
TEST REPORT

Report No.: SRTC2018-9003(F)-0027
Product Name: LTE Ufi
Model Name: 802ZT
Applicant: ZTE Corporation
Manufacturer: ZTE Corporation
Specification: FCC Part15B (Certification)
(2019 edition)
FCC ID: SRQ-MF993

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
Testion 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
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1.3 Applicant's details

Company: ZTE Corporation
Address: ZTE Plaza, #55 Keji Road South, Hi-Tech, Industrial Park, Nanshan District,Guangdong, China
City: Shenzhen
Country or Region: P.R.China
Contacted person: Yang Zhao
Tel: +86-29-83600770
Fax: ---
Email: zhao.yangxa@zte.com.cn

1.4 Manufacturer's details

Company: ZTE Corporation
Address: ZTE Plaza, #55 Keji Road South, Hi-Tech, Industrial Park, Nanshan District,Guangdong, China
City: Shenzhen
Country or Region: P.R.China
Contacted person: Yang Zhao
Tel: +86-29-83600770
Email: zhao.yangxa@zte.com.cn

1.5 Application details

Date of reception of test sample: 5th Jan. 2019

Date of test: 6th Jan. 2019 to 29th Jan. 2019

1.6 Reference specification

FCC Part 15B, 2019 (Certification)

1.7 Information of EUT

1.7.1 General information

Name of EUT	LTE Ufi
FCC ID	SRQ-MF993
Frequency Range	WCDMA Band II/LTE band II: Tx:1850~1910MHz Rx:1930~1990MHz WCDMA BAND IV/LTE band IV: Tx: 1710 MHz – 1755 MHz Rx: 2110 MHz – 2155 MHz LTE band XII:Tx: 699 MHz – 716 MHz Rx: 729 MHz – 746 MHz LTE band XVII:Tx: 704 MHz – 716 MHz Rx: 734 MHz – 746 MHz LTE band XLI:Tx:2496 MHz – 2690 MHz Rx:2496 MHz – 2690 MHz WiFi: Tx:2.4~2.4835GHz 5.15GHz -5.25GHz Rx: 2.4~2.4835GHz 5.15GHz -5.25GHz
Rated Output Power	WCDMA:24.0dBm LTE:24.0dBm
Modulation Type	WCDMA:QPSK LTE:QPSK; 16QAM; 64QAM
Emission Designator	WCDMA;LTE
Duplex Mode	TDD; FDD
Equipment Class	Class B
Antenna Type	Internal fixed antenna
Power Supply	Battery or Charger
Rated Power Supply Voltage	3.73V
Extreme Temperature	Lowest: -10°C Highest: +55°C
Extreme Voltage	Minimum: 3.357V Maximum: 4.103V
HW Version	MF993H01
SW Version	MF993S01

1.7.2EUT details

Product Name	Model Name	IMEI
LTE Ufi	802ZT	863942040003823

1.7.3 Auxiliary equipment details

AE (Auxiliary Equipment) 1#: Computer

Manufacturer	Lenovo
Model Number	E40-70
S/N	MP06WE9U
Input Voltage	100V-240V AC
Frequency	50/60Hz

AE (Auxiliary Equipment) 2#: USB Cable

Manufacturer	chuantuo
Model Number	80410500042

AE (Auxiliary Equipment) 4#: Battery

Type	Li-Lon
Manufacturer	Jiade Energy Technology (Zhuhai) Co., Ltd.
Model Number	Li3730T43P4h794667
Capacity	3000mAh
Nominal Voltage	3.73V

AE (Auxiliary Equipment) 5#: Charger

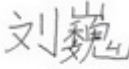
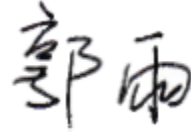
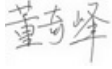
Manufacturer	ZTE Corporation
Model Number	WPS-060
S/N	20160917
Input Voltage	100V-240V AC
Frequency	50/60Hz

Note: Only for testing 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. LiuWei Director of the test department 	Checked by Mr. Guo Yu Vice director of the test department 
Tested by: Mr. Dong Qifeng 	Issued date: 2019.02.20

2.2 Test result

2.2.1 Conducted Emissions-FCC Part15.107

Ambient condition:

Temperature	Relative humidity	Pressure
24.6°C	40.5%	100.8kPa

Test Setup with laptop:

