FCC PART 15B
TEST REPORT

No. 24T04Z101591-013

for

Guangdong OPPO Mobile Telecommunications Corp., Ltd.

Mobile Phone

Model Name: CPH2659

FCC ID: R9C-OP23216

with

Hardware Version: 11

Software Version: Color OS 15.0

Issued Date: 2024-10-09

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.

Test Laboratory:

CTTL-Telecommunication Technology Labs, CAICT

No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191.

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
24T04Z101591-013	Rev.0	1st edition	2024-09-18
24T04Z101591-013	Rev.1	2nd edition Modified the bands EUT supports	2024-10-09

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

CONTENTS

1. Test Laboratory

1.1. Testing Location

CTTL (huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191

1.2. Testing Environment

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2024-08-08

Testing End Date: 2024-09-02

1.4. Signature

Wang Xue

(Prepared this test report)

Zhang Ying

(Reviewed this test report)

Zhang Xia

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	Guangdong OPPO Mobile Telecommunications Corp., Ltd.
Address /Post:	NO.18 HaiBin Road, Wusha Village, Chang'an Town, DongGuan City, Guangdong Province, P.R. China
Contact:	Xiong Bo
Telephone:	(86)76986076999
E-Mail:	xiongbo@oppo.com

2.2. Manufacturer Information

Company Name:	Guangdong OPPO Mobile Telecommunications Corp., Ltd.
Address /Post:	NO.18 HaiBin Road, Wusha Village, Chang'an Town, DongGuan City, Guangdong Province, P.R. China
Contact:	Xiong Bo
Telephone:	(86)76986076999
E-Mail:	xiongbo@oppo.com

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

3.1. About EUT

Description	Mobile Phone
Model Name	CPH2659
FCC ID:	R9C-OP23216

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
EUT1	866185070033131	11	Color OS 15.0
EUT2	866185070033115	11	Color OS 15.0

*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	Model	Manufacture
AE1	Battery	BLPB05	Dongguan NVT Technology Co., Ltd
AE2	Charger1	VCB8OAUH	Dongguan Aohai Technology Co.,Ltd.
AE3	Charger2	VCB8OAUH	Huizhou Golden Lake Industrial Co., Ltd.
AE4	USB Cable	DL129	DUWEI

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

3.4. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT1 + AE1 + AE3 + AE4	Charger2+REAR Camera +GSM 850 idle
Set.2	EUT1 + AE1 + AE2 + AE4	Charger1 +MP4+WCDMA 850 idle
Set.3	EUT1 + AE1 + AE2 + AE4	Charger1+front Camera+LTE B5 idle
Set.4	EUT1 + AE1 + AE2	USB+ NR n5 idle
Set.5	EUT1+ AE1+Cable +EUT2	OTG
Set.6	EUT1+ AE1+wireless charger	WPT

Note:

Equipment Under Test (EUT) is a model of Mobile Phone.

It supports

GSM Band	GSM 850/900/1800/1900
UMTS Band	WCDMA B1/2/4/5/6/8/19
LTE Band	FDD_LTE: B1,2,3,4,5,7,8,12,13,17,18,19,20,25,26,28,32,66
	TDD_LTE: 38/39/41
NR Band	SA: FR1:n1,n2,n3,n5,n7,n8,n12,n20,n25,n26,n28,n38,n41,n66,n75,n76
	NSA:FR1:n1,n2,n3,n5,n7,n8,n20,n26,n28,n38,n41,n66,n75,n76

It has MP3, Camera, USB memory, OTG, Bluetooth 5.4, Wi-Fi 2.4G (802.11b/g/n/ac/ax/be, 802.11n/ac/ax/be support 20MHz and 40MHz bandwidth), Wi-Fi 5G(802.11a/n/ac/ax/be, 802.11n

support 20MHz and 40MHz bandwidth, 802.11ac/ax/be support 20MHz, 40MHz, 80MHz and 160MHz bandwidth), Wi-Fi 6E and Wi-Fi 7(802.11ax/be, support 20MHz, 40MHz, 80MHz, 160MHz bandwidth, 802.11be supports 320MHz bandwidth in addition), and NFC , GNSS functions.
The device contains receivers which tune and operate between 30MHz-960MHz in the following mode: GSM850, WCDMA850, LTE Band 5/12/13/17/26, NR band n5/n12/n26. All licensed band receivers that tune in the range of 30MHz-960MHz are investigated. Only the worst-case emissions are reported.

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	2019
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 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	< 4Ω
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 MΩ
Ground system resistance	< 4Ω

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	ESW44	103144	R&S	2024-11-26	1 Year
2	LISN	ENV216	101200	R&S	2024-06-05	1 year
3	Test Receiver	ESCI 7	100344	R&S	2024-02-21	1 Year
4	EMI Antenna	VULB 9163	01222	SCHWARZBECK	2025-07-30	1 year
5	EMI Antenna	3115	00167250	ETS-Lindgren	2025-04-11	1 year
6	Universal Communication Tester	CMW500	150344	R&S	2025-01-03	1 Year
7	Universal Communication Tester	E7515B	MY60102215	Keysight	2026-07-09	2 Years

Test software information		
Test Item	Software	Version
Radiated Emission	EMC32	V11.50.00
Conducted Emission	EMC32	V8.53.0

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/OTG mode of MS and charging mode of MS) at distances of 3 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, OTG 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 the other device for charging in OTG mode and is connected to a charger in the case of charging mode.

The EUT was tested while operating in licensed band Rx mode. 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.

All equipment is placed on the test table top and arranged in a typical configuration in accordance with ANSI C63.4-2014 and manipulated to obtain worst case emissions.

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.

The EUT was tested while operating in licensed band Rx mode. 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.

All equipment is placed on the test table top and arranged in a typical configuration in accordance with ANSI C63.4-2014 and manipulated to obtain worst case emissions.

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 = 4.84 dB, k=2.

Measurement results for Set.1:

Charing 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	43.70	-26.91	42.24	28.38	54.00	10.30	V
17925.880	43.50	-26.85	42.33	28.02	54.00	10.50	H
17959.200	43.30	-27.02	42.33	27.99	54.00	10.70	H
17965.320	43.30	-27.19	42.33	28.16	54.00	10.70	H
17934.040	43.30	-26.85	42.33	27.82	54.00	10.70	V
17932.000	43.10	-26.85	42.33	27.62	54.00	10.90	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)
17861.960	54.70	-27.24	42.24	39.70	74.00	19.30	H
17941.520	54.40	-27.02	42.33	39.09	74.00	19.60	V
17981.300	53.80	-27.36	42.33	38.84	74.00	20.20	V
17946.280	53.80	-27.02	42.33	38.49	74.00	20.20	H
17392.420	53.70	-27.49	41.96	39.23	74.00	20.30	H
17909.900	53.70	-26.91	42.24	38.38	74.00	20.30	H

Measurement results for Set.2:

Charing 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)
17916.020	43.40	-26.91	42.33	27.98	54.00	10.60	H
17968.380	43.40	-27.19	42.33	28.26	54.00	10.60	H
17961.920	43.30	-27.19	42.33	28.16	54.00	10.70	V
17892.900	43.20	-27.07	42.24	28.04	54.00	10.80	V
17990.140	43.20	-27.36	42.33	28.24	54.00	10.80	V
17932.680	43.10	-26.85	42.33	27.62	54.00	10.90	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)
17921.120	54.50	-26.85	42.33	39.02	74.00	19.50	H
17913.980	54.10	-26.91	42.24	38.78	74.00	19.90	V
17890.520	53.80	-27.07	42.24	38.64	74.00	20.20	H
17969.740	53.70	-27.19	42.33	38.56	74.00	20.30	V
17899.700	53.70	-27.07	42.24	38.54	74.00	20.30	H
17906.160	53.70	-26.91	42.24	38.38	74.00	20.30	H

Measurement results for Set.3:

Charing 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)
17946.620	43.60	-27.02	42.33	28.29	54.00	10.40	V
17960.220	43.50	-27.19	42.33	28.36	54.00	10.50	H
17912.960	43.30	-26.91	42.24	27.98	54.00	10.70	H
17998.300	43.20	-27.36	42.33	28.24	54.00	10.80	V
17935.740	43.20	-26.85	42.33	27.72	54.00	10.80	V
17956.820	43.20	-27.02	42.33	27.89	54.00	10.80	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)
17987.420	54.10	-27.36	42.33	39.14	74.00	19.90	H
17960.560	53.90	-27.19	42.33	38.76	74.00	20.10	H
17931.660	53.80	-26.85	42.33	38.32	74.00	20.20	V
17956.480	53.80	-27.02	42.33	38.49	74.00	20.20	H
17928.600	53.70	-26.85	42.33	38.22	74.00	20.30	H
17975.180	53.70	-27.19	42.33	38.56	74.00	20.30	V

Measurement results for Set.4:

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)
6051.720	45.30	-36.36	35.18	46.48	54.00	8.70	V
6052.060	44.80	-36.36	35.18	45.98	54.00	9.20	V
6052.400	43.90	-36.36	35.18	45.08	54.00	10.10	H
17907.860	43.40	-26.91	42.24	28.08	54.00	10.60	V
17875.900	43.30	-27.24	42.24	28.30	54.00	10.70	V
17942.880	43.30	-27.02	42.33	27.99	54.00	10.70	H

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)
17849.380	54.40	-27.40	42.24	39.56	74.00	19.60	H
17815.720	54.10	-27.72	42.24	39.58	74.00	19.90	H
17970.080	54.00	-27.19	42.33	38.86	74.00	20.00	H
17930.980	53.90	-26.85	42.33	38.42	74.00	20.10	V
17915.000	53.80	-26.91	42.33	38.38	74.00	20.20	V
17969.060	53.80	-27.19	42.33	38.66	74.00	20.20	V

Measurement results for Set.5:

OTG 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)
17924.520	43.50	-26.85	42.33	28.02	54.00	10.50	V
17907.860	43.30	-26.91	42.24	27.98	54.00	10.70	V
17949.000	43.20	-27.02	42.33	27.89	54.00	10.80	H
17953.080	43.10	-27.02	42.33	27.79	54.00	10.90	H
17946.280	43.00	-27.02	42.33	27.69	54.00	11.00	V
17895.960	43.00	-27.07	42.24	27.84	54.00	11.00	H

OTG 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)
17946.280	55.00	-27.02	42.33	39.69	74.00	19.00	H
17981.980	54.20	-27.36	42.33	39.24	74.00	19.80	H
17935.740	54.10	-26.85	42.33	38.62	74.00	19.90	V
17950.700	53.90	-27.02	42.33	38.59	74.00	20.10	H
17943.220	53.70	-27.02	42.33	38.39	74.00	20.30	H
17913.300	53.70	-26.91	42.24	38.38	74.00	20.30	V

Measurement results for Set.6:

WPT 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)
17962.260	43.70	-27.19	42.33	28.56	54.00	10.30	V
17939.480	43.30	-26.85	42.33	27.82	54.00	10.70	H
17920.440	43.20	-26.85	42.33	27.72	54.00	10.80	H
17962.940	43.20	-27.19	42.33	28.06	54.00	10.80	H
17929.280	43.20	-26.85	42.33	27.72	54.00	10.80	H
17944.240	43.20	-27.02	42.33	27.89	54.00	10.80	V

WPT 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)
17819.460	53.70	-27.72	42.24	39.18	74.00	20.30	H
17954.100	53.50	-27.02	42.33	38.19	74.00	20.50	V
17975.180	53.50	-27.19	42.33	38.36	74.00	20.50	V
17978.240	53.50	-27.19	42.33	38.36	74.00	20.50	H
17907.520	53.30	-26.91	42.24	37.98	74.00	20.70	V
17636.540	53.30	-28.10	42.10	39.30	74.00	20.70	V

Measurement results for Set.1:

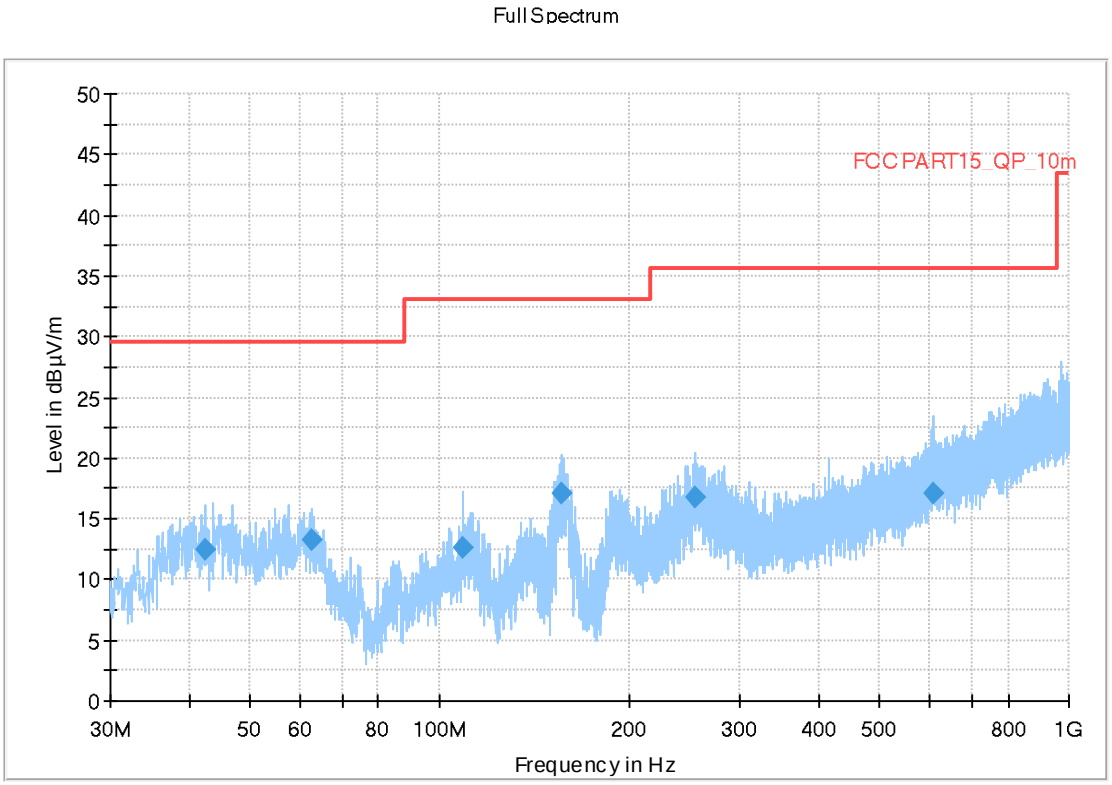

Fig A.1 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
42.513000	12.48	29.54	17.06	120.000	122.0	V	285.0
62.689000	13.25	29.54	16.29	120.000	225.0	V	263.0
108.861000	12.56	33.06	20.50	120.000	225.0	V	6.0
156.148500	17.03	33.06	16.03	120.000	179.0	V	-23.0
255.137000	16.74	35.56	18.82	120.000	108.0	V	150.0
609.817500	17.07	35.56	18.49	120.000	175.0	V	227.0

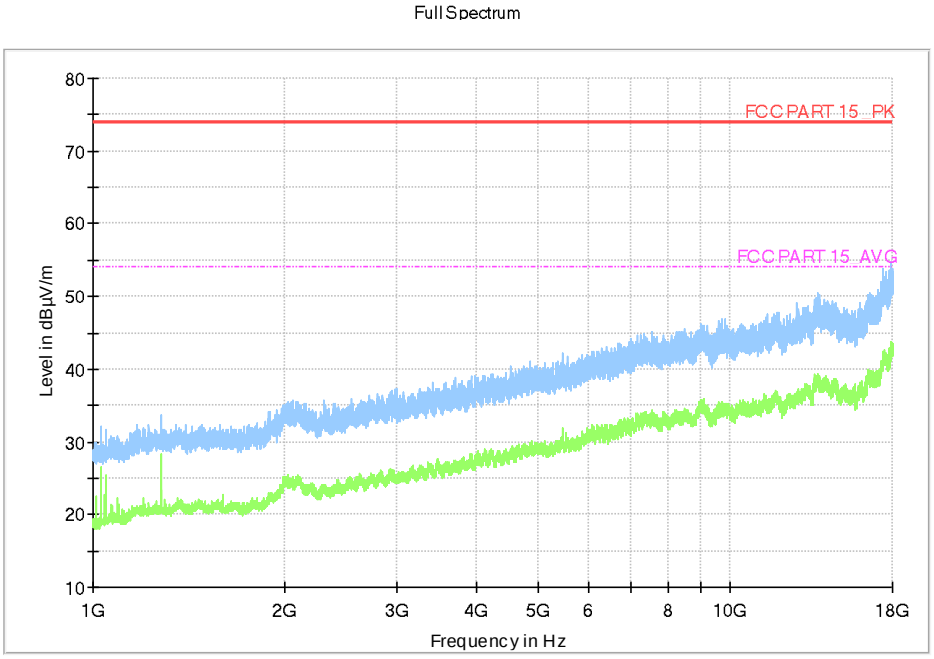

Fig A.2 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.2:

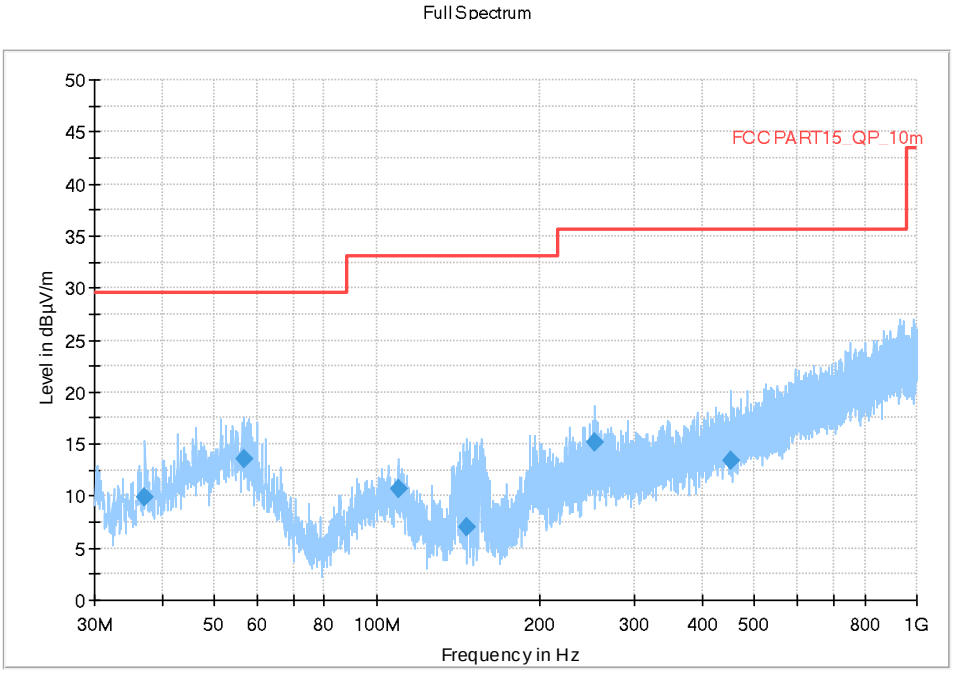

Fig A.3 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
37.178000	9.87	29.54	19.67	120.000	308.0	V	45.0
56.869000	13.65	29.54	15.89	120.000	215.0	V	90.0
109.443000	10.68	33.06	22.38	120.000	208.0	V	1.0
146.739500	7.04	33.06	26.02	120.000	100.0	V	-15.0
253.342500	15.13	35.56	20.43	120.000	104.0	V	270.0
451.562000	13.42	35.56	22.14	120.000	215.0	V	315.0

