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# FCC Test Report

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Report No.: AGC00014160902FE03

**FCC ID** : 2AB5T-HE8  
**APPLICATION PURPOSE** : Original Equipment  
**PRODUCT DESIGNATION** : Bluetooth headphone  
**BRAND NAME** : Cowin  
**MODEL NAME** : HE8  
**CLIENT** : Shenzhen MeiDong Acoustics Co., LTD  
**DATE OF ISSUE** : Oct.12, 2016  
**STANDARD(S)**  
**TEST PROCEDURE(S)** : FCC Part 15 Rules  
**REPORT VERSION** : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd



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### Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Oct.12, 2016	Valid	Original Report

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## 1. VERIFICATION OF CONFORMITY

<b>Applicant</b>	Shenzhen MeiDong Acoustics Co., LTD
<b>Address</b>	Cell B, 3th Floor, Tower B, Hongzhuyongqi Technology Park, Lezhujiao, Xixiang, Baoan, Shenzhen, Guangdong, China
<b>Manufacturer</b>	Shenzhen MeiDong Acoustics Co., LTD
<b>Address</b>	Cell B, 3th Floor, Tower B, Hongzhuyongqi Technology Park, Lezhujiao, Xixiang, Baoan, Shenzhen, Guangdong, China
<b>Product Designation</b>	Bluetooth headphone
<b>Brand Name</b>	Cowin
<b>Test Model</b>	HE8
<b>Date of test</b>	Sep.23, 2016 to Sep.26, 2016
<b>Deviation</b>	None
<b>Condition of Test Sample</b>	Normal
<b>Report Template</b>	AGCRT-US-BR/RF

We hereby certify that:

The above equipment was tested by Dongguan Precise Testing Service Co., Ltd. The test data, the energy emitted by the sample tested as described in this report is in compliance with the requirements of FCC Rules Part 15.249.

Tested By

Time Huang(Huang Nanhui)

Oct.12, 2016

Reviewed By

Forrest Lei(Lei Yonggang)

Oct.12, 2016

Approved By

Solger Zhang(Zhang Hongyi)  
Authorized Officer

Oct.12, 2016

## 2. GENERAL INFORMATION

### 2.1. PRODUCT DESCRIPTION

A major technical description of EUT is described as following

<b>Operation Frequency</b>	2.402 GHz to 2.480GHz
<b>RF Output Power</b>	3.40dBm(Max EIRP Power=Max radiation field-95.2)
<b>Bluetooth Version</b>	V4.0
<b>Modulation</b>	GFSK, π /4-DQPSK, 8DPSK for BR/EDR; GFSK for BLE
<b>Number of channels</b>	79 for BR/EDR, 40 for BLE
<b>Hardware Version</b>	V1.0
<b>Software Version</b>	V1.0
<b>Antenna Designation</b>	Ceramic Antenna
<b>Antenna Gain</b>	0dBi
<b>Power Supply</b>	DC 3.7V by battery

### 2.2. TABLE OF CARRIER FREQUENCYS

BR/EDR channel List

<b>Frequency Band</b>	<b>Channel Number</b>	<b>Frequency</b>
2400~2483.5MHZ	0	2402MHZ
	1	2403MHZ
	:	:
	38	2440 MHZ
	39	2441 MHZ
	40	2442 MHZ
	:	:
	77	2479 MHZ
	78	2480 MHZ

BLE Channel List

Frequency Band	Channel Number	Frequency
2400~2483.5MHZ	0	2402MHZ
	1	2404MHZ
	:	:
	38	2478 MHZ
	39	2480 MHZ

### 3. MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expended uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

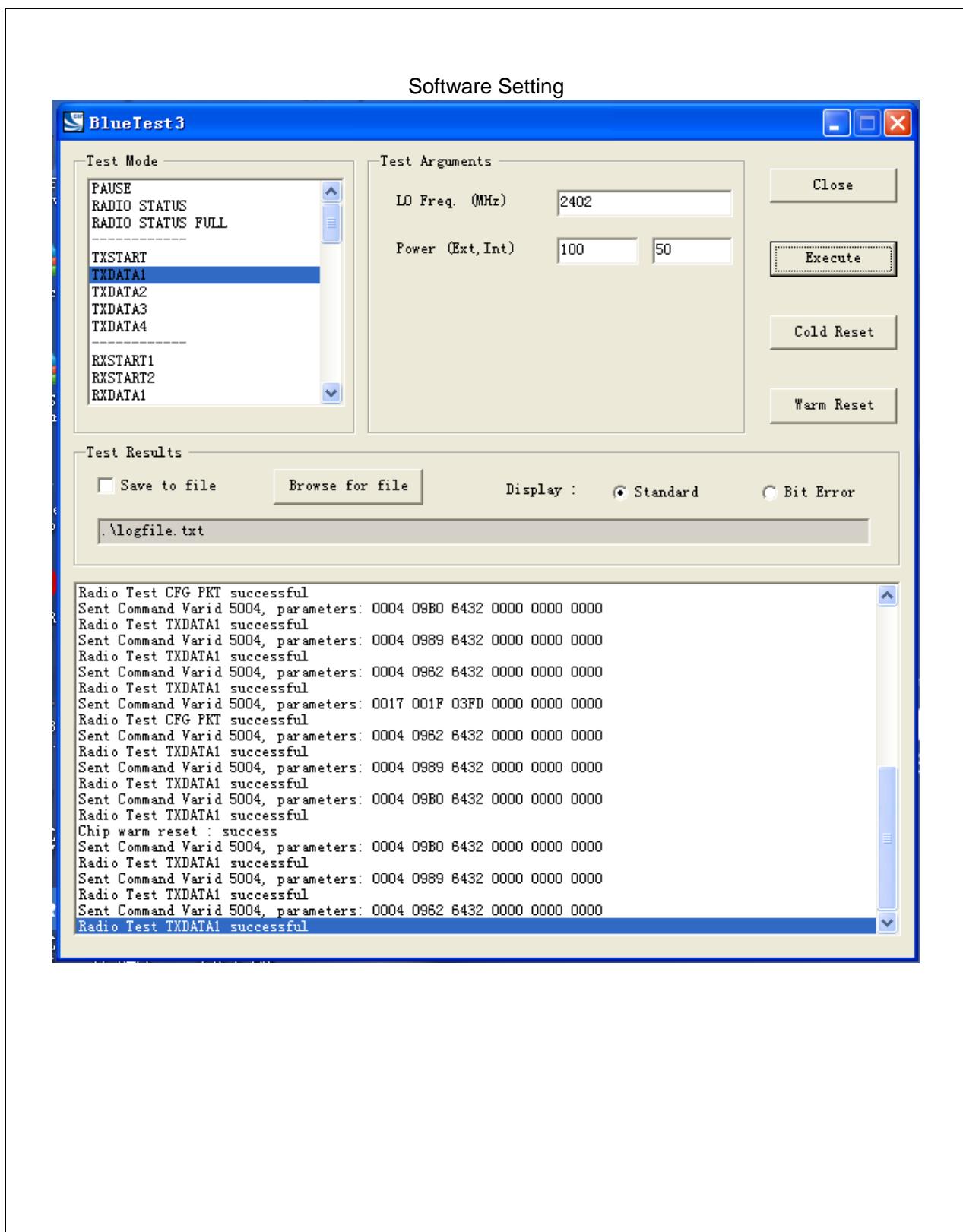
No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 3.18\text{dB}$
2	All emissions, radiated	$\pm 3.91\text{dB}$
3	Temperature	$\pm 0.5^\circ\text{C}$
4	Humidity	$\pm 2\%$

### 4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION
1	Low channel GFSK
2	Middle channel GFSK
3	High channel GFSK
4	Low channel $\pi/4$ -DQPSK
5	Middle channel $\pi/4$ -DQPSK
6	High channel $\pi/4$ -DQPSK
7	Low channel 8DPSK
8	Middle channel 8DPSK
9	High channel 8DPSK
10	BT Link with charging
11	BT Link

Note:

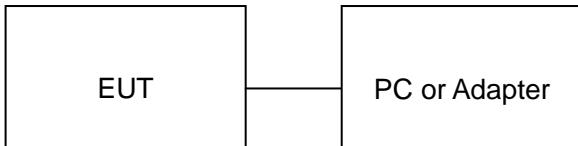
1. All the test modes can be supply by battery, only the result of the worst case was recorded in the report, if no other cases.
2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
3. The EUT used fully-charged battery when tested.



## 5. SYSTEM TEST CONFIGURATION

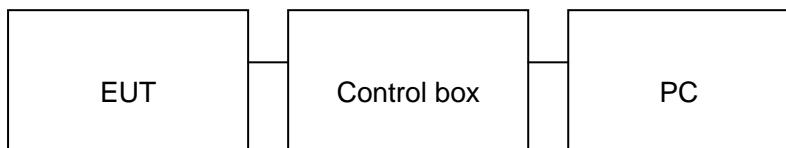
### 5.1. CONFIGURATION OF EUT SYSTEM

Configure 1: (Normal hopping)



**Note:** Owing to the EUT has own battery, Testing will be performed while PC or adapter remove.

Configure 2: (Control continuous TX)



### 5.2. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Mfr/Brand	Model/Type No.	Remark
1	Bluetooth headphone	Cowin	HE8	EUT
2	Battery	KYS	751115	Accessory
3	PC	Sony	E1412AYCW	A.E
4	Control box	CSR	N/A	A.E
5	Adapter	ETPCA	ETPCA-050100U3W	A.E

### 5.3. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.249	Radiated Emission	Compliant
§15.249	Band Edges	Compliant
§15.207	Conduction Emission	Compliant
§15.215	Bandwidth	Compliant

## 6. TEST FACILITY

<b>Site</b>	Dongguan Precise Testing Service Co., Ltd.
<b>Location</b>	Building D,Baoding Technology Park,Guangming Road2,Dongcheng District, Dongguan, Guangdong, China,
<b>FCC Registration No.</b>	371540
<b>Description</b>	The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2014.

## TEST METHODOLOGY

All measurements contained in this report were conducted with ANSI C63.10-2013

## 7. ALL TEST EQUIPMENT LIST

FOR RADIATED EMISSION TEST (BELOW 1GHZ)

Radiated Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI Test Receiver	Rohde & Schwarz	ESCI	101417	July 4, 2016	July 3, 2017
Trilog Broadband Antenna (25M-1GHz)	SCHWARZBECK	VULB9160	9160-3355	July 4, 2016	July 3, 2017
Signal Amplifier	SCHWARZBECK	BBV 9475	9745-0013	July 4, 2016	July 3, 2017
RF Cable	SCHWARZBECK	AK9515E	96221	July 4, 2016	July 3, 2017
3m Anechoic Chamber	CHENGYU	966	PTS-001	June 6, 2016	June 5, 2017
MULTI-DEVICE Positioning Controller	Max-Full	MF-7802	MF780208339	N/A	N/A
Active loop antenna (9K-30MHz)	Schwarzbeck	FMZB1519	1519-038	June 6, 2016	June 5, 2017
Spectrum analyzer	Agilent	E4407B	MY46185649	June 6, 2016	June 5, 2017
Radiation Cable 1	MXT	RS1	R005	June 6, 2016	June 5, 2017
Radiation Cable 2	MXT	RS1	R006	June 6, 2016	June 5, 2017

FOR RADIATED EMISSION TEST (1GHZ ABOVE)

Radiated Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI Test Receiver	Rohde & Schwarz	ESCI	101417	July 4, 2016	July 3, 2017
Horn Antenna (1G-18GHz)	SCHWARZBECK	BBHA9120D	9120D-1246	July 11, 2016	July 10, 2017
Spectrum Analyzer	Agilent	E4411B	MY4511453	July 4, 2016	July 3, 2017
Signal Amplifier	SCHWARZBECK	BBV 9718	9718-269	July 7, 2016	July 6, 2017
RF Cable	SCHWARZBECK	AK9515H	96220	July 8, 2016	July 7, 2017
3m Anechoic Chamber	CHENGYU	966	PTS-001	June 6, 2016	June 5, 2017
MULTI-DEVICE Positioning Controller	Max-Full	MF-7802	MF780208339	N/A	N/A
Horn Ant (18G-40GHz)	Schwarzbeck	BBHA 9170	9170-181	June 6, 2016	June 5, 2017
Radiation Cable 1	MXT	RS1	R005	June 6, 2016	June 5, 2017
Radiation Cable 2	MXT	RS1	R006	June 6, 2016	June 5, 2017

Conducted Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI Test Receiver	- Rohde & Schwarz	ESCI	101417	July 4, 2016	July 3, 2017
Artificial Mains Network	Narda	L2-16B	000WX31025	July 8, 2016	July 7, 2017
Artificial Mains Network (AUX)	Narda	L2-16B	000WX31026	July 8, 2016	July 7, 2017
RF Cable	SCHWARZBECK	AK9515E	96222	July 4, 2016	July 3, 2017
Shielded Room	CHENGYU	843	PTS-002	June 6, 2016	June 5, 2017
Conduction Cable	MXT	SE1	S003	June 6, 2016	June 5, 2017

## 8. RADIATED EMISSION

### 8.1 TEST LIMIT

#### Standard FCC15.249

Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
900-928MHz	50	500
2400-2483.5MHz	50	500
5725-5875MHz	50	500
24.0-24.25GHz	250	2500

#### Standard FCC 15.209

Frequency (MHz)	Distance Meters	Field Strengths Limit	
		$\mu$ V/m	dB( $\mu$ V)/m
0.009 ~ 0.490	300	2400/F(kHz)	---
0.490 ~ 1.705	30	24000/F(kHz)	---
1.705 ~ 30	30	30	---
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	Other: 74.0 dB( $\mu$ V)/m (Peak) 54.0 dB( $\mu$ V)/m (Average)	

Remark:

- (1) Emission level  $dB\mu$  V =  $20 \log$  Emission level  $\mu$  V/m
- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

## 8.2. MEASUREMENT PROCEDURE

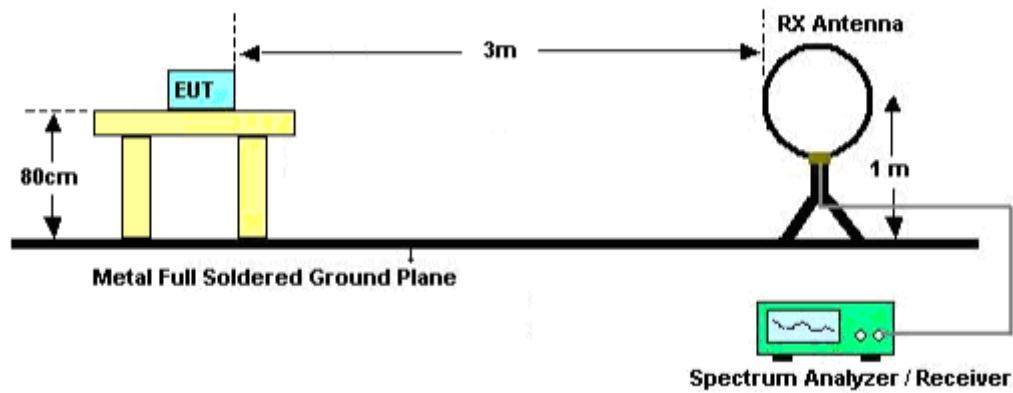
1. The measuring distance of 3m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation(Below 1GHz)
2. The measuring distance of 3m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation(Above 1GHz)
3. The height of the test antenna shall vary between 1m to 4m. Both horizontal and vertical polarization of the antenna are set to make the measurement.
4. The initial step in collecting radiated emission data is a receive peak detector mode. Pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
5. All readings are peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP limits and then QP Mode measurement didn't perform(Below 1GHz)
6. All readings are Peak mode value unless otherwise stated AVG in column of Note. If the Peak mode measured value compliance with the Peak limits and lower than AVG Limits, the EUT shall be deemed to meet Peak&AVG limits and then only Peak mode was measured, but AVG mode didn't perform.(Above 1GHz)

The following table is the setting of spectrum analyzer and receiver.

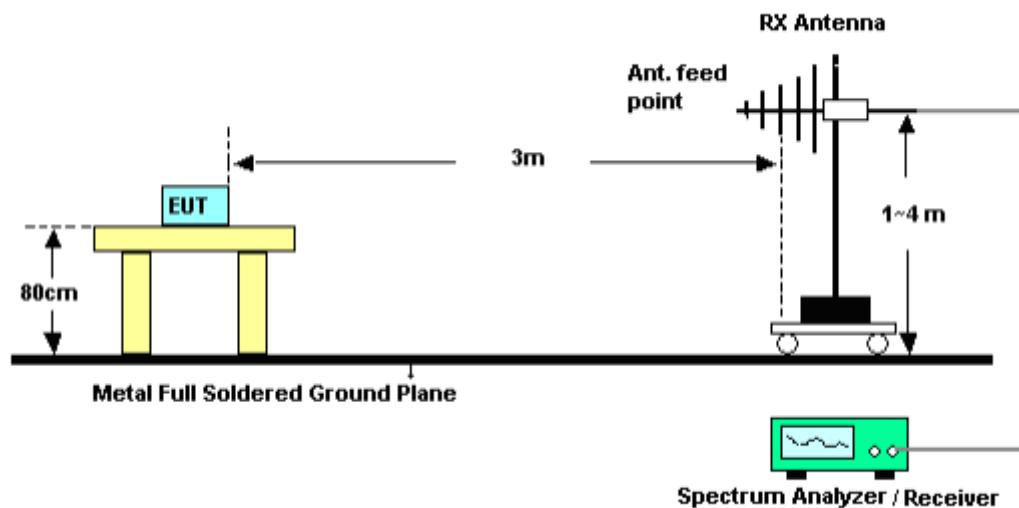
Spectrum Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
Start ~Stop Frequency	1GHz~26.5GHz 1MHz/3MHz for Peak, 1MHz/10Hz for Average
Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP

### 8.3. TEST SETUP

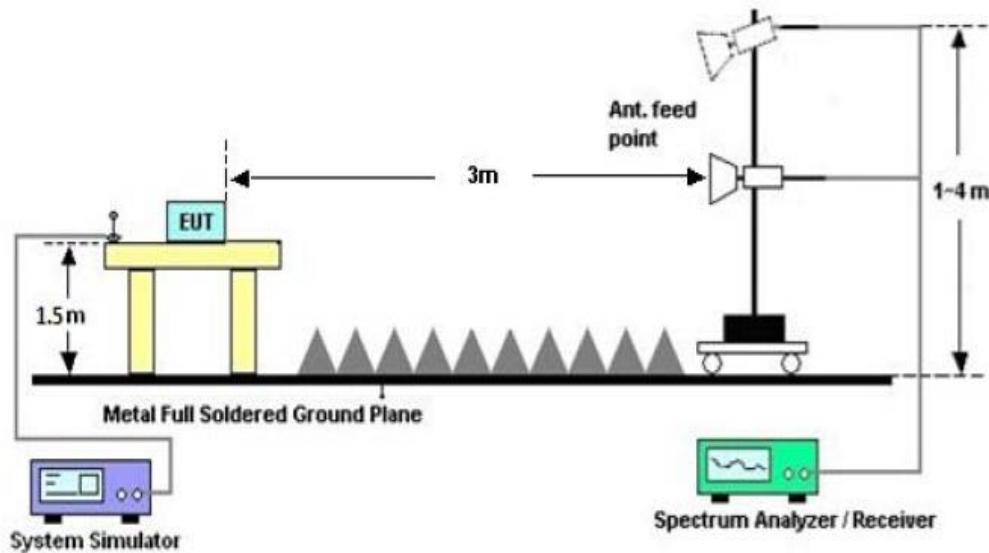
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



**8.4. TEST RESULT**

**(Worst modulation:GFSK)**

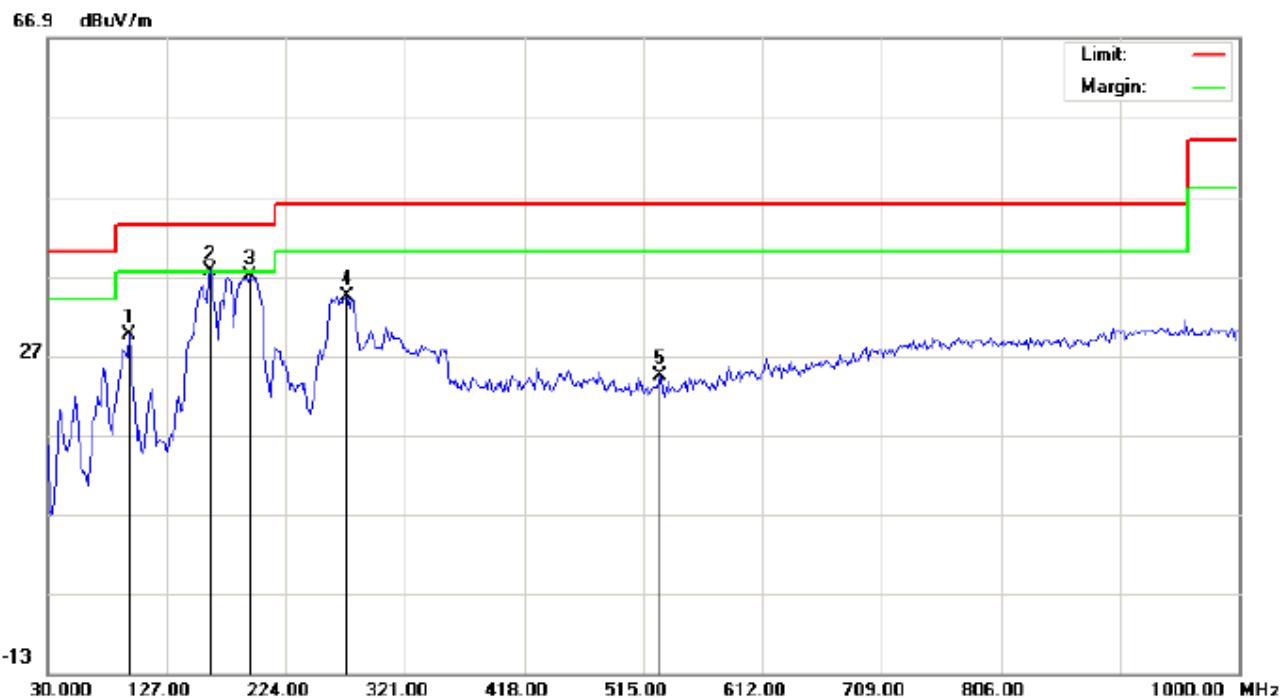
**FOR BR/EDR**

**RADIATED EMISSION BELOW 30MHZ**

No emission found between lowest internal used/generated frequencies to 30MHz.

