

APPLICATION CERTIFICATION FCC Part 15C
On Behalf of
Shenzhen KingBoard Technology Co., Ltd.

Speaker
Model No.:KTS-06

FCC ID: SXXKTS-06

Prepared for : Shenzhen KingBoard Technology Co., Ltd.
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Shenzhen, China

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Date of Test : April 11-24, 2013
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Test Report Certification

Applicant : Shenzhen KingBoard Technology Co., Ltd.
 Manufacturer : Shenzhen KingBoard Technology Co., Ltd.
 EUT Description : Speaker
 (A) MODEL NO.: KTS-06
 (B) TRADE NAME.: N/A
 (C) POWER SUPPLY: DC 3.7V (Li-polymer battery) or DC 5V (Power by USB port)

Measurement Procedure Used:

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

The EUT was tested according to 558074 D01 DTS Meas Guidance v03r01

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 : April 11-24, 2013

Prepared by : Apple Lv
 (Engineer)

Approved & Authorized Signer : Heim
 (Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	:	Speaker
Model Number	:	KTS-06
Frequency Range	:	Bluetooth V4.0 BLE: 2402MHz-2480MHz
Number of Channels	:	40
Antenna Gain	:	0dBi
Power Supply	:	DC 3.7V (Li-polymer battery) or DC 5V (Power by USB port)
Applicant	:	Shenzhen KingBoard Technology Co., Ltd.
Address	:	Bldg. A, Dakanglong Industry Zone, Dabuxiang, Guanlan, Shenzhen, China
Manufacturer	:	Shenzhen KingBoard Technology Co., Ltd.
Address	:	Bldg. A, Dakanglong Industry Zone, Dabuxiang, Guanlan, Shenzhen, China
Date of sample received	:	April 11, 2013
Date of Test	:	April 11-24, 2013

1.2.Carrier Frequency of Channels

Channel	Frequency(MHz)	Channel	Frequency(MHz)	Channel	Frequency(MHz)	Channel	Frequency(MHz)
01	2402	11	2422	21	2442	31	2462
02	2404	12	2424	22	2444	32	2464
03	2406	13	2426	23	2446	33	2466
04	2408	14	2428	24	2448	34	2468
05	2410	15	2430	25	2450	35	2470
06	2412	16	2432	26	2452	36	2472
07	2414	17	2434	27	2454	37	2474
08	2416	18	2436	28	2456	38	2476
09	2418	19	2438	29	2458	39	2478
10	2420	20	2440	30	2460	40	2480

1.3.Special Accessory and Auxiliary Equipment

Notebook PC : Manufacturer: Lenovo
Model No.: 4290-RT8
Serial No.: R9-FW93G 11/08

1.4.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

1.5.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 dates	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. 6, 2013	Feb. 5, 2014
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Feb. 6, 2013	Feb. 5, 2014
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Feb. 6, 2013	Feb. 5, 2014
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Feb. 6, 2013	Feb. 5, 2014
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 12, 2013	Jan. 11, 2014
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 12, 2013	Jan. 11, 2014
Highpass Filter	Wainwright Instruments	WHKX3.6/18 G-10SS	N/A	Jan. 12, 2013	Jan. 11, 2014
Band Reject Filter	Wainwright Instruments	WRCG2400/2 485-2375/2510 -60/11SS	N/A	Jan. 12, 2013	Jan. 11, 2014

3. OPERATION OF EUT DURING TESTING

3.1.Operating Mode

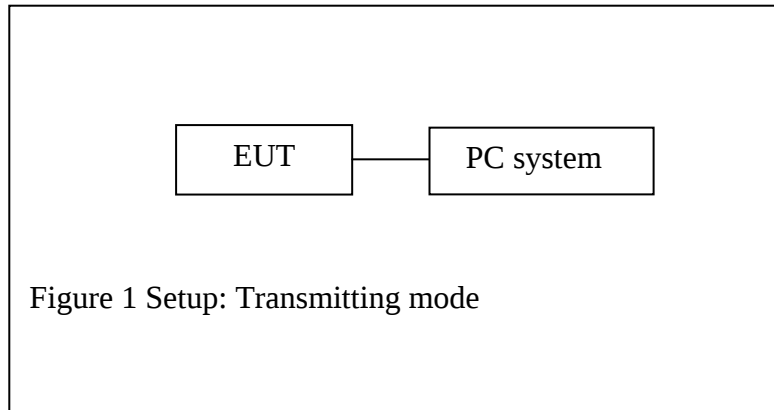
The mode is used: **BLE Transmitting mode**

Low Channel: 2402MHz

Middle Channel: 2440MHz

High Channel: 2480MHz

3.2.Configuration and peripherals

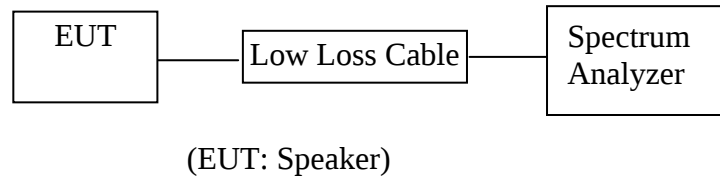


4. TEST PROCEDURES AND RESULTS

FCC Rules	Description of Test	Result
Section 15.247(a)(2)	6dB Bandwidth Test	Compliant
Section 15.247(e)	Power Spectral Density Test	Compliant
Section 15.247(b)(3)	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

5. 6DB BANDWIDTH MEASUREMENT

5.1. Block Diagram of Test Setup



5.2. The Requirement For Section 15.247(a)(2)

Section 15.247(a)(2): Systems using digital modulation techniques may operate in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

5.3. EUT Configuration on Measurement

The following equipment is 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. Speaker (EUT)

Model Number : KTS-06
Serial Number : N/A

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. The transmit frequency are 2402-2480 MHz. We select 2402MHz, 2440MHz, and 2480MHz TX frequency to transmit.

5.5. Test Procedure

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

5.6. Test Result

PASS.

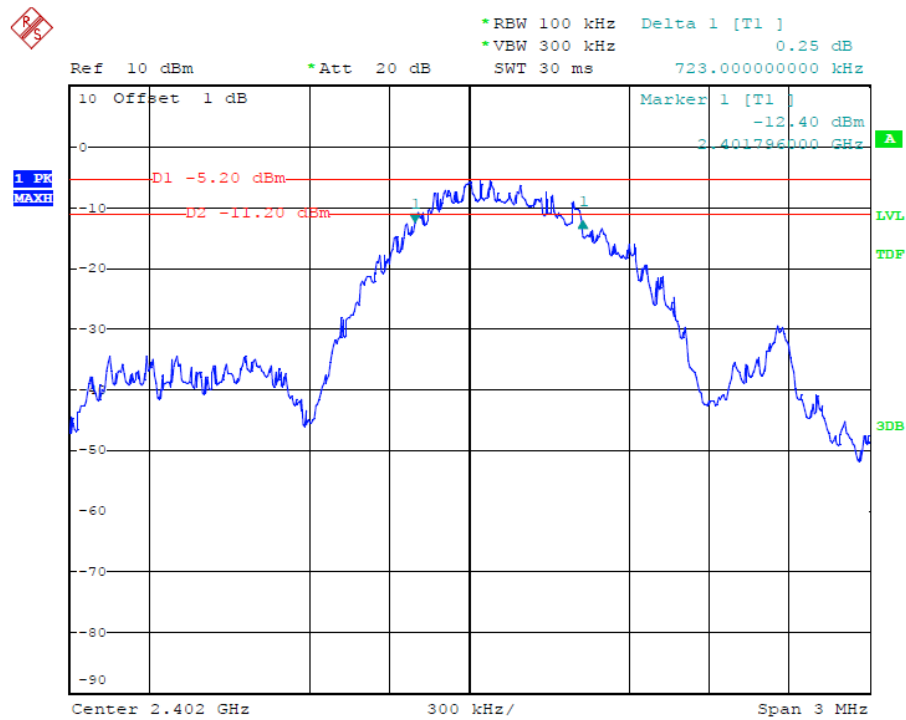
Date of Test:	<u>April 20, 2013</u>	Temperature:	<u>25°C</u>
EUT:	<u>Speaker</u>	Humidity:	<u>50%</u>
Model No.:	<u>KTS-06</u>	Power Supply:	<u>DC 5V</u>
Test Mode:	<u>TX</u>	Test Engineer:	<u>Star</u>

The test was performed with BLE

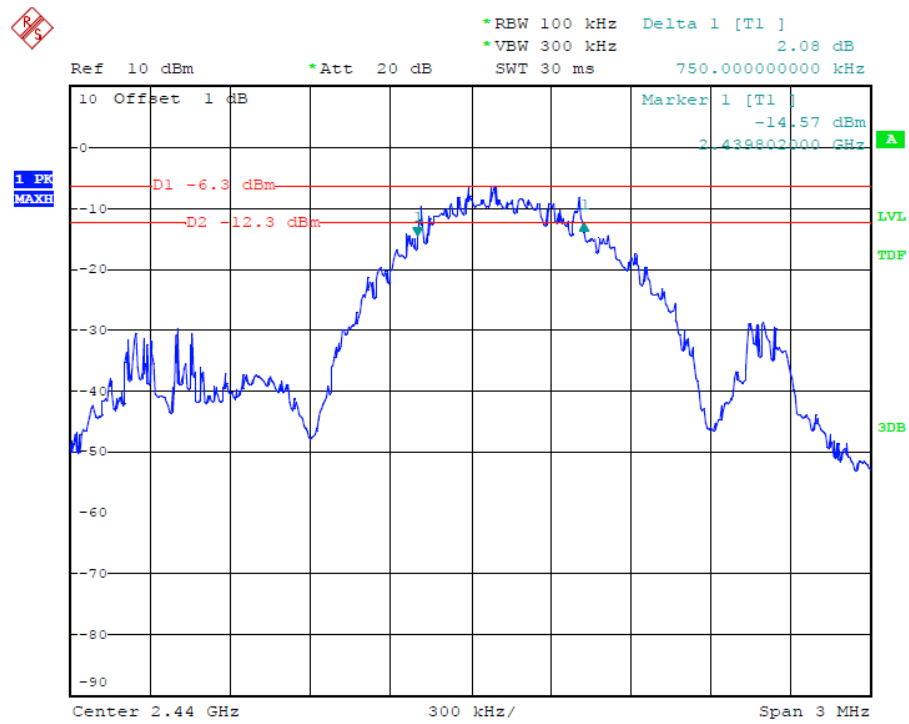
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
Low	2402	0.723	> 0.5MHz
Middle	2440	0.750	> 0.5MHz
High	2480	0.751	> 0.5MHz

The spectrum analyzer plots are attached as below.

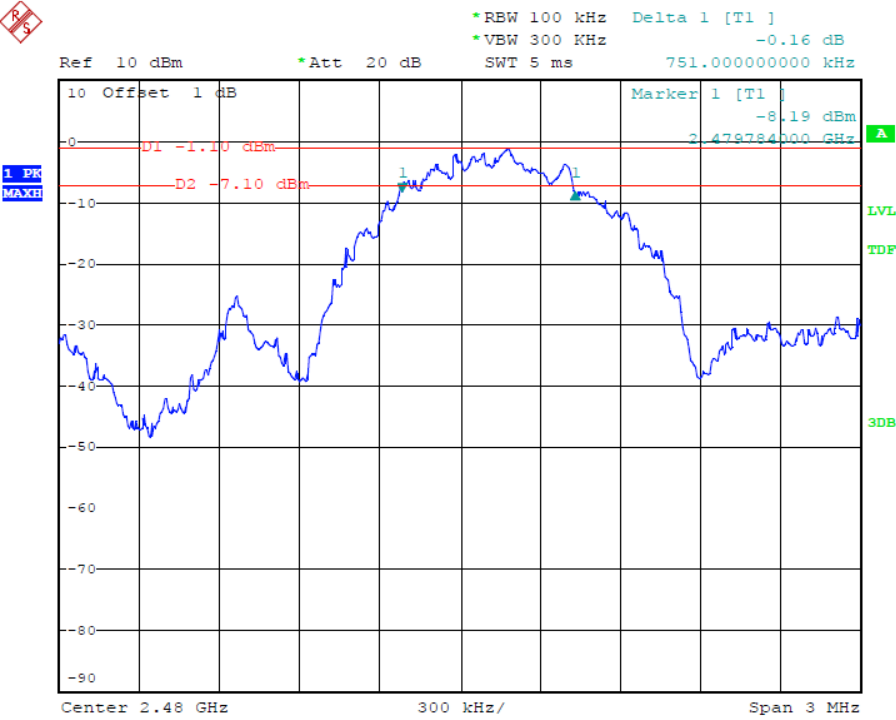
BLE Channel Low 2402MHz



BLE Channel Middle 2440MHz

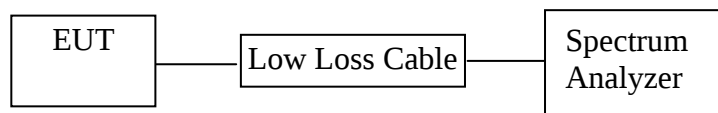


BLE Channel High 2480MHz



6. MAXIMUM PEAK OUTPUT POWER

6.1. Block Diagram of Test Setup



(EUT: Speaker)

6.2. The Requirement For Section 15.247(b)(3)

Section 15.247(b)(3): For systems using digital modulation in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz bands: 1 Watt.

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. Speaker (EUT)

Model Number : KTS-06

Serial Number : N/A

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 modes measure it. The transmit frequency are 2402-2480 MHz. We select 2402MHz, 2440MHz, and 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. The EUT was tested according to Section 9.1.1 of the 558074 D01 DTS Meas Guidance v03r01

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

6.5.4. Measurement the maximum peak output power.

6.6. Test Result

PASS.

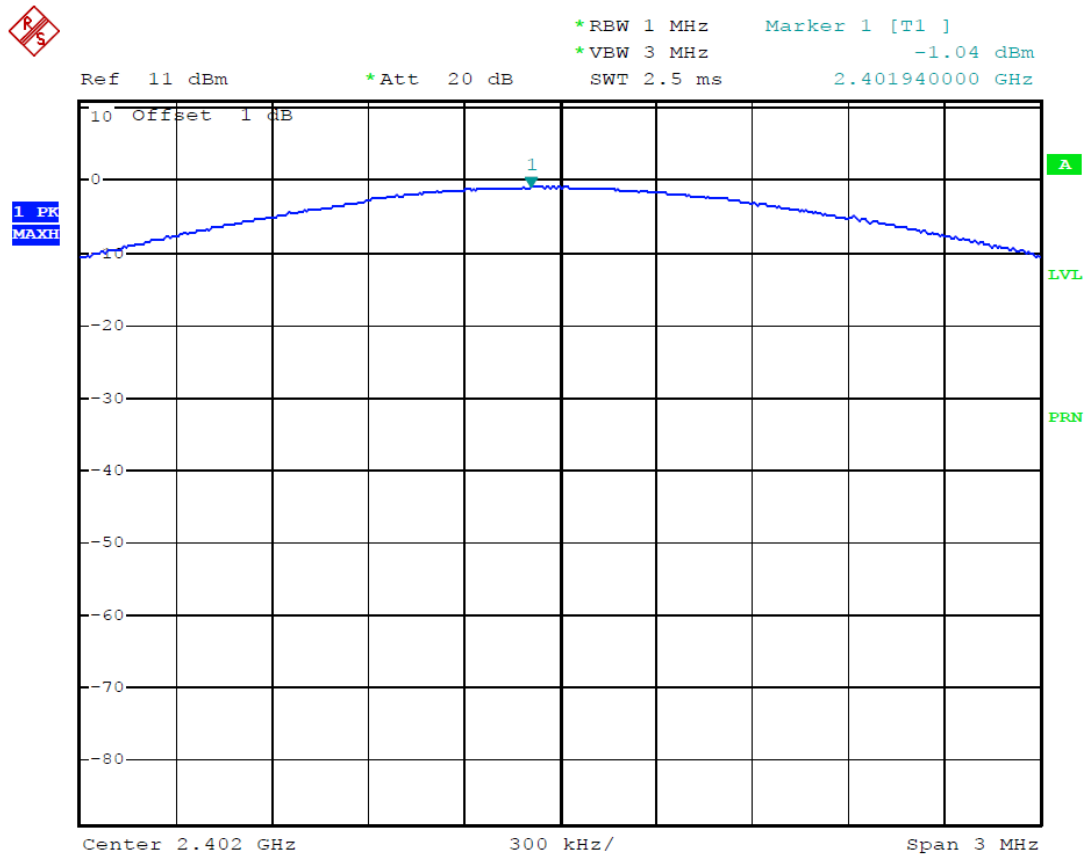
Date of Test:	<u>April 20, 2013</u>	Temperature:	<u>25°C</u>
EUT:	<u>Speaker</u>	Humidity:	<u>50%</u>
Model No.:	<u>KTS-06</u>	Power Supply:	<u>DC 5V</u>
Test Mode:	<u>TX</u>	Test Engineer:	<u>Star</u>

The test was performed with BLE

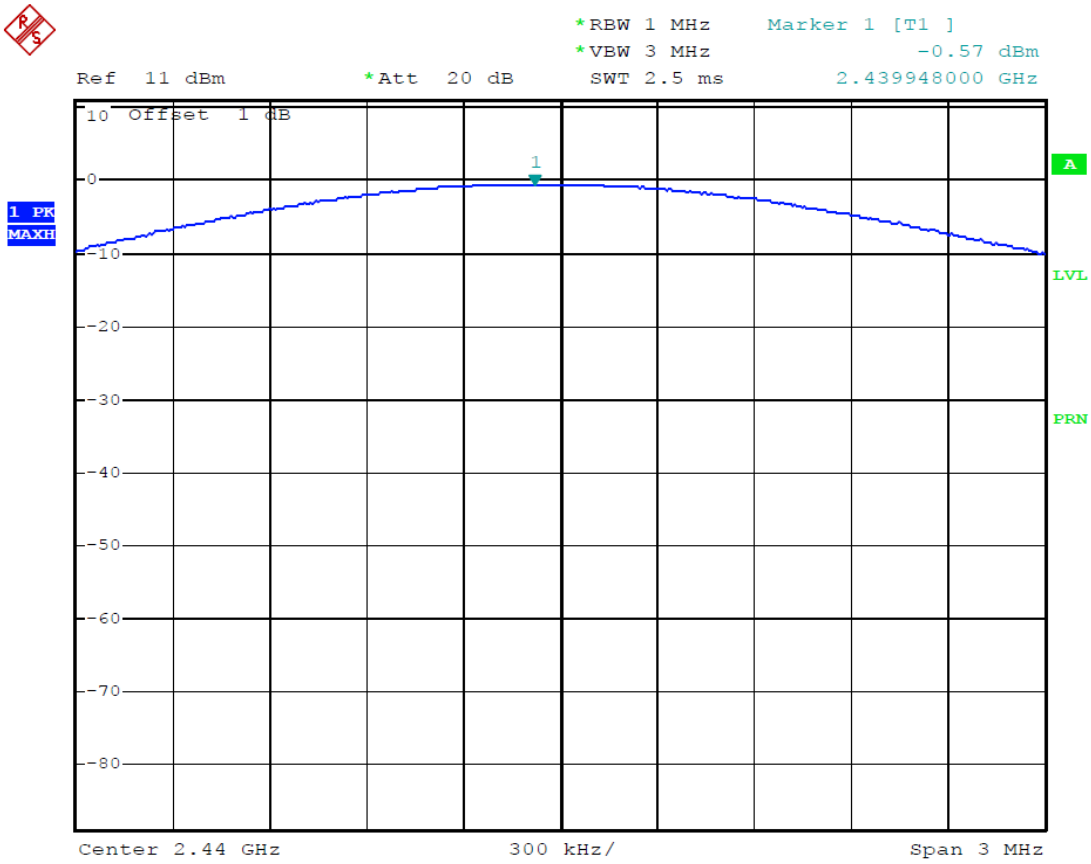
Channel	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (mW)	Limits dBm / W
Low	2402	-1.04	0.79	30 dBm / 1 W
Middle	2440	-0.57	0.88	30 dBm / 1 W
High	2480	-0.40	0.91	30 dBm / 1 W

The spectrum analyzer plots are attached as below.

