



TEST REPORT

No. I20Z70378-EMC01

for

Samsung Electronics Co., Ltd.

Tablet PC

Model Name: SM-T225

FCC ID: ZCASMT225

with

Hardware Version: REV1.0

Software Version: T225.001

Issued Date: 2021-02-10

Note:

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I20Z70378-EMC01	Rev.0	1 st edition	2021-02-10

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

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1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2017 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

CTTL (BDA)

Address: No.18A, Kangding Street, Beijing Economic-Technology Development Area, Beijing, P. R. China 100176

1.3. Testing Environment

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

1.4. Project data

Testing Start Date: 2021-01-11

Testing End Date: 2021-02-09

1.5. Signature



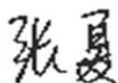
Li Yan

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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: Samsung Electronics Co., Ltd.
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City: /
Postal Code: /
Country: /
Contact: Jenni Chun
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2.2. Manufacturer Information

Company Name: Samsung Electronics. Co., Ltd.
Address: Samsung R5, Maetan dong 129, Samsung ro
Youngtong gu, Suwon city 443 742, Korea
City: /
Postal Code: /
Country: /
Contact: 조성훈(Sunghoon Cho)
Email: ggobi.cho@samsung.com
Telephone: +82-10-2722-4159

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

3.1. About EUT

Description	Tablet PC
Model Name	SM-T225
FCC ID	ZCASMT225
Extreme vol. Limits	3.6VDC to 4.4VDC (nominal: 4.0VDC)

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

3.2. Internal Identification of EUT used during the test

EUT ID*	IME/SNI	HW Version	SW Version	Date of receipt
UT04a	2070378UT04a	REV1.0	T225.001	2021.01.11

*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	Charger1	/	/
AE2	Charger2	/	/
AE3	Charger3	/	/
AE4	Charger4	/	/
AE5	Charger5	/	/
AE6	Charger6	/	/
AE7	USB cable	/	/
AE8	Headset1	/	/
AE9	Headset2	/	/
AE10	battery	/	/

AE1

Model	EP-TA50JWE
Manufacturer	RFTECH Co., Ltd.
Length of cable	/

AE2

Model	EP-TA50JWE
Manufacturer	HAEM Co., Ltd.
Length of cable	/

AE3

Model	EP-TA200
Manufacturer	DongYang E&P Inc.
Length of cable	/

AE4	
Model	EP-TA200
Manufacturer	HAEM Co., Ltd.
Length of cable	/
AE5	
Model	EP-TA200
Manufacturer	SoluM Co.,Ltd
Length of cable	/
AE6	
Model	EP-TA200
Manufacturer	RFTECH Co., Ltd.
Length of cable	/
AE7	
Model	EP-DT725BWE
Manufacturer	Samsung Electronics Co., Ltd.
Length of cable	/
AE8	
Model	EHS61ASFWE
Manufacturer	ALMUS
Length of cable	/
AE9	
Model	EHS61ASFWE
Manufacturer	Cresyn
Length of cable	/
AE10	
Type	Secondary Li-ion Battery
SN	HQ-3565S
Manufacturer	SCUD (Fujian) Electronics CO.,LTD

Note: The USB cables are shielded.

3.4. General Description

The device contains receivers which tune and operate between 30MHz-960MHz in the following bands: GSM850, WCDMA BAND 5, LTE BAND 5, LTE BAND 12, and LTE BAND 17.

3.5. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	UT04a + AE1 + AE7+ AE8	Charger1+ Rear Camera + Headset1
Set.2	UT04a + AE2 + AE7+ AE8	Charger2+MP4+ Headset1
Set.3	UT04a + AE3 + AE7+ AE9	Charger3+ Front camera + Headset2
Set.4	UT04a + AE4 + AE7+ AE9	Charger4+MP3+Headset2
Set.5	UT04a + AE5 + AE7	Charger5+ RX mode
Set.6	UT04a + AE6 + AE7	Charger6+ RX mode
Set.7	UT04a + AE7 + AE8	USB SD TO PC + Headset1

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-2 (10 meters×6.7meters×6.1meters) 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, 3m distance, from 30 to 1000 MHz
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 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(BDA)
2	Conducted Emission	15.107(a)	A.2	P	CTTL(BDA)

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	Test Receiver	ESU26	100376	R&S	2021-09-04	1 year
2	Test Receiver	ESCI	100766	R&S	2021-03-10	1 year
3	LISN	ENV216	101459	R&S	2021-03-17	1 year
4	BiLog Antenna	VULB9163	9163-514	Schwarzbeck	2021-02-24	1 year
5	EMI Antenna	3117	00058888	ETS-Lindgren	2021-04-18	1 year
6	Universal Radio Communication Tester	CMW500	159408	R&S	2021-03-04	1 year
7	Printer	P1606dn	VNC3L52122	HP	N/A	N/A
8	Keyboard	KU-1601	2048361	Lenovo	N/A	N/A
9	Mouse	EMS-537A	8021S3MC	Lenovo	N/A	N/A
10	PC	M4000e-17	M706RMW2	Lenovo	N/A	N/A

Test Item	Test Software and Version	Software Vendor
Radiated Continuous Emission	EMC32 V9.01.00	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 (USB mode of MS and charging mode of MS) 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 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 USB mode, charging mode, MP4, CAMERA, SD and License RX band 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 the 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.

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.

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:

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

Where

G_A : Antenna factor of receive antenna

G_{PL} : Path Loss

P_{Mea} : Measurement result on receiver.

Measurement uncertainty (worst case): 30MHz-1GHz: 5.40dB, 1GHz-18GHz: 4.32dB, $k=2$.

Measurement results for Set.1:

Charger1+ Rear Camera /Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17691.500	38.90	-22.2	41.2	19.82	54.0	15.1	V
17684.000	38.78	-22.1	41.2	19.68	54.0	15.2	H
17690.000	38.77	-22.2	41.2	19.69	54.0	15.2	V
17706.500	38.63	-22.2	41.2	19.59	54.0	15.4	H
17689.000	38.63	-22.2	41.2	19.54	54.0	15.4	H
17684.500	38.63	-22.1	41.2	19.53	54.0	15.4	H

Charger1+ Rear Camera /Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17683.500	51.5	-22.1	41.2	32.42	74.0	22.5	V
17840.000	50.9	-22.5	41.3	32.15	74.0	23.1	V
17701.000	50.8	-22.2	41.2	31.79	74.0	23.2	V
17645.000	50.8	-22.1	41.2	31.65	74.0	23.2	V
17907.500	50.7	-22.6	41.3	32.08	74.0	23.3	V
17651.000	50.7	-22.1	41.2	31.54	74.0	23.3	H

Measurement results for Set.2:
Charger2+ MP4 /Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17687.500	39.23	-22.1	41.2	20.14	54.0	14.8	H
17697.500	39.19	-22.2	41.2	20.12	54.0	14.8	H
17707.500	39.13	-22.2	41.2	20.09	54.0	14.9	V
17696.000	39.11	-22.2	41.2	20.04	54.0	14.9	V
17774.000	39.11	-22.4	41.3	20.20	54.0	14.9	H
17692.000	39.09	-22.2	41.2	20.02	54.0	14.9	H

Charger2+ MP4 /Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17911.500	51.46	-22.6	41.3	32.82	74.0	22.5	H
17672.000	51.33	-22.1	41.2	32.21	74.0	22.7	V
17770.500	51.28	-22.3	41.3	32.36	74.0	22.7	V
17139.000	51.27	-23.0	41.6	32.71	74.0	22.7	V
17818.000	51.21	-22.4	41.3	32.40	74.0	22.8	H
17702.500	51.09	-22.2	41.2	32.03	74.0	22.9	V

Measurement results for Set.3:
Charger3+ Front Camera /Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17690.000	39.25	-22.2	41.2	20.17	54.0	14.7	H
17696.000	39.16	-22.2	41.2	20.09	54.0	14.8	V
17901.000	39.14	-22.6	41.3	20.48	54.0	14.9	V
17699.500	39.12	-22.2	41.2	20.05	54.0	14.9	H
17693.500	39.11	-22.2	41.2	20.03	54.0	14.9	H
17702.500	39.10	-22.2	41.2	20.05	54.0	14.9	H

Charger3+ Front Camera /Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17720.500	51.9	-22.2	41.2	32.84	74.0	22.1	H
17630.000	51.8	-22.0	41.2	32.66	74.0	22.2	V
17738.000	51.3	-22.3	41.2	32.30	74.0	22.7	V
17000.500	51.3	-23.0	41.7	32.58	74.0	22.7	H
16996.500	51.2	-23.0	41.7	32.56	74.0	22.8	H
17896.000	51.1	-22.6	41.3	32.40	74.0	22.9	H

Measurement results for Set.4:
Charger4+ MP3 /Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17694.000	39.33	-22.2	41.2	20.25	54.0	14.7	H
17698.500	39.28	-22.2	41.2	20.21	54.0	14.7	H
17690.000	39.24	-22.2	41.2	20.16	54.0	14.8	V
17689.000	39.21	-22.2	41.2	20.13	54.0	14.8	V
17693.500	39.20	-22.2	41.2	20.12	54.0	14.8	V
17690.500	39.18	-22.2	41.2	20.10	54.0	14.8	H

Charger4+MP3 /Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17696.500	51.9	-22.2	41.2	32.86	74.0	22.1	V
17706.500	51.7	-22.2	41.2	32.70	74.0	22.3	V
17625.000	51.4	-22.1	41.2	32.28	74.0	22.6	H
17701.000	51.3	-22.2	41.2	32.19	74.0	22.7	V
17720.500	51.2	-22.2	41.2	32.20	74.0	22.8	V
17721.000	51.2	-22.2	41.2	32.18	74.0	22.8	V

Measurement results for Set.7:
USB (SD) mode /Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17890.000	39.62	-22.6	41.3	20.94	54.0	14.4	H
17693.000	39.48	-22.2	41.2	20.40	54.0	14.5	V
17687.000	39.47	-22.1	41.2	20.38	54.0	14.5	V
17701.500	39.46	-22.2	41.2	20.41	54.0	14.5	H
17686.500	39.45	-22.1	41.2	20.36	54.0	14.6	H
17894.500	39.45	-22.6	41.3	20.77	54.0	14.6	H

