

### APPLICATION CERTIFICATION On Behalf of ACOUSTMAX INTERNATIONAL CO., LTD

### Indoor/Outdoor speaker with Bluetooth Model No.: BTW248XBK, BTW248XWH, BTW348XBK, BTW548XBK, BTW648XBK, BTW748XBK, BTW848XBK, BTW948XBK

### FCC ID: 2AAIN-BTW248XBK

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Date of Report	:	Feb 26,2014



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## Test Report Certification

Applicant	:	ACOUSTMAX INTERNATIONAL CO., LTD			
Manufacturer	:	Musilab Electronic(DongGuan) Co.,Ltd			
EUT Description	:	Indoor/Outdoor speaker with Bluetooth			
		<ul> <li>(A) MODEL NO.: BTW248XBK, BTW248XWH, BTW348XBK, BTW548XBK, BTW648XBK, BTW748XBK, BTW848XBK, BTW948XBK.</li> </ul>			
		(B) Trade Name: Monster			
		(C) POWER SUPPLY: DC 11.1V (battery) Or AC 120V/60Hz			

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247 KDB558074 D01

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 :

Feb 10-Feb 26, 2014

Prepared by :

Jim Zhar

(Tim.zhang, Engineer)

Approved & Authorized Signer :

(Sean Liu, Manager)



# **1. GENERAL INFORMATION**

# 1.1.Description of Device (EUT)

EUT	:	Indoor/Outdoor speaker with Bluetooth
Model Number	:	BTW248XBK, BTW248XWH, BTW348XBK,
		BTW548XBK, BTW648XBK, BTW748XBK,
		BTW848XBK, BTW948XBK
Operation Frequency	:	5736MHz, 5762MHz, 5814MHz
Number of Channels	:	3
Modulation type	:	QPSK
Antenna Gain	:	3dBi
Antenna type	:	PCB Antenna
Power Supply	:	DC 11.1V Or AC 120V/60Hz
Applicant	:	ACOUSTMAX INTERNATIONAL CO., LTD
Address	:	Unit D16/F Cheuk Nang Plaza 250 Hennessy Road
		Wanchai HongKong, China
Manufacturer	:	Musilab Electronic(DongGuan) Co.,Ltd
Address	:	A2 LinDong 3Road, LinCun, TangXia Town, DongGuan
		City, GuangDong, China
Date of sample received	:	Feb 10, 2014
Date of Test	:	Feb 10-26,2014
EUT	:	Indoor/Outdoor speaker with Bluetooth
Model Number	:	BTW248XBK, BTW248XWH, BTW348XBK,
		BTW548XBK, BTW648XBK, BTW748XBK,
		BTW848XBK, BTW948XBK
BT Frequency Band	:	2402MHz-2480MHz
Number of Channels	:	79
Modulation type	:	GFSK, $\Pi/4$ -DQPSK, 8DPSK
Antenna Gain	:	0dBi
Antenna type	:	PCB Antenna



# 1.2.Description of Test Facility

EMC Lab	:	Accredited by TUV Rheinland Shenzhen
		Listed by FCC
		The Registration Number is 752051
		Listed by Industry Canada
		The Registration Number is 5077A-2
		Accredited by China National Accreditation Committee for Laboratories
		The Certificate Registration Number is L3193
Name of Firm	:	ACCURATE TECHNOLOGY CO. LTD
Site Location	:	F1, Bldg. A, Changyuan New Material Port, Keyuan Rd.
		Science & Industry Park, Nanshan, Shenzhen, Guangdong
		P.R. China

# 1.3.Measurement Uncertainty

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



# 2. MEASURING DEVICE AND TEST EQUIPMENT

#### Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Туре	S/N	Calibrated dates	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 11, 2014	Jan. 10, 2015
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 11, 2014	Jan. 10, 2015
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 11, 2014	Jan. 10, 2015
Pre-Amplifier	Rohde&Schwarz	CBLU118354 0-01	3791	Jan. 11, 2014	Jan. 10, 2015
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 15, 2014	Jan. 14, 2015
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 15, 2014	Jan. 14, 2015
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 15, 2014	Jan. 14, 2015
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1067	Jan. 15, 2014	Jan. 14, 2015
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 11, 2014	Jan. 10, 2015
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 11, 2014	Jan. 10, 2015
Highpass Filter	Wainwright Instruments	WHKX3.6/18 G-10SS	N/A	Jan. 11, 2014	Jan. 10, 2015
Band Reject Filter	Wainwright Instruments	WRCG2400/2 485-2375/2510 -60/11SS	N/A	Jan. 11, 2014	Jan. 10, 2015



# 3. OPERATION OF EUT DURING TESTING

3.1.Operating Mode

The mode is used: Transmitting mode Low Channel: 5736MHz Middle Channel: 5762MHz High Channel: 5814MHz

3.2. Configuration and peripherals



(EUT: Indoor/Outdoor speaker with Bluetooth)

Note: The EUT have two antenna(A and B), They can not transmit simultaneously, The EUT select a antenna to transmit according to signal strength automatically, One Antenna of EUT does not work when Another antenna is transmitting



# 4. TEST PROCEDURES AND RESULTS

FCC Rules	Description of Test	Result
Section 15.207	AC power Line Conducted Emission Test	Compliant
Section 15.247(a)(2)	6dB Occupied Bandwidth Test	Compliant
Section 15.247(b)(3)	Conducted Peak Output Power Test	Compliant
Section 15.247(e)	Power Spectral Density Test	Compliant
Section 15.205 Section 15.209	Radiated Spurious Emissions Test	Compliant
Section 15.247(d)	RF Conducted spurious emissions Test	Compliant
Section 15.247(d)	Band Edge Compliance Test	Compliant
Section 15.203	Antenna Requirement	Compliant



# 5. 6DB OCCUPIED BANDWIDTH TEST

#### 5.1.Block Diagram of Test Setup



(EUT: Indoor/Outdoor speaker with Bluetooth)

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

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

### 5.3.EUT Configuration on Measurement

The 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.

