FCC PART 15B
TEST REPORT

No. I21Z60176-EMC01

for

TCL Communication Ltd.

LTE/WCDMA/GSM mobile phone

Model Name: 6056A/6156A

FCC ID: 2ACCJB148

with

Hardware Version: PIO

Software Version: AN55

Issued Date: 2021-02-22

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.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S.Government.

Test Laboratory:

CTTL-Telecommunication Technology Labs, CAICT

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I21Z60176-EMC01	Rev.0	1st edition	2021-02-22

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

CONTENTS

1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2017 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0, and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (CN0066). The detail accreditation scope can be found on NVLAP website.

1.2. Testing Location

CTTL (huayuan North Road)

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

1.3. Testing Environment

Normal Temperature: 15-35° C

Relative Humidity: 20-75%

1.4. Project data

Testing Start Date: 2021-02-17

Testing End Date: 2021-02-22

1.5. 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

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	Gong Zhizhou
Contact Email	zhizhou.gong@tcl.com
Telephone:	0086-755-36611722
Fax:	0086-755-36612000-81722

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	Gong Zhizhou
Contact Email	zhizhou.gong@tcl.com
Telephone:	0086-755-36611722
Fax:	0086-755-36612000-81722

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

3.1. About EUT

Description	LTE/WCDMA/GSM mobile phone
Model Name	6056A/6156A
FCC ID	2ACCJB148
Extreme vol. Limits	3.6VDC to 4.4VDC (nominal: 3.85VDC)

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	359184550001274/01	PIO	AN55

*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	SN	Remarks
AE1	Battery	/	
AE2	Battery	/	
AE3	USB Cable	/	
AE4	USB Cable	/	
AE5	Charger1	/	
AE6	Charger2	/	
AE7	Headset1	/	
AE8	Headset2	/	
AE9	Headset3	/	
AE10	Headset4	/	

AE1

Model	CAC3860032CA
Manufacturer	TIANMAO
Capacity	3860mAh
Nominal Voltage	3.85V

AE2

Model	CAC3860025C7
Manufacturer	VEKEN
Capacity	3860mAh
Nominal Voltage	3.85V

AE3

Model	CDA0000024C8
Manufacturer	PUAN
Length of cable	/

AE4

Model	CDA0000024C2
Manufacturer	JUWEI

Length of cable	/
AE5	
Model	CBA0059AGAC5
Manufacturer	PUAN
Length of cable	/
AE6	
Model	CBA0059AGAC7
Manufacturer	CHENYANG
Length of cable	/
AE7	
Model	CCB0046A10C1/CCB0046A15C1
Manufacturer	JUWEI
Length of cable	/
AE8	
Model	CCB0046A10C4
Manufacturer	MEIHAO
Length of cable	/
AE9	
Model	CCB0070B10C1
Manufacturer	JUWEI
Length of cable	/
AE10	
Model	CCB0046A15C4
Manufacturer	MEIHAO
Length of cable	/

*AE ID: is used to identify the test sample in the lab internally.
Note: The USB cables are shielded.

3.4. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT1+ AE1/AE2+ AE3/AE4+ AE5	REAR Camera + GSM 850 Idle
Set.2	EUT1+ AE1/AE2+ AE3/AE4+ AE6	MP4+WCDMA 850 Idle
Set.3	EUT1+ AE1/AE2 + AE3/AE4+ AE7	USB+front camera +LTE B5 Idle +FM98
Set.4	EUT1+ AE1/AE2 + AE3/AE4+ AE8	USB+front camera +LTE B5 Idle +FM98
Set.5	EUT1+ AE1/AE2 + AE3/AE4+ AE9	USB+front camera +LTE B5 Idle +FM98
Set.6	EUT1+ AE1/AE2 + AE3/AE4+ AE10	USB+front camera +LTE B5 Idle +FM98

Note:

The device supports GSM/GPRS/EGPRS 850/900/1800/1900, UMTS FDD Band 1/2/4/5/8; LTE FDD Band 2/3/4/5/7/8/12/13/17/26/28/66. It has WLAN (802.11b/g/n, 802.11n supports 20MHz bandwidth), Bluetooth (EDR, BLE) and GNSS (GPS&GLONASS&BDS& GALILEO) functions.

The device contains receivers which tune and operate between 30MHz-960MHz in the following bands: GSM850, WCDMA850 and LTE Band 5. All licensed band receivers that tune in the range of 30MHz-960MHz are investigated.

The 6056A is a variant product of 6156A. According to the declaration of changes, the differences between the two products are the brand name and logo.

Model name	6056A	6156A
Brand name	Alcatel	TCL

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 (10 meters×6.7meters×6.1meters) 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 M
Ground system resistance	< 4
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 M
Ground system resistance	< 4

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)**
2	Conducted Emission	15.107(a)	B.2	P	**CTTL(huayuan North Road)**

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	Test Receiver	ESU26	100235	R&S	2021-03-02	1 Year
2	LISN	ENV216	101200	R&S	2021-05-19	1 year
3	Universal Radio Communication Tester	CMW500	116588	R&S	2021-12-07	1 year
4	Test Receiver	ESCI 7	100344	R&S	2021-02-26	1 Year
5	EMI Antenna	VULB 9163	9163-1223	Schwarzbeck	2021-03-18	1 year
6	EMI Antenna	3115	00167250	ETS-Lindgren	2021-05-14	1 year
7	Signal Generator	SMBV100A	106247	R&S	2021-05-18	1 year
8	Signal Generator	SMB100A	102063	R&S	2022-01-07	1 year

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 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 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 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.

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/1MHz	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 = 4.74 dB, k=2.

Measurement results for Set.1:

Charging 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)
17952.967	43.7	-28.9	46.7	25.98	54.00	28.02	V
17920.667	43.5	-29.4	46.7	26.24	54.00	27.76	H
17890.067	43.5	-29.5	46.0	27.08	54.00	26.92	H
17905.933	43.1	-29.3	46.0	26.47	54.00	27.53	V
17949.000	43.1	-28.9	46.7	25.38	54.00	28.62	H
17756.900	43.1	-29.6	46.0	26.76	54.00	27.24	V

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)
17944.467	52.7	-28.9	46.7	34.98	74.00	39.02	V
17989.800	52.1	-29.1	46.7	34.50	74.00	39.50	V
17929.733	52.0	-29.4	46.7	34.74	74.00	39.26	H
17788.067	51.8	-29.9	46.0	35.73	74.00	38.27	H
17958.067	51.8	-28.9	46.7	34.08	74.00	39.92	V
17896.300	51.7	-29.5	46.0	35.28	74.00	38.72	H

Measurement results for Set.2:

Charging 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)
17953.533	43.7	-28.9	46.7	25.98	54.00	28.02	H
17918.967	43.5	-29.3	46.7	26.17	54.00	27.83	H
17897.433	43.3	-29.5	46.0	26.88	54.00	27.12	H
17980.733	43.3	-29.1	46.7	25.70	54.00	28.30	V
17986.400	43.2	-29.1	46.7	25.60	54.00	28.40	V
17973.933	43.2	-29.1	46.7	25.60	54.00	28.40	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)
17811.300	52.4	-29.6	46.0	36.08	74.00	37.92	V
17906.500	52.3	-29.3	46.0	35.67	74.00	38.33	V
17542.700	52.2	-29.5	44.4	37.33	74.00	36.67	H
17954.667	52.1	-28.9	46.7	34.38	74.00	39.62	V
17580.667	51.8	-29.7	45.2	36.25	74.00	37.75	V
17543.267	51.6	-29.5	44.4	36.73	74.00	37.27	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)
17963.733	44.1	-29.1	46.7	26.50	54.00	27.50	H
17855.500	43.0	-29.3	46.0	26.38	54.00	27.62	V
17901.967	42.9	-29.3	46.0	26.27	54.00	27.73	H
17943.333	42.9	-28.9	46.7	25.18	54.00	28.82	H
17951.267	42.9	-28.9	46.7	25.18	54.00	28.82	H
17924.633	42.9	-29.4	46.7	25.64	54.00	28.36	V

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)
17877.033	53.0	-29.4	46.0	36.44	74.00	37.56	H
17817.533	52.8	-29.6	46.0	36.48	74.00	37.52	H
17976.200	52.4	-29.1	46.7	34.80	74.00	39.20	V
18000.000	52.3	-29.2	47.0	34.54	74.00	39.46	V
17869.100	52.1	-29.4	46.0	35.54	74.00	38.46	V
17908.767	51.8	-29.3	46.0	35.17	74.00	38.83	V

Measurement results for Set.4:

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)
17939.933	43.6	-29.4	46.7	26.34	54.00	27.66	H
17874.767	43.4	-29.4	46.0	26.84	54.00	27.16	V
17951.267	43.4	-28.9	46.7	25.68	54.00	28.32	H
17941.633	43.1	-28.9	46.7	25.38	54.00	28.62	H
17949.000	43.1	-28.9	46.7	25.38	54.00	28.62	V
17580.667	43.1	-29.7	45.2	27.55	54.00	26.45	V

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)
17990.933	53.3	-29.1	46.7	35.70	74.00	38.30	V
17939.933	52.1	-29.4	46.7	34.84	74.00	39.16	V
17995.467	52.0	-29.1	46.7	34.40	74.00	39.60	V
17856.633	51.8	-29.3	46.0	35.18	74.00	38.82	H
17792.033	51.8	-29.9	46.0	35.73	74.00	38.27	V
3594.767	51.7	-39.3	31.2	59.86	74.00	14.14	V

Measurement results for Set. 5:

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)
17932.000	44.0	-29.4	46.7	26.74	54.00	27.26	H
17537.600	43.3	-29.3	44.4	28.27	54.00	25.73	H
17987.533	43.3	-29.1	46.7	25.70	54.00	28.30	V
17860.600	43.3	-29.4	46.0	26.74	54.00	27.26	V
17951.267	43.0	-28.9	46.7	25.28	54.00	28.72	H
17836.233	42.9	-29.7	46.0	26.62	54.00	27.38	V

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)
17862.867	52.1	-29.4	46.0	35.54	74.00	38.46	H
17869.667	51.8	-29.4	46.0	35.24	74.00	38.76	V
17771.633	51.6	-29.6	46.0	35.27	74.00	38.73	H
17844.733	51.6	-29.3	46.0	34.98	74.00	39.02	V
17970.533	51.5	-29.1	46.7	33.90	74.00	40.10	H
17958.067	51.5	-28.9	46.7	33.78	74.00	40.22	H

Measurement results for Set. 6:

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)
17933.700	44.4	-29.4	46.7	27.14	54.00	26.86	H
17987.533	44.3	-29.1	46.7	26.70	54.00	27.30	H
17910.467	43.8	-29.3	46.0	27.17	54.00	26.83	H
17899.133	43.7	-29.5	46.0	27.28	54.00	26.72	V
17951.267	43.5	-28.9	46.7	25.78	54.00	28.22	V
17897.433	43.2	-29.5	46.0	26.78	54.00	27.22	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)
17981.867	52.0	-29.1	46.7	34.40	74.00	39.60	V
3587.400	51.7	-39.3	31.2	59.86	74.00	14.14	H
17969.400	51.7	-29.1	46.7	34.10	74.00	39.90	V
17870.800	51.6	-29.4	46.0	35.04	74.00	38.96	H
17980.167	51.6	-29.1	46.7	34.00	74.00	40.00	H
17924.633	51.5	-29.4	46.7	34.24	74.00	39.76	H

Measurement results for Set.1:

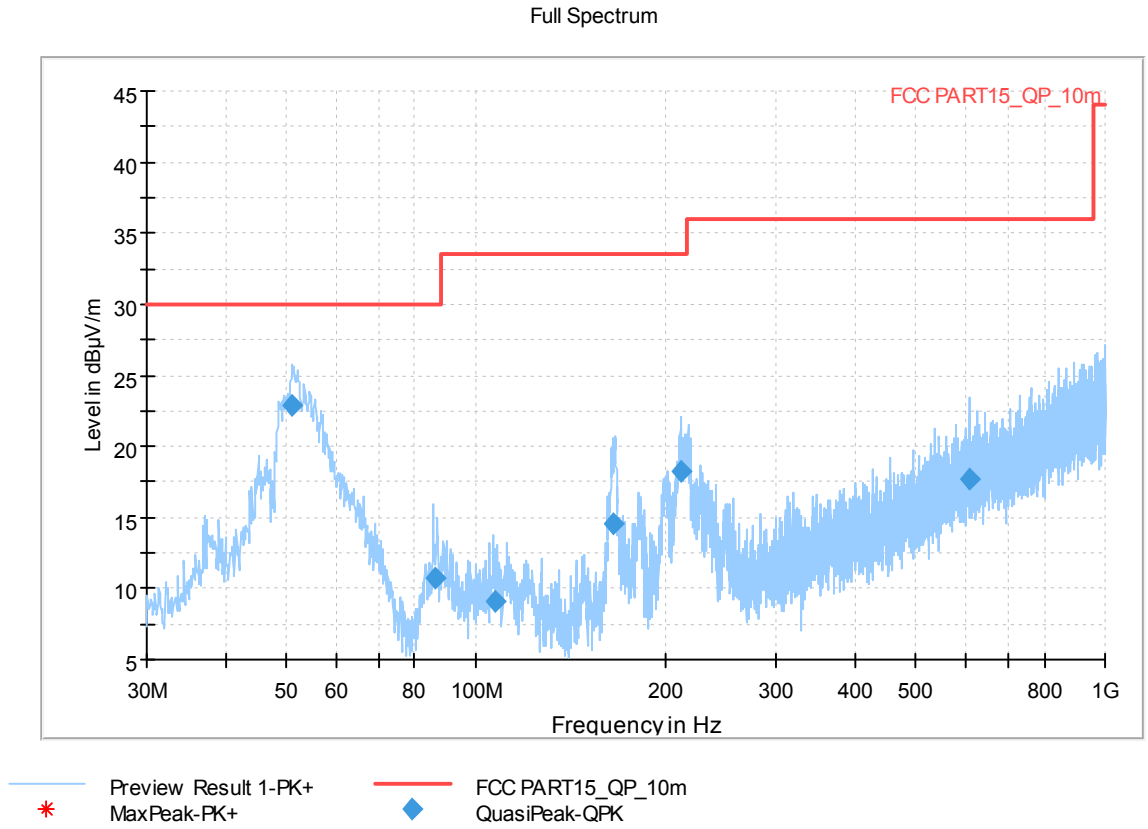

Fig A.1 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
50.989000	22.84	30.00	7.16	1000.0	120.000	100.0	V	-24.0
86.084000	10.80	30.00	19.20	1000.0	120.000	325.0	V	16.0
107.170000	9.04	33.50	24.48	1000.0	120.000	275.0	V	161.0
165.504000	14.50	33.50	19.02	1000.0	120.000	179.0	V	7.0
212.378000	18.26	33.50	15.26	1000.0	120.000	106.0	V	-19.0
608.406000	17.67	36.00	18.35	1000.0	120.000	207.0	V	120.0

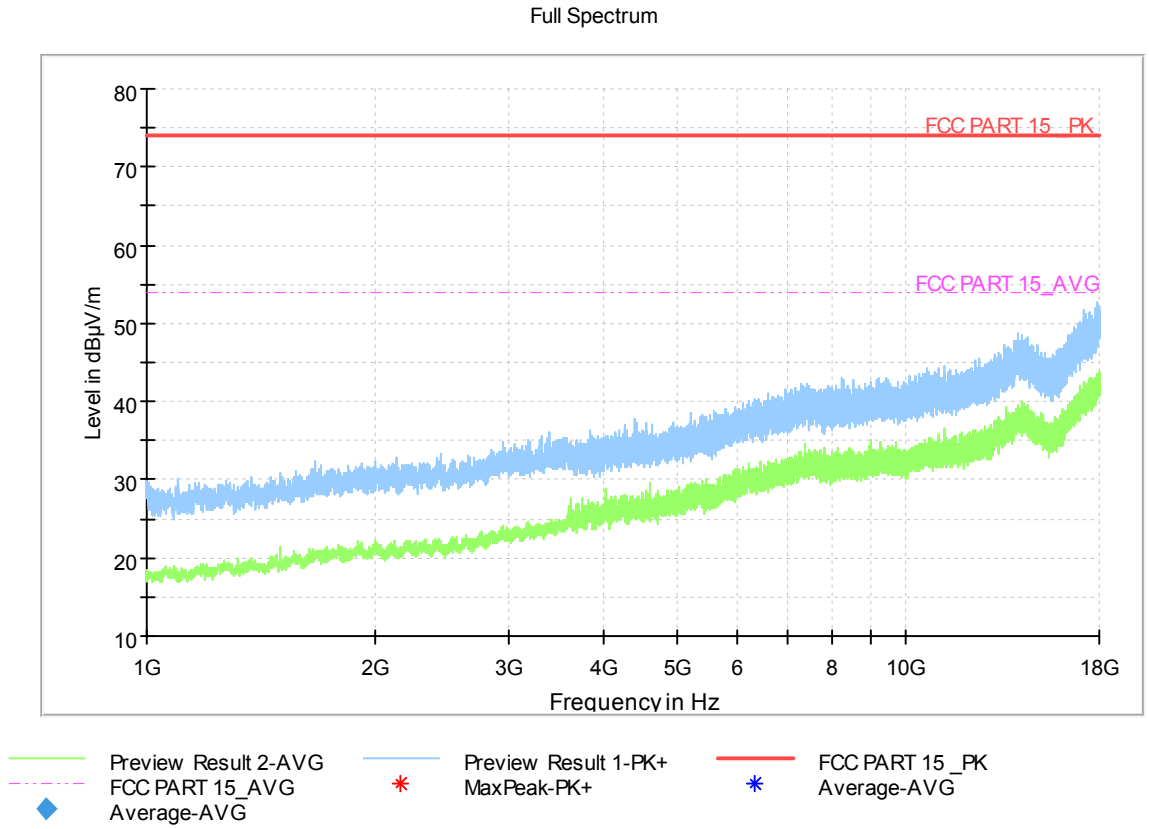

Fig A.2 Radiated Emission from 1GHz to 18GHz

Measurement results for Set. 2:

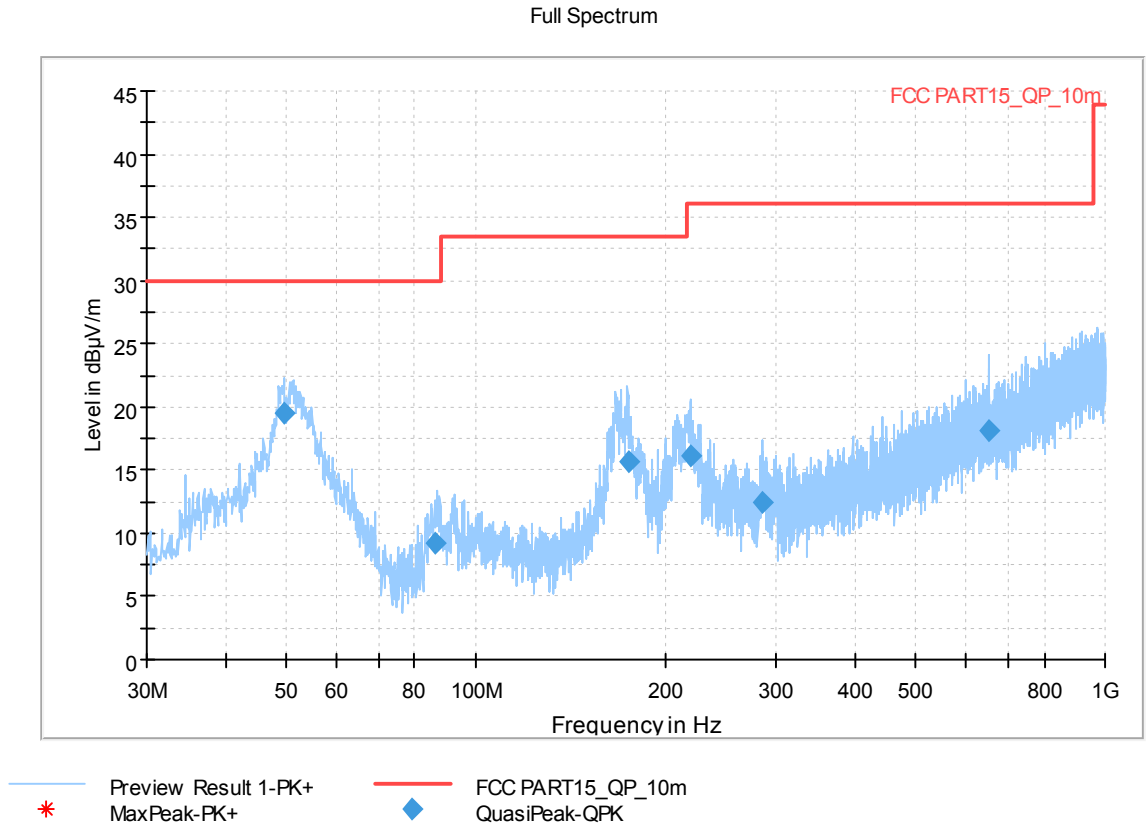

Fig A.3 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµv/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
49.474000	19.50	30.00	10.50	1000.0	120.000	100.0	V	65.0
86.482000	9.19	30.00	20.81	1000.0	120.000	125.0	V	-16.0
174.484000	15.72	33.50	17.80	1000.0	120.000	114.0	V	-7.0
218.938000	16.09	36.00	19.93	1000.0	120.000	107.0	V	-3.0
284.879000	12.43	36.00	23.59	1000.0	120.000	125.0	V	179.0
653.359000	18.08	36.00	17.94	1000.0	120.000	185.0	V	114.0

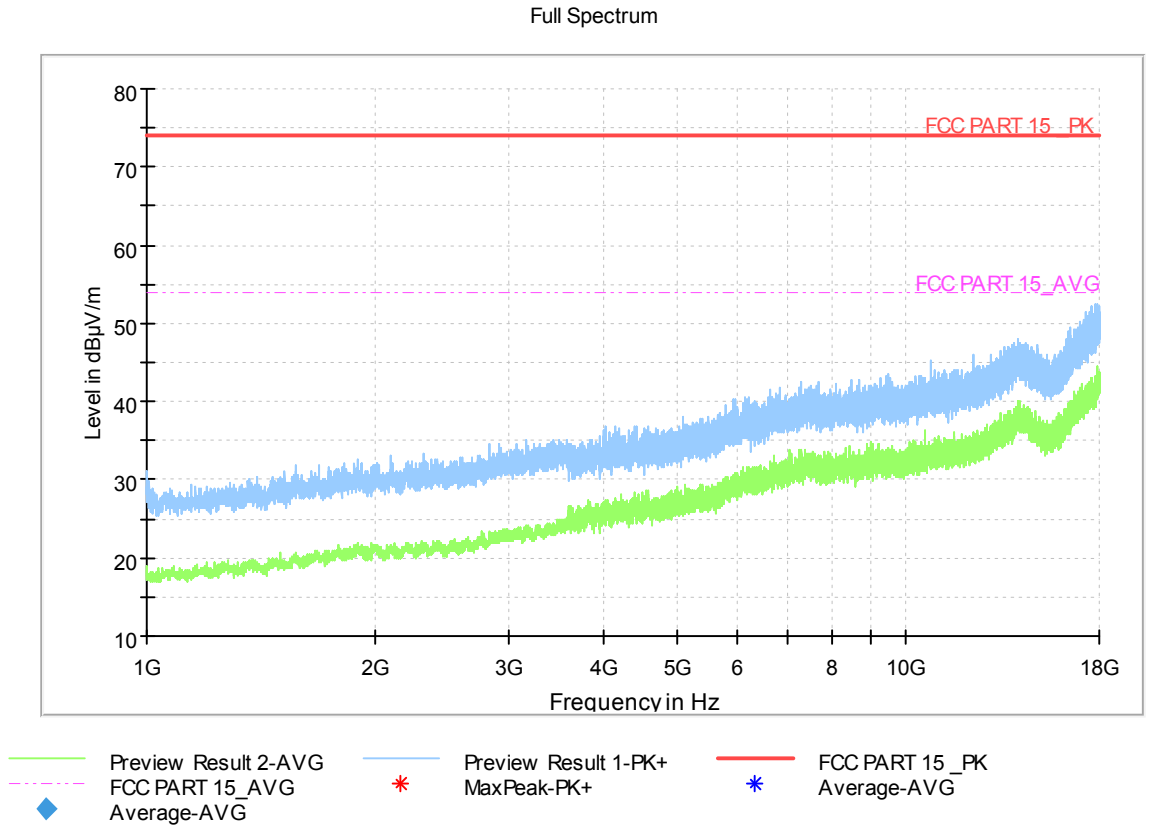

Fig A.4 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.3:

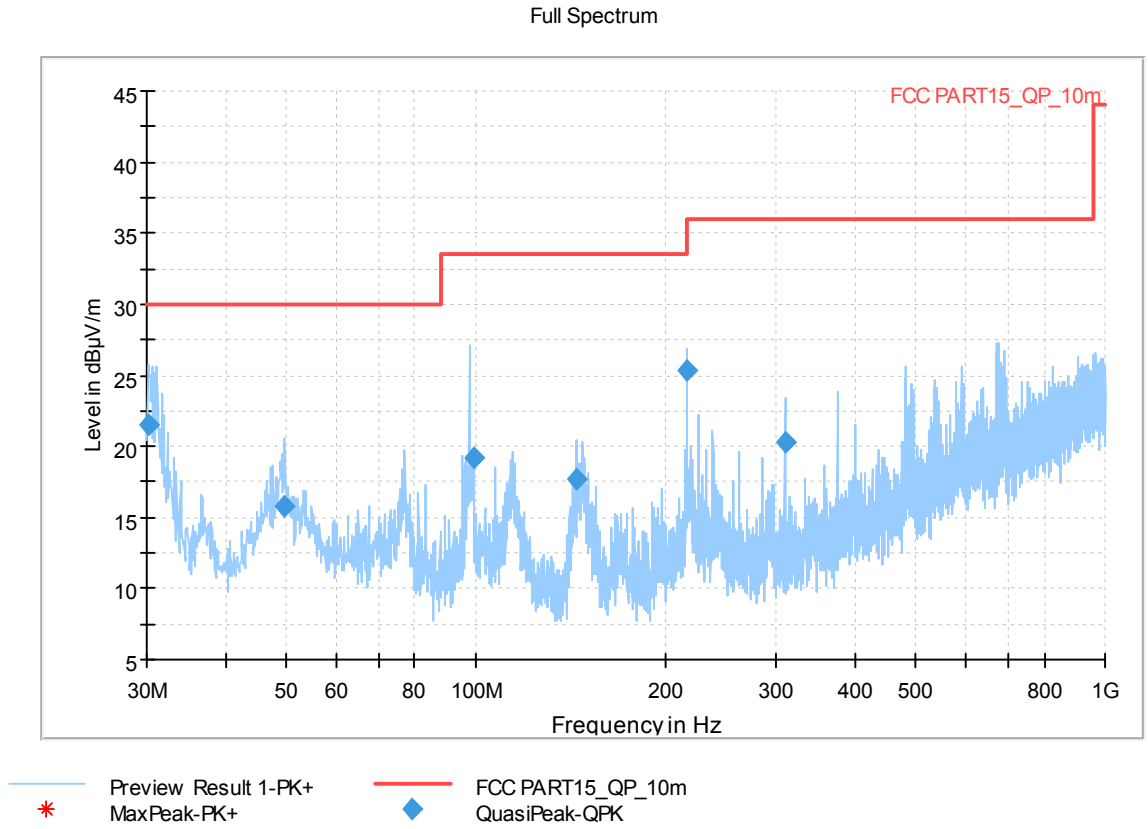

Fig A.5 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
30.194000	21.57	30.00	8.43	1000.0	120.000	125.0	V	-19.0
49.691000	15.85	30.00	14.15	1000.0	120.000	125.0	V	186.0
99.064000	19.26	33.50	14.26	1000.0	120.000	194.0	V	10.0
144.751000	17.73	33.50	15.79	1000.0	120.000	111.0	V	9.0
216.046000	25.36	36.00	10.66	1000.0	120.000	106.0	V	210.0
309.651000	20.25	36.00	15.77	1000.0	120.000	281.0	V	178.0

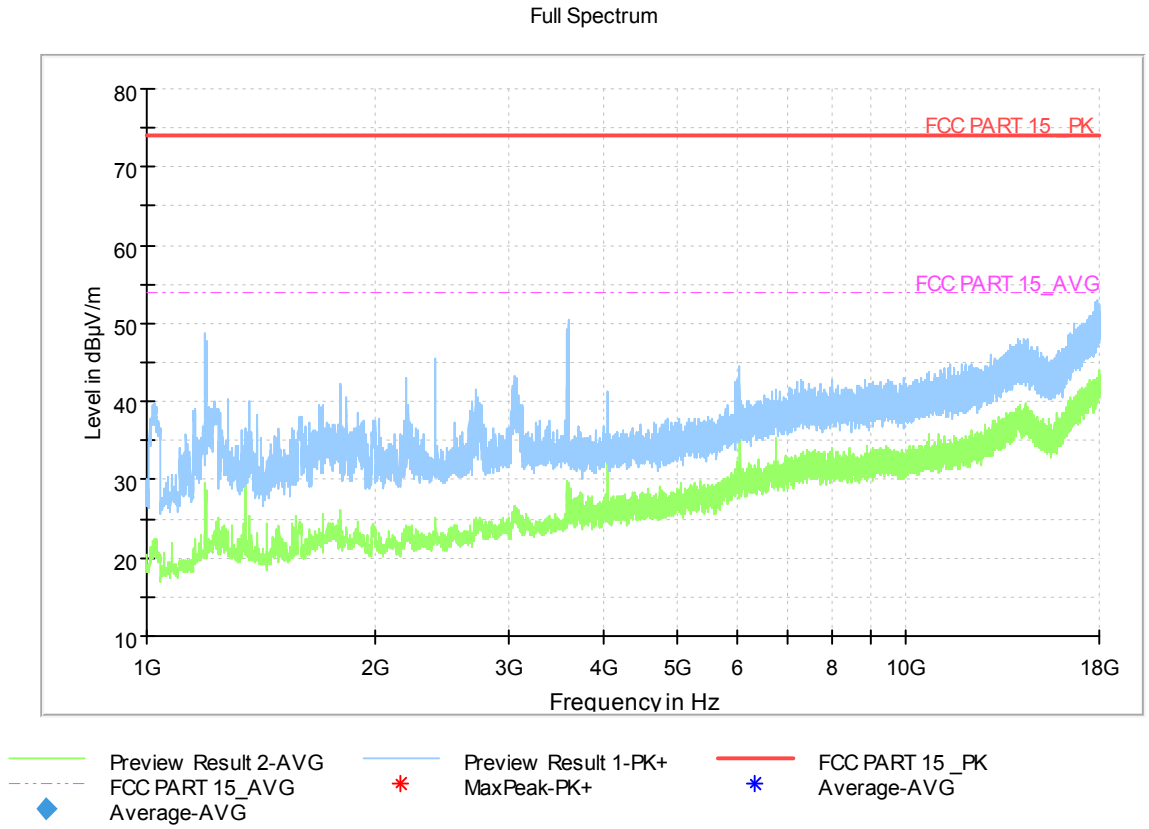

Fig A.6 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.4:

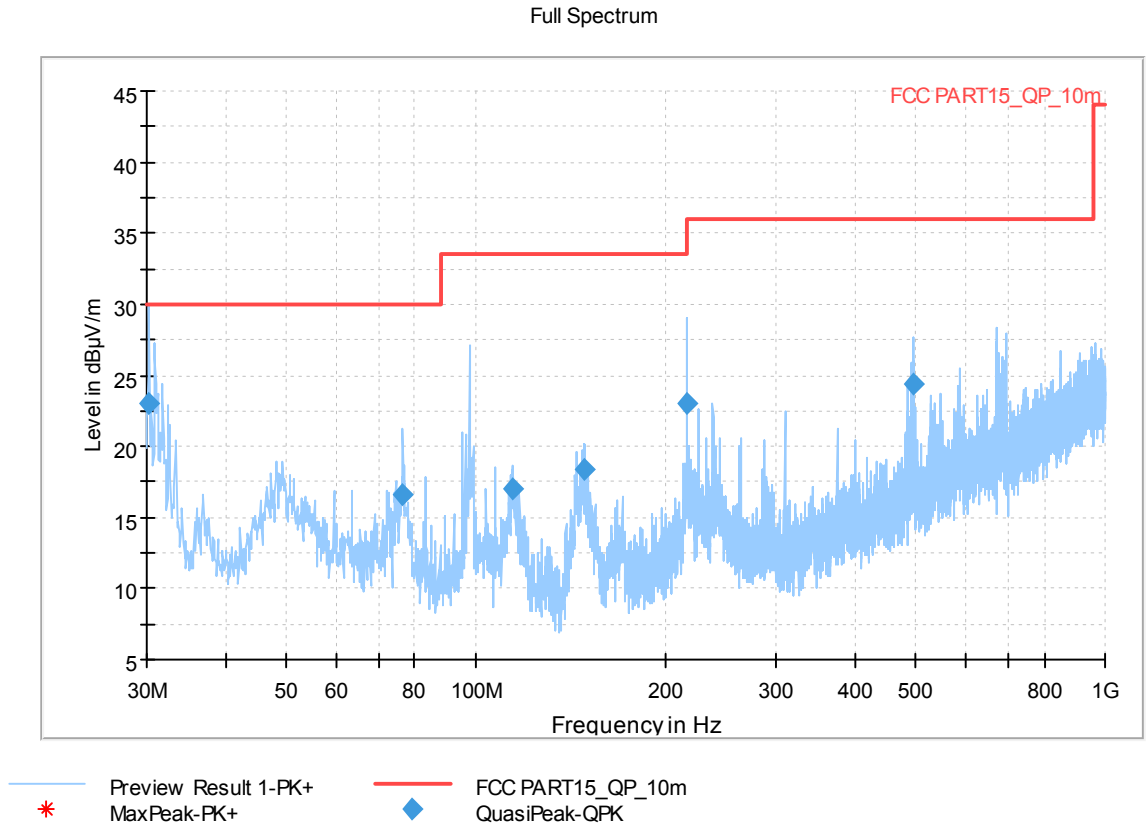

Fig A.7 Radiated Emission from 30MHz to 1GHz

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
30.291000	22.97	30.00	7.03	1000.0	120.000	379.0	V	253.0
76.657000	16.67	30.00	13.33	1000.0	120.000	197.0	V	65.0
114.099000	17.03	33.50	16.49	1000.0	120.000	190.0	V	161.0
148.340000	18.37	33.50	15.15	1000.0	120.000	125.0	V	15.0
215.949000	22.96	33.50	10.56	1000.0	120.000	104.0	V	-30.0
495.988000	24.37	36.00	11.65	1000.0	120.000	225.0	V	11.0

