FCC CERTIFICATION
On Behalf of
Home Art International Limited

Wireless Speaker
Model No.: WS3201, WS3201-XX, WS3202, WS3202-XX

FCC ID: YRE-WS32013202

Prepared for	:	Home Art International Limited
Address	:	Unit 2701 Trend Centre, 29-31 Cheung Lee Street, Chai Wan, Hong Kong
Prepared by	:	ACCURATE TECHNOLOGY CO. LTD
Address	:	F1, Bldg. A, Changyuan New Material Port, Keyuan Rd. Science & Industry Park, Nanshan, Shenzhen, Guangdong P.R. China
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Report Number	:	ATE20101876
Date of Test	:	September 1, 2010
Date of Report	:	September 6, 2010

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Description Page

Test Report Certification

Applicant	:	Home Art International Limited
Manufacturer	:	Clever Bright Electronic Factory
EUT Description	:	Wireless Speaker (TX)
		(A) MODEL NO.: WS3201, WS3201-XX, WS3202, WS3202-XX
		(B) SERIAL NO.: N/A
		(C) POWER SUPPLY: 6.0V DC ("AA" batteries 4×)

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.235
ANSI C63.4: 2003

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 Section15.235 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 : September 1, 2010

Prepared by :

(Engineer)

Approved & Authorized Signer :

(Manager)

1. GENERAL INFORMATION

1.1.Description of Device (EUT)

EUT	:	Wireless Speaker (TX)
Model Number	:	WS3201, WS3201-XX, WS3202, WS3202-XX (Note: These samples are identical except the appearance is different, therefore only model WS3201 is tested.)
Power Supply	:	6.0V DC ("AA" batteries 4×)
Operate Frequency	:	49.86MHz
Applicant	:	Home Art International Limited
Address	:	Unit 2701 Trend Centre, 29-31 Cheung Lee Street, Chai Wan, Hong Kong
Manufacturer	:	Clever Bright Electronic Factory
Address	:	No. 68 Long Cheng Nan Road, Long Gang District, Shenzhen, Guangdong Province, China
Date of sample received	:	August 24, 2010
Date of Test	:	September 1, 2010

1.2.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

1.3.Measurement Uncertainty

Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty (9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty (30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty (Above 1GHz)	=	4.06dB, k=2

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 9, 2011
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 9, 2011
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 9, 2011
Pre-Amplifier	Rohde&Schwarz	CBLU1183540-01	3791	Jan. 9, 2011
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 9, 2011
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 9, 2011
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 9, 2011
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 9, 2011
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 9, 2011
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 9, 2011

3. SUMMARY OF TEST RESULTS

FCC Rules	**Description of Test**	**Result**
Section 15.207	Conducted Emission	N/A
Section 15.209 Section 15.235(b)	Radiated Emission	Compliant
Section 15.235(a)	The fundamental Radiated Emission	Compliant
Section 15.235(b)	Band Edge	Compliant

