



FCC 15B TEST REPORT

No. I21Z62323-EMC01

for

TCL Communication Ltd.

GSM/UMTS/LTE Mobile phone

Model Name: 6102H

FCC ID: 2ACCJH154

with

Hardware Version: 05

Software Version: NA52

Issued Date: 2021-12-22

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.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

Test Laboratory:

CTTL, Telecommunication Technology Labs, CAICT

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REPORT HISTORY

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1. Test Laboratory

1.1. Testing Location

CTTL(huayuan North Road)

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

1.2. Testing Environment

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2021-12-02


Testing End Date: 2021-12-17

1.4. Signature



An Hui

(Prepared this test report)



Zhang Ying

(Reviewed this test report)



Zhang Xia

Deputy Director of the laboratory

(Approved this test report)



2. Client Information

2.1. Applicant Information

Company Name: TCL Communication Ltd.
Address /Post: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science
Park, Shatin, NT, Hong Kong
City: Hong Kong
Postal Code: /
Country: China
Telephone: 0086-755-36611722
Fax: 0086-755-36612000-81722

2.2. Manufacturer Information

Company Name: TCL Communication Ltd.
Address /Post: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science
Park, Shatin, NT, Hong Kong
City: Hong Kong
Postal Code: /
Country: China
Telephone: 0086-755-36611722
Fax: 0086-755-36612000-81722

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

3.1. About EUT

Description	GSM/UMTS/LTE Mobile phone
Model Name	6102H
FCC ID	2ACCJH154

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
EUT1	359920710201779/ 359920710201787	05	NA52

*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
AE1-1	Adapter	CBA0059AAAC7
AE1-2	Adapter	CBA0059AANC5
AE1-3	Adapter	CBA0059AATC1
AE1-4	Adapter	CBA0059AATC5
AE1-5	Adapter	CBA0059ACNC5
AE1-6	Adapter	CBA0059AAAC5
AE1-7	Adapter	CBA0059ABAC7
AE1-8	Adapter	CBA005AAAAC5
AE1-9	Adapter	CBA0059ABTC5
AE1-10	Adapter	CBA0059ABAC5
AE1-11	Adapter	CBA0059ABTC1
AE1-12	Adapter	CBA0059AAAC5
AE2-1	USB Cable	CDA0000123C8
AE2-2	USB Cable	CDA0000123C1
AE3-1	Battery	TLp048A7
AE3-2	Battery	TLp048A1
AE4-1	Headset	CCB0046A15C1
AE4-2	Headset	CCB0049A12C1
AE4-3	Headset	CCB0076A10C1



AE1-1		
Model	CBA0059AAAC7	
Manufacturer	Chenyang	
Length	/	
AE1-2		
Model	CBA0059AANC5	
Manufacturer	PUAN	
Length	/	
AE1-3		
Model	CBA0059AATC1	
Manufacturer	BYD	
Length	/	
AE1-4		
Model	CBA0059AATC5	
Manufacturer	PUAN	
Length	/	
AE1-4		
Model	CBA0059ACNC5	
Manufacturer	PUAN	
Length	/	
AE1-6		
Model	CBA0059AAAC5	
Manufacturer	PUAN	
Length	/	
AE1-7		
Model	CBA0059ABAC7	
Manufacturer	Chenyang	
Length	/	
AE1-8		
Model	CBA005AAAAC5	
Manufacturer	PUAN	
Length	/	
AE1-9		
Model	CBA0059ABTC5	
Manufacturer	PUAN	
Length	/	



AE1-10
Model CBA0059ABAC5
Manufacturer PUAN
Length /

AE1-11
Model CBA0059ABTC1
Manufacturer BYD
Length /

AE1-12
Model CBA0059AAAC5
Manufacturer PUAN
Length /

AE2-1
Model CDA0000123C8
Manufacturer PUAN
Length /

AE2-2
Model CDA0000123C1
Manufacturer JUWEI
Length /

AE3-1
Model TLp048A7
Manufacturer VEKEN
Capacitance 5000mAh
Nominal voltage /

AE3-2
Model TLp048A1
Manufacturer BYD
Capacitance 5000mAh
Nominal voltage /

AE4-1
Model CCB0046A15C1
Manufacturer JUWEI
Length /

AE4-2
 Model CCB0049A12C1
 Manufacturer JUWEI
 Length /

AE4-3
 Model CCB0076A10C1
 Manufacturer JUWEI
 Length /

*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.1-1	EUT1+AE1-1+AE2-1/AE2-2+ AE3-1/AE3-2+AE4-1	Charger+ Real Camera+ + GSM850 idle
Set.1-2	EUT1+AE1-2+AE2-1/AE2-2+ AE3-1/AE3-2+AE4-2	Charger+ Real Camera+ + GSM850 idle
Set.1-3	EUT1+AE1-3+AE2-1/AE2-2+ AE3-1/AE3-2+AE4-3	Charger+ Real Camera+ + GSM850 idle
Set.2	EUT1+AE1-1+AE2-1/AE2-2+ AE3-1/AE3-2	Charger+MP4
Set.3	EUT1+AE1-1+AE2-1/AE2-2+AE3-1/AE3-2+AE4-1	Charger+FM
Set.4	EUT1+AE3/AE4 + AE5	USB SD TO PC+ Front Camera

Note:

The device contains receivers which tune and operate between 30MHz-960MHz in the following bands: GSM 850MHz,WCDMA Band5, LTE Band 5, The measurement results showed here are worst cases of different bands.

3.5. General Description

Equipment Under Test (EUT) is a model of GSM/UMTS/LTE Mobile phone with integrated antenna.

It supports

GSM Frequency Band	GSM 900/GSM 1800/GSM 1900/GSM 850
UMTS Frequency Band	FDD Band I(W2100)/FDD Band II(W1900)/FDD Band V(W850)/FDD Band VIII(W900)
LTE Frequency Band	LTE FDD Bands 1/3/5/7/8/20/28, LTE FDD Bands 38/40/41.

It has MP3, Camera, USB memory, FM, Bluetooth 5.0, Wi-Fi (802.11b/g/n, 802.11n supports 20MHz and 40MHz bandwidth,), GNSS functions.

Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the client.

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

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 - Unintentional Radiators	2019
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
	BR	Re-use test data from basic model report.

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

7. Test Equipments Utilized

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	LISN	ENV216	101200	Rohde & Schwarz	1 year	2022-05-30
2	Test Receiver	ESCI 7	100344	Rohde & Schwarz	1 year	2022-02-26
3	Test Receiver	ESW44	103015	Rohde & Schwarz	1 year	2022-09-05
4	BiLog Antenna	VULB9163	9163-01223	Schwarzbeck	1 year	2022-03-22
5	Signal Source	SMBV100A	260613	Rohde & Schwarz	1 year	2022-01-06
6	Universal Radio Communication Tester	CMW500	116588	Rohde & Schwarz	1 year	2021-12-07
7	EMI Antenna	3115	6914	ETS-Lindgren	1 year	2022-02-03
8	PC	M4000e-17	M706GWXD	Lenovo	N/A	N/A
9	Printer	P1606dn	VNC3L52122	HP	N/A	N/A

Note: The test dates were before the calibration due dates of equipment used (the Universal Radio Communication Tester which series number is 116588)

Test Item	Test Software and Version	Software Vendor
Radiated Continuous Emission	EMC32 V10.60.10	R&S
Conducted Emission	EMC32 V8.53.0	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) at distances of 3 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 is connected to a charger in the case of charging mode.

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.

All equipment is placed on the test table top and arranged in a typical configuration in accordance with ANSI C63.4-2014 and manipulated to obtain worst case emissions.

