



TEST REPORT

No. I17Z61985-EMC01

for

TCL Communication Ltd.

LTE / UMTS / GSM mobile phone

Model Name: 5099A

FCC ID: 2ACCJBT08

with

Hardware Version: 03

Software Version: vJ1R

Issued Date: 2017-12-05



Note:

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Test Laboratory:

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I17Z61895-EMC01	Rev.0	1 st edition	2017-12-05



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1. Test Laboratory

1.1. Testing Location

Location: CTTL(huayuan North Road)

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: 2017-11-19

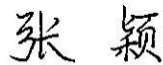
Testing End Date: 2017-12-05

1.4. Signature



Li Yan

(Prepared this test report)



Zhang Ying

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Liu Baodian

Deputy Director of the laboratory

(Approved this test report)



2. Client Information

2.1. Applicant Information

Company Name: TCL Communication Ltd.
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Contact Email juan.ma@tcl.com□
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2.2. Manufacturer Information

Company Name: TCL Communication Ltd.
Address /Post: 5F, C-Tower, No. 232, Liang Jing Road, ZhangJiang High-Tech Park,
Pudong Area,Shanghai,201203,P.R.China
Contact Person: Juan.Ma
Contact Email juan.ma@tcl.com□
Telephone: 0755-33038372
Fax: /



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

3.1. About EUT

Description	LTE / UMTS / GSM mobile phone
Model Name	5099A
FCC ID	2ACCJBT08
Extreme vol. Limits	3.5VDC to 4.4VDC (nominal: 3.8VDC)

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
EUT8	015106000200210	03	vJ1R

*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
AE2	Battery	/	inbuilt
AE3	Charger	/	17TCTCH1231
AE4	Charger	/	17TCTCH1197
AE5	Charger	/	17TCTCH1249
AE6	Charger	/	17TCTCH1179
AE7	Charger	/	17TCTCH1187
AE8	USB cable		17TCTDC0502
AE9	USB cable		17TCTDC0490
AE10	Charger		/
AE11	Charger	/	/

AE1

Model	CAC2900005C7
Manufacturer	VEKEN
Capacitance	2900 mAh
Nominal voltage	3.0V

AE2

Model	CAC2900001C1
Manufacturer	BYD
Capacitance	2900 mAh
Nominal voltage	3.85V

AE3

Model	CBA0058AGAC2
Manufacturer	TENPAO
Length of cable	/

AE4



Model	CBA0058AMAC5
Manufacturer	PUAN
Length of cable	/
AE5	
Model	CBA0058AMAC2
Manufacturer	TENPAO
Length of cable	/
AE6	
Model	CBA0058AHAC2
Manufacturer	TENPAO
Length of cable	/
AE7	
Model	CBA0058AGAC5
Manufacturer	PUAN
Length of cable	/
AE8	
Model	CDA3122005C1
Manufacturer	Juwei
Length of cable	100cm
AE9	
Model	CDA3122005C2
Manufacturer	Shenghua
Length of cable	99cm
AE10	
Model	CBA0058AAAC5
Manufacturer	PUAN
Length of cable	/
AE11	
Model	CBA0058AAAC2
Manufacturer	TENPAO
Length of cable	/

*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	EUT8+ AE1/AE2+ AE3+AE8/AE9	Charger
Set.2	EUT8+ AE1/AE2+ AE4+AE8/AE9	Charger
Set.3	EUT8+ AE1/AE2+ AE5+AE8/AE9	Charger
Set.4	EUT8+ AE1/AE2+ AE6+AE8/AE9	Charger
Set.5	EUT8+ AE1/AE2+ AE7+AE8/AE9	Charger
Set.6	EUT8+ AE1/AE2+ AE8/AE9	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(BDA)
2	Conducted Emission	15.107(a)	B.2	P	CTTL(BDA)



7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	Test Receiver	ESCI	100766	R&S	2018-05-06	1 year
2	Test Receiver	ESU26	100376	R&S	2018-12-30	1 year
3	Universal Radio Communication Tester	CMW500	127406	R&S	2018-01-19	1 year
4	LISN	ESH2-Z5	829991/012	R&S	2018-05-10	1 year
5	EMI Antenna	VULB 9163	9163-483	Schwarzbeck	2018-08-20	3 years
6	EMI Antenna	3117	00139065	ETS-Lindgren	2020-11-15	3 years
7	PC	OPTIPLEX 380	2X1YV2X	DELL	N/A	N/A
8	Printer	P1606dn	VNC3L52122	HP	N/A	N/A
9	Keyboard	L100	CN0RH6596589 07ATOI40	DELL	N/A	N/A
10	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 3 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): 4.3dB, $k=2$.

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)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17650.500	39.6	-25.6	41.1	24.12	54.0	14.4	V
16939.500	39.5	-25.7	41.4	23.71	54.0	14.5	H
17593.500	39.4	-25.7	41.1	24.03	54.0	14.6	V
17635.500	39.4	-25.9	41.1	24.16	54.0	14.6	H
17574.000	39.4	-25.7	41.1	23.90	54.0	14.6	V
17616.000	39.4	-25.8	41.1	24.10	54.0	14.6	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)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
16918.500	52.3	-25.8	41.4	36.62	74.0	21.7	H
17044.500	52.2	-25.5	41.4	36.39	74.0	21.8	H
17947.500	51.9	-24.8	40.8	35.93	74.0	22.1	V
17259.000	51.8	-25.9	41.2	36.46	74.0	22.2	V
16645.500	51.8	-26.0	41.3	36.42	74.0	22.2	H
17736.750	51.7	-24.2	41.0	34.92	74.0	22.3	V

Measurement results for Set.2:

Charging Mode/Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17595.750	39.5	-25.7	41.1	24.11	54.0	14.5	H
17609.250	39.4	-25.8	41.1	24.11	54.0	14.6	V
17587.500	39.4	-25.7	41.1	23.95	54.0	14.6	V
17655.750	39.4	-25.5	41.1	23.82	54.0	14.6	V
17579.250	39.4	-25.7	41.1	23.91	54.0	14.6	H
17628.000	39.3	-25.9	41.1	24.12	54.0	14.7	V

Charging Mode/Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17593.500	52.2	-25.7	41.1	36.80	74.0	21.8	H
17032.500	51.7	-25.6	41.4	35.93	74.0	22.3	H
17949.750	51.7	-24.9	40.8	35.76	74.0	22.3	H
17635.500	51.7	-25.9	41.1	36.47	74.0	22.3	V
17520.750	51.7	-25.4	41.2	35.92	74.0	22.3	H
17656.500	51.6	-25.5	41.1	36.06	74.0	22.4	V

Measurement results for Set.3:

Charging Mode/Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17658.000	39.40	-25.5	41.1	23.81	54.0	14.6	V
16938.000	39.37	-25.7	41.4	23.63	54.0	14.6	V
17578.500	39.36	-25.7	41.1	23.90	54.0	14.6	V
17654.250	39.36	-25.5	41.1	23.83	54.0	14.6	V
17658.750	39.33	-25.5	41.1	23.72	54.0	14.7	H
17582.250	39.30	-25.7	41.1	23.86	54.0	14.7	V

Charging Mode/Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17033.250	52.0	-25.6	41.4	36.16	74.0	22.0	V
16935.000	51.9	-25.7	41.4	36.14	74.0	22.1	H
17623.500	51.7	-25.9	41.1	36.48	74.0	22.3	H
17637.000	51.6	-25.8	41.1	36.39	74.0	22.4	V
17567.250	51.6	-25.6	41.1	36.12	74.0	22.4	V
16884.000	51.6	-25.9	41.4	36.07	74.0	22.4	V

Measurement results for Set.4:

Charging Mode/Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17560.500	39.42	-25.6	41.2	23.86	54.0	14.6	H
16947.000	39.37	-25.7	41.4	23.61	54.0	14.6	V
17625.000	39.37	-25.9	41.1	24.13	54.0	14.6	V
17577.000	39.35	-25.7	41.1	23.88	54.0	14.7	H
17616.750	39.32	-25.8	41.1	24.04	54.0	14.7	V
17629.500	39.30	-25.9	41.1	24.08	54.0	14.7	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)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
16824.000	51.8	-26.1	41.5	36.38	74.0	22.2	H
16949.250	51.7	-25.7	41.4	35.89	74.0	22.3	H
16971.750	51.6	-25.6	41.4	35.83	74.0	22.4	H
17499.750	51.6	-25.3	41.2	35.75	74.0	22.4	V
16784.250	51.6	-26.2	41.5	36.29	74.0	22.4	H
17658.750	51.5	-25.5	41.1	35.90	74.0	22.5	V

Measurement results for Set.5:

Charging Mode/Average detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
17579.250	39.32	-25.7	41.1	23.86	54.0	14.7	V
17967.750	39.31	-25.1	40.8	23.60	54.0	14.7	V
17582.250	39.28	-25.7	41.1	23.83	54.0	14.7	H
17592.750	39.27	-25.7	41.1	23.87	54.0	14.7	H
16944.000	39.26	-25.7	41.4	23.51	54.0	14.7	H
17619.750	39.26	-25.8	41.1	24.00	54.0	14.7	V

Charging Mode/Peak detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
17623.500	52.45	-25.9	41.1	37.21	74.0	21.6	V
16677.750	52.28	-26.0	41.4	36.94	74.0	21.7	V
16480.500	51.93	-26.0	41.1	36.85	74.0	22.1	V
17577.750	51.85	-25.7	41.1	36.38	74.0	22.2	H
17668.500	51.82	-25.3	41.1	36.06	74.0	22.2	H
16928.250	51.75	-25.7	41.4	36.04	74.0	22.2	V

Measurement results for Set.6:

USB Mode/Average detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
5877.000	51.08	-32.2	35.1	48.15	54.0	2.9	H
5877.750	49.12	-32.2	35.1	46.18	54.0	4.9	H
5878.500	47.88	-32.2	35.1	44.95	54.0	6.1	V
5879.250	46.40	-32.2	35.1	43.46	54.0	7.6	V
5876.250	43.20	-32.2	35.1	40.27	54.0	10.8	H
16943.250	39.41	-25.7	41.4	23.65	54.0	14.6	V

USB Mode/Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
5877.000	53.4	-32.2	35.1	50.45	74.0	20.6	H
5877.750	52.7	-32.2	35.1	49.77	74.0	21.3	H
16874.250	52.3	-25.9	41.5	36.79	74.0	21.7	V
17958.750	52.3	-25.0	40.8	36.47	74.0	21.7	V
16344.750	52.0	-25.6	40.8	36.81	74.0	22.0	V
16947.750	51.8	-25.7	41.4	36.05	74.0	22.2	V

Note: The measurement results of Set.1, Set.2, Set.3, Set.4, Set.5 and Set.6 showed here are worst cases of the combinations of different batteries and USB cables.

