



# TEST REPORT

## No.I22N01741-EMC

for

**HMD Global Oy**

**Smart Phone**

**Model Name: TA-1429**

**With**

**Hardware Version: V01**

**Software Version: 00WW\_0\_010**

**FCC ID: 2AJOTTA-1429**

**Issued Date: 2022-10-05**

**Designation Number: CN1210**

**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 SAICT.

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No.I22N01741-EMC

## **REPORT HISTORY**

<b>Report Number</b>	<b>Revision</b>	<b>Description</b>	<b>Issue Date</b>
I22N01741-EMC	Rev.0	1st edition	2022-10-05

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

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## 1. SUMMARY OF TEST REPORT

### 1.1. Test Items

Description	Smart Phone
Model Name	TA-1429
Applicant's name	HMD Global Oy
Manufacturer's Name	HMD Global Oy

### 1.2. Test Standards

FCC Part 15, Subpart B (10-1-2020 Edition); ANSI C63.4-2014.

### 1.3. Test Result

Total test 2 items, pass 2 items. Please refer to "6.2 Test Results".

### 1.4. Testing Location

Address: Building G, Shenzhen International Innovation Center, No.1006  
Shennan Road, Futian District, Shenzhen, Guangdong, China

### 1.5. Project data

Testing Start Date: 2022-09-30

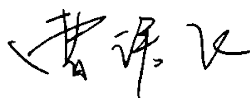
Testing End Date: 2022-09-30

### 1.6. Signature



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Liang Yong  
(Prepared this test report)



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Cao Junfei  
(Approved this test report)



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Zhang Yunzhuan  
(Reviewed this test report)



## **2. CLIENT INFORMATION**

### **2.1. Applicant Information**

Company Name: HMD Global Oy  
Address: Bertel Jungin aukio 9, 02600 Espoo, Finland  
Contact: Reza Serafat  
Email: reza.serafat@hmdglobal.com  
Tel: +393 31 6272922

### **2.2. Manufacturer Information**

Company Name: HMD Global Oy  
Address: Bertel Jungin aukio 9, 02600 Espoo, Finland  
Contact: Reza Serafat  
Email: reza.serafat@hmdglobal.com  
Tel: +393 31 6272922

### 3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT

#### (AE)

#### 3.1. About EUT

Description	Smart Phone
Model Name	TA-1429
FCC ID	2AJOTTA-1429
Condition of EUT as received	No obvious damage in appearance

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of Shenzhen Academy of Information and Communications Technology.

#### 3.2. Internal Identification of EUT

EUT ID*	SN or IMEI	HW Version	SW Version	Receive Date
UT01aa	356254720183683	V01	00WW_0_010	2022-09-26

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

#### 3.3. Internal Identification of AE

##### **AE ID\*      Description**

AE1	Battery
AE2	Charger
AE3	USB Cable
AE4	Headset

##### AE1-1

Model	GH6581
Manufacturer	Shenzhen Aerospace Electronic CO.,Ltd.
Capacity	4850mAh
Nominal Voltage	3.85v

##### AE2-1

Model	AD-010E
Manufacturer	Shenzhen Baijunda Electronics Co. LTD

##### AE2-2

Model	AD-010U
Manufacturer	Shenzhen Baijunda Electronics Co. LTD

##### AE2-3

Model	AD-010A
Manufacturer	Shenzhen Baijunda Electronics Co. LTD

##### AE2-4

Model	AD-010X
Manufacturer	Shenzhen Baijunda Electronics Co. LTD

##### AE3-1

Model	MO56B2000100
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Manufacturer Qianyang FKY Electronic Technology Co., Ltd.  
AE4

Model JWEP1199-M01H

Manufacturer JUWEI ELECTRONICS CO.,LTD

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

AE: ancillary equipment

AE2: The circuit boards of model AD-010E (AE2-1), AD-010U (AE2-2), AD-010A (AE2-3), and AD-010X (AE2-4), are the same.