USB (SD) mode /Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
16171.500	51.8	-23.3	41.0	34.06	74.0	22.2	H
17780.500	51.7	-22.4	41.3	32.81	74.0	22.3	H
17885.500	51.6	-22.6	41.3	32.89	74.0	22.4	H
17062.000	51.4	-23.0	41.6	32.84	74.0	22.6	V
17018.500	51.4	-23.0	41.7	32.78	74.0	22.6	V
17708.000	51.3	-22.2	41.2	32.28	74.0	22.7	V

Measurement results for Set.5
RX mode GSM850MHz /Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17687.000	39.34	-22.1	41.2	20.25	54.0	14.7	V
17684.500	39.31	-22.1	41.2	20.22	54.0	14.7	H
17688.000	39.31	-22.2	41.2	20.22	54.0	14.7	H
17689.000	39.30	-22.2	41.2	20.21	54.0	14.7	V
17645.000	39.28	-22.1	41.2	20.10	54.0	14.7	V
17686.000	39.27	-22.1	41.2	20.18	54.0	14.7	V

RX mode GSM850MHz /Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17697.500	51.9	-22.2	41.2	32.80	74.0	22.1	V
17095.500	51.4	-23.0	41.6	32.87	74.0	22.6	H
17615.000	51.2	-22.1	41.2	32.12	74.0	22.8	V
17914.000	51.1	-22.6	41.3	32.46	74.0	22.9	V
16812.500	51.1	-23.0	41.6	32.50	74.0	22.9	H
17591.500	51.0	-22.3	41.2	32.10	74.0	23.0	V

Measurement results for Set.6
RX mode WCDMA B5 /Average detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17689.500	39.40	-22.2	41.2	20.32	54.0	14.6	V
17770.000	39.39	-22.3	41.3	20.48	54.0	14.6	H
17687.500	39.39	-22.1	41.2	20.30	54.0	14.6	H
17689.000	39.38	-22.2	41.2	20.30	54.0	14.6	V
17699.000	39.37	-22.2	41.2	20.31	54.0	14.6	V
17642.000	39.35	-22.0	41.2	20.16	54.0	14.6	V

RX mode WCDMA B5 /Peak detector

Frequency (MHz)	Measurement Result (dB μ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB μ V)	Limit (dB μ V/m)	Margin (dB)	Antenna Pol. (H/V)
17591.000	51.8	-22.3	41.2	32.90	74.0	22.2	V
17683.000	51.7	-22.1	41.2	32.61	74.0	22.3	H
17632.500	51.7	-22.0	41.2	32.46	74.0	22.3	V
16829.500	51.6	-23.0	41.6	32.98	74.0	22.4	V
17824.000	51.5	-22.5	41.3	32.73	74.0	22.5	H
17648.000	51.5	-22.1	41.2	32.34	74.0	22.5	V

Charger1+ Rear Camera, Set.1

15B RE 30MHz-1GHz

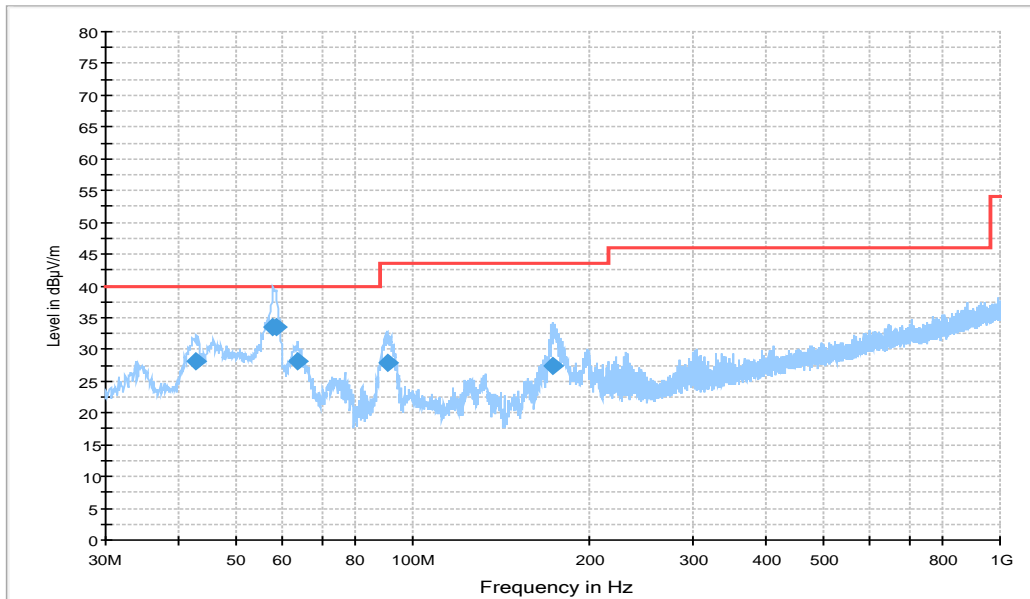


Figure A.1 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
42.804000	28.2	100.0	V	48.0	-0.6	11.8	40.0
57.936000	33.5	125.0	V	288.0	-0.8	6.5	40.0
58.518000	33.5	119.0	V	266.0	-0.8	6.5	40.0
63.562000	28.1	100.0	V	48.0	-2.2	11.9	40.0
90.431000	27.8	100.0	V	228.0	-3.7	15.7	43.5
173.07500	27.3	100.0	V	-9.0	-3.9	16.2	43.5