Charging Mode, Set.1

15B RE 30MHz-1GHz

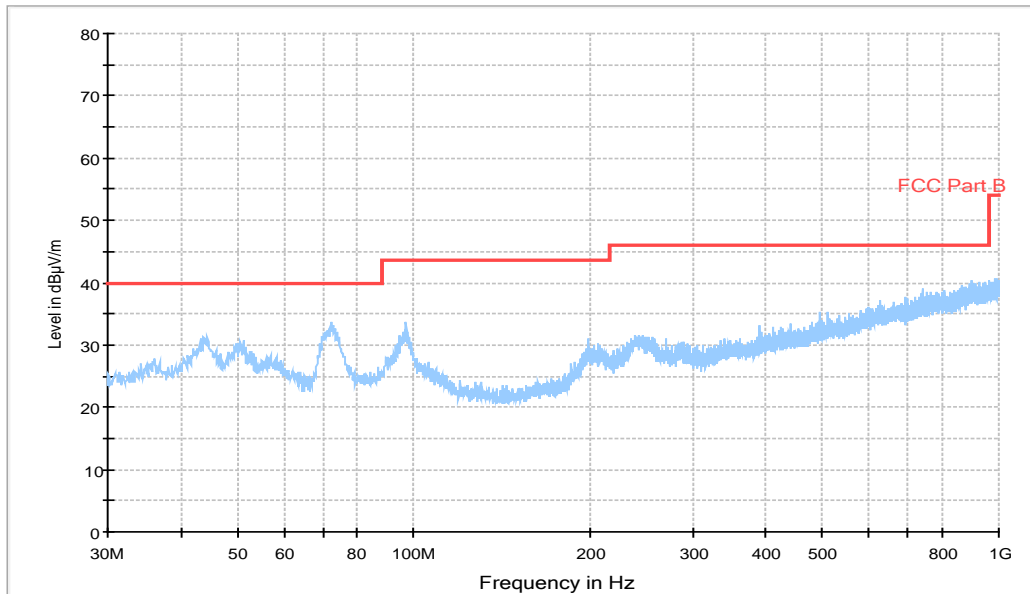


Figure A.1 Radiated Emission from 30MHz to 1GHz

15B RE - 1GHz-3GHz

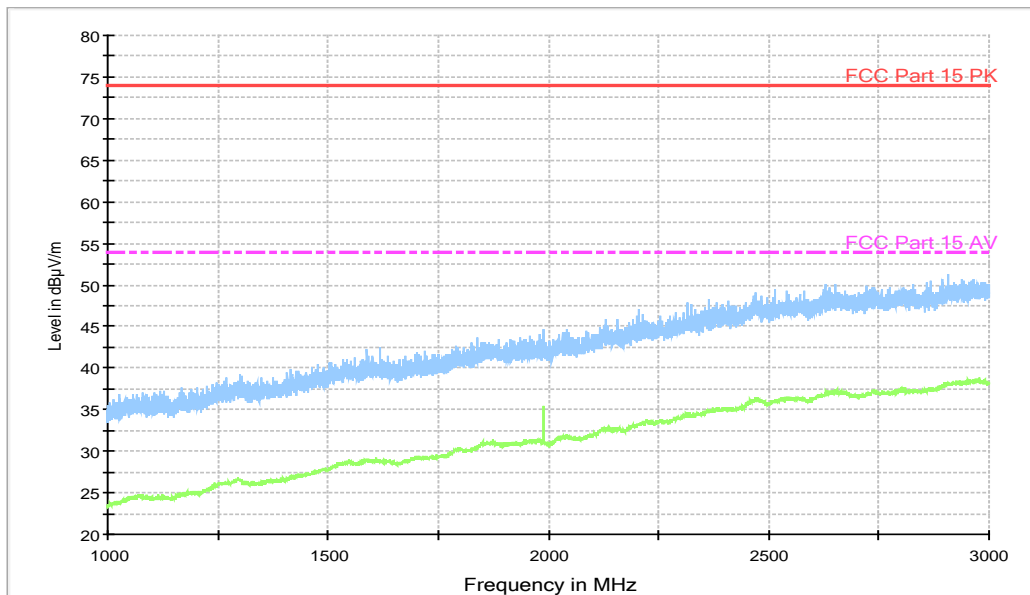


Figure A.2 Radiated Emission from 1GHz to 3GHz

15B RE - 1GHz-3GHz

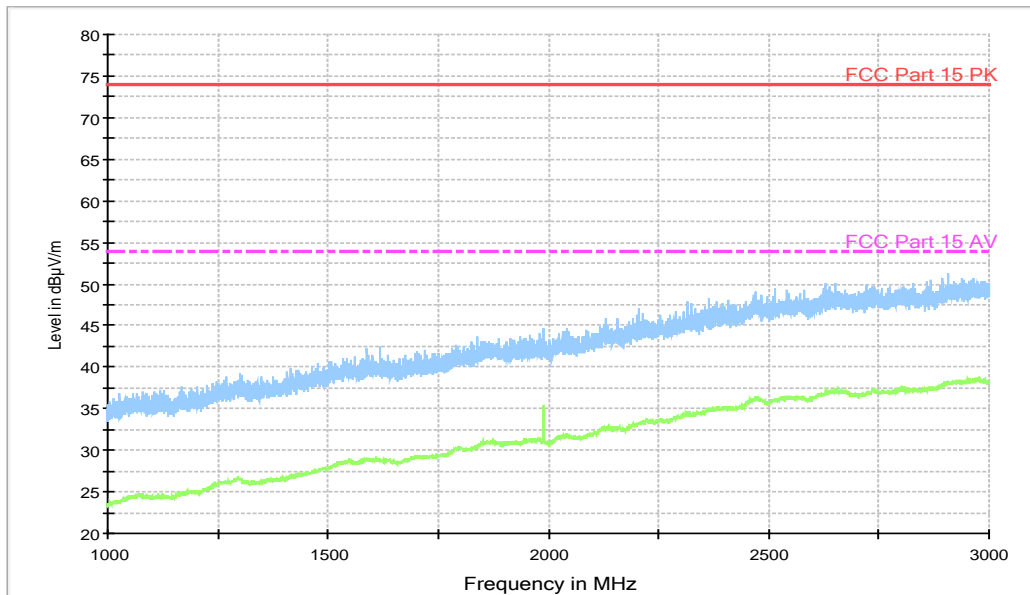


Figure A.3 Radiated Emission from 3GHz to 18GHz

Charging Mode, Set.2

15B RE 30MHz-1GHz

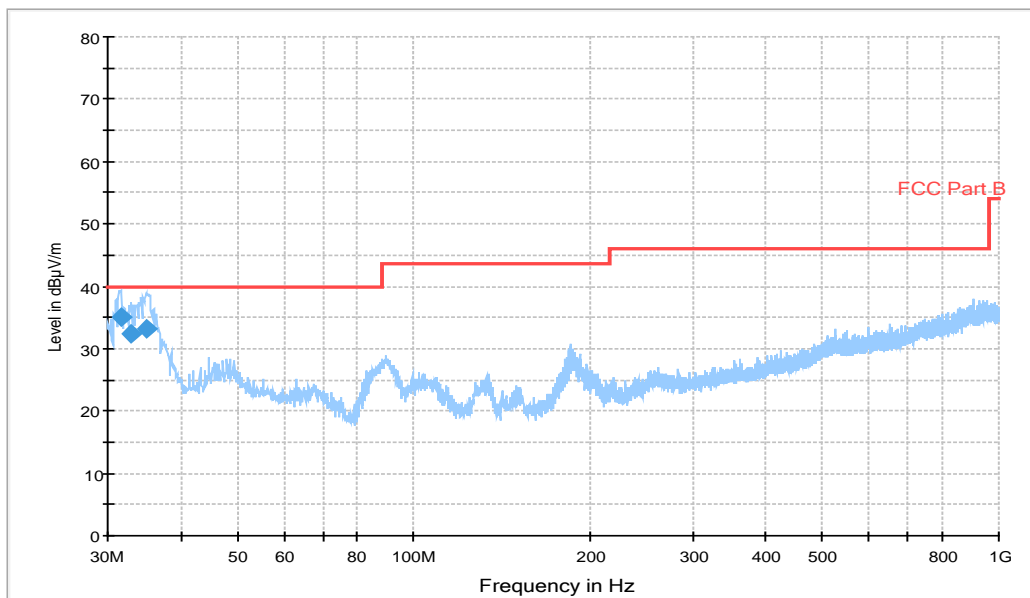


Figure A.4 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency	QuasiPeak	Height	Polarization	Azimuth	Corr.	Margin	Limit
31.552000	35.0	100.0	V	169.0	-2.6	5.0	40.0
33.007000	32.5	100.0	V	159.0	-2.3	7.5	40.0
35.044000	33.3	109.0	V	32.0	-1.9	6.7	40.0

15B RE - 1GHz-3GHz

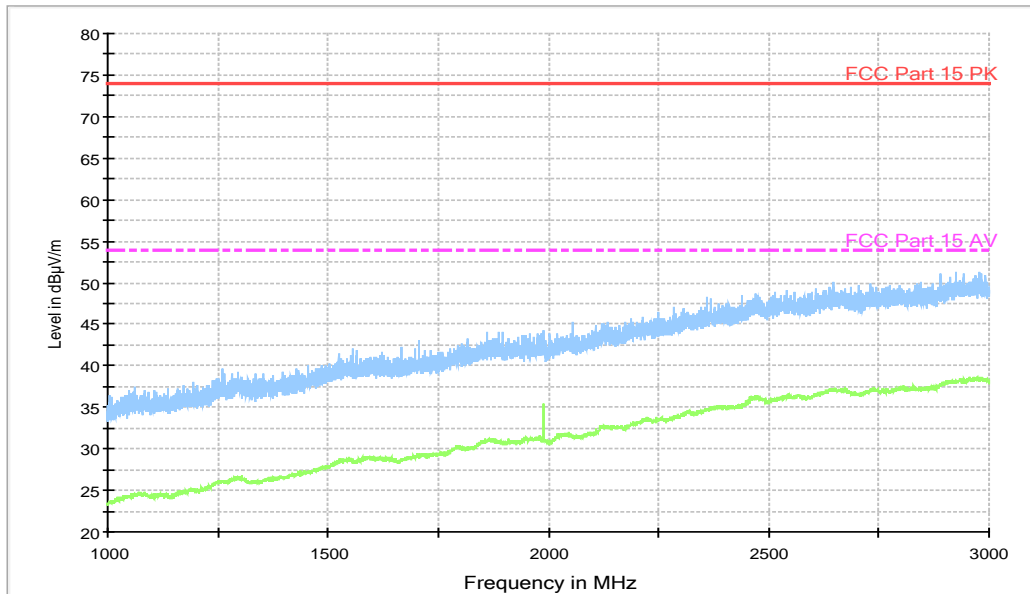


Figure A.5 Radiated Emission from 1GHz to 3GHz

15b RE - 3GHz-18GHz

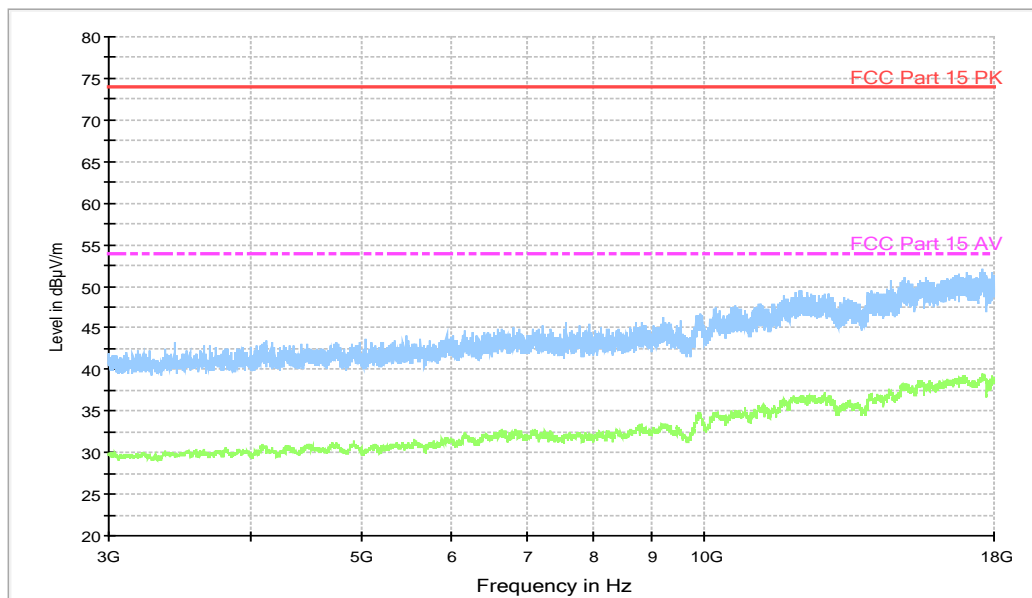


Figure A.6 Radiated Emission from 3GHz to 18GHz

Charging Mode, Set.3

15B RE 30MHz-1GHz

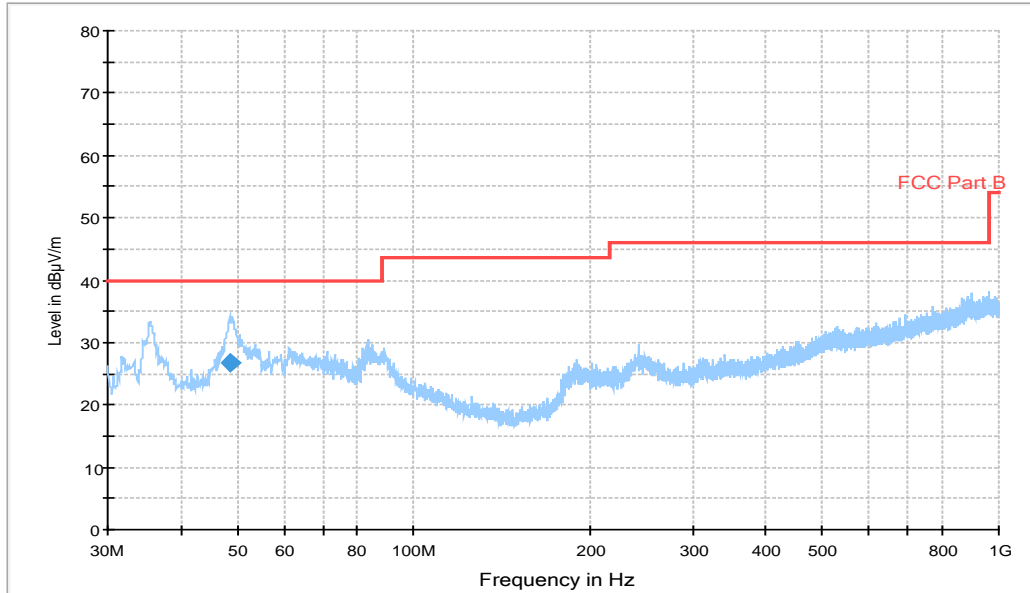


Figure A.7 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency	QuasiPeak	Height	Polarization	Azimuth	Corr.	Margin	Limit
48.430000	26.8	100.0	V	107.0	-0.5	13.2	40.0

