



# FCC TEST REPORT

**REPORT NO.:** ZEZ-13SE0011VNCY-A2

**MODEL NO.:** BH-B102D

**FCC ID.:** 2AAXDZHJBBH102VTXD

**RECEIVED:** Sep. 02, 2013

**ISSUED:** Sep. 16, 2013

**APPLICANT:** Jiangsu Bluebell video InfoTech Inc.

**ADDRESS:** Room 501-29, Building 1, No.36, Nanwei  
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**ISSUED BY:** BUREAU VERITAS ADT (Shanghai) Corporation

**LAB LOCATION:** 2F, Building C, No.1618, Yishan rd., 201103,  
Shanghai, China

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## 1 CERTIFICATION

**PRODUCT:** High Definition Multimedia Player  
**MODEL NO.:** BH-B102D  
**APPLICANT:** Jiangsu Bluebell video InfoTech Inc.  
**TESTED:** Sep. 02 ~Sep 16, 2013  
**TEST ITEM:** Engineering Sample  
**STANDARDS:** FCC Part 15:2012,  
Subpart C (Section 15.249),  
ANSI C63.4-2003

We, BUREAU VERITAS ADT (Shanghai) Corporation, declare that the equipment above has been tested in our facility and found compliance with the requirement limits of applicable standards. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate under the standards herein specified.

**PREPARED BY :** Kevin Jiang, **DATE:** Sep. 16, 2013  
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Testing Engineer

**TECHNICAL ACCEPTANCE :** Joy Zhu, **DATE:** Sep. 16, 2013  
Joy Zhu  
Lab Manager

**APPROVED BY :** Yzhg, **DATE:** Sep. 16, 2013  
Zhaoqian YU  
Director of Operations



## 2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C			
Standard Paragraph	Test Type	Result	Remarks
15.207	Conducted Emission Test	N/A	Meet the requirement of limit. Minimum passing margin is <b>-12.70dB</b> at <b>0.47844MHz</b> .
15.249(a)	Field Strength	PASS	Meet the requirement of limit
15.205	Restricted Band of Operation	PASS	Meet the requirement of limit
15.247(d)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is <b>-2.97dB</b> at <b>742.48MHz</b> .
15.249(d)	Out of Band Emission	PASS	Meet the requirement of limit

### 2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4:

Measurement		Value
Conducted emissions		2.55 dB
Conducted emissions at telecom port		2.60 dB
Radiated emissions	30 MHz ~ 1GHz	3.22 dB
	Above 1GHz	2.89 dB



### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	High Definition Multimedia Player
<b>MODEL NO.</b>	BH-B102D
<b>POWER SUPPLY</b>	AC110V, 60Hz
<b>MODULATION TYPE</b>	FSK
<b>CARRIER FREQUENCY OF EACH CHANNEL</b>	2410.00 MHz, 2420.00 MHz, 2430.00 MHz, 2440.00 MHz, 2450.00 MHz, 2460.00 MHz, 2470.00 MHz
<b>NUMBER OF CHANNEL</b>	7
<b>ANTENNA TYPE</b>	Soldered on PCB
<b>100MBASE-T RJ45 WIRED NETWORK PORT</b>	Use CAT5 wire to connect to network router
<b>HDMI PORT</b>	High Definition audio/video output port to meet HDMI1.3 standard with high resolution up to 1080@60Hz. BH102 box comes with HDMI cable
<b>RJ11 PORT</b>	Regular telephone port
<b>AV PORT</b>	Using AV wire to connect with TV AV input port
<b>SPDIF PORT</b>	Optical Fiber for Stereo output to home stereo system
<b>USB PORT</b>	USB port on the box can be connected usb disk for local video, music and picture
<b>MICRO USB PORT</b>	Micro USB port can be connected to pc
<b>ELECTRICAL DC POWER PORT</b>	Input requires 12V/1.5A

**NOTE:** The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.



### 3.2 DESCRIPTION OF TEST MODES

Test Mode	Description
1	Make sure EUT work in the operation mode.

One channel is provided to this EUT:

Channel	Frequency
1	2410.00 MHz
4	2440.00MHz
7	2470.00MHz

**TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:**

EUT configure mode	Applicable to		Description
	RE	Out of Band Emission	
1	√	√	Continuously transmitting

Where RE: Radiated Emission

**Radiated Emission Test:**

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, and X.Y.Z. axis.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

Tested Channel	Modulation Type	Axis
1	FSK	X
4	FSK	X
7	FSK	X



### **3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS**

The EUT is a remote switching. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC Part 15, Subpart C. (15.249)**

**ANSI C63.4- 2003**

All test items have been performed and recorded as per the above standards.



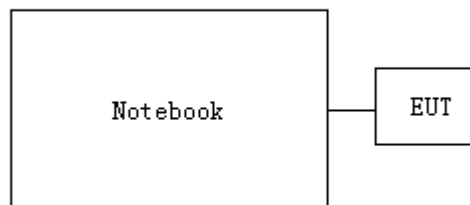


### 3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.
1	Notebook	LENOVO	R61i	--
2	Phone	SIEMENS	805HF	--

#### TEST CONFIGURATION





## 4 EMISSION TEST

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY (MHz)	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

**NOTES:** 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

#### 4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	E1R1002	May. 10, 2014
LISN ROHDE & SCHWARZ	ENV216	E1L1011	Aug. 14, 2014
RF signal cable Woken	RG-58	E1CBL09	Mar. 31, 2014
Software ADT	ADT_Conc_ V7.3.1	N/A	N/A

**NOTE:** The calibration interval of the above test instruments is 12 months.



### **4.1.3 TEST PROCEDURES**

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

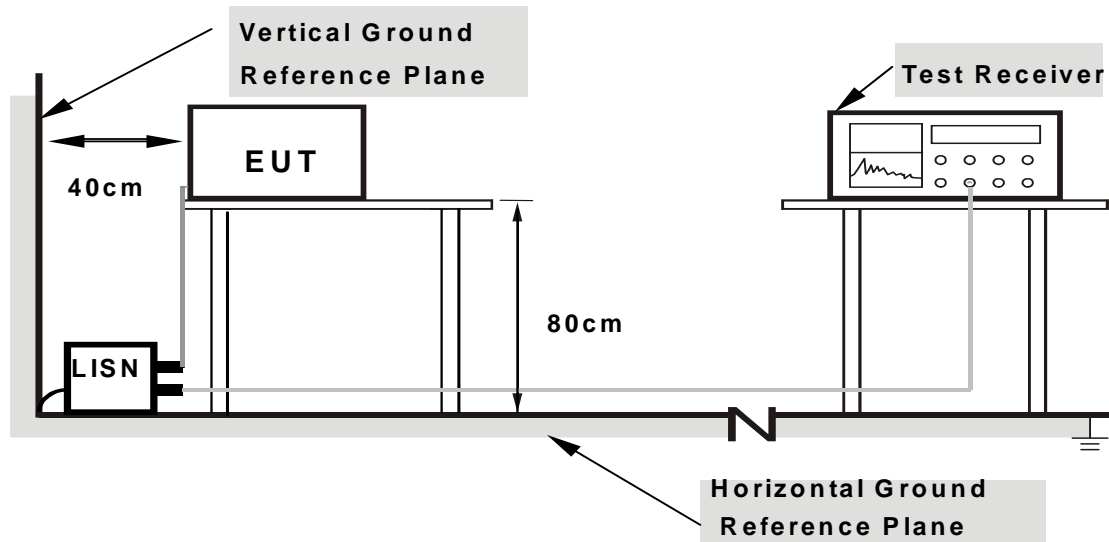
NOTE: All modes of operation were investigated and the worst-case emissions are reported.

