FCC REPORT

Applicant: OBSERVA Telecom

Address of Applicant: Monte Esquinza, 28 – 1st floor – Right hand, Madrid, Spain

Equipment Under Test (EUT)

Product Name: Dongle USB 3G

Model No.: QX301A

Trade mark: MOVISTAR

FCC ID: 2AKELQX301A

Applicable standards: FCC CFR Title 47 Part 15 Subpart B

Date of sample receipt: 01 Dec., 2016

Date of Test: 01 Dec., to 06 Dec., 2016

Date of report issued: 06 Dec., 2016

Test Result: Pass *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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2 Version

Version No.	Date	Description
00	*06 Dec., 2016*	*Original*

Tested by: Steven Liu ***Date:*** *06 Dec., 2016*

Test Engineer

Reviewed by: Carey Chen ***Date:*** *06 Dec., 2016*

Project Engineer

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4 Test Summary

Test Item	Section in CFR 47	Result
Conducted Emission	Part 15.107	Pass
Radiated Emission	Part 15.109	Pass

Pass: The EUT complies with the essential requirements in the standard.

5 General Information

5.1 Client Information

Applicant:	OBSERVA Telecom
Address of Applicant:	Monte Esquinza, 28 – 1st floor – Right hand, Madrid, Spain
Manufacturer:	Huizhou QiaoXing Famous Science And Technology Co. Ltd
Address of Manufacturer:	QiaoXing Science And Technology Industrial Park ,TangQuan ,Huizhou City, Guangdong Province, China

5.2 General Description of E.U.T.

Product Name:	Dongle USB 3G
Model No.:	QX301A
Power supply:	AC 120V

5.3 Test Mode

Operating mode	Detail description
PC mode	Keep the EUT in Downloading mode(Worst case)
The sample was placed 0.8m above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.	

5.4 Measurement Uncertainty

Items	Expanded Uncertainty (Confidence of 95%)
Conducted Emission (9kHz ~ 30MHz)	2.14 dB (k=2)
Radiated Emission (9kHz ~ 30MHz)	4.24 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	4.35 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	4.44 dB (k=2)
Radiated Emission (18GHz ~ 26.5GHz)	4.56 dB (k=2)

5.5 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
DELL	PC	OPTIPLEX745	N/A	DoC
DELL	MONITOR	E178FPC	N/A	DoC
DELL	KEYBOARD	SK-8115	N/A	DoC
DELL	MOUSE	MOC5UO	N/A	DoC
HP	Printer	CB495A	05257893	DoC

5.6 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC - Registration No.: 817957**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in out files. Registration 817957, February 27, 2012.

- **IC - Registration No.: 10106A-1**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

- **CNAS - Registration No.: CNAS L6048**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing.The Registration No. is CNAS L6048.

5.7 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.
Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,
Bao'an District,Shenzhen, Guangdong,China
Tel: +86-755-23118282
Fax: +86-755-23116366

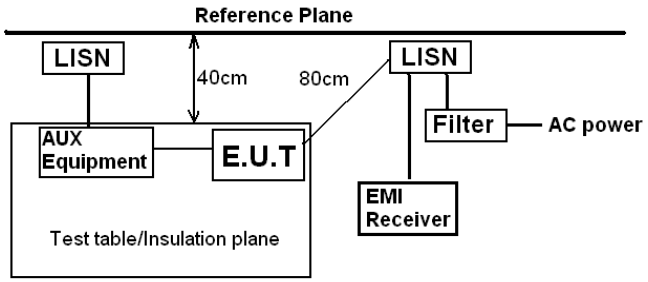
5.8 Test Instruments list

Radiated Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
1	3m SAC	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	08-23-2014	08-22-2017
2	BiConiLog Antenna	SCHWARZBECK	VULB9163	CCIS0005	03-25-2016	03-25-2017
3	Horn Antenna	SCHWARZBECK	BBHA9120D	CCIS0006	03-25-2016	03-25-2017
4	Pre-amplifier (10kHz-1.3GHz)	HP	8447D	CCIS0003	04-01-2016	03-31-2017
5	Pre-amplifier (1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	04-01-2016	03-31-2017
6	Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP30	CCIS0023	03-28-2016	03-28-2017
7	EMI Test Receiver	Rohde & Schwarz	ESRP7	CCIS0167	03-28-2016	03-28-2017
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
9	Coaxial Cable	N/A	N/A	CCIS0018	04-01-2016	03-31-2017
10	Coaxial Cable	N/A	N/A	CCIS0020	04-01-2016	03-31-2017

