TEST REPORT

No. 2013EEB00459-EMC

for

DBJay Ltd.

GSM Quad band device

Model Name: ZJ100

Marketing Name: ZJ100

FCC ID: 2AA5OZJ100G

IC ID: 11430A-ZJ100G

with

Hardware Version: VER2_CR001

Software Version: MOCOR_12C_W13.04

Issued Date: 2013-10-25

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.

TMC Beijing, Telecommunication Metrology Center of Ministry of Industry and Information Technology

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CONTENTS

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℃
Relative Humidity:	20-75%

1.3. Project data

Testing Start Date:	2013-09-28
Testing End Date:	2013-10-15

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:	DBJay Ltd.
Address /Post:	680 Davenport Rd., Unit D
City:	Waterloo
Postal Code:	N2V 2C3
Country:	Canada
Telephone:	+15194989965

2.2. Manufacturer Information

Company Name:	DBJay Ltd.
Address /Post:	680 Davenport Rd., Unit D
City:	Waterloo
Postal Code:	N2V 2C3
Country:	Canada
Telephone:	+15194989965

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

3.1. About EUT

Description	GSM Quad band device
Model Name	ZJ100
Marketing Name	ZJ100
FCC ID	2AA5OZJ100G
IC ID	11430A-ZJ100G

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	/	VER2_CR001	MOCOR_12C_W13.04

*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	403055P/750mAh-2P1S
Manufacturer	CMT ELECTRONIC CO. LTD.
Capacitance	1500mAh
Nominal voltage	3.7V

AE2

Model	GMT-0505
Manufacturer	Shenzhen guangmingtong electronics industry co., Ltd.
Length of cable	105cm

AE3

Model	/
Manufacturer	/
Length of cable	105cm

*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.

Reference	Title	Version
FCC Part 15, Subpart B	Radio frequency devices	10-1-2012 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
ICES-003	Spectrum Management and Telecommunications Policy Interference-Causing Equipment Standard Digital Apparatus	Issue 5

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 ℃, Max. = 30 ℃
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 ℃, Max. = 35 ℃
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 ℃, Max. = 30 ℃
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 ℃, Max. = 30 ℃
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

Abbreviations used in this clause:	
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	2013.08.03	1 year
2	Test Receiver	ESCI	100702	R&S	2013.08.03	1 year
3	Test Receiver	FSP 40	100378	R&S	2013.12.21	1 year
4	BiLog Antenna	VULB9163	9163 330	Schwarzbeck	2014.02.24	3 years
5	LISN	ESH2-Z5	100196	R&S	2014.01.23	1 year
6	Dual-Ridge Waveguide Horn Antenna	3117	00066577	ETS-Lindgren	2016.04.01	3 years
7	Universal Radio Communication Tester	E5515C	GB47460389	Agilent	2013.09.19	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 of emission (MHz)	Field strength (microvolts/meter)
30-88	100
88-216	150
216-960	200
Above 960	500

Limit from ICES-003 Section 6.2

Frequency range (MHz)	Field strength limits* (dBμV/m)
30 to 88	40
88 to 216	43.5
216 to 960	46
Above 960	54

A.1.4 Test Condition

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	120kHz (IF bandwidth)	5
1000-4000	1MHz/1MHz	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:

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.

Note: the result contains vertical part and Horizontal part

Set.1 Charging mode

Frequency(MHz)	Result(dBuV/m)	A_{Rpl} (dB)	P_{mea}(dBuV)	Polarity
1202	31.2	-4.8	36	H
1440	29.4	-3.6	33	H
1865	33.9	-0.1	34	V
2357	36.3	1.7	34.6	V
2651	34.1	2.3	31.8	V
3239.875	34.4	3.3	31.1	V

Set.2 USB mode

Frequency(MHz)	Result(dBuV/m)	A_{Rpl} (dB)	P_{Mea}(dBuV)	Polarity
1080	34.9	-5.6	40.5	H
1500	40.5	-3.4	43.9	V
1964	33.3	0.7	32.6	V
2357	35.5	1.7	33.8	V
3000.125	38.4	3	35.4	V
3208.25	36.5	3.3	33.2	H