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: 5.16dB, 1GHz-18GHz: 5.44dB, $k=2$.

Note : The measurement results showed here are worst cases of the combinations of different Battery, cables and Headset.

Note:The measurement results showed here are worst cases.

Measurement results for Set.1-1:
EUT1 Charger1+Back Camera+GSM 850MHz idle Mode/QP detector

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
46.684000	11.47	29.54	18.07	2000.0	120.000	295.0	V	100.0
71.419000	6.65	29.54	22.89	2000.0	120.000	118.0	V	260.0
126.127000	8.09	33.06	24.97	2000.0	120.000	182.0	V	80.0
164.054000	12.87	33.06	20.19	2000.0	120.000	107.0	V	-30.0
191.990000	23.02	33.06	10.04	2000.0	120.000	101.0	V	300.0
213.427000	18.84	33.06	14.22	2000.0	120.000	125.0	V	151.0

EUT1 Charger1+Back Camera+GSM 850MHz idle Mode/Average detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)	Limit (dBμV/m)	Margin (dB)
17959.200	46.0	-28.9	46.7	28.283	V	54	8.0
17958.633	46.0	-28.9	46.7	28.283	V	54	8.0
17930.300	46.0	-29.4	46.7	28.739	H	54	8.0
17968.267	45.8	-29.1	46.7	28.201	H	54	8.2
17942.767	45.7	-28.9	46.7	27.983	V	54	8.3
17988.100	45.7	-29.1	46.7	28.098	V	54	8.3

EUT1 Charger1+Back Camera+GSM 850MHz idle Mode/Peak detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)	Limit (dBμV/m)	Margin (dB)
17387.433	55.1	-29.8	44.4	40.576	H	74	18.9
17980.167	54.9	-29.1	46.7	37.298	H	74	19.1
17984.700	54.9	-29.1	46.7	37.298	H	74	19.1
17619.767	54.7	-29.5	45.2	38.972	V	74	19.3
17890.633	54.6	-29.5	46.0	38.180	H	74	19.4
17945.033	54.6	-28.9	46.7	36.883	H	74	19.4

Measurement results for Set.1-2:
EUT1 Charger2+Back Camera+GSM 850MHz idle Mode/QP detector

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
33.977000	12.02	29.54	17.52	2000.0	120.000	311.0	V	150.0
53.474000	11.07	29.54	18.47	2000.0	120.000	294.0	V	-8.0
75.008000	15.35	29.54	14.19	2000.0	120.000	176.0	V	-29.0
110.898000	13.33	33.06	19.73	2000.0	120.000	107.0	V	300.0
212.651000	10.37	33.06	22.69	2000.0	120.000	125.0	V	-29.0
360.964000	12.35	35.56	23.21	2000.0	120.000	295.0	V	210.0

EUT1 Charger2+Back Camera+GSM 850MHz idle Mode/Average detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)	Limit (dBμV/m)	Margin (dB)
17949.567	45.7	-28.9	46.7	27.983	H	54	8.3
17385.733	45.5	-29.8	43.4	31.972	V	54	8.5
17917.267	45.5	-29.3	46.7	28.165	H	54	8.5
17939.367	45.5	-29.4	46.7	28.239	V	54	8.5
17218.000	45.5	-29.5	43.4	31.631	H	54	8.5
17967.700	45.4	-29.1	46.7	27.801	V	54	8.6

EUT1 Charger2+Back Camera+GSM 850MHz idle Mode/Peak detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)	Limit (dBμV/m)	Margin (dB)
17595.967	54.9	-29.7	45.2	39.349	H	74	19.1
17538.733	54.7	-29.3	44.4	39.667	H	74	19.3
17917.833	54.5	-29.3	46.7	37.165	V	74	19.5
17790.333	54.4	-29.9	46.0	38.332	H	74	19.6
17921.233	54.4	-29.4	46.7	37.139	V	74	19.6
17933.133	54.4	-29.4	46.7	37.139	H	74	19.6

Measurement results for Set.1-3:
EUT1 Charger3+Back Camera+GSM 850MHz idle Mode/QP detector

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
30.873000	19.03	29.54	10.51	2000.0	120.000	176.0	V	99.0
55.705000	14.38	29.54	15.16	2000.0	120.000	108.0	V	260.0
94.020000	12.83	33.06	20.23	2000.0	120.000	276.0	V	300.0
191.990000	19.47	33.06	13.59	2000.0	120.000	108.0	V	300.0
383.953000	20.57	35.56	14.99	2000.0	120.000	125.0	V	261.0
576.013000	25.61	35.56	9.95	2000.0	120.000	100.0	V	-10.0

EUT1 Charger3+Back Camera+GSM 850MHz idle Mode/Average detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)	Limit (dBμV/m)	Margin (dB)
17967.133	46.1	-29.1	46.7	28.501	V	54	7.9
17934.833	46.1	-29.4	46.7	28.839	V	54	7.9
17982.433	46.0	-29.1	46.7	28.398	H	54	8.0
17981.300	46.0	-29.1	46.7	28.398	V	54	8.0
17897.433	45.8	-29.5	46.0	29.380	H	54	8.2
17959.767	45.8	-28.9	46.7	28.083	V	54	8.2

EUT1 Charger3+Back Camera+GSM 850MHz idle Mode/Peak detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Antenna Pol. (H/V)	Limit (dBμV/m)	Margin (dB)
17952.967	55.4	-28.9	46.7	37.683	V	74	18.6
17943.333	55.0	-28.9	46.7	37.283	V	74	19.0
17864.000	54.8	-29.4	46.0	38.239	H	74	19.2
17151.700	54.8	-29.9	42.4	42.314	V	74	19.2
17387.433	54.8	-29.8	44.4	40.276	H	74	19.2
17962.033	54.6	-29.1	46.7	37.001	V	74	19.4

Measurement results for Set.2:
EUT1 Charger3+MP4 Mode/QP detector

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
34.074000	21.37	29.54	8.17	2000.0	120.000	275.0	V	210.0
37.469000	18.87	29.54	10.67	2000.0	120.000	282.0	V	241.0
62.107000	20.26	29.54	9.28	2000.0	120.000	119.0	V	300.0
74.814000	14.02	29.54	15.52	2000.0	120.000	175.0	V	196.0
177.246000	12.78	33.06	20.28	2000.0	120.000	176.0	V	-29.0
225.940000	16.75	35.56	18.81	2000.0	120.000	101.0	V	30.0

EUT1 Charger3+MP4 Mode/Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Antenna Pol. (H/V)	Limit (dB μ V/m)	Margin (dB)
17962.600	46.0	-29.1	46.7	28.401	V	54	8.0
17954.667	45.9	-28.9	46.7	28.183	H	54	8.1
17947.300	45.6	-28.9	46.7	27.883	V	54	8.4
17520.600	45.5	-29.3	44.4	30.467	V	54	8.5
17959.767	45.5	-28.9	46.7	27.783	H	54	8.5
17985.833	45.5	-29.1	46.7	27.898	V	54	8.5

EUT1 Charger3+MP4 Mode/Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Antenna Pol. (H/V)	Limit (dB μ V/m)	Margin (dB)
17847.000	55.4	-29.3	46.0	38.782	V	74	18.6
17938.800	55.0	-29.4	46.7	37.739	H	74	19.0
17992.067	54.9	-29.1	46.7	37.298	V	74	19.1
17171.533	54.9	-29.8	42.4	42.317	V	74	19.1
17920.100	54.7	-29.4	46.7	37.439	H	74	19.3
17974.500	54.7	-29.1	46.7	37.101	V	74	19.3

