

## TEST REPORT

Report No.: HK12011058-1

**Audiovox Accessories Corporation**

Application  
For  
Certification  
(Original Grant)  
**(FCC ID: VIX-ARAP50A)**

(Transceiver)

Prepared and Checked by:

Approved by:

Signed On File  
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Assistant Supervisor  
Date: March 30, 2012

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### GENERAL INFORMATION

#### Audiovox Accessories Corporation

**MODEL: ARAP50-A**

**FCC ID: VIX-ARAP50A**

Grantee:	Audiovox Accessories Corporation
Grantee Address:	701 Congressional Blvd., Suite 200, Carmel, Indiana, United States, 46230
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Manufacturer:	Victory Telecom (Huizhou) Ltd.
Manufacturer Address:	Building A, No. 18, Shuiyuan Industrial District, Ruhu Town, Huizhou City 516021, Guangdong Province, P.R. China.
Brand Name:	AcousticResearch
Model:	ARAP50-A
Type of EUT:	Transceiver
Description of EUT:	Audio System with AirPlay
Serial Number:	N/A
FCC ID:	VIX-ARAP50A
Date of Sample Submitted:	January 31, 2012
Date of Test:	March 12, 2012
Report No.:	HK12011058-1
Report Date:	March 30, 2012
Environmental Conditions:	Temperature: +10 to 40°C Humidity: 10 to 90%

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### SUMMARY OF TEST RESULT

**MODEL: ARAP50-A**

**FCC ID: VIX-ARAP50A**

TEST SPECIFICATION	REFERENCE	RESULTS
Maximum Peak Output Power	15.247(b), (c)	Pass
6 dB Bandwidth	15.247(a)(2)	Pass
Maximum Power Density	15.247(e)	Pass
Out of Band Antenna Conducted Emission	15.247(d)	Pass
Radiated Emission in Restricted Bands	15.247(d)	Pass
Radiated Spurious Emissions	15.247(d)	Pass
Transmitter Power Line Conducted Emissions	15.207	Pass
Antenna Requirement	15.203	Pass (See Note 1)

Note: 1. The EUT uses a permanently attached antenna which, in accordance to section 15.203, is consider sufficient to comply with the previsions of this section.

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## 1.0 General Description

### 1.1 Product Description

The Equipment Under Test (EUT) is an Wi-Fi 802.11b/g speaker which is operating at 2412MHz to 2462MHz, with 5MHz channel spacing. The EUT is powered by an AC/DC adaptor (Model: KSAS0451800250HU, Input 100-240VAC~50/60Hz 1.2A, Output: 18VDC 2.5A). It can play music from the other music source through the Wi-Fi function. Also, it can charge and play music through the USB port to connect to the relative Apple products.

Antenna Type: Internal, Integral

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

### 1.2 Related Submittal(s) Grants

The Declaration of the Conformity procedure of PC portion for this transceiver is being processed as the same time of this application.

The receiver portion for this transceiver is exempted from the Part 15 technical rules per 15.101(b).

### 1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003). All radiated measurements were performed in an Open Area Test Site. Preliminary scans were performed in the Open Area Test Site only to determine worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the “**Justification Section**” of this Application.

### 1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. This test facility and site measurement data have been placed on file with the FCC.

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### 2.0 **System Test Configuration**

#### 2.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.4 (2003).

The device was powered by 18VDC AC/DC Adaptor through the testing Jig (Input: 100-240VAC, Output: 18VDC 2.5A).

For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. This step by step procedure for maximizing emissions led to the data reported in Exhibit 3.0.

The rear of unit shall be flushed with the rear of the table.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was placed on turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

The set-up configuration is according to the client's instruction for testing.

#### 2.2 EUT Exercising Software

There was no special software to exercise the device. Once the unit is powered up, it transmits the RF signal continuously.

#### 2.3 Special Accessories

There are no special accessories necessary for compliance of this product.

#### 2.4 Equipment Modification

Any modifications installed previous to testing by Audiovox Accessories Corporation will be incorporated in each production model sold/leased in the United States.

No modifications were installed by Intertek Testing Services Hong Kong Ltd.

