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# FCC Test Report

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Report No.: AGC06542160401FE03

**FCC ID** : 2AHXNJS168  
**APPLICATION PURPOSE** : Original Equipment  
**PRODUCT DESIGNATION** : Bluetooth Speaker  
**BRAND NAME** : ilavie  
**MODEL NAME** : JS-168  
**CLIENT** : Golden Trees Technology Co.,Ltd  
**DATE OF ISSUE** : Apr.29,2016  
**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	/	Apr.29, 2016	Valid	Original Report

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## 1. VERIFICATION OF CONFORMITY

<b>Applicant</b>	Golden Trees Technology Co.,Ltd
<b>Address</b>	No.3, Nan Tong Blvd, Bao Long Industrial Area, LongGang District , Shenzhen, China 518116
<b>Manufacturer</b>	Golden Trees Technology Co.,Ltd
<b>Address</b>	No.3, Nan Tong Blvd, Bao Long Industrial Area, LongGang District , Shenzhen, China 518116
<b>Product Designation</b>	Bluetooth Speaker
<b>Brand Name</b>	ilavie
<b>Test Model</b>	JS-168
<b>Date of test</b>	Apr.11,2016 to Apr.13,2016
<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)

Apr.29, 2016

Reviewed By

Forrest Lei(Lei Yonggang)

Apr.29, 2016

Approved By

Solger Zhang(Zhang Hongyi)  
Authorized Officer

Apr.29, 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>	2.34dBm(Max)
<b>Bluetooth Version</b>	V4.0
<b>Modulation</b>	GFSK, π /4-DQPSK, 8DPSK
<b>Number of channels</b>	79 for BR/EDR, 40 for BLE
<b>Hardware Version</b>	DSP6835VC_V1.0
<b>Software Version</b>	N/A
<b>Antenna Designation</b>	PCB Antenna
<b>Antenna Gain</b>	0dBi
<b>Power Supply</b>	DC 3.7V

Note: The USB port only used for charging and can't be used to transfer data with PC.

### 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 %.

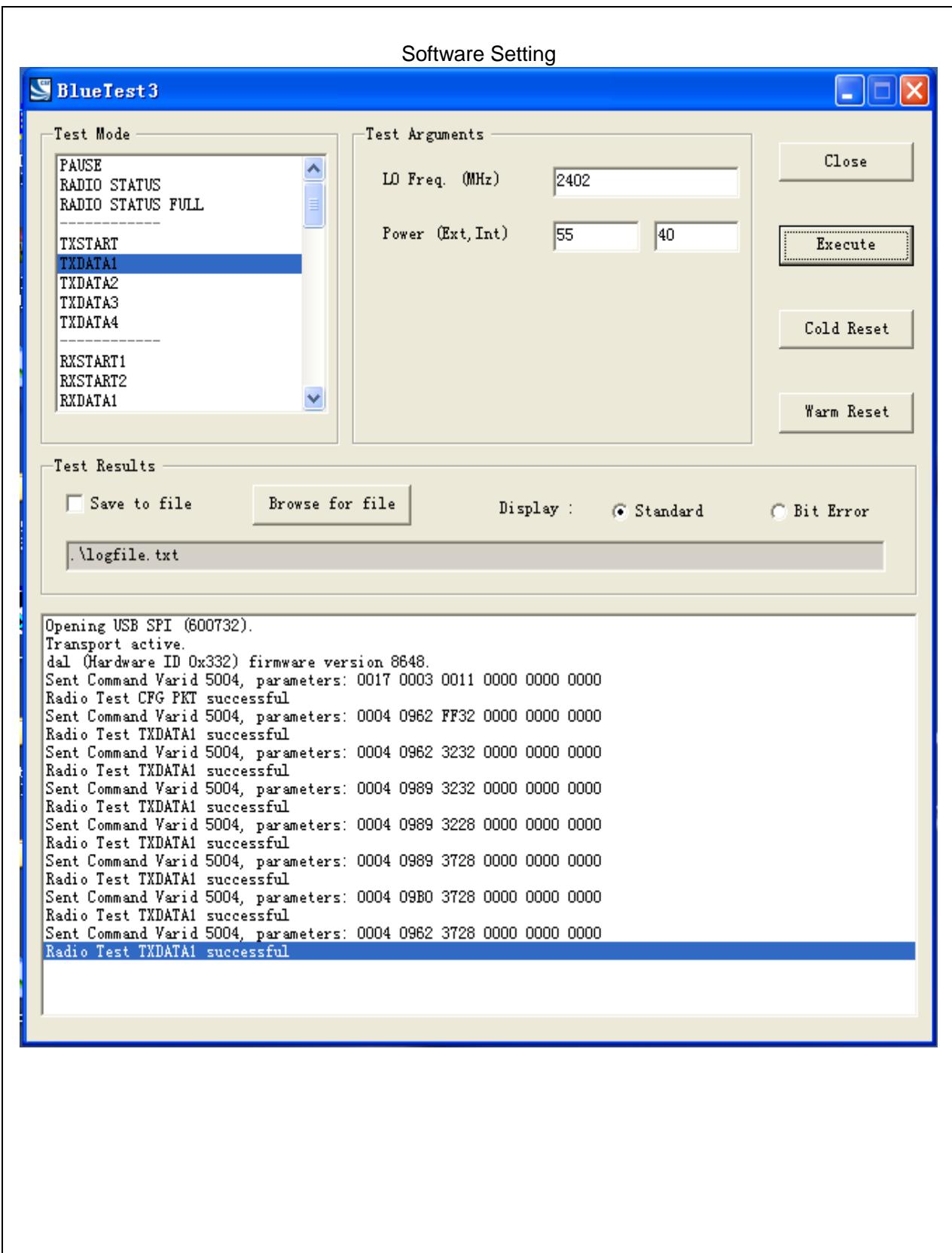
No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 3.18\text{dB}$
2	All emissions, radiated	$\pm 3.91\text{dB}$
3	Temperature	$\pm 0.5^\circ\text{C}$
4	Humidity	$\pm 2\%$

### 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:

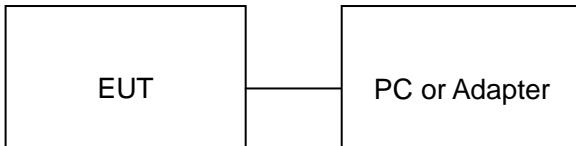
1. All the test modes can be supply by battery, only the result of the worst case was recorded in the report, if no other cases.
2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
3. The EUT used fully-charged battery when tested.



## 5. SYSTEM TEST CONFIGURATION

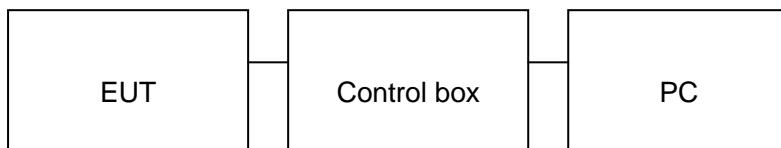
### 5.1. CONFIGURATION OF EUT SYSTEM

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	Model No.	ID or Specification	Remark
1	Bluetooth Speaker	JS-168	FCC ID: 2AHXNJS168	EUT
2	Battery	NV 602060	DC3.7V/ 700mAh	Accessory
3	PC	E1412AYCW	Sony	A.E
4	Control box	N/A	N/A	A.E
5	Adapter	ETPCA-050100U	N/A	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, 2015	July 3, 2016
Trilog Broadband Antenna (25M-1GHz)	SCHWARZBECK	VULB9160	9160-3355	July 4, 2015	July 3, 2016
Signal Amplifier	SCHWARZBECK	BBV 9475	9745-0013	July 4, 2015	July 3, 2016
RF Cable	SCHWARZBECK	AK9515E	96221	July 4, 2015	July 3, 2016
3m Anechoic Chamber	CHENGYU	966	PTS-001	June 6, 2015	June 5, 2016
MULTI-DEVICE Positioning Controller	Max-Full	MF-7802	MF780208339	N/A	N/A
Active loop antenna (9K-30MHz)	Schwarzbeck	FMZB1519	1519-038	June 6, 2015	June 5, 2016
Spectrum analyzer	Agilent	E4407B	MY46185649	June 6, 2015	June 5, 2016
Radiation Cable 1	MXT	RS1	R005	June 6, 2015	June 5, 2016
Radiation Cable 2	MXT	RS1	R006	June 6, 2015	June 5, 2016

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, 2015	July 3, 2016
Horn Antenna (1G-18GHz)	SCHWARZBECK	BBHA9120D	9120D-1246	July 11, 2015	July 10, 2016
Spectrum Analyzer	Agilent	E4411B	MY4511453	July 4, 2015	July 3, 2016
Signal Amplifier	SCHWARZBECK	BBV 9718	9718-269	July 7, 2015	July 6, 2016
RF Cable	SCHWARZBECK	AK9515H	96220	July 8, 2015	July 7, 2016
3m Anechoic Chamber	CHENGYU	966	PTS-001	June 6, 2015	June 5, 2016
MULTI-DEVICE Positioning Controller	Max-Full	MF-7802	MF780208339	N/A	N/A
Horn Ant (18G-40GHz)	Schwarzbeck	BBHA 9170	9170-181	June 6, 2015	June 5, 2016
Radiation Cable 1	MXT	RS1	R005	June 6, 2015	June 5, 2016
Radiation Cable 2	MXT	RS1	R006	June 6, 2015	June 5, 2016

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, 2015	July 3, 2016
Artificial Mains Network	Narda	L2-16B	000WX31025	July 8, 2015	July 7, 2016
Artificial Mains Network (AUX)	Narda	L2-16B	000WX31026	July 8, 2015	July 7, 2016
RF Cable	SCHWARZBECK	AK9515E	96222	July 4, 2015	July 3, 2016
Shielded Room	CHENGYU	843	PTS-002	June 6,2015	June 5,2016
Conduction Cable	MXT	SE1	S003	June 6,2015	June 5,2016

## 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

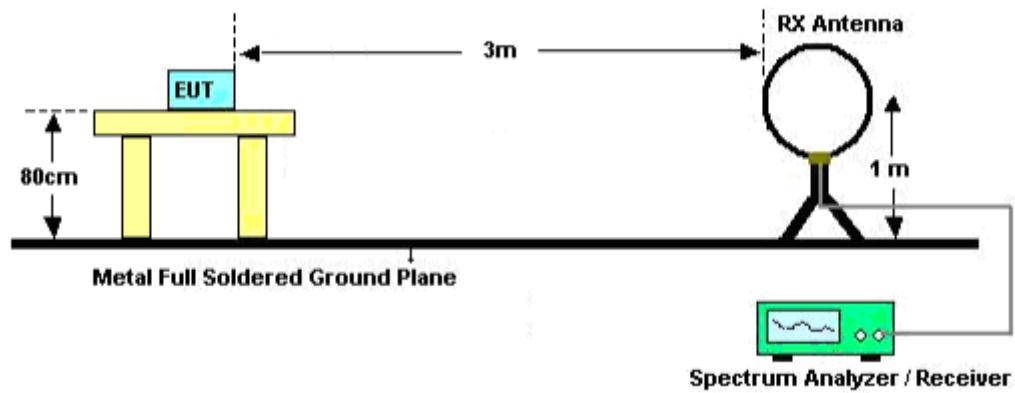
1. The measuring distance of 3m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation(below 1GHz)
2. The measuring distance of 3m shall 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 denoted 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.

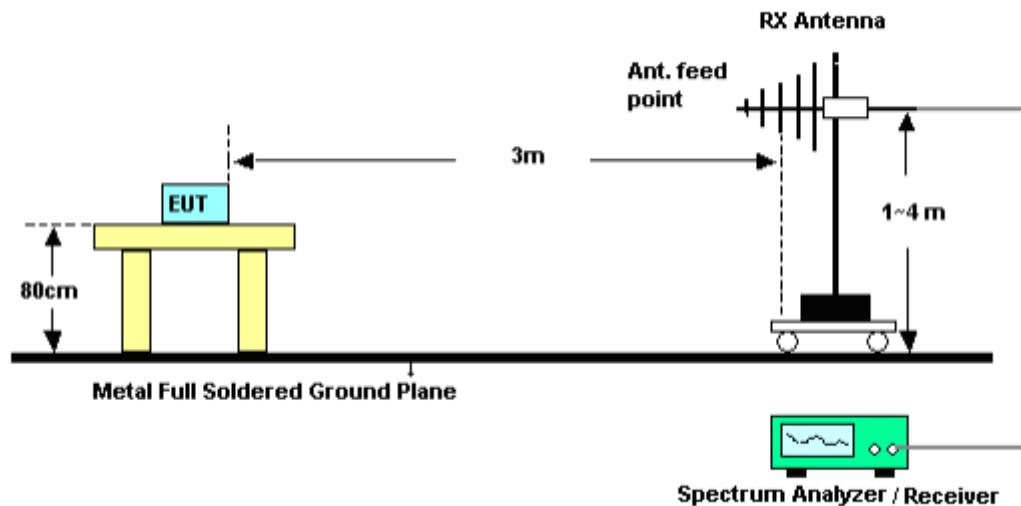
<b>Spectrum Parameter</b>	<b>Setting</b>
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
Start ~Stop Frequency	1GHz~26.5GHz 1MHz/3MHz for Peak, 1MHz/10Hz for Average
<b>Receiver Parameter</b>	<b>Setting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

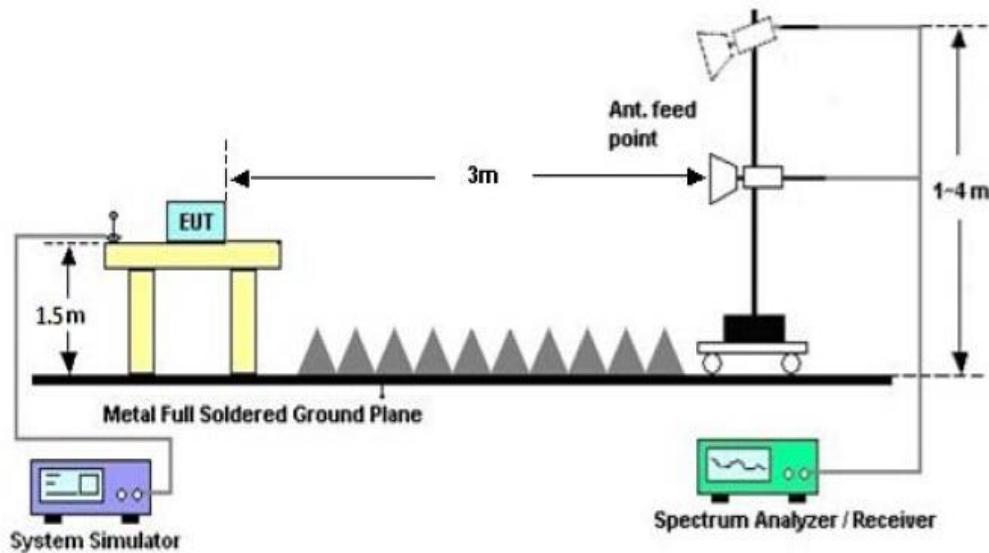
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



**8.4. TEST RESULT**

**(Worst modulation:GFSK)**

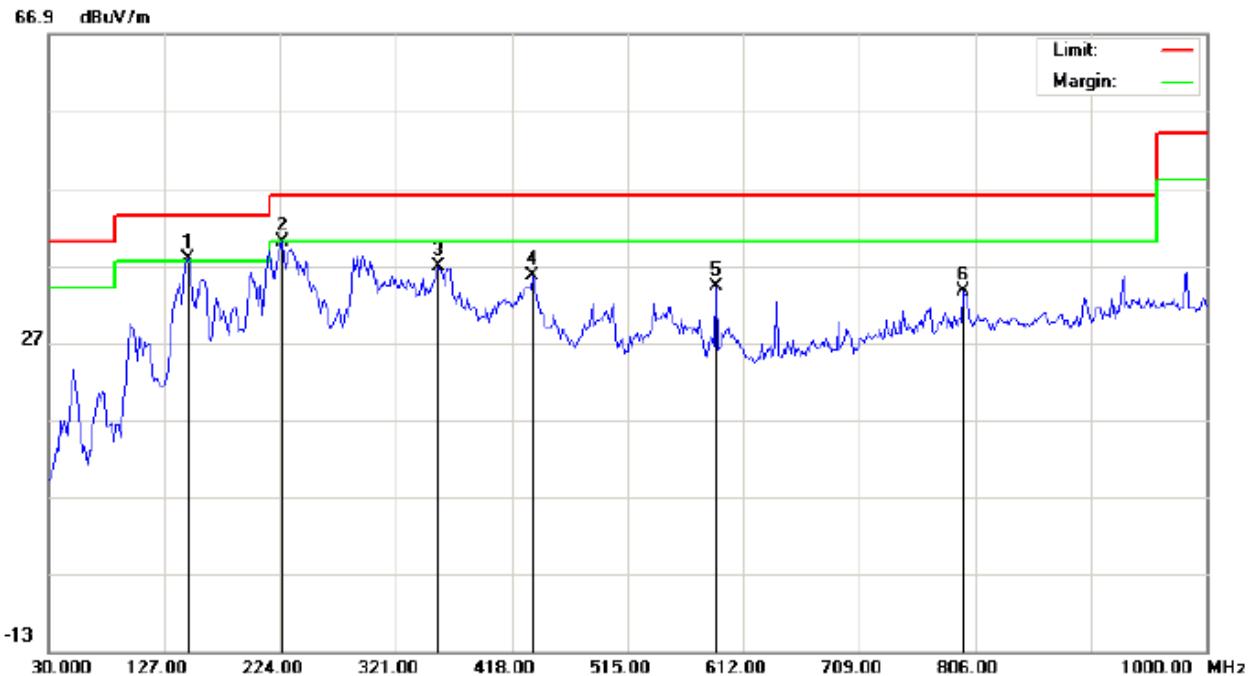
**FOR BR/EDR**

**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




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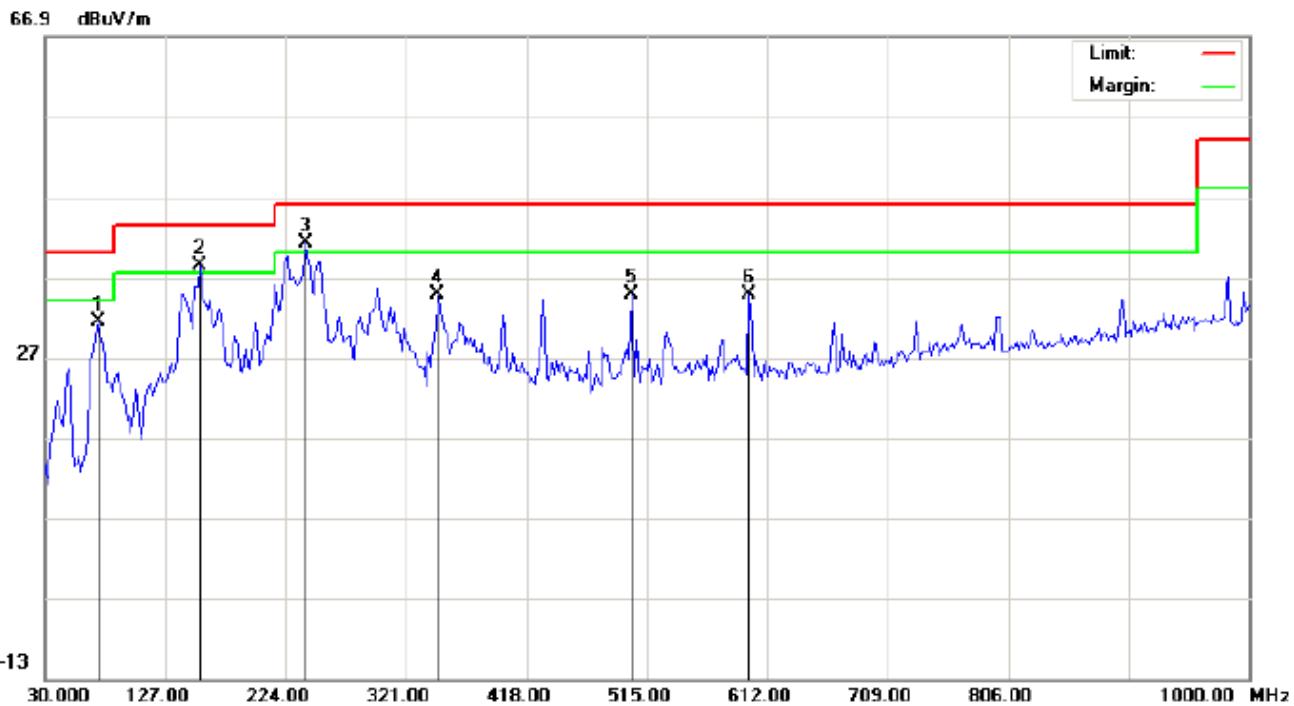
Site: site #1	Polarization: <i>Horizontal</i>	Temperature: 23.9
Limit: FCC Class B 3M Radiation	Power:	Humidity: 52.2 %
EUT: Bluetooth Speaker	Distance:	
M/N: JS168		
Mode: Low Channel TX		
Note:		

---

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	*	146.4000	24.25	13.64	37.89	43.50	-5.61	peak			
2	!	225.6167	30.70	9.39	40.09	46.00	-5.91	peak			
3		356.5667	18.03	18.78	36.81	46.00	-9.19	peak			
4		435.7832	15.52	20.16	35.68	46.00	-10.32	peak			
5		589.3667	10.66	23.46	34.12	46.00	-11.88	peak			
6		796.2998	6.34	27.27	33.61	46.00	-12.39	peak			

**RESULT: PASS**

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




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Site: site #1	Polarization: <b>Vertical</b>	Temperature: 23.9
Limit: FCC Class B 3M Radiation	Power:	Humidity: 52.2 %
EUT: Bluetooth Speaker	Distance:	
M/N: JS168		
Mode: Low Channel TX		
Note:		

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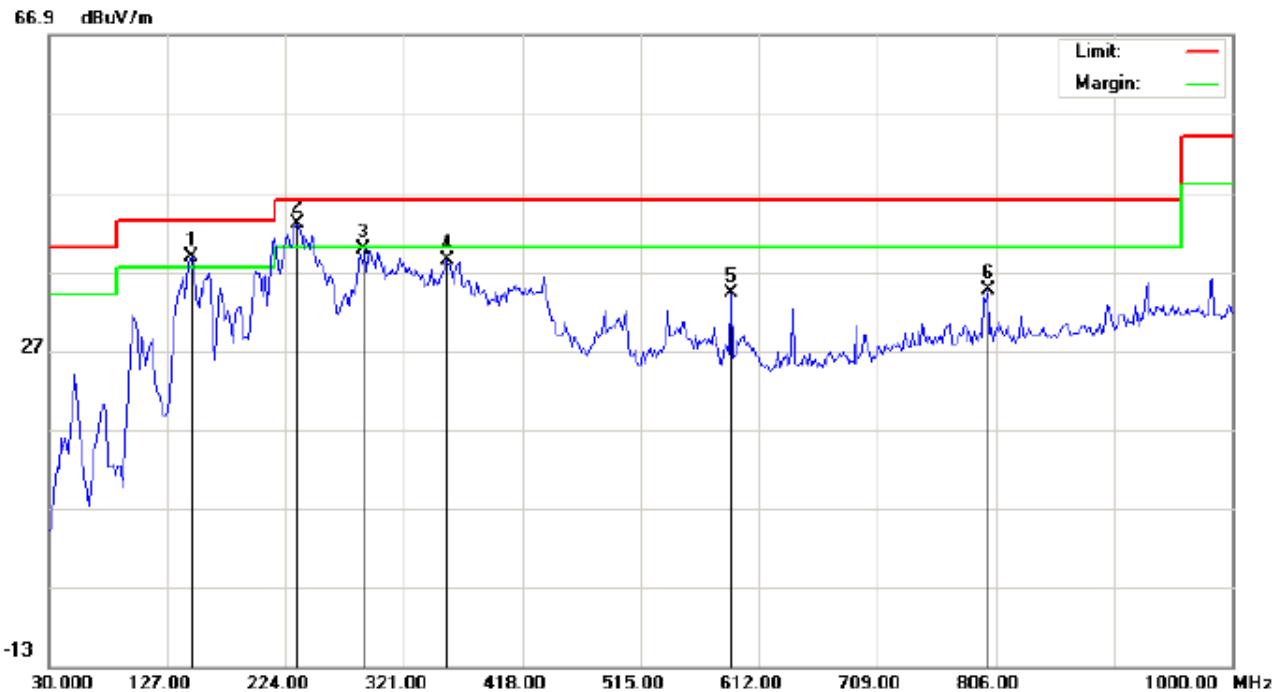
No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		73.6500	28.10	3.36	31.46	40.00	-8.54	peak			
2	!	154.4832	23.04	15.29	38.33	43.50	-5.17	peak			
3	*	240.1665	28.22	12.94	41.16	46.00	-4.84	peak			
4		346.8666	16.27	18.53	34.80	46.00	-11.20	peak			
5		502.0667	13.54	21.19	34.73	46.00	-11.27	peak			
6		597.4500	12.06	22.72	34.78	46.00	-11.22	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)-MIDDLE CHANNEL-HORIZONTAL



Site: site #1 Polarization: *Horizontal* Temperature: 23.9  
Limit: FCC Class B 3M Radiation Power: Humidity: 52.2 %  
EUT: Bluetooth Speaker Distance:  
M/N: JS168  
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	!	146.4000	25.25	13.64	38.89	43.50	-4.61	peak			
2	*	233.6999	34.46	8.56	43.02	46.00	-2.98	peak			
3		288.6666	26.27	13.48	39.75	46.00	-6.25	peak			
4		356.5667	19.53	18.78	38.31	46.00	-7.69	peak			
5		589.3667	10.66	23.46	34.12	46.00	-11.88	peak			
6		799.5333	7.28	27.31	34.59	46.00	-11.41	peak			

**RESULT: PASS**

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



Site: site #1	Polarization: <i>Vertical</i>	Temperature: 23.9
Limit: FCC Class B 3M Radiation	Power:	Humidity: 52.2 %
EUT: Bluetooth Speaker	Distance:	
M/N: JS168		
Mode: Middle Channel TX		
Note:		

