



TEST REPORT

No.I17N00067-EMC

for

Power Idea Technology (Shenzhen) Co., Ltd.

TD-LTE digital mobile phone

Model Name: RG730

FCC ID: ZLE-RG730

with

Hardware Version: 1.04

Software Version: RG730_US_25_V1.01_V02W_20161205

Issued Date: 2017-03-02

Test Laboratory:

FCC 2.948 Listed: No.342690

IC O.A.T.S listed: No.21856-1

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

Test Laboratory:

CTTL, Telecommunication Technology Labs, Academy of Telecommunication Research, MIIT

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I17N00067-EMC	Rev.0	1st edition	2017-03-02

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1. Test Laboratory

1.1. Testing Location

Address: TCL International E city No. 1001 Zhongshanyuan Road, Nanshan District, Shenzhen, Guangdong, China
Postal Code: 518048
Telephone: +86(755)33322000
Fax: +86(755)33322001

1.2. Testing Environment

Normal Temperature: 15-35°C
Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2017-01-19
Testing End Date: 2017-02-11

1.4. Signature

Du Zhaoxuan

(Prepared this test report)

Zhang Yunzhan

(Reviewed this test report)

Cao Junfei

Director of the laboratory
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name: Power Idea Technology (Shenzhen) Co., Ltd.
4th Floor, A Section , Languang Science&technology Building , No.7
Address: Xinxi RD , Hi-Tech Industrial Park North , Nanshan District ,
ShenZhen , P.R.C.

2.2. Manufacturer Information

Company Name: Power Idea Technology (Shenzhen) Co., Ltd.
4th Floor, A Section , Languang Science&technology Building , No.7
Address: Xinxi RD , Hi-Tech Industrial Park North , Nanshan District ,
ShenZhen , P.R.C.

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	TD-LTE digital mobile phone
Model Name	RG730
FCC ID	ZLE-RG730
IC number	11113A-RG730

The Equipment Under Test (EUT) are a model of Smart phone with integrated antenna.

The EUT supports GPRS service and EGPRS service. It has Bluetooth and WLAN functions.

Remark: The above EUT's information is declared by manufacturer. Please refer to the specifications or user's manual for more detailed information.

3.2. Internal Identification of EUT

EUT ID* SN or IMEI

EUT1 867453020986645

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE

AE ID*	Description	SN
AE1	Battery	/
AE2	Travel charger	/
AE3	USB cable	/

AE1

Model	Li-ion Rechargeable Battery
Manufacturer	Springpower Technology (Shenzhen) Co., LTD
Capacitance	3020mAh
Nominal Voltage	3.7V

AE2

Model	HKC0055010-2D
Manufacturer	SHENZHEN HUNTKEY ELECTRIC CO., LTD
SN	8050DB16C6001810

AE3

Model	Micro 5PIN
Manufacturer	Shenzhen Dechangsheng Electronic Technology Co., Ltd.

*AE ID: is used to identify the test sample in the lab internally.

3.4. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT1+ AE1 + AE2+ AE3	Charging mode
Set.2	EUT1+ AE1 + AE3	USB mode

4. Reference Documents

4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 15, Subpart B	Radio frequency devices	10-1-2015 Edition
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2014

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	0.014MHz-1MHz,>60dB; 1MHz-18000MHz,>90dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4 Ω
Normalised site attenuation (NSA)	< ± 4 dB, 3 m distance, from 30 to 1000 MHz

Shield room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	0.014MHz-1MHz,>60dB; 1MHz-10000MHz,>90dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4 Ω

Fully-anechoic chamber did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	0.014MHz-1MHz,>60dB; 1MHz-18000MHz,>90dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4 Ω
Voltage Standing Wave Ratio (VSWR)	≤ 6 dB, from 1 to 18 GHz, 3 m distance
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:	
P	Pass
NA	Not applicable
F	Fail

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Radiated Emission	15.109(a)	A.1	P
2	Conducted Emission	15.107(a)	A.2	P

7. Test Facilities Utilized

NO.	NAME	TYPE	SERIES NUMBER	PRODUCER	CALDUE DATE	CAL PERIOD
1.	Test Receiver	ESCI	100701	R&S	2017.08.09	1 year
2.	Test Receiver	ESR7	101675	R&S	2017.07.21	1 year
3.	Spectrum Analyzer	FSP 40	100378	R&S	2017.12.15	1 year
4.	BiLog Antenna	VULB9163	9163 330	Schwarzbeck	2017.04.22	3 years
5.	LISN	ESH2-Z5	100196	R&S	2018.01.05	1 year
6.	Horn Antenna	3117	00066585	ETS-Lindgren	2019.03.05	3 years
7.	Universal Radio Communication Tester	E5515C	GB44051324	Agilent	2017.05.18	1 year
8.	PC	2OET-A00DC D	PF-OIYDAK	Lenovo	/	/
9.	Printer	P1008	VNF6C12491	HP	/	/
10.	Mouse	MO28UOL	44B39412	Lenovo	/	/
11.	Chamber	FACT5-2.0	4166	ETS-Lindgren	2018.05.13	3 years