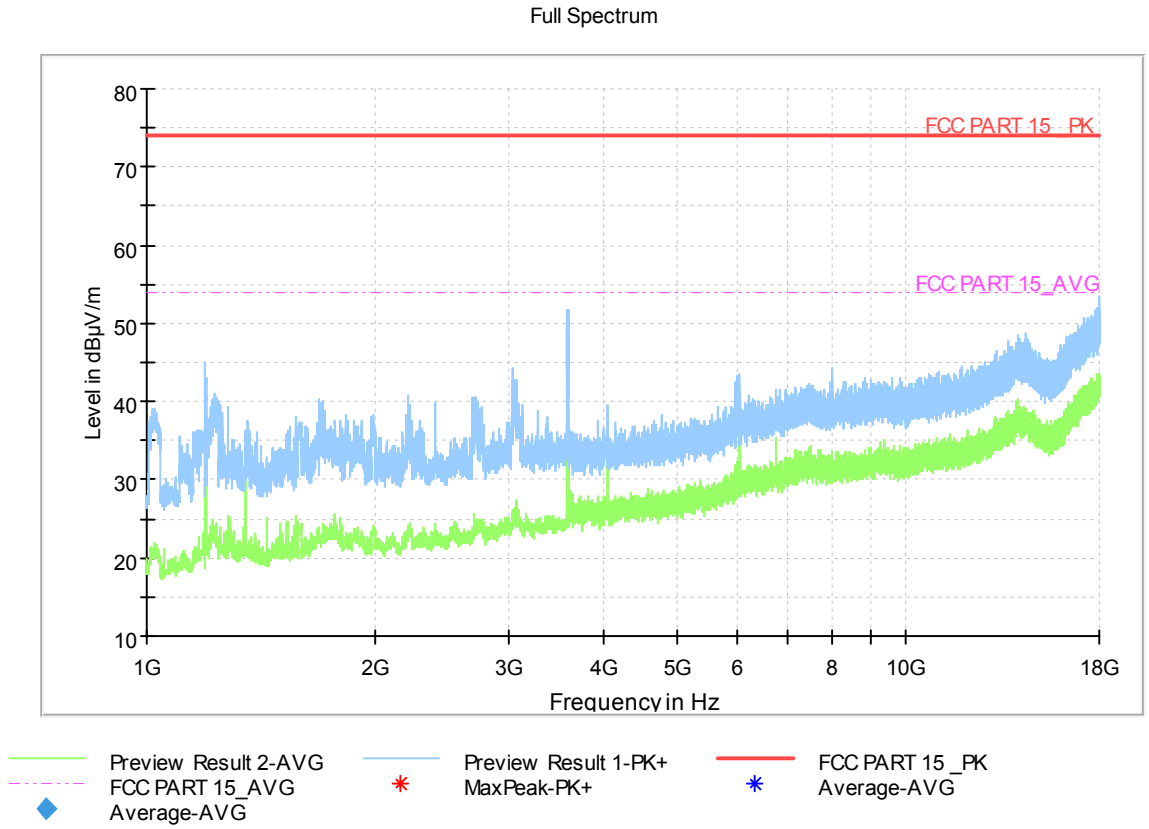

Fig A.8 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.5:

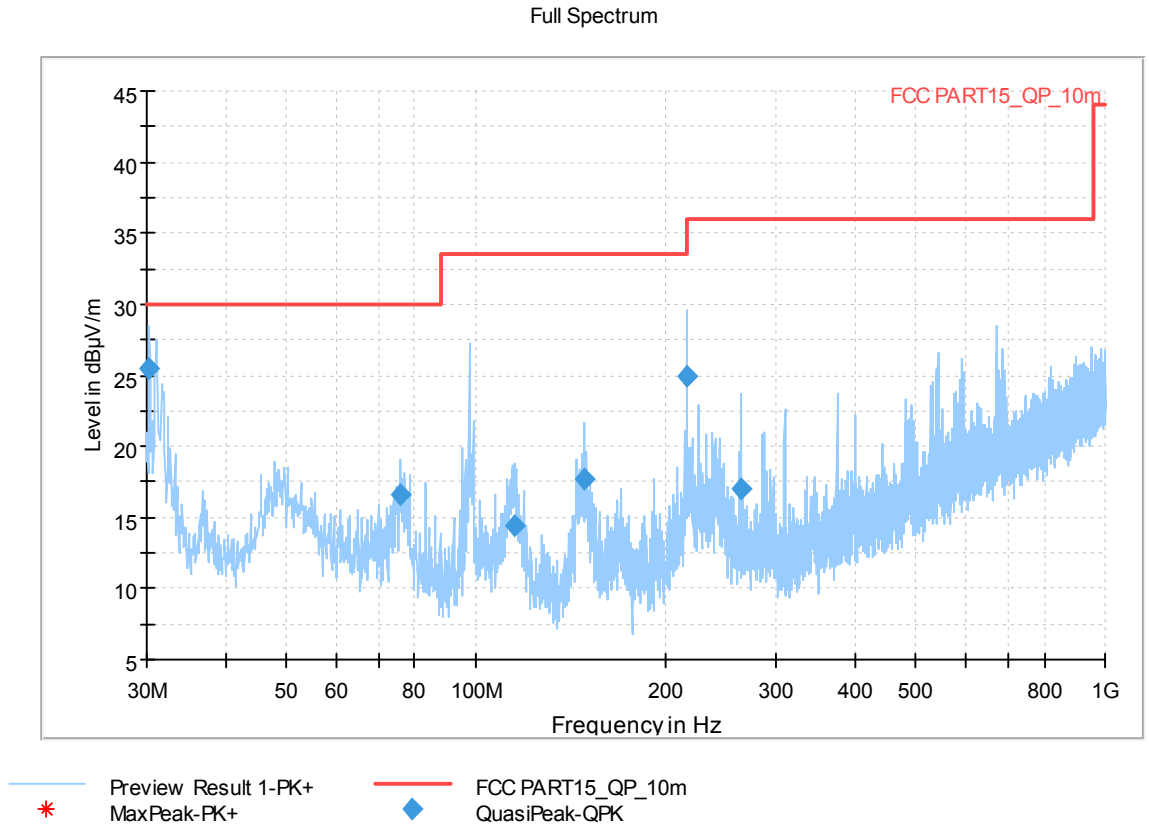

Fig A.9 Radiated Emission from 30MHz to 1GHz

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
30.291000	25.52	30.00	4.48	1000.0	120.000	105.0	V	210.0
75.881000	16.59	30.00	13.41	1000.0	120.000	225.0	V	63.0
115.069000	14.44	33.50	19.08	1000.0	120.000	109.0	V	110.0
148.728000	17.71	33.50	15.81	1000.0	120.000	225.0	V	1.0
215.949000	24.97	33.50	8.55	1000.0	120.000	116.0	V	300.0
263.964000	16.95	36.00	19.07	1000.0	120.000	104.0	V	99.0

