



# TEST REPORT

No. I14N01258-EMC

for

**MFOURTEL MEXICO S.A. DE C.V.**

**GSM/GPRS WCDMA Mobile Telephone**

**Model Name: M4 SS4041**

**Marketing Name: M4**

**FCC ID: CLNSS4041**

with

**Hardware Version: XL-V2.0**

**Software Version: M4\_SS4041\_S10\_Ver200**

**Issued Date: 2014-11-13**

**Test Laboratory:**

**FCC 2.948 Listed: No.310359**

**IC O.A.T.S listed: No.6629C-1**

**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 TMC Beijing.

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## 1. Test Laboratory

### 1.1. Testing Location

Company Name: TMC Shenzhen, Telecommunication Metrology Center of MIIT  
Address: No. 12 Building, Shangsha Innovation and Technology Park, Futian District  
Postal Code: 518048  
Telephone: +86(0)755-33322000  
Fax: +86(0)755-33322001

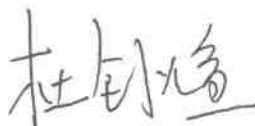
### 1.2. Testing Environment

Normal Temperature: 15-35°C  
Relative Humidity: 20-75%

### 1.3. Project data

Testing Start Date: 2014-10-31  
Testing End Date: 2014-11-10

### 1.4. Signature



Du Zhaoxuan

(Prepared this test report)



Zhang Bojun

(Reviewed this test report)



Lu Minniu

Director of the laboratory

(Approved this test report)

## **2. Client Information**

### **2.1. Applicant Information**

Company Name: MFOURTEL MEXICO S.A. DE C.V.  
Address /Post: Av. Ejército Nacional 436 Piso 3 Chapultepec Morales Miguel Hidalgo  
Distrito Federal 11570

### **2.2. Manufacturer Information**

Company Name: CK TELECOM LTD.  
Address /Post: Technology Road.High-Tech Development Zone. Heyuan,  
Guangdong,P.R.China

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

#### 3.1. About EUT

Description	GSM/GPRS WCDMA Mobile Telephone
Model Name	M4 SS4041
Marketing Name	M4
FCC ID	CLNSS4041

#### 3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	/	XL-V2.0	M4_SS4041_S10_Ver200

\*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
AE1	Battery	/
AE2	Travel charger	/
AE3	USB cable	/

##### AE1

Model	M2150A
Manufacturer	GuangYu
Capacitance	2150mAh
Nominal voltage	3.8V

##### AE2

Model	HKC0055010-2A
Manufacturer	Huntkey
Length of cable	110cm

##### AE3

Model	/
Manufacturer	/
Length of cable	110cm

\*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	Charging mode
Set.2	EUT1+ AE1 + AE3	USB mode

## **4. Reference Documents**

### **4.1. Reference Documents for testing**

The following documents listed in this section are referred for testing.

<b>Reference</b>	<b>Title</b>	<b>Version</b>
FCC Part 15, Subpart B	Radio frequency devices	10-1-2013 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	2003

## 5. LABORATORY ENVIRONMENT

**Semi-anechoic chamber** (11.20 meters×6.10meters×5.60meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 0.5 Ω
Normalised site attenuation (NSA)	< ±3.5 dB, 3 m distance, from 30 to 1000 MHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

**Control room** did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. =20 %, Max. = 80 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 0.5 Ω

**Conducted chamber** did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. =35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 0.5 Ω

**Fully-anechoic chamber** (11.20 meters×6.10 meters×6.60 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 0.5 Ω
Voltage Standing Wave Ratio (VSWR)	≤ 6 dB, from 1 to 6 GHz, 3 m distance



## 6. SUMMARY OF TEST RESULTS

<b>Abbreviations used in this clause:</b>	
P	Pass
NA	Not applicable
F	Fail

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

**7. Test Equipments Utilized**

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CAL PERIOD
1	Test Receiver	ESCI	100701	R&S	2015.07.30	1 year
2	Test Receiver	ESCI	100702	R&S	2015.07.30	1 year
3	Spectrum Analyzer	FSP 40	100378	R&S	2014.12.20	1 year
4	BiLog Antenna	VULB9163	9163 329	Schwarzbeck	2017.01.20	3 years
5	LISN	ESH2-Z5	100196	R&S	2015.01.14	1 year
6	Dual-Ridge Waveguide Horn Antenna	3117	00066577	ETS-Lindgren	2016.04.01	3 years
7	Universal Radio Communication Tester	E5515C	GB44051324	Agilent	2015.05.20	1 year