#### 2.5 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

#### 2.6 Support Equipment List and Description

AC/DC Adaptor with ferrite (Input: 100-240VAC 50/60Hz, Output: 18VDC 2.5A)  
(Provided by Applicant)  
iPad 2, 16G, Wi-Fi version (Provided by Intertek)

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### 3.0 Emission Results

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

#### 3.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any), Average Factor (optional) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG - AV$$

where            FS = Field Strength in dB $\mu$ V/m  
                    RA = Receiver Amplitude (including preamplifier) in dB $\mu$ V  
                    CF = Cable Attenuation Factor in dB  
                    AF = Antenna Factor in dB  
                    AG = Amplifier Gain in dB  
                    AV = Average Factor in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:

$$FS = RR + LF$$

where            FS = Field Strength in dB $\mu$ V/m  
                    RR = RA - AG - AV in dB $\mu$ V  
                    LF = CF + AF in dB

Assume a receiver reading of 52.0 dB $\mu$ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB are added. The amplifier gain of 29 dB and average factor of 5 dB are subtracted, giving a field strength of 27 dB $\mu$ V/m. This value in dB $\mu$ V/m was converted to its corresponding level in  $\mu$ V/m.

RA = 52.0 dB $\mu$ V/m	
AF = 7.4 dB	RR = 18.0 dB $\mu$ V
CF = 1.6 dB	LF = 9.0 dB
AG = 29.0 dB	
AV = 5.0 dB	
FS = RR + LF	
FS = 18 + 9 = 27 dB $\mu$ V/m	

Level in  $\mu$ V/m = Common Antilogarithm [(27 dB $\mu$ V/m)/20] = 22.4  $\mu$ V/m

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### 3.2 Radiated Emission Configuration Photograph

The worst case in radiated emission was found at 14772.000 MHz

For electronic filing, the worst case radiated emission configuration photographs are saved with filename: radiated photos.pdf.

### 3.3 Radiated Emission Data

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgment: Passed by 7.2 dB

### 3.4 Conducted Emission Configuration Photograph

For electronic filing, the worst case line-conducted configuration photographs are saved with filename: conducted photos.pdf.

### 3.5 Conducted Emission Data

For electronic filing, the graph and data table of conducted emission is saved with filename: conducted.pdf.

Judgment: Passed by more than 20 dB



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### 4.0 Measurement Results

#### 4.1 Maximum Conducted Output Power at Antenna Terminals, FCC Rules 15.247(b)(3):

**Test Setup:**

The antenna power of the EUT was connected to the input of a power meter. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.

For antennas with gains of 6 dBi or less, maximum allowed transmitter output is 1 watt (+30 dBm).

Frequency (MHz)	Antenna 0 Maximum Antenna Gain = 0dBi			
	Output in dBm		Output in mWatt	
	802.11b	802.11g	802.11b	802.11g
Lowest Channel: 2412	13.03	19.44	20.09	87.90
Middle Channel: 2442	13.56	19.73	22.70	93.97
Highest Channel: 2462	13.74	19.78	23.66	95.06

Frequency (MHz)	Antenna 1 Maximum Antenna Gain = 0dBi			
	Output in dBm		Output in mWatt	
	802.11b	802.11g	802.11b	802.11g
Lowest Channel: 2412	17.66	24.07	58.34	255.27
Middle Channel: 2442	17.69	24.40	58.75	275.42
Highest Channel: 2462	17.58	24.54	57.28	284.45

EUT dBm max. output level = 24.54 dBm (+30 dBm or less)

Limit: = 30 dBm

For RF Safety, the information is saved with filename: RF exposure.pdf.

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### 4.2 Minimum 6 dB RF Bandwidth, FCC Rule 15.247(a)(2):

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 100kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK output reading was taken, a DISPLAY line was drawn 6 dB lower than PEAK level. The 6dB bandwidth was determined from where the channel output spectrum intersected the display line.

Frequency (MHz)	6 dB Bandwidth (kHz)			
	Antenna 0		Antenna 1	
	802.11b	802.11g	802.11b	802.11g
2412	12160	16400	12640	16400
2442	12160	16480	12200	16440
2462	13120	16480	12160	16480

Limit: at least 500kHz

Refer to the following plots for 6dB bandwidth sharp.

