



TEST REPORT

No.I21N03609-EMC

for

TCL Communication Ltd.

GSM Quad Band Mobile Phone

Model Name: 1068D,1068X

With

Hardware Version: PIO

Software Version: V1.0

FCC ID: 2ACCJB168

Issued Date: 2022-01-09

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
I21N03609-EMC	Rev.0	1st edition	2022-01-09

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	GSM Quad Band Mobile Phone
Model Name	1068D,1068X
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: 2022-01-03

Testing End Date: 2022-01-06

1.6. Signature

Liang Yong

(Prepared this test report)

Zhang Yunzhan

(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

Company Name: TCL Communication Ltd.
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Email: peter.yang@tcl.com
Tel: +86 755 3664 5759
Fax: +86 755 3661 2000-81722



3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT

(AE)

3.1. About EUT

Description	GSM Quad Band Mobile Phone
Model Name	1068D,1068X
FCC ID	2ACCJB168
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
UT09aa	358894690000595	PIO	V1.0	2021-12-08

*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	TLi004FA
S/N	CAB0400024CA
Manufacturer	TIANMAO
Capacity	400 mAh

AE2-1

Model	PA-5V550mA-005
S/N	CBA0066AGAC5
Manufacturer	PUAN

AE2-2

Model	UC11US
S/N	CBA0058AGAC5
Manufacturer	PUAN

AE3-1

Model	CDA3122005C8
Manufacturer	PUAN

AE4-1

Model	CCB0046A15C4
Manufacturer	MEIHAO



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AE4-2

Model CCB0050A11C7

Manufacturer JIAYIKANG

* 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+AE2-1+AE3-1+AE4-1	
Set.2	EUT +AE1+AE2-2+AE3-1+AE4-2	
Set.3	EUT+AE1+AE3-1+PC+AE4-1	



3.5. General Description

The Equipment Under Test (EUT) is a model of GSM Quad Band Mobile Phone.

It supports GSM850/900/1800/1900MHz.

It has Camera,USB memory, Bluetooth 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.

This report is based on the model 1068D for the primary complete test.

GSM Quad Band Mobile Phone 1068X manufactured by TCL Communication Ltd. is a variant model based on 1068D for conformance test. According to client's description, the table below shows the changes

changes	1068D	1068X
SIM	Dual SIM	Single SIM

According to the declaration of differences by manufacturer, all tests results of the model 1068X are cited from the initial model 1068D, there is no need to add any additional tests.

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)
	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	2022.01.13	1 year
3.	Spectrum Analyzer	FSV40	101192	R&S	2022.01.13	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	2022.01.13	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.

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.

GSM receiver: The EUT is connected to a charger for charging. The EUT is synchronized to System Simulator (SS), and able to respond to paging messages and incoming call. An established call has been released.

This device contains the receivers which tune and operate between 30MHz-960MHz in the following bands:GSM850MHz.

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.

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

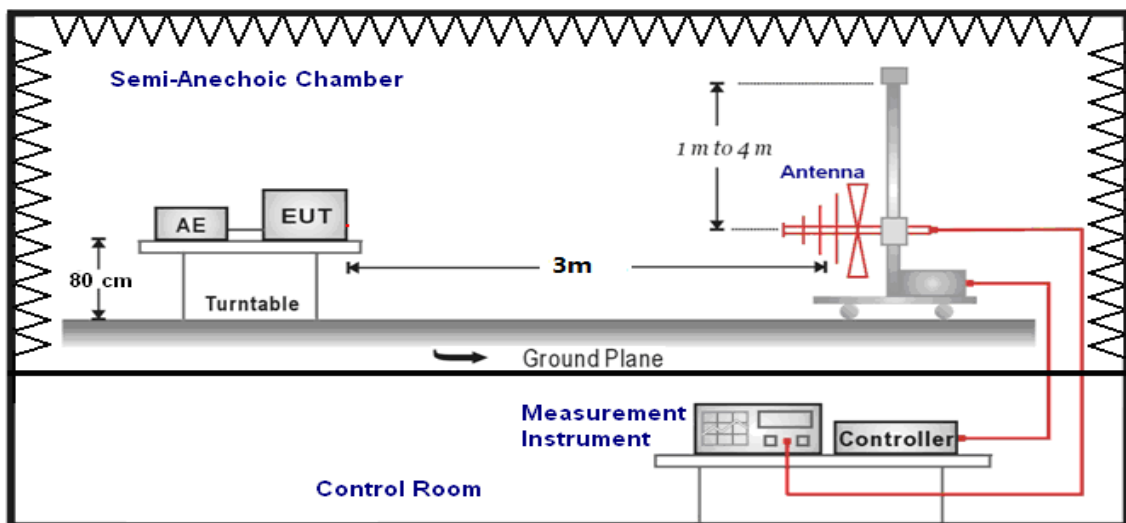
*Note: The original limit is defined at 10m test distance. This limit is calculated according to CISPR requirements.

A.1.4 Test Condition

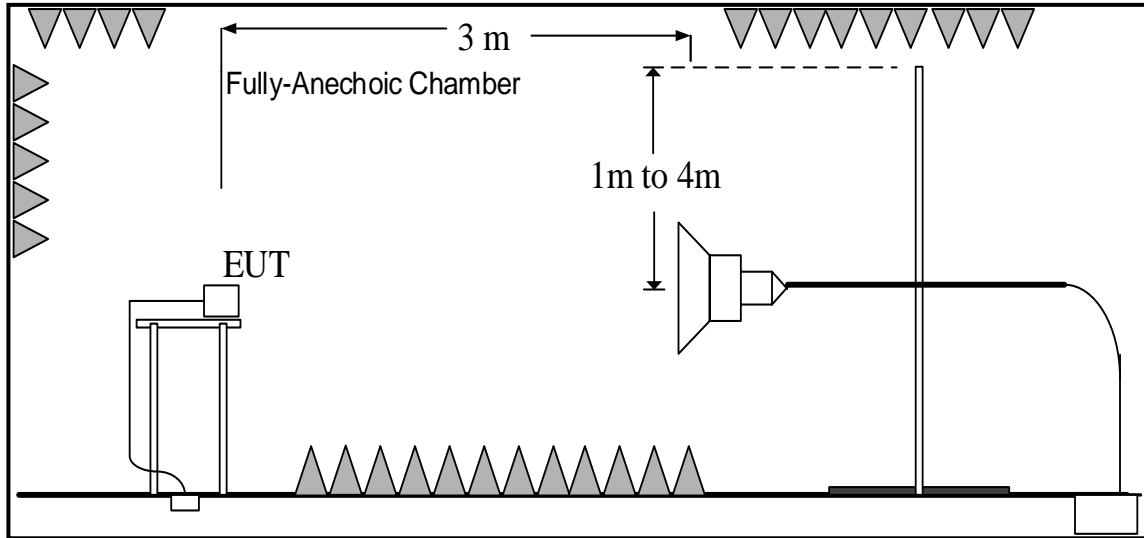
Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	120kHz (IF bandwidth)	5
Above 1000	1MHz/3MHz	15

A.1.5 Test set-up:

30MHz-1GHz



1GHz-18GHz



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_{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
		UT09aa/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
			UT09aa/Set.1	
1000 to 18000	54.00	74.00	See Figure A.1.2.	P

Camera

Frequency range (MHz)	Quasi-Peak Limit (dB μ V/m)	Result (dB μ V/m)	Conclusion
		UT09aa/Set.2	
30-88	40.00	See Figure A.1.3.	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
			UT09aa/Set.1	
1000 to 18000	54.00	74.00	See Figure A.1.4.	P