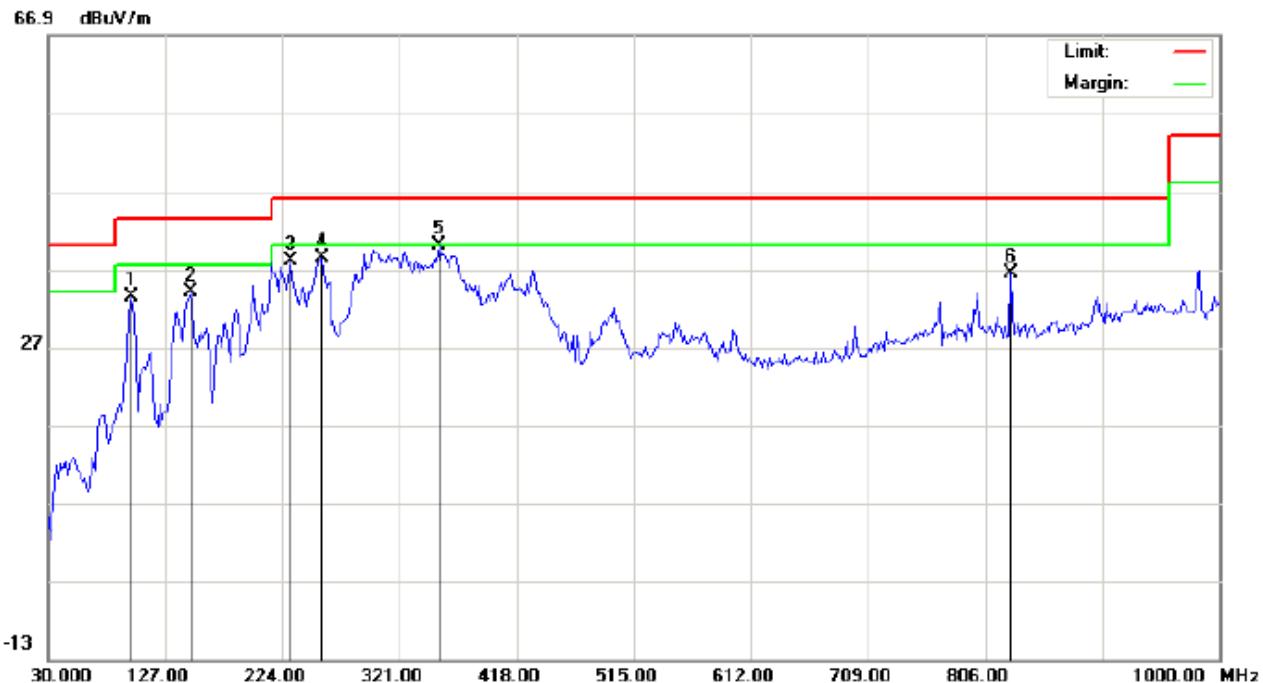
No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		70.4167	25.31	4.16	29.47	40.00	-10.53	peak			
2	!	154.4832	24.54	15.29	39.83	43.50	-3.67	peak			
3	!	225.6167	29.49	11.51	41.00	46.00	-5.00	peak			
4	*	249.8667	28.50	13.89	42.39	46.00	-3.61	peak			
5		503.6833	15.99	21.23	37.22	46.00	-8.78	peak			
6		597.4500	12.56	22.72	35.28	46.00	-10.72	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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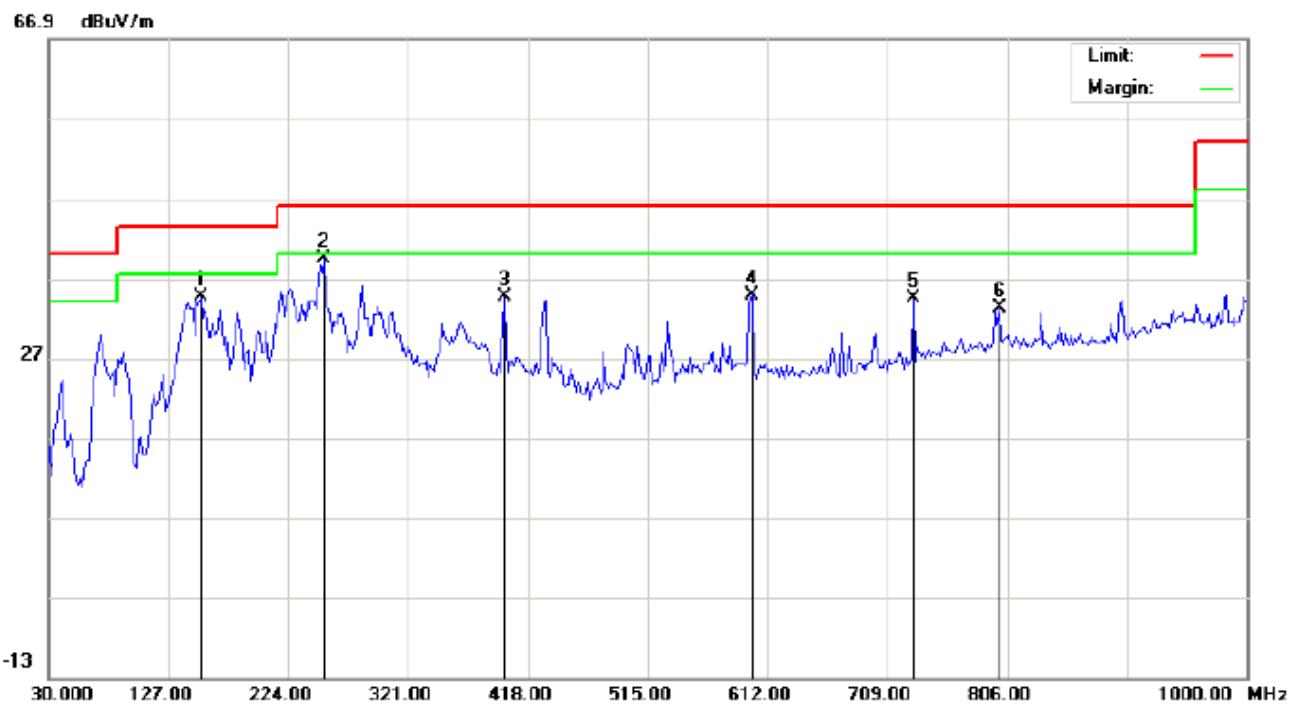
Site: site #1	Polarization: <i>Horizontal</i>	Temperature: 23.9
Limit: FCC Class B 3M Radiation	Power:	Humidity: 52.2 %
EUT: Bluetooth Speaker	Distance:	
M/N: JS168		
Mode: High Channel TX		
Note:		

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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		99.5167	23.33	10.00	33.33	43.50	-10.17	peak			
2		148.0167	20.73	13.25	33.98	43.50	-9.52	peak			
3		230.4667	29.07	8.89	37.96	46.00	-8.04	peak			
4		256.3333	30.39	7.98	38.37	46.00	-7.63	peak			
5	*	353.3333	21.30	18.76	40.06	46.00	-5.94	peak			
6		827.0167	9.07	27.31	36.38	46.00	-9.62	peak			

**RESULT: PASS**

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




---

Site: site #1	Polarization: <i>Vertical</i>	Temperature: 23.9
Limit: FCC Class B 3M Radiation	Power:	Humidity: 52.2 %
EUT: Bluetooth Speaker	Distance:	
M/N: JS168		
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		152.8667	19.33	15.28	34.61	43.50	-8.89	peak			
2	*	253.1000	25.43	13.99	39.42	46.00	-6.58	peak			
3		398.6000	15.61	19.06	34.67	46.00	-11.33	peak			
4		599.0667	12.17	22.73	34.90	46.00	-11.10	peak			
5		730.0167	8.34	26.05	34.39	46.00	-11.61	peak			
6		799.5333	5.92	27.31	33.23	46.00	-12.77	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.

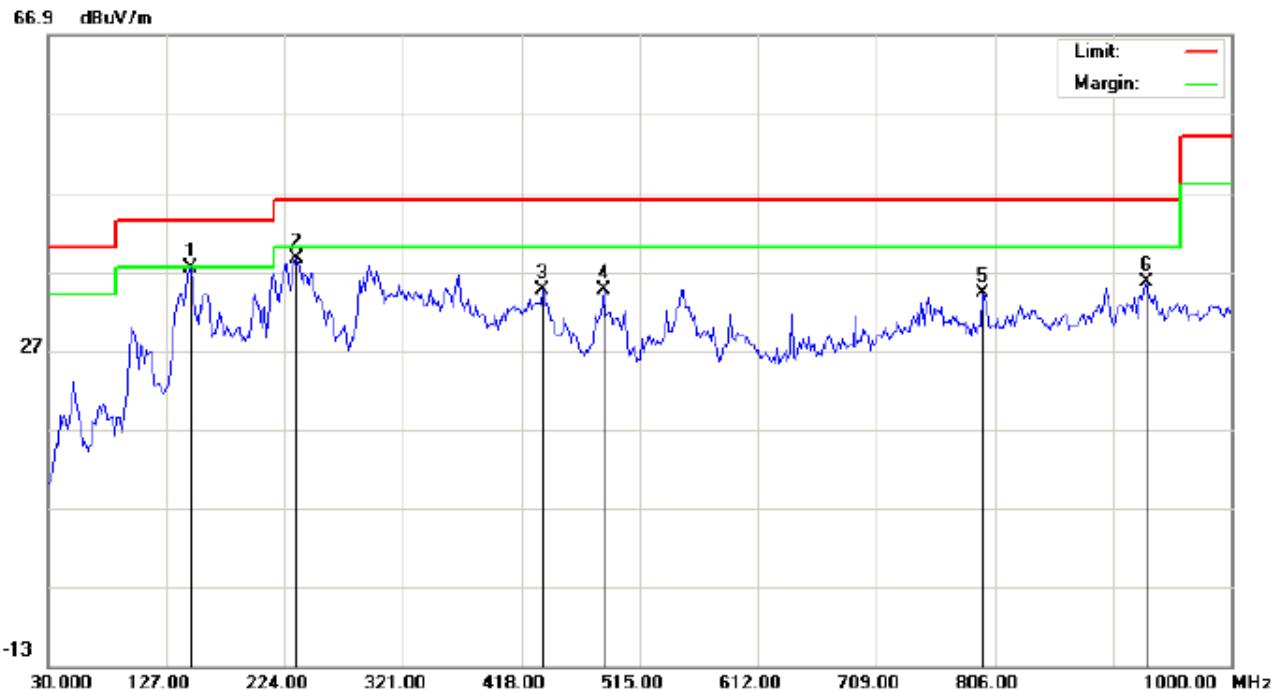
**FOR BLE**

### 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

Polarization: **Horizontal**

Temperature: 23.9

Limit: FCC Class B 3M Radiation

Power:

Humidity: 52.2 %

EUT: Bluetooth Speaker

Distance:

M/N: JS168

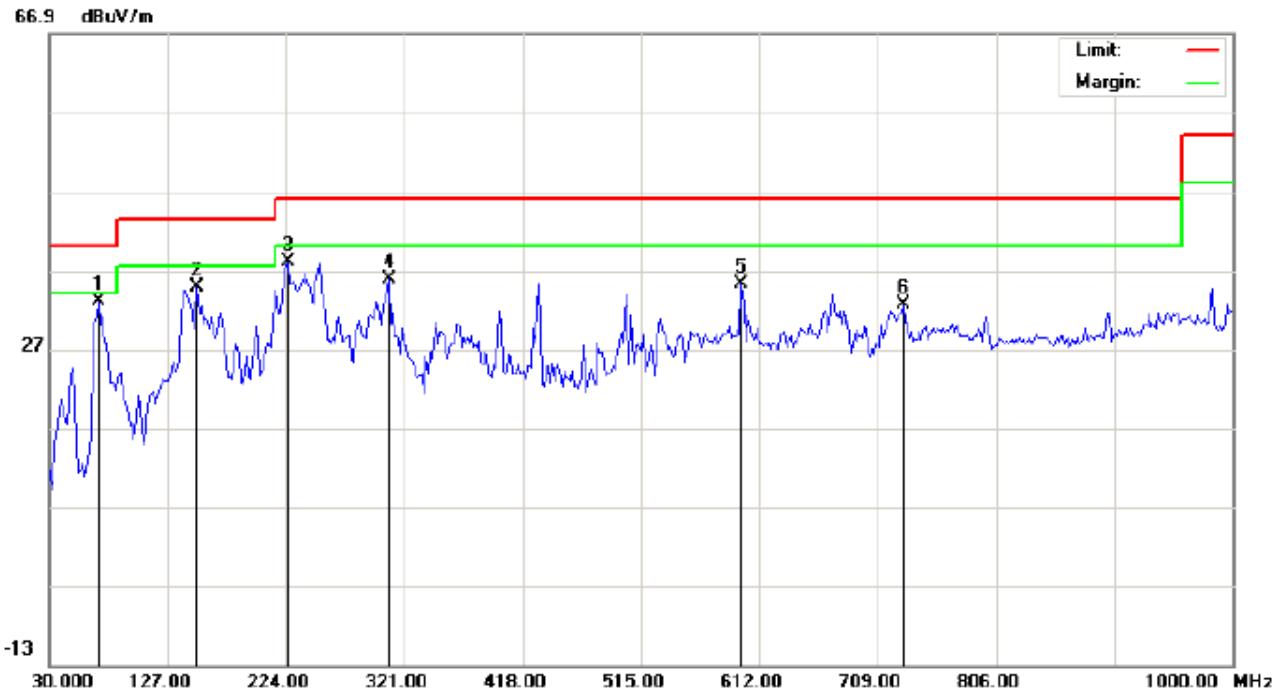
Mode: Low Channel TX

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	*	146.4000	23.75	13.64	37.39	43.50	-6.11	peak			
2		233.6999	29.96	8.56	38.52	46.00	-7.48	peak			
3		435.7832	14.52	20.16	34.68	46.00	-11.32	peak			
4		485.8999	13.55	20.98	34.53	46.00	-11.47	peak			
5		796.2998	6.84	27.27	34.11	46.00	-11.89	peak			
6		930.4832	6.10	29.46	35.56	46.00	-10.44	peak			

**RESULT: PASS**

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



Site: site #1 Polarization: **Vertical** Temperature: 23.9  
 Limit: FCC Class B 3M Radiation Power: Humidity: 52.2 %  
 EUT: Bluetooth Speaker Distance:  
 M/N: JS168  
 Mode: Low Channel TX  
 Note:

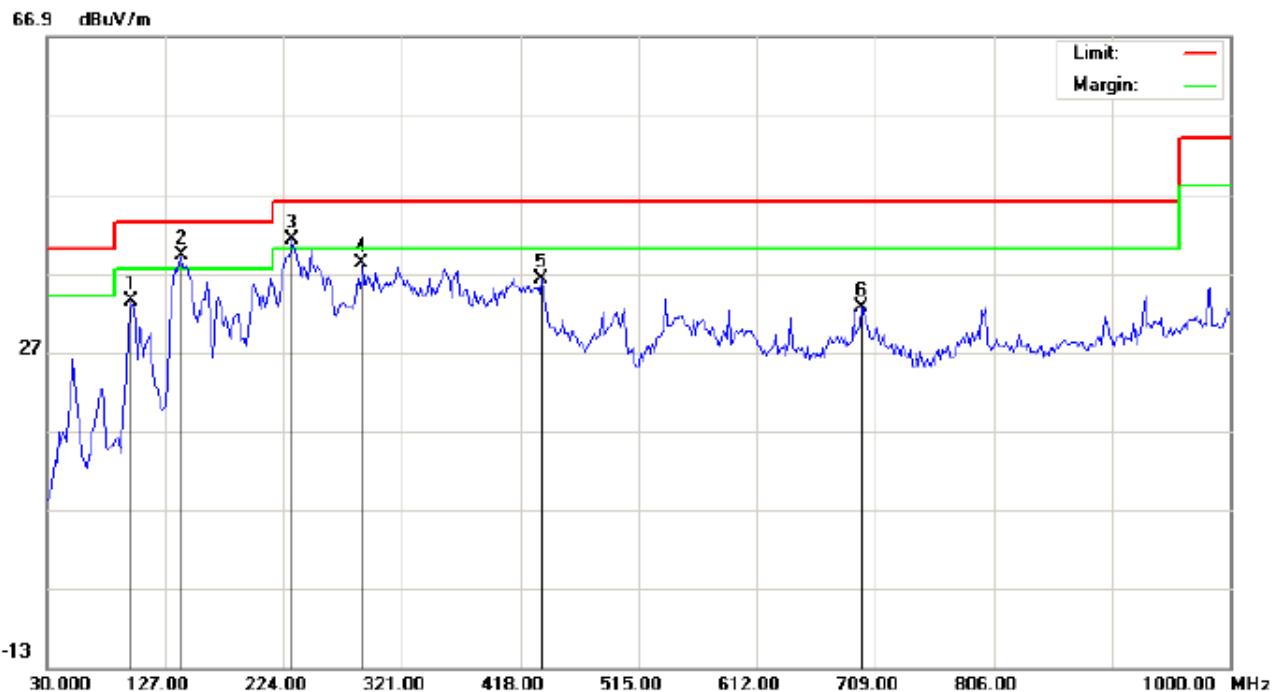
No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	70.4167	28.81	4.16	32.97	40.00	-7.03	peak			
2		151.2500	19.53	15.27	34.80	43.50	-8.70	peak			
3		225.6167	26.49	11.51	38.00	46.00	-8.00	peak			
4		308.0667	19.78	15.95	35.73	46.00	-10.27	peak			
5		597.4500	12.56	22.72	35.28	46.00	-10.72	peak			
6		730.0167	6.53	26.05	32.58	46.00	-13.42	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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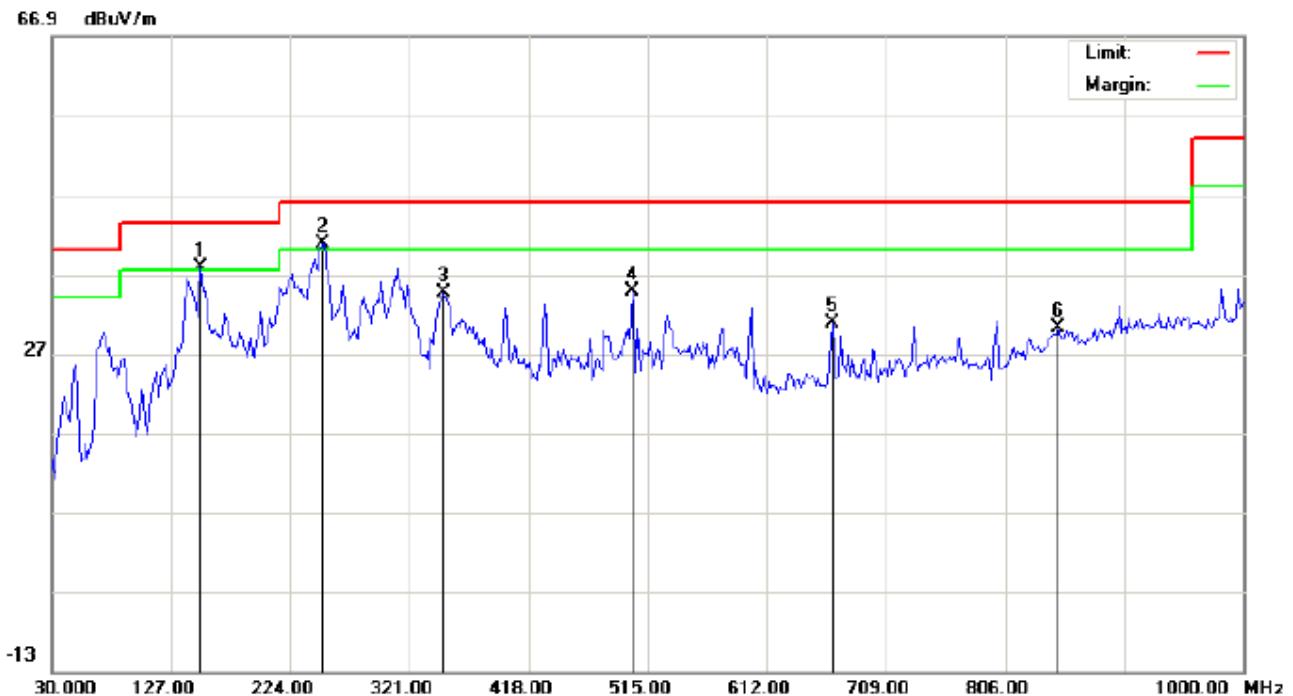
Site: site #1	Polarization: <b>Horizontal</b>	Temperature: 23.9
Limit: FCC Class B 3M Radiation	Power:	Humidity: 52.2 %
EUT: Bluetooth Speaker	Distance:	
M/N: JS168		
Mode: Middle Channel TX		
Note:		

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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		99.5167	23.34	10.00	33.34	43.50	-10.16	peak			
2	*	139.9333	24.00	15.17	39.17	43.50	-4.33	peak			
3	!	230.4667	32.30	8.89	41.19	46.00	-4.81	peak			
4		288.6666	24.77	13.48	38.25	46.00	-7.75	peak			
5		435.7832	16.02	20.16	36.18	46.00	-9.82	peak			
6		697.6833	7.43	25.13	32.56	46.00	-13.44	peak			

**RESULT: PASS**

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




---

Site: site #1	Polarization: <b>Vertical</b>	Temperature: 23.9
Limit: FCC Class B 3M Radiation	Power:	Humidity: 52.2 %
EUT: Bluetooth Speaker	Distance:	
M/N: JS168		
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	!	151.2500	22.53	15.27	37.80	43.50	-5.70	peak			
2	*	249.8667	27.00	13.89	40.89	46.00	-5.11	peak			
3		348.4832	15.97	18.64	34.61	46.00	-11.39	peak			
4		502.0667	13.54	21.19	34.73	46.00	-11.27	peak			
5		665.3500	6.52	24.26	30.78	46.00	-15.22	peak			
6		849.6499	2.89	27.31	30.20	46.00	-15.80	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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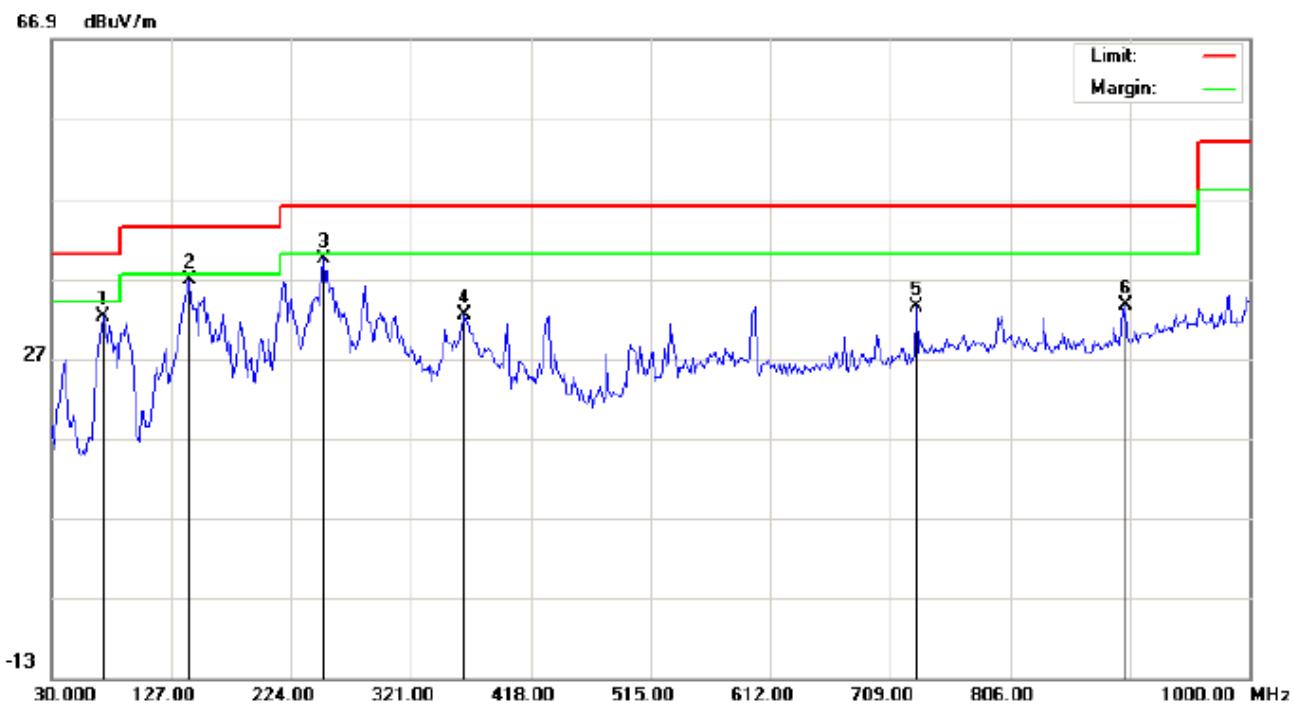
Site: site #1	Polarization: <i>Horizontal</i>	Temperature: 23.9
Limit: FCC Class B 3M Radiation	Power:	Humidity: 52.2 %
EUT: Bluetooth Speaker	Distance:	
M/N: JS168		
Mode: High Channel TX		
Note:		

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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		99.5167	23.33	10.00	33.33	43.50	-10.17	peak			
2		146.4000	21.30	13.64	34.94	43.50	-8.56	peak			
3		230.4667	28.57	8.89	37.46	46.00	-8.54	peak			
4		325.8500	20.62	17.13	37.75	46.00	-8.25	peak			
5	*	353.3333	21.80	18.76	40.56	46.00	-5.44	peak			
6		827.0167	8.07	27.31	35.38	46.00	-10.62	peak			

**RESULT: PASS**

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




---

Site: site #1	Polarization: <i>Vertical</i>	Temperature: 23.9
Limit: FCC Class B 3M Radiation	Power:	Humidity: 52.2 %
EUT: Bluetooth Speaker	Distance:	
M/N: JS168		
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		72.0331	28.49	3.76	32.25	40.00	-7.75	peak			
2		141.5500	21.62	15.21	36.83	43.50	-6.67	peak			
3	*	249.8667	25.61	13.89	39.50	46.00	-6.50	peak			
4		364.6499	13.61	18.84	32.45	46.00	-13.55	peak			
5		730.0167	7.34	26.05	33.39	46.00	-12.61	peak			
6		899.7667	5.07	28.60	33.67	46.00	-12.33	peak			

**RESULT: PASS**

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

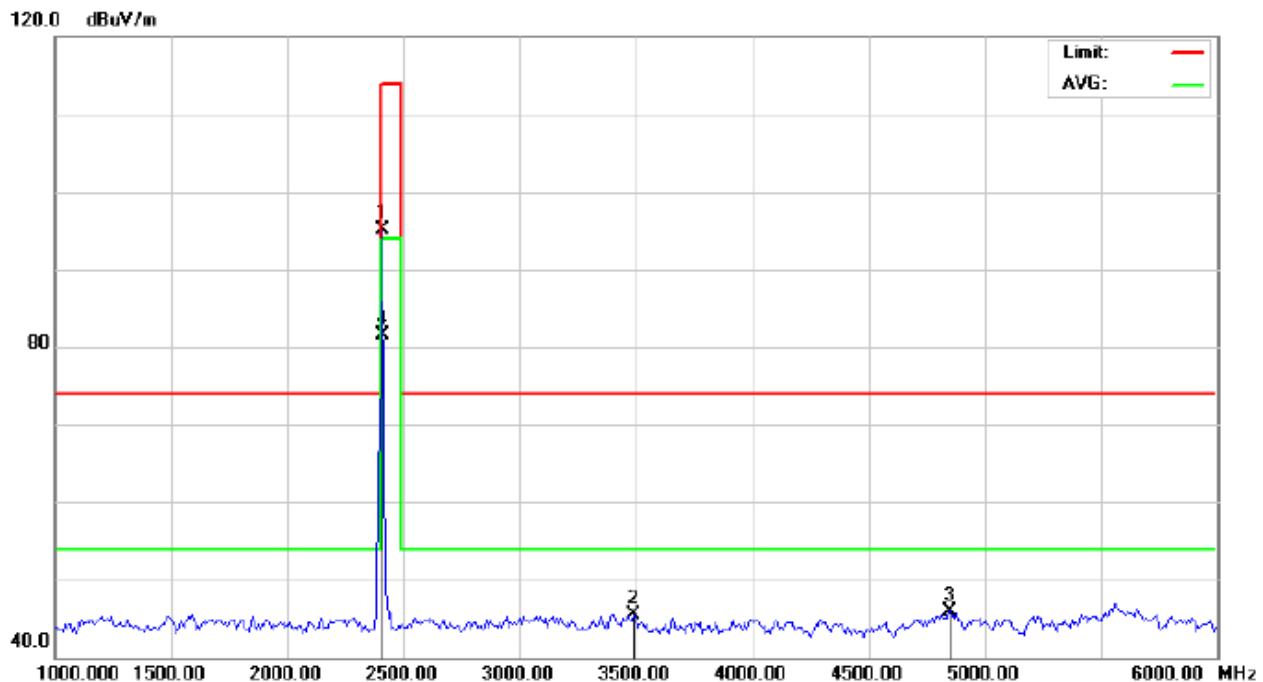
2. The "Factor" value can be calculated automatically by software of measurement system.

