FCC/IC Radio TEST Report

FCC ID: W5D-LVC02A
IC: 9676A-LVC02A

This report concerns (check one) : ■ **Original Grant** □ **Class II Change**

Issued Date	:	Jun. 09, 2011
Project No.	:	1105C094
Equipment	:	Internet Radio Bluetooth FM car kit
Model Name	:	LVC02A
Applicant	:	Myine Electronics, Inc. d/b/a Livio
Address	:	3136 Hilton Rd. Ferndale Michigan USA
Manufacturer Address		Zhongshan K-mate General Electronics Co., Ltd B1 Building,Fuwan Ind.Zone,Fuwan Nan Road,East District,Zhongshan,China

Tested by:
Neutron Engineering Inc. EMC Laboratory

Date of Receipt: May. 09, 2011

Date of Test:
May. 09, 2011 ~ Jun. 03, 2011

Testing Engineer : _____ (Ivan Cao)

Technical Manager : _____ (Leo Hung)

Authorized Signatory : _____ (Steven Lu)

Neutron Engineering Inc.

No.3,Jinshagang 1st Road, ShiXia, Dalang Town, Dong Guan, China.
TEL : (0769) 8318-3000 FAX : (0769) 8319-6000

Declaration

Neutron represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (**NML**) of **R.O.C**., or National Institute of Standards and Technology (**NIST**) of **U.S.A.**

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Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

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1. CERTIFICATION

Equipment:	Internet Radio Bluetooth FM car kit
Brand Name:	Livio Radio
Model Name:	LVC02A
Applicant:	Myine Electronics, Inc. d/b/a Livio
Factory:	Zhongshan K-mate General Electronics Co., Ltd
Address:	B1 Building,Fuwan Ind.Zone,Fuwan Nan Road,East District,Zhongshan,China
Date of Test:	May. 09, 2011 ~ Jun. 03, 2011
Test Item:	ENGINEERING SAMPLE
Standards:	FCC Part15, Subpart C (15.239)/ ANCI C63.4 : 2003/ Canada RSS-210:2010

The above equipment has been tested and found compliance with the requirement of the relative standards by Neutron Engineering Inc. EMC Laboratory.
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. NEI-FCCP-1-1105C094) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of NVLAP and TAF according to the ISO-17025 quality assessment standard and technical standard(s).

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards: (Antenna to EUT distance is **3** m)

FCC Part15, Subpart C / Canada RSS-210:2010				
Standard	Test Item	Limit	Frequency Range (MHz)	Judgment
15.207	Conducted Emission	Class B	0.15 - 30	N/A
15.209 Table(2)	Radiated Emission	Class B	30-1000	PASS
15.239 A2.8(a)	Radiated Emission	250 μV/m (48dBμV/m) @ 3m	88~108	PASS

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is **DG-C03/DG-CB03** at the location of No.3,Jinshagang 1st Road, ShiXia, Dalang Town, Dong Guan, China.523792
Neutron's test firm number for FCC 319330
Neutron's test firm number for IC 4428B-1

2.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

The reported uncertainty of measurement **y** ± **U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95** %。

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U，(dB)	NOTE
DG-C03	CISPR	150 KHz ~ 30MHz	1.94	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U，(dB)	NOTE
DG-CB03	CISPR	30MHz ~ 200MHz	V	3.82	
		30MHz ~ 200MHz	H	3.60	
		200MHz ~ 1,000MHz	V	3.86	
		200MHz ~ 1,000MHz	H	3.94	

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Internet Radio Bluetooth FM car kit
Brand Name	Livio Radio
Model Name.	LVC02A
OEM Brand/Model No.	N/A
Model Difference	N/A
Product Description	The EUT is a. Internet Radio Bluetooth FM car kit Operation Frequency: 88.1~107.9MHz Modulation Type: FM Channel Separation: 200 KHz Channel No. 100CH Antenna Designation: Printed antenna Output Power: 44.16 dBuV/m(AV Max.) Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.
Channel List	Please refer to Note 2.
Power Source	DC Voltage supplied from Car battery
Power Rating	DC 12V/24V 600mAh
Connecting I/O Port(s)	Please refer to the User's Manual
Products Covered	N/A
EUT Modification(s)	N/A

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

Channel No.	Frequency	Channel No.	Frequency	Channel No.	Frequency
1	88.1MHz	35	94.9MHz	69	101.7MHz
2	88.3MHz	36	95.1MHz	70	101.9MHz
3	88.5MHz	37	95.3MHz	71	102.1MHz
4	88.7MHz	38	95.5MHz	72	102.3MHz
5	88.9MHz	39	95.7MHz	73	102.5MHz
6	89.1MHz	40	95.9MHz	74	102.7MHz
7	89.3MHz	41	96.1MHz	75	102.9MHz
8	89.5MHz	42	96.3MHz	76	103.1MHz
9	89.7MHz	43	96.5MHz	77	103.3MHz
10	89.9MHz	44	96.7MHz	78	103.5MHz
11	90.1MHz	45	96.9MHz	79	103.7MHz
12	90.3MHz	46	97.1MHz	80	103.9MHz
13	90.5MHz	47	97.3MHz	81	104.1MHz
14	90.7MHz	48	97.5MHz	82	104.3MHz
15	90.9MHz	49	97.7MHz	83	104.5MHz
16	91.1MHz	50	97.9MHz	84	104.7MHz
17	91.3MHz	51	98.1MHz	85	104.9MHz
18	91.5MHz	52	98.3MHz	86	105.1MHz
19	91.7MHz	53	98.5MHz	87	105.3MHz
20	91.9MHz	54	98.7MHz	88	105.5MHz
21	92.1MHz	55	98.9MHz	89	105.7MHz
22	92.3MHz	56	99.1MHz	90	105.9MHz
23	92.5MHz	57	99.3MHz	91	106.1MHz
24	92.7MHz	58	99.5MHz	92	106.3MHz
25	92.9MHz	59	99.7MHz	93	106.5MHz
26	93.1MHz	60	99.9MHz	94	106.7MHz
27	93.3MHz	61	100.1MHz	95	106.9MHz
28	93.5MHz	62	100.3MHz	96	107.1MHz
29	93.7MHz	63	100.5MHz	97	107.3MHz
30	93.9MHz	64	100.7MHz	98	107.5MHz
31	94.1MHz	65	100.9MHz	99	107.7MHz
32	94.3MHz	66	101.1MHz	100	107.9MHz
33	94.5MHz	67	101.3MHz		
34	94.7MHz	68	101.5MHz		

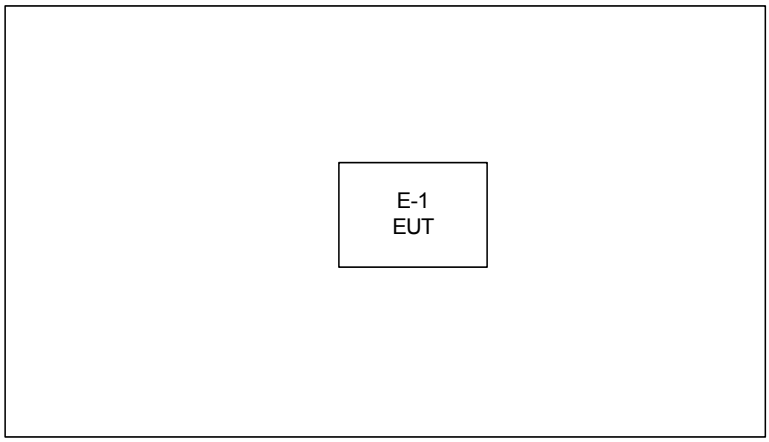
3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Test Mode	Description
Mode 1	TX CH01 (88.1 MHz)
Mode 2	TX CH51 (98.1 MHz)
Mode 3	TX CH100 (107.9 MHz)

Test Items	Mode	Channel
Field Strength of Fundamental Emissions 20dB Spectrum Bandwidth	CTX of X Axis	01/51/100
Radiated Emissions 9kHz~30MHz	CTX of X Axis	01
Radiated Emissions 30MHz~10th Harmonic	CTX of X Axis	01/51/100
Band Edge Emissions	CTX of X Axis	01/100

3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
E-1	Internet Radio Bluetooth FM car kit	Livio Radio	LVC02A	W5D-LVC02A/ 9676A-LVC02A	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 POWER LINE CONDUCTED EMISSION **(FREQUENCY RANGE 150KHZ-30MHZ)**

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

4.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	EMCO	3816/2SH	00052766	May.25.2012
2	LISN	R&S	ENV216	100526	May.25.2012
3	Test Cable	N/A	C_19	N/A	Apr.25.2012
4	EMI TEST RECEIVER	R&S	ESCI	100895	May.26.2012
5	50Ω Terminator	SHX	TF2-3G-A	08122901	May.26.2012

Remark: ” N/A” denotes No Model Name , Serial No. or No Calibration specified.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

