



TEST REPORT

No. I21Z70032-EMC07

for

Samsung Electronics Co., Ltd.

Notebook PC

NP750XDA

with

FCC ID: ZCANP750XDA

ISED Number: 25314-NP750XDA

Hardware Version: REV1.0

Software Version: Windows10-Pro

Issued Date: 2021-03-29

Note:

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Test Laboratory:

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I21Z70032-EMC07	Rev.0	1 st edition	2021-03-29

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

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1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2017 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 ISCED accredited test laboratory (ISED#: 24849). 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: 2021-02-05

Testing End Date: 2021-03-25

1.5. Signature



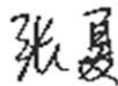
Li Yan

(Prepared this test report)



Zhang Ying

(Reviewed this test report)



Zhang Xia

Deputy Director of the laboratory

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name: Samsung Electronics Co., Ltd.
Address: 19 Chapin Rd., Building D Pine Brook, NJ 07058
City: /
Postal Code: /
Country: /
Contact: Jenni Chun
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2.2. Manufacturer Information

Company Name: Samsung Electronics. Co., Ltd.
Address: Samsung R5, Maetan dong 129, Samsung ro
Youngtong gu, Suwon city 443 742, Korea
City: /
Postal Code: /
Country: /
Contact: Sunghoon Cho
Email: ggobi.cho@samsung.com
Telephone: +82-10-2722-4159

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

3.1. About EUT

Description	Notebook PC
Model name	NP750XDA
FCC ID	ZCANP750XDA
ISED Number	25314-NP750XDA

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*	IMEI/SN	HW Version	SW Version
UT11a	2170032UT11a	REV1.0	Windows10-Pro
UT21a	2170032UT21a	REV1.0	Windows10-Pro
UT32a	2170032UT32a	REV1.0	Windows10-Pro
UT41a	2170032UT41a	REV1.0	Windows10-Pro
UT51a	2170032UT51a	REV1.0	Windows10-Pro

*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	AC Adapter	/	/
AE2	Travel adapter	/	/
AE3	USB Cable	/	/
AE4	Headset	/	/
AE5	HDMI Cable	/	/
AE6	LCD Display	/	/
AE7	Hard Disk	/	/
AE8	Hard Disk	/	/
AE9	USB flash disk	/	Type-C/USB
AE10	SD card	/	/

Note: The USB cables are shielded.

3.4. General Description

Equipment under Test (EUT) is a model of Notebook PC with integrated antenna.

It consists of normal options: lithium battery and charger.

Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the client.

3.5. Key component list

Item	Spec.	Manufacturer	Model
CPU	Intel Tiger Lake-U 15W(I7)	Intel	Intel® Core™ i7-1165G7 Processor
	Intel Tiger Lake-U 15W(I5)	Intel	Intel® Core™ i5-1135G7 Processor
	Intel Tiger Lake-U 15W(I3)	Intel	Intel® Core™ i3-1115G4 Processor
	Cel	Cel	Intel Celeron Processor 6305
	PDC	PDC	Intel Pentium Processor 7505
GPU	NVIDIA MX450	Nvidia	NVIDIA_N18S_G5_A1
WLAN	802.11 ax 2x2	Intel	AX201.D2WG.SNVW
Memory	LPDDR4X 4GB	SEC	K4U6E3S4AA-MGCR
	LPDDR4X 8GB	SEC	K4U6E3S4AA-MGCR
	LPDDR4X 16GB	SEC	K4UBE3D4AA-MGCR
SSD	128G M.2 2280 PCIe(NVMe)	SEC	MZVLQ128HCHQ-00BKN
		SSSTC	CL1-8D128
		LITEON(Calcomp)	CL1-8D128
	256G M.2 2280 PCIe(NVMe)	SEC	MZVLQ256HBJD-00BKN
		Calcomp	CL1-8D256
		SSSTC	CL1-8D256
		WD	SDBPNPZ-256G-1004
	512G M.2 2280 PCIe(NVMe)	SEC	MZVLQ512HBLU-00BKN
		SSSTC	CL1-8D512
		WD	SDBPNPZ-512G-1004
GDDR6	GDDR6 2GB	SEC	K4Z80325BC-HC14
DPK	DPK	MS	/
LCD	15.6" FHD IPS	Panda	LM156LF5L03
	15.6" FHD TN	BOE	NT156FHM-N61
Battery	54W	SDI	AA-PBSN4AF
Adaptor	65W Type-C Brick	Chicony	PD-65ABH
		Dongyang	EA-TA865

Antenna	/	Inpaq	/
	/	Speed	/

Note: EUT1-EUT5 correspond to different key component configurations.

3.6. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT1+ AE1+AE3+AE4+AE5+AE6+AE7+AE8+AE9+AE10	EUT1+Charger1
Set.2	EUT2+ AE1+AE3+AE4+AE5+AE6+AE7+AE8+AE9+AE10	EUT2+Charger1
Set.3	EUT3+ AE1+AE3+AE4+AE5+AE6+AE7+AE8+AE9+AE10	EUT3+Charger1
Set.4	EUT4+ AE1+AE3+AE4+AE5+AE6+AE7+AE8+AE9+AE10	EUT4+Charger1
Set.5	EUT5+ AE1+AE3+AE4+AE5+AE6+AE7+AE8+AE9+AE10	EUT5+Charger1
Set.6	EUT1+ AE2+AE3+AE4+AE5+AE6+AE7+AE8+AE9+AE10	EUT1+Charger2

4. Reference Documents

4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC 47 CFR Part 15, Subpart B	Radio frequency devices - Unintentional Radiators	2019
ICES-003	Information Technology Equipment (including Digital Apparatus)	Issue 7 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 (23 meters×17meters×10meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω
Normalised site attenuation (NSA)	< ± 4 dB, 3m distance, from 30 to 1000 MHz
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 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	< 4 Ω

6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:		
Verdict Column	P	Pass
	NA	Not applicable
	F	Fail
	BR	Re-use test data from basic model report.

Items	Test Name	Clause in FCC rules	Clause in ISED rules	Section in this report	Verdict	Test Location
1	Radiated Emission	15.109(a)	Section 3	A.1	P	CTTL(Huayuan North Road)
2	Conducted Emission	15.107(a)	Section 3	A.2	P	CTTL(Huayuan North Road)

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATI ON INTERVAL
1	Test Receiver	ESCI	100344	R&S	2022-02-23	1 year
2	LISN	ENV216	101200	R&S	2021-05-19	1 year
3	Test Receiver	ESU 26	100235	R&S	2022-02-23	1 year
4	BiLog Antenna	VULB9163	9163-483	Schwarzbeck	2021-08-07	1 year
5	EMI Antenna	3115	6914	R&S	2022-02-23	1 year

Test Item	Test Software and Version	Software Vendor
Radiated Continuous Emission	EMC32 V9.01.00	R&S
Conducted Emission	EMC32 V8.52.0	R&S

ANNEX A: MEASUREMENT RESULTS

A.1 Radiated Emission

Reference

FCC: CFR Part 15.109(a).

