

APPLICATION CERTIFICATION
On Behalf of
SHENZHEN AOB ELECTRONICS CO., LTD

BLUETOOTH EARPONES
Model No.: ES-80143BT

FCC ID: COM-ES-80143BT

Prepared for : SHENZHEN AOB ELECTRONICS CO., LTD
Address : Bldg A4, Third Industry Area, Huang Ma Bu Village,
Xixiang Town, Bao An District, Shenzhen, China

Prepared by : ACCURATE TECHNOLOGY CO. LTD
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Report Number : ATE20120635
Date of Test : May 10-24, 2012
Date of Report : May 24, 2012

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Test Report Certification

Applicant : SHENZHEN AOB ELECTRONICS CO., LTD
 Manufacturer : SHENZHEN AOB ELECTRONICS CO., LTD
 EUT Description : BLUETOOTH EARPHONES
 (A) MODEL NO.: ES-80143BT
 (B) SERIAL NO.: N/A
 (C) POWER SUPPLY: DC 3.7V

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247 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 Section 15.247 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY CO. LTD is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

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

Date of Test : May 10-24, 2012

Prepared by : APPLE
 (Engineer)

Approved & Authorized Signer : Heimle
 (Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT : BLUETOOTH EARPHONES
 Model Number : ES-80143BT
 Frequency Band : 2402MHz-2480MHz
 Number of Channels : 79
 Antenna Gain : 0dBi
 Power Supply : DC 3.7V
 Applicant : SHENZHEN AOB ELECTRONICS CO., LTD
 Address : Bldg A4, Third Industry Area, Huang Ma Bu Village,
 Xixiang Town, Bao An District, Shenzhen, China
 Manufacturer : SHENZHEN AOB ELECTRONICS CO., LTD
 Address : Bldg A4, Third Industry Area, Huang Ma Bu Village,
 Xixiang Town, Bao An District, Shenzhen, China
 Date of sample received : May 10, 2012
 Date of Test : May 10-24, 2012

1.2. Special Accessory and Auxiliary Equipment

PC : Manufacturer: DELL
 Model No.: DMC
 Serial No.: 3R7LF1X
 LCD Monitor : Manufacturer: DELL
 Model No.: E172FPt
 Serial No.: 434
 Keyboard : Manufacturer: DELL
 Model No.: SK-8110
 Serial No.: LR86682
 Mouse : Manufacturer: DELL
 Model No.: M071KC
 Serial No.: 410042355
 Printer : Manufacturer: Canon
 Model No.: BJC-1000SP

1.3. Description of Test Facility

EMC Lab : Accredited by TUV Rheinland Shenzhen

Listed by FCC
The Registration Number is 752051

Listed by Industry Canada
The Registration Number is 5077A-2

Accredited by China National Accreditation Committee
for Laboratories
The Certificate Registration Number is L3193

Name of Firm : ACCURATE TECHNOLOGY CO. LTD

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

1.4. Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2

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

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

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

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated date	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 8, 2012	Jan. 7, 2013
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 8, 2012	Jan. 7, 2013
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 8, 2012	Jan. 7, 2013
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	Jan. 8, 2012	Jan. 7, 2013
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 8, 2012	Jan. 7, 2013
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 8, 2012	Jan. 7, 2013
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 8, 2012	Jan. 7, 2013
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 8, 2012	Jan. 7, 2013
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 8, 2012	Jan. 7, 2013
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 8, 2012	Jan. 7, 2013

3. OPERATION OF EUT DURING TESTING

3.1.Operating Mode

The mode is used: Transmitting mode

Low Channel: 2402MHz

Middle Channel: 2441MHz

High Channel: 2480MHz

Hopping

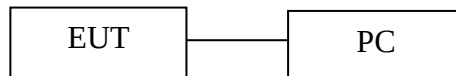
Charging

3.2.Configuration and peripherals



Setup: Transmitting mode

(EUT: BLUETOOTH EARPHONES)



Setup: Charging mode

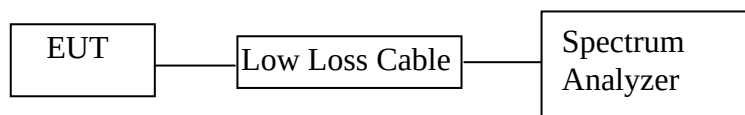
(EUT: BLUETOOTH EARPHONES)

4. TEST PROCEDURES AND RESULTS

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

5. 20DB BANDWIDTH TEST

5.1. Block Diagram of Test Setup



(EUT: BLUETOOTH EARPHONES)

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

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

5.3. EUT Configuration on Measurement

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

5.3.1. BLUETOOTH EARPHONES (EUT)

Model Number	:	ES-80143BT
Serial Number	:	N/A
Manufacturer	:	SHENZHEN AOB ELECTRONICS CO., LTD

5.4. Operating Condition of EUT

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

5.4.2. Turn on the power of all equipment.

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

5.5. Test Procedure

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

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

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

5.6. Test Result

PASS.

Date of Test:	<u>May 16, 2012</u>	Temperature:	<u>25°C</u>
EUT:	<u>BLUETOOTH EARPHONES</u>	Humidity:	<u>50%</u>
Model No.:	<u>ES-80143BT</u>	Power Supply:	<u>DC 3.7V</u>
Test Mode:	<u>TX</u>	Test Engineer:	<u>Apple</u>

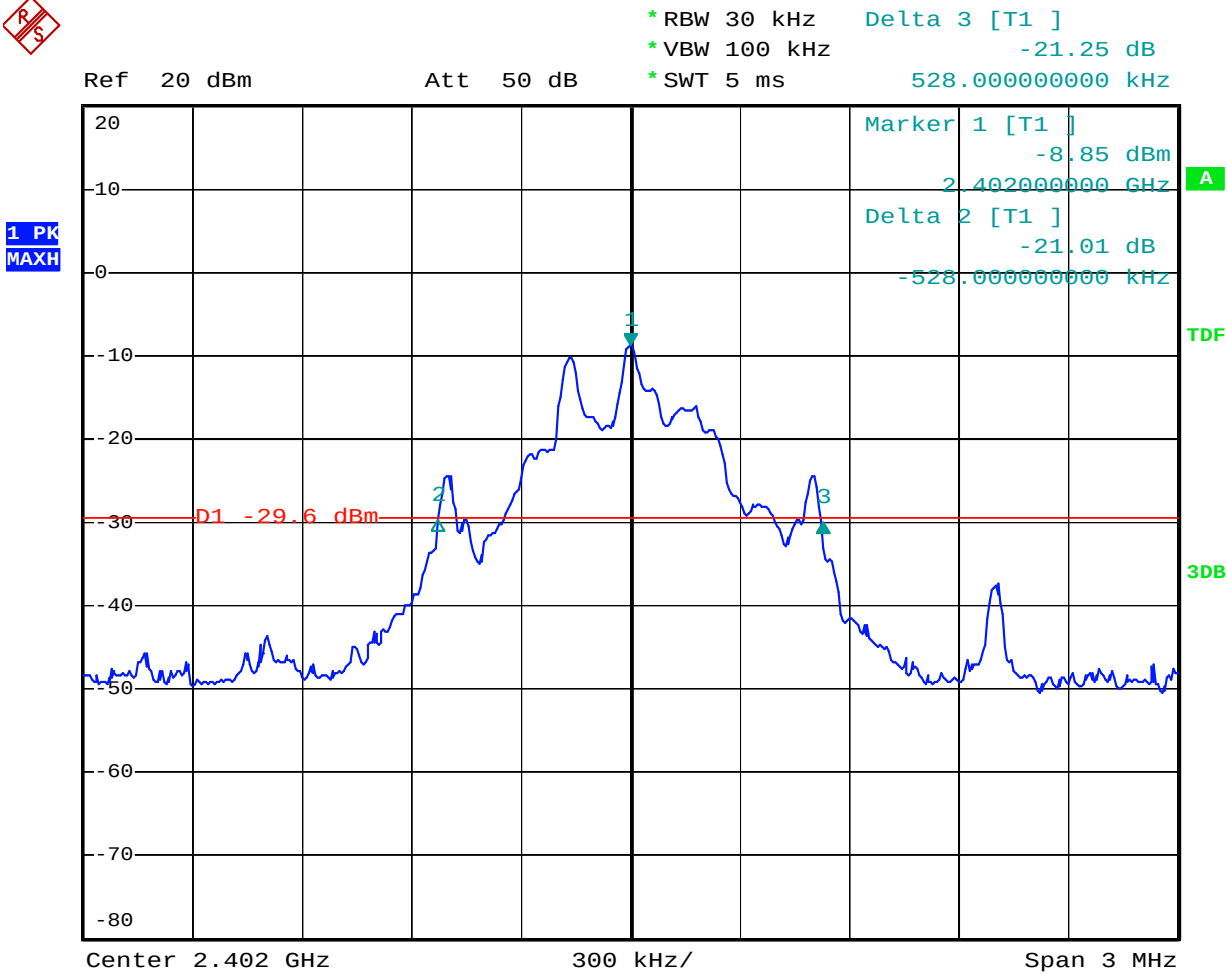
Channel	Frequency (MHz)	20dB Bandwidth (MHz)	Limit (MHz)
Low	2402	1.056	N/A
Middle	2441	1.056	N/A
High	2480	1.056	N/A

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

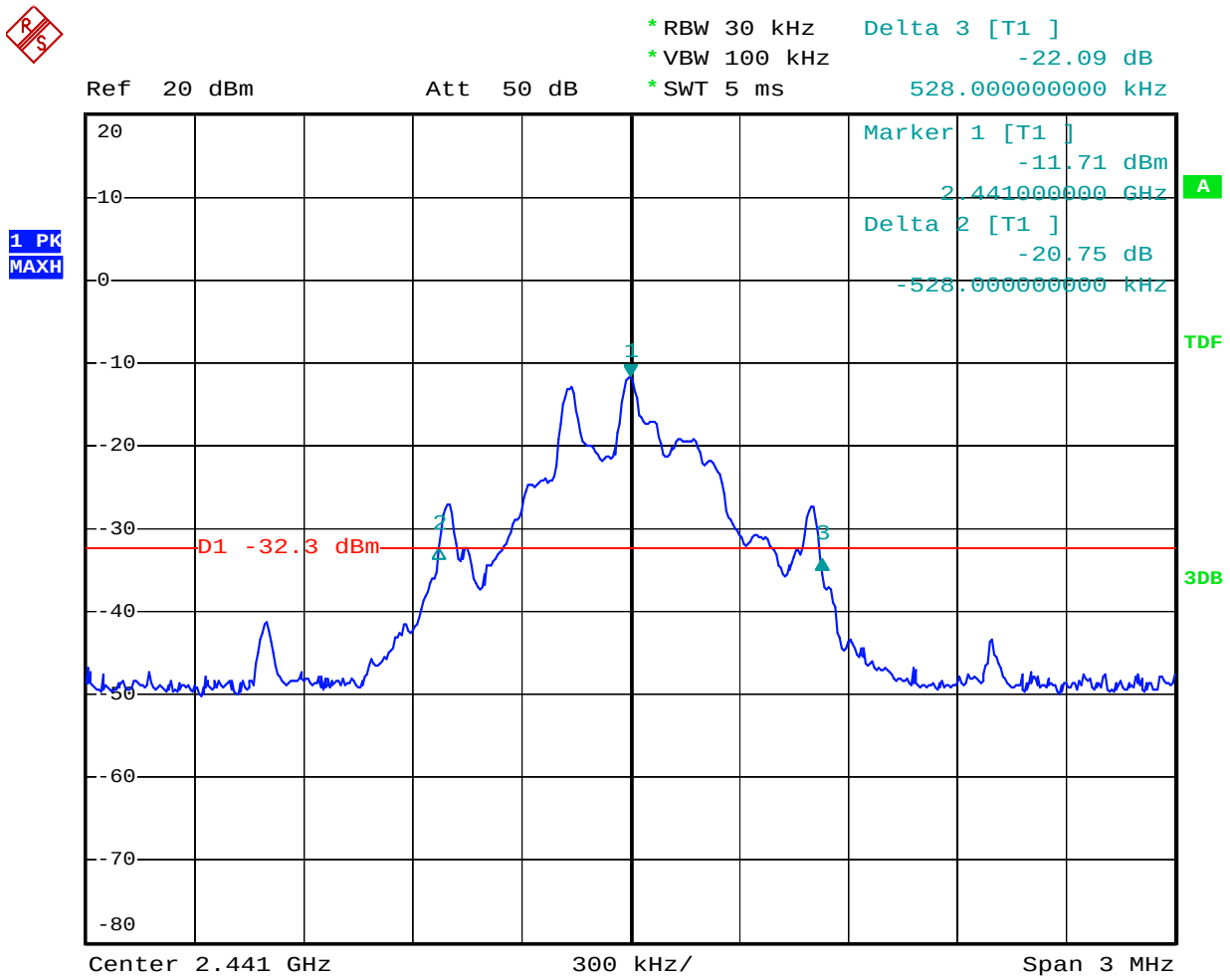
2) The data of 20 dB bandwidth of the hopping channel is limit of carrier frequencies separated

The spectrum analyzer plots are attached as below.

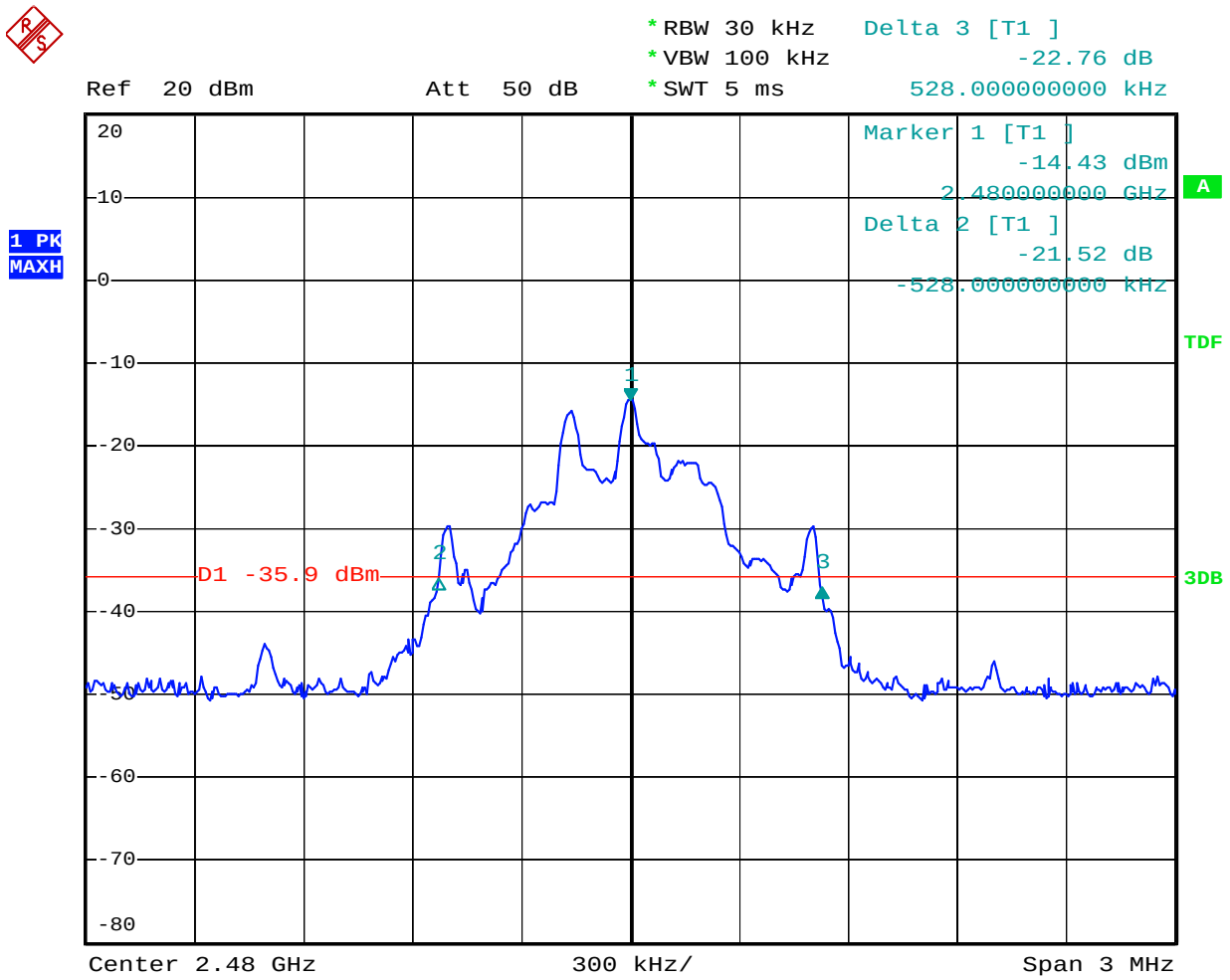
"Spectrum analyzer" is R/S



Date: 16.MAY.2012 08:54:38



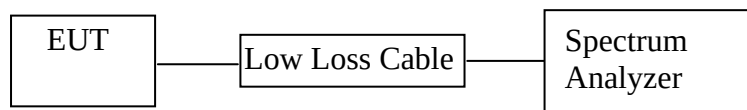
Date: 16.MAY.2012 08:57:29



Date: 16.MAY.2012 08:58:16

6. CARRIER FREQUENCY SEPARATION TEST

6.1. Block Diagram of Test Setup



(EUT: BLUETOOTH EARPHONES)

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

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

6.3. EUT Configuration on Measurement

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

6.3.1. BLUETOOTH EARPHONES (EUT)

Model Number	:	ES-80143BT
Serial Number	:	N/A
Manufacturer	:	SHENZHEN AOB ELECTRONICS CO., LTD

6.4. Operating Condition of EUT

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

6.4.2. Turn on the power of all equipment.

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

6.5. Test Procedure

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

6.5.2. Set RBW of spectrum analyzer to 100kHz and VBW to 300kHz. Adjust Span to 3 MHz.

6.5.3. Set the adjacent channel of the EUT maxhold another trace.

6.5.4. Measurement the channel separation

6.6. Test Result

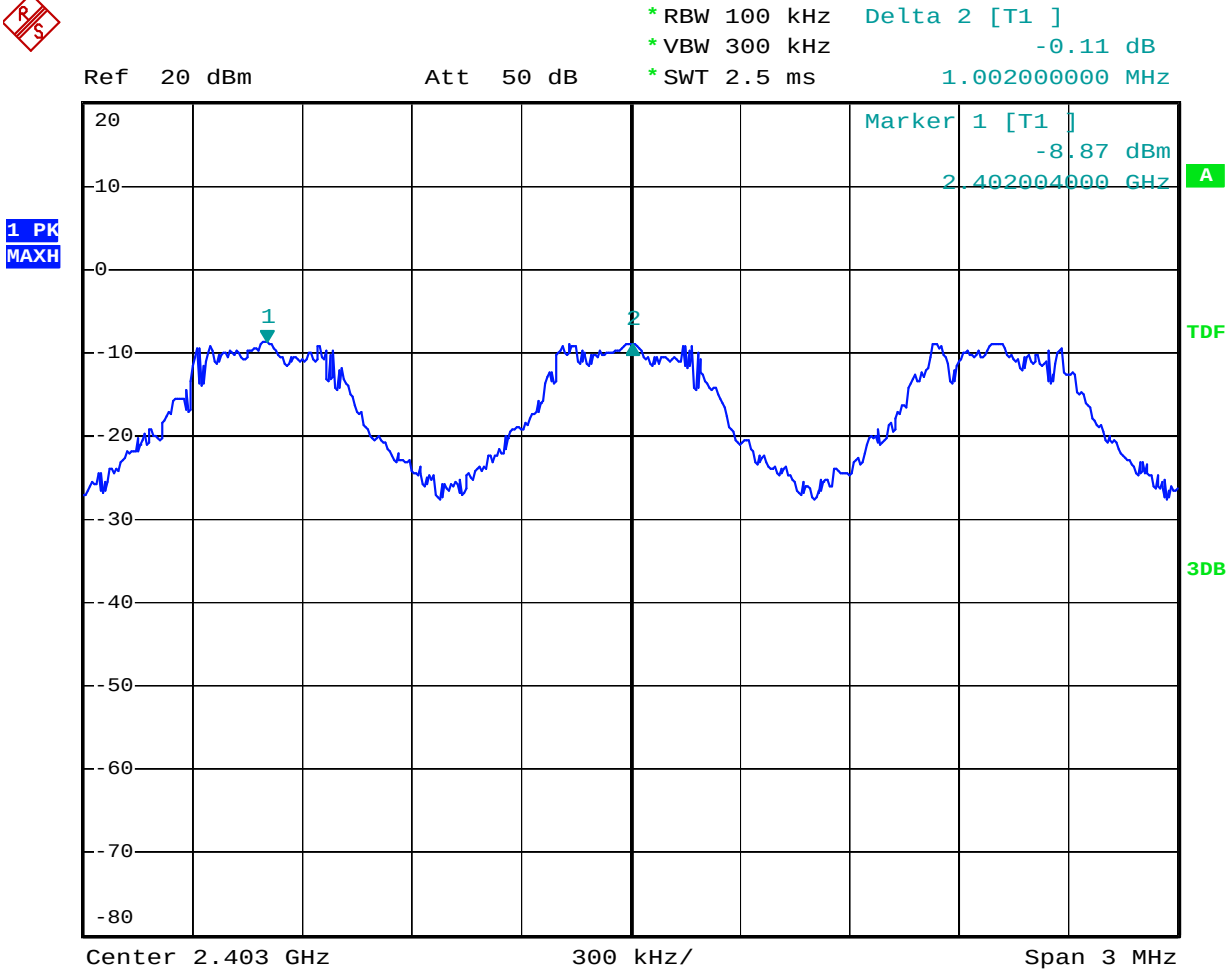
PASS.