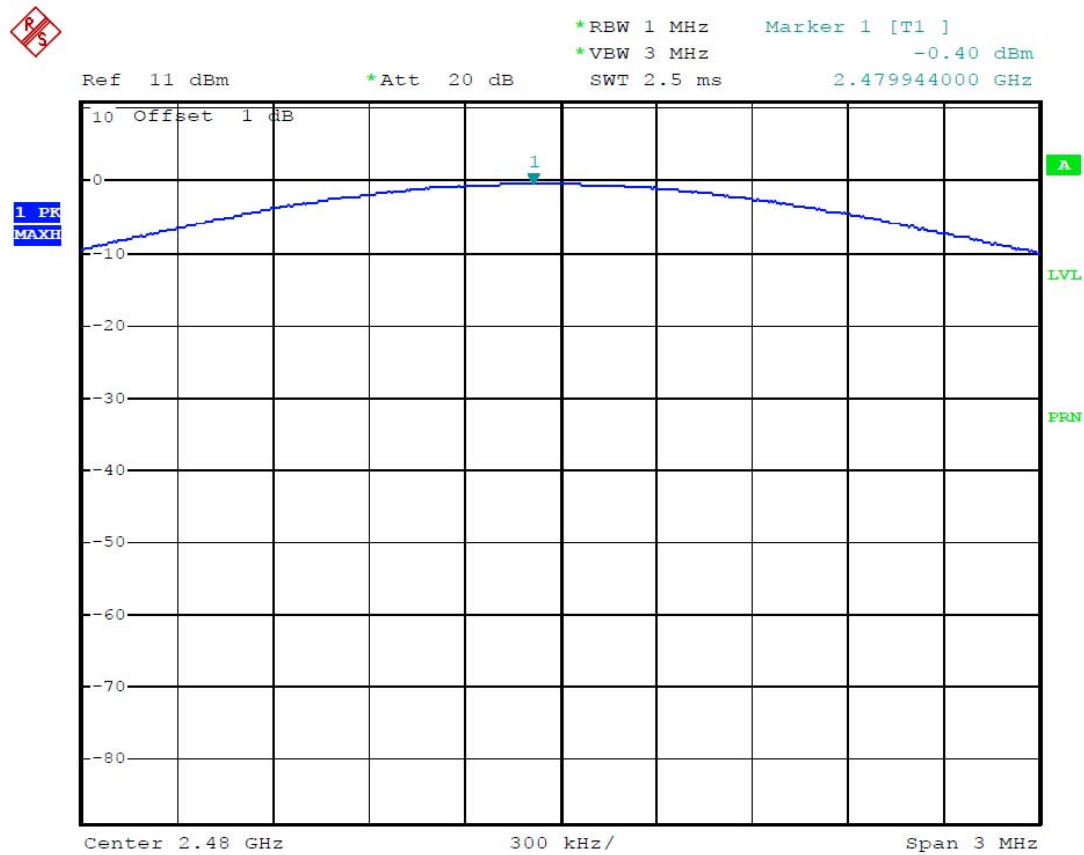
BLE Channel Low 2402MHz



BLE Channel Middle 2440MHz

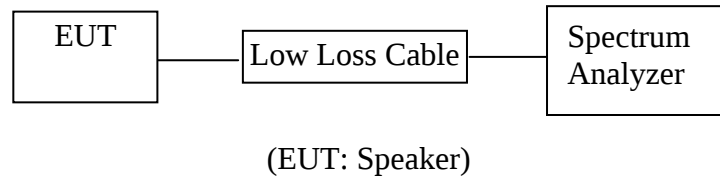


BLE Channel High 2480MHz



7. POWER SPECTRAL DENSITY MEASUREMENT

7.1. Block Diagram of Test Setup



7.2. The Requirement For Section 15.247(e)

Section 15.247(e): For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

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. Speaker (EUT)

Model Number : KTS-06
Serial Number : N/A

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 modes measure it. The transmit frequency are 2402-2480. We select 2402MHz, 2440MHz, and 2480MHz TX frequency to transmit.

7.5. Test Procedure

7.5.1. The EUT was tested according to Section 10.2 of the 558074 D01 DTS Meas Guidance v03r01.

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

7.5.3. Measurement Procedure PKPSD:

This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance, and is optional if the maximum conducted (average) output power was used to demonstrate compliance.

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
4. Set the VBW $\geq 3 \times \text{RBW}$.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

7.5.4. Measurement the maximum power spectral density.

7.6. Test Result

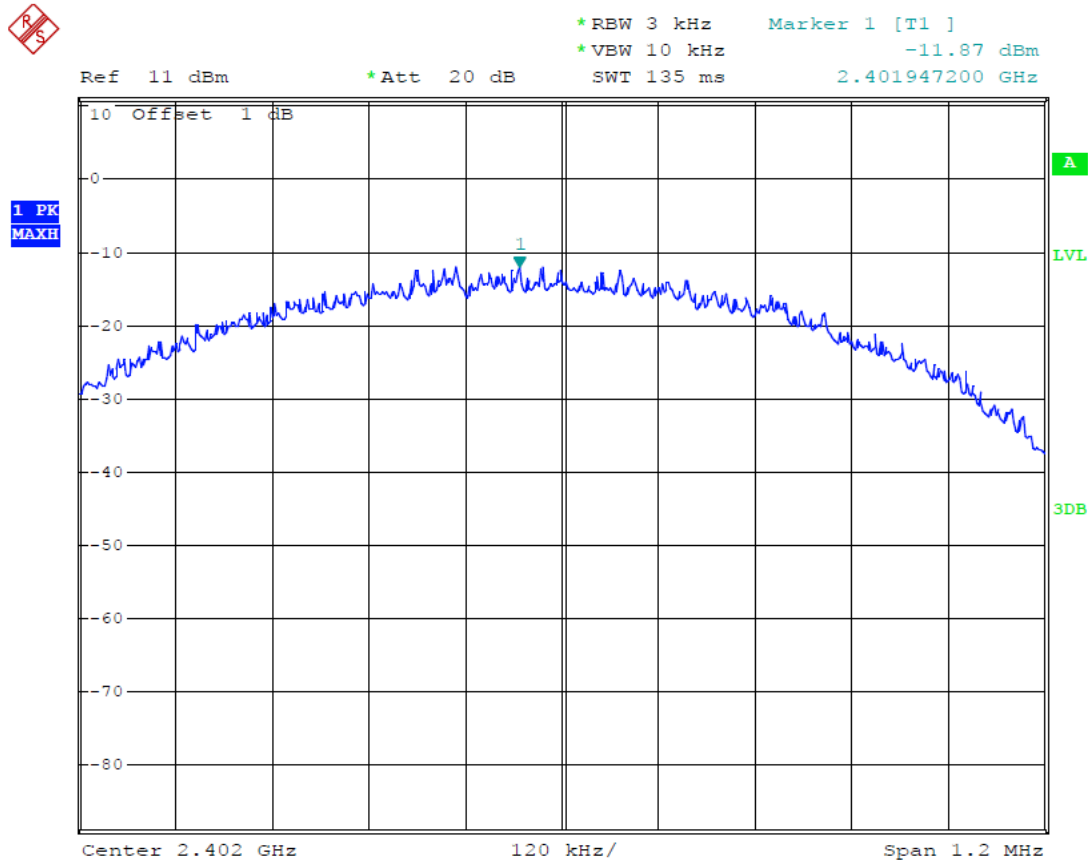
PASS.

Date of Test:	April 20, 2013	Temperature:	25°C
EUT:	Speaker	Humidity:	50%
Model No.:	KTS-06	Power Supply:	DC 5V
Test Mode:	TX	Test Engineer:	Star

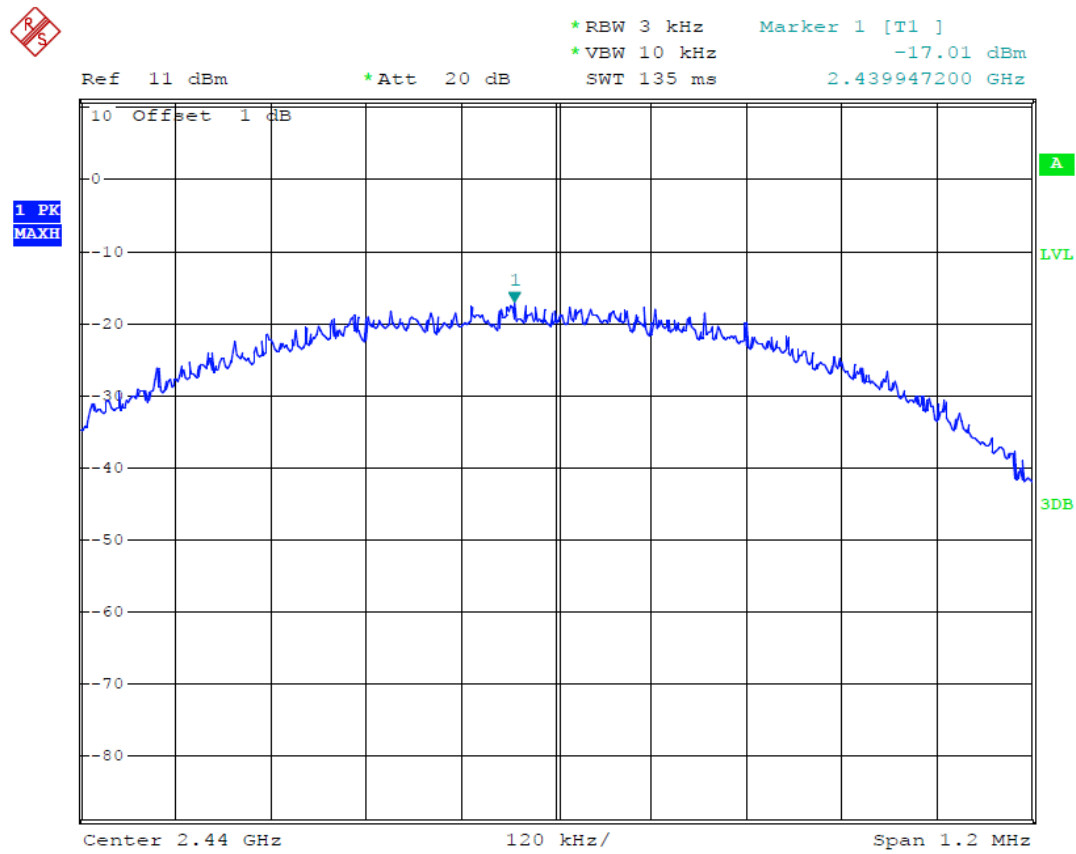
The test was performed with BLE			
Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limits (dBm/3kHz)
Low	2402	-11.87	8 dBm
Middle	2440	-17.01	8 dBm
High	2480	-14.61	8 dBm

The spectrum analyzer plots are attached as below.

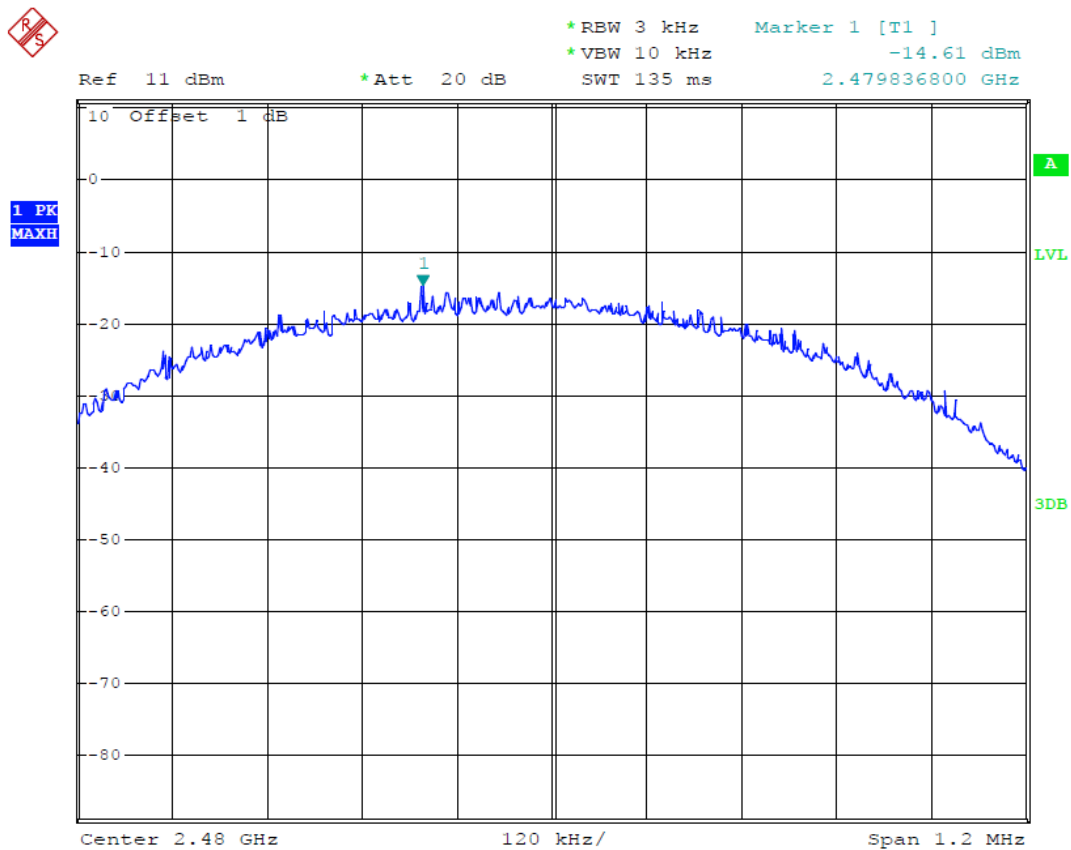
BLE Channel Low 2402MHz



BLE Channel Middle 2440MHz

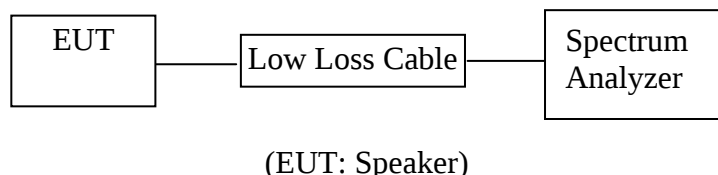


BLE Channel High 2480MHz



8. BAND EDGE COMPLIANCE TEST

8.1. Block Diagram of Test Setup



8.2. 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).

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. Speaker (EUT)

Model Number : KTS-06
Serial Number : N/A

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 modes measure it. The transmit frequency are 2402-2480 MHz. We select 2402MHz, 2480MHz TX frequency to transmit.

8.5. Test Procedure

Conducted Band Edge:

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

8.5.2. Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz.

