



FCC PART 15B TEST REPORT

No. I22Z60501-EMC01

for

TCL Communication Ltd.

Tablet PC

Model name: 9183W

FCC ID: 2ACCJB178

with

Hardware Version: 05

Software Version: CLS5

Issued Date: 2022-05-27

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.

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I22Z60501-EMC01	Rev.0	1 st edition	2022-04-28
I22Z60501-EMC01	Rev.1	2 nd edition	2022-05-22
I22Z60501-EMC01	Rev.2	3 rd edition	2022-05-27

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



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1. Test Laboratory

1.1. Testing Location

CTTL (huayuan North Road)

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

1.2. Testing Environment

Normal Temperature: 15-35°C


Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2022-03-22

Testing End Date: 2022-04-28

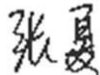
1.4. Signature



Wang Xue
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2. Client Information

2.1. Applicant Information

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

3.1. About EUT

Description	Tablet PC
Model Name	9183W
FCC ID:	2ACCJB178

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	016239000000075	05	CLS5

*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	USB Cable1	/	/
AE3	Charger1	/	/
AE4	Headset	/	/
AE5	USB Cable2	/	/
AE6	Charger2	/	/

AE1

Model	TLp078C1
Manufacturer	BYD
Capacity	8000mAh
Nominal Voltage	

AE2

Model	CDA0000128C2
Manufacturer	SHENGHUA
Length of cable	/

AE3

Model	QC13US
Manufacturer	BYD
Length of cable	/

AE4

Model	/
Manufacturer	/
Length of cable	/

AE5

Model	CDA0000128C1
Manufacturer	JUWEI
Length of cable	/

AE6

Model	QC13US
Manufacturer	PUAN
Length of cable	/

*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 + AE2 + AE3	Charger1 + REAR Camera + GSM 850 idle
Set.2	EUT1 + AE1 + AE2 + AE3	Charger1 + MP4 + WCDMA 850 idle
Set.3	EUT1 + AE1 + AE2	USB + front camera +LTE B5 idle
Set.4	EUT1 + AE1 + AE4	FM
Set.2-1	EUT1 + AE1 + AE5 + AE6	Charger2
Set.2-2	EUT1 + AE1 + AE5	USB

Note:

Equipment Under Test (EUT) is a model of Tablet PC with integrated antenna.

It supports

GSM Band	GSM900/DCS1800/PCS1900/GSM850
UMTS Band	FDD Band II(W1900) /FDD Band IV(W1700)/FDD Band V(W850)
LTE Band	FDD1/FDD2/FDD3/FDD4/FDD5/FDD7/FDD8/FDD12/FDD13/FDD20/FDD25/ FDD26/FDD28/TDD38/TDD39/TDD40/TDD41/FDD66/FDD71
NR Band	n2/n26/n41/n66/n71/n77

It has MP3, Camera, USB memory, FM, Bluetooth 5.1, Wi-Fi (802.11a/b/g/n/ac, 802.11n supports 20MHz and 40MHz bandwidth, 802.11ac supports 20MHz,40MHz and 80MHz bandwidth) ,GNSS functions

The device contains receivers which tune and operate between 30MHz-960MHz in the following bands: GSM850, WCDMA850, LTE Band 5/8/12/13/20/26/28/71 and NR n71. 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 (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	Test Receiver	ESW44	103023	R&S	2022-10-28	1 Year
2	Test Receiver	ESW44	103015	R&S	2022-09-03	1 Year
3	LISN	ENV216	101200	R&S	2022-05-30	1 year
4	Universal Radio Communication Tester	CMW500	116588	R&S	2022-12-20	1 year
5	Test Receiver	ESCI 7	100344	R&S	2023-03-21	1 Year
6	EMI Antenna	VULB 9163	483	SCHWARZBECK	2022-08-24	1 year
7	EMI Antenna	3115	00167250	ETS-Lindgren	2022-07-01	1 year
8	Signal Generator	SMBV100A	260613	R&S	2023-01-09	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 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. 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.

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:

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

Where

G_A : Antenna factor of receive antenna

G_{PL} : Path Loss

P_{Mea} : Measurement result on receiver.

Measurement uncertainty (worst case): $U = 4.74 \text{ dB}$, $k=2$.

Measurement results for Set.1:

Charing 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)
17969.740	40.00	-29.06	46.66	22.40	54.00	14.00	H
17951.720	39.80	-28.94	46.66	22.08	54.00	14.20	V
17977.220	39.70	-29.06	46.66	22.10	54.00	14.30	H
17855.500	39.70	-29.34	45.95	23.08	54.00	14.30	V
17982.320	39.70	-29.06	46.66	22.10	54.00	14.30	V
17984.360	39.70	-29.06	46.66	22.10	54.00	14.30	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)
17669.180	51.60	-29.90	45.25	36.25	74.00	22.40	V
17934.380	51.50	-29.40	46.66	34.24	74.00	22.50	V
17242.140	50.90	-30.02	43.36	37.56	74.00	23.10	H
17930.980	50.90	-29.40	46.66	33.64	74.00	23.10	H
17880.320	50.80	-29.53	45.95	34.38	74.00	23.20	V
17798.720	50.80	-29.89	45.95	34.73	74.00	23.20	V

Measurement results for Set.2:
Charing 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)
17978.920	40.00	-29.06	46.66	22.40	54.00	14.00	H
17862.980	39.90	-29.39	45.95	23.34	54.00	14.10	V
17951.720	39.90	-28.94	46.66	22.18	54.00	14.10	V
17975.860	39.90	-29.06	46.66	22.30	54.00	14.10	V
17881.000	39.60	-29.53	45.95	23.18	54.00	14.40	H
17949.000	39.60	-28.94	46.66	21.88	54.00	14.40	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)
17917.380	51.90	-29.33	46.66	34.57	74.00	22.10	H
17986.740	51.40	-29.06	46.66	33.80	74.00	22.60	H
17951.380	51.40	-28.94	46.66	33.68	74.00	22.60	V
16890.920	51.30	-29.92	41.49	39.73	74.00	22.70	H
17968.380	51.00	-29.06	46.66	33.40	74.00	23.00	H
17868.760	50.90	-29.39	45.95	34.34	74.00	23.10	V

Measurement results for Set.3:
USB 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)
6053.760	41.40	-37.82	34.40	44.82	54.00	12.60	V
6054.100	40.10	-37.82	34.40	43.52	54.00	13.90	H
17995.580	40.00	-29.06	46.66	22.40	54.00	14.00	V
17961.920	40.00	-29.06	46.66	22.40	54.00	14.00	V
17964.640	39.90	-29.06	46.66	22.30	54.00	14.10	V
17976.200	39.90	-29.06	46.66	22.30	54.00	14.10	H

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)
17754.180	52.10	-29.61	45.95	35.76	74.00	21.90	H
17826.260	51.60	-29.68	45.95	35.32	74.00	22.40	H
17962.600	51.20	-29.06	46.66	33.60	74.00	22.80	V
17932.340	51.00	-29.40	46.66	33.74	74.00	23.00	V
17951.040	51.00	-28.94	46.66	33.28	74.00	23.00	V
17833.400	51.00	-29.68	45.95	34.72	74.00	23.00	V