Date of Test:	May 16, 2012	Temperature:	25°C
EUT:	BLUETOOTH EARPHONES	Humidity:	50%
Model No.:	ES-80143BT	Power Supply:	DC 3.7V
Test Mode:	Hopping	Test Engineer:	Apple

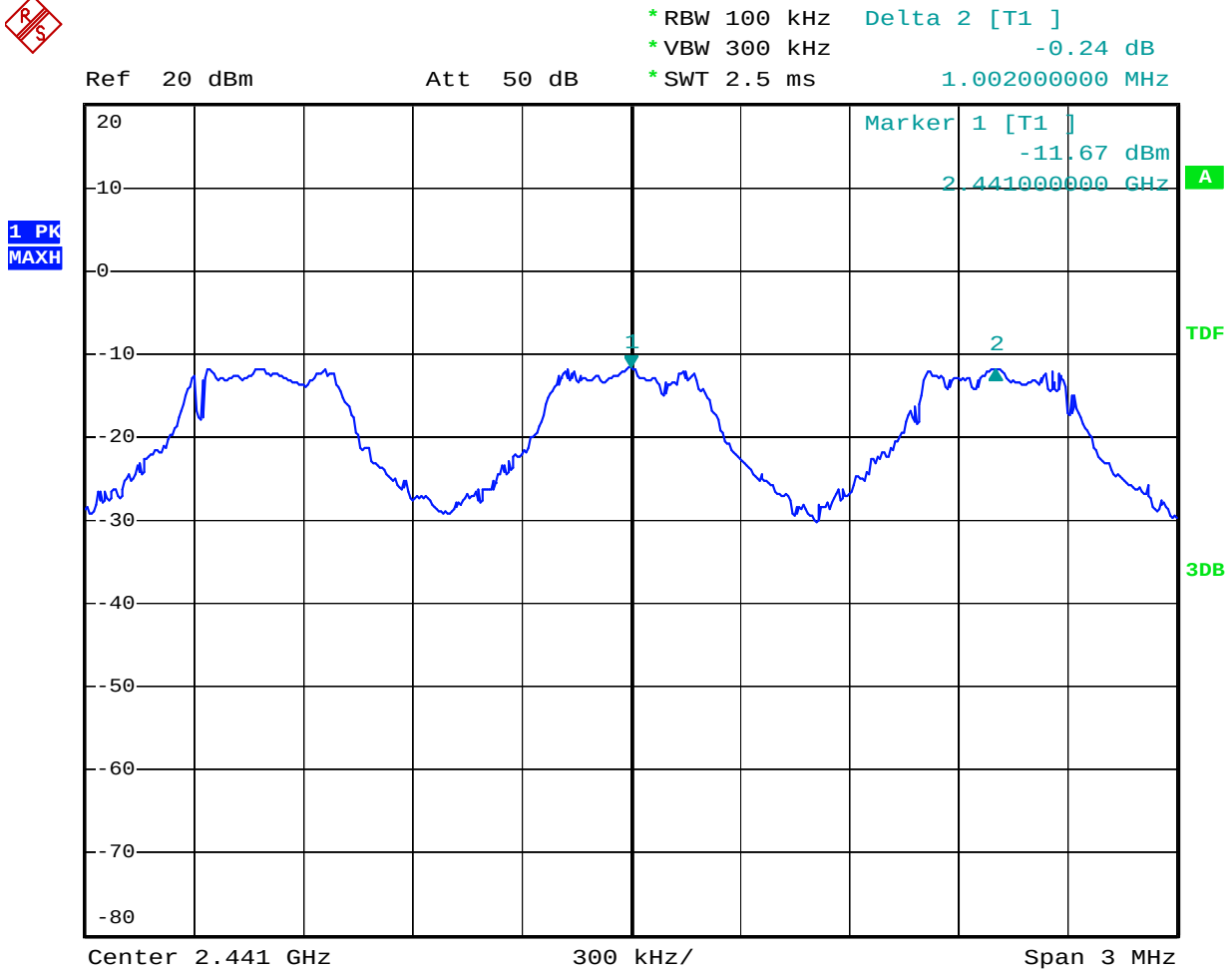
Channel	Channel Frequency (MHz)	Channel separation (MHz)	Limit
Low	2402	1.002	> two-thirds of the 20 dB bandwidth (0.704MHz) or 25kHz (whichever is greater)
Middle	2441	1.002	> two-thirds of the 20 dB bandwidth (0.704MHz) or 25kHz (whichever is greater)
High	2480	1.008	> two-thirds of the 20 dB bandwidth (0.704MHz) or 25kHz (whichever is greater)

The spectrum analyzer plots are attached as below.

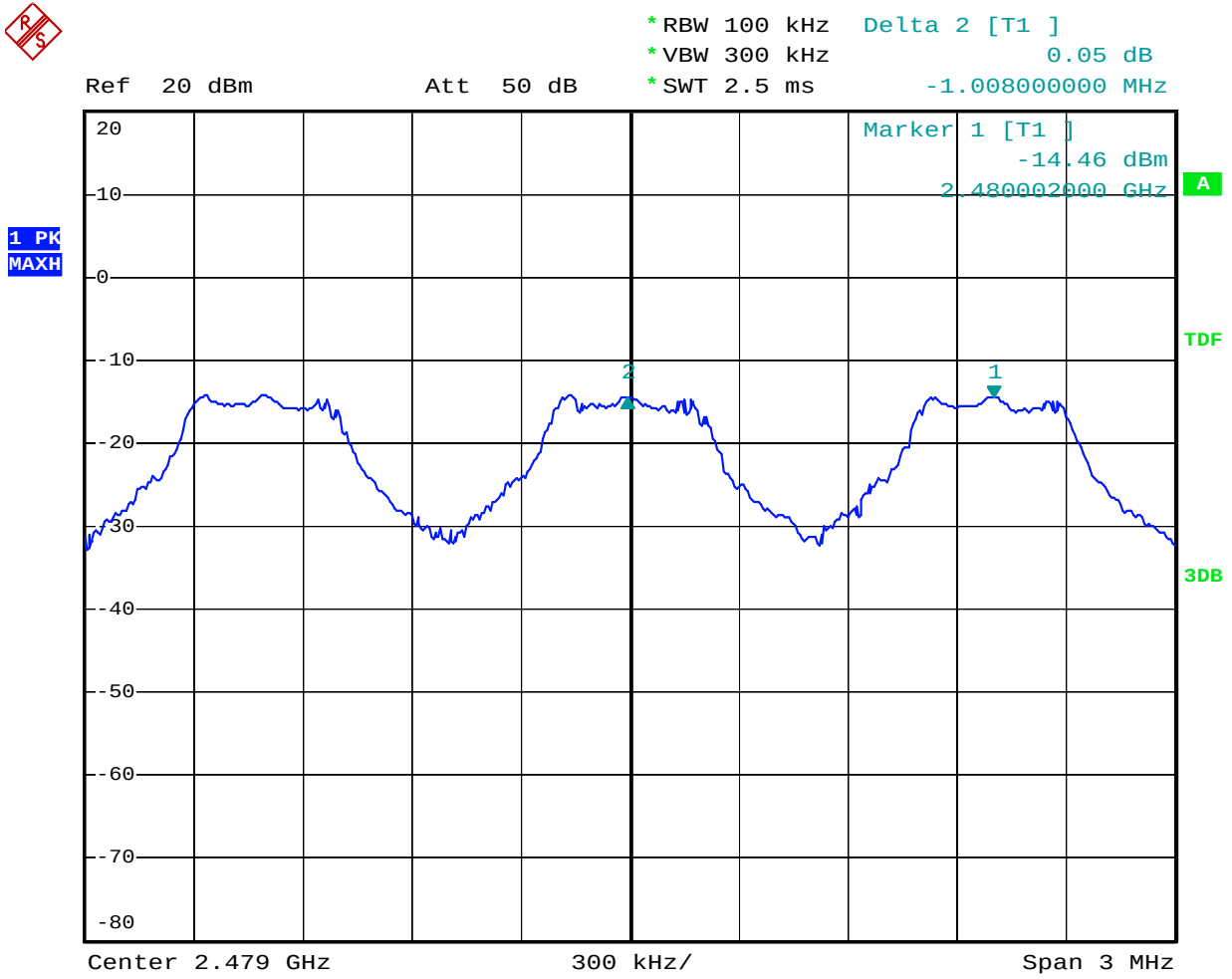
"Spectrum analyzer" is R/S



Date: 16.MAY.2012 09:01:14



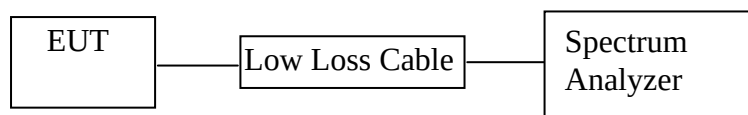
Date: 16.MAY.2012 09:03:49



Date: 16.MAY.2012 09:20:58

7. NUMBER OF HOPPING FREQUENCY TEST

7.1. Block Diagram of Test Setup



(EUT: BLUETOOTH EARPHONES)

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

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

7.3. EUT Configuration on Measurement

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

7.3.1. BLUETOOTH EARPHONES (EUT)

Model Number	:	ES-80143BT
Serial Number	:	N/A
Manufacturer	:	SHENZHEN AOB ELECTRONICS CO., LTD

7.4. Operating Condition of EUT

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

7.4.2. Turn on the power of all equipment.

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

7.5. Test Procedure

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

7.5.2. Set the spectrum analyzer as Span=30MHz, RBW=300kHz, VBW=300kHz.

7.5.3. Max hold, view and count how many channel in the band.

7.6. Test Result

PASS.

Date of Test:	<u>May 16, 2012</u>	Temperature:	<u>25°C</u>
EUT:	<u>BLUETOOTH EARPHONES</u>	Humidity:	<u>50%</u>
Model No.:	<u>ES-80143BT</u>	Power Supply:	<u>DC 3.7V</u>
Test Mode:	<u>Hopping</u>	Test Engineer:	<u>Apple</u>

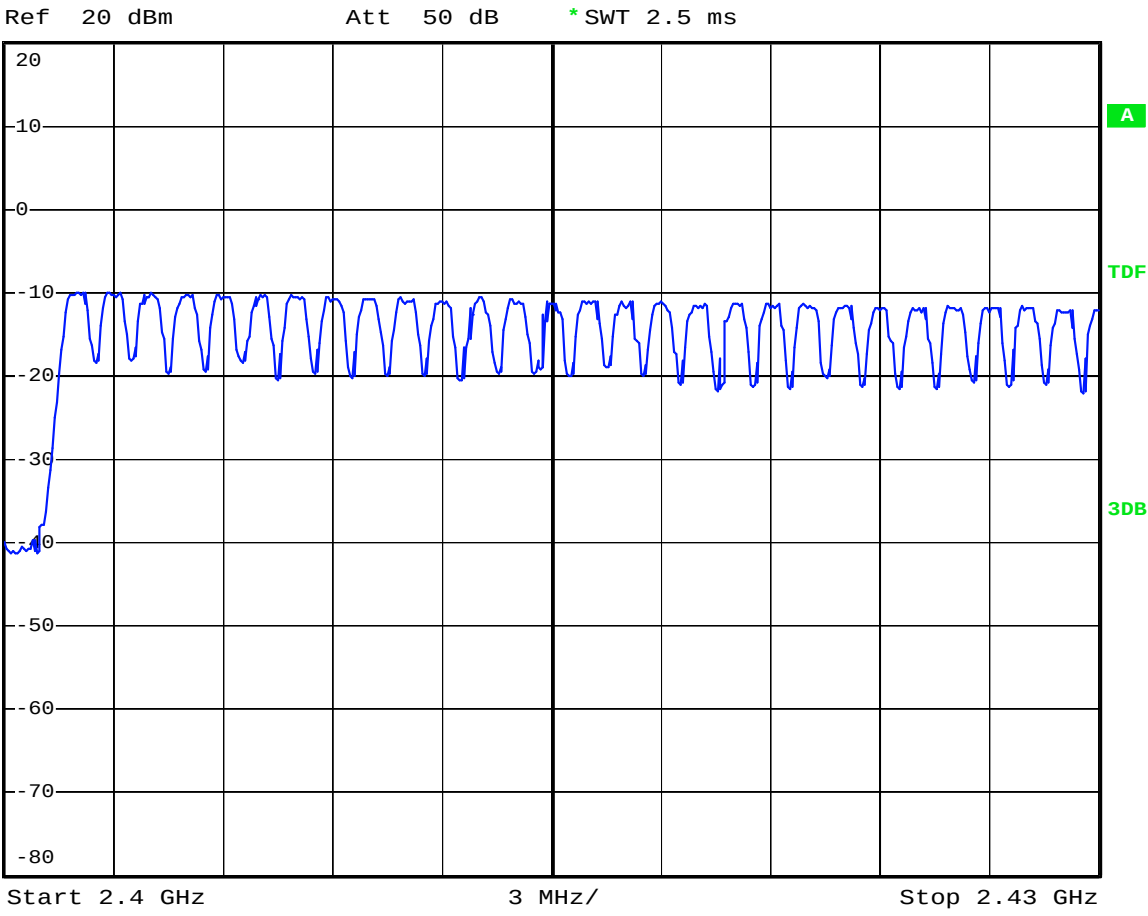
Total number of hopping channel	Measurement result (CH)	Limit (CH)
	79	>15

The spectrum analyzer plots are attached as below.

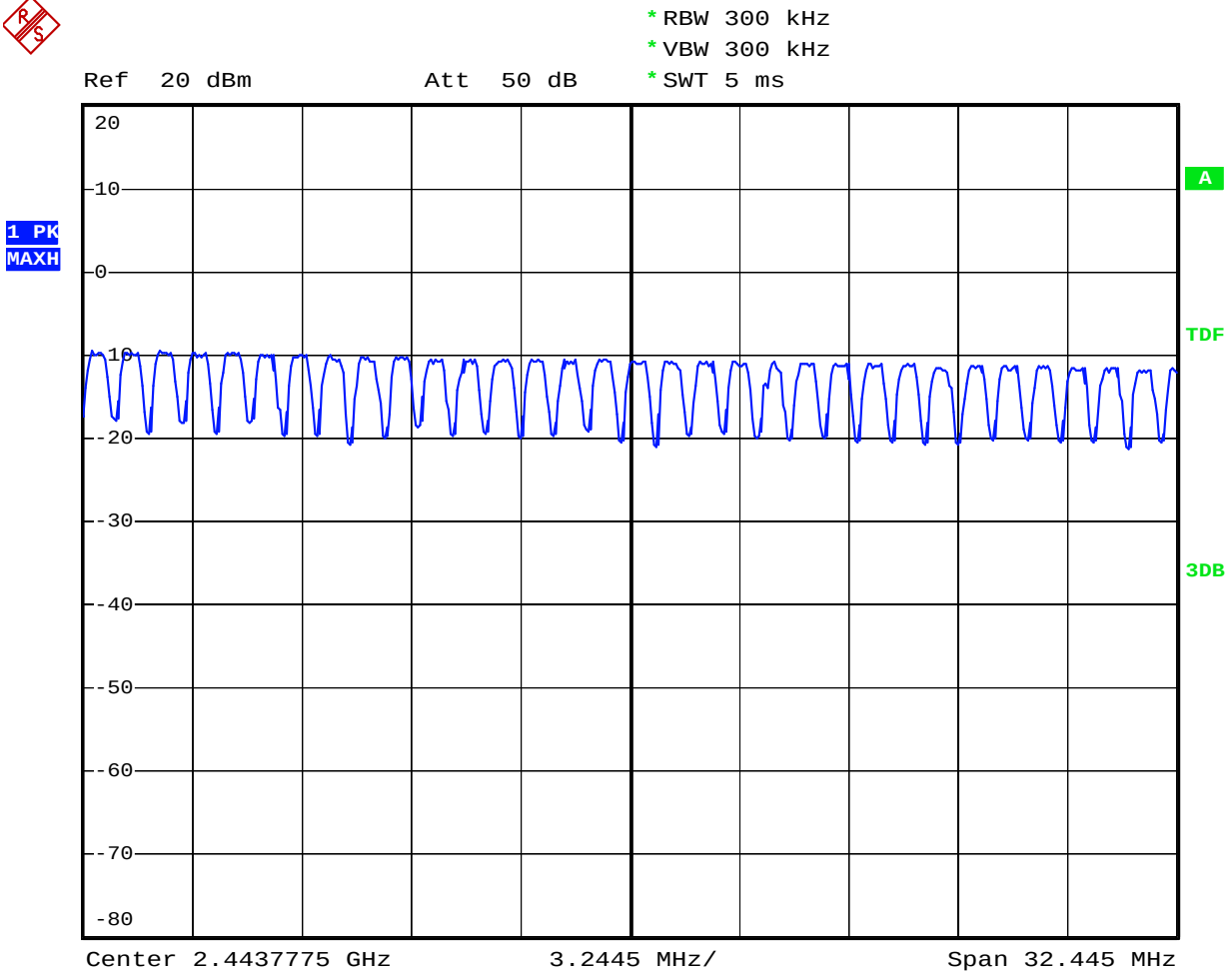
"Spectrum analyzer" is R/S



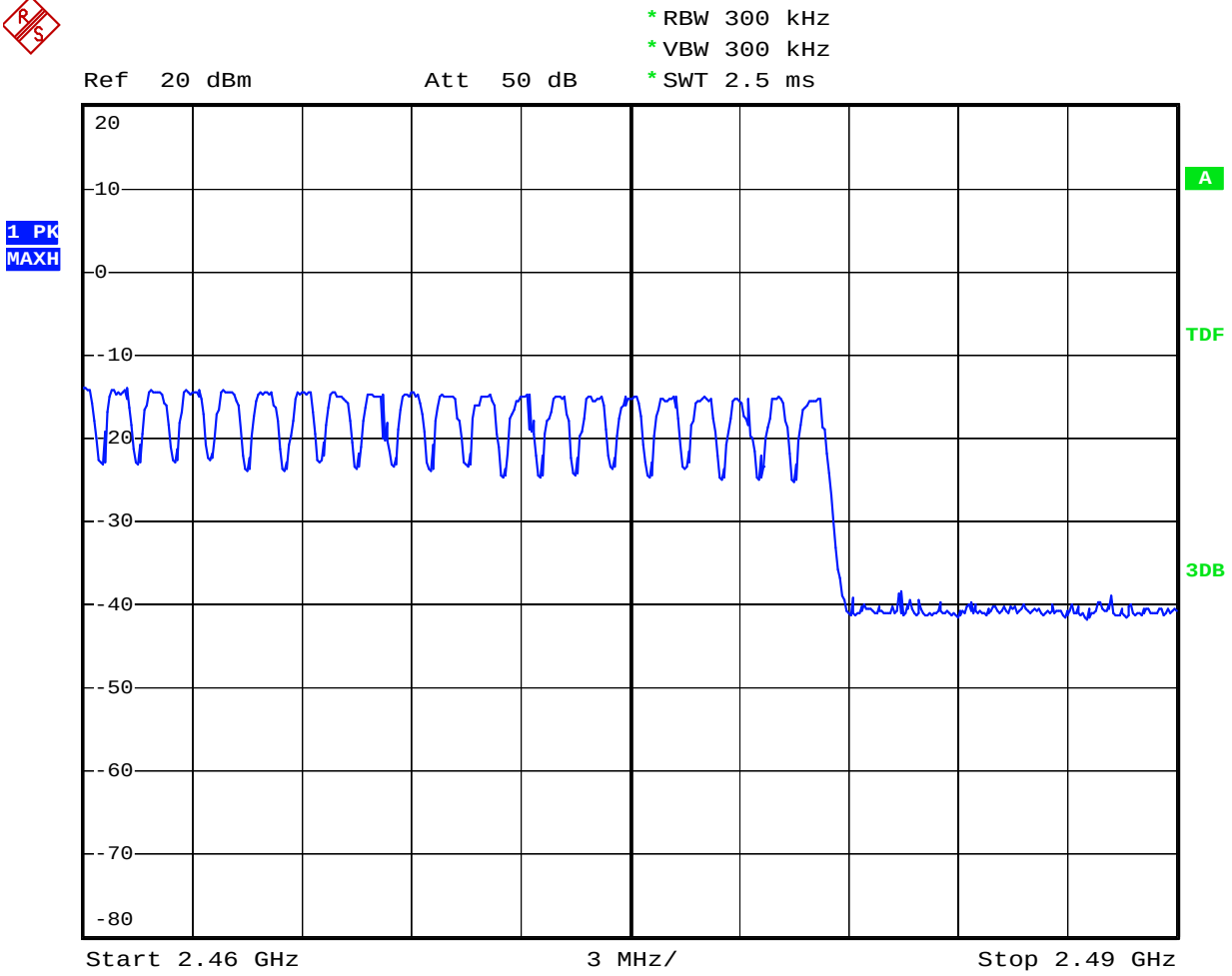
* RBW 300 kHz
* VBW 300 kHz
* SWT 2.5 ms



Date: 16.MAY.2012 10:02:00



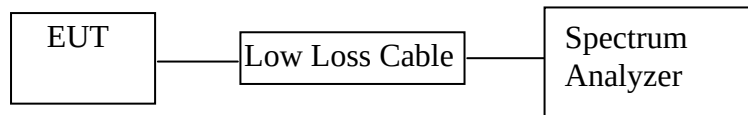
Date: 16.MAY.2012 16:34:00



Date: 16.MAY.2012 10:03:47

8. DWELL TIME TEST

8.1. Block Diagram of Test Setup



(EUT: BLUETOOTH EARPHONES)

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

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

8.3. EUT Configuration on Measurement

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

8.3.1. BLUETOOTH EARPHONES (EUT)

Model Number	:	ES-80143BT
Serial Number	:	N/A
Manufacturer	:	SHENZHEN AOB ELECTRONICS CO., LTD

8.4. Operating Condition of EUT

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

8.4.2. Turn on the power of all equipment.

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

8.5. Test Procedure

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

8.5.2. Set center frequency of spectrum analyzer = operating frequency.

8.5.3. Set the spectrum analyzer as RBW=100kHz, VBW=300kHz, Span=0Hz, Adjust Sweep=31.6s. Get the burst (in 31.6s.).

8.5.4. Set the spectrum analyzer as RBW=1MHz, VBW=3MHz, Span=0Hz, Adjust Sweep=5ms. Get the pulse time.

8.5.5. Repeat above procedures until all frequency measured were complete.

8.6. Test Result

PASS.

