



# TEST REPORT

## No. 23T04Z70626-01

for

**Samsung Electronics Co., Ltd.**

**Multi-band GSM/WCDMA/LTE/5G NR Phone with Bluetooth, WLAN**

**Model Name: SM-M556B/DS**

with

**FCC ID: ZCASMM556B**

**Hardware Version: REV1.0**

**Software Version: M556B.001**

**Issued Date: 2024-01-15**

**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.

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## **REPORT HISTORY**

<b>Report Number</b>	<b>Revision</b>	<b>Description</b>	<b>Issue Date</b>
23T04Z70626-01	Rev.0	1 <sup>st</sup> edition	2024-01-15

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 American Association for Laboratory Accreditation (A2LA) with lab code 7049.01, and is also an FCC accredited test laboratory (CN1349), and ISED accredited test laboratory (CAB identifier:CN0066). The detail accreditation scope can be found on A2LA 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: 2023-12-01

Testing End Date: 2024-01-05

### 1.5. Signature



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Li Yan

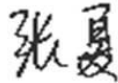
(Prepared this test report)



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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.  
Address: 19 Chapin Rd., Building D Pine Brook, NJ 07058  
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Postal Code: /  
Country: /  
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Contact Email: j1.chun@samsung.com  
Telephone: +1-201-937-4203  
Fax: /

### **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 Person: Sunghoon Cho  
Contact Email: ggobi.cho@samsung.com  
Telephone: +82-10-2722-4159  
Fax: /

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

#### **3.1. About EUT**

Description	Multi-band GSM/WCDMA/LTE/5G NR Phone with Bluetooth, WLAN
Model name	SM-M556B/DS
FCC ID	ZCASMM556B

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>IMEI/SN</b>	<b>HW Version</b>	<b>SW Version</b>
UT22a	2370626UT22a	REV1.0	M556B.001
UT23a	2370626UT23a	REV1.0	M556B.001

\*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>Name</b>	<b>Model</b>	<b>Manufacturer</b>
AE1	Battery	HQ-6887NAS	Ningde Amperex Technology Limited
AE2-1*	Adapter	EP-TA845	SoluM Co.,Ltd.
AE2-2*	Adapter	EP-T1510JWE	DONGYANG E&P INC
AE3-1	Date Cable1 C-C	EP-DN975BWE	ASAP TECHNOLOGY(JIANGXI) CO.,LTD.
AE3-2	Date Cable2 C-C	EP-DN975BWE	RFTECH ELECTRONICS (HUIZHOU) CO., LTD
AE4*	Date Cable3 C-A	EP-DR140AWE	CRESYN HANOI Co., Ltd
AE5*	Headset	QL6601A	Quancheng Electronics
AE6*	PC	/	/
AE7*	SD card	/	/
AE8*	MHD	/	/
AE9*	Keyboard	/	Samsung Electronics Co.,Ltd

\* The USB cables are shielded.

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

\*AE2-1, AE2-2, AE4 and A5 are not the AE for EUT, provided by the client for relevant tests.

\*AE6, AE7 and AE8 are not the AE for EUT, provided by the Lab for relevant tests.

### 3.4. General Description

Equipment under Test (EUT) is a model of Multi-band GSM/WCDMA/LTE/5G NR Phone with Bluetooth, WLAN with integrated antenna.

Description	Multi-band GSM/WCDMA/LTE/5G NR Phone with Bluetooth, WLAN	
Model name	SM-M556B/DS	
Marketing name	/	
Brand name	SAMSUNG	
Cellular Bands	<input type="checkbox"/> GSM	Bands 850/900/1800/1900MHz
	<input type="checkbox"/> CDMA	/
	<input checked="" type="checkbox"/> WCDMA	Bands 1/2/4/5/8
	<input checked="" type="checkbox"/> LTE	Bands 1/2/3/4/5/7/8/12/17/20/25/26/28/38/40/41/66
	<input checked="" type="checkbox"/> 5G NR SA	Bands 1/3/5/7/8/20/28/38/40/41/66/77/78
	<input checked="" type="checkbox"/> 5G NR NSA	Refer to the manufacturer's specifications
Unlicensed Radio	<input checked="" type="checkbox"/> Wi-Fi 2.4GHz	802.11b/g/n(20MHz,40MHz)/ax(20MHz,40MHz)
	<input checked="" type="checkbox"/> Wi-Fi 5GHz	802.11a/n(20MHz,40MHz)/ac(20MHz,40MHz,80MHz)/ax(20MHz,40MHz,80MHz,160MHz)
	<input checked="" type="checkbox"/> Wi-Fi 5.8GHz	802.11a/n(20MHz,40MHz)/ac(20MHz,40MHz,80MHz)/ax(20MHz,40MHz,80MHz,160MHz)
	<input checked="" type="checkbox"/> Bluetooth	<input checked="" type="checkbox"/> EDR <input type="checkbox"/> BLE4 <input checked="" type="checkbox"/> BLE5
Other	<input checked="" type="checkbox"/> GNSS	<input checked="" type="checkbox"/> GPS <input checked="" type="checkbox"/> BDS <input checked="" type="checkbox"/> Galileo <input checked="" type="checkbox"/> Glonass
	<input type="checkbox"/> FM <input checked="" type="checkbox"/> MP3 <input checked="" type="checkbox"/> MP4 <input checked="" type="checkbox"/> Camera <input checked="" type="checkbox"/> USB <input checked="" type="checkbox"/> NFC	
	<input checked="" type="checkbox"/> External memory	
Temperature	-10-55°C	
Normal Voltage	3.85V	
Extreme Low Voltage	3.60V	
Extreme High Voltage	4.4V	

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, LTE Band 17, LTE Band 26, 5G NR Band5.

Samples undergoing test were selected by the client.

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

For more EUT information please refer to the manufacturer's specifications or user's manual.

### 3.5. EUT set-ups

#### Set-up

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	UT22a + AE1 + AE3-1 +AE5	Adapter1 + cable1
Set.2	UT22a + AE2 + AE3-2 +AE5	Adapter2 + cable2
Set.3	UT22a +AE5	headset
Set.4	UT22a + AE3-1/2 + UT23a	EUT+EUT
Set.5	UT22a + AE3-1/2 + HD	EUT+HD
Set.6	UT22a + AE3-1/2 + PC	Type C communication with PC
Set.7	UT22a + AE4 + PC + SD	USB communication with PC+SD

#### Test mode

Mode No.	Operating mode	Remarks
mode.1	MP4 Play	RE, CE
mode.2	Front Camera	RE, CE
mode.3	Rear Camera	RE, CE
mode.4	OTG Phone to Phone	RE only
mode.5	OTG + Mobile HD+MP4	RE only
mode.6	USB DATA (TYPE C)	RE, CE
mode.7	USB DATA (USB, SD TO PC)	RE, CE
mode.8	CXX RX mode	GSM850, WCDMA Band 5, LTE Band 5, LTE Band 12, LTE Band 17, LTE Band 26, 5G NR Band5 (Low/Mid/High channel)



## 4. Reference Documents

### 4.1. Documents supplied by applicant

EUT parameters are supplied by the client or manufacturer, which is the basis of testing.