15B RE - 1GHz-3GHz

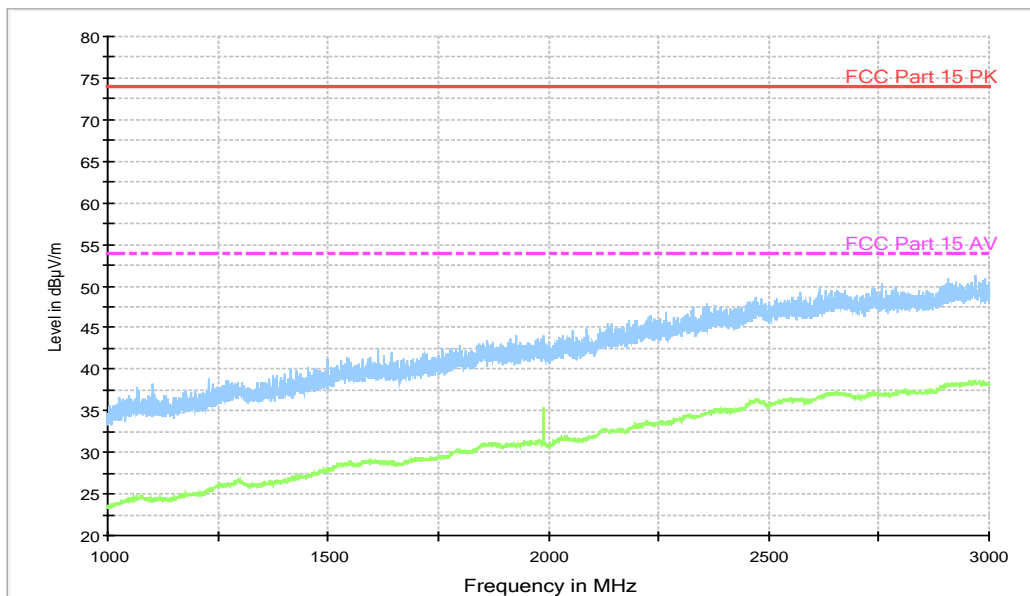


Figure A.8 Radiated Emission from 1GHz to 3GHz

15b RE - 3GHz-18GHz

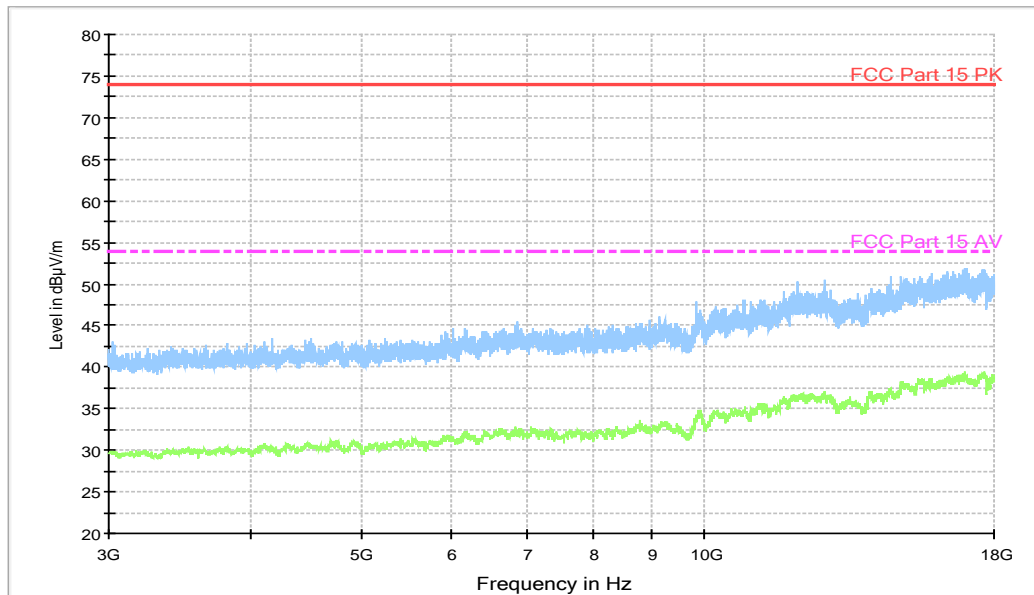


Figure A.9 Radiated Emission from 3GHz to 18GHz

Charging Mode, Set.4

15B RE 30MHz-1GHz

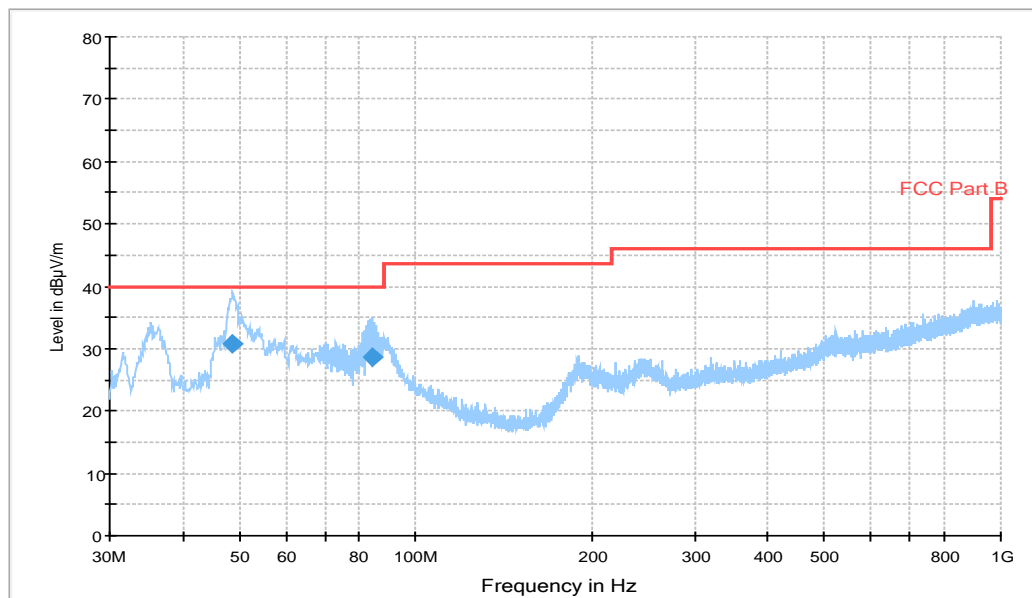


Figure A.10 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency	QuasiPeak	Height	Polarization	Azimuth	Corr.	Margin	Limit
48.721000	30.8	100.0	V	62.0	-0.5	9.2	40.0
84.223000	28.7	125.0	V	315.0	-4.4	11.3	40.0