Date of Test:	<u>May 16, 2012</u>	Temperature:	<u>25°C</u>
EUT:	<u>BLUETOOTH EARPHONES</u>	Humidity:	<u>50%</u>
Model No.:	<u>ES-80143BT</u>	Power Supply:	<u>DC 3.7V</u>
Test Mode:	<u>Hopping</u>	Test Engineer:	<u>Apple</u>

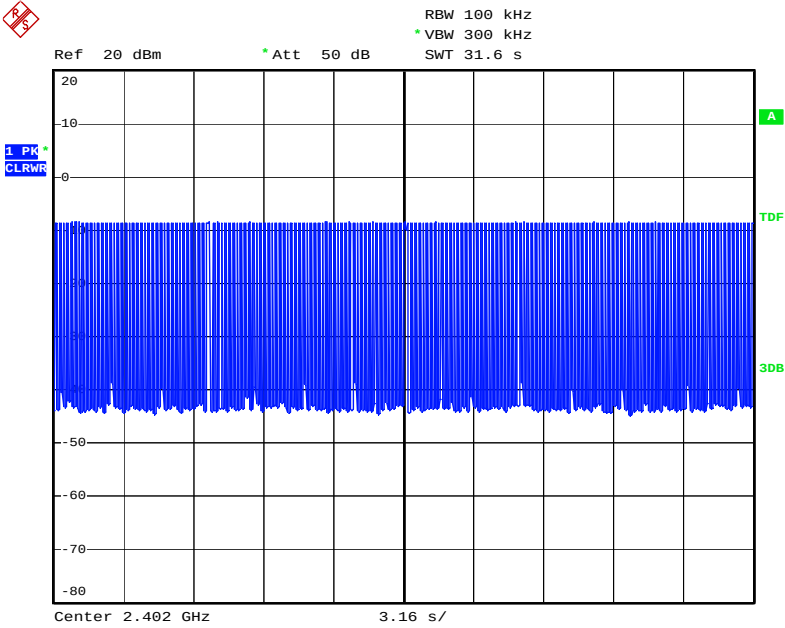
A period transmit time = $0.4 \times 79 = 31.6$

Dwell time = pulse time $\times$ burst (in 31.6 sec.)

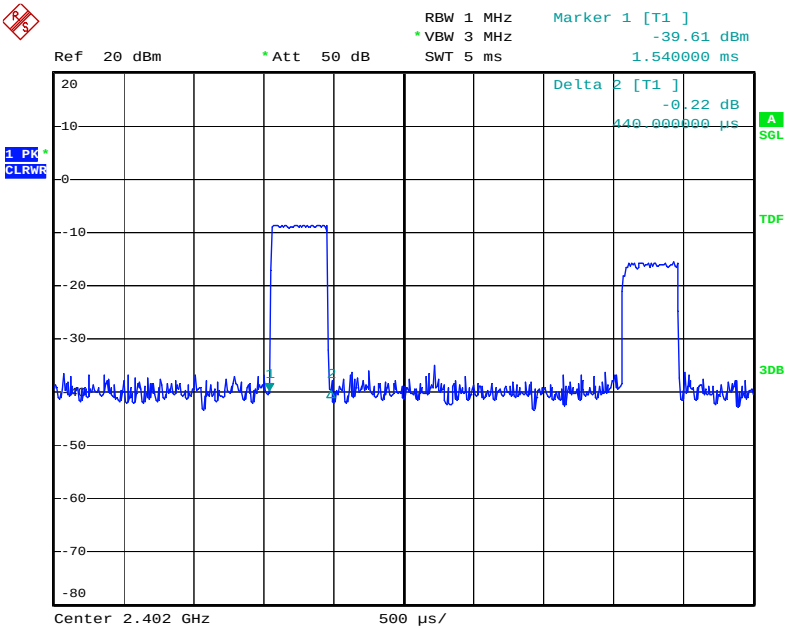
Channel	Channel Frequency (MHz)	Pulse Time (ms)	Burst (in 31.6 sec.)	Dwell Time (ms)	Limit (ms)
Low	2402	0.440	317	139.5	400
Middle	2441	0.440	322	141.7	400
High	2480	0.460	320	147.2	400

The spectrum analyzer plots are attached as below.

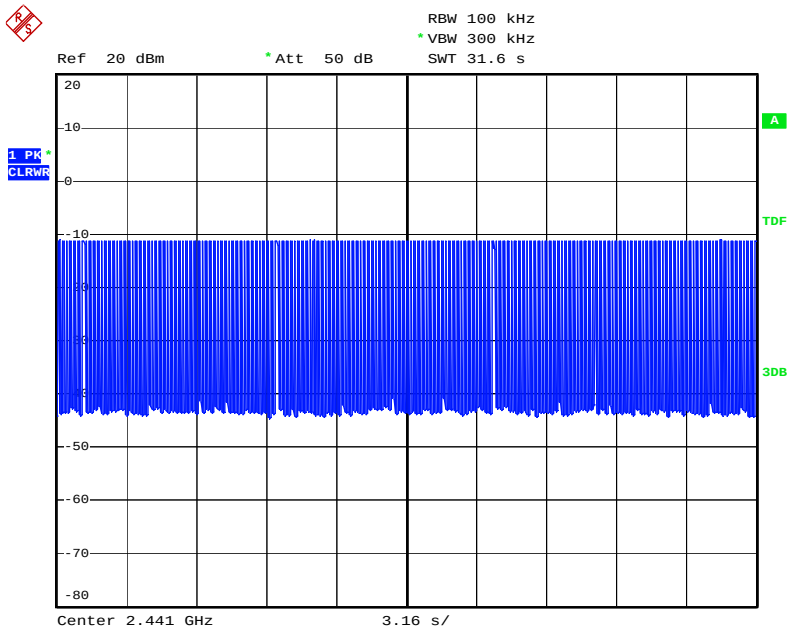
"Spectrum analyzer" is R/S



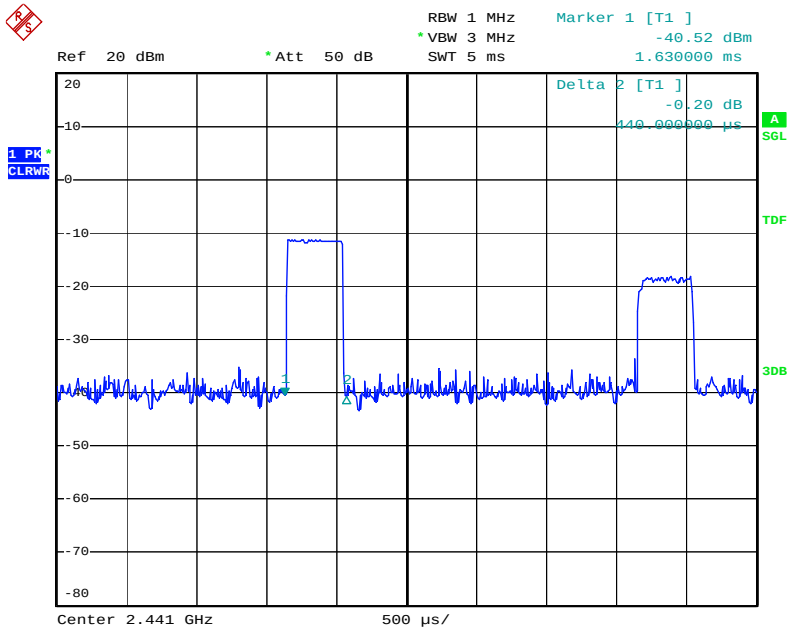
Date: 16.MAY.2012 20:03:06



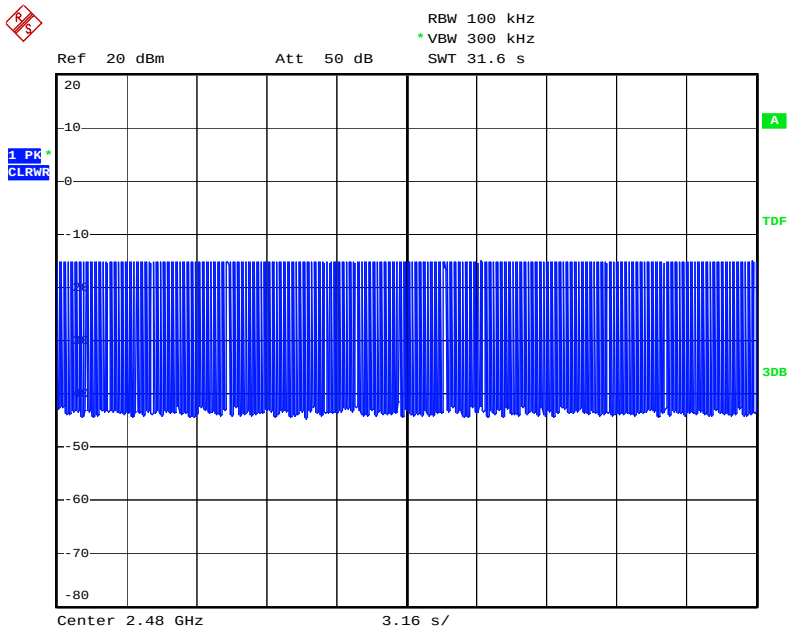
Date: 16.MAY.2012 19:56:09



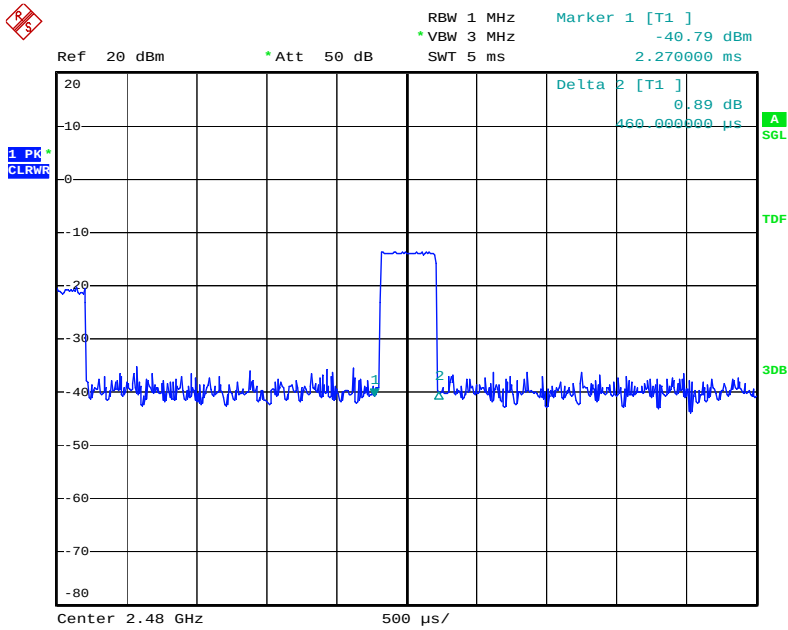
Date: 16.MAY.2012 20:00:04



Date: 16.MAY.2012 20:07:09



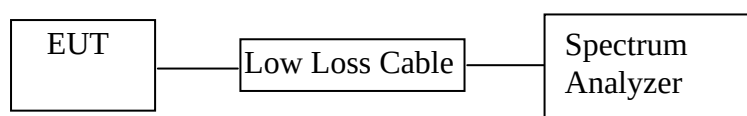
Date: 16.MAY.2012 09:52:00



Date: 16.MAY.2012 19:57:12

9. MAXIMUM PEAK OUTPUT POWER TEST

9.1. Block Diagram of Test Setup



(EUT: BLUETOOTH EARPHONES)

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

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

9.3. EUT Configuration on Measurement

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

9.3.1. BLUETOOTH EARPHONES (EUT)

Model Number	:	ES-80143BT
Serial Number	:	N/A
Manufacturer	:	SHENZHEN AOB ELECTRONICS CO., LTD

9.4. Operating Condition of EUT

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

9.4.2. Turn on the power of all equipment.

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

9.5. Test Procedure

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

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

9.5.3. Measurement the maximum peak output power.

9.6. Test Result

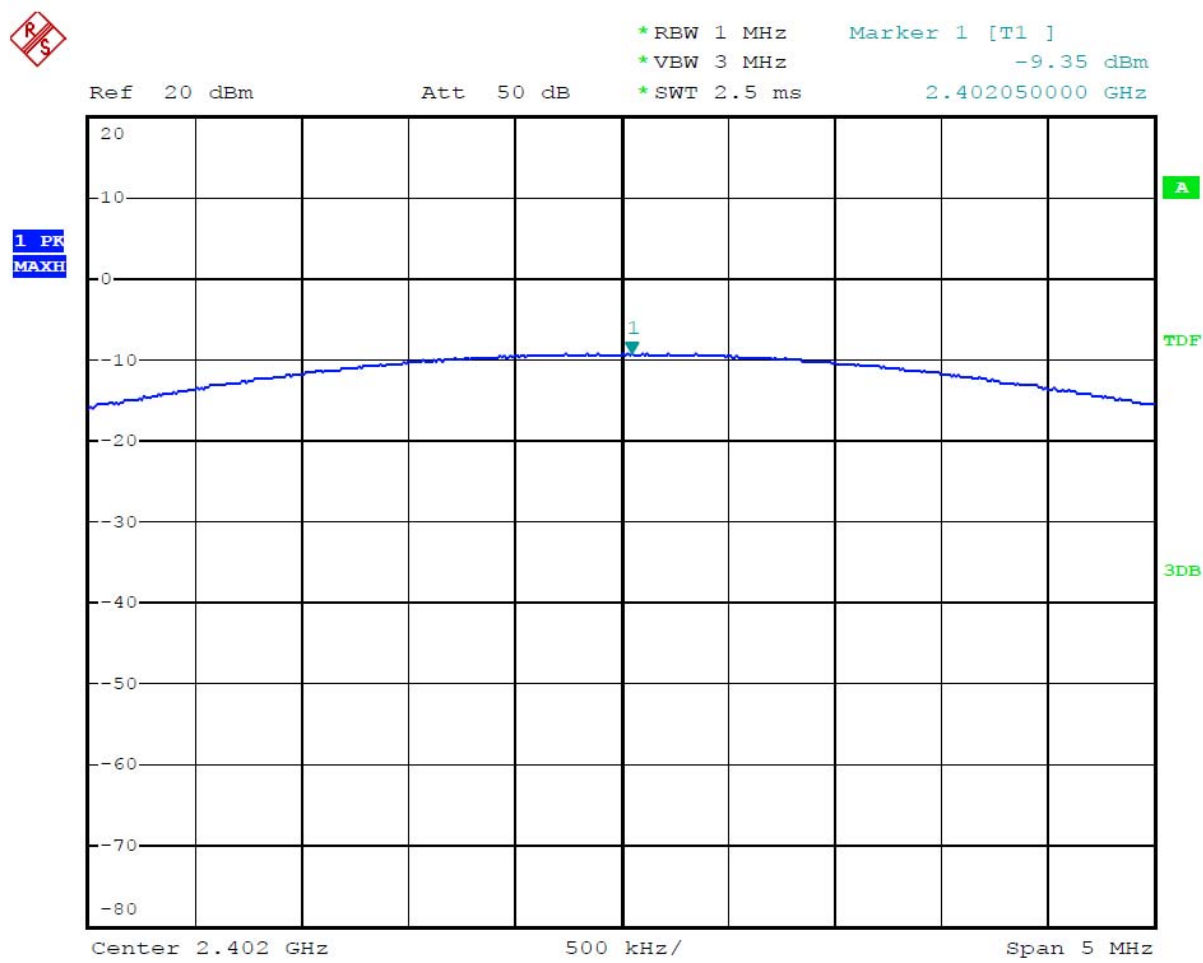
PASS.

Date of Test:	<u>May 16, 2012</u>	Temperature:	<u>25°C</u>
EUT:	<u>BLUETOOTH EARPHONES</u>	Humidity:	<u>50%</u>
Model No.:	<u>ES-80143BT</u>	Power Supply:	<u>DC 3.7V</u>
Test Mode:	<u>TX</u>	Test Engineer:	<u>Apple</u>

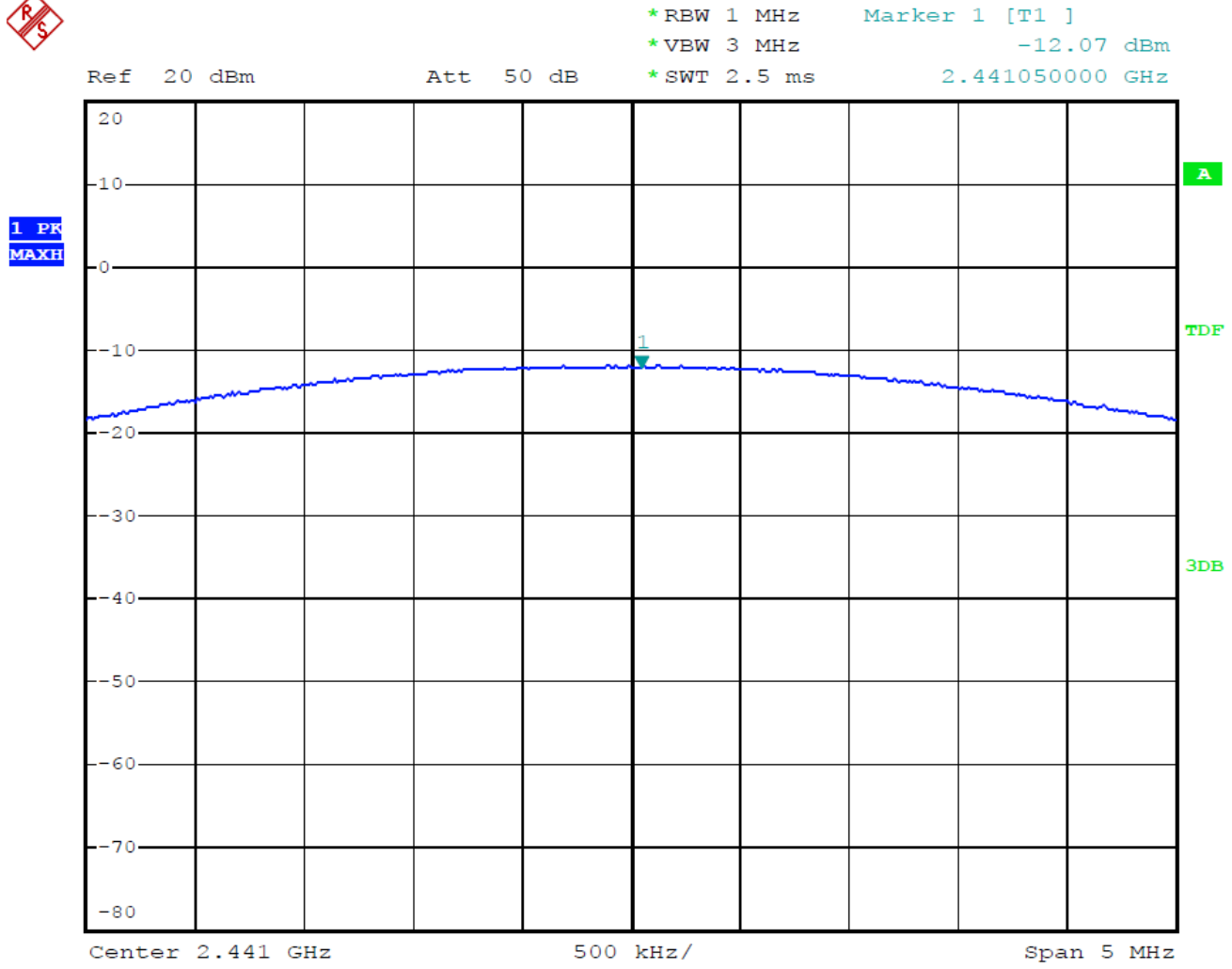
Channel	Frequency (MHz)	Peak Output Power (dBm)	Peak Output Power (mW)	Limits dBm / W
Low	2402	-9.35	0.12	21 dBm / 0.125 W
Middle	2441	-12.07	0.06	21 dBm / 0.125 W
High	2480	-14.34	0.04	21 dBm / 0.125 W

The spectrum analyzer plots are attached as below.

