



TEST REPORT

No. I22Z60452-EMC01

for

HMD Global Oy

Smart Phone

Model Name: N1530DL

FCC ID: 2AJOTTA-1530

with

Hardware Version: v1.0

Software Version: 02US_1_110

Issued Date: 2022-06-28

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
I22Z60542-EMC01	Rev.0	1 st edition	2022-05-27
I22Z60542-EMC01	Rev.1	Deleted the data of LTE band 17	2022-06-28

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

CONTENTS

1. TEST LABORATORY	4
1.1. INTRODUCTION & ACCREDITATION	4
1.2. TESTING LOCATION.....	4
1.3. TESTING ENVIRONMENT	4
1.4. PROJECT DATA	4
1.5. SIGNATURE.....	4
2. CLIENT INFORMATION	5
2.1. APPLICANT INFORMATION	5
2.2. MANUFACTURER INFORMATION	5
3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE)	6
3.1. ABOUT EUT	6
3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST	6
3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST	6
3.4. EUT SET-UPS	7
4. REFERENCE DOCUMENTS	9
4.1. REFERENCE DOCUMENTS FOR TESTING	9
5. LABORATORY ENVIRONMENT.....	10
6. SUMMARY OF TEST RESULTS	11
7. TEST EQUIPMENTS UTILIZED	12
ANNEX A: MEASUREMENT RESULTS	13
ANNEX B: PERSONS INVOLVED IN THIS TESTING	30

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: 2022-05-09
Testing End Date: 2022-05-31

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: HMD Global Oy
Address: Bertel Jungin aukio 9 02600 Espoo Finland
Contact: /
Telephone: /
Email: /

2.2. Manufacturer Information

Company Name: HMD Global Oy
Address: Bertel Jungin aukio 9 02600 Espoo Finland
Contact: /
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3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	Smart Phone
Model Name	N1530DL
FCC ID	2AJOTTA-1530
Extreme vol. Limits	3.5VDC to 4.45VDC (nominal: 3.80VDC)

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	Note
UT102a	/	/	/	/
UT17a	358503170008834	v1.0	02US_1_110	/

*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	Battery	/	/
AE3	Charger	/	/
AE4	USB Cable	/	/
AE5	Headset	/	/

AE1

Model	HQ610
Manufacturer	Ningde Amperex Technology Limited
Capacity	4900mAh
Voltage	3.87V

AE2

Model	HQ610
Manufacturer	GUANGDONG FENGHUA NEW ENERGY CO., LTD
Capacity	4900mAh
Voltage	3.87V

AE3

Model	Charger-AD-020US
Manufacturer	Aohai

AE4

Model	USB-SHQ-A119A
Manufacturer	Saibao(Jiangxi)communication Industrial Co.,Ltd

AE5

Model	JWEP239-H17H
Manufacturer	JUWEI ELECTRONICS CO.,LTD

*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	UT102a + AE1 + AE3 + AE4	Charger
Set.12	UT102a + AE1 + AE4 + AE5	USB + FM
Set.11-2	UT17a + AE1 + AE3 + AE4	Charger

Note: Mobile phone N1530DL manufactured by HMD Global Oy is a variant model based on TA-1448 for conformance test. The Differences between the items

	TA-1448	N1530DL
GSM	850, 900, 1800, 1900	850, 900, 1800, 1900
3G UMTS (WCDMA)	B1,B 2,B4, B5,	B2, B4, B5
LTEBands	B1, B2, B3, B4, B5, B7, B8, B12, B13, B17, B20, B25, B26, B38, B39, B40, B41, B66, B71	B2, B4, B5, B12, B13, B25, B26, B41,B66, B71
NR bands	n71, n66, n25, n41,n77	n2, n5, n66, n77, n71, n25, n41

PCB is the same, PCBA is different; Because of the different frequency band, part of the inductance capacitance is also different; and the performance of the same frequency band is not affected.

According to the declaration of changes, adding the tests as chapter 3.5. The other test results are derived from test report No.I22Z60412-EMC01.

3.5. Test summary

EUT set-up No.	Test mode	Test result	
		Radiated Emission	Conducted Emission
Set.11	GSM850 idle	BR	BR
Set.11	WCDMA 850 idle	BR	NA
Set.11	LTE band 5 idle	BR	NA
Set.11	LTE band 12 idle	BR	NA
Set.11	LTE band 13 idle	BR	NA
Set.11	LTE band 26 idle	BR	NA
Set.11	LTE band 71 idle	BR	NA
Set.12	USB + FM	BR	BR
Set.11-2	n25 idle	Pass	NA

Terms used in Verdict column

P	Pass. The EUT complies with the essential requirements in the standard.
NP	Not Performed. The test was not performed by CTTL.
NA	Not Applicable. The test was not applicable.
BR	Re-use test data from basic model report.



F	Fail. The EUT does not comply with the essential requirements in the standard.
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All the test results are based on normal power.

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	2021
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/Full-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 M
Ground system resistance	< 4
Normalised site attenuation (NSA)	< ± 4 dB, 3m/10m distance, from 30 to 1000 MHz
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz

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

The equipment for I22Z60412

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 3	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	Signal Generator	SMBV100A	260613	R&S	2023-01-09	1 year
9	PC	OPTIPLEX 380	2X1YV2X	DELL	N/A	N/A
10	Printer	P1606dn	VNC3L52122	HP	N/A	N/A
11	Keyboard	L100	CN0RH6596589 07ATOI40	DELL	N/A	N/A
12	Mouse	M-UAE119	LZ935220ZRC	Lenovo	N/A	N/A

The equipment for I22Z60452

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	Test Receiver	ESW44	103015	R&S	2023-03-08	1 year
2	EMI Antenna	VULB 9163	302	Schwarzbeck	2022-12-28	1 Year
3	EMI Antenna	3115	00167250	ETS-Lindgren	2022-07-01	1 year

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 FM/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 ($\mu\text{V}/\text{m}$)		
	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/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:

$$\text{Result} = P_{\text{Mea}} + A_{\text{Rpl}} = P_{\text{Mea}} + G_A + G_{\text{PL}}$$

Where

G_A : Antenna factor of receive antenna

G_{PL} : Path Loss

P_{Mea} : Measurement result on receiver.

Measurement uncertainty:

Frequency range	Measurement uncertainty
30MHz-1GHz	5.18dB, k=2
1GHz-18GHz	5.54dB, k=2

Measurement results for Set.11, LTE band 13 idle(worst case):
Charging Mode/QP detector

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
43.968000	9.06	29.54	20.48	175.0	H	135.0
61.719000	10.64	29.54	18.90	275.0	V	187.0
87.424000	10.84	29.54	18.70	175.0	V	251.0
124.769000	9.94	33.06	23.12	125.0	V	0.0
164.442000	18.55	33.06	14.51	125.0	V	135.0
362.807000	12.04	35.56	23.52	186.0	V	135.0

Measurement results for Set.11, LTE band 12 idle(worst case):
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)
17804.840	41.1	-29.6	46.0	24.8	54.0	12.9	V
17805.180	40.8	-29.6	46.0	24.5	54.0	13.2	V
17372.020	40.7	-30.0	43.4	27.3	54.0	13.3	H
17782.060	40.7	-29.9	46.0	24.6	54.0	13.3	H
17813.680	40.6	-29.6	46.0	24.3	54.0	13.4	V
17714.740	40.6	-29.7	45.2	25.1	54.0	13.4	H

