



TEST REPORT

No.I21N3995-EMC

for

TCL Communication Ltd.

Tablet PC

Model Name: 8491X

With

Hardware Version: PIO

Software Version: JC2-AA5

FCC ID: 2ACCJB175

Issued Date: 2022-03-02

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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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I21N3995-EMC	Rev.0	1st edition	2022-03-02

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	Tablet PC
Model Name	8491X
Applicant's name	TCL Communication Ltd.
Manufacturer's Name	TCL Communication Ltd.

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: 2022-02-18

Testing End Date: 2022-02-28

1.6. Signature

Liang Yong

(Prepared this test report)

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(Reviewed this test report)

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(Approved this test report)



2. CLIENT INFORMATION

2.1. Applicant Information

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2.2. Manufacturer Information

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Contact: Peter Yang
Email: peter.yang@tcl.com
Tel: +86 755 3664 5759
Fax: 0086-755-36612000-81722



3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT

(AE)

3.1. About EUT

Description	Tablet PC
Model Name	8491X
FCC ID	2ACCJB175
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	6409ACCE7B78520	PIO	JC2-AA5	2022-02-08
UT02aa	6409ACCE7B78521	PIO	JC2-AA5	2022-02-08
UT06aa	6409ACCE7B78465	PIO	JC2-AA5	2022-02-08

*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

Model	TLp040M7
Manufacturer	Veken
Capacitance	4000mAh
Nominal Voltage	3.85 v

AE2-1

Model	UC11US
Manufacturer	PUAN

AE3-1

Model	CDA0000123C8
Manufacturer	Puan

AE3-2

Model	CDA0000123C1
Manufacturer	JUWEI

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

AE: ancillary equipment



3.4. EUT Set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT+AE1-1+AE2-1+AE3-1	
Set.2	EUT+AE1-1+AE2-1+AE3-2	
Set.3	EUT+AE1-1+AE3-1+PC	
Set.4	EUT+AE1-1+AE3-2+PC	



3.5. General Description

The Equipment Under Test (EUT) is a model of Tablet PC.

It has MP3, Camera, USB memory, Bluetooth, and Wi-Fi functions.

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

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.

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	(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

Semi-anechoic chamber 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,>60dB; 1MHz-18000MHz,>90dB
Electrical insulation	>2MΩ
Ground system resistance	<4Ω
Normalised site attenuation (NSA)	<±4 dB, 3 m distance, from 30 to 1000 MHz

Shield 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-10000MHz,>90dB
Electrical insulation	>2MΩ
Ground system resistance	<4Ω

Fully-anechoic chamber 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,>60dB; 1MHz-18000MHz,>90dB
Electrical insulation	>2MΩ
Ground system resistance	<4Ω
Voltage Standing Wave Ratio (VSWR)	≤ 6 dB, from 1 to 18GHz, 3 m distance
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

6. SUMMARY OF TEST RESULTS

6.1. Testing Environment

Normal Temperature: 15~35°C
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)
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	2022.04.02	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.	Universal Radio Communication Tester	CMU200	114545	R&S	2023.01.12	1 year
10.	Horn Antenna	QSH-SL-18-2 6-S-20	17013	Q-par	2023.01.06	3 years
11.	Horn Antenna	QSH-SL-8-26- 40-K-20	17014	Q-par	2023.01.06	3 years



9. TEST ACCESSORY UTILIZED

No.	Name	Model	Serial Number	Manufacturer	Calibration Due date	Calibration Period
1.	PC	ThinkPad T480	PF-13LW0C	Lenovo	/	/
2.	Printer	P1008	VNF6C12491	HP	/	/
3.	Mouse	MOEUUOA	44NY517	Lenovo	/	/

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:

Camera: At the beginning of measurement, the battery is completely discharged. The battery and charger are installed so that the EUT works well and keeping on taking photos.

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

Data Transfer: The model of the PC is Lenovo ThinkPad T480, and the serial number of the PC is PF-13LW0C. The EUT is connected to a PC for transmitting data. The software is used to let the PC keep on copying data to EUT or TF Card, reading and erasing the data after copy action was finished.

This device does not contains the receivers which tune and operate between 30MHz-960MHz in the following bands:

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

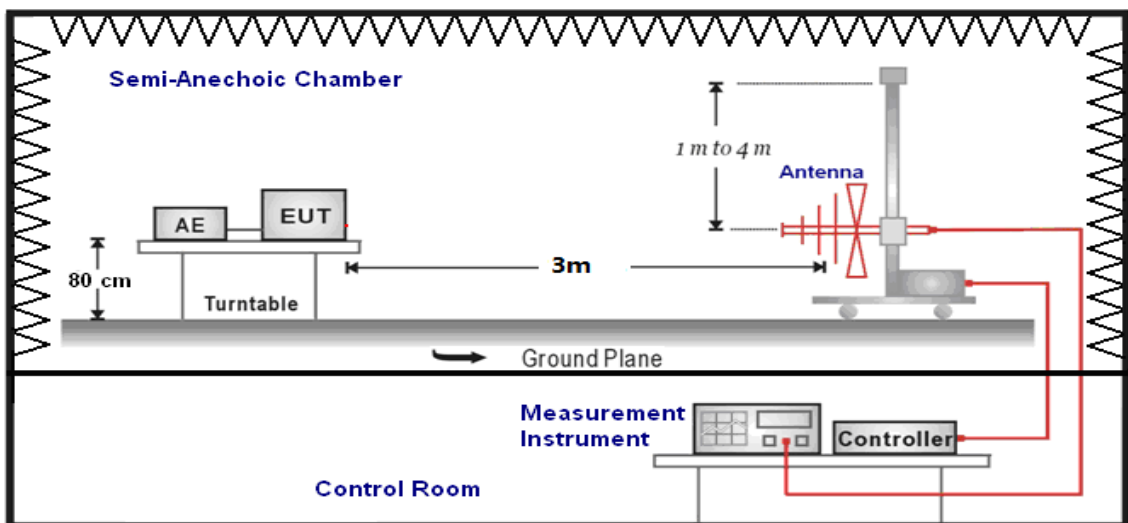
*Note: The original limit is defined at 10m test distance. This limit is calculated according to CISPR requirements.

A.1.4 Test Condition

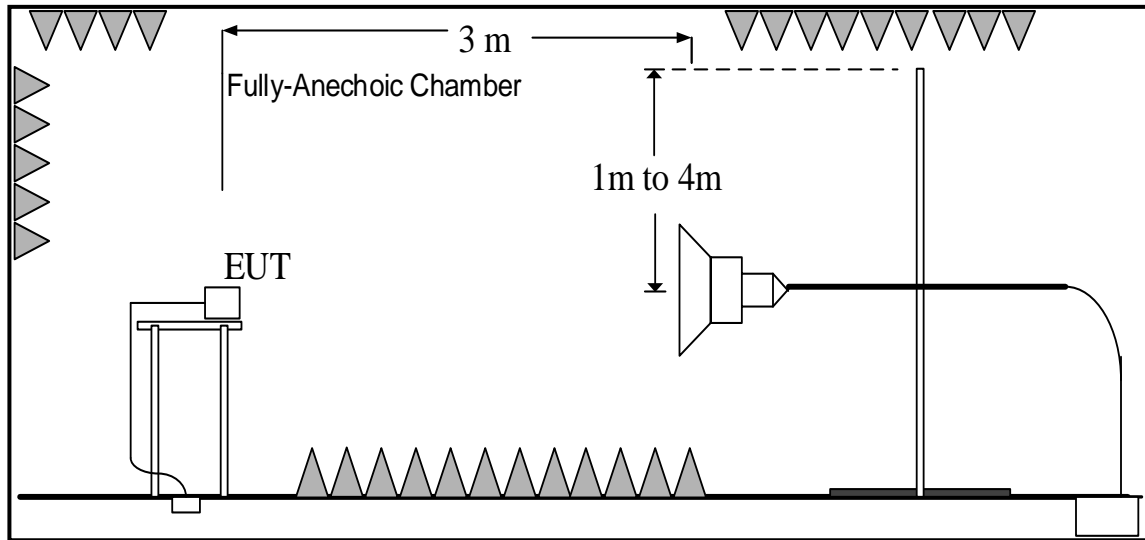
Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	120kHz (IF bandwidth)	5
Above 1000	1MHz/3MHz	15

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} : PathLoss

P_{Mea} : Measurement result on receiver.

Result: Quasi-Peak(dB μ V/m) /Average(dB μ V/m)/Peak(dB μ V/m)

Note: the result contains vertical part and Horizontal part

Camera

Frequency range (MHz)	Quasi-Peak Limit (dB μ V/m)	Result (dB μ V/m)	Conclusion
		UT02aa/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 μ V/m)	Peak Limit (dB μ V/m)	Result (dB μ V/m)	Conclusion
			UT02aa/Set.1	
1000 to 3000	54.00	74.00	See Figure A.1.2.	P
3000 to 18000	54.00	74.00	See Figure A.1.3.	

Video Player

Frequency range (MHz)	Quasi-Peak Limit (dB μ V/m)	Result (dB μ V/m)	Conclusion
		UT02aa/Set.1	
30-88	40.00	See Figure A.1.4.	P
88-216	43.52		
216-960	46.02		
960-1000	54.00		

Frequency range (MHz)	Average Limit (dB μ V/m)	Peak Limit (dB μ V/m)	Result (dB μ V/m)	Conclusion
			UT02aa/Set.1	
1000 to 3000	54.00	74.00	See Figure A.1.5.	P
3000 to 18000	54.00	74.00	See Figure A.1.6.	

Video Player

Frequency range (MHz)	Quasi-Peak Limit (dB μ V/m)	Result (dB μ V/m)	Conclusion
		UT02aa/Set.2	
30-88	40.00	See Figure A.1.7.	P
88-216	43.52		
216-960	46.02		
960-1000	54.00		

Frequency range (MHz)	Average Limit (dB μ V/m)	Peak Limit (dB μ V/m)	Result (dB μ V/m)	Conclusion
			UT02aa/Set.2	
1000 to 3000	54.00	74.00	See Figure A.1.8.	P
3000 to 18000	54.00	74.00	See Figure A.1.9.	

Data Transfer:PC TO EUT

Frequency range (MHz)	Quasi-Peak Limit (dB μ V/m)	Result (dB μ V/m)	Conclusion
		UT06aa/Set.3	
30-88	40.00	See Figure A.1.10.	P
88-216	43.52		
216-960	46.02		
960-1000	54.00		

Frequency range (MHz)	Average Limit (dB μ V/m)	Peak Limit (dB μ V/m)	Result (dB μ V/m)	Conclusion
			UT06aa/Set.3	
1000 to 3000	54.00	74.00	See Figure A.1.11.	P
3000 to 18000	54.00	74.00	See Figure A.1.12.	