### RADIATED EMISSION BELOW 1GHZ

#### RADIATED EMISSION TEST- (30MHZ-1GHZ)-LOW CHANNEL-HORIZONTAL



Site: site #1  
Limit: FCC Class B 3M Radiation  
EUT: Bluetooth headphone  
M/N: HE8  
Mode: Low Channel TX  
Note:

Polarization: *Horizontal*

Temperature: 22.7

Power:

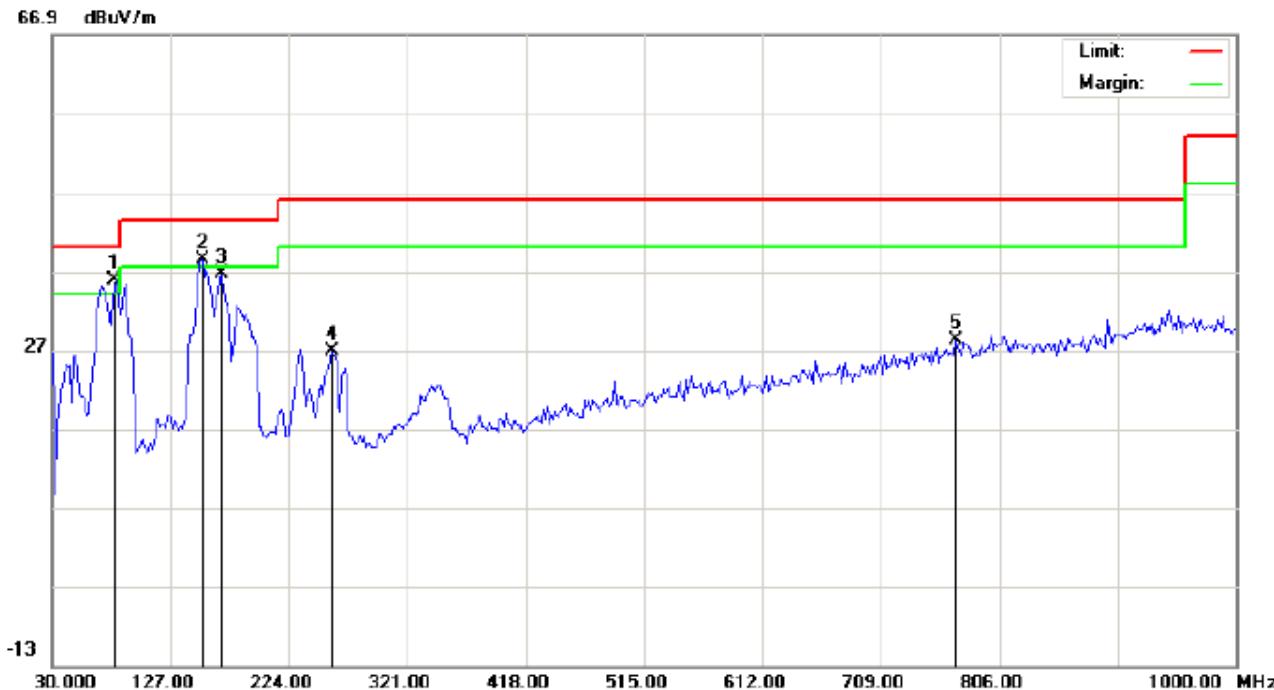
Humidity: 54.9 %

Distance:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		96.2832	22.85	6.77	29.62	43.50	-13.88	peak			
2	*	162.5666	27.25	10.42	37.67	43.50	-5.83	peak			
3		194.9000	25.21	11.76	36.97	43.50	-6.53	peak			
4		274.1166	23.35	11.00	34.35	46.00	-11.65	peak			
5		527.9333	2.52	21.88	24.40	46.00	-21.60	peak			

**RESULT: PASS**

## RADIATED EMISSION TEST- (30MHZ-1GHZ)-LOW CHANNEL -VERTICAL



Site: site #1 Polarization: **Vertical** Temperature: 22.7  
Limit: FCC Class B 3M Radiation Power: Humidity: 54.9 %  
EUT: Bluetooth headphone Distance:  
M/N: HE8  
Mode: Low Channel TX  
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	81.7332	33.33	2.42	35.75	40.00	-4.25	peak			
2	!	152.8667	23.03	15.28	38.31	43.50	-5.19	peak			
3		169.0331	21.79	14.76	36.55	43.50	-6.95	peak			
4		259.5667	12.59	14.19	26.78	46.00	-19.22	peak			
5		770.4333	1.27	26.91	28.18	46.00	-17.82	peak			

## **RESULT: PASS**

**Note:** 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

2. The “Factor” value can be calculated automatically by software of measurement system.

RADIATED EMISSION TEST- (30MHZ-1GHZ)-MIDDLE CHANNEL-HORIZONTAL




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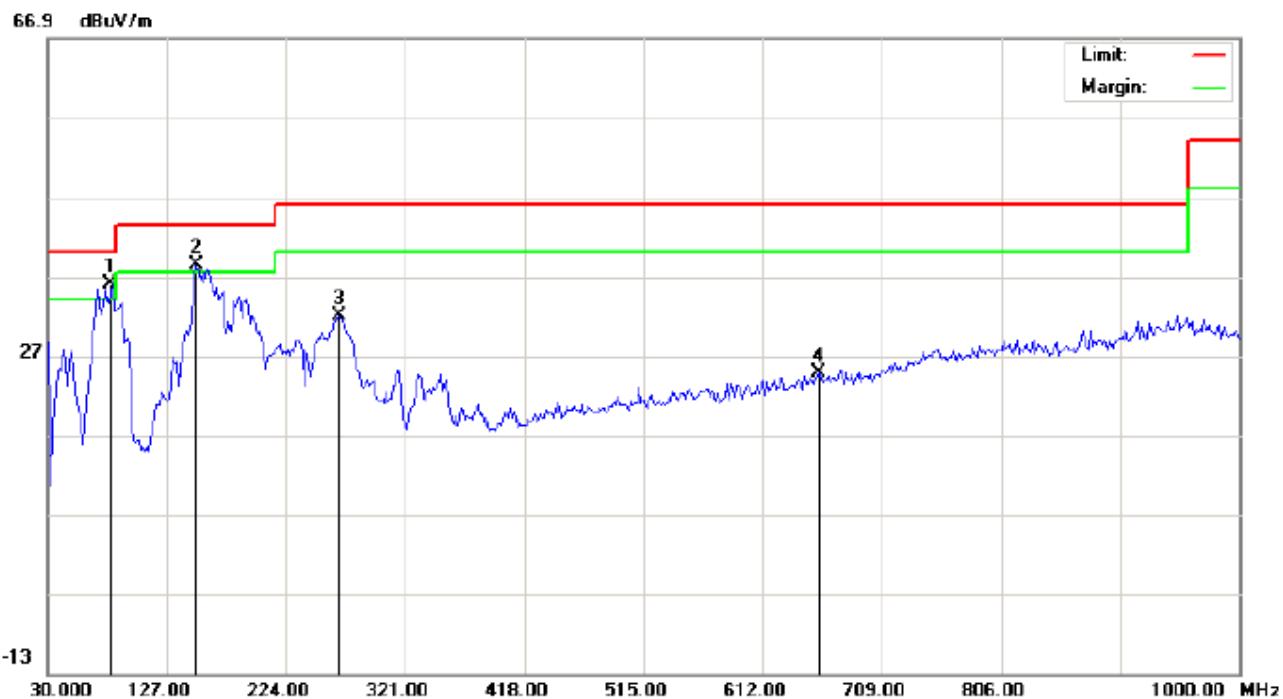
Site: site #1	Polarization: <i>Horizontal</i>	Temperature: 22.7
Limit: FCC Class B 3M Radiation	Power:	Humidity: 54.9 %
EUT: Bluetooth headphone	Distance:	
M/N: HE8		
Mode: Middle Channel TX		
Note:		

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No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		96.2832	28.64	6.77	35.41	43.50	-8.09	peak			
2	!	156.0999	26.71	11.28	37.99	43.50	-5.51	peak			
3	*	177.1167	27.44	10.96	38.40	43.50	-5.10	peak			
4		262.8000	29.37	9.08	38.45	46.00	-7.55	peak			

**RESULT: PASS**

RADIATED EMISSION TEST- (30MHZ-1GHZ)- MIDDLE CHANNEL -VERTICAL



Site: site #1	Polarization: <b>Vertical</b>	Temperature: 22.7
Limit: FCC Class B 3M Radiation	Power:	Humidity: 54.9 %
EUT: Bluetooth headphone	Distance:	
M/N: HE8		
Mode: Middle Channel TX		
Note:		

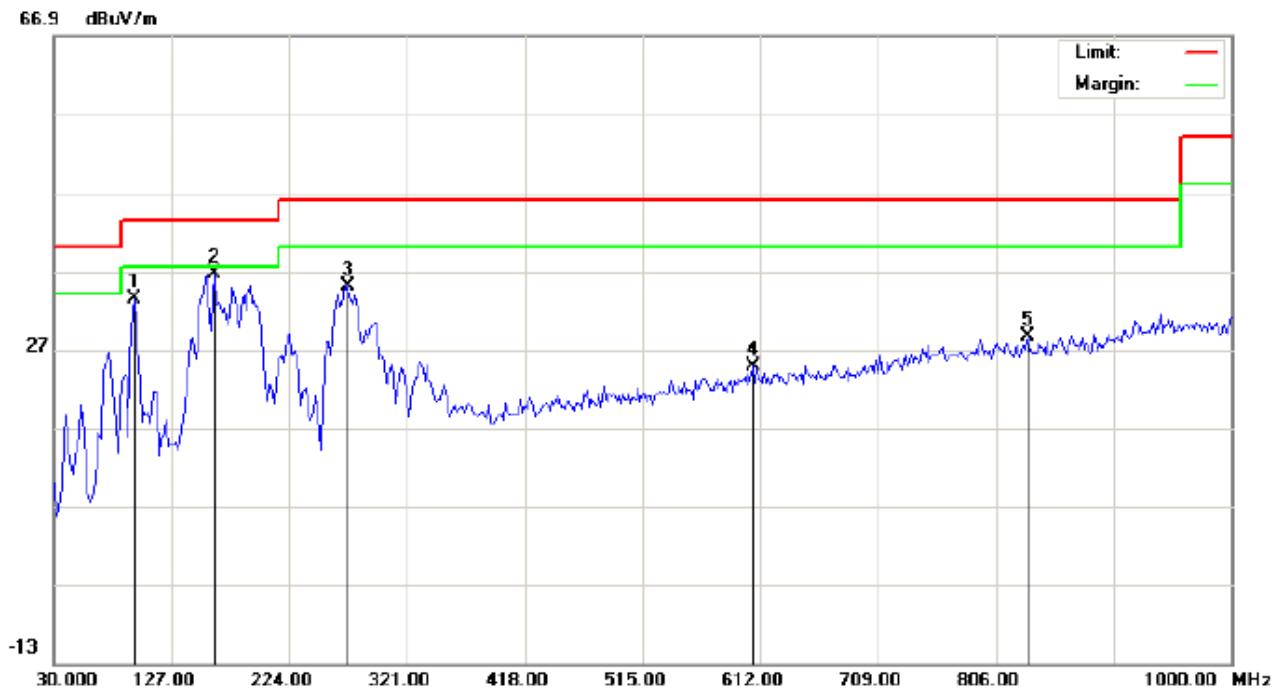
No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	81.7332	33.66	2.42	36.08	40.00	-3.92	peak			
2	!	151.2500	23.18	15.27	38.45	43.50	-5.05	peak			
3		267.6499	17.49	14.43	31.92	46.00	-14.08	peak			
4		657.2667	0.74	24.04	24.78	46.00	-21.22	peak			

**RESULT: PASS**

**Note:** 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

2. The "Factor" value can be calculated automatically by software of measurement system.

## RADIATED EMISSION TEST- (30MHZ-1GHZ)-HIGH CHANNEL-HORIZONTAL



Site: site #1

Polarization: *Horizontal*

Temperature: 22.7

Limit: FCC Class B 3M Radiation

Power

Humidity: 54.9 %

#### FUT: Bluetooth headphone

### Distance:

M/N: HF8

Mode: High Channel TX

### Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB				
1		96.2832	26.67	6.77	33.44	43.50	-10.06	peak			
2	*	162.5666	26.14	10.42	36.56	43.50	-6.94	peak			
3		272.5000	24.30	10.73	35.03	46.00	-10.97	peak			
4		605.5333	1.06	23.74	24.80	46.00	-21.20	peak			
5		831.8667	1.23	27.31	28.54	46.00	-17.46	peak			

## **RESULT: PASS**

RADIATED EMISSION TEST- (30MHZ-1GHZ)-HIGH CHANNEL -VERTICAL



Site: site #1  
Limit: FCC Class B 3M Radiation  
EUT: Bluetooth headphone  
M/N: HE8  
Mode: High Channel TX  
Note:

Polarization: *Vertical*

Temperature: 22.7  
Humidity: 54.9 %

Power:  
Distance:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		75.2667	28.92	2.96	31.88	40.00	-8.12	peak			
2	*	151.2500	23.53	15.27	38.80	43.50	-4.70	peak			
3	!	159.3333	23.45	15.33	38.78	43.50	-4.72	peak			
4		190.0500	23.48	11.52	35.00	43.50	-8.50	peak			
5		266.0332	22.32	14.38	36.70	46.00	-9.30	peak			
6		723.5499	1.68	25.87	27.55	46.00	-18.45	peak			

**RESULT: PASS**

**Note:** 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

2. The "Factor" value can be calculated automatically by software of measurement system.

**FOR BLE**

### RADIATED EMISSION BELOW 30MHZ

No emission found between lowest internal used/generated frequencies to 30MHz.

### RADIATED EMISSION BELOW 1GHZ

#### RADIATED EMISSION TEST- (30MHZ-1GHZ)-LOW CHANNEL-HORIZONTAL



Site: site #1

Limit: FCC Class B 3M Radiation

EUT: Bluetooth headphone

M/N: HE8

Mode: Low Channel TX

Note:

Polarization: *Horizontal*

Temperature: 22.7

Power:

Humidity: 54.9 %

Distance:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		96.2832	29.01	6.77	35.78	43.50	-7.72	peak			
2	*	156.0999	26.57	11.28	37.85	43.50	-5.65	peak			
3	!	270.8833	29.83	10.45	40.28	46.00	-5.72	peak			
4		388.8999	6.75	19.00	25.75	46.00	-20.25	peak			
5		660.5000	5.02	24.13	29.15	46.00	-16.85	peak			

**RESULT: PASS**

RADIATED EMISSION TEST- (30MHZ-1GHZ)-LOW CHANNEL -VERTICAL



Site: site #1	Polarization: <b>Vertical</b>	Temperature: 22.7
Limit: FCC Class B 3M Radiation	Power:	Humidity: 54.9 %
EUT: Bluetooth headphone	Distance:	
M/N: HE8		
Mode: Low Channel TX		
Note:		

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	86.5832	28.93	4.16	33.09	40.00	-6.91	peak			
2		194.9000	21.66	10.29	31.95	43.50	-11.55	peak			
3		267.6499	18.20	14.43	32.63	46.00	-13.37	peak			
4		351.7167	10.46	18.75	29.21	46.00	-16.79	peak			
5		634.6332	3.30	23.51	26.81	46.00	-19.19	peak			

**RESULT: PASS**

**Note:** 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

2. The "Factor" value can be calculated automatically by software of measurement system.

RADIATED EMISSION TEST- (30MHZ-1GHZ)-MIDDLE CHANNEL-HORIZONTAL




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Site: site #1	Polarization: <i>Horizontal</i>	Temperature: 22.7
Limit: FCC Class B 3M Radiation	Power:	Humidity: 54.9 %
EUT: Bluetooth headphone	Distance:	
M/N: HE8		
Mode: Middle Channel TX		
Note:		

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	83.3499	32.53	3.00	35.53	40.00	-4.47	peak			
2		151.2500	21.09	15.27	36.36	43.50	-7.14	peak			
3		235.3166	22.59	12.46	35.05	46.00	-10.95	peak			
4		267.6499	23.31	14.43	37.74	46.00	-8.26	peak			
5		730.0167	1.25	26.05	27.30	46.00	-18.70	peak			
6		752.6499	2.35	26.67	29.02	46.00	-16.98	peak			

**RESULT: PASS**

RADIATED EMISSION TEST- (30MHZ-1GHZ)- MIDDLE CHANNEL -VERTICAL



Site: site #1

Limit: FCC Class B 3M Radiation

EUT: Bluetooth headphone

M/N: HE8

Mode: Middle Channel TX

Note:

Polarization: *Vertical*

Temperature: 22.7

Power:

Humidity: 54.9 %

Distance:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		88.2000	25.56	4.74	30.30	43.50	-13.20	peak			
2	*	156.0999	20.21	15.30	35.51	43.50	-7.99	peak			
3		267.6499	19.78	14.43	34.21	46.00	-11.79	peak			
4		332.3167	8.54	17.56	26.10	46.00	-19.90	peak			
5		760.7332	1.92	26.78	28.70	46.00	-17.30	peak			

**RESULT: PASS**

**Note:** 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

2. The "Factor" value can be calculated automatically by software of measurement system.

RADIATED EMISSION TEST- (30MHZ-1GHZ)-HIGH CHANNEL-HORIZONTAL




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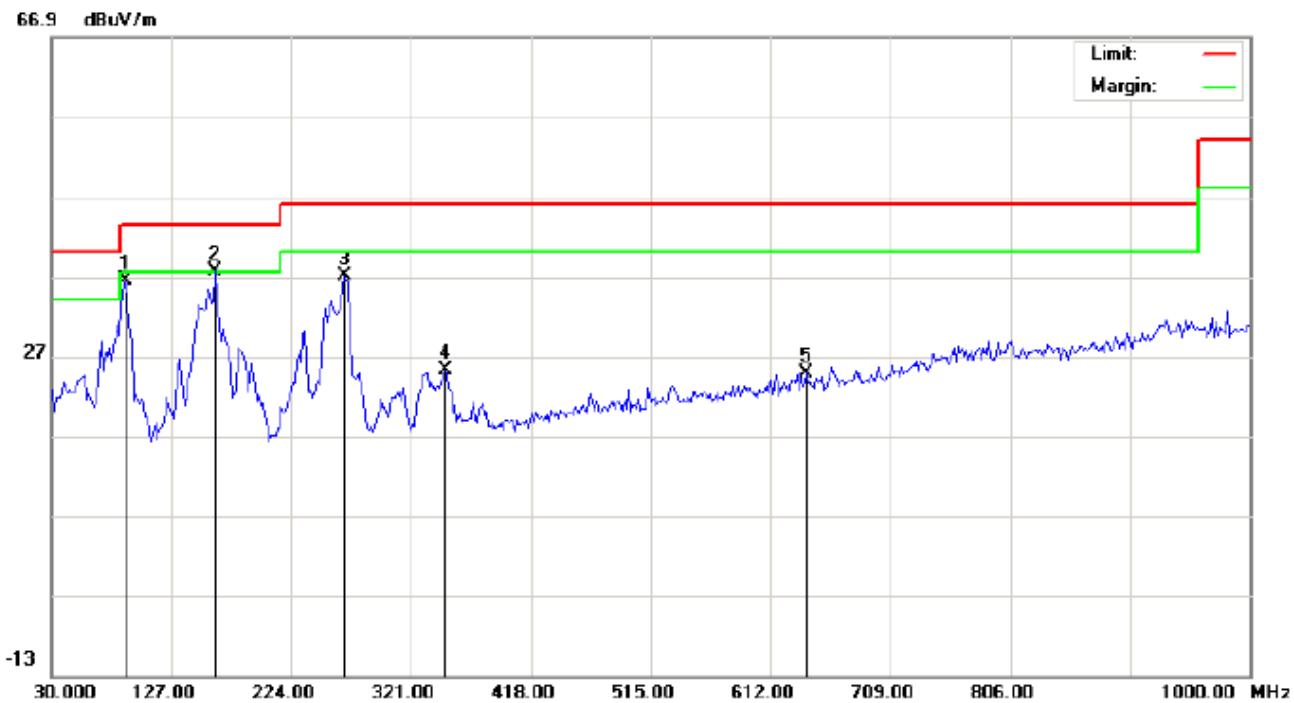
Site: site #1	Polarization: <i>Horizontal</i>	Temperature: 22.7
Limit: FCC Class B 3M Radiation	Power:	Humidity: 54.9 %
EUT: Bluetooth headphone	Distance:	
M/N: HE8		
Mode: High Channel TX		
Note:		

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No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		96.2832	27.60	6.77	34.37	43.50	-9.13	peak			
2		156.0999	23.77	11.28	35.05	43.50	-8.45	peak			
3		186.8166	23.41	11.39	34.80	43.50	-8.70	peak			
4	*	272.5000	27.03	10.73	37.76	46.00	-8.24	peak			
5		707.3832	4.21	25.40	29.61	46.00	-16.39	peak			

**RESULT: PASS**

## RADIATED EMISSION TEST- (30MHZ-1GHZ)-HIGH CHANNEL -VERTICAL



Site: site #1

Limit: FCC Class B 3M Radiation

EUT: Bluetooth headphone

M/N: HF8

Mode: High Channel TX

Note:-

Polarization: **Vertical**

Power:

Temperature: 22.7

Humidity: 54.9 %

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		89.8166	31.06	5.31	36.37	43.50	-7.13	peak			
2	*	162.5666	22.36	15.17	37.53	43.50	-5.97	peak			
3		267.6499	22.57	14.43	37.00	46.00	-9.00	peak			
4		348.4832	6.63	18.64	25.27	46.00	-20.73	peak			
5		641.1000	1.19	23.65	24.84	46.00	-21.16	peak			

**RESULT: PASS**

**Note:** 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

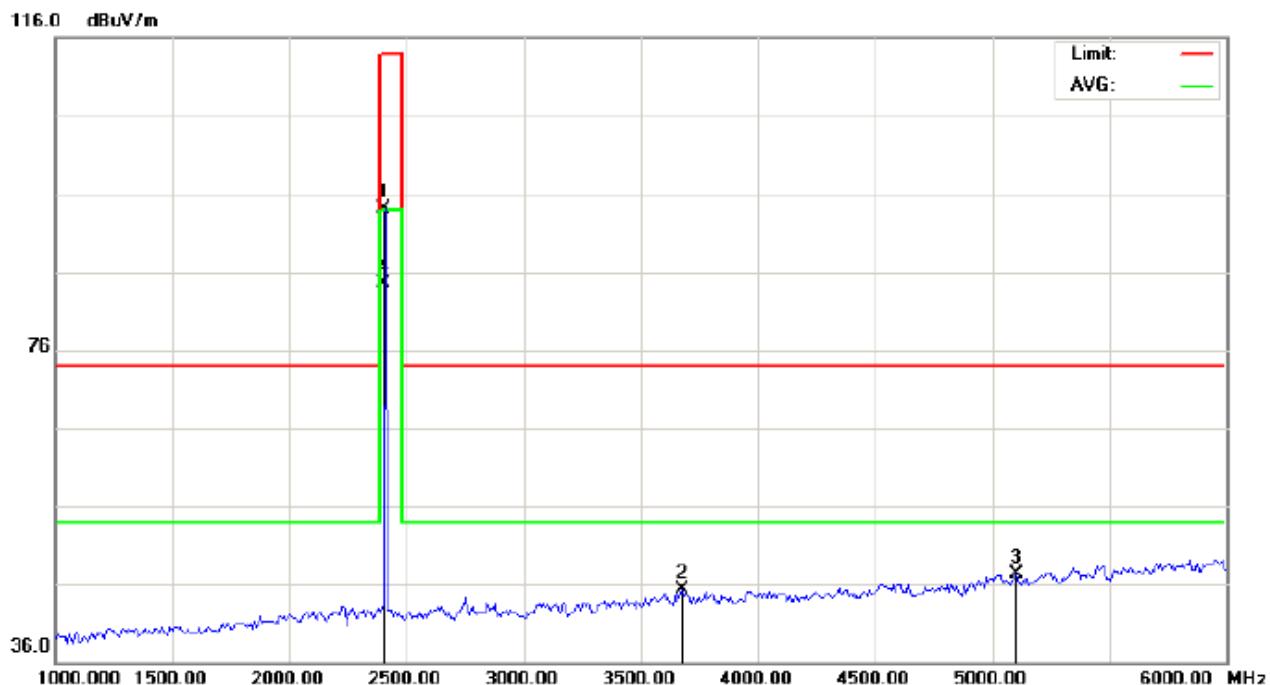
2. The “Factor” value can be calculated automatically by software of measurement system.