4. FUNDAMENTAL RADIATED EMISSION FOR FCC PART 15 SECTION 15.235(A)

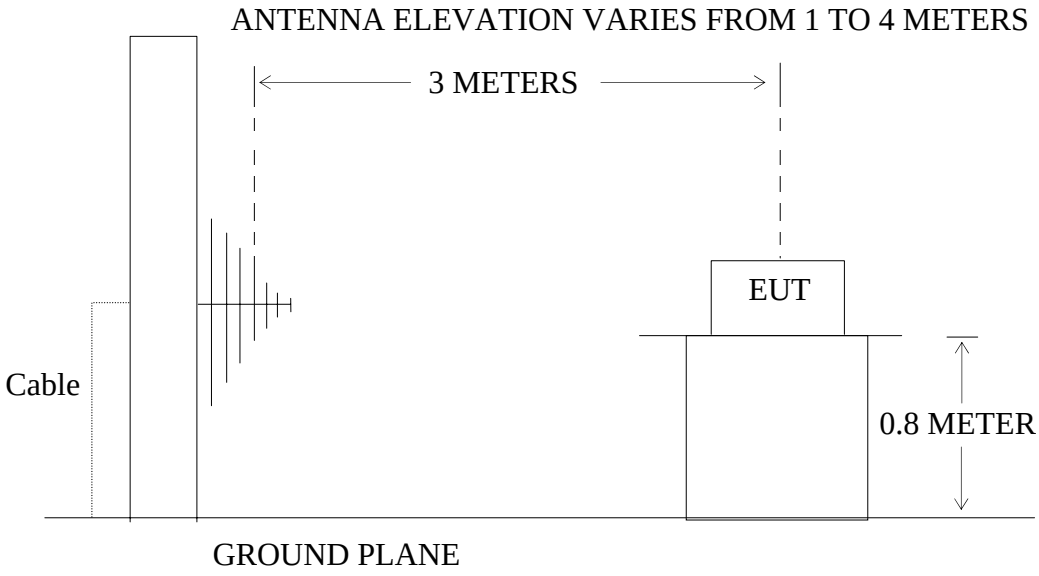
4.1.Block Diagram of Test Setup

4.1.1.Block diagram of connection between the EUT and simulators

EUT

(EUT: Wireless Speaker (TX))

4.1.2.Anechoic Chamber Test Setup Diagram



(EUT: Wireless Speaker (TX))

4.2. The Emission Limit for Section 15.235(a)

4.2.1. The field strength of any emission within this band shall not exceed 10,000 microvolts/meter at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in Section 15.35 for limiting peak emissions apply.

4.3. 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.

4.3.1. Wireless Speaker (TX) (EUT)

Model Number	**:**	WS3201
Serial Number	**:**	N/A
Manufacturer	**:**	Clever Bright Electronic Factory

4.4. Operating Condition of EUT

4.4.1. Setup the EUT and simulator as shown as Section 4.1.

4.4.2. Turn on the power of all equipment.

4.4.3. Let the EUT work in TX modes measure it.

4.5. 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: 2003 on radiated emission measurement.

The bandwidth of test receiver is set at 120kHz in 30-1000MHz.

4.6. The Field Strength of Radiation Emission Measurement Results

PASS.

Date of Test:	September 1, 2010	Temperature:	25°C
EUT:	Wireless Speaker (TX)	Humidity:	50%
Model No.:	WS3201	Power Supply:	6.0V DC ("AA" batteries 4×)
Test Mode:	TX	Test Engineer:	Joe

Fundamental Radiated Emissions

Test conditions		Fundamental Frequency	
		49.86MHz	
T_{nom}(25°C) V_{nom} (6.0V DC)	Unit	(dBμV/m)/(μV/m) PEAK	(dBμV/m)/(μV/m) AV
	Vertical	65.20/1819.7	62.40/1318.3
	Horizontal	60.18/1020.9	57.41/742.2
Limit		100/100,000	80/10,000
Note: Measurement was performed with modulated signal with average detector and peak detector.			

The spectral diagrams in appendix I.

