



FCC 15B TEST REPORT

No. I21Z62362-EMC02

for

TCL Communication Ltd.

LINKKEY LTE Cat4 USB Dongle

Model Name: IK42UC

FCC ID: 2ACCJB167

with

Hardware Version: V01

Software Version: IK42_ZZ_02.00_02

Issued Date: 2022-01-14

Note:

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I21Z62362-EMC02	Rev.0	1 st edition	2022-01-10
I21Z62362-EMC02	Rev.1	Modified the Product Name, SW Version and Contact Person	2022-01-14
I21Z62362-EMC02	Rev.2	Modified the EUT Operating mode as “ 1. MS is connected to a charger; 2. MS is connected to a PC. ” in P12 and 32. Adding the CMW500(SN:116588) in P11.	2022-02-24

Note: the latest revision of the test report supersedes all previous version.

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1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2005 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0, and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (ISED#: 24849). The detail accreditation scope can be found on NVLAP website.

1.2. Testing Location

Location 1: CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,
P. R. China 100191

1.3. Testing Environment

Normal Temperature: 15-35℃
Relative Humidity: 20-75%

1.4. Project data

Testing Start Date: 2021-12-15
Testing End Date: 2021-12-16

1.5. Signature



Zhang Ying
(Prepared this test report)



An Hui
(Reviewed this test report)



Zhang Xia
(Approved this test report)



2. Client Information

2.1. Applicant Information

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2.2. Manufacturer Information

Company Name: TCL Communication Ltd.
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City: Hong Kong
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3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	LINKKEY LTE Cat4 USB Dongle
Model Name	IK42UC
FCC ID	2ACCJB167

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of CTTL, Telecommunication Technology Labs, Academy of Telecommunication Research, MIIT.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT4	016167000000462	V01	IK42_ZZ_02.00_02

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

3.3. Internal Identification of AE used during the test

AE ID*	Description	SN	Remarks
AE1	charger	/	/
AE2	PC	/	/
AE3	Keyboard	/	/
AE4	Mouse	/	/
AE5	Printer	/	/

AE1

Model	/
Manufacturer	/

AE2

Model	/
Manufacturer	/

AE3

Model	/
Manufacturer	/

AE4

Model	/
Manufacturer	/

AE5

Model	/
Manufacturer	/

*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	EUT4 + AE1	Charging with power adapter
Set.2	EUT4 + PC+ Keyboard + Mouse + Printer	Charging with PC

4. Reference Documents

4.1. Documents supplied by applicant

EUT parameters, referring to chapter 3 for detailed information, are supplied by the client or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

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

	Title	Version
Reference		
FCC Part 15, Subpart B	Radio frequency devices - Unintentional Radiators	10-1-20 Edition
ANSI C63.4	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2014

Note: The test methods have no deviation with standards.

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber SAC-1 (23 meters×17meters×10meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω
Normalised site attenuation (NSA)	< ±4 dB, 10 m distance
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 6GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

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

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz, >60dB; 1MHz—1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω

6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:		
Verdict Column	P	Pass
	NA	Not applicable
	F	Fail
Location Column	1/2/4	The test is performed in test location 1/2/4 which is described in section 1.1 of this report

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

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	Test Receiver	ESCI 3	100344	Rohde & Schwarz	2022-02-23	1 year
2	LISN	ENV216	101200	Rohde & Schwarz	2022-05-30	1 year
3	EMI Antenna	3115	6914	ETS-Lindgren	2022-02-03	1 year
4	Test Receiver for Radiated Emission	ESW44	103023	R&S	2022-10-28	1 year
5	EMI Antenna for Radiated Emission (<1GHz)	VULB9163	9163-1223	Schwarzbeck	2022-03-22	1 year
6	Universal Radio Communication Tester	CMW500	116588	R&S	2022-12-20	1 year

Test Item	Test Software and Version	Software Vendor
Radiated Continuous Emission	EMC32 V9.01.0	R&S
Conducted Emission	EMC32 V8.52.0	R&S

ANNEX A: MEASUREMENT RESULTS

A.1 Radiated Emission

Reference

FCC: CFR Part 15.109(a).

A.1.1 Method of measurement

The field strength of radiated emissions from the unintentional radiator (charging mode of MS) at distances of 10 meters (for 30MHz-1GHz) and 3 meters (for above 1GHz) 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 3/10 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:

The MS is operating in the charging mode. During the test MS had two mode:

3. MS is connected to a PC;
4. MS is connected to a charger.

The EUT was tested while operating in licensed band Rx mode. All licensed band receivers that tune in the range of 30MHz-960MHz, as listed in section 3.4, are investigated. Only the worst case emissions are reported.

The model of the PC is M4000E-17, and the serial number of the PC is M706GWXD. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

Note: I/O information: Printer – USB, Mouse – PS/2, Keyboard – USB.

A.1.3 Measurement Limit

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

Note: the above limit is for 3 meters test distance. 10 meters' limit is got by converting.

$$\text{Limit}(10\text{m}) = \text{limit}(3\text{m}) + 20(\log(3/10))$$

A.1.4 Test Condition

Frequency range (MHz)	RBW/VBW	Sweep Time (s)	Detector
30-1000	120kHz (IF Bandwidth)	5	Peak/Quasi-peak
Above 1000	1MHz/3MHz	15	Peak, Average

A.1.5 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:

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

Where

G_A : Antenna factor of receive antenna

G_{PL} : Path Loss

P_{Mea} : Measurement result on receiver.

Measurement uncertainty (worst case): 30MHz-1GHz: 5.18dB, 1GHz-18GHz: 5.54dB, $k=2$.

Measurement results for Set.1:
Charger + GSM 850 idle QP detector

Frequency (MHz)	QP (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
45.617000	10.07	29.54	19.47	188.0	V	120.0
49.012000	9.65	29.54	19.89	200.0	V	240.0
99.064000	7.62	33.06	25.44	335.0	V	120.0
140.580000	9.08	33.06	23.98	100.0	V	300.0
172.008000	5.35	33.06	27.71	310.0	V	0.0
778.161000	18.55	35.56	17.01	335.0	V	80.0

Charger + GSM 850 idle PK detector

Frequency (MHz)	Result(d B μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Polarity
17887.800	55.5	-29.5	46.0	39.1	74.000	18.500	H
17827.733	55.3	-29.7	46.0	39.0	74.000	18.700	H
17838.500	55.2	-29.7	46.0	38.9	74.000	18.800	V
17891.200	55.0	-29.5	46.0	38.6	74.000	19.000	H
17866.833	54.8	-29.4	46.0	38.2	74.000	19.200	H
17920.667	54.2	-29.4	46.7	36.9	74.000	19.800	H

Charger + GSM 850 idle AV detector

Frequency (MHz)	Result(d B μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Polarity
17964.867	46.0	-29.1	46.7	28.4	54.000	8.000	V
17962.033	45.7	-29.1	46.7	28.1	54.000	8.300	H
17547.800	45.6	-29.5	44.4	30.7	54.000	8.400	H
17589.167	45.3	-29.7	45.2	29.7	54.000	8.700	V
17937.100	45.3	-29.4	46.7	28.0	54.000	8.700	H
17157.367	45.3	-29.9	42.4	32.8	54.000	8.700	H

Measurement results for Set.1:
Charger + WCDMA 850 idle QP detector

Frequency (MHz)	QP (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
48.430000	9.58	29.54	19.96	107.0	V	30.0
55.317000	10.48	29.54	19.06	101.0	V	240.0
110.510000	7.74	33.06	25.32	118.0	V	-29.0
192.378000	7.41	33.06	25.65	300.0	V	251.0
398.406000	12.47	35.56	23.09	118.0	V	152.0
797.173000	18.33	35.56	17.23	125.0	V	191.0

Charger + WCDMA 850 idle PK detector

Frequency (MHz)	Result(d B μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Polarity
16444.500	55.0	-29.9	39.3	45.5	74.000	19.000	H
17977.333	54.8	-29.1	46.7	37.2	74.000	19.200	V
17633.933	54.6	-29.4	45.2	38.8	74.000	19.400	V
17917.833	54.6	-29.3	46.7	37.3	74.000	19.400	H
17941.633	54.6	-28.9	46.7	36.9	74.000	19.400	H
17850.967	54.4	-29.3	46.0	37.8	74.000	19.600	H

Charger + WCDMA 850 idle AV detector

Frequency (MHz)	Result(d B μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Polarity
17964.867	46.7	-29.1	46.7	29.1	54.000	7.300	V
17941.633	46.0	-28.9	46.7	28.3	54.000	8.000	V
17952.400	45.8	-28.9	46.7	28.1	54.000	8.200	H
17822.067	45.7	-29.7	46.0	29.4	54.000	8.300	H
17992.633	45.6	-29.1	46.7	28.0	54.000	8.400	V
17939.933	45.5	-29.4	46.7	28.2	54.000	8.500	H

