

FCC PART 15.235  
EMI MEASUREMENT AND TEST REPORT  
For  
**SHENZHEN LISAIER TRONICS CO.,LTD.**

NO.22, Xihu Industrial Park, Xikeng, Henggang Town, Longgang District, Shenzhen, China

**FCC ID: UWOSP950**

Apr. 13, 2009

This Report Concerns: Original Report	Equipment Type : Wireless Speakers
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Report No.: F09032301A	
Receive EUT Date/Test Date: Apr.06, 2009/ Apr.06-13,2009	
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## 1. GENERAL INFORMATION

### 1.1. Report information

1.1.1. This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that BST approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that BST in any way guarantees the later performance of the product/equipment.

1.1.2. The sample/s mentioned in this report is/are supplied by Applicant, BST therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through BST, unless the applicant has authorized BST in writing to do so.

#### Test Facility -

The test site used to collect the radiated data is located on the address of Solid Industrial Co., Ltd. (FCC Registered Test Site Number: 759397 ) on 333 Bulong Highway Buji, Longgang Shenzhen, Guangdong, China

The Test Site is constructed and calibrated to meet the FCC requirements.

### 1.2. Measurement Uncertainty

Available upon request.

## 2. PRODUCT DESCRIPTION

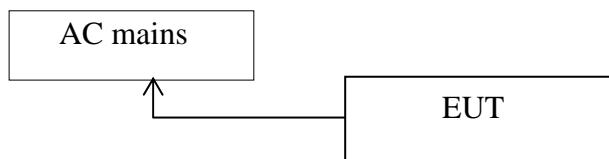
### 2.1. EUT Description

Description : Wireless Speakers  
Applicant : SHENZHEN LISAIER TRONICS CO., LTD.  
NO.22, Xihu Industrial Park, Xikeng, Henggang Town,  
Longgang District, Shenzhen, China  
Model Number : HP-7000, SP950, V910  
Trade name : HUALIPU,SENTRY,VORVIS

#### Additonal Information

Frequency : 49.85MHZ  
Number : -  
of Channels  
Power Supply : DC 12V (POWERED BY ADAPTER)  
DC 9V (POWERED BY BATTERY)  
Maximum : N/A  
Range  
Transmitter : -  
Antenna  
Current : N/A  
Consumption

### 2.2. Block Diagram of EUT Configuration



### 2.3. Support Equipment List

N/A

### 2.4. Test Conditions

Temperature: 23~25  
Relative Humidity: 55~63 %

### 3. FCC ID LABEL

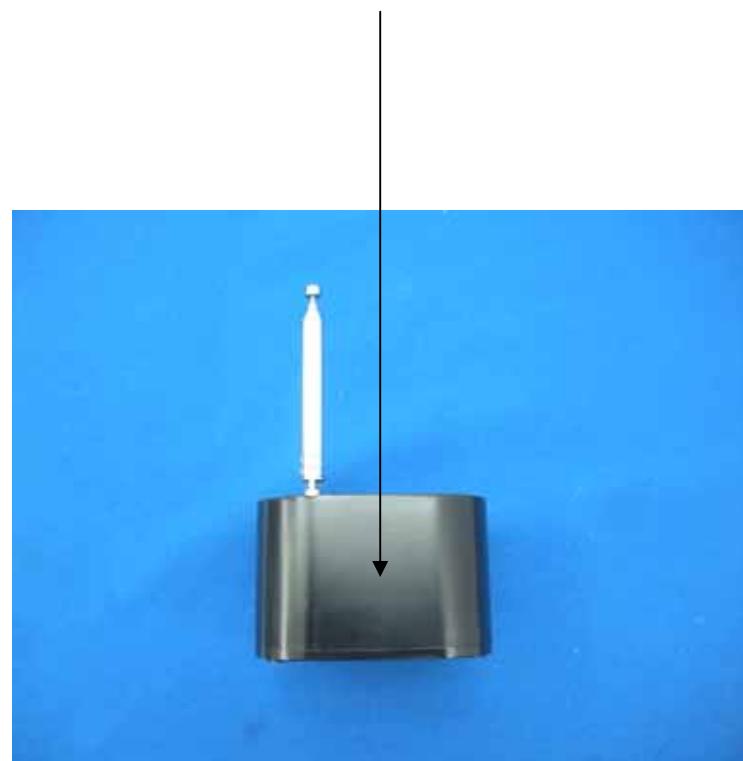
**FCC ID: UWOSP950**

**This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:**

- 1. This device may not cause harmful interference, and**
- 2. This device must accept any interference received, including interference that may cause undesired operation.**