15B RE - 1GHz-3GHz

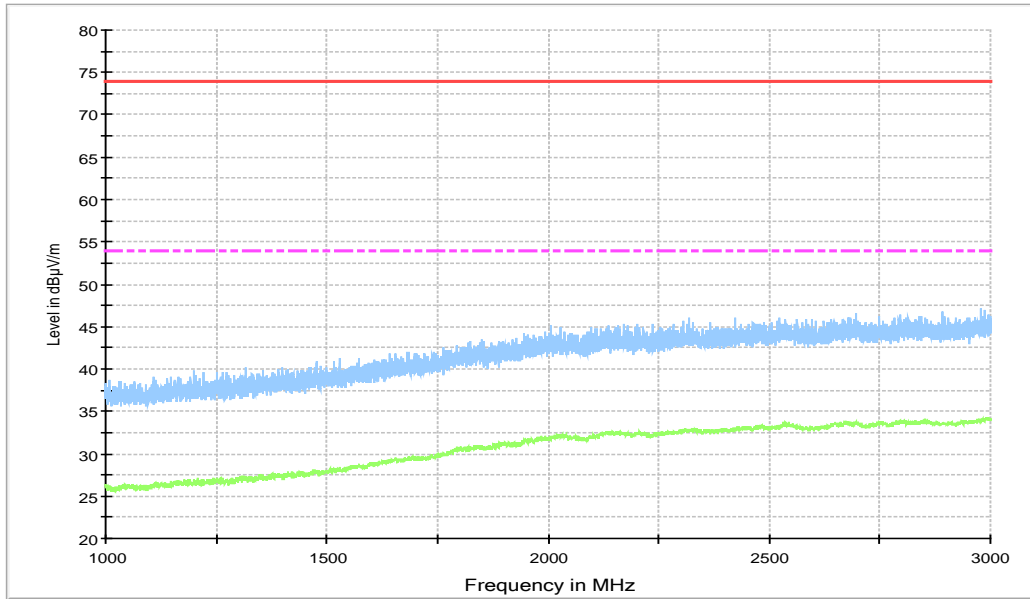


Figure A.2 Radiated Emission from 1GHz to 3GHz

15b RE - 3GHz-18GHz

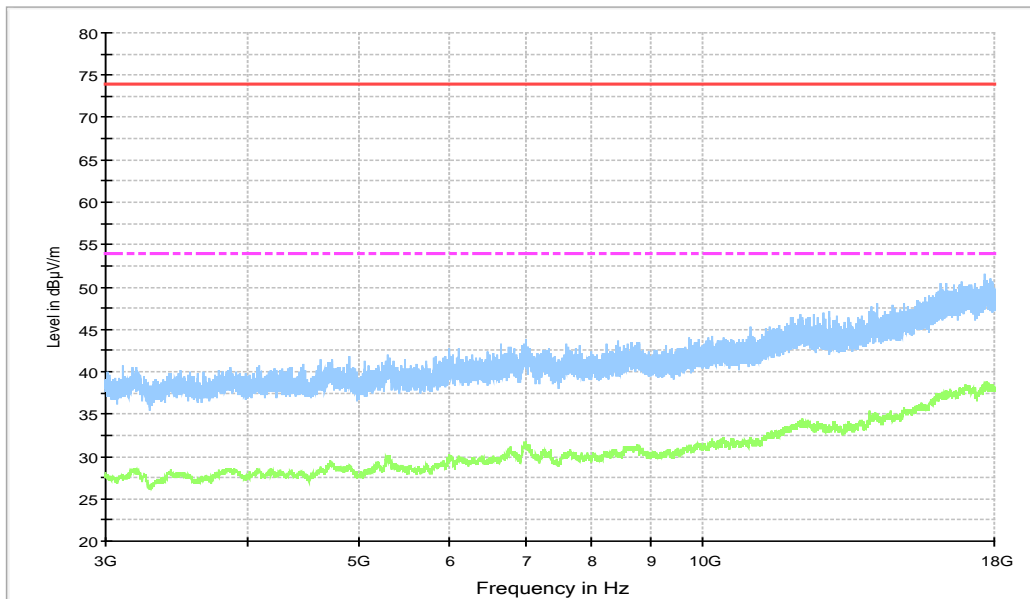


Figure A.3 Radiated Emission from 3GHz to 18GHz

Charger2+MP4, Set.2

15B RE 30MHz-1GHz

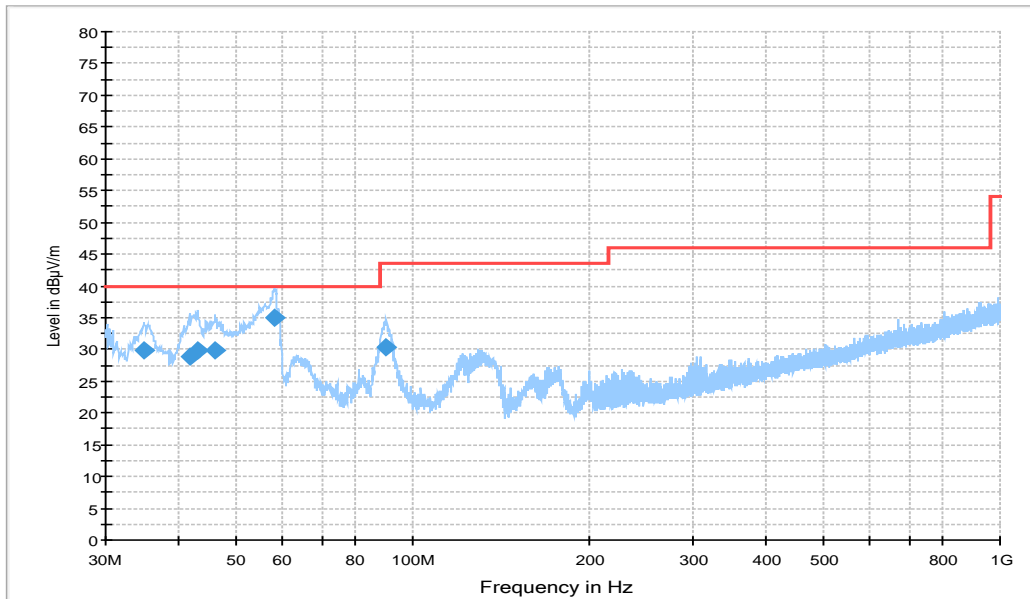
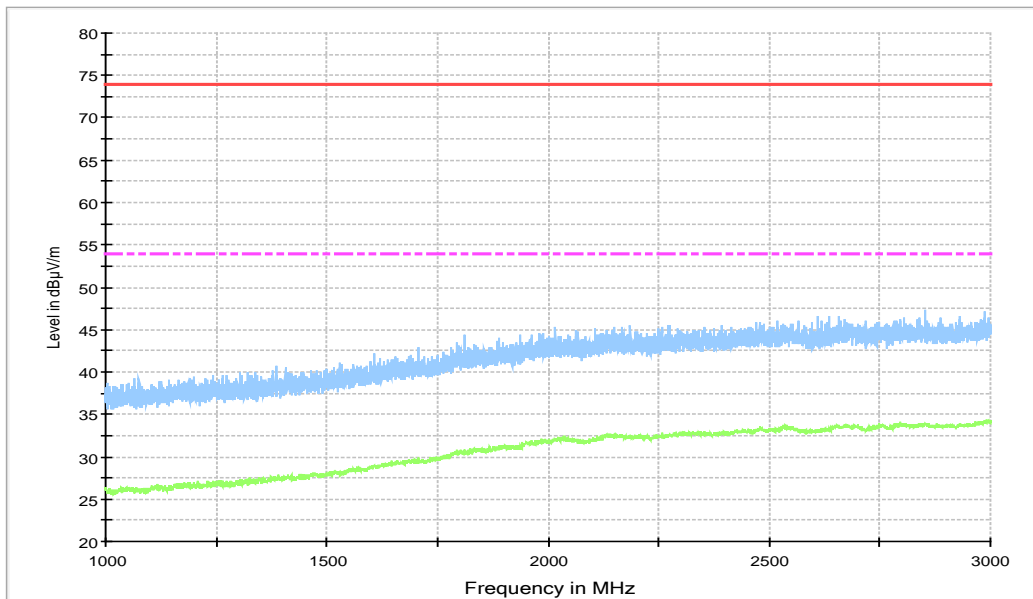


Figure A.4 Radiated Emission from 30MHz to 1GHz

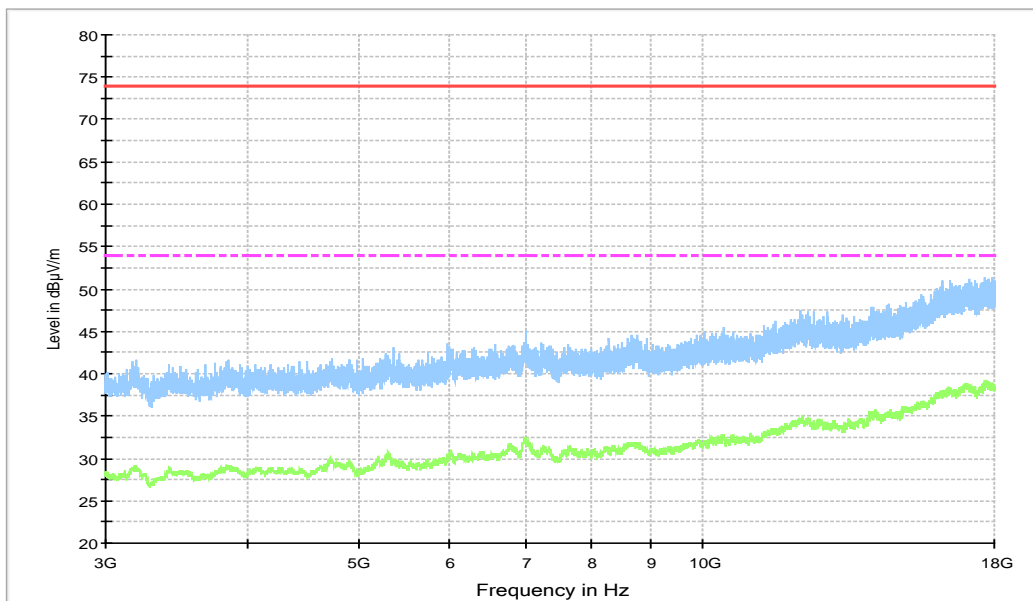
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
34.850000	29.9	100.0	V	228.0	-1.6	10.1	40.0
41.640000	28.8	125.0	V	70.0	-0.6	11.2	40.0
42.998000	30.0	110.0	V	112.0	-0.6	10.0	40.0
46.102000	29.8	110.0	V	51.0	-0.5	10.2	40.0
58.227000	34.9	120.0	V	282.0	-0.8	5.1	40.0
90.334000	30.4	100.0	V	242.0	-3.7	13.1	43.5

15B RE - 1GHz-3GHz

**Figure A.5 Radiated Emission from 1GHz to 3GHz**

15b RE - 3GHz-18GHz

**Figure A.6 Radiated Emission from 3GHz to 18GHz**

Charger3+Front Camera, Set.3

15B RE 30MHz-1GHz

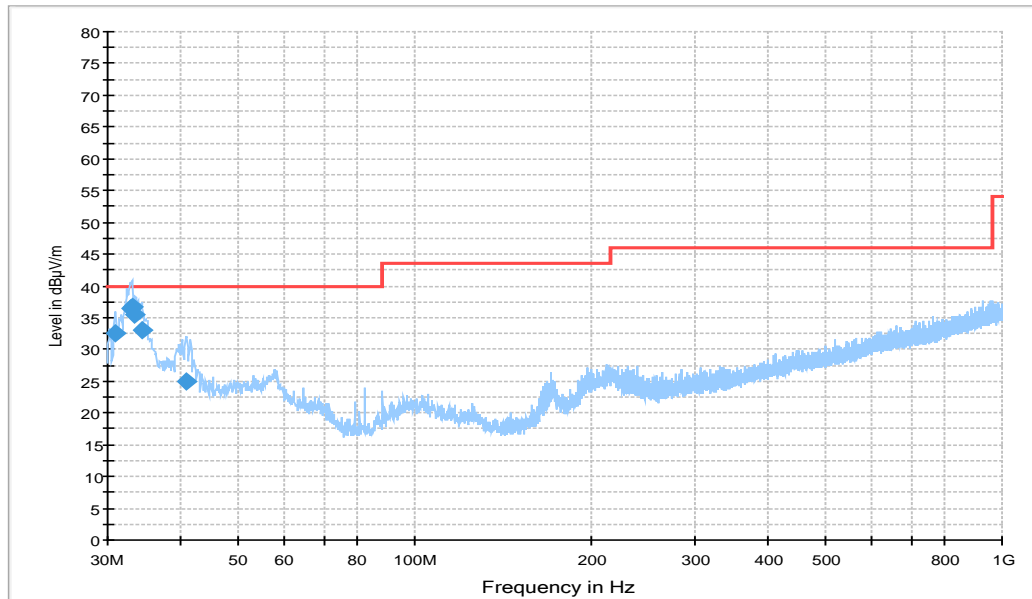


Figure A.7 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
30.970000	32.5	100.0	V	135.0	-2.3	7.5	40.0
32.716000	36.3	100.0	V	260.0	-2.0	3.7	40.0
33.007000	36.7	100.0	V	125.0	-1.9	3.3	40.0
33.395000	35.4	100.0	V	228.0	-1.8	4.6	40.0
34.365000	32.9	100.0	V	135.0	-1.6	7.1	40.0
40.961000	25.0	100.0	V	48.0	-0.6	15.0	40.0

