TEST REPORT

No. I19Z62331-EMC01

for

LG Electronics USA,Inc.

Multi-band GSM/WCDMA/LTE phone with Bluetooth, WLAN

Model Name: LM-K510BMW, LMK510BMW, K510BMW, LM-K510HM, LMK510HM, K510HM

FCC ID: ZNFK510HM

with

Issued Date: 2020-03-11

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

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

Tel:+86(0)10-62304633-2512, Fax:+86(0)10-62304633-2504

Email: cttl_terminals@caict.ac.cn, website: www.caict.ac.cn

REPORT HISTORY

Report Number	Revision	Description	Issue Date
I19Z62331-EMC01	Rev.0	1st edition	2020-03-06
I19Z62331-EMC01	Rev.1	Modify Client Information	2020-03-11

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1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2005 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. China100191

1.3. Testing Environment

Normal Temperature: 15-35°C

Relative Humidity: 20-75%

1.4. Project data

Testing Start Date: 2020-01-19

Testing End Date: 2020-02-19

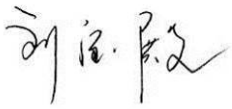
1.5. Signature

Li Yan

(Prepared this test report)

Zhang Ying

(Reviewed this test report)



Liu Baodian

Deputy Director of the laboratory

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	LG Electronics USA,Inc.
Address:	1000 Sylvan Avenue,Englewood Cliffs NJ 07632
City:	/
Postal Code:	/
Country:	/
Contact:	/
Email:	/
Telephone:	/

2.2. Manufacturer Information

Company Name:	LG Electronics Inc.
Address:	LG Twin Towers,128,Yeoui-daero,Yeongdeungpo-gu,Seoul， Korea 150-721
City:	/
Postal Code:	/
Country:	Korea
Contact:	/
Email:	/
Telephone:	+82-2-6946-1675

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

3.1. About EUT

Description	Multi-band GSM/WCDMA/LTE phone with Bluetooth, WLAN
Model Name	LM-K510BMW, LMK510BMW, K510BMW, LM-K510HM, LMK510HM, K510HM
FCC ID	ZNFK510HM
Extreme vol. Limits	3.6VDC to 4.2VDC (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
EUT2	353265110055490/ 353265110055508

*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	/	Inbuilt
AE2	Charger	/	/
AE3	USB Cable	/	/
AE4	Headset	/	/

AE1

Model	BL-T49
Manufacturer	ATL
Capacitance	4000mAh
Nominal voltage	3.87v

AE2

Model	MCS-V02WR
Manufacturer	Sunlin Electrocnis
Length of cable	/

AE3

Model	DC15WB-G
Manufacturer	Ningbo
Length of cable	/

AE4

Model	EAB64468444
Manufacturer	Cresyn
Length of cable	/

Note: The USB cables are shielded.

3.4. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT2+ AE1 + AE2+ AE3	Charger+CAMERA
Set.2	EUT2+ AE1 + AE3+ AE4	USB mode +FM
Set.3	EUT2+ AE1 + AE2+ AE3	Charger+MP4
Set.4	EUT2+ AE1 + AE3	USB mode(SD Card)+MP3
Set.5	EUT2+ AE1 + AE2+ AE3	License RX band mode

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 (23 meters×17 meters×10 meters) 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/10m distance, from 30 to 1000 MHz
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz
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	< 4 Ω

6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:		
Verdict Column	P	Pass
	NA	Not applicable
	F	Fail
	BR	Re-use test data from basic model report.

Items	Test Name	Clause in FCC rules	Section in this report	Verdict	Test Location
1	Radiated Emission	15.109(a)	A.1	P	**CTTL(huayuan North Road)**
2	Conducted Emission	15.107(a)	A.2	P	**CTTL(huayuan North Road)**

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	Universal Radio Communication Tester	CMW500	150344	R&S	2020-11-17	1 Year
2	Universal Radio Communication Tester	CMW500	116588	R&S	2020-12-05	1 Year
3	EMI Antenna	3115	00167250	R&S	2020-05-15	1 year
4	Test Receiver	ESCI	100344	R&S	2021-02-27	1 Year
5	LISN	ENV216	101200	R&S	2020-03-14	1 Year
6	Test Receiver	ESU26	100235	Rohde & Schwarz	2020-03-01	1 Year
7	BiLog Antenna	VULB9163	9163-1222	Schwarzbeck	2020-03-14	1 Year
8	Printer	P1606dn	VNC3L52122	HP	N/A	N/A
9	Keyboard	KU-1601	2048361	Lenovo	N/A	N/A
10	Mouse	EMS-537A	8021S3MC	Lenovo	N/A	N/A

Test Item	Test Software and Version	Software Vendor
Radiated Continuous Emission	EMC32 V9.01.00	R&S
Conducted Emission	EMC32 V8.52.0	R&S

Note: The Test Receiver which series number is 100235 was before Cal Due Date when used.

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 10 meters(for 30MHz-1GHz) and 3 meters (for above 1GHz) 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 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, charging mode, MP3, MP4, CAMERA, SD and License RX band mode.

License RX band mode:

Test mode: GSM850, WCDMA BAND 5, LTE BAND 5, LTE BAND 12, LTE BAND 13.

The model of the PC is Lenovo M4000e-17, and the serial number of the PC is M706RMW2. 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/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): 30MHz-1GHz：5.16dB, 1GHz-18GHz：5.44dB, *k*=2.

Measurement results for Set.1:

Charging Mode+ CAMERA /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)
17998.300	33.6	-17.7	45.6	5.700	54.0	20.4	H
17960.333	33.5	-17.7	45.6	5.600	54.0	20.5	H
17988.667	33.3	-17.7	45.6	5.400	54.0	20.7	V
17989.233	33.3	-17.7	45.6	5.400	54.0	20.7	H
17997.733	33.3	-17.7	45.6	5.400	54.0	20.7	H
17915.567	33.2	-17.7	45.6	5.300	54.0	20.8	H

Charging Mode+ CAMERA /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)
17967.700	45.7	-17.7	45.6	17.800	74.0	28.3	H
17796.567	44.1	-18.5	45.6	17.000	74.0	29.9	H
17950.700	44.0	-17.7	45.6	16.100	74.0	30.0	V
17917.833	43.9	-17.7	45.6	16.000	74.0	30.1	H
17930.300	43.8	-17.7	45.6	15.900	74.0	30.2	H
17890.067	43.8	-18.5	45.6	16.700	74.0	30.2	H

Measurement results for Set.2:

USB Mode +FM /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)
17968.267	33.9	-17.7	45.6	6.000	54.0	20.1	H
17952.400	33.9	-17.7	45.6	6.000	54.0	20.1	H
17974.500	33.8	-17.7	45.6	5.900	54.0	20.2	V
17995.467	33.8	-17.7	45.6	5.900	54.0	20.2	H
17998.867	33.8	-17.7	45.6	5.900	54.0	20.2	H
17967.700	33.8	-17.7	45.6	5.900	54.0	20.2	H

USB Mode +FM /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)
1194.367	51.5	-41.2	24.1	68.600	74.0	22.5	H
1198.900	51.2	-41.3	24.1	68.400	74.0	22.8	H
17773.333	45.0	-18.5	45.6	17.900	74.0	29.0	V
1659.033	45.0	-39.5	25.3	59.200	74.0	29.0	H
17611.833	44.7	-18.9	45.6	18.000	74.0	29.3	H
1199.467	44.7	-41.3	24.1	61.900	74.0	29.3	H

Measurement results for Set.3:

Charger+MP4 /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)
17983.567	33.5	-17.7	45.6	5.600	54.0	20.5	H
17968.267	33.3	-17.7	45.6	5.400	54.0	20.7	H
17980.167	33.1	-17.7	45.6	5.200	54.0	20.9	V
17965.433	33.1	-17.7	45.6	5.200	54.0	20.9	H
17998.867	33.1	-17.7	45.6	5.200	54.0	20.9	H
17977.333	33.0	-17.7	45.6	5.100	54.0	21.0	H

Charger+MP4 /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)
17881.567	45.4	-18.5	45.6	18.300	74.0	28.6	H
17940.500	45.2	-17.7	45.6	17.300	74.0	28.8	H
17930.867	45.0	-17.7	45.6	17.100	74.0	29.0	V
17860.033	44.9	-18.5	45.6	17.800	74.0	29.1	H
17917.267	44.8	-17.7	45.6	16.900	74.0	29.2	H
17890.633	44.5	-18.5	45.6	17.400	74.0	29.5	H

Measurement results for Set.4:

USB mode (SD Card) +MP3/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)
17971.100	33.2	-17.7	45.6	5.300	54.0	20.8	H
17998.867	33.2	-17.7	45.6	5.300	54.0	20.8	H
17828.300	33.2	-18.5	45.6	6.100	54.0	20.8	V
17954.100	33.0	-17.7	45.6	5.100	54.0	21.0	H
17972.233	33.0	-17.7	45.6	5.100	54.0	21.0	H
17996.600	33.0	-17.7	45.6	5.100	54.0	21.0	H

USB mode (SD Card) +MP3 /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)
17943.333	45.2	-17.7	45.6	17.300	74.0	28.8	H
17989.800	44.8	-17.7	45.6	16.900	74.0	29.2	H
17998.867	44.8	-17.7	45.6	16.900	74.0	29.2	V
17997.167	44.7	-17.7	45.6	16.800	74.0	29.3	H
17871.367	44.6	-18.5	45.6	17.500	74.0	29.4	H
17875.333	44.6	-18.5	45.6	17.500	74.0	29.4	H

Charging Mode+ CAMERA, Set.1

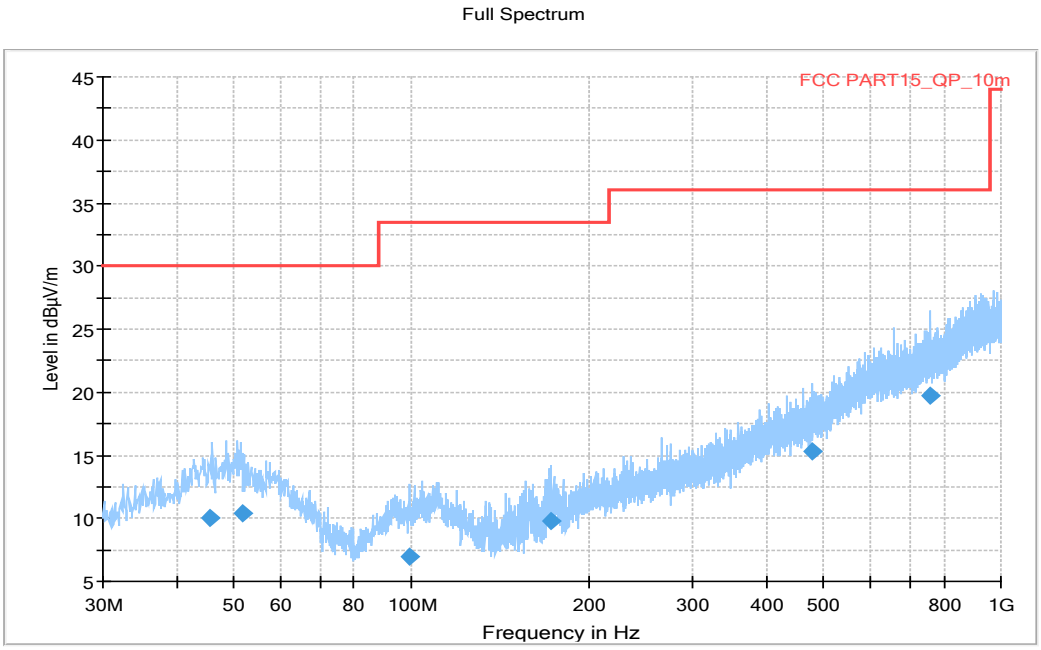


Figure A.1 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)
45.465000	10.04	30.00	19.96	1000.0	325.0	V	151.0
51.580000	10.43	30.00	19.57	1000.0	125.0	V	30.0
99.032000	7.01	33.50	26.51	1000.0	400.0	V	167.0
172.15600	9.80	33.50	23.72	1000.0	107.0	V	97.0
479.30400	15.26	36.00	20.76	1000.0	112.0	H	116.0
760.02200	19.75	36.00	16.27	1000.0	377.0	H	192.0

