



# TEST REPORT

## No.I23N01931-EMC

for

**IDEMIA Identity and Security France**

**ID Screen**

**Model Name: MPH-MB003A**

**With**

**Hardware Version: V01(M32N)**

**Software Version: V01**

**FCC ID: ZBW-MPHMB003**

**Issued Date:2024-01-10**

**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**

<b>Report Number</b>	<b>Revision</b>	<b>Description</b>	<b>Issue Date</b>
I23N01931-EMC	Rev.0	1st edition	2024-01-10

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	ID Screen
Model Name	MPH-MB003A
Applicant's name	IDEMIA Identity and Security France
Manufacturer's Name	IDEMIA Identity and Security France

### 1.2. Test Standards

FCC Part 15, Subpart B (10-1-2021 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: EMC Laboratory, Building G, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian District, Shenzhen, Guangdong, China

### 1.5. Project data

Testing Start Date: 2023-11-24

Testing End Date: 2023-12-10

### 1.6. Signature

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**Huang Yuqing**  
(Prepared this test report)

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**Liang Yong**  
(Reviewed this test report)

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**Cao Junfei**  
(Approved this test report)



## **2. CLIENT INFORMATION**

### **2.1. Applicant Information**

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

#### (AE)

#### 3.1. About EUT

Description	ID Screen
Model Name	MPH-MB003A
FCC ID	ZBW-MPHMB003
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	354520110568309 354520110568317	V01(M32N)	V01	2023-11-24

\*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	Data Cable

##### AE1

Model	MPH-MB003A(178177093)
Manufacturer	Zhongshan Tianmao Battery Co., Ltd.
Capacity	5000mAh
Nominal Voltage	3.85V

##### AE2

Model	S008ACM0500200
Manufacturer	Ten Pao Electronics (Huizhou) Co., Ltd.

##### AE3-1

Model	JWUB1454-M01
Manufacturer	HUIZHOU JUWEI ELECTRONICS CO.,LTD

##### AE3-2

Model	JWUB1453-M01R
Manufacturer	HUIZHOU JUWEI ELECTRONICS CO.,LTD

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



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AE: ancillary equipment

AE2: There is just one internal circuit of charger, and the plug of the charger can be replaced to meet worldwide country's requirement.

### 3.4. EUT Set-ups

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

### 3.5. General Description

The Equipment Under Test (EUT) is a model of ID Screen with internal antenna.

It supports GSM 900/850/1800/1900MHz, WCDMA Bands 1/2/5/8, and LTE Bands 1/2/3/4/5/7/8/20/28/38/40.

It has Camera, Video Player, USB Data Transfer, NFC, Bluetooth, GNSS and Wi-Fi functions.

It consists of normal options: Battery, Charger and Data 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.

This report serves as a record of MPH-MB003A (Non-IRIS Memory 32G) manufactured by IDEMIA Identity and Security France. According to client's description, the table below shows the difference:

	Details
Components on PCB	CPU/NFC inductance/3D G-sensor changes to 2nd substrate : NFC inductor (0603) changed from INPAQ to MICROGATE; BB IC changed from MT8768V/WBA to MT8768V/WAA; 3D G-sensor changed from SC7A20TR to SC7A20HTR.
LCD changes	Add 2nd resources: LCM: changed from 8.0 INX IPS 9365+5726 WM28 logoHLT to 8.0WXGA INX 9365DA+5726 WM28logoZGD
Camera	Add 2nd resources: Front Camera: changed from 2M FF 6.5*6.5 G02M2 CSP H5161 LH to 2M FF6.5*6.5 GC02M1H 2P CSP ST1V1_LH.
Memory	Add 2nd resources: Memory (32GB ROM) changed from EMMC 32GB KINGSTON EMMC32G-TX29 to EMMC 32GB Jiangbolong A3A55; Memory (3GB RAM) changed from LPDDR4X3GB 2NP-053RS WT:BMicron to LPDDR4X 3GB Hynix.
Front/Back cover or keypad	Changed the front/back cover supplier: Plastic Part (raw materials) changed from Sinoplast to Honour; Plastic Part (Structural part mold transfer) changed from Xinhaoyuan to Dingsheng.
Test Standards	FCC Part 15, Subpart B (10-1-2020 Edition) update to FCC Part 15, Subpart B (10-1-2021 Edition)





According to the declaration of differences by manufacturer, the following tests need to be performed from the report of the initial model:

No	Test Item	EUT set-up No	Test Mode
1	Radiated Emission	Set.1	Camera
		Set.2	Camera
		Set.3	Data Transfer
2	Conducted Emission	Set.1	Camera
		Set.2	Camera
		Set.3	Data Transfer

Other results are cited from the initial report.

The report number for initial model is I22N01644-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	(10-1-2021 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

**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-18000MHz,>90dB
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/IC rules	Section in this report	Verdict
1	Radiated Emission	15.109(a)/ Section 6.2	A.1	P
2	Conducted Emission	15.107(a)/ Section 6.1	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	4.80dB(k=2)
	1GHz-18GHz	4.62dB(k=2)
	18GHz-40GHz	2.36dB(k=2)
Conducted Emission	150kHz-30MHz	2.68dB(k=2)

**8. MEASURING APPARATUS UTILIZED**

No.	Name	Model	Serial Number	Manufacturer	Calibration Due date	Calibration Period
1.	Test Receiver	ESR7	101676	R&S	2024.11.22	1 year
2.	Test Receiver	ESCI	100702	R&S	2024.01.11	1 year
3.	Spectrum Analyzer	FSV40	101192	R&S	2024.01.11	1 year
4.	BiLog Antenna	3142E	00224831	ETS-Lindgren	2024.05.27	3 years
5.	LISN	ENV216	102067	R&S	2024.10.07	1 year
6.	Horn Antenna	3117	00066577	ETS-Lindgren	2025.04.17	3 years
7.	Anechoic Chamber	FACT3-2.0	1285	ETS-Lindgren	2025.05.28	2 years
8.	Horn Antenna	QSH-SL-18-2 6-S-20	17013	Q-par	2026.02.01	3 years
9.	Horn Antenna	QSH-SL-8-26- 40-K-20	17014	Q-par	2026.01.30	3 years

**9. MEASURING 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	/	/



## **10. MEASURING SOFTWARE**

<b>No.</b>	<b>Name</b>	<b>Manufacturer</b>	<b>Version</b>
1	EMC32	Rohde & Schwarz	V10.50.40



## **ANNEX A: MEASUREMENT RESULTS**

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

#### **Reference**

FCC: Part 15.109(a)

IC: ICES-003 section 6.2

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

The field strength of radiated emissions from the unintentional radiator at a distance of 3 meters or 1 meters is tested. Tested in accordance with the procedures of ANSI C63.4 -2014, section 8.3. The EUT was placed on a non-conductive table. 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.

**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.

The EUT was tested while operating in licensed band receiver mode. All licensed band receivers that tune in the range of 30MHz-960MHz, as listed in Section 3.1, 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. For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane) were recorded in this report.

#### **A.1.3 Measurement Limit**

Limit from Part 15.109(a)

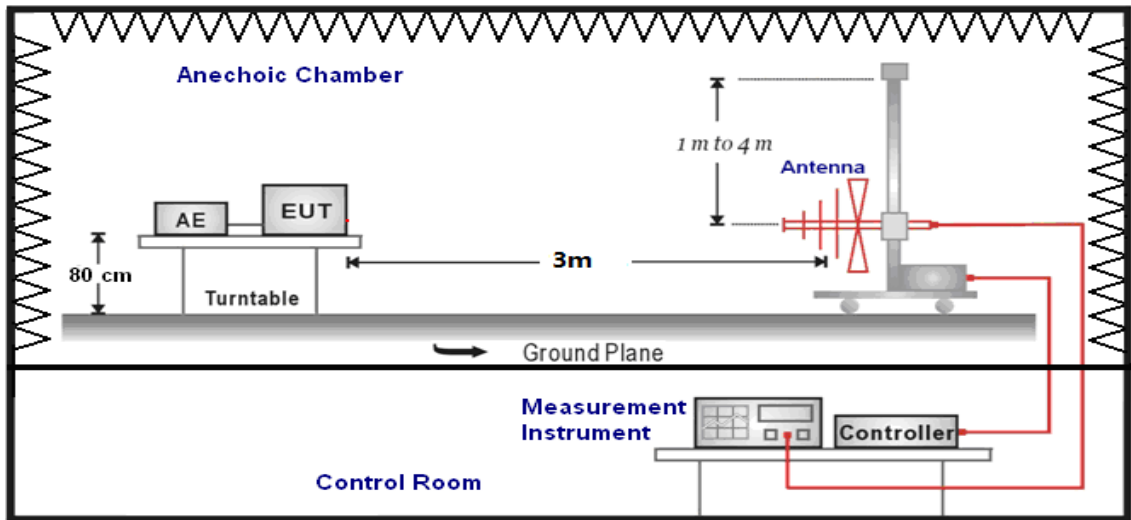
Frequency range (MHz)	Field strength limit ( $\mu\text{V}/\text{m}$ )		
	Quasi-peak	Average	Peak
30-88	100		
88-216	150		
216-960	200		
960-1000	500		
>1000		500	5000

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

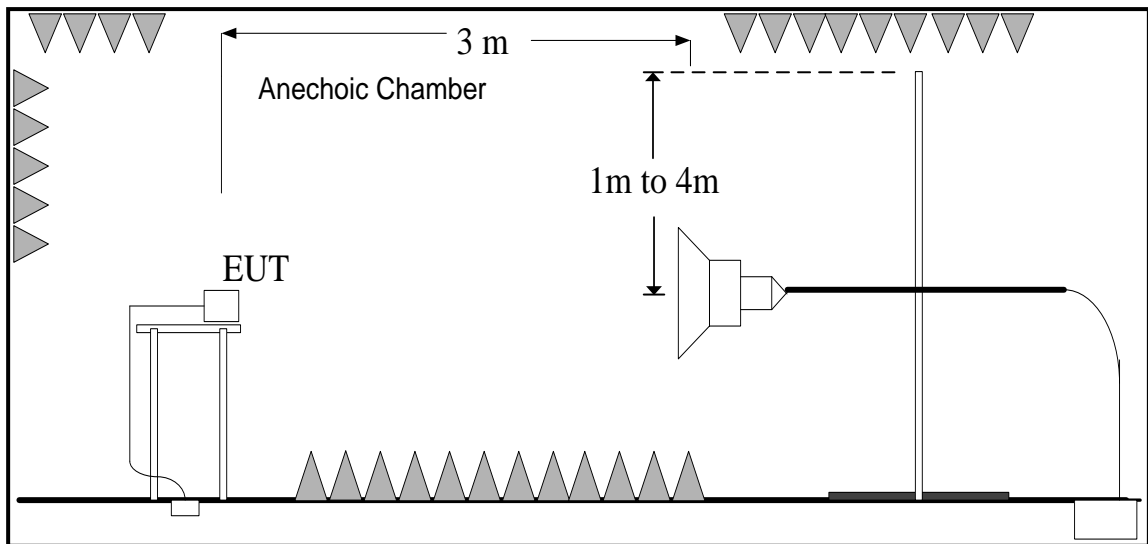
**A.1.4 Test Condition**

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

$G_{PL}$ : 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

Camera

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.	

Camera

Frequency range (MHz)	Quasi-Peak Limit (dB $\mu$ V/m)	Result (dB $\mu$ V/m)	Conclusion
		UT01aa/Set.2	
30-88	40.00	See Figure A.1.5.	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.2	
1000 to 18000	54.00	74.00	See Figure A.1.6.	P
18000 to 26500	63.54	83.54	See Figure A.1.7.	
26500 to 40000	63.54	83.54	See Figure A.1.8.	

Data Transfer: PC TO EUT

Frequency range (MHz)	Quasi-Peak Limit (dB $\mu$ V/m)	Result (dB $\mu$ V/m)	Conclusion
		UT01aa/Set.3	
30-88	40.00	See Figure A.1.9.	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.3	
1000 to 18000	54.00	74.00	See Figure A.1.10.	P
18000 to 26500	63.54	83.54	See Figure A.1.11.	
26500 to 40000	63.54	83.54	See Figure A.1.12.	

