

TEST REPORT

Report No.: SRTC2022-9003(F)-0028
Product Name: WCDMA/LTE Multi-mode Digital Mobile Phone
Model Name: ZTE 9047
Applicant: Sharp Corporation
Manufacturer: Sharp Corporation
Specification: FCC Part15B (Certification)
(2022 edition)
ANSI C63.4-2014
FCC ID: SRQ-ZTE9047

The State Radio_monitoring_center Testing Center (SRTC)
15th Building, No.30 Shixing Street, Shijingshan District,
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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, #55 Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China
City: Shenzhen
Country or Region: China
Contacted person: ---
Tel: ---
Email: ---

1.4 Manufacturer's details

Company: ZTE Corporation
Address: ZTE Plaza, #55 Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China
City: Shenzhen
Country or Region: China
Contacted person: ---
Tel: ---
Email: ---

1.5 Application details

Date of reception of test sample: 3rd June 2022

Date of test: 3rd June 2022 to 18th June 2022

1.6 Reference specification

FCC Part 15B, 2022 (Certification)

1.7 Information of EUT

1.7.1 General information

Product Name of EUT	WCDMA/LTE Multi-mode Digital Mobile Phone
Model Name of EUT	ZTE 9047
Marketing Name	ZTE Axon 40 SE, ZTE Blade V40s
FCC ID	SRQ-ZTE9047
Frequency Range	GSM: GSM850 / DCS1900 WCDMA: FDD II/ FDD IV / FDD V LTE: FDD 2/ FDD 4/ FDD 5/FDD 7/ FDD 12/ FDD 13/ FDD 17/ FDD 28 / FDD 66/TDD 38 Bluetooth: 2.4~2.4835GHz WiFi: 2.4~2.4835GHz 5.15-5.25GHz 5.725GHz-5.85GHz
Power Supply	Charger/Battery
Nominal Voltage	4V
Extreme Temperature	Lowest: 0°C Highest: +55°C
Extreme Voltage	Minimum: 3.8V Maximum: 4.3V
HW Version	ZTE 9047HW1.0
SW Version	MyOS12.0.0_9047_TEL

1.7.2 EUT details

No.	Product Name	Model Name	IMEI
EUT1	WCDMA/LTE Multi-mode Digital Mobile Phone	ZTE 9047	869140060000860

1.7.3 Auxiliary equipment details

AE (Auxiliary Equipment) 1#: Charger1

Manufacturer	RUIJING
Model Number	STC-A51030A2-Z
Input Voltage	100V-240V AC
Output Voltage	5V DC

AE (Auxiliary Equipment) 2#: Charger2

Manufacturer	Chenyang
Model Number	STC-A51030A2-Z
Input Voltage	100V-240V AC
Output Voltage	5V DC

AE (Auxiliary Equipment) 3#: Battery

Manufacturer	Zhuhai CosMX Power Jinwan Subsidiary Co., Ltd
Model Number	Li3844T45P8h896546

AE (Auxiliary Equipment) 4#: USB cable1


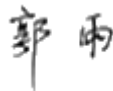

Manufacturer	Shenzhen Luxshare Precision Industry Co.,Ltd.
Model Number	USB-TC20-W-100-M-L-HF

Note1: In this report, the result exercised by the EUT1, charger1 AE1, charger2 AE2, the Battery AE3and the USB cable AE4.

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. Lv Youyou Test engineer 	Issued date: 2022.06.18

2.2 Test result

2.2.1 Conducted Emissions-FCC Part15.107

Ambient condition:

Temperature	Relative humidity	Pressure
23.3°C	39.1%	100.7kPa

Test Setup with charger:

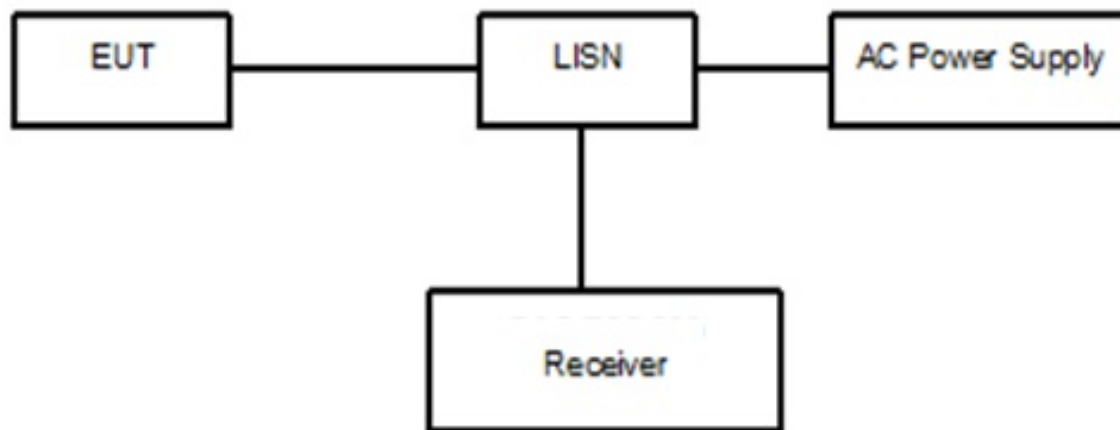


Figure 1

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 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:

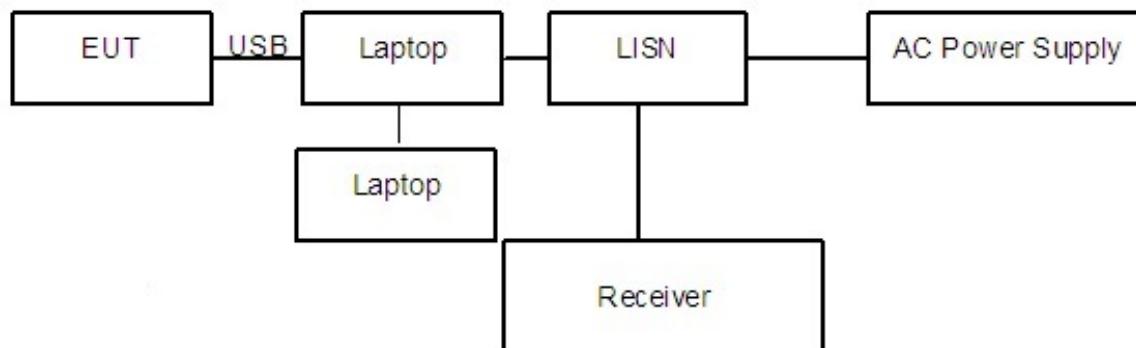


Figure 2

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 was charged. 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:

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

Sample calculation: $(39.72\text{dB}\mu\text{V}) = (10.12 \text{dB}\mu\text{V}) + (29.6 \text{dB})$, the corresponding frequency is 0.158529MHz.

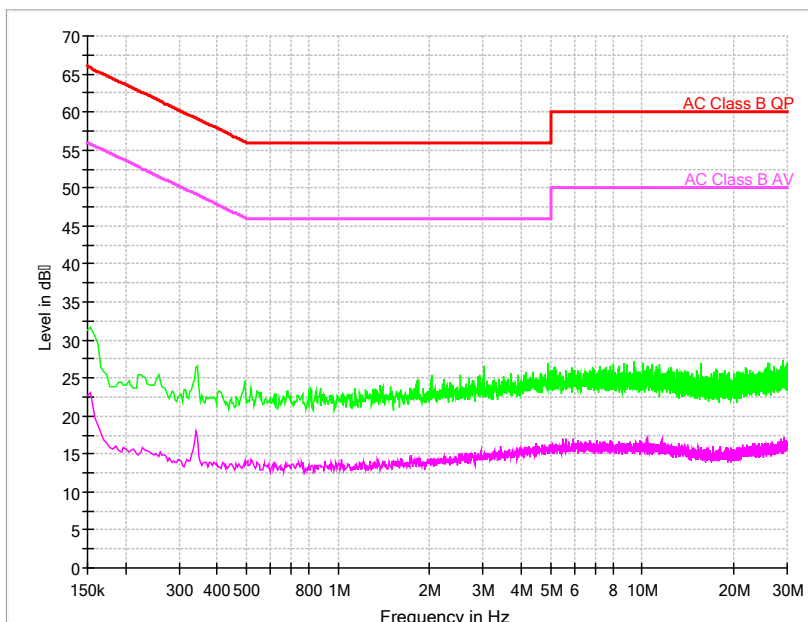
Limit:

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

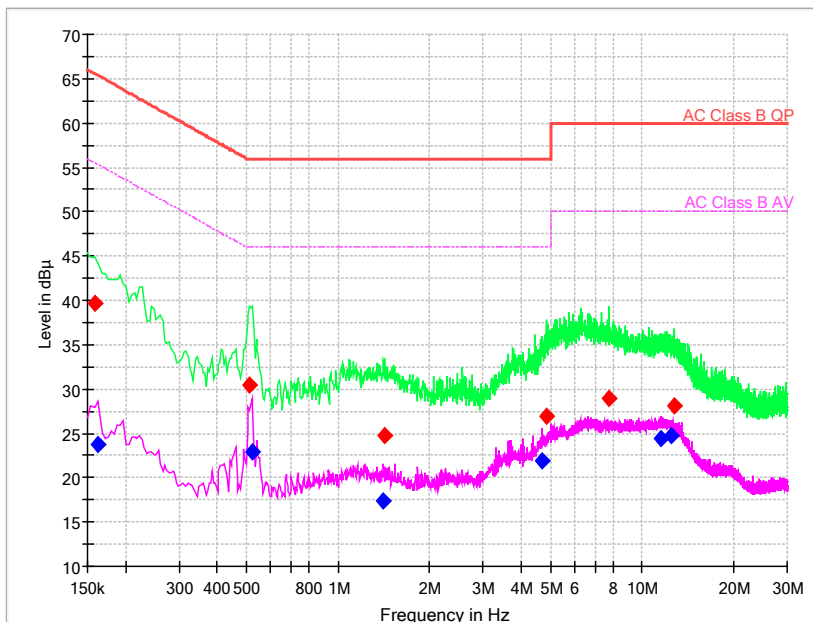
Test result:

Noise Level of the Measuring Instrument



Pic1. Conducted emission L and N Line

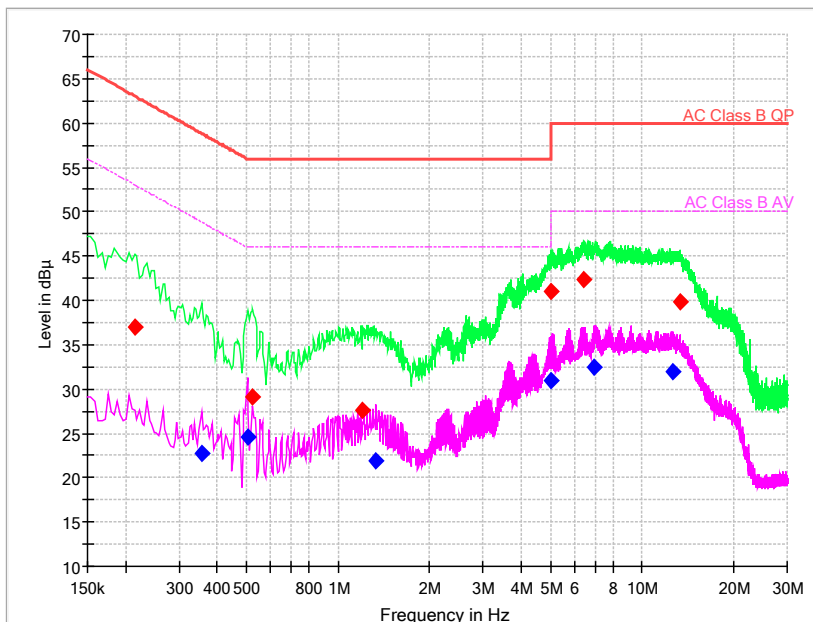
EUT1+charger1:



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)
0.158529	39.72	---	65.54	25.83	L1	29.6	10.12	---
0.162793	---	23.75	55.32	31.57	N	29.6	---	-5.85
0.512464	30.43	---	56.00	25.57	L1	29.6	0.83	---
0.520993	---	22.97	46.00	23.03	L1	29.6	---	-6.63
1.412229	---	17.38	46.00	28.62	N	29.7	---	-12.32
1.420757	24.79	---	56.00	31.21	N	29.7	-4.91	---
4.687200	---	21.95	46.00	24.05	L1	29.7	---	-7.75
4.844979	26.94	---	56.00	29.06	N	29.7	-2.76	---
7.748957	28.95	---	60.00	31.05	N	29.8	-0.85	---
11.552700	---	24.49	50.00	25.51	N	29.8	---	-5.31
12.452464	---	24.72	50.00	25.28	N	29.8	---	-5.08
12.819193	28.08	---	60.00	31.92	N	29.8	-1.72	---

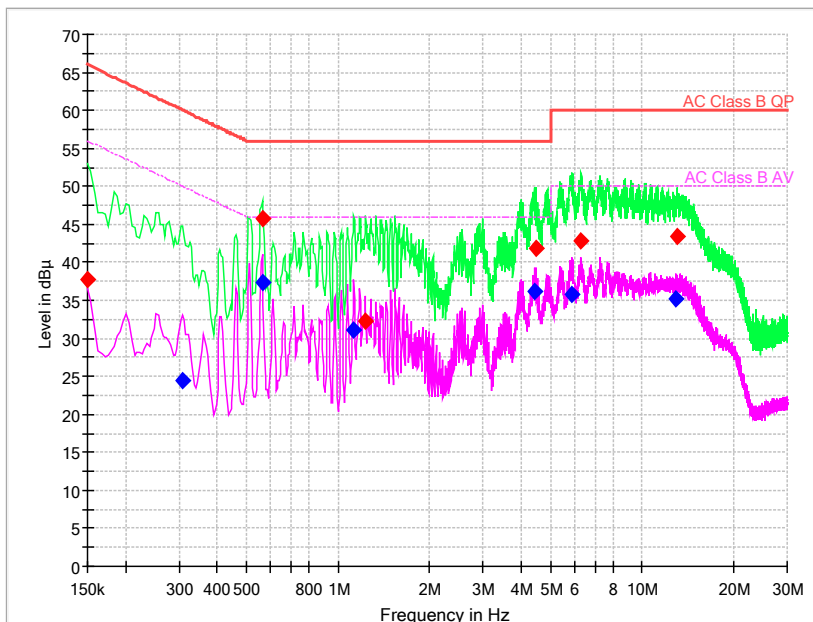
EUT1+charger1:



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)
0.213964	36.91	---	63.05	26.14	N	29.6	7.31	---
0.354686	---	22.80	48.85	26.05	L1	29.6	---	-6.8
0.503936	---	24.63	46.00	21.37	N	29.6	---	-4.97
0.525257	29.06	---	56.00	26.94	N	29.6	-0.54	---
1.203279	27.62	---	56.00	28.38	L1	29.7	-2.08	---
1.335471	---	21.97	46.00	24.03	L1	29.7	---	-7.73
4.998493	---	30.87	46.00	15.13	L1	29.7	---	1.17
4.998493	41.05	---	56.00	14.95	L1	29.7	11.35	---
6.427029	42.28	---	60.00	17.72	L1	29.7	12.58	---
6.964329	---	32.40	50.00	17.60	L1	29.7	---	2.7
12.550543	---	31.89	50.00	18.11	L1	29.8	---	2.09
13.399136	39.79	---	60.00	20.21	L1	29.8	9.99	---

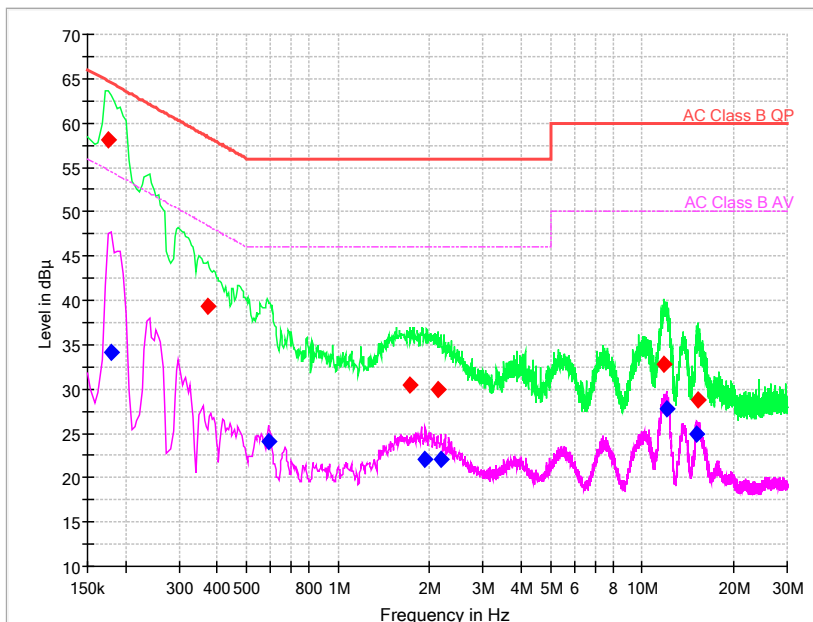
EUT1+charger2:



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)
0.150000	37.69	---	66.00	28.31	L1	29.6	8.09	---
0.307779	---	24.54	50.03	25.49	L1	29.6	---	-5.06
0.563636	---	37.30	46.00	8.70	L1	29.6	---	7.7
0.563636	45.68	---	56.00	10.32	L1	29.6	16.08	---
1.126521	---	31.12	46.00	14.88	L1	29.7	---	1.42
1.228864	32.33	---	56.00	23.67	L1	29.7	2.63	---
4.414286	---	36.11	46.00	9.89	L1	29.7	---	6.41
4.469721	41.92	---	56.00	14.08	N	29.7	12.22	---
5.855614	---	35.76	50.00	14.24	L1	29.7	---	6.06
6.316157	42.80	---	60.00	17.20	N	29.7	13.1	---
12.951386	---	35.26	50.00	14.74	N	29.8	---	5.46
13.113429	43.35	---	60.00	16.65	L1	29.8	13.55	---

EUT1+Laptop:



Pic5. Conducted emission L&N Line

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	Pme a Quas	Pme a Aver
0.175586	58.14	---	64.69	6.56	N	29.6	28.5	---
0.179850	---	34.11	54.49	20.39	N	29.6	---	4.51
0.371743	39.28	---	58.46	19.18	N	29.6	9.68	---
0.589221	---	24.01	46.00	21.99	L1	29.6	---	-5.59
1.723521	30.49	---	56.00	25.51	N	29.7	0.79	---
1.936736	---	22.03	46.00	23.97	L1	29.7	---	-7.67
2.128629	29.97	---	56.00	26.03	N	29.7	0.27	---
2.184064	---	22.05	46.00	23.95	L1	29.7	---	-7.65
11.838407	32.79	---	60.00	27.21	L1	29.8	2.99	---
11.996186	---	27.75	50.00	22.25	L1	29.8	---	-2.05
15.143229	---	24.89	50.00	25.11	L1	29.8	---	-4.91
15.343650	28.75	---	60.00	31.25	N	29.8	-1.05	---

2.2.2 Radiated Emissions-FCC Part15.109

Ambient condition:

Temperature	Relative humidity	Pressure
23.3°C	39.1%	100.7kPa

Test Setup:

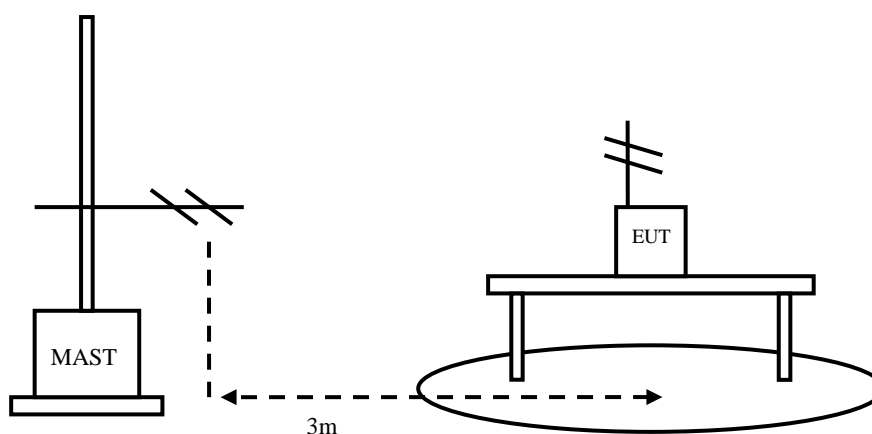


Figure 3

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: 30MHz<f<1GHz

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:

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

Sample calculation: $(24.48 \text{ dB}\mu\text{V/m}) = (43.28 \text{ dB}\mu\text{V}) + (-18.8 \text{ dB/m})$, the corresponding frequency is 39.021000MHz.

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:

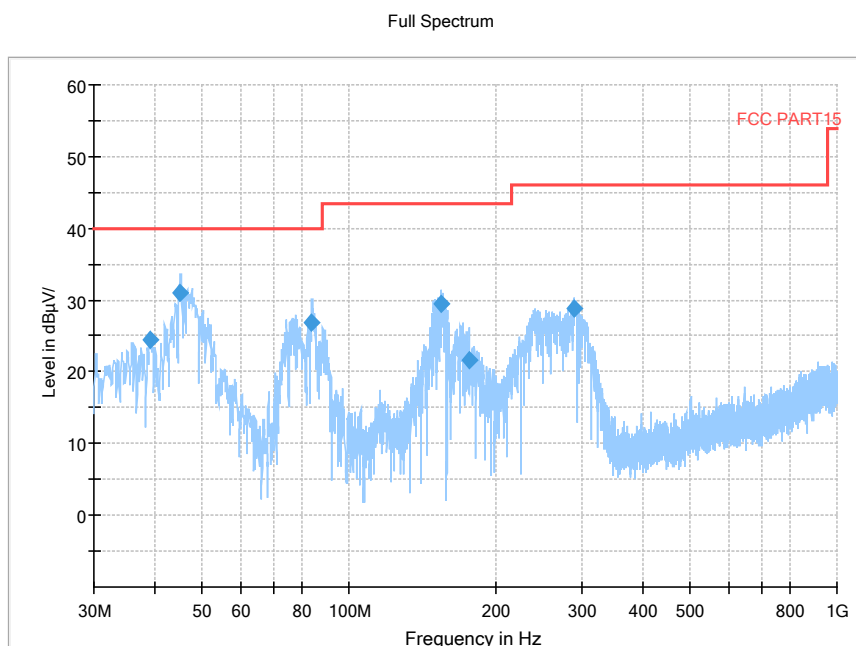
EUT1+charger1:

Frequency(MHz)	Result(dBuV/m)	A_{Rpl} (dB/m)	P_{mea} (dBuV)	Polarity
39.021000	24.48	-18.8	43.28	V
45.180500	30.99	-17.9	48.89	V
83.980500	26.92	-23.2	50.12	V
154.936000	29.54	-22.4	51.94	V
176.082000	21.54	-21.3	42.84	V
290.202500	28.89	-16.3	45.19	V