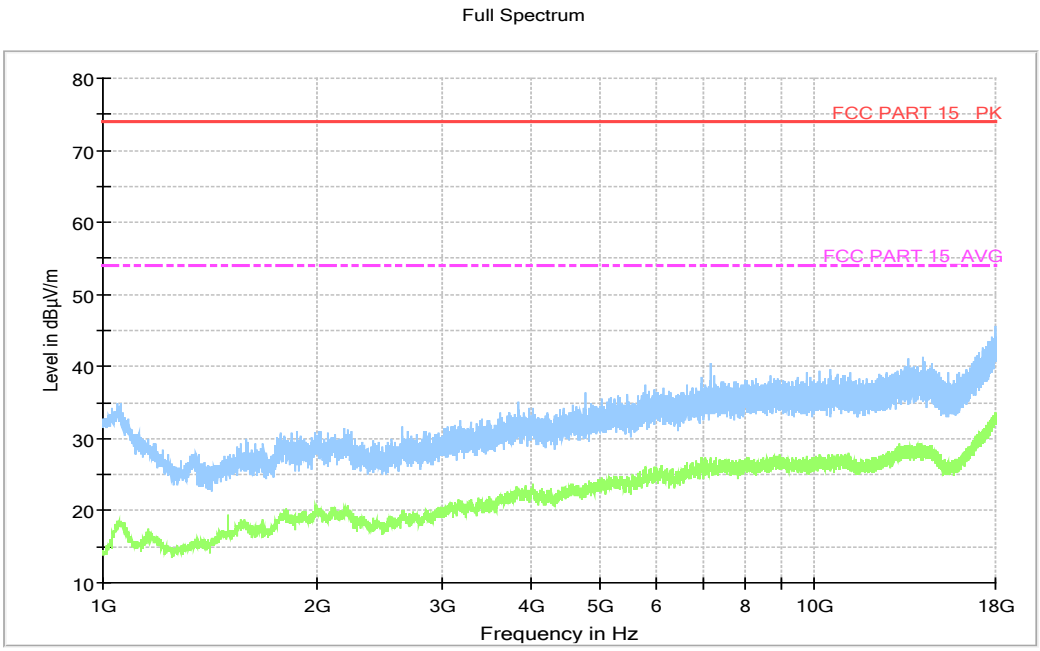


Figure A.2 Radiated Emission from 1GHz to 18GHz

USB Mode +FM, Set.2

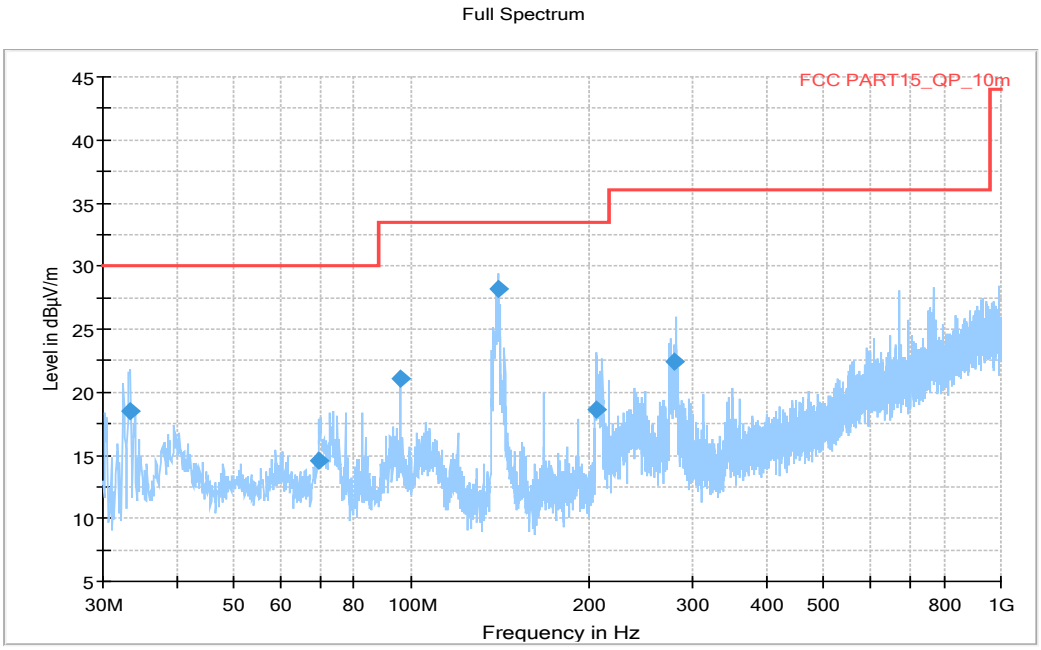


Figure A.3 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)
33.298000	18.47	30.00	11.53	1000.0	325.0	V	168.0
69.858000	14.54	30.00	15.46	1000.0	177.0	V	269.0
96.020000	21.09	33.50	12.43	1000.0	114.0	V	30.0
140.67200	28.14	33.50	5.38	1000.0	115.0	V	150.0
205.69000	18.68	33.50	14.84	1000.0	121.0	V	202.0
280.26500	22.45	36.00	13.57	1000.0	125.0	V	150.0

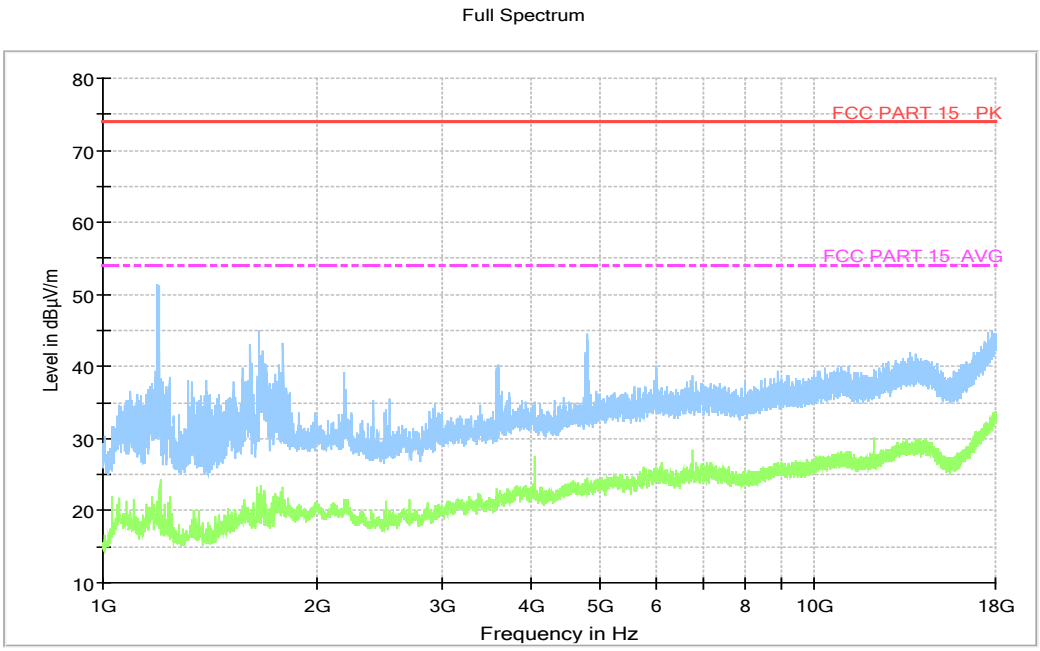


Figure A.4 Radiated Emission from 1GHz to 18GHz

Charging Mode+MP4, Set.3

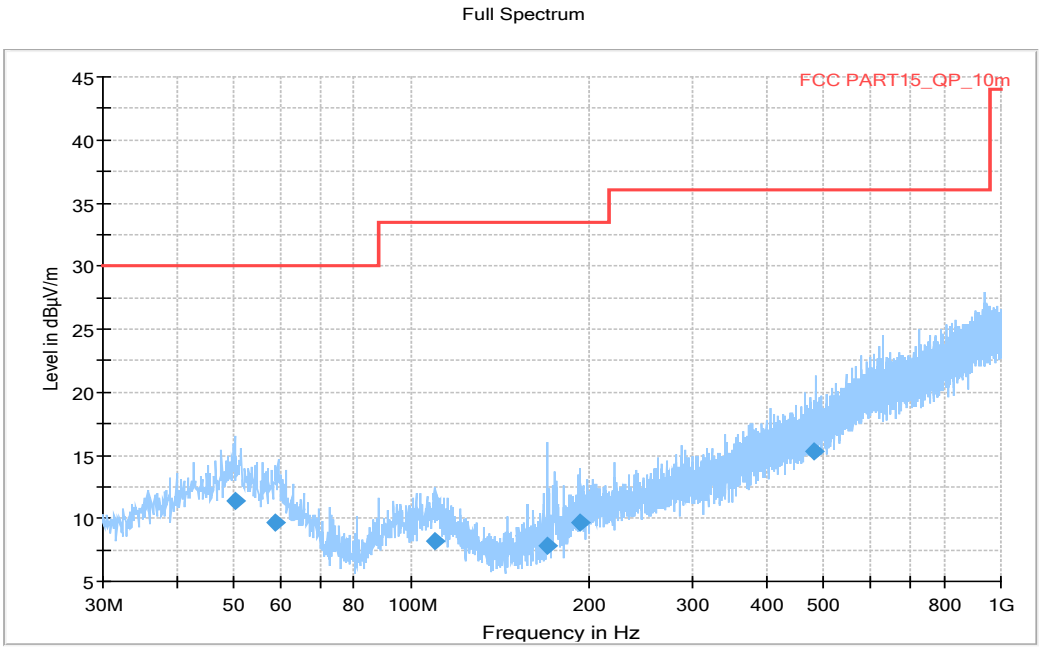


Figure A.5 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)
50.416000	11.32	30.00	18.68	1000.0	120.0	V	240.0
58.948000	9.62	30.00	20.38	1000.0	188.0	V	120.0
109.64600	8.17	33.50	25.35	1000.0	325.0	V	263.0
170.09100	7.87	33.50	25.65	1000.0	119.0	V	120.0
192.82600	9.70	33.50	23.82	1000.0	107.0	V	18.0
483.36000	15.36	36.00	20.66	1000.0	214.0	V	186.0

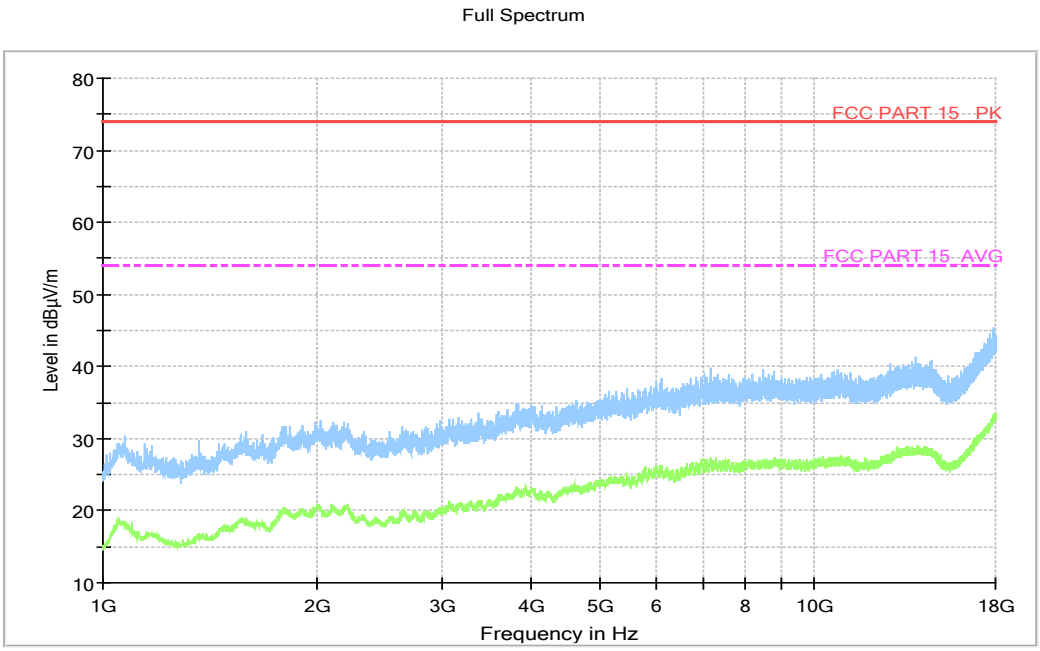


Figure A.6 Radiated Emission from 1GHz to 18GHz

USB mode(SD Card)+MP3, Set.4

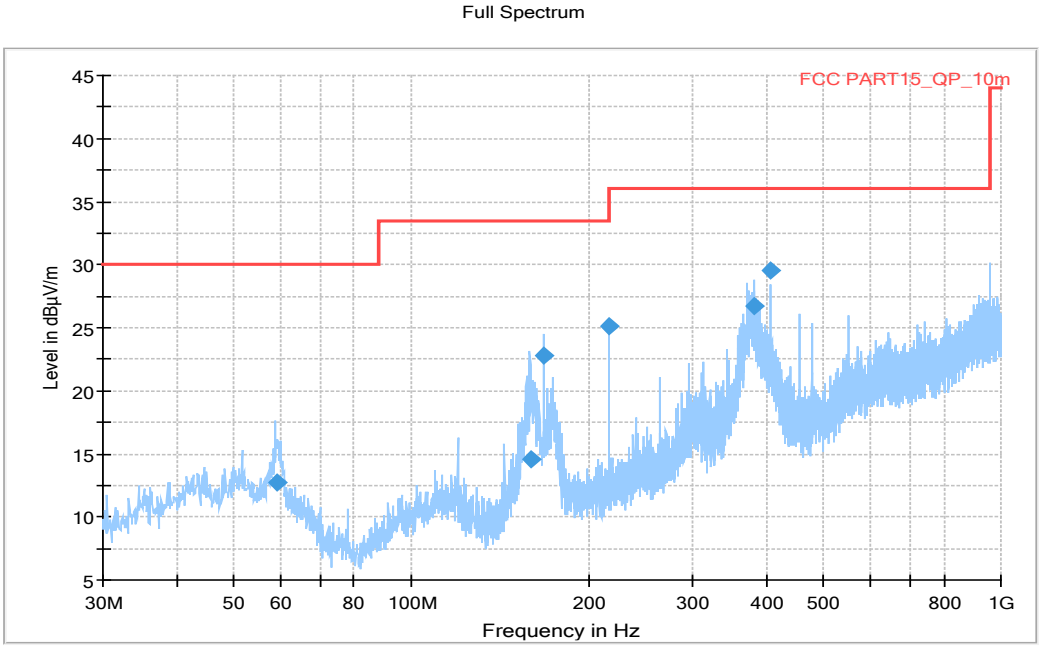


Figure A.7 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)
59.289000	12.76	30.00	17.24	1000.0	284.0	V	261.0
159.61000	14.53	33.50	18.99	1000.0	125.0	V	158.0
168.03100	22.83	33.50	10.69	1000.0	106.0	V	250.0
216.00900	25.09	36.00	10.93	1000.0	110.0	V	280.0
381.84200	26.66	36.00	9.36	1000.0	102.0	V	20.0
408.00900	29.53	36.00	6.49	1000.0	103.0	V	-15.0

