
TEST REPORT

Report No.: SRTC2022-9003(F)-0032
Product Name: LTE/UMTS Digital Mobile Phone
Model Name: Z6103
Applicant: ZTE CORPORATION
Manufacturer: ZTE CORPORATION
Specification: FCC Part15B (Certification)
(2021 edition)
ANSI C63.4-2014
FCC ID: SRQ-Z6103

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

The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written permission of The State Radio_monitoring_center Testing Center (SRTC).

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: Electronic Testing Building, No. 43 Shahe Road, Xili street, Nanshan District, Guangdong, China
City: ---
Country or Region: ---
Contacted person: ---
Tel: ---
Email: ---

1.4 Manufacturer's details

Company: ZTE CORPORATION
Address: Electronic Testing Building, No. 43 Shahe Road, Xili street, Nanshan District, Guangdong, China
City: ---
Country or Region: ---
Contacted person: ---
Tel: ---
Email: ---

1.5 Application details

Date of reception of test sample: 23th June 2022

Date of test: 24th June 2022 to 11th July 2022

1.6 Reference specification

FCC Part 15B, 2021 (Certification)

1.7 Information of EUT

1.7.1 General information

Name of EUT	LTE/UMTS Digital Mobile Phone
Model Name	Z6103
FCC ID	SRQ-Z6103
Frequency Range	WCDMA: FDD II / FDD IV /FDD V LTE: FDD 2/ FDD 4/ FDD 5/ FDD 12 /TDD 41 /FDD 66 Bluetooth: 2.4~2.4835GHz WiFi: 2.4~2.4835GHz/ 5.15-5.25GHz /5.725-5.85GHz
Equipment Class	Class B
Power Supply	Battery or Charger
Rated Power Supply Voltage	4.0V
Extreme Temperature	Lowest: -10°C Highest: +55°C
Extreme Voltage	Minimum: 3.8V Maximum: 4.3V
HW Version	zw5A
SW Version	TBD

1.7.2EUT details

	Product Name	Model Name	IMEI
EUT	LTE/UMTS Digital Mobile Phone	Z6103	866978060002565

1.7.3 Auxiliary equipment details

AE (Auxiliary Equipment) 1#: Laptop

Manufacturer	Lenovo
Model Number	E40-70
S/N	MP06WE9U
Input Voltage	100V-240V AC

AE (Auxiliary Equipment) 2#: Charger

Manufacturer	RUIJNG
Model Number	STC-A520A-Z
Input Voltage	100V-240V AC
Output Voltage	5.0V DC

AE (Auxiliary Equipment) 3#: Charger

Manufacturer	CHENYANG
Model Number	STC-A520A-Z
Input Voltage	100V-240V AC
Output Voltage	5.0V DC

AE (Auxiliary Equipment) 4#: Battery

Type	Li-Lon
Manufacturer	Ningbo Veken Battery Co., Ltd.
Model Number	Li3931T44P8h806139

AE (Auxiliary Equipment) 5#: Battery

Type	Li-Lon
Manufacturer	ZHONGSHAN TIANMAO Battery Co., Ltd.
Model Number	Li3931T44P8h806139

AE (Auxiliary Equipment) 6#: USB Cable

Manufacturer	Luxshare-ICT Co., Ltd
Model Number	USB-TC20-W-100-M-L

AE (Auxiliary Equipment) 7#: USB Cable

Manufacturer	King Power Electronics Co., Ltd
Model Number	USB-TC20-W-100-M-L

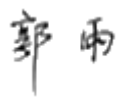
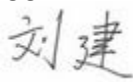
Note1: As the information described in these above tables, the relevant tests have been performed in order to verify in which supply would have the worst features. When the EUT exercised with 3# Charger, 5# Battery, 7# USB Cable is the worst feature, and record the results in the test report.

Note2: AE1# Laptop 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. Liu Jian Test engineer 	Issued date: 2022.7.11

2.2 Test result

2.2.1 Conducted Emissions-FCC Part15.107

Ambient condition:

Temperature	Relative humidity	Pressure
24.0°C	36.3%	100.8kPa

Test Setup with laptop:

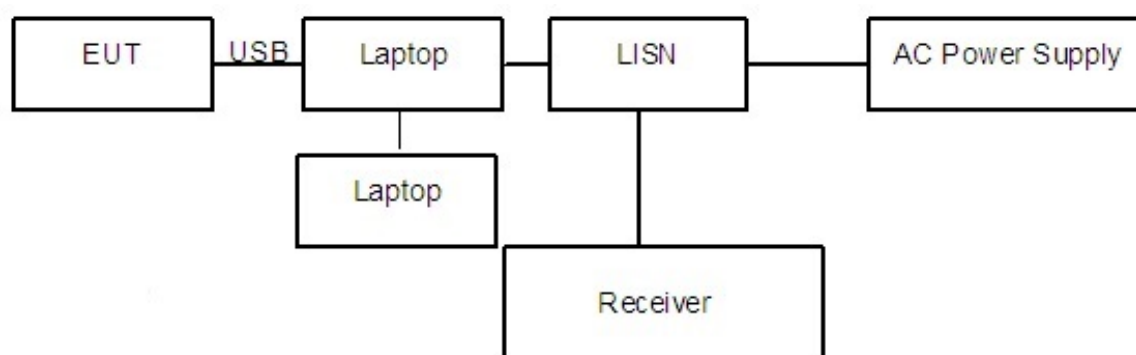


Figure 1

Test Procedure:

The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The 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:

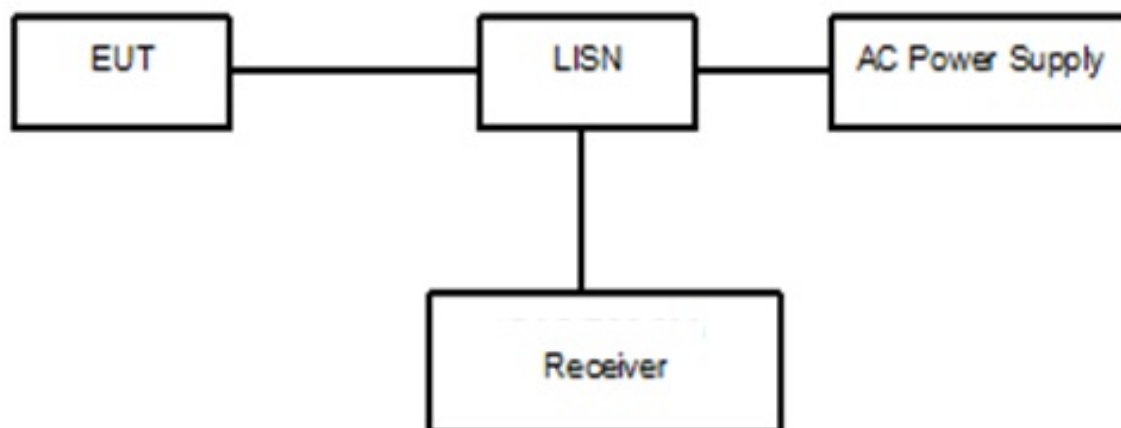


Figure 2

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 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:

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

Sample calculation: $(39.43\text{dB}\mu\text{V}) = (9.73\text{dB}\mu\text{V}) + (29.7\text{dB})$, the corresponding frequency is 0.162793MHz.

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	Pmea QuasiPeak (dBμV)	Pmea Average (dBμV)
0.162793	39.43	---	65.32	25.89	L1	29.7	9.73	---

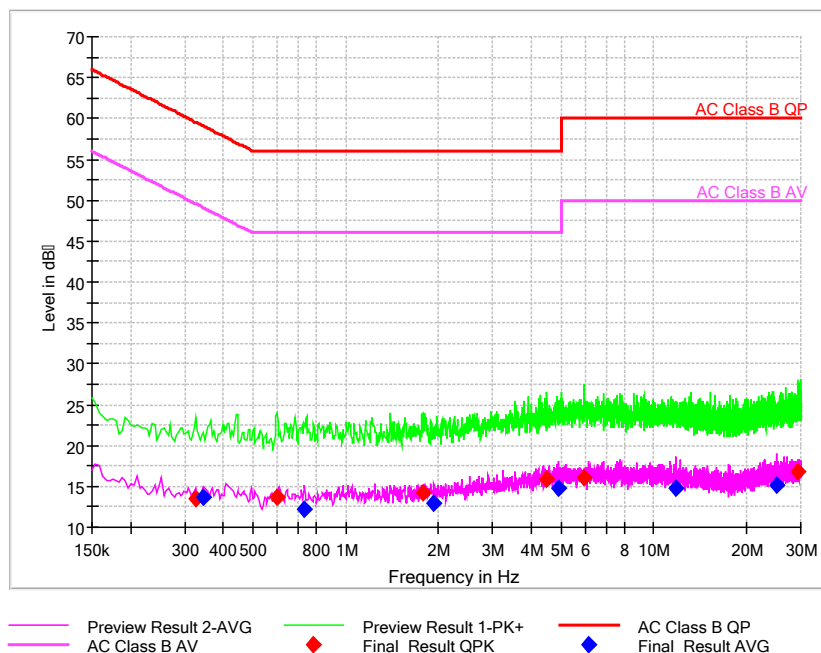
Limit:

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

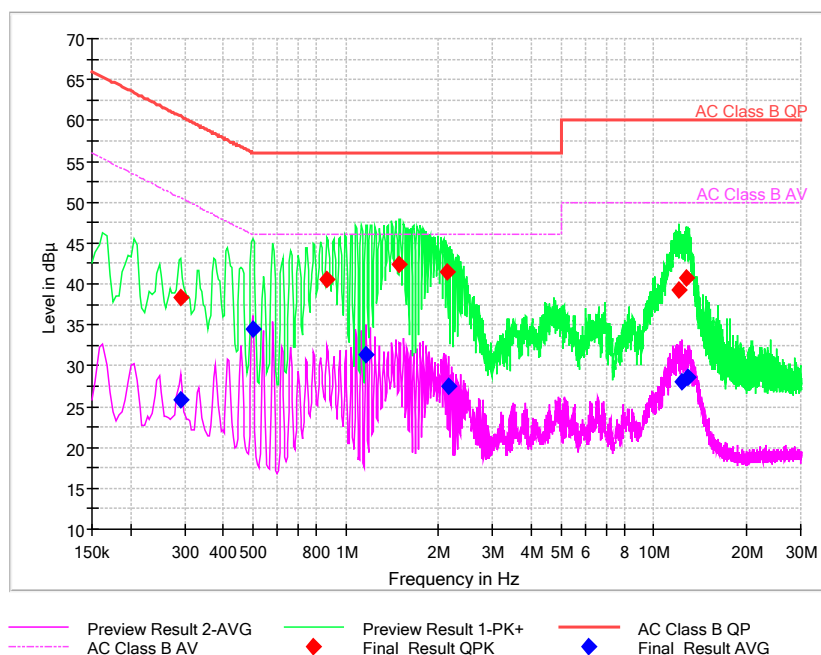
Test result:

Noise Level of the Measuring Instrument



Pic1. Conducted emission L and N Line

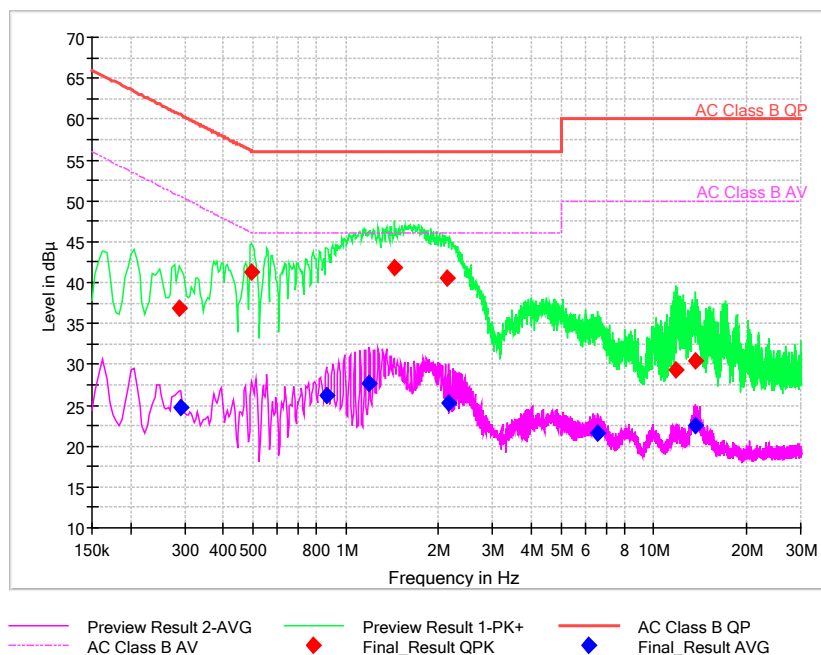
EUT + Charger: AC240V



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)
0.290721	38.3	---	60.5	22.2	N	29.9	8.4	---
0.290721	---	25.76	50.5	24.74	N	29.9	---	-4.14
0.499671	---	34.56	46.01	11.45	L1	29.8	---	4.76
0.870664	40.54	---	56	15.46	N	29.7	10.84	---
1.160636	---	31.38	46	14.62	L1	29.7	---	1.68
1.49325	42.45	---	56	13.55	N	29.7	12.75	---
2.128629	41.4	---	56	14.6	N	29.7	11.7	---
2.158479	---	27.43	46	18.57	L1	29.7	---	-2.27
12.06441	39.21	---	60	20.79	L1	29.8	9.41	---
12.29895	---	28.02	50	21.98	N	29.8	---	-1.78
12.70832	40.78	---	60	19.22	L1	29.8	10.98	---
12.96418	---	28.66	50	21.34	L1	29.8	---	-1.14