### RADIATED EMISSION ABOVE 1GHZ

(Worst modulation: GFSK)

FOR BR/EDR

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



Site: Conduction Polarization: *Horizontal* Temperature: 26

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

EUT: Bluetooth Speaker Distance: 3m

M/N: JS-168

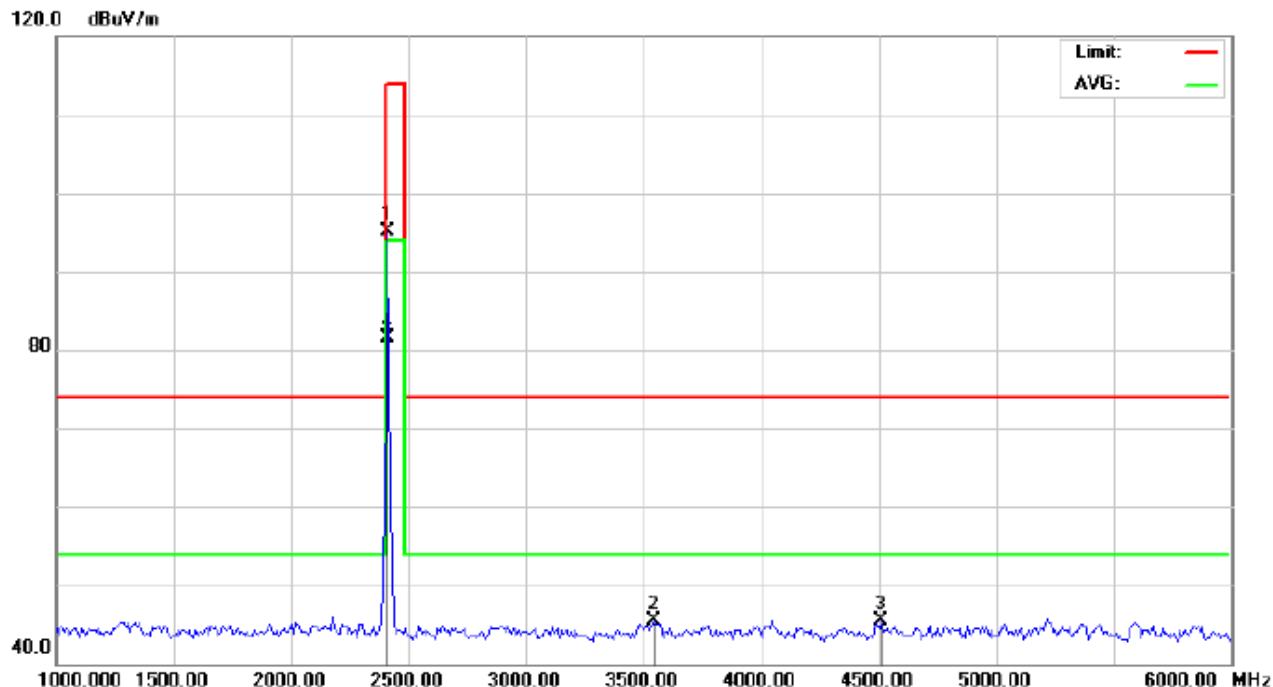
Mode: Low Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2402.000	104.76	-9.68	95.08	114.00	-18.92	peak			
2		3491.667	53.45	-7.90	45.55	74.00	-28.45	peak			
3		4850.000	48.18	-2.19	45.99	74.00	-28.01	peak			
4	*	2402.000	91.12	-9.68	81.44	94.00	-12.56	AVG	100	126	

**RESULT: PASS**

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




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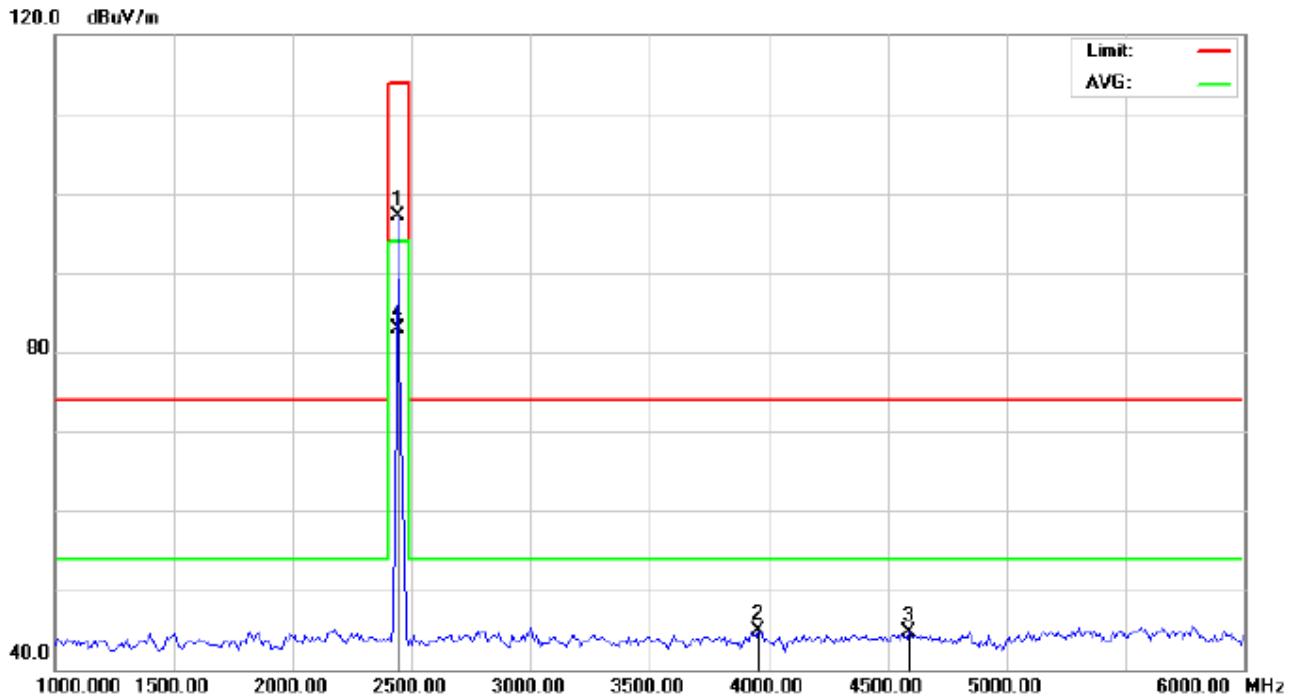
Site: Conduction	Polarization: <b>Vertical</b>	Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK)-	Power:	Humidity: 60 %
EUT: Bluetooth Speaker	Distance: 3m	
M/N: JS-168		
Mode: Low Channel TX		
Note:		

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No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2402.000	104.70	-9.68	95.02	114.00	-18.98	peak			
2		3541.667	53.10	-7.63	45.47	74.00	-28.53	peak			
3		4508.333	48.55	-3.09	45.46	74.00	-28.54	peak			
4	*	2402.000	91.20	-9.68	81.52	94.00	-12.48	AVG	100	217	

**RESULT: PASS**

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



Site: Conduction Polarization: **Horizontal** Temperature: 26

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

EUT: Bluetooth Speaker Distance: 3m

M/N: JS-168

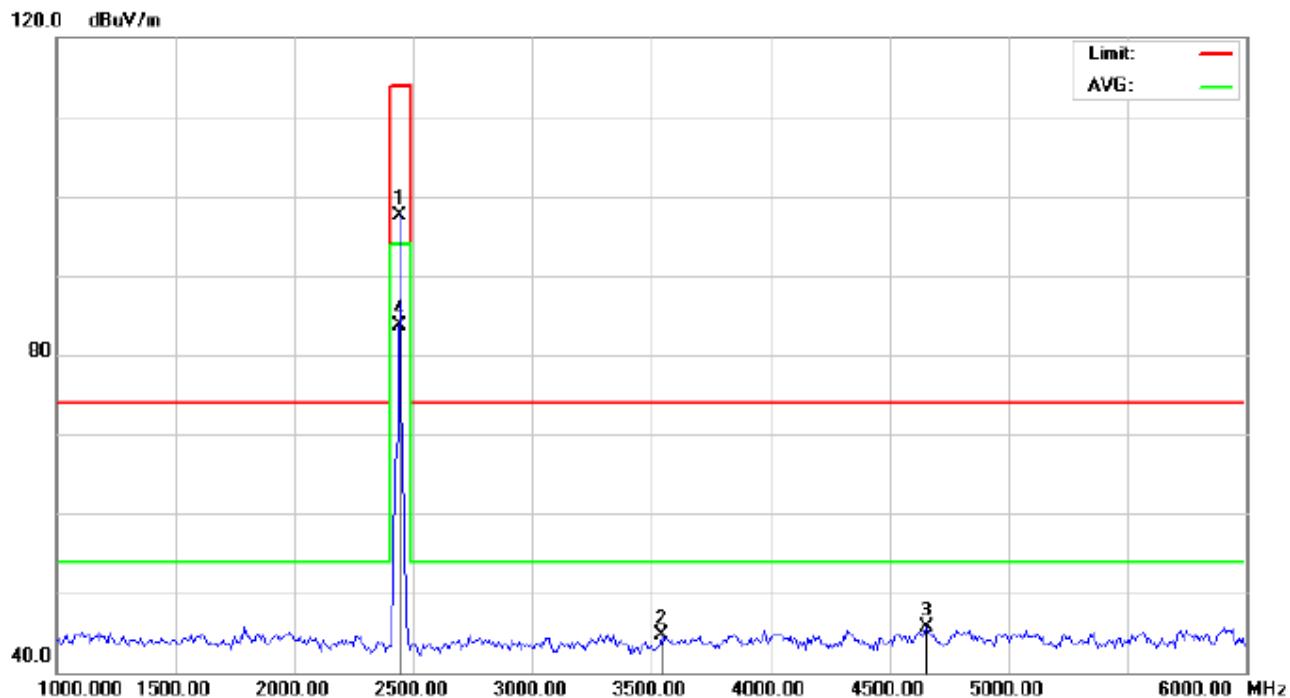
Mode: Middle Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2441.000	106.82	-9.63	97.19	114.00	-16.81	peak			
2		3958.333	49.98	-5.07	44.91	74.00	-29.09	peak			
3		4591.667	47.64	-2.87	44.77	74.00	-29.23	peak			
4	*	2441.000	92.61	-9.63	82.98	94.00	-11.02	AVG	100	129	

**RESULT: PASS**

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



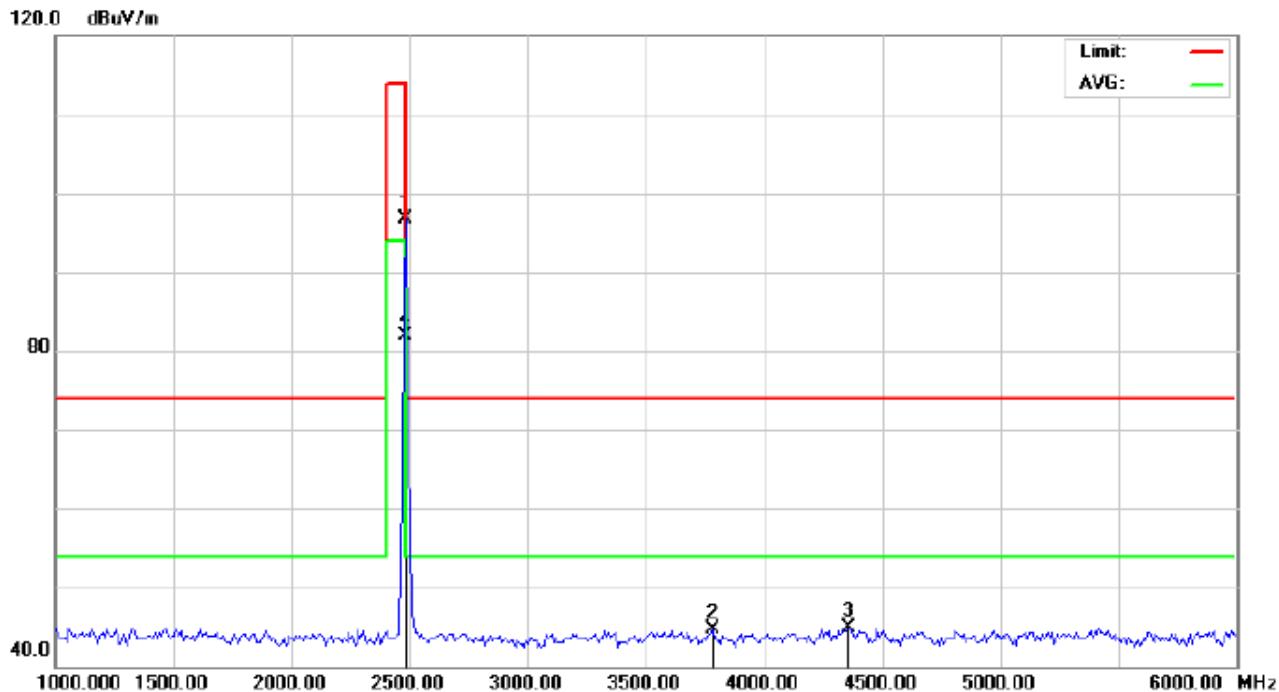

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Site: Conduction Polarization: *Vertical* Temperature: 26  
 Limit: FCC Class B 3M Radiation above 1GHZ(PK)- Power: Humidity: 60 %  
 EUT: Bluetooth Speaker Distance: 3m  
 M/N: JS-168  
 Mode: Middle Channel TX  
 Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2441.000	107.17	-9.63	97.54	114.00	-16.46	peak			
2		3541.667	52.31	-7.63	44.68	74.00	-29.32	peak			
3		4658.333	48.40	-2.70	45.70	74.00	-28.30	peak			
4	*	2441.000	93.39	-9.63	83.76	94.00	-10.24	AVG	100	215	

**RESULT: PASS**

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




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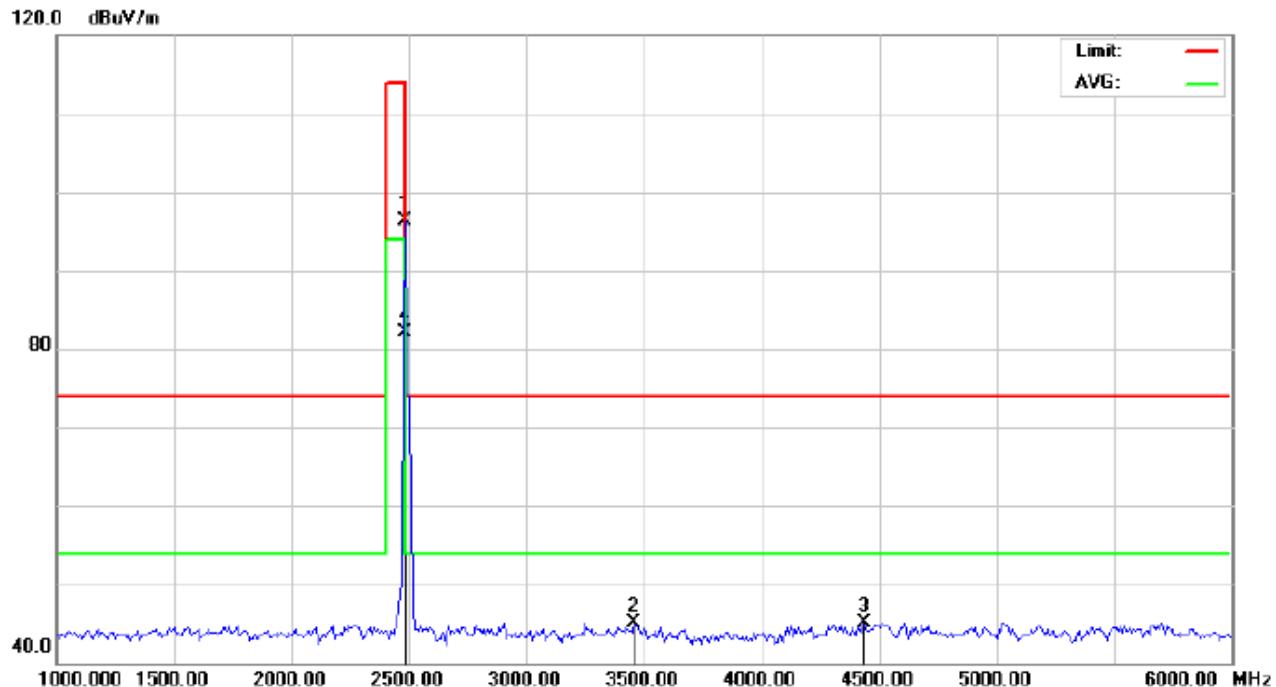
Site: Conduction	Polarization: <i>Horizontal</i>	Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK)-	Power:	Humidity: 60 %
EUT: Bluetooth Speaker	Distance: 3m	
M/N: JS-168		
Mode: High Channel TX		
Note:		

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No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dB	cm		degree		
1		2480.000	106.32	-9.59	96.73	114.00	-17.27	peak			
2		3783.333	50.80	-6.14	44.66	74.00	-29.34	peak			
3		4358.333	48.51	-3.59	44.92	74.00	-29.08	peak			
4	*	2480.000	91.55	-9.59	81.96	94.00	-12.04	AVG	100	124	

**RESULT: PASS**

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



Site: Conduction Polarization: **Vertical** Temperature: 26  
 Limit: FCC Class B 3M Radiation above 1GHZ(PK)- Power: Humidity: 60 %  
 EUT: Bluetooth Speaker Distance: 3m  
 M/N: JS-168  
 Mode: High Channel TX  
 Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2480.000	105.91	-9.59	96.32	114.00	-17.68	peak			
2		3458.333	53.02	-7.93	45.09	74.00	-28.91	peak			
3		4433.333	48.38	-3.34	45.04	74.00	-28.96	peak			
4	*	2480.000	91.72	-9.59	82.13	94.00	-11.87	AVG	100	219	

**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	Reading Level	Factor	Measurement	Limit	Over	Antenna
(MHz)	(dBuv)	(dB/m)	(dBuv/m)	(dBuv/m)	(dB)	Polarization
2402	104.76	-9.68	95.08	114.00	-18.92	Horizontal
2402	104.70	-9.68	95.02	114.00	-18.98	Vertical
2441	106.82	-9.63	97.19	114.00	-16.81	Horizontal
2441	107.17	-9.63	97.54	114.00	-16.46	Vertical
2480	106.32	-9.59	96.73	114.00	-17.27	Horizontal
2480	105.91	-9.59	96.32	114.00	-17.68	Vertical

##### Average value

Frequency	Reading Level	Factor	Measurement	Limit	Over	Antenna
(MHz)	(dBuv)	(dB/m)	(dBuv/m)	(dBuv/m)	(dB)	Polarization
2402	91.12	-9.68	81.44	94.00	-12.56	Horizontal
2402	91.20	-9.68	81.52	94.00	-12.48	Vertical
2441	92.61	-9.63	82.98	94.00	-11.02	Horizontal
2441	93.39	-9.63	83.76	94.00	-10.24	Vertical
2480	91.55	-9.59	81.96	94.00	-12.04	Horizontal
2480	91.72	-9.59	82.13	94.00	-11.87	Vertical

**2Mbps Result:**

**Peak value**

Frequency (MHz)	Reading Level (dBuv)	Factor (dB/m)	Measurement (dBuv/m)	Limit (dBuv/m)	Over (dB)	Antenna Polarization
2402	104.21	-9.68	94.53	114.00	-19.47	Horizontal
2402	104.16	-9.68	94.48	114.00	-19.52	Vertical
2441	106.66	-9.68	96.98	114.00	-17.02	Horizontal
2441	106.54	-9.68	96.86	114.00	-17.14	Vertical
2480	103.84	-9.63	94.21	114.00	-19.79	Horizontal
2480	103.80	-9.63	94.17	114.00	-19.83	Vertical

**Average value**

Frequency (MHz)	Reading Level (dBuv)	Factor (dB/m)	Measurement (dBuv/m)	Limit (dBuv/m)	Over (dB)	Antenna Polarization
2402	90.98	-9.63	81.35	94.00	-12.65	Horizontal
2402	90.89	-9.63	81.26	94.00	-12.74	Vertical
2441	-93.26	-9.59	83.67	94.00	-10.33	Horizontal
2441	-93.07	-9.59	83.48	94.00	-10.52	Vertical
2480	-90.83	-9.59	81.24	94.00	-12.76	Horizontal
2480	-90.68	-9.59	81.09	94.00	-12.91	Vertical

**3Mbps Result:**

**Peak value**

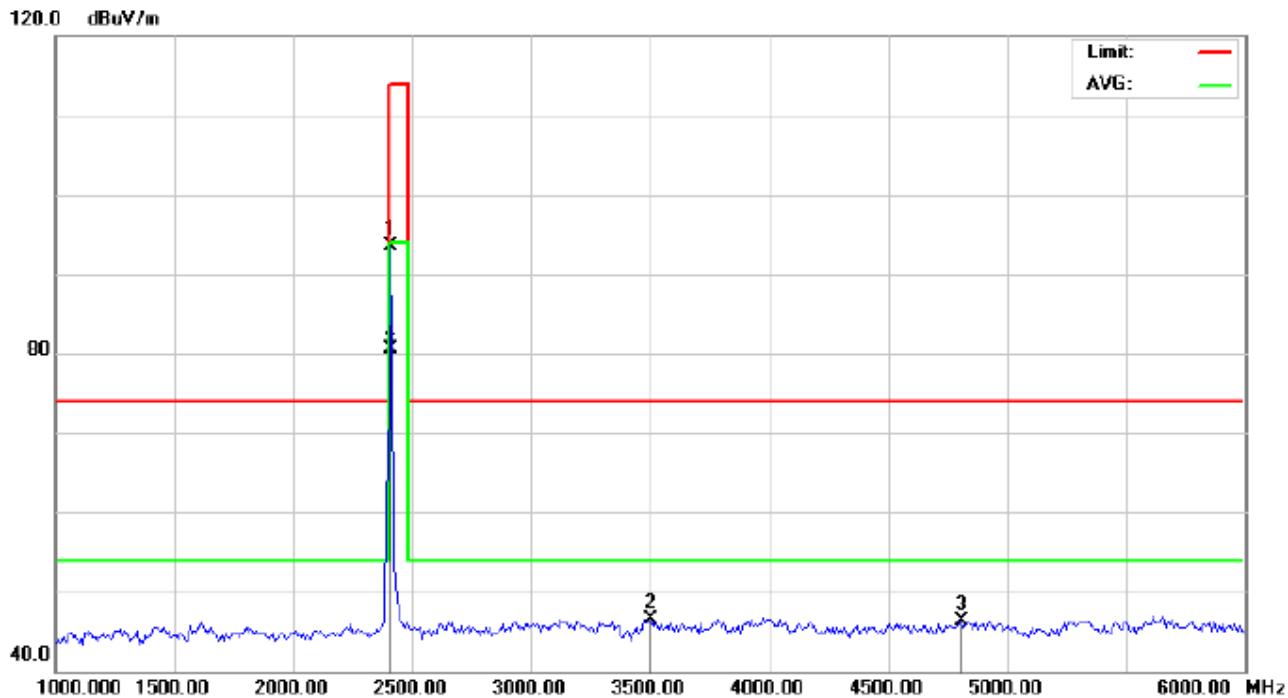
Frequency (MHz)	Reading Level (dBuv)	Factor (dB/m)	Measurement (dBuv/m)	Limit (dBuv/m)	Over (dB)	Antenna Polarization
2402	104.05	-9.68	94.37	114.00	-19.63	Horizontal
2402	103.93	-9.68	94.25	114.00	-19.75	Vertical
2441	106.47	-9.68	96.79	114.00	-17.21	Horizontal
2441	106.33	-9.68	96.65	114.00	-17.35	Vertical
2480	103.71	-9.63	94.08	114.00	-19.92	Horizontal
2480	103.52	-9.63	93.89	114.00	-20.11	Vertical

**Average value**

Frequency (MHz)	Reading Level (dBuv)	Factor (dB/m)	Measurement (dBuv/m)	Limit (dBuv/m)	Over (dB)	Antenna Polarization
2402	90.84	-9.63	81.21	94.00	-12.79	Horizontal
2402	90.80	-9.63	81.17	94.00	-12.83	Vertical
2441	-93.01	-9.59	83.42	94.00	-10.58	Horizontal
2441	-92.98	-9.59	83.39	94.00	-10.61	Vertical
2480	-90.60	-9.59	81.01	94.00	-12.99	Horizontal
2480	-90.55	-9.59	80.96	94.00	-13.04	Vertical