Measurement results for Set.11, LTE band 12 idle(worst case):
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)
17753.160	53.8	-29.6	46.0	37.456	74.0	20.2	V
17752.820	53.8	-29.6	46.0	37.456	74.0	20.2	H
17778.660	52.5	-29.6	46.0	36.172	74.0	21.5	V
17371.680	52.3	-30.0	43.4	38.912	74.0	21.7	H
17890.180	52.0	-29.5	46.0	35.580	74.0	22.0	V
17867.400	51.8	-29.4	46.0	35.239	74.0	22.2	H

Measurement results for Set.12, FM + USB,:
Charging Mode/QP detector

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
39.991000	20.10	29.54	9.44	225.0	V	71.0
151.056000	22.86	33.06	10.20	100.0	V	2.0
170.359000	21.09	33.06	11.97	125.0	V	2.0
196.355000	22.50	33.06	10.56	98.0	V	354.0
557.098000	27.11	35.56	8.45	275.0	V	2.0
590.757000	25.58	35.56	9.98	225.0	V	1.0

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)
17799.060	41.3	-29.9	46.0	25.2	54.0	12.7	H
17610.020	41.3	-29.5	45.2	25.6	54.0	12.7	V
17812.660	41.3	-29.6	46.0	25.0	54.0	12.7	H
17908.540	41.2	-29.3	46.0	24.6	54.0	12.8	H
17949.340	41.2	-28.9	46.7	23.5	54.0	12.8	V
17643.680	41.2	-29.6	45.2	25.6	54.0	12.8	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)
17837.140	53.4	-29.7	46.0	37.1	74.0	20.6	H
17322.040	53.2	-29.7	43.4	39.5	74.0	20.8	H
17480.480	53.0	-29.8	44.4	38.4	74.0	21.0	V
17700.460	52.8	-29.7	45.2	37.3	74.0	21.2	V
17817.760	52.7	-29.6	46.0	36.4	74.0	21.3	V
17259.140	52.7	-30.0	43.4	39.4	74.0	21.3	H

Sample:

17837.140MHz

$$\text{Result}(53.4 \text{ dB}\mu\text{V/m}) = P_{\text{Mea}} (37.1 \text{ dB}\mu\text{V/m}) + G_A (46.0 \text{ dB/m}) + G_{\text{PL}} (-29.7\text{dB})$$

Measurement results for Set.11-2, FR n5 idle(worst case):
Charging Mode/QP detector

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
39.700000	11.40	29.54	18.14	106.0	V	225.0
58.712000	13.58	29.54	15.96	196.0	V	35.0
77.433000	12.23	29.54	17.31	181.0	V	-45.0
89.946000	11.95	33.06	21.11	125.0	V	146.0
103.623000	11.93	33.06	21.13	125.0	V	-45.0
163.763000	14.58	33.06	18.48	181.0	V	-45.0

Measurement results for Set.11-2, FR n5 idle(worst case):
Charging Mode/Average detector

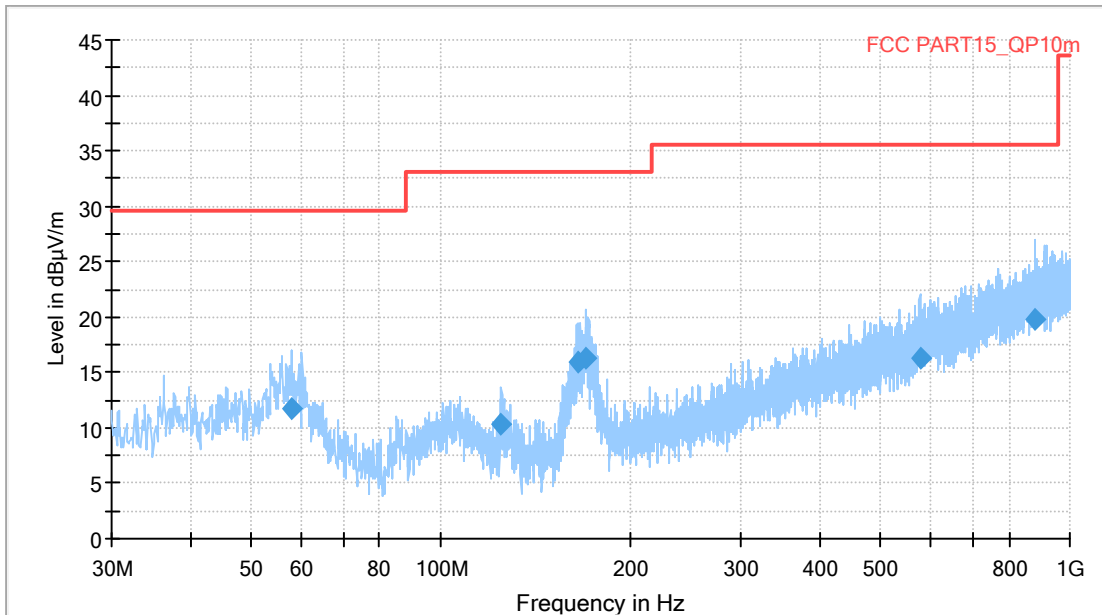
Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17568.880	43.2	-29.8	45.2	27.7	54.0	10.8	V
17540.660	43.0	-29.5	44.4	28.1	54.0	11.0	V
17677.680	42.8	-29.9	45.2	27.4	54.0	11.2	H
17903.440	42.7	-29.3	46.0	26.1	54.0	11.3	V
17655.920	42.6	-29.6	45.2	27.0	54.0	11.4	V
17805.520	42.6	-29.6	46.0	26.3	54.0	11.4	V

Measurement results for Set.11-2, FR n5 idle(worst case):
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)
17667.820	53.6	-29.9	45.2	38.2	74.0	20.4	H
17334.960	52.9	-29.7	43.4	39.2	74.0	21.1	V
17629.060	52.8	-29.4	45.2	37.0	74.0	21.2	V
17907.180	52.5	-29.3	46.0	35.9	74.0	21.5	V
17706.240	52.4	-29.7	45.2	36.9	74.0	21.6	H
17567.180	52.4	-29.8	45.2	36.9	74.0	21.6	H

Measurement results for Set.11, GSM850 idle:

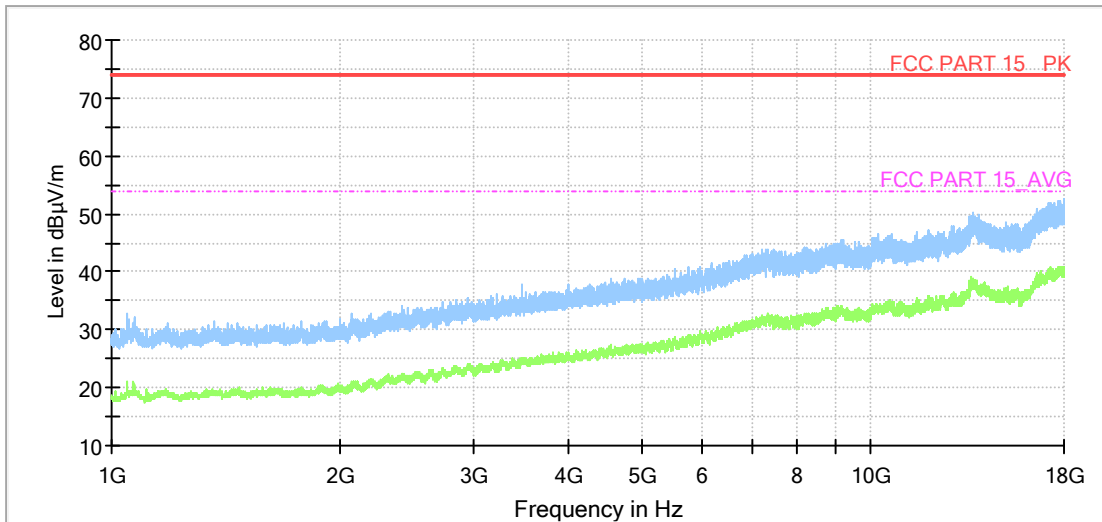
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART15_QP10m [..]
- ◆ Final_Result QPK [Final_Result.Result:4]

