



TEST REPORT

No. I21Z70411-EMC01

for

Samsung Electronics Co., Ltd.

Multi-band GSM/WCDMA/LTE phone with Bluetooth, WLAN

Model Name: SM-A032M/DS, SM-A032M

FCC ID: ZCASMA032M

with

Hardware Version: REV1.0

Software Version: A032M.001

Issued Date: 2021-09-22

Note:

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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.

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I21Z70411-EMC01	Rev.0	1 st edition	2021-09-22

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, 100176, P.R. China

1.3. Testing Environment

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

1.4. Project data

Testing Start Date: 2021-08-31
Testing End Date: 2021-09-18

1.5. Signature



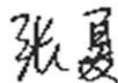
Li Yan

(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: Samsung Electronics Co., Ltd.
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Postal Code: /
Country: /
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Email: j1.chun@samsung.com
Telephone: +1-201-937-4203

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	Multi-band GSM/WCDMA/LTE phone with Bluetooth, WLAN
Model Name	SM-A032M/DS, SM-A032M
FCC ID	ZCASMA032M
Extreme vol. Limits	3.65VDC to 4.4VDC (nominal: 3.85VDC)

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
UT05a	2170411UT05a	REV1.0	A032M.001	2021.08.31

*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
AE1-1	Adapter1	/	/
AE1-2	Adapter2	/	/
AE1-3	Adapter3	/	/
AE2-1	Adapter4	/	/
AE2-2	Adapter5	/	/
AE2-3	Adapter6	/	/
AE2-4	Adapter7	/	/
AE2-5	Adapter8	/	/
AE3-1	Adapter9	/	/
AE3-2	Adapter10	/	/
AE3-3	Adapter11	/	/
AE3-4	Adapter12	/	/
AE3-11	Adapter13	/	/
AE4-1	Adapter14	/	/
AE4-4	Adapter15	/	/
AE5-1	USB Cable1	/	/
AE5-2	USB Cable2	/	/
AE5-3	USB Cable3	/	/
AE6	Headset1	/	/
AE7	Headset2	/	/
AE8	Battery	/	/



AE1-1	
Model	EP-TA50EWE
Manufacturer	RFTECH Co., Ltd.
Length of cable	/
AE1-2	
Model	EP-TA50JWS
Manufacturer	RFTECH Co., Ltd.
Length of cable	/
AE1-3	
Model	EP-TA50JWE
Manufacturer	RFTECH Co., Ltd.
Length of cable	/
AE2-1	
Model	EP-TA50EWE
Manufacturer	DONGYANG E&P Inc.
Length of cable	/
AE2-2	
Model	EP-TA50JWS
Manufacturer	DONGYANG E&P Inc.
Length of cable	/
AE2-3	
Model	EP-TA50JWE
Manufacturer	DONGYANG E&P Inc.
Length of cable	/
AE2-4	
Model	EP-TA50UWE
Manufacturer	DONGYANG E&P Inc.
Length of cable	/
AE2-5	
Model	EP-TA50RWS
Manufacturer	DONGYANG E&P Inc.
Length of cable	/
AE3-1	
Model	EP-TA50EWE
Manufacturer	HAEM Co.,Ltd
Length of cable	/
AE3-2	
Model	EP-TA50JWS
Manufacturer	HAEM Co.,Ltd
Length of cable	/
AE3-3	
Model	EP-TA50JWE
Manufacturer	HAEM Co.,Ltd
Length of cable	/



AE3-4		
Model	EP-TA50UWE	
Manufacturer	HAEM Co.,Ltd	
Length of cable	/	
AE3-11		
Model	EP-TA50EWE	
Manufacturer	HAEM Co.,Ltd	
Length of cable	/	
AE4-1		
Model	EP-TA50EWE	
Manufacturer	Salcomp (Shenzhen) Co., Ltd.	
Length of cable	/	
AE4-4		
Model	EP-TA50UWE	
Manufacturer	Salcomp (Shenzhen) Co., Ltd.	
Length of cable	/	
AE5-1		
Model	ECB-DU68WE(GH39-02004A)	
Manufacturer	CRESYN HANOI Co., Ltd	
Length	/	/
AE5-2		
Model	ECB-DU68WE(GH39-02004A)/ ECB-DU68WZ(GH39-02005A) / ECB-DU68WE(GH39-02004B)	/
Manufacturer	DONGGUAN KSD CO.,LTD	
Length	/	/
AE5-3		
Model	ECB-DU68WE(GH39-02004A)/ ECB-DU68WZ(GH39-02005A) / ECB-DU68WE(GH39-02004B)	/
Manufacturer	RFTECH Co., Ltd.	
Length	/	/
AE6		
Model	GH59-15054A/ GH59-15071A	
Manufacturer	DONGGUAN YOUNGBO ELECTRONICS CO.,LTD	
Length	/	
AE7		
Model	GH59-15054A/ GH59-15071A	
Manufacturer	CRESYN HANOI Co., Ltd	
Length	/	
AE8		
TYPE	Secondary Li-ion Battery	
SN	SLC-50	
Manufacturer	Ningde Amperex Technology Limited	

Note:

1. The USB cables are shielded.
2. According to the declaration provided by the manufacturer, differences of USB cable from the same manufacturer are only in model name and packaging; the difference of headset from the same manufacturer is on the label; the only difference between AE3-1 and AE3-11 is the label.

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.1-1	UT05a + AE1-1+ AE5-1	Adapter1+RX mode
Set.1-2	UT05a + AE1-2+ AE5-1+AE6	Adapter2+ R Camera+ Headset1
Set.1-3	UT05a + AE1-3+ AE5-3	Adapter3+MP4
Set.2-1	UT05a + AE2-1+ AE5	Adapter4+FM+Headset1
Set.2-2	UT05a + AE2-2+ AE5-1	Adapter5+F camera +RX mode
Set.2-3	UT05a + AE2-3+ AE5-2+AE7	Adapter6+FM+Headset2
Set.2-4	UT05a + AE2-4+ AE5-3	Adapter7+RX mode
Set.2-5	UT05a + AE2-5+ AE5	Adapter8+FM+Headset1
Set.3-1	UT05a + AE3-1+ AE5-1+AE6	Adapter9+FM+Headset1
Set.3-2	UT05a + AE3-2+ AE5	Adapter10+FM+Headset2
Set.3-3	UT05a + AE3-3+ AE5-2	Adapter11+MP4+RX mode
Set.3-4	UT05a + AE3-4+ AE5-3	Adapter12+MP3+RX mode
Set.3-11	UT05a + AE3-11+ AE5	Adapter13+FM+Headset1
Set.4-1	UT05a + AE4-1+ AE5-1	Adapter14+RX mode
Set.4-4	UT05a + AE4-4+ AE5-2	Adapter15+RX mode
Set.5	UT05a + AE5-1+AE6	USB SD TO PC + Headset1+RX mode
Set.6	UT05a + AE5-3+AE7	USB PC TO SC + Headset2+RX mode
Set.7	UT05a + AE5-3+AE7	USB + Headset2+RX+ mode

Note: All the set-ups above were tested but only the worst test data of worst set-up showed in this report.

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)

Note: The only difference between SM-A032M/DS and SM-A032M is Dual SIM slot rack and Single SIM slot rack, the tests were performed on SM-A032M/DS and SM-A032M shared the SM-A032M/DS results.

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	Test Receiver	ESU26	100235	R&S	2022-02-23	1 year
2	Test Receiver	ESCI	100766	R&S	2022-03-16	1 year
3	LISN	ENV216	101459	R&S	2022-03-09	1 year
4	BiLog Antenna	VULB9163	9163-482	Schwarzbeck	2021-11-04	1 year
5	EMI Antenna	3117	00139065	ETS-Lindgren	2021-10-11	1 year
6	Universal Radio Communication Tester	CMW500	159408	R&S	2022-03-08	1 year
7	Signal Generator	SMBV100A	R&S	260613	2022-01-06	1 year
8	Printer	P1606dn	VNC3L52122	HP	N/A	N/A
9	Keyboard	KU-1601	2048361	Lenovo	N/A	N/A
10	Mouse	EMS-537A	8021S3MC	Lenovo	N/A	N/A
11	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, MP3, CAMERA, FM, 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.