5. RADIATED EMISSION FOR FCC PART 15 SECTION 15.235(B)

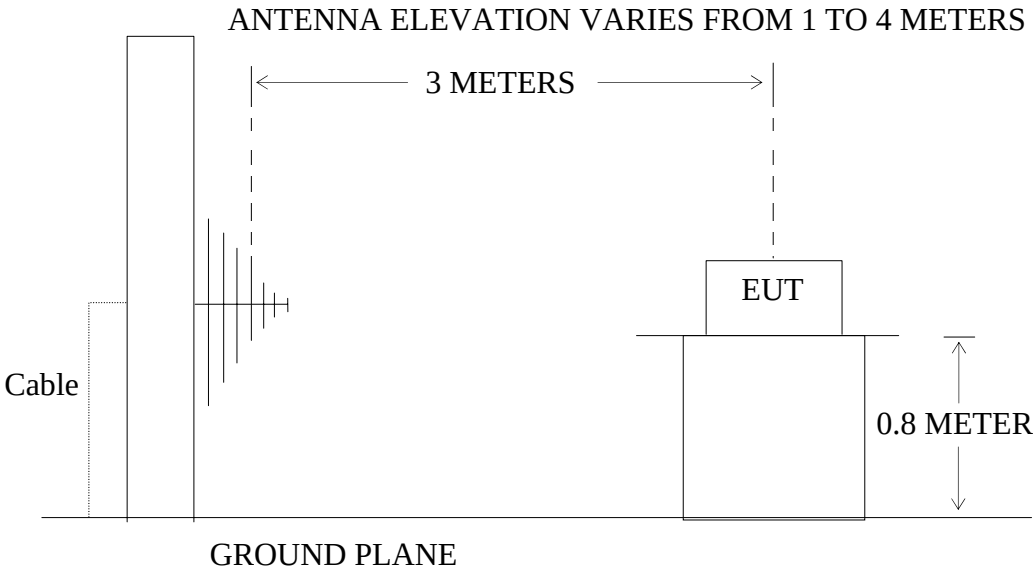
5.1.Block Diagram of Test Setup

5.1.1.Block diagram of connection between the EUT and simulators

EUT

(EUT: Wireless Speaker (TX))

5.1.2.Anechoic Chamber Test Setup Diagram



(EUT: Wireless Speaker (TX))

5.2.The Field Strength of Radiation Emission Measurement Limits

5.2.1.The field strength of any emissions appearing between the band edges and up to10kHz above and below the band edges shall not exceed the general radiated emission limits in section 15.209. The field strength of any emissions removed by more than 10kHz from the band edges shall not exceed the general radiated emission limits in section 15.209.

Radiation Emission Measurement Limits According to Section 15.209

Frequency (MHz)	Limit		
	Field Strength of Quasi-peak Value (microvolts/m)	Field Strength of Quasi-peak Value (dBμV/m)	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.
30 - 88	100	40	
88 - 216	150	43.5	
216 - 960	200	46	
Above 960	500	54	

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. Wireless Speaker (TX) (EUT)

Model Number : WS3201
Serial Number : N/A
Manufacturer : Clever Bright Electronic Factory

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 modes measure it.

5.5. 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: 2003 on radiated emission measurement.

The bandwidth of test receiver is set at 120kHz in 30-1000MHz.

The frequency range from 30MHz to 1000MHz 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.

5.6. The Emission Measurement Result

PASS.

Date of Test:	September 1, 2010	Temperature:	25°C
EUT:	Wireless Speaker (TX)	Humidity:	50%
Model No.:	WS3201	Power Supply:	6.0V DC ("AA" batteries 4×)
Test Mode:	TX	Test Engineer:	Joe

Frequency (MHz)	Reading (dBμV/m)	Factor(dB) Corr.	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
149.5830	25.26	14.53	39.79	43.50	-3.71	Vertical
249.3030	24.22	17.47	41.69	46.00	-4.31	
349.0210	20.25	20.67	40.92	46.00	-5.08	
149.5830	24.40	14.53	38.93	43.50	-4.57	Horizontal
249.3030	23.41	17.47	40.88	46.00	-5.12	
349.0210	19.87	20.67	40.54	46.00	-5.46	

Note:

1. The spectral diagrams in appendix 1 display the measurement of peak values with corrected factors counted.
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:

   Result = Reading + Corrected Factor

   Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss – Amplifier Gain

6. BAND EDGES FOR FCC PART 15 SECTION 15.235(B)

6.1.The Requirement For Section 15.235(b)

6.1.1.The field strength of any emission appearing between the band edges and up to 10kHz above and below the band edges shall be attenuated at least 26dB below the level of the unmodulated carrier or to the general limits in Section 15.209, whichever permits the higher emission levels.

Radiation Emission Measurement Limits According to Section 15.209

Frequency (MHz)	Limit		
	Field Strength of Quasi-peak Value (microvolts/m)	Field Strength of Quasi-peak Value (dBμV/m)	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.
30 - 88	100	40	
88 - 216	150	43.5	
216 - 960	200	46	
Above 960	500	54	

6.2.EUT Configuration on Measurement

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

6.2.1.Wireless Speaker (TX) (EUT)

Model Number : WS3201
Serial Number : N/A
Manufacturer : Clever Bright Electronic Factory

6.3. Operating Condition of EUT

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

6.3.2. Turn on the power of all equipment.

6.3.3. Let the EUT work in TX modes measure it.

6.4. 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: 2003 on radiated emission measurement.

