

TEST REPORT

Report No.: SRTC2021-9003(F)-0058
Product Name: Mobile phone
Applicant: Hisense International Co., Ltd.
Manufacturer: Hisense International Co., Ltd.
Specification: FCC Part15B (Certification)
(2021 edition)
ANSI C63.4-2014
FCC ID: 2ADOBHLTE106E

The State Radio_monitoring_center Testing Center (SRTC)
15th Building, No.30 Shixing Street, Shijingshan District,
Beijing, China

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1. General information

1.1 Notes of the test report

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The test results relate only to individual items of the samples which have been tested.

1.2 Information about the testing laboratory

Company: The State Radio_monitoring_center Testing Center (SRTC)
Address: 15th Building, No.30 Shixing Street, Shijingshan District
Testing location: No.80, Zhaojiachang, BeizangCun, Daxing District, Beijing, China.
City: Beijing
Country or Region: China
Contacted person: Liu Jia
Tel: +86 10 57996183
Fax: +86 10 57996388
Email: liujiaf@srtc.org.cn

1.3 Applicant's details

Company: Hisense International Co., Ltd.
Address: Floor 22, Hisense Tower, 17 Donghai Xi Road, Qingdao, 266071, China
City: Qingdao
Country or Region: China
Contacted person: Dengtingting
Tel: +86- 0532-55753708
Email: Dengtingting@hisense.com

1.4 Manufacturer's details

Company: Hisense International Co., Ltd.
Address: Floor 22, Hisense Tower, 17 Donghai Xi Road, Qingdao, 266071, China
City: Qingdao
Country or Region: China
Contacted person: Dengtingting
Tel: +86- 0532-55753708
Email: Dengtingting@hisense.com

1.5 Application details

Date of reception of test sample: 15th October 2021

Date of test: 15th October 2021 to 8th November 2021

1.6 Reference specification

FCC Part 15B, 2021 (Certification)

1.7 Information of EUT

1.7.1 General information

Product Name of EUT	Mobile phone
FCC ID	2ADOBHLTE106E
Frequency Range	GSM: GSM850 / DCS1900 WCDMA: FDD II/ FDD IV / FDD V LTE: FDD 2/ FDD 4/ FDD 5/FDD 7/ FDD 12 Bluetooth: 2.4~2.4835GHz WiFi: 2.4~2.4835GHz
Power Supply	Charger/Battery
Nominal Voltage	3.85V
Extreme Temperature	Lowest: 0°C Highest: +55°C
Extreme Voltage	Minimum: 3.5V Maximum: 4.35V
HW Version	Refer 1.7.2 for detail
SW Version	Refer 1.7.2 for detail

1.7.2 EUT details

No.	Product Name	IMEI	Note
EUT1	Mobile phone	862866060000305	HLTE106E.40 with main supply
EUT2	Mobile phone	862866060000420	HLTE106E.40 with secondary supply
EUT3	Mobile phone	862866060000511	HLTE106E.41 with main supply
EUT4	Mobile phone	862866060000537	HLTE106E.41 with secondary supply
EUT5	Mobile phone	862866060000081	HLTE106E.30 with main supply
EUT6	Mobile phone	862866060000107	HLTE106E.30 with secondary supply
EUT7	Mobile phone	862866060000156	HLTE106E.31 with main supply
EUT8	Mobile phone	862866060000172	HLTE106E.31 with secondary supply

Note1: As the applicant of this model, [Hisense International Co., Ltd.] declares that the product has two suppliers Memory/Battery/CAM/CTP/LCD.

Main Supply

Part Name	Model	Supplier(Brand)	Description
Camera	HG8M4510-V1.0	Shenzhen shennuoxin electronic technology co.LTD	rear CAM
Camera	HG7M4411-V1.0	Shenzhen shennuoxin electronic technology co.LTD	Front CAM
CTP	YX50B29TSBA00	Shengzhen AGS Optronics Tech(ShenZhen) , co.,	
LCD	YX498IS039	Shengzhen AGS Optronics Tech(ShenZhen) , co.,	
Battery	LIW380200A	SHENZHEN UTILITY POWER SOURCE CO.,LTD	

Secondary Supply

Part Name	Model Name	supplier	Description
Camera	BM18613	LUZHOU Chengxiangtong technology CO.,LTD	rear CAM

Camera	BM15563	LUZHOU Chengxiangtong technology CO.,LTD	Front CAM
CTP	Y129070F1-R	Dongguan Yuye Communication Technology Co.,Ltd	
LCD	Y88790	Shenzhen Digital Technology Co.,Ltd	
Battery	LIW380200A	ShenzhenAerospaceElectronicCo.,Ltd.	

2. Memory specification

Part Name	Model	Supplier(Brand)	Description
Memory	Model1:KKMFE10012M-B214 Model2:KMFE60012M-B214	SAMSUNG;	1+16 integrated memory
Memory	Model1:RS256M32LD3D1LMZ-125BT+E32G CYNB1ABE00 Model2 : FL3B1001G-29+KM110SA1032GXA-AAA00 WT,	Main supply:RAYSON + SCY Second supply: FORESEE+ Kimtigo	1+32 separate memory

3. The PCB has differences in memory circuits, but the RF and power circuits are exactly the same. And in order to distinguish between memory and market, the software version is different. The description is shown in the table below:

FCC ID	Product Name	Brand	Model	Internal model	Market model	Hardware version	Software version	Memory
2ADOBHTE106	Mobile phone	Hisense	HLTE106E	HLTE106E.30	Hisense U30	A507-MB-V3.6	Hisense_HLTE106E_30_S03_01_01_MX05	1+16 integrated memory
				HLTE106E.31			Hisense_HLTE106E_31_S03_01_01_MX00	
				HLTE106E.40	Hisense U30 32GB	A507-MB-V3.0	Hisense_HLTE106E_40_S03_01_01_MX06	1+32 separate memory
				HLTE106E.41			Hisense_HLTE106E_41_S03_01_01_MX00	

1.7.3 Auxiliary equipment details

AE (Auxiliary Equipment) 1#: Charger

Manufacturer	SHENZHEN TIANYIN ELECTRONICS CO.,LTD
Model Number	TPA-97050100U01
Input Voltage	100V-240V AC
Output Voltage	5V DC

AE (Auxiliary Equipment) 2#: Battery1

Manufacturer	ShenzhenAerospaceElectronicCo.,Ltd.
Model Number	LIW380200A

AE (Auxiliary Equipment) 3#: Battery2

Manufacturer	Shenzhen Utility Power Source Co.,ltd.
Model Number	LIW380200A

AE (Auxiliary Equipment) 4#: Headset

Manufacturer	Dongguan Keling Electronic Technology Co., Ltd.
Model Number	KS103

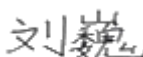
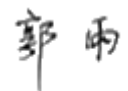
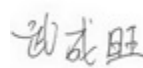
Note1: In this report, the result exercised by the EUT1, EUT2, EUT3, EUT4, EUT5, EUT6, EUT7 and EUT8, charger AE1, the Battery AE2 and the Headset AE4.

Note2: According to the test results of conducted emission at 120VAC and 240VAC, the tests of EUT2, EUT3, EUT4, EUT5, EUT6, EUT7 and EUT8 are carried out at 240VAC.

2. Test information

2.1 Summary of the test results

No.	Test case	FCC reference	Verdict
1	Conducted emissions	15.107	Pass
2	Radiated emissions	15.109	Pass

Approved By: Mr. Liu Wei Director of the test department 	Checked By: Mr. Guo Yu Vice director of the test department 
Tested By: Mr. Wu Chengwang 	Issued date: 2021.11.26

2.2 Test result

2.2.1 Conducted Emissions-FCC Part15.107

Ambient condition:

Temperature	Relative humidity	Pressure
22.6°C	40.1%	100.8kPa

Test Setup with charger:

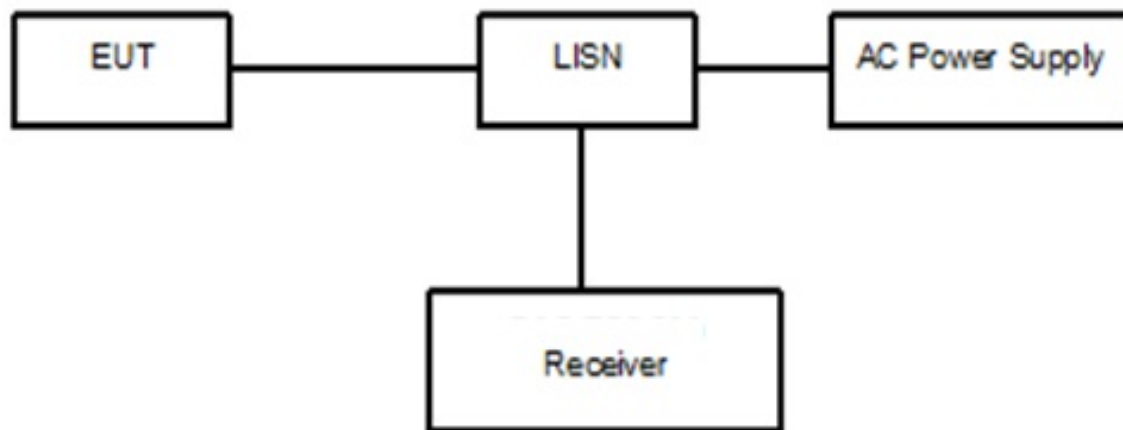


Figure 1

Test Procedure:

The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The EUT is connected with LISN via the charger. The LISN is connected to the reference ground. The accessories of the EUT are connected with the EUT such as headset etc. Open the following functions of EUT: Camera, flash lamp, FM, GPS and video. The test set-up and the test methods are performed according to ANSI C63.4:2014.

Then start the test software EMC32. Sweep the whole frequency band through the range from 150 KHz to 30 MHz with RBW 9kHz, VBW 30kHz. The measurement should be done for both L line and N line. During pre-test, the receiver uses both peak detector and average detector. And the final test, the receiver uses both average detector and Quasi-peak detector.

The data of cable loss has been calibrated in full testing frequency range before the testing.

Test Setup with laptop:

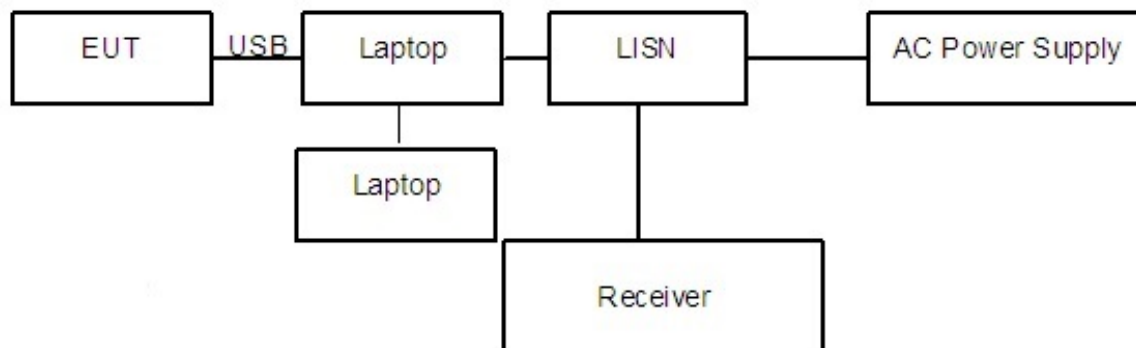


Figure 2

Test Procedure:

The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The accessories of the EUT are connected with the EUT such as headset etc. The EUT was connected with a laptop via the USB cable and transferred the data by copying large files from laptop to the EUT. The laptop's LAN port is connected with another laptop via cable. And the data transferring between two laptops is maintained.

The AC main power supply of the laptop is connected to LISN and LISN is connected to the reference ground. The test set-up and the test methods are performed according to ANSI C63.4:2014.

Then start the test software EMC32. Sweep the whole frequency band through the range from 150 KHz to 30 MHz. The measurement should be done for both L line and N line. During pre-test, the receiver uses both peak detector and average detector. And the final test, the receiver uses both average detector and Quasi-peak detector.

The data of cable loss has been calibrated in full testing frequency range before the testing.

A “reference path loss” Corr.(dB) is established and the $L_{\text{cable}} + \text{ATT} + \text{VDF}$ is the attenuation of “reference path loss”, and including the cable loss, the attenuation of the attenuator, the voltage division factor of AMN.

The measurement results are obtained as described below:

$$P_{\text{result}} = P_{\text{mea}} + \text{Corr. (dB)}$$

Sample calculation: $(41.09 \text{ dB}\mu\text{V}) = (11.39 \text{ dB}\mu\text{V}) + (29.7 \text{ dB})$, the corresponding frequency is 0.201171MHz.