### **4.1.4 DEVIATION FROM TEST STANDARD**

No deviation



#### 4.1.5 TEST SETUP



**Note:** 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80  
from other units and other metal planes

For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.1.6 EUT OPERATING CONDITIONS

Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.

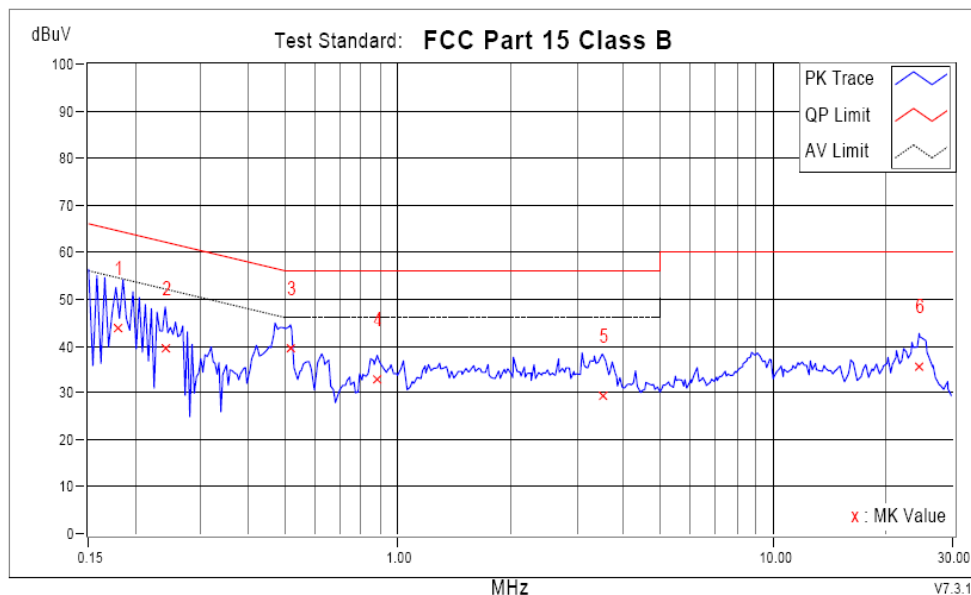


#### 4.1.7 TEST RESULTS

EUT TEST CONDITION		MEASUREMENT DETAIL	
model NO.	BH-B102D	PHASE	L
CHANNEL	Channel 1	INPUT POWER (SYSTEM)	AC110V, 60Hz
MODULATION TYPE	FSK	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25.2deg. C, 48.6 RH, 101kPa	TESTED BY	Bing YE

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17964	9.76	34.17	18.14	43.93	27.90	64.50	54.50	-20.57	-26.60
2	0.23993	9.75	29.61	13.96	39.36	23.71	62.10	52.10	-22.74	-28.39
3	0.51754	9.75	29.84	15.89	39.59	25.64	56.00	46.00	-16.41	-20.36
4	0.88117	9.63	23.12	12.22	32.75	21.85	56.00	46.00	-23.25	-24.15
5	3.50631	9.73	19.61	12.58	29.34	22.31	56.00	46.00	-26.66	-23.69
6	24.50610	10.25	25.33	15.27	35.58	25.52	60.00	50.00	-24.42	-24.48

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.

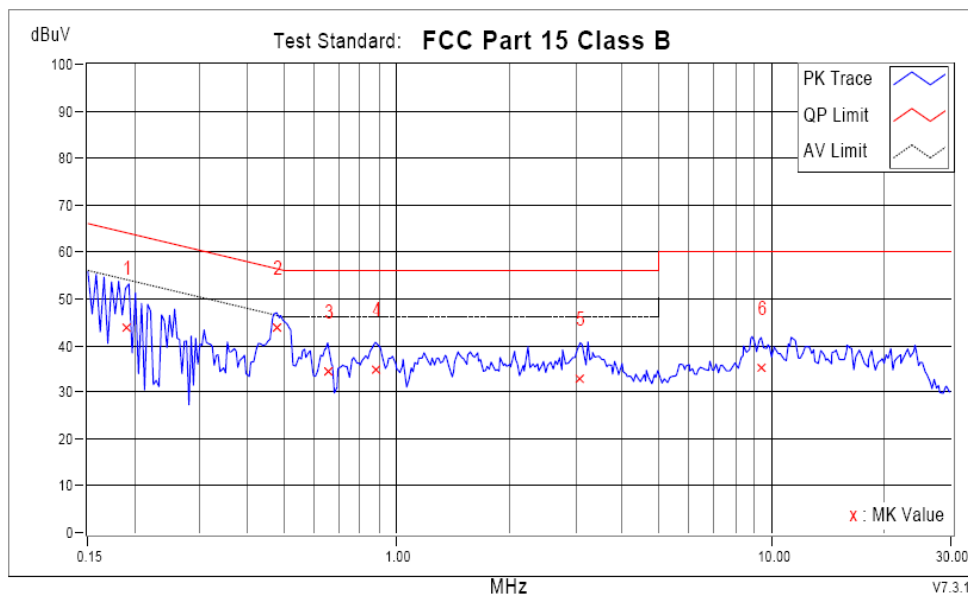




EUT TEST CONDITION		MEASUREMENT DETAIL	
model NO.	BH-B102D	PHASE	N
CHANNEL	Channel 1	INPUT POWER (SYSTEM)	AC110V, 60Hz
MODULATION TYPE	FSK	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	25.2deg. C, 48.6 RH, 101kPa	TESTED BY	Bing YE

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19032	9.69	33.99	17.50	43.68	27.19	64.02	54.02	-20.35	-26.84
2	0.47844	9.74	33.93	22.52	43.67	32.26	56.37	46.37	-12.70	-14.11
3	0.65439	9.66	24.77	12.34	34.43	22.00	56.00	46.00	-21.57	-24.00
4	0.87726	9.64	25.04	14.10	34.68	23.74	56.00	46.00	-21.32	-22.26
5	3.08794	9.88	22.77	13.65	32.65	23.53	56.00	46.00	-23.35	-22.47
6	9.38695	10.08	25.25	13.36	35.33	23.44	60.00	50.00	-24.67	-26.56

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.





## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

#### TEST STANDARD:

FCC Part 15: 2010, Subpart C (Section: 15.205)

FCC Part 15: 2010, Subpart C (Section: 15.209)

FCC Part 15: 2010, Subpart C (Section: 15.249(a))

According to 15.249 the field strength of emissions from intentional radiators operated under these frequencies bands shall not exceed the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental	Field Strength of Harmonics
	(millivolts/meter)	(microvolts/meter)
902-928	50	500
2400-2483.5	50	500
5725-5875	50	500
24000-242500	250	2500

#### NOTE:

- (1) The above field strength limits are specified at a distance of 3meters. The tighter limits apply at the band edges.



Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

<b>Frequencies (MHz)</b>	<b>Field strength (microvolts/meter)</b>	<b>Measurement distance (meters)</b>
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

## FREQUENCY RANGE OF RADIATED MEASUREMENT

(For intentional radiators)

If the intentional radiator operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.





## 4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	E1R1001	May. 10, 2014
BILOG Antenna SCHWARZBECK	VULB9168	E1A1001	Apr. 27, 2014
Preamplifier Agilent	8447D	E1A2001	Nov. 22, 2013
Preamplifier Agilent	8449B	E1A2002	Apr. 15, 2014
Double Ridged Broadband Horn Antenna Schwarzbeck	BBHA 9120D	E1A1002	Sep. 08, 2014
*Spectrum Analyzer Agilent	E4403B	E1S1001	Aug. 14, 2014
*Spectrum Analyzer ROHDE & SCHWARZ	FSP	E1S1002	Aug. 15, 2014
RF signal cable Woken	RG-402	E1CBH16	May. 30, 2014
RF signal cable Woken	RG-402	E1CBH20	May. 30, 2014
RF signal cable Woken	RG-412	E1CBL02	May. 30, 2014
RF signal cable Woken	RG-412	E1CBL03	May. 30, 2014
RF signal cable Woken	RG-412	E1CBL04	May. 30, 2014
Software ADT	ADT_Radiated_V7.5	N/A	N/A

- NOTE:**
1. The calibration interval of the above test instruments is 12 months.
  2. “\*” = These equipment are used for the final measurement.
  3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
  4. The Spectrum Analyzer (model: FSP) and RF signal cable (SERIAL: E1CBH05&E1CBH07) are used only for the measurement of emission frequency above 1GHz if tested.



### 4.2.3 TEST PROCEDURE

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

**NOTE:**

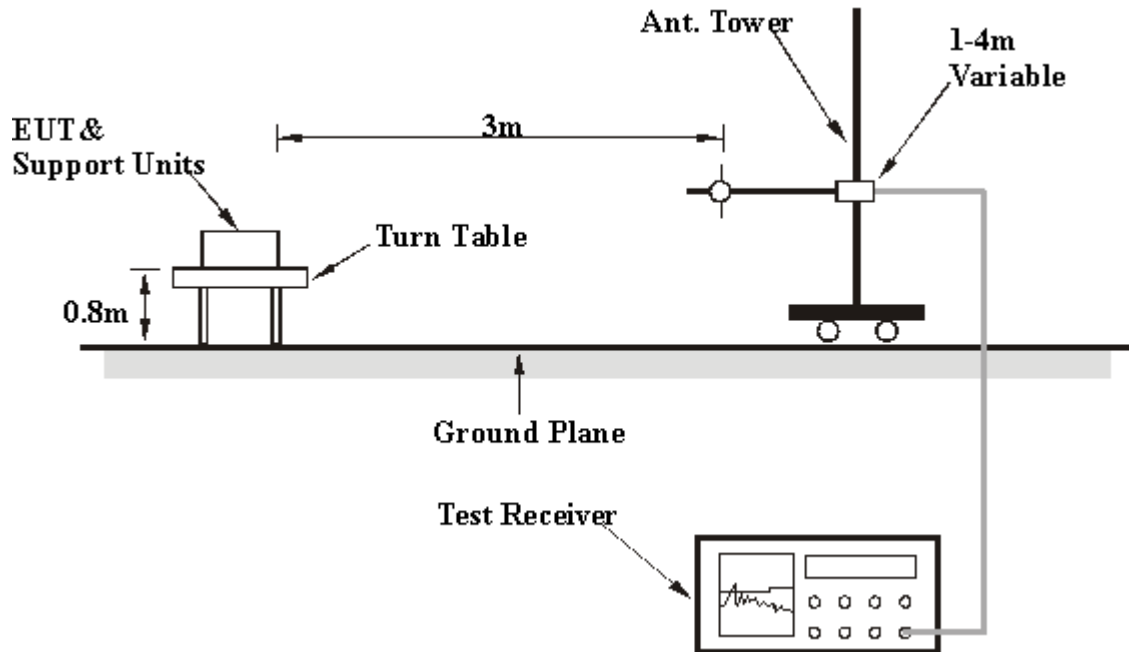
1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.

### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation.



#### 4.2.5 TEST SETUP



For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

#### 4.2.6 EUT OPERATING CONDITIONS

Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.

