



TEST REPORT

No.B22N02534-EMC

for

TCL Communication Ltd.

GSM/UMTS/LTE /NR Mobile phone

Model Name: T609M

With

Hardware Version: 04

Software Version: SAS0

FCC ID:2ACCJH168

Issued Date: 2023-02-15

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.

Test Laboratory:

SAICT, Shenzhen Academy of Information and Communications Technology

Building G, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian District, Shenzhen, Guangdong, P. R. China. 518000.

Tel: +86(0)755-33322000, Fax: +86(0)755-33322001

Email: yewu@caict.ac.cn. www.saict.ac.cn



REPORT HISTORY

Report Number	Revision	Description	Issue Date
B22N02534-EMC	Rev.0	1st edition	2023-02-15

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/UMTS/LTE /NR Mobile phone
Model Name	T609M
Applicant's name	TCL Communication Ltd.
Manufacturer's Name	TCL Communication Ltd.

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

1.5. Project data

Testing Start Date: 2023-02-07

Testing End Date: 2023-02-08

1.6. Signature

Huang Kaiyang
(Prepared this test report)

Huang Yuqing
(Reviewed this test report)

Cao Junfei
(Approved this test report)



2. CLIENT INFORMATION

2.1. Applicant Information

Company Name: TCL Communication Ltd.
Address: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong
Science Park, Shatin, NT, Hong Kong
Contact Person Annie Jiang
E-Mail nianxiang.jiang@tcl.com
Telephone: +86 755 3661 1621
Fax: +86 755 3661 2000-81722

2.2. Manufacturer Information

Company Name: TCL Communication Ltd.
Address: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong
Science Park, Shatin, NT, Hong Kong
Contact Person Annie Jiang
E-Mail nianxiang.jiang@tcl.com
Telephone: +86 755 3661 1621
Fax: +86 755 3661 2000-81722



3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT

(AE)

3.1. About EUT

Description	GSM/UMTS/LTE /NR Mobile phone
Model Name	T609M
FCC ID	2ACCJH168
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	016320000014344	04	SAS0	2023-01-06

*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
AE1-1	
Model	TLp048D7
S/N	CAC4850007C7
Manufacturer	VEKEN
Capacity	5000mAh
Nominal Voltage	3.85 V
AE2-1	
Model	CBA0064BGTC5
Manufacturer	PUAN
AE2-2	
Model	CBA0064BGTC1
Manufacturer	BYD
AE3-1	
Model	CDA0000198C1
Manufacturer	JUWEI
AE3-2	
Model	CDA0000198C2
Manufacturer	SHENGHUA
AE3-3	
Model	CDA0000201C2



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Manufacturer SHENGHUA
AE3-4
Model CDA0000202C1
Manufacturer JUWEI

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

AE: ancillary equipment.



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3.4. EUT Set-ups

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



3.5. General Description

The Equipment Under Test (EUT) is a model of GSM/UMTS/LTE /NR Mobile phone. It supports GSM 850/900/1800/1900MHz, WCDMA Bands 1/2/4/5/8, LTE Bands 2/3/4/5/7/12/13/20/25/26/28/41/48/66/71, 5G NR Bands n2/n3/n25/n30/n41/n66/n71/n77 and ENDC Bands DC_2A_n2A/DC_5A_n2A/DC_12A_n2A /DC_13A_n2A/DC_66A_n2A/DC_2A_n5A/DC_66A_n5A/DC_2A_n25A/DC_66A_n25A/DC_12_n25A/DC_2A_n30A/DC_5A_n30A/DC_12A_n30A/DC_66A_n30A/DC_2A_n41A/DC_66A_n41A/DC_2A_n66A/DC_5A_n66A/DC_12A_n66A/DC_13A_n66A/DC_66A_n66A/DC_2A_n71A/DC_66A_n71A/DC_2A_n77A/DC_5A_n77A/DC_12A_n77A/DC_13A_n77A/DC_66A_n77A.

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

GSM/UMTS/LTE /NR Mobile phone T609M manufactured by TCL Communication Ltd. is a variant model based on T609DL for conformance test. According to client's description, the table below shows the difference between model T609DL and T609M:

Changes	T609DL	T609M
Camera	50M	13M
Software Version	JSS8	SAS0

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

NO.	Test item	EUT set-ups	Operating mode
1	Radiated Emission	Set.1	Camera

Other results are cited from the initial report. The report number for initial model is B22N02534-EMC.



