NVLAP LAB CODE 200707-0

FCC PART 15.231

MEASUREMENT AND TEST REPORT

For

Vson Technology Co., Ltd.

5 Floor, A Building, Weixinda Xichen Industrial Park, Xixiang Town,
Baoan District, Shenzhen, China

FCC ID: T2DV-809R

This Report Concerns: ☒ Original Report	**Equipment Type:** Wireless presenter
Test Engineer:	Leon Zhou leon.zhou
Report No.:	RSZ07053001
Test Date:	2007-06-02
Report Date:	2007-06-05
Reviewed By:	EMC Manager: Boni Baniqued
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TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Vson Technology Co., Ltd.'s* product, model: *V-809* or the "EUT" as referred to in this report is a Wireless presenter which measures approximately 12.0 cm L x 3.0 cm W x 1.2 cm H, rated input voltage: DC 3V battery.

** The test data gathered are from production sample, serial number: 0705016 provided by the manufacturer, we receive the EUT on 2007-05-30.*

Objective

This document is a test report based on the Electromagnetic Interference (EMI) tests performed on the EUT. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4 - 2003.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, and section 15.203,15.205,15.209 and 15.231 rules.

Related Submittal(s)/Grant(s)

No Related Submittals

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 measurement was performed at Bay Area Compliance Laboratory Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratory Corp. (Shenzhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratory Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 04, 2004. 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 has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratory Corp. (Shenzhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0). The current scope of accreditations can be found at http://ts.nist.gov/ts/htdocs/210/214/scopes/2007070.htm.

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

EUT Exercise Software

N/A.

Special Accessories

The special accessories were supplied by manufacturer.

Equipment Modifications

Bay Area Compliance Laboratory Corp. (Shenzhen) has not done any modification on the EUT.

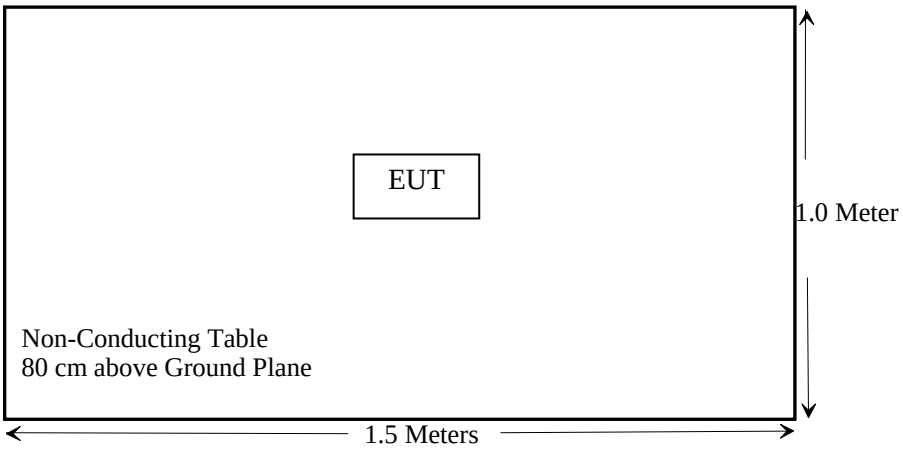
Configuration of Test Setup

Lie

Side

Stand

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of test	Result
§15.203	Antenna Requirement	Compliant
§15.205	Restricted Band	Compliant
§15.209	General Requirement	Compliant
§15.231 (b)	Radiated Emissions	Compliant
§15.231 (c)	20dB Band Width Testing	Compliant
§15.231 (a)(1)	Deactivation Testing	Compliant
§15.207	Conducted Emissions	N/A
§15.231	Duty Cycle	Compliant

§15.203 - ANTENNA REQUIREMENT

Standard Applicable

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 shall be considered sufficient to comply with the provisions of this section.

The antenna of the EUT was built on PCB board.

Result: Compliant.