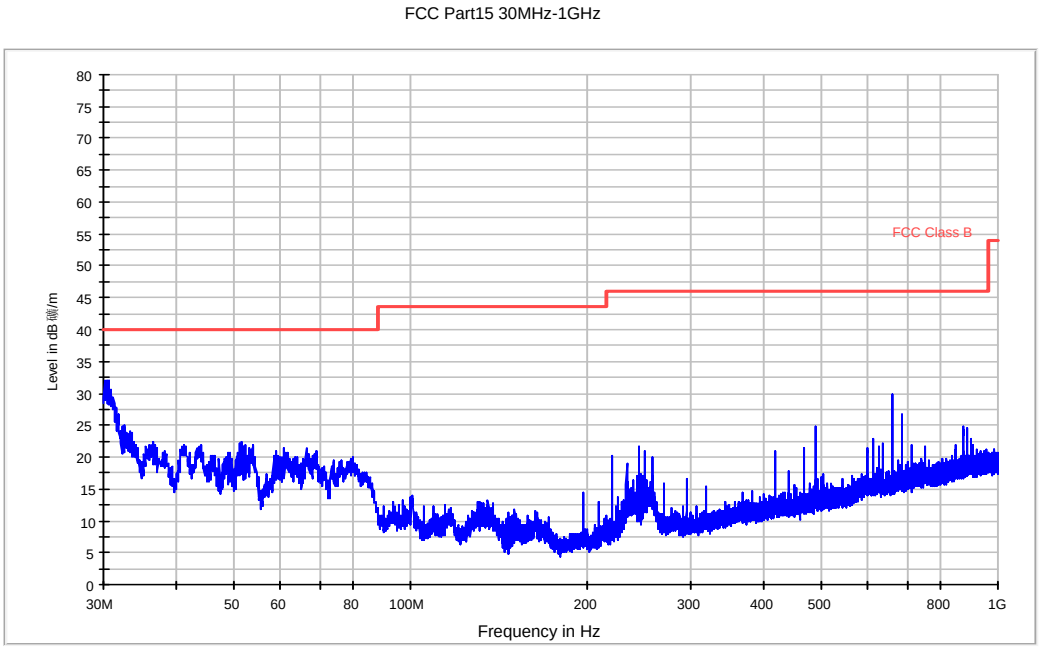

Figure A.1 Radiated Emission from 30MHz to 1GHz (Set.1, Charging mode)

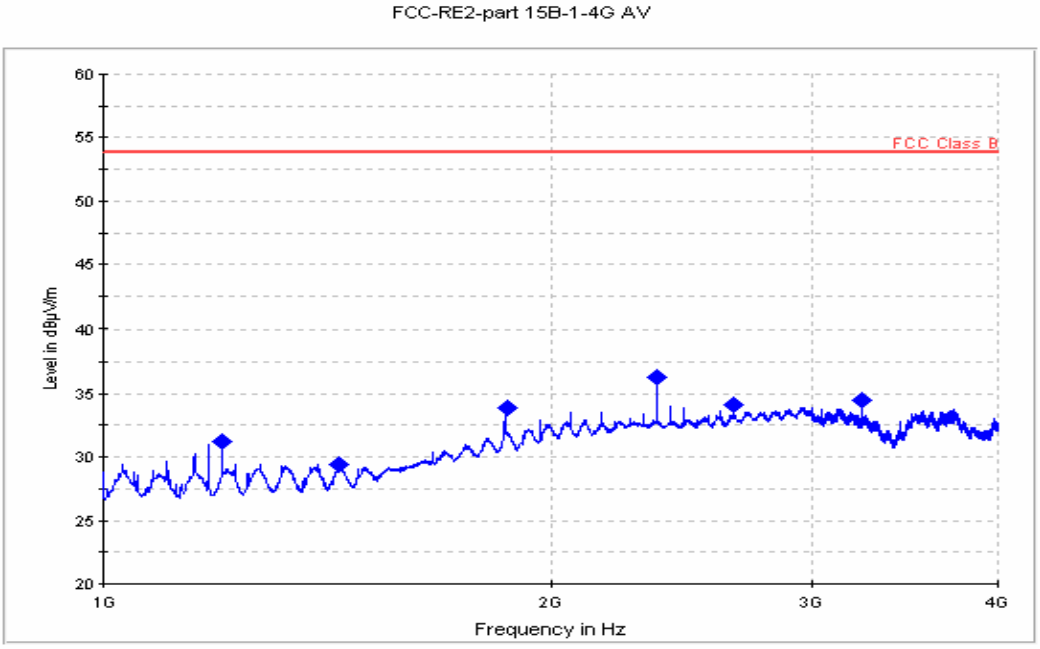

Figure A.2 Radiated Emission from 1GHz to 4GHz (Set.1, Charging mode)