15B RE - 1GHz-3GHz

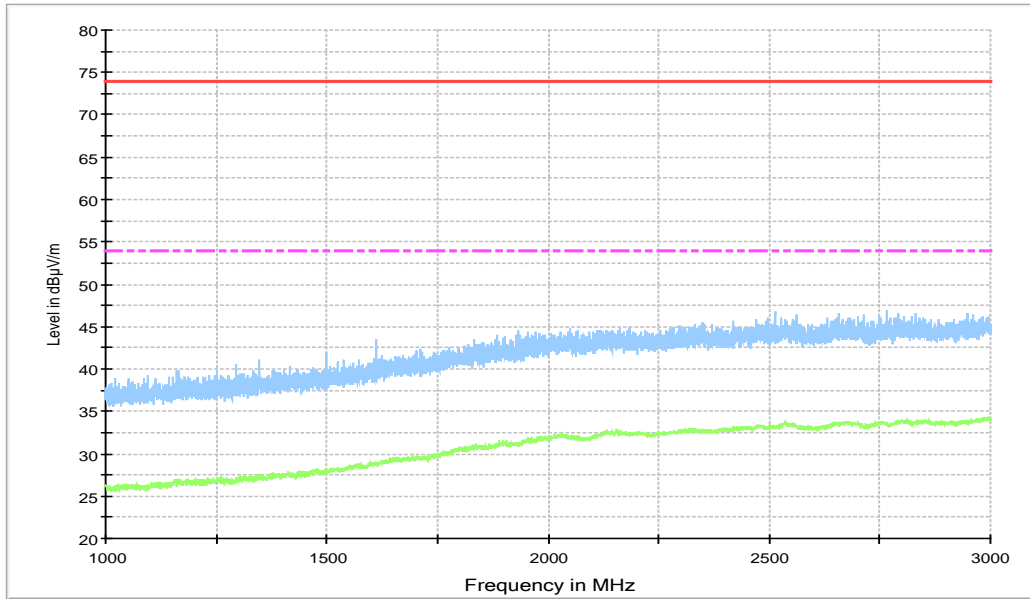


Figure A.8 Radiated Emission from 1GHz to 3GHz

15b RE - 3GHz-18GHz

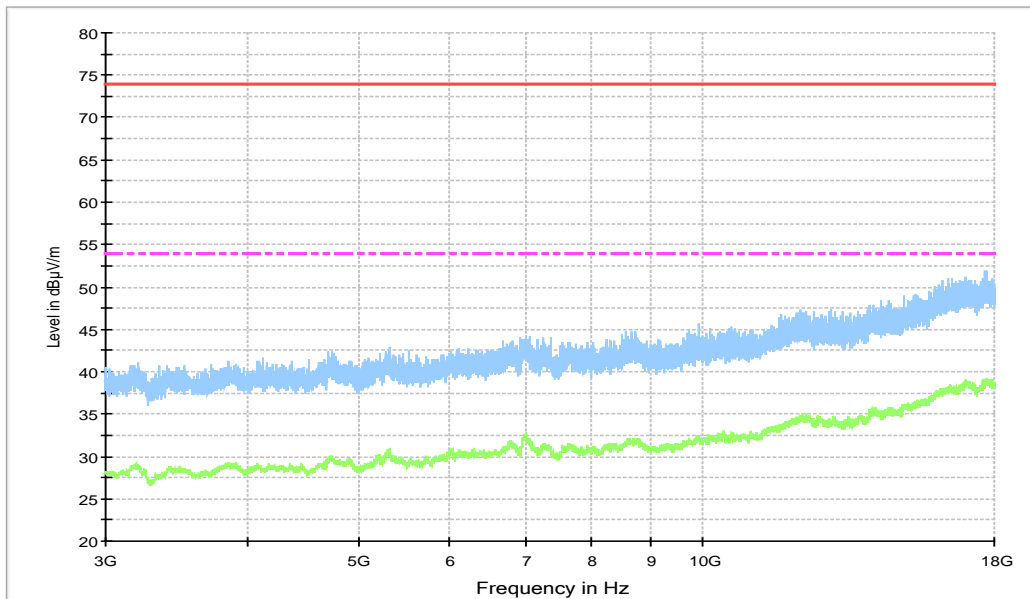


Figure A.9 Radiated Emission from 3GHz to 18GHz

Charger4+MP3, Set.4

15B RE 30MHz-1GHz

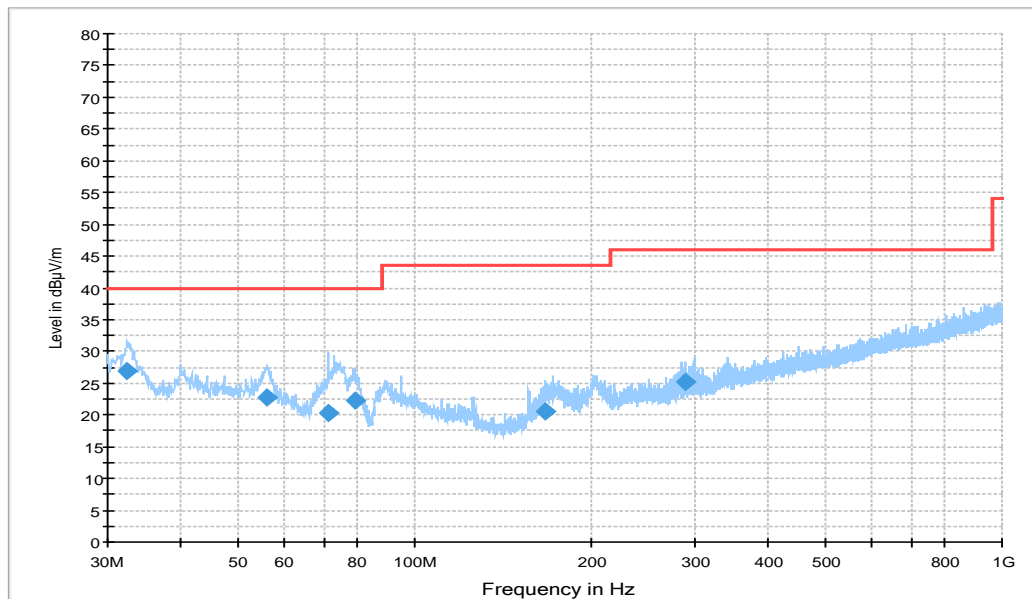


Figure A.10 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
32.425000	26.8	100.0	V	181.0	-2.0	13.2	40.0
56.190000	22.8	100.0	V	260.0	-0.7	17.2	40.0
71.225000	20.4	100.0	V	66.0	-4.8	19.6	40.0
78.985000	22.3	119.0	V	187.0	-6.6	17.7	40.0
166.96400	20.5	100.0	V	199.0	-4.2	23.0	43.5
289.66900	25.3	110.0	H	90.0	0.4	20.7	46.0

15B RE - 1GHz-3GHz

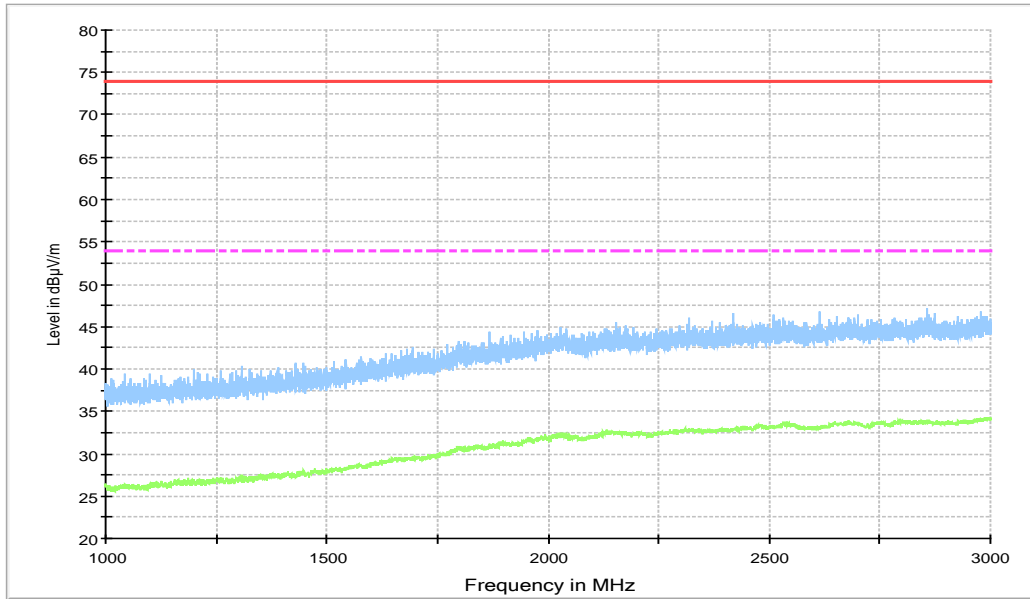


Figure A.11 Radiated Emission from 1GHz to 3GHz

15b RE - 3GHz-18GHz

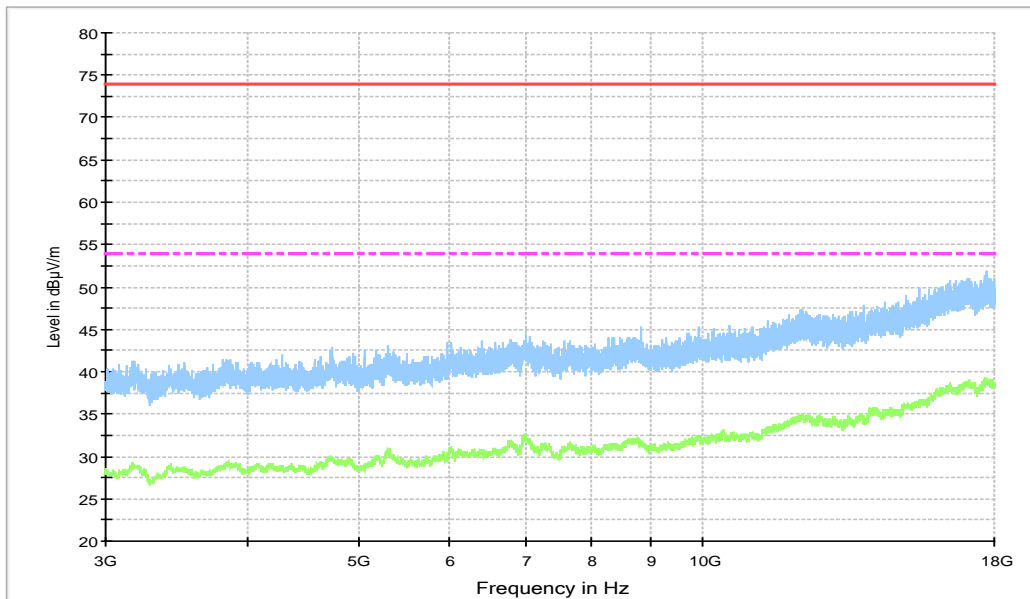


Figure A.12 Radiated Emission from 3GHz to 18GHz

USB (SD) mode, Set.7

15B RE 30MHz-1GHz

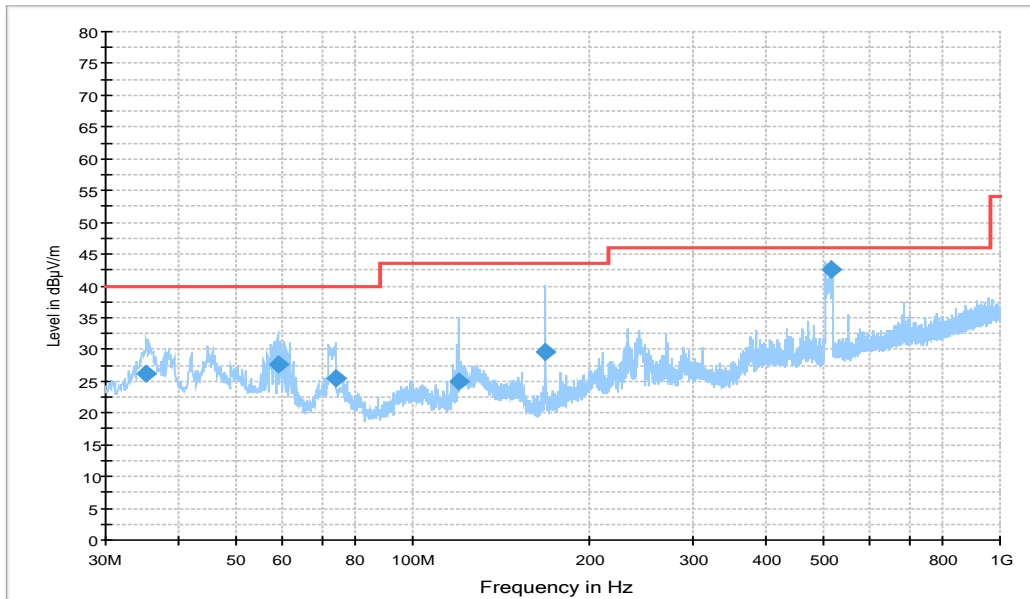


Figure A.13 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
35.238000	26.2	125.0	V	-7.0	-1.5	13.8	40.0
58.906000	27.8	125.0	V	66.0	-0.8	12.2	40.0
73.747000	25.3	100.0	V	58.0	-5.4	14.7	40.0
119.91900	25.1	125.0	H	275.0	-3.8	18.4	43.5
167.93400	29.5	100.0	V	15.0	-4.1	14.0	43.5
517.03700	42.6	125.0	V	-9.0	6.3	3.4	46.0