## FOR BLE

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



Site: Conduction Polarization: **Horizontal** Temperature: 26

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

EUT: Bluetooth Speaker Distance: 3m

M/N: JS-168

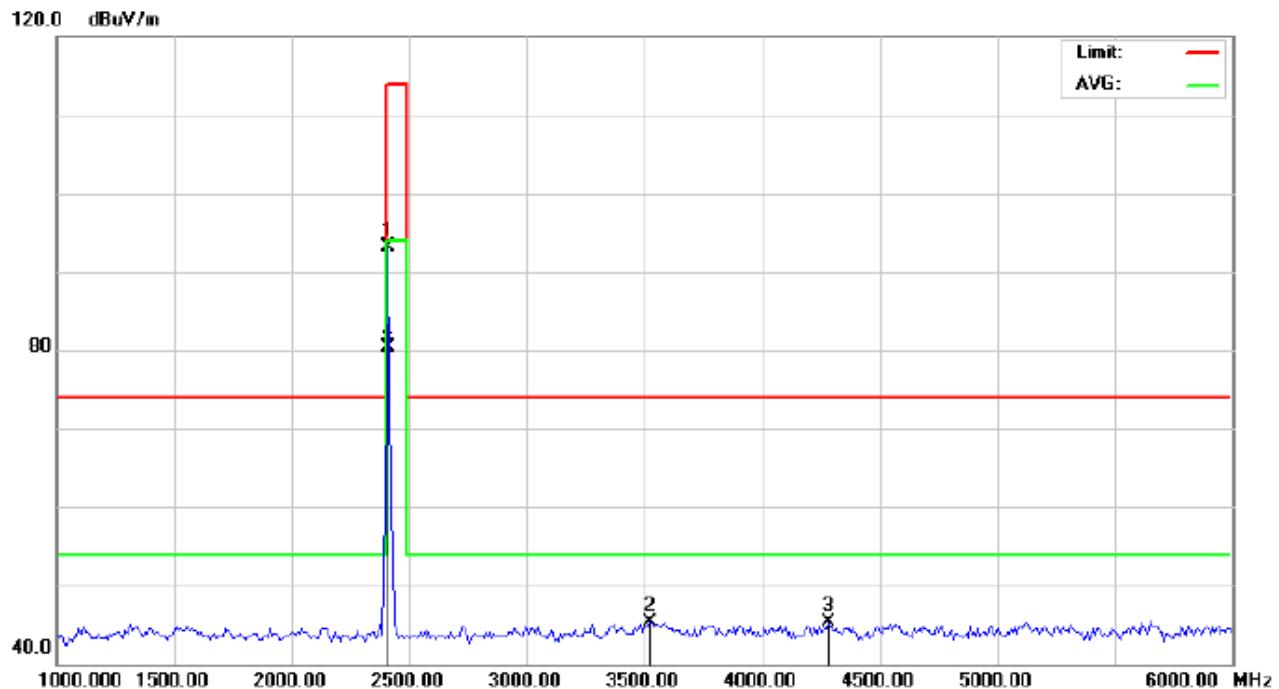
Mode: Low Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2402.000	103.19	-9.68	93.51	114.00	-20.49	peak			
2		3500.000	54.41	-7.89	46.52	74.00	-27.48	peak			
3		4808.333	48.61	-2.30	46.31	74.00	-27.69	peak			
4	*	2402.000	90.16	-9.68	80.48	94.00	-13.52	AVG	100	183	

**RESULT: PASS**

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

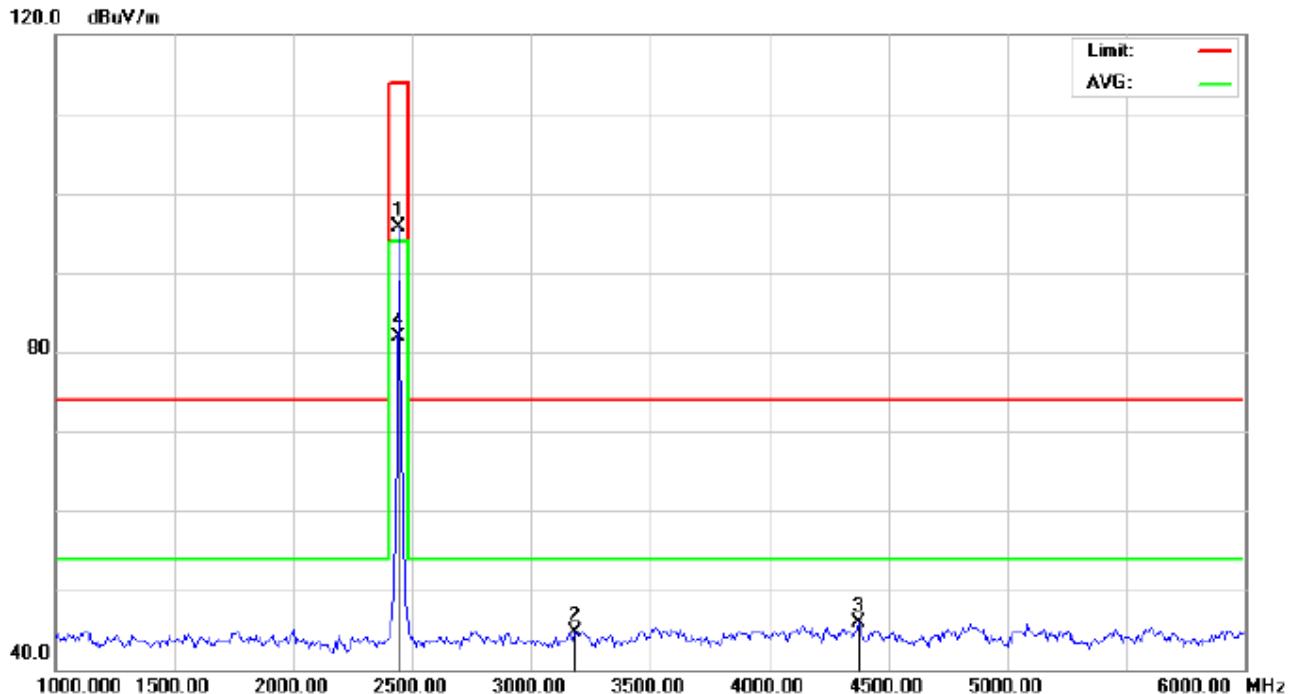


Site: Conduction Polarization: **Vertical** Temperature: 26  
 Limit: FCC Class B 3M Radiation above 1GHZ(PK)- Power:  
 EUT: Bluetooth Speaker Humidity: 60 %  
 M/N: JS-168 Distance: 3m  
 Mode: Low Channel TX  
 Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2402.000	102.76	-9.68	93.08	114.00	-20.92	peak			
2		3525.000	53.13	-7.74	45.39	74.00	-28.61	peak			
3		4283.333	49.14	-3.85	45.29	74.00	-28.71	peak			
4	*	2402.000	89.95	-9.68	80.27	94.00	-13.73	AVG	100	19	

**RESULT: PASS**

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



Site: Conduction Polarization: *Horizontal* Temperature: 26

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

EUT: Bluetooth Speaker Distance: 3m

M/N: JS-168

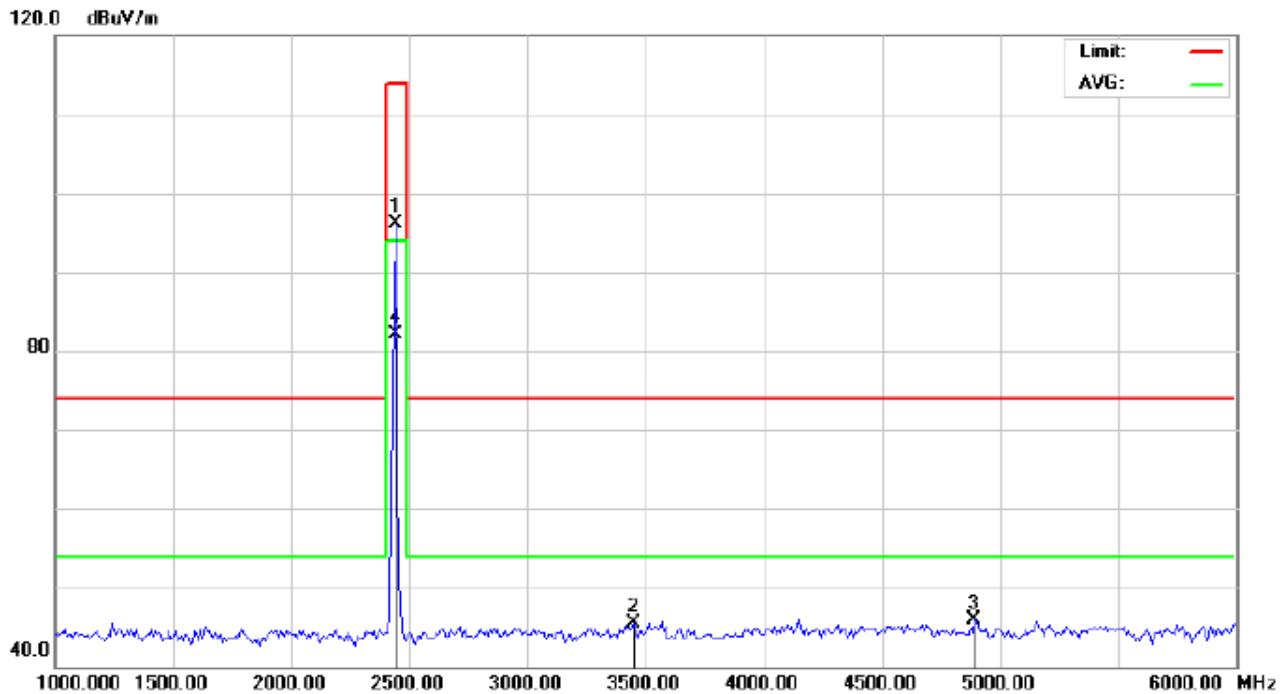
Mode: Middle Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2440.000	105.35	-9.64	95.71	114.00	-18.29	peak			
2		3183.333	52.98	-8.19	44.79	74.00	-29.21	peak			
3		4375.000	49.43	-3.53	45.90	74.00	-28.10	peak			
4	*	2440.000	91.57	-9.64	81.93	94.00	-12.07	AVG	100	181	

**RESULT: PASS**

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



Site: Conduction Polarization: **Vertical** Temperature: 26

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

EUT: Bluetooth Speaker Distance: 3m

M/N: JS-168

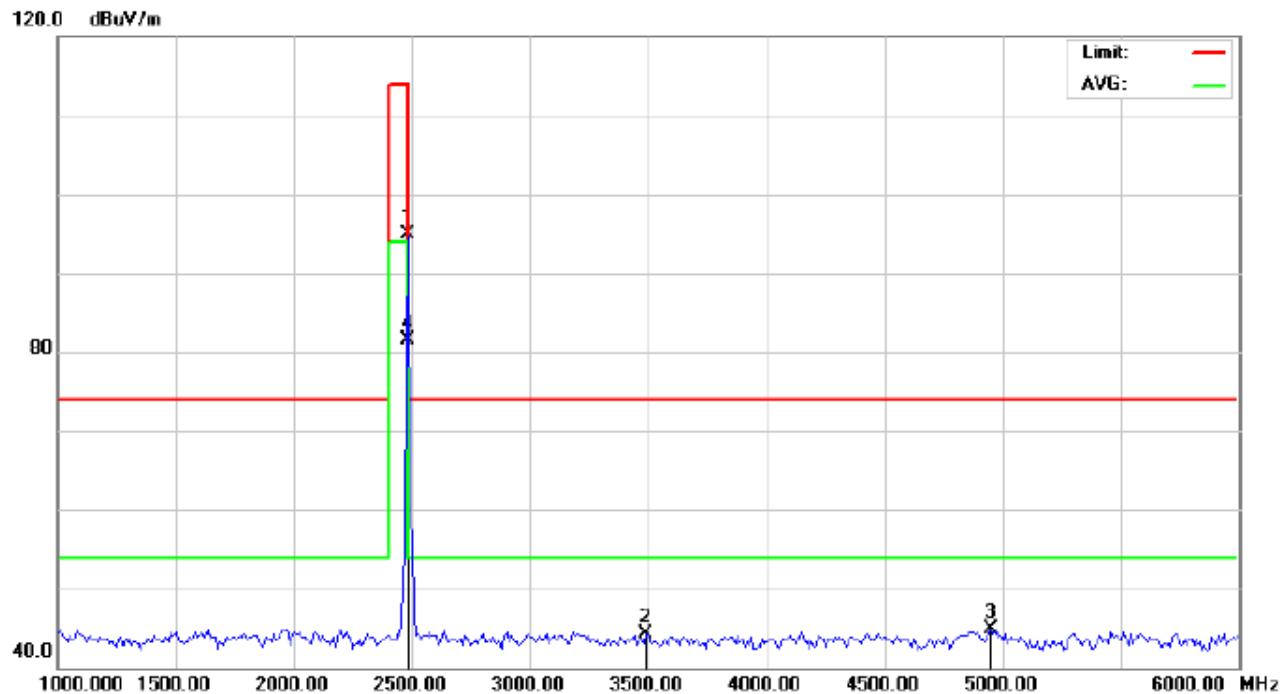
Mode: Middle Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2440.000	105.70	-9.64	96.06	114.00	-17.94	peak			
2		3450.000	53.39	-7.94	45.45	74.00	-28.55	peak			
3		4891.667	47.90	-2.08	45.82	74.00	-28.18	peak			
4	*	2440.000	91.82	-9.64	82.18	94.00	-11.82	AVG	100	23	

**RESULT: PASS**

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

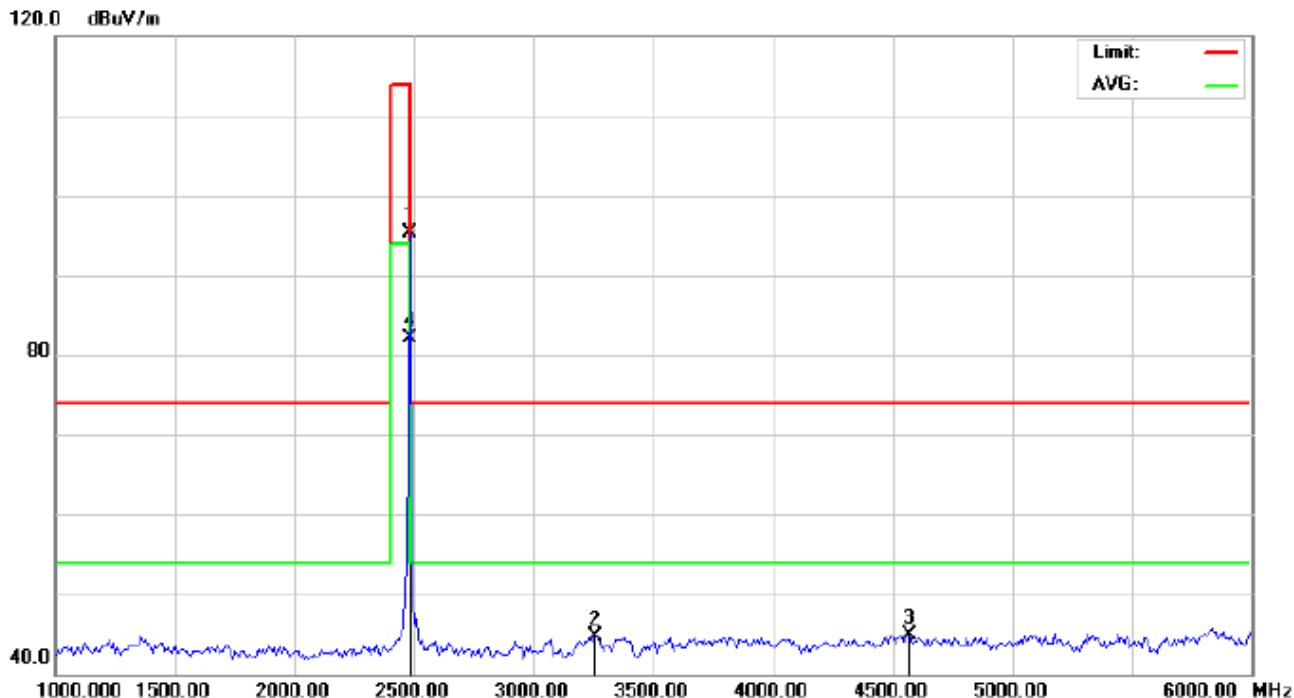


Site: Conduction	Polarization: <i>Horizontal</i>	Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK)-	Power:	Humidity: 60 %
EUT: Bluetooth Speaker	Distance: 3m	
M/N: JS-168		
Mode: High Channel TX		
Note:		

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2480.000	104.43	-9.59	94.84	114.00	-19.16	peak			
2		3491.667	52.13	-7.90	44.23	74.00	-29.77	peak			
3		4950.000	46.88	-1.93	44.95	74.00	-29.05	peak			
4	*	2480.000	91.18	-9.59	81.59	94.00	-12.41	AVG	100	185	

**RESULT: PASS**

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



Site: Conduction Polarization: *Vertical* Temperature: 26  
Limit: FCC Class B 3M Radiation above 1GHZ(PK)- Power: Humidity: 60 %  
EUT: Bluetooth Speaker Distance: 3m  
M/N: JS-168  
Mode: High Channel TX  
Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2480.000	104.83	-9.59	95.24	114.00	-18.76	peak			
2		3258.333	52.90	-8.12	44.78	74.00	-29.22	peak			
3		4566.667	47.78	-2.94	44.84	74.00	-29.16	peak			
4	*	2480.000	91.60	-9.59	82.01	94.00	-11.99	AVG	100	25	

**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	103.19	-9.68	93.51	114.00	-20.49	Horizontal
2402	102.76	-9.68	93.08	114.00	-20.92	Vertical
2440	105.35	-9.64	95.71	114.00	-18.29	Horizontal
2440	105.70	-9.64	96.06	114.00	-17.94	Vertical
2480	104.43	-9.59	94.84	114.00	-19.16	Horizontal
2480	104.83	-9.59	95.24	114.00	-18.76	Vertical

#### Average value

Frequency (MHz)	Reading Level (dBuv)	Factor (dB/m)	Measurement (dBuv/m)	Limit (dBuv/m)	Over (dB)	Antenna Polarization
2402	90.16	-9.68	80.48	94.00	-13.52	Horizontal
2402	89.95	-9.68	80.27	94.00	-13.73	Vertical
2440	91.57	-9.64	81.93	94.00	-12.07	Horizontal
2440	91.82	-9.64	82.18	94.00	-11.82	Vertical
2480	91.18	-9.59	81.59	94.00	-12.41	Horizontal
2480	91.60	-9.59	82.01	94.00	-11.99	Vertical

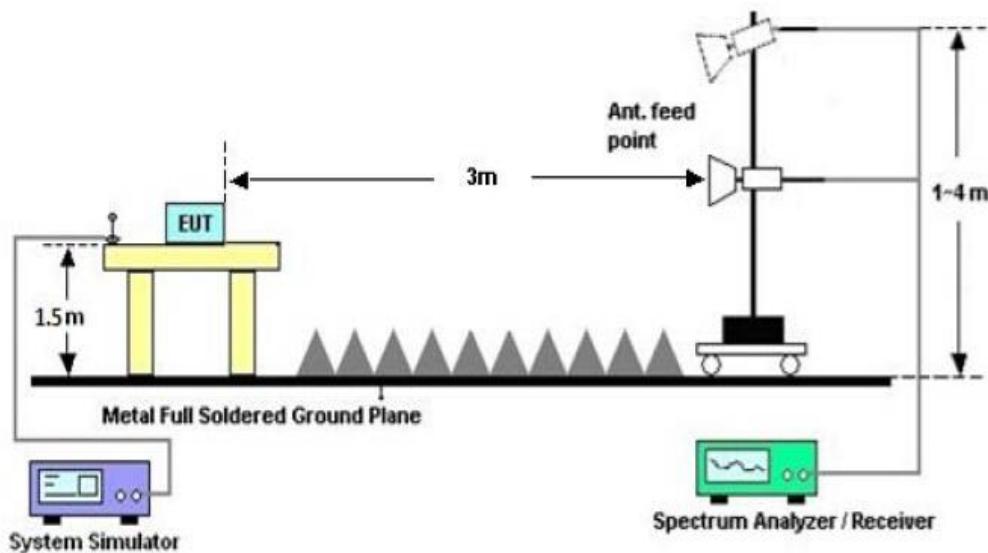
## 9. BAND EDGE EMISSION

### 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 step 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

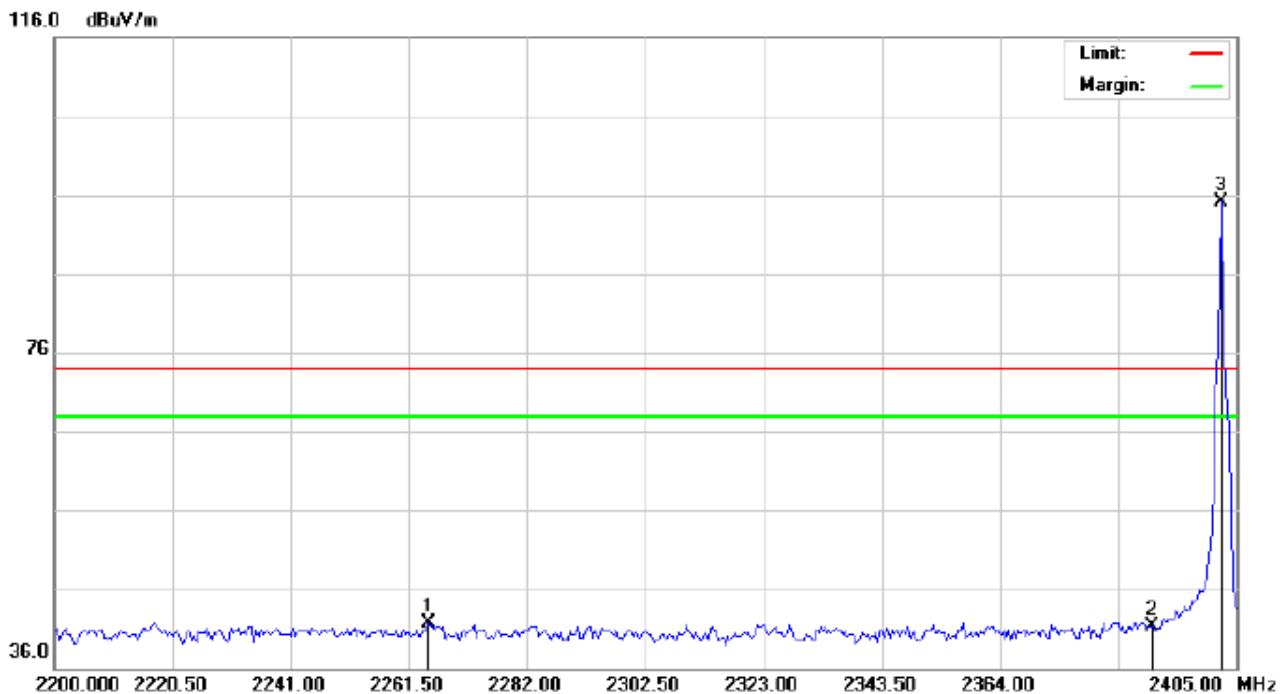


### 9.3 RADIATED TEST RESULT

(Worst modulation: GFSK)

FOR BR/EDR

TEST PLOT OF BAND EDGE FOR LOW CHANNEL-Horizontal



Site: Conduction Polarization: *Horizontal* Temperature: 26

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

EUT: Bluetooth Speaker Distance:

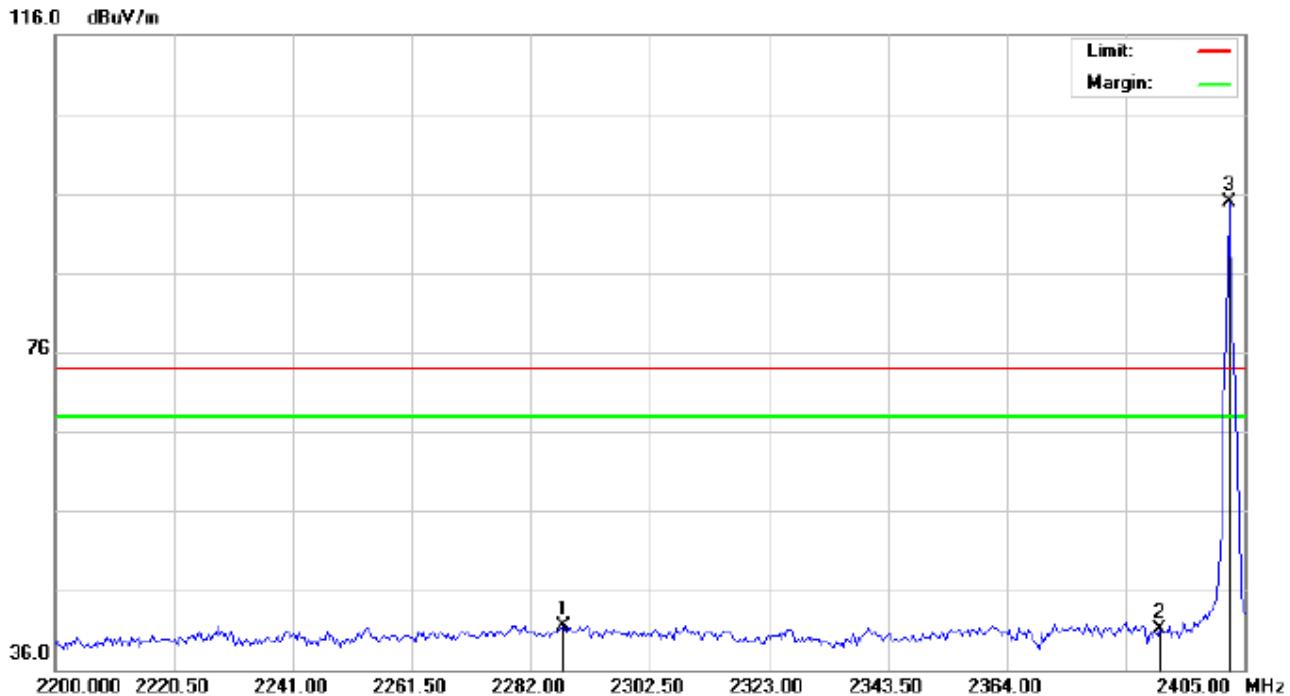
M/N: JS-168

Mode: Low Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dB	cm		degree		
1		2264.917	31.57	10.17	41.74	74.00	-32.26	peak			
2		2390.000	31.00	10.31	41.31	74.00	-32.69	peak			
3	*	2402.000	84.72	10.32	95.04	74.00	21.04	peak			

