TEST REPORT

No. I22Z61169-EMC01

for

TCL Communication Ltd.

HOME PHONE 42

Model Name: T606HPDL

FCC ID: 2ACCJB180

with

Hardware Version: V05

Software Version: HP42UC_SD_CERT_FCC_GCF_PTCRB_01.00_01

Issued Date: 2022-08-05

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

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

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I22Z61169-EMC01	Rev.0	1st edition	2022-07-11
I22Z61169-EMC01	Rev.1	Deleting the Extreme vol. Limits in P6	2022-08-05

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

CONTENTS

1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2005 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0, and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (CN0066). The detail accreditation scope can be found on NVLAP website.

1.2. Testing Location

CTTL (huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China100191

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

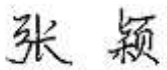
Relative Humidity: 20-75%

1.4. Project data

Testing Start Date: 2022-07-06

Testing End Date: 2022-07-08

1.5. Signature

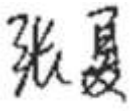


Zhang Ying

(Prepared this test report)

An Hui

(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
Contact:	Peter yang
Email:	peter.yang@tcl.com
Telephone:	+86 755 3664 5759

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
Contact:	Peter yang
Email:	peter.yang@tcl.com
Telephone:	+86 755 3664 5759

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

3.1. About EUT

Description	HOME PHONE 42
Model Name	HP42U2
FCC ID	2ACCJB180

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*	SN or IMEI	HW Version	SW Version
UT05a	016257000001543	V05	HP42UC_SD_CERT_FCC_GCF_PTCRB_01.00_01

Note: This second source of our product: TMAF035G. The difference as follow:
The second source memory.

*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	Battery	/	/
AE2	Charger	/	/
AE3	Charger	/	/

AE1

Model	Tli028C7
Manufacturer	Veken
Capacity	3000mAh
Nominal Voltage	3.85V

AE2

Model	1-CHUSB102-131
Manufacturer	Puan

AE3

Model	CYSE12-120100U
Manufacturer	Chenyang

*AE ID: is used to identify the test sample in the lab internally.
Note: The USB cables are shielded.

3.4. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	UT05a + AE1 + AE2	Charger 1
Set.2	UT05a + AE1 + AE3	Charger 2
Set.3	UT05a + AE1 + PC	USB

3.5. Test summary

EUT set-up No.	Test mode	Test result	
		Radiated Emission	Conducted Emission
Set.1	LTE band 5 idle	Pass	Pass
Set.2	LTE band 12 idle	Pass	/
Set.1	LTE band 13 idle	Pass	/
Set.1	LTE band 26 idle	Pass	/
Set.2	LTE band 71 idle	Pass	/
Set.3	USB	Pass	Pass

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	2021
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 M
Ground system resistance	< 4
Normalised site attenuation (NSA)	< ± 4 dB, 3m/10m distance, from 30 to 1000 MHz
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz

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

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

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	LISN	ENV216	101459	R&S	2023-03-16	1 year
2	Test Receiver	ESCI 3	100766	R&S	2023-03-02	1 year
3	Test Receiver	ESU26	100376	R&S	2022-09-05	1 year
4	BiLog Antenna	VULB9163	01176	Schwarzbeck	2022-11-15	1 year
5	EMI Antenna	3117	00139065	ETS-Lindgren	2022-09-02	1 year
6	Universal Radio Communication Tester	CMW500	159408	R&S	2023-04-01	1 year
7	Signal generator	SMF100A	101295	R&S	2022-11-04	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

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 3/10 meters is tested. Tested in accordance with the procedures of ANSI C63.4 – 2014, section 8.3.

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3/10 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 USB mode and charging mode. During the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of charging mode.

The EUT was tested while operating in licensed band Rx mode with Camera/MP3. All licensed band receivers that tune in the range of 30MHz-960MHz, as listed in section 3.4, are investigated. Only the worst case emissions are reported.

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

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

A.1.3 Measurement Limit

Frequency range (MHz)	Field strength limit (μV/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:

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

Where

G_A: Antenna factor of receive antenna

G_{PL}: Path Loss

P_{Mea}: Measurement result on receiver.

Measurement uncertainty:

Frequency range	Measurement uncertainty
30MHz-1GHz	5.73dB, k=2
1GHz-18GHz	5.58dB, k=2

Measurement results for Set.2, LTE band 71 idle(worst case):

Charging Mode/QP detector

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
34.462000	28.4	40.0	11.6	100.0	V	270.0
44.841000	29.9	40.0	10.1	100.0	V	-20.0
60.070000	30.5	40.0	9.5	100.0	V	263.0
63.562000	31.1	40.0	9.0	100.0	V	263.0
154.257000	19.2	43.5	24.3	100.0	V	6.0
936.271000	31.7	46.0	14.3	100.0	H	-45.0

Measurement results for Set.2, LTE band 71 idle(worst case):

Charging Mode/Average detector

Frequency (MHz)	Measurement Result (dBµV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBµV)	Limit (dBµV/m)	Margin (dB)	Antenna Pol. (H/V)
17030.500	39.73	-27.0	41.7	25.12	54.0	14.3	V
17929.500	39.73	-26.2	41.2	24.65	54.0	14.3	V
17918.000	39.70	-26.2	41.2	24.65	54.0	14.3	V
17935.500	39.65	-26.1	41.2	24.54	54.0	14.4	H
17910.500	39.64	-26.2	41.2	24.62	54.0	14.4	V
17030.000	39.64	-27.0	41.7	25.03	54.0	14.4	V

Measurement results for Set.1, LTE band 26 idle(worst case):

Charging Mode/Peak detector

Frequency (MHz)	Measurement Result (dBµV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBµV)	Limit (dBµV/m)	Margin (dB)	Antenna Pol. (H/V)
17918.500	52.3	-26.2	41.2	37.22	74.0	21.7	H
17145.000	52.3	-26.9	41.5	37.72	74.0	21.7	V
17006.000	52.1	-27.1	41.7	37.51	74.0	21.9	H
17215.000	52.0	-26.9	41.4	37.54	74.0	22.0	H
17031.500	51.8	-27.0	41.6	37.14	74.0	22.2	H
16738.500	51.7	-27.4	41.4	37.67	74.0	22.3	H

Measurement results for Set.3, USB,:

Charging Mode/QP detector

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
35.917000	31.3	40.0	8.7	100.0	V	218.0
62.495000	25.5	40.0	14.5	100.0	V	-27.0
145.527000	26.9	43.5	16.6	100.0	V	308.0
240.005000	40.4	46.0	5.4	113.0	H	102.0
577.565000	37.6	46.0	8.4	100.0	V	135.0
589.787000	42.5	46.0	3.5	100.0	V	180.0

