

# Test Report of FCC Part 15 C for FCC Certificate

On Behalf of

## Guangzhou Liwei Electronics Co.,Ltd

**FCC ID:** VO8-SBH-T9  
**Product Description:** Bluetooth headset  
**Model No.:** T9+,SBH-T9  
**Brand:** **Bluedio** 蓝弦<sup>®</sup> and ZTE

**Prepared for:** **Guangzhou Liwei Electronics Co.,Ltd**  
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**Test Date:** May 15~21, 2013

**Test by:**

**Reviewed By:**



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Owen Li



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Edmund Zou

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## 1. GENERAL INFORMATION

### 1.1 Product Description for Equipment Under Test (EUT)

#### Client Information

Applicant: **Guangzhou Liwei Electronics Co.,Ltd**  
Address of applicant: No.33 Zhenzhong North Rd,Shenshan Ind.Park BaiYun District,Guangzhou GuangDong,China  
  
Agent: **ZTE Corporation**  
Address of agent: NO.55 Hi-tech Road South,ShenZhen,P.R.China  
Agent brand: **ZTE**  
  
Manufacturer: **Guangzhou Liwei Electronics Co.,Ltd**  
Address of manufacturer: No.33 Zhenzhong North Rd,Shenshan Ind.Park BaiYun District,Guangzhou GuangDong,China

#### General Description of E.U.T

Items	Description
EUT Description:	Bluetooth headset
Model No.:	T9+,SBH-T9
Type of Modulation:	FHSS
Frequency Band:	2402 MHz ~ 2480 MHz
Number of Channels:	79
Channel Bandwidth:	1 MHz
Antenna Type:	Integrated antenna, fixed on PCB
Antenna Gain:	0dBi
Rated Voltage:	3.7V from battery and charged by USB DC5V

\* The test data gathered are from the production sample provided by the manufacturer,

\* The T9+ is the same as SBH-T9,just difference in model number and trade mark serves as Marketing strategy.

## 1.2 Test Facility

All measurement required was performed at laboratory of Centre Testing International (ShenZhen) Corporation, Location at Hongwei Industrial Zone, Baoan 70 District, Shenzhen, Guangdong, The site and apparatus are constructed in conformance with the requirements of ANSI C63.4, CISPR 16-1-1 and other equivalent standards.

The test facility is recognized, certified, or accredited by the following organizations:

### **FCC – Registration No.: 510007**

CENTRE TESTING INTERNATIONAL (SHENZHEN) CORPORATION, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. Registration 338263, March 20, 2009.

### **IC Registration No.: 7408B**

The 3m alternate test site of CENTRE TESTING INTERNATIONAL (SHENZHEN) CORPORATION. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 7408B on December 29, 2009.

### **CNAS - Registration No.: L1910**

CENTRE TESTING INTERNATIONAL (SHENZHEN) CORPORATION, to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing. The acceptance letter from the CNAS is maintained in our files: Registration: L1910, January 12, 2010.

## 1.3 Related Submittal(s) / Grant (s)

This submittal(s) is a test report based on the Electromagnetic Interference (EMI) tests performed on the EUT. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4 - 2003.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.209, and 15.247 rules.

## 1.4 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

Test item	Value (dB)
Conducted Emission	3.2
Radiated Emission	4.5

## **2. SYSTEM TEST CONFIGURATION**

The tests documented in this report were performed in accordance with ANSI C63.4-2003 and FCC CFR 47 Part 15 Subpart C.

### **2.1 EUT Configuration**

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

### **2.2 EUT Exercise**

The calibrated antennas used to sample the radiated field strength are mounted on a non-conductive, motorized antenna mast 3 or 10 meters from the leading edge of the turntable.

### **2.3 General Test Procedures**

**Conducted Emissions** The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 7.1 of ANSI C63.4-2003. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak detector mode.

**Radiated Emissions** The EUT is placed on a turntable, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m/10m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4-2003.

## 2.4 List of Measuring Equipments

Test equipments list of CENTRE TESTING INTERNATIONAL (SHENZHEN) CORPORATION.

Shielding Room No. 1 - Conducted disturbance Test				
Equipment	Manufacturer	Model	Serial No.	Due Date
Receiver	R&S	ESCI	100009	07/19/2014
LISN	ETS-LINDGREN	3850/2	00051952	07/19/2014
LISN	R&S	ENV216	100098	07/19/2014
Voltage Probe	R&S	ESH2-Z3	100042	07/19/2014
Current Probe	R&S	EZ17	100106	07/19/2014
ISN	TESEQ GmbH	ISN T800	30297	07/04/2014

Control Room - Conducted disturbance Test (10m part)				
Equipment	Manufacturer	Model	Serial No.	Due Date
Receiver	R&S	ESCI	100435	07/19/2014
LISN	schwarzbeck	NNLK8121	8121-529	07/19/2014
Transient Limiter	ELECTRO-METRICS	EM-7600	806	07/29/2014
Voltage Probe	R&S	ESH2-Z3	100042	07/19/2014
Current Probe	R&S	EZ17	100106	07/19/2014
ISN	TESEQ GmbH	ISN T800	30297	07/04/2014

3M Semi-anechoic Chamber - Radiated disturbance Test				
Equipment	Manufacturer	Model	Serial No.	Due Date
3M Chamber & Accessory Equipment	ETS-LINDGREN	FACT-3	3510	07/09/2014
Spectrum Analyzer	Agilent	E4440A	MY46185649	07/07/2014
TRILOG Broadband Antenna	schwarzbeck	VULB 9163	401	07/21/2014
Multi device Controller	ETS-LINGREN	2090	00057230	N/A
Horn Antenna	ETS-LINGREN	3117	00057407	07/19/2014
Microwave Preamplifier	Agilent	8449B	3008A02425	07/29/2014

10M Semi-anechoic Chamber - Radiated disturbance Test				
Equipment	Manufacturer	Model	Serial No.	Due Date
10M Chamber & Accessory Equipment	Rainford	--	--	07/06/2015
Receiver	R&S	ESCI	100435	07/19/2014
Spectrum Analyzer	R&S	FSP40	100416	07/06/2014
EMI test receiver	R&S	ESIB40	2023282915	07/24/2014
TRILOG Broadband Antenna	schwarzbeck	VULB 9163	484	07/21/2014

Horn Antenna	ETS-LINGREN	3117	00044562	07/07/2015
Microwave Preamplifier	Agilent	11909A	186871	07/06/2014
Microwave Preamplifier	HP	HP 8447F	2805A03379	07/06/2014
Microwave Preamplifier	CD	PAP-1G18G	2001	07/29/2014

Shielding Room No. 2 - Harmonic / Flicker Test (EN 61000-3-2) / (EN 61000-3-3)				
Equipment	Manufacturer	Model	Serial No.	Due Date
5KVA AC POWER SOURCE	California instruments	5001iX-400-413	57344	07/29/2014
Flicker & Harmonic Tester	California instruments	PACS-1	72492	07/29/2014

Shielding Room No. 3 - ESD Test (IEC 61000-4-2)				
Equipment	Manufacturer	Model	Serial No.	Due Date
ESD Simulator	EM TEST	ESD30C	V0603101091	07/30/2014
ESD Simulator	TESEQ	NSG437	478	08/22/2014

3M Full-anechoic Chamber - Radio-frequency electromagnetic field Immunity Test (IEC 61000-4-3)				
Equipment	Manufacturer	Model	Serial No.	Due Date
3M Chamber & Accessory Equipment	ETS-LINDGREN	FACT-3	3510	07/09/2014
ESG Vector signal generators	Agilent	E4438C	MY45095744	07/07/2014
Power Amplifier	AR	150W1000	0322288	07/19/2014
TRILOG Broadband Antenna	schwarzbeck	VULB 9163	401	07/21/2014
Temperature & Humidity Chamber	ESPEC	DSW0540	ER-009	09/29/2014

Shielding Room No. 3 - EFT / Surges Test (IEC 61000-4-4) (IEC 61000-4-5)				
Equipment	Manufacturer	Model	Serial No.	Due Date
Compact Generator	EM-Test	UCS500M/6B	V0603101093	07/19/2014
Capacitive Clamp	EM-Test	C Clamp HFK	0306-43	07/19/2014
CDN for Telecom Port	EM-Test	CNV504S1	V0603101094	07/19/2014
EFT Generator	SCHAFFNER	NSG 2025	19878	07/29/2014
SURGE Generator	SCHAFFNER	NSG 2050	200313-135AR	07/29/2014
CDN	SCHAFFNER	CDN-131/133	34397	07/29/2014

Shielding Room No. 2 - Radio-frequency continuous conducted Immunity Test (IEC 61000-4-6)				
Equipment	Manufacturer	Model	Serial No.	Due Date
Signal Generator	IFR	2023B	202307/883	07/07/2014



Power Amplifier	AR	75A 250A	320297	07/29/2014
Attenuator	EM-Test	ATT6/75	0320837	07/19/2014
CDN	EM-Test	CDN M2/M3	0204-01	07/19/2014
EM-Clamp	EM-Test	EM101	35770	07/19/2014

Shielding Room No. 2 - Power-frequency magnetic fields Immunity Test (IEC 61000-4-8)				
Compact Generator	EM-Test	UCS500M/6B	V0603101093	07/19/2014
Induction Coil	EM-Test	MS100	0106-47	07/29/2014
Current Transformer	EM-Test	MC2630	0106-02	07/29/2014

Shielding Room No. 2 –Voltage dips and interruptions Test (IEC 61000-4-11)				
Equipment	Manufacturer	Model	Serial No.	Due Date
5KVA AC POWER SOURCE	California instruments	5001iX-400-413	57344	07/29/2014
Electronic output switch	California instruments	EOS-1	72616	07/29/2014

## 2.5 List of auxiliary device

Equipment	Manufacturer	Model	Serial No.	Specification
Notebook	Lenovo	E46L	EB23971458	Input: DC20V ( 3.25A) Output: USB DC5V
Adapter	Lenovo	PA-1650-56LC	36001651	Input:100~240V (1.7A)50-60Hz Output: DC20V ( 3.25A)

### 3. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
15.247(a)(1)	Hopping Channel Bandwidth	Pass
15.247(a)(1)	Hopping Channel Separation	Pass
15.247(a)(1)	Number of Hopping Frequency Used	Pass
15.247(a)(1)(iii)	Dwell Time of Each Frequency	Pass
15.247(b)(1)	Maximum Peak Output Power	Pass
15.247(d)	Band Edges Emission	Pass
15.247(d)	Spurious Radiated Emission	Pass
15.203/15.247(b)/(c)	Antenna Requirement	Pass

## 4. Conducted Emission Test

### 4.1 Applicable Standard

Section 15.247(a): for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

### 4.2 Limits

Limits for Class A digital devices

Frequency range (MHz)	Limits dB( $\mu$ V)	
	Quasi-peak	Average
0.15 to 0.50	79	66
0.50 to 30	73	60

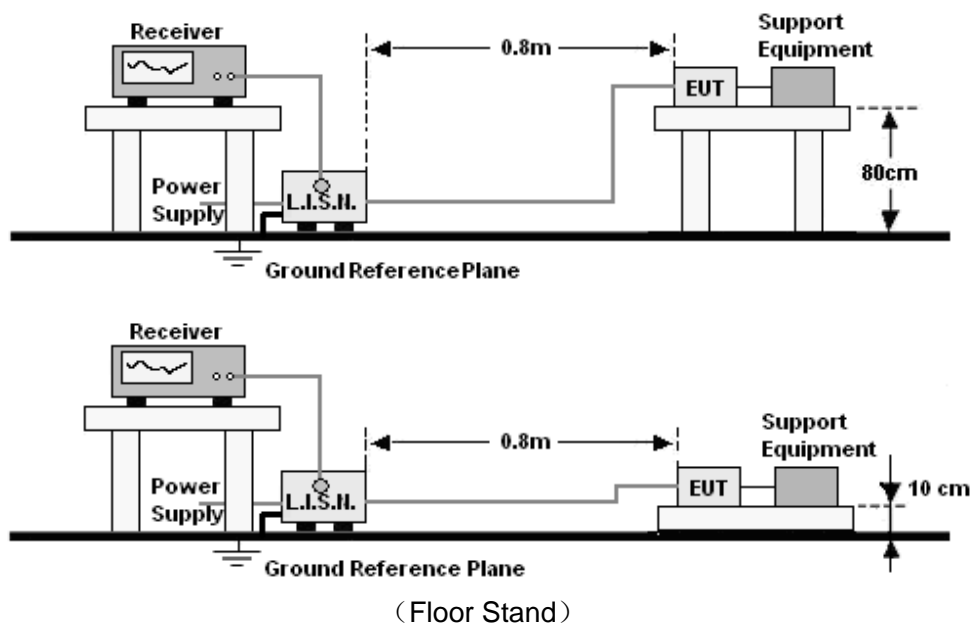
**NOTE:** The lower limit shall apply at the transition frequency.