### 4.2. 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 47 CFR 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** 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;
Electrical insulation	1MHz— 1000MHz, >90dB. > 2 MΩ
Ground system resistance	< 4 Ω
Temperature	Min. = 15 °C, Max. = 35 °C

## 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

### Test Equipment

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURER	CAL DUE DATE	CALIBRATION INTERVAL
1	Test Receiver	ESU26	100376	R&S	2024-06-29	1 year
2	Test Receiver	ESCI	100766	R&S	2024-02-29	1 year
3	LISN	ENV216	101459	R&S	2024-03-30	1 year
4	BiLog Antenna	VULB9163	01223	Schwarzbeck	2024-08-18	1 year
5	EMI Antenna	3115	00119021	ETS-Lindgren	2024-06-24	1 year
6	Universal Radio Communication Tester	CMW500	159408	R&S	2024-04-26	1 year
7	Universal Radio Communication Tester	SP9500	20482	StarPoint	2024-11-29	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
12	PC	T14S	PC-1RP0TY	Lenovo	N/A	N/A

### Test Software

Test Item	Test Software and Version	Software Vendor
Radiated Continuous Emission	EMC32 V8.53.0	R&S
Conducted Emission	EMC32 V8.53.0	R&S

## **ANNEX A: MEASUREMENT RESULTS**

### **A.1 Radiated Emission**

#### **Reference**

FCC: CFR Part 15.109(a).

#### **A.1.1 Method of measurement**

The field strength of radiated emissions from the unintentional radiator 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 and arranged in a typical configuration in accordance with ANSI C63.4-2014 and manipulated to obtain worst case emissions. 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.

For the test setup photographs please see the test setup photos document.

#### **A.1.2 EUT Operating Mode**

The EUT is operating in the USB mode, charging mode, MP3, MP4, CAMERA, OTG, SD and cellular RX 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.

#### A.1.4 Test Condition

Voltage (V)	Frequency (Hz)
120	60

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

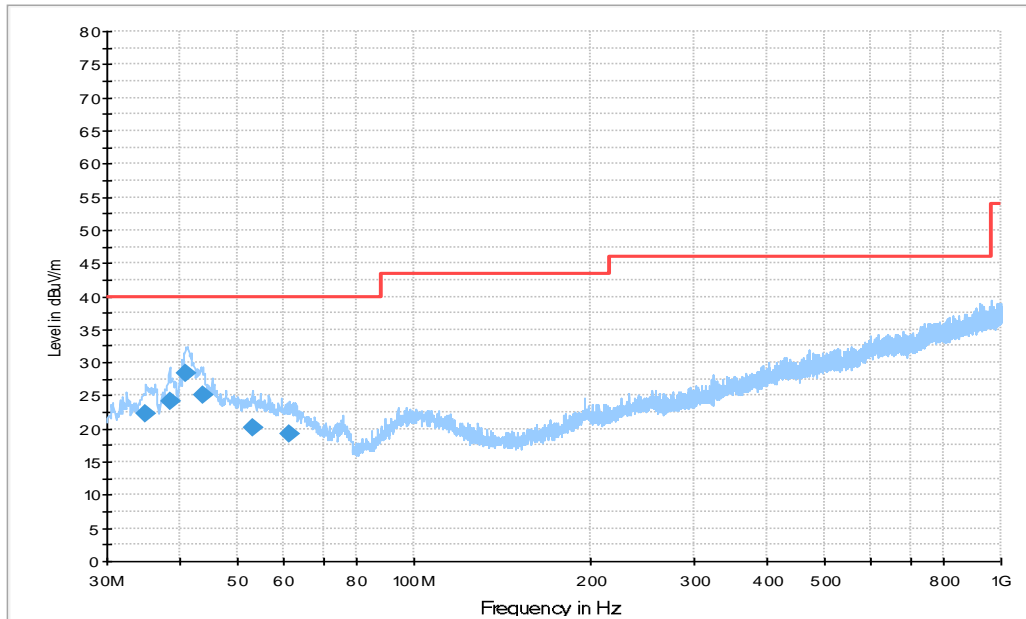
$G_{\text{PL}}$ : Path Loss

$P_{\text{Mea}}$ : Measurement result on receiver.

Measurement uncertainty (worst case): 30MHz-1GHz: 5.73dB, 1GHz-18GHz: 5.58dB,  $k=2$ .

Note: all the set-up and operating mode list in section 3.5 were tested, only the worst test data are showed in this section.

**Set.1+Mode3, Rear Camera**



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

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBuV/m)
34.947000	22.4	100.0	V	90.0	-2.2	17.6	40.0
38.342000	24.1	100.0	V	108.0	-1.0	15.9	40.0
40.961000	28.5	100.0	V	64.0	-0.2	11.5	40.0
43.677000	25.0	100.0	V	45.0	0.3	15.0	40.0
52.989000	20.3	125.0	H	45.0	0.4	19.7	40.0
61.234000	19.2	100.0	V	135.0	-1.1	20.8	40.0