ISED: ICES-003 Section 3.2.2.

A.1.1 Method of measurement

The field strength of radiated emissions from the unintentional radiator at distances of 10 meters(for 30MHz-1GHz) and 3 meters (for above 1GHz) is tested. Tested in accordance with the procedures of ANSI C63.4 – 2014, section 8.3.

The EUT was placed on a non-conductive table and arranged in a typical configuration in accordance with ANSI C63.4-2014 and manipulated to obtain worst case emissions. 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.

For the test setup photographs please see the test setup photos document.

A.1.2 EUT Operating Mode

The system was configured for testing in a typical mode that a customer would normal use.

LABTM software is used to let the EUT to continuously copy data to external (Hard Disk & USB flash disk & SD card) storage media, read and erase the data after copy action was finished.

During the test, the Color Bar image with a moving element via HDMI cable display on the LCD panel; the music was repetitively played through the headset; the WIFI and BT function was on and worked in receiver mode.

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.

Limit (10m) = limit (3m) + 20(log (3/10))

A.1.4 Test Condition

Voltage (V)	Frequency (Hz)
120	60

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 (worst case): 30MHz-1GHz: 5.16dB, 1GHz-18GHz: 5.44dB, $k=2$.

Note: Test data in this section has been taken against the FCC 15.109(a) limit as it is the most stringent limit. By complying with more restrictive FCC 15.109 limit compliance with the ICES-003 Issue 7 limit also demonstrated.

Set.1

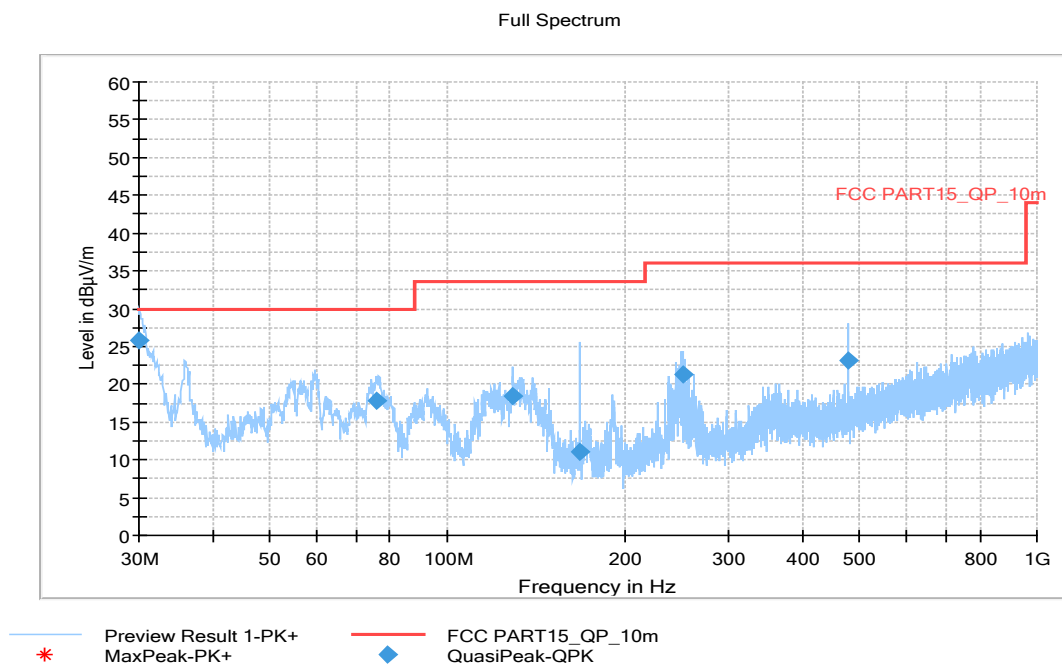


Figure A.1 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)
30.09700	25.74	30.00	4.26	1000.0	120.000	184.0	V	210.0
76.07500	17.89	30.00	12.11	1000.0	120.000	125.0	V	251.0
129.1340	18.51	33.50	15.01	1000.0	120.000	125.0	V	300.0
167.9340	11.03	33.50	22.49	1000.0	120.000	103.0	V	-9.0
250.3840	21.26	36.00	14.76	1000.0	120.000	125.0	V	1.0
480.0800	23.15	36.00	12.87	1000.0	120.000	225.0	V	186.0

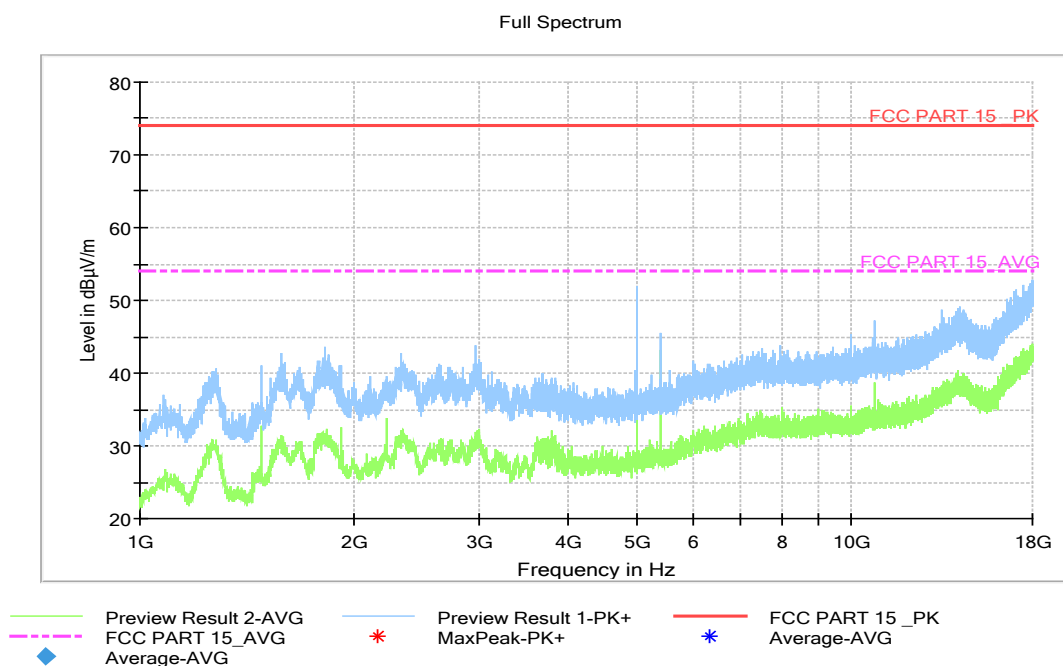


Figure A.2 Radiated Emission from 1GHz to 18GHz

Average detector result

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)
17946.733	43.8	-28.9	46.7	26.083	54.0	10.2	V
17989.233	43.7	-29.1	46.7	26.098	54.0	10.3	V
17943.900	43.6	-28.9	46.7	25.883	54.0	10.4	V
17985.267	43.6	-29.1	46.7	25.998	54.0	10.4	V
17891.200	43.5	-29.5	46.0	27.080	54.0	10.5	H
17943.333	43.4	-28.9	46.7	25.683	54.0	10.6	H