Measurement results for Set.4:
FM 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)
17865.700	39.70	-29.39	45.95	23.14	54.00	14.30	V
17959.540	39.70	-28.94	46.66	21.98	54.00	14.30	H
17742.960	39.60	-29.61	45.95	23.26	54.00	14.40	H
17821.840	39.60	-29.68	45.95	23.32	54.00	14.40	V
17960.900	39.50	-29.06	46.66	21.90	54.00	14.50	H
17871.140	39.50	-29.39	45.95	22.94	54.00	14.50	V

FM 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)
17955.460	51.40	-28.94	46.66	33.68	74.00	22.60	H
17804.160	51.00	-29.63	45.95	34.68	74.00	23.00	V
17841.560	50.90	-29.34	45.95	34.28	74.00	23.10	H
17963.280	50.90	-29.06	46.66	33.30	74.00	23.10	V
17919.760	50.90	-29.33	46.66	33.57	74.00	23.10	V
17981.980	50.90	-29.06	46.66	33.30	74.00	23.10	H

Measurement results for Set.2-1:
Charing 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)
17960.220	39.60	-29.06	46.66	22.00	54.00	14.40	V
17956.140	39.60	-28.94	46.66	21.88	54.00	14.40	V
17973.480	39.40	-29.06	46.66	21.80	54.00	14.60	H
17271.040	39.30	-29.75	43.36	25.69	54.00	14.70	V
17957.840	39.30	-28.94	46.66	21.58	54.00	14.70	V
17960.900	39.20	-29.06	46.66	21.60	54.00	14.80	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)
17965.660	51.70	-29.06	46.66	34.10	74.00	22.30	H
16890.240	50.90	-29.92	41.49	39.33	74.00	23.10	V
17933.020	50.80	-29.40	46.66	33.54	74.00	23.20	H
17884.400	50.80	-29.53	45.95	34.38	74.00	23.20	H
17743.980	50.80	-29.61	45.95	34.46	74.00	23.20	V
17944.580	50.70	-28.94	46.66	32.98	74.00	23.30	V

Measurement results for Set.2-2:
Charing 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)
17974.160	39.40	-29.06	46.66	21.80	54.00	14.60	V
17952.400	39.30	-28.94	46.66	21.58	54.00	14.70	H
17954.780	39.20	-28.94	46.66	21.48	54.00	14.80	V
17943.900	39.20	-28.94	46.66	21.48	54.00	14.80	V
17955.460	39.20	-28.94	46.66	21.48	54.00	14.80	V
17863.660	39.20	-29.39	45.95	22.64	54.00	14.80	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)
17932.000	50.90	-29.40	46.66	33.64	74.00	23.10	H
17946.280	50.50	-28.94	46.66	32.78	74.00	23.50	V
17866.380	50.50	-29.39	45.95	33.94	74.00	23.50	H
17448.860	50.20	-29.87	44.35	35.72	74.00	23.80	H
17976.880	50.20	-29.06	46.66	32.60	74.00	23.80	V
17909.220	50.10	-29.33	45.95	33.47	74.00	23.90	H

Measurement results for Set.1:

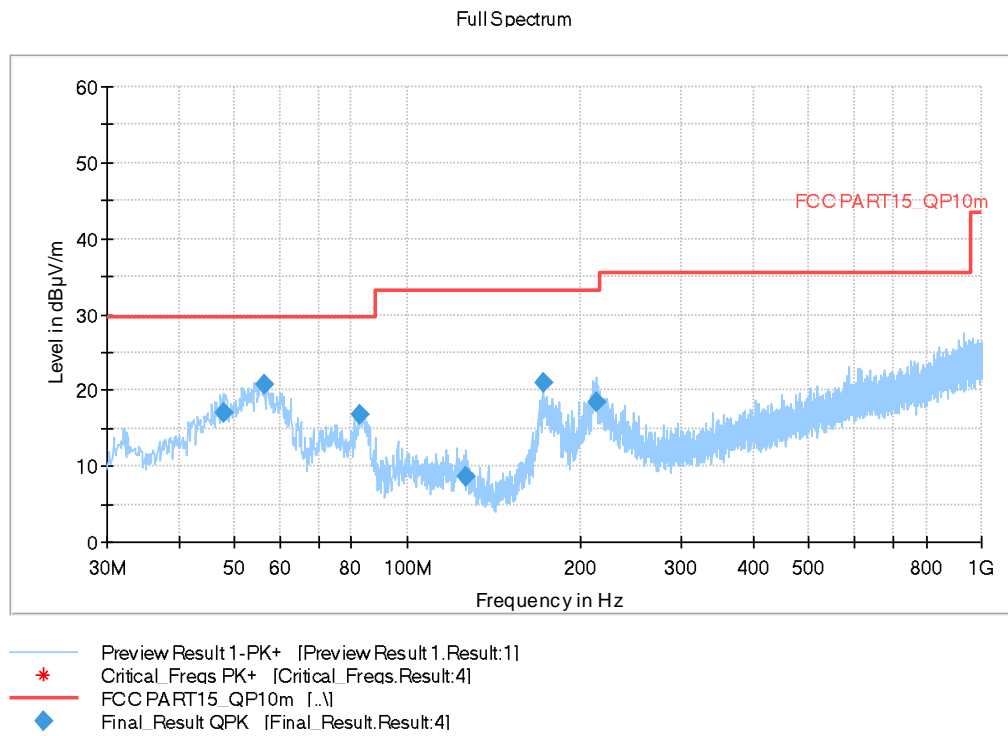
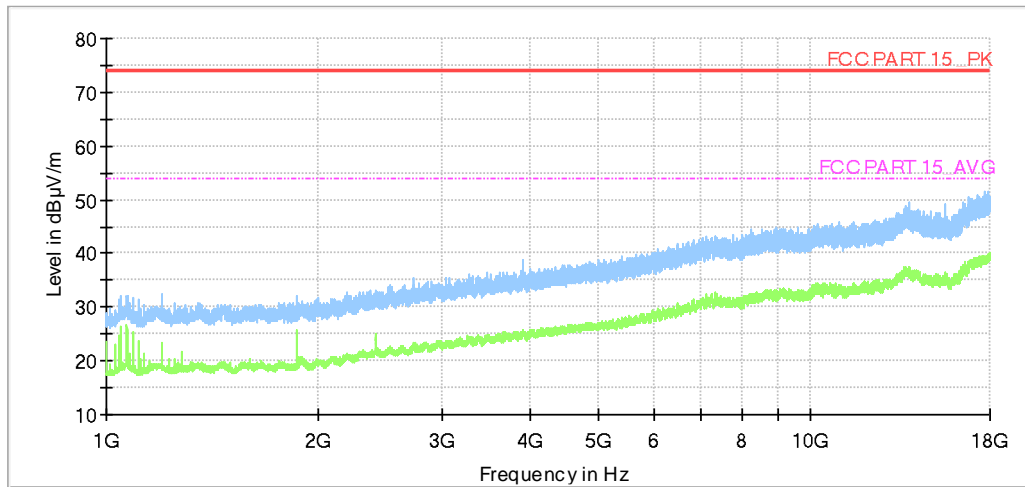