## **ANNEX A: MEASUREMENT RESULTS**

### **A.1 Radiated Emission (§15.109(a))**

#### **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 a distance of 3 meters is tested. Tested in accordance with the procedures of ANSI C63.4 - 2003, 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 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 Lenovo Thinkcentre M4099t, and the serial number of the PC is SA08850737. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

#### **A.1.3 Measurement Limit**

Limit from CFR 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 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:

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

Where

$G_A$ : Antenna factor of receive antenna

$G_{\text{PL}}$ : Path Loss

$P_{\text{Mea}}$ : Measurement result on receiver.

Note: the result contains vertical part and Horizontal part

#### Set.1 Charging mode / Peak detector

Frequency(MHz)	Result(dBuV/m)	Polarity	$A_{\text{Rpl}}$ (dB)	Margin(dB)	Limit (dB $\mu$ V/m)
14322.000000	56.7	H	13.2	17.3	74.0
15135.000000	57.1	H	12.8	16.9	74.0
15761.000000	58.6	H	14.1	15.4	74.0
16401.000000	59.7	H	15.3	14.3	74.0
16837.000000	59.5	V	15.6	14.5	74.0
17415.000000	59.5	V	15.6	14.5	74.0

#### Set.1 Charging mode / Average detector

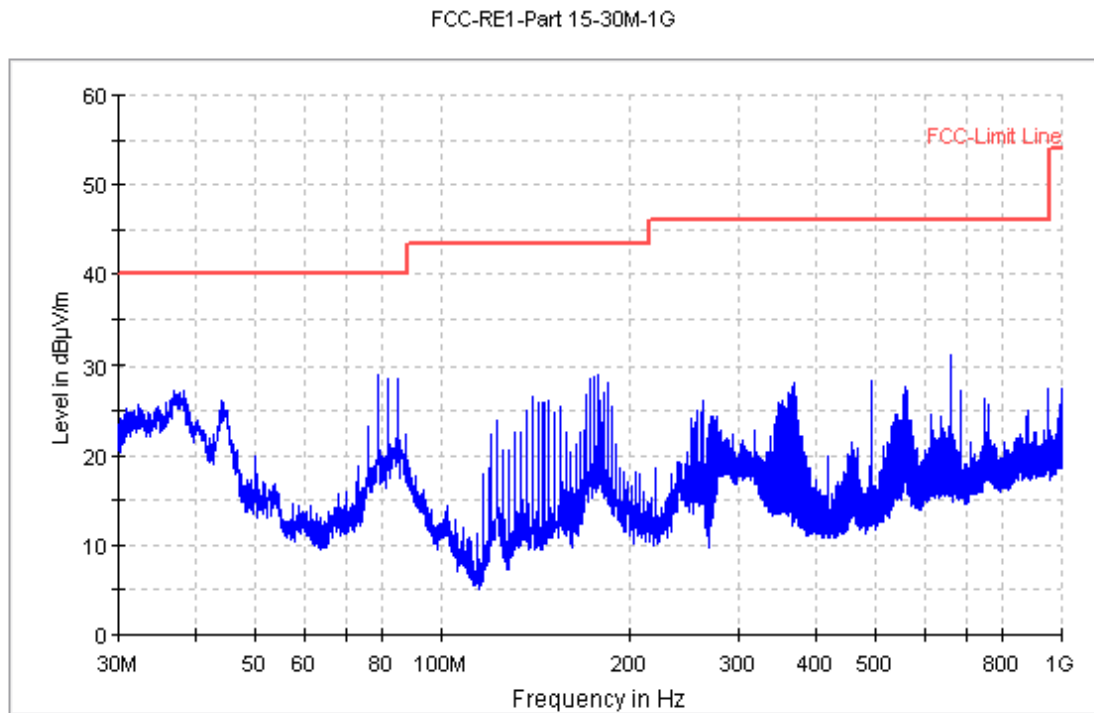
Frequency(MHz)	Result(dBuV/m)	Polarity	$A_{\text{Rpl}}$ (dB)	Margin(dB)	Limit (dB $\mu$ V/m)
14387.000000	44.6	H	13.4	9.4	54.0
15073.000000	45.1	H	13.1	8.9	54.0
15779.000000	46.8	H	14.2	7.2	54.0
16327.000000	46.8	H	15.0	7.2	54.0
16826.000000	47.5	H	15.5	6.5	54.0
17350.000000	46.8	V	15.5	7.2	54.0

