

APPLICATION CERTIFICATION
On Behalf of
Zylux Acoustic Corporation

HP Wireless Portable Speaker S9500
Model No.: HP S9500

FCC ID: XN6-HPS9500

Prepared for : Zylux Acoustic Corporation
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Date of Test : May 7-14, 2013
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Test Report Certification

Applicant : Zylux Acoustic Corporation
Manufacturer : Zhao Yang Elec.(Shenzhen) Co., Ltd.
EUT Description : HP Wireless Portable Speaker S9500
(A) MODEL NO.: HP S9500
(B) SERIAL NO.: N/A
(C) POWER SUPPLY: DC 5V/2000mA(Power by Adapter) or DC 3.7V
(Power by Li-Ion battery)

Measurement Procedure Used:

**FCC Rules and Regulations Part 15 Subpart C Section 15.247
ANSI C63.4: 2009**

The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.247 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY CO. LTD is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of ACCURATE TECHNOLOGY CO. LTD.

Date of Test : May 7-14, 2013

Prepared by :

Apple

(Engineer)

Approved & Authorized Signer :

Henry

(Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT : HP Wireless Portable Speaker S9500
 Model Number : HP S9500
 Frequency Band : 2402MHz-2480MHz
 Number of Channels : 79
 Antenna Gain : 3dBi
 Rating : DC 5V/2000mA(Power by Adapter) or DC 3.7V (Power by Li-Ion battery)
 Adapter : Model number: S018KM0500200
 Input: AC 100-240V; 50/60Hz 500mA
 Output: DC 5V/2000mA
 Output line: Non-shielded, Non-detachable, 1.8m
 Li-Ion battery : Model number: McR18650
 Voltage: DC 3.7V
 Capacity: 1800mAh
 Applicant : Zylux Acoustic Corporation
 Address : 3F, 22 Lane 35, Jihu Road, Neihu Technology Park, Taipei 114, Taiwan
 Manufacturer : Zhao Yang Elec.(Shenzhen) Co., Ltd.
 Address : Section A, 4th Floor, Building 1 & Building 2, De Yong Jia Industrial Park, Guang Qiao Road, Yu Lv Community, Gong Ming Street, Guang Ming New District, Shenzhen, China
 Date of sample received : May 7, 2013
 Date of Test : May 7-14, 2013

1.2. Special Accessory and Auxiliary Equipment

N/A

1.3.Description of Test Facility

EMC Lab	: Accredited by TUV Rheinland Shenzhen
	Listed by FCC The Registration Number is 752051
	Listed by Industry Canada The Registration Number is 5077A-2
	Accredited by China National Accreditation Committee for Laboratories The Certificate Registration Number is L3193
Name of Firm	: ACCURATE TECHNOLOGY CO. LTD
Site Location	: F1, Bldg. A, Changyuan New Material Port, Keyuan Rd. Science & Industry Park, Nanshan, Shenzhen, Guangdong P.R. China

1.4.Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2

Radiated emission expanded uncertainty = 3.08dB, k=2
(9kHz-30MHz)

Radiated emission expanded uncertainty = 4.42dB, k=2
(30MHz-1000MHz)

Radiated emission expanded uncertainty = 4.06dB, k=2
(Above 1GHz)

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated date	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 12, 2013	Jan. 11, 2014
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 12, 2013	Jan. 11, 2014
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 12, 2013	Jan. 11, 2014
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	Jan. 12, 2013	Jan. 11, 2014
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Feb. 06, 2013	Feb. 05, 2014
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Feb. 06, 2013	Feb. 05, 2014
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Feb. 06, 2013	Feb. 05, 2014
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Feb. 06, 2013	Feb. 05, 2014
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 12, 2013	Jan. 11, 2014
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 12, 2013	Jan. 11, 2014

3. OPERATION OF EUT DURING TESTING

3.1. Operating Mode

The mode is used: Transmitting mode

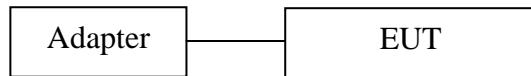
Low Channel: 2402MHz

Middle Channel: 2441MHz

High Channel: 2480MHz

Hopping

3.2. Configuration and peripherals



Setup: Transmitting mode

(EUT: HP Wireless Portable Speaker S9500)

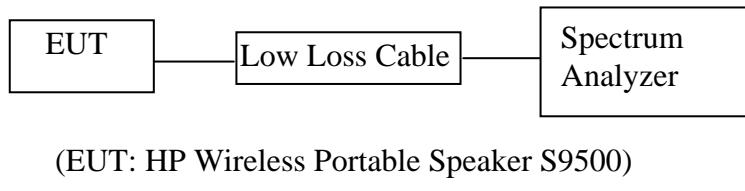
4. TEST PROCEDURES AND RESULTS

FCC Rules	Description of Test	Result
Section 15.247(a)(1)	20dB Bandwidth Test	Compliant
Section 15.247(a)(1)	Carrier Frequency Separation Test	Compliant
Section 15.247(a)(1)(iii)	Number Of Hopping Frequency Test	Compliant
Section 15.247(a)(1)(iii)	Dwell Time Test	Compliant
Section 15.247(b)(1)	Maximum Peak Output Power Test	Compliant
Section 15.247(d)	Band Edge Compliance Test	Compliant
Section 15.247(d) Section 15.209	Radiated Spurious Emission Test	Compliant
Section 15.247(d)	Conducted Spurious Emission Test	Compliant
Section 15.207	AC Power Line Conducted Emission Test	Compliant
Section 15.203	Antenna Requirement	Compliant

Remark: “N/A” means “Not applicable”.

5. 20DB BANDWIDTH TEST

5.1. Block Diagram of Test Setup



5.2. The Requirement For Section 15.247(a)(1)

Section 15.247(a)(1): Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

5.3. EUT Configuration on Measurement

The following equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

5.3.1. HP Wireless Portable Speaker S9500 (EUT)

Model Number	:	HP S9500
Serial Number	:	N/A
Manufacturer	:	Zhao Yang Elec.(Shenzhen) Co., Ltd.

5.4. Operating Condition of EUT

5.4.1. Setup the EUT and simulator as shown as Section 5.1.

5.4.2. Turn on the power of all equipment.

5.4.3. Let the EUT work in TX(Hopping off) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, 2480MHz TX frequency to transmit.

5.5. Test Procedure

5.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

5.5.2. Set RBW of spectrum analyzer to 30kHz and VBW to 100kHz.

5.5.3. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

5.6. Test Result

PASS.

Date of Test:	May 9, 2013	Temperature:	25°C
EUT:	HP Wireless Portable Speaker S9500	Humidity:	50%
Model No.:	HP S9500	Power Supply:	AC 120V/60HZ
Test Mode:	TX	Test Engineer:	Apple

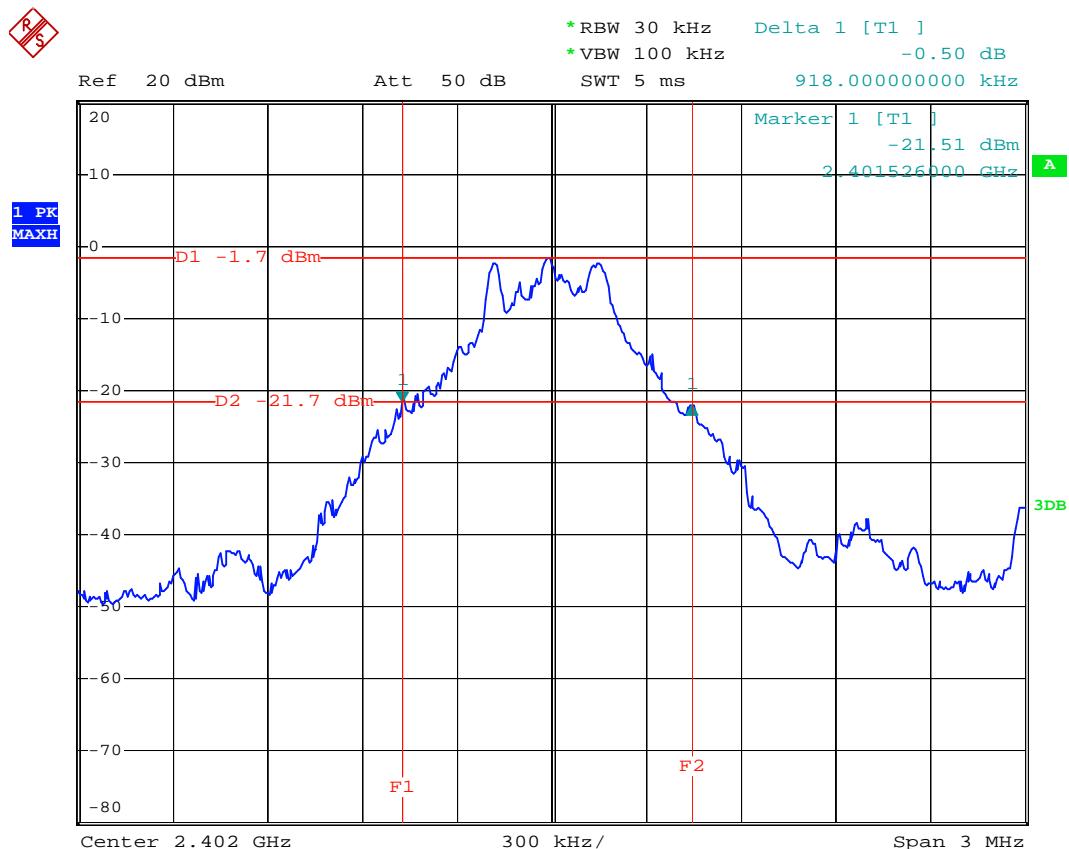
Channel	Frequency (MHz)	20dB Bandwidth (MHz)	Limit (MHz)
Low	2402	0.918	N/A
Middle	2441	0.912	N/A
High	2480	0.900	N/A

Note: N/A: 1) The 20 dB bandwidth of the hopping channel is not limit.

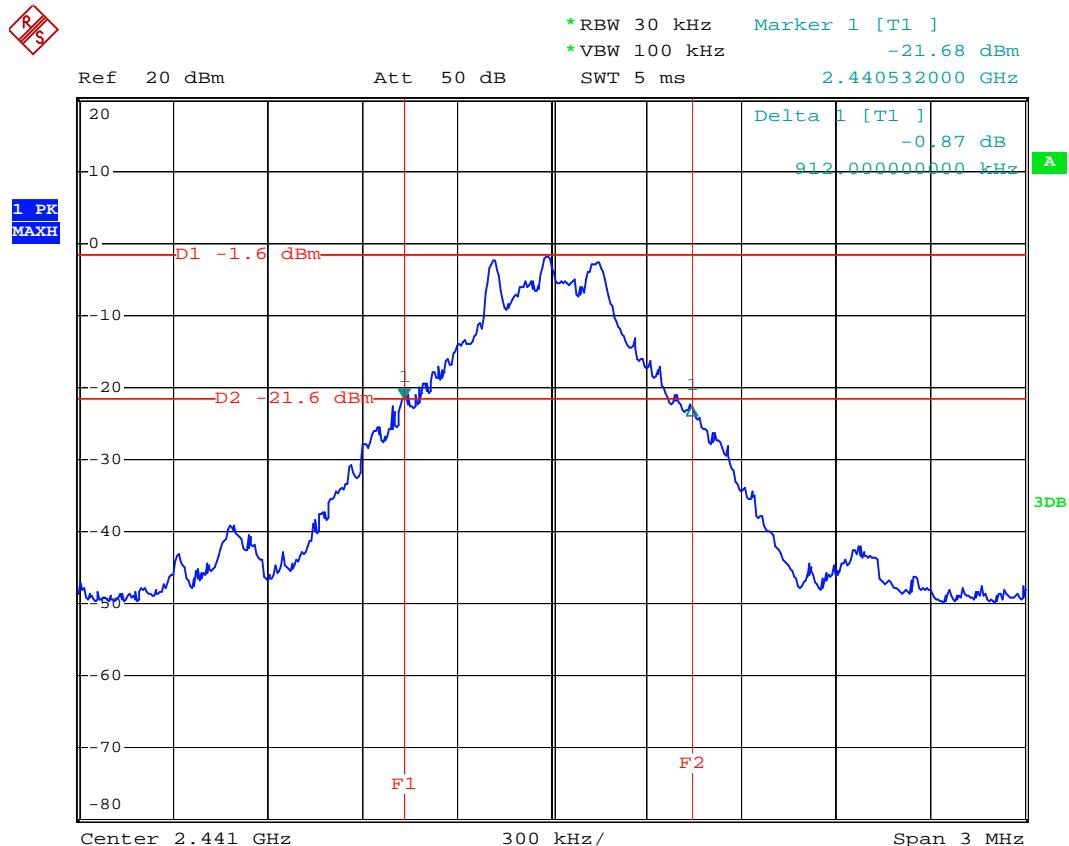
- 2) The data of 20 dB bandwidth of the hopping channel is limit of carrier frequencies separated

The spectrum analyzer plots are attached as below.

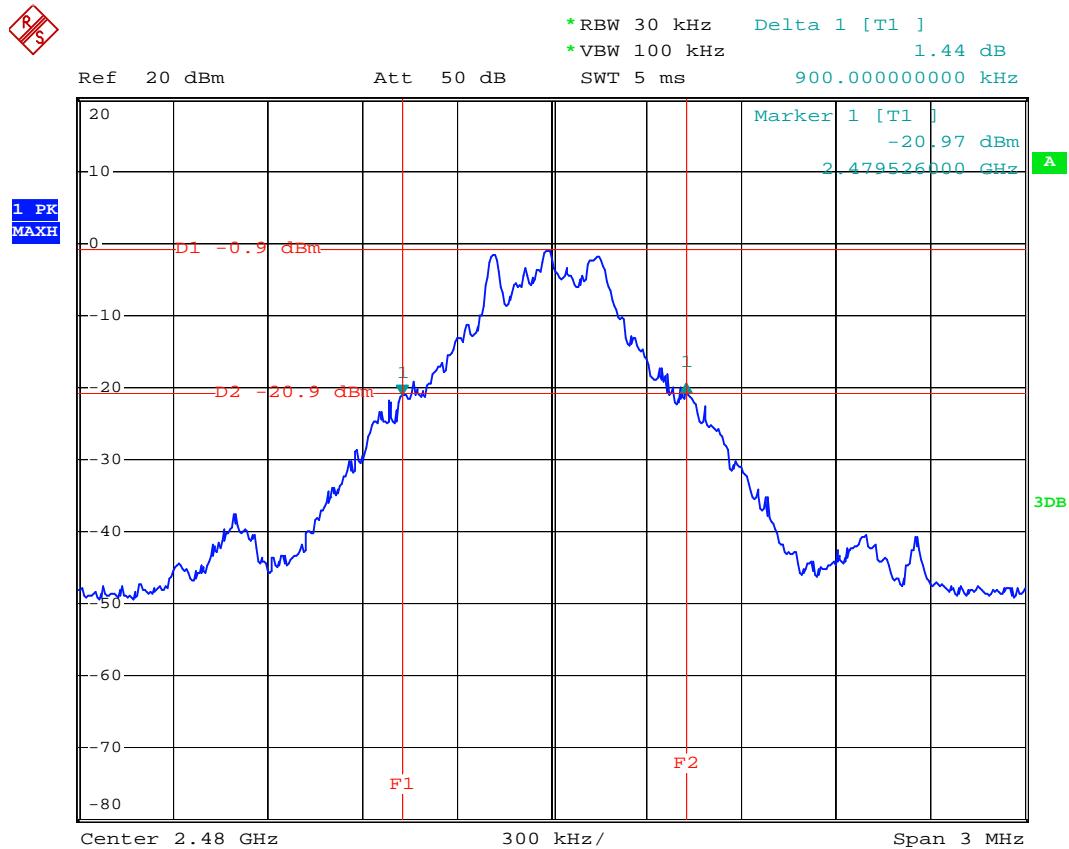
"Spectrum analyzer" is R/S



Date: 9.MAY.2013 11:49:52



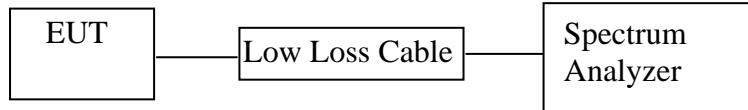
Date: 9.MAY.2013 11:47:07



Date: 9.MAY.2013 11:45:56

6. CARRIER FREQUENCY SEPARATION TEST

6.1. Block Diagram of Test Setup



(EUT: HP Wireless Portable Speaker S9500)

6.2. The Requirement For Section 15.247(a)(1)

Section 15.247(a)(1): Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudorandomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

6.3. EUT Configuration on Measurement

The following equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

6.3.1. HP Wireless Portable Speaker S9500 (EUT)

Model Number :	HP S9500
Serial Number :	N/A
Manufacturer :	Zhao Yang Elec.(Shenzhen) Co., Ltd.

6.4. Operating Condition of EUT

6.4.1. Setup the EUT and simulator as shown as Section 6.1.

6.4.2. Turn on the power of all equipment.

6.4.3. Let the EUT work in TX (Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, 2480MHz TX frequency to transmit.

6.5. Test Procedure

- 6.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.
- 6.5.2. Set RBW of spectrum analyzer to 100kHz and VBW to 300kHz. Adjust Span to 3 MHz.
- 6.5.3. Set the adjacent channel of the EUT maxhold another trace.
- 6.5.4. Measurement the channel separation

6.6. Test Result

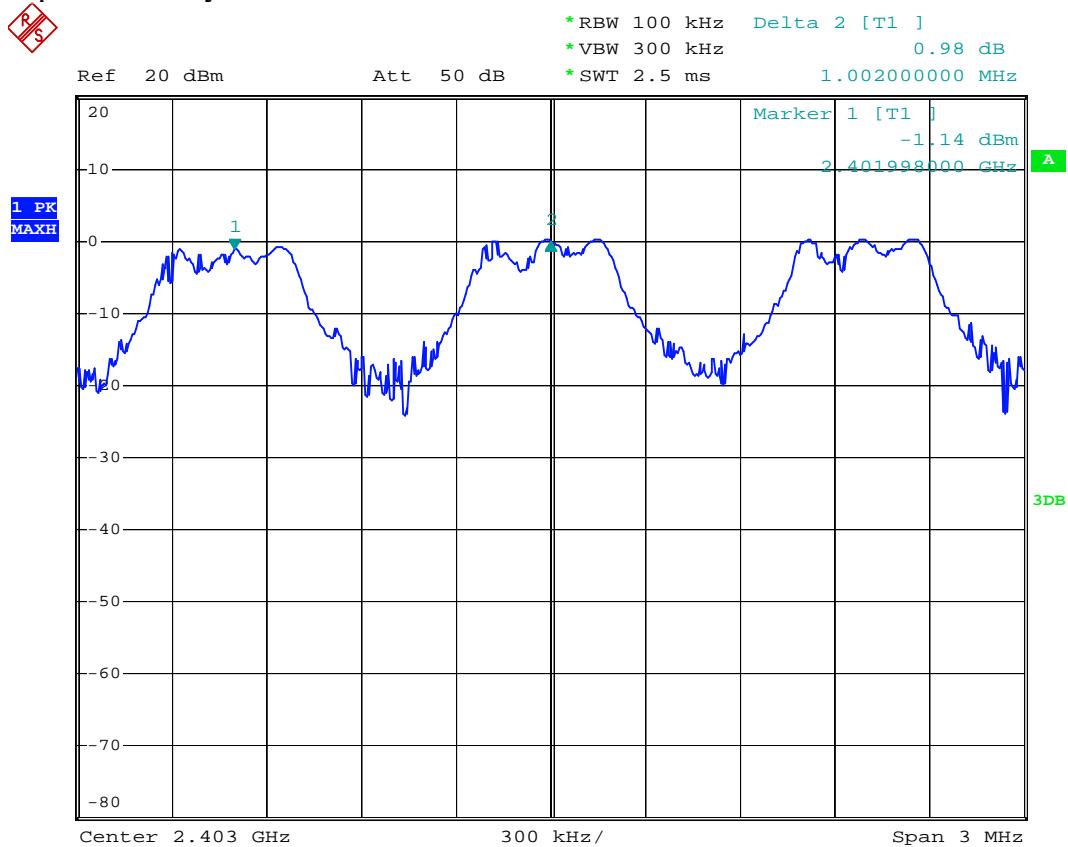
PASS.

Date of Test:	May 9, 2013	Temperature:	25°C
EUT:	HP Wireless Portable Speaker S9500	Humidity:	50%
Model No.:	HP S9500	Power Supply:	AC 120V/60HZ
Test Mode:	Hopping	Test Engineer:	Apple

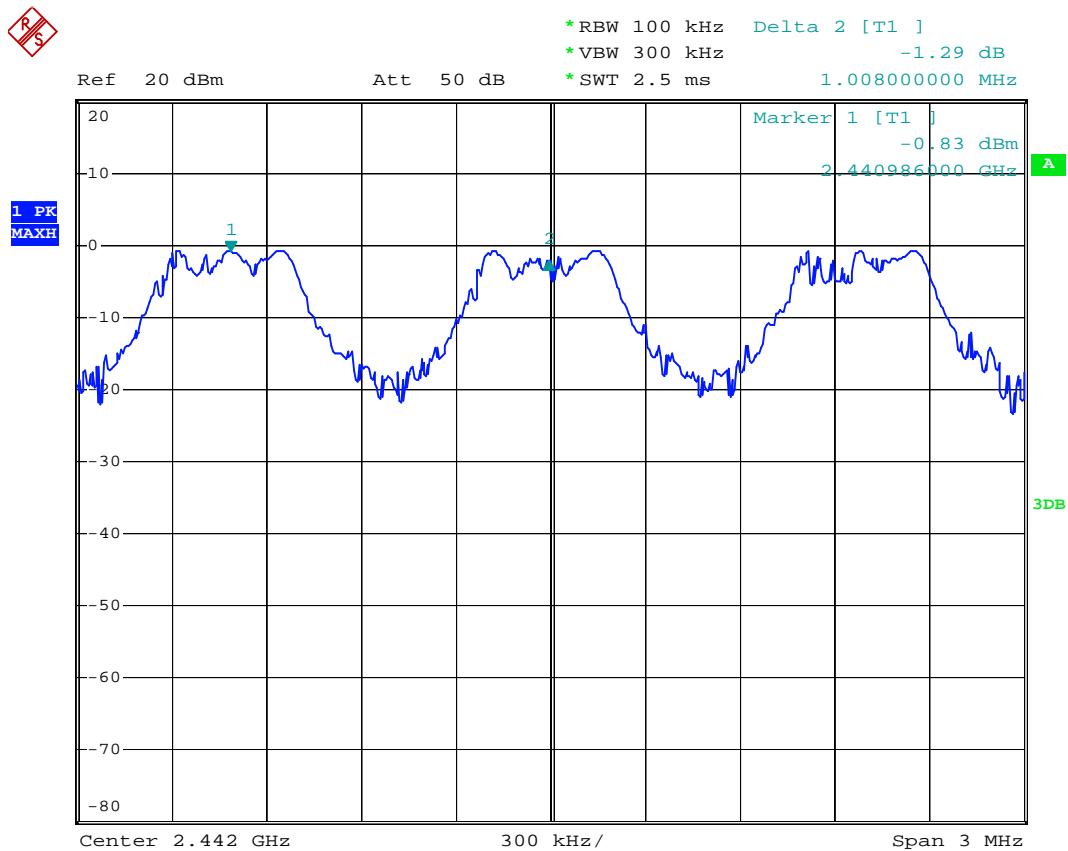
Channel	Channel Frequency (MHz)	Channel separation (MHz)	Limit
Low	2402	1.002	> the 20 dB bandwidth of the hopping channel (0.918MHz) or 25kHz (whichever is greater)
Middle	2441	1.008	> the 20 dB bandwidth of the hopping channel (0.912MHz) or 25kHz (whichever is greater)
High	2480	1.020	> the 20 dB bandwidth of the hopping channel (0.900MHz) or 25kHz (whichever is greater)

The spectrum analyzer plots are attached as below.