Limits for Class B digital devices

Frequency range (MHz)	Limits dB( $\mu$ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

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

### 4.3 EUT Test Setup



#### 4.4 Procedure Of Conducted Emission Test

- a. The Product was placed on a nonconductive table above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
- b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
- c. For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

#### 4.5 Test Result

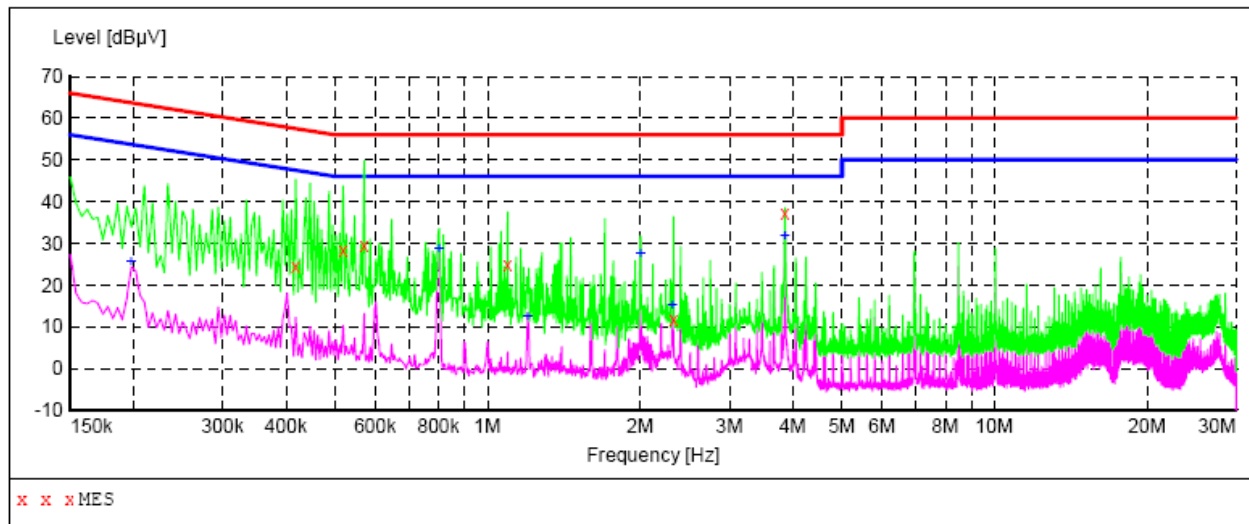
Temperature ( °C ) : 22~23	EUT: Bluetooth headset
Humidity (%RH ) : 50~54	M/N: T9+
Barometric Pressure ( mbar ) : 950~1000	Operation Condition: Charge mode

## The Test Data Of Conducted Emission

EUT: Bluetooth headset  
M/N: T9+  
Operating Condition: Charge mode  
Test Site: CHAMBER  
Operator: Owen Li  
Comment: Line:L  
Tem:23℃ Hum:50%

### SCAN TABLE: "Voltage (150K-30M) FIN"

Short Description: 150k-30M Voltage



### MEASUREMENT RESULT:

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.418000	24.40	10.1	58	33.1	QP	-L-	---
0.518000	28.40	10.1	56	27.6	QP	-L-	---
0.570000	29.60	10.2	56	26.4	QP	-L-	---
1.094000	25.00	10.3	56	31.0	QP	-L-	---
2.326000	11.70	10.3	56	44.3	QP	-L-	---
3.862000	37.20	10.4	56	18.8	QP	-L-	---

### MEASUREMENT RESULT:

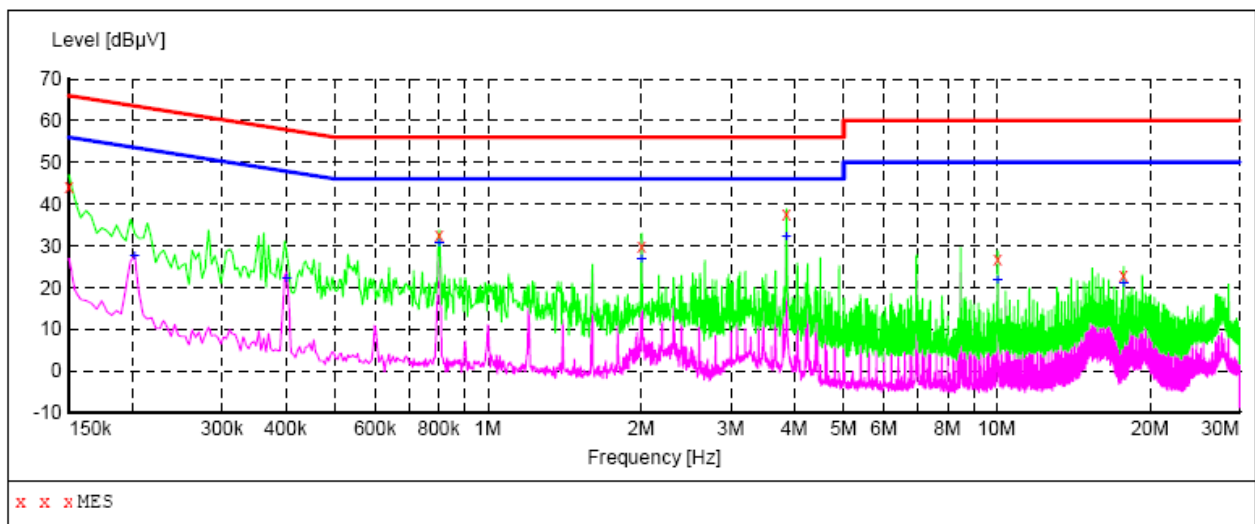
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.198000	25.70	10.1	54	28.0	AV	-L-	---
0.802000	28.80	10.2	46	17.2	AV	-L-	---
1.198000	12.50	10.3	46	33.5	AV	-L-	---
2.002000	27.50	10.3	46	18.5	AV	-L-	---
2.318000	15.20	10.3	46	30.8	AV	-L-	---
3.862000	32.00	10.4	46	14.0	AV	-L-	---

## The Test Data Of Conducted Emission

EUT: Bluetooth headset  
M/N: T9+  
Operating Condition: Charge mode  
Test Site: CHAMBER  
Operator: Owen Li  
Comment: Line:N  
Tem:23℃ Hum:50%

### SCAN TABLE: "Voltage (150K-30M)FIN"

Short Description: 150k-30M Voltage



### MEASUREMENT RESULT:

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.150000	44.20	10.1	66	21.8	QP	-N-	---
0.802000	32.80	10.2	56	23.2	QP	-N-	---
2.002000	29.90	10.3	56	26.1	QP	-N-	---
3.862000	37.70	10.4	56	18.3	QP	-N-	---
10.038000	26.70	10.4	60	33.3	QP	-N-	---
17.754000	23.10	10.6	60	36.9	QP	-N-	---

### MEASUREMENT RESULT:

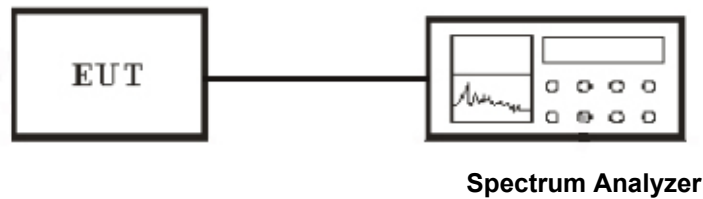
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.202000	27.50	10.1	54	26.0	AV	-N-	---
0.402000	22.10	10.1	48	25.7	AV	-N-	---
0.802000	30.50	10.2	46	15.5	AV	-N-	---
2.002000	26.90	10.3	46	19.1	AV	-N-	---
3.862000	32.10	10.4	46	13.9	AV	-N-	---
10.038000	21.90	10.4	50	28.1	AV	-N-	---
17.754000	21.00	10.6	50	29.0	AV	-N-	---

## 5. Test of Hopping Channel Bandwidth

### 5.1 Applicable Standard

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

### 5.2 EUT Setup



### 5.3 Test Equipment List and Details

See section 2.4.

### 5.4 Test Procedure

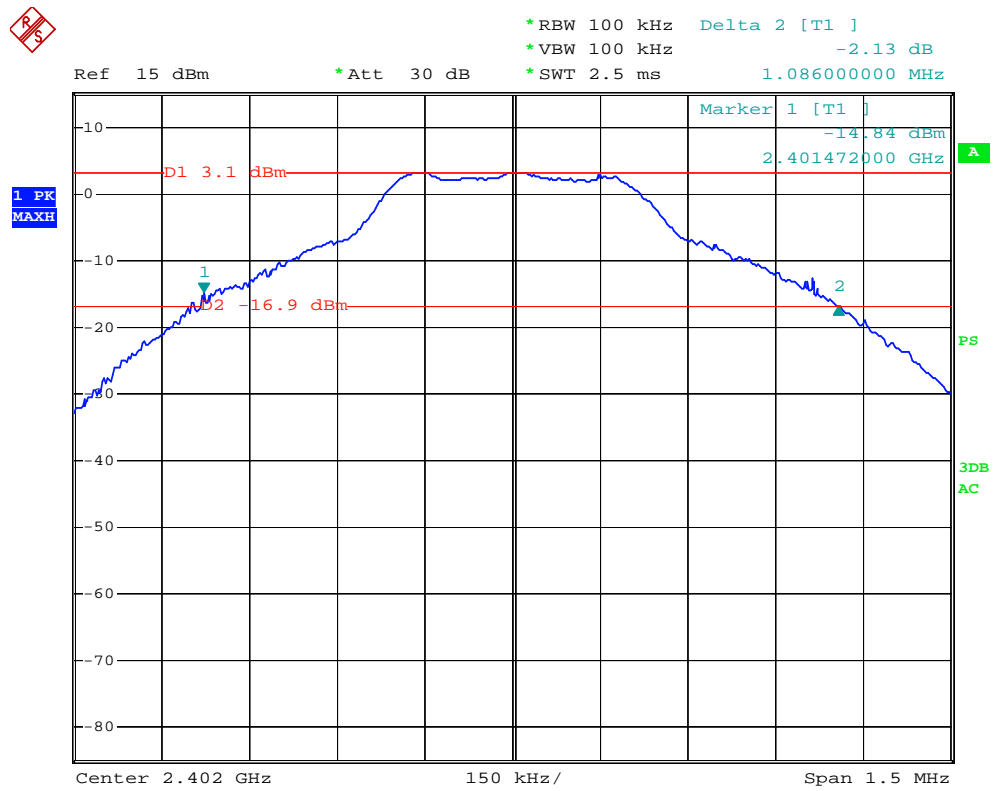
1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 100KHz and VBW to 100KHz.
3. Set Detector to Peak, Trace to Max Hold and Sweep Time is Auto.
4. The spectrum width with level higher than 20dB below the peak level.
5. Repeat above 1~3 points for the low, middle and highest 3 channels of the EUT.

### 5.5 Test Result

Temperature ( °C ) : 22~23	EUT: Bluetooth headset
Humidity (%RH) : 50~54	M/N: T9+
Barometric Pressure ( mbar ) : 950~1000	Operation Condition: Tx Mode

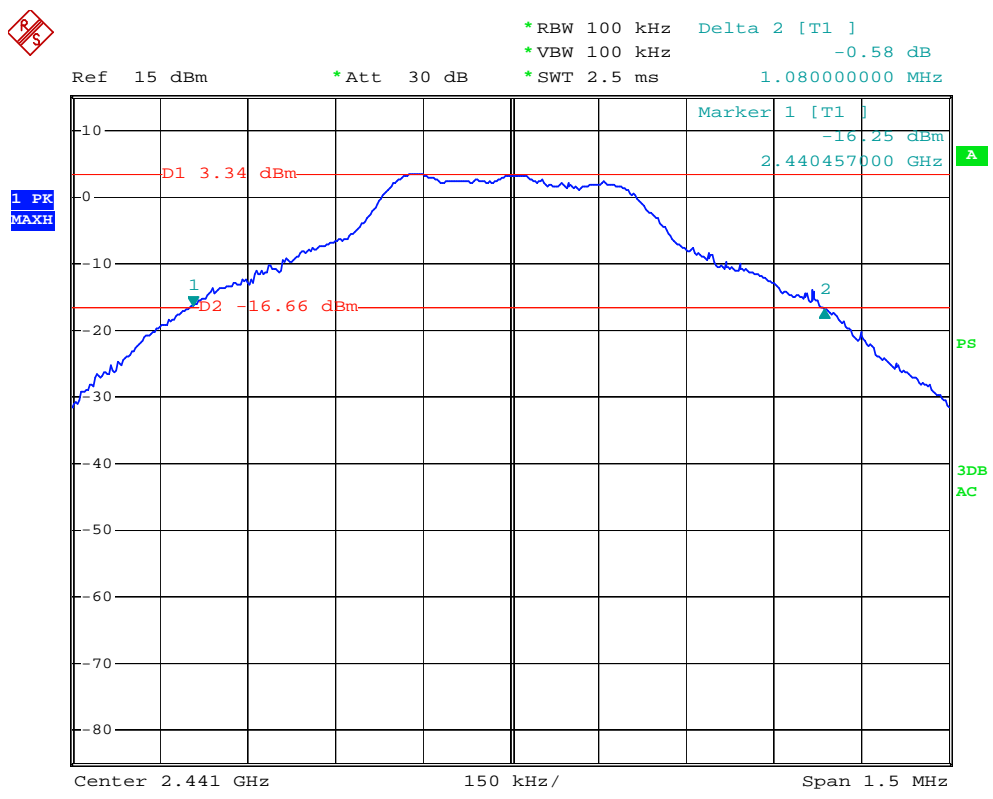
Modulation Type	Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)
FHSS	Low	2402	1086
FHSS	Middle	2441	1080
FHSS	High	2480	1077

Channel Low :

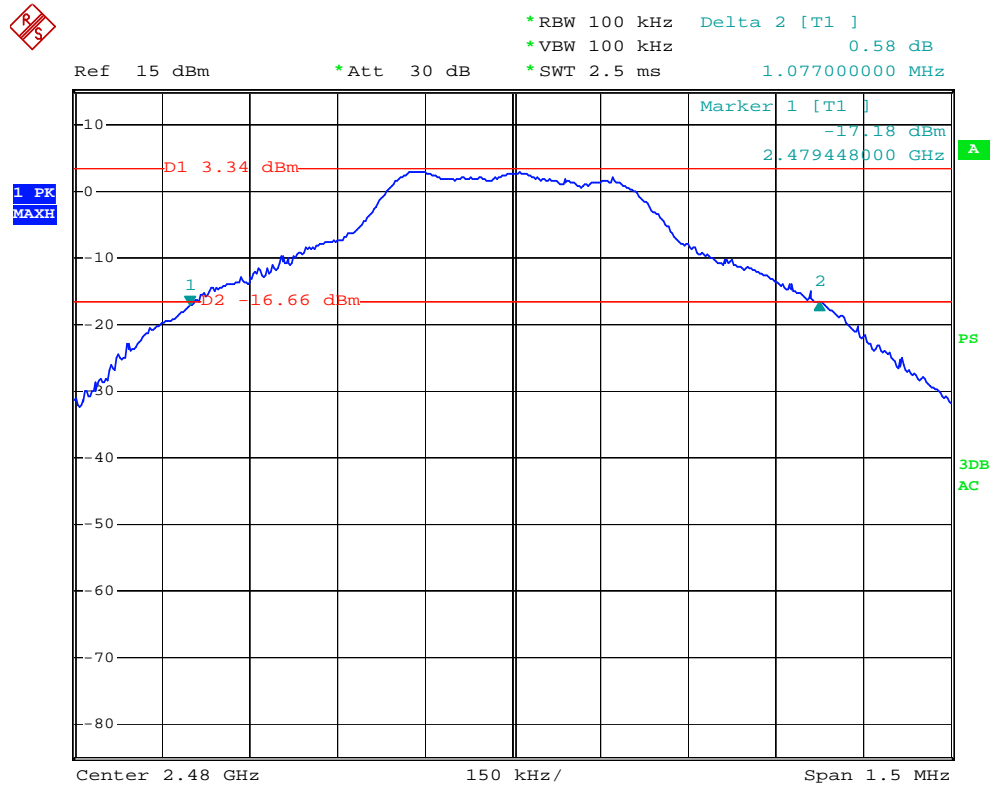




Channel Middle :



Channel High:

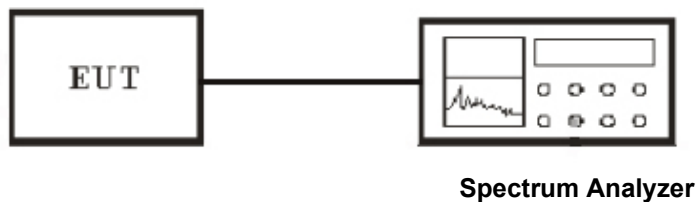


## 6. Test of Hopping Channel Separation

### 6.1 Applicable Standard

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

### 6.2 EUT Setup



### 6.3 Test Equipment List and Details

See section 2.4.

