FCC TEST REPORT

FOR

Unicorn Srl

Vibration speaker

Model No.: Thor-01

Prepared for	:	Unicorn Srl
Address	:	Via Sant' Agnese, Milano 20123, Italy
Prepared by	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Address	:	1F., Xingyuan Industrial Park, Tongda Road, Bao'an Blvd., Bao'an District, Shenzhen, Guangdong, China
Date of receipt of test sample	:	May 06, 2013
Number of tested samples	:	1
Serial number	:	Prototype
Date of Test	:	May 06, 2013 – May 22, 2013
Date of Report	:	May 22, 2013

FCC TEST REPORT
FCC CFR 47 PART 15 C (15.225)-2012

Report Reference No. ..... :	**LCS130514458TF**
Date of Issue ..... :	May 22, 2013
Testing Laboratory Name..... :	**Shenzhen LCS Compliance Testing Laboratory Ltd.**
Address ..... :	1F., Xingyuan Industrial Park, Tongda Road, Bao'an Blvd., Bao'an District, Shenzhen, Guangdong, China
Testing Location/ Procedure..... :	Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □
Applicant's Name ..... :	**Unicorn Srl**
Address ..... :	Via Sant' Agnese, Milano 20123, Italy
Test Specification	
Standard ..... :	FCC CFR 47 PART 15 C(15.225)-2012
Test Report Form No. ..... :	LCSEMC-1.0
TRF Originator ..... :	Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF ..... :	Dated 2011-03

Test Item Description. ..... :	**Vibration speaker**
Trade Mark ..... :	Vibe-Tribe
Model/ Type reference ..... :	Thor-01
Ratings ..... :	DC 3.7V by battery(1400mAh)
Result ..... :	**Positive**

Compiled by:	**Supervised by:**	**Approved by:**
Ada Liang/ File administrators	Fox Zhang/ Technique principal	Gavin Liang/ Manager

FCC -- TEST REPORT

Test Report No. : LCS130514458TF	May 22, 2013 Date of issue

Type / Model.....	: Thor-01
EUT.....	: Vibration speaker
Applicant.....	**: Unicorn Srl**
Address.....	: Via Sant' Agnese, Milano 20123, Italy
Telephone.....	: /
Fax.....	: /
Manufacturer.....	**: Unicorn Srl**
Address.....	: Via Sant' Agnese, Milano 20123, Italy
Telephone.....	: /
Fax.....	: /
Factory.....	: **Unicorn Srl**
Address.....	: Via Sant' Agnese, Milano 20123, Italy
Telephone.....	: /
Fax.....	: /

Test Result:	**Positive**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

TABLE OF CONTENTS

Description Page

1. GENERAL INFORMATION

1.1 Description of Device (EUT)

EUT	:	Vibration speaker
Model Number	:	Thor-01
Power Supply	:	DC 3.7V by battery(1400mAh)
Operating Frequency	:	13.56MHz
Channel Number	:	1
Modulation Technology	:	ASK
Antenna Gain	:	Loop Antenna, 0dBi

1.2 Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	Certificate
Lenovo	Notebook	B470	--	DOC

1.3 External I/O

I/O Port Description	Quantity	Cable
USB Port	1	1.5m, unshielded
TF Card Port	1	N/A

***Note: The USB port is used for charging and can't transfer data with PC.

1.4 Description of Test Facility

Site Description EMC Lab.	:	Accredited by CNAS, June 04, 2010
		The Certificate Registration Number. is L4595.
		Accredited by FCC, July 14, 2011
		The Certificate Registration Number. is 899208.
		Accredited by Industry Canada, May. 02, 2011
		The Certificate Registration Number. is 9642A-1

1.5 Statement of The Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

1.6 Measurement Uncertainty

Test Item		Frequency Range	Uncertainty	Note
Radiation Uncertainty	:	9KHz~30MHz	±3.10dB	(1)
		30MHz~200MHz	±2.96dB	(1)
		200MHz~1000MHz	±3.10dB	(1)
		1GHz~26.5GHz	±3.80dB	(1)
		26.5GHz~40GHz	±3.90dB	(1)
Conduction Uncertainty	:	150kHz~30MHz	±1.63dB	(1)
Power disturbance	:	30MHz~300MHz	±1.60dB	(1)

(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

1.7 Description Of Test Modes

The EUT was operated in the engineering mode. All X, Y, Z axis had been tested and the worst case was record.

1.8 Summary Of Test Result

Test Items	FCC Rules	IC Rules	Result
Line Conducted Emissions	15.207	RSS-Gen	PASS
Field Strength of Fundamental Emissions	15.225(a)(b)(c)	A2.6	PASS
Radiated Emissions	15.225(d) & 15.209	A2.6	PASS
20dB Bandwidth	2.1049	-	PASS
Frequency Stability	15.225(e)	A2.6	PASS
Antenna Requirement	15.203	-	PASS

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4, FCC CFR PART 15C 15.225.

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.225 under the FCC Rules Part 15 Subpart C.

2.3 General Test Procedures

2.3.1 Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using Quasi-peak and average detector modes.

2.3.2 Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4

3. SYSTEM TEST CONFIGURATION

3.1 Justification

N/A.