Peak detector result

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)
17979.033	52.7	-29.1	46.7	35.101	74	21.3	V
17955.800	52.5	-28.9	46.7	34.783	74	21.5	V
17962.600	52.4	-29.1	46.7	34.801	74	21.6	H
17932.000	52.4	-29.4	46.7	35.139	74	21.6	V
17933.133	52.3	-29.4	46.7	35.039	74	21.7	V
17847.567	52.2	-29.3	46.0	35.582	74	21.8	H

Set.2

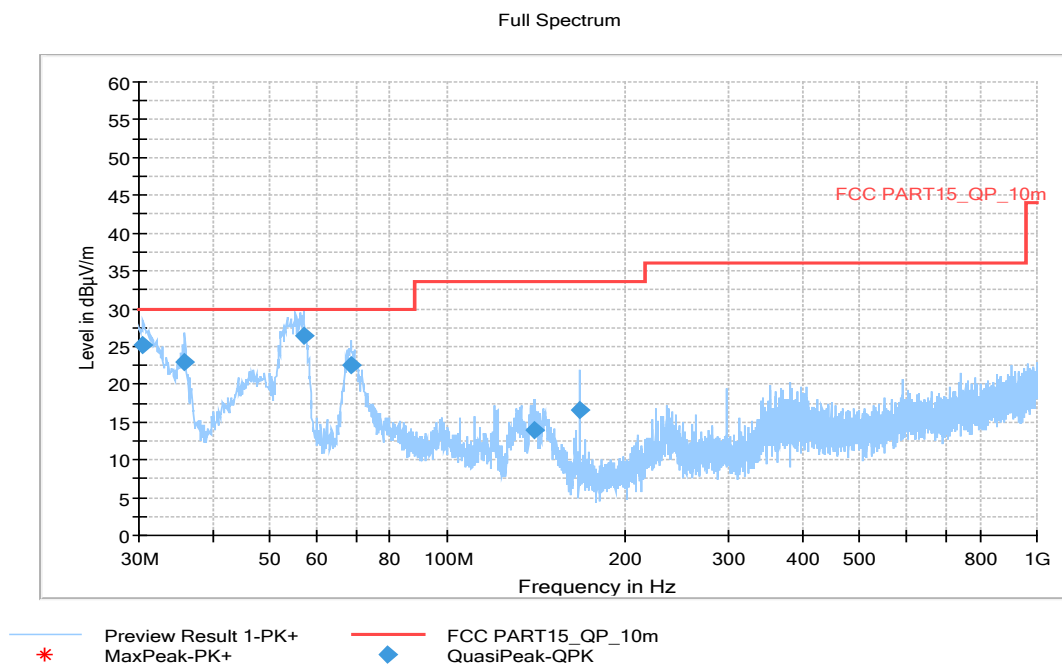


Figure A.3 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)
30.48500	25.22	30.00	4.78	1000.0	120.000	125.0	V	-4.0
35.91700	23.01	30.00	6.99	1000.0	120.000	102.0	V	120.0
57.06300	26.37	30.00	3.63	1000.0	120.000	205.0	V	76.0
68.80000	22.43	30.00	7.57	1000.0	120.000	108.0	V	88.0
140.9680	13.96	33.50	19.56	1000.0	120.000	110.0	V	-7.0
167.9340	16.66	33.50	16.86	1000.0	120.000	101.0	V	-27.0

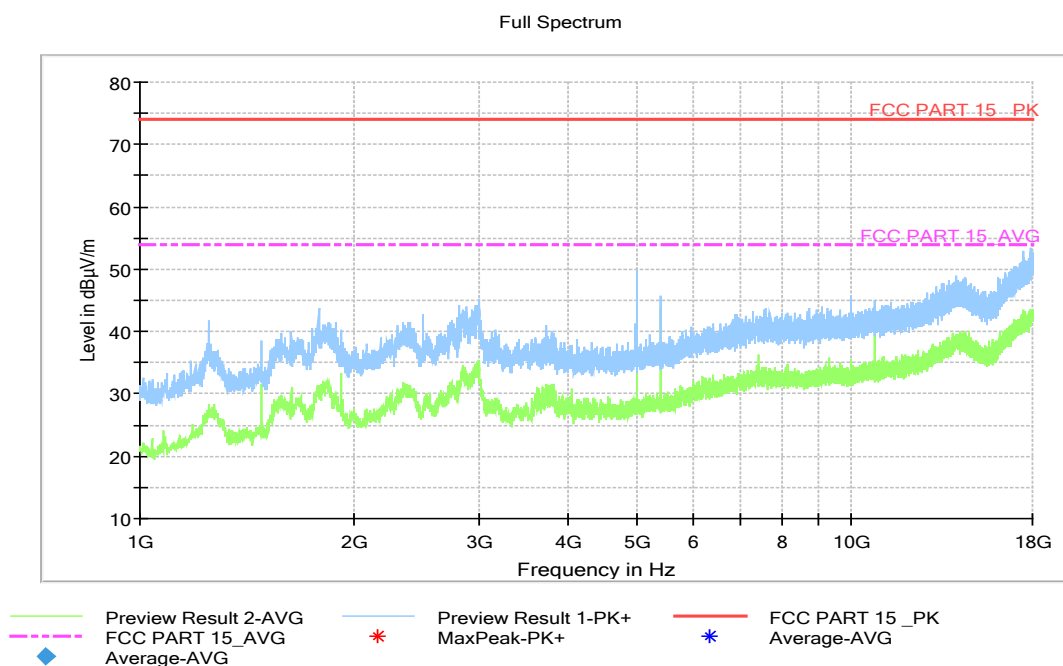


Figure A.4 Radiated Emission from 1GHz to 18GHz

Average detector result

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)
17867.400	43.6	-29.4	46.0	27.039	54.0	10.4	V
17929.733	43.6	-29.4	46.7	26.339	54.0	10.4	H
17996.033	44.8	-29.1	46.7	27.170	54.0	9.2	V
17950.133	45.0	-28.9	46.7	27.280	54.0	9.0	V
17510.967	41.2	-29.3	44.4	26.080	54.0	12.8	H
17881.567	42.7	-29.5	46.0	26.280	54.0	11.3	V

