TEST REPORT

No. I22Z60871-EMC01

for

vivo Mobile Communication Co., Ltd.

Mobile Phone

Model Name: V2160

FCC ID: 2AUCY-V2127

with

Hardware Version: MP_0.1

Software Version: PD2197BF_EX_A_3.13.15

Issued Date: 2022-05-24

Note:

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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
I22Z60871-EMC01	Rev.0	1st edition	2022-05-24

Note: the latest revision of the test report supersedes all previous version.

CONTENTS

1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2005 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0, and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (CN0066). The detail accreditation scope can be found on NVLAP website.

1.2. Testing Location

CTTL (huayuan North Road)

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

1.3. Testing Environment

Normal Temperature: 15-35° C

Relative Humidity: 20-75%

1.4. Project data

Testing Start Date: 2021-11-24

Testing End Date: 2022-05-24

1.5. Signature

Zhang Ying

(Prepared this test report)

An Hui

(Reviewed this test report)

Zhang Xia

Deputy Director of the laboratory

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	vivo Mobile Communication Co., Ltd.
Address:	No.1, vivo Road, Chang'an, Dongguan,Guangdong,China
Contact:	/
Telephone:	/
Email:	/

2.2. Manufacturer Information

Company Name:	vivo Mobile Communication Co., Ltd.
Address:	No.1, vivo Road, Chang'an, Dongguan,Guangdong,China
Contact:	/
Telephone:	/
Email:	/

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

3.1. About EUT

Description	Mobile Phone
Model Name	V2160
FCC ID	2AUCY-V2127
Extreme vol. Limits	3.6VDC to 4.45VDC (nominal: 3.87VDC)

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
UT01a	866590060198952/ 866590060198945	MP_0.1	PD2197BF_EX_A_3.13.15

*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	Charger	/	/
AE4	Charger	/	/
AE5	Battery	/	inbuilt
AE7	USB Cable	/	/

AE1

Model	V1020D-EU
Manufacturer	Dongguan Aohai Technology Co.,Ltd

AE4

Model	V1020D-US
Manufacturer	PHIHONG TECHNOLOGY CO LTD

AE5

Model	B-T6
Manufacturer	Dongguan NVT Technology Co.,Ltd
Typical capacity	5000mAh

AE7

Model	BK-C-32
Manufacturer	vivo

*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.1-1	EUT01a + AE5 + AE1 + AE7	Charger V1020D-EU

Set.1-4	EUT01a + AE5 + AE4 + AE7	Charger V1020D-US
Set.2	EUT01a + AE5 + AE7 + PC	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	2020
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 (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 M
Ground system resistance	< 4
Normalised site attenuation (NSA)	< ±4 dB, 3m 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 6000 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 M
Ground system resistance	< 4

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	LISN	ENV216	101200	R&S	2022-05-30	1 Year
2	Test Receiver	ESCI 7	100344	R&S	2023-03-21	1 year
3	Test Receiver	ESW44	103015	R&S	2023-03-08	1 year
4	EMI Antenna	VULB 9163	302	Schwarzbeck	2022-12-28	1 Year
5	EMI Antenna	3115	00167250	ETS-Lindgren	2022-07-01	1 year
6	Universal Radio Communication Tester	CMW500	116588	R&S	2022-12-20	1 Year
7	PC	OPTIPLEX 380	2X1YV2X	DELL	N/A	N/A
8	Printer	P1606dn	VNC3L52122	HP	N/A	N/A
9	Keyboard	L100	CN0RH659658907ATOI40	DELL	N/A	N/A
10	Mouse	M-UAE119	LZ935220ZRC	Lenovo	N/A	N/A

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 3/10 meters 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 EUT was tested while operating in licensed band Rx mode with Camera/MP3. All licensed band receivers that tune in the range of 30MHz-960MHz, as listed in section 3.4, are investigated. Only the worst case emissions are reported.

The model of the PC is M4000E-17, and the serial number of the PC is M706GWXD. 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 (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/3MHz	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 = 5.54 dB, k=2.

Measurement results for Set.1-1, GSM850 idle, charger V1020D-EU:

Charging Mode/QP detector

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
34.171000	11.23	29.54	18.31	98.0	V	315.0
58.615000	13.92	29.54	15.62	125.0	V	233.0
104.690000	9.21	33.06	23.85	109.0	V	135.0
127.194000	11.18	33.06	21.88	125.0	V	341.0
165.897000	14.11	33.06	18.95	109.0	V	137.0
212.845000	9.85	33.06	23.21	225.0	V	71.0

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)
17803.820	41.7	-29.6	46.0	25.4	54.0	12.3	H
17753.840	41.5	-29.6	46.0	25.2	54.0	12.5	V
17747.040	41.4	-29.6	46.0	25.1	54.0	12.6	H
17687.540	41.3	-30.0	45.2	26.0	54.0	12.7	H
17976.200	41.3	-29.1	46.7	23.7	54.0	12.7	V
17210.860	41.2	-29.5	42.4	28.3	54.0	12.8	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)
17956.820	52.6	-28.9	46.7	34.9	74.0	21.4	V
17940.840	51.8	-28.9	46.7	34.1	74.0	22.2	V
17826.940	51.8	-29.7	46.0	35.5	74.0	22.2	V
17466.540	51.6	-30.1	44.4	37.3	74.0	22.4	H
17669.860	51.6	-29.9	45.2	36.2	74.0	22.4	V
17321.360	51.6	-29.7	43.4	37.9	74.0	22.4	H

Measurement results for Set.1-4, WCDMA 850 idle, charger V1020D-US:

Charging Mode/QP detector

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
54.929000	11.42	29.54	18.12	125.0	V	225.0
87.036000	10.08	29.54	19.46	109.0	V	278.0
127.291000	10.16	33.06	22.90	225.0	V	0.0
158.719000	12.31	33.06	20.75	125.0	V	315.0
206.346000	10.66	33.06	22.40	98.0	V	225.0
260.860000	13.82	35.56	21.74	98.0	V	135.0

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)
17932.340	43.5	-29.4	46.7	26.2	54.0	10.5	H
17852.440	43.4	-29.3	46.0	26.8	54.0	10.6	V
17549.160	43.2	-29.5	44.4	28.3	54.0	10.8	V
17273.420	43.2	-29.7	43.4	29.6	54.0	10.8	H
17916.700	43.1	-29.3	46.7	25.8	54.0	10.9	H
17967.360	42.9	-29.1	46.7	25.3	54.0	11.1	H

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)
17434.580	52.0	-29.7	44.4	37.4	74.0	22.0	V
17840.540	51.2	-29.3	46.0	34.6	74.0	22.8	H
17958.180	50.9	-28.9	46.7	33.2	74.0	23.1	H
17549.160	50.9	-29.5	44.4	36.0	74.0	23.1	V
17791.240	50.9	-29.9	46.0	34.8	74.0	23.1	V
17161.560	50.9	-29.8	42.4	38.3	74.0	23.1	V

Measurement results for Set.1-1, LTE band 5 idle, charger V1020D-EU:

Charging Mode/QP detector

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
32.910000	10.94	29.54	18.60	286.0	V	45.0
57.839000	14.13	29.54	15.41	125.0	V	236.0
103.623000	10.89	33.06	22.17	100.0	H	125.0
127.291000	11.79	33.06	21.27	125.0	V	97.0
142.714000	11.20	33.06	21.86	125.0	V	135.0
156.682000	11.63	33.06	21.43	98.0	V	71.0

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)
17905.820	43.4	-29.3	46.0	26.8	54.0	10.6	H
17756.900	43.3	-29.6	46.0	27.0	54.0	10.7	H
17362.160	43.2	-30.0	43.4	29.8	54.0	10.8	V
17816.400	43.2	-29.6	46.0	26.9	54.0	10.8	V
17172.440	43.1	-29.8	42.4	30.5	54.0	10.9	V
17160.540	43.0	-29.8	42.4	30.4	54.0	11.0	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)
17978.240	52.2	-29.1	46.7	34.6	74.0	21.8	V
17739.560	51.3	-29.7	46.0	35.0	74.0	22.7	V
17845.640	51.1	-29.3	46.0	34.5	74.0	22.9	V
17858.220	51.0	-29.3	46.0	34.4	74.0	23.0	H
17216.300	51.0	-29.5	43.4	37.1	74.0	23.0	V
17763.700	50.9	-29.6	46.0	34.6	74.0	23.1	H

Measurement results for Set.1-4, LTE band 12 idle, charger V1020D-US:

Charging Mode/QP detector

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
55.511000	12.81	29.54	15.73	185.0	V	267.0
86.745000	11.92	29.54	17.62	286.0	V	315.0
100.907000	11.56	33.06	21.50	175.0	H	1.0
158.040000	12.87	33.06	20.19	125.0	V	0.0
206.928000	10.74	33.06	22.32	98.0	V	315.0
267.068000	10.17	35.56	25.39	175.0	V	46.0

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)
17677.680	43.3	-29.9	45.2	27.9	54.0	10.7	H
17246.560	43.2	-30.0	43.4	29.9	54.0	10.8	V
17790.220	43.2	-29.9	46.0	27.1	54.0	10.8	V
17703.860	43.1	-29.7	45.2	27.6	54.0	10.9	H
17222.760	43.0	-29.6	43.4	29.2	54.0	11.0	H
17979.940	43.0	-29.1	46.7	25.4	54.0	11.0	H

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)
17229.220	51.3	-29.6	43.4	37.5	74.0	22.7	H
17270.360	51.0	-29.7	43.4	37.4	74.0	23.0	V
17944.240	51.0	-28.9	46.7	33.3	74.0	23.0	V
17784.780	50.9	-29.9	46.0	34.8	74.0	23.1	V
17175.500	50.9	-29.8	42.4	38.3	74.0	23.1	V
17344.140	50.7	-30.0	43.4	37.3	74.0	23.3	H

Measurement results for Set.1-1, LTE band 13 idle, charger V1020D-EU:

Charging Mode/QP detector

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
33.977000	11.50	29.54	18.04	275.0	V	315.0
56.481000	13.55	29.54	15.99	225.0	V	315.0
102.750000	10.73	33.06	22.33	225.0	H	103.0
126.127000	10.52	33.06	22.54	186.0	V	135.0
162.405000	15.11	33.06	17.95	109.0	V	0.0
210.905000	12.79	33.06	20.27	109.0	V	46.0

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)
17239.080	43.1	-29.6	43.4	29.3	54.0	10.9	V
17446.140	43.1	-29.9	44.4	28.6	54.0	10.9	V
17632.120	43.1	-29.4	45.2	27.3	54.0	10.9	H
17527.740	43.0	-29.3	44.4	28.0	54.0	11.0	V
17793.960	42.9	-29.9	46.0	26.8	54.0	11.1	H
17967.020	42.9	-29.1	46.7	25.3	54.0	11.1	H

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)
17757.580	51.7	-29.6	46.0	35.4	74.0	22.3	V
17767.780	51.3	-29.6	46.0	35.0	74.0	22.7	H
17261.180	51.2	-29.7	43.4	37.6	74.0	22.8	V
17956.140	51.1	-28.9	46.7	33.4	74.0	22.9	V
17720.860	51.1	-29.7	45.2	35.5	74.0	22.9	H
17142.520	51.0	-29.9	42.4	38.5	74.0	23.0	H

Measurement results for Set.1-4, LTE band 17 idle , charger V1020D-US:

Charging Mode/QP detector

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
58.130000	14.60	29.54	14.94	125.0	V	339.0
100.131000	10.01	33.06	23.05	325.0	V	225.0
125.157000	10.64	33.06	22.42	175.0	V	225.0
174.239000	17.80	33.06	15.26	98.0	V	0.0
230.014000	10.80	35.56	24.76	125.0	V	135.0
316.732000	14.19	35.56	21.37	325.0	H	303.0

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)
17878.280	43.2	-29.4	46.0	26.6	54.0	10.8	V
17957.500	43.1	-28.9	46.7	25.4	54.0	10.9	V
17764.380	43.1	-29.6	46.0	26.8	54.0	10.9	H
17920.440	43.0	-29.4	46.7	25.7	54.0	11.0	V
17777.300	43.0	-29.6	46.0	26.7	54.0	11.0	H
17449.880	43.0	-29.9	44.4	28.5	54.0	11.0	H

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)
17958.860	51.7	-28.9	46.7	34.0	74.0	22.3	V
17816.060	51.5	-29.6	46.0	35.2	74.0	22.5	V
17673.260	51.3	-29.9	45.2	35.9	74.0	22.7	H
17654.900	51.1	-29.6	45.2	35.5	74.0	22.9	V
17280.220	51.0	-29.7	43.4	37.3	74.0	23.0	V
17739.560	50.9	-29.7	46.0	34.6	74.0	23.1	H

Measurement results for Set.2, USB:

USB Mode/QP detector

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
49.206000	18.14	29.54	11.40	98.0	V	225.0
96.154000	18.80	33.06	14.26	125.0	V	2.0
137.379000	11.89	33.06	21.17	286.0	H	252.0
275.022000	25.26	35.56	10.30	286.0	H	1.0
399.958000	21.22	35.56	14.34	175.0	H	161.0
528.968000	27.59	35.56	7.97	225.0	V	315.0

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)
17799.400	49.6	-29.9	46.0	33.5	54.0	4.4	V
17860.600	48.4	-29.4	46.0	31.8	54.0	5.6	V
17873.520	48.7	-29.4	46.0	32.1	54.0	5.3	H
17735.480	49.6	-29.7	45.2	34.0	54.0	4.4	V
17347.540	48.2	-30.0	43.4	34.8	54.0	5.8	V
17984.020	48.7	-29.1	46.7	31.1	54.0	5.3	V