Measurement results for Set.3:
EUT1 Charger3+FM Mode/QP detector

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
32.037000	19.85	29.54	9.69	2000.0	120.000	276.0	V	120.0
50.758000	15.97	29.54	13.57	2000.0	120.000	100.0	V	90.0
92.080000	12.21	33.06	20.85	2000.0	120.000	101.0	V	300.0
173.560000	13.38	33.06	19.68	2000.0	120.000	101.0	V	-29.0
191.990000	19.22	33.06	13.84	2000.0	120.000	175.0	V	300.0
308.681000	12.60	35.56	22.96	2000.0	120.000	102.0	V	-2.0

EUT1 Charger3+FM Mode/Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Antenna Pol. (H/V)	Limit (dB μ V/m)	Margin (dB)
17970.533	46.5	-29.1	46.7	28.901	V	54	7.5
17965.433	45.6	-29.1	46.7	28.001	H	54	8.4
17983.000	45.4	-29.1	46.7	27.798	V	54	8.6
17959.200	45.4	-28.9	46.7	27.683	V	54	8.6
17558.567	45.4	-29.5	44.4	30.534	H	54	8.6
17573.867	45.4	-29.8	45.2	29.946	H	54	8.6

EUT1 Charger3+FM Mode/Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Antenna Pol. (H/V)	Limit (dB μ V/m)	Margin (dB)
17964.300	55.4	-29.1	46.7	37.801	V	74	18.6
17997.167	55.3	-29.1	46.7	37.698	H	74	18.7
17958.633	54.9	-28.9	46.7	37.183	V	74	19.1
17995.467	54.9	-29.1	46.7	37.298	H	74	19.1
17983.567	54.8	-29.1	46.7	37.198	H	74	19.2
17966.567	54.7	-29.1	46.7	37.101	H	74	19.3

Measurement results for Set.4:
EUT1 USB + SD + Front Camera Mode/QP detector

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
34.074000	20.62	29.54	8.92	2000.0	120.000	118.0	V	-11.0
35.626000	22.25	29.54	7.29	2000.0	120.000	225.0	V	150.0
95.281000	16.01	33.06	17.05	2000.0	120.000	101.0	V	80.0
166.673000	9.60	33.06	23.46	2000.0	120.000	102.0	V	189.0
481.535000	25.60	35.56	9.96	2000.0	120.000	294.0	V	-10.0
673.789000	27.83	35.56	7.73	2000.0	120.000	176.0	V	-9.0

EUT1 USB + SD + Front Camera Mode/Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Antenna Pol. (H/V)	Limit (dB μ V/m)	Margin (dB)
17906.500	46.0	-29.3	46.0	29.372	H	54	8.0
17954.667	45.9	-28.9	46.7	28.183	V	54	8.1
17916.700	45.8	-29.3	46.7	28.465	H	54	8.2
17976.767	45.8	-29.1	46.7	28.201	H	54	8.2
17943.333	45.8	-28.9	46.7	28.083	H	54	8.2
17992.633	45.7	-29.1	46.7	28.098	H	54	8.3

EUT1 USB + SD + Front Camera Mode/Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Antenna Pol. (H/V)	Limit (dB μ V/m)	Margin (dB)
17995.467	55.6	-29.1	46.7	37.998	V	74	18.4
17952.400	55.5	-28.9	46.7	37.783	V	74	18.5
17975.633	55.2	-29.1	46.7	37.601	H	74	18.8
17614.667	55.1	-29.5	45.2	39.372	H	74	18.9
17939.367	54.9	-29.4	46.7	37.639	V	74	19.1
17987.533	54.9	-29.1	46.7	37.298	V	74	19.1