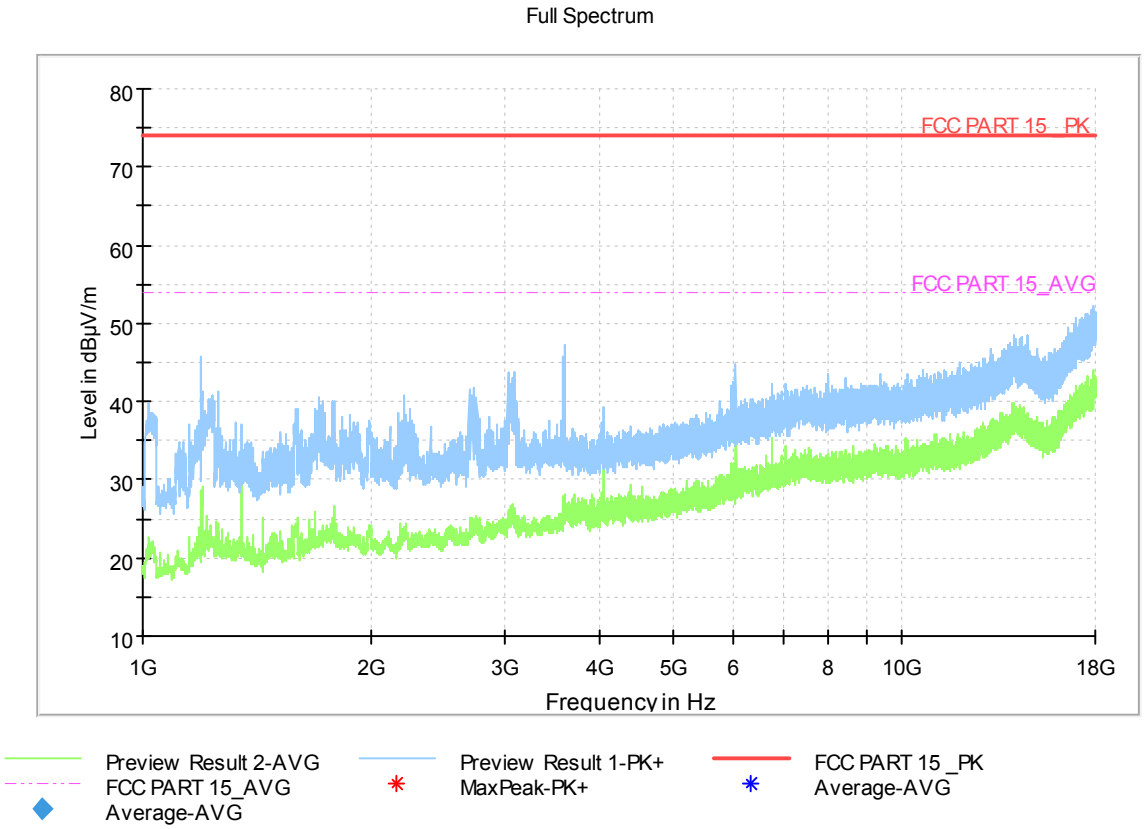

Fig A.10 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.6:

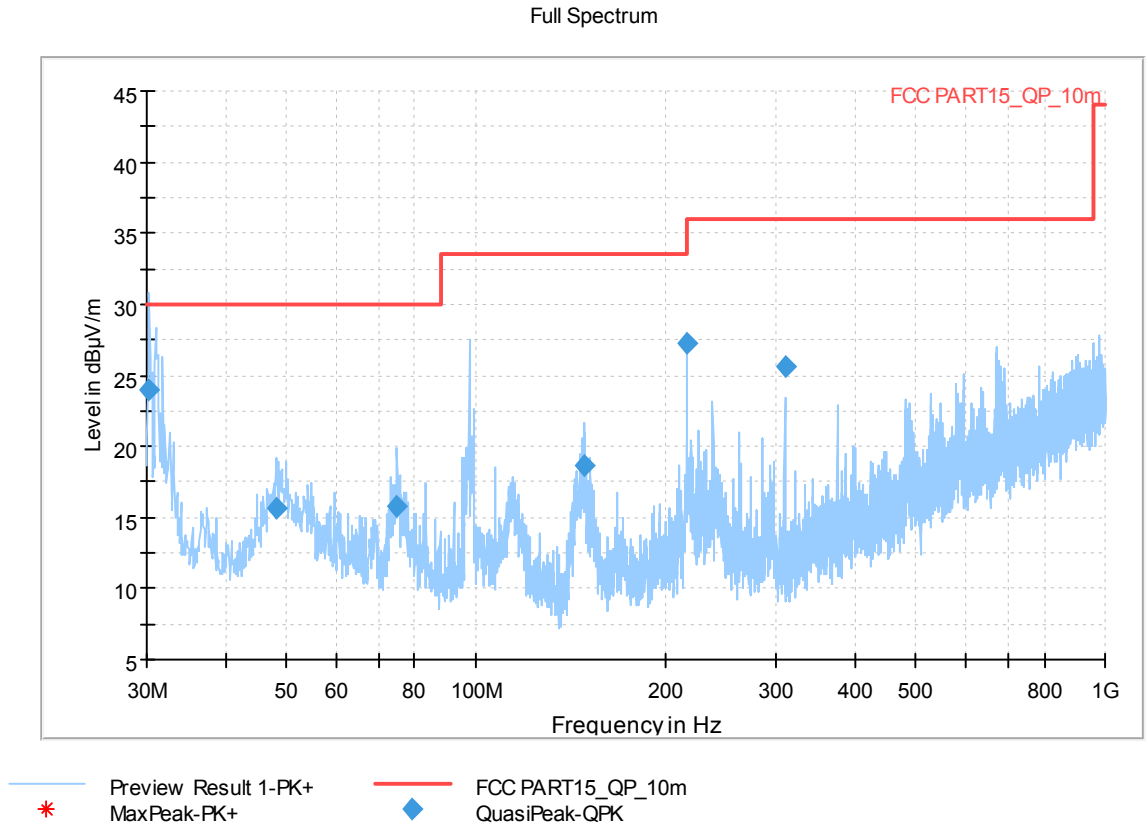

Fig A.11 Radiated Emission from 30MHz to 1GHz

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
30.291000	23.95	30.00	6.05	1000.0	120.000	279.0	V	249.0
48.139000	15.60	30.00	14.40	1000.0	120.000	184.0	V	150.0
74.911000	15.83	30.00	14.17	1000.0	120.000	180.0	V	79.0
148.631000	18.59	33.50	14.93	1000.0	120.000	105.0	V	180.0
215.949000	27.28	33.50	6.24	1000.0	120.000	125.0	V	210.0
309.651000	25.65	36.00	10.37	1000.0	120.000	103.0	V	-9.0

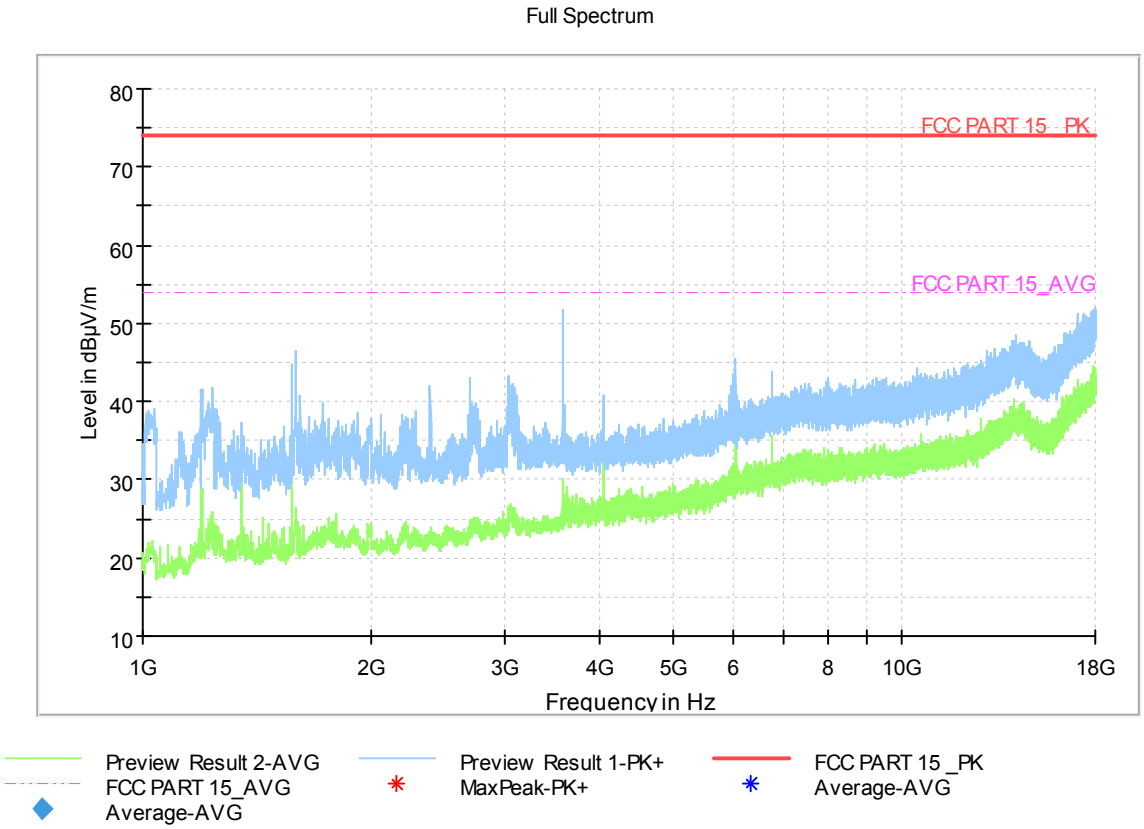

Fig A.12 Radiated Emission from 1GHz to 18GHz

A.2 Conducted Emission

Reference

FCC: CFR 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 150 kHz to 30 MHz 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

The MS is operating in the USB 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 a charger in the case of charging mode. The model of the PC is DELL 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.