Data Transfer: EUT TO PC

Frequency range (MHz)	Quasi-Peak Limit (dB $\mu$ V/m)	Result (dB $\mu$ V/m)	Conclusion
		UT01aa/Set.3	
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 $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Result (dB $\mu$ V/m)	Conclusion
			UT01aa/Set.3	
1000 to 18000	54.00	74.00	See Figure A.1.14.	P
18000 to 26500	63.54	83.54	See Figure A.1.15.	
26500 to 40000	63.54	83.54	See Figure A.1.16.	

Data Transfer: PC TO TF Card

Frequency range (MHz)	Quasi-Peak Limit (dB $\mu$ V/m)	Result (dB $\mu$ V/m)	Conclusion
		UT01aa/Set.3	
30-88	40.00	See Figure A.1.17.	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.3	
1000 to 18000	54.00	74.00	See Figure A.1.18.	P
18000 to 26500	63.54	83.54	See Figure A.1.19.	
26500 to 40000	63.54	83.54	See Figure A.1.20.	



Data Transfer: TF Card TO PC

Frequency range (MHz)	Quasi-Peak Limit (dB $\mu$ V/m)	Result (dB $\mu$ V/m)	Conclusion
		UT01aa/Set.3	
30-88	40.00	See Figure A.1.21.	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.3	
1000 to 18000	54.00	74.00	See Figure A.1.22.	P
18000 to 26500	63.54	83.54	See Figure A.1.23.	
26500 to 40000	63.54	83.54	See Figure A.1.24.	

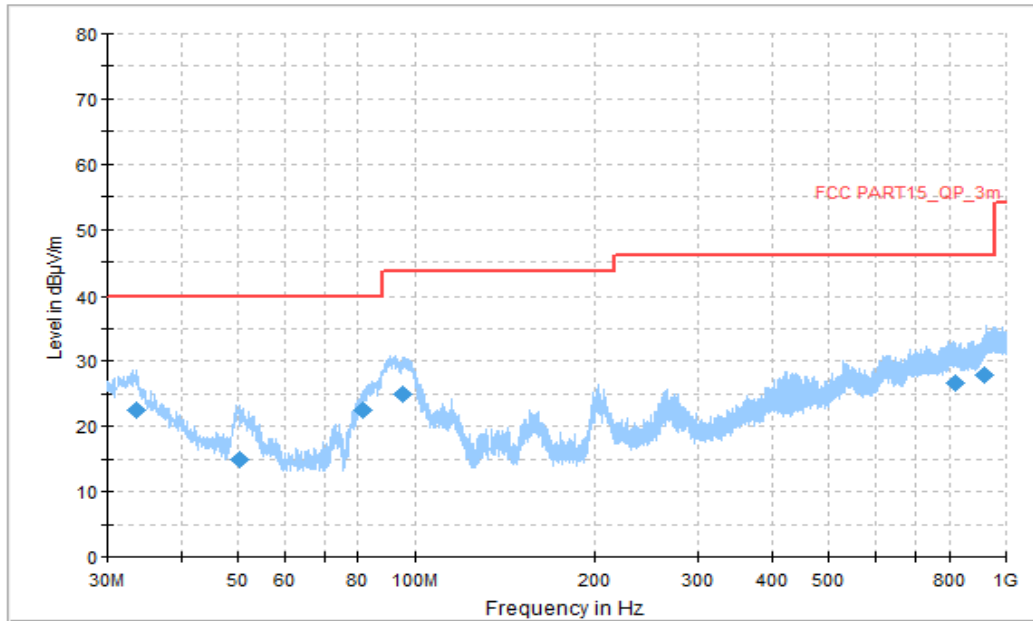


Figure A.1.1. Radiated Emission (Camera, 30MHz to 1GHz)

Final\_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	ARpl (dB/m)	P <sub>Mea</sub> (dBµV)
33.502778	22.62	40.00	17.38	V	-13	35.62
50.423889	14.98	40.00	25.02	V	-20	34.98
81.410000	22.45	40.00	17.55	V	-21	43.45
94.936111	24.86	43.52	18.66	V	-19	43.86
817.262778	26.78	46.02	19.24	V	1	25.78
916.687778	27.94	46.02	18.08	V	2	25.94

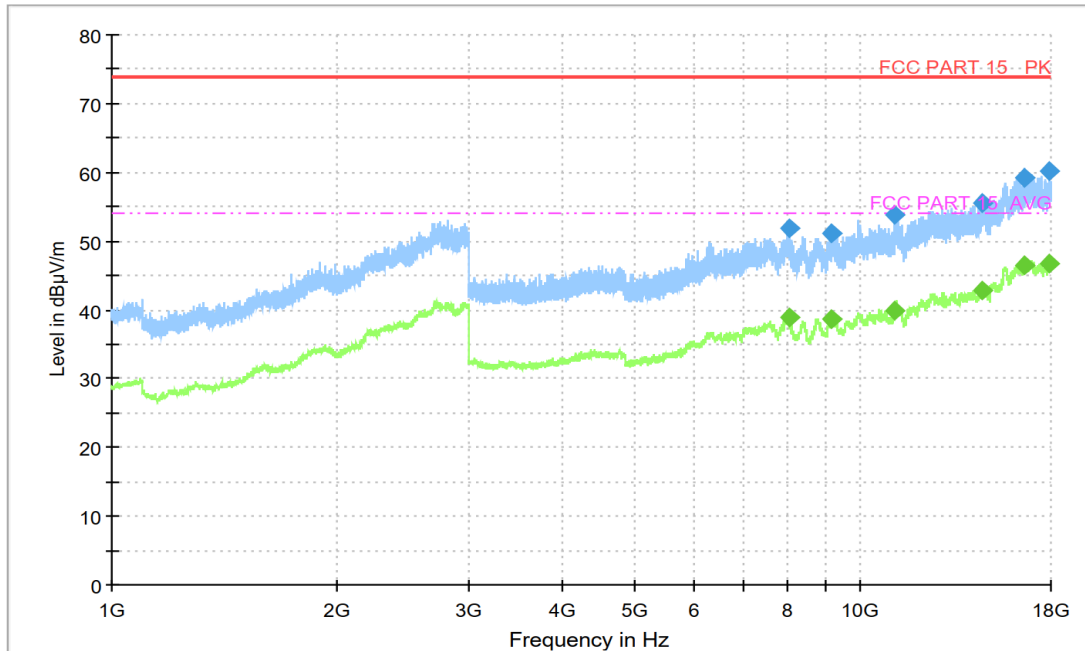


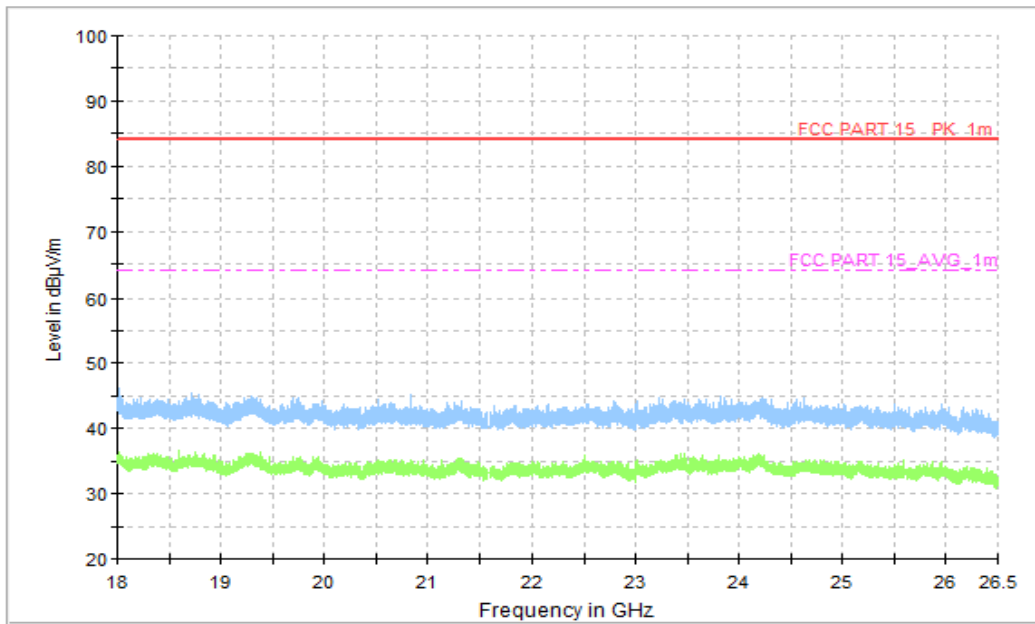
Figure A.1.2. Radiated Emission (Camera, 1GHz to 18GHz)

**Final\_Results\_PK**

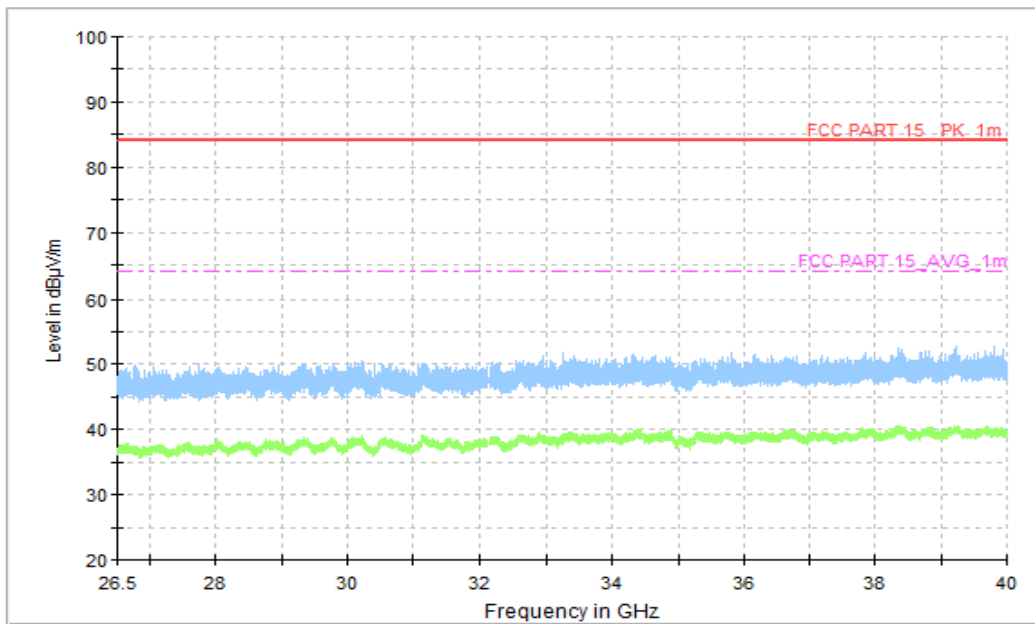
Frequency(MHz)	Peak (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P <sub>Mea</sub> (dBµV)
8034.375000	51.78	74.00	22.22	V	12	39.78
9173.125000	51.25	74.00	22.75	H	13	38.25
11144.062500	53.87	74.00	20.13	H	15	38.87
14541.750000	55.55	74.00	18.45	V	18	37.55
16610.500000	59.12	74.00	14.88	V	22	37.12
17879.750000	60.20	74.00	13.80	H	24	36.20

**Final\_Results\_AVG**

Frequency(MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P <sub>Mea</sub> (dBµV)
8034.375000	38.88	54.00	15.12	V	12	26.88
9173.125000	38.54	54.00	15.46	H	13	25.54
11144.062500	39.86	54.00	14.14	H	15	24.86
14541.750000	42.75	54.00	11.25	V	18	24.75
16610.500000	46.52	54.00	7.48	V	22	24.52
17879.750000	46.68	54.00	7.32	H	24	22.68