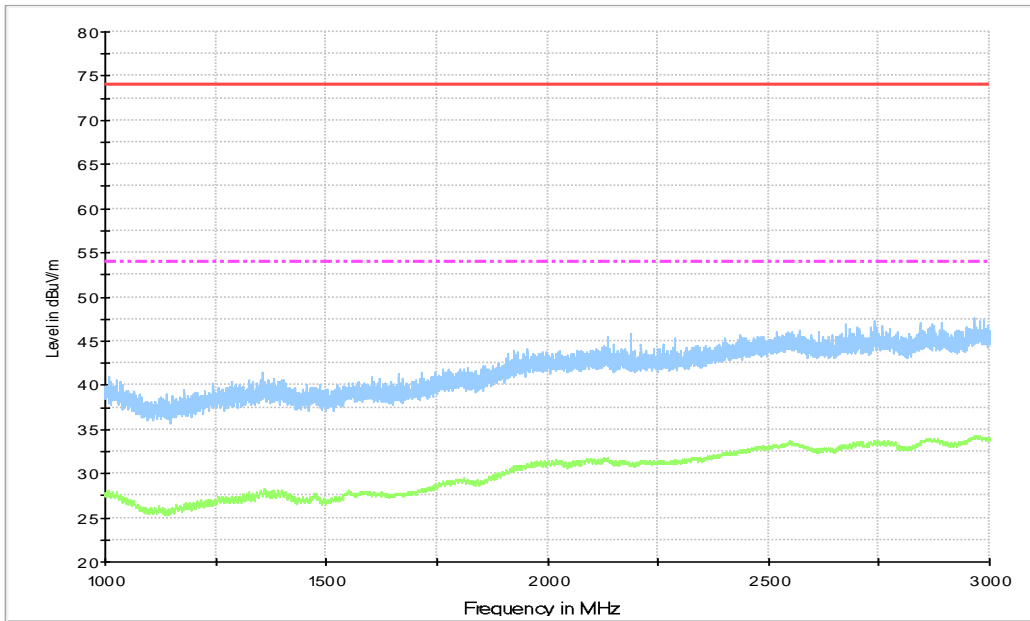


Figure A.2 Radiated Emission from 1GHz to 3GHz

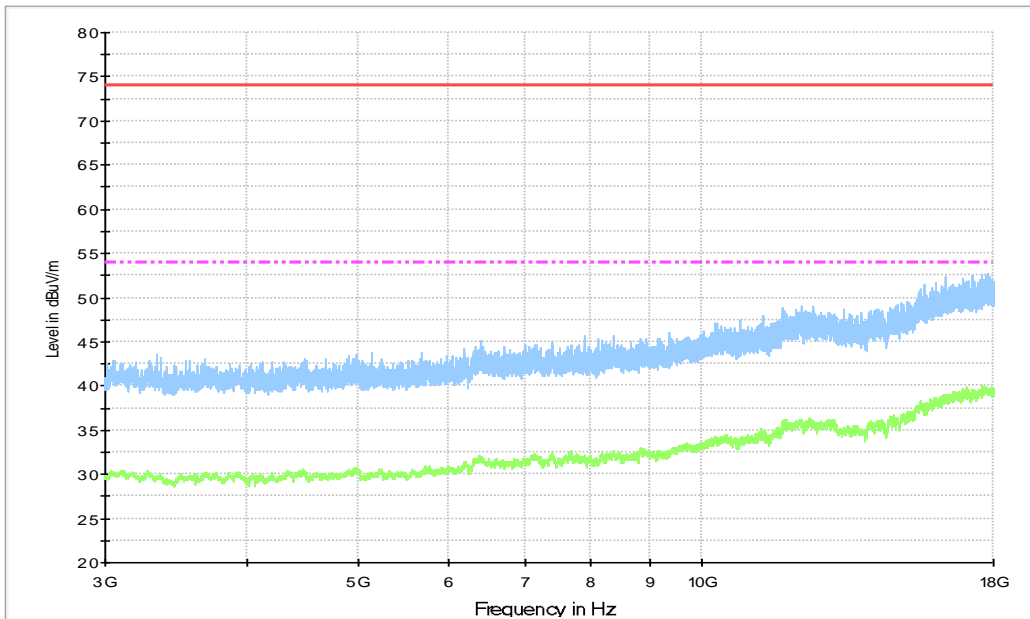


Figure A.3 Radiated Emission from 3GHz to 18GHz



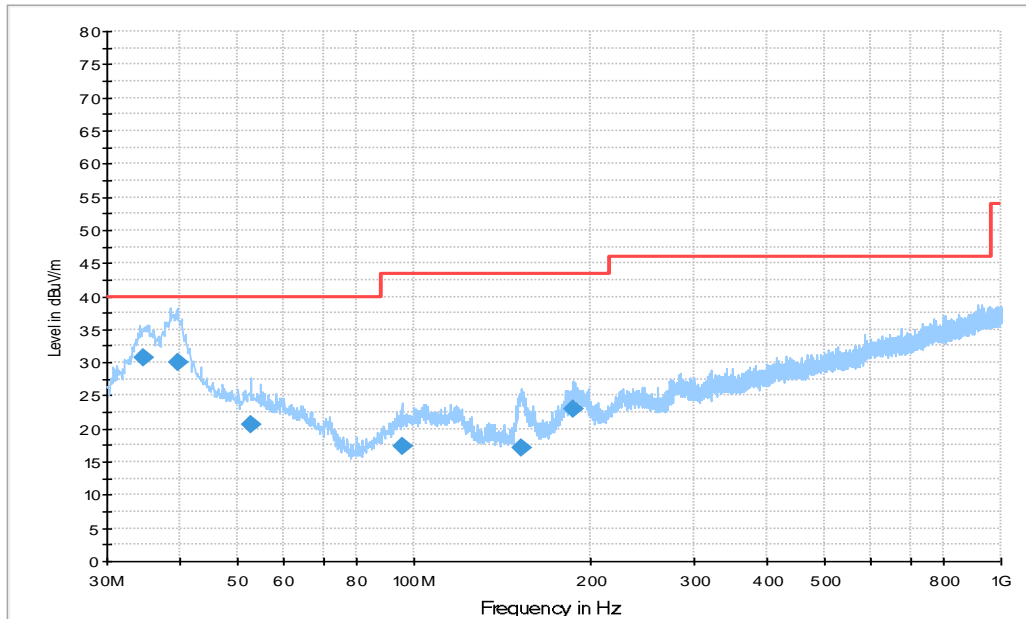
**Average detector result**

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)
17602.000	39.83	-23.75	40.60	22.98	54.00	14.17	V
17618.000	39.83	-23.72	40.60	22.94	54.00	14.17	V
17713.000	39.82	-23.66	40.59	22.89	54.00	14.18	H
17623.500	39.81	-23.70	40.60	22.91	54.00	14.19	H
17605.500	39.80	-23.75	40.60	22.95	54.00	14.20	V
17604.000	39.77	-23.75	40.60	22.92	54.00	14.23	H

**Peak detector result**

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)
17471.500	52.69	-24.06	40.63	36.12	74.00	21.31	V
17592.500	52.64	-23.78	40.60	35.82	74.00	21.36	V
17702.500	52.54	-23.66	40.60	35.60	74.00	21.46	V
17866.500	52.30	-23.52	40.50	35.32	74.00	21.70	H
17746.500	52.30	-23.65	40.55	35.39	74.00	21.70	H
17694.000	52.24	-23.66	40.60	35.30	74.00	21.76	H

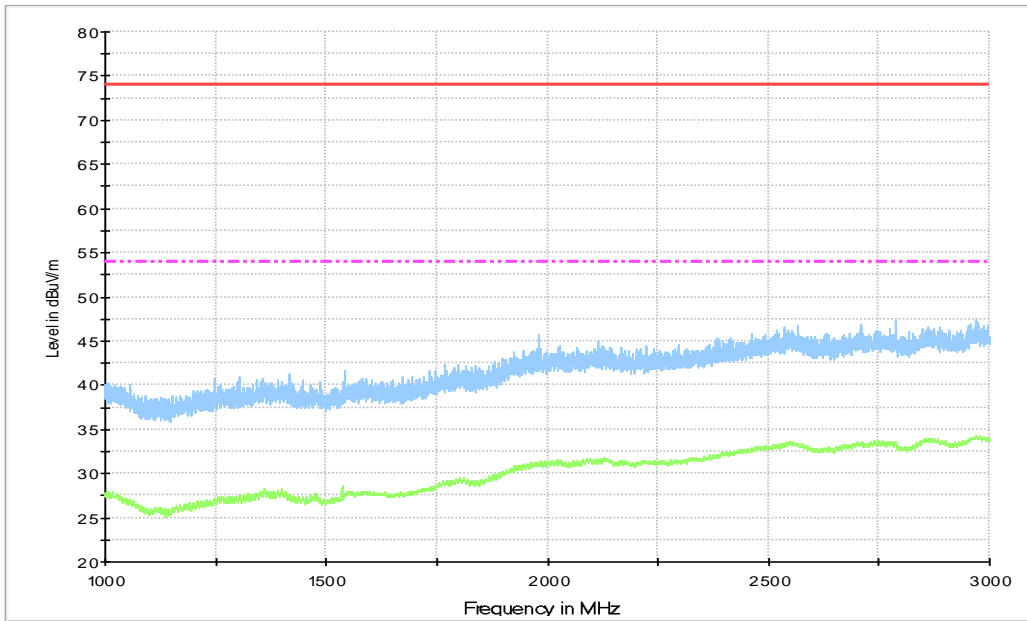
**Set.2+Mode2+Mode8, Front Camera + RX LTE Band 12**



