
TEST REPORT

Report No.: SRTC2020-9003(F)-0043
Product Name: Smartphone
Model Name: HLTE100E
Applicant: Hisense International Co., Ltd.
Manufacturer: Hisense Communications Co., Ltd.
Specification: FCC Part15B (Certification)
(2019 edition)
FCC ID: 2ADOBHLTE100E

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: Geng Ruifeng
Tel: +86-532-80877742
Email: gengruifeng@hisense.com

1.4 Manufacturer's details

Company: Hisense Communications Co., Ltd.
Address: 218 Qianwangang Road, Qingdao Economic & Technological Development Zone, Qingdao, China
City: Qingdao
Country or Region: China
Contacted person: Deng Tingting
Tel: + 86-532-55753708
Email: dengtingting@hisense.com

1.5 Application details

Date of reception of test sample: 4th September 2020

Date of test: 4th September 2020 to 16th September 2020

1.6 Reference specification

FCC Part 15B, 2019 (Certification)

1.7 Information of EUT

1.7.1 General information

Name of EUT	Smartphone
Model Name	HLTE100E
FCC ID	2ADOBHLTE100E
Frequency Range	GSM: GSM850 / PCS1900 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
Equipment Class	Class B
Power Supply	Battery or Charger
Rated Power Supply Voltage	3.8V
Extreme Temperature	Lowest: -25°C Highest: +50°C
Extreme Voltage	Minimum: 3.5V Maximum: 4.3V
HW Version	FS097-MB-V1.0A
SW Version	Hisense_HLTE100E_20_S01_01_05_MX05 Hisense_HLTE100E_20_SVV_VV_VV_MX05 (VV stands for update software version number) And the update on VV will not change the radio frequency conformance of this product.

1.7.2EUT details

Product Name	Model Name	IMEI
Smartphone	HLTE100E	1#:862359040611375 2#:866696050001617

Note: As the applicant of this model, [Hisense International Co., Ltd.] declares that the product has two the suppliers of TP/LCD/CAM/Memory. Test the main and second supply equipment respectively, and record the results in the test report.

Main Supply: 1#: 862359040611375

Part Name	Model Name	supplier
TP	Y128068H3-R/ Y140071B1-R	GUIZHOU YUYE OPTO-ELECTRONICS CO., LTD
LCD	LQ050KZYP1072A	SHENZHEN EASY QUICK TECHNOLOGY CO., LTD.
CAM	C10966V0; BC15164 V0	SHENZHEN Imaging TECHNOLOGY CO.,LTD
Memory	KMFE10012M-B214	SAMSUNG

Secondary Supply: 2#: 866696050001617

Part Name	Model Name	supplier
TP	YX50A92TSBA00	Shengzhen AGS Optronics Tech(ShenZhen) , co.,
LCD	KV0498FWTS1506A	SHENZHEN KINGDOM SCIENCE & TECHNOLOGY CO.,LTD
CAM	ST-CFKS964FF-V3.0; ST-CFKS964BA-V1.0	Shenzhen Union Image Co.,Ltd
Memory	KMFE60012M-B214	SAMSUNG

1.7.3 Auxiliary equipment details

AE (Auxiliary Equipment) 1#: Laptop

Manufacturer	Lenovo
Model Number	E470c
S/N	PF10VBX6
Input Voltage	100V-240V AC

AE (Auxiliary Equipment) 2#: USB Cable

Manufacturer	SRTC
Model Number	USB-1m-001

AE (Auxiliary Equipment) 3#: Battery

Type	Li-Lon
Manufacturer	Shenzhen Utility Power Source Co.,Ltd.
Model Number	KS100
Capacity	2000mAh
Nominal Voltage	3.8V

AE (Auxiliary Equipment) 4#: Charger

Manufacturer	Shenzhen Tianyin Electronics Co.,Ltd
Model Number	TPA-97050100U01
S/N	/
Input Voltage	100V-240V AC 150mA
Output Voltage	5.0VDC 1000mA

AE (Auxiliary Equipment) 5#: Headset

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

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

2.2 Test result

2.2.1 Conducted Emissions-FCC Part15.107

Ambient condition:

Temperature	Relative humidity	Pressure
24.8°C	40.8%	100.8kPa

Test Setup with laptop:

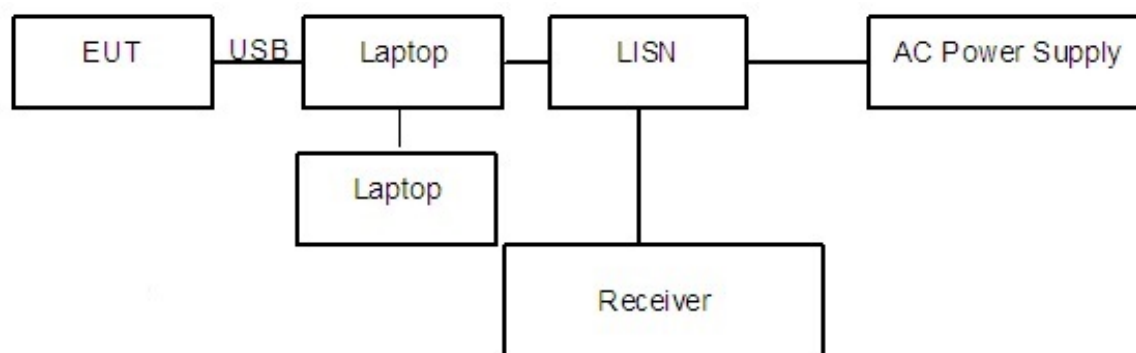


Figure 1

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 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 charger:

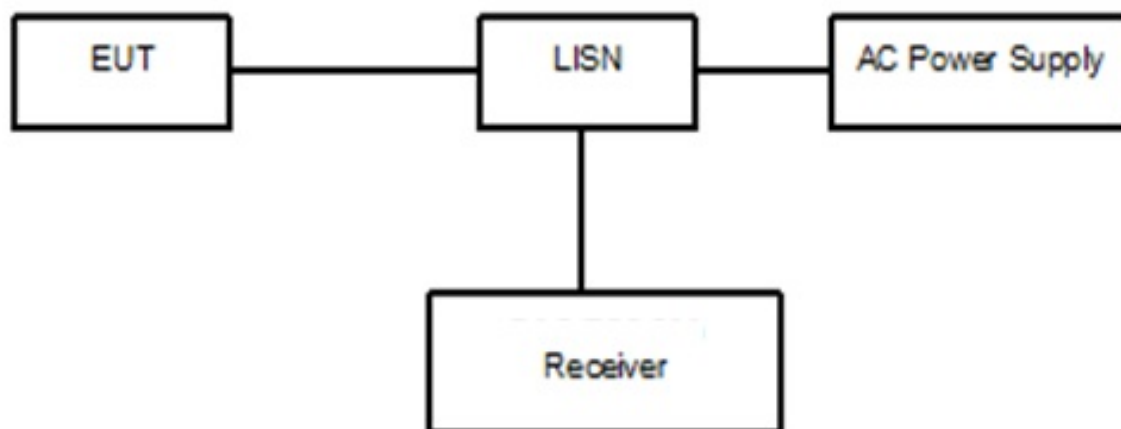


Figure 2

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.

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: $(30.12 \text{ dB}\mu\text{V}) = (0.52 \text{ dB}\mu\text{V}) + (29.6 \text{ dB})$, the corresponding frequency is 0.490477MHz.

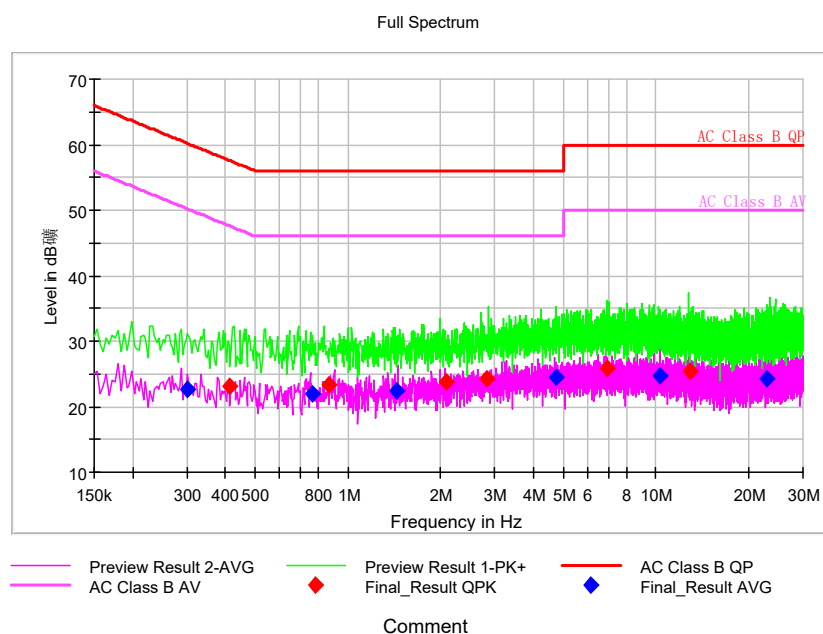
Limit:

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

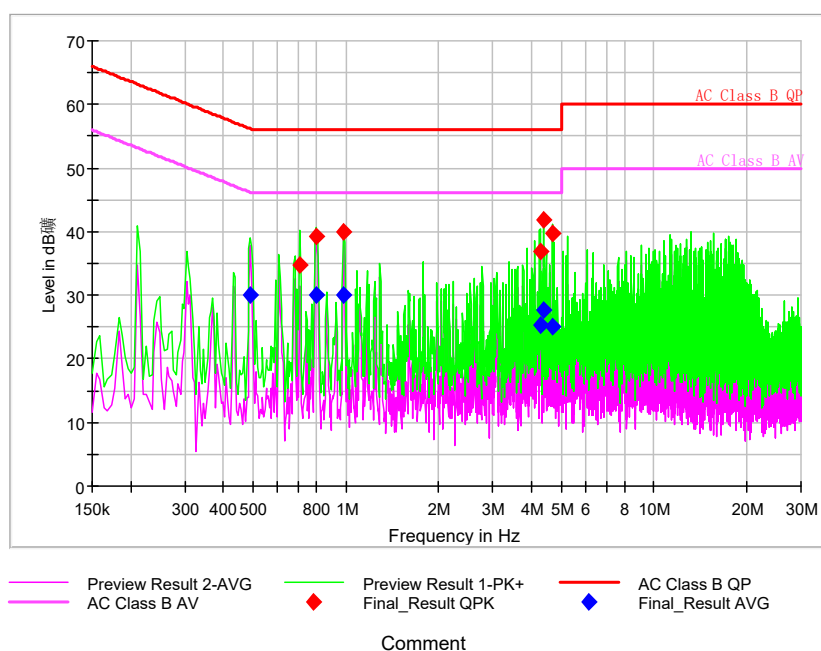
Test result:

Noise Level of the Measuring Instrument



Pic1. Conducted emission L and N Line

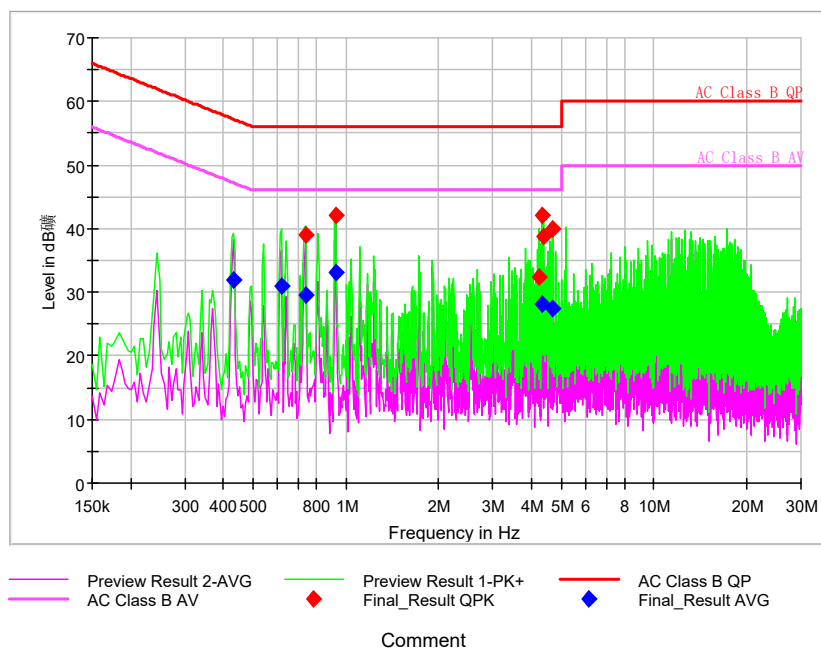
1#EUT + 3#AE: Battery+4# AE: Charger+5# AE: Headset:



Pic2. Conducted emission L&N Line

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	Pmea QuasiPeak (dBμV)	Pmea Average (dBμV)
0.490477	---	30.12	46.16	16.04	L1	29.6	---	0.52
0.705023	34.74	---	56.00	21.26	L1	29.6	5.14	---
0.798305	---	30.10	46.00	15.90	L1	29.6	---	0.5
0.798305	39.32	---	56.00	16.68	L1	29.6	9.72	---
0.984867	39.86	---	56.00	16.14	L1	29.7	10.16	---
0.984867	---	29.97	46.00	16.03	L1	29.7	---	0.27
4.263703	36.96	---	56.00	19.04	L1	29.7	7.26	---
4.263703	---	25.25	46.00	20.75	N	29.7	---	-4.45
4.375641	---	27.68	46.00	18.32	N	29.7	---	-2.02
4.380305	41.81	---	56.00	14.19	L1	29.7	12.11	---
4.683469	---	25.11	46.00	20.89	L1	29.7	---	-4.59
4.683469	39.83	---	56.00	16.17	L1	29.7	10.13	---

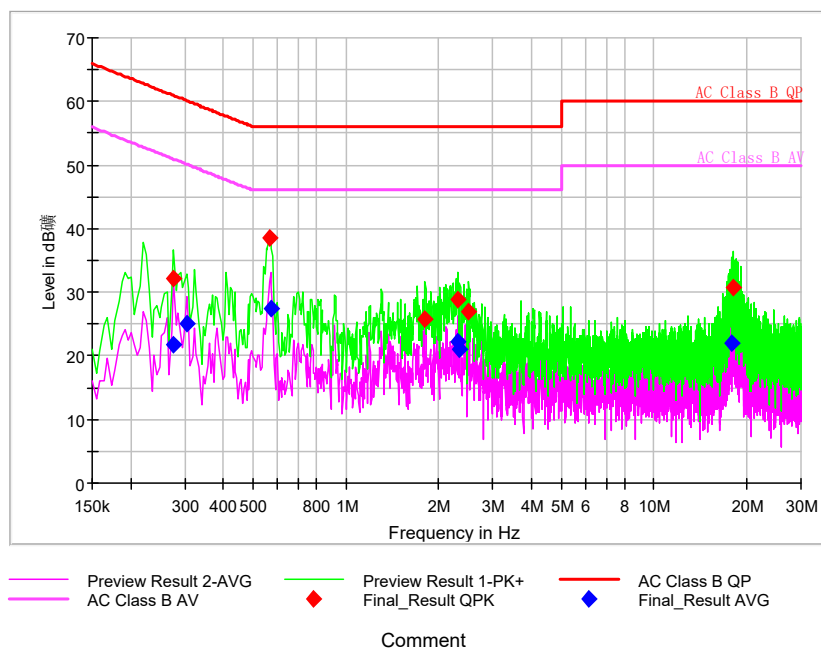
2#EUT + 3#AE: Battery+4# AE: Charger+5# AE: Headset:



Pic3. Conducted emission L&N Line

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	Pmea QuasiPeak (dBμV)	Pmea Average (dBμV)
0.429844	---	31.83	47.26	15.43	L1	29.6	---	2.23
0.616406	---	31.00	46.00	15.00	L1	29.6	---	1.4
0.737672	39.08	---	56.00	16.92	L1	29.6	9.48	---
0.737672	---	29.56	46.00	16.44	N	29.6	---	-0.04
0.924234	---	33.13	46.00	12.87	N	29.7	---	3.43
0.924234	42.11	---	56.00	13.89	L1	29.7	12.41	---
4.226391	32.44	---	56.00	23.56	L1	29.7	2.74	---
4.315008	---	28.09	46.00	17.91	L1	29.7	---	-1.61
4.315008	42.20	---	56.00	13.80	L1	29.7	12.5	---
4.389633	38.76	---	56.00	17.24	L1	29.7	9.06	---
4.692797	---	27.38	46.00	18.62	L1	29.7	---	-2.32
4.692797	39.96	---	56.00	16.04	L1	29.7	10.26	---

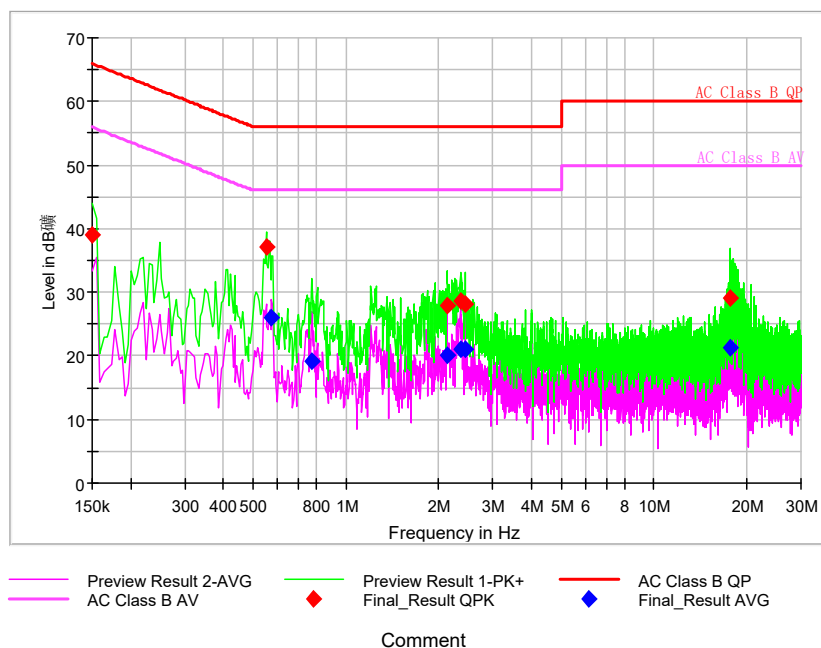
1#EUT + 2# AE: USB Cable+3# AE: Battery +5# AE: Headset+1# AE: Laptop:



Pic4. Conducted emission L&N Line

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	Pmea QuasiPeak (dBμV)	Pmea Average (dBμV)
0.275930	---	21.84	50.94	29.09	L1	29.6	---	-7.76
0.275930	32.14	---	60.94	28.80	L1	29.6	2.54	---
0.303914	---	24.97	50.14	25.17	L1	29.6	---	-4.63
0.565102	38.61	---	56.00	17.39	L1	29.6	9.01	---
0.569766	---	27.52	46.00	18.48	N	29.6	---	-2.08
1.810406	25.84	---	56.00	30.16	L1	29.7	-3.86	---
2.309461	---	22.33	46.00	23.67	N	29.7	---	-7.37
2.314125	28.90	---	56.00	27.10	L1	29.7	-0.8	---
2.346773	---	20.98	46.00	25.02	L1	29.7	---	-8.72
2.510016	26.95	---	56.00	29.05	L1	29.7	-2.75	---
17.910750	---	21.92	50.00	28.08	L1	29.8	---	-7.88
18.120633	30.65	---	60.00	29.35	L1	29.8	0.85	---

2#EUT + 2# AE: USB Cable+3# AE: Battery +5# AE: Headset+1# AE: Laptop:



Pic5. Conducted emission L&N Line

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	Pmea QuasiPeak (dBμV)	Pmea Average (dBμV)
0.150000	39.11	---	66.00	26.89	L1	29.6	9.51	---
0.551109	37.06	---	56.00	18.94	L1	29.6	7.46	---
0.574430	---	26.12	46.00	19.88	N	29.6	---	-3.48
0.774984	---	19.26	46.00	26.74	N	29.6	---	-10.34
2.132227	28.00	---	56.00	28.00	L1	29.7	-1.7	---
2.132227	---	20.20	46.00	25.80	L1	29.7	---	-9.5
2.351438	---	21.05	46.00	24.95	L1	29.7	---	-8.65
2.370094	28.54	---	56.00	27.46	L1	29.7	-1.16	---
2.440055	28.04	---	56.00	27.96	L1	29.7	-1.66	---
2.440055	---	20.98	46.00	25.02	L1	29.7	---	-8.72
17.654227	---	21.28	50.00	28.72	L1	29.8	---	-8.52
17.654227	29.01	---	60.00	30.99	L1	29.8	-0.79	---

2.2.2 Radiated Emissions-FCC Part15.109

Ambient condition:

Temperature	Relative humidity	Pressure
24.6°C	40.2%	100.8kPa

Test Setup:

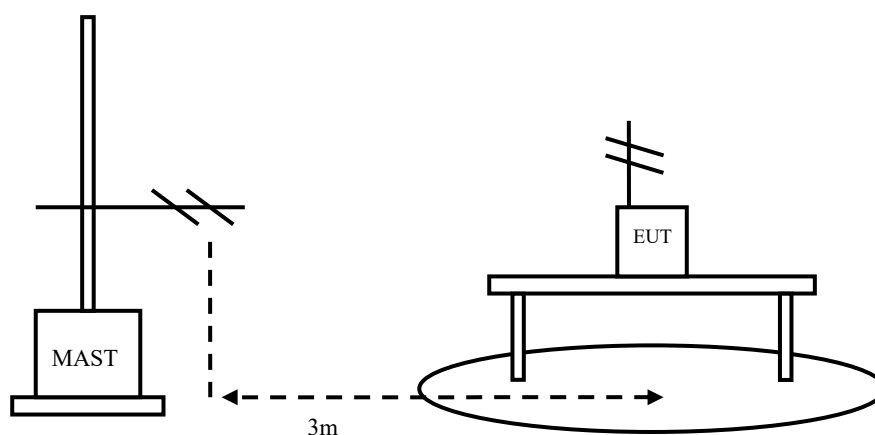


Figure 3

Test Procedure:

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.

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, 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 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: 30MHz<f<1GHz

RBW=1MHz, VBW=3MHz, when the test frequency: f>1GHz

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:

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

Limit:

Frequency of Emission(MHz)	Limits	
	Detector	Unit (dBμV/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:

Sample calculation: $(28.06 \text{ dB } \mu \text{ V/m}) = (48.66 \text{ dB } \mu \text{ V/m}) + (-20.6 \text{ dB})$, the corresponding frequency is 66.643500MHz.

1#EUT + 3#AE: Battery+4# AE: Charger+5# AE: Headset:

Frequency(MHz)	Result(dB μ V/m)	Limit (dB μ V/m)	ARpl (dB)	Pmea (dB μ V/m)	Polarity
66.643500	28.06	40.00	-20.6	48.66	V
66.717500	27.95	40.00	-20.6	48.55	V
68.760500	28.00	40.00	-21.2	49.2	V
69.439500	28.31	40.00	-21.5	49.81	V
69.499000	28.18	40.00	-21.5	49.68	V
69.524500	27.58	40.00	-21.5	49.08	V

2#EUT + 3#AE: Battery+4# AE: Charger+5# AE: Headset:

Frequency(MHz)	Result(dB μ V/m)	Limit (dB μ V/m)	ARpl (dB)	Pmea (dB μ V/m)	Polarity
66.772000	29.98	40.00	-20.6	50.58	V
67.154000	29.19	40.00	-20.7	49.89	V
69.294000	29.96	40.00	-21.4	51.36	V
69.496500	30.13	40.00	-21.5	51.63	V
69.522000	30.16	40.00	-21.5	51.66	V
69.809500	29.63	40.00	-21.6	51.23	V