3.2 EUT Exercise Software

N/A.

3.3 Special Accessories

N/A.

3.4 Block Diagram/Schematics

Please refer to the report.

3.5 Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

3.6 Test Setup

Please refer to the test setup photo.

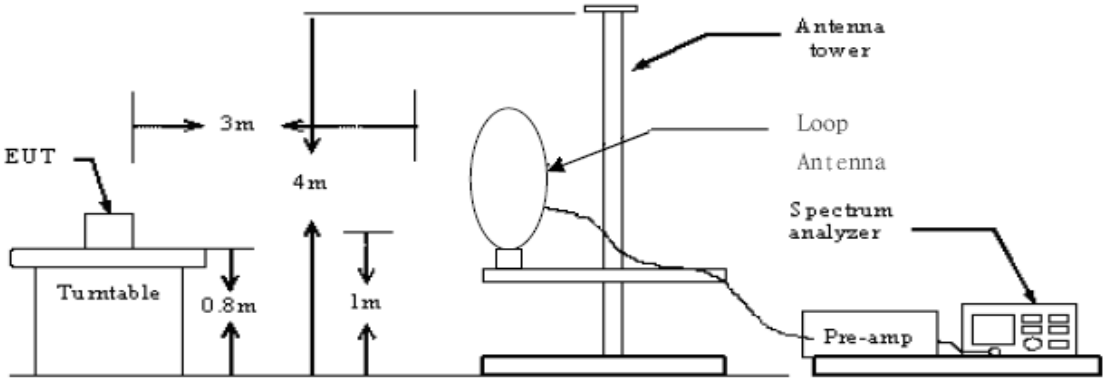
4. RADIATED MEASUREMENT

4.1 Radiated Emission

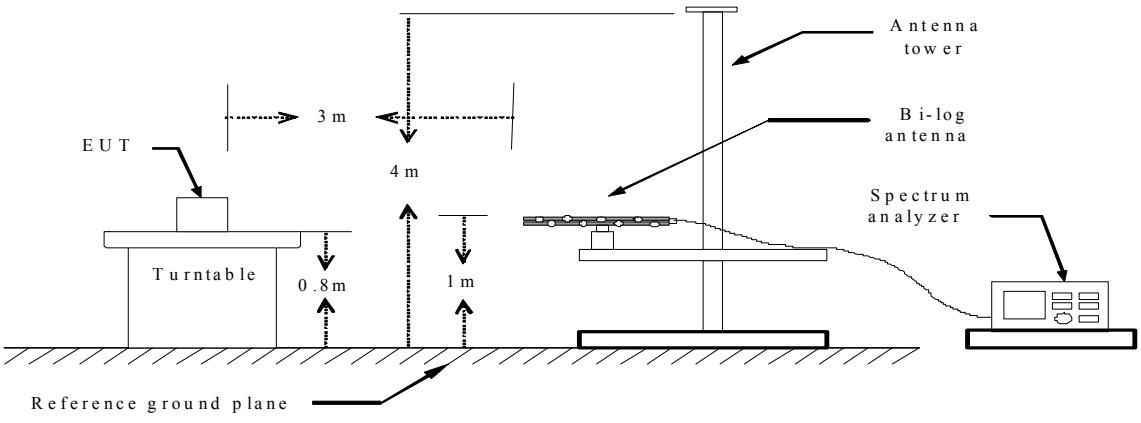
4.1.1 Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
1	Spectrum Analyzer	Agilent	E4407B	MY41440292	2012-06-16	2013/06/15
2	Test Receiver	Rohde & Schwarz	ESCS30	100174	2012-06-18	2013/06/17
3	Loop antenna	R&S	HFH2-Z2	860004/001	2012-06-18	2013/06/17
4	Log per Antenna	SCHWARZBECK	VULB9163	9163-470	2012-06-10	2013/06/09
5	Horn-antenna	EMCO	3115	6741	2012-06-10	2013/06/09
6	DC Filter	MPE	23872C	N/A	2012-06-18	2013/06/17

4.1.2 Block Diagram of Test Setup



9KHz ~ 30MHz



30MHz ~ 1GHz

4.1.3 Radiated Emission Limit

15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
\1\ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293.	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(\2\)
13.36-13.41			

\1\ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

\2\ Above 38.6

Part 15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector.

According to Part 15.225 (a), the field strength of any emissions which appear outside of 13.553 ~ 13.567MHz band shall not exceed the general radiated emissions limits.

Frequency (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

Limit calculation and transfer to 3m distance as showed in the following table:

Frequency (MHz)	Limit (dBuV/m)	Distance (m)
0.009-0.490	20log(2400/F(KHz))+40log(300/3)	3
0.490-1.705	20log(2400/F(KHz))+40log(300/3)	3
1.705-30.0	69.5	3
30-88	40.0	3
88-216	43.5	3
216-960	46.0	3
Above 960	54.0	3

4.1.4 Test Results

PASS.