EUT1 Charger1+Back Camera+GSM 850MHz idle Mode, Set.1-1

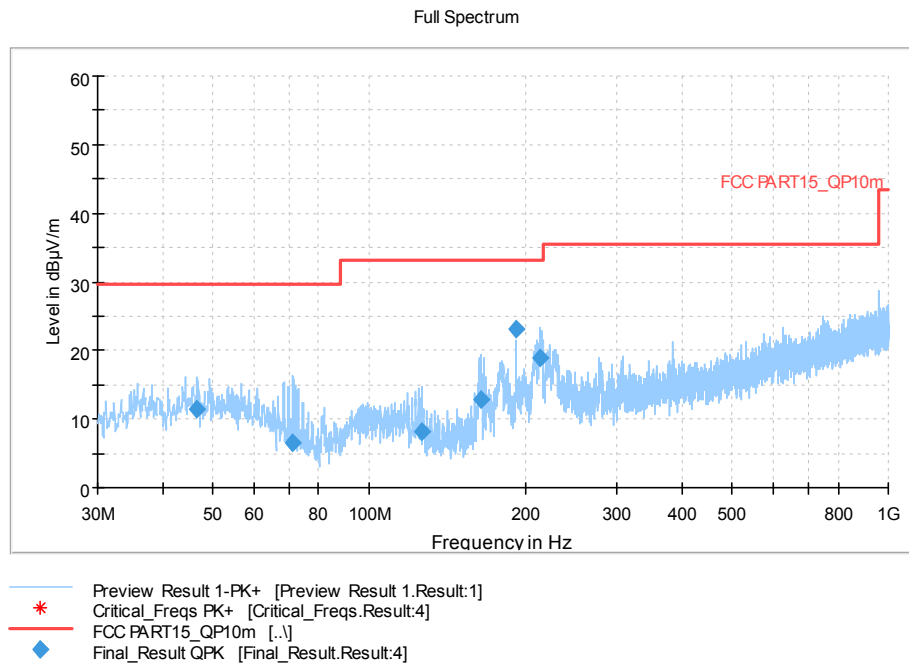


Figure A.1 Radiated Emission from 30MHz to 1GHz

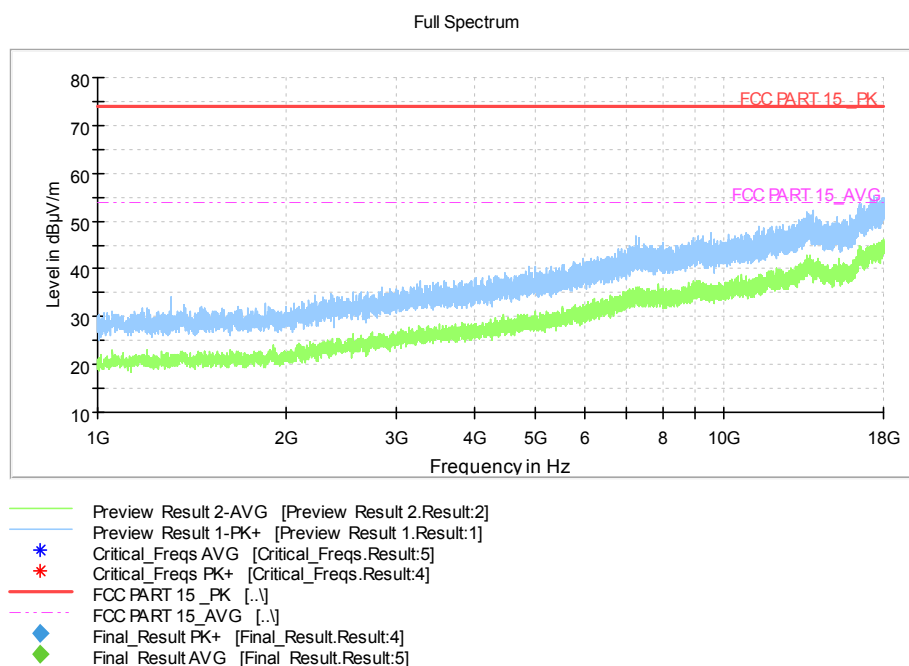


Figure A.2 Radiated Emission from 1GHz to 18GHz

EUT1 Charger2+Back Camera+GSM 850MHz idle Mode, Set.1-2

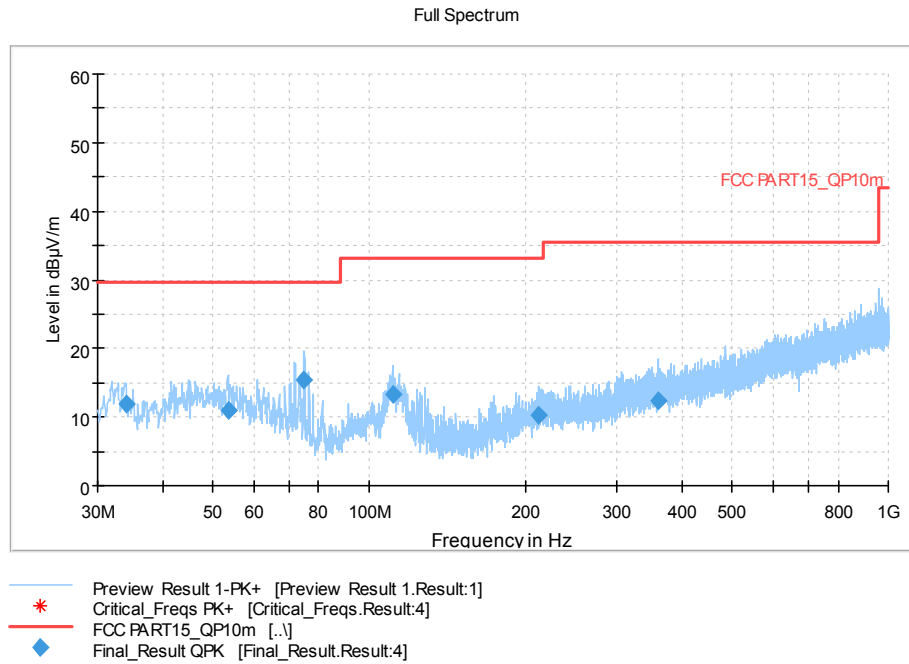


Figure A.3 Radiated Emission from 30MHz to 1GHz

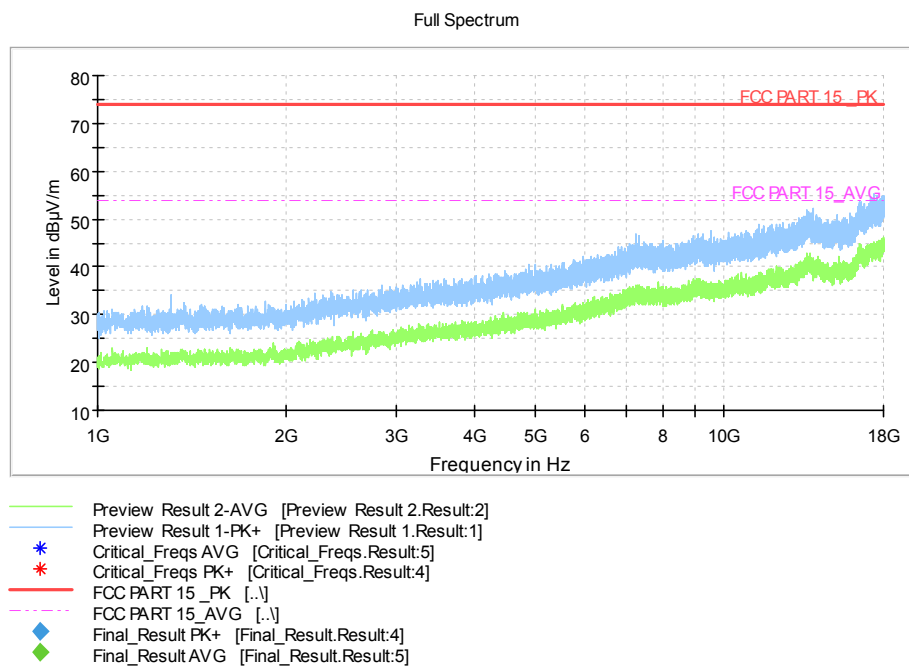


Figure A.4 Radiated Emission from 1GHz to 3GHz

EUT1 Charger3+Back Camera+GSM 850MHz idle Mode, Set.1-3

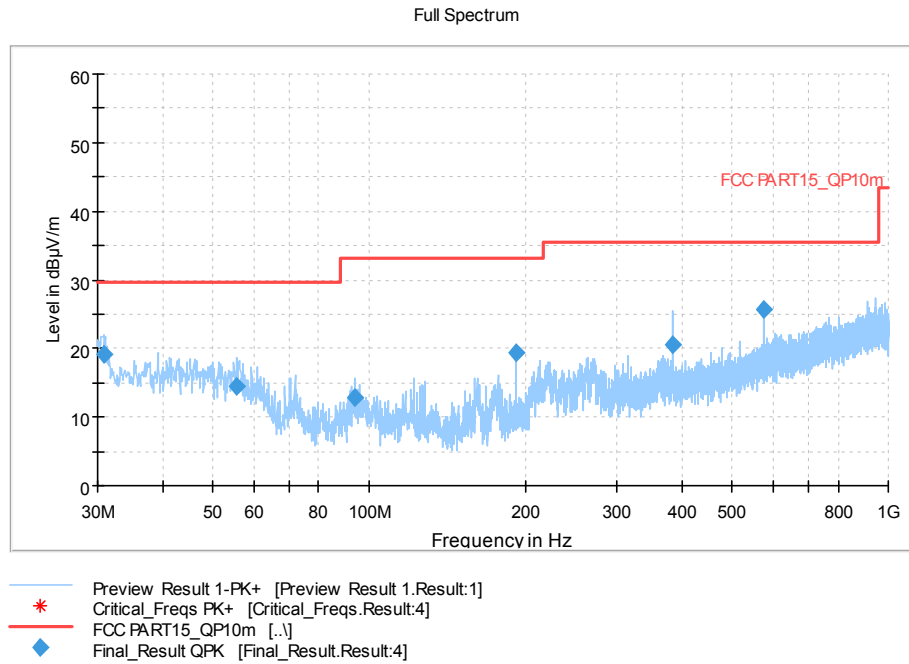