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

Full Spectrum

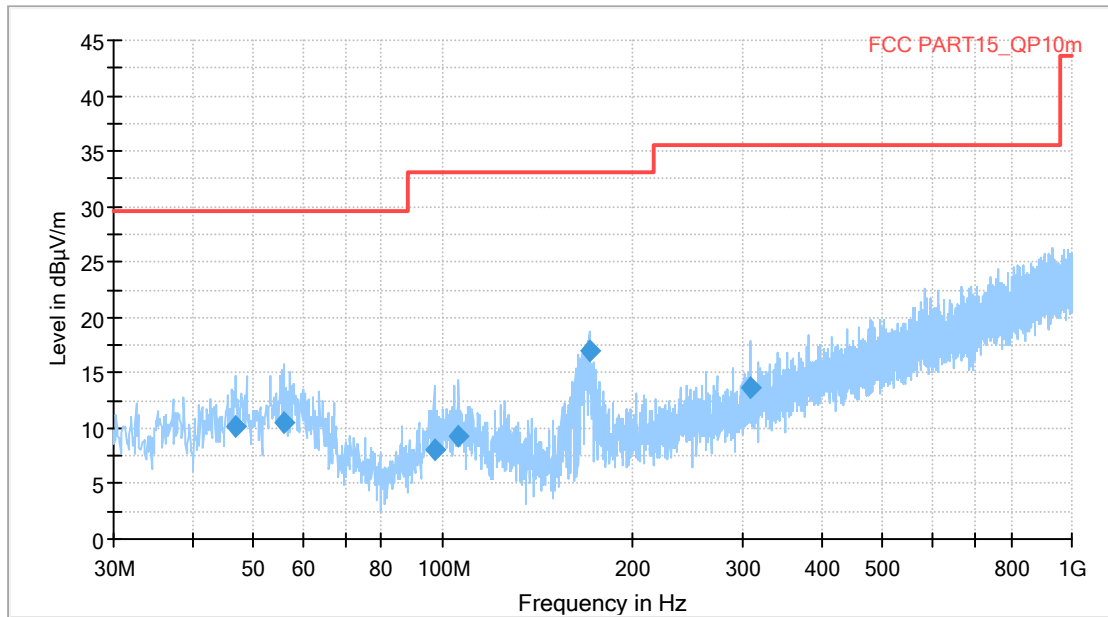


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs AVG [Critical_Freqs.Result:5]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART 15_PK [..]
- - - FCC PART 15_AVG [..]
- ◆ Final_Result PK+ [Final_Result.Result:4]
- ◆ Final_Result AVG [Final_Result.Result:5]

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

Measurement results for Set.11, WCDMA 850 idle:

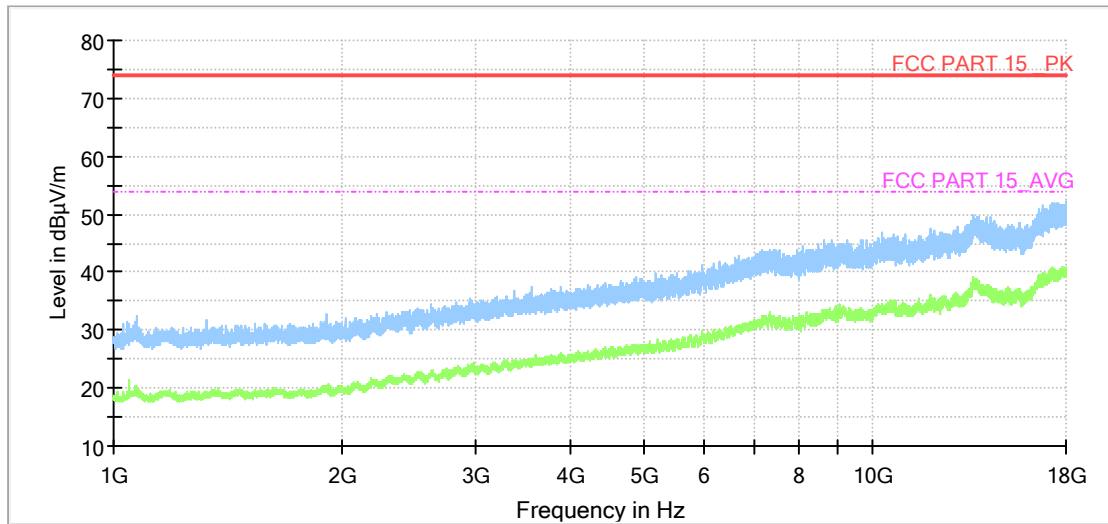
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART15_QP10m [..]
- ◆ Final_Result QPK [Final_Result.Result:4]

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

Full Spectrum

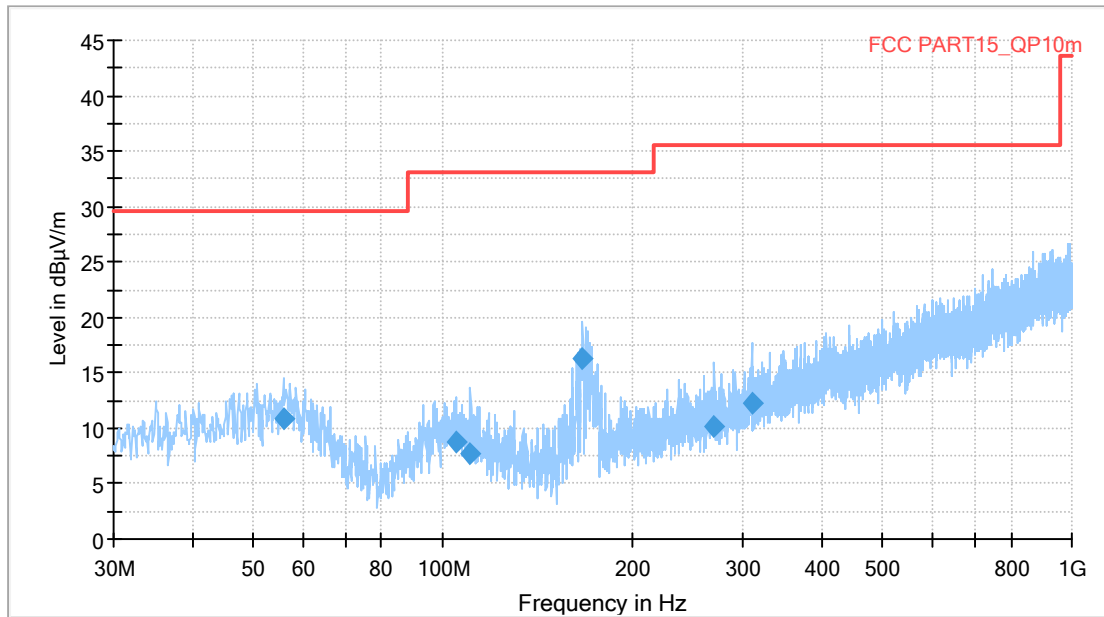


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs AVG [Critical_Freqs.Result:5]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART 15_PK [..]
- - - FCC PART 15_AVG [..]
- ◆ Final_Result PK+ [Final_Result.Result:4]
- ◆ Final_Result AVG [Final_Result.Result:5]