The FM radio mode radiated testing was performed with the Low/Mid/High channel. Only the worst cases 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, $k=2$.

Note: all the set-up lists in section 3.5 were tested and only the worst test data of worst set-up showed in this section.

Measurement results for Set.1-2:

Adapter2+ Headset1+ 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)
17994.000	43.57	-22.8	41.3	25.04	54.0	10.4	V
17986.500	43.55	-22.8	41.3	25.05	54.0	10.5	V
17985.500	43.51	-22.8	41.3	25.01	54.0	10.5	V
17981.500	43.46	-22.8	41.3	24.95	54.0	10.5	H
17980.500	43.46	-22.8	41.3	24.95	54.0	10.5	V
17987.500	43.46	-22.8	41.3	24.96	54.0	10.5	V

Adapter2+ Headset1+ 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)
17989.000	55.6	-22.8	41.3	37.06	74.0	18.4	V
17043.000	55.5	-23.0	41.7	36.90	74.0	18.5	V
17855.500	55.5	-22.5	41.3	36.77	74.0	18.5	V
17001.000	55.3	-23.0	41.7	36.67	74.0	18.7	H
17907.500	55.3	-22.6	41.3	36.67	74.0	18.7	V
17033.500	55.3	-23.0	41.7	36.65	74.0	18.7	V

Measurement results for Set.2-2:
Adapter5+ Front Camera + RX mode GSM850/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)
17984.000	43.59	-22.8	41.3	25.08	54.0	10.4	V
17977.500	43.54	-22.8	41.3	25.02	54.0	10.5	V
17978.000	43.52	-22.8	41.3	25.01	54.0	10.5	V
17989.000	43.52	-22.8	41.3	25.01	54.0	10.5	V
17905.000	43.48	-22.6	41.3	24.83	54.0	10.5	V
17985.000	43.46	-22.8	41.3	24.96	54.0	10.5	V

Adapter5+ Front Camera + RX mode GSM850 /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)
17952.000	55.68	-22.7	41.3	37.11	74.0	18.3	H
17694.500	55.64	-22.2	41.2	36.56	74.0	18.4	V
17734.500	55.43	-22.3	41.2	36.44	74.0	18.6	V
17992.000	55.37	-22.8	41.3	36.85	74.0	18.6	V
17756.500	55.34	-22.3	41.3	36.39	74.0	18.7	V
17634.500	55.33	-22.0	41.2	36.13	74.0	18.7	V

Measurement results for Set.3-1:
Adapter9+ Headset1+ FM 88MHz /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)
17987.500	43.55	-22.8	41.3	25.05	54.0	10.4	V
17988.500	43.53	-22.8	41.3	25.02	54.0	10.5	V
17979.000	43.49	-22.8	41.3	24.98	54.0	10.5	V
17980.500	43.48	-22.8	41.3	24.97	54.0	10.5	V
17982.000	43.46	-22.8	41.3	24.95	54.0	10.5	V
17986.000	43.46	-22.8	41.3	24.95	54.0	10.5	H

Adapter9+ Headset1+ FM 88MHz /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)
16999.500	56.6	-23.0	41.7	37.91	74.0	17.4	V
16960.500	56.0	-23.0	41.7	37.38	74.0	18.0	V
17866.000	55.6	-22.5	41.3	36.87	74.0	18.4	H
17918.000	55.6	-22.7	41.3	36.93	74.0	18.4	V
16970.500	55.4	-23.0	41.7	36.69	74.0	18.6	H
17606.500	55.2	-22.2	41.2	36.22	74.0	18.8	H

Measurement results for Set.3-3:
Adapter11+ MP4+ RX mode LTE 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)
17982.500	43.65	-22.8	41.3	25.14	54.0	10.4	V
17989.500	43.63	-22.8	41.3	25.12	54.0	10.4	V
17985.000	43.54	-22.8	41.3	25.03	54.0	10.5	H
17986.500	43.53	-22.8	41.3	25.03	54.0	10.5	V
17983.500	43.53	-22.8	41.3	25.02	54.0	10.5	V
17981.000	43.50	-22.8	41.3	24.99	54.0	10.5	V

Adapter11+ MP4+ RX mode LTE 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)
17989.500	55.9	-22.8	41.3	37.42	74.0	18.1	H
17985.000	55.6	-22.8	41.3	37.14	74.0	18.4	H
17962.000	55.6	-22.7	41.3	37.03	74.0	18.4	V
17966.000	55.5	-22.8	41.3	36.96	74.0	18.5	V
17636.000	55.5	-22.0	41.2	36.30	74.0	18.5	V
16931.000	55.5	-23.0	41.7	36.80	74.0	18.5	V

Measurement results for Set.5:
USB (SD) mode+ RX mode LTE B12 /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)
17984.500	43.74	-22.8	41.3	25.23	54.0	10.3	V
17988.500	43.72	-22.8	41.3	25.22	54.0	10.3	V
17987.000	43.70	-22.8	41.3	25.20	54.0	10.3	V
17985.000	43.70	-22.8	41.3	25.19	54.0	10.3	V
17978.000	43.66	-22.8	41.3	25.14	54.0	10.3	V
17989.500	43.65	-22.8	41.3	25.14	54.0	10.3	V

USB (SD) mode + RX mode LTE B12 /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)
17599.500	56.9	-22.2	41.2	37.96	74.0	17.1	H
17986.000	56.8	-22.8	41.3	38.34	74.0	17.2	V
17501.500	56.0	-22.9	41.2	37.65	74.0	18.0	V
17809.000	55.9	-22.4	41.3	37.07	74.0	18.1	V
17975.500	55.9	-22.8	41.3	37.33	74.0	18.1	V
17961.000	55.8	-22.7	41.3	37.29	74.0	18.2	V

Adapter2+ Headset1+ Rear Camera, Set.1-2

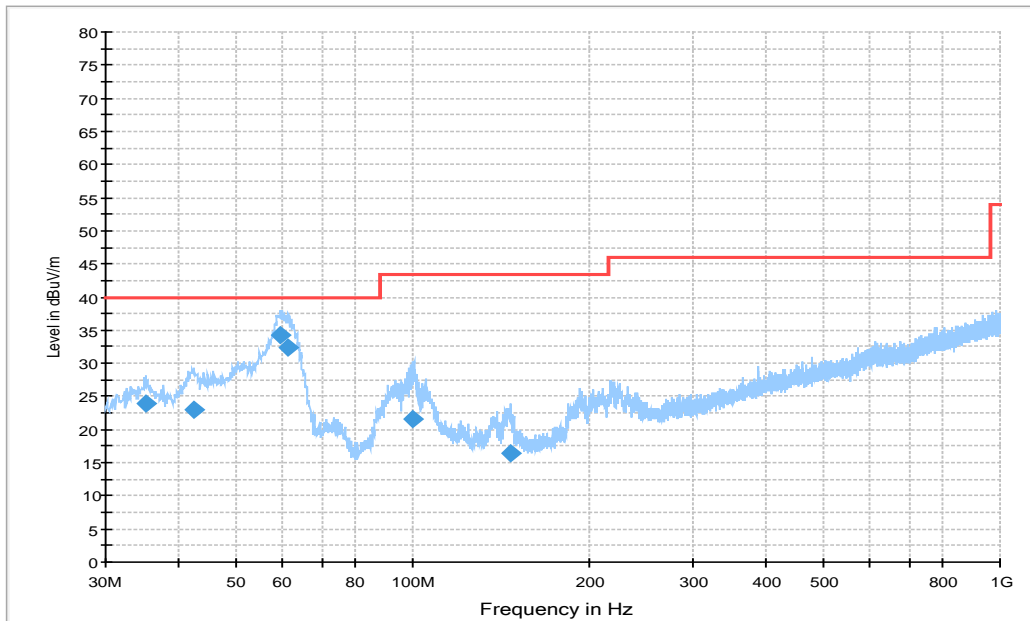


Figure A.1 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
35.141000	23.8	100.0	V	210.0	-1.5	16.2	40.0
42.416000	23.0	113.0	V	225.0	-0.4	17.0	40.0
59.682000	34.2	100.0	V	225.0	-0.7	5.8	40.0
61.525000	32.5	100.0	V	195.0	-1.3	7.5	40.0
99.743000	21.6	100.0	V	225.0	-1.6	21.9	43.5
146.69100	16.3	112.0	V	120.0	-5.4	27.2	43.5

