



TEST REPORT

No. I18Z61597-EMC03

For

Palm Ventures Group

**HSUPA/HSDPA/UMTS Quad Band/GSM Quad Band/LTE 5 Bands
mobile phone**

Model Name: PVG100E/PVGE100EU

FCC ID: 2AOETPVG100E

Hardware Version: 03

Software Version: 3B1K-1

Issued Date: 2018-10-25



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.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

Test Laboratory:

CTTL, Telecommunication Technology Labs, CAICT

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REPORT HISTORY

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1. Test Laboratory

1.1. Testing Location

CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,
P. R. China100191

1.2. Testing Environment

Normal Temperature: 15-35°C

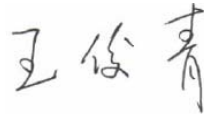
Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2018-09-28

Testing End Date: 2018-10-17

1.4. Signature



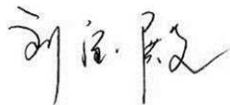
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2. Client Information

2.1. Applicant Information

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2.2. Manufacturer Information

Company Name: Palm Ventures Group
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City: San Francisco
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3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	HSUPA/HSDPA/UMTS Quad Band/GSM Quad Band/LTE 5 Bands mobile
Model Name	PVG100E/PVG100EU
FCC ID	2AOETPVG100E
Extreme vol. Limits	3.6VDC to 4.4VDC (nominal: 3.85VDC)

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of CTTL, Telecommunication Technology Labs, CAICT.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT2	352506100002500	03	3B1K-1

*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	/	/
AE2	Charger	/	/
AE3	Charger	/	/
AE5	USB Cable	/	/
AE8	USB Cable	/	/

AE1

Model	TLP007A1
Manufacturer	BYD
Capacitance	770 mAh
Nominal voltage	3.85 V

AE2

Model	UC11EU
Manufacturer	PUAN
Length of cable	/

AE3

Model	UC11UK
Manufacturer	PUAN
Length of cable	/

AE5

Model	CDA0000121CF
Manufacturer	Luxshare
Length of cable	95cm



AE8

Model CDA0000121C2
Manufacturer Shenghua
Length of cable 95cm

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

Note: The USB cables are shielded.

3.4. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT1+ AE1 + AE2+ AE5/AE8	Charger
Set.2	EUT1+ AE1 + AE5/AE8	USB mode

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	2016
ANSI C63.4	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	2014

Note: The test methods have no deviation with standards.

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

Semi-anechoic chamber SAC-2 (10 meters×6.7meters×6.1meters) 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, 3m distance, from 30 to 1000 MHz
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz
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

Items	Test Name	Clause in FCC rules	Section in this report	Verdict	Test Location
1	Radiated Emission	15.109(a)	B.1	P	CTTL(huayuan North Road)
2	Conducted Emission	15.107(a)	B.2	P	CTTL(huayuan North Road)

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	Test Receiver	ESU26	100235	R&S	2019-03-31	1 year
2	Test Receiver	ESCI	100948	R&S	2019-07-27	1 Year
3	Universal Radio Communication Tester	CMW500	143008	R&S	2018-11-26	1 year
4	Universal Radio Communication Tester	CMW500	155415	R&S	2019-01-15	1 year
5	LISN	ENV216	101200	R&S	2019-04-15	1 year
6	EMI Antenna	VULB 9163	9163-301	Schwarzbeck	2019-01-03	3 years
7	EMI Antenna	3115	00167250	ETS-Lindgren	2018-11-30	3 years
8	PC	OPTIPLEX 380	2X1YV2X	DELL	N/A	N/A
9	Printer	P1606dn	VNC3L52122	HP	N/A	N/A
10	Keyboard	L100	CN0RH6596589 07ATOI40	DELL	N/A	N/A
11	Mouse	M-UAE119	LZ935220ZRC	Lenovo	N/A	N/A

Test Item	Test Software and Version	Software Vendor
Radiated Continuous Emission	EMC32 V9.01	R&S
Conducted Emission	EMC32 V8.52.0	R&S

ANNEX A: MEASUREMENT RESULTS

A.1 Radiated Emission

Reference

FCC: CFR Part 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 – 2014, 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.

Note: I/O information: Printer – USB, Mouse – PS/2, Keyboard – USB.