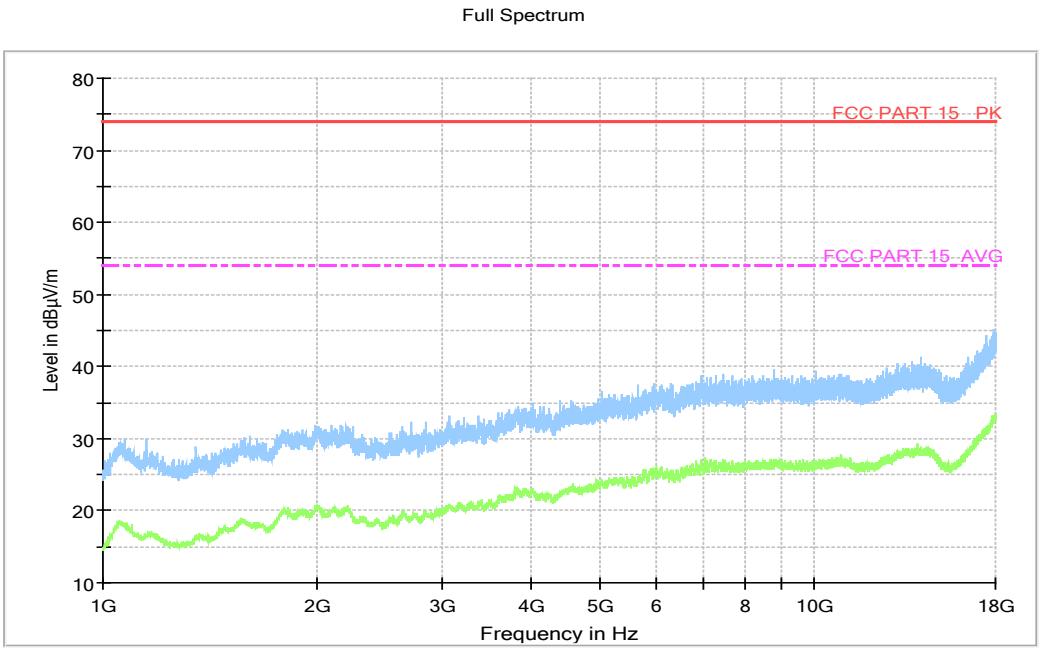


Figure A.8 Radiated Emission from 1GHz to 18GHz

License RX band mode, Set.5

GSM850MHz LOW CHANNEL (869.2MHz)

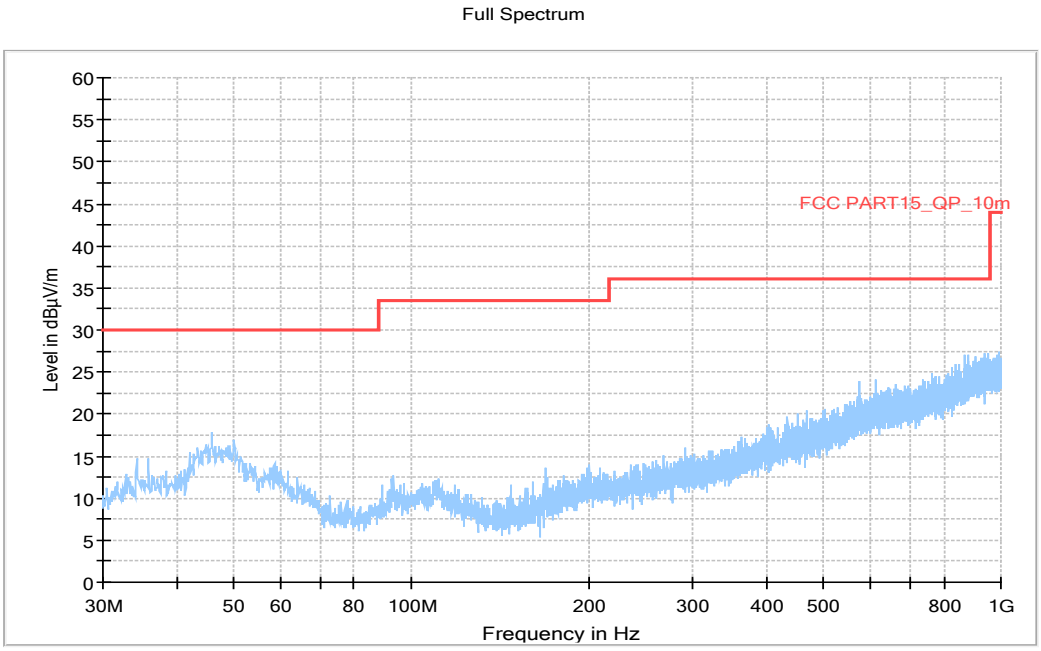


Figure A.9 Radiated Emission from 30MHz to 1GHz

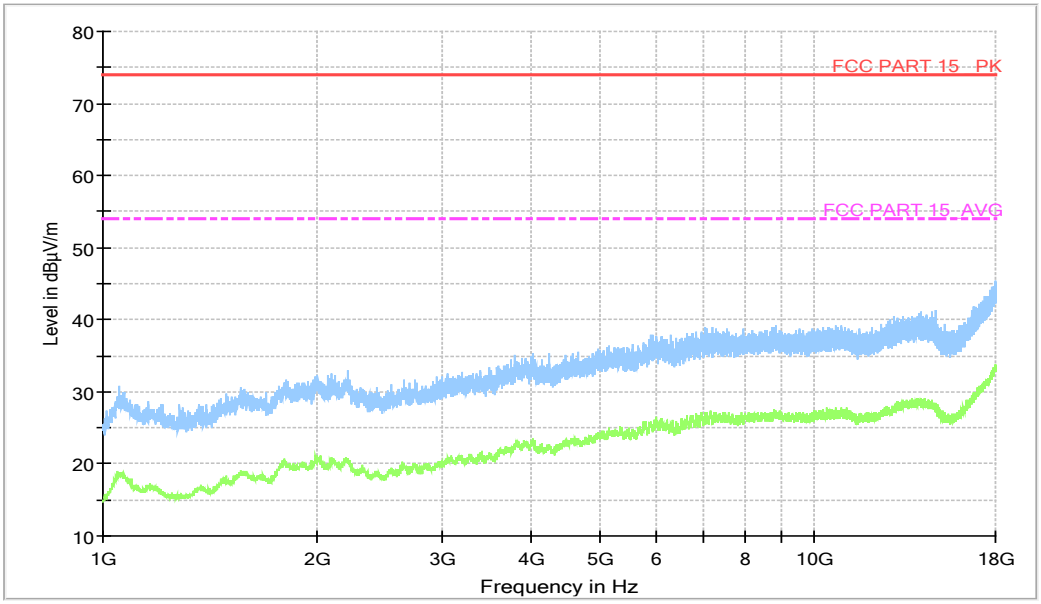


Figure A.10 Radiated Emission from 1GHz to 18GHz

GSM850MHz MID CHANNEL (881.6MHz)

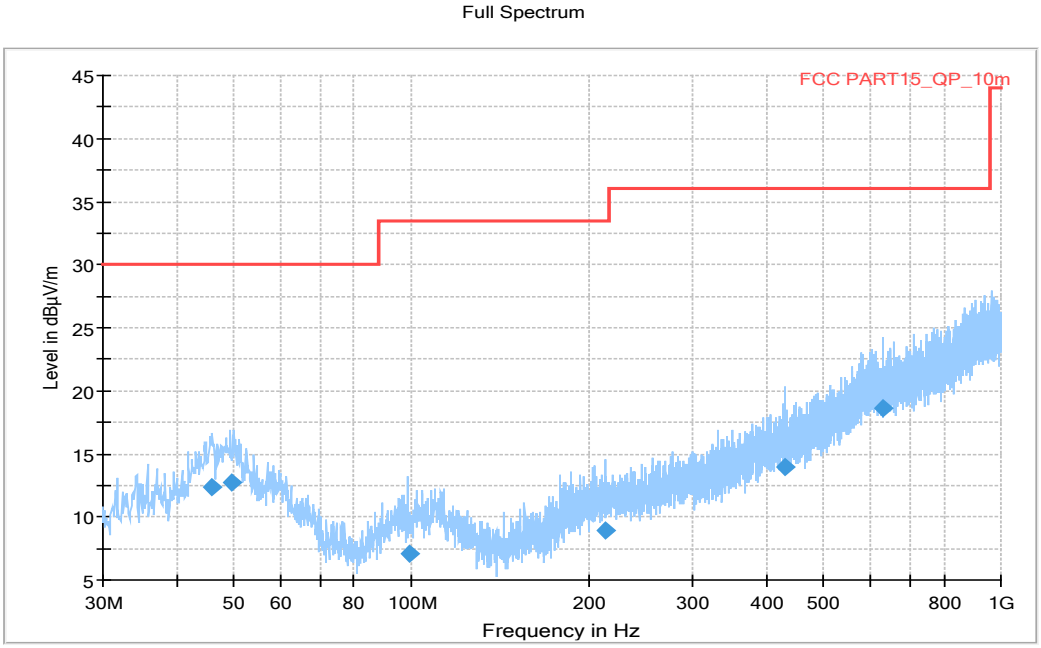


Figure A.11 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)
45.825000	12.40	30.00	17.60	1000.0	125.0	V	247.0
49.700000	12.77	30.00	17.23	1000.0	125.0	V	11.0
99.013000	7.09	33.50	26.43	1000.0	321.0	V	254.0
213.63000	8.91	33.50	24.61	1000.0	313.0	V	60.0
429.04000	13.96	36.00	22.06	1000.0	181.0	V	24.0
629.26600	18.58	36.00	17.44	1000.0	190.0	V	120.0

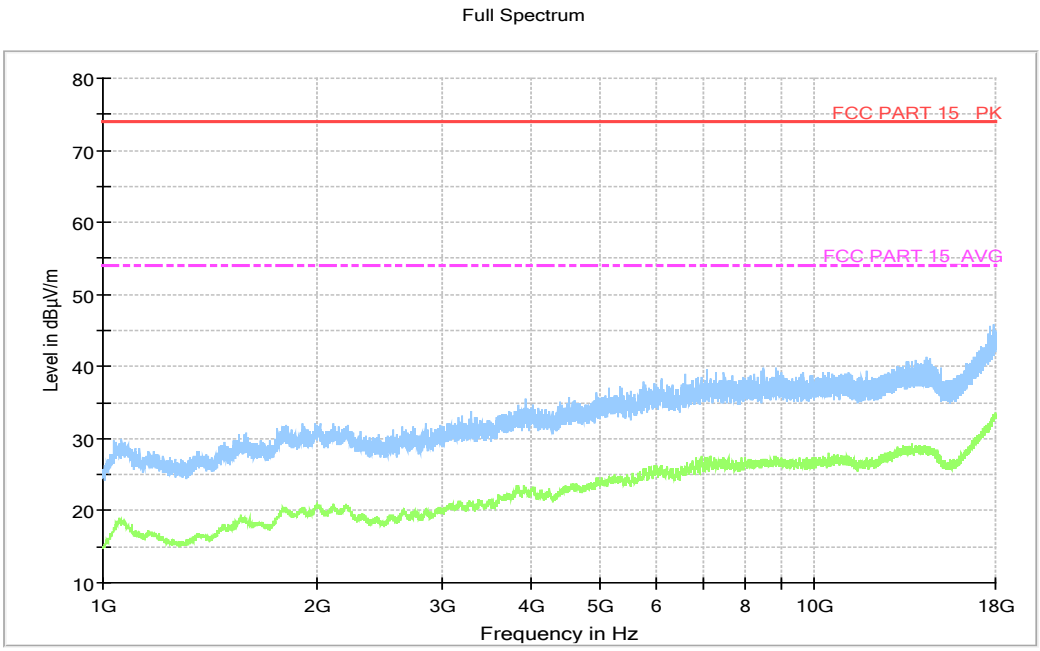


Figure A.12 Radiated Emission from 1GHz to 18GHz

GSM850MHz HIGH CHANNEL (893.8MHz)

