
TEST REPORT

Report No.: SRTC2018-9003(F)-0022
Product Name: GSM/WCDMA Multi-Mode Digital Mobile Phone
Model Name: ZTE Blade L130
Applicant: ZTE Corporation
Manufacturer: ZTE Corporation
Specification: FCC Part15B (Certification)
(2018 edition)
ANSI C63.4-2014
FCC ID: SRQ-L130

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

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
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
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City: Shenzhen
Country or Region: 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: China
Contacted person: Yang Zhao
Tel: +86-29-83600770
Fax: ---
Email: zhao.yangxa@zte.com.cn

1.5 Application details

Date of reception of test sample: 13thDec. 2018

Date of test: 13thDec. 2018 to 20thDec. 2018

1.6 Reference specification

FCC Part 15B, 2018 (Certification)

ANSI C63.4-2014

1.7 Information of EUT

1.7.1 General information

Name of EUT	GSM/WCDMA Multi-Mode Digital Mobile Phone
FCC ID	SRQ-L130
Frequency Range	GSM850 PCS1900 WCDMA Band II WCDMA Band IV WCDMA band V
Modulation Type	GSM/GPRS:GMSK EDGE:GMSK WCDMA:QPSK
Duplex Mode	/
Equipment Class	Class B
Antenna Type	/
Power Supply	Battery or Charger
Rated Power Supply Voltage	3.8V
Extreme Temperature	Lowest: -10°C Highest: +55°C
Extreme Voltage	Minimum: 3.6V Maximum: 4.2V
HW Version	ujuA
SW Version	CLA_CO_L130V1.0

1.7.2 EUT details

Product Name	Model Name	IMEI
GSM/WCDMA Multi-Mode Digital Mobile Phone	ZTE Blade L130	866728040004144/866728040004086/ 866728040004110

1.7.3 Auxiliary equipment details

The EUT's USB cable and charger have two different suppliers. Earphone isn't in the sale configuration list. For more information, see tables below.

AE (Auxiliary Equipment) 1#: Computer

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

AE (Auxiliary Equipment) 2#: USB Cable

Manufacturer	Shen zhen KB TECHNOLOGY Co.,Ltd
Model Number	80410500059

AE (Auxiliary Equipment) 3#: USB Cable

Manufacturer	Dongguan Guojun Plastic Electronic Co.,Ltd
Model Number	80410500059

AE (Auxiliary Equipment) 4#: Battery

Type	Li-Lon
Manufacturer	NINGBO Veken Battery
Model Number	Li3816T43P4h604550
Capacity	/
Nominal Voltage	3.8V

AE (Auxiliary Equipment) 5#: Charger

Manufacturer	RUIJING
Model Number	STC-A505D-Z
S/N	/
Input Voltage	100V-240V AC
Frequency	50/60Hz

AE (Auxiliary Equipment) 6#: Charger

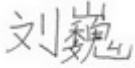

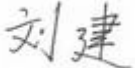
Manufacturer	Aohai
Model Number	STC-A505D-Z
S/N	/
Input Voltage	100V-240V AC
Frequency	50/60Hz

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 2# USB Cable and 5# Charger are the worst feature, and record the results in the test report. Throughout the testing period, all digital functions were activated, including GPS receiving, camera recording.

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

Issued by Mr. LiuWei 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: 2018.12.24

2.2 Test result

2.2.1 Conducted Emissions-FCC Part15.107

Ambient condition:

Temperature	Relative humidity	Pressure
23.1°C	40.3%	101.2kPa

Test Setup with laptop:

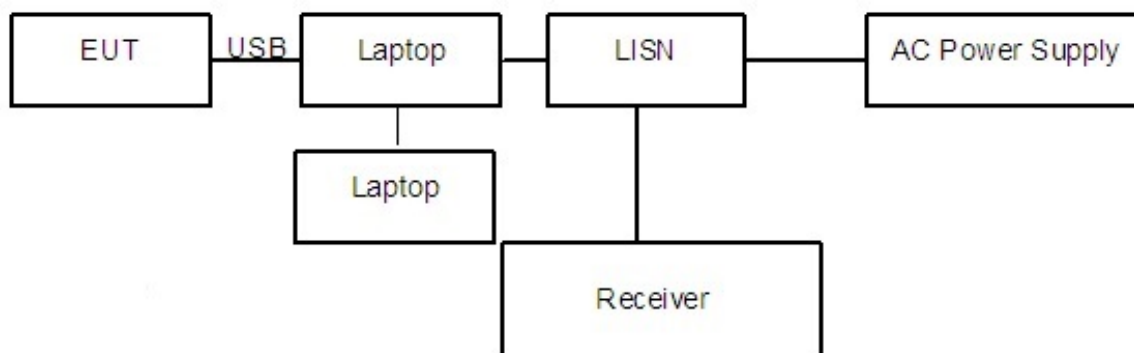


Figure 1

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 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.