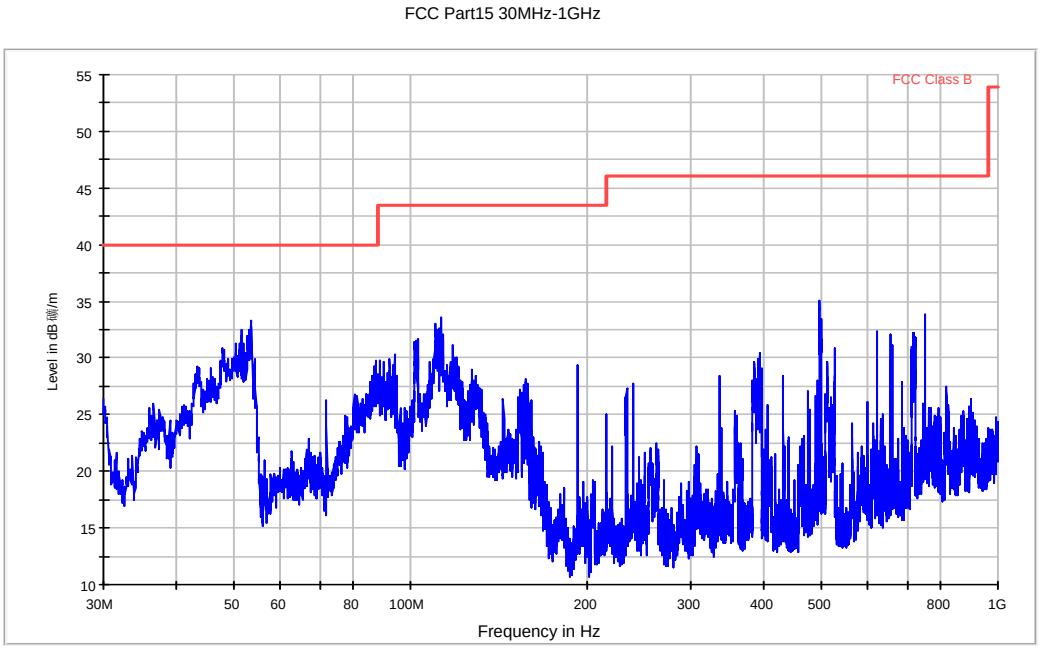

Figure A.3 Radiated Emission from 30MHz to 1GHz (Set.2, USB mode)

