
TEST REPORT

Report No.: SRTC2021-9003(F)-0008
Product Name: Mobile Phone
Model Name: HLTE222E
Applicant: Hisense International Co., Ltd.
Manufacturer: Hisense Communications Co., Ltd.
Specification: FCC Part15B (Certification)
(2020 edition)
FCC ID: 2ADOBHLTE222E

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: Zhang He
Tel: +86-532-55753718
Email: zhanghe1@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: Zhang He
Tel: +86-532-55753718
Email: zhanghe1@hisense.com

1.5 Application details

Date of reception of test sample: 12th April 2021

Date of test: 12th April 2021 to 27th April 2021

1.6 Reference specification

FCC Part 15B, 2020 (Certification)

1.7 Information of EUT

1.7.1 General information

Name of EUT	Mobile Phone
Model Name	HLTE222E
FCC ID	2ADOBHLTE222E
Frequency Range	GSM: GSM850 / PCS1900 WCDMA: FDD II / FDD IV / FDD V LTE: FDD 2/ FDD 4/ FDD 5/ FDD 7/ FDD 12/FDD 26 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: -20°C Highest: +55°C
Extreme Voltage	Minimum: 3.55V Maximum: 4.35V
HW Version	A563-MB-V1.2
SW Version	Android 11

1.7.2EUT details

Product Name	Model Name	IMEI
Mobile Phone	HLTE222E	865246050001711/865246050001091

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

Main Supply: 1#: 865246050001711

Part Name	Model Name	supplier
CTP	Y147069C1-R	JIANG XI HUAYU WISDOM TECHNOLOGY CO., LTD
FLASH	ZD53D16GA062FA	KINGSTON(AF)
battery	LPN440400	Shenzhen Aerospace Electronic Co., Ltd.

Secondary Supply: 2#: 865246050001091

Part Name	Model Name	supplier
CTP	YX60100TS	AGS Optronics (Shenzhen) Co., Ltd.
FLASH	GD82B32MJ0-41M2	ZETTA
battery	LPN440400	Shenzhen Powercom Electronic Co., Ltd.

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	Dongguan Keling Electronic Technology Co., Ltd.
Model Number	KS222

AE (Auxiliary Equipment) 3#: Charger

Manufacturer	Shenzhen Tianyin Electronics Co., Ltd
Model Number	TPA-97050100UU
S/N	/

Input Voltage	100-240V AC 0.15A
Output Voltage	5.0VDC 1A

AE (Auxiliary Equipment) 4#: Headset

Manufacturer	Dongguan Keling Electronic Technology Co., Ltd.
Model Number	KS222

AE (Auxiliary Equipment) 5#: Battery1

Manufacturer	Shenzhen Aerospace Electronic Co., Ltd.
Model Number	LPN440400

AE (Auxiliary Equipment) 6#: Battery 2

Manufacturer	Shenzhen Powercom Electronic Co., Ltd.
Model Number	LPN440400

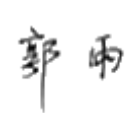
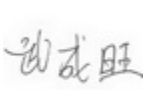
Note1: As the information described in these above tables, the relevant tests have been performed in order to verify in which supply would have the worst features. When the EUT1# exercised with 2# USB Cable, 3# Charger,, 4# Headset, 5# Battery1 is the worst feature, and record the results in the test report.

Note2: AE1# Laptop was selected by testing laboratory and was only cooperated with this test, not for sale.

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: 2021.04.30

2.2 Test result

2.2.1 Conducted Emissions-FCC Part15.107

Ambient condition:

Temperature	Relative humidity	Pressure
21.9°C	40.2%	100.8kPa

Test Setup with laptop:

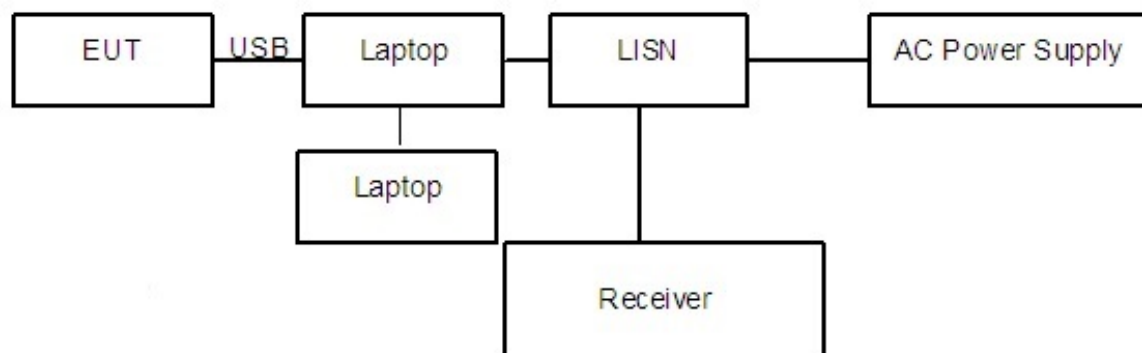


Figure 1

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:

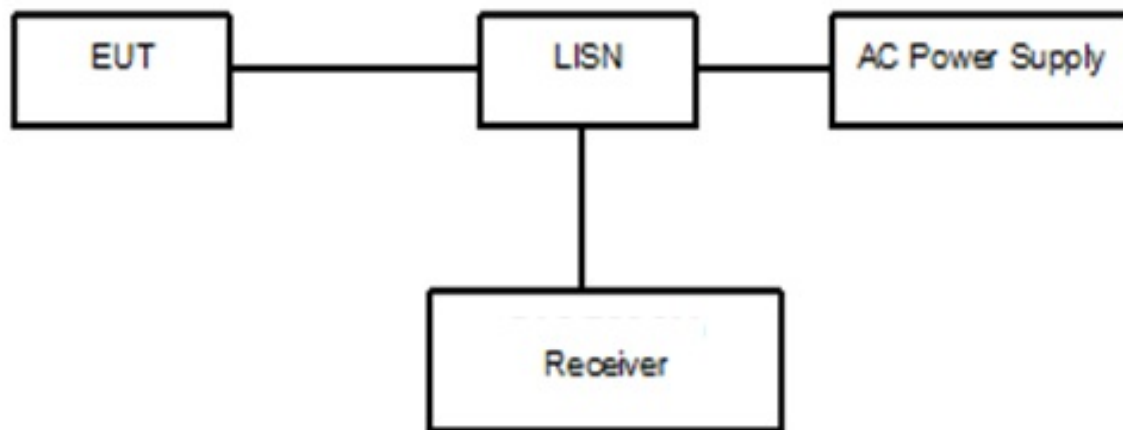


Figure 2

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: $(43.09 \text{ dB}\mu\text{V}) = (13.39 \text{ dB}\mu\text{V}) + (29.7 \text{ dB})$, the corresponding frequency is 0.324836MHz.

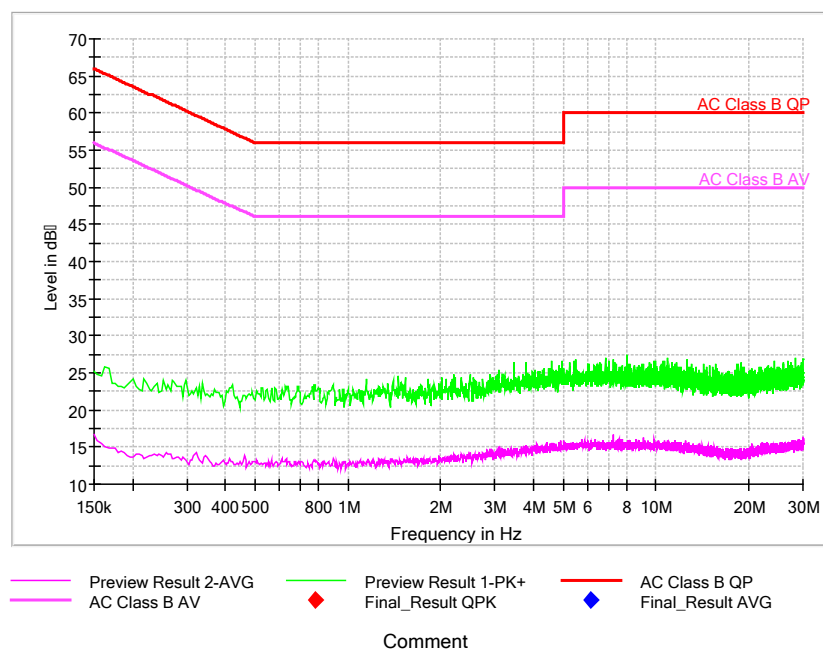
Limit:

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:

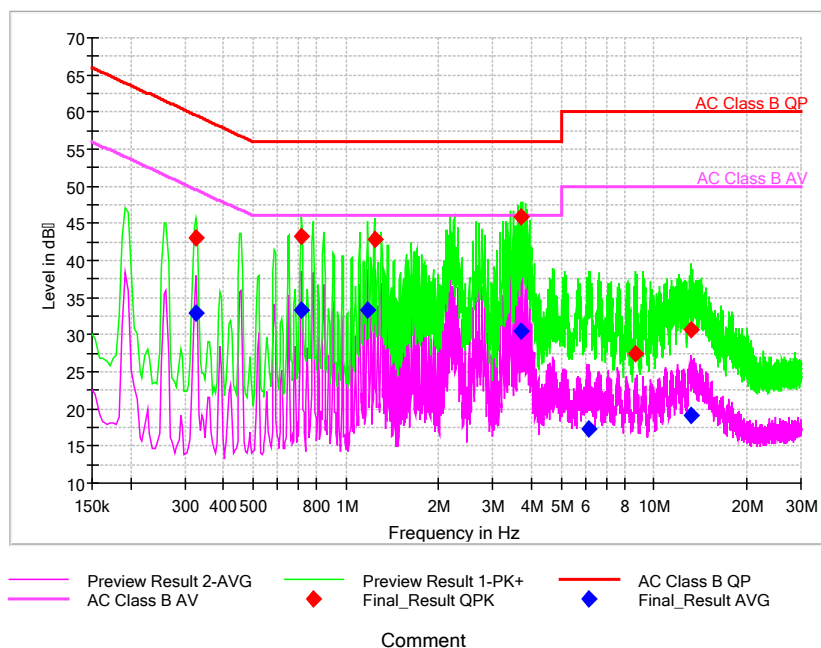
Noise Level of the Measuring Instrument



Pic1. Conducted emission L and N Line

240VAC:

EUT1# + 2#AE: USB Cable+3# AE: Charger+4# AE: Headset+5# AE: Battery1:

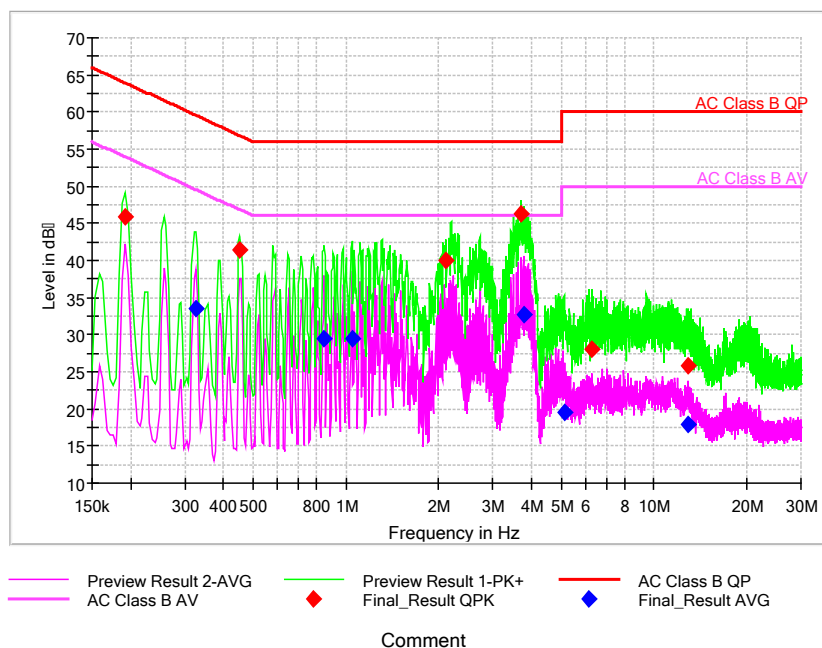


Pic2. Conducted emission L&N Line

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	Pmea QuasiPeak (dBμV)	Pmea Average (dBμV)
0.324836	43.09	---	59.58	16.49	L1	29.7	13.39	---
0.324836	---	33.00	49.58	16.58	L1	29.7	---	3.3
0.717150	---	33.27	46.00	12.73	L1	29.7	---	3.57
0.717150	43.21	---	56.00	12.79	L1	29.7	13.51	---
1.173429	---	33.24	46.00	12.76	N	29.8	---	3.44
1.237393	42.90	---	56.00	13.10	L1	29.8	13.1	---
3.689357	---	30.57	46.00	15.43	N	29.8	---	0.77
3.689357	45.93	---	56.00	10.07	L1	29.8	16.13	---
6.141321	---	17.22	50.00	32.78	L1	29.8	---	-12.58
8.708421	27.37	---	60.00	32.63	L1	29.9	-2.53	---
13.147543	---	19.09	50.00	30.91	L1	30.0	---	-10.91
13.147543	30.68	---	60.00	29.32	L1	30.0	0.68	---

120VAC:

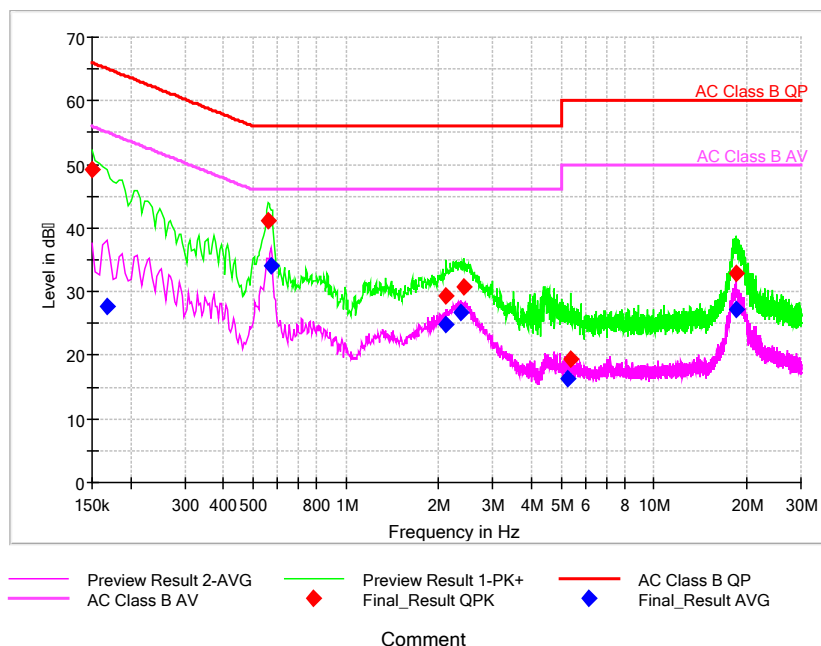
EUT1# + 2#AE: USB Cable+3# AE: Charger+4# AE: Headset+5# AE: Battery1:



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)
0.192643	45.81	---	63.92	18.11	L1	29.7	16.11	---
0.324836	---	33.52	49.58	16.06	L1	29.7	---	3.82
0.452764	41.32	---	56.82	15.50	L1	29.7	11.62	---
0.849343	---	29.49	46.00	16.51	L1	29.7	---	-0.21
1.045500	---	29.42	46.00	16.58	N	29.8	---	-0.38
2.107307	39.99	---	56.00	16.01	L1	29.8	10.19	---
3.702150	46.33	---	56.00	9.67	L1	29.8	16.53	---
3.766114	---	32.64	46.00	13.36	N	29.8	---	2.84
5.139214	---	19.51	50.00	30.49	N	29.8	---	-10.29
6.299100	28.14	---	60.00	31.86	L1	29.8	-1.66	---
12.844779	---	17.88	50.00	32.12	L1	30.0	---	-12.12
12.900214	25.77	---	60.00	34.23	L1	30.0	-4.23	---

