



TEST REPORT

No. I18Z61602-EMC04

for

TCL Communication Ltd.

Tablet

Model Name: 9009G

FCC ID: 2ACCJBT14

with

Hardware Version: V03

Software Version: J5L

Issued Date: 2018-10-22



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

Report Number	Revision	Description	Issue Date
I18Z61602-EMC04	Rev.0	1 st edition	2018-10-16
I18Z61602-EMC04	Rev.1	Delete AE1 battery information in page 6	2018-10-22



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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. China
100191

CTTL (BDA)

Address: No.18A, Kangding Street, Beijing Economic-Technology Development
Area, Beijing, P. R. China 100176

1.2. Testing Environment

Normal Temperature: 15-35°C

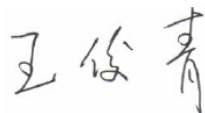
Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2018-09-20

Testing End Date: 2018-10-12

1.4. Signature



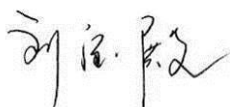
Wang Junqing

(Prepared this test report)



Zhang Ying

(Reviewed this test report)



Liu Baodian

Deputy Director of the laboratory

(Approved this test report)



2. Client Information

2.1. Applicant Information

Company Name: TCL Communication Ltd.
Address /Post: 7/F, Block F4, TCL International E City, Zhong Shan Yuan Road,
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Contact Email: zhizhou.gong@tcl.com
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2.2. Manufacturer Information

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Nanshan District, Shenzhen, Guangdong, P.R. China 518052
Contact Person: Gong Zhizhou
Contact Email: zhizhou.gong@tcl.com
Telephone: 0086-755-36611722
Fax: /

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

3.1. About EUT

Description	Tablet
Model Name	9009G
FCC ID	2ACCJBT14
Extreme vol. Limits	3.4VDC to 4.4VDC (nominal: 3.9VDC)

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

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT6	352317100200205	V03	J5L

*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
AE2	Battery	/	inbuilt
AE7	Charger	/	1861602CH016
AE8	Charger	/	1861602CH033
AE9	USB Cable	/	1861602DC019
AE10	USB Cable	/	1861602DC004

AE2

Model	CAC2580038C7
Manufacturer	VEKEN
Capacitance	2580mAh
Nominal voltage	3.8V

AE7

Model	CBA0058AGAC5
Manufacturer	PUAN
Length of cable	/

AE8

Model	CBA0058AGAC7
Manufacturer	CHENGYANG
Length of cable	/

AE9

Model	CDA3122005C1
Manufacturer	JUWEI
Length of cable	m



AE10

Model CDA3122005C8
Manufacturer PUAN
Length of cable m

*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.11	EUT6+ AE2+ AE7+ AE9/AE10	Charger
Set.12	EUT6+ AE2+ AE8+ AE9/AE10	Charger
Set.13	EUT6+ AE2+ AE9/AE10	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, 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	ESC13	100344	R&S	2019-02-28	1 year
3	Universal Radio Communication Tester	CMW500	116588	R&S	2018-11-26	1 year
4	LISN	ENV216	101200	R&S	2019-04-15	1 year
5	BT Tester	CBT	101042	R&S	2019-03-08	1 year
6	EMI Antenna	VULB 9163	9163-302	Schwarzbeck	2020-02-27	3 years
7	EMI Antenna	3115	00167250	ETS-Lindgren	2020-05-21	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 ($\mu\text{V}/\text{m}$)		
	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.11:

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)
17966.000	40.1	-5.4	43.4	2.116	H
17959.200	39.9	-5.4	43.4	1.916	H
17976.200	39.9	-5.4	43.4	1.916	V
17952.400	39.9	-5.4	43.4	1.916	H
17950.133	39.8	-5.4	43.4	1.816	H
17960.900	39.8	-5.4	43.4	1.816	H

Charging Mode/QP 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)
874.676	27.0	-17.8	21.5	23.253	H
942.576	26.9	-17.3	22.0	22.197	H
866.722	26.9	-18.3	21.5	23.653	V
866.625	26.6	-18.3	21.5	23.353	H
950.045	26.5	-17.3	22.0	21.797	H
862.939	26.3	-18.3	21.5	23.053	H

Measurement results for Set.12:

Charging Mode/Average detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
17952.967	39.9	-5.4	43.4	1.916	H
17956.367	39.8	-5.4	43.4	1.816	H
17966.000	39.8	-5.4	43.4	1.816	V
17977.900	39.8	-5.4	43.4	1.816	H
17972.233	39.8	-5.4	43.4	1.816	H
17942.200	39.7	-5.4	43.4	1.716	H

Charging Mode/QP detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
910.566	26.7	-17.8	21.7	22.753	H
953.537	26.5	-17.3	22.0	21.797	H
864.200	26.4	-18.3	21.5	23.153	V
957.611	26.4	-17.3	22.0	21.697	H
911.633	26.2	-17.8	21.7	22.253	H
955.283	26.2	-17.3	22.0	21.497	H

Measurement results for Set.13:

USB Mode/Average detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
17968.833	40.4	-5.4	43.4	2.416	H
17996.600	40.2	-5.4	43.4	2.216	H
17977.333	40.1	-5.4	43.4	2.116	V
17960.900	40.1	-5.4	43.4	2.116	H
17966.567	40.1	-5.4	43.4	2.116	H
17954.667	40.0	-5.4	43.4	2.016	H

USB Mode/QP detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)
953.149	26.5	-17.3	22.0	21.797	H
940.636	26.5	-17.3	22.0	21.797	H
882.145	26.5	-17.8	21.5	22.753	V
810.365	26.4	-18.6	20.6	24.439	H
948.590	26.2	-17.3	22.0	21.497	H
955.671	26.2	-17.3	22.0	21.497	H

