

Report No: CCISE170100601

FCC REPORT

(BLE)

Applicant: LALTITUDE LLC

Address of Applicant: 17128 COLIMA RD. #209 HACIENDA HEIGHTS, CA 91745 USA

Equipment Under Test (EUT)

Product Name: SB340 USB ADAPTER

Model No.: SB340

Trade mark: SOUNDBOT

FCC ID: 2AKVO-SB340

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247

Date of sample receipt: 05 Jan., 2017

Date of Test: 05 Jan., 2017 to 11 Jan., 2017

Date of report issued: 11 Jan., 2017

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	11 Jan., 2017	Original

Tested by: Date: 11 Jan., 2017

Test\⊈ngineer

Reviewed by: Lee Date: 11 Jan., 2017

Project Engineer



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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203/15.247 (c)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.247 (b)(3)	Pass
6dB Emission Bandwidth	15.247 (a)(2)	Pass
Power Spectral Density	15.247 (e)	Pass
Band Edge	15.247(d)	Pass
Spurious Emission	15.205/15.209	Pass

Pass: The EUT complies with the essential requirements in the standard. Test according to ANSI C 63.4-2014 and ANSI C 63.10-2013





5 General Information

5.1 Client Information

Applicant:	LALTITUDE LLC
Address of Applicant:	17128 COLIMA RD. #209 HACIENDA HEIGHTS, CA 91745 USA
Manufacturer/Factory:	LALTITUDE LLC
Address of Manufacturer/Factory:	17128 COLIMA RD. #209 HACIENDA HEIGHTS, CA 91745 USA

5.2 General Description of E.U.T.

Product Name:	SB340 USB ADAPTER
Model No.:	SB340
Operation Frequency:	2402-2480 MHz
Channel numbers:	40
Channel separation:	2 MHz
Modulation technology:	GFSK
Data speed :	1Mbps
Antenna Type:	PCB Antenna
Antenna gain:	1.0 dBi
Power supply:	DC 5V powered by USB port



Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	10	2422MHz	20	2442MHz	30	2462MHz
1	2404MHz	11	2424MHz	21	2444MHz	31	2464MHz
2	2406MHz	12	2426MHz	22	2446MHz	32	2466MHz
3	2408MHz	13	2428MHz	23	2448MHz	33	2468MHz
4	2410MHz	14	2430MHz	24	2450MHz	34	2470MHz
5	2412MHz	15	2432MHz	25	2452MHz	35	2472MHz
6	2414MHz	16	2434MHz	26	2454MHz	36	2474MHz
7	2416MHz	17	2436MHz	27	2456MHz	37	2476MHz
8	2418MHz	18	2438MHz	28	2458MHz	38	2478MHz
9	2420MHz	19	2440MHz	29	2460MHz	39	2480MHz

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The lowest channel	2402MHz
The middle channel	2442MHz
The Highest channel	2480MHz

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5.3 Test environment and mode

Operating Environment:				
Temperature:	24.0 °C			
Humidity:	54 % RH			
Atmospheric Pressure:	1010 mbar			
Test mode:				
Operation mode	Keep the EUT in continuous transmitting with modulation			

The sample was placed 0.8m(below 1GHz)/1.5m(above 1GHz) 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. Duty cycle setting during the transmission is 100% with maximum power setting for all modulations.

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

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.

Shenzhen Zhongjian Nanfang Testing Co., Ltd.
No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road, Bao'an District, Shenzhen, Guangdong, China
Telephone: +86 (0) 755 23116366



Report No: CCISE170100601

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

Rad	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	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	04-01-2016	03-31-2017		
7	Horn Antenna	ETS-LINDGREN	3160	GTS217	04-01-2016	03-31-2017		
8	Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP30	CCIS0023	03-28-2016	03-28-2017		
9	EMI Test Receiver	Rohde & Schwarz	ESRP7	CCIS0167	03-28-2016	03-28-2017		
10	Loop antenna	Laplace instrument	RF300	EMC0701	04-01-2016	03-31-2017		
11	EMI Test Software	AUDIX	E3	N/A	N/A	N/A		
12	Coaxial Cable	N/A	N/A	CCIS0018	04-01-2016	03-31-2017		
13	Coaxial Cable	N/A	N/A	CCIS0020	04-01-2016	03-31-2017		

Con	Conducted Emission:							
Item	Test Equipment	Manufacturer	Model No.	Inventory	Cal. Date	Cal. Due date		
iteiii	rest Equipment	Manufacturer	woder No.	No.	(mm-dd-yy)	(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 Antenna requirement:

Standard requirement: FCC Part 15 C Section 15.203 /247(c)

15.203 requirement:

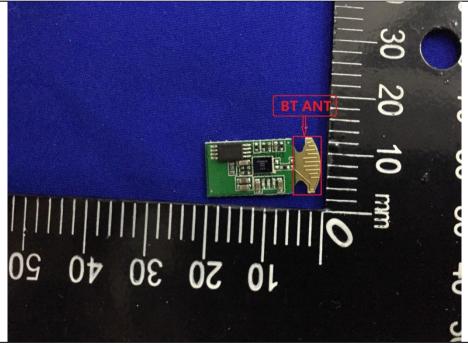
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(c) (1)(i) requirement:

(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

E.U.T Antenna:

The BLE antenna is an internal antenna which cannot replace by end-user, the best case gain of the antenna is 1.0 dBi.