#### Antenna 0 (802.11b)

Plot B2A0L : Lowest Channel 6dB RF Bandwidth

Plot B2A0M : Middle Channel 6dB RF Bandwidth

Plot B2A0H : Highest Channel 6dB RF Bandwidth

#### Antenna 0 (802.11g)

Plot G2A0L : Lowest Channel 6dB RF Bandwidth

Plot G2A0M : Middle Channel 6dB RF Bandwidth

Plot G2A0H : Highest Channel 6dB RF Bandwidth

#### Antenna 1 (802.11b)

Plot B2A1L : Lowest Channel 6dB RF Bandwidth

Plot B2A1M : Middle Channel 6dB RF Bandwidth

Plot B2A1H : Highest Channel 6dB RF Bandwidth

#### Antenna 1 (802.11g)

Plot G2A1L : Lowest Channel 6dB RF Bandwidth

Plot G2A1M : Middle Channel 6dB RF Bandwidth

Plot G2A1H : Highest Channel 6dB RF Bandwidth

For electronic filing, the above plots are saved with filename: 6dB.pdf

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### 4.3 Maximum Power Density Reading, FCC Rule 15.247(e)

The spectrum analyzer RES BW was set to 3kHz. In order to look for a peak, the START and STOP frequencies were set to the band edges of the maximum output passband. If there is no clear maximum amplitude in any given portion of the band, it may be necessary to make measurements at a number of bands defined by several START and STOP frequency pairs.

Antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are added to the analyzer raw readings.

Frequency (MHz)	Power Density (dBm/3kHz)			
	Antenna 0		Antenna 1	
	802.11b	802.11g	802.11b	802.11g
2412	-8.23	-11.94	-5.83	-8.36
2442	-6.15	-12.45	-3.63	-9.10
2462	-7.09	-11.63	-1.67	-8.62

Peak Power Density = -1.67 dBm/3kHz

Limit: 8dBm/ 3kHz

Refer to the following plots for Power density data.

#### Antenna 0 (802.11b)

Plot T5A: Lowest Channel Power Density

Plot T5B: Middle Channel Power Density

Plot T5C: Highest Channel Power Density

#### Antenna 0 (802.11g)

Plot T6A: Lowest Channel Power Density

Plot T6B: Middle Channel Power Density

Plot T6C: Highest Channel Power Density

#### Antenna 1 (802.11b)

Plot E5A: Lowest Channel Power Density

Plot E5B: Middle Channel Power Density

Plot E5C: Highest Channel Power Density

#### Antenna 1 (802.11g)

Plot E6A: Lowest Channel Power Density

Plot E6B: Middle Channel Power Density

Plot E6C: Highest Channel Power Density

For electronic filing, the above plots are saved with filename: maxpd.pdf

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### 4.4 Out of Band Conducted Emissions, FCC Rule 15.247(d)

In any 100 kHz bandwidth outside the EUT passband, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20dB below that of the maximum in-band 100 kHz emission, or else shall meet the general limits for radiated emissions at frequencies outside the passband, whichever results in lower attenuation.

All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the passband.

The plots showed all spurious emission up to the tenth harmonic. They were found to be at least 20 dB below the highest level of the desired power in the passband.

Refer to the following plots for out of band conducted emissions data:

#### Antenna 0 (802.11b)

Plot T7A1 – T7A2: Lowest Channel Emissions

Plot T7B1 – T7B2: Middle Channel Emissions

Plot T7C1 – T7C2: Highest Channel Emissions

Plot T7D1 – T7D2: Modulation Product Emissions of Lowest Channel

Plot T7E1 – T7E2: Modulation Product Emissions of Highest Channel

#### Antenna 0 (802.11g)

Plot T8A1 – T8A2: Lowest Channel Emissions

Plot T8B1 – T8B2: Middle Channel Emissions

Plot T8C1 – T8C2: Highest Channel Emissions

Plot T8D1 – T8D2: Modulation Product Emissions of Lowest Channel

Plot T8E1 – T8E2: Modulation Product Emissions of Highest Channel

#### Antenna 1 (802.11b)

Plot E7A1 – E7A2: Lowest Channel Emissions

Plot E7B1 – E7B2: Middle Channel Emissions

Plot E7C1 – E7C2: Highest Channel Emissions

Plot E7D1 – E7D2: Modulation Product Emissions of Lowest Channel

Plot E7E1 – E7E2: Modulation Product Emissions of Highest Channel

#### Antenna 1 (802.11g)

Plot E8A1 – E8A2: Lowest Channel Emissions

Plot E8B1 – E8B2: Middle Channel Emissions

Plot E8C1 – E8C2: Highest Channel Emissions

Plot E8D1 – E8D2: Modulation Product Emissions of Lowest Channel

Plot E8E1 – E8E2: Modulation Product Emissions of Highest Channel

For the electronic filing, the above plots are saved with filename: obantcon.pdf

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### 4.5 Out of Band Radiated Emissions, FCC Rule 15.247(d):

For out of band emissions that are close to or that exceed the 20dB attenuation requirement described in the specification, radiated measurements were performed at a 3m separation distance to determine whether these emissions complied with the general radiated emission requirement.