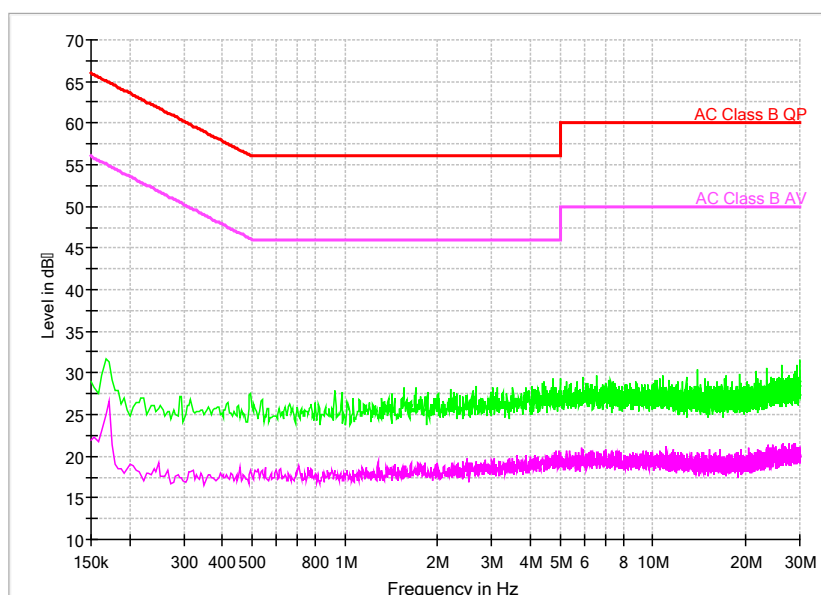
Limit:

Frequency of Emission(MHz)	Limits(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

Note: * Decreases with the logarithm of the frequency

Test result:

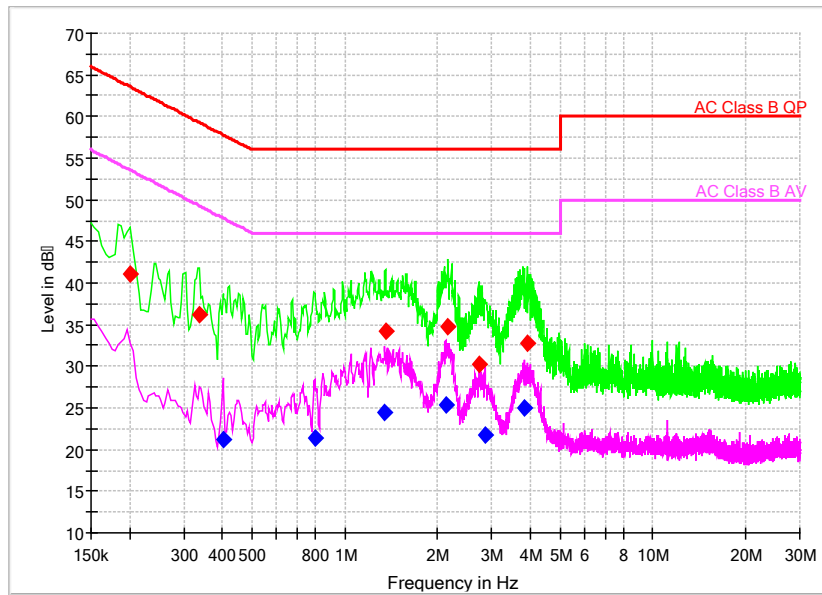
Noise Level of the Measuring Instrument



Comment

Pic1. Conducted emission L and N Line

EUT1+charger:

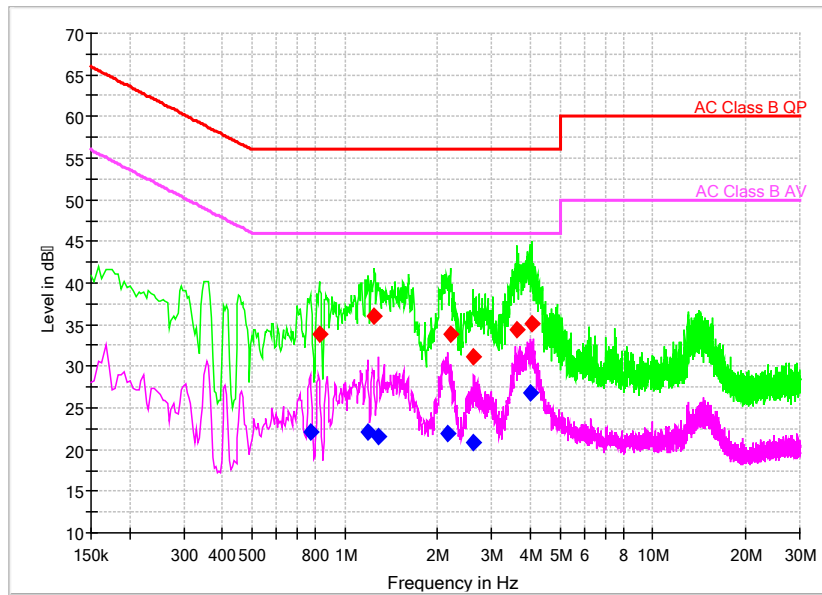


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Pic2. Conducted emission L&N Line Voltage: 120VAC

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	P _{mea} QuasiPeak (dBμV)	P _{mea} Average (dBμV)
0.201171	41.09	---	63.56	22.47	L1	29.7	11.39	---
0.337629	36.23	---	59.26	23.03	L1	29.7	6.53	---
0.401593	---	21.23	47.82	26.59	L1	29.7	---	-8.47
0.798171	---	21.38	46.00	24.62	L1	29.7	---	-8.32
1.348264	---	24.52	46.00	21.48	L1	29.8	---	-5.28
1.356793	34.22	---	56.00	21.78	N	29.8	4.42	---
2.124364	---	25.31	46.00	20.69	L1	29.8	---	-4.49
2.162743	34.77	---	56.00	21.23	N	29.8	4.97	---
2.717100	30.22	---	56.00	25.78	N	29.8	0.42	---
2.857821	---	21.75	46.00	24.25	N	29.9	---	-8.15
3.838607	---	25.01	46.00	20.99	L1	29.8	---	-4.79
3.902571	32.79	---	56.00	23.21	L1	29.8	2.99	---

EUT1+charger:

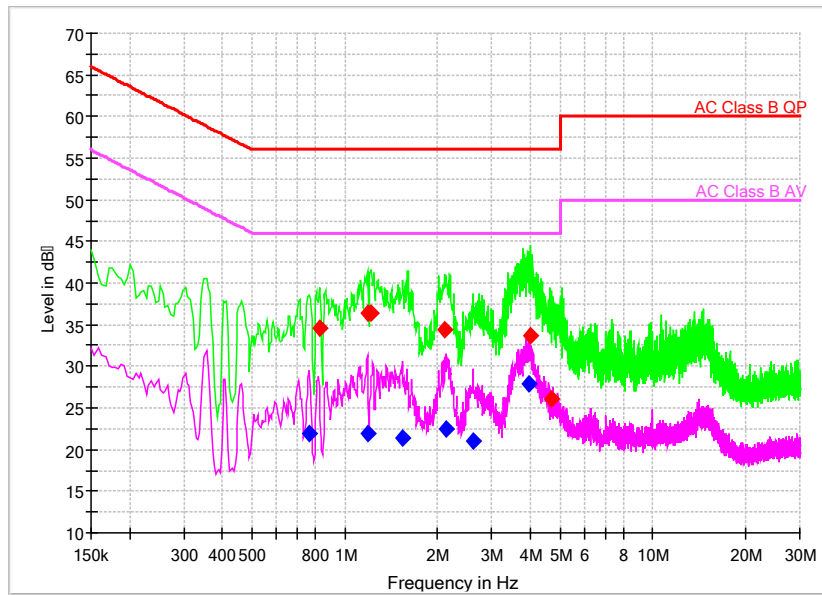


Comment

Pic3. Conducted emission L&N Line Voltage: 240VAC

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	P _{mea} QuasiPeak (dBμV)	P _{mea} Average (dBμV)
0.772586	---	22.17	46.00	23.83	L1	29.7	---	-7.53
0.828021	33.94	---	56.00	22.06	L1	29.7	4.24	---
1.190486	---	22.11	46.00	23.89	L1	29.8	---	-7.69
1.245921	36.11	---	56.00	19.89	L1	29.8	6.31	---
1.288564	---	21.66	46.00	24.34	L1	29.8	---	-8.14
2.162743	---	21.84	46.00	24.16	L1	29.8	---	-7.96
2.201121	33.83	---	56.00	22.17	L1	29.8	4.03	---
2.614757	31.14	---	56.00	24.86	L1	29.8	1.34	---
2.623286	---	20.82	46.00	25.18	L1	29.8	---	-8.98
3.625393	34.43	---	56.00	21.57	L1	29.8	4.63	---
4.009179	---	26.83	46.00	19.17	L1	29.8	---	-2.97
4.043293	35.15	---	56.00	20.85	L1	29.8	5.35	---

EUT2+charger:

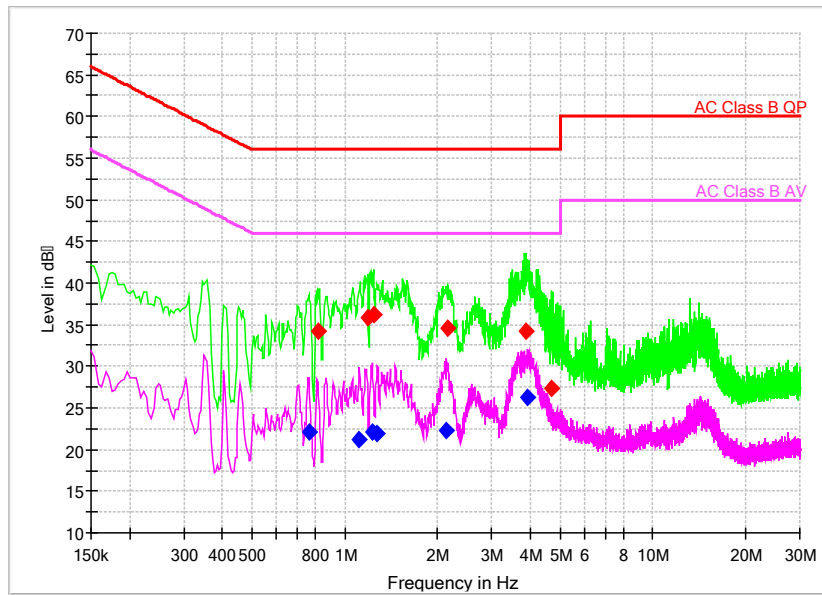


Comment

Pic4. Conducted emission L&N Line Voltage: 240VAC

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	P _{mea} QuasiPeak (dBμV)	P _{mea} Average (dBμV)
0.764057	---	21.85	46.00	24.15	L1	29.8	---	-7.95
0.828021	34.61	---	56.00	21.39	L1	29.8	4.81	---
1.181957	---	22.00	46.00	24.00	L1	29.8	---	-7.8
1.181957	36.42	---	56.00	19.58	L1	29.8	6.62	---
1.220336	36.36	---	56.00	19.64	L1	29.8	6.56	---
1.535893	---	21.35	46.00	24.65	L1	29.8	---	-8.45
2.115836	34.38	---	56.00	21.62	L1	29.8	4.58	---
2.137157	---	22.40	46.00	23.60	N	29.8	---	-7.4
2.619021	---	21.09	46.00	24.91	N	29.8	---	-8.71
3.940950	---	27.81	46.00	18.19	N	29.9	---	-2.09
4.013443	33.63	---	56.00	22.37	L1	29.9	3.73	---
4.704257	26.10	---	56.00	29.90	L1	29.9	-3.8	---

EUT3+charger:

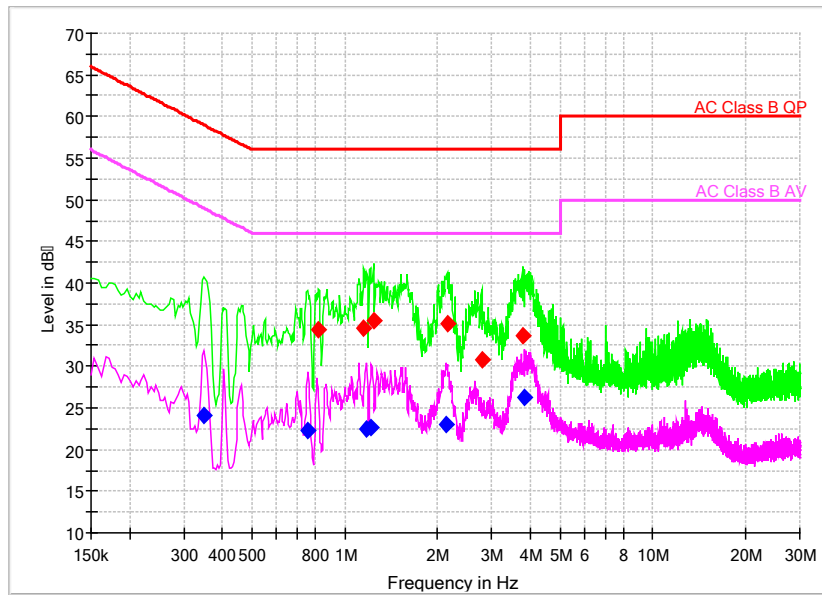


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Pic5. Conducted emission L&N Line Voltage: 240VAC