Conducted Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Shielding Room	ZhongShuo Electron	11.0(L)x4.0(W)x3.0(H)	CCIS0061	08-23-2014	08-22-2017
2	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	03-24-2016	03-24-2017
3	LISN	CHASE	MN2050D	CCIS0074	03-26-2016	03-26-2017
4	Coaxial Cable	CCIS	N/A	CCIS0086	04-01-2016	03-31-2017
5	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

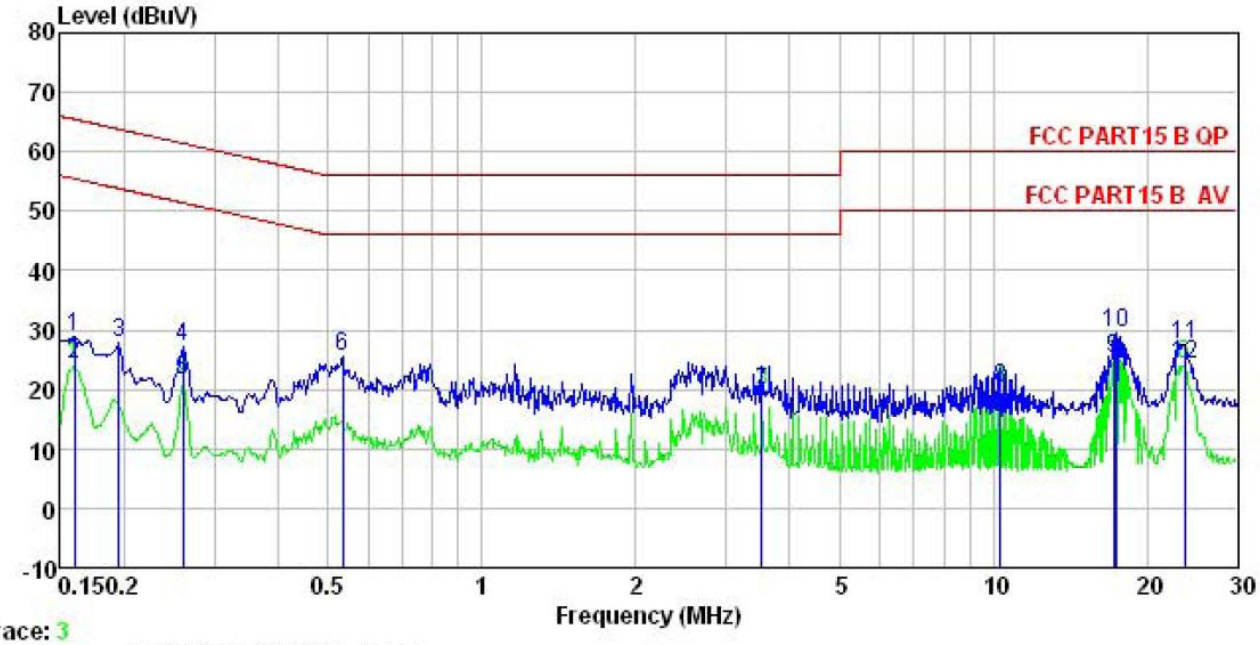
6 Test results and Measurement Data

6.1 Conducted Emission

Test Requirement:	FCC Part 15 B Section 15.107					
Test Method:	ANSI C63.4:2014					
Test Frequency Range:	150kHz to 30MHz					
Class / Severity:	Class B					
Receiver setup:	RBW=9kHz, VBW=30kHz					
Limit:	Frequency range (MHz)	Limit (dBµV)				
		Quasi-peak	Average			
	0.15-0.5	66 to 56*	56 to 46*			