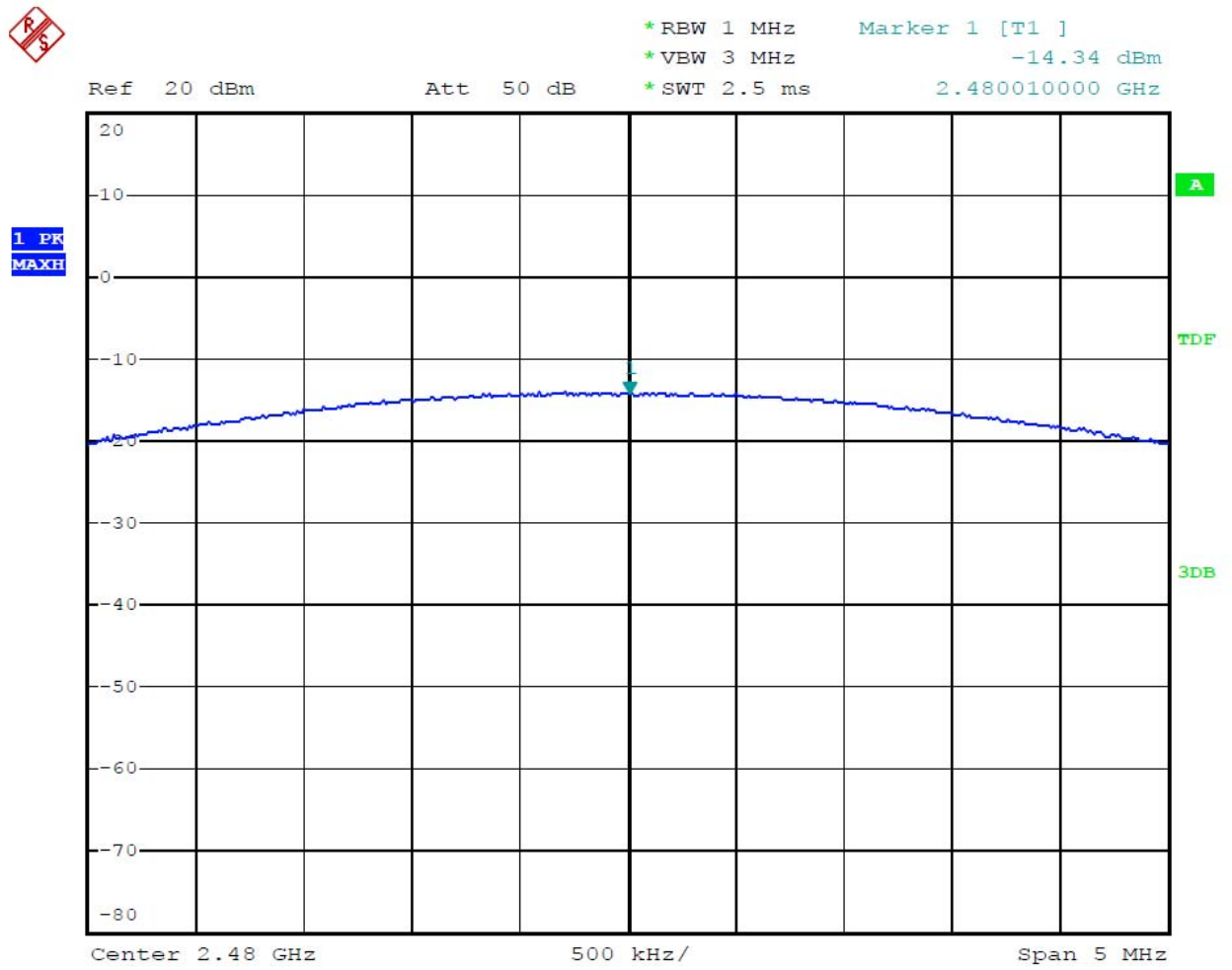
"Spectrum analyzer" is Agilent



Date: 16.MAY.2012 09:57:15



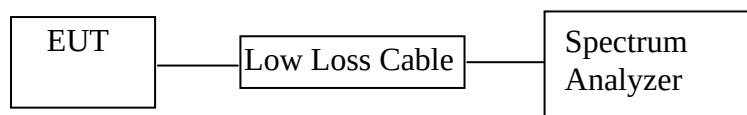
Date: 16.MAY.2012 09:57:41



Date: 16.MAY.2012 09:58:06

10.BAND EDGE COMPLIANCE TEST

10.1.Block Diagram of Test Setup



(EUT: BLUETOOTH EARPHONES)

10.2.The Requirement For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

10.3.EUT Configuration on Measurement

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

10.3.1.BLUETOOTH EARPHONES (EUT)

Model Number	:	ES-80143BT
Serial Number	:	N/A
Manufacturer	:	SHENZHEN AOB ELECTRONICS CO., LTD

10.4.Operating Condition of EUT

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

10.4.2.Turn on the power of all equipment.

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

10.5.Test Procedure

Conducted Band Edge:

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

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

Radiate Band Edge:

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

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

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

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

RBW=1MHz, VBW=1MHz

10.5.7.The band edges was measured and recorded.

10.6. Test Result

Pass

Date of Test:	<u>May 16, 2012</u>	Temperature:	<u>25°C</u>
EUT:	<u>BLUETOOTH EARPHONES</u>	Humidity:	<u>50%</u>
Model No.:	<u>ES-80143BT</u>	Power Supply:	<u>DC 3.7V</u>
Test Mode:	<u>TX (Hopping off)</u>	Test Engineer:	<u>Apple</u>

Conducted test

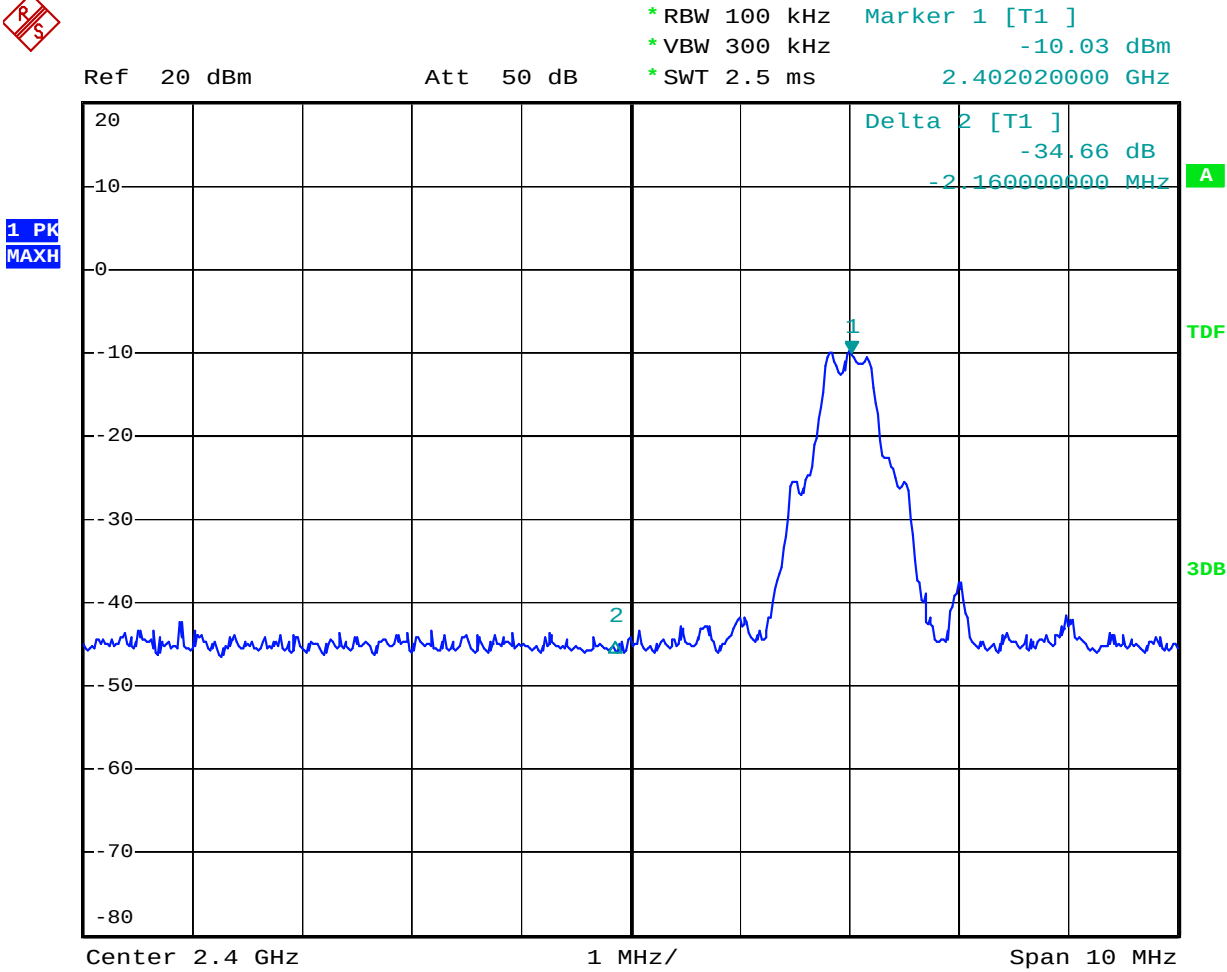
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2402	34.66	> 20dBc
2480	28.61	> 20dBc

Date of Test:	<u>May 16, 2012</u>	Temperature:	<u>25°C</u>
EUT:	<u>BLUETOOTH EARPHONES</u>	Humidity:	<u>50%</u>
Model No.:	<u>ES-80143BT</u>	Power Supply:	<u>DC 3.7V</u>
Test Mode:	<u>TX (Hopping on)</u>	Test Engineer:	<u>Apple</u>

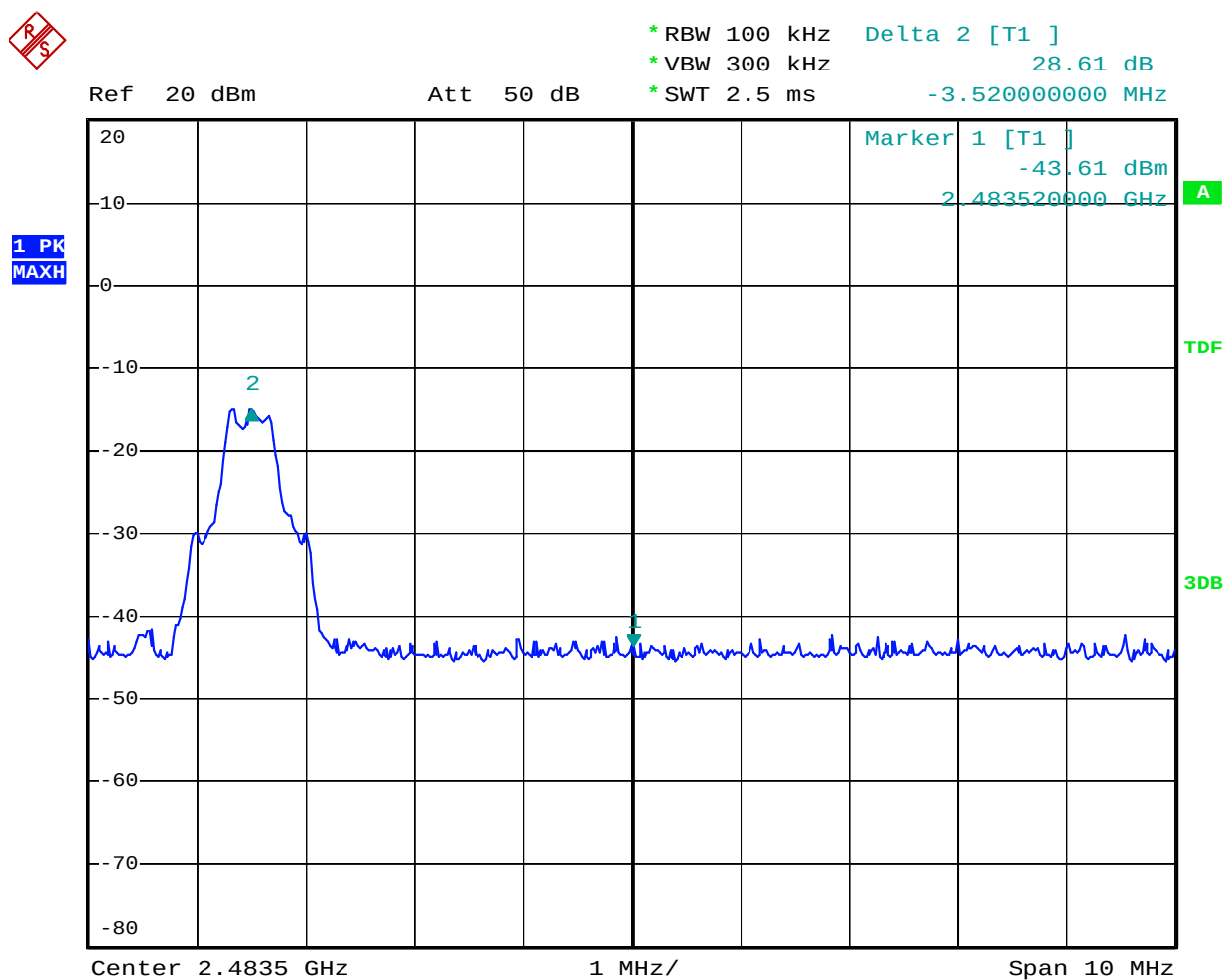
Conducted test

Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2402	43.86	> 20dBc
2480	52.24	> 20dBc

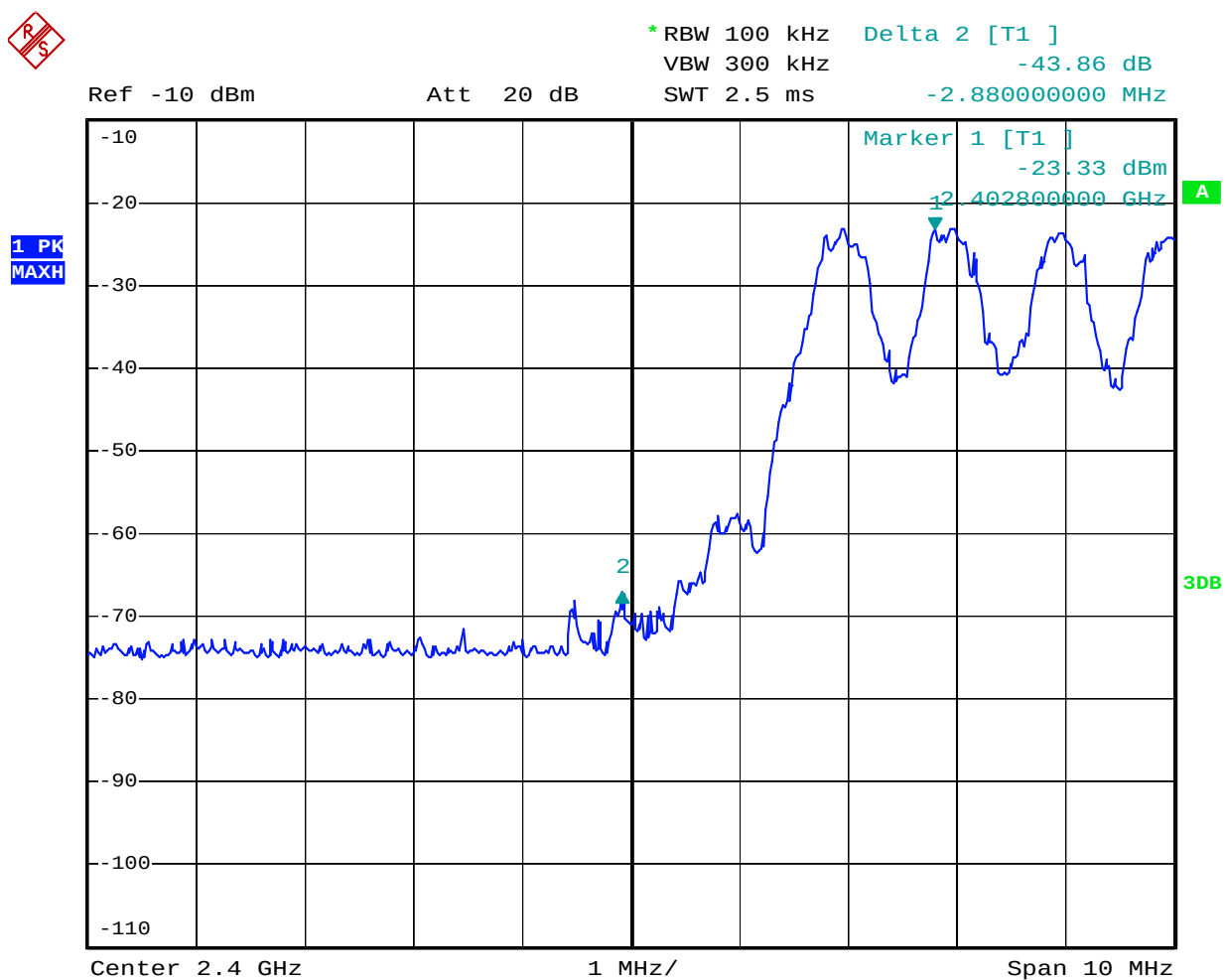
"Spectrum analyzer" is R/S

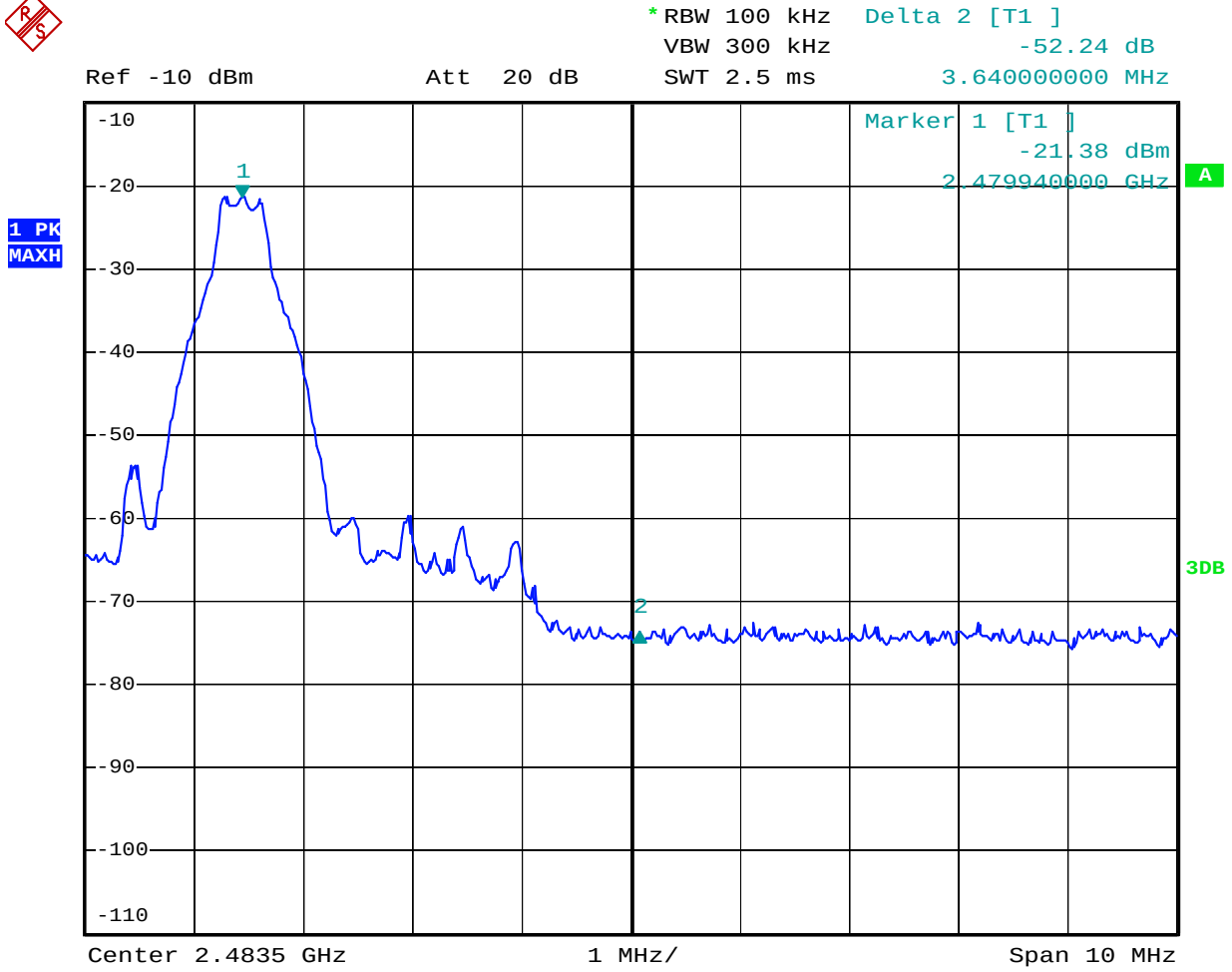


Date: 16.MAY.2012 10:00:45



Date: 16.MAY.2012 10:00:12





Radiated Band Edge Result

Date of Test: May 12, 2012

Temperature: 25°C

EUT: BLUETOOTH EARPHONES

Humidity: 50%

Model No.: ES-80143BT

Power Supply: DC 3.7V

Test Mode: TX (2402MHz)

Test Engineer: Kai

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	42.57	47.24	-7.81	34.76	39.43	54	74	-19.24	-34.57	Vertical
2332.480	43.66	47.50	-7.81	35.58	39.69	54	74	-18.15	-34.31	Vertical
2390.000	43.33	48.76	-7.53	35.80	41.23	54	74	-18.20	-32.77	Vertical
2310.000	43.57	48.45	-7.81	35.76	40.64	54	74	-18.24	-33.36	Horizontal
2332.150	43.55	48.72	-7.81	35.74	40.91	54	74	-18.26	-33.09	Horizontal
2390.000	41.68	47.65	-7.53	34.15	40.12	54	74	-19.85	-33.88	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.

