

FCC PART 15.225  
IC RSS-210, ISSUE 8, DEC 2010  
TEST AND MEASUREMENT REPORT



For

**NVIDIA Corporation**

2701 San Tomas Expressway,

Santa Clara, CA 95050, USA

**FCC ID: VOB-E1290A**  
**IC: 7361A-E1290A**

<b>Report Type:</b> Original Report	<b>Product Type:</b> Tegra 3 Developer Tablet
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<b>Report No.:</b> R1111165-225	
<b>Report Date:</b> 2011-12-29	
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\* This report may contain data that are not covered by the NVLAP accreditation and are marked with an asterisk "\*" see 2

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**DOCUMENT REVISION HISTORY**

<b>Revision Number</b>	<b>Report Number</b>	<b>Description of Revision</b>	<b>Date of Revision</b>
0	R1111165-225	Original Report	2011-12-29

## 1 GENERAL INFORMATION

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### 1.1 Product Description for Equipment under Test (EUT)

The *NVIDIA Corporation's* product model: E1290, FCC ID: *VOB-E1290A, IC: 7361A-E1290A* is a Tegra 3 Developer Tablet with NFC 13.56 MHz transmitter, WWAN module and Bluetooth/WLAN combo module.

### 1.2 Mechanical Description

The EUT measures approximately 258mm (L) x 163mm (W) x 10 mm (H). Weight: 650 kg.

*The test data gathered is from production samples, serial number: 0412911036188, provided by the manufacturer.*

### 1.3 Objective

This Type approval report is prepared on behalf of *NVIDIA Corporation* in accordance with Part 2, Subpart J, and Part 15 Subpart C of the Federal Communication Commissions rules and IC RSS-210 Issue 8, Dec 2010.

### 1.4 Related Submittal(s)/Grant(s)

No Related Submittals.

### 1.5 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, 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.

All radiated and conducted emissions measurements were performed at Bay Area Compliance Laboratory, Corp.

### 1.6 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the values range from  $\pm 2.0$  for Conducted Emissions tests and  $\pm 4.0$  dB for Radiated Emissions tests are the most accurate estimates pertaining to uncertainty of EMC measurements at BACL.

Detailed instrumentation measurement uncertainties can be found in BACL report QAP-018.

## 1.7 Test Facility

The test site used by BACL Corp. to collect measurement data is located at its facility in Sunnyvale, California, USA.

The test sites at BACL have been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports has been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997 and Article 8 of the VCCI regulations on December 25, 1997. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission, Industry Canada, and Voluntary Control Council for Interference has the reports on file and is listed under FCC registration number: 90464, IC registration number: 3062A, and VCCI Registration Number: C-2463 and R-2698. The test site has been approved by the FCC, IC, and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200167-0). The current scope of accreditations can be found at <http://ts.nist.gov/ts/htdocs/210/214/scopes/2001670.htm>



## 2 SYSTEM TEST CONFIGURATION

### 2.1 Justification

The EUT was configured for testing according to ANSI C63.4-2003.

Worse 2.4G b mode + WAN 1 850 MHz GPRS + NFC 13.65 MHz.

### 2.2 EUT Exercise Software

N/A

### 2.3 Special Accessories

N/A

### 2.4 Equipment Modifications

No modifications were made to the EUT

### 2.5 Local Support Equipment

N/A

### 2.6 Interface Ports and Cabling

Cable Description	Length (m)	From	To
Power Cable	< 3m	EUT	AC line Power Source

### 3 SUMMARY OF TEST RESULTS

FCC/IC Rules	Description of Test	Results
FCC §15.203 IC RSS-210 §7.1.2	Antenna Requirement	Compliant
FCC §15.209, §15.225 IC RSS-210, §A2.6, RSS-Gen §7.2.2	Radiated Emission	Compliant
FCC §15.207 IC RSS-Gen §7.2.4	Conducted Emission	Compliant
FCC §15.225(e) IC RSS-210, §A2.6	Frequency Stability	Compliant
IC RSS-Gen §6	Receiver Spurious Emissions	Compliant



## **4 FCC §15.203 & IC RSS-Gen §7.1.2 – ANTENNA REQUIREMENT**

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### **4.1 Applicable Standard**

FCC Part 15.203 and IC RSS-Gen §7.1.2

**Result:** Compliance, please refer to the EUT internal photos.

## 5 FCC §15.209, §15.225 & IC RSS-210 §A2.6, RSS-GEN §7.2.2 - RADIATED EMISSION TEST

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### 5.1 Applicable Standard

As per 15.225:

- (a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/ meter at 30 meters.
- (b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.
- (c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.
- (d) The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.
- (e) The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$  of the operating frequency over a temperature variation of  $\pm 20$  degrees to  $+50$  degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.
- (f) In the case of radio frequency powered tags designed to operate with a device authorized under this section, the tag may be approved with the device or be considered as a separate device subject to its own authorization. Powered tags approved with a device under a single application shall be labeled with the same identification number as the device.

As per RSS-210, A2.6:

- (a) 15.848 millivolts/m (84 dB $\mu$ V/m) at 30 m, within the band 13.553-13.567 MHz.
- (b) 334 microvolts/m (50.5 dB $\mu$ V/m) at 30 m, within the bands 13.410-13.553 MHz and 13.567-13.710 MHz.
- (c) 106 microvolts/m (40.5 dB $\mu$ V/m) at 30 m, within the bands 13.110-13.410 MHz and 13.710-14.010 MHz.
- (d) 30 microvolts/m (29.5 dB $\mu$ V/m) at 30 m, outside the band 13.110-14.010 MHz.