EUT1#+2#AE: USB Cable+4# AE: Headset+5# AE: Battery1+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)
0.150000	56.42	---	66.00	9.58	L1	29.7	26.72	---
0.158529	---	32.81	55.54	22.73	L1	29.7	---	3.11
0.529521	42.20	---	56.00	13.80	L1	29.7	12.5	---
0.533786	---	37.57	46.00	8.43	L1	29.7	---	7.87
2.094514	---	25.38	46.00	20.62	L1	29.8	---	-4.42
2.098779	29.52	---	56.00	26.48	L1	29.8	-0.28	---
2.465507	33.42	---	56.00	22.58	L1	29.8	3.62	---
2.482564	---	28.83	46.00	17.17	N	29.8	---	-0.97
5.233029	---	20.91	50.00	29.09	N	29.8	---	-8.89
11.693421	26.14	---	60.00	33.86	L1	29.9	-3.76	---
13.629407	---	27.05	50.00	22.95	L1	30.0	---	-2.95
13.633671	33.86	---	60.00	26.14	L1	30.0	3.86	---

2.2.2 Radiated Emissions-FCC Part15.109

Ambient condition:

Temperature	Relative humidity	Pressure
21.2°C	39.8%	100.8kPa

Test Setup:

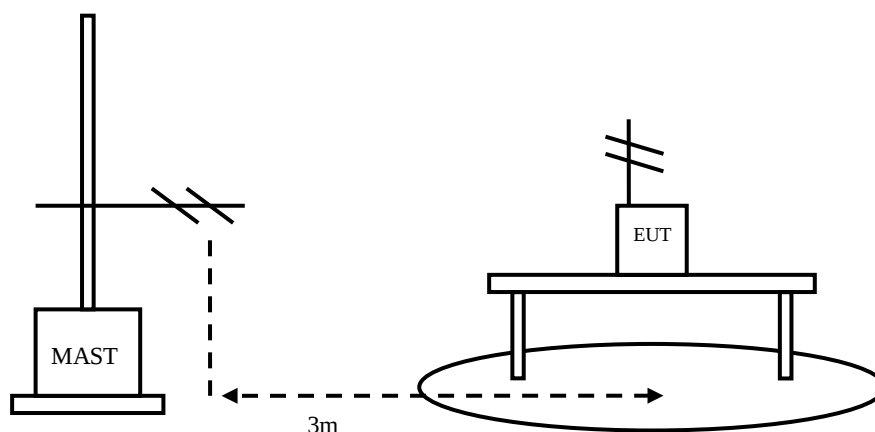


Figure 3

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: $30\text{MHz} < f < 1\text{GHz}$

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

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: $(26.49 \text{ dB } \mu \text{ V/m}) = (49.99 \text{ dB } \mu \text{ V}) + (-23.5 \text{ dB/m})$, the corresponding frequency is 54.358500MHz.

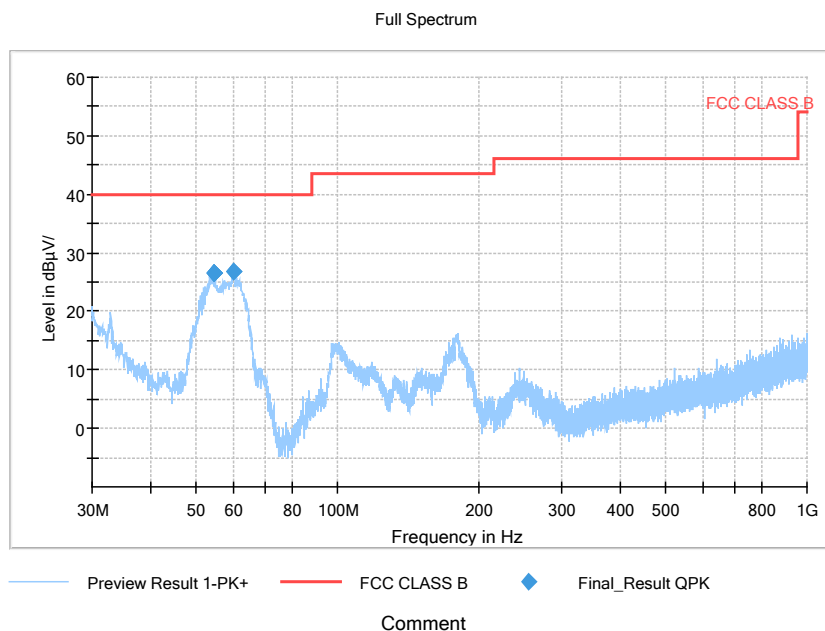
EUT1# + 2#AE: USB Cable+3# AE: Charger+4# AE: Headset+5# AE: Battery1:

Frequency(MHz)	Result(dB μ V/m)	Limit (dB μ V/m)	ARpl (dB/m)	Pmea (dB μ V)	Polarity
54.358500	26.49	40.00	-23.5	49.99	V
54.401000	26.49	40.00	-23.5	49.99	V
54.413000	26.53	40.00	-23.5	50.03	V
54.424000	26.51	40.00	-23.5	50.01	V
59.984500	26.78	40.00	-24.4	51.18	V
60.010000	26.78	40.00	-24.4	51.18	V

EUT1# + 2#AE: USB Cable+4# AE: Headset+5# AE: Battery1+1# AE: Laptop:

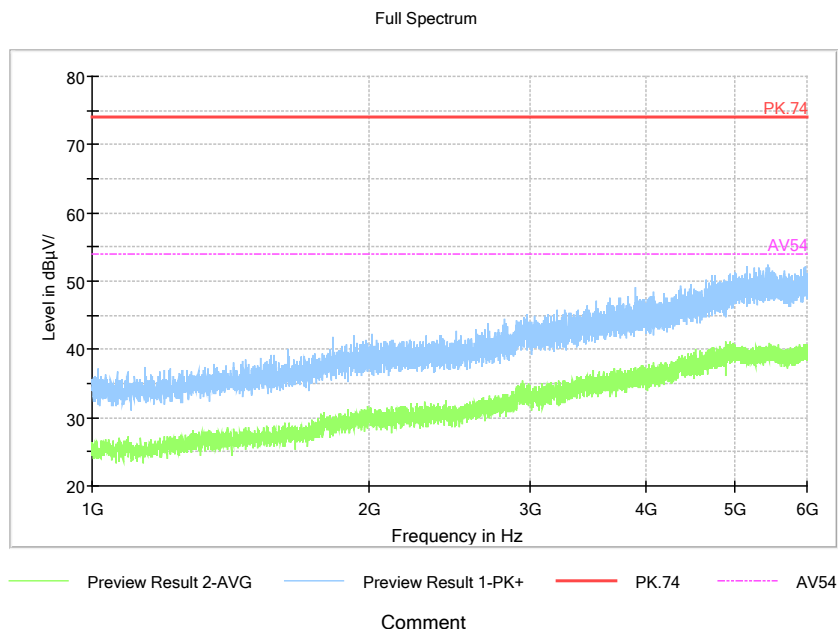
Frequency(MHz)	Result(dB μ V/m)	Limit (dB μ V/m)	ARpl (dB/m)	Pmea (dB μ V)	Polarity
168.002500	24.29	43.50	-27.5	51.79	V
311.999000	19.69	46.00	-21.7	41.39	V
407.989000	23.11	46.00	-18.6	41.71	V
456.004000	21.71	46.00	-18.0	39.71	V
551.985500	22.81	46.00	-15.7	38.51	V
599.992000	22.25	46.00	-14.1	36.35	V

EUT1# + 2#AE: USB Cable+3# AE: Charger+4# AE: Headset+5# AE: Battery1:
refer to Pic5, Pic6, Pic7



Pic5. Radiated emission(30MHz – 1GHz)