#### **Label Location on EUT**

#### **EUT Bottom View/ FCC ID Label Location**



## 4. TEST RESULTS SUMMARY

### FCC Part 15 Subpart C, Paragraph 15.235

Test Standards	Test Items	Test Results
FCC Part 15,Paragraph 15.207	Conducted Test	Pass
FCC Part 15 Subpart C Paragraph 15.235 Limit	Field Strength of Fundamental	Pass
FCC Part 15,Paragraph 15.209	Radiated mission Test	Pass
Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the Radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).	Band Edge Test	Pass

Remark: "N/A" means "Not applicable."

### Modifications

No modification was made.

## 5. TEST EQUIPMENT USED

Equipment/Facilities	Manufacturer	Model #	Serial no.	Date of Cal.	Cal. Interval
Cable	Resenberger	N/A	NO.1	Mar 10 , 2009	1 Year
Cable	SCHWARZBECK	N/A	NO.2	Mar 10 , 2009	1 Year
Cable	SCHWARZBECK	N/A	NO.3	Mar 10 , 2009	1 Year
LISN	Rohde & Schwarz	ESH3-Z5	100305	Mar 10 , 2009	1 Year
50 Coaxial Switch	ANRITSU CORP	MP59B	6200283933	Mar 10, 2009	1 Year
EMI Test Receiver	Rohde & Schwarz	ESP13	100180	Oct.18,2008	1 Year
Spectrum Analyzer	Rohde & Schwarz	FSP40	100273	Sep.10,2008	1 Year
3m Semi-Anechoic Chamber	Albatross Projects	9mx6mx6m	N/A	Feb.20,2009	1 Year
Signal Generator	FLUKE	PM5418 + Y/C	LO747012	Feb.20,2009	1 Year
Signal Generator	FLUKE	PM5418TX	LO738007	Feb.20,2009	1 Year
Loop Antenna	SCHWARZBECK	FMZB1516	113	Jan.30,2009	1 Year
Trilog-Super Broadband Antenna	SCHWARZBECK	VULB9161	9161-4079	Sep.22,2008	1 Year
Broad-Band Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-564	Sep.22,2008	1 Year
Ultra Broadband Antenna	Rohde & Schwarz	HL-562	100110	June.15,2008	1 Year
AMN	Rohde & Schwarz	ESH3-Z5	100196	Oct.11,2008	1 Year
AMN	Rohde & Schwarz	ESH3-Z5	100197	Oct.11,2008	1 Year
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	N/A	N/A	N/A
Power Meter	Rohde & Schwarz	NRVD	100041	Feb.20,2009	1 Year
EMI Test Receiver	Rohde & Schwarz	ESCS30	100003	Feb.20,2009	1 Year
Coaxial Cable with N-connectors	SCHWARZBECK	AK9515H	95549	Sep.22,2008	1 Year
Radio Communication Test Set	Rohde & Schwarz	CMS 54	846621/024	Feb.20,2009	1 Year
Modulation Analyzer	Hewlett-Packard	8901B	2303A00362	Feb.20,2009	1 Year
Absorbing clamp	Rohde & Schwarz	MDS-21	N/A	Oct.29,2008	1 Year