### 5.2 EUT Setup

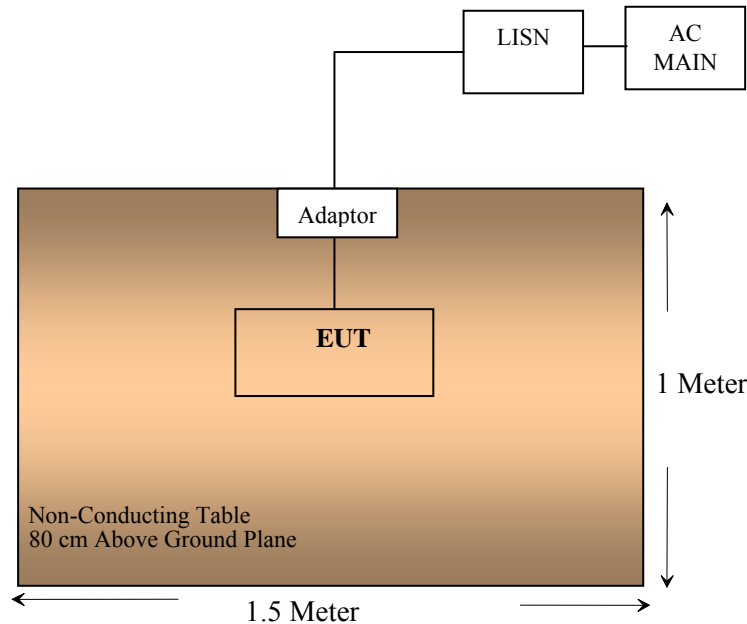
The radiated emission tests were performed in the open area 3-meter test site, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC 15 Subpart C and IC RSS-210 limits.

The spacing between the peripherals was 10 centimeters.

External I/O cables were draped along the edge of test table and bundle when necessary.

The EUT was placed on the center of the back edge on the test table.

### 5.3 Test Setup Block Diagram



### 5.4 Test Procedure

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT is compliant with all installation combination.

All data was recorded in the peak detection mode. Quasi-peak readings performed only when an emission was found to be marginal (within -4 dB of specification limitation), and are distinguished with a "QP" in the data table.

The EUT was operating at normal to represent worst case during final qualification test. Therefore, this configuration was used for final test data recorded in the following table of this report.

### 5.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corrected Amplitude} - \text{Limit}$$

## 5.6 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date
Com-Power	Active Loop Antenna (10 kHz-30 MHz)	AL-130	17043	2010-06-01 <sup>1</sup>
Sunol Science Corp	System Controller	SC99V	122303-1	N/R
HP	Pre Amplifier	8449B	3147A00400	2011-02-03
Sunol Science Corp	Combination Antenna	JB3	A020106-2	2011-08-10
Agilent	PSA Series Spectrum Analyzer	E4440A	MY44303352	2011-05-10
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.595 0K03	100044	2011-04-14

**Note**<sup>1</sup>: 2 year calibration cycle

**Statement of Traceability: BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

## 5.7 Test Environmental Conditions

<b>Temperature:</b>	22.3 °C
<b>Relative Humidity:</b>	32.7 %
<b>ATM Pressure:</b>	101.5kPa

The testing was performed by Jerry Huang on 2011-12-21 in 5 meter chamber #3.

## 5.8 Summary of Test Results

According to the data in the following table, the EUT complied with the FCC Title 47, Part 15, Subpart C, section 15.225 and IC RSS-210 §A2.6. The EUT had the worst margin reading of:

**-34.12 dB at 27.12 MHz** below 30 MHz

**-9.49 dB at 196.8565 MHz** in the **Horizontal** polarization 30 to 1000 MHz

Co-location with WWAN Module (P1001) and WLAN Module (NB099H):

PCS GPRS Middle Channel (1880MHz), NFC and 802.11b Middle Channel (2437MHz):

**-7.2 dB at 249.9508 MHz** in the **Vertical** polarization 30 MHz to 25 GHz

PCS GPRS Middle Channel (1880MHz), NFC and 802.11a Worst Channel (5580MHz):