#### 5.4.Operating Condition of EUT

- 5.4.1.Setup the EUT and simulator as shown as Section 5.1.
- 5.4.2.Turn on the power of all equipment.
- 5.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 5736MHz, 5762MHz, 5814MHz,. We select these 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 100 kHz and VBW to 300 kHz.
- 5.5.3.The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.



### 5.6.Test Result

#### Antenna A test data

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Result
Low	5736	11.172	Pass
Middle	5762	11.057	Pass
High	5814	11.115	Pass

#### Antenna B test data

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Result
Low	5736	11.057	Pass
Middle	5762	11.057	Pass
High	5814	11.057	Pass

The spectrum analyzer plots are attached as below.

#### Spectrum Ref Level 20.00 dBm Offset 0.50 dB 👄 RBW 100 kHz Att 30 dB SWT 94.8 µs 👄 **VBW** 300 kHz Mode Auto FFT ●1Pk Max D3[1] -10.23 dB 4.2260 MHz 10 dBm -12.13 dBm 5.7367530 GHz M1[1] 0 dBm--10 dBm· իրը D1 -18.130 -20 dBmħ -30 dBm -40 dBm h -50 dBm Am -60 dBm -70 dBm-Span 40.0 MHz CF 5.736 GHz 691 pts Marker Type | Ref | Trc | Stimulus Function Function Result Response 5.736753 GHz -6.946 MHz -12.13 dBm -6.40 dB -10.23 dB M1 D2 Μ1 1 DЗ Μ1 4.226 MHz 14.02.2014 11:01:35 Measuring...

#### Low channel(Antenna A)

Date: 14.FEB.2014 11:01:34





Middle channel(Antenna A)

Date: 14.FEB.2014 10:59:38





Date: 25.FEB.2014 17:02:14







Date: 25.FEB.2014 11:37:03





Date: 25.FEB.2014 11:39:43





#### High channel(Antenna B)

Date: 25.FEB.2014 11:43:52



# 6. POWER SPECTRAL DENSITY TEST

#### 6.1.Block Diagram of Test Setup



(EUT: Indoor/Outdoor speaker with Bluetooth)

### 6.2. The Requirement For Section 15.247(e)

Section 15.247(e): For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

### 6.3.EUT Configuration on Measurement

The 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.

### 6.4. Operating Condition of EUT

- 6.4.1.Setup the EUT and simulator as shown as Section 6.1.
- 6.4.2.Turn on the power of all equipment.
- 6.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 5736MHz, 5762MHz, 5814MHz,. We select these frequency to transmit.

6.5.Test Procedure Refer to KDB558074 D01



## 6.6.Test Result

#### Antenna B test result

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limit (dBm)	Result
Low	5736MHz	-12.01	≤8.00	PASS
Middle	5762MHz	-11.94	≤8.00	PASS
High	5814MHz	-10.75	≤8.00	PASS

#### Antenna A test result

Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limit (dBm)	Result
Low	5736MHz	-10.71	≤8.00	PASS
Middle	5762MHz	-10.91	≤8.00	PASS
High	5814MHz	-8.45	≤8.00	PASS

The spectrum analyzer plots are attached as below.



#### Low channel(Antenna B)

FCC ID: 2AAIN-BTW248XBK





#### Middle channel(Antenna B)

Date: 14.FEB.2014 11:05:44









#### Low channel(Antenna A)

Date: 25.FEB.2014 13:37:08









#### High channel(Antenna A)

Date: 25.FEB.2014 11:47:20



# 7. RF CONDUCTED SPURIOUS EMISSIONS TEST

#### 7.1.Block Diagram of Test Setup



(EUT: Indoor/Outdoor speaker with Bluetooth)

### 7.2. 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, pro-vided the transmitter demonstrates compliance with the peak conducted power limits.

### 7.3.EUT Configuration on Measurement

The 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.

### 7.4. Operating Condition of EUT

- 7.4.1.Setup the EUT and simulator as shown as Section 7.1.
- 7.4.2.Turn on the power of all equipment.
- 7.4.3.Let the EUT work in TX modes measure it.

#### 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 test frequency range from 30MHz to 25GHz and set RBW=100 kHz, VBW=300 kHz.

7.6.Test Result



The spectrum analyzer plots are attached as below.



Low channel(Antenna A)

Date: 14.FEB.2014 10:53:44

#### Middle channel(Antenna A)

Spect	rum											
Ref L	evel	20.00 dB	m Offset	0.50 dB (	RBW	100 kHz	:					
🗕 Att		30 d	B SWT	250 ms (	VBW	300 kHz	Mode	Auto S\	veep			
😑 1Pk M	ax											
							M	3[1]			-	50.68 dBm
10 - 10											16	5.7430 GHz
то авт							M	1[1]			-	11.23 dBm
0.40.00												i.7580 GHz
u asm-												
10 - 10 -			M1									
-10 aBU												
00 ID												
-20 aBn	1											
-30 dBo		1 -31.23	) dBm									
40 d0 a												
-40 UBI												
E0 d0a	V12								МЗ			
-50 UBI								mar	An	whent	when when he	
co. do			when	www.	month	rhurn	mangene				work	man
-OUNUBH	0.0 of											
70 d0 a												
-70 UBI												
Start 3	0.0 N	1Hz				691 p	ots				Stop	25.0 GHz
Marker												
Туре	Ref	Trc	Stimu	us (	Res	ponse	Func	tion		Fund	tion Result	
M1		1	5.	758 GHz	-1	1.23 dBr	n					
M2		1	1.9	271 GHz	-5	0.43 dBr	n					
МЗ		1	16.	743 GHz	-5	0.68 dBr	n					
							Mea	surina.			<b>440</b>	4.02.2014
	1											10:55:32