Data Transfer: PC TO EUT

Frequency range (MHz)	Quasi-Peak Limit (dB μ V/m)	Result (dB μ V/m)	Conclusion
		UT06aa/Set.4	
30-88	40.00	See Figure A.1.13.	P
88-216	43.52		
216-960	46.02		
960-1000	54.00		

Frequency range (MHz)	Average Limit (dB μ V/m)	Peak Limit (dB μ V/m)	Result (dB μ V/m)	Conclusion
			UT06aa/Set.4	
1000 to 3000	54.00	74.00	See Figure A.1.14.	P
3000 to 18000	54.00	74.00	See Figure A.1.15.	

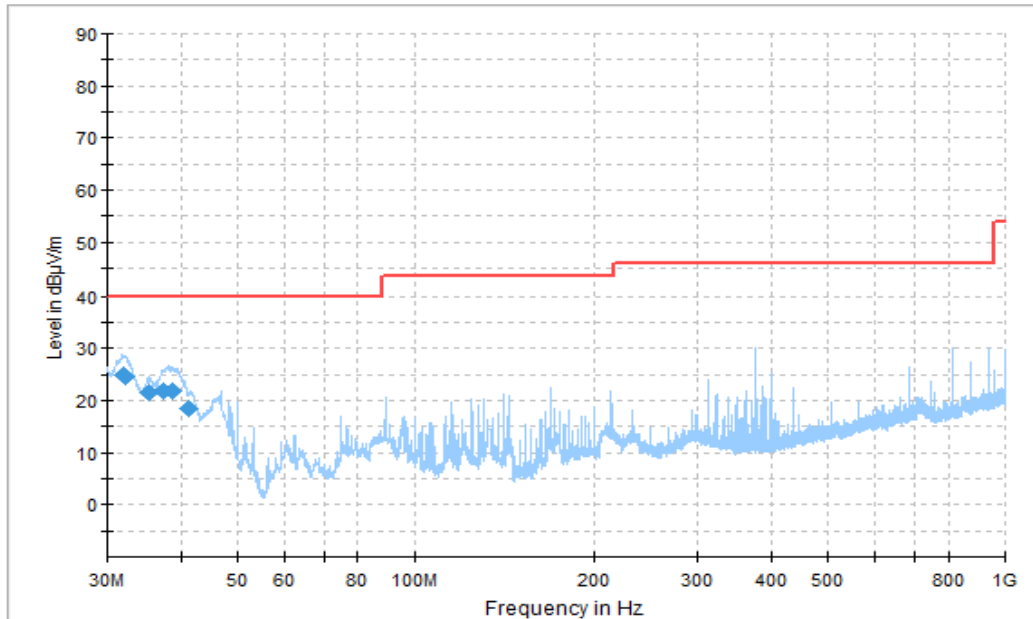


Figure A.1.1. Radiated Emission (Camera , 30MHz to 1GHz)

Final_Results

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	ARpl (dB/m)	PMea (dBµV)
32.024444	24.93	40.00	15.07	V	-25.9	50.83
32.232778	24.71	40.00	15.29	V	-25.9	50.61
35.247222	21.54	40.00	18.46	V	-27.1	48.64
37.319444	21.76	40.00	18.24	V	-28.0	49.76
38.640556	21.76	40.00	18.24	V	-29.0	50.76
41.124444	18.30	40.00	21.70	V	-29.8	48.10

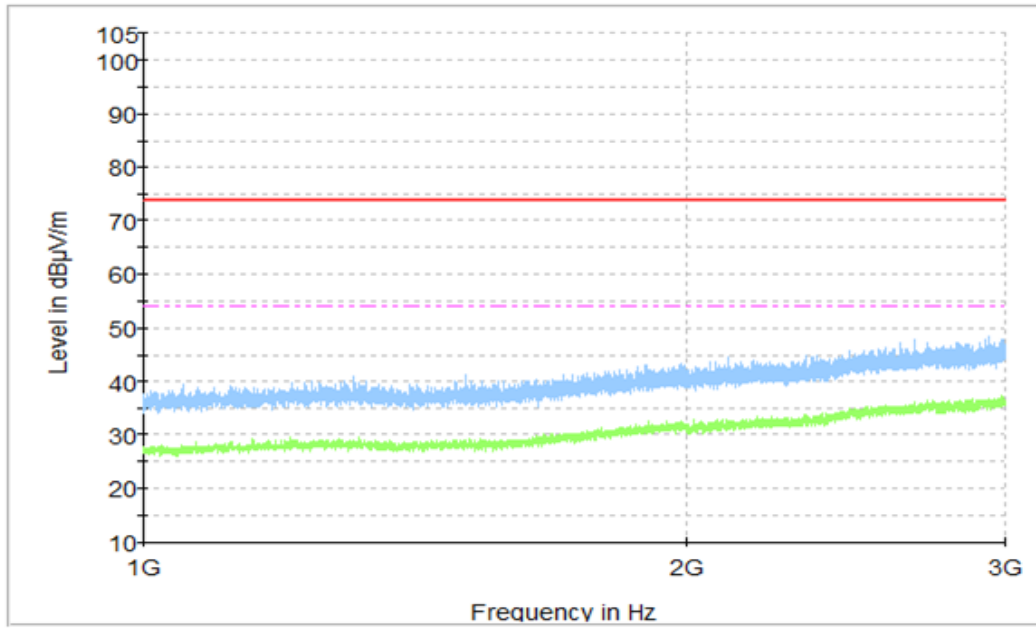


Figure A.1.2. Radiated Emission (Camera , 1GHz to 3GHz)

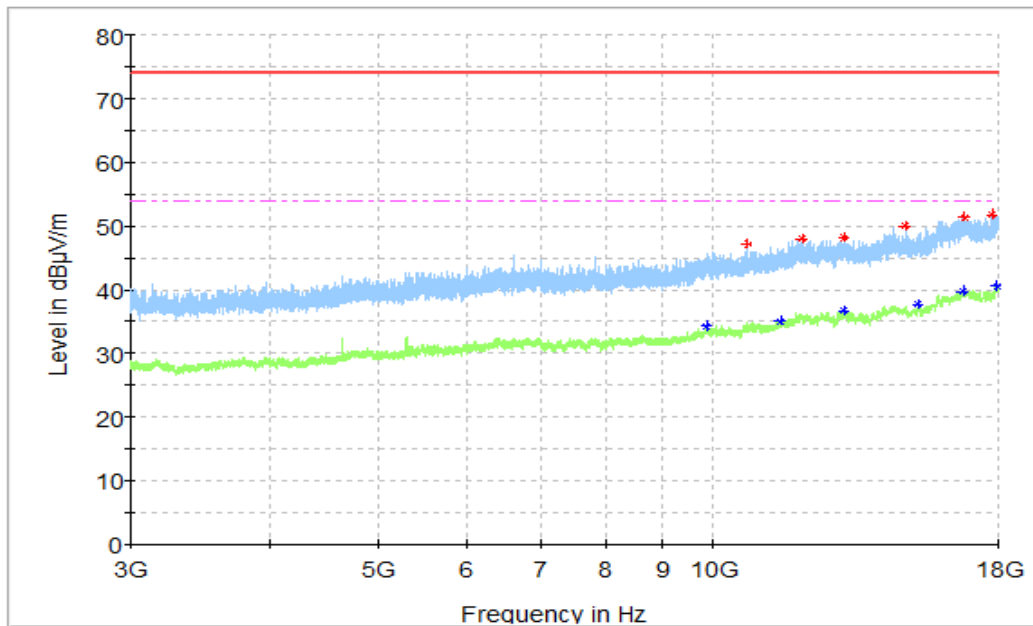


Figure A.1.3. Radiated Emission (Camera , 3GHz to 18GHz)

Final_Results_PK

Frequency(MHz)	Peak (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	PMea (dBµV)
10722.500000	47.19	74.00	26.81	V	6.2	40.99
12016.500000	47.92	74.00	26.08	V	7.9	40.02
13093.000000	48.12	74.00	25.88	H	9.6	38.52
14857.500000	49.95	74.00	24.05	H	11.5	38.45
16780.000000	51.37	74.00	22.63	V	15.8	35.57
17780.500000	51.72	74.00	22.28	V	16.6	35.12

Final_Results_AVG

Frequency(MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	PMea (dBµV)
9853.000000	34.16	54.00	19.84	H	5.3	28.86
11489.500000	35.04	54.00	18.96	V	7.0	28.04
13091.000000	36.69	54.00	17.31	H	9.5	27.19
15290.000000	37.74	54.00	16.26	H	12.4	25.34
16748.000000	39.62	54.00	14.38	H	15.6	24.02
17945.000000	40.57	54.00	13.43	H	17.3	23.27

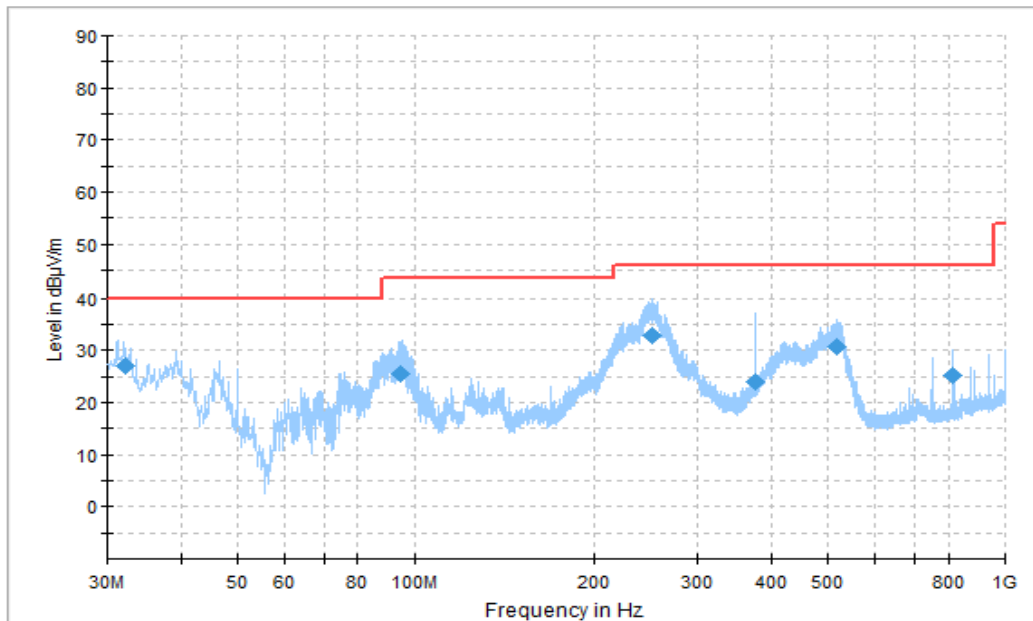


Figure A.1.4. Radiated Emission (Video Player , 30MHz to 1GHz)