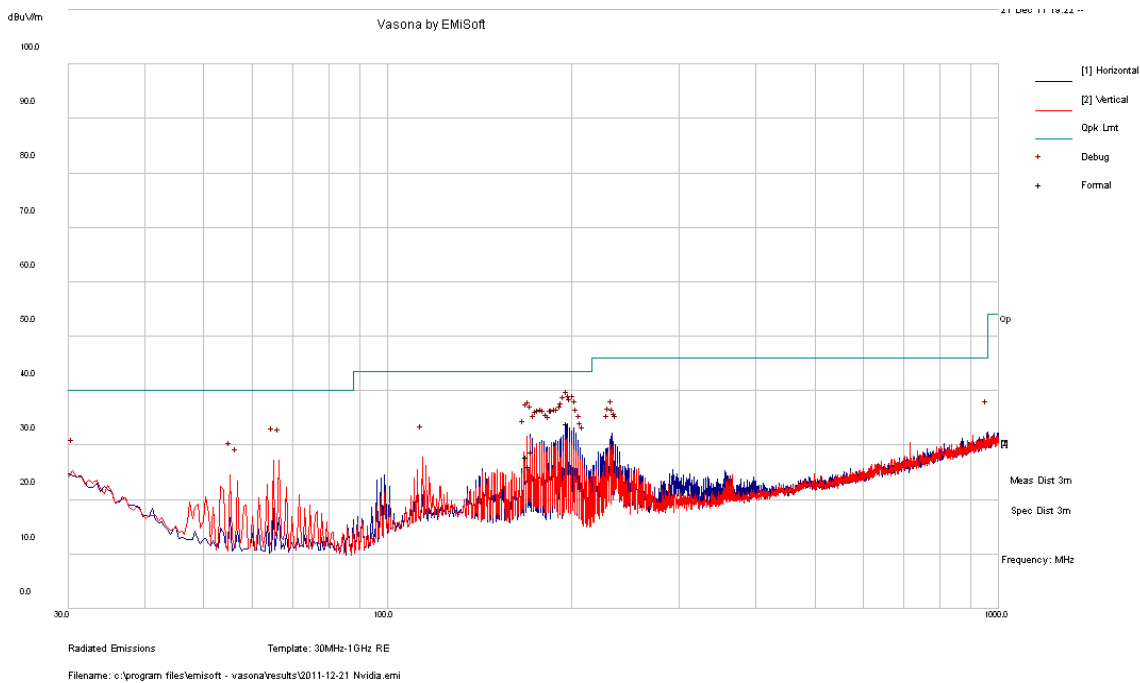
**-3.91 dB at 249.9545 MHz** in the **Vertical** polarization 30 MHz to 60 GHz

### 5.9 Radiated Emissions Test Result Data and Plots

9 kHz to 30 MHz

Frequency (MHz)	S.A. Reading (dBuV/m)	Turntable Degrees	Test Antenna		Cable Loss (dB)	Distance Factor (dB)	Cord. Amp. (dBuV/m)	FCC/IC	
			Height (m)	Factor (dB/m)				Limit (dBuV/m)	Margin (dB)
13.56	57.48	87	1.0	11.3	0.1	40	28.88	84	-55.12
3.87	24.17	202	1.0	10.9	0.05	40	-4.88	75.85	-80.73
13.41	21.45	83	1.0	11.3	0.1	40	-7.15	50.5	-57.65
13.37	21.13	81	1.0	11.3	0.1	40	-7.47	40.5	-47.97
13.7169	21.19	84	1.0	11.3	0.1	40	-7.41	40.5	-47.91
27.12	25.17	86	1.0	10.1	0.15	40	-4.58	29.54	-34.12

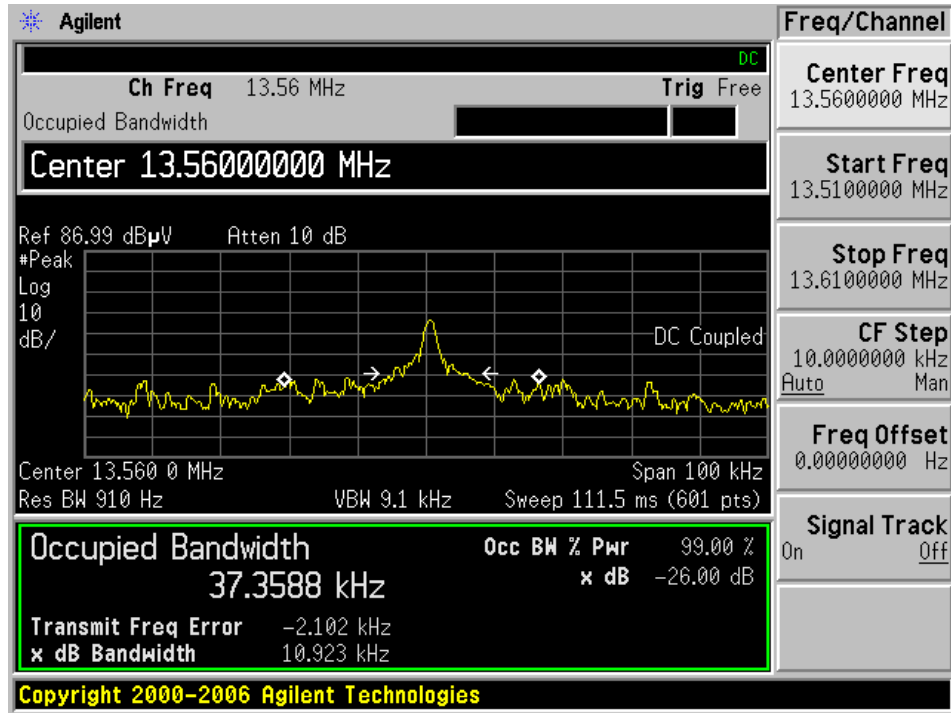
30 to 1000 MHz:



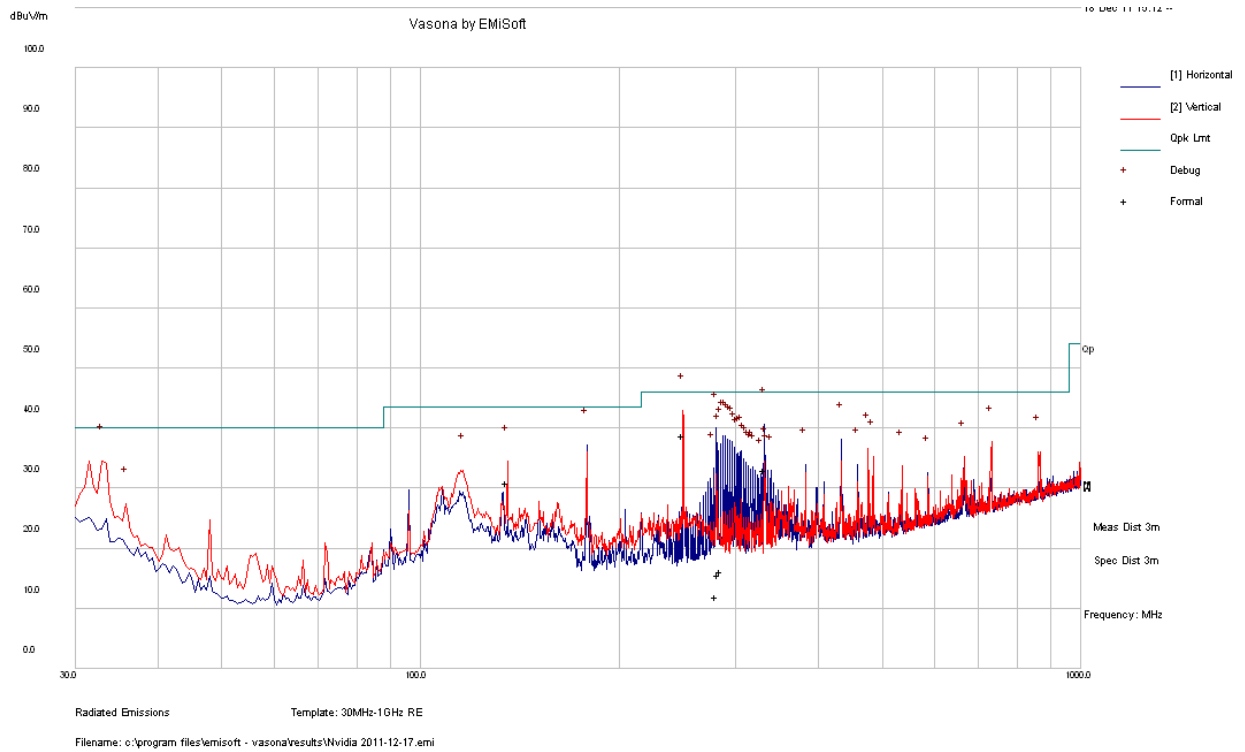
#### Quasi Peak Measurement

Frequency (MHz)	Quasi-Peak (dBuV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Position (deg)	Limit (dBuV/m)	Margin (dB)
196.8565	34.01	183	H	258	43.5	-9.49
172.3468	28.88	196	H	20	43.5	-14.62
169.1768	27.79	106	V	54	43.5	-15.71
170.7975	26.23	302	H	239	43.5	-17.27