GSM receiver 850MHz

Frequency range (MHz)	Quasi-Peak Limit (dB μ V/m)	Result (dB μ V/m)	Conclusion
		UT09aa/Set.1	
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 μ V/m)	Peak Limit (dB μ V/m)	Result (dB μ V/m)	Conclusion
			UT09aa/Set.1	
1000 to 18000	54.00	74.00	See Figure A.1.6.	P

Data Transfer: PC TO TF Card

Frequency range (MHz)	Quasi-Peak Limit (dB μ V/m)	Result (dB μ V/m)	Conclusion
		UT09aa/Set.3	
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
			UT09aa/Set.3	
1000 to 18000	54.00	74.00	See Figure A.1.8.	P



Data Transfer: TF Card TO PC

Frequency range (MHz)	Quasi-Peak Limit (dB μ V/m)	Result (dB μ V/m)	Conclusion
		UT09aa/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 μ V/m)	Peak Limit (dB μ V/m)	Result (dB μ V/m)	Conclusion
			UT09aa/Set.3	
1000 to 18000	54.00	74.00	See Figure A.1.10.	P

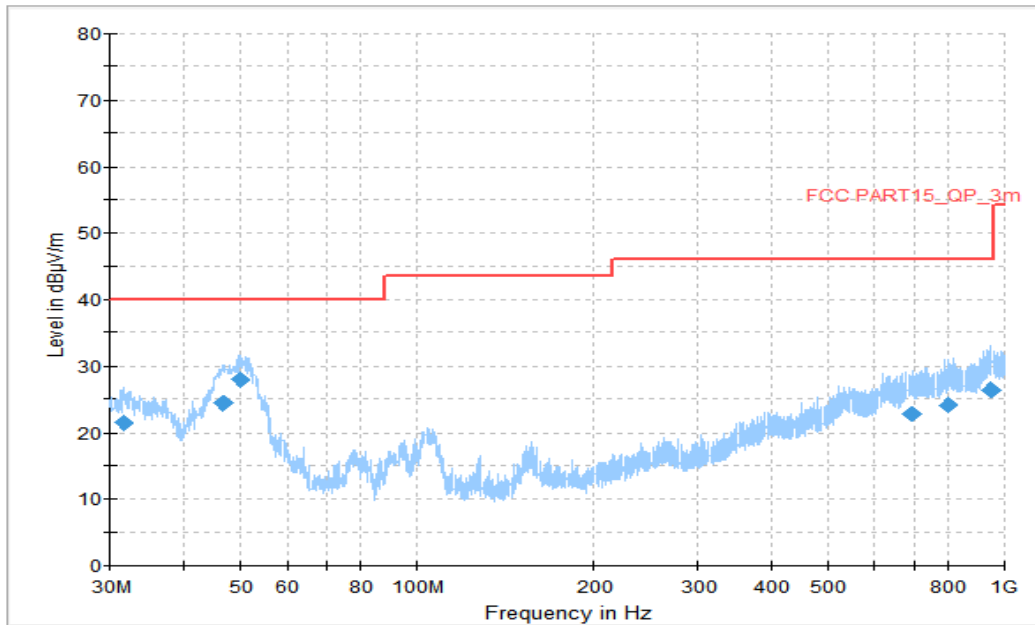


Figure A.1.1. Radiated Emission (Camera , 30MHz to 1GHz)

Final_Results

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	ARpl (dB/m)	PMea (dBµV)
31.616667	21.45	40.00	18.55	V	-13	34.45
46.813333	24.40	40.00	15.60	V	-21	45.4
49.777222	27.85	40.00	12.15	V	-22	49.85
697.683333	22.74	46.02	23.28	H	-2	24.74
803.090000	24.24	46.02	21.78	H	-1	25.24
950.098889	26.26	46.02	19.76	H	1	25.26

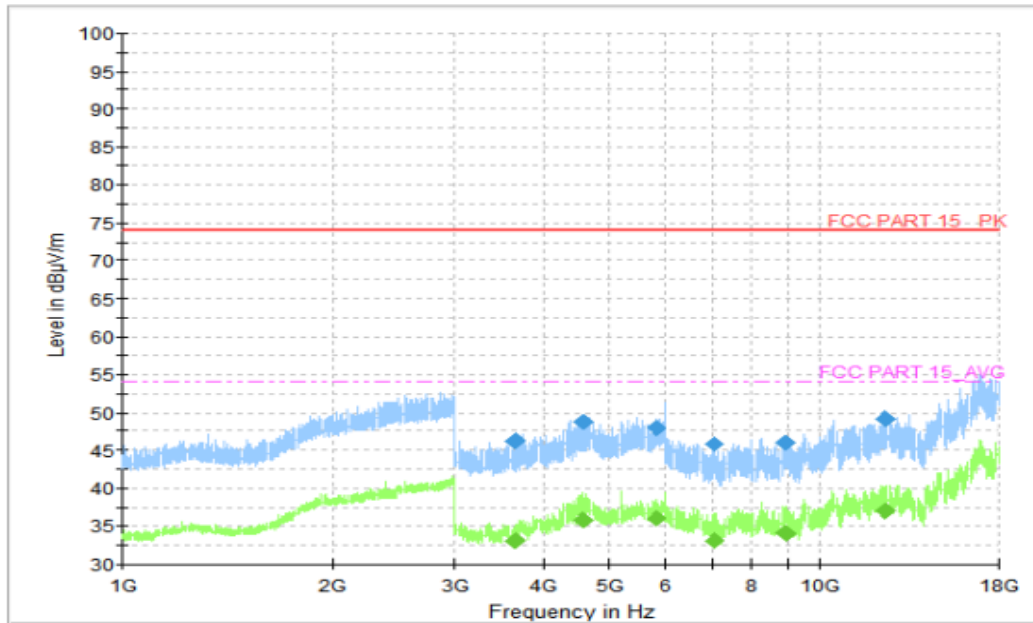


Figure A.1.2. Radiated Emission (Camera , 1GHz to 18GHz)

Final_Results_PK

Frequency(MHz)	Peak (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	PMea (dBµV)
3653.400000	46.20	74.00	27.80	H	0.4	45.80
4583.400000	48.74	74.00	25.26	H	4.6	44.14
5809.200000	48.00	74.00	26.00	H	4.5	43.50
7073.142857	45.88	74.00	28.12	V	5.3	40.58
8930.142857	46.08	74.00	27.92	H	6.5	39.58
12424.714286	49.17	74.00	24.83	V	11.4	37.77

Final_Results_AVG

Frequency(MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	PMea (dBµV)
3653.400000	33.16	54.00	20.84	H	0.4	32.76
4583.400000	35.93	54.00	18.07	H	4.6	31.33
5809.200000	36.09	54.00	17.91	H	4.5	31.59
7073.142857	33.19	54.00	20.81	V	5.3	27.89
8930.142857	34.09	54.00	19.91	H	6.5	27.59
12424.714286	37.05	54.00	16.95	V	11.4	25.65