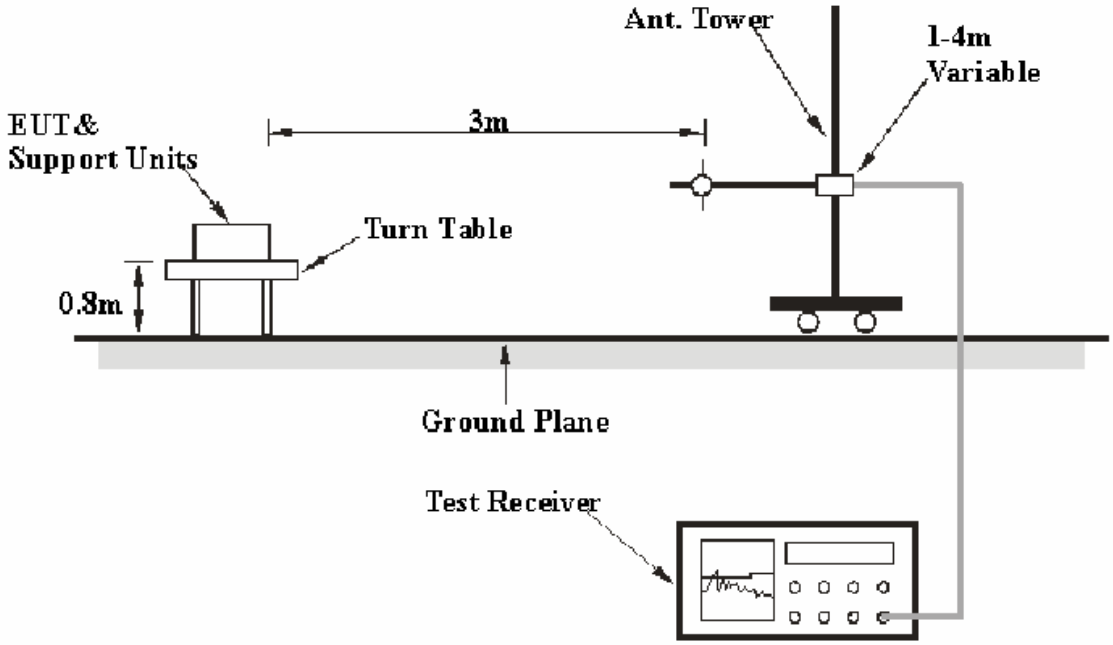
§15.205, §15.209, §15.231 (b) - RADIATED EMISSIONS

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 best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratory Corp. (Shenzhen) is ±4.0 dB.

EUT Setup



The radiated emission tests were performed in the 3 meters chamber B test site, using the setup accordance with the ANSI C63.4 - 2003. The specification used was the FCC 15 § 15.209 and 15.231.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 5 GHz.

During the radiated emission test, the test receiver was set with the following configurations:

Frequency Range	***RBW***	***VBW***
30 – 1000 MHz	100 kHz	300 kHz
1000 MHz –5 GHz	1 MHz	3 MHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	Spectrum Analyzer	8564E	3943A01781	2006-11-22	2007-11-22
HP	Amplifier	8449B	3008A00277	2006-09-29	2007-09-29
Sunol Sciences	Horn Antenna	DRH-118	A052604	2006-07-20	2007-07-20
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2006-09-29	2007-09-29
HP	Amplifier	8447E	1937A01046	2006-11-15	2007-11-15
Sunol Sciences	Bilog Antenna	JB1	A040904-2	2006-08-14	2007-08-14

*** Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Peak and Average detection mode.

Standard Applicable

According to §15.231(b), the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Fundamental frequency (MHz)	Field Strength of Fundamental (Microvolts /meter)	Field Strength of spurious emissions ((Microvolts /meter)
40.66-40.70	2,250	225
70-130	1,250	125
130-174	1,250 to 3,370	125 to375
174-260	3,750	375
260-470	3,750 to12, 500	375 to 1,250
Above 470	12,500	1,250

Linear interpolations for frequency range 130 - 174 MHz and 260 - 470 MHz.

The above field strength limits are specified at a distance of 3-meters the tighter limits apply at the band edges.

Corrected Amplitude & Margin Calculation

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

Cord. Amp. = Meter Reading + Antenna Loss + Cable Loss - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 5.8dB means the emission is 5.8dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Cord. Amp.

