



# TEST REPORT

## No. I20Z70291-EMC01

for

**Samsung Electronics Co., Ltd.**

**Smart Phone**

**Model Name: SM-A025M/DS, SM-A025M**

**FCC ID: ZCASMA025M**

with

**Hardware Version: REV1.0**

**Software Version: A025M.001**

**Issued Date: 2020-10-09**

**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.

**Test Laboratory:**

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## **REPORT HISTORY**

<b>Report Number</b>	<b>Revision</b>	<b>Description</b>	<b>Issue Date</b>
I20Z70291-EMC01	Rev.0	1 <sup>st</sup> edition	2020-10-09

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 17025:2005 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 (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: 2020-09-10  
Testing End Date: 2020-09-29

### **1.5. Signature**



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Li Yan

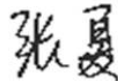
**(Prepared this test report)**



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Zhang Ying

**(Reviewed this test report)**



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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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Country: /  
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### **2.2. Manufacturer Information**

Company Name: Samsung Electronics. Co., Ltd.  
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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	Smart Phone
Model Name	SM-A025M/DS, SM-A025M
FCC ID	ZCASMA025M
Extreme vol. Limits	3.6VDC to 4.2VDC (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**

<b>EUT ID*</b>	<b>IME/SNI</b>	<b>HW Version</b>	<b>SW Version</b>	<b>Date of receipt</b>
UT10a	2070291UT10a	REV1.0	A025M.001	2020.09.10

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

#### **3.3. Internal Identification of AE used during the test**

<b>AE ID*</b>	<b>Description</b>	<b>SN</b>	<b>Remarks</b>
AE1	Charger1	/	
AE2	Charger2	/	
AE3	Charger3	/	/
AE4	Charger4		
AE5	Charger5		
AE6	USB cable		
AE7	Headset1	/	/
AE8	Headset2	/	/
AE9	battery	/	/

##### **AE1**

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

##### **AE2**

Model	EP-TA50JWE
Manufacturer	RFTech Electronics(HuiZhou)Co.,LTD
Length of cable	/

##### **AE3**

Model	EP-TA200
Manufacturer	HAEM Co.,Ltd
Length of cable	/

##### **AE4**

Model	EP-TA200
Manufacturer	RFTech Electronics(HuiZhou)Co.,LTD

Length of cable	/
AE5	
Model	EP-TA200
Manufacturer	SoluM Co.,Ltd
Length of cable	/
AE6	
Model	EP-DR140AWE
Manufacturer	Samsung Electronics Co., Ltd.
Length of cable	/
AE7	
Model	EHS61ASFWE
Manufacturer	DONGGUAN YOUNGBO ELECTRONICS CO.,LTD
Length of cable	/
AE8	
Model	EHS61ASFWE
Manufacturer	WATA ELECTRONICS CO.,LTD
Length of cable	/
AE9	
Type	HQ-50S
Manufacturer	SUCD(FUJIAN) Electronics Co.,Ltd
Length of cable	/

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.

The model of SM-A025M/DS is double card, and the model of SM-A025M is single card.

### 3.5. EUT set-ups

<b>EUT set-up No.</b>	<b>Combination of EUT and AE</b>	<b>Remarks</b>
Set.1	UT10a + AE1 + AE6+ AE7	Charger1+ Rear Camera+ Headset1
Set.2	UT10a + AE2 + AE6	Charger2+MP4
Set.3	UT10a + AE3 + AE6	Charger3+Front Camera
Set.4	UT10a + AE4 + AE6+ AE7	Charger4+FM+Headset1
Set.5	UT10a + AE5 + AE6+ AE8	Charger5+FM+Headset2
Set.6	UT10a + AE6 + AE8	USB SD TO PC + Headset2
Set.7	UT10a + AE1 + AE6	Charger1

## **4. Reference Documents**

### **4.1. Reference Documents for testing**

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

<b>Reference</b>	<b>Title</b>	<b>Version</b>
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×17 meters×10 meters) 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	< 4Ω
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
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

**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	2020-10-30	1 year
2	Test Receiver	Test Receiver	100766	ESCI	2021-03-10	1 year
3	Universal Radio Communication Tester	CMW500	127406	R&S	2021-02-18	1 year
4	LISN	ENV216	101459	R&S	2021-03-17	1 year
5	BiLog Antenna	VULB9163	9163-514	Schwarzbeck	2021-02-24	1 year
6	EMI Antenna	3117	0005888	ETS-Lindgren	2021-04-08	1 year
7	Signal Generator	SMF100A	101295	R&S	2020-11-06	1 year
8	Universal Radio Communication Tester	CMW500	159408	R&S	2021-03-03	1 year
9	Printer	P1606dn	VNC3L52122	HP	N/A	N/A
10	Keyboard	KU-1601	2048361	Lenovo	N/A	N/A
11	Mouse	EMS-537A	8021S3MC	Lenovo	N/A	N/A
12	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, FM, 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.

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

$G_{\text{PL}}$ : Path Loss

$P_{\text{Mea}}$ : 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 $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)
17690.000	40.46	-22.2	41.2	21.38	54.0	13.5	V
17706.000	40.41	-22.2	41.2	21.36	54.0	13.6	V
17687.000	40.32	-22.1	41.2	21.23	54.0	13.7	V
17693.500	40.32	-22.2	41.2	21.24	54.0	13.7	V
17641.500	40.32	-22.0	41.2	21.13	54.0	13.7	V
17642.000	40.32	-22.0	41.2	21.13	54.0	13.7	V

##### Charger1+ Rear Camera /Peak detector

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)
17706.000	53.9	-22.2	41.2	34.84	74.0	20.1	V
17721.500	53.5	-22.2	41.2	34.51	74.0	20.5	V
17720.500	53.1	-22.2	41.2	34.11	74.0	20.9	V
17648.500	53.0	-22.1	41.2	33.81	74.0	21.0	H
16997.000	52.7	-23.0	41.7	34.07	74.0	21.3	V
17776.500	52.7	-22.4	41.3	33.80	74.0	21.3	V

**Measurement results for Set.2:**

**Charger2+ MP4 /Average detector**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)
17680.000	40.29	-22.1	41.2	21.19	54.0	13.7	V
17074.000	40.26	-23.0	41.6	21.67	54.0	13.7	V
17692.000	40.26	-22.2	41.2	21.18	54.0	13.7	V
17015.500	40.25	-23.0	41.7	21.59	54.0	13.7	V
17100.500	40.22	-23.0	41.6	21.66	54.0	13.8	V
17689.000	40.21	-22.2	41.2	21.13	54.0	13.8	H

**Charger2+ MP4 /Peak detector**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)
17869.000	53.26	-22.6	41.3	34.54	74.0	20.7	V
17620.500	53.01	-22.1	41.2	33.89	74.0	21.0	H
17117.500	52.28	-23.0	41.6	33.74	74.0	21.7	V
17651.500	52.23	-22.1	41.2	33.06	74.0	21.8	V
16867.000	52.20	-23.0	41.6	33.58	74.0	21.8	H
16898.500	52.16	-23.0	41.6	33.53	74.0	21.8	V

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

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)
17700.500	40.41	-22.2	41.2	21.34	54.0	13.6	V
17084.000	40.22	-23.0	41.6	21.64	54.0	13.8	V
17691.500	40.22	-22.2	41.2	21.14	54.0	13.8	H
17687.500	40.20	-22.1	41.2	21.12	54.0	13.8	H
17686.000	40.20	-22.1	41.2	21.11	54.0	13.8	V
17691.000	40.19	-22.2	41.2	21.11	54.0	13.8	V

**Charger3+ Front Camera /Peak detector**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)
17624.500	52.7	-22.1	41.2	33.60	74.0	21.3	H
16952.000	52.5	-23.0	41.7	33.85	74.0	21.5	H
17709.000	52.4	-22.2	41.2	33.36	74.0	21.6	V
17675.000	52.4	-22.1	41.2	33.26	74.0	21.6	V
17858.000	52.3	-22.5	41.3	33.54	74.0	21.7	V
17569.000	52.2	-22.4	41.2	33.46	74.0	21.8	H

**Measurement results for Set.4:**
**Charger4+ FM+Headset1 /Average detector**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)
17007.500	40.25	-23.0	41.7	21.58	54.0	13.8	V
17751.500	40.21	-22.3	41.3	21.26	54.0	13.8	V
17697.000	40.21	-22.2	41.2	21.14	54.0	13.8	H
17691.500	40.20	-22.2	41.2	21.12	54.0	13.8	V
17771.500	40.16	-22.3	41.3	21.25	54.0	13.8	H
17079.500	40.15	-23.0	41.6	21.57	54.0	13.8	V

**Charger4+ FM+Headset1 /Peak detector**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)
17757.500	53.4	-22.3	41.3	34.50	74.0	20.6	V
17875.000	52.7	-22.6	41.3	33.99	74.0	21.3	H
17747.500	52.6	-22.3	41.2	33.62	74.0	21.4	H
16969.500	52.2	-23.0	41.7	33.54	74.0	21.8	H
16919.500	52.1	-23.0	41.7	33.50	74.0	21.9	V
17921.500	52.1	-22.7	41.3	33.52	74.0	21.9	V



**Measurement results for Set.5:**
**Charger5+ FM+Headset2 /Average detector**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)
17702.000	40.28	-22.2	41.2	21.22	54.0	13.7	V
17699.000	40.28	-22.2	41.2	21.21	54.0	13.7	V
17780.500	40.26	-22.4	41.3	21.37	54.0	13.7	V
17073.000	40.24	-23.0	41.6	21.65	54.0	13.8	V
17080.000	40.23	-23.0	41.6	21.65	54.0	13.8	H
17694.500	40.23	-22.2	41.2	21.16	54.0	13.8	V