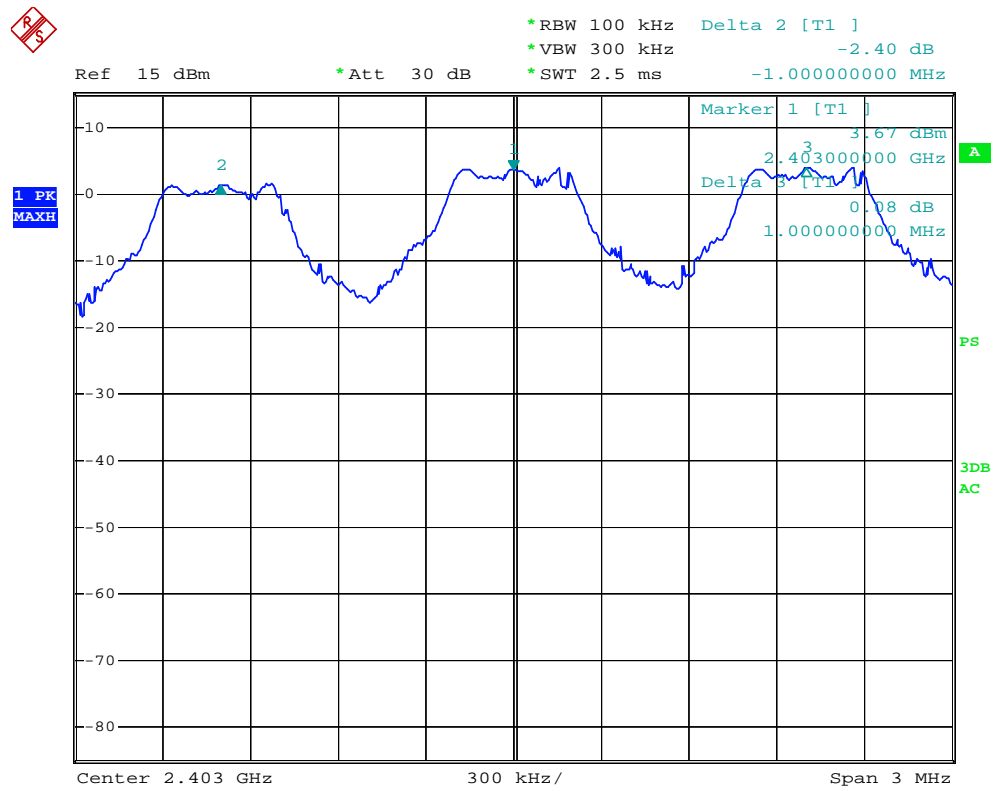
### 6.4 Test Procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 100KHz and VBW to 300KHz.
3. Set Detector to Peak, Trace to Max Hold and Sweep Time is Auto.
4. The Hopping Channel Separation is defined as the separation between 2 neighboring hopping frequencies.

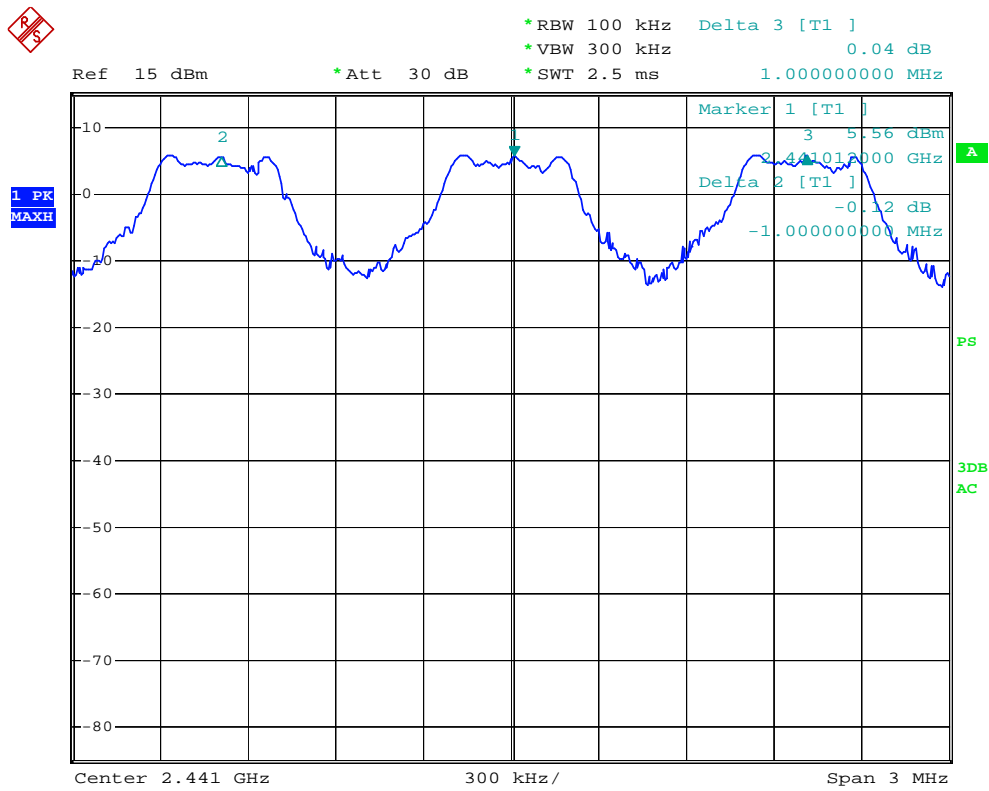
### 6.5 Test Result

Temperature ( °C ) : 22~23	EUT: Bluetooth headset
Humidity (%RH) : 50~54	M/N: T9+
Barometric Pressure ( mbar ) : 950~1000	Operation Condition: Normal Mode

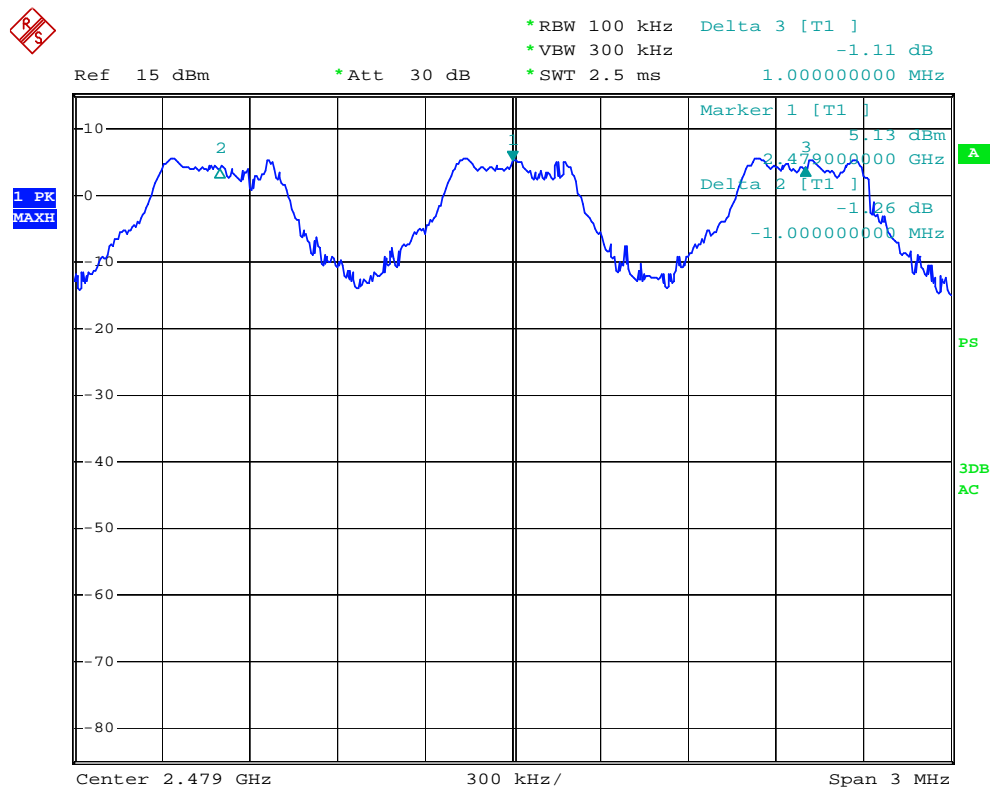
Channel Low :



Channel Middle :



Channel High :

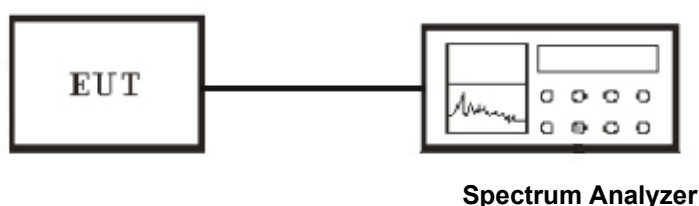


## 7. Test of Number of Hopping Frequency

### 7.1 Applicable Standard

Section 15.247(a)(1)(iii): For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 15 non-overlapping hopping channels. Frequency hopping system which use fewer than 75 hopping frequencies may employ intelligent hopping techniques to avoid interference to other transmissions. Frequency hopping system may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 non-overlapping channels are used.

### 7.2 EUT Setup



### 7.3 Test Equipment List and Details

See section 2.4.

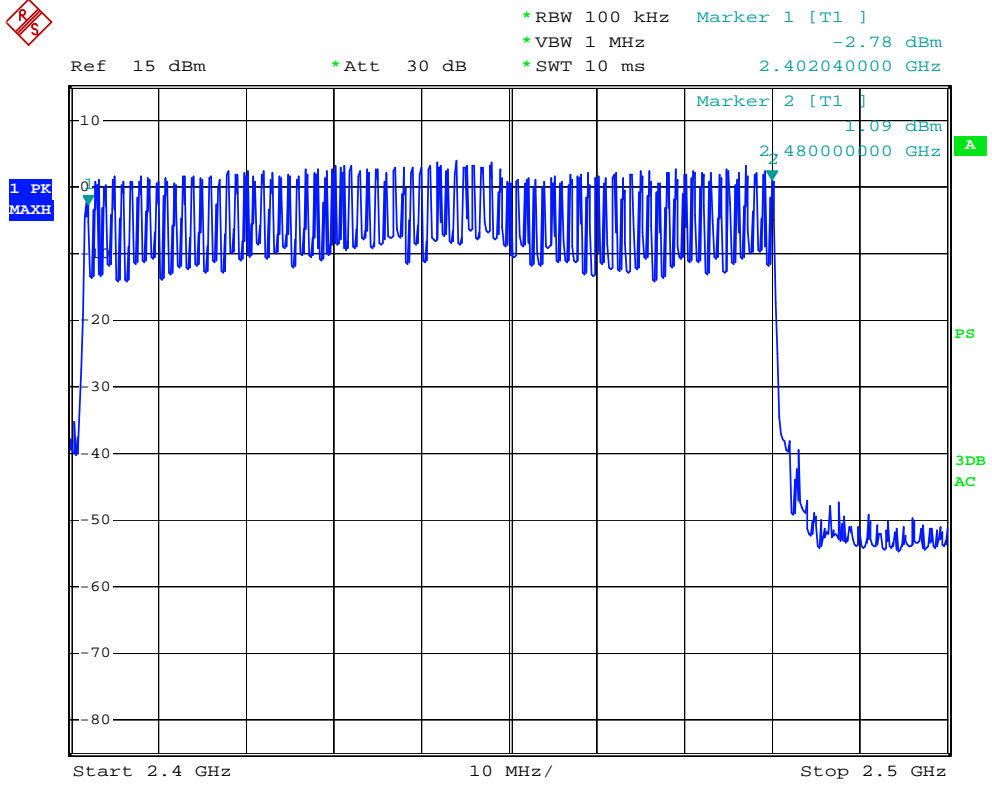
### 7.4 Test Procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 100KHz and VBW to 1MHz.
3. Set Detector to Peak, Trace to Max Hold and Sweep Time is Auto.

### 7.5 Test Result

Temperature ( °C ) : 22~23	EUT: Bluetooth headset
Humidity (%RH) : 50~54	M/N: T9+
Barometric Pressure ( mbar ) : 950~1000	Operation Condition: Normal Mode

Modulation Type	Frequency (MHz)	Number of Hopping Channels	Min. Limit (kHz)
FHSS	2402~2480	79	>15



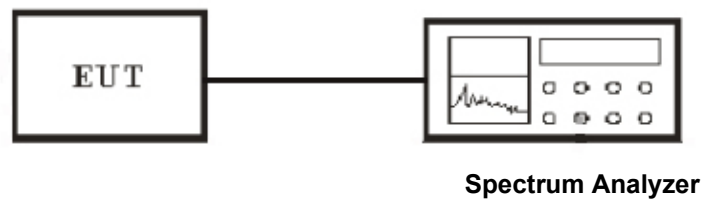


## 8. Test of Dwell Time of Each Frequency

### 8.1 Applicable Standard

Section 15.247(a)(1)(iii): For frequency hopping systems operating in the 2400-2483.5 MHz band The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4seconds multiplied by the number of hopping channels employed.

### 8.2 EUT Setup



### 8.3 Test Equipment List and Details

See section 2.4.

### 8.4 Test Procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 1000kHz and VBW to 1000kHz.
3. Set Detector to Peak, Trace to Max Hold and Sweep Time is more than once pulse time.
4. Set the center frequency on any frequency would be measure and set the frequency span to zero span.
5. Measure the maximum time duration of one single pulse.