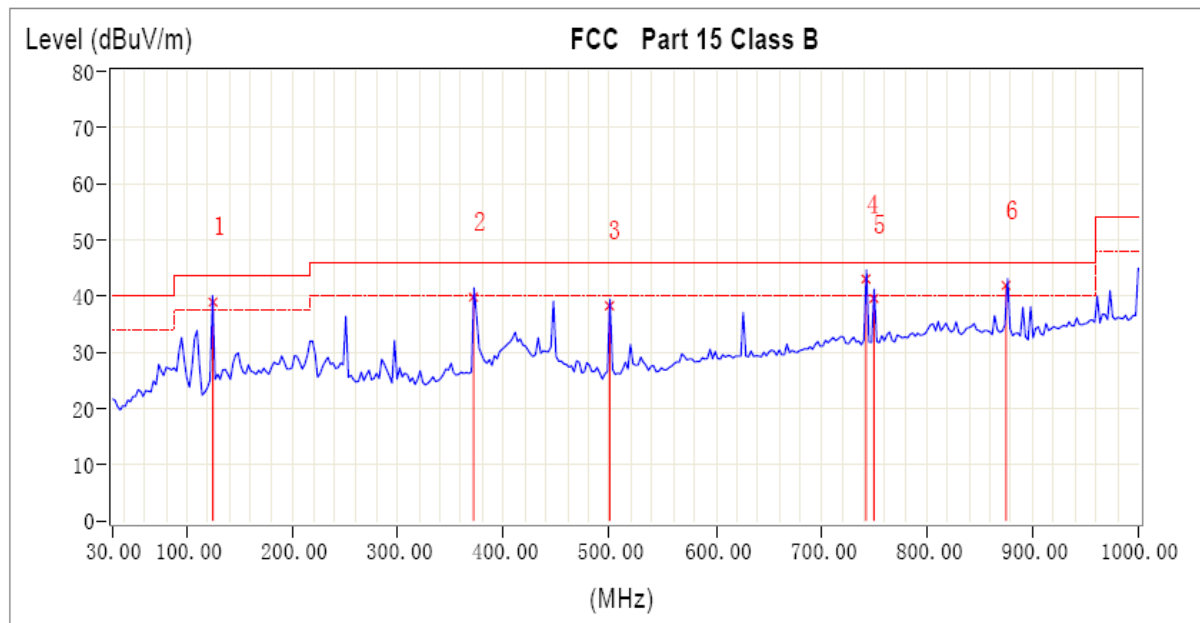


## 4.2.7 TEST RESULTS

Below 1GHz Worst-Case Data

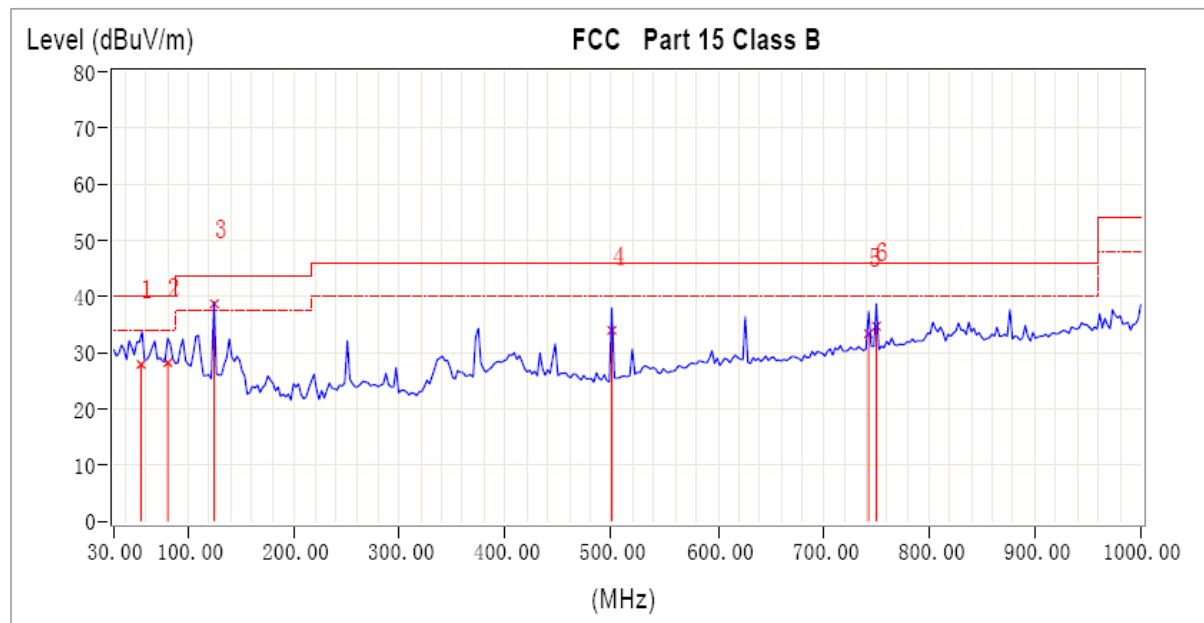
<b>EUT</b>	High Definition Multimedia Player	<b>MODEL NO.</b>	BH-B102D
<b>CHANNEL</b>	Channel 1	<b>FREQUENCY RANGE</b>	30 ~ 1000 MHz
<b>MODULATION TYPE</b>	FSK	<b>INPUT POWER (SYSTEM)</b>	AC110V, 60Hz
<b>ENVIRONMENTAL CONDITIONS</b>	25.2deg. C, 48.6 RH, 101kPa	<b>DETECTOR FUNCTION</b>	Quasi-Peak
<b>TESTED BY</b>	Bing YE		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	125.00	12.55	26.36	38.91	43.50	-4.59	169	0
2	371.25	16.51	23.29	39.79	46.00	-6.21	100	236
3	500.00	19.46	18.78	38.24	46.00	-7.76	100	177
4	<b>742.48</b>	<b>24.97</b>	<b>18.07</b>	<b>43.03</b>	<b>46.00</b>	<b>-2.97</b>	<b>100</b>	<b>219</b>
5	750.00	25.04	14.50	39.54	46.00	-6.46	116	135
6	875.00	26.68	15.19	41.87	46.00	-4.13	100	168





ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	55.83	13.25	14.63	27.88	40.00	-12.12	100	252
2	81.17	9.89	18.30	28.19	40.00	-11.81	100	0
3	125.00	12.55	26.11	38.66	43.50	-4.84	100	284
4	500.45	19.47	14.49	33.96	46.00	-12.04	100	298
5	742.95	24.97	8.38	33.35	46.00	-12.65	100	217
6	750.23	25.04	9.66	34.70	46.00	-11.30	100	134



- NOTE:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB)
  2. Correction Factor (dB) = Antenna Factor (dB) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. “\*” = Fundamental frequency



## Above 1GHz Worst-Case Data

<b>EUT</b>	High Definition Multimedia Player	<b>MODEL NO.</b>	BH-B102D
<b>CHANNEL</b>	Channel 1	<b>FREQUENCY RANGE</b>	Above 1GHz
<b>MODULATION TYPE</b>	FSK	<b>INPUT POWER (SYSTEM)</b>	AC110V, 60Hz
<b>ENVIRONMENTAL CONDITIONS</b>	25.2deg. C, 48.6 RH, 101kPa	<b>DETECTOR FUNCTION</b>	Peak
<b>TESTED BY</b>	Bing YE		

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	2410.00 PK	33.05	56.38	89.43	114.00	-24.57	100	0
2	2410.00 AV	--	--	47.33	94.00	-46.67	--	--
3	4820.00 PK	37.74	11.00	48.73	74.00	-25.27	100	0
4	4820.00 AV	--	--	6.63	54.00	-47.37	--	--
5	7230.00 PK	44.00	10.88	54.88	74.00	-19.12	100	0
6	7230.00 AV	--	--	12.78	54.00	-41.22	--	--