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	(10-1-2021 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

Shielded room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. =20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz> 60 dB; 1MHz-18000MHz>90 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4Ω

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

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	2023.11.23	1 year
2.	Test Receiver	ESCI	100702	R&S	2024.01.11	1 year
3.	Spectrum Analyzer	FSV40	101192	R&S	2024.01.13	1 year
4.	BiLog Antenna	3142E	0224831	ETS-Lindgren	2024.05.27	3 years
5.	Horn Antenna	3117	00066577	ETS-Lindgren	2025.03.15	3 years
6.	LISN	ENV216	102067	R&S	2023.07.11	1 year
7.	Chamber	FACT3-2.0	1285	ETS-Lindgren	2023.05.29	2 years
8.	Software	EMC32	V10.50.40	R&S	/	/
9.	Horn Antenna	QSH-SL-18-26-S-20	17013	Q-par	2026.01.30	3 years
10.	Horn Antenna	QSH-SL-8-26-40-K-20	17014	Q-par	2026.01.30	3 years



ANNEX A: MEASUREMENT RESULTS

A.1 Radiated Emission (§15.109(a))

Reference

FCC: Part 15.109(a)

A.1.1 Method of measurement

The field strength of radiated emissions from the unintentional radiator at a distance of 3 meters or 1 meter is tested. Tested in accordance with the procedures of ANSI C63.4 -2014, section 8.3. The EUT was placed on a non-conductive table. Below 18GHz the measurement antenna was placed at a distance of 3 meters from the EUT. Above 18GHz the measurement antenna was placed at a distance of 1 meters from the EUT. (According to Part 15.31(f)(1), 1m limit is calculated by extrapolation factor of 20 dB/decade) During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

A.1.2 EUT Operating Mode:

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.

All equipment is placed on the test table top and arranged in a typical configuration in accordance with ANSI C63.4-2014 and manipulated to obtain worst case emissions.

A.1.3 Measurement Limit

Limit from Part 15.109(a)

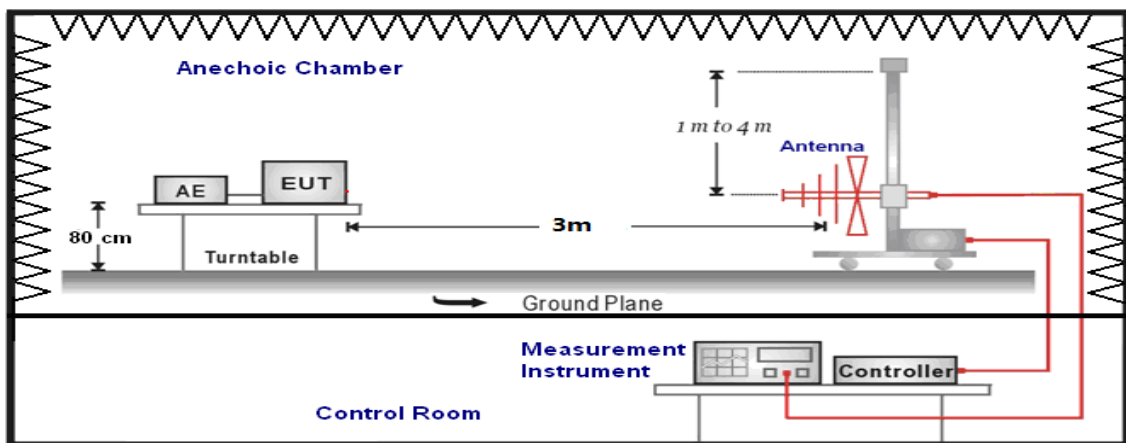
Frequency range (MHz)	Field strength limit ($\mu\text{V/m}$)		
	Quasi-peak	Average	Peak
30-88	100		
88-216	150		
216-960	200		
960-1000	500		
>1000		500	5000