**Charger5+ FM+Headset2 /Peak detector**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)
17578.000	52.8	-22.4	41.2	33.95	74.0	21.2	H
16983.000	52.7	-23.0	41.7	34.06	74.0	21.3	V
17690.500	52.7	-22.2	41.2	33.61	74.0	21.3	V
17523.000	52.6	-22.7	41.2	34.17	74.0	21.4	V
17722.500	52.6	-22.2	41.2	33.55	74.0	21.4	V
16371.000	52.6	-23.1	41.2	34.42	74.0	21.4	V

**Measurement results for Set.6:**
**USB (SD ) mode /Average detector**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)
17689.000	40.32	-22.2	41.2	21.24	54.0	13.7	H
17682.000	40.29	-22.1	41.2	21.19	54.0	13.7	V
17684.500	40.27	-22.1	41.2	21.17	54.0	13.7	V
17693.000	40.27	-22.2	41.2	21.19	54.0	13.7	H
17640.000	40.25	-22.0	41.2	21.06	54.0	13.8	V
17689.500	40.23	-22.2	41.2	21.14	54.0	13.8	V

**USB (SD) mode /Peak detector**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)
17108.500	52.8	-23.0	41.6	34.28	74.0	21.2	V
17070.500	52.8	-23.0	41.6	34.22	74.0	21.2	V
17795.500	52.6	-22.4	41.3	33.78	74.0	21.4	H
17776.000	52.5	-22.4	41.3	33.63	74.0	21.5	V
17693.000	52.5	-22.2	41.2	33.43	74.0	21.5	H
16207.000	52.5	-23.2	41.1	34.65	74.0	21.5	V

**Measurement results for Set.7:**
**RX mode /Average detector**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)
17695.000	40.43	-22.2	41.2	21.35	54.0	13.6	V
17077.000	40.30	-23.0	41.6	21.71	54.0	13.7	V
17698.000	40.26	-22.2	41.2	21.19	54.0	13.7	V
17689.500	40.22	-22.2	41.2	21.13	54.0	13.8	V
17759.000	40.21	-22.3	41.3	21.27	54.0	13.8	V
17753.000	40.16	-22.3	41.3	21.21	54.0	13.8	V

**RX mode /Peak detector**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)
17105.500	52.9	-23.0	41.6	34.33	74.0	21.1	H
17695.000	52.5	-22.2	41.2	33.39	74.0	21.5	H
17893.500	52.4	-22.6	41.3	33.75	74.0	21.6	V
17851.000	52.4	-22.5	41.3	33.63	74.0	21.6	H
17002.000	52.3	-23.0	41.7	33.67	74.0	21.7	H
17052.000	52.2	-23.0	41.6	33.53	74.0	21.8	V

### Charger1+ Rear Camera, Set.1

15B RE 30MHz-1GHz

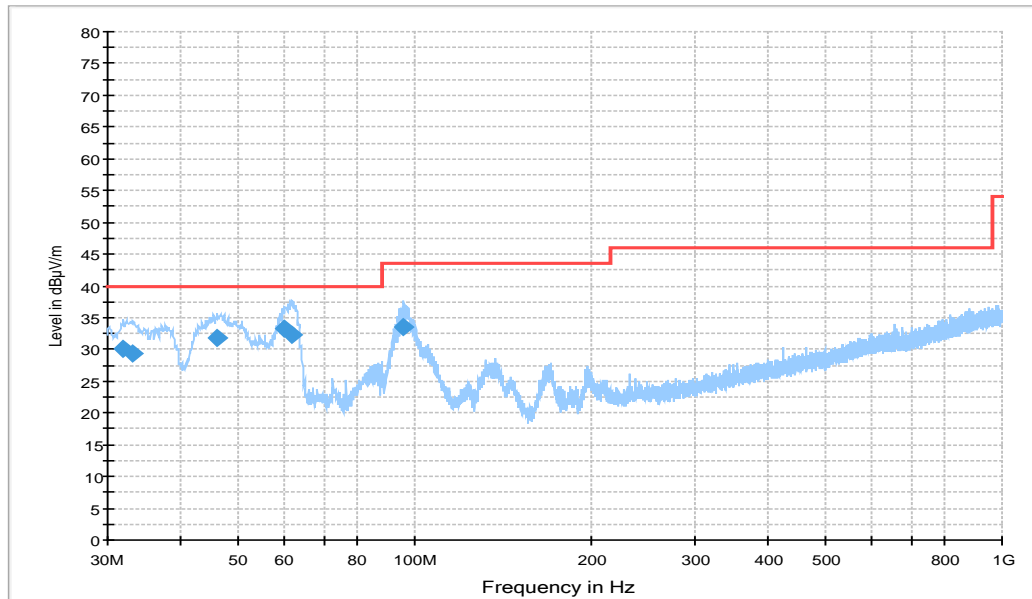
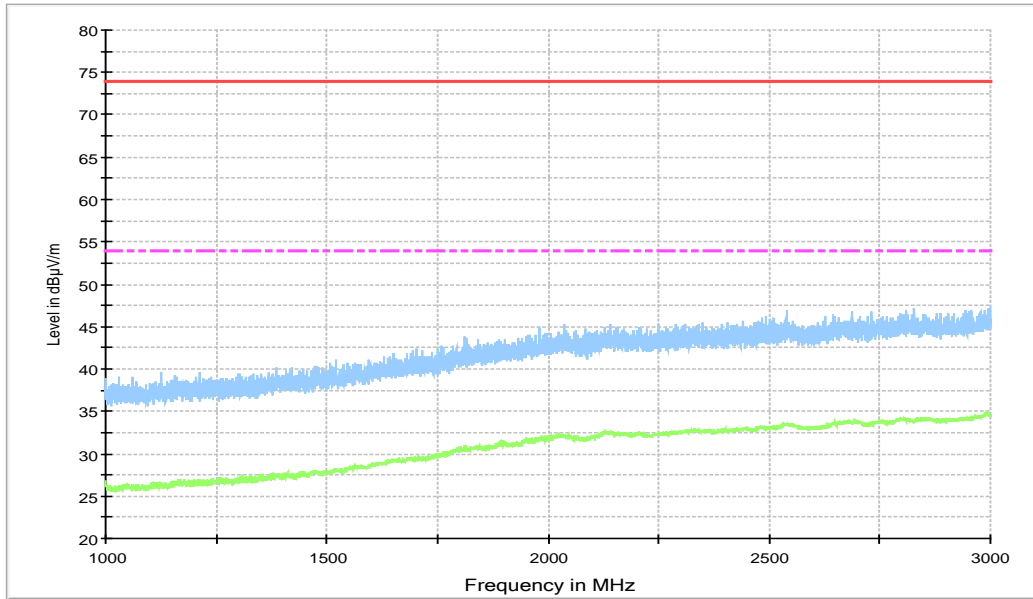


Figure A.1 Radiated Emission from 30MHz to 1GHz

### Final Result 1

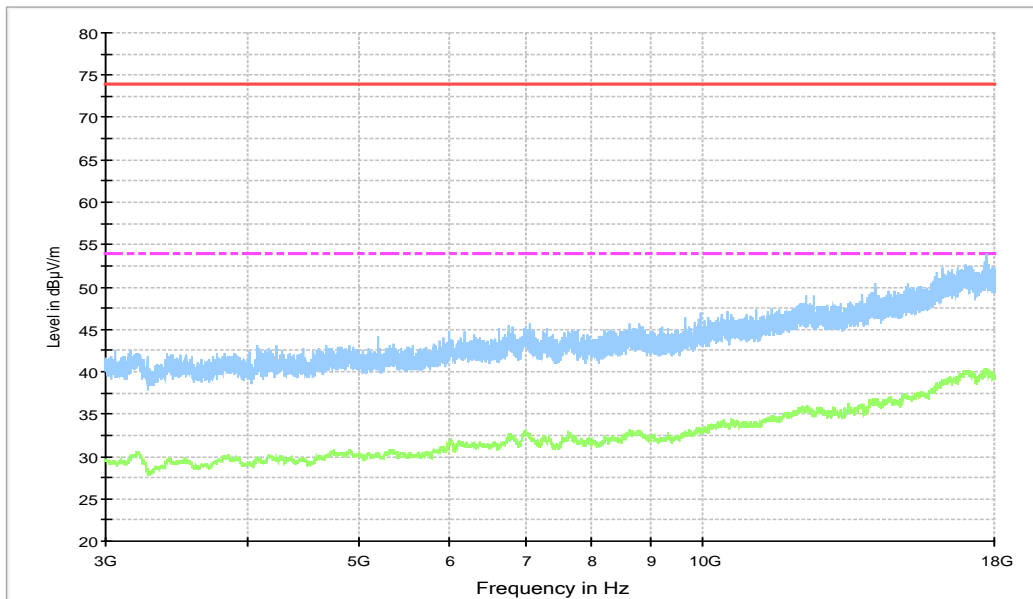
Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
31.940000	30.2	100.0	V	152.0	-1.6	9.8	40.0
33.201000	29.4	100.0	V	45.0	-1.3	10.6	40.0
46.005000	31.7	100.0	V	101.0	0.0	8.3	40.0
60.167000	33.3	100.0	V	256.0	-0.4	6.7	40.0
62.010000	32.4	100.0	V	270.0	-1.1	7.6	40.0
95.766000	33.6	100.0	V	205.0	-1.7	9.9	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