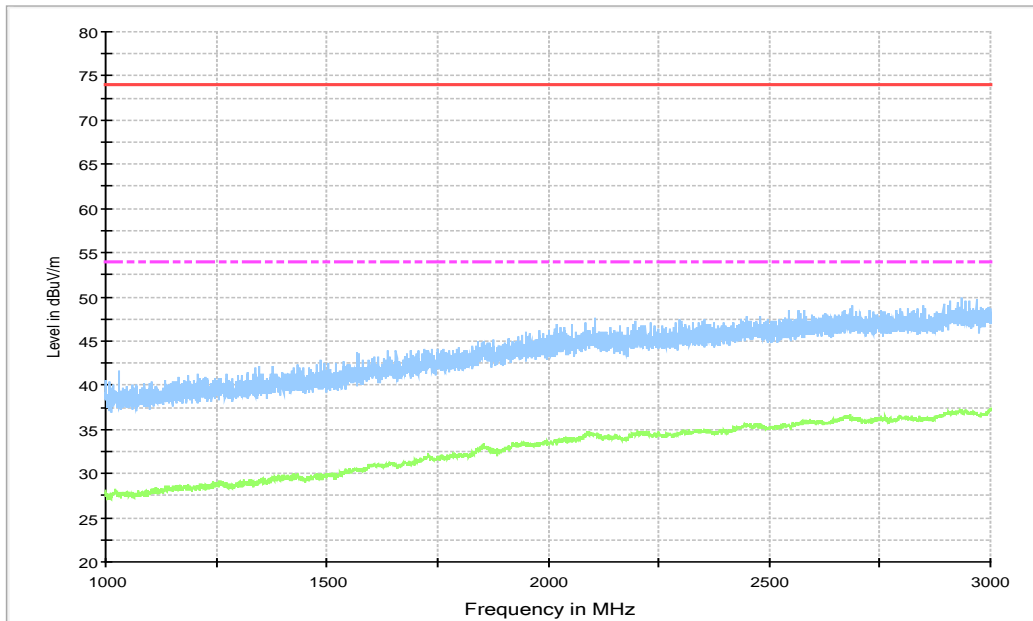


Figure A.2 Radiated Emission from 1GHz to 3GHz

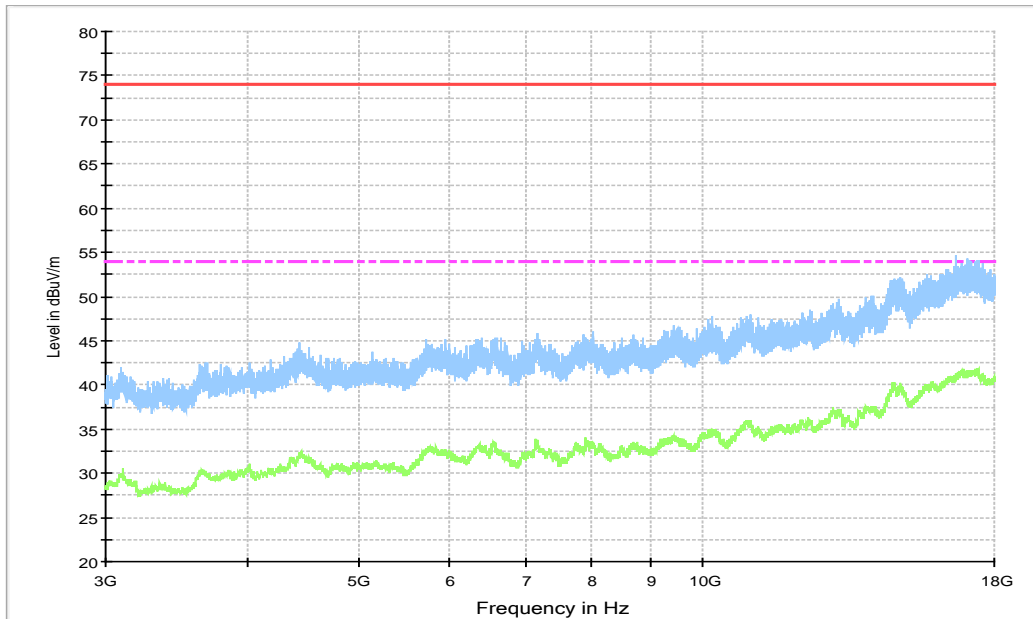


Figure A.3 Radiated Emission from 3GHz to 18GHz

Adapter5+ Front Camera + RX mode GSM850, Set.2-2

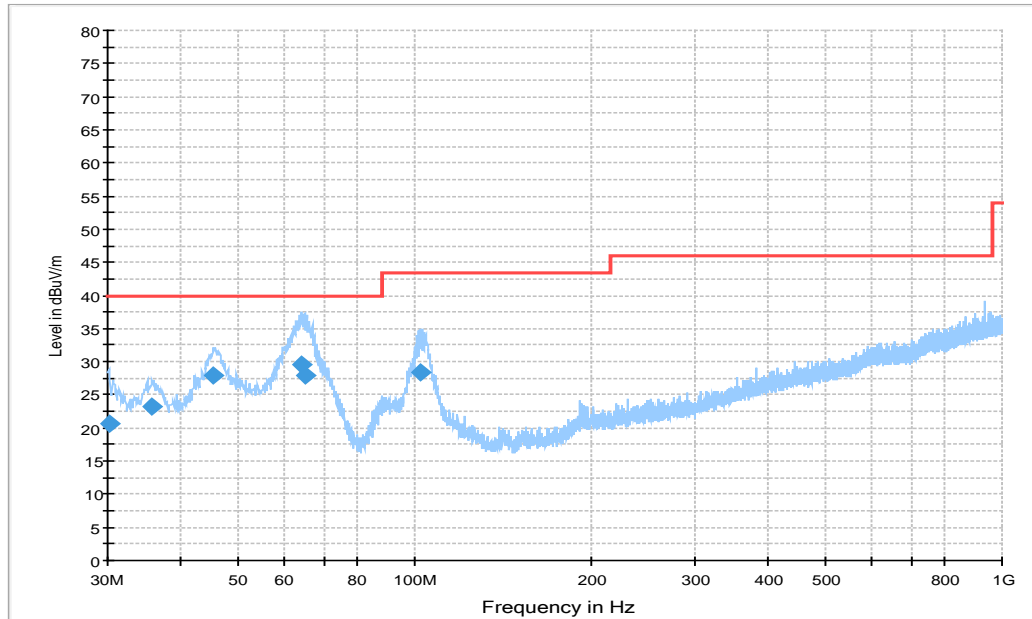


Figure A.4 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
30.194000	20.7	113.0	V	135.0	-2.8	19.3	40.0
35.723000	23.2	100.0	V	179.0	-1.4	16.8	40.0
45.423000	28.0	100.0	V	45.0	-0.3	12.0	40.0
64.241000	29.6	100.0	V	270.0	-2.4	10.4	40.0
64.920000	27.8	100.0	V	299.0	-2.7	12.2	40.0
102.36200	28.4	113.0	V	195.0	-1.8	15.1	43.5