## 6. CONDUCTED POWER LINE TEST

### 6.1. Test Equipment

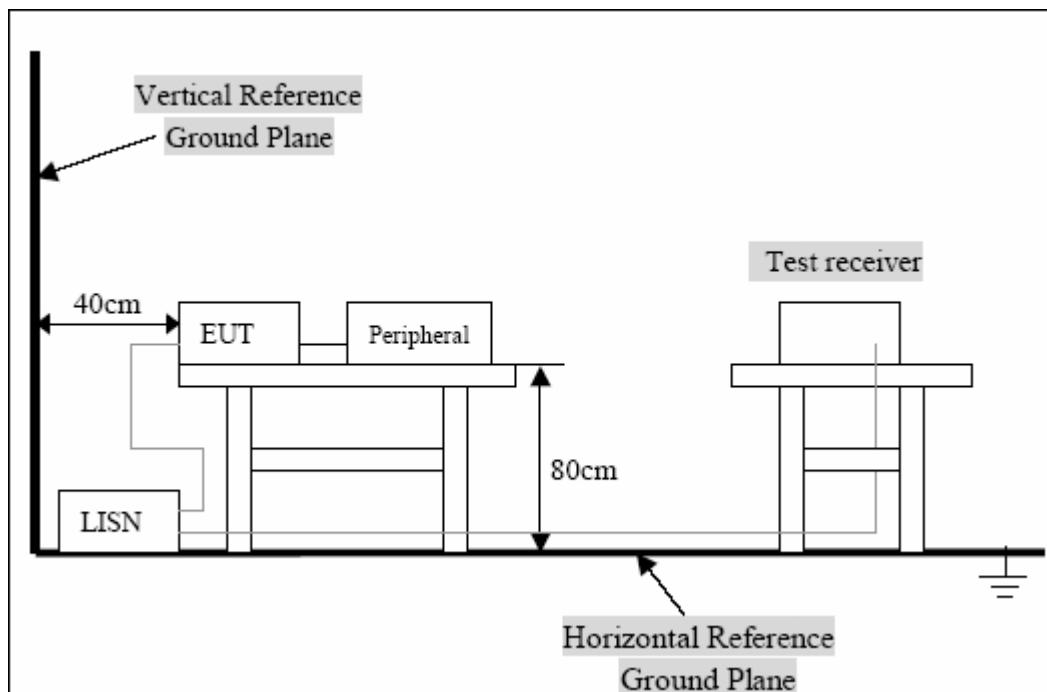
Please refer to section 5 this report.

### 6.2. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.).This provides a 50ohm/50uh coupling inpedance for the measuring equipment.The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uh coupling inpedance with 50ohm termination.

Both sides of A.C. Line are check for maximum conducted interference.In order to find the maximum emission,the relative positions of equipment and all of the interface cables must be changed according to ASIN C63.4:2003 on conducted measurement .Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9Khz.

### 6.3. Test Setup



For the actual test configuration,Please refer to the related items-Photos of testing

### 6.4. Configuring of the EUT

The EUT was configured according to ASIN C63.4:4-2003. Enable the signal transmitted from the external antenna from EUT to receiver. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

Note:

Below 1GHZ, the channel low, middle, high were pre-tested, The channel low, worst case one, was chosen for conducted and radiated emission test.

Above 1GHZ, the channel low ,middle, high were tested individually.

**A.EUT**

Device	Manufacturer	Model #	FCC ID
Wireless Speakers	SHENZHEN LISAIER TRONICS CO.,LTD.	HP-7000, SP950, V910	UWOSP950