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 results for Set.1:

Charging Mode/Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Antenna Pol. (H/V)
17966.567	40.4	-5.4	43.4	2.416	H
17972.233	40.3	-5.4	43.4	2.316	H
17963.167	40.2	-5.4	43.4	2.216	V
17965.433	40.2	-5.4	43.4	2.216	H
17941.633	40.2	-5.4	43.4	2.216	H
17954.100	40.1	-5.4	43.4	2.116	H

Charging Mode/Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Antenna Pol. (H/V)
931.712	27.2	-17.3	21.9	22.597	H
969.348	27.1	-16.8	21.8	22.071	H
999.418	27.0	-16.8	22.0	21.771	V
931.615	26.8	-17.3	21.9	22.197	H
999.321	26.7	-16.8	22.0	21.471	H
983.704	26.7	-16.8	22.0	21.471	H

Measurement results for Set.2:

USB Mode/Average detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
17987.533	50.5	-17.7	45.6	22.600	V
17888.933	50.3	-18.5	45.6	23.200	H
17892.900	50.3	-18.5	45.6	23.200	V
17907.067	50.3	-18.5	45.6	23.200	H
17874.200	50.2	-18.5	45.6	23.100	H
17992.067	50.2	-17.7	45.6	22.300	H

USB Mode/ Peak detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
17908.767	62.1	-18.5	45.6	35.000	H
17867.400	62.1	-18.5	45.6	35.000	H
17885.533	61.8	-18.5	45.6	34.700	V
17929.167	61.6	-17.7	45.6	33.700	H
17965.433	61.4	-17.7	45.6	33.500	H
17940.500	61.2	-17.7	45.6	33.300	V

Note: The measurement results of Set.1, Set.2 showed here are worst cases of the combinations of different batteries and USB cables.