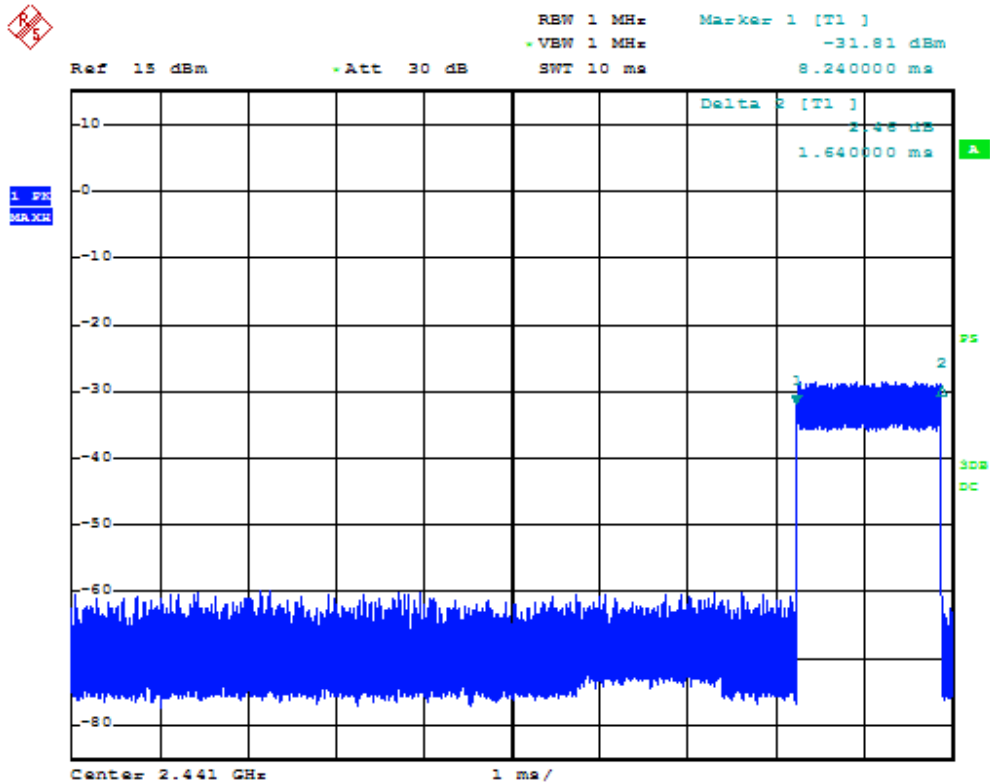
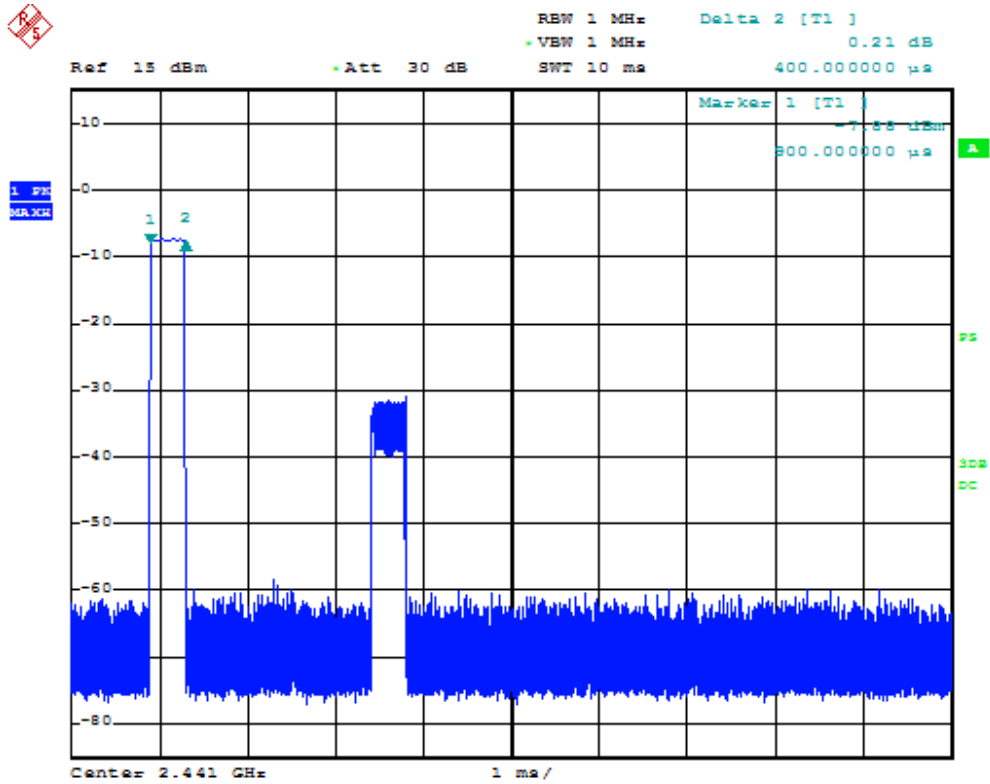
### 8.5 Test Result

Temperature ( °C ) : 22~23	EUT: Bluetooth headset
Humidity (%RH) : 50~54	M/N: T9+
Barometric Pressure ( mbar ) : 950~1000	Operation Condition: Normal Mode

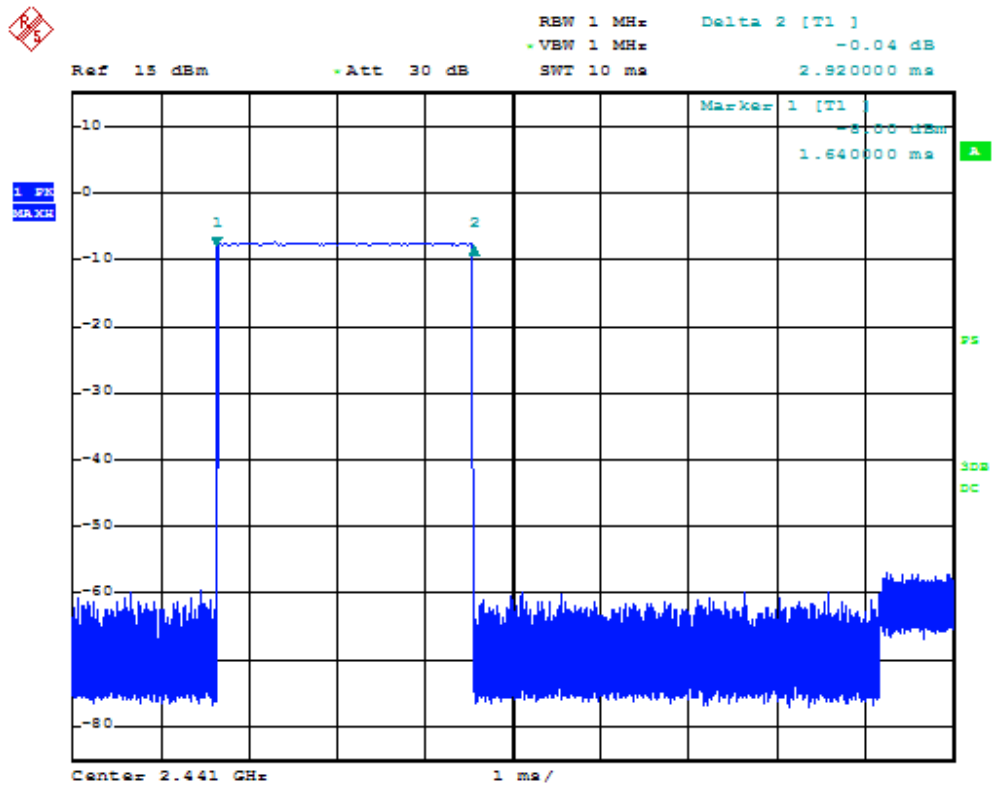
**Note:**The channel mid test data is the worst case in channel low,mid and high there modes test results

Test Data (Worset case )

Packet	Frequency (MHz)	Pulse Wide (ms)	Number of Hopping Pulses in 0.4*channel number	Dwell Time (ms)	Limit (ms)
DH1	2441	0.4	$*(1600/(2*79))*31.6$	128.0	400
DH3	2441	1.64	$*(1600/(4*79))*31.6$	262.4	400
DH5	2441	2.92	$*(1600/(6*79))*31.6$	311.5	400



DH5:

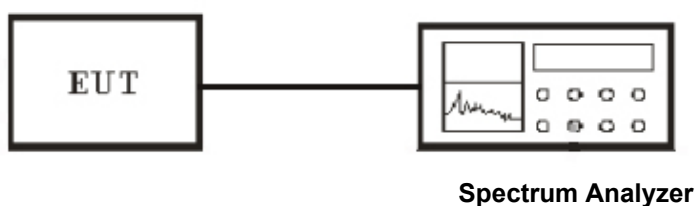


## 9. Test of Maximum Peak Output Power

### 9.1 Applicable Standard

Section 15.247(b)(1): For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels and The maximum peak output power shall not exceed 1 watt. For all other frequency hopping systems in this frequency band, The maximum peak output power shall not exceed 0.125 watt.

### 9.2 EUT Setup



### 9.3 Test Equipment List and Details

See section 2.4.

### 9.4 Test Equipment List and Details

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. Set RBW of spectrum analyzer to 3MHz and VBW to 3MHz.Span to10MHz
3. Set Detector to Peak,

### 9.5 Test Result

Temperature ( °C ) : 22~23	EUT: Bluetooth headset
Humidity (%RH) : 50~54	M/N: T9+
Barometric Pressure ( mbar ) : 950~1000	Operation Condition: Tx Mode

Channel	Frequency (MHz)	Output Power (dBm)	Limits (dBm)	Margin (dB)
Low	2402	2.13	30	27.87
Middle	2441	2.52	30	27.48
High	2480	2.27	30	27.73

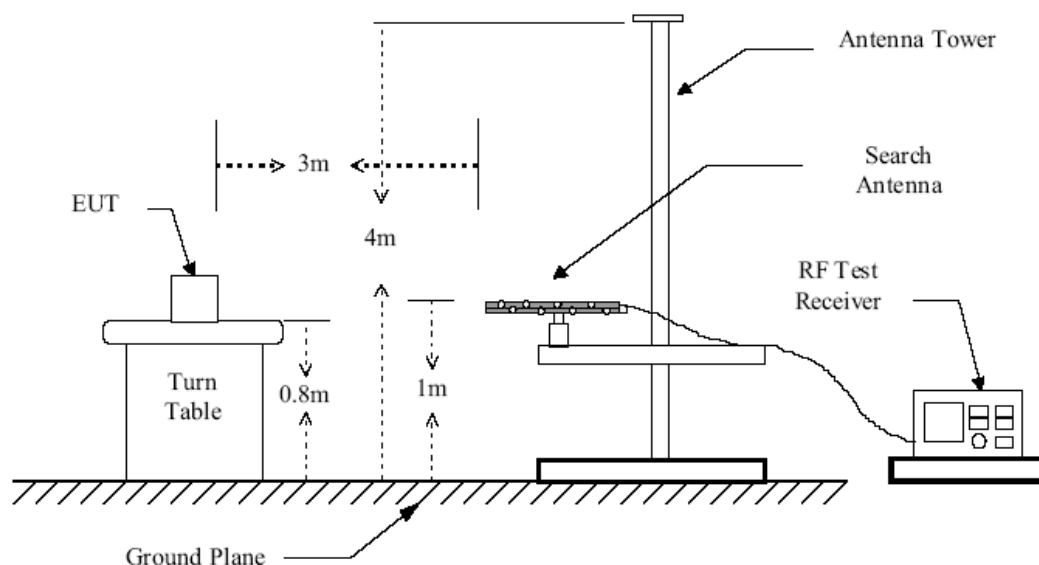
## 10. Test of Band Edges Emission

### 10.1 Applicable Standard

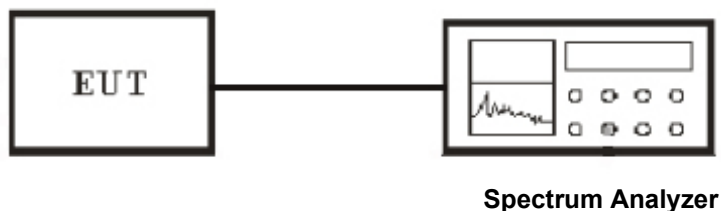
Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. In addition, radiated emissions that fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209.

### 10.2 EUT Setup

#### Radiated Measurement Setup



#### Conducted Measurement Setup



### 10.3 Test Equipment List and Details

See section 2.4.

### 10.4 Test Procedure

#### Conducted Measurement

1. The transmitter is set to the lowest channel.
2. The transmitter output was connected to the spectrum analyzer via a cable and cable loss is used as the offset of the spectrum analyzer.
3. Set both RBW and VBW of spectrum analyzer to 100KHz with convenient frequency span including 100MHz bandwidth from lower band edge. Then detector set to peak and max hold this trace.
4. The lowest band edges emission was measured and recorded.
5. The transmitter set to the highest channel and repeated 2~4.

#### Radiated Measurement

1. Configure the EUT according to ANSI C63.4-2003
2. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of both horizontal and vertical polarization.
4. For band edge emission, the antenna tower was scan (from 1 M to 4 M) and then the turn table was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. For band edge emission, use 1MHz VBW and 1MHz RBW for reading under AV and use 1MHz VBW and 1MHz RBW for reading under PK.