The test data please refer to following page:

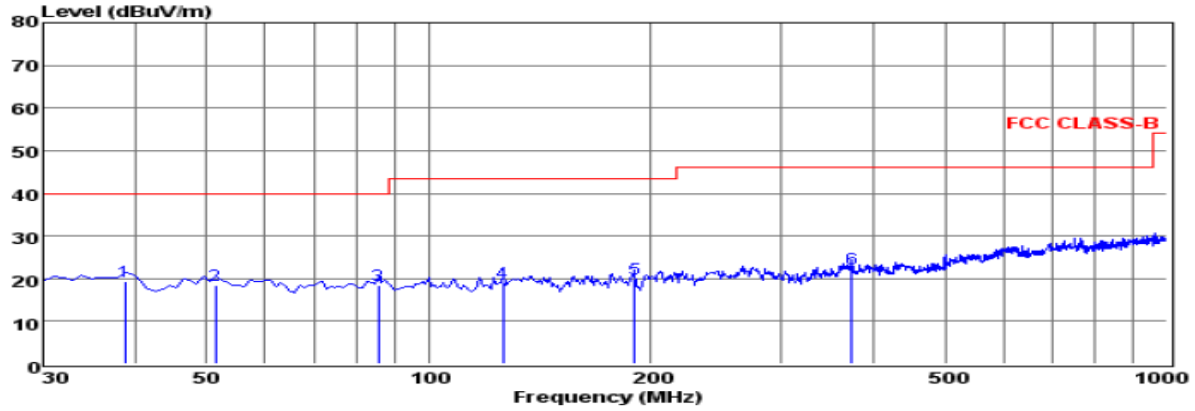
9KHz ~ 30MHz

Freq. MHz	Antenna Pol.	Reading dBuV	Factor dB	Measured dBuV	Limit dBuV/m	Margin dB	Remark
0.350	H	--	--	--	65	--	--
1.000	H	--			65		--
3.54	H	37.11	11.71	48.82	69.5	-20.68	Peak
10.78	H	18.21	11.04	29.25	69.5	-40.25	Peak
13.56	H	57.74	10.86	68.60	124	-55.40	Peak
17.71	H	14.11	10.54	24.65	69.5	-44.85	Peak
25.10	H	15.47	9.60	25.07	69.5	-44.43	Peak
28.64	H	12.33	8.91	21.24	69.5	-48.26	Peak
0.350	V	--			65		--
0.860	V	--			65		--
3.61	V	37.13	11.69	48.82	69.5	-20.68	Peak
10.74	V	18.24	11.01	29.25	69.5	-40.25	Peak
13.56	V	56.91	10.86	67.77	124	-56.23	Peak
17.75	V	15.84	10.57	26.41	69.5	-43.09	Peak
25.13	V	15.51	9.59	25.1	69.5	-44.40	Peak
28.59	V	12.31	8.93	21.24	69.5	-48.26	Peak

*Note: Factor= Antenna Gain + Cable Loss – Amplifier Gain;

"--" means noise floor.

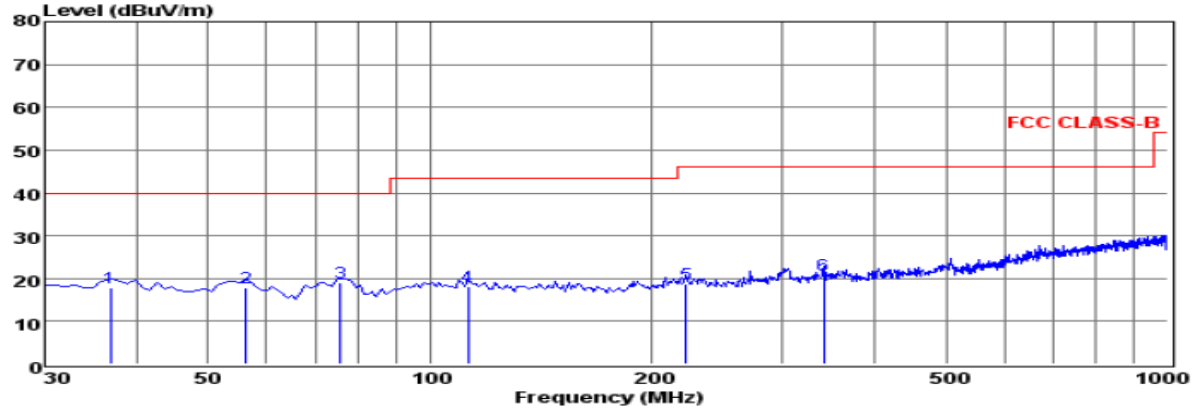
30MHz ~ 1GHz



Env. /Ins: 24℃/56%
EUT: vibration speaker
M/N: Thor-01
Power Rating: DC 3.7V
Test Mode: TX
Operator: ANDY
Memo:
pol: VERTICAL

	Freq	Reading	CabLos	AntFac	PreFac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dB	dBuV/m	dBuV/m	dB	
1	38.73	5.72	0.38	13.25	0.00	19.35	40.00	-20.65	QP
2	51.34	4.74	0.54	13.19	0.00	18.47	40.00	-21.53	QP
3	85.29	7.71	0.47	10.40	0.00	18.58	40.00	-21.42	QP
4	126.03	8.71	0.71	9.55	0.00	18.97	43.50	-24.53	QP
5	190.05	8.65	0.86	10.56	0.00	20.07	43.50	-23.43	QP
6	374.35	6.73	1.10	14.54	0.00	22.37	46.00	-23.63	QP

Note: 1. All readings are Quasi-peak values.
2.Measured = Reading + Antenna Factor + Cable Loss - Amp Factor.
3.The emission levels that ate 20dB below the official limit are not reported.



