FCC PART 15B
TEST REPORT

No. 24T04Z100324-003

for

TCL Communication Ltd.

GSM/UMTS/LTE/NR Mobile phone

Model Name: T702M

FCC ID: 2ACCJH181

with

Hardware Version: 03

Software Version: 9JS3

Issued Date: 2024-03-07

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 CTTL.

Test Laboratory:

CTTL-Telecommunication Technology Labs, CAICT

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
24T04Z100324-003	Rev.0	1st edition	2024-03-07

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

CONTENTS

1. Test Laboratory

1.1. Testing Location

CTTL (huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191

1.2. Testing Environment

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2024-02-26

Testing End Date: 2024-03-03

1.4. Signature

Wang Xue

(Prepared this test report)

Zhang Ying

(Reviewed this test report)

Zhang Xia

(Approved this test report)

2. Client Information

2.1. Applicant Information

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2.2. Manufacturer Information

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3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	GSM/UMTS/LTE Mobile phone
Model Name	T702M
FCC ID:	2ACCJH181

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of CTTL, Telecommunication Technology Labs, CAICT.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	016540000002656/ 016540000002755	03	9JS3

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

3.3. Internal Identification of AE used during the test

AE ID*	Description	Model	Manufacture	Remark
AE1	Battery1	TLp049D7	VEKEN	/
AE2	Battery2	TLp049DA	TMB	/
AE3	Charger1	QC13US	PUAN	/
AE4	USB Cable1	CDA0000128C1	JUWEI	/
AE5	USB Cable2	CDA0000128C2	SHENGHUA	/
AE6	Headset	/	/	Provided by laboratory

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

3.4. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT1 + AE1/AE2 +AE3+AE4/AE5	Charger1+MP3+F Camera +GSM 850 idle
Set.2	EUT1 + AE1/AE2 +AE4+AE4/AE5	Charger1+R Camera + WCDMA B5 idle
Set.3	EUT1 + AE1/AE2 + AE4/AE5 + AE6	USB + FM + LTE B5 idle
Set.4	EUT1 + AE1/AE2+ Cable	OTG + NR n71 idle

Equipment Under Test (EUT) is a model of GSM/UMTS/LTE mobile phone.

It supports

GSM Band	850/900/1800/1900
UMTS Band	FDD Band I(W2100) /FDD Band II(W1900) /FDD Band IV(W1700)/FDD V(W850)
LTE Band	FDD Bands 1/2/3/4/5/7/8/12/13/20/25/26/28/66/71, TDD Bands 38/39/40/41
NR Band	NR Bands n25/n41/n66/n71/n77

It has MP3, Camera, USB memory, Bluetooth 5.1, Wi-Fi (802.11a/b/g/n/ac, 802.11n supports 20MHz and 40MHz bandwidth, 802.11ac supports 20MHz, 40MHz and 80MHz bandwidth) and GNSS function.

The device contains receivers which tune and operate between 30MHz-960MHz in the following mode: GSM 850, WCDMA850, LTE Band 5/12/13/20/71, NR band n71, FM. All licensed band receivers that tune in the range of 30MHz-960MHz are investigated. Only the worst-case emissions are reported.

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 - Unintentional Radiators	2019
ANSI C63.4	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2014

Note: The test methods have no deviation with standards.

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber SAC-1 did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ˚C, Max. = 35 ˚C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4Ω
Normalised site attenuation (NSA)	< ±4 dB, 3m distance
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 6GHz
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, >60dB; 1MHz－1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4Ω

6. SUMMARY OF TEST RESULTS

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

Items	Test Name	Clause in FCC rules	Section in this report	Verdict	Test Location
1	Radiated Emission	15.109(a)	B.1	P	**CTTL(huayuan North Road)**

Note: The T702M is a variant model based on T702W. According to the declaration of changes, following items are tested, other test results please refer to 23T04Z80937-10.

Test Item	Mode or Feature	EUT Set-up
Radiated Continues Emission	Charging mode/USB mode /OTG mode	Set.1/2/3/4

Only the worst-case emissions are reported.