Measurement results for Set.1:
Charger + LTE BAND 5 idle QP detector

Frequency (MHz)	QP (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
50.079000	9.71	29.54	19.83	324.0	V	211.0
57.063000	9.46	29.54	20.08	276.0	V	30.0
102.071000	8.27	33.06	24.79	101.0	V	120.0
108.376000	7.98	33.06	25.08	101.0	V	30.0
377.551000	12.06	35.56	23.50	225.0	V	30.0
886.413000	20.12	35.56	15.44	180.0	V	150.0

Charger + LTE BAND 5 idle PK detector

Frequency (MHz)	Result(d B μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Polarity
17921.233	55.0	-29.4	46.7	37.7	74.000	19.000	H
17942.200	54.7	-28.9	46.7	37.0	74.000	19.300	H
17901.967	54.4	-29.3	46.0	37.8	74.000	19.600	V
17873.633	54.3	-29.4	46.0	37.7	74.000	19.700	V
17950.133	54.3	-28.9	46.7	36.6	74.000	19.700	H
17943.333	54.2	-28.9	46.7	36.5	74.000	19.800	V

Charger + LTE BAND 5 idle AV detector

Frequency (MHz)	Result(d B μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Polarity
17942.200	45.8	-28.9	46.7	28.1	54.000	8.200	V
17939.933	45.8	-29.4	46.7	28.5	54.000	8.200	V
17539.867	45.8	-29.3	44.4	30.8	54.000	8.200	H
17990.367	45.8	-29.1	46.7	28.2	54.000	8.200	H
17988.667	45.7	-29.1	46.7	28.1	54.000	8.300	H
17860.033	45.5	-29.4	46.0	28.9	54.000	8.500	V

Measurement results for Set.1:
Charger + LTE BAND 12 idle QP detector

Frequency (MHz)	QP (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
47.072000	10.08	29.54	19.46	125.0	V	300.0
63.562000	8.21	29.54	21.33	310.0	V	189.0
96.154000	7.03	33.06	26.03	125.0	V	60.0
141.065000	6.96	33.06	26.10	205.0	V	0.0
194.221000	7.44	33.06	25.62	200.0	V	240.0
822.102000	19.11	35.56	16.45	125.0	V	120.0

Charger + LTE BAND 12 idle PK detector

Frequency (MHz)	Result(d B μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Polarity
17741.6	55.6	-29.6	46.0	39.3	74.000	18.400	H
17630.5	55.3	-29.4	45.2	39.5	74.000	18.700	H
17937.7	55.1	-29.4	46.7	37.8	74.000	18.900	H
17937.1	55.0	-29.4	46.7	37.7	74.000	19.000	H
17987.0	55.0	-29.1	46.7	37.4	74.000	19.000	V
17910.5	54.8	-29.3	46.0	38.2	74.000	19.200	V

Charger + LTE BAND 12 idle AV detector

Frequency (MHz)	Result(d B μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Polarity
17998.867	46.6	-29.1	46.7	29.0	54.000	7.400	H
17986.967	46.2	-29.1	46.7	28.6	54.000	7.800	H
17988.667	46.2	-29.1	46.7	28.6	54.000	7.800	H
17909.900	45.6	-29.3	46.0	29.0	54.000	8.400	H
17882.700	45.5	-29.5	46.0	29.1	54.000	8.500	V
17926.900	45.5	-29.4	46.7	28.2	54.000	8.500	H

Measurement results for Set.1:
Charger + LTE BAND 13 idle QP detector

Frequency (MHz)	QP (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
52.601000	9.85	29.54	19.69	108.0	V	151.0
55.608000	10.18	29.54	19.36	325.0	V	100.0
101.877000	8.21	33.06	24.85	320.0	V	170.0
298.205000	9.62	35.56	25.94	276.0	V	171.0
774.087000	18.87	35.56	16.69	230.0	V	120.0
928.123000	20.49	35.56	15.07	107.0	V	153.0

Charger + LTE BAND 13 idle PK detector

Frequency (MHz)	Result(d B μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Polarity
17853.800	54.8	-29.3	46.0	38.2	74.000	19.200	V
17994.333	54.8	-29.1	46.7	37.2	74.000	19.200	H
17941.067	54.6	-28.9	46.7	36.9	74.000	19.400	H
17550.067	54.3	-29.5	44.4	39.4	74.000	19.700	V
17951.833	54.3	-28.9	46.7	36.6	74.000	19.700	V
17919.533	54.1	-29.3	46.7	36.8	74.000	19.900	V

Charger + LTE BAND 13 idle AV detector

Frequency (MHz)	Result(d B μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Polarity
17938.800	46.2	-29.4	46.7	28.9	54.000	7.800	H
17982.433	45.9	-29.1	46.7	28.3	54.000	8.100	H
17944.467	45.8	-28.9	46.7	28.1	54.000	8.200	V
17888.933	45.5	-29.5	46.0	29.1	54.000	8.500	V
17942.767	45.5	-28.9	46.7	27.8	54.000	8.500	H
17957.500	45.4	-28.9	46.7	27.7	54.000	8.600	V

Measurement results for Set.1:
Charger + LTE BAND 14 idle QP detector

Frequency (MHz)	QP (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
38.148000	8.25	29.54	21.29	276.0	V	100.0
46.975000	10.10	29.54	19.44	219.0	V	120.0
52.892000	9.98	29.54	19.56	275.0	V	300.0
64.920000	7.57	29.54	21.97	276.0	V	280.0
298.593000	9.75	35.56	25.81	283.0	V	30.0
372.895000	11.97	35.56	23.59	226.0	V	210.0

Charger + LTE BAND 14 idle PK detector

Frequency (MHz)	Result(d B μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Polarity
17897.433	45.9	-29.5	46.0	29.5	74.000	28.100	V
17939.367	45.9	-29.4	46.7	28.6	74.000	28.100	V
17998.300	45.7	-29.1	46.7	28.1	74.000	28.300	H
17977.900	45.6	-29.1	46.7	28.0	74.000	28.400	H
17914.433	45.6	-29.3	46.7	28.3	74.000	28.400	H
17918.400	45.5	-29.3	46.7	28.2	74.000	28.500	H

Charger + LTE BAND 14 idle AV detector

Frequency (MHz)	Result(d B μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Polarity
17897.433	45.9	-29.5	46.0	29.5	54.000	8.100	H
17939.367	45.9	-29.4	46.7	28.6	54.000	8.100	H
17998.300	45.7	-29.1	46.7	28.1	54.000	8.300	H
17977.900	45.6	-29.1	46.7	28.0	54.000	8.400	H
17914.433	45.6	-29.3	46.7	28.3	54.000	8.400	H
17918.400	45.5	-29.3	46.7	28.2	54.000	8.500	V

Measurement results for Set.1:
Charger + LTE BAND 17 idle QP detector

Frequency (MHz)	QP (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
46.781000	10.15	29.54	19.39	180.0	V	190.0
62.883000	8.19	29.54	21.35	108.0	V	60.0
143.296000	6.61	33.06	26.45	125.0	V	151.0
256.689000	9.06	35.56	26.50	300.0	V	180.0
368.627000	11.99	35.56	23.57	125.0	V	120.0
901.448000	20.14	35.56	15.42	230.0	V	61.0

Charger + LTE BAND 17 idle PK detector

Frequency (MHz)	Result(d B μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Polarity
17997.167	55.0	-29.1	46.7	37.4	74.000	19.000	H
17927.467	54.6	-29.4	46.7	37.3	74.000	19.400	H
17941.633	54.6	-28.9	46.7	36.9	74.000	19.400	H
17828.300	54.5	-29.7	46.0	38.2	74.000	19.500	H
17902.533	54.4	-29.3	46.0	37.8	74.000	19.600	V
17956.933	54.3	-28.9	46.7	36.6	74.000	19.700	V

Charger + LTE BAND 17 idle AV detector

Frequency (MHz)	Result(d B μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Polarity
17946.167	46.1	-28.9	46.7	28.4	54.000	7.900	V
17356.833	45.9	-30.0	43.4	32.5	54.000	8.100	V
17992.067	45.7	-29.1	46.7	28.1	54.000	8.300	H
17960.900	45.7	-29.1	46.7	28.1	54.000	8.300	H
17845.867	45.7	-29.3	46.0	29.1	54.000	8.300	V
17901.400	45.6	-29.3	46.0	29.0	54.000	8.400	H