Not required, since all emissions are more than 20dB below fundamental.

### 4.6 General Radiated Emissions limit for spurious emission at bandedge and within Restricted Bands, FCC Rule 15.247(d):

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included. All measurements were performed with peak detection unless otherwise specified.

The following data list the significant emission frequencies, the limit and the margin of compliance.

#### Antenna 0 (802.11b)

Frequency (MHz)	OATS radiated field strength at carrier frequency measured at 3m (dB $\mu$ V/m)		Attenuation (dBc)		Calculated radiated field strength at the bandage (dB $\mu$ V/m)	
	Peak	Average	Peak	Average	Peak	Average
2483.5	109.00	100.00	38.95	52.36	70.05	47.64

#### Antenna 0 (802.11g)

Frequency (MHz)	OATS radiated field strength at carrier frequency measured at 3m (dB $\mu$ V/m)		Attenuation (dBc)		Calculated radiated field strength at the bandage (dB $\mu$ V/m)	
	Peak	Average	Peak	Average	Peak	Average
2483.5	107.30	91.10	36.35	40.56	70.95	50.54

#### Antenna 1 (802.11b)

Frequency (MHz)	OATS radiated field strength at carrier frequency measured at 3m (dB $\mu$ V/m)		Attenuation (dBc)		Calculated radiated field strength at the bandage (dB $\mu$ V/m)	
	Peak	Average	Peak	Average	Peak	Average
2483.5	110.00	100.00	37.79	52.93	72.21	47.07

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### Antenna 1 (802.11g)

Frequency (MHz)	OATS radiated field strength at carrier frequency measured at 3m (dB $\mu$ V/m)		Attenuation (dBc)		Calculated radiated field strength at the bandage (dB $\mu$ V/m)	
	Peak	Average	Peak	Average	Peak	Average
2483.5	108.00	91.40	37.30	41.26	70.70	50.14

#### Limit:

The average radiated field strength at bandedge should be smaller than 54dBuV/m and the peak radiated field strength at bandedge should be smaller than 74dBuV/m.

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### 4.7 Radiated Spurious Emissions

Applicant: Audiovox Accessories Corporation

Date of Test: March 12, 2012

Model: ARAP50-A

Worst-Case Operating Mode: Antenna 0 (802.11b)

**Table 1**  
**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.247: Emissions Requirement**

#### Lowest Channel

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
H	4824.000	33.2	33	34.9	35.1	54.0	-18.9
H	7236.000	34.7	33	37.9	39.6	54.0	-14.4
H	9648.000	35.4	33	40.4	42.8	54.0	-11.2
V	12060.000	37.0	33	40.5	44.5	54.0	-9.5
V	14472.000	38.0	33	40.0	45.0	54.0	-9.0

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
H	4824.000	43.2	33	34.9	45.1	74.0	-28.9
H	7236.000	41.7	33	37.9	46.6	74.0	-27.4
H	9648.000	45.6	33	40.4	53.0	74.0	-21.0
V	12060.000	42.5	33	40.5	50.0	74.0	-24.0
V	14472.000	43.0	33	41.7	51.7	74.0	-22.3

NOTES: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative sign in the column shows value below limit.

4. Horn antenna is used for the emission over 1000MHz.

\* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000MHz and average limit for frequencies over 1000MHz.

## INTERTEK TESTING SERVICES

Applicant: Audiovox Accessories Corporation  
 Model: ARAP50-A  
 Worst-Case Operating Mode: Antenna 0 (802.11b)

Date of Test: March 12, 2012

**Table 2**  
**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.247: Emissions Requirement**

### Middle Channel

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	4884.000	33.7	33	34.9	35.6	54.0	-18.4
H	7326.000	29.9	33	37.9	34.8	54.0	-19.2
H	9768.000	34.8	33	40.4	42.2	54.0	-11.8
V	12210.000	36.9	33	40.5	44.4	54.0	-9.6
V	14652.000	39.8	33	38.4	45.2	54.0	-8.8

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	4884.000	43.3	33	34.9	45.2	74.0	-28.8
H	7326.000	41.4	33	37.9	46.3	74.0	-27.7
H	9768.000	45.2	33	40.4	52.6	74.0	-21.4
V	12210.000	42.5	33	40.5	50.0	74.0	-24.0
V	14652.000	42.2	33	42.4	51.6	74.0	-22.4

- NOTES: 1. Peak Detector Data unless otherwise stated.
2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative sign in the column shows value below limit.
4. Horn antenna is used for the emission over 1000MHz.
- \* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000MHz and average limit for frequencies over 1000MHz.