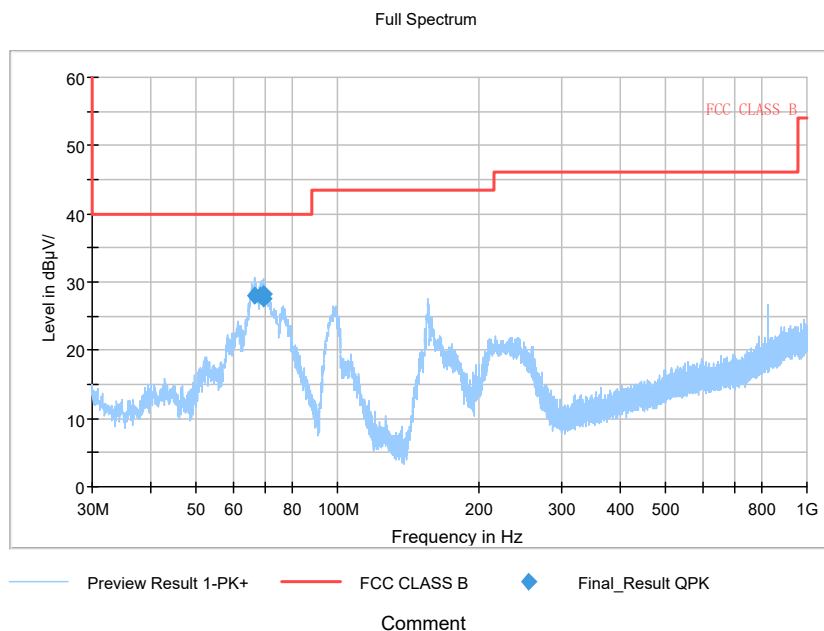
1#EUT + 2# AE: USB Cable+3# AE: Battery +5# AE: Headset+1# AE: Laptop:

Frequency(MHz)	Result(dB μ V/m)	Limit (dB μ V/m)	ARpl (dB)	Pmea (dB μ V/m)	Polarity
65.947500	22.35	40.00	-20.4	42.75	V
66.044500	23.53	40.00	-20.4	43.93	V
168.002500	37.05	43.50	-20.8	57.85	H
263.992500	35.18	46.00	-16.1	51.28	H
455.995500	36.13	46.00	-10.4	46.53	H
504.010500	31.69	46.00	-9.2	40.89	H

2#EUT + 2# AE: USB Cable+3# AE: Battery +5# AE: Headset+1# AE: Laptop:

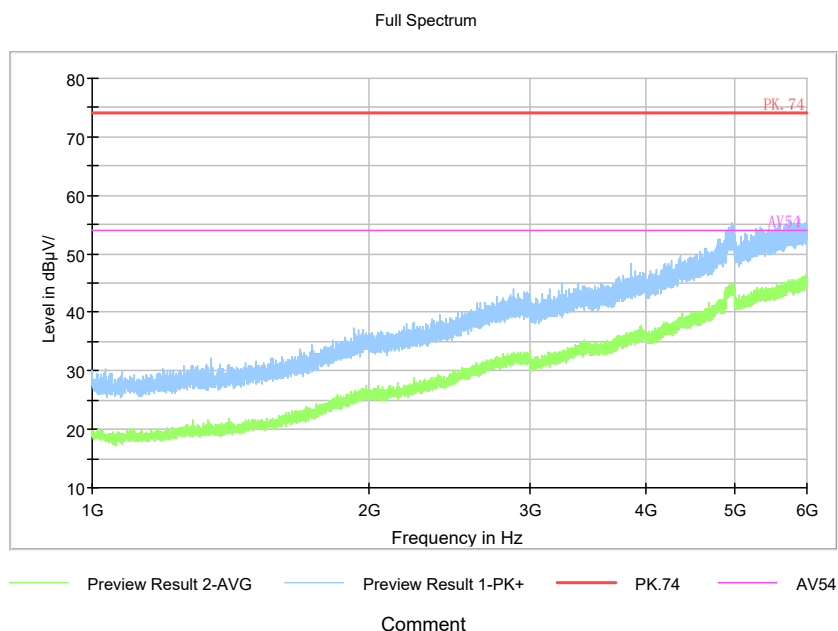
Frequency(MHz)	Result(dB μ V/m)	Limit (dB μ V/m)	ARpl (dB)	Pmea (dB μ V/m)	Polarity
168.001500	31.87	43.50	-20.8	52.67	V
263.942000	33.12	46.00	-16.1	49.22	V
311.975000	38.14	46.00	-14.7	52.84	H
456.016000	34.05	46.00	-10.4	44.45	H
743.992000	32.01	46.00	-4.5	36.51	V
839.974000	31.92	46.00	-2.6	34.52	V

1#EUT + 3#AE: Battery+4# AE: Charger+5# AE: Headset: refer to Pic6, Pic7, Pic8



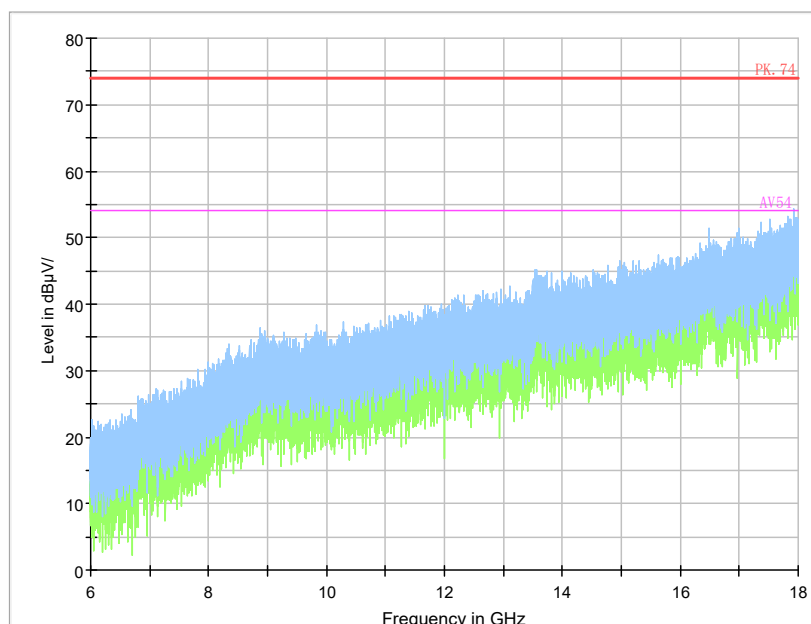
Pic6. Radiated emission(30MHz – 1GHz)

