Registration
No.788871

TEST REPORT

Report No.:	SRTC2019-9003(F)-0039
Product Name:	LTE/WCDMA/GSM（GPRS） Multi-Mode Digital Mobile Phone
Model Name:	ZTE Blade A7 2019
Applicant:	ZTE Corporation
Manufacturer:	ZTE Corporation
Specification:	FCC Part15B (Certification) (2019 edition)
FCC ID:	SRQ-A72019

The State Radio_monitoring_center Testing Center (SRTC)

15th Building, No.30 Shixing Street, Shijingshan District,

Beijing, China

Tel: 86-10-57996183 Fax: 86-10-57996388

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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:	ZTE Corporation
Address:	ZTE Plaza, Keji Road South,Hi-Tech, Industrial Park, Nanshan District,Shenzhen, P.R.China
City:	Shenzhen
Country or Region:	P.R.China
Contacted person:	Gong Yu
Tel:	+86-21-68895397
Email:	gongyu@zte.com.cn

1.4 Manufacturer’s details

Company:	ZTE Corporation
Address:	ZTE Plaza, Keji Road South,Hi-Tech, Industrial Park, Nanshan District,Shenzhen, P.R.China
City:	Shenzhen
Country or Region:	P.R.China
Contacted person:	Gong Yu
Tel:	+86-21-68895397
Email:	gongyu@zte.com.cn

1.5 Application details

Date of reception of test sample: 1st August. 2019
Date of test: 1st August. 2019 to 27th August. 2019

1.6 Reference specification

FCC Part 15B, 2019 (Certification)

1.7 Information of EUT

1.7.1 General information

Name of EUT	LTE/WCDMA/GSM（GPRS） Multi-Mode Digital Mobile Phone
Model Name	ZTE Blade A7 2019
Marketing Name	ZTE Blade A7 2019, ZTE BLADE A7 2019, Blade A7 2019, BLADE A7 2019
FCC ID	SRQ-A72019
Frequency Range	GSM: GSM850 / PCS1900 WCDMA: FDD II / FDD V LTE: FDD 2/ FDD 4/ FDD 5/ FDD 12/FDD 13/FDD 17 Bluetooth: 2.4~2.4835GHz WiFi: 2.4~2.4835GHz
Equipment Class	Class B
Antenna Type	PIFA Antenna
Power Supply	Battery or Charger
Rated Power Supply Voltage	3.85V
Extreme Temperature	Lowest: -10°C Highest: +55°C
Extreme Voltage	Minimum: 3.46V Maximum: 4.4V
HW Version	ukhB
SW Version	TEL_BHM_ZTE_Blade_A7_2019V1.0

1.7.2EUT details

Product Name	Model Name	IMEI
LTE/WCDMA/GSM （GPRS） Multi-Mode Digital Mobile Phone	ZTE Blade A7 2019	864432040465239

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 Cable1

Manufacturer	Dongguan Guojun Plastic Electronic Co.,Ltd
Model Number	USB-MU5-W-70-M-L

AE (Auxiliary Equipment) 3#: USB Cable2

Manufacturer	Shen Zhen Shi Yi HUA XING Electron Co.,Ltd
Model Number	USB-MU5-W-70-M-L

AE (Auxiliary Equipment) 4#: Battery1

Type	Li-Lon
Manufacturer	Ningbo Veken Battery Co., Ltd.
Model Number	Li3931T44P8h806139
Capacity	3100mAh
Nominal Voltage	3.85V

AE (Auxiliary Equipment) 5#: Battery2

Type	Li-Lon
Manufacturer	Zhongshan Tianmao Battery Co., Ltd.
Model Number	Li3931T44P8h806139
Capacity	3100mAh
Nominal Voltage	3.85V

AE (Auxiliary Equipment) 6#: Charger1

Manufacturer	RUIJING
Model Number	STC-A515A-Z
S/N	/
Input Voltage	100V-240V AC 300mA
Output Voltage	5.0VDC 1500mA

AE (Auxiliary Equipment) 7#: Charger2

Manufacturer	CHENYANG
Model Number	STC-A515A-Z
S/N	/
Input Voltage	100V-240V AC 300mA
Output Voltage	5.0VDC 1500mA

AE (Auxiliary Equipment) 8#: Headset1

Manufacturer	JUWEI ELECTRONICS CO.,LTD
Model Number	JWEP1036-Z01R

AE (Auxiliary Equipment) 9#: Headset2

Manufacturer	ShenZhen FDC Electronic Co.,Ltd
Model Number	DEM-66

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: 2019.8.27

2.2 Test result

2.2.1Conducted Emissions-FCC Part15.107

Ambient condition:

Temperature	Relative humidity	Pressure
25.4°C	41.3%	100.8kPa

Test Setup with laptop:

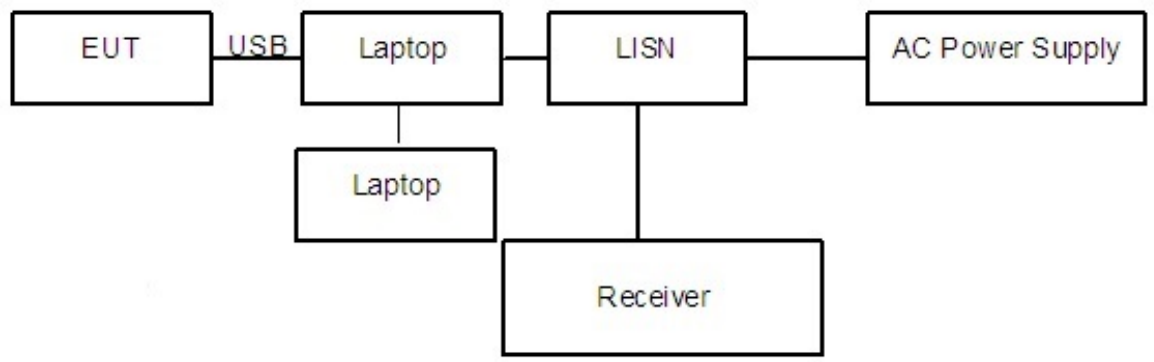


Figure 1

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:

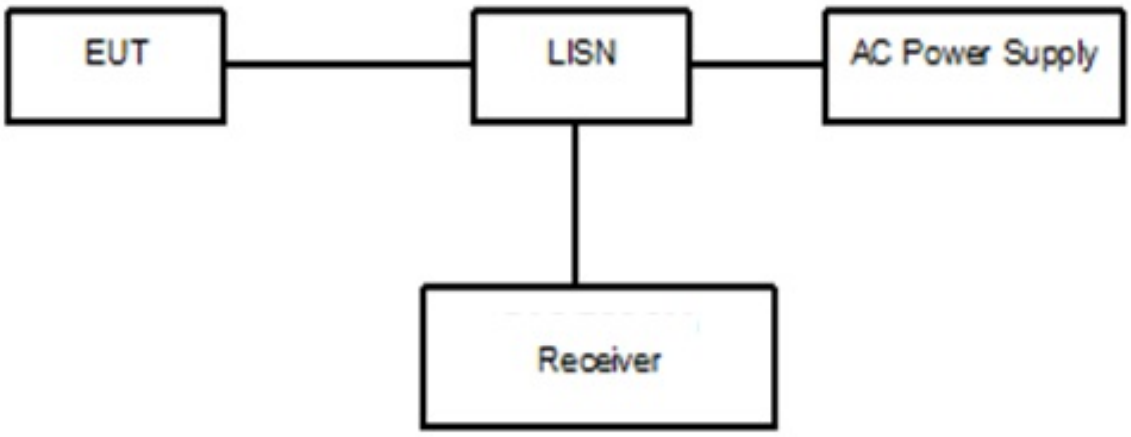


Figure 2

Test Procedure:

The EUT is placed on a non-matellic 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, GNSS 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_{cable}+ATT+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:
$P_{result}=P_{mea}$+ Corr.(dB)

Sample calculation: (49.66 dBμV) = (19.96 dBμV) + (29.7 dB), the corresponding frequency is 0.170000MHz.

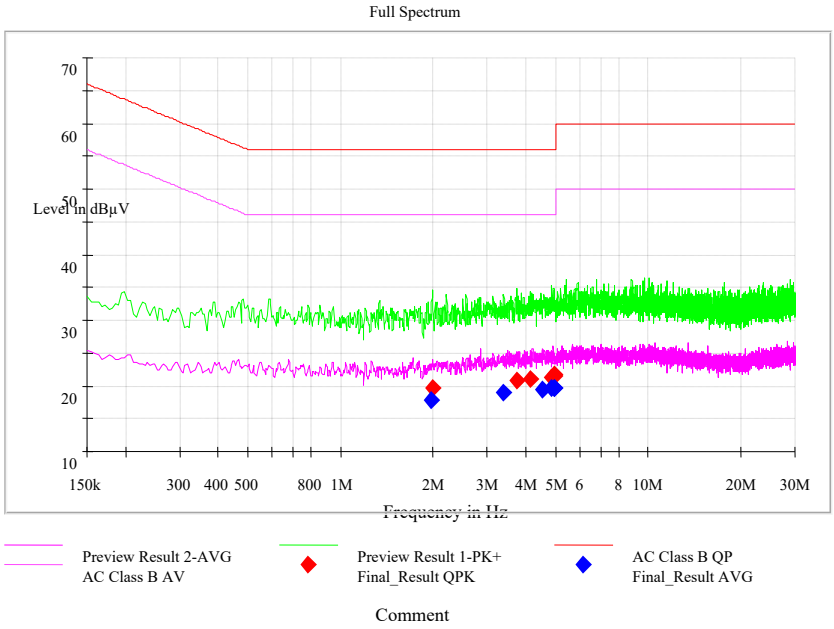
Limit:

Frequency of Emission(MHz)	Limits(dBμV)	
	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