Project	Name	Version
Radiated Emission	EMC32	Version 10.01.00
Conducted Emission	EMC32	Version 8.53.0

ANNEX A: MEASUREMENT RESULTS

A.1 Radiated Emission (§15.109(a))

Reference

FCC: CFR Part 15.109(a)

A.1.1 Method of measurement

The field strength of radiated emissions from the unintentional radiator (USB mode of MS and charging mode of MS) at a distance of 3 meters is tested. Tested in accordance with the procedures of ANSI C63.4 - 2014, section 8.3.

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

A.1.2 EUT Operating Mode:

Charging mode: The MS is synchronized to SS, and able to respond to paging messages and incoming call. An established call has been released. The MS is connected to a charger.

USB mode: The model of the PC is Lenovo 2OET-A00DCD, and the serial number of the PC is PF-OIYDAK. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

A.1.3 Measurement Limit

Limit from CFR Part 15.109(a)

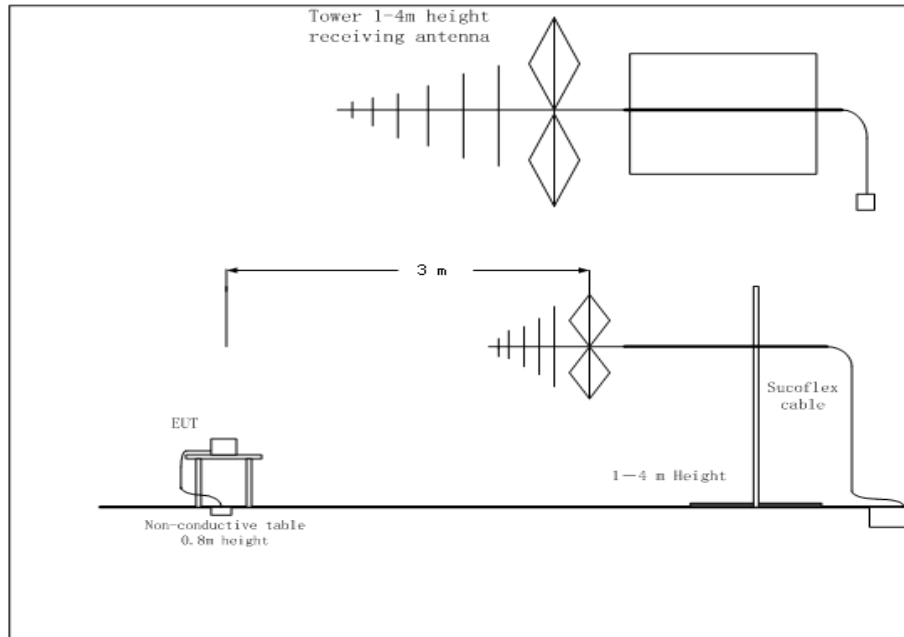
Frequency range (MHz)	Field strength limit ($\mu\text{V/m}$)		
	Quasi-peak	Average	Peak
30-88	100		
88-216	150		
216-960	200		
960-1000	500		
>1000		500	5000

*Note: The original limit is defined at 10m test distance. This limit is calculated according to CISPR requirements.

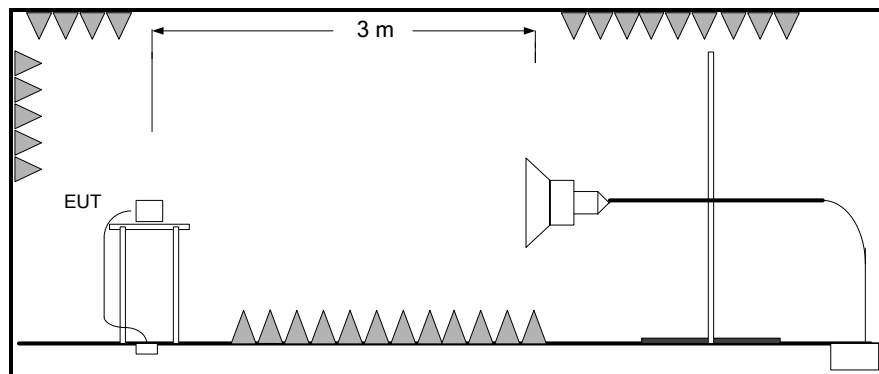
A.1.4 Test Condition

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	120kHz (IF bandwidth)	5
Above 1000	1MHz/3MHz	15

**A.1.5 Test set-up:
30MHz-1GHz**



1GHz-18GHz



A.1.6 Measurement Results

A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss". It includes the antenna factor of receive antenna and the path loss.