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



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

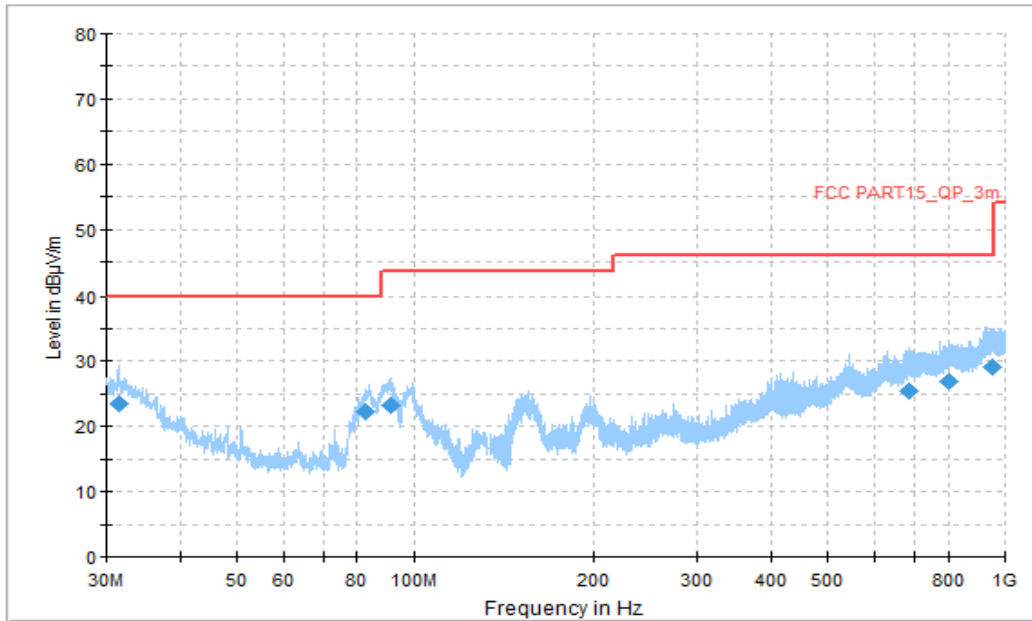


Figure A.1.5. Radiated Emission (Camera, 30MHz to 1GHz)

Final\_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	ARpl (dB/m)	P <sub>Mea</sub> (dBµV)
31.562778	23.50	40.00	16.50	V	-12	35.50
82.649444	22.16	40.00	17.84	V	-21	43.16
91.271667	23.12	43.52	20.40	V	-20	43.12
687.013333	25.46	46.02	20.56	H	-1	26.46
805.191667	26.94	46.02	19.08	H	1	25.94
948.859444	29.05	46.02	16.97	V	3	26.05

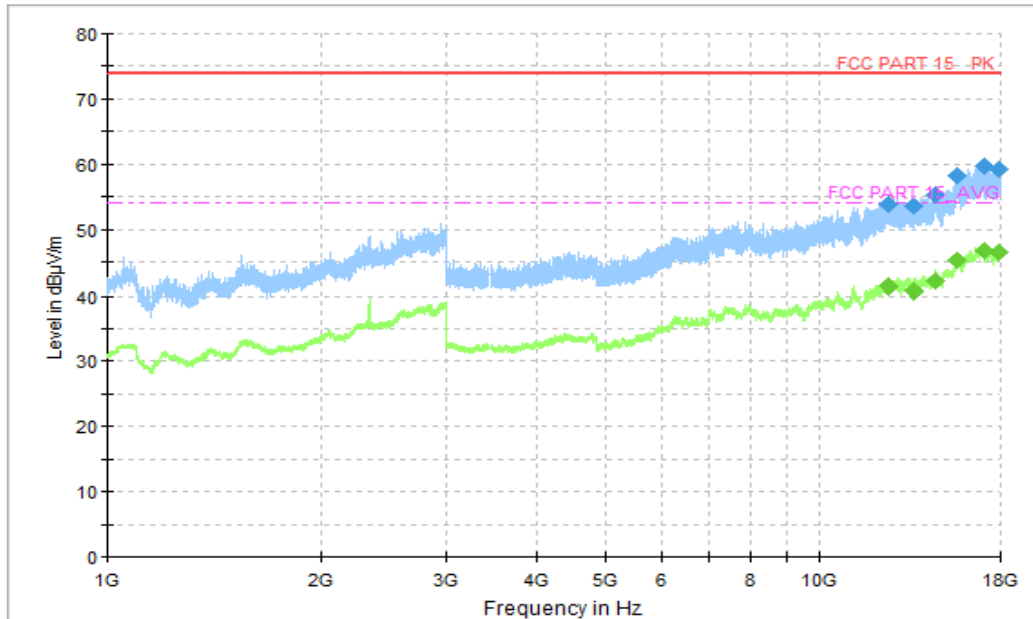


Figure A.1.6. Radiated Emission (Camera, 1GHz to 18GHz)

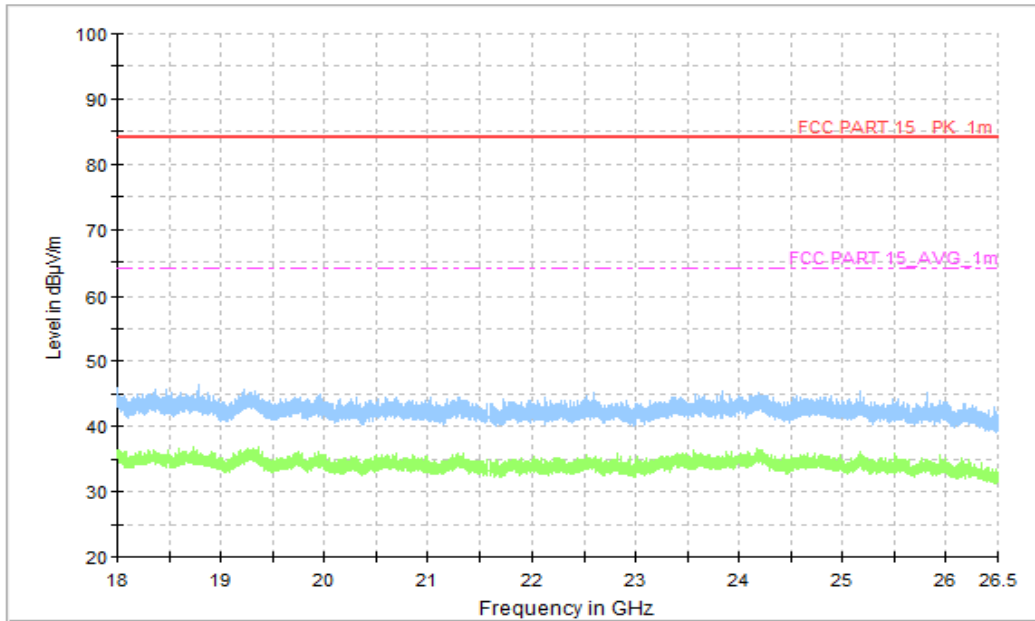
**Final\_Results\_PK**

Frequency(MHz)	Peak (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P <sub>Mea</sub> (dBµV)
12484.000000	53.89	74.00	20.11	H	17	36.89
13600.750000	53.49	74.00	20.51	V	17	36.49
14591.500000	55.25	74.00	18.75	V	18	37.25
15660.750000	58.30	74.00	15.70	V	20	38.30
17051.500000	59.80	74.00	14.20	V	22	37.8
17894.000000	59.22	74.00	14.78	V	24	35.22

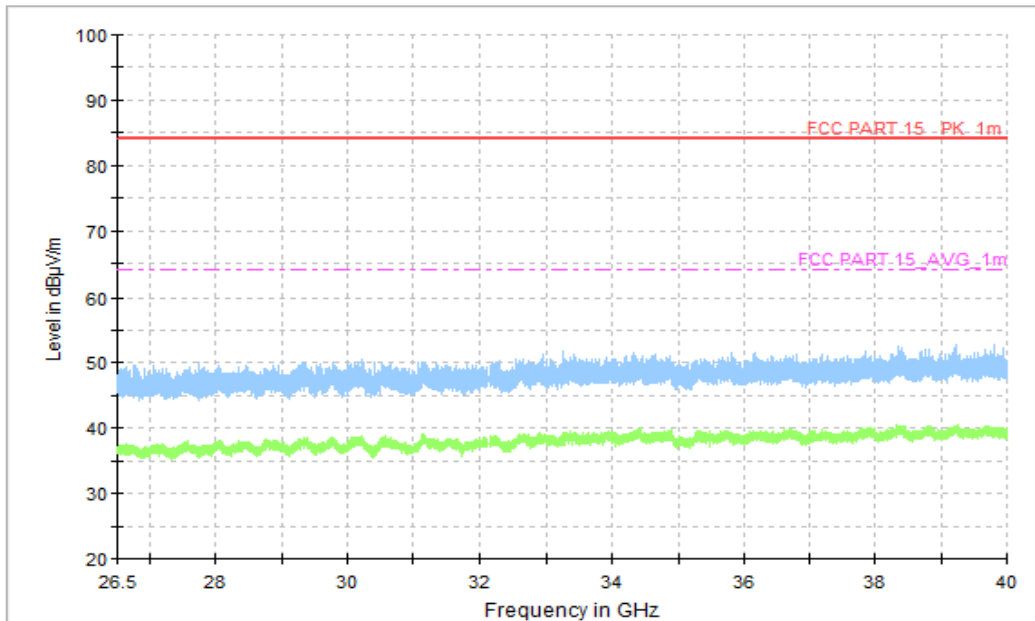
**Final\_Results\_AVG**

Frequency(MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P <sub>Mea</sub> (dBµV)
12484.000000	41.23	54.00	12.77	H	17	24.23
13600.750000	40.60	54.00	13.40	V	17	23.6
14591.500000	42.12	54.00	11.88	V	18	24.12
15660.750000	45.32	54.00	8.68	V	20	25.32
17051.500000	46.68	54.00	7.32	V	22	24.68
17894.000000	46.52	54.00	7.48	V	24	22.52





**Figure A.1.7. Radiated Emission (Camera, 18GHz to 26.5GHz)**



**Figure A.1.8. Radiated Emission (Camera, 26.5GHz to 40GHz)**

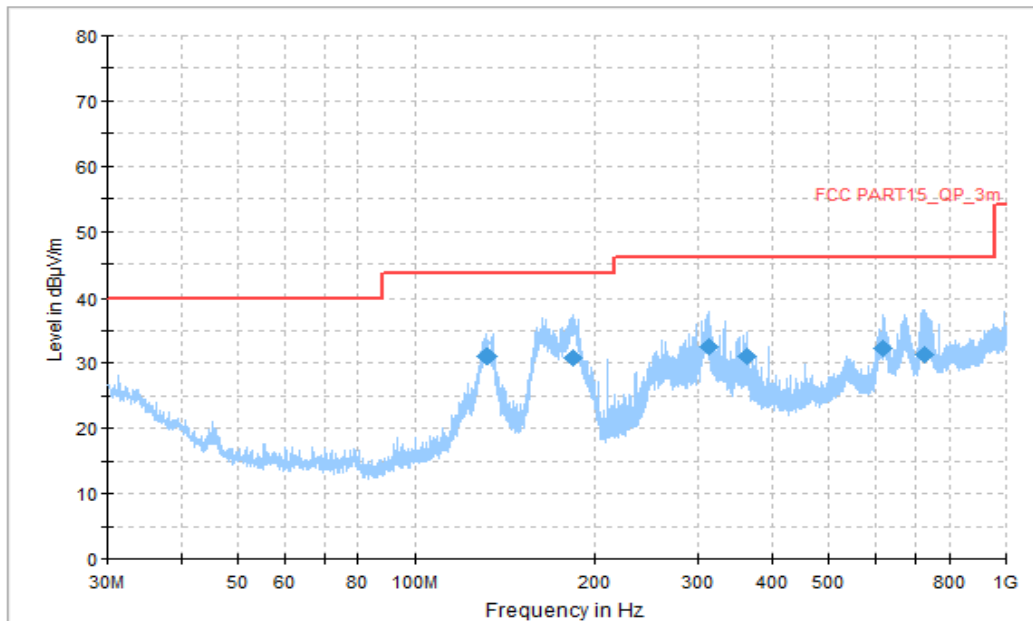


Figure A.1.9. Radiated Emission (Data Transfer: PC TO EUT, 30MHz to 1GHz)

Final\_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	ARpl (dB/m)	P <sub>Mea</sub> (dBµV)
131.850000	31.05	43.52	12.47	H	-19	50.05
184.607222	30.89	43.52	12.63	V	-16	46.89
313.886667	32.52	46.02	13.50	H	-12	44.52
362.871667	31.05	46.02	14.97	H	-9	40.05
619.544444	32.40	46.02	13.62	V	-2	34.4
728.992778	31.39	46.02	14.63	V	0	31.39