Radiate Band Edge:

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

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

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

8.5.6. 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

8.5.7. The band edges was measured and recorded.

8.6. Test Result

Pass

Conducted test

Date of Test:	April 20, 2013	Temperature:	25°C
EUT:	Speaker	Humidity:	50%
Model No.:	KTS-06	Power Supply:	DC 5V
Test Mode:	TX	Test Engineer:	Star

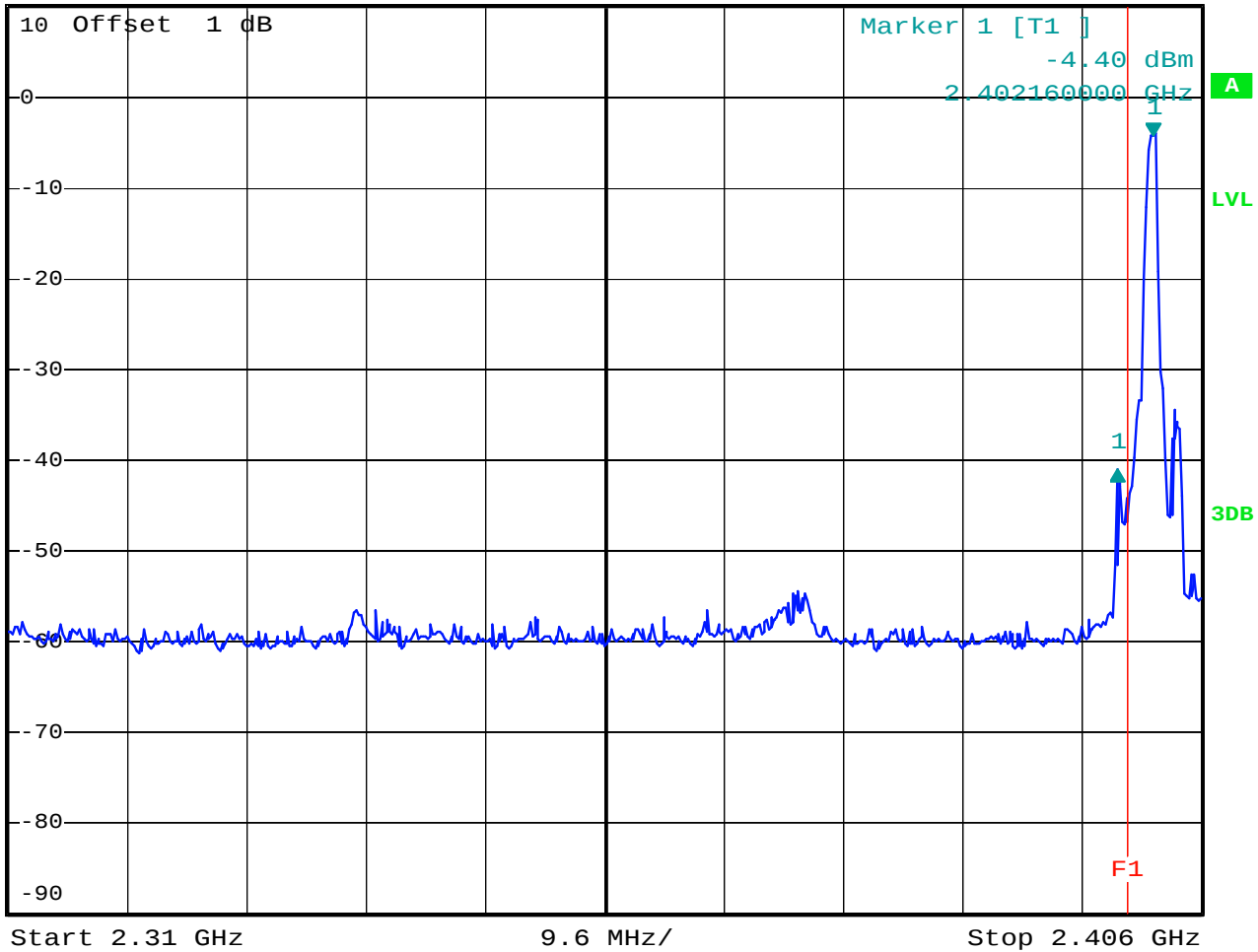
The test was performed with BLE		
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2402	36.71	> 20dBc
2480	42.61	> 20dBc

BLE Channel Low 2402MHz



1 PK
MAXH

* RBW 100 kHz Delta 1 [T1]
* VBW 300 kHz -36.71 dB
Ref 10 dBm * Att 20 dB SWT 10 ms -2.880000000 MHz

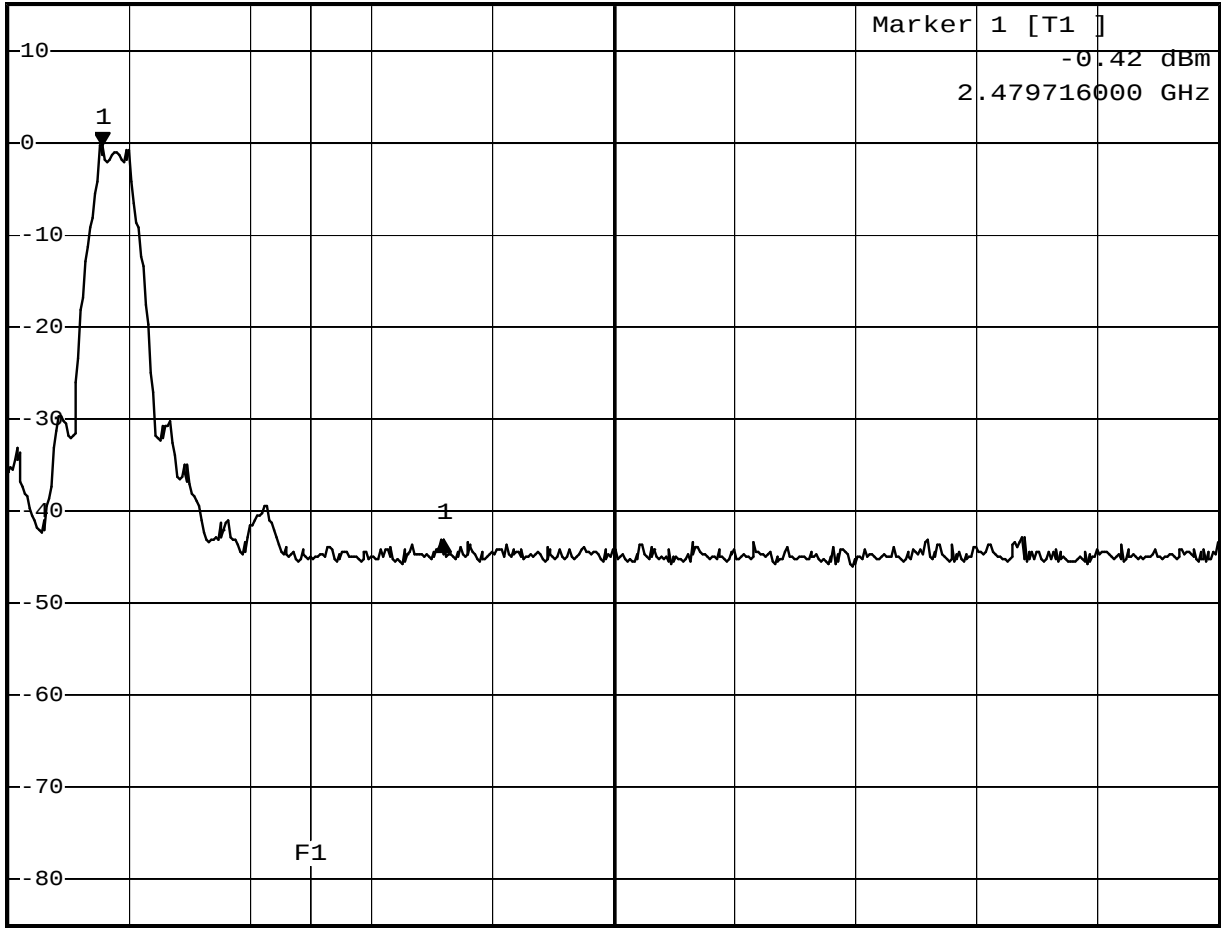


BLE Channel High 2480MHz



* RBW 100 kHz Delta 1 [T1]
* VBW 300 kHz -42.61 dB
Ref 15 dBm Att 50 dB SWT 2.5 ms 6.204000000 MHz

1 PK
MAXH



A

TDF

3DB

Start 2.478 GHz 2.2 MHz/ Stop 2.5 GHz

Radiated Band Edge Result

Date of Test:	<u>April 11, 2013</u>	Temperature:	<u>25°C</u>
EUT:	<u>Speaker</u>	Humidity:	<u>50%</u>
Model No.:	<u>KTS-06</u>	Power Supply:	<u>DC 5V</u>
Test Mode:	<u>BLE Channel Low 2402MHz</u>	Test Engineer:	<u>Star</u>

Frequency (MHz)	Reading(dBμV/m)		Factor(dB) Corr.	Result(dBμV/m)		Limit(dBμV/m)		Margin(dB)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2310.000	36.83	45.22	-7.81	29.02	37.41	54.00	74.00	-24.98	-36.59	Vertical
2339.971	38.14	47.09	-7.80	30.34	39.29	54.00	74.00	-23.66	-34.71	Vertical
2390.000	35.13	44.54	-7.53	27.60	37.01	54.00	74.00	-26.40	-36.99	Vertical
2310.000	31.28	43.98	-7.81	23.47	36.17	54.00	74.00	-30.53	-37.83	Horizontal
2375.708	36.18	47.72	-7.62	28.56	40.10	54.00	74.00	-25.44	-33.90	Horizontal
2390.000	33.58	44.28	-7.53	26.05	36.75	54.00	74.00	-27.95	-37.25	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: April 11, 2013

Temperature: 25°C

EUT: Speaker

Humidity: 50%

Model No.: KTS-06

Power Supply: DC 5V

Test Mode: BLE Channel High 2480MHz

Test Engineer: Star

Frequency (MHz)	Reading(dBμV/m)		Factor(dB) Corr.	Result(dBμV/m)		Limit(dBμV/m)		Margin(dB)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
2483.500	34.14	45.73	-7.37	26.77	38.36	54.00	74.00	-27.23	-35.64	Vertical
2493.689	35.25	45.56	-7.39	27.86	38.17	54.00	74.00	-26.14	-35.83	Vertical
2500.000	32.58	43.92	-7.40	25.18	36.52	54.00	74.00	-28.82	-37.48	Vertical
2483.500	36.89	46.09	-7.37	29.52	38.72	54.00	74.00	-24.48	-35.28	Horizontal
2493.054	35.18	46.12	-7.39	27.79	38.73	54.00	74.00	-26.21	-35.27	Horizontal
2500.000	34.04	44.30	-7.40	26.64	36.90	54.00	74.00	-27.36	-37.10	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:
Result = Reading + Corrected Factor
3. Display the measurement of peak values.



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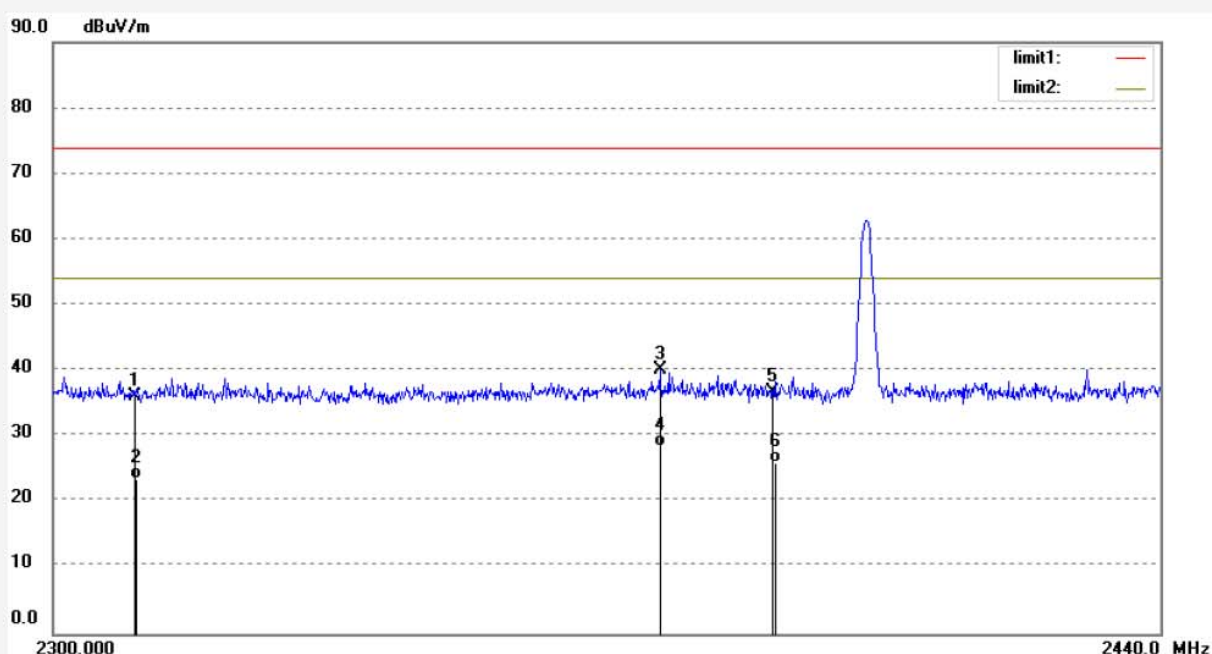
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: STAR #1905
Standard: FCC 15C PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 24 C / 48 %
EUT: Speaker
Mode: TX 2402MHz
Model: KTS-06
Manufacturer: KingBoard

Polarization: Horizontal
Power Source: DC 5V
Date: 2013/04/11
Time: 19:44:11
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20130606



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	43.98	-7.81	36.17	74.00	-37.83	peak			
2	2310.000	31.28	-7.81	23.47	54.00	-30.53	AVG			
3	2375.708	47.72	-7.62	40.10	74.00	-33.90	peak			
4	2375.708	36.18	-7.62	28.56	54.00	-25.44	AVG			
5	2390.000	44.28	-7.53	36.75	74.00	-37.25	peak			
6	2390.000	33.58	-7.53	26.05	54.00	-27.95	AVG			



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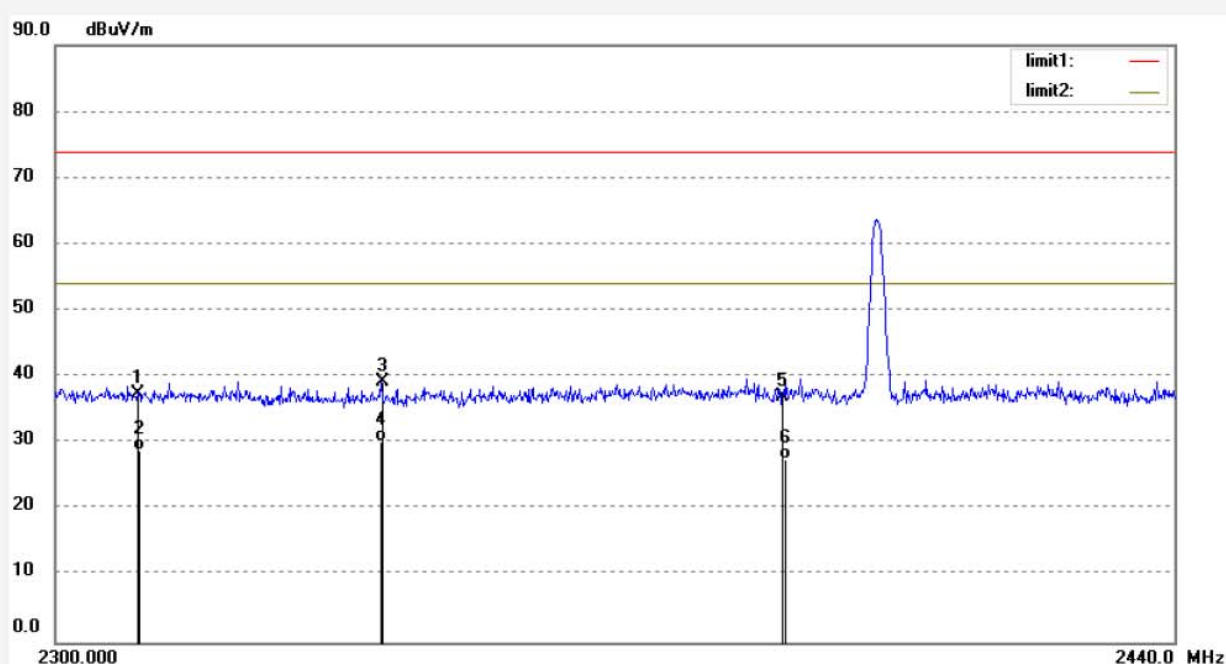
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: STAR #1906
Standard: FCC 15C PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 24 C / 48 %
EUT: Speaker
Mode: TX 2402MHz
Model: KTS-06
Manufacturer: KingBoard

Polarization: Vertical
Power Source: DC 5V
Date: 2013/04/11
Time: 19:46:54
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20130606



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	45.22	-7.81	37.41	74.00	-36.59	peak			
2	2310.000	36.83	-7.81	29.02	54.00	-24.98	AVG			
3	2339.971	47.09	-7.80	39.29	74.00	-34.71	peak			
4	2339.971	38.14	-7.80	30.34	54.00	-23.66	AVG			
5	2390.000	44.54	-7.53	37.01	74.00	-36.99	peak			
6	2390.000	35.13	-7.53	27.60	54.00	-26.40	AVG			



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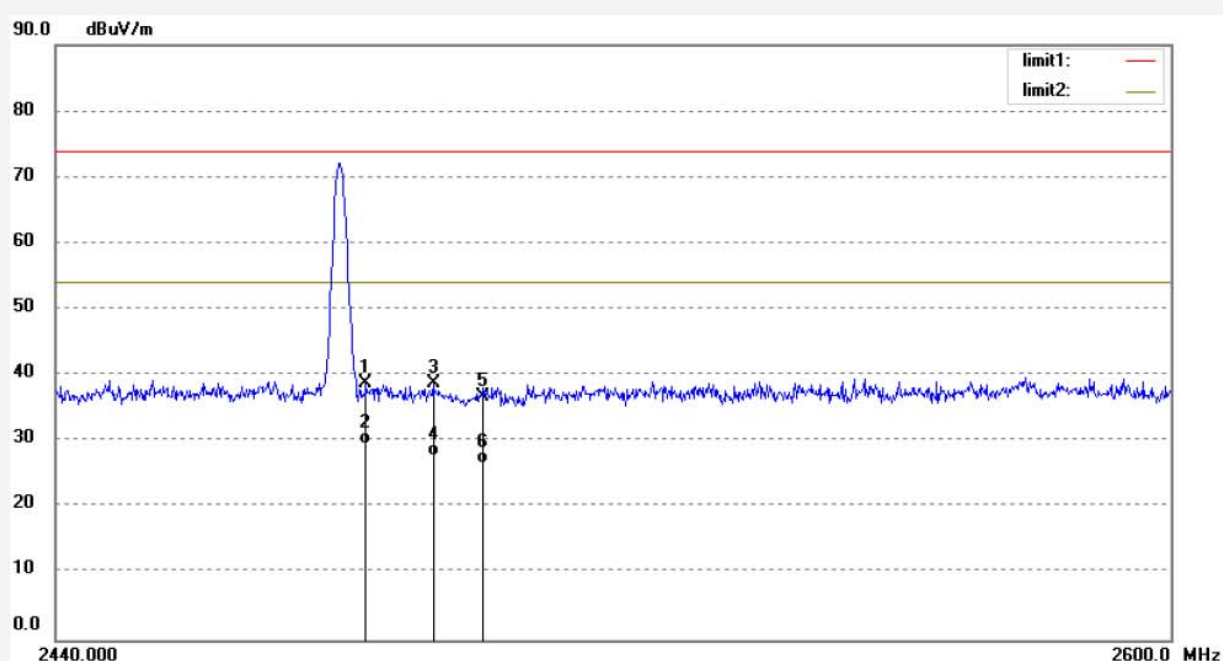
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: STAR #1908
Standard: FCC 15C PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 24 C / 48 %
EUT: Speaker
Mode: TX 2480MHz
Model: KTS-06
Manufacturer: KingBoard

Polarization: Horizontal
Power Source: DC 5V
Date: 2013/04/11
Time: 19:51:29
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20130606