The measurement results are obtained as described below:

$$\text{Result} = P_{\text{Mea}} + A_{\text{Rpl}} = P_{\text{Mea}} + G_A + G_{\text{PL}}$$

Where

G_A : Antenna factor of receive antenna

G_{PL} : Path Loss

P_{Mea} : Measurement result on receiver.

Note: the result contains vertical part and Horizontal part

RE Measurement uncertainty: 30M-1GHz: 5.12dB (k=2);
1GHz-18GHz: 4.48 dB (k=2)

Set.1 Charging mode / Peak detector

Frequency(MHz)	Result(dBuV/m)	Limit (dBμV/m)	Margin(dB)	Polar ity	A_{Rpl} (dB)	P_{Mea} (dBμV)
14446.000000	54.57	74.00	19.43	V	11.7	42.87
14761.500000	55.10	74.00	18.90	V	11.9	43.2
15759.500000	56.62	74.00	17.38	V	12.8	43.82
16246.000000	56.32	74.00	17.68	V	13.2	43.12
16832.000000	56.69	74.00	17.31	V	13.9	42.79
17316.500000	56.41	74.00	17.59	V	13.9	42.51

Set.1 Charging mode / Average detector

Frequency(MHz)	Result(dBuV/m)	Limit (dBμV/m)	Margin(dB)	Polar ity	A_{Rpl} (dB)	P_{Mea} (dBμV)
14548.000000	43.21	54.00	10.79	V	11.9	31.31
15130.500000	43.90	54.00	10.10	V	12.1	31.8
15682.000000	45.03	54.00	8.97	V	12.6	32.43
16247.000000	44.85	54.00	9.15	V	13.2	31.65
16816.000000	45.24	54.00	8.76	V	13.9	31.34
17454.000000	44.74	54.00	9.26	V	14.0	30.74

Set.2 USB mode / Peak detector

Frequency(MHz)	Result(dBuV/m)	Limit (dBμV/m)	Margin(dB)	Polar ity	A _{Rpl} (dB)	P _{Mea} (dBμV)
14528.000000	54.50	74.00	19.50	V	11.8	42.7
14616.500000	55.04	74.00	18.96	V	11.9	43.14
15755.500000	56.44	74.00	17.56	V	12.8	43.64
16230.500000	57.78	74.00	16.22	V	13.1	44.68
16717.000000	57.16	74.00	16.84	V	13.8	43.36
17388.500000	56.44	74.00	17.56	V	14.0	42.44

Set.2 USB mode / Average detector

Frequency(MHz)	Result(dBuV/m)	Limit (dBμV/m)	Margin(dB)	Polar ity	A _{Rpl} (dB)	P _{Mea} (dBμV)
14541.500000	43.43	54.00	10.57	V	11.9	31.53
15078.000000	43.92	54.00	10.08	V	12.1	31.82
15787.000000	45.07	54.00	8.93	V	12.8	32.27
16219.000000	45.01	54.00	8.99	V	13.1	31.91
16803.000000	45.61	54.00	8.39	V	13.9	31.71
17361.500000	44.84	54.00	9.16	V	14.0	30.84