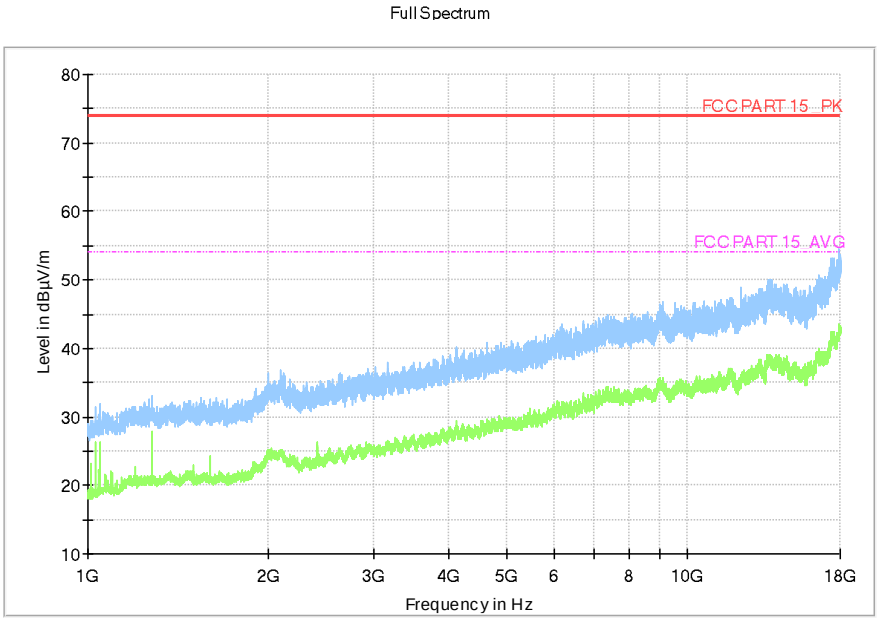

Fig A.4 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.3:

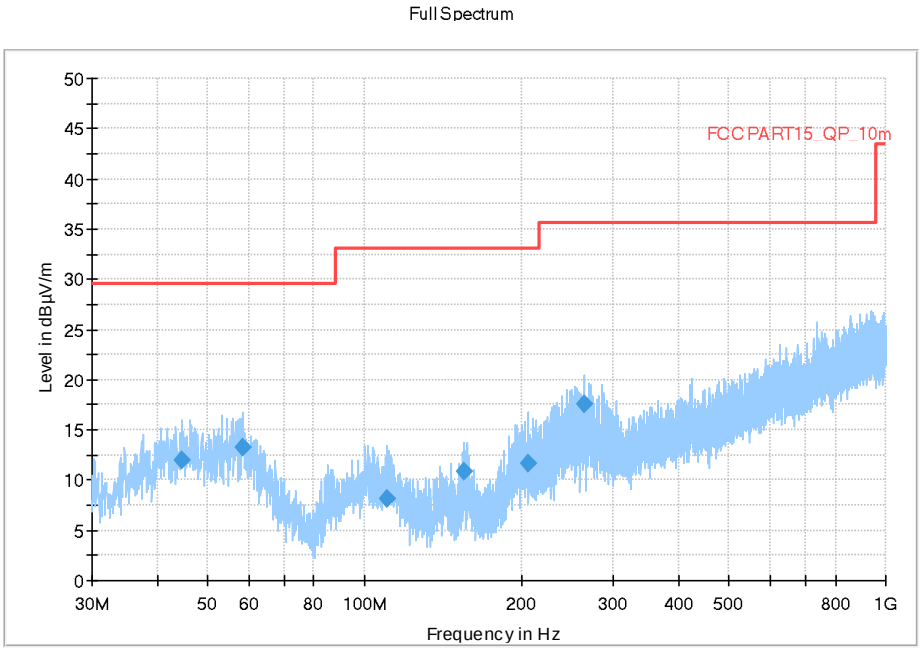

Fig A.5 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
44.695500	11.99	29.54	17.55	120.000	110.0	V	311.0
58.227000	13.33	29.54	16.21	120.000	215.0	V	315.0
110.752500	8.14	33.06	24.92	120.000	325.0	H	-44.0
154.936000	10.84	33.06	22.22	120.000	123.0	V	-13.0
206.006500	11.73	33.06	21.34	120.000	199.0	V	90.0
263.867000	17.51	35.56	18.05	120.000	101.0	V	61.0

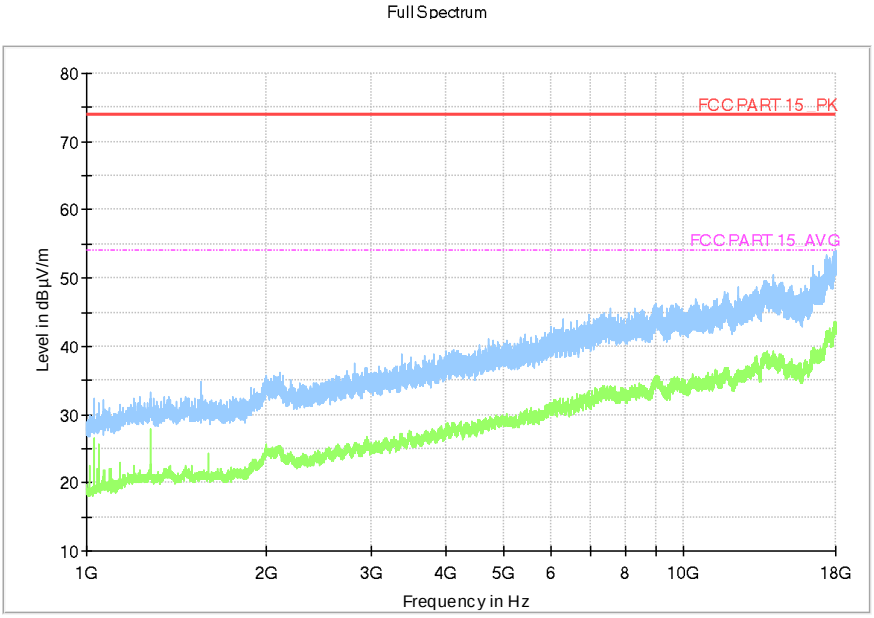

Fig A.6 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.4:

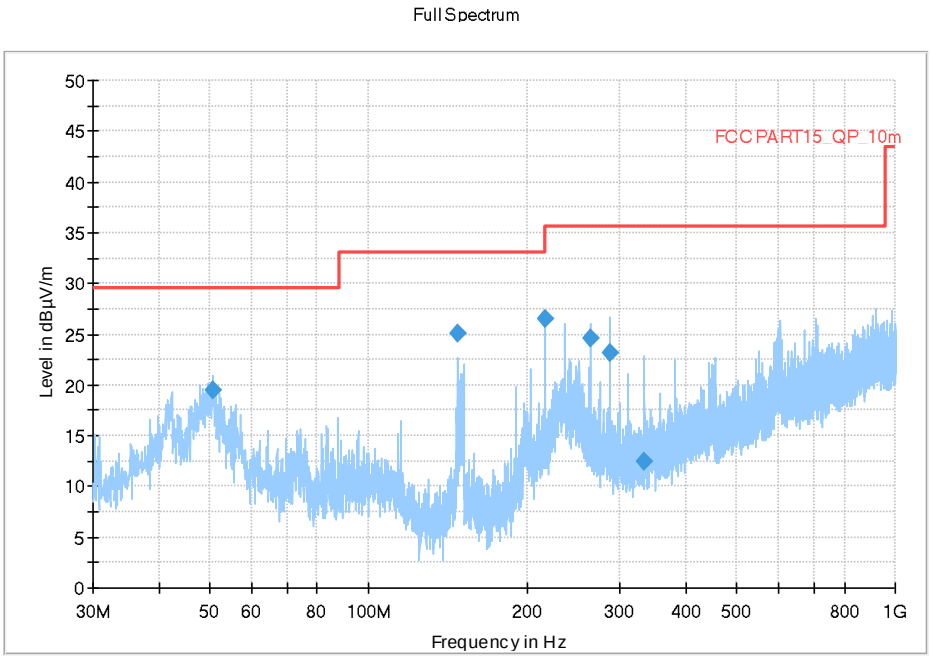

Fig A.7 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
50.564000	19.47	29.54	10.07	120.000	207.0	V	135.0
147.370000	25.12	33.06	7.94	120.000	101.0	V	-45.0
215.997500	26.52	33.06	6.54	120.000	184.0	V	53.0
263.964000	24.63	35.56	10.93	120.000	320.0	H	173.0
288.020000	23.20	35.56	12.36	120.000	275.0	H	180.0
334.531500	12.45	35.56	23.11	120.000	276.0	H	22.0

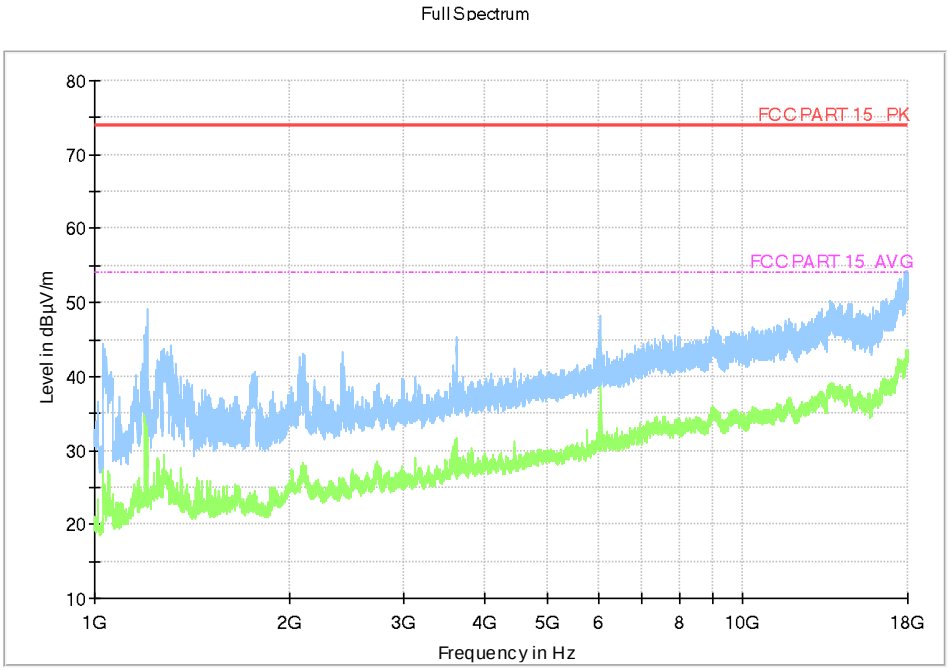

Fig A.8 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.5:

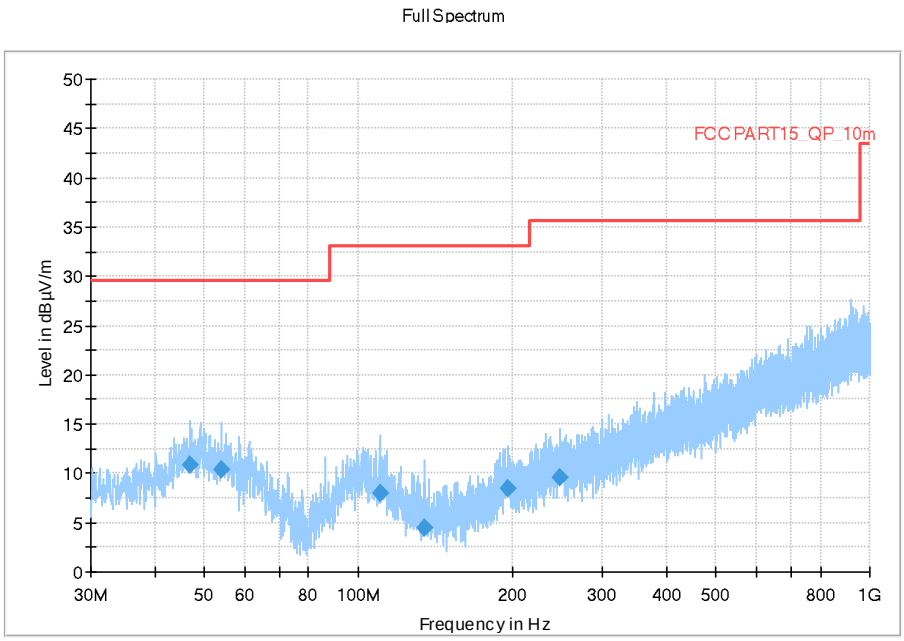

Fig A.9 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
46.781000	10.81	29.54	18.73	120.000	100.0	H	225.0
54.104500	10.34	29.54	19.20	120.000	215.0	V	285.0
110.073500	8.00	33.06	25.06	120.000	208.0	V	225.0
134.566000	4.50	33.06	28.56	120.000	101.0	V	181.0
196.112500	8.47	33.06	24.59	120.000	175.0	V	278.0
247.183000	9.51	35.56	26.05	120.000	323.0	V	54.0

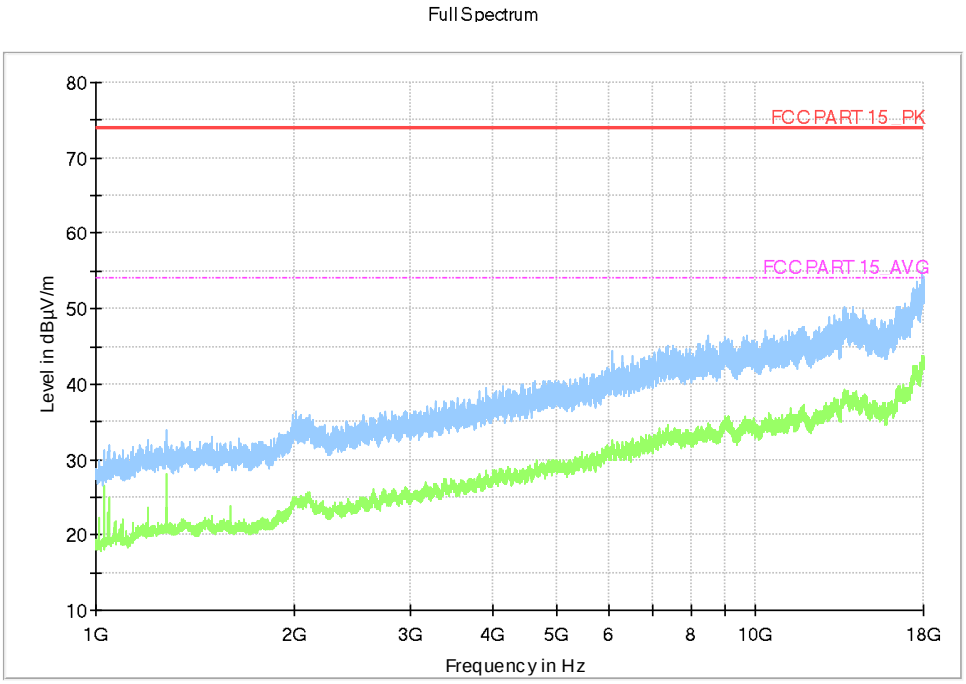

Fig A.10 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.6:

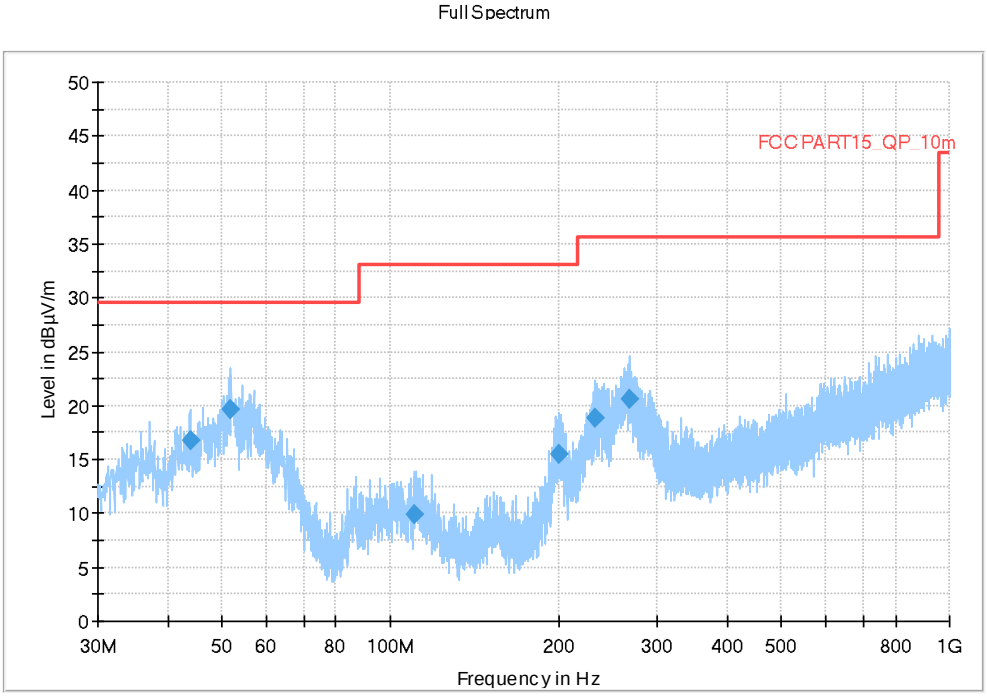

Fig A.11 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
43.871000	16.80	29.54	12.74	120.000	120.0	V	226.0
51.873500	19.69	29.54	9.85	120.000	104.0	V	-44.0
110.122000	9.91	33.06	23.15	120.000	101.0	V	-21.0
200.235000	15.46	33.06	17.60	120.000	125.0	V	79.0
231.614500	18.82	35.56	16.74	120.000	125.0	V	105.0
267.698500	20.60	35.56	14.96	120.000	100.0	V	54.0

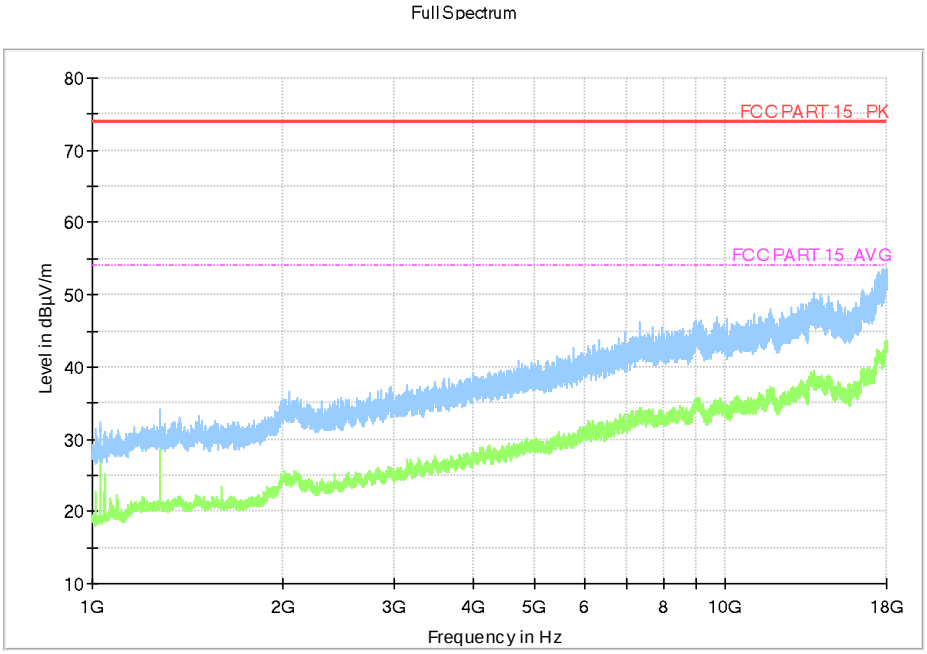

Fig A.12 Radiated Emission from 1GHz to 18GHz

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:

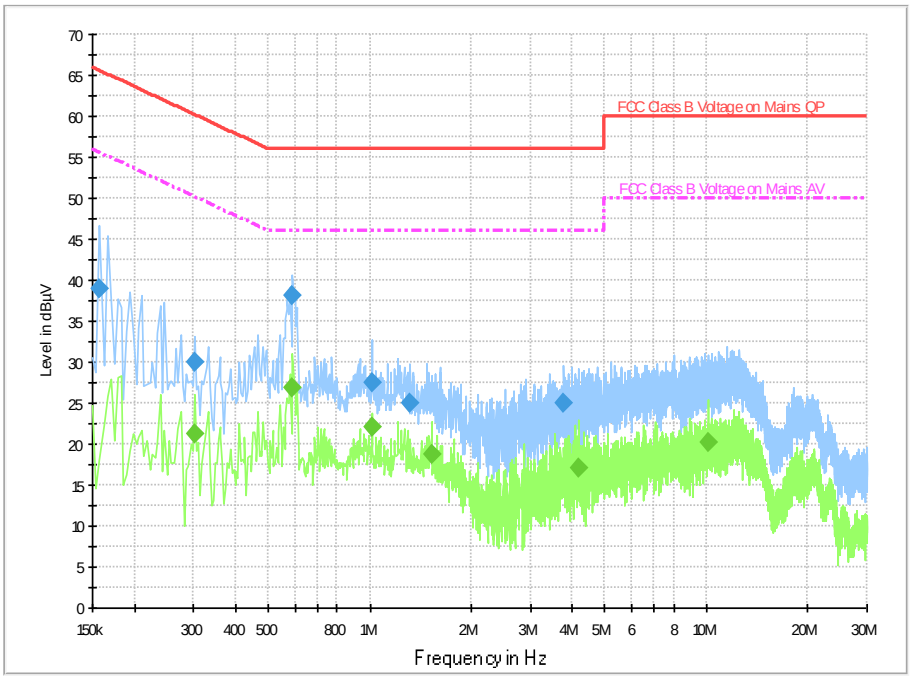

Fig A.13 Conducted Emission from 150kHz to 30MHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.158000	39.1	2000.0	9.000	On	N	19.9	26.5	65.6	
0.302000	30.0	2000.0	9.000	On	L1	19.9	30.2	60.2	
0.590000	38.2	2000.0	9.000	On	L1	20.0	17.8	56.0	
1.018000	27.6	2000.0	9.000	On	L1	19.9	28.4	56.0	
1.322000	25.0	2000.0	9.000	On	L1	19.9	31.0	56.0	
3.778000	25.0	2000.0	9.000	On	L1	19.8	31.0	56.0	

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.302000	21.2	2000.0	9.000	On	L1	19.9	29.0	50.2	
0.590000	27.0	2000.0	9.000	On	L1	20.0	19.0	46.0	
1.018000	22.2	2000.0	9.000	On	L1	19.9	23.8	46.0	
1.530000	18.8	2000.0	9.000	On	L1	19.9	27.2	46.0	
4.154000	17.0	2000.0	9.000	On	L1	19.8	29.0	46.0	
10.162000	20.2	2000.0	9.000	On	N	19.7	29.8	50.0	

Charging Mode, Set.2:

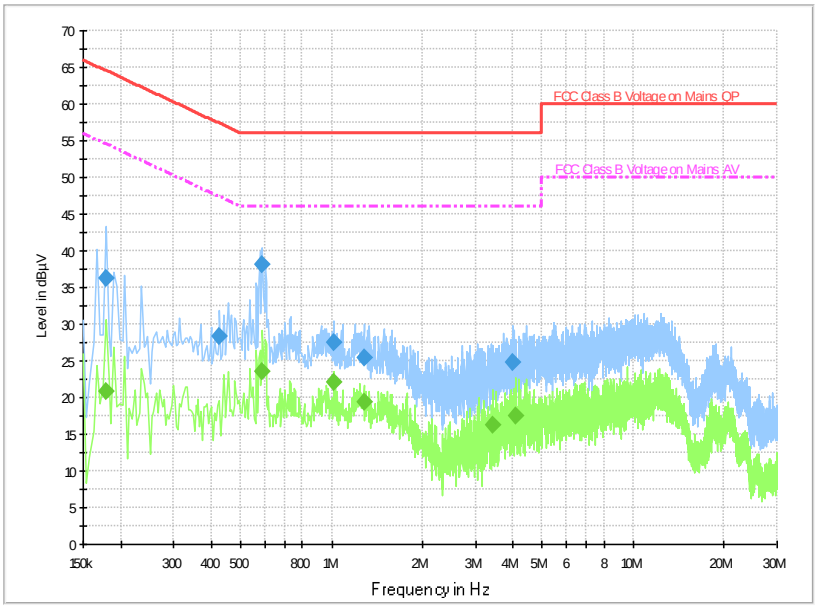

Fig A.14 Conducted Emission from 150kHz to 30MHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.178000	36.3	2000.0	9.000	On	N	19.8	28.3	64.6	
0.426000	28.3	2000.0	9.000	On	L1	20.0	29.0	57.3	
0.590000	38.1	2000.0	9.000	On	L1	20.0	17.9	56.0	
1.018000	27.5	2000.0	9.000	On	L1	19.9	28.5	56.0	
1.282000	25.5	2000.0	9.000	On	L1	19.9	30.5	56.0	
3.978000	24.8	2000.0	9.000	On	L1	19.8	31.2	56.0	

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.178000	20.9	2000.0	9.000	On	N	19.8	33.6	54.6	
0.590000	23.5	2000.0	9.000	On	N	19.9	22.5	46.0	
1.018000	22.1	2000.0	9.000	On	L1	19.9	23.9	46.0	
1.278000	19.4	2000.0	9.000	On	L1	19.9	26.6	46.0	
3.438000	16.2	2000.0	9.000	On	L1	19.8	29.8	46.0	
4.098000	17.4	2000.0	9.000	On	L1	19.8	28.6	46.0	

Charging Mode, Set.3:

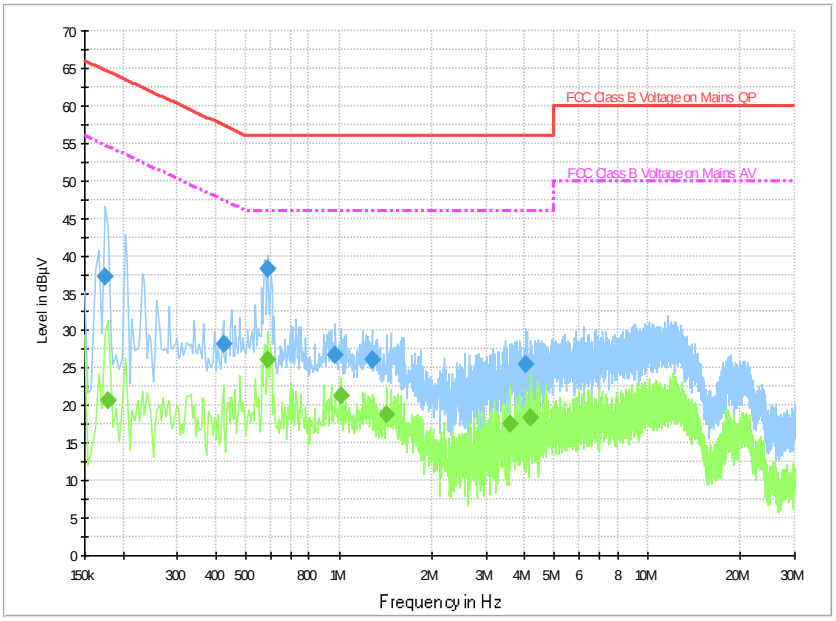

Fig A.15 Conducted Emission from 150kHz to 30MHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.174000	37.3	2000.0	9.000	On	L1	19.9	27.5	64.8	
0.422000	28.2	2000.0	9.000	On	L1	20.0	29.2	57.4	
0.586000	38.3	2000.0	9.000	On	L1	20.0	17.7	56.0	
0.974000	26.8	2000.0	9.000	On	L1	19.9	29.2	56.0	
1.278000	26.2	2000.0	9.000	On	L1	19.9	29.8	56.0	
4.038000	25.5	2000.0	9.000	On	L1	19.8	30.5	56.0	