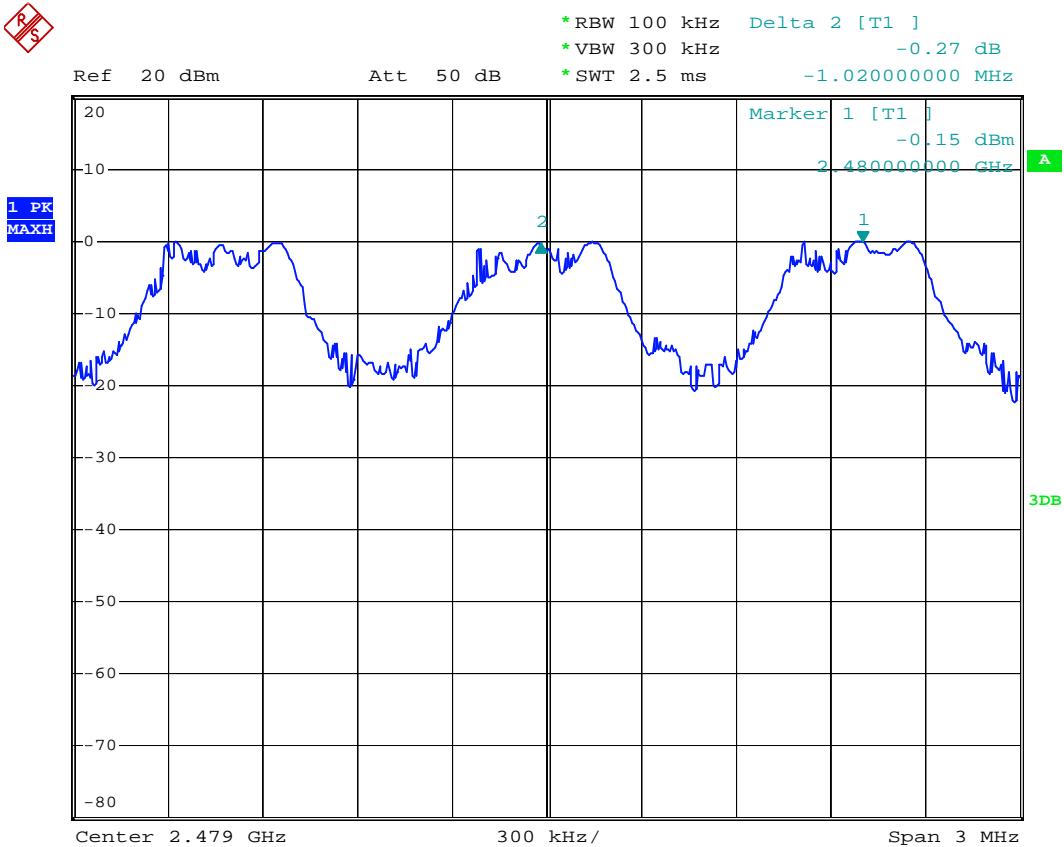
"Spectrum analyzer" is R/S



Date: 9.MAY.2013 14:42:54



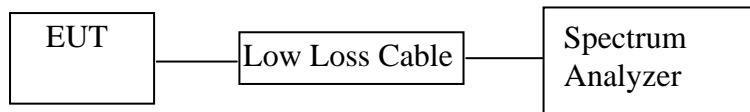
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Date: 9.MAY.2013 16:56:08

7. NUMBER OF HOPPING FREQUENCY TEST

7.1. Block Diagram of Test Setup



(EUT: HP Wireless Portable Speaker S9500)

7.2. The Requirement For Section 15.247(a)(1)(iii)

Section 15.247(a)(1)(iii): Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

7.3. EUT Configuration on Measurement

The following equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

7.3.1. HP Wireless Portable Speaker S9500 (EUT)

Model Number	:	HP S9500
Serial Number	:	N/A
Manufacturer	:	Zhao Yang Elec.(Shenzhen) Co., Ltd.

7.4. Operating Condition of EUT

7.4.1. Setup the EUT and simulator as shown as Section 7.1.

7.4.2. Turn on the power of all equipment.

7.4.3. Let the EUT work in TX (Hopping on) modes measure it.

7.5. Test Procedure

- 7.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.
- 7.5.2. Set the spectrum analyzer as RBW=300kHz, VBW=300kHz.
- 7.5.3. Max hold, view and count how many channel in the band.

7.6. Test Result

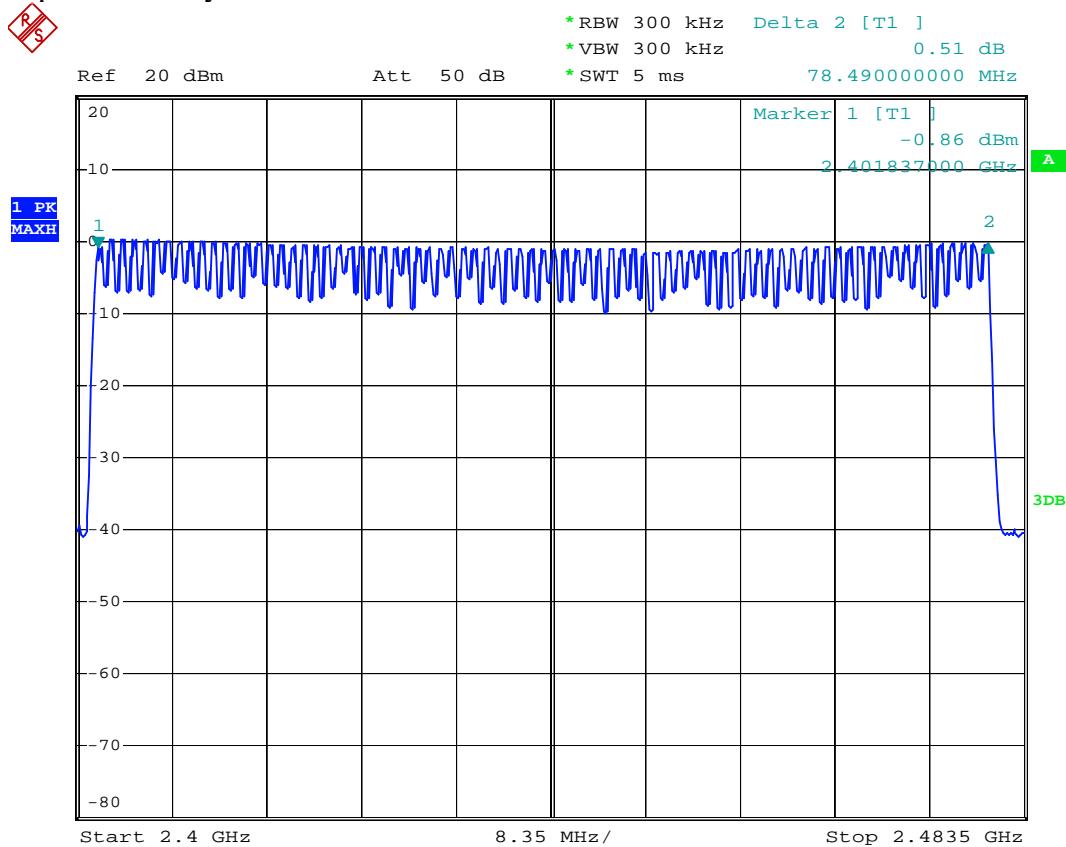
PASS.

Date of Test:	<u>May 9, 2013</u>	Temperature:	<u>25°C</u>
	HP Wireless Portable Speaker		
EUT:	<u>S9500</u>	Humidity:	<u>50%</u>
Model No.:	<u>HP S9500</u>	Power Supply:	<u>AC 120V/60HZ</u>
Test Mode:	<u>Hopping</u>	Test Engineer:	<u>Apple</u>

Total number of hopping channel	Measurement result (CH)	Limit (CH)
	79	>15

The spectrum analyzer plots are attached as below.

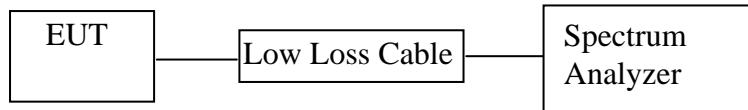
"Spectrum analyzer" is R/S



Date: 9.MAY.2013 11:55:17

8. DWELL TIME TEST

8.1. Block Diagram of Test Setup



(EUT: HP Wireless Portable Speaker S9500)

8.2. The Requirement For Section 15.247(a)(1)(iii)

Section 15.247(a)(1)(iii): Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

8.3. EUT Configuration on Measurement

The following equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

8.3.1. HP Wireless Portable Speaker S9500 (EUT)

Model Number :	HP S9500
Serial Number :	N/A
Manufacturer :	Zhao Yang Elec.(Shenzhen) Co., Ltd.

8.4. Operating Condition of EUT

8.4.1. Setup the EUT and simulator as shown as Section 8.1.

8.4.2. Turn on the power of all equipment.

8.4.3. Let the EUT work in TX (Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, 2480MHz TX frequency to transmit.

8.5. Test Procedure

- 8.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.
- 8.5.2. Set center frequency of spectrum analyzer = operating frequency.
- 8.5.3. Set the spectrum analyzer as RBW=100kHz, VBW=300kHz, Span=0Hz, Adjust Sweep=31.6s. Get the burst (in 31.6s.).
- 8.5.4. Set the spectrum analyzer as RBW=1MHz, VBW=3MHz, Span=0Hz, Adjust Sweep=2ms. Get the pulse time.
- 8.5.5. Repeat above procedures until all frequency measured were complete.

8.6. Test Result

PASS.

Date of Test:	<u>May 9, 2013</u>	Temperature:	<u>25°C</u>
	HP Wireless Portable Speaker		
EUT:	<u>S9500</u>	Humidity:	<u>50%</u>
Model No.:	<u>HP S9500</u>	Power Supply:	<u>AC 120V/60HZ</u>
Test Mode:	<u>Hopping</u>	Test Engineer:	<u>Apple</u>

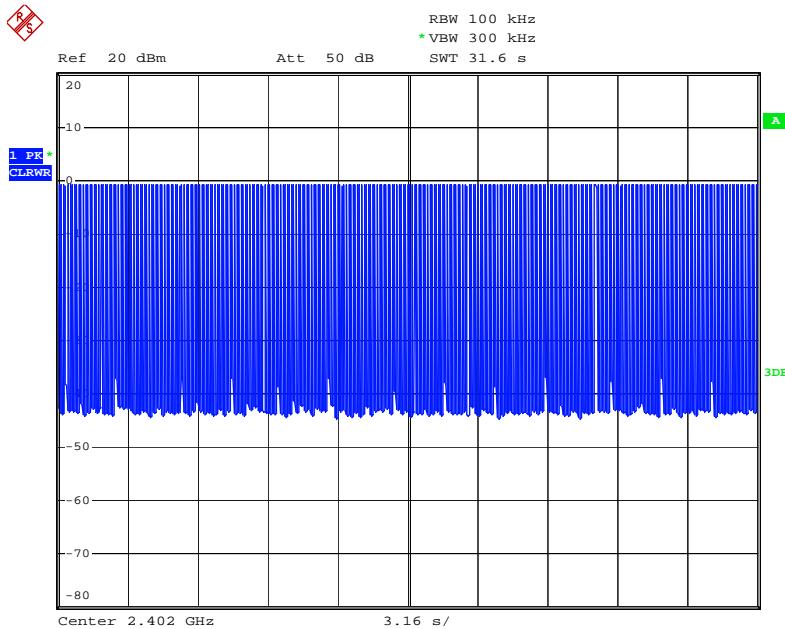
A period transmit time = $0.4 \times 79 = 31.6$

Dwell time = pulse time × burst (in 31.6 sec.)

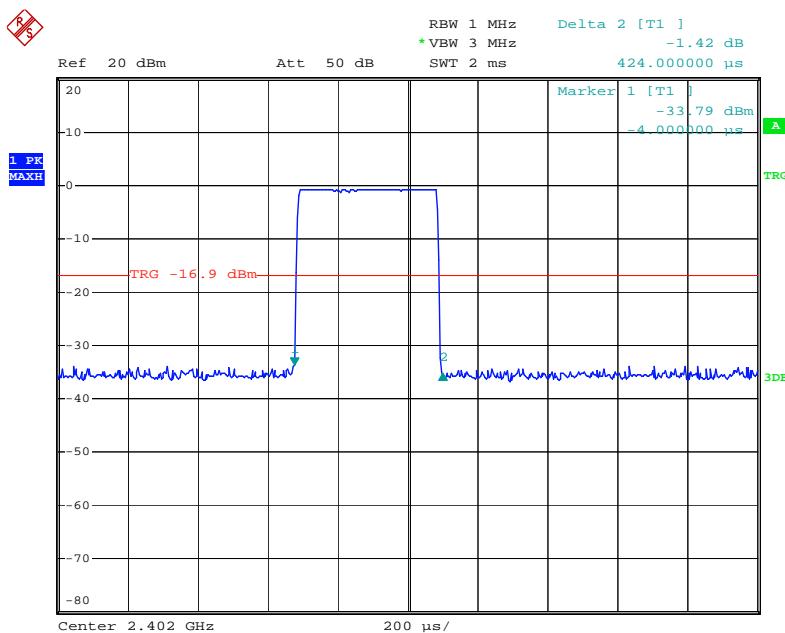
Channel	Channel Frequency (MHz)	Pulse Time (ms)	Burst (in 31.6 sec.)	Dwell Time (ms)	Limit (ms)
Low	2402	320	0.424	135.68	400
Middle	2441	317	0.424	134.41	400
High	2480	322	0.436	140.39	400

The spectrum analyzer plots are attached as below.

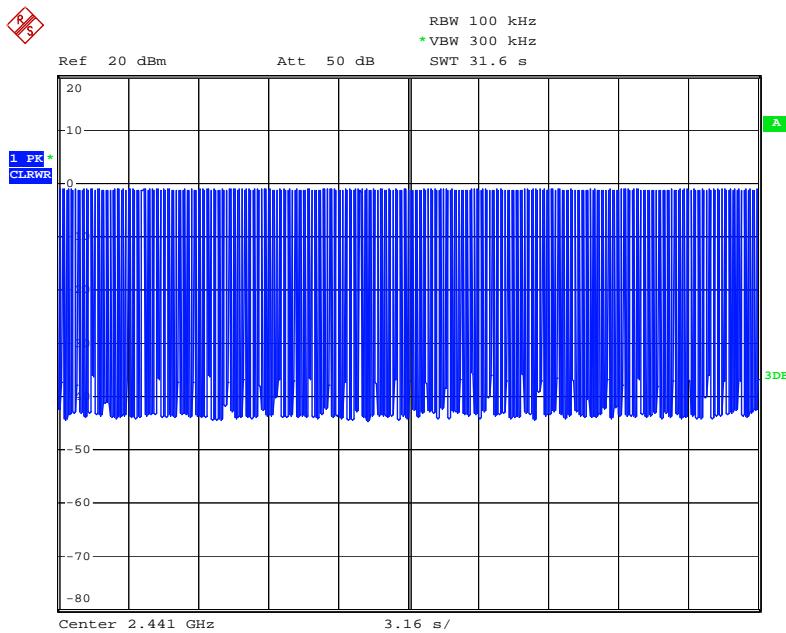
"Spectrum analyzer" is R/S



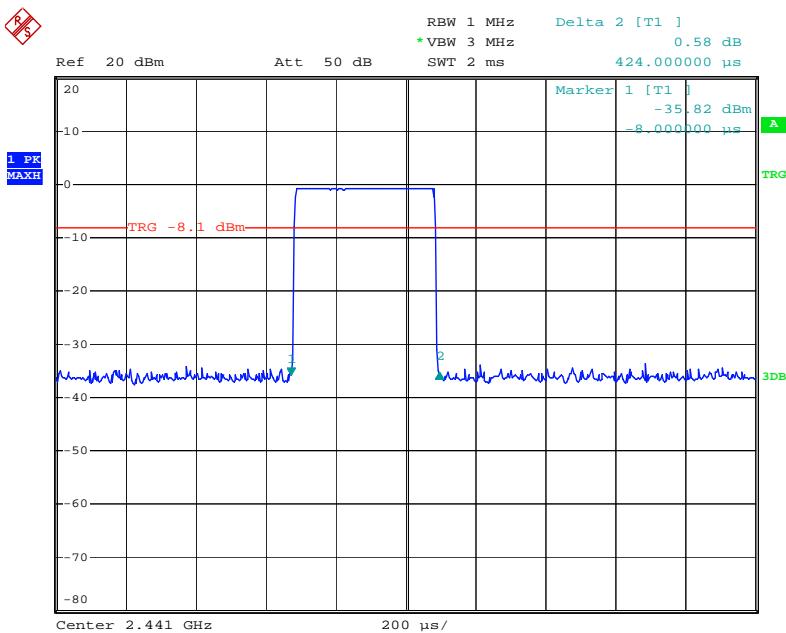
Date: 9.MAY.2013 11:58:11



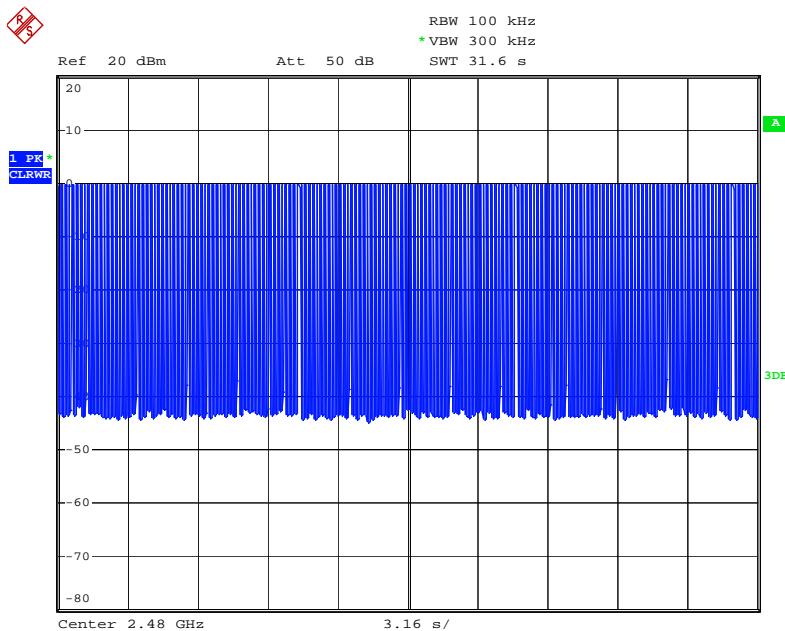
Date: 9.MAY.2013 12:32:26



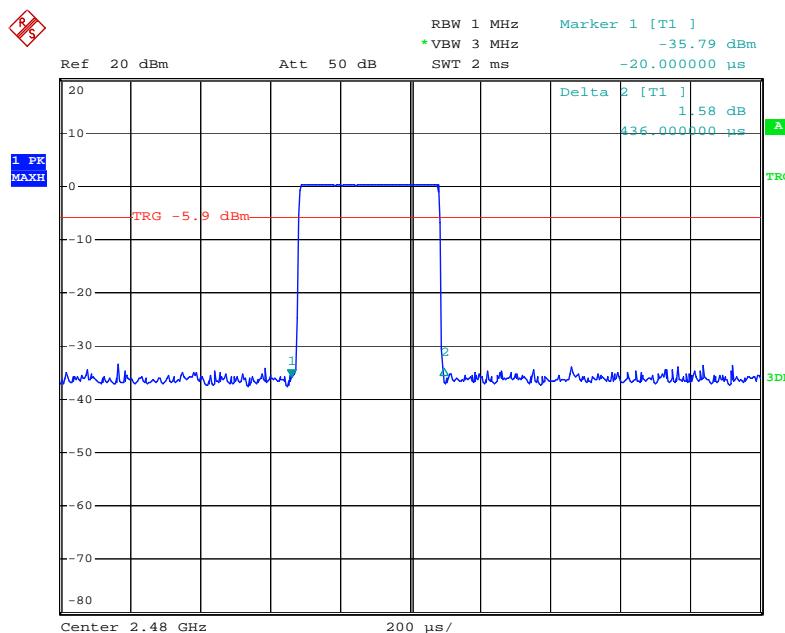
Date: 9.MAY.2013 11:59:36



Date: 9.MAY.2013 12:33:21



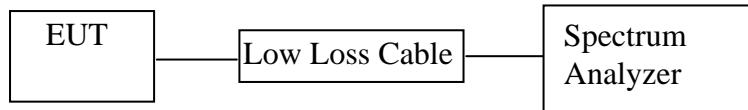
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Date: 9.MAY.2013 12:33:50

9. MAXIMUM PEAK OUTPUT POWER TEST

9.1. Block Diagram of Test Setup



(EUT: HP Wireless Portable Speaker S9500)

9.2. The Requirement For Section 15.247(b)(1)

Section 15.247(b)(1): For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

9.3. EUT Configuration on Measurement

The following equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

9.3.1. HP Wireless Portable Speaker S9500 (EUT)

Model Number	:	HP S9500
Serial Number	:	N/A
Manufacturer	:	Zhao Yang Elec.(Shenzhen) Co., Ltd.