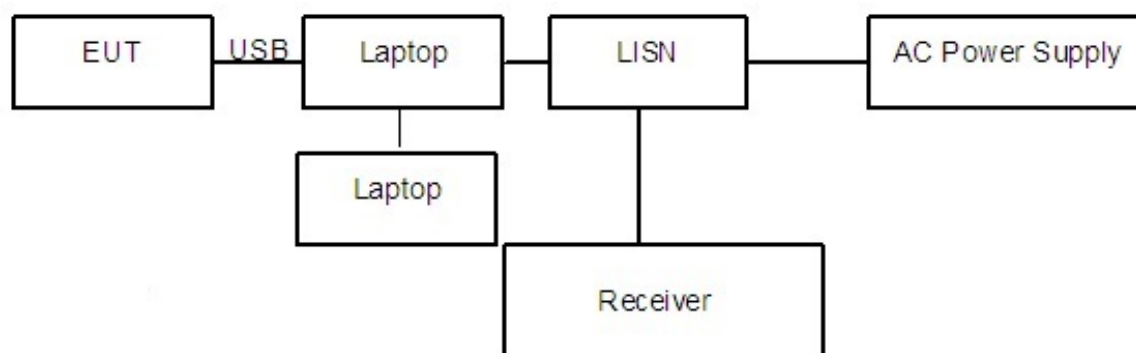


Figure 1

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 was charged. Obtain network information for reading and modifying related network parameters through the program in laptop.

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:

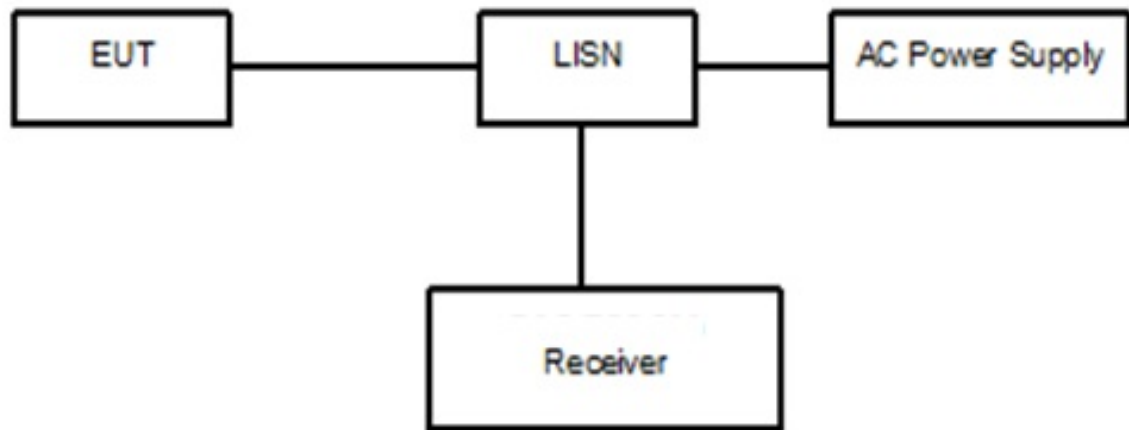


Figure 2

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.

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.

The “reference path loss”, using Corr. as symbol, includes the cable loss, the attenuation of the attenuator and the voltage division factor of AMN.

The measurement results are obtained as described below:

Result= Reading + Corr.