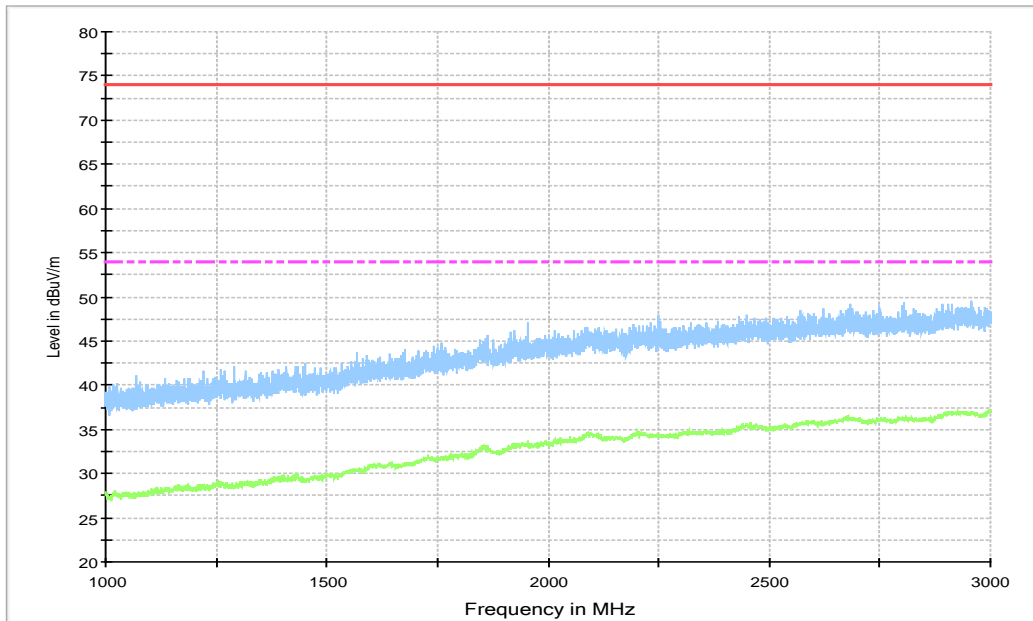


Figure A.5 Radiated Emission from 1GHz to 3GHz

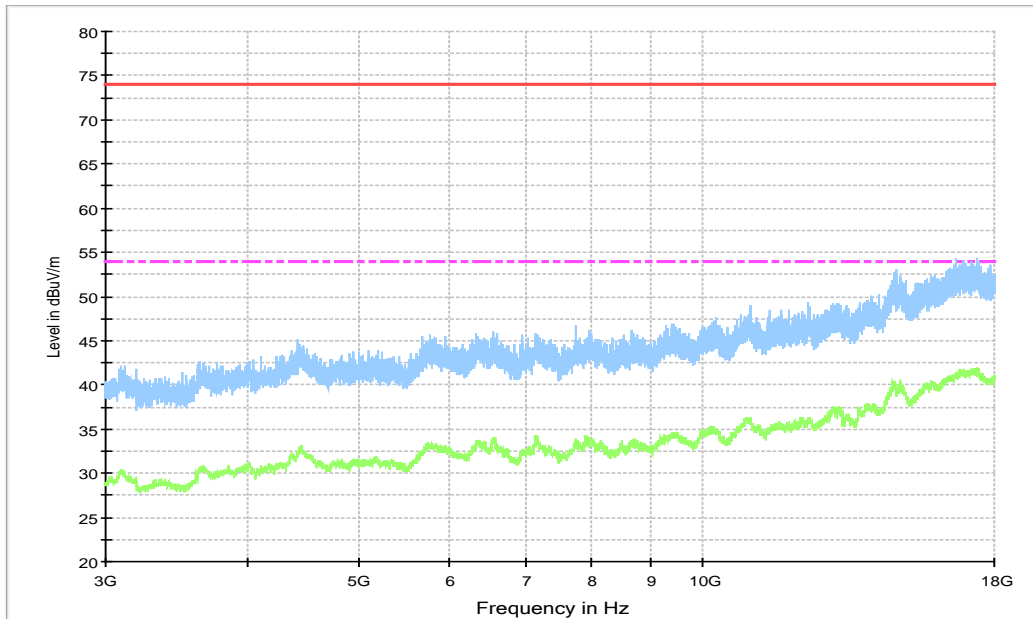


Figure A.6 Radiated Emission from 3GHz to 18GHz

Adapter9+ Headset1+ FM 88MHz, Set.3-1

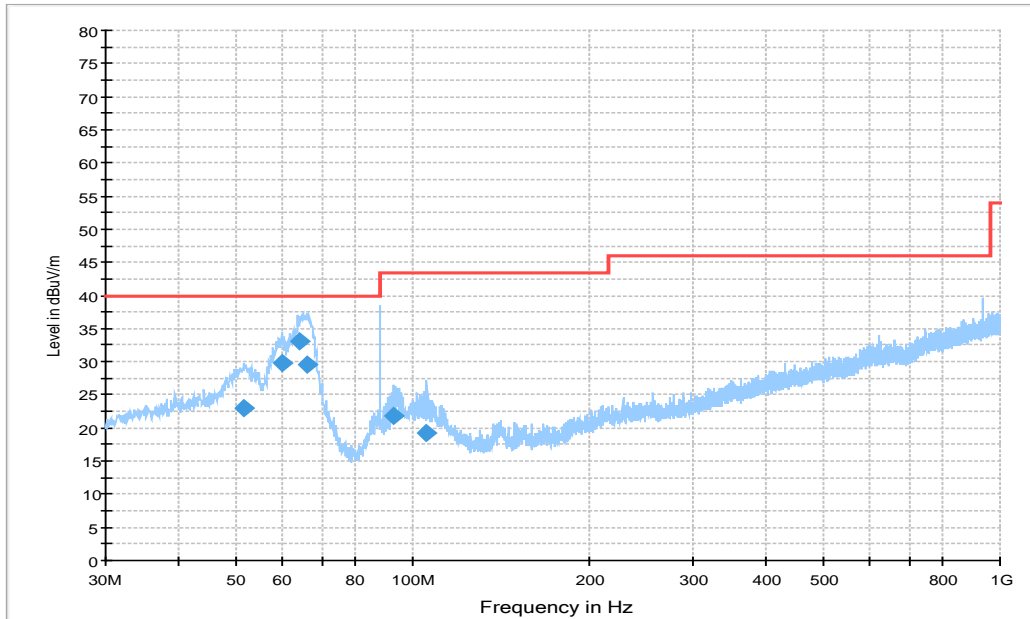


Figure A.7 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
51.534000	23.1	100.0	V	149.0	-0.3	16.9	40.0
59.779000	29.7	100.0	V	239.0	-0.7	10.3	40.0
64.144000	33.2	100.0	V	-30.0	-2.4	6.8	40.0
66.084000	29.5	113.0	V	150.0	-3.1	10.5	40.0
92.953000	21.9	125.0	H	225.0	-3.1	21.6	43.5
105.75700	19.2	100.0	V	239.0	-2.0	24.3	43.5