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	Test Receiver	ESW44	103023	R&S	2024-07-08	1 Year
2	EMI Antenna	VULB 9163	01223	SCHWARZBECK	2024-08-18	1 Year
3	EMI Antenna	3115	6914	ETS-Lindgren	2024-06-07	1 Year
4	Signal Generator	SMBV100A	260613	R&S	2024-03-14	1 Year
5	Universal Communication Tester	CMW500	167943	R&S	2024-05-23	1 Year
6	Universal Communication Tester	E7515B	MY60102215	Keysight	2024-07-09	1 Year

Test software information		
Test Item	Software	Version
Radiated Emission	EMC32	V11.50.00

ANNEX A: MEASUREMENT RESULTS

A.1 Radiated Emission

Reference

FCC: CFR Part 15.109(a).

A.1.1 Method of measurement

The field strength of radiated emissions from the unintentional radiator (USB/OTG mode of MS and charging mode of MS) at distances of 3 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. The measurement antenna was placed at a distance of 3/10 meters from the EUT. 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

The MS is operating in the USB mode, OTG mode and charging mode. During the test MS is connected to a PC via a USB cable in the case of USB mode, and is connected to the other device for charging in OTG mode and is connected to a charger in the case of charging mode.

The EUT was tested while operating in licensed band Rx mode. All licensed band receivers that tune in the range of 30MHz-960MHz, as listed in section 3.4, 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.

The model of the PC is M4000E-17, and the serial number of the PC is M706GWXD. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

Note：I/O information：Printer – USB, Mouse – PS/2, Keyboard – USB.

The EUT was tested while operating in licensed band Rx mode. All licensed band receivers that tune in the range of 30MHz-960MHz, as listed in section 3.4, 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

Frequency range (MHz)	Field strength limit (μV/m)		
	Quasi-peak	Average	Peak
30-88	100		
88-216	150		
216-960	200		
960-1000	500		
>1000		500	5000

Note: the above limit is for 3 meters test distance. 10 meters' limit is got by converting.

A.1.4 Test Condition

Frequency range (MHz)	RBW/VBW	Sweep Time (s)	Detector
30-1000	120kHz (IF Bandwidth)	5	Peak/Quasi-peak
Above 1000	1MHz/3MHz	15	Peak, Average

A.1.5 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:

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

Where

G_A: Antenna factor of receive antenna

G_{PL}: Path Loss

P_{Mea}: Measurement result on receiver.

Measurement uncertainty (worst case): U = 4.84 dB, k=2.

Measurement results for Set.1:

Charing Mode/Average detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
17737.520	41.70	-29.67	45.95	25.41	54.00	12.30	H
17759.280	41.60	-29.61	45.95	25.26	54.00	12.40	V
17746.360	41.60	-29.61	45.95	25.26	54.00	12.40	V
17769.820	41.40	-29.63	45.95	25.07	54.00	12.60	V
17748.400	41.40	-29.61	45.95	25.06	54.00	12.60	H
17758.600	41.40	-29.61	45.95	25.06	54.00	12.60	H

Charging Mode/Peak detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
17704.540	52.20	-29.73	45.25	36.69	74.00	21.80	H
17660.000	51.70	-29.90	45.25	36.35	74.00	22.30	H
17737.520	51.60	-29.67	45.95	35.31	74.00	22.40	V
17696.040	51.60	-29.98	45.25	36.33	74.00	22.40	H
17702.160	51.50	-29.73	45.25	35.99	74.00	22.50	V
17529.100	51.50	-29.32	44.35	36.47	74.00	22.50	H

Measurement results for Set.2:

Charing Mode/Average detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
17723.580	41.40	-29.67	45.25	25.82	54.00	12.60	V
17734.120	41.30	-29.67	45.25	25.72	54.00	12.70	H
17715.080	41.20	-29.73	45.25	25.69	54.00	12.80	V
17766.080	41.10	-29.63	45.95	24.77	54.00	12.90	H
17744.660	41.00	-29.61	45.95	24.66	54.00	13.00	V
17664.080	41.00	-29.90	45.25	25.65	54.00	13.00	H

Charging Mode/Peak detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
17229.900	51.60	-29.57	43.36	37.81	74.00	22.40	V
17668.500	51.40	-29.90	45.25	36.05	74.00	22.60	V
17735.820	51.10	-29.67	45.25	35.52	74.00	22.90	H
17583.500	51.10	-29.70	45.25	35.55	74.00	22.90	H
17594.380	51.10	-29.70	45.25	35.55	74.00	22.90	H
17998.640	50.90	-29.06	46.66	33.30	74.00	23.10	H