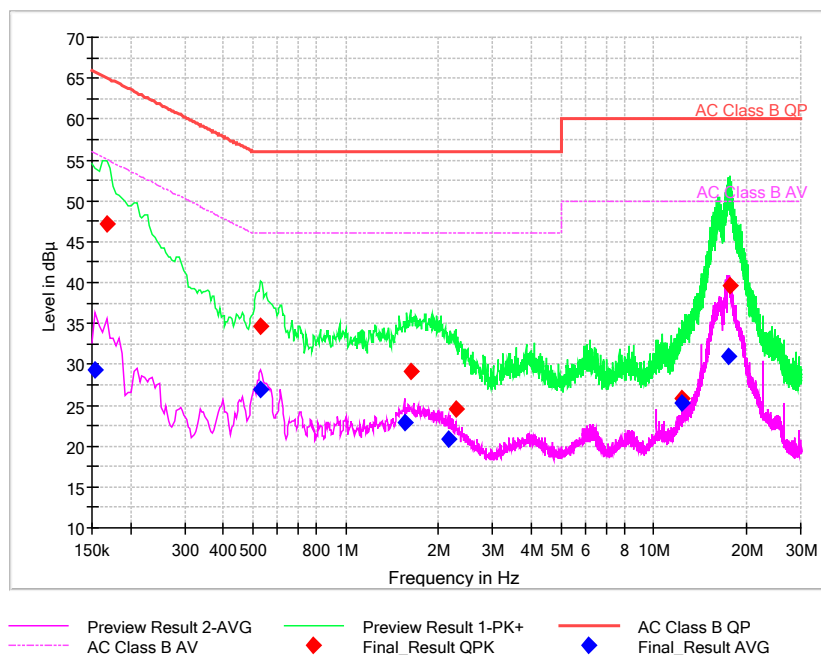
EUT + Charger: AC120V



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)
0.286457	36.9	---	60.63	23.73	L1	29.8	7.1	---
0.290721	---	24.78	50.5	25.73	L1	29.8	---	-5.02
0.495407	41.33	---	56.08	14.74	L1	29.8	11.53	---
0.8664	---	26.24	46	19.76	N	29.7	---	-3.46
1.19475	---	27.63	46	18.37	N	29.7	---	-2.07
1.437814	41.81	---	56	14.19	N	29.7	12.11	---
2.137157	40.59	---	56	15.41	N	29.7	10.89	---
2.14995	---	25.31	46	20.69	N	29.7	---	-4.39
6.5379	---	21.54	50	28.46	L1	29.8	---	-8.26
11.82988	29.36	---	60	30.64	L1	29.8	-0.44	---
13.67205	---	22.45	50	27.55	L1	29.8	---	-7.35
13.71896	30.51	---	60	29.49	L1	29.8	0.71	---

EUT + 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)
0.154264	---	29.35	55.77	26.42	N	29.9	---	-0.55
0.167057	47.12	---	65.11	17.99	L1	29.9	17.22	---
0.529521	34.65	---	56	21.35	N	29.8	4.85	---
0.529521	---	26.99	46	19.01	L1	29.8	---	-2.81
1.548686	---	22.82	46	23.18	N	29.7	---	-6.88
1.621179	29.08	---	56	26.92	L1	29.7	-0.62	---
2.145686	---	20.77	46	25.23	L1	29.7	---	-8.93
2.286407	24.5	---	56	31.5	L1	29.7	-5.2	---
12.28616	---	25.29	50	24.71	N	29.8	---	-4.51
12.29895	25.77	---	60	34.23	L1	29.8	-4.03	---
17.51417	---	30.9	50	19.1	L1	29.9	---	1
17.58666	39.54	---	60	20.46	N	29.9	9.64	---

2.2.2 Radiated Emissions-FCC Part15.109

Ambient condition:

Temperature	Relative humidity	Pressure
24.0°C	36.3%	100.8kPa

Test Setup:

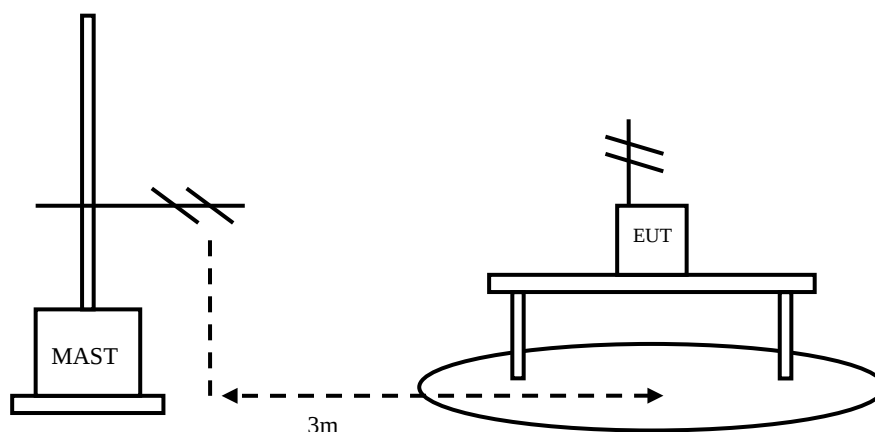


Figure 3

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 EUT was connected with a laptop via the USB cable and transferred the data between the laptop and 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 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: $(24.61\text{dB}\mu\text{V/m}) = (36.61\text{dB}\mu\text{V}) + (-12\text{dB/m})$, the corresponding frequency is 30 MHz.