15B RE - 1GHz-3GHz

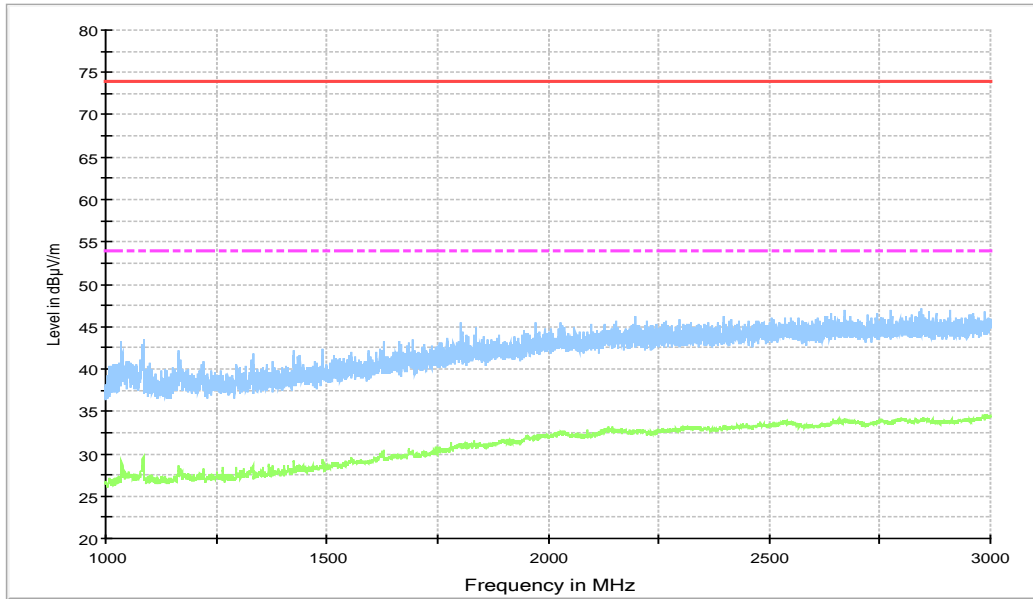


Figure A.14 Radiated Emission from 1GHz to 3GHz

15b RE - 3GHz-18GHz

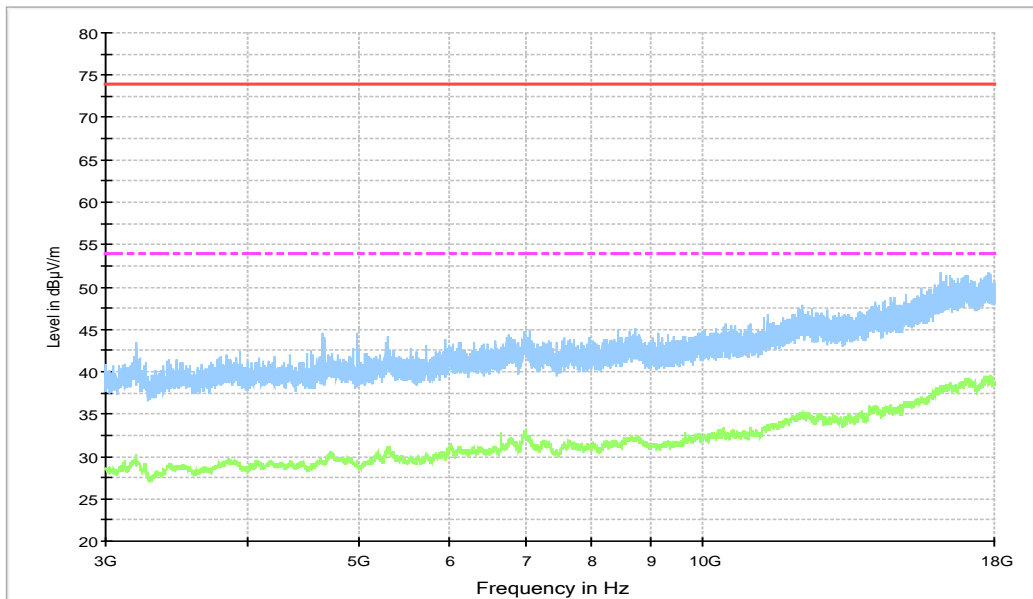


Figure A.15 Radiated Emission from 3GHz to 18GHz

License RX band mode, Set.5

GSM850MHz MID CHANNEL (881.6MHz)

15B RE 30MHz-1GHz

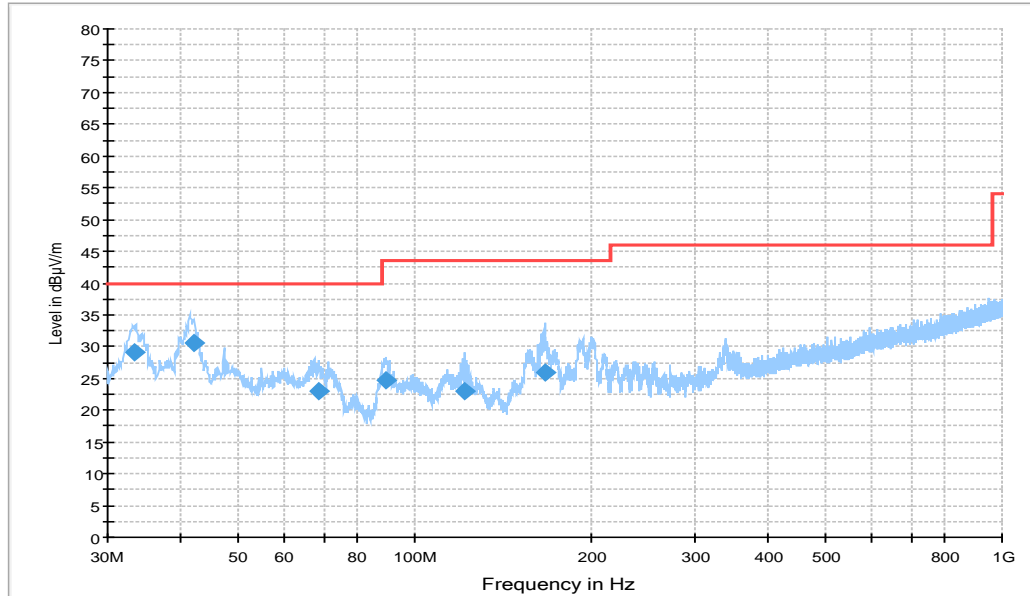


Figure A.16 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
33.395000	29.0	100.0	V	256.0	-1.8	11.0	40.0
42.125000	30.5	100.0	V	80.0	-0.6	9.5	40.0
68.703000	23.1	100.0	V	267.0	-4.1	16.9	40.0
89.558000	24.7	100.0	V	267.0	-3.9	18.8	43.5
121.47100	23.0	125.0	V	0.0	-4.0	20.5	43.5
166.28500	26.0	100.0	V	-14.0	-4.2	17.5	43.5