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

Measurement results for Set.11, LTE band 5 idle:

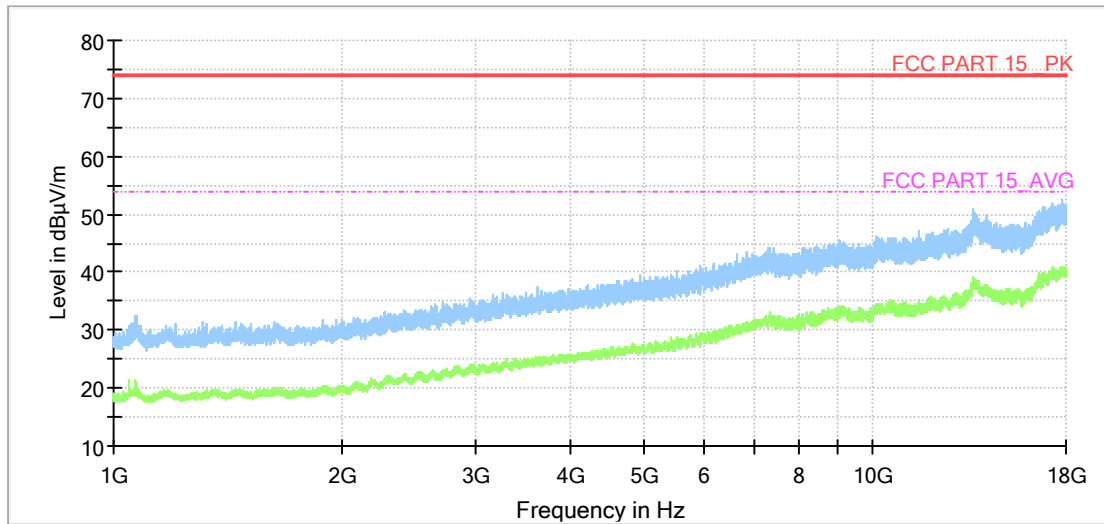
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART15_QP10m [..]
- ◆ Final_Result QPK [Final_Result.Result:4]

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

Full Spectrum

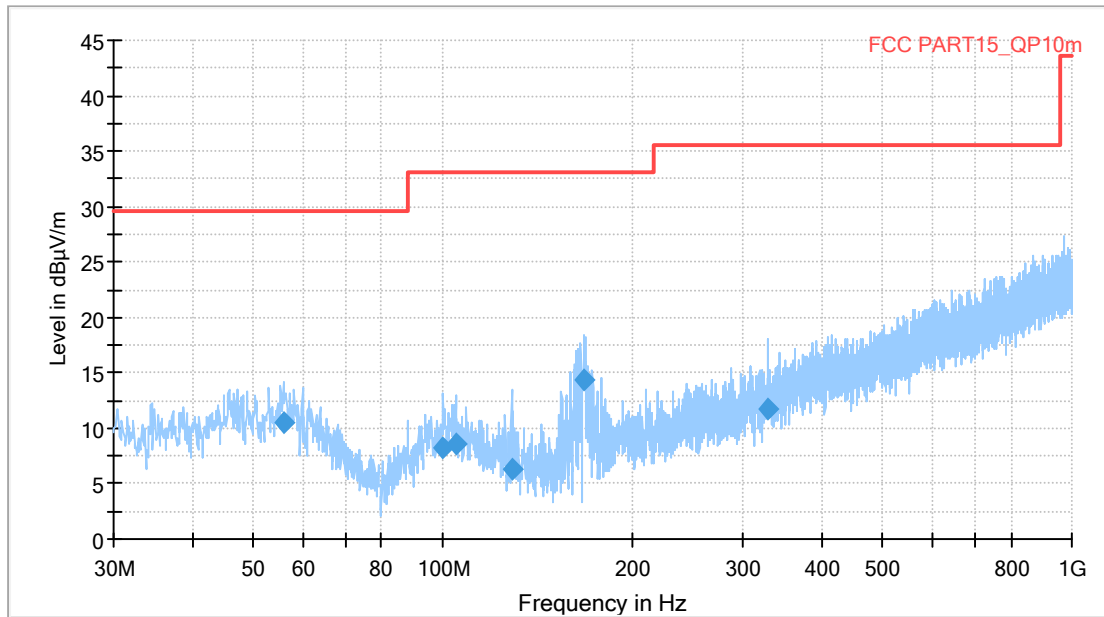


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs AVG [Critical_Freqs.Result:5]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART 15_PK [..]
- - - FCC PART 15_AVG [..]
- ◆ Final_Result PK+ [Final_Result.Result:4]
- ◆ Final_Result AVG [Final_Result.Result:5]

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

Measurement results for Set.11, LTE band 12 idle:

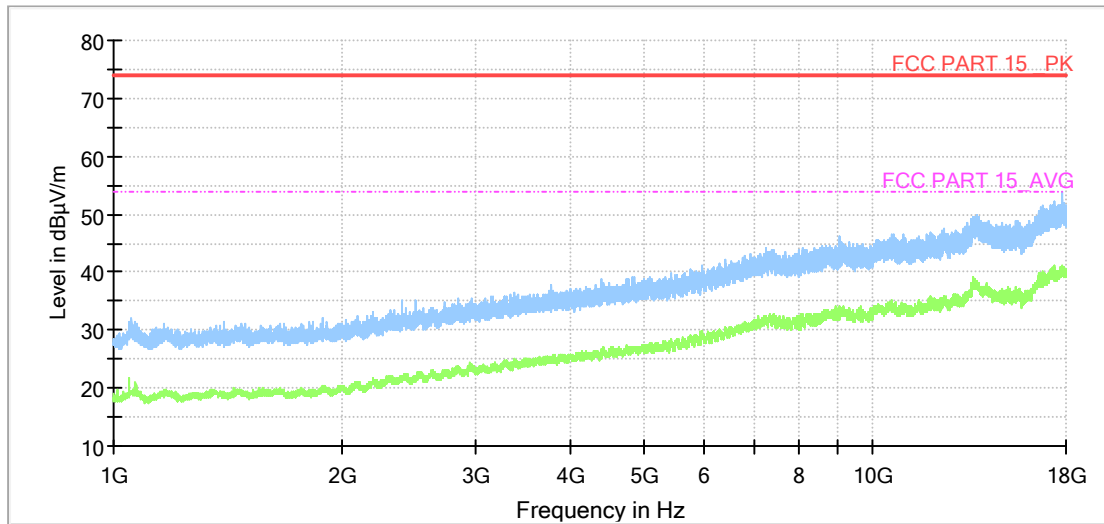
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART15_QP10m [..]
- ◆ Final_Result QPK [Final_Result.Result:4]