Final_Results

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	ARpl (dB/m)	PMea (dBµV)
32.133889	26.86	40.00	13.15	V	-25.9	52.76
94.671111	25.61	43.50	17.89	V	-32.8	58.41
250.867222	32.92	46.00	13.08	H	-31.2	64.12
375.393889	23.85	46.00	22.15	H	-26.8	50.65
518.268889	30.57	46.00	15.43	H	-23.2	53.77
812.540556	25.30	46.00	20.70	V	-18.8	44.10

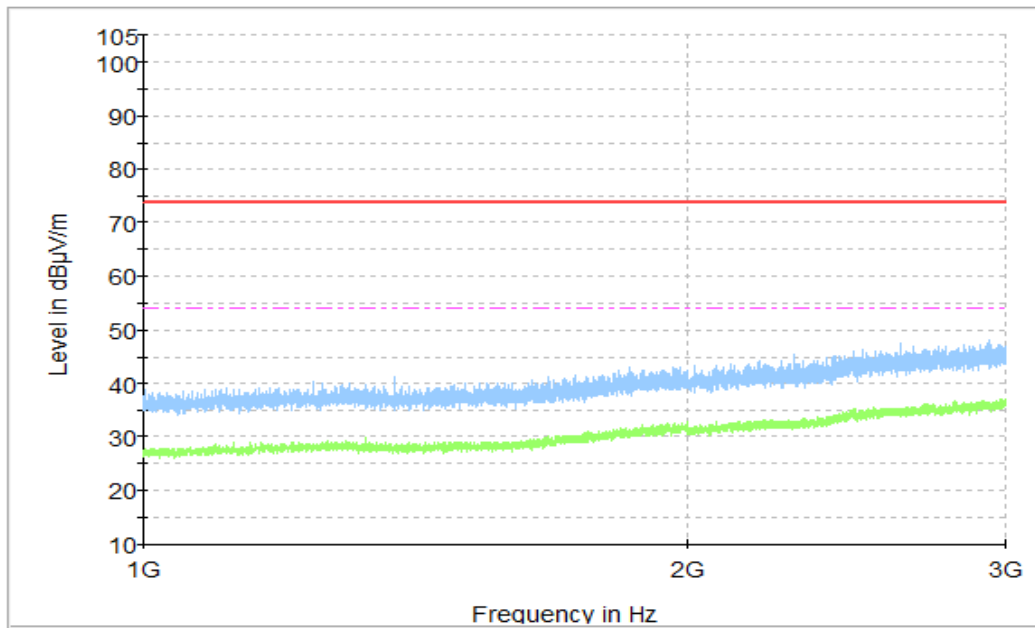


Figure A.1.5. Radiated Emission (Video Player , 1GHz to 3GHz)

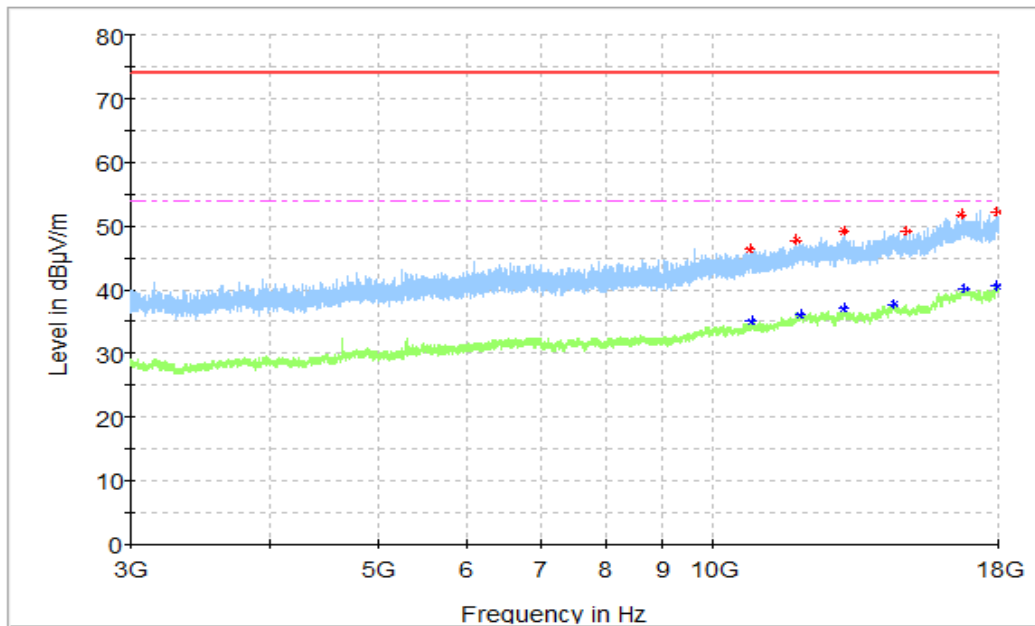


Figure A.1.6. Radiated Emission (Video Player , 3GHz to 18GHz)

Final_Results_PK

Frequency(MHz)	Peak (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	PMea (dBµV)
10795.500000	46.44	74.00	27.56	V	6.3	40.14
11889.500000	47.69	74.00	26.31	H	7.8	39.89
13106.000000	49.15	74.00	24.85	H	9.5	39.65
14900.000000	49.21	74.00	24.79	H	11.7	37.51
16694.500000	51.81	74.00	22.19	V	15.4	36.41
17940.000000	52.15	74.00	21.85	H	17.2	34.95

Final_Results_AVG

Frequency(MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	PMea (dBµV)
10819.500000	35.05	54.00	18.95	H	6.4	28.65
11972.500000	36.15	54.00	17.85	V	8.1	28.05
13096.000000	36.98	54.00	17.02	H	9.7	27.28
14498.500000	37.72	54.00	16.28	V	11.7	26.02
16816.500000	40.15	54.00	13.85	V	16.0	24.15
17946.000000	40.55	54.00	13.45	V	17.3	23.25

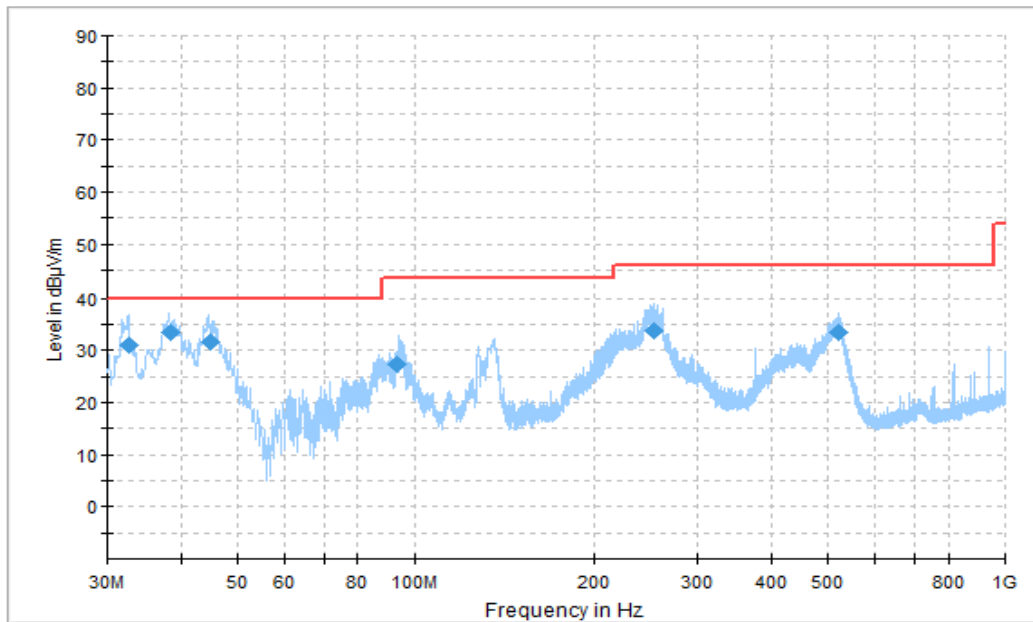


Figure A.1.7. Radiated Emission (Video Player , 30MHz to 1GHz)

Final_Results

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	ARpl (dB/m)	PMea (dBµV)
32.766667	30.83	40.00	9.17	V	-25.9	56.73
38.357222	33.49	40.00	6.51	V	-28.8	62.29
44.796111	31.63	40.00	8.37	V	-32.5	64.13
93.516667	27.17	43.50	16.33	V	-32.8	59.97
252.784444	33.61	46.00	12.39	H	-31.1	64.71
520.193333	33.52	46.00	12.48	H	-23.2	56.72

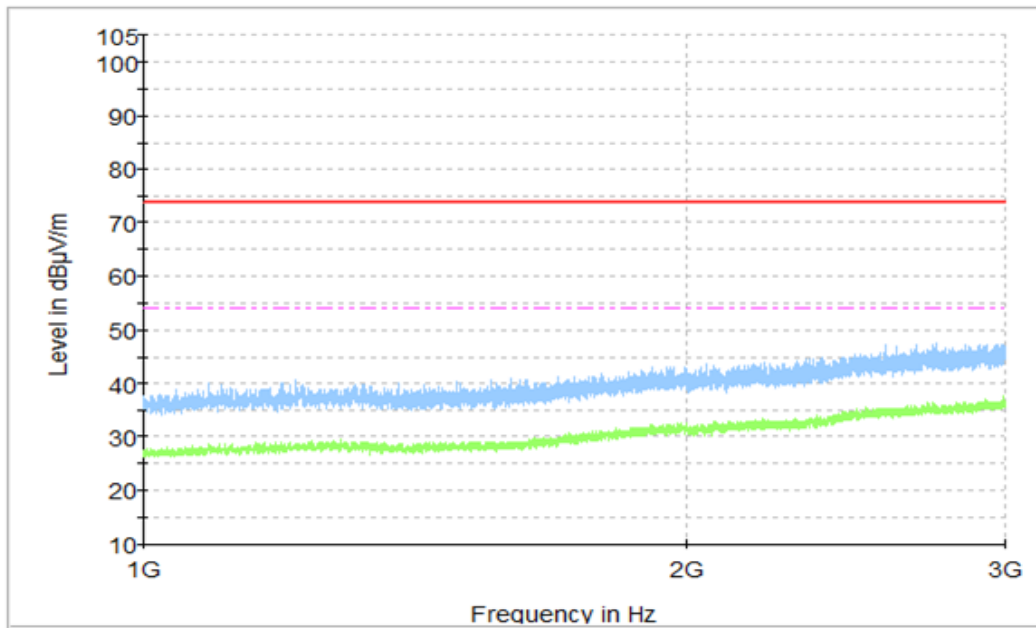


Figure A.1.8. Radiated Emission (Video Player , 1GHz to 3GHz)