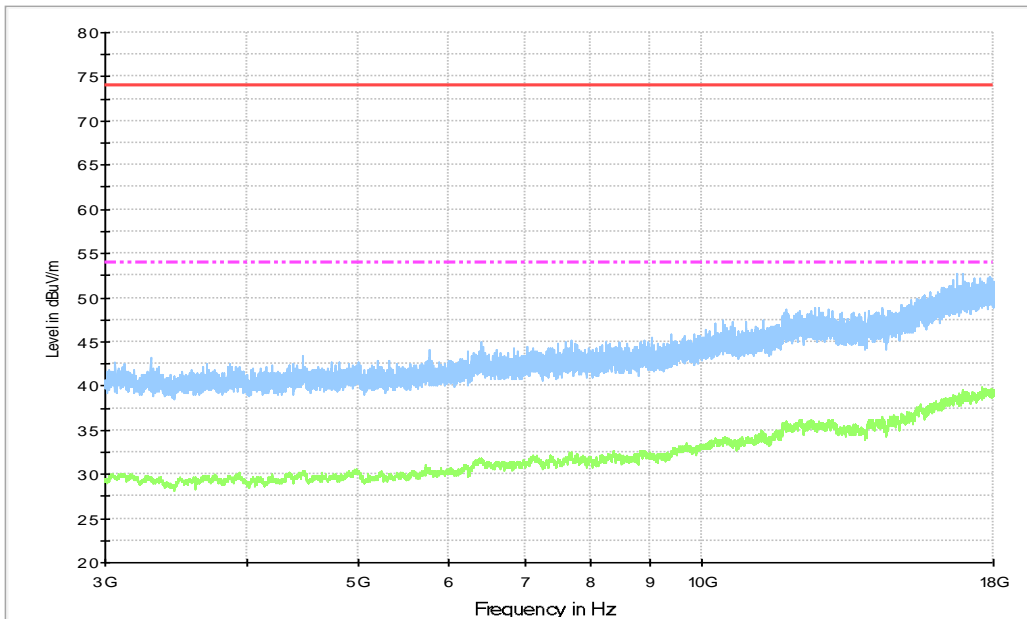
**Figure A.4 Radiated Emission from 30MHz to 1GHz**

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBuV/m)
34.656000	30.8	100.0	V	45.0	-2.4	9.2	40.0
39.603000	30.0	100.0	V	-45.0	-0.6	10.0	40.0
52.698000	20.7	100.0	V	70.0	0.4	19.3	40.0
95.281000	17.5	125.0	V	218.0	-1.9	26.0	43.5
152.51100	17.2	113.0	V	200.0	-4.4	26.3	43.5
186.26700	23.0	100.0	V	0.0	-1.9	20.5	43.5



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



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

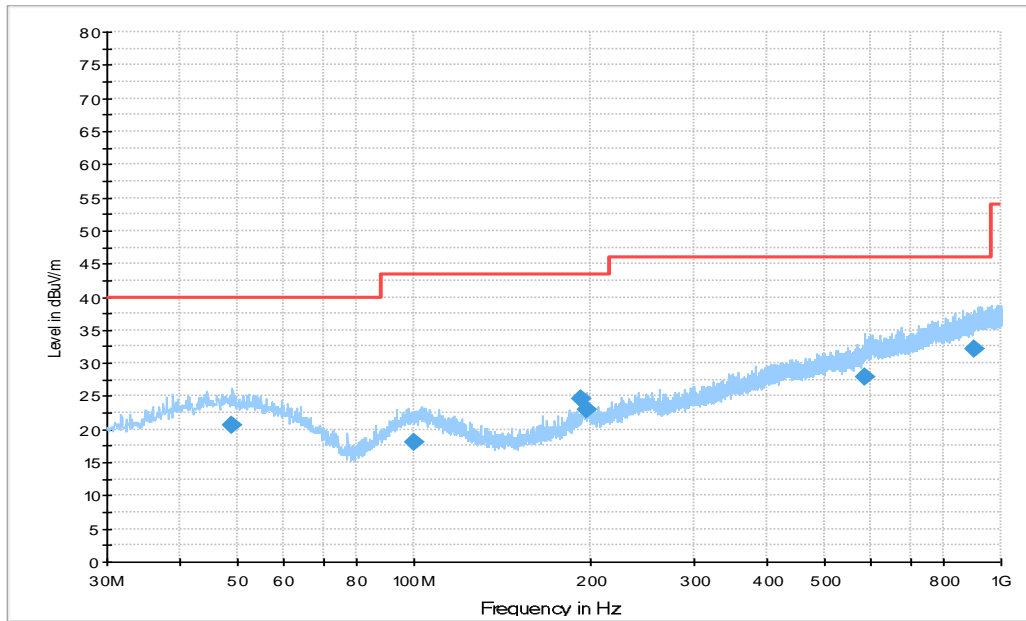
**Average detector result**

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)
17602.000	39.85	-23.75	40.60	23.00	54.00	14.15	V
17621.500	39.76	-23.71	40.60	22.87	54.00	14.24	V
17707.500	39.75	-23.66	40.59	22.82	54.00	14.25	V
17612.000	39.73	-23.73	40.60	22.86	54.00	14.27	V
17707.000	39.71	-23.66	40.59	22.78	54.00	14.29	H
17605.000	39.71	-23.75	40.60	22.85	54.00	14.29	V

**Peak detector result**

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)
16709.500	52.81	-25.24	41.48	36.57	74.00	21.19	H
16916.500	52.71	-24.68	41.27	36.12	74.00	21.29	H
17853.500	52.37	-23.55	40.50	35.42	74.00	21.63	V
17518.000	52.27	-23.95	40.60	35.62	74.00	21.73	V
17812.000	52.16	-23.63	40.50	35.29	74.00	21.84	H
17960.000	52.14	-23.34	40.56	34.92	74.00	21.86	V