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	P _{mea} QuasiPeak (dBμV)	P _{mea} Average (dBμV)
0.764057	---	22.09	46.00	23.91	L1	29.7	---	-7.61
0.823757	34.22	---	56.00	21.78	N	29.8	4.42	---
1.113729	---	21.28	46.00	24.72	L1	29.8	---	-8.52
1.186221	35.92	---	56.00	20.08	N	29.8	6.12	---
1.228864	---	22.11	46.00	23.89	L1	29.8	---	-7.69
1.241657	36.14	---	56.00	19.86	N	29.8	6.34	---
1.275771	---	21.99	46.00	24.01	L1	29.8	---	-7.81
2.141421	---	22.37	46.00	23.63	N	29.8	---	-7.43
2.154214	34.61	---	56.00	21.39	N	29.8	4.81	---
3.872721	34.29	---	56.00	21.71	L1	29.8	4.49	---
3.915364	---	26.18	46.00	19.82	L1	29.8	---	-3.62
4.678671	27.40	---	56.00	28.60	N	29.9	-2.5	---

EUT4+charger:

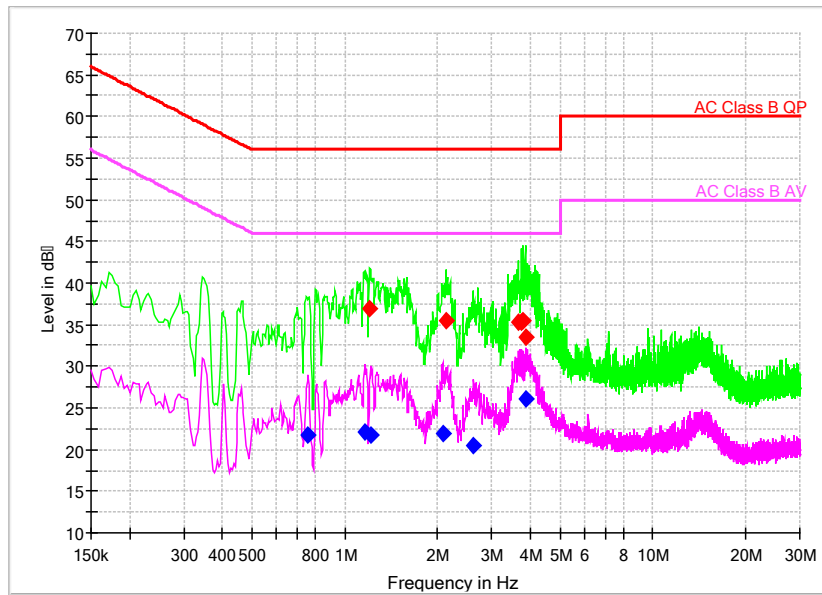


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Pic6. Conducted emission L&N Line Voltage: 240VAC

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	P _{mea} QuasiPeak (dBμV)	P _{mea} Average (dBμV)
0.350421	---	24.18	48.95	24.77	L1	29.8	---	-5.62
0.759793	---	22.24	46.00	23.76	L1	29.8	---	-7.56
0.823757	34.42	---	56.00	21.58	L1	29.8	4.62	---
1.152107	34.55	---	56.00	21.45	L1	29.8	4.75	---
1.173429	---	22.51	46.00	23.49	L1	29.8	---	-7.29
1.220336	---	22.68	46.00	23.32	N	29.8	---	-7.12
1.241657	35.42	---	56.00	20.58	N	29.8	5.62	---
2.137157	---	23.10	46.00	22.90	N	29.8	---	-6.7
2.145686	35.12	---	56.00	20.88	L1	29.8	5.32	---
2.781064	30.79	---	56.00	25.21	N	29.8	0.99	---
3.770379	33.61	---	56.00	22.39	L1	29.8	3.81	---
3.817286	---	26.32	46.00	19.68	N	29.9	---	-3.58

EUT5+charger:

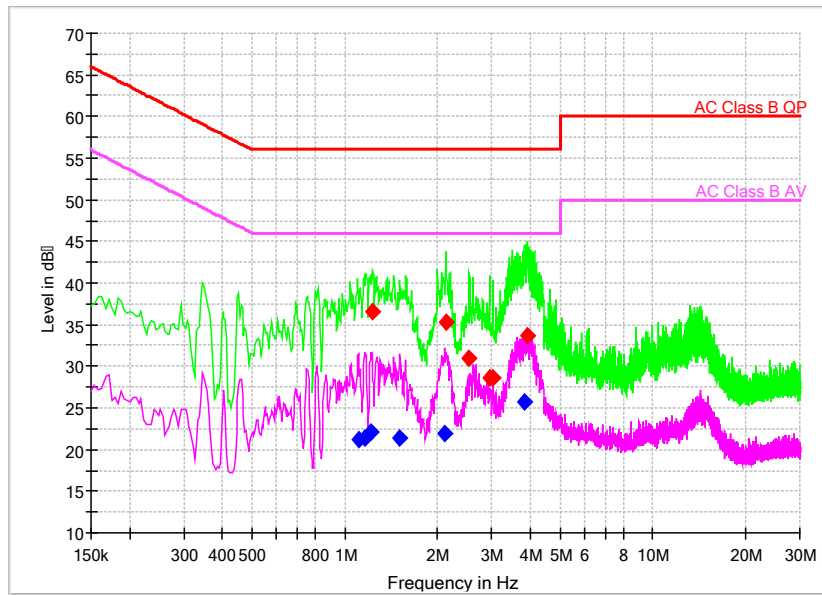


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Pic7. Conducted emission L&N Line Voltage: 240VAC

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	P _{mea} QuasiPeak (dBμV)	P _{mea} Average (dBμV)
0.759793	---	21.81	46.00	24.19	L1	29.7	---	-7.89
1.164900	---	22.10	46.00	23.90	L1	29.8	---	-7.7
1.207543	36.88	---	56.00	19.12	L1	29.8	7.08	---
1.216071	---	21.82	46.00	24.18	L1	29.8	---	-7.98
2.077457	---	21.86	46.00	24.14	L1	29.8	---	-7.94
2.132893	35.43	---	56.00	20.57	L1	29.8	5.63	---
2.623286	---	20.55	46.00	25.45	L1	29.8	---	-9.25
3.668036	35.39	---	56.00	20.61	L1	29.8	5.59	---
3.736264	35.26	---	56.00	20.74	L1	29.8	5.46	---
3.800229	35.43	---	56.00	20.57	L1	29.8	5.63	---
3.851400	---	26.09	46.00	19.91	N	29.9	---	-3.81
3.851400	33.54	---	56.00	22.46	N	29.9	3.64	---

EUT6+charger:

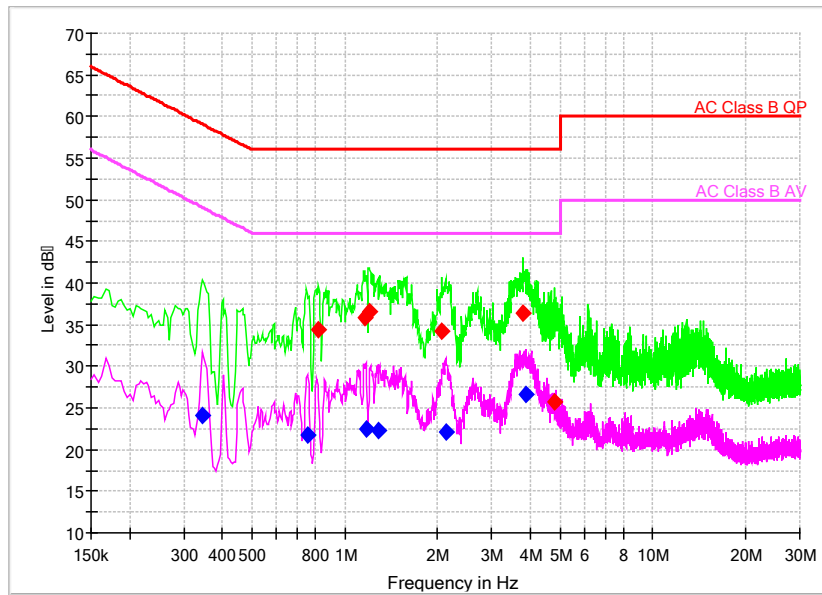


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Pic8. Conducted emission L&N Line Voltage: 240VAC

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	P _{mea} QuasiPeak (dBμV)	P _{mea} Average (dBμV)
1.105200	---	21.27	46.00	24.73	L1	29.8	---	-8.53
1.156371	---	21.40	46.00	24.60	L1	29.8	---	-8.4
1.216071	---	22.19	46.00	23.81	L1	29.8	---	-7.61
1.233129	36.65	---	56.00	19.35	L1	29.8	6.85	---
1.506043	---	21.39	46.00	24.61	N	29.8	---	-8.41
2.107307	---	21.94	46.00	24.06	N	29.8	---	-7.86
2.128629	35.23	---	56.00	20.77	L1	29.8	5.43	---
2.538000	30.95	---	56.00	25.05	L1	29.8	1.15	---
2.947371	28.60	---	56.00	27.40	L1	29.9	-1.3	---
3.015600	28.53	---	56.00	27.47	L1	29.9	-1.37	---
3.834343	---	25.75	46.00	20.25	L1	29.9	---	-4.15
3.911100	33.76	---	56.00	22.24	L1	29.9	3.86	---

EUT7+charger:

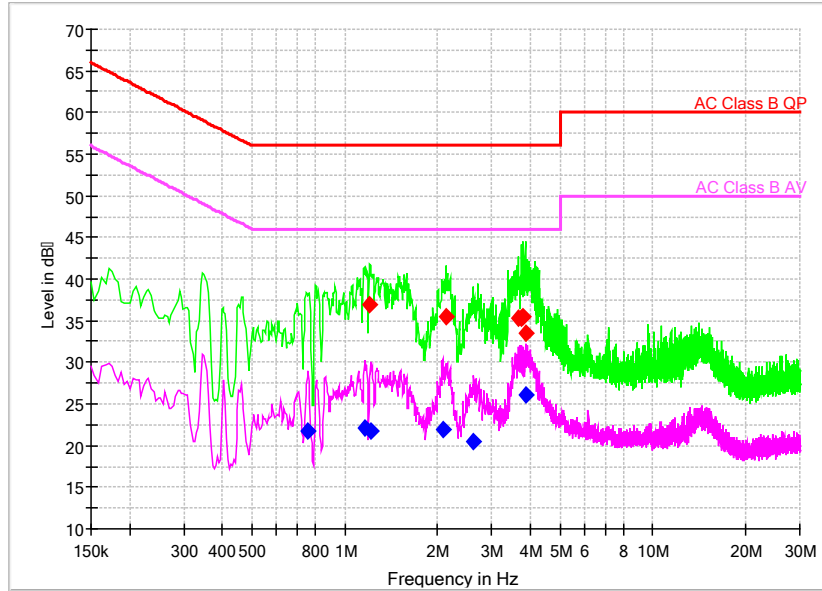


Comment

Pic9. Conducted emission L&N Line Voltage: 240VAC

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	P _{mea} QuasiPeak (dBμV)	P _{mea} Average (dBμV)
0.346157	---	24.08	49.05	24.98	L1	29.7	---	-5.62
0.755529	---	21.69	46.00	24.31	L1	29.7	---	-8.01
0.823757	34.34	---	56.00	21.66	N	29.8	4.54	---
1.156371	35.89	---	56.00	20.11	L1	29.8	6.09	---
1.169164	---	22.43	46.00	23.57	L1	29.8	---	-7.37
1.203279	36.60	---	56.00	19.40	N	29.8	6.8	---
1.280036	---	22.33	46.00	23.67	N	29.8	---	-7.47
2.068929	34.20	---	56.00	21.80	N	29.8	4.4	---
2.124364	---	22.17	46.00	23.83	L1	29.8	---	-7.63
3.800229	36.42	---	56.00	19.58	L1	29.8	6.62	---
3.881250	---	26.57	46.00	19.43	L1	29.8	---	-3.23
4.785279	25.68	---	56.00	30.32	N	29.9	-4.22	---

EUT8+charger:

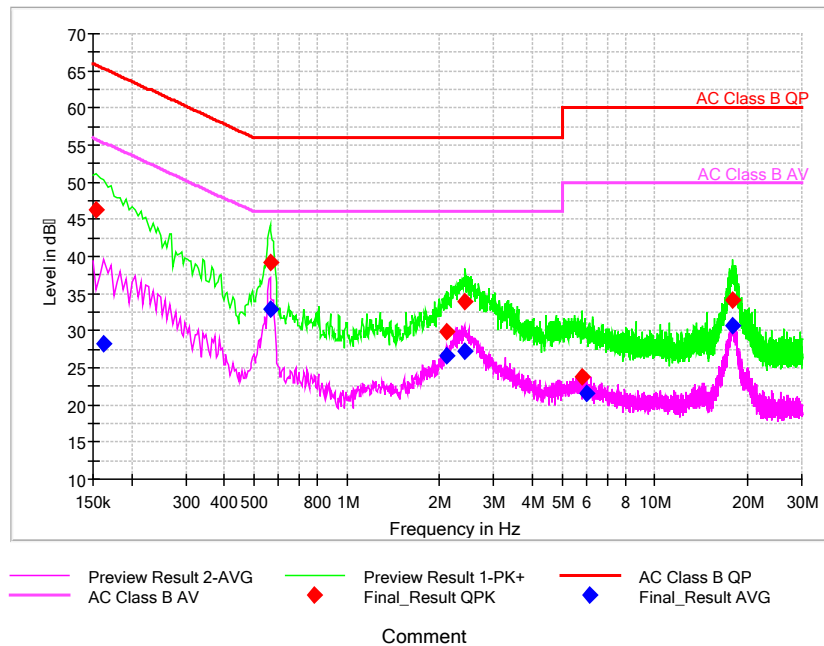


Comment

Pic10. Conducted emission L&N Line Voltage: 240VAC

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	P _{mea} QuasiPeak (dBμV)	P _{mea} Average (dBμV)
0.755233	---	21.84	46.00	24.16	L1	29.7	---	-7.86
1.163753	---	22.20	46.00	23.80	L1	29.8	---	-7.6
1.201234	36.84	---	56.00	19.16	L1	29.8	7.04	---
1.211256	---	21.85	46.00	24.15	N	29.8	---	-7.95
2.073246	---	21.83	46.00	24.17	N	29.8	---	-7.97
2.134326	35.46	---	56.00	20.54	L1	29.8	5.66	---
2.624754	---	20.55	46.00	25.45	L1	29.8	---	-9.25
3.663422	35.34	---	56.00	20.66	L1	29.8	5.54	---
3.732833	35.22	---	56.00	20.78	L1	29.8	5.42	---
3.812346	35.47	---	56.00	20.53	L1	29.8	5.67	---
3.821352	---	26.08	46.00	19.92	N	29.9	---	-3.82
3.815277	33.57	---	56.00	22.43	L1	29.9	3.67	---