Measurement results for Set.3:

USB Mode/Average detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
17743.640	41.90	-29.61	45.95	25.56	54.00	12.10	H
17737.520	41.90	-29.67	45.95	25.61	54.00	12.10	V
17747.040	41.80	-29.61	45.95	25.46	54.00	12.20	V
17751.800	41.80	-29.61	45.95	25.46	54.00	12.20	V
17684.820	41.80	-29.98	45.25	26.53	54.00	12.20	H
17746.020	41.60	-29.61	45.95	25.26	54.00	12.40	H

USB Mode/Peak detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
17579.080	51.60	-29.79	45.25	36.15	74.00	22.40	V
17633.140	51.50	-29.40	45.25	35.65	74.00	22.50	V
17767.440	51.40	-29.63	45.95	35.07	74.00	22.60	H
17754.520	51.20	-29.61	45.95	34.86	74.00	22.80	V
17629.740	51.20	-29.40	45.25	35.35	74.00	22.80	V
17539.980	51.20	-29.32	44.35	36.17	74.00	22.80	H

Measurement results for Set.4:

OTG Mode/Average detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
17699.100	42.10	-29.98	45.25	26.83	54.00	11.90	H
17749.760	42.00	-29.61	45.95	25.66	54.00	12.00	H
17780.360	42.00	-29.89	45.95	25.93	54.00	12.00	V
17774.240	41.90	-29.63	45.95	25.57	54.00	12.10	V
17744.660	41.80	-29.61	45.95	25.46	54.00	12.20	V
17747.720	41.80	-29.61	45.95	25.46	54.00	12.20	H

OTG Mode/Peak detector

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)
17711.000	52.30	-29.73	45.25	36.79	74.00	21.70	H
17680.740	52.10	-29.98	45.25	36.83	74.00	21.90	V
17664.080	52.10	-29.90	45.25	36.75	74.00	21.90	V
17669.180	51.60	-29.90	45.25	36.25	74.00	22.40	H
17668.160	51.50	-29.90	45.25	36.15	74.00	22.50	H
17683.460	51.50	-29.98	45.25	36.23	74.00	22.50	V

Measurement results for Set.1:

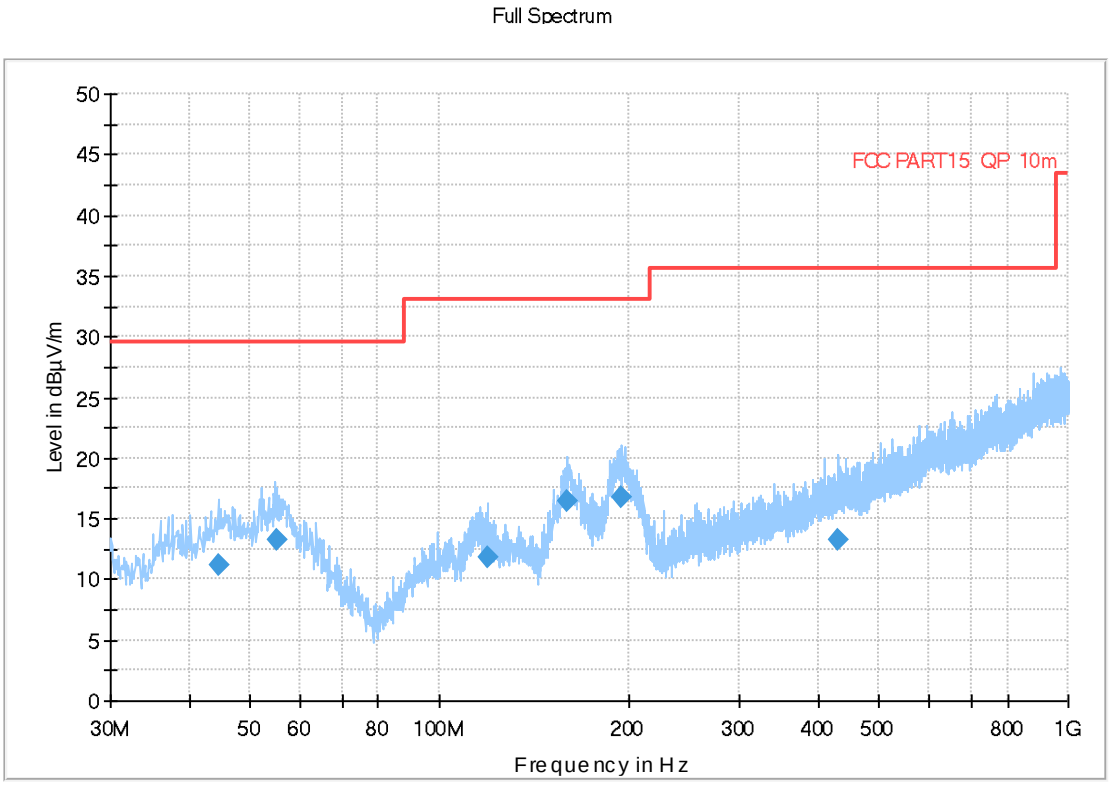

Fig A.1 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
44.453000	11.11	29.54	18.43	120.000	176.0	V	284.0
55.026000	13.23	29.54	16.31	120.000	175.0	V	245.0
119.725000	11.74	33.06	21.32	120.000	112.0	V	-25.0
159.398000	16.39	33.06	16.67	120.000	100.0	V	-25.0
195.288000	16.81	33.06	16.25	120.000	100.0	V	47.0
430.610000	13.20	35.56	22.36	120.000	125.0	V	13.0

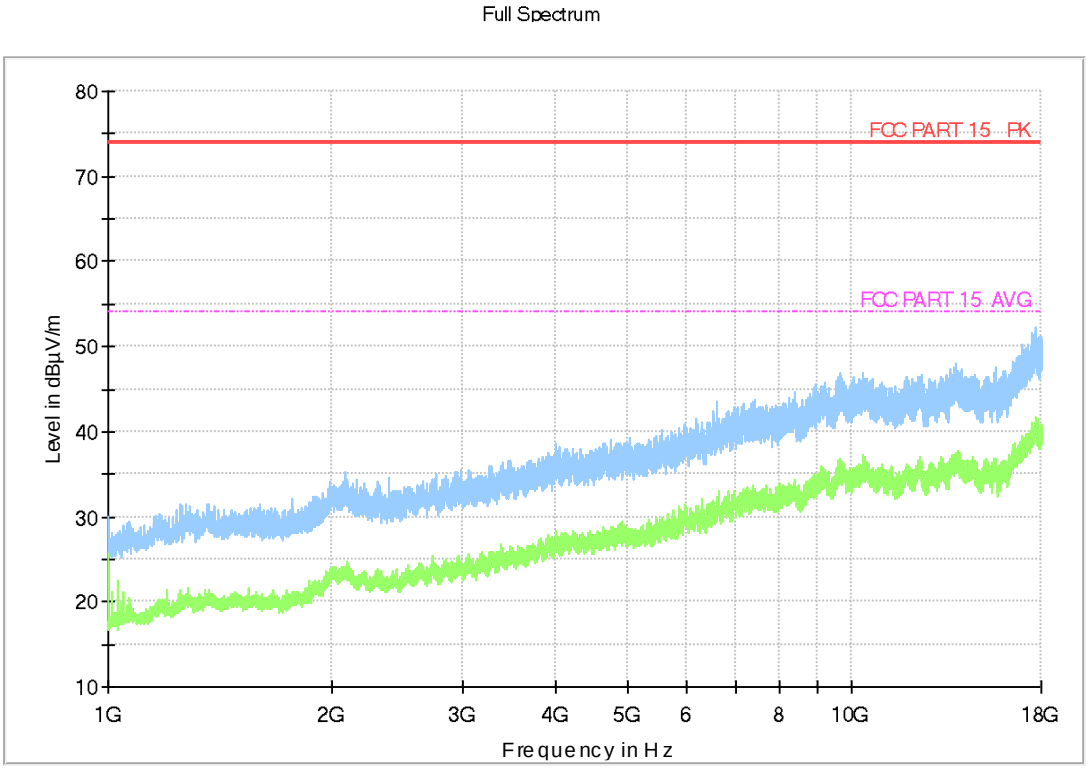

Fig A.2 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.2:

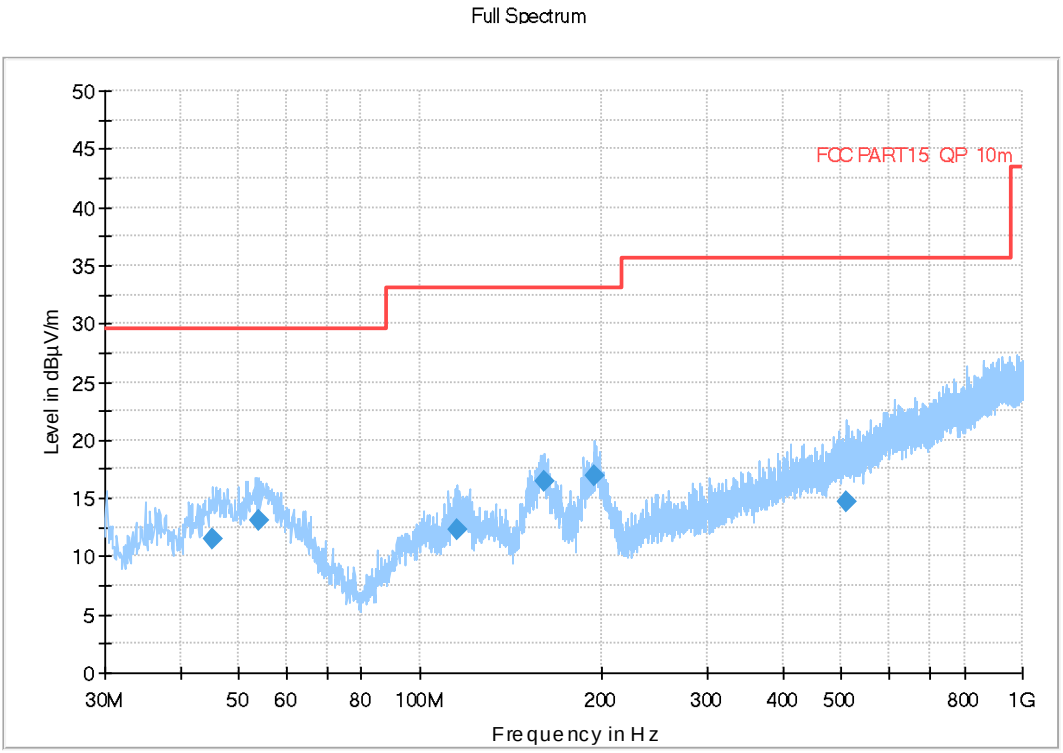

Fig A.3 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
45.229000	11.45	29.54	18.09	120.000	100.0	V	47.0
53.862000	13.14	29.54	16.40	120.000	100.0	V	245.0
115.457000	12.25	33.06	20.81	120.000	175.0	V	-6.0
160.465000	16.39	33.06	16.67	120.000	100.0	V	-25.0
194.997000	16.87	33.06	16.19	120.000	100.0	V	47.0
510.344000	14.63	35.56	20.93	120.000	187.0	H	155.0