15B RE - 1GHz-3GHz

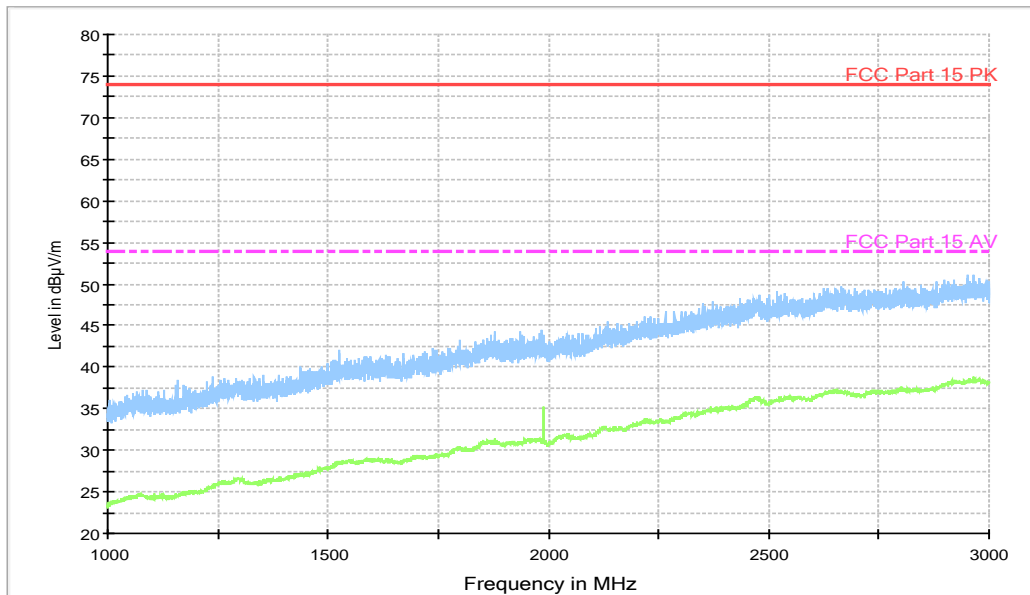


Figure A.11 Radiated Emission from 1GHz to 3GHz

15b RE - 3GHz-18GHz

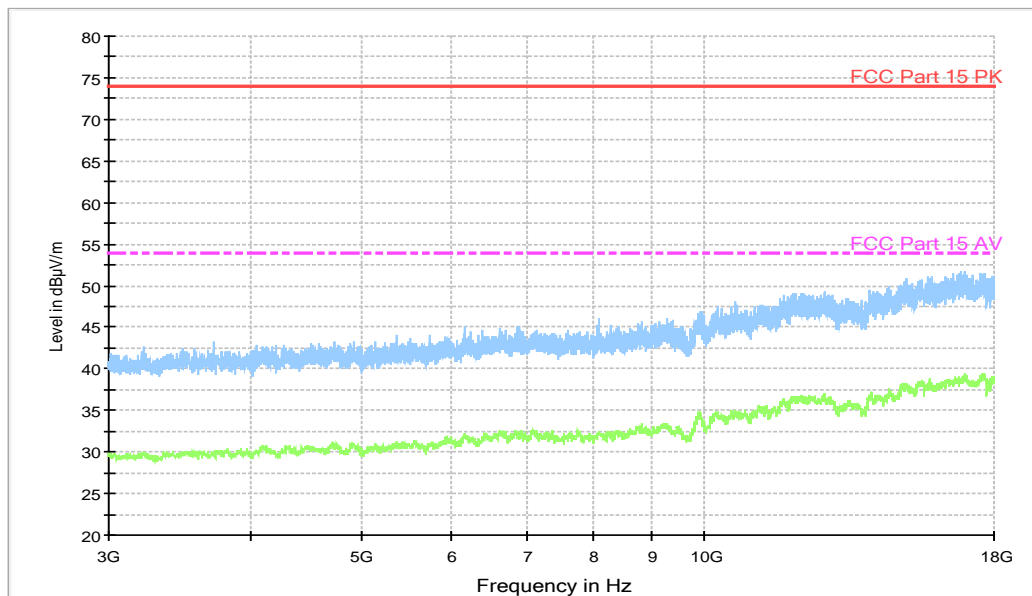


Figure A.12 Radiated Emission from 3GHz to 18GHz

Charging Mode, Set.5

15B RE 30MHz-1GHz

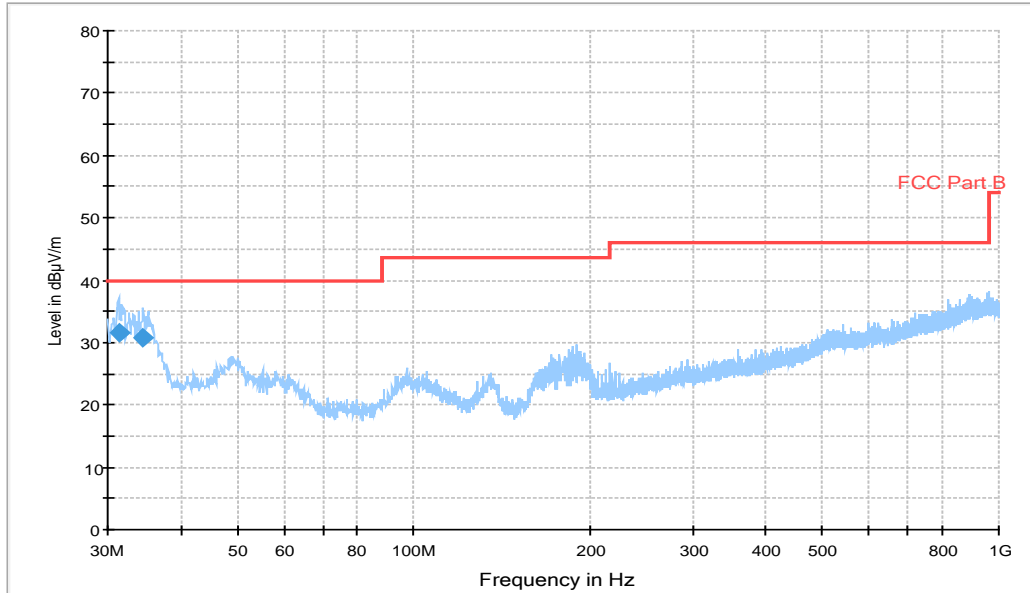


Figure A.13 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency	QuasiPeak	Height	Polarization	Azimuth	Corr.	Margin	Limit
31.358000	31.5	100.0	V	159.0	-2.7	8.5	40.0
34.559000	30.8	120.0	V	135.0	-2.0	9.2	40.0