9.4. Operating Condition of EUT

9.4.1. Setup the EUT and simulator as shown as Section 9.1.

9.4.2. Turn on the power of all equipment.

9.4.3. Let the EUT work in TX (Hopping off) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, 2480MHz TX frequency to transmit.

9.5. Test Procedure

9.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

9.5.2. Set RBW of spectrum analyzer to 1MHz and VBW to 3MHz.

9.5.3. Measurement the maximum peak output power.

9.6. Test Result

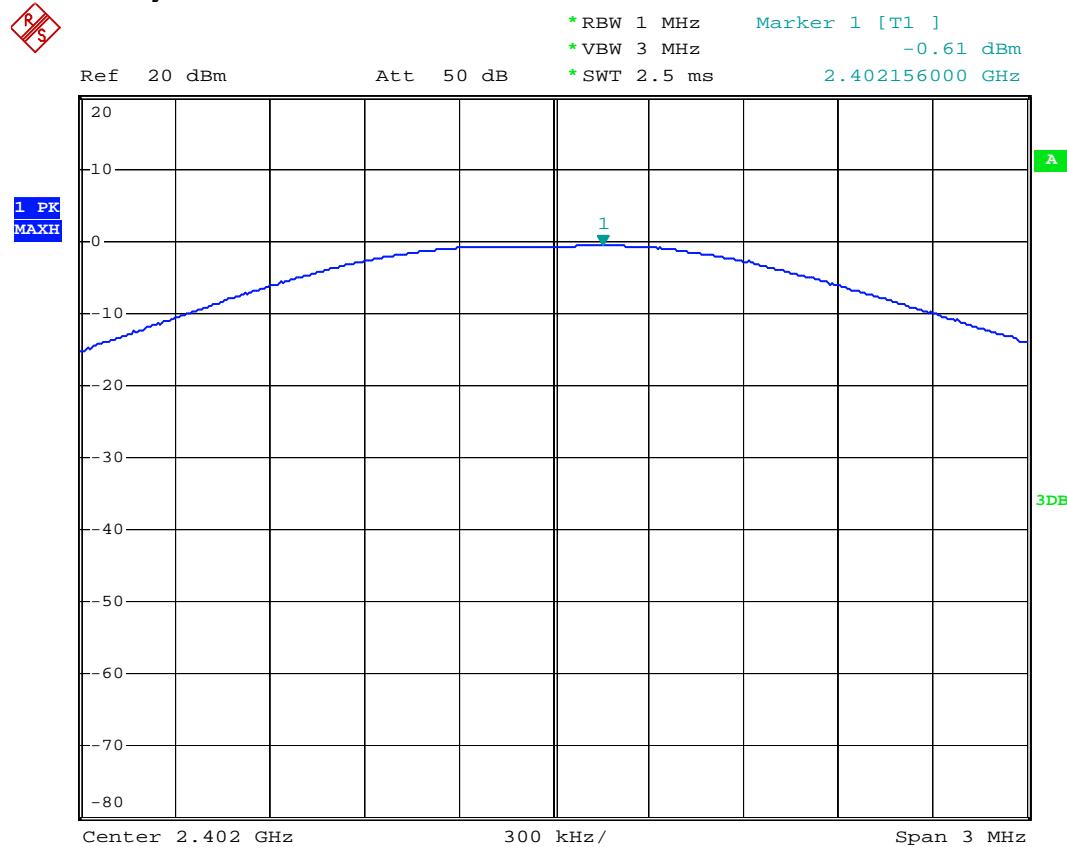
PASS.

Date of Test:	May 9, 2013	Temperature:	25°C
	HP Wireless Portable Speaker		
EUT:	S9500	Humidity:	50%
Model No.:	HP S9500	Power Supply:	AC 120V/60HZ
Test Mode:	TX	Test Engineer:	Apple

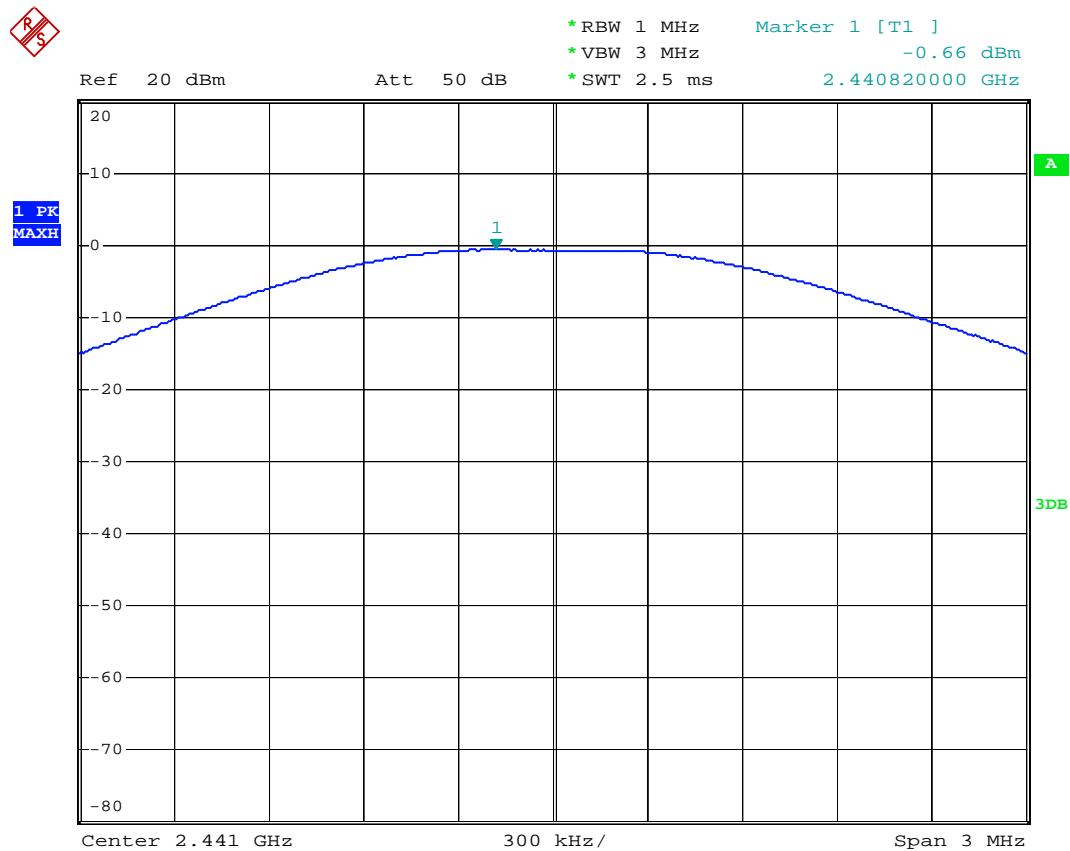
Channel	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (mW)	Limits dBm / W
Low	2402	-0.61	0.87	30 dBm / 1 W
Middle	2441	-0.66	0.86	30 dBm / 1 W
High	2480	0.06	1.01	30 dBm / 1 W

The spectrum analyzer plots are attached as below.

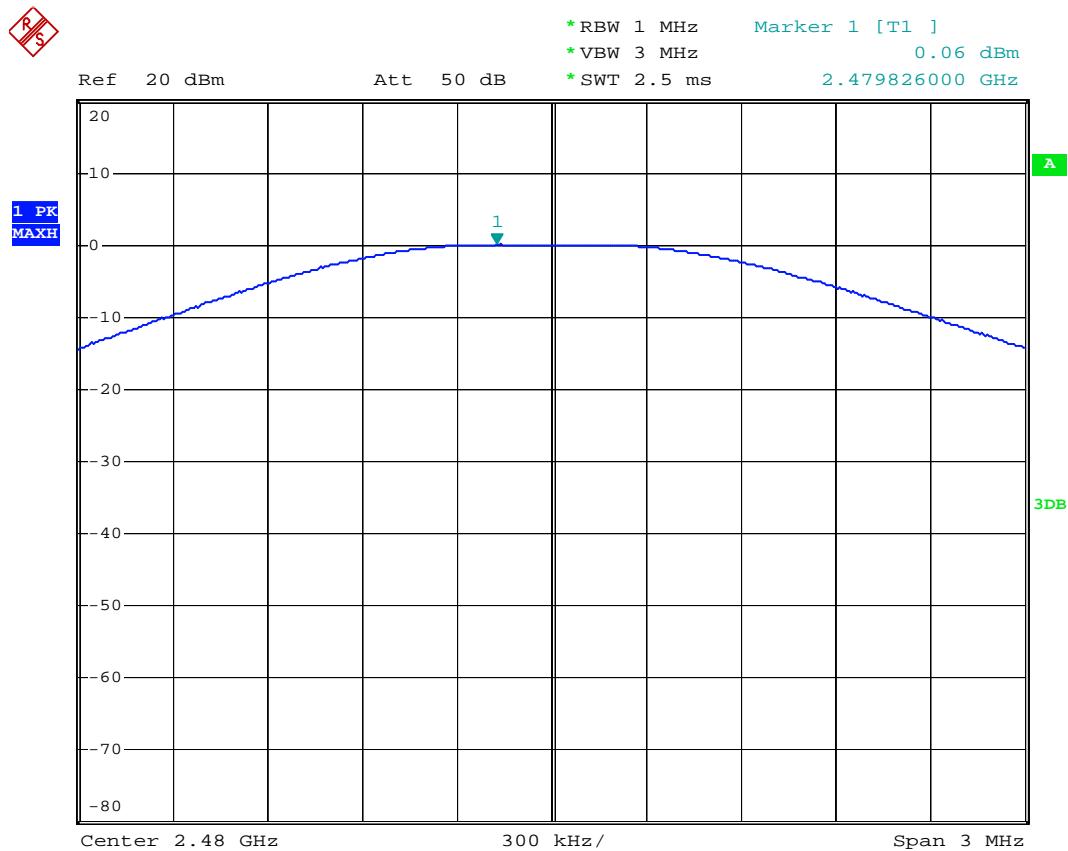
"Spectrum analyzer" is R/S



Date: 9.MAY.2013 17:33:09



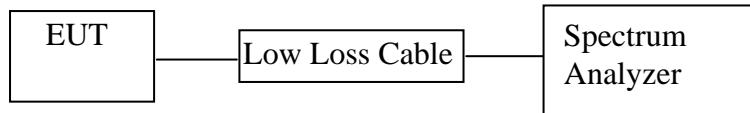
Date: 9.MAY.2013 17:33:35



Date: 9.MAY.2013 17:34:37

10.BAND EDGE COMPLIANCE TEST

10.1.Block Diagram of Test Setup



(EUT: HP Wireless Portable Speaker S9500)

10.2.The Requirement For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. 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).

10.3.EUT Configuration on Measurement

The following equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

10.3.1.HP Wireless Portable Speaker S9500 (EUT)

Model Number	:	HP S9500
Serial Number	:	N/A
Manufacturer	:	Zhao Yang Elec.(Shenzhen) Co., Ltd.

10.4.Operating Condition of EUT

10.4.1.Setup the EUT and simulator as shown as Section 10.1.

10.4.2.Turn on the power of all equipment.

10.4.3.Let the EUT work in TX (Hopping off, Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2480MHz TX frequency to transmit.

10.5.Test Procedure

Conducted Band Edge:

10.5.1.The transmitter output was connected to the spectrum analyzer via a low loss cable.

10.5.2.Set RBW of spectrum analyzer to 300kHz and VBW to 1MHz.

Radiate Band Edge:

10.5.3.The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.

10.5.4.The turntable was rotated for 360 degrees to determine the position of maximum emission level.

10.5.5.EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.

10.5.6.Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

RBW=1MHz, VBW=1MHz

10.5.7.The band edges was measured and recorded.

10.6. Test Result

Pass

Date of Test:	<u>May 9, 2013</u>	Temperature:	<u>25°C</u>
EUT:	<u>HP Wireless Portable Speaker S9500</u>	Humidity:	<u>50%</u>
Model No.:	<u>HP S9500</u>	Power Supply:	<u>AC 120V/60HZ</u>
Test Mode:	<u>TX (Hopping off)</u>	Test Engineer:	<u>Apple</u>

Conducted test

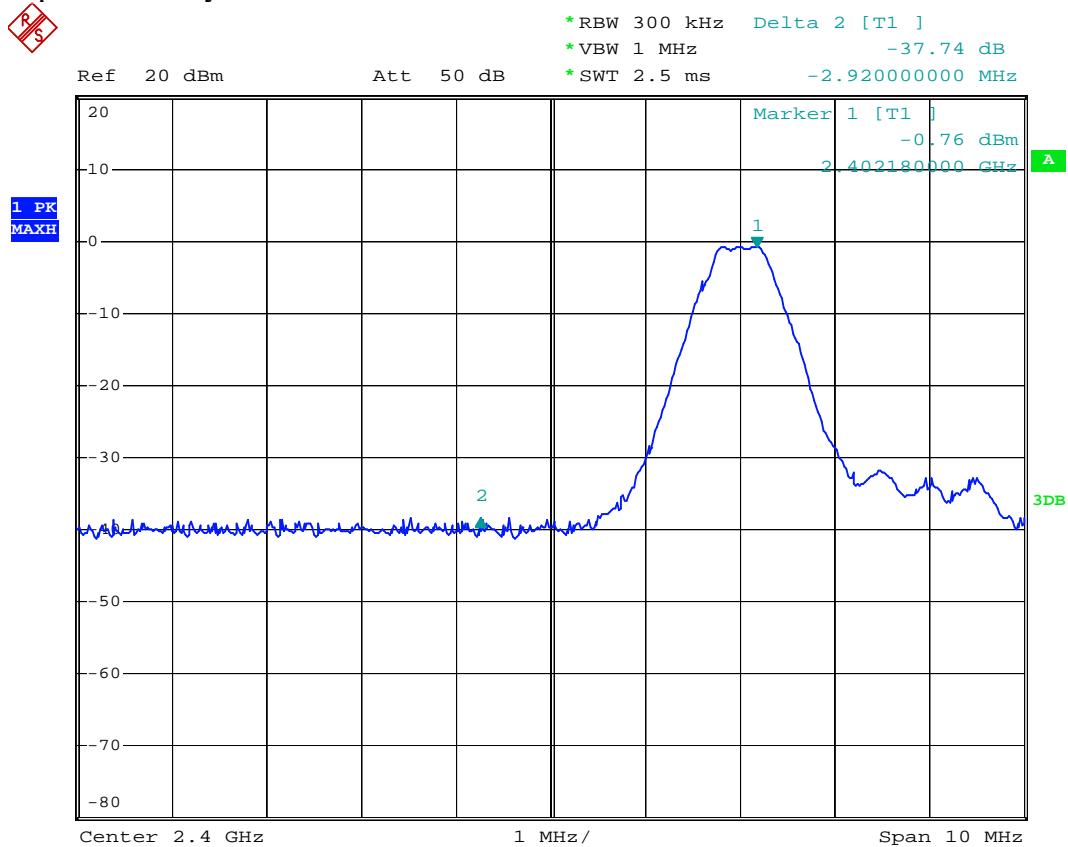
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2402	37.74	> 20dBc
2480	38.25	> 20dBc

Date of Test:	<u>May 9, 2013</u>	Temperature:	<u>25°C</u>
EUT:	<u>HP Wireless Portable Speaker S9500</u>	Humidity:	<u>50%</u>
Model No.:	<u>HP S9500</u>	Power Supply:	<u>AC 120V/60HZ</u>
Test Mode:	<u>TX (Hopping on)</u>	Test Engineer:	<u>Apple</u>

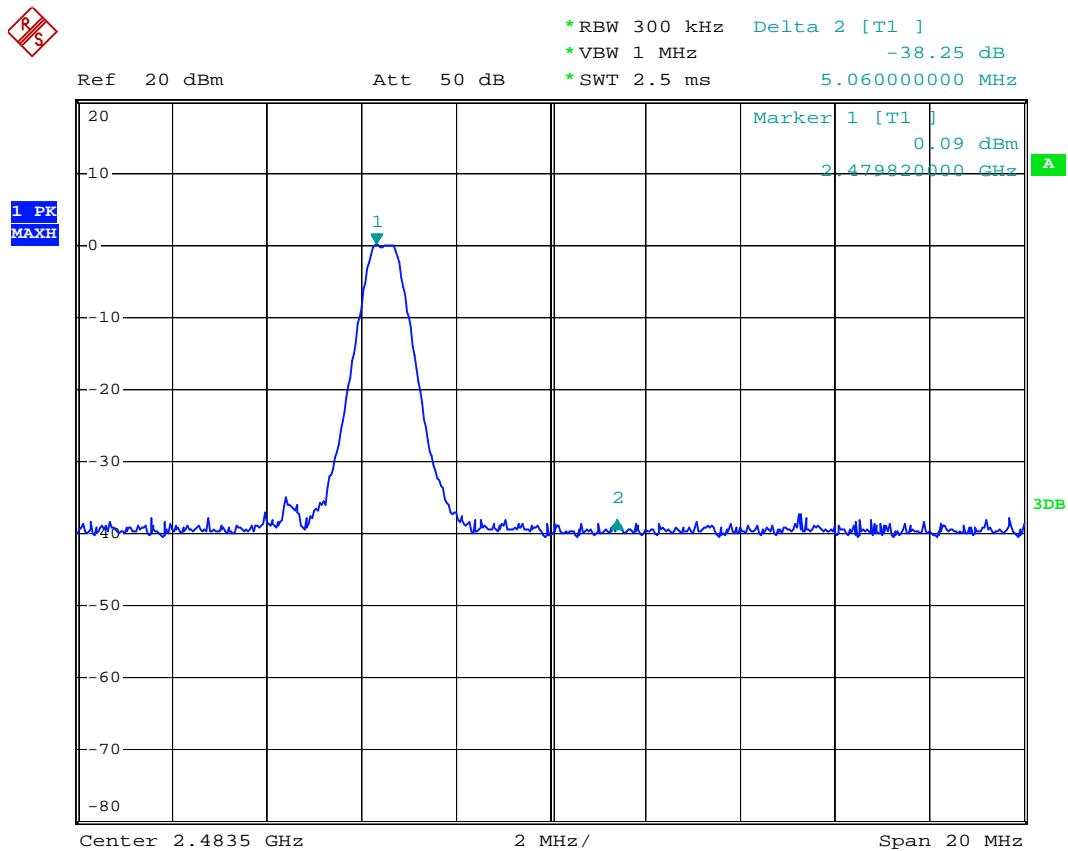
Conducted test

Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2402	36.69	> 20dBc
2480	37.69	> 20dBc

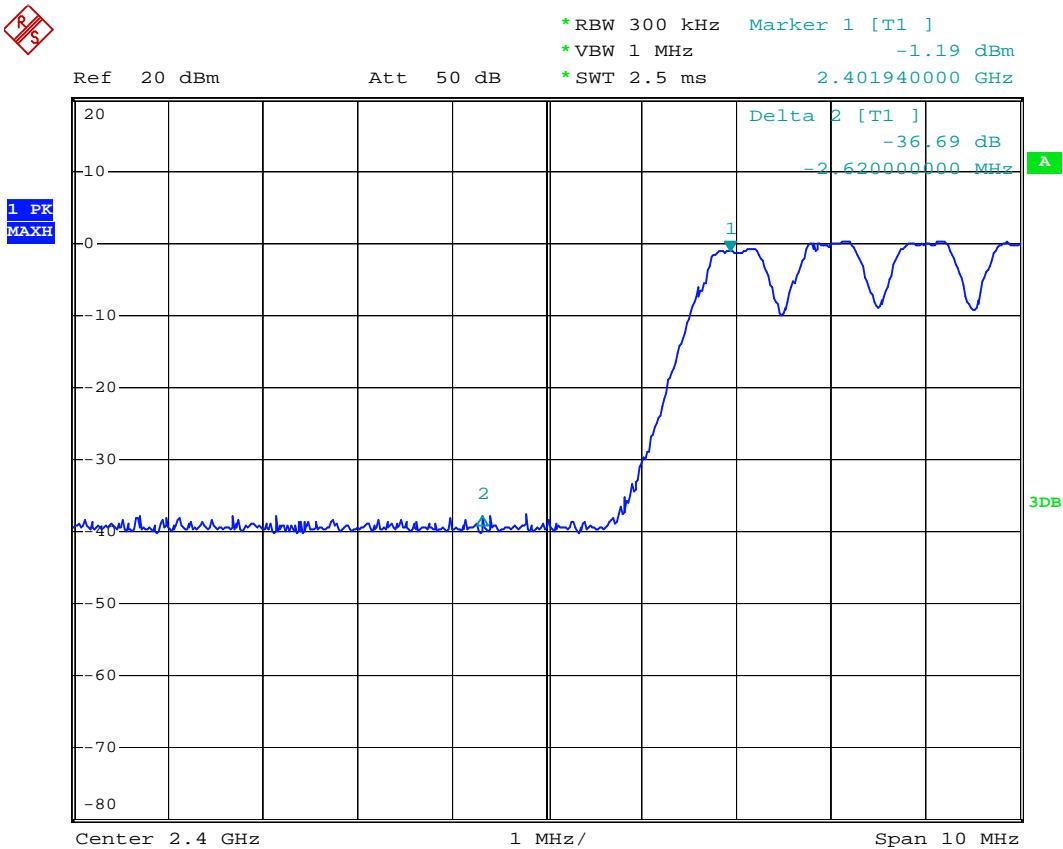
"Spectrum analyzer" is R/S



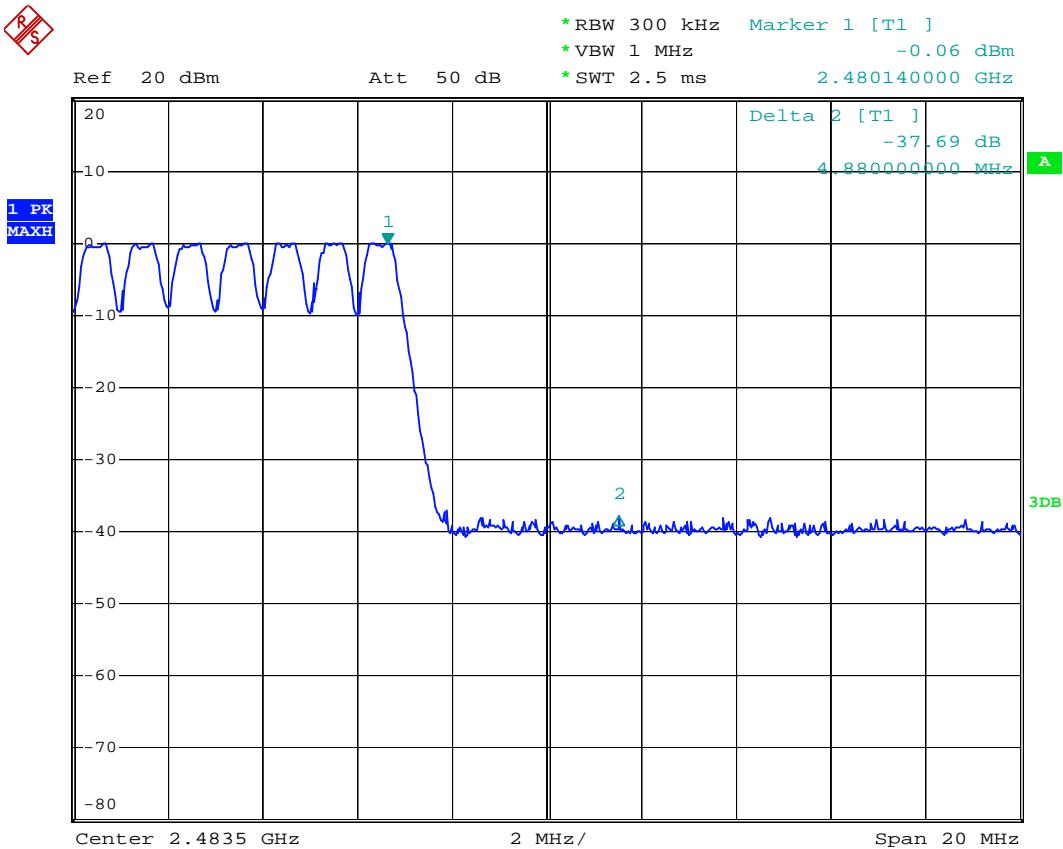
Date: 9.MAY.2013 17:40:58



Date: 9.MAY.2013 17:39:15



Date: 9.MAY.2013 17:43:03



Date: 9.MAY.2013 17:46:58

Radiated Band Edge Result

Date of Test:	May 13, 2013	Temperature:	25°C
EUT:	HP Wireless Portable Speaker S9500	Humidity:	50%
Model No.:	HP S9500	Power Supply:	AC 120V/60HZ
Test Mode:	TX (2402MHz)	Test Engineer:	Kai

Frequency (MHz)	Reading(dB μ V/m)		Factor(dB) Corr.	Result(dB μ V/m)		Limit(dB μ V/m)		Margin(dB)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2310.000	39.68	44.00	-7.81	31.87	36.19	54.00	74.00	-22.13	-37.81	Vertical
2373.318	42.20	52.73	-7.64	34.56	45.09	54.00	74.00	-19.44	-28.91	Vertical
2390.000	39.17	44.34	-7.53	31.64	36.81	54.00	74.00	-22.36	-37.19	Vertical
2310.000	41.72	46.33	-7.81	33.91	38.52	54.00	74.00	-20.09	-35.48	Horizontal
2331.673	41.32	53.10	-7.81	33.51	45.29	54.00	74.00	-20.49	-28.71	Horizontal
290.0000	40.69	46.89	-7.53	33.16	39.36	54.00	74.00	-20.84	-34.64	Horizontal

Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

$$\text{Result} = \text{Reading} + \text{Corrected Factor}$$
3. Display the measurement of peak values.