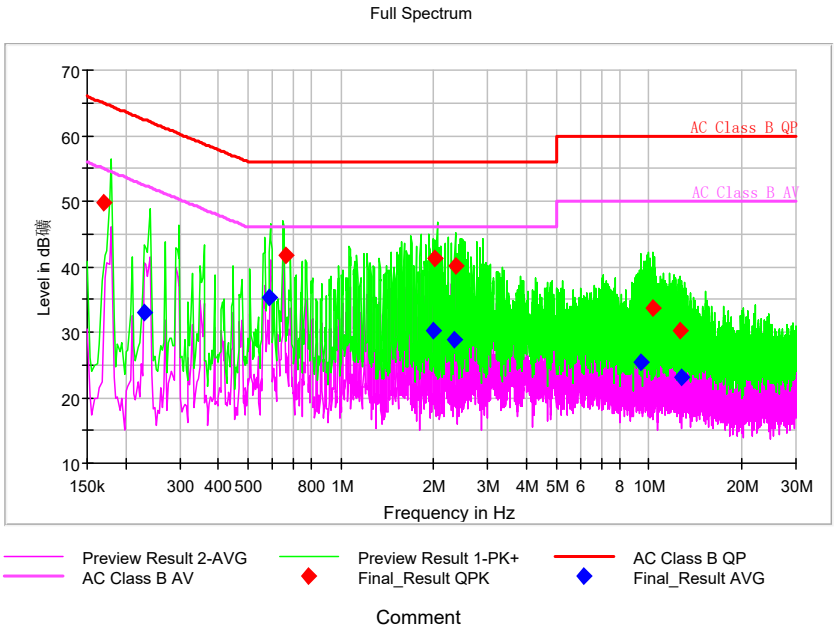
Test result:

Noise Level of the Measuring Instrument



Pic1.Conducted emission L and N Line

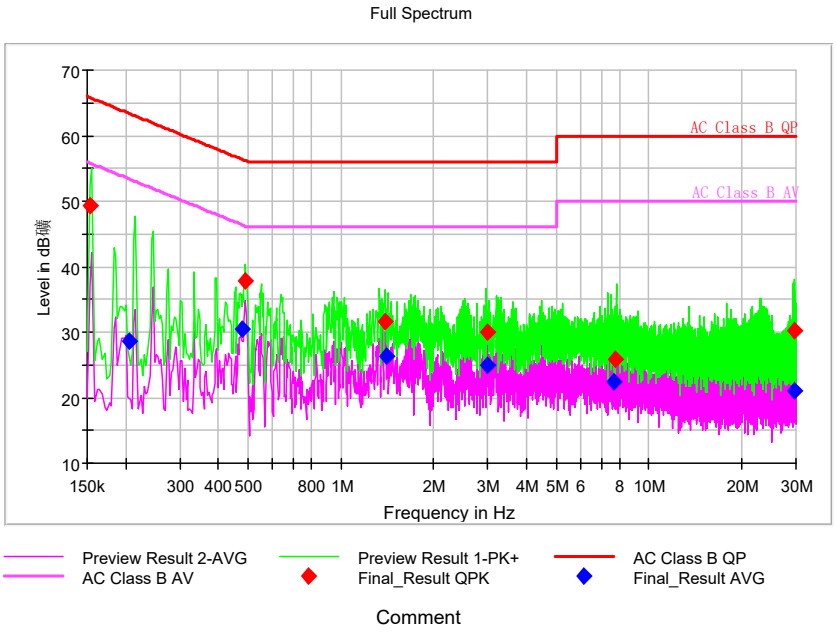
EUT + 2#USB Cable1+4#Battery1+6#Charger1+8#Headset1:



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)
0.170000	49.66	---	64.96	15.30	L1	29.7	19.96	---
0.230000	---	33.06	52.45	19.39	L1	29.7	---	3.36
0.583480	---	35.28	46.00	10.72	L1	29.7	---	5.58
0.664495	41.70	---	56.00	14.30	L1	29.7	12	---
1.995445	---	30.26	46.00	15.74	L1	29.8	---	0.46
2.011445	41.17	---	56.00	14.83	L1	29.8	11.37	---
2.345945	---	28.79	46.00	17.21	L1	29.8	---	-1.01
2.365945	40.17	---	56.00	15.83	L1	29.8	10.37	---
9.413230	---	25.33	50.00	24.67	L1	29.9	---	-4.57
10.345030	33.71	---	60.00	26.29	L1	29.9	3.81	---
12.630465	30.16	---	60.00	29.84	L1	29.9	0.26	---
12.743180	---	23.14	50.00	26.86	N	29.9	---	-6.76