Measurement results for Set.1:
Charger + LTE BAND 71 idle QP detector

Frequency (MHz)	QP (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
46.684000	10.19	29.54	19.35	325.0	V	169.0
52.407000	9.85	29.54	19.69	225.0	V	170.0
139.901000	7.34	33.06	25.72	118.0	V	-30.0
343.116000	11.69	35.56	23.87	226.0	V	-11.0
753.814000	18.83	35.56	16.73	225.0	V	300.0
949.754000	20.41	35.56	15.15	181.0	V	120.0

Charger + LTE BAND 71 idle PK detector

Frequency (MHz)	Result(d B μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Polarity
17938.800	56.4	-29.4	46.7	39.1	74.000	17.600	H
17906.500	55.0	-29.3	46.0	38.4	74.000	19.000	V
17912.167	54.4	-29.3	46.0	37.8	74.000	19.600	H
17521.167	54.3	-29.3	44.4	39.3	74.000	19.700	V
17728.000	54.3	-29.7	45.2	38.7	74.000	19.700	H
17950.700	54.2	-28.9	46.7	36.5	74.000	19.800	H

Charger + LTE BAND 71 idle AV detector

Frequency (MHz)	Result(d B μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Polarity
17972.233	46.0	-29.1	46.7	28.4	54.000	8.000	H
17922.367	46.0	-29.4	46.7	28.7	54.000	8.000	V
17948.433	45.9	-28.9	46.7	28.2	54.000	8.100	H
17954.100	45.6	-28.9	46.7	27.9	54.000	8.400	H
17966.567	45.6	-29.1	46.7	28.0	54.000	8.400	V
17906.500	45.6	-29.3	46.0	29.0	54.000	8.400	H

Measurement results for Set.2:
PC + GSM 850 idle QP detector

Frequency (MHz)	QP (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
59.585000	19.28	29.54	10.26	101.0	V	99.0
85.096000	18.75	29.54	10.79	125.0	V	81.0
124.963000	16.63	33.06	16.43	226.0	V	121.0
491.623000	23.57	35.56	11.99	300.0	V	0.0
594.734000	28.81	35.56	6.75	230.0	V	0.0
672.140000	27.98	35.56	7.58	187.0	V	-28.0

PC + GSM 850 idle PK detector

Frequency (MHz)	Result(d B μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Polarity
17237.833	55.9	-29.6	43.4	42.1	74.000	18.100	V
17239.533	55.7	-29.6	43.4	41.9	74.000	18.300	H
17605.033	55.6	-29.5	45.2	39.9	74.000	18.400	V
17662.267	55.5	-29.9	45.2	40.2	74.000	18.500	V
17166.433	55.5	-29.8	42.4	42.9	74.000	18.500	H
17586.333	55.4	-29.7	45.2	39.8	74.000	18.600	H

PC + GSM 850 idle AV detector

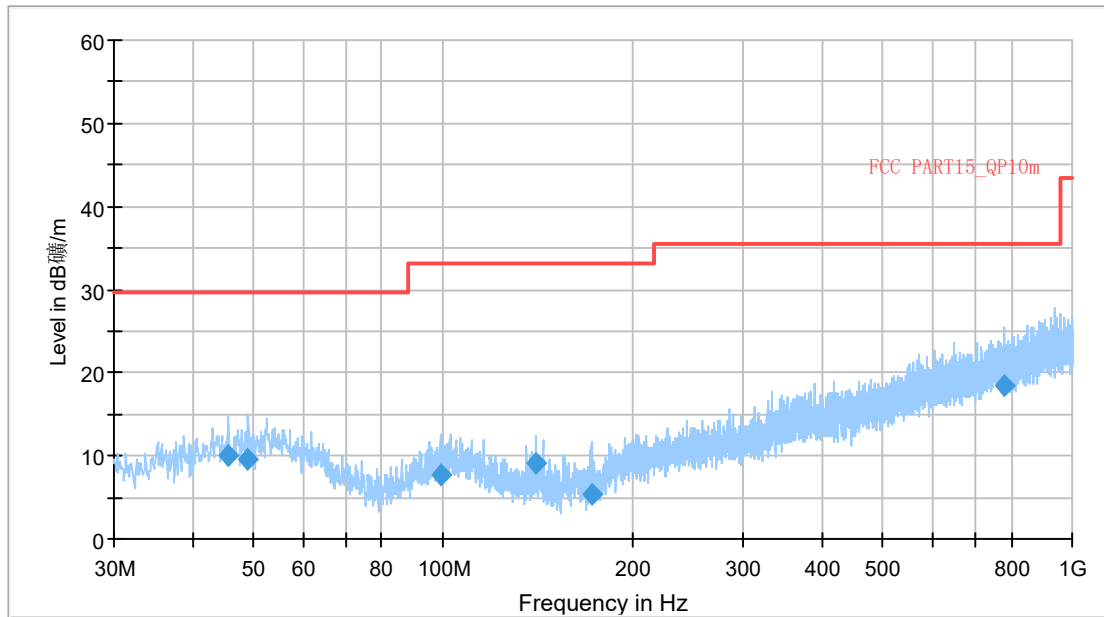
Frequency (MHz)	Result(d B μ V/m)	G _{PL} (dB)	G _A (dB/m)	P _{Mea} (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Polarity
17596.533	46.7	-29.7	45.2	31.1	54.000	7.300	H
17950.133	46.6	-28.9	46.7	28.9	54.000	7.400	V
17922.367	46.6	-29.4	46.7	29.3	54.000	7.400	V
17177.200	46.4	-29.8	42.4	33.8	54.000	7.600	V
17225.933	46.3	-29.6	43.4	32.5	54.000	7.700	H
17994.900	46.3	-29.1	46.7	28.7	54.000	7.700	V

Sample calculation: AV detector, 17596.533MHz

Result = P_{Mea} (31.1dB μ V) + G_A (45.2dB/m) + G_{PL}(-29.7dB) = 46.7dB μ V/m

Charger + GSM 850MHz idle, Set.1

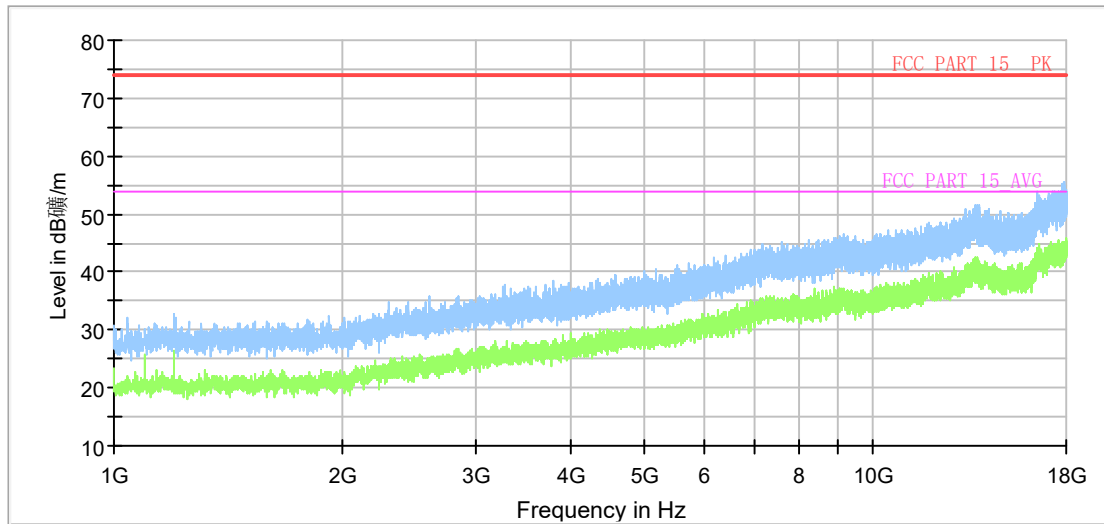
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART15_QP10m [..]
- ◆ Final_Result QPK [Final_Result.Result:4]