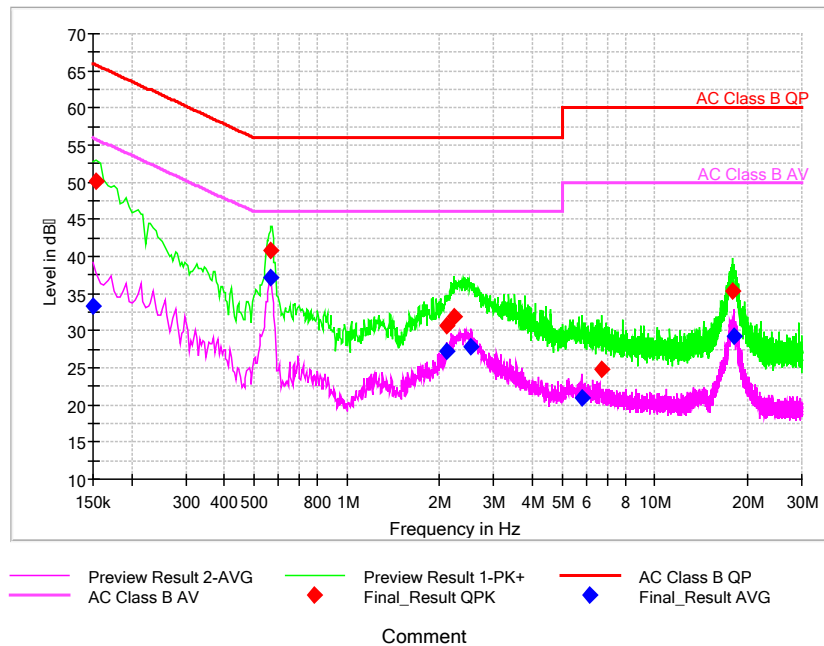
EUT1+Laptop:



Pic11. Conducted emission L&N Line

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	Pmea Quasi Peak (dBμV)	Pmea Average (dBμV)
0.154264	46.38	---	65.77	19.38	L1	29.6	16.78	---
0.162793	---	28.31	55.32	27.01	L1	29.6	---	-1.29
0.563636	---	32.98	46.00	13.02	L1	29.6	---	3.38
0.563636	39.10	---	56.00	16.90	L1	29.6	9.5	---
2.111571	29.85	---	56.00	26.15	L1	29.7	0.15	---
2.120100	---	26.70	46.00	N	L1	29.7	---	-3
2.401543	---	27.22	46.00	N	L1	29.7	---	-2.48
2.427129	33.91	---	56.00	22.09	L1	29.7	4.21	---
5.804443	23.76	---	60.00	36.24	L1	29.7	-5.94	---
5.979279	---	21.59	50.00	28.41	L1	29.7	---	-8.11
17.829729	34.17	---	60.00	25.83	L1	29.8	4.37	---
17.919279	---	30.77	50.00	19.23	L1	29.8	---	0.97

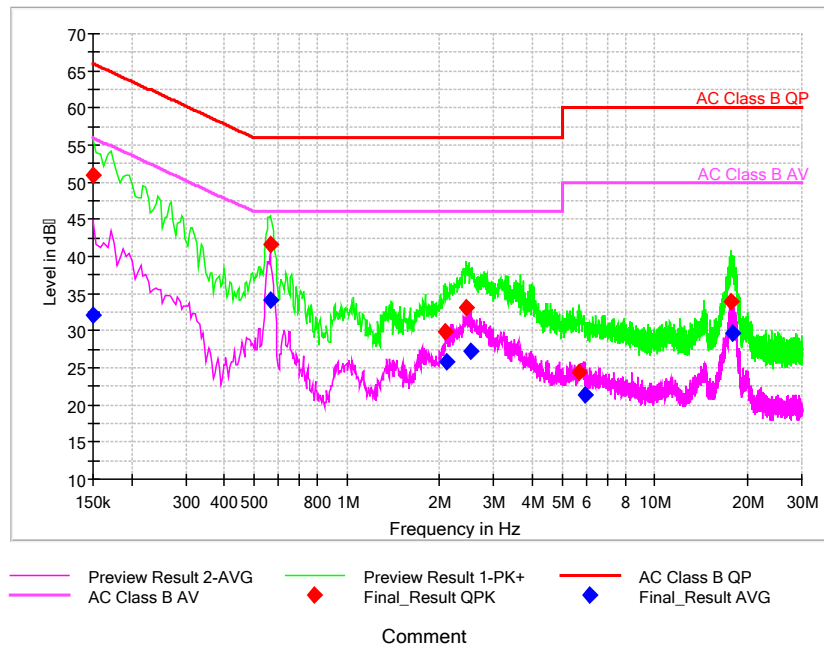
EUT3+Laptop:



Pic12. Conducted emission L&N Line

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	Pmea Quasi Peak (dBμV)	Pmea Average (dBμV)
0.150000	---	33.37	56.00	22.63	L1	29.6	---	3.77
0.154264	50.08	---	65.77	15.69	L1	29.6	20.48	---
0.567900	---	37.23	46.00	8.77	L1	29.6	---	7.63
0.567900	40.83	---	56.00	15.17	L1	29.6	11.23	---
2.103043	30.73	---	56.00	25.27	L1	29.7	1.03	---
2.107307	---	27.31	46.00	18.69	L1	29.7	---	-2.39
2.235236	31.99	---	56.00	24.01	L1	29.7	2.29	---
2.520943	---	27.91	46.00	N	L1	29.7	---	-1.79
5.774593	---	20.95	50.00	N	L1	29.7	---	-8.75
6.699943	24.86	---	60.00	35.14	L1	29.7	-4.84	---
17.915014	35.32	---	60.00	24.68	L1	29.8	5.52	---
18.102643	---	29.19	50.00	20.81	L1	29.8	---	-0.61

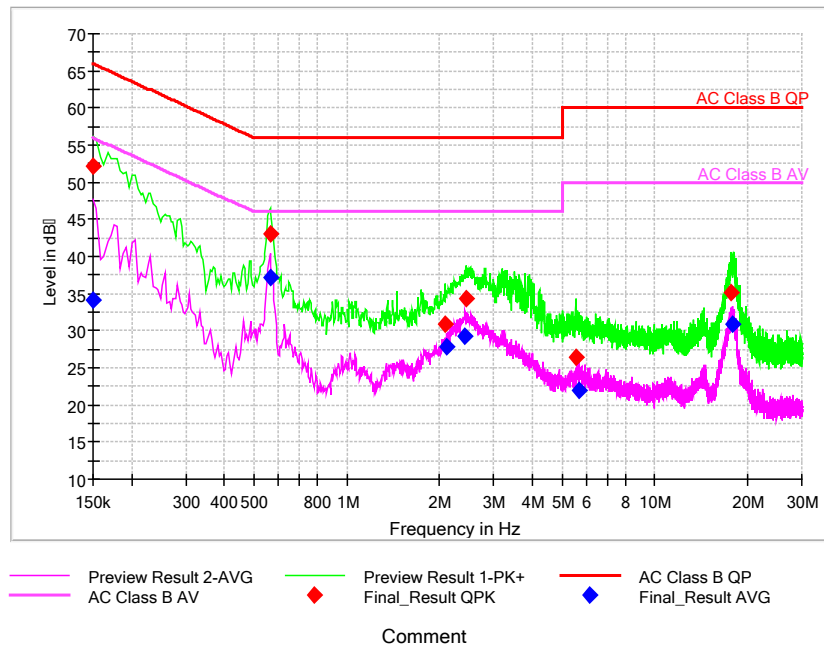
EUT5+Laptop:



Pic13. Conducted emission L&N Line

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	Pmea Quasi Peak (dBμV)	Pmea Average (dBμV)
0.150000	---	32.08	56.00	23.92	L1	29.6	---	2.48
0.150000	50.93	---	66.00	15.07	L1	29.6	21.33	---
0.563636	---	34.20	46.00	11.80	L1	29.6	---	4.6
0.563636	41.72	---	56.00	14.28	L1	29.6	12.12	---
2.090250	29.89	---	56.00	26.11	L1	29.7	0.19	---
2.103043	---	25.83	46.00	20.17	L1	29.7	---	-3.87
2.448450	33.04	---	56.00	22.96	L1	29.7	3.34	---
2.516679	---	27.18	46.00	18.82	L1	29.7	---	-2.52
5.680779	24.36	---	60.00	N	L1	29.7	-5.34	---
5.923843	---	21.32	50.00	N	L1	29.7	---	-8.38
17.667686	33.93	---	60.00	26.07	L1	29.8	4.13	---
17.978979	---	29.63	50.00	20.37	L1	29.8	---	-0.17

EUT7+Laptop:



Pic14. Conducted emission L&N Line

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	Pmea Quasi Peak (dBμV)	Pmea Average (dBμV)
0.150000	---	34.14	56.00	21.86	L1	29.6	---	4.54
0.150000	52.19	---	66.00	13.81	L1	29.6	22.59	---
0.563636	---	37.17	46.00	8.83	L1	29.6	---	7.57
0.563636	42.99	---	56.00	13.01	L1	29.6	13.39	---
2.090250	30.87	---	56.00	25.13	L1	29.7	1.17	---
2.107307	---	27.85	46.00	N	L1	29.7	---	-1.85
2.427129	---	29.34	46.00	N	L1	29.7	---	-0.36
2.431393	34.31	---	56.00	21.69	L1	29.7	4.61	---
5.527264	26.48	---	60.00	33.52	L1	29.7	-3.22	---
5.663721	---	21.92	50.00	28.08	L1	29.7	---	-7.78
17.680479	35.19	---	60.00	24.81	L1	29.8	5.39	---
17.855314	---	30.87	50.00	19.13	L1	29.8	---	1.07

2.2.2 Radiated Emissions-FCC Part15.109

Ambient condition:

Temperature	Relative humidity	Pressure
22.8°C	40.5%	100.8kPa

Test Setup:

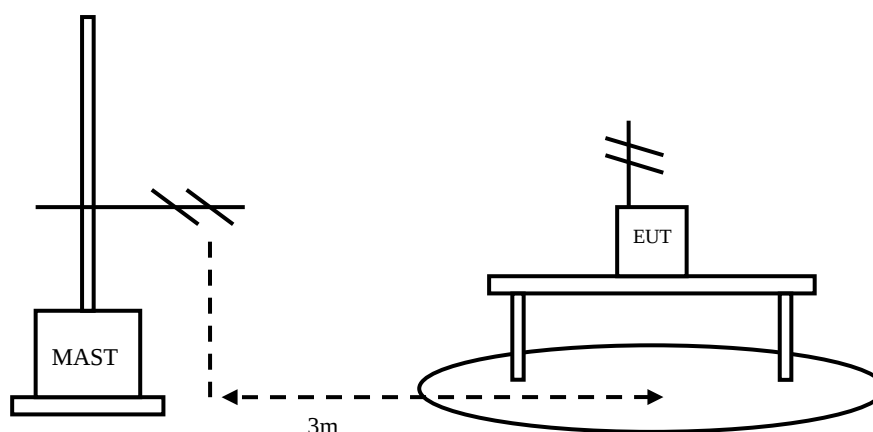


Figure 3

Test Procedure:

EUT+Charger:

The EUT should be placed on a non-metallic table 80cm above the ground plane. The receive antennas shall be moved from 1 to 4 meters. The distance between EUT and receive antenna should be 3 meters.

The EUT should work in idle mode. The accessories of the EUT are connected with the EUT such as headset etc. Open the following functions of EUT: Camera, flash lamp, GPS and video. The test set-up and the test methods are performed according to ANSI C63.4:2014.

Then start the test software EMC32. Sweep the whole frequency band through the range from 30MHz to 1GHz, using receive log period antenna VULB 9163.

During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turn table shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The EUT is laid in two modes as follow: 1. put the EUT in horizontal direction; 2. put the EUT in vertical direction.

The data of cable loss and antenna factor have been calibrated in full testing frequency range before the testing. All test results are performed with max hold at the horizontal and vertical polarity.