Date of Test:	May 12, 2012	Temperature:	25°C
EUT:	BLUETOOTH EARPHONES	Humidity:	50%
Model No.:	ES-80143BT	Power Supply:	DC 3.7V
Test Mode:	TX (2480MHz)	Test Engineer:	Kai

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	
2483.900	43.69	49.29	-7.38	36.31	41.91	54	74	-17.69	-32.09	Vertical
2487.904	43.61	48.96	-7.38	36.23	41.58	54	74	-17.77	-32.42	Vertical
2500.000	42.58	47.63	-7.40	35.18	40.23	54	74	-18.82	-33.77	Vertical
2483.900	43.57	48.01	-7.38	36.19	40.63	54	74	-17.81	-33.37	Horizontal
2487.950	44.99	49.28	-7.38	37.61	41.90	54	74	-16.39	-32.10	Horizontal
2500.000	43.68	49.50	-7.40	36.28	42.10	54	74	-17.72	-31.90	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.


ACCURATE TECHNOLOGY CO., LTD.

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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.: Bob #2053

Polarization: Horizontal

Standard: FCC 15C PK

Power Source: DC 3.7V

Test item: Radiation Test

Date: 2012/05/16

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

Time: 22:11:14

EUT: BLUETOOTH EARPHONES

Engineer Signature:

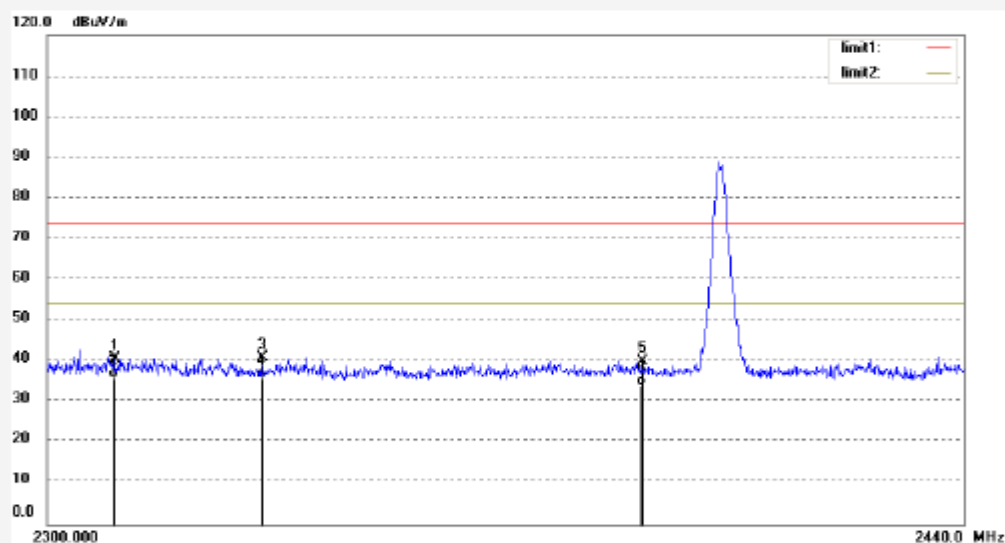
Mode: TX 2402

Distance: 3m

Model: ES-80143BT

Manufacturer: AOB

Note: Report NO.:ATE20120635



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	48.45	-7.81	40.64	74.00	-33.36	peak			
2	2310.000	43.57	-7.81	35.76	54.00	-18.24	AVG			
3	2332.150	48.72	-7.81	40.91	74.00	-33.09	peak			
4	2332.150	43.55	-7.81	35.74	54.00	-18.26	AVG			
5	2390.000	47.65	-7.53	40.12	74.00	-33.88	peak			
6	2390.000	41.68	-7.53	34.15	54.00	-19.85	AVG			


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Fax:+86-0755-26503398

Job No.: Bob #2054

Standard: FCC 15C PK

Test item: Radiation Test

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

EUT: BLUETOOTH EARPHONES

Mode: TX 2402

Model: ES-80143BT

Manufacturer: AOB

Polarization: Vertical

Power Source: DC 3.7V

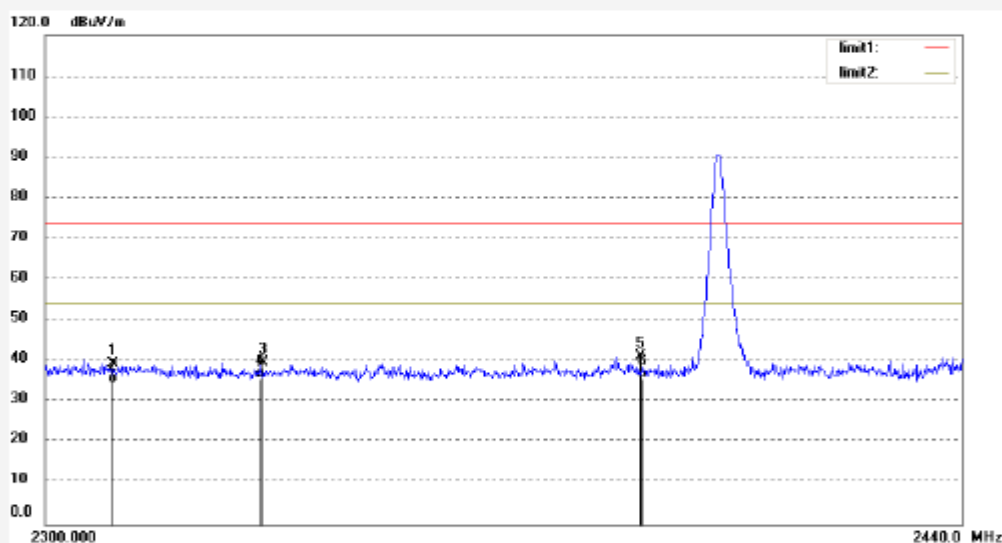
Date: 2012/05/16

Time: 22:13:25

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20120635



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	47.24	-7.81	39.43	74.00	-34.57	peak			
2	2310.000	42.57	-7.81	34.76	54.00	-19.24	AVG			
3	2332.480	47.50	-7.81	39.69	74.00	-34.31	peak			
4	2332.480	43.66	-7.81	35.85	54.00	-18.15	AVG			
5	2390.000	48.76	-7.53	41.23	74.00	-32.77	peak			
6	2390.000	43.33	-7.53	35.80	54.00	-18.20	AVG			


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Fax:+86-0755-26503396

Job No.: Bob #2056

Standard: FCC 15C PK

Test item: Radiation Test

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

EUT: BLUETOOTH EARPHONES

Mode: TX 2480

Model: ES-80143BT

Manufacturer: AOB

Polarization: Horizontal

Power Source: DC 3.7V

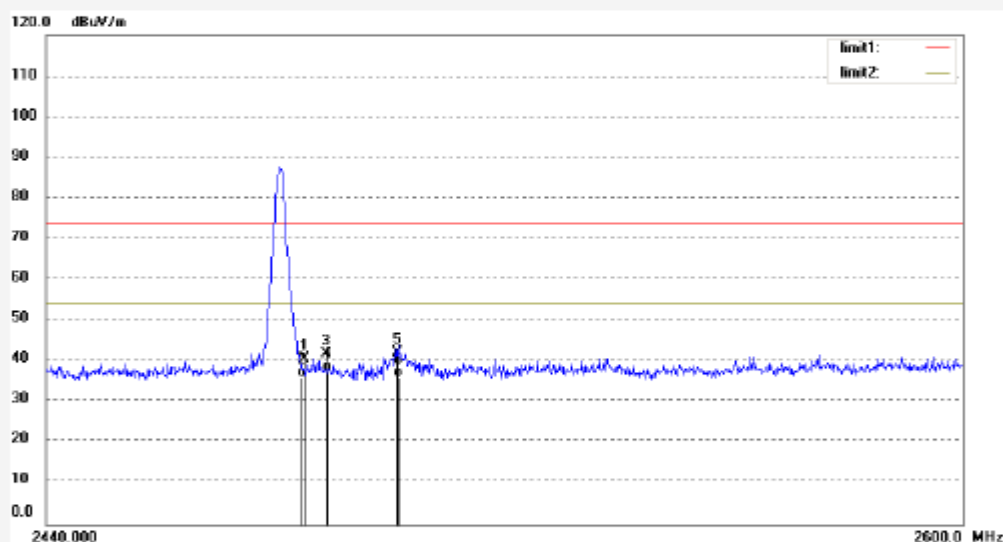
Date: 2012/05/16

Time: 22:19:00

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20120635



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.900	48.01	-7.38	40.63	74.00	-33.37	peak			
2	2483.900	43.57	-7.38	36.19	54.00	-17.81	AVG			
3	2487.950	49.28	-7.38	41.90	74.00	-32.10	peak			
4	2487.950	44.99	-7.38	37.61	54.00	-16.39	AVG			
5	2500.000	49.50	-7.40	42.10	74.00	-31.90	peak			
6	2500.000	43.68	-7.40	36.28	54.00	-17.72	AVG			


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Site: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Bob #2055

Standard: FCC 15C PK

Test item: Radiation Test

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

EUT: BLUETOOTH EARPHONES

Mode: TX 2480

Model: ES-80143BT

Manufacturer: AOB

Polarization: Vertical

Power Source: DC 3.7V

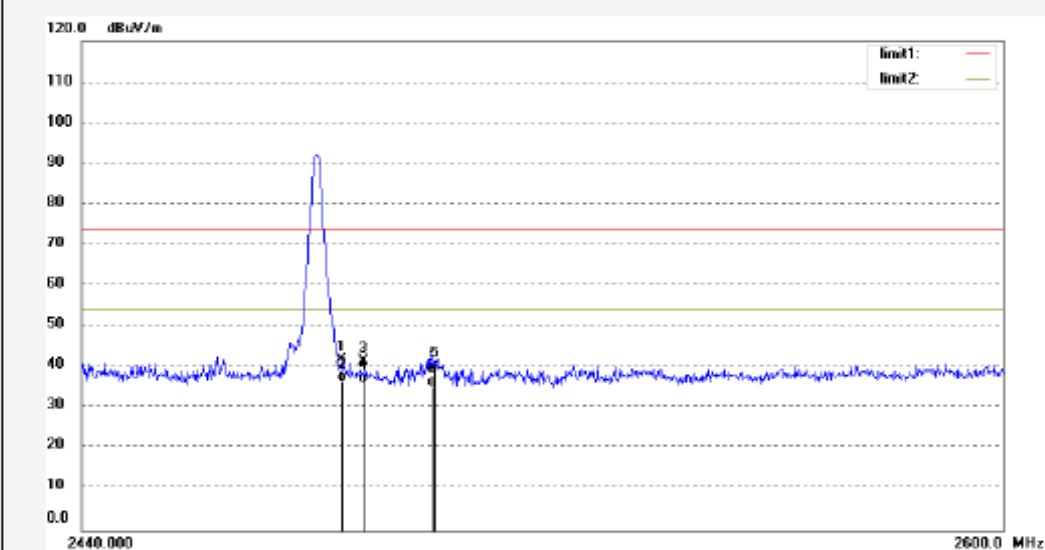
Date: 2012/05/16

Time: 22:16:04

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20120635



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.900	49.29	-7.38	41.91	74.00	-32.09	peak			
2	2483.900	43.69	-7.38	36.31	54.00	-17.69	AVG			
3	2487.904	48.96	-7.38	41.58	74.00	-32.42	peak			
4	2487.904	43.61	-7.38	36.23	54.00	-17.77	AVG			
5	2500.000	47.63	-7.40	40.23	74.00	-33.77	peak			
6	2500.000	42.58	-7.40	35.18	54.00	-18.82	AVG			

11.RADIATED SPURIOUS EMISSION TEST

11.1.Block Diagram of Test Setup

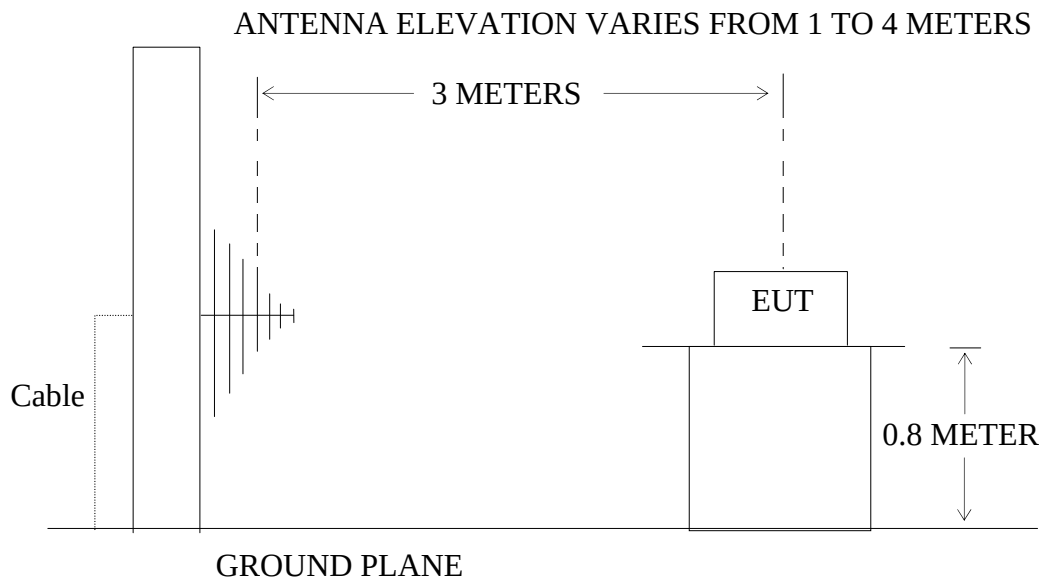
11.1.1.Block diagram of connection between the EUT and simulators



Setup: Transmitting mode

(EUT: BLUETOOTH EARPHONES)

11.1.2.Semi-Anechoic Chamber Test Setup Diagram



(EUT: BLUETOOTH EARPHONES)

11.2.The Limit For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

11.3.Restricted bands of operation

11.3.1.FCC Part 15.205 Restricted bands of operation

(a) Except as shown in paragraph (d) of this section, Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(²)
13.36-13.41			

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

²Above 38.6

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

11.4.Configuration of EUT on Measurement

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

11.4.1.BLUETOOTH EARPHONES (EUT)

Model Number : ES-80143BT
 Serial Number : N/A
 Manufacturer : SHENZHEN AOB ELECTRONICS CO., LTD

11.5.Operating Condition of EUT

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

11.5.2.Turn on the power of all equipment.

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

11.6.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

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

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

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

Result = Reading + Corrected Factor

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

11.7. The Field Strength of Radiation Emission Measurement Results

PASS.

Date of Test:	May 12-14, 2012	Temperature:	25°C
EUT:	BLUETOOTH EARPHONES	Humidity:	50%
Model No.:	ES-80143BT	Power Supply:	DC 3.7V
Test Mode:	TX (2402MHz)	Test Engineer:	Apple

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	
-	-	-	-	-	-	Vertical
-	-	-	-	-	-	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	
4804.000	45.68	49.80	-0.30	45.38	49.50	54	74	-8.62	-24.50	Vertical
4804.000	47.58	51.74	-0.30	47.28	51.44	54	74	-6.72	-22.56	Horizontal

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

2. *: Denotes restricted band of operation.

Date of Test:	May 12-14, 2012	Temperature:	25°C
EUT:	BLUETOOTH EARPHONES	Humidity:	50%
Model No.:	ES-80143BT	Power Supply:	DC 3.7V
Test Mode:	TX (2441MHz)	Test Engineer:	Apple

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	
-	-	-	-	-	-	Vertical
-	-	-	-	-	-	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	
4882.000	44.69	49.89	0.14	44.83	50.03	54	74	-9.17	-23.97	Vertical
4882.000	45.68	50.05	0.14	45.82	50.19	54	74	-8.18	-23.81	Horizontal

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.**2. *: Denotes restricted band of operation.**

Date of Test:	May 12-14, 2012	Temperature:	25°C
EUT:	BLUETOOTH EARPHONES	Humidity:	50%
Model No.:	ES-80143BT	Power Supply:	DC 3.7V
Test Mode:	TX (2480MHz)	Test Engineer:	Apple

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	
-	-	-	-	-	-	Vertical
-	-	-	-	-	-	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	
4960.000	41.57	46.56	0.52	42.09	47.08	54	74	-11.91	-6.92	Vertical
4960.000	41.58	46.80	0.52	42.10	47.32	54	74	-11.90	-6.68	Horizontal

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.**2. *: Denotes restricted band of operation.**



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.: Bob #5868

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 50 %

EUT: BLUETOOTH EARPHONES

Mode: TX2402

Model: ES-8014BT

Manufacturer: AOB

Polarization: Horizontal

Power Source: DC3.7V

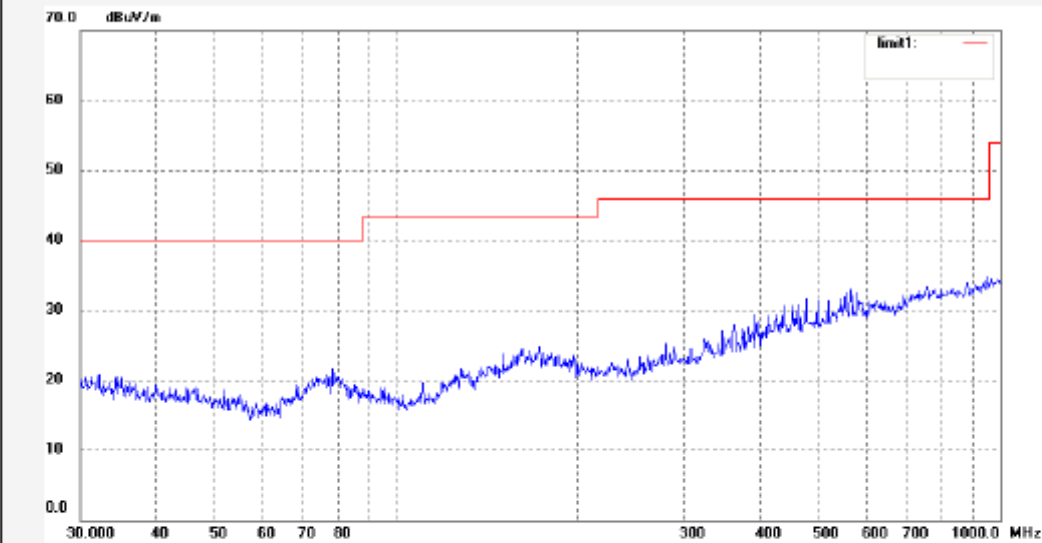
Date: 2012/5/12

Time: 15:01:24

Engineer Signature: Bob

Distance: 3m

Note: Report No.:ATE20120635



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.: Bob #5869

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 50 %

EUT: BLUETOOTH EARPHONES

Mode: TX2402

Model: ES-8014BT

Manufacturer: AOB

Polarization: Vertical

Power Source: DC3.7V

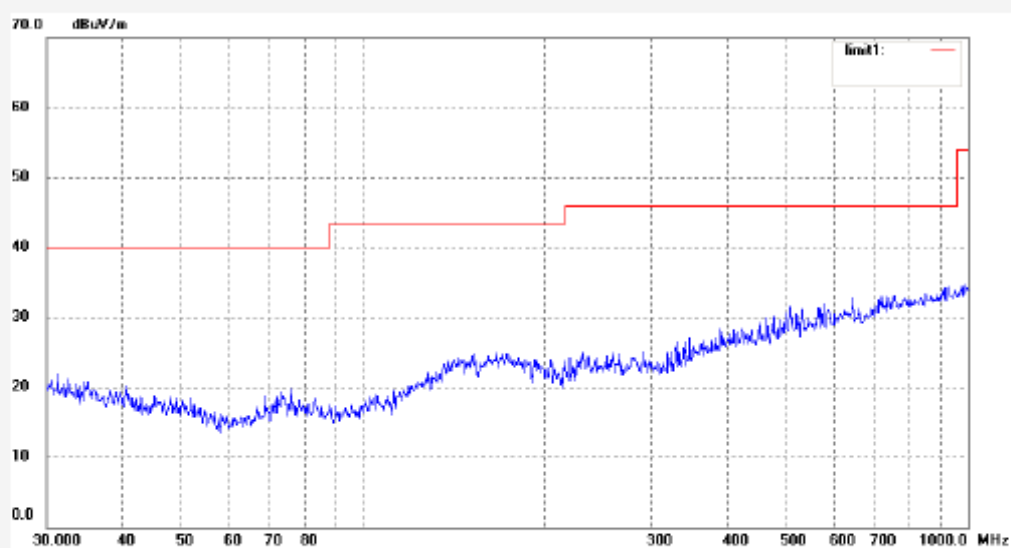
Date: 2012/5/12

Time: 15:05:27

Engineer Signature: Bob

Distance: 3m

Note: Report No.:ATE20120635



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.: Bob #2031

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 51 %

EUT: BLUETOOTH EARPHONES

Mode: TX2402

Model: ES-80143BT

Manufacturer: AOB

Polarization: Horizontal

Power Source: DC 3.7V

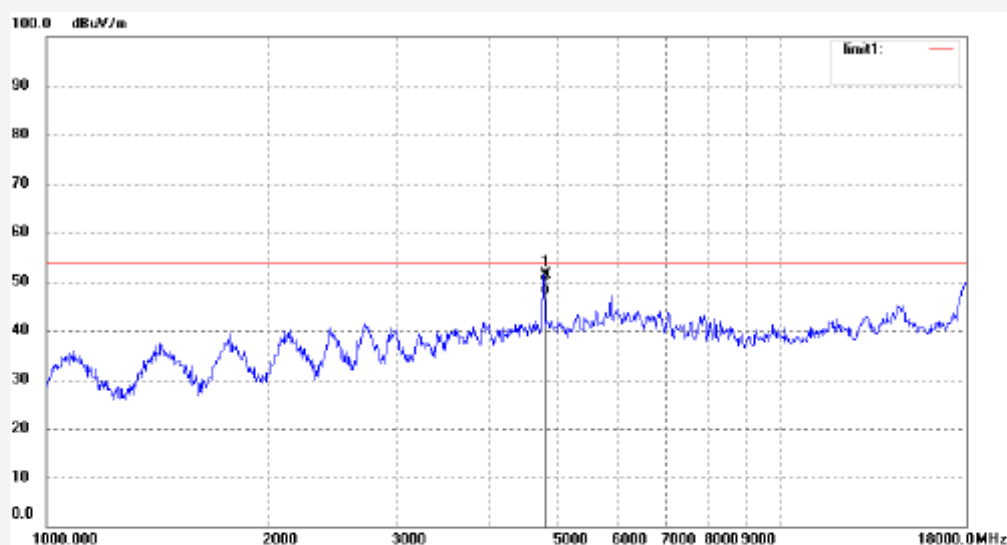
Date: 2012/05/12

Time: 21:35:39

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20120635



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4804.000	51.74	-0.30	51.44	74.00	-22.56	peak			
2	4804.000	47.58	-0.30	47.28	54.00	-6.72	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.: Bob #2032