	0.5-5	56	46			
	0.5-30	60	50			
	* Decreases with the logarithm of the frequency.					
Test setup:	 *Remark:* *E.U.T: Equipment Under Test* *LISN: Line Impedence Stabilization Network* *Test table height=0.8m*					
Test procedure	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.					
Test environment:	Temp.:	23 °C	Humid.:	56%	Press.:	101kPa
Test Instruments:	Refer to section 5.7 for details					
Test mode:	Refer to section 5.3 for details					
Test results:	Pass					

Measurement data:

Line:



Trace: 3

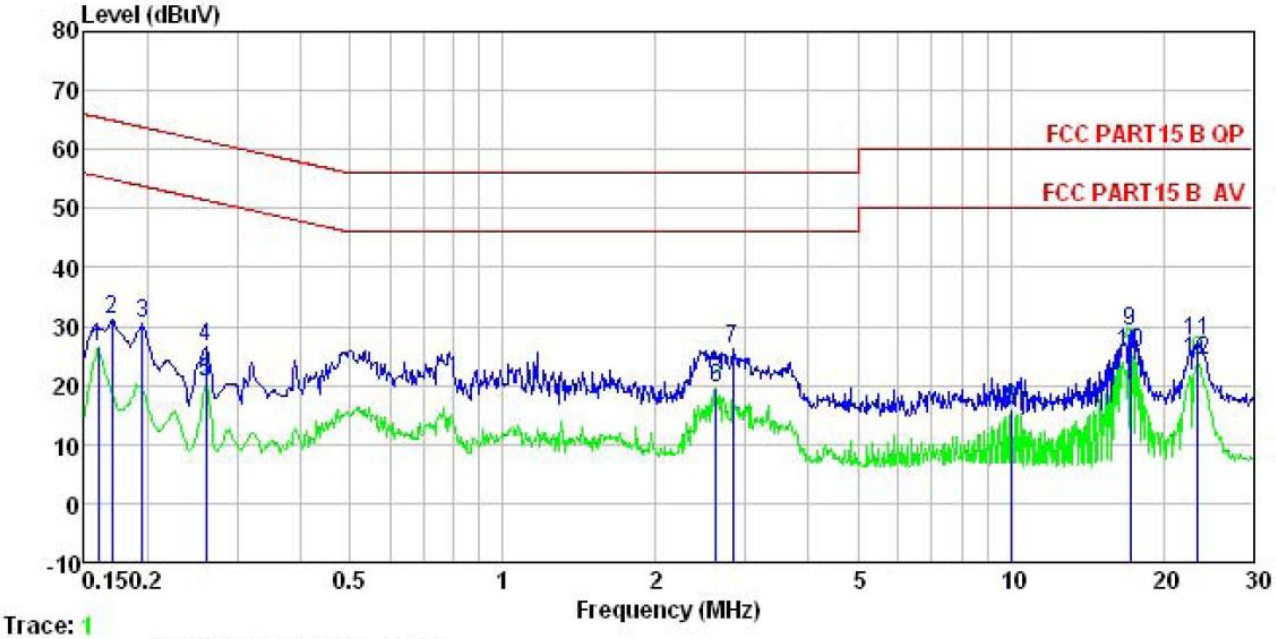
Site : CCIS Shielding Room
Condition : FCC PART15 B QP LISN LINE
EUT : Dongle USB 3G
Model : QX301A
Test Mode : PC mode
Power Rating : AC230V/50Hz
Environment : Temp: 23 ℃ Huni:56% Atmos:101KPa
Test Engineer: Steven
Remark :