Fig A.1 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
47.751000	17.02	29.54	12.52	2000.0	120.000	100.0	V	260.0
56.287000	20.79	29.54	8.75	2000.0	120.000	286.0	V	120.0
82.574000	16.85	29.54	12.69	2000.0	120.000	187.0	V	-30.0
126.709000	8.55	33.06	24.51	2000.0	120.000	110.0	V	30.0
172.008000	20.90	33.06	12.16	2000.0	120.000	112.0	V	30.0
213.524000	18.39	33.06	14.67	2000.0	120.000	111.0	V	172.0

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.2:

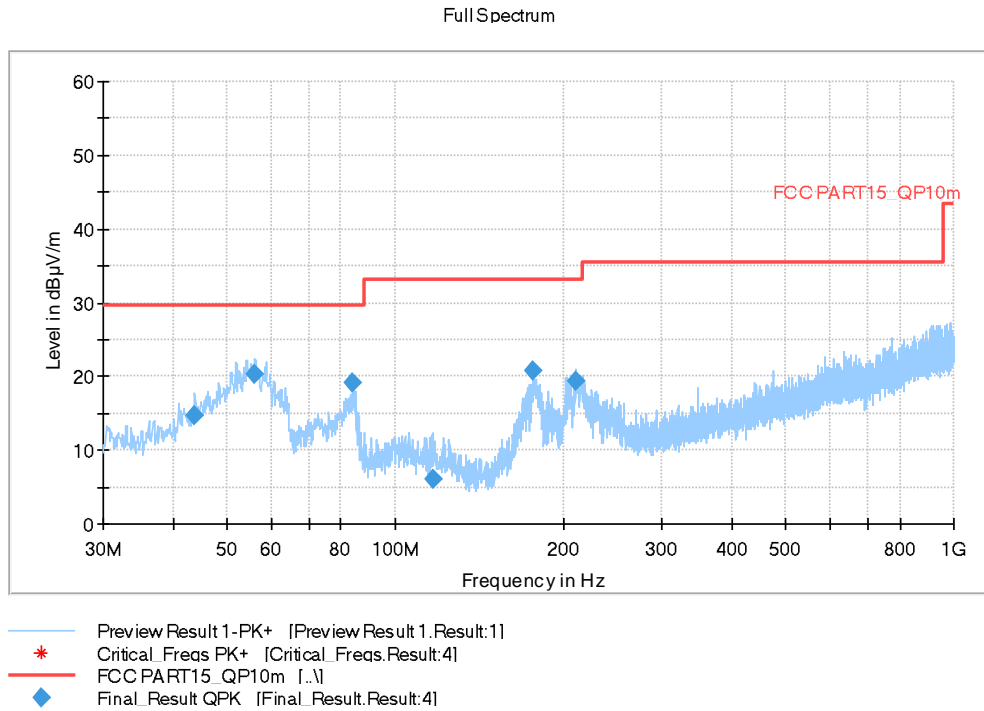


Fig A.3 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
43.774000	14.66	29.54	14.88	2000.0	120.000	100.0	V	-28.0
56.093000	20.37	29.54	9.17	2000.0	120.000	112.0	V	100.0
83.932000	19.09	29.54	10.45	2000.0	120.000	112.0	V	300.0
116.524000	5.99	33.06	27.07	2000.0	120.000	125.0	H	190.0
176.858000	20.70	33.06	12.36	2000.0	120.000	112.0	V	13.0
211.099000	19.33	33.06	13.73	2000.0	120.000	111.0	V	100.0

Full Spectrum

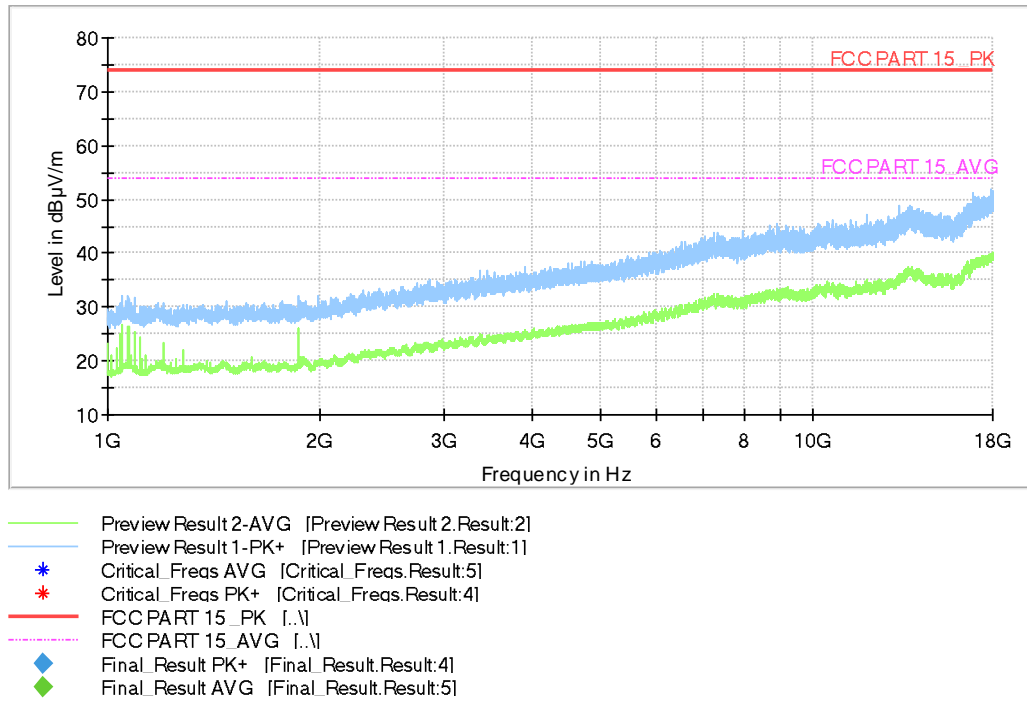


Fig A.4 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.3:

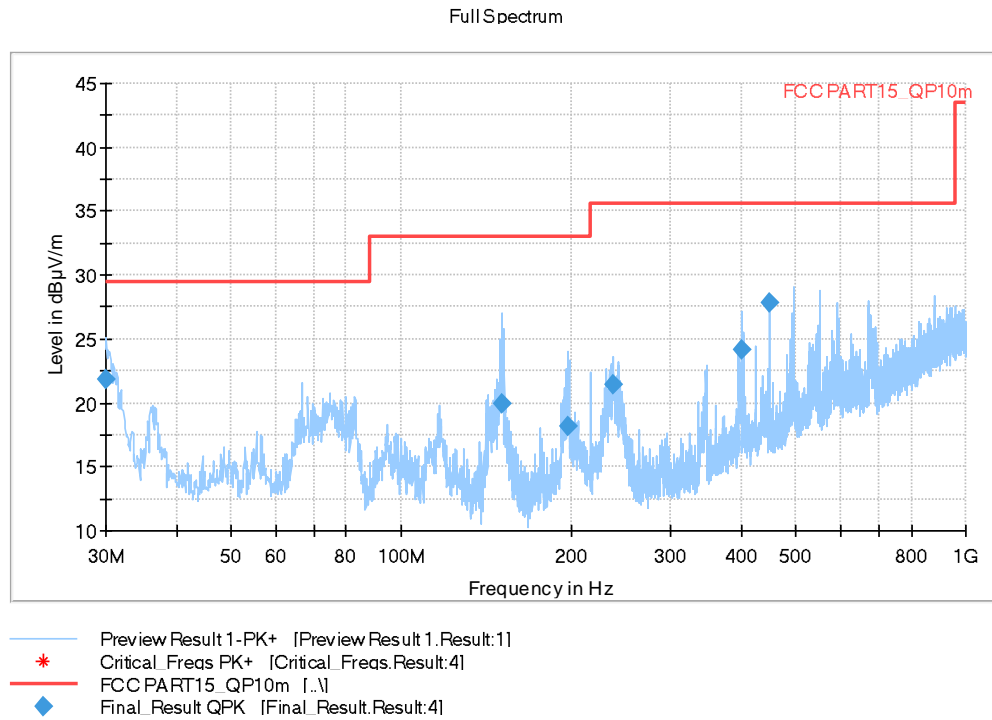


Fig A.5 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
30.097000	21.81	29.54	7.73	2000.0	120.000	98.0	V	117.0
150.571000	19.97	33.06	13.09	2000.0	120.000	98.0	V	124.0
197.228000	18.16	33.06	14.90	2000.0	120.000	108.0	V	224.0
237.289000	21.38	35.56	14.18	2000.0	120.000	110.0	V	174.0
399.958000	24.10	35.56	11.46	2000.0	120.000	186.0	H	266.0
450.010000	27.87	35.56	7.69	2000.0	120.000	98.0	V	152.0

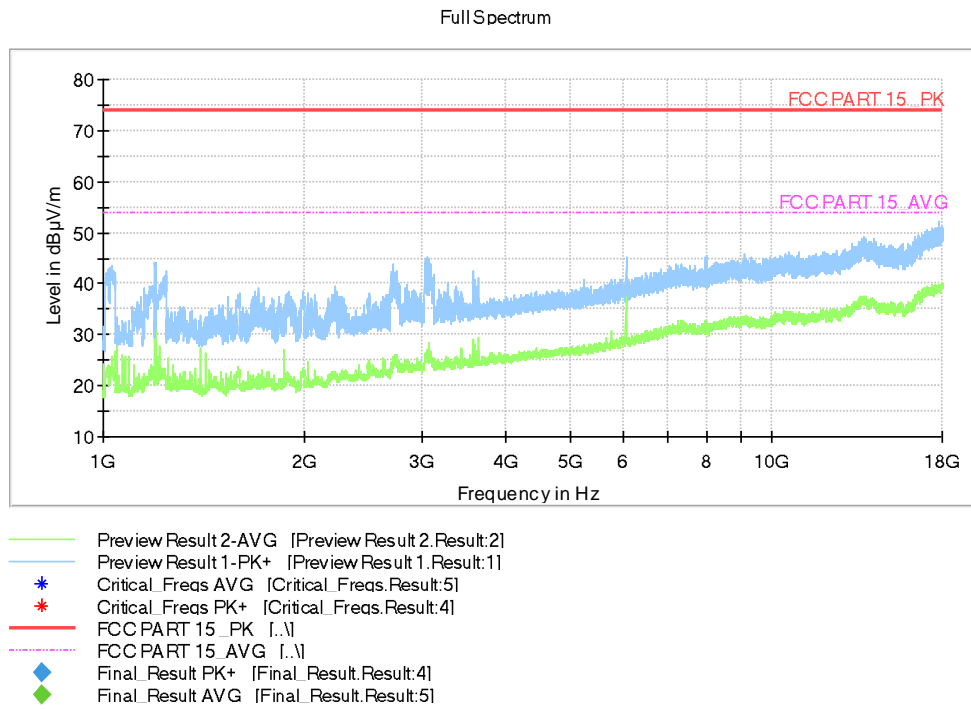


Fig A.6 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.4:

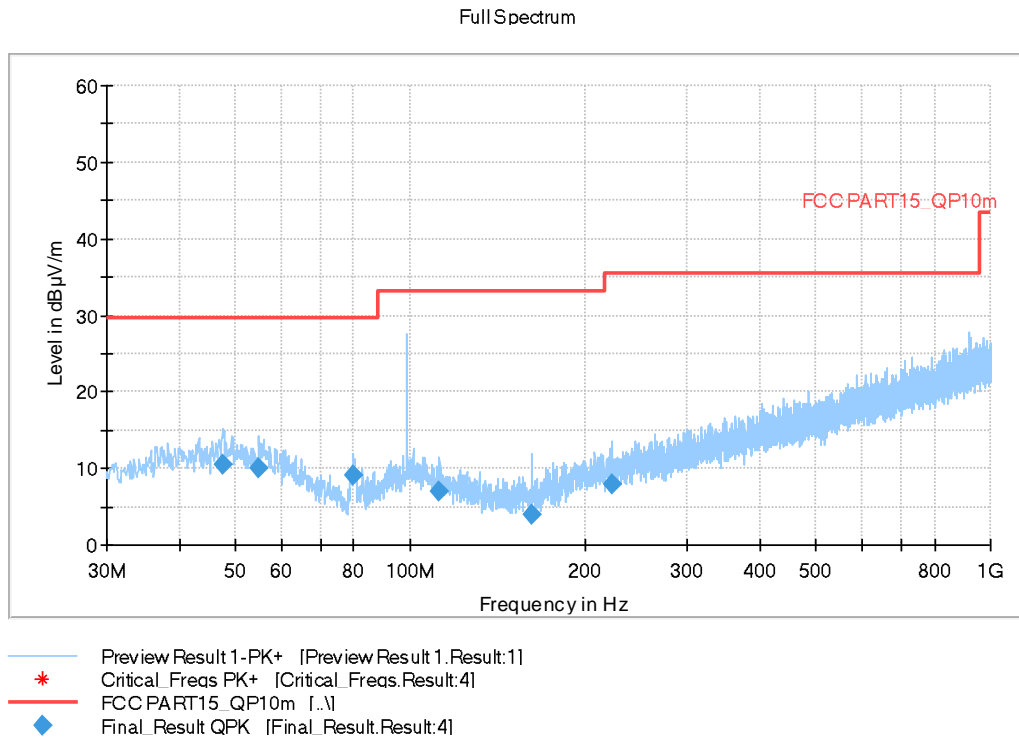
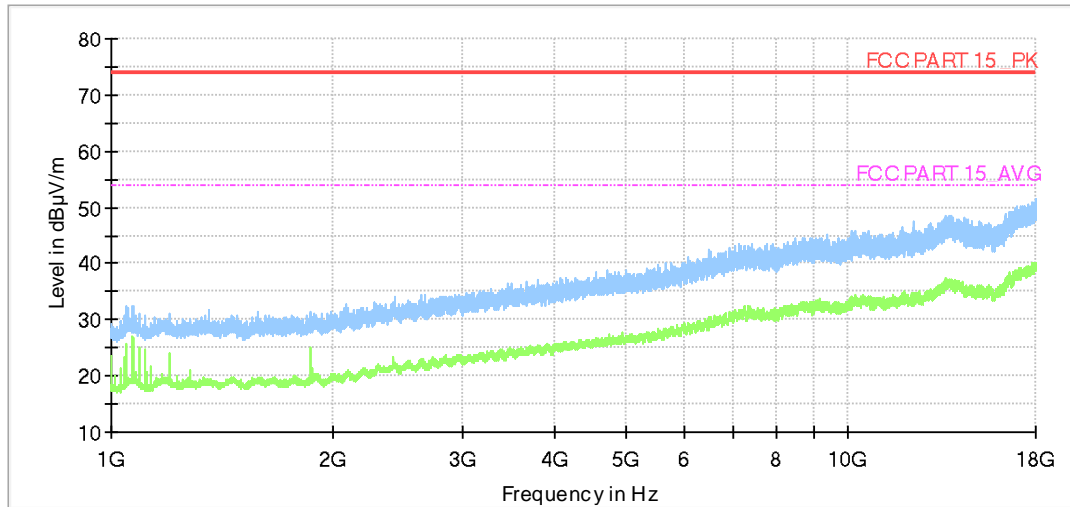