### 3.4. EUT Set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT+AE1-1+AE2-1+AE3-1+AE4	
Set.2	EUT+AE1-1+AE3-1+PC	

### 3.5. General Description

The Equipment Under Test (EUT) is a model of Smart Phone.

It supports GSM 850/900/1800/1900MHz, WCDMA Bands 1/2/4/5/8 and

LTE Bands 1/2/3/4/5/7/8/12/13/17/28/66.

It has Video Player, Camera, FM Receiver, USB memory, Bluetooth, Wi-Fi and GNSS functions.

It consists of normal options: Battery, Charger USB Cable and headset.

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

Samples (EUT+AE) undergoing test were selected by the Client. Relevant information is provided by the client.

This report serves as a record of Smart Phone TA-1429 manufactured by HMD Global Oy.

According to the declaration of differences by manufacturer. The table below shows the details;

Model Differences	TA-1429(Initial)	TA-1429(Record)
CPU	/	Add 3rd substrate for CPU UMS9230, only assembly Site changes, to expand capacity.
Software	/	1.Android A12 provides common Patch upgrade for UMS9230 1st and 2nd substrate software engineering; 2.Android A12 provides a baseline version, compatible with UMS9230 1st and 2nd substrate;
Software Version	00WW_0_017	00WW_0_010

According to the declaration of differences by manufacturer, the following tests need to be performed.

NO.	Test item	EUT Operating Mode
1	Radiated Emission	Video Player
2	Conducted Emission	Video Player/FM receiver

Other results are cited from the initial report.

The report number for initial model is I22N00718-EMC.



#### **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	(10-1-2020 Edition)
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2014

## 5. LABORATORY ENVIRONMENT

Anechoic chamber (FACT3-2.0) did not exceed following limits along the EMC testing:

9.10m×6.10m×5.60m (L×W×H)

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz> 60 dB; 1MHz-18000MHz>90 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4Ω
Normalised site attenuation (NSA)	< ± 4 dB, 3 m distance, from 30 to 1000 MHz
Voltage Standing Wave Ratio (VSWR)	≤ 6 dB, from 1 to 18 GHz, 3 m distance
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> 60 dB; 1MHz-10000MHz>90 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4Ω

## **6. SUMMARY OF TEST RESULTS**

### **6.1. Testing Environment**

Normal Temperature: 15~35℃  
Relative Humidity: 20~75%  
Atmospheric pressure 86~106kPa

### **6.2. Summary of Measurement Results**

Abbreviations used in this clause:	
P	Pass
NA	Not applicable
F	Fail

Items	Test Name	Clause in FCC	Section in this report	Verdict
1	Radiated Emission	15.109(a)	A.1	P
2	Conducted Emission	15.107(a)	A.2	P

### **6.3. Statement**

#### **6.3.1 Statements of conformity**

This report takes measured values as criterion of test conclusion. The test conclusion meets the limit requirements.

## 7. MEASUREMENT UNCERTAINTY

Test item	Frequency ranges	Measurement uncertainty
Radiated Emission	30MHz-1GHz	4.86dB(k=2)
	1GHz-18GHz	4.82dB(k=2)
	18GHz-40GHz	2.90dB(k=2)
Conducted Emission	150kHz-30MHz	2.62dB(k=2)

## 8. MEASURING APPARATUS UTILIZED

No.	Name	Model	Serial Number	Manufacturer	Calibration Due date	Calibration Period
1.	Test Receiver	ESR7	101676	R&S	2022.11.24	1 year
2.	Test Receiver	ESCI	100702	R&S	2023.01.12	1 year
3.	Spectrum Analyzer	FSV40	101192	R&S	2023.01.12	1 year
4.	BiLog Antenna	3142E	0224831	ETS-Lindgren	2024.05.27	3 years
5.	Horn Antenna	3117	00066577	ETS-Lindgren	2025.03.15	3 years
6.	LISN	ENV216	102067	R&S	2022.07.15	1 year
7.	Chamber	FACT3-2.0	1285	ETS-Lindgren	2023.05.29	2 years
8.	Software	EMC32	V10.50.40	R&S	/	/
9.	Horn Antenna	QSH-SL-18-2 6-S-20	17013	Q-par	2023.01.06	3 years
10.	Horn Antenna	QSH-SL-8-26- 40-K-20	17014	Q-par	2023.01.06	3 years