Test Data

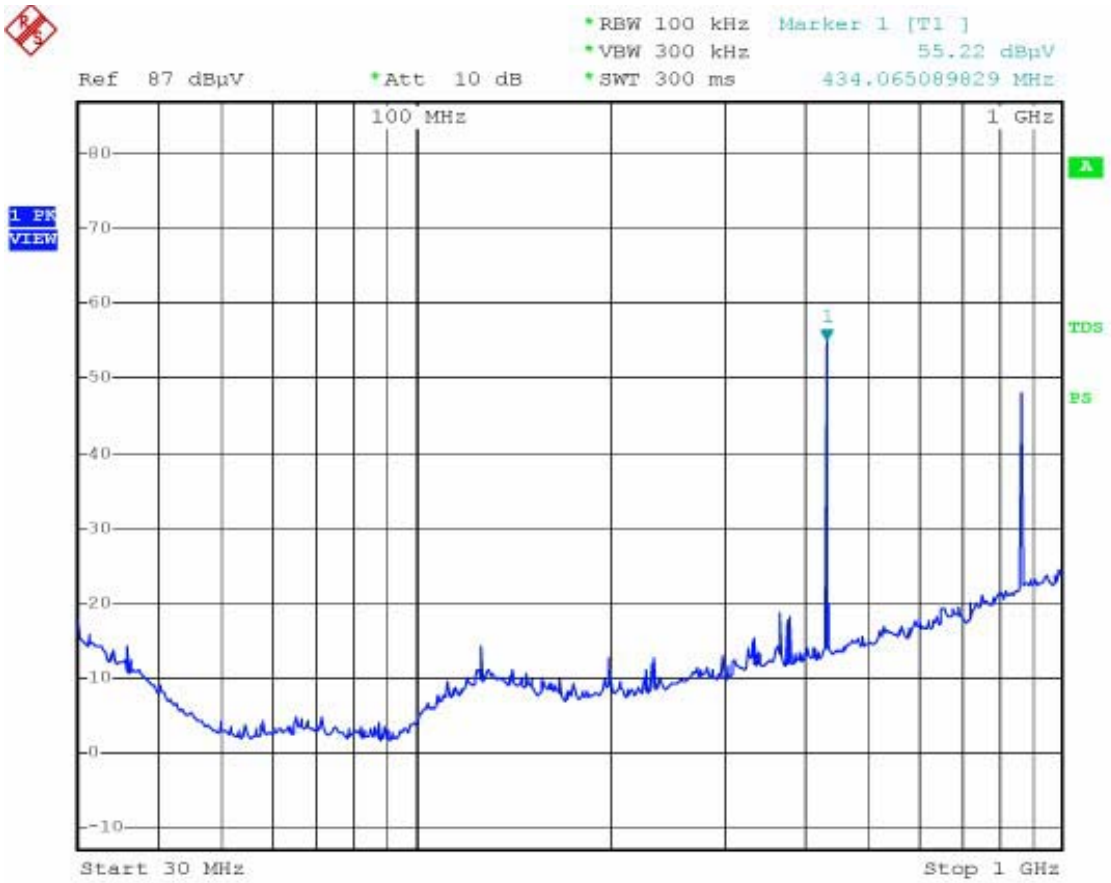
Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	56%
ATM Pressure:	1002mbar

The testing was performed by Leon Zhou on 2007-06-02.

Test Mode: Transmitting

Frequency (MHz)	Meter Reading (dBuV)	Detector PK/AV	Direction Degree	Ant Height (m)	Polar H / V	Antenna Factor (dB/m)	Cable loss (dB)	Duty Cycle (dB)	Amp Gain (dB)	Corr. Amp. (dB uV/m)	FCC Part 15.231		
											Limit (dBuV/m)	Margin (dB)	Remarks
30 –1000 MHz													
867.85	48.05	/	360	1	V	22.2	3.93	-4.59	26.67	42.92	60.8	17.88	Harmonic
867.85	47.21	/	360	1	H	22.2	3.93	-4.59	26.67	42.08	60.8	18.72	Harmonic
433.93	68.05	/	0	1	V	16.8	3.12	-4.59	27.36	56.02	80.8	24.78	Fund.
433.93	62.66	/	0	1	H	16.8	3.12	-4.59	27.36	50.63	80.8	30.17	Fund.
867.85	48.05	PK	0	1	V	22.2	3.93	0	26.67	47.51	80.8	33.29	Harmonic
867.85	47.21	PK	0	1	H	22.2	3.93	0	26.67	46.67	80.8	34.13	Harmonic
433.93	68.05	PK	0	1	V	16.8	3.12	0	27.36	60.61	100.8	40.19	Fund.
433.93	62.66	PK	0	1	H	16.8	3.12	0	27.36	55.22	100.8	45.58	Fund.
Above 1 GHz													
1301.76	45.33	/	0	1	V	25.4	2.79	-4.59	36.00	32.93	54.0	21.07	Harmonic
1301.76	42.56	/	0	1	H	25.4	2.79	-4.59	36.00	30.16	54.0	23.84	Harmonic
1735.68	43.67	/	180	1	V	27.1	2.82	-4.59	35.00	34.00	60.8	26.08	Harmonic
2169.60	42.11	/	0	1	V	27.3	3.62	-4.59	35.00	33.44	60.8	27.36	Harmonic
1735.68	40.77	/	180	1	H	27.1	2.82	-4.59	35.00	31.10	60.8	29.70	Harmonic
2169.6	39.07	/	90	1	H	27.3	3.62	-4.59	35.00	30.40	60.8	30.40	Harmonic
1301.76	45.33	PK	0	1	V	25.4	2.79	0	36.00	37.52	74.0	36.48	Harmonic
1301.76	42.56	PK	0	1	H	25.4	2.79	0	36.00	34.75	74.0	39.25	Harmonic
1735.68	43.67	PK	0	1	V	27.1	2.82	0	35.00	38.59	80.8	42.21	Harmonic
2169.60	42.11	PK	0	1	V	27.3	3.62	0	35.00	38.03	80.8	42.77	Harmonic
1735.68	40.77	PK	0	1	H	27.1	2.82	0	35.00	35.69	80.8	45.11	Harmonic
2169.60	39.07	PK	0	1	H	27.3	3.62	0	35.00	34.99	80.8	45.81	Harmonic