Frequency(MHz)	Result(dB μ V/m)	Limit (dB μ V/m)	ARpl (dB/m)	Pmea (dB μ V)	Polarity
30	24.61	40.00	-12	36.61	V

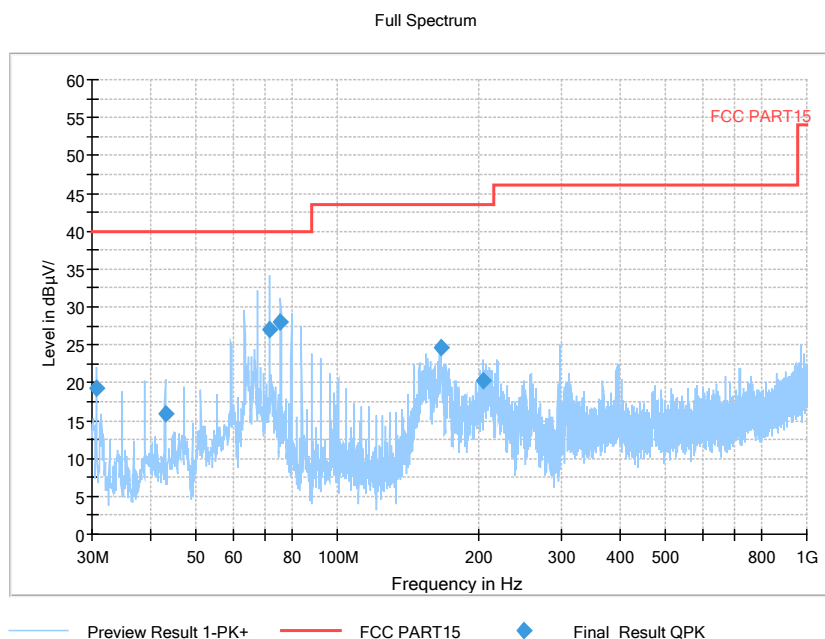
EUT + Laptop:

Frequency(MHz)	Result(dB μ V/m)	Limit (dB μ V/m)	ARpl (dB/m)	Pmea (dB μ V)	Polarity
30.679	19.3	40.00	-21.1	40.4	V
42.9495	15.9	40.00	-18.2	34.1	V
71.613	27.08	40.00	-22.5	49.58	V
75.7355	27.98	40.00	-23.5	51.48	V
165.8485	24.71	43.50	-21.8	46.51	V
204.3575	20.29	43.50	-19	39.29	V

EUT + Charger:

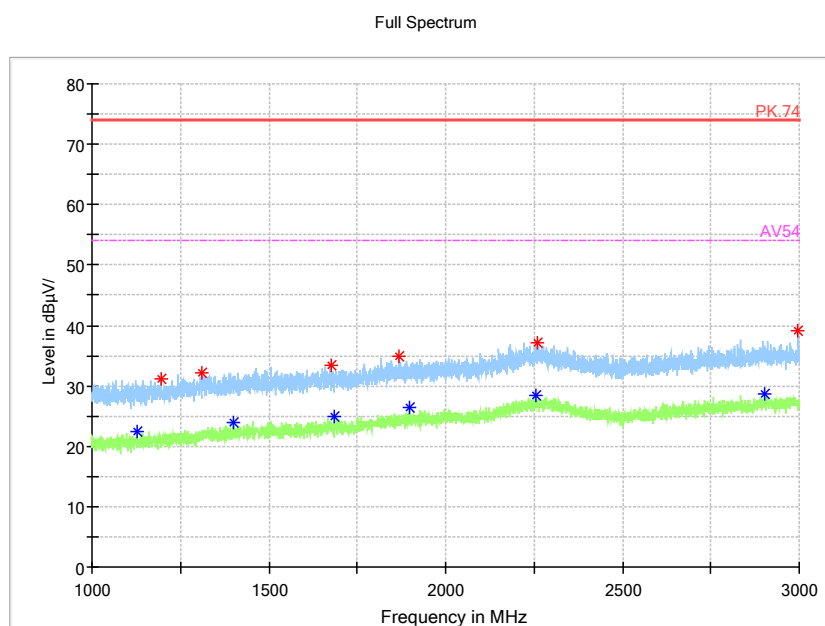
Frequency(MHz)	Result(dB μ V/m)	Limit (dB μ V/m)	ARpl (dB/m)	Pmea (dB μ V)	Polarity
30.485	12.16	40.00	-21.1	33.26	V
44.453	16.58	40.00	-18	34.58	V
64.1925	25.66	40.00	-20.2	45.86	V
72.8255	18.94	40.00	-22.8	41.74	V
127.679	18.23	43.50	-22.1	40.33	V
940.83	19.13	46.00	-2.8	21.93	V

EUT + Laptop: refer to Pic5, Pic6, Pic7, Pic8, Pic9



Pic5. Radiated emission(30MHz – 1GHz)