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



Pic7. Radiated emission (1GHz –6GHz)

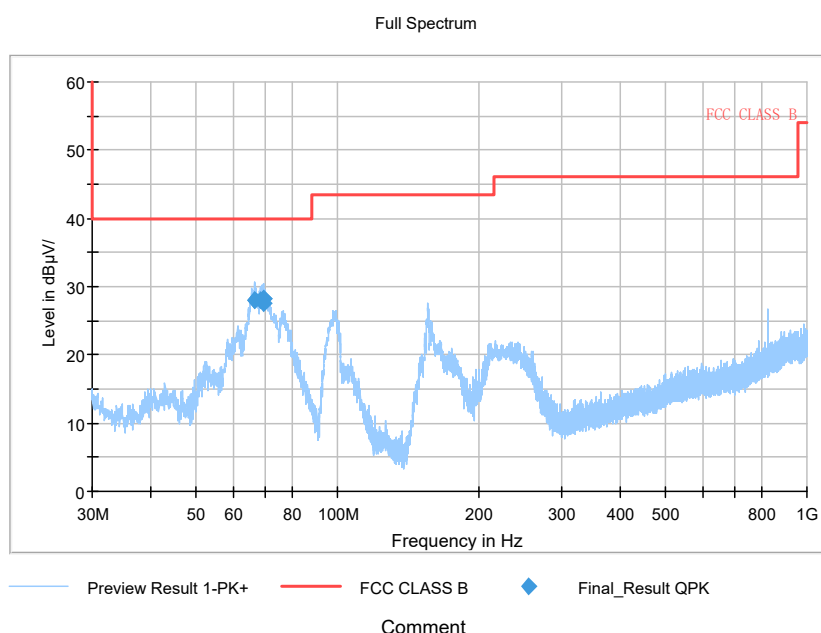
Note: The test data in the graph includes two polarizations: horizontal and vertical.



Pic8. Radiated emission (6GHz –18GHz)

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

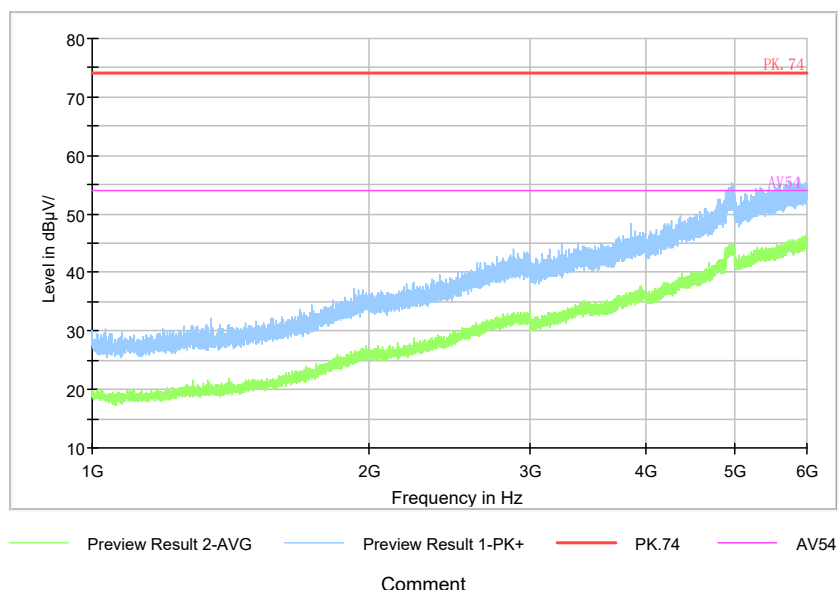
2#EUT+ 3#AE: Battery+4# AE: Charger+5# AE: Headset: refer to Pic9, Pic10, Pic11



Pic9. Radiated emission(30MHz – 1GHz)

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

Full Spectrum

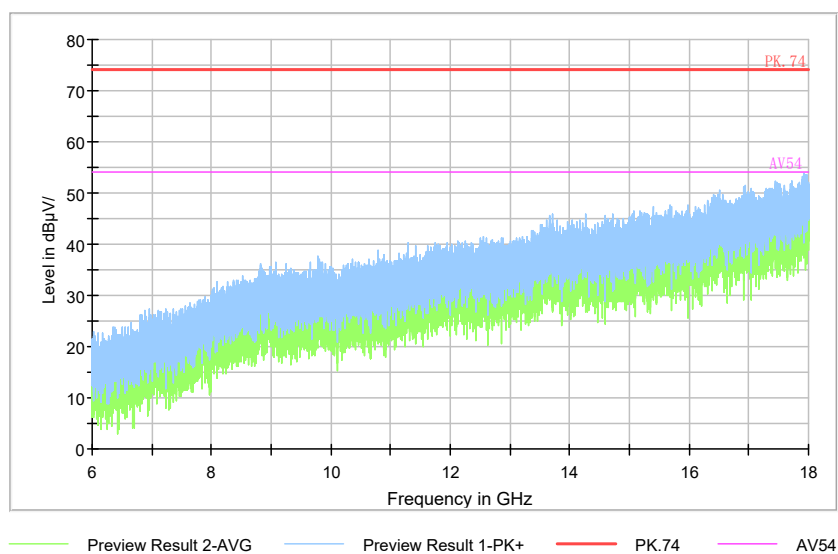


Comment

Pic10. Radiated emission (1GHz –6GHz)