Peak detector result

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)
17945.600	53.4	-28.9	46.7	35.683	74	20.6	V
17518.900	53.0	-29.3	44.4	37.903	74	21.0	H
17937.667	52.8	-29.4	46.7	35.539	74	21.2	H
17997.733	52.7	-29.1	46.7	35.098	74	21.3	H
18000.000	52.7	-29.2	47.0	34.943	74	21.3	V
17929.733	52.6	-29.4	46.7	35.339	74	21.4	V

Set.3

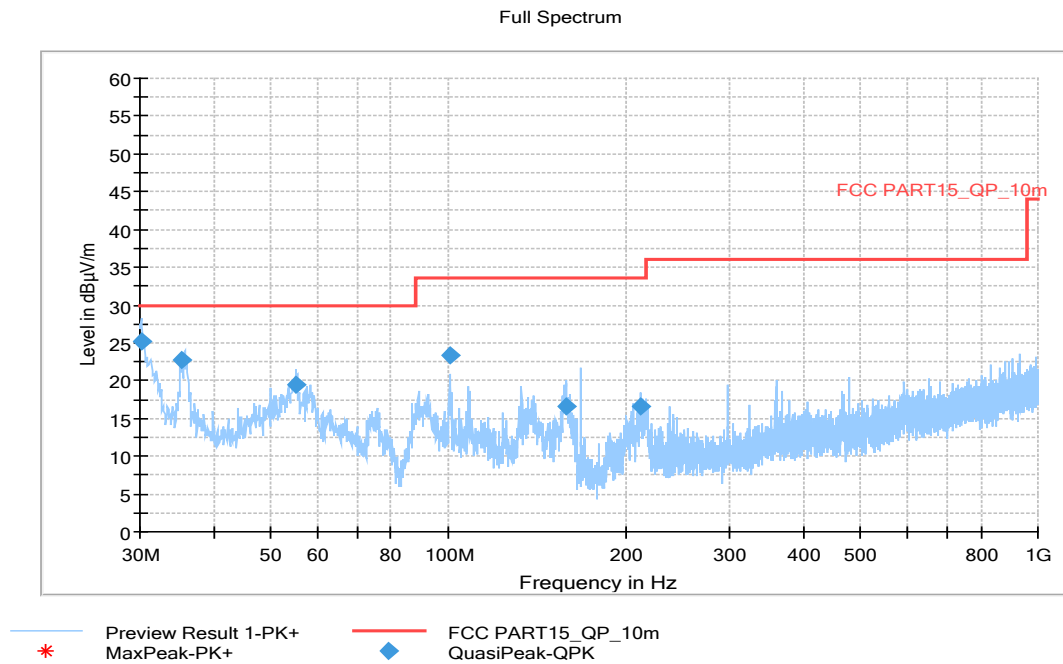


Figure A.5 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)
30.19400	25.13	30.00	4.87	1000.0	120.000	125.0	V	183.0
35.43200	22.69	30.00	7.31	1000.0	120.000	100.0	V	62.0
55.22000	19.43	30.00	10.57	1000.0	120.000	280.0	V	61.0
100.9070	23.42	33.50	10.10	1000.0	120.000	296.0	V	-23.0
158.1370	16.58	33.50	16.94	1000.0	120.000	179.0	V	112.0
211.77800	16.62	33.50	16.90	1000.0	120.000	121.0	V	10.0

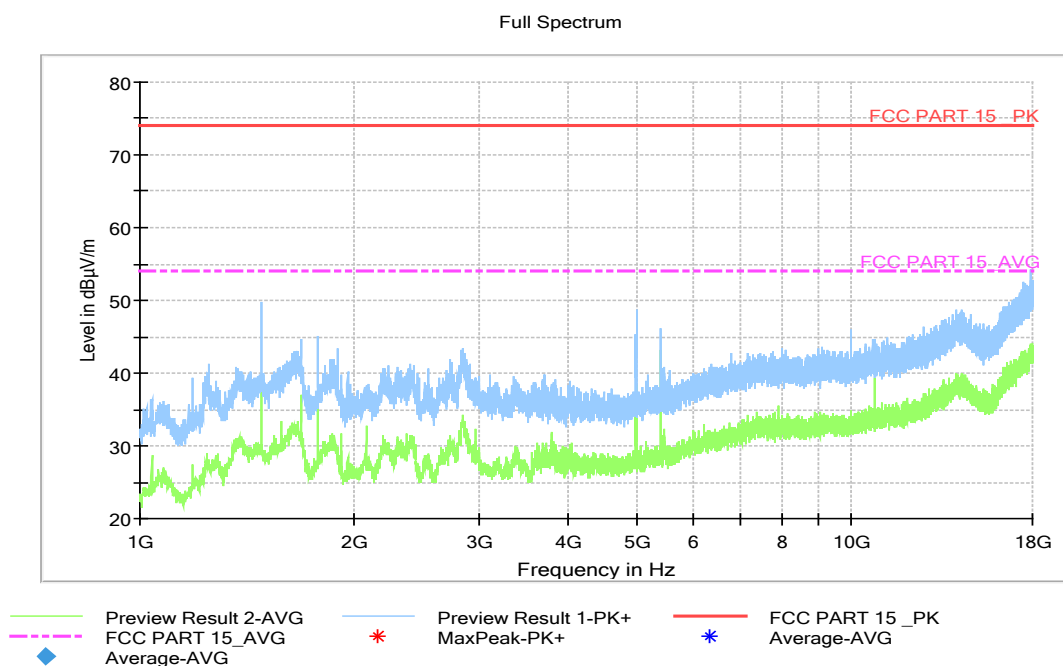


Figure A.6 Radiated Emission from 1GHz to 18GHz

Average detector result

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)
17996.600	43.8	-29.1	46.7	26.198	54.0	10.2	V
17945.600	43.8	-28.9	46.7	26.083	54.0	10.2	H
17987.533	43.8	-29.1	46.7	26.198	54.0	10.2	V
17986.967	43.7	-29.1	46.7	26.098	54.0	10.3	V
17954.667	43.6	-28.9	46.7	25.883	54.0	10.4	H
17926.333	43.6	-29.4	46.7	26.339	54.0	10.4	V