### Emission Bandwidth



**Co-location with WWAN modular Worst Case PCS GPRS Middle Channel + 2.4GHz Worst mode 802.11b middle channel:**

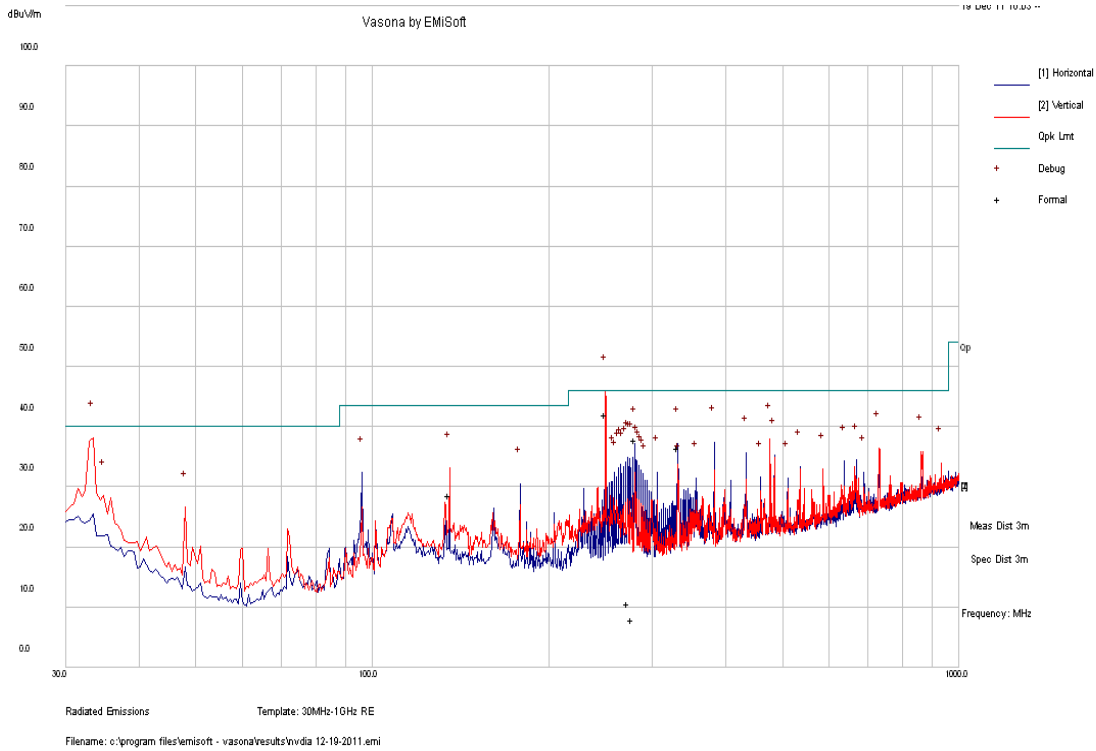


**Quasi-Peak Measurements**

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
249.9508	38.8	100	V	169	46	-7.2
135.3283	30.88	99	V	249	43.5	-12.62
331.4883	33.08	107	H	0	46	-12.92
284.7838	16.24	135	H	120	46	-29.76
282.2455	15.65	105	H	119	46	-30.35
280.5083	11.94	175	H	135	46	-34.06

Note: Above 1 GHz, all emission was at noise floor except for 1880MHz and 2437MHz fundamental.

**Co-location with WWAN modular Worst Case PCS GPRS Middle Channel + 5GHz Worst mode 802.11a 5580MHz channel:**



**Quasi-Peak Measurements**

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBμV/m)	Margin (dB)
249.9545	42.09	100	V	178	46	-3.91
280.4943	37.84	100	H	153	46	-8.16
331.475	36.5	100	H	141	46	-9.5
135.3458	28.68	170	V	284	43.5	-14.82
272.5365	10.69	126	H	149	46	-35.31
277.1535	7.87	121	H	252	46	-38.13

Note: Above 1 GHz, all emission was at noise floor except for 1880MHz and 5580MHz fundamental.



## 6 FCC §15.207 & IC RSS-GEN §7.2.4 – CONDUCTED EMISSIONS

### 6.1 Applicable Standard

As per FCC §15.207 & IC RSS-Gen §7.2.4 Conducted limits:

For an intentional radiator 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 in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequencies ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 <sup>1</sup>	56 to 46 <sup>1</sup>
0.5-5	56	46
5-30	60	50

**Note<sup>1</sup>:** *Decreases with the logarithm of the frequency.*

According to “New Policies for Part 15 Devices” release on May 10-13, 2005:

AC line-conducted emissions measurements conducted emissions measurements of Part 15 transmitters that operate < 30 MHz

Although C63.4 is designed for Part 15 transmitters that operate above 30 MHz with a detachable antenna, we are willing to accept measurements on a 13.56 MHz transmitter done with a dummy load under the following conditions:

- 1) First, perform the AC line conducted tests with the antenna attached to make sure the device complies with the 15.207 limits outside the transmitter's fundamental emission band.
- 2) Second, retest with a dummy load to make sure the device complies with the 15.207 limits inside the transmitter's fundamental emission band. Only the fundamental TX emission band needs to be retested.

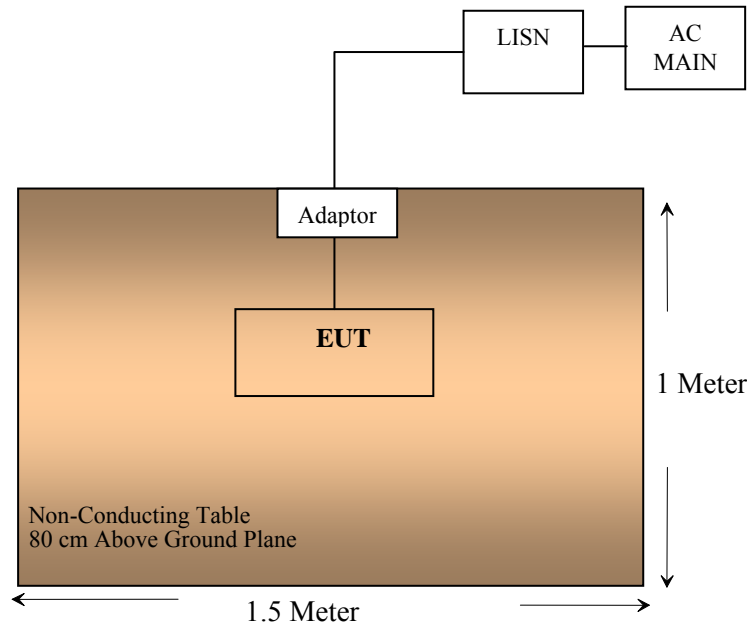
### 6.2 Test Setup

The measurement was performed at shield room, using the setup per ANSI C63.4-2003 measurement procedure. The specification used was FCC/IC limits.

External I/O cables were draped along the edge of the test table and bundle when necessary.

The host of EUT was connected with LISN-1.

### 6.3 Test Setup Block Diagram



### 6.4 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.5950K03	100044	2011-04-14
Solar Electronics	LISN	9252-R-24-BNC	511205	2011-06-25
TTE	Filter, High Pass	H9962-150K-50-21378	K7133	2011-06-10

**Statement of Traceability:** **BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

### 6.5 Test Procedure

During the conducted emissions test, the power cord of the host was connected to the mains outlet of the LISN-1.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the peak detection mode, quasi-peak and average. Quasi-Peak readings are distinguished with a “QP”. Average readings are distinguished with an “Ave”.

## 6.6 Test Environmental Conditions

<b>Temperature:</b>	22.3 °C
<b>Relative Humidity:</b>	32.7 %
<b>ATM Pressure:</b>	101.5kPa

The testing was performed by Jerry Huang on 2011-12-21 in 5 meter chamber #3.