Env. /Ins: 24℃/56%
EUT: vibration speaker
M/N: Thor-01
Power Rating: DC 3.7V
Test Mode: TX
Operator: ANDY
Memo:
pol: HORIZONTAL

	Freq	Reading	CabLos	AntFac	PreFac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dB	dBuV/m	dBuV/m	dB	
1	36.79	4.67	0.41	12.76	0.00	17.84	40.00	-22.16	QP
2	56.19	4.44	0.47	12.94	0.00	17.85	40.00	-22.15	QP
3	75.59	10.48	0.54	7.89	0.00	18.91	40.00	-21.09	QP
4	112.45	5.77	0.65	11.82	0.00	18.24	43.50	-25.26	QP
5	222.06	6.56	0.95	11.29	0.00	18.80	46.00	-27.20	QP
6	341.37	5.68	1.12	14.14	0.00	20.94	46.00	-25.06	QP

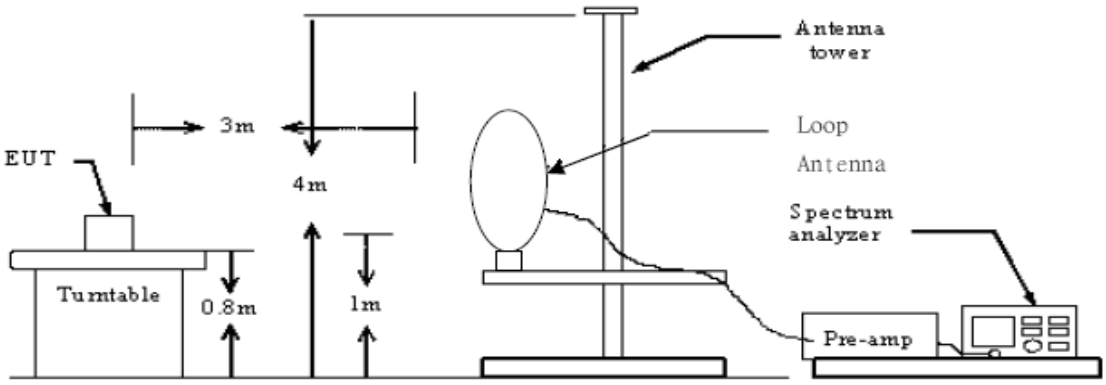
Note: 1. All readings are Quasi-peak values.
2.Measured = Reading + Antenna Factor + Cable Loss - Amp Factor.
3.The emission levels that ate 20dB below the official limit are not reported.

4.2 Field Strength of Fundamental Emissions and Mask Measurement

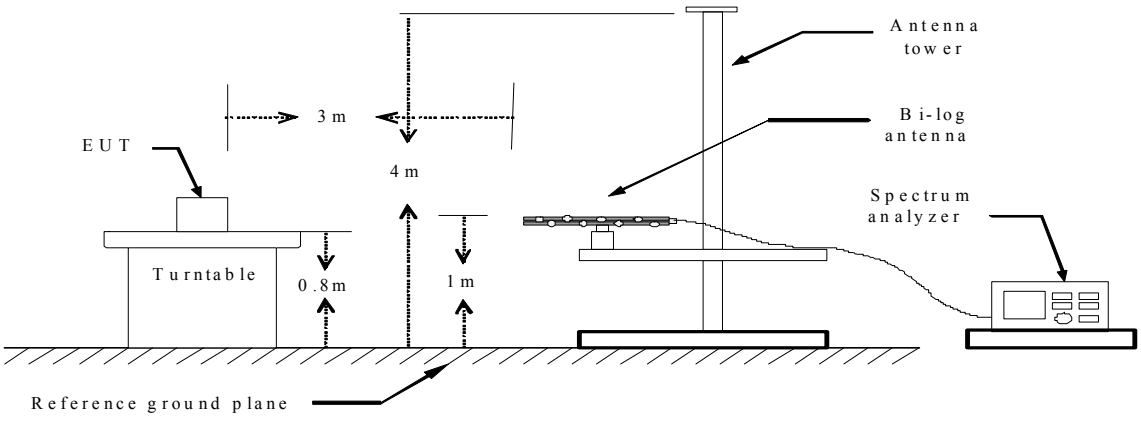
4.2.1 Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
1	Spectrum Analyzer	Agilent	E4407B	MY41440292	2012-06-16	2013/06/15
2	Test Receiver	Rohde & Schwarz	ESCS30	100174	2012-06-18	2013/06/17
3	Loop antenna	R&S	HFH2-Z2	860004/001	2012-06-18	2013/06/17
4	Log per Antenna	SCHWARZBECK	VULB9163	9163-470	2012-06-10	2013/06/09
5	Horn-antenna	EMCO	3115	6741	2012-06-10	2013/06/09
6	DC Filter	MPE	23872C	N/A	2012-06-18	2013/06/17

4.1.2 Block Diagram of Test Setup



9KHz ~ 30MHz



30MHz ~ 1GHz

4.1.3 Field strength of fundamental emissions limit and Mask limit

The field strength of fundamental emissions shall not exceed 15848 microvolts/meter at 30 meters. The emissions limit in this paragraph is based on measurement instrumentation employing a QP detector.