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

Full Spectrum

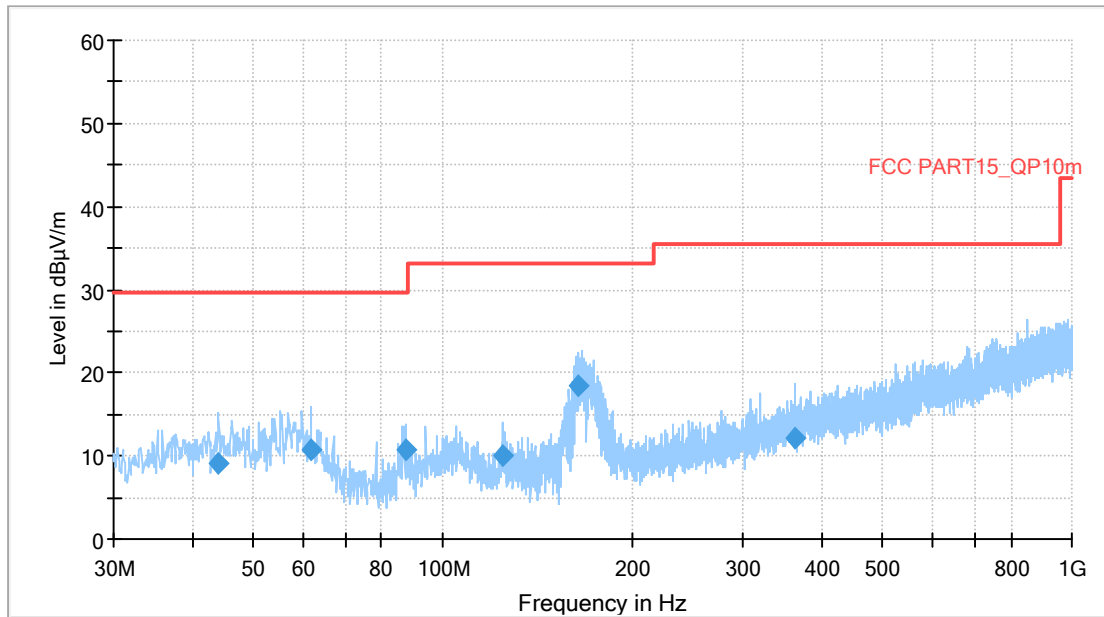


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs AVG [Critical_Freqs.Result:5]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART 15_PK [..]
- - - FCC PART 15_AVG [..]
- ◆ Final_Result PK+ [Final_Result.Result:4]
- ◆ Final_Result AVG [Final_Result.Result:5]

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

Measurement results for Set.11, LTE band 13 idle:

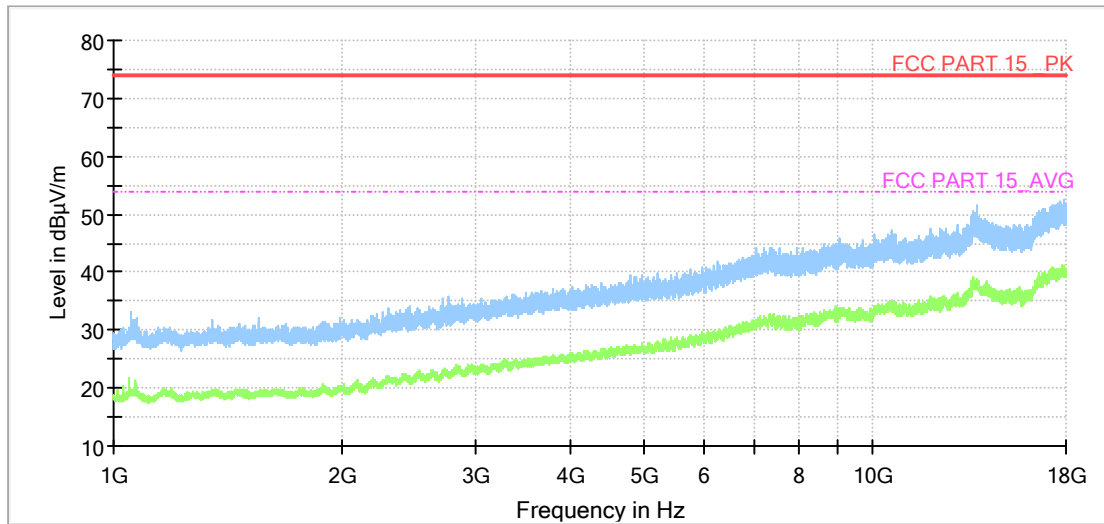
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART15_QP10m [..]
- ◆ Final_Result QPK [Final_Result.Result:4]

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

Full Spectrum

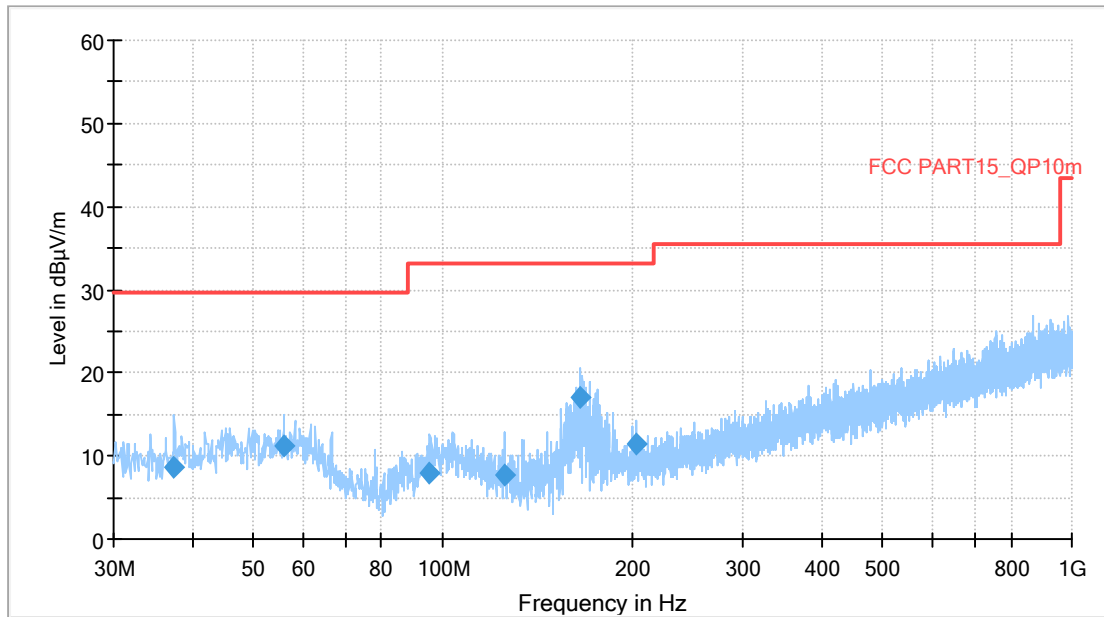


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs AVG [Critical_Freqs.Result:5]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART 15_PK [..]
- FCC PART 15_AVG [..]
- ◆ Final_Result PK+ [Final_Result.Result:4]
- ◆ Final_Result AVG [Final_Result.Result:5]

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

Measurement results for Set.11, LTE band 26 idle:

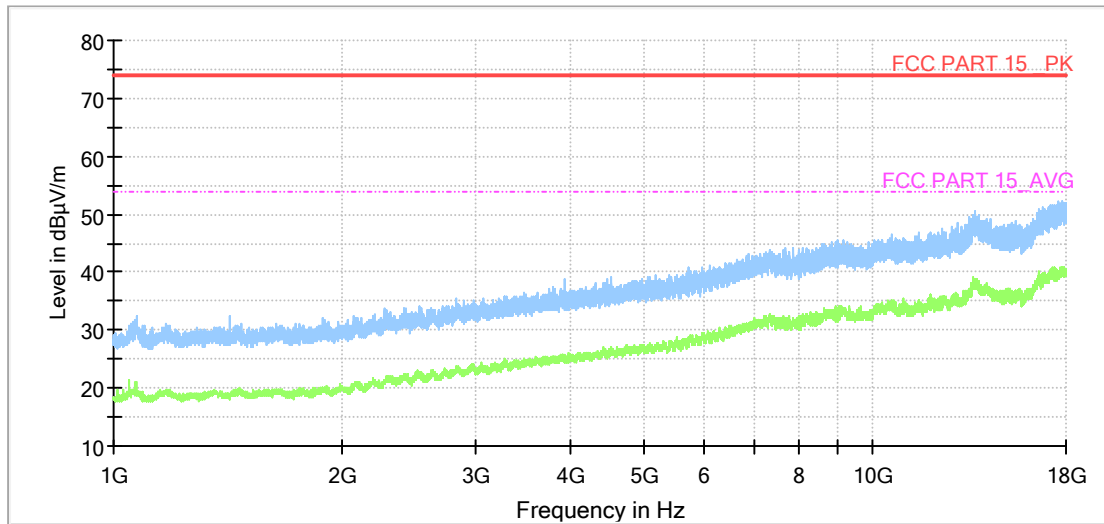
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART15_QP10m [..]
- ◆ Final_Result QPK [Final_Result.Result:4]

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

Full Spectrum

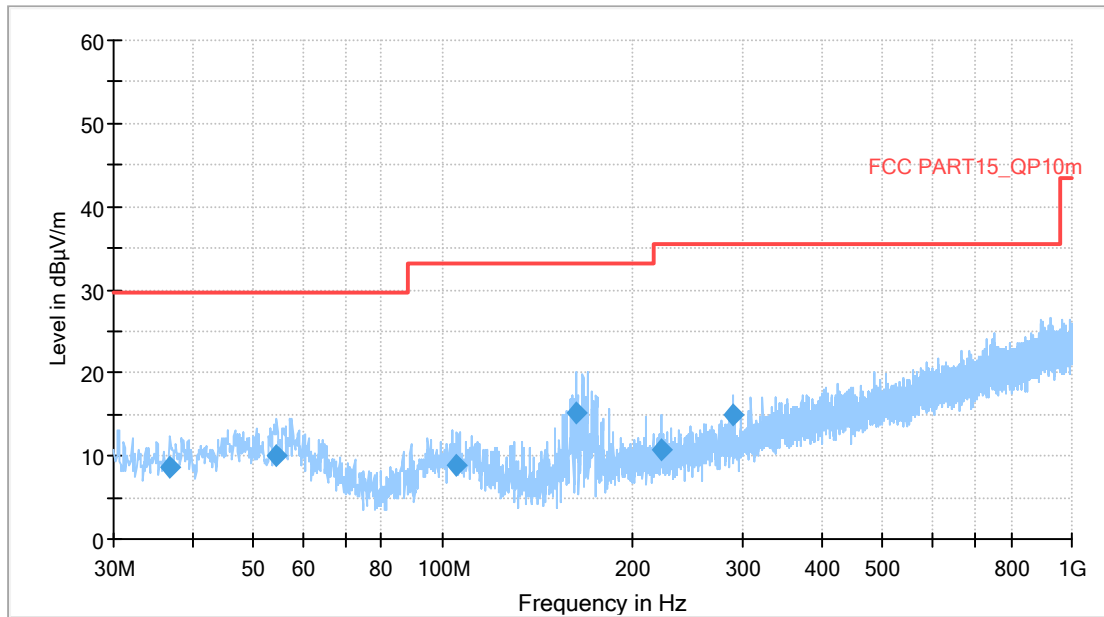


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs AVG [Critical_Freqs.Result:5]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART 15_PK [..]
- - - FCC PART 15_AVG [..]
- ◆ Final_Result PK+ [Final_Result.Result:4]
- ◆ Final_Result AVG [Final_Result.Result:5]

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

Measurement results for Set.11, LTE band 71 idle:

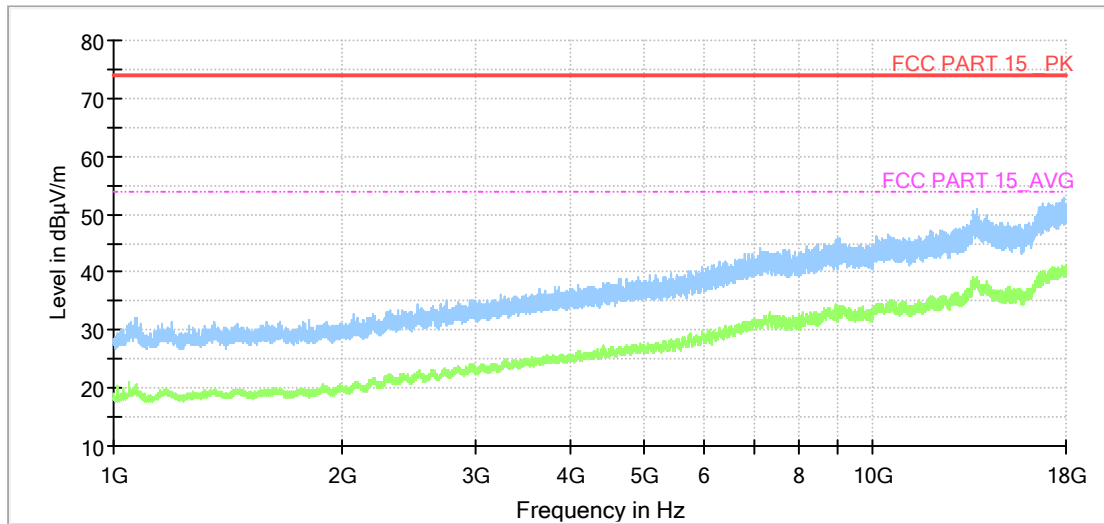
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART15_QP10m [..]
- ◆ Final_Result QPK [Final_Result.Result:4]

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

Full Spectrum

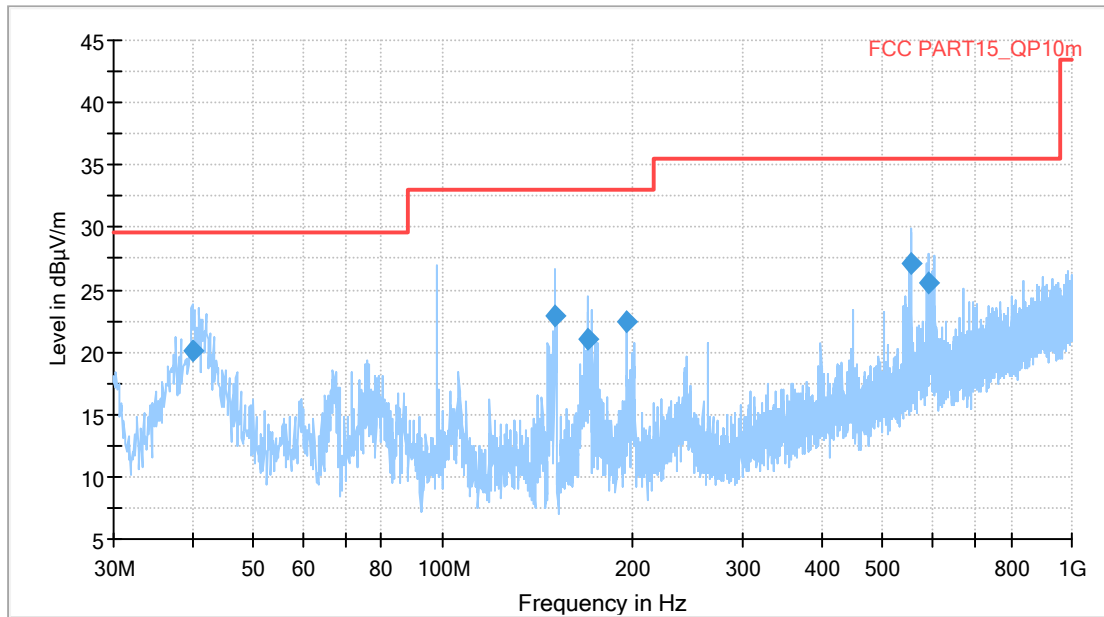


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs AVG [Critical_Freqs.Result:5]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART 15_PK [..]
- FCC PART 15_AVG [..]
- ◆ Final_Result PK+ [Final_Result.Result:4]
- ◆ Final_Result AVG [Final_Result.Result:5]