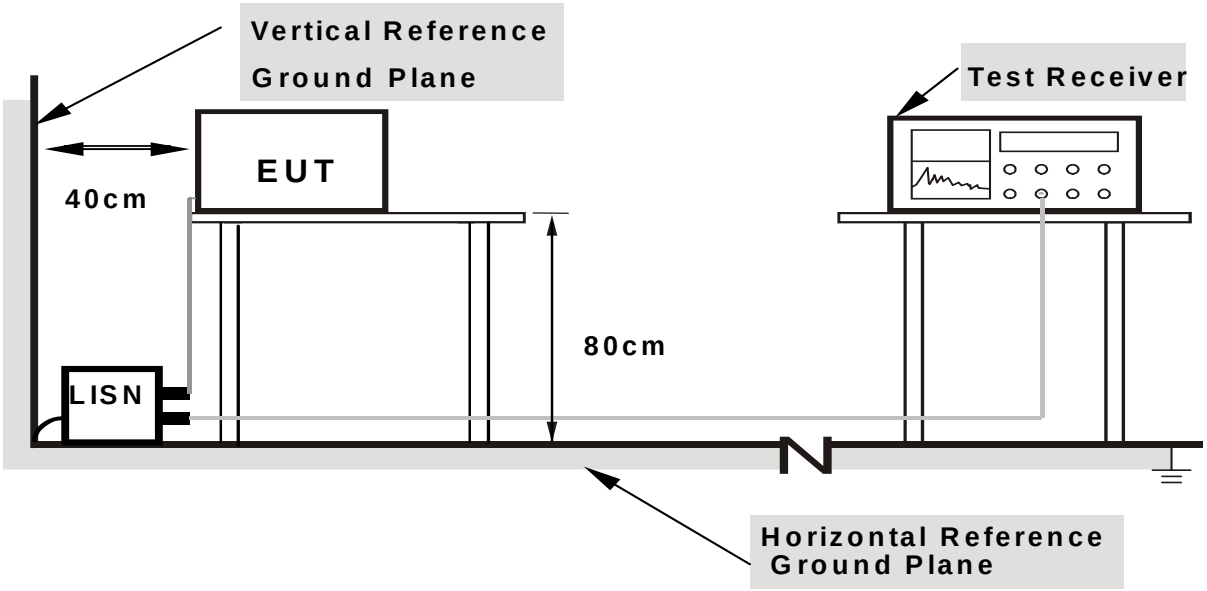
4.1.3 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

4.1.6 **EUT OPERATING CONDITIONS**

The EUT exercise program used during radiated and/or conducted emission measurement was designed to exercise the various system components in a manner similar to a typical use. The program contained on a PC hard disk and is auto-starting on power-up. Once loaded, the program sequentially exercises each system component in turn. The sequence used is:

4.1.7 TEST RESULTS

EUT：	Internet Radio Bluetooth FM car kit	Model Name :	LVC02A
Temperature：	--	Relative Humidity：	--
Pressure：	--	Test Power ：	--
Test Mode ：	” N/A” denotes test is not applicable in this Test Report.		

Remark

(1) All readings are QP Mode value unless otherwise stated AVG in column of『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn‘t perform。In this case, a “ * ” marked in AVG Mode column of Interference Voltage Measured。

(2) Measuring frequency range from 150KHz to 30MHz.

(3) ” N/A” denotes test is not applicable in this Test Report.

4.2 RADIATED EMISSION MEASUREMENT

4.2.1 RADIATED EMISSION LIMITS (Frequency Range 9KHz-1000MHz)

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

Notes:

(1) The tighter limit applies at the band edges.

(2) Emission level (dBuV/m)=20log Emission level (uV/m).

(3) A measuring distance of 3m is a primary used. However, either 3m or 10m (instead of 10m) distance my be allowed. If the distance is 3m, add 10dB to the QP-limit above. If the distance is 10m, subtract 10dB from the QP-limit above.

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

4.2.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Active Loop Antenna	R&S	HFH2-Z2	830749/020	May.26.2012
2	Bi-log Antenna	Schwarbeck	VULB9160	9160-3232	May.25.2012
3	Horn Antenna	ETS	3115	00075789	May.11.2012
4	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170340	Dec.15.2011
5	Amplifier	HP	8447D	2944A09673	May.25.2012
6	Amplifier	Agilent	8449B	3008A02274	May.25.2012
7	Amplifier	EMC	EMC2654045	980039	Aug.12.2011
8	Test Receiver	R&S	ESCI	100895	May.25.2012
9	Spectrum Analyzer	R&S	FSP 40	100185	Nov.26.2011
10	Test Cable	N/A	C-01_CB03	N/A	Jul.05.2011
11	Test Cable	HUBER+SUHNER	SUCOFLEX_8m	313794/4	Apr.11.2012
12	Controller	CT	SC100	N/A	N/A

Remark: ” N/A” denotes No Model Name / Serial No. and No Calibration specified.

4.2.3 TEST PROCEDURE

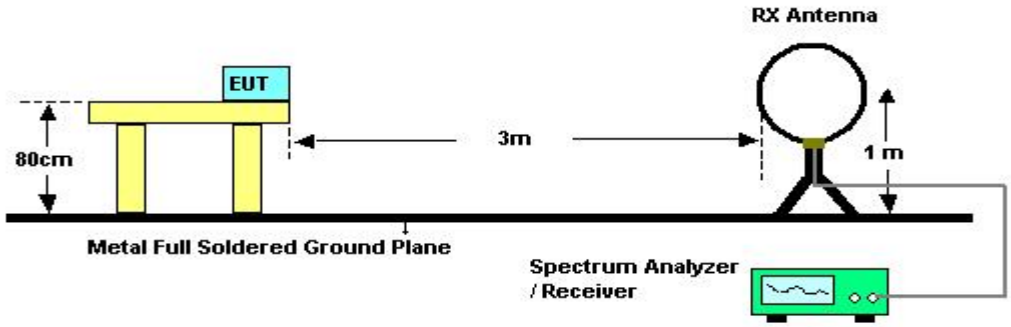
a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m semi-anechoic chamber.. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.
g. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.2.4 DEVIATION FROM TEST STANDARD

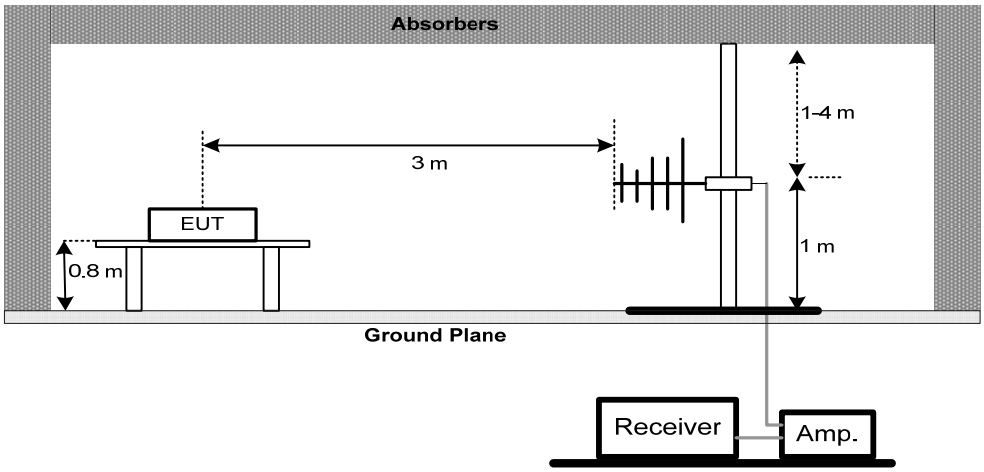
No deviation

4.2.5 TEST SETUP

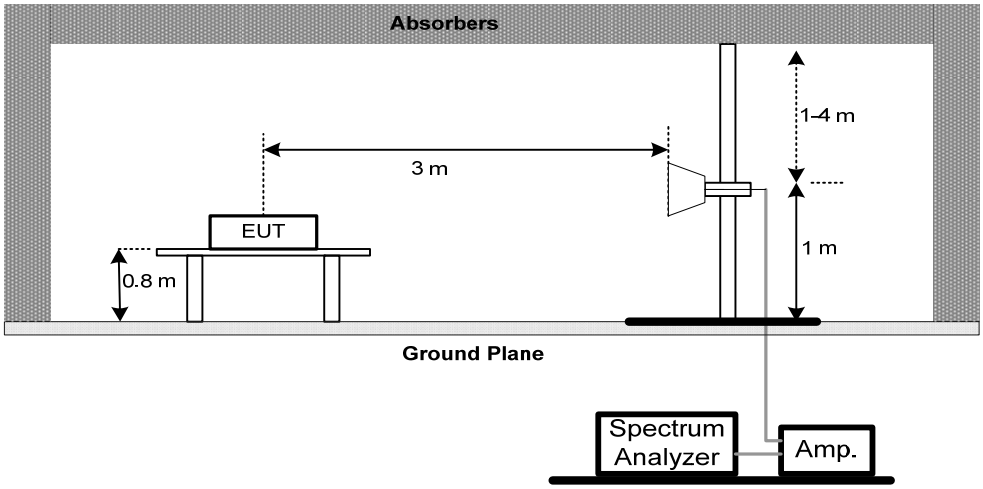
(A) Radiated Emission Test Set-Up Frequency Below 30MHz



(B) Radiated Emission Test Set-Up Frequency Below 1 GHz



(C) Radiated Emission Test Set-Up Frequency Above 1 GHz



4.2.6 EUT OPERATING CONDITIONS

(a) Only radiated testing was performed during the max. EMI emission evaluation. Conducted testing excepted because of the EUT is a battery operating device.