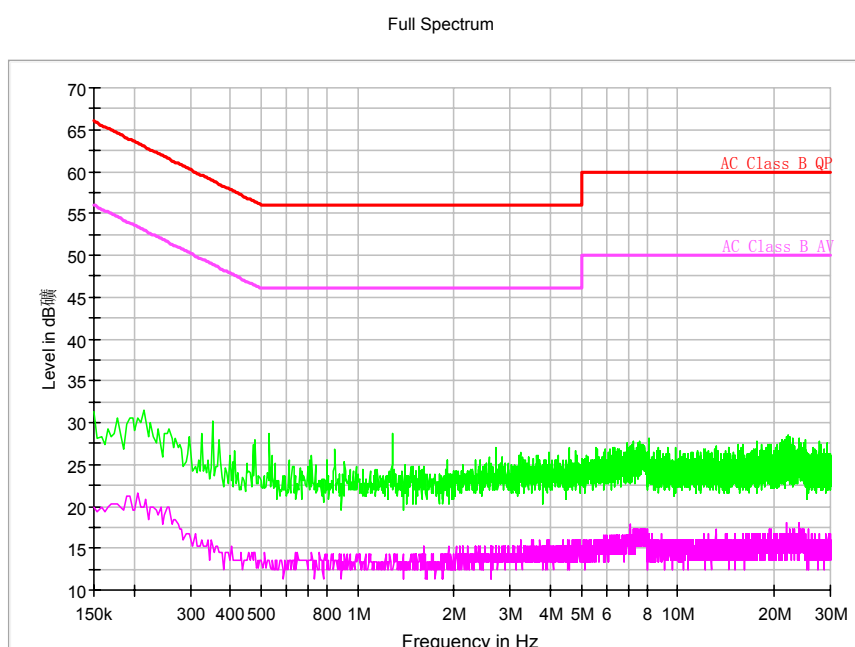
Limit:

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

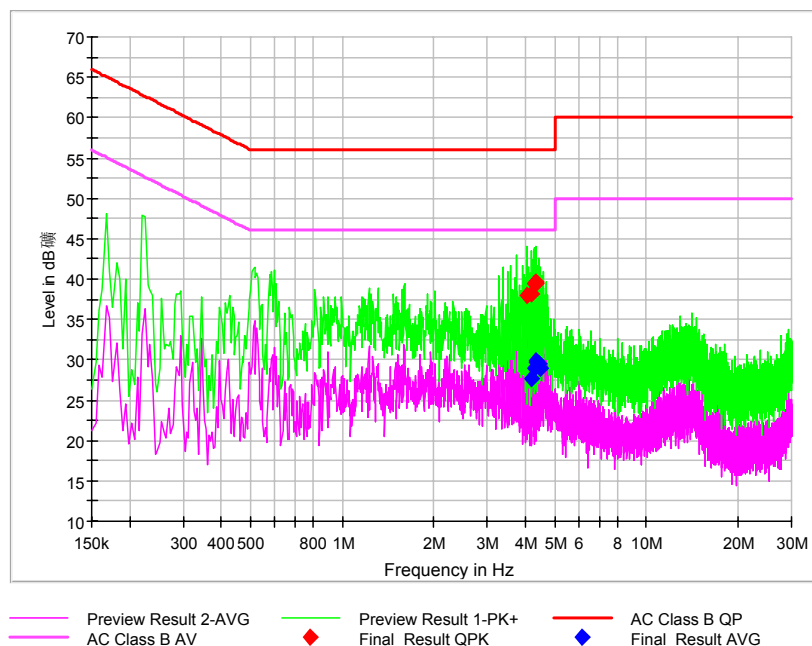
Test result:

Noise Level of the Measuring Instrument



Pic1. Conducted emission L and N Line

EUT+Laptop:



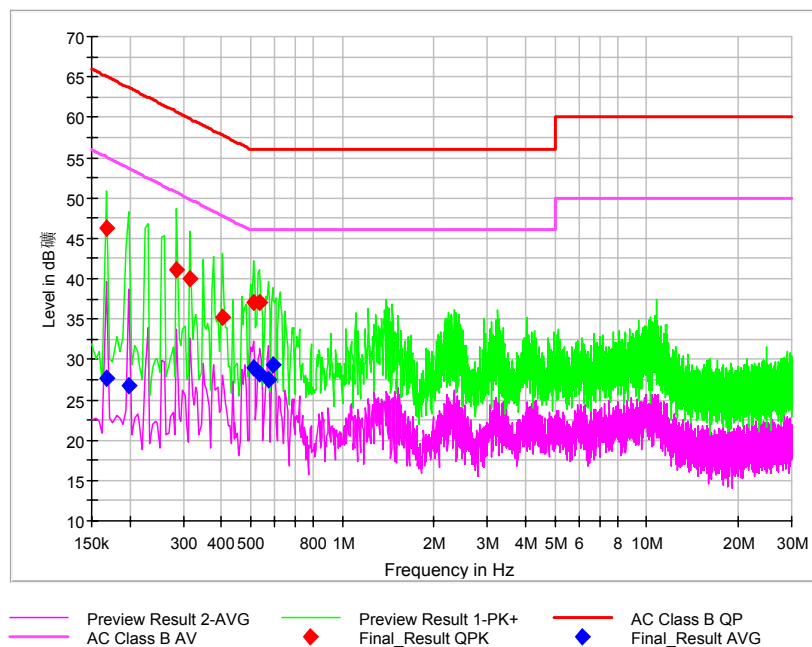
Pic2. Conducted emission L+N Line

MEASUREMENT RESULT:

Frequency(MHz)	Average(dBμV)	Limit(dBμV)	Line	Corr.(dB)
4.170971	27.71	46.00	L1	29.9
4.276324	28.97	46.00	N	29.9
4.333390	29.81	46.00	L1	29.9
4.350949	29.65	46.00	L1	29.9
4.412404	29.43	46.00	N	29.9
4.473860	28.98	46.00	L1	29.9

Frequency(MHz)	Average(dBμV)	Limit(dBμV)	Line	Corr.(dB)
4.048059	37.90	56.00	L1	29.9
4.170971	38.12	56.00	N	29.9
4.276324	39.54	56.00	L1	29.9
4.298272	39.39	56.00	L1	29.9
4.333390	39.71	56.00	N	29.9
4.350949	39.39	56.00	L1	29.9

EUT+ charger



Pic3. Conducted emission L+N Line

MEASUREMENT RESULT:

Frequency(MHz)	Average(dBμV)	Limit(dBμV)	Line	Corr.(dB)
0.167559	27.63	55.08	L1	29.9
0.198287	26.78	53.68	N	29.9
0.509956	28.95	46.00	L1	30.0
0.536294	28.27	46.00	L1	30.0
0.571412	27.49	46.00	N	30.0
0.588971	29.32	46.00	L1	30.0

Frequency(MHz)	Average(dBμV)	Limit(dBμV)	Line	Corr.(dB)
0.167559	46.32	65.08	L1	29.9
0.286081	41.16	60.64	N	30.0
0.316809	40.06	59.79	L1	30.0
0.404603	35.23	57.76	L1	30.0
0.509956	37.06	56.00	N	30.0
0.531904	37.03	56.00	L1	30.0

2.2.2 Radiated Emissions-FCC Part15.109

Ambient condition:

Temperature	Relative humidity	Pressure
24.6°C	40.5%	100.8kPa

Test Setup:

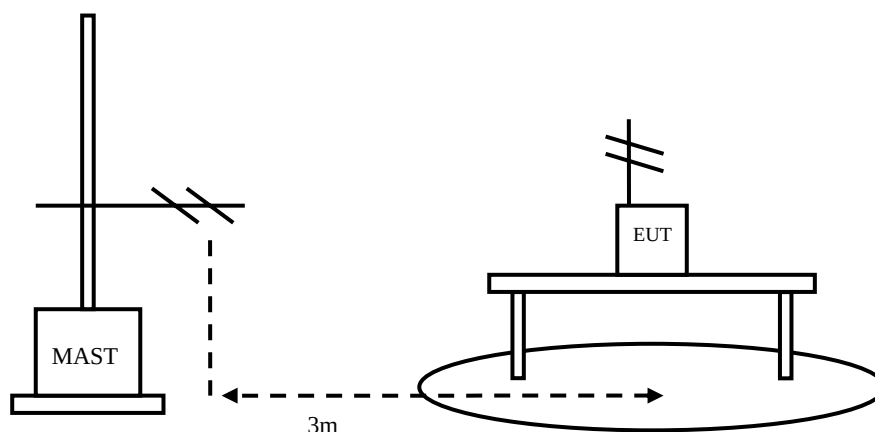


Figure 3

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 was charged. Obtain network information for reading and modifying related network parameters through the program in laptop. 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 HL562.

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 charging mode. The test set-up and the test methods are performed according to ANSI C63.4.

Then start the test software EMC32. Sweep the whole frequency band through the range from 30MHz to 1GHz, using receive log period antenna HL562.