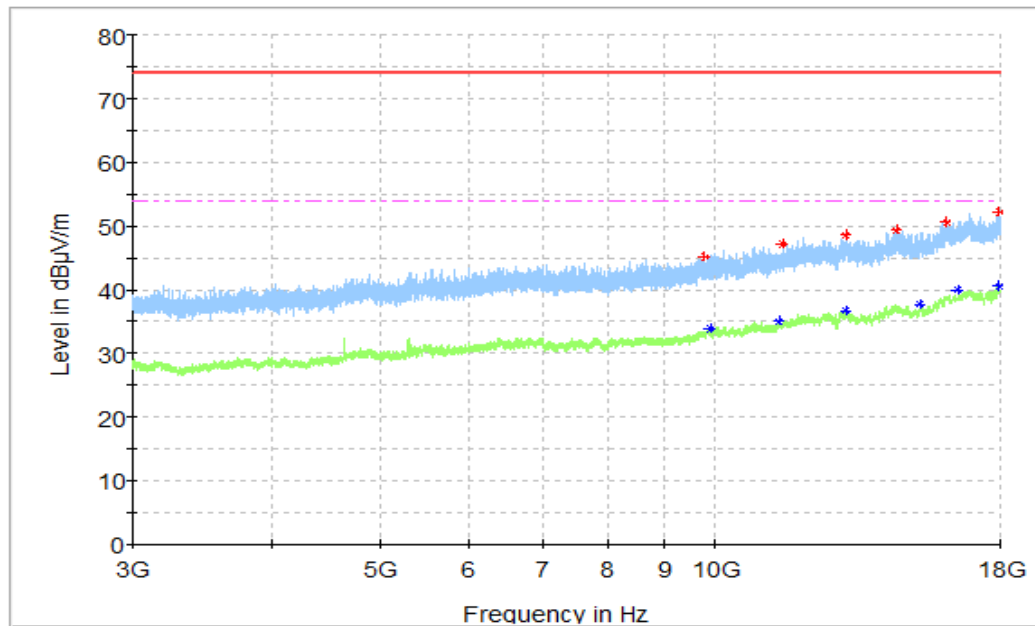


Figure A.1.9. Radiated Emission (Video Player , 3GHz to 18GHz)

Final_Results_PK

Frequency(MHz)	Peak (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	PMea (dBµV)
9772.000000	45.20	74.00	28.80	H	4.8	40.40
11490.500000	47.13	74.00	26.87	H	7.0	40.13
13112.000000	48.47	74.00	25.53	V	9.2	39.27
14572.000000	49.39	74.00	24.61	V	11.7	37.69
16125.500000	50.66	74.00	23.34	H	15.0	35.66
17940.000000	52.11	74.00	21.89	V	17.2	34.91

Final_Results_AVG

Frequency(MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	PMea (dBµV)
9882.000000	33.87	54.00	20.13	H	5.4	28.47
11432.000000	34.97	54.00	19.03	H	6.8	28.17
13099.000000	36.69	54.00	17.31	H	9.8	26.89
15279.500000	37.68	54.00	16.32	V	12.2	25.48
16522.500000	39.93	54.00	14.07	V	15.3	24.63
17944.000000	40.41	54.00	13.59	H	17.3	23.11

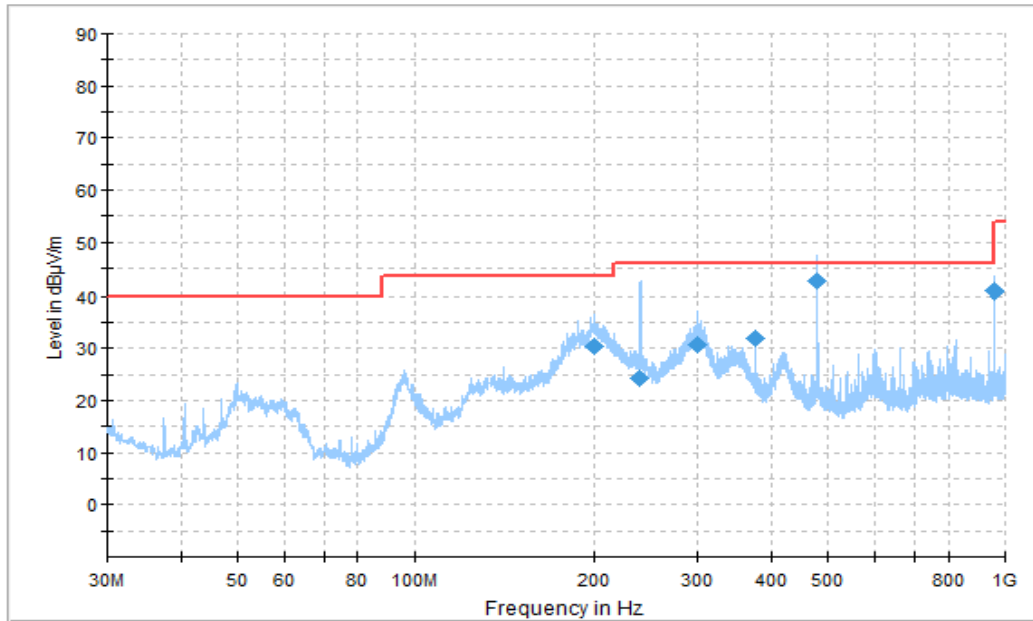


Figure A.1.10. Radiated Emission (Data Transfer: EUT TO PC, 30MHz to 1GHz)

Final_Results

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	ARpl (dB/m)	P _{Mea} (dBµV)
199.850000	30.43	43.50	13.07	H	-33.2	63.63
239.891111	24.35	46.00	21.65	H	-31.5	55.85
299.355000	30.72	46.00	15.28	H	-29.5	60.22
375.393889	31.90	46.00	14.10	H	-26.8	58.70
479.952222	42.64	46.00	3.36	H	-24.0	66.64
960.034444	40.80	54.00	13.20	H	-16.9	57.70

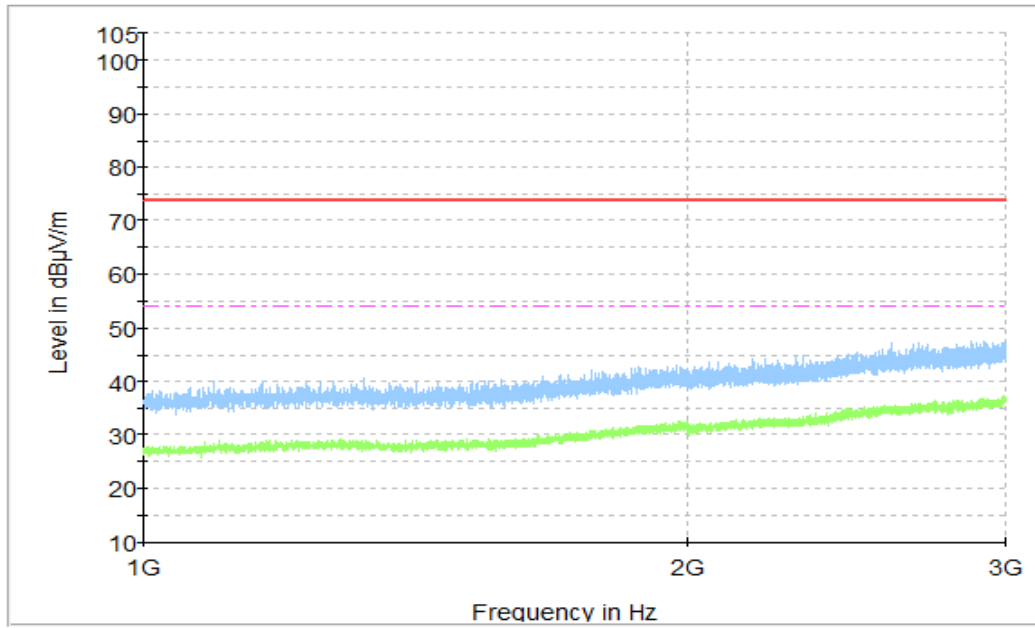


Figure A.1.11. Radiated Emission (Data Transfer: EUT TO PC , 1GHz to 3GHz)

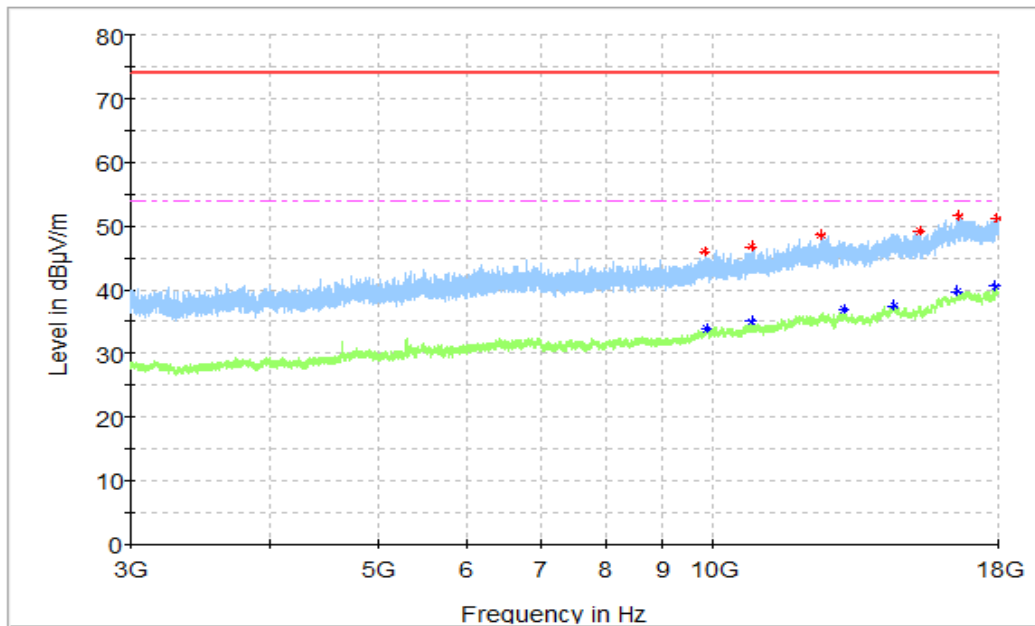


Figure A.1.12. Radiated Emission (Data Transfer: EUT TO PC, 3GHz to 18GHz)

Final_Results_PK

Frequency(MHz)	Peak (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P _{Mea} (dBµV)
9830.500000	46.04	74.00	27.96	H	5.0	41.04
10841.000000	46.79	74.00	27.21	H	6.0	40.79
12486.000000	48.48	74.00	25.52	V	8.9	39.58
15303.000000	49.25	74.00	24.75	V	12.3	36.95
16590.000000	51.55	74.00	22.45	H	15.3	36.25
17955.000000	51.15	74.00	22.85	V	17.0	34.15

Final_Results_AVG

Frequency(MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P _{Mea} (dBµV)
9865.000000	33.89	54.00	20.11	H	5.2	28.69
10820.500000	34.98	54.00	19.02	H	6.4	28.58
13098.000000	36.87	54.00	17.13	V	9.8	27.07
14497.000000	37.40	54.00	16.60	V	11.7	25.70
16563.000000	39.62	54.00	14.38	V	15.2	24.42
17907.500000	40.50	54.00	13.50	V	17.3	23.20