Polarization: Vertical

Standard: FCC Class B 3M Radiated

Power Source: DC 3.7V

Test item: Radiation Test

Date: 2012/05/12

Temp.(C)/Hum.(%) 25 C / 51 %

Time: 21:38:26

EUT: BLUETOOTH EARPHONES

Engineer Signature:

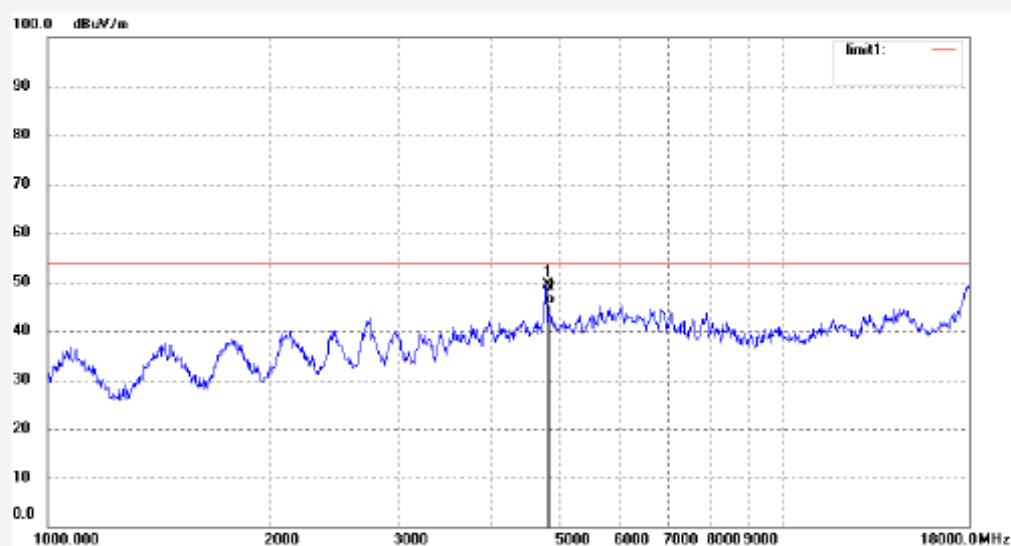
Mode: TX2402

Distance: 3m

Model: ES-80143BT

Manufacturer: AOB

Note: Report NO.:ATE20120635



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4804.000	49.80	-0.30	49.50	74.00	-24.50	peak			
2	4804.000	45.68	-0.30	45.38	54.00	-8.62	AVG			


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:+86-0755-26503398

Job No.: Bob #5916

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 50 %

EUT: BLUETOOTH EARPHONES

Mode: TX2402

Model: ES-8014BT

Manufacturer: AOB

Polarization: Horizontal

Power Source: DC3.7V

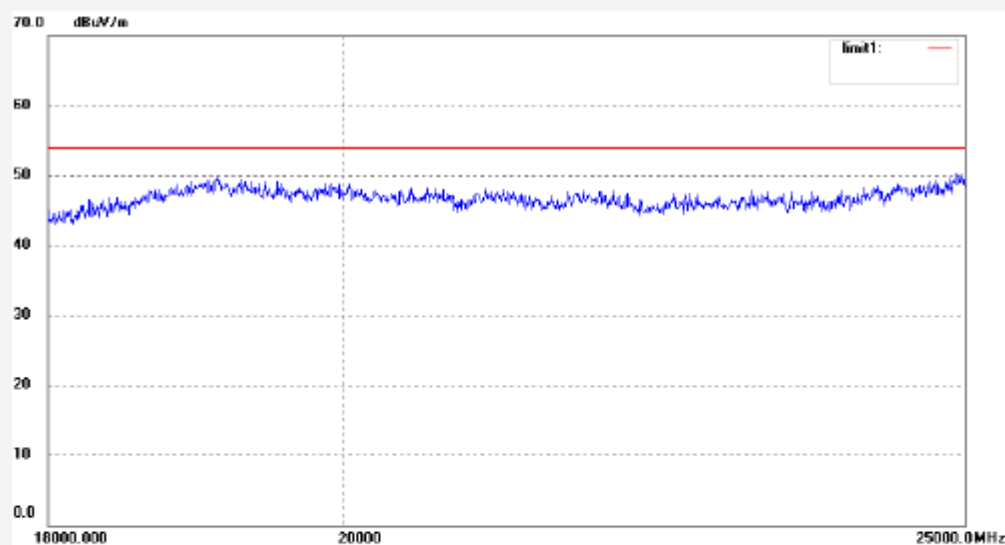
Date: 2012/5/13

Time: 11:52:09

Engineer Signature: Bob

Distance: 3m

Note: Report No.:ATE20120635



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.: Bob #5917

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 50 %

EUT: BLUETOOTH EARPHONES

Mode: TX2402

Model: ES-8014BT

Manufacturer: AOB

Polarization: Vertical

Power Source: DC3.7V

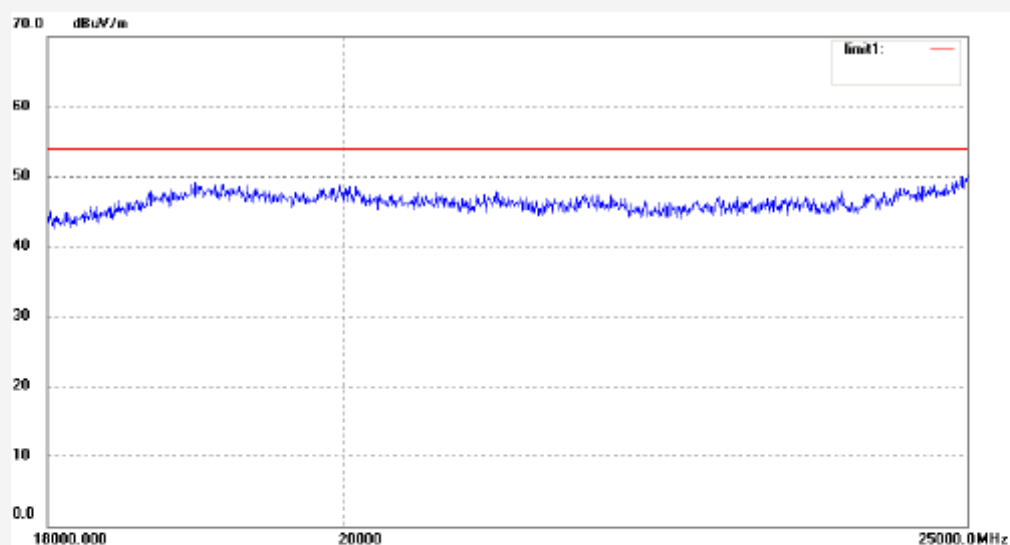
Date: 2012/5/13

Time: 11:56:43

Engineer Signature: Bob

Distance: 3m

Note: Report No.: ATE20120635



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.: Bob #5871

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 50 %

EUT: BLUETOOTH EARPHONES

Mode: TX2441

Model: ES-8014BT

Manufacturer: AOB

Polarization: Horizontal

Power Source: DC3.7V

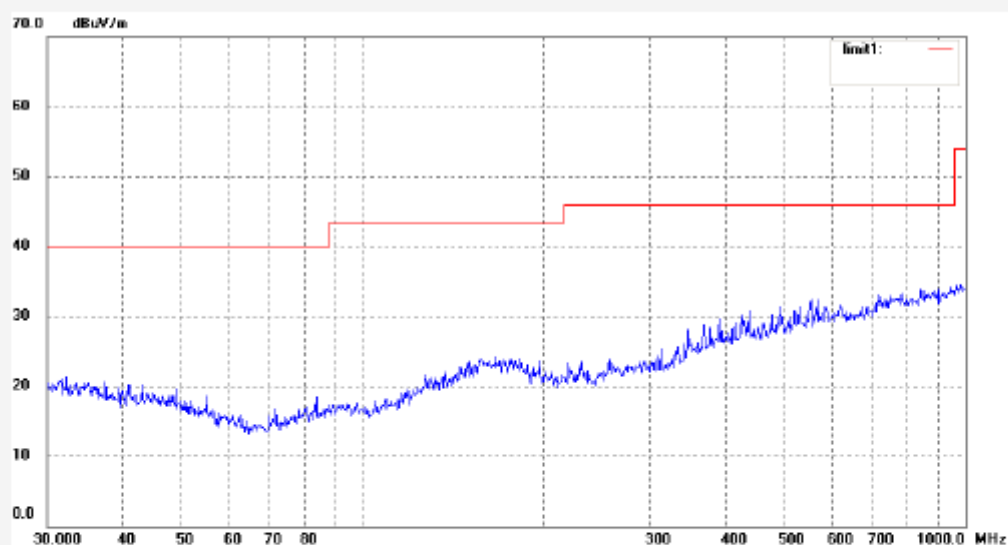
Date: 2012/5/12

Time: 15:14:30

Engineer Signature: Bob

Distance: 3m

Note: Report No.: ATE20120635



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: 986 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Bob #5868

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 50 %

EUT: BLUETOOTH EARPHONES

Mode: TX2441

Model: ES-8014BT

Manufacturer: AOB

Polarization: Vertical

Power Source: DC3.7V

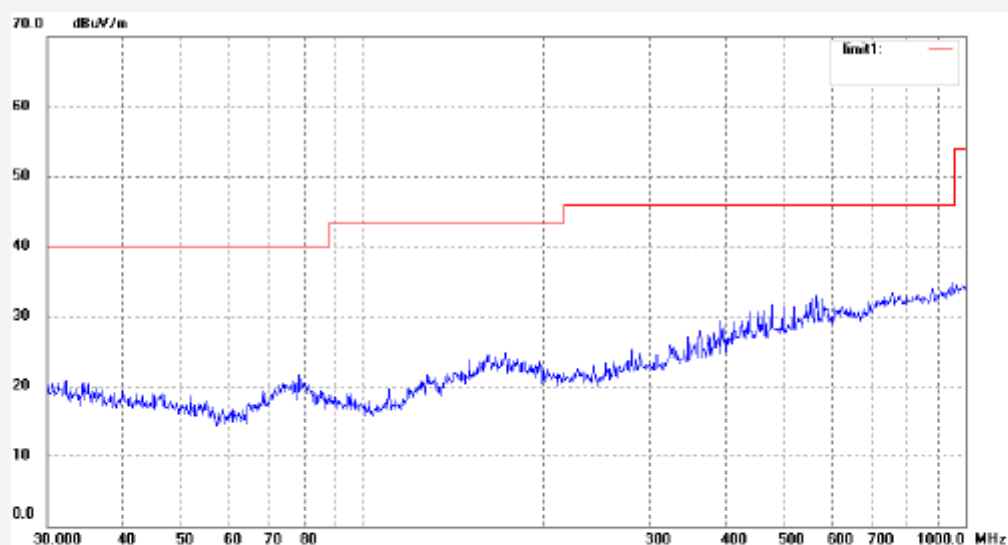
Date: 2012/5/12

Time: 15:01:24

Engineer Signature: Bob

Distance: 3m

Note: Report No.: ATE20120635



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.: Bob #2030

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 51 %

EUT: BLUETOOTH EARPHONES

Mode: TX2441

Model: ES-80143BT

Manufacturer: AOB

Polarization: Horizontal

Power Source: DC 3.7V

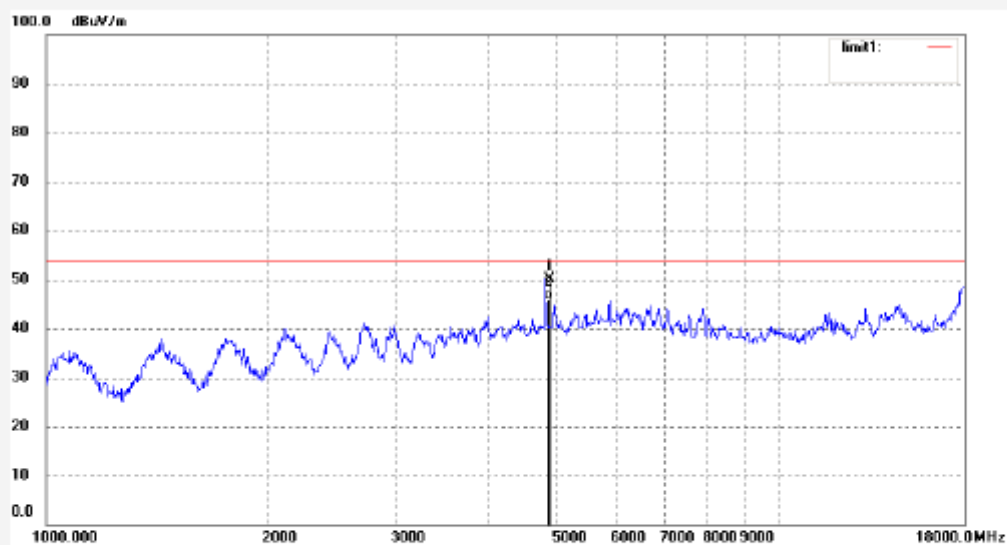
Date: 2012/05/12

Time: 21:32:09

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20120635



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4882.000	50.05	0.14	50.19	74.00	-23.81	peak			
2	4882.000	45.68	0.14	45.82	54.00	-8.18	AVG			


ACCURATE TECHNOLOGY CO., LTD.

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

Site: 986 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Bob #2029

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 51 %

EUT: BLUETOOTH EARPHONES

Mode: TX2441

Model: ES-80143BT

Manufacturer: AOB

Polarization: Vertical

Power Source: DC 3.7V

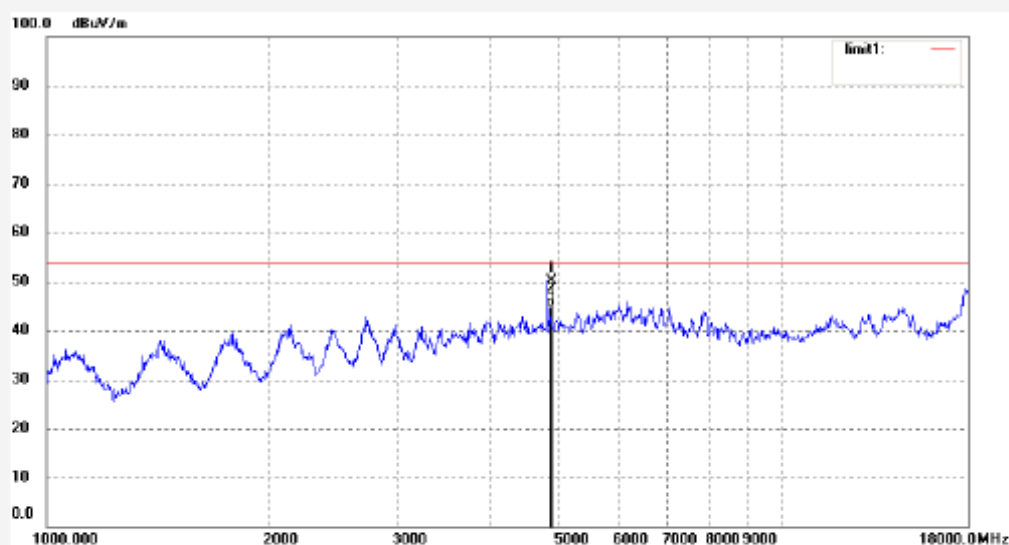
Date: 2012/05/12

Time: 21:30:37

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20120635



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4882.000	49.89	0.14	50.03	74.00	-23.97	peak			
2	4882.000	44.69	0.14	44.83	54.00	-9.17	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.: Bob #5919

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 50 %

EUT: BLUETOOTH EARPHONES

Mode: TX2441

Model: ES-8014BT

Manufacturer: AOB

Polarization: Horizontal

Power Source: DC3.7V

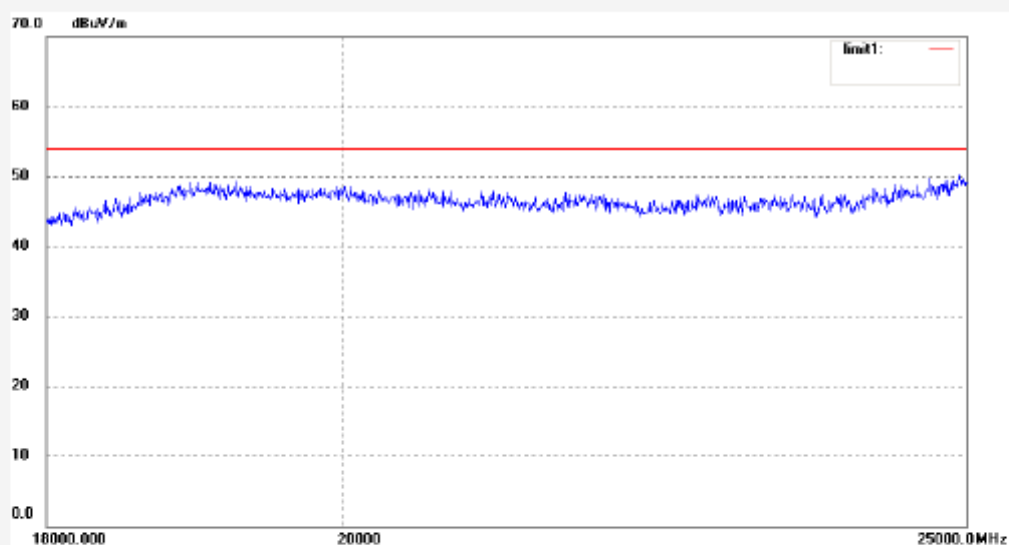
Date: 2012/5/13

Time: 12:05:30

Engineer Signature: Bob

Distance: 3m

Note: Report No.:ATE20120635



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

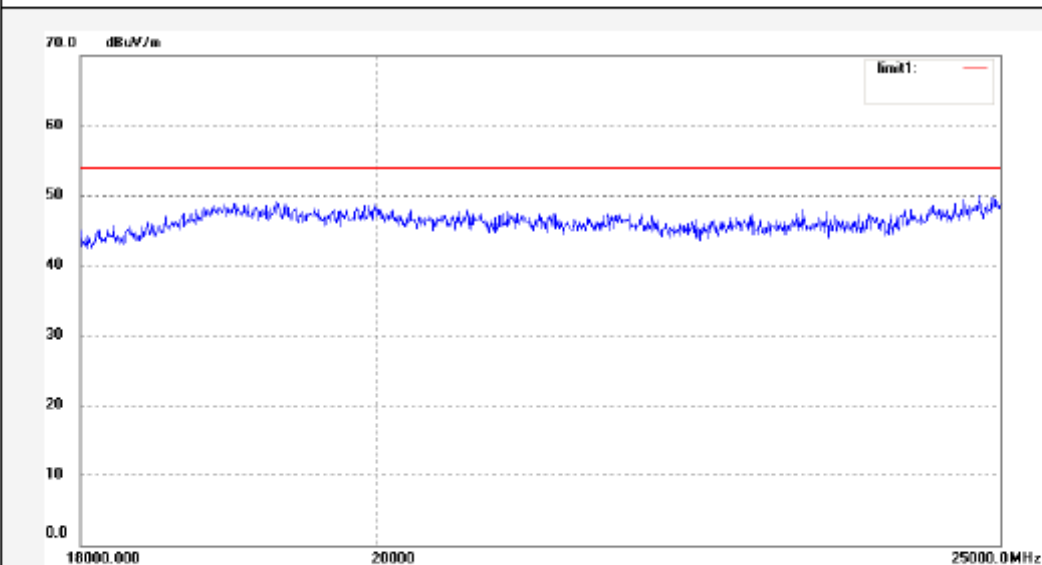
Site: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Bob #5918	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: DC3.7V
Test item: Radiation Test	Date: 2012/5/13
Temp.(C)/Hum.(%) 25 C / 50 %	Time: 12:01:19
EUT: BLUETOOTH EARPHONES	Engineer Signature: Bob
Mode: TX2441	Distance: 3m
Model: ES-8014BT	
Manufacturer: AOB	

Note: Report No.: ATE20120635



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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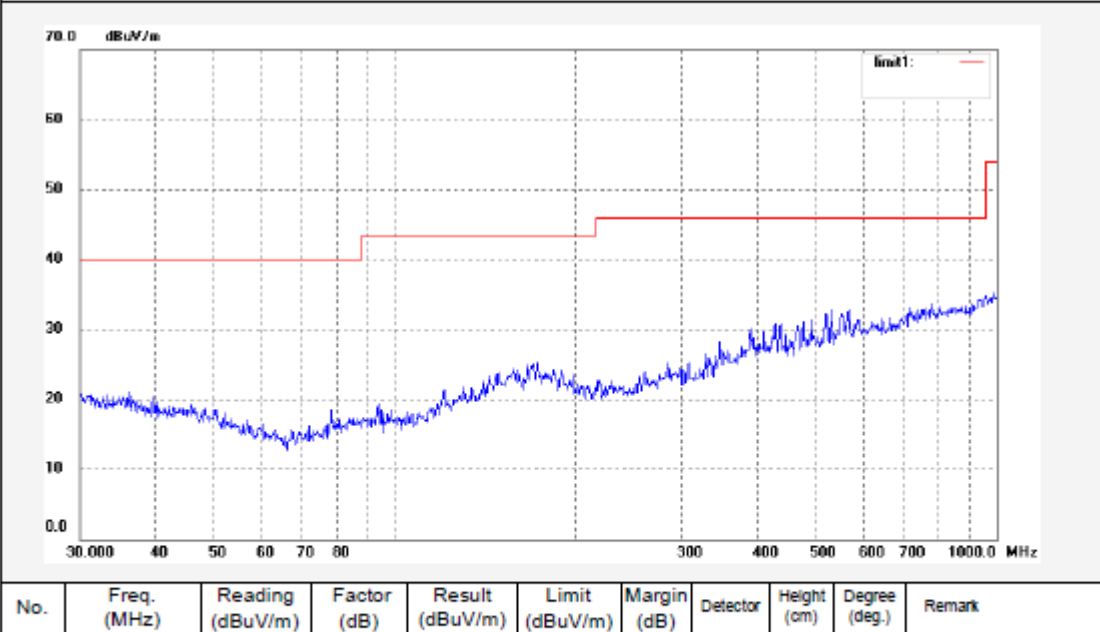
ACCURATE TECHNOLOGY CO., LTD.