RBW=120kHz, VBW=300kHz, when the test frequency: $30\text{MHz} < f < 1\text{GHz}$

RBW=1MHz, VBW=3MHz, when the test frequency: $f > 1\text{GHz}$

EUT+Laptop:

The EUT should be placed on a non-metallic table 80cm above the ground plane. The receive antennas shall be moved from 1 to 4 meters. The distance between EUT and receive antenna should be 3 meters.

The accessories of the EUT are connected with the EUT such as headset etc. The EUT was connected with a laptop via the USB cable and transferred the data by copying large files from laptop to the EUT. The test set-up and the test methods are performed according to ANSI C63.4:2014

Then start the test software EMC32. Sweep the whole frequency band through the range from 30MHz to 1GHz, using receive log period antenna VULB 9163.

During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turn table shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The EUT is laid in two modes as follow: 1. put the EUT in horizontal direction; 2. put the EUT in vertical direction.

The data of cable loss and antenna factor have been calibrated in full testing frequency range before the testing.

A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss", and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

The measurement results are obtained as described below:

Result = $P_{mea} + A_{Rpl}$

Sample calculation: $(16.20 \text{ dB}\mu\text{V/m}) = (33.80 \text{ dB}\mu\text{V}) + (-17.6 \text{ dB/m})$, the corresponding frequency is 50.806500MHz.

Limit:

Frequency of Emission(MHz)	Limits	
	Detector	Unit (dB μ V/m)
30~88	Quasi-peak	40
88~216	Quasi-peak	43.5
216~960	Quasi-peak	46
960~1000	Quasi-peak	54
1000~5th harmonic of the highest frequency or 40GHz, whichever is lower	Average	54
	Peak	74

Test result:

EUT1+charger:

Frequency(MHz)	Result(dBuV/m)	A _{Rpl} (dB/m)	P _{mea} (dBuV)	Polarity
50.806500	16.20	-17.6	33.80	V
64.047000	24.23	-20.2	44.43	V
105.272000	23.96	-19.4	43.36	V
172.202000	28.65	-21.5	50.15	V
173.317500	27.78	-21.4	49.18	V
948.929500	15.60	-2.7	18.30	V

EUT2+charger:

Frequency(MHz)	Result(dBuV/m)	A _{Rpl} (dB/m)	P _{mea} (dBuV)	Polarity
53.280000	15.58	-18.0	33.58	V
65.938500	24.82	-20.8	45.62	V
104.205000	25.26	-19.3	44.56	V
167.400500	30.33	-21.8	52.13	V
173.269000	28.34	-21.5	49.84	V
936.416500	15.56	-2.8	18.36	V

EUT3+charger:

Frequency(MHz)	Result(dBuV/m)	A _{Rpl} (dB/m)	P _{mea} (dBuV)	Polarity
53.037500	17.21	-17.9	35.11	V
65.793000	23.91	-20.8	44.71	V
132.723000	24.55	-22.5	47.05	V
170.407500	27.83	-21.7	49.53	V
173.705500	28.07	-21.4	49.47	V
949.026500	15.52	-2.7	18.22	V

EUT4+charger:

Frequency(MHz)	Result(dBuV/m)	A _{Rpl} (dB/m)	P _{mea} (dBuV)	Polarity
51.049000	16.53	-17.7	34.23	V
64.823000	23.91	-20.5	44.41	V
132.092500	24.48	-22.4	46.88	V
171.232000	27.72	-21.6	49.32	V
173.608500	27.74	-21.4	49.14	V
953.488500	15.68	-2.7	18.38	V

EUT5+charger:

Frequency(MHz)	Result(dBuV/m)	A _{Rpl} (dB/m)	P _{mea} (dBuV)	Polarity
50.952000	15.98	-17.6	33.58	V
65.502000	24.12	-20.7	44.82	V
132.044000	24.08	-22.4	46.48	V
171.668500	27.93	-21.6	49.53	V
173.560000	27.55	-21.4	48.95	V
951.209000	15.66	-2.7	18.36	V

EUT6+charger:

Frequency(MHz)	Result(dBuV/m)	A _{Rpl} (dB/m)	P _{mea} (dBuV)	Polarity
53.377000	17.22	-18.0	35.22	V
67.151000	23.30	-21.2	44.50	V
130.880000	25.73	-22.4	48.13	V
178.361500	24.17	-21.1	45.27	V
422.704500	8.82	-12.7	21.52	V
927.007500	15.55	-2.9	18.45	V

EUT7+charger:

Frequency(MHz)	Result(dBuV/m)	A _{Rpl} (dB/m)	P _{mea} (dBuV)	Polarity
52.843500	17.15	-17.9	35.05	V
64.095500	23.69	-20.2	43.89	V
133.256500	24.63	-22.5	47.13	V
172.299000	27.18	-21.5	48.68	V
174.724000	27.04	-21.4	48.44	V
689.988000	11.68	-7.3	18.98	V

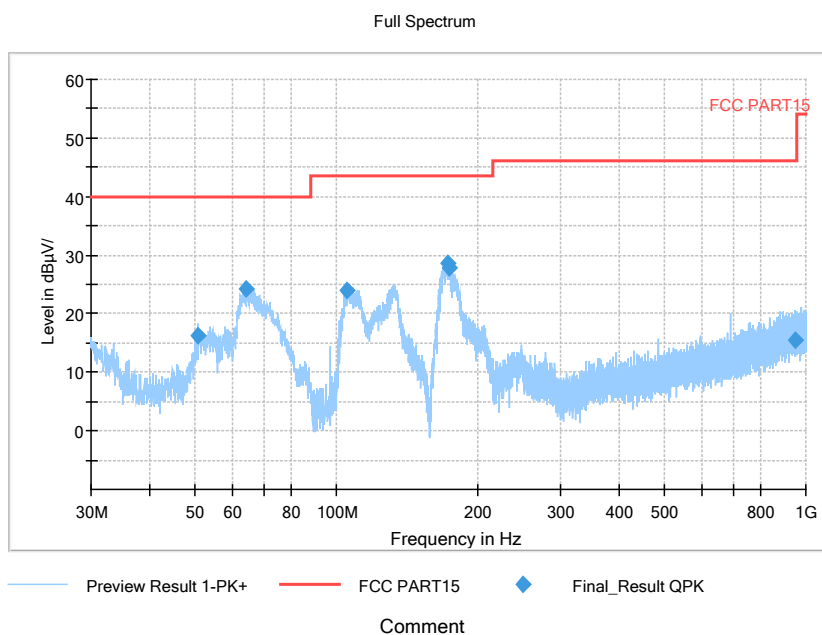
EUT8+charger:

Frequency(MHz)	Result(dBuV/m)	A _{Rpl} (dB/m)	P _{mea} (dBuV)	Polarity
50.661000	15.90	-17.6	33.50	V
63.756000	23.51	-20.1	43.61	V
110.558500	25.15	-19.8	44.95	V
171.959500	27.25	-21.5	48.75	V
174.821000	27.29	-21.4	48.69	V
689.988000	11.60	-7.3	18.90	V

EUT1+Laptop:

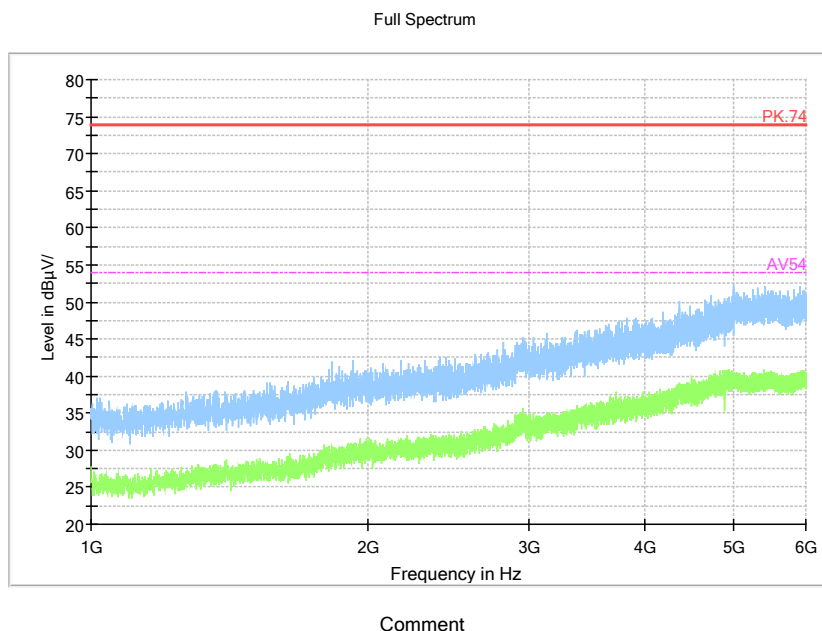
Frequency(MHz)	Result(dBuV/m)	A _{Rpl} (dB/m)	P _{mea} (dBuV)	Polarity
168.002000	24.15	-27.5	51.65	V
311.999000	19.63	-21.7	41.33	V
407.991000	23.18	-18.6	41.78	V
456.006000	21.74	-18.0	39.74	V
551.985000	22.86	-15.7	38.56	V
599.994000	22.21	-14.1	36.31	V

EUT1+charger: refer to Pic15 to Pic17



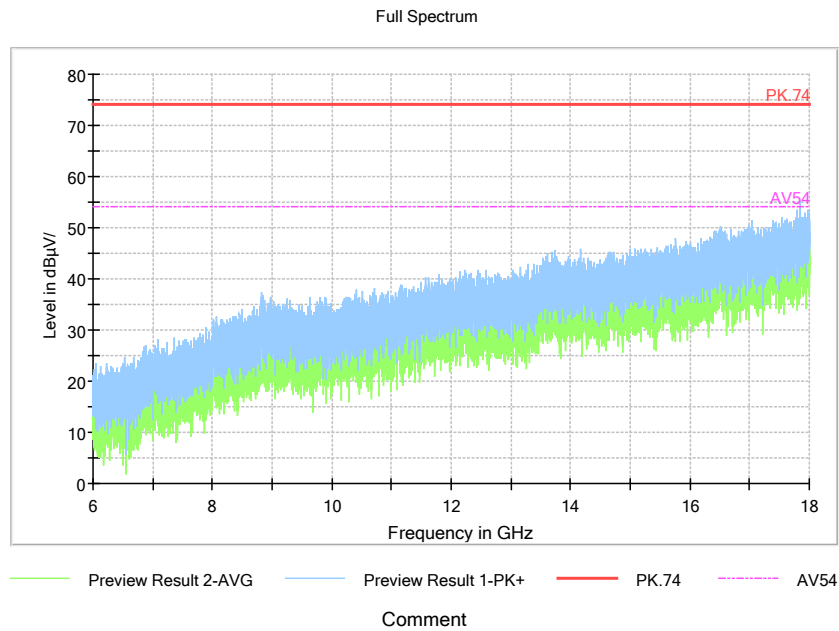
Pic15. Radiated emission (30MHz – 1GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical



Pic16. Radiated emission (1GHz –6GHz)

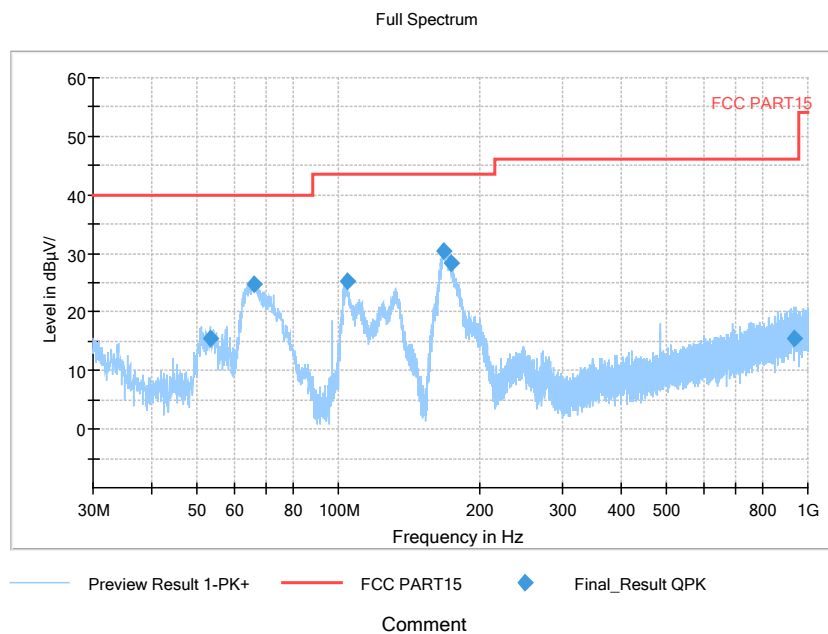
Note: The test data in the graph includes two polarizations: horizontal and vertical



Pic17. Radiated emission (6GHz –18GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical

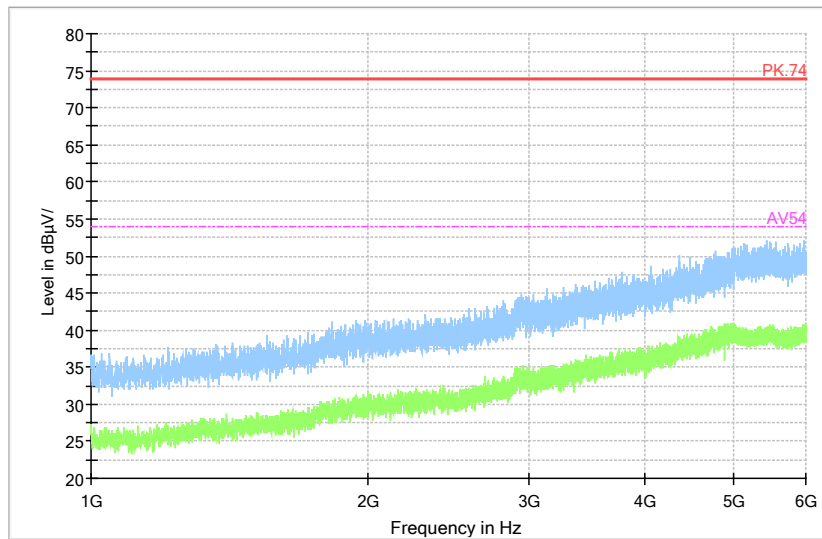
EUT2+charger: refer to Pic18 to Pic20



Pic18. Radiated emission (30MHz – 1GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical

Full Spectrum

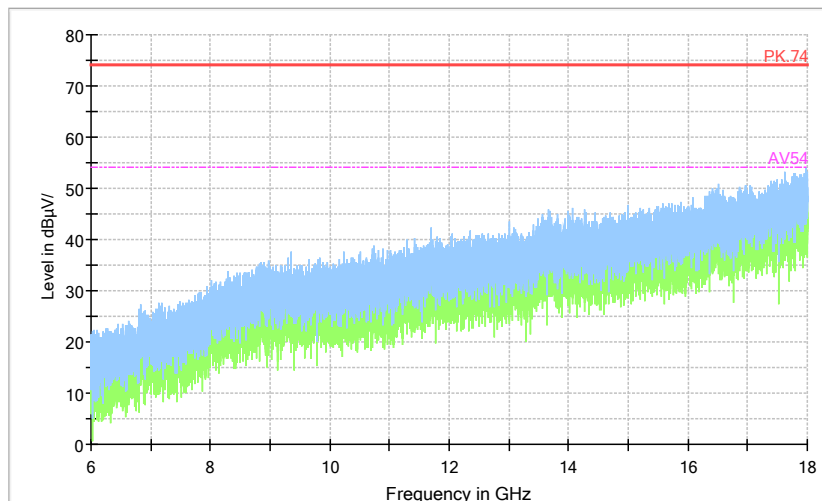


Comment

Pic19. Radiated emission (1GHz –6GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical

Full Spectrum



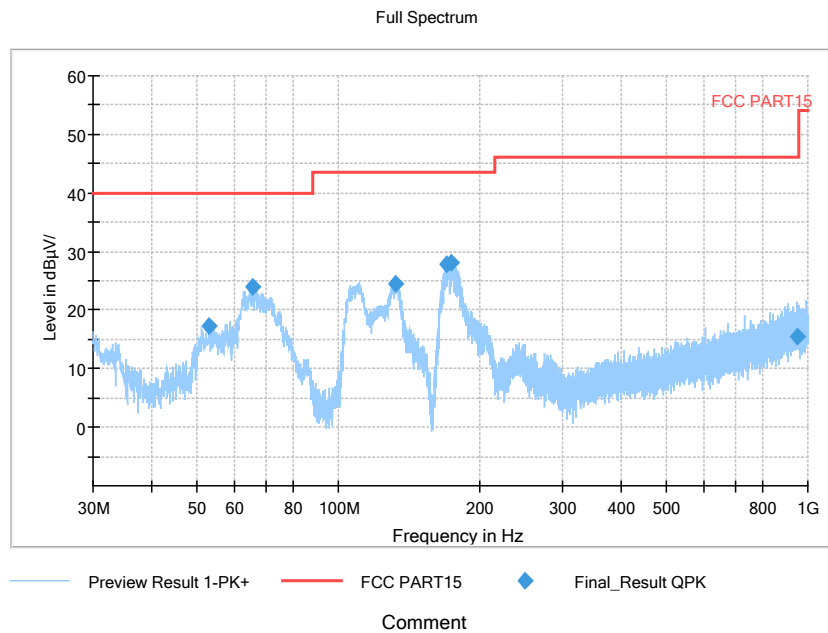
Preview Result 2-AVG Preview Result 1-PK+ PK.74 AV54

Comment

Pic20. Radiated emission (6GHz –18GHz)

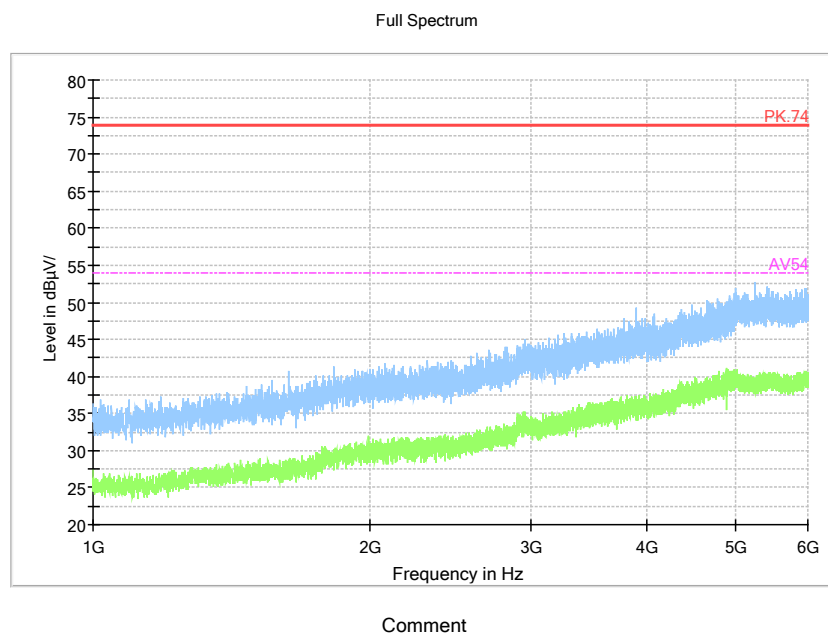
Note: The test data in the graph includes two polarizations: horizontal and vertical

EUT3+charger: refer to Pic21 to Pic23



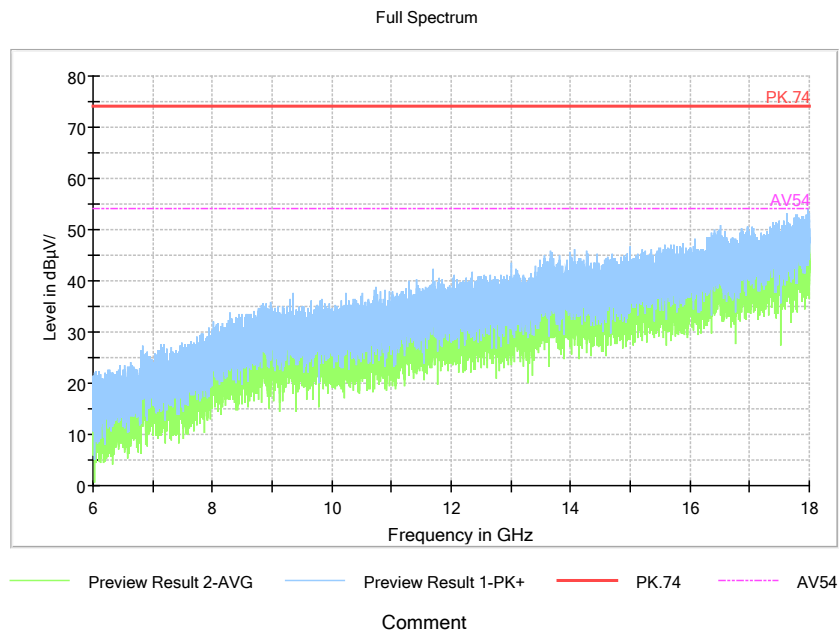
Pic21. Radiated emission (30MHz – 1GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical



Pic22. Radiated emission (1GHz – 6GHz)

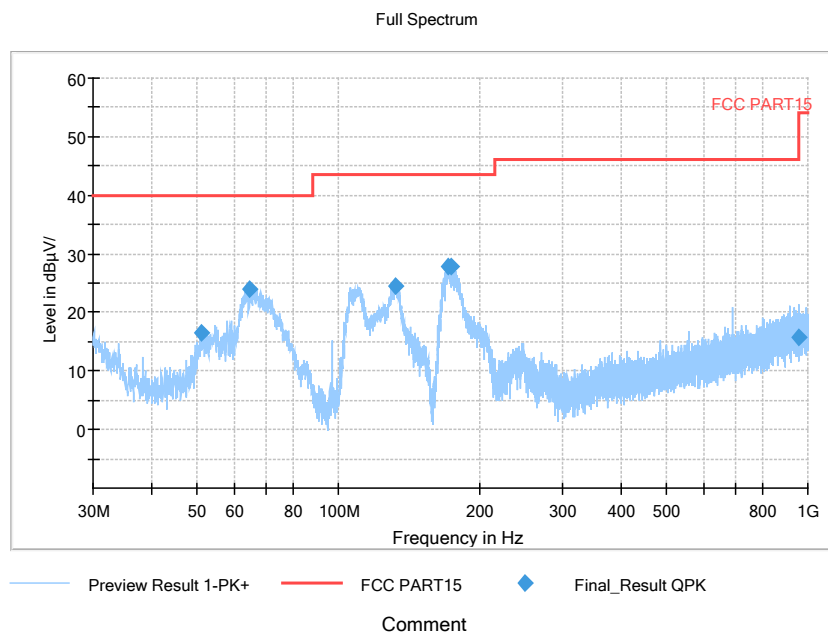
Note: The test data in the graph includes two polarizations: horizontal and vertical



Pic23. Radiated emission (6GHz –18GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical

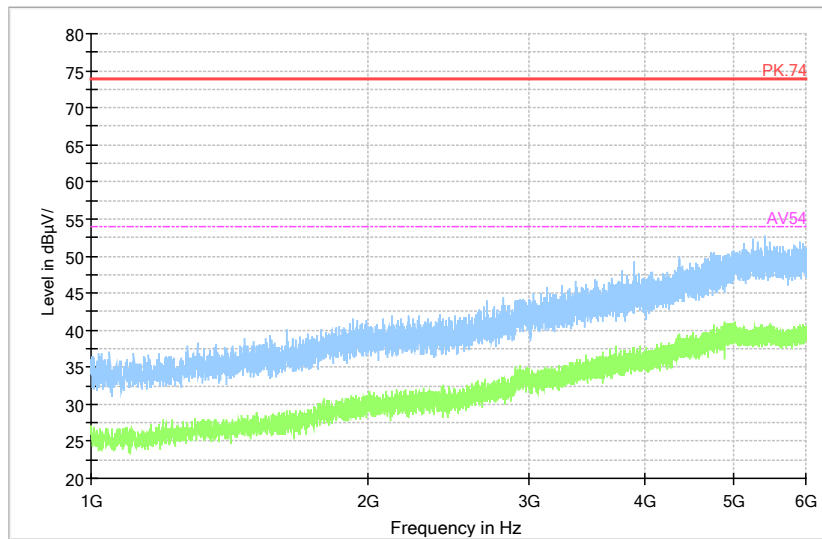
EUT4+charger: refer to Pic24 to Pic26



Pic24. Radiated emission (30MHz – 1GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical

Full Spectrum

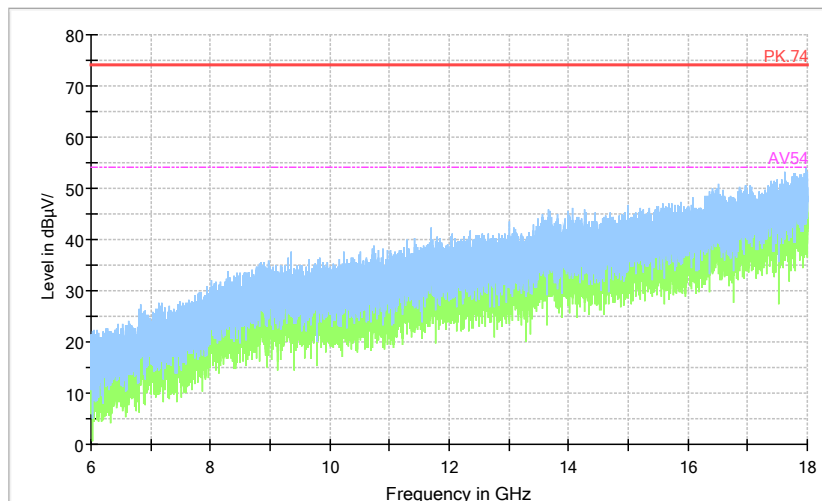


Comment

Pic25. Radiated emission (1GHz –6GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical

Full Spectrum



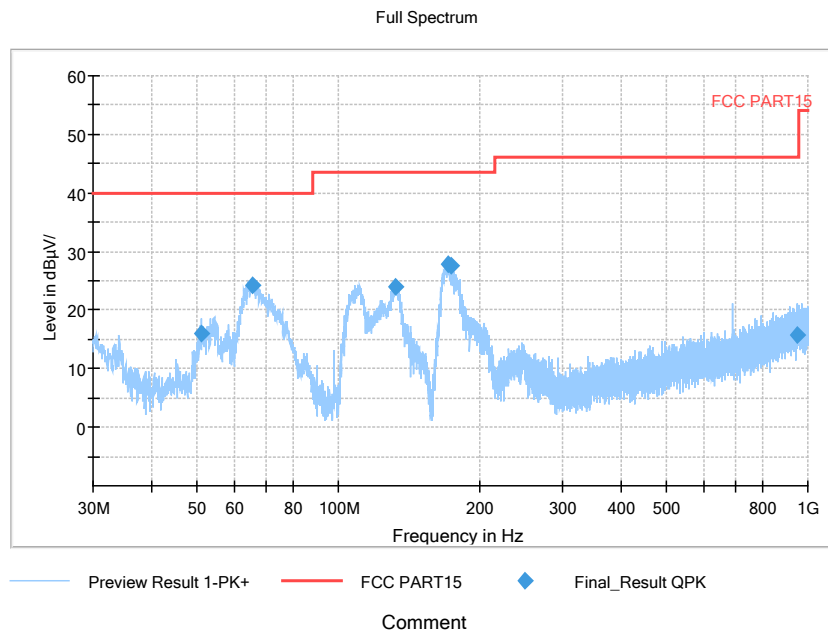
Preview Result 2-AVG Preview Result 1-PK+ PK.74 AV54

Comment

Pic26. Radiated emission (6GHz –18GHz)

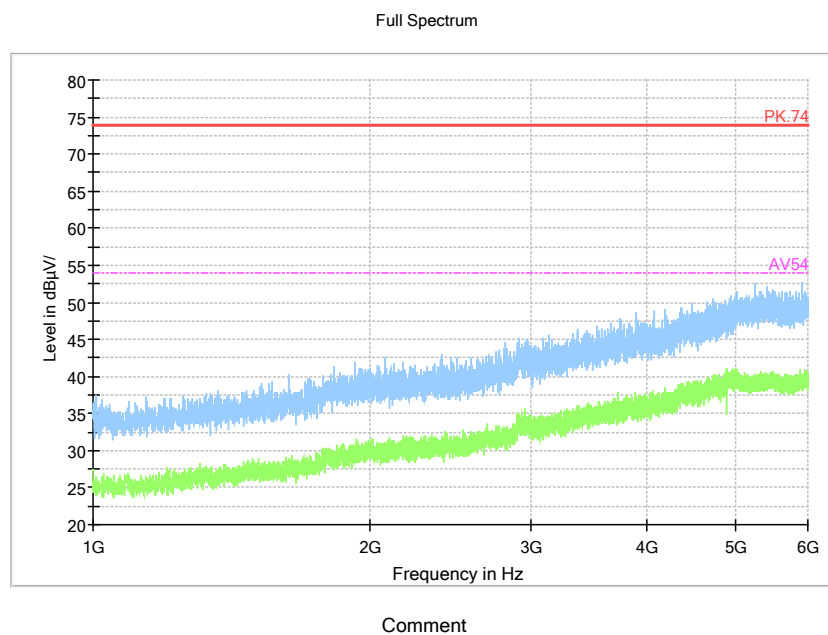
Note: The test data in the graph includes two polarizations: horizontal and vertical

EUT5+charger: refer to Pic27 to Pic29



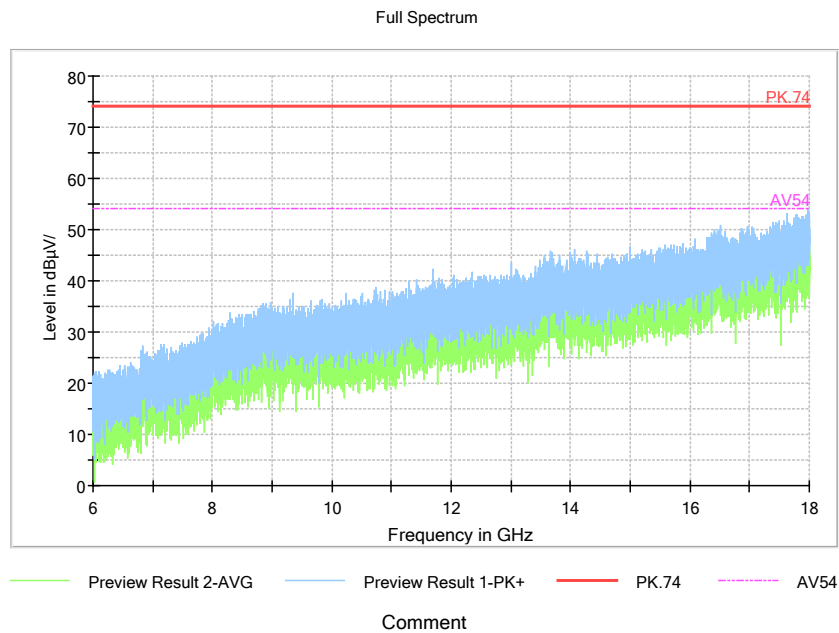
Pic27. Radiated emission (30MHz – 1GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical



Pic28. Radiated emission (1GHz –6GHz)

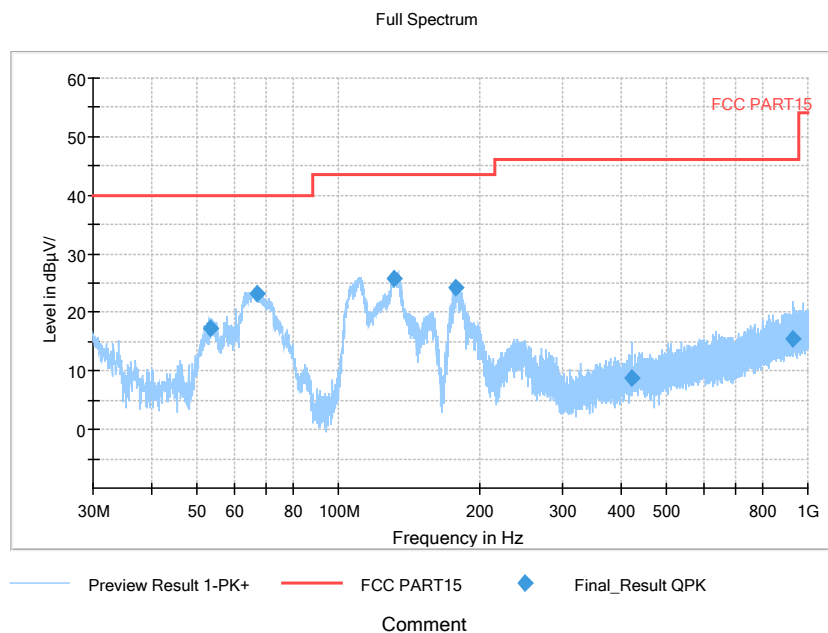
Note: The test data in the graph includes two polarizations: horizontal and vertical



Pic29. Radiated emission (6GHz –18GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical

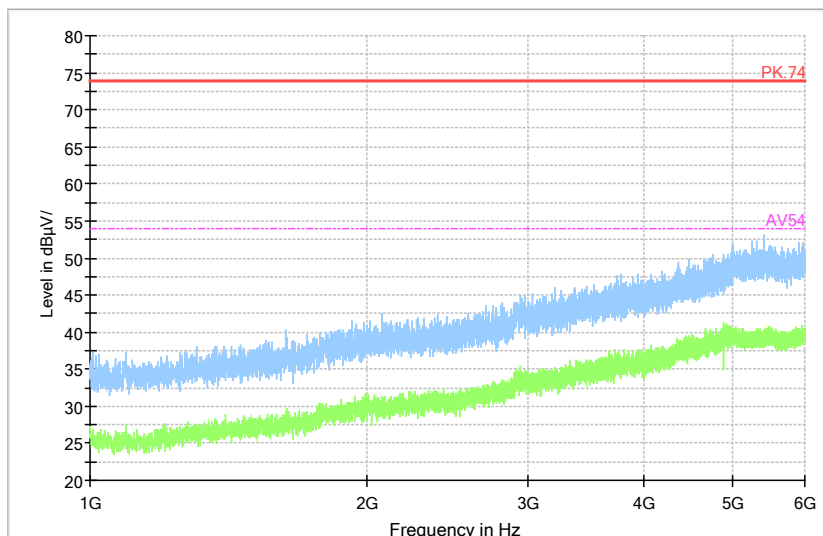
EUT6+charger: refer to Pic30 to Pic32



Pic30. Radiated emission (30MHz – 1GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical

Full Spectrum

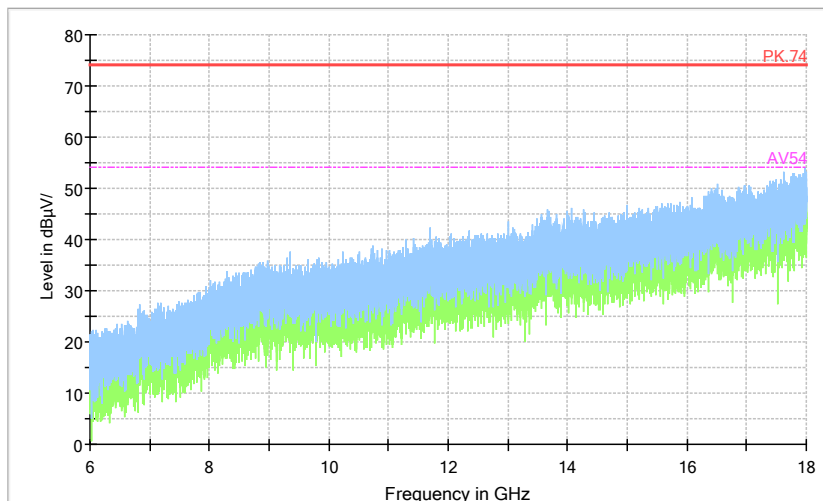


Comment

Pic31. Radiated emission (1GHz –6GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical

Full Spectrum



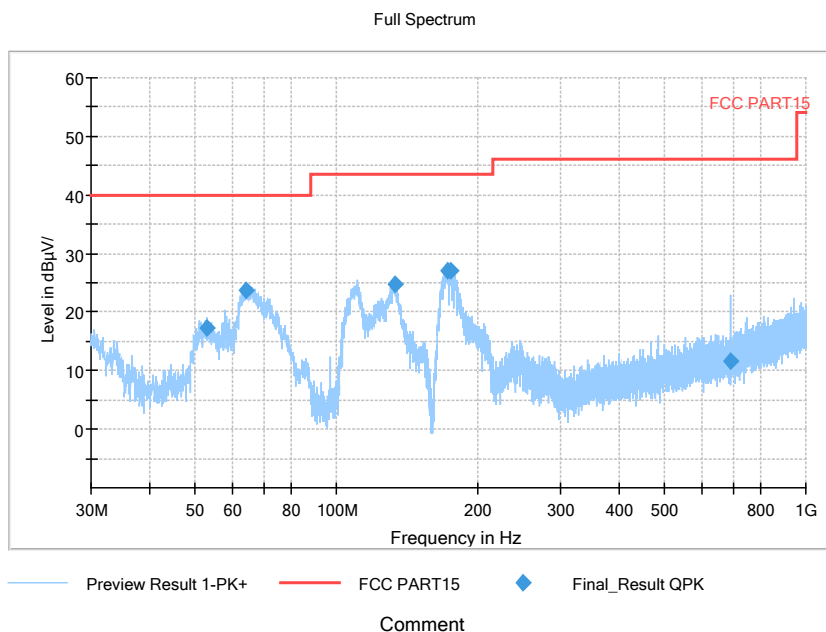
Preview Result 2-AVG Preview Result 1-PK+ PK.74 AV54

Comment

Pic32. Radiated emission (6GHz –18GHz)

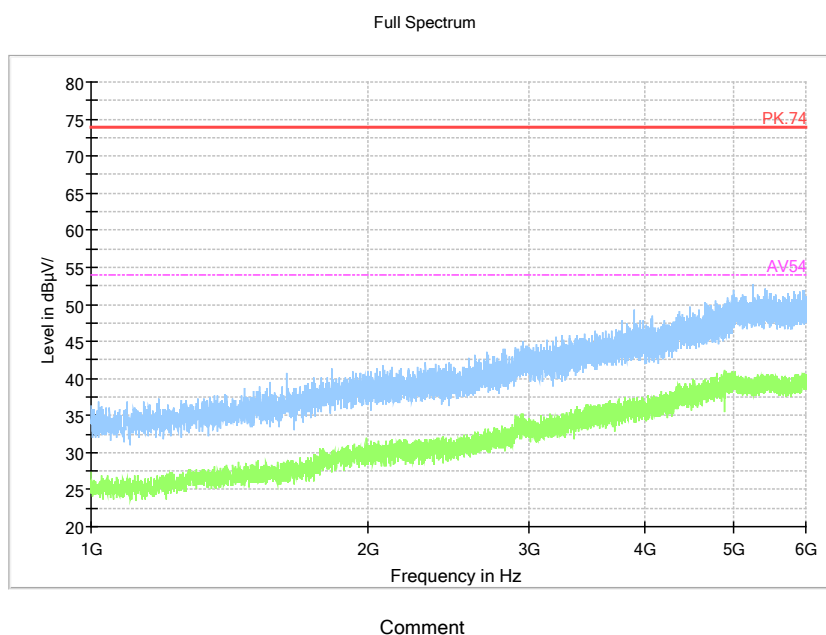
Note: The test data in the graph includes two polarizations: horizontal and vertical