TEST PLOT OF BAND EDGE FOR LOW CHANNEL -Vertical



Site: Conduction Polarization: *Vertical* Temperature: 26

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

EUT: Bluetooth Speaker Distance:

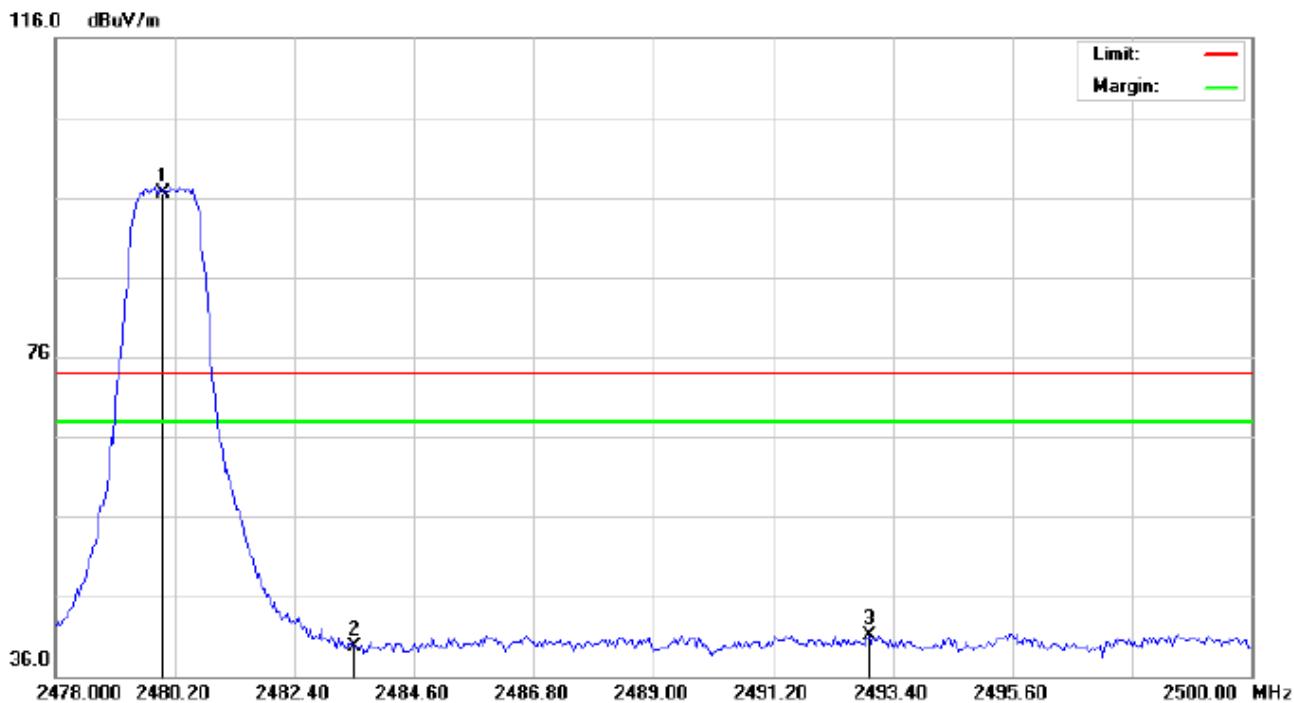
M/N: JS-168

Mode: Low Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2287.467	31.39	10.20	41.59	74.00	-32.41	peak			
2		2390.000	30.71	10.31	41.02	74.00	-32.98	peak			
3	*	2402.000	84.59	10.32	94.91	74.00	20.91	peak			

TEST PLOT OF BAND EDGE FOR HIGH CHANNEL -Horizontal



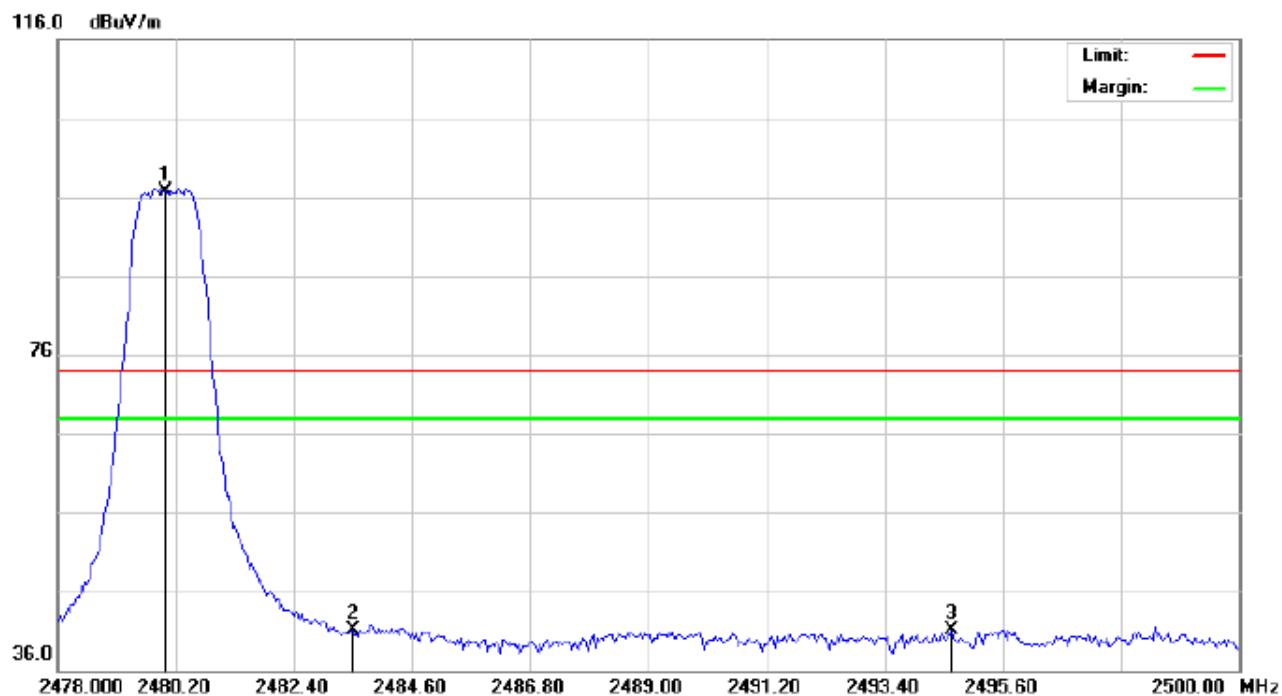

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Site: Conduction	Polarization: <i>Horizontal</i>	Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK)	Power:	Humidity: 60 %
EUT: Bluetooth Speaker	Distance:	
M/N: JS-168		
Mode: High Channel TX		
Note:		

---

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2480.000	86.05	10.41	96.46	74.00	22.46	peak			
2		2483.500	29.19	10.41	39.60	74.00	-34.40	peak			
3		2492.960	30.66	10.42	41.08	74.00	-32.92	peak			

TEST PLOT OF BAND EDGE FOR HIGH CHANNEL-Vertical



Site: Conduction Polarization: **Vertical** Temperature: 26  
 Limit: FCC Class B 3M Radiation above 1GHZ(PK) Power: Humidity: 60 %  
 EUT: Bluetooth Speaker Distance:  
 M/N: JS-168  
 Mode: High Channel TX  
 Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2480.000	86.32	10.41	96.73	74.00	22.73	peak			
2		2483.500	30.76	10.41	41.17	74.00	-32.83	peak			
3		2494.647	30.68	10.42	41.10	74.00	-32.90	peak			

**RESULT: PASS**

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

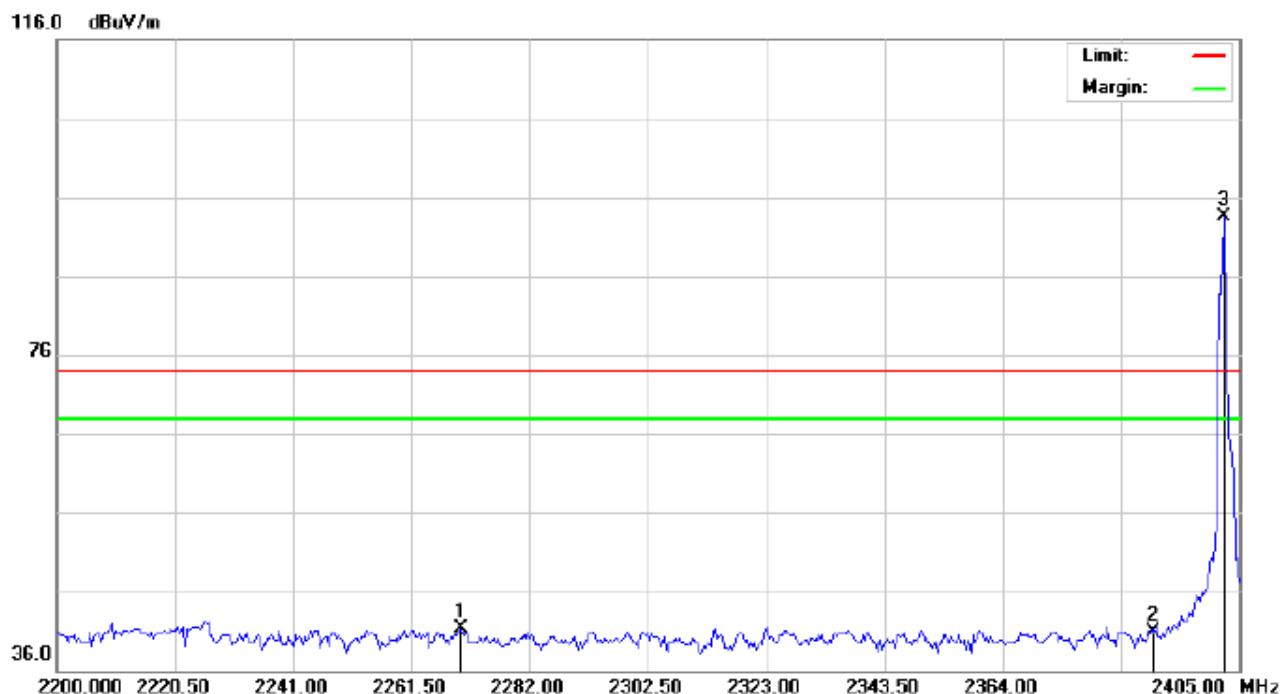
Factor=Antenna Factor + Cable loss - Amplifier gain, Over=Measure-Limit.

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: Conduction Polarization: *Horizontal* Temperature: 26

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

EUT: Bluetooth Speaker Distance:

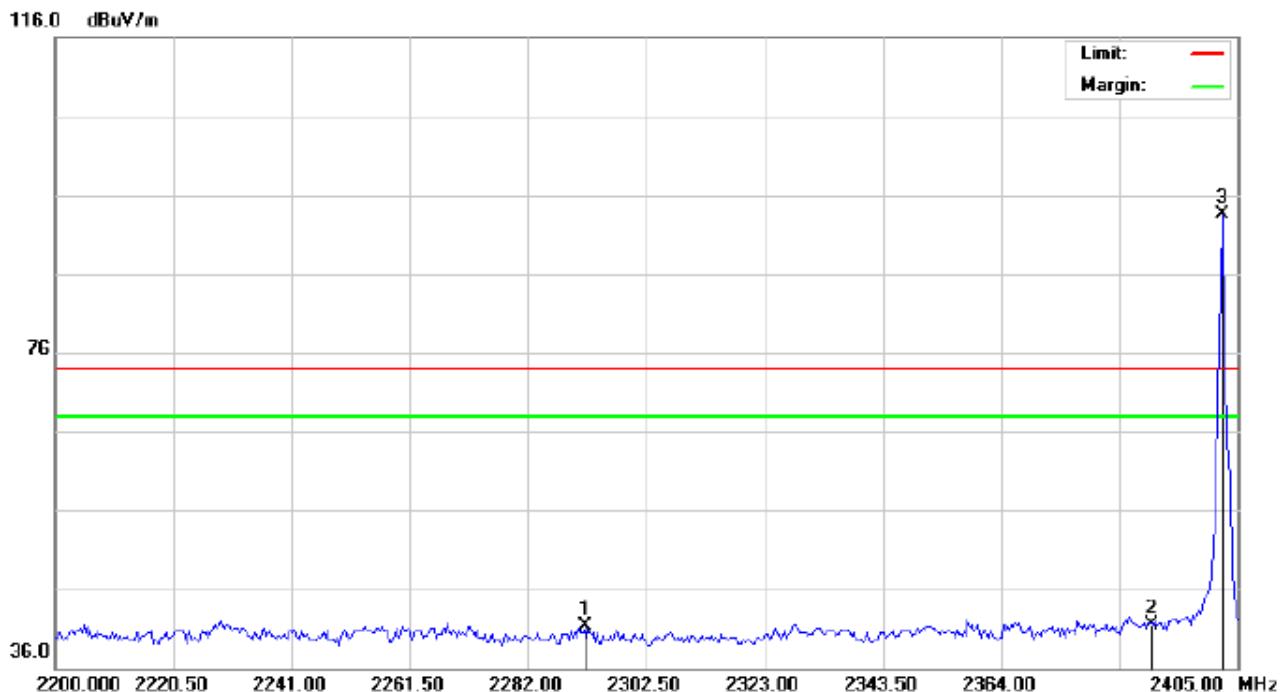
M/N: JS-168

Mode: Low Channel TX

Note:

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2270.042	31.09	10.18	41.27	74.00	-32.73	peak			
2		2390.000	30.50	10.31	40.81	74.00	-33.19	peak			
3	*	2402.000	83.22	10.32	93.54	74.00	19.54	peak			

TEST PLOT OF BAND EDGE FOR LOW CHANNEL -Vertical



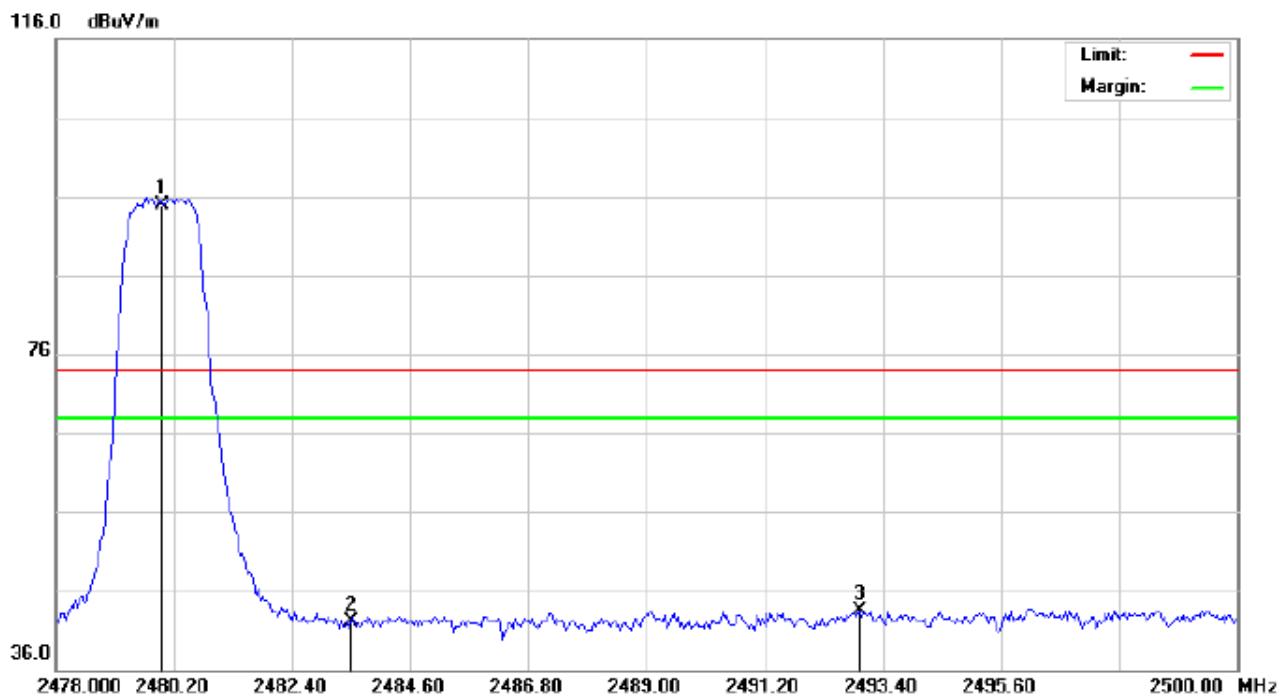

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Site: Conduction	Polarization: <i>Vertical</i>	Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK)	Power:	Humidity: 60 %
EUT: Bluetooth Speaker	Distance:	
M/N: JS-168		
Mode: Low Channel TX		
Note:		

---

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1		2291.908	31.14	10.20	41.34	74.00	-32.66	peak			
2		2390.000	31.21	10.31	41.52	74.00	-32.48	peak			
3	*	2402.000	83.09	10.32	93.41	74.00	19.41	peak			

TEST PLOT OF BAND EDGE FOR HIGH CHANNEL -Horizontal



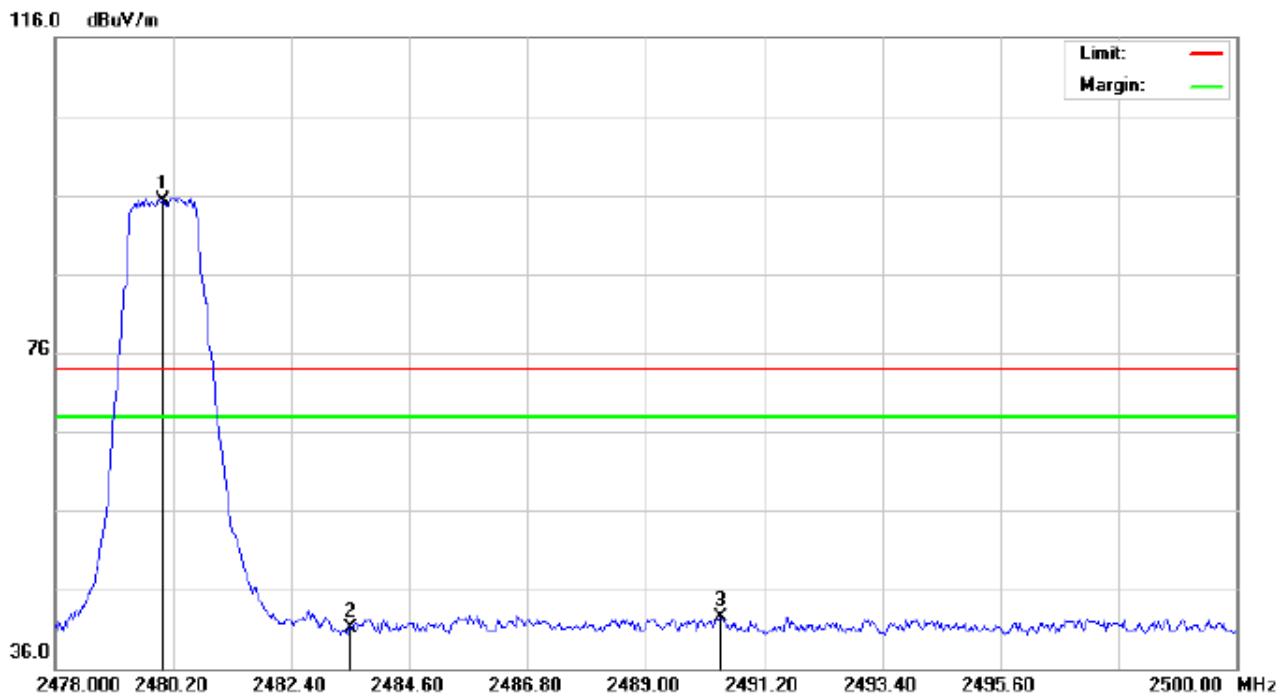

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Site: Conduction	Polarization: <i>Horizontal</i>	Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK)	Power:	Humidity: 60 %
EUT: Bluetooth Speaker	Distance:	
M/N: JS-168		
Mode: High Channel TX		
Note:		

---

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/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	31.69	10.41	42.10	74.00	-31.90	peak			
3		2492.960	33.16	10.42	43.58	74.00	-30.42	peak			

TEST PLOT OF BAND EDGE FOR HIGH CHANNEL-Vertical




---

Site: Conduction	Polarization: <i>Vertical</i>	Temperature: 26
Limit: FCC Class B 3M Radiation above 1GHZ(PK)	Power:	Humidity: 60 %
EUT: Bluetooth Speaker	Distance:	
M/N: JS-168		
Mode: High Channel TX		
Note:		

---

No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB		cm	degree	
1	*	2480.000	84.82	10.41	95.23	74.00	21.23	peak			
2		2483.500	30.76	10.41	41.17	74.00	-32.83	peak			
3		2490.393	32.16	10.42	42.58	74.00	-31.42	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.

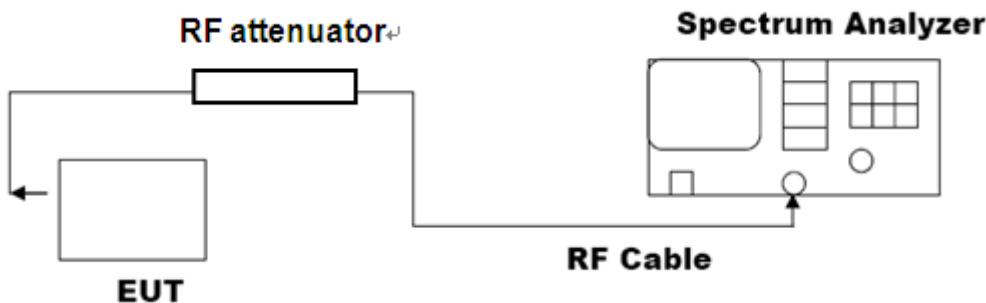
## 10. 20DB BANDWIDTH

### 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)



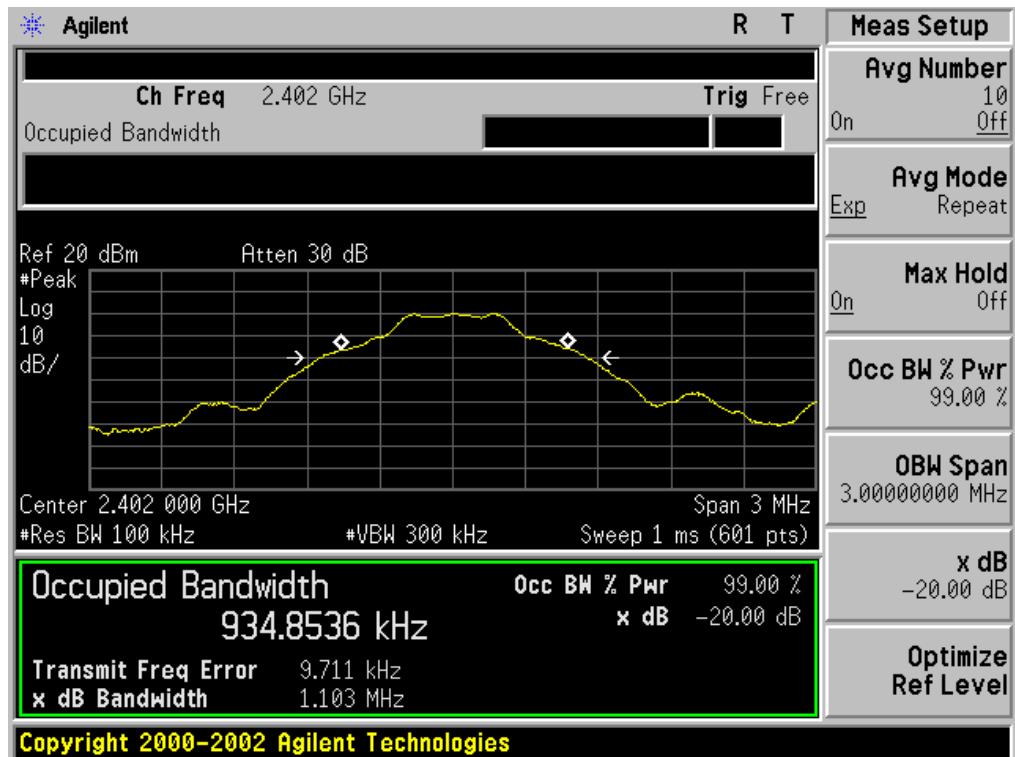
Note: The EUT has been used temporary antenna connector for testing.