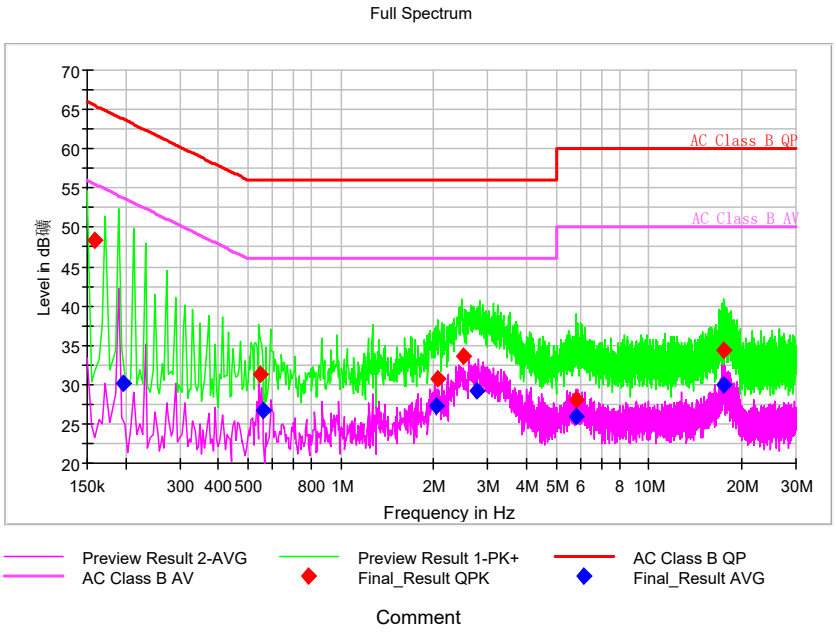
EUT + 3#USB Cable3+5#Battery2+7#Charger2+9#Headset2:



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)
0.154000	49.39	---	65.78	16.39	L1	29.7	19.69	---
0.206000	---	28.66	53.37	24.70	L1	29.7	---	-1.04
0.478290	---	30.56	46.37	15.81	L1	29.7	---	0.86
0.486290	37.86	---	56.23	18.37	L1	29.7	8.16	---
1.387045	31.65	---	56.00	24.35	L1	29.7	1.95	---
1.404895	---	26.37	46.00	19.63	N	29.7	---	-3.33
2.994825	29.89	---	56.00	26.11	N	29.8	0.09	---
2.997990	---	24.90	46.00	21.10	N	29.8	---	-4.9
7.662885	---	22.37	50.00	27.63	L1	29.9	---	-7.53
7.792435	25.75	---	60.00	34.25	L1	29.9	-4.15	---
29.550340	30.29	---	60.00	29.71	L1	29.9	0.39	---
29.600425	---	20.95	50.00	29.05	L1	29.9	---	-8.95

EUT +4#Battery1+ 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)
0.158000	48.27	---	65.57	17.30	L1	29.7	18.57	---
0.196205	---	30.08	53.77	23.69	L1	29.7	---	0.38
0.548977	31.30	---	56.00	24.70	L1	29.7	1.6	---
0.556977	---	26.76	46.00	19.24	L1	29.7	---	-2.94
2.035386	---	27.26	46.00	18.74	L1	29.8	---	-2.54
2.064091	30.67	---	56.00	25.33	L1	29.8	0.87	---
2.484705	33.68	---	56.00	22.32	L1	29.8	3.88	---
2.773295	---	29.26	46.00	16.74	L1	29.8	---	-0.54
5.816045	28.00	---	60.00	32.00	L1	29.8	-1.8	---
5.821386	---	26.02	50.00	23.98	L1	29.8	---	-3.78
17.490023	---	30.06	50.00	19.94	N	30.0	---	0.06
17.530773	34.43	---	60.00	25.57	N	30.0	4.43	---

2.2.2RadiatedEmissions-FCC Part15.109

Ambient condition:

Temperature	Relative humidity	Pressure
24.9°C	41.4%	100.8kPa

Test Setup:

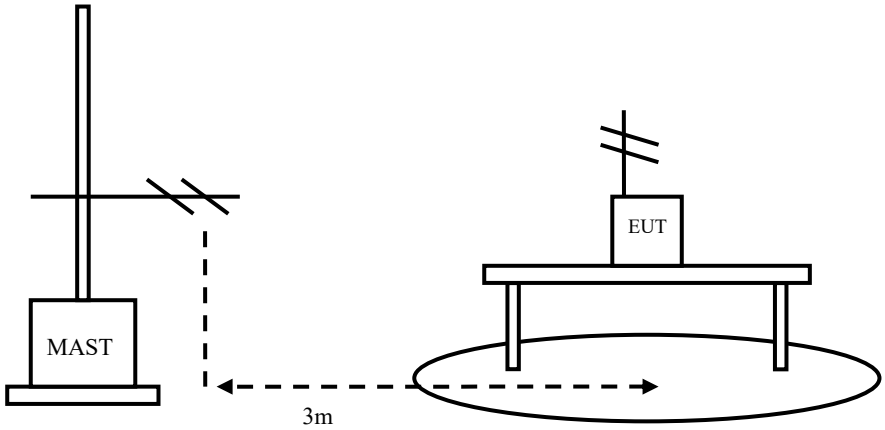


Figure 3

Test Procedure:

EUT+Laptop:
The EUT should be placed on a non-metallic table80cm 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, GNSS 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 to4 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:
Result= $P_{mea} + A_{Rpl}$

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 Peak	54 74

Test result:

Sample calculation: (25.37 dB μ V/m) = (46.57 dB μ V/m) + (-21.2 dB), the corresponding frequency is 30.000000MHz.