## **ANNEX A: MEASUREMENT RESULTS**

### **A.1 Radiated Emission (§15.109(a))**

#### **Reference**

FCC: Part 15.109(a)

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

The field strength of radiated emissions from the unintentional radiator at a distance of 3 meters or 1 meter 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. Below 18GHz the measurement antenna was placed at a distance of 3 meters from the EUT. Above 18GHz the measurement antenna was placed at a distance of 1 meters from the EUT. (According to Part 15.31(f)(1), 1m limit is calculated by extrapolation factor of 20 dB/decade) 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:**

**Video Player:** The EUT is connected to a charger for charging and keeping on playing mp3.

**FM receiver:** The EUT is connected to a charger for charging. The EUT is synchronized to a FM signal generator. The EUT is keeping on demodulating the FM signal and outputting the audio signal through the headset.

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.

### A.1.3 Measurement Limit

Limit from Part 15.109(a)

Frequency range (MHz)	Field strength limit ( $\mu\text{V/m}$ )		
	Quasi-peak	Average	Peak
30-88	100		
88-216	150		
216-960	200		
960-1000	500		
>1000		500	5000

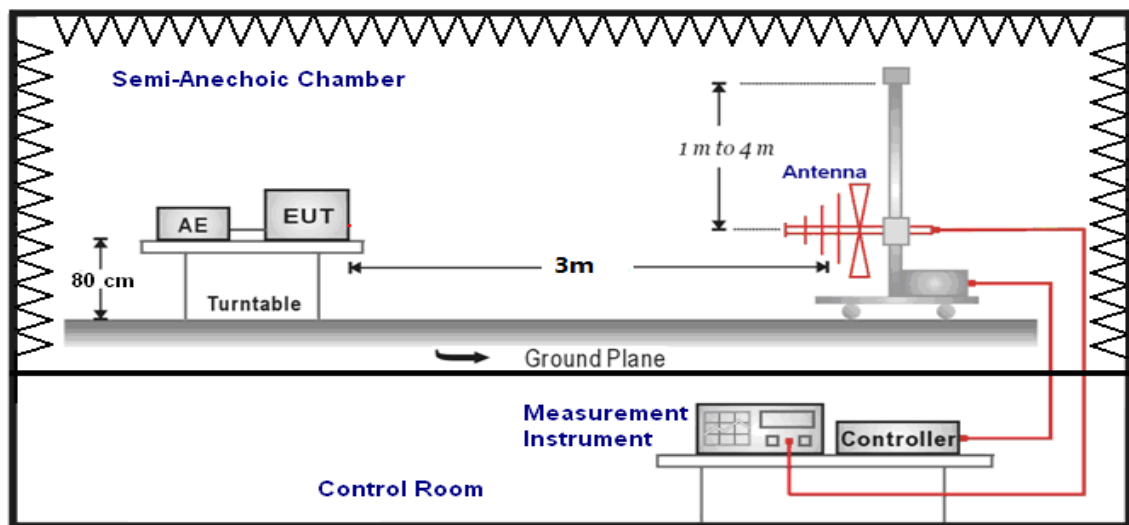
\*Note: The original limit is defined at 10m test distance. This limit is calculated according to CISPR requirements.