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	46.09	-7.37	38.72	74.00	-35.28	peak			
2	2483.500	36.89	-7.37	29.52	54.00	-24.48	AVG			
3	2493.054	46.12	-7.39	38.73	74.00	-35.27	peak			
4	2493.054	35.18	-7.39	27.79	54.00	-26.21	AVG			
5	2500.000	44.30	-7.40	36.90	74.00	-37.10	peak			
6	2500.000	34.04	-7.40	26.64	54.00	-27.36	AVG			



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Site: 966 chamber

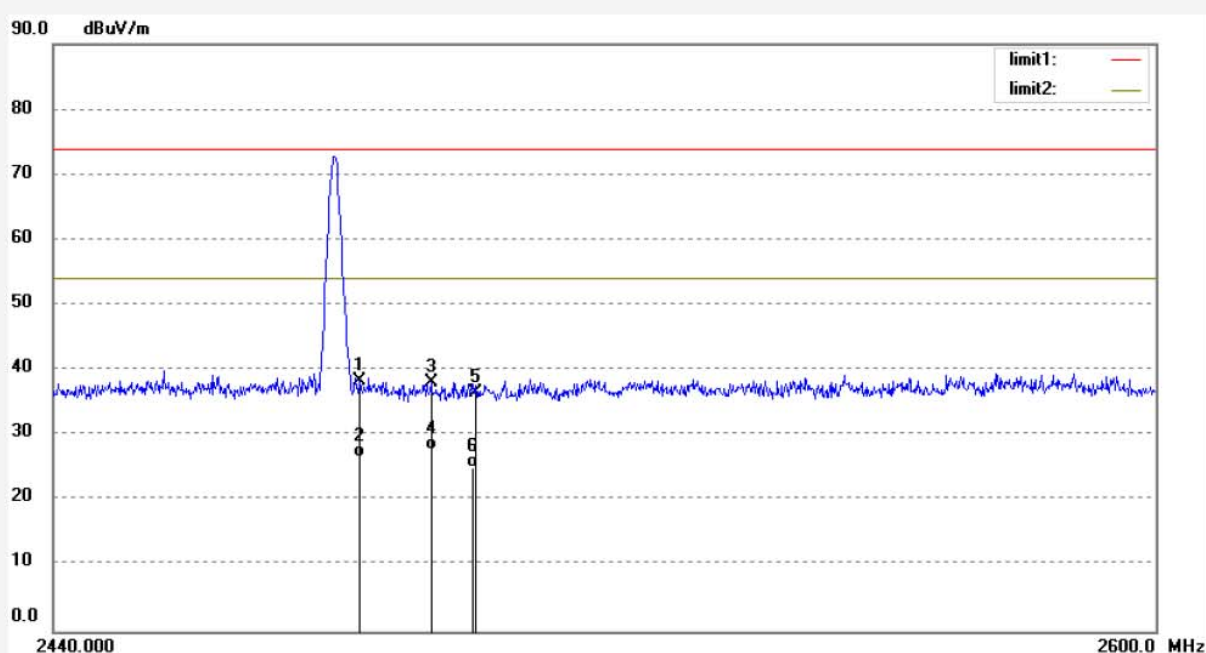
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR #1907
Standard: FCC 15C PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 24 C / 48 %
EUT: Speaker
Mode: TX 2480MHz
Model: KTS-06
Manufacturer: KingBoard

Polarization: Vertical
Power Source: DC 5V
Date: 2013/04/11
Time: 19:49:32
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20130606

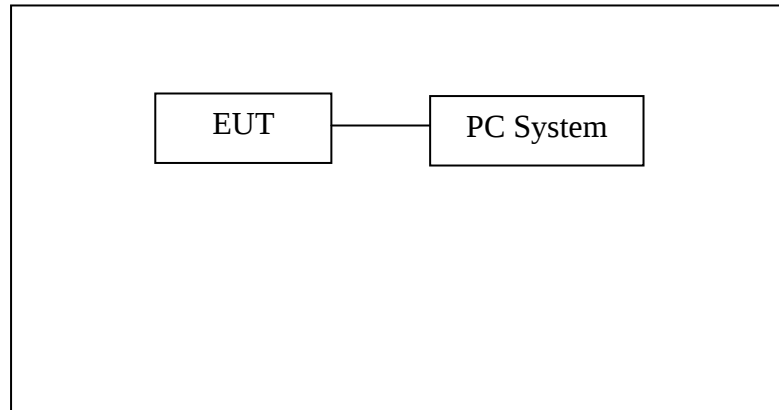


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	45.73	-7.37	38.36	74.00	-35.64	peak			
2	2483.500	34.14	-7.37	26.77	54.00	-27.23	AVG			
3	2493.689	45.56	-7.39	38.17	74.00	-35.83	peak			
4	2493.689	35.25	-7.39	27.86	54.00	-26.14	AVG			
5	2500.000	43.92	-7.40	36.52	74.00	-37.48	peak			
6	2500.000	32.58	-7.40	25.18	54.00	-28.82	AVG			

9. RADIATED SPURIOUS EMISSION TEST

9.1. Block Diagram of Test Setup

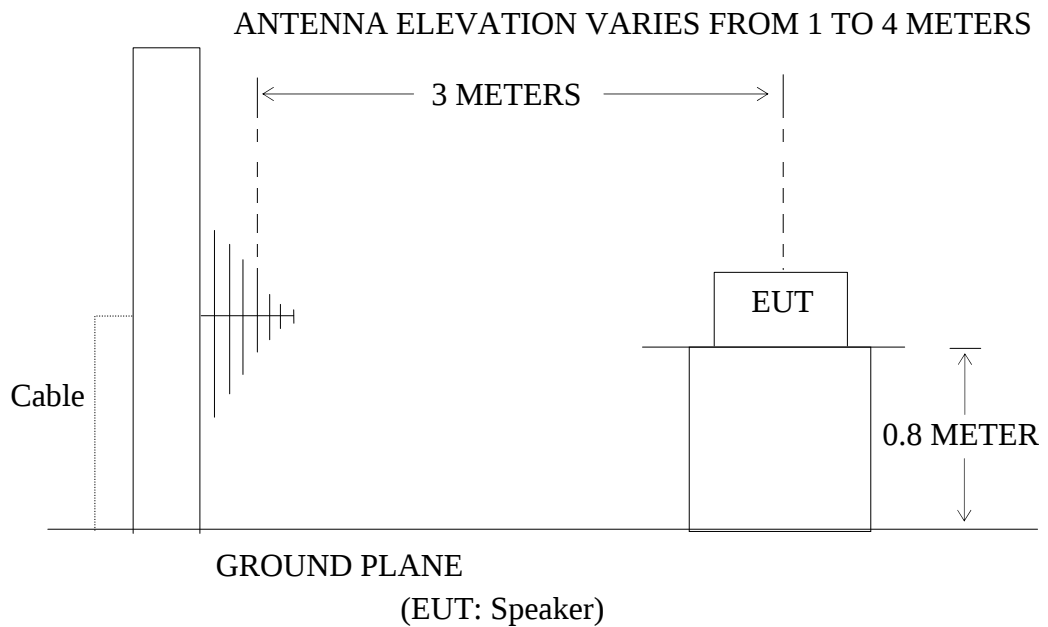
9.1.1. Block diagram of connection between the EUT and peripherals



Setup: Transmitting mode

(EUT: Speaker)

9.1.2. Semi-Anechoic Chamber Test Setup Diagram



9.2.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).

9.3.Restricted bands of operation

9.3.1.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.

9.4.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.

9.4.1.Speaker (EUT)

Model Number : KTS-06
Serial Number : N/A

9.5.Operating Condition of EUT

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

9.5.2.Turn on the power of all equipment.

9.5.3.Let the EUT work in TX modes measure it. The transmit frequency are 2402-2480 MHz. We select 2402MHz, 2440MHz, and 2480MHz TX frequency to transmit.

9.6.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 9 kHz in below 30MHz. and set at 120 kHz in 30-1000MHz, and 1MHz in above 1000MHz.

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

The final measurement in band 9-90 kHz, 110-490 kHz 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

9.7.The Field Strength of Radiation Emission Measurement Results

PASS.

Date of Test:	April 12, 2013	Temperature:	25°C
EUT:	Speaker	Humidity:	50%
Model No.:	KTS-06	Power Supply:	DC 5V
Test Mode:	BLE Channel Low 2402MHz	Test Engineer:	Star

For Below 30MHz

Frequency (MHz)	Reading (dBμV/m)	Factor(dB Corr.	Result (dBμV/m)	Limit (dBμV/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 (dBμV/m)	Factor Corr. (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
102.9728	3.36	13.95	17.31	43.50	-26.19	Vertical
219.1785	2.17	15.49	17.66	46.00	-28.34	Vertical
357.1923	8.99	21.17	30.16	46.00	-15.84	Vertical
95.6484	14.26	14.09	28.35	43.50	-15.15	Horizontal
259.4433	13.05	18.52	31.57	46.00	-14.43	Horizontal
285.2611	18.41	18.46	36.87	46.00	-9.13	Horizontal

For 1GHz-25GHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading(dBμV/m)		Factor Corr. (dB)	Result(dBμV/m)		Limit(dBμV/m)		Margin(dBμV/m)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
-	-	-	-	-	-	-	-	-	-	Vertical
-	-	-	-	-	-	-	-	-	-	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: April 12, 2013

Temperature: 25°C

EUT: Speaker

Humidity: 50%

Model No.: KTS-06

Power Supply: DC 5V

Test Mode: BLE Channel Middle 2440MHz

Test Engineer: Bob

For Below 30MHz

Frequency (MHz)	Reading (dBμV/m)	Factor(dB) Corr.	Result (dBμV/m)	Limit (dBμV/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 (dBμV/m)	Factor Corr. (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
46.5439	3.41	14.45	17.86	40.00	-22.14	Vertical
103.3353	3.93	13.94	17.87	43.50	-25.63	Vertical
285.2611	3.25	18.46	21.71	46.00	-24.29	Vertical
95.6484	15.20	14.09	29.29	43.50	-14.21	Horizontal
259.4433	13.28	18.52	31.80	46.00	-14.20	Horizontal
285.2611	18.88	18.46	37.34	46.00	-8.66	Horizontal

For 1GHz-25GHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading(dBμV/m)		Factor Corr. (dB)	Result(dBμV/m)		Limit(dBμV/m)		Margin(dBμV/m)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
-	-	-	-	-	-	-	-	-	-	Vertical
-	-	-	-	-	-	-	-	-	-	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: April 12, 2013

Temperature: 25°C

EUT: Speaker

Humidity: 50%

Model No.: KTS-06

Power Supply: DC 5V

Test Mode: BLE Channel High 2480MHz

Test Engineer: Star

For Below 30MHz

Frequency (MHz)	Reading (dBμV/m)	Factor(dB) Corr.	Result (dBμV/m)	Limit (dBμV/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 (dBμV/m)	Factor Corr. (dB)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Polarization
	QP		QP	QP	QP	
34.4059	2.59	15.75	18.34	40.00	-21.66	Vertical
40.0172	3.45	14.55	18.00	40.00	-22.00	Vertical
357.1923	9.44	21.17	30.61	46.00	-15.39	Vertical
189.1075	12.21	13.86	26.07	43.50	-17.43	Horizontal
236.7927	14.44	16.80	31.24	46.00	-14.76	Horizontal
285.2611	18.79	18.46	37.25	46.00	-8.75	Horizontal

For 1GHz-25GHz

Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Frequency (MHz)	Reading(dBμV/m)		Factor Corr. (dB)	Result(dBμV/m)		Limit(dBμV/m)		Margin(dBμV/m)		Polarization
	AV	PEAK		AV	PEAK	AV	PEAK	AV	PEAK	
-	-	-	-	-	-	-	-	-	-	Vertical
-	-	-	-	-	-	-	-	-	-	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: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: star #1909

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 24 C / 48 %

EUT: Speaker

Mode: TX 2402MHz

Model: KTS-06

Manufacturer: KingBoard

Polarization: Horizontal

Power Source: DC 5V

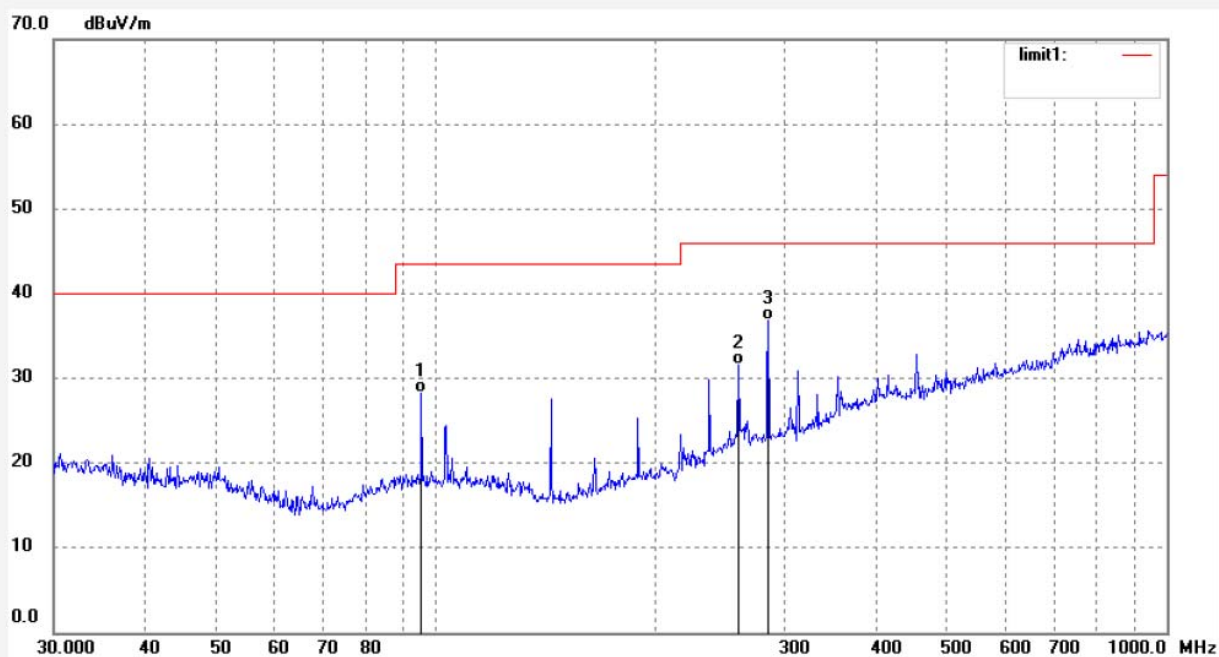
Date: 2013/04/12

Time: 20:21:04

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20130606



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	95.6484	14.26	14.09	28.35	43.50	-15.15	QP			
2	259.4433	13.05	18.52	31.57	46.00	-14.43	QP			
3	285.2611	18.41	18.46	36.87	46.00	-9.13	QP			



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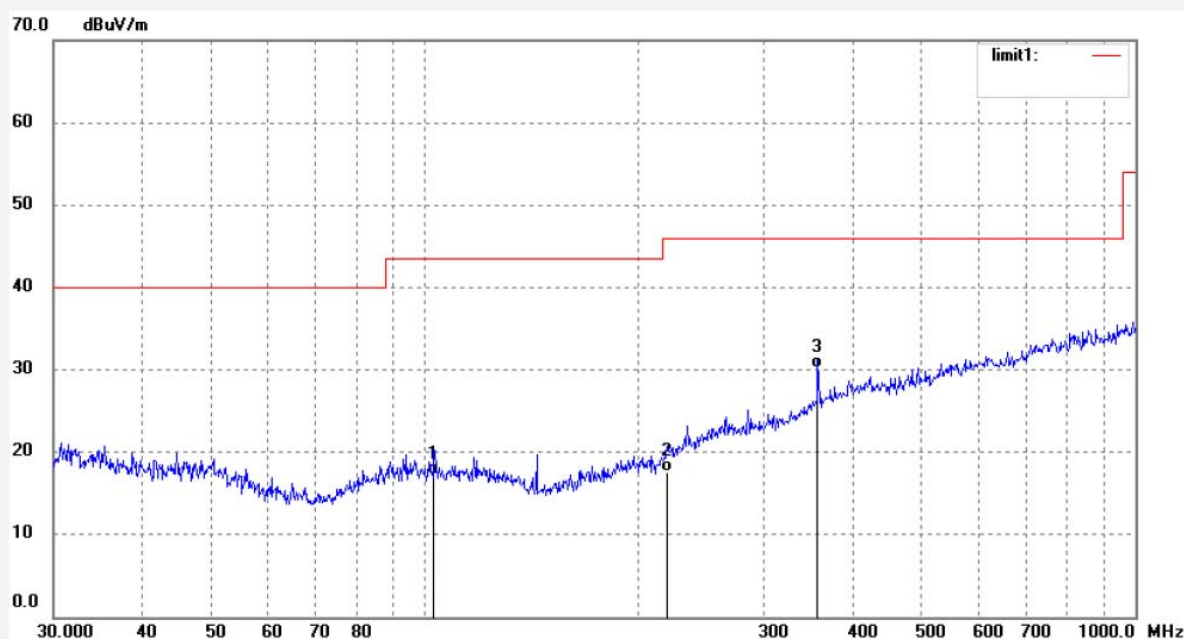
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: star #1910
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 24 C / 48 %
EUT: Speaker
Mode: TX 2402MHz
Model: KTS-06
Manufacturer: KingBoard

Polarization: Vertical
Power Source: DC 5V
Date: 2013/04/12
Time: 20:21:57
Engineer Signature:
Distance: 3m

Note: Report No.: ATE20130606



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	102.9728	3.36	13.95	17.31	43.50	-26.19	QP			
2	219.1785	2.17	15.49	17.66	46.00	-28.34	QP			
3	357.1923	8.99	21.17	30.16	46.00	-15.84	QP			


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Site: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR #1881