Vson Wireless Presenter V-809R (H)

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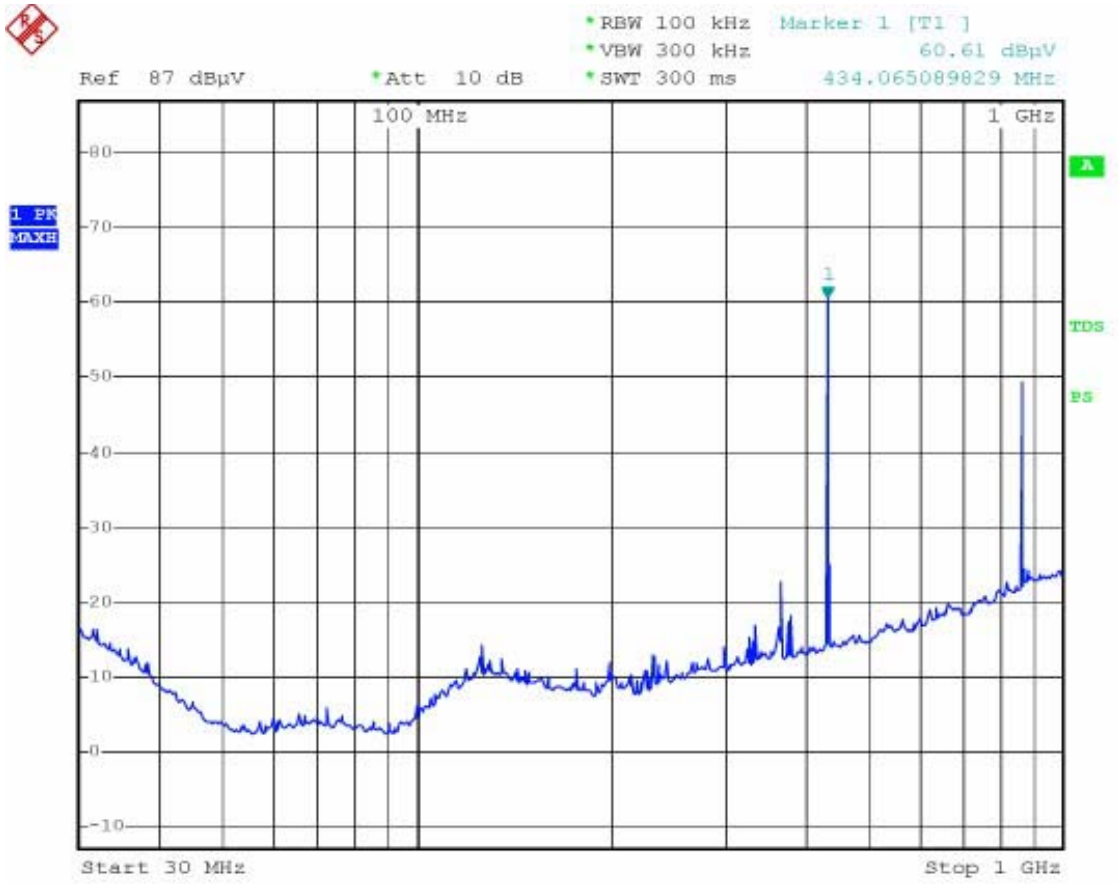

Vson Wireless Presenter V-809R (V)

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§15.231(c) - 20dB BANDWIDTH TESTING

Requirement

Per 15.231(c), The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. Bandwidth is determined at the points 20 dB down from the modulated carrier.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2006-09-29	2007-09-29
HP	Amplifier	8447E	1937A01046	2006-11-15	2007-11-15
Sunol Sciences	Bilog Antenna	JB1	A040904-2	2006-08-14	2007-08-14

*** Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

Test Procedure

With the EUT's antenna attached, the EUT's 20dB Bandwidth power was received by the test antenna which was connected to the spectrum analyzer with the START and STOP frequencies set to the EUT's operation band.

Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	50%
ATM Pressure:	1009mbar

The testing was performed by Leon Zhou on 2007-06-02.