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 Condition in charging mode

Voltage（V）	Frequency（Hz）
120	60

RBW/IF bandwidth	Sweep Time(s)
9kHz	1

A.2.5 Measurement Results

Measurement uncertainty: *U*= 3.1 dB, *k*=2.

Charging Mode, Set.1:

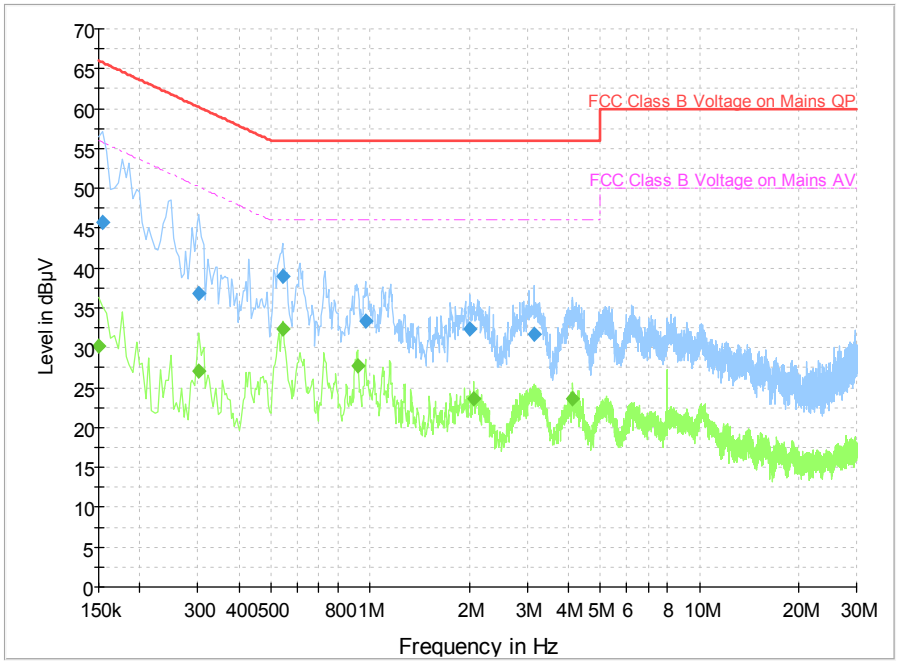

Fig A.13 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.154500	45.8	1000.0	9.000	On	L1	19.7	20.0	65.8	
0.303000	36.8	1000.0	9.000	On	L1	19.6	23.3	60.2	
0.541500	39.0	1000.0	9.000	On	L1	19.6	17.0	56.0	
0.969000	33.3	1000.0	9.000	On	L1	19.6	22.7	56.0	
2.008500	32.4	1000.0	9.000	On	L1	19.5	23.6	56.0	
3.156000	31.8	1000.0	9.000	On	L1	19.7	24.2	56.0	

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.150000	30.2	1000.0	9.000	On	L1	19.6	25.8	56.0	
0.303000	27.1	1000.0	9.000	On	L1	19.6	23.1	50.2	
0.541500	32.3	1000.0	9.000	On	L1	19.6	13.7	46.0	
0.915000	27.7	1000.0	9.000	On	L1	19.6	18.3	46.0	
2.062500	23.6	1000.0	9.000	On	L1	19.5	22.4	46.0	
4.132500	23.6	1000.0	9.000	On	L1	19.7	22.4	46.0	

Charging Mode, Set.2:

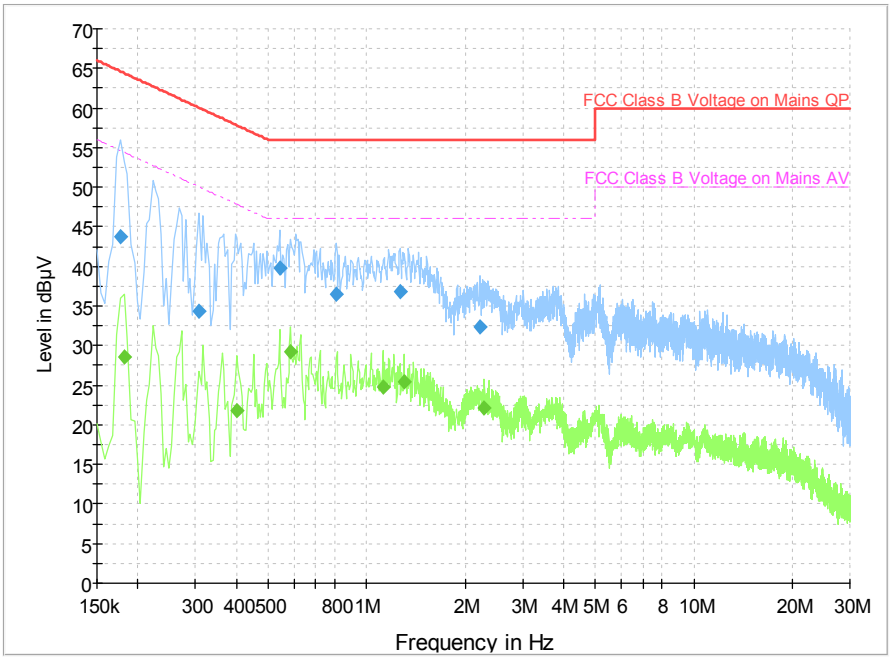

Fig A.14 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.177000	43.8	1000.0	9.000	On	L1	19.7	20.8	64.6	
0.307500	34.3	1000.0	9.000	On	L1	19.6	25.8	60.0	
0.541500	39.7	1000.0	9.000	On	N	19.5	16.3	56.0	
0.807000	36.5	1000.0	9.000	On	N	19.5	19.5	56.0	
1.270500	36.8	1000.0	9.000	On	L1	19.6	19.2	56.0	
2.215500	32.4	1000.0	9.000	On	L1	19.6	23.6	56.0	

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.181500	28.6	1000.0	9.000	On	N	19.5	25.8	54.4	
0.402000	21.7	1000.0	9.000	On	N	19.6	26.1	47.8	
0.586500	29.3	1000.0	9.000	On	L1	19.6	16.7	46.0	
1.122000	24.8	1000.0	9.000	On	L1	19.6	21.2	46.0	
1.302000	25.3	1000.0	9.000	On	L1	19.6	20.7	46.0	
2.292000	22.1	1000.0	9.000	On	L1	19.6	23.9	46.0	

USB Mode, Set.3:

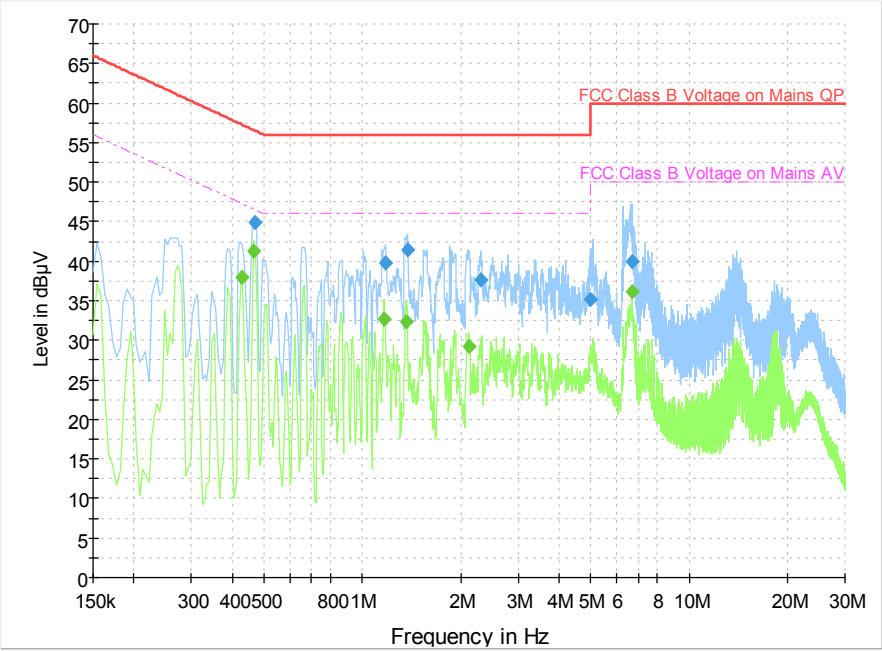

Fig A.15 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.469500	45.0	1000.0	9.000	On	N	19.6	11.5	56.5	
1.180500	39.8	1000.0	9.000	On	L1	19.6	16.2	56.0	
1.374000	41.4	1000.0	9.000	On	L1	19.6	14.6	56.0	
2.301000	37.6	1000.0	9.000	On	N	19.6	18.4	56.0	
4.996500	35.1	1000.0	9.000	On	N	19.7	20.9	56.0	
6.711000	40.0	1000.0	9.000	On	L1	19.7	20.0	60.0	