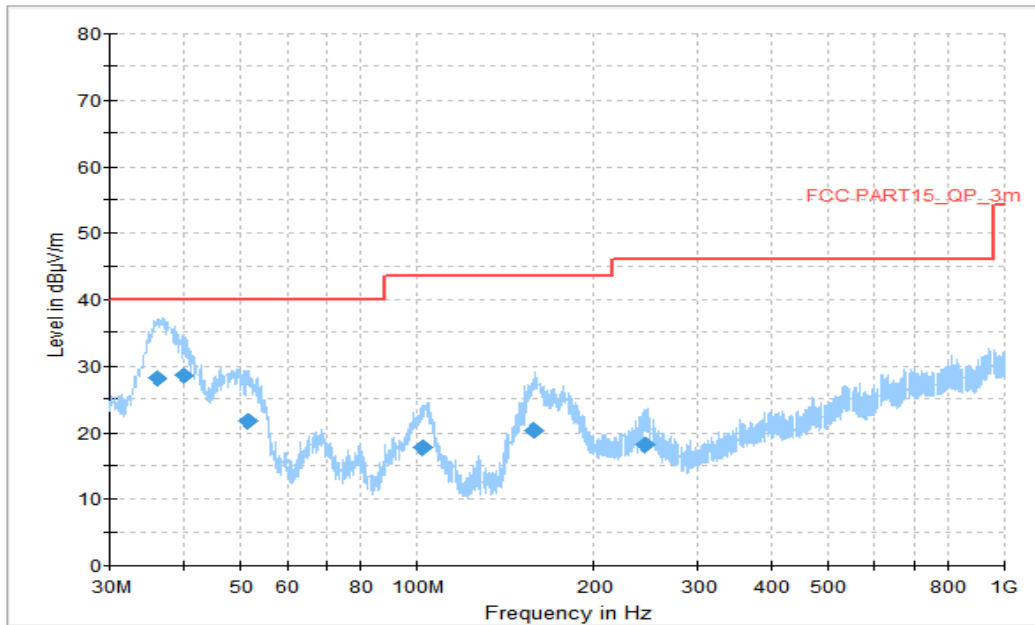


Figure A.1.3. Radiated Emission (Camera , 30MHz to 1GHz)

Final_Results

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	ARpl (dB/m)	PMea (dBµV)
36.035556	28.20	40.00	11.80	V	-16	44.20
40.023333	28.60	40.00	11.40	V	-18	46.6
51.393889	21.69	40.00	18.31	V	-22	43.69
102.318889	17.70	43.52	25.82	V	-20	37.70
158.147778	20.37	43.52	23.15	V	-17	37.37
244.100556	18.12	46.02	27.90	H	-15	33.12

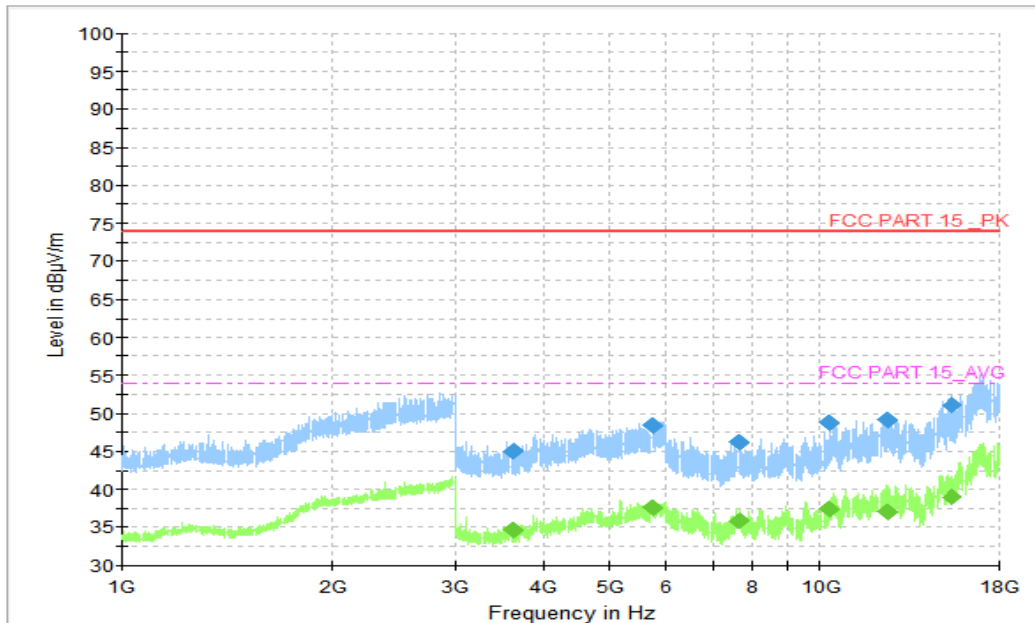


Figure A.1.4. Radiated Emission (Camera , 1GHz to 18GHz)

Final_Results_PK

Frequency(MHz)	Peak (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P _{Mea} (dBµV)
3624.900000	45.10	74.00	28.90	H	0.2	44.90
5750.400000	48.42	74.00	25.58	V	4.0	44.42
7636.285714	46.31	74.00	27.69	V	5.7	40.61
10277.571429	48.71	74.00	25.29	H	8.5	40.21
12468.000000	49.13	74.00	24.87	H	11.3	37.83
15390.857143	51.05	74.00	22.95	V	12.5	38.55

Final_Results_AVG

Frequency(MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P _{Mea} (dBµV)
3624.900000	34.65	54.00	21.35	H	0.2	34.45
5750.400000	37.67	54.00	18.33	V	4.0	33.67
7636.285714	35.87	54.00	18.13	V	5.7	30.17
10277.571429	37.38	54.00	16.62	H	8.5	28.88
12468.000000	36.98	54.00	17.02	H	11.3	25.68
15390.857143	39.08	54.00	14.92	V	12.5	26.58

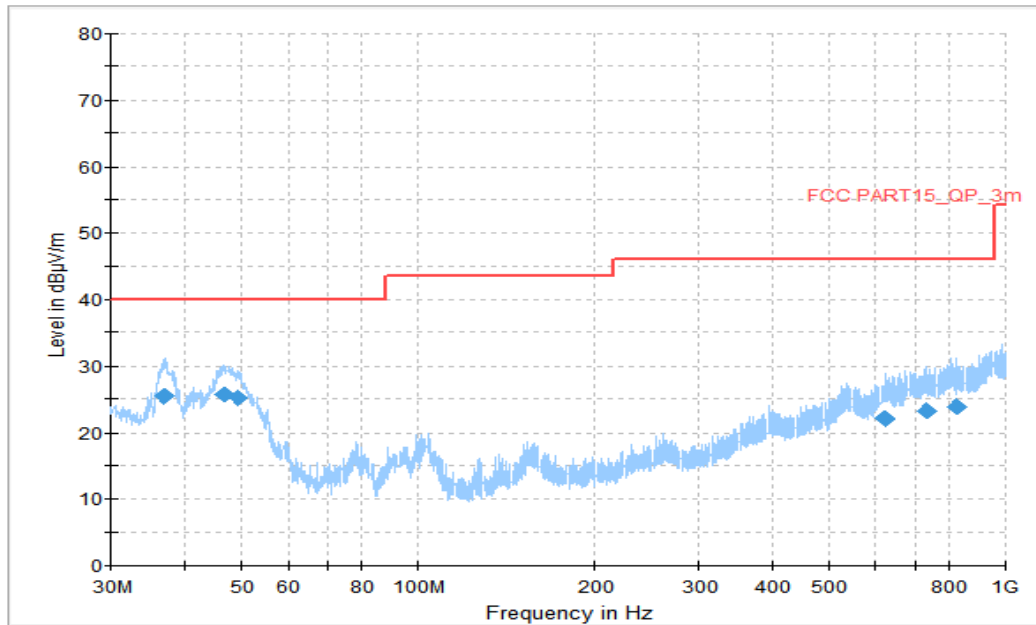


Figure A.1.5. Radiated Emission (GSM receiver 850MHz, 30MHz to 1GHz)