## INTERTEK TESTING SERVICES

Applicant: Audiovox Accessories Corporation  
 Model: ARAP50-A  
 Worst-Case Operating Mode: Antenna 0 (802.11b)

Date of Test: March 12, 2012

**Table 3**  
**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.247: Emissions Requirement**

### Highest Channel

Polari- zation	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	4924.000	33.3	33	34.9	35.2	54.0	-18.8
H	7386.000	35.0	33	37.9	39.9	54.0	-14.1
H	9848.000	35.6	33	40.4	43.0	54.0	-11.0
V	12310.000	36.9	33	40.5	44.4	54.0	-9.6
V	14772.000	40.2	33	38.4	45.6	54.0	-8.4

Polari- zation	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	4924.000	43.7	33	34.9	45.6	74.0	-28.4
H	7386.000	42.0	33	37.9	46.9	74.0	-27.1
H	9848.000	45.3	33	40.4	52.7	74.0	-21.3
V	12310.000	42.9	33	40.5	50.4	74.0	-23.6
V	14772.000	42.4	33	42.4	51.8	74.0	-22.2

- NOTES: 1. Peak Detector Data unless otherwise stated.
2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative sign in the column shows value below limit.
4. Horn antenna is used for the emission over 1000MHz.
- \* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000MHz and average limit for frequencies over 1000MHz.

## INTERTEK TESTING SERVICES

Applicant: Audiovox Accessories Corporation

Date of Test: March 12, 2012

Model: ARAP50-A

Worst-Case Operating Mode: Antenna 0 (802.11g)

**Table 4**  
**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.247: Emissions Requirement**

**Lowest Channel**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	4824.000	33.5	33	34.9	35.4	54.0	-18.6
H	7236.000	35.7	33	37.9	40.6	54.0	-13.4
H	9648.000	35.7	33	40.4	43.1	54.0	-10.9
V	12060.000	36.9	33	40.5	44.4	54.0	-9.6
V	14472.000	39.0	33	40.0	46.0	54.0	-8.0

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	4824.000	43.1	33	34.9	45.0	74.0	-29.0
H	7236.000	41.9	33	37.9	46.8	74.0	-27.2
H	9648.000	45.6	33	40.4	53.0	74.0	-21.0
V	12060.000	41.5	33	40.5	49.0	74.0	-25.0
V	14472.000	42.9	33	41.7	51.6	74.0	-22.4

NOTES: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative sign in the column shows value below limit.

4. Horn antenna is used for the emission over 1000MHz.

\* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000MHz and average limit for frequencies over 1000MHz.

## INTERTEK TESTING SERVICES

Applicant: Audiovox Accessories Corporation  
 Model: ARAP50-A  
 Worst-Case Operating Mode: Antenna 0 (802.11g)

Date of Test: March 12, 2012

**Table 5**  
**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.247: Emissions Requirement**

**Middle Channel**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	4884.000	32.9	33	34.9	34.8	54.0	-19.2
H	7326.000	35.4	33	37.9	40.3	54.0	-13.7
H	9768.000	35.5	33	40.4	42.9	54.0	-11.1
V	12210.000	36.8	33	40.5	44.3	54.0	-9.7
V	14652.000	40.4	33	38.4	45.8	54.0	-8.2

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	4884.000	43.2	33	34.9	45.1	74.0	-28.9
H	7326.000	42.2	33	37.9	47.1	74.0	-26.9
H	9768.000	45.2	33	40.4	52.6	74.0	-21.4
V	12210.000	41.1	33	40.5	48.6	74.0	-25.4
V	14652.000	42.6	33	42.4	52.0	74.0	-22.0

- NOTES: 1. Peak Detector Data unless otherwise stated.
2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative sign in the column shows value below limit.
4. Horn antenna is used for the emission over 1000MHz.
- \* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000MHz and average limit for frequencies over 1000MHz.