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

Full Spectrum

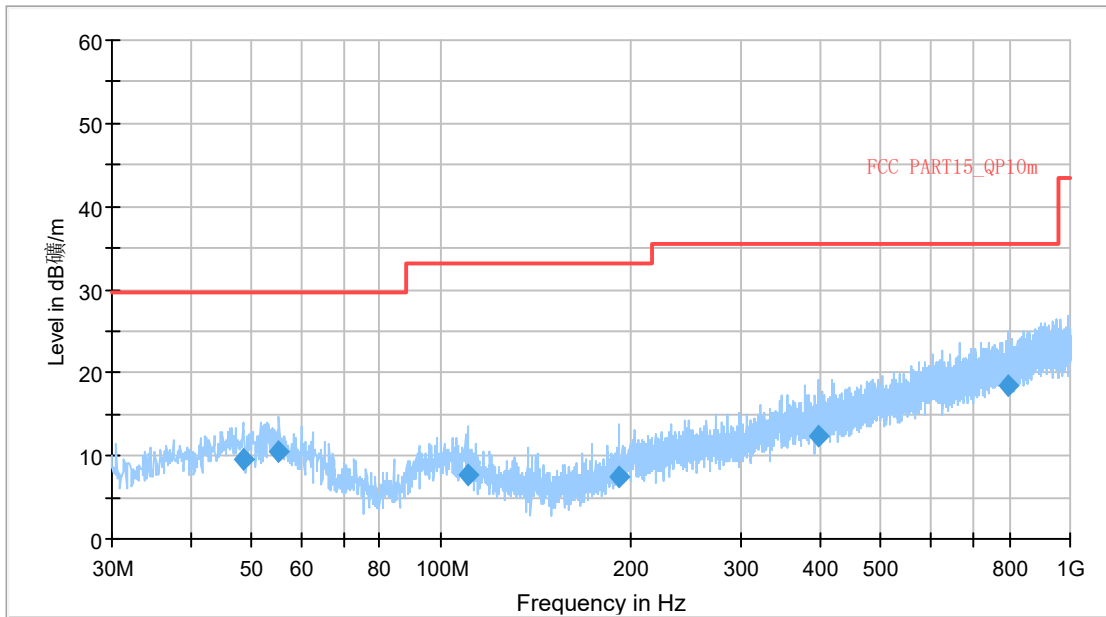


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs AVG [Critical_Freqs.Result:5]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART 15_PK [..]
- FCC PART 15_AVG [..]
- ◆ Final_Result PK+ [Final_Result.Result:4]
- ◆ Final_Result AVG [Final_Result.Result:5]

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

Charger + WCDMA 850MHz idle, Set.1

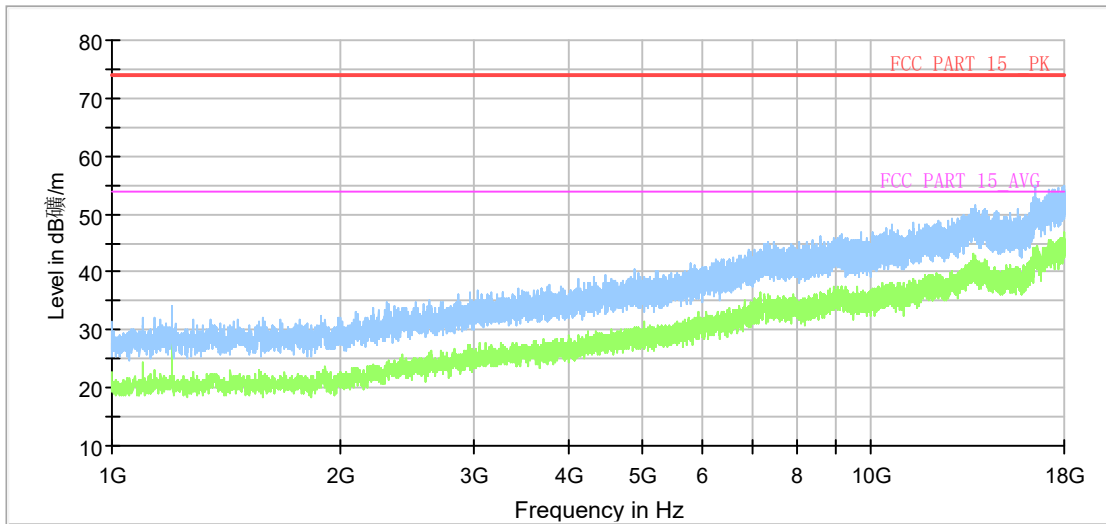
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART15_QP10m [..]
- ◆ Final_Result QPK [Final_Result.Result:4]

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

Full Spectrum

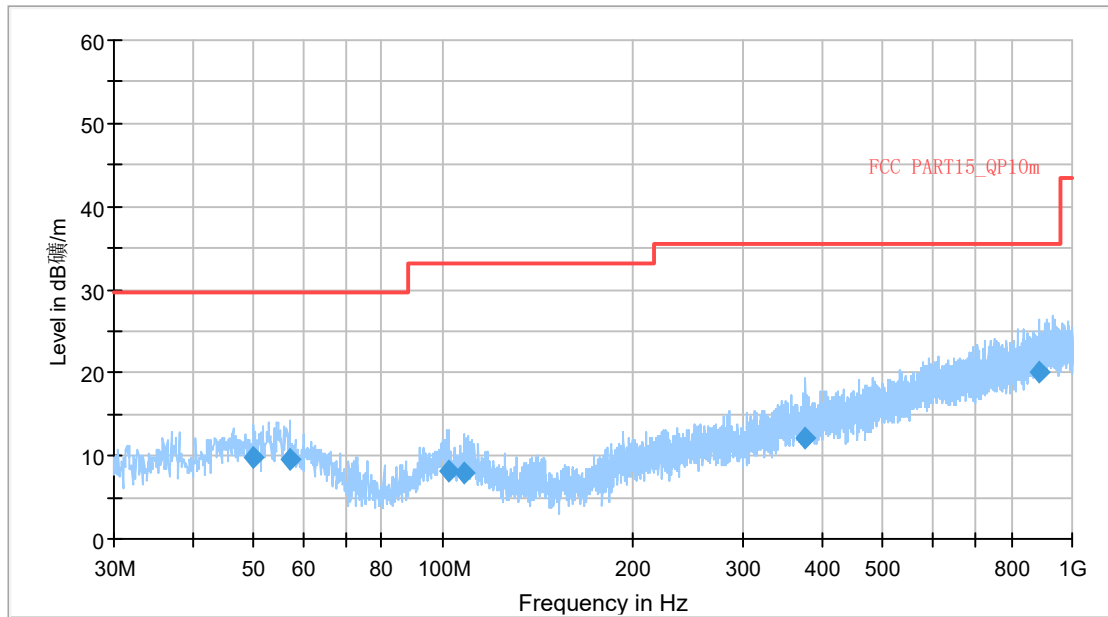


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs AVG [Critical_Freqs.Result:5]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART 15_PK [..]
- FCC PART 15_AVG [..]
- ◆ Final_Result PK+ [Final_Result.Result:4]
- ◆ Final_Result AVG [Final_Result.Result:5]

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

Charger + LTE band 5 idle, Set.1

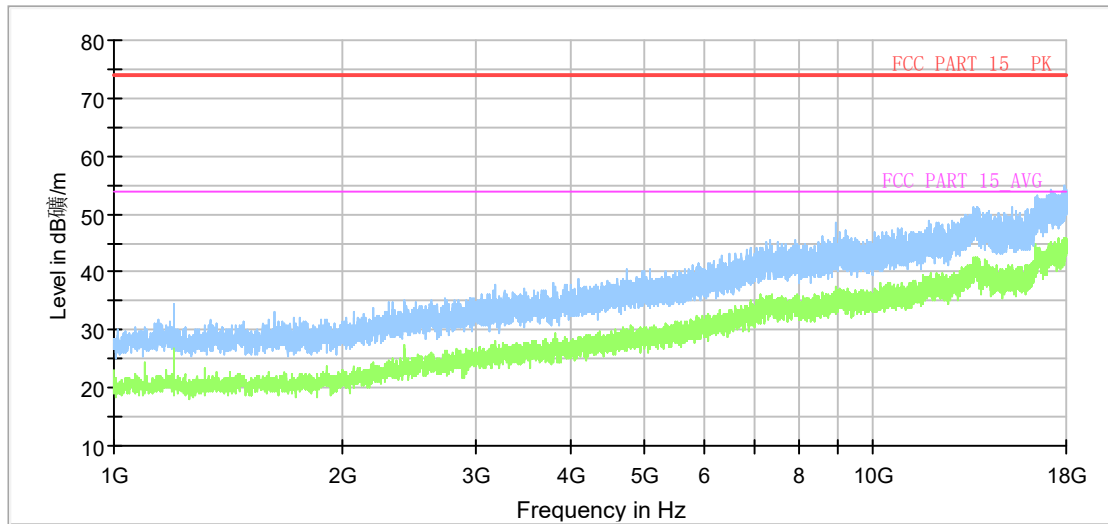
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART15_QP10m [..]
- ◆ Final_Result QPK [Final_Result.Result:4]