EUT+4#Battery1+Laptop

Frequency(MHz)	Result(dB μ V/m)	Limit (dB μ V/m)	ARpl (dB)	Pmea (dB μ V/m)	Polarity
30.000000	25.37	40.00	-21.2	46.57	V
71.981000	26.37	40.00	-22.1	48.47	V
168.002500	27.00	43.50	-20.8	47.8	V
407.989000	30.67	46.00	-11.5	42.17	V
455.995500	31.61	46.00	-10.4	42.01	V
743.997000	29.91	46.00	-4.5	34.41	V

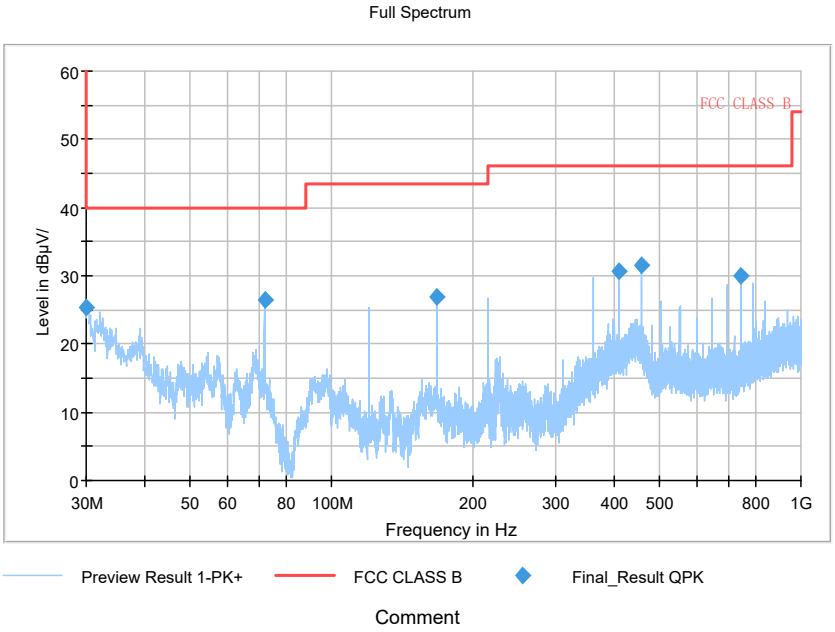
EUT + 2#USB Cable1+4#Battery1+6#Charger1+8#Headset1

Frequency(MHz)	Result(dB μ V/m)	Limit (dB μ V/m)	ARpl (dB)	Pmea (dB μ V/m)	Polarity
30.000000	29.22	40.00	-15.2	44.42	V
34.330500	27.58	40.00	-13.9	41.48	V
43.069000	23.49	40.00	-11.8	35.29	V
49.148500	28.42	40.00	-11.2	39.62	V
54.038500	25.47	40.00	-11.6	37.07	V
889.705500	23.35	46.00	4.3	19.05	V

EUT + 3#USB Cable2+5#Battery2+7#Charger2+9#Headset2

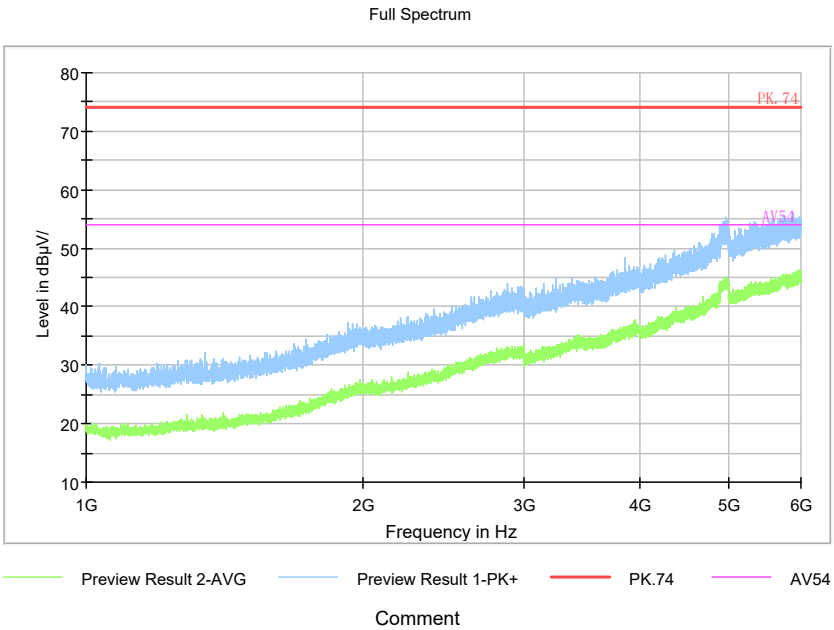
Frequency(MHz)	Result(dB μ V/m)	Limit (dB μ V/m)	ARpl (dB)	Pmea (dB μ V/m)	Polarity
30.200000	29.94	40.00	-15.1	45.04	V
31.363500	33.67	40.00	-14.8	48.47	V
32.955500	29.98	40.00	-14.3	44.28	V
38.302500	25.54	40.00	-12.7	38.24	V
39.709000	25.55	40.00	-12.2	37.75	V
48.099500	27.67	40.00	-11.3	38.97	V