Date: 14.FEB.2014 10:55:32



High channel(Antenna A	4)
------------------------	----

Spectr	um												
Ref Le	vel 2	20.00 dBn	n Offset	0.50 dB (	e RB\	₩ 100 kH	z						
🗕 Att		30 di	SWT	250 ms (	e VB	<b>W</b> 300 kH	z	Mode /	Auto SN	weep			
😑 1Pk Ma:	x												
10 dBm—								м м	3[1] 1[1]			1	-50.46 dBm 8.0800 GHz -9.88 dBm
													5.8300 GHz
0 dBm—													+
-10 dBm-	_		M1										
-20 dBm-	-												
- <del>30 dBm-</del>		1 -29.900	dBm										
-40 dBm-	_												
M -50 dBm	2										МЗ		
NTSOUGRAM		سىسلىسىد	walnung	umunul	under	nontabala	war	white	www	vinn	white	Many work	heremoned
-70 dBm-	+				_								
Start 30	).0 M	Hz	L			691	pts		I			Stop	25.0 GHz
Marker													
Type	Ref	Trc	Stimulu	is	Re	esponse		Func	tion		Fu	nction Result	t
M1		1	5	.83 GHz		-9.88 dB	m						
M2		1	1.92	271 GHz		-50.00 dB	5m						
M3		1	18	.08 GHz		-50.46 dB	m						
								Mea	suring.			D 🦇	14.02.2014

Date: 14.FEB.2014 10:51:37



Spect	rum													
Ref L	evel	20.00	dBm	Offset	D.50 dB	🔵 RE	<b>3W</b> 100 k⊢	z						
🗕 Att		30	I dB	SWT	250 ms	I VE	<b>3₩</b> 300 kH	İZ	Mode /	Auto S	weep			
⊖1Pk M	ax .													
									M	3[1]				-52.48 dBm
10 dBm	$\rightarrow$									1111			1	1.4670 GHz
									IMI	1[1]				-9.71 uBm 5 7210 GHz
0 dBm–								-					+	1
			1	41										
-10 dBn	-+-י			<u> </u>										
-20 dBn														
00 ID			710 40	<u> </u>										
-30 uBn		JI -29.7	/ 10 aB	-m										
-40 dBn														
240 UBN	-													
-50 dBn	-						M3							
1	·			un			bert have	and I	مدامرسون	war	vije	whent	Munne	mapp your
60 dBb	ىلىسىن	moreton	~~u~	and the second	m	source	,000,000,000		····· · · · ·				C () V	
-70 dBn	י—ר							-						
Start 3	0.0 N	/Hz					691	nts					Stor	1 25.0 GHz
Marker													200	
Type	Ref	Trc		Stimulu	s	l F	Response	1	Func	tion	1	Fun	ction Result	t
M1		1		5.7	21 GHz		-9.71 dE	3m						
M2		1		84	.0 MHz		-45.19 dE	3m						
M3		1		11.4	67 GHz		-52.48 dE	3m						
		)[							Mea	suring	(		444	25.02.2014 13:53:08

Date: 25.FEB.2014 13:53:09



Ref Level	20.00 dBm	Offset 0	.50 dB (	RBW 1	.00 kHz					
Att	30 dB	SWT 2	250 ms (	e VBW 3	100 kHz	Mode /	Auto Sweep	I		
▶1Pk Max										
						M	3[1]		-	49.89 dBm
10 40									1:	L.5390 GHz
10 aBm						M	1[1]		-	11.46 dBm
										5.7580 GHz
10.10		M1								
-10 aBm										
-20 aBm										
-30 dBm—+	01 -31.460	dBm								
10.10										
-40 dBm										
					M3					
-50 dBm-+							marane	Manuall	the also	
A l	mountelle	within	mour	www.www.	warm	man	9		Arran	anarra
հմուզթաշե										
70 10-										
-70 aBm										
Start 30.0 M	MHz				691 pt	5			Stop	25.0 GHz
1arker										
Type   Ref	Trc	Stimulus	;	Resp	onse	Func	tion	Fund	tion Result	
M1	1	5.75	58 GHz	-11	.46 dBm					
M2	1	84.	0 MHz	-46	.87 dBm					
M3	1	11.53	39 GHz	-49	.89 dBm					

#### Middle channel(Antenna B)

Date: 25.FEB.2014 16:36:43



#### High channel(Antenna B)

Date: 25.FEB.2014 16:44:07



# 8. CONDUCTED PEAK OUTPUT POWER TEST

#### 8.1.Block Diagram of Test Setup



(EUT: Indoor/Outdoor speaker with Bluetooth)

#### 8.2. The Requirement For Section 15.247(b)(3)

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.

#### 8.3.EUT Configuration on Measurement

The 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.

#### 8.4.Operating Condition of EUT

- 8.4.1.Setup the EUT and simulator as shown as Section 9.1.
- 8.4.2.Turn on the power of all equipment.
- 8.4.3.Let the EUT work in TX (Hopping off) modes measure it. The transmit frequency are 5736MHz, 5762MHz, 5814MHz,. We select these 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 RBW of spectrum analyzer to 1MHz and VBW to 3MHz for test mode
- 8.5.3.Measurement the maximum peak output power.



### 8.6.Test Result

	Antenna A test result										
Channel	Frequency (MHz)	Peak Output Power (dBm)	Limits dBm								
Low	5736	5.50	30								
Middle	5762	7.90	30								
High	5814	8.20	30								

	Antenna B test result											
Channel	Frequency (MHz)	Peak Output Power (dBm)	Limits dBm									
Low	5736	6.22	30									
Middle	5762	6.82	30									
High	5814	7.96	30									