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.: Bob #5872	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: DC3.7V
Test item: Radiation Test	Date: 2012/5/12
Temp.(C)/Hum.(%) 25 C / 50 %	Time: 15:19:41
EUT: BLUETOOTH EARPHONES	Engineer Signature: Bob
Mode: TX2480	Distance: 3m
Model: ES-8014BT	
Manufacturer: AOB	

Note: Report No.:ATE20120635




ACCURATE TECHNOLOGY CO., LTD.

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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.: Bob #5873

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 50 %

EUT: BLUETOOTH EARPHONES

Mode: TX2480

Model: ES-8014BT

Manufacturer: AOB

Polarization: Vertical

Power Source: DC3.7V

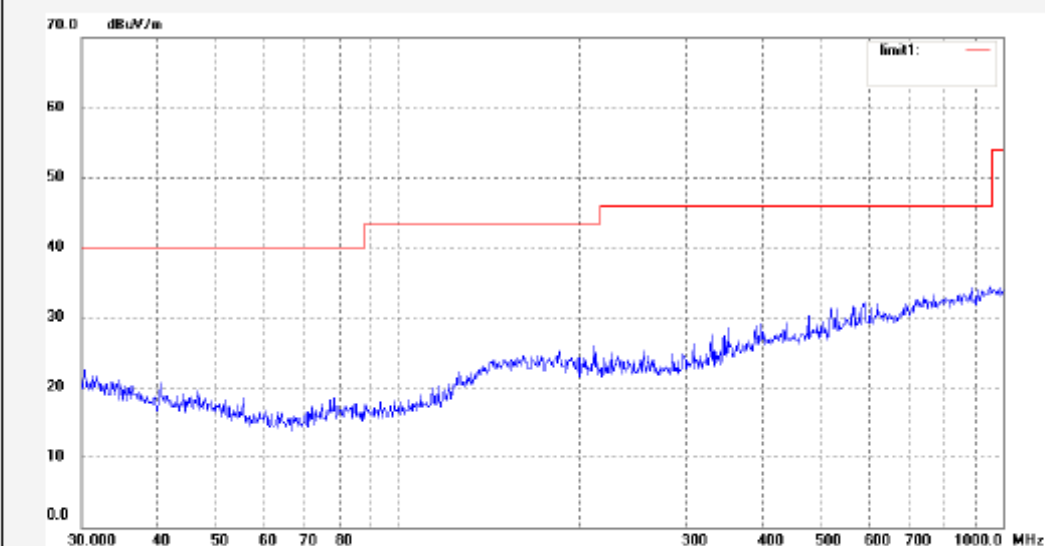
Date: 2012/5/12

Time: 15:23:50

Engineer Signature: Bob

Distance: 3m

Note: Report No.: ATE20120635



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

Site: 966 chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Bob #2027

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 51 %

EUT: BLUETOOTH EARPHONES

Mode: TX2480

Model: ES-80143BT

Manufacturer: AOB

Polarization: Horizontal

Power Source: DC 3.7V

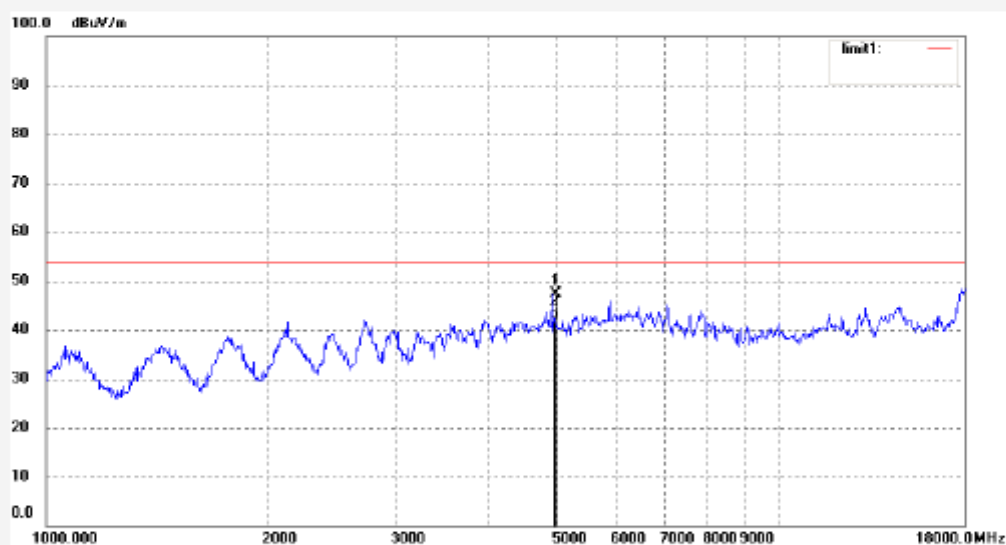
Date: 2012/05/12

Time: 21:25:30

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20120635



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4960.000	46.80	0.52	47.32	74.00	-26.68	peak			
2	4960.000	41.58	0.52	42.10	54.00	-11.90	AVG			


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.: Bob #2028

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 51 %

EUT: BLUETOOTH EARPHONES

Mode: TX2480

Model: ES-80143BT

Manufacturer: AOB

Polarization: Vertical

Power Source: DC 3.7V

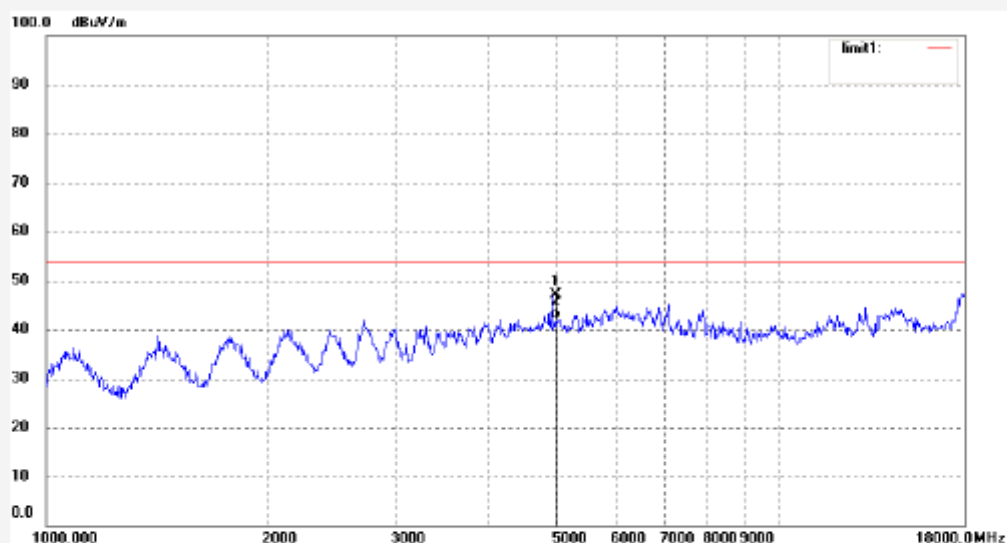
Date: 2012/05/12

Time: 21:28:56

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20120635



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	4980.000	46.56	0.52	47.08	74.00	-26.92	peak			
2	4980.000	41.57	0.52	42.09	54.00	-11.91	AVG			


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.: Bob #5920

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 50 %

EUT: BLUETOOTH EARPHONES

Mode: TX2480

Model: ES-8014BT

Manufacturer: AOB

Polarization: Horizontal

Power Source: DC3.7V

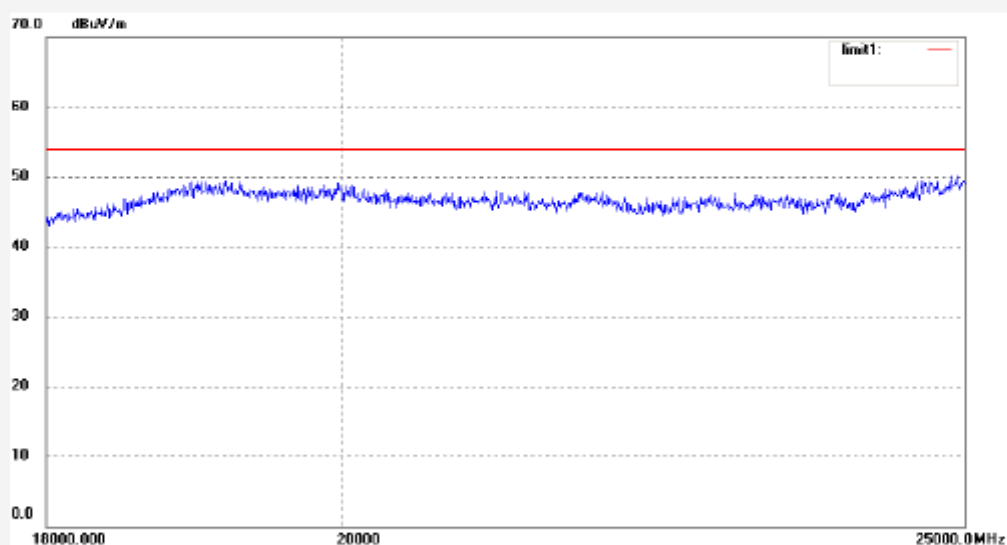
Date: 2012/5/13

Time: 12:10:41

Engineer Signature: Bob

Distance: 3m

Note: Report No.:ATE20120635



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.: Bob #5921

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.(C)/Hum.(%) 25 C / 50 %

EUT: BLUETOOTH EARPHONES

Mode: TX2480

Model: ES-8014BT

Manufacturer: AOB

Polarization: Vertical

Power Source: DC3.7V

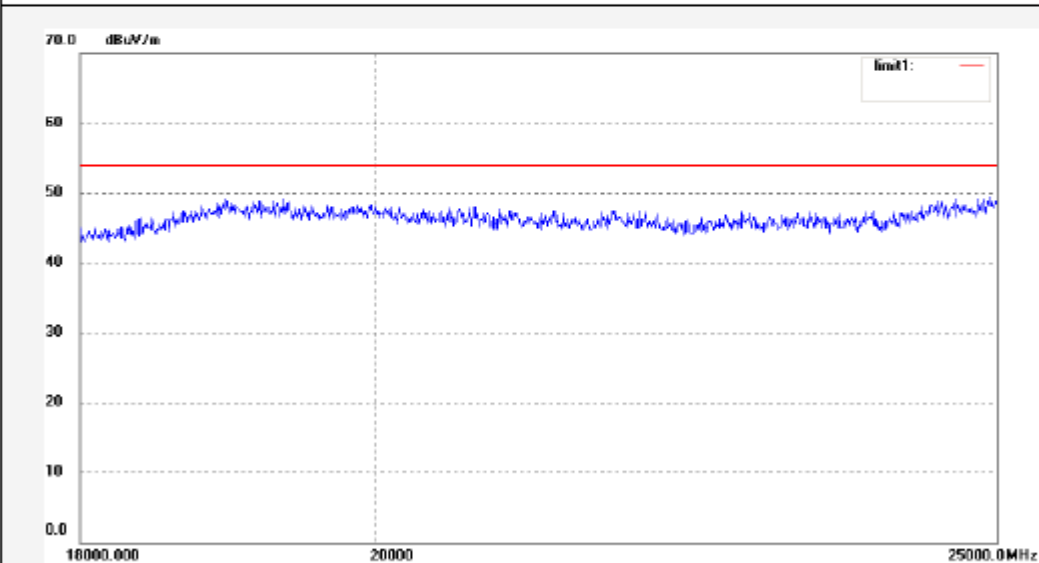
Date: 2012/5/13

Time: 12:15:08

Engineer Signature: Bob

Distance: 3m

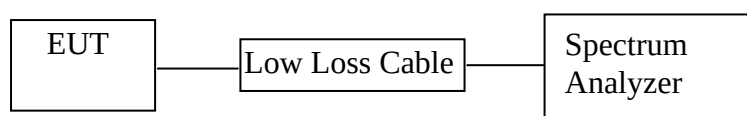
Note: Report No.:ATE20120635



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

12.1.Block Diagram of Test Setup



(EUT: BLUETOOTH EARPHONES)

12.2.The Requirement For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

12.3.EUT Configuration on Measurement

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

12.3.1.BLUETOOTH EARPHONES (EUT)

Model Number	:	ES-80143BT
Serial Number	:	N/A
Manufacturer	:	SHENZHEN AOB ELECTRONICS CO., LTD

12.4.Operating Condition of EUT

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

12.4.2.Turn on the power of all equipment.

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

12.5.Test Procedure

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

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

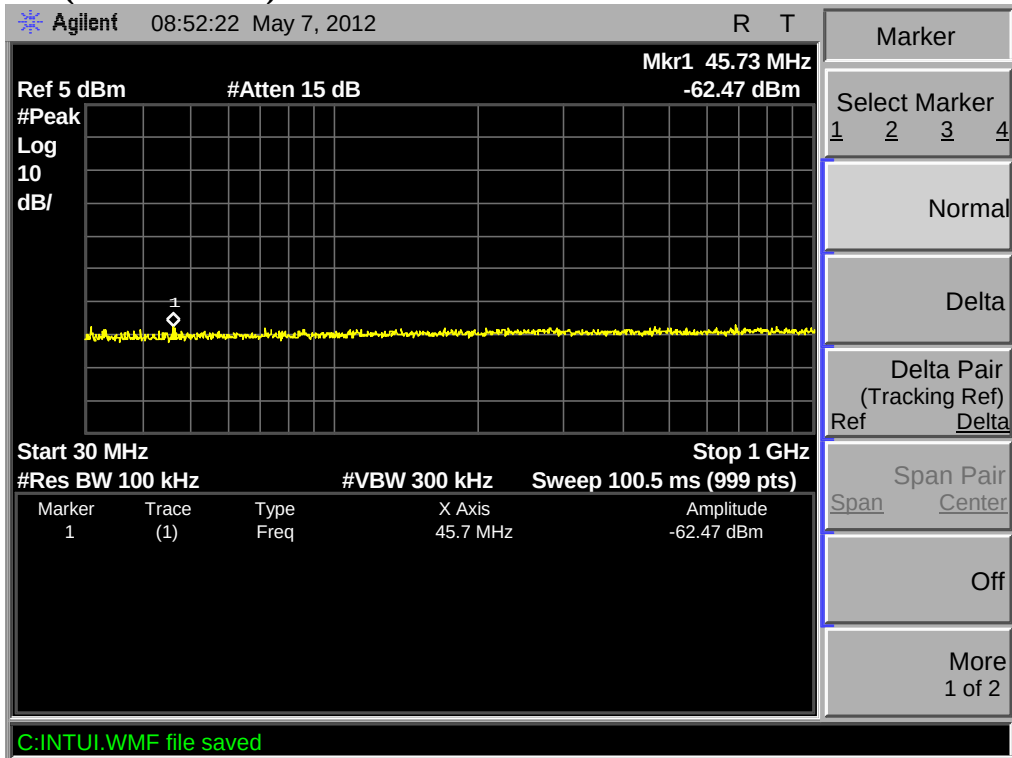
12.5.3.The Conducted Spurious Emission was measured and recorded.

12.6.Test Result

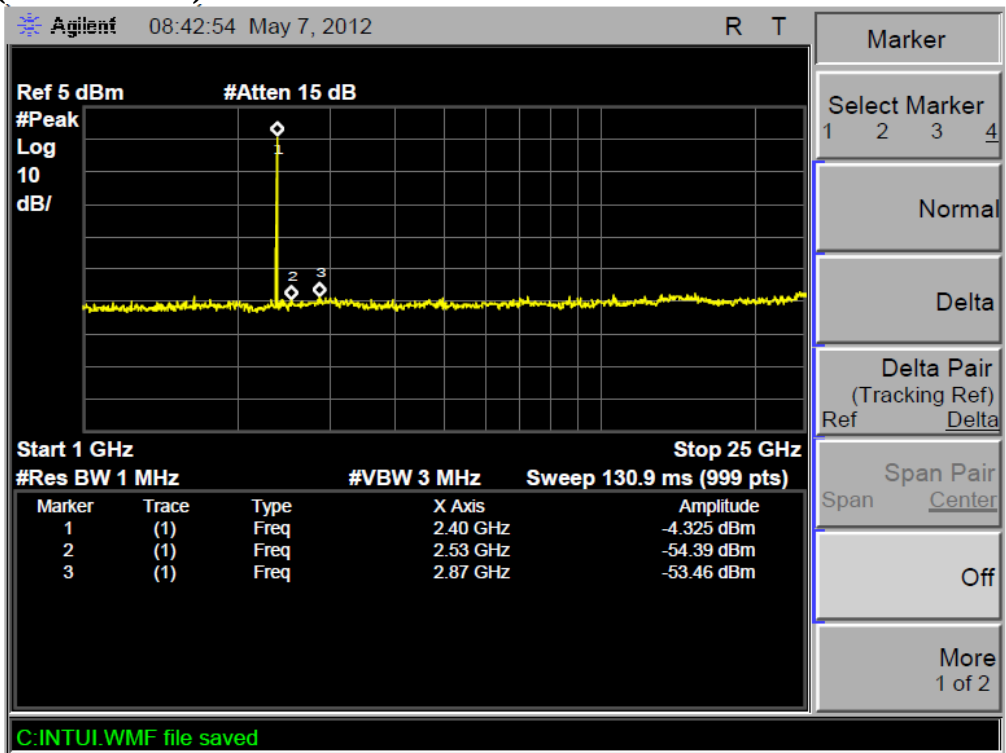
Pass.

The spectrum analyzer plots are attached as below.