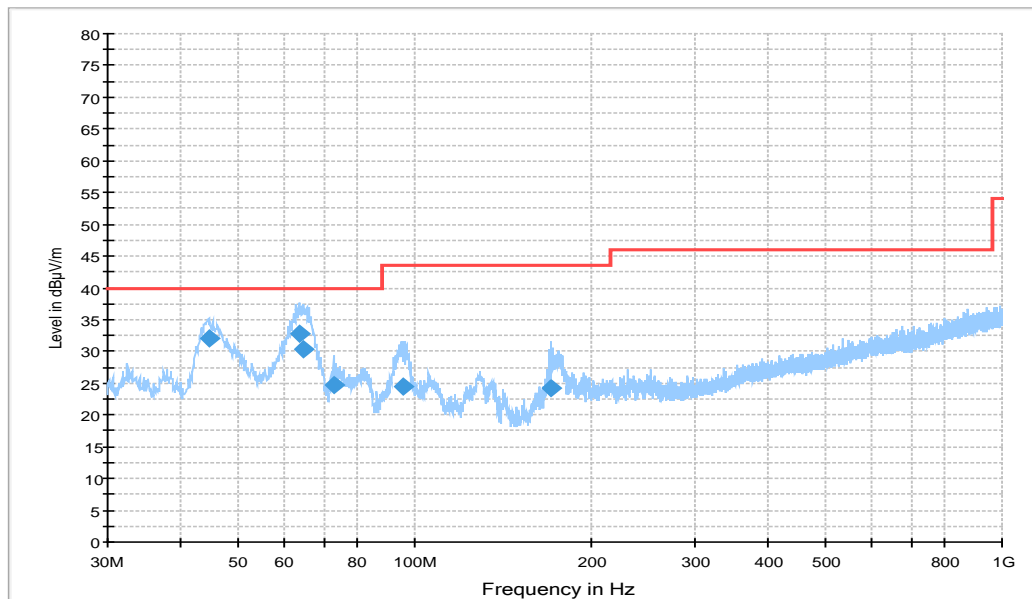
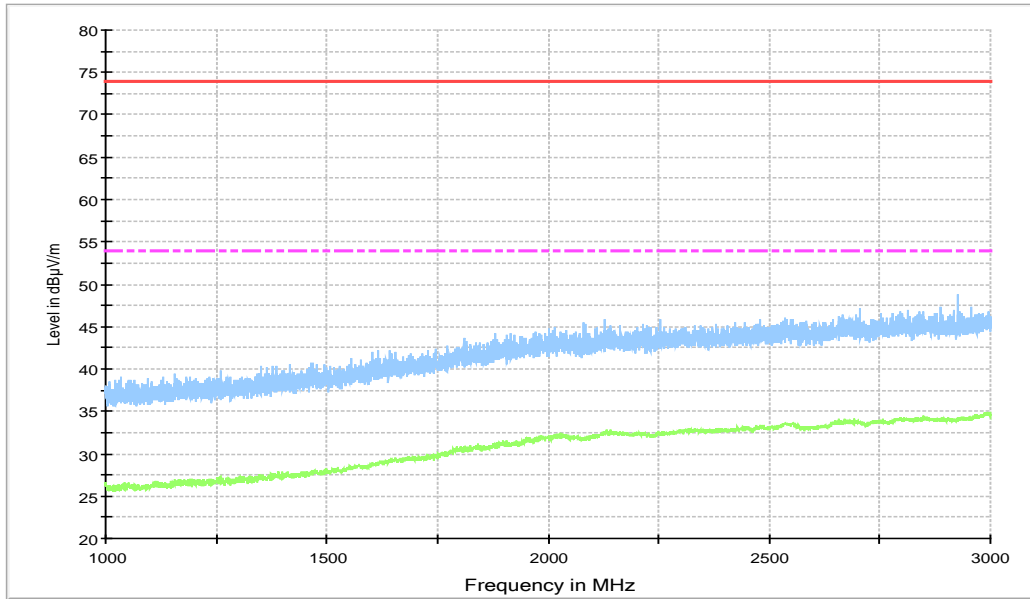


Figure A.4 Radiated Emission from 30MHz to 1GHz

### Final Result 1

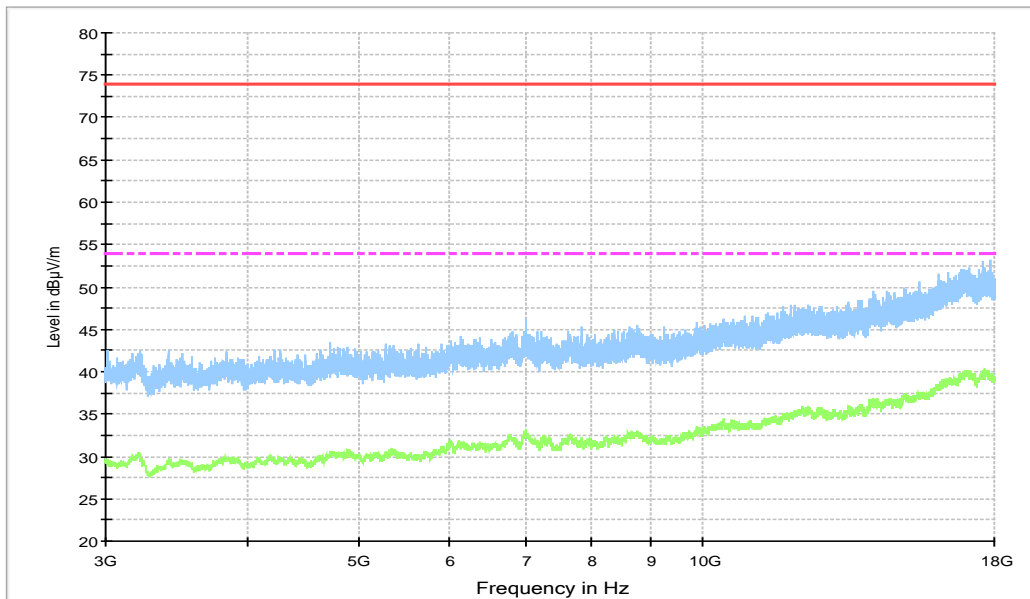
Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
44.550000	32.0	100.0	V	107.0	0.0	8.0	40.0
63.465000	32.7	100.0	V	260.0	-1.6	7.3	40.0
64.726000	30.4	100.0	V	238.0	-2.1	9.6	40.0
72.680000	24.7	100.0	V	285.0	-4.6	15.3	40.0
95.475000	24.4	100.0	V	225.0	-1.8	19.1	43.5
170.94100	24.1	100.0	V	-3.0	-3.6	19.4	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

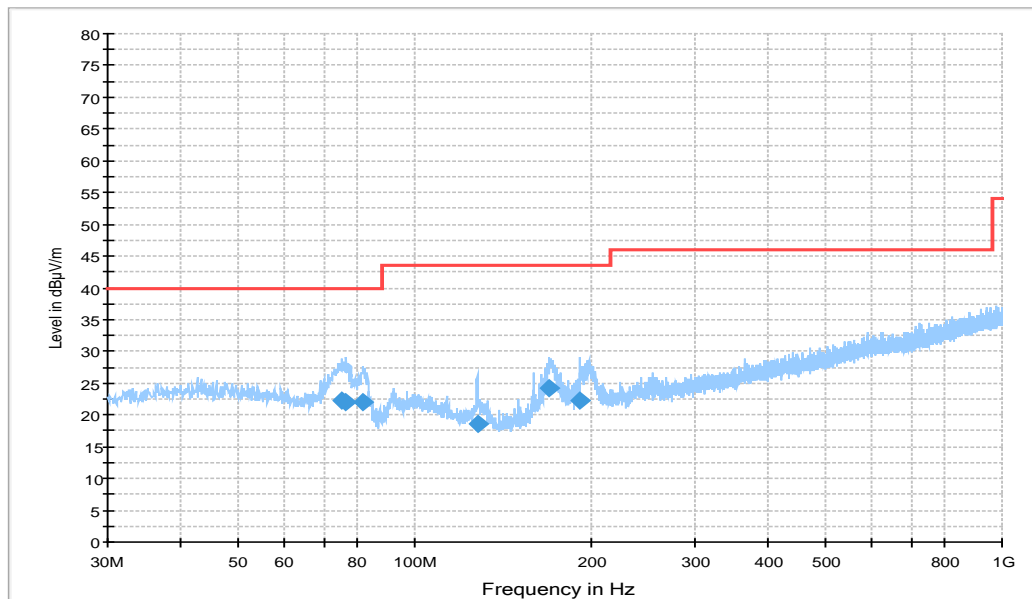


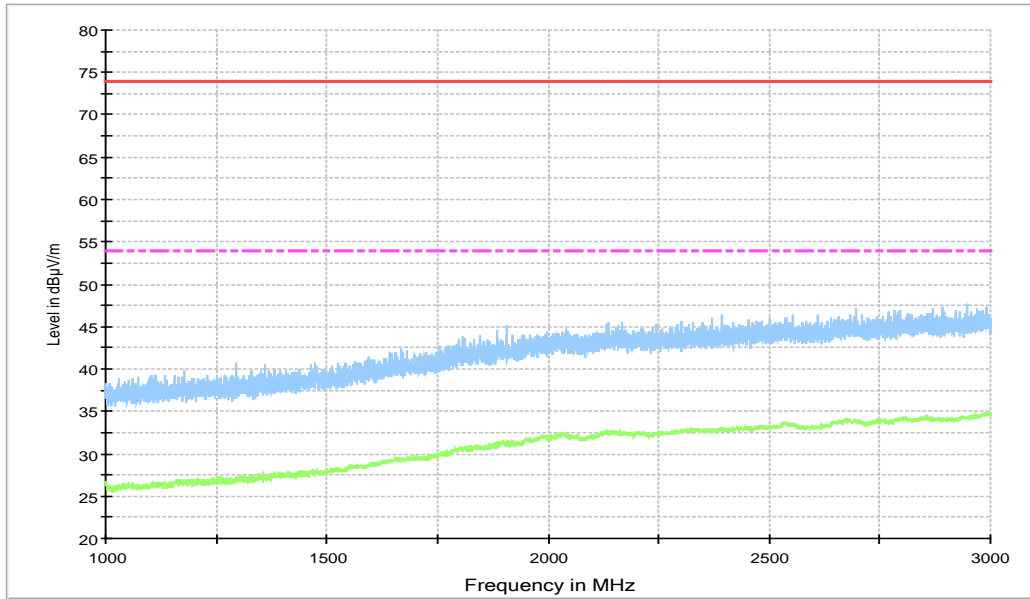
Figure A.7 Radiated Emission from 30MHz to 1GHz

### Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
75.008000	22.2	100.0	V	295.0	-5.1	17.8	40.0
76.463000	22.1	110.0	V	253.0	-5.5	17.9	40.0
81.701000	22.0	100.0	V	242.0	-5.7	18.0	40.0
127.77600	18.5	100.0	V	216.0	-3.9	25.0	43.5
169.87400	24.3	100.0	V	6.0	-3.6	19.2	43.5
191.21400	22.4	100.0	V	-21.0	-2.2	21.1	43.5

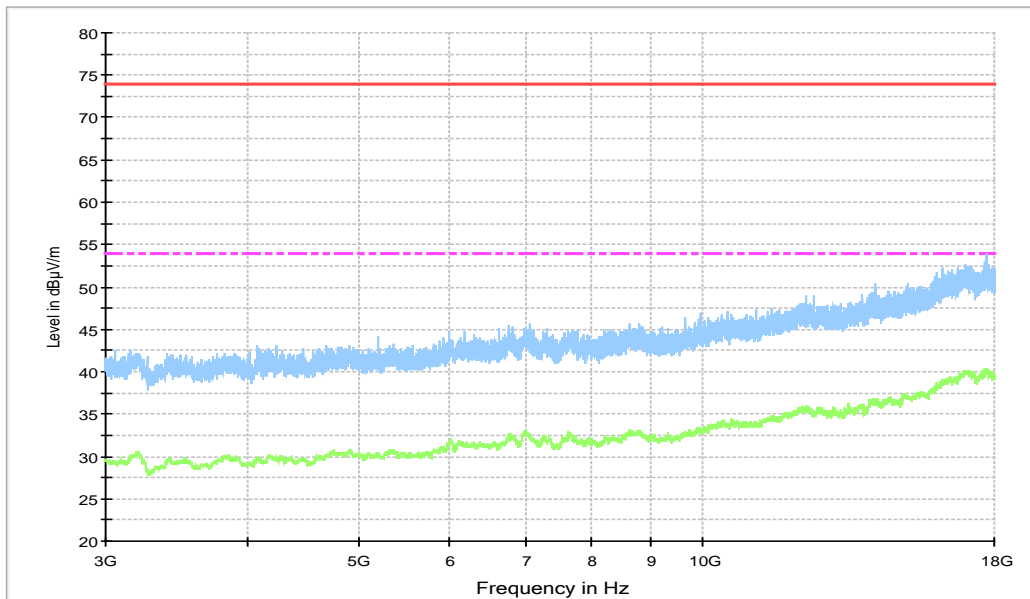


15B RE - 1GHz-3GHz



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

15b RE - 3GHz-18GHz



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

### Charger4+FM+Headset1, Set.4

15B RE 30MHz-1GHz

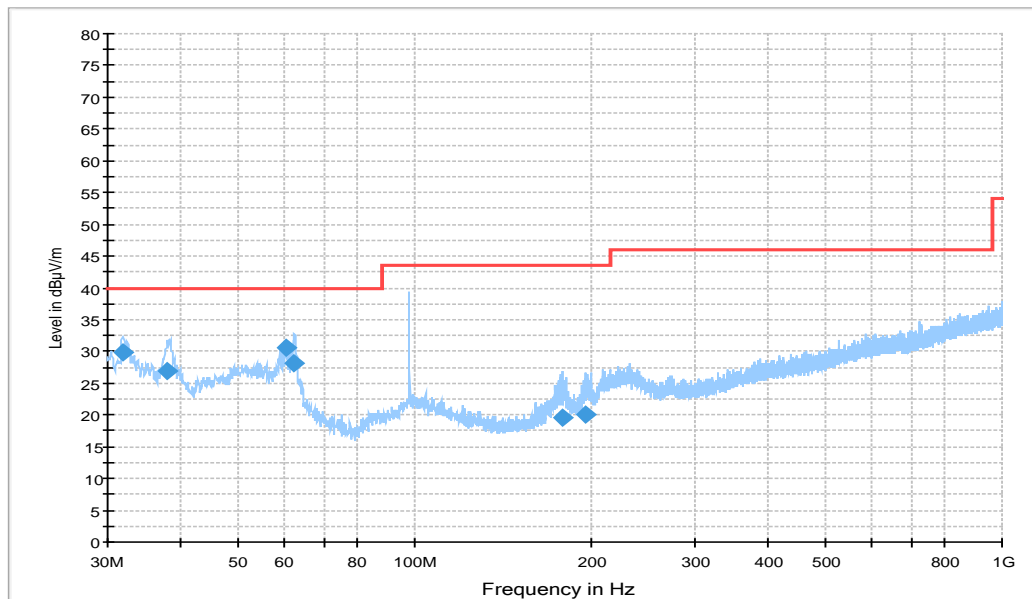
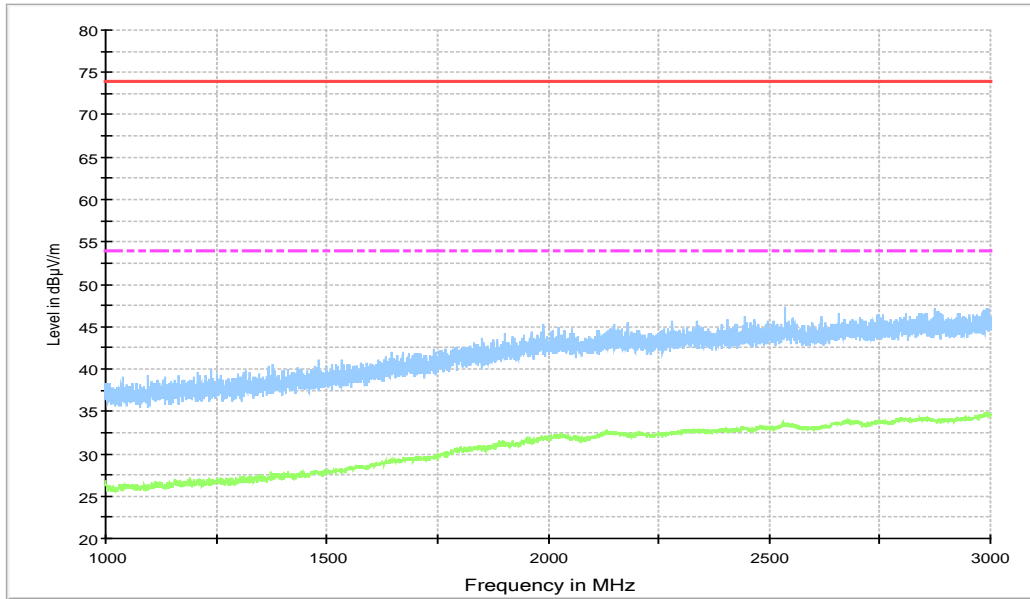


Figure A.10 Radiated Emission from 30MHz to 1GHz

### Final Result 1

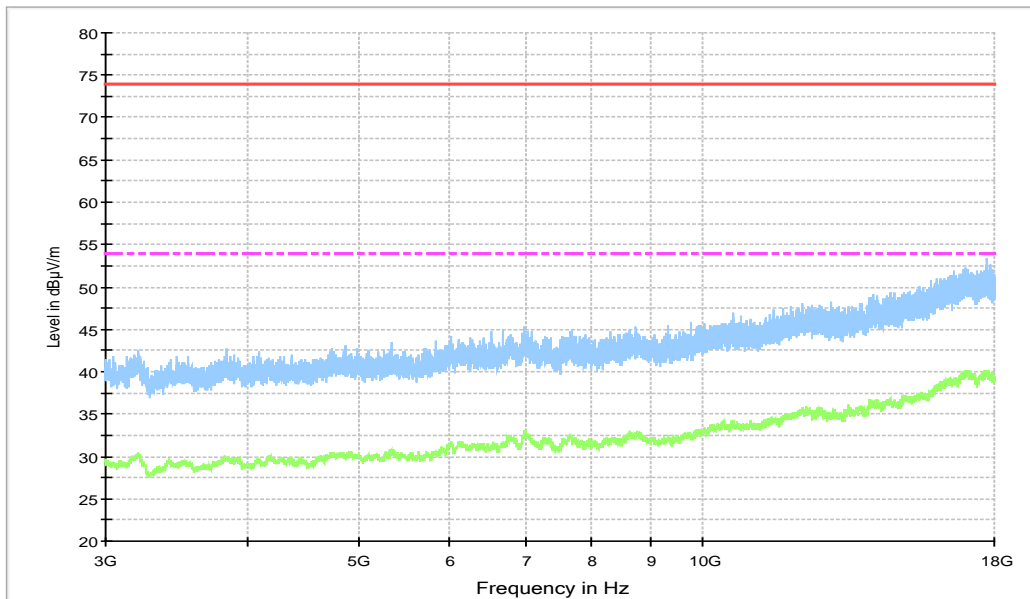
Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
31.746000	29.8	100.0	V	142.0	-1.6	10.2	40.0
37.857000	26.8	100.0	V	252.0	-0.5	13.2	40.0
60.361000	30.7	100.0	V	163.0	-0.5	9.3	40.0
62.398000	28.2	100.0	V	49.0	-1.2	11.8	40.0
178.60400	19.6	100.0	V	11.0	-3.3	23.9	43.5
195.38500	20.0	100.0	V	0.0	-1.9	23.5	43.5