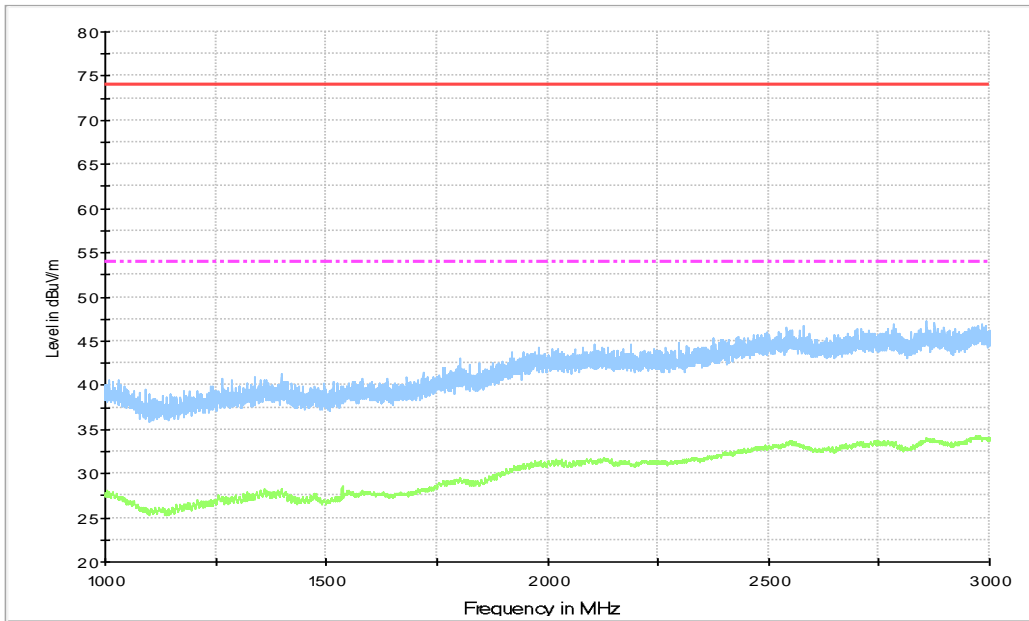
**Set.3+Mode1+Mode8, MP4 +RX LTE B5**



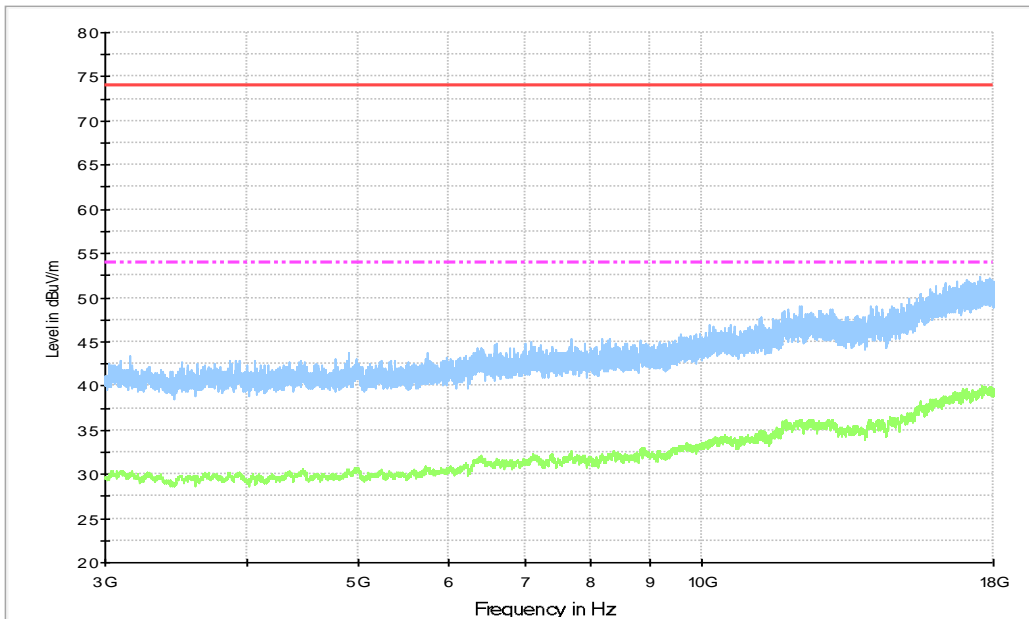
**Figure A.7 Radiated Emission from 30MHz to 1GHz**

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBuV/m)
49.109000	20.6	100.0	H	25.0	0.9	19.4	40.0
99.840000	18.0	100.0	H	147.0	-1.3	25.5	43.5
191.990000	24.7	100.0	H	77.0	-1.1	18.8	43.5
196.646000	23.0	100.0	H	90.0	-0.3	20.5	43.5
587.168000	27.8	113.0	V	19.0	9.1	18.2	46.0
898.538000	32.1	100.0	V	166.0	13.1	13.9	46.0



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



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

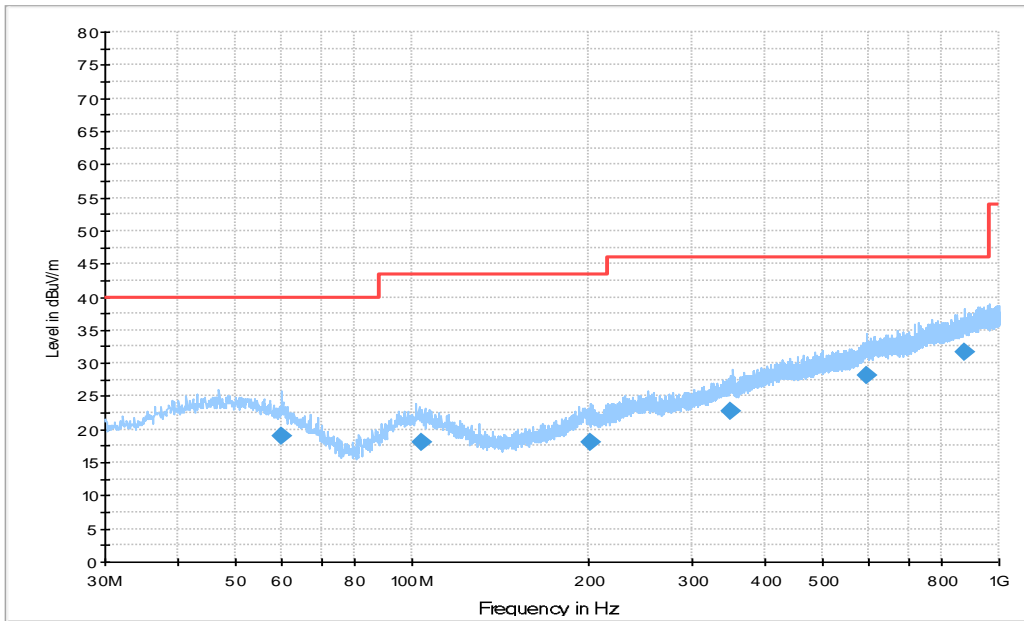
**Average detector result**

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)
17613.500	40.12	-23.73	40.60	23.25	54.00	13.88	V
17609.000	40.10	-23.74	40.60	23.24	54.00	13.90	V
17604.500	39.92	-23.75	40.60	23.07	54.00	14.08	H
17714.500	39.91	-23.66	40.59	22.98	54.00	14.09	V
17713.000	39.90	-23.66	40.59	22.97	54.00	14.10	H
17622.500	39.90	-23.71	40.60	23.00	54.00	14.10	V

**Peak detector result**

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)
16709.500	52.81	-25.24	41.48	36.57	74.00	21.19	H
16916.500	52.71	-24.68	41.27	36.12	74.00	21.29	H
17853.500	52.37	-23.55	40.50	35.42	74.00	21.63	V
17518.000	52.27	-23.95	40.60	35.62	74.00	21.73	V
17812.000	52.16	-23.63	40.50	35.29	74.00	21.84	H
17960.000	52.14	-23.34	40.56	34.92	74.00	21.86	V