## RADIATED EMISSION ABOVE 1GHZ

(Worst modulation: GFSK)

**FOR BR/EDR**

## RADIATED EMISSION TEST- (ABOVE 1GHZ)-LOW CHANNEL-HORIZONTAL

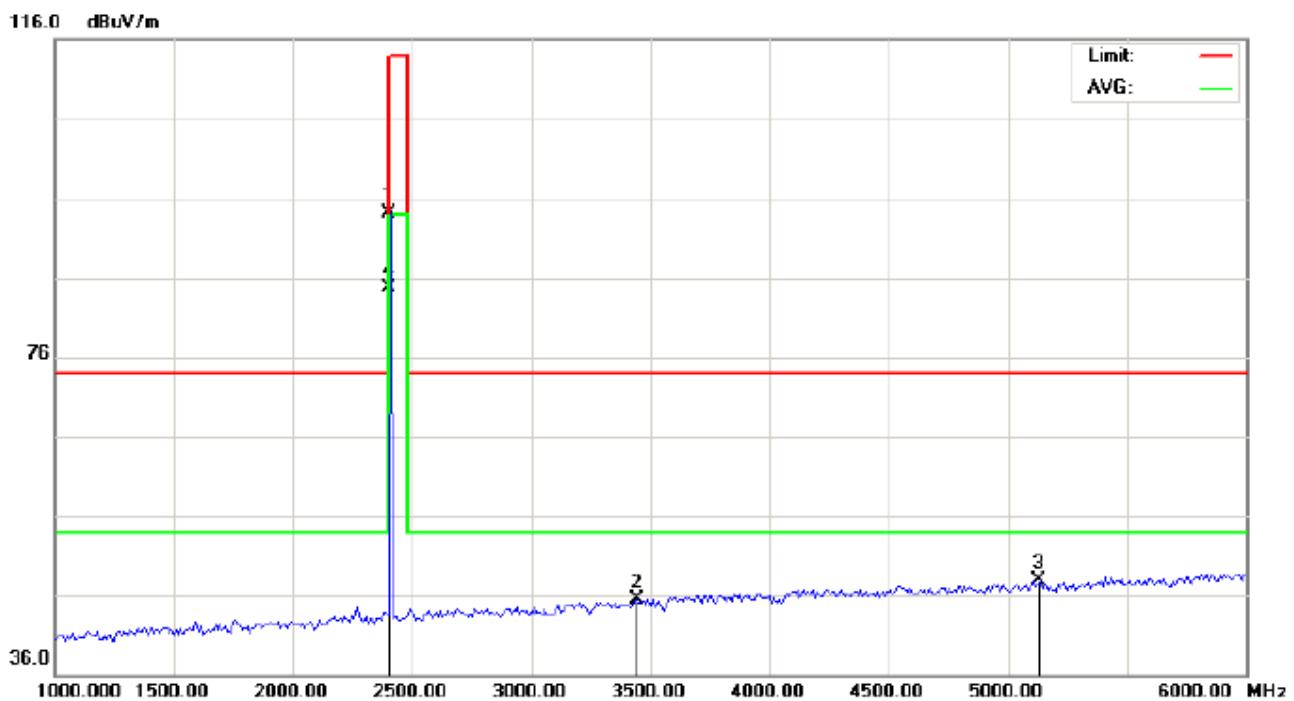


Site: site #1 Polarization: **Horizontal** Temperature: 22.7  
Limit: FCC Class B 3M Radiation above 1GHZ(PK)- Power: Humidity: 53.6 %  
EUT: Bluetooth Headphone Distance:  
M/N: HE8  
Mode: Low Channel TX  
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2402.000	83.71	10.32	94.03	114.00	-19.97	peak			
2		3675.000	32.10	13.19	45.29	74.00	-28.71	peak			
3		5100.000	41.14	6.20	47.34	74.00	-26.66	peak			
4	*	2402.000	74.21	10.32	84.53	94.00	-9.47	AVG	100	115	

RESULT: PASS

## RADIATED EMISSION TEST- (ABOVE 1GHZ)-LOW CHANNEL- VERTICAL

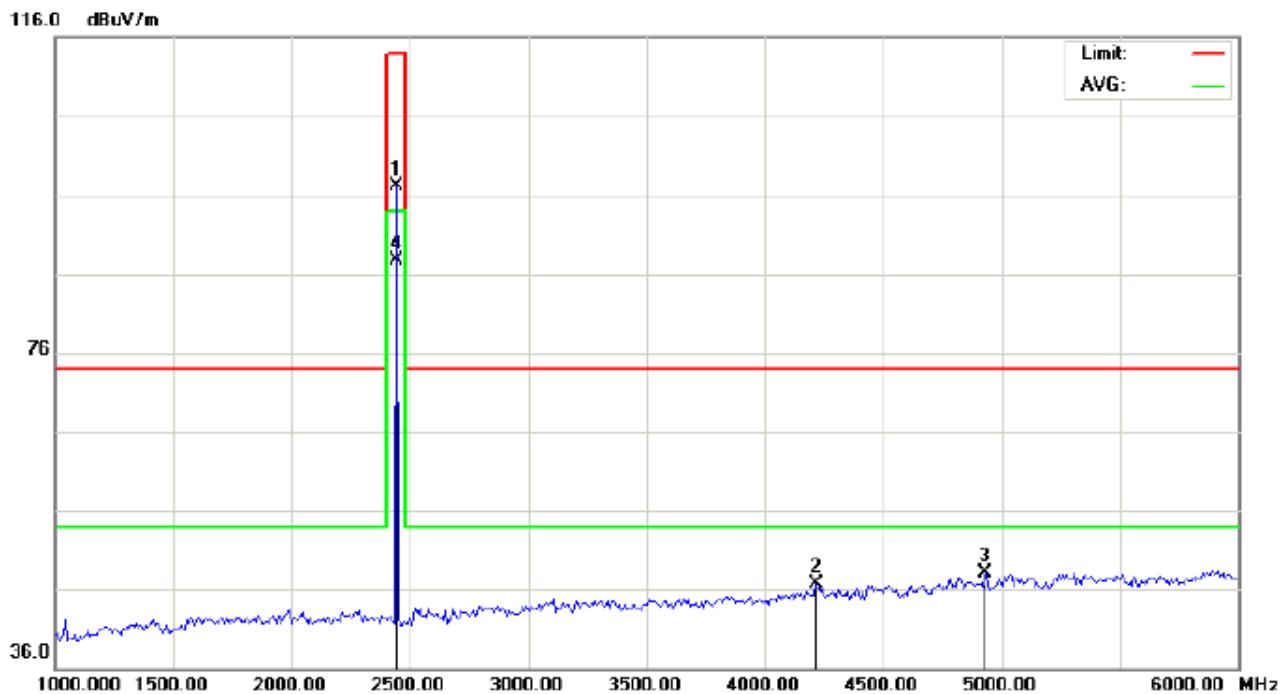


Site: site #1 Polarization: **Vertical** Temperature: 22.7  
Limit: FCC Class B 3M Radiation above 1GHZ(PK)- Power: Humidity: 53.6 %  
EUT: Bluetooth Headphone Distance:  
M/N: HE8  
Mode: Low Channel TX  
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2402.000	83.82	10.32	94.14	114.00	-19.86	peak			
2		3441.667	33.50	12.05	45.55	74.00	-28.45	peak			
3		5133.333	42.39	5.53	47.92	74.00	-26.08	peak			
4	*	2402.000	74.37	10.32	84.69	94.00	-9.31	AVG	100	337	

## **RESULT: PASS**

## RADIATED EMISSION TEST- (ABOVE 1GHZ)-MIDDLE CHANNEL-HORIZONTAL

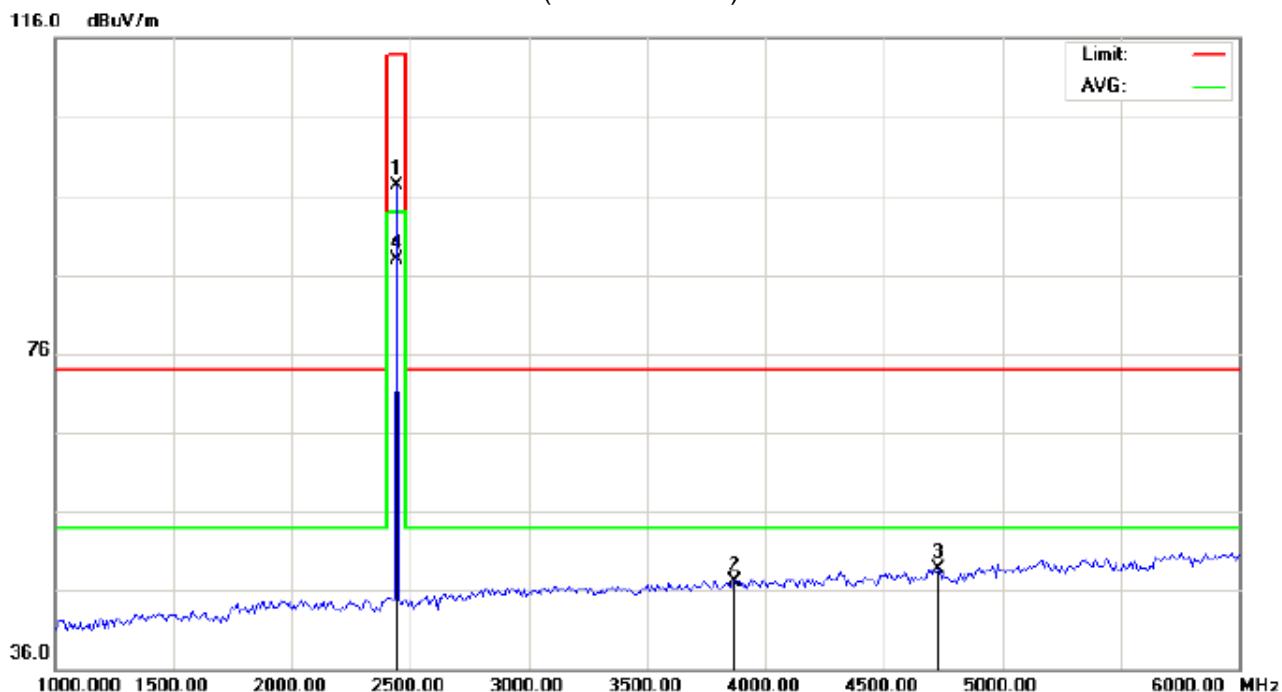


Site: site #1 Polarization: **Horizontal** Temperature: 22.7  
Limit: FCC Class B 3M Radiation above 1GHZ(PK)- Power: Humidity: 53.6 %  
EUT: Bluetooth Headphone Distance:  
M/N: HE8  
Mode: Middle Channel TX  
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2441.000	86.74	10.36	97.10	114.00	-16.90	peak			
2		4216.667	35.05	11.59	46.64	74.00	-27.36	peak			
3		4933.333	39.99	8.02	48.01	74.00	-25.99	peak			
4	*	2441.000	77.26	10.36	87.62	94.00	-6.38	AVG	100	109	

## **RESULT: PASS**

#### RADIATED EMISSION TEST- (ABOVE 1GHZ)-MIDDLE CHANNEL- VERTICAL

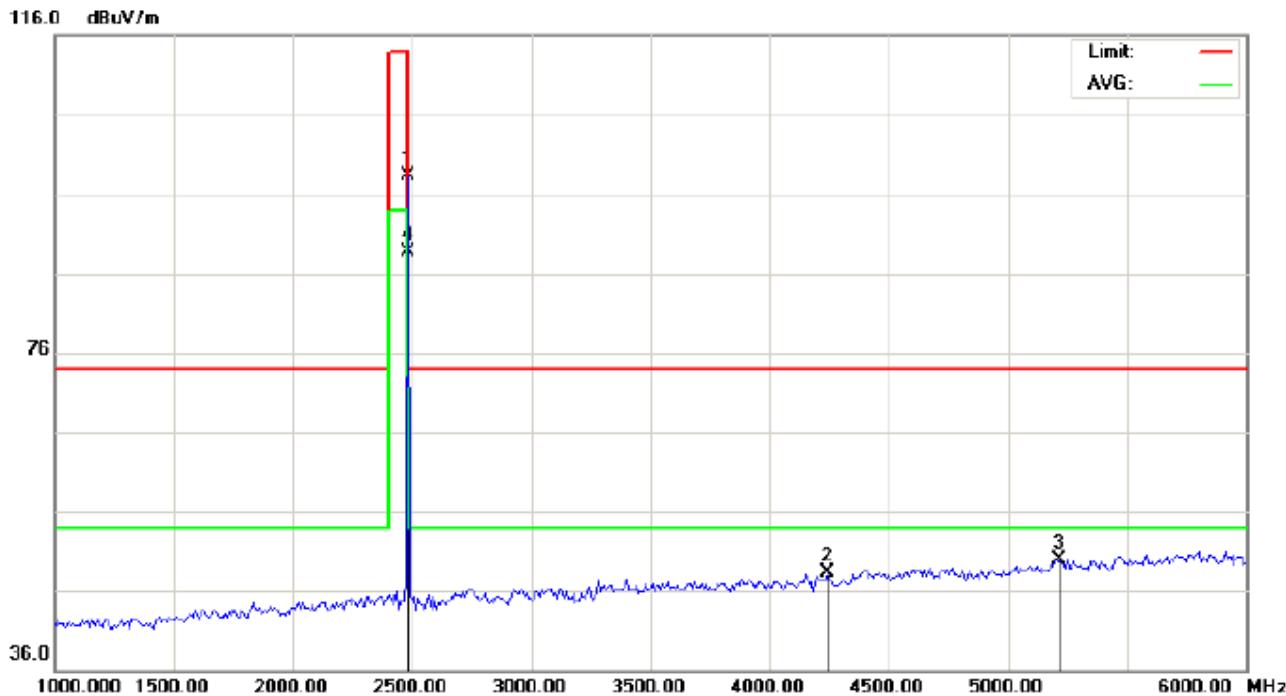


Site: site #1 Polarization: **Vertical** Temperature: 22.7  
Limit: FCC Class B 3M Radiation above 1GHZ(PK)- Power: Humidity: 53.6 %  
EUT: Bluetooth Headphone Distance:  
M/N: HE8  
Mode: Middle Channel TX  
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2441.000	86.99	10.36	97.35	114.00	-16.65	peak			
2		3866.667	32.81	14.37	47.18	74.00	-26.82	peak			
3		4733.333	41.27	7.50	48.77	74.00	-25.23	peak			
4	*	2441.000	77.49	10.36	87.85	94.00	-6.15	AVG	100	334	

RESULT: PASS

## RADIATED EMISSION TEST- (ABOVE 1GHZ)-HIGH CHANNEL-HORIZONTAL

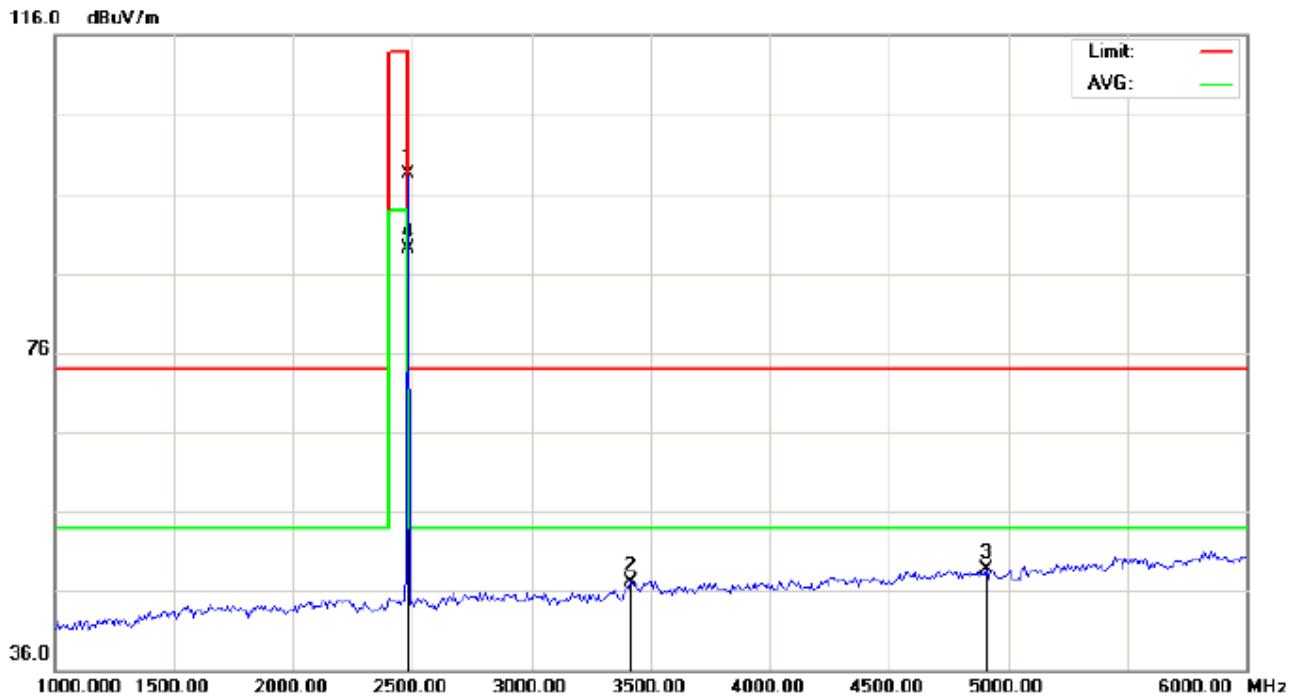


Site: site #1 Polarization: **Horizontal** Temperature: 22.7  
Limit: FCC Class B 3M Radiation above 1GHZ(PK)- Power: Humidity: 53.6 %  
EUT: Bluetooth Headphone Distance:  
M/N: HE8  
Mode: High Channel TX  
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2480.000	87.97	10.41	98.38	114.00	-15.62	peak			
2		4241.667	37.07	11.18	48.25	74.00	-25.75	peak			
3		5216.667	46.04	3.86	49.90	74.00	-24.10	peak			
4	*	2480.000	78.35	10.41	88.76	94.00	-5.24	AVG	100	112	

RESULT: PASS

RADIATED EMISSION TEST- (ABOVE 1GHZ)-HIGH CHANNEL- VERTICAL




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Site: site #1	Polarization: <i>Vertical</i>	Temperature: 22.7
Limit: FCC Class B 3M Radiation above 1GHZ(PK)-	Power:	Humidity: 53.6 %
EUT: Bluetooth Headphone	Distance:	
M/N: HE8		
Mode: High Channel TX		
Note:		

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No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2480.000	88.19	10.41	98.60	114.00	-15.40	peak			
2		3416.667	35.10	12.03	47.13	74.00	-26.87	peak			
3		4908.333	40.73	7.96	48.69	74.00	-25.31	peak			
4	*	2480.000	78.61	10.41	89.02	94.00	-4.98	AVG	100	336	

**RESULT: PASS**

**Note:** 6~25GHz at least have 20dB margin. No recording in the test report.

Factor=Antenna Factor + Cable loss - Amplifier gain, Margin=Measurement-Limit.

The "Factor" value can be calculated automatically by software of measurement system.

### Field strength of the fundamental signal

#### 1Mbps Result:

##### Peak value

Frequency (MHz)	Reading Level (dBuv)	Factor (dB/m)	Measurement (dBuv/m)	Limit (dBuv/m)	Over (dB)	Antenna Polarization
2402	83.71	10.32	94.03	114	-19.97	Horizontal
2402	83.82	10.32	94.14	114	-19.86	Vertical
2441	86.74	10.36	97.10	114	-16.90	Horizontal
2441	86.99	10.36	97.35	114	-16.65	Vertical
2480	87.97	10.41	98.38	114	-15.62	Horizontal
2480	88.19	10.41	98.60	114	-15.40	Vertical

##### Average value

Frequency (MHz)	Reading Level (dBuv)	Factor (dB/m)	Measurement (dBuv/m)	Limit (dBuv/m)	Over (dB)	Antenna Polarization
2402	74.21	10.32	84.53	94	-9.47	Horizontal
2402	74.37	10.32	84.69	94	-9.31	Vertical
2441	77.26	10.36	87.62	94	-6.38	Horizontal
2441	77.49	10.36	87.85	94	-6.15	Vertical
2480	78.35	10.41	88.76	94	-5.24	Horizontal
2480	78.61	10.41	89.02	94	-4.98	Vertical

**2Mbps Result:**

**Peak value**

Frequency (MHz)	Reading Level (dBuv)	Factor (dB/m)	Measurement (dBuv/m)	Limit (dBuv/m)	Over (dB)	Antenna Polarization
2402	83.12	10.32	93.44	114	-20.56	Horizontal
2402	82.92	10.32	93.24	114	-20.76	Vertical
2441	85.79	10.36	96.15	114	-17.85	Horizontal
2441	86.07	10.36	96.43	114	-17.57	Vertical
2480	86.46	10.41	96.87	114	-17.13	Horizontal
2480	86.73	10.41	97.14	114	-16.86	Vertical

**Average value**

Frequency (MHz)	Reading Level (dBuv)	Factor (dB/m)	Measurement (dBuv/m)	Limit (dBuv/m)	Over (dB)	Antenna Polarization
2402	73.24	10.32	83.56	94	-10.44	Horizontal
2402	72.83	10.32	83.15	94	-10.85	Vertical
2441	75.78	10.36	86.14	94	-7.86	Horizontal
2441	75.86	10.36	86.22	94	-7.78	Vertical
2480	77.02	10.41	87.43	94	-6.57	Horizontal
2480	76.57	10.41	86.98	94	-7.02	Vertical

**3Mbps Result:**

**Peak value**

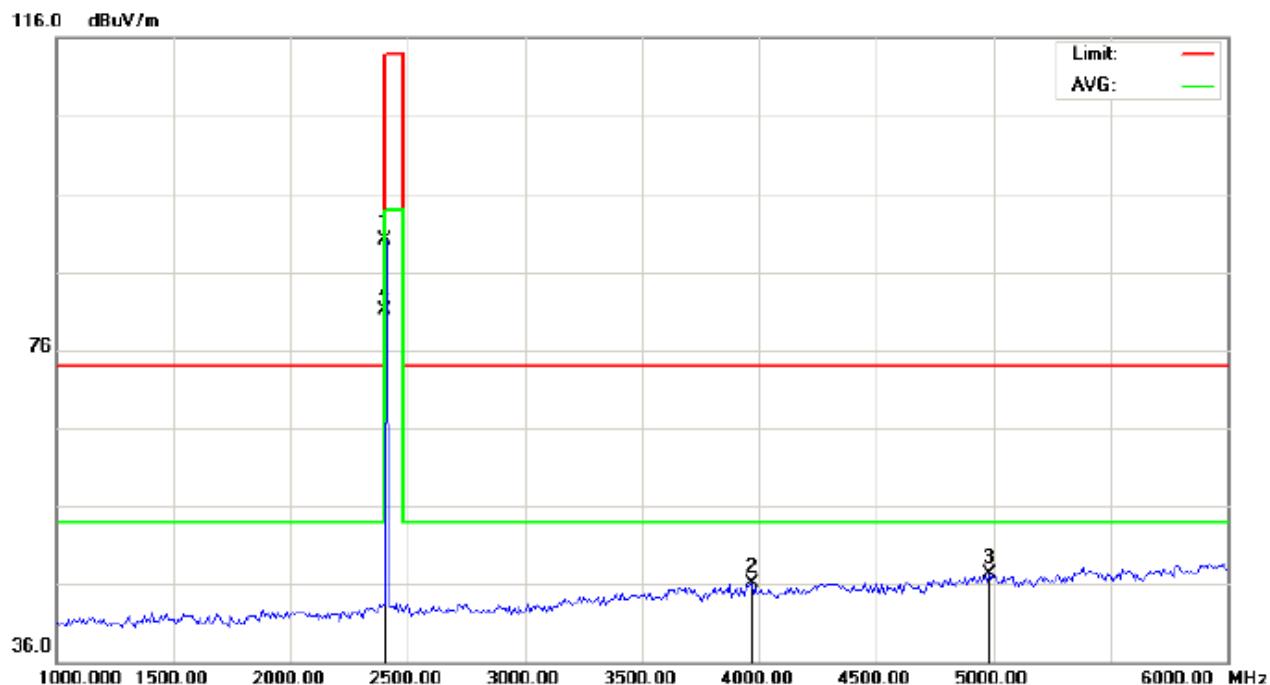
Frequency (MHz)	Reading Level (dBuv)	Factor (dB/m)	Measurement (dBuv/m)	Limit (dBuv/m)	Over (dB)	Antenna Polarization
2402	82.83	10.32	93.15	114	-20.85	Horizontal
2402	83.22	10.32	93.54	114	-20.46	Vertical
2441	85.53	10.36	95.89	114	-18.11	Horizontal
2441	84.98	10.36	95.34	114	-18.66	Vertical
2480	83.72	10.41	94.13	114	-19.87	Horizontal
2480	85.77	10.41	96.18	114	-17.82	Vertical

**Average value**

Frequency (MHz)	Reading Level (dBuv)	Factor (dB/m)	Measurement (dBuv/m)	Limit (dBuv/m)	Over (dB)	Antenna Polarization
2402	72.79	10.32	83.11	94	-10.89	Horizontal
2402	73.73	10.32	84.05	94	-9.95	Vertical
2441	75.06	10.36	85.42	94	-8.58	Horizontal
2441	74.78	10.36	85.14	94	-8.86	Vertical
2480	73.8	10.41	84.21	94	-9.79	Horizontal
2480	75.62	10.41	86.03	94	-7.97	Vertical