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.429000	38.0	1000.0	9.000	On	L1	19.6	9.3	47.3	
0.465000	41.3	1000.0	9.000	On	L1	19.6	5.3	46.6	
1.162500	32.6	1000.0	9.000	On	L1	19.6	13.4	46.0	
1.369500	32.4	1000.0	9.000	On	L1	19.6	13.6	46.0	
2.125500	29.1	1000.0	9.000	On	L1	19.5	16.9	46.0	
6.688500	36.1	1000.0	9.000	On	L1	19.7	13.9	50.0	

USB Mode, Set.4:

Fig A.16 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.474000	44.0	1000.0	9.000	On	N	19.6	12.4	56.4	
1.171500	40.1	1000.0	9.000	On	L1	19.6	15.9	56.0	
1.378500	41.4	1000.0	9.000	On	L1	19.6	14.6	56.0	
2.130000	38.5	1000.0	9.000	On	N	19.5	17.5	56.0	
4.996500	35.3	1000.0	9.000	On	N	19.7	20.7	56.0	
6.598500	41.5	1000.0	9.000	On	L1	19.7	18.5	60.0	

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.429000	38.2	1000.0	9.000	On	L1	19.6	9.1	47.3	
0.469500	42.1	1000.0	9.000	On	N	19.6	4.4	46.5	
0.861000	31.8	1000.0	9.000	On	L1	19.6	14.2	46.0	
1.360500	33.6	1000.0	9.000	On	L1	19.6	12.4	46.0	
2.130000	26.4	1000.0	9.000	On	L1	19.5	19.6	46.0	
6.688500	35.9	1000.0	9.000	On	L1	19.7	14.1	50.0	

USB Mode, Set.5:

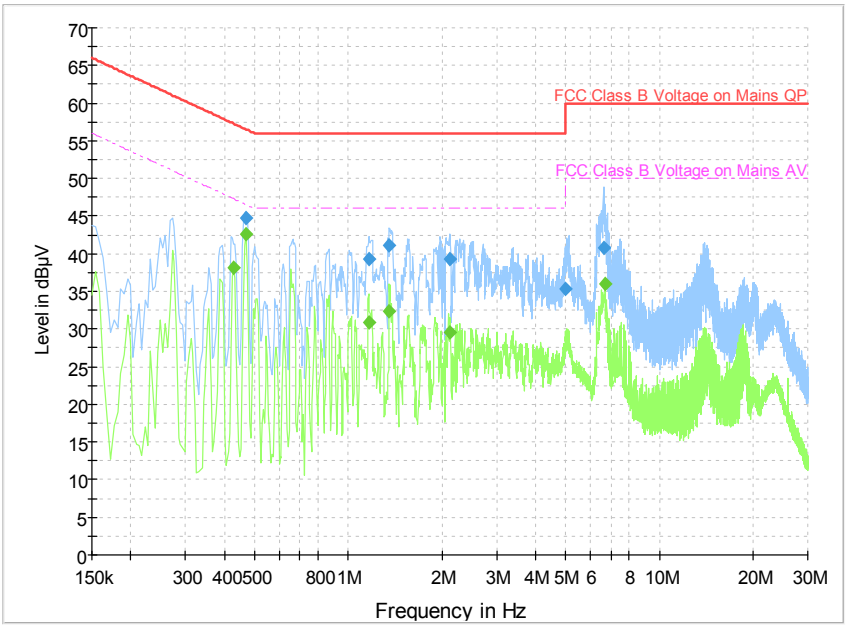

Fig A.17 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.469500	44.7	1000.0	9.000	On	N	19.6	11.8	56.5	
1.167000	39.4	1000.0	9.000	On	N	19.6	16.6	56.0	
1.356000	41.2	1000.0	9.000	On	L1	19.6	14.8	56.0	
2.125500	39.2	1000.0	9.000	On	L1	19.5	16.8	56.0	
4.992000	35.3	1000.0	9.000	On	N	19.7	20.7	56.0	
6.607500	40.9	1000.0	9.000	On	L1	19.7	19.1	60.0	

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.429000	38.1	1000.0	9.000	On	L1	19.6	9.2	47.3	
0.469500	42.5	1000.0	9.000	On	N	19.6	4.0	46.5	
1.162500	30.9	1000.0	9.000	On	N	19.6	15.1	46.0	
1.356000	32.4	1000.0	9.000	On	L1	19.6	13.6	46.0	
2.130000	29.6	1000.0	9.000	On	N	19.5	16.4	46.0	
6.688500	35.9	1000.0	9.000	On	L1	19.7	14.1	50.0	

USB Mode, Set.6:

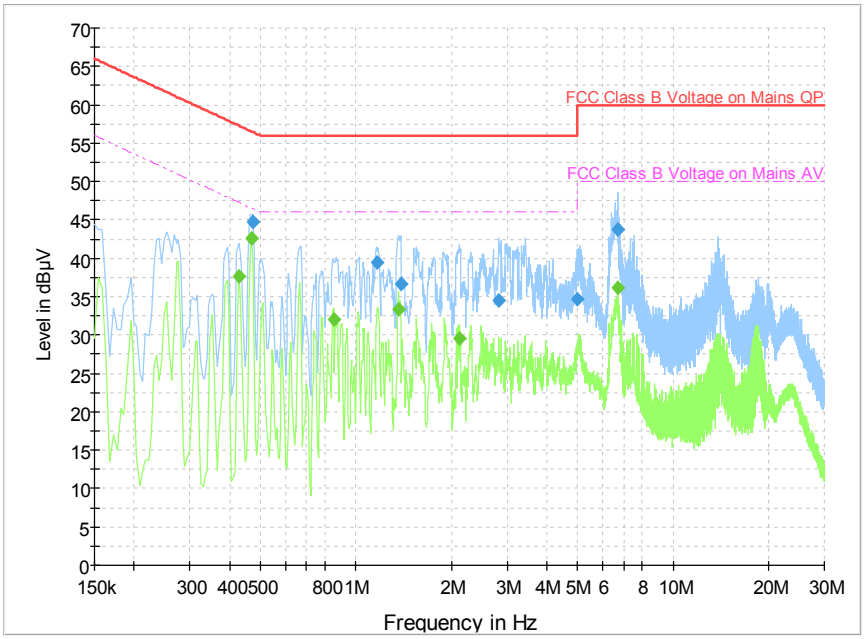

Fig A.18 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.474000	44.8	1000.0	9.000	On	L1	19.6	11.6	56.4	
1.162500	39.5	1000.0	9.000	On	L1	19.6	16.5	56.0	
1.387500	36.7	1000.0	9.000	On	L1	19.6	19.3	56.0	
2.818500	34.4	1000.0	9.000	On	N	19.6	21.6	56.0	
4.987500	34.6	1000.0	9.000	On	N	19.7	21.4	56.0	
6.688500	43.8	1000.0	9.000	On	L1	19.7	16.2	60.0	

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)	Comment
0.429000	37.6	1000.0	9.000	On	L1	19.6	9.7	47.3	
0.469500	42.6	1000.0	9.000	On	L1	19.6	3.9	46.5	
0.852000	32.0	1000.0	9.000	On	N	19.5	14.0	46.0	
1.360500	33.3	1000.0	9.000	On	N	19.6	12.7	46.0	
2.130000	29.6	1000.0	9.000	On	N	19.5	16.4	46.0	
6.688500	36.1	1000.0	9.000	On	L1	19.7	13.9	50.0	

ANNEX B: PERSONS INVOLVED IN THIS TESTING

Test Item	Test Software and Version	Software Vendor	Test operator
Conducted Emission	EMC32 V8.5.2	R&S	Yang Mengke
Radiated Emission	EMC32 V9.01.00	R&S	Ding Zai, Zhang Tianli

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