(b) The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

(c) The iPhone is playing typical MPS song and the iPhone Player is adjusted to maximum volume.

4.2.7 TEST RESULTS (Below 30MHZ)

EUT：	Internet Radio Bluetooth FM car kit	Model Name :	LVC02A
Temperature：	--	Relative Humidity：	--
Pressure：	--	Test Power ：	--
Test Mode ：	” N/A” denotes test is not applicable in this Test Report.		

Remark：

(1) The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported ◦ It is valid for the radiated emissions results of this FM Transmitter.
(2) Distance extrapolation factor = 40 log (specific distance / test distance) (dB); ◦
(3) Limit line = specific limits (dBuV) + distance extrapolation factor. ◦

4.2.8 TEST RESULTS (30~1000MHZ)

EUT：	Internet Radio Bluetooth FM car kit	Model Name :	LVC02A
Temperature：	23°C	Relative Humidity：	51%
Pressure：	1008 hPa	Test Power ：	DC 12V
Test Mode ：	TX CH01 (88.1MHz)		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
76.08	V	44.50	-18.86	25.64	40.00	- 14.36	
165.80	V	44.71	-17.45	27.26	43.50	- 16.24	
199.75	V	42.94	-16.57	26.37	43.50	- 17.13	
289.48	V	42.97	-12.08	30.89	46.00	- 15.11	
321.00	V	40.65	-11.55	29.10	46.00	- 16.90	
362.23	V	39.52	-10.40	29.12	46.00	- 16.88	

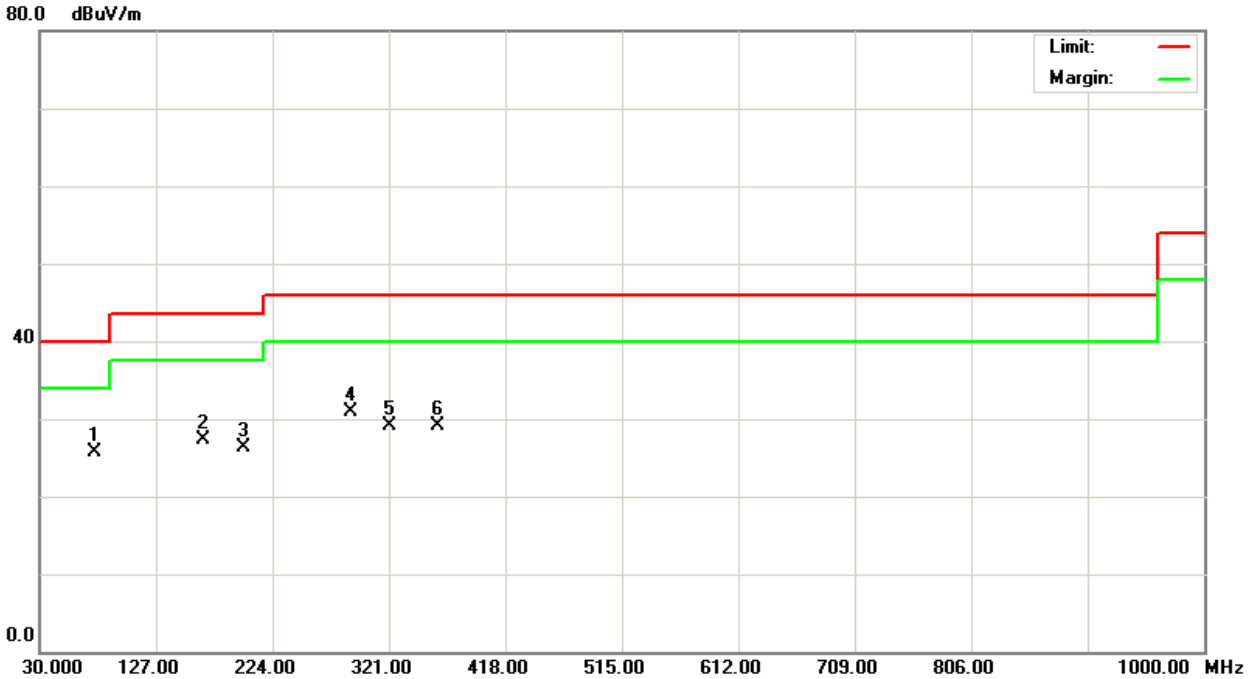
Remark：

(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz；SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of 『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 30MHz to 1000MHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



EUT：	Internet Radio Bluetooth FM car kit	Model Name：	LVC02A
Temperature：	23°C	Relative Humidity：	51%
Pressure：	1008 hPa	Test Power ：	DC 12V
Test Mode ：	TX CH01 (88.1MHz)		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
170.65	H	52.15	-17.27	34.88	43.50	- 8.62	
192.48	H	58.09	-16.69	41.40	43.50	- 2.10	
209.45	H	56.81	-16.33	40.48	43.50	- 3.02	
236.13	H	53.99	-15.34	38.65	46.00	- 7.35	
289.48	H	51.21	-12.08	39.13	46.00	- 6.87	
296.75	H	53.68	-12.07	41.61	46.00	- 4.39	

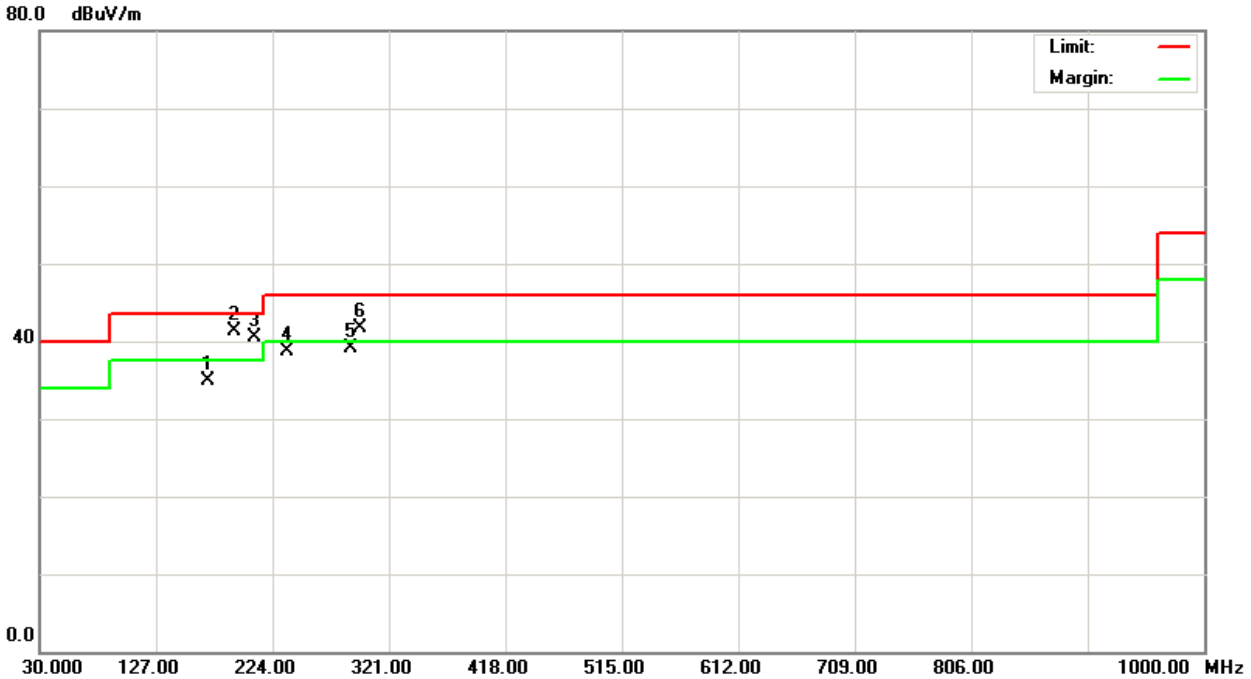
Remark：

(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz；SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 30MHz to 1000MHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



EUT：	Internet Radio Bluetooth FM car kit	Model Name :	LVC02A
Temperature：	23°C	Relative Humidity：	51%
Pressure：	1008 hPa	Test Power ：	DC 12V
Test Mode ：	TX CH51 (98.1MHz)		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
77.14	V	45.01	-18.92	26.09	40.00	- 13.91	
166.02	V	46.02	-17.44	28.58	43.50	- 14.92	
200.02	V	43.68	-16.57	27.11	43.50	- 16.39	
287.11	V	43.11	-12.22	30.89	46.00	- 15.11	
322.32	V	41.98	-11.52	30.46	46.00	- 15.54	
363.87	V	40.36	-10.34	30.02	46.00	- 15.98	