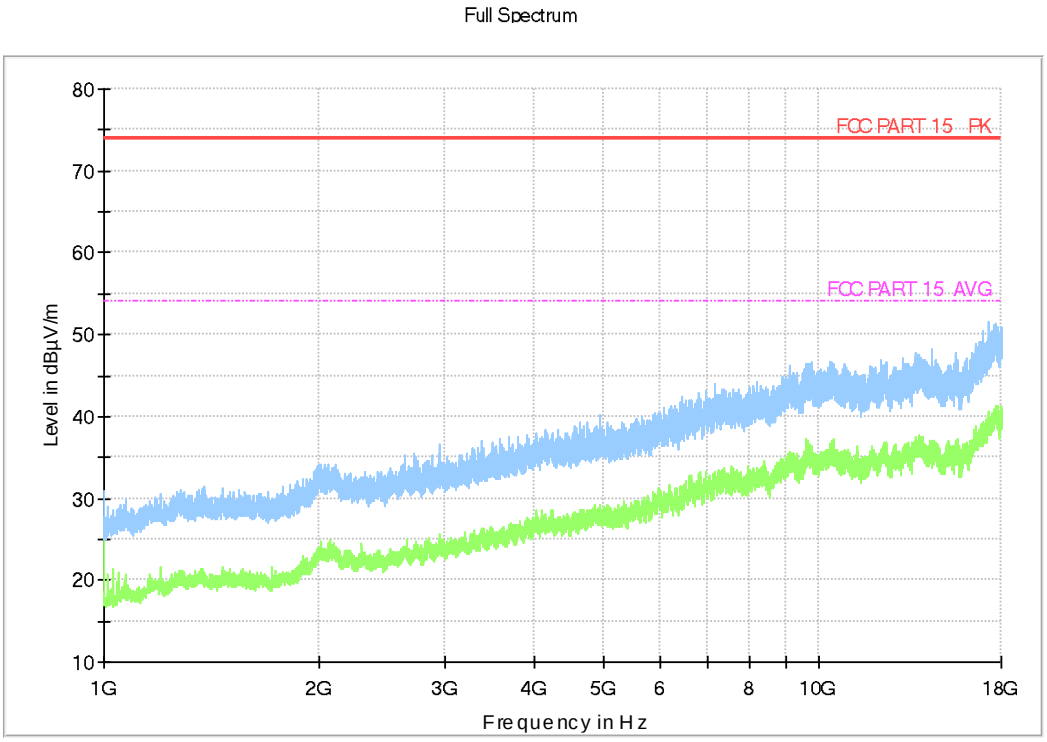

Fig A.4 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.3:

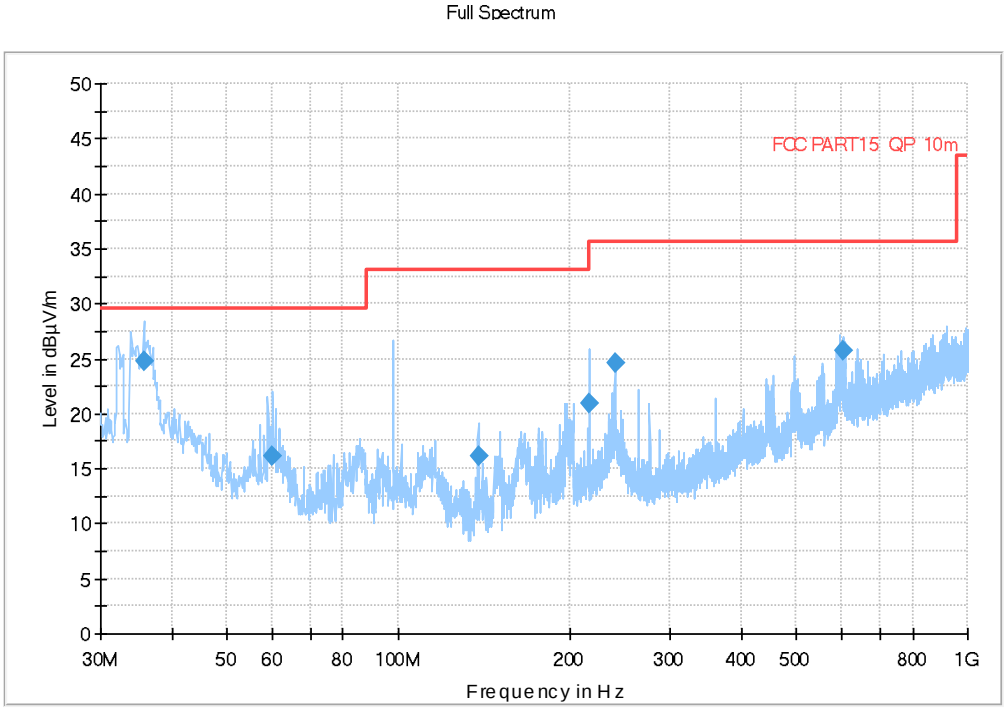

Fig A.5 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
35.723000	24.69	29.54	4.85	120.000	100.0	V	45.0
60.264000	16.10	29.54	13.44	120.000	223.0	V	193.0
138.155000	16.17	33.06	16.89	120.000	275.0	H	-44.0
215.949000	21.00	33.06	12.06	120.000	125.0	V	122.0
240.005000	24.53	35.56	11.03	120.000	309.0	H	137.0
602.785000	25.69	35.56	9.87	120.000	187.0	V	315.0