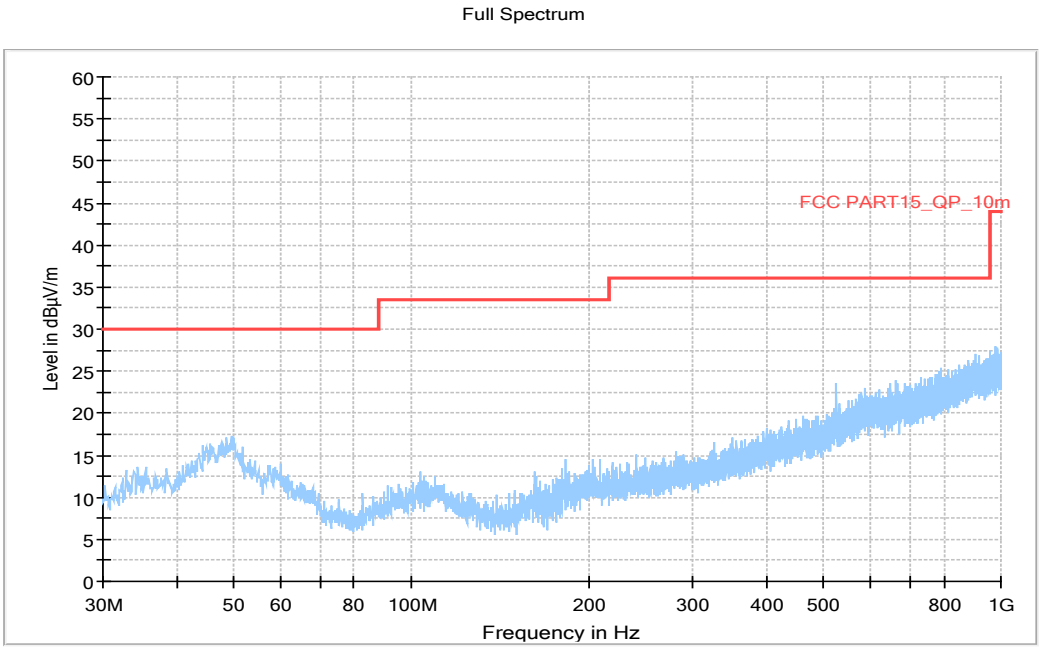


Figure A.13 Radiated Emission from 30MHz to 1GHz

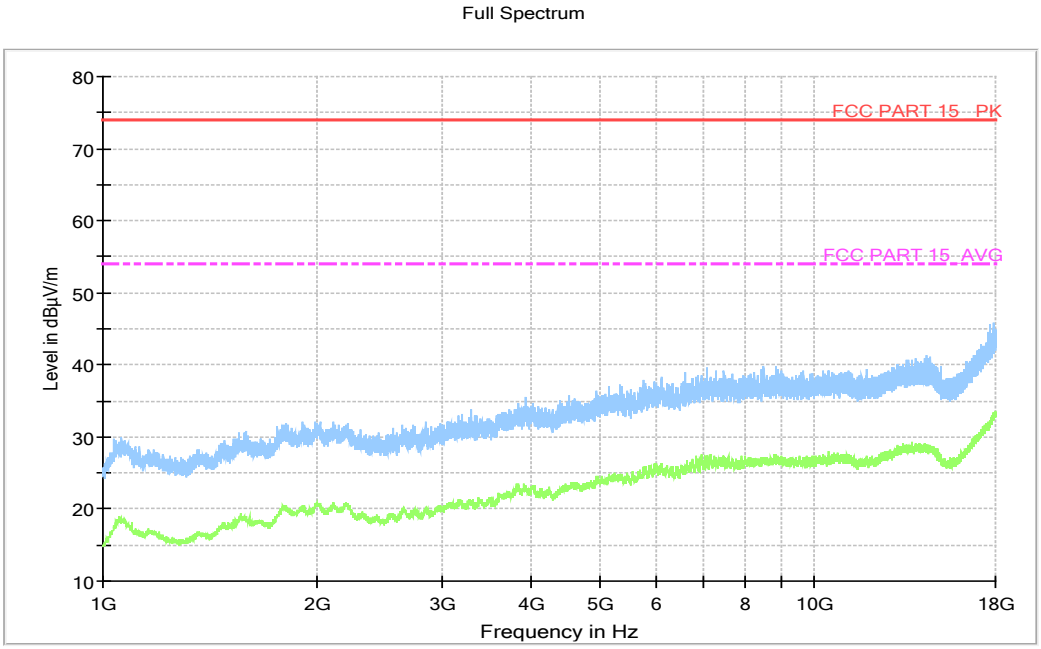


Figure A.14 Radiated Emission from 1GHz to 18GHz

WCDMA Band 5 LOW CHANNEL (871.4MHz)

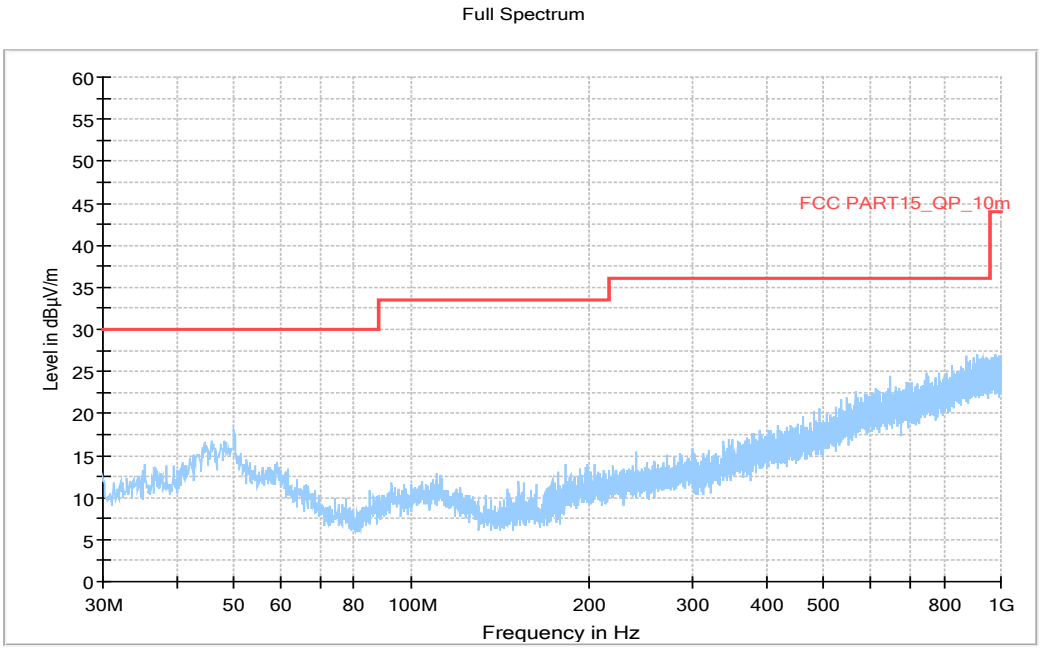


Figure A.15 Radiated Emission from 30MHz to 1GHz

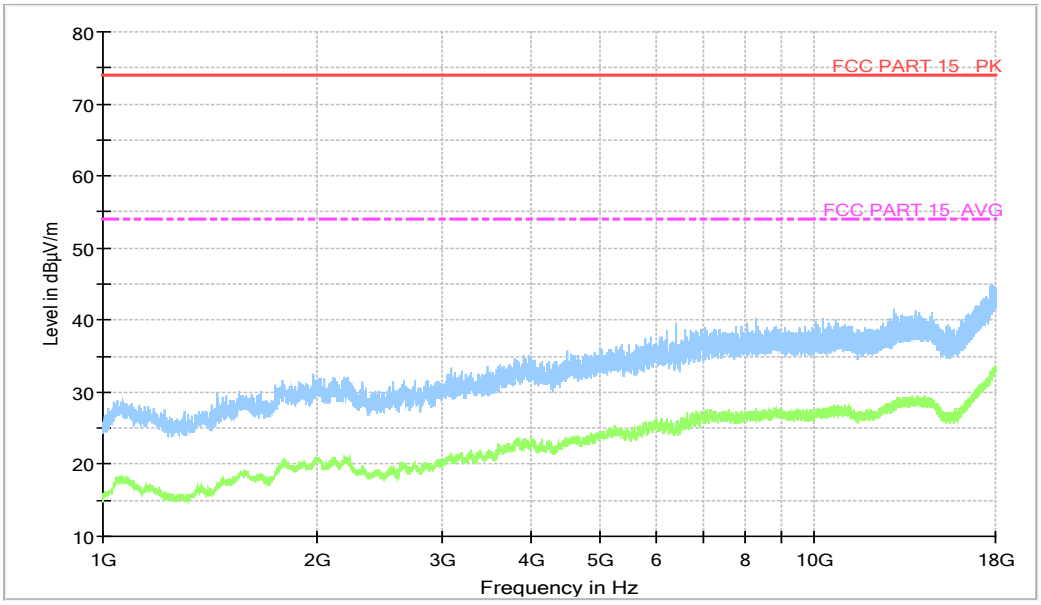


Figure A.16 Radiated Emission from 1GHz to 18GHz

WCDMA Band 5 MID CHANNEL (881.6MHz)

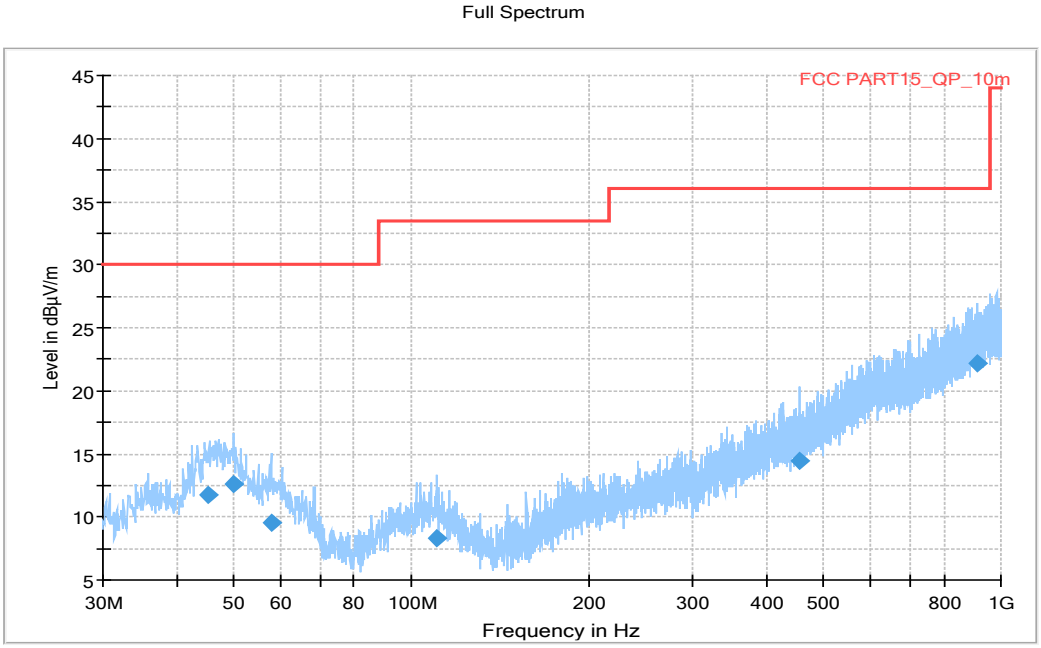


Figure A.17 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)
45.247000	11.71	30.00	18.29	1000.0	325.0	V	170.0
50.005000	12.64	30.00	17.36	1000.0	111.0	V	30.0
57.959000	9.49	30.00	20.51	1000.0	194.0	V	263.0
110.47300	8.31	33.50	25.21	1000.0	125.0	V	255.0
456.19500	14.39	36.00	21.63	1000.0	103.0	V	261.0
914.57100	22.13	36.00	13.89	1000.0	303.0	V	89.0

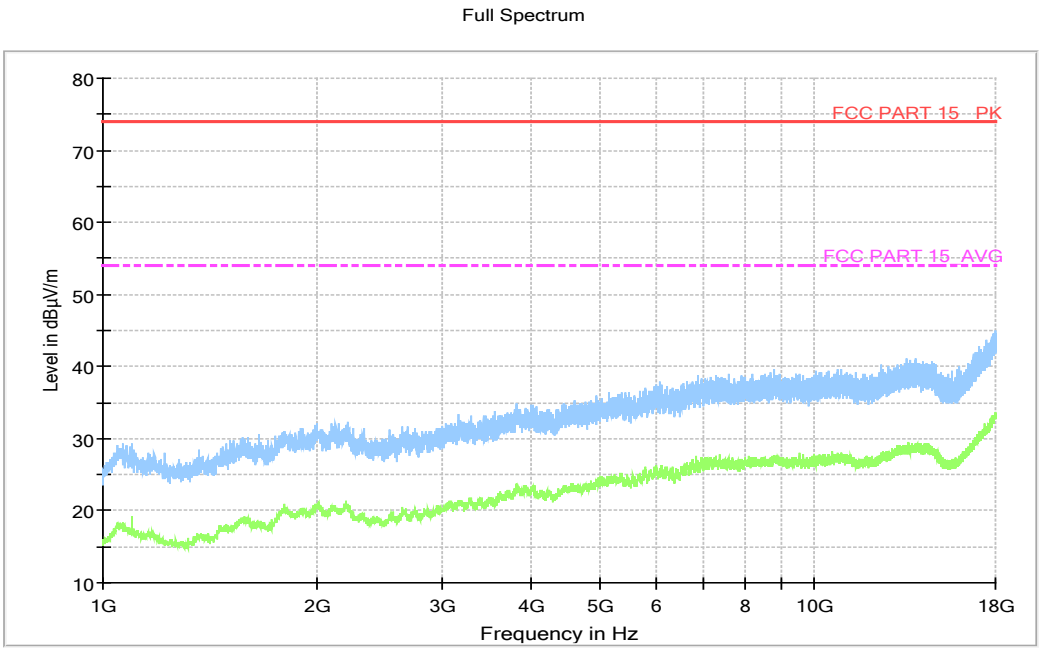


Figure A.18 Radiated Emission from 1GHz to 18GHz

WCDMA Band 5 HIGH CHANNEL (891.6MHz)