Final_Results

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	ARpl (dB/m)	P _{Mea} (dBµV)
36.897778	25.47	40.00	14.53	V	-17	42.47
46.813333	25.59	40.00	14.41	V	-21	46.59
49.184444	25.33	40.00	14.67	V	-22	47.33
624.933333	22.18	46.02	23.84	H	-3	25.18
732.549444	23.32	46.02	22.70	V	-2	25.32
823.352222	24.02	46.02	22.00	H	-1	25.02

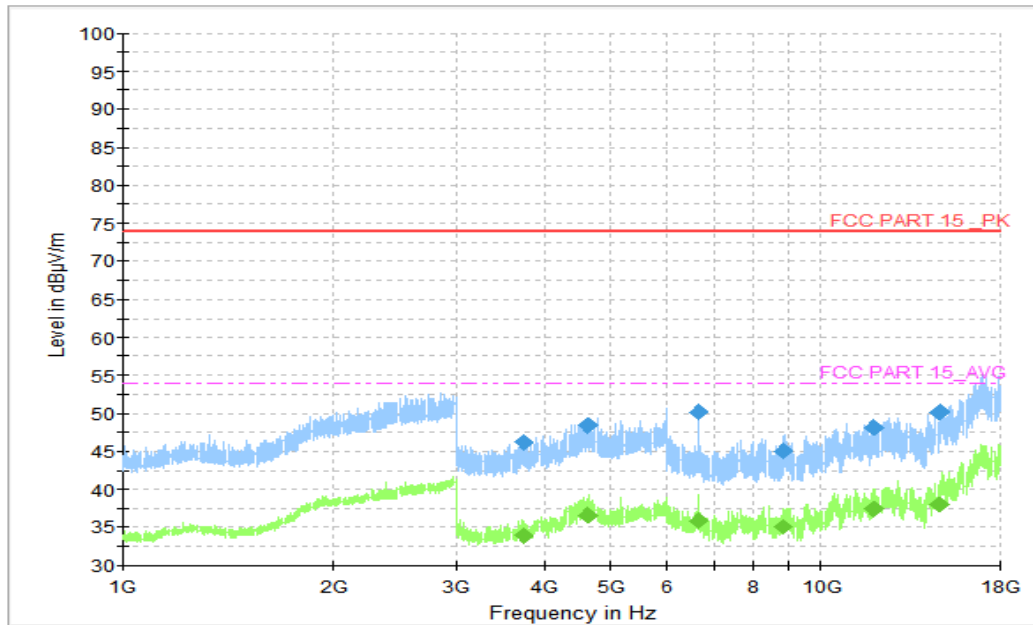


Figure A.1.6. Radiated Emission (GSM receiver 850MHz , 1GHz to 18GHz)

Final_Results_PK

Frequency(MHz)	Peak (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P _{Mea} (dBµV)
3752.700000	46.17	74.00	27.83	H	1.0	51.30
4630.800000	48.45	74.00	25.55	H	4.7	50.00
6660.000000	50.10	74.00	23.90	V	5.9	48.20
8797.714286	45.13	74.00	28.87	H	6.3	46.90
11880.857143	48.19	74.00	25.81	H	10.1	46.40
14793.857143	50.16	74.00	23.84	V	12.8	43.70

Final_Results_AVG

Frequency(MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P _{Mea} (dBµV)
3752.700000	33.97	54.00	20.03	H	1.0	38.30
4630.800000	36.56	54.00	17.44	H	4.7	37.60
6660.000000	35.84	54.00	18.16	V	5.9	34.90
8797.714286	35.18	54.00	18.82	H	6.3	33.10
11880.857143	37.52	54.00	16.48	H	10.1	32.60
14793.857143	38.03	54.00	15.97	V	12.8	30.90

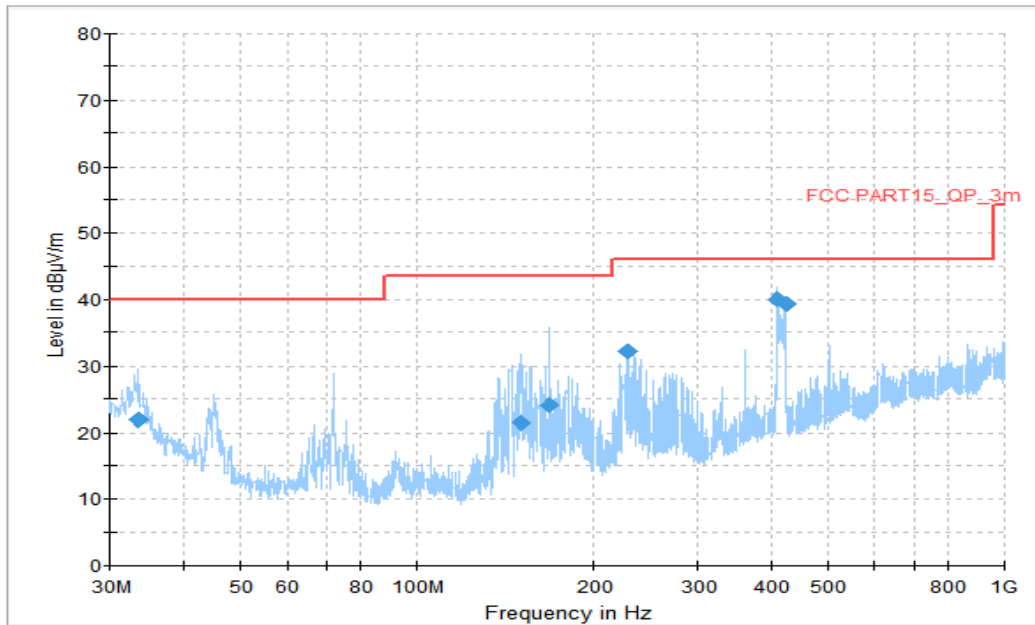


Figure A.1.7. Radiated Emission (Data Transfer: PC TO TF Card, 30MHz to 1GHz)
Final_Results

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	ARpl (dB/m)	P _{Mea} (dBµV)
33.448889	21.82	40.00	18.18	V	-15	36.82
149.687222	21.46	43.52	22.06	V	-19	40.46
167.955556	24.07	43.52	19.45	H	-18	42.07
228.041667	32.19	46.02	13.83	H	-16	48.19
409.377778	40.11	46.02	5.91	H	-9	49.11
424.358889	39.30	46.02	6.72	H	-9	48.30