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	2410.00 PK	33.05	57.63	90.68	114.00	-23.32	100	0
2	2410.00 AV	--	--	48.58	94.00	-45.42	--	--
3	4820.00 PK	37.74	10.41	48.15	74.00	-25.85	100	0
4	4820.00 AV	--	--	6.05	54.00	-47.95	--	--
5	7230.00 PK	44.00	10.59	54.59	74.00	-19.41	100	0
6	7230.00 AV	--	--	12.49	54.00	-41.51	--	--

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m)
  2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. The average value of fundamental frequency and spurious emission is: Average = Peak value + 20log(Duty cycle)
- Where the duty factor is calculated from following formula:  
 $20\log(\text{Duty cycle}) = 20\log(0.390\text{ms} \times 2 / 100\text{ms}) = -42.1\text{dB}$   
 Average = PK value + 20log(Duty cycle) = PK value - 42.1dB  
 please see page 24 for plotted duty



<b>EUT</b>	High Definition Multimedia Player	<b>MODEL NO.</b>	BH-B102D
<b>CHANNEL</b>	Channel 4	<b>FREQUENCY RANGE</b>	Above 1GHz
<b>MODULATION TYPE</b>	FSK	<b>INPUT POWER (SYSTEM)</b>	AC110V, 60Hz
<b>ENVIRONMENTAL CONDITIONS</b>	25.2deg. C, 48.6 RH, 101kPa	<b>DETECTOR FUNCTION</b>	Peak
<b>TESTED BY</b>	Bing YE		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	2440.00 PK	33.05	55.31	88.36	114.00	-25.64	201	0
2	2440.00 AV	--	--	46.26	94.00	-47.74	--	--
3	4880.00 PK	37.85	10.27	48.12	74.00	-25.88	201	0
4	4880.00 AV	--	--	6.02	54.00	-47.98	--	--
5	7320.00 PK	44.07	10.49	54.55	74.00	-19.45	201	0
6	7320.00 AV	--	--	12.45	54.00	-41.55	--	--

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	2440.00 PK	33.05	58.10	91.15	114.00	-22.85	99	0
2	2440.00 AV	--	--	49.05	94.00	-44.95	--	--
3	4880.00 PK	37.85	10.01	47.86	74.00	-26.14	99	0
4	4880.00 AV	--	--	5.76	54.00	-48.24	--	--
5	7320.00 PK	44.07	10.94	55.01	74.00	-18.99	99	0
6	7320.00 AV	--	--	12.91	54.00	-41.09	--	--

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The average value of fundamental frequency and spurious emission is: Average = Peak value + 20log(Duty cycle)

Where the duty factor is calculated from following formula:  
 $20\log(\text{Duty cycle}) = 20\log(0.390\text{ms} \times 2 / 100\text{ms}) = -42.1\text{dB}$   
 Average = PK value + 20log(Duty cycle) = PK value - 42.1dB  
 please see page 24 for plotted duty



<b>EUT</b>	High Definition Multimedia Player	<b>MODEL NO.</b>	BH-B102D
<b>CHANNEL</b>	Channel 7	<b>FREQUENCY RANGE</b>	Above 1GHz
<b>MODULATION TYPE</b>	FSK	<b>INPUT POWER (SYSTEM)</b>	AC110V, 60Hz
<b>ENVIRONMENTAL CONDITIONS</b>	25.2deg. C, 48.6 RH, 101kPa	<b>DETECTOR FUNCTION</b>	Peak
<b>TESTED BY</b>	Bing YE		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	2470.00 PK	33.05	57.22	90.27	114.00	-23.73	99	0
2	2470.00 AV	--	--	48.17	94.00	-45.83	--	--
3	4940.00 PK	37.96	10.06	48.02	74.00	-25.98	99	0
4	4940.00 AV	--	--	5.92	54.00	-48.08	--	--
5	7410.00 PK	37.96	10.06	48.02	74.00	-25.98	99	0
6	7410.00 AV	--	--	5.92	54.00	-48.08	--	--

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	2470.00 PK	33.05	59.86	92.91	114.00	-21.09	201	0
2	2470.00 AV	--	--	50.81	94.00	-43.19	--	--
3	4940.00 PK	37.96	10.30	48.26	74.00	-25.74	201	0
4	4940.00 AV	--	--	6.16	54.00	-47.84	--	--
5	7410.00 PK	44.12	10.42	54.54	74.00	-19.46	201	0
6	7410.00 AV	--	--	12.44	54.00	-41.56	--	--

**REMARKS:**

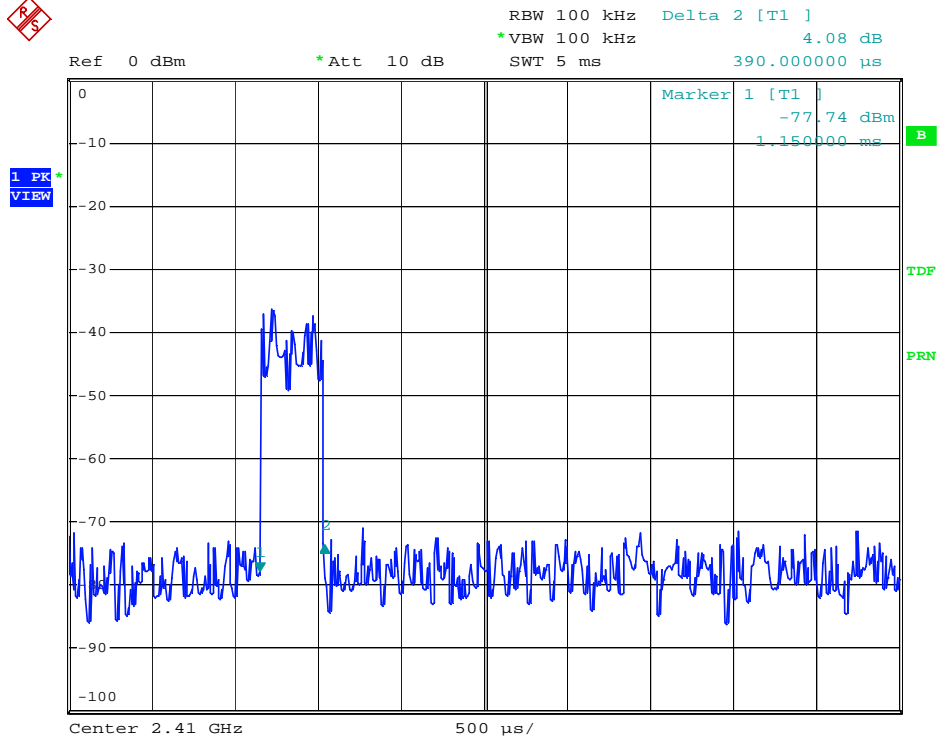
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The average value of fundamental frequency and spurious emission is: Average = Peak value + 20log(Duty cycle)