Charging Mode, Set.1

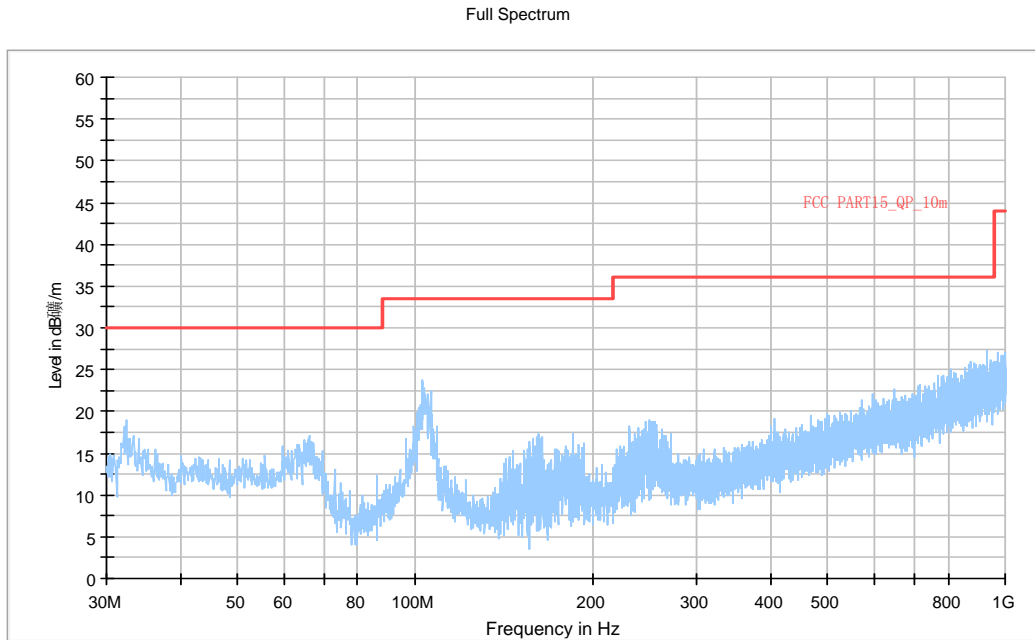


Fig A.1 Radiated Emission from 30MHz to 1GHz

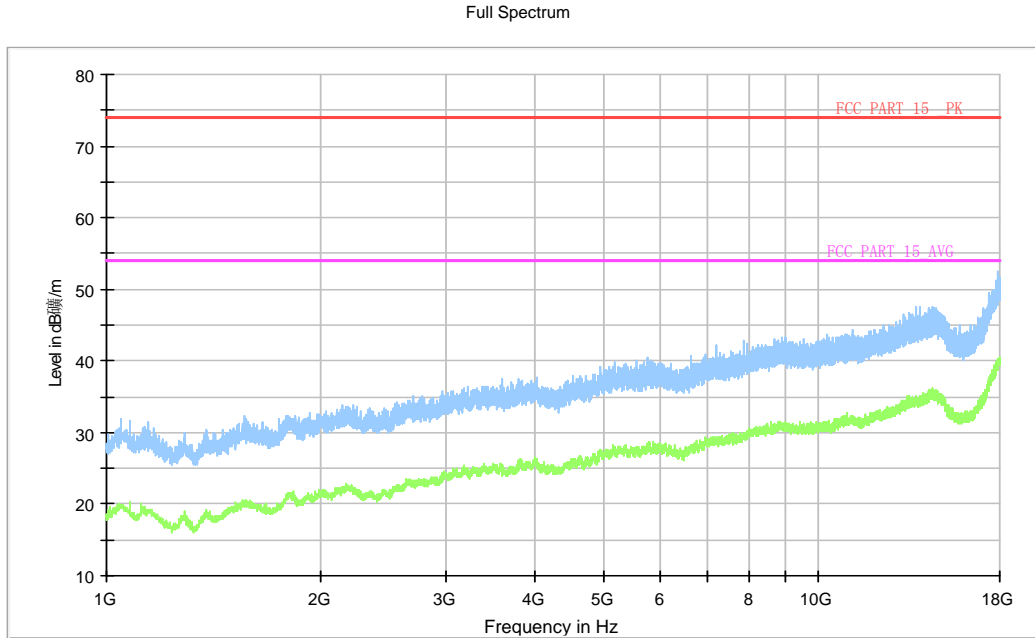


Fig A.2 Radiated Emission from 1GHz to 18GHz

USB Mode, Set.2

Full Spectrum

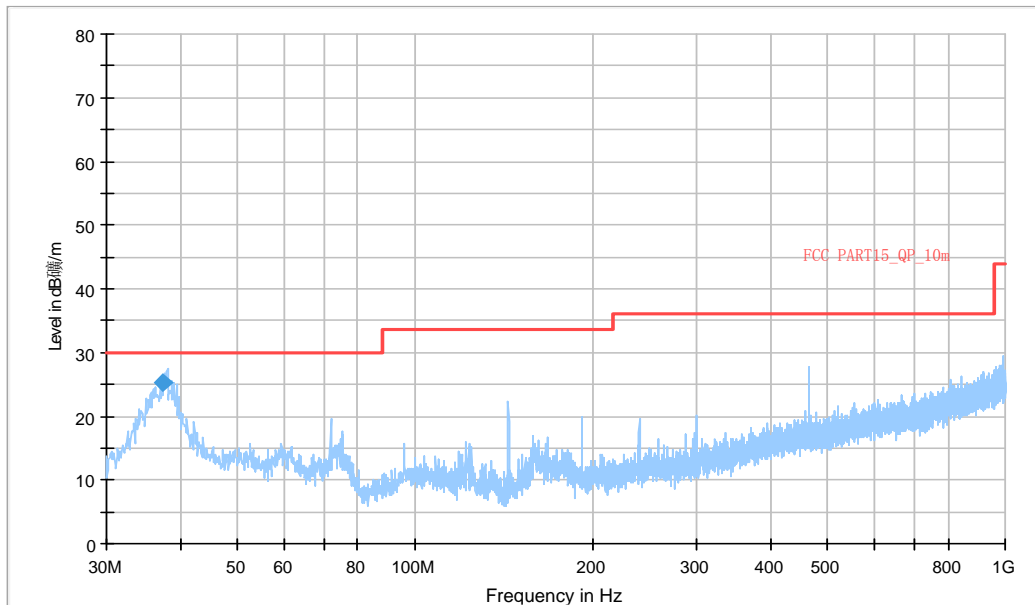


Fig A.3 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
37.451000	25.30	282.0	V	24.0	-12.4	4.70	30.00