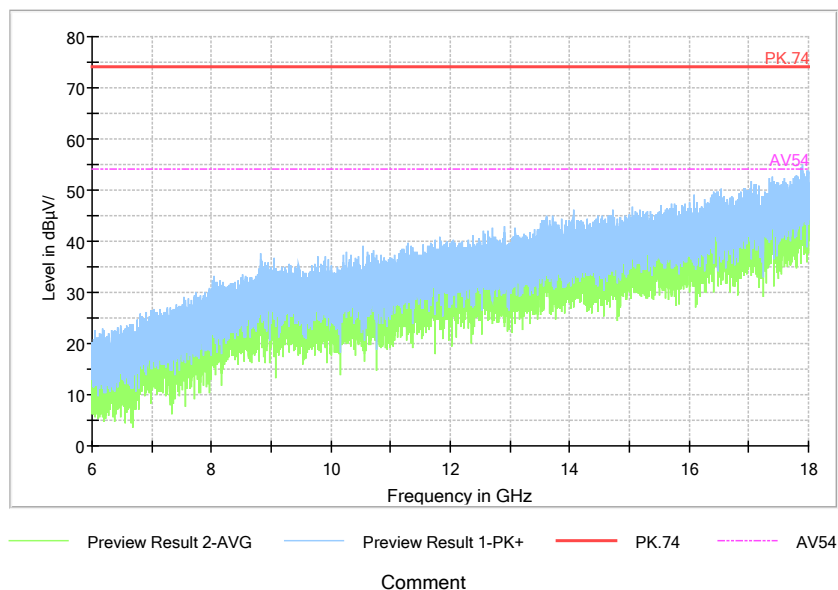
Note: The test data in the graph includes two polarizations: horizontal and vertical



Pic6. Radiated emission (1GHz –6GHz)

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

Full Spectrum



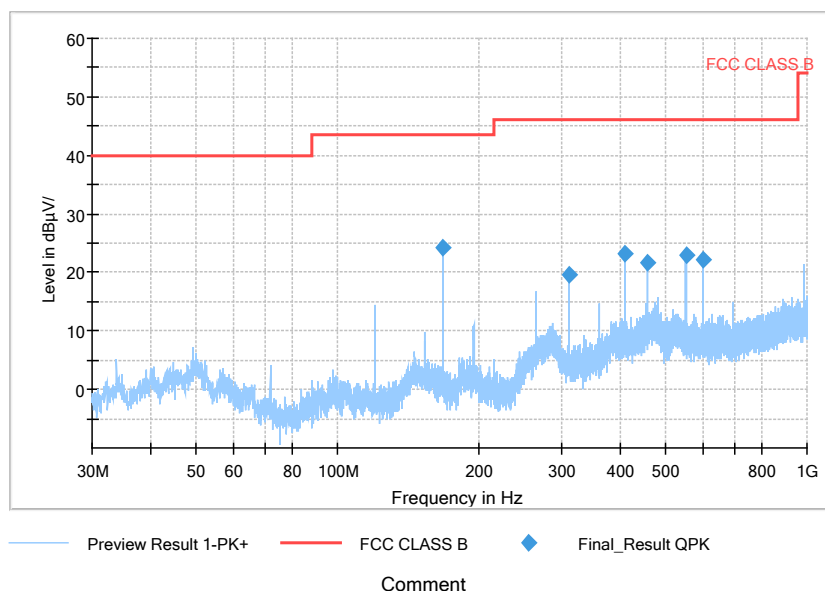
Comment

Pic7. Radiated emission (6GHz –18GHz)

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

EUT1#+ 2#AE: USB Cable +4# AE: Headset+5# AE: Battery1+1# AE: Laptop: refer to Pic8, Pic9, Pic10