EUT7+charger: refer to Pic33 to Pic35



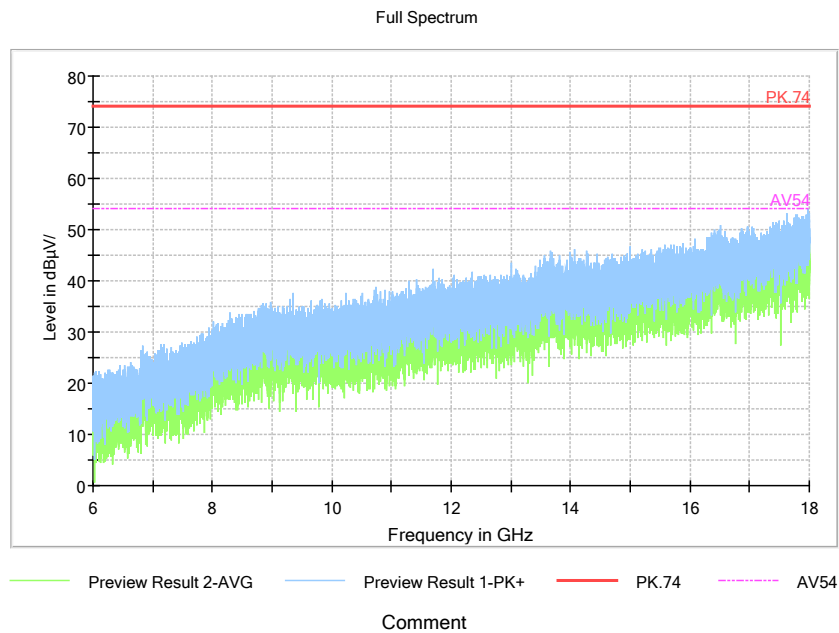
Pic33. Radiated emission (30MHz – 1GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical



Pic34. Radiated emission (1GHz –6GHz)

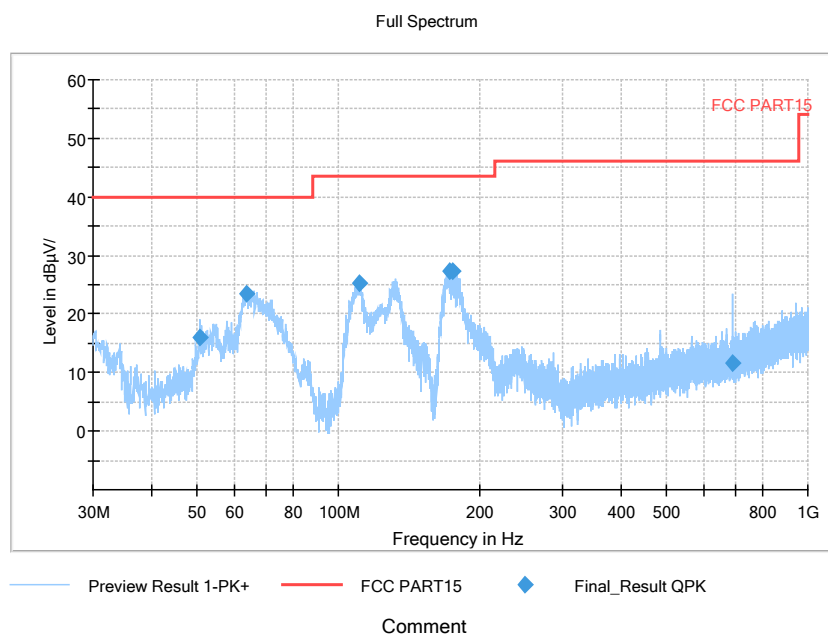
Note: The test data in the graph includes two polarizations: horizontal and vertical



Pic35. Radiated emission (6GHz –18GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical

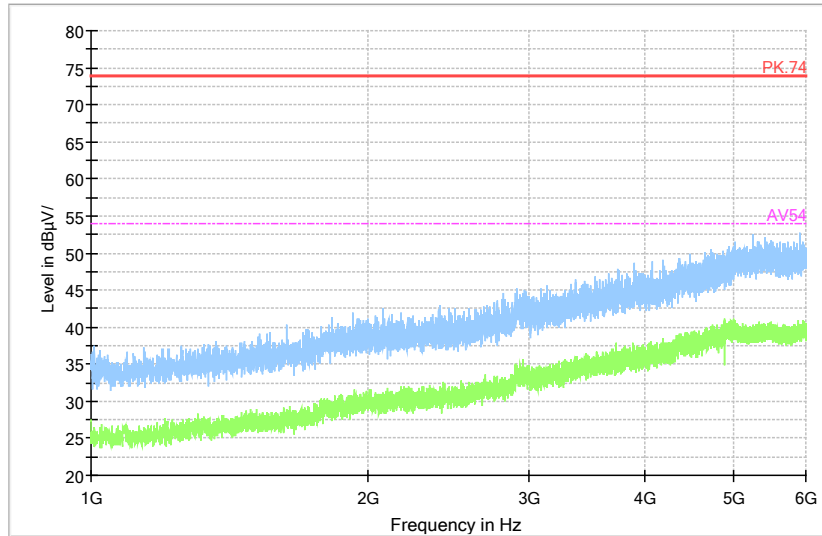
EUT8+charger: refer to Pic36 to Pic38



Pic36. Radiated emission (30MHz – 1GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical

Full Spectrum

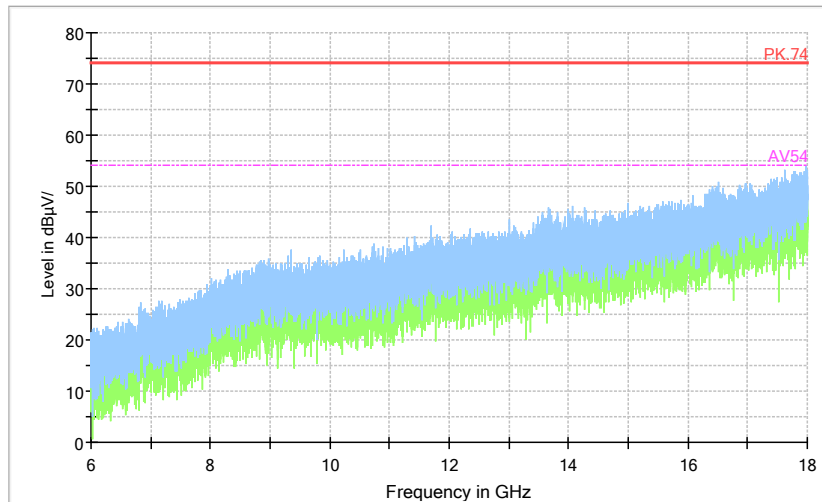


Comment

Pic37. Radiated emission (1GHz –6GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical

Full Spectrum



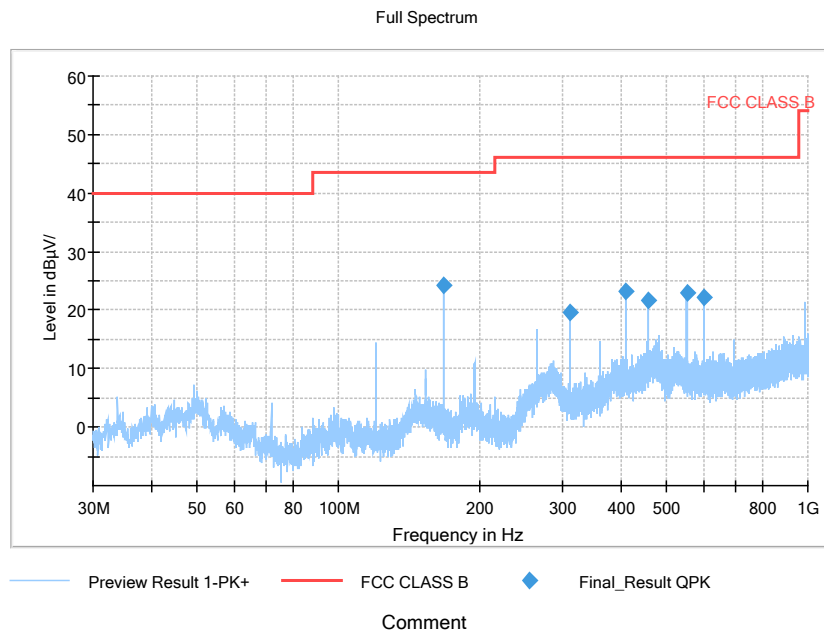
Preview Result 2-AVG Preview Result 1-PK+ PK.74 AV54

Comment

Pic38. Radiated emission (6GHz –18GHz)

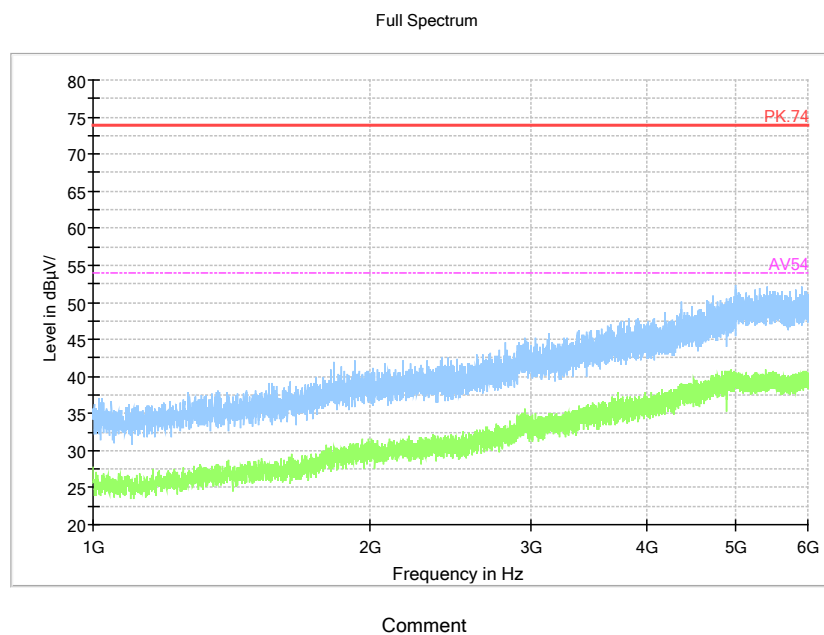
Note: The test data in the graph includes two polarizations: horizontal and vertical

EUT1+ Laptop: refer to Pic39 to Pic41



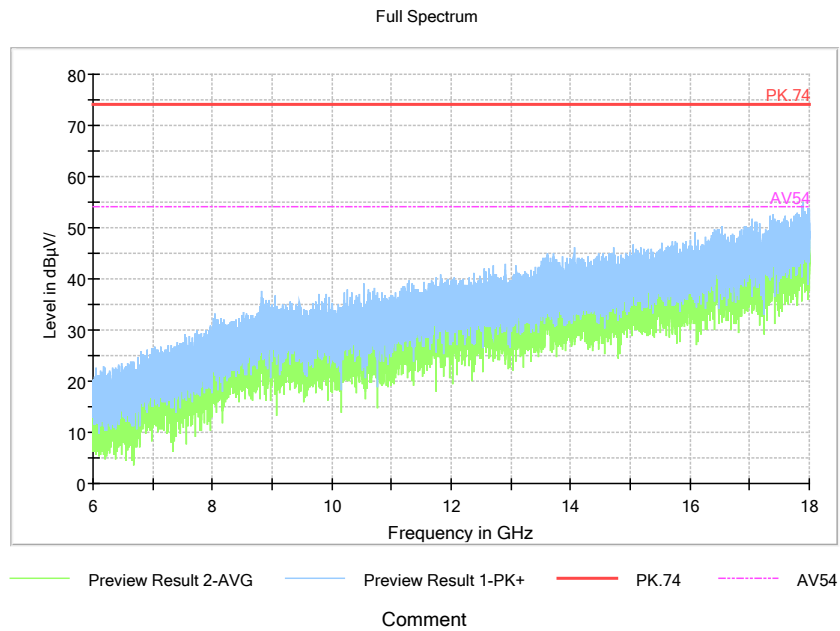
Pic39. Radiated emission (30MHz – 1GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical



Pic40. Radiated emission (1GHz – 6GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical



Pic41. Radiated emission (6GHz –18GHz)

Note: The test data in the graph includes two polarizations: horizontal and vertical

2.3. List of test equipments

No.	Name/Model	Manufacturer	S/N	Calibration Due Date	Calibration Date
1	23.18m×16.88m×9.60mS emi-AnechoicChamber	FRANKONIA	-----	2023.09.05	2018.09.06
2	ESW EMI test receiver	R&S	101574	2022.06.19	2021.06.20
3	ESR3 EMI test receiver	R&S	102361	2022.04.11	2021.04.12
4	9.080m×5.255m×3.525m Shielding room	FRANKONIA	-----	2023.09.05	2018.09.06
5	VULB 9163 Ultra log test antenna	schwarzbeck	867	2023.05.28	2021.05.29
6	HF 907 Double-Ridged Waveguide Horn Antenna	R&S	100512	2023.05.12	2021.05.13
7	SAS-574 Horn Antenna	schwarzbeck	535	2023.06.19	2021.06.20
8	ENV216 AMN	R&S	3560.6550. 12	2022.06.19	2021.06.20
9	EMC32EMI test software	R&S	-----	-----	-----

-----The end-----