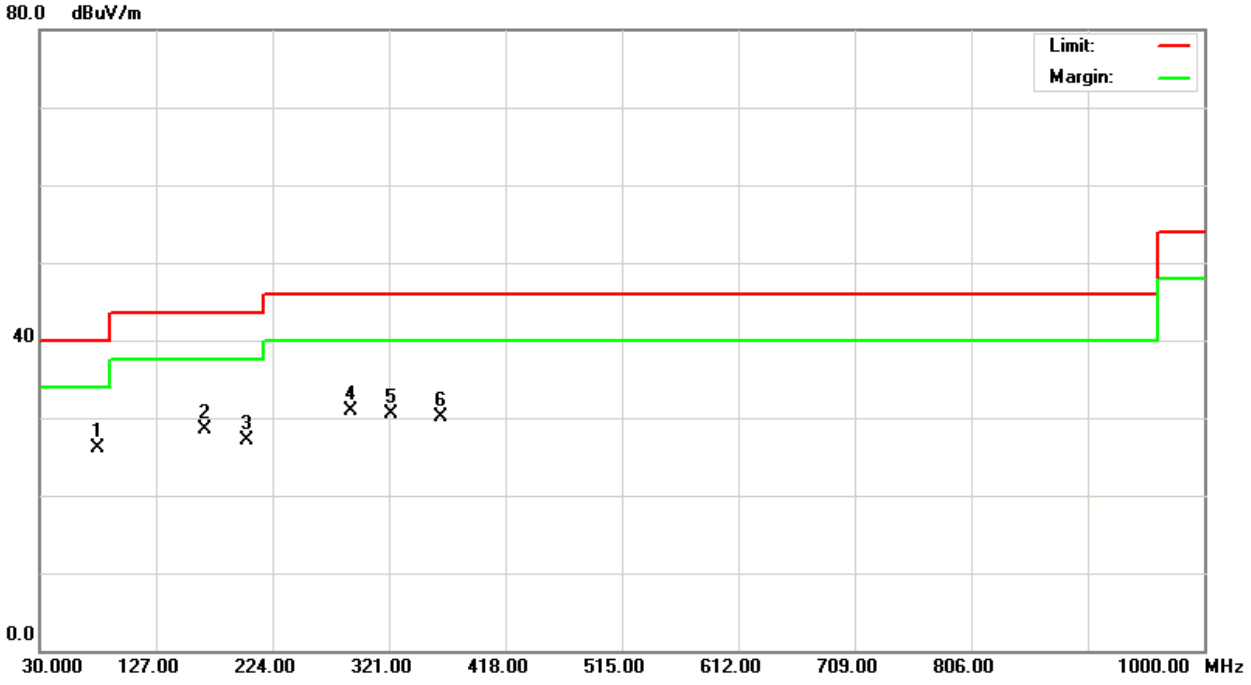
Remark：

(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz；SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 30MHz to 1000MHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



EUT：	Internet Radio Bluetooth FM car kit	Model Name :	LVC02A
Temperature：	23°C	Relative Humidity：	51%
Pressure：	1008 hPa	Test Power ：	DC 12V
Test Mode ：	TX CH51 (98.1MHz)		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
168.01	H	51.02	-17.37	33.65	43.50	- 9.85	
202.35	H	56.02	-16.51	39.51	43.50	- 3.99	
224.38	H	56.23	-15.75	40.48	46.00	- 5.52	
287.36	H	51.30	-12.21	39.09	46.00	- 6.91	
305.36	H	50.85	-11.94	38.91	46.00	- 7.09	
365.68	H	52.01	-10.27	41.74	46.00	- 4.26	

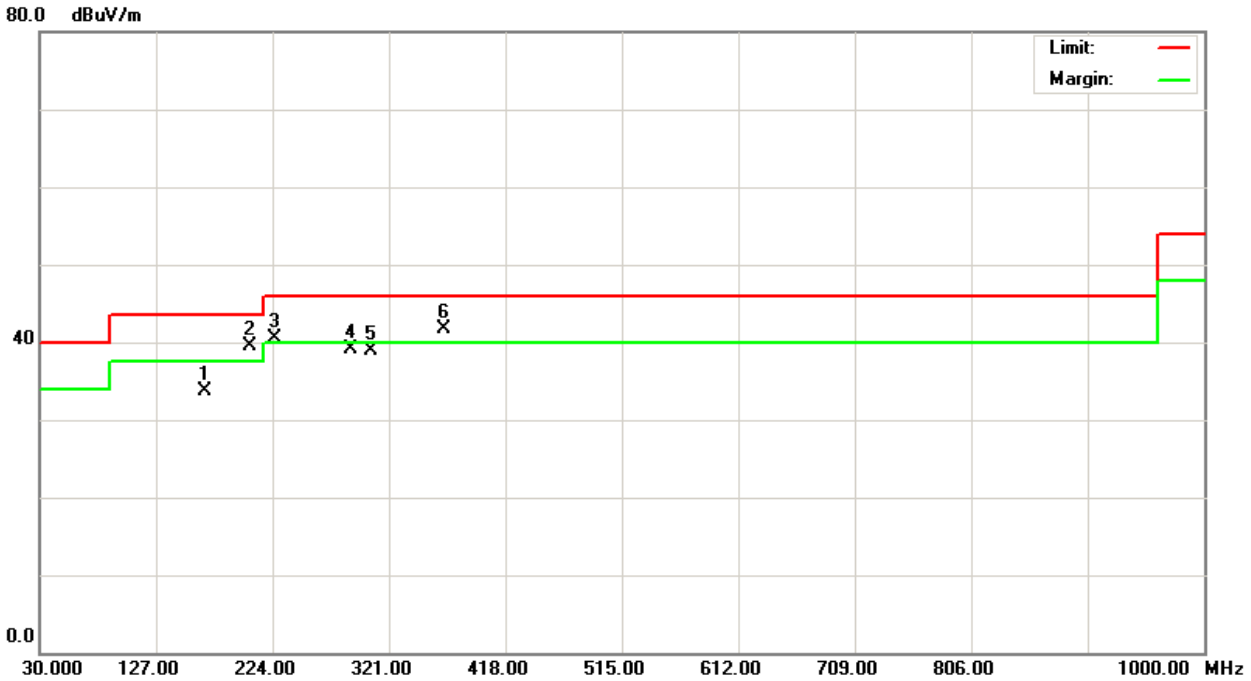
Remark：

(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz；SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 30MHz to 1000MHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



EUT：	Internet Radio Bluetooth FM car kit	Model Name：	LVC02A
Temperature：	23°C	Relative Humidity：	51%
Pressure：	1008 hPa	Test Power ：	DC 12V
Test Mode ：	TX CH100 (107.9MHz)		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
77.11	V	45.02	-18.92	26.10	40.00	- 13.90	
166.02	V	44.63	-17.44	27.19	43.50	- 16.31	
202.57	V	45.28	-16.50	28.78	43.50	- 14.72	
278.96	V	43.60	-12.71	30.89	46.00	- 15.11	
325.64	V	40.54	-11.44	29.10	46.00	- 16.90	
361.10	V	40.13	-10.43	29.70	46.00	- 16.30	

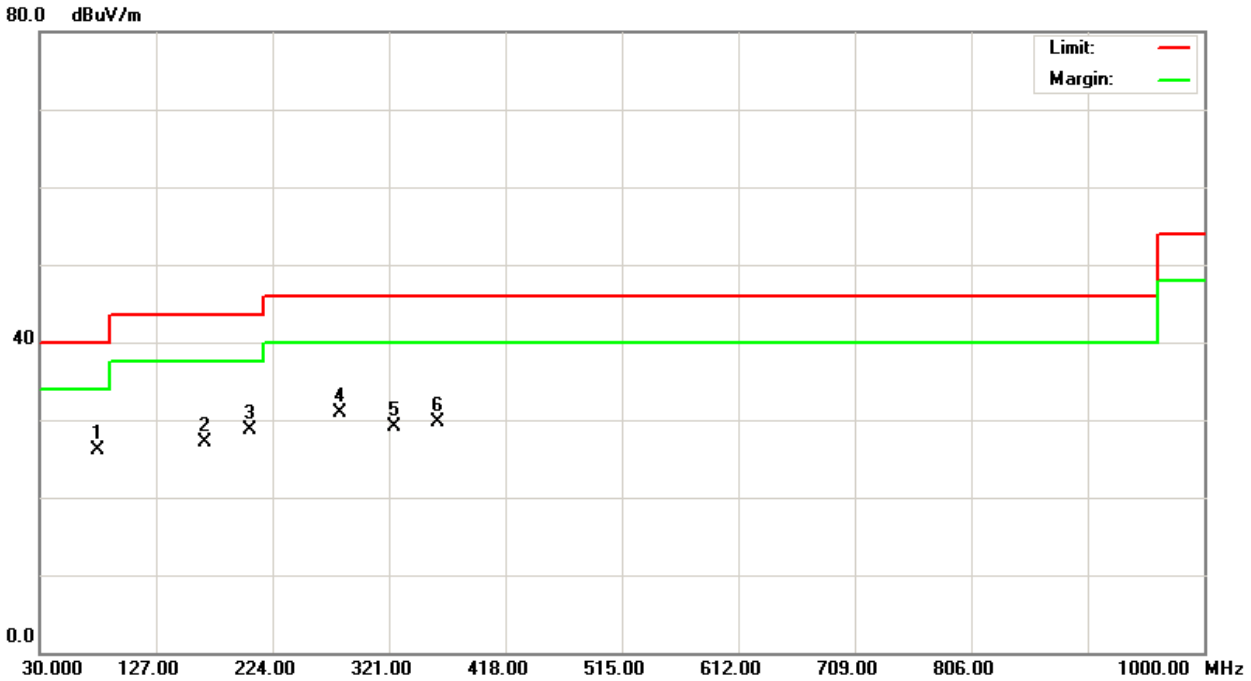
Remark：

(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz；SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 30MHz to 1000MHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