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:

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

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

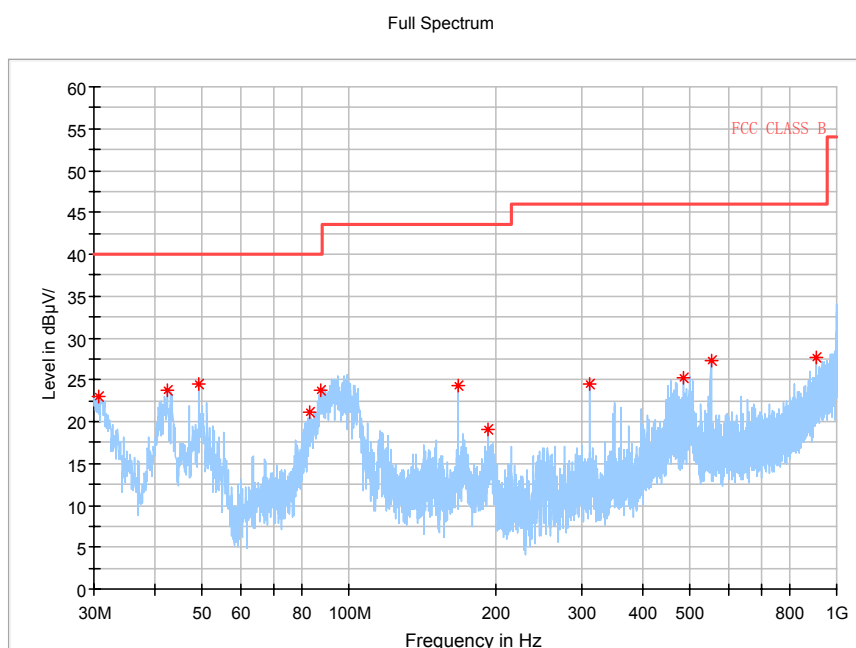
Test result:
EUT+Laptop

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity
30.65	23.00	-13.70	36.70	H
42.45	23.81	-19.40	43.21	V
49.12	24.40	-23.60	48.00	V
83.23	21.13	-23.50	44.63	H
87.23	23.82	-23.00	46.82	V
167.98	24.24	-22.80	47.04	V
192.76	19.03	-22.40	41.43	V
311.99	24.56	-17.70	42.26	V
485.86	25.27	-12.40	37.67	H
551.98	27.20	-11.00	38.20	V
907.37	27.71	-4.70	32.41	V

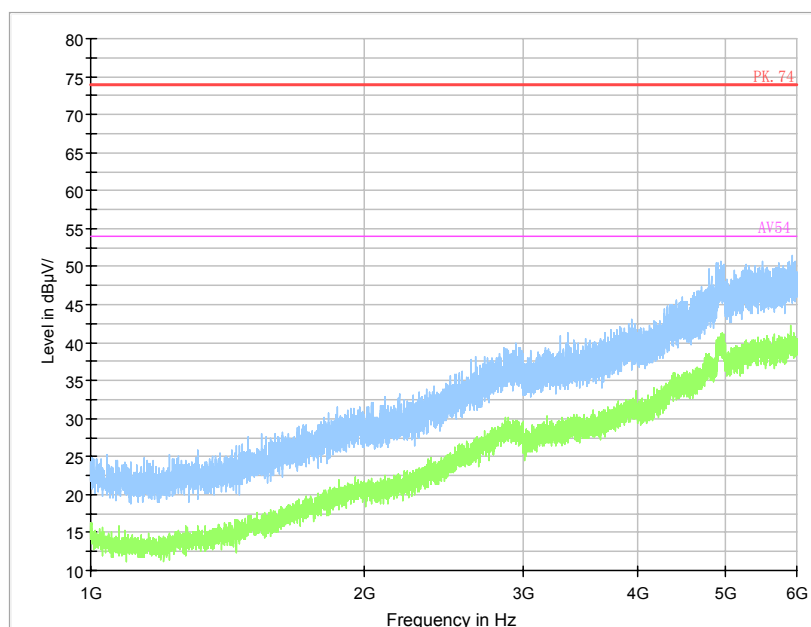
EUT+ charger

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity
41.76	27.48	-19.00	46.48	H
42.13	27.22	-19.20	46.42	V
48.47	27.12	-23.20	50.32	V
48.71	27.04	-23.40	50.44	H
80.93	16.07	-23.80	39.87	V
88.00	20.76	-22.90	43.66	V
173.20	18.02	-22.60	40.62	V
181.12	21.69	-22.40	44.09	V
249.99	17.41	-19.90	37.31	H
483.96	17.77	-12.40	30.17	V
682.93	20.77	-8.70	29.47	V
937.72	26.09	-4.20	30.29	V