### A.1.4 Test Condition

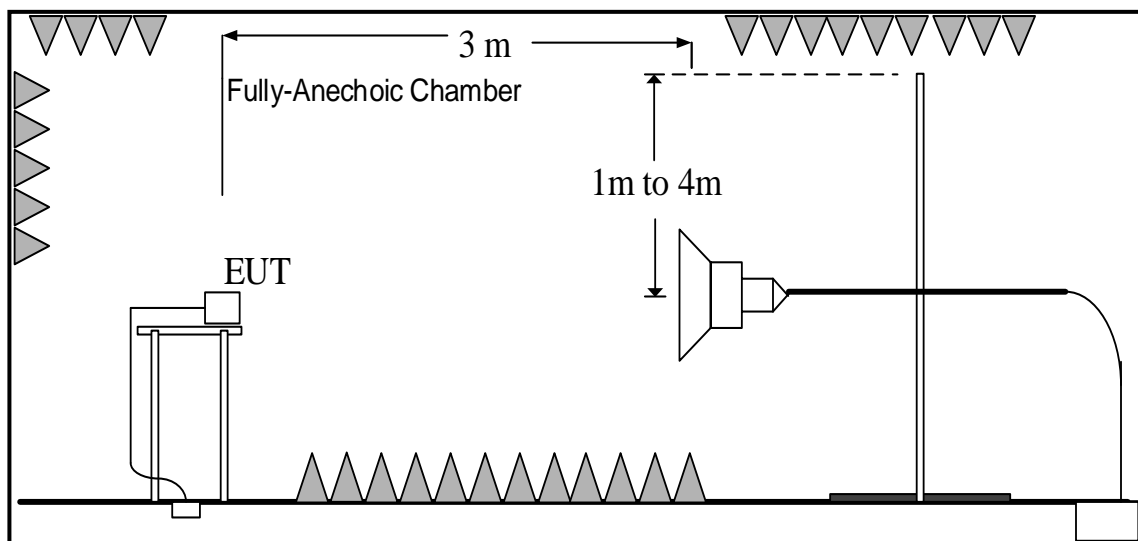
Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	120kHz (IF bandwidth)	5
Above 1000	1MHz/3MHz	15

### A.1.5 Test set-up:

30MHz-1GHz



## 1GHz-40GHz



### A.1.6 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:

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

Where

$G_A$ : Antenna factor of receive antenna

$G_{PL}$ : Path Loss

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

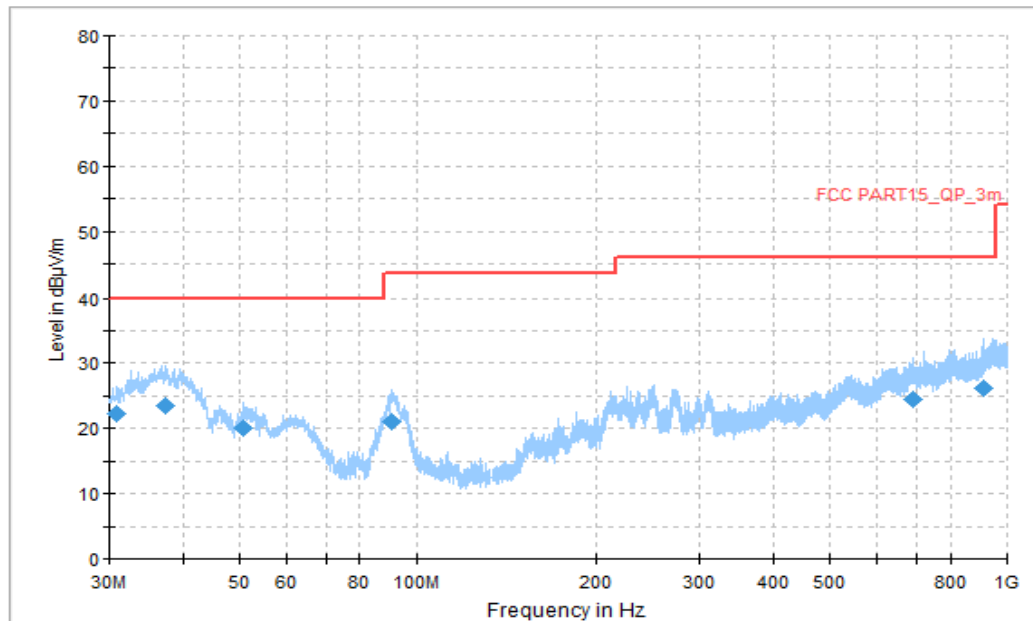
Result: Quasi-Peak (dB $\mu$ V/m) / Average (dB $\mu$ V/m) / Peak (dB $\mu$ V/m)