**Set.2 USB mode / Peak detector**

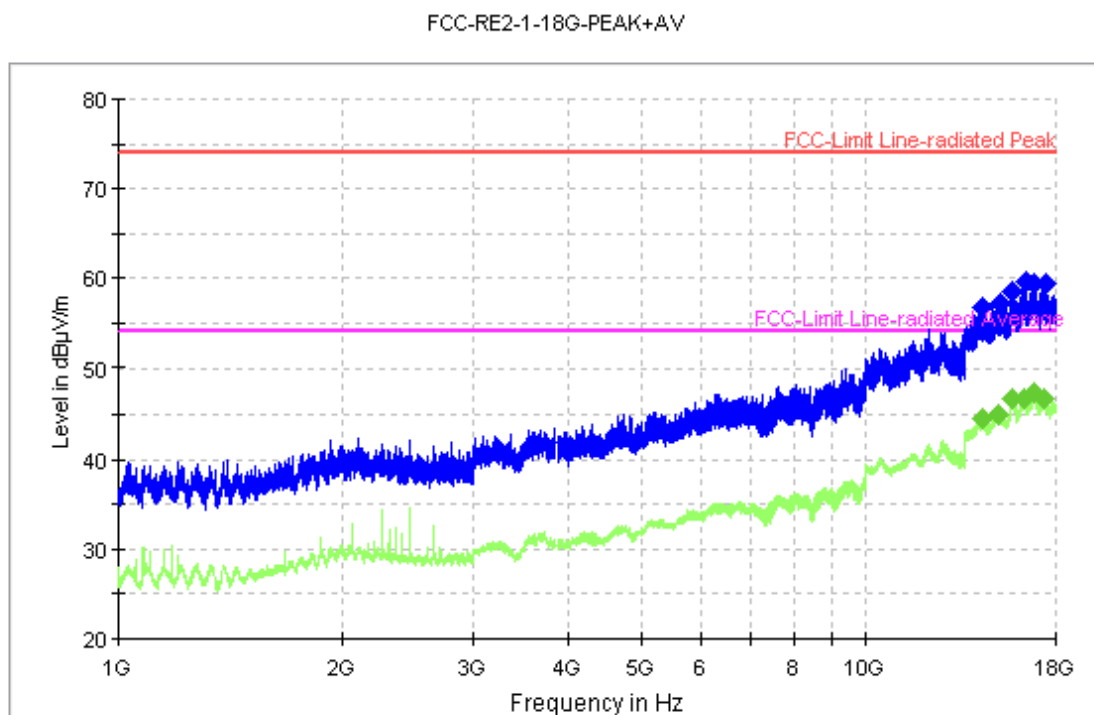
Frequency(MHz)	Result(dBuV/m)	Polarity	A <sub>Rpl</sub> (dB)	Margin(dB)	Limit (dBμV/m)
14401.000000	57.8	H	13.4	16.2	74.0
15051.000000	58.6	H	13.3	15.4	74.0
15763.000000	60.8	V	14.1	13.2	74.0
16378.000000	60.9	V	15.3	13.1	74.0
16823.000000	60.9	V	15.5	13.1	74.0
17307.000000	61.2	H	15.4	12.8	74.0