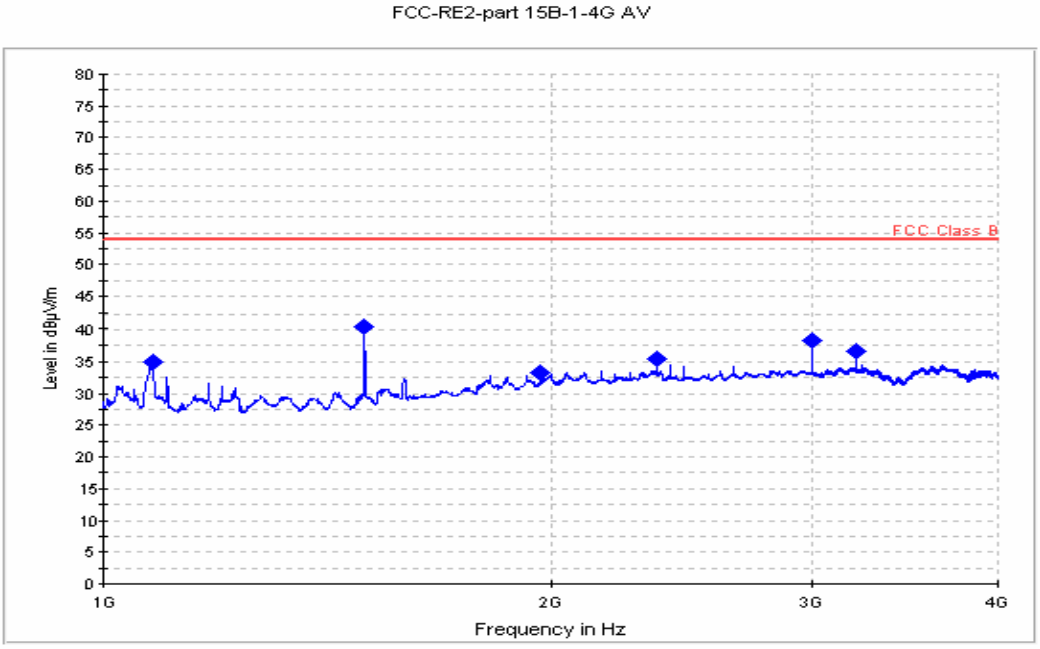

Figure A.4 Radiated Emission from 1GHz to 4GHz (Set.2, USB mode)

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

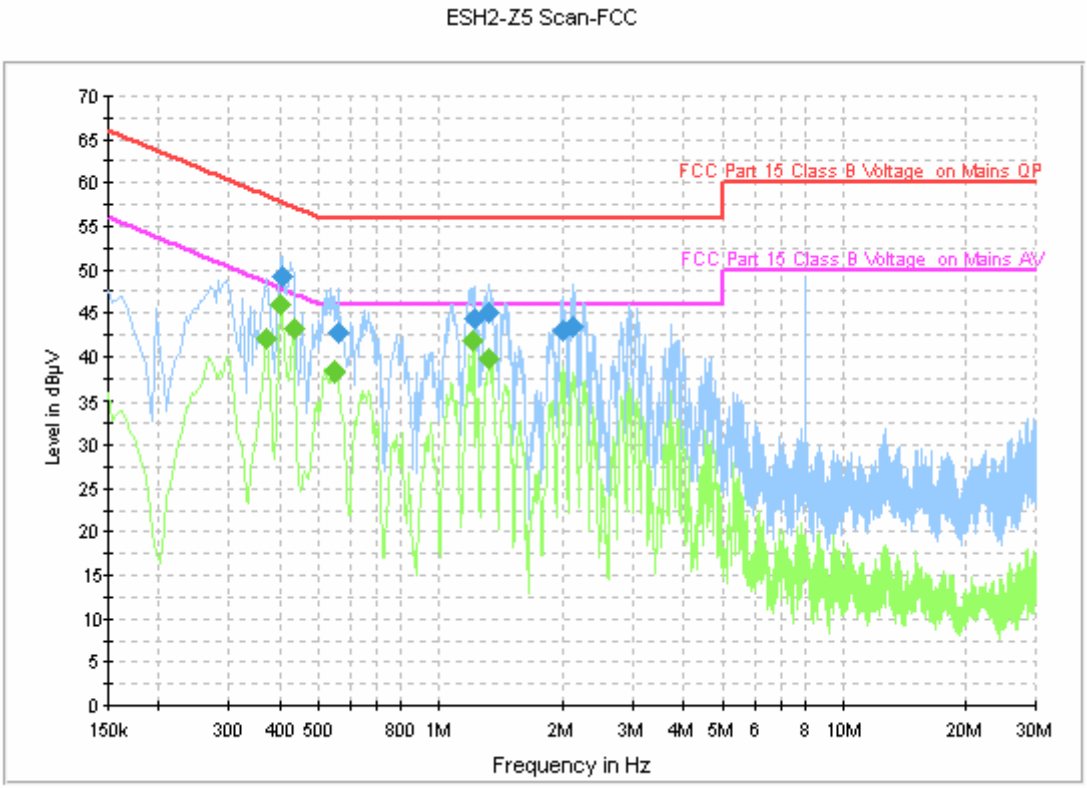

Figure A.5 Conducted Emission (Set.1, Charging mode)

Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.406000	49.3	FLO	L1	10.0	8.4	57.7
0.558000	42.6	FLO	L1	10.1	13.4	56.0
1.218000	44.4	FLO	L1	10.1	11.6	56.0
1.330000	45.0	FLO	L1	10.1	11.0	56.0
2.002000	43.0	FLO	L1	10.1	13.0	56.0
2.122000	43.4	FLO	L1	10.1	12.6	56.0