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.178000	20.6	2000.0	9.000	On	N	19.8	33.9	54.6	
0.586000	26.0	2000.0	9.000	On	L1	20.0	20.0	46.0	
1.014000	21.4	2000.0	9.000	On	L1	19.9	24.6	46.0	
1.426000	18.9	2000.0	9.000	On	L1	19.9	27.1	46.0	
3.582000	17.5	2000.0	9.000	On	L1	19.8	28.5	46.0	
4.158000	18.4	2000.0	9.000	On	L1	19.8	27.6	46.0	

USB Mode, Set.4:

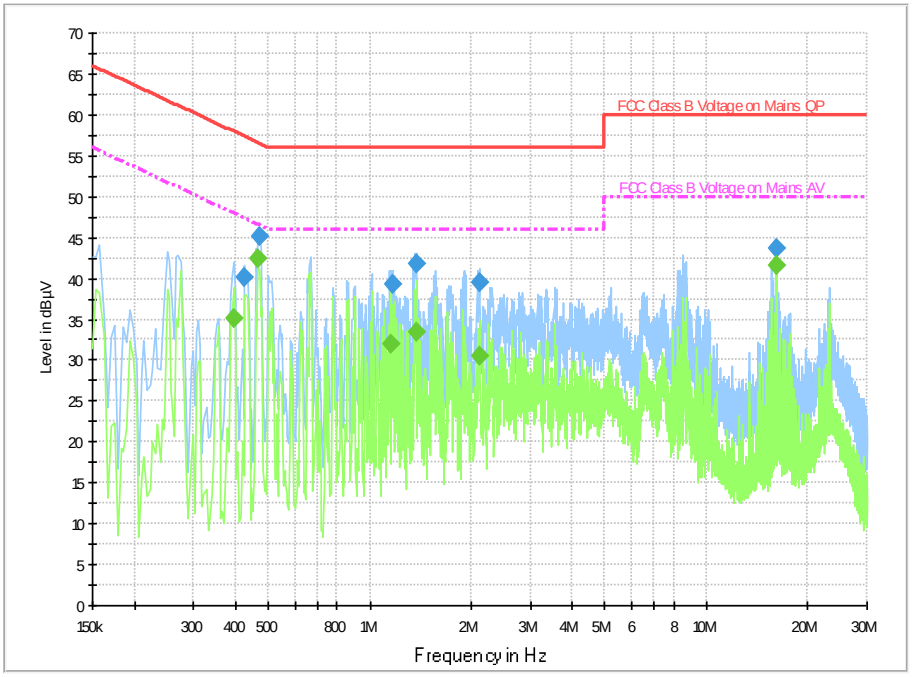

Fig A.16 Conducted Emission from 150kHz to 30MHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.426000	40.2	2000.0	9.000	On	L1	20.0	17.1	57.3	
0.470000	45.1	2000.0	9.000	On	L1	20.0	11.4	56.5	
1.170000	39.4	2000.0	9.000	On	L1	19.9	16.6	56.0	
1.374000	41.7	2000.0	9.000	On	L1	19.9	14.3	56.0	
2.122000	39.4	2000.0	9.000	On	N	19.6	16.6	56.0	
16.226000	43.8	2000.0	9.000	On	L1	20.0	16.2	60.0	

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.394000	35.0	2000.0	9.000	On	L1	20.0	13.0	48.0	
0.466000	42.4	2000.0	9.000	On	N	19.9	4.2	46.6	
1.162000	31.9	2000.0	9.000	On	L1	19.9	14.1	46.0	
1.374000	33.4	2000.0	9.000	On	L1	19.9	12.6	46.0	
2.122000	30.4	2000.0	9.000	On	N	19.6	15.6	46.0	
16.226000	41.6	2000.0	9.000	On	L1	20.0	8.4	50.0	

WPT Mode, Set.6:

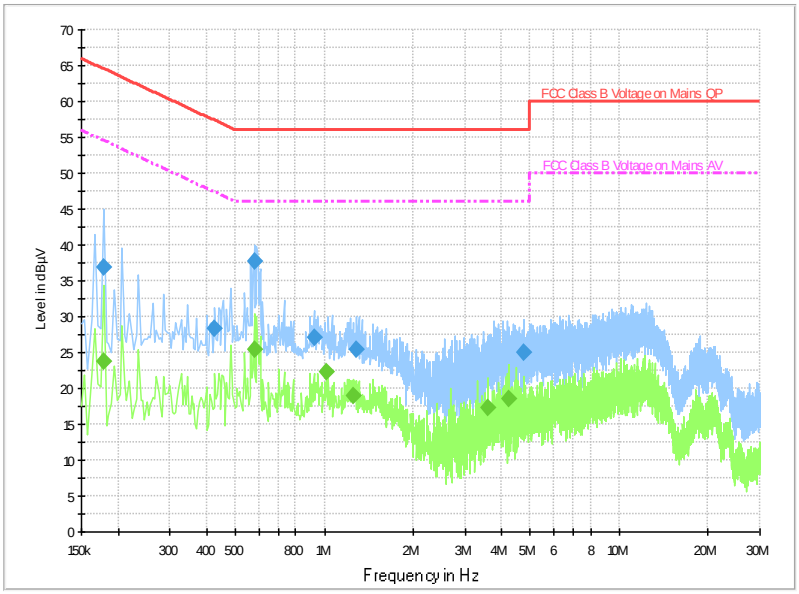

Fig A.17 Conducted Emission from 150kHz to 30MHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.178000	36.9	2000.0	9.000	On	L1	19.9	27.7	64.6	
0.426000	28.4	2000.0	9.000	On	L1	20.0	29.0	57.3	
0.578000	37.7	2000.0	9.000	On	L1	20.0	18.3	56.0	
0.922000	27.1	2000.0	9.000	On	L1	19.9	28.9	56.0	
1.282000	25.4	2000.0	9.000	On	L1	19.9	30.6	56.0	
4.754000	24.9	2000.0	9.000	On	L1	19.8	31.1	56.0	

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.178000	23.8	2000.0	9.000	On	L1	19.9	30.8	54.6	
0.578000	25.4	2000.0	9.000	On	L1	20.0	20.6	46.0	
1.018000	22.2	2000.0	9.000	On	L1	19.9	23.8	46.0	
1.254000	19.1	2000.0	9.000	On	L1	19.9	26.9	46.0	
3.582000	17.3	2000.0	9.000	On	L1	19.8	28.7	46.0	
4.218000	18.5	2000.0	9.000	On	L1	19.8	27.5	46.0	

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