Where the duty factor is calculated from following formula:  
 $20\log(\text{Duty cycle}) = 20\log(0.390\text{ms} \times 2 / 100\text{ms}) = -42.1\text{dB}$   
 Average = PK value + 20log(Duty cycle) = PK value - 42.1dB  
 please see page 24 for plotted duty



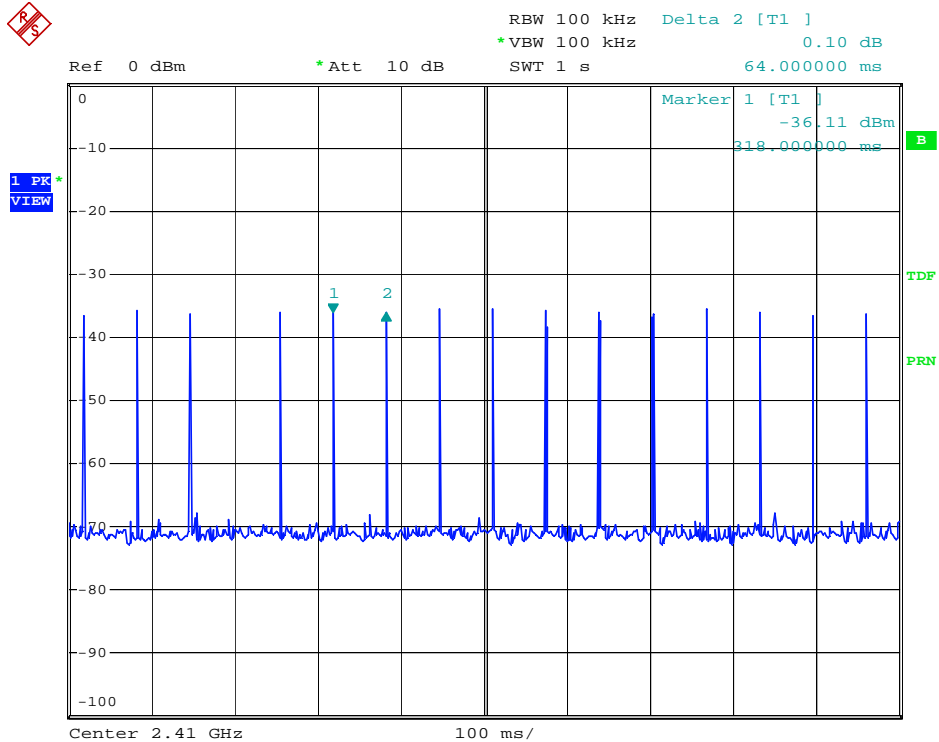


5ms



Date: 1.JAN.2000 00:34:10

1s



Date: 1.JAN.2000 00:25:54



## 4.3 OUT OF BAND EMISSIONS

### 4.3.1 LIMITS OF OUT OF BAND EMISSIONS

#### TEST STANDARD:

#### FCC Part 15: 2010, Subpart C (Section: 15.249(d))

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

### 4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SIGNAL ANALYZER Rohde & Schwarz	FSP	E1S1002	Aug. 15, 2014
Preamplifier Agilent	8449B	E1A2002	Apr. 15, 2014
Double Ridged Broadband Horn Antenna Schwarzbeck	BBHA 9120D	E1A1002	Sep. 08, 2014
RF signal cable Woken	RG-402	E1CBH01	May. 30, 2014

**NOTE:** The calibration interval of the above test instruments is 12 months.



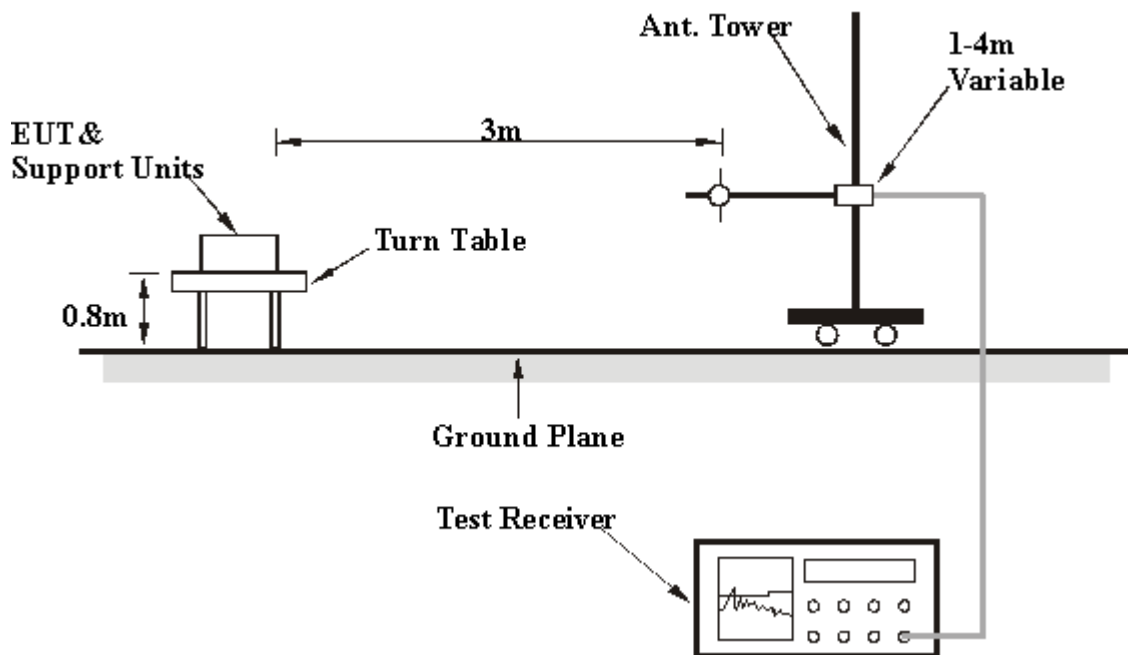
### 4.3.3 TEST PROCEDURES

1. The EUT was placed on the turning table.
2. The signal was coupled to the spectrum analyzer through an antenna.
3. Set the resolution bandwidth to 100 kHz and video bandwidth to 300 kHz then select Peak function to scan the channel frequency.
4. Out of band emissions was measured and recorded.

### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation.