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.160	17.96	0.14	10.78	28.88	65.47	-36.59	QP
2	0.160	13.23	0.14	10.78	24.15	55.47	-31.32	Average
3	0.195	17.05	0.15	10.76	27.96	63.80	-35.84	QP
4	0.260	16.24	0.16	10.75	27.15	61.42	-34.27	QP
5	0.260	10.62	0.16	10.75	21.53	51.42	-29.89	Average
6	0.535	14.57	0.26	10.76	25.59	56.00	-30.41	QP
7	3.528	8.40	0.34	10.90	19.64	46.00	-26.36	Average
8	10.342	8.99	0.30	10.94	20.23	50.00	-29.77	Average
9	17.199	14.08	0.29	10.91	25.28	50.00	-24.72	Average
10	17.383	18.41	0.30	10.91	29.62	60.00	-30.38	QP
11	23.636	16.42	0.36	10.88	27.66	60.00	-32.34	QP
12	23.636	12.89	0.36	10.88	24.13	50.00	-25.87	Average

Notes:

1. *An initial pre-scan was performed on the line and neutral lines with peak detector.*
2. *Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.*
3. *Final Level =Receiver Read level + LISN Factor + Cable Loss.*

Neutral:



Trace: 1

Site : CCIS Shielding Room
Condition : FCC PART15 B QP LISN NEUTRAL
EUT : Dongle USB 3G
Model : QX301A
Test Mode : PC mode
Power Rating : AC230V/50Hz
Environment : Temp: 23 ℃ Huni:56% Atmos:101KPa
Test Engineer: Steven
Remark :

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.160	15.57	0.13	10.78	26.48	55.47	-28.99	Average
2	0.170	20.18	0.13	10.77	31.08	64.94	-33.86	QP
3	0.195	19.76	0.15	10.76	30.67	63.80	-33.13	QP
4	0.260	15.73	0.18	10.75	26.66	61.42	-34.76	QP
5	0.260	9.79	0.18	10.75	20.72	51.42	-30.70	Average
6	2.636	8.45	0.29	10.93	19.67	46.00	-26.33	Average
7	2.839	15.01	0.30	10.93	26.24	56.00	-29.76	QP
8	10.072	4.65	0.24	10.94	15.83	50.00	-34.17	Average
9	17.199	18.16	0.27	10.91	29.34	60.00	-30.66	QP
10	17.199	14.47	0.27	10.91	25.65	50.00	-24.35	Average
11	23.263	16.49	0.25	10.89	27.63	60.00	-32.37	QP
12	23.387	12.91	0.25	10.89	24.05	50.00	-25.95	Average

Notes:

1. *An initial pre-scan was performed on the line and neutral lines with peak detector.*
2. *Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.*
3. *Final Level =Receiver Read level + LISN Factor + Cable Loss.*

6.2 Radiated Emission

Test Requirement:	FCC Part 15 B Section 15.109
Test Method:	ANSI C63.4:2014
Test Frequency Range:	30MHz to 26000MHz
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)

Receiver setup:

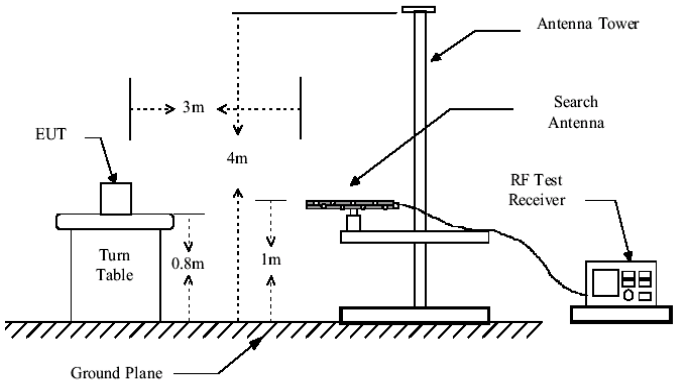
Frequency	Detector	RBW	VBW	Remark
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value
Above 1GHz	Peak	1MHz	3MHz	Peak Value
	RMS	1MHz	3MHz	Average Value

Limit:

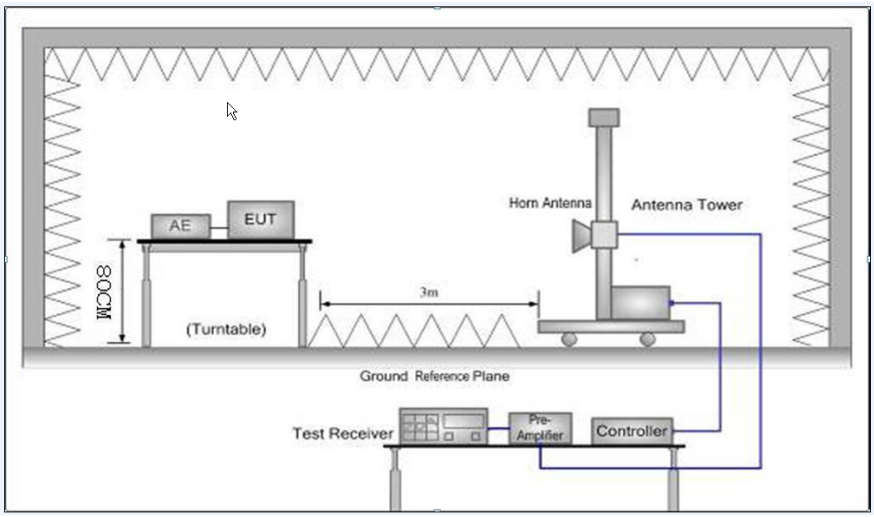
Frequency	Limit (dBuV/m @3m)	Remark
30MHz-88MHz	40.0	Quasi-peak Value
88MHz-216MHz	43.5	Quasi-peak Value
216MHz-960MHz	46.0	Quasi-peak Value
960MHz-1GHz	54.0	Quasi-peak Value
Above 1GHz	54.0	Average Value
	74.0	Peak Value

Test setup:

Below 1GHz



Above 1GHz

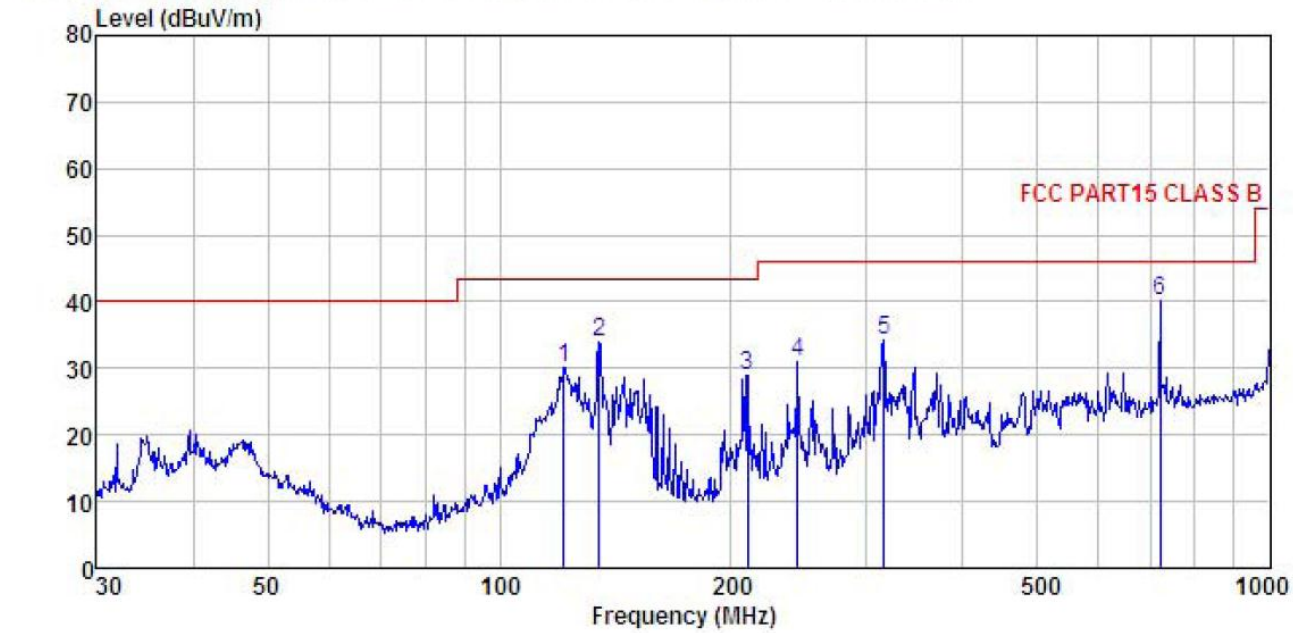


Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.					
Test environment:	Temp.:	25 °C	Humid.:	55%	Press.:	1 01kPa
Test Instruments:	Refer to section 5.7 for details					
Test mode:	Refer to section 5.3 for details					
Test results:	Passed					
Remark:	All of the observed value above 6GHz ware the niose floor , which were no recorded					

Measurement Data:

Below 1GHz

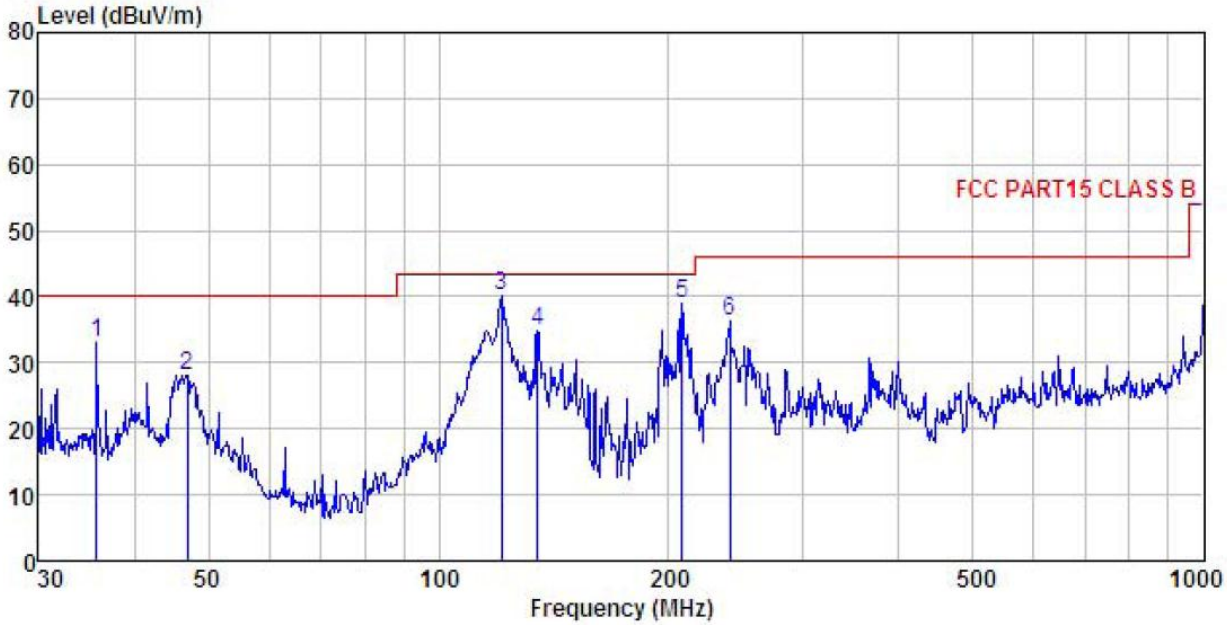
Horizontal:



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163(30M3G) HORIZONTAL
EUT : Dongle USB 3G
Model : QX301A
Test mode : PC mode
Power Rating : AC120V/60Hz
Environment : Temp:25.5℃ Huni:55%
Test Engineer: steven
REMARK :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	121.123	45.47	11.86	2.18	29.38	30.13	43.50	-13.37	QP
2	134.559	48.78	12.02	2.34	29.30	33.84	43.50	-9.66	QP
3	210.048	44.13	10.70	2.86	28.77	28.92	43.50	-14.58	QP
4	244.232	44.88	11.84	2.82	28.57	30.97	46.00	-15.03	QP
5	315.481	46.50	13.17	2.99	28.49	34.17	46.00	-11.83	QP
6	721.726	44.56	19.76	4.26	28.58	40.00	46.00	-6.00	QP