Figure A.5 Radiated Emission from 30MHz to 1GHz

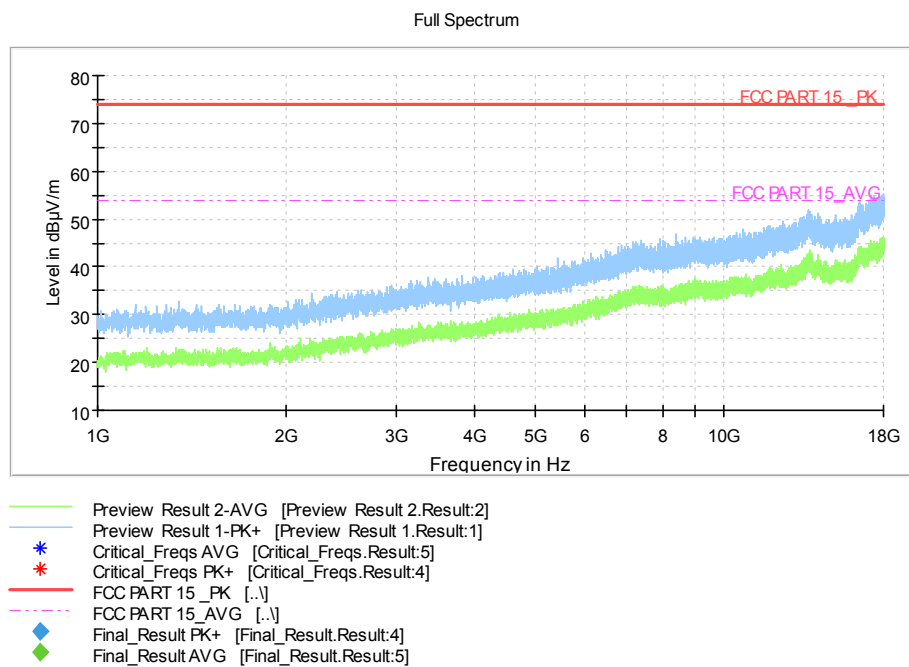


Figure A.6 Radiated Emission from 1GHz to 3GHz

EUT1 Charger3+MP4 Mode, Set.2

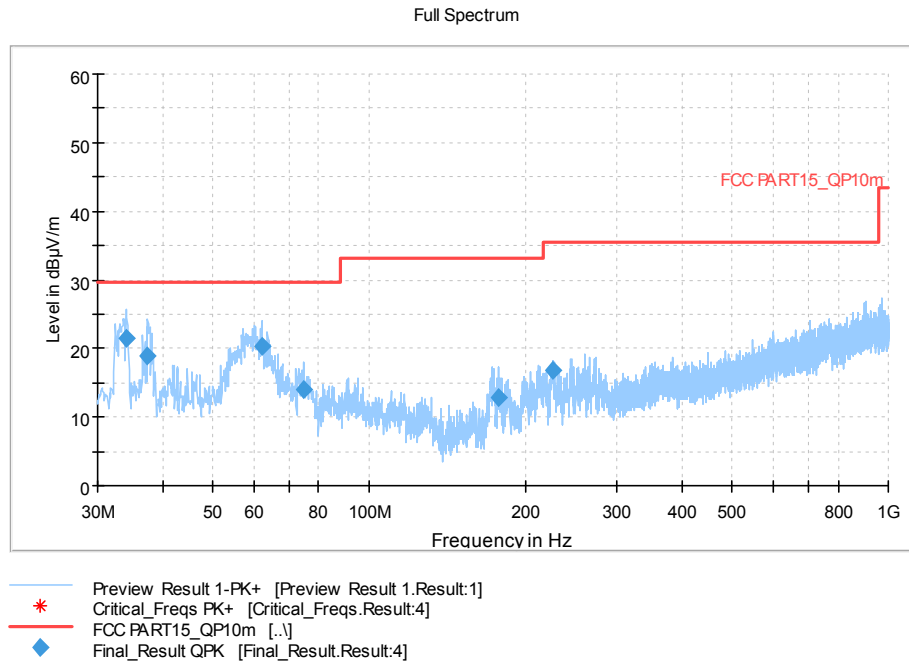


Figure A.7 Radiated Emission from 30MHz to 1GHz

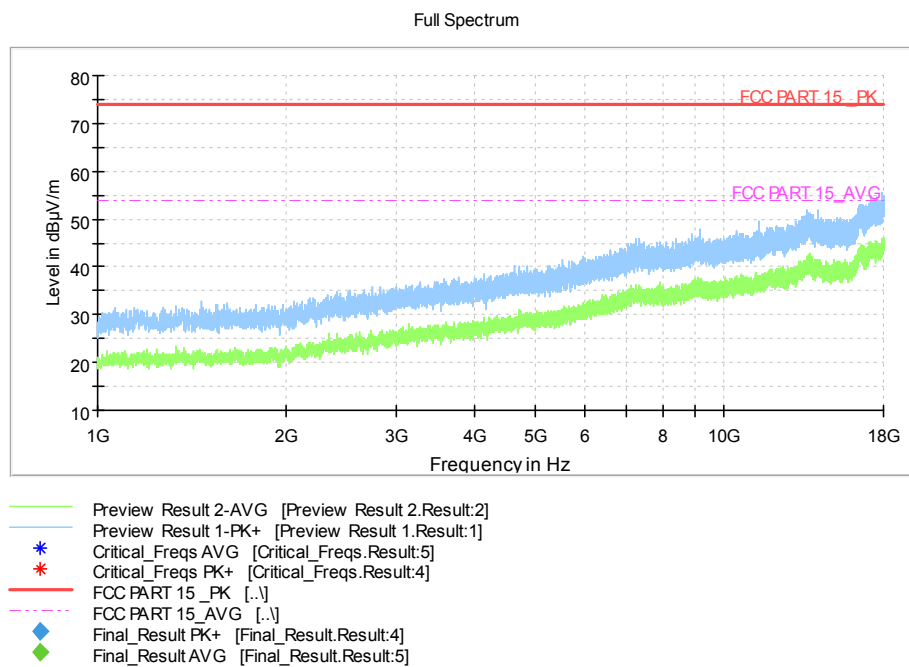


Figure A.8 Radiated Emission from 1GHz to 18GHz

EUT1 Charger3+FM Mode, Set.3

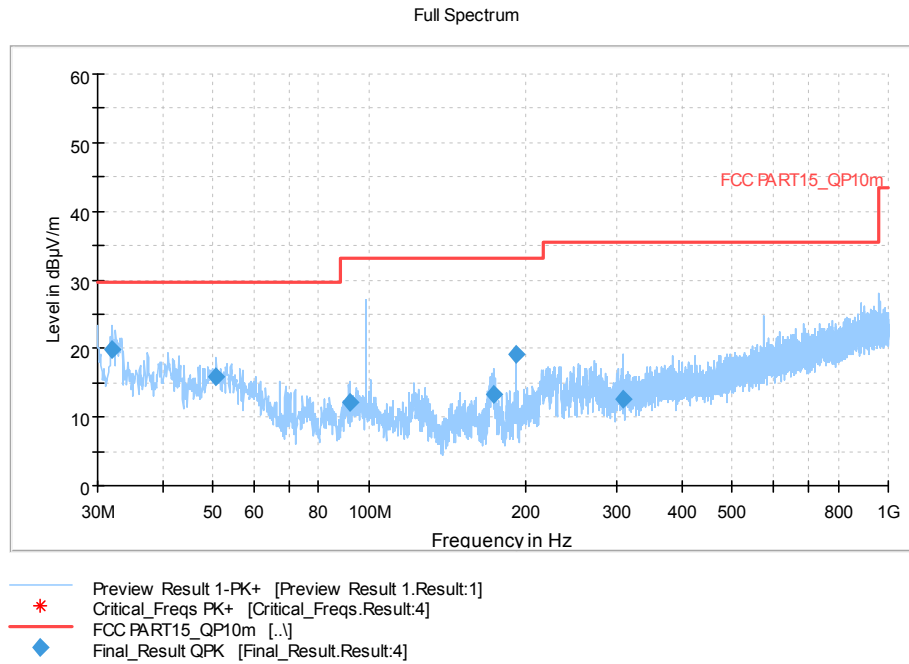


Figure A.9 Radiated Emission from 30MHz to 1GHz

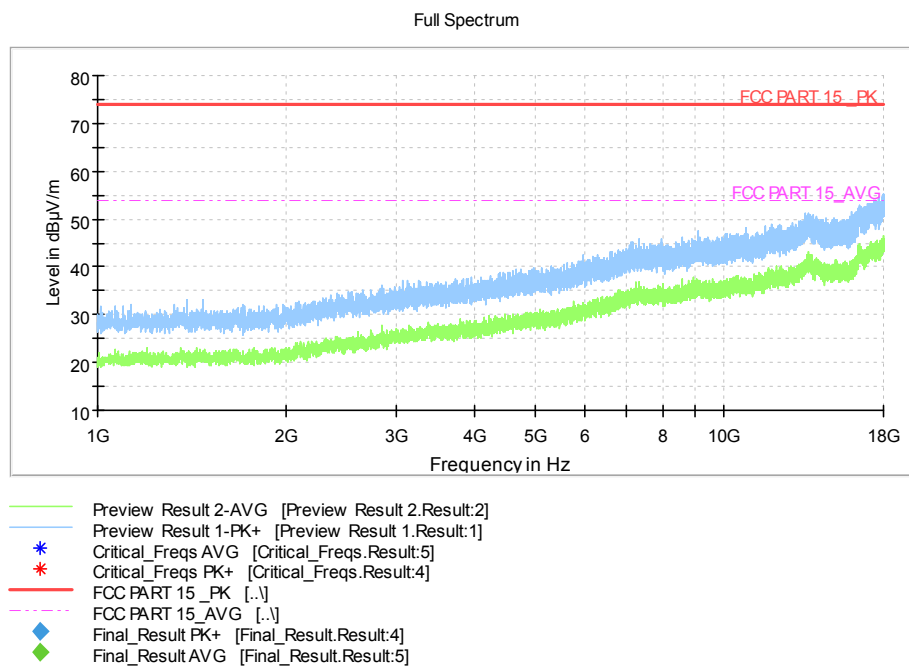


Figure A.10 Radiated Emission from 1GHz to 18GHz