Frequencies (MHz)	Field Strength (microvolts/meter)	Field Strength (dBμV/m) at 10m	Field Strength (dBμV/m) at 3m
13.553 ~ 13.567MHz	15848 at 30m	103.08 (QP)	124 (QP)

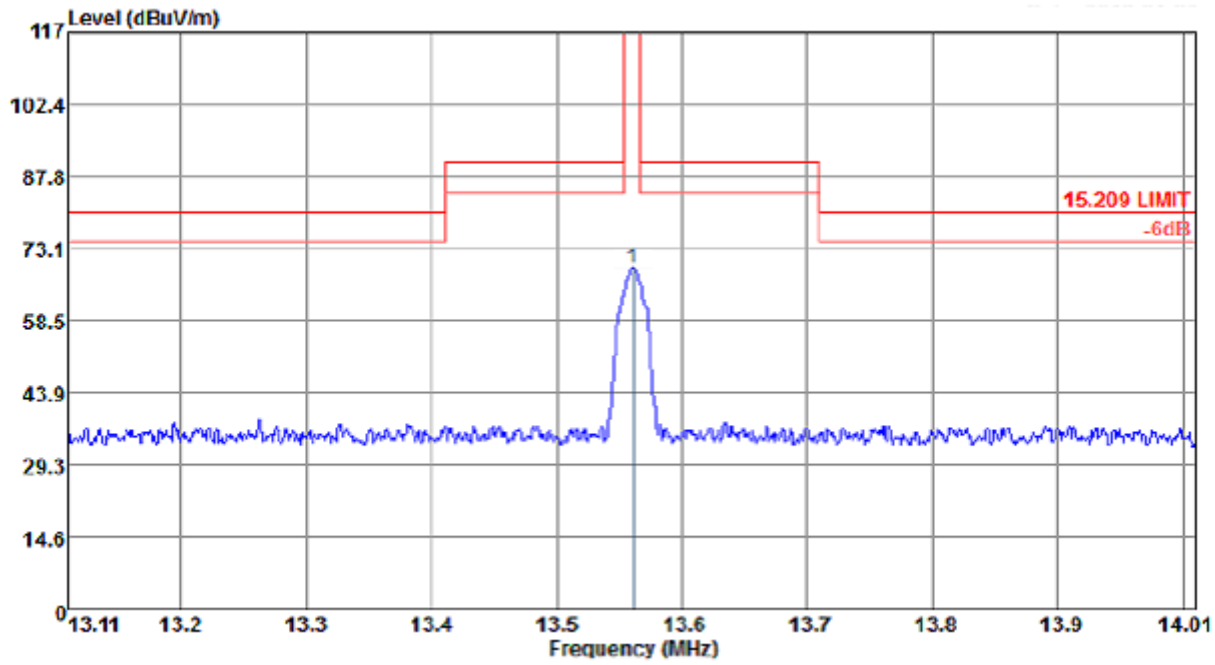
Mask Limit:

Frequency (MHz)	**Limit (dBuV/m)**	**Distance (m)**
1.705-13.110	69.5	3
13.110-13.410	80.5	3
13.410-13.553	90.5	3
13.553-13.567	124.0	3
13.567-13.710	90.5	3
13.710-14.010	80.5	3
14.010-30.000	69.5	3