Test Setup with charger:

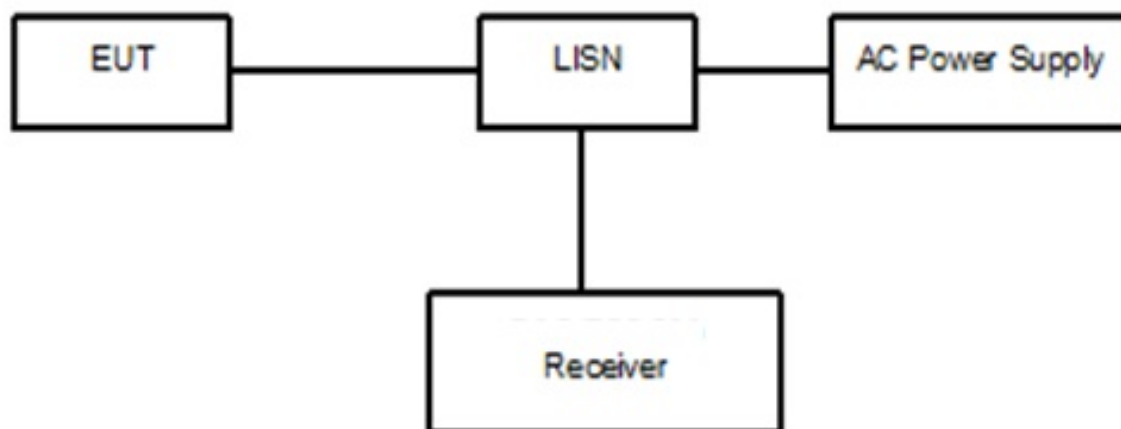


Figure 2

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.

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.

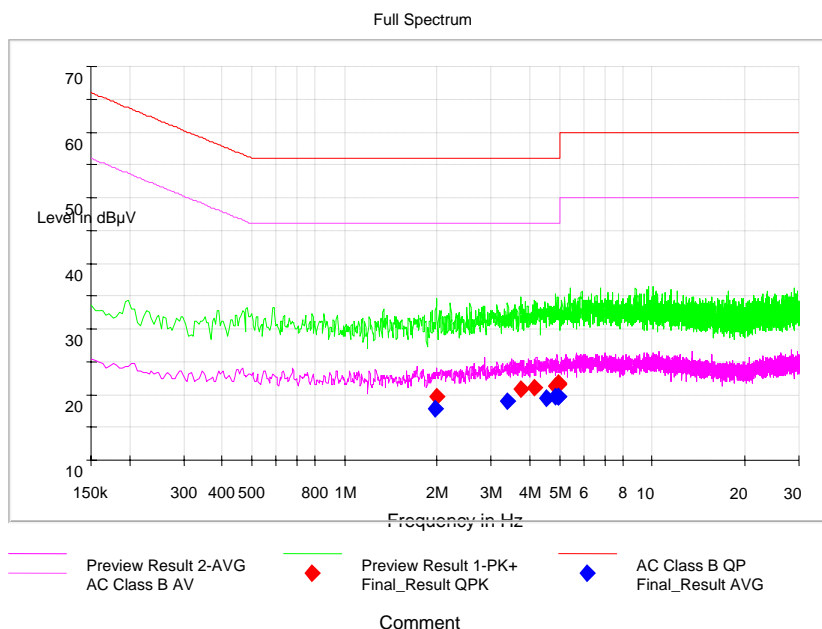
Limit:

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

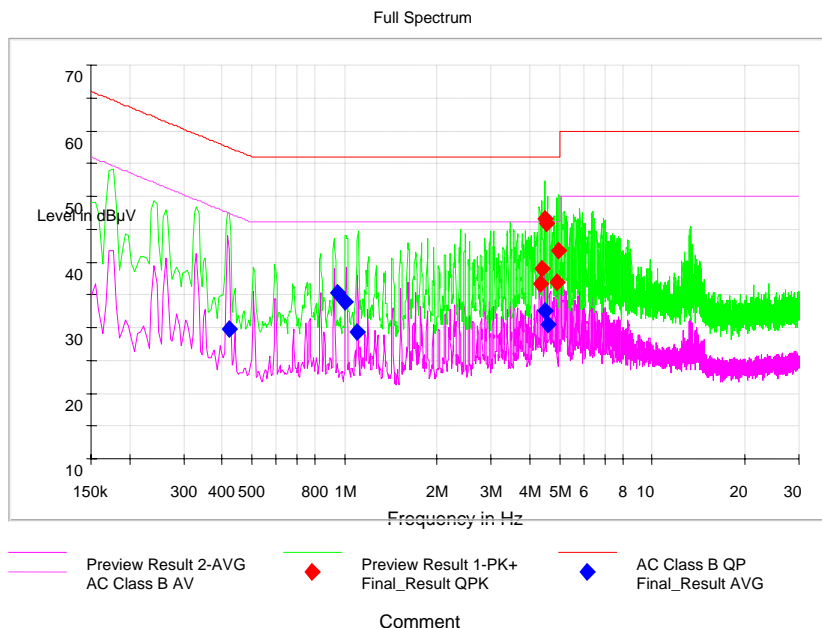
Test result:

Noise Level of the Measuring Instrument



Pic1.Conducted emission L and N Line

EUT + Charger + FM Receiver:



Pic2. Conducted emission L Line

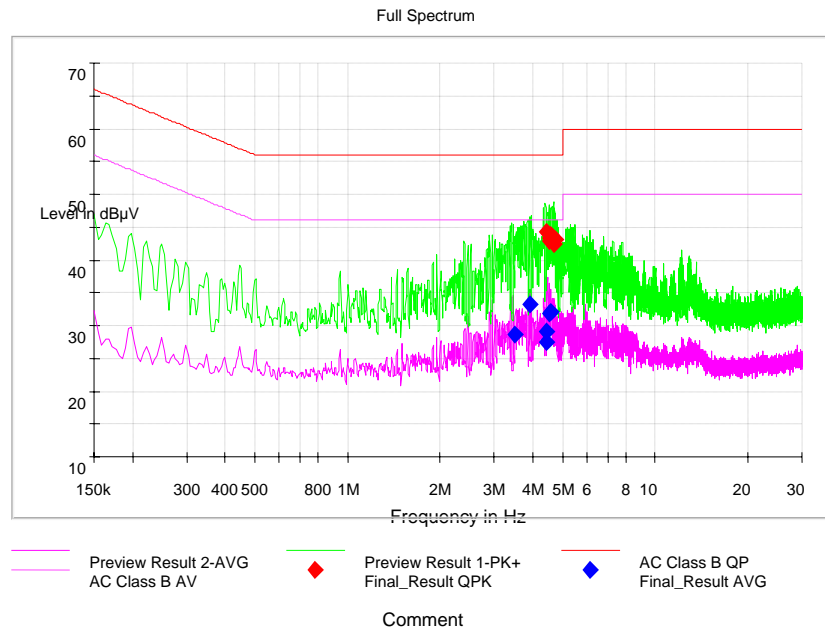
MEASUREMENT RESULT: "EUT_fin QP"

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Corr. (dB)
4.323886	36.59	56.00	19.41	29.8
4.378341	39.06	56.00	16.94	29.8
4.504273	46.50	56.00	9.50	29.8
4.550727	45.77	56.00	10.23	29.8
4.880364	36.87	56.00	19.13	29.8
4.974295	41.62	56.00	14.38	29.8

MEASUREMENT RESULT: "EUT_fin AV"

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Corr. (dB)
0.422341	29.76	47.40	17.64	30.1
0.950409	35.24	46.00	10.76	30.0
1.007341	34.00	46.00	12.00	29.9
1.101795	29.22	46.00	16.78	29.9
4.468273	32.53	46.00	13.47	29.8
4.578727	30.50	46.00	15.50	29.8

EUT + Charger + FM Receiver:



Pic3. Conducted emission N Line

MEASUREMENT RESULT: "EUT_fin QP"