EUT1 USB + SD + Front Camera Mode, Set.4

Full Spectrum

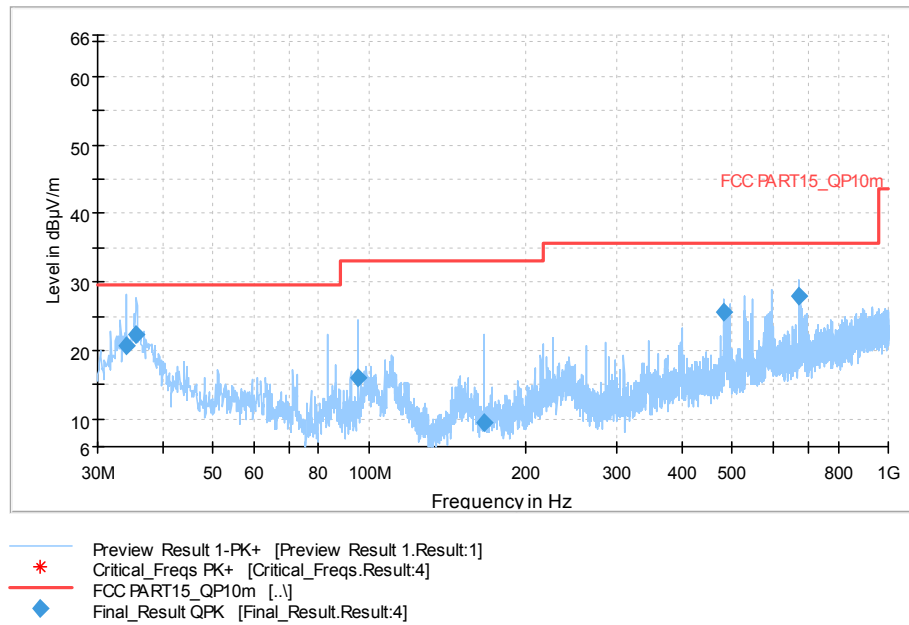


Figure A.11 Radiated Emission from 30MHz to 1GHz

Full Spectrum

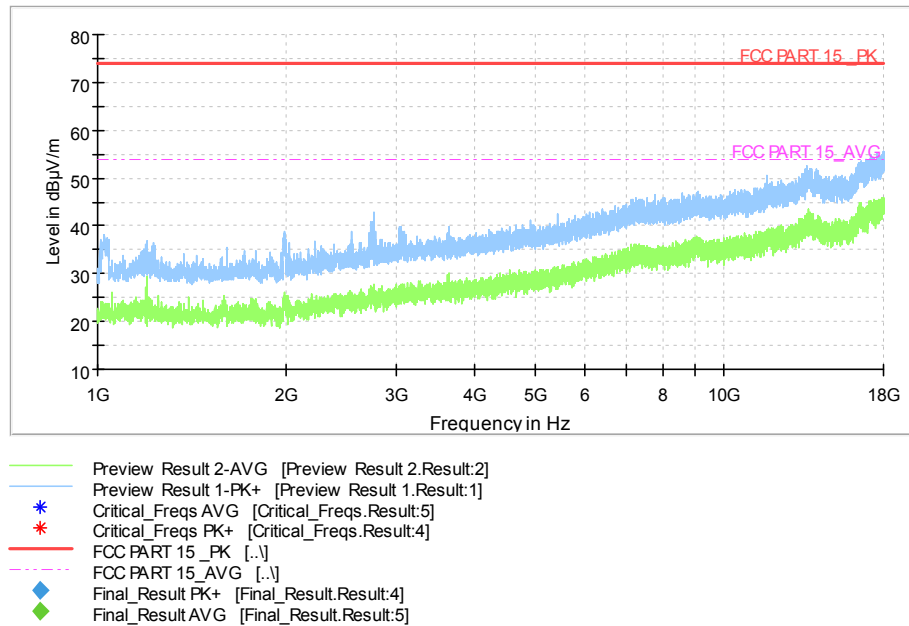


Figure A.12 Radiated Emission from 1GHz to 18GHz

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 and usb mode.

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: $U=3.08\text{dB}$, $k=2$.

Note: The measurement results showed here are worst cases of the combinations of different Battery, cables and Headset.

Note: The measurement results showed here are worst cases.