Peak detector result

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)
17944.467	54.2	-28.9	46.7	36.483	74	19.8	H
17985.833	52.9	-29.1	46.7	35.298	74	21.1	V
17911.600	52.7	-29.3	46.0	36.072	74	21.3	V
17996.600	52.7	-29.1	46.7	35.098	74	21.3	V
17524.000	52.6	-29.3	44.4	37.567	74	21.4	V
17945.033	52.6	-28.9	46.7	34.883	74	21.4	H

Set.4

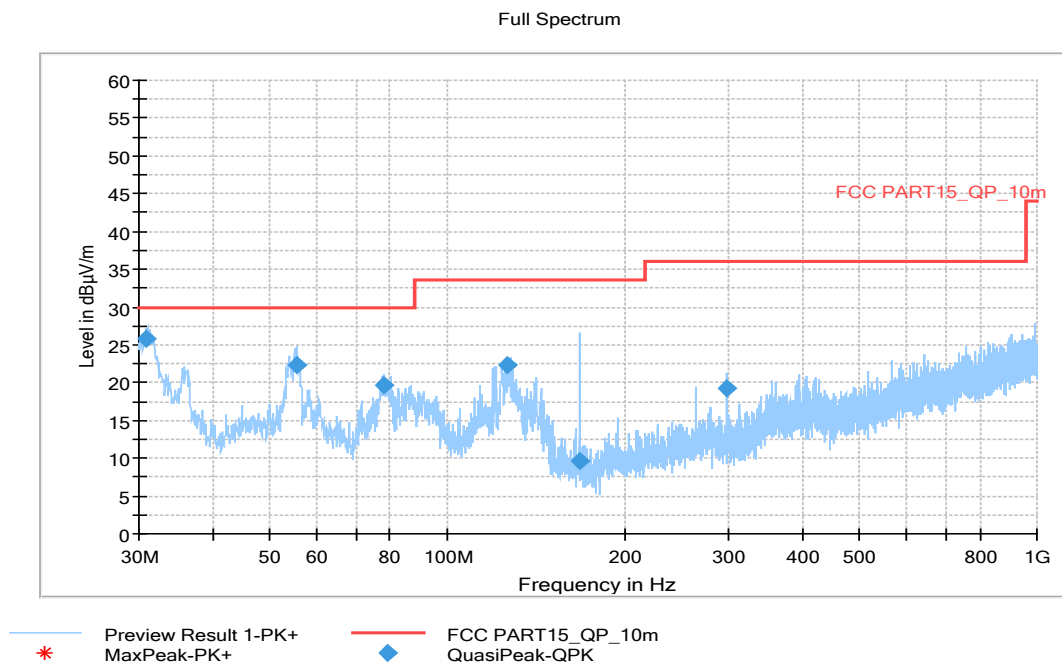


Figure A.7 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)
30.87300	25.78	30.00	4.22	1000.0	120.000	204.0	V	3.0
55.70500	22.28	30.00	7.72	1000.0	120.000	325.0	V	89.0
78.20900	19.72	30.00	10.28	1000.0	120.000	125.0	V	240.0
126.7090	22.36	33.50	11.16	1000.0	120.000	175.0	V	281.0
167.9340	9.54	33.50	23.98	1000.0	120.000	125.0	V	-3.0
296.9440	19.23	36.00	16.79	1000.0	120.000	100.0	V	-12.0

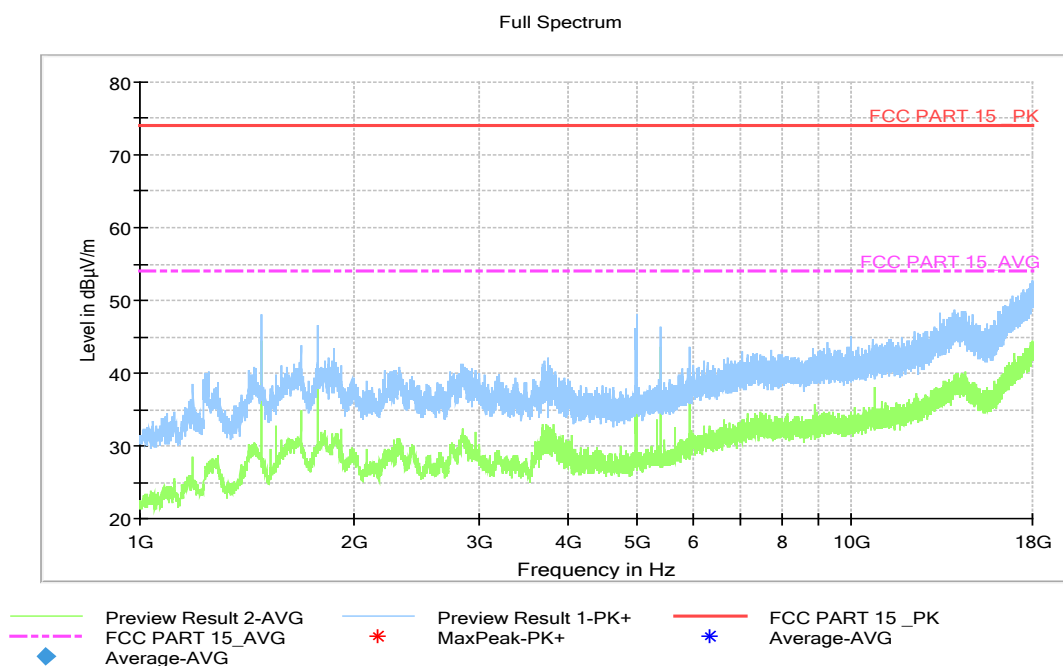


Figure A.8 Radiated Emission from 1GHz to 18GHz

Average detector result

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)
17911.600	44.8	-29.3	46.0	28.172	54.0	9.2	H
17988.667	43.8	-29.1	46.7	26.198	54.0	10.2	H
17955.233	43.7	-28.9	46.7	25.983	54.0	10.3	H
17959.767	43.7	-28.9	46.7	25.983	54.0	10.3	H
17972.233	43.4	-29.1	46.7	25.801	54.0	10.6	V
17433.900	43.4	-29.7	44.4	28.760	54.0	10.6	H

Peak detector result

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)
17954.667	52.7	-28.9	46.7	34.983	74	21.3	H
17994.333	52.5	-29.1	46.7	34.898	74	21.5	V
17882.133	52.4	-29.5	46.0	35.980	74	21.6	V
17903.667	52.4	-29.3	46.0	35.772	74	21.6	H
17964.867	52.3	-29.1	46.7	34.701	74	21.7	H
17997.167	52.2	-29.1	46.7	34.598	74	21.8	V