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**

### Charger5+FM+Headset2, Set.5

15B RE 30MHz-1GHz

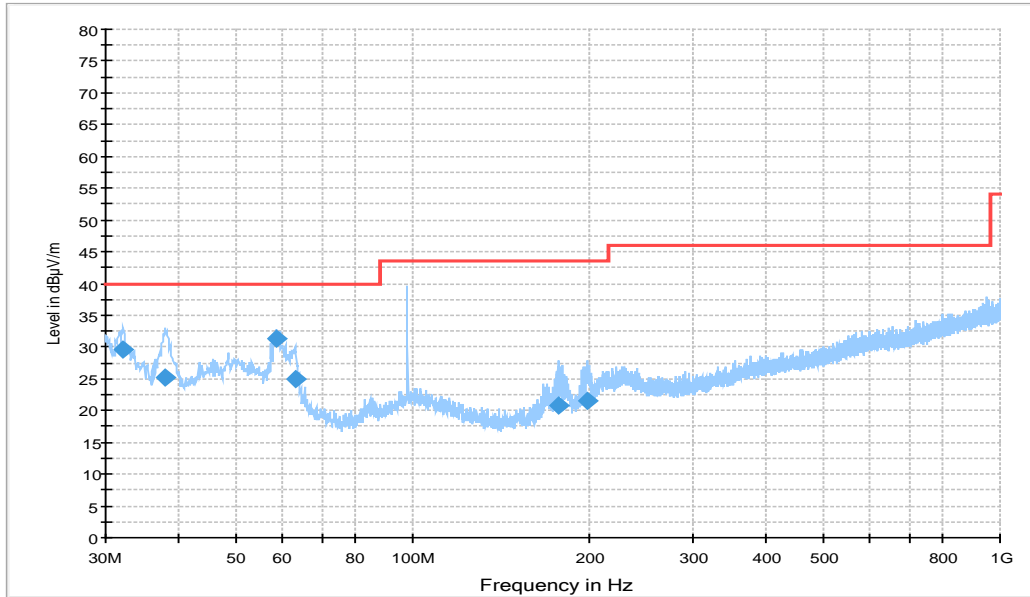
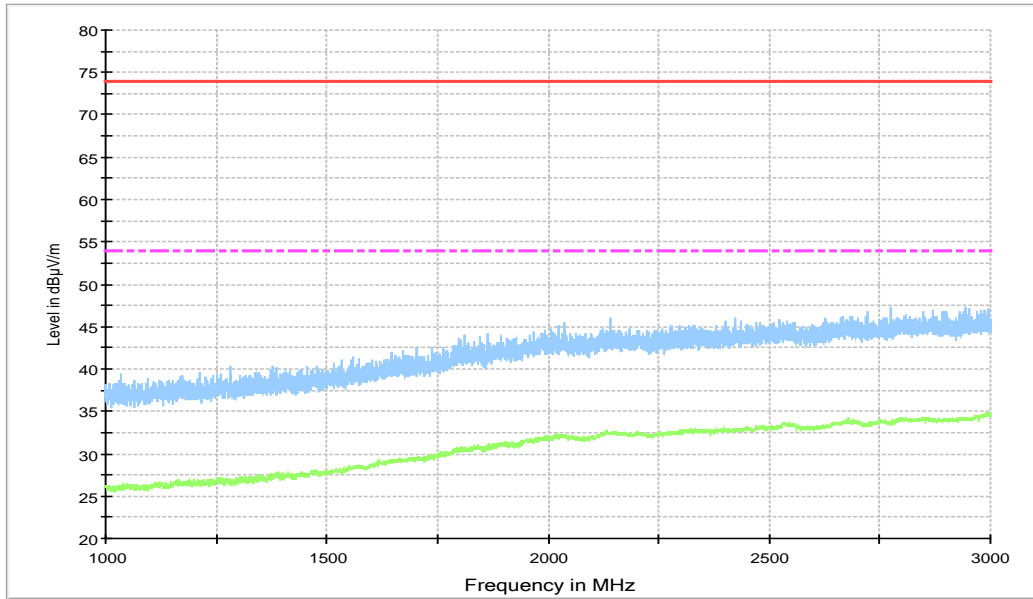


Figure A.13 Radiated Emission from 30MHz to 1GHz

### Final Result 1

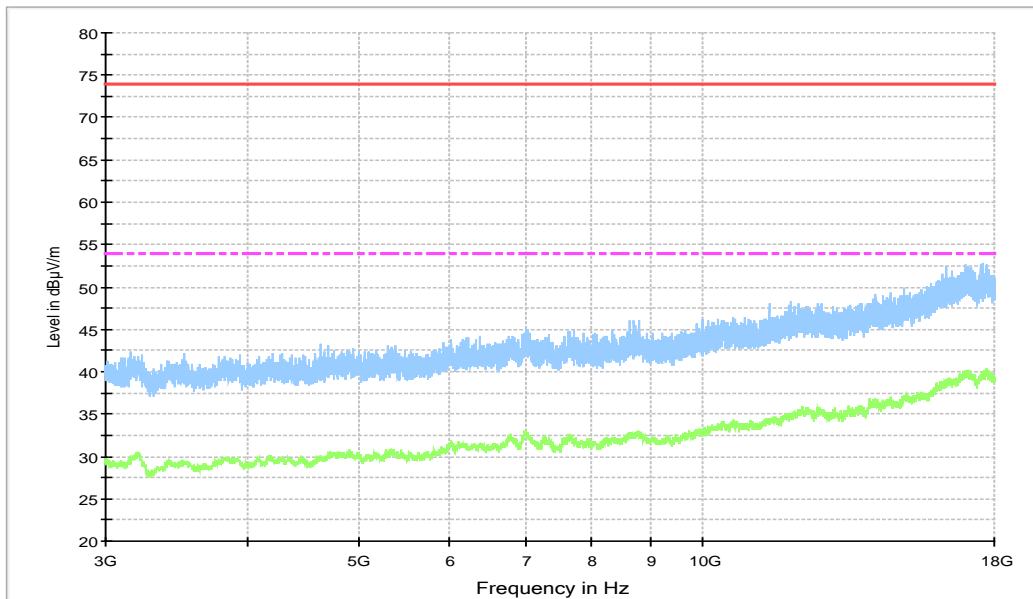
Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
32.134000	29.7	110.0	V	149.0	-1.5	10.3	40.0
37.857000	25.3	100.0	V	253.0	-0.5	14.7	40.0
58.615000	31.3	110.0	V	76.0	-0.3	8.7	40.0
62.980000	25.0	100.0	V	69.0	-1.4	15.0	40.0
177.440000	20.8	100.0	V	14.0	-3.3	22.7	43.5
198.101000	21.6	110.0	V	3.0	-1.7	21.9	43.5

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**

### USB (SD) mode, Set.6

15B RE 30MHz-1GHz

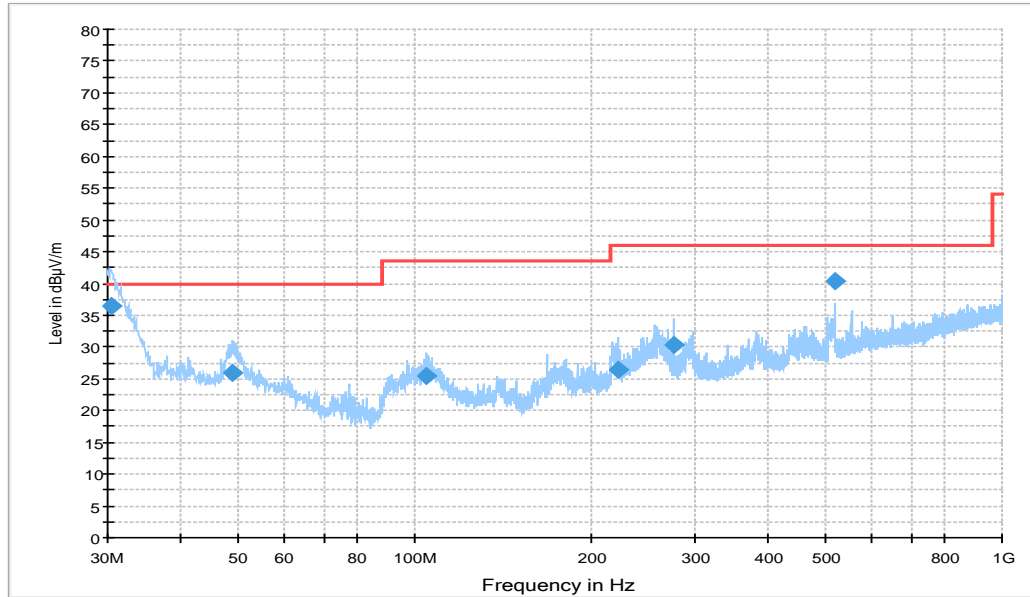
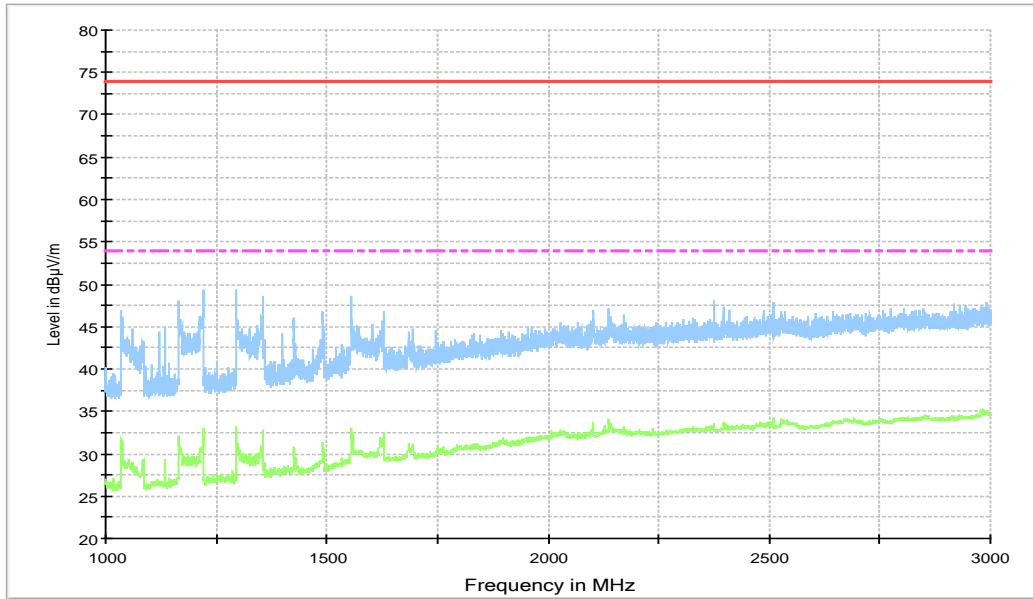