**B.Internal Devices**

Device	Manufacturer	Model #	FCC ID
N/A			

**C.Peripherals**

Device	Manufacturer	Model # Serial #	FCC ID/Doc	Cable
N/A				

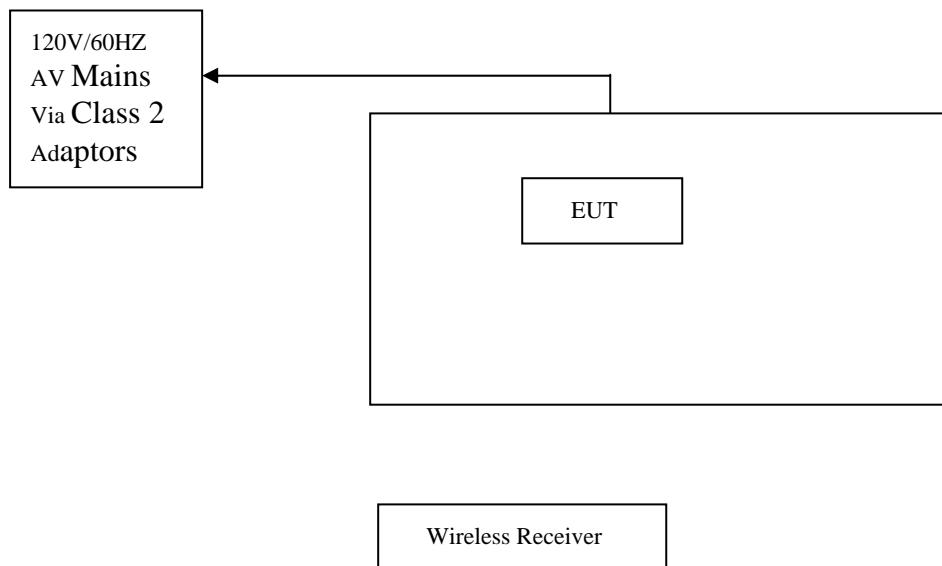
## 6.5. EUT Operating Condition

Operating condition is according to ANSI C63.4-2003.

Setup the EUT and simulators as shown on follow.

Enable RF signal and confirm EUT active.

Modulate output capacity of EUT up to specification.



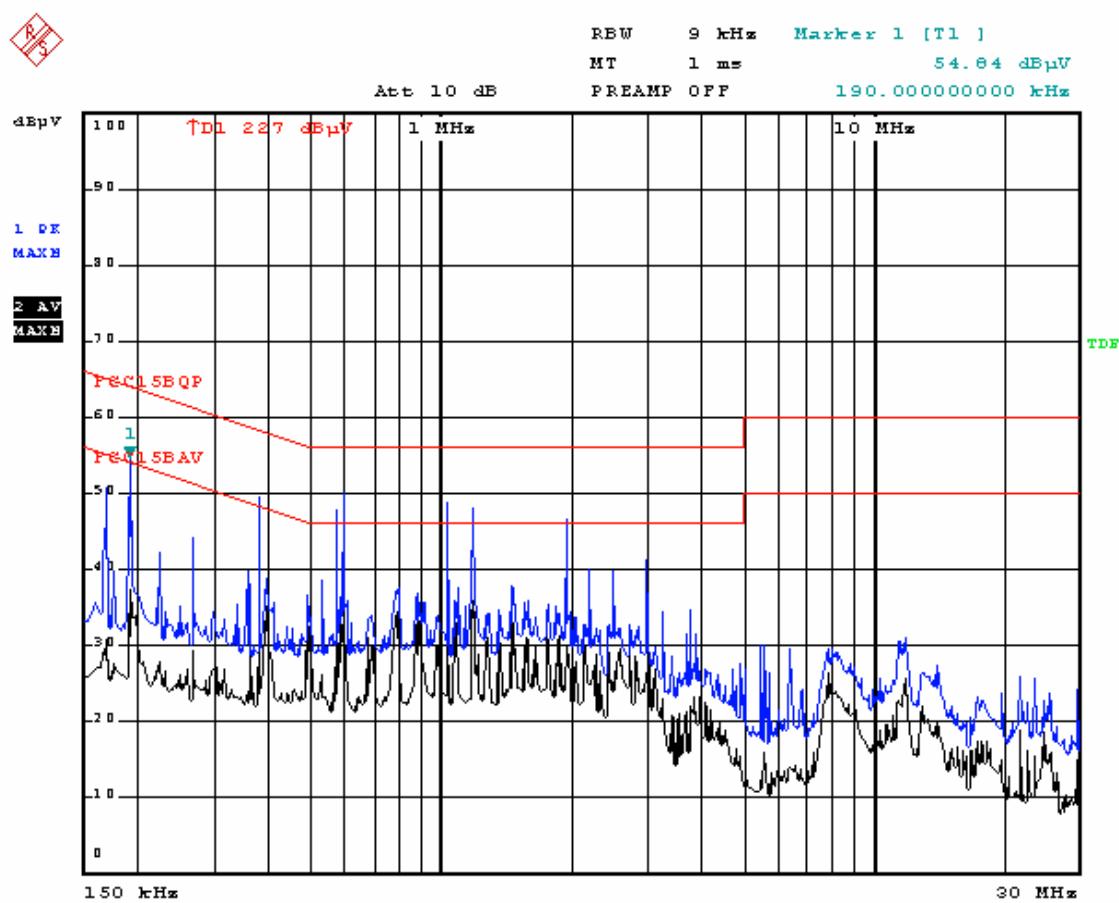
## 6.6. Conducted Power line Emission Limits