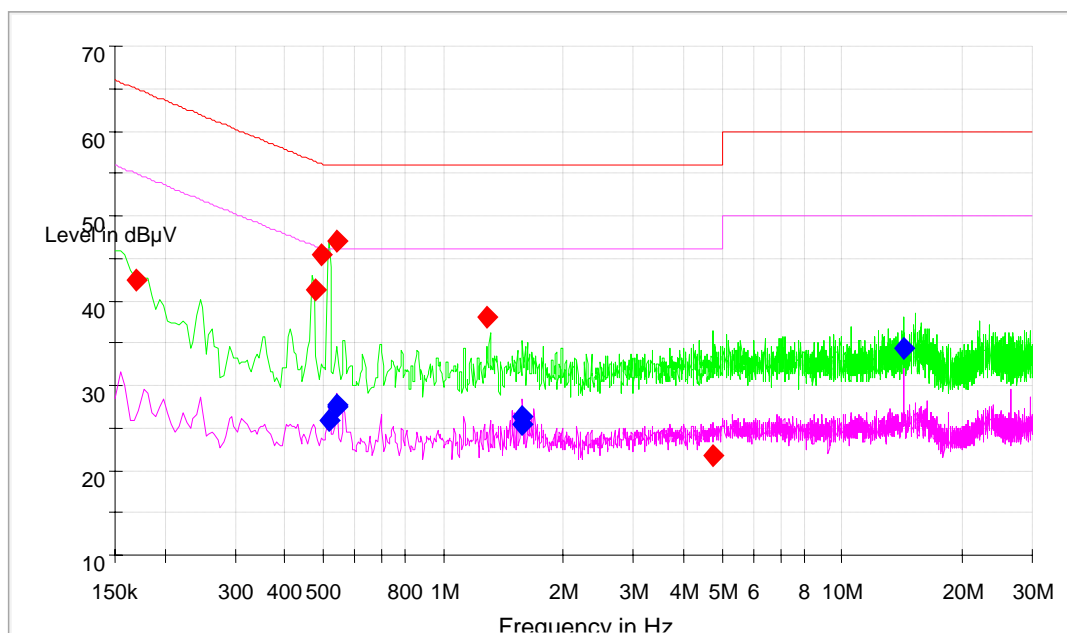
Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Corr. (dB)
4.415386	44.26	56.00	11.74	29.8
4.523409	43.37	56.00	12.63	29.8
4.545159	42.98	56.00	13.02	29.8
4.603432	43.88	56.00	12.12	29.8
4.665182	42.42	56.00	13.58	29.8
4.735932	43.21	56.00	12.79	29.8

MEASUREMENT RESULT: "EUT_fin AV"

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Corr. (dB)
3.483136	28.54	46.00	17.46	29.8
3.897886	33.24	46.00	12.76	29.8
4.411909	29.09	46.00	16.91	29.8
4.523409	27.40	46.00	18.60	29.8
4.545159	31.93	46.00	14.07	29.8
4.577682	32.01	46.00	13.99	29.8

EUT + computer :

Full Spectrum



— Preview Result 2-AVG AC Class B AV
 ◆ Preview Result 1-PK+ Final_Result QPK
 ◆ AC Class B QP Final_Result AVG

Comment

Pic4. Conducted emission L Line

MEASUREMENT RESULT: "EUT_fin QP"

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Corr. (dB)
0.170000	42.38	64.96	22.58	30.2
0.476091	41.20	56.41	15.21	30.2
0.493841	45.38	56.10	10.73	30.2
0.543068	47.10	56.00	8.90	30.2
1.289318	37.94	56.00	18.06	29.9
4.762068	21.78	56.00	34.22	29.8

MEASUREMENT RESULT: "EUT_fin AV"

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Corr. (dB)
0.517841	25.94	46.00	20.06	30.2
0.540455	27.69	46.00	18.31	30.2
0.543068	27.57	46.00	18.43	30.2
1.580682	26.29	46.00	19.71	29.9
1.583295	25.43	46.00	20.57	29.9
14.335295	34.44	50.00	15.56	29.9

EUT + computer:



Pic5. Conducted emission N Line

MEASUREMENT RESULT: "EUT_fin QP"

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Corr. (dB)
0.629000	27.40	56.00	28.60	30.1
4.088886	21.32	56.00	34.68	29.8
4.549682	21.62	56.00	34.38	29.8
4.572295	21.41	56.00	34.59	29.8
4.794773	21.48	56.00	34.52	29.8
29.691523	31.12	60.00	28.88	30.0

MEASUREMENT RESULT: "EUT_fin AV"

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Corr. (dB)
0.540977	26.88	46.00	19.12	30.2
1.601909	24.77	46.00	21.23	29.9
4.360545	19.43	46.00	26.57	29.8
14.334773	33.34	50.00	16.66	29.9
26.623545	32.66	50.00	17.34	30.0
29.699523	29.48	50.00	20.52	30.0

2.2.2 Radiated Emissions-FCC Part15.109

Ambient condition:

Temperature	Relative humidity	Pressure
23.1°C	39.5%	101.2kPa

Test Setup:

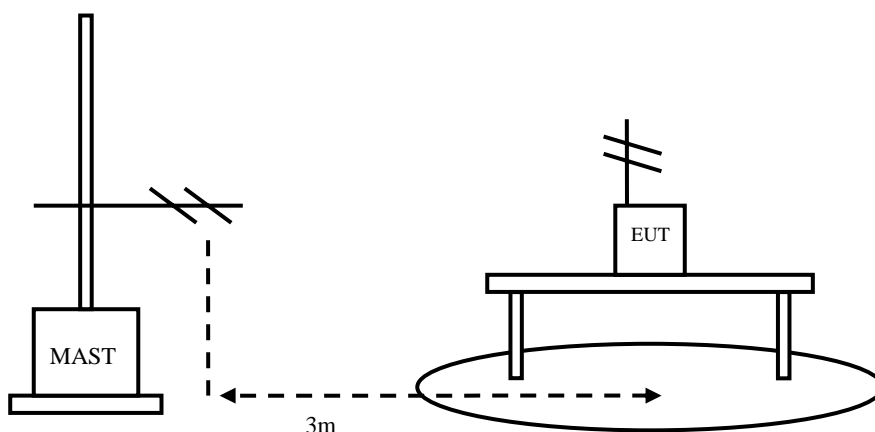


Figure 3

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 was charged. The laptop's LAN port is connected with another laptop via cable. And the data transferring between two laptops is maintained. 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+ FM Receiver:

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. 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. All test results are performed with max hold at the horizontal and vertical polarity.

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:

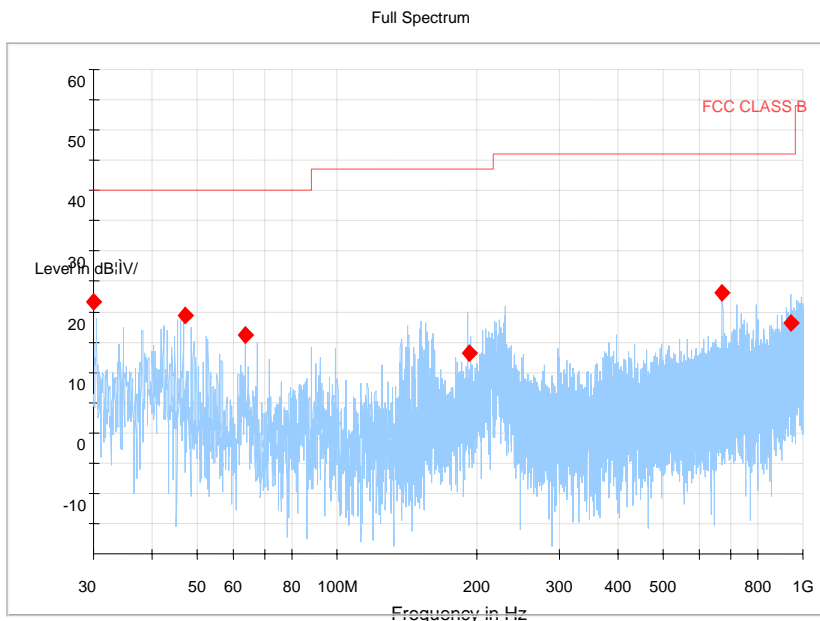
EUT+Laptop

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity
30.080000	21.70	-13.5	35.2	V
47.152917	19.47	-22.5	41.97	V
63.485000	16.25	-26.0	42.25	V
191.962083	13.23	-22.6	35.83	V
671.998750	23.21	-9.5	32.71	V
943.849583	18.11	-5.0	23.11	V