Figure A.16 Radiated Emission from 30MHz to 1GHz

### Final Result 1

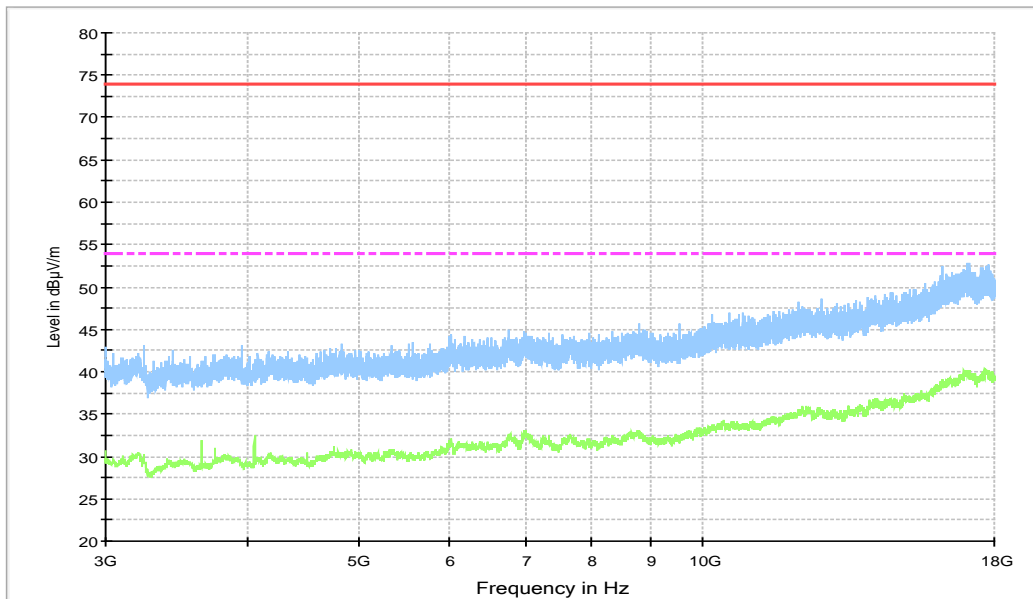
Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
30.388000	36.4	100.0	V	270.0	-1.9	3.6	40.0
49.109000	25.8	100.0	V	270.0	0.1	14.2	40.0
104.98100	25.5	100.0	V	293.0	-1.4	18.0	43.5
222.15700	26.5	125.0	H	-21.0	-0.9	19.5	46.0
276.96200	30.3	100.0	H	-16.0	0.2	15.7	46.0
519.26800	40.4	125.0	V	-31.0	6.4	5.6	46.0

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.7

### GSM850MHz MID CHANNEL (881.6MHz)

15B RE 30MHz-1GHz

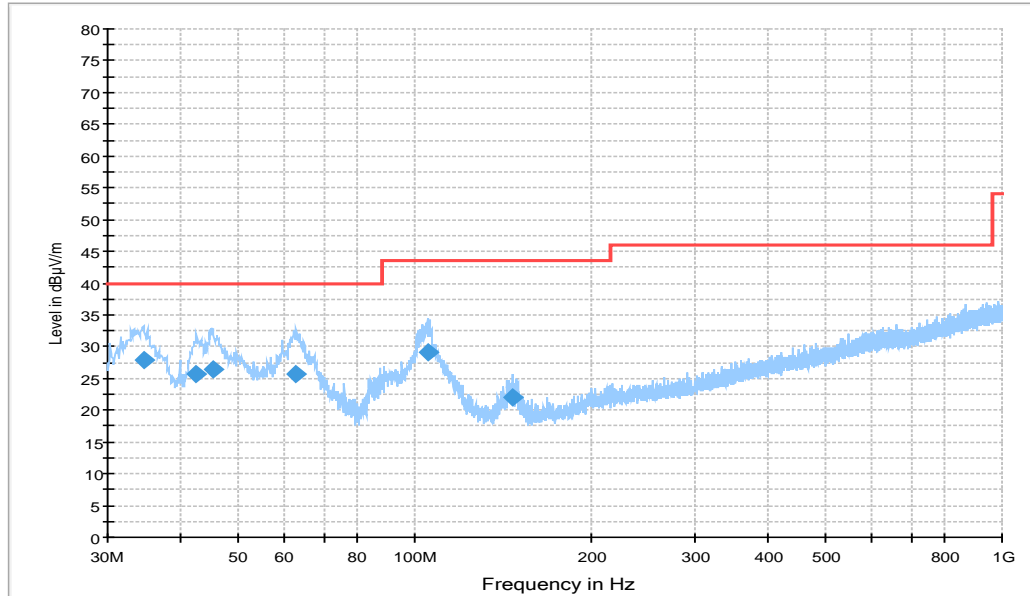


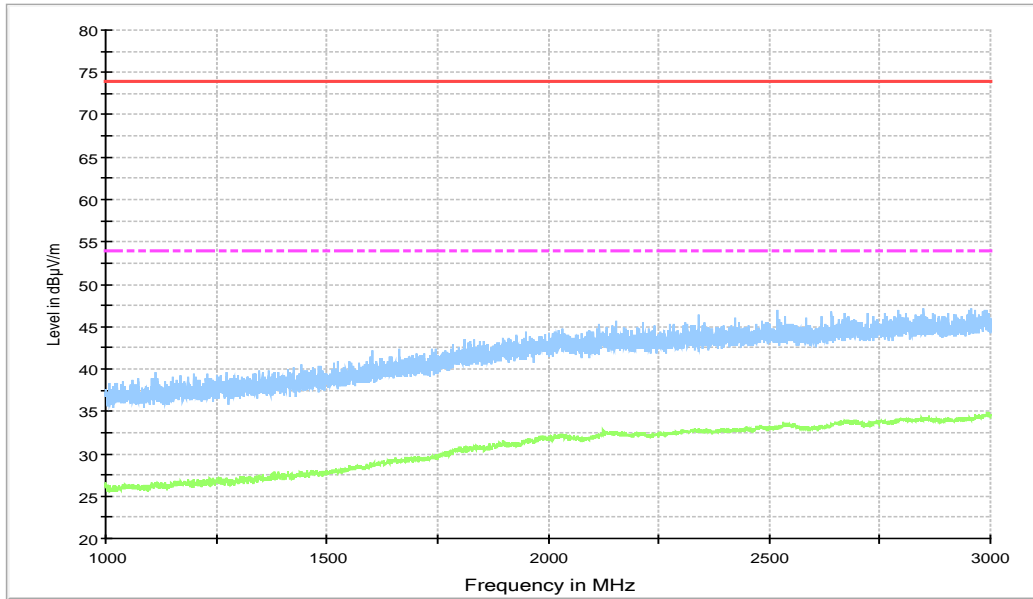
Figure A.19 Radiated Emission from 30MHz to 1GHz

## Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
34.559000	27.8	100.0	V	156.0	-1.1	12.2	40.0
42.513000	25.8	100.0	V	67.0	-0.1	14.2	40.0
45.229000	26.3	110.0	V	239.0	0.0	13.7	40.0
62.883000	25.7	100.0	V	225.0	-1.4	14.3	40.0
105.07800	29.1	111.0	V	-21.0	-1.4	14.4	43.5
146.40000	22.0	118.0	H	205.0	-4.6	21.5	43.5

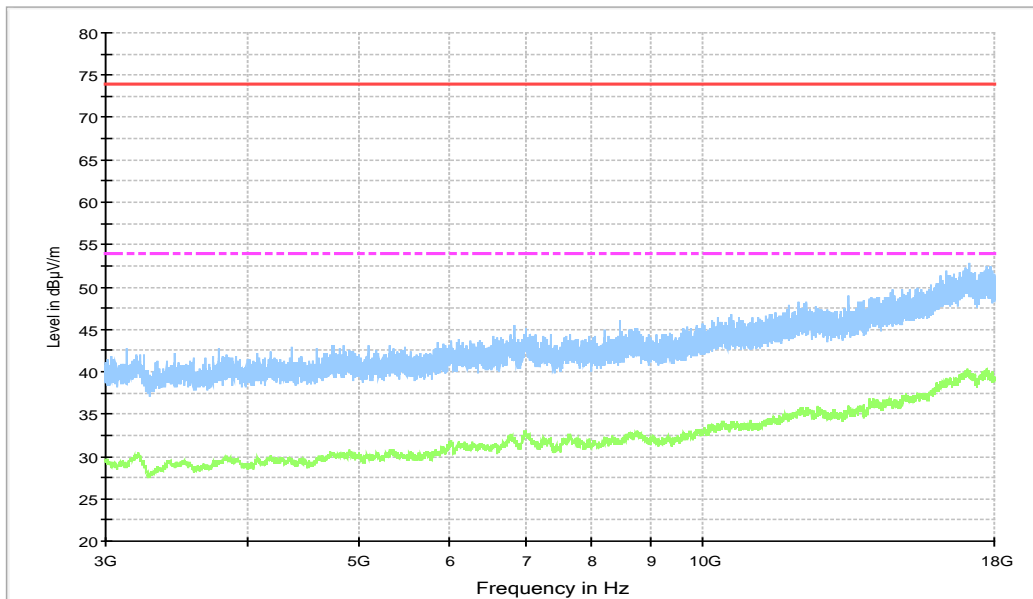


15B RE - 1GHz-3GHz



**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, FM, 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 $\mu$ 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