FOR BLE

## RADIATED EMISSION TEST- (ABOVE 1GHZ)-LOW CHANNEL-HORIZONTAL

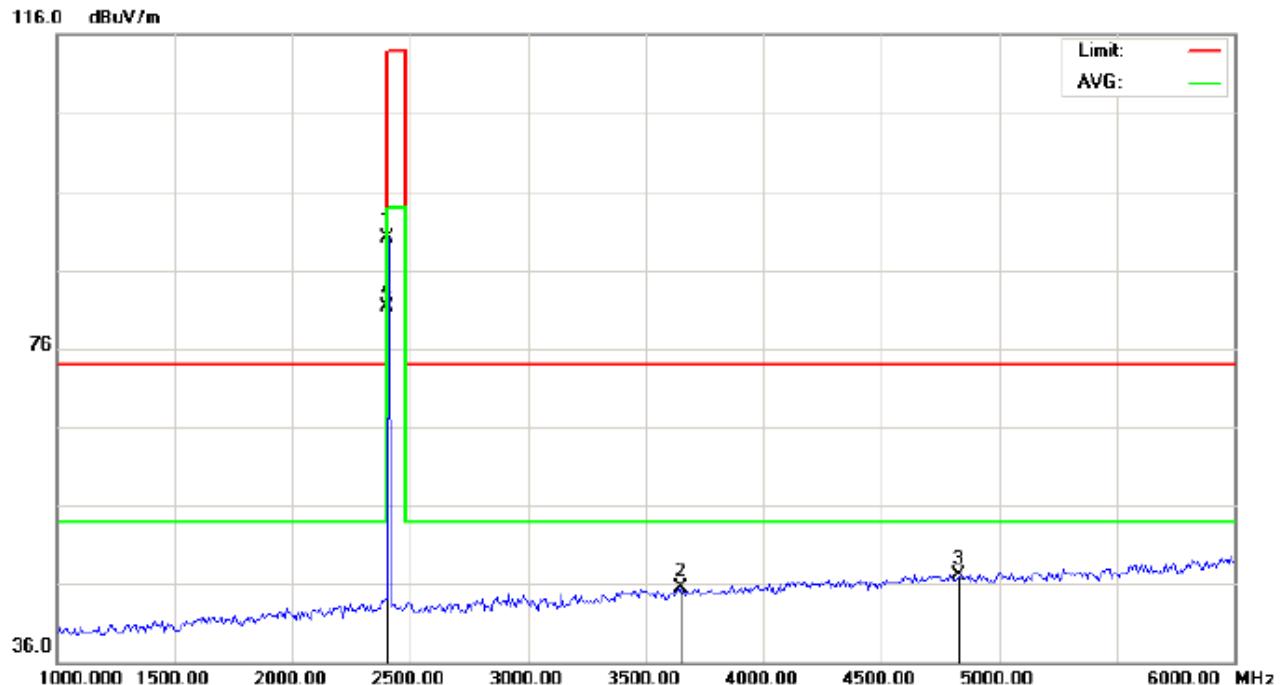


Site: site #1 Polarization: ***Horizontal*** Temperature: 22.7  
Limit: FCC Class B 3M Radiation above 1GHZ(PK)- Power: Humidity: 53.6 %  
EUT: Bluetooth Headphone Distance:  
M/N: HE8  
Mode: Low Channel TX  
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2402.000	79.71	10.32	90.03	114.00	-23.97	peak			
2		3966.667	31.08	14.98	46.06	74.00	-27.94	peak			
3		4983.333	39.20	8.16	47.36	74.00	-26.64	peak			
4	*	2402.000	70.81	10.32	81.13	94.00	-12.87	AVG	100	348	

## **RESULT: PASS**

RADIATED EMISSION TEST- (ABOVE 1GHZ)-LOW CHANNEL- VERTICAL

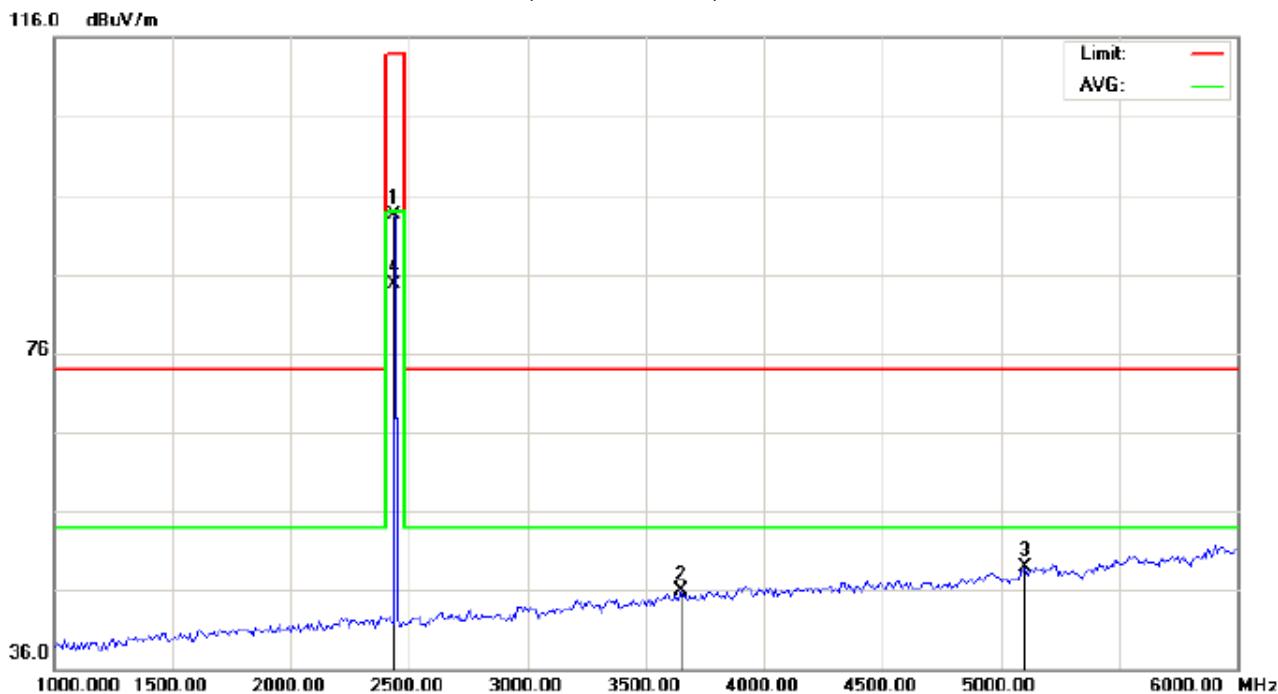


Site: site #1 Polarization: *Vertical* Temperature: 22.7  
 Limit: FCC Class B 3M Radiation above 1GHZ(PK)- Power: Humidity: 53.6 %  
 EUT: Bluetooth Headphone Distance:  
 M/N: HE8  
 Mode: Low Channel TX  
 Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2402.000	79.82	10.32	90.14	114.00	-23.86	peak			
2		3650.000	32.42	13.03	45.45	74.00	-28.55	peak			
3		4833.333	39.27	7.76	47.03	74.00	-26.97	peak			
4	*	2402.000	70.92	10.32	81.24	94.00	-12.76	AVG	100	48	

**RESULT: PASS**

## RADIATED EMISSION TEST- (ABOVE 1GHZ)-MIDDLE CHANNEL-HORIZONTAL

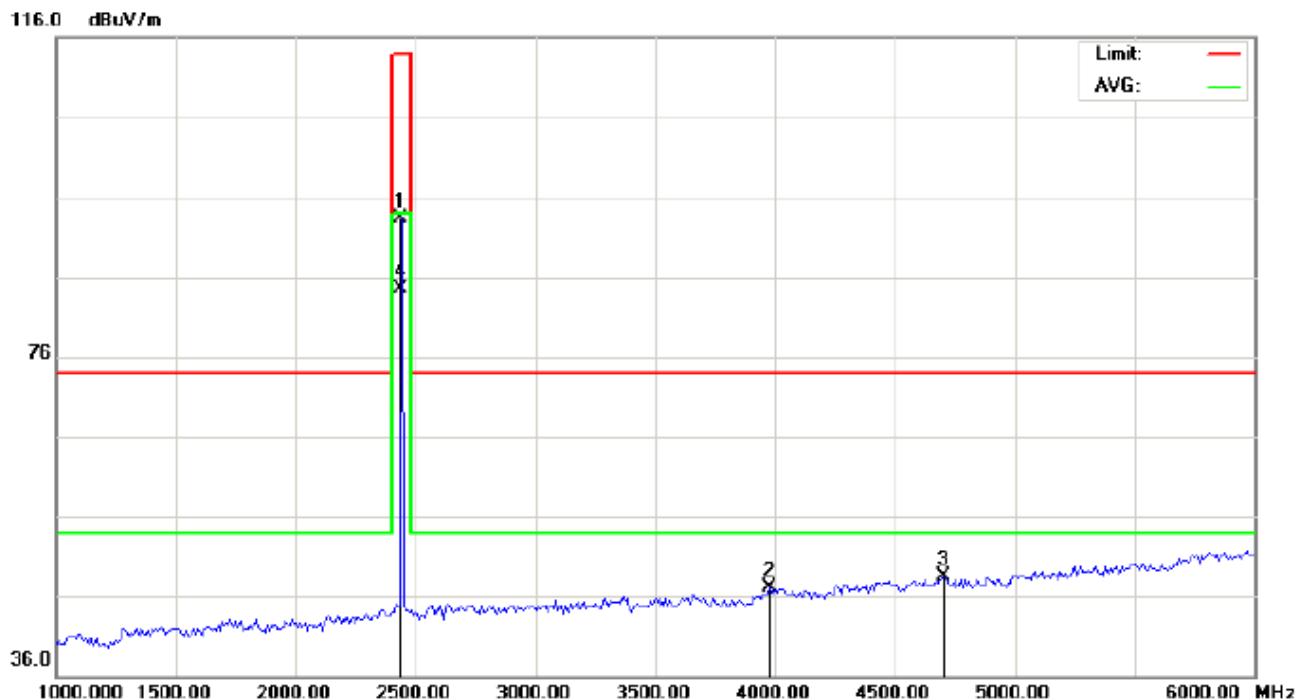


Site: site #1 Polarization: ***Horizontal*** Temperature: 22.7  
Limit: FCC Class B 3M Radiation above 1GHZ(PK)- Power: Humidity: 53.6 %  
EUT: Bluetooth Headphone Distance:  
M/N: HE8  
Mode: Middle Channel TX  
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2440.000	83.24	10.36	93.60	114.00	-20.40	peak			
2		3650.000	32.78	13.03	45.81	74.00	-28.19	peak			
3		5100.000	42.66	6.20	48.86	74.00	-25.14	peak			
4	*	2440.000	74.25	10.36	84.61	94.00	-9.39	AVG	100	342	

RESULT: PASS

#### RADIATED EMISSION TEST- (ABOVE 1GHZ)-MIDDLE CHANNEL- VERTICAL

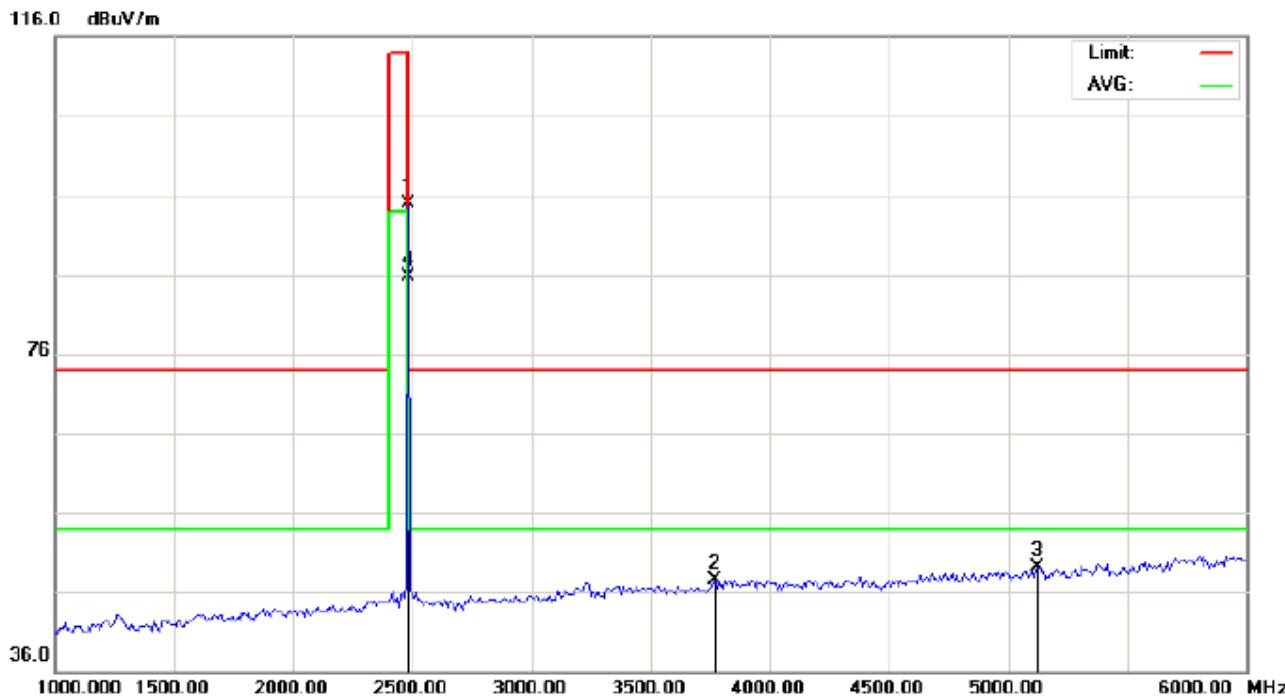


Site: site #1 Polarization: **Vertical** Temperature: 22.7  
Limit: FCC Class B 3M Radiation above 1GHZ(PK)- Power: Humidity: 53.6 %  
EUT: Bluetooth Headphone Distance:  
M/N: HE8  
Mode: Middle Channel TX  
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2440.000	82.99	10.36	93.35	114.00	-20.65	peak			
2		3975.000	32.00	15.04	47.04	74.00	-26.96	peak			
3		4700.000	41.13	7.41	48.54	74.00	-25.46	peak			
4	*	2440.000	74.06	10.36	84.42	94.00	-9.58	AVG	100	52	

RESULT: PASS

## RADIATED EMISSION TEST- (ABOVE 1GHZ)-HIGH CHANNEL-HORIZONTAL

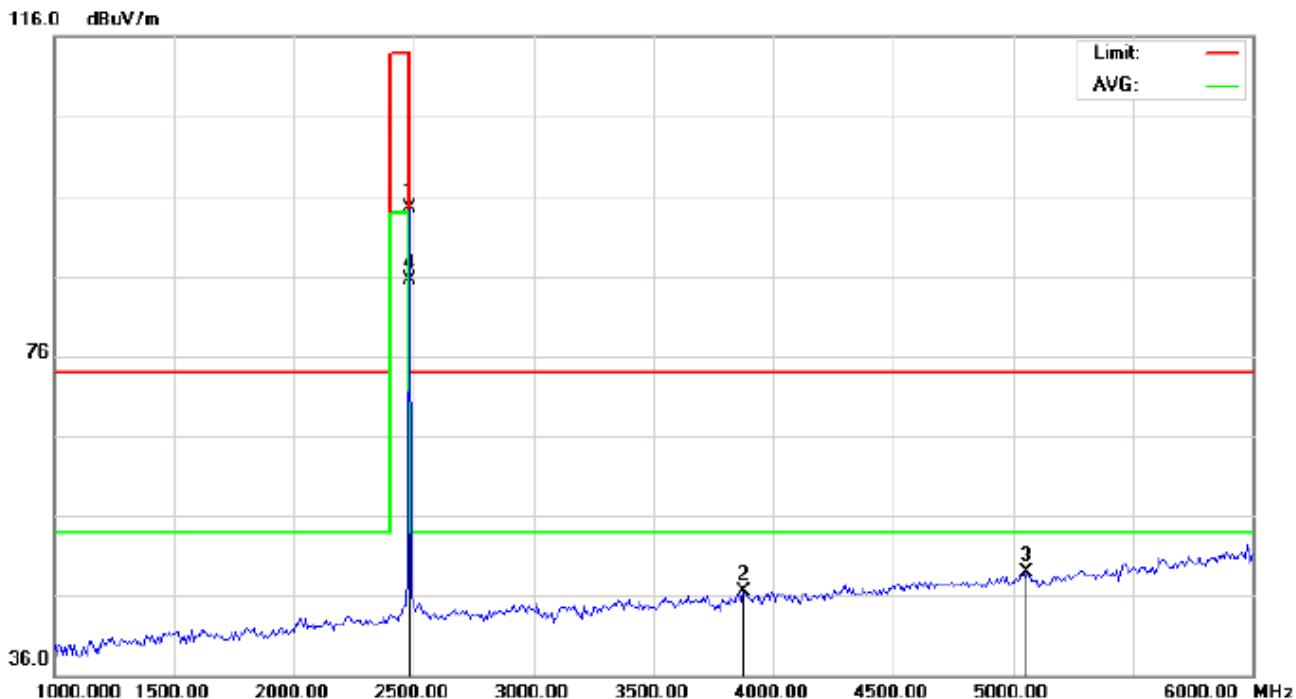


Site: site #1 Polarization: **Horizontal** Temperature: 22.7  
Limit: FCC Class B 3M Radiation above 1GHZ(PK)- Power: Humidity: 53.6 %  
EUT: Bluetooth Headphone Distance:  
M/N: HE8  
Mode: High Channel TX  
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2480.000	84.47	10.41	94.88	114.00	-19.12	peak			
2		3766.667	33.82	13.75	47.57	74.00	-26.43	peak			
3		5125.000	43.44	5.70	49.14	74.00	-24.86	peak			
4	*	2480.000	75.26	10.41	85.67	94.00	-8.33	AVG	100	346	

## **RESULT: PASS**

RADIATED EMISSION TEST- (ABOVE 1GHZ)-HIGH CHANNEL- VERTICAL




---

Site: site #1	Polarization: <b>Vertical</b>	Temperature: 22.7
Limit: FCC Class B 3M Radiation above 1GHZ(PK)-	Power:	Humidity: 53.6 %
EUT: Bluetooth Headphone	Distance:	
M/N: HE8		
Mode: High Channel TX		
Note:		

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No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2480.000	84.19	10.41	94.60	114.00	-19.40	peak			
2		3875.000	32.16	14.42	46.58	74.00	-27.42	peak			
3		5058.333	41.78	7.03	48.81	74.00	-25.19	peak			
4	*	2480.000	75.08	10.41	85.49	94.00	-8.51	AVG	100	47	

**RESULT: PASS**

**Note:** 6~25GHz at least have 20dB margin. No recording in the test report.

Factor=Antenna Factor + Cable loss - Amplifier gain, Margin=Measurement-Limit.

The "Factor" value can be calculated automatically by software of measurement system.

### Field strength of the fundamental signal

#### Peak value

Frequency (MHz)	Reading Level (dBuv)	Factor (dB/m)	Measurement (dBuv/m)	Limit (dBuv/m)	Over (dB)	Antenna Polarization
2402	79.71	10.32	90.03	114	-23.97	Horizontal
2402	79.82	10.32	90.14	114	-23.86	Vertical
2440	83.24	10.36	93.60	114	-20.40	Horizontal
2440	82.99	10.36	93.35	114	-20.65	Vertical
2480	84.47	10.41	94.88	114	-19.12	Horizontal
2480	84.19	10.41	94.60	114	-19.40	Vertical

#### Average value

Frequency (MHz)	Reading Level (dBuv)	Factor (dB/m)	Measurement (dBuv/m)	Limit (dBuv/m)	Over (dB)	Antenna Polarization
2402	70.81	10.32	81.13	94	-12.87	Horizontal
2402	70.92	10.32	81.24	94	-12.76	Vertical
2440	74.25	10.36	84.61	94	-9.39	Horizontal
2440	74.06	10.36	84.42	94	-9.58	Vertical
2480	75.26	10.41	85.67	94	-8.33	Horizontal
2480	75.08	10.41	85.49	94	-8.51	Vertical

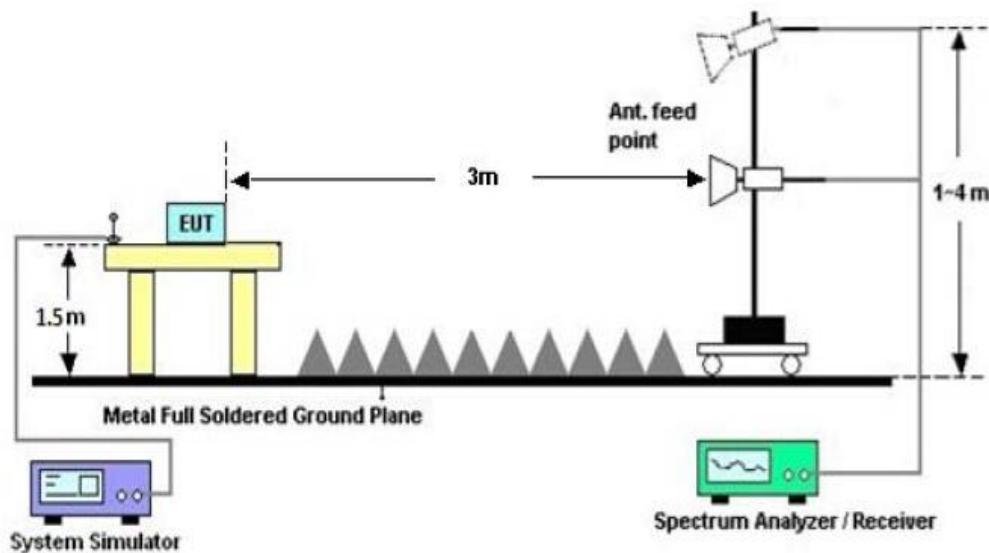
## 9. BAND EDGE EMISSION

### 9.1. MEASUREMENT PROCEDURE

- 1The EUT operates at hopping-off test mode. The lowest or highest channels are tested to verify the largest transmission and spurious emissions power at the continuous transmission mode.
- 2Max hold the trace of the setup 1, and the EUT operates at hopping-on test mode to verify the largest spurious emissions power.
- 3Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission

### 9.2 TEST SETUP

RADIATED EMISSION TEST SETUP

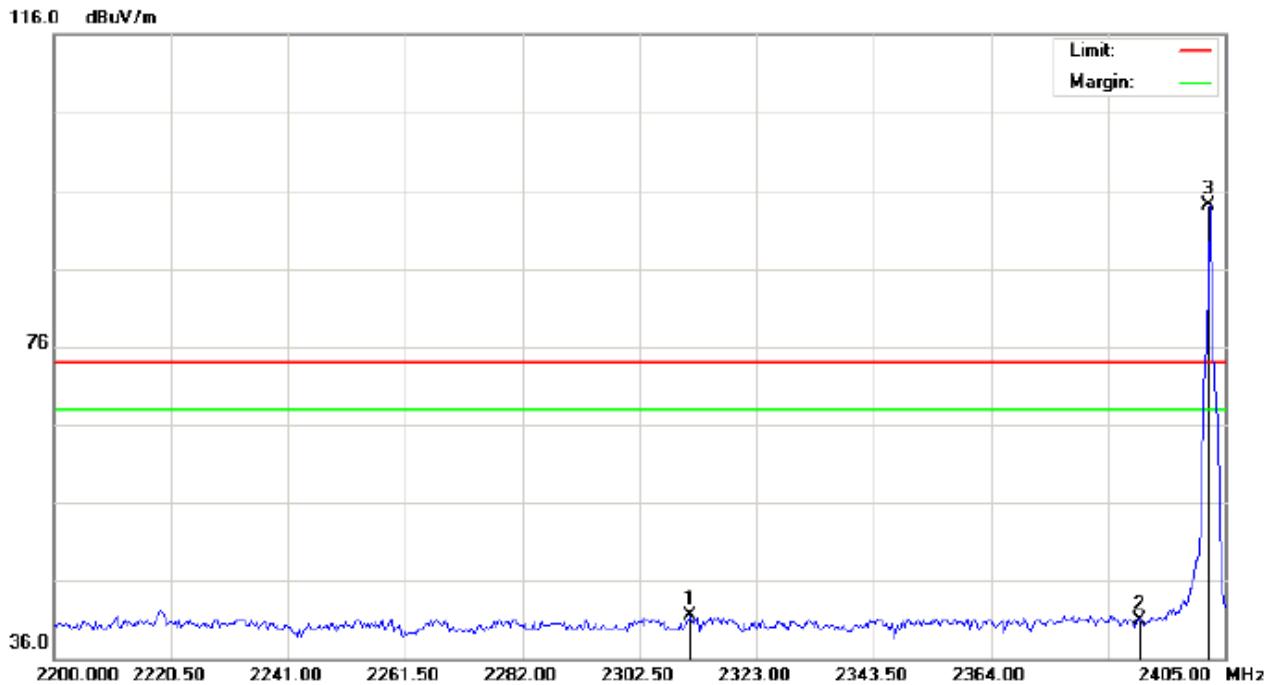


### 9.3 RADIATED TEST RESULT

(Worst modulation: GFSK)