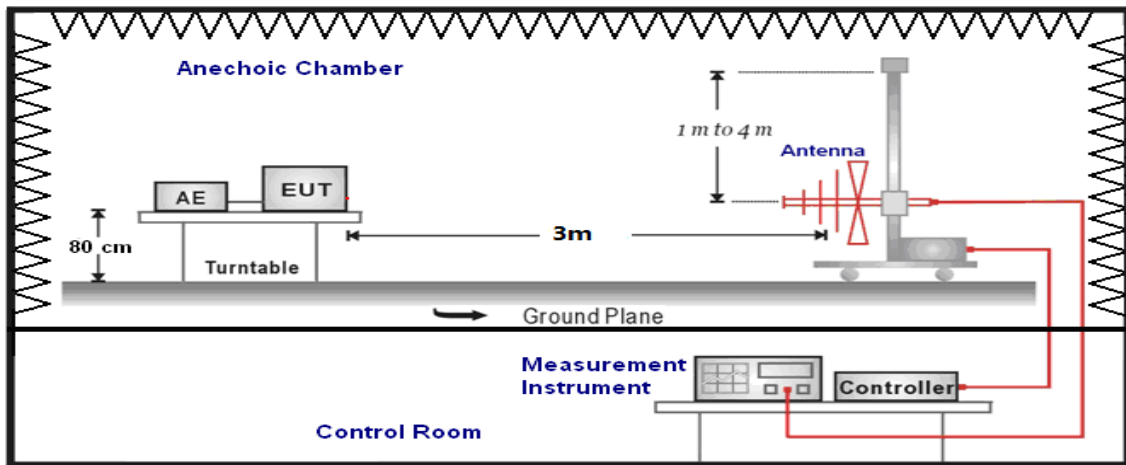
*Note: The original limit is defined at 10m test distance. This limit is calculated according to CISPR requirements.

A.1.4 Test Condition

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

**A.1.5 Test set-up:
30MHz-1GHz**



1GHz-40GHz

A.1.6 Measurement Results

A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss". It includes the antenna factor of receive antenna and the path loss.

The measurement results are obtained as described below:

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

Where

G_A : Antenna factor of receive antenna

G_{PL} : Path Loss

P_{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
		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 μ V/m)	Peak Limit (dB μ V/m)	Result (dB μ V/m)	Conclusion
			UT01aa/Set.1	
1000 to 18000	54.00	74.00	See Figure A.1.2.	P
18000 to 26500	63.54	83.54	See Figure A.1.3.	
26500 to 40000	63.54	83.54	See Figure A.1.4.	

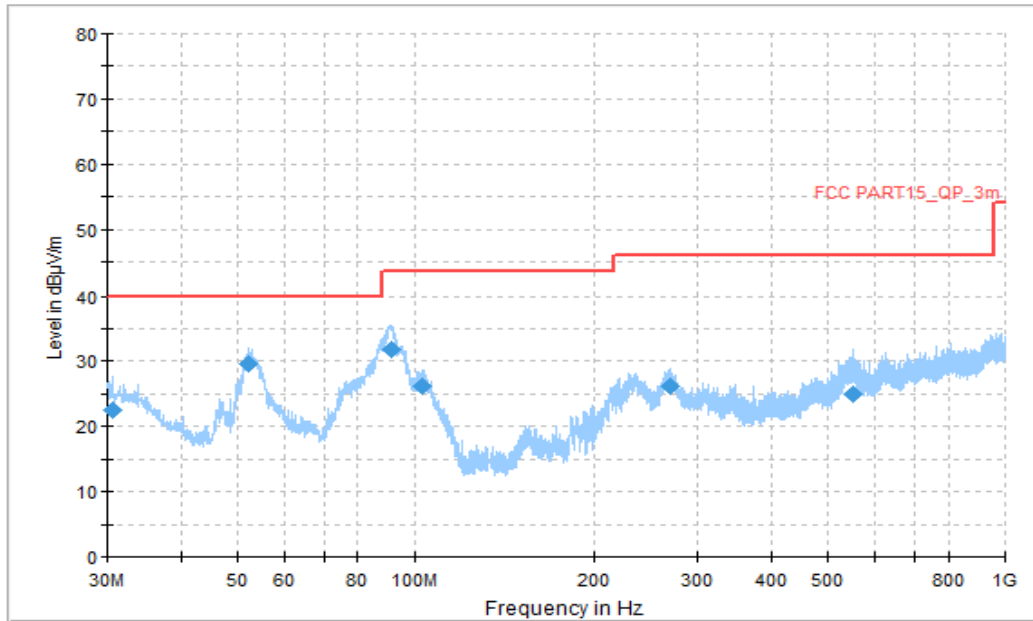


Figure A.1.1. Radiated Emission (Camera, 30MHz to 1GHz)