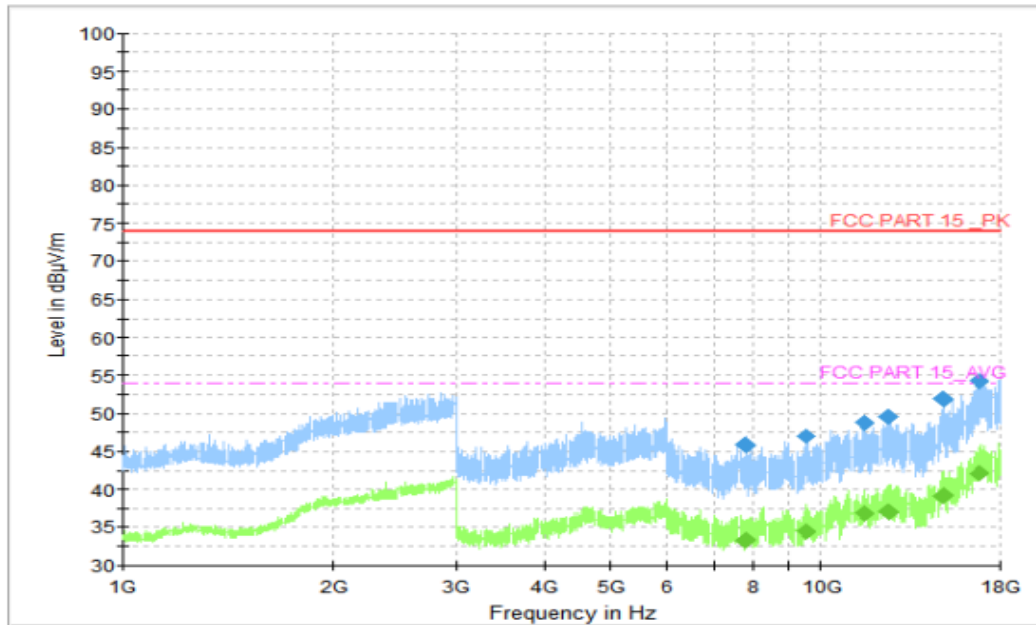


Figure A.1.8. Radiated Emission (Data Transfer: PC TO TF Card, 1GHz to 18GHz)

Final_Results_PK

Frequency(MHz)	Peak (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P _{Mea} (dBµV)
7800.857143	45.82	74.00	28.18	V	5.8	40.02
9515.571429	46.97	74.00	27.03	H	7.1	39.87
11499.428572	48.86	74.00	25.14	V	10.1	38.76
12457.285714	49.51	74.00	24.49	H	11.4	38.11
14904.000000	51.82	74.00	22.18	H	13.0	38.82
16804.714286	54.32	74.00	19.68	V	17.8	36.52

Final_Results_AVG

Frequency(MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P _{Mea} (dBµV)
7800.857143	33.29	54.00	20.71	V	5.8	27.49
9515.571429	34.48	54.00	19.52	H	7.1	27.38
11499.428572	36.76	54.00	17.24	V	10.1	26.66
12457.285714	37.00	54.00	17.00	H	11.4	25.60
14904.000000	39.11	54.00	14.89	H	13.0	26.11
16804.714286	42.18	54.00	11.82	V	17.8	24.38

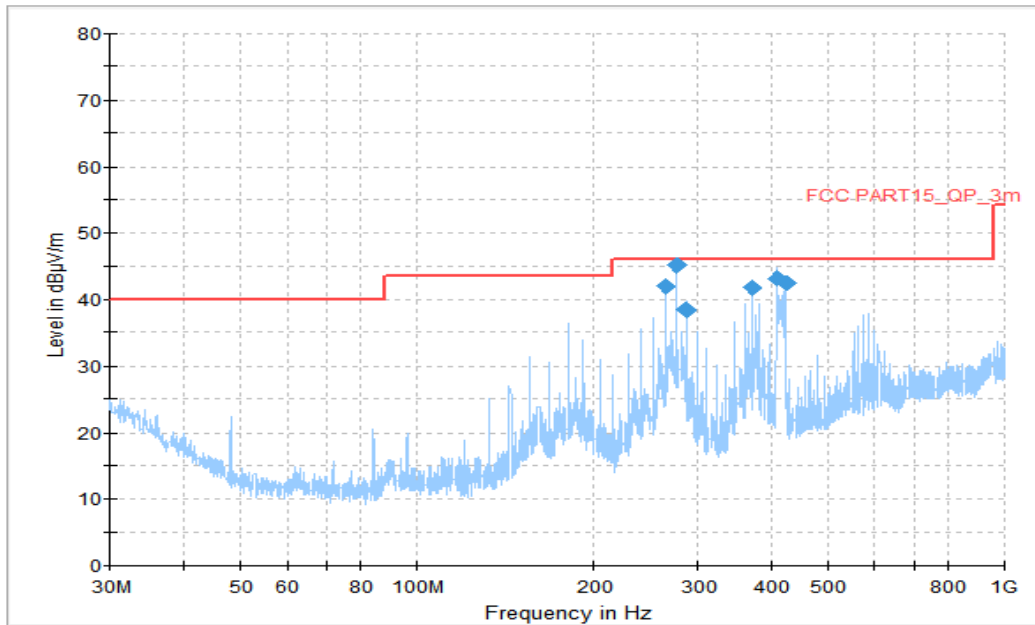


Figure A.1.9. Radiated Emission (Data Transfer: TF Card TO PC, 30MHz to 1GHz)
Final_Results

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	ARpl (dB/m)	P _{Mea} (dBµV)
263.985556	41.93	46.02	4.09	H	-14	55.93
276.002778	45.06	46.02	0.96	H	-14	59.06
287.966111	38.35	46.02	7.67	H	-15	53.35
371.978889	41.81	46.02	4.21	H	-10	51.81
409.431667	43.06	46.02	2.96	H	-9	52.06
424.412778	42.56	46.02	3.46	H	-9	51.56

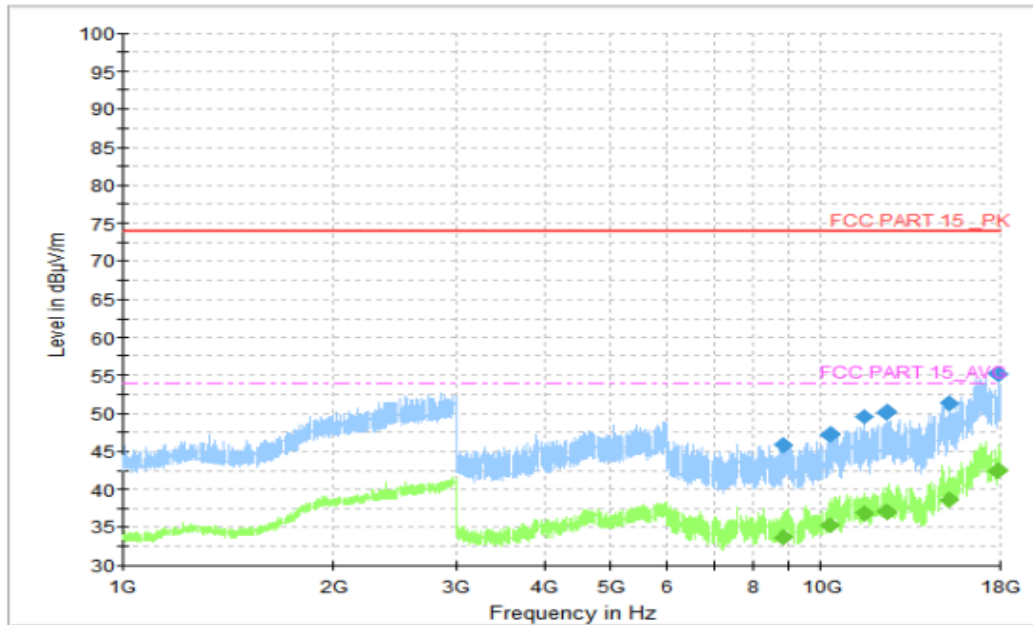


Figure A.1.10. Radiated Emission (Data Transfer: TF Card TO PC, 1GHz to 18GHz)

Final_Results_PK

Frequency(MHz)	Peak (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P _{Mea} (dBµV)
8835.428572	45.79	74.00	28.21	V	6.4	39.39
10287.428572	47.26	74.00	26.74	H	8.6	38.66
11499.428572	49.60	74.00	24.40	H	10.1	39.50
12435.857143	50.05	74.00	23.95	V	11.4	38.65
15201.857143	51.41	74.00	22.59	V	12.5	38.91
17892.428571	55.29	74.00	18.71	V	18.8	36.49

Final_Results_AVG

Frequency(MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	P _{Mea} (dBµV)
8835.428572	33.78	54.00	20.22	V	6.4	27.38
10287.428572	35.22	54.00	18.78	H	8.6	26.62
11499.428572	36.80	54.00	17.20	H	10.1	26.70
12435.857143	36.98	54.00	17.02	V	11.4	25.58
15201.857143	38.56	54.00	15.44	V	12.5	26.06
17892.428571	42.48	54.00	11.52	V	18.8	23.68



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.