USB 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)
17249.280	52.0	-30.0	43.4	38.7	74.0	22.0	H
17894.260	51.7	-29.5	46.0	35.3	74.0	22.3	V
17755.540	51.3	-29.6	46.0	35.0	74.0	22.7	H
17253.020	51.3	-30.0	43.4	38.0	74.0	22.7	V
17694.000	51.3	-30.0	45.2	36.0	74.0	22.7	V
17769.820	51.3	-29.6	46.0	35.0	74.0	22.7	V

Measurement results for Set.1-1, GSM850 idle, charger V1020D-EU:

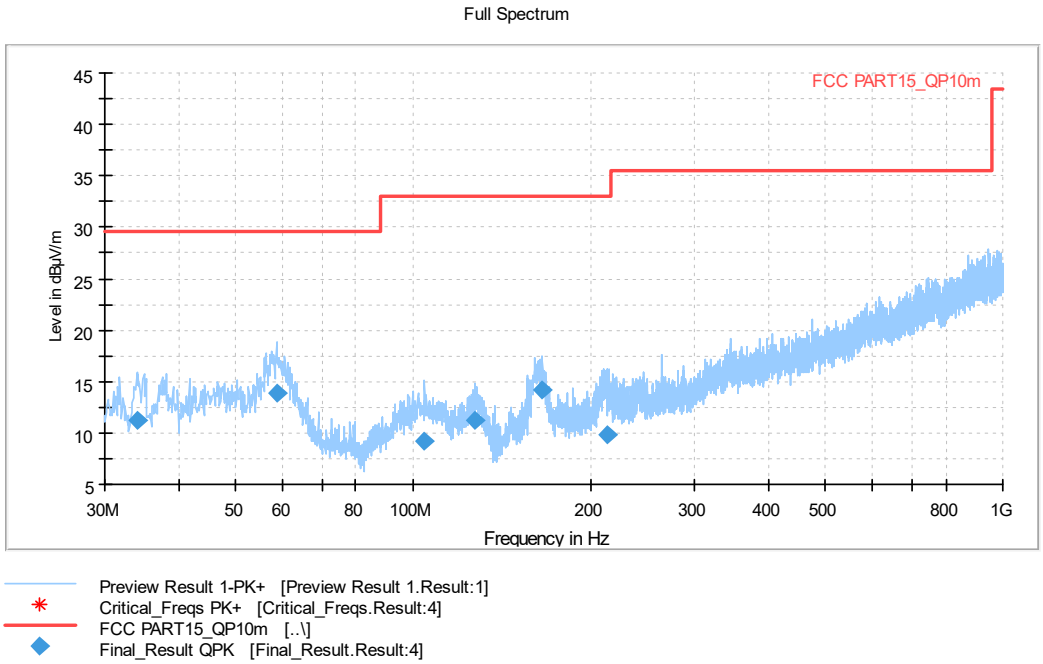

Fig A.1 Radiated Emission from 30MHz to 1GHz

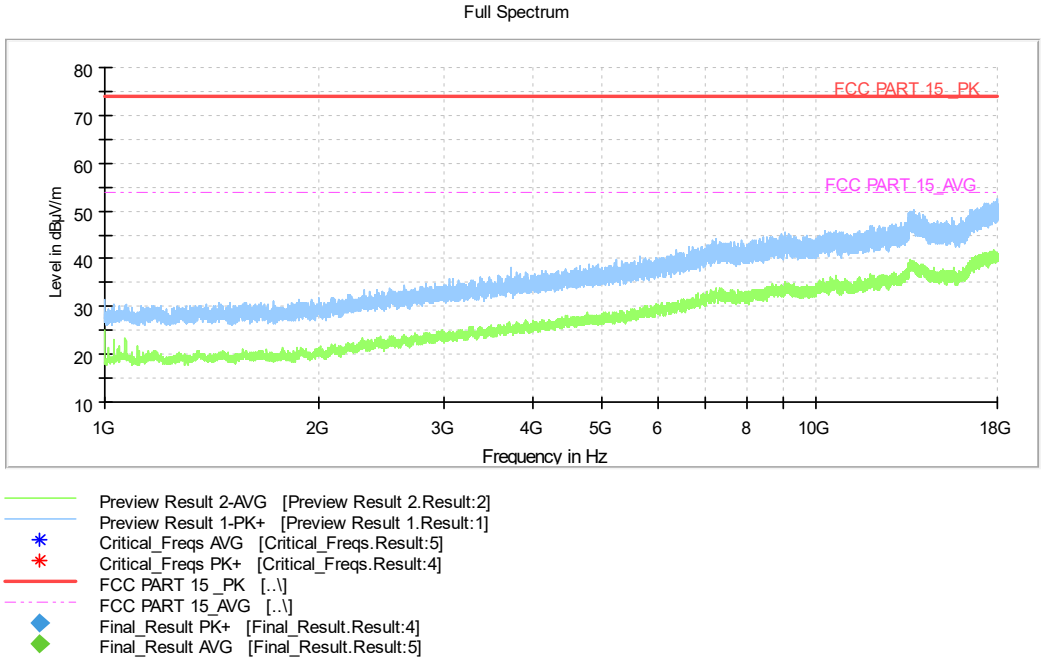

Fig A.2 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.1-4, WCDMA 850 idle, charger V1020D-US:

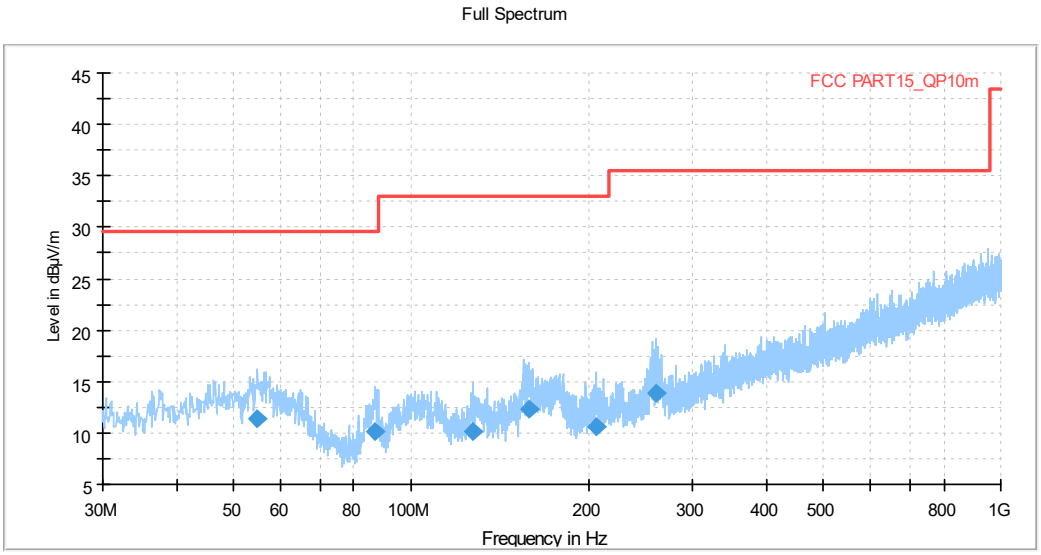

Fig A.3 Radiated Emission from 30MHz to 1GHz

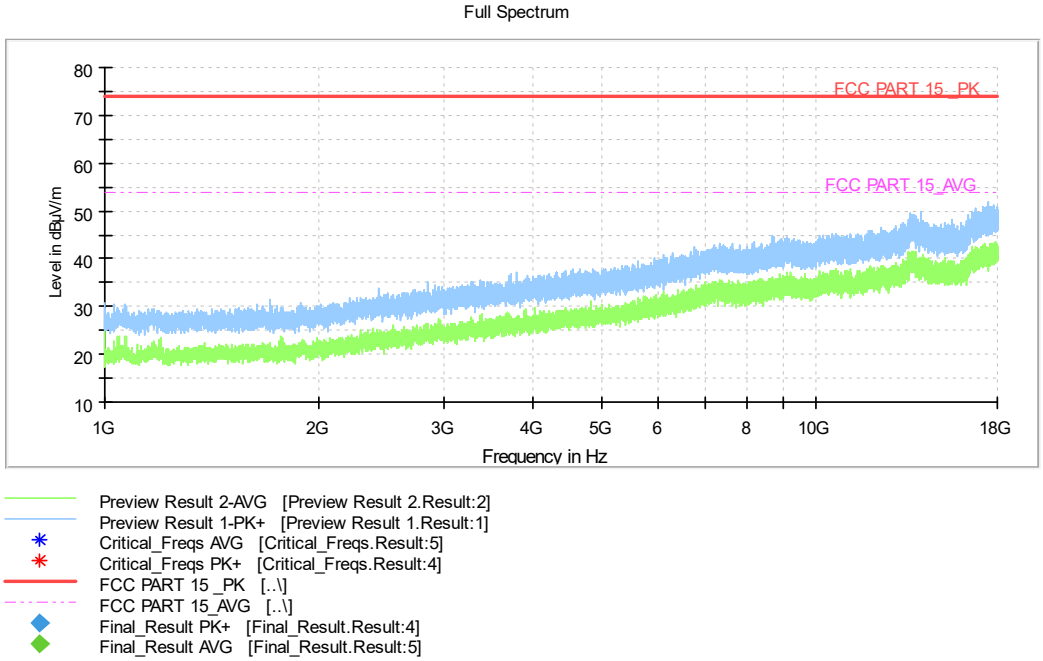

Fig A.4 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.1-1, LTE band 5 idle, charger V1020D-EU:

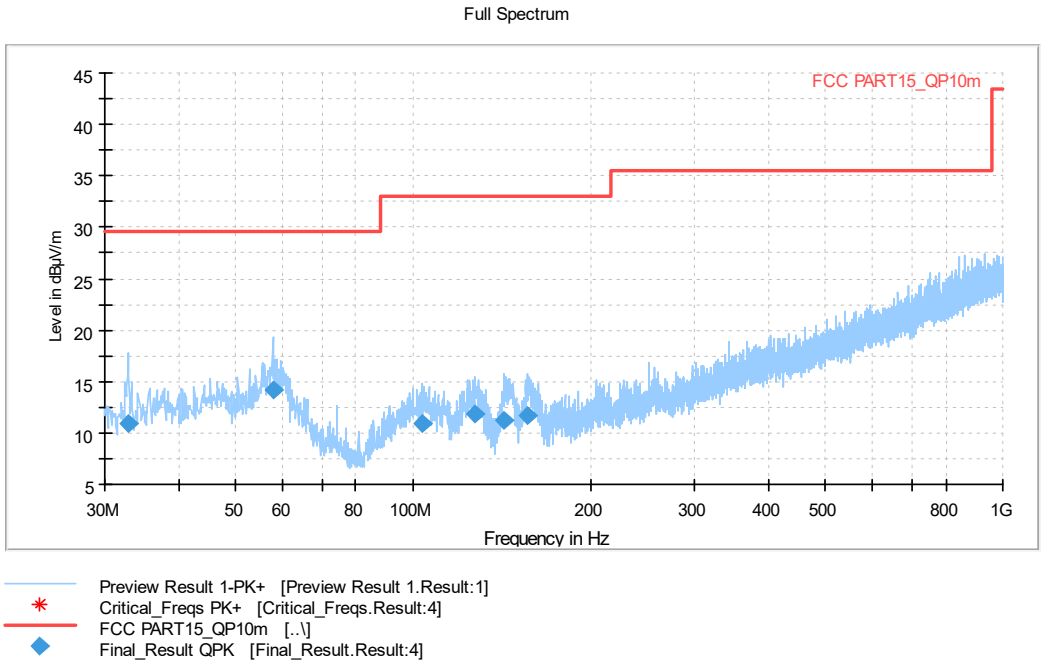

Fig A.5 Radiated Emission from 30MHz to 1GHz

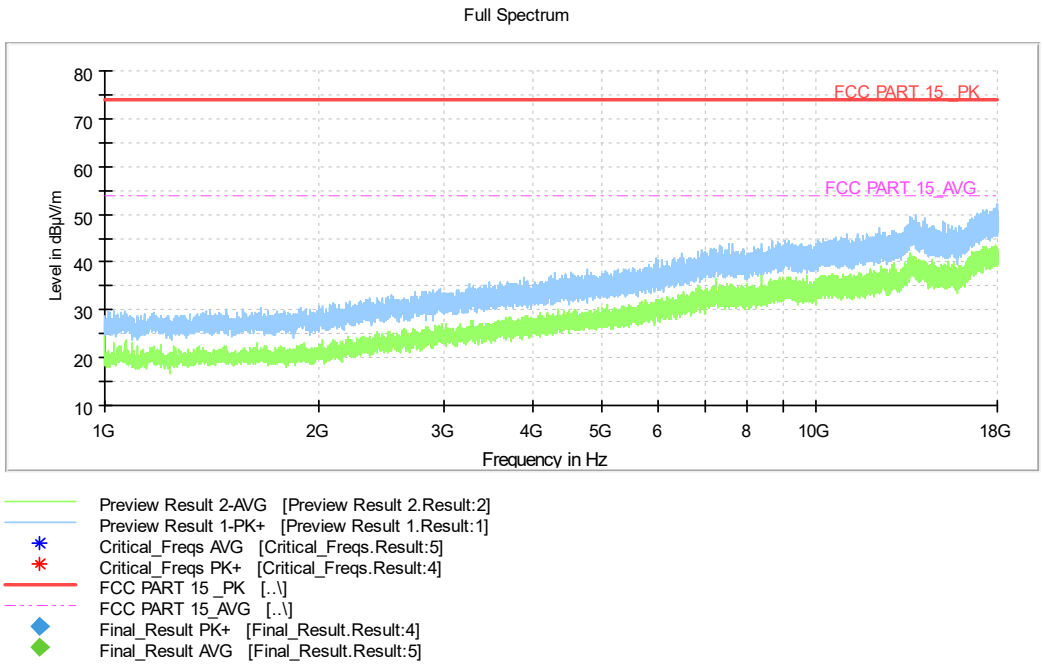

Fig A.6 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.1-4, LTE band 12 idle, charger V1020D-US:

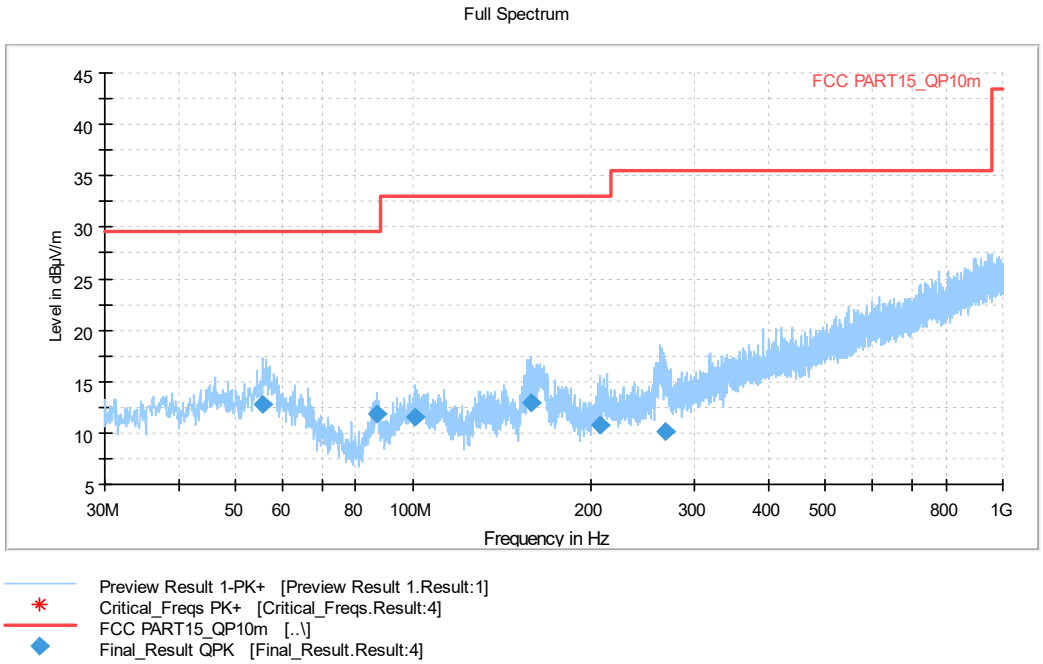

Fig A.7 Radiated Emission from 30MHz to 1GHz

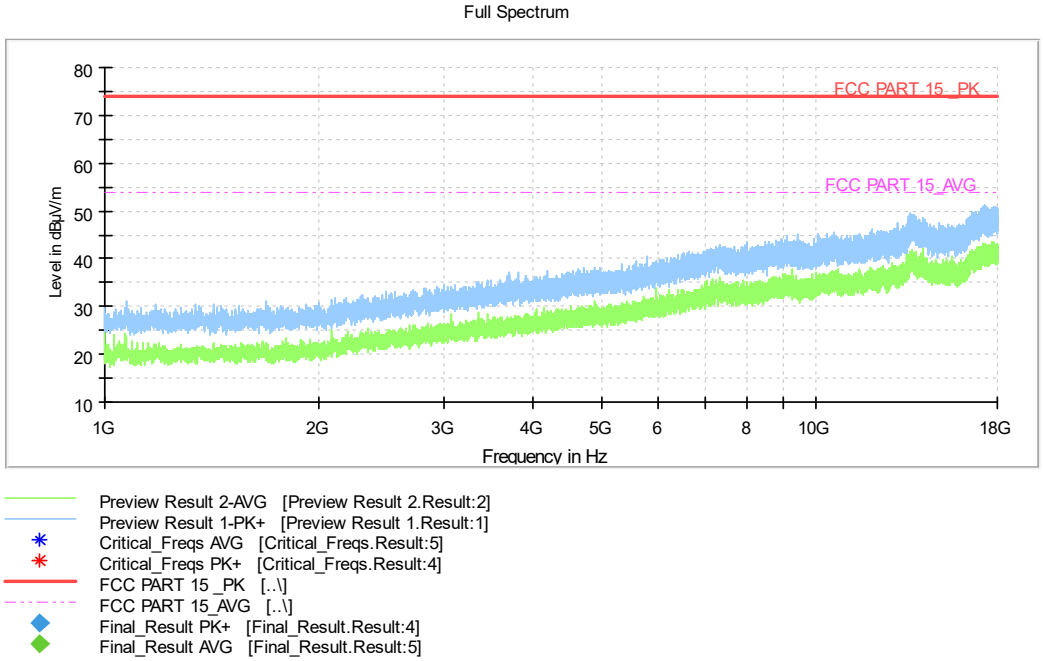

Fig A.8 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.1-1, LTE band 13 idle, charger V1020D-EU:

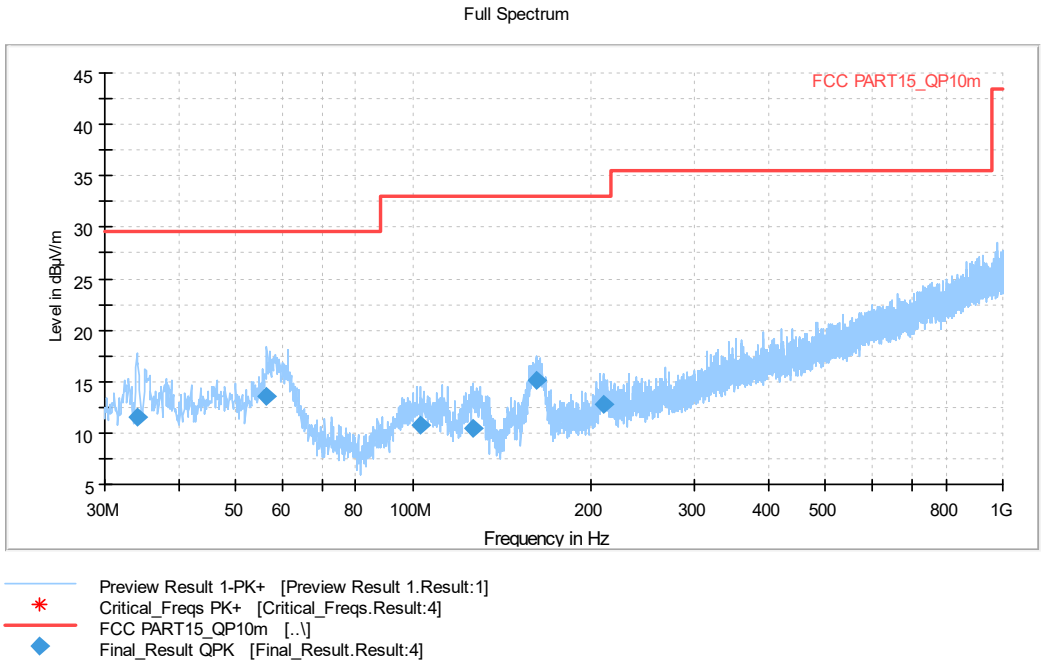

Fig A.9 Radiated Emission from 30MHz to 1GHz

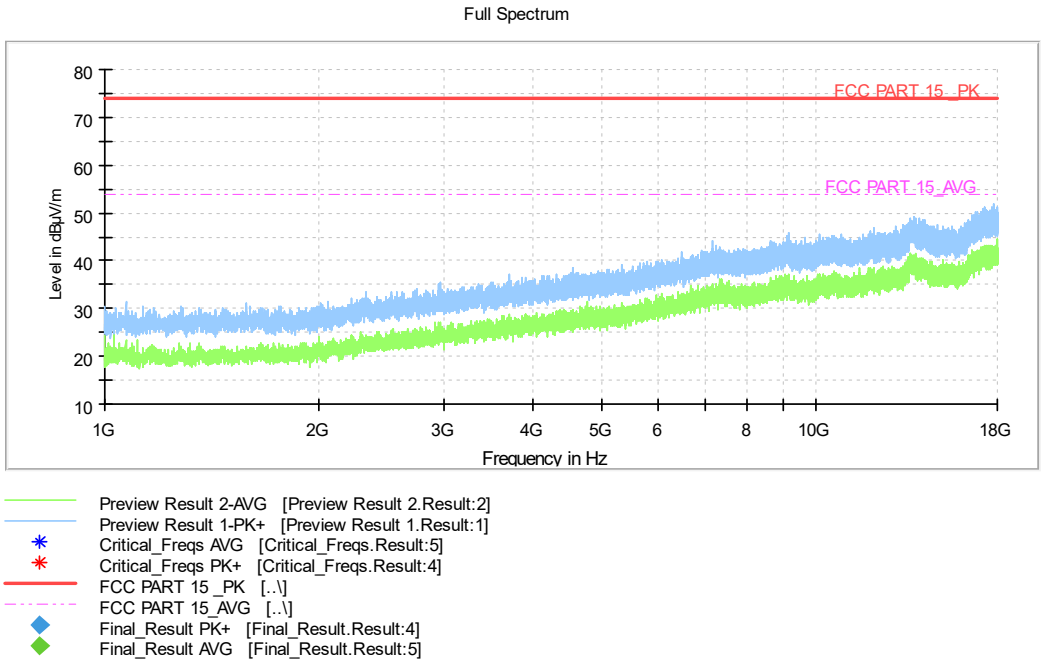

Fig A.10 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.1-4, LTE band 17 idle , charger V1020D-US:

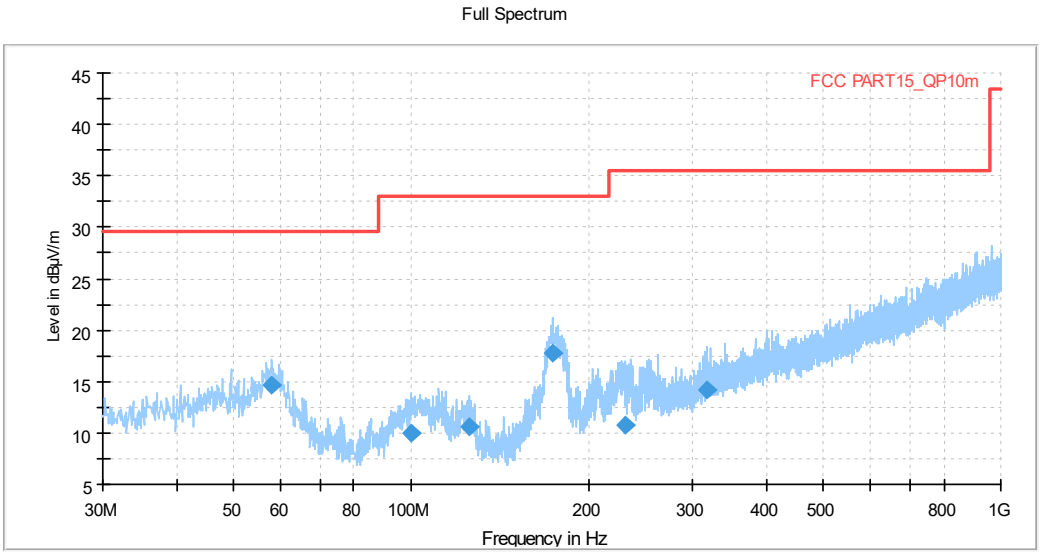

Fig A.11 Radiated Emission from 30MHz to 1GHz

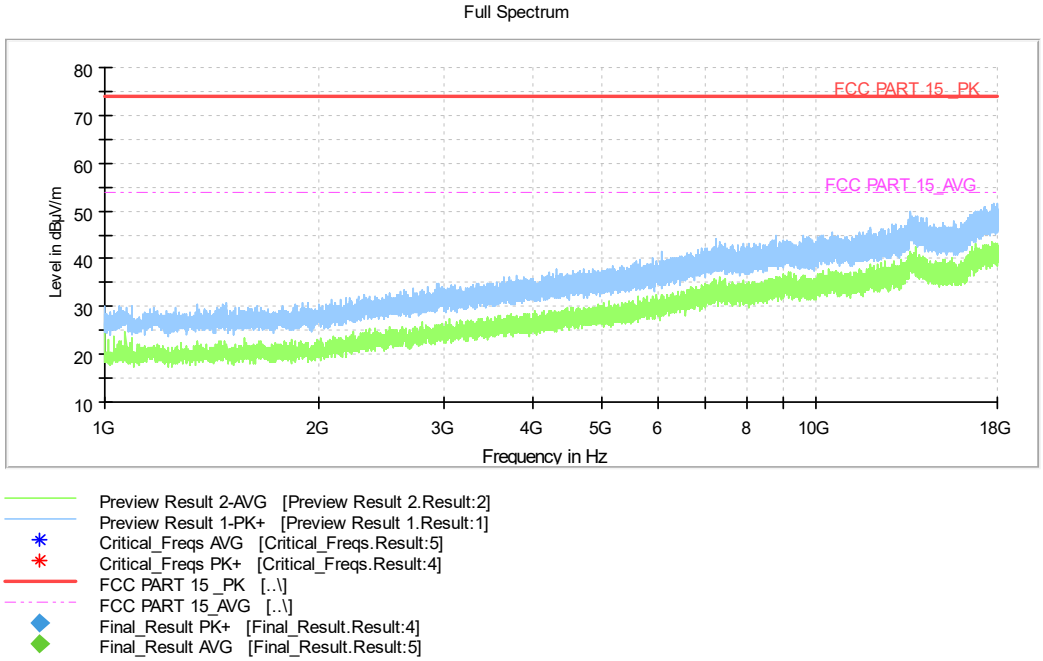

Fig A.12 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.2 , USB:

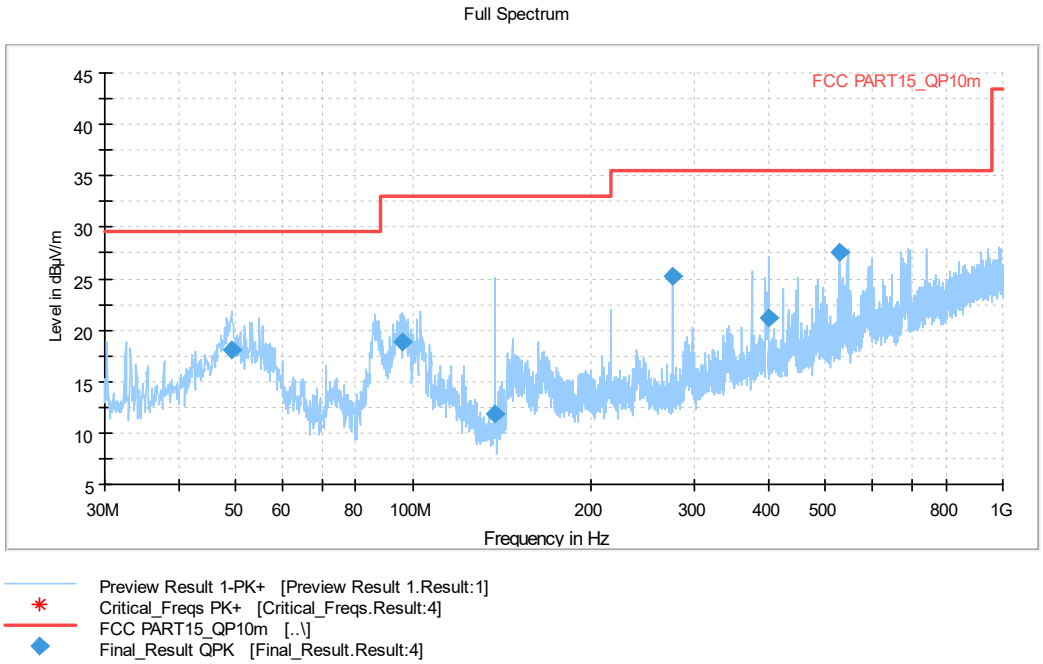

Fig A.13 Radiated Emission from 30MHz to 1GHz

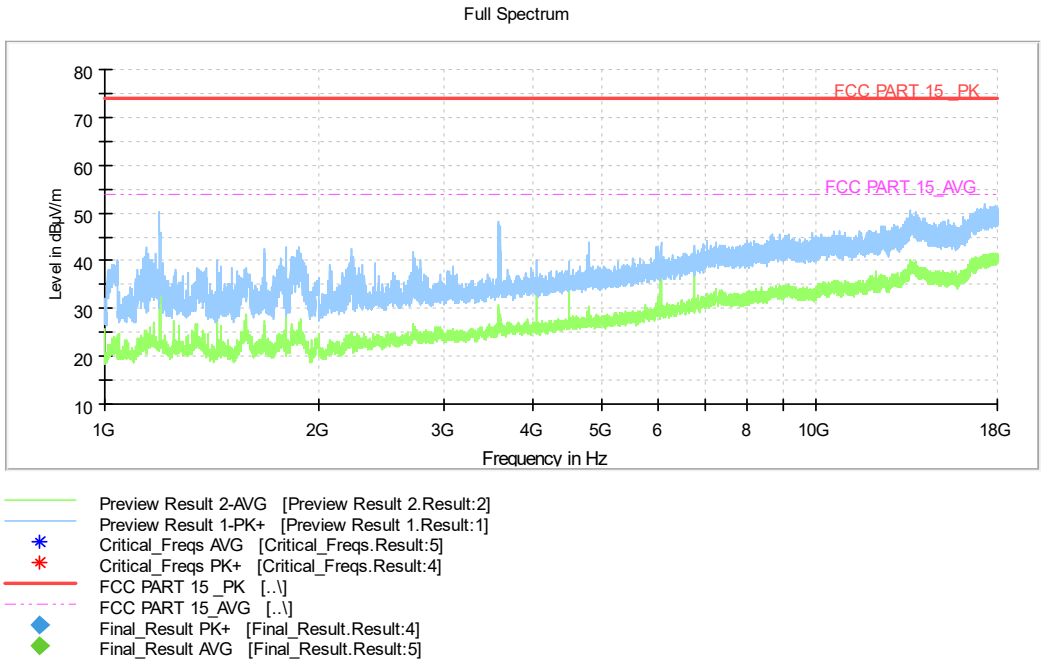

Fig A.14 Radiated Emission from 1GHz to 18GHz

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 M4000E-17, and the serial number of the PC is M706GWXD. 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 (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*= 3.08 dB, *k*=2.

Charging Mode, Set.1-1, GSM850 idle, charger V1020D-EU:

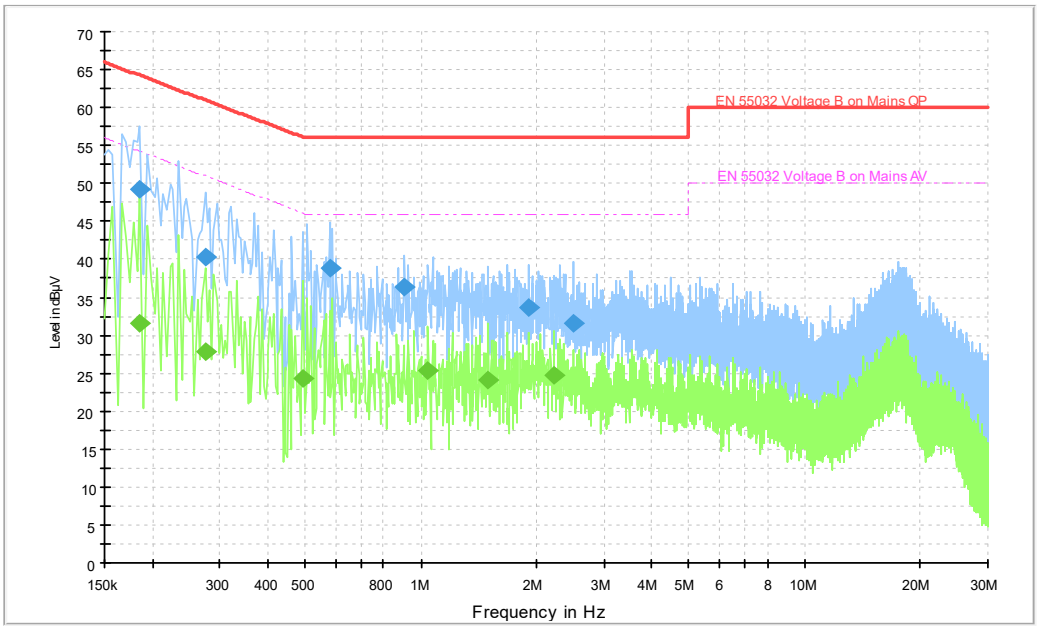

Fig A.15 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.186000	49.2	N	19.7	15.0	64.2
0.274000	40.3	L1	19.8	20.7	61.0
0.578000	38.8	L1	19.7	17.2	56.0
0.910000	36.4	L1	19.7	19.6	56.0
1.910000	33.7	L1	19.6	22.3	56.0
2.498000	31.6	L1	19.6	24.4	56.0