15B RE - 1GHz-3GHz

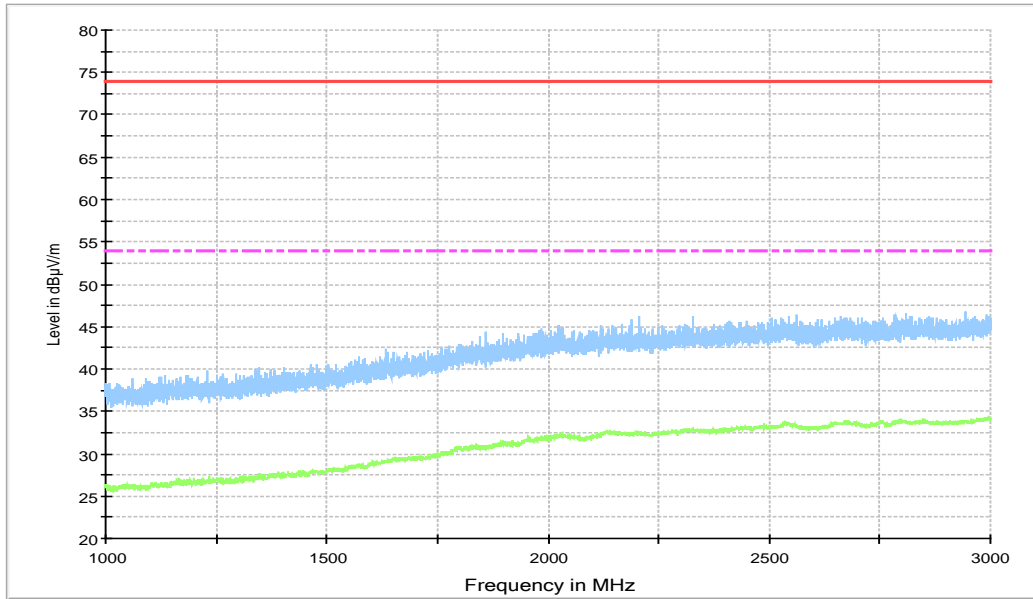


Figure A.17 Radiated Emission from 1GHz to 3GHz

15b RE - 3GHz-18GHz

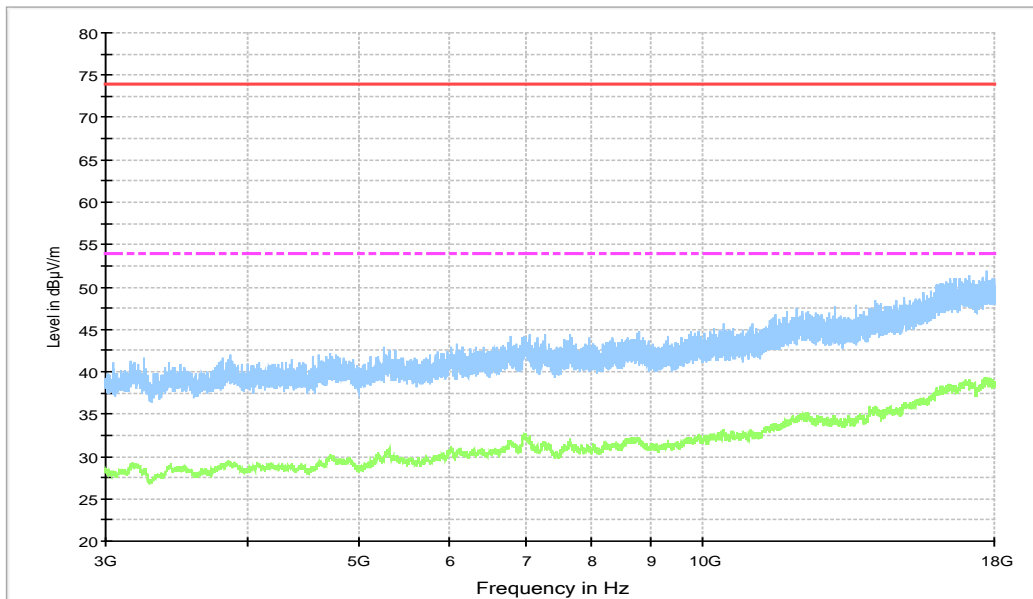


Figure A.18 Radiated Emission from 3GHz to 18GHz

License RX band mode, Set.6

WCDMA B5 MID CHANNEL

15B RE 30MHz-1GHz

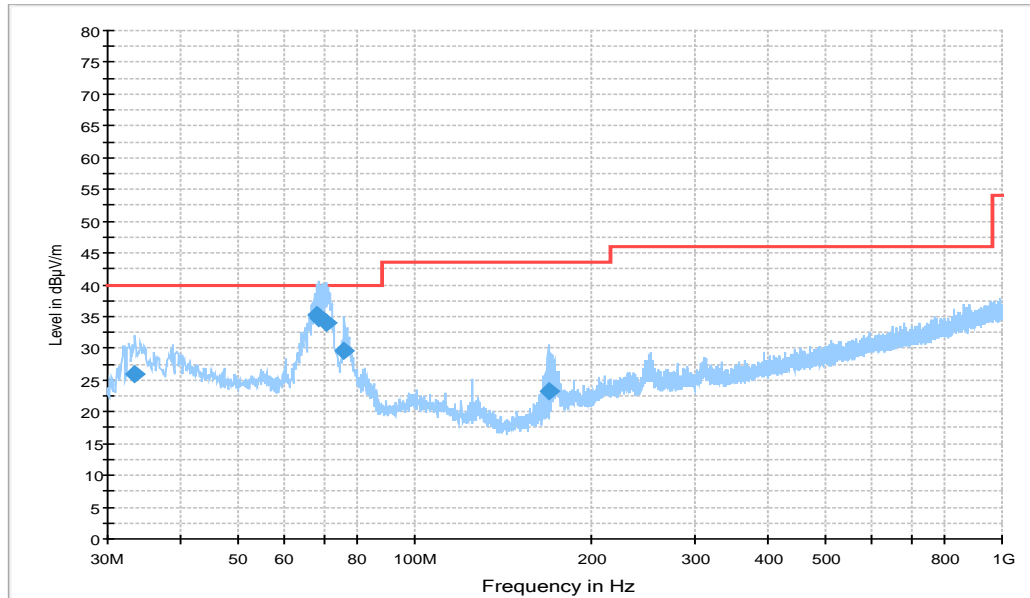


Figure A.19 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
33.395000	25.8	100.0	V	150.0	-1.8	14.2	40.0
68.218000	35.1	100.0	V	271.0	-3.9	4.9	40.0
68.800000	34.8	100.0	V	228.0	-4.1	5.2	40.0
70.837000	33.9	110.0	V	238.0	-4.7	6.1	40.0
75.881000	29.7	100.0	V	276.0	-5.9	10.3	40.0
168.71000	23.3	100.0	V	2.0	-4.1	20.2	43.5

15B RE - 1GHz-3GHz

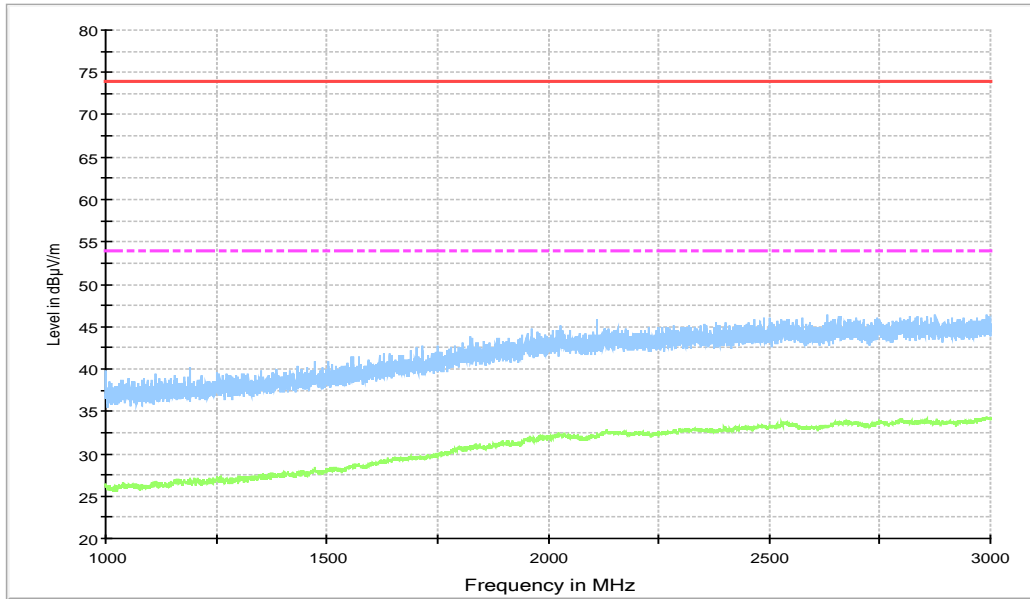


Figure A.20 Radiated Emission from 1GHz to 3GHz

15b RE - 3GHz-18GHz

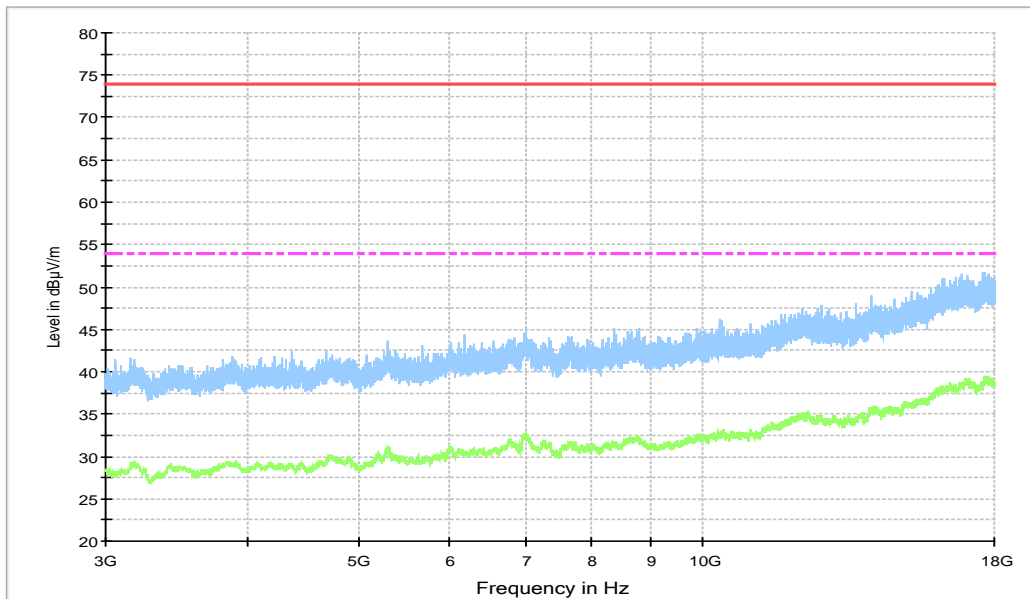


Figure A.21 Radiated Emission from 3GHz to 18GHz

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 USB mode, charging mode, MP4, CAMERA and SD mode.

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: $U= 3.10$ dB, $k=2$.