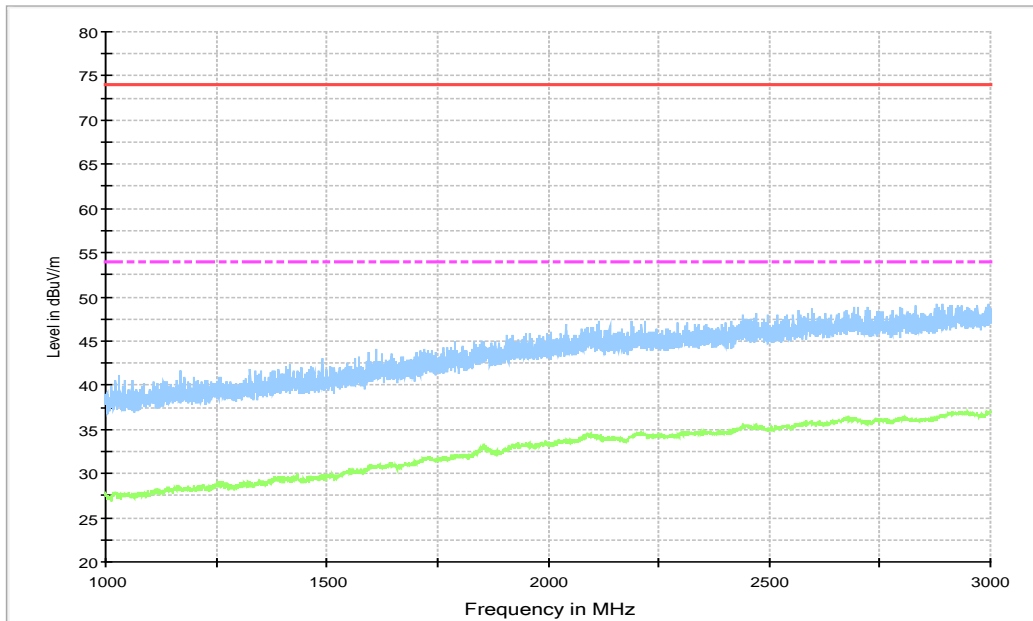


Figure A.8 Radiated Emission from 1GHz to 3GHz

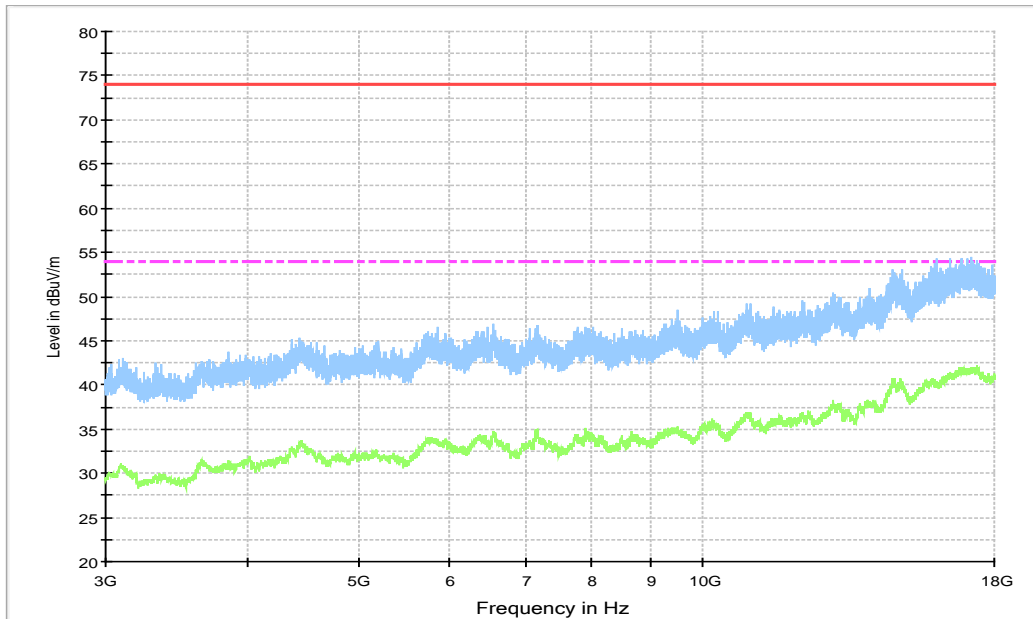


Figure A.9 Radiated Emission from 3GHz to 18GHz

Adapter11+ MP4+ RX mode LTE B5, Set.3-3

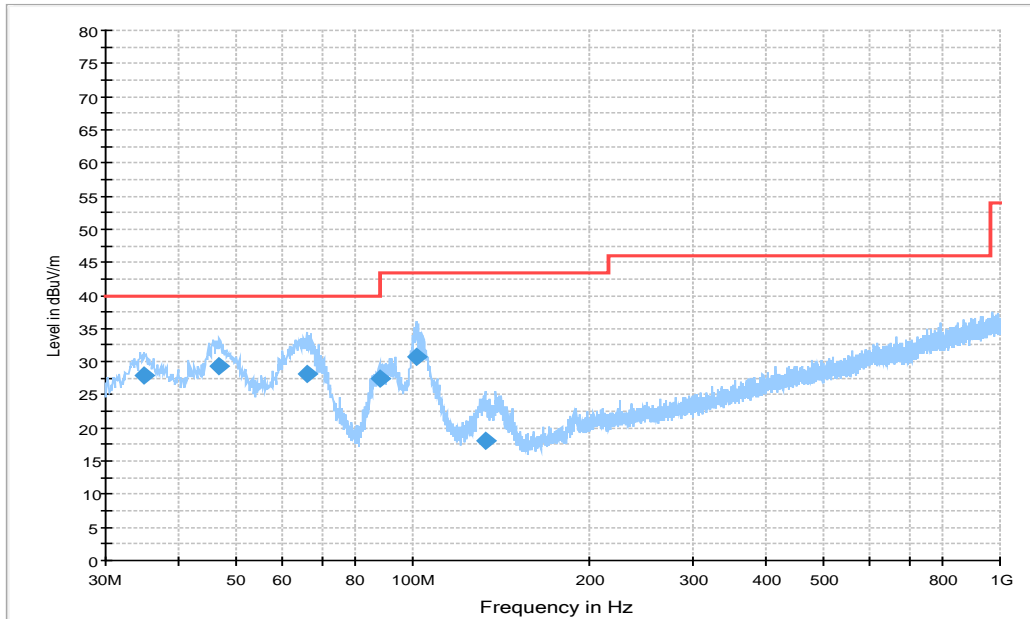


Figure A.10 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
34.850000	27.9	113.0	V	119.0	-1.6	12.1	40.0
46.878000	29.3	100.0	V	239.0	-0.2	10.7	40.0
65.890000	28.1	100.0	V	120.0	-3.0	11.9	40.0
87.715000	27.5	125.0	H	180.0	-4.5	12.5	40.0
101.29500	30.6	100.0	V	284.0	-1.7	12.9	43.5
132.62600	18.1	100.0	V	-30.0	-5.1	25.4	43.5