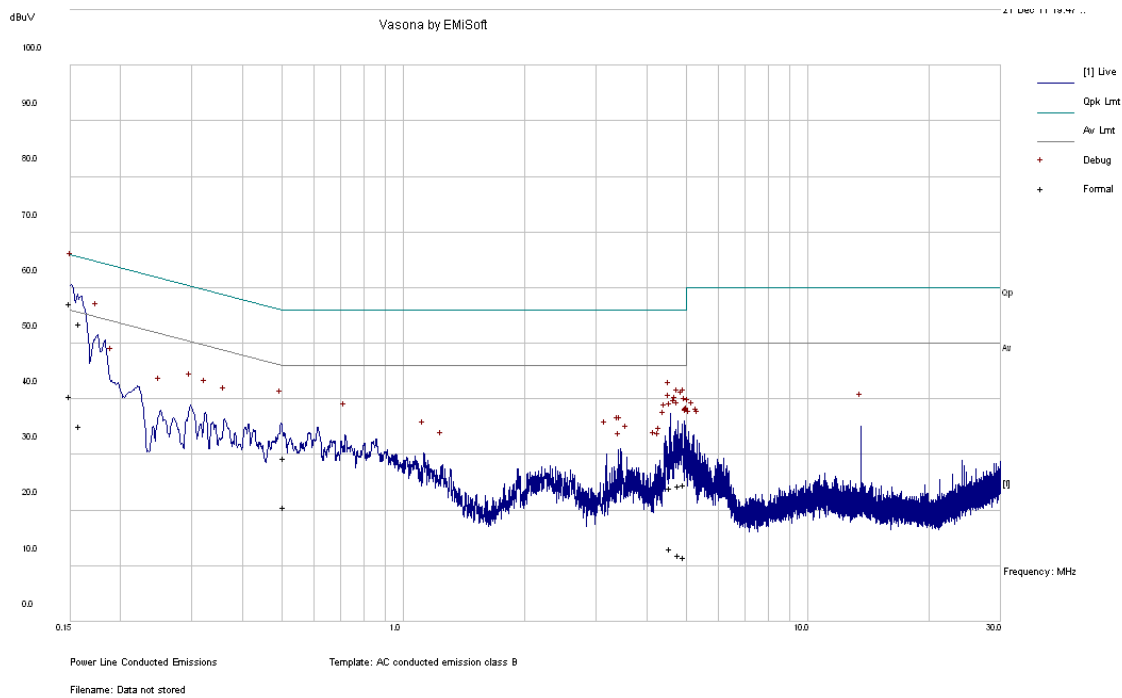
## 6.7 Summary of Test Results

According to the recorded data in following table, the EUT complied with the FCC/IC standard's conducted emissions limits for Class B devices, with the *worst* margin reading of:

Connection: AC/DC adapter connected to 120 V/60 Hz, AC			
Margin (dB)	Frequency (MHz)	Conductor Mode (Line/Neutral)	Range (MHz)
-8.77	0.150627	Line	0.15 to 30