Final_Results

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	ARpl (dB/m)	PMea (dBµV)
30.592778	22.50	40.00	17.50	V	-12	34.50
52.202222	29.57	40.00	10.43	V	-21	50.57
91.002222	31.84	43.52	11.68	V	-20	51.84
103.235000	26.30	43.52	17.22	V	-18	44.30
269.967222	26.08	46.02	19.94	H	-13	39.08
551.321111	24.86	46.02	21.16	V	-3	27.86

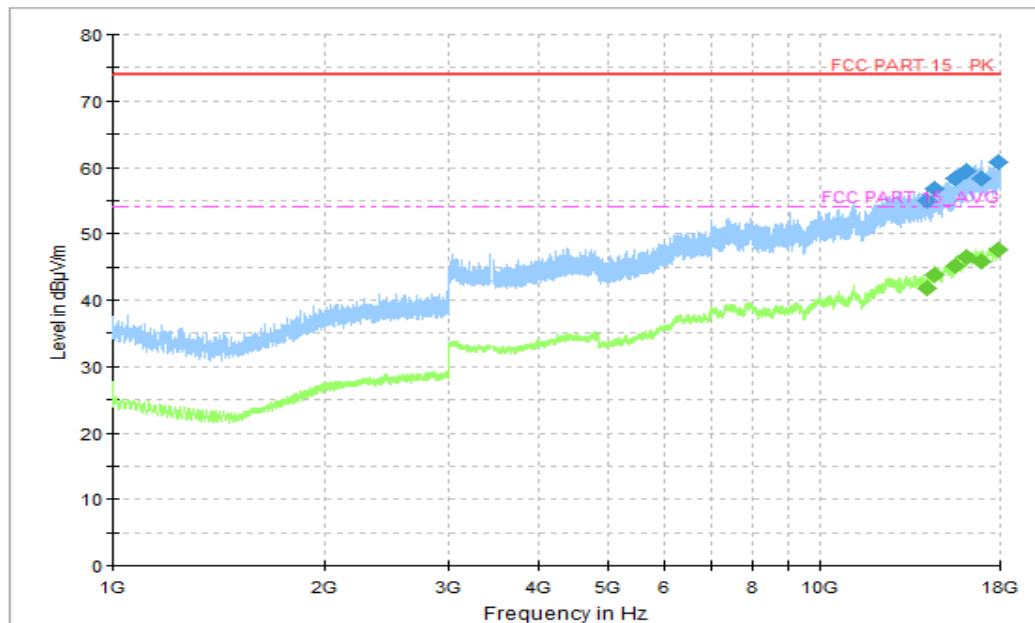


Figure A.1.2. Radiated Emission (Camera, 1GHz to 18GHz)

Final_Results_PK

Frequency(MHz)	Peak (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	PMea (dBµV)
14143.250000	54.96	74.00	19.04	H	-20.17	75.13
14566.250000	56.77	74.00	17.23	V	-18.23	75.00
15575.250000	58.28	74.00	15.72	H	-14.31	72.59
16166.000000	59.47	74.00	14.53	V	-0.97	60.44
16906.000000	58.25	74.00	15.75	H	5.88	52.37
17909.500000	60.75	74.00	13.25	V	12.82	47.93

Final_Results_AVG

Frequency(MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin(dB)	Polarity	ARpl (dB/m)	PMea (dBµV)
14143.250000	41.74	54.00	12.26	V	-20.2	61.94
14566.250000	43.85	54.00	10.15	H	-18.2	62.05
15575.250000	45.07	54.00	8.93	H	-14.3	59.37
16166.000000	46.43	54.00	7.57	V	-1.0	47.43
16906.000000	45.87	54.00	8.13	H	5.9	39.97
17909.500000	47.52	54.00	6.48	V	12.8	34.72