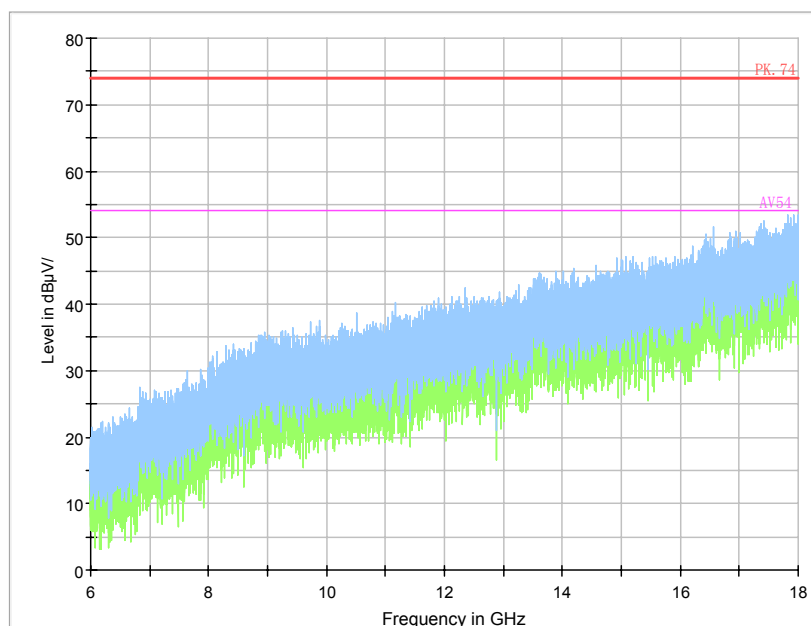
EUT+Laptop:



Pic4. Radiated emission(30 MHz – 1 GHz)



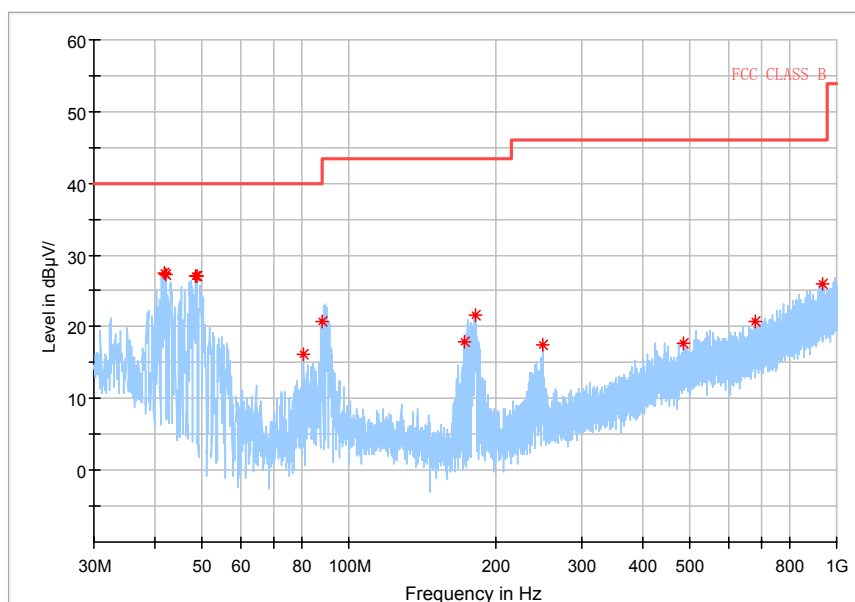
Pic5. Radiated emission (1 GHz – 6 GHz)