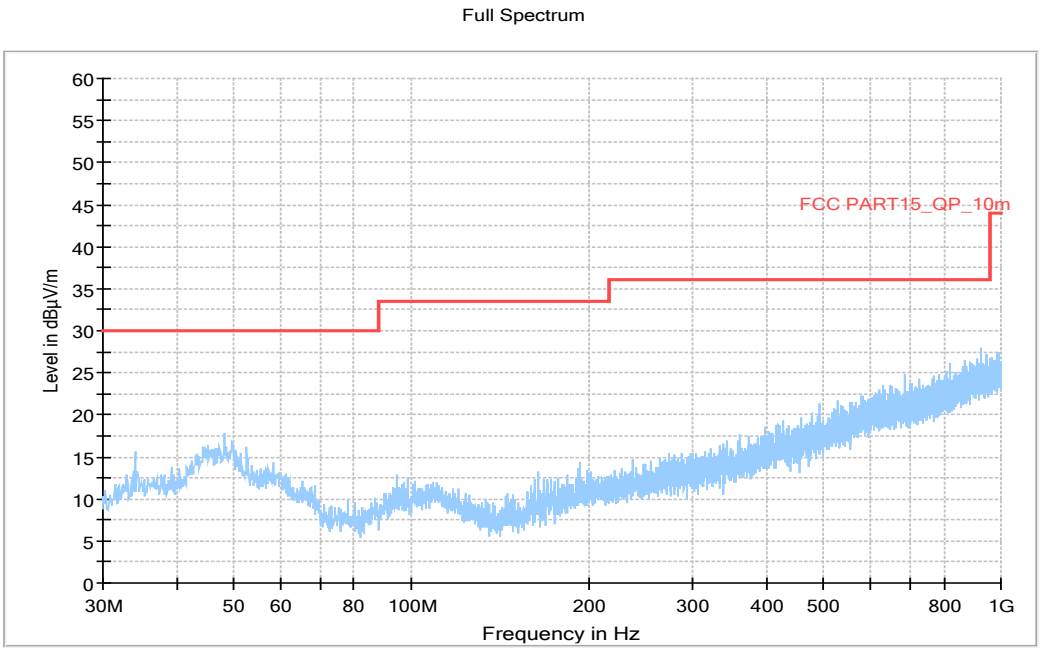


Figure A.19 Radiated Emission from 30MHz to 1GHz

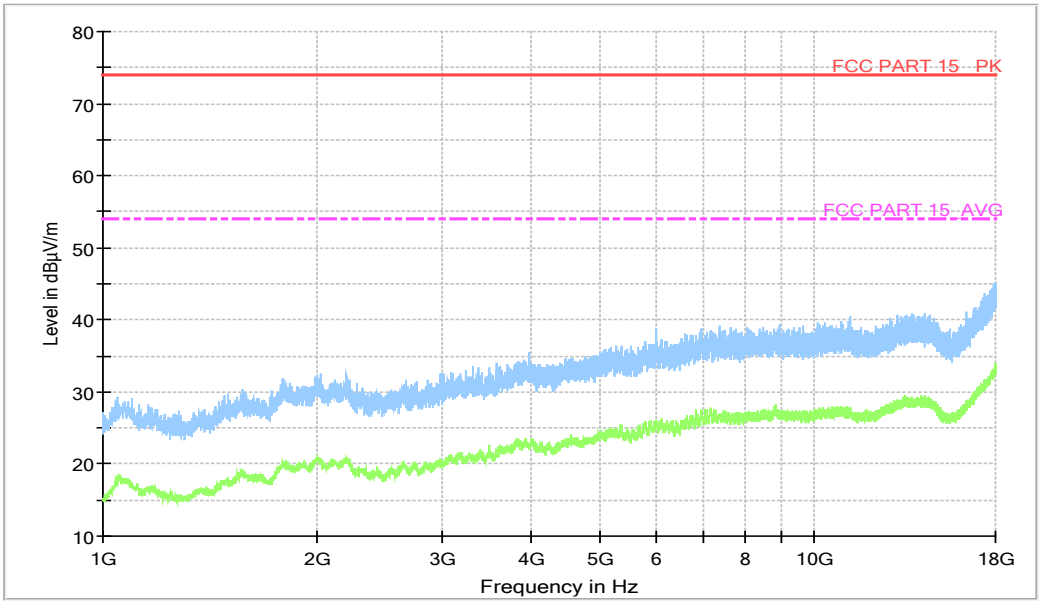


Figure A.20 Radiated Emission from 1GHz to 18GHz

LTE Band 5 LOW CHANNEL (869.7MHz)

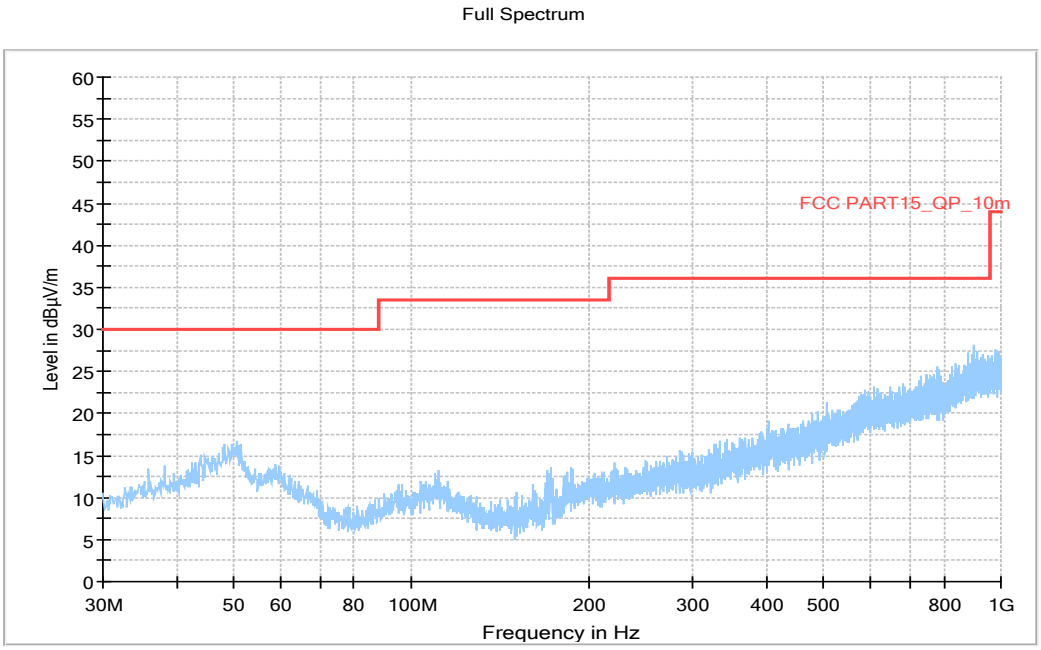


Figure A.21 Radiated Emission from 30MHz to 1GHz

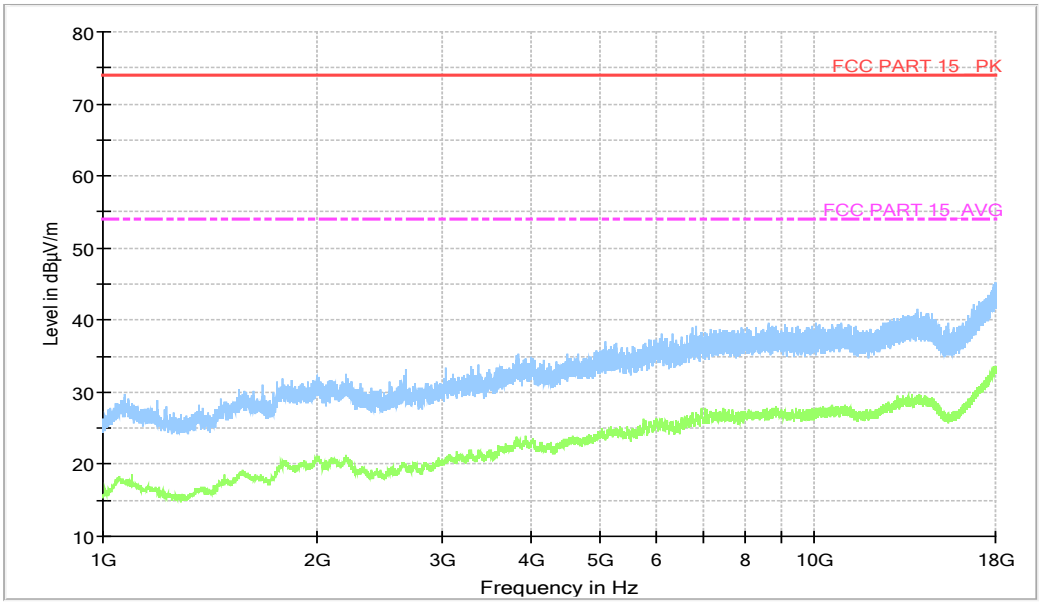


Figure A.22 Radiated Emission from 1GHz to 18GHz

LTE Band 5 MID CHANNEL (881.5MHz)

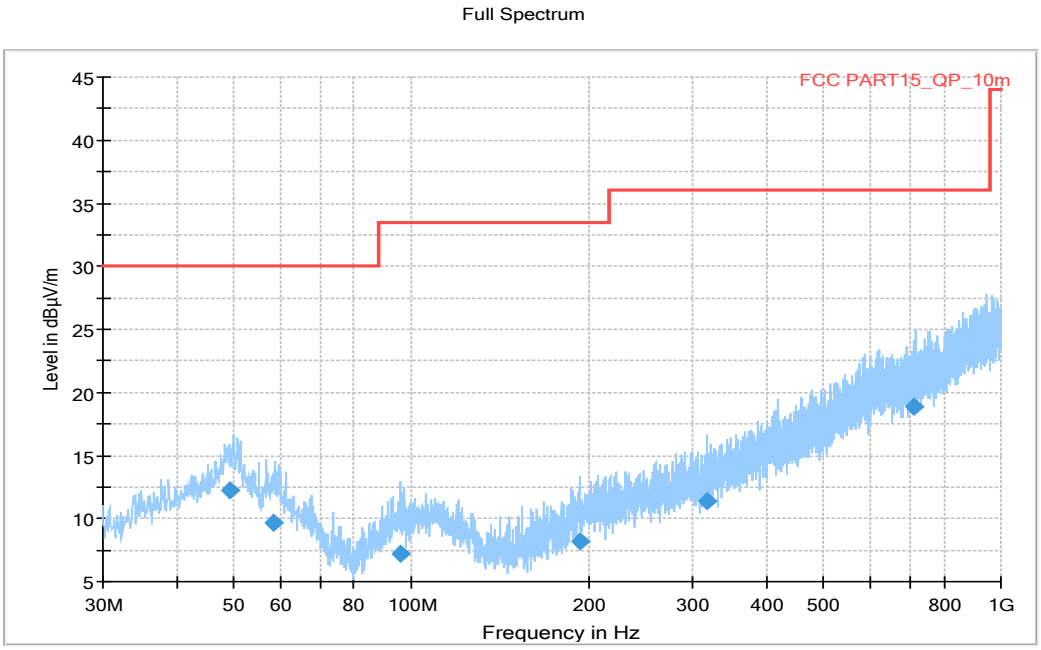


Figure A.23 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)
49.345000	12.21	30.00	17.79	1000.0	107.0	V	84.0
58.255000	9.61	30.00	20.39	1000.0	305.0	V	261.0
96.177000	7.22	33.50	26.30	1000.0	175.0	V	160.0
193.26900	8.22	33.50	25.30	1000.0	225.0	V	120.0
317.84100	11.42	36.00	24.60	1000.0	299.0	V	2.0
710.00200	18.89	36.00	17.13	1000.0	183.0	V	94.0

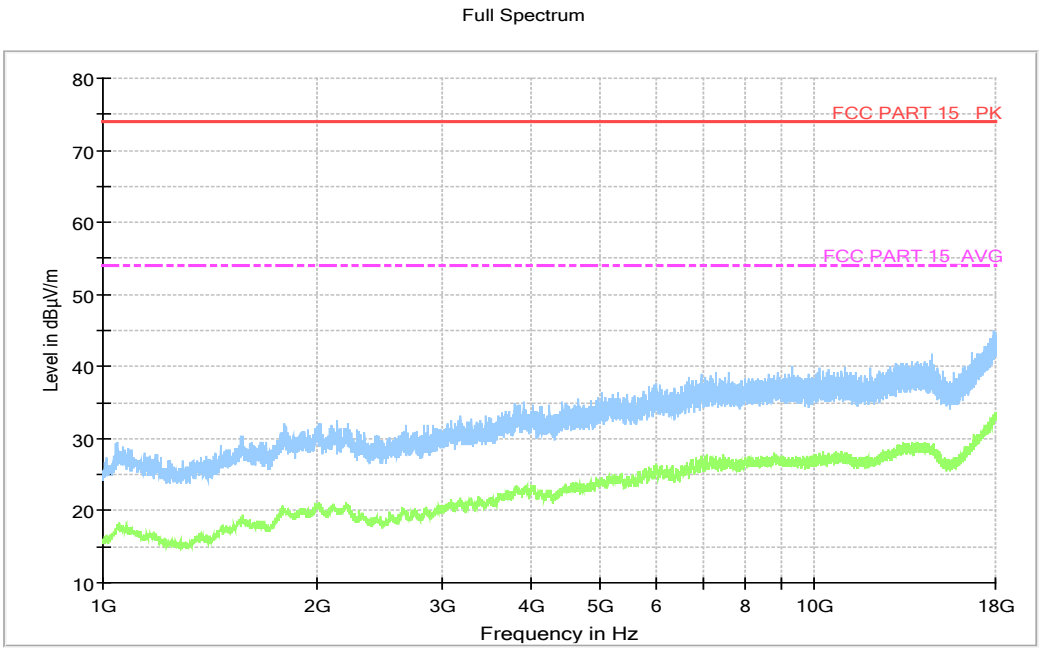


Figure A.24 Radiated Emission from 1GHz to 3GHz

LTE Band 5 HIGH CHANNEL (893.3MHz)