#### The spectrum analyzer plots are attached as below.



#### Low channel (Antenna A)

Date: 25.FEB.2014 16:52:27





#### Middle channel (Antenna A)

Date: 25.FEB.2014 16:56:02

#### High channel (Antenna A)



Date: 25.FEB.2014 16:57:54







Date: 14.FEB.2014 10:39:27





Date: 14.FEB.2014 10:40:31





#### High channel (Antenna B)

Date: 14.FEB.2014 10:41:33



# 9. RADIATED EMISSION TEST

#### 9.1.Block Diagram of Test Setup

9.1.1.Block diagram of connection between the EUT and simulators



#### (EUT: Indoor/Outdoor speaker with Bluetooth)

9.1.2. Anechoic Chamber Test Setup Diagram



GROUND PLANE

### 9.2.The Limit For Section 15.247(d)

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



### 9.3.Restricted bands of operation

#### 9.3.1.FCC Part 15.205 Restricted bands of operation

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

penn	intered in any of the negative	ney builds listed below.	
MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
<sup>1</sup> 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			

<sup>1</sup>Until February 1, 1999, this restricted band shall be 0.490-0.510 <sup>2</sup>Above 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 Section15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

### 9.4. Configuration of EUT on Measurement

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



### 9.5.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4- 2009 on radiated emission measurement.

The bandwidth of test receiver (R&S ESI26) is set at 120 KHz in 30-1000MHz. and set at 1MHz in above 1000MHz.

The frequency range from 30MHz to 40000MHz is checked.

The final measurement in band 9-90 kHz, 110-490 kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

The field strength is calculated by adding the antenna factor, and cable loss, and subtracting the amplifier gain from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

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



### 9.6. The Field Strength of Radiation Emission Measurement Results

Note: 1.We tested battery mode and AC mode and recorded the worst case data(AC mode) for all test mode.

- 2. The 18-40GHz emissions are not reported, because the levels are too low against the limit.
- 3. we tested radiation emission of Antenna A and Antenna B, The following test data is the worst case(Antenna A) data which I have recorded





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⊺est it	em: Radiatio	n Test				[	Date: 14/	02/14/					
Temp.	( C)/Hum.(%	) 25 C/5	5 %			٦	Time: 8/39/18						
EUT:	Indoor/ou	utdoor speak	er with blu	letooth		E	Engineer Signature:						
Mode:	TX 5762M	Hz				[	Distance: 3m						
Model	: BTW248X	BK											
Manuf	acturer: Musil	ab											
Note:	Report No:A	TE2014013	31										
	-												
70.	0 dBu∀/m								limit				
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0.0	30.000 40	50 60 70	) 80			30	) 00 40	0 500	600 7	700 1000.0 MHz			
	From	Deading	Faster	Beault	Linsit	Marain		Llaight	Demo				
No.	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	Detector	(cm)	(deg.)	Remark			
1	208.5803	61.01	-20.03	40.98	43.50	-2.52	QP						
2	264.7457	58.24	-18.87	39.37	46.00	-6.63	QP						
3	295.1469	56.87	-17.95	38.92	46.00	-7.08	QP						
I				1	1	1	1			1			



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10.0		00		lusily i aik,i	varisitari Or	enznen	,1 .1	lia					
Job N	Job No.: alen #3460 Polarization: Horizontal												
Stand	ard: FCC Clas	s B 3M Rad	iated			F	Power Sc	ource:	AC 120	V/60Hz			
Test if	tem: Radiatio	n Test				[	Date: 14/	02/13/					
Temp	.( C)/Hum.(%)	) 25 C/5	5 %			Ī	Time: 10/	57/14					
EUT:	Indoor/ou	utdoor speak	er with blu	etooth		E	Engineer	Signat	ure:				
Mode	TX 5736M	Hz				[	Distance:	3m					
Mode	: BTW248X	вк											
Manu	facturer: Musil	ab											
Note:	Report No:A	ATE2014013	31										
10	0.0 dBu∀/m					3							
				1		1			limit1	: <u> </u>			
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80					+								
70													
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10	1000.000	20	000	3000	5000	6000	7000 8000	9000		18000.0 MHz			
	-	<b>D</b>			1.2. 26	. ·	r		-				
No.	Freq.	(dBu\//m)	Factor (dB)	Result (dBu\//m)	LIMIT (dBuV/m)	Margin (dB)	Detector	Height (cm)	(deg.)	Remark			
1	1529.414	60.93	-9.59	51.34	74.00	-22.66	peak						
2	1529.414	53.01	-9.59	43.42	54.00	-10.58	AVG		Î				
3	5736.095	99.90	-0.37	99.53	444477 (1110444) (1177) 1		peak						
4	5736.095	92.68	-0.37	92.31		1	AVG						
5	11467.005	55.01	6.01	61.02	74.00	-12.98	peak						
6	11467.005	47.01	6.01	53.02	54.00	-0.98	AVG						
		1 - 1993 - 1993 - 19 <sup>9</sup> 7 (19 <sup>9</sup> 7)				0							



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		30	ence a mo	iusily Faik,	varistiati Sti	enznen	,F.R.Onii	la	1 GAA	
Job N	o.: alen #3459	Ð				F	Polarizati	on: ∖	/ertical	
Stand	ard: FCC Clas	s B 3M Rad	iated			F	Power Sc	ource:	AC 120	V/60Hz
Test if	tem: Radiatio	n Test				0	Date: 14/	02/13/		
Temp	.( C)/Hum.(%	) 25 C/5	5 %			٦	- ime: 10/	54/09		
EUT:	Indoor/ou	utdoor speak	er with blu	etooth		E	Engineer	Signat	ure:	
Mode	: TX 5736M	Hz				0	Distance:	3m		
Mode	: BTW248X	BK								
Manu	facturer: Musil	ab								
Note:	Report No:A	TE2014013	31							
10	0.0 dBuV/m									
		1				3			limit1	:
90					ļ	1				
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10	1000.000	20	00	2000	5000	C000	7000 0000	0000		19000 0 MH-
	1000.000	20		5000		0000	7000 0000	5000		10000.0 MH2
No.	Freq.	Reading	Factor	Result	Limit	Margin	Detector	Height	Degree	Remark
1	(IVIHZ)	(dBuV/m)	(aB)	(dBuV/m)	(dBuV/m)	(aB)	neak	(cm)	(deg.)	
2	1529.414	48.04	-9.59	30.35	54.00	-14 65				
2	5726 005	04.04	0.00	04 54	54.00	-14.00	hook			
3	5736.095	94.91	-0.37	94.94			реак			
4	5730.095	54.05	-0.37	00.17	74.00	10.14	AVG			
с 0	11467.005	54.85	0.01	60.86	74.00	-13.14	реак			
б	11467.005	46.89	6.01	52.90	54.00	-1.10	AVG			