Charging mode: Set 1

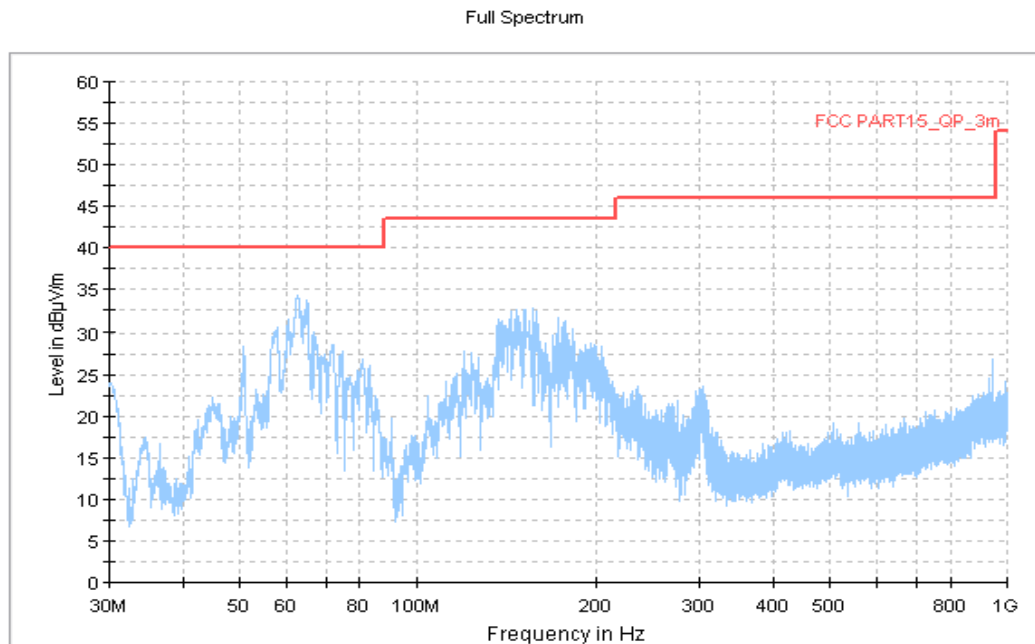


Figure A.1 Radiated Emission from 30MHz to 1GHz

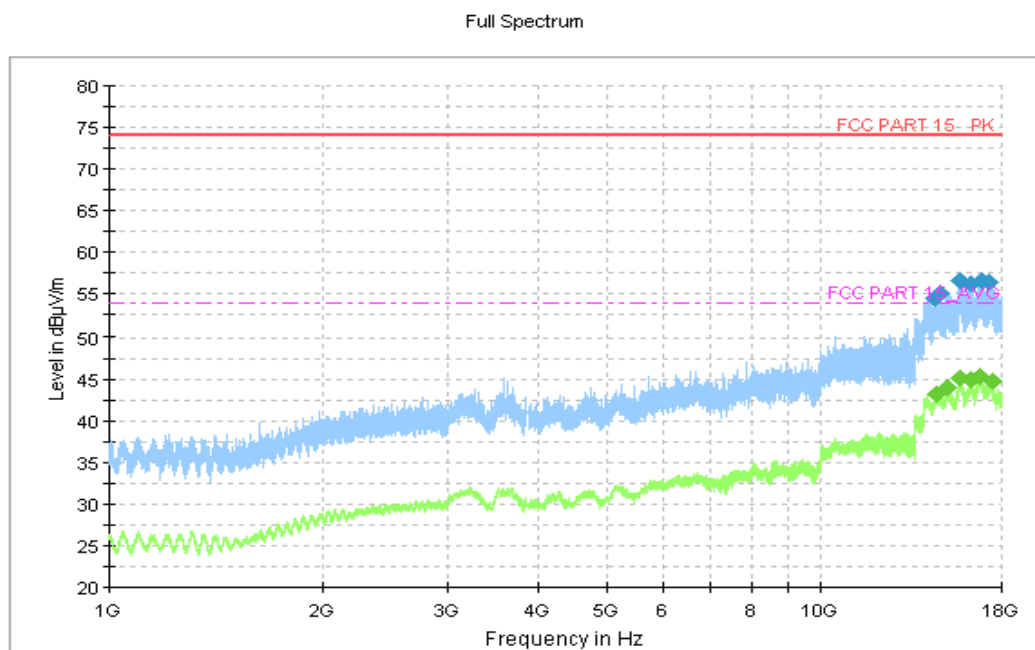


Figure A.2 Radiated Emission from 1GHz to 18GHz

USB mode: Set 2

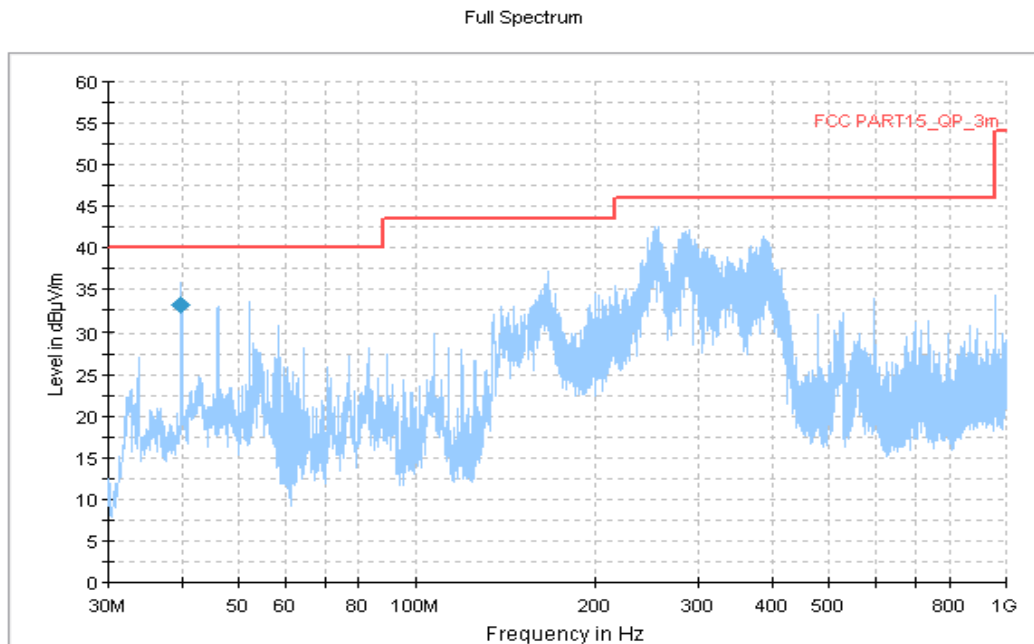


Figure A.3 Radiated Emission from 30MHz to 1GHz

Final_Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