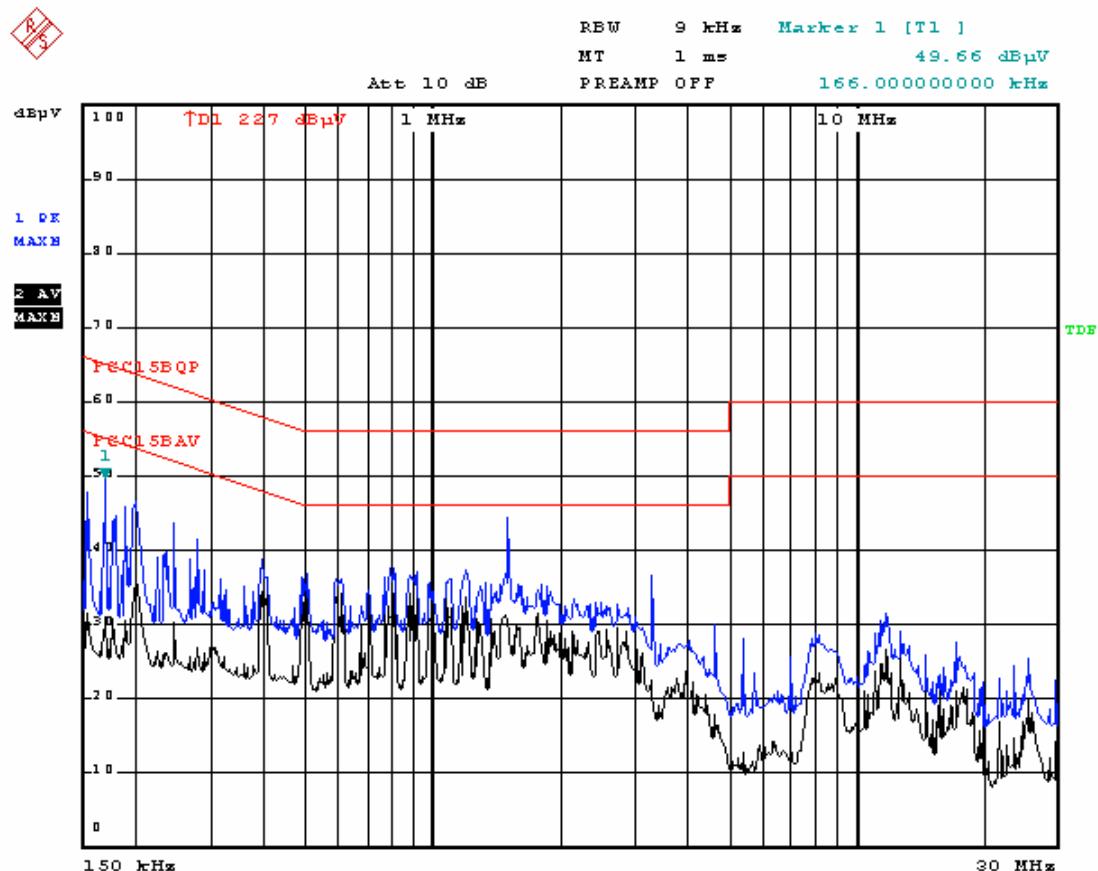
FCC Part 15 Paragraph 15.207 (dBuv)		
Frequency Range (MHZ)	Class A QP/AV	Class B QP/AV
0.15-0.5	79/66	65-56/56-46
0.5-5.0	73/60	56/46
5.0-30	73/60	60/50