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Science & Industry Park, Nansnan Snenzhen, P.R. China Pax. 100 0100 20000000												
Job N	o.: alen #346	1				F	Polarizati	on: H	lorizonta	al		
Stand	ard: FCC Clas	s B 3M Rad	liated			F	Power So	ource:	AC 120	V/60Hz		
Test i	tem: Radiatio	n Test				[	Date: 14/	02/13/				
Temp	.( C)/Hum.(%	) 25 C/5	55 %			-	Time: 11	/01/50				
EUT:	Indoor/ou	utdoor speal	ker with blu	etooth		E	Engineer	Signat	ure:			
Mode	TX 5762M	Hz				[	Distance:	3m				
Mode	: BTW248X	BK										
Manu	facturer: Musil	ab										
Note:	Report No:A	ATE201401	31									
10	0.0 dBu∀/m											
						3 X			limit	1:		
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	1000.000	2	000	3000	5000	) 6000	7000 8000	9000		18000.0 MHz		
	Freq	Reading	Eactor	Result	Limit	Margin		Hoight	Dogroo			
No.	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	Detector	(cm)	(deg.)	Remark		
1	1556.169	59.90	-9.48	50.42	74.00	-23.58	peak					
2	1556.169	52.79	-9.48	43.31	54.00	-10.69	AVG					
3	5762.017	94.75	-0.34	94.41			peak					
4	5762.017	86.98	-0.34	86.64			AVG					
5	11533.485	54.33	6.07	60.40	74.00	-13.6	peak					
6	11533.485	46.69	6.07	52.76	54.00	-1.24	AVG					
			1		1					ı		



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Job N	o.: alen #346	2		<b>, , , , , , , , , ,</b>		F	Polarizati	on: \	/ertical	
Stand	ard: FCC Clas	s B 3M Rad	liated			F	Power Sc	ource:	AC 120	V/60Hz
Test if	tem: Radiatio	n Test				[	Date: 14/	02/13/		
Temp	.( C)/Hum.(%	) 25 C/5	5 %			-	Time: 11/	/03/03		
EUT:	Indoor/ou	utdoor speał	er with blu	etooth		[	Engineer	Signat	ure:	
Mode	: TX 5762M	Hz				[	Distance:	3m		
Mode	I: BTW248X	BK								
Manut	facturer: Musil	ab								
Note:	Report No:A	TE2014013	31							
	I									
10	0.0 dBuil/m									
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	1000.000	20	000	3000	5000	6000	7000 8000	9000		18000.0 MHz
No	Freq.	Reading	Factor	Result	Limit	Margin	Dotoctor	Height	Degree	Domark
INO.	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	Detector	(cm)	(deg.)	rtemark
1	1556.169	60.06	-9.48	50.58	74.00	-23.42	2 peak			
2	1556.169	52.01	-9.48	42.53	54.00	-11.47	AVG			
3	5762.017	94.83	-0.34	94.49			peak			
4	5762.017	87.85	-0.34	87.51			AVG			
5	11533.485	54.28	6.07	60.35	74.00	-13.65	j peak			
6	11533.485	46.78	6.07	52.85	54.00	-1.15	AVG			



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Fax:+86-0755-26503290

lah Ni		4					Delevienti	inea I	laviaant	-
	D.: alen #346		:			1		on: F		
Standa	ard: FCC Clas		lated			1	Power Sc	ource:	AC 120	V/60HZ
l est it	em: Radiatio	n lest				l	Date: 14/	02/13/		
Temp.	( C)/Hum.(%	) 25 C/5	5 %			-	Time: 11	/05/56		
EUT:	Indoor/ou	utdoor speak	er with blu	etooth		I	Engineer	Signat	ure:	
Mode:	TX 5814M	Hz				[	Distance:	3m		
Model	: BTW248X	BK								
Manuf	acturer: Musil	ab								
Note:	Report No:/	ATE2014013	31							
100	).0 dBu∀/m									
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10.	U	20	00	3000	5000	6000	2000 8000	9000		18000.0 MHz
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	1606.441	60.80	-9.29	51.51	54.00	-2.49	peak			
2	1606.441	52.65	-9.29	43.36	54.00	-10.64	AVG			
3	5814.011	89.89	-0.29	89.60			AVG			
4	5814.012	96.90	-0.29	96.61			peak			
5	11633.928	55.06	6.16	61.22	54.00	7.22	peak			
6	11633.928	46.59	6.16	52.75	54.00	-1.25	AVG			
6	11633.928	46.59	6.16	52.75	54.00	-1.25	AVG			



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Job N	o : alen #346;	3					Polarizati	on: \	/ertical			
Stand	ard: FCC Clas	s B 3M Rad	iated			F	Power Sc	ource:	AC 120	V/60Hz		
Test if	em: Radiatio	n Test				[	Date: 14/	02/13/				
Temp	.( C)/Hum.(%	) 25 C/5	5 %			-	Time: 11	/04/34				
EUT:	Indoor/ou	, utdoor speał	er with blu	etooth		E	Engineer	Signati	ure:			
Mode	TX 5814M	Hz				[	Distance:	3m				
Model	: BTW248X	BK										
Manut	facturer: Musil	ab										
Note:	Note: Report No:ATE20140131											
10	0.0 dBu∀/m											
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No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark		
1	1606.441	61.03	-9.29	51.74	74.00	-22.26	peak					
2	1606.441	53.78	-9.29	44.49	54.00	-9.51	AVG					
3	5814.011	88.97	-0.29	88.68			AVG					
4	5814.012	95.89	-0.29	95.60			peak					
5	11633.928	54.29	6.16	60.45	74.00	-13.55	peak					
6	11633.928	46.57	6.16	52.73	54.00	-1.27	AVG					



# **10.BAND EDGE COMPLIANCE TEST**

#### 10.1.Block Diagram of Test Setup



(EUT: Indoor/Outdoor speaker with Bluetooth)

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 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.