Figure A.5 Radiated Emission from 30MHz to 1GHz

Full Spectrum

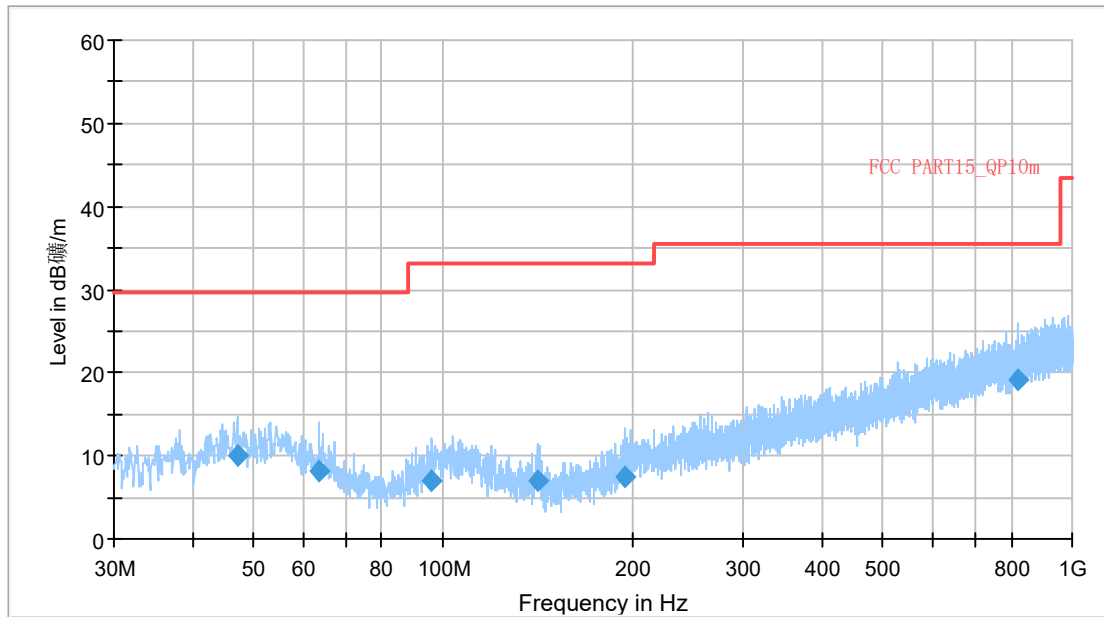


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs AVG [Critical_Freqs.Result:5]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART 15_PK [..]
- FCC PART 15_AVG [..]
- ◆ Final_Result PK+ [Final_Result.Result:4]
- ◆ Final_Result AVG [Final_Result.Result:5]

Figure A.6 Radiated Emission from 1GHz to 18GHz

Charger + LTE band 12 idle, Set.1

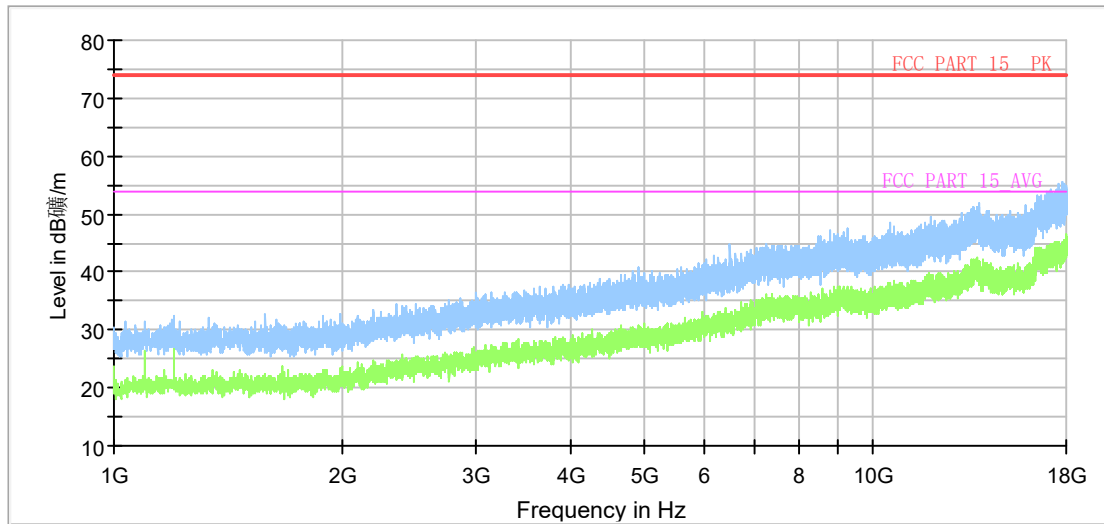
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART15_QP10m [..]
- ◆ Final_Result QPK [Final_Result.Result:4]

Figure A.7 Radiated Emission from 30MHz to 1GHz

Full Spectrum

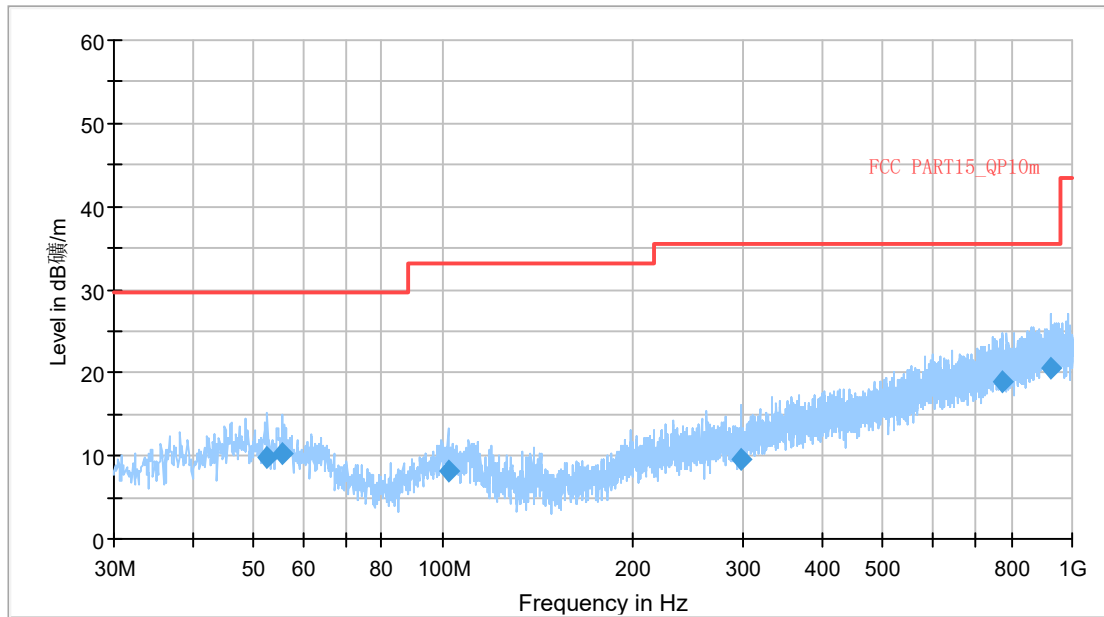


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs AVG [Critical_Freqs.Result:5]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART 15_PK [..]
- FCC PART 15_AVG [..]
- ◆ Final_Result PK+ [Final_Result.Result:4]
- ◆ Final_Result AVG [Final_Result.Result:5]

Figure A.8 Radiated Emission from 1GHz to 18GHz

Charger + LTE band 13 idle, Set.1

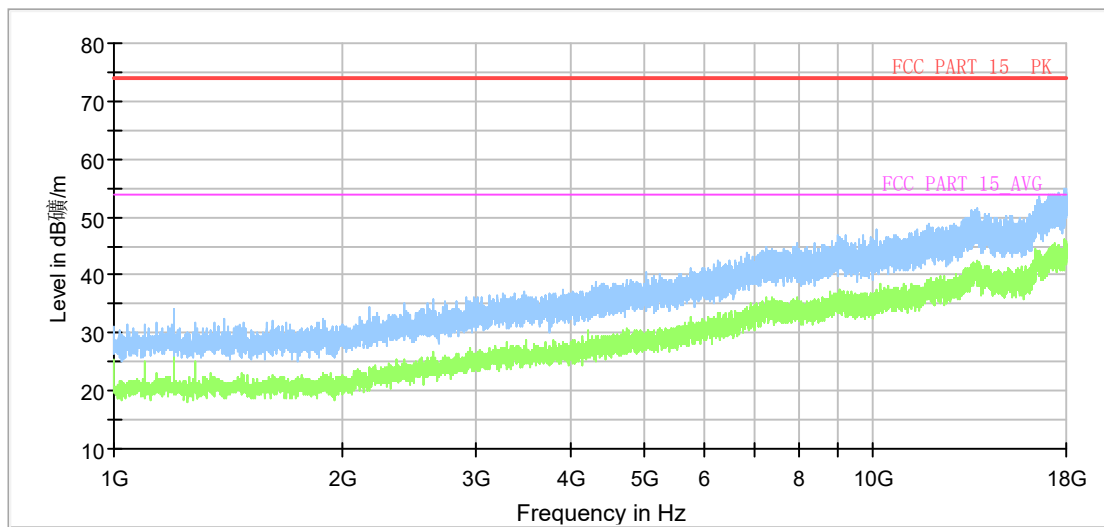
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART15_QP10m [..]
- ◆ Final_Result QPK [Final_Result.Result:4]