**Note:** In the above table, the tighter limit applies at the band edges.

## 6.7. Conducted Power Line Test Result

Model No.: HP-7000									
Test Mode:									
Frequency (MHz)	Line				Neutral				Average
	Quasi-Peak	Average		Frequency (MHz)	Quasi-Peak	Average		Frequency (MHz)	
Reading (dB $\mu$ V)	Limit (dB $\mu$ V)	Reading (dB $\mu$ V)	Limit (dB $\mu$ V)	Reading (dB $\mu$ V)	Limit (dB $\mu$ V)	Reading (dB $\mu$ V)	Limit (dB $\mu$ V)	Reading (dB $\mu$ V)	Limit (dB $\mu$ V)
0.19	54.84	65 ~ 56	38.12	56 ~ 46	0.166	49.66	65 ~ 56	32.12	56 ~ 46
1.99	47.05	60	30.02	50	1.68	46.23	60	31.56	50





## 7. RADIATED EMISSION TEST

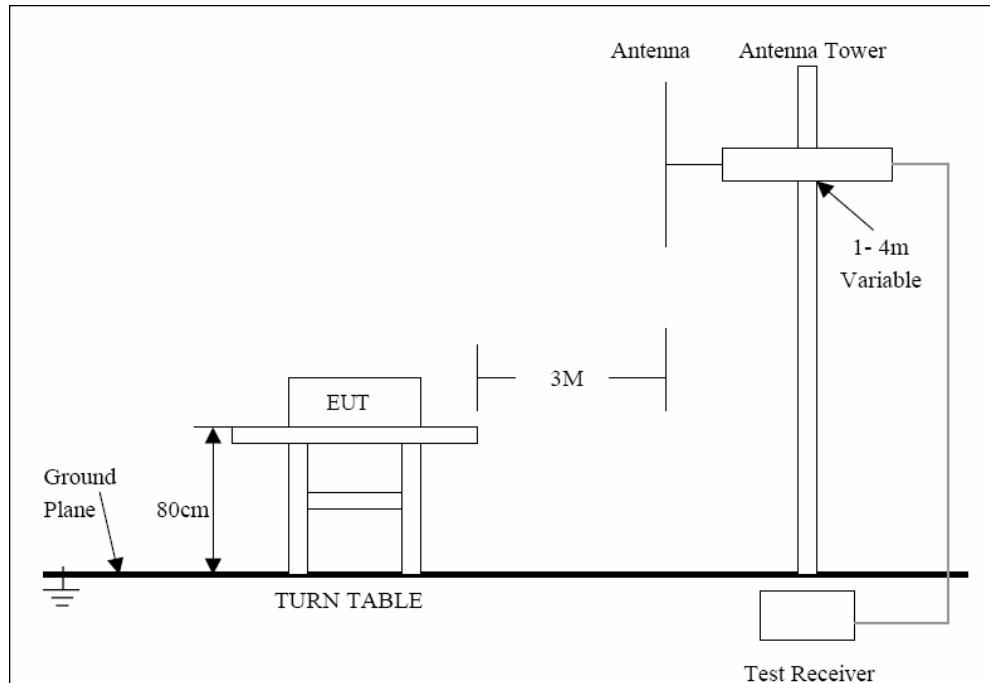
### 7.1. Test Equipment

Please refer to section 5 this report.

### 7.2. Test Procedure

1. The EUT was tested according C63.4-2003. The radiated test was performed at FCC Registration laboratory .
2. The EUT,peripherals were put on the turntable which table size od 1m×1.5m,table high 0.8m. All set up is according tl ANSI C63.4-2003.
3. The frequency spectrum from 30MHZ to 1 GHZ was investigated. All readings from 30MHZ to 1 GHZ are quasi-peak values with a resolution bandwidth of 120 KHZ. All readings are above 1GHZ ,prak values with a resolution bandwidth of 1 MHZ. Measurements were made at 3 merers.
4. The antenna high is varied from 1m to 4m high to find the maximum emission for each frequency.
5. Maximizing procedure was performed on the six(6)highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 Db of specification limit),and are distinguished with a “QP”in the data table.
6. The antenna polarization:Vertical polarization and Horizontal polarization.

### 7.3. Radiated Test Setup



For the accrual test configuration,pleas refer to the related items-photos of Testing.