**Set.4+Mode4+Mode8, OTG + RX NR Band5**

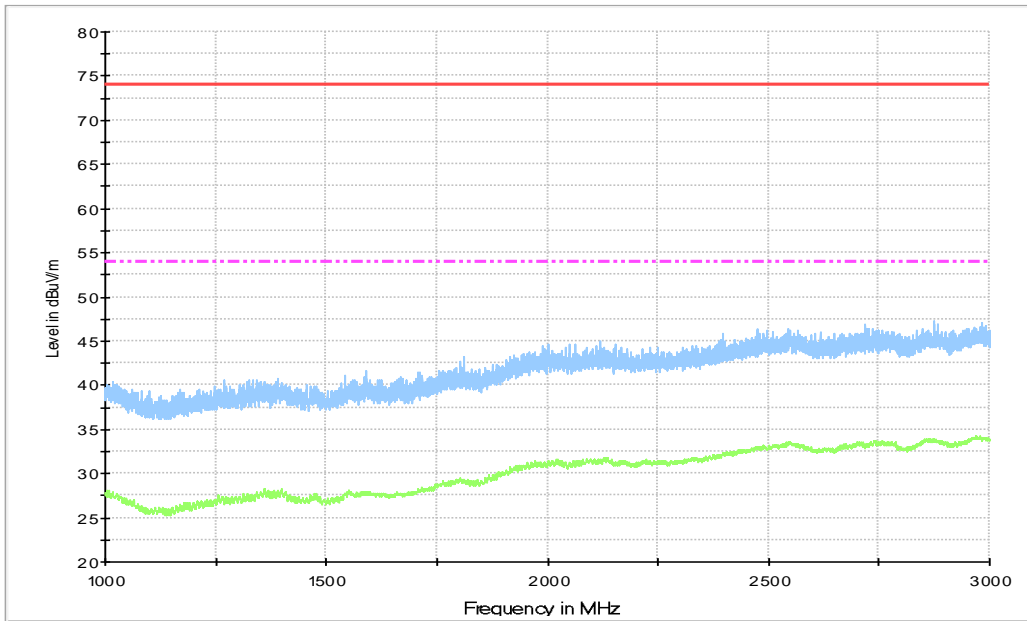


**Figure A.10 Radiated Emission from 30MHz to 1GHz**

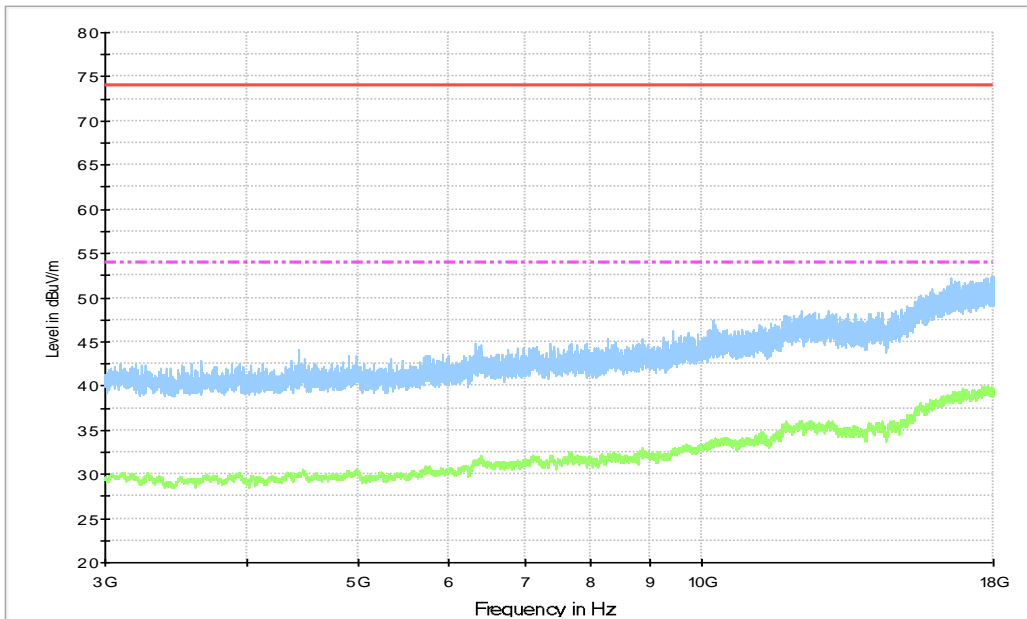
**Final Result 1**

Frequency (MHz)	QuasiPeak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBuV/m)
60.070000	19.0	100.0	V	308.0	-0.7	21.0	40.0
104.01100	18.0	100.0	V	109.0	-1.1	25.5	43.5
201.59300	18.1	100.0	H	231.0	-0.8	25.4	43.5
349.22700	22.8	100.0	V	225.0	4.1	23.2	46.0
594.15200	28.1	100.0	V	-39.0	9.3	17.9	46.0
875.54900	31.8	100.0	V	167.0	12.7	14.2	46.0





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



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

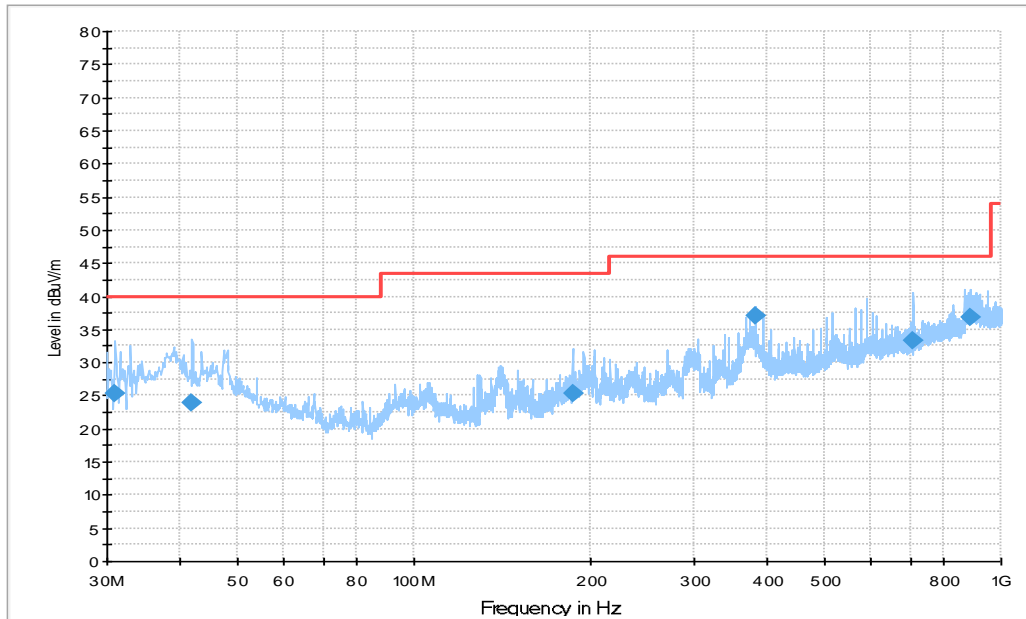
**Average detector result**

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)
18000.000	39.59	-23.41	40.60	22.39	54.00	14.41	V
17999.500	39.48	-23.40	40.60	22.28	54.00	14.52	V
17999.000	39.60	-23.40	40.60	22.40	54.00	14.40	H
17998.500	39.57	-23.39	40.60	22.36	54.00	14.43	H
17998.000	39.64	-23.39	40.60	22.43	54.00	14.36	V
17997.500	39.46	-23.38	40.60	22.25	54.00	14.54	H

**Peak detector result**

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)
17898.500	52.34	-23.46	40.50	35.30	74.00	21.66	H
17997.000	52.29	-23.38	40.60	35.08	74.00	21.71	H
16504.000	52.28	-25.55	41.21	36.62	74.00	21.72	V
17770.500	52.24	-23.64	40.53	35.35	74.00	21.76	V
17897.000	52.19	-23.46	40.50	35.15	74.00	21.81	V
17743.000	52.11	-23.65	40.56	35.21	74.00	21.89	H