### 4.3.5 TEST SETUP



For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

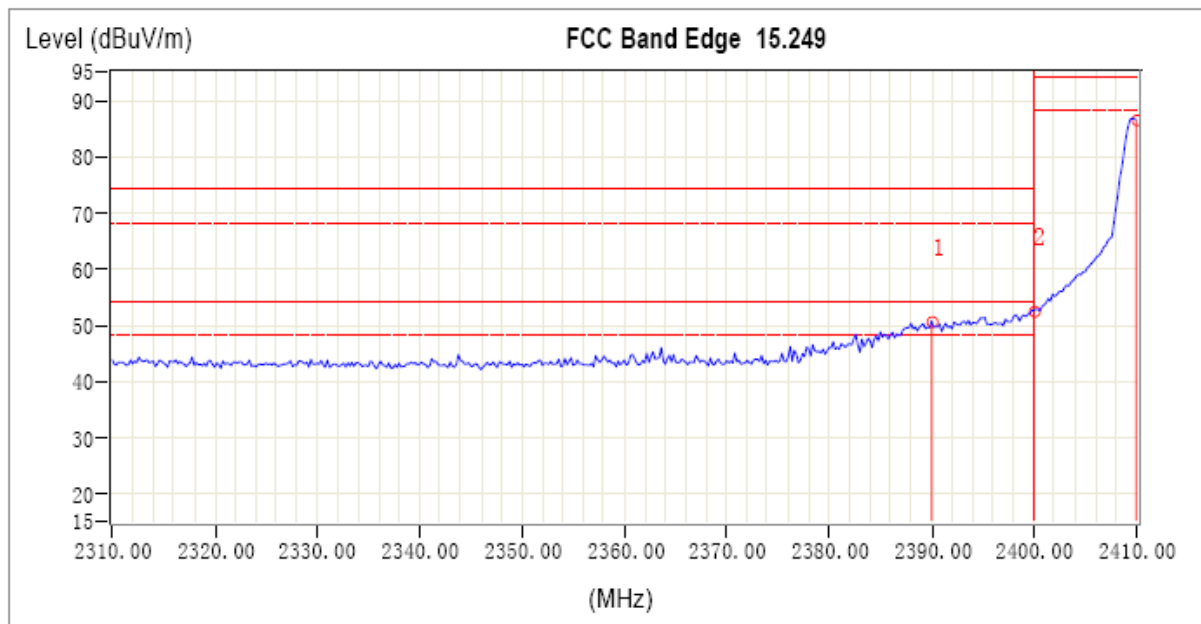


### 4.3.6 TEST RESULTS

<b>EUT</b>	High Definition Multimedia Player	<b>MODEL NO.</b>	BH-B102D
<b>INPUT POWER (SYSTEM)</b>	AC110V, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	25.2deg. C, 48.6 RH, 101kPa
<b>TESTED BY</b>	Kevin JIANG		

#### For Channel 1

Horizontal



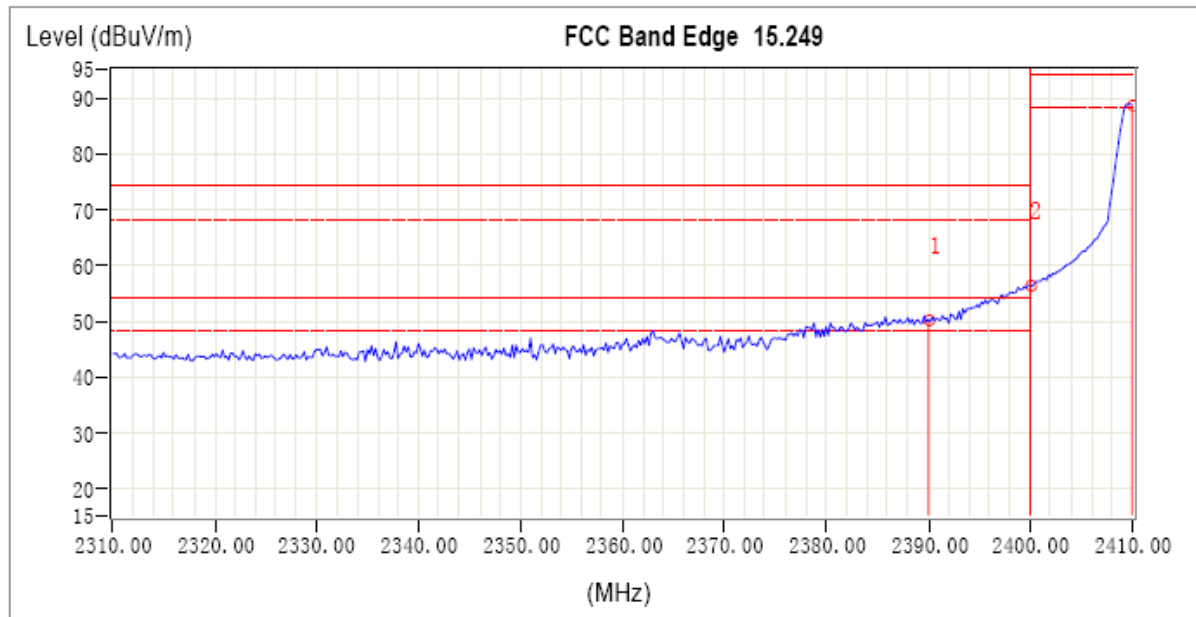
This data is for evaluation purposes only. It cannot be used for EMC approvals unless it contains the approved signature.

If you have any questions regarding the test data, you can write your comments to [service@mail.adt.com.tw](mailto:service@mail.adt.com.tw) V7. 5. 14

No.	Freq. MHz	C.F. dB	Reading		Emission		Limit		Margin		Ant./Table	
			PK	AV	PK	AV	PK	AV	PK	AV	cm	deg
1	2390.00	33.06	17.47	--	50.54	--	74.00	54.00	-23.46	--	99	0
* 2	2400.00	33.05	19.33	--	52.37	--	74.00	54.00	-21.63	--	99	0
3	2410.00	33.05	53.42	--	86.47	--	114.00	94.00	-27.53	--	99	0