EUT1 Charger1+Back Camera+GSM 850MHz idle Mode, Set.1-1

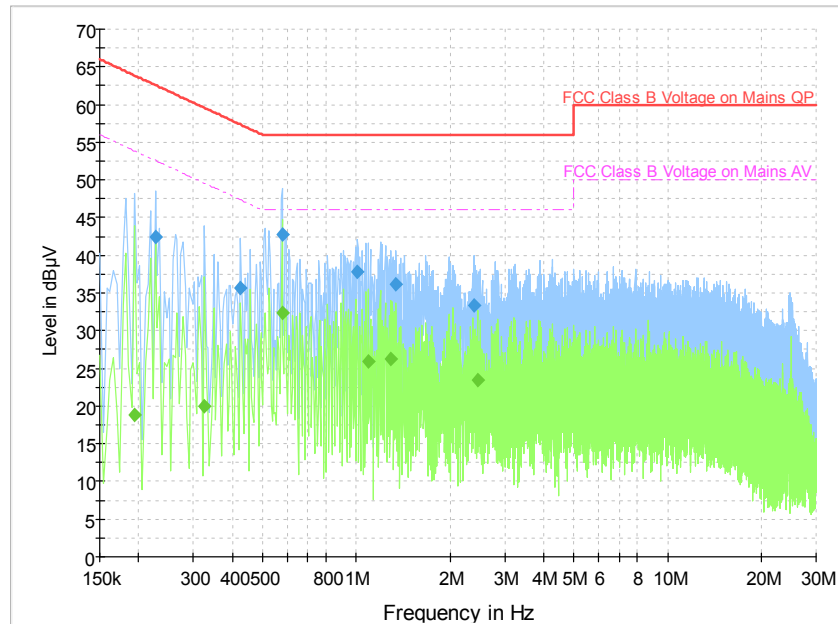


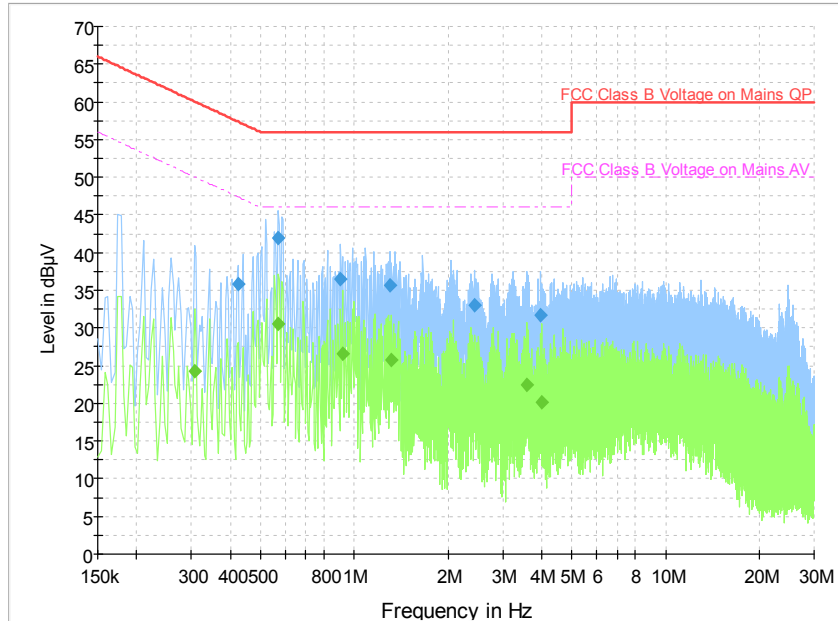
Figure A.13 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.226000	42.4	2000.0	9.000	On	N	19.8	20.2	62.6
0.426000	35.7	2000.0	9.000	On	N	19.9	21.6	57.3
0.578000	42.7	2000.0	9.000	On	L1	19.8	13.3	56.0
1.010000	37.9	2000.0	9.000	On	L1	19.6	18.1	56.0
1.342000	36.1	2000.0	9.000	On	L1	19.5	19.9	56.0
2.390000	33.3	2000.0	9.000	On	L1	19.5	22.7	56.0

Final Result 2

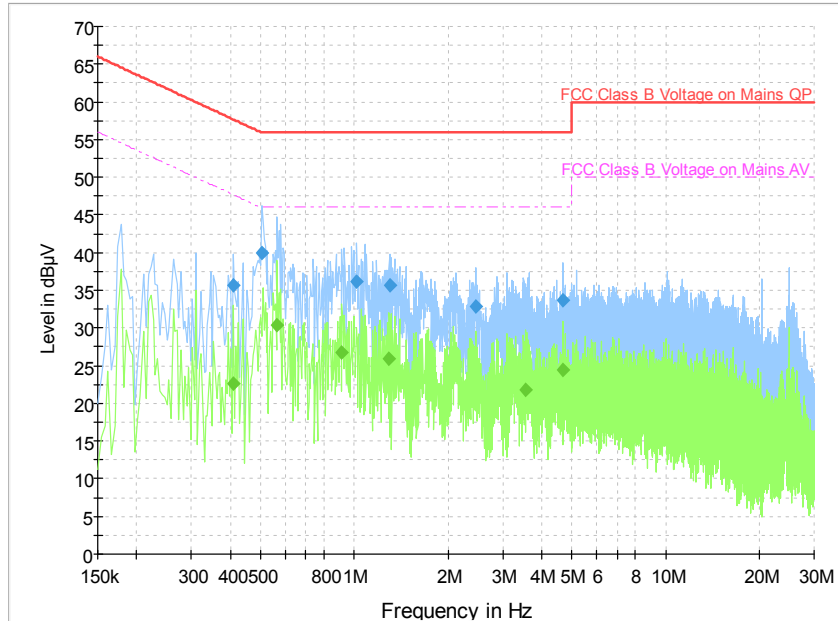
Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.194000	18.9	2000.0	9.000	On	N	19.8	35.0	53.9
0.326000	20.0	2000.0	9.000	On	N	19.8	29.6	49.6
0.578000	32.4	2000.0	9.000	On	L1	19.8	13.6	46.0
1.094000	25.9	2000.0	9.000	On	L1	19.5	20.1	46.0
1.294000	26.2	2000.0	9.000	On	L1	19.5	19.8	46.0
2.450000	23.5	2000.0	9.000	On	L1	19.5	22.5	46.0

EUT1 Charger2+Back Camera+GSM 850MHz idle Mode, Set.1-2

Figure A.14 Conducted Emission
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.426000	35.9	2000.0	9.000	On	N	19.9	21.4	57.3
0.570000	41.9	2000.0	9.000	On	L1	19.8	14.1	56.0
0.902000	36.5	2000.0	9.000	On	L1	19.6	19.5	56.0
1.302000	35.7	2000.0	9.000	On	L1	19.5	20.3	56.0
2.426000	33.0	2000.0	9.000	On	L1	19.5	23.0	56.0
3.962000	31.6	2000.0	9.000	On	L1	19.6	24.4	56.0

Final Result 2

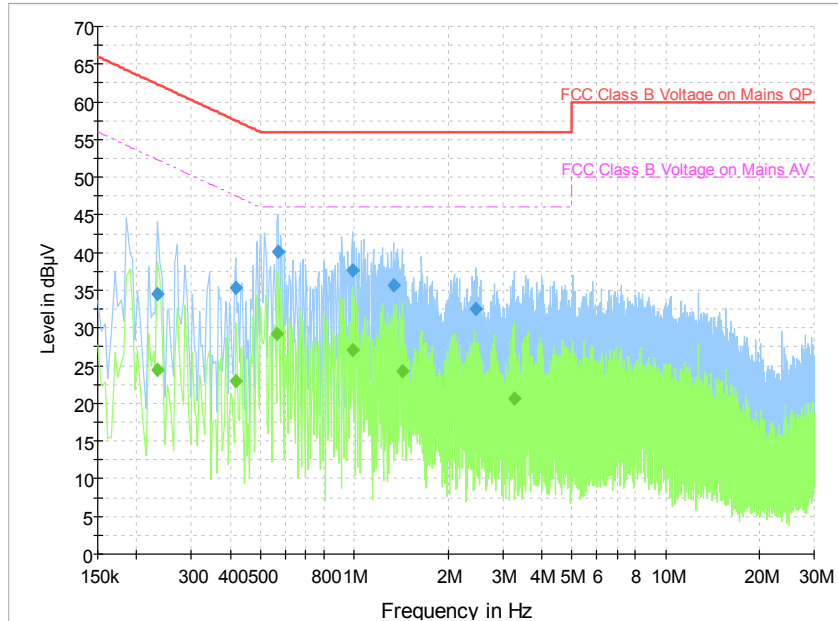
Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.306000	24.3	2000.0	9.000	On	L1	20.0	25.7	50.1
0.570000	30.5	2000.0	9.000	On	L1	19.8	15.5	46.0
0.918000	26.6	2000.0	9.000	On	L1	19.6	19.4	46.0
1.318000	25.7	2000.0	9.000	On	L1	19.5	20.3	46.0
3.594000	22.4	2000.0	9.000	On	L1	19.5	23.6	46.0
3.994000	20.2	2000.0	9.000	On	L1	19.6	25.8	46.0

EUT1 Charger3+Back Camera+GSM 850MHz idle Mode, Set.1-3

Figure A.15 Conducted Emission
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.410000	35.6	2000.0	9.000	On	N	19.9	22.0	57.6
0.506000	40.0	2000.0	9.000	On	N	20.0	16.0	56.0
1.018000	36.2	2000.0	9.000	On	L1	19.6	19.8	56.0
1.298000	35.6	2000.0	9.000	On	L1	19.5	20.4	56.0
2.454000	32.8	2000.0	9.000	On	L1	19.5	23.2	56.0
4.662000	33.6	2000.0	9.000	On	L1	19.6	22.4	56.0