Charging Mode/Average detector

Frequency (MHz)	Measurement Result (dBµV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBµV)	Limit (dBµV/m)	Margin (dB)	Antenna Pol. (H/V)
17035.000	39.70	-27.0	41.6	25.10	54.0	14.3	H
17914.500	39.70	-26.2	41.2	24.66	54.0	14.3	H
17032.500	39.66	-27.0	41.6	25.05	54.0	14.3	V
17911.000	39.66	-26.2	41.2	24.64	54.0	14.3	V
17034.500	39.65	-27.0	41.6	25.04	54.0	14.3	H
17029.500	39.65	-27.0	41.7	25.04	54.0	14.4	V

Charging Mode/Peak detector

Frequency (MHz)	Measurement Result (dBµV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBµV)	Limit (dBµV/m)	Margin (dB)	Antenna Pol. (H/V)
15958.000	52.5	-27.7	40.6	39.48	74.0	21.5	H
17274.000	52.3	-26.9	41.3	37.97	74.0	21.7	H
17923.500	52.2	-26.2	41.2	37.18	74.0	21.8	V
17057.500	52.2	-27.0	41.6	37.56	74.0	21.8	H
16770.500	52.1	-27.3	41.5	37.93	74.0	21.9	V
15940.000	52.0	-27.7	40.6	39.17	74.0	22.0	H

Measurement results for Set.1, LTE band 5 idle:

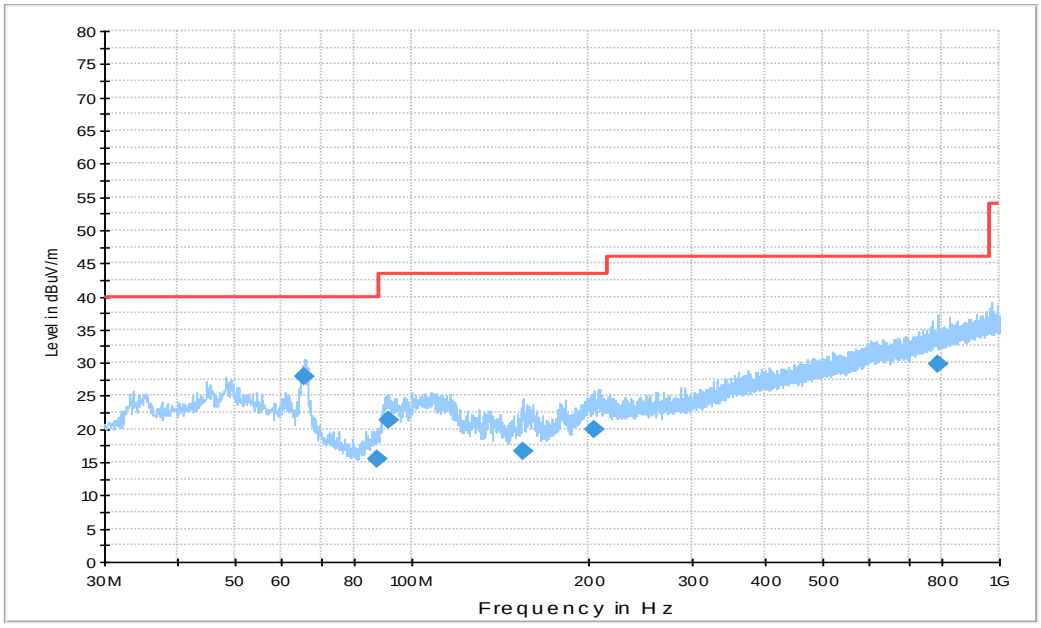


Fig A.1 Radiated Emission from 30MHz to 1GHz

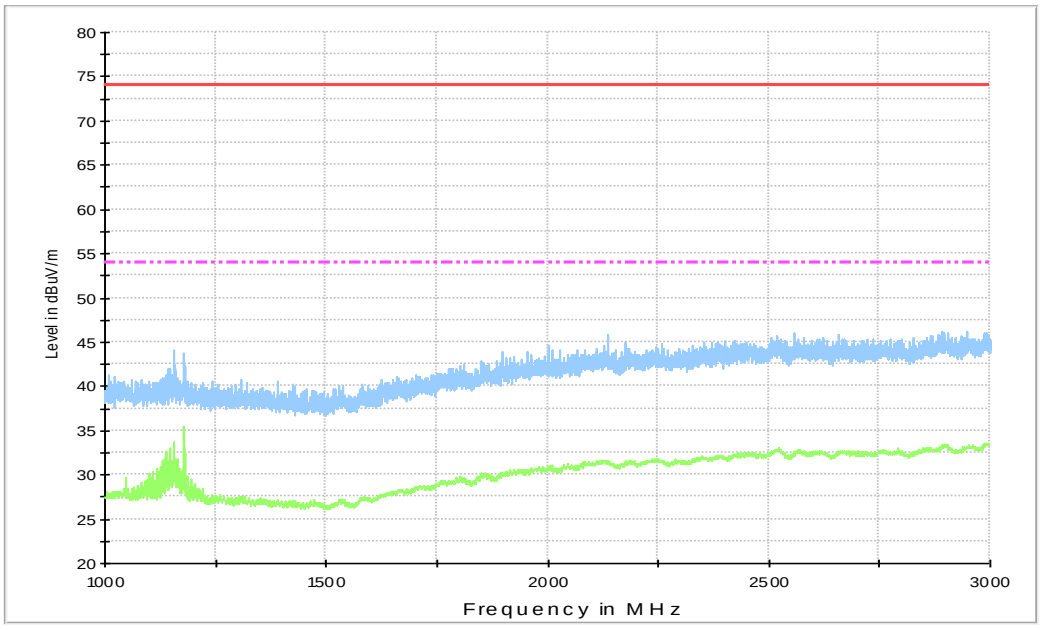


Fig A.2 Radiated Emission from 1GHz to 3GHz

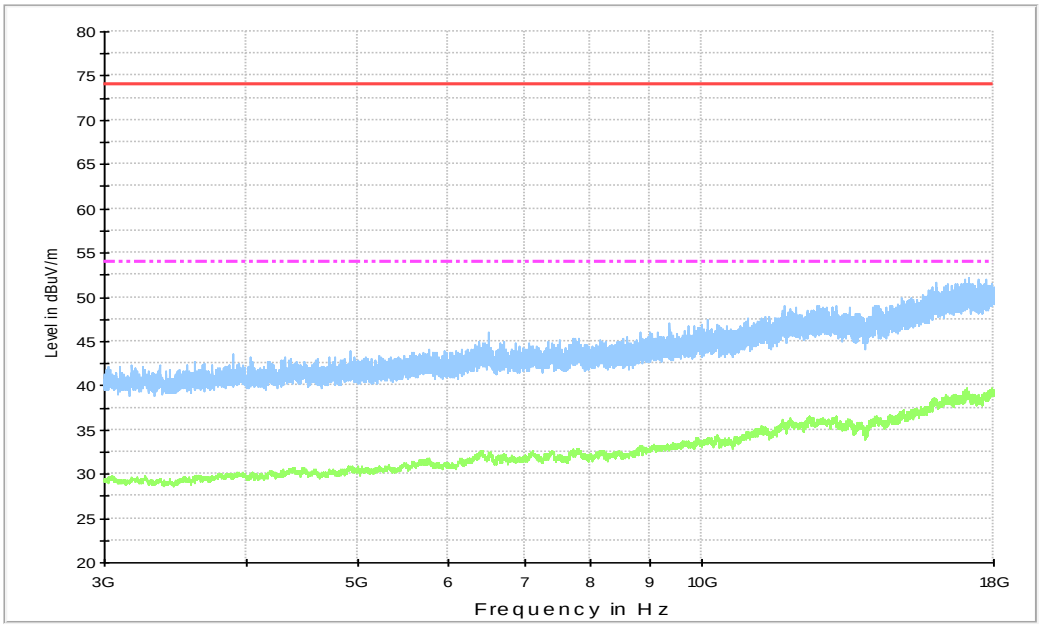


Fig A.3 Radiated Emission from 3GHz to 18GHz

Measurement results for Set.2, LTE band 12 idle:

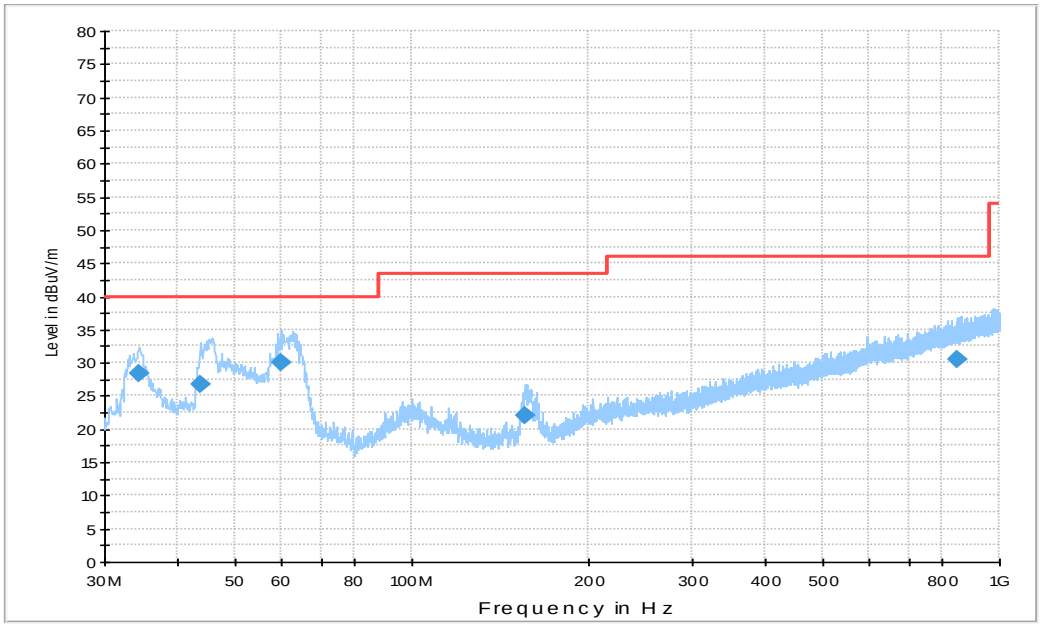


Fig A.4 Radiated Emission from 30MHz to 1GHz

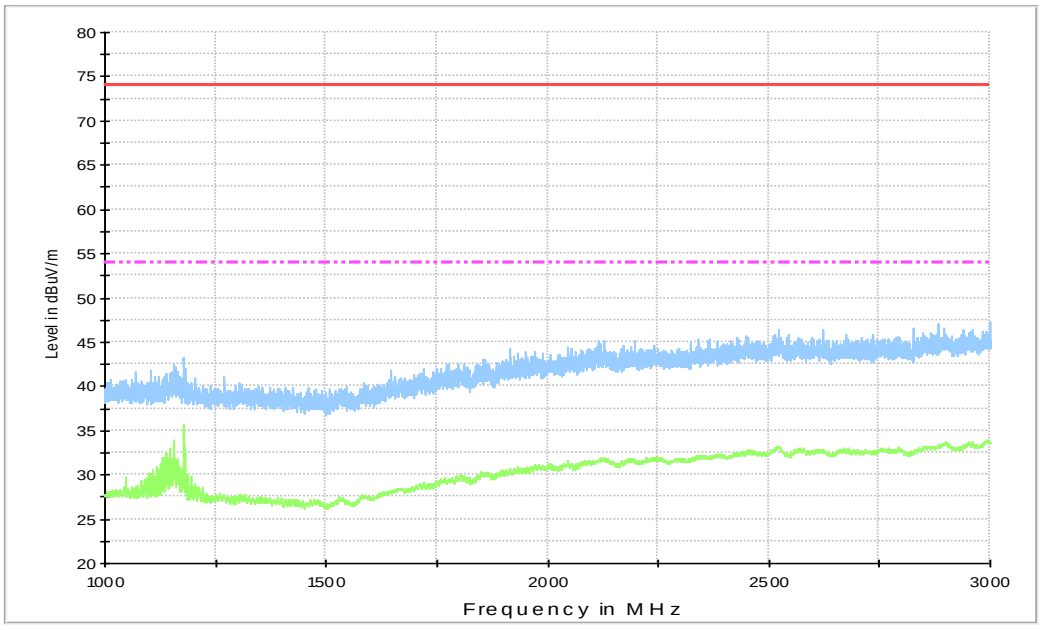


Fig A.5 Radiated Emission from 1GHz to 3GHz

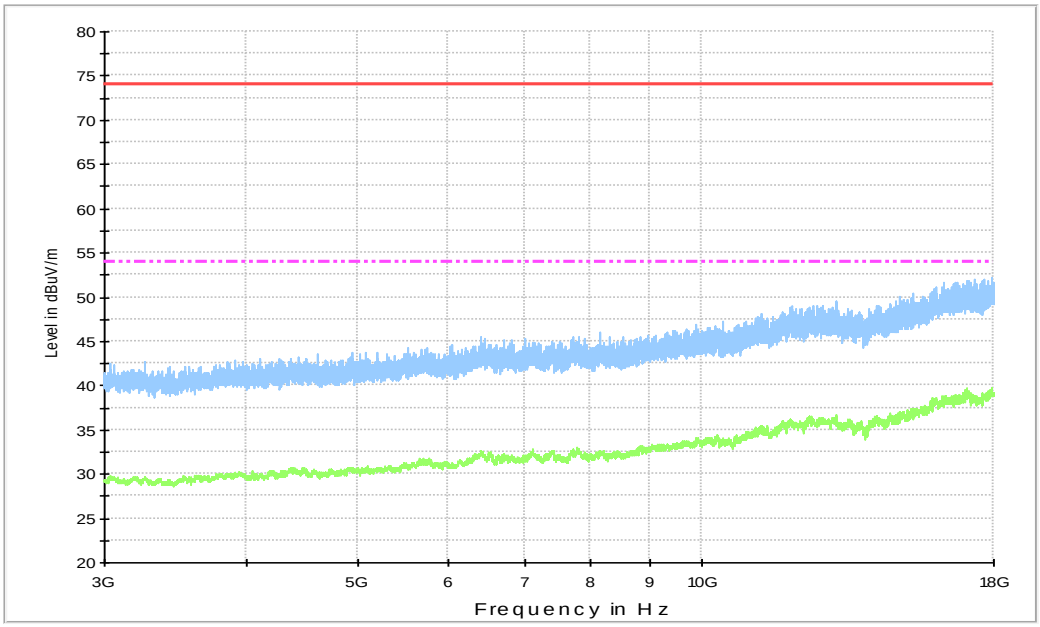


Fig A.6 Radiated Emission from 3GHz to 18GHz

Measurement results for Set.1, LTE band 13 idle:

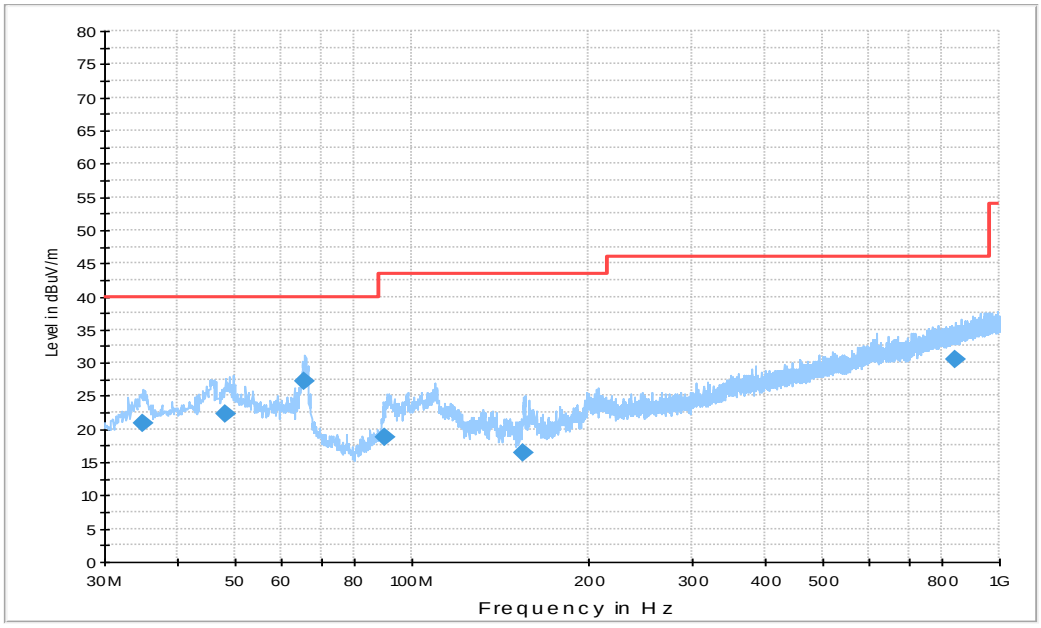


Fig A.7 Radiated Emission from 30MHz to 1GHz

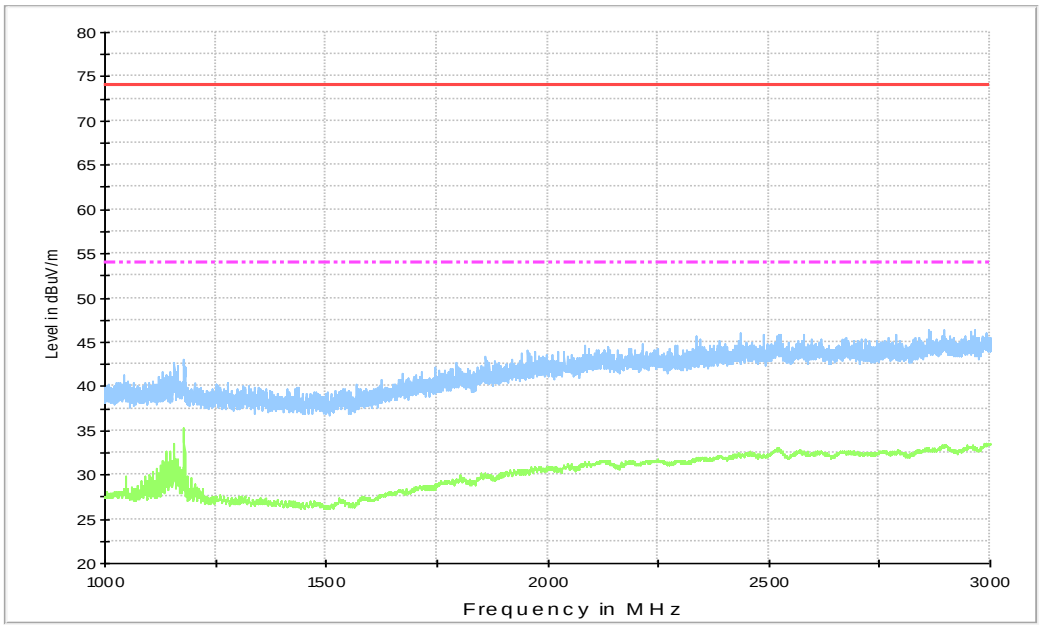


Fig A.8 Radiated Emission from 1GHz to 3GHz

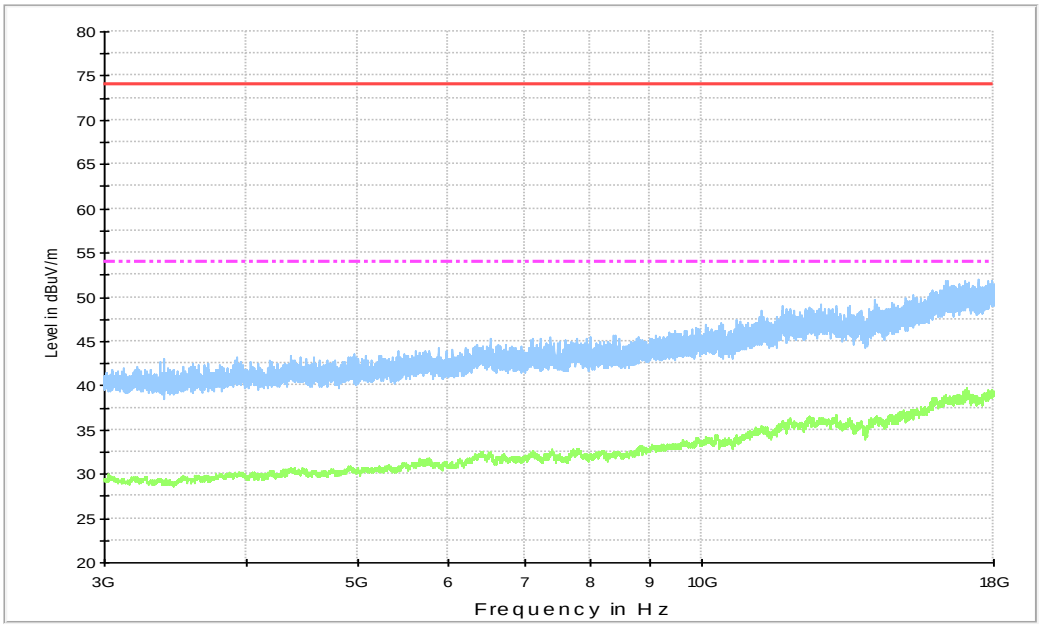


Fig A.9 Radiated Emission from 3GHz to 18GHz

Measurement results for Set.1, LTE band 26 idle:

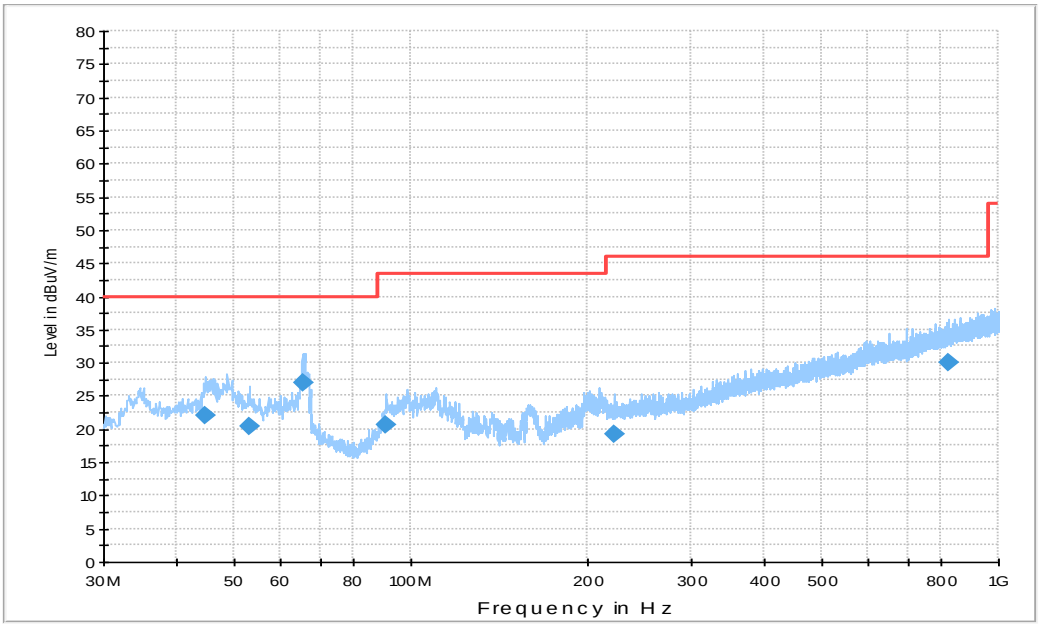


Fig A.10 Radiated Emission from 30MHz to 1GHz

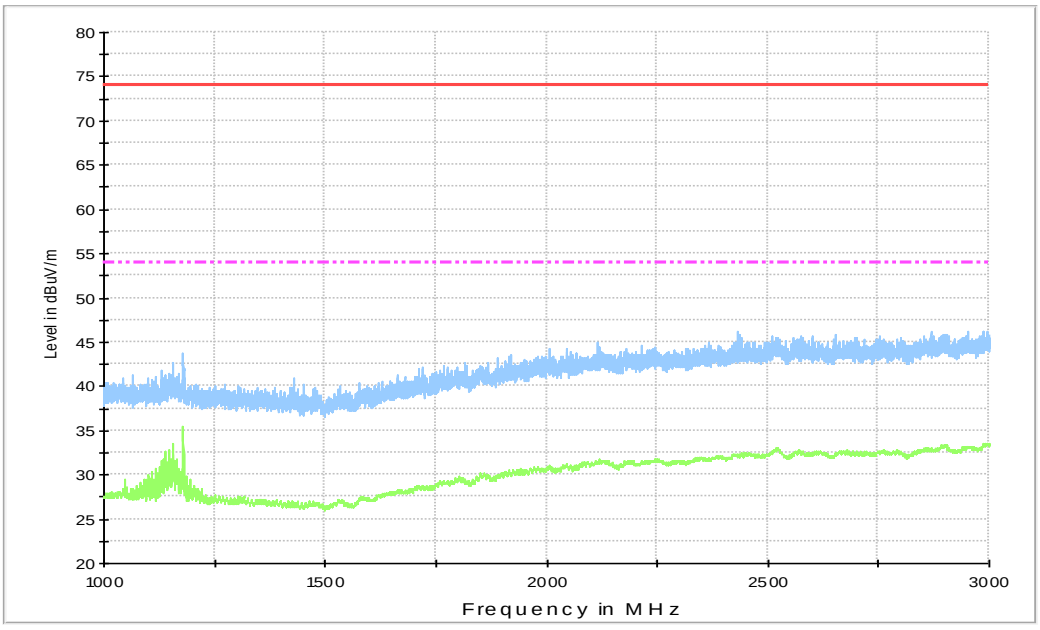


Fig A.11 Radiated Emission from 1GHz to 3GHz

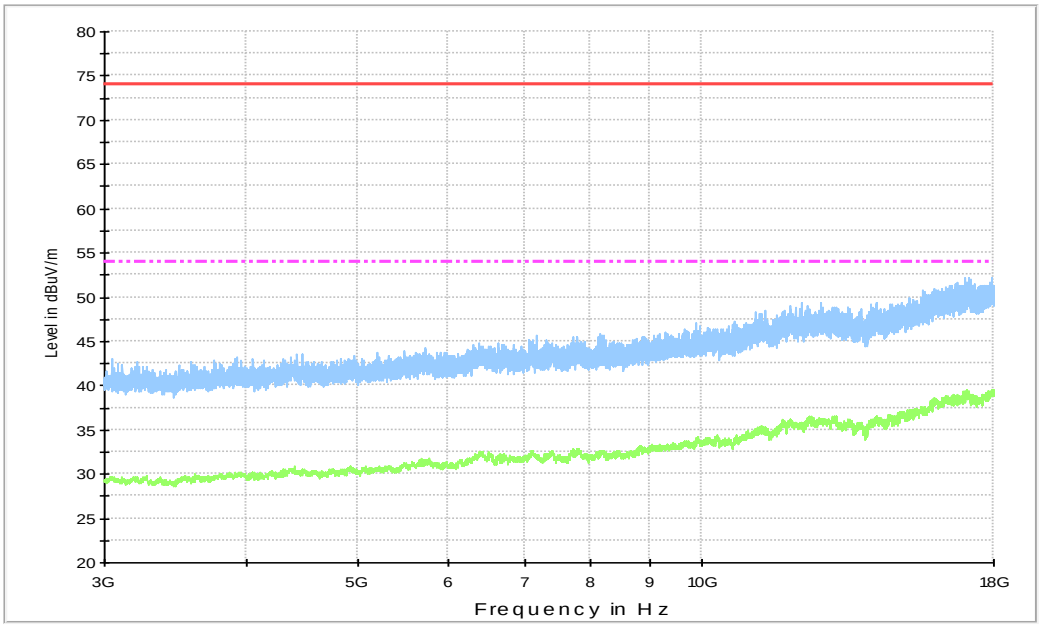


Fig A.12 Radiated Emission from 3GHz to 18GHz

Measurement results for Set.2, LTE band 71 idle:

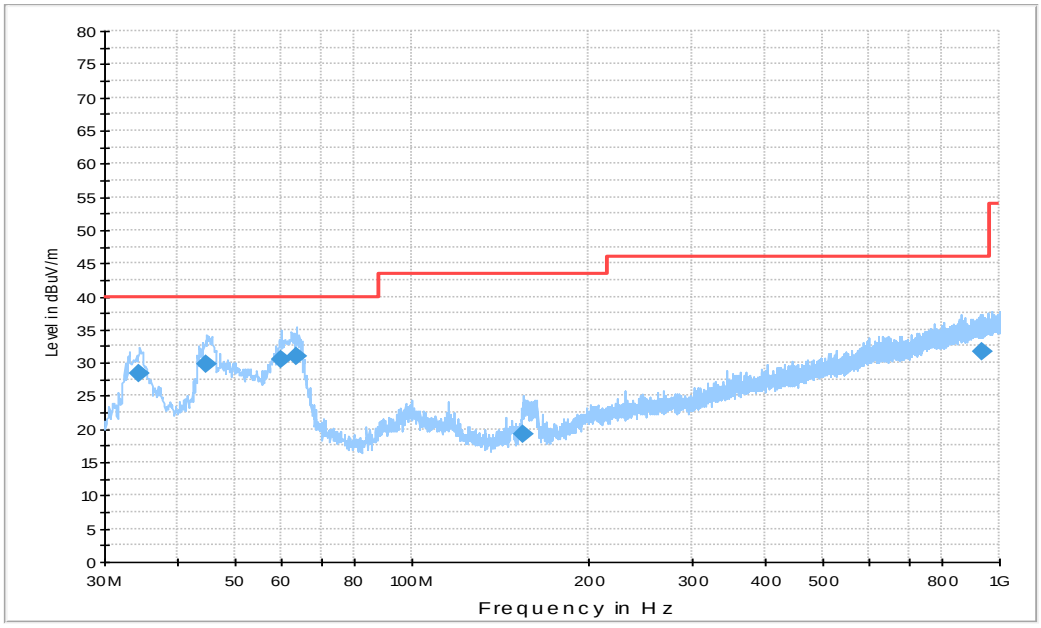


Fig A.13 Radiated Emission from 30MHz to 1GHz

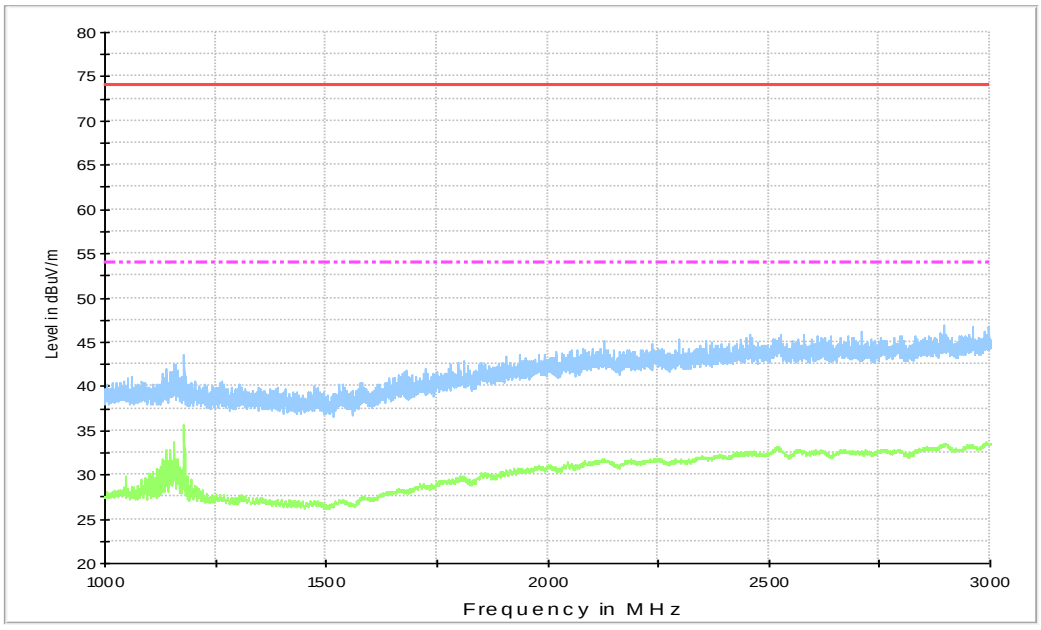


Fig A.14 Radiated Emission from 1GHz to 3GHz

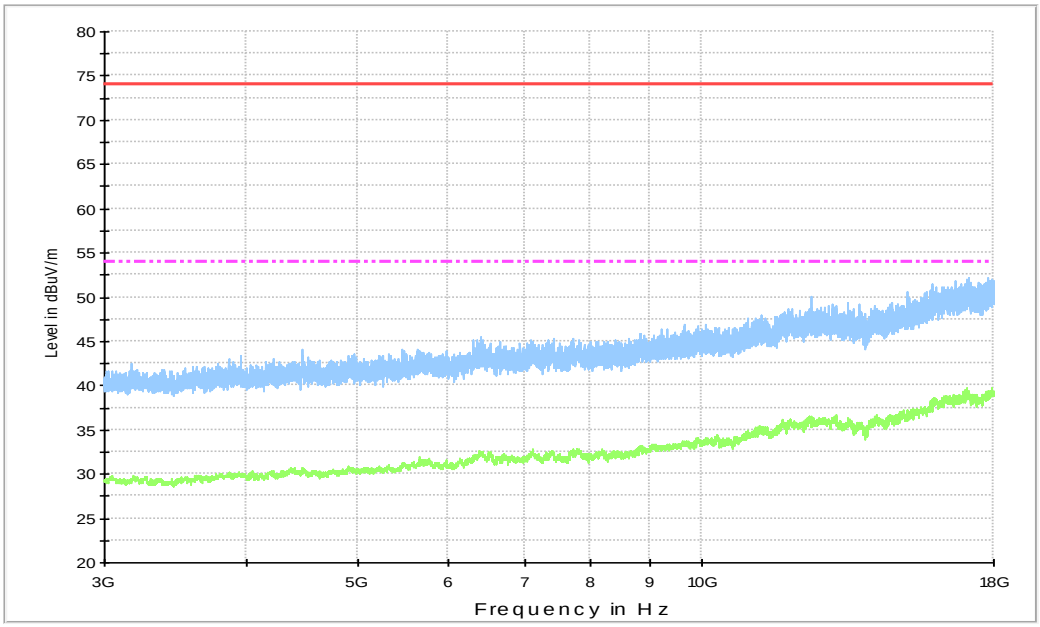


Fig A.15 Radiated Emission from 3GHz to 18GHz

Measurement results for Set.3, USB transfer:

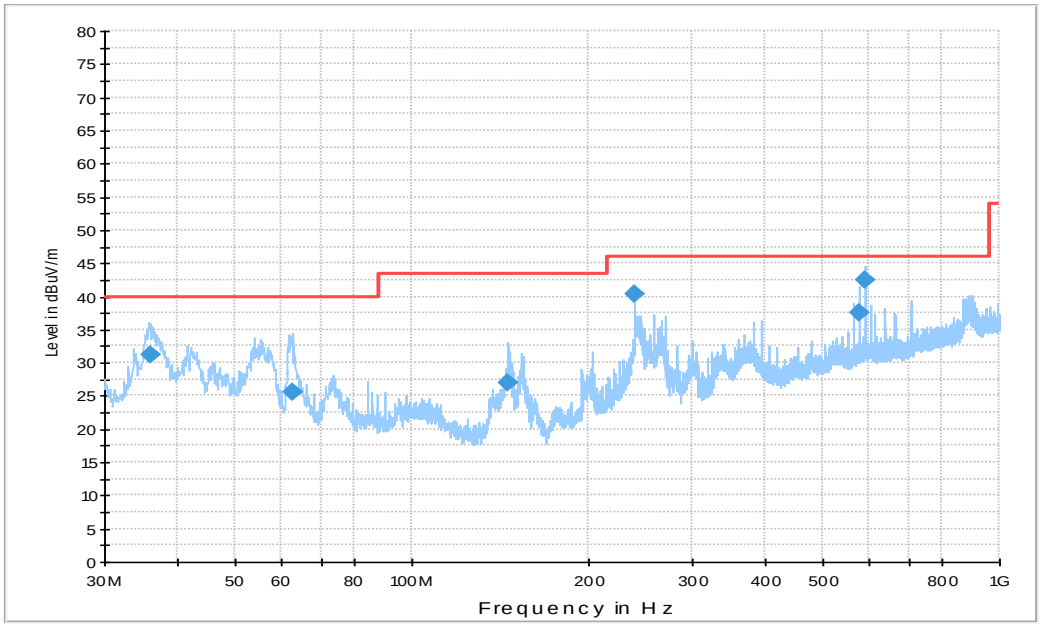


Fig A.16 Radiated Emission from 30MHz to 1GHz

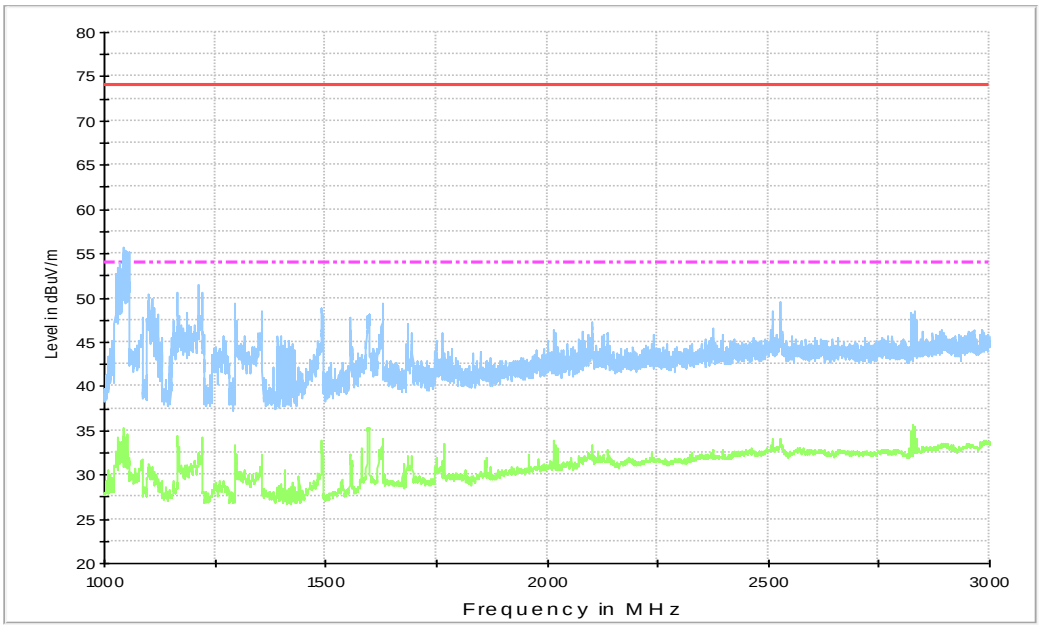


Fig A.17 Radiated Emission from 1GHz to 3GHz

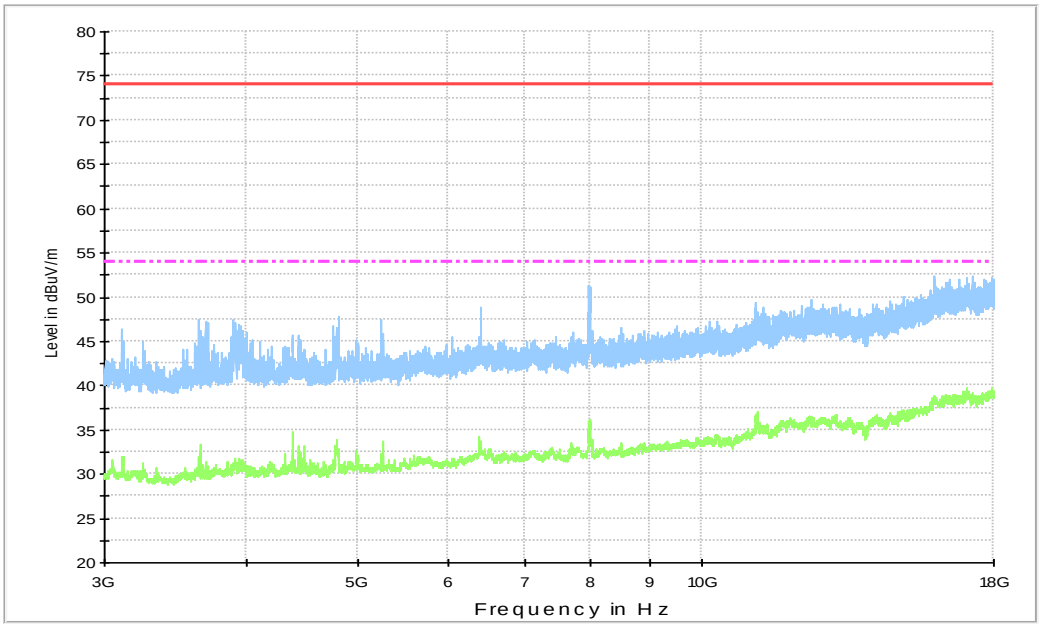


Fig A.18 Radiated Emission from 3GHz to 18GHz

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 and charging mode. During the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of charging 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 (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with the logarithm of the frequency		

A.2.4 Test Condition in charging mode

Voltage（V）	Frequency（Hz）
120	60

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

A.2.5 Measurement Results

Second source:

Measurement uncertainty: *U*= 3.10 dB, *k*=2.