**Set.2 USB mode / Average detector**

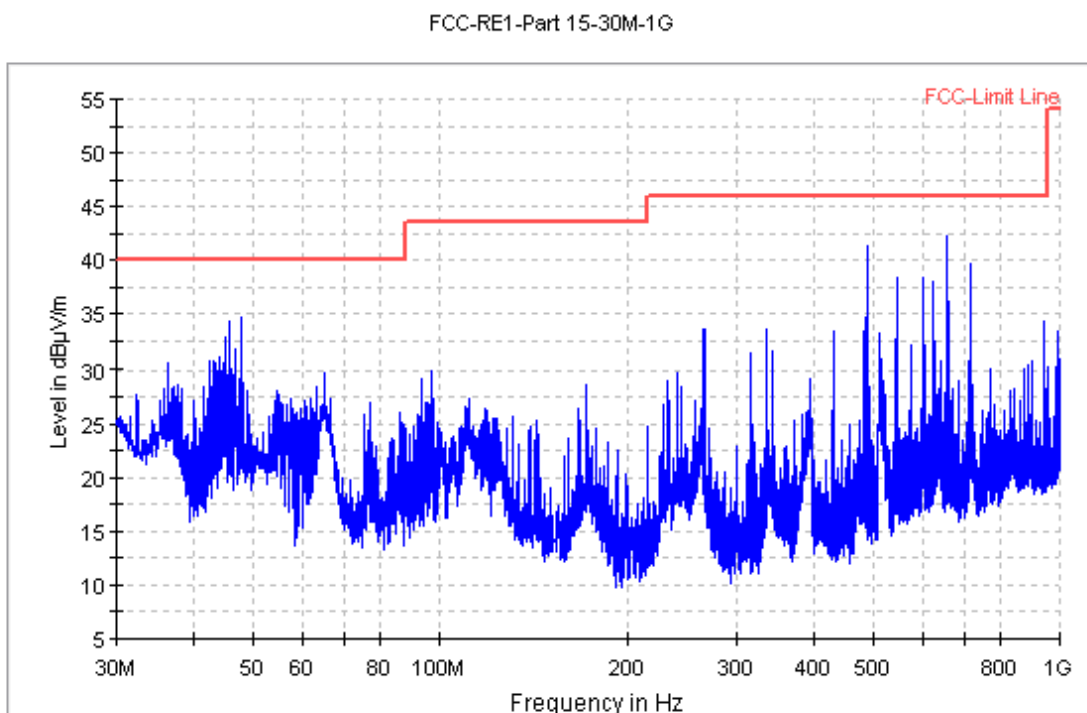
Frequency(MHz)	Result(dBuV/m)	Polarity	A <sub>Rpl</sub> (dB)	Margin(dB)	Limit (dBμV/m)
14461.000000	46.1	H	13.0	7.9	54.0
15046.000000	46.7	V	13.3	7.3	54.0
15755.000000	48.3	H	14.1	5.7	54.0
16334.000000	48.4	H	15.1	5.6	54.0
16854.000000	49.0	H	15.7	5.0	54.0
17441.000000	48.8	V	15.6	5.2	54.0



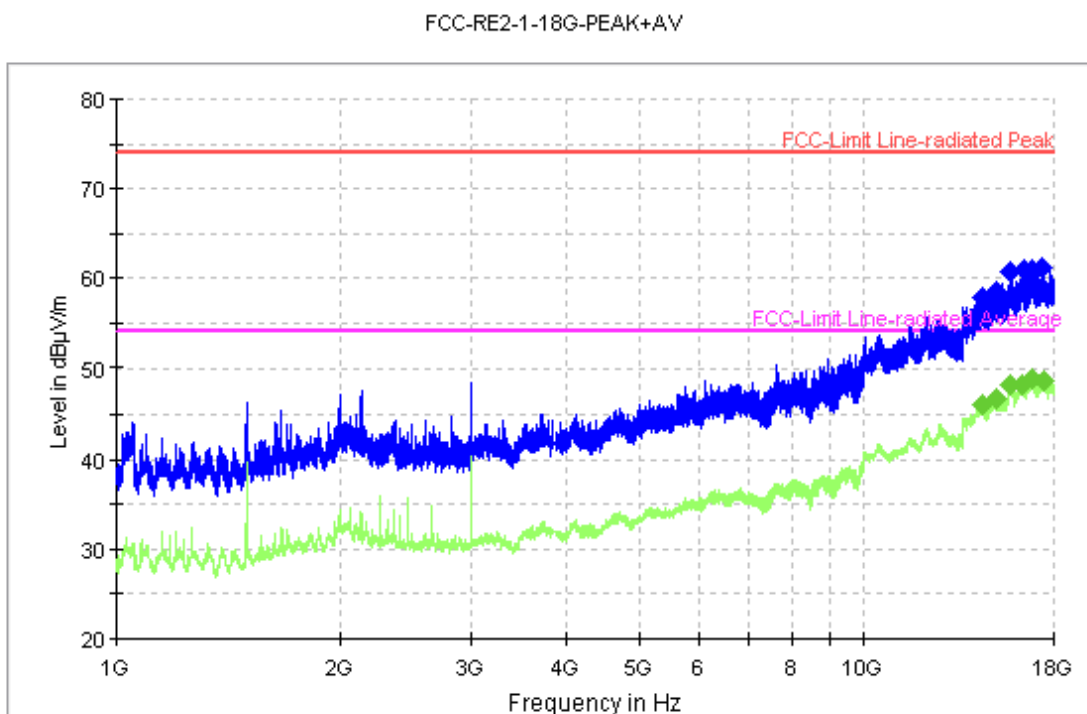
**Figure A.1 Radiated Emission from 30MHz to 1GHz (Set.1, Charging mode)**



