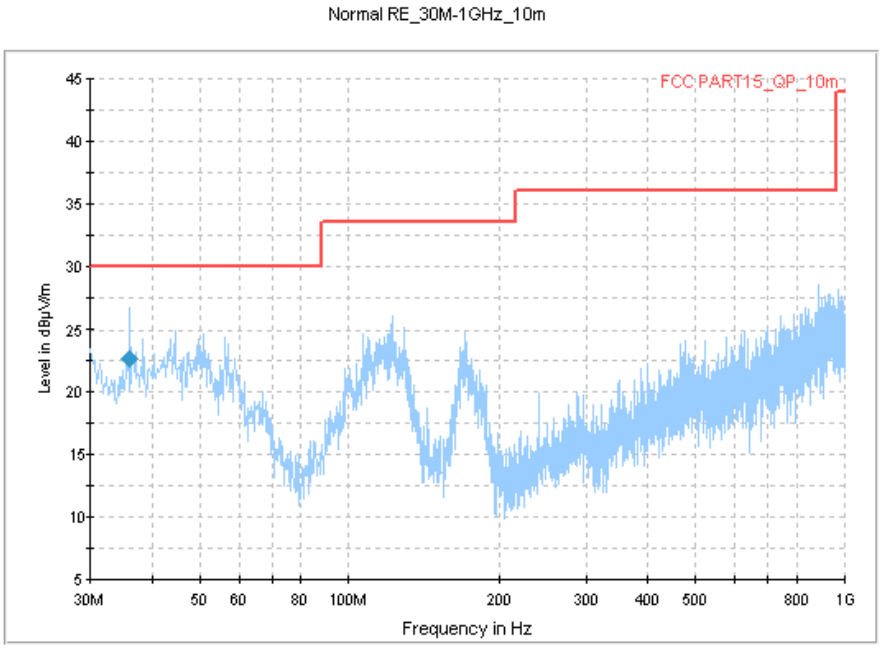

Fig.3 Radiated Emission from 30MHz to 1GHz

Final Result

Frequency MHz	QuasiPeak dBµV/m	Limit dBµV/m	Margin dB	Azimuth Deg	Polarization H/V
36.062500	22.7	30.0	7.3	-30.0	V

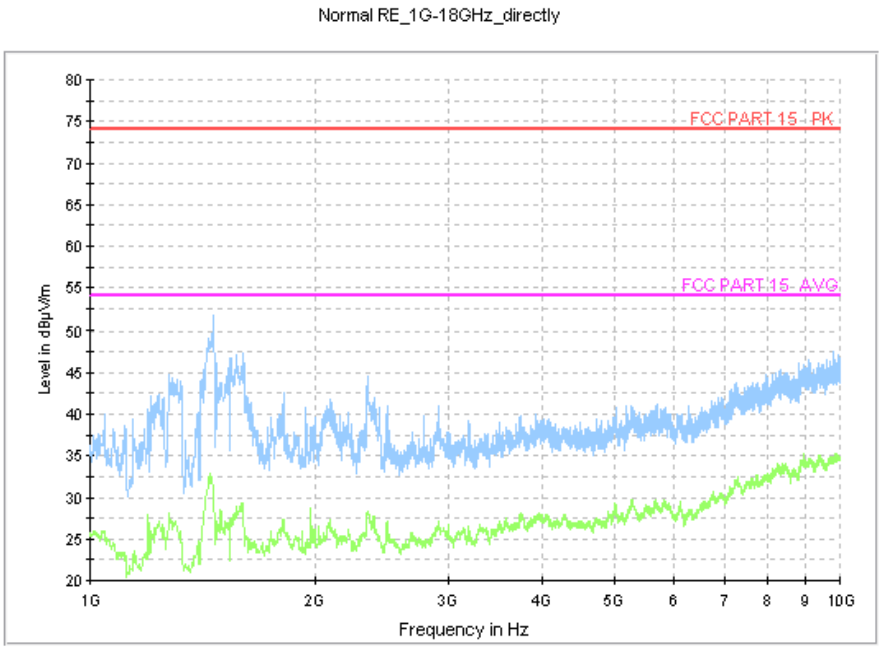

Fig.4 Radiated Emission from 1GHz to 10GHz

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 - 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 dB, *k*=2.