Final Result 2

Frequency (MHz)	Average (dBuV)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.186000	31.6	N	19.7	22.6	54.2
0.274000	27.9	L1	19.8	23.1	51.0
0.494000	24.2	L1	19.8	21.9	46.1
1.046000	25.2	L1	19.8	20.8	46.0
1.502000	24.1	L1	19.7	21.9	46.0
2.230000	24.8	L1	19.6	21.2	46.0

Charging Mode, for Set.1-4, LTE band 12 idle, charger V1020D-US:

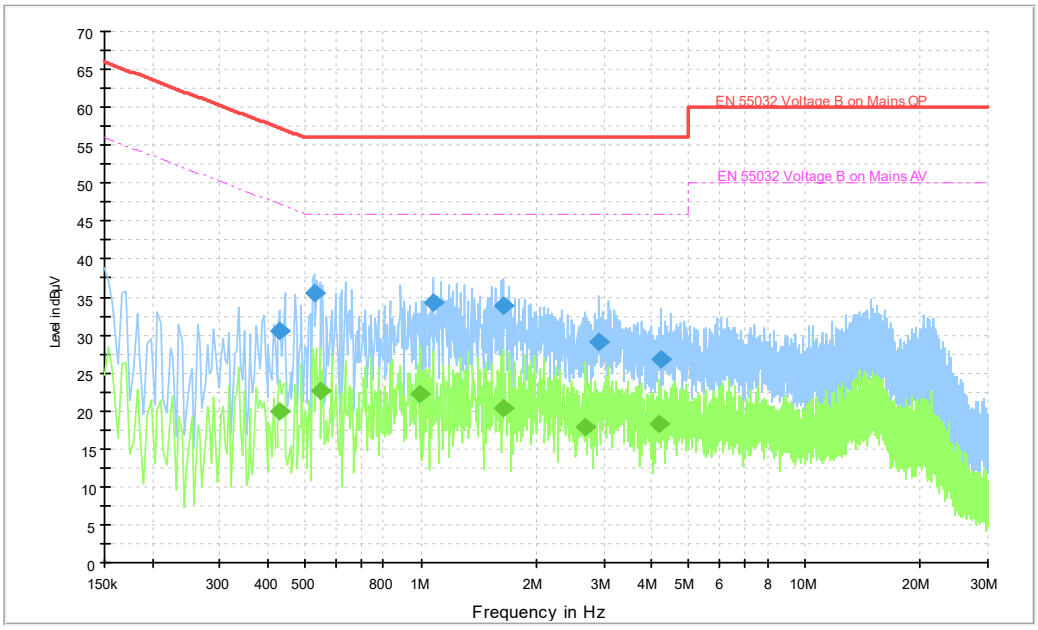

Fig A.16 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.430000	30.5	L1	19.8	26.8	57.3
0.526000	35.4	L1	19.7	20.6	56.0
1.078000	34.3	L1	19.8	21.7	56.0
1.642000	33.9	L1	19.7	22.1	56.0
2.914000	29.1	L1	19.5	26.9	56.0
4.242000	26.7	L1	19.6	29.3	56.0

Final Result 2

Frequency (MHz)	Average (dBuV)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.430000	20.0	L1	19.8	27.3	47.3
0.546000	22.7	N	19.8	23.3	46.0
0.994000	22.1	L1	19.8	23.9	46.0
1.642000	20.3	L1	19.7	25.7	46.0
2.694000	17.9	L1	19.6	28.1	46.0
4.170000	18.2	L1	19.6	27.8	46.0

Charging Mode, for Set.2, USB:

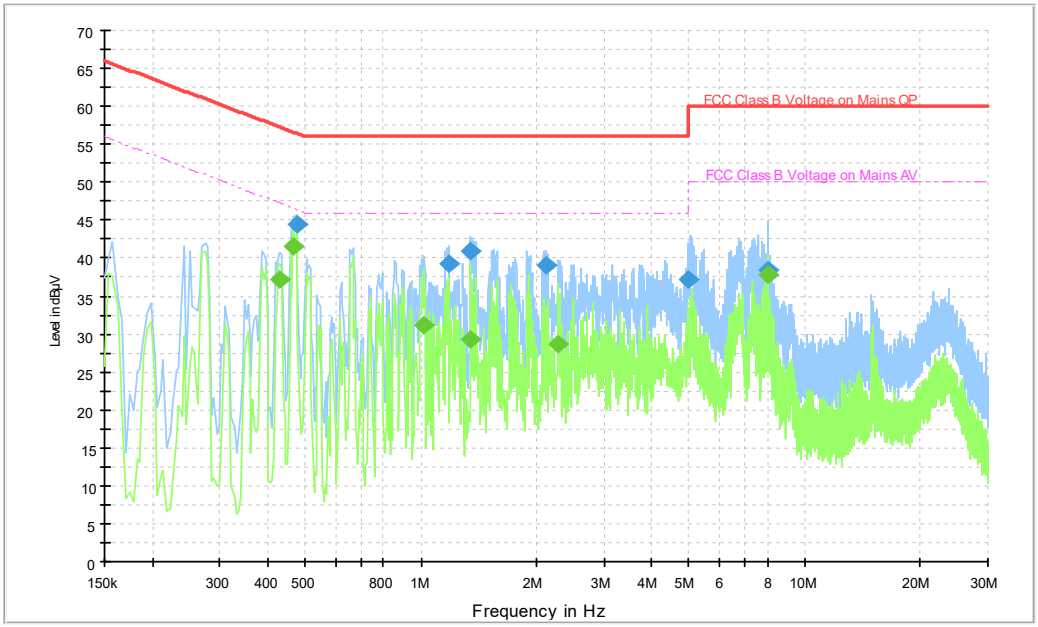

Fig A.17 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.474000	44.5	L1	19.8	11.9	56.4
1.186000	39.2	L1	19.7	16.8	56.0
1.346000	40.9	L1	19.7	15.1	56.0
2.122000	39.1	N	19.7	16.9	56.0
4.998000	37.1	L1	19.6	18.9	56.0
8.014000	38.4	N	19.6	21.6	60.0

Final Result 2

Frequency (MHz)	Average (dBuV)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.430000	37.3	L1	19.8	10.0	47.3
0.466000	41.5	L1	19.8	5.0	46.6
1.022000	31.3	L1	19.8	14.7	46.0
1.346000	29.2	L1	19.7	16.8	46.0
2.274000	28.8	L1	19.6	17.2	46.0
8.010000	37.8	N	19.6	12.2	50.0

ANNEX B: PERSONS INVOLVED IN THIS TESTING

Test Item	Test Software and Version	Software Vendor	Test operator
Conducted Emission	EMC32 V8.5.2	R&S	Chen Tianwei
Radiated Emission	EMC32 V9.01.00	R&S	Ding Zai&Chen tianwei

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