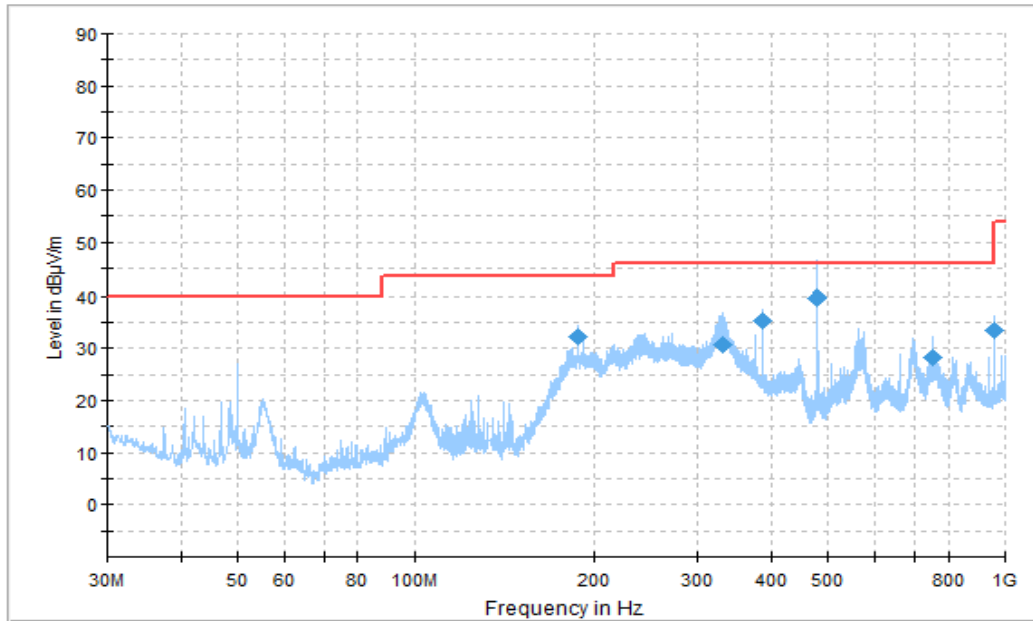


Figure A.1.13. Radiated Emission (Data Transfer: EUT TO PC, 30MHz to 1GHz)

Final_Results

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	ARpl (dB/m)	P _{Mea} (dBµV)
187.698889	32.27	43.50	11.23	H	-33.8	66.07
331.620556	30.55	46.00	15.45	H	-28.3	58.85
387.478889	35.25	46.00	10.75	H	-26.6	61.85
480.072222	39.39	46.00	6.61	H	-24.0	63.39
750.743889	28.08	46.00	17.92	H	-19.4	47.48
959.834444	33.33	46.00	12.67	H	-17.0	50.33

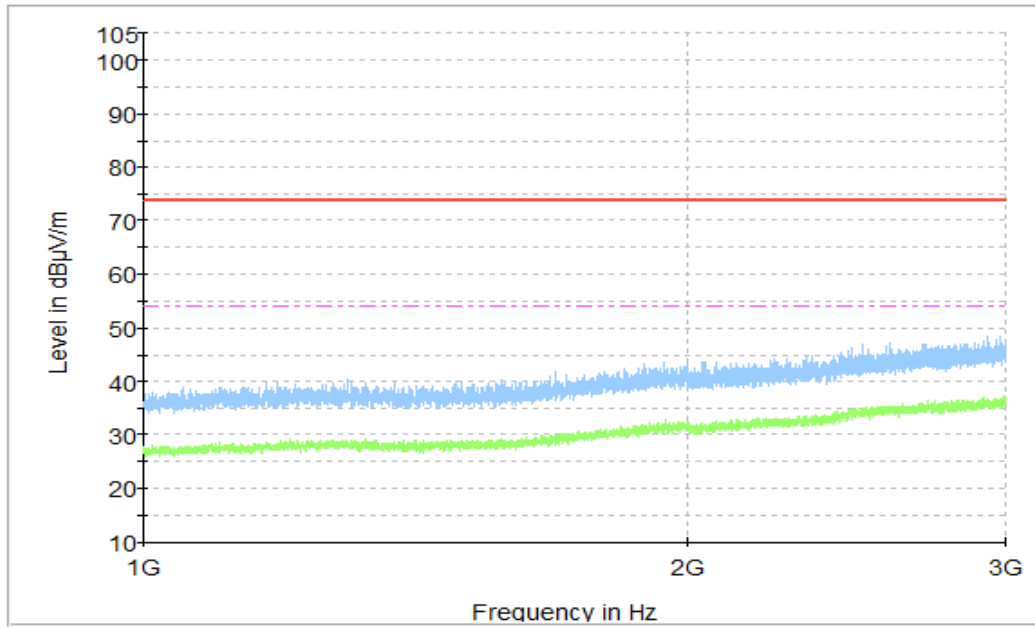


Figure A.1.14. Radiated Emission (Data Transfer: EUT TO PC , 1GHz to 3GHz)

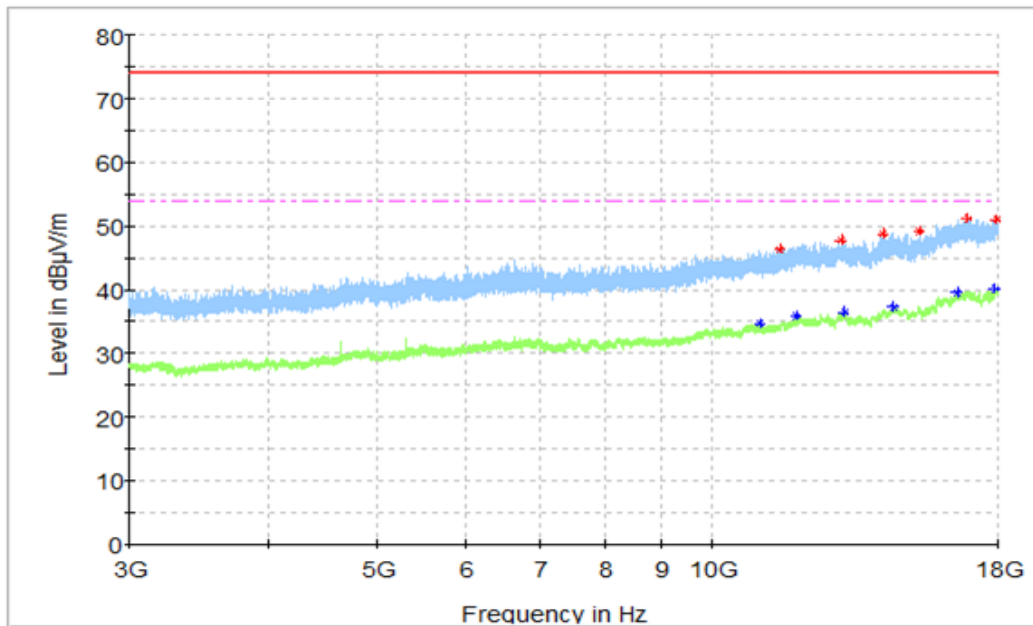


Figure A.1.15. Radiated Emission (Data Transfer: EUT TO PC, 3GHz to 18GHz)

Final_Results_PK

Frequency(MHz)	Peak (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P _{Mea} (dBµV)
11493.000000	46.25	74.00	27.75	V	6.9	39.35
13016.000000	47.73	74.00	26.27	H	9.2	38.53
14217.500000	48.74	74.00	25.26	V	11.8	36.94
15331.500000	49.10	74.00	24.90	V	12.3	36.80
16911.000000	51.28	74.00	22.72	H	16.0	35.28
17963.000000	50.93	74.00	23.07	H	16.8	34.13

Final_Results_AVG

Frequency(MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P _{Mea} (dBµV)
11006.500000	34.73	54.00	19.27	V	6.6	28.13
11888.000000	35.95	54.00	18.05	H	7.9	28.05
13119.500000	36.41	54.00	17.59	H	9.6	26.81
14492.000000	37.31	54.00	16.69	V	11.7	25.61
16549.500000	39.47	54.00	14.53	V	15.3	24.17
17907.500000	40.10	54.00	13.90	V	17.3	22.80



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:

Camera: At the beginning of measurement, the battery is completely discharged. The battery and charger are installed so that the EUT works well and keeping on taking photos.

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

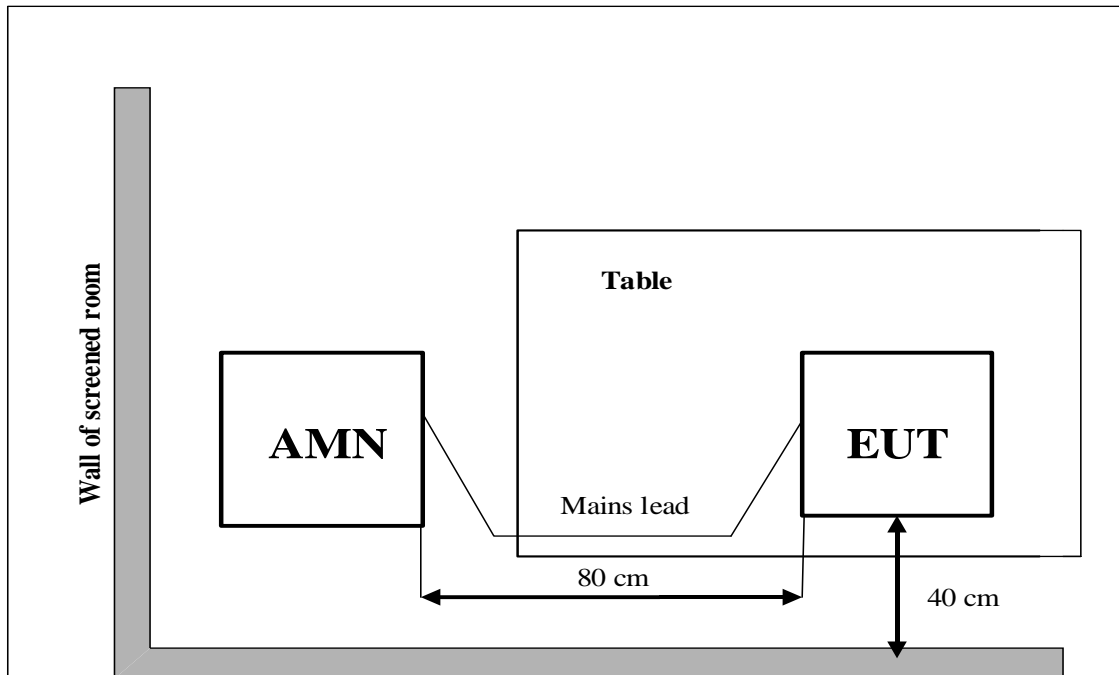
Data Transfer: The model of the PC is Lenovo ThinkPad T480, and the serial number of the PC is PF-13LW0C. The EUT is connected to a PC for transmitting data. The software is used to let the PC keep on copying data to EUT or TF Card, reading and erasing the data after copy action was finished.