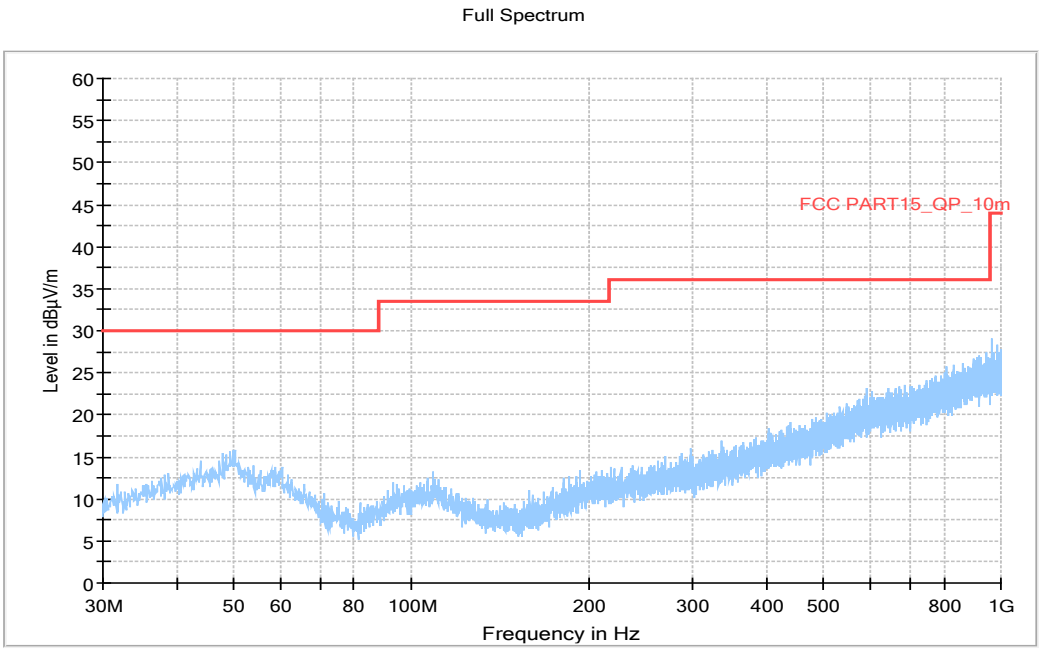


Figure A.25 Radiated Emission from 30MHz to 1GHz

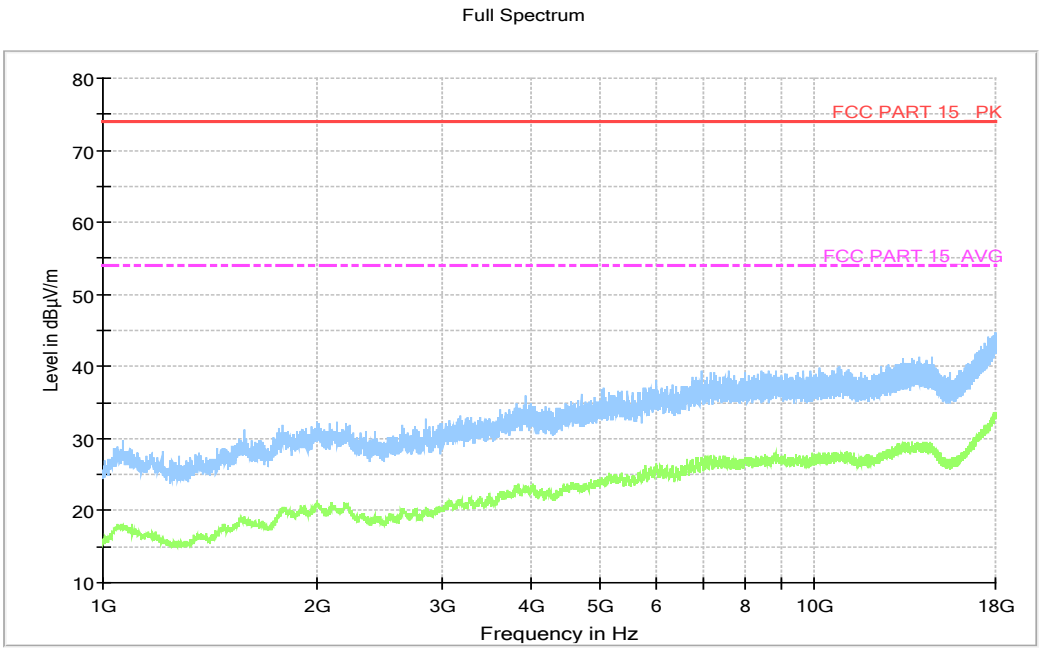


Figure A.26 Radiated Emission from 1GHz to 18GHz

LTE Band 12 LOW CHANNEL (729.7MHz)

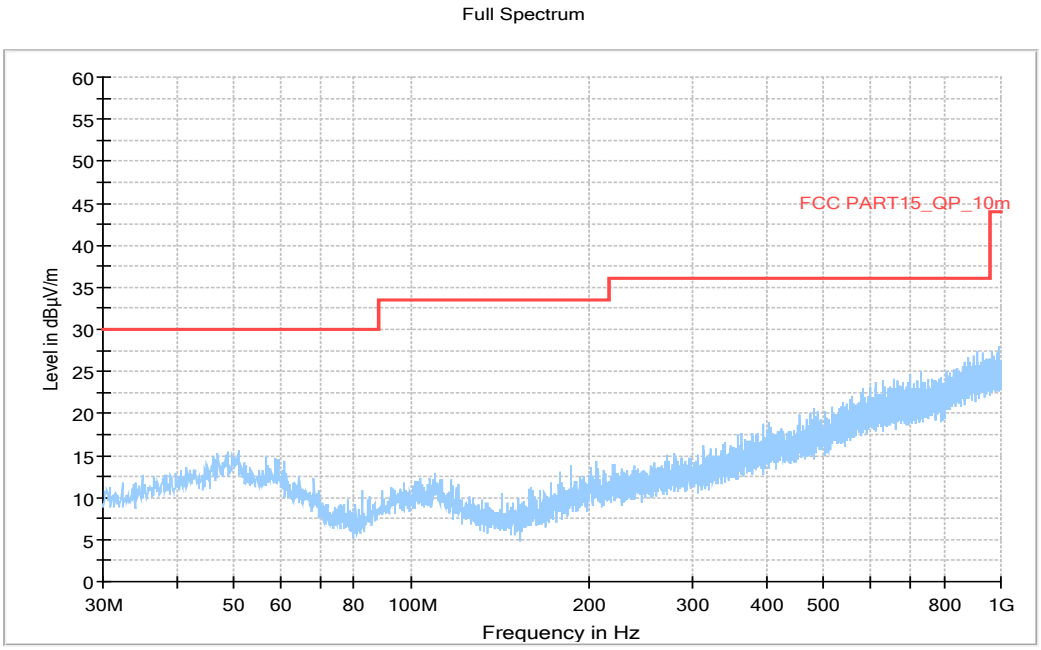


Figure A.27 Radiated Emission from 30MHz to 1GHz

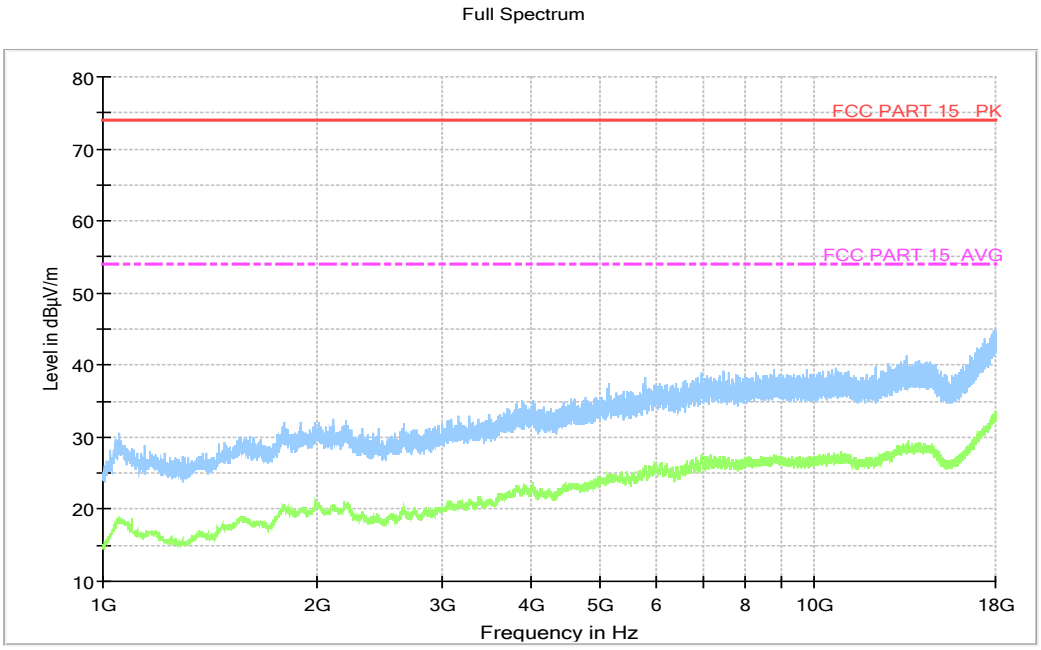


Figure A.28 Radiated Emission from 1GHz to 18GHz

LTE Band 12 MID CHANNEL (737.5MHz)

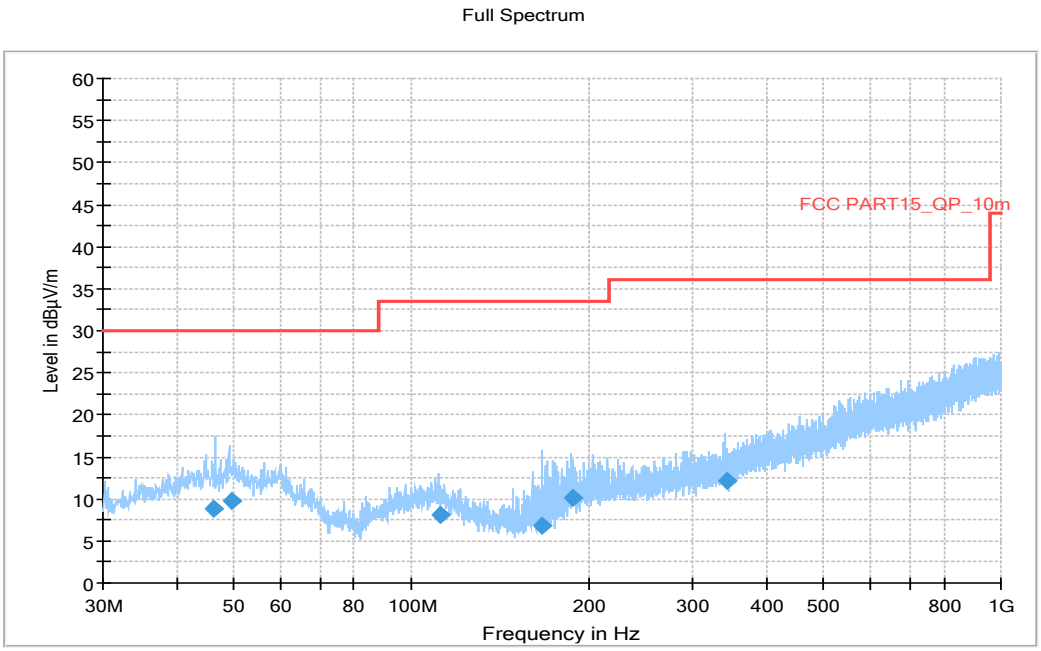


Figure A.29 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)
46.107000	8.83	30.00	21.17	1000.0	120.0	V	30.0
49.469000	9.83	30.00	20.17	1000.0	125.0	V	96.0
111.90000	8.04	33.50	25.48	1000.0	316.0	V	193.0
166.76100	6.83	33.50	26.69	1000.0	104.0	V	87.0
187.26000	10.16	33.50	23.36	1000.0	107.0	V	96.0
342.05800	12.19	36.00	23.83	1000.0	118.0	V	75.0