EUT+ charger+ FM Receiver

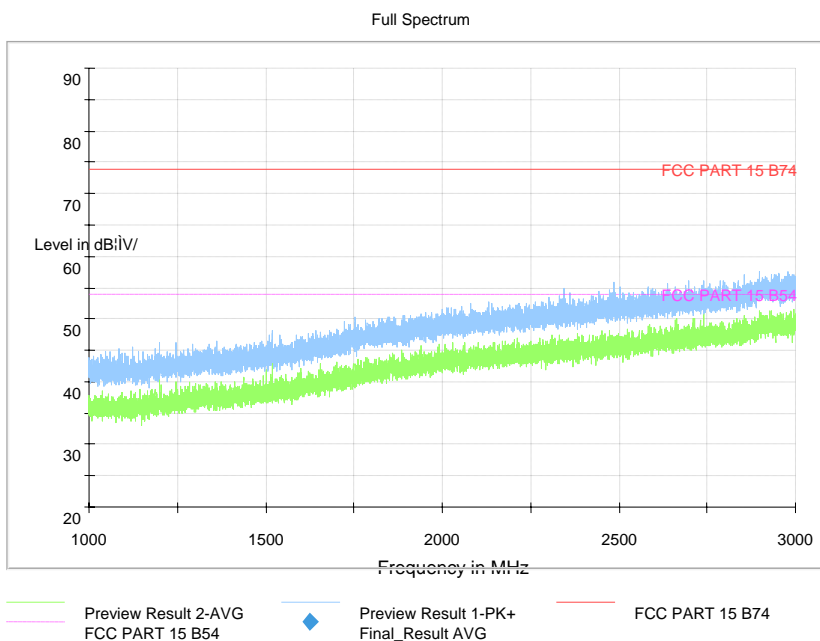
Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity
42.179583	20.97	-19.4	40.37	V
44.166667	22.11	-20.6	42.71	V
73.18125	12.87	-24.4	37.27	V
87.165417	15.91	-23.2	39.11	V
324.814167	9.52	-17.7	27.22	V
930.184583	15.29	-5.1	20.39	V

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



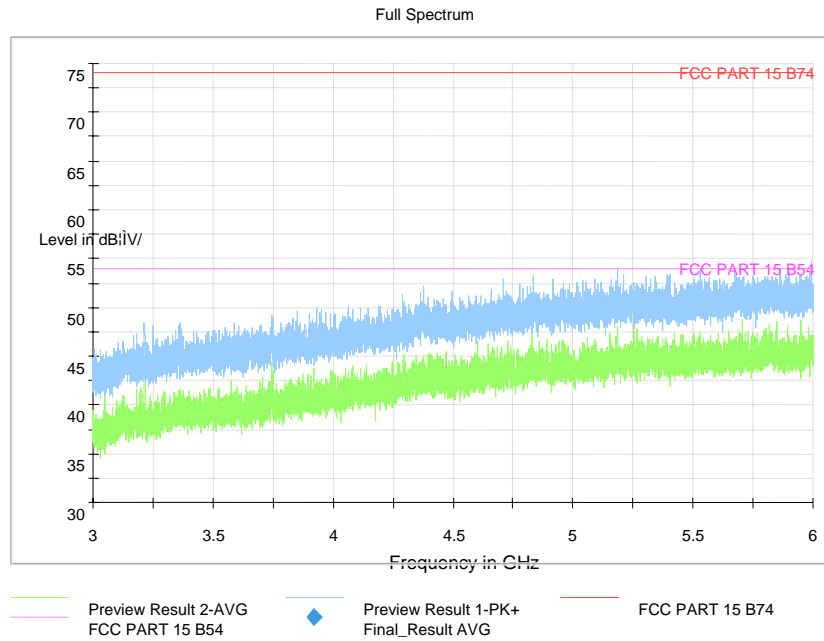
Pic6. Radiated emission(30MHz – 1GHz)

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



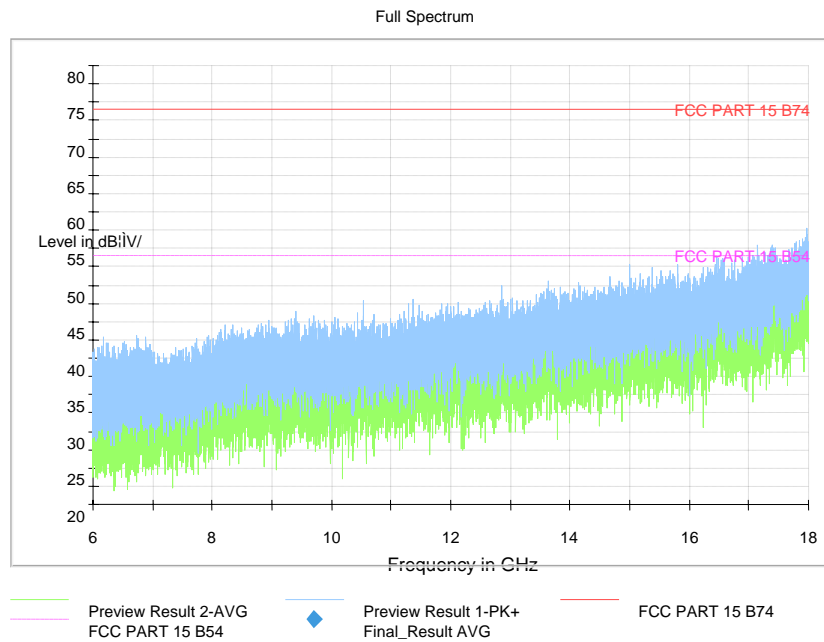
Pic7. Radiated emission (1GHz –3Hz)