FOR BR/EDR

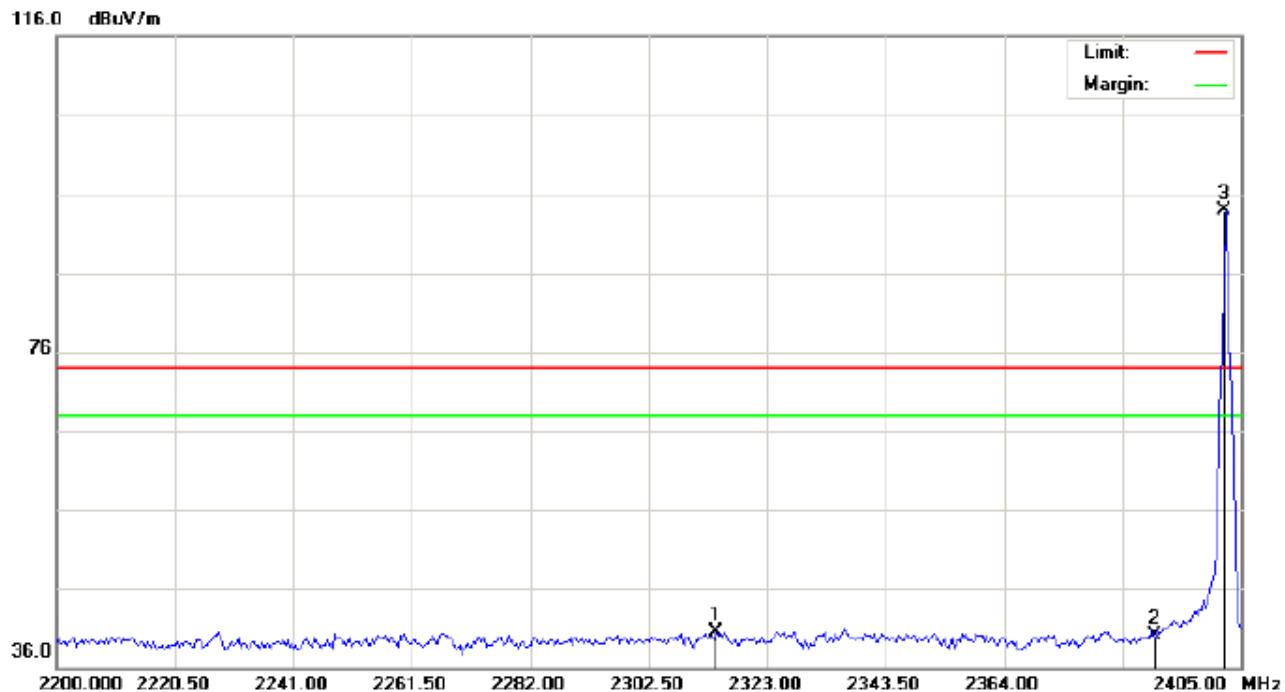
TEST PLOT OF BAND EDGE FOR LOW CHANNEL-Horizontal



Site: site #1      Polarization: **Horizontal**      Temperature: 26  
 Limit: FCC Class B 3M Radiation above 1GHZ(PK)      Power:      Humidity: 60 %  
 EUT: Bluetooth Headphone      Distance:  
 M/N: HE8  
 Mode: Low Channel TX  
 Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2311.383	31.23	10.22	41.45	74.00	-32.55	peak			
2		2390.000	30.50	10.31	40.81	74.00	-33.19	peak			
3	*	2402.000	83.72	10.32	94.04	74.00	20.04	peak			

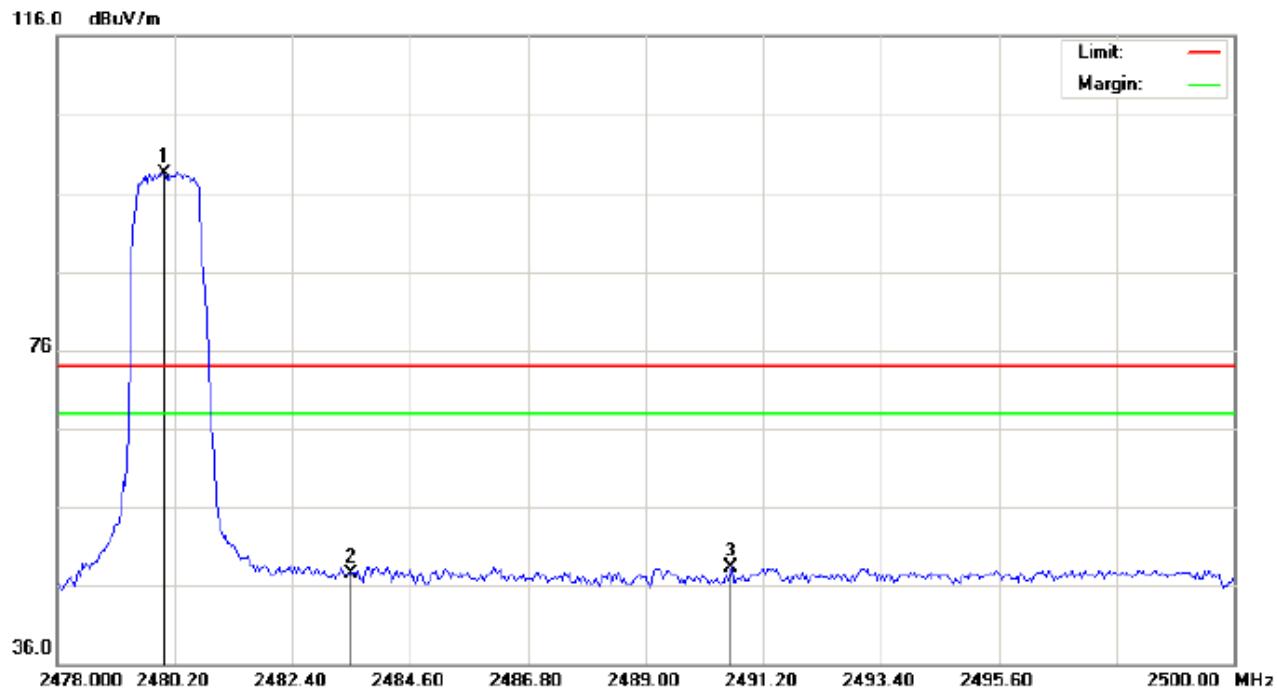
## TEST PLOT OF BAND EDGE FOR LOW CHANNEL -Vertical



Site: site #1 Polarization: *Vertical* Temperature: 26  
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %  
EUT: Bluetooth Headphone Distance:  
M/N: HE8  
Mode: Low Channel TX  
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2314.116	30.27	10.23	40.50	74.00	-33.50	peak			
2		2390.000	29.71	10.31	40.02	74.00	-33.98	peak			
3	*	2402.000	83.59	10.32	93.91	74.00	19.91	peak			

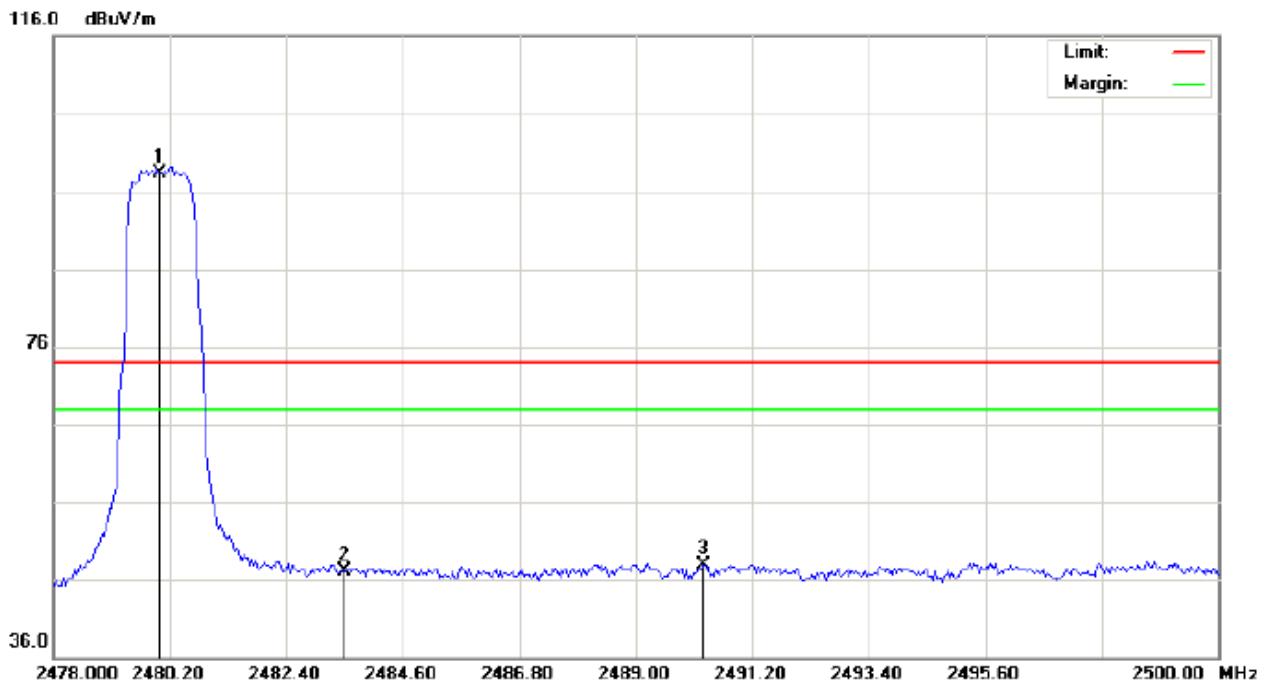
TEST PLOT OF BAND EDGE FOR HIGH CHANNEL -Horizontal



Site: site #1 Polarization: *Horizontal* Temperature: 26  
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %  
EUT: Bluetooth Headphone Distance:  
M/N: HE8  
Mode: High Channel TX  
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2480.000	88.05	10.41	98.46	74.00	24.46	peak			
2		2483.500	37.19	10.41	47.60	74.00	-26.40	peak			
3		2490.613	37.86	10.42	48.28	74.00	-25.72	peak			

TEST PLOT OF BAND EDGE FOR HIGH CHANNEL-Vertical




---

Site: site #1	Polarization: <b>Vertical</b>	Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK)	Power:	Humidity: 60 %
EUT: Bluetooth Headphone	Distance:	
M/N: HE8		
Mode: High Channel TX		
Note:		

---

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna	Table	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		Height	Degree	
1	*	2480.000	87.82	10.41	98.23	74.00	24.23	peak			
2		2483.500	36.76	10.41	47.17	74.00	-26.83	peak			
3		2490.283	37.45	10.42	47.87	74.00	-26.13	peak			

**RESULT: PASS**

**Note:** The other modes radiation emission have enough 20dB margin.

Factor=Antenna Factor + Cable loss - Amplifier gain, Over=Measure-Limit.

The "Factor" value can be calculated automatically by software of measurement system.

Hopping on mode and Hopping off mode have been tested, but only worst case reported.

**FOR BLE**

TEST PLOT OF BAND EDGE FOR LOW CHANNEL-Horizontal



Site: site #1 Polarization: **Horizontal** Temperature: 26

Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %

EUT: Bluetooth Headphone Distance:

M/N: HE8

Mode: Low Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2267.650	30.74	10.17	40.91	74.00	-33.09	peak			
2		2390.000	30.50	10.31	40.81	74.00	-33.19	peak			
3	*	2402.000	79.72	10.32	90.04	74.00	16.04	peak			

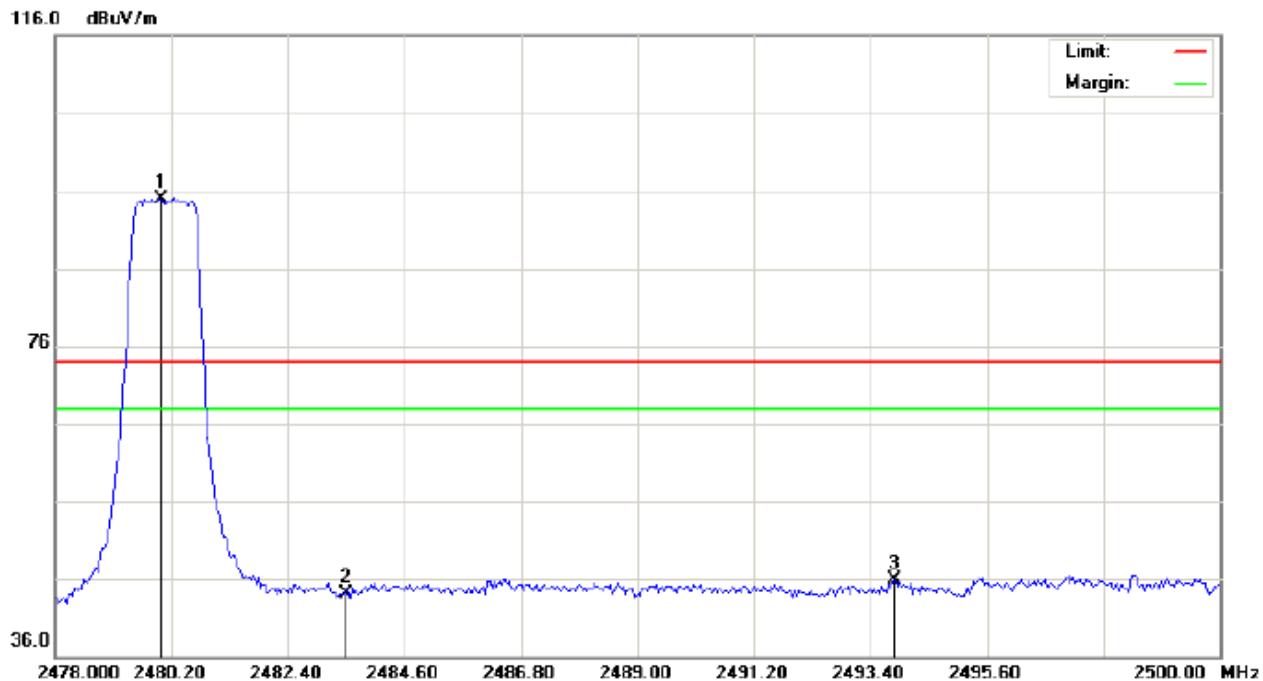
## TEST PLOT OF BAND EDGE FOR LOW CHANNEL -Vertical



Site: site #1 Polarization: ***Vertical*** Temperature: 26  
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %  
EUT: Bluetooth Headphone Distance:  
M/N: HE8  
Mode: Low Channel TX  
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2296.008	30.83	10.21	41.04	74.00	-32.96	peak			
2		2390.000	31.21	10.31	41.52	74.00	-32.48	peak			
3	*	2402.000	79.59	10.32	89.91	74.00	15.91	peak			

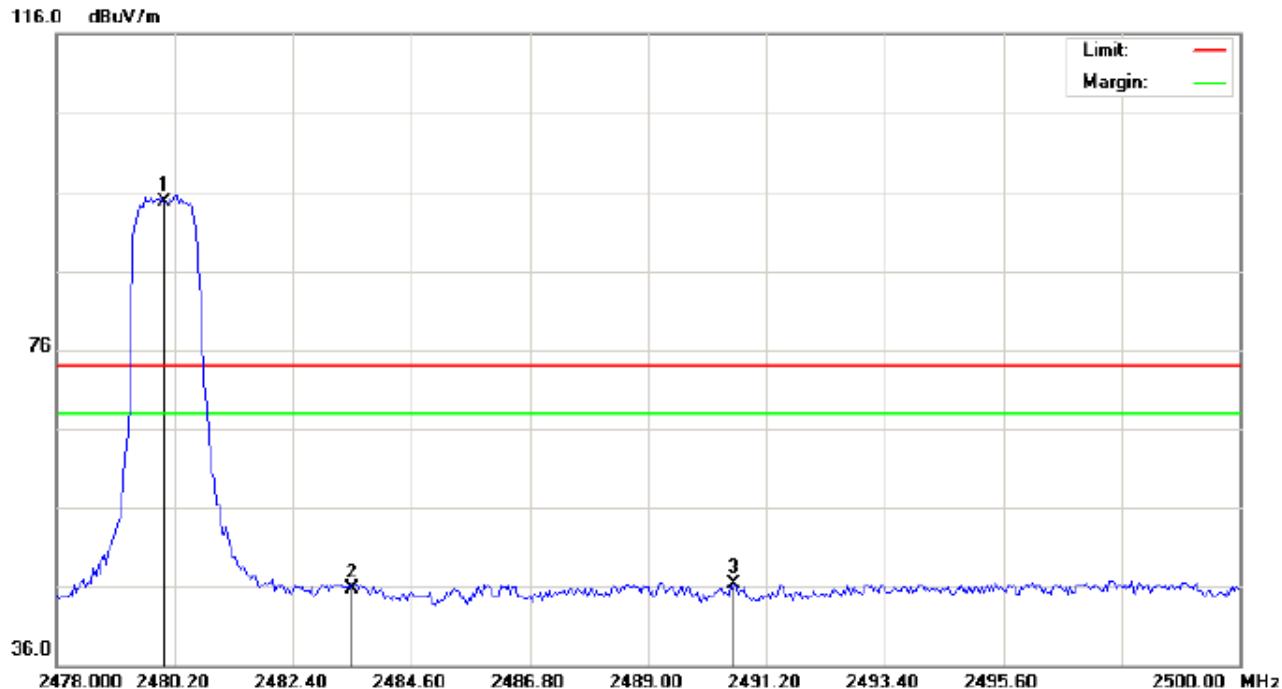
## TEST PLOT OF BAND EDGE FOR HIGH CHANNEL -Horizontal



Site: site #1 Polarization: **Horizontal** Temperature: 26  
Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %  
EUT: Bluetooth Headphone Distance:  
M/N: HE8  
Mode: High Channel TX  
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2480.000	84.55	10.41	94.96	74.00	20.96	peak			
2		2483.500	33.69	10.41	44.10	74.00	-29.90	peak			
3		2493.840	35.55	10.42	45.97	74.00	-28.03	peak			

TEST PLOT OF BAND EDGE FOR HIGH CHANNEL-Vertical




---

Site: site #1	Polarization: <i>Vertical</i>	Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK)	Power:	Humidity: 60 %
EUT: Bluetooth Headphone	Distance:	
M/N: HE8		
Mode: High Channel TX		
Note:		

---

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2480.000	84.32	10.41	94.73	74.00	20.73	peak			
2		2483.500	35.26	10.41	45.67	74.00	-28.33	peak			
3		2490.613	35.79	10.42	46.21	74.00	-27.79	peak			

**RESULT: PASS**

**Note:** The other modes radiation emission have enough 20dB margin.

Factor=Antenna Factor + Cable loss - Amplifier gain, Over=Measure-Limit.

The "Factor" value can be calculated automatically by software of measurement system.

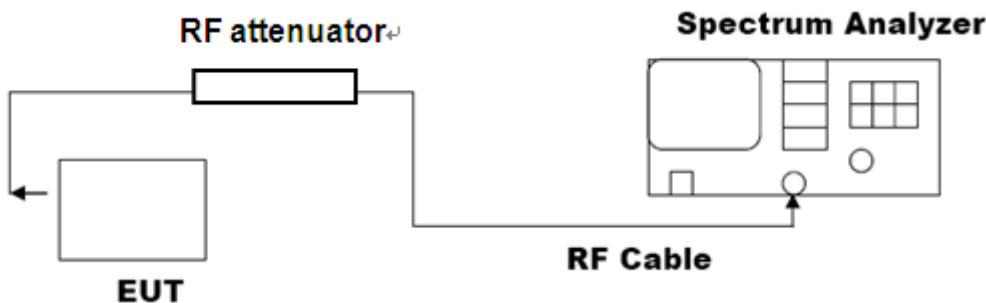
## 10. 20DB BANDWIDTH

### 10.1. MEASUREMENT PROCEDURE

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel  
 $RBW \geq 1\%$  of the 20 dB bandwidth,  $VBW \geq RBW$ ; Sweep = auto; Detector function = peak
4. Set SPA Trace 1 Max hold, then View.

### 10.2. TEST SET-UP

#### (BLOCK DIAGRAM OF CONFIGURATION)



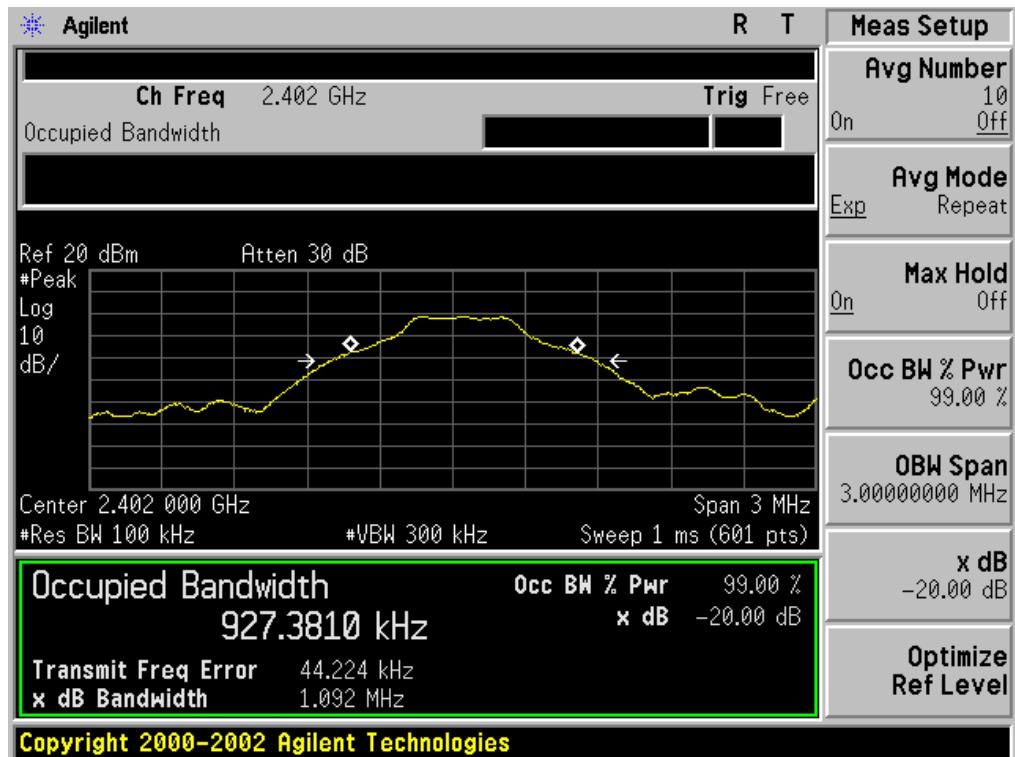
Note: The EUT has been used temporary antenna connector for testing.