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 24 C / 48 %

EUT: Speaker

Mode: TX 2402MHz

Model: KTS-06

Manufacturer: KingBoard

Polarization: Horizontal

Power Source: DC 5V

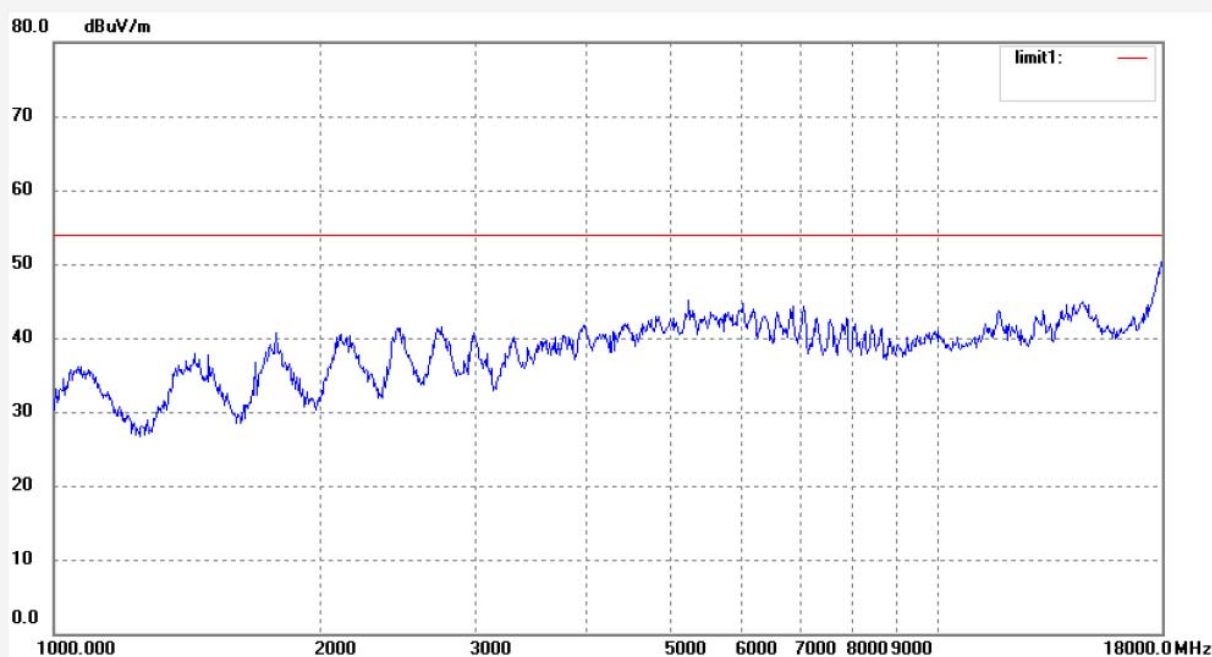
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Time: 19:05:19

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20130606



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: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: STAR #1882

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 24 C / 48 %

EUT: Speaker

Mode: TX 2402MHz

Model: KTS-06

Manufacturer: KingBoard

Polarization: Vertical

Power Source: DC 5V

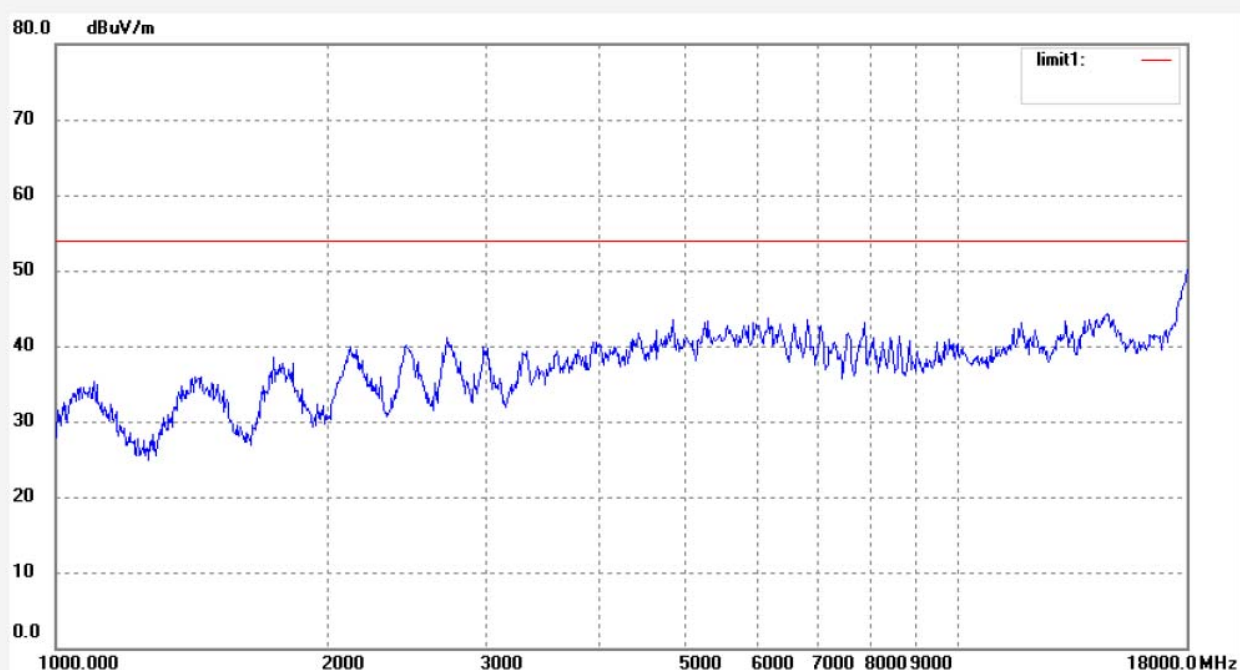
Date: 2013/04/12

Time: 19:05:49

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20130606



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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Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR #1892

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 24 C / 48 %

EUT: Speaker

Mode: TX 2402MHz

Model: KTS-06

Manufacturer: KingBoard

Polarization: Horizontal

Power Source: DC 5V

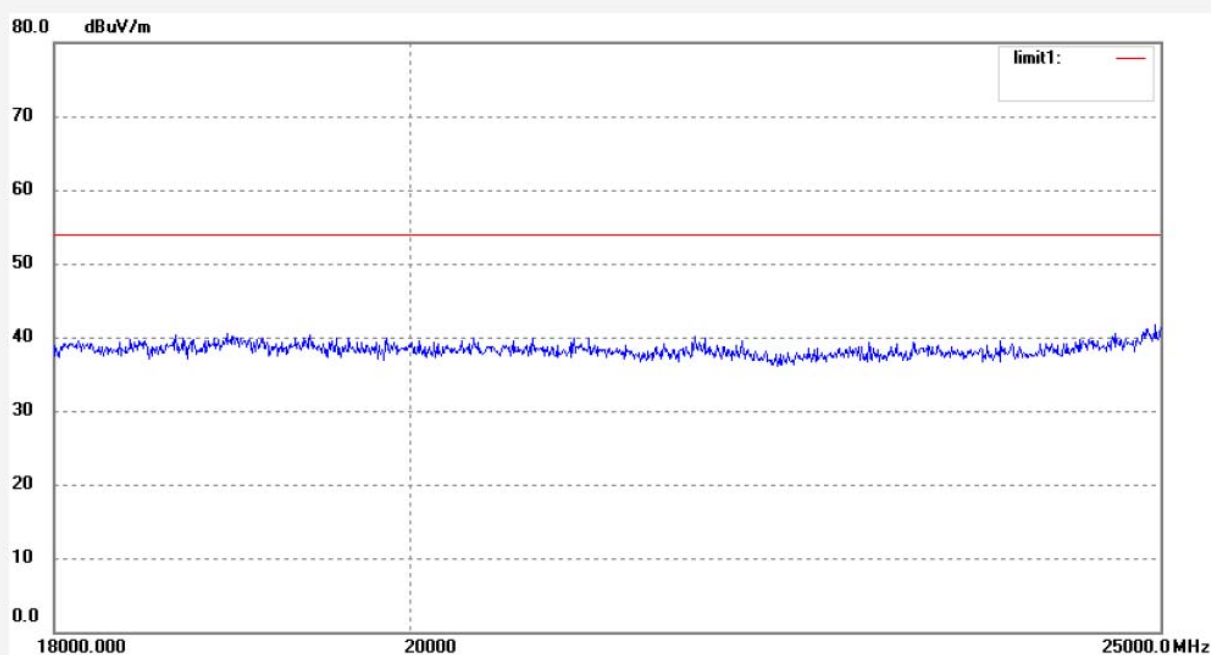
Date: 2013/04/12

Time: 19:14:09

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20130606



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: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR #1891

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 24 C / 48 %

EUT: Speaker

Mode: TX 2402MHz

Model: KTS-06

Manufacturer: KingBoard

Polarization: Vertical

Power Source: DC 5V

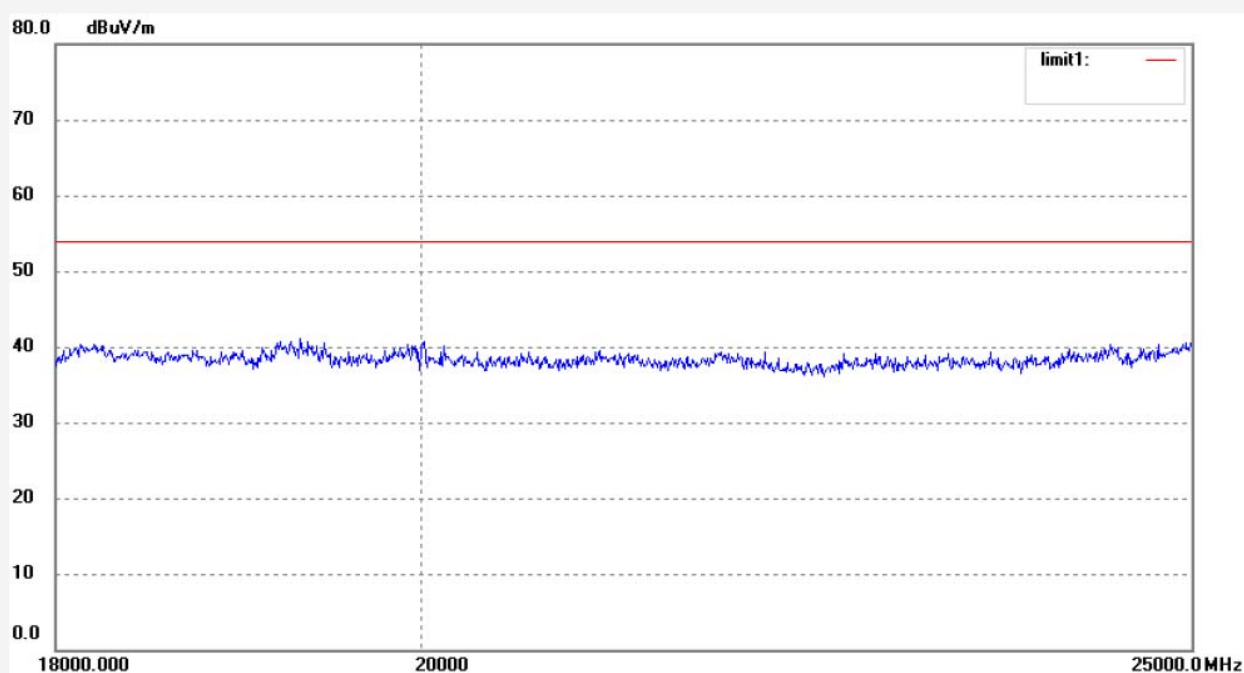
Date: 2013/04/12

Time: 19:13:02

Engineer Signature:

Distance: 3m

Note: Report No.: ATE20130606



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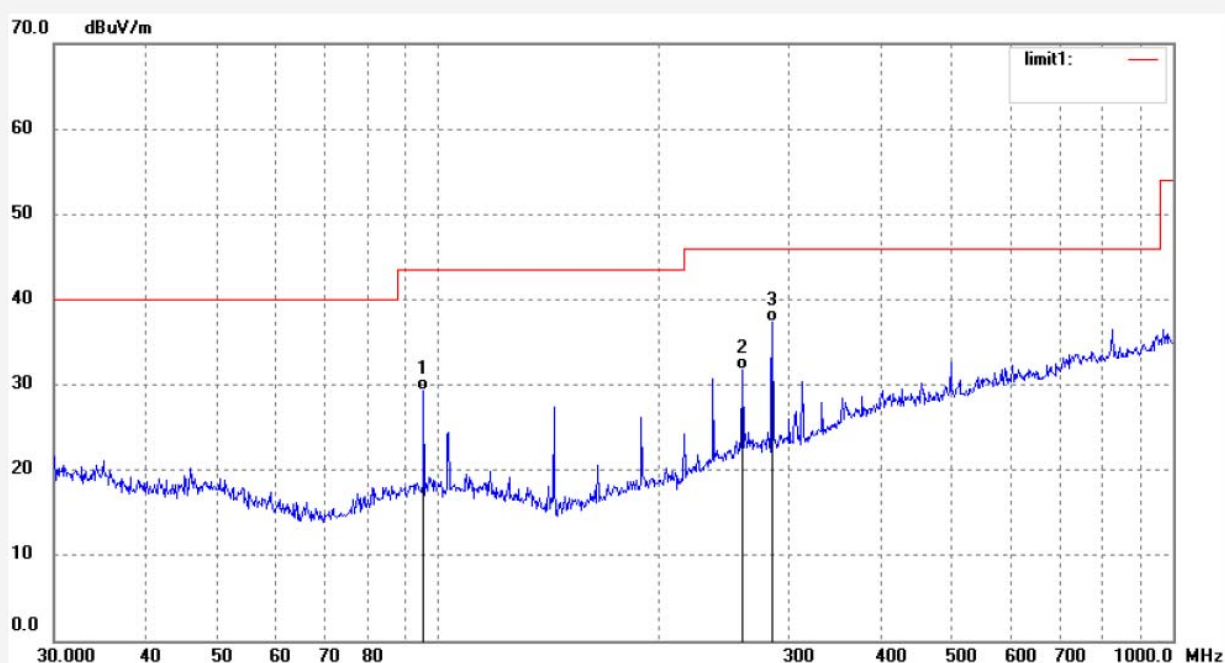
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: star #1912
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 24 C / 48 %
EUT: Speaker
Mode: TX 2440MHz
Model: KTS-06
Manufacturer: KingBoard

Polarization: Horizontal
Power Source: DC 5V
Date: 2013/04/12
Time: 20:24:42
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20130606



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	95.6484	15.20	14.09	29.29	43.50	-14.21	QP			
2	259.4433	13.28	18.52	31.80	46.00	-14.20	QP			
3	285.2611	18.88	18.46	37.34	46.00	-8.66	QP			



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Site: 966 chamber
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Fax:+86-0755-26503396

Job No.: star #1911

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 24 C / 48 %

EUT: Speaker

Mode: TX 2440MHz

Model: KTS-06

Manufacturer: KingBoard

Polarization: Vertical

Power Source: DC 5V

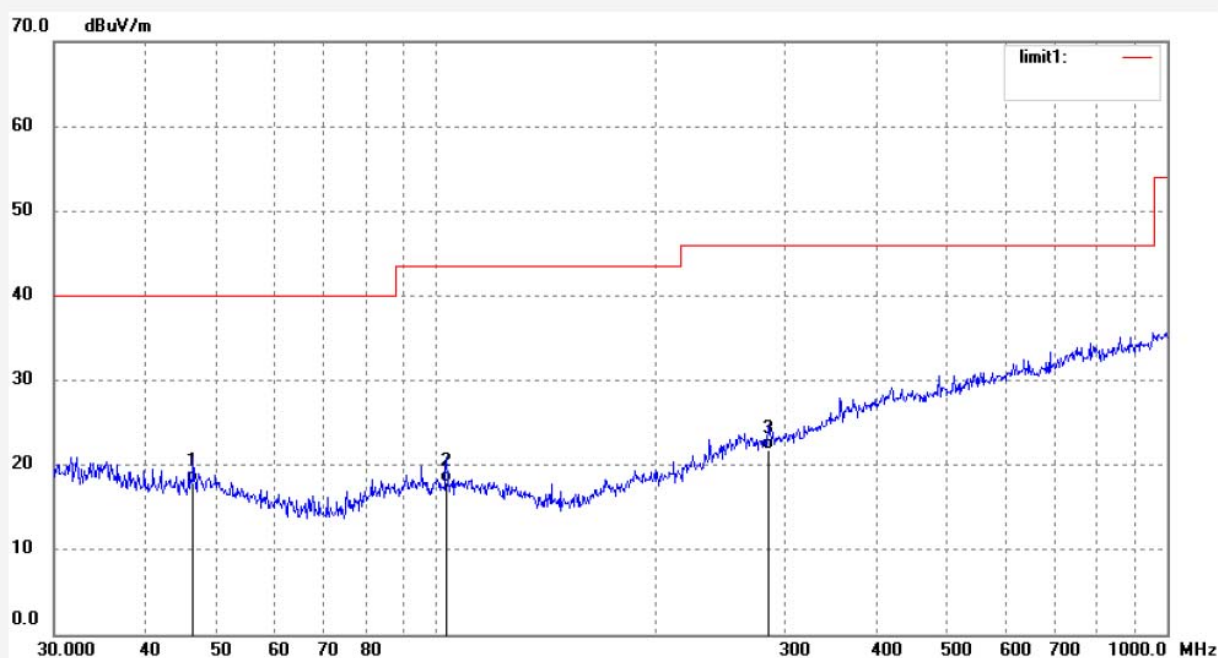
Date: 2013/04/12

Time: 20:22:48

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20130606



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	46.5439	3.41	14.45	17.86	40.00	-22.14	QP			
2	103.3353	3.93	13.94	17.87	43.50	-25.63	QP			
3	285.2611	3.25	18.46	21.71	46.00	-24.29	QP			

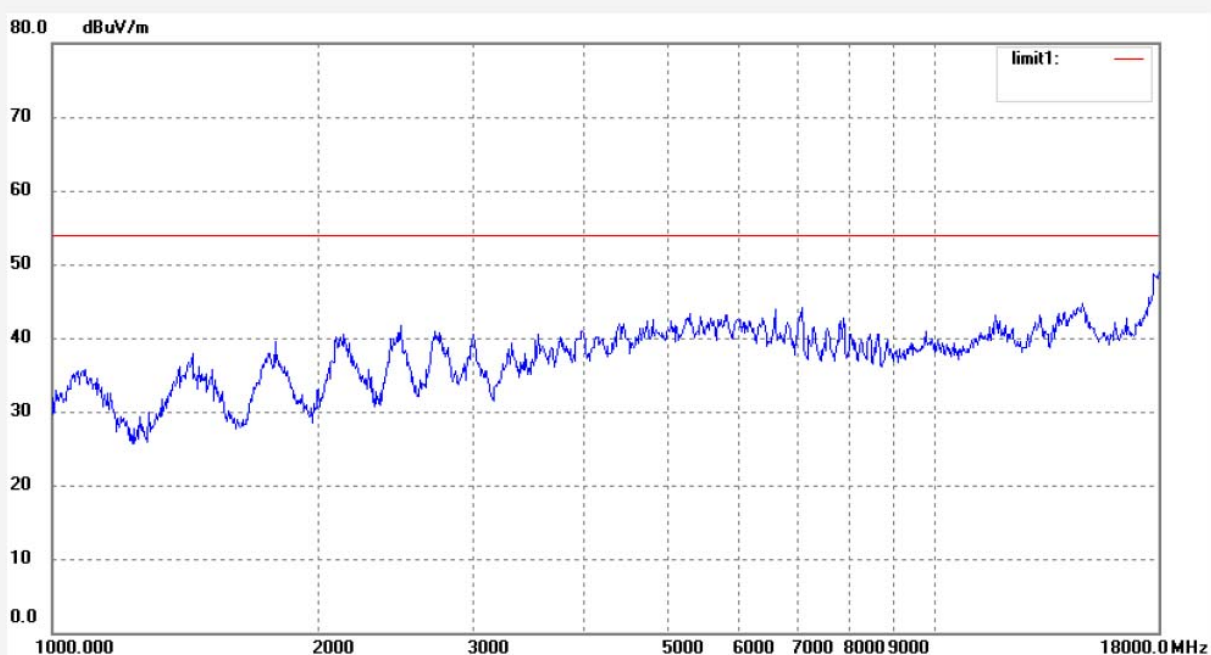

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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: STAR #1884	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 2013/04/12
Temp.(C)/Hum.(%) 24 C / 48 %	Time: 19:06:45
EUT: Speaker	Engineer Signature:
Mode: TX 2440MHz	Distance: 3m
Model: KTS-06	
Manufacturer: KingBoard	

Note: Report No.:ATE20130606



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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ACCURATE TECHNOLOGY CO., LTD.