EUT1+Laptop:

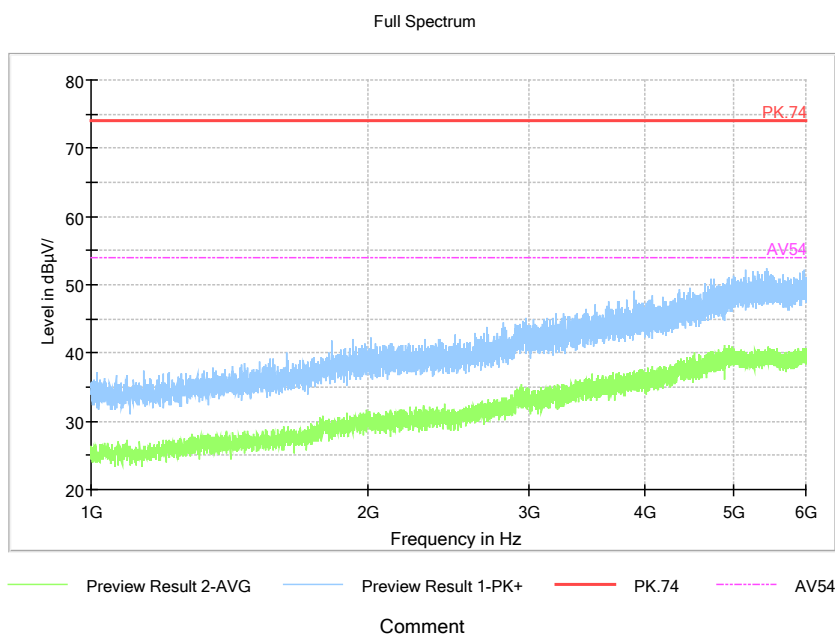
Frequency(MHz)	Result(dBuV/m)	A_{Rpl} (dB/m)	P_{mea} (dBuV)	Polarity
59.973000	15.15	-18.8	33.95	V
298.399000	26.43	-16.2	42.63	H
402.237500	22.76	-13.0	35.76	V
424.693000	19.22	-12.6	31.82	V
736.742000	15.48	-5.9	21.38	H
796.494000	28.10	-5.3	33.40	H

EUT1+charger1: refer to Pic6 to Pic9



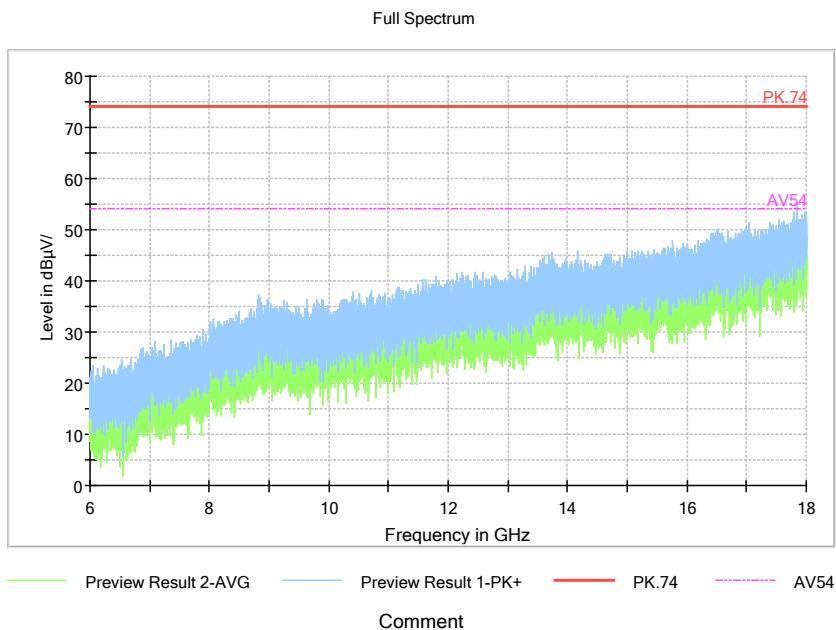
Pic6. Radiated emission (30MHz – 1GHz)