Fig A.7 Radiated Emission from 30MHz to 1GHz

Final Result 1

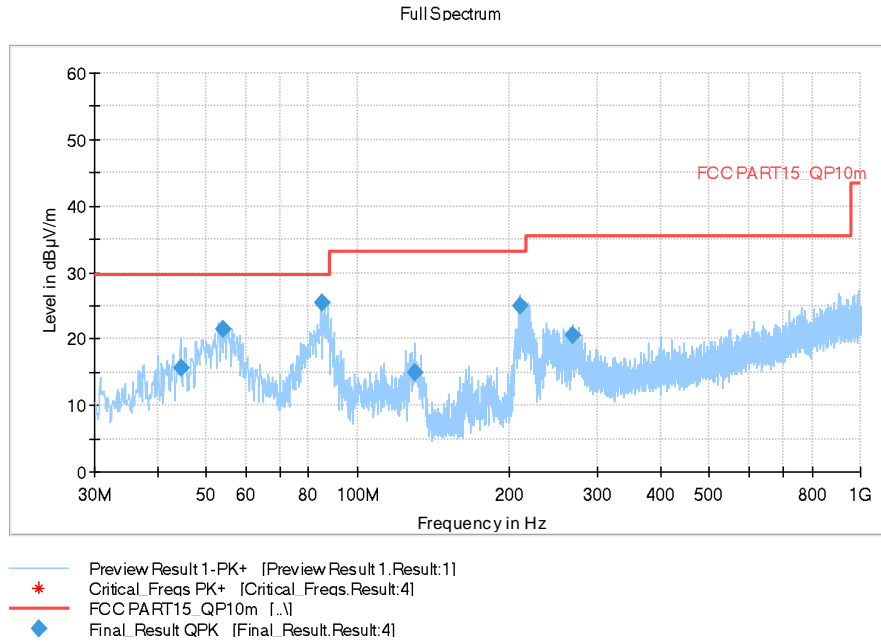
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
47.557000	10.49	29.54	19.05	2000.0	120.000	203.0	H	120.0
54.832000	10.12	29.54	19.42	2000.0	120.000	175.0	H	241.0
79.567000	9.00	29.54	20.54	2000.0	120.000	103.0	H	-30.0
111.868000	6.97	33.06	26.09	2000.0	120.000	325.0	H	80.0
161.823000	4.05	33.06	29.01	2000.0	120.000	285.0	V	240.0
222.351000	7.84	35.56	27.72	2000.0	120.000	275.0	H	-30.0

Full Spectrum



- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freas AVG [Critical_Freas.Result:5]
- * Critical_Freas PK+ [Critical_Freas.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.2-1:

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

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
44.453000	15.65	29.54	13.89	2000.0	120.000	175.0	V	92.0
53.862000	21.40	29.54	8.14	2000.0	120.000	125.0	V	0.0
84.708000	25.49	29.54	4.05	2000.0	120.000	175.0	V	265.0
129.716000	15.02	33.06	18.04	2000.0	120.000	175.0	V	-5.0
210.517000	25.04	33.06	8.02	2000.0	120.000	98.0	V	183.0
268.426000	20.66	35.56	14.90	2000.0	120.000	98.0	V	176.0