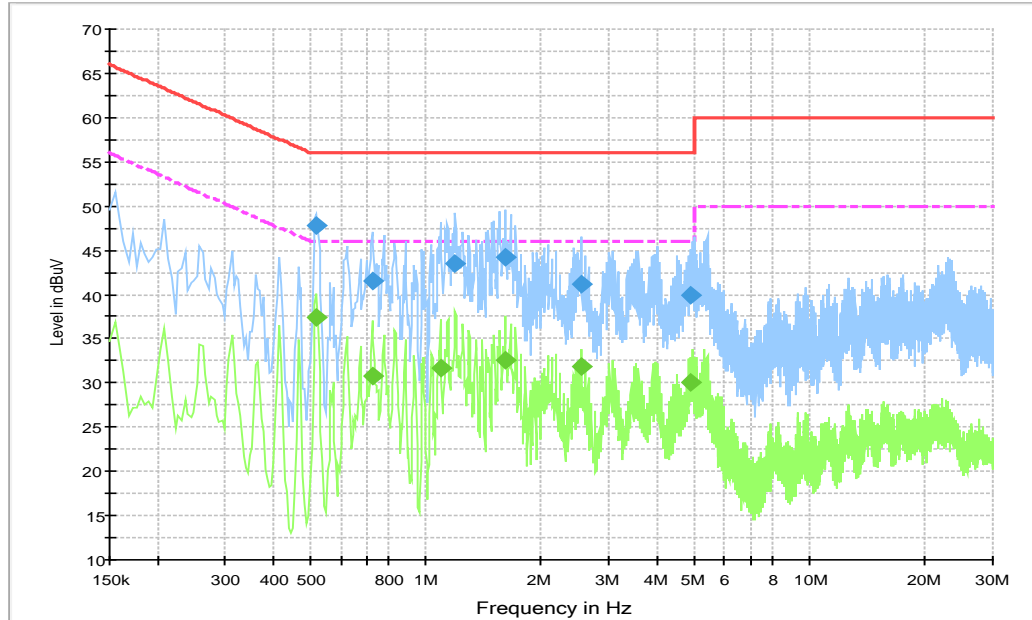


Figure A.22 Conducted Emission

#### Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.519000	47.7	5000.0	9.000	On	L1	20.0	8.3	56.0
0.726000	41.5	5000.0	9.000	On	L1	19.9	14.5	56.0
1.194000	43.4	5000.0	9.000	On	L1	19.8	12.6	56.0
1.612500	44.2	5000.0	9.000	On	L1	19.8	11.8	56.0
2.548500	41.1	5000.0	9.000	On	L1	19.8	14.9	56.0
4.884000	39.9	5000.0	9.000	On	L1	19.8	16.1	56.0

#### Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.519000	37.3	5000.0	9.000	On	L1	20.0	8.7	46.0
0.726000	30.9	5000.0	9.000	On	L1	19.9	15.1	46.0
1.090500	31.7	5000.0	9.000	On	L1	19.8	14.3	46.0
1.612500	32.6	5000.0	9.000	On	L1	19.8	13.4	46.0
2.548500	31.9	5000.0	9.000	On	L1	19.8	14.1	46.0
4.888500	30.0	5000.0	9.000	On	L1	19.8	16.0	46.0

. Charger2+MP4, Set.2

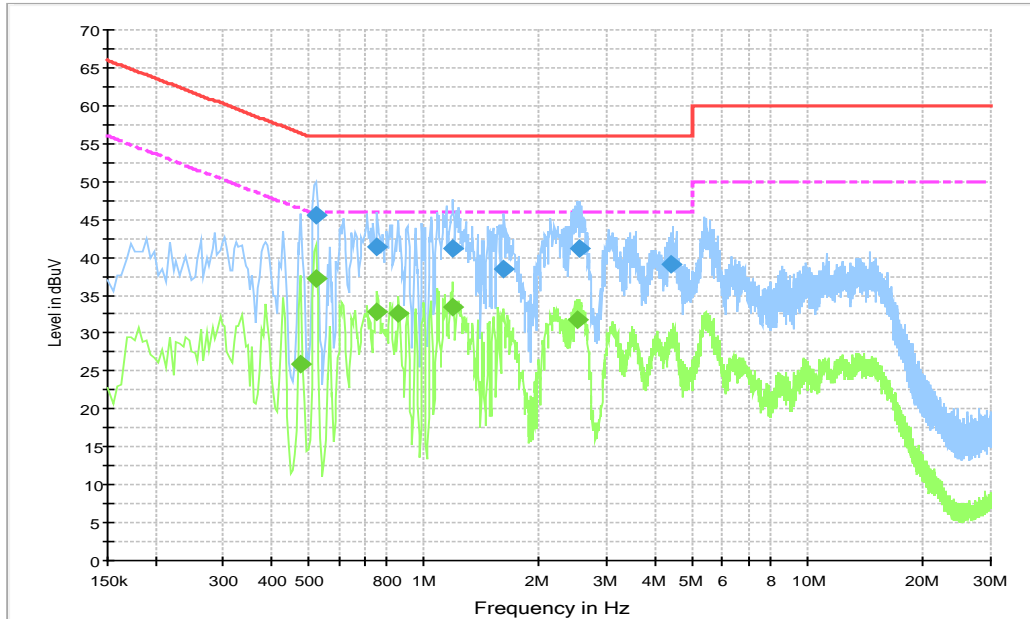


Figure A.23 Conducted Emission

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.523500	45.6	5000.0	9.000	On	L1	20.0	10.4	56.0
0.757500	41.3	5000.0	9.000	On	L1	19.9	14.7	56.0
1.189500	41.2	5000.0	9.000	On	L1	19.8	14.8	56.0
1.617000	38.4	5000.0	9.000	On	L1	19.8	17.6	56.0
2.544000	41.3	5000.0	9.000	On	L1	19.8	14.7	56.0
4.389000	39.1	5000.0	9.000	On	L1	19.8	16.9	56.0

**Final Result 2**

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.478500	25.8	5000.0	9.000	On	L1	20.0	20.5	46.4
0.523500	37.1	5000.0	9.000	On	L1	20.0	8.9	46.0
0.757500	32.7	5000.0	9.000	On	L1	19.9	13.3	46.0
0.861000	32.6	5000.0	9.000	On	L1	19.8	13.4	46.0
1.189500	33.4	5000.0	9.000	On	L1	19.8	12.6	46.0
2.521500	31.8	5000.0	9.000	On	L1	19.8	14.2	46.0

### Charger3+Front Camera, Set.3

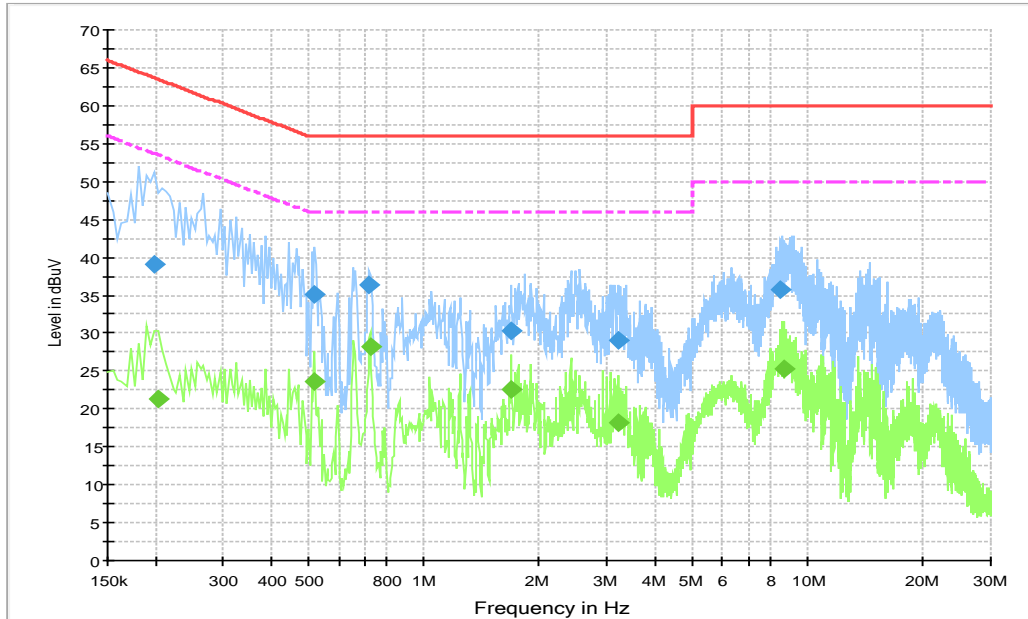


Figure A.24 Conducted Emission

#### Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.199500	39.1	5000.0	9.000	On	L1	19.9	24.6	63.6
0.519000	35.2	5000.0	9.000	On	L1	20.0	20.8	56.0
0.721500	36.4	5000.0	9.000	On	L1	19.9	19.6	56.0
1.693500	30.3	5000.0	9.000	On	L1	19.8	25.7	56.0
3.201000	29.1	5000.0	9.000	On	L1	19.8	26.9	56.0
8.524500	35.7	5000.0	9.000	On	L1	19.9	24.3	60.0

#### Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.204000	21.4	5000.0	9.000	On	L1	19.9	32.0	53.4
0.519000	23.6	5000.0	9.000	On	L1	20.0	22.4	46.0
0.726000	28.1	5000.0	9.000	On	L1	19.9	17.9	46.0
1.689000	22.5	5000.0	9.000	On	L1	19.8	23.5	46.0
3.201000	18.1	5000.0	9.000	On	L1	19.8	27.9	46.0
8.655000	25.3	5000.0	9.000	On	L1	19.9	24.7	50.0