### 6.8 Conducted Emissions Test Plots and Data

#### 120V/60 Hz Line:



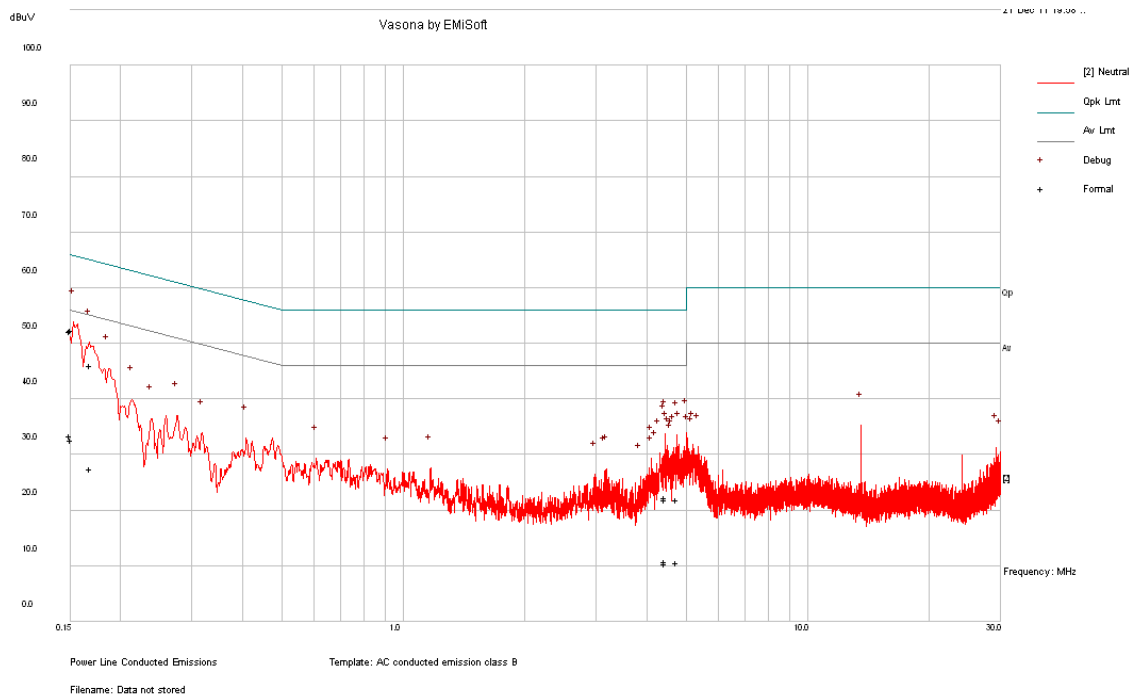
#### Quasi-Peak Measurement

Frequency (MHz)	Corrected Amplitude (dBuV)	Measurement Type	Conductor (L/N)	Limit (dBuV)	Margin (dB)
0.150627	57.19	Quasi-Peak	L	65.97	-8.77
0.159207	53.52	Quasi-Peak	L	65.51	-11.98
0.508287	29.32	Quasi-Peak	L	56	-26.68
4.968719	24.66	Quasi-Peak	L	56	-31.34
4.799954	24.44	Quasi-Peak	L	56	-31.56
4.576838	24.09	Quasi-Peak	L	56	-31.91

#### Average Measurement

Frequency (MHz)	Corrected Amplitude (dBuV)	Measurement Type	Conductor (L/N)	Limit (dBuV)	Margin (dB)
0.150627	40.58	Average	L	55.97	-15.39
0.159207	35.15	Average	L	55.51	-20.36
0.508287	20.53	Average	L	46	-25.47
4.576838	13.13	Average	L	46	-32.87
4.799954	11.91	Average	L	46	-34.09
4.968719	11.66	Average	L	46	-34.34

**120V/60 Hz Neutral:**



**Quasi-Peak Measurement**

Frequency (MHz)	Corrected Amplitude (dBuV)	Measurement Type	Conductor (L/N)	Limit (dBuV)	Margin (dB)
0.150933	52.38	Quasi-Peak	N	65.95	-13.57
0.150364	52.21	Quasi-Peak	N	65.99	-13.78
0.169089	46.06	Quasi-Peak	N	65.01	-18.95
23.99823	22.26	Quasi-Peak	N	56	-33.74
4.956953	22.03	Quasi-Peak	N	56	-33.97
5.005337	21.91	Quasi-Peak	N	56	-34.09

**Average Measurement**

Frequency (MHz)	Corrected Amplitude (dBuV)	Measurement Type	Conductor (L/N)	Limit (dBuV)	Margin (dB)
0.150231	33.34	Average	N	55.99	-22.64
0.150945	32.61	Average	N	55.95	-23.34
0.169035	27.44	Average	N	55.01	-27.57
4.445603	10.75	Average	N	46	-35.25
4.739777	10.7	Average	N	46	-35.3
4.436018	10.46	Average	N	46	-35.54

## 7 FCC §15.225(e) & IC RSS-210 §A2.6 - FREQUENCY STABILITY MEASUREMENT

### 7.1 Standard Applicable

According to FCC §15.225(e), the frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$  of the operating frequency over a temperature variation of  $-20$  degrees to  $+ 50$  degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

According to RSS-210 A2.6:

Carrier frequency stability shall be maintained to  $\pm 0.01\%$  ( $\pm 100$  ppm).

### 7.2 Test Procedure

#### 7.2.1 Frequency stability versus environmental temperature

The equipment under test was connected to an external AC power supply and the RF output was connected to a frequency counter via feed through attenuators. The EUT was placed inside the temperature chamber.

After the temperature stabilized for approximately 20 minutes, the frequency of the output signal was recorded from the counter.

#### 7.2.2. Frequency Stability versus Input Voltage

At room temperature ( $25 \pm 5^\circ\text{C}$ ), an external variable DC power supply was connected to the EUT. The frequency of the transmitter was measured for 115%, 100% and 85% of the nominal operating input voltage.

### 7.3 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date
Com-Power	Active Loop Antenna (10 kHz-30 MHz)	AL-130	17043	2010-06-01 <sup>1</sup>
Agilent	PSA Series Spectrum Analyzer	E4440A	MY44303352	2011-05-10
Tenney	Temperature oven	Versa Tenn	12.431-8	2010-06-28 <sup>1</sup>

**Note**<sup>1</sup>: 2 year calibration cycle

**Statement of Traceability:** **BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

## 7.4 Test Environmental Conditions

<b>Temperature:</b>	22.3 °C
<b>Relative Humidity:</b>	32.7 %
<b>ATM Pressure:</b>	101.5kPa

The testing was performed by Lionel Lara on 2011-12-21 at RF Bench.

## 7.5 Test Results

Test Environment		Reference Frequency (Hz)	Measured Frequency (Hz)	Frequency Error (Hz)	Limit <sup>1</sup> (Hz)
Voltage (Vac)	Temperature (°C)				
120	-30	13560000	13560125	125	1356
120	-20	13560000	13560213	213	1356
120	-10	13560000	13560213	213	1356
120	0	13560000	13560126	126	1356
120	10	13560000	13560126	126	1356
120	20	13560000	13560213	213	1356
120	30	13560000	13560129	129	1356
120	50	13560000	13560231	231	1356
102	20	13560000	13560213	213	1356
138	20	13560000	13560326	326	1356

**Note<sup>1</sup>:** The limit is  $\pm 0.01\%$  of the operating frequency, the fundamental of EUT is 13.56 MHz.

## 8 FCC §15.109 & IC RSS-Gen §6 - RECEIVER RADIATED SPURIOUS EMISSIONS

### 8.1 Applicable Standards

FCC §15.109 and IC RSS-Gen §6

### 8.2 EUT Setup

The radiated emissions tests were performed in the 3 meter chamber, using the setup in accordance with ANSI C63.4-2003.