Full Spectrum

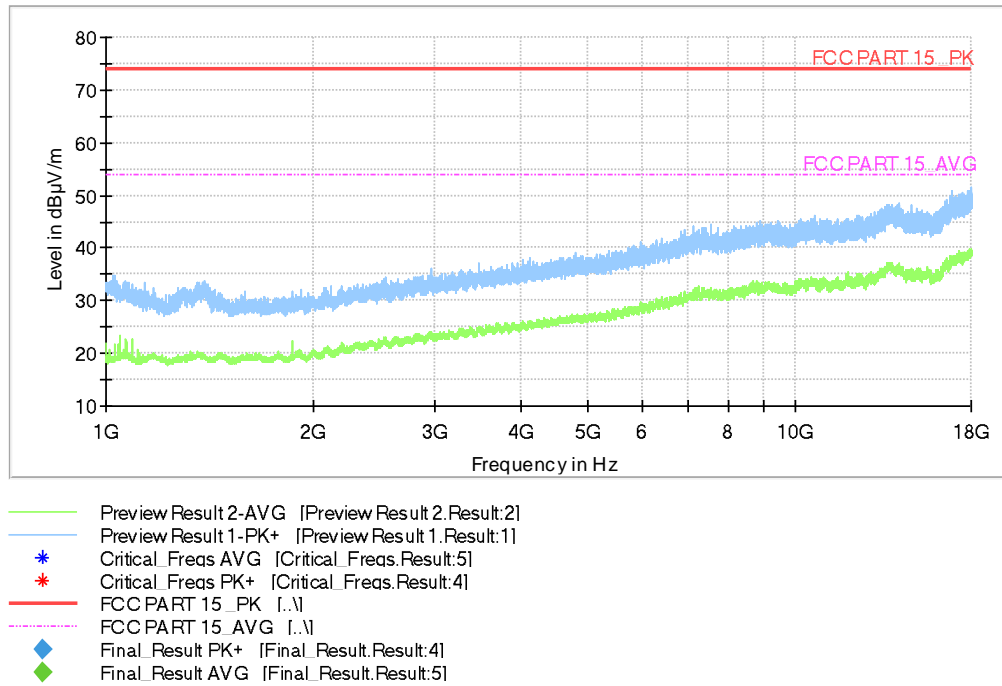
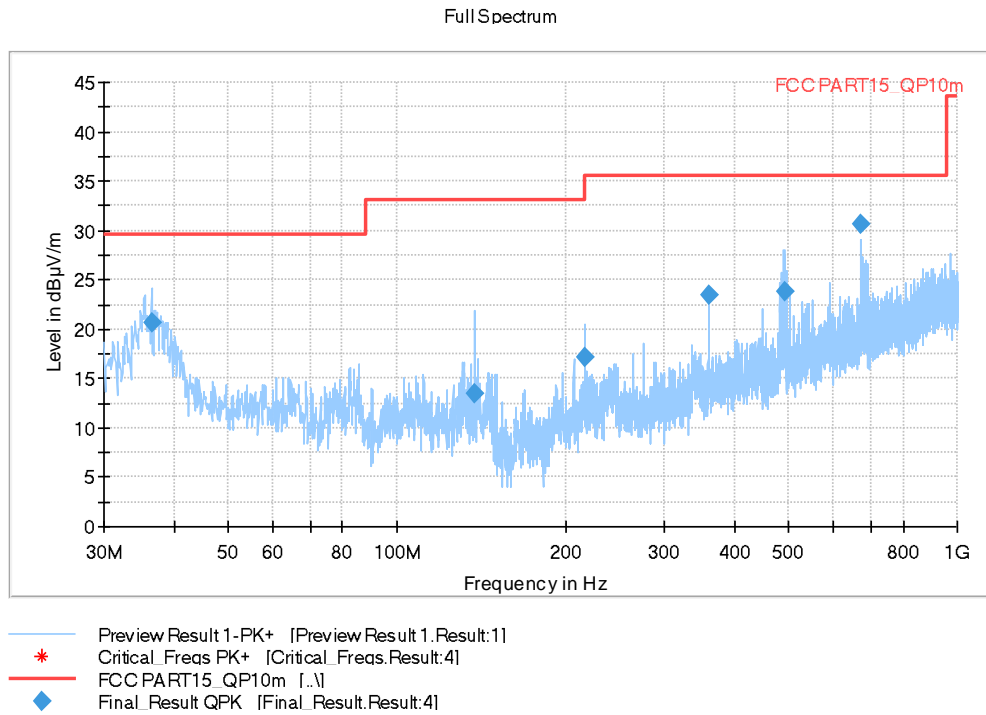


Fig A.10 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.2-2:

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

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
36.499000	20.73	29.54	8.81	2000.0	120.000	98.0	V	276.0
137.767000	13.57	33.06	19.49	2000.0	120.000	109.0	V	268.0
215.949000	17.21	33.06	15.85	2000.0	120.000	175.0	V	272.0
359.994000	23.46	35.56	12.10	2000.0	120.000	186.0	H	4.0
490.750000	23.83	35.56	11.73	2000.0	120.000	285.0	V	0.0
673.110000	30.58	35.56	4.98	2000.0	120.000	186.0	V	-3.0

Full Spectrum

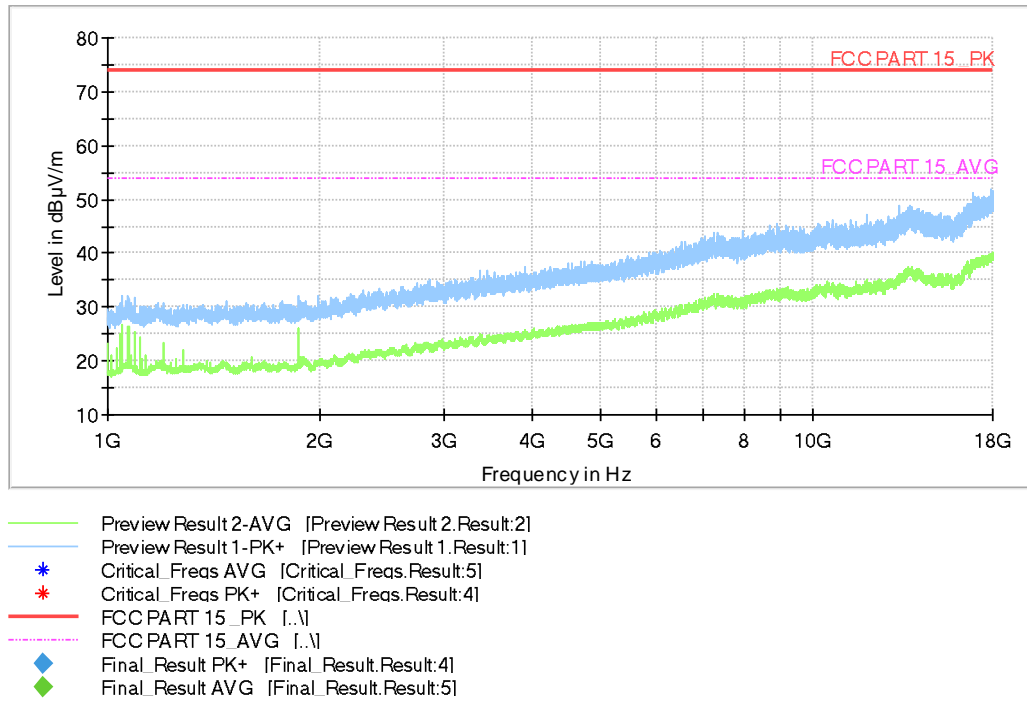


Fig A.12 Radiated Emission from 1GHz to 18GHz

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 (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: $U= 3.1 \text{ dB}$, $k=2$.

Charging Mode, Set.1:

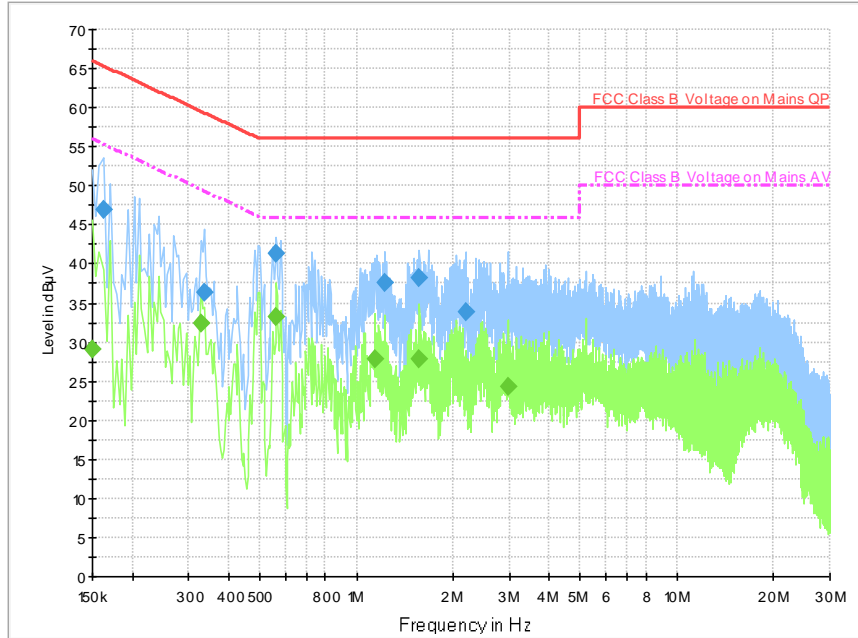


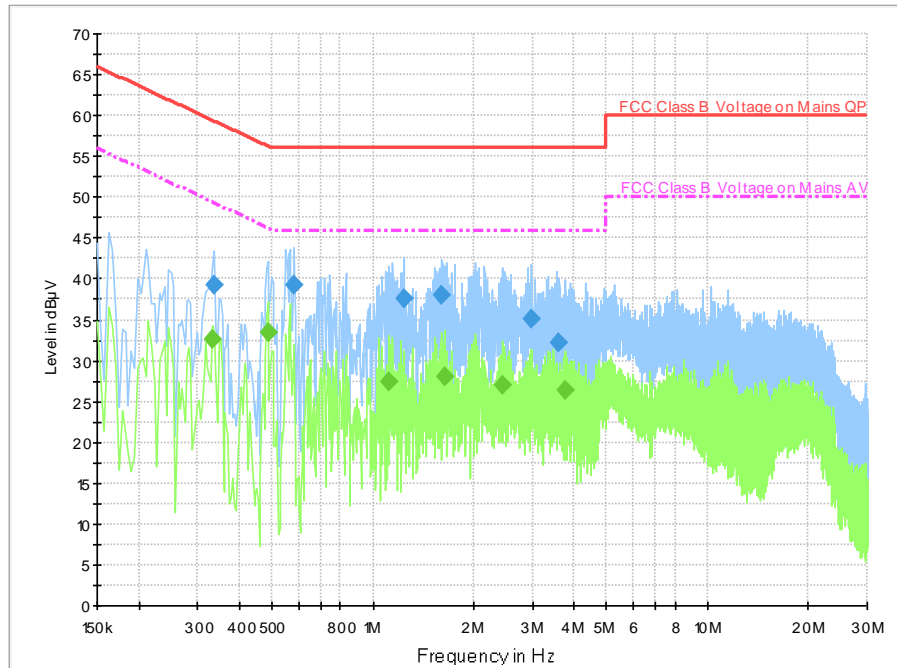
Fig A.13 Conducted Emission from 150kHz to 30MHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.162000	46.9	5000.0	9.000	On	L1	20.0	18.5	65.4	
0.334000	36.4	5000.0	9.000	On	N	19.9	22.9	59.4	
0.562000	41.4	5000.0	9.000	On	L1	19.9	14.6	56.0	
1.226000	37.7	5000.0	9.000	On	L1	19.5	18.3	56.0	
1.574000	38.1	5000.0	9.000	On	L1	19.5	17.9	56.0	
2.186000	33.9	5000.0	9.000	On	L1	19.5	22.1	56.0	

Final Result 2

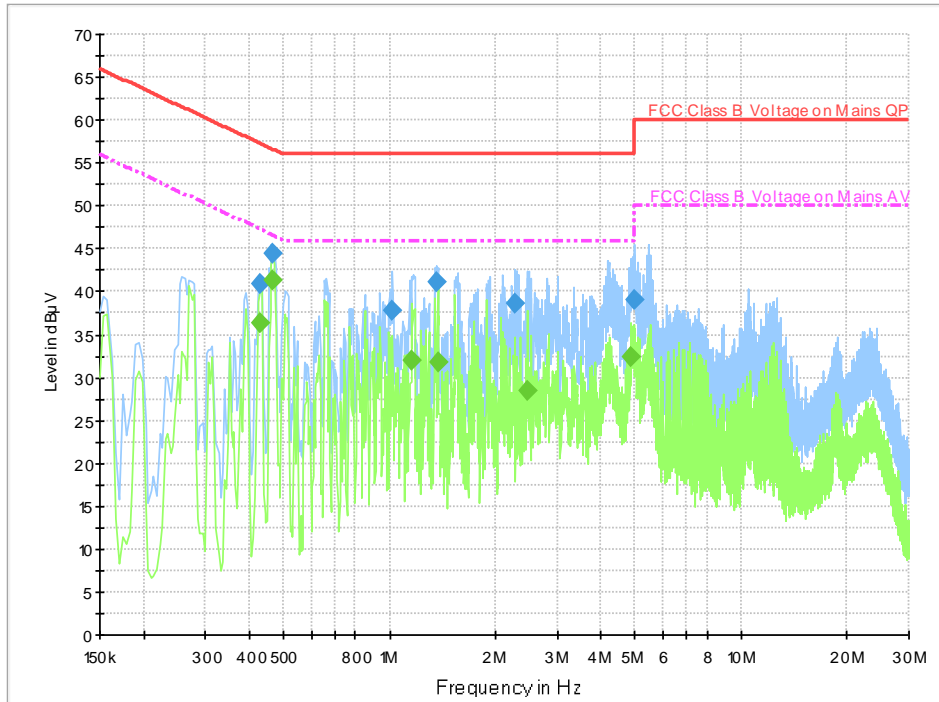
Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.150000	29.0	5000.0	9.000	On	N	20.0	27.0	56.0	
0.326000	32.4	5000.0	9.000	On	L1	19.9	17.2	49.6	
0.562000	33.3	5000.0	9.000	On	L1	19.9	12.7	46.0	
1.142000	27.9	5000.0	9.000	On	L1	19.5	18.1	46.0	
1.574000	27.9	5000.0	9.000	On	L1	19.5	18.1	46.0	
2.978000	24.3	5000.0	9.000	On	N	19.7	21.7	46.0	

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
0.334000	39.3	5000.0	9.000	On	L1	19.9	20.1	59.4	
0.582000	39.3	5000.0	9.000	On	L1	19.8	16.7	56.0	
1.242000	37.5	5000.0	9.000	On	L1	19.5	18.5	56.0	
1.610000	38.0	5000.0	9.000	On	L1	19.5	18.0	56.0	
2.966000	35.1	5000.0	9.000	On	L1	19.5	20.9	56.0	
3.606000	32.2	5000.0	9.000	On	N	19.7	23.8	56.0	