Figure A.9 Radiated Emission from 30MHz to 1GHz

Full Spectrum

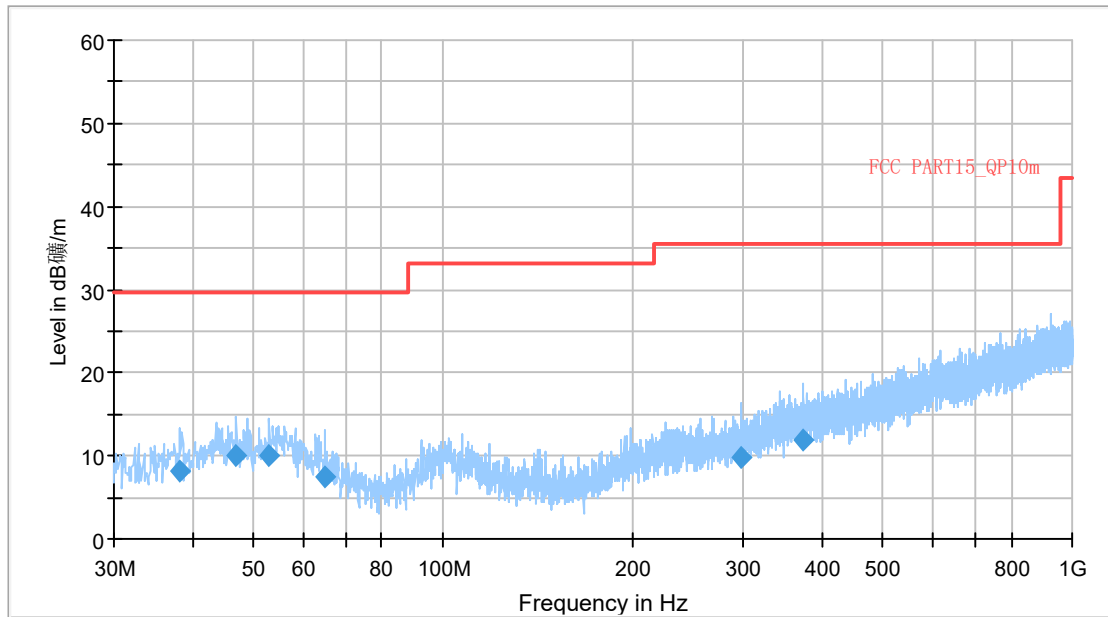


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs AVG [Critical_Freqs.Result:5]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART 15_PK [..]
- FCC PART 15_AVG [..]
- ◆ Final_Result PK+ [Final_Result.Result:4]
- ◆ Final_Result AVG [Final_Result.Result:5]

Figure A.10 Radiated Emission from 1GHz to 18GHz

Charger + LTE band 14 idle, Set.1

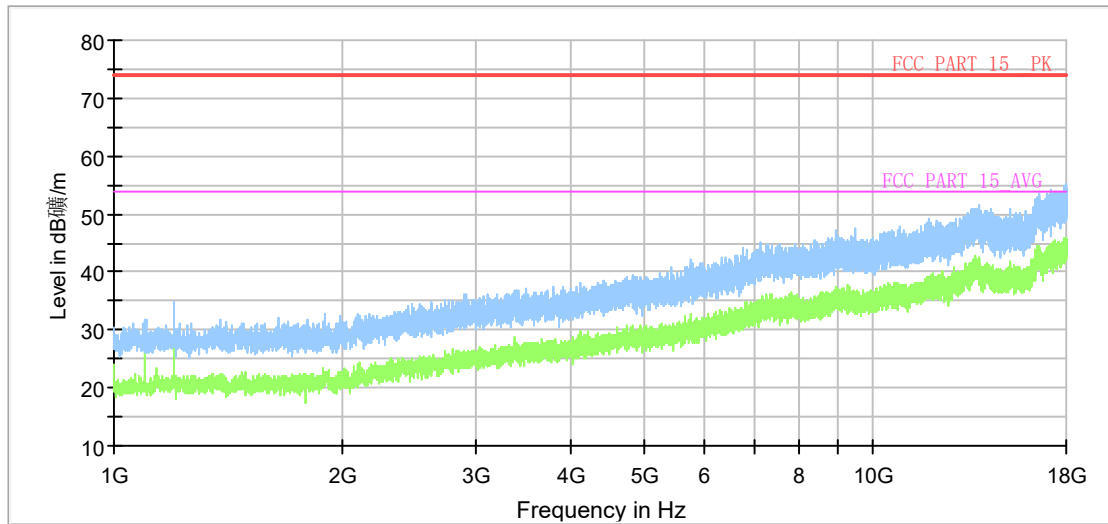
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART15_QP10m [..]
- ◆ Final_Result QPK [Final_Result.Result:4]

Figure A.11 Radiated Emission from 30MHz to 1GHz

Full Spectrum

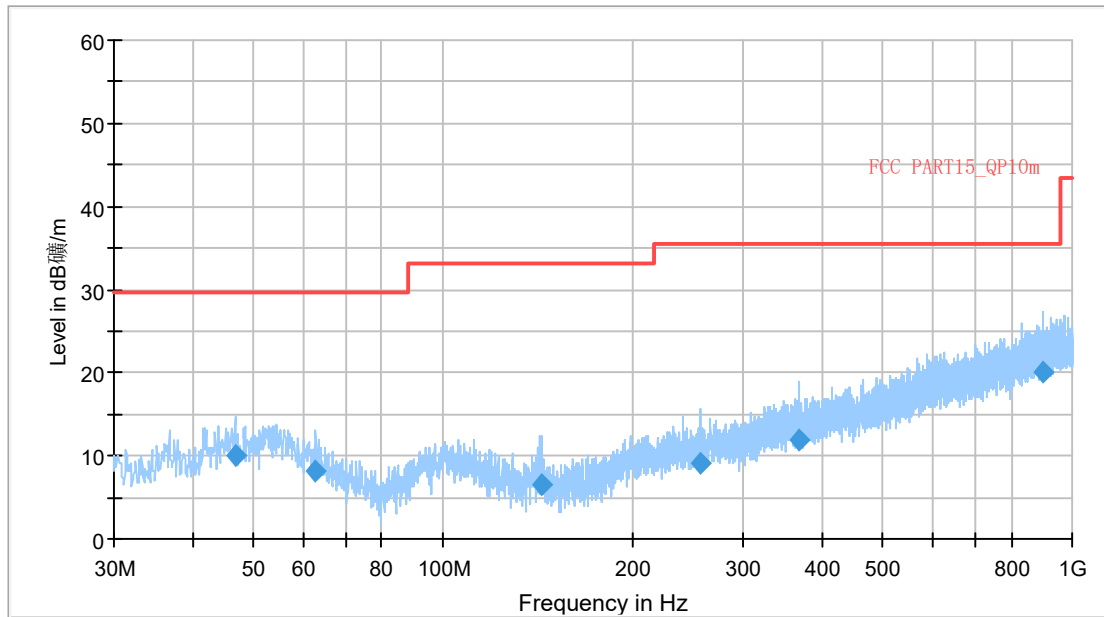


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs AVG [Critical_Freqs.Result:5]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART 15_PK [..]
- FCC PART 15_AVG [..]
- ◆ Final_Result PK+ [Final_Result.Result:4]
- ◆ Final_Result AVG [Final_Result.Result:5]

Figure A.12 Radiated Emission from 1GHz to 18GHz

Charger + LTE band 17 idle, Set.1

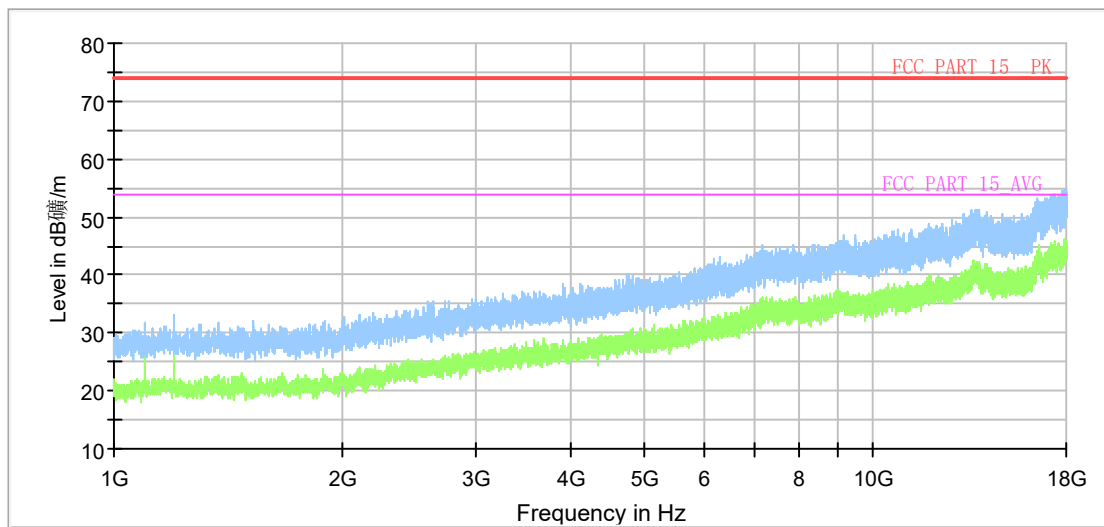
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART15_QP10m [..]
- ◆ Final_Result QPK [Final_Result.Result:4]