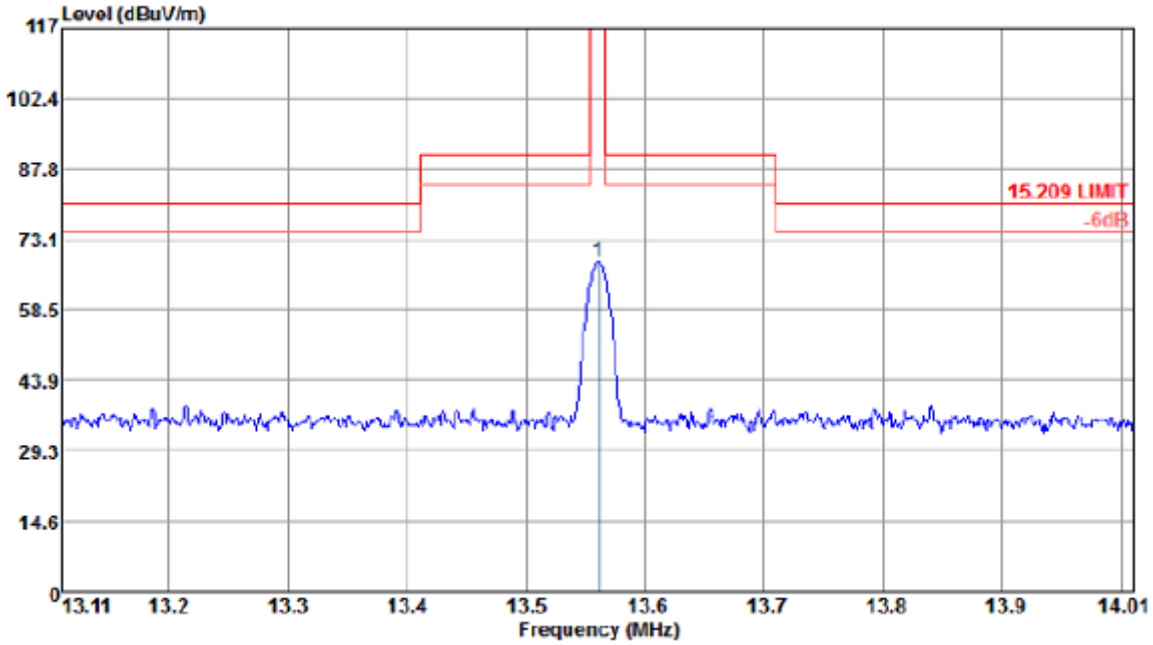
4.1.4 Test Results

PASS.

The test data please refer to following page:



	Freq.(MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Pol.	Remark
1	13.56	53.46	10.86	64.32	124	H	QP



	Freq.(MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Pol.	Remark
1	13.56	52.61	10.86	63.47	124	V	QP

*Note: Factor= Antenna Gain + Cable Loss – Amplifier Gain

Emission level (dBμV/m) = 20 log Emission level (μV/m).

Measured distance is 3m.

All emissions emit form non-NFC function of digital unintentional emissions. All NFC's spurious emissions are below 20dB of limits.

5. BANDWIDTH OF THE OPERATING FREQUENCY

5.1 Standard Applicable

Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emissions in the specific band (13.553 ~ 13.567MHz).

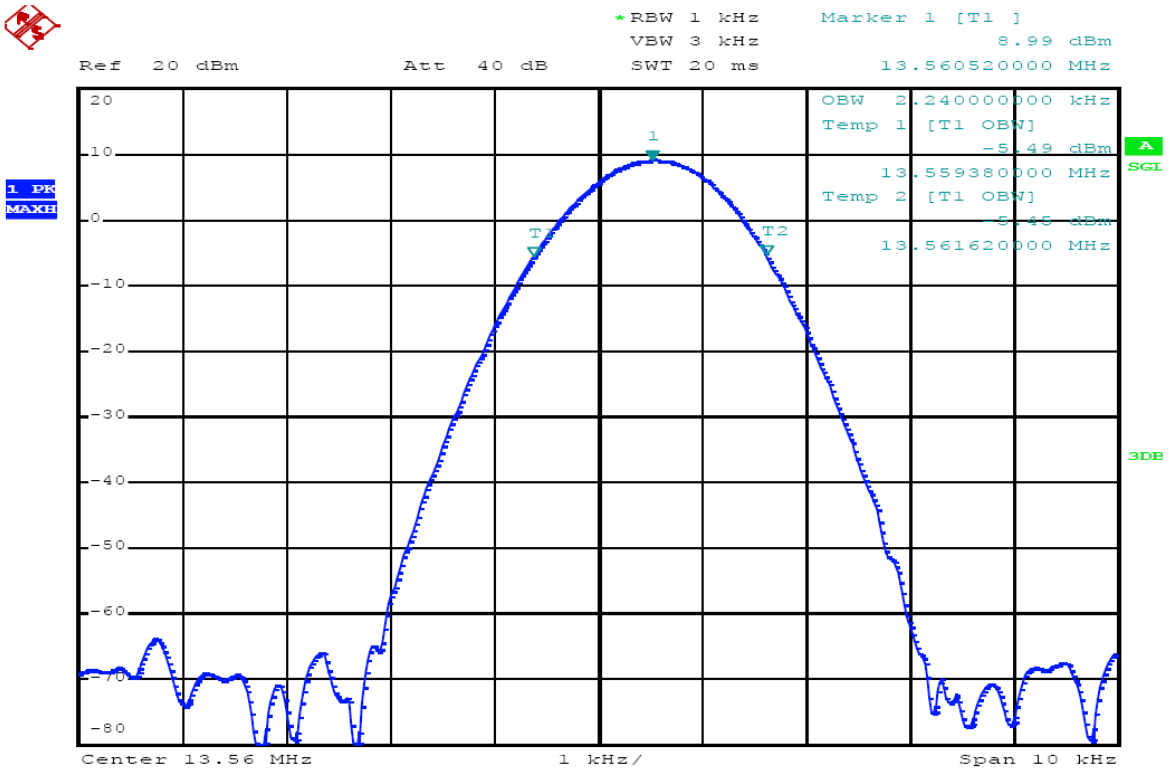
5.2 Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
1	Spectrum Analyzer	Agilent	E4407B	MY41440292	2012-06-16	2013/06/15
2	Test Receiver	Rohde & Schwarz	ESCS30	100174	2012-06-18	2013/06/17
3	DC Filter	MPE	23872C	N/A	2012-06-18	2013/06/17

5.3 Test Result

EUT	Vibration speaker		
RBW	1KHz		
VBW	3KHz		
SPAN	20KHz		
Carrier Freq. (MHz)	20dB Bandwidth (KHz)	Frequency range (MHz)	
		F_L>13.553MHz	F_H<13.567MHz
13.56	2.24	13.55924	13.56188

Please refer to the test plot:


RBW 1 kHz
VBW 3 kHz
SWT 20 ms
Marker 1 [T1]
8.99 dBm
13.560520000 MHz
Ref 20 dBm
Att 40 dB
OBW 2.240000000 kHz
Temp 1 [T1 OBW]
-5.49 dBm
13.559380000 MHz
Temp 2 [T1 OBW]
-5.45 dBm
13.561620000 MHz
1 PK MAXH
A SGL
3DB
T1
T2
Center 13.56 MHz
1 kHz/
Span 10 kHz

6. FREQUENCY STABILITY MEASUREMENT

6.1 Standard Applicable

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% (100ppm) 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.