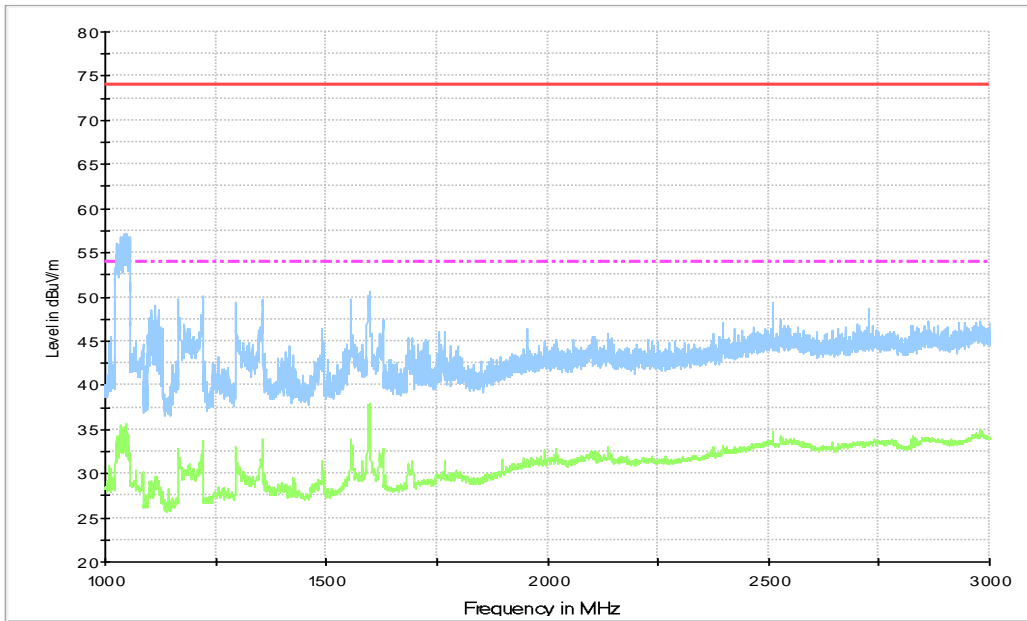
**Set.7+Mode7+Mode9, USB (SD TO PC) +RX LTE Band26**



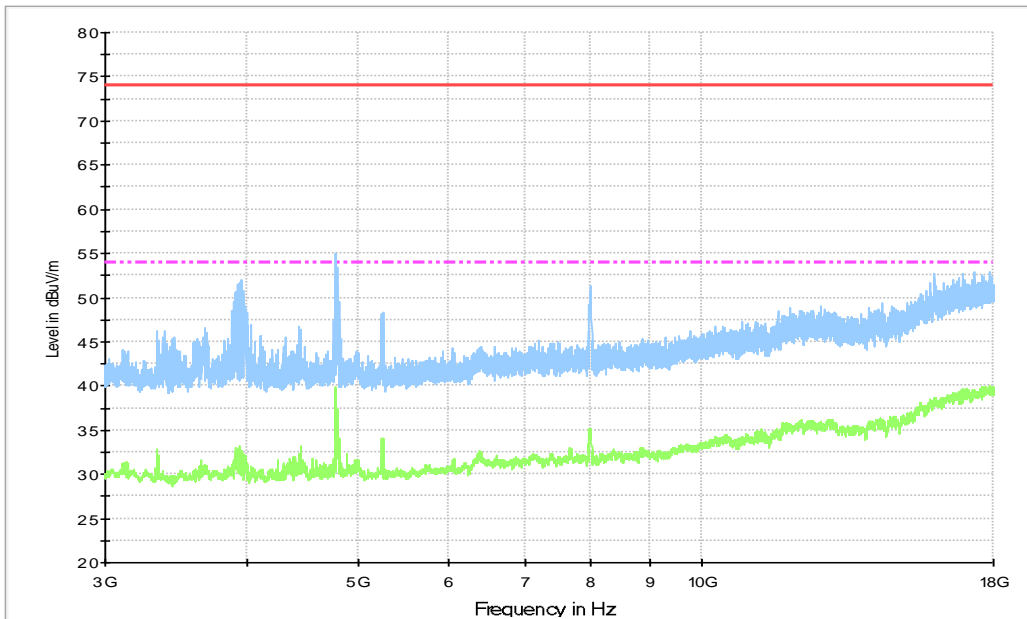
**Figure A.13 Radiated Emission from 30MHz to 1GHz**

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBuV/m)
30.970000	25.2	100.0	V	211.0	-3.5	14.8	40.0
41.931000	23.9	113.0	V	0.0	-0.2	16.1	40.0
186.07300	25.5	113.0	H	180.0	-2.0	18.0	43.5
380.94600	37.0	100.0	V	12.0	4.7	9.0	46.0
707.06000	33.4	113.0	H	154.0	10.1	12.6	46.0
885.24900	36.9	113.0	V	6.0	12.8	9.1	46.0



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



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

**Average detector result**

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)
1045.600	35.61	-38.46	28.39	45.67	54.00	18.39	V
1220.400	33.74	-38.27	27.91	44.11	54.00	20.26	V
1596.000	37.86	-37.69	28.52	47.03	54.00	16.14	V
3935.500	33.11	-35.17	33.19	35.10	54.00	20.89	H
4780.000	39.85	-35.09	33.96	40.98	54.00	14.15	H
7970.000	35.09	-32.80	35.68	32.21	54.00	18.91	V

**Peak detector result**

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)
1046.000	57.19	-38.46	28.39	67.27	74.00	16.81	V
1295.400	49.40	-38.04	28.38	59.06	74.00	24.60	V
1599.200	50.53	-37.71	28.50	59.73	74.00	23.47	V
3949.500	52.04	-35.16	33.10	54.09	74.00	21.96	V
4780.000	54.98	-35.09	33.96	56.11	74.00	19.03	H
7982.500	51.29	-32.83	35.73	48.39	74.00	22.71	V

## 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.

For the test setup photographs please see the test setup photos document.

#### A.2.2 EUT Operating Mode

The EUT is operating in the USB mode, charging mode, MP3, MP4, CAMERA, SD and cellular RX 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

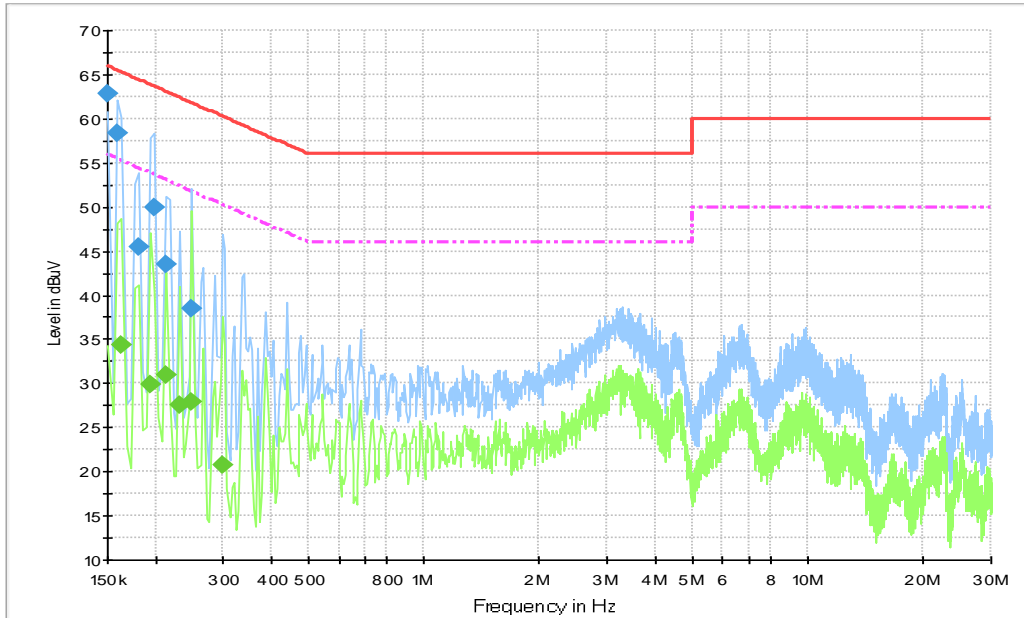
RBW/IF bandwidth	Sweep Time(s)
9kHz	1

### A.2.5 Measurement Results

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

Note: all the set-up and operating mode list in section 3.5 were tested, only the worst test data are showed in this section.