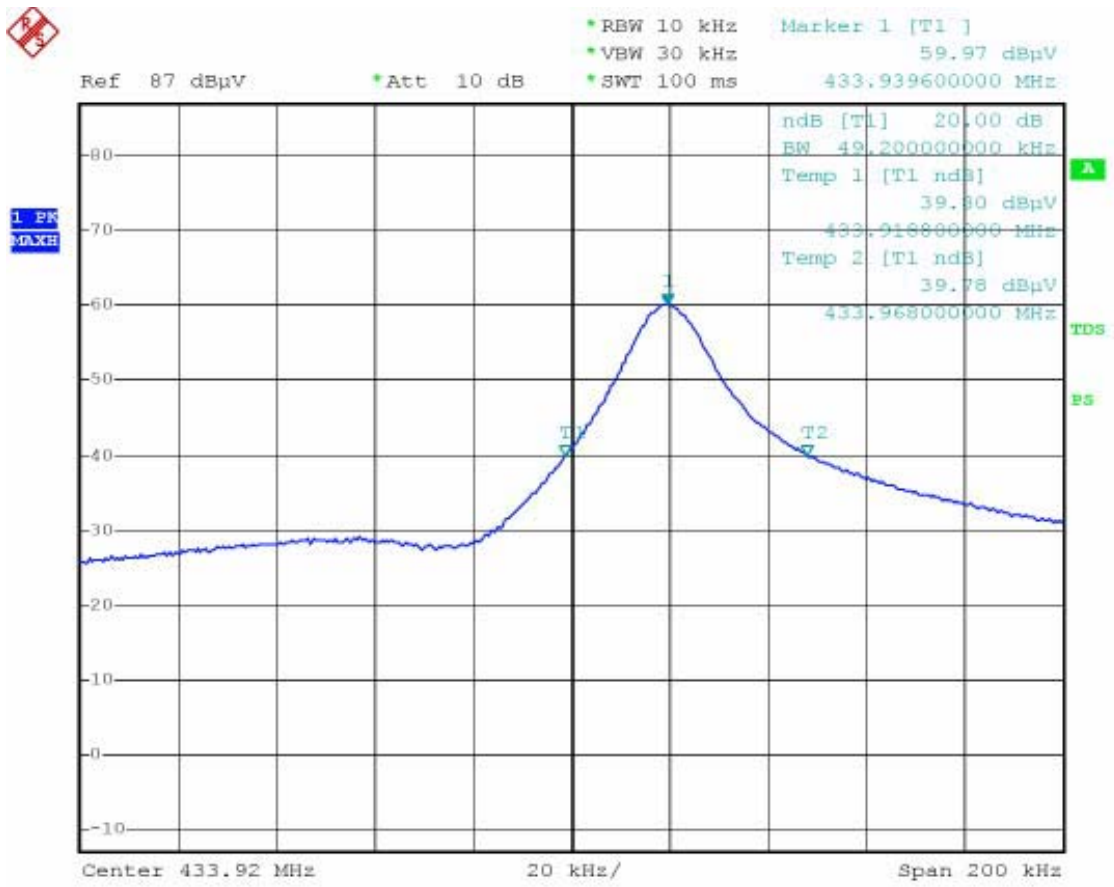
Test Mode: Transmitting

20 dB Bandwidth Limit = Fundamental frequency * 0.25%
= 433.92 MHz *0.25%
= 1084.8 kHz

Frequency (MHz)	Measured 20 dB Bandwidth (kHz)	Limit (kHz)
433.92	49.2	1084.8

Test Result: Pass

Refer to the attached plot.