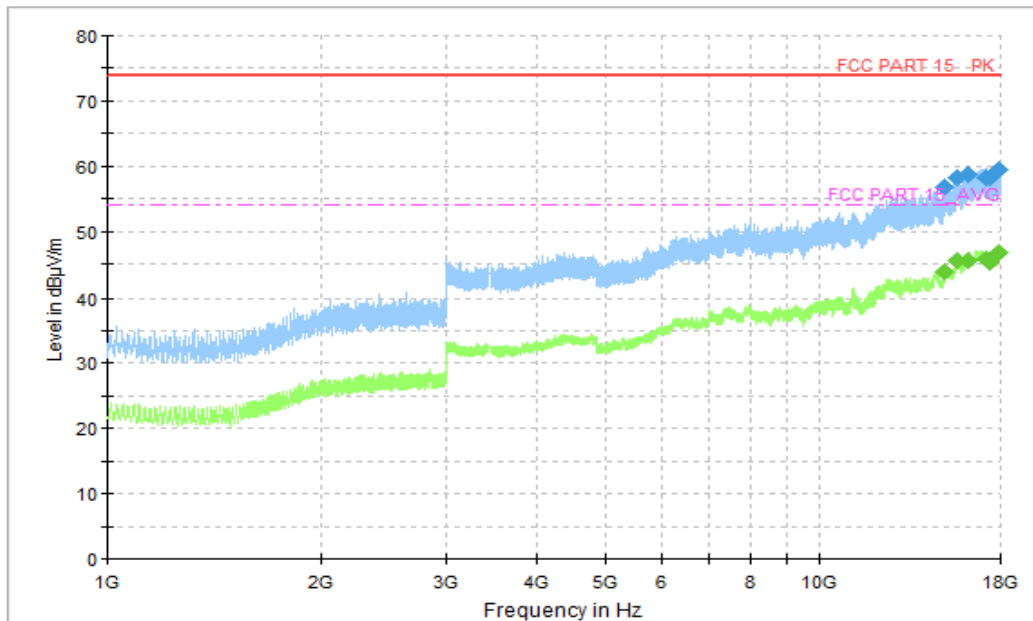


Figure A.1.10. Radiated Emission (Data Transfer: PC TO EUT, 1GHz to 18GHz)

**Final\_Results\_PK**

Frequency(MHz)	Peak (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P <sub>Mea</sub> (dBµV)
15044.750000	56.75	74.00	17.25	H	18	38.75
15600.000000	58.11	74.00	15.89	H	20	38.11
16240.250000	58.82	74.00	15.18	V	21	37.82
17167.250000	58.14	74.00	15.86	H	21	37.14
17350.000000	58.11	74.00	15.89	V	22	36.11
17910.500000	59.49	74.00	14.51	V	24	35.49

**Final\_Results\_AVG**

Frequency(MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P <sub>Mea</sub> (dBµV)
15044.750000	43.77	54.00	10.23	H	18	25.77
15600.000000	45.43	54.00	8.58	H	20	25.43
16240.250000	45.50	54.00	8.50	V	21	24.50
17167.250000	45.75	54.00	8.25	H	21	24.75
17350.000000	45.22	54.00	8.78	V	22	23.22
17910.500000	46.64	54.00	7.36	V	24	22.64

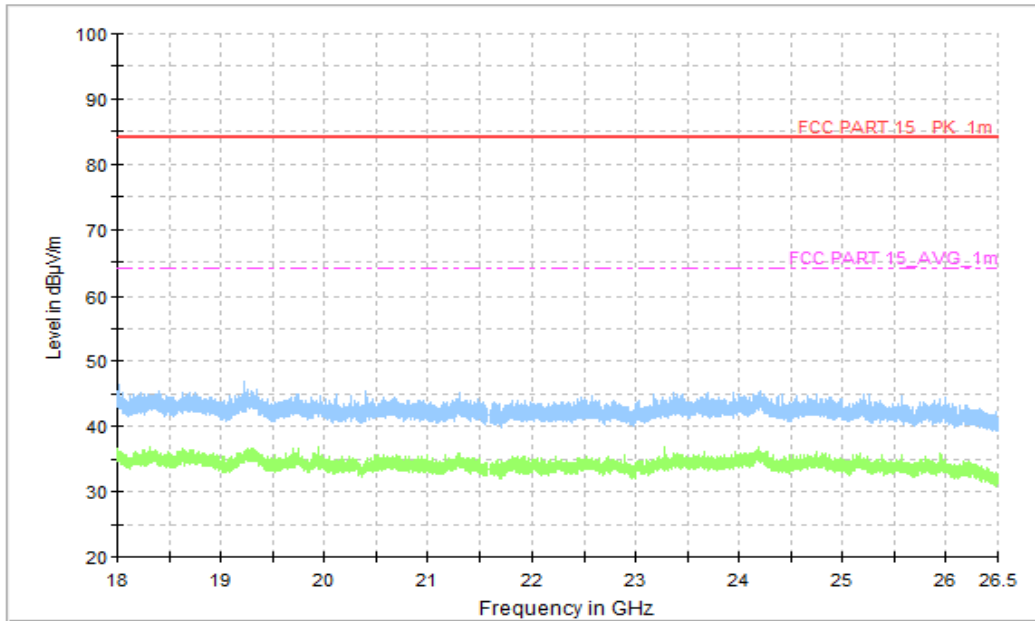


Figure A.1.11. Radiated Emission (Data Transfer: PC TO EUT, 18GHz to 26.5GHz)

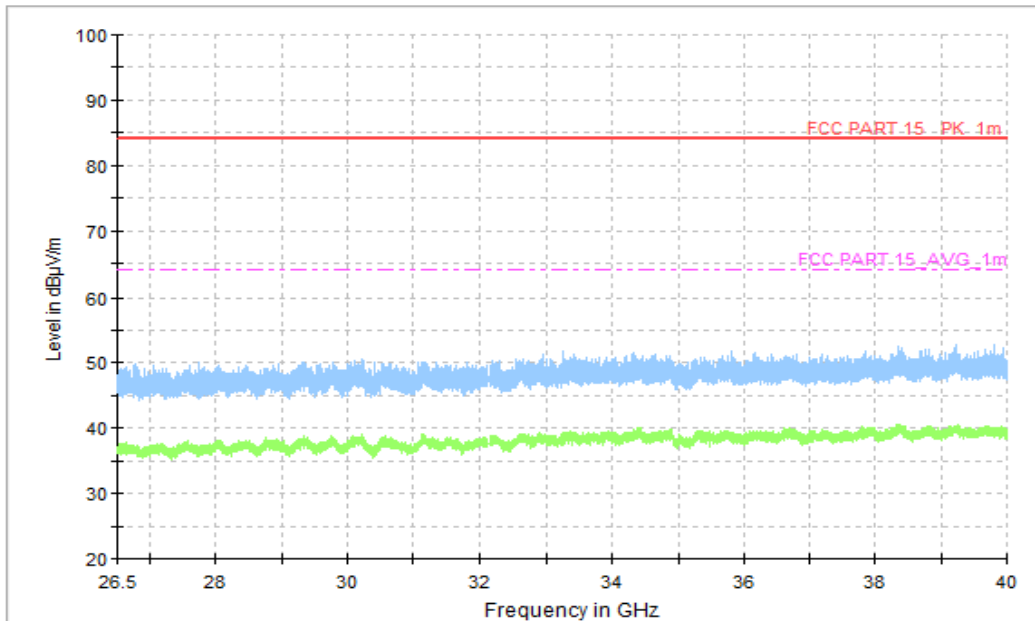


Figure A.1.12. Radiated Emission (Data Transfer: PC TO EUT, 26.5GHz to 40GHz)

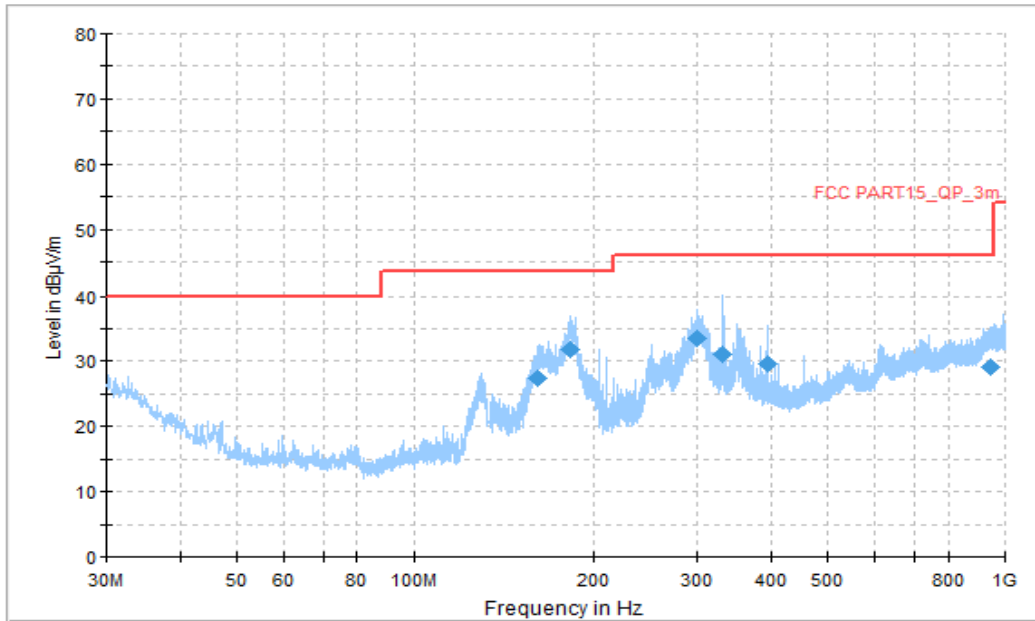


Figure A.1.13. Radiated Emission (Data Transfer: EUT TO PC, 30MHz to 1GHz)

Final\_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	ARpl (dB/m)	P <sub>Mea</sub> (dBµV)
161.057778	27.44	43.52	16.08	V	-16	43.44
182.182222	31.78	43.52	11.74	V	-16	47.78
300.252778	33.62	46.02	12.40	H	-12	45.62
331.831667	31.14	46.02	14.88	H	-11	42.14
395.690000	29.69	46.02	16.33	V	-7	36.69
942.608333	29.01	46.02	17.01	V	3	26.01

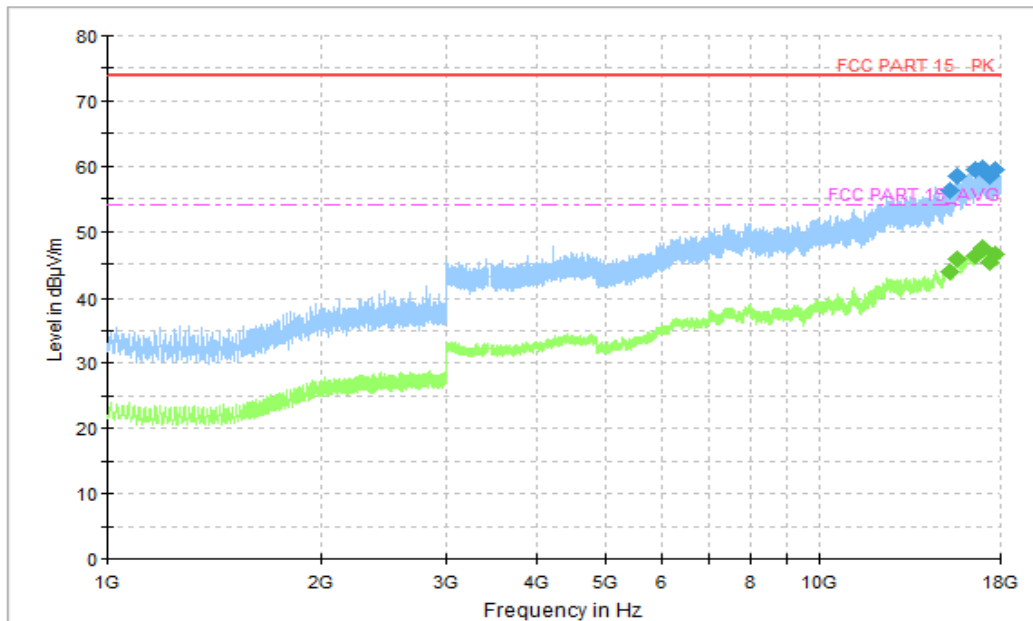


Figure A.1.14. Radiated Emission (Data Transfer: EUT TO PC, 1GHz to 18GHz)