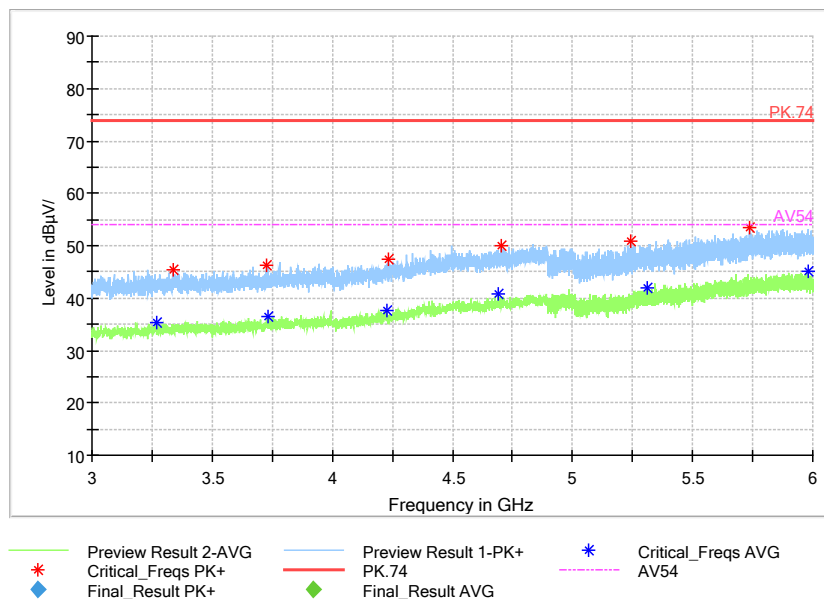
Note: The test data in the graph includes two polarizations: horizontal and vertical



Pic6. Radiated emission (1GHz –3GHz)

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

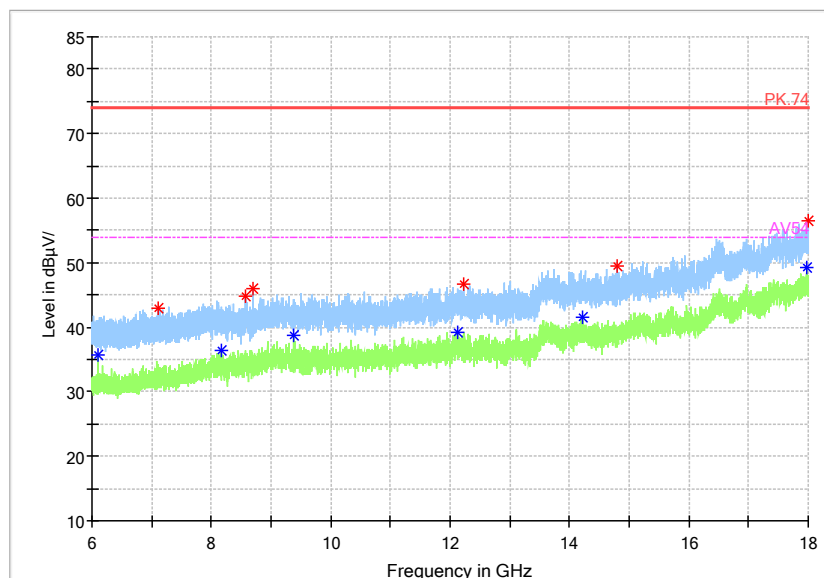
Full Spectrum



Pic7. Radiated emission (3GHz –6GHz)

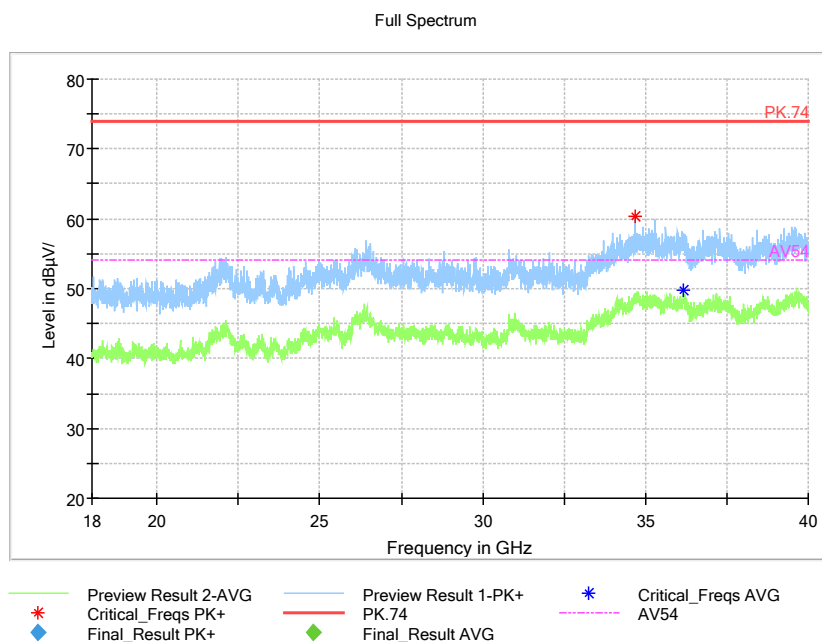
Note: The test data in the graph includes two polarizations: horizontal and vertical.