## Vertical



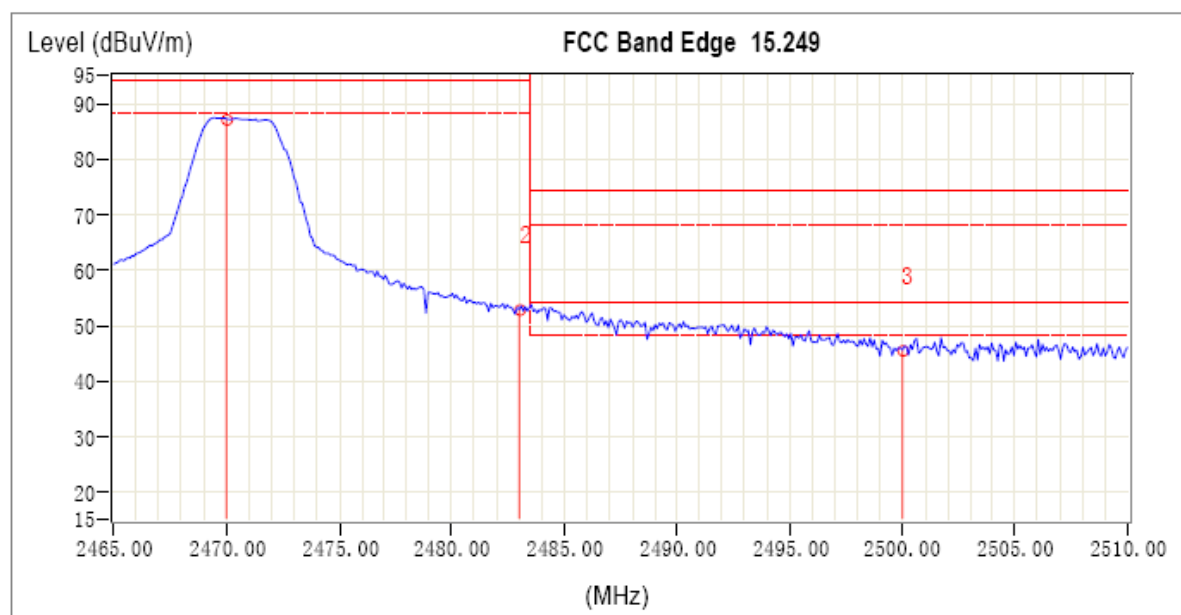
This data is for evaluation purposes only. It cannot be used for EMC approvals unless it contains the approved signature.

If you have any questions regarding the test data, you can write your comments to [service@mail.adt.com.tw](mailto:service@mail.adt.com.tw) V7.5.14

No.	f	MHz	V	dBuV/m	PK	AV	Emission		Limit		Margin		Ant./Table	
							PK	AV	PK	AV	PK	AV	cm	deg
1	2390.00	33.06	17.08	--	50.14	--	74.00	54.00	-23.86	--	99	208		
*	2400.00	33.05	23.27	--	56.32	--	74.00	54.00	-17.68	--	99	208		
3	2410.00	33.05	55.60	--	88.65	--	114.00	94.00	-25.35	--	99	208		

**For Channel 7**

Horizontal



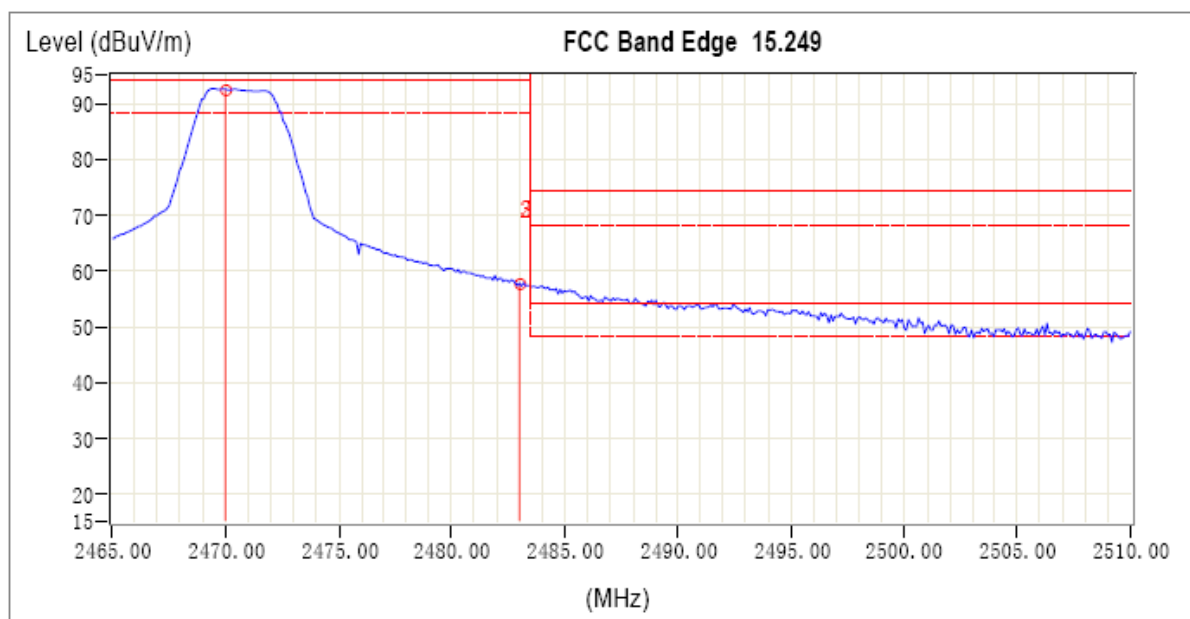
This data is for evaluation purposes only. It cannot be used for EMC approvals unless it contains the approved signature.

If you have any questions regarding the test data, you can write your comments to [service@mail.adt.com.tw](mailto:service@mail.adt.com.tw) V7.5.14

No.	Freq. MHz	C.F. dB	Reading		Emission		Limit		Margin		Ant./Table	
			PK	AV	PK	AV	PK	AV	PK	AV	cm	deg
* 1	2470.00	33.05	54.01	--	87.06	--	114.00	94.00	-26.94	--	99	336
2	2483.00	33.05	19.71	--	52.76	--	114.00	94.00	-61.24	--	99	336
3	2500.00	33.05	12.35	--	45.40	--	74.00	54.00	-28.60	--	99	336



Vertical



This data is for evaluation purposes only. It cannot be used for EMC approvals unless it contains the approved signature.

If you have any questions regarding the test data, you can write your comments to [service@mail.adt.com.tw](mailto:service@mail.adt.com.tw) V7. 5. 14

No.   Emission Limit Margin Ant./Table													
		FREQ	SD	PK	AV	PK	AV	PK	AV	PK	AV	cm	deg
*	1	2470.00	33.05	59.30	--	92.35	--	114.00	94.00	-21.65	--	99	0
	2	2483.00	33.05	24.54	--	57.59	--	114.00	94.00	-56.41	--	99	0
	3	2483.00	33.05	24.54	--	57.59	--	114.00	94.00	-56.41	--	99	0



## 5 APPENDIX - INFORMATION ON THE TESTING LABORATORIES

We, BUREAU VERITAS ADT (Shanghai) Corporation, were founded in 2004 to provide our best service in EMC, Radio and Vehicle consultation. Our laboratories are accredited by the following accreditation bodies according to ISO/IEC 17025 (2005) .

<b>USA</b>	A2LA Certificate No.: 2343.01
<b>China</b>	CNAS Certificate No.: L2810

Copies of accreditation certificates could be inquired from our office. If you have any comments, please feel free to contact us at the following:

**EMC / RF / Vehicle Lab:**

Tel: +86 21 6465 9091

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Email: [bvadtshmail@cn.bureauveritas.com](mailto:bvadts@mail@cn.bureauveritas.com)

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