Date of Test:	May 13, 2013	Temperature:	25°C
EUT:	HP Wireless Portable Speaker S9500	Humidity:	50%
Model No.:	HP S9500	Power Supply:	AC 120V/60HZ
Test Mode:	TX (2480MHz)	Test Engineer:	Kai

Frequency (MHz)	Reading(dB μ V/m)		Factor(dB) Corr.	Result(dB μ V/m)		Limit(dB μ V/m)		Margin(dB)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2483.500	48.69	53.31	-7.37	41.32	45.94	54.00	74.00	-12.68	-28.06	Vertical
2489.566	40.55	45.00	-7.39	33.16	37.61	54.00	74.00	-20.84	-36.39	Vertical
2500.000	38.33	43.64	-7.40	30.93	36.24	54.00	74.00	-23.07	-37.76	Vertical
2483.500	47.85	52.00	-7.37	40.48	44.63	54.00	74.00	-13.52	-29.37	Horizontal
2488.774	40.34	45.30	-7.39	32.95	37.91	54.00	74.00	-21.05	-36.09	Horizontal
2500.000	38.36	42.38	-7.40	30.96	34.98	54.00	74.00	-23.04	-39.02	Horizontal

Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

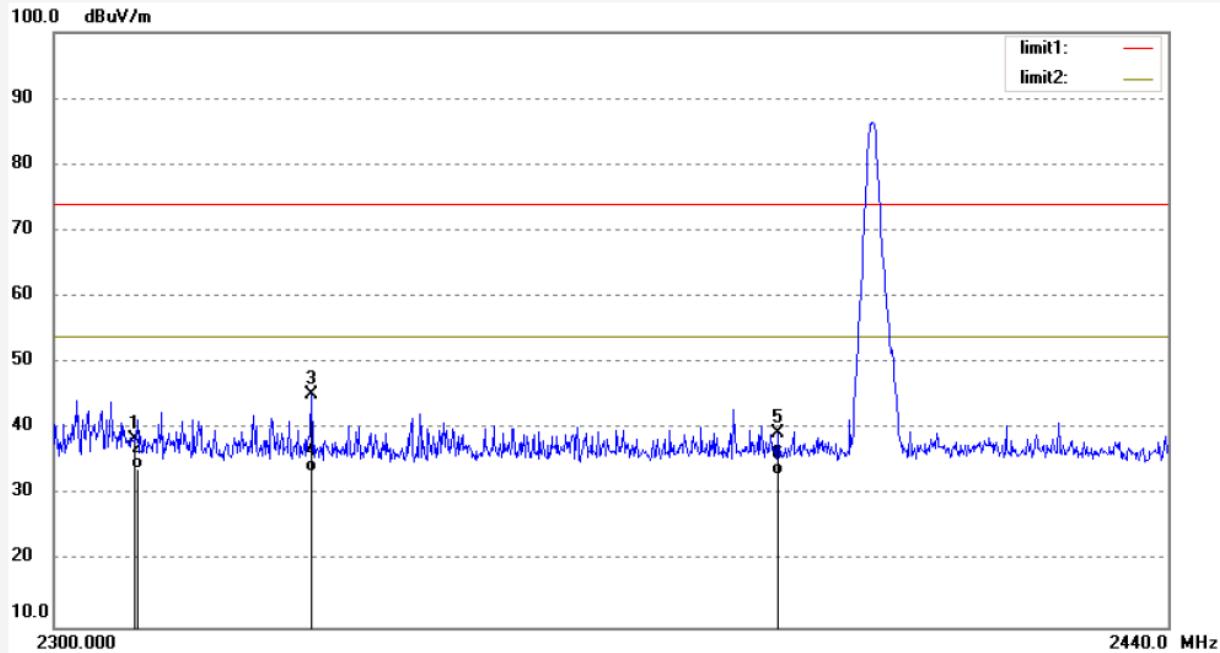
$$\text{Result} = \text{Reading} + \text{Corrected Factor}$$
3. Display the measurement of peak values.


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Fax:+86-0755-26503396

Job No.: STAR #4314	Polarization: Horizontal
Standard: FCC PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2013-5-13
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 12:51:19
EUT: HP Wireless Portable Speaker S9500	Engineer Signature:
Mode: TX 2402MHz	Distance: 3m
Model: HP S9500	
Manufacturer: Zhao Ynag	
Note: Report No.:ATE20130913	



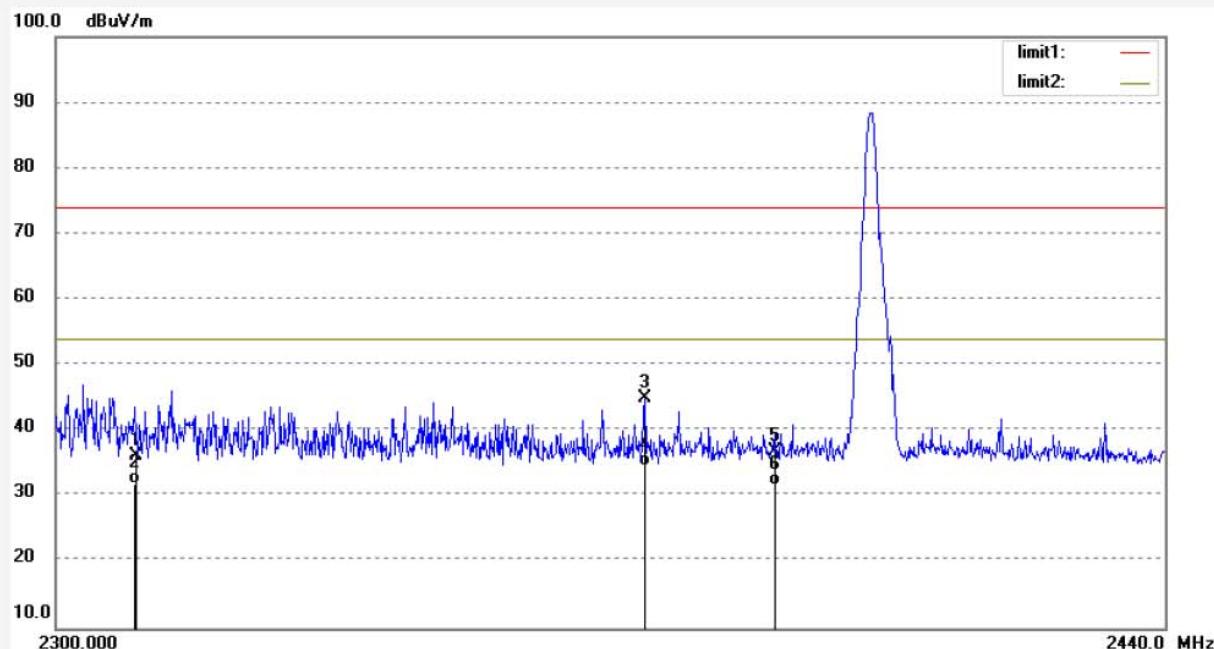
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2310.000	46.33	-7.81	38.52	74.00	-35.48	peak			
2	2310.000	41.72	-7.81	33.91	54.00	-20.09	AVG			
3	2331.673	53.10	-7.81	45.29	74.00	-28.71	peak			
4	2331.673	41.32	-7.81	33.51	54.00	-20.49	AVG			
5	2390.000	46.89	-7.53	39.36	74.00	-34.64	peak			
6	2390.000	40.69	-7.53	33.16	54.00	-20.84	AVG			


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Job No.: STAR #4315	Polarization: Vertical
Standard: FCC PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2013-5-13
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 12:55:27
EUT: HP Wireless Portable Speaker S9500	Engineer Signature:
Mode: TX 2402MHz	Distance: 3m
Model: HP S9500	
Manufacturer: Zhao Ynag	
Note: Report No.:ATE20130913	



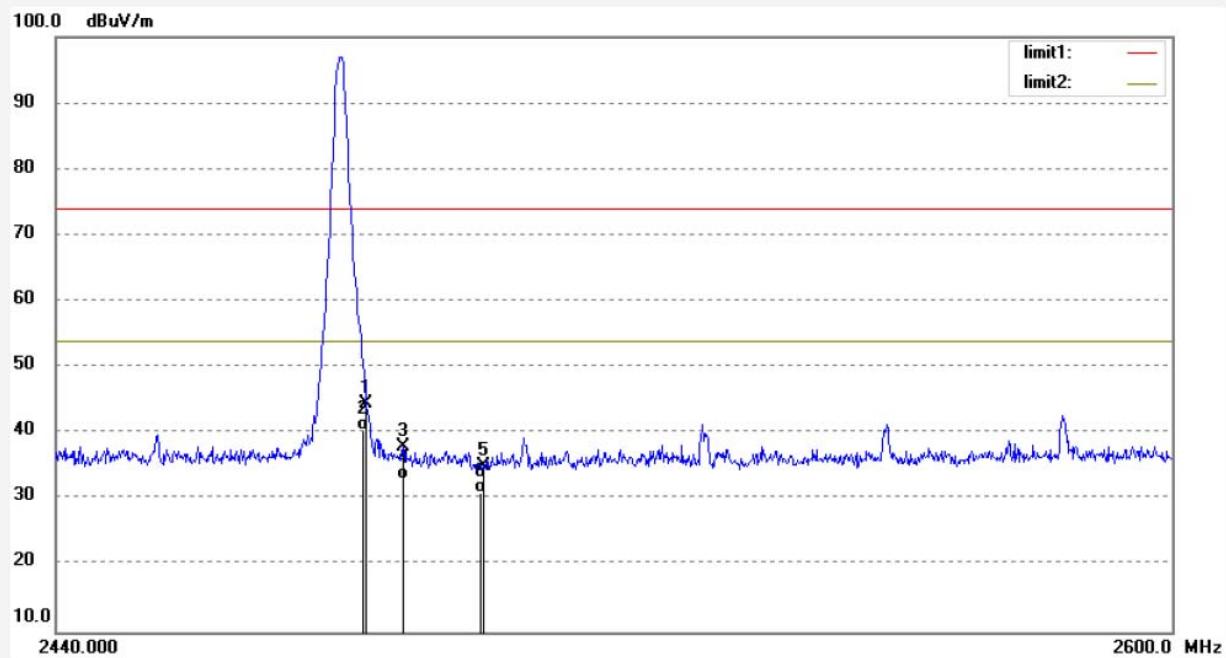
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2310.000	44.00	-7.81	36.19	74.00	-37.81	peak			
2	2310.000	39.68	-7.81	31.87	54.00	-22.13	AVG			
3	2373.318	52.73	-7.64	45.09	74.00	-28.91	peak			
4	2373.318	42.20	-7.64	34.56	54.00	-19.44	AVG			
5	2390.000	44.34	-7.53	36.81	74.00	-37.19	peak			
6	2390.000	39.17	-7.53	31.64	54.00	-22.36	AVG			


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Job No.: STAR #4317	Polarization: Horizontal
Standard: FCC PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2013-5-13
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 13:04:09
EUT: HP Wireless Portable Speaker S9500	Engineer Signature:
Mode: TX 2480MHz	Distance: 3m
Model: HP S9500	
Manufacturer: Zhao Ynag	
Note: Report No.:ATE20130913	



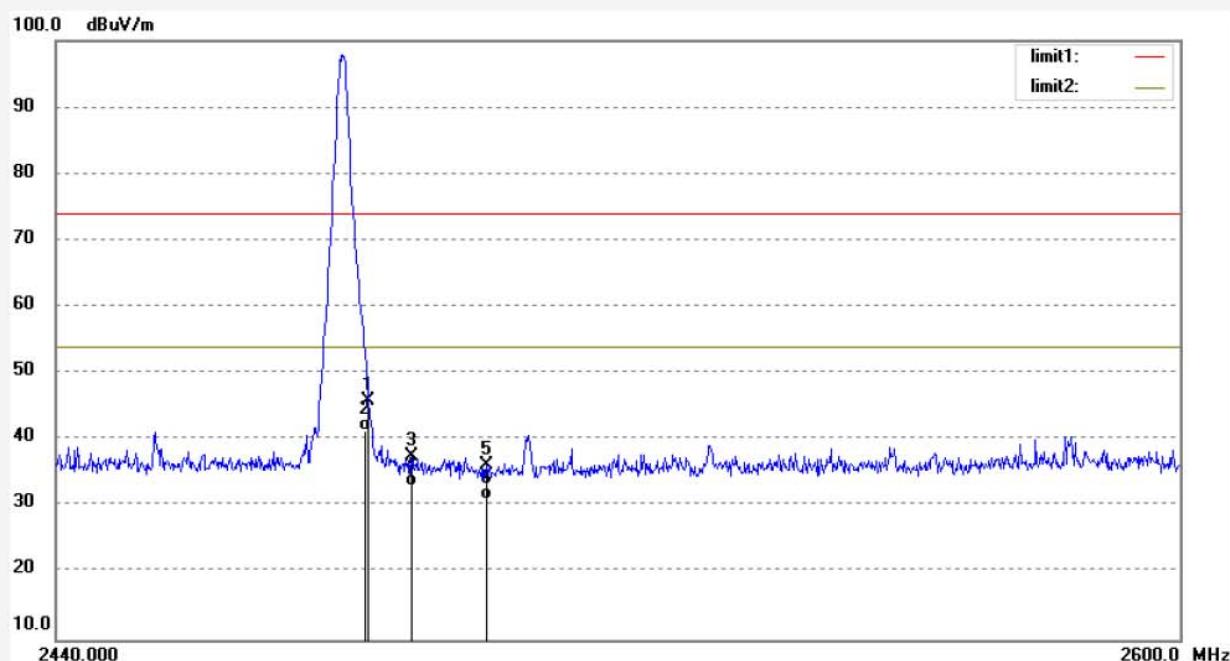
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	52.00	-7.37	44.63	74.00	-29.37	peak			
2	2483.500	47.85	-7.37	40.48	54.00	-13.52	AVG			
3	2488.774	45.30	-7.39	37.91	74.00	-36.09	peak			
4	2488.774	40.34	-7.39	32.95	54.00	-21.05	AVG			
5	2500.000	42.38	-7.40	34.98	74.00	-39.02	peak			
6	2500.000	38.36	-7.40	30.96	54.00	-23.04	AVG			


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 Fax:+86-0755-26503396

Job No.: STAR #4316	Polarization: Vertical
Standard: FCC PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2013-5-13
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 12:59:52
EUT: HP Wireless Portable Speaker S9500	Engineer Signature:
Mode: TX 2480MHz	Distance: 3m
Model: HP S9500	
Manufacturer: Zhao Ynag	
Note: Report No.:ATE20130913	



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	53.31	-7.37	45.94	74.00	-28.06	peak			
2	2483.500	48.69	-7.37	41.32	54.00	-12.68	AVG			
3	2489.566	45.00	-7.39	37.61	74.00	-36.39	peak			
4	2489.566	40.55	-7.39	33.16	54.00	-20.84	AVG			
5	2500.000	36.24	-7.40	36.24	74.00	-37.76	peak			
6	2500.000	30.93	-7.40	30.93	54.00	-23.07	AVG			

11.RADIATED SPURIOUS EMISSION TEST

11.1.Block Diagram of Test Setup

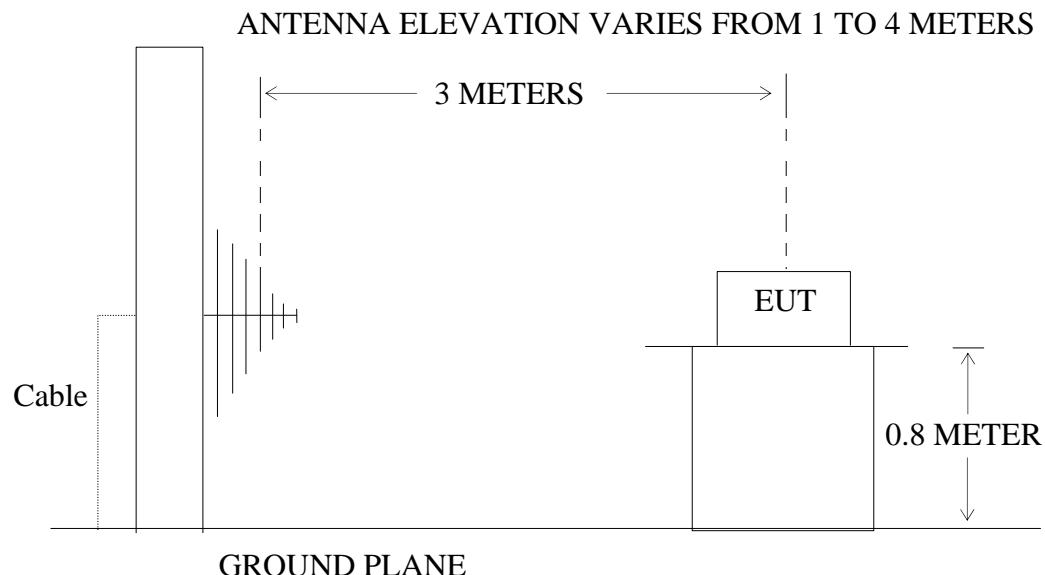
11.1.1.Block diagram of connection between the EUT and simulators



Setup: Transmitting mode

(EUT: HP Wireless Portable Speaker S9500)

11.1.2.Semi-Anechoic Chamber Test Setup Diagram



(EUT: HP Wireless Portable Speaker S9500)

11.2.The Limit For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. 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).

11.3.Restricted bands of operation

11.3.1.FCC Part 15.205 Restricted bands of operation

- (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			

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

²Above 38.6

- (b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

11.4.Configuration of EUT on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

11.4.1.HP Wireless Portable Speaker S9500 (EUT)

Model Number	:	HP S9500
Serial Number	:	N/A
Manufacturer	:	Zhao Yang Elec.(Shenzhen) Co., Ltd.

11.5.Operating Condition of EUT

11.5.1.Setup the EUT and simulator as shown as Section 11.1.

11.5.2.Turn on the power of all equipment.

11.5.3.Let the EUT work in TX (Hopping off) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, 2480MHz TX frequency to transmit.

11.6.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2009 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

The bandwidth of test receiver is set at 9kHz in below 30MHz. and set at 120kHz in 30-1000MHz, and 1MHz in above 1000MHz.

The frequency range from 9kHz to 25GHz is checked.

The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector. The field strength is calculated by adding the antenna factor, and cable loss, and subtracting the amplifier gain from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

Where Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

**11.7.The Field Strength of Radiation Emission Measurement Results
PASS.**

Date of Test:	May 9, 2013	Temperature:	25°C
EUT:	HP Wireless Portable Speaker S9500	Humidity:	50%
Model No.:	HP S9500	Power Supply:	AC 120V/60HZ
Test Mode:	TX (2402MHz)	Test Engineer:	Apple

For Below 30MHz

Frequency (MHz)	Reading (dB μ V/m)	Factor(dB) Corr.	Result	Limit	Margin	Polarization
			(dB μ V/m)	QP	QP	
-	-	-	-	-	-	X
-	-	-	-	-	-	Y
-	-	-	-	-	-	Z

For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dB μ V/m)	Factor Corr. (dB)	Result	Limit	Margin	Polarization
			(dB μ V/m)	QP	QP	
157.5588	54.33	-21.37	32.96	43.50	-10.54	Vertical
202.8103	57.14	-20.61	36.53	43.50	-6.97	Vertical
312.1792	45.27	-17.04	28.23	46.00	-17.77	Vertical
132.2204	54.16	-24.13	30.03	43.50	-13.47	Horizontal
204.2375	55.33	-20.09	35.24	43.50	-8.26	Horizontal
303.5437	56.74	-17.79	38.95	46.00	-7.05	Horizontal

For 1GHz-25GHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequenc y (MHz)	Reading(dB μ V/m)		Factor Corr. (dB)	Result(dB μ V/m)		Limit(dB μ V/m)		Margin(dB μ V/m)		Polarizati on
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
4804.110	47.47	51.47	-1.59	45.88	59.88	54.00	74.00	-8.12	-24.12	Vertical
4804.110	47.98	51.88	-1.59	46.39	50.29	54.00	74.00	-7.61	-23.71	Horizontal

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

2. *: Denotes restricted band of operation.