### 10.3. LIMITS AND MEASUREMENT RESULTS

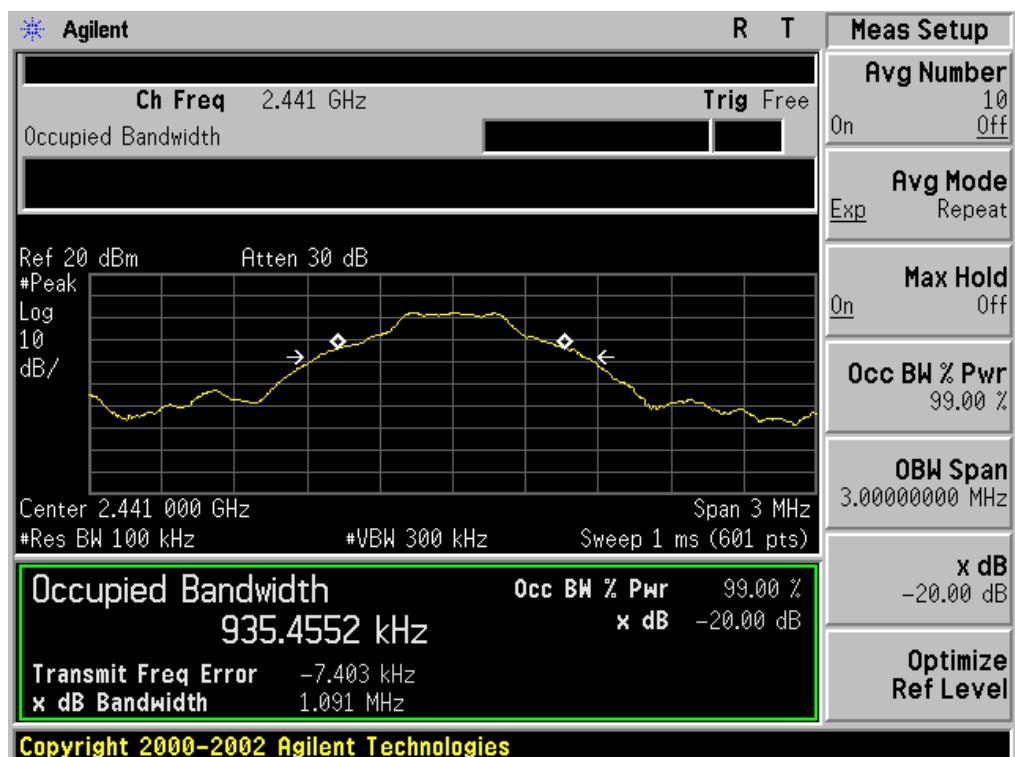
#### FOR BR/EDR

BLUETOOTH 1MBPS LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Measurement Result		
	Test Data (MHz)	Criteria	
N/A	Low Channel	1.103	PASS
	Middle Channel	1.091	PASS
	High Channel	1.102	PASS

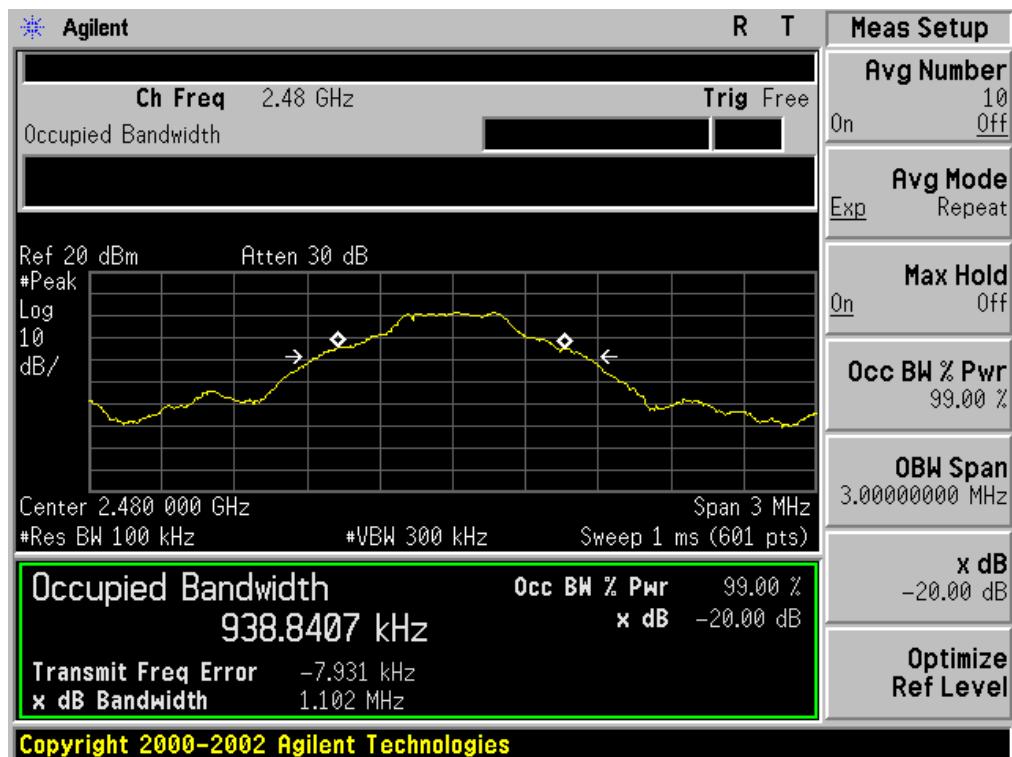
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

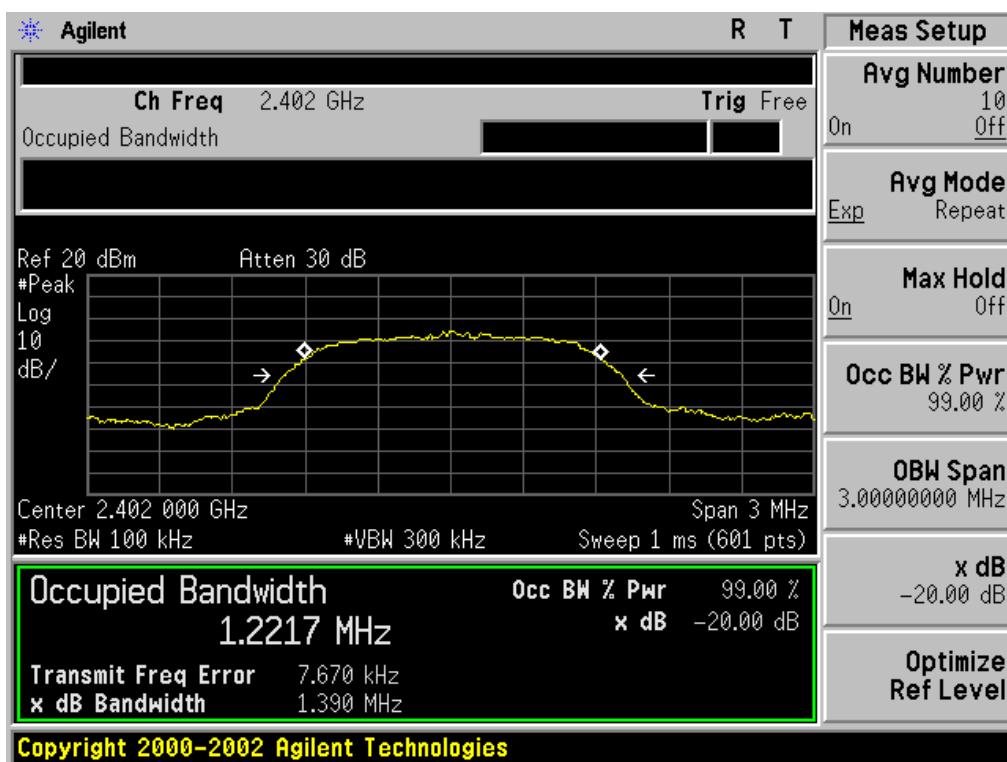


TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL

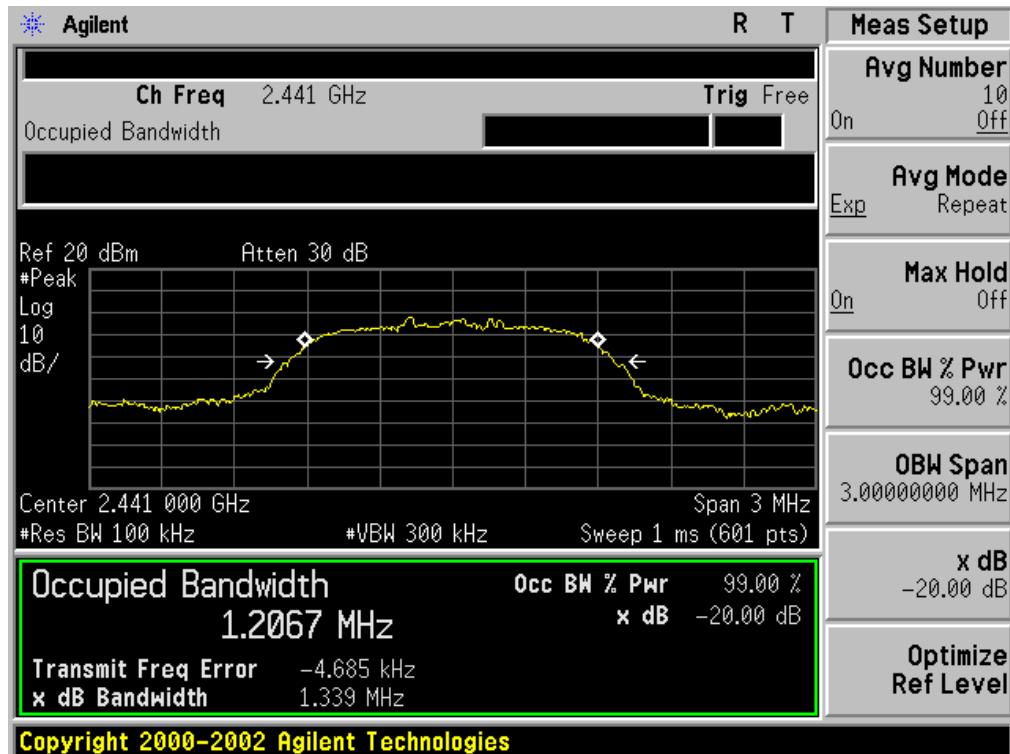


BLUETOOTH 2MBPS LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Measurement Result		
	Test Data (MHz)	Criteria	
N/A	Low Channel	1.390	PASS
	Middle Channel	1.339	PASS
	High Channel	1.357	PASS

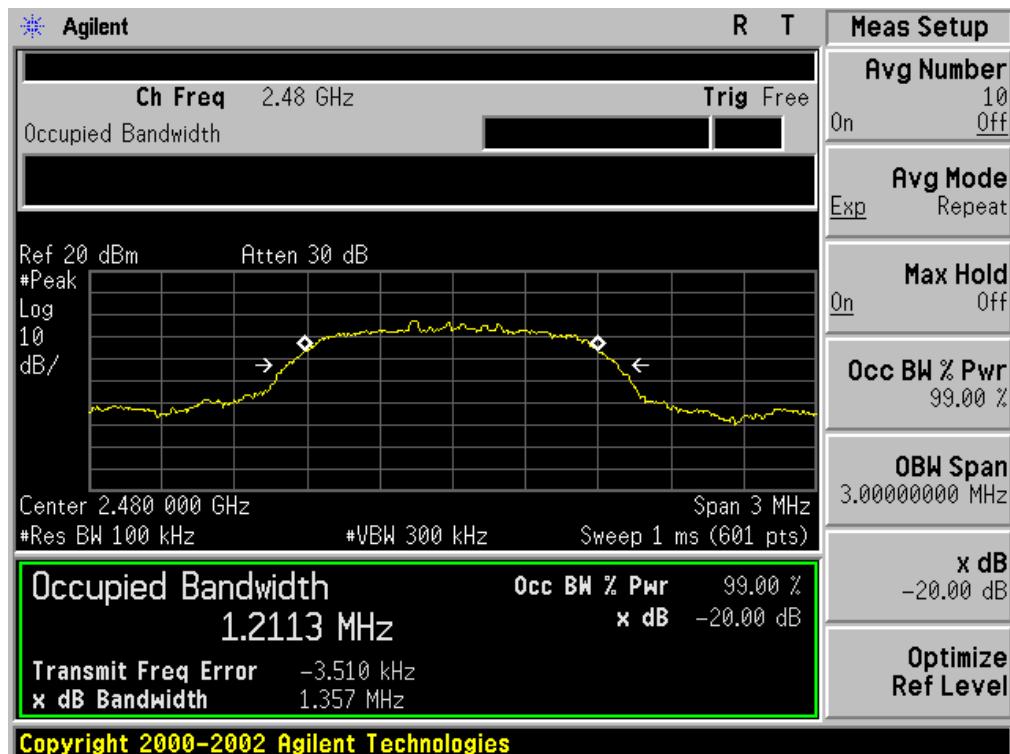
### TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL

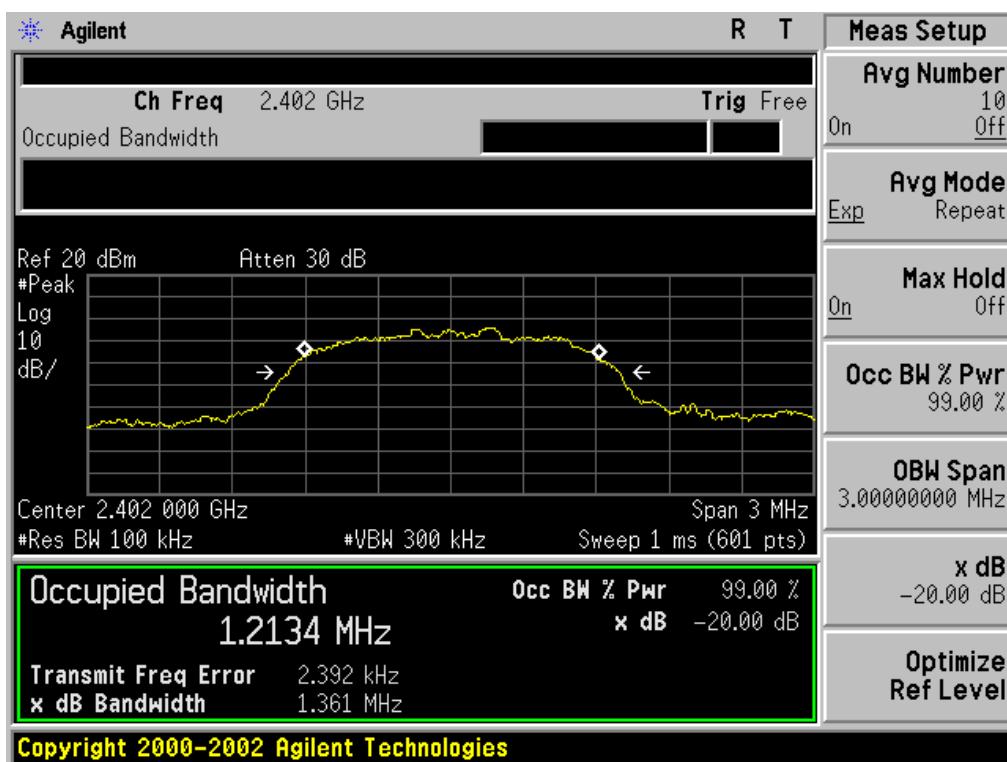


TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



BLUETOOTH 3MBPS LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Measurement Result		
	Test Data (MHz)		Criteria
N/A	Low Channel	1.361	PASS
	Middle Channel	1.366	PASS
	High Channel	1.366	PASS

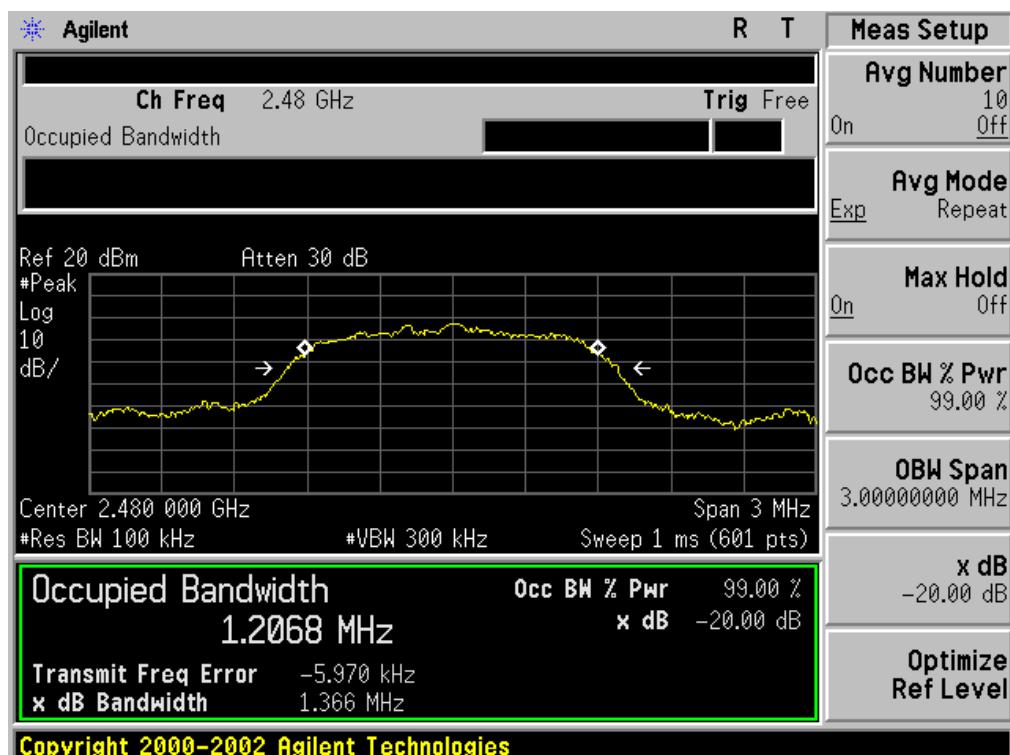
#### TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



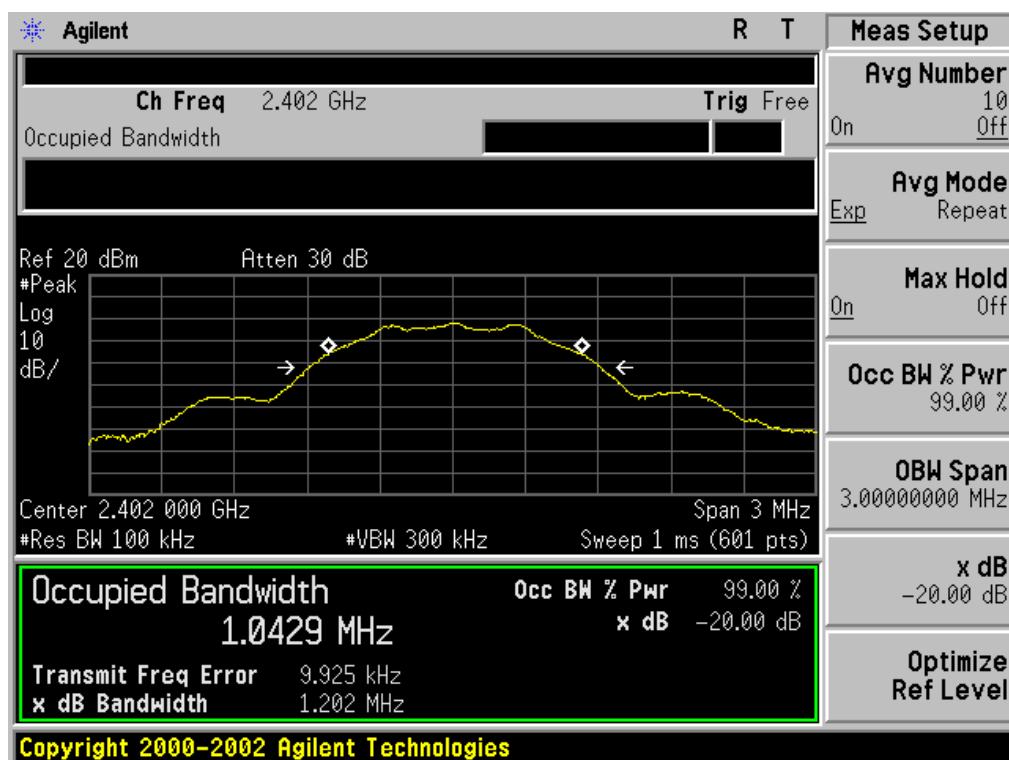
TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



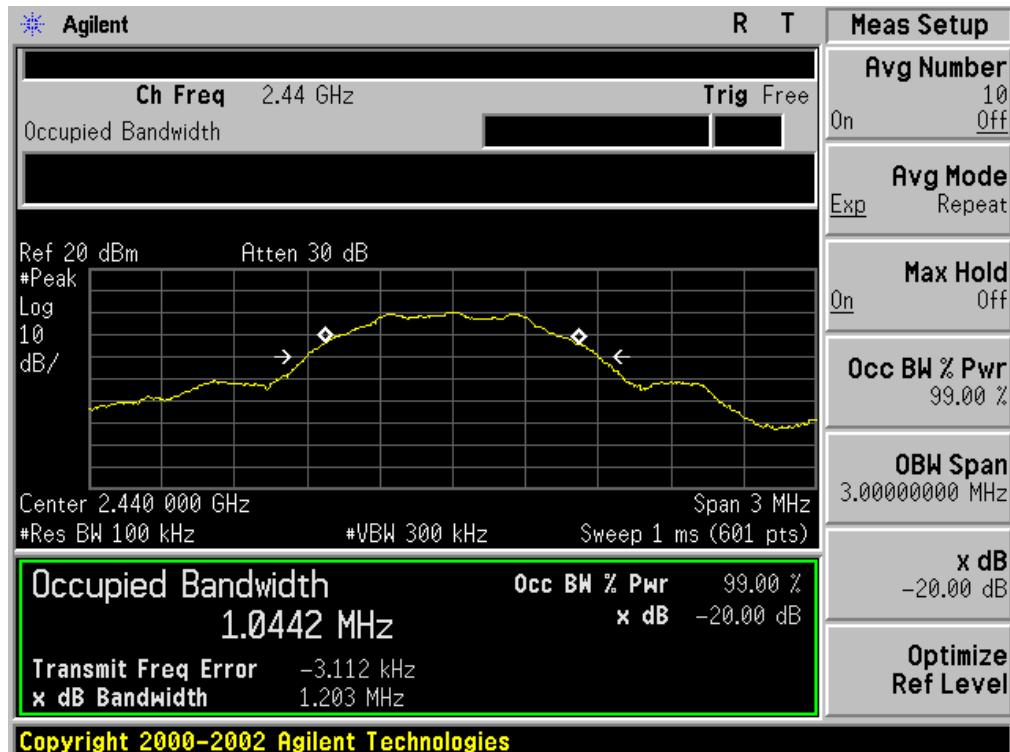
FOR BLE

BLUETOOTH 1MBPS LIMITS AND MEASUREMENT RESULT			
Applicable Limits	Measurement Result		
	Test Data (MHz)		Criteria
N/A	Low Channel	1.202	PASS
	Middle Channel	1.203	PASS
	High Channel	1.193	PASS

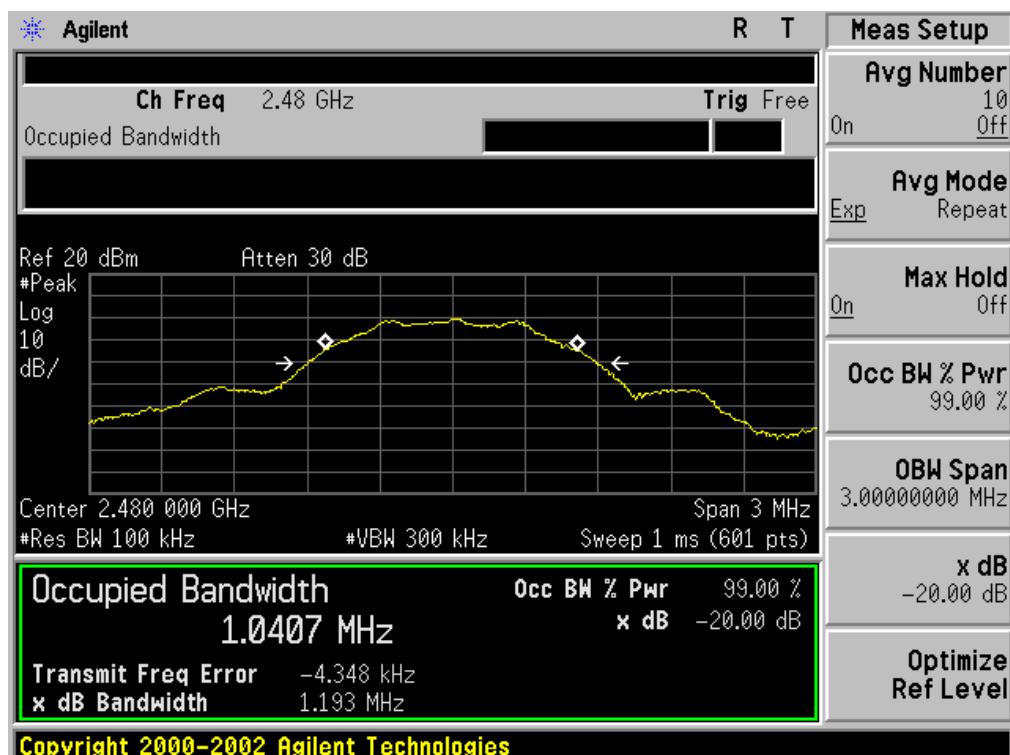
TEST PLOT OF BANDWIDTH FOR LOW CHANNEL



TEST PLOT OF BANDWIDTH FOR MIDDLE CHANNEL



TEST PLOT OF BANDWIDTH FOR HIGH CHANNEL



## 11. FCC LINE CONDUCTED EMISSION TEST

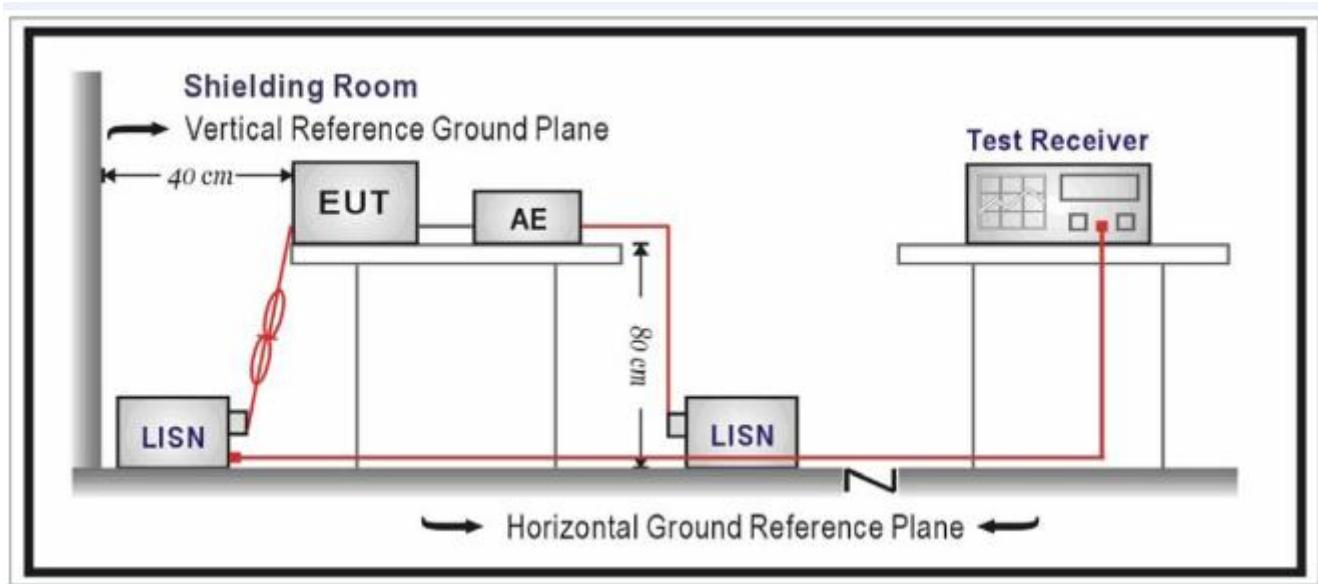
### 11.1. LIMITS OF LINE CONDUCTED EMISSION TEST