Vson Wireless Presenter V-809R 20dB Bandwidth

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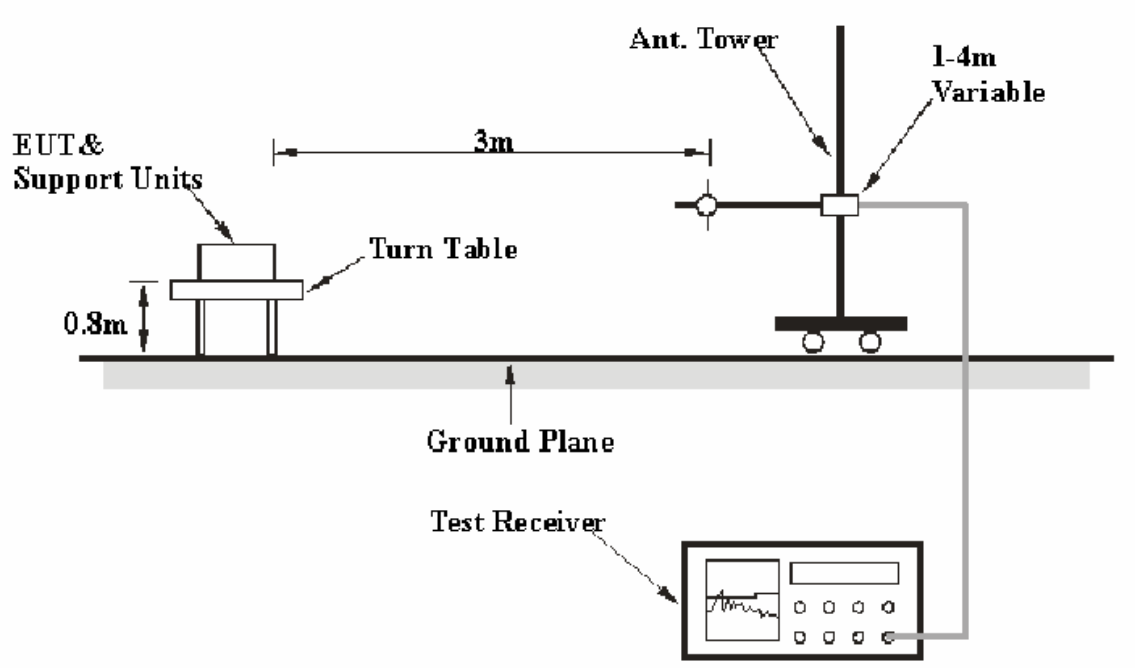
§15.231(a) - DEACTIVATION TESTING

Requirement

Per 15.231(a) (1), a manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

EUT Setup



The deactivation test was performed in the 3 meters chamber B test site, using the setup accordance with the ANSI C63.4 - 2003. The specification used was the FCC 15.231(a) limits.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2006-09-29	2007-09-29
HP	Amplifier	8447E	1937A01046	2006-11-15	2007-11-15
Sunol Sciences	Bilog Antenna	JB1	A040904-2	2006-08-14	2007-08-14

*** Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Test Data

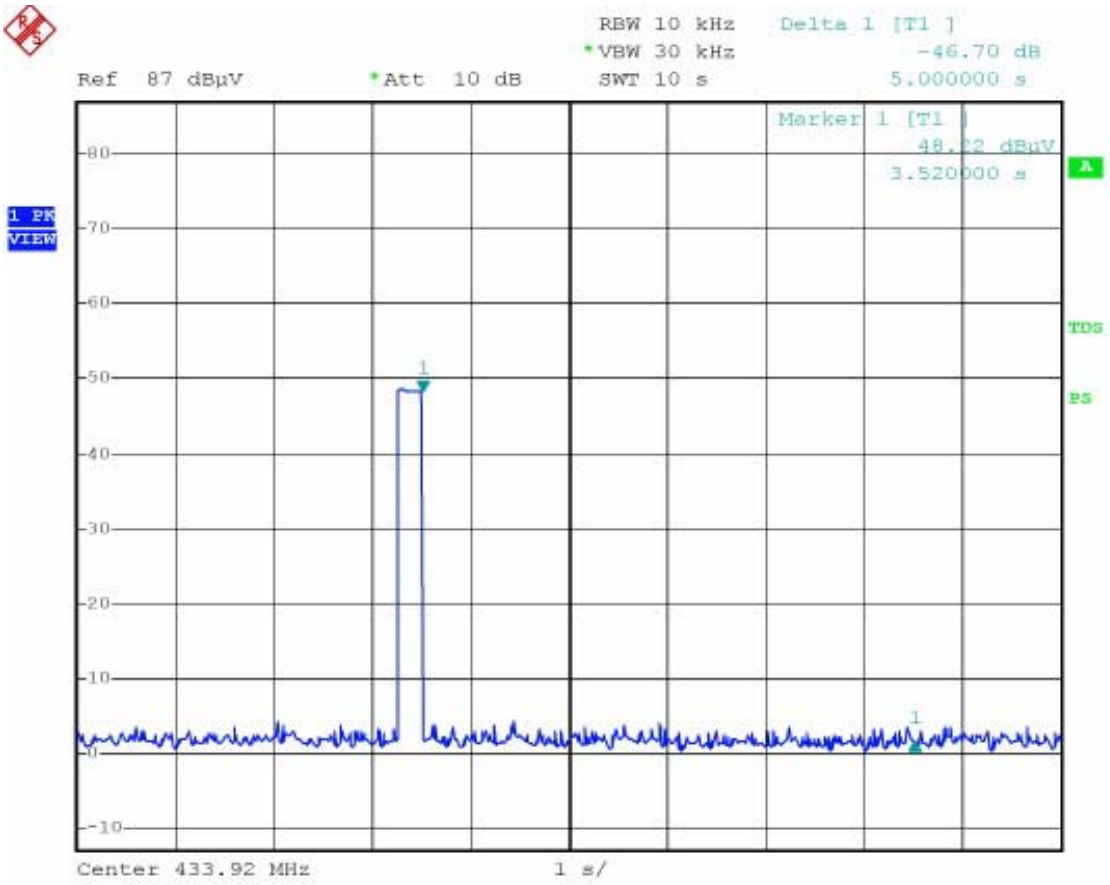
Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	50%
ATM Pressure:	1032mbar

The testing was performed by Leon Zhou on 2007-06-02.