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.

Camera

AC Input Port/ Voltage: 120V/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.

Video Player

AC Input Port/ Voltage: 120V/60Hz

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Average Limit (dB μ V)	Result (dB μ V)	Conclusion
			UT01aa/Set.1	
0.15 to 0.5	66 to 56	56 to 46	See Figure A.2.2.	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.				

Video Player

AC Input Port/ Voltage: 120V/60Hz

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Average Limit (dB μ V)	Result (dB μ V)	Conclusion
			UT01aa/Set.2	
0.15 to 0.5	66 to 56	56 to 46	See Figure A.2.3.	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.				

Data Transfer

AC Input Port/ Voltage: 120V/60Hz

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Average Limit (dB μ V)	Result (dB μ V)	Conclusion
			UT01aa/Set.3	
0.15 to 0.5	66 to 56	56 to 46	See Figure A.2.4.	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.				

Data Transfer

AC Input Port/ Voltage: 120V/60Hz

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Average Limit (dB μ V)	Result (dB μ V)	Conclusion
			UT01aa/Set.4	
0.15 to 0.5	66 to 56	56 to 46	See Figure A.2.5.	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.				

Camera

AC Input Port/ Voltage: 240V/60Hz

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Average Limit (dB μ V)	Result (dB μ V)	Conclusion
			UT01aa/Set.1	
0.15 to 0.5	66 to 56	56 to 46	See Figure A.2.6.	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.

Video Player

AC Input Port/ Voltage: 240V/60Hz

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Average Limit (dB μ V)	Result (dB μ V)	Conclusion
			UT01aa/Set.1	
0.15 to 0.5	66 to 56	56 to 46	See Figure A.2.7.	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.

Camera

AC Input Port/ Voltage: 240V/60Hz

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Average Limit (dB μ V)	Result (dB μ V)	Conclusion
			UT01aa/Set.2	
0.15 to 0.5	66 to 56	56 to 46	See Figure A.2.8.	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.

Data Transfer

AC Input Port/ Voltage: 240V/60Hz

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Average Limit (dB μ V)	Result (dB μ V)	Conclusion
			UT01aa/Set.3	
0.15 to 0.5	66 to 56	56 to 46	See Figure A.2.9.	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.



Data Transfer

AC Input Port/ Voltage: 240V/60Hz

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Average Limit (dB μ V)	Result (dB μ V)	Conclusion
			UT01aa/Set.4	
0.15 to 0.5	66 to 56	56 to 46	See Figure A.2.10.	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: 120V/60Hz

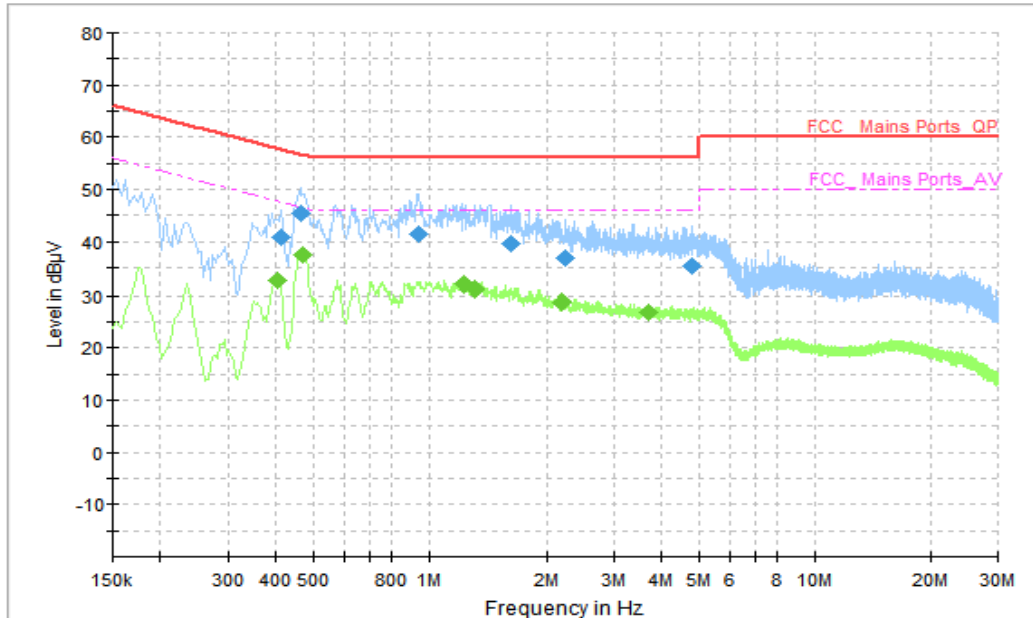


Figure A.2.1. Conducted Emission(Camera)

Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.410000	40.97	57.65	16.68	N	10	30.97
0.462000	45.31	56.66	11.34	N	10	35.31
0.938000	41.60	56.00	14.40	N	10	31.60
1.614000	39.55	56.00	16.45	N	10	29.55
2.246000	36.87	56.00	19.13	N	10	26.87
4.806000	35.32	56.00	20.68	N	10	25.32

Final_Result_AVG

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.402000	32.55	47.81	15.27	N	10	22.55
0.470000	37.56	46.51	8.95	N	10	27.56
1.230000	31.93	46.00	14.07	N	10	21.93
1.318000	31.16	46.00	14.84	N	10	21.16
2.190000	28.63	46.00	17.37	N	10	18.63
3.706000	26.79	46.00	19.21	N	10	16.79

AC Input Port/ Voltage: 120V/60Hz

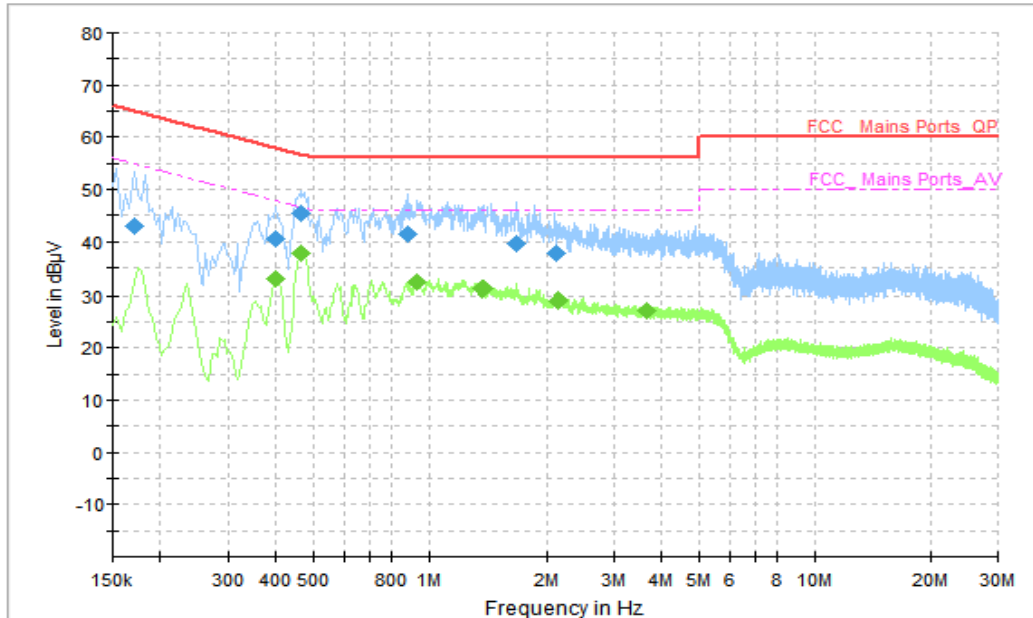


Figure A.2.2. Conducted Emission(Video Player)

Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.170000	43.10	64.96	21.86	N	10	33.10
0.398000	40.48	57.90	17.41	N	10	30.48
0.462000	45.34	56.66	11.31	N	10	35.34
0.878000	41.60	56.00	14.40	N	10	31.60
1.678000	39.72	56.00	16.28	N	10	29.72
2.126000	37.88	56.00	18.12	N	10	27.88

Final_Result_AVG

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.398000	32.85	47.90	15.04	N	10	22.85
0.462000	37.77	46.66	8.88	N	10	27.77
0.930000	32.22	46.00	13.78	N	10	22.22
1.370000	30.96	46.00	15.04	N	10	20.96
2.138000	29.08	46.00	16.92	N	10	19.08
3.646000	26.97	46.00	19.03	N	10	16.97

AC Input Port/ Voltage: 120V/60Hz

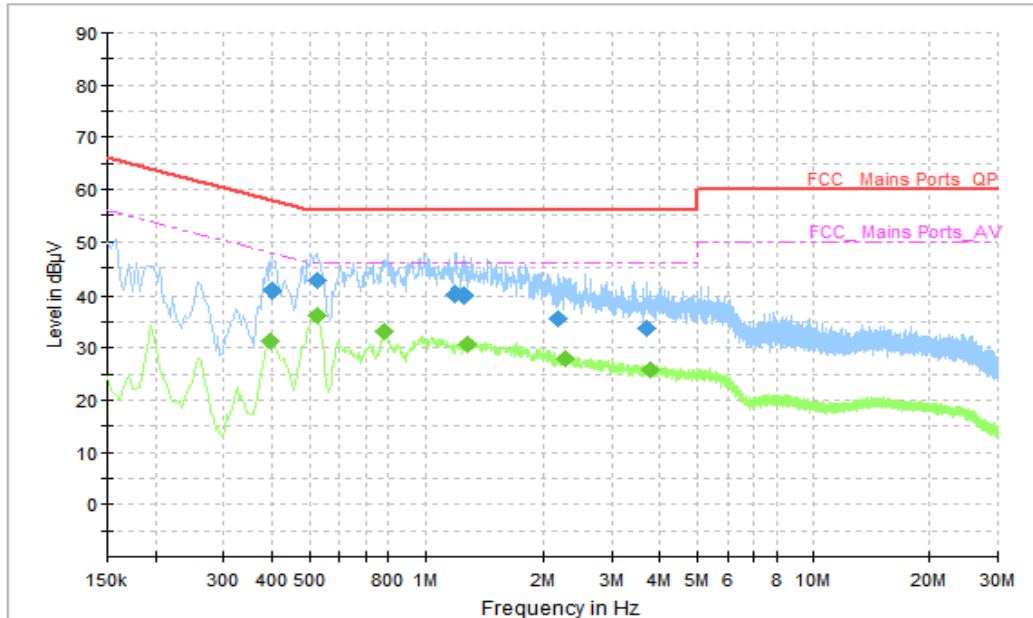


Figure A.2.3. Conducted Emission(Video Player)

Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.402000	40.75	57.81	17.06	N	10	30.75
0.526000	42.75	56.00	13.25	L1	10	32.75
1.190000	40.29	56.00	15.71	N	10	30.29
1.262000	39.82	56.00	16.19	N	10	29.82
2.178000	35.60	56.00	20.40	N	10	25.6
3.694000	33.70	56.00	22.30	N	10	23.70

Final_Result_AVG

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.398000	31.25	47.90	16.64	N	10	21.25
0.522000	36.06	46.00	9.94	N	10	26.06
0.786000	33.10	46.00	12.90	N	10	23.10
1.278000	30.77	46.00	15.23	N	10	20.77
2.282000	27.88	46.00	18.12	N	10	17.88
3.782000	25.75	46.00	20.25	N	10	15.75

AC Input Port/ Voltage: 120V/60Hz

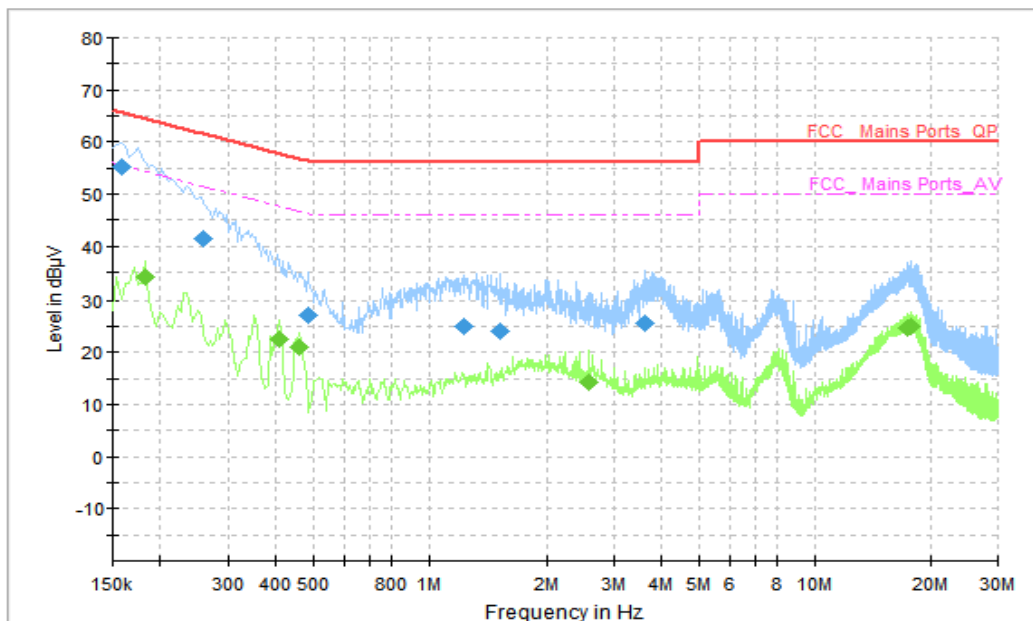


Figure A.2.4. Conducted Emission(Data Transfer)

Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.158000	55.26	65.57	10.31	L1	10	45.26
0.258000	41.59	61.50	19.90	L1	10	31.59
0.482000	27.02	56.31	29.28	L1	10	17.02
1.226000	24.89	56.00	31.11	N	10	14.89
1.522000	23.92	56.00	32.08	N	10	13.92
3.610000	25.55	56.00	30.45	N	10	15.55

Final_Result_AVG

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.182000	34.25	54.39	20.14	L1	10	24.25
0.406000	22.63	47.73	25.10	L1	10	12.63
0.458000	21.03	46.73	25.70	L1	10	11.03
2.586000	14.34	46.00	31.66	N	10	4.34
17.510000	24.51	50.00	25.49	N	10	14.51
17.886000	24.91	50.00	25.09	L1	10	14.91

AC Input Port/ Voltage: 120V/60Hz

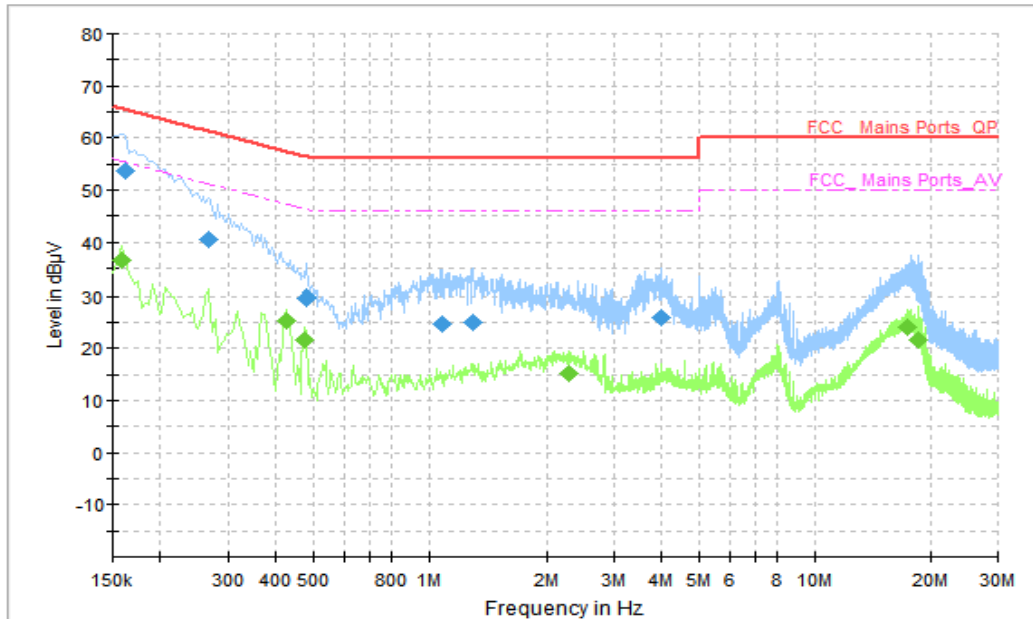


Figure A.2.5. Conducted Emission(Data Transfer)

Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.162000	53.84	65.36	11.52	L1	10	43.84
0.266000	40.66	61.24	20.58	L1	10	30.66
0.478000	29.57	56.37	26.81	L1	10	19.57
1.078000	24.74	56.00	31.27	N	10	14.74
1.298000	24.85	56.00	31.15	N	10	14.85
3.962000	25.72	56.00	30.28	N	10	15.72

Final_Result_AVG

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.158000	36.71	55.57	18.85	L1	10	26.71
0.426000	25.40	47.33	21.93	L1	10	15.4
0.474000	21.56	46.44	24.88	L1	10	11.56
2.294000	15.06	46.00	30.94	N	10	5.06
17.398000	24.17	50.00	25.83	N	10	14.17
18.570000	21.62	50.00	28.38	L1	10	11.62

AC Input Port/ Voltage: 240V/60Hz

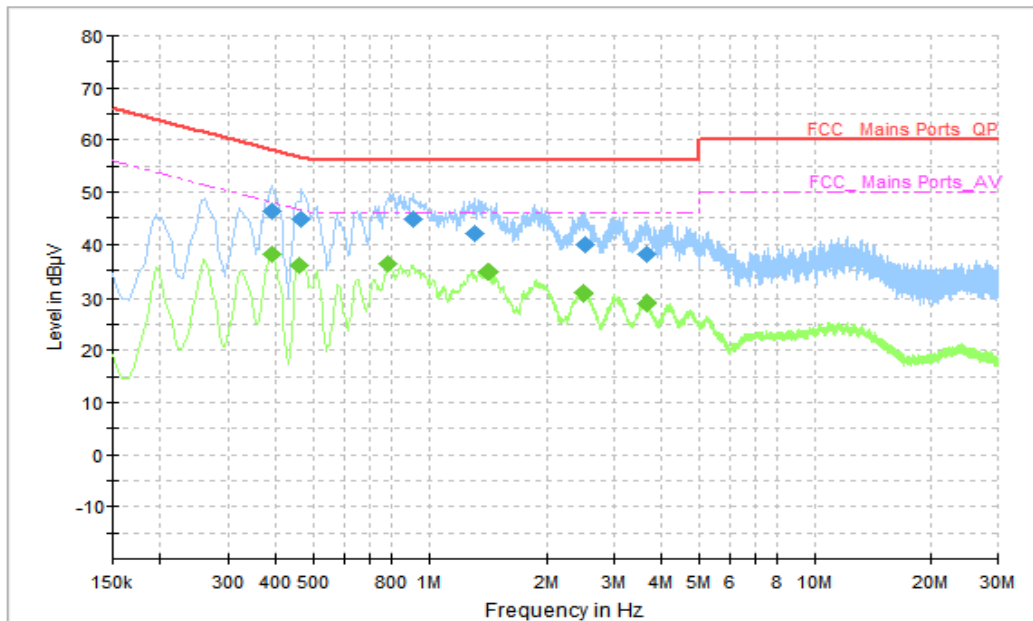


Figure A.2.6. Conducted Emission(Camera)

Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.390000	46.34	58.06	11.73	N	10	36.34
0.466000	44.71	56.59	11.87	N	10	34.71
0.910000	44.81	56.00	11.19	N	10	34.81
1.310000	42.14	56.00	13.86	N	10	32.14
2.522000	39.84	56.00	16.16	N	10	29.84
3.642000	38.15	56.00	17.85	N	10	28.15

Final_Result_AVG

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.390000	38.01	48.06	10.05	N	10	28.01
0.458000	35.86	46.73	10.87	N	10	25.86
0.782000	36.20	46.00	9.80	N	10	26.20
1.414000	34.68	46.00	11.32	N	10	24.68
2.490000	30.67	46.00	15.33	N	10	20.67
3.638000	28.87	46.00	17.13	N	10	18.87