**Final\_Results\_PK**

Frequency(MHz)	Peak (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P <sub>Mea</sub> (dBµV)
15263.500000	56.17	74.00	17.83	V	19	37.17
15661.750000	58.51	74.00	15.49	H	20	38.51
16575.500000	59.56	74.00	14.44	H	22	37.56
17017.500000	59.72	74.00	14.28	V	23	36.72
17331.500000	58.48	74.00	15.52	H	22	36.48
17717.500000	59.38	74.00	14.62	H	23	36.38

**Final\_Results\_AVG**

Frequency(MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P <sub>Mea</sub> (dBµV)
15263.500000	43.67	54.00	10.33	V	19	24.67
15661.750000	45.83	54.00	8.17	H	20	25.83
16575.500000	46.22	54.00	7.78	H	22	24.22
17017.500000	47.34	54.00	6.66	V	23	24.34
17331.500000	45.22	54.00	8.78	H	22	23.22
17717.500000	46.49	54.00	7.51	H	23	23.49

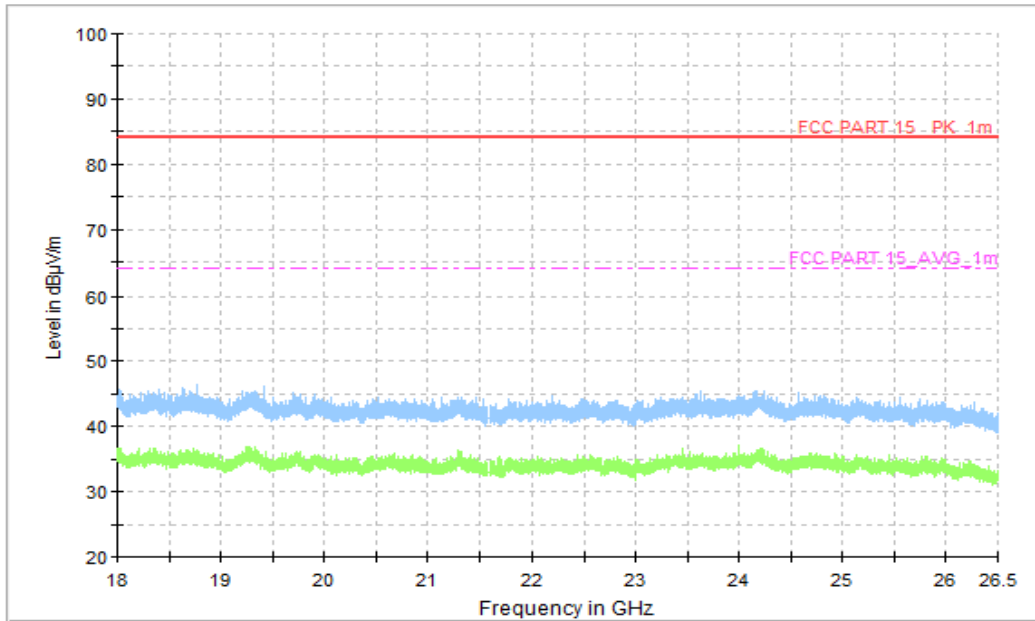


Figure A.1.15. Radiated Emission (Data Transfer: EUT TO PC, 18GHz to 26.5GHz)

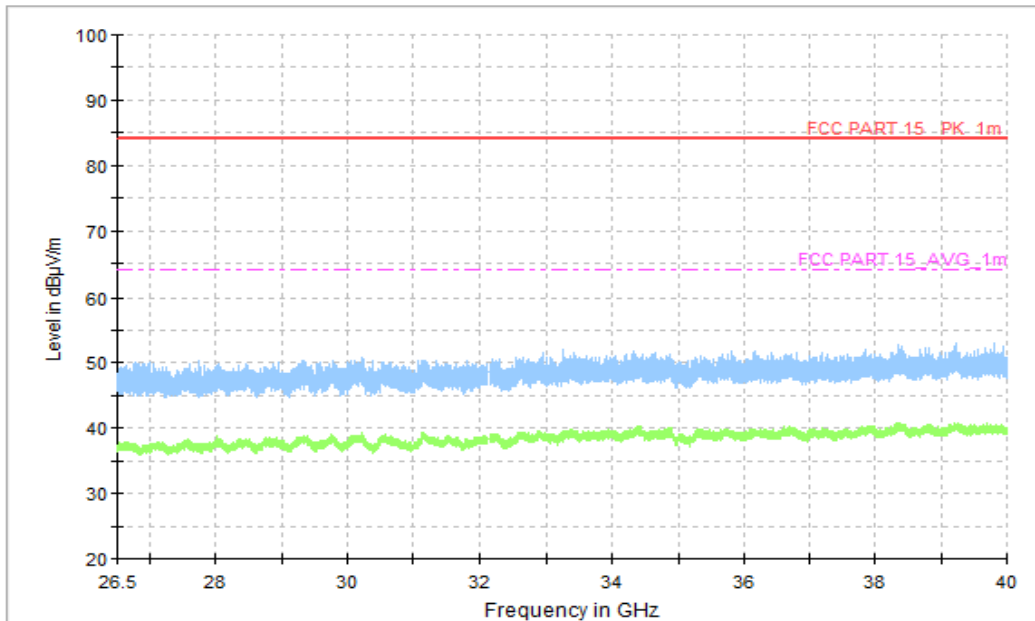


Figure A.1.16. Radiated Emission (Data Transfer: EUT TO PC, 26.5GHz to 40GHz)

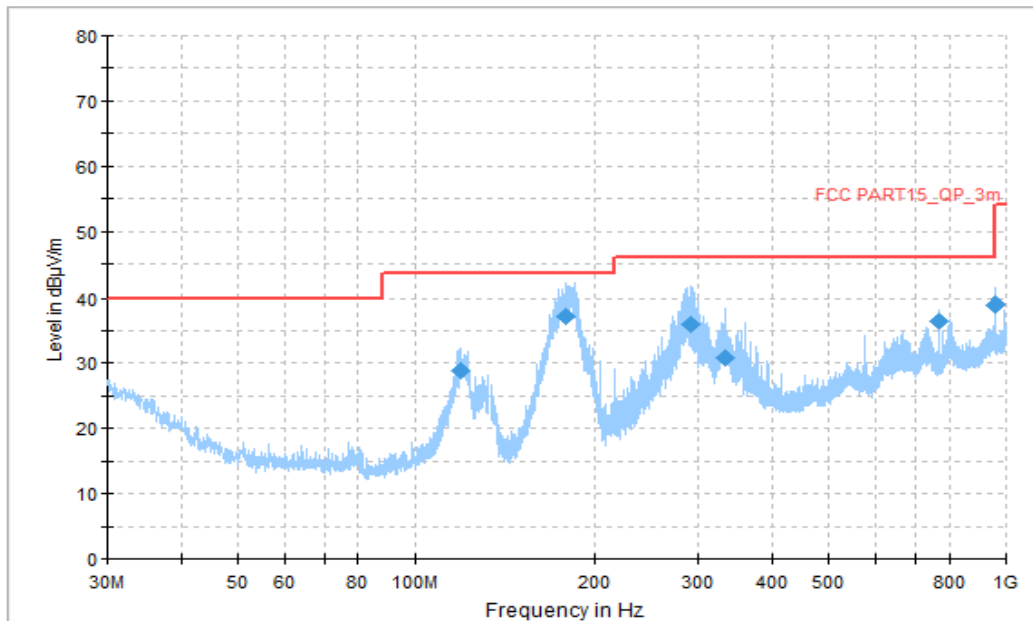


Figure A.1.17. Radiated Emission (Data Transfer: PC TO TF Card, 30MHz to 1GHz)

Final\_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	ARpl (dB/m)	P <sub>Mea</sub> (dBµV)
119.509444	28.87	43.52	14.65	H	-19	47.87
178.733333	37.18	43.52	6.34	H	-16	53.18
291.415000	36.07	46.02	9.95	H	-13	49.07
332.586111	30.75	46.02	15.27	H	-11	41.75
768.008333	36.46	46.02	9.56	H	0	36.46
960.014444	38.80	53.98	15.18	H	3	35.80



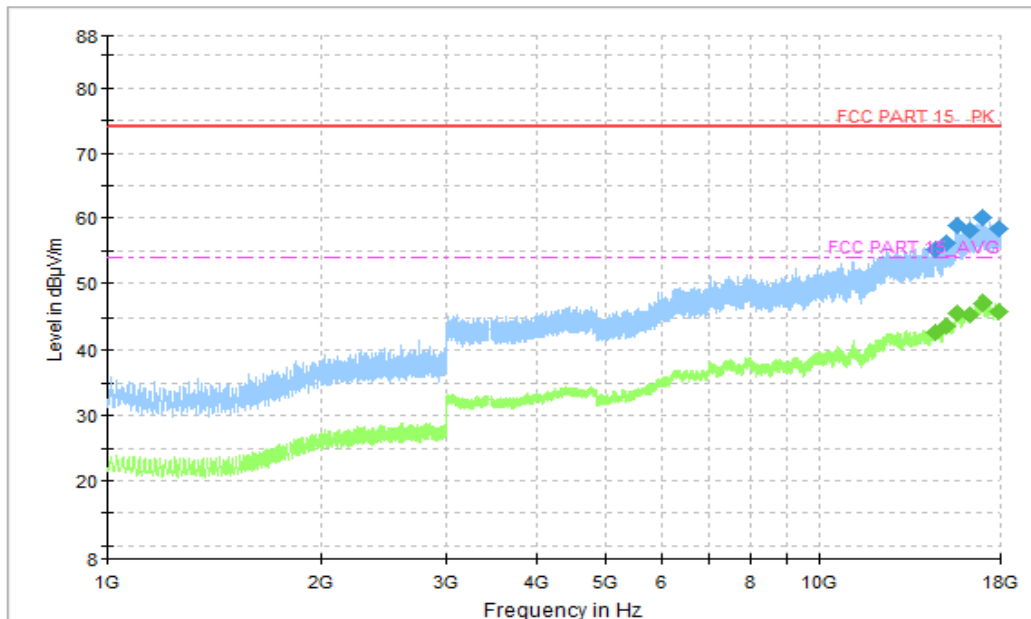


Figure A.1.18. Radiated Emission (Data Transfer: PC TO TF Card, 1GHz to 18GHz)

**Final\_Results\_PK**

Frequency(MHz)	Peak (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P <sub>Mea</sub> (dBµV)
14536.250000	55.27	74.00	18.73	V	18	37.27
15100.250000	56.27	74.00	17.73	H	18	38.27
15659.500000	58.93	74.00	15.07	V	20	38.93
16263.750000	58.20	74.00	15.80	V	21	37.20
17016.250000	60.22	74.00	13.78	H	23	37.22
17946.250000	58.32	74.00	15.68	V	24	34.32

**Final\_Results\_AVG**

Frequency(MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P <sub>Mea</sub> (dBµV)
14536.250000	42.81	54.00	11.19	V	18	24.81
15100.250000	43.81	54.00	10.19	H	18	25.81
15659.500000	45.64	54.00	8.36	V	20	25.64
16263.750000	45.42	54.00	8.58	V	21	24.42
17016.250000	47.23	54.00	6.77	H	23	24.23
17946.250000	45.95	54.00	8.05	V	24	21.95