Set.5

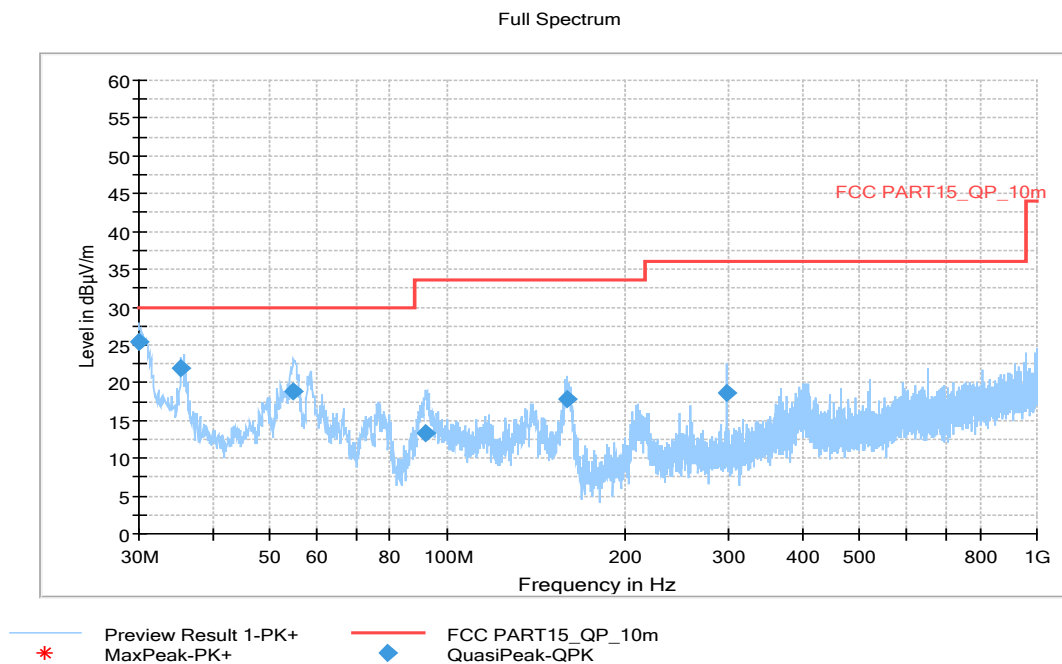


Figure A.9 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)
30.00000	25.46	30.00	4.54	1000.0	120.000	108.0	V	108.0
35.43200	21.99	30.00	8.01	1000.0	120.000	105.0	V	61.0
54.92900	18.93	30.00	11.07	1000.0	120.000	325.0	V	72.0
91.88600	13.32	33.50	20.20	1000.0	120.000	120.0	V	300.0
159.5920	17.87	33.50	15.65	1000.0	120.000	125.0	V	116.0
296.9440	18.68	36.00	17.34	1000.0	120.000	111.0	V	-9.0

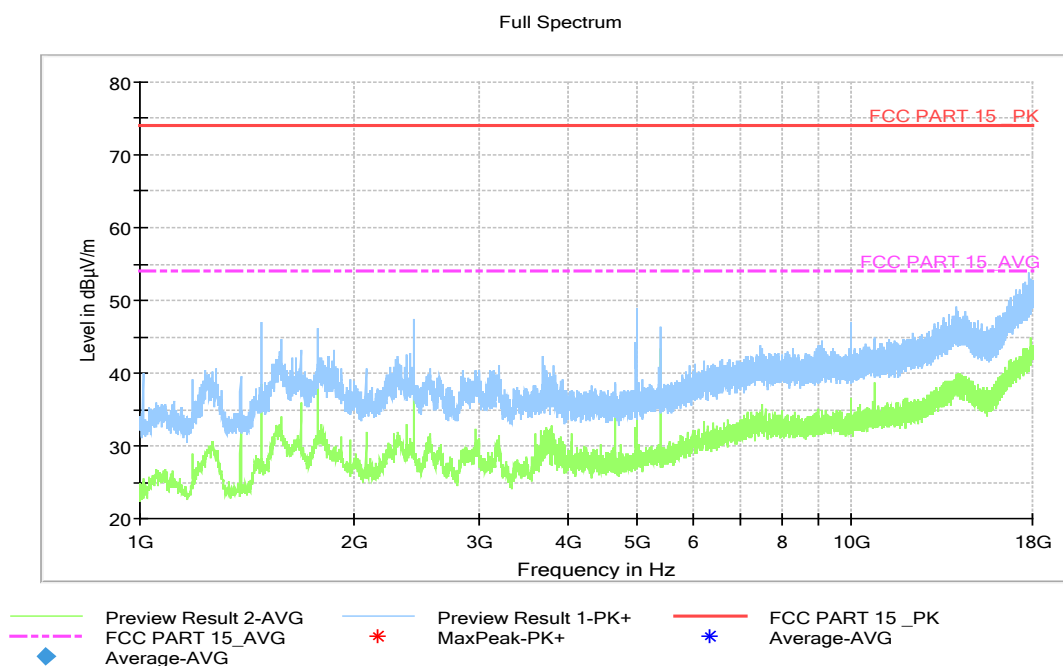


Figure A.10 Radiated Emission from 1GHz to 18GHz

Average detector result

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)
17979.033	44.7	-29.1	46.7	27.101	54.0	9.3	V
17915.000	44.3	-29.3	46.7	26.965	54.0	9.7	H
17942.200	44.1	-28.9	46.7	26.383	54.0	9.9	H
17912.733	43.9	-29.3	46.0	27.272	54.0	10.1	V
17906.500	43.8	-29.3	46.0	27.172	54.0	10.2	V
17975.633	43.8	-29.1	46.7	26.201	54.0	10.2	H

Peak detector result

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)
17834.533	53.8	-29.7	46.0	37.524	74	20.2	H
17942.200	52.9	-28.9	46.7	35.183	74	21.1	H
17989.233	52.8	-29.1	46.7	35.198	74	21.2	V
17983.567	52.7	-29.1	46.7	35.098	74	21.3	V
17940.500	52.6	-28.9	46.7	34.883	74	21.4	H
17620.900	52.6	-29.4	45.2	36.752	74	21.4	H