### 8.3 Test Procedure

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations.

All data were recorded in the peak detection mode. Quasi-peak readings was performed only when an emissions was found to be marginal (within -4 dB of specification limits), and are distinguished with a "QP" in the data table.

### 8.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the maximum limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corrected Amplitude} - \text{Limit}$$

### 8.5 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date
Com-Power	Active Loop Antenna (10 kHz-30 MHz)	AL-130	17043	2010-06-01 <sup>1</sup>
Sunol Science Corp	System Controller	SC99V	122303-1	N/R
HP	Pre Amplifier	8449B	3147A00400	2011-02-03
Sunol Science Corp	Combination Antenna	JB3	A020106-2	2011-08-10
Agilent	PSA Series Spectrum Analyzer	E4440A	MY4430335 2	2011-05-10
Rohde & Schwarz	EMI Test Receiver	ESCI 1166.595 0K03	100044	2011-04-14

**Note**<sup>1</sup>: 2 year calibration cycle

**Statement of Traceability:** BACL attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.



### 8.6 Test Environmental Conditions

<b>Temperature:</b>	22.3 °C
<b>Relative Humidity:</b>	32.7 %
<b>ATM Pressure:</b>	101.5kPa

The testing was performed by Jerry Huang on 2011-12-21 in 5 meter chamber #3.

### 8.7 Summary of Test Results

According to the test data,, the EUT complied with the FCC Part 15.109 and IC RSS-Gen, with the closest margins from the limit listed below:

Mode: Receiving			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Range (MHz)
-9.89	245.723	Horizontal	0.009 MHz to 1000 MHz

Please refer to the following table and plots for specific test result details

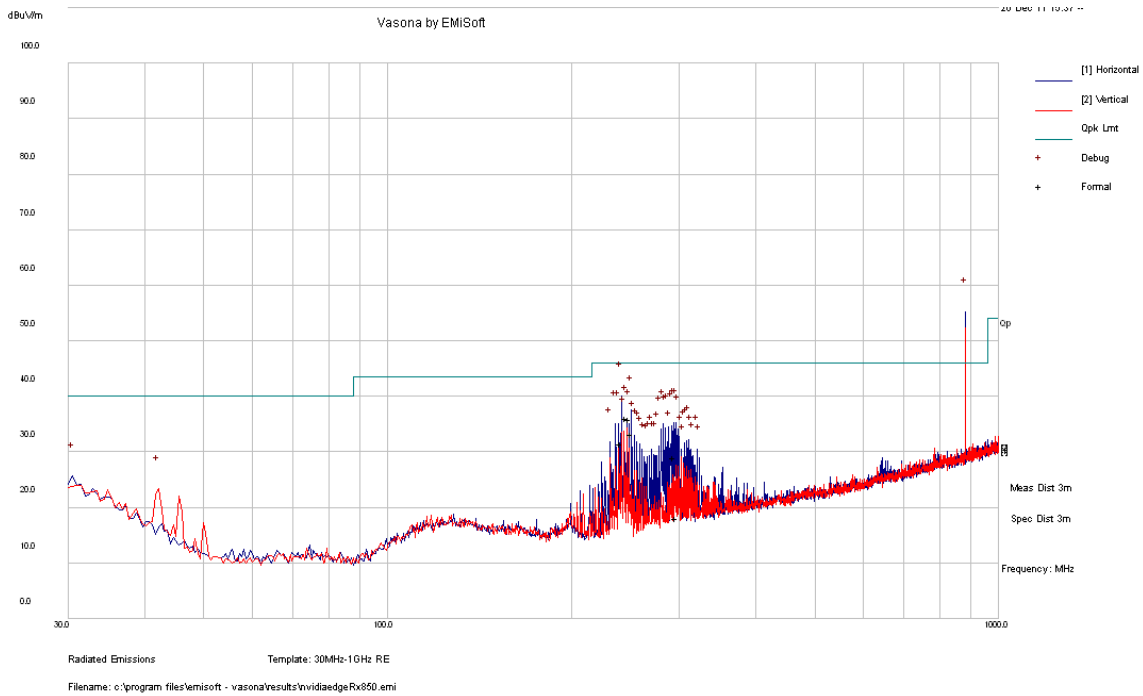
### 8.8 Test Results

1) 9 kHz to 30 MHz

Frequency (MHz)	S.A. Reading (dBuV/m)	Turntable Degrees	Test Antenna		Cable Loss (dB)	Distance Factor (dB)	Cord. Amp. (dBuV/m)	FCC/IC	
			Height (m)	Factor (dB/m)				Limit (dBuV/m)	Margin (dB)
-	-	-	-	-	-	-	-	-	-

Note: All emissions are under noise floor level

2) 30 MHz -1 GHz, measured at 3 meters



Frequency (MHz)	Corrected Amplitude (dB)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
245.723	36.11	190	H	310	46	-9.89
248.1835	35.9	105	H	329	46	-10.1
250.6135	33.19	129	H	136	46	-12.81
240.8675	31.53	220	H	274	46	-14.47
294.3403	29.08	111	H	315	46	-16.92
296.7738	18.16	177	H	348	46	-27.84