Figure A.13 Radiated Emission from 30MHz to 1GHz

Full Spectrum

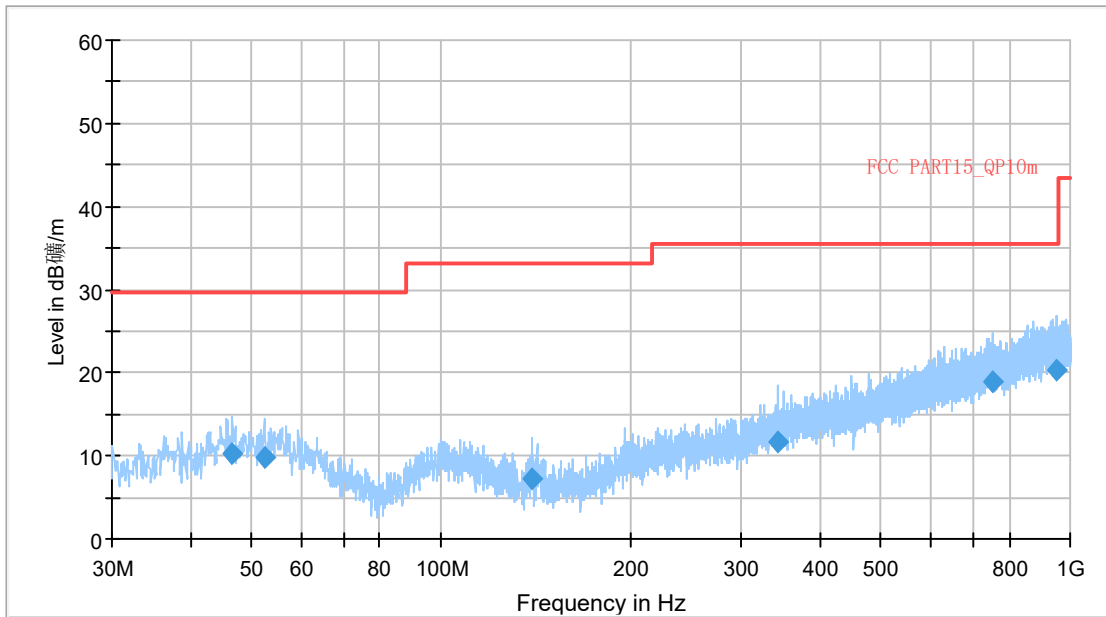


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs AVG [Critical_Freqs.Result:5]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART 15_PK [..]
- FCC PART 15_AVG [..]
- ◆ Final_Result PK+ [Final_Result.Result:4]
- ◆ Final_Result AVG [Final_Result.Result:5]

Figure A.14 Radiated Emission from 1GHz to 18GHz

Charger + LTE band 71 idle, Set.1

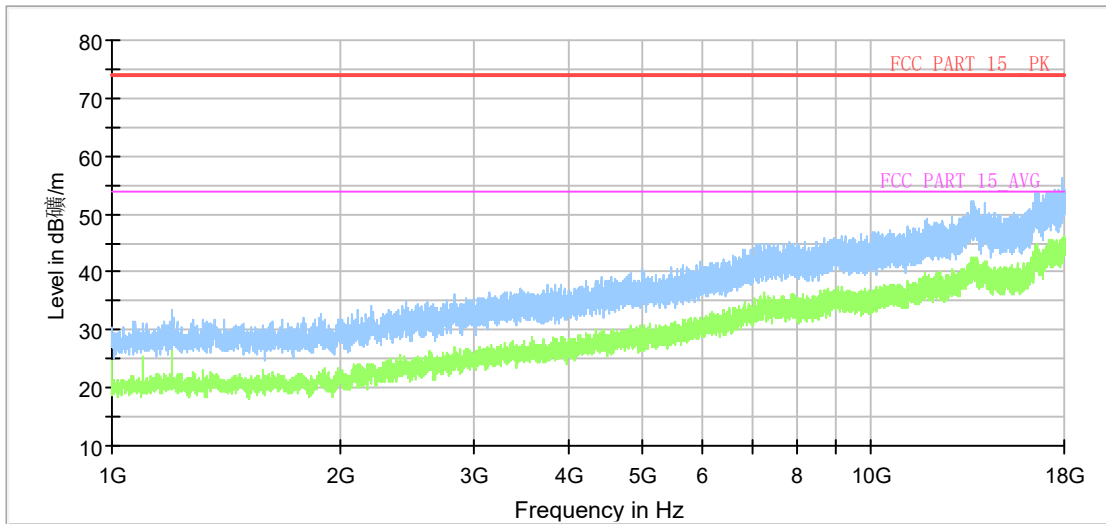
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART15_QP10m [..]
- ◆ Final_Result QPK [Final_Result.Result:4]

Figure A.15 Radiated Emission from 30MHz to 1GHz

Full Spectrum

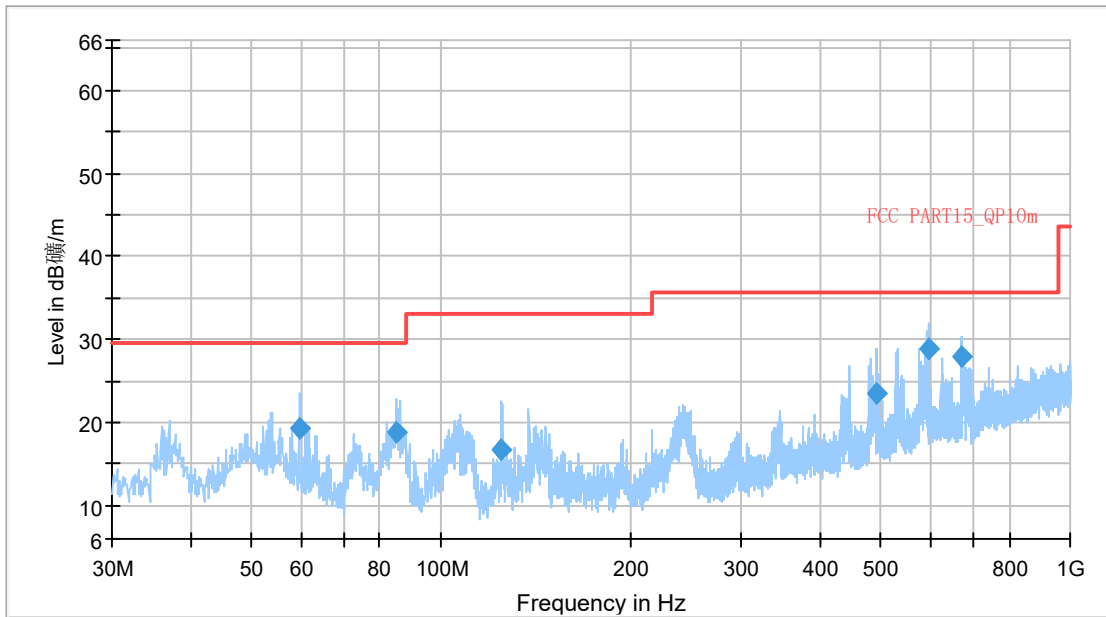


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs AVG [Critical_Freqs.Result:5]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART 15_PK [..]
- FCC PART 15_AVG [..]
- ◆ Final_Result PK+ [Final_Result.Result:4]
- ◆ Final_Result AVG [Final_Result.Result:5]