Set.6

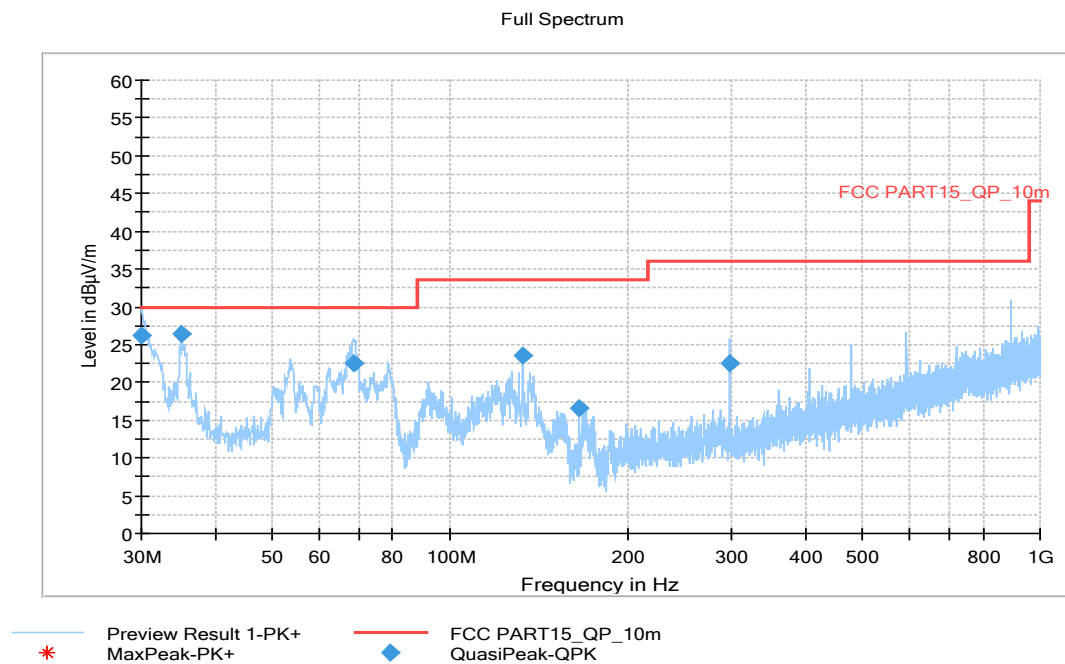


Figure A.11 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)
30.09700	26.13	30.00	3.87	1000.0	120.000	125.0	V	175.0
35.14100	26.39	30.00	3.61	1000.0	120.000	102.0	V	30.0
68.60600	22.59	30.00	7.41	1000.0	120.000	101.0	V	62.0
132.7230	23.45	33.50	10.07	1000.0	120.000	104.0	V	60.0
296.9440	22.55	36.00	13.47	1000.0	120.000	101.0	V	167.0
165.7030	16.56	33.50	16.96	1000.0	120.000	107.0	V	300.0

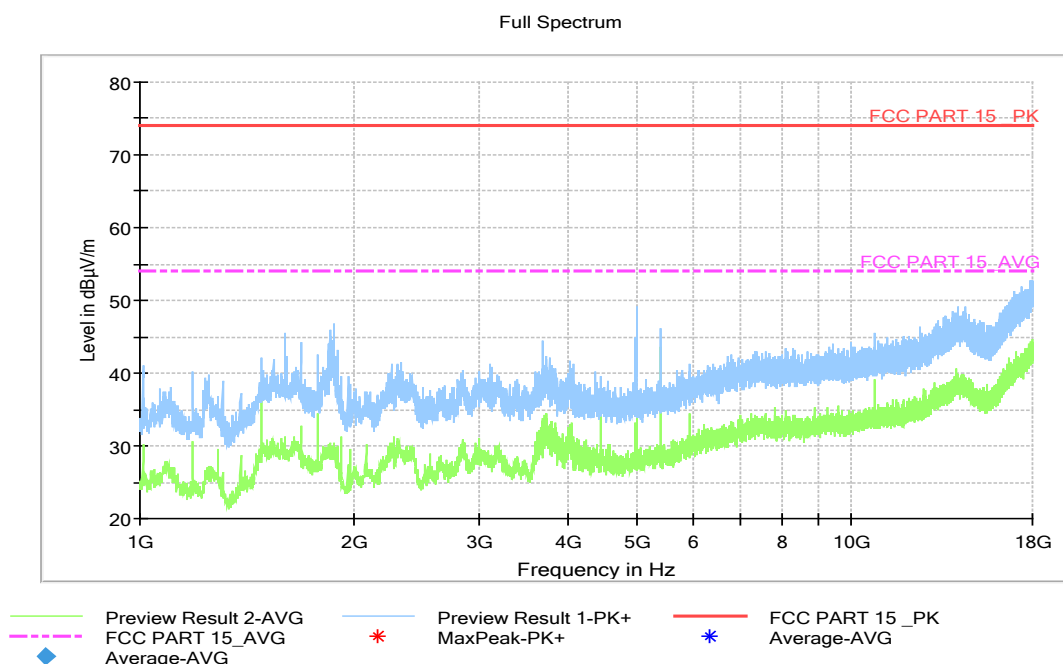


Figure A.12 Radiated Emission from 1GHz to 18GHz

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)
17940.500	43.9	-28.9	46.7	26.183	54.0	10.1	V
17998.867	43.9	-29.1	46.7	26.298	54.0	10.1	V
1484.500	43.9	-39.9	24.8	59.013	54.0	10.1	H
17939.933	43.6	-29.4	46.7	26.339	54.0	10.4	V
17988.667	43.5	-29.1	46.7	25.898	54.0	10.5	V
17843.033	43.4	-29.3	46.0	26.782	54.0	10.6	V

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)
17931.433	52.8	-29.4	46.7	35.539	74	21.2	H
17962.600	52.8	-29.1	46.7	35.201	74	21.2	H
17941.067	52.7	-28.9	46.7	34.983	74	21.3	H
17986.400	52.6	-29.1	46.7	34.998	74	21.4	V
17994.900	52.5	-29.1	46.7	34.898	74	21.5	V
17998.867	52.5	-29.1	46.7	34.898	74	21.5	V

A.2 Conducted Emission

Reference

FCC: CFR Part 15.107(a).

ISED: ICES-003 Section 3.2.1

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.

For the test setup photographs please see the test setup photos document.

A.2.2 EUT Operating Mode

The system was configured for testing in a typical mode that a customer would normal use.

LABTM software is used to let the EUT to continuously copy data to external (Hard Disk & USB flash disk & SD card) storage media, read and erase the data after copy action was finished.

During the test, Color Bar image with a moving element via HDMI cable display on the LCD panel; the music was repetitively played through the headset; the WIFI and BT function was on and worked in receiver mode.