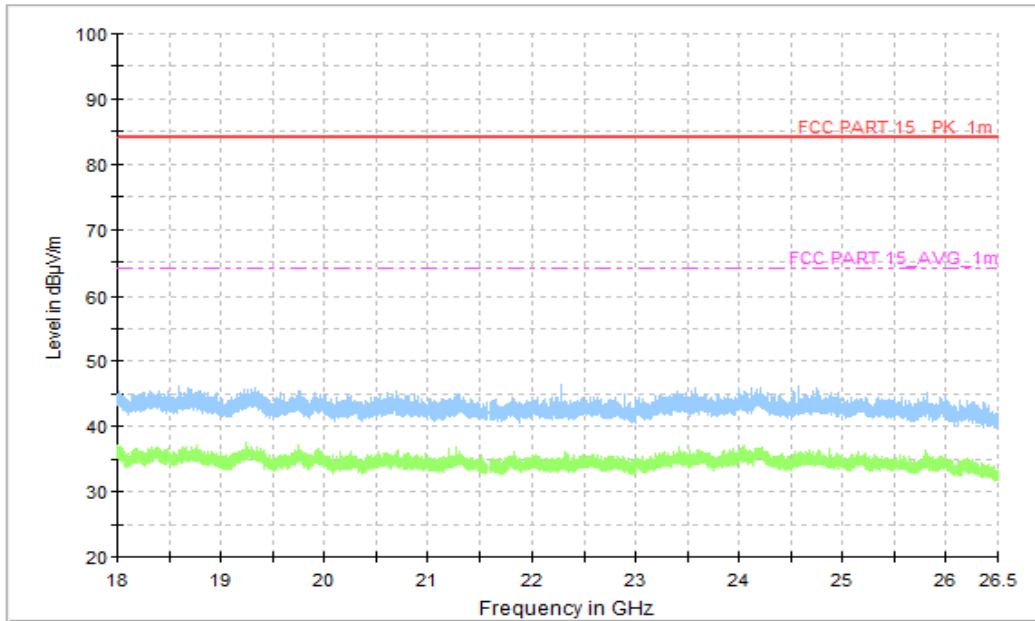


Figure A.1.19. Radiated Emission (Data Transfer: PC TO TF Card, 18GHz to 26.5GHz)

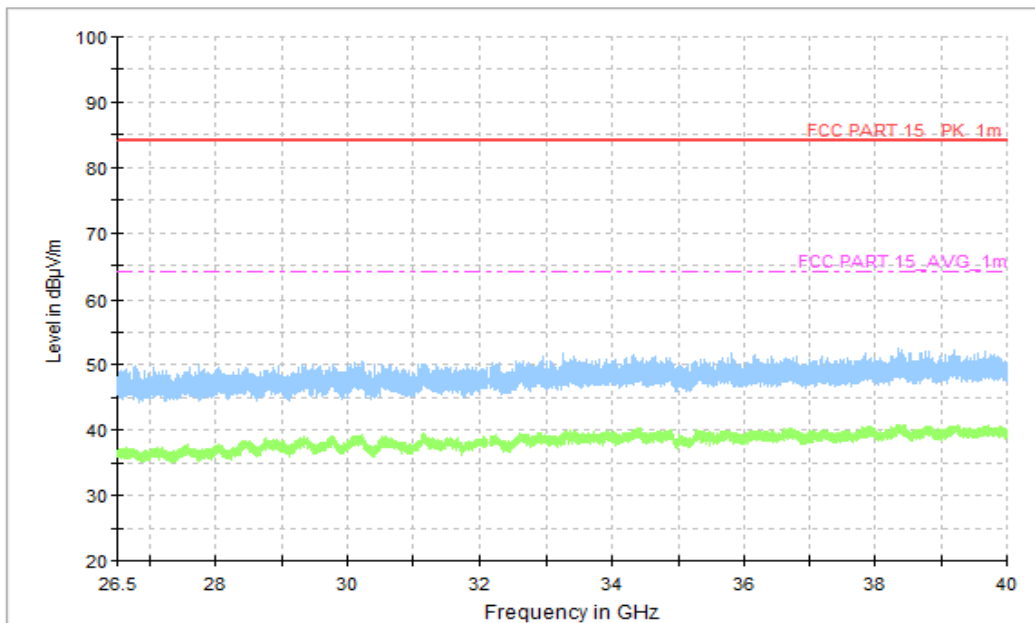
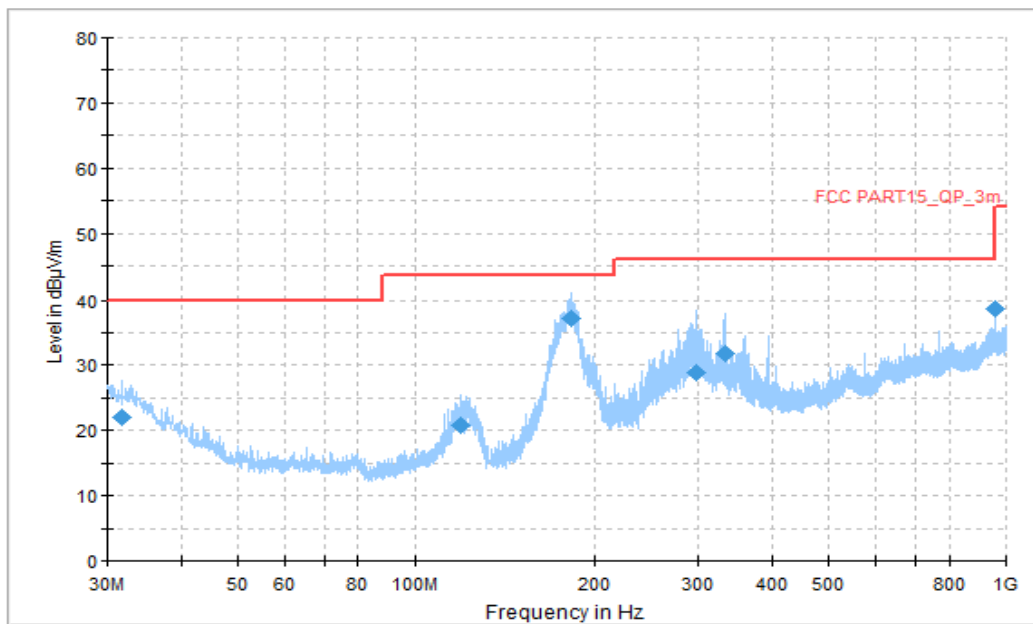


Figure A.1.20. Radiated Emission (Data Transfer: PC TO TF Card, 26.5GHz to 40GHz)



**Figure A.1.21. Radiated Emission (Data Transfer: TF Card TO PC, 30MHz to 1GHz)**

**Final\_Result**

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	ARpl (dB/m)	P <sub>Mea</sub> (dBµV)
31.778333	21.93	40.00	18.07	V	-12	33.93
119.347778	20.85	43.52	22.67	H	-19	39.85
182.990556	37.21	43.52	6.31	H	-16	53.21
296.803889	28.86	46.02	17.16	V	-13	41.86
333.125000	31.78	46.02	14.24	H	-11	42.78
960.014444	38.74	53.98	15.24	H	3	35.74

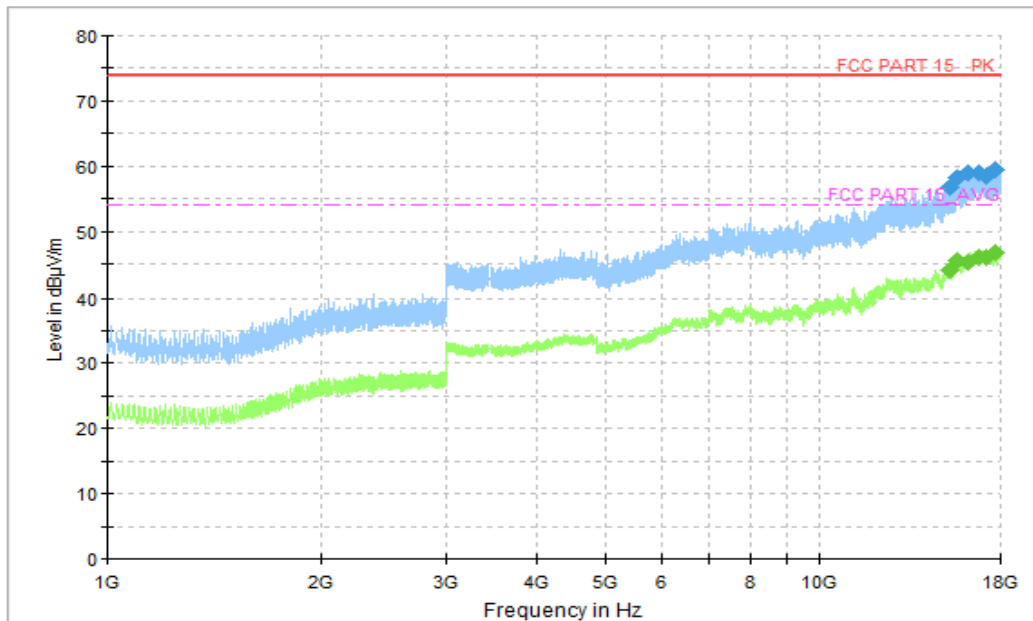


Figure A.1.22. Radiated Emission (Data Transfer: TF Card TO PC, 1GHz to 18GHz)

**Final\_Results\_PK**

Frequency(MHz)	Peak (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P <sub>Mea</sub> (dBµV)
15307.500000	56.77	74.00	17.23	V	19	37.77
15637.750000	58.32	74.00	15.68	H	20	38.32
16173.250000	58.98	74.00	15.02	H	21	37.98
16744.000000	58.84	74.00	15.16	V	21	37.84
17223.250000	58.49	74.00	15.51	H	22	36.49
17681.000000	59.53	74.00	14.47	H	23	36.53

**Final\_Results\_AVG**

Frequency(MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P <sub>Mea</sub> (dBµV)
15307.500000	43.99	54.00	10.01	V	19	24.99
15637.750000	45.56	54.00	8.44	H	20	25.56
16173.250000	45.33	54.00	8.67	H	21	24.33
16744.000000	46.09	54.00	7.91	V	21	25.09
17223.250000	45.90	54.00	8.10	H	22	23.9
17681.000000	46.63	54.00	7.37	H	23	23.63

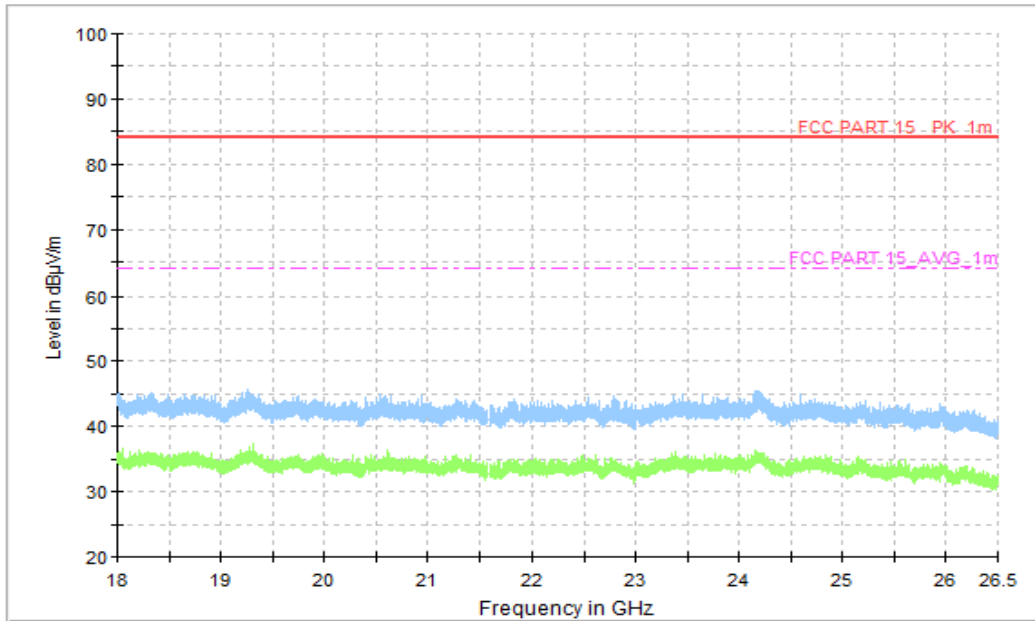


Figure A.1.23. Radiated Emission (Data Transfer: TF Card TO PC, 18GHz to 26.5GHz)

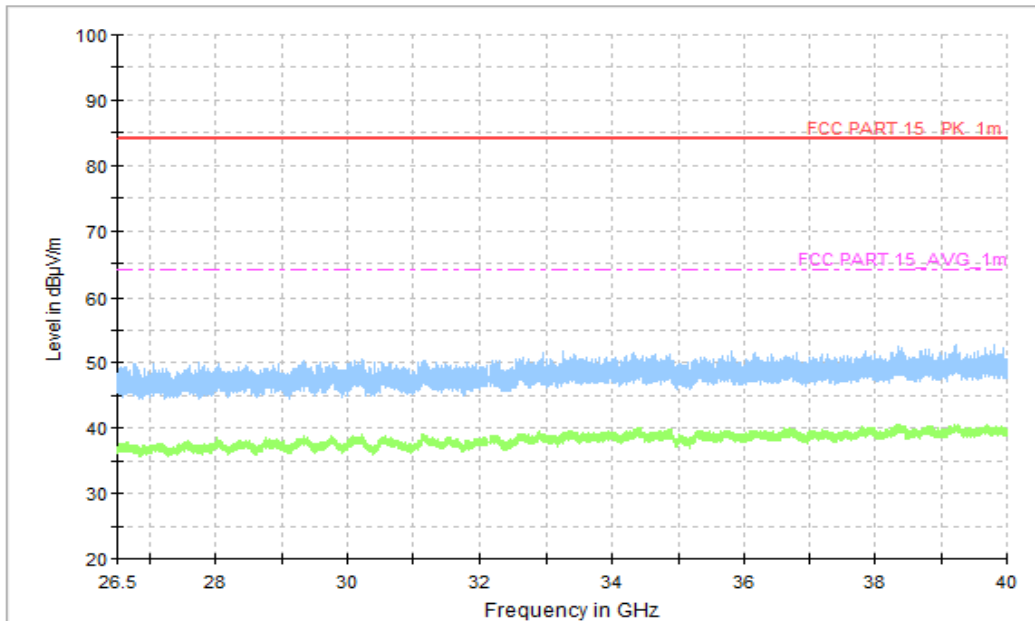


Figure A.1.24. Radiated Emission (Data Transfer: TF Card TO PC, 26.5GHz to 40GHz)



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

**Reference**

FCC: Part 15.107(a)

IC: ICES-003 section 6.1.