Note: the result contains vertical part and Horizontal part

#### Video Player

Frequency range (MHz)	Quasi-Peak Limit (dB $\mu$ V/m)	Result (dB $\mu$ V/m)	Conclusion
		UT01aa/Set.1	
30-88	40.00	See Figure A.1.1.	P
88-216	43.52		
216-960	46.02		
960-1000	54.00		

Frequency range (MHz)	Average Limit (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Result (dB $\mu$ V/m)	Conclusion
			UT01aa/Set.1	
1000 to 18000	54.00	74.00	See Figure A.1.2.	P
18000 to 26500	63.54	83.54	See Figure A.1.3.	
26500 to 40000	63.54	83.54	See Figure A.1.4.	

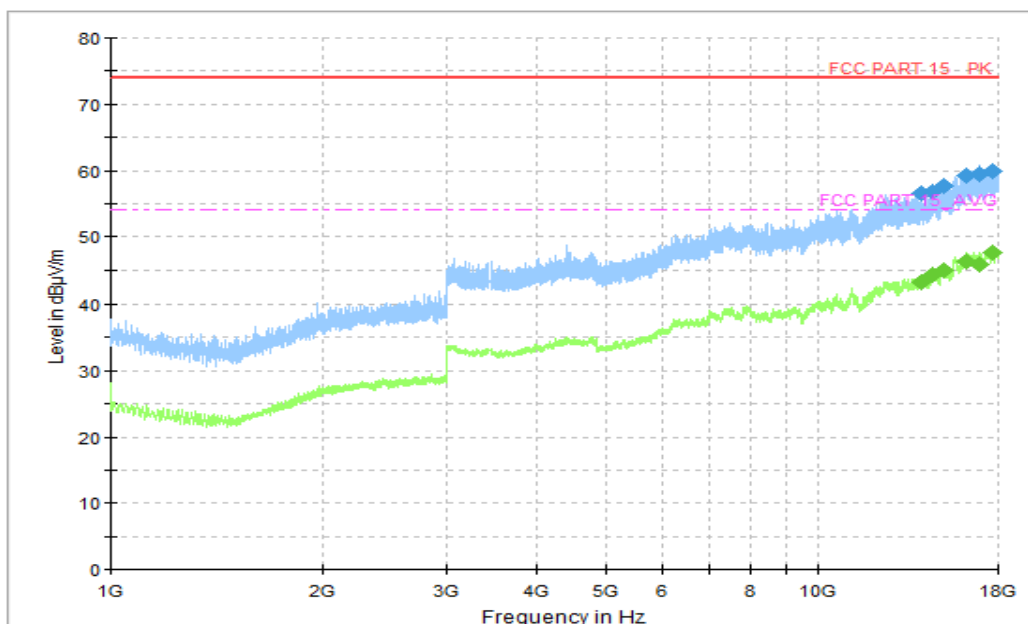


**Figure A.1.1. Radiated Emission (Video Player , 30MHz to 1GHz)**

#### Final\_Results

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	ARpl (dB/m)	PMea (dBμV)
30.970000	22.37	40.00	17.63	V	-13	35.37
37.490556	23.53	40.00	16.47	V	-17	40.53
50.747222	20.16	40.00	19.84	V	-22	42.16
90.894444	20.98	43.52	22.54	V	-21	41.98
689.977222	24.42	46.02	21.60	V	-2	26.42
913.292778	26.12	46.02	19.90	H	0	26.12