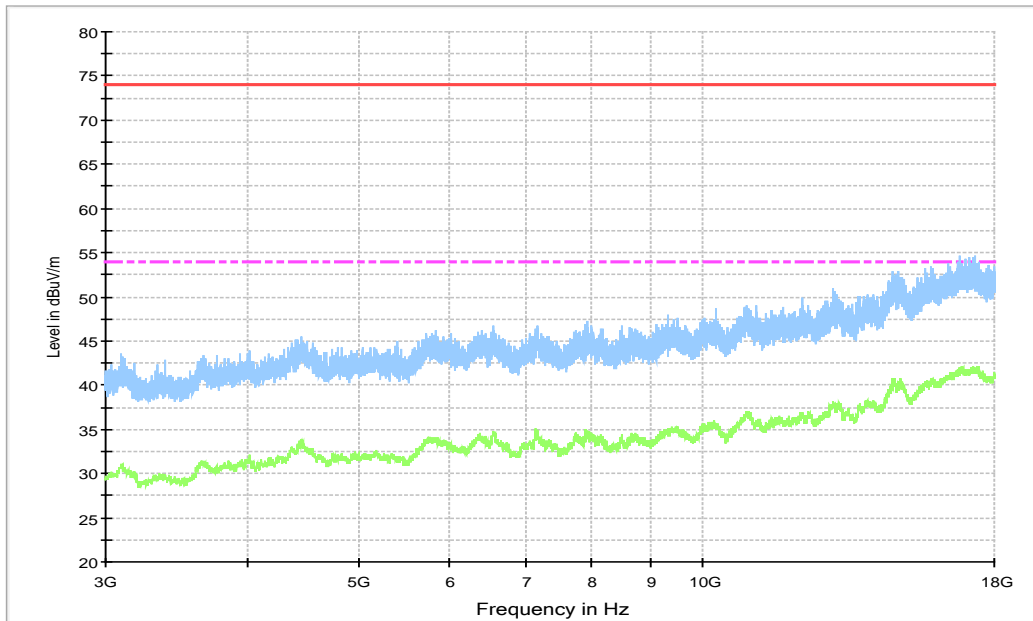


Figure A.11 Radiated Emission from 1GHz to 3GHz

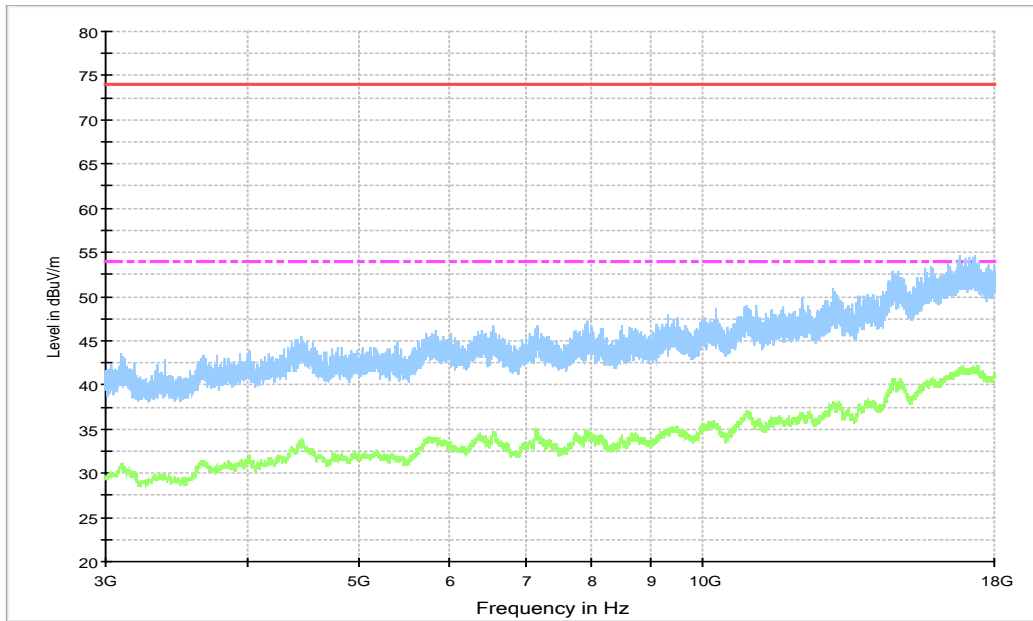


Figure A.12 Radiated Emission from 3GHz to 18GHz

USB (SD) mode+ RX mode LTE B12, Set.5

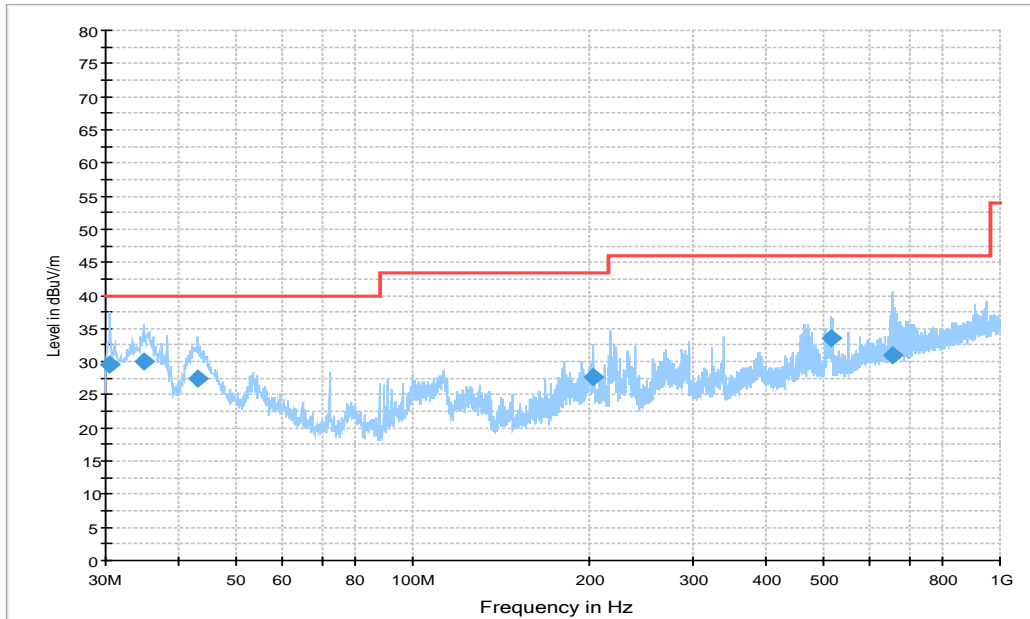


Figure A.13 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
30.485000	29.6	100.0	V	90.0	-2.7	10.4	40.0
34.753000	30.0	113.0	V	240.0	-1.6	10.0	40.0
42.901000	27.4	100.0	V	300.0	-0.3	12.6	40.0
203.14500	27.6	100.0	H	120.0	-1.8	15.9	43.5
517.03700	33.6	125.0	V	0.0	6.6	12.4	46.0
654.68000	30.9	113.0	V	90.0	8.9	15.1	46.0