Charger1+ Rear Camera, Set.1

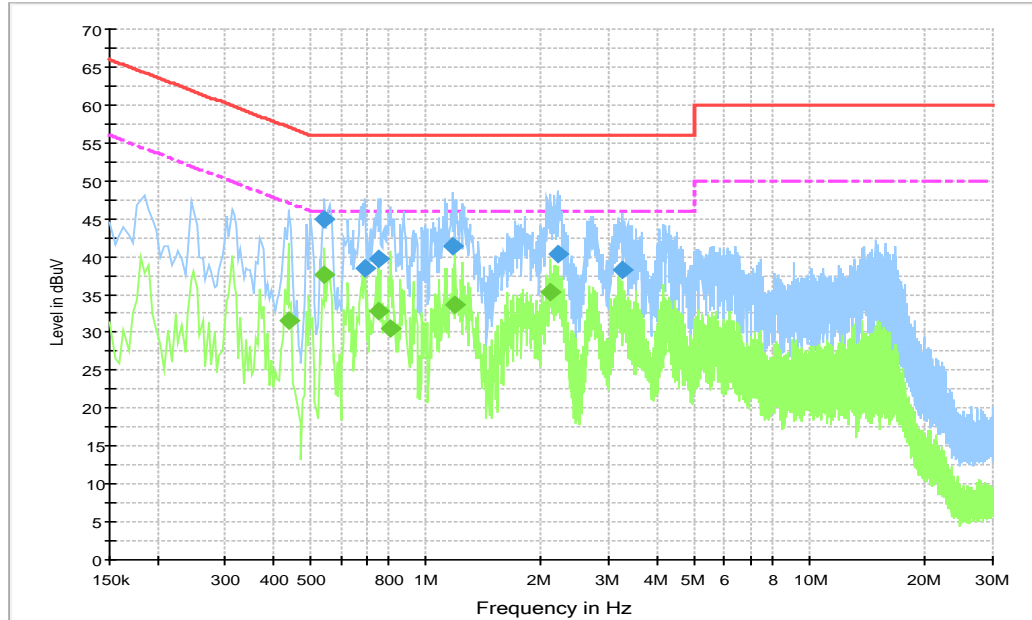


Figure A.22 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.546000	44.9	1000.0	9.000	On	L1	20.0	11.1	56.0
0.694500	38.5	1000.0	9.000	On	L1	19.9	17.5	56.0
0.753000	39.7	1000.0	9.000	On	L1	19.9	16.3	56.0
1.176000	41.4	1000.0	9.000	On	L1	19.8	14.6	56.0
2.197500	40.4	1000.0	9.000	On	L1	19.8	15.6	56.0
3.250500	38.2	1000.0	9.000	On	L1	19.8	17.8	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.438000	31.5	1000.0	9.000	On	L1	20.0	15.6	47.1
0.546000	37.7	1000.0	9.000	On	L1	20.0	8.3	46.0
0.753000	32.8	1000.0	9.000	On	L1	19.9	13.2	46.0
0.811500	30.5	1000.0	9.000	On	L1	19.9	15.5	46.0
1.194000	33.6	1000.0	9.000	On	L1	19.8	12.4	46.0
2.121000	35.3	1000.0	9.000	On	L1	19.8	10.7	46.0

. Charger2+MP4, Set.2

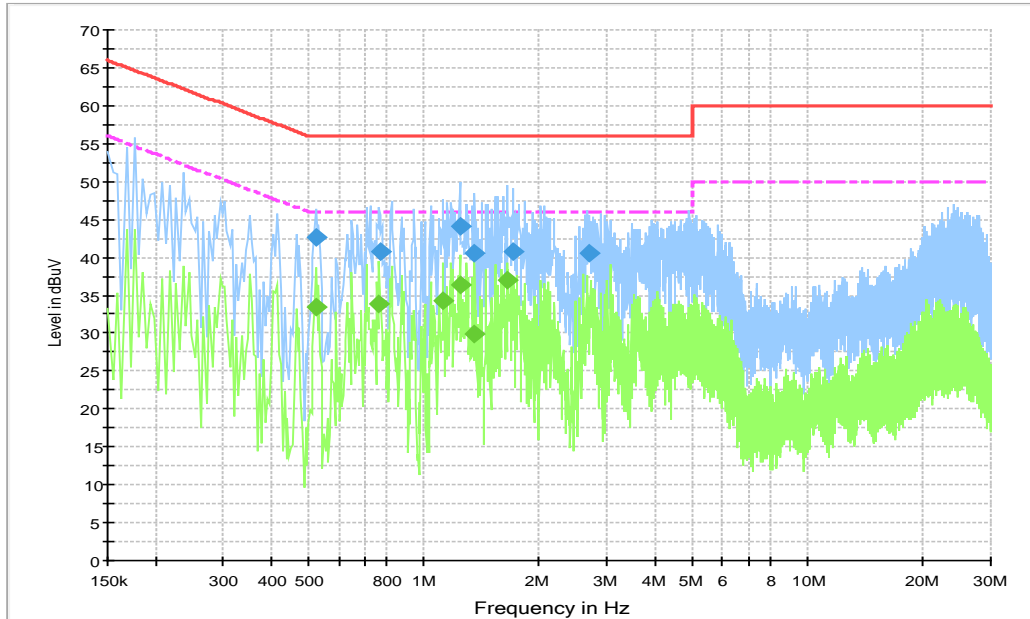


Figure A.23 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.523500	42.7	1000.0	9.000	On	L1	20.0	13.3	56.0
0.771000	40.8	1000.0	9.000	On	L1	19.9	15.2	56.0
1.239000	44.0	1000.0	9.000	On	L1	19.8	12.0	56.0
1.356000	40.6	1000.0	9.000	On	L1	19.8	15.4	56.0
1.711500	40.8	1000.0	9.000	On	L1	19.8	15.2	56.0
2.706000	40.5	1000.0	9.000	On	L1	19.8	15.5	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.523500	33.5	1000.0	9.000	On	L1	20.0	12.5	46.0
0.766500	33.8	1000.0	9.000	On	L1	19.9	12.2	46.0
1.122000	34.2	1000.0	9.000	On	L1	19.8	11.8	46.0
1.239000	36.3	1000.0	9.000	On	L1	19.8	9.7	46.0
1.356000	29.8	1000.0	9.000	On	L1	19.8	16.2	46.0
1.648500	36.9	1000.0	9.000	On	L1	19.8	9.1	46.0

Charger3+Front Camera, Set.3

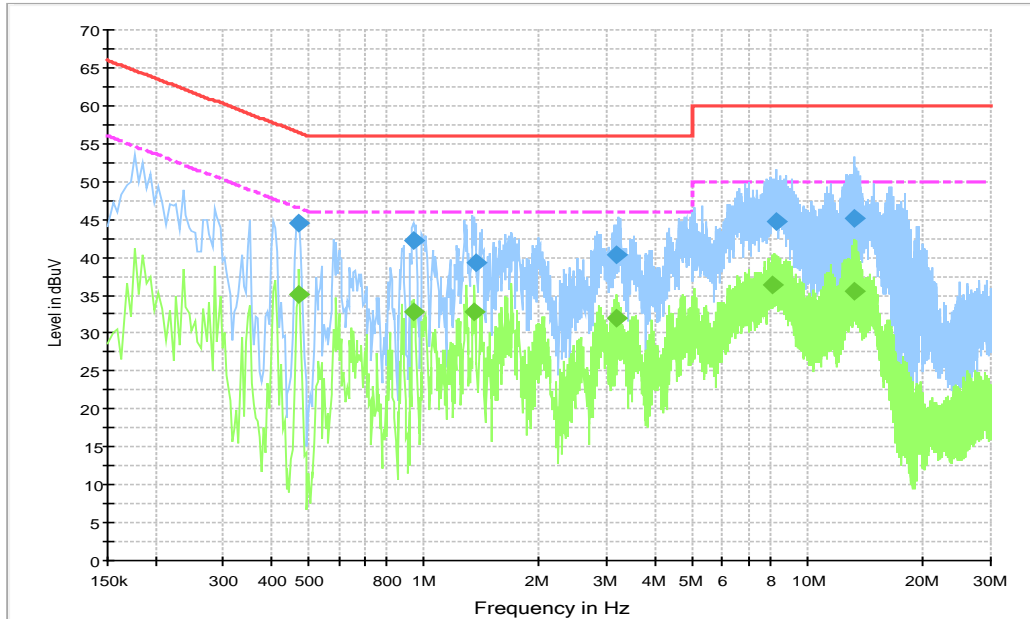


Figure A.24 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.474000	44.6	1000.0	9.000	On	L1	20.0	11.9	56.4
0.937500	42.2	1000.0	9.000	On	L1	19.9	13.8	56.0
1.365000	39.2	1000.0	9.000	On	L1	19.8	16.8	56.0
3.174000	40.3	1000.0	9.000	On	L1	19.8	15.7	56.0
8.326500	44.7	1000.0	9.000	On	L1	19.8	15.3	60.0
13.272000	45.1	1000.0	9.000	On	L1	19.9	14.9	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.474000	35.0	1000.0	9.000	On	L1	20.0	11.4	46.4
0.942000	32.7	1000.0	9.000	On	L1	19.9	13.3	46.0
1.356000	32.8	1000.0	9.000	On	L1	19.8	13.2	46.0
3.192000	31.9	1000.0	9.000	On	L1	19.8	14.1	46.0
8.061000	36.4	1000.0	9.000	On	L1	19.8	13.6	50.0
13.272000	35.5	1000.0	9.000	On	L1	19.9	14.5	50.0

Charger4+MP3, Set.4

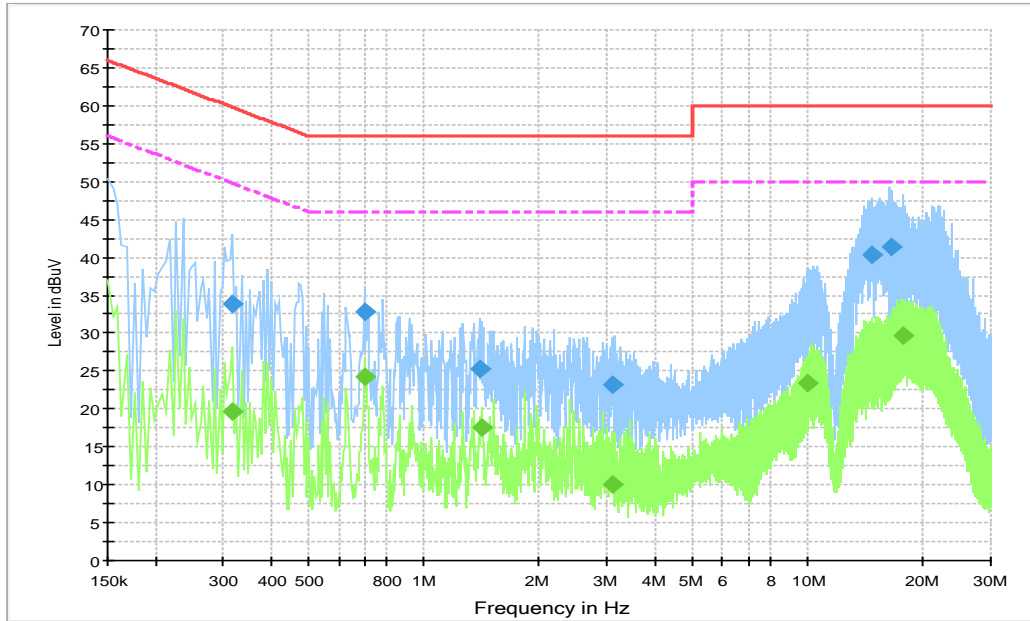


Figure A.25 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.316500	33.8	1000.0	9.000	On	L1	19.9	26.0	59.8
0.699000	32.8	1000.0	9.000	On	L1	19.9	23.2	56.0
1.396500	25.3	1000.0	9.000	On	L1	19.8	30.7	56.0
3.088500	23.1	1000.0	9.000	On	N	19.8	32.9	56.0
14.671500	40.4	1000.0	9.000	On	L1	19.9	19.6	60.0
16.521000	41.4	1000.0	9.000	On	L1	19.9	18.6	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.316500	19.6	1000.0	9.000	On	L1	19.9	30.2	49.8
0.699000	24.3	1000.0	9.000	On	L1	19.9	21.7	46.0
1.410000	17.5	1000.0	9.000	On	L1	19.8	28.5	46.0
3.106500	10.0	1000.0	9.000	On	L1	19.8	36.0	46.0
9.982500	23.5	1000.0	9.000	On	L1	19.9	26.5	50.0
17.709000	29.7	1000.0	9.000	On	L1	20.0	20.3	50.0