Full Spectrum



Pic8. Radiated emission (6GHz –18GHz)

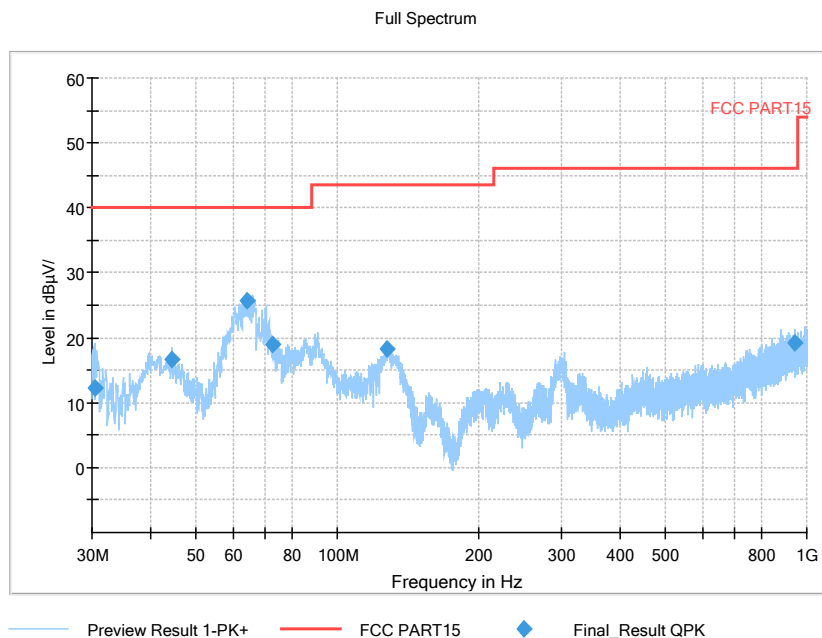
Note: The test data in the graph includes two polarizations: horizontal and vertical.



Pic9. Radiated emission (18GHz – 40GHz)

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

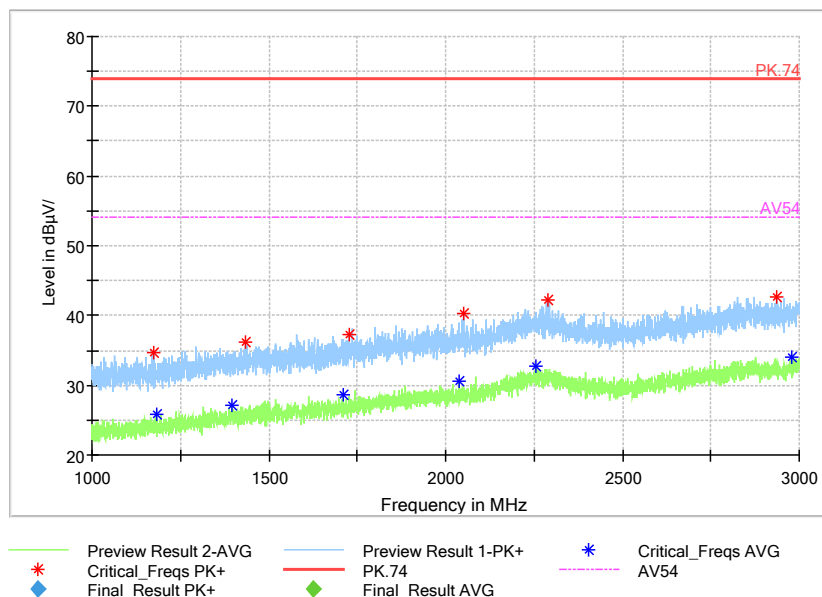
EUT + Charger: refer to Pic10, Pic11, Pic12, Pic13, Pic14



Pic10. Radiated emission(30MHz – 1GHz)

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

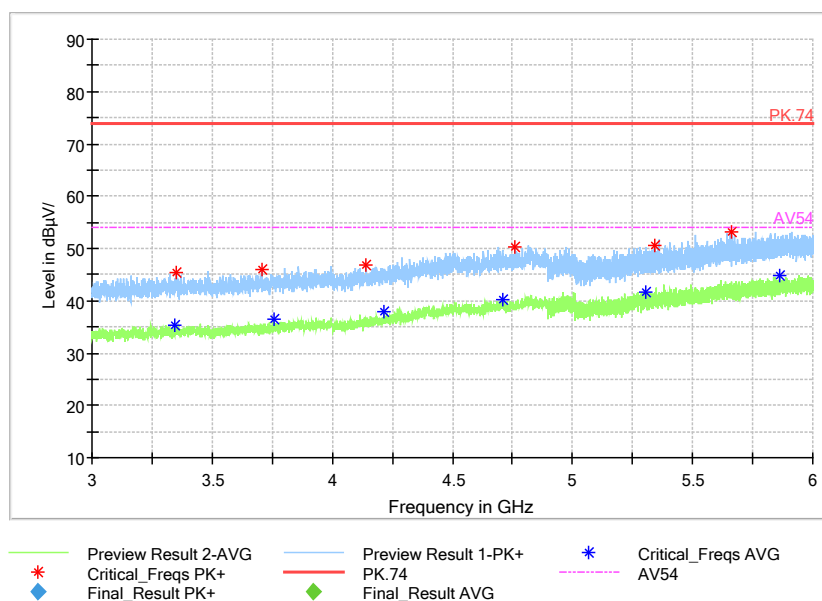
Full Spectrum



Pic11. Radiated emission (1GHz –3GHz)