#### Set.1+Mode3



Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

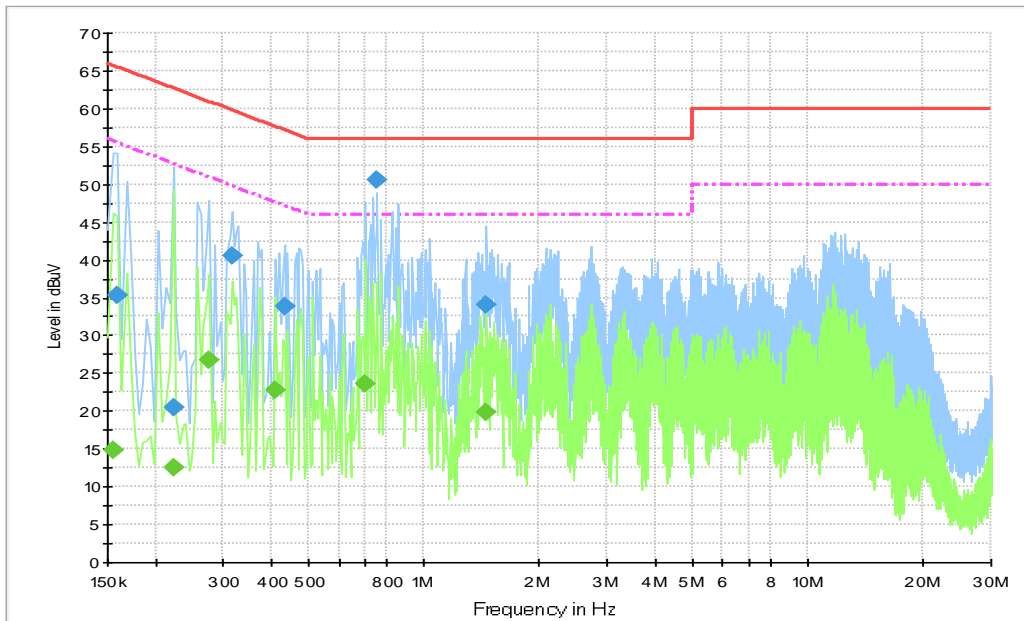
**Figure A.16 Conducted Emission**

#### Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	62.8	2000.0	9.000	L1	19.7	3.2	66.0
0.159000	58.4	2000.0	9.000	N	19.7	7.1	65.5
0.181500	45.5	2000.0	9.000	L1	19.7	18.9	64.4
0.199500	50.0	2000.0	9.000	L1	19.7	13.7	63.6
0.213000	43.5	2000.0	9.000	L1	19.7	19.6	63.1
0.249000	38.5	2000.0	9.000	L1	19.7	23.3	61.8

#### Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.163500	34.4	2000.0	9.000	L1	19.7	20.8	55.3
0.195000	29.9	2000.0	9.000	L1	19.7	24.0	53.8
0.213000	31.0	2000.0	9.000	L1	19.7	22.1	53.1
0.231000	27.5	2000.0	9.000	L1	19.7	24.9	52.4
0.249000	27.8	2000.0	9.000	N	19.7	24.0	51.8
0.298500	20.7	2000.0	9.000	L1	19.6	29.5	50.3

**Set.2+Mode2+ Mode9**


Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

**Figure A.17 Conducted Emission**

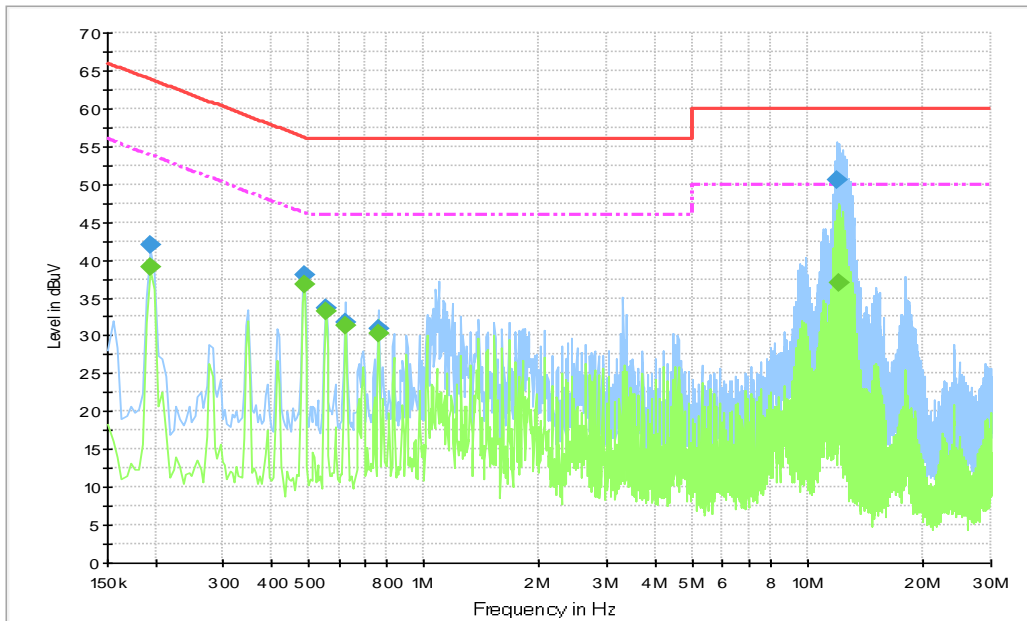
**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.159000	35.3	2000.0	9.000	N	19.7	30.2	65.5
0.222000	20.5	2000.0	9.000	L1	19.7	42.2	62.7
0.316500	40.6	2000.0	9.000	N	19.6	19.2	59.8
0.433500	33.8	2000.0	9.000	N	19.7	23.4	57.2
0.757500	50.6	2000.0	9.000	L1	19.7	5.4	56.0
1.455000	34.1	2000.0	9.000	N	19.7	21.9	56.0

**Final Result 2**

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.154500	14.8	2000.0	9.000	N	19.7	40.9	55.8
0.222000	12.5	2000.0	9.000	N	19.7	40.2	52.7
0.276000	26.7	2000.0	9.000	L1	19.7	24.2	50.9
0.411000	22.9	2000.0	9.000	L1	19.7	24.8	47.6
0.703500	23.7	2000.0	9.000	L1	19.6	22.3	46.0
1.455000	20.0	2000.0	9.000	L1	19.7	26.0	46.0



**Set.7+Mode7+Mode8**


Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

**Figure A.18 Conducted Emission**

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.195000	42.1	2000.0	9.000	L1	19.7	21.8	63.8
0.487500	37.9	2000.0	9.000	N	19.6	18.3	56.2
0.555000	33.6	2000.0	9.000	L1	19.6	22.4	56.0
0.622500	31.8	2000.0	9.000	N	19.6	24.2	56.0
0.762000	30.9	2000.0	9.000	N	19.7	25.1	56.0
11.935500	50.5	2000.0	9.000	L1	19.9	9.5	60.0

**Final Result 2**

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.195000	39.1	2000.0	9.000	L1	19.7	14.8	53.8
0.487500	36.9	2000.0	9.000	N	19.6	9.3	46.2
0.555000	33.2	2000.0	9.000	N	19.6	12.8	46.0
0.622500	31.3	2000.0	9.000	L1	19.6	14.7	46.0
0.762000	30.4	2000.0	9.000	L1	19.7	15.6	46.0
12.039000	37.0	2000.0	9.000	L1	19.9	13.0	50.0



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

Test Item	Tester
Radiated Emission	Sun Tianyuan
Conducted Emission	Yan Xaorui

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