Final Measurement Detector 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.370000	42.0	FLO	L1	10.0	6.5	48.5
0.402000	46.1	FLO	L1	10.0	1.8	47.8
0.434000	43.2	FLO	L1	10.0	3.9	47.2
0.550000	38.4	FLO	L1	10.1	7.6	46.0
1.214000	41.8	FLO	L1	10.1	4.2	46.0
1.326000	39.8	FLO	L1	10.1	6.2	46.0

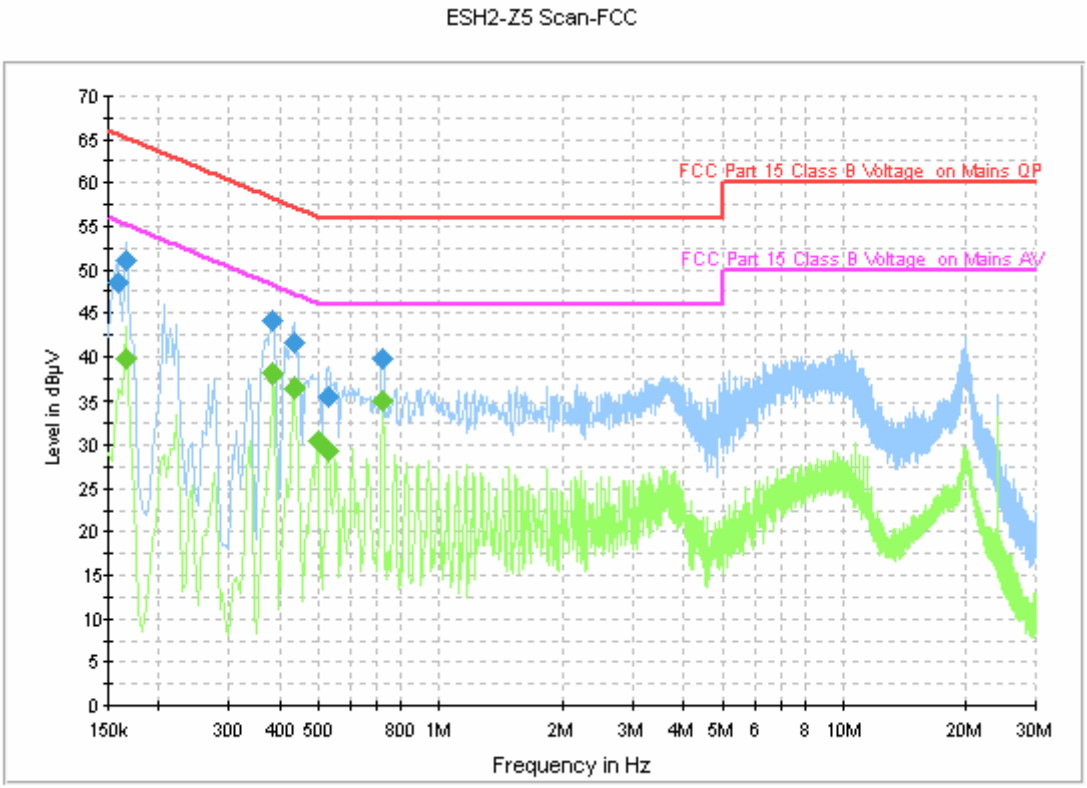

Figure A.6 Conducted Emission (Set.2, USB mode)

Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	48.5	FLO	N	10.1	17.0	65.6
0.166000	51.1	FLO	N	10.1	14.0	65.2
0.386000	44.0	FLO	N	10.0	14.1	58.1
0.434000	41.6	FLO	N	10.1	15.5	57.2
0.530000	35.6	FLO	N	10.1	20.4	56.0
0.722000	39.7	FLO	L1	10.0	16.3	56.0

Final Measurement Detector 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	39.8	FLO	N	10.1	15.4	55.2
0.386000	38.1	FLO	L1	10.0	10.0	48.1
0.434000	36.6	FLO	L1	10.0	10.6	47.2
0.498000	30.4	FLO	N	10.1	15.6	46.0
0.530000	29.3	FLO	L1	10.0	16.7	46.0
0.722000	35.2	FLO	L1	10.0	10.8	46.0

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