EUT +4#Battery1+ Laptop: refer to Pic5, Pic6, Pic7



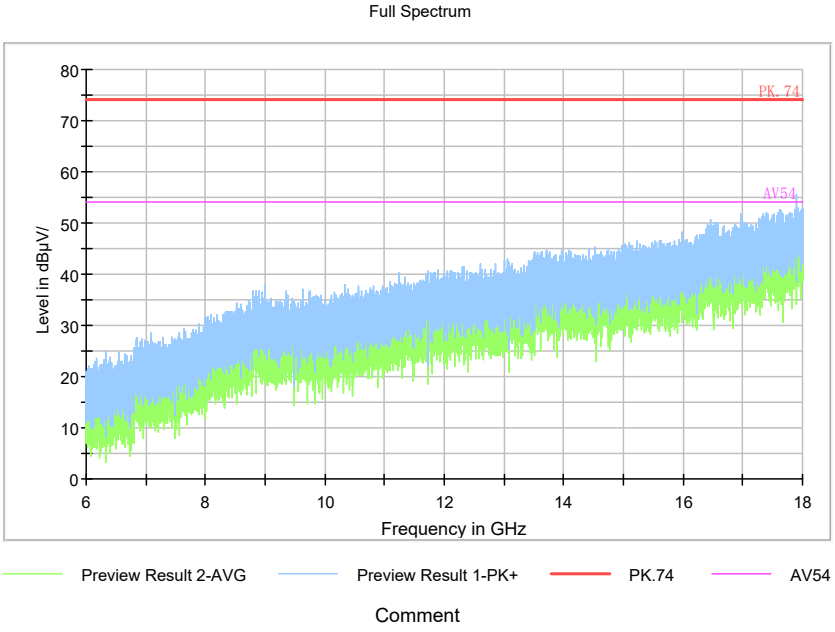
Pic5. Radiated emission(30MHz – 1GHz)

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



Pic6. Radiated emission (1GHz –6GHz)

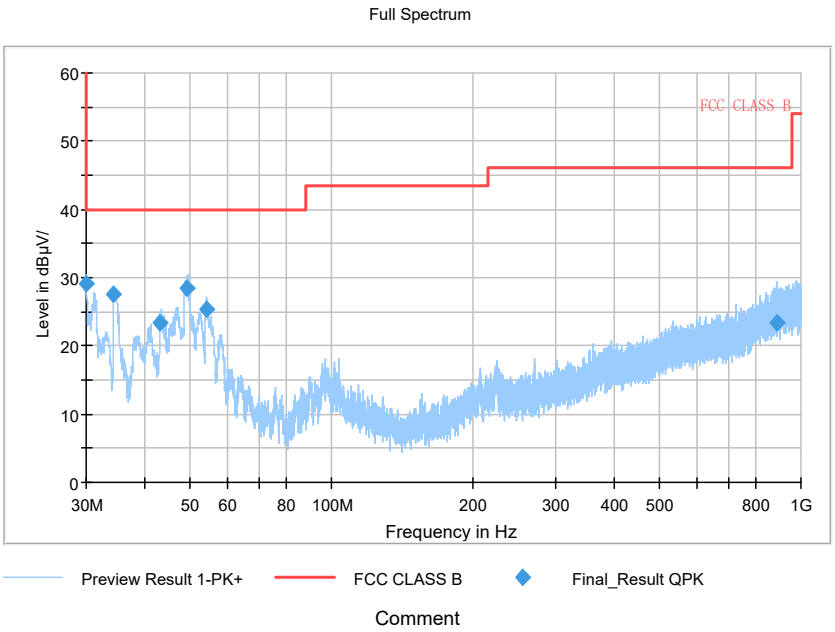
Note：The test data in the graph includes two polarizations: horizontal and vertical.