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



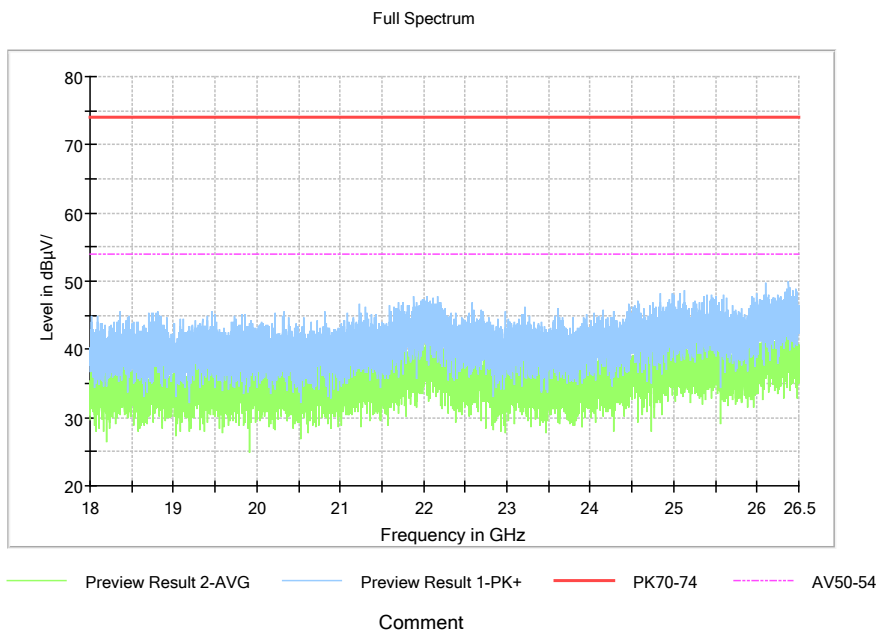
Pic7. Radiated emission (1GHz –6GHz)

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



Pic8. Radiated emission (6GHz –18GHz)

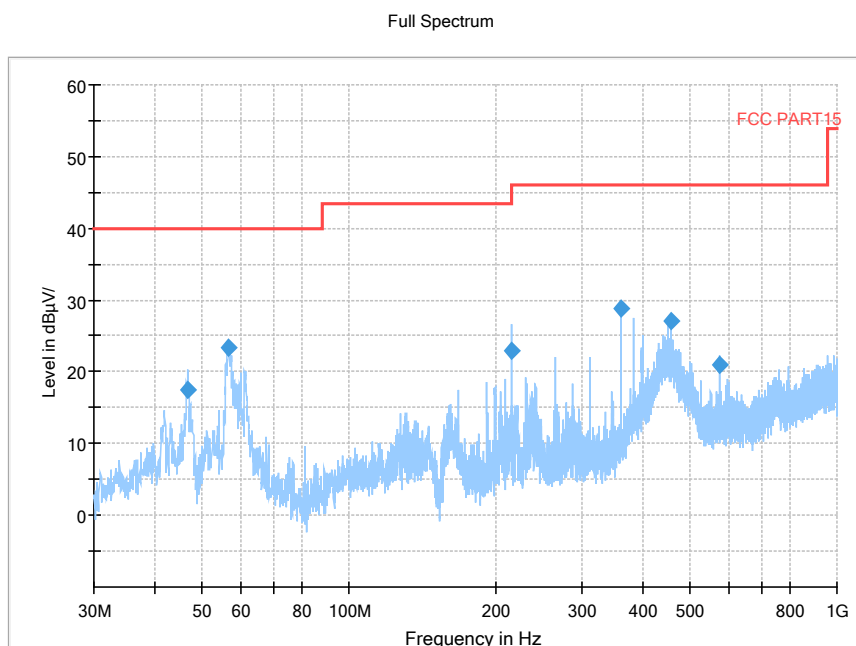
Note: The test data in the graph includes two polarizations: horizontal and vertical



Pic9. Radiated emission (18GHz –26GHz)

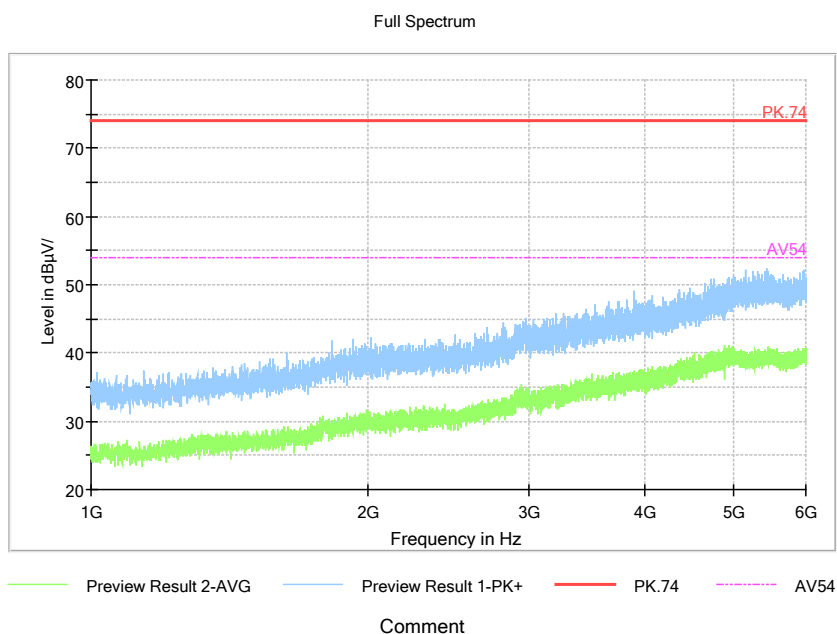
Note: The test data in the graph includes two polarizations: horizontal and vertical