Charger5, Set.5

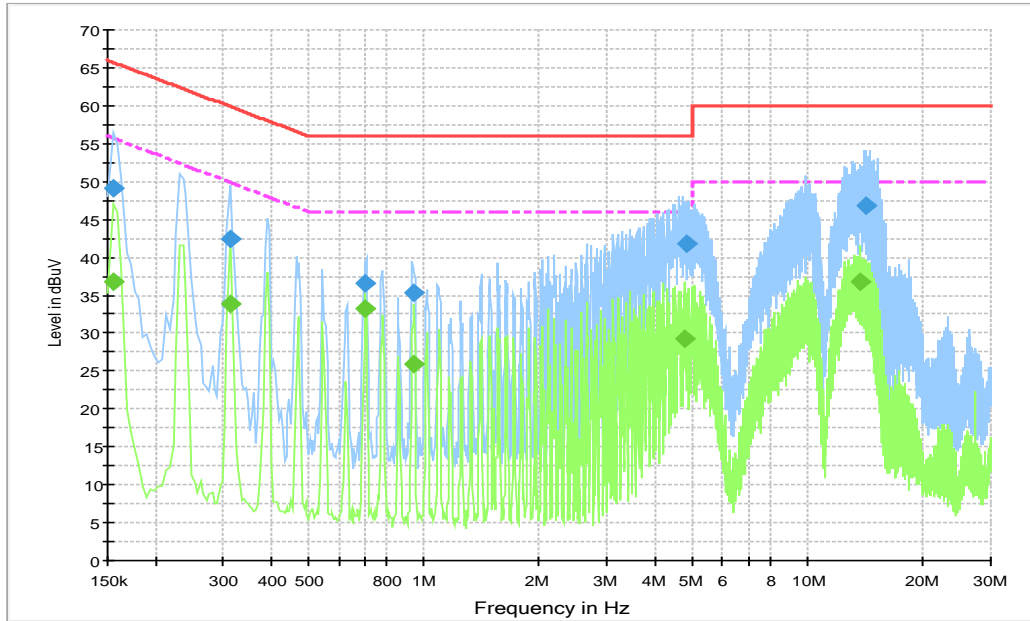


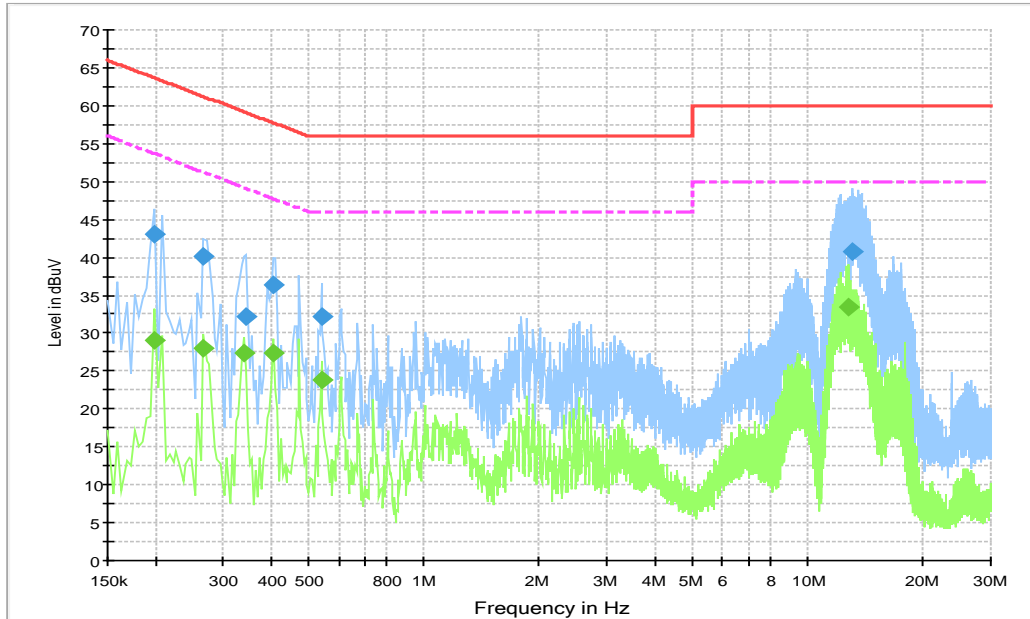
Figure A.26 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.154500	49.0	1000.0	9.000	On	L1	19.9	16.7	65.8
0.312000	42.5	1000.0	9.000	On	L1	20.0	17.4	59.9
0.703500	36.5	1000.0	9.000	On	N	19.9	19.5	56.0
0.937500	35.4	1000.0	9.000	On	L1	19.9	20.6	56.0
4.830000	41.7	1000.0	9.000	On	L1	19.8	14.3	56.0
14.262000	46.8	1000.0	9.000	On	L1	19.9	13.2	60.0

Final Result 2

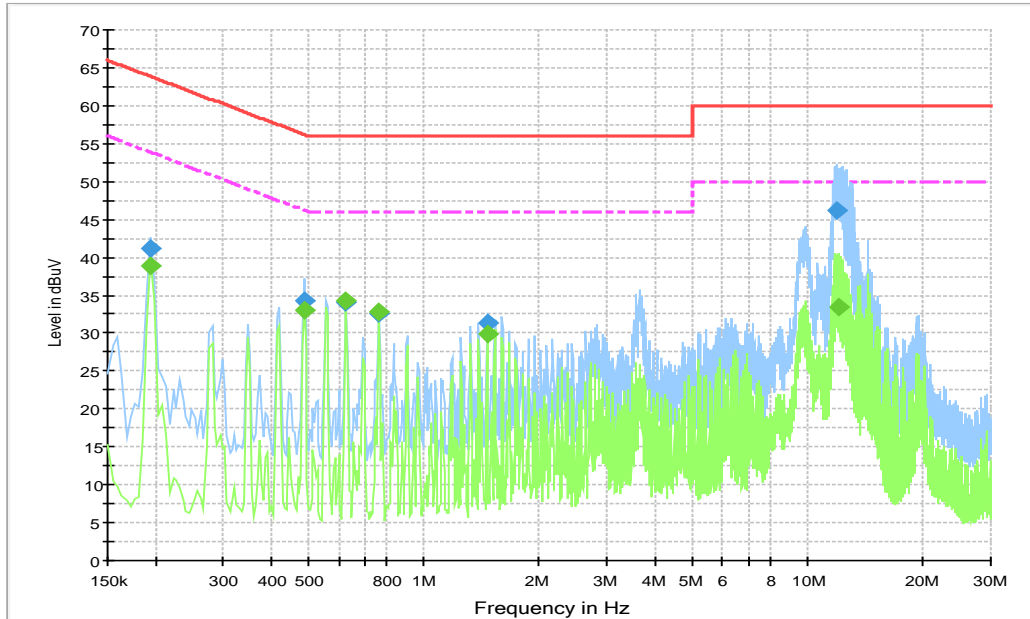
Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.154500	36.7	1000.0	9.000	On	L1	19.9	19.0	55.8
0.312000	33.9	1000.0	9.000	On	L1	20.0	16.0	49.9
0.703500	33.1	1000.0	9.000	On	L1	19.9	12.9	46.0
0.942000	25.9	1000.0	9.000	On	N	19.9	20.1	46.0
4.758000	29.2	1000.0	9.000	On	L1	19.8	16.8	46.0
13.659000	36.8	1000.0	9.000	On	L1	19.9	13.2	50.0

Charger6, Set.6

Figure A.27 Conducted Emission
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.199500	43.1	1000.0	9.000	On	L1	19.9	20.6	63.6
0.267000	40.2	1000.0	9.000	On	L1	19.9	21.0	61.2
0.343500	32.3	1000.0	9.000	On	L1	20.0	26.9	59.1
0.406500	36.4	1000.0	9.000	On	L1	20.0	21.3	57.7
0.541500	32.1	1000.0	9.000	On	L1	20.0	23.9	56.0
13.128000	40.7	1000.0	9.000	On	L1	19.9	19.3	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.199500	29.0	1000.0	9.000	On	L1	19.9	24.6	53.6
0.267000	28.0	1000.0	9.000	On	L1	19.9	23.2	51.2
0.339000	27.4	1000.0	9.000	On	L1	19.9	21.8	49.2
0.406500	27.4	1000.0	9.000	On	L1	20.0	20.3	47.7
0.541500	23.9	1000.0	9.000	On	L1	20.0	22.1	46.0
12.772500	33.4	1000.0	9.000	On	L1	19.9	16.6	50.0

USB (SD) mode, Set.7

Figure A.28 Conducted Emission
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.195000	41.2	1000.0	9.000	On	L1	20.0	22.6	63.8
0.487500	34.4	1000.0	9.000	On	N	20.0	21.9	56.2
0.627000	34.1	1000.0	9.000	On	N	19.9	21.9	56.0
0.766500	32.7	1000.0	9.000	On	L1	19.9	23.3	56.0
1.464000	31.4	1000.0	9.000	On	L1	19.8	24.6	56.0
11.922000	46.2	1000.0	9.000	On	L1	19.9	13.8	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.195000	38.9	1000.0	9.000	On	L1	20.0	14.9	53.8
0.487500	33.0	1000.0	9.000	On	L1	20.0	13.3	46.2
0.627000	34.3	1000.0	9.000	On	N	19.9	11.8	46.0
0.766500	32.9	1000.0	9.000	On	N	19.9	13.1	46.0
1.464000	29.9	1000.0	9.000	On	N	19.8	16.1	46.0
12.034500	33.4	1000.0	9.000	On	N	19.9	16.6	50.0



ANNEX B: Persons involved in this testing

Test Item	Tester
Radiated Emission	Li Zongliang
Conducted Emission	Guo Qian

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