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



Pic8. Radiated emission (3GHz –6Hz)

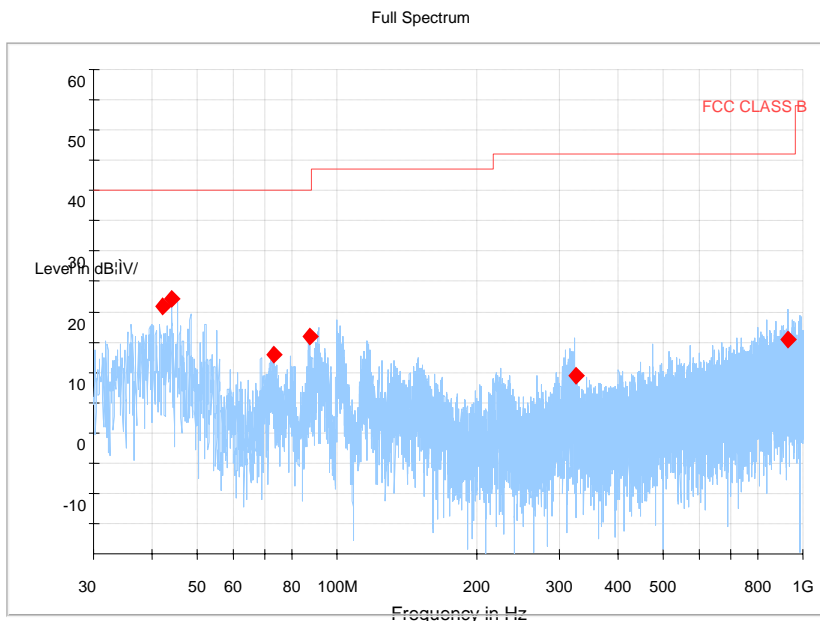
Note: The test data in the graph includes two polarizations: horizontal and vertical



Pic9. Radiated emission (6GHz –18Hz)

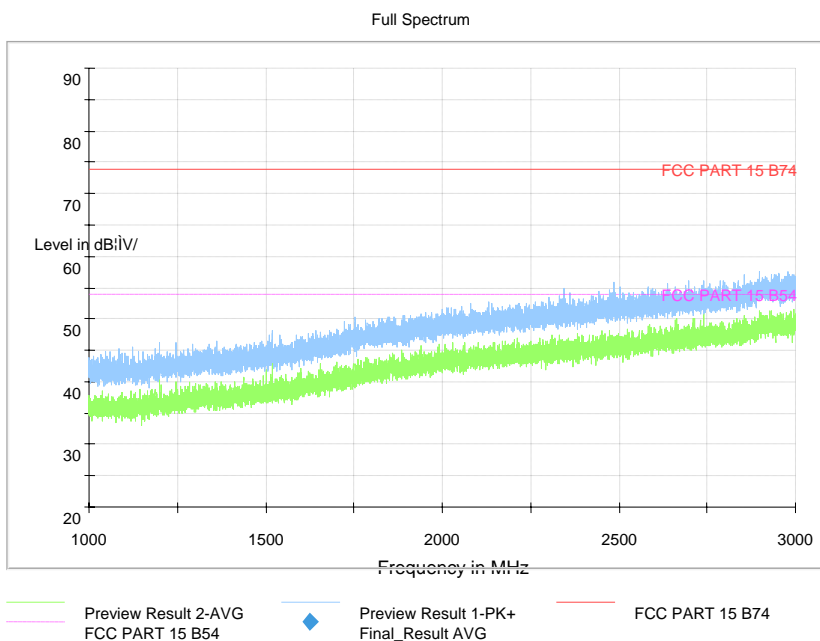
Note: The test data in the graph includes two polarizations: horizontal and vertical