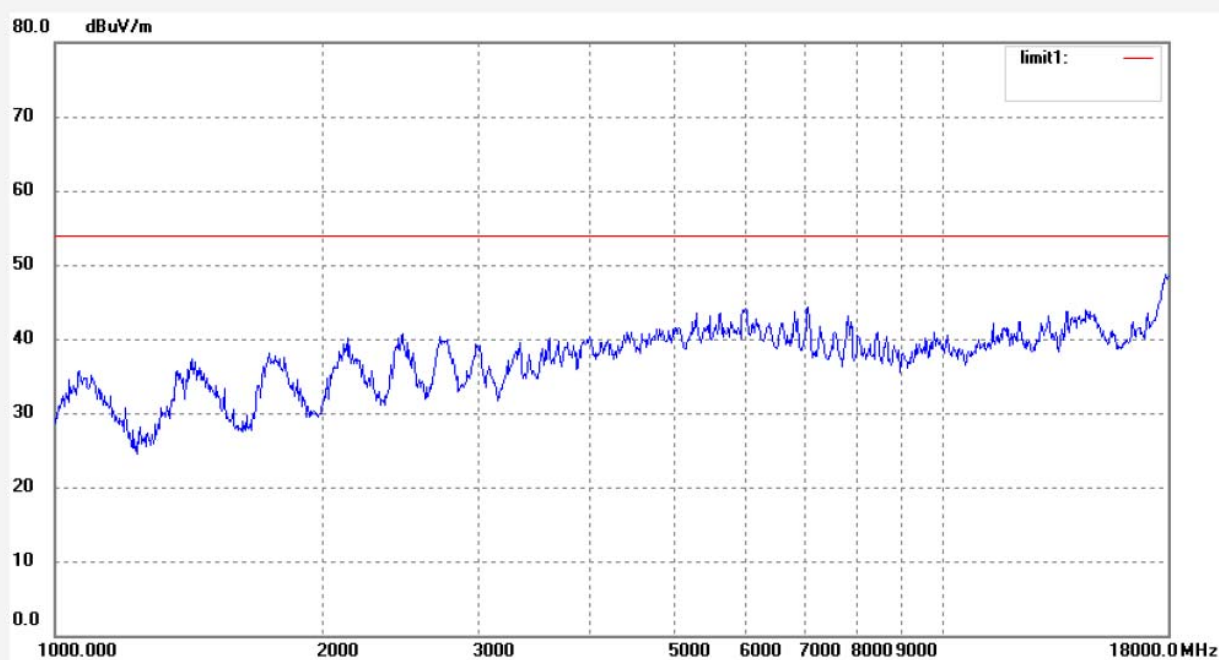
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 966 chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: STAR #1883
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 24 C / 48 %
EUT: Speaker
Mode: TX 2440MHz
Model: KTS-06
Manufacturer: KingBoard

Polarization: Vertical
Power Source: DC 5V
Date: 2013/04/12
Time: 19:06:10
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20130606



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: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR #1889

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 24 C / 48 %

EUT: Speaker

Mode: TX 2440MHz

Model: KTS-06

Manufacturer: KingBoard

Polarization: Horizontal

Power Source: DC 5V

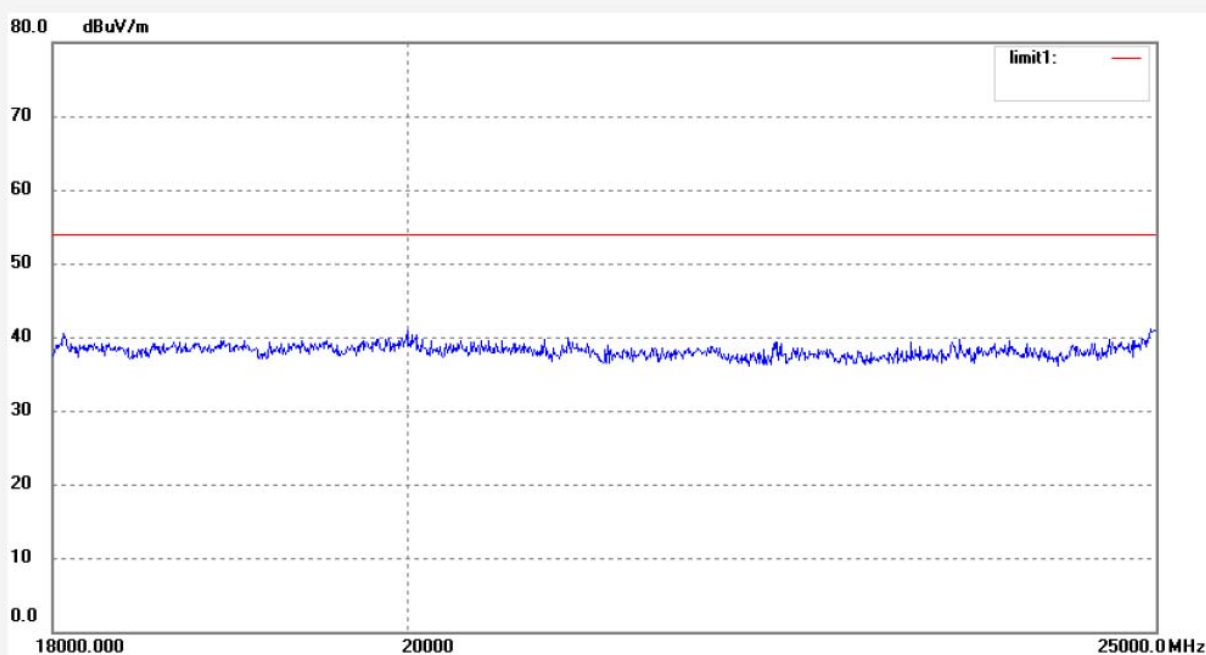
Date: 2013/04/12

Time: 19:10:52

Engineer Signature:

Distance: 3m

Note: Report No.: ATE20130606



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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ACCURATE TECHNOLOGY CO., LTD.

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Site: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR #1890

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 24 C / 48 %

EUT: Speaker

Mode: TX 2440MHz

Model: KTS-06

Manufacturer: KingBoard

Polarization: Vertical

Power Source: DC 5V

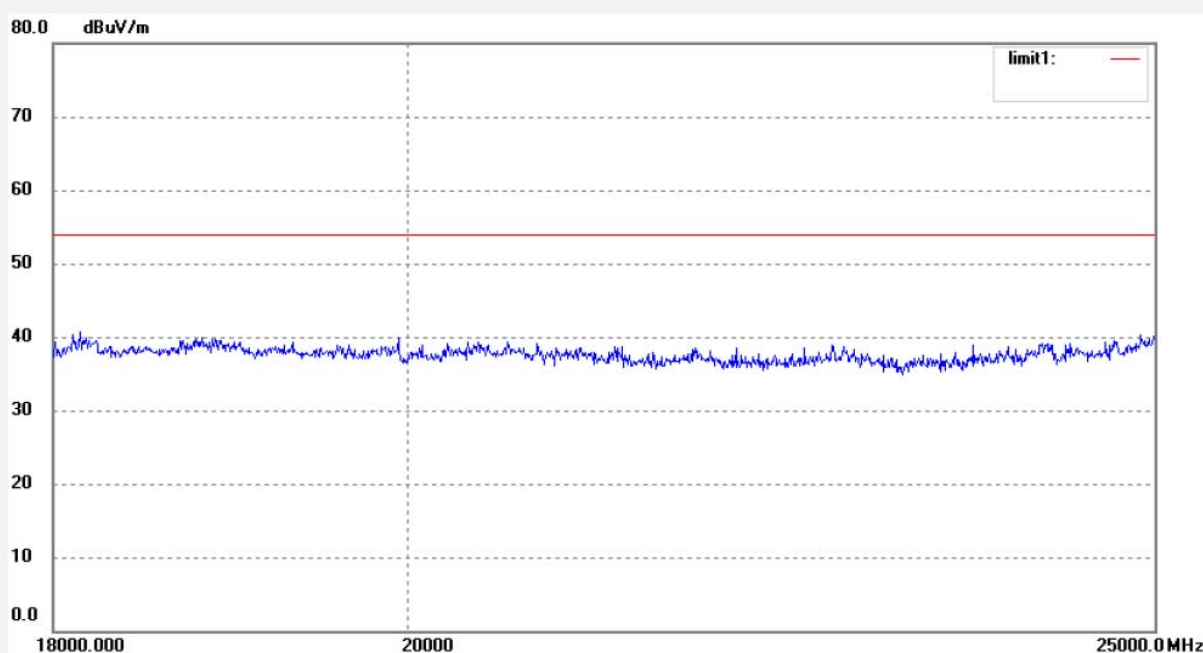
Date: 2013/04/12

Time: 19:11:56

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20130606



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: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: star #1913

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 24 C / 48 %

EUT: Speaker

Mode: TX 2480MHz

Model: KTS-06

Manufacturer: KingBoard

Polarization: Horizontal

Power Source: DC 5V

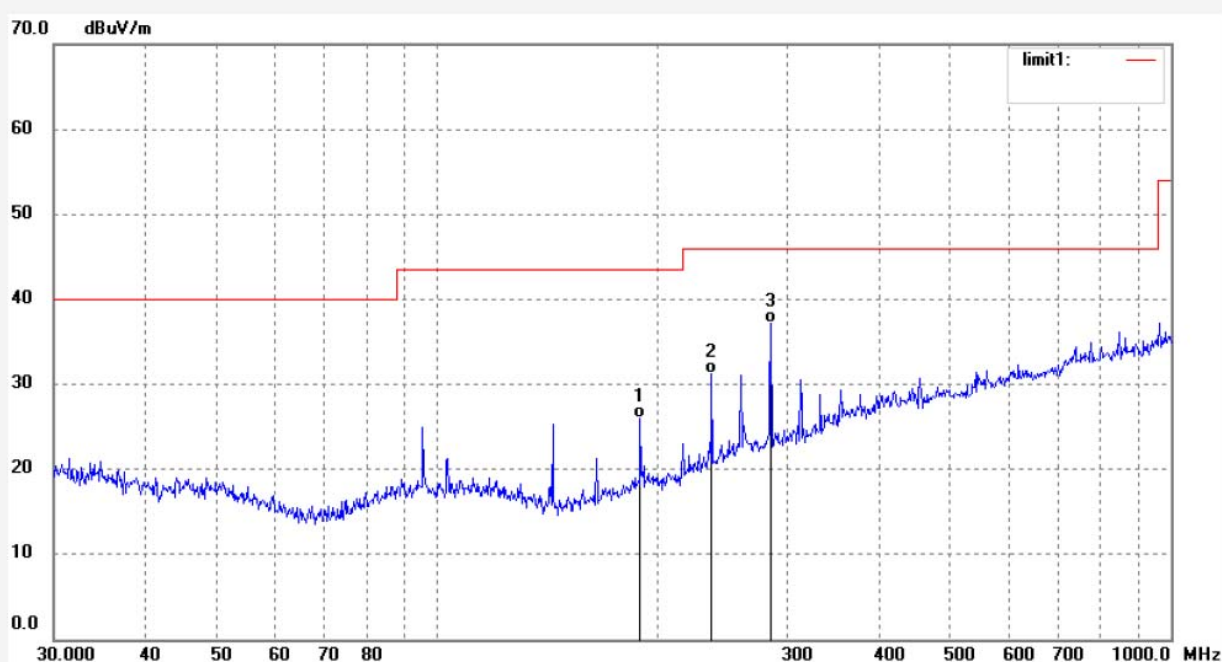
Date: 2013/04/12

Time: 20:25:59

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20130606



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	189.1075	12.21	13.86	26.07	43.50	-17.43	QP			
2	236.7927	14.44	16.80	31.24	46.00	-14.76	QP			
3	285.2611	18.79	18.46	37.25	46.00	-8.75	QP			



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Site: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: star #1914

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 24 C / 48 %

EUT: Speaker

Mode: TX 2480MHz

Model: KTS-06

Manufacturer: KingBoard

Polarization: Vertical

Power Source: DC 5V

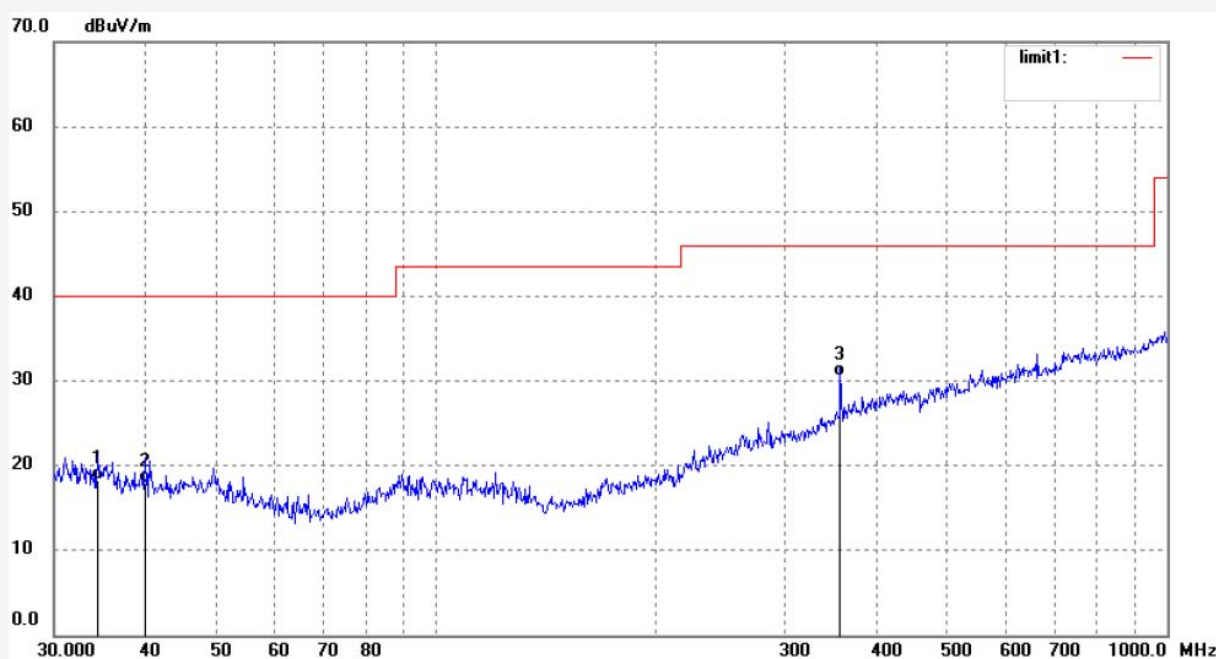
Date: 2013/04/12

Time: 20:26:52

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20130606



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	34.4059	2.59	15.75	18.34	40.00	-21.66	QP			
2	40.0172	3.45	14.55	18.00	40.00	-22.00	QP			
3	357.1923	9.44	21.17	30.61	46.00	-15.39	QP			


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Site: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR #1885

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 24 C / 48 %

EUT: Speaker

Mode: TX 2480MHz

Model: KTS-06

Manufacturer: KingBoard

Polarization: Horizontal

Power Source: DC 5V

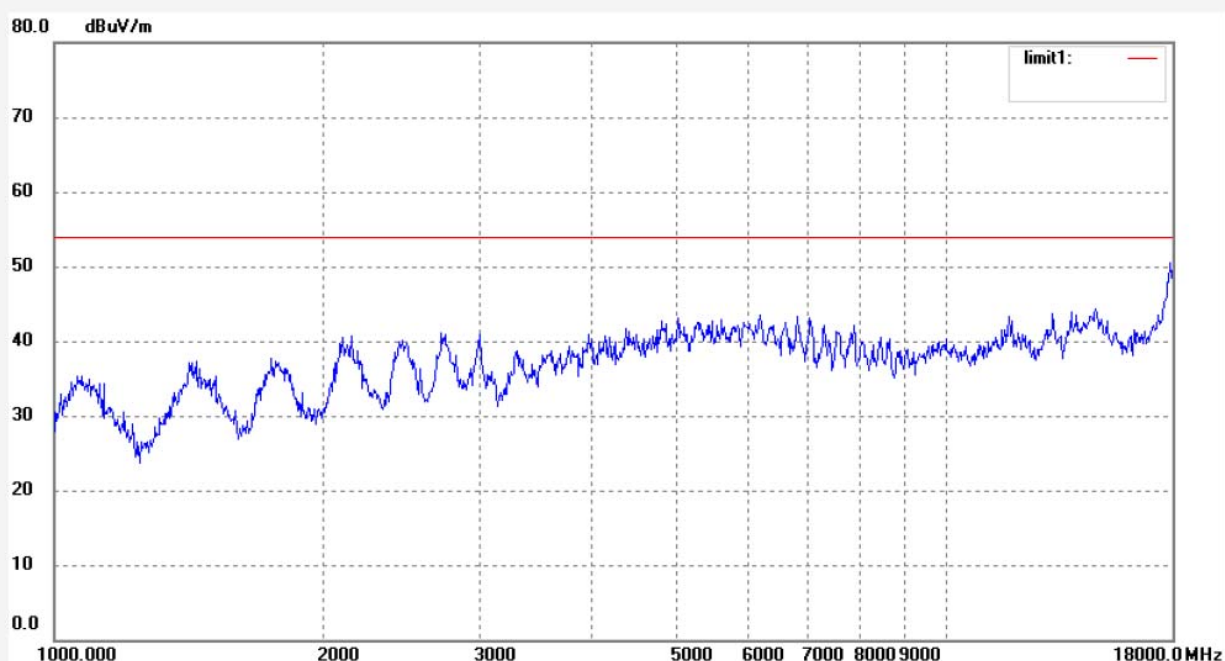
Date: 2013/04/12

Time: 19:07:01

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20130606



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: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR #1886