Test Mode: Transmitting

Refer to the attached plots.



Vson Wireless Presenter V-809R deactived time

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§15.231- DUTY CYCLE

Limit

Nil (No dedicated limit specified in the Rules).

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100224	2006-09-29	2007-09-29

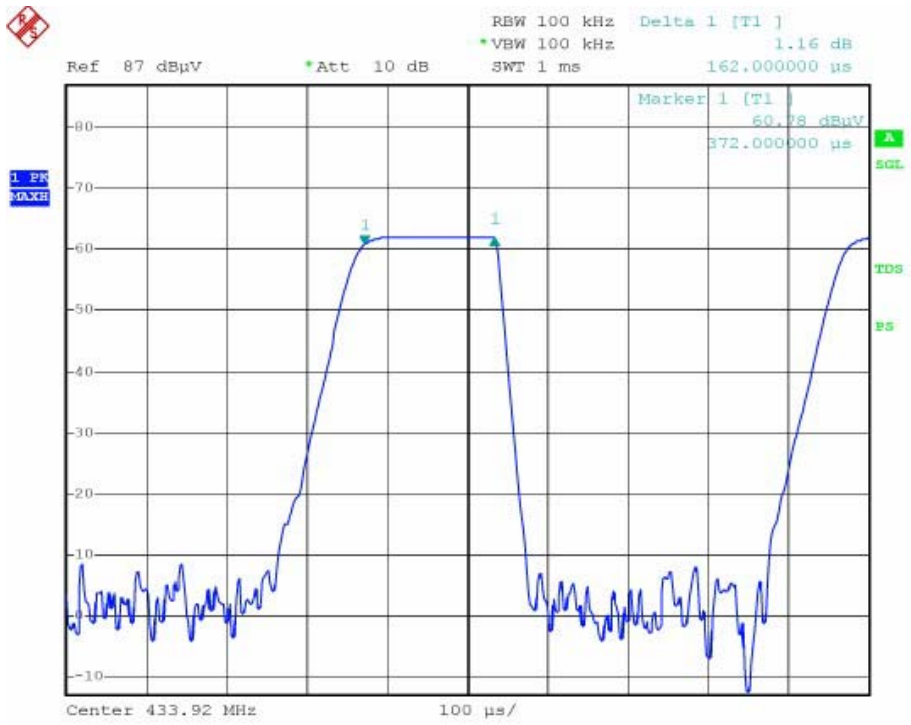
* **Statement of Traceability:** Bay Area Compliance Laboratory Corp. (ShenZhen) attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

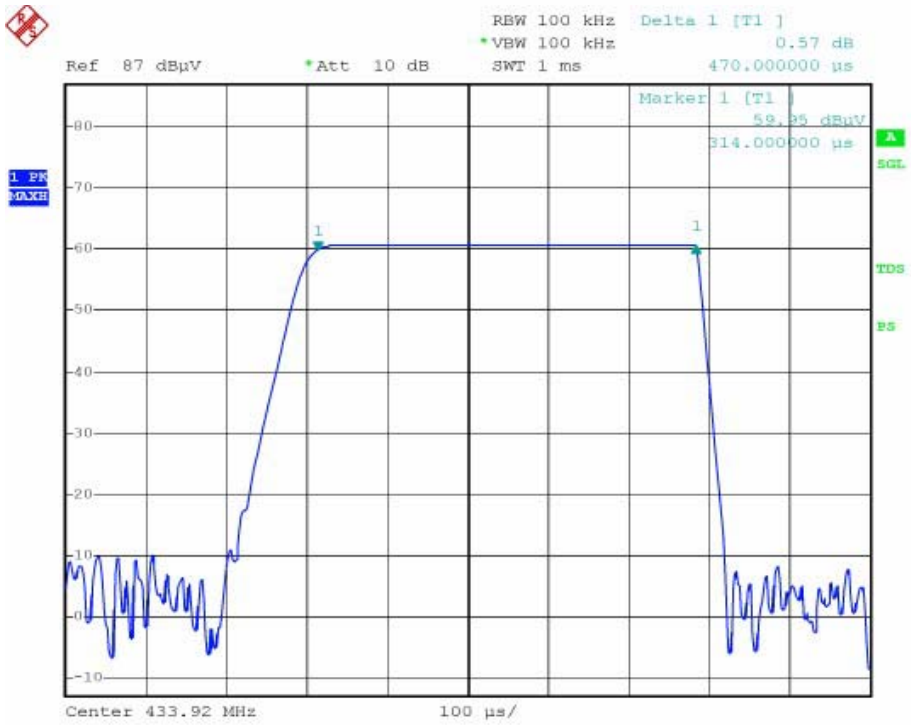
Test Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set center frequency of spectrum analyzer=operating frequency.
4. Set the spectrum analyzer as RBW, VBW=100KHz, Span=0Hz, Adjust Sweep=100ms.
5. Repeat above procedures until all frequency measured was complete.