### 10.3. LIMITS AND MEASUREMENT RESULTS

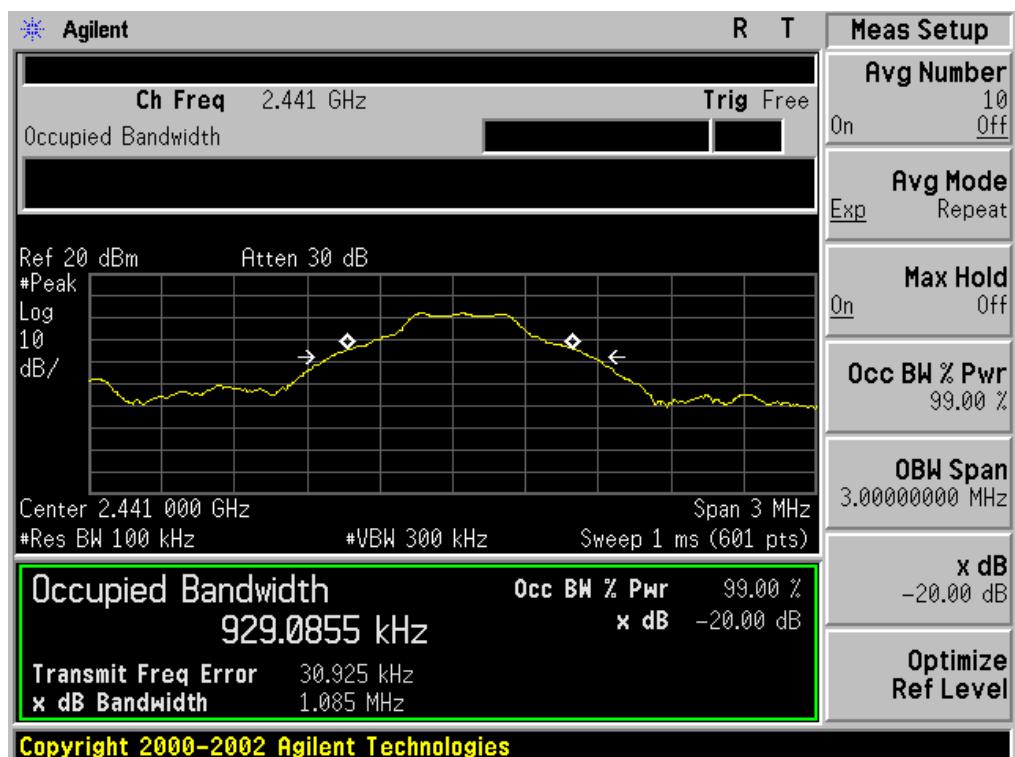
#### FOR BR/EDR

BLUETOOTH 1MBPS LIMITS AND MEASUREMENT RESULT					
Applicable Limits	Measurement Result			Result	
	Test Data (MHz)		99%OBW (MHz)		
N/A	Low Channel	0.927	1.092	PASS	
	Middle Channel	0.929	1.085	PASS	
	High Channel	0.925	1.079	PASS	

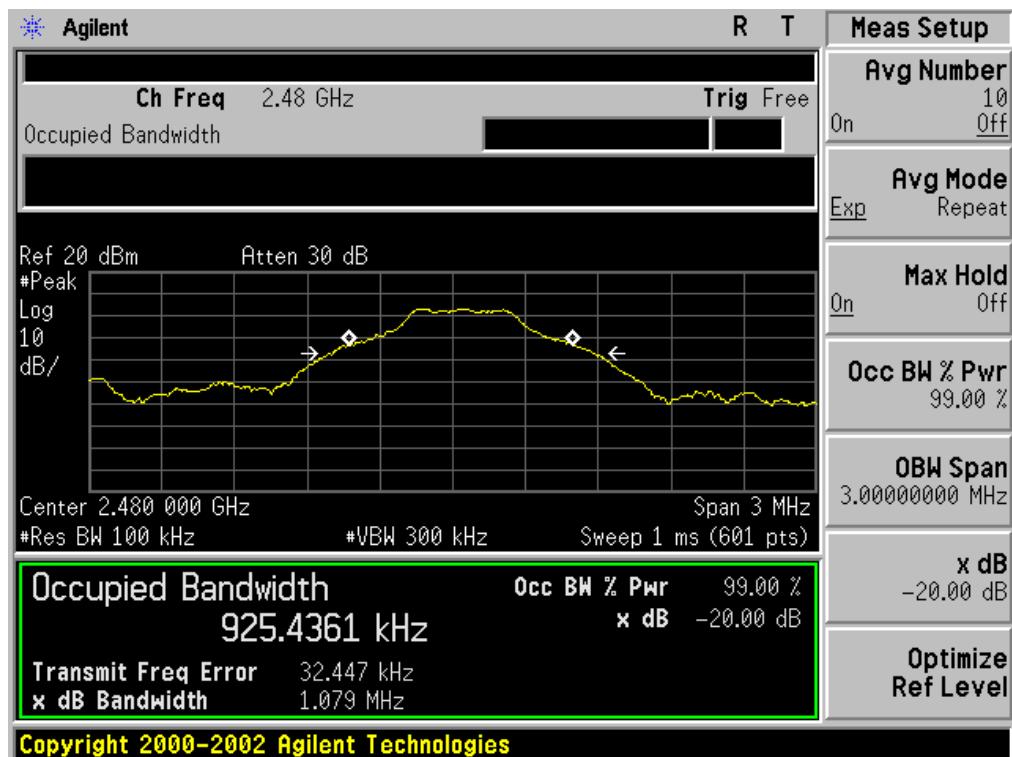
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

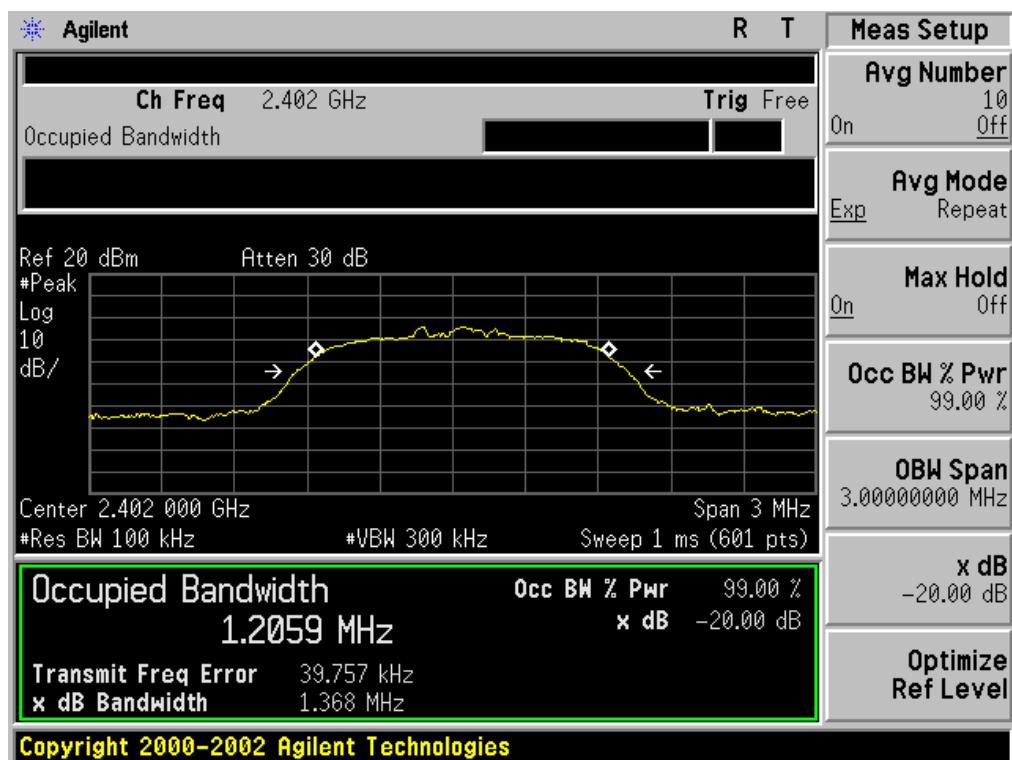


TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

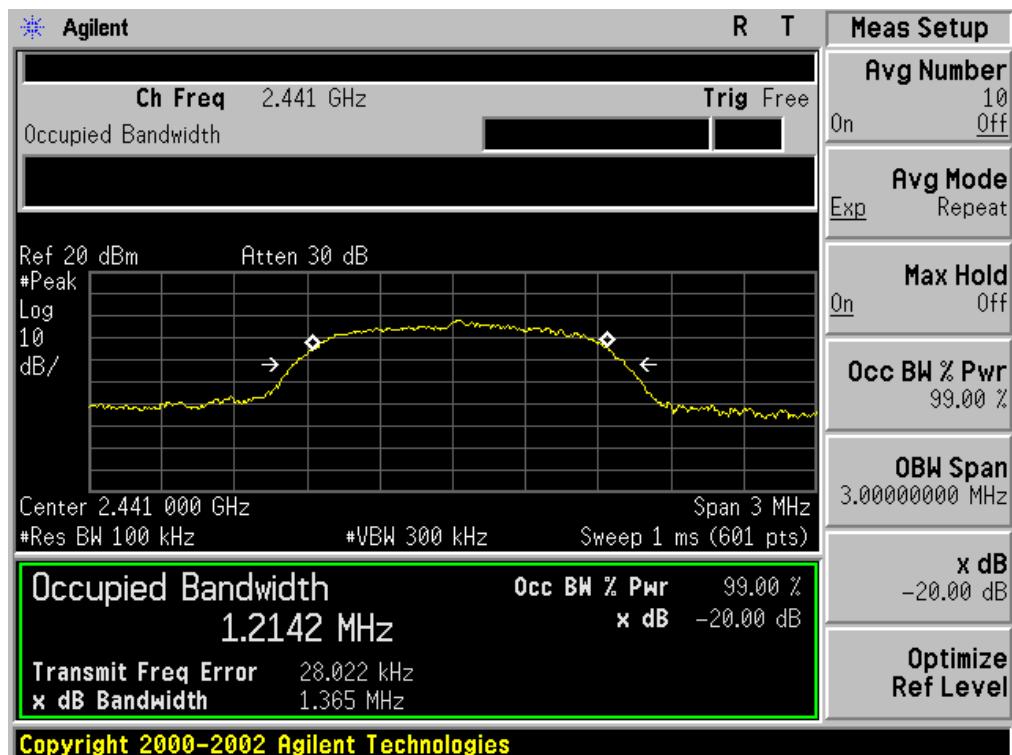


BLUETOOTH 2MBPS LIMITS AND MEASUREMENT RESULT				
Applicable Limits	Measurement Result			
	Test Data (MHz)			Result
		99%OBW (MHz)	-20dB BW(MHz)	
N/A	Low Channel	1.206	1.368	PASS
	Middle Channel	1.214	1.365	PASS
	High Channel	1.198	1.354	PASS

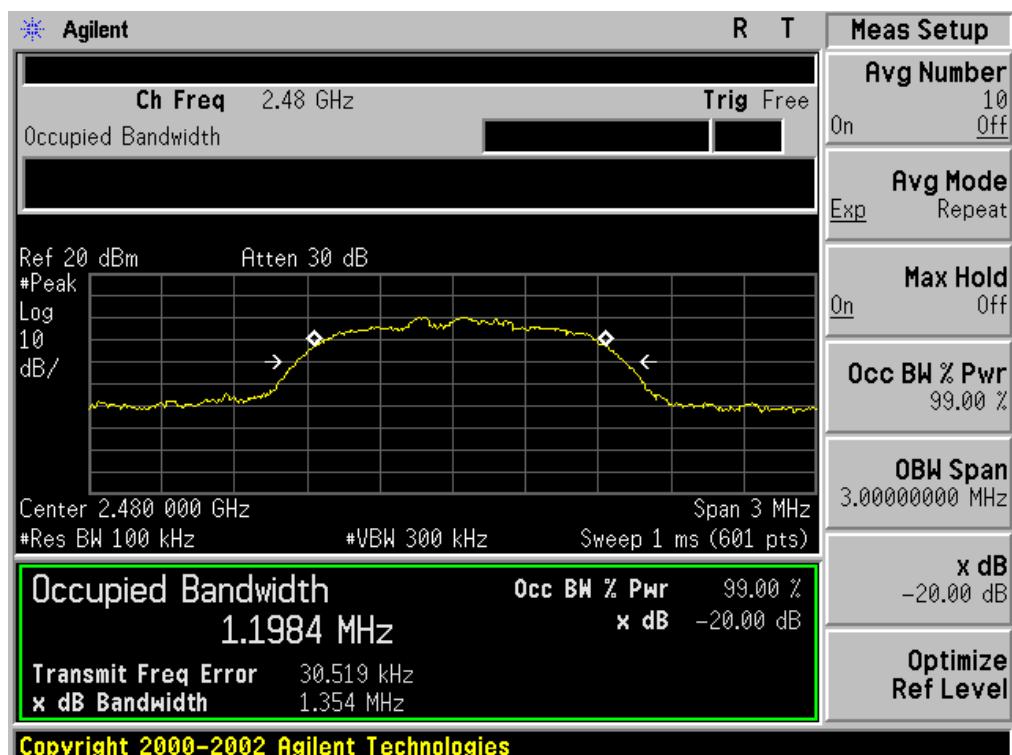
#### TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

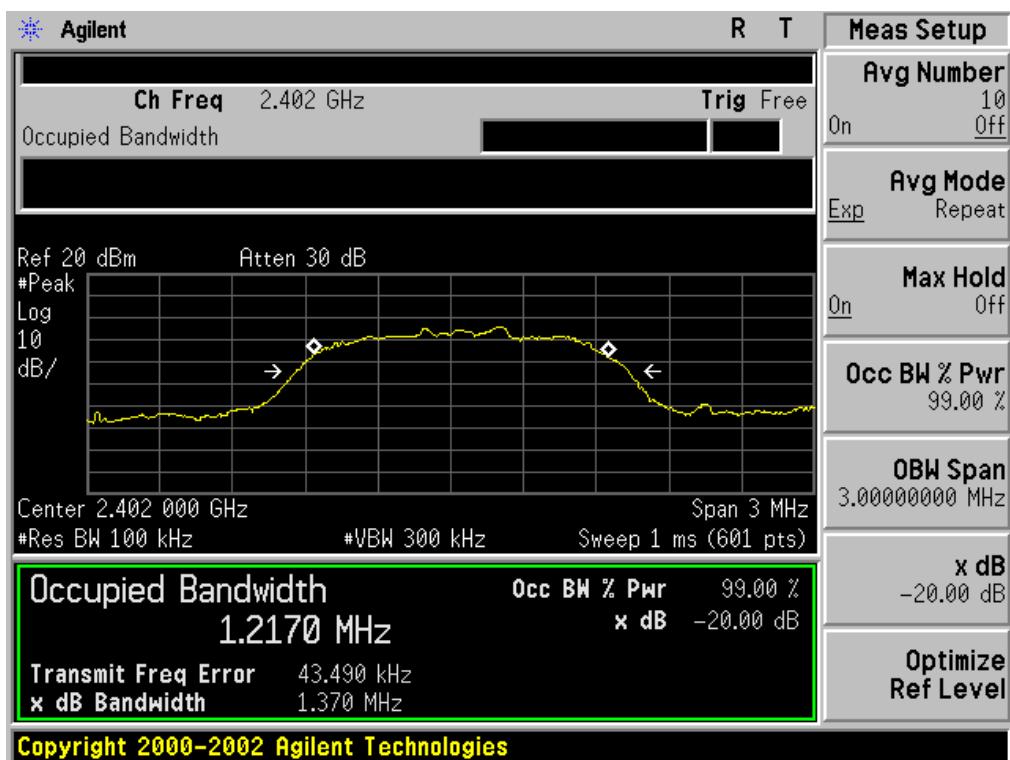


TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

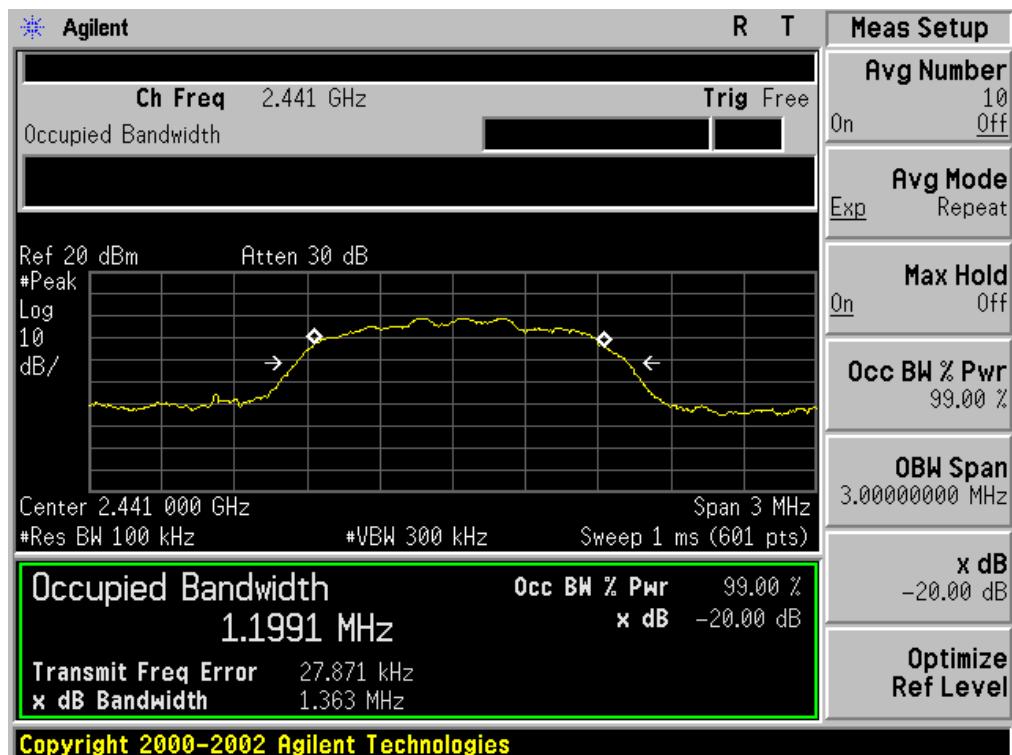


BLUETOOTH 3MBPS LIMITS AND MEASUREMENT RESULT				
Applicable Limits	Measurement Result			
	Test Data (MHz)			Result
		99%OBW (MHz)	-20dB BW(MHz)	
N/A	Low Channel	1.217	1.370	PASS
	Middle Channel	1.199	1.363	PASS
	High Channel	1.225	1.389	PASS

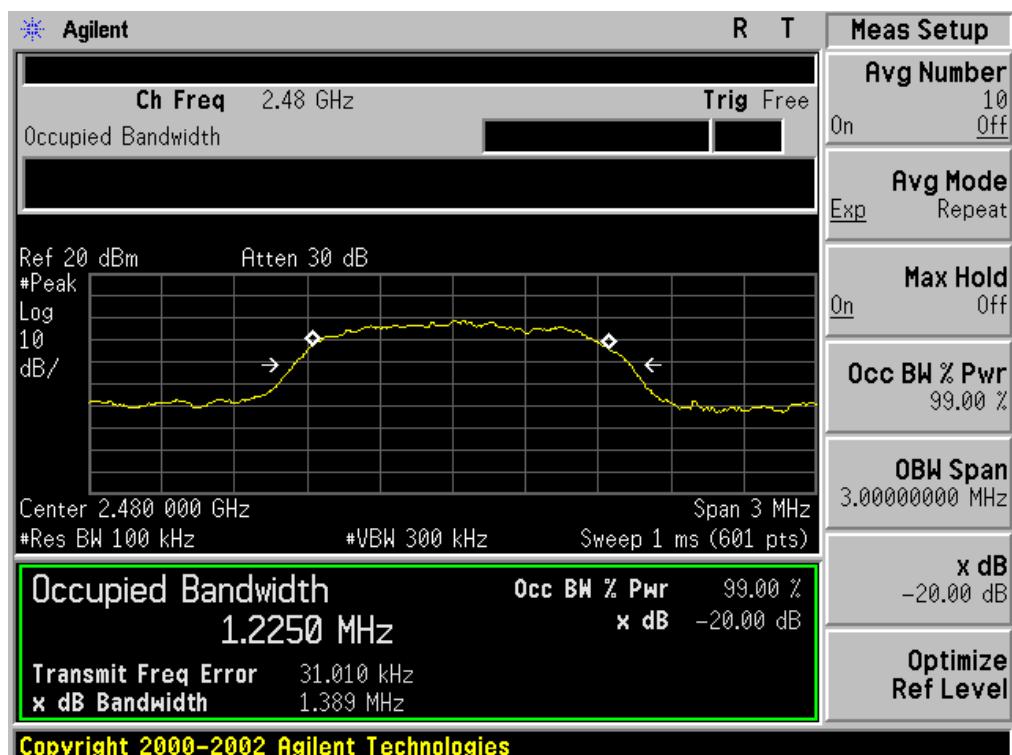
#### TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



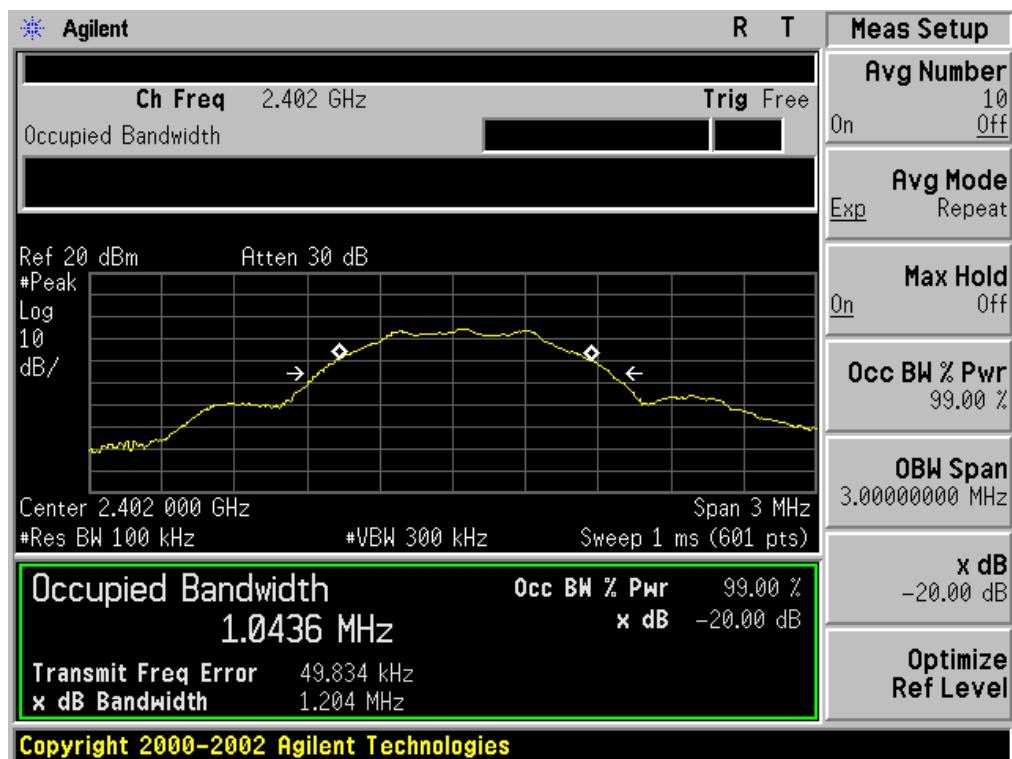
TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



**FOR BLE**

BLUETOOTH 1MBPS LIMITS AND MEASUREMENT RESULT				
Applicable Limits	Measurement Result			
	Test Data (MHz)			Result
		99%OBW (MHz)	-20dB BW(MHz)	
N/A	Low Channel	1.044	1.204	PASS
	Middle Channel	1.044	1.189	PASS
	High Channel	1.040	1.198	PASS

TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



## 11. FCC LINE CONDUCTED EMISSION TEST

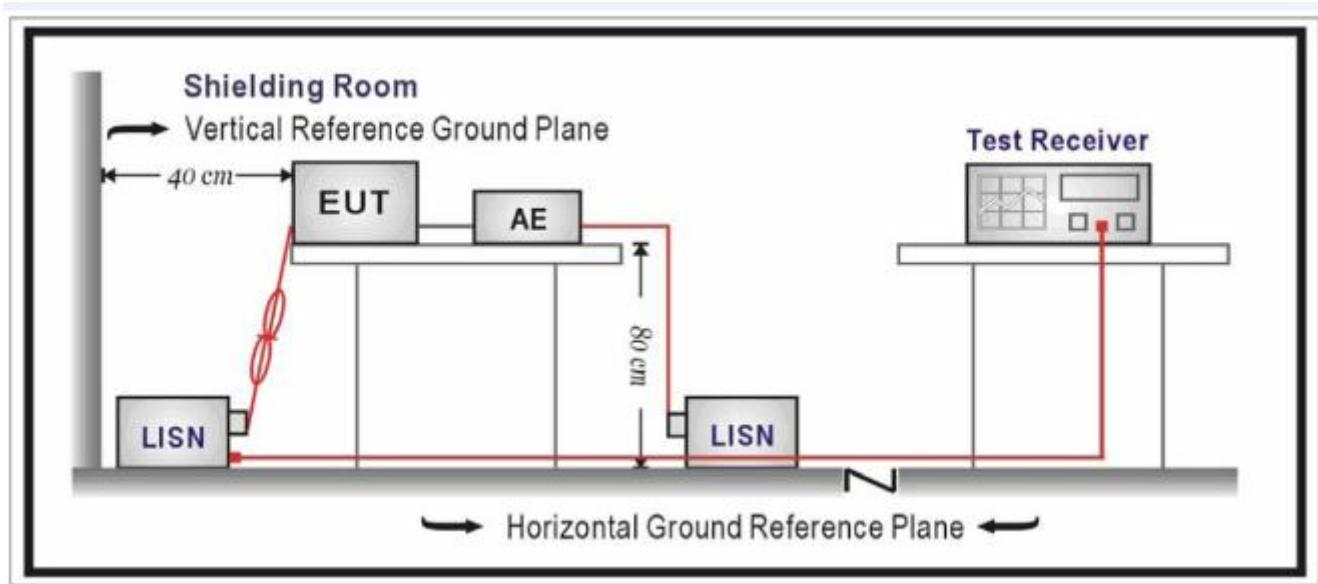
### 11.1. LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P. ( dBuV)	Average( dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Note:

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

### 11.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



### **11.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST**

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. All support equipments received AC120V/60Hz power from a LISN, if any.
5. The EUT received DC charging voltage by adapter or PC which received 120V/60Hzpower by a LISN.
6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.
9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

### **11.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST**

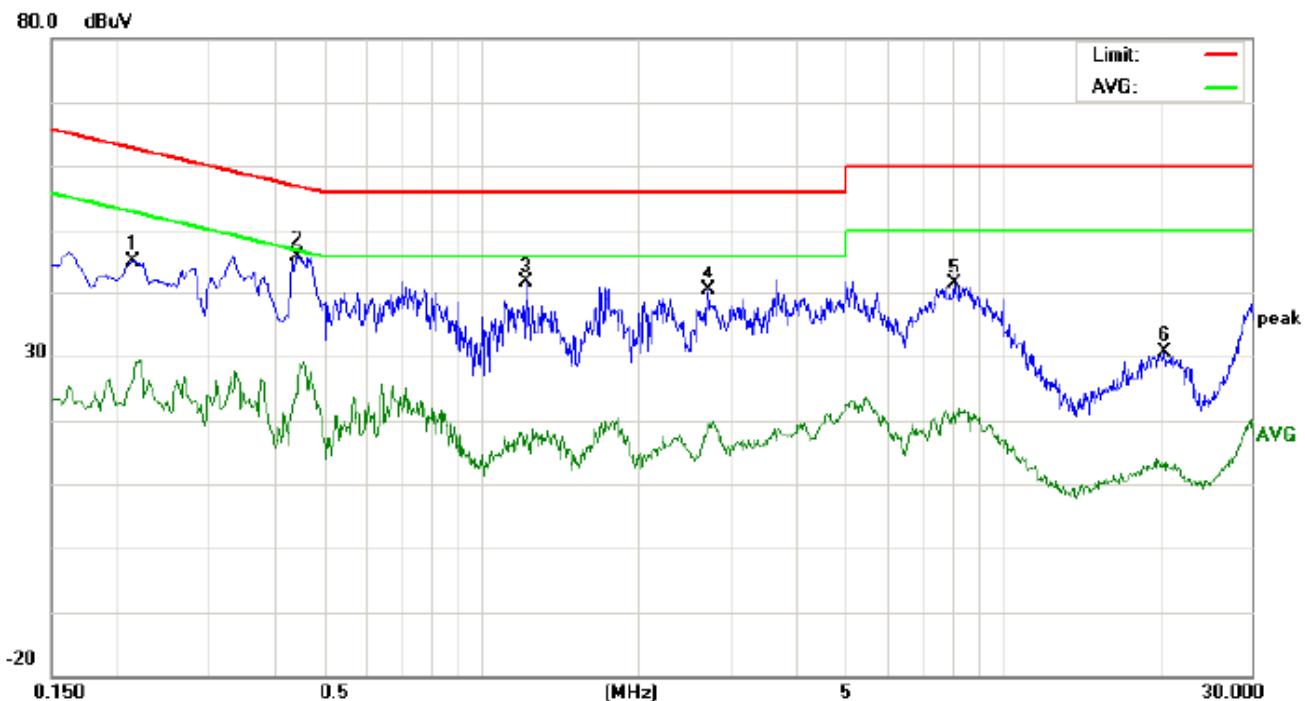
1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
3. The test data of the worst case condition(s) was reported on the Summary Data page.

## 11.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

By adapter(worst case)

FOR BR/EDR

Line Conducted Emission Test Line 1-L



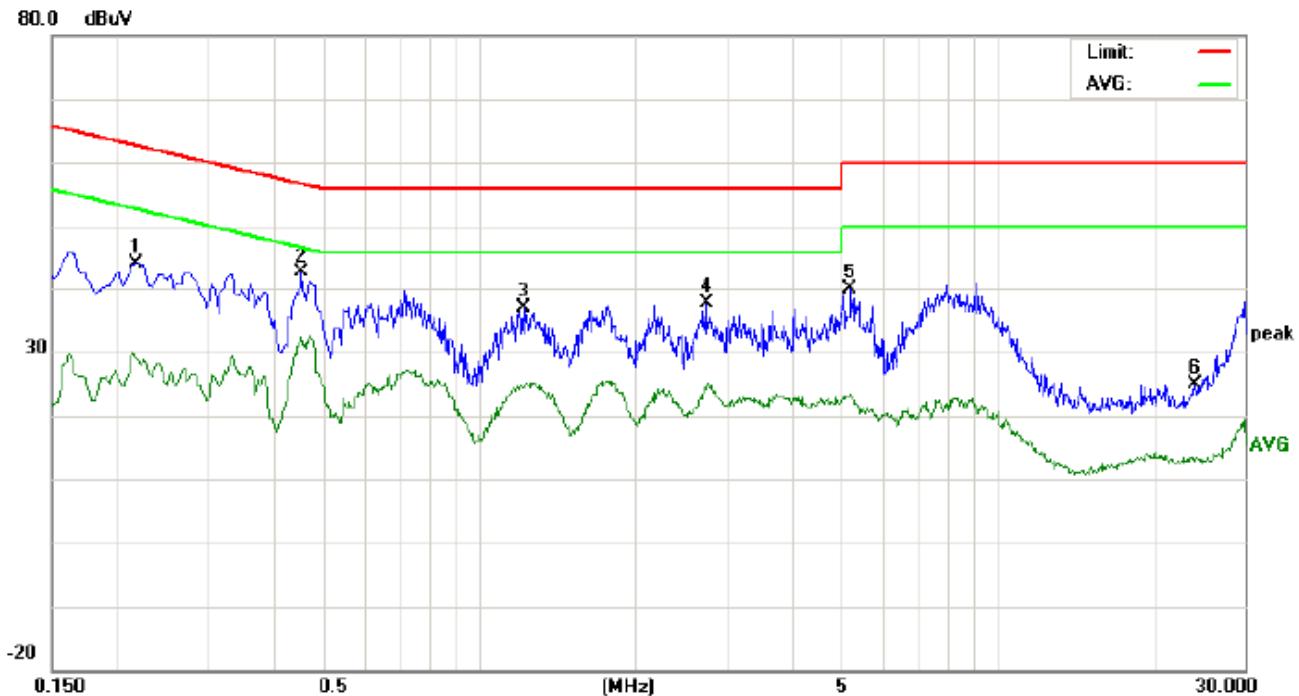

---

Site: Conduction	Phase: L1	Temperature: 25.8
Limit: FCC Class B Conduction(QP)	Power:	Humidity: 51.9 %
EUT: Bluetooth headphone		
M/N: HE8		
Mode: BT Link with charging		
Note:		

---

No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.2140	34.87		15.56	10.23	45.10		25.79	63.04	53.04	-17.94	-27.25	P	
2	0.4460	35.46		16.53	10.36	45.82		26.89	56.95	46.95	-11.13	-20.06	P	
3	1.2220	31.32		7.51	10.37	41.69		17.88	56.00	46.00	-14.31	-28.12	P	
4	2.7260	29.84		8.90	10.48	40.32		19.38	56.00	46.00	-15.68	-26.62	P	
5	8.0699	30.97		9.16	10.35	41.32		19.51	60.00	50.00	-18.68	-30.49	P	
6	20.4220	20.56		2.67	10.12	30.68		12.79	60.00	50.00	-29.32	-37.21	P	

Line Conducted Emission Test Line 2-N

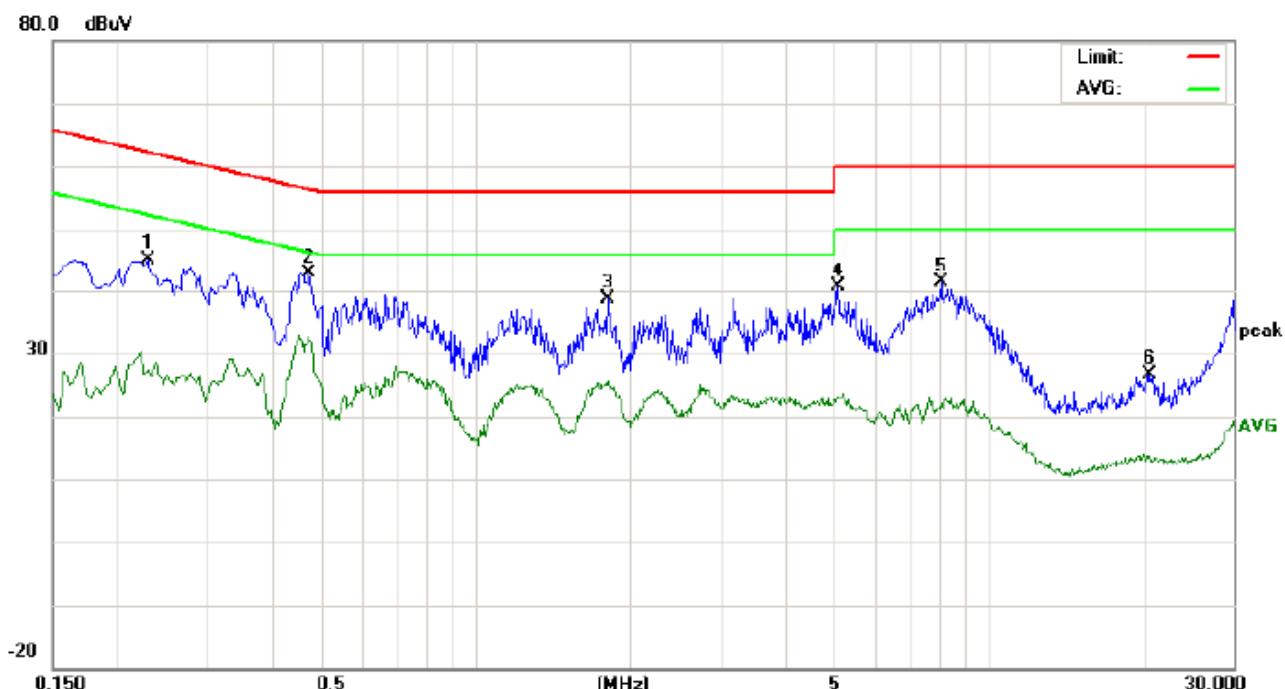


Site: Conduction Phase: **N** Temperature: 25.8  
 Limit: FCC Class B Conduction(QP) Power: Humidity: 51.9 %  
 EUT: Bluetooth headphone  
 M/N: HE8  
 Mode: BT Link with charging  
 Note:

No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	Avg		Peak	QP	Avg	QP	Avg	QP	Avg		
1	0.2180	33.96		18.87	10.23	44.19		29.10	62.89	52.89	-18.70	-23.79	P	
2	0.4540	32.21		22.02	10.37	42.58		32.39	56.80	46.80	-14.22	-14.41	P	
3	1.2220	26.62		14.07	10.37	36.99		24.44	56.00	46.00	-19.01	-21.56	P	
4	2.7500	27.04		14.06	10.49	37.53		24.55	56.00	46.00	-18.47	-21.45	P	
5	5.1979	29.68		13.19	10.24	39.92		23.43	60.00	50.00	-20.08	-26.57	P	
6	24.0860	14.88		2.79	10.11	24.99		12.90	60.00	50.00	-35.01	-37.10	P	

**FOR BLE**

Line Conducted Emission Test Line 1-L



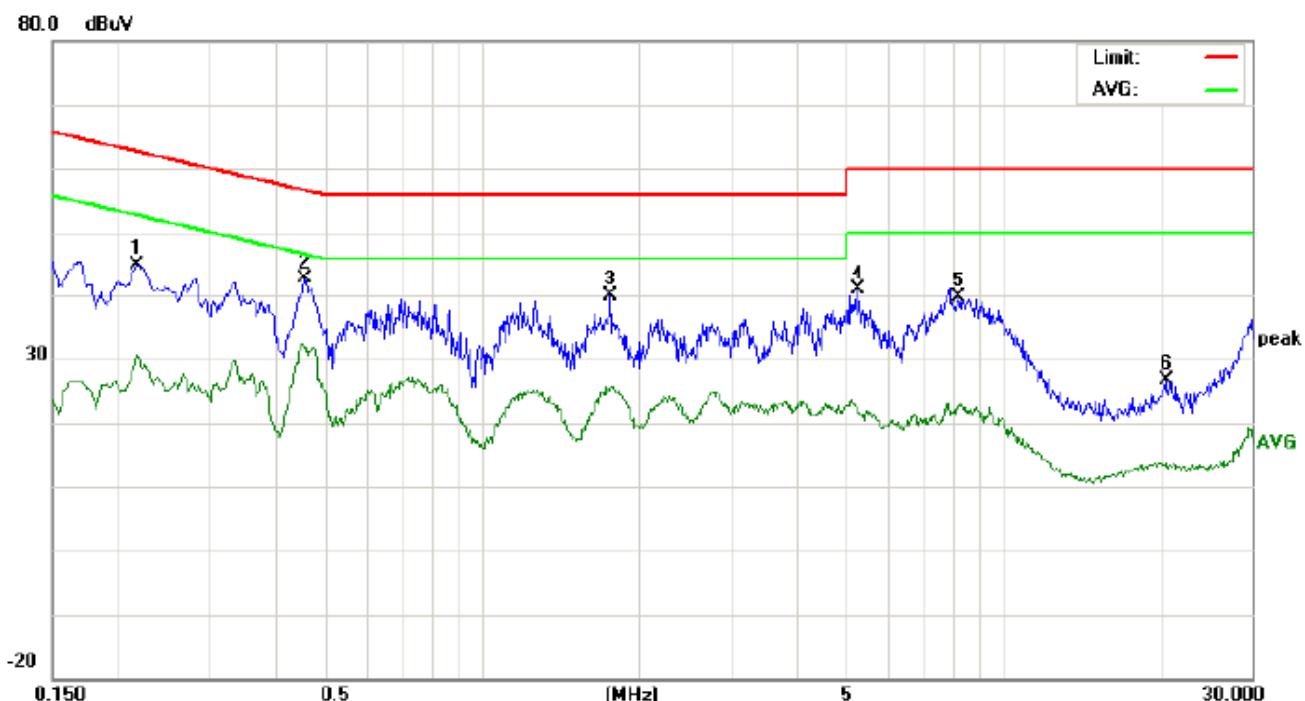

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Site: Conduction	Phase: L1	Temperature: 25.8
Limit: FCC Class B Conduction(QP)	Power:	Humidity: 51.9 %
EUT: Bluetooth headphone		
M/N: HE8		
Mode: BT Link with charging		
Note:		

---

No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		Peak	QP	Avg	QP	Avg	QP	Avg		
1	0.2300	34.80		17.09	10.25	45.05		27.34	62.45	52.45	-17.40	-25.11	P	
2	0.4740	32.58		22.27	10.38	42.96		32.65	56.44	46.44	-13.48	-13.79	P	
3	1.8100	28.28		15.42	10.28	38.56		25.70	56.00	46.00	-17.44	-20.30	P	
4	5.1099	30.44		12.93	10.24	40.68		23.17	60.00	50.00	-19.32	-26.83	P	
5	8.1019	31.06		11.70	10.35	41.41		22.05	60.00	50.00	-18.59	-27.95	P	
6	20.6340	16.52		3.39	10.12	26.64		13.51	60.00	50.00	-33.36	-36.49	P	

Line Conducted Emission Test Line 2-N



Site: Conduction Phase: *N* Temperature: 25.8  
 Limit: FCC Class B Conduction(QP) Power: Humidity: 51.9 %  
 EUT: Bluetooth headphone  
 M/N: HE8  
 Mode: BT Link with charging  
 Note:

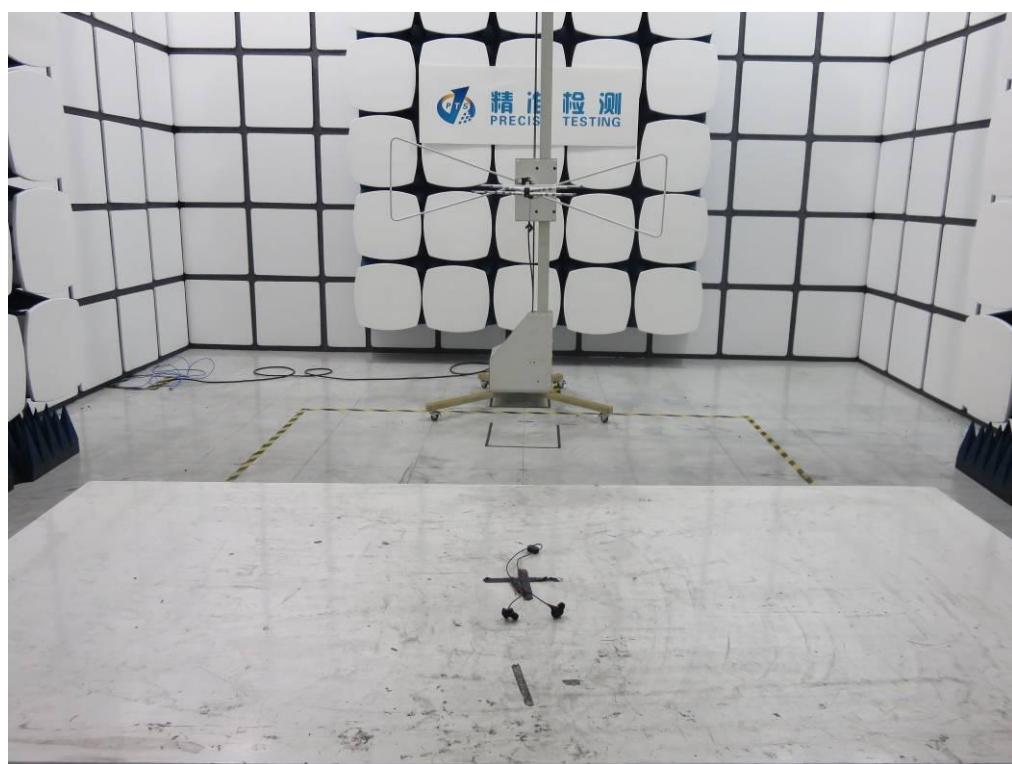
No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	Avg		Peak	QP	Avg	QP	Avg	QP	Avg		
1	0.2180	34.58		20.46	10.23	44.81		30.69	62.89	52.89	-18.08	-22.20	P	
2	0.4580	32.28		21.34	10.37	42.65		31.71	56.73	46.73	-14.08	-15.02	P	
3	1.7700	29.46		14.73	10.29	39.75		25.02	56.00	46.00	-16.25	-20.98	P	
4	5.2538	30.69		11.61	10.25	40.94		21.86	60.00	50.00	-19.06	-28.14	P	
5	8.2139	29.21		11.92	10.35	39.56		22.27	60.00	50.00	-20.44	-27.73	P	
6	20.5380	16.53		3.41	10.12	26.65		13.53	60.00	50.00	-33.35	-36.47	P	

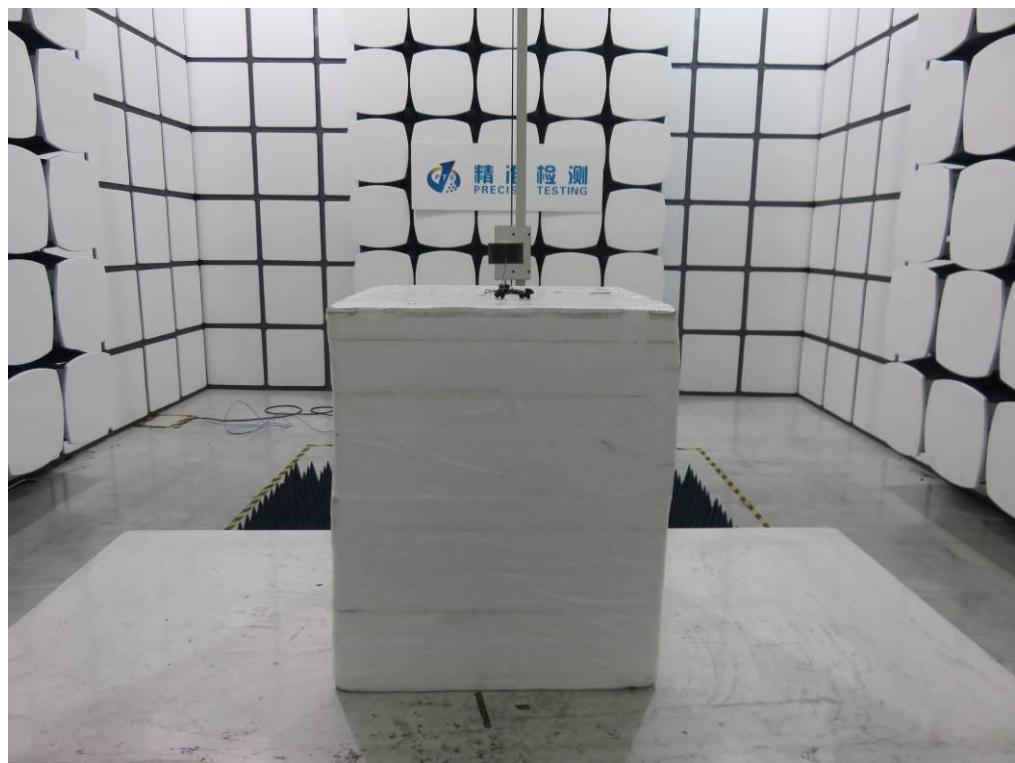
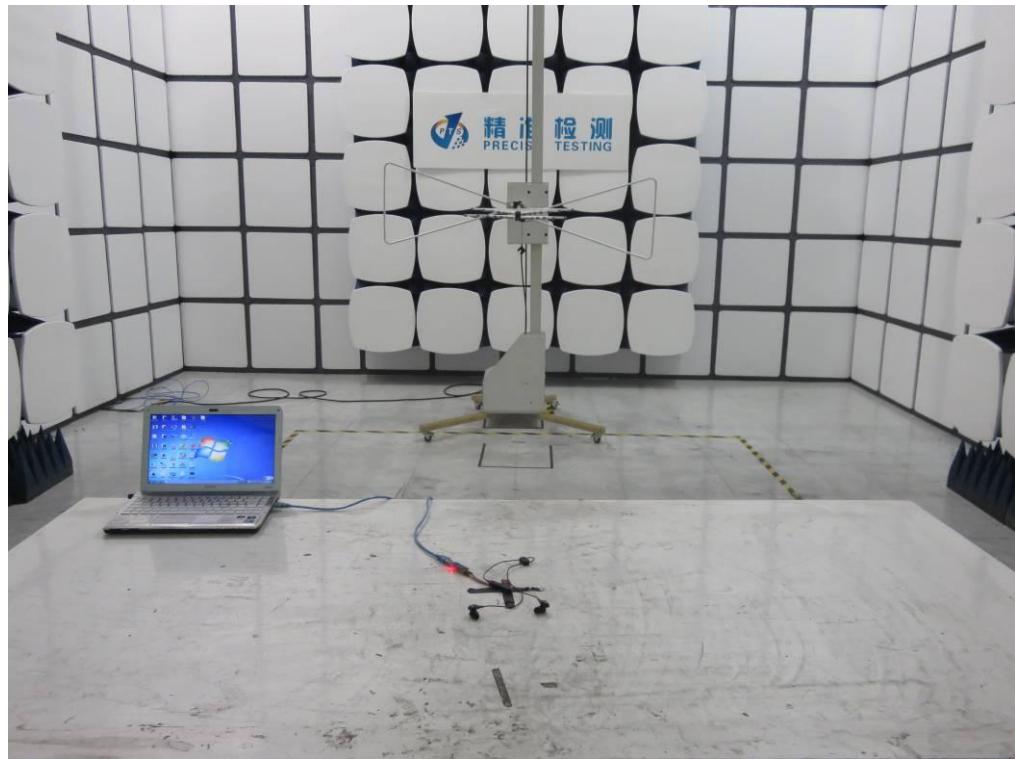
## APPENDIX A: PHOTOGRAPHS OF TEST SETUP