Final Result 2

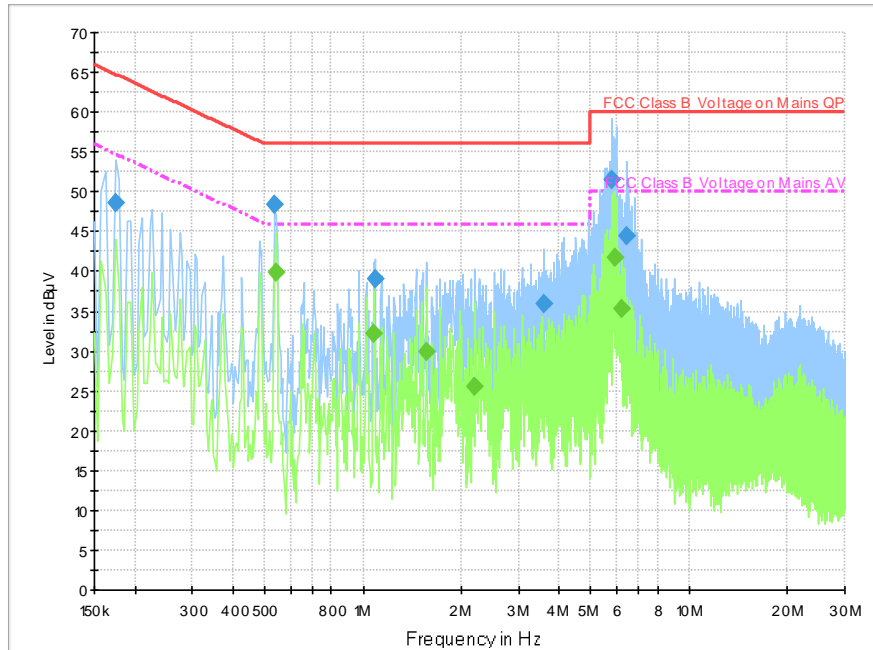
Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.330000	32.6	5000.0	9.000	On	L1	19.9	16.9	49.5	
0.486000	33.4	5000.0	9.000	On	L1	19.9	12.9	46.2	
1.114000	27.5	5000.0	9.000	On	L1	19.5	18.5	46.0	
1.642000	28.0	5000.0	9.000	On	L1	19.5	18.0	46.0	
2.454000	27.0	5000.0	9.000	On	L1	19.5	19.0	46.0	
3.742000	26.5	5000.0	9.000	On	L1	19.5	19.5	46.0	

USB 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
0.430000	40.8	5000.0	9.000	On	L1	19.9	16.4	57.3	
0.466000	44.5	5000.0	9.000	On	N	20.0	12.1	56.6	
1.022000	37.7	5000.0	9.000	On	N	19.8	18.3	56.0	
1.358000	41.2	5000.0	9.000	On	N	19.8	14.8	56.0	
2.278000	38.6	5000.0	9.000	On	N	19.7	17.4	56.0	
4.990000	39.0	5000.0	9.000	On	N	19.7	17.0	56.0	

Final Result 2

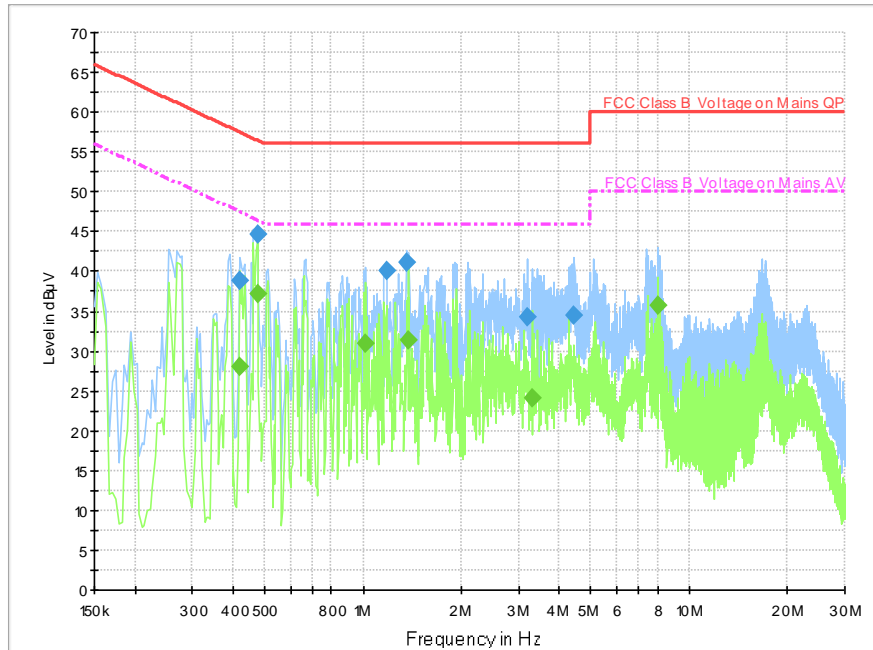
Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.430000	36.4	5000.0	9.000	On	N	19.9	10.8	47.3	
0.466000	41.3	5000.0	9.000	On	N	20.0	5.3	46.6	
1.154000	32.1	5000.0	9.000	On	L1	19.6	13.9	46.0	
1.370000	31.8	5000.0	9.000	On	N	19.8	14.2	46.0	
2.470000	28.5	5000.0	9.000	On	N	19.7	17.5	46.0	
4.846000	32.4	5000.0	9.000	On	L1	19.6	13.6	46.0	

Charging Mode, Set.2-1:

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
0.174000	48.5	5000.0	9.000	On	L1	20.0	16.2	64.8	
0.538000	48.4	5000.0	9.000	On	L1	19.9	7.6	56.0	
1.086000	39.0	5000.0	9.000	On	N	19.8	17.0	56.0	
3.574000	35.9	5000.0	9.000	On	N	19.7	20.1	56.0	
5.814000	51.5	5000.0	9.000	On	L1	19.5	8.5	60.0	
6.454000	44.4	5000.0	9.000	On	N	19.7	15.6	60.0	

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.542000	39.9	5000.0	9.000	On	N	19.9	6.1	46.0	
1.078000	32.2	5000.0	9.000	On	L1	19.5	13.8	46.0	
1.562000	29.9	5000.0	9.000	On	L1	19.5	16.1	46.0	
2.206000	25.5	5000.0	9.000	On	L1	19.5	20.5	46.0	
5.918000	41.8	5000.0	9.000	On	L1	19.5	8.2	50.0	
6.226000	35.4	5000.0	9.000	On	L1	19.6	14.6	50.0	

USB Mode, Set.2-2:

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
0.418000	38.8	5000.0	9.000	On	L1	19.9	18.7	57.5	
0.474000	44.6	5000.0	9.000	On	L1	19.9	11.9	56.4	
1.178000	40.0	5000.0	9.000	On	N	19.8	16.0	56.0	
1.358000	41.2	5000.0	9.000	On	L1	19.5	14.8	56.0	
3.202000	34.3	5000.0	9.000	On	N	19.7	21.7	56.0	
4.406000	34.4	5000.0	9.000	On	N	19.7	21.6	56.0	

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.418000	28.1	5000.0	9.000	On	L1	19.9	19.4	47.5	
0.474000	37.1	5000.0	9.000	On	L1	19.9	9.3	46.4	
1.022000	30.9	5000.0	9.000	On	L1	19.6	15.1	46.0	
1.378000	31.3	5000.0	9.000	On	N	19.8	14.7	46.0	
3.294000	24.0	5000.0	9.000	On	N	19.7	22.0	46.0	
8.014000	35.7	5000.0	9.000	On	L1	19.6	14.3	50.0	

END OF REPORT