EUT：	Internet Radio Bluetooth FM car kit	Model Name：	LVC02A
Temperature：	23°C	Relative Humidity：	51%
Pressure：	1008 hPa	Test Power ：	DC 12V
Test Mode ：	TX CH100 (107.9MHz)		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
171.53	H	51.87	-17.23	34.64	43.50	- 8.86	
193.52	H	56.31	-16.67	39.64	43.50	- 3.86	
210.58	H	56.87	-16.29	40.58	43.50	- 2.92	
241.38	H	53.73	-15.08	38.65	46.00	- 7.35	
289.64	H	51.20	-12.07	39.13	46.00	- 6.87	
302.41	H	52.02	-12.01	40.01	46.00	- 5.99	

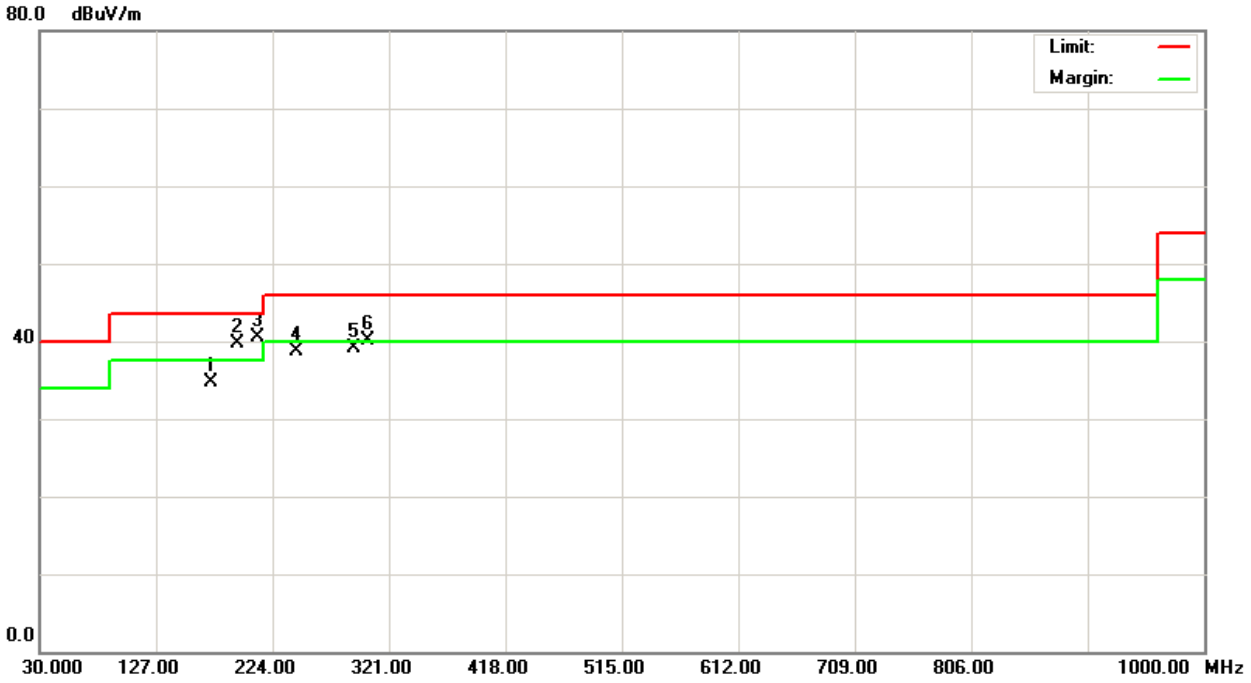
Remark：

(1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz；SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz。

(2) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(3) Measuring frequency range from 30MHz to 1000MHz。

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table。



4.3 FIELD STRENGTH OF FUNDAMENTAL AND BAND EDGE EMISSIONS MEASUREMENT

4.3.1 LIMITS OF FIELD STRENGTH OF FUNDAMENTAL AND BAND EDGE EMISSIONS MEASUREMENT

According to 15.239 the field strength of emissions from intentional radiators operated under these frequencies bands shall not exceed the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental (dBuV/m)	
88 to 108	Peak	Average
	67.96	47.96

Band edge emissions outside of the frequency bands shown in below table.

Outside Frequency Band Edge	Limit (dBuV/m) at 3m
Below 88 MHz	40.0 (QP)
Above 108 MHz	43.5 (QP)

4.3.2 MEASURING INSTRUMENTS AND SETTING

Receiver Parameter	Setting
Center Frequency	Fundamental Frequency
RBW	120 KHz
Detector	AV or Peak

4.3.3 TEST PROCEDURE

The test procedure is the same as section 4.1.3.

4.3.4 TEST SETUP LAYOUT

This test setup layout is the same as that shown in section 4.2.5

4.3.5 TEST DEVIATION

There is no deviation with the original standard.

4.3.6 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

The iPhone is playing typical MP3 song and the iPhone Player is adjusted to maximum volume.

4.3.6 TEST RESULTS (Fundamental & Bandedge emission)

EUT：	Internet Radio Bluetooth FM car kit	Model Name ：	LVC02A
Temperature：	25°C	Relative Humidity：	58%
Test Voltage ：	DC 12V		
Test Mode：	TX CH01 (88.1MHz)		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Note
88.0000	V	54.45	-19.09	35.36	40.00	- 4.64	(X/PK)
88.1250	V	58.69	-19.08	39.61	68.00	- 28.39	(X/PK)
88.1250	V	58.43	-19.08	39.35	48.00	- 8.65	(X/AV)

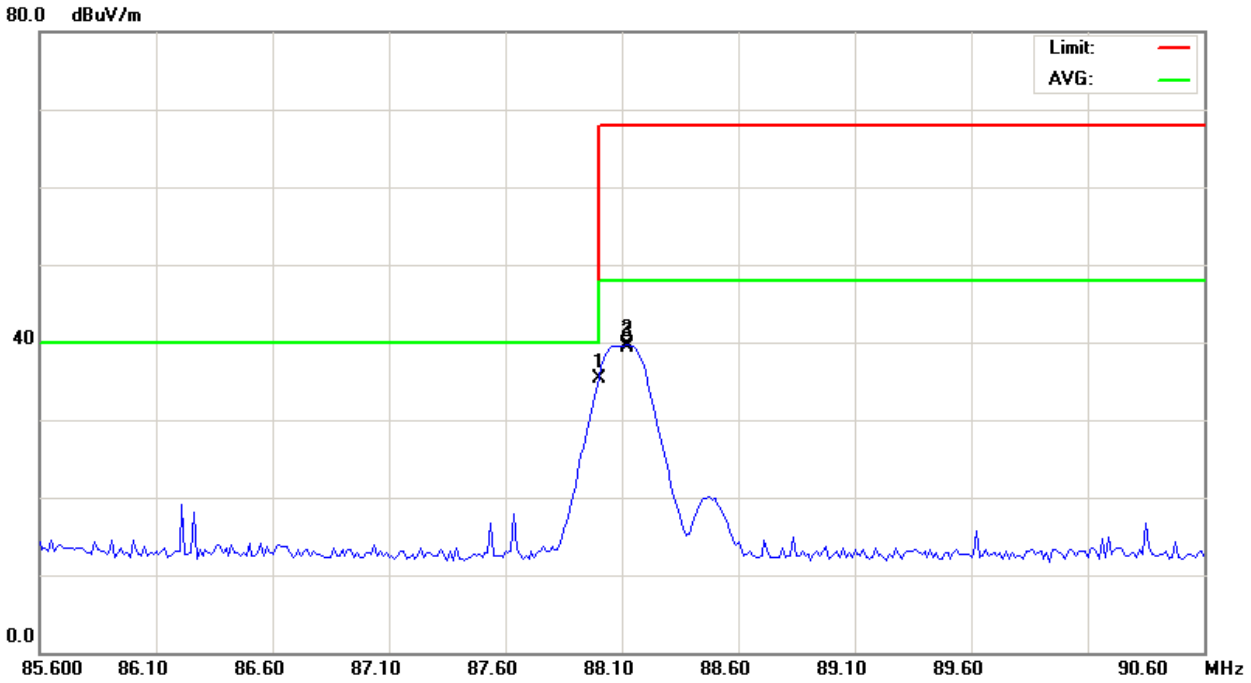
Remark：

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

(3) EUT Orthogonal Axes：

"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand



EUT：	Internet Radio Bluetooth FM car kit	Model Name ：	LVC02A
Temperature：	25°C	Relative Humidity：	58%
Test Voltage ：	DC 12V		
Test Mode：	TX CH01 (88.1MHz)		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Note
88.0000	H	56.80	-19.09	37.71	40.00	- 2.29	(X/PK)
88.0875	H	63.98	-19.09	44.89	68.00	- 23.11	(X/PK)
88.0875	H	63.25	-19.09	44.16	48.00	- 3.84	(X/AV)