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 24 C / 48 %

EUT: Speaker

Mode: TX 2480MHz

Model: KTS-06

Manufacturer: KingBoard

Polarization: Vertical

Power Source: DC 5V

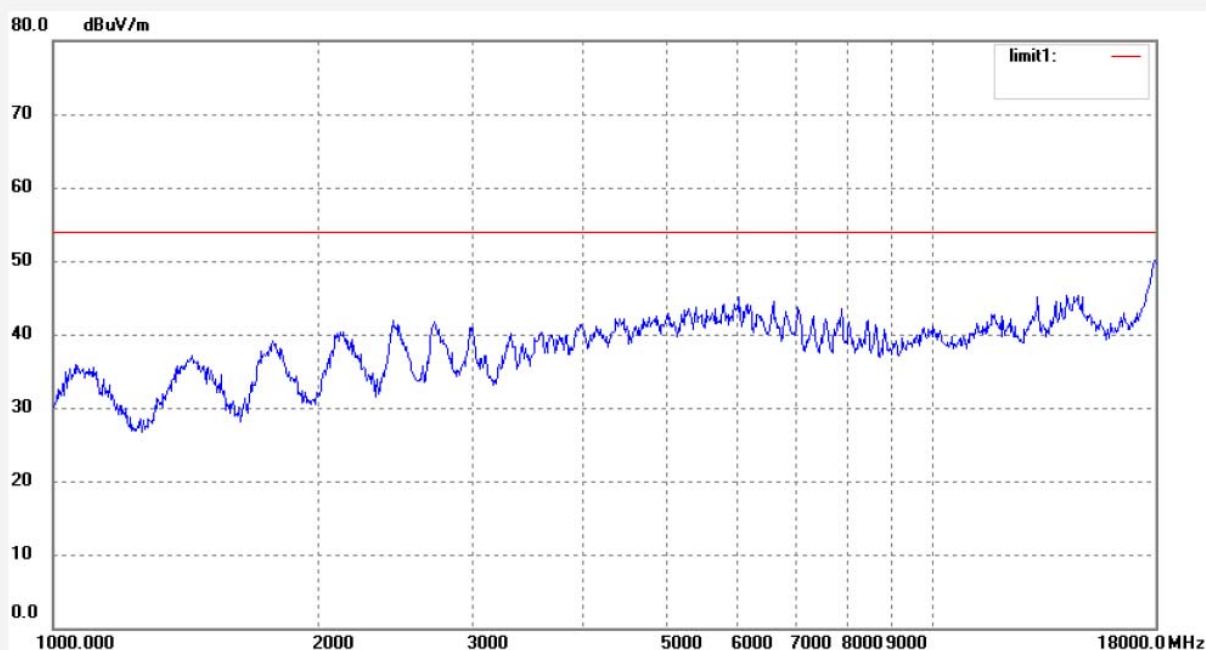
Date: 2013/04/12

Time: 19:08:41

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20130606



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: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR #1888

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 24 C / 48 %

EUT: Speaker

Mode: TX 2480MHz

Model: KTS-06

Manufacturer: KingBoard

Polarization: Horizontal

Power Source: DC 5V

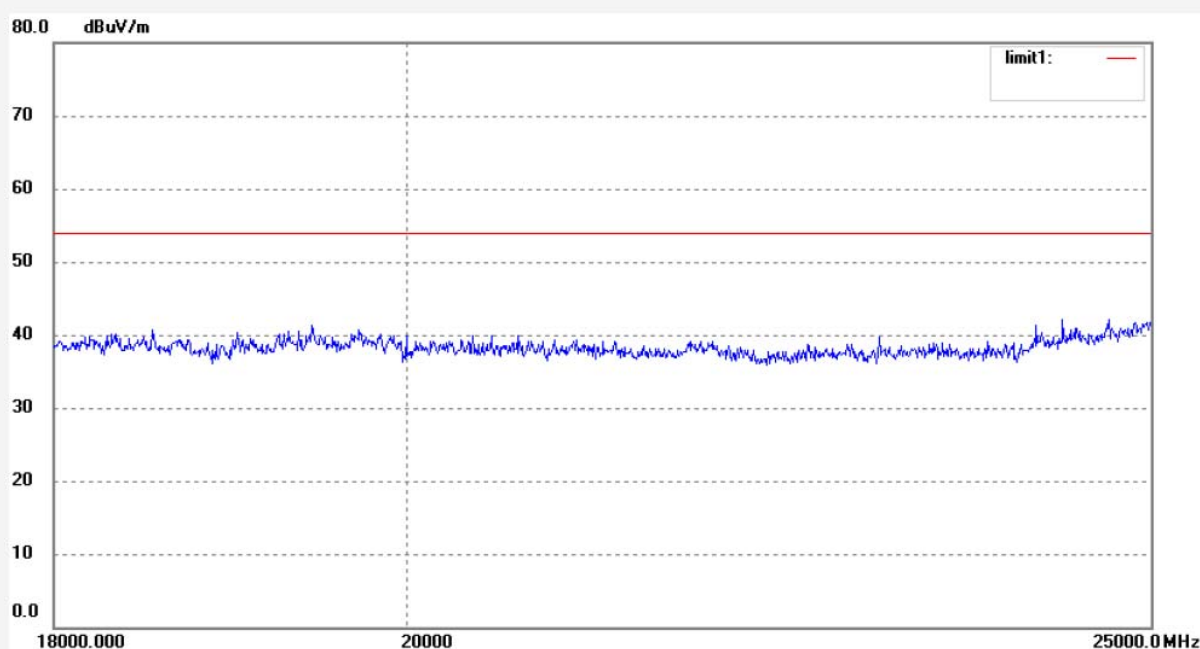
Date: 2013/04/12

Time: 19:09:56

Engineer Signature:

Distance: 3m

Note: Report No.:ATE20130606



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: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: STAR #1887

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 24 C / 48 %

EUT: Speaker

Mode: TX 2480MHz

Model: KTS-06

Manufacturer: KingBoard

Polarization: Vertical

Power Source: DC 5V

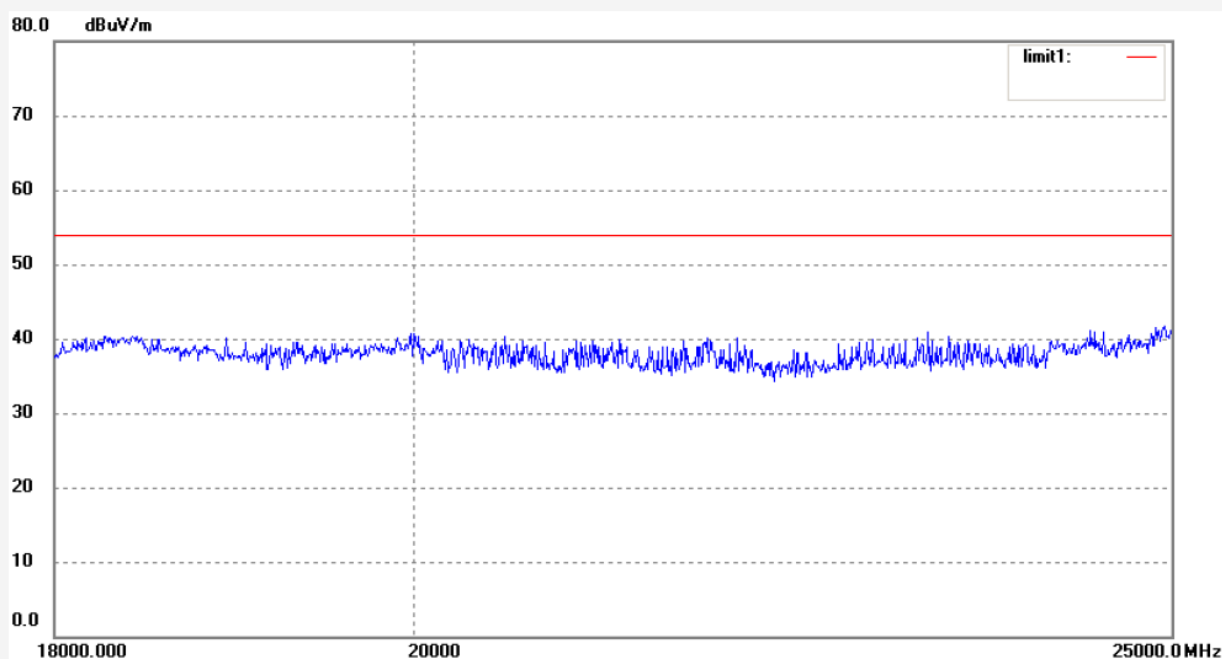
Date: 2013/04/12

Time: 19:09:14

Engineer Signature:

Distance: 3m

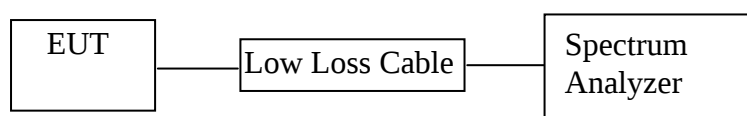
Note: Report No.: ATE20130606



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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10.CONDUCTED SPURIOUS EMISSION COMPLIANCE TEST

10.1.Block Diagram of Test Setup



(EUT: Speaker)

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 is 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. Speaker (EUT)

Model Number : KTS-06
Serial Number : N/A

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 modes measure it. The transmit frequency are 2402-2480 MHz. We select 2402MHz, 2440MHz, and 2480MHz TX frequency to transmit.

10.5.Test Procedure

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 100kHz and VBW to 300kHz (below 1GHz).

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

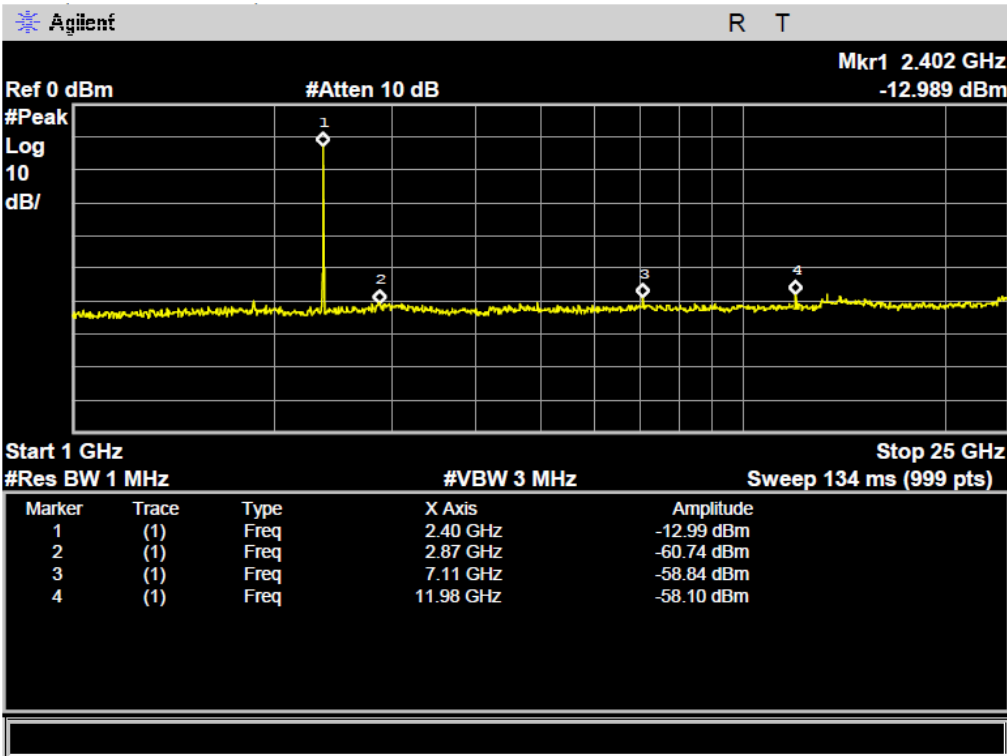
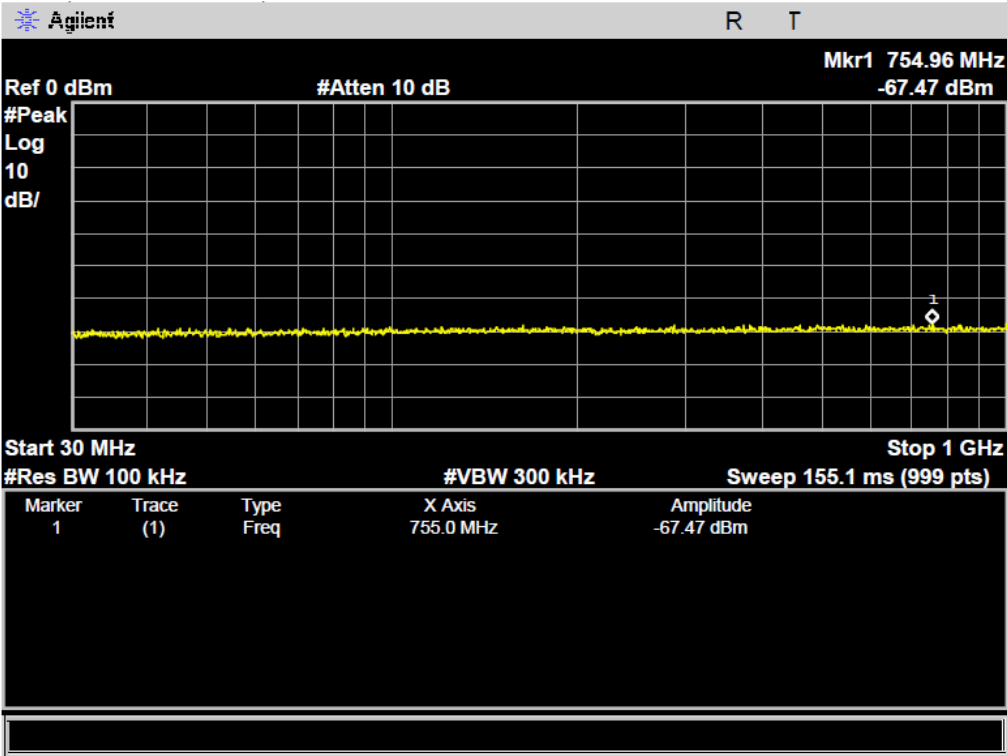
10.5.4.The Conducted Spurious Emission was measured and recorded.

10.6.Test Result

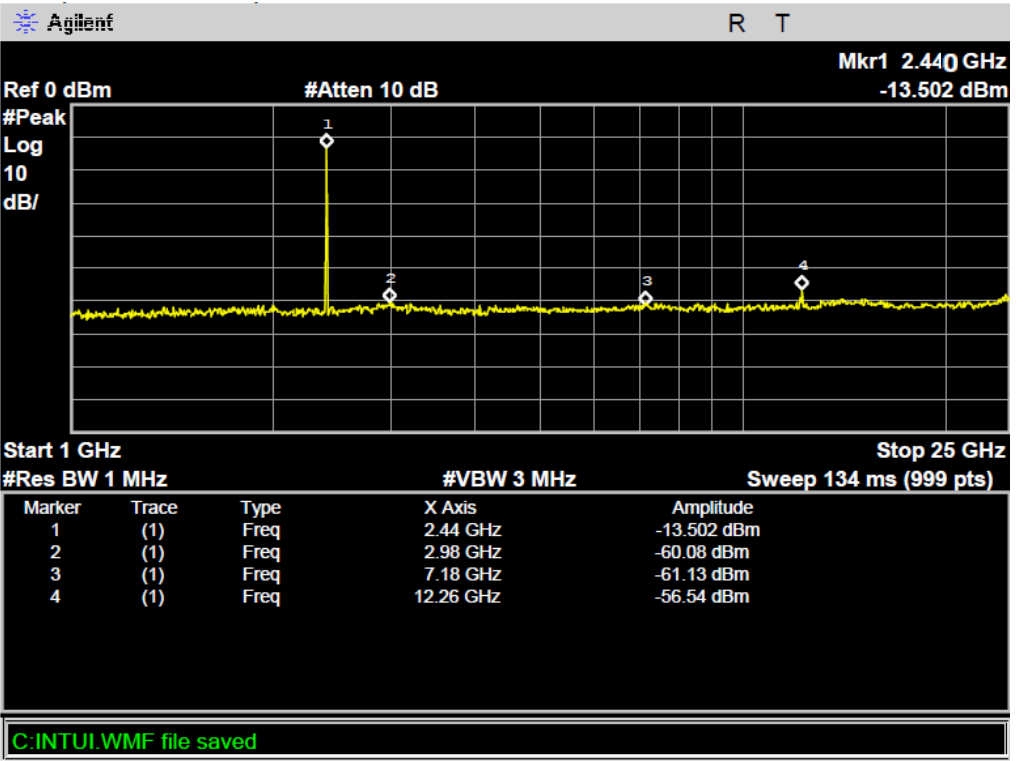
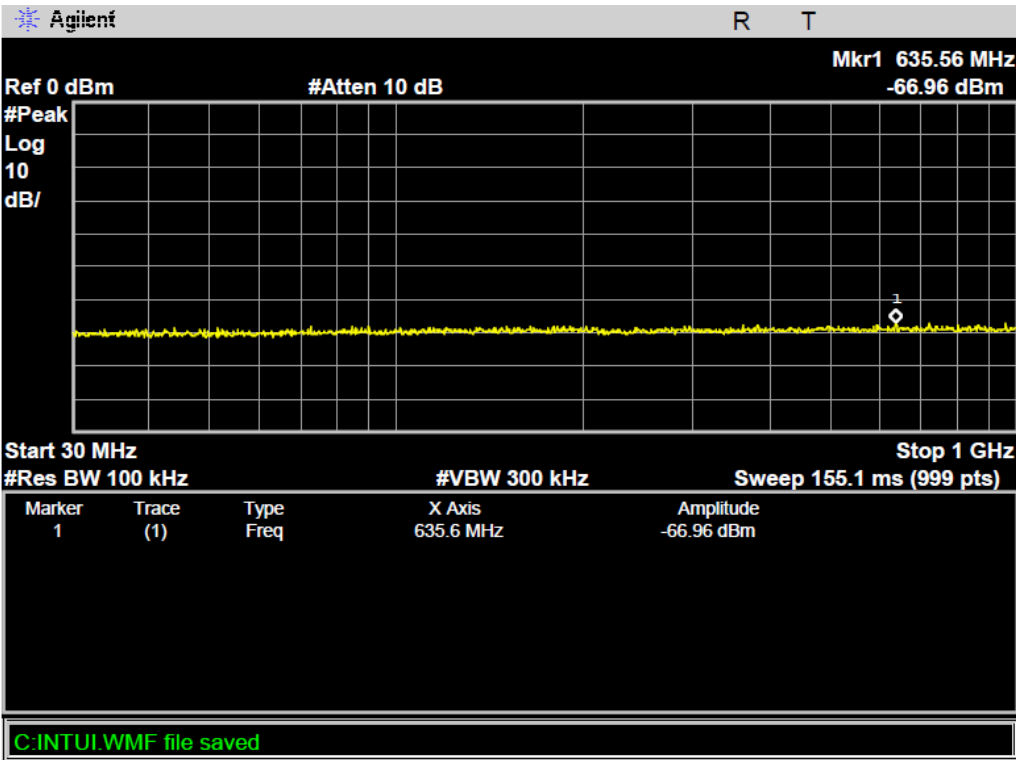
Pass.