Charging Mode, Set.2

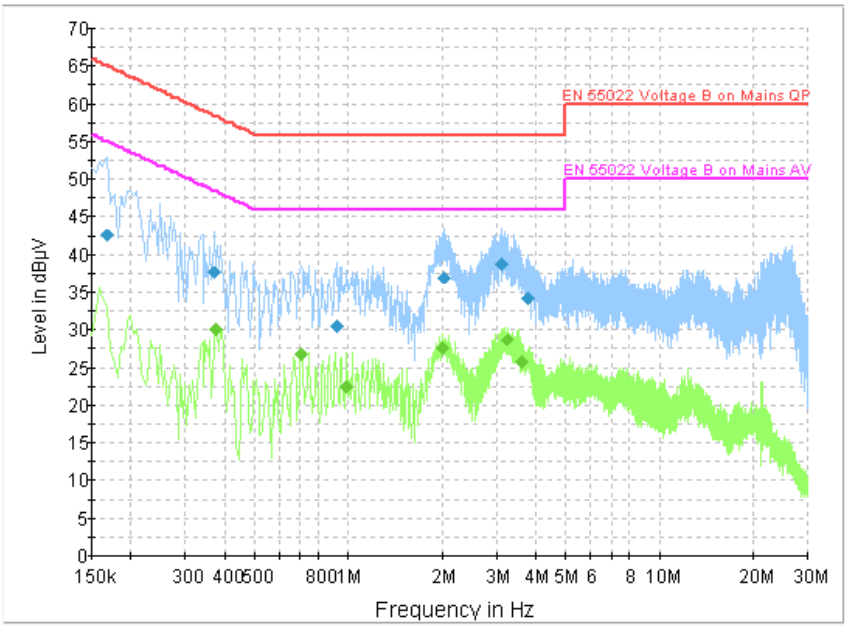

Fig.5 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.168000	42.6	GND	L1	19.9	22.5	65.1
0.370500	37.7	GND	N	19.9	20.8	58.5
0.919500	30.6	GND	L1	19.8	25.4	56.0
2.026500	37.0	GND	L1	19.7	19.0	56.0
3.129000	38.8	GND	L1	19.7	17.2	56.0
3.781500	34.2	GND	L1	19.7	21.8	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.375000	30.1	GND	L1	19.9	18.3	48.4
0.703500	26.8	GND	L1	19.9	19.2	46.0
0.987000	22.5	GND	L1	19.8	23.5	46.0
2.004000	27.5	GND	L1	19.7	18.5	46.0
3.228000	28.7	GND	L1	19.7	17.3	46.0
3.628500	25.7	GND	L1	19.7	20.3	46.0

Note: The measurement results showed here are worst cases of the combinations of different USB cable.

USB Mode, Set.3

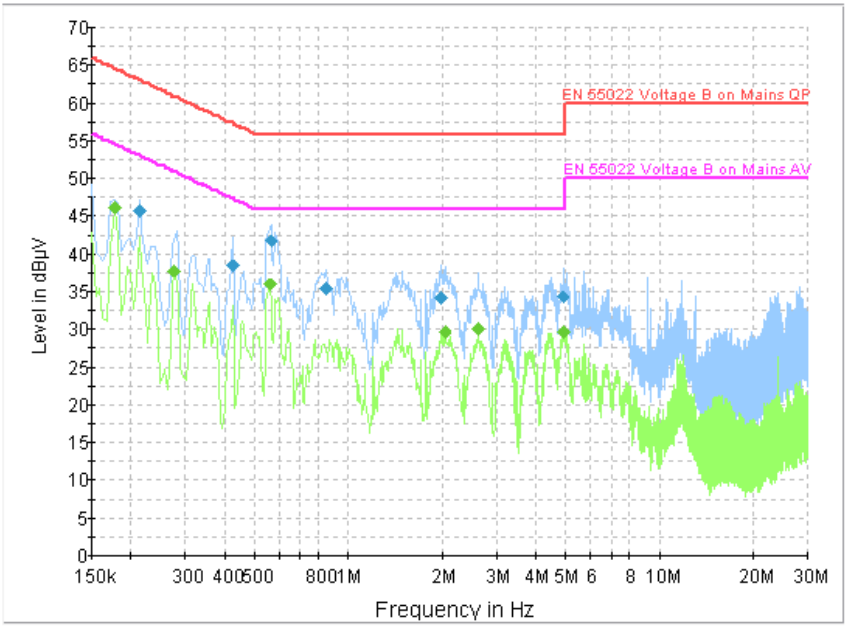

Fig.6 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.213000	45.8	GND	N	19.9	17.3	63.1
0.424500	38.4	GND	L1	20.0	18.9	57.4
0.564000	41.7	GND	L1	20.0	14.3	56.0
0.847500	35.5	GND	N	19.9	20.5	56.0
1.981500	34.2	GND	N	19.7	21.8	56.0
4.915500	34.3	GND	L1	19.7	21.7	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.177000	46.2	GND	N	19.9	8.5	54.6
0.276000	37.7	GND	N	19.9	13.2	50.9
0.559500	36.0	GND	L1	20.0	10.0	46.0
2.053500	29.8	GND	N	19.7	16.2	46.0
2.620500	30.0	GND	L1	19.7	16.0	46.0
4.956000	29.8	GND	L1	19.6	16.2	46.0

Note: The measurement results showed here are worst cases of the combinations of different USB cable.

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