### 10.5 Test Result

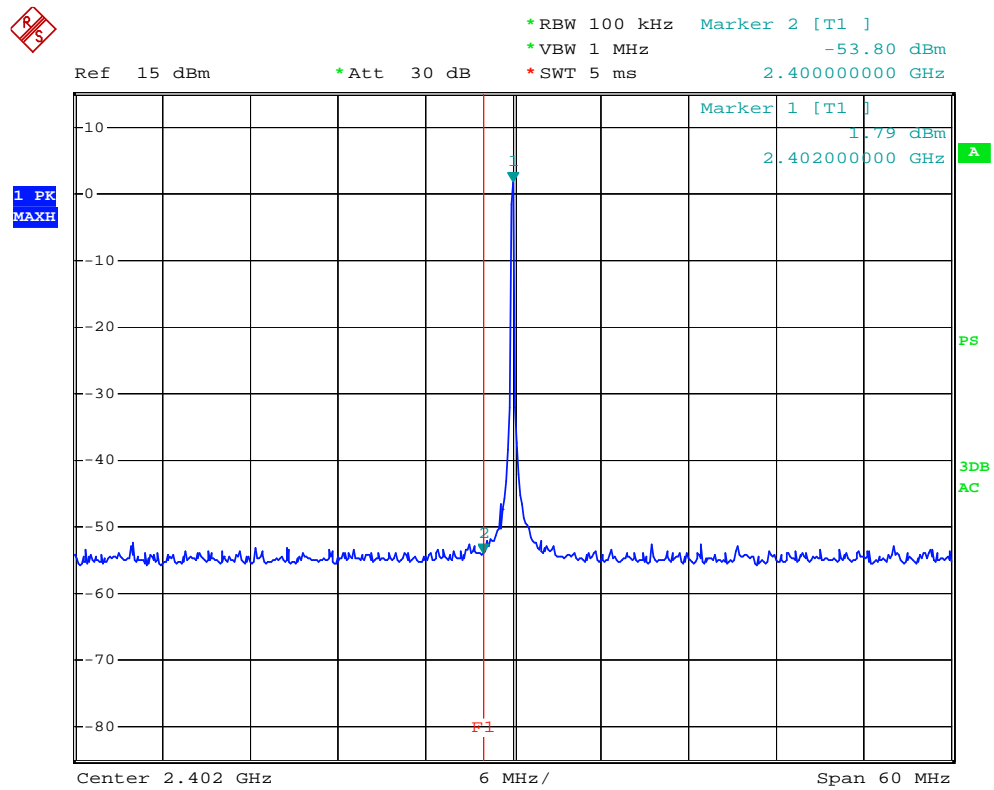
Temperature ( °C ) : 22~23	EUT: Bluetooth headset
Humidity (%RH ) : 50~54	M/N: T9+
Barometric Pressure ( mbar ) : 950~1000	Operation Condition: Tx Mode

Note: Channel low, mid and high, 30MHz-25GHz conducted emissions all more than 20 dB below fundamental.

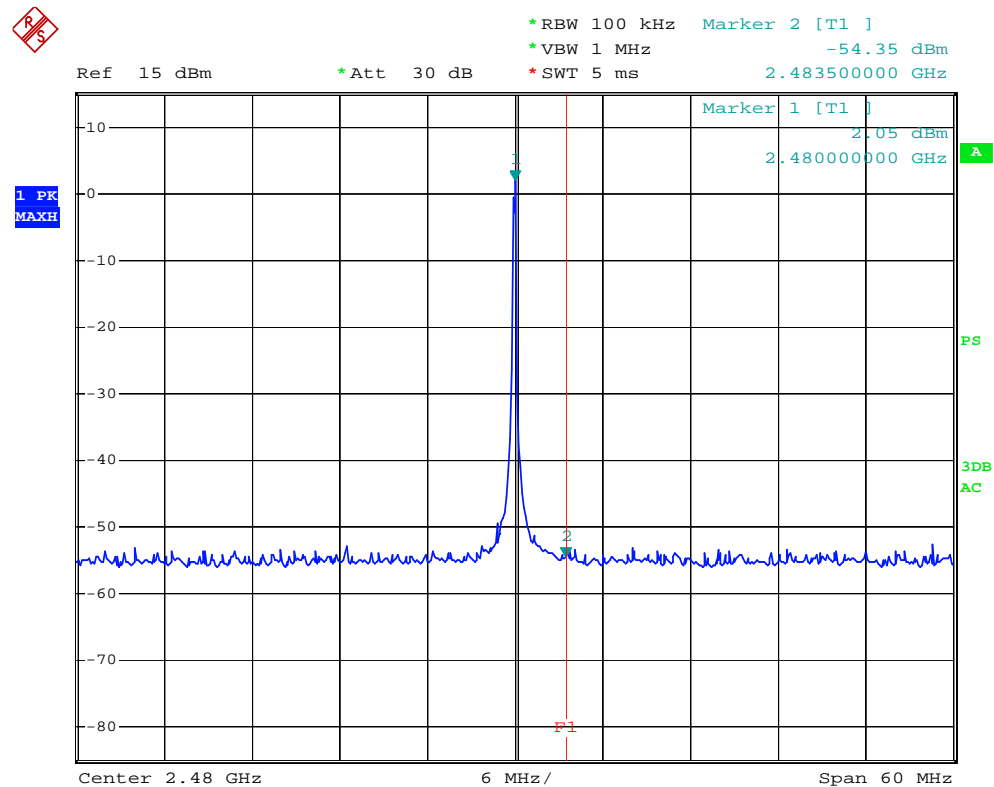
#### Radiated Test Result

Frequency(MHz)
<2400
>2483.5

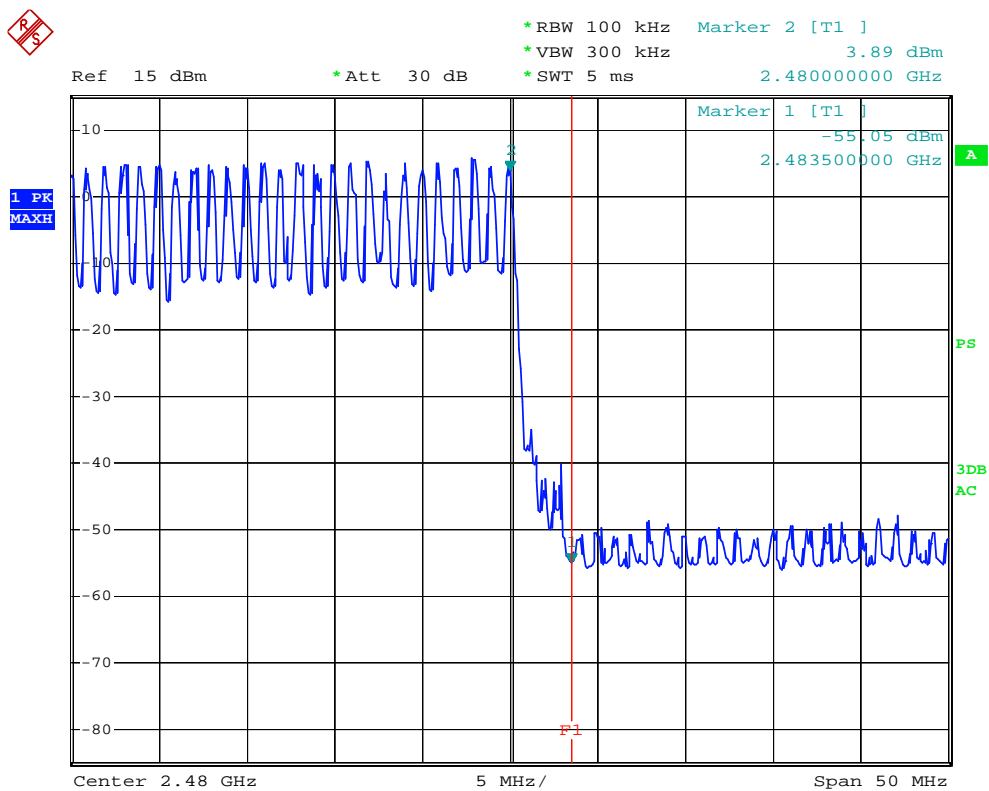
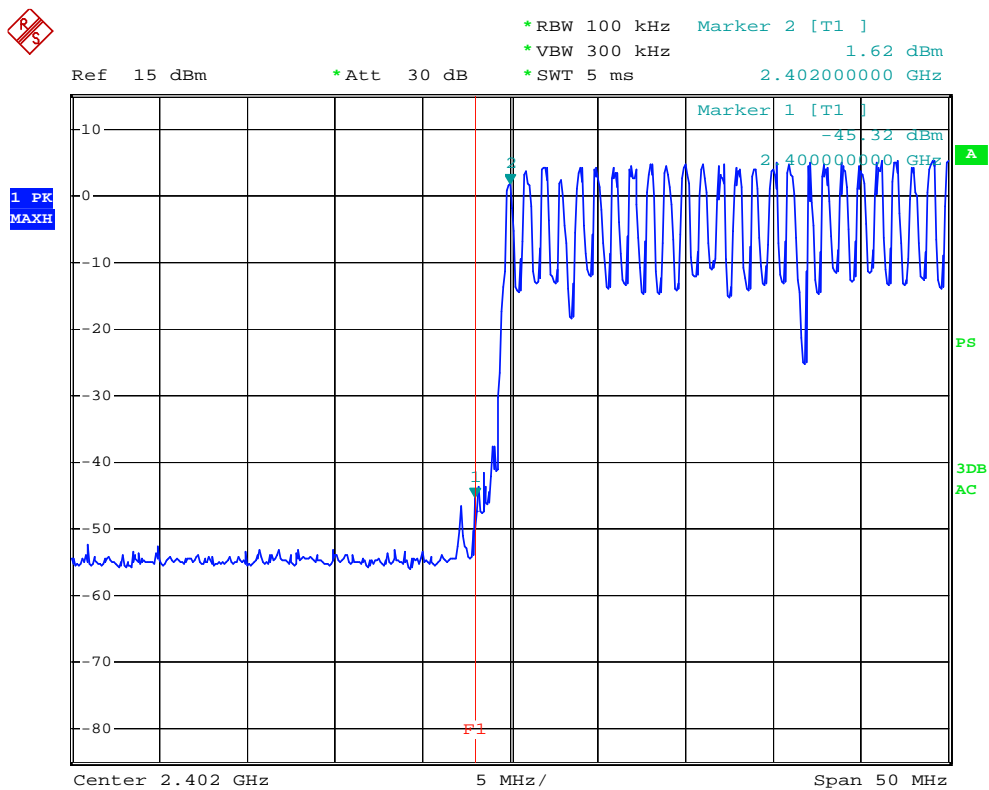
*The worst frequency range of continual TX Low Channel*



*The worst frequency range of continual TX High Channel*



# The worst frequency range of Hopping Mode





## 11. Test of Spurious Radiated Emission

### 11.1 Applicable Standard

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. In addition, radiated emissions that fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209.

**Limits for Class B digital devices**

Frequency (MHz)	limits at 3m dB( $\mu$ V/m)
30-88	40.0
88-216	43.5
216-960	46.0
Above 960	54.0

- NOTE:**
1. The lower limit shall apply at the transition frequency.
  2. The limits shown above are based on measuring equipment employing a CISPR quasi-peak detector function for frequencies below or equal to 1000MHz.
  3. The limits shown above are based on measuring equipment employing an average detector function for frequencies above 1000MHz.

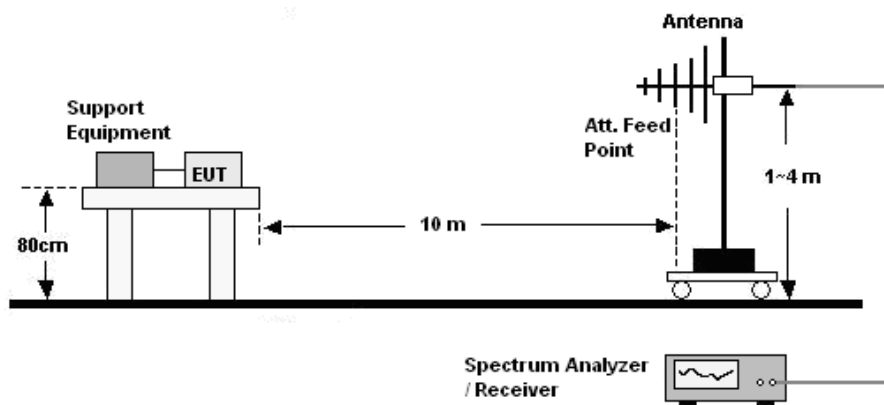
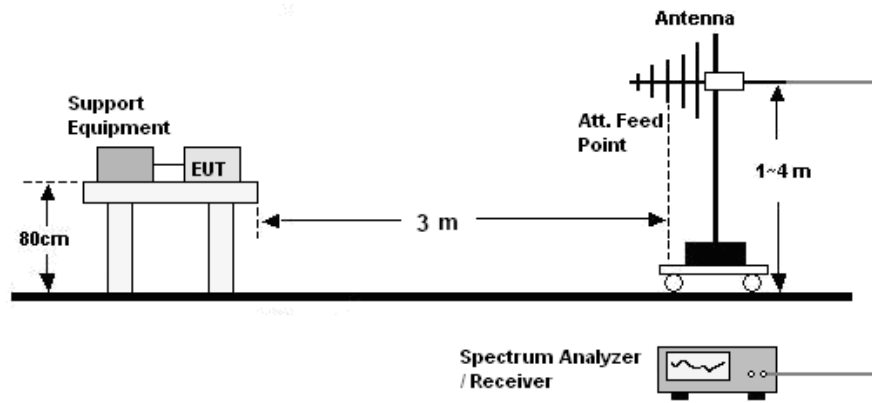
**Limits for Class B digital devices**

Frequency (MHz)	limits at 10m dB( $\mu$ V/m)
30-88	30.0
88-216	33.5
216-960	56.0
Above 960	64.0

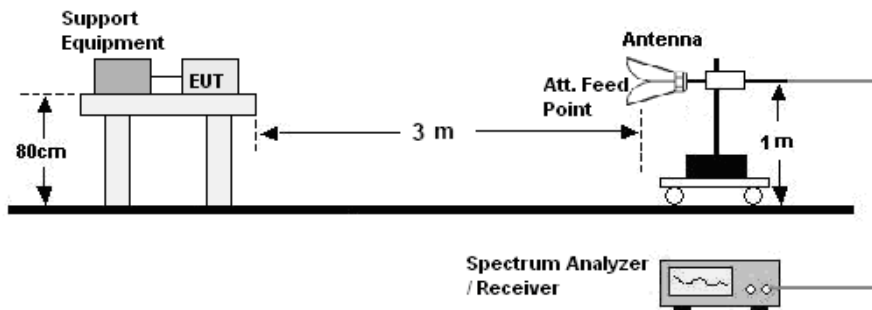
- NOTE:**
1. The lower limit shall apply at the transition frequency.
  2. The limits shown above are based on measuring equipment employing a CISPR quasi-peak detector function for frequencies below or equal to 1000MHz.
  3. The limits shown above are based on measuring equipment employing an average detector function for frequencies above 1000MHz.

## 11.2 Radiated Measurement Setup

30MHz ~ 1GHz:



Above 1GHz:



### 11.3 Test Equipment List and Details

See section 2.4.

### 11.4 Radiated Measurement Test Procedure

#### 30MHz ~ 1GHz:

- a. The Product was placed on the non-conductive turntable 0.8/0.1 m above the ground at a chamber.
- b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
- c. For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

#### Above 1GHz:

- a. The Product was placed on the non-conductive turntable 0.8/0.1 m above the ground at a chamber.
- b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 1MHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
- c. For each frequency whose maximum record was higher or close to limit, measure its AV value: rotate the turntable from 0 to 360 degrees to find the degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to AV value and specified bandwidth with Maximum Hold Mode, and record the maximum value.