39.898000	33.13	40.00	6.87	V	-33.6

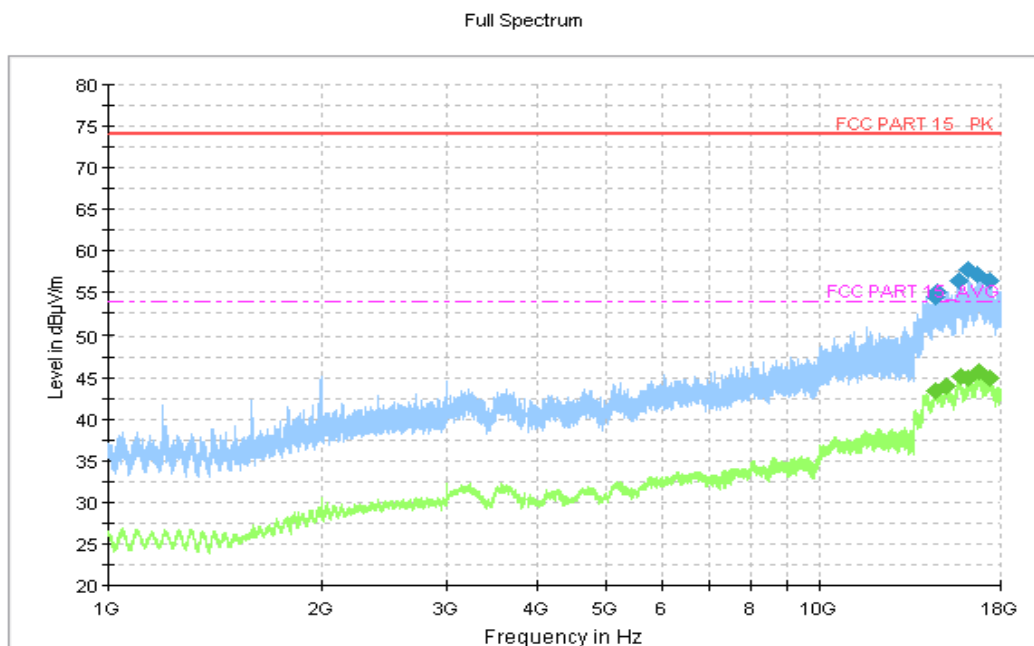


Figure A.4 Radiated Emission from 1GHz to 18GHz

A.2 Conducted Emission (§15.107(a))**Reference**

FCC: CFR Part 15.107(a)

A.2.1 Method of measurement

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits. Tested in accordance with the procedures of ANSI C63.4 - 2014, section 7.3.

A.2.2 EUT Operating Mode:

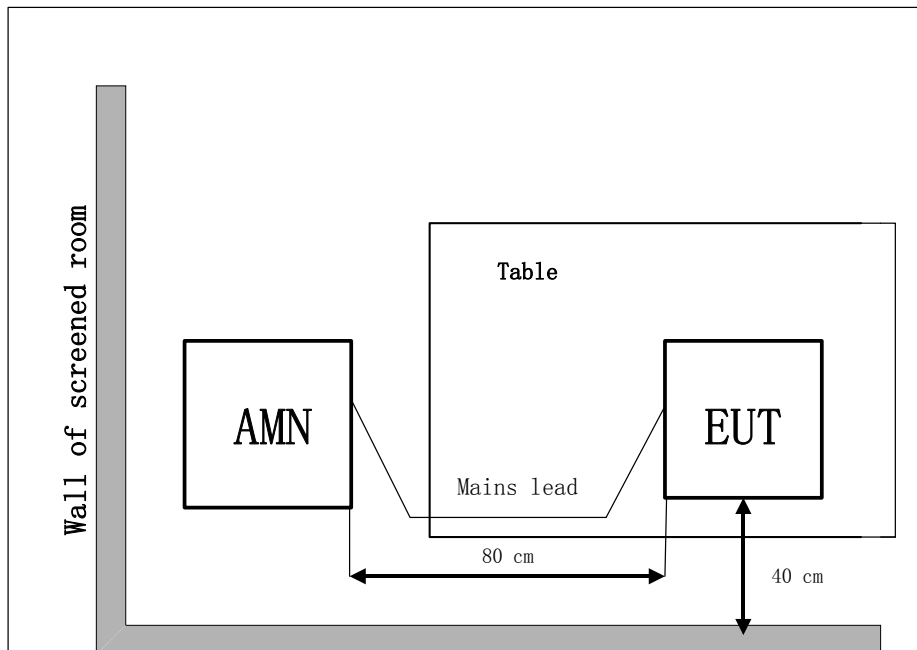
Charging mode: The MS is synchronized to SS, and able to respond to paging messages and incoming call. An established call has been released. The MS is connected to a charger.

USB mode: The model of the PC is Lenovo 2OET-A00DCD, and the serial number of the PC is PF-OIYDAK. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

A.2.3 Measurement Limit

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with the logarithm of the frequency		

A.2.4 Test set-up:



A.2.5 Test Condition in charging mode

Voltage (V)	Frequency (Hz)
120	60
240	60

RBW	Sweep Time(s)
9kHz	1

CE Measurement uncertainty: 3.06 dB (k=2)

A.2.6 Measurement Results

Charging mode:Set.1

Voltage:120V

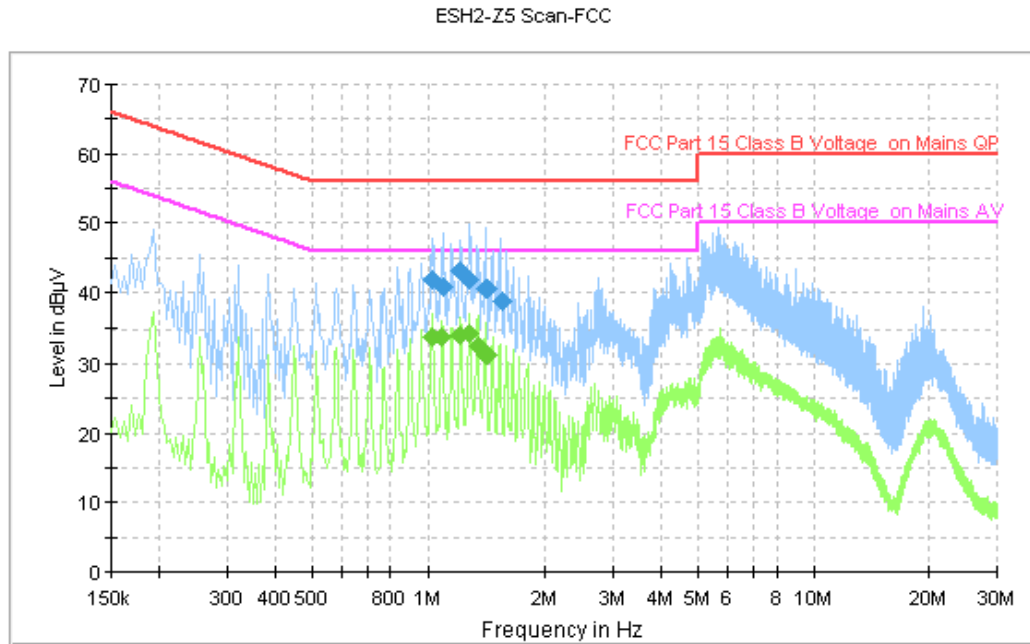


Figure A.5 Conducted Emission

Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dB µV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB µV)
1.026000	41.8	GND	N	9.5	14.2	56.0
1.094000	40.9	GND	N	9.6	15.1	56.0
1.218000	43.2	GND	N	9.6	12.8	56.0
1.286000	42.0	GND	N	9.6	14.0	56.0
1.414000	40.7	GND	N	9.5	15.3	56.0
1.542000	38.8	GND	N	9.6	17.2	56.0

Final Measurement Detector 2

Frequency (MHz)	Average (dB µV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB µV)
1.026000	33.8	GND	N	9.5	12.2	46.0
1.090000	33.7	GND	N	9.6	12.3	46.0
1.218000	34.0	GND	N	9.6	12.0	46.0
1.282000	34.4	GND	N	9.6	11.6	46.0
1.350000	32.5	GND	N	9.6	13.5	46.0
1.414000	31.3	GND	N	9.5	14.7	46.0