6.2 Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
1	Spectrum Analyzer	Agilent	E4407B	MY41440292	2012-06-16	2013/06/15
2	Test Receiver	Rohde & Schwarz	ESCS30	100174	2012-06-18	2013/06/17
3	DC Filter	MPE	23872C	N/A	2012-06-18	2013/06/17
4	Wuhuan	Temperature & Humidity Chamber	Temperature & Humidity Chamber	HTP205	2012-06-18	2013-06-17
5	DC power Source	GW	GPC-6030D	C671845	2012-06-18	2013-06-17

6.3 Test Result

Voltage vs. Frequency Stability

Voltage(V)	Measurement Frequency (MHz)
DC 3.3V	13.56054
DC 3.7V	13.56049
DC 4.2V	13.56051
Max. Deviation (MHz)	0.00054
Max. Deviation (ppm)	39.8230

Temperature vs. Frequency Stability

Temperature (℃)	Measurement Frequency (MHz)
-20	13.56060
-10	13.56057
0	13.56054
10	13.56055
20	13.56049
30	13.56052
40	13.56050
50	13.56052
Max. Deviation (MHz)	0.00060
Max. Deviation (ppm)	44.2478

7. LINE CONDUCTED EMISSIONS

7.1 Standard Applicable

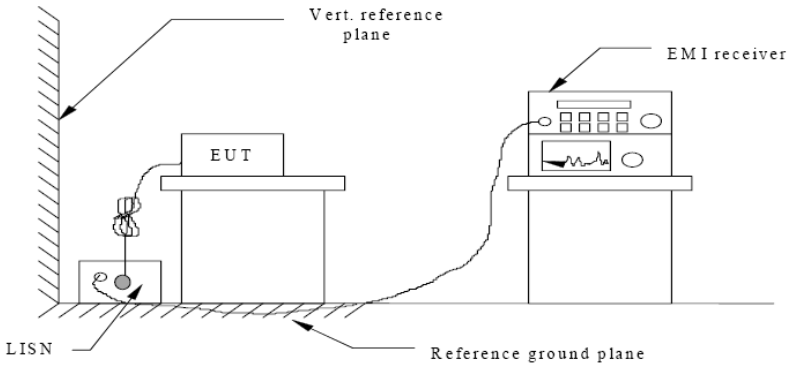
According to §15.207 (a) or RSS-GEN: For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolt (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range are listed as follows:

Frequency Range(MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

7.2 Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	EMC Receiver	R&S	ESCS30	100174	2012-06-18	2013-06-17
2	L.I.S.N	MESS Tec	NNB-2/16Z	99079	2012-06-18	2013-06-17
3	50ΩCoaxial Switch	R&S	MP59B	M20531	2012-06-18	2013-06-17
4	Pulse Limiter	Anritsu	ESH3-Z2	100006	2012-06-18	2013-06-17
5	Voltage Probe	Rohde & Schwarz	TK9416	N/A	2012-06-18	2013-06-17

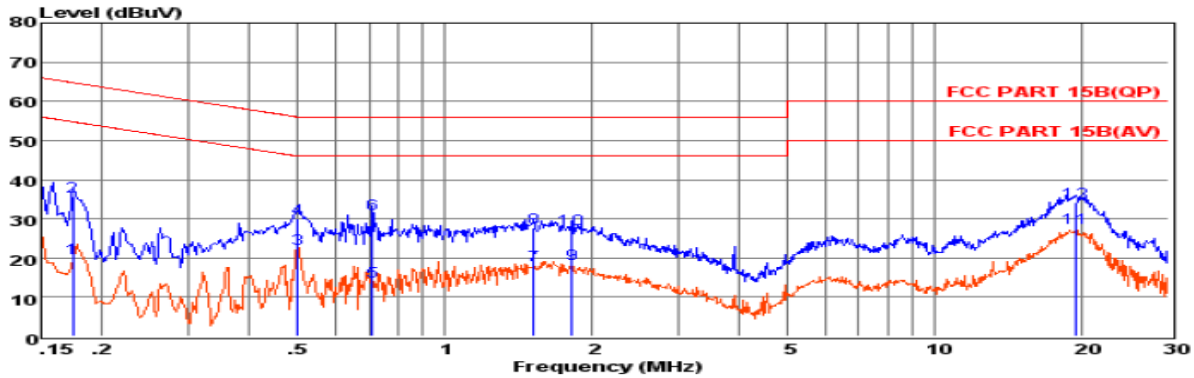
7.3 Block Diagram of Test Setup



7.4 Test Results

PASS.