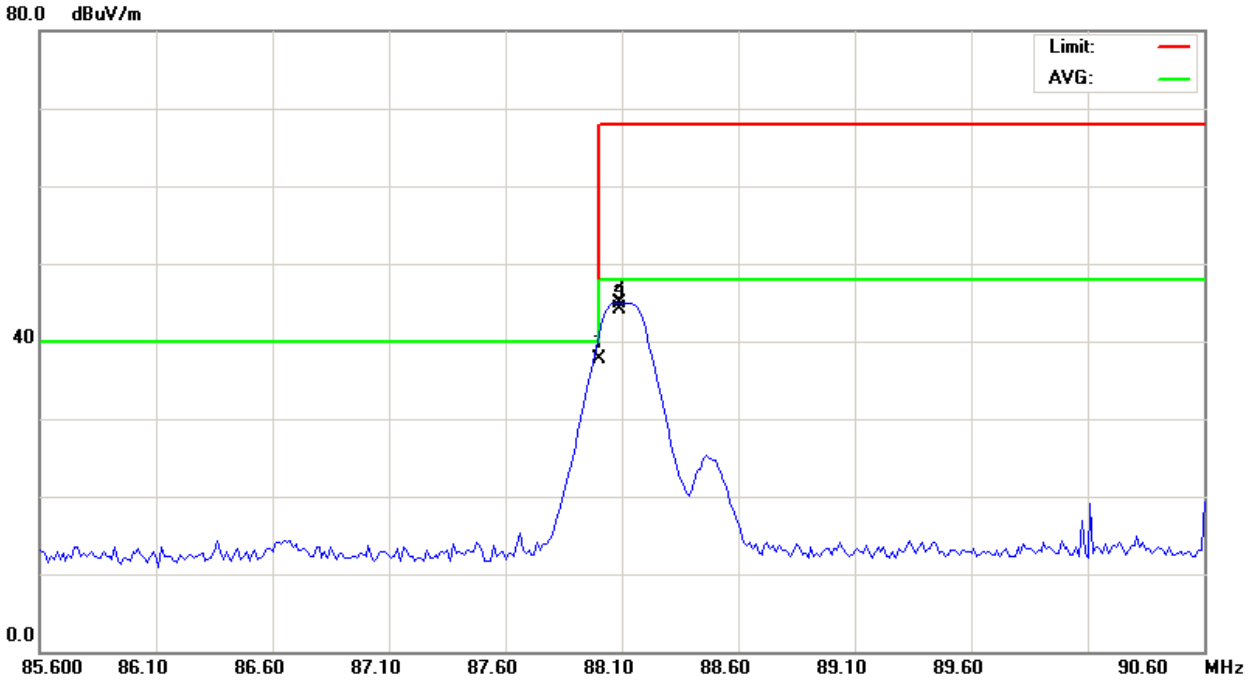
Remark：

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

(3) EUT Orthogonal Axes：

"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand



EUT：	Internet Radio Bluetooth FM car kit	Model Name ：	LVC02A
Temperature：	25°C	Relative Humidity：	58%
Test Voltage ：	DC 12V		
Test Mode：	TX CH51(98.1MHz)		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Note
98.0875	V	53.51	-18.44	35.07	68.00	- 32.93	(X/PK)
98.0875	V	53.02	-18.44	34.58	48.00	- 13.42	(X/AV)

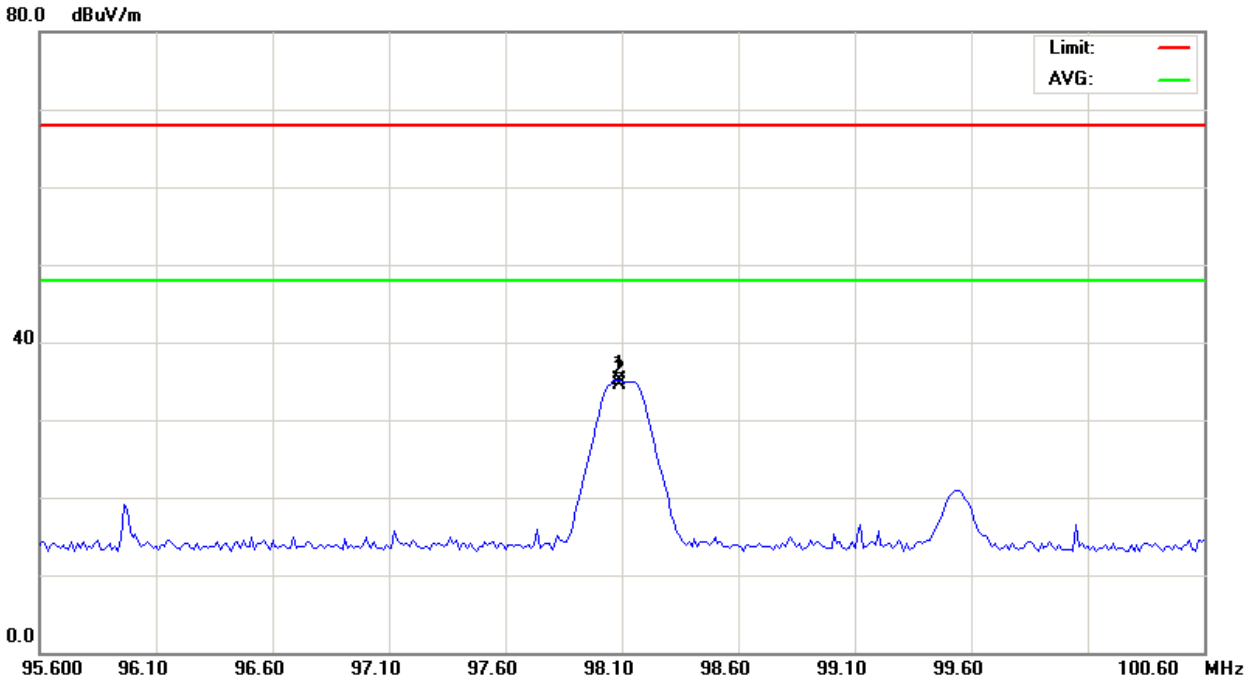
Remark：

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission ◦

(3) EUT Orthogonal Axes：

"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand



EUT：	Internet Radio Bluetooth FM car kit	Model Name ：	LVC02A
Temperature：	25°C	Relative Humidity：	58%
Test Voltage ：	DC 12V		
Test Mode：	TX CH51(98.1MHz)		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Note
98.1125	H	58.16	-18.44	39.72	68.00	- 28.28	(X/PK)
98.1125	H	58.02	-18.44	39.58	48.00	- 8.42	(X/AV)