3. The fundamental radiated emissions were reduced by Band Reject Filter in the attached plots.

Date of Test:	May 9, 2013	Temperature:	25°C
EUT:	HP Wireless Portable Speaker S9500	Humidity:	50%
Model No.:	HP S9500	Power Supply:	AC 120V/60HZ
Test Mode:	TX (2441MHz)	Test Engineer:	Apple

For Below 30MHz

Frequency (MHz)	Reading (dB μ V/m)	Factor(dB) Corr.	Result	Limit	Margin	Polarization
			QP	QP	QP	
-	-	-	-	-	-	X
-	-	-	-	-	-	Y
-	-	-	-	-	-	Z

For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading (dB μ V/m)	Factor Corr. (dB)	Result	Limit	Margin	Polarization
			QP	QP	QP	
147.9214	56.70	-21.60	35.10	43.50	-8.40	Vertical
202.8103	55.20	-20.61	34.59	43.50	-8.91	Vertical
322.1886	49.35	-16.83	32.52	46.00	-13.48	Vertical
204.9551	57.40	-20.05	37.35	43.50	-6.15	Horizontal
302.4812	54.33	-17.81	36.52	46.00	-9.48	Horizontal
443.2943	42.51	-14.83	27.68	46.00	-18.32	Horizontal

For 1GHz-25GHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequenc y (MHz)	Reading(dB μ V/m)		Factor Corr. (dB)	Result(dB μ V/m)		Limit(dB μ V/m)		Margin(dB μ V/m)		Polarizati on
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
4888.151	48.50	51.39	-1.33	47.17	50.06	54.00	74.00	-6.83	-23.94	Vertical
4888.151	47.80	51.66	-1.33	46.47	50.33	54.00	74.00	-7.53	-3.67	Horizontal

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.**2. *: Denotes restricted band of operation.****3. The fundamental radiated emissions were reduced by Band Reject Filter in the attached plots.**

Date of Test:	May 9, 2013	Temperature:	25°C
EUT:	HP Wireless Portable Speaker S9500	Humidity:	50%
Model No.:	HP S9500	Power Supply:	AC 120V/60HZ
Test Mode:	TX (2480MHz)	Test Engineer:	Apple

For Below 30MHz

Frequency (MHz)	Reading (dB μ V/m)	Factor(dB) Corr.	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
-	-	-	-	-	-	X
-	-	-	-	-	-	Y
-	-	-	-	-	-	Z

For 30MHz-1000MHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading	Factor Corr.	Result	Limit	Margin	Polarization
	(dB μ V/m)		(dB)	(dB μ V/m)	(dB μ V/m)	
QP	QP	QP	QP	QP	QP	QP
147.9214	55.69	-21.60	34.09	43.50	-9.41	Vertical
202.8103	55.14	-20.61	34.53	43.50	-8.97	Vertical
298.2681	51.25	-17.37	33.88	46.00	-12.12	Vertical
173.2050	52.67	-22.49	30.18	43.50	-13.32	Horizontal
202.8103	57.20	-20.13	37.07	43.50	-6.43	Horizontal
304.6099	54.33	-17.76	36.57	46.00	-9.43	Horizontal

For 1GHz-25GHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading(dB μ V/m)		Factor Corr. (dB)	Result(dB μ V/m)		Limit(dB μ V/m)		Margin(dB μ V/m)		Polarizati on
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
4959.307	45.80	49.98	-1.12	44.68	48.86	54.00	74.00	-9.32	-5.14	Vertical
4959.307	44.88	48.06	-1.12	43.76	46.94	54.00	74.00	-10.24	-7.06	Horizontal

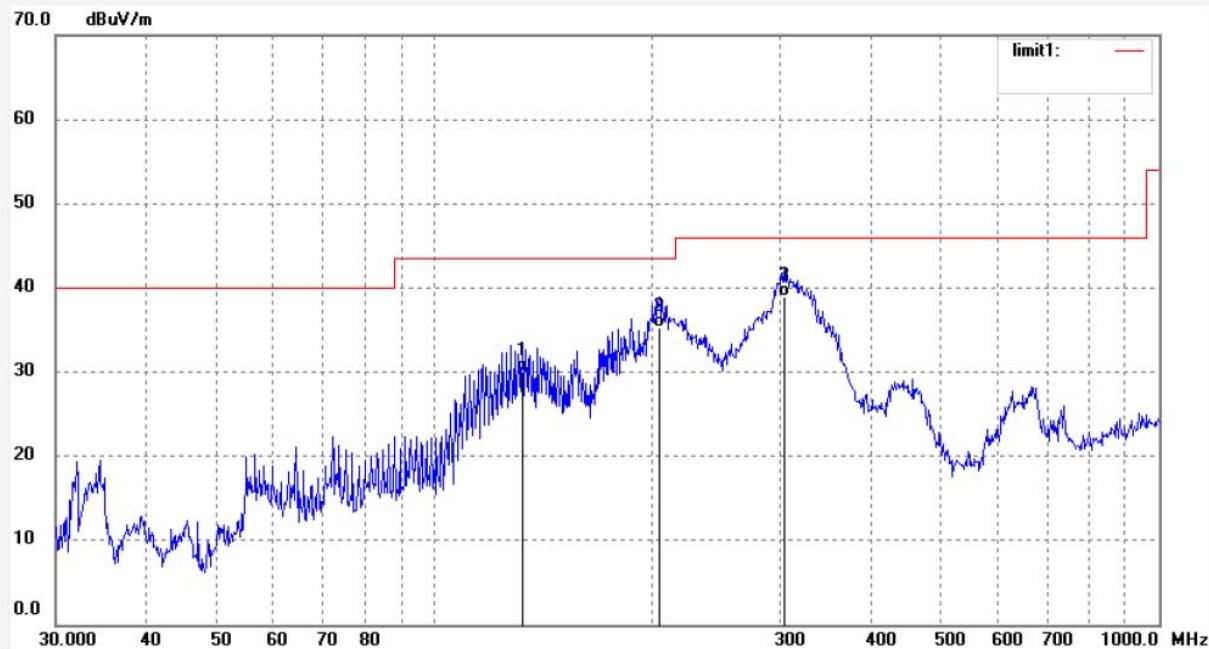
Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.**2. *: Denotes restricted band of operation.****3. The fundamental radiated emissions were reduced by Band Reject Filter in the attached plots.**


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Site: 1# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: star #732	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 13/05/09/
Temp.(C)/Hum.(%) 26 C / 55 %	Time: 8/43/23
EUT: HP Wireless Portable Speaker S9500	Engineer Signature: STAR
Mode: TX 2402MHz	Distance: 3m
Model: HP S9500	
Manufacturer: Zhao Yang	
Note: Report No.:ATE20130913	



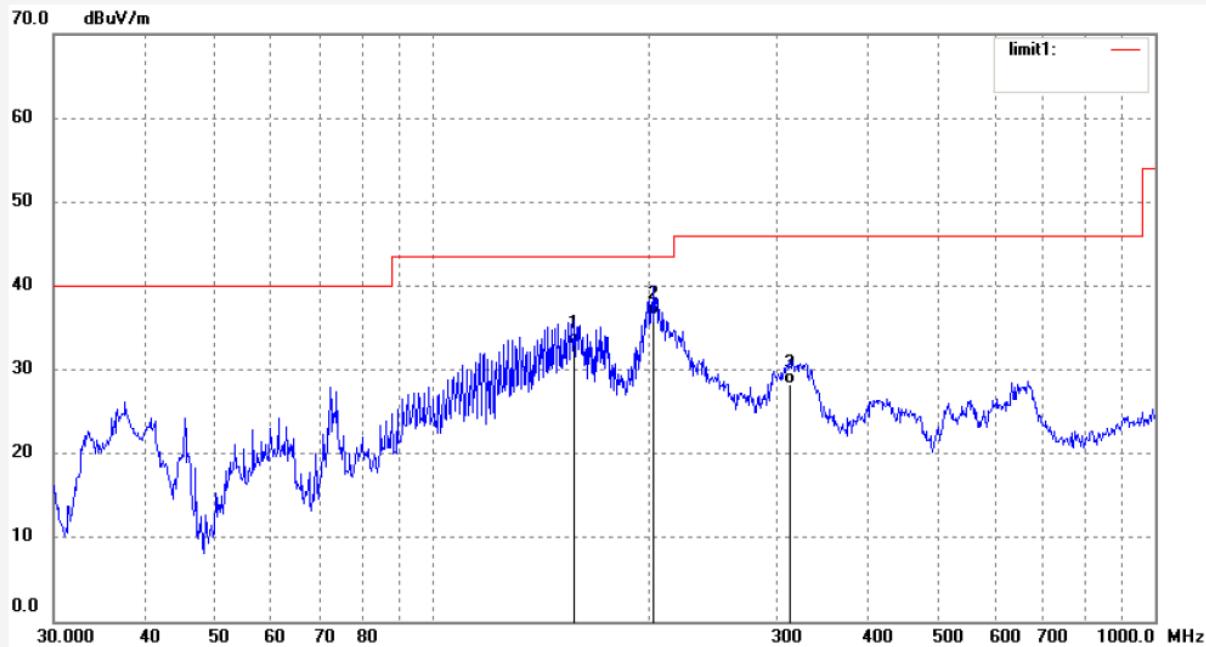
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	132.2204	54.16	-24.13	30.03	43.50	-13.47	QP			
2	204.2375	55.33	-20.09	35.24	43.50	-8.26	QP			
3	303.5437	56.74	-17.79	38.95	46.00	-7.05	QP			


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 Fax:+86-0755-26503396

Job No.: star #733	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 13/05/09/
Temp.(C)/Hum.(%) 26 C / 55 %	Time: 8/44/56
EUT: HP Wireless Portable Speaker S9500	Engineer Signature: STAR
Mode: TX 2402MHz	Distance: 3m
Model: HP S9500	
Manufacturer: Zhao Yang	
Note: Report No.:ATE20130913	



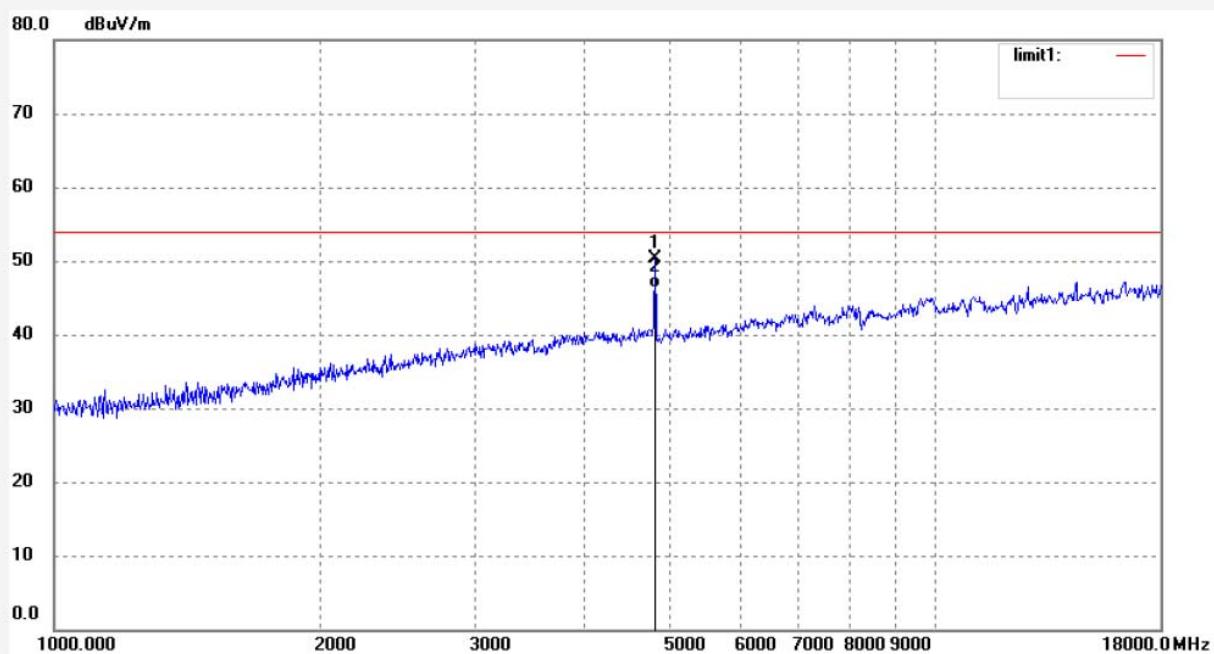
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	157.5588	54.33	-21.37	32.96	43.50	-10.54	QP			
2	202.8103	57.14	-20.61	36.53	43.50	-6.97	QP			
3	312.1792	45.27	-17.04	28.23	46.00	-17.77	QP			


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 Site: 1# Chamber
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 Fax:+86-0755-26503396

Job No.: STAR #815	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2013/05/10
Temp.(C)/Hum.(%) 26 C / 55 %	Time: 17:20:35
EUT: HP Wireless Portable Speaker S9500	Engineer Signature: STAR
Mode: TX 2402MHz	Distance: 3m
Model: HP S9500	
Manufacturer: Zhao Yang	
Note: Report No.:ATE20130913	



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4804.110	51.88	-1.59	50.29	54.00	-3.71	peak			
2	4804.110	47.98	-1.59	46.39	54.00	-7.61	AVG			


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Fax:+86-0755-26503396

Job No.: STAR #814

Polarization: Vertical

Standard: FCC Class B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2013/05/10

Temp.(C)/Hum.(%) 26 C / 55 %

Time: 17:16:57

EUT: HP Wireless Portable Speaker S9500

Engineer Signature: STAR

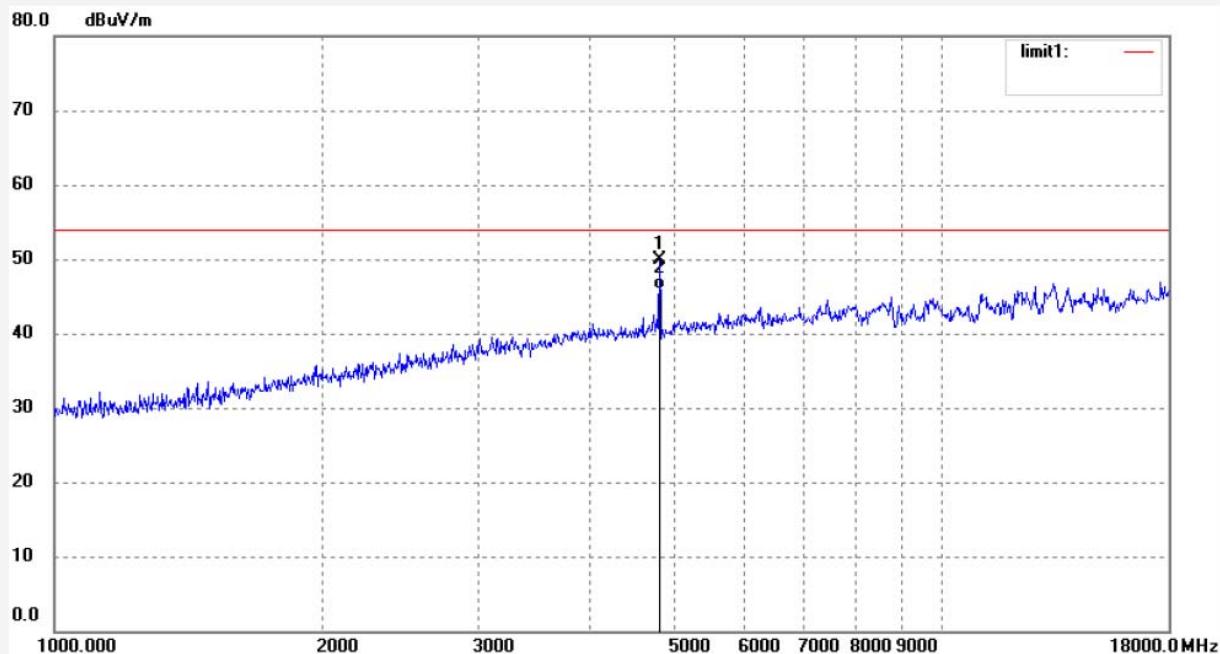
Mode: TX 2402MHz

Distance: 3m

Model: HP S9500

Manufacturer: Zhao Yang

Note: Report No.:ATE20130913



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4804.110	51.47	-1.59	49.88	54.00	-4.12	peak			
2	4804.110	47.47	-1.59	45.88	54.00	-8.12	AVG			


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Site: 2# Chamber
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Fax:+86-0755-26503396

Job No.: star #4249

Polarization: Horizontal

Standard: FCC Class B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 13/05/10/

Temp.(C)/Hum.(%) 25 C / 55 %

Time: 9/16/00

EUT: HP Wireless Portable Speaker S9500

Engineer Signature:

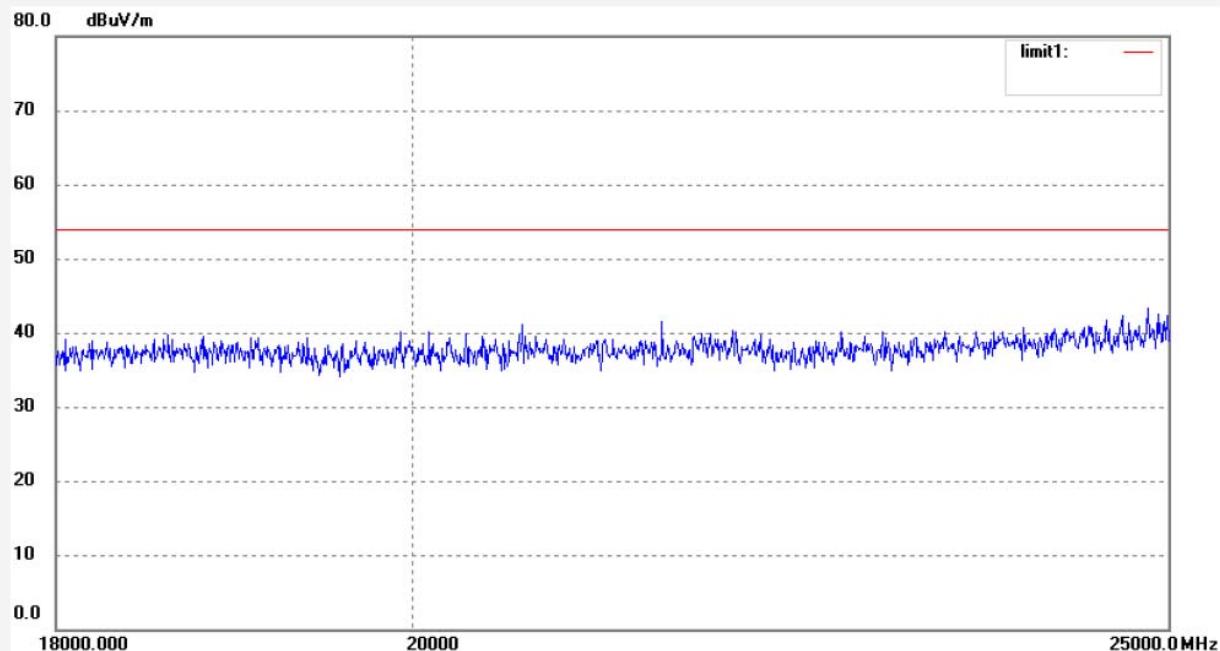
Mode: TX 2402MHz

Distance: 3m

Model: HP S9500

Manufacturer: Zhao Ynag

Note: Report No.:ATE20130913



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
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Job No.: star #4248

Polarization: Vertical

Standard: FCC Class B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 13/05/10/

Temp.(C)/Hum.(%) 25 C / 55 %

Time: 9/15/55

EUT: HP Wireless Portable Speaker S9500

Engineer Signature:

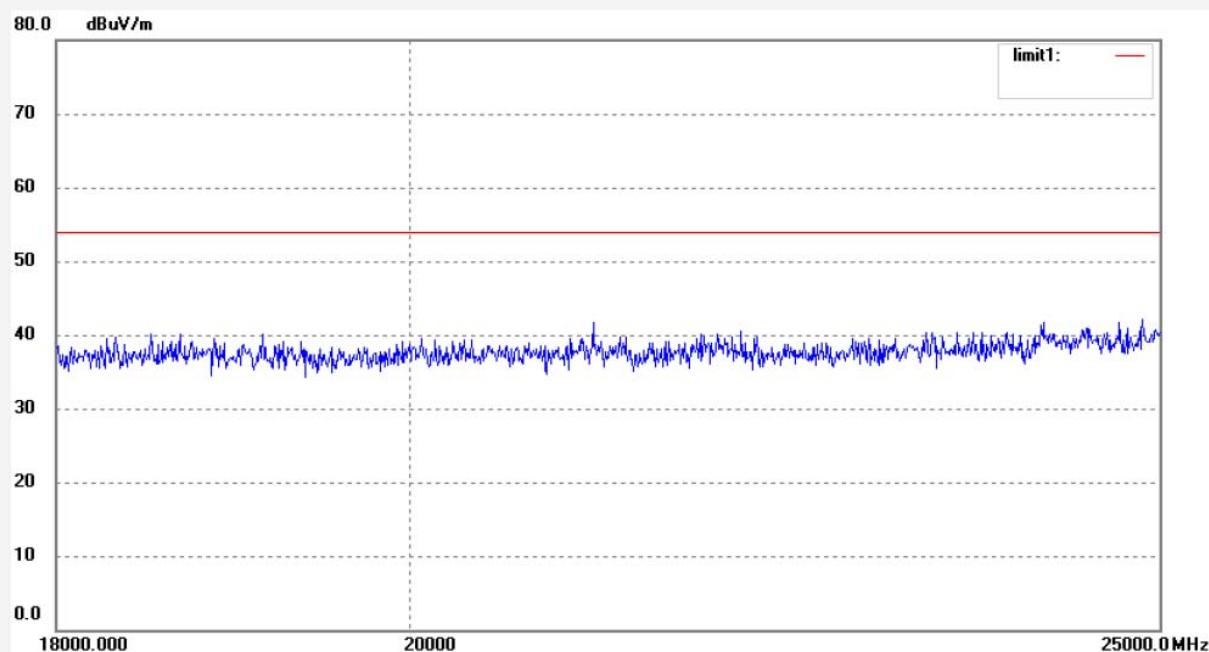
Mode: TX 2402MHz

Distance: 3m

Model: HP S9500

Manufacturer: Zhao Ynag

Note: Report No.:ATE20130913



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
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 Site: 1# Chamber
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 Fax:+86-0755-26503396