### 11.5 Test Result

Temperature ( °C ) : 22~23	EUT: Bluetooth headset
Humidity (%RH ) : 50~54	M/N: T9+
Barometric Pressure ( mbar ) : 950~1000	Operation Condition: Normal operation

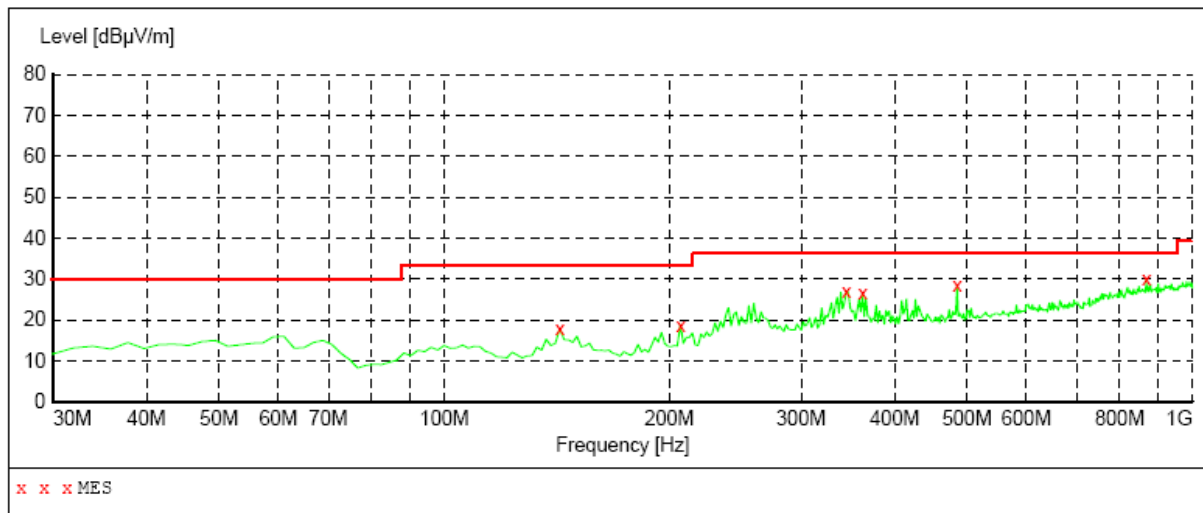
**Note:**The test datas of (18-25GHz ) emissions in BT TX Mode is just noise floor.  
The test datas from Page 44 to page 49 ,the test distance is 3m.

## The Spurious Emission (30~1000MHz) Of Horizontal (Charge mode)

EUT: Bluetooth headset  
M/N: T9+  
Operating Condition: Charge mode  
Test Site: 10m CHAMBER  
Operator: Owen Li  
Test Specification: DC 5V  
Comment: Polarization: Horizontal  
Tem:23℃ Hum:50%

### **SWEEP TABLE: "test (30M-1G) 8447F"**

Short Description:		Field Strength			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
Frequency 30.0 MHz	Frequency 1.0 GHz	MaxPeak	Coupled	100 kHz	VBLU9163



### **MEASUREMENT RESULT:**

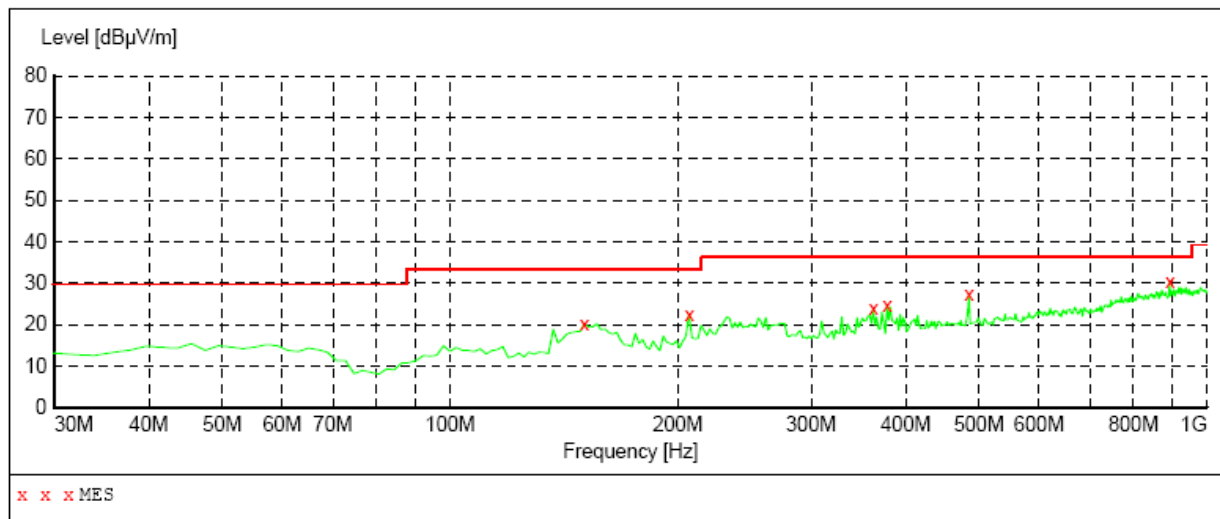
Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
142.745491	17.90	-15.6	33.5	15.6	---	100.0	179.00	HORIZONTAL
206.893788	18.80	-12.6	33.5	14.7	---	100.0	88.00	HORIZONTAL
344.909820	27.10	-8.1	36.5	9.4	---	100.0	268.00	HORIZONTAL
362.404810	26.60	-8.2	36.5	9.9	---	100.0	284.00	HORIZONTAL
484.869739	28.50	-6.2	36.5	8.0	---	100.0	370.00	HORIZONTAL
867.815631	29.90	0.4	36.5	6.6	---	100.0	120.00	HORIZONTAL

## The Spurious Emission (30~1000MHz) Of Vertical (Charge mode)

EUT: Bluetooth headset  
M/N: T9+  
Operating Condition: Charge mode  
Test Site: 10m CHAMBER  
Operator: Owen Li  
Test Specification: DC 5V  
Comment: Polarization: Vertical  
Tem:23°C Hum:50%

### SWEEP TABLE: "test (30M-1G) 8447F"

Short Description:		Field Strength			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VBLU9163



### MEASUREMENT RESULT:

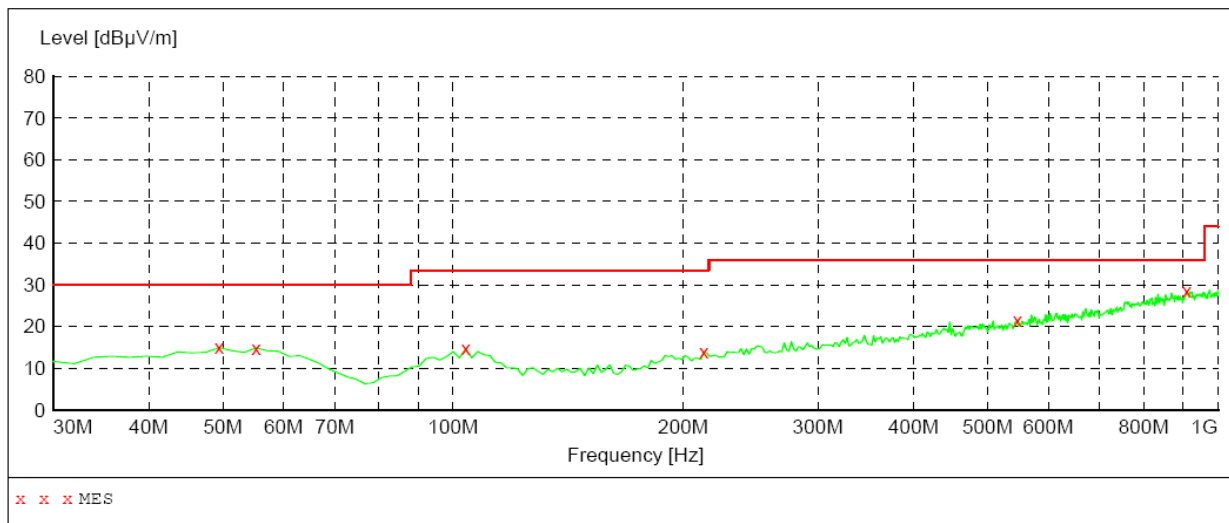
Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
150.521042	20.20	-15.8	33.5	13.3	---	100.0	349.00	VERTICAL
206.893788	22.50	-12.6	33.5	11.0	---	100.0	10.00	VERTICAL
362.404810	23.80	-8.2	36.5	12.7	---	100.0	97.00	VERTICAL
377.955912	24.60	-7.9	36.5	11.9	---	100.0	97.00	VERTICAL
484.869739	27.20	-6.2	36.5	9.3	---	100.0	285.00	VERTICAL
893.086172	30.50	0.9	36.5	6.0	---	100.0	276.00	VERTICAL

## The Spurious Emission (30~1000MHz) Of Horizontal (BT TX Model L)

EUT: Bluetooth headset  
M/N: T9+  
Operating Condition: BT TX Channel Low  
Test Site: 10m CHAMBER  
Operator: Owen Li  
Test Specification: DC 5V  
Comment: Polarization: Horizontal  
Tem:23℃ Hum:50%

### SWEEP TABLE: "test (30M-1G) 8447F"

Short Description:		Field Strength			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
Frequency 30.0 MHz	Frequency 1.0 GHz	MaxPeak	Coupled	100 kHz	VBLU9163



### MEASUREMENT RESULT:

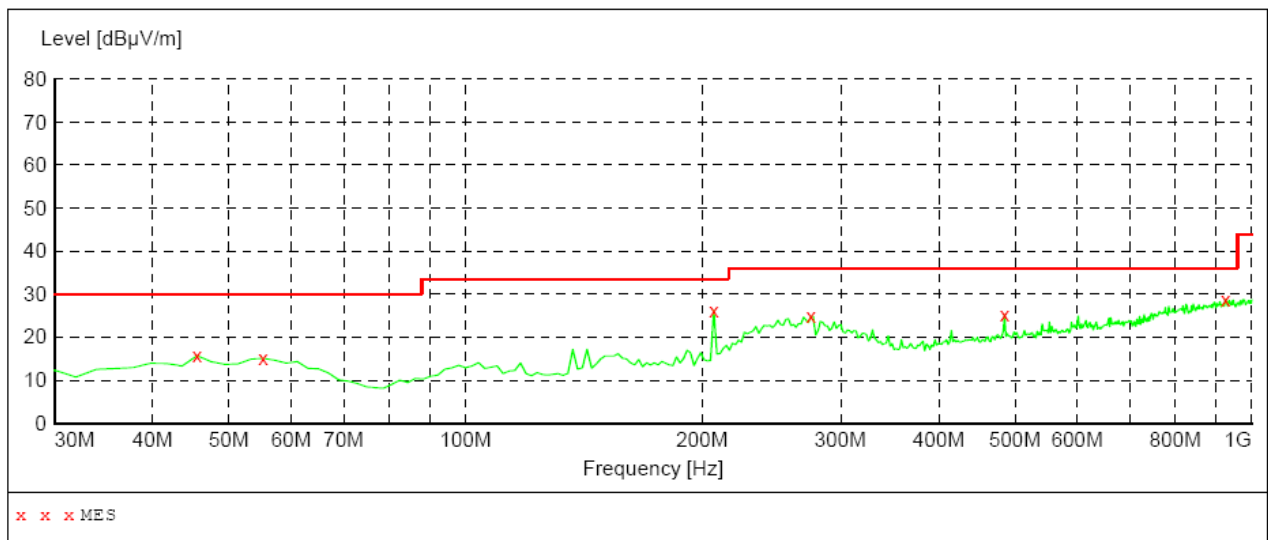
Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
49.438878	15.00	-11.1	30.0	15.0	---	100.0	26.00	HORIZONTAL
55.270541	14.90	-10.8	30.0	15.1	---	100.0	36.00	HORIZONTAL
103.867735	14.70	-12.2	33.5	18.8	---	100.0	0.00	HORIZONTAL
212.725451	14.10	-12.3	33.5	19.4	---	100.0	49.00	HORIZONTAL
547.074148	21.60	-5.4	36.0	14.4	---	100.0	0.00	HORIZONTAL
910.581162	28.50	1.1	36.0	7.5	---	100.0	26.00	HORIZONTAL

## The Spurious Emission (30~1000MHz) Of Vertical (BT TX Model L)

EUT: Bluetooth headset  
M/N: T9+  
Operating Condition: BT TX Channel Low  
Test Site: 10m CHAMBER  
Operator: Owen Li  
Test Specification: DC 5V  
Comment: Polarization: Vertical  
Tem:23℃ Hum:50%

### SWEEP TABLE: "test (30M-1G) 8447F"

Short Description:		Field Strength			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	VBLU9163



### MEASUREMENT RESULT:

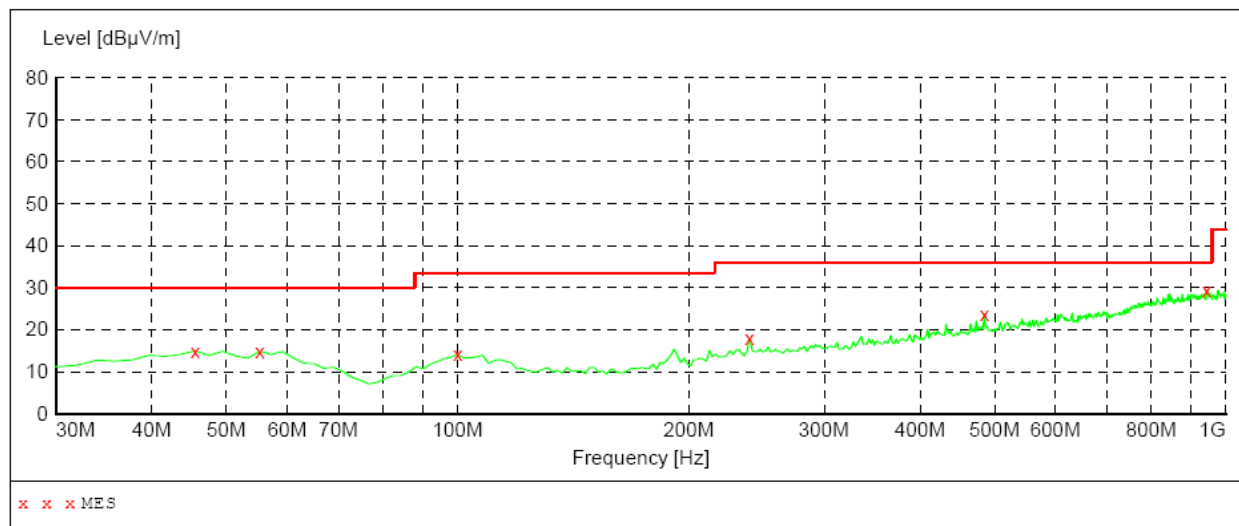
Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
45.551102	15.70	-11.2	30.0	14.3	---	100.0	323.00	VERTICAL
55.270541	15.10	-10.8	30.0	14.9	---	100.0	203.00	VERTICAL
206.893788	26.30	-12.6	33.5	7.2	---	100.0	225.00	VERTICAL
274.929860	24.80	-10.1	36.0	11.2	---	100.0	10.00	VERTICAL
484.869739	25.20	-6.2	36.0	10.8	---	100.0	125.00	VERTICAL
926.132265	28.80	1.3	36.0	7.2	---	100.0	358.00	VERTICAL