**Figure A.2 Radiated Emission from 1GHz to 18GHz (Set.1, Charging mode)**



**Figure A.3 Radiated Emission from 30MHz to 1GHz (Set.2, USB mode)**



**Figure A.4 Radiated Emission from 1GHz to 18GHz (Set.2, USB mode)**

## A.2 Conducted Emission (§15.107(a))

### 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 - 2003, section 7.2.

### 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 Lenovo Thinkcentre M4099t, and the serial number of the PC is SA08850737. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

### A.2.3 Measurement Limit

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with the logarithm of the frequency		

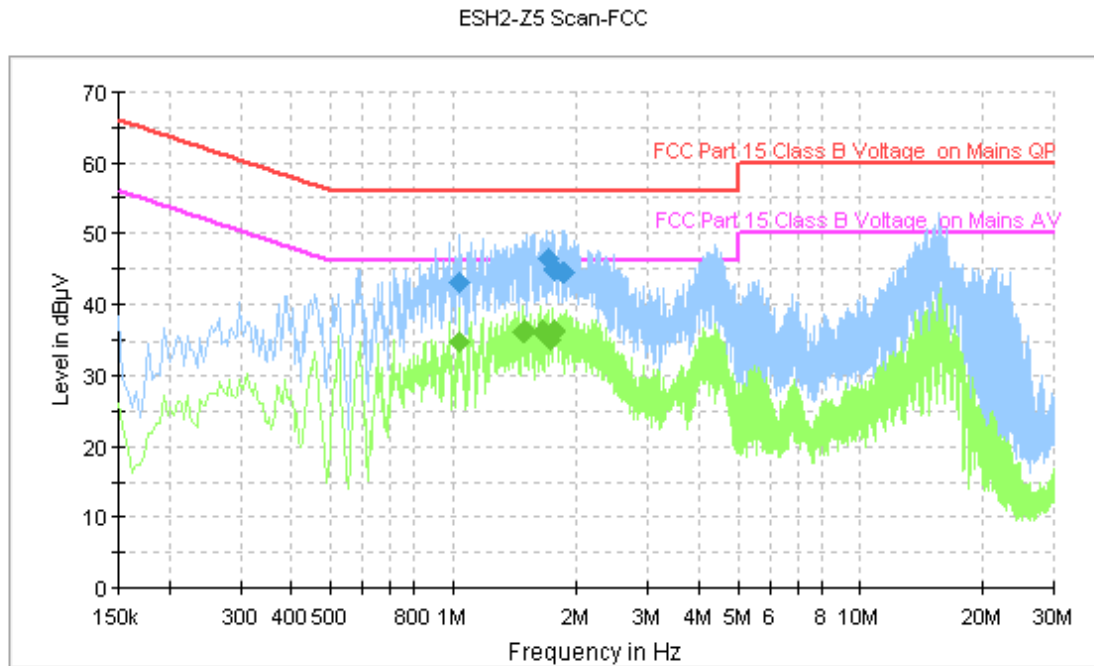
### A.2.4 Test Condition in charging mode