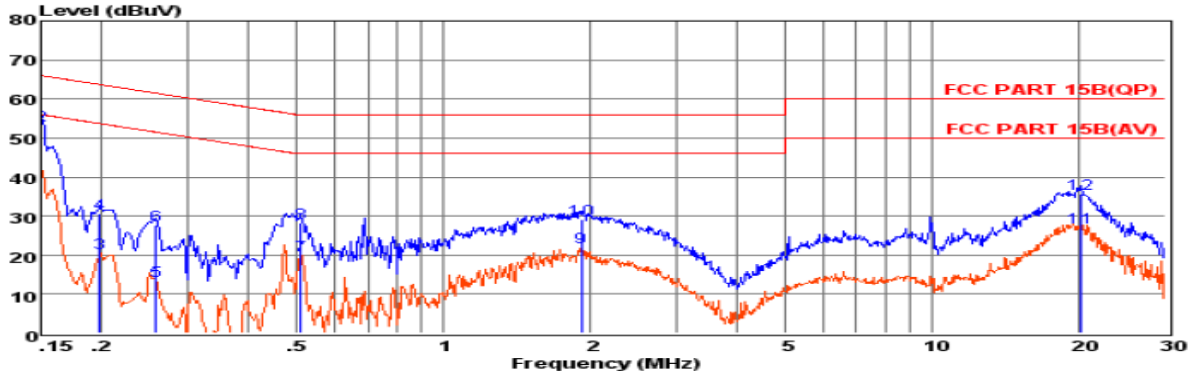
The test data please refer to following page.



Env. Ins: 24*/56%
EUT: Vibration speaker
M/N: Thor-01
Power Rating: AC 120V/60Hz
Test Mode: TX
Operator: Tree
Memo:
Pol: LINE

	Freq	Reading	LisnFac	CabLos	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.17	10.38	9.60	0.02	20.00	54.77	-34.77	Average
2	0.17	26.16	9.60	0.02	35.78	64.77	-28.99	QP
3	0.50	12.70	9.62	0.04	22.36	46.00	-23.64	Average
4	0.50	20.51	9.62	0.04	30.17	56.00	-25.83	QP
5	0.71	4.38	9.64	0.04	14.06	46.00	-31.94	Average
6	0.71	21.64	9.64	0.04	31.32	56.00	-24.68	QP
7	1.52	8.51	9.64	0.05	18.20	46.00	-27.80	Average
8	1.52	17.96	9.64	0.05	27.65	56.00	-28.35	QP
9	1.82	8.71	9.64	0.05	18.40	46.00	-27.60	Average
10	1.82	17.82	9.64	0.05	27.51	56.00	-28.49	QP
11	19.33	17.66	9.75	0.12	27.53	50.00	-22.47	Average
12	19.33	24.25	9.75	0.12	34.12	60.00	-25.88	QP

Remarks: 1. Measured = Reading + Lisn Factor +Cable Loss.
2. The emission levels that are 20dB below the official limit are not reported.



Env. Ins: 24*/56%
EUT: Vibration speaker
M/N: Thor-01
Power Rating: AC 120V/60Hz
Test Mode: TX
Operator: Tree
Memo:
Pol: NEUTRAL

	Freq	Reading	LisnFac	CabLos	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.15	30.84	9.70	0.02	40.56	56.00	-15.44	Average
2	0.15	43.51	9.70	0.02	53.23	66.00	-12.77	QP
3	0.20	10.98	9.59	0.02	20.59	53.71	-33.12	Average
4	0.20	21.01	9.59	0.02	30.62	63.71	-33.09	QP
5	0.26	3.71	9.60	0.03	13.34	51.51	-38.17	Average
6	0.26	17.92	9.60	0.03	27.55	61.51	-33.96	QP
7	0.51	10.18	9.62	0.04	19.84	46.00	-26.16	Average
8	0.51	18.61	9.62	0.04	28.27	56.00	-27.73	QP
9	1.92	12.35	9.63	0.05	22.03	46.00	-23.97	Average
10	1.92	19.60	9.63	0.05	29.28	56.00	-26.72	QP
11	20.06	17.10	9.89	0.12	27.11	50.00	-22.89	Average
12	20.06	25.67	9.89	0.12	35.68	60.00	-24.32	QP

Remarks: 1. Measured = Reading + Lisn Factor +Cable Loss.
2. The emission levels that are 20dB below the official limit are not reported.

8. ANTENNA REQUIREMENT

8.1 Standard Applicable

According to antenna requirement of §15.203.
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 manufacturer may design the unit so that a broken antenna can be re-placed by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

And according to §15.247(4)(1), system operating in the 2400-2483.5MHz bands that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

8.2 Antenna Connected Construction

This EUT uses an loop antenna which is permanently attached on the cap（refer to EUT interior photographs）.

.

9. MANUFACTURER/ APPROVAL HOLDER DECLARATION

The following identical model(s):

--	--	--	--

Belong to the tested device:

Product description : Vibration speaker

Model name : Thor-01

Remark: No additional models were tested.

----------THE END OF REPORT----------