Figure A.16 Radiated Emission from 1GHz to 18GHz

PC + GSM 850 idle, Set.2

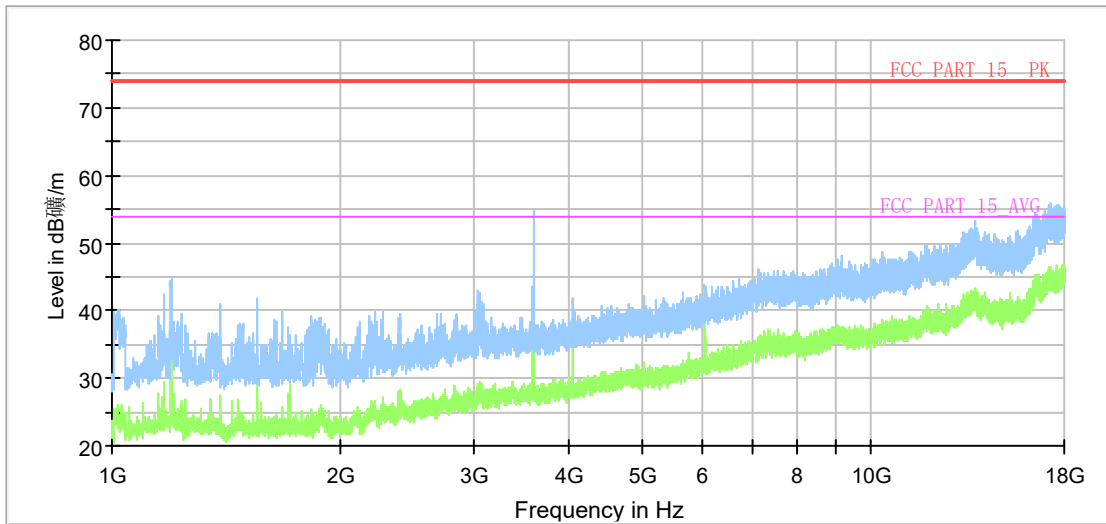
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART15_QP10m [..]
- ◆ Final_Result QPK [Final_Result.Result:4]

Figure A.17 Radiated Emission from 30MHz to 1GHz

Full Spectrum



- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- * Critical_Freqs AVG [Critical_Freqs.Result:5]
- * Critical_Freqs PK+ [Critical_Freqs.Result:4]
- FCC PART 15_PK [..]
- FCC PART 15_AVG [..]
- ◆ Final_Result PK+ [Final_Result.Result:4]
- ◆ Final_Result AVG [Final_Result.Result:5]

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

A.2 Conducted Emission

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

The MS is operating in the charging mode. During the test MS had two modes:

1. MS is connected to a PC;
2. MS is connected to a charger.

The model of the PC is M4000E-17, and the serial number of the PC is M706GWXD. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

Note: I/O information: Printer – USB, Mouse – PS/2, Keyboard – USB.

A.2.3 Measurement Limit

Frequency of emission (MHz)	Conducted limit (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

*Decreases with the logarithm of the frequency

A.2.4 Test Condition in charging mode

Voltage (V)	Frequency (Hz)
120	60

RBW/IF bandwidth	Sweep Time(s)
9kHz	1

A.2.5 Measurement Results

Measurement uncertainty: $U=3.18\text{dB}$, $k=2$.

Charger + GSM 850MHz idle, Set.1

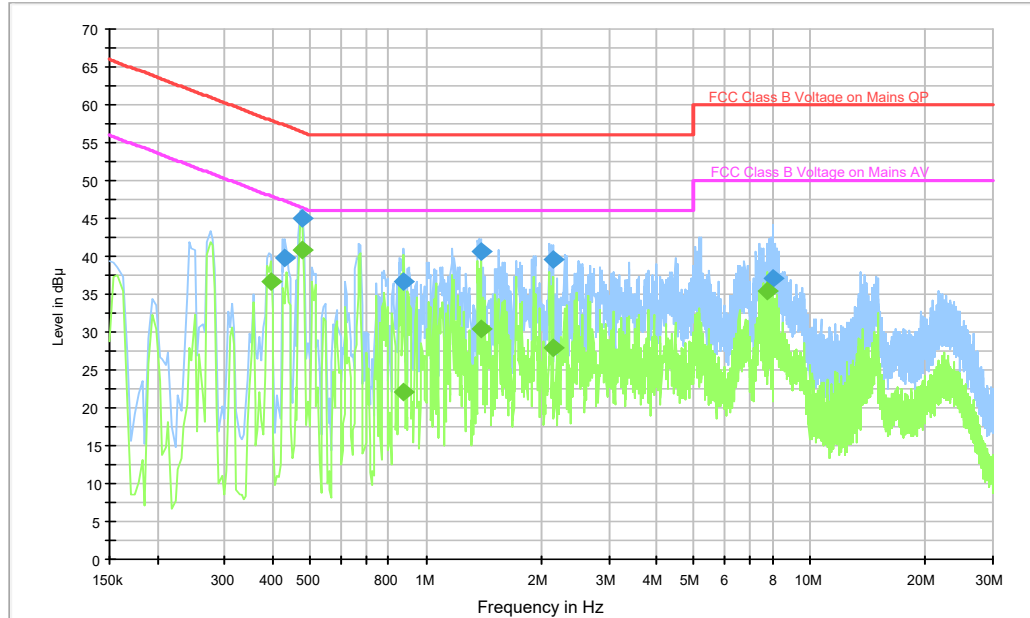


Figure A.13 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.430000	39.8	L1	19.9	17.4	57.3
0.474000	44.9	L1	19.9	11.5	56.4
0.878000	36.7	N	19.8	19.3	56.0
1.386000	40.7	L1	19.5	15.3	56.0
2.138000	39.6	N	19.8	16.4	56.0
8.002000	37.2	N	19.7	22.8	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.394000	36.7	L1	19.9	11.3	48.0
0.474000	40.7	L1	19.9	5.7	46.4
0.878000	22.1	N	19.8	23.9	46.0
1.386000	30.4	L1	19.5	15.6	46.0
2.138000	27.9	N	19.8	18.1	46.0
7.726000	35.3	N	19.7	14.7	50.0

PC + GSM 850MHz idle, Set.2

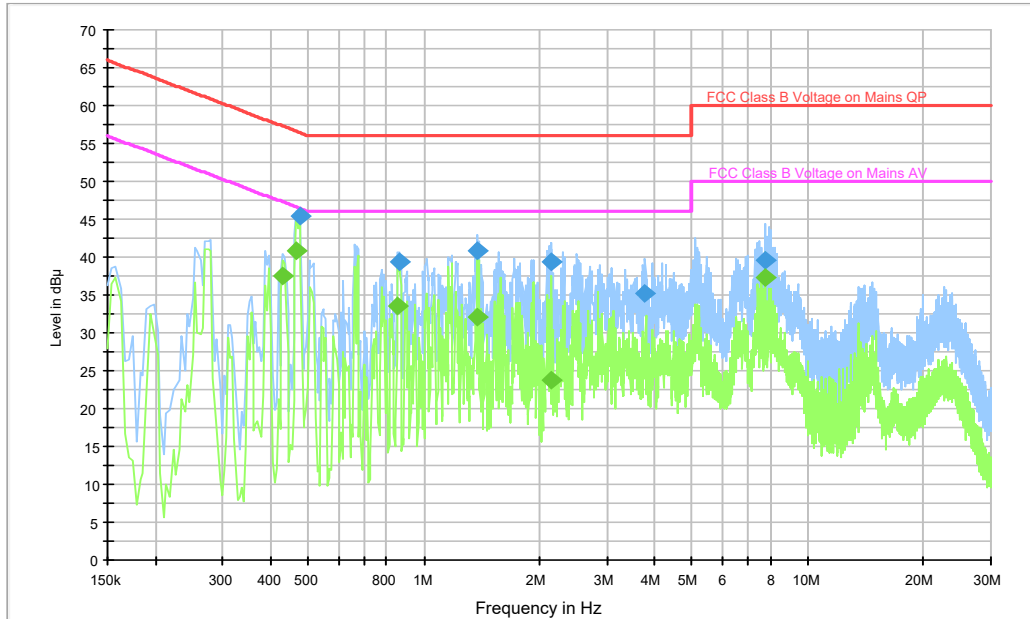


Figure A.14 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.474000	45.4	L1	19.9	11.0	56.4
0.862000	39.5	N	19.8	16.5	56.0
1.374000	40.9	L1	19.5	15.1	56.0
2.138000	39.4	N	19.8	16.6	56.0
3.778000	35.3	N	19.7	20.7	56.0
7.722000	39.6	N	19.7	20.4	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.430000	37.5	L1	19.9	9.8	47.3
0.466000	40.9	L1	19.9	5.7	46.6
0.858000	33.5	N	19.8	12.5	46.0
1.374000	32.1	L1	19.5	13.9	46.0
2.146000	23.7	L1	19.5	22.3	46.0
7.722000	37.3	N	19.7	12.7	50.0



ANNEX B: Persons involved in this testing

Test Item	Tester
Conducted Continuous Emission	Meng Qingbo
Radiated Continuous Emission	Yan Hanchen

*****END OF REPORT*****