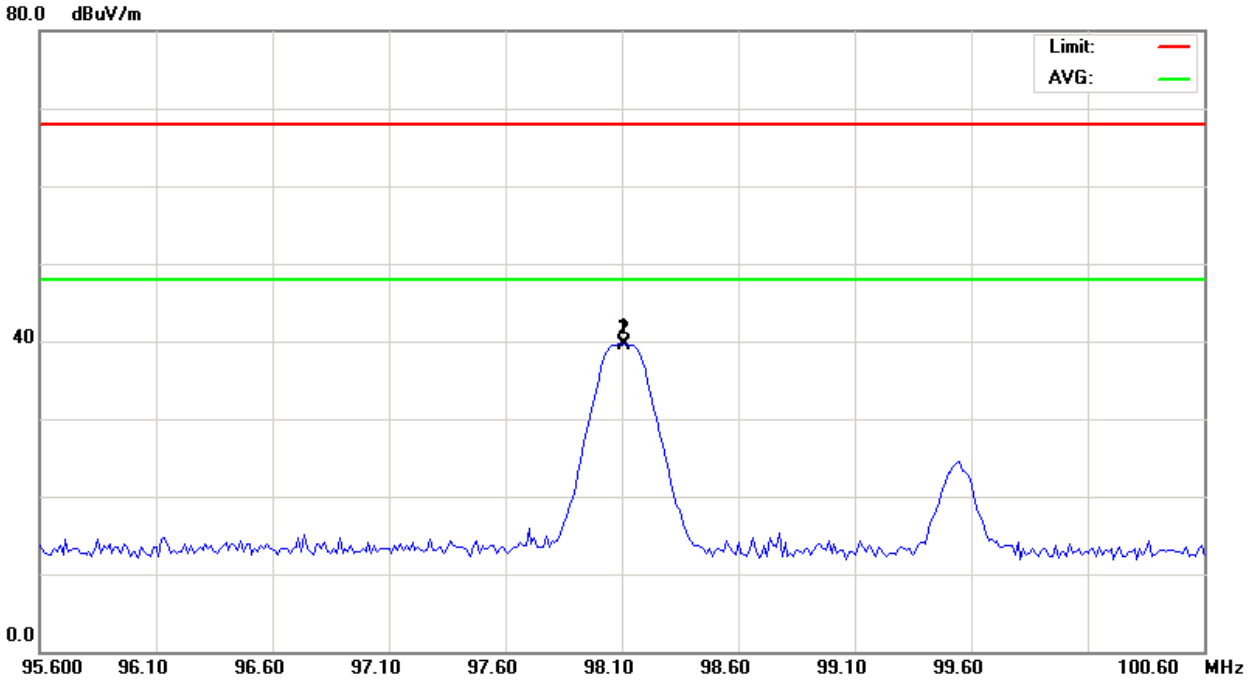
Remark：

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

(3) EUT Orthogonal Axes：

"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand



EUT：	Internet Radio Bluetooth FM car kit	Model Name ：	LVC02A
Temperature：	25°C	Relative Humidity：	58%
Test Voltage ：	DC 12V		
Test Mode：	TX CH100 (107.9MHz)		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Note
107.8750	V	51.97	-18.36	33.61	68.00	- 34.39	(X/PK)
107.8750	V	51.76	-18.36	33.40	48.00	- 14.60	(X/AV)
108.0000	V	48.71	-18.36	30.35	43.50	- 13.15	(X/PK)

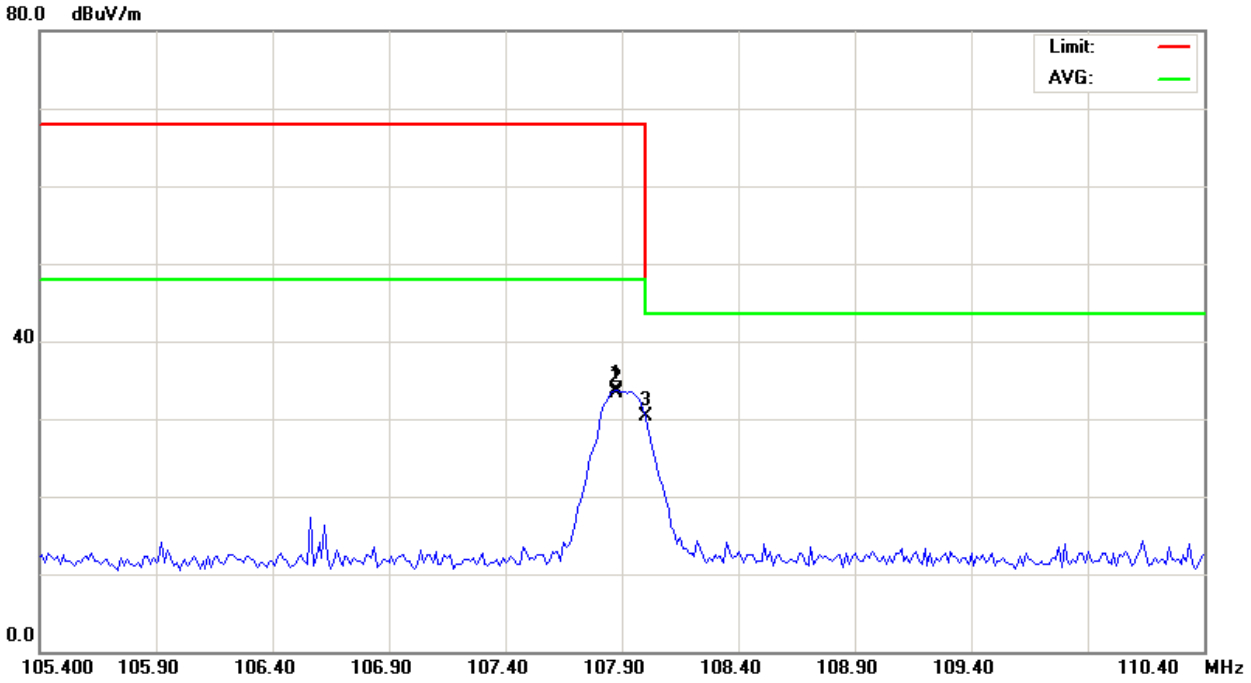
Remark：

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

(3) EUT Orthogonal Axes：

"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand



EUT：	Internet Radio Bluetooth FM car kit	Model Name ：	LVC02A
Temperature：	25°C	Relative Humidity：	58%
Test Voltage ：	DC 12V		
Test Mode：	TX CH100 (107.9MHz)		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Note
107.8750	H	60.13	-18.36	41.77	68.00	- 26.23	(X/PK)
107.8750	H	59.98	-18.36	41.62	48.00	- 6.38	(X/AV)
108.0000	H	57.02	-18.36	38.66	43.50	- 4.84	(X/PK)

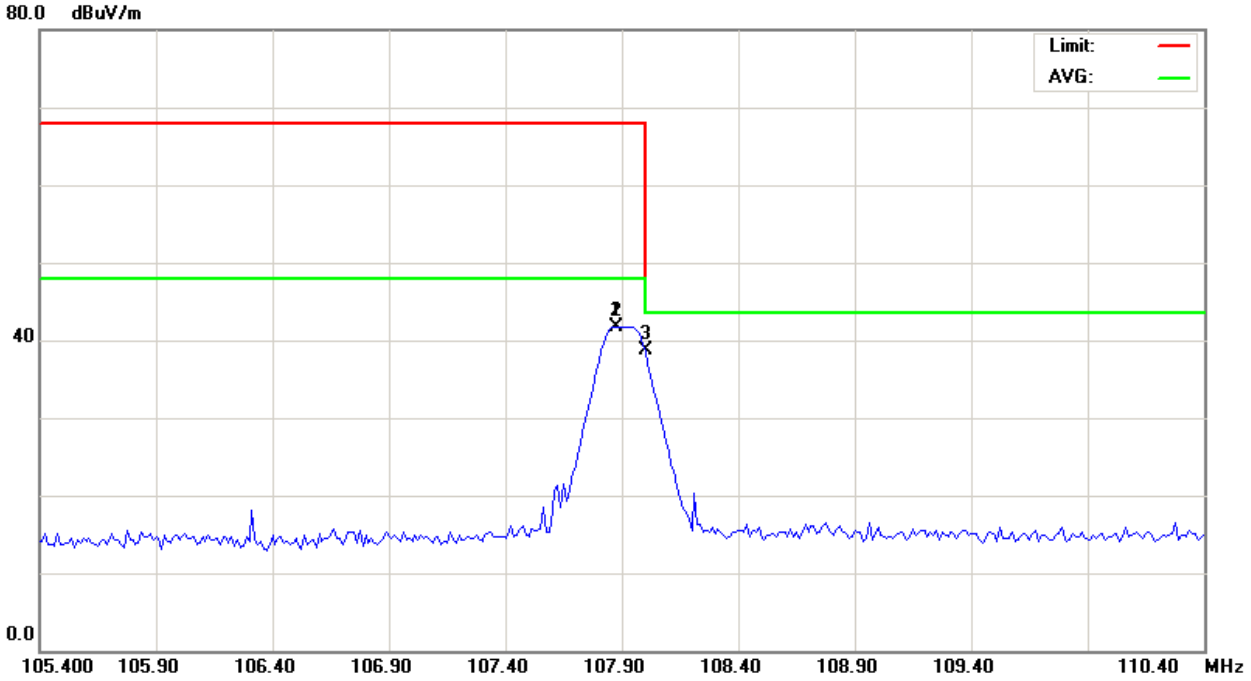
Remark：

(1) Spectrum Setting : 30MHz – 1000MHz , RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = Auto

(2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission 。

(3) EUT Orthogonal Axes：

"X" - denotes Laid on Table；"Y" - denotes Vertical Stand；"Z" - denotes Side Stand



5. BANDWIDTH REQUIREMENT

5.1 LIMITS OF EMISSION BAND MEASUREMENT

Emissions from the intentional radiator shall be confined within a bands 200kHz wide centered on the operating frequency. The 200 kHz band shall lie wholly within the frequency range of 88 to 108MHz.