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**

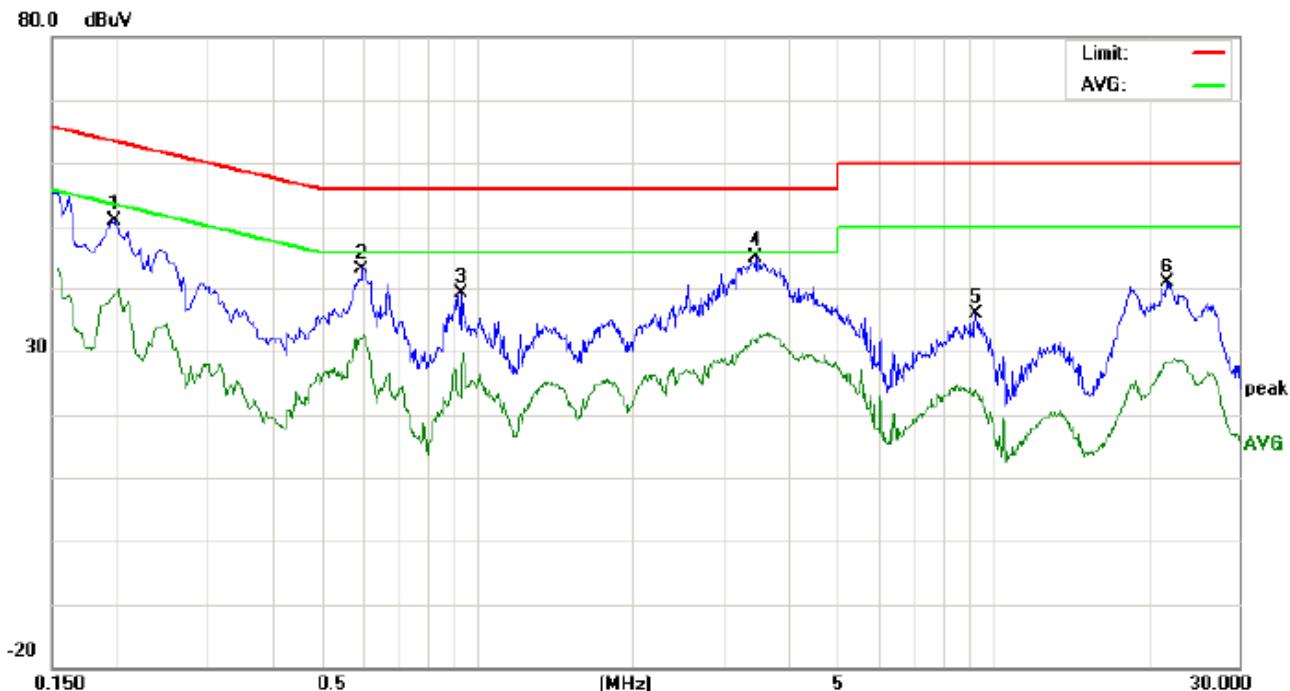
1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used 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  
Limit: FCC Class B Conduction(QP)

Phase: L1

Temperature: 25.3

EUT: Bluetooth Speaker

Power:

Humidity: 51.2 %

M/N: JS-168

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	0.1980	40.74		28.91	10.21	50.95		39.12	63.69	53.69	-12.74	-14.57	P	
2	0.5980	32.76		21.46	10.31	43.07		31.77	56.00	46.00	-12.93	-14.23	P	
3	0.9380	28.67		16.38	10.39	39.06		26.77	56.00	46.00	-16.94	-19.23	P	
4	3.4780	34.68		21.30	10.51	45.19		31.81	56.00	46.00	-10.81	-14.19	P	
5	9.2659	25.48		13.65	10.30	35.78		23.95	60.00	50.00	-24.22	-26.05	P	
6	21.8300	30.71		18.04	10.12	40.83		28.16	60.00	50.00	-19.17	-21.84	P	

Line Conducted Emission Test Line 2-N

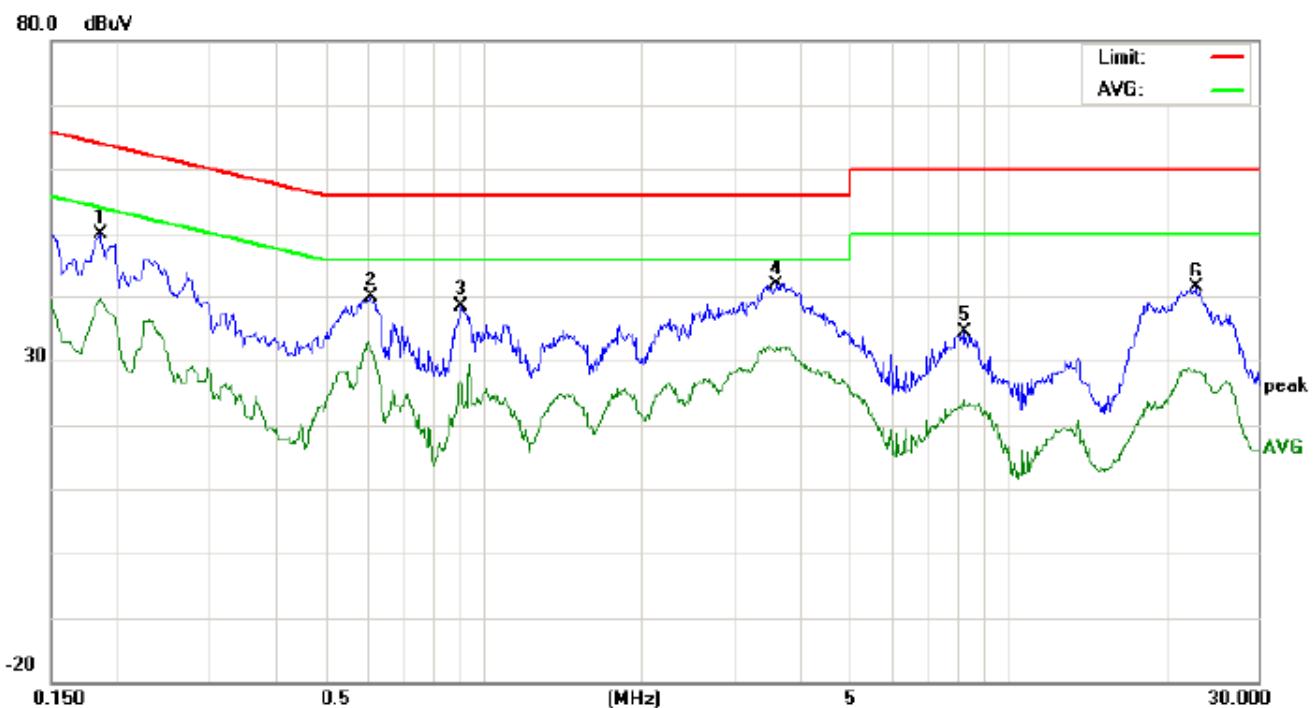


Site: Conduction Phase: *N* Temperature: 25.3  
 Limit: FCC Class B Conduction(QP) Power: Humidity: 51.2 %  
 EUT: Bluetooth Speaker  
 M/N: JS-168  
 Mode: BT Link with charging  
 Note:

No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	Avg		dB	Peak	QP	Avg	QP	Avg	QP	Avg	
1	0.1539	45.36		33.59	10.16	55.52		43.75	65.78	55.78	-10.26	-12.03	P	
2	0.2140	40.63		26.19	10.23	50.86		36.42	63.04	53.04	-12.18	-16.62	P	
3	0.6060	31.35		20.11	10.31	41.66		30.42	56.00	46.00	-14.34	-15.58	P	
4	0.9020	28.68		16.27	10.41	39.09		26.68	56.00	46.00	-16.91	-19.32	P	
5	3.9140	33.78		20.51	10.44	44.22		30.95	56.00	46.00	-11.78	-15.05	P	
6	21.6820	29.68		15.76	10.12	39.80		25.88	60.00	50.00	-20.20	-24.12	P	

**FOR BLE**

Line Conducted Emission Test Line 1-L



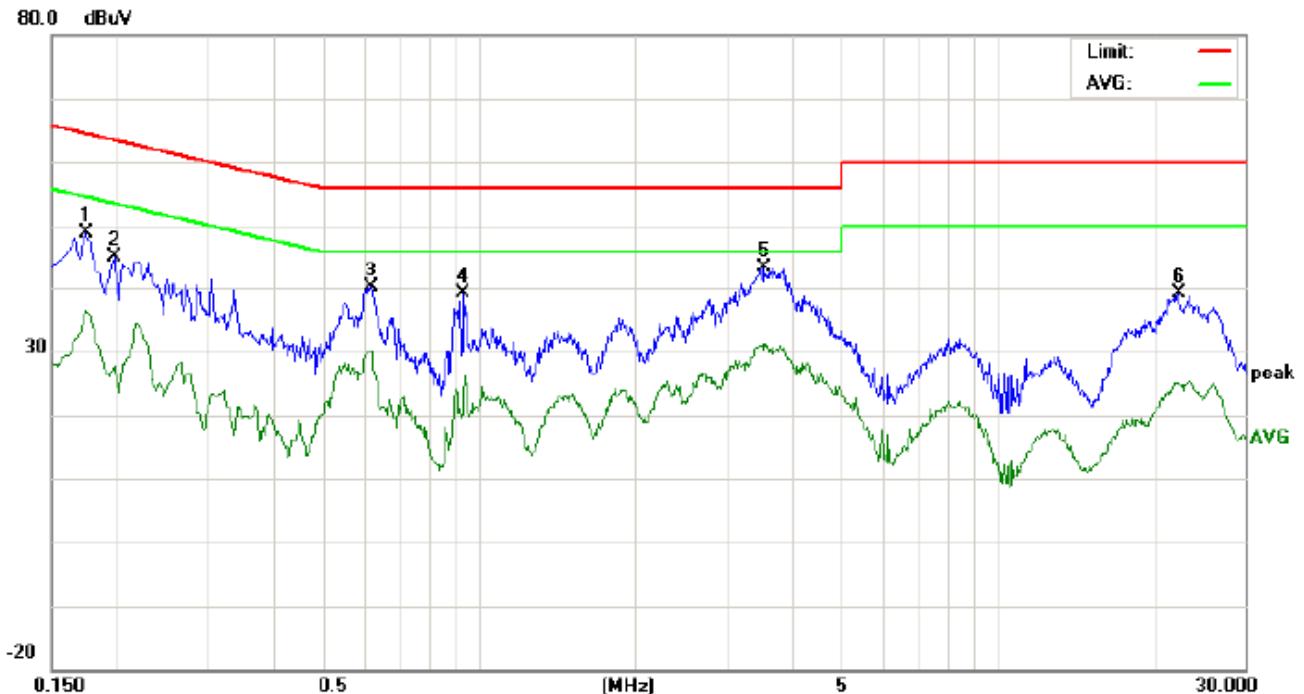

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Site: Conduction	Phase: <i>L1</i>	Temperature: 25.3
Limit: FCC Class B Conduction(QP)	Power:	Humidity: 51.2 %
EUT: Bluetooth Speaker		
M/N: JS-168		
Mode: BT Link with charging		
Note:		

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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	0.1859	39.79		29.52	10.20	49.99		39.72	64.21	54.21	-14.22	-14.49	P	
2	0.6097	29.49		20.99	10.31	39.80		31.30	56.00	46.00	-16.20	-14.70	P	
3	0.9060	27.98		16.42	10.41	38.39		26.83	56.00	46.00	-17.61	-19.17	P	
4	3.6379	31.49		21.57	10.49	41.98		32.06	56.00	46.00	-14.02	-13.94	P	
5	8.2378	24.12		13.50	10.35	34.47		23.85	60.00	50.00	-25.53	-26.15	P	
6	22.8060	31.19		18.06	10.11	41.30		28.17	60.00	50.00	-18.70	-21.83	P	

Line Conducted Emission Test Line 2-N

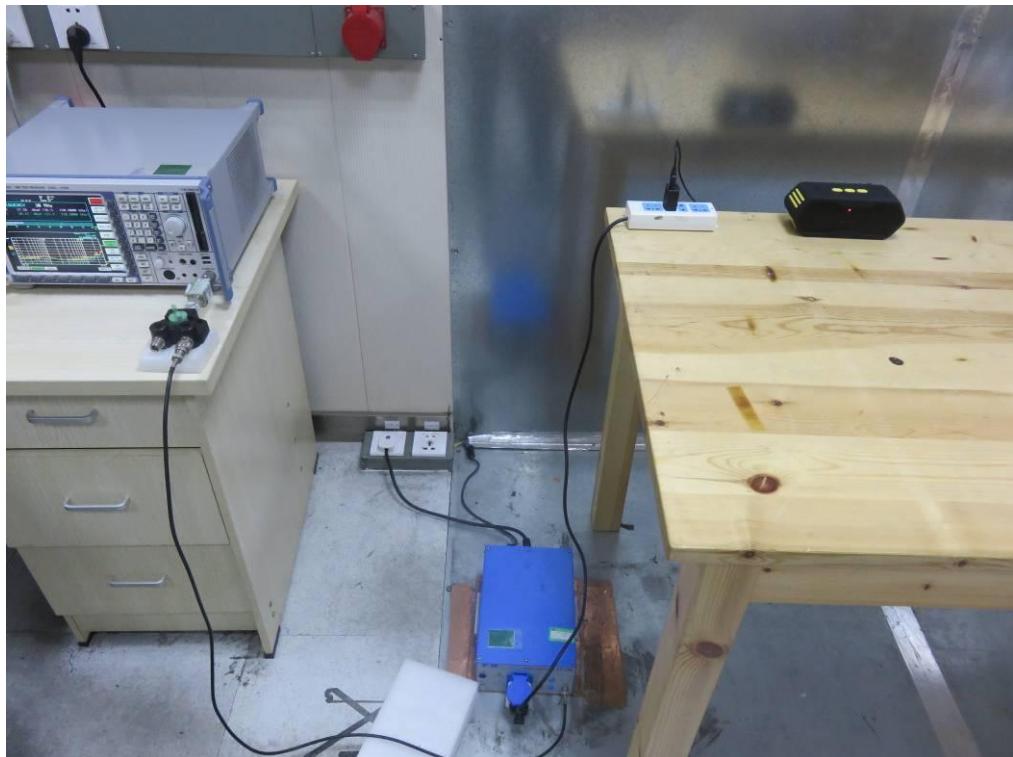


Site: Conduction Phase: **N** Temperature: 25.3  
 Limit: FCC Class B Conduction(QP) Power: Humidity: 51.2 %  
 EUT: Bluetooth Speaker  
 M/N: JS-168  
 Mode: BT Link with charging  
 Note:

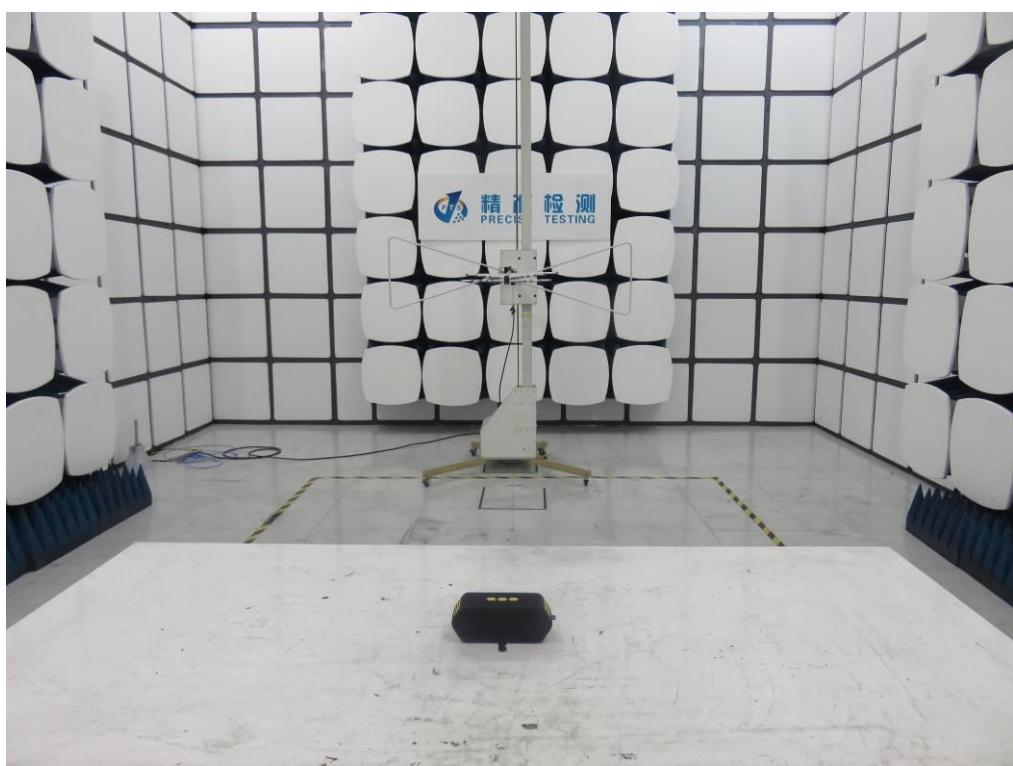
No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	Avg		Peak	QP	Avg	QP	Avg	QP	Avg		
1	0.1740	38.68		26.16	10.19	48.87		36.35	64.76	54.76	-15.89	-18.41	P	
2	0.1980	34.97		17.50	10.21	45.18		27.71	63.69	53.69	-18.51	-25.98	P	
3	0.6180	29.73		19.84	10.32	40.05		30.16	56.00	46.00	-15.95	-15.84	P	
4	0.9380	28.79		12.48	10.39	39.18		22.87	56.00	46.00	-16.82	-23.13	P	
5	3.5420	32.77		20.69	10.50	43.27		31.19	56.00	46.00	-12.73	-14.81	P	
6	22.3940	29.03		15.05	10.12	39.15		25.17	60.00	50.00	-20.85	-24.83	P	

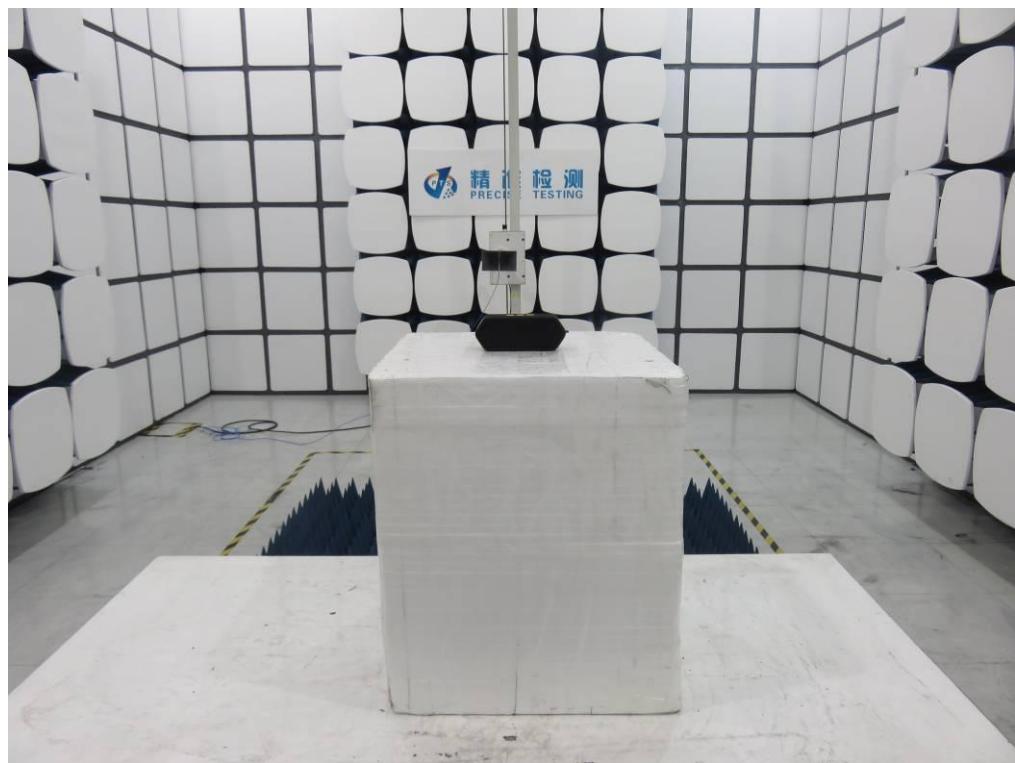
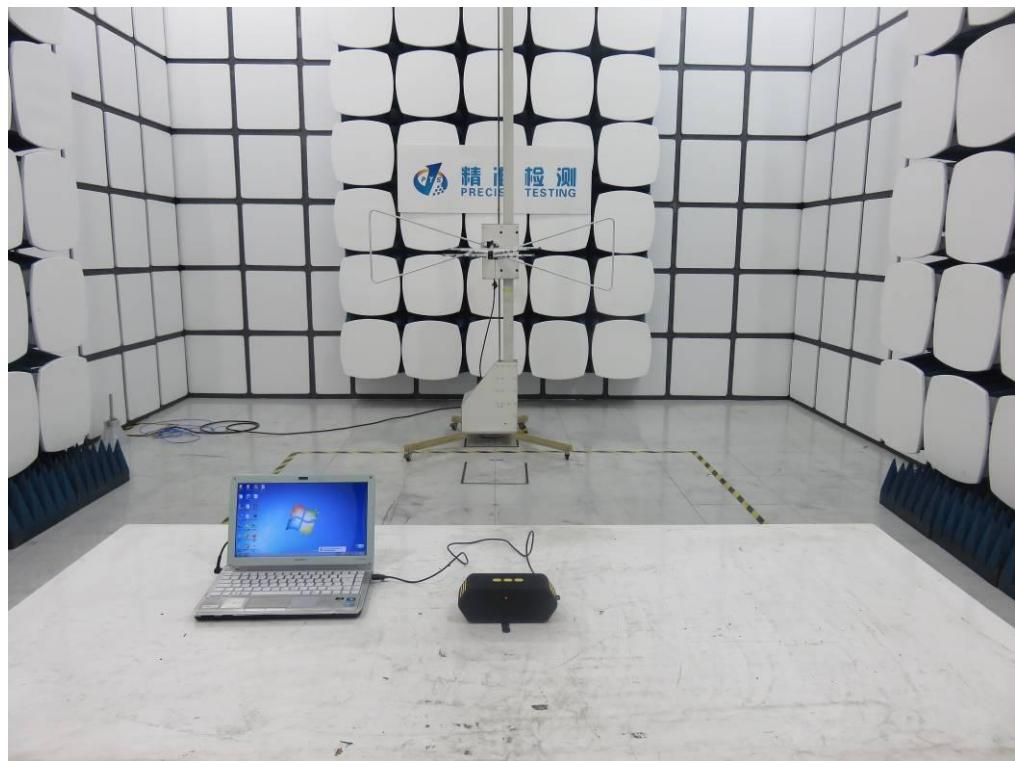
## APPENDIX A: PHOTOGRAPHS OF TEST SETUP

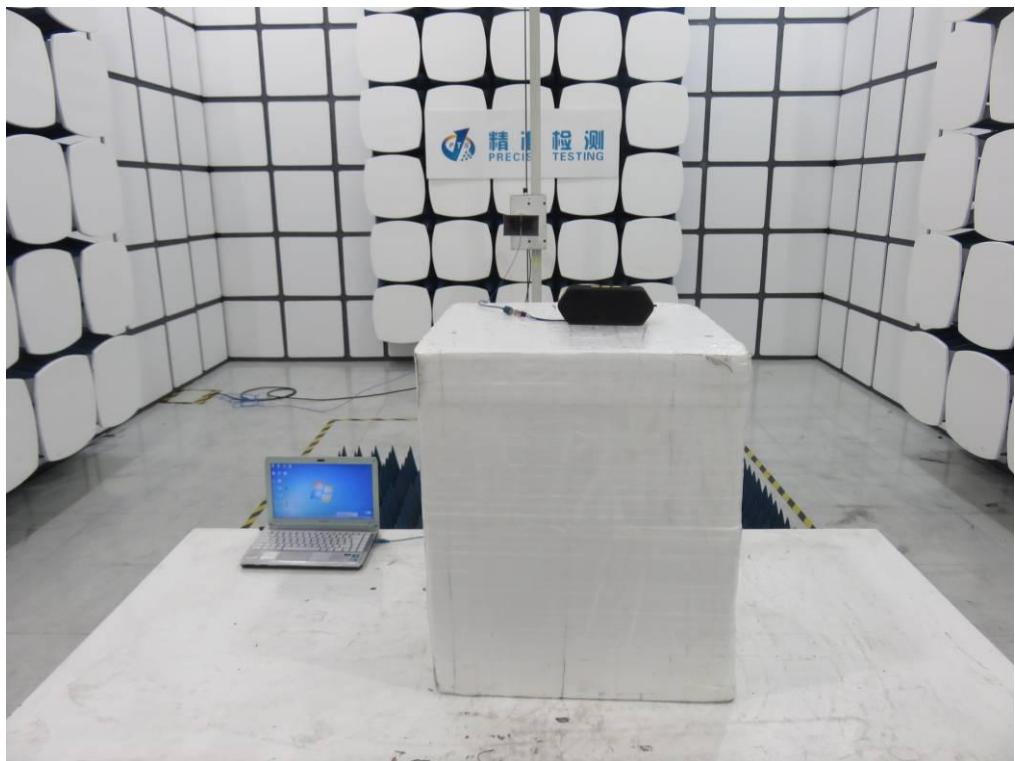
### FCC LINE CONDUCTED EMISSION TEST SETUP