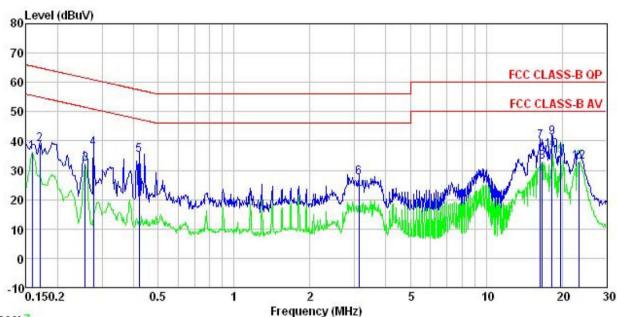
6.2 Conducted Emission

<u> </u>	or contacted Emission								
	Test Requirement:	FCC Part 15 C Section 15.207							
	Test Method:	ANSI C63.4: 2014							
	Test Frequency Range:	150 kHz to 30 MHz							
	Class / Severity:	Class B							
	Receiver setup:	RBW=9kHz, VBW=30kHz							
	Limit:	Frequency range (MHz)	Limit	(dBuV)					
		, , ,	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 logar							
	Test procedure	 The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.), which provides a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 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 setup:	Reference Plane							
		AUX Equipment Test table/Insulation Remark E.U.T. Equipment Under Te LISN: Line Impedence Stab Test table height=0.8m	E.U.T EMI Receiver	ilter — AC power					
	Test Instruments:	Refer to section 5.7 for det	tails						
	Test mode:	Refer to section 5.3 for det	tails						
	Test results:	Passed							



Measurement Data:

Neutral:



Trace: 7

Site

: CCIS Shielding Room : FCC CLASS-B QP LISN NEUTRAL : SB340 USB ADAPTER Condition

EUT

Model : SB340 Test Mode : BLE Mode Power Rating : AC 120/60Hz

Environment: Temp: 23 °C Huni: 56% Atmos: 101KPa

Test Engineer: Carey

Remark

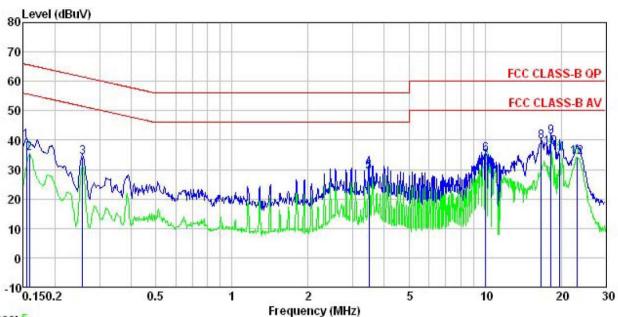
: Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
MHz	—dBu∜	<u>ap</u>	<u>ab</u>	dBu√	—dBu₹		
0.158	25.32	0.13	10.78	36.23	55.56	-19.33	Average
0.170	27.87	0.13	10.77	38.77	64.94	-26.17	QP
0.258	21.10	0.17	10.75	32.02	51.51	-19.49	Average
0.277	26.62	0.18	10.74	37.54	60.90	-23.36	QP
0.421	24.09	0.23	10.73	35.05	57.42	-22.37	QP
3.123	16.32	0.31	10.92	27.55	56.00	-28.45	QP
16.398	28.57	0.27	10.91	39.75	60.00	-20.25	QP
16.661	21.54	0.27	10.91	32.72	50.00	-17.28	Average
18.232	30.08	0.27	10.91	41.26	60.00	-18.74	QP
18.232	25.53	0.27	10.91	36.71	50.00	-13.29	Average
19.740	23.63	0.28	10.93	34.84	50.00	-15.16	Average
23.387	21.79	0.25	10.89	32.93	50.00	-17.07	Average
	MHz 0. 158 0. 170 0. 258 0. 277 0. 421 3. 123 16. 398 16. 661 18. 232 18. 232 19. 740	MHz dBuV 0.158 25.32 0.170 27.87 0.258 21.10 0.277 26.62 0.421 24.09 3.123 16.32 16.398 28.57 16.661 21.54 18.232 30.08 18.232 25.53 19.740 23.63	Freq Level Factor MHz dBuV dB 0.158 25.32 0.13 0.170 27.87 0.13 0.258 21.10 0.17 0.277 26.62 0.18 0.421 24.09 0.23 3.123 16.32 0.31 16.398 28.57 0.27 16.661 21.54 0.27 18.232 30.08 0.27 18.232 25.53 0.27 19.740 23.63 0.28	Freq Level Factor Loss MHz dBuV dB dB	MHz dBuV dB dB dBuV 0.158 25.32 0.13 10.78 36.23 0.170 27.87 0.13 10.77 38.77 0.258 21.10 0.17 10.75 32.02 0.277 26.62 0.18 10.74 37.54 0.421 24.09 0.23 10.73 35.05 3.123 16.32 0.31 10.92 27.55 16.398 28.57 0.27 10.91 39.75 16.661 21.54 0.27 10.91 32.72 18.232 30.08 0.27 10.91 41.26 18.232 25.53 0.27 10.91 36.71 19.740 23.63 0.28 10.93 34.84	Freq Level Factor Loss Level Line MHz dBuV dB dB dBuV dBuV	MHz dBuV dB dB dBuV dBuV dB 0.158 25.32 0.13 10.78 36.23 55.56 -19.33 0.170 27.87 0.13 10.77 38.77 64.94 -26.17 0.258 21.10 0.17 10.75 32.02 51.51 -19.49 0.277 26.62 0.18 10.74 37.54 60.90 -23.36 0.421 24.09 0.23 10.73 35.05 57.42 -22.37 3.123 16.32 0.31 10.92 27.55 56.00 -28.45 16.398 28.57 0.27 10.91 39.75 60.00 -20.25 16.661 21.54 0.27 10.91 32.72 50.00 -17.28 18.232 30.08 0.27 10.91 41.26 60.00 -18.74 18.232 25.53 0.27 10.91 36.71 50.00 -13.29 19.740 23.63 0.28 </td