The bandwidth of test receiver is set at 120kHz in 30-1000MHz.

The frequency range from 30MHz to 1000MHz 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.

6.5. The Field Strength of Radiation Emission Measurement Results

Pass.

The frequency ranges from 49.81MHz to 49.82MHz, from 49.90MHz to 49.91MHz are checked. Because the field strength is higher, we test to comply to the general limits in Section 15.209.

Date of Test:	September 1, 2010	Temperature:	25°C
EUT:	Wireless Speaker (TX)	Humidity:	50%
Model No.:	WS3201	Power Supply:	6.0V DC ("AA" batteries 4×)
Test Mode:	TX	Test Engineer:	Joe

Frequency (MHz)	Reading (dBμV/m)	Factor(dB) Corr.	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
49.8100	22.38	14.52	36.91	40	-3.10	Vertical
49.9100	22.50	14.49	36.99	40	-3.01	
49.8100	22.04	14.50	36.54	40	-3.46	Horizontal
49.9100	22.18	14.48	36.66	40	-3.34	

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:

Result = Reading + Corrected Factor

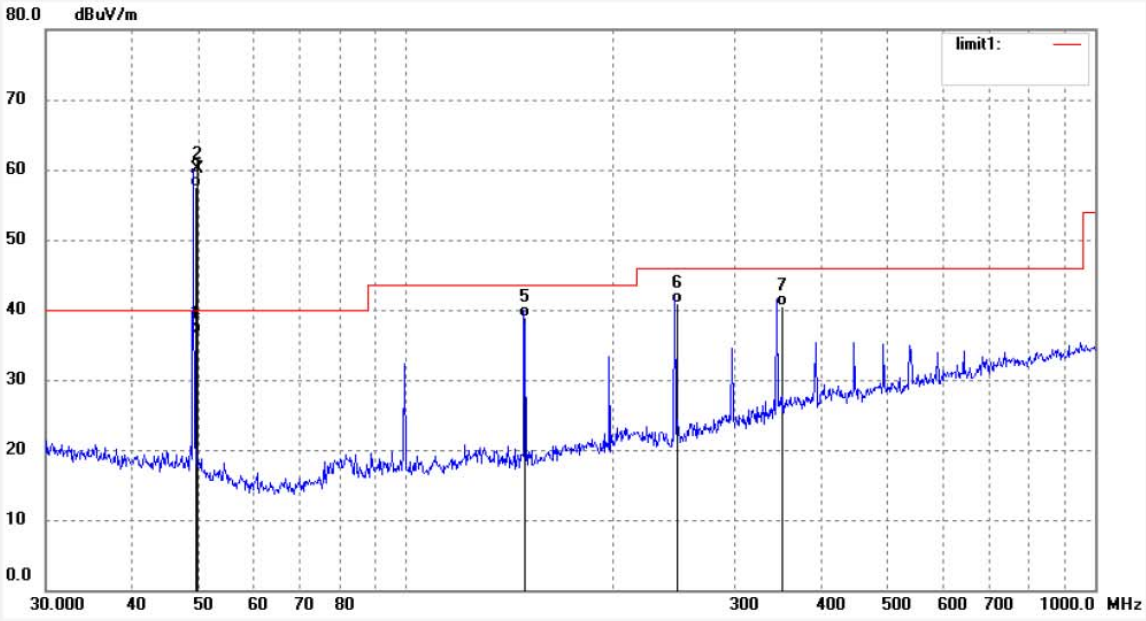
Where Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss – Amplifier Gain

APPENDIX I
(Test Curves)

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: joe #661	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 6V
Test item: Radiation Test	Date: 10/09/01/
Temp.(C)/Hum.(%) 25 C / 50 %	Time: 9/34/34
EUT: Wireless Speaker (TX)	Engineer Signature: Joe
Mode: TX	Distance: 3m
Model: WS3201	
Manufacturer: Clever Bright Electronic Factory	