Charging Mode, Set.1, LTE band 5 idle:

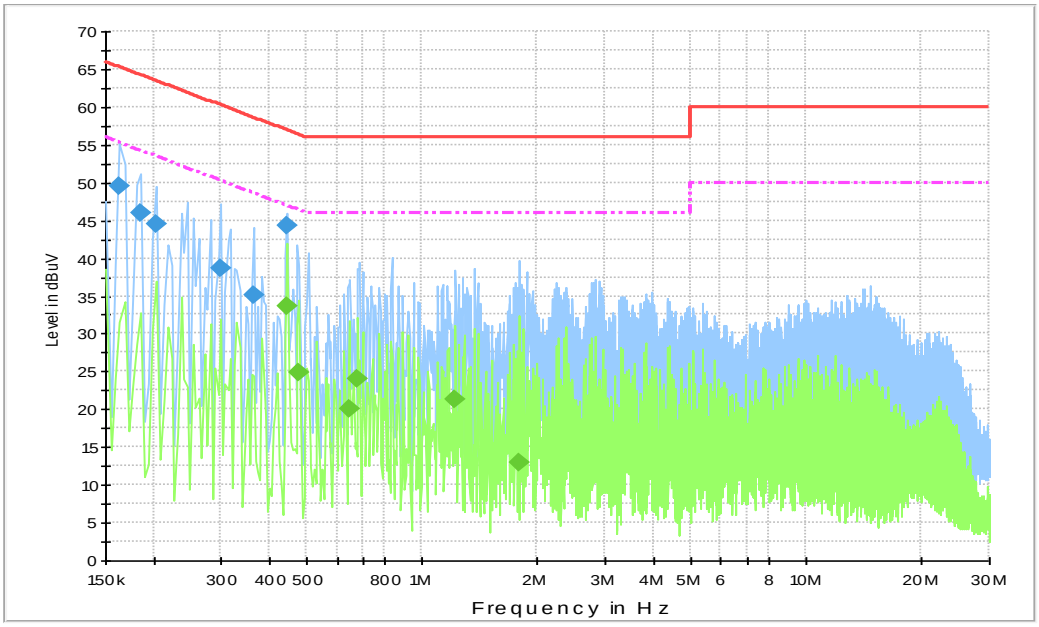


Fig A.19 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.163500	**49.5**	**L1**	**19.9**	**15.8**	**65.3**
0.186000	**46.0**	**L1**	**19.8**	**18.2**	**64.2**
0.204000	**44.5**	**L1**	**19.7**	**19.0**	**63.4**
0.298500	**38.7**	**L1**	**19.7**	**21.6**	**60.3**
0.366000	**35.0**	**N**	**19.8**	**23.6**	**58.6**
0.447000	**44.3**	**N**	**19.8**	**12.6**	**56.9**

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.447000	**33.6**	**L1**	**19.8**	**13.3**	**46.9**
0.478500	**24.9**	**L1**	**19.8**	**21.5**	**46.4**
0.645000	**20.0**	**N**	**19.8**	**26.0**	**46.0**
0.681000	**24.0**	**N**	**19.8**	**22.0**	**46.0**
1.221000	**21.4**	**N**	**19.6**	**24.6**	**46.0**
1.788000	**12.9**	**N**	**19.6**	**33.1**	**46.0**

Charging Mode, Set.3, USB:

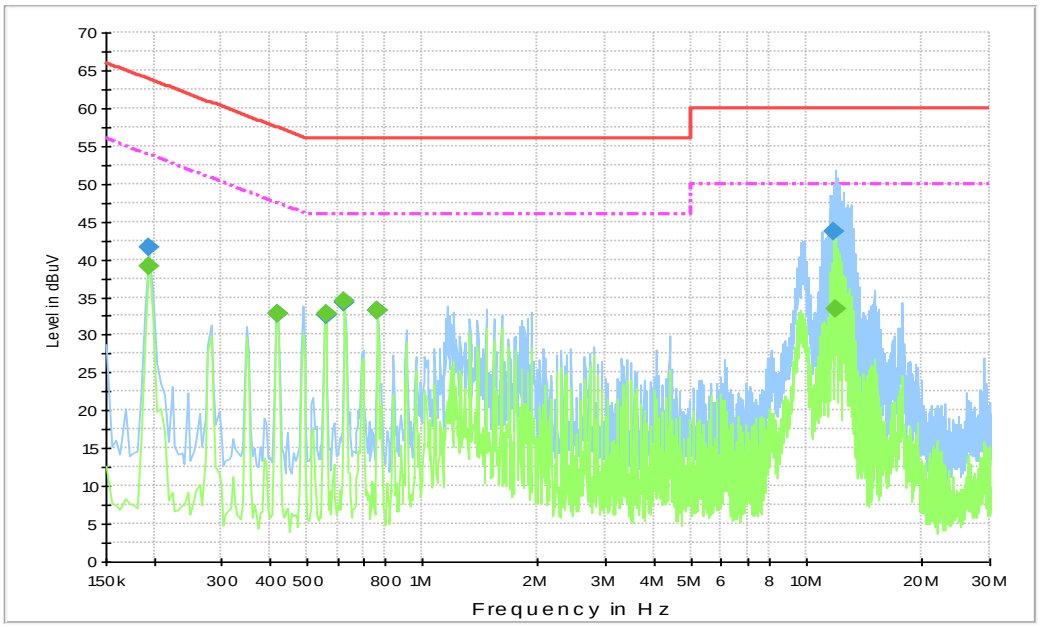


Fig A.20 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.195000	**41.6**	**N**	**19.7**	**22.2**	**63.8**
0.420000	**32.8**	**L1**	**19.8**	**24.7**	**57.4**
0.559500	**32.6**	**N**	**19.8**	**23.4**	**56.0**
0.627000	**34.4**	**N**	**19.7**	**21.6**	**56.0**
0.766500	**33.1**	**N**	**19.7**	**22.9**	**56.0**
11.710500	**43.7**	**N**	**19.8**	**16.3**	**60.0**

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.195000	**39.0**	**L1**	**19.7**	**14.8**	**53.8**
0.420000	**32.7**	**N**	**19.8**	**14.7**	**47.4**
0.559500	**32.7**	**L1**	**19.8**	**13.3**	**46.0**
0.627000	**34.5**	**L1**	**19.7**	**11.5**	**46.0**
0.766500	**33.2**	**N**	**19.7**	**12.8**	**46.0**
11.881500	**33.5**	**L1**	**19.8**	**16.5**	**50.0**

ANNEX B: PERSONS INVOLVED IN THIS TESTING

Test Item	Test Software and Version	Software Vendor	Test operator
Conducted Emission	EMC32 V8.52.0	R&S	Yang Xiaorui
Radiated Emission	EMC32 V8.55.3	R&S	Guo Qian

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