AC Input Port/ Voltage: 240V/60Hz

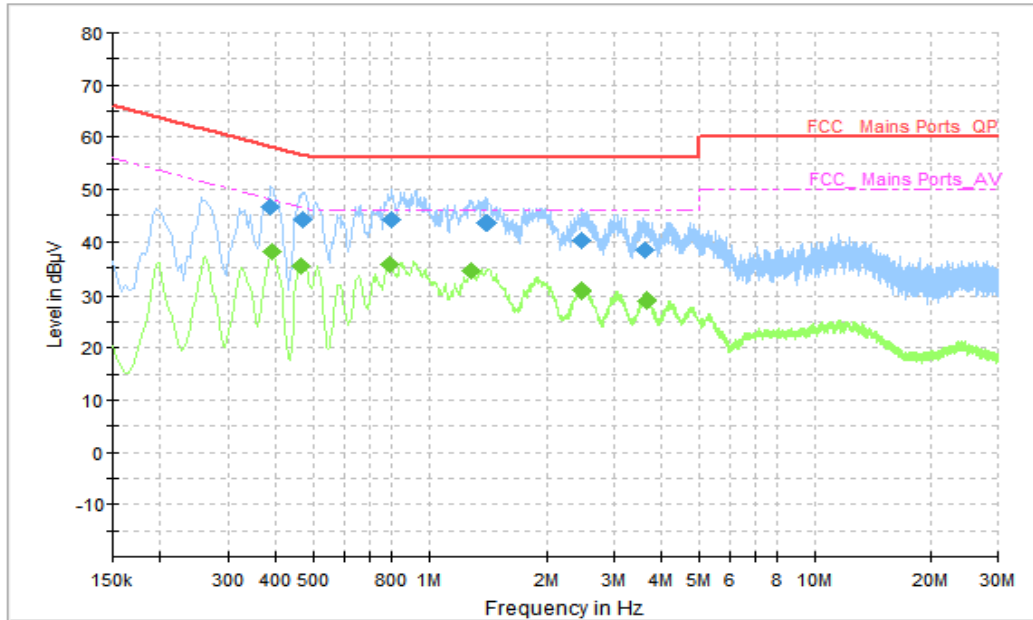


Figure A.2.7. Conducted Emission(Video Player)

Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.386000	46.65	58.15	11.50	N	10	36.65
0.470000	44.32	56.51	12.20	N	10	34.32
0.802000	44.26	56.00	11.74	N	10	34.26
1.410000	43.47	56.00	12.53	N	10	33.47
2.482000	40.21	56.00	15.79	N	10	30.21
3.622000	38.49	56.00	17.51	N	10	28.49

Final_Result_AVG

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.390000	38.14	48.06	9.92	N	10	28.14
0.466000	35.33	46.59	11.26	N	10	25.33
0.790000	35.66	46.00	10.34	N	10	25.66
1.282000	34.46	46.00	11.54	N	10	24.46
2.462000	30.62	46.00	15.38	N	10	20.62
3.634000	28.88	46.00	17.12	N	10	18.88

AC Input Port/ Voltage:240 V/60Hz

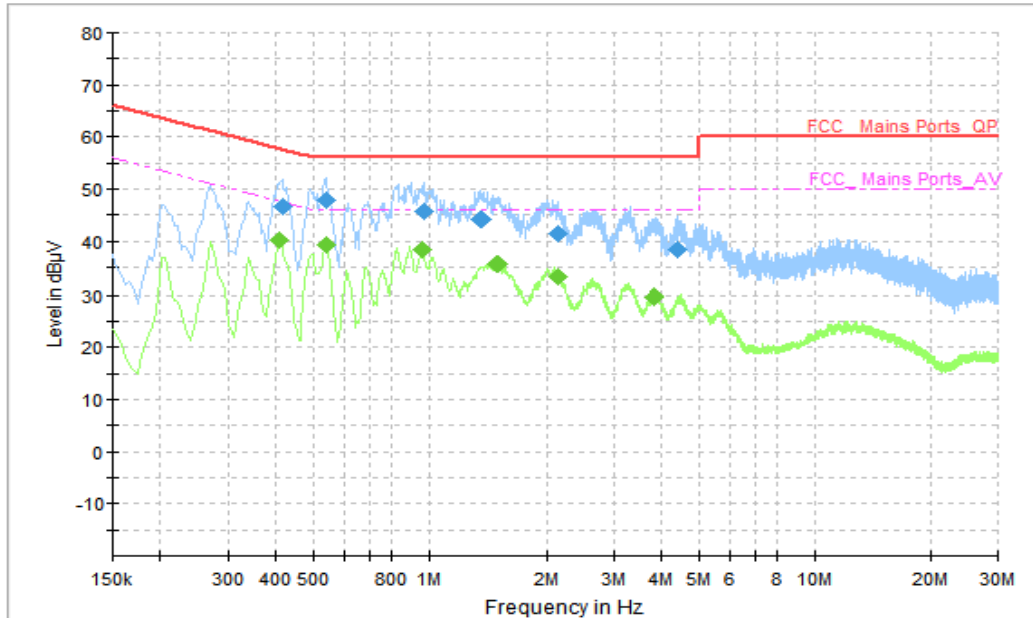


Figure A.2.8. Conducted Emission(Camera)

Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.414000	46.67	57.57	10.90	N	10	36.67
0.538000	47.86	56.00	8.14	N	10	37.86
0.970000	45.84	56.00	10.16	N	10	35.84
1.362000	44.24	56.00	11.76	N	10	34.24
2.146000	41.47	56.00	14.53	N	10	31.47
4.414000	38.48	56.00	17.52	N	10	28.48

Final_Result_AVG

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.406000	40.36	47.73	7.37	N	10	30.36
0.542000	39.18	46.00	6.82	N	10	29.18
0.958000	38.42	46.00	7.58	N	10	28.42
1.498000	35.71	46.00	10.29	N	10	25.71
2.146000	33.30	46.00	12.70	N	10	23.3
3.794000	29.54	46.00	16.46	N	10	19.54

AC Input Port/ Voltage: 240V/60Hz

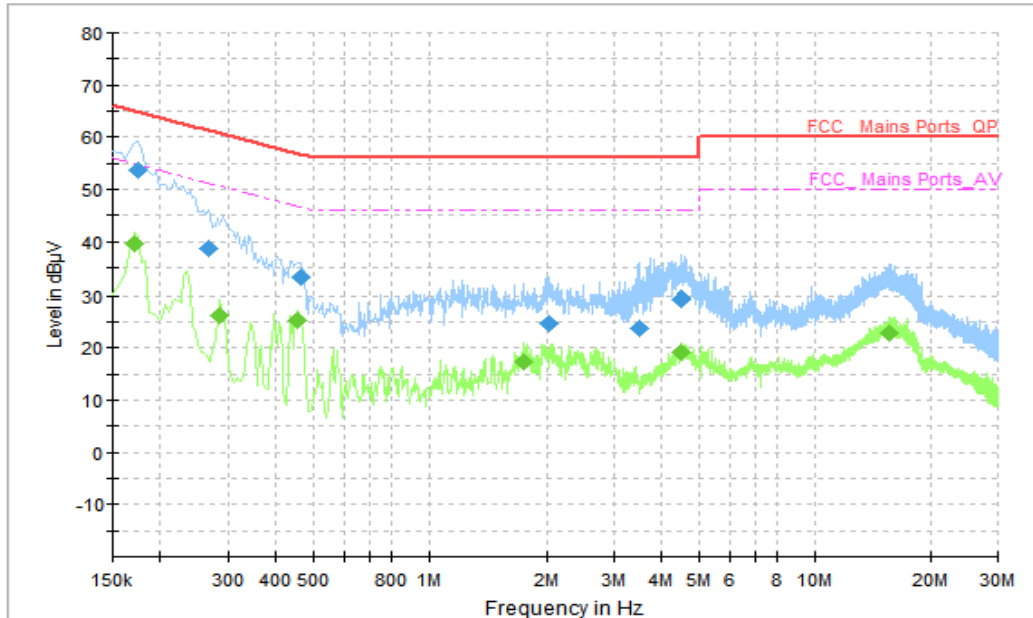


Figure A.2.9. Conducted Emission(Data Transfer)

Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.174000	53.66	64.77	11.11	L1	10	43.66
0.266000	38.75	61.24	22.50	L1	10	28.75
0.462000	33.24	56.66	23.41	N	10	23.24
2.042000	24.65	56.00	31.35	N	10	14.65
3.478000	23.72	56.00	32.28	N	10	13.72
4.498000	29.27	56.00	26.73	L1	10	19.27

Final_Result_AVG

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.170000	39.75	54.96	15.21	L1	10	29.75
0.286000	26.10	50.64	24.54	N	10	16.1
0.454000	25.17	46.80	21.63	N	10	15.17
1.754000	17.38	46.00	28.62	L1	10	7.38
4.498000	19.20	46.00	26.80	L1	10	9.2
15.566000	22.86	50.00	27.14	N	10	12.86

AC Input Port/ Voltage: 240V/60Hz

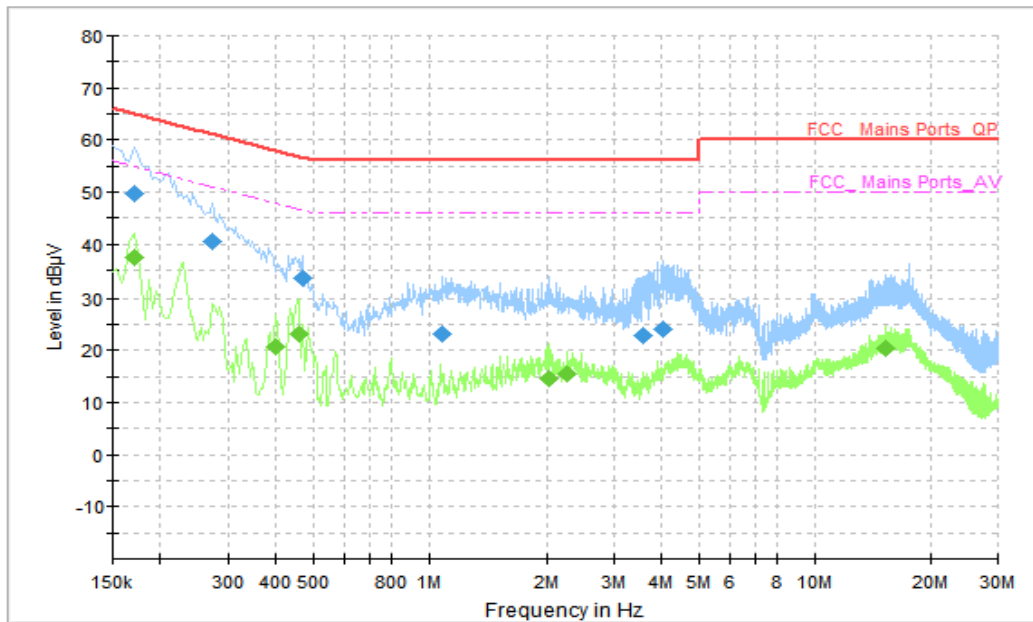


Figure A.2.10. Conducted Emission(Data Transfer)

Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.170000	49.61	64.96	15.35	N	10	39.61
0.274000	40.55	61.00	20.44	L1	10	30.55
0.470000	33.46	56.51	23.06	L1	10	23.46
1.086000	23.11	56.00	32.89	N	10	13.11
3.554000	22.77	56.00	33.23	N	10	12.77
4.006000	23.97	56.00	32.03	N	10	13.97

Final_Result_AVG

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.170000	37.64	54.96	17.32	N	10	27.64
0.398000	20.52	47.90	27.37	N	10	10.52
0.458000	23.11	46.73	23.61	N	10	13.11
2.042000	14.66	46.00	31.34	N	10	4.66
2.258000	15.44	46.00	30.56	N	10	5.44
15.322000	20.40	50.00	29.60	N	10	10.40

END OF REPORT