Vertical:

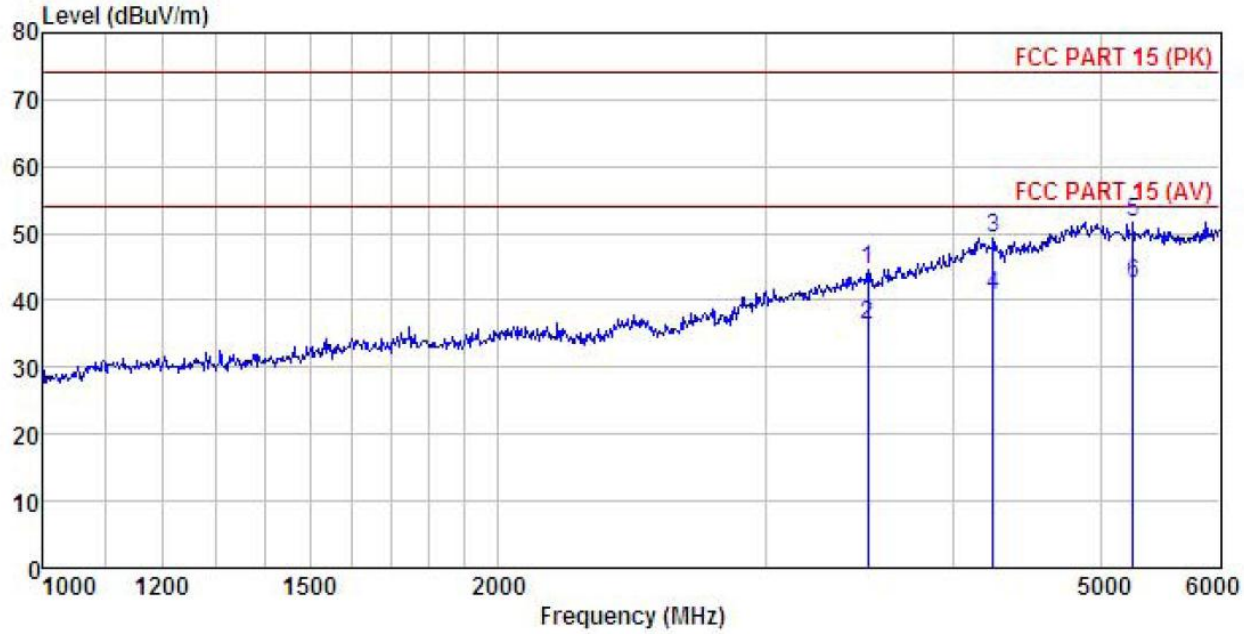


Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163(30M3G) VERTICAL
EUT : Dongle USB 3G
Model : QX301A
Test mode : PC mode
Power Rating : AC120V/60Hz
Environment : Temp:25.5℃ Huni:55%
Test Engineer: steven
REMARK :

	Freq	ReadLevel	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	35.749	46.90	15.13	1.07	29.94	33.16	40.00	-6.84	QP
2	46.995	40.05	16.71	1.27	29.84	28.19	40.00	-11.81	QP
3	120.699	55.44	11.83	2.18	29.39	40.06	43.50	-3.44	QP
4	134.559	49.84	12.02	2.34	29.30	34.90	43.50	-8.60	QP
5	207.850	54.28	10.56	2.86	28.78	38.92	43.50	-4.58	QP
6	239.987	50.33	11.80	2.82	28.59	36.36	46.00	-9.64	QP