Charging Mode, Set.11

Full Spectrum

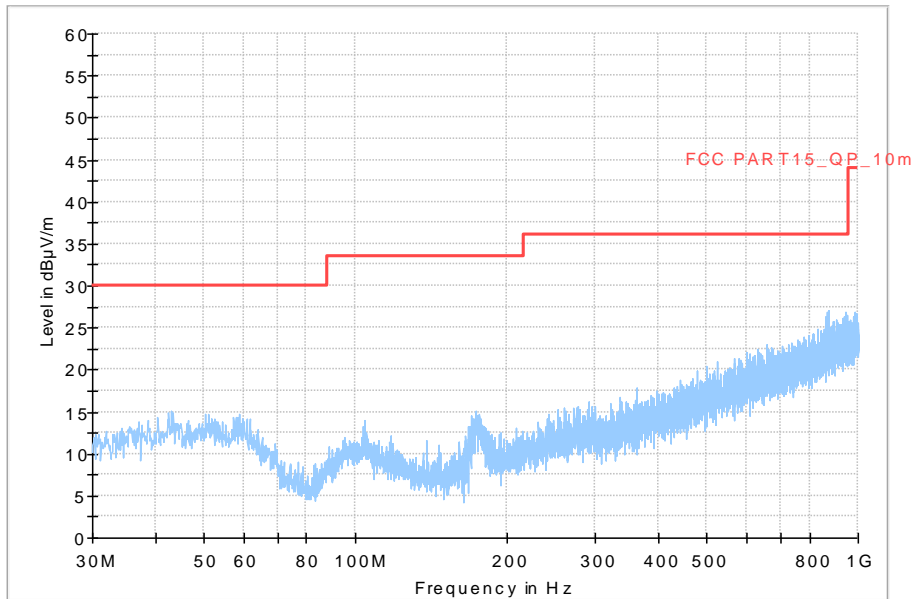


Fig A.1 Radiated Emission from 30MHz to 1GHz

Full Spectrum

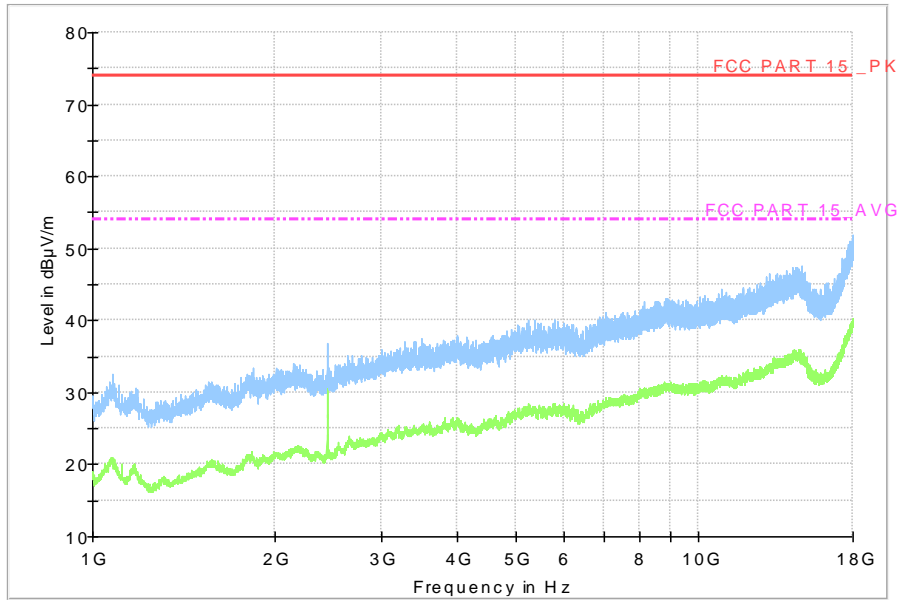


Fig A.2 Radiated Emission from 1GHz to 18GHz

Charging Mode, Set.12

Full Spectrum

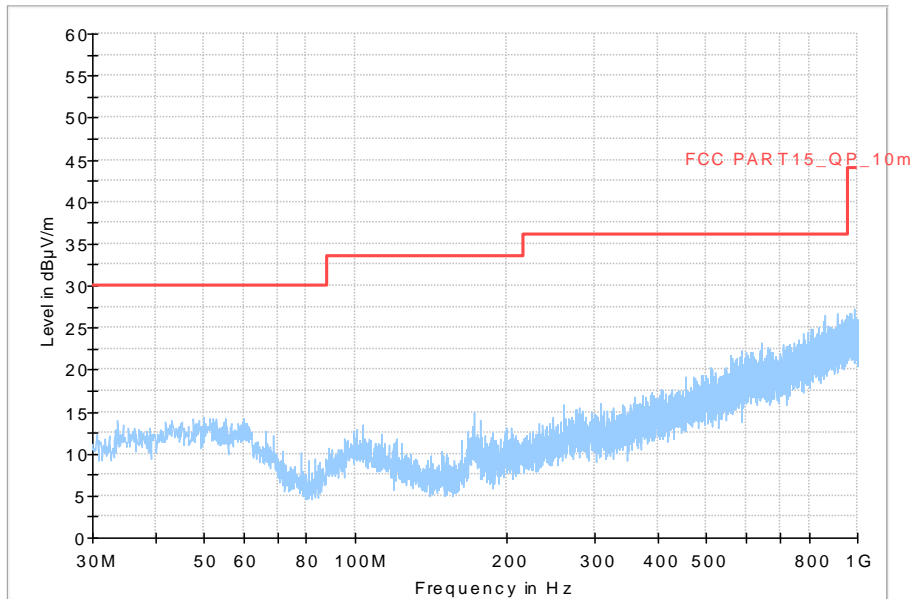


Fig A.3 Radiated Emission from 30MHz to 1GHz

Full Spectrum

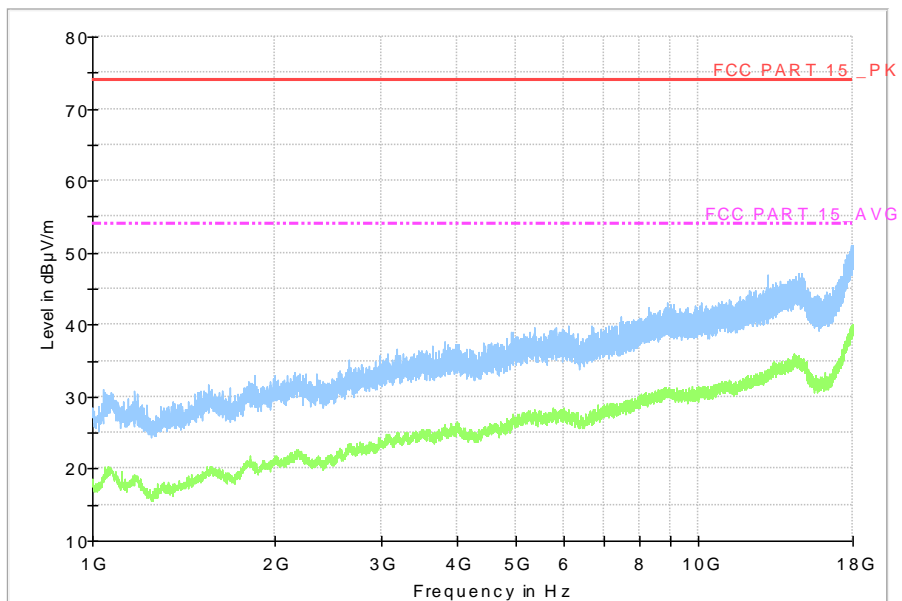


Fig A.4 Radiated Emission from 1GHz to 18GHz

USB Mode, Set.13

Full Spectrum