15B RE - 1GHz-3GHz

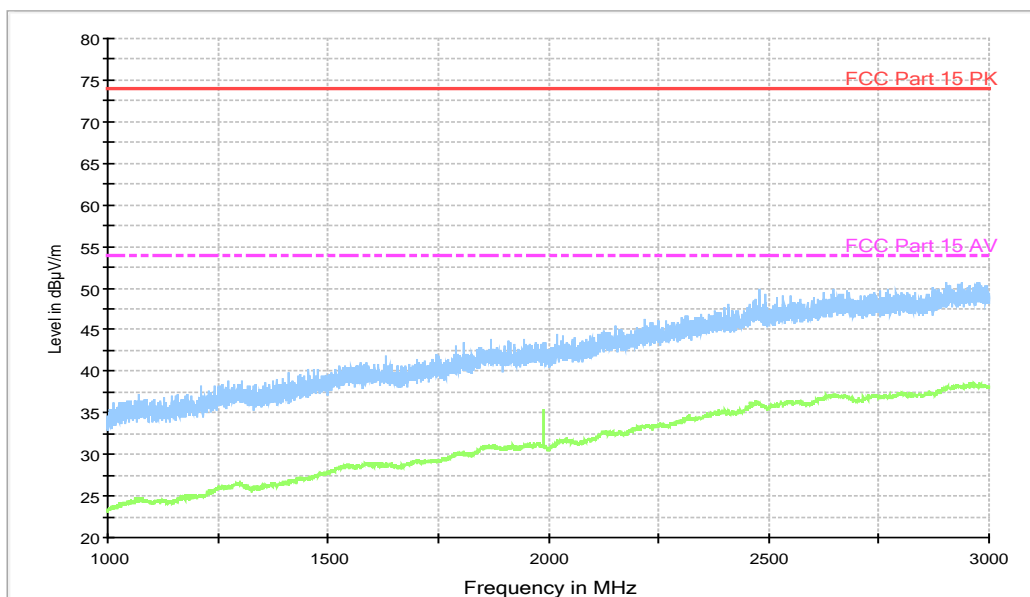


Figure A.14 Radiated Emission from 1GHz to 3GHz

15b RE - 3GHz-18GHz

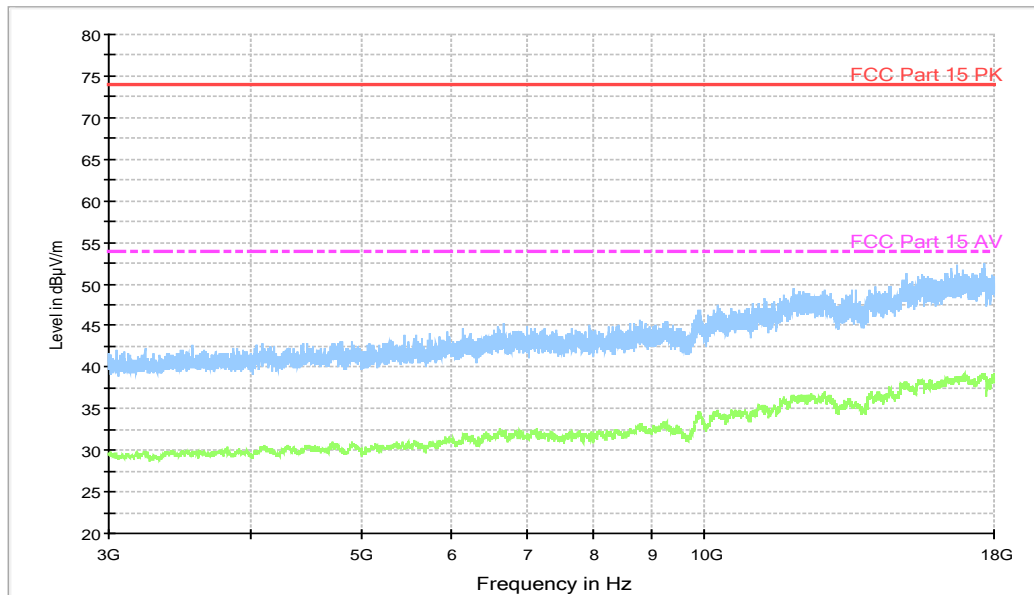


Figure A.15 Radiated Emission from 3GHz to 18GHz

USB Mode, Set.6

15B RE 30MHz-1GHz

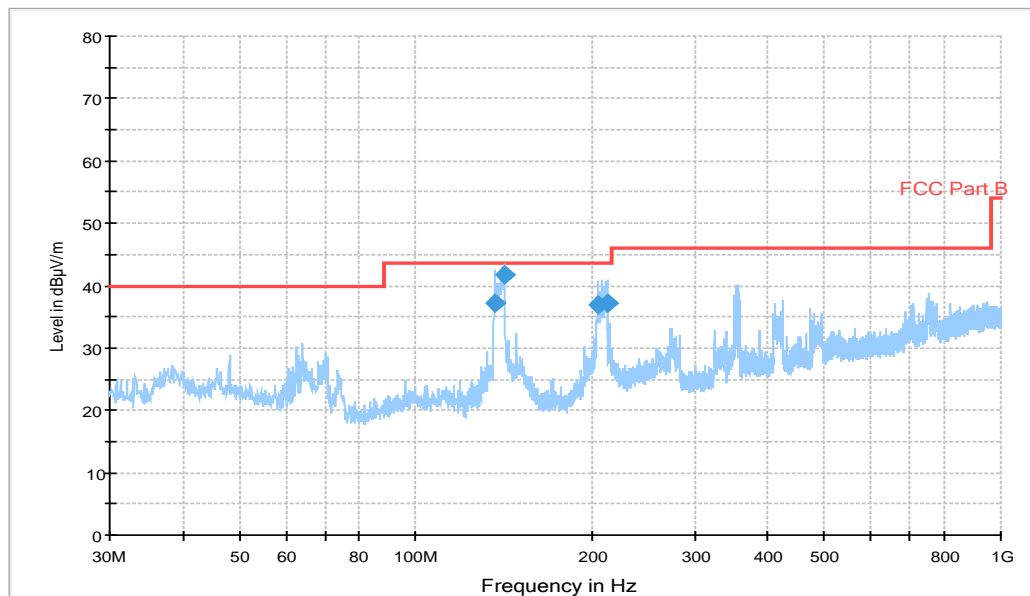


Figure A.16 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency	QuasiPeak	Height	Polarization	Azimuth	Corr.	Margin	Limit
136.797000	37.2	100.0	V	-35.0	-5.6	6.3	43.5
141.453000	41.7	100.0	V	-14.0	-5.8	1.8	43.5
204.503000	36.9	125.0	H	-28.0	-1.9	6.6	43.5
212.360000	37.3	125.0	H	-45.0	-1.5	6.2	43.5

15B RE - 1GHz-3GHz

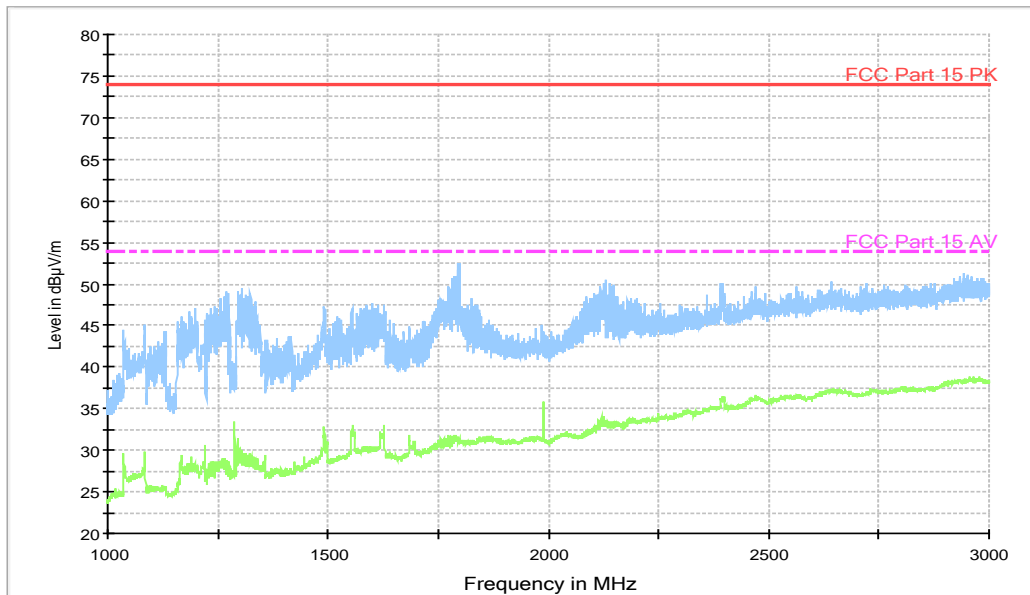


Figure A.17 Radiated Emission from 1GHz to 3GHz

15b RE - 3GHz-18GHz

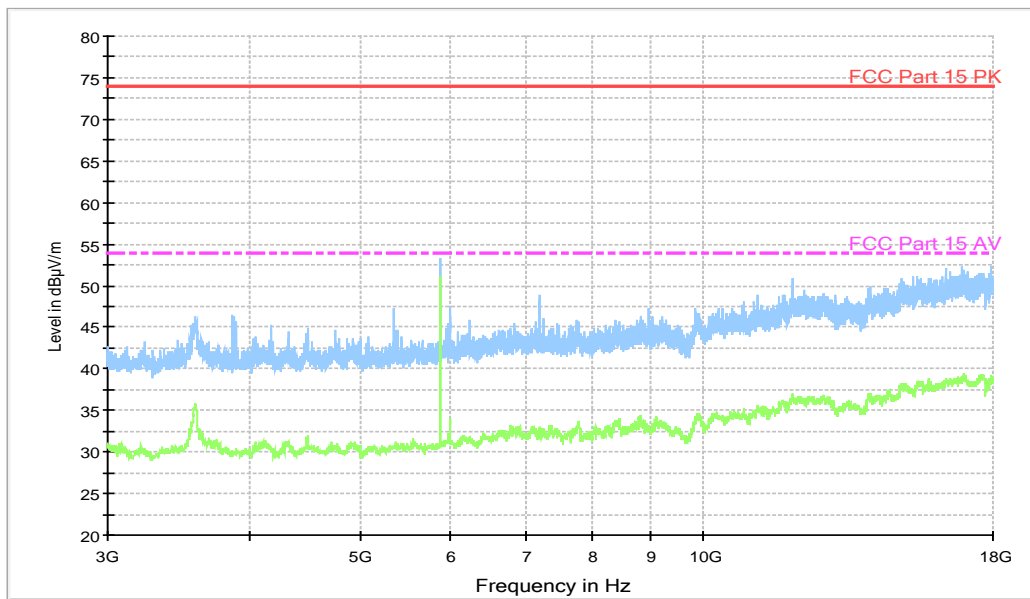


Figure A.18 Radiated Emission from 3GHz to 6GHz

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: $U = 2.9 \text{ dB}$, $k=2$.