## INTERTEK TESTING SERVICES

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Applicant: Audiovox Accessories Corporation  
 Model: ARAP50-A  
 Worst-Case Operating Mode: Antenna 0 (802.11g)

Date of Test: March 12, 2012

**Table 6**  
**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.247: Emissions Requirement**

### Highest Channel

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	4924.000	33.0	33	34.9	34.9	54.0	-19.1
H	7386.000	35.7	33	37.9	40.6	54.0	-13.4
H	9848.000	36.2	33	40.4	43.6	54.0	-10.4
V	12310.000	37.1	33	40.5	44.6	54.0	-9.4
V	14772.000	41.1	33	38.4	46.5	54.0	-7.5

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	4924.000	42.9	33	34.9	44.8	74.0	-29.2
H	7386.000	42.3	33	37.9	47.2	74.0	-26.8
H	9848.000	44.7	33	40.4	52.1	74.0	-21.9
V	12310.000	40.9	33	40.5	48.4	74.0	-25.6
V	14772.000	42.3	33	42.4	51.7	74.0	-22.3

- NOTES: 1. Peak Detector Data unless otherwise stated.
2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative sign in the column shows value below limit.
4. Horn antenna is used for the emission over 1000MHz.
- \* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000MHz and average limit for frequencies over 1000MHz.

## INTERTEK TESTING SERVICES

Applicant: Audiovox Accessories Corporation  
 Model: ARAP50-A  
 Worst-Case Operating Mode: Antenna 1 (802.11b)

Date of Test: March 12, 2012

**Table 7**  
**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.247: Emissions Requirement**

**Lowest Channel**

Polari- zation	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	4824.000	33.1	33	34.9	35.0	54.0	-19.0
H	7236.000	35.9	33	37.9	40.8	54.0	-13.2
H	9648.000	35.6	33	40.4	43.0	54.0	-11.0
V	12060.000	37.0	33	40.5	44.5	54.0	-9.5
V	14472.000	38.9	33	40.0	45.9	54.0	-8.1

Polari- zation	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	4824.000	43.7	33	34.9	45.6	74.0	-28.4
H	7236.000	42.1	33	37.9	47.0	74.0	-27.0
H	9648.000	46.2	33	40.4	53.6	74.0	-20.4
V	12060.000	42.1	33	40.5	49.6	74.0	-24.4
V	14472.000	42.5	33	41.7	51.2	74.0	-22.8

- NOTES: 1. Peak Detector Data unless otherwise stated.
2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative sign in the column shows value below limit.
4. Horn antenna is used for the emission over 1000MHz.
- \* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000MHz and average limit for frequencies over 1000MHz.

## INTERTEK TESTING SERVICES

Applicant: Audiovox Accessories Corporation

Date of Test: March 12, 2012

Model: ARAP50-A

Worst-Case Operating Mode: Antenna 1 (802.11b)

**Table 8**  
**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.247: Emissions Requirement**

### Middle Channel

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	4884.000	33.4	33	34.9	35.3	54.0	-18.7
H	7326.000	36.0	33	37.9	40.9	54.0	-13.1
H	9768.000	35.8	33	40.4	43.2	54.0	-10.8
V	12210.000	37.1	33	40.5	44.6	54.0	-9.4
V	14652.000	40.6	33	38.4	46.0	54.0	-8.0

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	4884.000	43.4	33	34.9	45.3	74.0	-28.7
H	7326.000	41.9	33	37.9	46.8	74.0	-27.2
H	9768.000	45.6	33	40.4	53.0	74.0	-21.0
V	12210.000	42.0	33	40.5	49.5	74.0	-24.5
V	14652.000	42.5	33	42.4	51.9	74.0	-22.1

NOTES: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative sign in the column shows value below limit.

4. Horn antenna is used for the emission over 1000MHz.

\* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000MHz and average limit for frequencies over 1000MHz.

## INTERTEK TESTING SERVICES

Applicant: Audiovox Accessories Corporation  
 Model: ARAP50-A  
 Worst-Case Operating Mode: Antenna 1 (802.11b)

Date of Test: March 12, 2012

**Table 9**  
**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.247: Emissions Requirement**

### Highest Channel

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	4924.000	33.7	33	34.9	35.6	54.0	-18.4
H	7386.000	35.7	33	37.9	40.6	54.0	-13.4
H	9848.000	35.9	33	40.4	43.3	54.0	-10.7
V	12310.000	36.9	33	40.5	44.4	54.0	-9.6
V	14772.000	41.4	33	38.4	46.8	54.0	-7.2

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	4924.000	43.6	33	34.9	45.5	74.0	-28.5
H	7386.000	41.7	33	37.9	46.6	74.0	-27.4
H	9848.000	45.5	33	40.4	52.9	74.0	-21.1
V	12310.000	42.1	33	40.5	49.6	74.0	-24.4
V	14772.000	42.2	33	42.4	51.6	74.0	-22.4

- NOTES: 1. Peak Detector Data unless otherwise stated.
2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative sign in the column shows value below limit.
4. Horn antenna is used for the emission over 1000MHz.
- \* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000MHz and average limit for frequencies over 1000MHz.