EUT+ charger+ FM Receiver: refer to Pic10,Pic11,Pic12 and Pic13



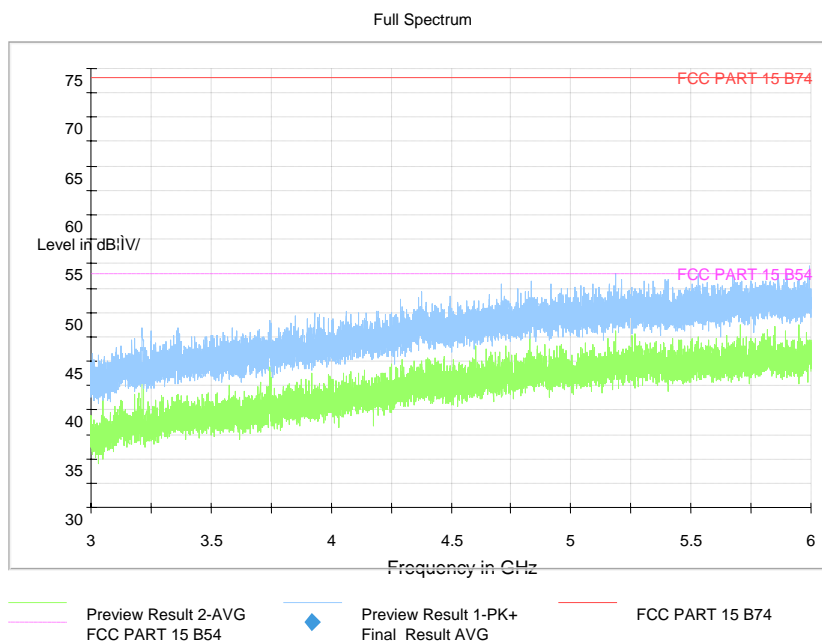
Pic10. Radiated emission(30MHz – 1GHz)

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



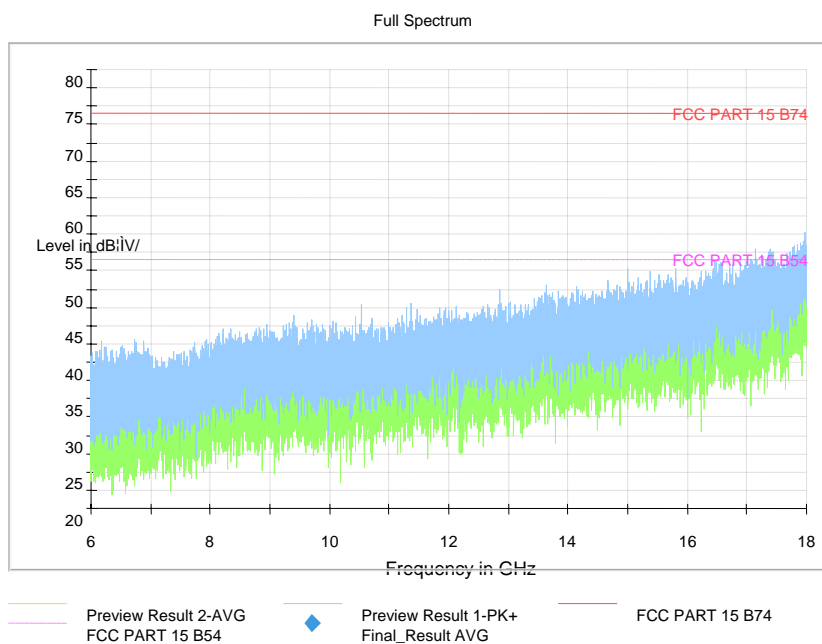
Pic11. Radiated emission (1GHz –3Hz)

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



Pic12. Radiated emission (3GHz –6Hz)

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



Pic13. Radiated emission (6GHz –18Hz)

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	-----	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	GB4405090 4	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. 2018	25 th May. 2017
9	HF 907 Double-Ridged Waveguide Horn Antenna	R&S	100513	20th Aug. 2019	20th Aug. 2018
10	PS2000 Turn Table	FRANKONIA	-----	20th Aug. 2019	20th Aug. 2018
11	MA260 Antenna Master	FRANKONIA	-----	20th Aug. 2019	20th Aug. 2018
12	EMC32EMI test software	R&S	-----	20th Aug. 2019	20th Aug. 2018
13	HL562 Receive antenna	R&S	100167	20th Aug. 2019	20th Aug. 2018
14	IMU3000F5-S-T-D-V	EMC PARTNER	105684-200 8	20th Aug. 2019	20th Aug. 2018
15	CDN3000A-08-32-690	EMC PARTNER	1506	20th Aug. 2019	20th Aug. 2018
16	VAR-EXT1000	EMC PARTNER	1567	20th Aug. 2019	20th Aug. 2018