**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:**

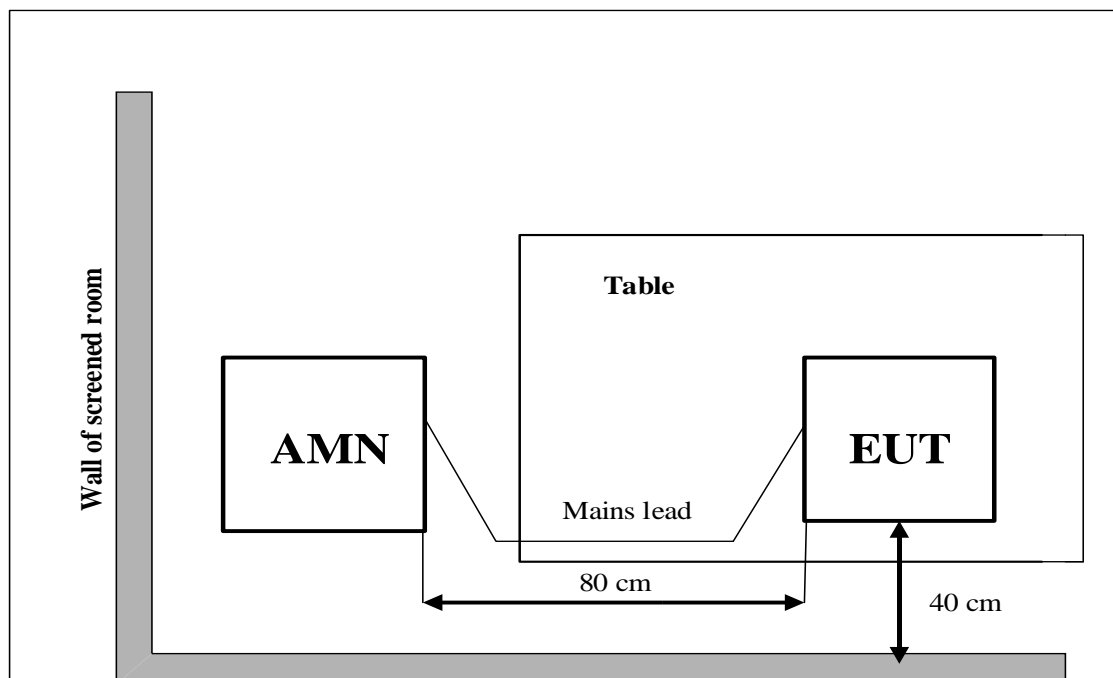
**Camera:** At the beginning of measurement, the battery is completely discharged. The battery and charger are installed so that the EUT works well and keeping on taking photos.

**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**

$$\text{QuasiPeak(dB}\mu\text{V) /Average(dB}\mu\text{V) =PMea+Corr}$$

Where

Corr: PathLoss + Voltage Division Factor

PMea: Measurement result on receiver.

Camera

AC Input Port/ Voltage: 120V/60Hz

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Average Limit (dB $\mu$ V)	Result (dB $\mu$ V)	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.



Camera

AC Input Port/ Voltage: 120V/60Hz

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Average Limit (dB $\mu$ V)	Result (dB $\mu$ V)	Conclusion
			UT01aa/Set.2	
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.

Data Transfer

AC Input Port/ Voltage: 120V/60Hz

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Average Limit (dB $\mu$ V)	Result (dB $\mu$ V)	Conclusion
			UT01aa/Set.3	
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.

Camera

AC Input Port/ Voltage: 240V/60Hz

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Average Limit (dB $\mu$ V)	Result (dB $\mu$ V)	Conclusion
			UT01aa/Set.1	
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.

Camera

AC Input Port/ Voltage: 240V/60Hz

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Average Limit (dB $\mu$ V)	Result (dB $\mu$ V)	Conclusion
			UT01aa/Set.2	
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.





Data Transfer

AC Input Port/ Voltage: 240V/60Hz

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Average Limit (dB $\mu$ V)	Result (dB $\mu$ V)	Conclusion
			UT01aa/Set.3	
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.

AC Input Port/ Voltage: 120V/60Hz

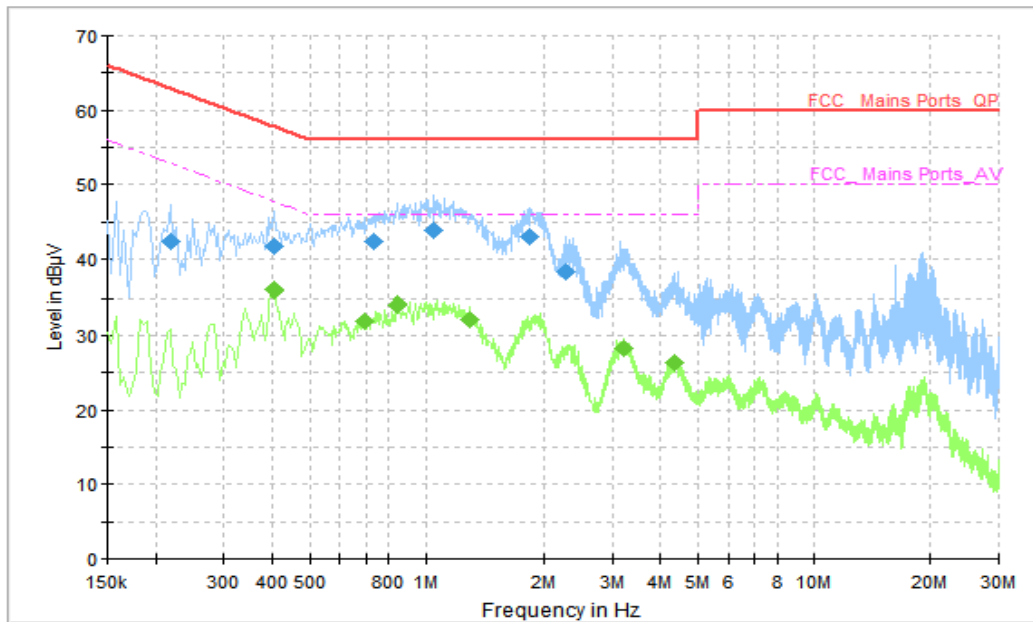


Figure A.2.1. Conducted Emission (Camera)

**Final\_Result\_QPK**

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P <sub>Mea</sub> (dBµV)
0.218000	42.33	62.90	20.57	N	10	32.33
0.406000	41.71	57.73	16.02	N	10	31.71
0.730000	42.45	56.00	13.55	L1	10	32.45
1.046000	43.97	56.00	12.03	L1	10	33.97
1.838000	43.10	56.00	12.90	N	10	33.1
2.286000	38.42	56.00	17.58	N	10	28.42

**Final\_Result\_AVG**

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P <sub>Mea</sub> (dBµV)
0.406000	35.94	47.73	11.79	L1	10	25.94
0.694000	31.81	46.00	14.19	L1	10	21.81
0.846000	34.12	46.00	11.88	L1	10	24.12
1.298000	32.20	46.00	13.80	L1	10	22.20
3.218000	28.24	46.00	17.76	L1	10	18.24
4.326000	26.23	46.00	19.77	L1	10	16.23

AC Input Port/ Voltage: 120V/60Hz

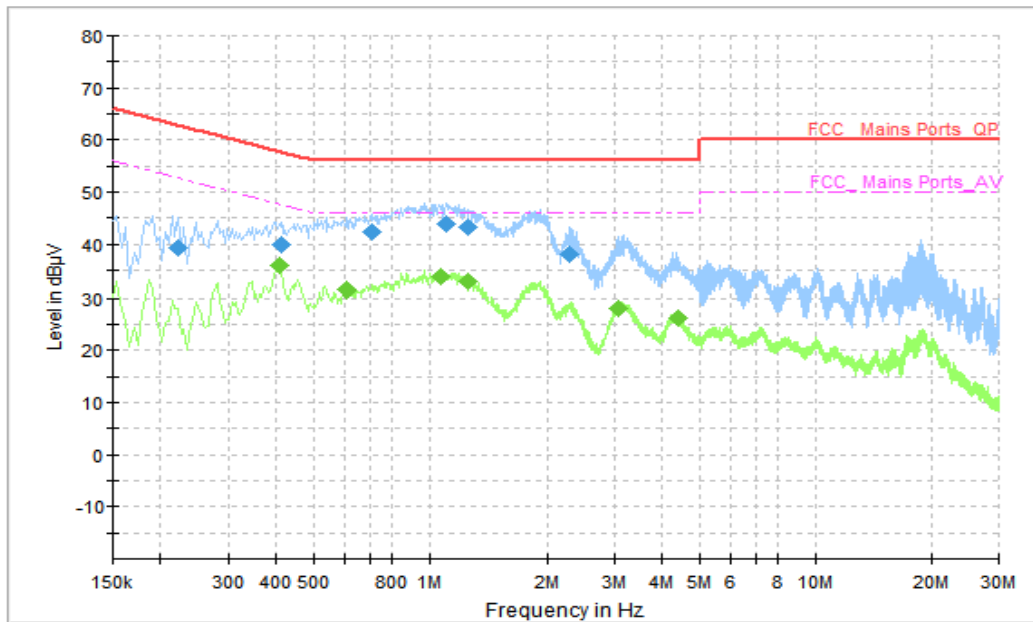


Figure A.2.2. Conducted Emission (Camera)

**Final\_Result\_QPK**

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P <sub>Mea</sub> (dBµV)
0.222000	39.39	62.74	23.36	N	10	29.39
0.410000	39.79	57.65	17.86	N	10	29.79
0.710000	42.23	56.00	13.77	L1	10	32.23
1.110000	43.86	56.00	12.14	L1	10	33.86
1.254000	43.35	56.00	12.65	L1	10	33.35
2.298000	38.10	56.00	17.90	N	10	28.10

**Final\_Result\_AVG**

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P <sub>Mea</sub> (dBµV)
0.406000	36.03	47.73	11.69	L1	10	26.03
0.610000	31.53	46.00	14.47	L1	10	21.53
1.070000	33.74	46.00	12.26	L1	10	23.74
1.254000	32.93	46.00	13.07	L1	10	22.93
3.078000	28.04	46.00	17.96	L1	10	18.04
4.374000	26.16	46.00	19.84	L1	10	16.16