## INTERTEK TESTING SERVICES

Applicant: Audiovox Accessories Corporation  
 Model: ARAP50-A  
 Worst-Case Operating Mode: Antenna 1 (802.11g)

Date of Test: March 12, 2012

**Table 10**  
**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.247: Emissions Requirement**

**Lowest Channel**

Polari- zation	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	4824.000	28.9	33	34.9	30.8	54.0	-23.2
H	7236.000	34.7	33	37.9	39.6	54.0	-14.4
H	9648.000	34.6	33	40.4	42.0	54.0	-12.0
V	12060.000	36.9	33	40.5	44.4	54.0	-9.6
V	14472.000	38.0	33	40.0	45.0	54.0	-9.0

Polari- zation	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	4824.000	38.9	33	34.9	40.8	74.0	-33.2
H	7236.000	41.6	33	37.9	46.5	74.0	-27.5
H	9648.000	45.1	33	40.4	52.5	74.0	-21.5
V	12060.000	44.5	33	40.5	52.0	74.0	-22.0
V	14472.000	35.0	33	41.7	43.7	74.0	-30.3

- NOTES: 1. Peak Detector Data unless otherwise stated.
2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative sign in the column shows value below limit.
4. Horn antenna is used for the emission over 1000MHz.
- \* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000MHz and average limit for frequencies over 1000MHz.



## INTERTEK TESTING SERVICES

Applicant: Audiovox Accessories Corporation  
 Model: ARAP50-A  
 Worst-Case Operating Mode: Antenna 1 (802.11g)

Date of Test: March 12, 2012

**Table 11**  
**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.247: Emissions Requirement**

**Middle Channel**

Polari- zation	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	4884.000	29.1	33	34.9	31.0	54.0	-23.0
H	7326.000	34.7	33	37.9	39.6	54.0	-14.4
H	9768.000	35.1	33	40.4	42.5	54.0	-11.5
V	12210.000	36.8	33	40.5	44.3	54.0	-9.7
V	14652.000	39.9	33	38.4	45.3	54.0	-8.7

Polari- zation	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	4884.000	39.0	33	34.9	40.9	74.0	-33.1
H	7326.000	41.2	33	37.9	46.1	74.0	-27.9
H	9768.000	45.6	33	40.4	53.0	74.0	-21.0
V	12210.000	44.9	33	40.5	52.4	74.0	-21.6
V	14652.000	44.4	33	42.4	53.8	74.0	-20.2

NOTES: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative sign in the column shows value below limit.

4. Horn antenna is used for the emission over 1000MHz.

\* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000MHz and average limit for frequencies over 1000MHz.

## INTERTEK TESTING SERVICES

Applicant: Audiovox Accessories Corporation

Date of Test: March 12, 2012

Model: ARAP50-A

Worst-Case Operating Mode: Antenna 1 (802.11g)

**Table 12**  
**Radiated Emissions**  
**Pursuant to FCC Part 15 Section 15.247: Emissions Requirement**

### Highest Channel

Polari- zation	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Average (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	4924.000	29.0	33	34.9	30.9	54.0	-23.1
H	7386.000	34.3	33	37.9	39.2	54.0	-14.8
H	9848.000	35.5	33	40.4	42.9	54.0	-11.1
V	12310.000	37.1	33	40.5	44.6	54.0	-9.4
V	14772.000	39.8	33	38.4	45.2	54.0	-8.8

Polari- zation	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m - Peak (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	4924.000	39.0	33	34.9	40.9	74.0	-33.1
H	7386.000	41.1	33	37.9	46.0	74.0	-28.0
H	9848.000	45.5	33	40.4	52.9	74.0	-21.1
V	12310.000	44.5	33	40.5	52.0	74.0	-22.0
V	14772.000	44.2	33	42.4	53.6	74.0	-20.4

NOTES: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative sign in the column shows value below limit.

4. Horn antenna is used for the emission over 1000MHz.

\* Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000MHz and average limit for frequencies over 1000MHz.