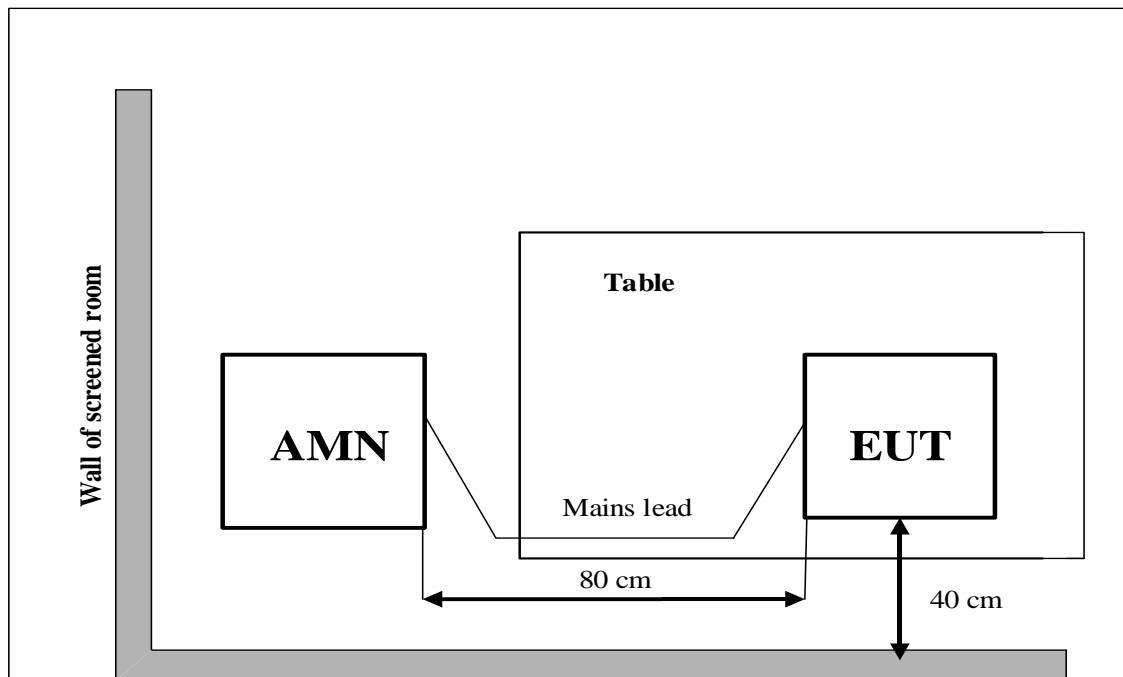
Data Transfer: The model of the PC is Lenovo ThinkPad T480, and the serial number of the PC is PF-13LW0C. The EUT is connected to a PC for transmitting data. The software is used to let the PC keep on copying data to EUT or TF Card, reading and erasing the data after copy action was finished.

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

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

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 μ V)	Average Limit (dB μ V)	Result (dB μ V)	Conclusion
			UT09aa/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 μ V)	Average Limit (dB μ V)	Result (dB μ V)	Conclusion
			UT09aa/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 μ V)	Average Limit (dB μ V)	Result (dB μ V)	Conclusion
			UT09aa/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 μ V)	Average Limit (dB μ V)	Result (dB μ V)	Conclusion
			UT09aa/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 μ V)	Average Limit (dB μ V)	Result (dB μ V)	Conclusion
			UT09aa/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 μ V)	Average Limit (dB μ V)	Result (dB μ V)	Conclusion
			UT09aa/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

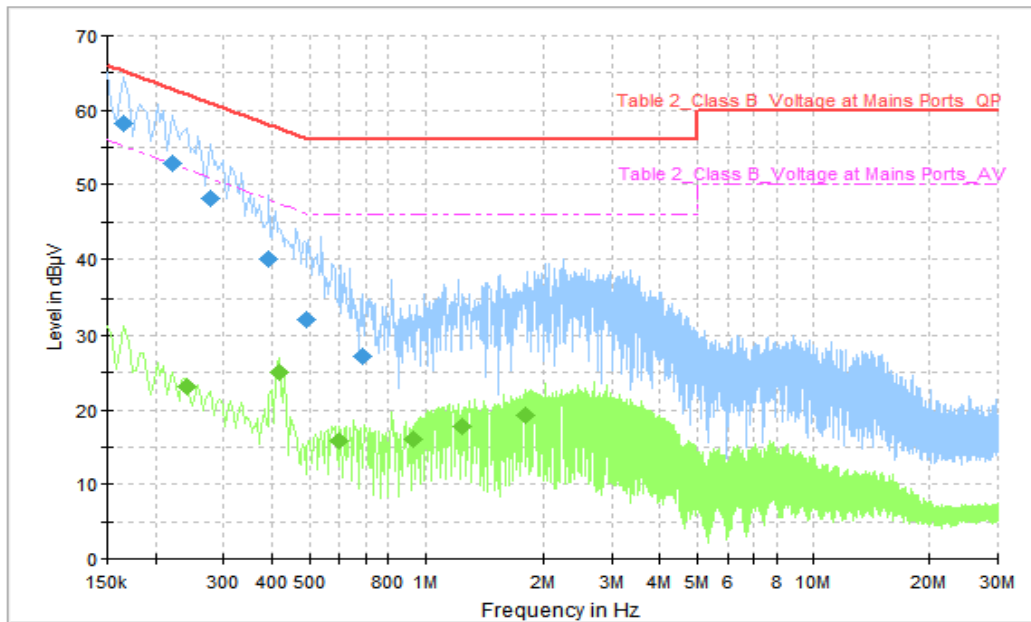


Figure A.2.1. Conducted Emission(Camera)

Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.166000	58.23	65.16	6.93	N	10	48.23
0.222000	52.98	62.74	9.76	N	10	42.98
0.278000	48.21	60.88	12.66	N	10	38.21
0.390000	40.02	58.06	18.04	N	10	30.02
0.490000	32.02	56.17	24.15	N	10	22.02
0.686000	27.08	56.00	28.92	N	10	17.08

Final_Result_AVG

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.242000	23.13	52.03	28.90	N	10	13.13
0.418000	25.08	47.49	22.40	N	10	15.08
0.598000	15.82	46.00	30.18	N	10	5.82
0.930000	16.07	46.00	29.93	N	10	6.07
1.238000	17.68	46.00	28.32	N	10	7.68
1.798000	19.19	46.00	26.81	N	10	9.19