Job No.: star #735

Polarization: Horizontal

Standard: FCC Class B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 13/05/09/

Temp. (C)/Hum.(%) 26 C / 55 %

Time: 8/49/05

EUT: HP Wireless Portable Speaker S9500

Engineer Signature: STAR

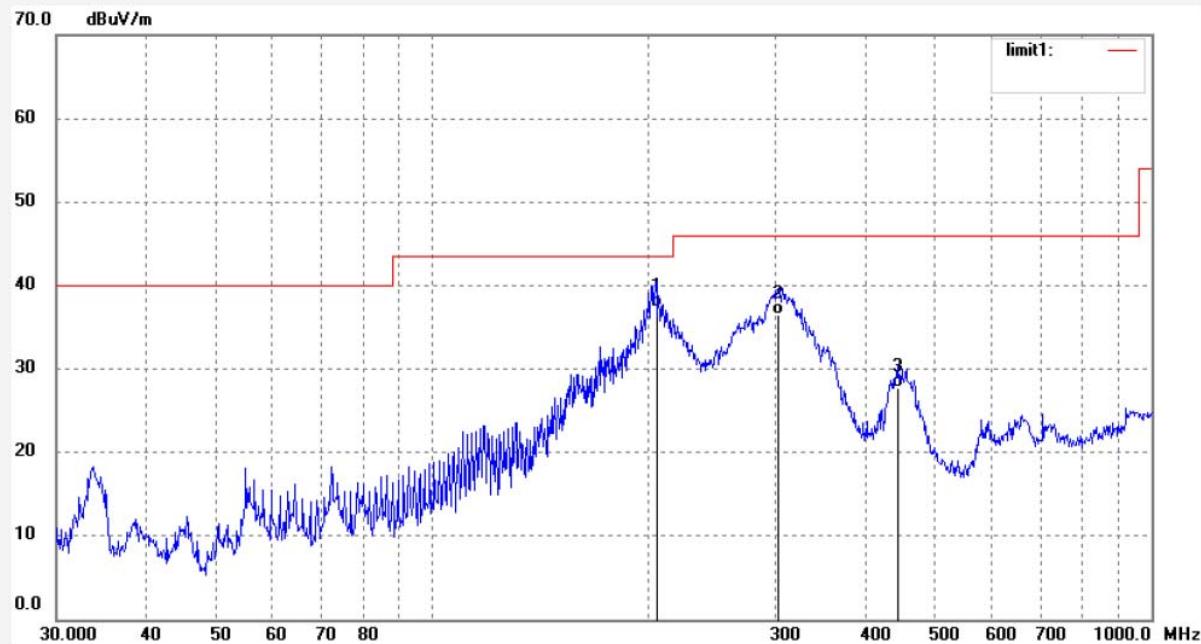
Mode: TX 2441MHz

Distance: 3m

Model: HP S9500

Manufacturer: Zhao Yang

Note: Report No.:ATE20130913



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	204.9551	57.40	-20.05	37.35	43.50	-6.15	QP			
2	302.4812	54.33	-17.81	36.52	46.00	-9.48	QP			
3	443.2943	42.51	-14.83	27.68	46.00	-18.32	QP			


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 Fax:+86-0755-26503396

Job No.: star #734

Polarization: Vertical

Standard: FCC Class B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 13/05/09

Temp.(C)/Hum.(%) 26 C / 55 %

Time: 8/48/15

EUT: HP Wireless Portable Speaker S9500

Engineer Signature: STAR

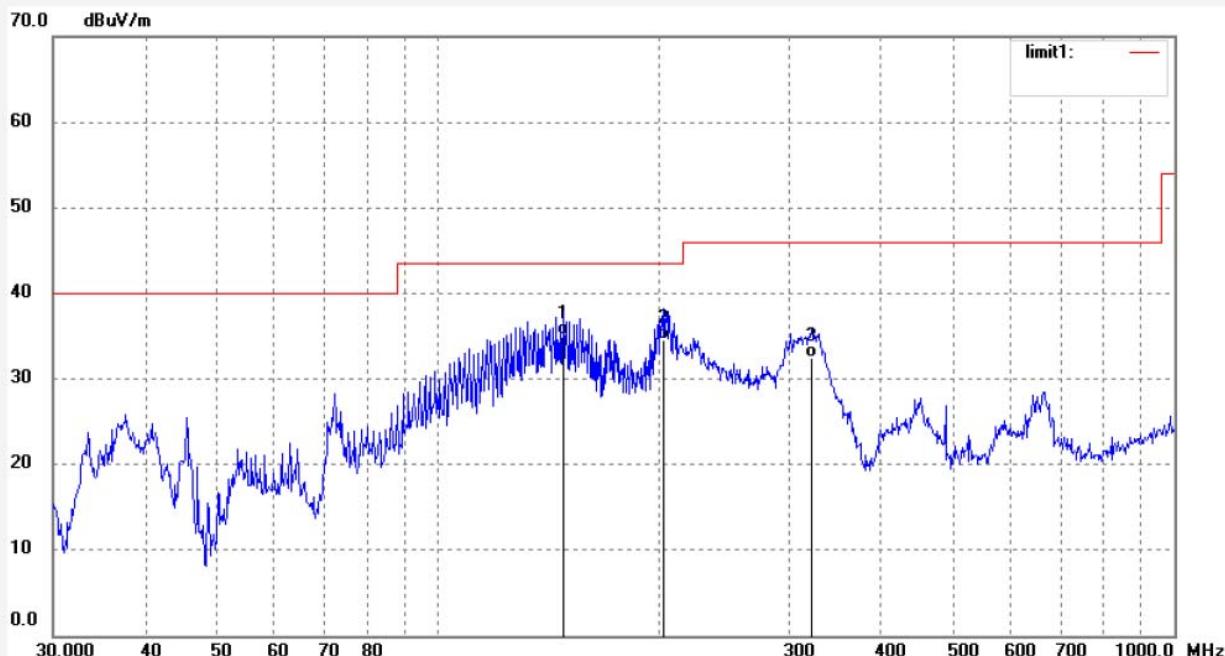
Mode: TX 2441MHz

Distance: 3m

Model: HP S9500

Manufacturer: Zhao Yang

Note: Report No.:ATE20130913



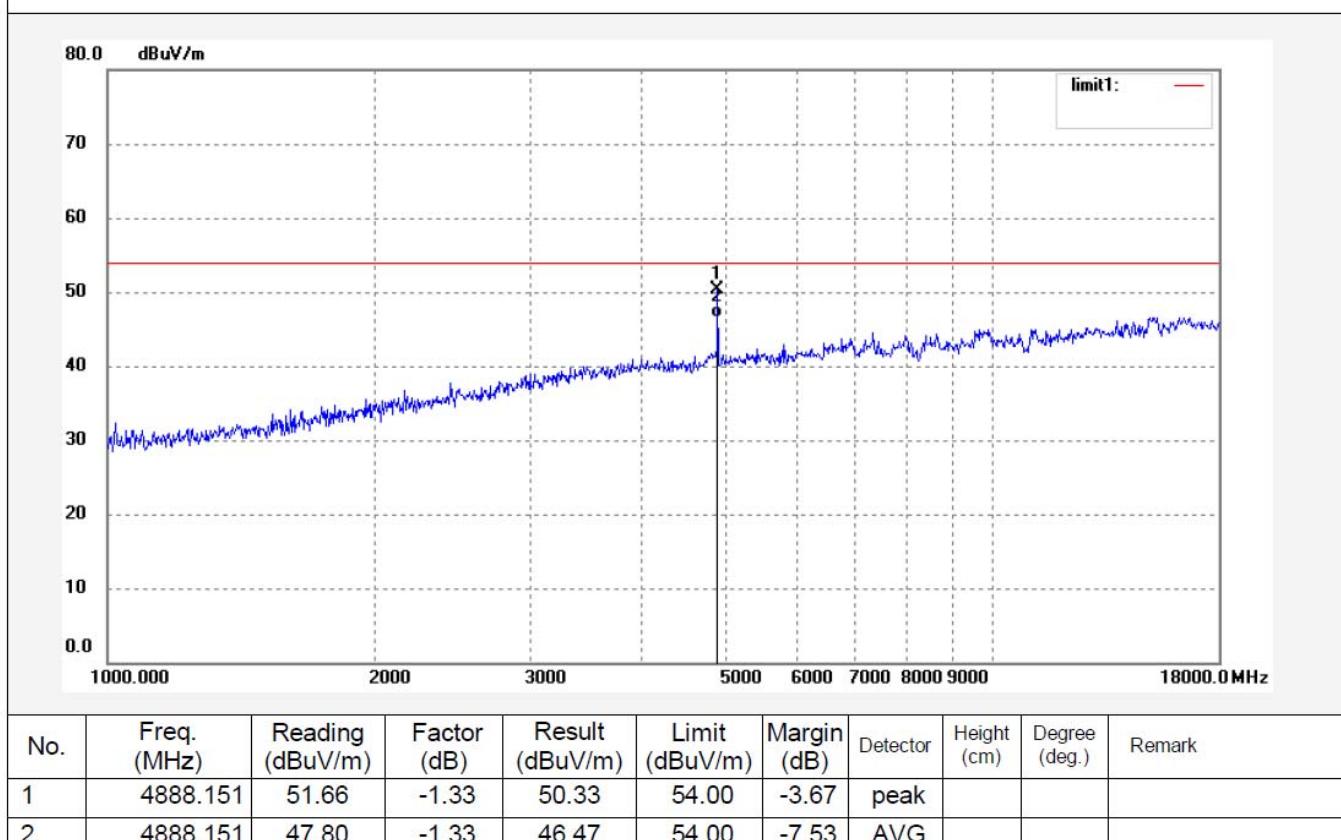
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	147.9214	56.70	-21.60	35.10	43.50	-8.40	QP			
2	202.8103	55.20	-20.61	34.59	43.50	-8.91	QP			
3	322.1886	49.35	-16.83	32.52	46.00	-13.48	QP			


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Site: 1# Chamber
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Fax:+86-0755-26503396

Job No.: STAR #812	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2013/05/10
Temp.(C)/Hum.(%) 26 C / 55 %	Time: 17:08:43
EUT: HP Wireless Portable Speaker S9500	Engineer Signature: STAR
Mode: TX 2441MHz	Distance: 3m
Model: HP S9500	
Manufacturer: Zhao Yang	
Note: Report No.:ATE20130913	




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Job No.: STAR #813

Polarization: Vertical

Standard: FCC Class B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2013/05/10

Temp.(C)/Hum.(%) 26 C / 55 %

Time: 17:12:54

EUT: HP Wireless Portable Speaker S9500

Engineer Signature: STAR

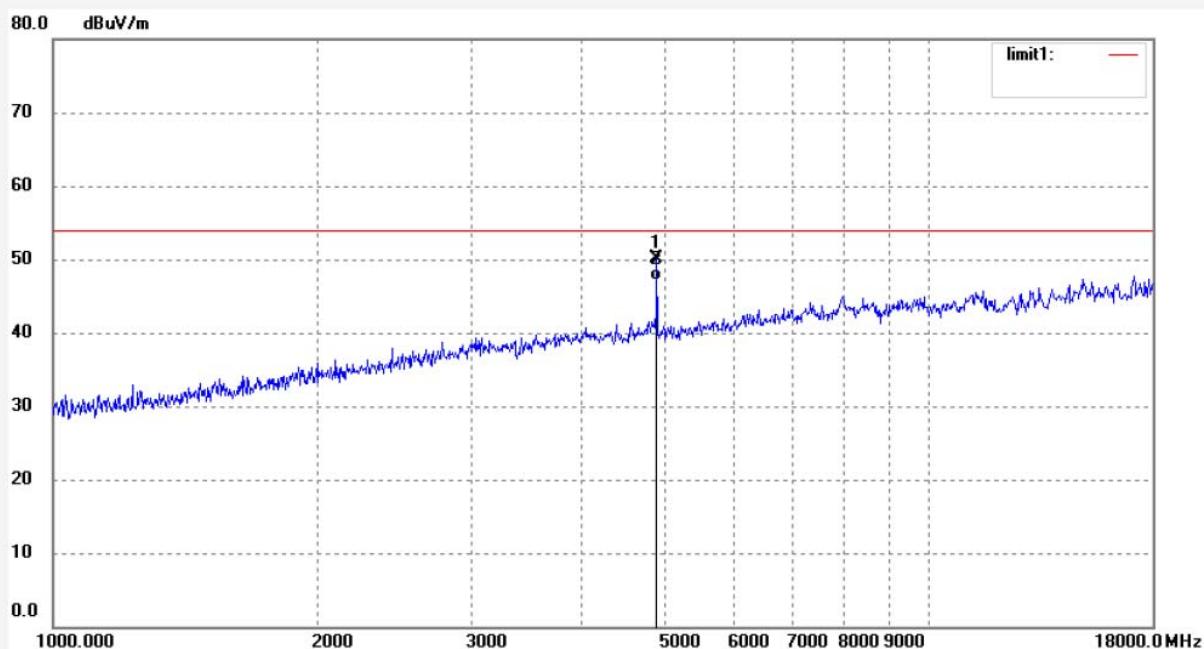
Mode: TX 2441MHz

Distance: 3m

Model: HP S9500

Manufacturer: Zhao Yang

Note: Report No.:ATE20130913



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4888.151	51.39	-1.33	50.06	54.00	-3.94	peak			
2	4888.151	48.50	-1.33	47.17	54.00	-6.83	AVG			


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 Site: 2# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

Job No.: star #4250

Polarization: Horizontal

Standard: FCC Class B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 13/05/10/

Temp.(C)/Hum.(%) 25 C / 55 %

Time: 9/16/06

EUT: HP Wireless Portable Speaker S9500

Engineer Signature:

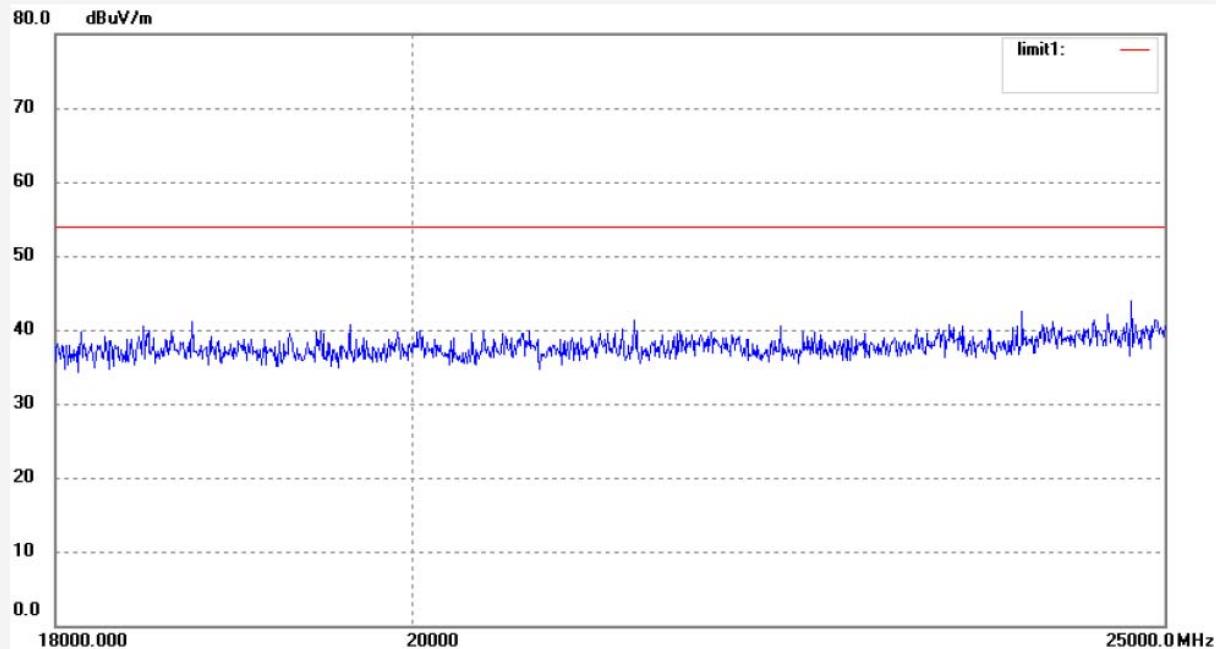
Mode: TX 2441MHz

Distance: 3m

Model: HP S9500

Manufacturer: Zhao Ynag

Note: Report No.:ATE20130913



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
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Fax:+86-0755-26503396

Job No.: star #4251

Polarization: Vertical

Standard: FCC Class B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 13/05/10/

Temp.(C)/Hum.(%) 25 C / 55 %

Time: 9/16/12

EUT: HP Wireless Portable Speaker S9500

Engineer Signature:

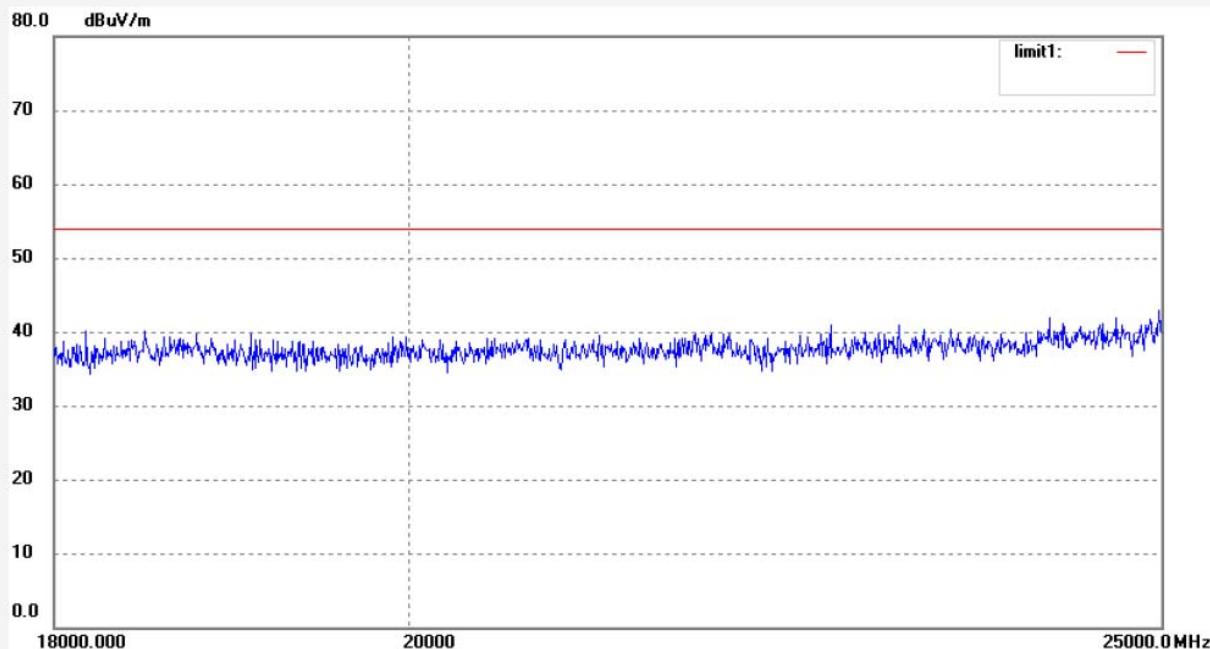
Mode: TX 2441MHz

Distance: 3m

Model: HP S9500

Manufacturer: Zhao Ynag

Note: Report No.:ATE20130913



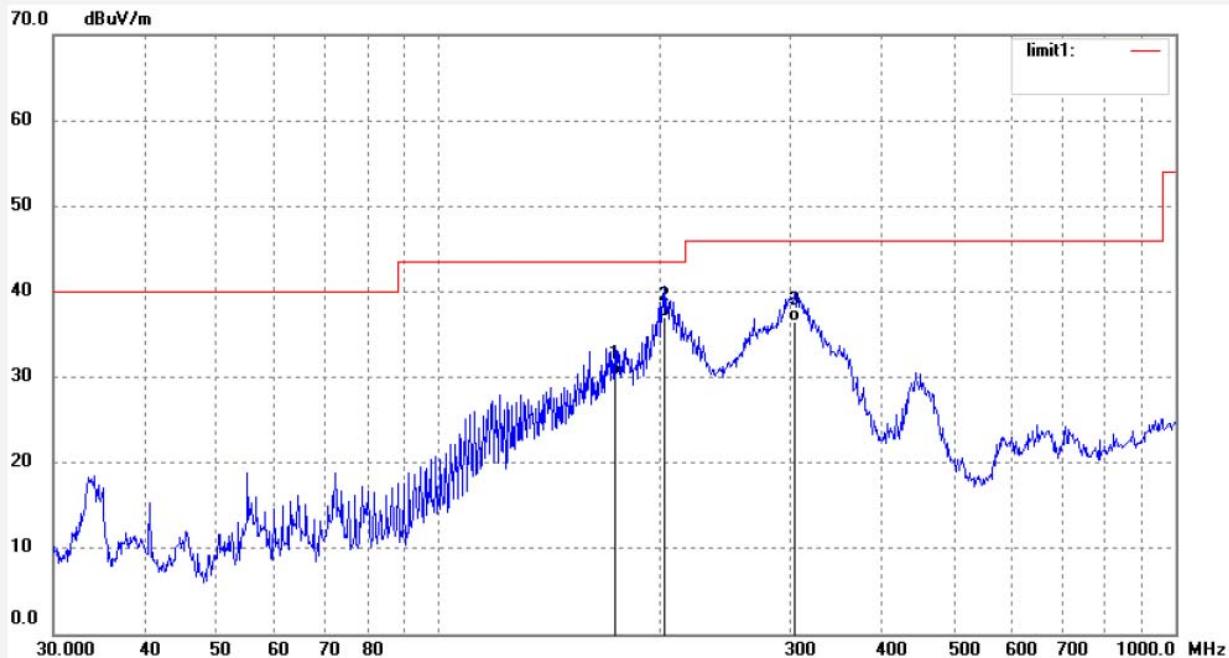
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 Site: 1# Chamber
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 Fax:+86-0755-26503396