EUT1+ Laptop: refer to Pic10 to Pic13



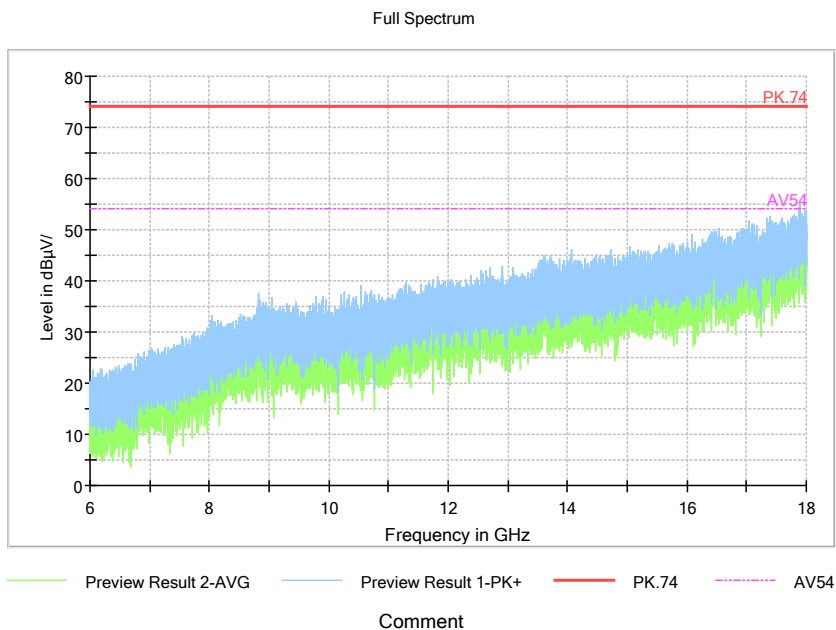
Pic10. Radiated emission (30MHz – 1GHz)

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



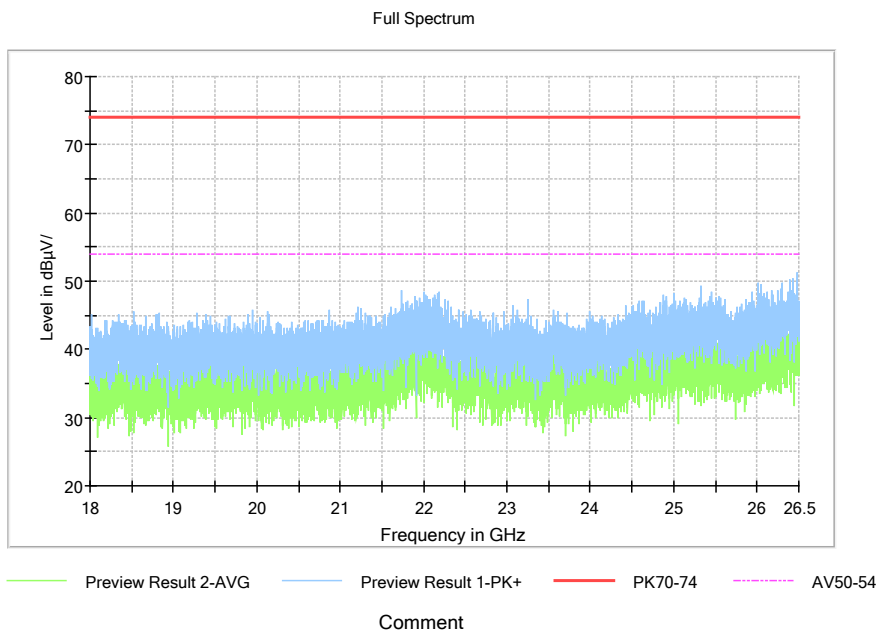
Pic11. Radiated emission (1GHz –6GHz)

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



Pic12. Radiated emission (6GHz –18GHz)

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



Pic13. Radiated emission (18GHz –26GHz)

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×9.60m Semi-Anechoic Chamber	FRANKONIA	-----	2023.11.15	2018.11.16
2	ESW EMI test receiver	R&S	101574	2022.06.19	2021.06.20
3	ESR3 EMI test receiver	R&S	102361	2023.04.11	2022.04.12
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-----