Notes:

- 1. An initial pre-scan was performed on the live 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.



Line:



Trace: 5

: CCIS Shielding Room : FCC CLASS-B QP LISN LINE Site Condition

EUT SB340 USB ADAPTER : SB340 Model

Test Mode : BLE Mode

Power Rating: AC 120/60Hz Environment: Temp: 23 °C Huni:56% Atmos:101KPa

Test Engineer: Carey

(emark									
	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark	
	MHz	dBu∜	<u>dB</u>	<u>ab</u>	dBu∀	dBu∇	<u>dB</u>		
1	0.154	28.85	0.14	10.78	39.77	65.78	-26.01	QP	
2	0.158	24.58	0.14	10.78	35.50	55.56	-20.06	Average	
2 3 4 5 6	0.258	23.40	0.16	10.75	34.31	61.51	-27.20	QP	
4	3.472	19.19	0.34	10.91	30.44	56.00	-25.56	QP	
5	3.472	17.90	0.34	10.91	29.15	46.00	-16.85	Average	
6	10.072	23.82	0.30	10.94	35.06	60.00	-24.94	QP	
7 8 9	10.072	21.52	0.30	10.94	32.76	50.00	-17.24	Average	
8	16.661	28.40	0.28	10.91	39.59	60.00	-20.41	QP	
9	18.232	29.99	0.31	10.91	41.21	60.00	-18.79	QP	
10	18.232	26.38	0.31	10.91	37.60	50.00	-12.40	Average	
11	19.740	24.25	0.33	10.93	35.51			Average	
12	23.018	23.04	0.35	10.89	34.28	50.00	-15.72	Average	

Notes:

- 1. An initial pre-scan was performed on the live 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.



6.3 Conducted Peak Output Power

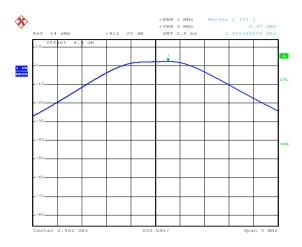
Test Requirement:	FCC Part 15 C Section 15.247 (b)(3)				
Test Method:	ANSI C63.10:2013 and KDB558074v03r05 section 9.1.1				
Limit:	30dBm				
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane				
Test Instruments:	Refer to section 5.7 for details				
Test mode:	Refer to section 5.3 for details				
Test results:	Passed				

Measurement Data:

Test CH	Peak Conducted Output Power (dBm)	Limit(dBm)	Result
Lowest	2.37		
Middle	4.18	30.00	Pass
Highest	4.83		

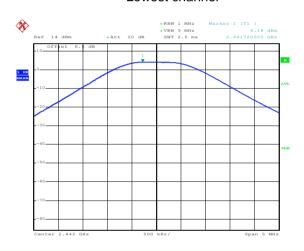


Test plot as follows:



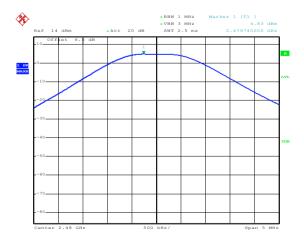
Date: 4.JAN.2017 12:02:21

Lowest channel



Date: 4.JAN.2017 12:02:11

Middle channel



Date: 4.JAN.2017 12:01:55

Highest channel



6.4 Occupy Bandwidth

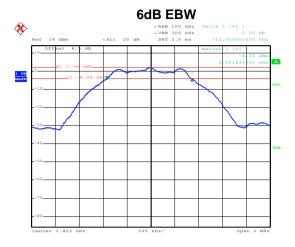
Test Requirement:	FCC Part 15 C Section 15.247 (a)(2)					
Test Method:	ANSI C63.10:2013 and KDB558074v03r05 section 8.1					
Limit:	>500kHz					
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane					
Test Instruments:	Refer to section 5.7 for details					
Test mode:	Refer to section 5.3 for details					
Test results:	Passed					

Measurement Data:

Test CH	6dB Emission Bandwidth (MHz)	Limit(kHz)	Result		
Lowest	0.712				
Middle	0.720	>500	Pass		
Highest	0.720				
Test CH	99% Occupy Bandwidth (MHz)	Limit(kHz)	Result		
Lowest	1.040				
Middle	1.040	N/A	N/A		
Highest	1.040				

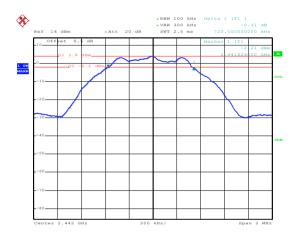


Test plot as follows:



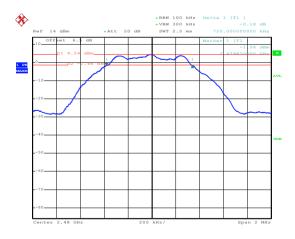
Date: 4.JAN.2017 12:03:10

Lowest channel



Date: 4.JAN.2017 12:03:50

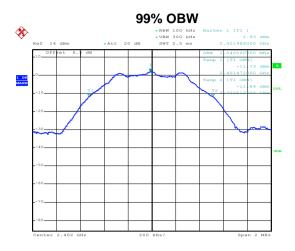
Middle channel



Date: 4.JAN.2017 12:04:40

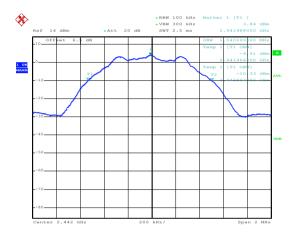
Highest channel





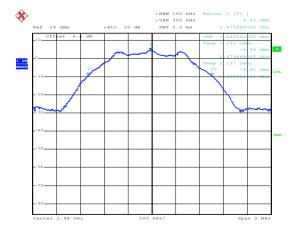
Date: 4.JAN.2017 12:02:39

Lowest channel



Date: 4.JAN.2017 12:04:05

Middle channel



Date: 4.JAN.2017 12:04:16

Highest channel



6.5 Power Spectral Density

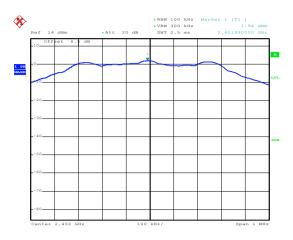
Test Requirement:	FCC Part 15 C Section 15.247 (e)				
Test Method:	ANSI C63.10:2013 and KDB558074v03r05 section 10.2				
Limit:	8 dBm				
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane				
Test Instruments:	Refer to section 5.7 for details				
Test mode:	Refer to section 5.3 for details				
Test results:	Passed				

Measurement Data:

modelation buta.						
Test CH	Power Spectral Density (dBm)	Limit(dBm)	Result			
Lowest	1.94					
Middle	3.83	8.00	Pass			
Highest	4.54					

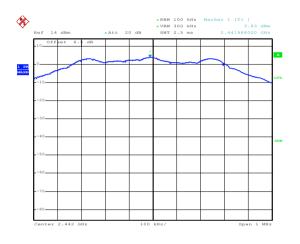


Test plots as follow:



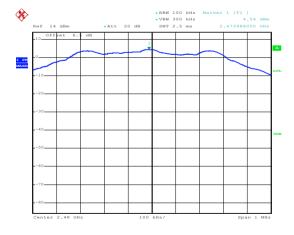
Date: 4.JAN.2017 12:06:35

Lowest channel



Date: 4.JAN.2017 12:05:09

Middle channel



Date: 4.JAN.2017 12:04:56

Highest channel



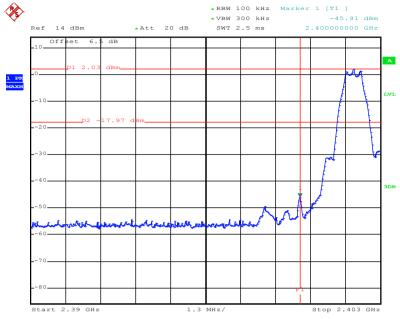
6.6 Band Edge

6.6.1 Conducted Emission Method

Toot Doguiroment	CCC Port 15 C Continu 15 017 (d)					
Test Requirement:	FCC Part 15 C Section 15.247 (d)					
Test Method:	ANSI C63.10:2013 and KDB558074v03r05 section 13					
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.					
Test setup:						
	Spectrum Analyzer					
	Non-Conducted Table					
	Ground Reference Plane					
Test Instruments:	Refer to section 5.7 for details					
Test mode:	Refer to section 5.3 for details					
Test results:	Passed					

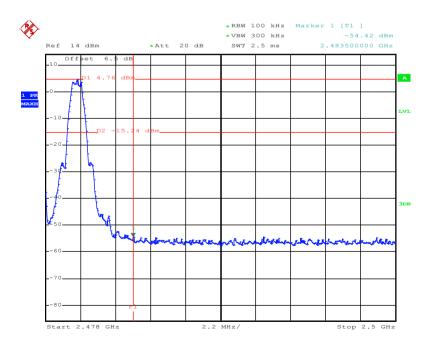


Test plots as follow:



Date: 4.JAN.2017 12:07:13

Lowest channel



Date: 4.JAN.2017 12:07:57

Highest channel



6.6.2 Radiated Emission Method

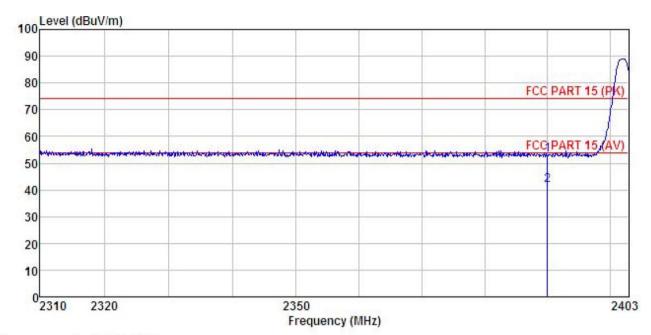
Limit: Frequency	Test Requirement:	FCC Part 15 C Section 15.209 and 15.205						
Test site: Measurement Distance: 3m Receiver setup: Frequency Detector RBW VBW Remark Above 1 GHz Peak 1 MHz 3 MHz Average Value RMS 1 MHz 3 MHz Average Value RMS 1 MHz 3 MHz Average Value Frequency Limit (dBuV/m @3m) Remark Above 1 GHz 54.00 Average Value Above 1 GHz 54.00 Peak Value Test Procedure: 1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degree 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 antenr 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 onizontal 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 to meters and the rota table was turned from 0 degrees to 360 degree 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 10 dB lower than the limit specified, then testing could be stopped and the peak value of the EUT would be re-rested one by one using peak, qual peak or average method as specified and then reported in a data sheet. Test setup: Test Instruments: Refer to section 5.7 for details Refer to section 5.3 for details	Test Method:	ANSI C63.10: 2013 and KDB 558074v03r05 section 12.1						
Receiver setup: Frequency	Test Frequency Range:	2.3GHz to 2.5GHz						
Above 1GHz Peak 1MHz 3MHz Peak Value Frequency Limit (dBuVm @3m) Average Value Frequency Limit (dBuVm @3m) Average Value Above 1GHz 74.00 Peak Value Peak Value	Test site:	Measurement	Distance: 3r	m				
Above 1GHz Peak	Receiver setup:	Frequency	Detector	RBW	VBW	V Remark		
Limit: Frequency Limit (BBU/M @ 3m) Remark		Above 1CHz	Peak	1MHz	3MH:	lz Peak Value		
Test Procedure: 1. The EUT was placed on the top of a rotating table 1.5 meters abov the ground at a 3 meter camber. The table was rotated 360 degree 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 antenr 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 rota table was turned from 0 degrees to 360 degree 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 10 dB lower that the limit specified, then testing could be stopped and the peak valu of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, qua peak or average method as specified and then reported in a data sheet. Test setup: Refer to section 5.7 for details Refer to section 5.3 for details		Above IGIIZ						
Test Procedure: 1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degree 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 antenr 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 rota table was turned from 0 degrees to 360 degree 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 10 dB lower that the limit specified, then testing could be stopped and the peak value of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, qual peak or average method as specified and then reported in a data sheet. Test setup: Refer to section 5.7 for details Refer to section 5.3 for details	Limit:	Frequer	ncy		3m)			
Test Procedure: 1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degree 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 antenn 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 rota table was turned from 0 degrees to 360 degree 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 10 dB lower that the limit specified, then testing could be stopped and the peak value of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quapeak or average method as specified and then reported in a data sheet. Test setup: Test setup: Refer to section 5.7 for details Refer to section 5.3 for details		Above 10	GHz –					
Test Instruments: Refer to section 5.7 for details Test mode: Refer to section 5.3 for details	Test Procedure:	the groun to determ 2. The EUT antenna, tower. 3. The antentent the groun Both horismake the 4. For each case and meters are to find the 5. The test-Inspecified 6. If the emite the limites of the EU have 10 copeak or an enterm to determine the second the entermine the limites of the EU have 10 copeak or an entermine to determine the limites of the EU have 10 copeak or an entermine to determine the limites of the EU have 10 copeak or an entermine the enter	ad at a 3 methine the positives was set 3 methine was set 3 methine was not an	on the top of a roter camber. The taking of the highest leters away from the nounted on the top avaried from one retical polarization ent. I waission, the EUT denna was tuned from the was tuned from the eading. I with Maximum How if the EUT in peak in testing could be reported. Otherwist ould be re-tested of the eader.	ble was radiation he interfer to fa variation meter to favalue of the assortion of the asso	le 1.5 meters above rotated 360 degrees in the rence-receiving riable-height antenna four meters above the field strength, antenna are set to anged to its worst is from 1 meter to 4 grees to 360 degrees it Function and as 10 dB lower than I and the peak values hissions that did not the using peak, quasi-		
Test mode: Refer to section 5.3 for details	Test setup:	SIEGE.	many.	Ground Reference Plane				
	Test Instruments:	Refer to section 5.7 for details						
	Test mode:	Refer to section	on 5.3 for det	tails				
Test results: Passed	Test results:	Passed						





Test channel: Lowest

Horizontal:



Site

: 3m chamber : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL : SB340 USB ADAPTER Condition

EUT

Model : SB340 Test mode : BLE-L Mode
Power Rating : AC120V / 60Hz
Environment : Temp:25.5°C Huni:55%

Test Engineer: Carey

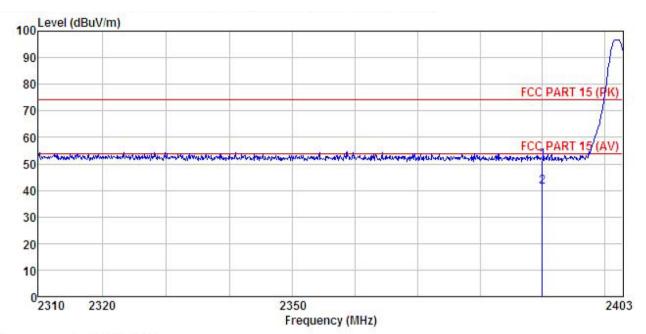
REMARK

	1297		Antenna Factor						Remark	
2	MHz	dBuV	<u>dB</u> /m	dB	<u>d</u> B	dBuV/m	dBuV/m	<u>d</u> B		
	2390.000 2390.000									





Vertical:



Site

: 3m chamber : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL : SB340 USB ADAPTER Condition

EUT

: SB340 Model Test mode : BLE-L Mode
Power Rating : AC120V / 60Hz
Environment : Temp:25.5°C Huni:55%

Test Engineer: Carey
REMARK

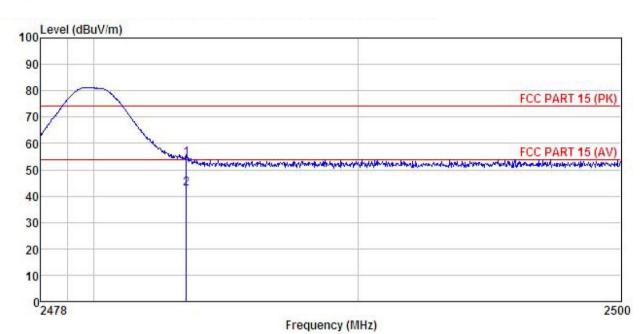
CINCILLA	200		Antenna Factor						
2	MHz	dBuV	<u>d</u> B/m	ā	<u>ab</u>	dBuV/m	dBuV/m	ā	
	2390.000 2390.000								





Test channel: Highest

Horizontal:



Site

: 3m chamber : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL : SB340 USB ADAPTER Condition

EUT

: SB340 Model : BLE-H Mode Test mode

Power Rating: AC120V / 60Hz Environment: Temp:25.5°C Huni:55%

Test Engineer: Carey

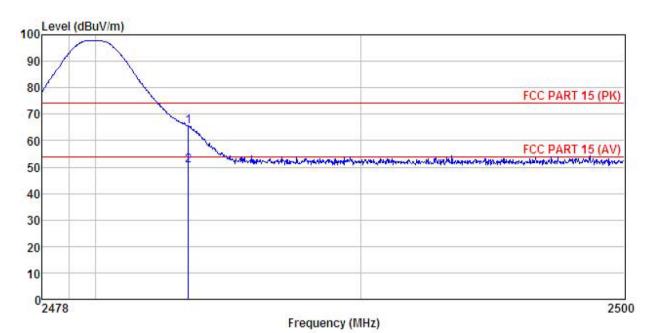
REMARK

1 2

	Freq		Antenna Factor						
-	MHz	dBu∇	<u>dB</u> /m	<u>d</u> B	<u>dB</u>	dBuV/m	dBu√/m	dB	 -
	2483, 500 2483, 500								



Vertical:



Site

: 3m chamber : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL Condition

: SB340 USB ADAPTER EUT

: SB340
Test mode : BLE-H Mode
Power Rating : AC120V / 60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Carey
REMARK :

			Antenna Factor					
,	MHz	——dBu∇	— <u>d</u> B/m	 <u>d</u> B	dBuV/m	dBuV/m	<u>d</u> B	
1 2	2483.500 2483.500							



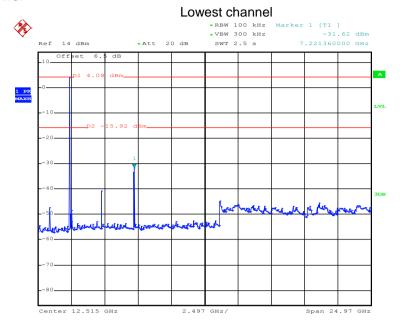
6.7 Spurious Emission

6.7.1 Conducted Emission Method

Tost Poquiroment:	FCC Part 15 C Section 15.247 (d)								
Test Requirement:									
Test Method:	ANSI C63.10:2013 and KDB558074v03r05 section 11								
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.								
Test setup:									
	Spectrum Analyzer								
	Non-Conducted Table								
	Ground Reference Plane								
Test Instruments:	Refer to section 5.7 for details								
Test mode:	Refer to section 5.3 for details								
Test results:	Passed								

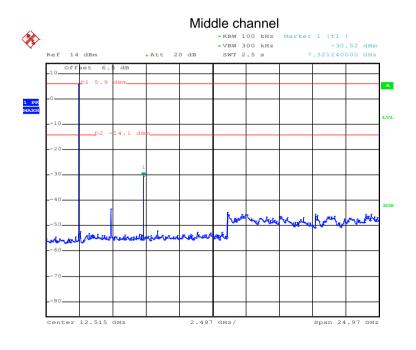


Test plot as follows:



Date: 4.JAN.2017 11:58:42

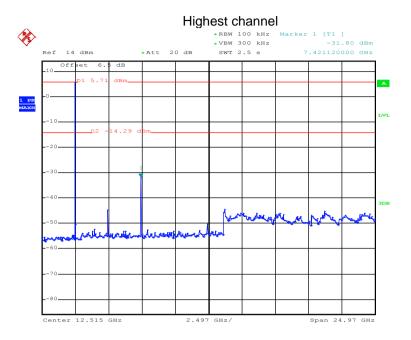
30MHz~25GHz



Date: 4.JAN.2017 11:59:41

30MHz~25GHz





Date: 4.JAN.2017 12:00:10

30MHz~25GHz



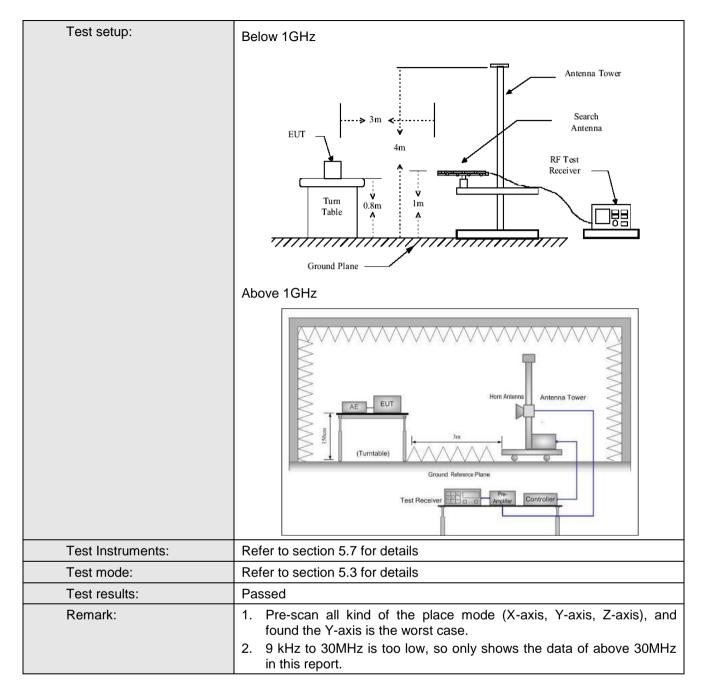


6.7.2 Radiated Emission Method

Test Requirement:	FCC Part 15 C Section 15.209 and 15.205								
Test Method:	ANSI C63.10:20	013							
Test Frequency Range:	9KHz to 25GHz								
Test site:	Measurement D	istance: 3	3m						
Receiver setup:	Frequency	Detecto	or	RBW VB		W	Remark		
·	30MHz-1GHz	Quasi-pe	eak	120KHz	300	KHz	Quasi-peak Value		
	Above 1GHz	Peak		1MHz	3M	Hz	Peak Value		
	Above 1GHz	RMS		1MHz	3M	Hz	Average Value		
Limit:	Frequency	У	Lin	nit (dBuV/m @	3m)		Remark		
	30MHz-88M	Hz		40.0			uasi-peak Value		
	88MHz-216N	ИHz		43.5		Q	uasi-peak Value		
	216MHz-960I			46.0			uasi-peak Value		
	960MHz-1G	Hz							
	Above 1GF	lz –				Average Value			
Test Procedure:	Above 1GHz Average Value A meter camber. A meter								



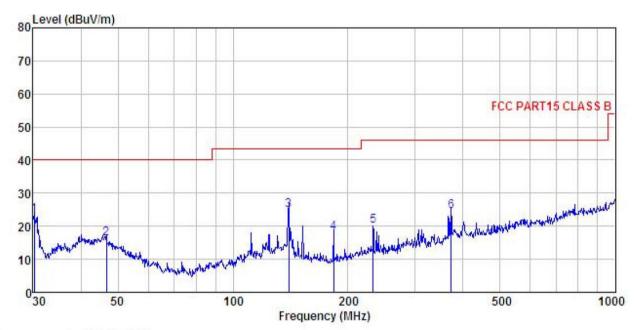






Below 1GHz:

Horizontal:



Site

: 3m chamber : FCC PART15 CLASS B 3m VULB9163(30M3G) HORIZONTAL Condition

: SB340 USB ADAPTER EUT

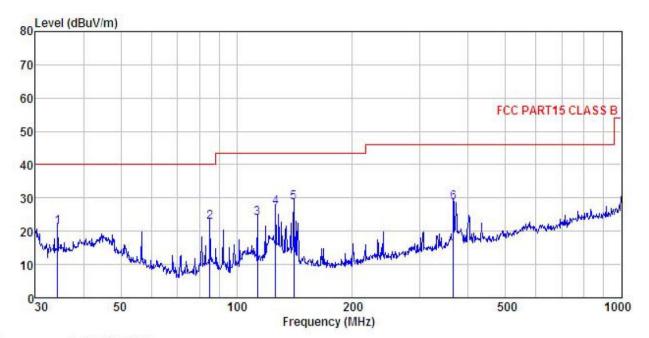
: SB340
Test mode : BLE Mode
Power Rating : AC120V/ 60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Carey
REMARK :