AC Input Port/ Voltage: 120V/60Hz

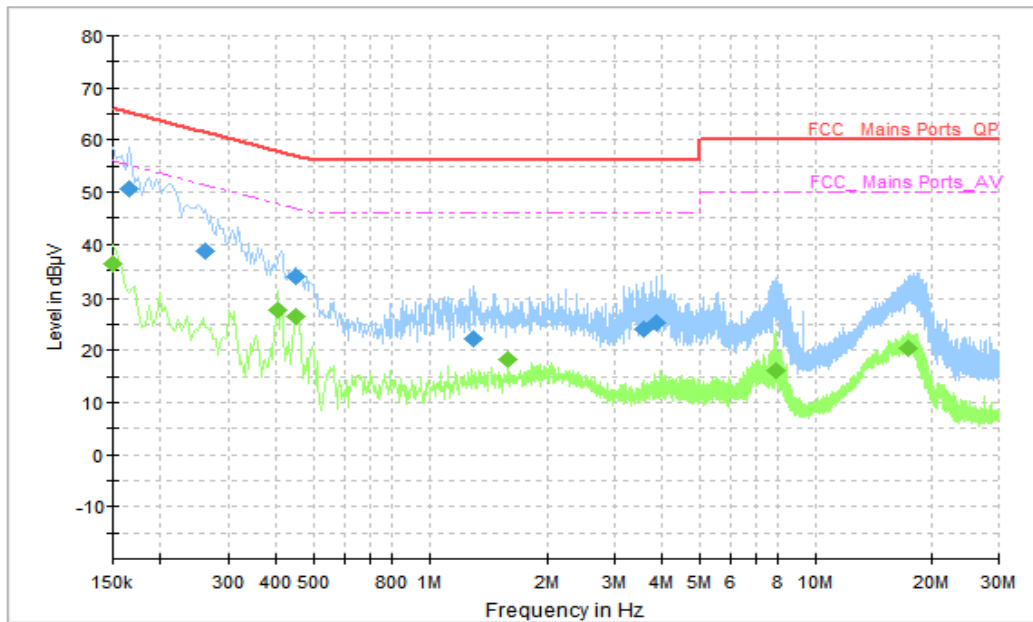


Figure A.2.3. Conducted Emission (Data Transfer)

**Final\_Result\_QPK**

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P <sub>Mea</sub> (dBµV)
0.166000	50.61	65.16	14.55	L1	10	40.61
0.262000	38.73	61.37	22.63	N	10	28.73
0.450000	33.88	56.88	23.00	L1	10	23.88
1.302000	22.27	56.00	33.73	L1	10	12.27
3.582000	23.99	56.00	32.01	L1	10	13.99
3.846000	25.17	56.00	30.83	L1	10	15.17

**Final\_Result\_AVG**

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P <sub>Mea</sub> (dBµV)
0.150000	36.17	56.00	19.83	L1	10	26.17
0.402000	27.69	47.81	20.12	L1	10	17.69
0.450000	26.55	46.88	20.33	L1	10	16.55
1.578000	18.30	46.00	27.70	L1	10	8.30
7.882000	16.09	50.00	33.91	L1	10	6.09
17.494000	20.41	50.00	29.59	L1	10	10.41

AC Input Port/ Voltage: 240V/60Hz

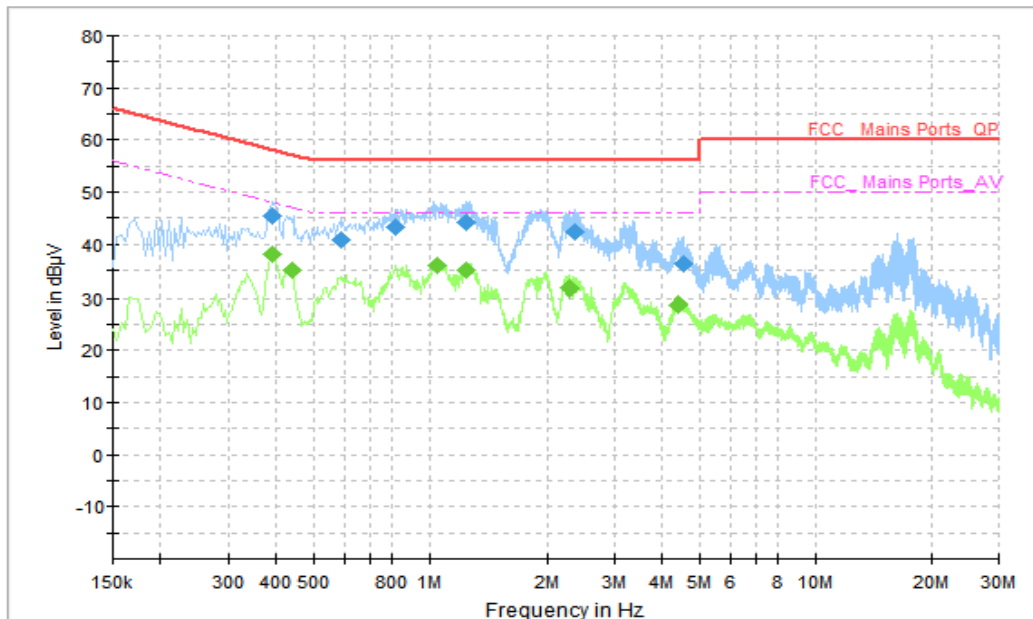


Figure A.2.4. Conducted Emission (Camera)

**Final\_Result\_QPK**

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P <sub>Mea</sub> (dBµV)
0.390000	45.51	58.06	12.56	N	10	35.51
0.590000	40.74	56.00	15.26	N	10	30.74
0.818000	43.45	56.00	12.55	N	10	33.45
1.242000	44.22	56.00	11.78	N	10	34.22
2.370000	42.50	56.00	13.50	N	10	32.5
4.534000	36.40	56.00	19.60	N	10	26.40

**Final\_Result\_AVG**

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P <sub>Mea</sub> (dBµV)
0.390000	38.05	48.06	10.01	L1	10	28.05
0.438000	34.90	47.10	12.20	L1	10	24.9
1.050000	35.94	46.00	10.06	L1	10	25.94
1.250000	35.17	46.00	10.83	L1	10	25.17
2.286000	31.57	46.00	14.43	N	10	21.57
4.386000	28.53	46.00	17.47	L1	10	18.53

AC Input Port/ Voltage: 240V/60Hz

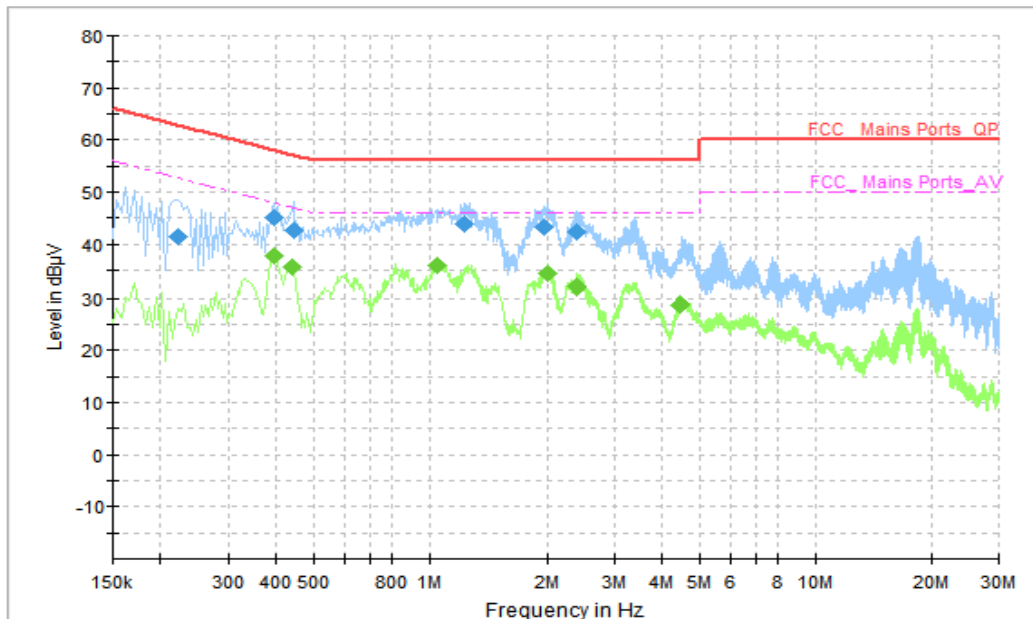


Figure A.2.5. Conducted Emission (Camera)

**Final\_Result\_QPK**

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P <sub>Mea</sub> (dBµV)
0.222000	41.35	62.74	21.40	N	10	31.35
0.394000	45.04	57.98	12.94	N	10	35.04
0.442000	42.77	57.02	14.25	N	10	32.77
1.238000	43.91	56.00	12.09	N	10	33.91
1.970000	43.33	56.00	12.67	N	10	33.33
2.386000	42.43	56.00	13.57	N	10	32.43

**Final\_Result\_AVG**

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P <sub>Mea</sub> (dBµV)
0.394000	37.84	47.98	10.14	L1	10	27.84
0.438000	35.68	47.10	11.41	L1	10	25.68
1.042000	35.94	46.00	10.06	L1	10	25.94
2.002000	34.40	46.00	11.60	L1	10	24.40
2.394000	31.98	46.00	14.02	N	10	21.98
4.458000	28.64	46.00	17.36	L1	10	18.64

AC Input Port/ Voltage: 240V/60Hz

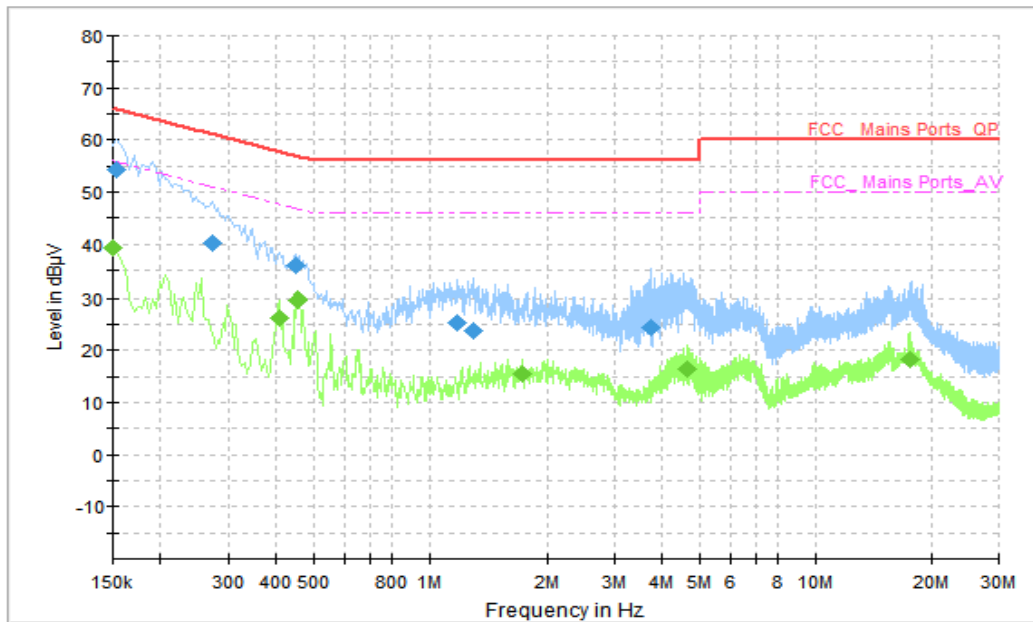


Figure A.2.6. Conducted Emission (Data Transfer)

**Final\_Result\_QPK**

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P <sub>Mea</sub> (dBµV)
0.154000	54.23	65.78	11.55	L1	10	44.23
0.274000	40.11	61.00	20.88	N	10	30.11
0.450000	35.90	56.88	20.97	L1	10	25.90
1.178000	25.16	56.00	30.84	L1	10	15.16
1.306000	23.70	56.00	32.30	L1	10	13.7
3.714000	24.30	56.00	31.70	L1	10	14.30

**Final\_Result\_AVG**

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P <sub>Mea</sub> (dBµV)
0.150000	39.38	56.00	16.62	L1	10	29.38
0.406000	26.29	47.73	21.44	L1	10	16.29
0.454000	29.42	46.80	17.39	L1	10	19.42
1.718000	15.50	46.00	30.50	L1	10	5.50
4.630000	16.37	46.00	29.63	N	10	6.37
17.562000	18.25	50.00	31.75	N	10	8.25

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