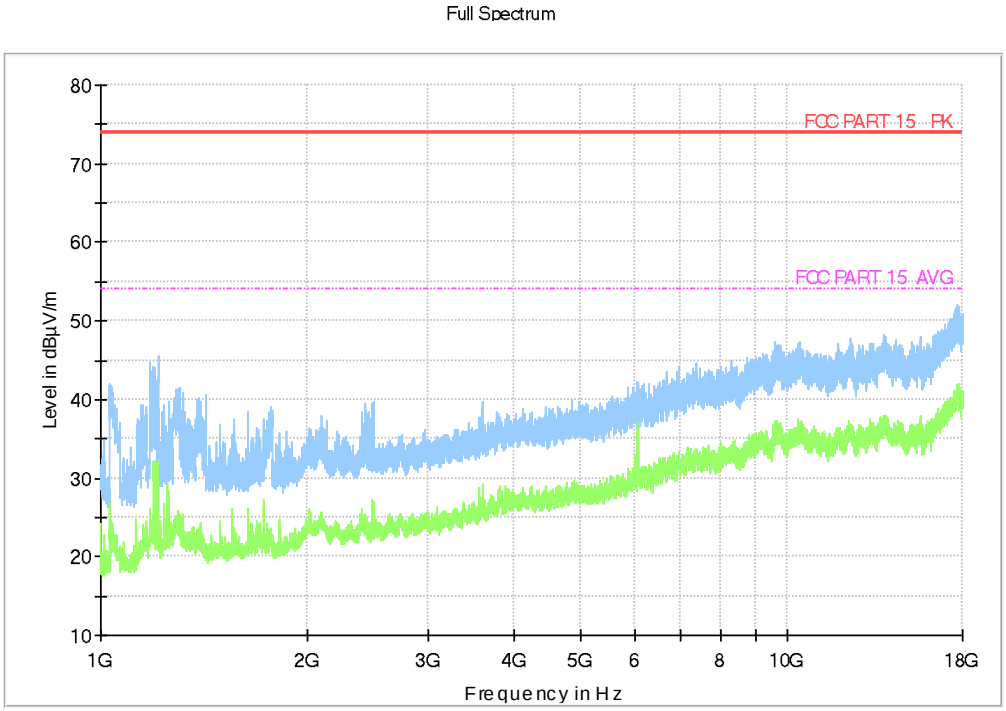

Fig A.6 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.4:

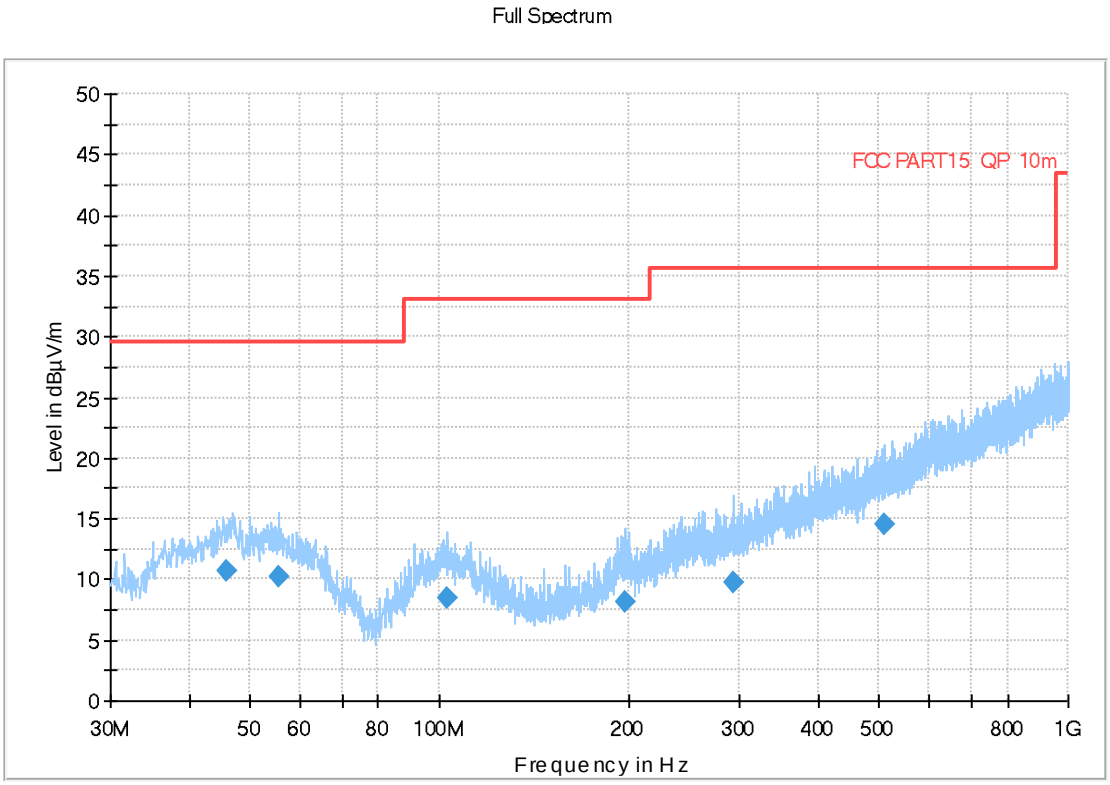

Fig A.7 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
45.908000	10.74	29.54	18.80	120.000	125.0	H	120.0
55.608000	10.20	29.54	19.34	120.000	225.0	V	225.0
102.944000	8.46	33.06	24.60	120.000	308.0	V	264.0
197.131000	8.16	33.06	24.90	120.000	223.0	V	12.0
292.773000	9.82	35.56	25.74	120.000	275.0	V	135.0
509.665000	14.47	35.56	21.09	120.000	225.0	H	135.0

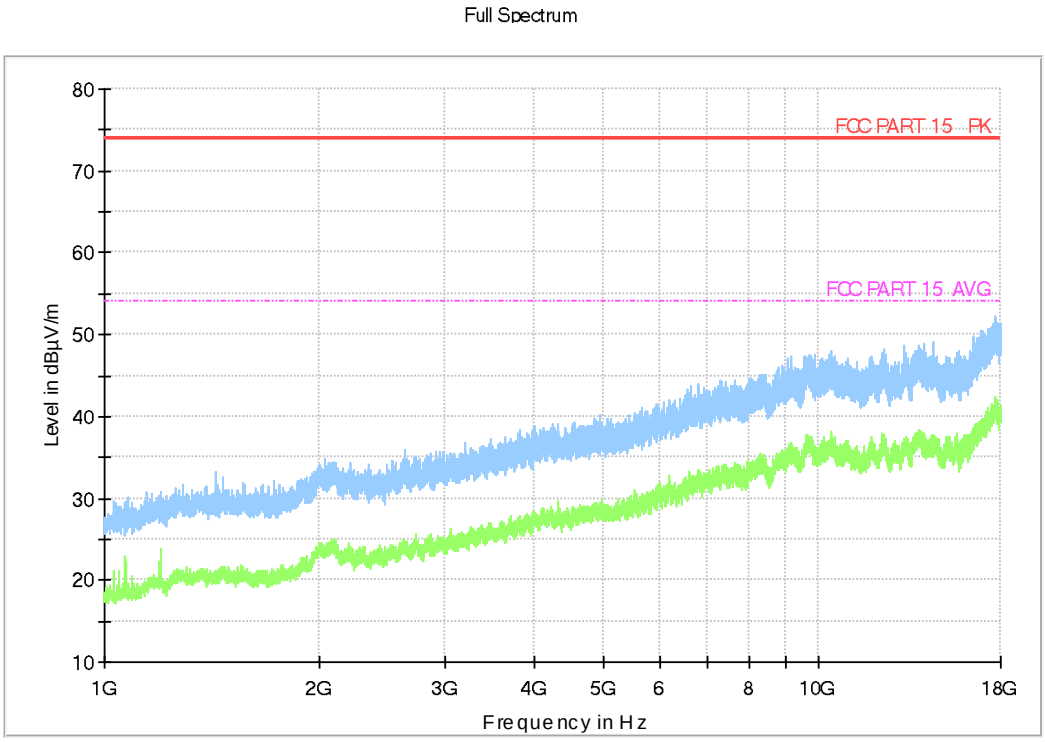

Fig A.8 Radiated Emission from 1GHz to 18GHz

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