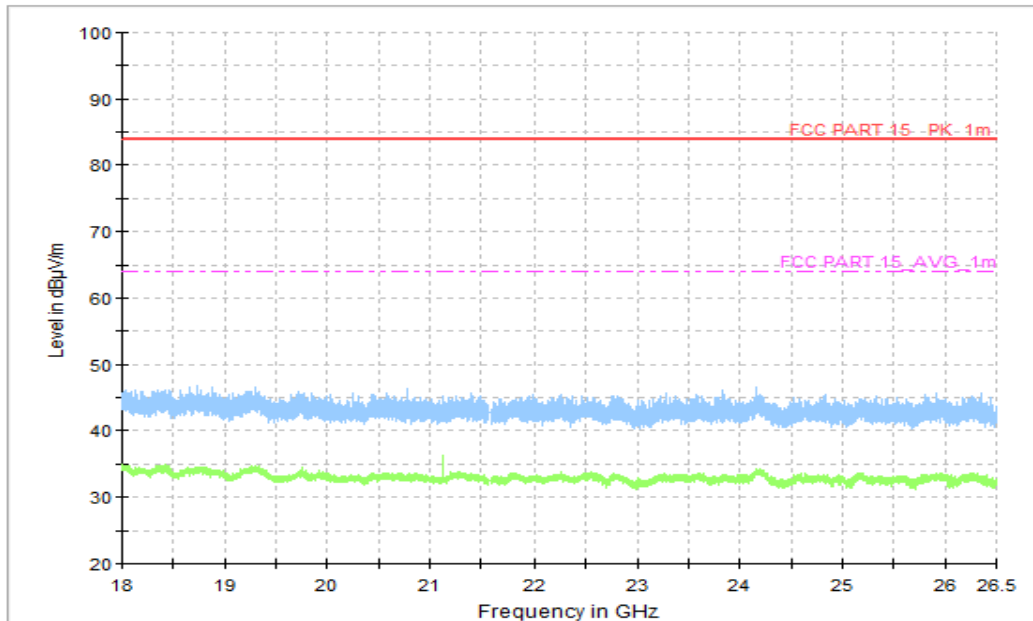


Figure A.1.3. Radiated Emission (Camera , 18GHz to 26.5GHz)

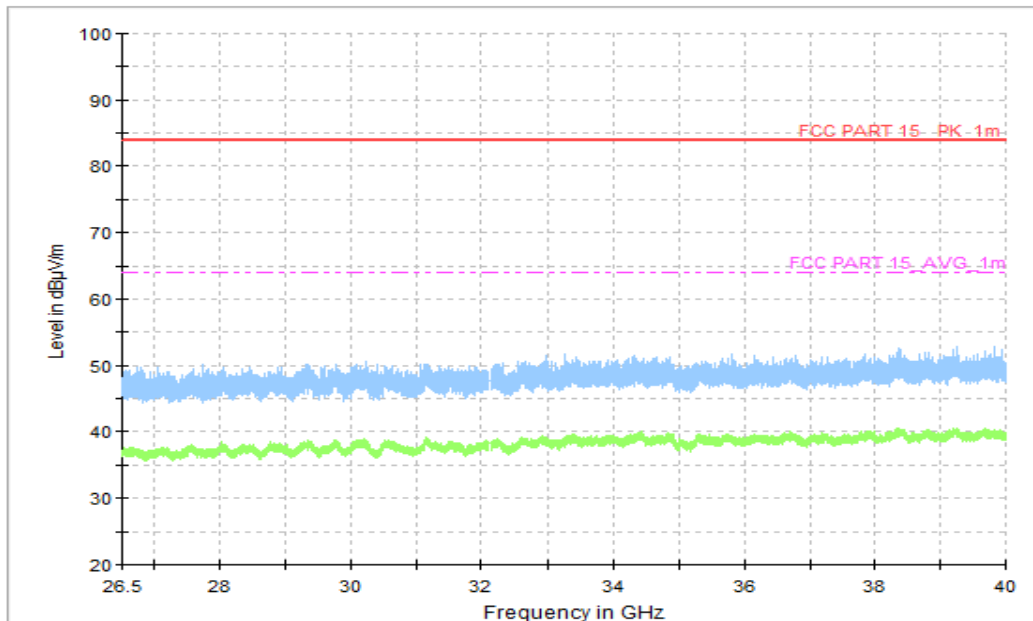


Figure A.1.4. Radiated Emission (Camera , 26.5GHz to 40GHz)

END OF REPORT