#### 7.4. Configuration of the EUT

Same as section 6.4 of this report

#### 7.5. EUT Operating Condition

Same as section 6.4 of this report.

#### 7.6. Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below :

A . FCC Part 15 Subpart C Paragraph 15.235 Limit

Fundamental Frequency (MHz)	Field Strength of Fundamental (3m)	
	Micro-volts /m	dBuV/m
49.82 to 49.90	10,000	80.00

Note: 1. RF Field Strength (dBuV) =  $20 \log_{10} \text{RF Voltage (uV)}$   
 2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.  
 3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

B . Frequencies in restricted band are complied to limit on Paragraph 15.209.

Frequency (MHZ)	Distance (m)	Field Strength (dBuV/m)
30-88	3	40.0
88-*216	3	43.5
216-960	3	46.0
ABOVE 960	3	54.0

Note: 1. RF Voltage (dBuV) =  $20 \log_{10} \text{RF Voltage (uV)}$   
 2. In the Above Table, the tighter limit applies at the band edges.  
 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT

#### 7.7. Radiated Emission Test Result

A. Fundamental Radiated Emission Data

Product:	Wireless Speakers	Test mode:	Transmitting
Test Item:	Fundamental Radiated Emission Data	Temperature:	25
Test Voltage:	DC12V	Humidity:	56%RH
Test Result:	PASS		

Freq. (MHz)	Emission PK/AV (dBuV/m)	HORIZ/ VERT	Limits PK/AV (dBuV/m)	Margin (dB)
49.84	76.78 (PK)	VERT	100/80	3.22
49.84	74.58 (PK)	HORIZ	100/80	5.42

## B. General Radiated Emission Data

Product:	Wireless Speakers	Test mode:	Transmitting
Test Item:	Radiated Emission Data	Temperature:	25
Test Voltage:	DC12V	Humidity:	56%RH
Test Result:	PASS		

Freq. (MHz)	Emission(dBuV/m) Peak Detector	HORIZ/ VERT	Limits(dBuV/m) Peak/ACERAGE	Margin (Db)
99.18	20.51	HORIZ	40.0	19.49
99.18	21.12	VERT	40.0	18.88
149.19	31.02	HORIZ	40.0	8.98
149.19	31.38	VERT	40.0	8.62
199.76	21.03	HORIZ	43.5	22.47
199.76	22.24	VERT	43.5	21.26
249.54	23.76	HORIZ	46.0	22.24
249.54	24.18	VERT	46.0	21.82
299.73	25.02	HORIZ	46.0	20.98
299.73	25.56	VERT	46.0	20.44
348.20	25.78	HORIZ	46.0	20.22
348.20	26.01	VERT	46.0	19.99
398.93	26.09	HORIZ	46.0	19.91
398.93	26.34	VERT	46.0	19.66
448.02	22.78	HORIZ	46.0	23.22
448.02	23.04	VERT	46.0	22.96
498.50	22.54	HORIZ	46.0	23.46
498.50	23.04	VERT	46.0	22.96

## 8. BAND EDGE

### 8.1. Test Equipment

Please refer to Section 5 this report.

### 8.2. Test Procedure

- (1) The EUT was tested according to ANSI C63.4 –2003.
- (2) Setting are as follows: span=200 kHz, RBW=10 kHz, VBW=30kHz, Sweep Time=300ms,PK detector mode, Maximum Hold.
- (3) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (4) The antenna polarization : Vertical polarization and Horizontal polarization.