Freq								
MHz	dBu∇	<u>dB</u> /m	<u>d</u> B	<u>ab</u>	$\overline{dBuV/m}$	$\overline{dBuV/m}$	<u>dB</u>	
30.211	40.51	12.03	0.72	29.98	23.28	40.00	-16.72	QP
46.666	28.12	16.83	1.28	29.85	16.38	40.00	-23.62	QP
139.851	40.06	11.74	2.39	29.27	24.92	43.50	-18.58	QP
183.201	34.75	9.37	2.75	28.95	17.92	43.50	-25.58	QP
232.532	34.32	11.66	2.83	28.64	20.17	46.00	-25.83	QP
372.005	35.22	14.97	3.09	28.66	24.62	46.00	-21.38	QP
	MHz 30. 211 46. 666 139. 851 183. 201 232. 532	Freq Level MHz dBuV 30.211 40.51 46.666 28.12 139.851 40.06 183.201 34.75 232.532 34.32	Freq Level Factor MHz dBuV dB/m 30.211 40.51 12.03 46.666 28.12 16.83 139.851 40.06 11.74 183.201 34.75 9.37 232.532 34.32 11.66	Freq Level Factor Loss MHz dBuV dB/m dB 30.211 40.51 12.03 0.72 46.666 28.12 16.83 1.28 139.851 40.06 11.74 2.39 183.201 34.75 9.37 2.75 232.532 34.32 11.66 2.83	Freq Level Factor Loss Factor MHz dBuV dB/m dB dB 30.211 40.51 12.03 0.72 29.98 46.666 28.12 16.83 1.28 29.85 139.851 40.06 11.74 2.39 29.27 183.201 34.75 9.37 2.75 28.95 232.532 34.32 11.66 2.83 28.64	Freq Level Factor Loss Factor Level MHz dBuV dB/m dB dB dBuV/m 30.211 40.51 12.03 0.72 29.98 23.28 46.666 28.12 16.83 1.28 29.85 16.38 139.851 40.06 11.74 2.39 29.27 24.92 183.201 34.75 9.37 2.75 28.95 17.92 232.532 34.32 11.66 2.83 28.64 20.17	Freq Level Factor Loss Factor Level Line MHz dBuV dB/m dB dB dBuV/m dBuV/m 30.211 40.51 12.03 0.72 29.98 23.28 40.00 46.666 28.12 16.83 1.28 29.85 16.38 40.00 139.851 40.06 11.74 2.39 29.27 24.92 43.50 183.201 34.75 9.37 2.75 28.95 17.92 43.50 232.532 34.32 11.66 2.83 28.64 20.17 46.00	Freq Level Factor Level Line Limit MHz dBuV dB/m dB dB dBuV/m dBuV/m dBuV/m dBuV/m dB 30.211 40.51 12.03 0.72 29.98 23.28 40.00 -16.72 46.666 28.12 16.83 1.28 29.85 16.38 40.00 -23.62 139.851 40.06 11.74 2.39 29.27 24.92 43.50 -18.58 183.201 34.75 9.37 2.75 28.95 17.92 43.50 -25.58 232.532 34.32 11.66 2.83 28.64 20.17 46.00 -25.83





Vertical:



Site

: 3m chamber : FCC PART15 CLASS B 3m VULB9163(30M3G) VERTICAL Condition

: SB340 USB ADAPTER : SB340 EUT

: SB340
Test mode : BLE Mode
Power Rating : AC120V/ 60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Carey
REMARK :

	Freq		Antenna Factor				Limit Line	Over Limit	Remark
_	MHz	dBu∜	-dB/m	dB	<u>dB</u>	$\overline{dBuV/m}$	$\overline{dBuV/m}$	<u>dB</u>	
1	34.276	35.85	14.37	1.04	29.95	21.31	40.00	-18.69	QP
2	85.298	42.92	7.55	1.87	29.60	22.74	40.00	-17.26	QP
3	113.316	40.31	10.85	2.09	29.43	23.82	43.50	-19.68	QP
4	126.329	42.17	12.12	2.24	29.35	27.18	43.50	-16.32	QP
1 2 3 4 5	140.835	43.86	11.63	2.41	29.27	28.63	43.50	-14.87	QP
6	365.539	39.55	14.72	3.09	28.63	28.73	46.00	-17.27	QP



Above 1GHz

Т	est channel	:	Lowest		Le	vel:	Peak		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4804.00	54.29	35.99	6.80	41.81	55.27	74.00	-18.73	Vertical	
4804.00	51.38	35.99	6.80	41.81	52.36	74.00	-21.64	Horizontal	
Т	est channel	•	Lowest		Le	vel:	Average		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4804.00	49.82	35.99	6.80	41.81	50.80	54.00	-3.20	Vertical	
4804.00	45.34	35.99	6.80	41.81	46.32	54.00	-7.68	Horizontal	

Т	est channel		Middle		Le	vel:	Peak		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4884.00	52.30	36.38	6.86	41.84	53.70	74.00	-20.30	Vertical	
4884.00	49.24	36.38	6.86	41.84	50.64	74.00	-23.36	Horizontal	
Т	est channel		Middle		Level:		Average		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4884.00	47.45	36.38	6.86	41.84	48.85	54.00	-5.15	Vertical	
4884.00	42.82	36.38	6.86	41.84	44.22	54.00	-9.78	Horizontal	

Т	est channel	:	Highest		Le	vel:	Peak		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4960.00	52.49	36.71	6.91	41.87	54.24	74.00	-19.76	Vertical	
4960.00	48.43	36.71	6.91	41.87	50.18	74.00	-23.82	Horizontal	
Т	est channel	•	Highest		Le	vel:	Average		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	
4960.00	45.41	36.71	6.91	41.87	47.16	54.00	-6.84	Vertical	
4960.00	42.45	36.71	6.91	41.87	44.20	54.00	-9.80	Horizontal	

Remark:

- 1. Final Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.