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

Full Spectrum

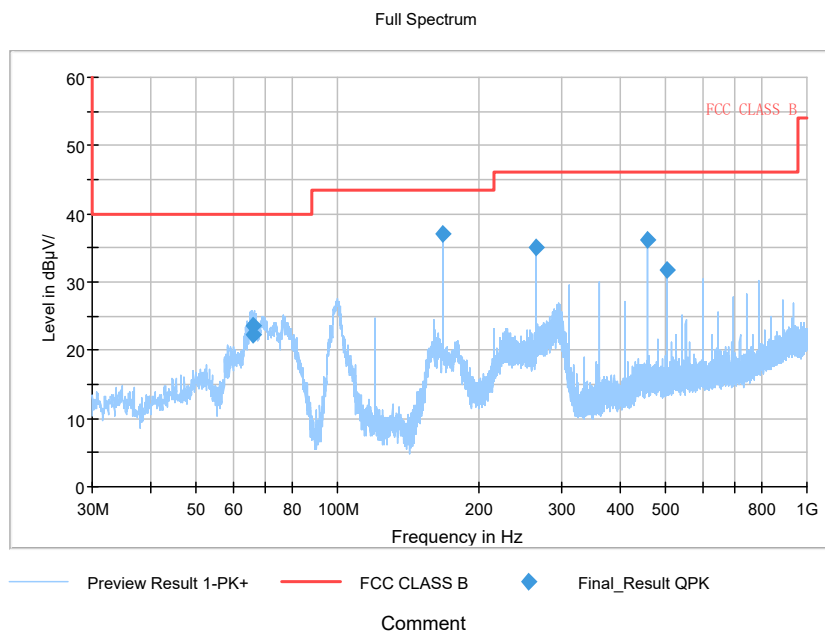


Comment

Pic11. Radiated emission (6GHz –18GHz)

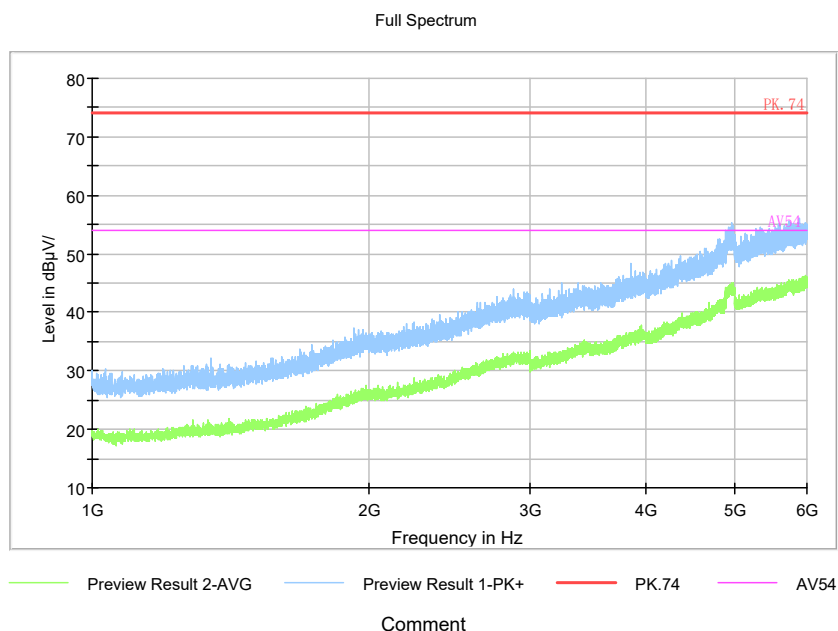
Note: The test data in the graph includes two polarizations: horizontal and vertical.

1#EUT + 2# AE: USB Cable+3# AE: Battery +5# AE: Headset+1# AE: Laptop: refer to Pic12, Pic13, Pic14



Pic12. Radiated emission(30MHz – 1GHz)

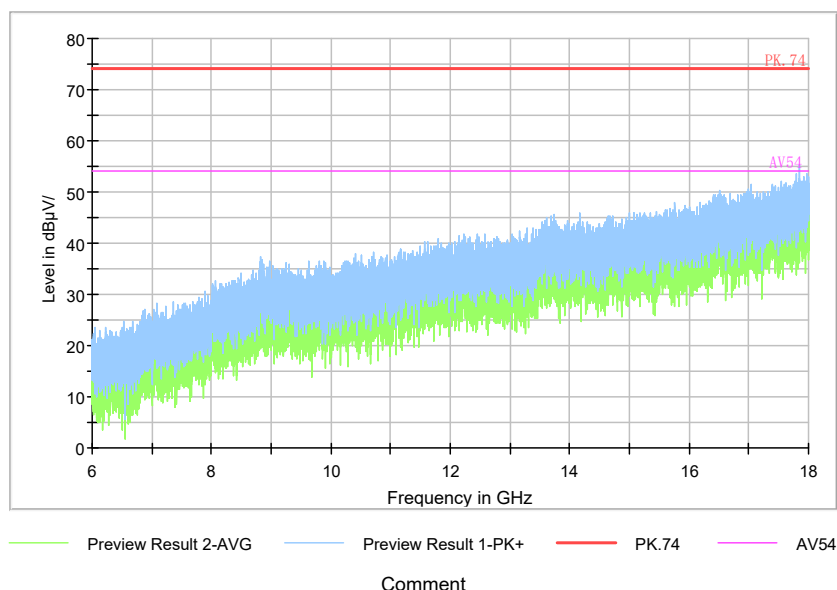
Note: The test data in the graph includes two polarizations: horizontal and vertical



Pic13. Radiated emission (1GHz –6GHz)