### 8.3. Configuration of The EUT

Same as section 6.4 of this report

### 8.4. EUT Operating Condition

Same as section 6.5 of this report

### 8.5. Band Edge Limit

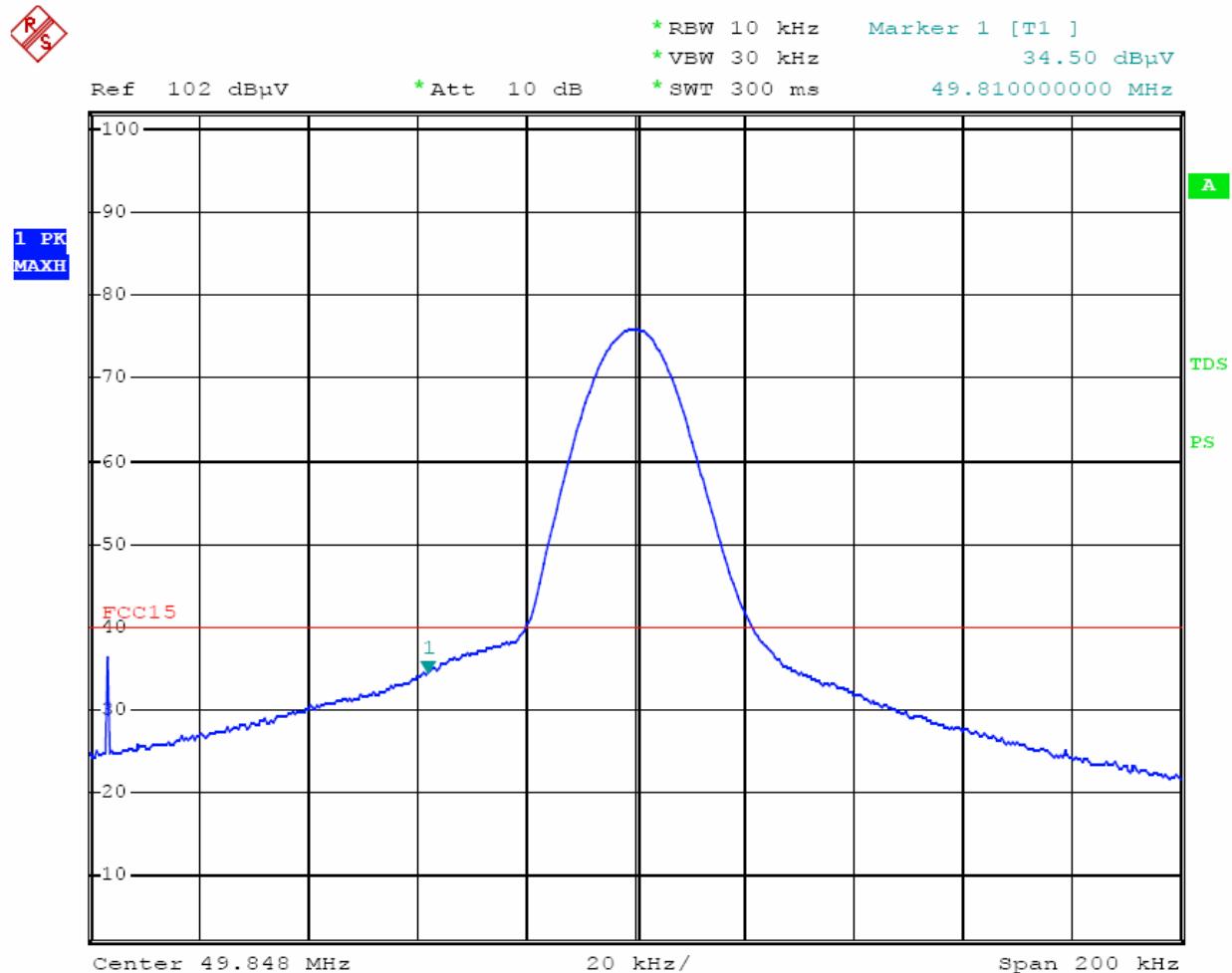
(1)The field strength of any emissions appearing between the band edges and up to 10 kHz above and below the band edges shall be attenuated at least 26 dB below the level of the unmodulated carrier or to the general limits in §15.209, whichever permits the higher emission levels. The field strength of any emissions removed by more than 10 kHz from the band edges shall not exceed the general radiated emission limits in §15.209

(2) Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated Emission limits specified in Section 15.209(a) (see Section 15.205(c)).

### 8.6. Band Edge Test Result

Product:	Wireless Speakers	Test mode:	Transmitting
Test Item:	Band Edge	Temperature:	25
Test Voltage:	DC12V	Humidity:	56%RH
Test Result:	PASS		

RS



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