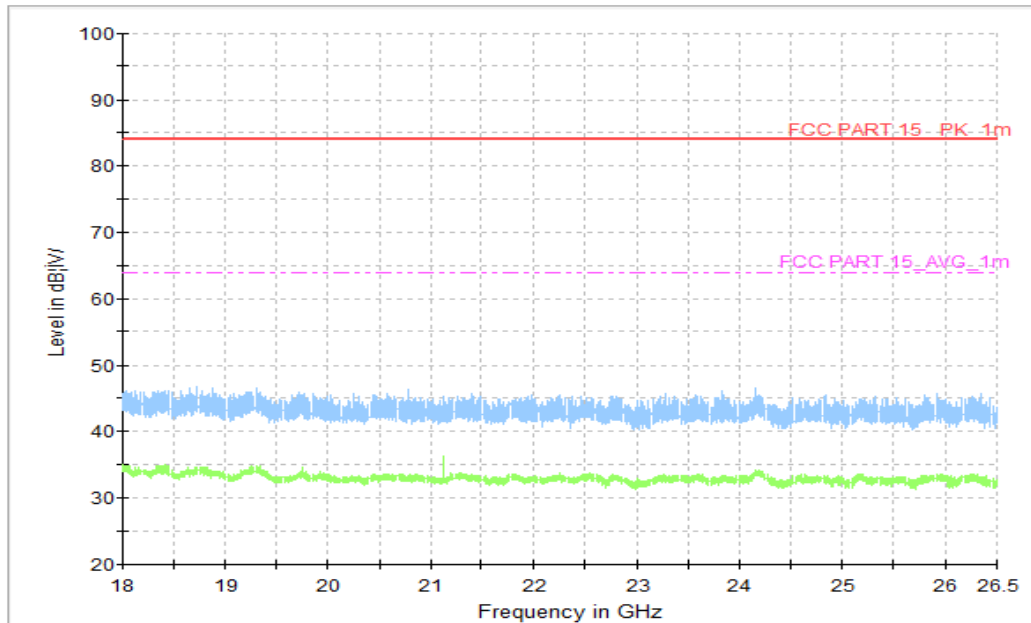
**Figure A.1.2. Radiated Emission (Video Player , 1GHz to 18GHz)**

#### Final\_Results\_PK

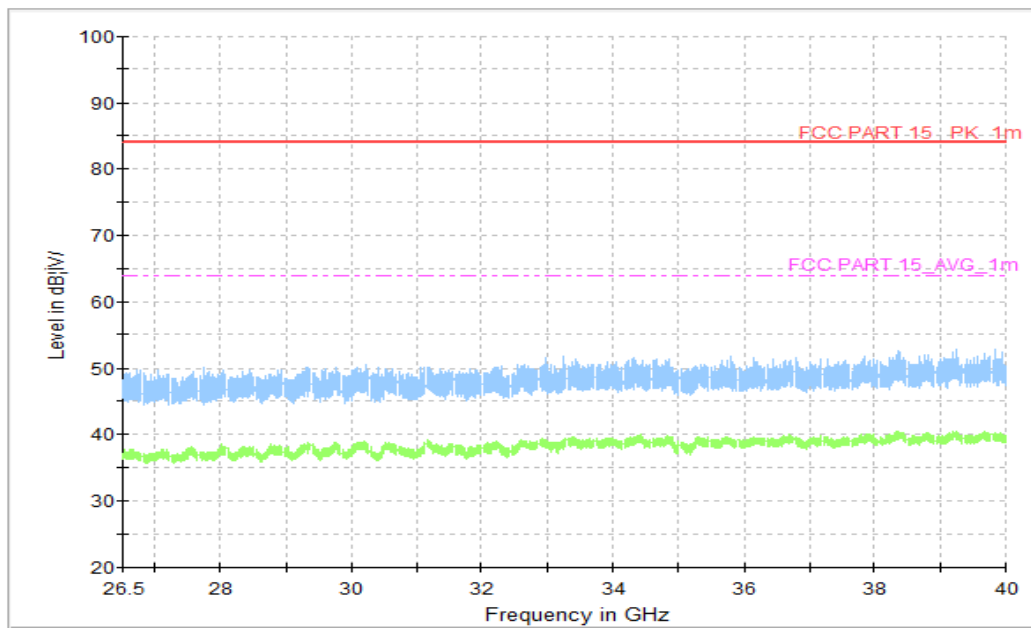
Frequency(MHz)	Peak (dBμV/m)	Limit (dBμV/m)	Margin(dB)	Polarity	ARpl (dB/m)	PMea (dBμV)
13972.250000	56.44	74.00	17.56	V	18	38.44
14539.750000	56.68	74.00	17.32	H	19	37.68
15045.750000	57.56	74.00	16.44	V	19	38.56
16258.250000	59.25	74.00	14.75	V	22	37.25
16891.750000	59.43	74.00	14.57	H	22	37.43
17714.250000	59.99	74.00	14.01	H	24	35.99