Voltage (V)	Frequency (Hz)
120	60

RBW	Sweep Time(s)
9kHz	1



## A.2.5 Measurement Results



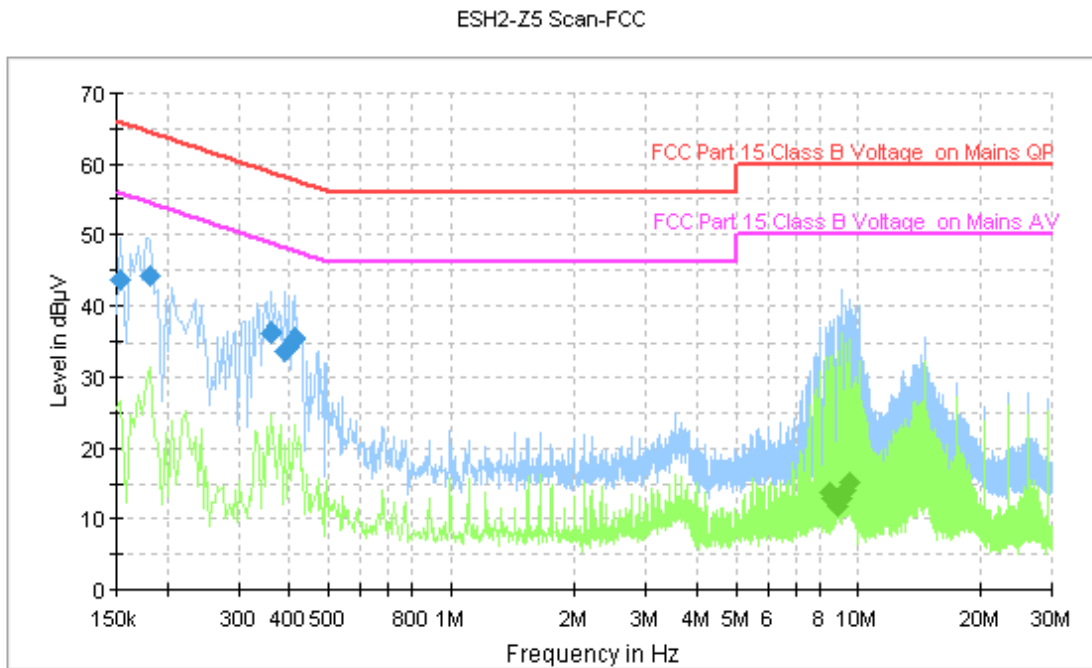
**Figure A.5 Conducted Emission (Set.1, Charging mode)**

### Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
1.038000	43.1	FLO	L1	10.0	12.9	56.0
1.698000	46.4	FLO	L1	10.1	9.6	56.0
1.754000	44.6	FLO	L1	10.1	11.4	56.0
1.770000	44.9	FLO	L1	10.1	11.1	56.0
1.842000	44.4	FLO	L1	10.1	11.6	56.0
1.858000	44.3	FLO	L1	10.1	11.7	56.0

### Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
1.038000	34.8	FLO	L1	10.0	11.2	46.0
1.490000	36.2	FLO	L1	10.1	9.8	46.0
1.638000	36.4	FLO	L1	10.1	9.6	46.0
1.726000	35.1	FLO	L1	10.1	10.9	46.0
1.754000	36.2	FLO	L1	10.1	9.9	46.0
1.770000	36.4	FLO	L1	10.1	9.6	46.0



**Figure A.6 Conducted Emission (Set.2, USB mode)**

#### Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.154000	43.5	FLO	N	10.0	22.3	65.8
0.182000	44.2	FLO	L1	10.0	20.2	64.4
0.362000	36.2	FLO	N	10.1	22.5	58.7
0.390000	33.6	FLO	N	10.0	24.5	58.1
0.398000	34.3	FLO	L1	10.0	23.6	57.9
0.414000	35.5	FLO	N	10.1	22.0	57.6

#### Final Measurement Detector 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
8.522000	13.8	FLO	N	10.4	36.2	50.0
8.642000	12.8	FLO	L1	10.3	37.2	50.0
8.862000	11.8	FLO	L1	10.3	38.2	50.0
9.078000	12.8	FLO	N	10.3	37.2	50.0
9.298000	14.0	FLO	N	10.3	36.0	50.0
9.518000	15.3	FLO	N	10.3	34.7	50.0

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