5.1.1 MEASUREMENT INSTRUMENTS LIST

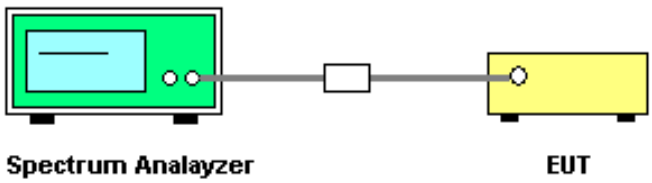
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov.26.2011

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 20dB Bandwidth
RB	10 kHz
VB	10 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5.1.2 TEST PROCEDURE

a. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
b. The resolution bandwidth of 10 kHz and the video bandwidth of 10 kHz were used.
c. Measured the spectrum width with power higher than 20dB below carrier.

5.1.3 TEST SETUP LAYOUT



5.1.4 TEST DEVIATION

There is no deviation with the original standard.

5.1.5 EUT OPERATION DURING TEST

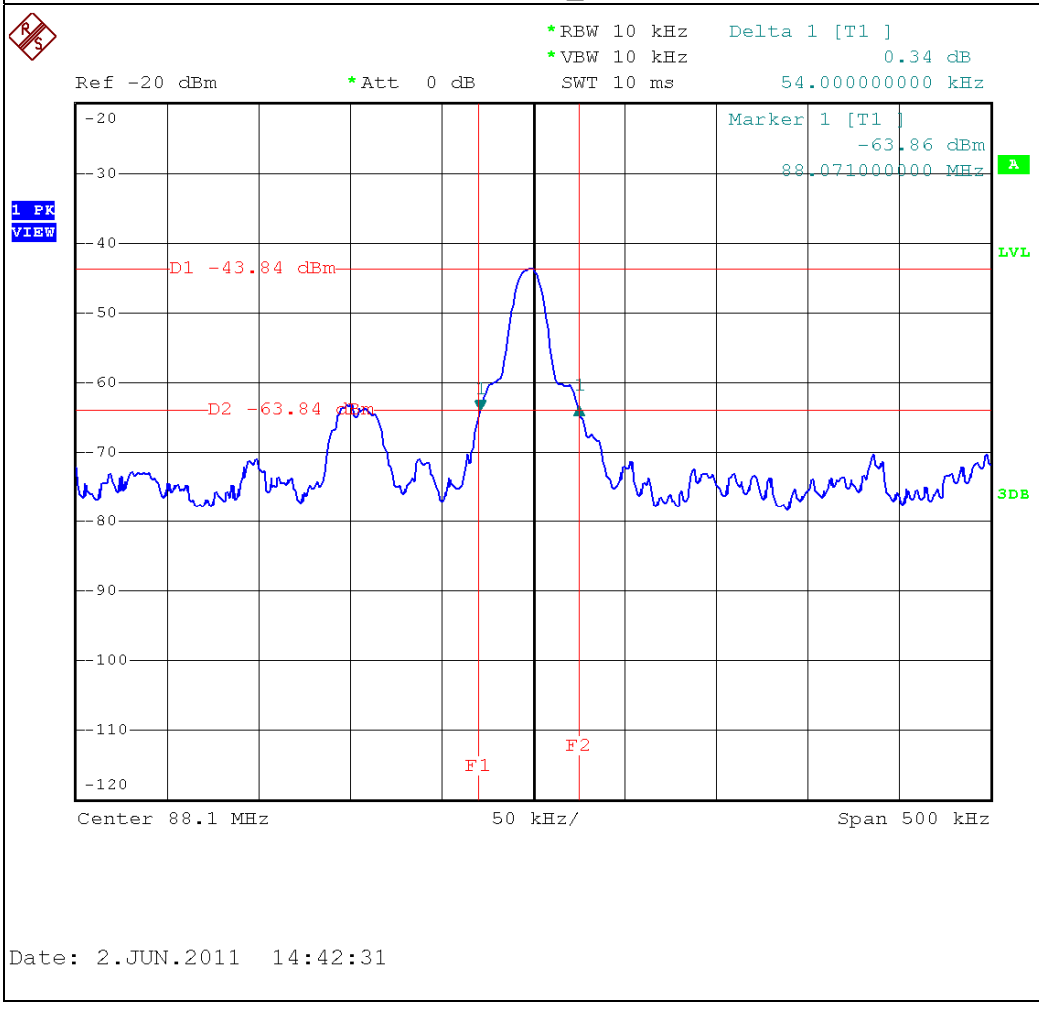
The EUT was programmed to be in continuously transmitting mode.
The iPhone is playing typical MP3 song and is adjusted to maximum volume.

5.1.6 TEST RESULT OF 20dB SPECTRUM BANDWIDTH

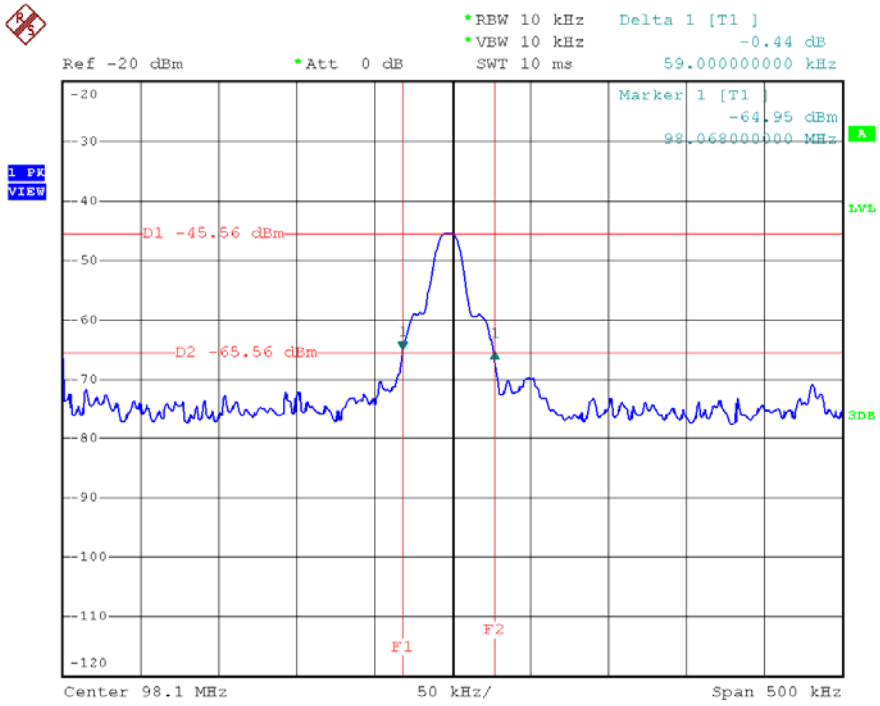
EUT：	Internet Radio Bluetooth FM car kit	Model Name ：	LVC02A
Temperature：	26°C	Relative Humidity：	60 %
Test Voltage ：	DC 12V		
Test Mode：	TRANSMITTER (Mono mode)		
Note：	CH01 (88.1MHz) / CH51 (98.1MHz) / CH100 (107.9MHz)		

Channel	Frequency (MHz)	20dB Bandwidth (KHz)	Limits kHz (20dB Down)	Test Result
01	88.1	54.00	200.0000	PASS
51	98.1	59.00	200.0000	PASS
100	107.9	65.00	200.0000	PASS

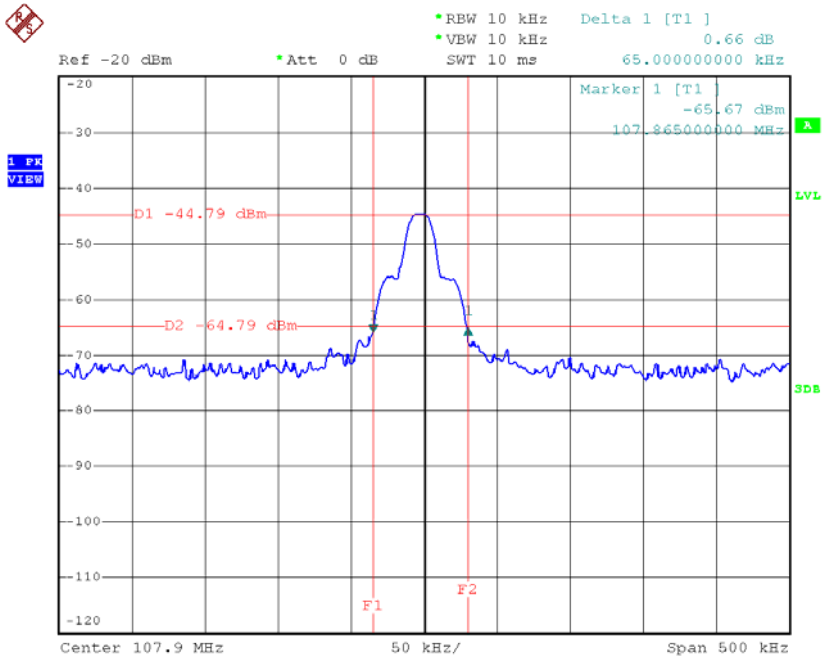
CH 01_88.1MHz



CH 51_98.1MHz



CH 100_107.9MHz



6. EUT TEST PHOTO

Radiated Measurement Photos