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

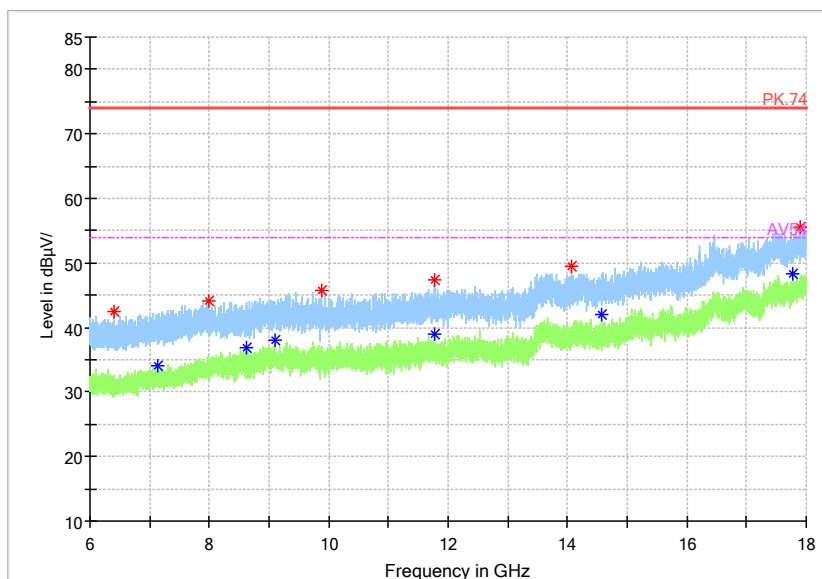
Full Spectrum



Pic12. Radiated emission (3GHz –6GHz)

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

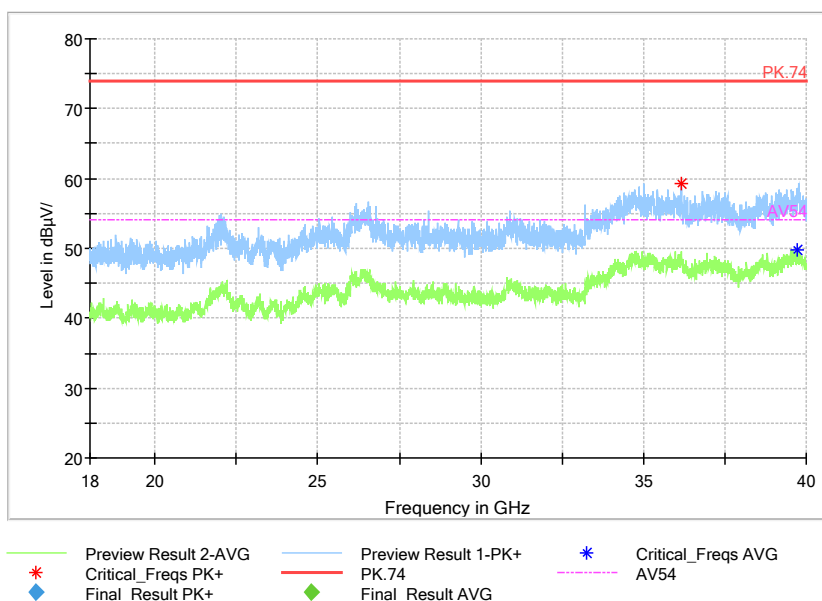
Full Spectrum



Pic13. Radiated emission (6GHz –18GHz)

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

Full Spectrum



Pic14. Radiated emission (18GHz – 40GHz)

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	-----	15th Nov. 2023	16th Nov. 2018
2	ESW EMI test receiver	R&S	101574	19th June 2023	20th June 2022
3	ESR3 EMI test receiver	R&S	102361	10th Apr. 2023	11th Apr. 2022
4	9.080m×5.255m×3.525m Shielding room	FRANKONIA	-----	24th Mar. 2025	25th Mar. 2022
5	VULB 9163 Ultra log test antenna	schwarzbeck	867	27th May 2023	28th May 2021
6	HF 907 Double-Ridged Waveguide Horn Antenna	R&S	100512	12th Apr. 2023	13th Apr. 2021
7	SAS-574 Horn Antenna	schwarzbeck	535	20th Apr. 2023	21th Apr. 2021
8	ENV216 AMN	R&S	101881	19th June 2023	20th June 2022
9	EMC32EMI test software	R&S	-----	-----	-----