Note: Report No.:ATE20101876



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	49.8100	22.04	14.50	36.54	40.00	-3.46	QP			
2	49.8616	45.69	14.49	60.18	40.00	20.18	peak			
3	49.8616	42.92	14.49	57.41	40.00	17.41	AVG			
4	49.9100	22.18	14.48	36.66	40.00	-3.34	QP			
5	149.5830	24.40	14.53	38.93	43.50	-4.57	QP			
6	249.3030	23.41	17.47	40.88	46.00	-5.12	QP			
7	349.0210	19.87	20.67	40.54	46.00	-5.46	QP			

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 966 chamber
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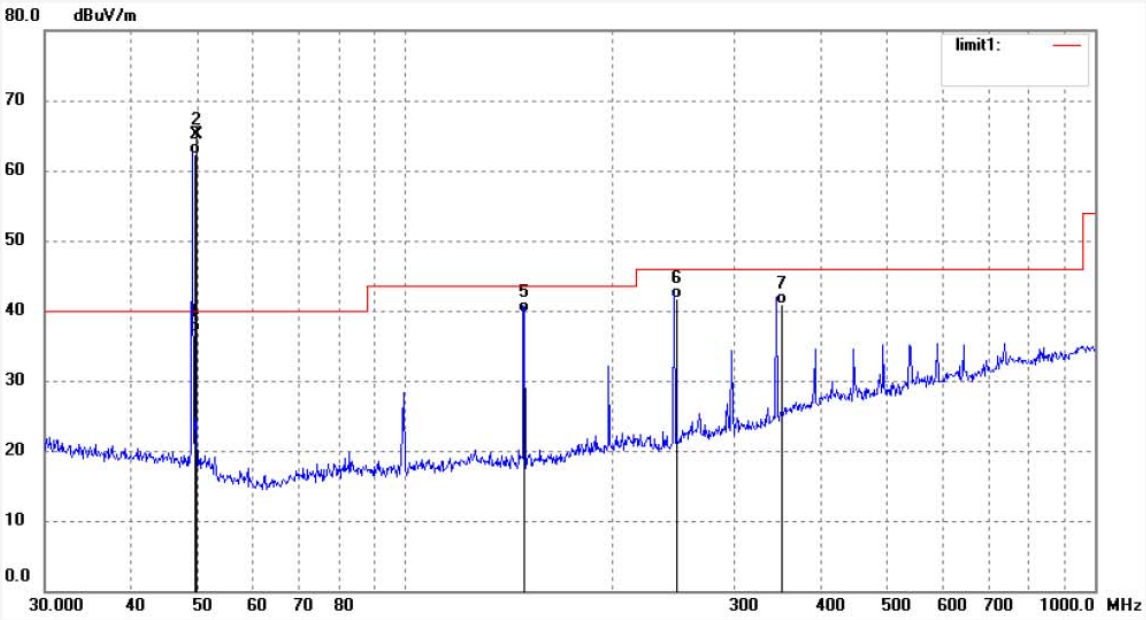
Fax:+86-0755-26503396

Job No.: joe #660	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC 6V
Test item: Radiation Test	Date: 10/09/01/
Temp.(C)/Hum.(%) 25 C / 50 %	Time: 9/30/00
EUT: Wireless Speaker (TX)	Engineer Signature: Joe
Mode: TX	Distance: 3m
Model: WS3201	
Manufacturer: Clever Bright Electronic Factory	

Note: Report No.:ATE20101876



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	49.8100	22.38	14.52	36.90	40.00	-3.10	QP			
2	49.8616	50.70	14.50	65.20	40.00	25.20	peak			
3	49.8616	47.90	14.50	62.40	40.00	22.40	AVG			
4	49.9100	22.50	14.49	36.99	40.00	-3.01	QP			
5	149.5830	25.26	14.53	39.79	43.50	-3.71	QP			
6	249.3030	24.22	17.47	41.69	46.00	-4.31	QP			
7	349.0210	20.25	20.67	40.92	46.00	-5.08	QP			