#### Final\_Results\_AVG

Frequency(MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin(dB)	Polarity	ARpl (dB/m)	PMea (dBμV)
13972.250000	43.03	54.00	10.97	V	18	25.03
14539.750000	44.19	54.00	9.81	H	19	25.19
15045.750000	44.91	54.00	9.09	V	20	24.91
16258.250000	46.29	54.00	7.71	V	22	24.29
16891.750000	45.91	54.00	8.09	H	23	22.91
17714.250000	47.59	54.00	6.41	H	24	23.59



**Figure A.1.3. Radiated Emission (Video Player , 18GHz to 26.5GHz)**



**Figure A.1.4. Radiated Emission (Video Player, 26.5GHz to 40GHz)**

**A.2 Conducted Emission (§15.107(a))****Reference**

FCC: 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 150kHz to 30MHz 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:**

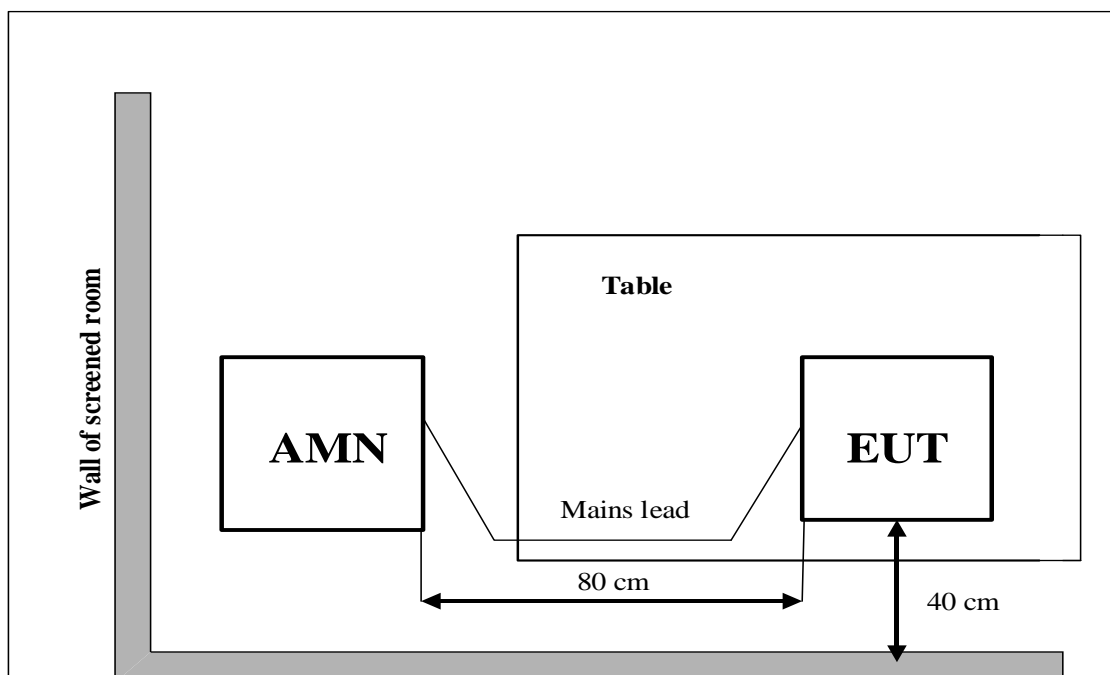
**Video Player:** The EUT is connected to a charger for charging and keeping on playing mp3.

**FM receiver:** The EUT is connected to a charger for charging. The EUT is synchronized to a FM signal generator. The EUT is keeping on demodulating the FM signal and outputting the audio signal through the headset.