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

Full Spectrum



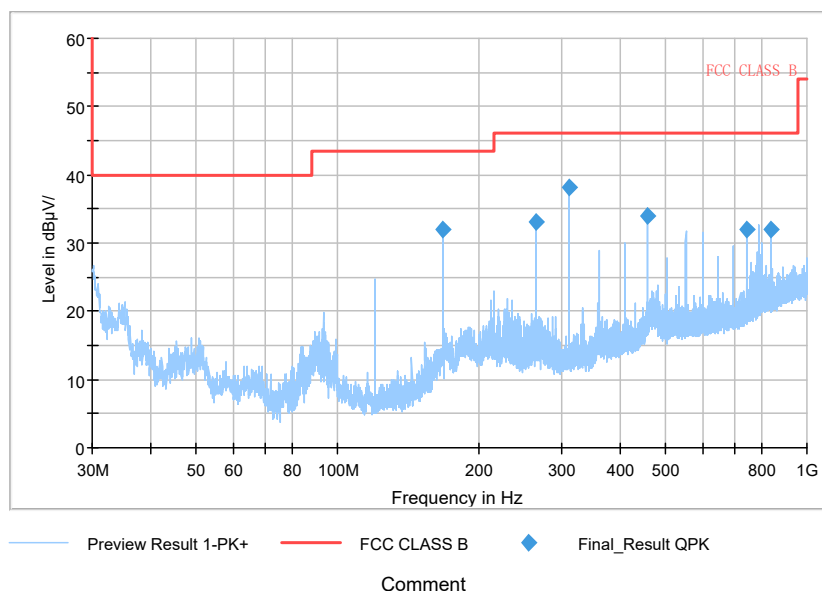
Comment

Pic14. Radiated emission (6GHz –18GHz)

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

2#EUT + 2# AE: USB Cable+3# AE: Battery +5# AE: Headset+1# AE: Laptop: refer to Pic15, Pic16, Pic17

Full Spectrum

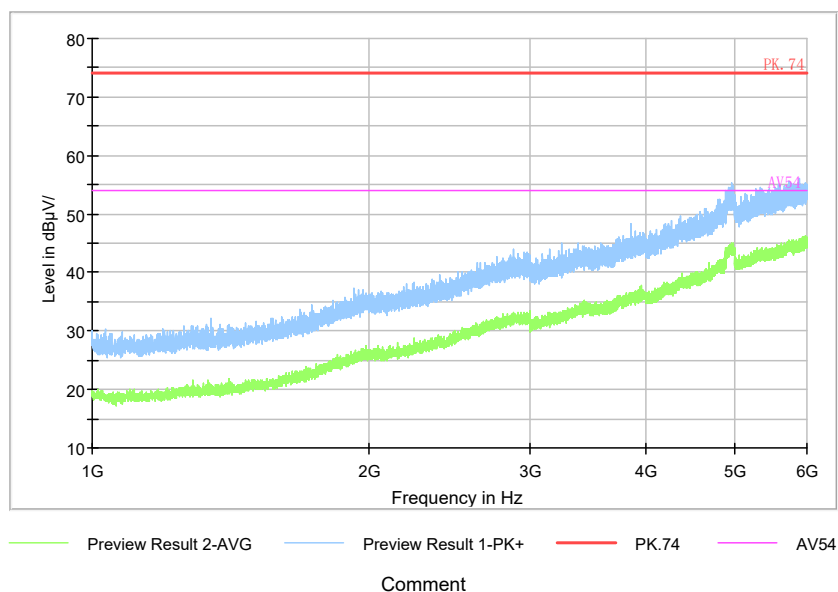


Comment

Pic15. Radiated emission(30MHz – 1GHz)

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

Full Spectrum

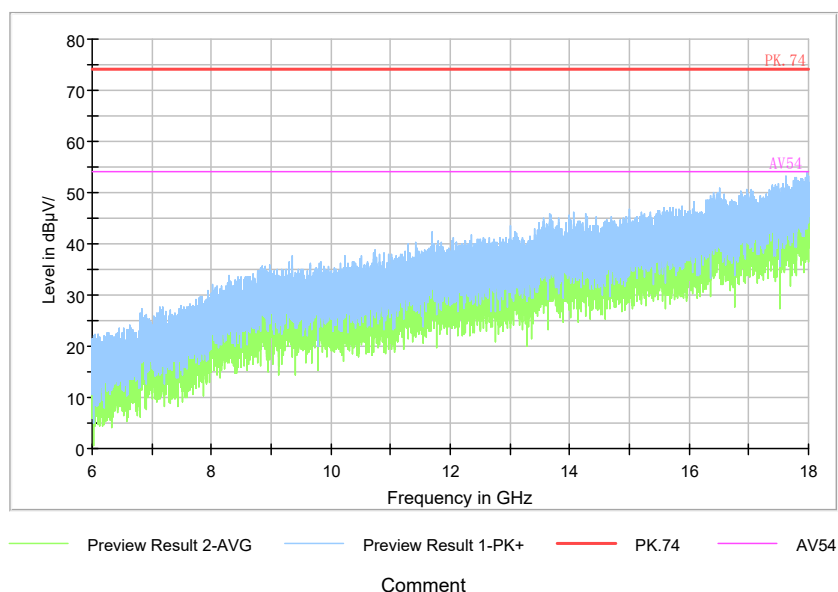


Comment

Pic16. Radiated emission (1GHz –6GHz)

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

Full Spectrum



Comment

Pic17. 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	-----	5th Sep. 2021	6th Sep. 2016
2	ESW EMI test receiver	R&S	101574	20th Aug. 2021	20th Aug. 2020
3	9.080m×5.255m×3.525m Shielding room	FRANKONIA	-----	5th Sep. 2021	6th Sep. 2016
4	ESR3 EMI test receiver	R&S	100280	20th Apr. 2021	21th Apr. 2020
5	VULB 9163Ultra log test antenna	R&S	867	25th Mar. 2021	25th Mar. 2020
6	ENV216 AMN	R&S	101881	20th Aug. 2021	20th Aug. 2020
7	HF 907 Double-Ridged Waveguide Horn Antenna	R&S	100512	25th Mar. 2021	25th Mar. 2020
8	SAS-574 Double-Ridged Waveguide Horn Antenna	A.H.SYSTEMS	2581	21th Apr. 2023	22th Apr. 2020
9	PS2000 Turn Table	FRANKONIA	-----	-----	-----
10	MA260 Antenna Master	FRANKONIA	-----	-----	-----
11	EMC32EMI test software	R&S	-----	-----	-----

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