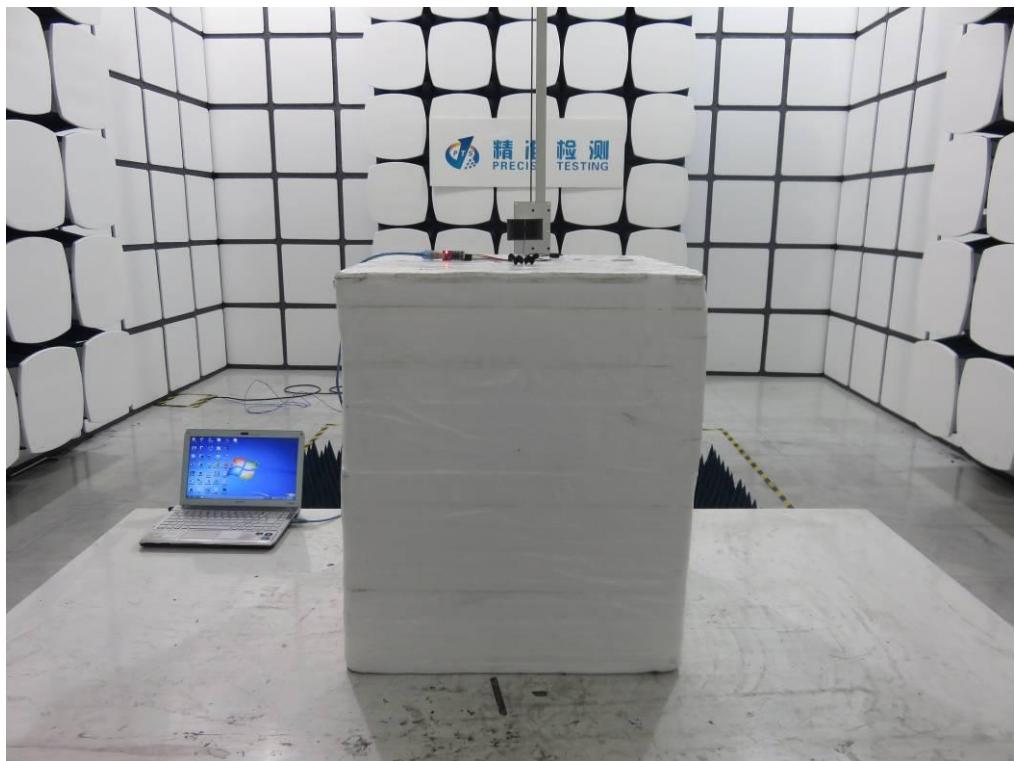
### FCC LINE CONDUCTED EMISSION TEST SETUP



### FCC RADIATED EMISSION TEST SETUP







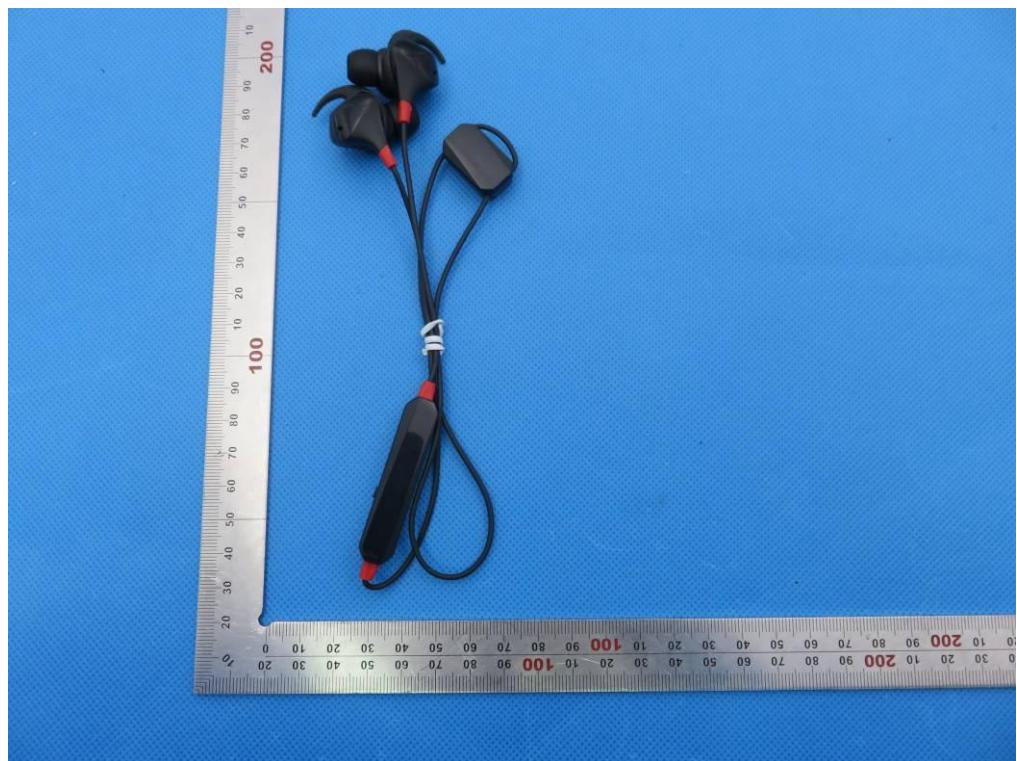
**APPENDIX B: PHOTOGRAPHS OF EUT**  
**WHOLE VIEW OF EUT**



TOP VIEW OF EUT



BOTTOM VIEW OF EUT



FRONT VIEW OF EUT



BACK VIEW OF EUT



LEFT VIEW OF EUT



RIGHT VIEW OF EUT



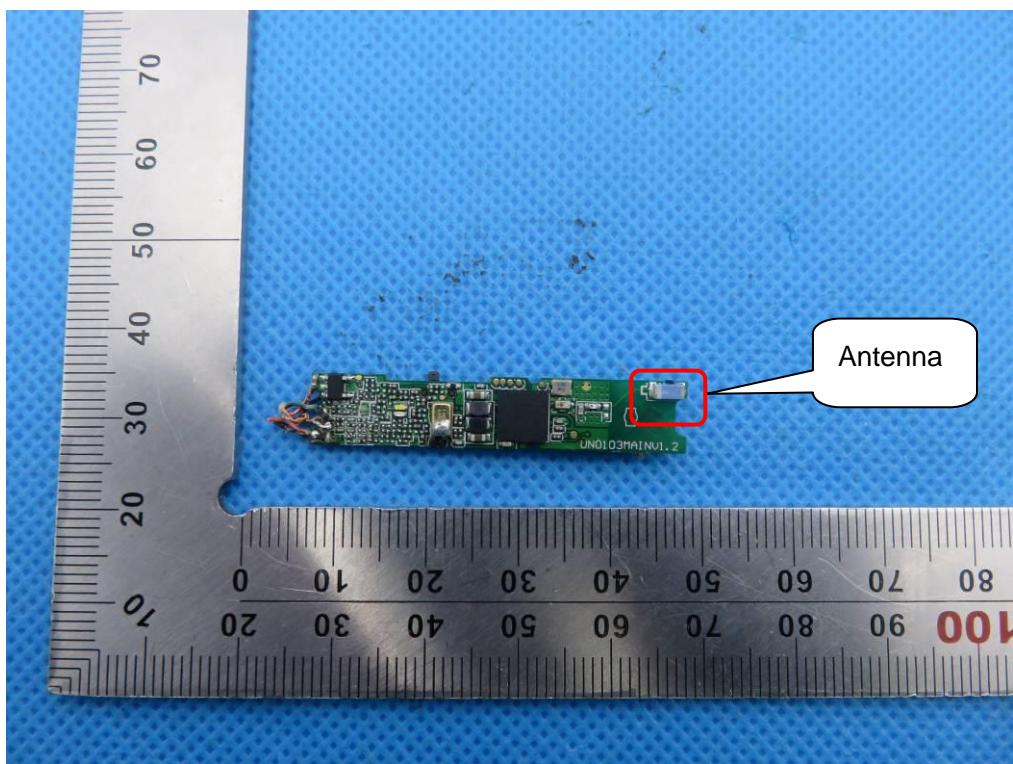
OPEN VIEW OF EUT-1



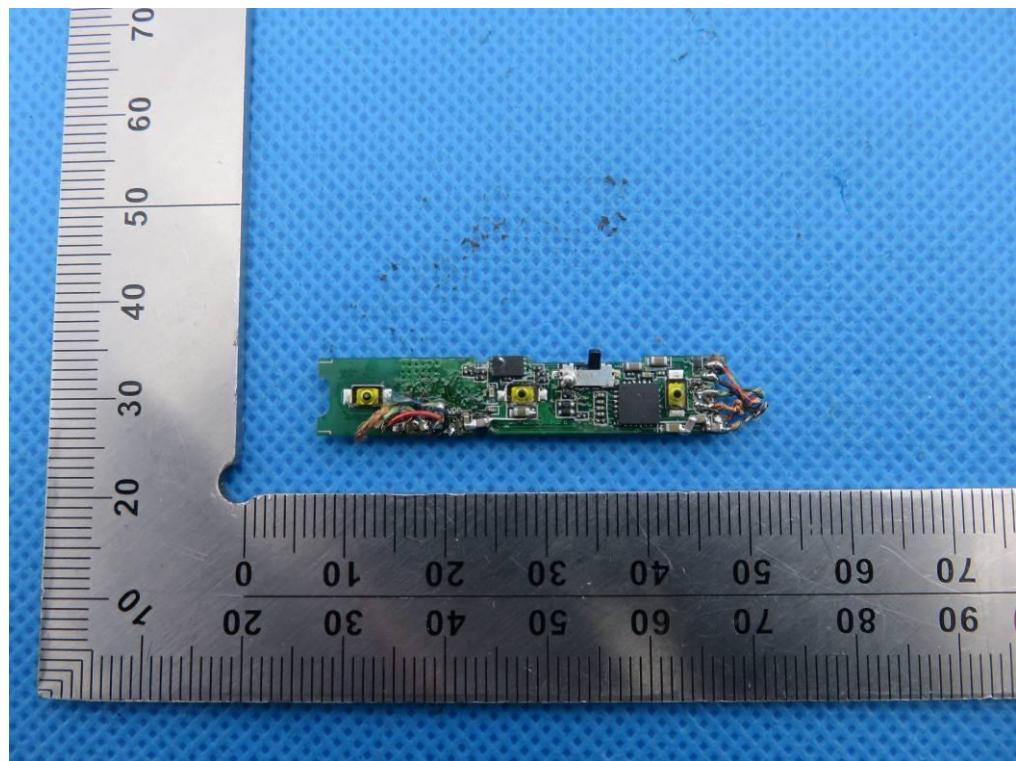
OPEN VIEW OF EUT-2



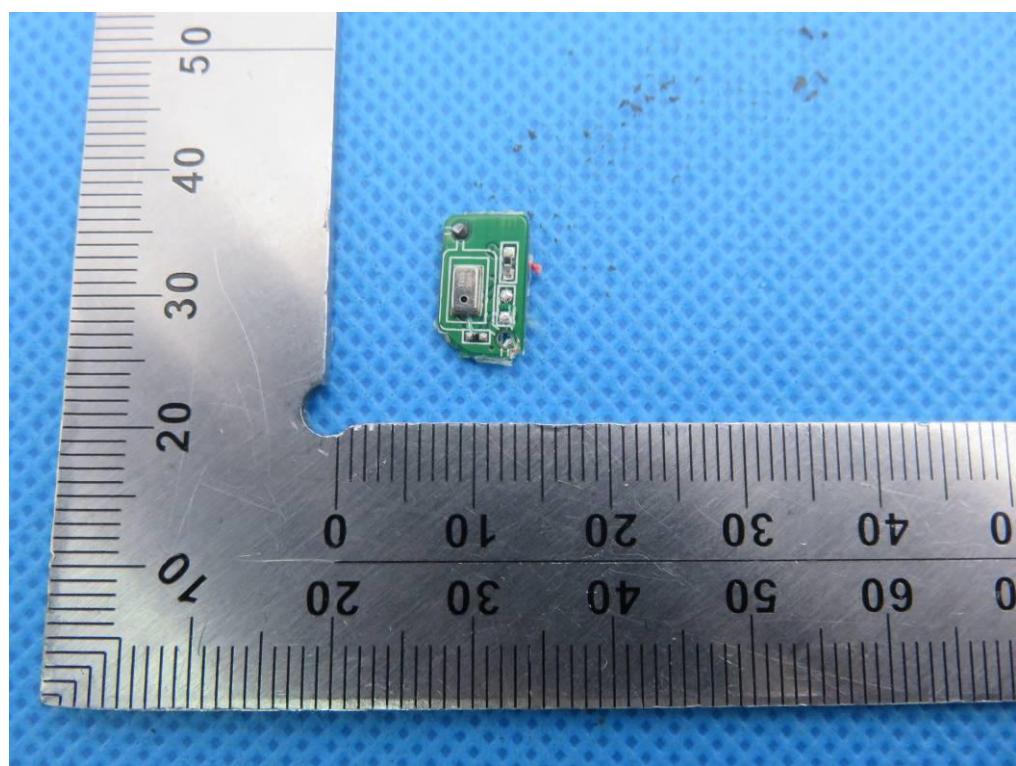
INTERNAL VIEW OF EUT-1



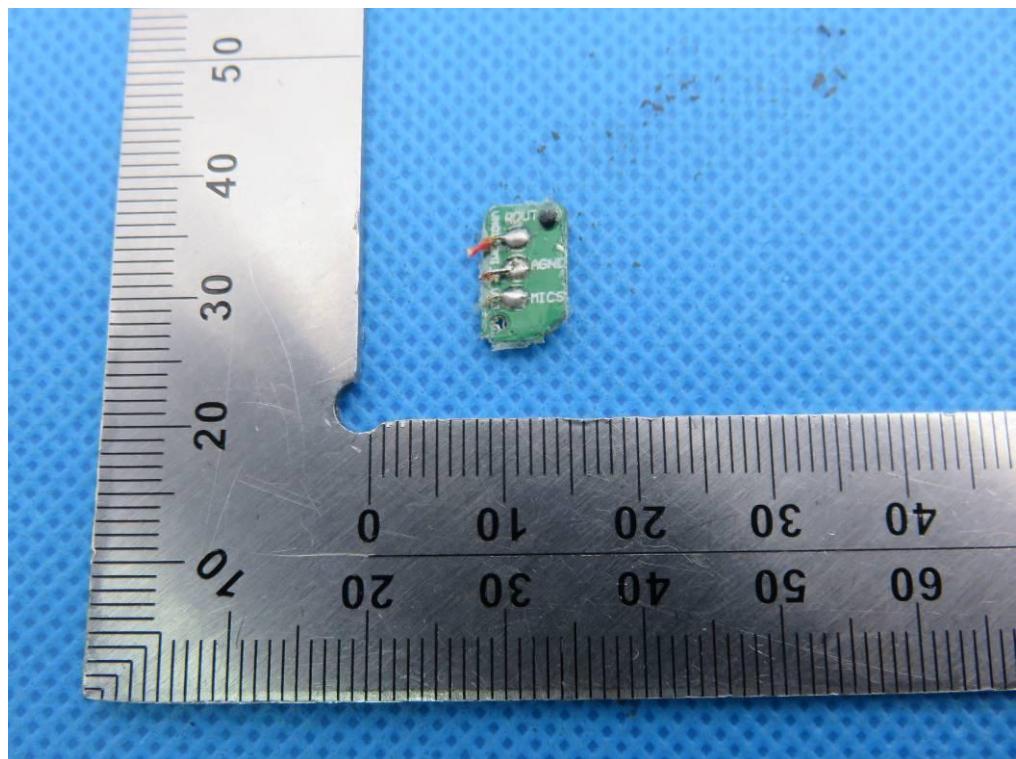
INTERNAL VIEW OF EUT-2



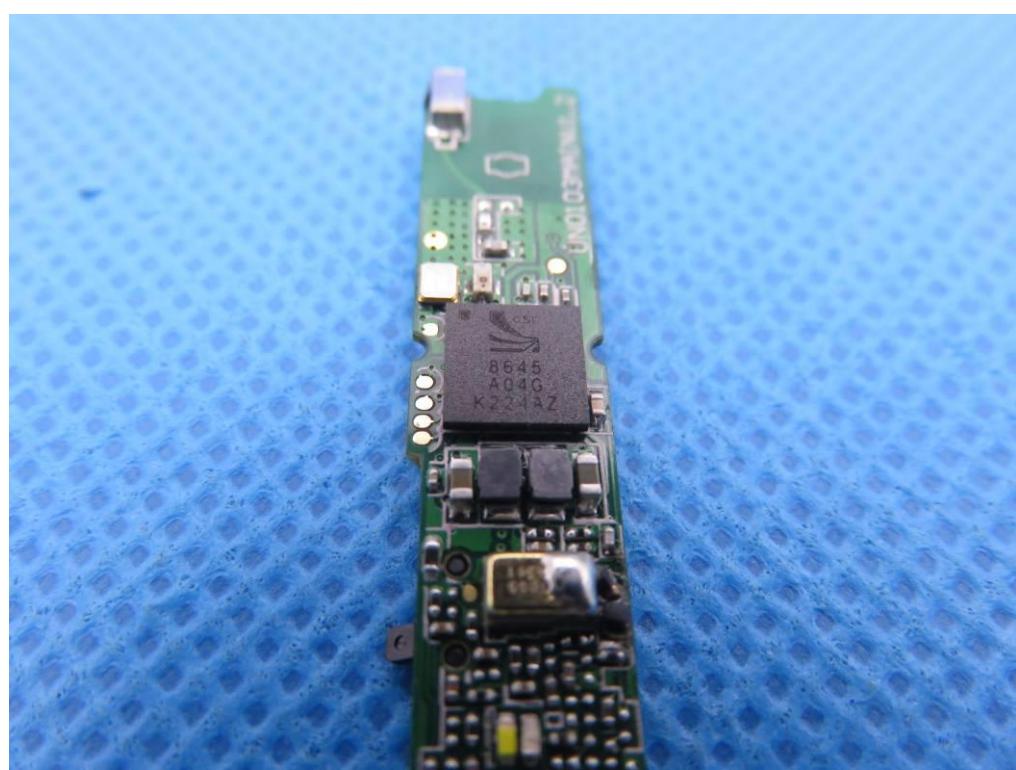
INTERNAL VIEW OF EUT-3



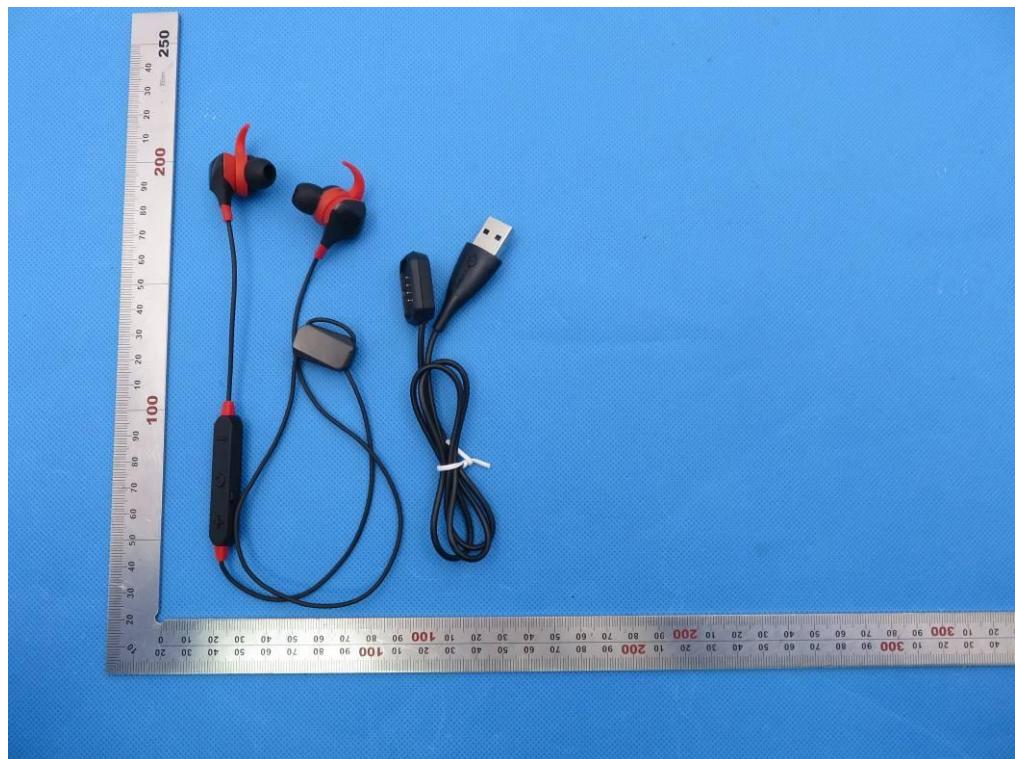
INTERNAL VIEW OF EUT-4



INTERNAL VIEW OF EUT-5



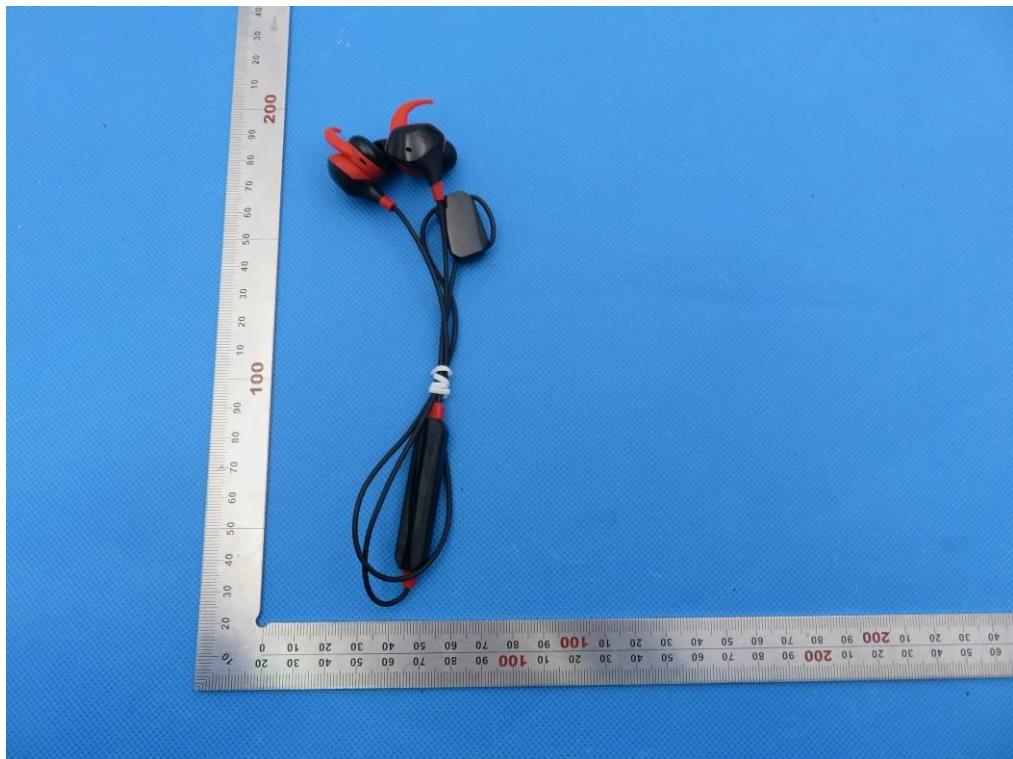
**Series Color**  
**WHOLE VIEW OF EUT**



**TOP VIEW OF EUT**



BOTTOM VIEW OF EUT



FRONT VIEW OF EUT



BACK VIEW OF EUT



LEFT VIEW OF EUT



RIGHT VIEW OF EUT



VIEW OF ADAPTER(AE)



THE ADAPTER SUPPLIED BY AGC

----END OF REPORT----