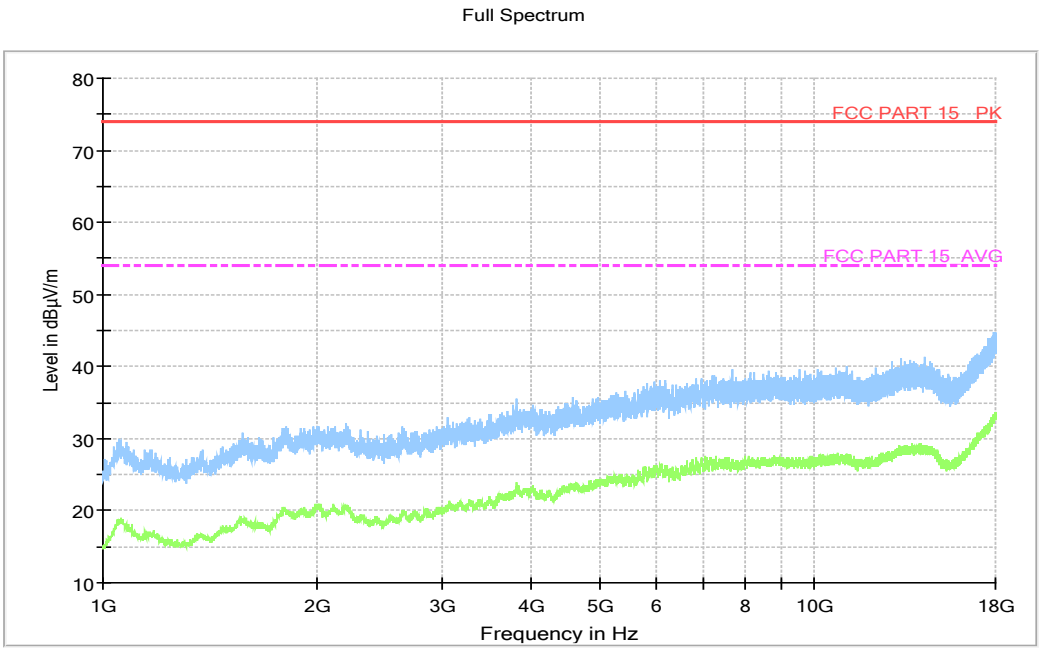


Figure A.30 Radiated Emission from 1GHz to 18GHz

LTE Band 12 HIGH CHANNEL (745.3MHz)

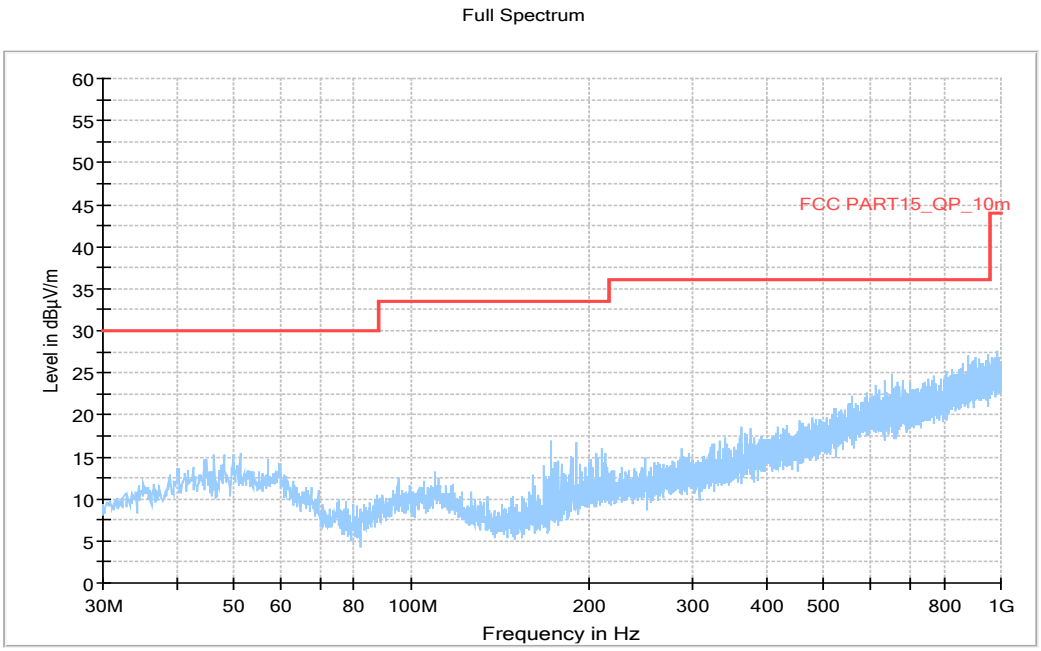


Figure A.31 Radiated Emission from 30MHz to 1GHz

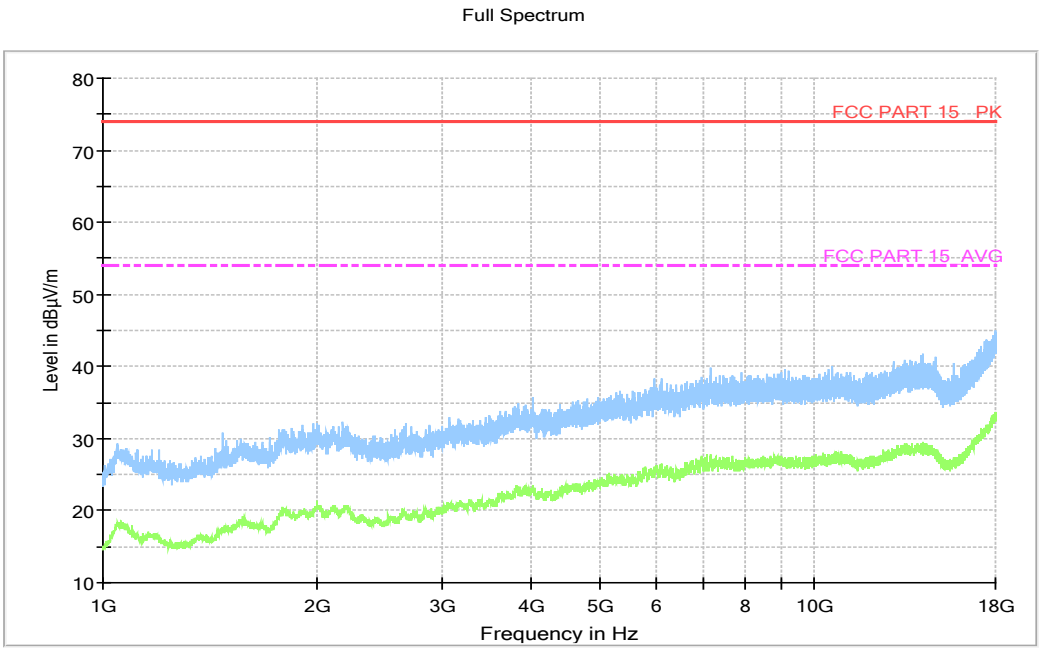


Figure A.32 Radiated Emission from 1GHz to 18GHz

LTE Band 13 LOW CHANNEL (748.5MHz)

Figure A.33 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)
48.878000	10.58	30.00	19.42	1000.0	225.0	V	87.0
51.950000	10.04	30.00	19.96	1000.0	125.0	V	183.0
59.276000	9.75	30.00	20.25	1000.0	106.0	V	240.0
103.22600	7.73	33.50	25.79	1000.0	104.0	V	284.0
175.63900	8.85	33.50	24.67	1000.0	110.0	V	66.0
493.20300	15.32	36.00	20.70	1000.0	288.0	V	256.0

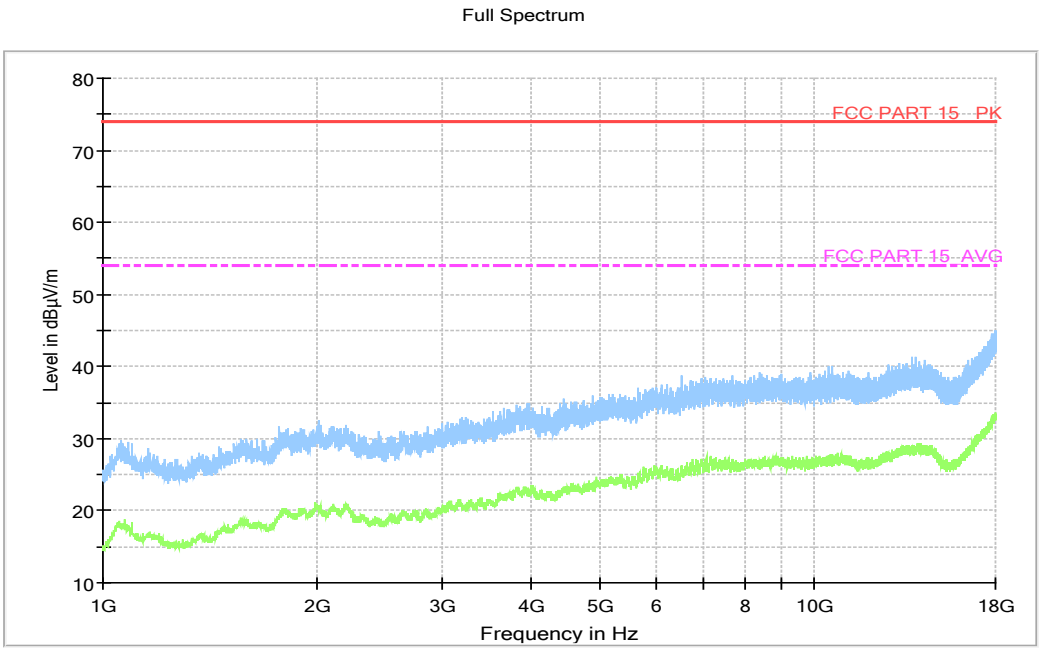


Figure A.34 Radiated Emission from 1GHz to 18GHz

LTE Band 13 MID CHANNEL (751MHz)

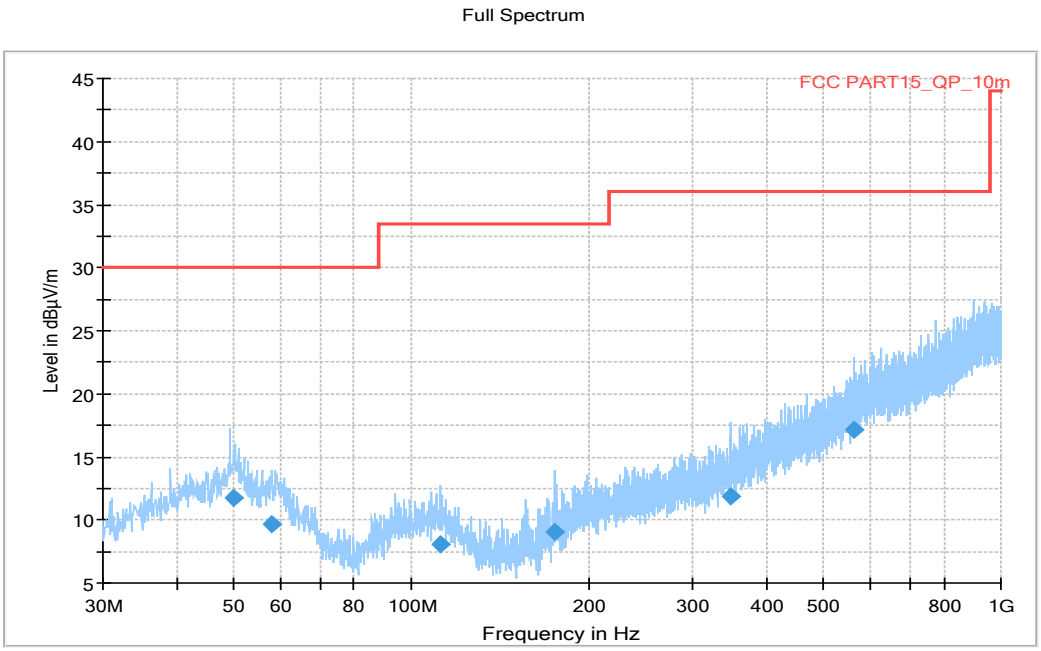


Figure A.35 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)
49.903000	11.75	30.00	18.25	1000.0	112.0	V	87.0
58.112000	9.65	30.00	20.35	1000.0	120.0	V	296.0
111.71100	8.08	33.50	25.44	1000.0	225.0	V	198.0
175.18100	9.02	33.50	24.50	1000.0	125.0	V	70.0
347.16700	11.93	36.00	24.09	1000.0	319.0	V	60.0
562.04500	17.09	36.00	18.93	1000.0	325.0	V	284.0