### Charger4+FM+Headset1, Set.4

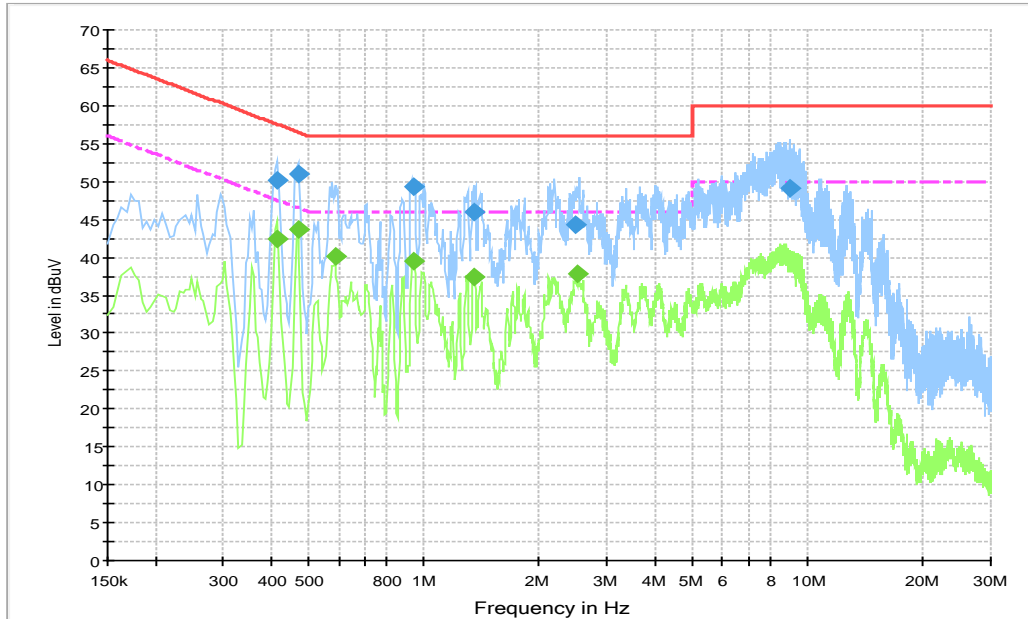


Figure A.25 Conducted Emission

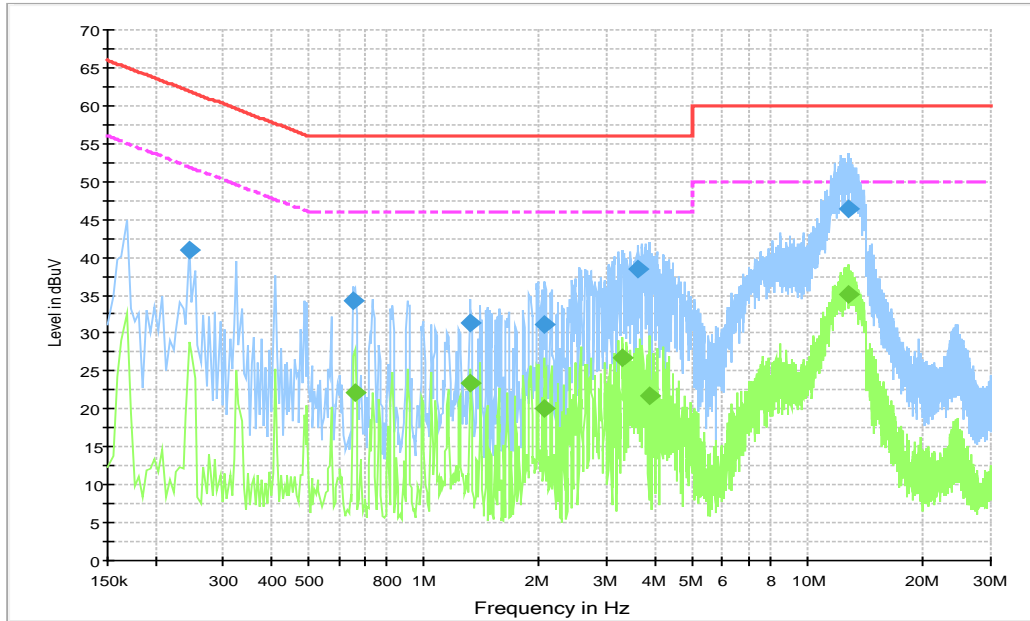
#### Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.415500	50.2	5000.0	9.000	On	L1	20.0	7.3	57.5
0.469500	51.0	5000.0	9.000	On	L1	20.0	5.5	56.5
0.942000	49.3	5000.0	9.000	On	L1	19.9	6.7	56.0
1.347000	46.1	5000.0	9.000	On	L1	19.8	9.9	56.0
2.494500	44.4	5000.0	9.000	On	L1	19.8	11.6	56.0
9.006000	49.0	5000.0	9.000	On	L1	19.9	11.0	60.0

#### Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.415500	42.5	5000.0	9.000	On	L1	20.0	5.0	47.5
0.469500	43.6	5000.0	9.000	On	L1	20.0	3.0	46.5
0.586500	40.2	5000.0	9.000	On	L1	20.0	5.8	46.0
0.937500	39.6	5000.0	9.000	On	L1	19.9	6.4	46.0
1.351500	37.4	5000.0	9.000	On	L1	19.8	8.6	46.0
2.526000	37.9	5000.0	9.000	On	L1	19.8	8.1	46.0

**Charger5+FM+Headset2, Set.5**



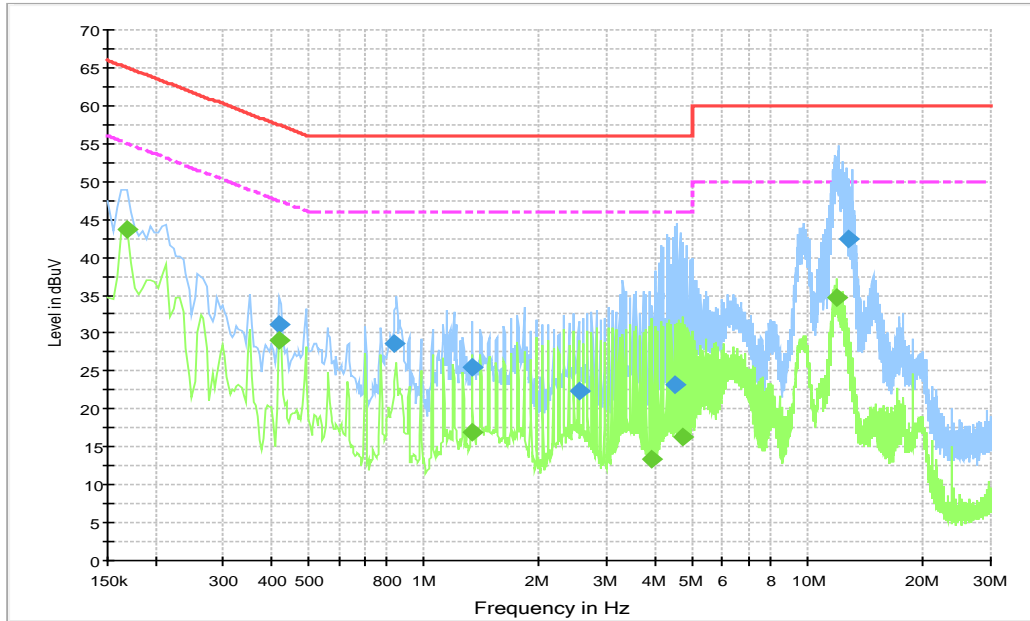
**Figure A.26 Conducted Emission**

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.244500	41.0	5000.0	9.000	On	N	19.9	21.0	61.9
0.654000	34.2	5000.0	9.000	On	L1	19.9	21.8	56.0
1.320000	31.4	5000.0	9.000	On	L1	19.8	24.6	56.0
2.071500	31.1	5000.0	9.000	On	L1	19.8	24.9	56.0
3.606000	38.5	5000.0	9.000	On	L1	19.8	17.5	56.0
12.844500	46.4	5000.0	9.000	On	L1	19.9	13.6	60.0

**Final Result 2**

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.663000	22.2	5000.0	9.000	On	L1	19.9	23.8	46.0
1.320000	23.3	5000.0	9.000	On	L1	19.8	22.7	46.0
2.067000	20.1	5000.0	9.000	On	L1	19.8	25.9	46.0
3.291000	26.7	5000.0	9.000	On	L1	19.8	19.3	46.0
3.885000	21.7	5000.0	9.000	On	L1	19.8	24.3	46.0
12.844500	35.1	5000.0	9.000	On	L1	19.9	14.9	50.0

**USB (SD) mode, 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)
0.420000	31.1	5000.0	9.000	On	L1	20.0	26.3	57.4
0.838500	28.7	5000.0	9.000	On	N	19.9	27.3	56.0
1.338000	25.5	5000.0	9.000	On	L1	19.8	30.5	56.0
2.530500	22.4	5000.0	9.000	On	N	19.8	33.6	56.0
4.506000	23.3	5000.0	9.000	On	N	19.8	32.7	56.0
12.781500	42.4	5000.0	9.000	On	L1	19.9	17.6	60.0

**Final Result 2**

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.168000	43.7	5000.0	9.000	On	N	20.1	11.3	55.1
0.420000	29.0	5000.0	9.000	On	L1	20.0	18.5	47.4
1.333500	16.9	5000.0	9.000	On	N	19.8	29.1	46.0
3.934500	13.3	5000.0	9.000	On	N	19.8	32.7	46.0
4.708500	16.3	5000.0	9.000	On	N	19.8	29.7	46.0
11.845500	34.7	5000.0	9.000	On	N	19.9	15.3	50.0





**ANNEX B: Persons involved in this testing**

Test Item	Tester
Radiated Emission	Zhao Wenhui, Li Zongliang
Conducted Emission	Guo Qian

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