The spectrum analyzer plots are attached as below.

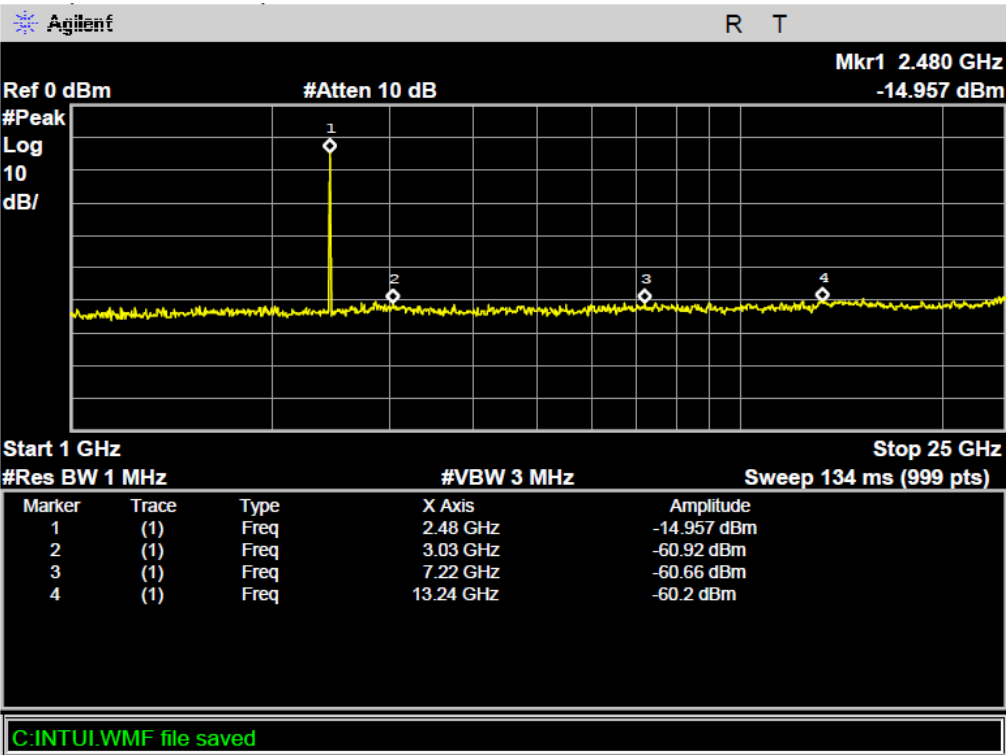
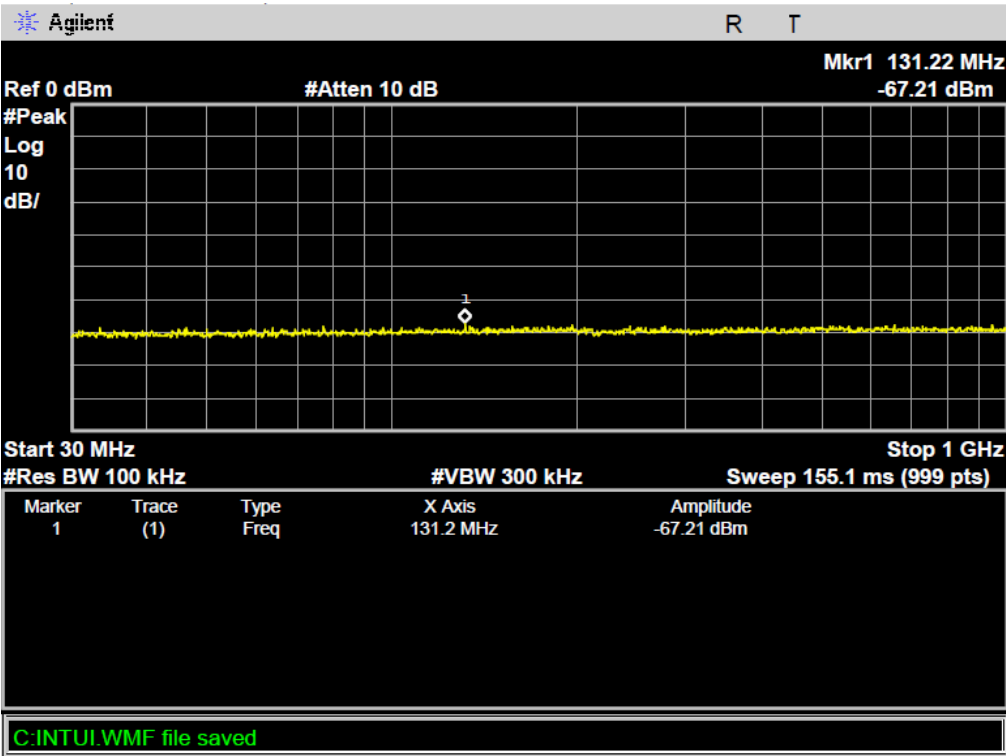
BLE Channel Low 2402MHz



BLE Channel Middle 2440MHz



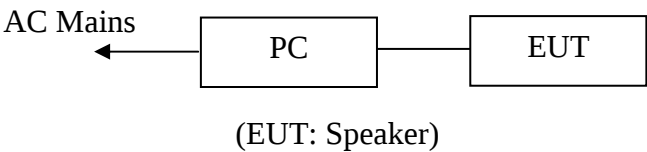
BLE Channel High 2480MHz



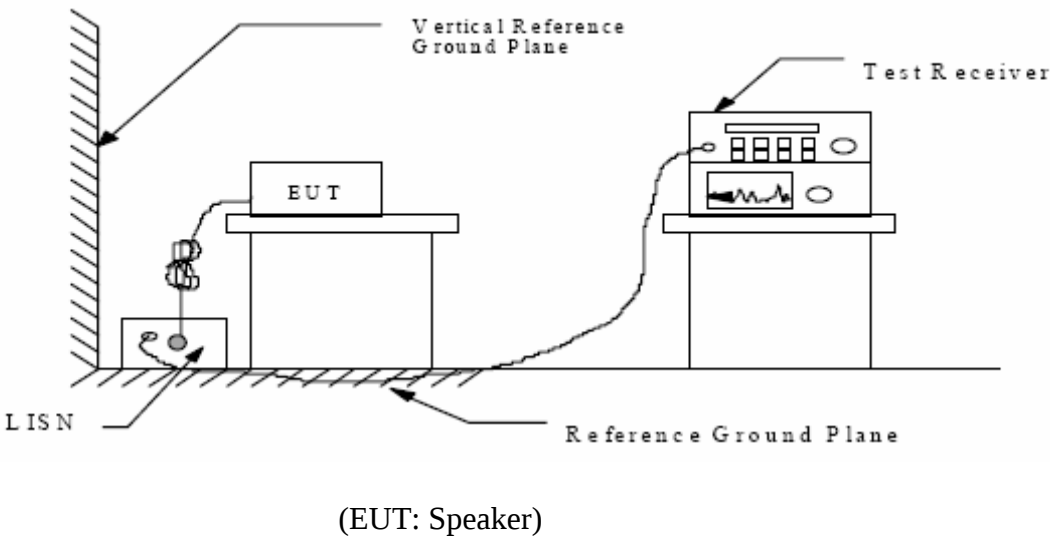
11.AC POWER LINE CONDUCTED EMISSION FOR FCC PART 15 SECTION 15.207(A)

11.1.Block Diagram of Test Setup

11.1.1.Block diagram of connection between the EUT and simulators



11.1.2.Shielding Room Test Setup Diagram



11.2.The Emission Limit

11.2.1.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.

11.3.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.

11.3.1.Speaker (EUT)

Model Number : KTS-04
Serial Number : N/A
Manufacturer : Shenzhen KingBoard Technology Co., Ltd.

11.4.Operating Condition of EUT

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

11.4.2.Turn on the power of all equipment.

11.4.3.Let the EUT work in (Tx) mode measure it.

11.5.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.

11.6. Power Line Conducted Emission Measurement Results

PASS.

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

Date of Test:	<u>April 12, 2013</u>	Temperature:	<u>25°C</u>
EUT:	<u>Speaker</u>	Humidity:	<u>50%</u>
Model No.:	<u>KTS-04</u>	Power Supply:	<u>AC 120V/ 60Hz</u>
Test Mode:	<u>Tx</u>	Test Engineer:	<u>Kai</u>

Frequency (MHz)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector	Line
0.150000	53.20	66	-12.8	QP	Neutral
0.490912	41.00	56	-15.2	QP	
0.488957	37.00	46	-9.2	AV	
0.151807	51.80	66	-14.1	QP	Live
0.492876	40.80	56	-15.3	QP	
0.494848	36.50	46	-9.6	AV	

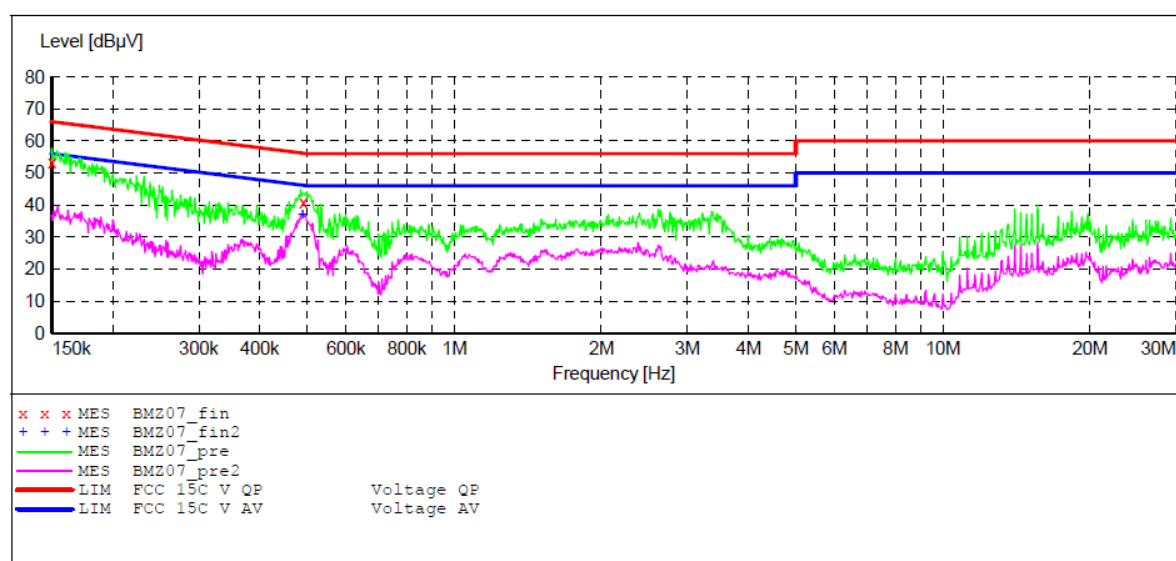
Emissions attenuated more than 20 dB below the permissible value are not reported.
The spectral diagrams are attached as below.

ACCURATE TECHNOLOGY CO.,LTD**CONDUCTED EMISSION STANDARD FCC PART 15C**

EUT: Speaker M/N:KTS-06
 Manufacturer: KingBoard
 Operating Condition: Playing
 Test Site: 1#Shielding Room
 Operator: Star
 Test Specification: N 120V/60Hz
 Comment: Report No.:ATE20130606
 Start of Test: 4/12/2013 / 6:07:21PM

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

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

**MEASUREMENT RESULT: "BMZ07_fin"**

4/12/2013 6:09PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.150000	53.20	11.5	66	12.8	QP	N	GND
0.490912	41.00	12.6	56	15.2	QP	N	GND

MEASUREMENT RESULT: "BMZ07_fin2"

4/12/2013 6:09PM

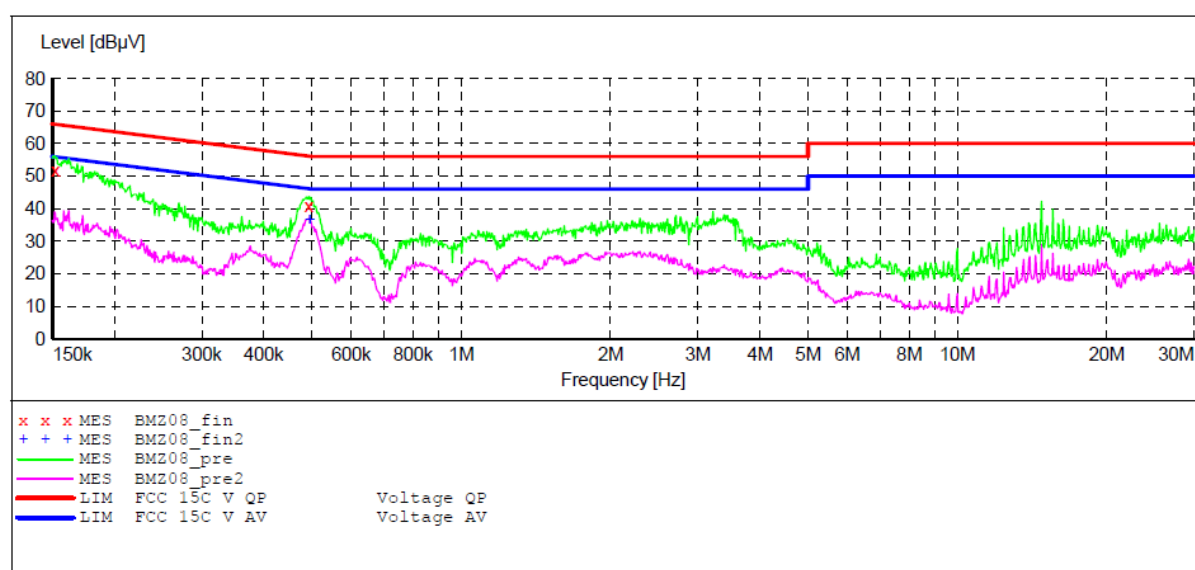
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.488957	37.00	12.6	46	9.2	AV	N	GND

ACCURATE TECHNOLOGY CO., LTD**CONDUCTED EMISSION STANDARD FCC PART 15C**

EUT: Speaker M/N:KTS-06
 Manufacturer: KingBoard
 Operating Condition: Playing
 Test Site: 1#Shielding Room
 Operator: Star
 Test Specification: L 120V/60Hz
 Comment: Report No.:ATE20130606
 Start of Test: 4/12/2013 / 6:10:21PM

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

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

**MEASUREMENT RESULT: "BMZ08_fin"**

4/12/2013 6:12PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.151807	51.80	11.5	66	14.1	QP	L1	GND
0.492876	40.80	12.6	56	15.3	QP	L1	GND

MEASUREMENT RESULT: "BMZ08_fin2"

4/12/2013 6:12PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.494848	36.50	12.6	46	9.6	AV	L1	GND

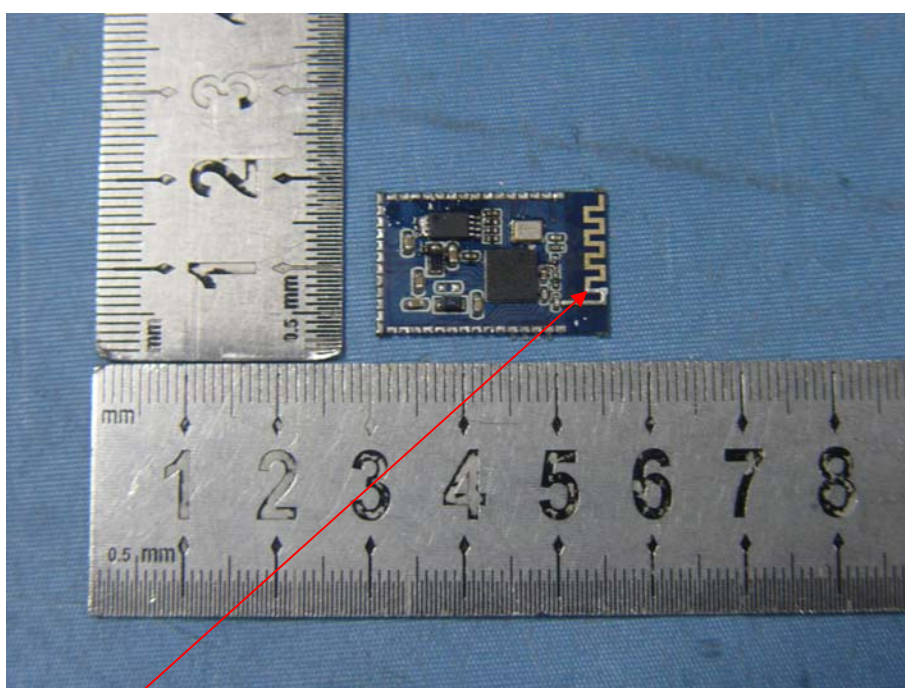
12.ANTENNA REQUIREMENT

12.1.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.

12.2.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.



Antenna