### 10.4. Operating Condition of EUT

- 10.4.1.Setup the EUT and simulator as shown as Section 11.1.
- 10.4.2.Turn on the power of all equipment.
- 10.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 5736-5814MHz. We select 5736MHz, 5814MHz 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:
- 10.5.7.RBW=1MHz, VBW=1MHz
- 10.5.8. The band edges was measured and recorded.

10.6.Test Result PASS



### Antenna A test plot

Spect	rum										
Ref Lo	evel	20.00	dBm Offset	0.50 dB	RBW	100 kHz					
🗕 Att		30	db <b>SWT</b>	19.5 ms	VBW	300 kHz	Mode	Auto Sw	еер		
😑 1Pk M	ax										
							M	2[1]			-36.92 dBm
10 d0m										5	.82399 GHz
TO UBIII							M	1[1]			-10.25 dBm
0 dBm—										5	.81270 GHz
o ubiii											
11 <b>1</b> 0 dBm											
10 abri	'										
20 dBm											
20 001	·										
30 dBm		1 -20	000 dBm								
12 <sup>2</sup>	·	/I -50.									
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Tuno	Pof	Tre	Stimul		Pos	nonco	Euno	tion	Eun	ction Result	• 1
M1	Kel	1	5.8	127 GHz	-1	0.25 dBm			run	ccon resul	<u> </u>
M2		1	5.82	399 GHz	-3	6.92 dBm					
M3		1	5.94	533 GHz	-5	3.42 dBm	1				
		][					Mea	asuring			14.02.2014

Date: 14.FEB.2014 10:49:52

Spect	rum														
Ref L	evel	20.00	dBm Of	ffset	0.50 dB	•	<b>RBW</b> 100 k	Ηz							
Att		31	D dB SN	NT 8	15.4 µs	•	<b>VBW</b> 300 k	ΗZ	Mode	Auto F	FT				
⊖1Pk M	ax														
									M	3[1]			-	49.88	dBm
10 dBm													5.7	21920	GHz
TO UDIN									M	1[1]				10.71	dBm
0 dBm-										-			5.7	36400	GHz
															М1
-10 dBm	n														×.
															4
-20 dBm	n-+														_
										_					
	!													l MF	- 1
-40 dBm	n-+														
														мз	
-50 dBm	n													<b>I</b> <u>₹</u>	
who are the		ALLN M	up hade	معل م	A. A.	M . 16								L.W.	
-60 dBm	n	000000	hards from a	"lual"		June 1	- man along	nur.	and and a	www		Mar and a low to	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	rw.	
-70 dBm	n-+														
Object F		211-					601								011-
start a	.35 (	JHZ					091	pts					Stop	15.75	GHZ
Marker		1 - 1					-		-		1				
Type	Ref	Irc	St	imulus	5		Response	_	Func	tion		Func	tion Result		
MD MD		1		5.73t	04 GHZ		-10.71 dB	m							
M3		1		5.7219	92 GHZ		-49.88 dB	m							
		20		021.					)	_				05 00 001	4
		Л							Mea	suring.	•		444	13:40:5	8 /

Date: 25.FEB.2014 13:40:58



#### Antenna B test plot

Spect	rum												
Ref Le	evel	20.00 d	Bm Offset	0.50 dB	RBW	100 kHz	:						
🗕 Att		30	dB SWT	19.5 ms	VBW	300 kHz	: Mo	de /	Auto Sw	еер			
😑 1Pk Ma	ах												
								Ma	3[1]			-	·54.81 dBm
10 40												5	.86910 GHz
TO UBIII								- Mi	l[1]			-	·10.75 dBm
												5	.81270 GHz
o abiii													
11 10 dBm													
10 abri	'												
20 dBm													
20 001	·												
30 dBm			00 d0 m										
<u>1</u> 2	. T	1 -30.7											
40 dBm	<u> </u>												
1													
-50 dBm	∩——			_									
Turste	_	المعالك مع	deliveration in the	. June 10 May	mentioner	www.	wwww	www	~~ .				
-60 dBm	1									weiters	يهد استدار مدر الدامر		manun
-70 dBm	∩——												
Start 5	9 CL	17				601 r	te					Stor	7 75 647
Marker		12				091						300	<u>, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>
Tupo	Pof	Tro	etimul		Pos	00050		unet	ion		Eup	tion Pocul	- 1
M1	Nei	1	5.8	127 GHz	-1	0.75 dBn		unct			Fun	aton Kesun	<u> </u>
M2		1	5.	824 GHz	-3	16.96 dBn	n						
MЗ		1	5.8	691 GHz	-5	4.81 dBn	n						
		)[						Meas	suring			444	25.02.2014

Date: 25.FEB.2014 16:46:42

Spect	rum													
Ref L	evel	20.00	dBm Offset	0.50 dB	e RE	3W 100 k	Hz							<u> </u>
Att		30	db SWT (	315.4 µs	● ¥E	3W 300 k	Hz	Mode	Auto F	FT				
⊖1Pk M	ax													
								M	3[1]			-	·50.07 (	:IBm
10 dBm												5.7	21920	GHz
TO GDIII								M	1[1]				12.39 (	:IBm
0 dBm-	_											5.7	36980	GHz
-10 dBn	י—ר				_								N	41
													V	νų.
-20 dBn					_								+	-
-30 dBn	י— <u>ו</u>				_								<del>  </del>	$\rightarrow$
	- I	JI -32.	390 aBm										MP	
-40 dBn	י—ר				_									
													мз	- 1
-50 dBn					_							-	<u>₩</u>	u
mar	ruth	non m	manne	low more	we	hall ward	MIN	Carl Of La	u un	لمار الأم	m. M. Mark	In some her	Aw	
-60 dBn	ĩ–			v	- (~	. Dr. D. A.		un un un	•••	. 64	00-0 0 00			
-70 dBn	י—ו				_									
Start 5	.35 (	GHz				691	nts					Stor	1 1 5.75 G	Hz
Marker														-
Type	Ref	Trc	Stimulu	s	R	esnonse	1	Fund	tion		Fun	ction Result		1
M1		1	5.736	- 98 GHz		-12.39 dE	3m						-	_
M2		1	5.7277	13 GHz		-37.15 dE	3m							
MЗ		1	5.721	92 GHz		-50.07 dE	3m							
		][						Mea	suring.	. 1		444	14.02.2014	