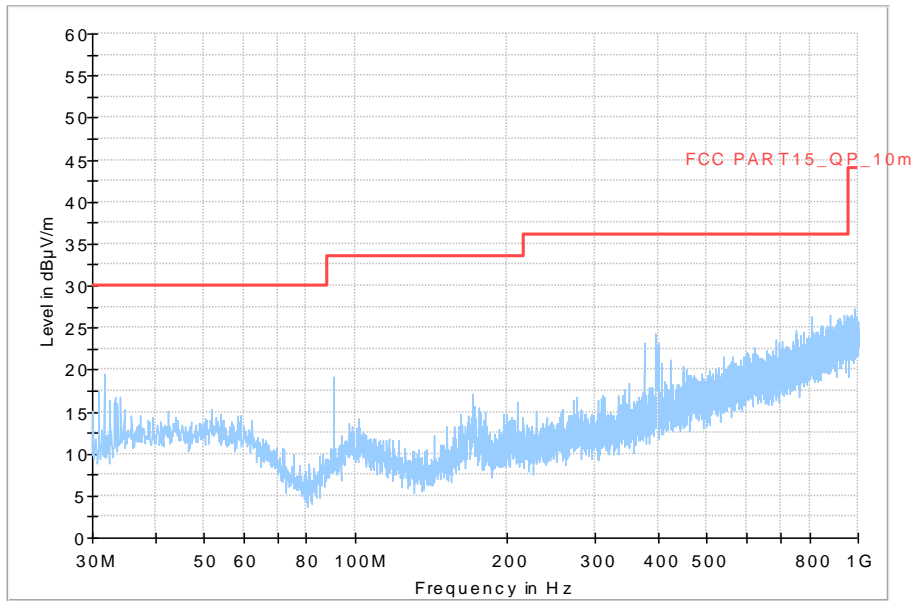


Fig A.5 Radiated Emission from 30MHz to 1GHz

Full Spectrum

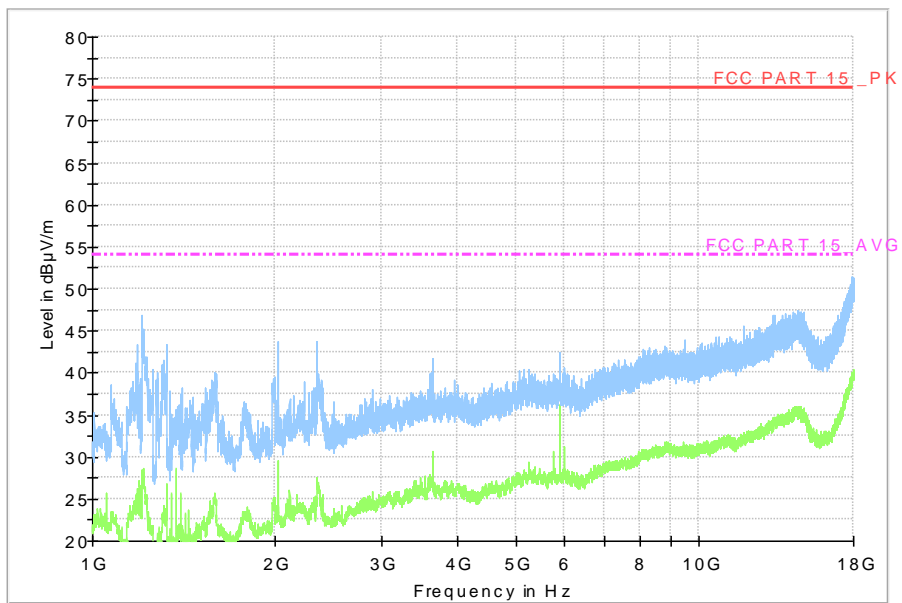


Fig A.6 Radiated Emission from 1GHz to 18GHz

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.11

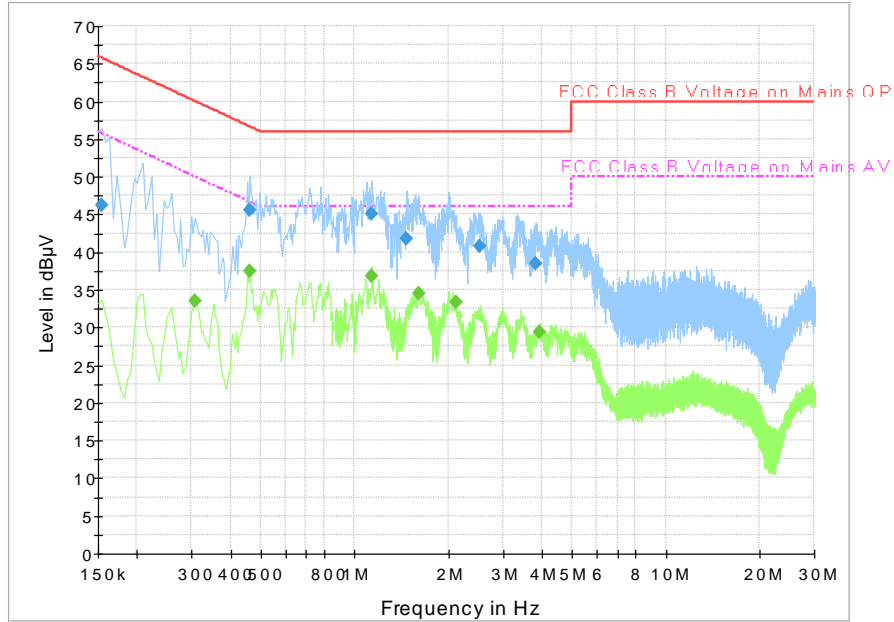


Fig A.7 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.154500	46.2	2000.0	9.000	On	L1	20.0	19.6	65.8	
0.460500	45.6	2000.0	9.000	On	L1	19.9	11.1	56.7	
1.140000	45.0	2000.0	9.000	On	L1	19.6	11.0	56.0	
1.464000	41.8	2000.0	9.000	On	L1	19.6	14.2	56.0	
2.530500	40.8	2000.0	9.000	On	L1	19.7	15.2	56.0	
3.826500	38.4	2000.0	9.000	On	L1	19.6	17.6	56.0	

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.307500	33.5	2000.0	9.000	On	L1	19.8	16.5	50.0	
0.460500	37.5	2000.0	9.000	On	L1	19.9	9.2	46.7	
1.140000	36.8	2000.0	9.000	On	L1	19.6	9.2	46.0	
1.603500	34.4	2000.0	9.000	On	L1	19.7	11.6	46.0	
2.125500	33.3	2000.0	9.000	On	L1	19.7	12.7	46.0	
3.934500	29.4	2000.0	9.000	On	L1	19.6	16.6	46.0	