Job No.:	star #736	Polarization:	Horizontal
Standard:	FCC Class B 3M Radiated	Power Source:	AC 120V/60Hz
Test item:	Radiation Test	Date:	13/05/09/
Temp.(C)/Hum.(%)	26 C / 55 %	Time:	8/50/10
EUT:	HP Wireless Portable Speaker S9500	Engineer Signature:	STAR
Mode:	TX 2480MHz	Distance:	3m
Model:	HP S9500		
Manufacturer:	Zhao Yang		
Note:	Report No.:ATE20130913		



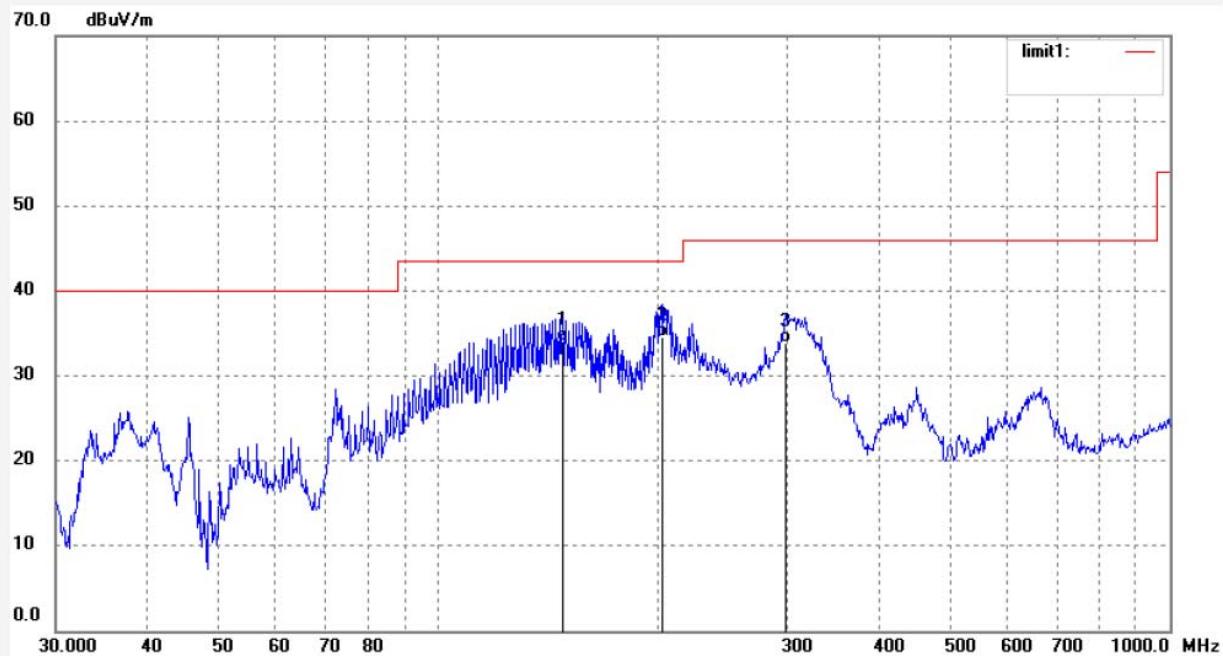
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	173.2050	52.67	-22.49	30.18	43.50	-13.32	QP			
2	202.8103	57.20	-20.13	37.07	43.50	-6.43	QP			
3	304.6099	54.33	-17.76	36.57	46.00	-9.43	QP			


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Fax:+86-0755-26503396

Job No.: star #737	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 13/05/09/
Temp.(C)/Hum.(%) 26 C / 55 %	Time: 8/51/24
EUT: HP Wireless Portable Speaker S9500	Engineer Signature: STAR
Mode: TX 2480MHz	Distance: 3m
Model: HP S9500	
Manufacturer: Zhao Yang	
Note: Report No.:ATE20130913	



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	147.9214	55.69	-21.60	34.09	43.50	-9.41	QP			
2	202.8103	55.14	-20.61	34.53	43.50	-8.97	QP			
3	298.2681	51.25	-17.37	33.88	46.00	-12.12	QP			


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Fax:+86-0755-26503396

Job No.: STAR #811

Polarization: Horizontal

Standard: FCC Class B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2013/05/10

Temp.(C)/Hum.(%) 26 C / 55 %

Time: 17:04:04

EUT: HP Wireless Portable Speaker S9500

Engineer Signature: STAR

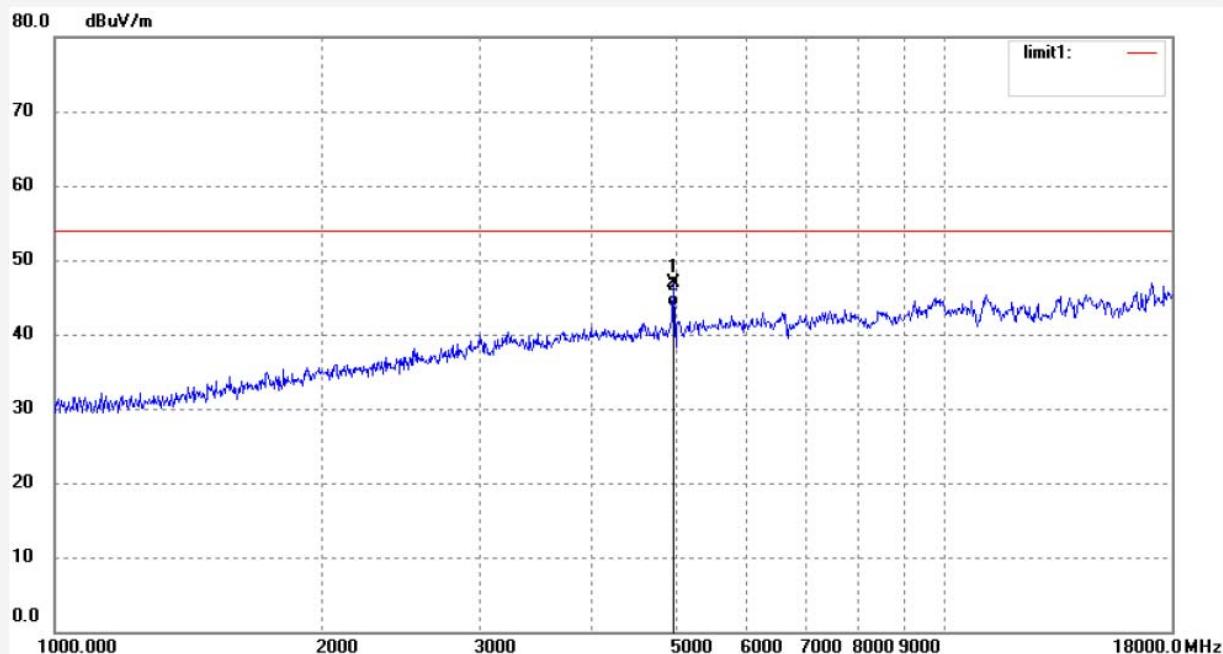
Mode: TX 2480MHz

Distance: 3m

Model: HP S9500

Manufacturer: Zhao Yang

Note: Report No.:ATE20130913



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4959.307	48.06	-1.12	46.94	54.00	-7.06	peak			
2	4959.307	44.88	-1.12	43.76	54.00	-10.24	AVG			


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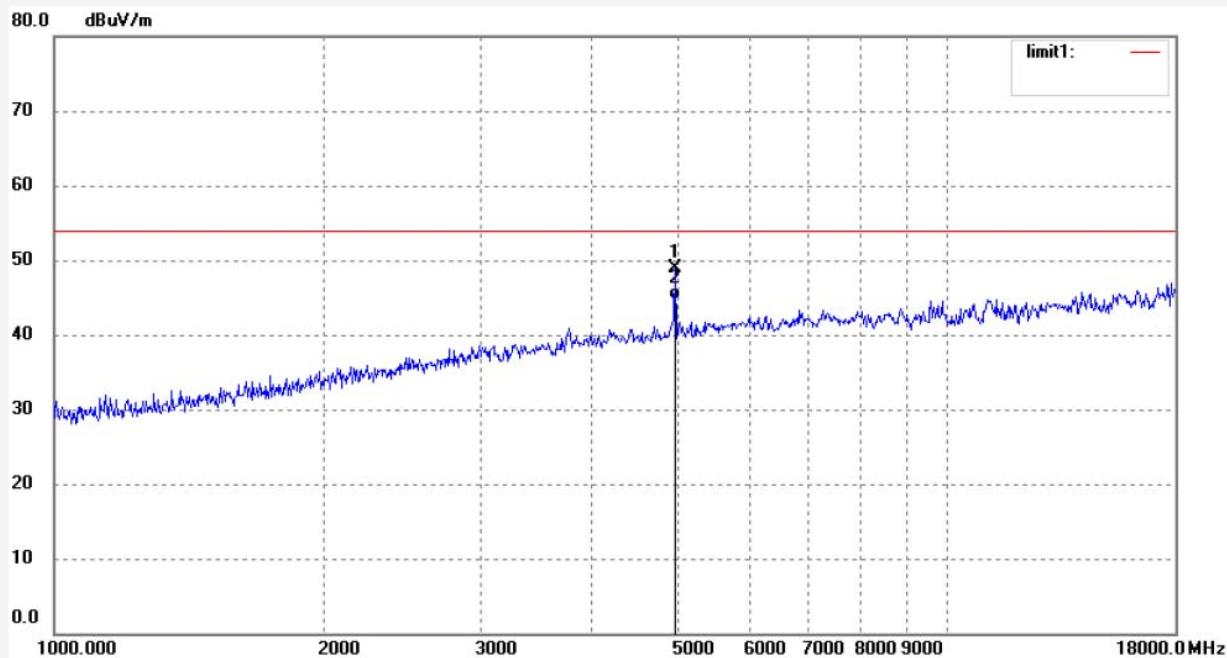
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 Site: 1# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

Job No.: STAR #810
 Standard: FCC Class B 3M Radiated
 Test item: Radiation Test
 Temp.(C)/Hum.(%) 26 C / 55 %
 EUT: HP Wireless Portable Speaker S9500
 Mode: TX 2480MHz
 Model: HP S9500
 Manufacturer: Zhao Yang

Polarization: Vertical
 Power Source: AC 120V/60Hz
 Date: 2013/05/10
 Time: 17:01:32
 Engineer Signature: STAR
 Distance: 3m

Note: Report No.:ATE20130913



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4959.307	49.98	-1.12	48.86	54.00	-5.14	peak			
2	4959.307	45.80	-1.12	44.68	54.00	-9.32	AVG			

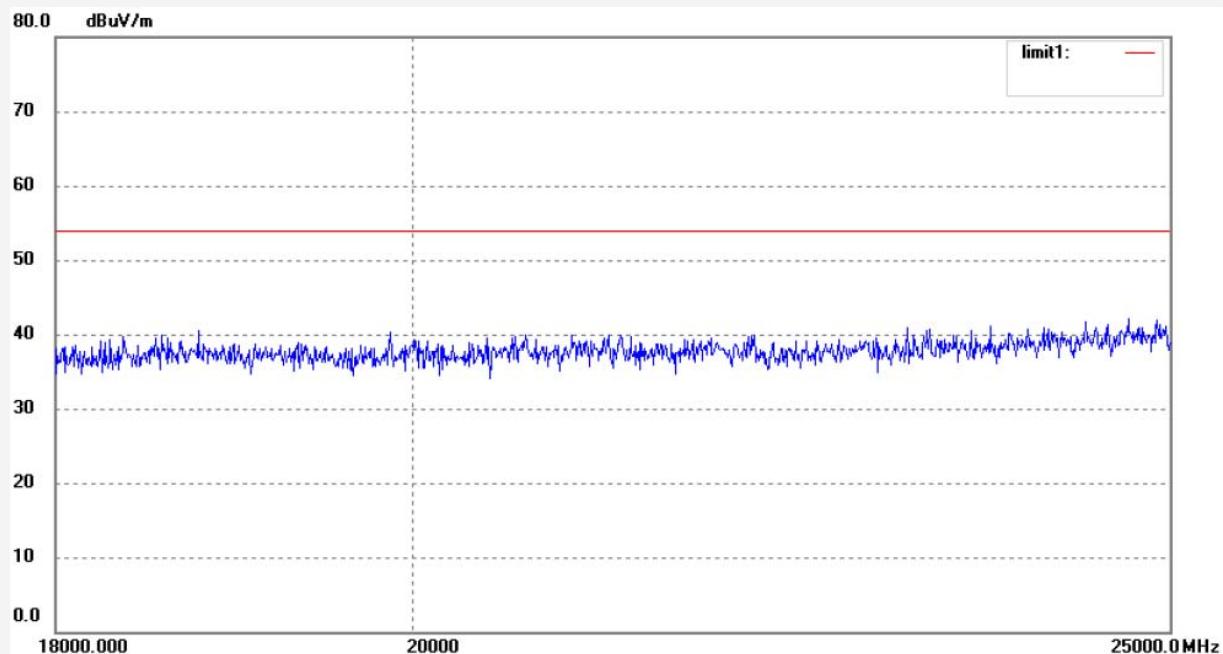

ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg.A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: star #4253	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 13/05/10/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 9/16/31
EUT: HP Wireless Portable Speaker S9500	Engineer Signature:
Mode: TX 2480MHz	Distance: 3m
Model: HP S9500	
Manufacturer: Zhao Ynag	

Note: Report No.:ATE20130913



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark

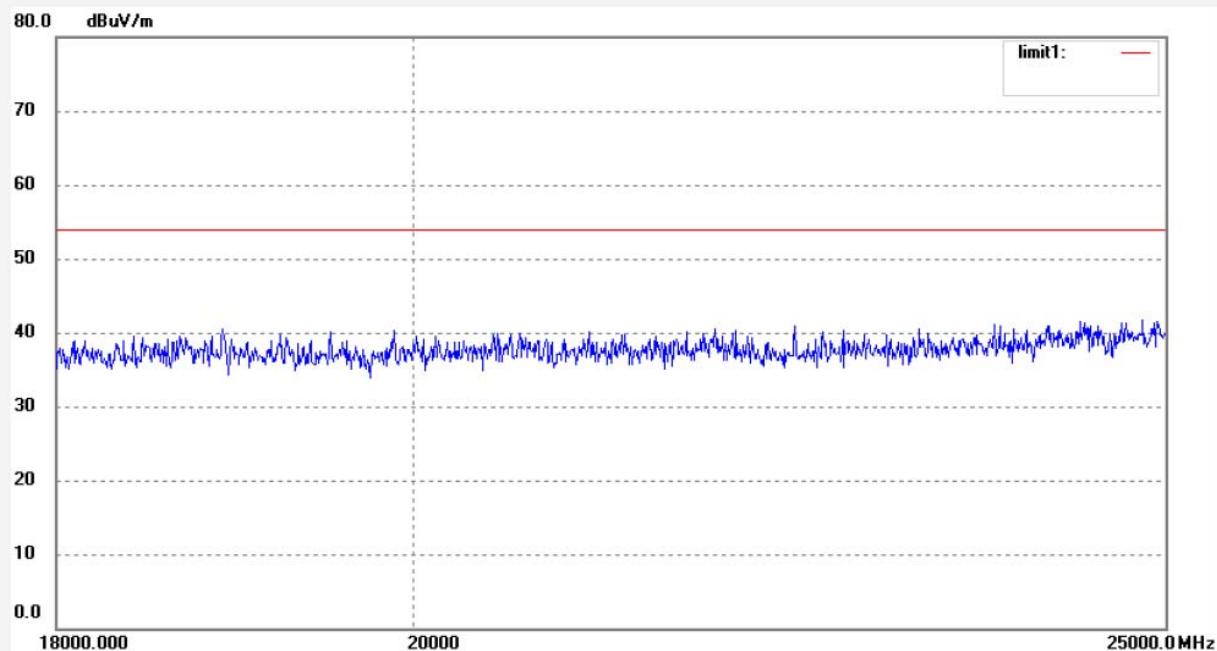

ACCURATE TECHNOLOGY CO., LTD.

 F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
 Science & Industry Park,Nanshan Shenzhen,P.R.China

 Site: 2# Chamber
 Tel:+86-0755-26503290
 Fax:+86-0755-26503396

Job No.: star #4252	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 13/05/10/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 9/16/17
EUT: HP Wireless Portable Speaker S9500	Engineer Signature:
Mode: TX 2480MHz	Distance: 3m
Model: HP S9500	
Manufacturer: Zhao Ynag	

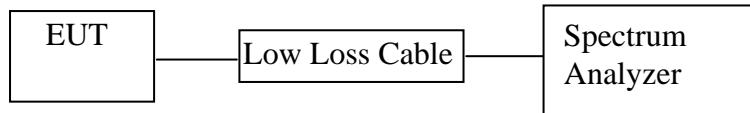
Note: Report No.:ATE20130913



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
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12.CONDUCTED SPURIOUS EMISSION COMPLIANCE TEST

12.1.Block Diagram of Test Setup



(EUT: HP Wireless Portable Speaker S9500)

12.2.The Requirement For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. 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).

12.3.EUT Configuration on Measurement

The following equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

12.3.1.HP Wireless Portable Speaker S9500 (EUT)

Model Number	:	HP S9500
Serial Number	:	N/A
Manufacturer	:	Zhao Yang Elec.(Shenzhen) Co., Ltd.

12.4.Operating Condition of EUT

12.4.1.Setup the EUT and simulator as shown as Section 12.1.

12.4.2.Turn on the power of all equipment.

12.4.3.Let the EUT work in TX (Hopping off) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, 2480MHz TX frequency to transmit.

12.5.Test Procedure

12.5.1.The transmitter output was connected to the spectrum analyzer via a low loss cable.

12.5.2.Set RBW of spectrum analyzer to 100kHz and VBW to 300kHz (below 1GHz).

Set RBW of spectrum analyzer to 1MHz and VBW to 3MHz (above 1GHz).

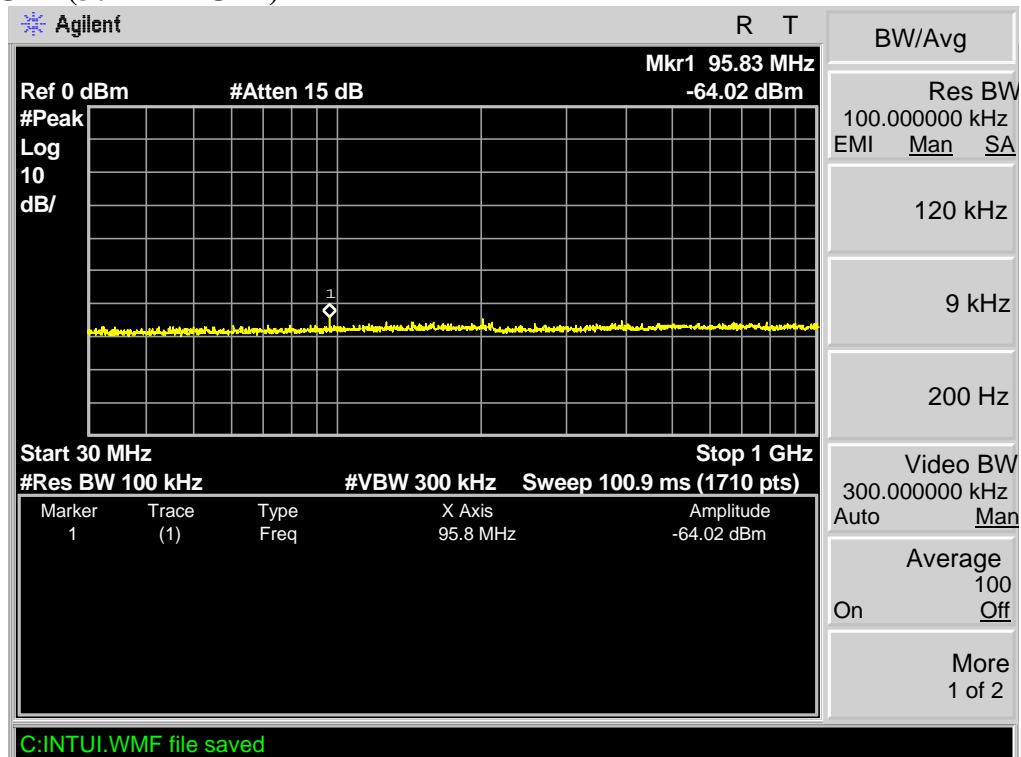
12.5.3.The Conducted Spurious Emission was measured and recorded.

12.6.Test Result

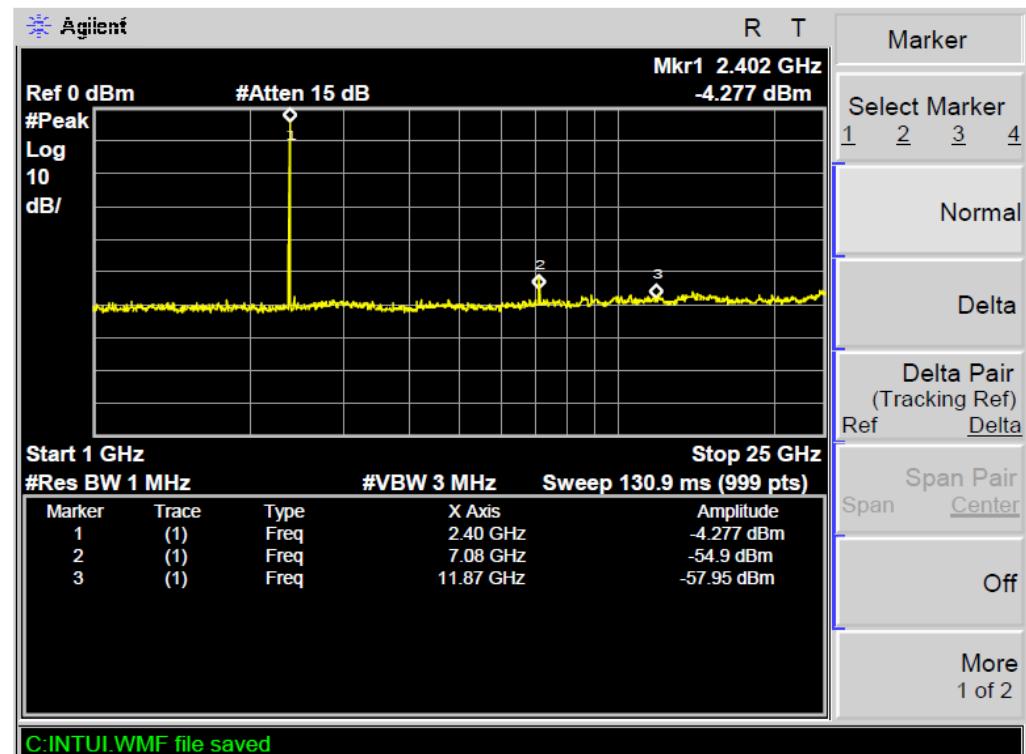
Pass.