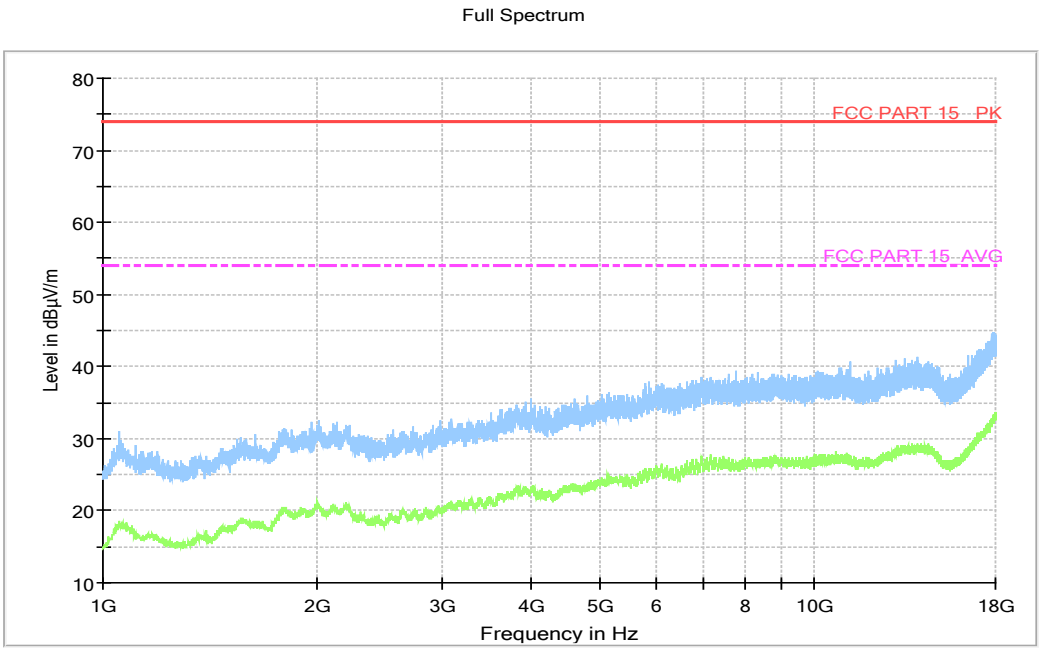


Figure A.36 Radiated Emission from 1GHz to 18GHz

LTE Band 13 HIGH CHANNEL (753.5MHz)

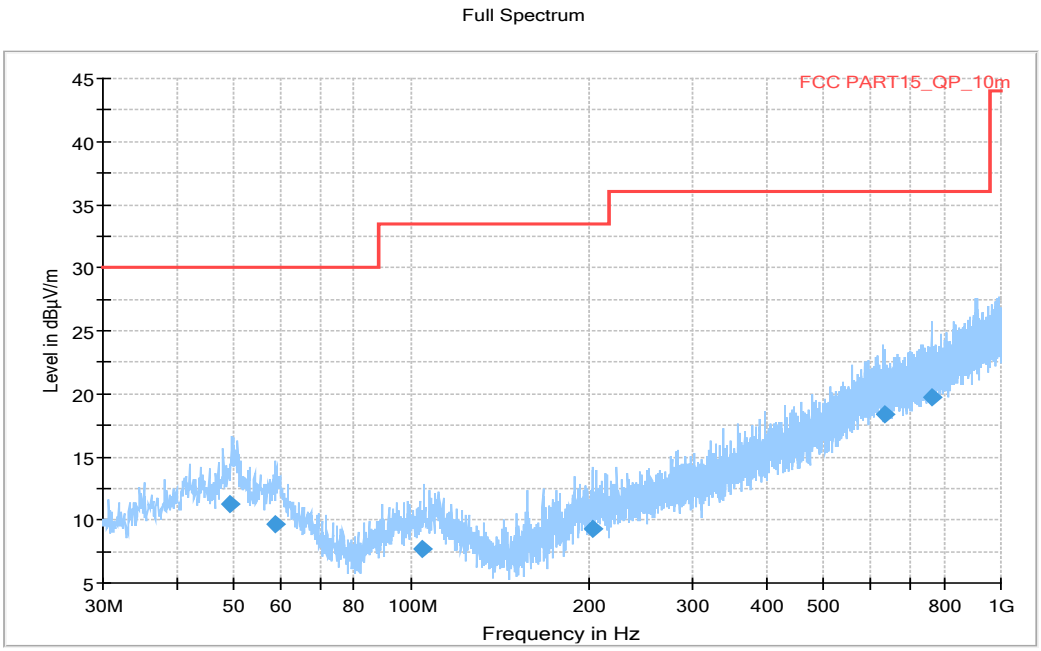


Figure A.37 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)
49.414000	11.20	30.00	18.80	1000.0	105.0	V	240.0
58.606000	9.63	30.00	20.37	1000.0	101.0	V	71.0
104.58400	7.68	33.50	25.84	1000.0	319.0	V	90.0
203.09400	9.35	33.50	24.17	1000.0	112.0	V	9.0
635.01700	18.37	36.00	17.65	1000.0	225.0	V	300.0
764.94100	19.78	36.00	16.24	1000.0	325.0	V	30.0

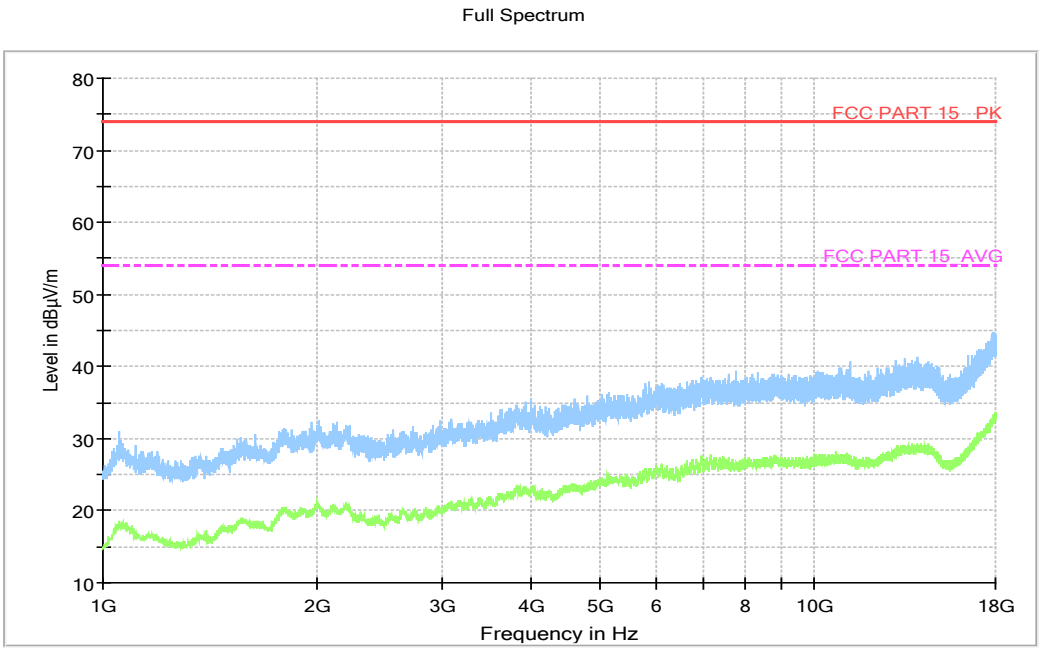


Figure A.38 Radiated Emission from 1GHz to 18GHz

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.

The model of the PC is Lenovo M4000e-17, and the serial number of the PC is M706RMW2. 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*= 3.08 dB, *k*=2.

Charging Mode + CAMERA, Set.1

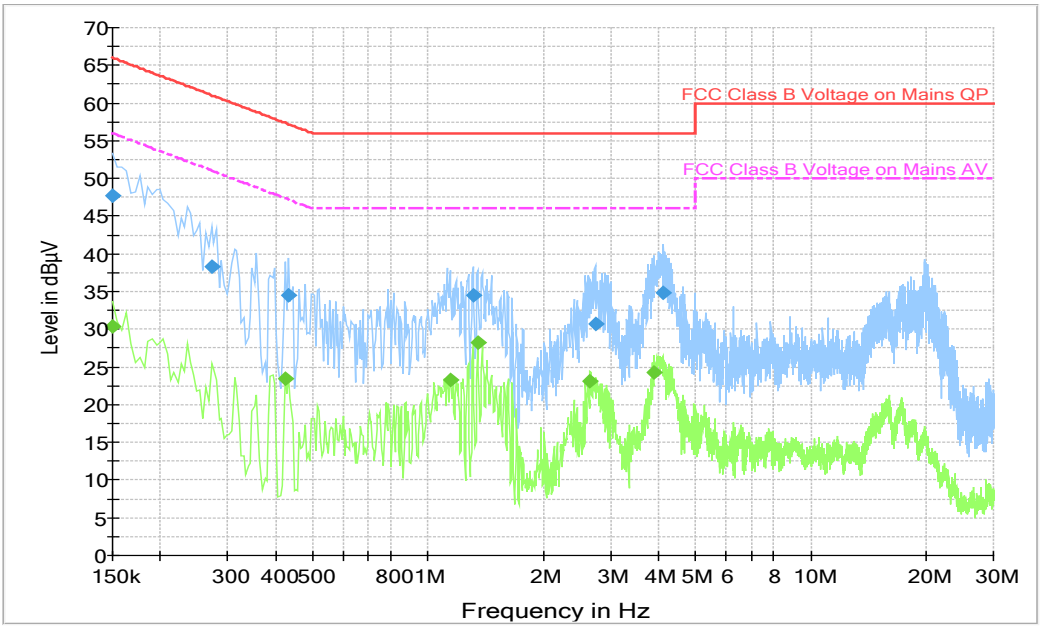


Figure A.39 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	47.7	1000.0	9.000	On	L1	20.2	18.3	66.0
0.271500	38.4	1000.0	9.000	On	L1	19.8	22.7	61.1
0.433500	34.5	1000.0	9.000	On	L1	19.8	22.7	57.2
1.311000	34.6	1000.0	9.000	On	L1	19.8	21.4	56.0
2.733000	30.7	1000.0	9.000	On	L1	19.8	25.3	56.0
4.132500	34.8	1000.0	9.000	On	L1	19.8	21.2	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	30.4	1000.0	9.000	On	L1	20.2	25.6	56.0
0.424500	23.5	1000.0	9.000	On	L1	19.8	23.8	47.4
1.144500	23.2	1000.0	9.000	On	L1	19.8	22.8	46.0
1.347000	28.2	1000.0	9.000	On	L1	19.8	17.8	46.0
2.656500	23.2	1000.0	9.000	On	L1	19.8	22.8	46.0
3.898500	24.2	1000.0	9.000	On	L1	19.8	21.8	46.0

.**USB Mode +FM, Set.2**

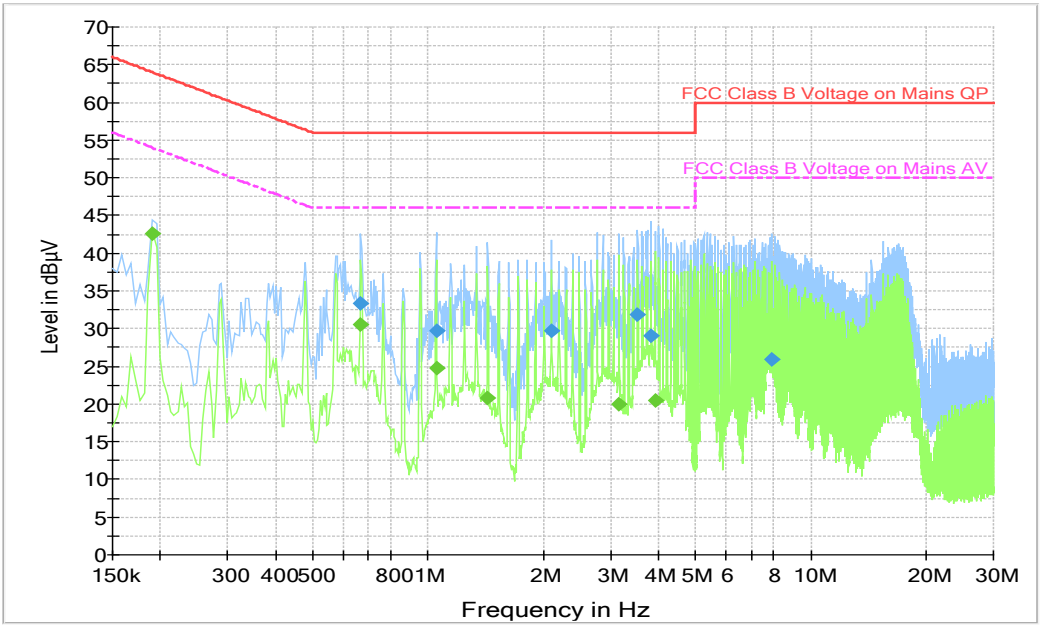


Figure A.40 Conducted Emission

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.667500	33.3	1000.0	9.000	On	L1	19.9	22.7	56.0
1.050000	29.8	1000.0	9.000	On	L1	19.8	26.2	56.0
2.103000	29.7	1000.0	9.000	On	L1	19.8	26.3	56.0
3.534000	31.8	1000.0	9.000	On	L1	19.8	24.2	56.0
3.822000	29.0	1000.0	9.000	On	L1	19.8	27.0	56.0
7.930500	25.9	1000.0	9.000	On	L1	19.8	34.1	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.190500	42.6	1000.0	9.000	On	N	19.9	11.4	54.0
0.667500	30.5	1000.0	9.000	On	L1	19.9	15.5	46.0
1.050000	24.8	1000.0	9.000	On	L1	19.8	21.2	46.0
1.432500	20.8	1000.0	9.000	On	L1	19.8	25.2	46.0
3.151500	20.0	1000.0	9.000	On	L1	19.8	26.0	46.0
3.916500	20.5	1000.0	9.000	On	L1	19.8	25.5	46.0

ANNEX B: Persons involved in this testing

Test Item	Tester
Radiated Emission	Li Pengfei ,Wang Huan,Yan Hanchen
Conducted Emission	Shi Suolan

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