Pic7. Radiated emission (6GHz –18GHz)

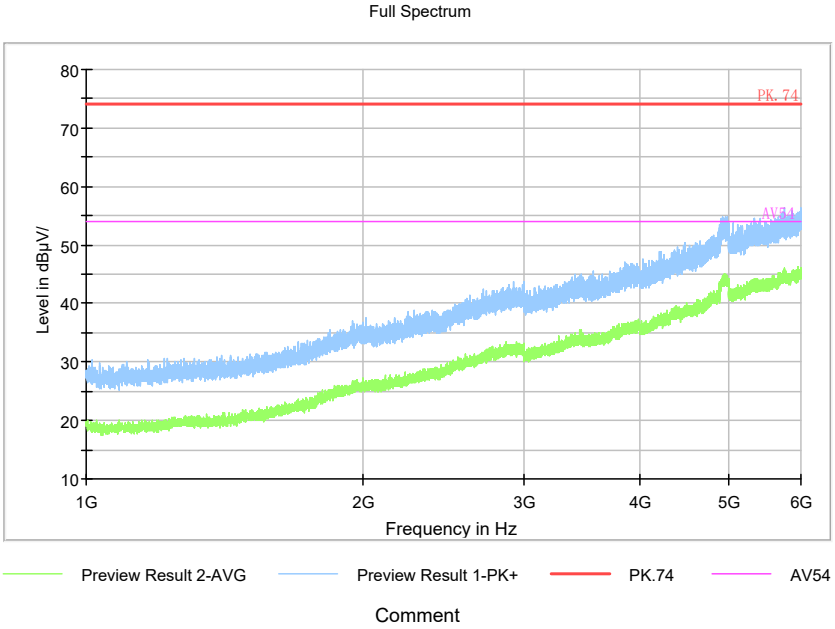
Note：The test data in the graph includes two polarizations: horizontal and vertical.

EUT + 2#USB Cable1+4#Battery1+6#Charger1+8#Headset1: refer to Pic8, Pic9, Pic10



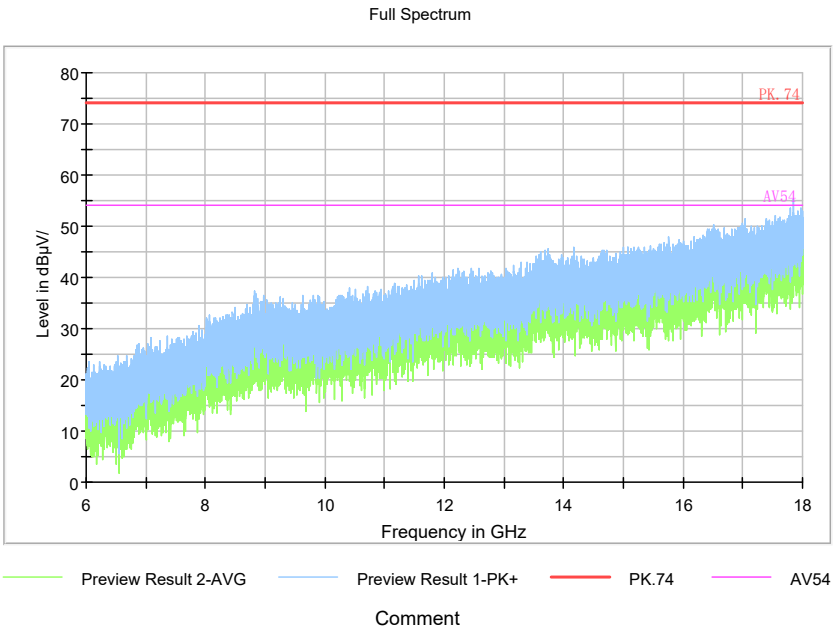
Pic8. Radiated emission(30MHz – 1GHz)

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



Pic9. Radiated emission (1GHz –6GHz)

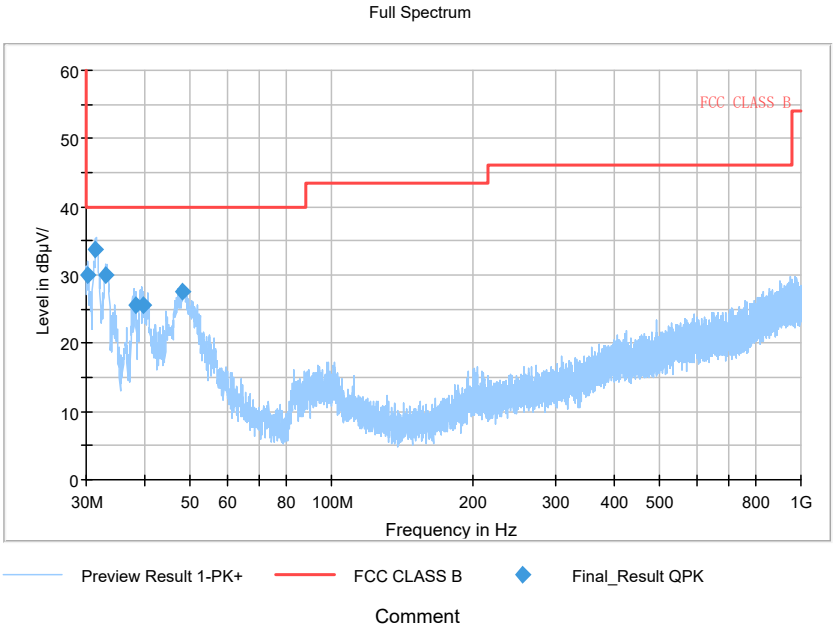
Note：The test data in the graph includes two polarizations: horizontal and vertical