Charging Mode, Set.1

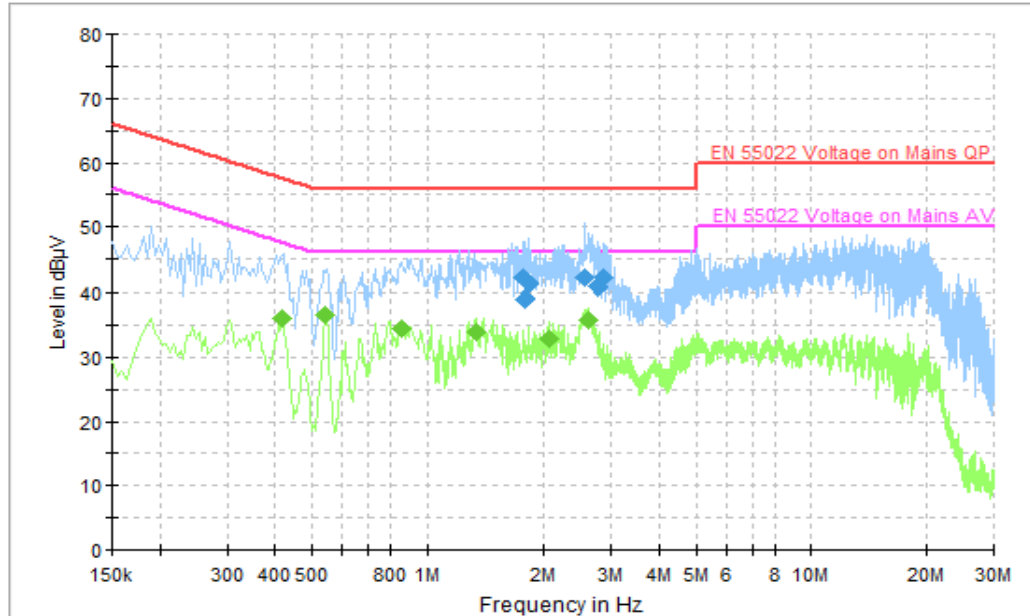


Figure A.19 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.761000	42.2	2000.0	9.000	L1	10.2	13.8	56.0
1.788000	38.9	2000.0	9.000	L1	10.2	17.1	56.0
1.824000	41.4	2000.0	9.000	L1	10.2	14.6	56.0
2.562000	42.2	2000.0	9.000	L1	10.2	13.8	56.0
2.773500	40.9	2000.0	9.000	L1	10.2	15.1	56.0
2.845500	42.2	2000.0	9.000	L1	10.3	13.8	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.415500	35.9	2000.0	9.000	L1	10.2	11.6	47.5
0.541500	36.6	2000.0	9.000	L1	10.2	9.4	46.0
0.861000	34.5	2000.0	9.000	L1	10.2	11.5	46.0
1.342500	33.8	2000.0	9.000	L1	10.2	12.2	46.0
2.062500	32.7	2000.0	9.000	L1	10.2	13.3	46.0
2.598000	35.9	2000.0	9.000	L1	10.2	10.1	46.0

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

Charging Mode, Set.2

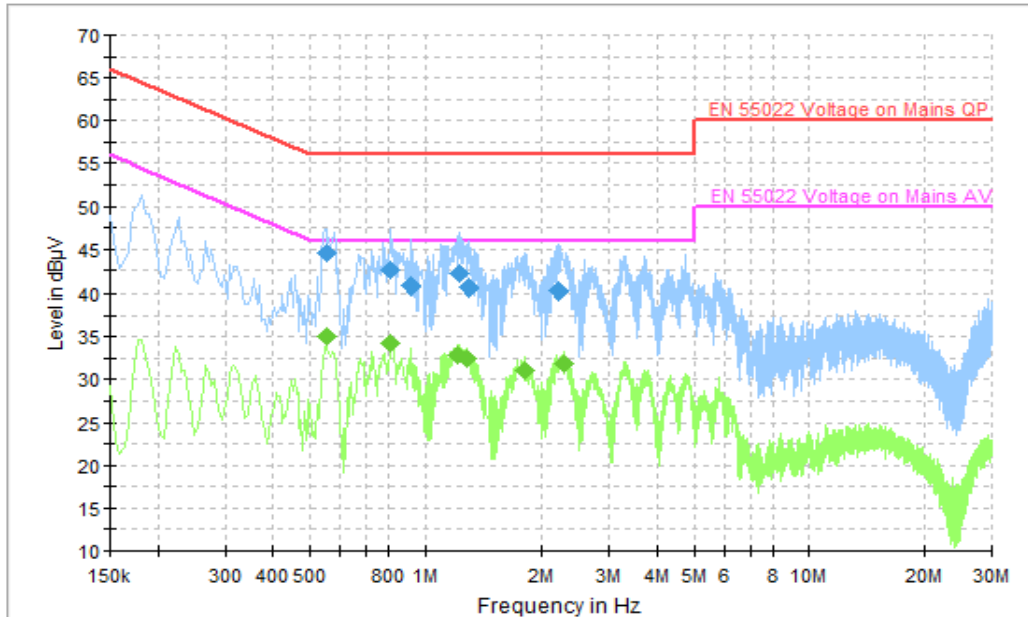


Figure A.20 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.550500	44.5	2000.0	9.000	L1	10.2	11.5	56.0
0.811500	42.6	2000.0	9.000	L1	10.2	13.4	56.0
0.915000	40.9	2000.0	9.000	L1	10.2	15.1	56.0
1.225500	42.1	2000.0	9.000	L1	10.2	13.9	56.0
1.302000	40.6	2000.0	9.000	L1	10.2	15.4	56.0
2.211000	40.2	2000.0	9.000	L1	10.2	15.8	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.550500	34.9	2000.0	9.000	L1	10.2	11.1	46.0
0.811500	34.2	2000.0	9.000	L1	10.2	11.8	46.0
1.216500	32.9	2000.0	9.000	L1	10.2	13.1	46.0
1.288500	32.4	2000.0	9.000	L1	10.2	13.6	46.0
1.810500	31.0	2000.0	9.000	L1	10.2	15.0	46.0
2.269500	31.9	2000.0	9.000	L1	10.2	14.1	46.0

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

Charging Mode, Set.3

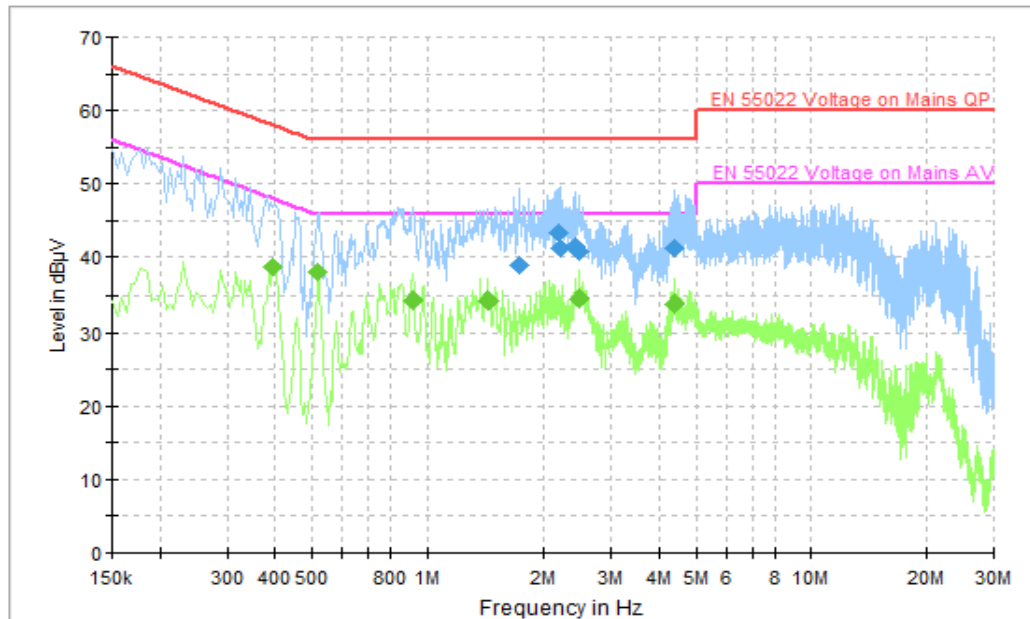


Figure A.21 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.716000	39.0	2000.0	9.000	N	10.2	17.0	56.0
2.188500	43.4	2000.0	9.000	L1	10.2	12.6	56.0
2.206500	41.3	2000.0	9.000	L1	10.2	14.7	56.0
2.404500	41.4	2000.0	9.000	L1	10.2	14.6	56.0
2.472000	40.7	2000.0	9.000	L1	10.2	15.3	56.0
4.407000	41.2	2000.0	9.000	L1	10.3	14.8	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.393000	38.7	2000.0	9.000	L1	10.2	9.3	48.0
0.514500	37.9	2000.0	9.000	L1	10.2	8.1	46.0
0.919500	34.4	2000.0	9.000	L1	10.2	11.6	46.0
1.437000	34.3	2000.0	9.000	L1	10.2	11.7	46.0
2.472000	34.5	2000.0	9.000	L1	10.2	11.5	46.0
4.407000	33.8	2000.0	9.000	L1	10.3	12.2	46.0