Date: 14.FEB.2014 11:04:00



#### **Radiated Band Edge Result**

Note:

- 1. Emissions attenuated more than 20 dB below the permissible value are not reported.
- 2. we tested radiated band edge of Antenna A and Antenna B, The following test data is the worst case(Antenna A) data which I have recorded
- 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

AT	B®	AC F1, Scie	CURA Bldg,A,Ch ence & Inc	TE TECH nangyuan Ne dustry Park,N	INOLOG ew Material Nanshan Sh	Y CO Port Ke nenzhen	<b>., LTD</b> yuan Rd P.R.Chin	, na	Tel: Fax	Site: 1# +86-0755 ::+86-075	Chamber 5-26503290 5-26503396
Job No.: al	en #3465					F	Polarizati	on: H	lorizont	al	
Standard: F	CC PK					F	Power Sc	ource:	AC 120	)V/60Hz	
Test item:	Radiation	Test				0	Date: 14/	02/13/			
Temp.( C)	Hum.(%)	25 C/5	5 %			٦	ime: 11/	25/27			
EUT:	ndoor/out	door speak	er with blu	letooth		E	Engineer	Signat	ure:		
Mode: T	K 5736MH	łz				۵	Distance:	3m			
Model: B	TW248XE	ЗK									
Manufacture	r: Musila	b									
Note: Re	oort No:A	TE2014013	1								
110.0 40											
	uv/111								limit	1:	1
100									limit	2:	
100										1	ā.
90										·····	-
										- 11 1	
80											-
70											-
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50											-
30			1	L. J. Markey	a hear wa	the MAA		mh u	I HAM W	rol M	
40	the production of	*****	and with	ANT CONTRACTOR OF CONTRACT	"Reduction of the second s	rmandar w	And the second s				-
30											-
20.0											
5350.00	D		100							5750.	0 MHz
No. F	eq. Hz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark	
1 5	166.400	47.02	-0.63	46.39	74.00	-27.61	peak				
2 5	166.400	38.65	-0.63	38.02	54.00	-15.98	AVG	S			
3 5	736.000	99.39	-0.37	99.02			peak				
4 5	736.000	92.98	-0.37	92.61			AVG				

FCC ID: 2AAIN-BTW248XBK



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

		00	chec a me	ausuy raik,i	varisitari or	CHZHCH	,1 .13.0111	a	1.0. 00000.0						
Job N	o.: alen #346	6				F	Polarizati	on: \	/ertical						
Stand	ard: FCC PK					F	Power Sc	ource:	AC 120	V/60Hz					
Test if	em: Radiatio	n Test				0	Date: 14/	02/13/							
Temp	.( C)/Hum.(%	) 25 C/5	5 %			Г	- ime: 11/	26/47							
EUT:	Indoor/ou	utdoor speak	er with blu	letooth		E	Engineer	Signat	ure:						
Mode	TX 5736M	Hz				Ľ	Distance:	3m							
Mode	: BTW248X	BK													
Manut	facturer: Musil	ab													
Note:	Report No:A	ATE2014013	31												
11	0.0 dBu∀/m														
									limit1	I: —					
10	o								limit2	2:					
										X					
90										····· <mark>/</mark> *\					
										- /					
80															
70															
10															
60															
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50			î												
10	mathematicher	en philipping-mailing	monesthere	no. Animene and Hardware and	whenoughtermalle	history which	- white the second	threadward a	man man M	htter					
40			•••••												
30															
20	.0														
	5350.000									5750.0	MHz				
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark					
1	5469.600	47.71	-0.62	47.09	74.00	-26.91	peak								
2	5469.600	39.56	-0.62	38.94	54.00	-15.06	AVG								
3	5736.000	96.26	-0.36	95.90	0	8	peak								
4	5736.000	88.78	-0.36	88.42			AVG								





#### Report No.: ATE2014131 Page 51 of 57

# ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.Chin Site: 1# Chamber Tel:+86-0755-26503290

1000		Sc	ience & Inc	dustry Park,I	Nanshan Sh	enzhen,	,P.R.Chi	na	Fax	:+86-0755	-26503396
Job No.: alen #3467 Polarization: Vertical											
Stand	ndard: FCC PK					F	Power Source: AC 120V/60Hz				
Test if	em: Radiatio	on Test				0	Date: 14/	02/13/			
Temp	.( C)/Hum.(%	) 25 C/5	5 %			Т	[ime: 11/	32/27			
EUT:	Indoor/or	utdoor speał	ker with blu	letooth		E	Engineer	Signat	ure:		
Mode	TX 5814M	lHz					Distance:	3m			
Model	: BTW248X	(BK									
Manut	acturer: Musil	ab									
Note:	Report No:	ATE2014013	31								
10	0.0 dBuV/m										
10	1								limit1	:	
90	1								limit2	2:	
50	•										
80											
70											
60											
00											
50								3			
	hoursers	how we have been been been been been been been be	munderalliteration	moundupli	water and water has the	normaloperolysis	Annangene	mp they	have the second second second second	enconcenter and	
40											
20											
50											
20											
10											
10	.º  : 5800.000 60	00				700	00			7750.0	MHz
No.	Freq.	Reading	Factor (dB)	Result	Limit	Margin (dR)	Detector	Height (cm)	Degree (dea.)	Remark	
1	5814.000	95.73	-0.29	95.44			peak	` '	,		
2	5814.000	87.98	-0.29	87.69			AVG				
3	7248.850	46.42	1.33	47.75	74.00	-26.25	peak				