USB mode:Set.2

Voltage:120V

ESH2-Z5 Scan-FCC

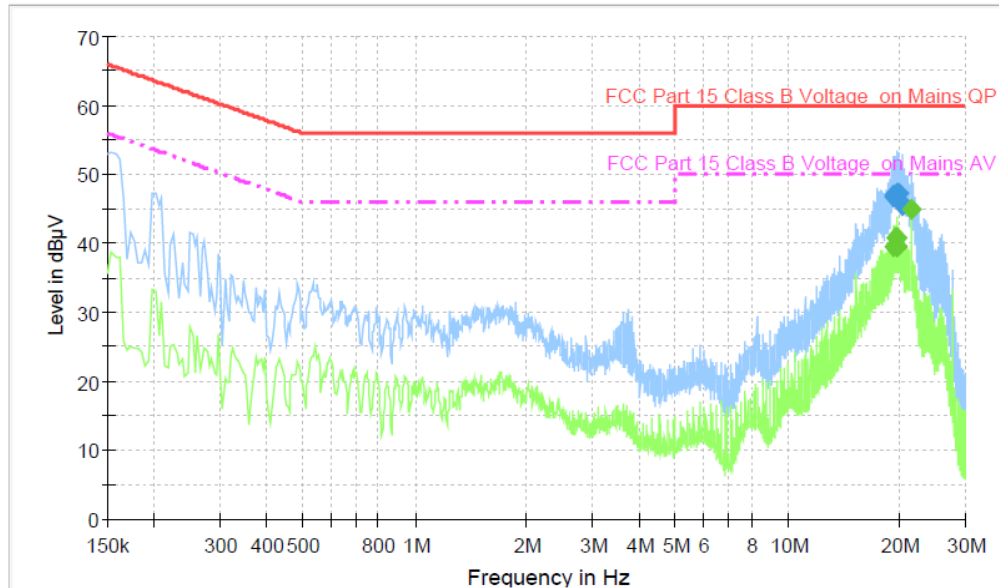


Figure A.6 Conducted Emission

Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dB µV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB µV)
19.222000	46.8	GND	N	10.0	13.2	60.0
19.334000	47.1	GND	N	10.0	12.9	60.0
19.702000	47.4	GND	N	10.0	12.6	60.0
19.862000	47.3	GND	N	10.0	12.7	60.0
20.270000	45.6	GND	N	10.0	14.4	60.0
20.398000	45.5	GND	N	10.0	14.5	60.0

Final Measurement Detector 2

Frequency (MHz)	Average (dB µV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB µV)
19.342000	39.6	GND	N	10.0	10.4	50.0
19.566000	40.9	GND	N	10.0	9.1	50.0
19.702000	39.6	GND	N	10.0	10.4	50.0
19.794000	40.9	GND	N	10.0	9.1	50.0
19.802000	39.6	GND	N	10.0	10.4	50.0
21.502000	45.0	GND	N	10.0	5.0	50.0