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

Charging Mode, Set.4

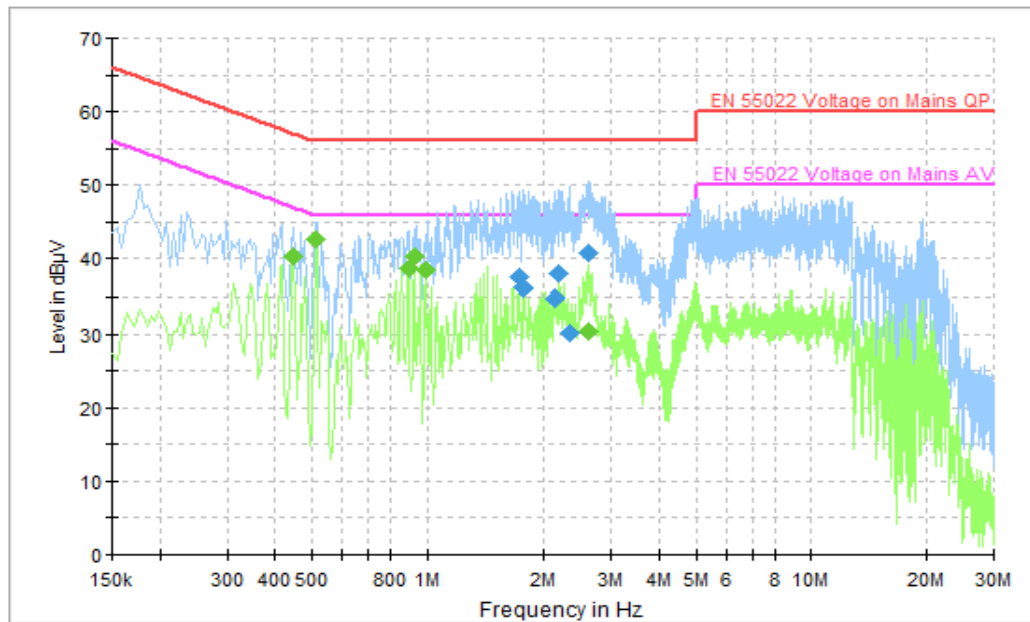


Figure A.22 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.716000	37.5	2000.0	9.000	L1	10.2	18.5	56.0
1.770000	36.1	2000.0	9.000	L1	10.2	19.9	56.0
2.139000	34.7	2000.0	9.000	L1	10.2	21.3	56.0
2.188500	38.0	2000.0	9.000	L1	10.2	18.0	56.0
2.332500	30.2	2000.0	9.000	L1	10.2	25.8	56.0
2.598000	40.8	2000.0	9.000	L1	10.2	15.2	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.447000	40.4	2000.0	9.000	N	10.2	6.6	46.9
0.510000	42.5	2000.0	9.000	N	10.2	3.5	46.0
0.892500	38.7	2000.0	9.000	N	10.2	7.3	46.0
0.924000	40.4	2000.0	9.000	N	10.2	5.6	46.0
0.991500	38.5	2000.0	9.000	N	10.2	7.5	46.0
2.598000	30.3	2000.0	9.000	L1	10.2	15.7	46.0

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

Charging Mode, Set.5

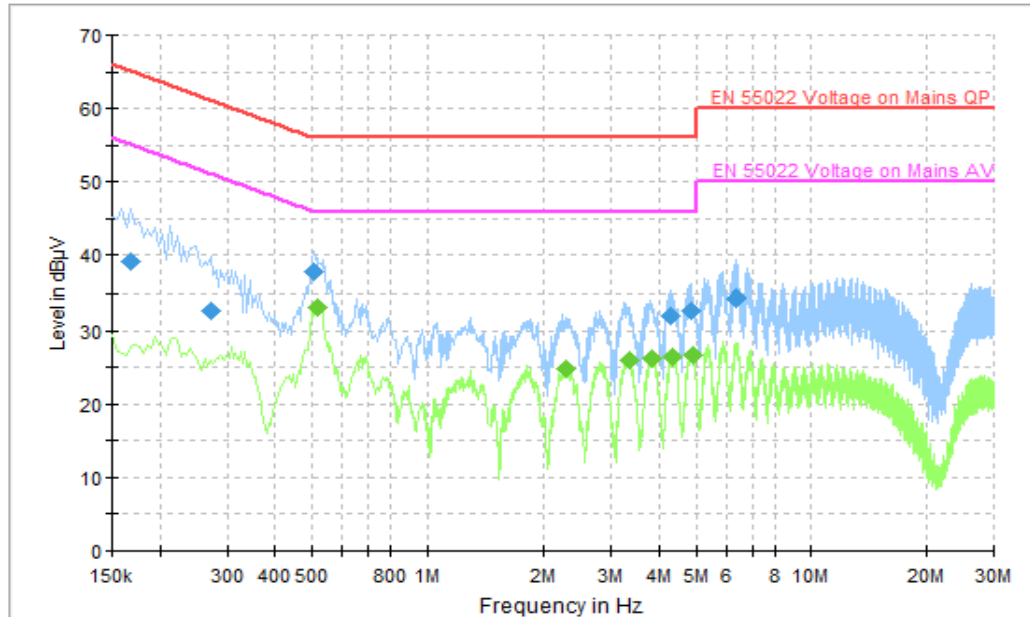


Figure A.23 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.168000	39.2	2000.0	9.000	L1	10.1	25.8	65.1
0.271500	32.6	2000.0	9.000	N	10.2	28.4	61.1
0.505500	37.8	2000.0	9.000	L1	10.2	18.2	56.0
4.276500	31.9	2000.0	9.000	L1	10.3	24.1	56.0
4.825500	32.6	2000.0	9.000	L1	10.3	23.4	56.0
6.387000	34.3	2000.0	9.000	L1	10.4	25.7	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.514500	33.1	2000.0	9.000	L1	10.2	12.9	46.0
2.287500	24.8	2000.0	9.000	L1	10.2	21.2	46.0
3.327000	25.9	2000.0	9.000	L1	10.3	20.1	46.0
3.835500	26.2	2000.0	9.000	L1	10.3	19.8	46.0
4.344000	26.3	2000.0	9.000	L1	10.3	19.7	46.0
4.884000	26.6	2000.0	9.000	L1	10.3	19.4	46.0

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

USB Mode, Set.6

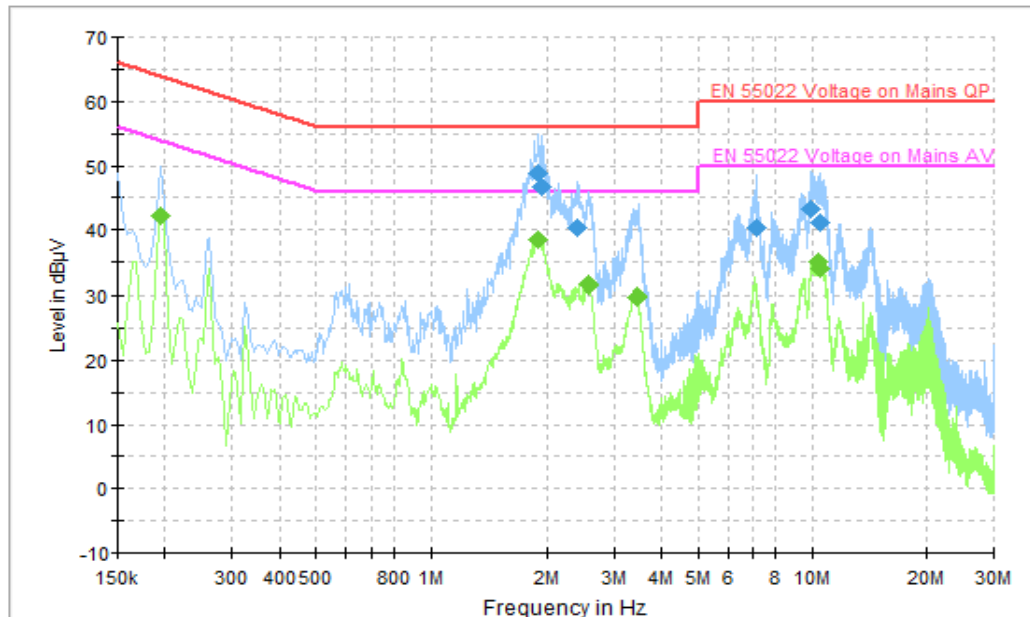


Figure A.24 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.761000	42.2	2000.0	9.000	L1	10.2	13.8	56.0
1.788000	38.9	2000.0	9.000	L1	10.2	17.1	56.0
1.824000	41.4	2000.0	9.000	L1	10.2	14.6	56.0
2.562000	42.2	2000.0	9.000	L1	10.2	13.8	56.0
2.773500	40.9	2000.0	9.000	L1	10.2	15.1	56.0
2.845500	42.2	2000.0	9.000	L1	10.3	13.8	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.415500	35.9	2000.0	9.000	L1	10.2	11.6	47.5
0.541500	36.6	2000.0	9.000	L1	10.2	9.4	46.0
0.861000	34.5	2000.0	9.000	L1	10.2	11.5	46.0
1.342500	33.8	2000.0	9.000	L1	10.2	12.2	46.0
2.062500	32.7	2000.0	9.000	L1	10.2	13.3	46.0
2.598000	35.9	2000.0	9.000	L1	10.2	10.1	46.0

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

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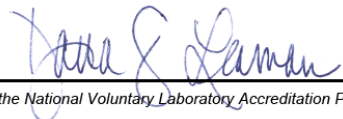
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2016-09-29 through 2017-09-30

Effective Dates



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END OF REPORT