Above 1GHz

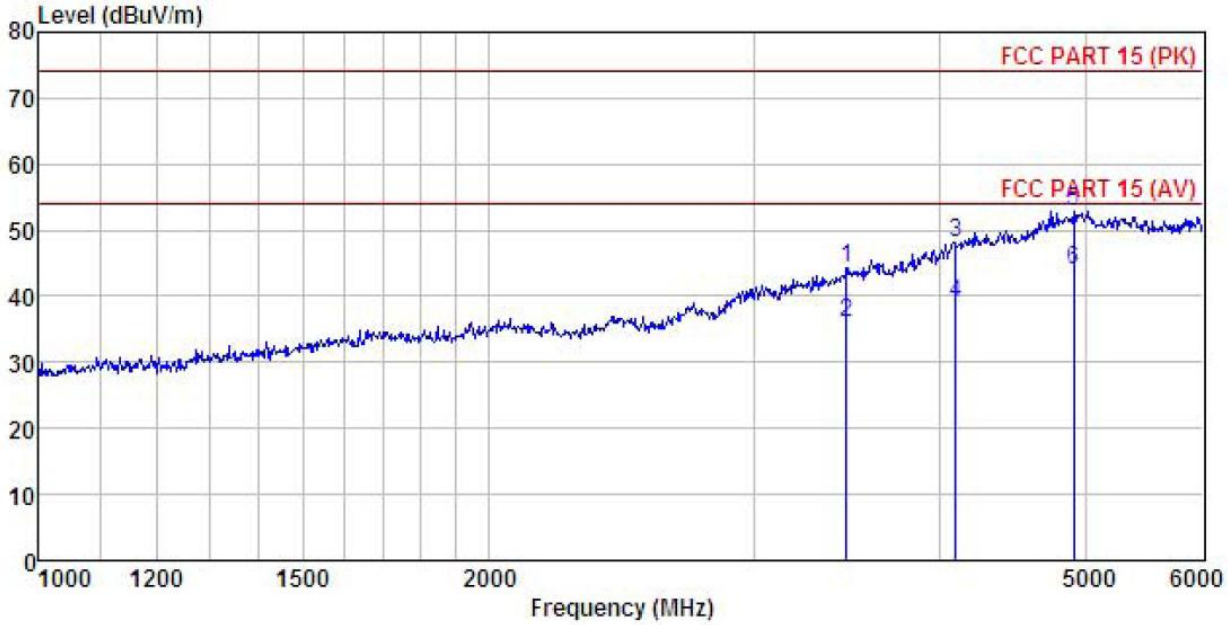
Horizontal:



Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
EUT : Dongle USB 3G
Model : QX301A
Test mode : PC Mode
Power Rating : AC120V/60Hz
Environment : Temp:25.5℃ Huni:55% 101KPa
Test Engineer: steven
REMARK :

	Freq	ReadLevel	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3511.430	52.17	27.99	5.78	41.46	44.48	74.00	-29.52	Peak
2	3511.430	43.95	27.99	5.78	41.46	36.26	54.00	-17.74	Average
3	4245.883	51.15	33.40	6.47	41.84	49.18	74.00	-24.82	Peak
4	4245.883	42.69	33.40	6.47	41.84	40.72	54.00	-13.28	Average
5	5254.943	50.73	35.77	7.09	41.93	51.66	74.00	-22.34	Peak
6	5254.943	41.65	35.77	7.09	41.93	42.58	54.00	-11.42	Average

Vertical:



Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
EUT : Dongle USB 3G
Model : QX301A
Test mode : PC Mode
Power Rating : AC120V/60Hz
Environment : Temp:25.5℃ Huni:55% 101KPa
Test Engineer: steven
REMARK :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3461.456	52.19	27.68	5.71	41.42	44.16	74.00	-29.84	Peak
2	3461.456	43.96	27.68	5.71	41.42	35.93	54.00	-18.07	Average
3	4096.425	50.90	32.74	6.25	41.81	48.08	74.00	-25.92	Peak
4	4096.425	41.85	32.74	6.25	41.81	39.03	54.00	-14.97	Average
5	4909.060	51.28	36.45	6.87	41.85	52.75	74.00	-21.25	Peak
6	4909.060	42.63	36.45	6.87	41.85	44.10	54.00	-9.90	Average