**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 set-up:



#### A.2.5 Test Condition in charging mode

Voltage (V)	Frequency (Hz)
120	60
240	60

RBW	Sweep Time(s)
9kHz	1

#### A.2.6 Measurement Results

QuasiPeak(dBμV) /Average(dBμV) =PMea+Corr

Where

Corr: PathLoss + Voltage Division Factor

PMea: Measurement result on receiver.

FM receiver

AC Input Port/ Voltage: 240V/60Hz

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Average Limit (dBμV)	Result (dBμV)	Conclusion
			UT01aa/Set.1	
0.15 to 0.5	66 to 56	56 to 46	See Figure A.2.1.	P
0.5 to 5	56	46		
5 to 30	60	50		
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

AC Input Port/ Voltage:240 V/60Hz

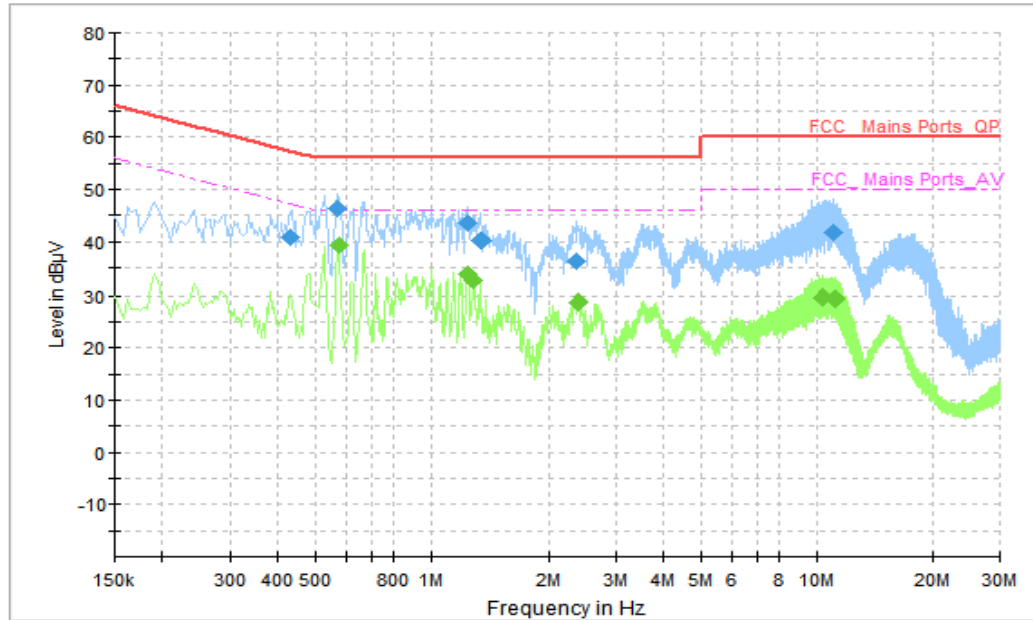


Figure A.2.1. Conducted Emission(FM receiver)

#### Final\_Result\_QPK

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	P <sub>Mea</sub> (dBμV)
0.430000	40.94	57.25	16.32	N	10	30.94
0.570000	46.27	56.00	9.73	N	10	36.27
1.246000	43.69	56.00	12.31	N	10	33.69
1.338000	40.27	56.00	15.73	N	10	30.27
2.370000	36.25	56.00	19.75	N	10	26.25
11.022000	41.81	60.00	18.19	N	10	31.81

#### Final\_Result\_AVG

Frequency (MHz)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	P <sub>Mea</sub> (dBμV)
0.574000	39.30	46.00	6.70	N	10	29.30
1.246000	33.68	46.00	12.32	N	10	23.68
1.294000	32.60	46.00	13.40	N	10	22.60
2.394000	28.72	46.00	17.28	N	10	18.72
10.374000	29.53	50.00	20.47	N	10	19.53
11.154000	29.26	50.00	20.74	N	10	19.26

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