Pic10. Radiated emission (6GHz –18GHz)

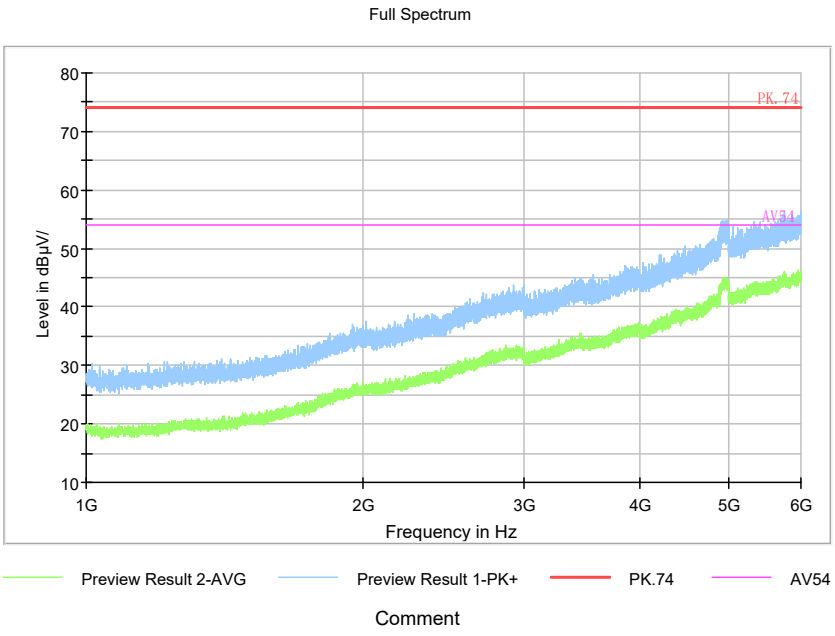
Note：The test data in the graph includes two polarizations: horizontal and vertical

EUT + 3#USB Cable3+5#Battery2+7#Charger2+9#Headset2: refer to Pic11, Pic12, Pic13



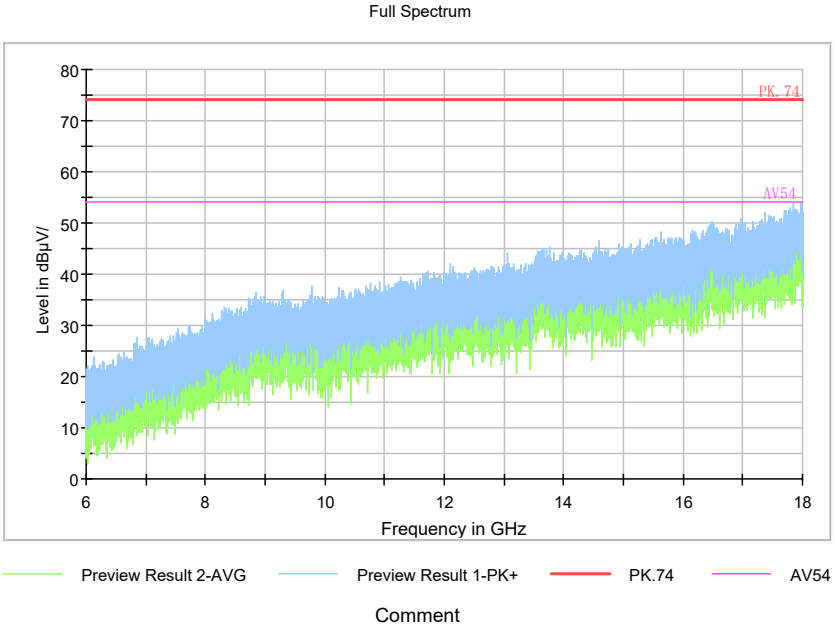
Pic11. Radiated emission(30MHz – 1GHz)

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



Pic12. Radiated emission (1GHz –6GHz)

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



Pic13. 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×9.60mSemi-AnechoicChamber	FRANKONIA	-----	5th Sep. 2021	6th Sep. 2016
2	ESW EMI test receiver	R&S	101574	20th Aug. 2020	20th Aug. 2019
3	9.080m×5.255m×3.525m Shielding room	FRANKONIA	-----	5th Sep. 2021	6th Sep. 2016
4	ESR3 EMI test receiver	R&S	102361	20th Aug. 2020	20th Aug. 2018
5	VULB 9163 Ultra log test antenna	schwarzbeck	867	20th Aug. 2020	20th Aug. 2018
6	ENV216 AMN	R&S	3560.6550.12	20th Aug. 2020	20th Aug. 2018
7	HF 907 Double-Ridged Waveguide Horn Antenna	R&S	100512	20th Aug. 2020	20th Aug. 2018
8	PS2000 Turn Table	FRANKONIA	-----	-----	-----
9	MA260 Antenna Master	FRANKONIA	-----	-----	-----
10	EMC32EMI test software	R&S	-----	-----	-----