## The Spurious Emission (30~1000MHz) Of Horizontal (BT TX Model M)

EUT: Bluetooth headset  
M/N: T9+  
Operating Condition: BT TX Channel Middle  
Test Site: 10m CHAMBER  
Operator: Owen Li  
Test Specification: DC 5V  
Comment: Polarization: Horizontal  
Tem:23℃ Hum:50%

### ***SWEEP TABLE: "test (30M-1G) 8447F"***

Short Description:		Field Strength			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
Frequency 30.0 MHz	Frequency 1.0 GHz	MaxPeak	Coupled	100 kHz	VBLU9163



### ***MEASUREMENT RESULT:***

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
45.551102	14.90	-11.2	30.0	15.1	---	100.0	186.00	HORIZONTAL
55.270541	14.90	-10.8	30.0	15.1	---	100.0	149.00	HORIZONTAL
99.979960	14.00	-12.4	33.5	19.5	---	100.0	214.00	HORIZONTAL
239.939880	18.00	-10.8	36.0	18.0	---	100.0	186.00	HORIZONTAL
484.869739	23.70	-6.2	36.0	12.3	---	100.0	200.00	HORIZONTAL
943.627255	29.30	1.1	36.0	6.7	---	100.0	214.00	HORIZONTAL

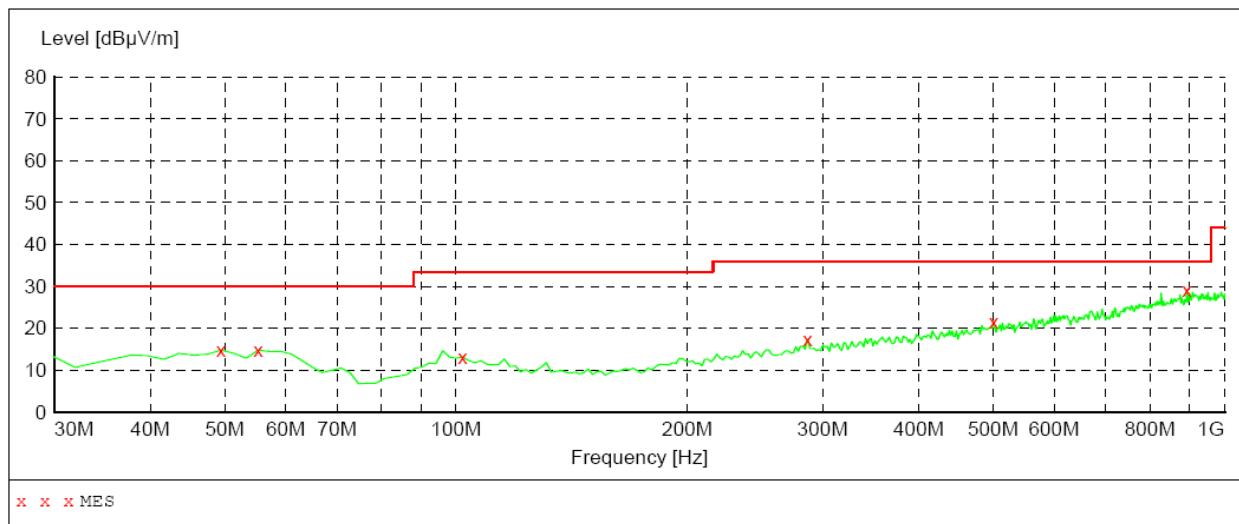


## The Spurious Emission (30~1000MHz) Of Vertical (BT TX Model M)

EUT: Bluetooth headset  
M/N: T9+  
Operating Condition: BT TX Channel Middle  
Test Site: 10m CHAMBER  
Operator: Owen Li  
Test Specification: DC 5V  
Comment: Polarization: Vertical  
Tem:23℃ Hum:50%

### SWEEP TABLE: "test (30M-1G) 8447F"

Short Description:		Field Strength			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
Frequency 30.0 MHz	Frequency 1.0 GHz	MaxPeak	Coupled	100 kHz	VBLU9163



### MEASUREMENT RESULT:

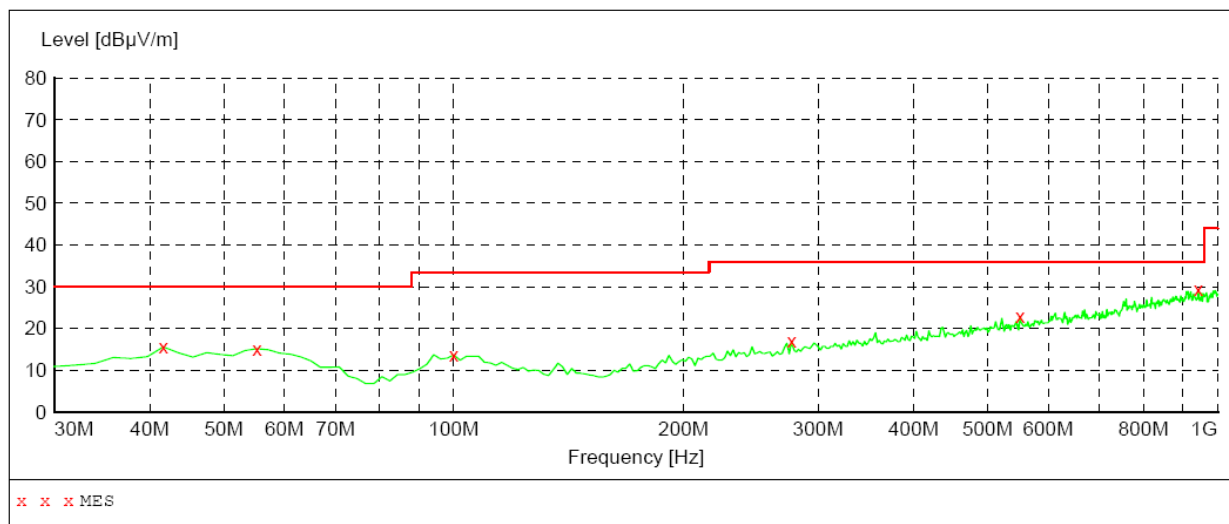
Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
49.438878	14.80	-11.1	30.0	15.2	---	100.0	0.00	VERTICAL
55.270541	14.80	-10.8	30.0	15.2	---	100.0	44.00	VERTICAL
101.923848	13.20	-12.3	33.5	20.3	---	100.0	9.00	VERTICAL
286.593186	17.40	-9.5	36.0	18.6	---	100.0	2.00	VERTICAL
500.420842	21.60	-5.8	36.0	14.4	---	100.0	0.00	VERTICAL
893.086172	29.20	0.9	36.0	6.8	---	100.0	0.00	VERTICAL

## The Spurious Emission (30~1000MHz) Of Horizontal (BT TX Model H)

EUT: Bluetooth headset  
M/N: T9+  
Operating Condition: BT TX Channel High  
Test Site: 10m CHAMBER  
Operator: Owen Li  
Test Specification: DC 5V  
Comment: Polarization: Horizontal  
Tem:23℃ Hum:50%

### SWEEP TABLE: "test (30M-1G) 8447F"

Short Description:		Field Strength				Transducer
Start	Stop	Detector	Meas. Time	IF Bandw.		
Frequency 30.0 MHz	Frequency 1.0 GHz	MaxPeak	Coupled	100 kHz	VBLU9163	



### MEASUREMENT RESULT:

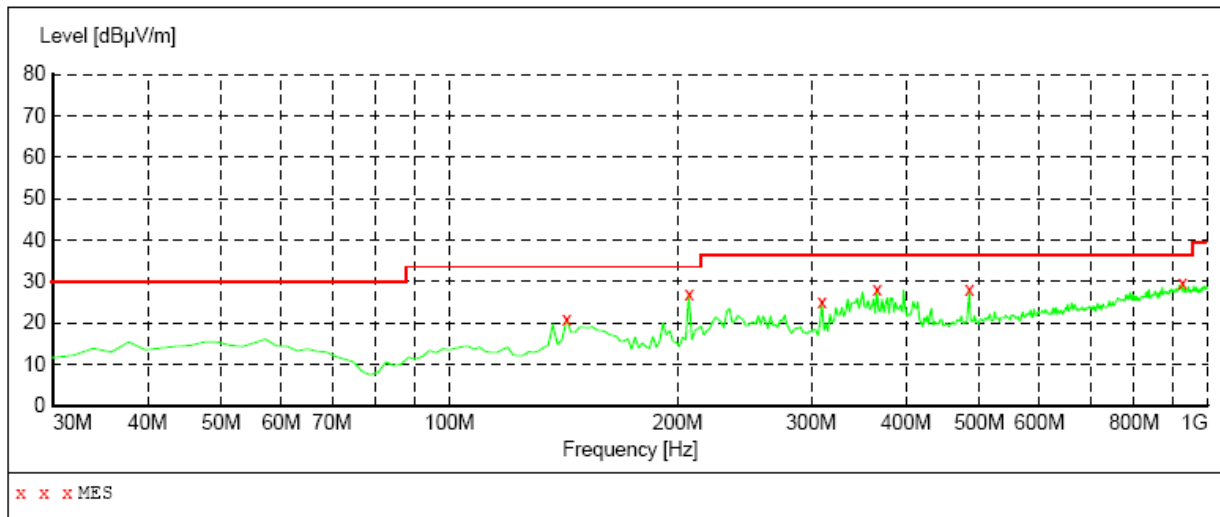
Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
41.663327	15.60	-11.5	30.0	14.4	---	100.0	48.00	HORIZONTAL
55.270541	15.20	-10.8	30.0	14.8	---	100.0	0.00	HORIZONTAL
99.979960	13.70	-12.4	33.5	19.8	---	100.0	41.00	HORIZONTAL
276.873747	17.00	-10.0	36.0	19.0	---	100.0	16.00	HORIZONTAL
550.961924	22.80	-5.4	36.0	13.2	---	100.0	30.00	HORIZONTAL
943.627255	29.40	1.1	36.0	6.6	---	100.0	34.00	HORIZONTAL

## The Spurious Emission (30~1000MHz) Of Vertical (BT TX Model H)

EUT: Bluetooth headset  
M/N: T9+  
Operating Condition: BT TX Channel High  
Test Site: 10m CHAMBER  
Operator: Owen Li  
Test Specification: DC 5V  
Comment: Polarization: Vertical  
Tem:23°C Hum:50%

### ***SWEEP TABLE: "test (30M-1G) 8447F"***

Short Description:		Field Strength			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
Frequency 30.0 MHz	Frequency 1.0 GHz	MaxPeak	Coupled	100 kHz	VBLU9163

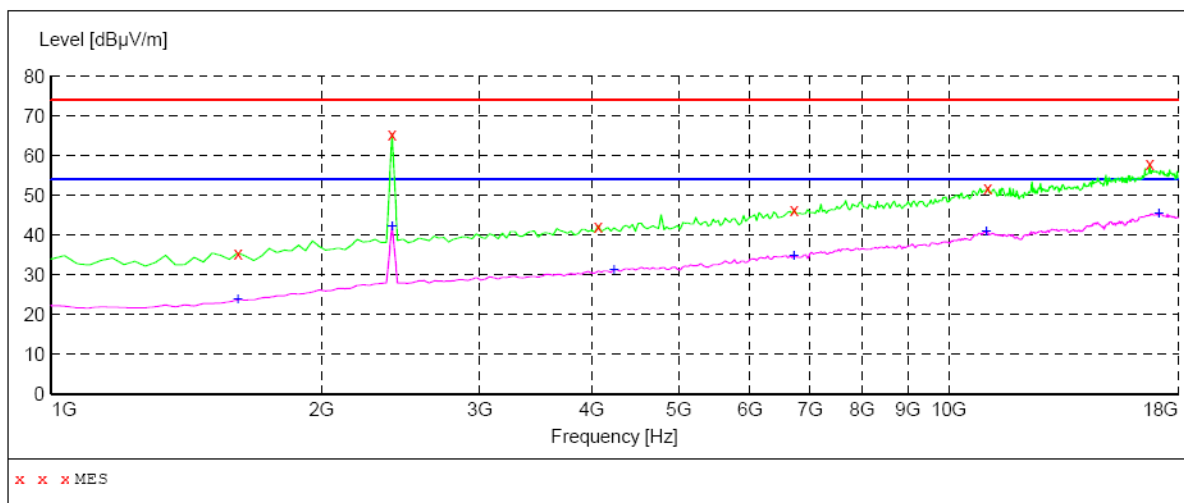


### ***MEASUREMENT RESULT:***

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
142.745491	21.00	-15.6	33.5	12.5	---	100.0	125.00	VERTICAL
206.893788	27.00	-12.6	33.5	6.5	---	100.0	10.00	VERTICAL
309.919840	25.20	-9.1	36.5	11.3	---	100.0	32.00	VERTICAL
366.292585	28.10	-8.1	36.5	8.4	---	100.0	125.00	VERTICAL
484.869739	28.10	-6.2	36.5	8.4	---	100.0	294.00	VERTICAL
926.132265	29.70	1.3	36.5	6.8	---	100.0	211.00	VERTICAL

## The Spurious Emission (Above 1GHz) Of Horizontal (BT TX Model L)

EUT: Bluetooth headset  
M/N: T9+  
Operating Condition: BT TX Channel Low  
Test Site: 10m CHAMBER  
Operator: Owen Li  
Test Specification: DC 5V  
Comment: Polarization: Horizontal  
Tem:23°C Hum:50%