Full Spectrum

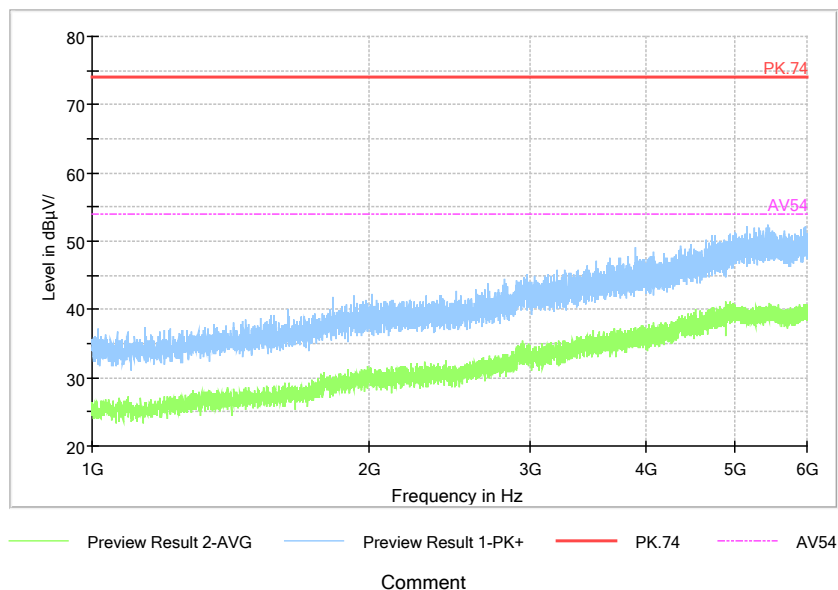


Comment

Pic8. Radiated emission(30MHz – 1GHz)

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

Full Spectrum

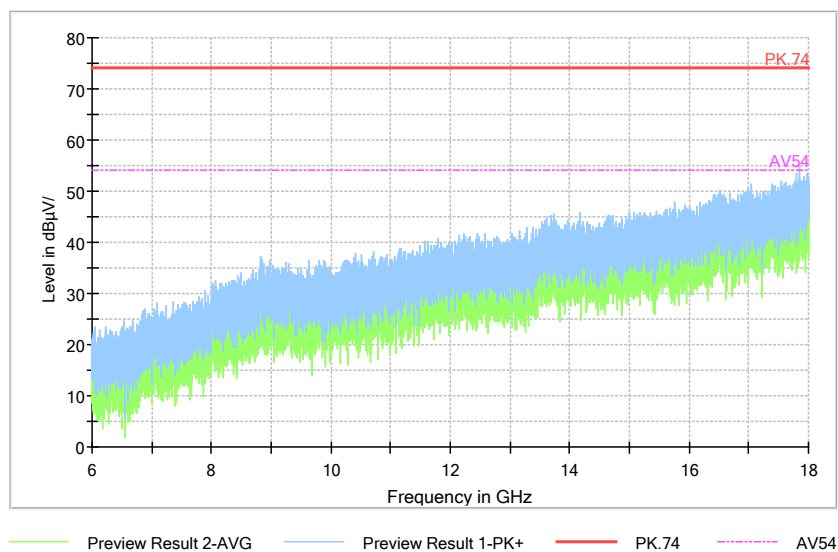


Comment

Pic9. Radiated emission (1GHz –6GHz)

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

Full Spectrum



Comment

Pic10. 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	-----	5 th Sep. 2021	6 th Sep. 2016
2	ESW EMI test receiver	R&S	101574	19 th Aug. 2021	20 th Aug. 2020
3	9.080m×5.255m×3.525m Shielding room	FRANKONIA	-----	5 th Sep. 2021	6 th Sep. 2016
4	ESR3 EMI test receiver	R&S	102361	19 th Mar. 2022	20 th Mar. 2021
5	VULB 9163 Ultra log test antenna	schwarzbeck	867	19 th Mar. 2023	20 th Mar. 2021
6	ENV216 AMN	R&S	3560.6550. 12	19 th Aug. 2021	20 th Aug. 2020
7	HF 907 Double-Ridged Waveguide Horn Antenna	R&S	100512	19 th Mar. 2023	20 th Mar. 2021
8	PS2000 Turn Table	FRANKONIA	-----	-----	-----
9	MA260 Antenna Master	FRANKONIA	-----	-----	-----
10	EMC32EMI test software Version 10.20.01	R&S	-----	-----	-----

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