## **INTERTEK TESTING SERVICES**

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### **5.0 Equipment Photographs**

For electronic filing, the photographs are saved with filename: external photos.pdf and internal photos.pdf.

### **6.0 Product Labelling**

For electronics filing, the FCC ID label artwork and the label location are saved with filename: label.pdf.

### **7.0 Technical Specifications**

For electronic filing, the block diagram and schematic of the tested EUT are saved with filename: block.pdf and circuit.pdf respectively.

### **8.0 Instruction Manual**

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States.

## INTERTEK TESTING SERVICES

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### 9.0 **Miscellaneous Information**

The miscellaneous information includes details of the test procedure.

#### 9.1 Discussion Pulse Desensitivity

Pulse desensitivity is not applicable for this device. Since the transmitter transmits the RF signal continuously.

#### 9.2 Calculation of Average Factor

The average factor is not applicable for this device as the transmitted signal is a continuously signal.

## INTERTEK TESTING SERVICES

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### 9.3 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services Hong Kong Ltd. in the measurements of transmitter operating under the Part 15, Subpart C rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 - 2003. A typical or an unmodulated CW signal at the operating frequency of the EUT has been supplied to the EUT for all measurements. Such a signal is supplied by a signal generator and an antenna in close proximity to the EUT. The signal level is sufficient to stabilize the local oscillator of the EUT.

The transmitting equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately one meter in height above the ground plane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The EUT is adjusted through all three orthogonal axis to obtain maximum emission levels. The antenna height and polarization are also varied during the testing to search for maximum signal levels. The height of the antenna is varied from one to four meters.

Detector function for radiated emissions is in peak mode. Average readings, when required, are taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings.

The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower. For line conducted emissions, the range scanned is 150 kHz to 30 MHz.

## INTERTEK TESTING SERVICES

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### 9.3 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

AC power to the unit is varied from 85% to 115% nominal and variation in the fundamental emission field strength is recorded. If battery powered, a new, fully charged battery is used.

Conducted measurements were made as described in ANSI C63.4 - 2003.

The IF bandwidth used for measurement of radiated signal strength was 100 kHz or greater when frequency is below 1000 MHz. Where pulsed transmissions of short enough pulse duration warrant, a greater bandwidth is selected according to the recommendations of Hewlett Packard Application Note 150-2. A discussion of whether pulse desensitivity is applicable to this unit is included in this report (See Exhibit 8.1). Above 1000 MHz, a resolution bandwidth of 1 MHz is used.

Transmitter measurements are normally conducted at a measurement distance of three meters. However, to assure low enough noise floor in the forbidden bands and above 1 GHz, signals are acquired at a distance of one meter or less. All measurements are extrapolated to three meters using inverse scaling, unless otherwise reported. Measurements taken at a closer distance are so marked.

### 10.0 **Confidentiality Request**

For electronic filing, a preliminary code of the confidentiality request is saved with filename: request.pdf.

## INTERTEK TESTING SERVICES

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### 11.0 Equipment List

#### 1) Radiated Emissions Test

Equipment	EMI Test Receiver	Biconical Antenna	Log Periodic Antenna
Registration No.	EW-2251	EW-0954	EW-0446
Manufacturer	R&S	EMCO	EMCO
Model No.	ESCI	3104C	3146
Calibration Date	May 06, 2011	Oct 18, 2011	Oct 31, 2011
Calibration Due Date	May 06, 2012	Apr 18, 2013	Apr 30, 2013

Equipment	Spectrum Analyzer	Double Ridged Guide Antenna
Registration No.	EW-2188	EW-1133
Manufacturer	AGILENTTECH	EMCO
Model No.	E4407B	3115
Calibration Date	Sep. 26, 2011	Mar 02, 2011
Calibration Due Date	Sep. 26, 2012	Sep 02, 2012

#### 2) Conducted Emissions Test

Equipment	EMI Test Receiver	LISN
Registration No.	EW-2500	EW-2501
Manufacturer	R&S	R&S
Model No.	ESCI	ENV-216
Calibration Date	Feb 24, 2012	Mar 30, 2011
Calibration Due Date	Feb 24, 2013	Mar 30, 2012

#### 3) Bandedge Measurement

Equipment	Spectrum Analyzer
Registration No.	EW-2466
Manufacturer	R&S
Model No.	FSP30
Calibration Date	Apr 11, 2011
Calibration Due Date	Apr 11, 2012