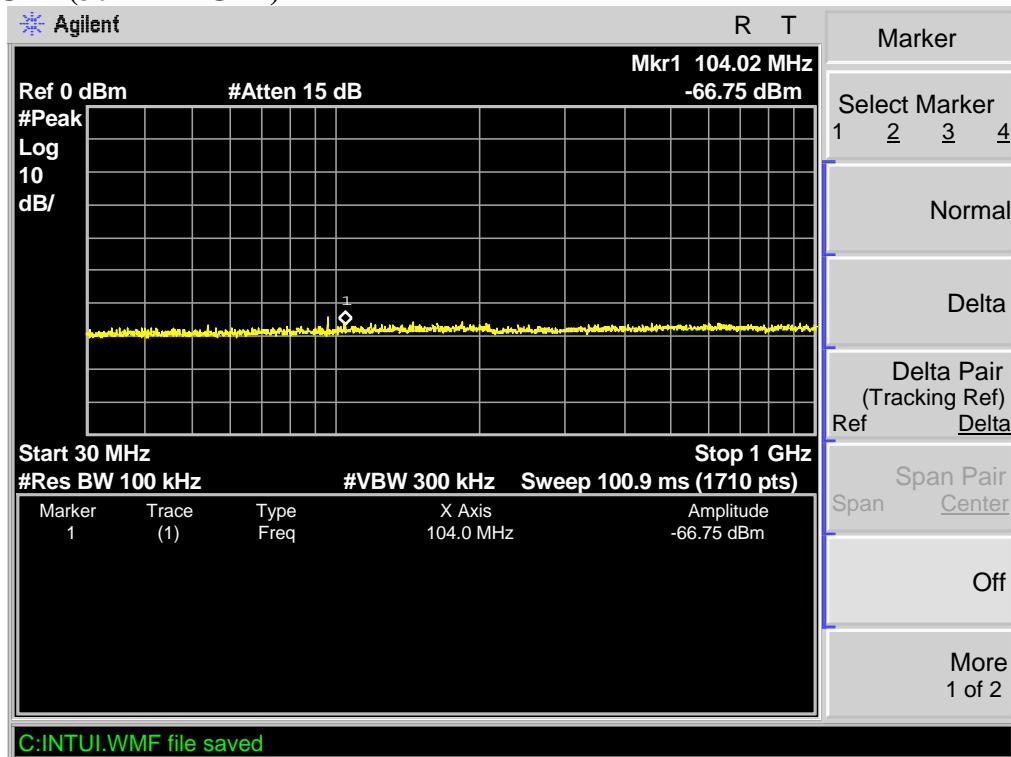
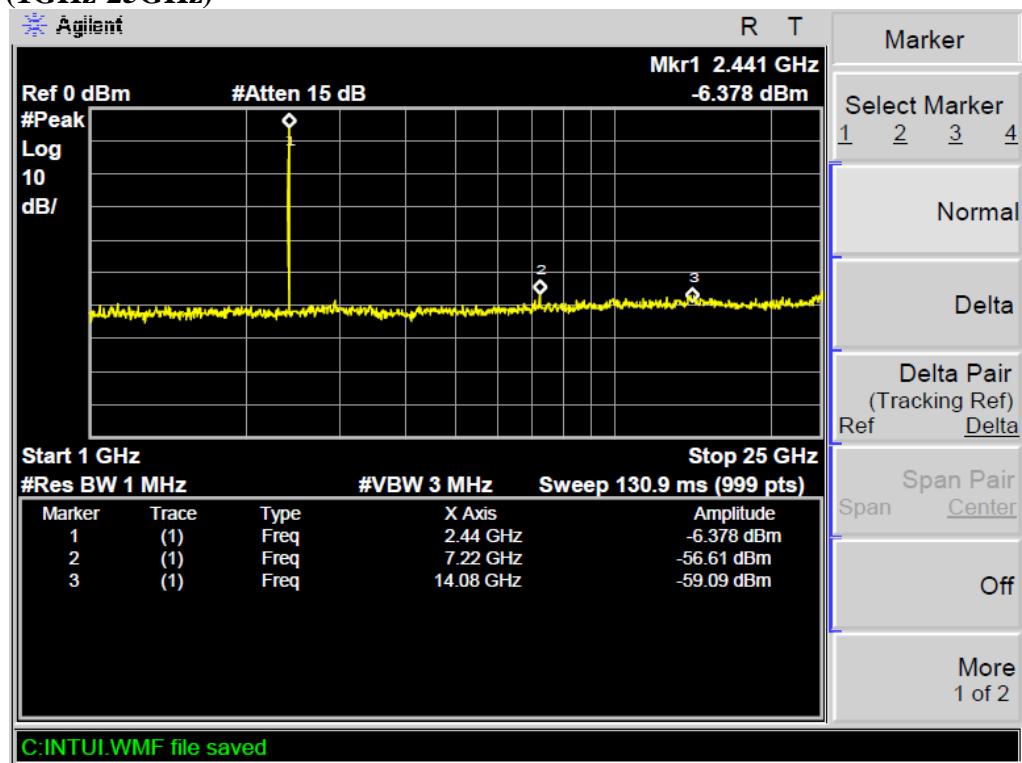
The spectrum analyzer plots are attached as below.

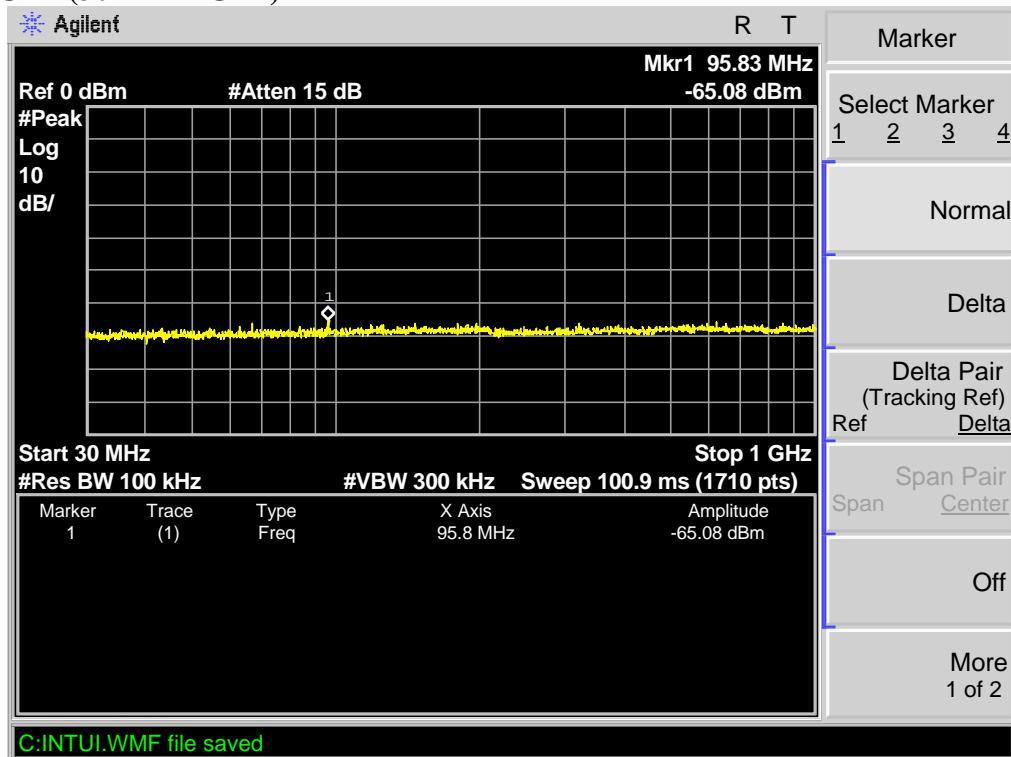
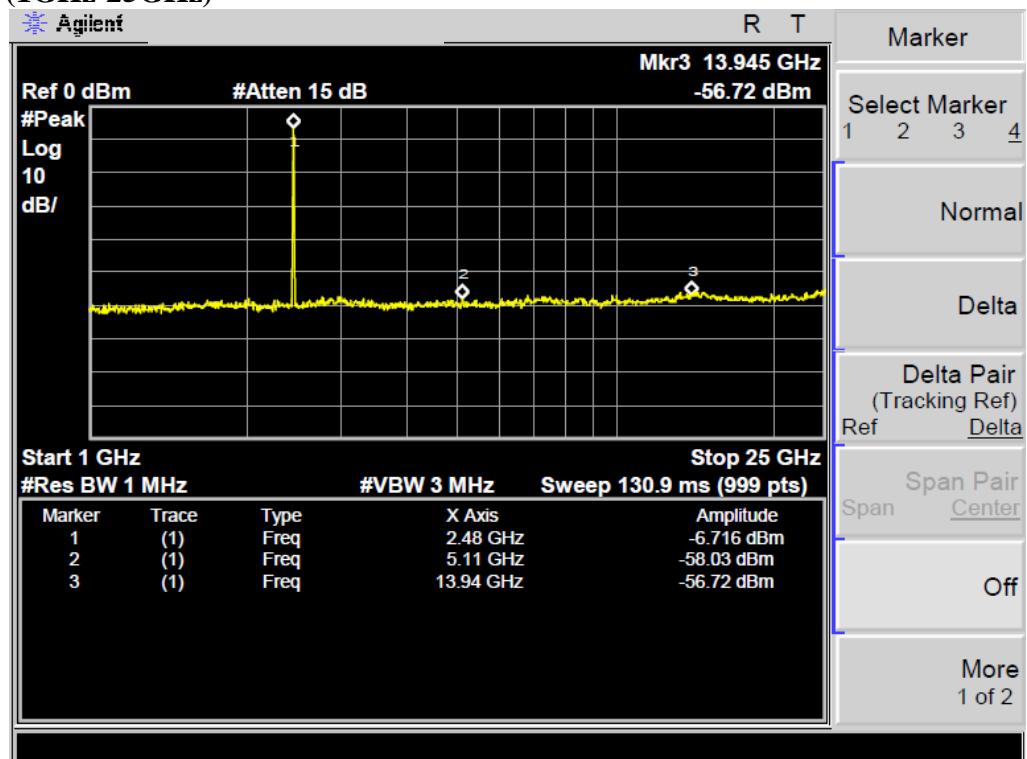
"Spectrum analyzer" is Agilent
TX 2402GHz (30MHz-1GHz)



(1GHz-25GHz)



TX 2441GHz (30MHz-1GHz)**(1GHz-25GHz)**

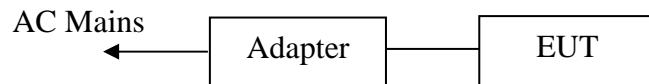
TX 2480GHz (30MHz-1GHz)**(1GHz-25GHz)**

13.AC POWER LINE CONDUCTED EMISSION FOR FCC PART

15 SECTION 15.207(A)

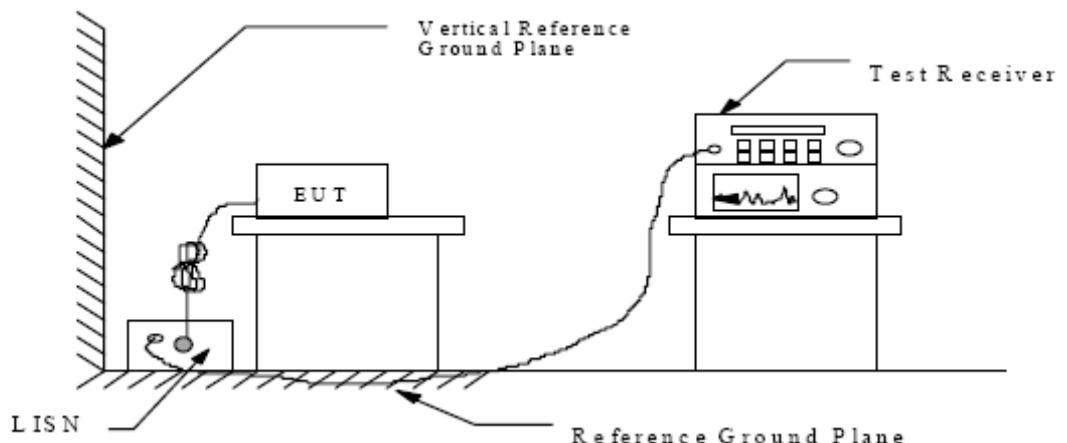
13.1.Block Diagram of Test Setup

13.1.1.Block diagram of connection between the EUT and simulators



(EUT: HP Wireless Portable Speaker S9500)

13.1.2.Shielding Room Test Setup Diagram



(EUT: HP Wireless Portable Speaker S9500)

13.2.The Emission Limit

13.2.1.Conducted Emission Measurement Limits According to Section 15.207(a)

Frequency (MHz)	Limit dB(μ V)	
	Quasi-peak Level	Average Level
0.15 - 0.50	66.0 – 56.0 *	56.0 – 46.0 *
0.50 - 5.00	56.0	46.0
5.00 - 30.00	60.0	50.0

* Decreases with the logarithm of the frequency.

13.3.Configuration of EUT on Measurement

The following equipment are installed on the Conducted Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

13.3.1.HP Wireless Portable Speaker S9500 (EUT)

Model Number	:	HP S9500
Serial Number	:	N/A
Manufacturer	:	Zhao Yang Elec.(Shenzhen) Co., Ltd.

13.4.Operating Condition of EUT

13.4.1.Setup the EUT and simulator as shown as Section 13.1.

13.4.2.Turn on the power of all equipment.

13.4.3.Let the EUT work in (Charging + Tx) mode measure it.

13.5.Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4: 2009 on Conducted Emission Measurement.

The bandwidth of test receiver (R & S ESCS30) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

13.6.Power Line Conducted Emission Measurement Results

PASS.

The frequency range from 150kHz to 30MHz is checked.

Date of Test:	May 8, 2013	Temperature:	25°C
EUT:	HP Wireless Portable Speaker S9500	Humidity:	50%
Model No.:	HP S9500	Power Supply:	AC 120V/ 60Hz
Test Mode:	Charging + Tx	Test Engineer:	Kai

Frequency (MHz)	Result (dB μ V)	Limit (dB μ V)	Margin (dB)	Detector	Line
0.174571	46.90	65	-17.8	QP	Neutral
3.612937	41.90	56	-14.1	QP	
11.498391	45.40	60	-14.6	QP	
0.328019	37.90	50	-11.6	AV	
2.273786	35.70	46	-10.3	AV	
11.498391	39.30	50	-10.7	AV	
0.173876	48.80	65	-16.0	QP	Live
2.923975	36.50	56	-19.5	QP	
6.897979	39.60	60	-20.4	QP	
0.326712	34.60	50	-14.9	AV	
3.612937	32.80	46	-13.2	AV	
11.498391	36.30	50	-13.7	AV	

Emissions attenuated more than 20 dB below the permissible value are not reported.
The spectral diagrams are attached as below.

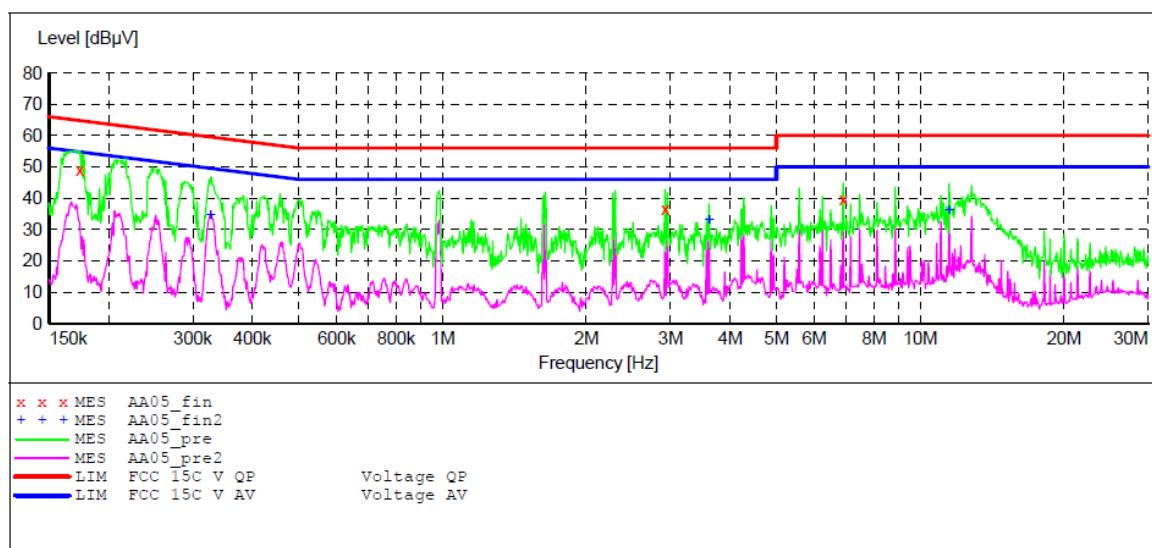
ACCURATE TECHNOLOGY CO., LTD

CONDUCTED EMISSION STANDARD FCC PART 15 C

EUT: HP Wireless Portable Speaker S9500 M/N:HP S9500
 Manufacturer: Zhao Ynag
 Operating Condition: Charging+TX
 Test Site: 1#Shielding Room
 Operator: Star
 Test Specification: L 120V/60Hz
 Comment: Report No.:ATE20130913
 Start of Test: 5/8/2013 / 4:49:36PM

SCAN TABLE: "V 150K-30MHz fin"

Short Description: SUB_STD_VTERM2 1.70					
Start Frequency	Stop Frequency	Step Width	Detector	Meas.	IF Transducer
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak	1.0 s	9 kHz NSLK8126 2008 Average



MEASUREMENT RESULT: "AA05_fin"

5/8/2013 4:51PM	Frequency	Level	Transd	Limit	Margin	Detector	Line	PE
	MHz	dBµV	dB	dBµV	dB			
	0.173876	48.80	11.6	65	16.0	QP	L1	GND
	2.923975	36.50	12.3	56	19.5	QP	L1	GND
	6.897979	39.60	12.2	60	20.4	QP	L1	GND

MEASUREMENT RESULT: "AA05_fin2"

5/8/2013 4:51PM	Frequency	Level	Transd	Limit	Margin	Detector	Line	PE
	MHz	dBµV	dB	dBµV	dB			
	0.326712	34.60	12.2	50	14.9	AV	L1	GND
	3.612937	32.80	12.3	46	13.2	AV	L1	GND
	11.498391	36.30	12.1	50	13.7	AV	L1	GND

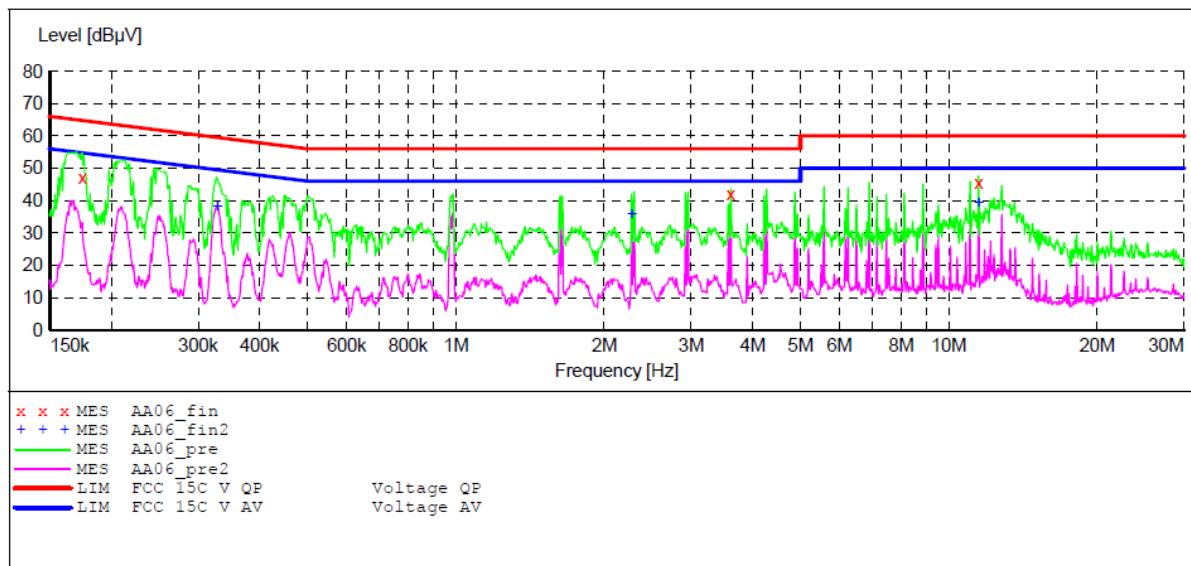
ACCURATE TECHNOLOGY CO., LTD

CONDUCTED EMISSION STANDARD FCC PART 15 C

EUT: HP Wireless Portable Speaker S9500 M/N:HP S9500
 Manufacturer: Zhao Ynag
 Operating Condition: Charging+TX
 Test Site: 1#Shielding Room
 Operator: Star
 Test Specification: N 120V/60Hz
 Comment: Report No.:ATE20130913
 Start of Test: 5/8/2013 / 4:52:00PM

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70					
Start Frequency	Stop Frequency	Step Width	Detector	Meas.	IF Transducer
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak	1.0 s	9 kHz NSLK8126 2008
Average					



MEASUREMENT RESULT: "AA06_fin"

5/8/2013 4:53PM

Frequency MHz	Level dB μ V	Transd dB	Limit dB μ V	Margin dB	Detector	Line	PE
0.174571	46.90	11.6	65	17.8	QP	N	GND
3.612937	41.90	12.3	56	14.1	QP	N	GND
11.498391	45.40	12.1	60	14.6	QP	N	GND

MEASUREMENT RESULT: "AA06_fin2"

5/8/2013 4:53PM

Frequency MHz	Level dB μ V	Transd dB	Limit dB μ V	Margin dB	Detector	Line	PE
0.328019	37.90	12.2	50	11.6	AV	N	GND
2.273786	35.70	12.4	46	10.3	AV	N	GND
11.498391	39.30	12.1	50	10.7	AV	N	GND

14. ANTENNA REQUIREMENT

14.1. The Requirement

According to Section 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.

14.2. Antenna Construction

Device is equipped with unique antenna, which isn't displaced by other antenna. Therefore, the equipment complies with the antenna requirement of Section 15.203.