Charging mode:Set.1

Voltage:240V

ESH2-Z5 Scan-FCC

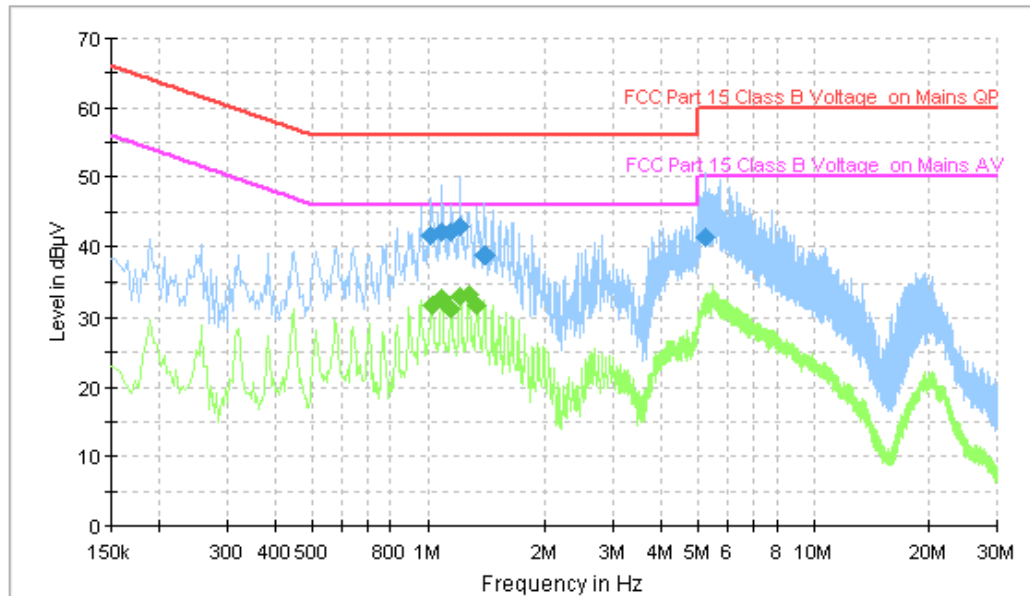


Figure A.7 Conducted Emission

Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dB µV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB µV)
1.022000	41.5	GND	N	9.5	14.5	56.0
1.090000	42.1	GND	N	9.6	13.9	56.0
1.154000	42.0	GND	N	9.5	14.0	56.0
1.214000	42.9	GND	N	9.5	13.1	56.0
1.398000	38.7	GND	N	9.6	17.3	56.0
5.226000	41.4	GND	N	9.6	18.6	60.0

Final Measurement Detector 2

Frequency (MHz)	Average (dB µV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB µV)
1.026000	31.8	GND	N	9.5	14.2	46.0
1.086000	32.7	GND	N	9.6	13.3	46.0
1.154000	31.3	GND	N	9.5	14.7	46.0
1.214000	33.1	GND	N	9.5	12.9	46.0
1.278000	33.4	GND	N	9.6	12.6	46.0
1.346000	31.9	GND	N	9.6	14.1	46.0

USB mode:Set.2

Voltage:240V

ESH2-Z5 Scan-FCC

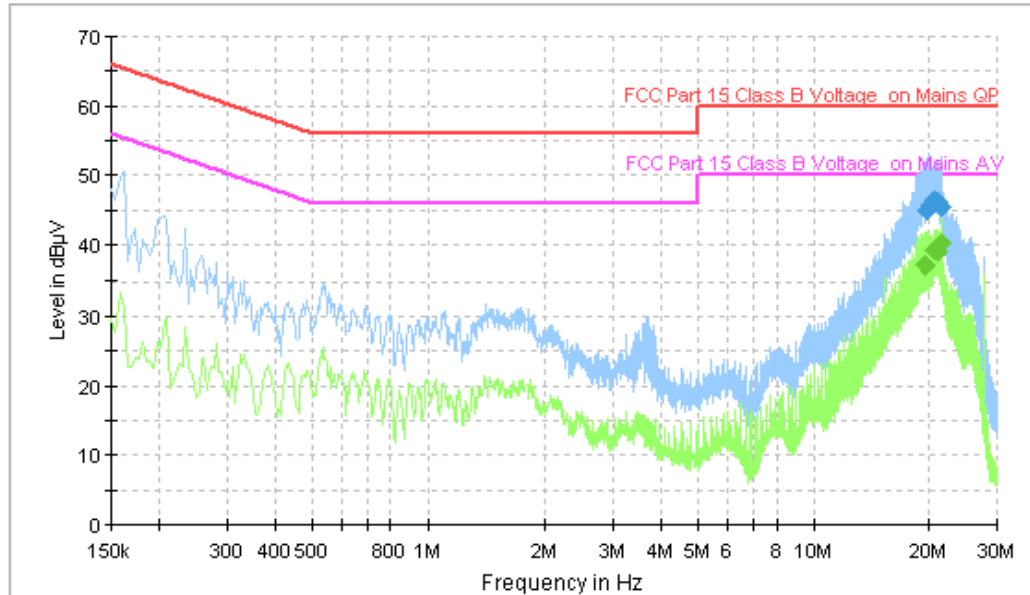


Figure A.8 Conducted Emission

Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dB µV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB µV)
19.678000	45.1	GND	N	10.0	14.9	60.0
19.870000	45.2	GND	N	10.0	14.8	60.0
20.186000	45.8	GND	N	10.0	14.2	60.0
20.570000	46.6	GND	N	10.0	13.4	60.0
20.950000	46.1	GND	N	10.0	13.9	60.0
21.502000	45.6	GND	N	10.0	14.4	60.0

Final Measurement Detector 2

Frequency (MHz)	Average (dB µV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB µV)
19.450000	37.2	GND	N	10.0	12.8	50.0
20.538000	39.2	GND	N	10.0	10.8	50.0
20.666000	39.3	GND	N	10.0	10.7	50.0
20.766000	39.2	GND	N	10.0	10.8	50.0
20.942000	39.0	GND	N	10.0	11.0	50.0
21.506000	40.3	GND	N	10.0	9.7	50.0

END OF REPORT