7248.850

38.69

1.33

40.02

54.00

-13.98

AVG

4



# 11.AC POWER LINE CONDUCTED EMISSION FOR FCC PART

# 15 SECTION 15.207(A)

### 11.1.Block Diagram of Test Setup

11.1.1.Shielding Room Test Setup Diagram



# 11.2.The Emission Limit

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

Frequency	Limit $dB(\mu V)$					
(MHz)	Quasi-peak Level	Average Level				
0.15 - 0.50	66.0 - 56.0 *	56.0 - 46.0 *				
0.50 - 5.00	56.0	46.0				
5.00 - 30.00	60.0	50.0				

\* Decreases with the logarithm of the frequency.



### 11.3.Configuration of EUT on Measurement

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

#### 11.4.Operating Condition of EUT

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

- 11.4.2.Turn on the power of all equipment.
- 11.4.3.Let the EUT work in Test mode measure it.

#### 11.5.Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4- 2009 on Conducted Emission Measurement.

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

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

# 11.6.Power Line Conducted Emission Measurement Results **PASS.**



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

Test mode : 5.8G Operation									
MEASUREMENT	RESULT	: "A-02	10-V02	_fin"					
2/10/2014 4:1 Frequency MHz	8PM Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE		
0.182408 0.449637 0.886326	54.70 44.20 35.90	10.5 10.7 10.8	64 57 56	9.7 12.7 20.1	QP QP QP	L1 L1 L1	GND GND GND		
MEASUREMENT	RESULT	: "A-02	10-V02	_fin2"					
2/10/2014 4:1 Frequency MHz	.8PM Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE		
0.183137 0.889871 7.806690	38.50 30.10 26.50	10.5 10.8 11.2	54 46 50	15.8 15.9 23.5	AV AV AV	L1 L1 L1	GND GND GND		
MEASUREMENT	RESULT:	"A-02	10-V01	_fin"					
2/10/2014 4:1	4PM								
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE		
0.179518 1.181465 6.217923	55.30 37.10 28.30	10.5 10.9 11.2	65 56 60	9.2 18.9 31.7	QP QP QP	N N N	GND GND GND		
MEASUREMENT	RESULT:	"A-02	10-V01	_fin2"					
2/10/2014 4:1 Frequency MHz	4PM Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE		
0.182408 0.886326 6.217923	38.90 29.00 24.30	10.5 10.8 11.2	54 46 50	15.5 17.0 25.7	AV AV AV	N N N	GND GND GND		

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

The spectral diagrams are attached as below.



#### ACCURATE TECHNOLOGY CO., LTD

#### CONDUCTED EMISSION STANDARD FCC PART 15

EUT:	Indoor/outdoor speaker with blutooth M/N:BTW248XBK
Manufacturer:	Musilab
Operating Condition:	5.8G Operation
Test Site:	1#Shielding Room
Operator:	Alen
Test Specification:	N 120V/60Hz
Comment:	Report No.:ATE20140131
Start of Test:	2/10/2014 / 4:11:45PM

#### SCAN TABLE: "V 150K-30MHz fin" Short Description: Detector Meas. Start Stop Step ΙF Transducer Frequency Frequency Width 150.0 kHz 30.0 MHz 4.5 kH Bandw. Time 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008 Average



#### MEASUREMENT RESULT: "A-0210-V01 fin"

2/10/2014 4:14PM Frequency Level Transd Limit Margin Detector Line PE dB dBµV MHz dBµV dB 0.179518 55.30 10.5 9.2 65 QP Ν GND 37.10 10.9 56 18.9 1.181465 GND QP Ν 6.217923 28.30 11.2 60 31.7 QP Ν GND

#### MEASUREMENT RESULT: "A-0210-V01 fin2"

2/10	0/2014 4:14	1PM						
H	Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
	0.182408	38.90	10.5	54	15.5	AV	Ν	GND
	0.886326	29.00	10.8	46	17.0	AV	Ν	GND
	6.217923	24.30	11.2	50	25.7	AV	N	GND



#### ACCURATE TECHNOLOGY CO., LTD

#### CONDUCTED EMISSION STANDARD FCC PART 15

EUT:	Indoor/outdoor speaker with blutooth M/N:BTW248XBK
Manufacturer:	Musilab
Operating Condition:	5.8G Operation
Test Site:	1#Shielding Room
Operator:	Alen
Test Specification:	L 120V/60Hz
Comment:	Report No.:ATE20140131
Start of Test:	2/10/2014 / 4:15:17PM

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

	100.					
Short Desc	ription:		_SUB_STD_VTE			
Start	Stop	Step	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak	1.0 s	9 kHz	NSLK8126 2008
			Average			



#### MEASUREMENT RESULT: "A-0210-V02 fin"

2/10/2014 4:18PM Frequency Level Transd Limit Margin Detector Line PE dBµV dBµV MHz dB dB 0.182408 54.70 9.7 12.7 10.5 64 QP L1 GND 10.0 QP 0.449637 44.20 57 L1 GND 0.886326 35.90 10.8 56 20.1 QP L1 GND

#### MEASUREMENT RESULT: "A-0210-V02 fin2"

2/10/2014 4: Frequency	18PM Level	Transd	Limit	Margin	Detector	Line	PE
0.183137	авµv 38.50	10.5	авµv 54	15.8	AV	L1	GND
0.889871 7.806690	30.10 26.50	10.8 11.2	46 50	15.9 23.5	AV AV	L1 L1	GND GND





# **12.ANTENNA REQUIREMENT**

#### 12.1.The Requirement

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

### 12.2.Antenna Construction

The antenna is PCB Layout antenna, no consideration of replacement. Therefore, the equipment complies with the antenna requirement of Section 15.203.