### FCC RADIATED EMISSION TEST SETUP







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



**BOTTOM VIEW OF EUT**



FRONT VIEW OF EUT



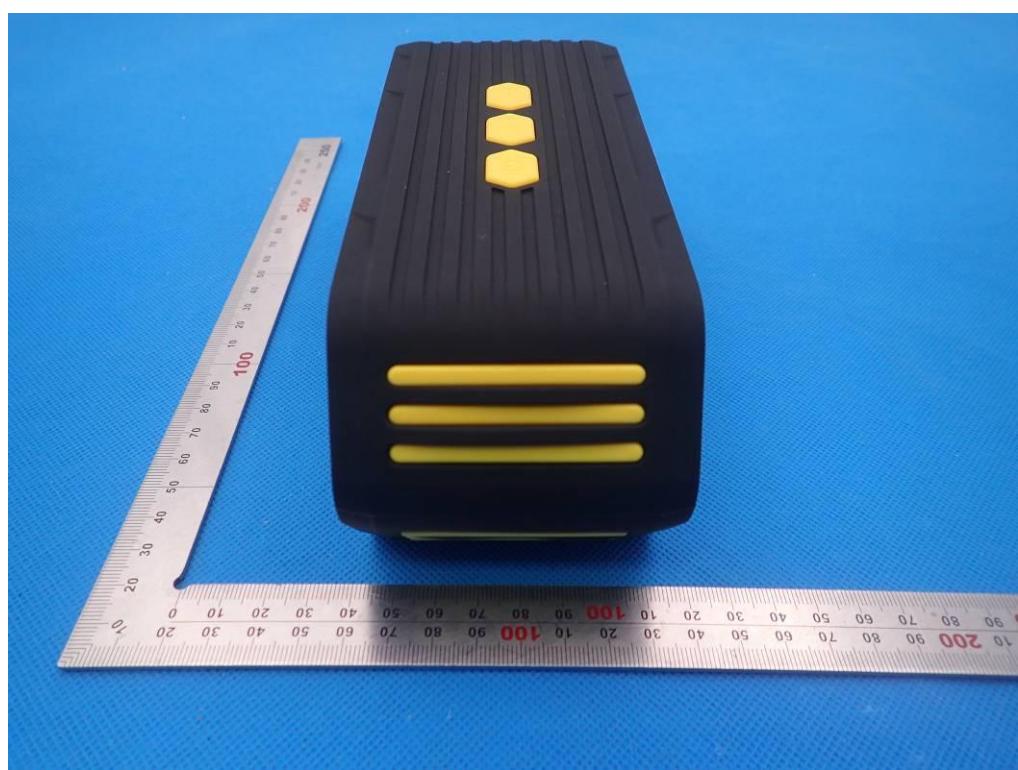
BACK VIEW OF EUT



LEFT VIEW OF EUT



RIGHT VIEW OF EUT



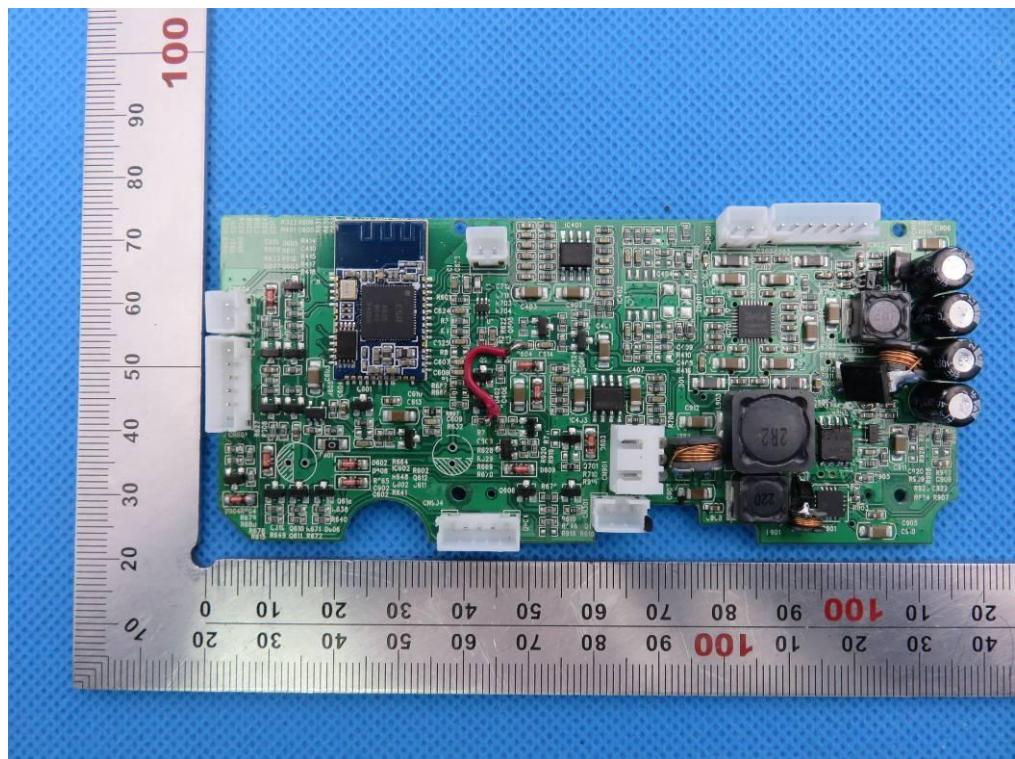
VIEW OF EUT (PORT)



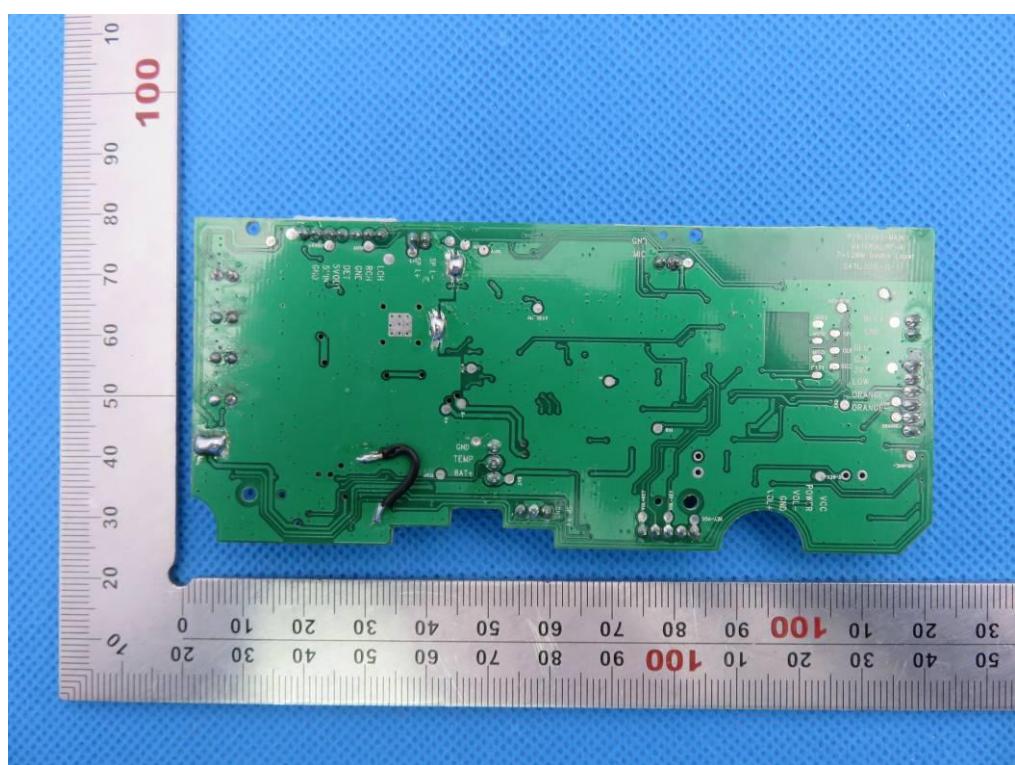
OPEN VIEW OF EUT



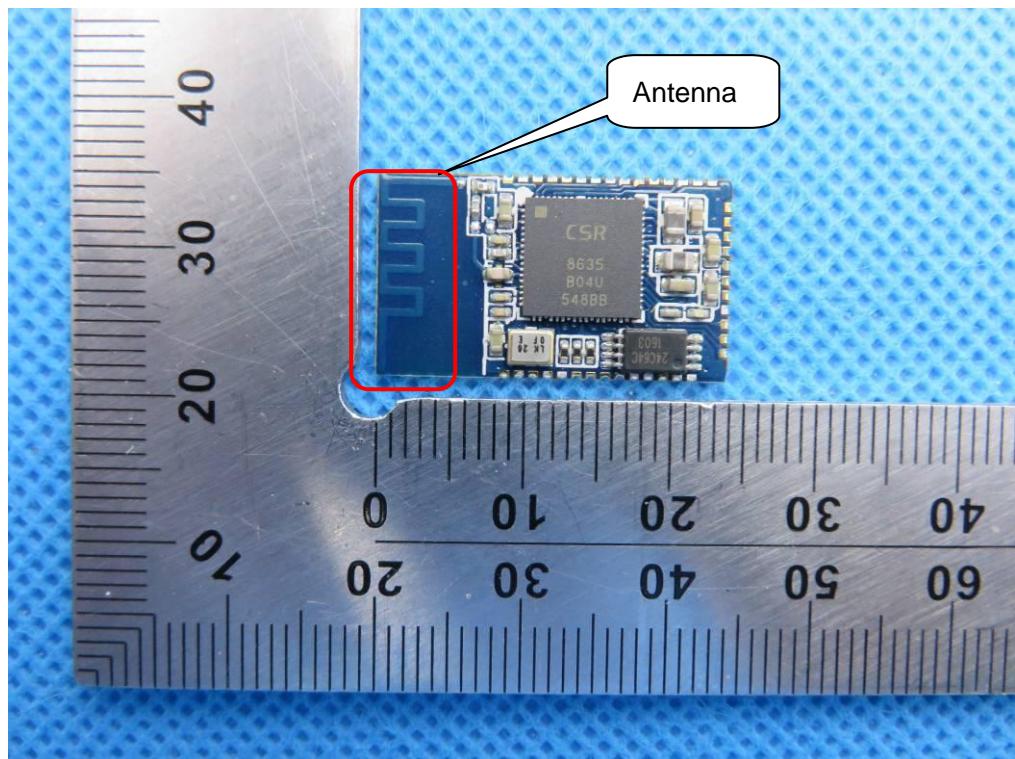
INTERNAL VIEW OF EUT-1



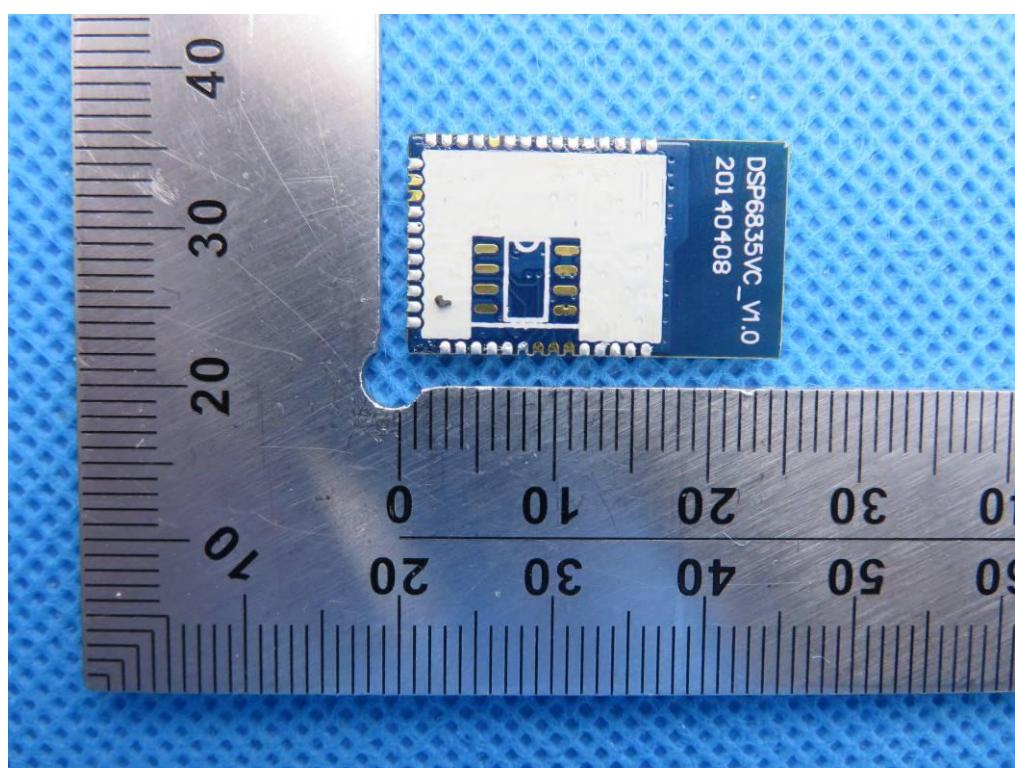
INTERNAL VIEW OF EUT-2



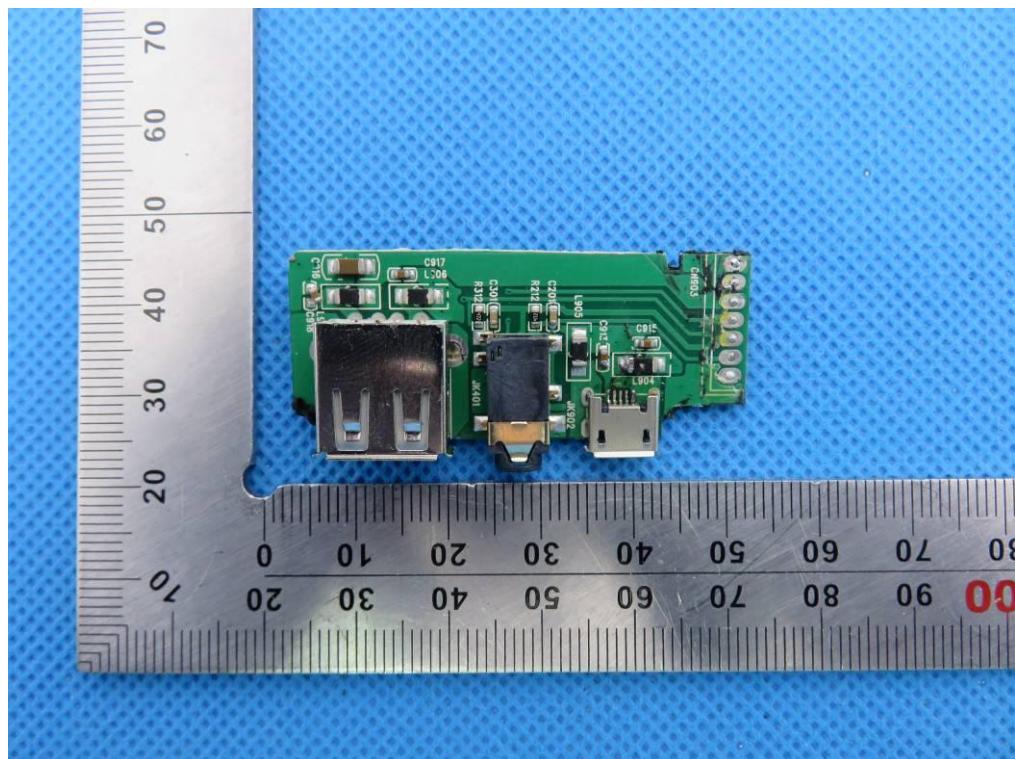
INTERNAL VIEW OF EUT-3



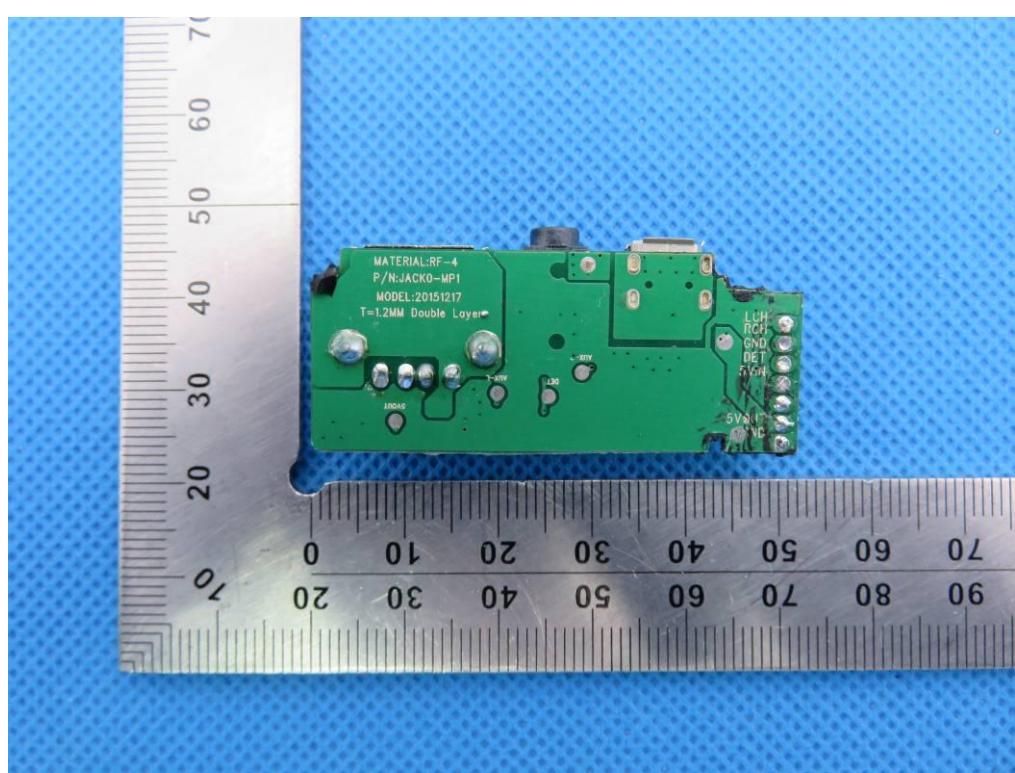
INTERNAL VIEW OF EUT-4



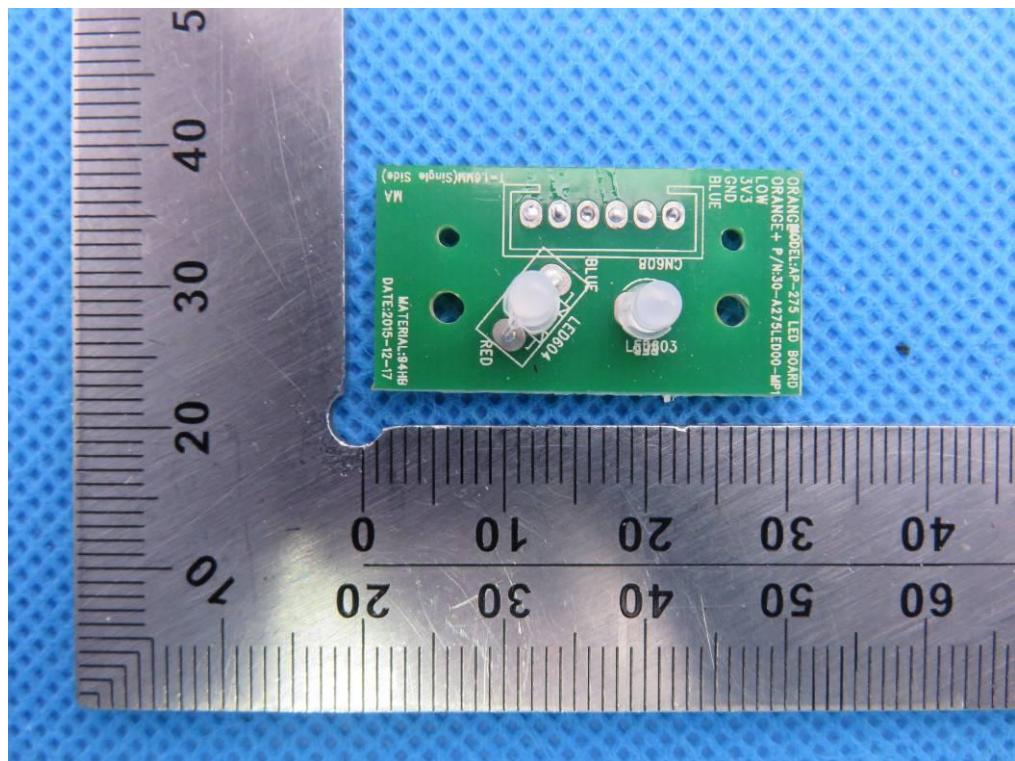
INTERNAL VIEW OF EUT-5



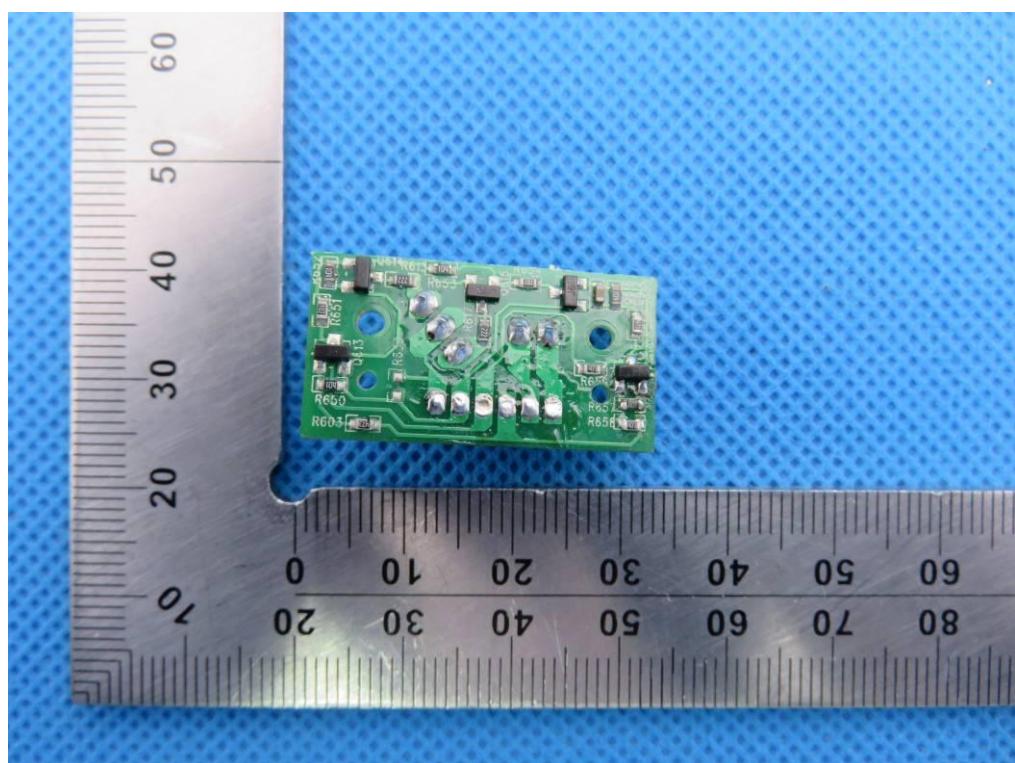
INTERNAL VIEW OF EUT-6



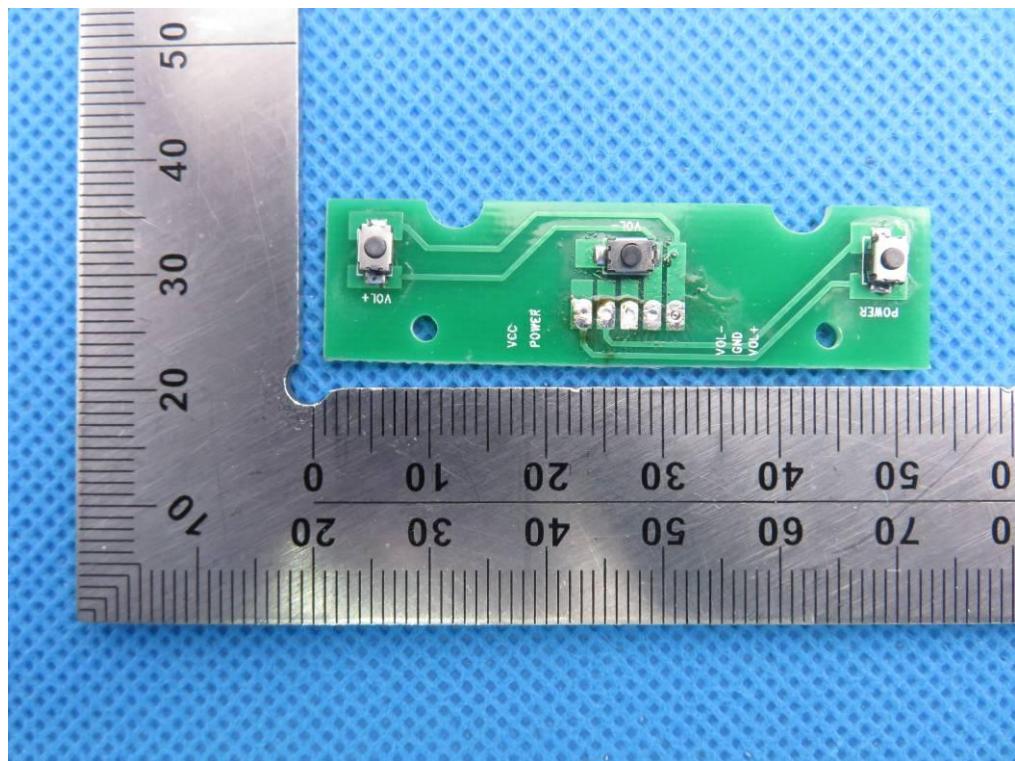
INTERNAL VIEW OF EUT-7



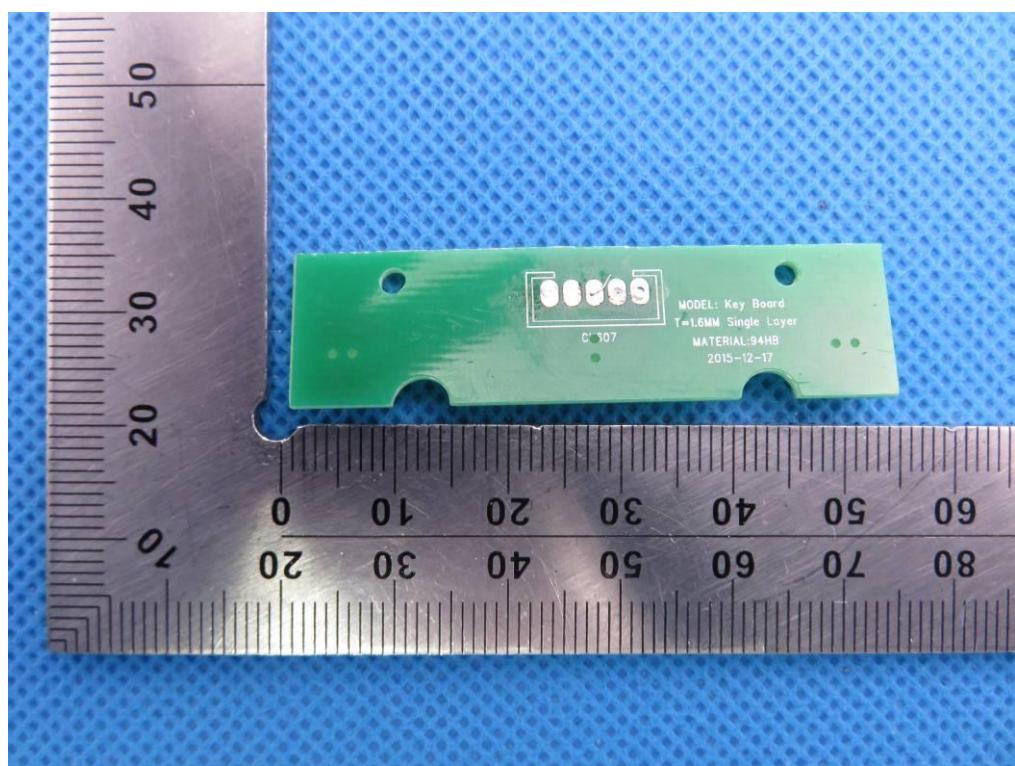
INTERNAL VIEW OF EUT-8



INTERNAL VIEW OF EUT-9



INTERNAL VIEW OF EUT-10



VIEW OF ADAPTER(AE)



----END OF REPORT----