Test Data

Tp = 100ms
Ton = Ton1 * Number + Ton2 * Number = 0.162* 56 + 0.470 * 106 = 58.892 (ms)
Duty Cycle = (Ton / Tp) * 100% = (58.892/100) *100% = 58.9 %
Factor = 20 * log (Ton / Tp) = 20 * log (58.892/100) = -4.59dB





Vson Wireless Presenter V-809R Ton2

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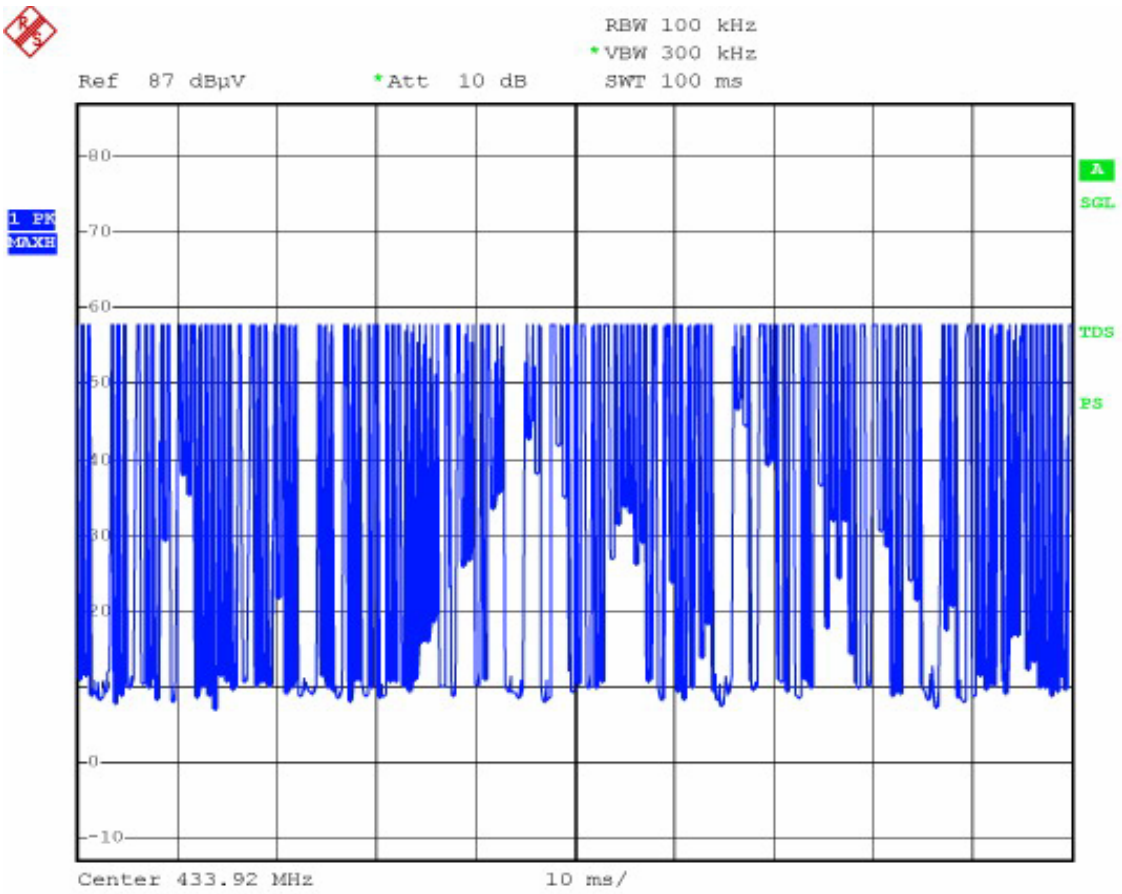

Vson Wireless Presenter V-809R Tp

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