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

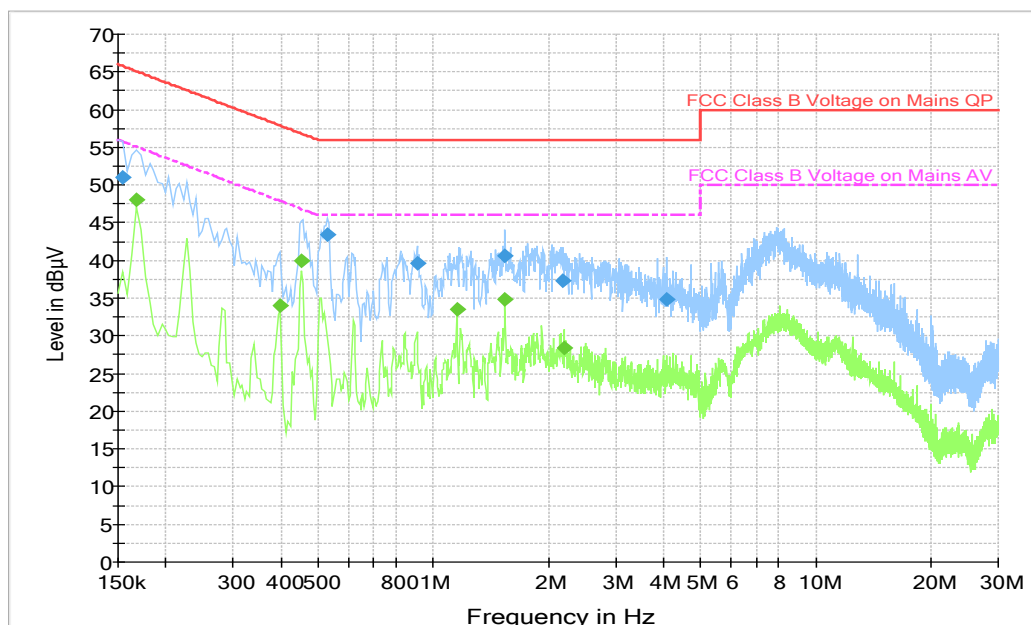
RBW/IF bandwidth	Sweep Time(s)
9kHz	1

A.2.5 Measurement Results

Measurement uncertainty: $U = 3.08 \text{ dB}$, $k=2$.

Note: all modes have been tested and the worst results shown here.

Set.1



Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

Figure A.13 Conducted Emission

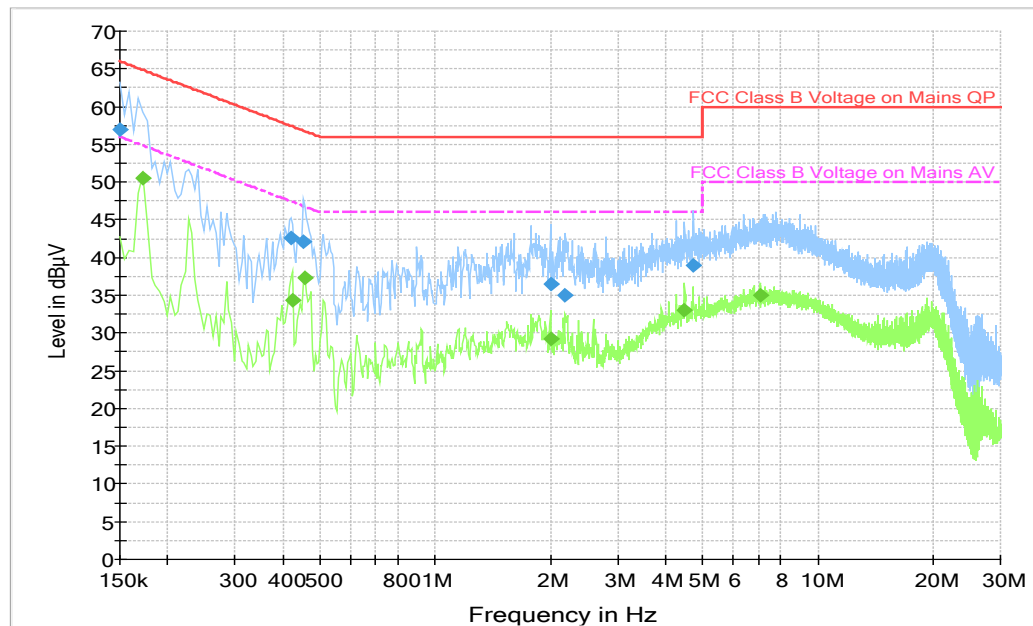
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.154500	51.0	1000.0	9.000	On	L1	19.7	14.7	65.8
0.528000	43.4	1000.0	9.000	On	L1	19.6	12.6	56.0
0.906000	39.7	1000.0	9.000	On	N	19.5	16.3	56.0
1.540500	40.5	1000.0	9.000	On	N	19.6	15.5	56.0
2.184000	37.3	1000.0	9.000	On	N	19.5	18.7	56.0
4.083000	34.9	1000.0	9.000	On	L1	19.7	21.1	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.168000	48.1	1000.0	9.000	On	L1	19.7	7.0	55.1
0.397500	33.9	1000.0	9.000	On	N	19.6	14.0	47.9
0.451500	39.9	1000.0	9.000	On	N	19.6	6.9	46.8
1.153500	33.5	1000.0	9.000	On	N	19.6	12.5	46.0
1.536000	34.9	1000.0	9.000	On	N	19.6	11.1	46.0
2.202000	28.4	1000.0	9.000	On	N	19.6	17.6	46.0

Set.2



Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

Figure A.14 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	56.9	1000.0	9.000	On	L1	19.6	9.1	66.0
0.420000	42.6	1000.0	9.000	On	N	19.6	14.9	57.4
0.451500	42.0	1000.0	9.000	On	N	19.6	14.8	56.8
1.999500	36.5	1000.0	9.000	On	N	19.5	19.5	56.0
2.188500	35.0	1000.0	9.000	On	L1	19.6	21.0	56.0
4.740000	38.9	1000.0	9.000	On	N	19.7	17.1	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.172500	50.6	1000.0	9.000	On	N	19.5	4.2	54.8
0.424500	34.3	1000.0	9.000	On	N	19.6	13.0	47.4
0.456000	37.3	1000.0	9.000	On	N	19.6	9.5	46.8
1.999500	29.2	1000.0	9.000	On	N	19.5	16.8	46.0
4.488000	33.0	1000.0	9.000	On	N	19.7	13.0	46.0
7.048500	35.0	1000.0	9.000	On	N	19.6	15.0	50.0

ANNEX B: Persons involved in this testing

Test Item	Tester
Radiated Emission	Li Zongliang, Zhao Wenhui
Conducted Emission	Guo Qian

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