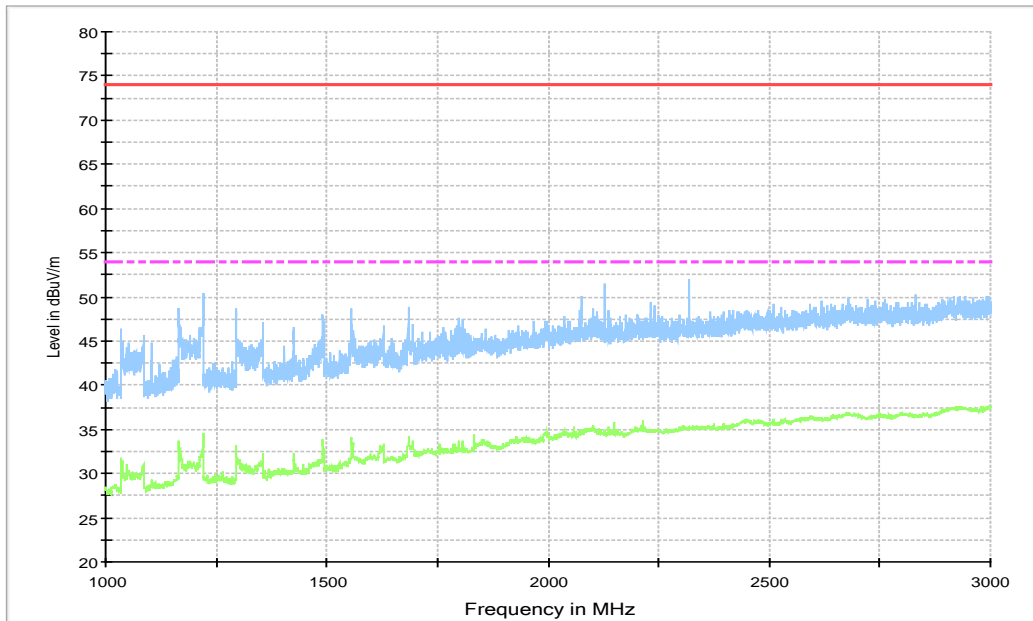


Figure A.14 Radiated Emission from 1GHz to 3GHz

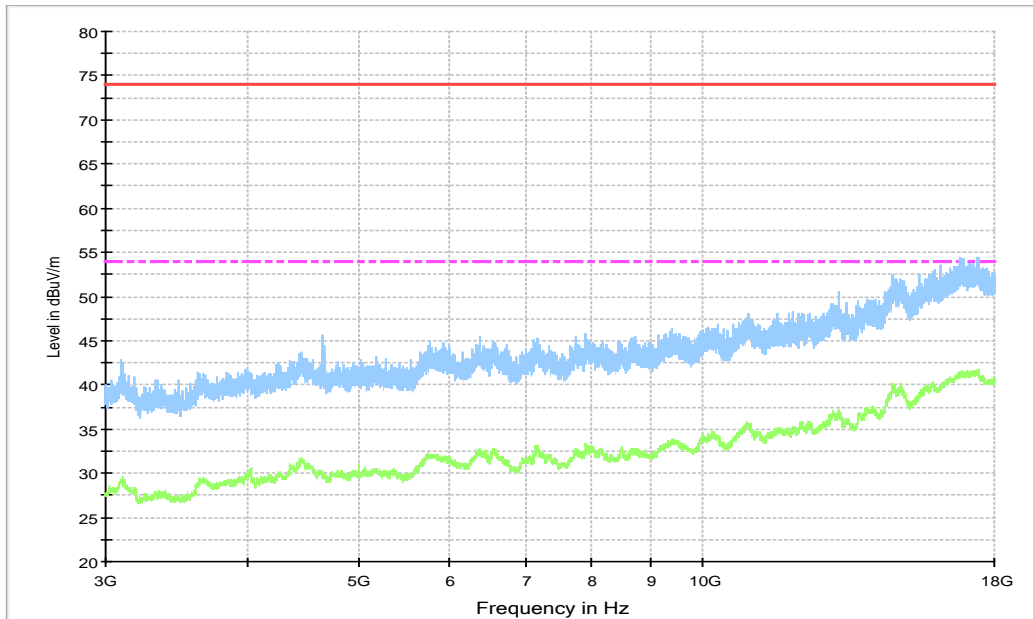


Figure A.15 Radiated Emission from 3GHz to 18GHz

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, $k=2$.

Note: all the set-up lists in section 3.5 were tested and only the worst test data of worst set-up showed in this section.

Adapter2+ Rear Camera, Set.1-2

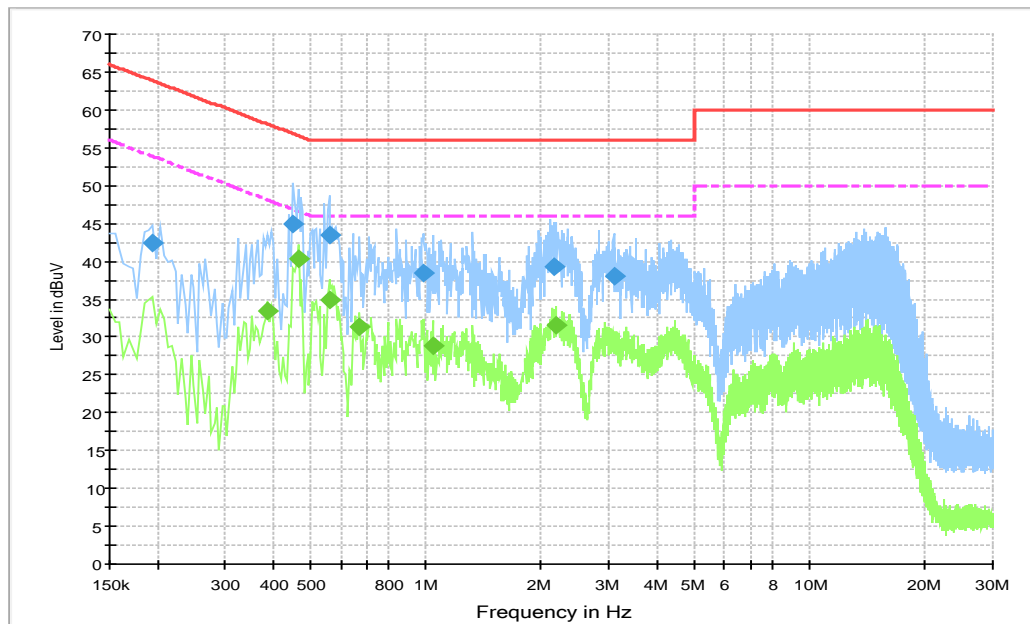


Figure A.16 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.195000	42.4	3000.0	9.000	On	L1	27.7	21.4	63.8
0.451500	45.0	3000.0	9.000	On	N	23.9	11.9	56.8
0.559500	43.5	3000.0	9.000	On	N	22.9	12.5	56.0
0.987000	38.4	3000.0	9.000	On	L1	20.3	17.6	56.0
2.157000	39.3	3000.0	9.000	On	N	20.0	16.7	56.0
3.115500	38.0	3000.0	9.000	On	N	19.9	18.0	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.388500	33.4	3000.0	9.000	On	L1	24.5	14.7	48.1
0.465000	40.3	3000.0	9.000	On	L1	23.7	6.3	46.6
0.559500	34.9	3000.0	9.000	On	N	22.9	11.1	46.0
0.672000	31.3	3000.0	9.000	On	N	22.0	14.7	46.0
1.041000	28.8	3000.0	9.000	On	L1	20.2	17.2	46.0
2.184000	31.5	3000.0	9.000	On	N	20.0	14.5	46.0

. Adapter5+Front Camera, Set.2-2

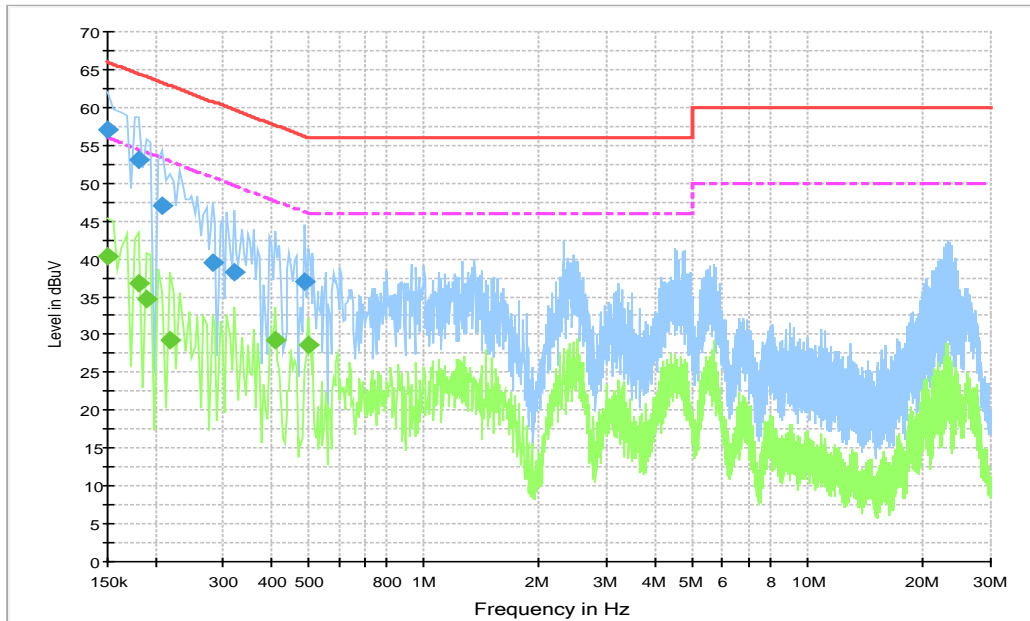


Figure A.17 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	57.1	3000.0	9.000	On	N	28.9	8.9	66.0
0.181500	53.1	3000.0	9.000	On	L1	28.0	11.3	64.4
0.208500	47.1	3000.0	9.000	On	L1	27.4	16.2	63.3
0.280500	39.6	3000.0	9.000	On	L1	26.0	21.2	60.8
0.321000	38.3	3000.0	9.000	On	N	25.4	21.3	59.7
0.487500	36.9	3000.0	9.000	On	L1	23.5	19.3	56.2