Charging Mode, Set.12

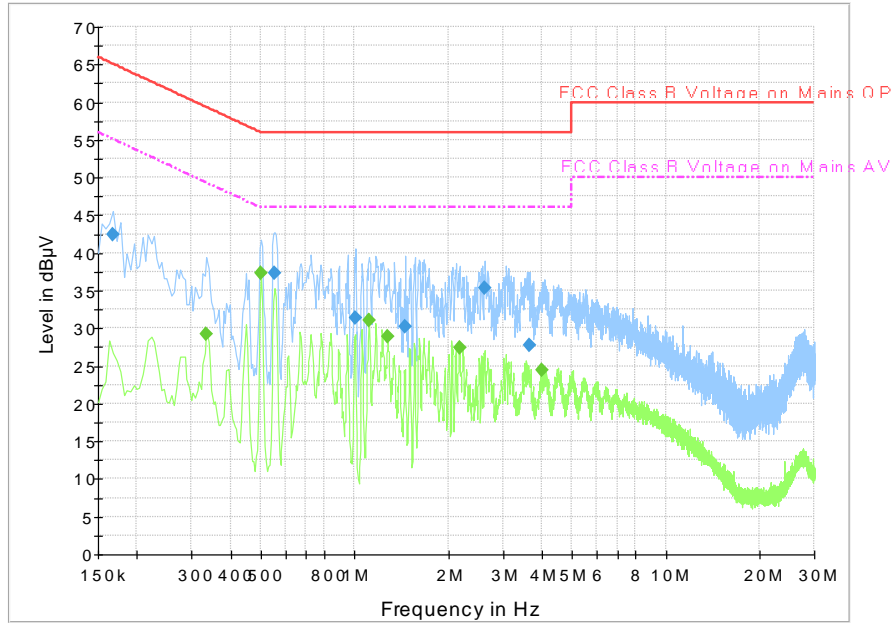


Fig A.8 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.168000	42.4	2000.0	9.000	On	N	19.8	22.7	65.1	
0.555000	37.3	2000.0	9.000	On	N	19.9	18.7	56.0	
1.009500	31.4	2000.0	9.000	On	N	19.7	24.6	56.0	
1.455000	30.2	2000.0	9.000	On	N	19.6	25.8	56.0	
2.620500	35.3	2000.0	9.000	On	L1	19.7	20.7	56.0	
3.642000	27.7	2000.0	9.000	On	N	19.7	28.3	56.0	

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.334500	29.2	2000.0	9.000	On	L1	19.8	20.2	49.3	
0.501000	37.4	2000.0	9.000	On	L1	19.9	8.6	46.0	
1.113000	31.1	2000.0	9.000	On	L1	19.6	14.9	46.0	
1.279500	28.9	2000.0	9.000	On	L1	19.6	17.1	46.0	
2.175000	27.4	2000.0	9.000	On	L1	19.7	18.6	46.0	
4.020000	24.4	2000.0	9.000	On	L1	19.6	21.6	46.0	

USB Mode, Set.13

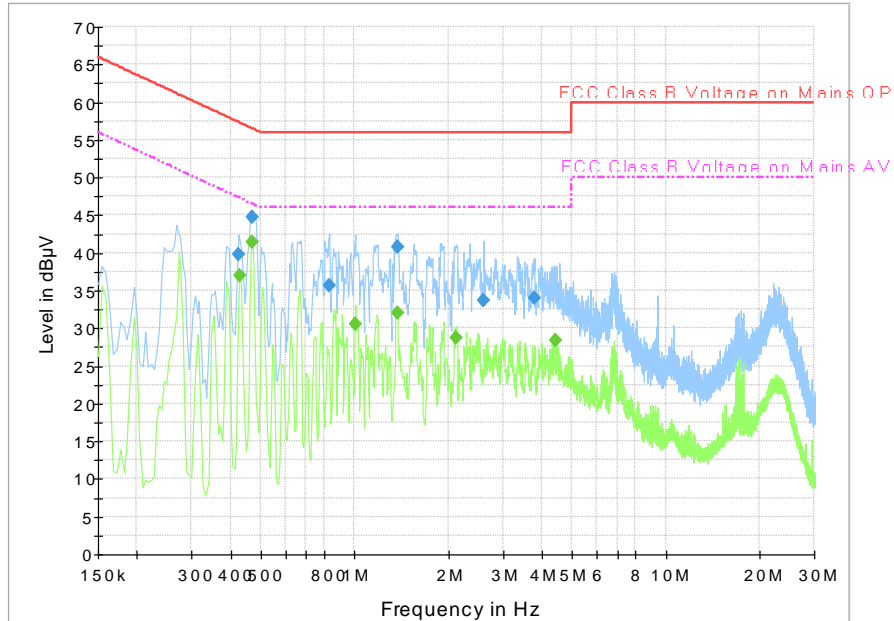


Fig A.9 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.424500	39.9	2000.0	9.000	On	L1	19.9	17.5	57.4	
0.469500	44.7	2000.0	9.000	On	N	19.9	11.8	56.5	
0.829500	35.7	2000.0	9.000	On	L1	19.7	20.3	56.0	
1.383000	40.8	2000.0	9.000	On	L1	19.6	15.2	56.0	
2.602500	33.6	2000.0	9.000	On	N	19.6	22.4	56.0	
3.795000	34.0	2000.0	9.000	On	N	19.7	22.0	56.0	

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.429000	37.0	2000.0	9.000	On	L1	19.9	10.3	47.3	
0.469500	41.5	2000.0	9.000	On	L1	19.9	5.0	46.5	
1.005000	30.6	2000.0	9.000	On	L1	19.6	15.4	46.0	
1.378500	32.1	2000.0	9.000	On	L1	19.6	13.9	46.0	
2.130000	28.8	2000.0	9.000	On	N	19.6	17.2	46.0	
4.425000	28.4	2000.0	9.000	On	N	19.7	17.6	46.0	



ANNEX B: Persons involved in this testing

Test Item	Tester
Conducted Continuous Emission	Shi Suolan
Radiated Continuous Emission	Shi Suolan

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