Full Spectrum

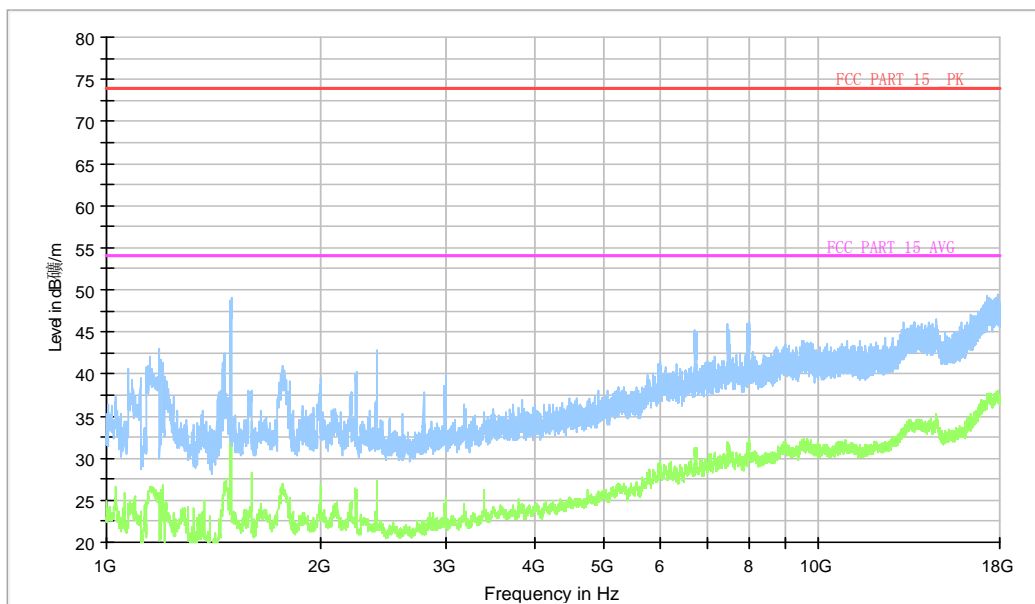


Fig A.4 Radiated Emission from 1GHz to 18GHz

A.2 Conducted Emission

Reference

FCC: CFR Part 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 – 2014, section 7.3.

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.

Note: I/O information: Printer – USB, Mouse – PS/2, Keyboard – USB.

A.2.3 Measurement Limit

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	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