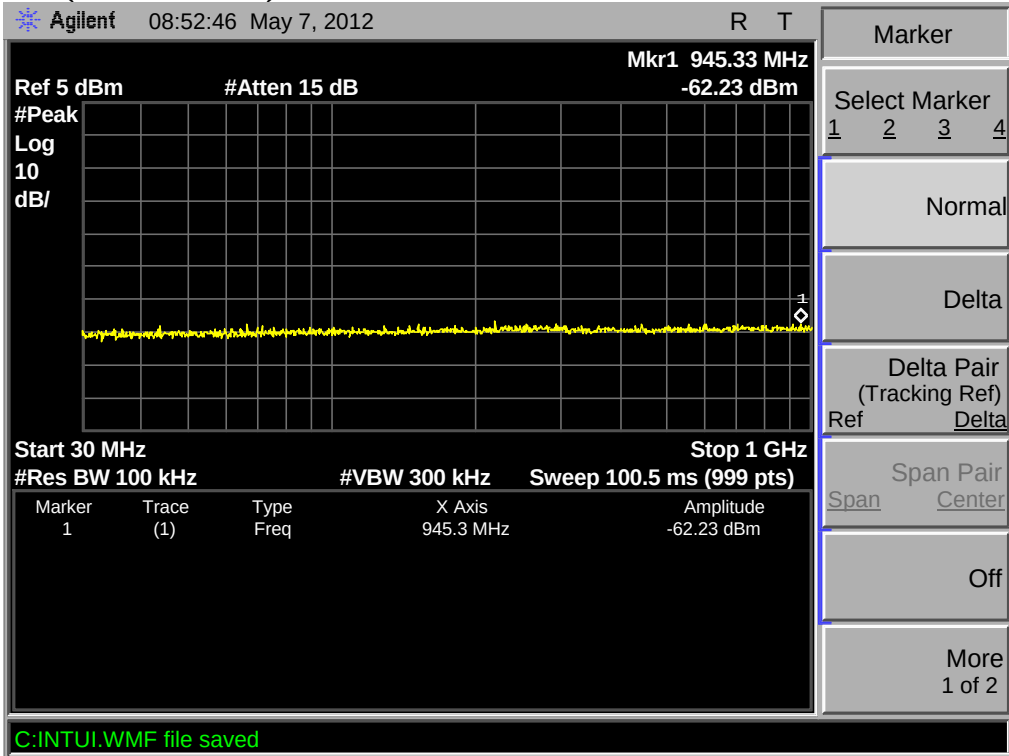
"Spectrum analyzer" is [Agilent](#)
TX 2402GHz (30MHz-1GHz)



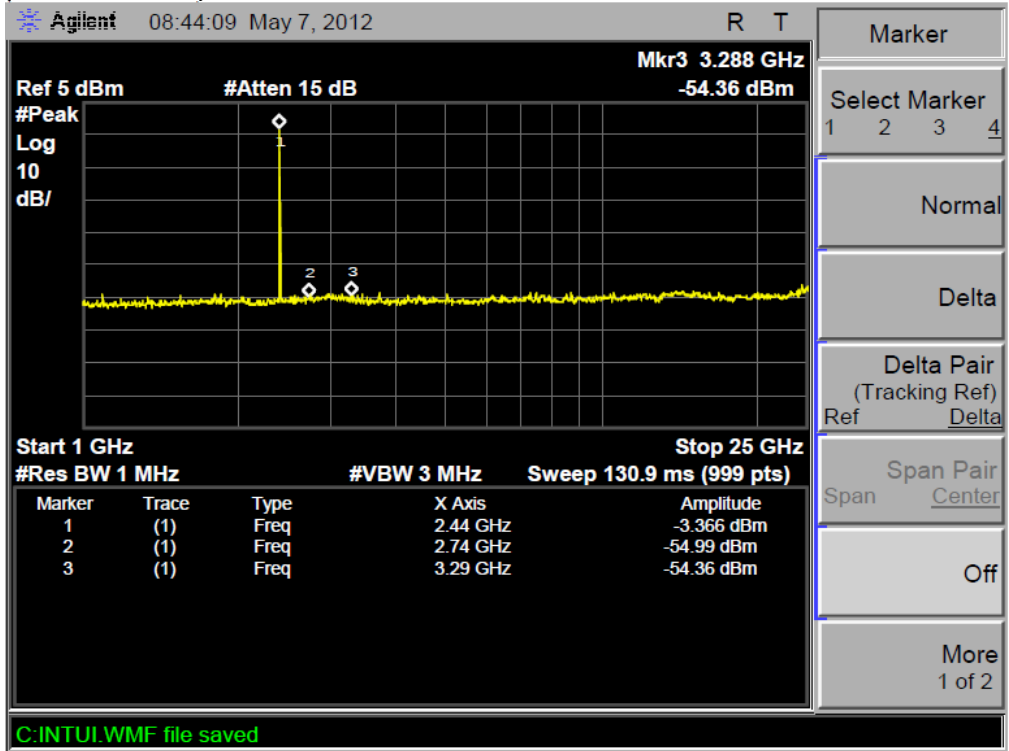
(1GHz-25GHz)



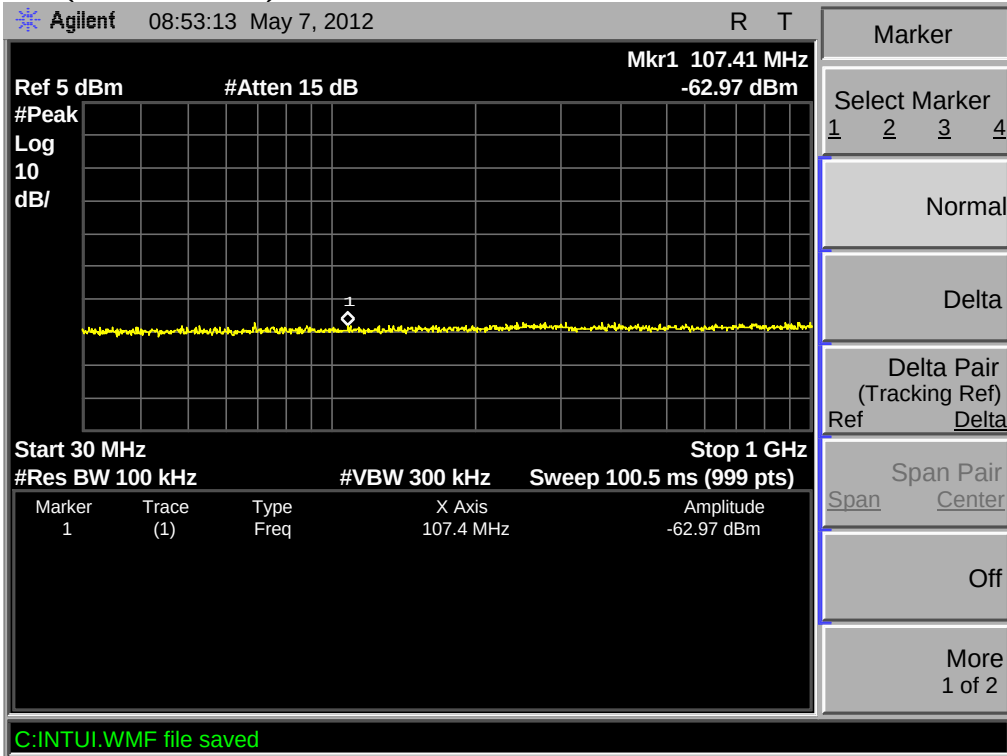
TX 2441GHz (30MHz-1GHz)



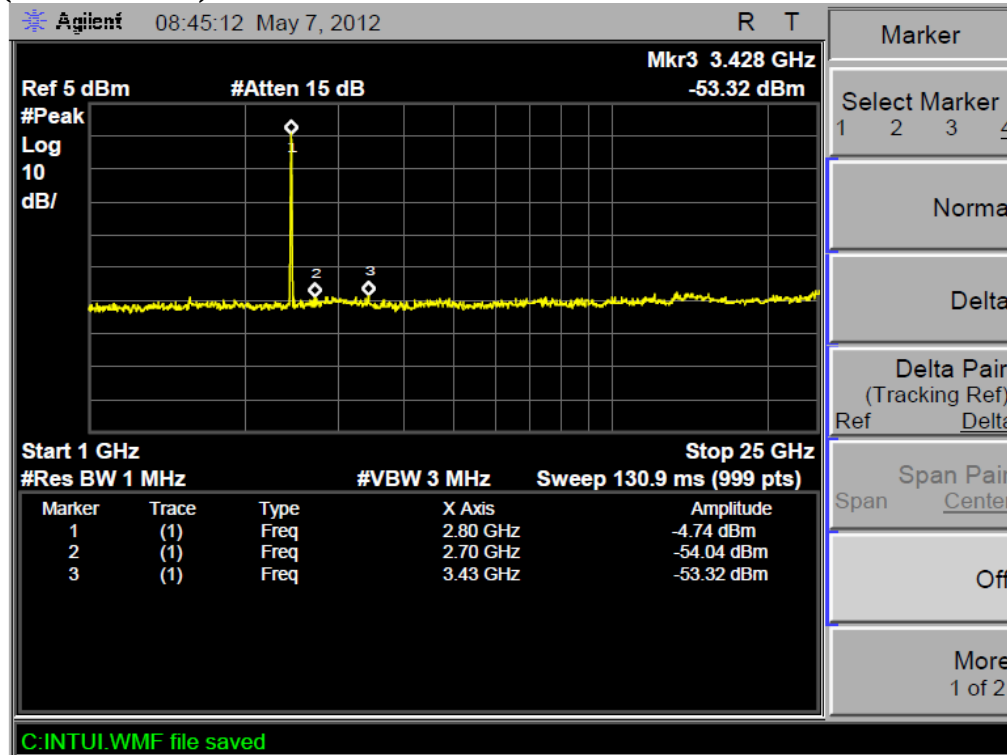
(1GHz-25GHz)



TX 2480GHz (30MHz-1GHz)



(1GHz-25GHz)

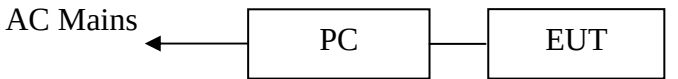


13.AC POWER LINE CONDUCTED EMISSION FOR FCC PART

15 SECTION 15.207(A)

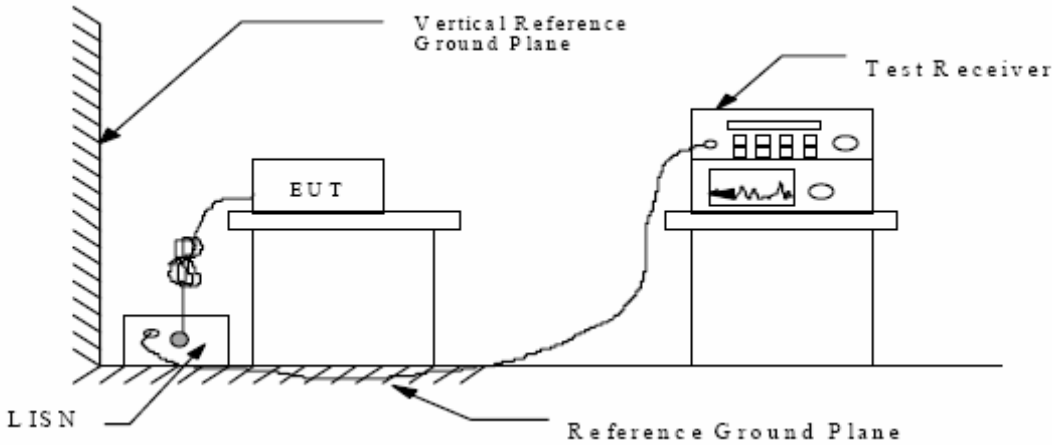
13.1.Block Diagram of Test Setup

13.1.1.Block diagram of connection between the EUT and simulators



(EUT: BLUETOOTH EARPHONES)

13.1.2.Shielding Room Test Setup Diagram



(EUT: BLUETOOTH EARPHONES)

13.2.The Emission Limit

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

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

* Decreases with the logarithm of the frequency.

13.3.Configuration of EUT on Measurement

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

13.3.1.BLUETOOTH EARPHONES (EUT)

Model Number	:	ES-80143BT
Serial Number	:	N/A
Manufacturer	:	SHENZHEN AOB ELECTRONICS CO., LTD

13.4.Operating Condition of EUT

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

13.4.2.Turn on the power of all equipment.

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

13.5.Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4: 2003 on Conducted Emission Measurement.

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

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

13.6.Power Line Conducted Emission Measurement Results

PASS.

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

Date of Test:	<u>May 14, 2012</u>	Temperature:	<u>25°C</u>
EUT:	<u>BLUETOOTH EARPHONES</u>	Humidity:	<u>50%</u>
Model No.:	<u>ES-80143BT</u>	Power Supply:	<u>AC 120V/ 60Hz</u>
Test Mode:	<u>Charging</u>	Test Engineer:	<u>Apple</u>

Frequency (MHz)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector	Line
0.335971	37.60	59.3	-21.7	QP	Neutral
12.454071	44.30	60	-15.7	QP	
12.858226	40.20	60	-19.8	QP	
13.065195	44.70	60	-15.3	QP	
0.405309	36.40	47.7	-11.3	AV	
12.454071	37.40	50	-12.6	AV	
12.654535	31.60	50	-18.4	AV	
12.858226	31.60	50	-18.4	AV	
0.335971	37.20	59.3	-22.1	QP	Live
12.404453	48.60	60	-11.4	QP	
12.604118	47.50	60	-12.5	QP	
12.806998	46.60	60	-13.4	QP	
0.405309	36.00	47.7	-11.7	AV	
12.404453	46.00	50	-4.0	AV	
12.604118	42.70	50	-7.3	AV	
12.806998	41.00	50	-9.0	AV	

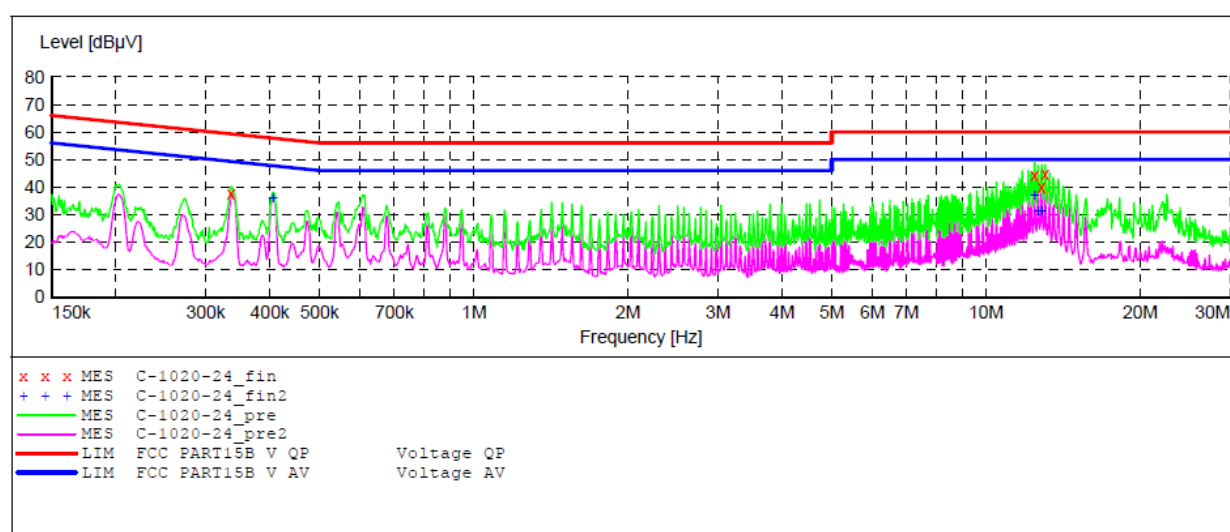
Emissions attenuated more than 20 dB below the permissible value are not reported.
The spectral diagrams are attached as below.

ACCURATE TECHNOLOGY CO.,LTD**CONDUCTED EMISSION STANDARD FCC PART15B**

EUT: BLUETOOTH EARPHONES M/N:ES-80143BT
 Manufacturer: AOB
 Operating Condition: USB Charging
 Test Site: 1#Shielding Room
 Operator: Bob
 Test Specification: N 120V/60Hz
 Comment: Report No.:ATE20120635
 Start of Test: 5/14/2012 / 3:28:29PM

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 0.8 % QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average

**MEASUREMENT RESULT: "C-1020-24_fin"**

5/14/2012 3:35PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.335971	37.60	11.7	59.3	21.7	QP	N	GND
12.454071	44.30	11.2	60	15.7	QP	N	GND
12.858226	40.20	11.2	60	19.8	QP	N	GND
13.065195	44.70	11.2	60	15.3	QP	N	GND

MEASUREMENT RESULT: "C-1020-24_fin2"

5/14/2012 3:35PM

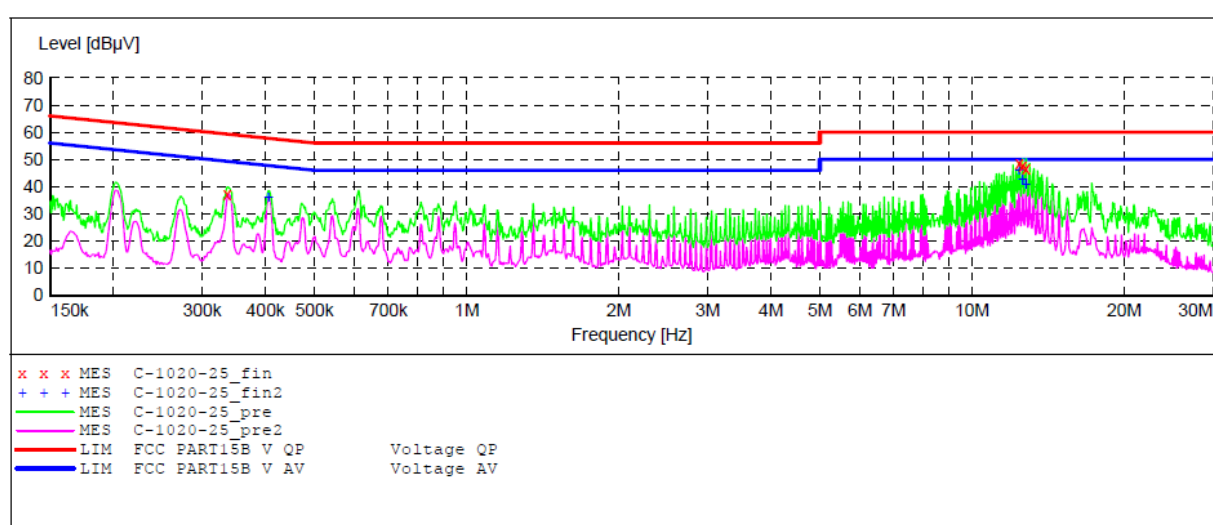
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.405309	36.40	11.8	47.7	11.3	AV	N	GND
12.454071	37.40	11.2	50	12.6	AV	N	GND
12.654535	31.60	11.2	50	18.4	AV	N	GND
12.858226	31.60	11.2	50	18.4	AV	N	GND

ACCURATE TECHNOLOGY CO.,LTD**CONDUCTED EMISSION STANDARD FCC PART15B**

EUT: BLUETOOTH EARPHONES M/N:ES-80143BT
 Manufacturer: AOB
 Operating Condition: USB Charging
 Test Site: 1#Shielding Room
 Operator: Bob
 Test Specification: L 120V/60Hz
 Comment: Report No.:ATE20120635
 Start of Test: 5/14/2012 / 3:35:54PM

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 0.8 % QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average

**MEASUREMENT RESULT: "C-1020-25_fin"**

5/14/2012 3:38PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.335971	37.20	11.7	59.3	22.1	QP	L1	GND
12.404453	48.60	11.2	60	11.4	QP	L1	GND
12.604118	47.50	11.2	60	12.5	QP	L1	GND
12.806998	46.60	11.2	60	13.4	QP	L1	GND

MEASUREMENT RESULT: "C-1020-25_fin2"

5/14/2012 3:38PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.405309	36.00	11.8	47.7	11.7	AV	L1	GND
12.404453	46.00	11.2	50	4.0	AV	L1	GND
12.604118	42.70	11.2	50	7.3	AV	L1	GND
12.806998	41.00	11.2	50	9.0	AV	L1	GND

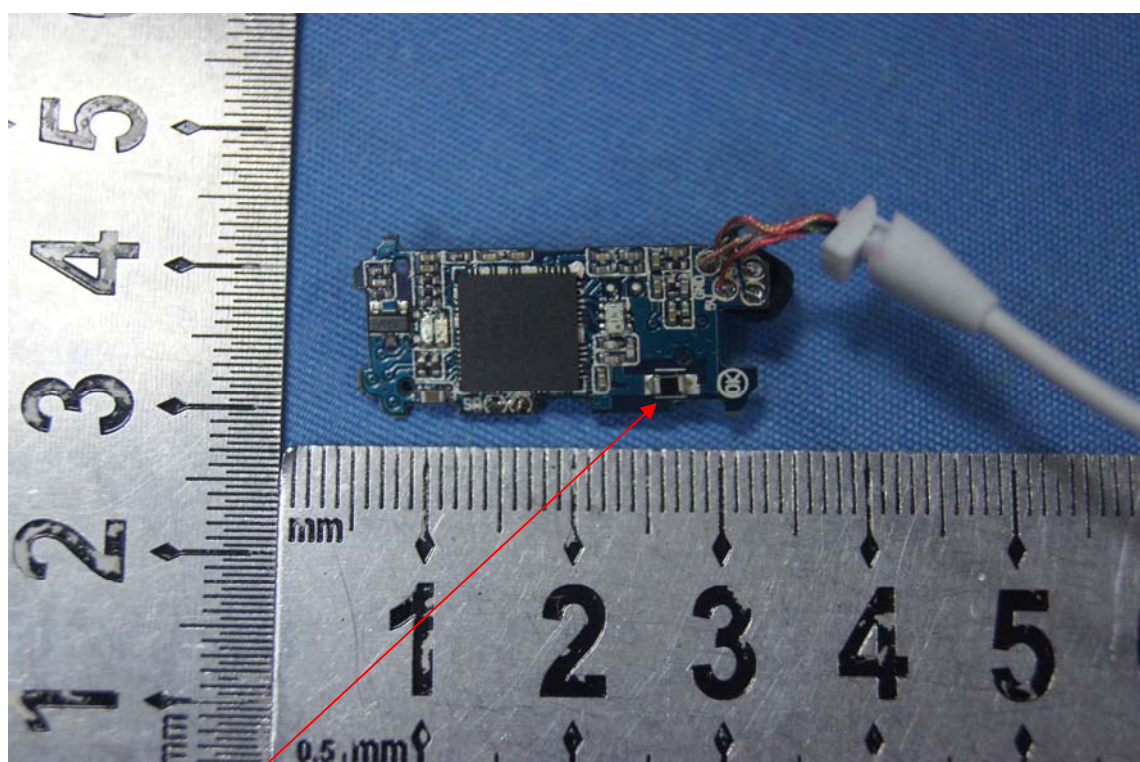
14.ANTENNA REQUIREMENT

14.1.The Requirement

According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

14.2.Antenna Construction

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



Antenna