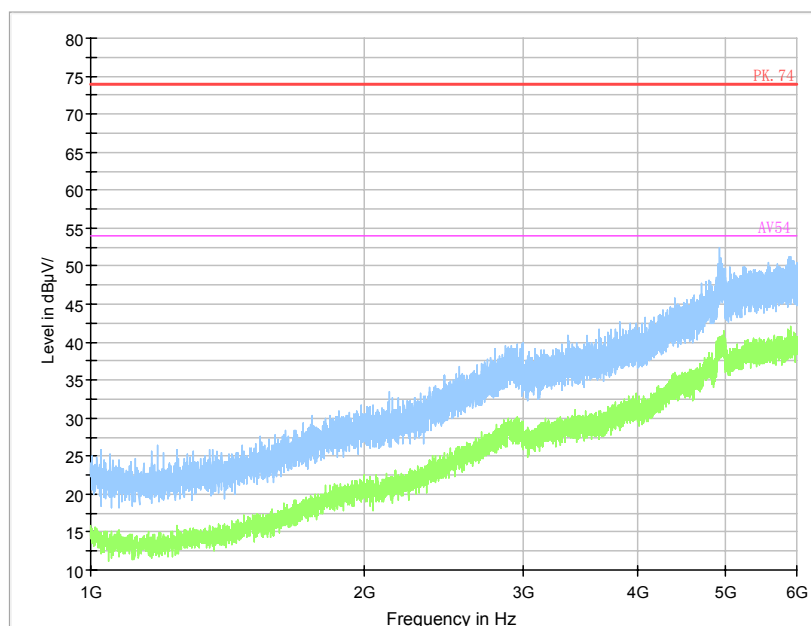
Pic6. Radiated emission (6 GHz – 18 GHz)

EUT+ charger:

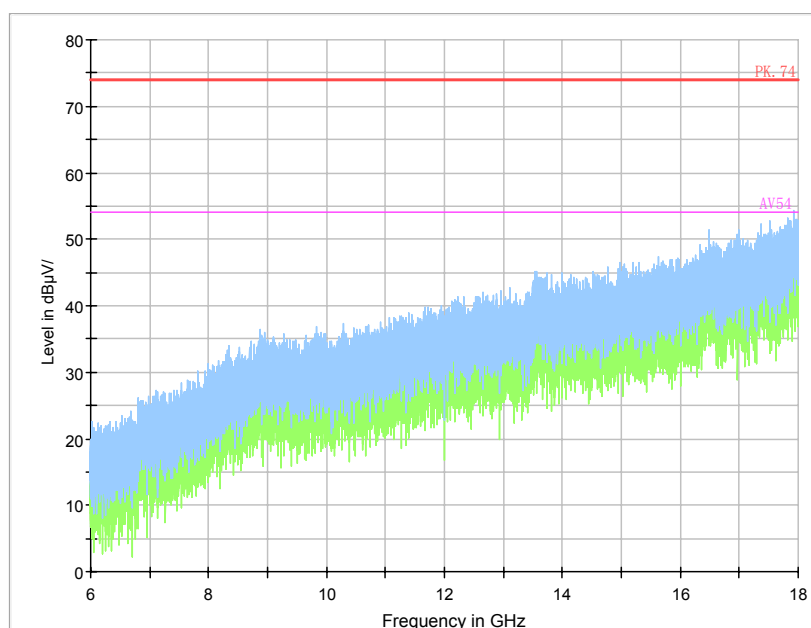
Full Spectrum



Pic7. Radiated emission(30MHz – 1GHz)



Pic8. Radiated emission (1 GHz – 6 GHz)



Pic9. Radiated emission (6 GHz – 18 GHz)

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	-----	20th Aug. 2019	20th Aug. 2018
2	ESI 40EMI test receiver	R&S	100015	20th Aug. 2019	20th Aug. 2018
3	E5515C(8960) Mobile Station Tester	Agilent	GB44050904	20th Aug. 2019	20th Aug. 2018
4	9.080m×5.255m×3.525m Shielding room	FRANKONIA	-----	20th Aug. 2019	20th Aug. 2018
5	ESCS30EMI test receiver	R&S	100029	20th Aug. 2019	20th Aug. 2018
6	HL562Ultra log test antenna	R&S	100016	20th Aug. 2019	20th Aug. 2018
7	ENV216 AMN	R&S	3560.6550.12	20th Aug. 2019	20th Aug. 2018
8	HF 907 Double-Ridged Waveguide Horn Antenna	R&S	100512	25 th May. 2019	25 th May. 2018
9	HF 907 Double-Ridged Waveguide Horn Antenna	R&S	100513	20th Aug. 2019	20th Aug. 2018
10	PS2000 Turn Table	FRANKONIA	-----	-----	-----
11	MA260 Antenna Master	FRANKONIA	-----	-----	-----
12	EMC32EMI test software	R&S	V10.20.01	-----	-----
13	HL562 Receive antenna	R&S	100167	20th Aug. 2019	20th Aug. 2018