Final Result 2

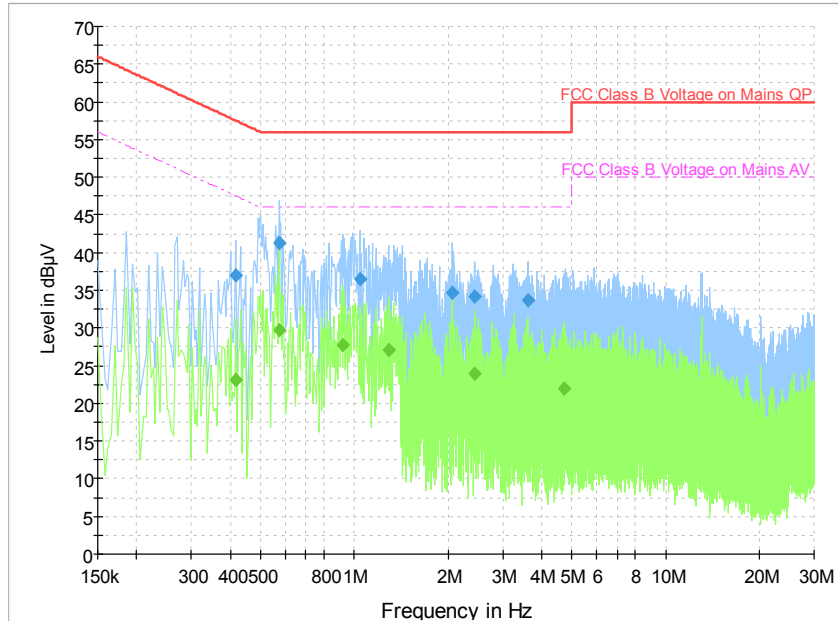
Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.410000	22.6	2000.0	9.000	On	N	19.9	25.1	47.6
0.566000	30.4	2000.0	9.000	On	L1	19.8	15.6	46.0
0.914000	26.8	2000.0	9.000	On	L1	19.6	19.2	46.0
1.294000	25.8	2000.0	9.000	On	L1	19.5	20.2	46.0
3.562000	21.8	2000.0	9.000	On	L1	19.5	24.2	46.0
4.662000	24.4	2000.0	9.000	On	L1	19.6	21.6	46.0

EUT1 Charger3+MP4 Mode, Set.2

Figure A.16 Conducted Emission
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.234000	34.5	2000.0	9.000	On	N	19.8	27.8	62.3
0.418000	35.4	2000.0	9.000	On	N	19.9	22.1	57.5
0.570000	40.1	2000.0	9.000	On	L1	19.8	15.9	56.0
0.986000	37.6	2000.0	9.000	On	L1	19.6	18.4	56.0
1.334000	35.7	2000.0	9.000	On	L1	19.5	20.3	56.0
2.454000	32.6	2000.0	9.000	On	L1	19.5	23.4	56.0

Final Result 2

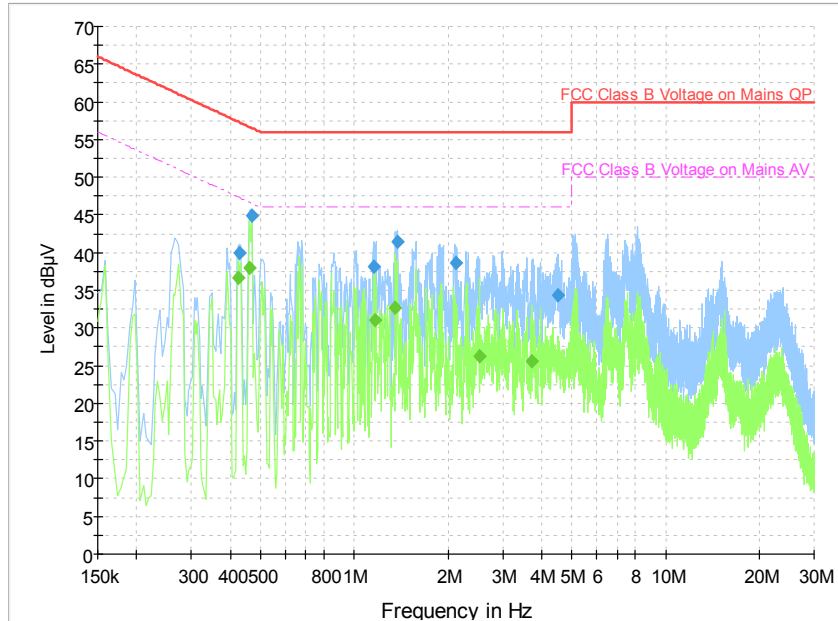
Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.234000	24.5	2000.0	9.000	On	N	19.8	27.8	52.3
0.418000	23.0	2000.0	9.000	On	N	19.9	24.5	47.5
0.566000	29.2	2000.0	9.000	On	N	19.9	16.8	46.0
0.986000	27.1	2000.0	9.000	On	L1	19.6	18.9	46.0
1.422000	24.2	2000.0	9.000	On	L1	19.5	21.8	46.0
3.258000	20.7	2000.0	9.000	On	L1	19.5	25.3	46.0

EUT1 Charger3+FM Mode, Set.3

Figure A.17 Conducted Emission
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.418000	36.9	2000.0	9.000	On	N	19.9	20.6	57.5
0.574000	41.3	2000.0	9.000	On	L1	19.8	14.7	56.0
1.042000	36.5	2000.0	9.000	On	L1	19.6	19.5	56.0
2.062000	34.7	2000.0	9.000	On	L1	19.5	21.3	56.0
2.426000	34.2	2000.0	9.000	On	L1	19.5	21.8	56.0
3.614000	33.7	2000.0	9.000	On	L1	19.5	22.3	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.418000	23.2	2000.0	9.000	On	N	19.9	24.3	47.5
0.574000	29.7	2000.0	9.000	On	L1	19.8	16.3	46.0
0.922000	27.8	2000.0	9.000	On	L1	19.6	18.2	46.0
1.286000	27.0	2000.0	9.000	On	L1	19.5	19.0	46.0
2.442000	24.0	2000.0	9.000	On	L1	19.5	22.0	46.0
4.710000	21.9	2000.0	9.000	On	L1	19.6	24.1	46.0

EUT1 USB + SD + Front Camera Mode, Set.4

Figure A.18 Conducted Emission
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.430000	39.9	2000.0	9.000	On	N	19.9	17.4	57.3
0.470000	44.9	2000.0	9.000	On	L1	19.9	11.6	56.5
1.154000	38.1	2000.0	9.000	On	L1	19.6	17.9	56.0
1.378000	41.4	2000.0	9.000	On	N	19.8	14.6	56.0
2.130000	38.7	2000.0	9.000	On	N	19.8	17.3	56.0
4.526000	34.4	2000.0	9.000	On	N	19.7	21.6	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.426000	36.6	2000.0	9.000	On	L1	19.9	10.7	47.3
0.462000	38.0	2000.0	9.000	On	L1	19.9	8.7	46.7
1.170000	31.0	2000.0	9.000	On	L1	19.6	15.0	46.0
1.354000	32.7	2000.0	9.000	On	L1	19.5	13.3	46.0
2.526000	26.2	2000.0	9.000	On	N	19.7	19.8	46.0
3.710000	25.6	2000.0	9.000	On	N	19.7	20.4	46.0



ANNEX B: Persons involved in this testing

Test Item	Tester
Conducted Continuous Emission	Zhang Tianli
Radiated Continuous Emission	Zhang Tianli, Yan Hanchen

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