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	40.3	3000.0	9.000	On	N	28.9	15.7	56.0
0.181500	36.8	3000.0	9.000	On	N	28.0	17.6	54.4
0.190500	34.8	3000.0	9.000	On	L1	27.8	19.2	54.0
0.217500	29.3	3000.0	9.000	On	N	27.2	23.6	52.9
0.411000	29.2	3000.0	9.000	On	L1	24.3	18.4	47.6
0.501000	28.7	3000.0	9.000	On	L1	23.4	17.3	46.0

Adapter12+MP3, Set.3-4

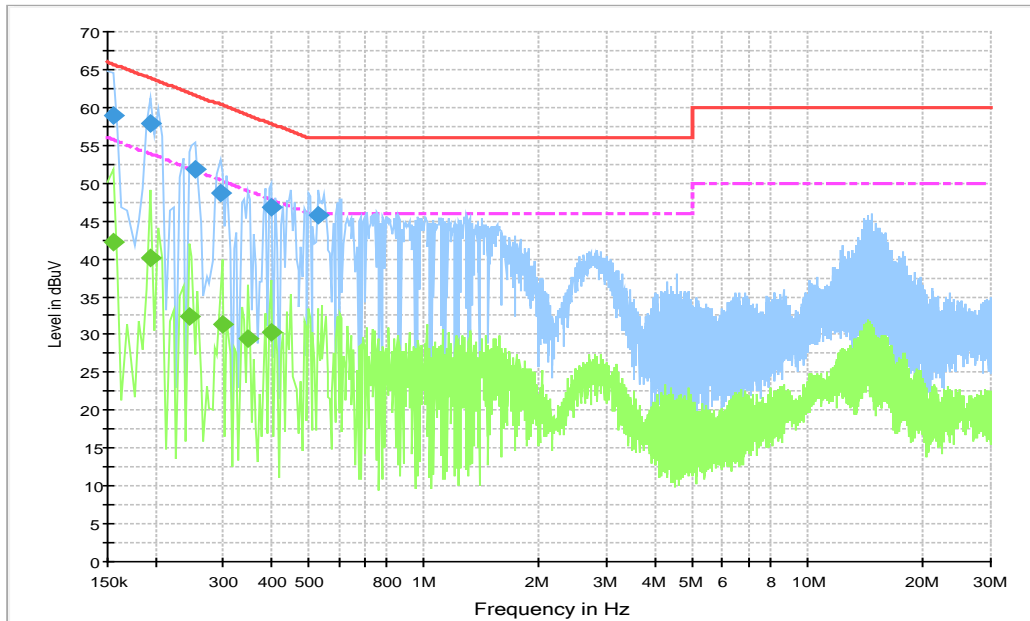


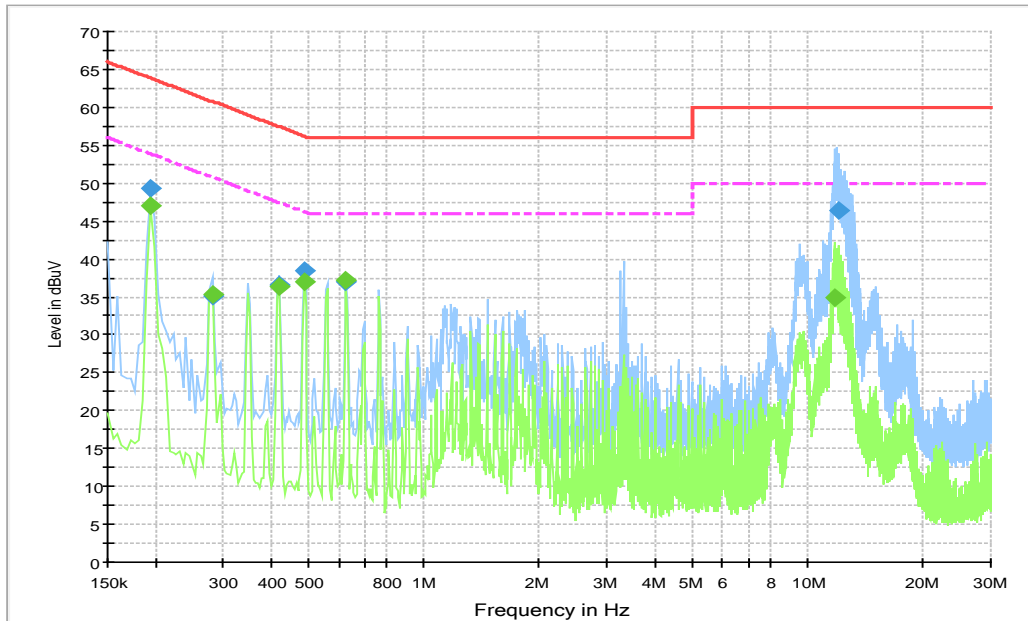
Figure A.18 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.154500	58.9	3000.0	9.000	On	N	28.8	6.8	65.8
0.195000	57.8	3000.0	9.000	On	L1	27.7	6.0	63.8
0.253500	51.7	3000.0	9.000	On	L1	26.5	9.9	61.6
0.294000	48.7	3000.0	9.000	On	N	25.8	11.7	60.4
0.402000	46.8	3000.0	9.000	On	L1	24.4	11.0	57.8
0.532500	45.7	3000.0	9.000	On	N	23.1	10.3	56.0

Final Result 2

Frequency (MHz)	Average (dB μ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.154500	42.3	3000.0	9.000	On	N	28.8	13.5	55.8
0.195000	40.1	3000.0	9.000	On	N	27.7	13.7	53.8
0.244500	32.4	3000.0	9.000	On	N	26.7	19.6	51.9
0.298500	31.3	3000.0	9.000	On	L1	25.7	19.0	50.3
0.348000	29.4	3000.0	9.000	On	N	25.0	19.6	49.0
0.402000	30.4	3000.0	9.000	On	L1	24.4	17.4	47.8

USB (SD) mode, Set.5

Figure A.19 Conducted Emission
Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.195000	49.4	3000.0	9.000	On	N	27.7	14.4	63.8
0.280500	35.2	3000.0	9.000	On	L1	26.0	25.6	60.8
0.420000	36.6	3000.0	9.000	On	L1	24.2	20.9	57.4
0.487500	38.5	3000.0	9.000	On	N	23.5	17.7	56.2
0.627000	36.9	3000.0	9.000	On	N	22.3	19.1	56.0
11.998500	46.5	3000.0	9.000	On	L1	20.1	13.5	60.0

Final Result 2

Frequency (MHz)	Average (dB μ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.195000	46.9	3000.0	9.000	On	N	27.7	6.9	53.8
0.280500	35.2	3000.0	9.000	On	L1	26.0	15.6	50.8
0.420000	36.3	3000.0	9.000	On	L1	24.2	11.1	47.4
0.487500	37.1	3000.0	9.000	On	L1	23.5	9.2	46.2
0.627000	37.1	3000.0	9.000	On	N	22.3	8.9	46.0
11.769000	35.0	3000.0	9.000	On	N	20.1	15.0	50.0



ANNEX B: Persons involved in this testing

Test Item	Tester
Radiated Emission	Li Zongliang
Conducted Emission	Guo Qian

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