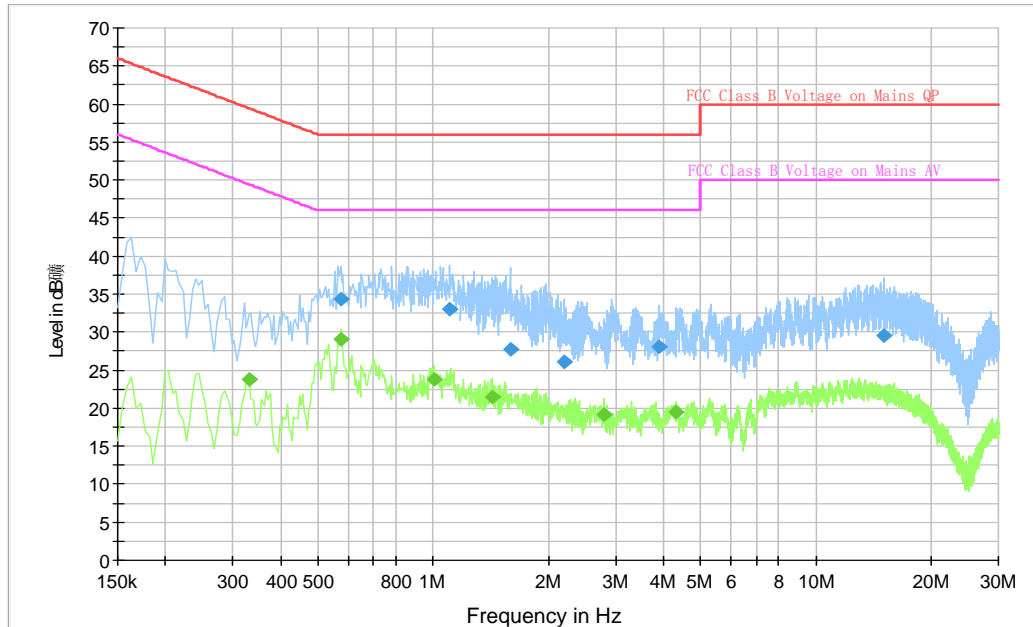


Fig A.5 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.573000	34.3	2000.0	9.000	L1	19.9	21.7	56.0
1.104000	33.1	2000.0	9.000	L1	19.6	22.9	56.0
1.590000	27.7	2000.0	9.000	N	19.6	28.3	56.0
2.206500	26.1	2000.0	9.000	N	19.6	29.9	56.0
3.889500	28.1	2000.0	9.000	L1	19.6	27.9	56.0
15.085500	29.6	2000.0	9.000	L1	19.9	30.4	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.330000	23.8	2000.0	9.000	L1	19.8	25.6	49.5
0.573000	29.1	2000.0	9.000	L1	19.9	16.9	46.0
1.005000	23.8	2000.0	9.000	L1	19.6	22.2	46.0
1.423500	21.4	2000.0	9.000	L1	19.6	24.6	46.0
2.805000	19.2	2000.0	9.000	L1	19.7	26.8	46.0
4.308000	19.6	2000.0	9.000	L1	19.6	26.4	46.0

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

USB Mode, Set.2

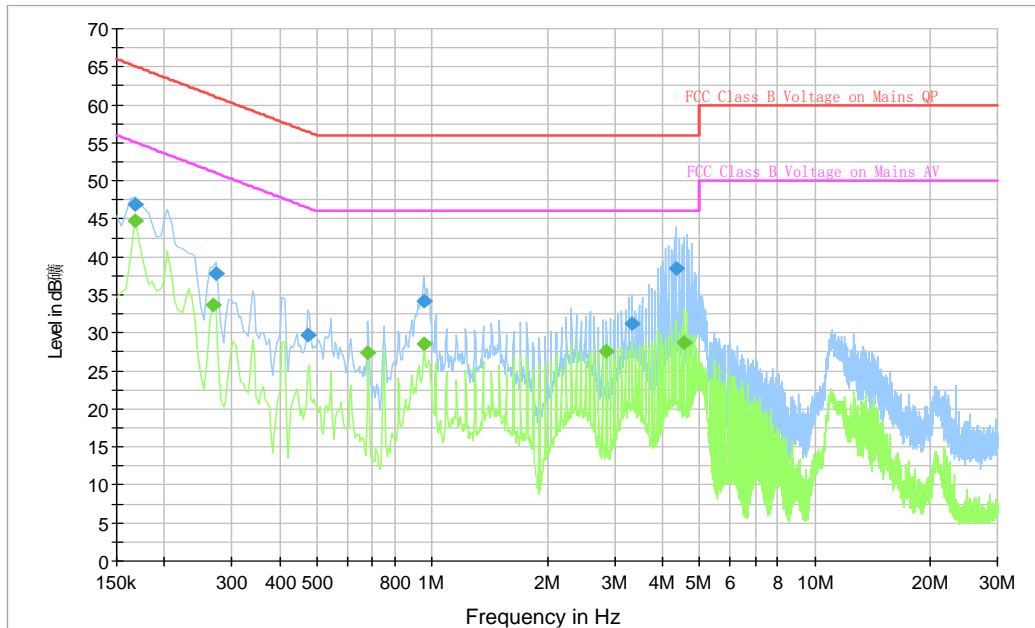


Fig A.6 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.168000	46.8	2000.0	9.000	N	19.8	18.3	65.1
0.271500	37.9	2000.0	9.000	L1	19.8	23.2	61.1
0.474000	29.8	2000.0	9.000	L1	19.9	26.7	56.4
0.951000	34.1	2000.0	9.000	N	19.7	21.9	56.0
3.336000	31.3	2000.0	9.000	N	19.7	24.7	56.0
4.357500	38.4	2000.0	9.000	N	19.7	17.6	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.168000	44.8	2000.0	9.000	N	19.8	10.3	55.1
0.267000	33.7	2000.0	9.000	L1	19.8	17.5	51.2
0.681000	27.5	2000.0	9.000	N	19.9	18.5	46.0
0.955500	28.5	2000.0	9.000	N	19.7	17.5	46.0
2.859000	27.5	2000.0	9.000	L1	19.7	18.5	46.0
4.560000	28.7	2000.0	9.000	N	19.7	17.3	46.0

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

END OF REPORT