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

Measurement results for Set.12, USB transfer + FM:

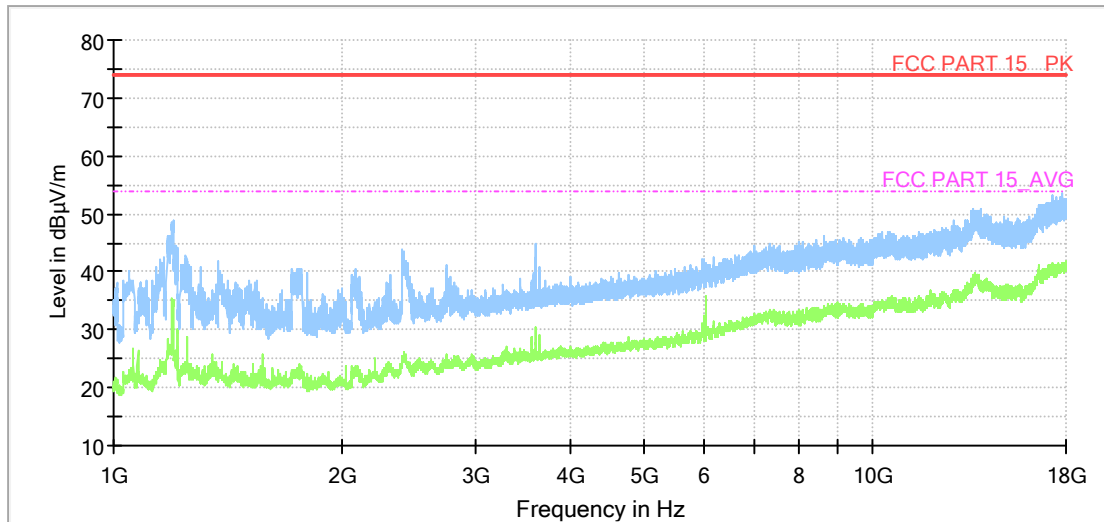
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART15_QP10m [..]
- ◆ Final_Result QPK [Final_Result.Result:4]

Fig A.15 Radiated Emission from 30MHz to 1GHz

Full Spectrum



- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs AVG [Critical_Freqs.Result:5]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART 15_PK [..]
- - - FCC PART 15_AVG [..]
- ◆ Final_Result PK+ [Final_Result.Result:4]
- ◆ Final_Result AVG [Final_Result.Result:5]

Fig A.16 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.11-2, FR n5 idle:

Full Spectrum

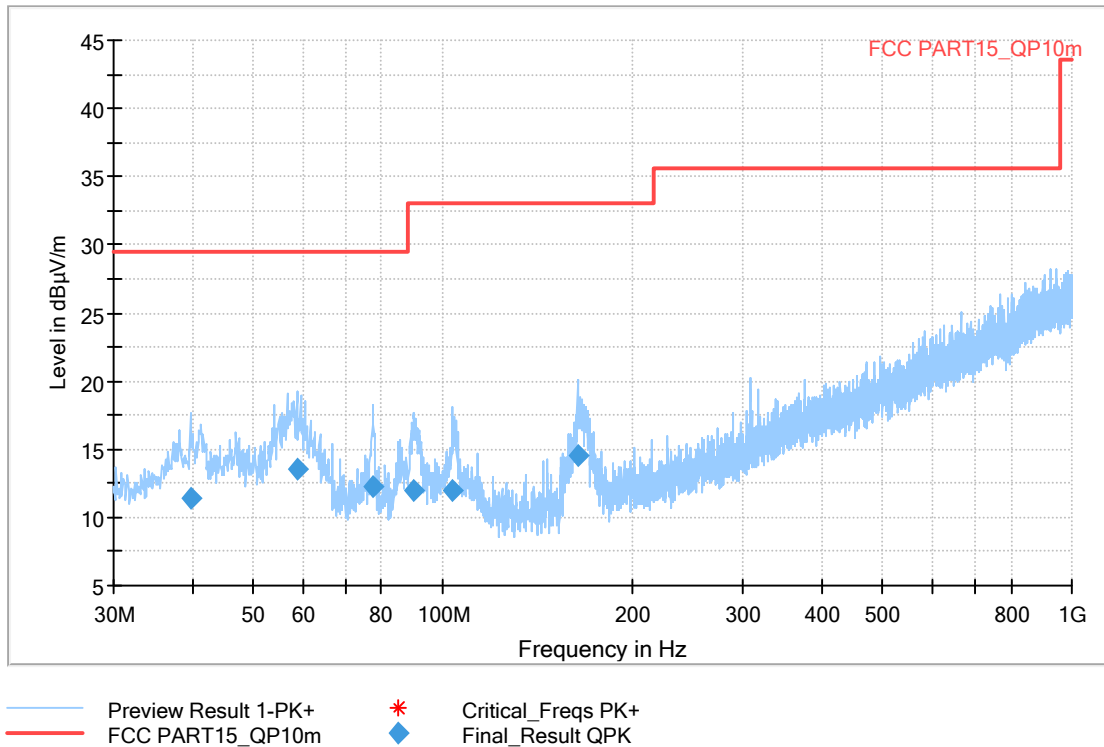


Fig A.17 Radiated Emission from 30MHz to 1GHz

Full Spectrum

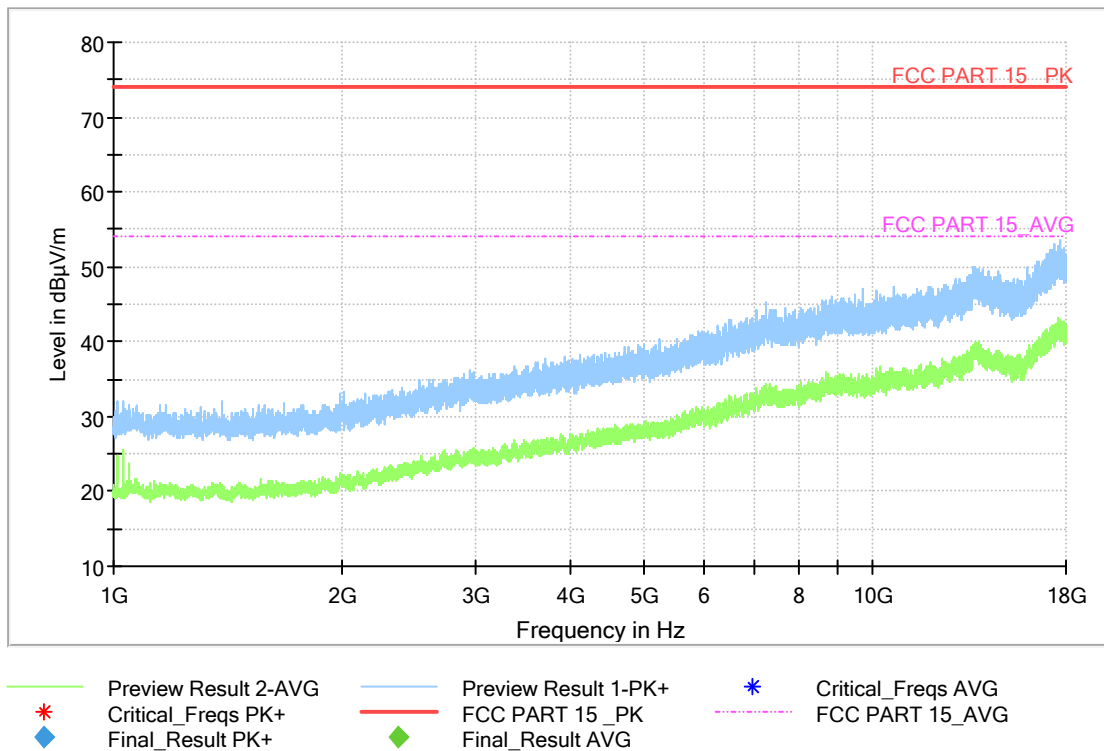


Fig A.18 Radiated Emission from 1GHz to 18GHz

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 (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: $U= 3.08$ dB, $k=2$.

Charging Mode, Set.11, GSM850 idle:

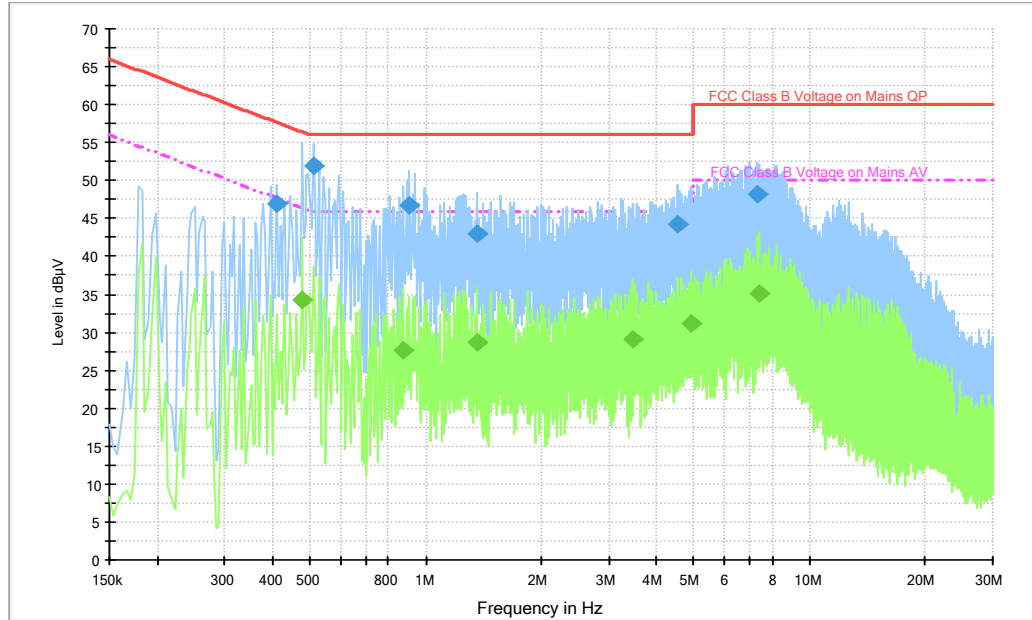


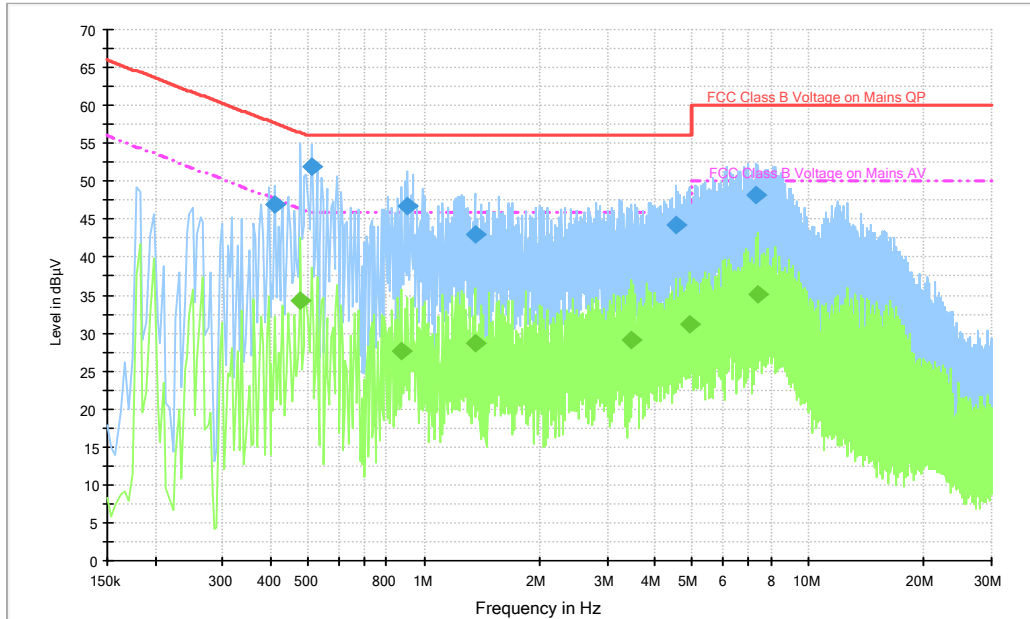
Fig A.19 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.410000	47.0	L1	19.7	10.6	57.6
0.510000	51.9	L1	19.7	4.1	56.0
0.906000	46.7	L1	19.7	9.3	56.0
1.354000	43.0	L1	19.7	13.0	56.0
4.542000	44.3	L1	19.5	11.7	56.0
7.310000	48.3	L1	19.8	11.7	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.478000	34.2	L1	19.8	12.1	46.4
0.874000	27.7	L1	19.7	18.3	46.0
1.354000	28.7	L1	19.7	17.3	46.0
3.454000	29.1	L1	19.6	16.9	46.0
4.922000	31.1	L1	19.6	14.9	46.0
7.426000	35.1	L1	19.7	14.9	50.0

Charging Mode, Set.12, FM + USB:

Fig A.20 Conducted Emission
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.474000	45.2	N	19.8	11.2	56.4
0.870000	39.5	N	19.6	16.5	56.0
1.362000	40.8	L1	19.7	15.2	56.0
2.138000	39.5	N	19.7	16.5	56.0
5.166000	36.5	N	19.6	23.5	60.0
7.494000	37.9	L1	19.7	22.1	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.390000	36.6	L1	19.8	11.4	48.1
0.470000	43.2	L1	19.8	3.3	46.5
0.854000	31.1	L1	19.7	14.9	46.0
1.386000	30.0	N	19.6	16.0	46.0
2.138000	29.0	N	19.7	17.0	46.0
7.822000	37.6	N	19.6	12.4	50.0



ANNEX B: PERSONS INVOLVED IN THIS TESTING

Test Item	Test Software and Version	Software Vendor	Test operator
Conducted Emission	EMC32 V8.52.0	R&S	Chen Tianwei
Radiated Emission	EMC32 V10.60.20	R&S	Chen Tianwei & Ding Zai

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