AC Input Port/ Voltage: 120V/60Hz

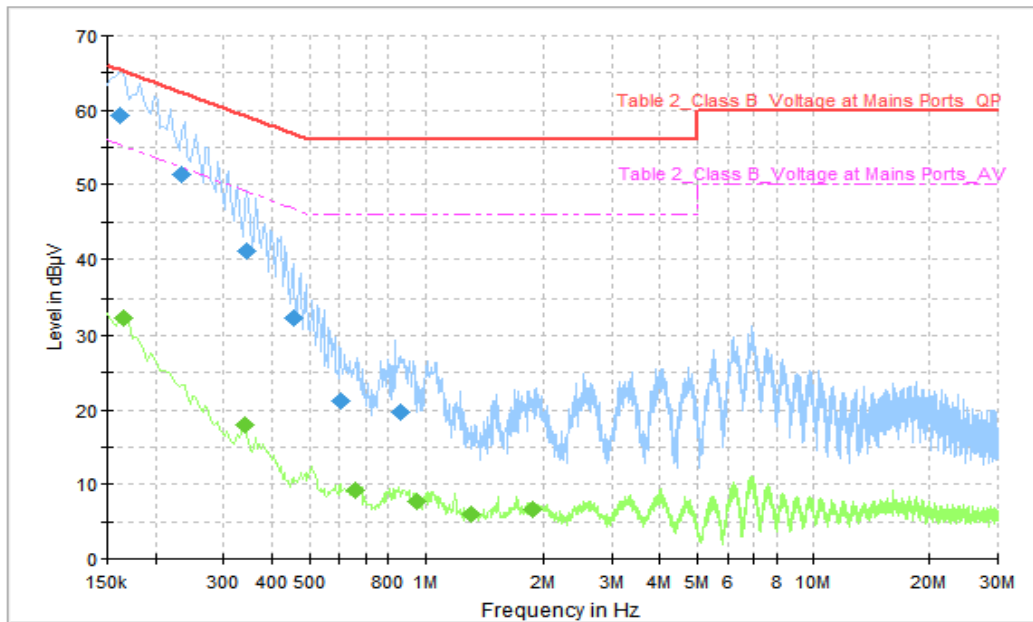


Figure A.2.2. Conducted Emission(Camera)

Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.162000	59.37	65.36	5.99	N	10	49.37
0.234000	51.40	62.31	10.91	N	10	41.4
0.346000	41.02	59.06	18.04	N	10	31.02
0.454000	32.39	56.80	24.41	N	10	22.39
0.602000	21.18	56.00	34.82	N	10	11.18
0.866000	19.71	56.00	36.29	N	10	9.71

Final_Result_AVG

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.166000	32.29	55.16	22.87	N	10	22.29
0.342000	17.93	49.16	31.23	N	10	7.93
0.658000	9.30	46.00	36.70	N	10	-0.70
0.946000	7.77	46.00	38.23	N	10	-2.23
1.314000	5.91	46.00	40.09	N	10	-4.09
1.878000	6.67	46.00	39.33	N	10	-3.33

AC Input Port/ Voltage: 120V/60Hz

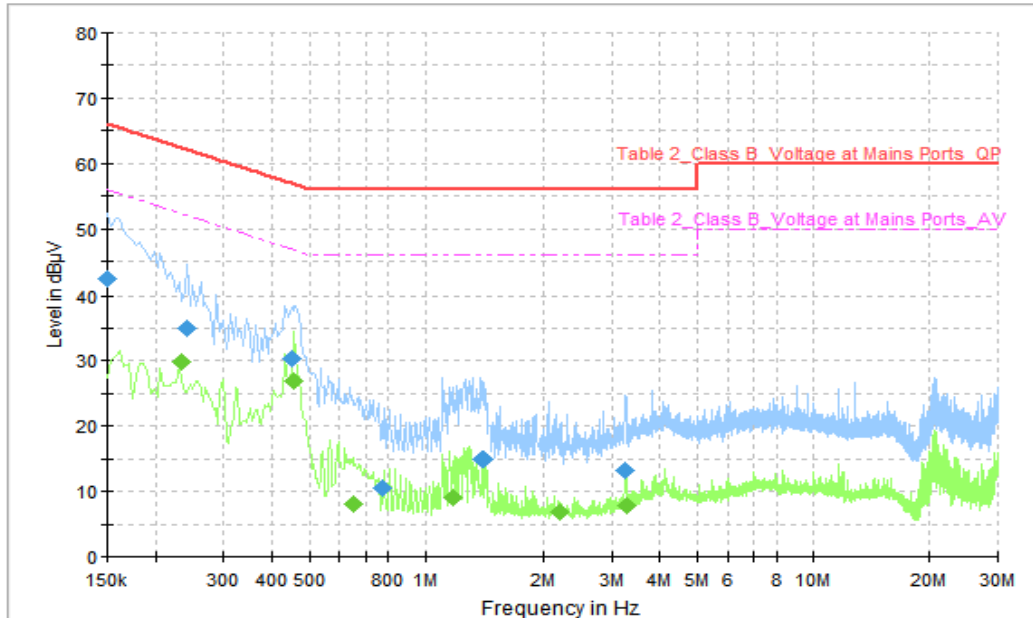


Figure A.2.3. Conducted Emission(Data Transfer)

Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.150000	42.26	66.00	23.74	L1	10	32.26
0.242000	35.02	62.03	27.01	L1	10	25.02
0.450000	30.37	56.88	26.51	L1	10	20.37
0.770000	10.41	56.00	45.59	L1	10	0.41
1.398000	15.01	56.00	40.99	N	10	5.01
3.242000	13.21	56.00	42.79	N	10	3.21

Final_Result_AVG

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.234000	13.77	52.31	38.54	L1	10	3.77
0.458000	26.84	46.73	19.89	N	10	16.84
0.654000	8.13	46.00	37.87	L1	10	-1.87
1.182000	8.97	46.00	37.03	N	10	-1.03
2.206000	6.95	46.00	39.05	L1	10	-3.05
3.274000	7.73	46.00	38.27	N	10	-2.27

AC Input Port/ Voltage: 240V/60Hz

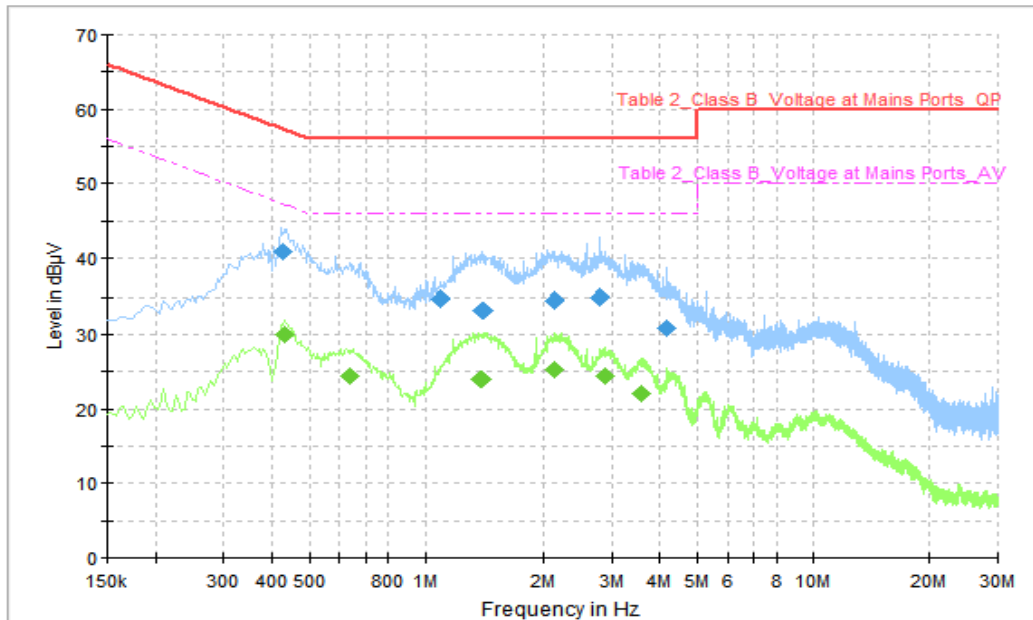


Figure A.2.4. Conducted Emission(Camera)

Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.426000	40.92	57.33	16.41	N	10	30.92
1.098000	34.75	56.00	21.25	N	10	24.75
1.406000	33.21	56.00	22.79	N	10	23.21
2.134000	34.41	56.00	21.59	N	10	24.41
2.806000	34.84	56.00	21.16	N	10	24.84
4.166000	30.83	56.00	25.17	N	10	20.83

Final_Result_AVG

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.430000	30.03	47.25	17.22	N	10	20.03
0.634000	24.51	46.00	21.49	N	10	14.51
1.378000	23.99	46.00	22.01	N	10	13.99
2.142000	25.20	46.00	20.80	N	10	15.20
2.882000	24.33	46.00	21.67	N	10	14.33
3.598000	22.14	46.00	23.86	N	10	12.14

AC Input Port/ Voltage: 240V/60Hz

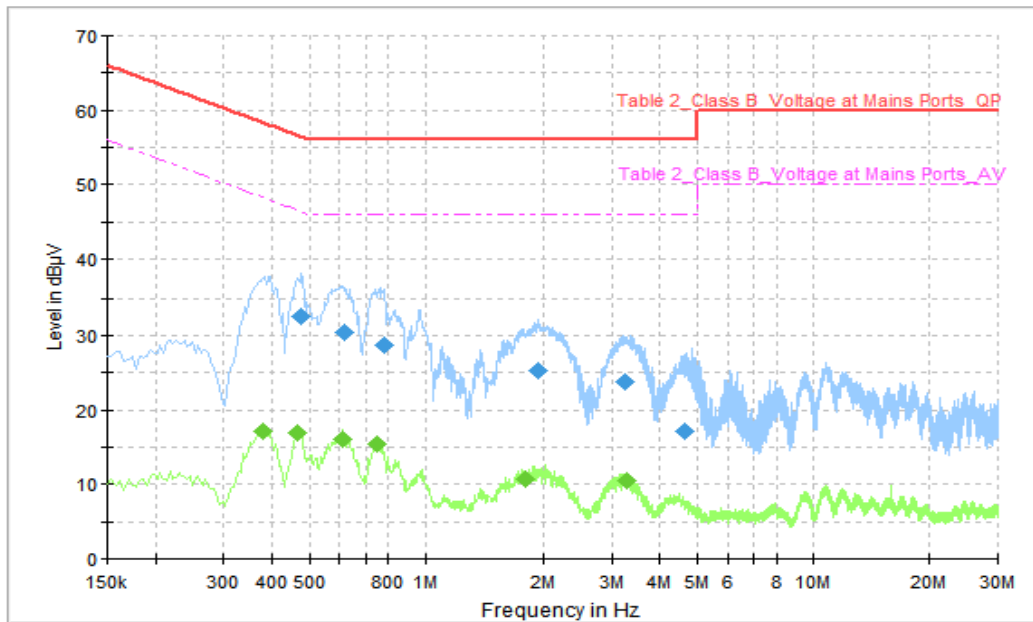


Figure A.2.5. Conducted Emission(Camera)

Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.478000	32.48	56.37	23.89	N	10	22.48
0.614000	30.48	56.00	25.52	N	10	20.48
0.778000	28.73	56.00	27.27	N	10	18.73
1.934000	25.16	56.00	30.84	N	10	15.16
3.234000	23.72	56.00	32.28	N	10	13.72
4.630000	17.09	56.00	38.91	L1	10	7.09

Final_Result_AVG

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.378000	17.03	48.32	31.30	N	10	7.03
0.466000	16.99	46.59	29.60	N	10	6.99
0.610000	16.01	46.00	29.99	N	10	6.01
0.750000	15.41	46.00	30.59	N	10	5.41
1.794000	10.72	46.00	35.28	N	10	0.72
3.274000	10.43	46.00	35.57	N	10	0.43

AC Input Port/ Voltage: 240V/60Hz

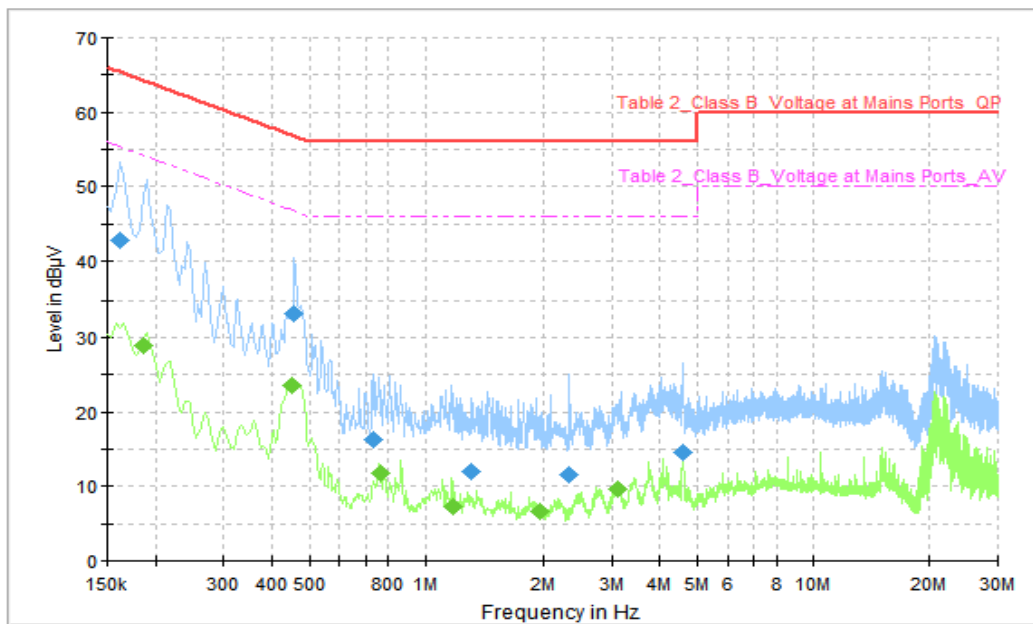


Figure A.2.6. Conducted Emission(Data Transfer)

Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.162000	42.90	65.36	22.46	N	10	32.90
0.458000	33.18	56.73	23.54	N	10	23.18
0.730000	16.35	56.00	39.65	L1	10	6.35
1.318000	12.00	56.00	44.00	N	10	2.00
2.334000	11.59	56.00	44.41	N	10	1.59
4.586000	14.45	56.00	41.55	L1	10	4.45

Final_Result_AVG

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)	P _{Mea} (dBµV)
0.186000	28.91	54.21	25.31	N	10	18.91
0.450000	23.56	46.88	23.32	L1	10	13.56
0.762000	11.68	46.00	34.32	N	10	1.68
1.174000	7.22	46.00	38.78	N	10	-2.78
1.966000	6.63	46.00	39.37	L1	10	-3.37
3.118000	9.70	46.00	36.30	L1	10	-0.30

END OF REPORT