### MEASUREMENT RESULT:

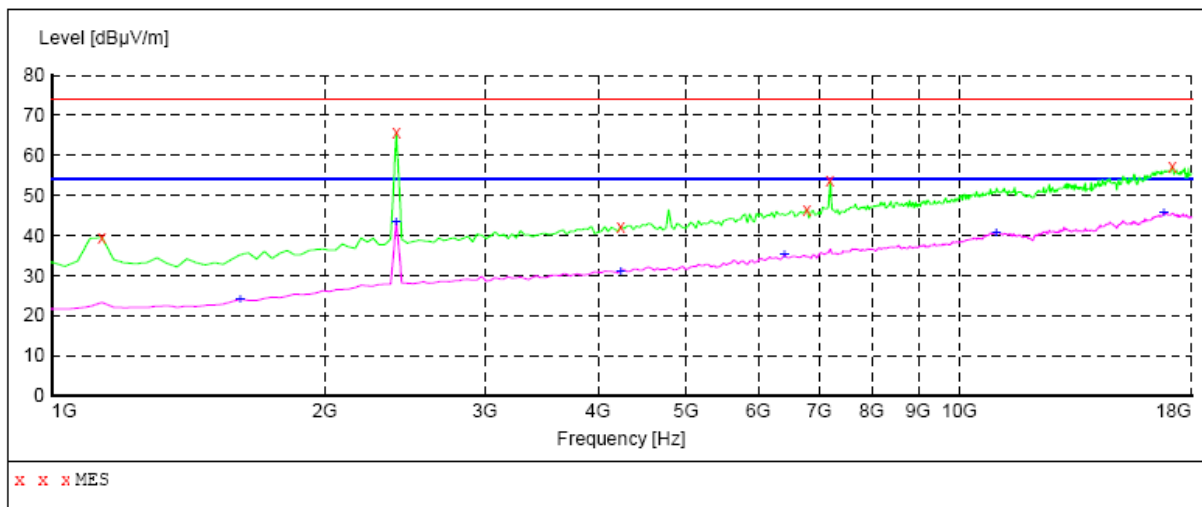
Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1613.226453	35.50	-12.4	74.0	38.5	PK	100.0	15.00	HORIZONTAL
4066.132265	42.40	-5.8	74.0	31.6	PK	100.0	41.00	HORIZONTAL
6723.446894	46.30	-2.3	74.0	27.7	PK	100.0	58.00	HORIZONTAL
11050.100200	51.90	3.4	74.0	22.1	PK	100.0	47.00	HORIZONTAL
16739.478958	58.00	10.0	74.0	16.0	PK	100.0	47.00	HORIZONTAL

### MEASUREMENT RESULT:

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1613.226453	23.70	-12.4	54.0	30.3	AV	100.0	58.00	HORIZONTAL
4236.472946	31.20	-5.5	54.0	22.8	AV	100.0	33.00	HORIZONTAL
6723.446894	35.00	-2.3	54.0	19.0	AV	100.0	15.00	HORIZONTAL
11016.032064	41.00	3.4	54.0	13.0	AV	100.0	21.00	HORIZONTAL
17148.296593	45.40	10.2	54.0	8.6	AV	100.0	41.00	HORIZONTAL

## The Spurious Emission (Above 1GHz) Of Vertical (BT TX Model L)

EUT: Bluetooth headset  
M/N: T9+  
Operating Condition: BT TX Channel Low  
Test Site: 10m CHAMBER  
Operator: Owen Li  
Test Specification: DC 5V  
Comment: Polarization: Vertical  
Tem:23°C Hum:50%



### MEASUREMENT RESULT:

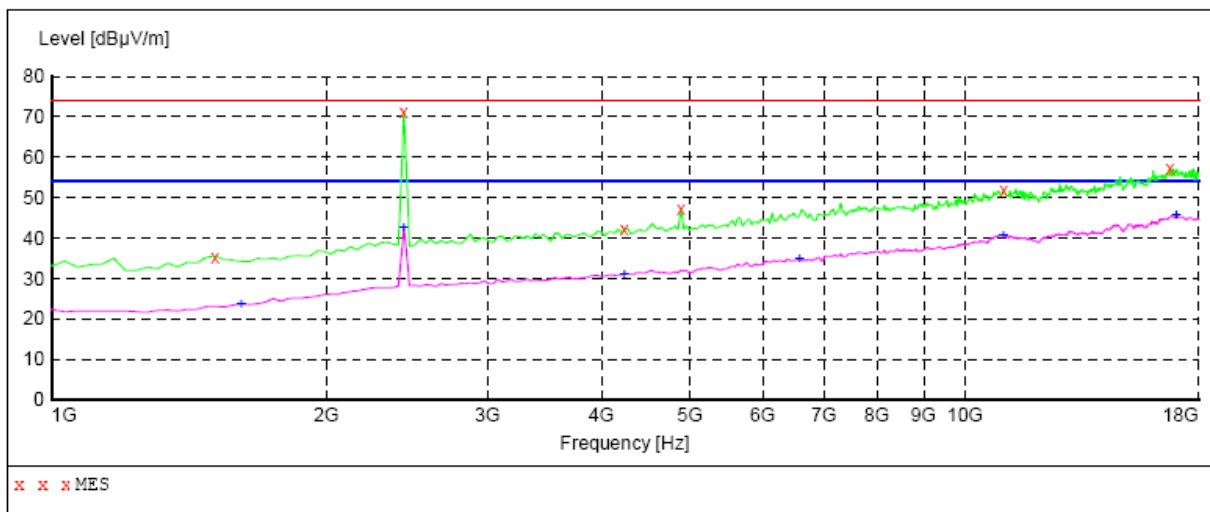
Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1136.272545	39.50	-14.1	74.0	34.5	PK	100.0	10.00	VERTICAL
4236.472946	42.20	-5.5	74.0	31.8	PK	100.0	54.00	VERTICAL
6791.583166	46.50	-2.2	74.0	27.5	PK	100.0	54.00	VERTICAL
7200.400802	53.70	-1.8	74.0	20.3	PK	100.0	59.00	VERTICAL
17148.296593	57.30	10.2	74.0	16.7	PK	100.0	39.00	VERTICAL

### MEASUREMENT RESULT:

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1613.226453	24.00	-12.4	54.0	30.0	AV	100.0	57.00	VERTICAL
4236.472946	31.20	-5.5	54.0	22.8	AV	100.0	10.00	VERTICAL
6416.833667	35.10	-2.5	54.0	18.9	AV	100.0	59.00	VERTICAL
10981.963928	40.80	3.3	54.0	13.2	AV	100.0	16.00	VERTICAL
16773.547094	45.70	10.0	54.0	8.3	AV	100.0	28.00	VERTICAL

## The Spurious Emission (Above 1GHz) Of Horizontal (BT TX Model M)

EUT: Bluetooth headset  
M/N: T9+  
Operating Condition: BT TX Channel Middle  
Test Site: 10m CHAMBER  
Operator: Owen Li  
Test Specification: DC 5V  
Comment: Polarization: Horizontal  
Tem:23℃ Hum:50%



### MEASUREMENT RESULT:

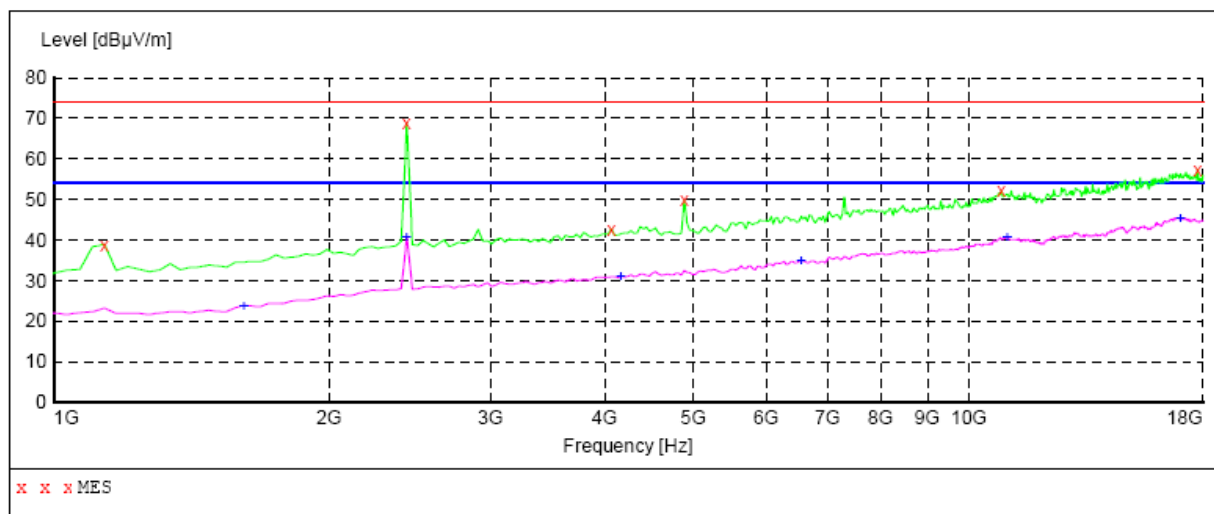
Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1511.022044	35.40	-13.2	74.0	38.6	PK	100.0	37.00	HORIZONTAL
4236.472946	42.30	-5.5	74.0	31.7	PK	100.0	10.00	HORIZONTAL
4883.767535	47.10	-4.8	74.0	26.9	PK	100.0	25.00	HORIZONTAL
11016.032064	51.80	3.4	74.0	22.2	PK	100.0	43.00	HORIZONTAL
16739.478958	57.40	10.0	74.0	16.6	PK	100.0	31.00	HORIZONTAL

### MEASUREMENT RESULT:

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1613.226453	23.70	-12.4	54.0	30.3	AV	100.0	10.00	HORIZONTAL
4236.472946	31.10	-5.5	54.0	22.9	AV	100.0	48.00	HORIZONTAL
6587.174349	35.00	-2.4	54.0	19.0	AV	100.0	52.00	HORIZONTAL
11016.032064	40.90	3.4	54.0	13.1	AV	100.0	25.00	HORIZONTAL
17012.024048	45.60	10.3	54.0	8.4	AV	100.0	37.00	HORIZONTAL

## The Spurious Emission (Above 1GHz) Of Vertical (BT TX Model M)

EUT: Bluetooth headset  
M/N: T9+  
Operating Condition: BT TX Channel Middle  
Test Site: 10m CHAMBER  
Operator: Owen Li  
Test Specification: DC 5V  
Comment: Polarization: Vertical  
Tem:23°C Hum:50%



### MEASUREMENT RESULT:

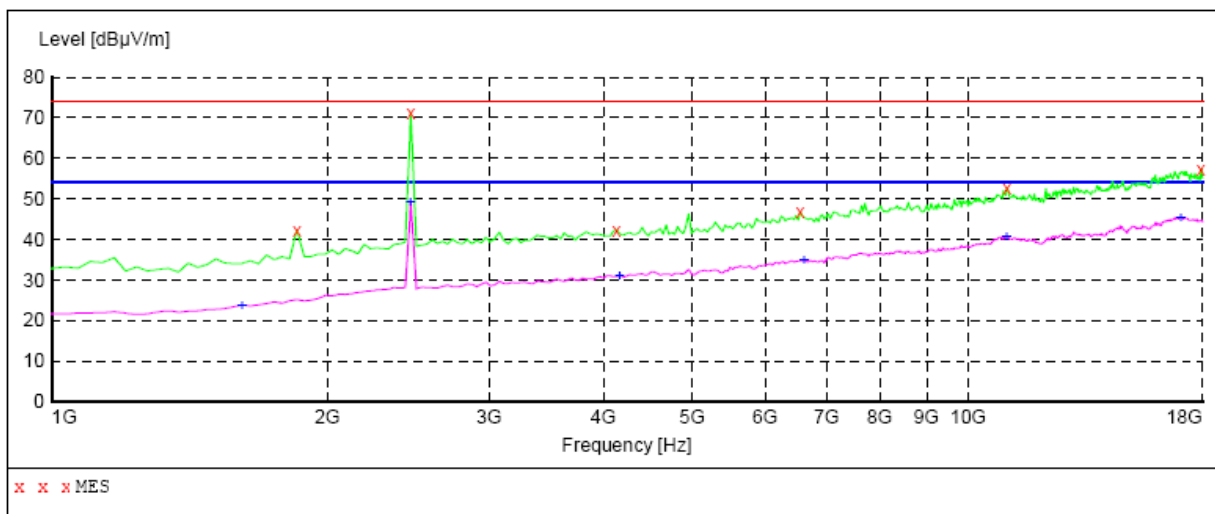
Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1136.272545	38.90	-14.1	74.0	35.1	PK	100.0	14.00	VERTICAL
4066.132265	42.70	-5.8	74.0	31.3	PK	100.0	37.00	VERTICAL
4883.767535	49.80	-4.8	74.0	24.2	PK	100.0	37.00	VERTICAL
10845.691383	52.10	3.0	74.0	21.9	PK	100.0	25.00	VERTICAL
17761.523046	57.40	9.5	74.0	16.6	PK	100.0	55.00	VERTICAL

### MEASUREMENT RESULT:

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1613.226453	23.80	-12.4	54.0	30.2	AV	100.0	14.00	VERTICAL
4168.336673	31.00	-5.6	54.0	23.0	AV	100.0	43.00	VERTICAL
6553.106212	35.00	-2.4	54.0	19.0	AV	100.0	10.00	VERTICAL
11016.032064	40.70	3.4	54.0	13.3	AV	100.0	37.00	VERTICAL
17012.024048	45.50	10.3	54.0	8.5	AV	100.0	14.00	VERTICAL

## The Spurious Emission (Above 1GHz) Of Horizontal (BT TX Model H)

EUT: Bluetooth headset  
M/N: T9+  
Operating Condition: BT TX Channel High  
Test Site: 10m CHAMBER  
Operator: Owen Li  
Test Specification: DC 5V  
Comment: Polarization: Horizontal  
Tem:23℃ Hum:50%



### MEASUREMENT RESULT:

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1851.703407	42.30	-10.8	74.0	31.7	PK	100.0	31.00	HORIZONTAL
4134.268537	42.30	-5.7	74.0	31.7	PK	100.0	31.00	HORIZONTAL
6553.106212	46.70	-2.4	74.0	27.3	PK	100.0	13.00	HORIZONTAL
11016.032064	52.80	3.4	74.0	21.2	PK	100.0	13.00	HORIZONTAL
17931.863727	57.50	9.3	74.0	16.5	PK	100.0	25.00	HORIZONTAL

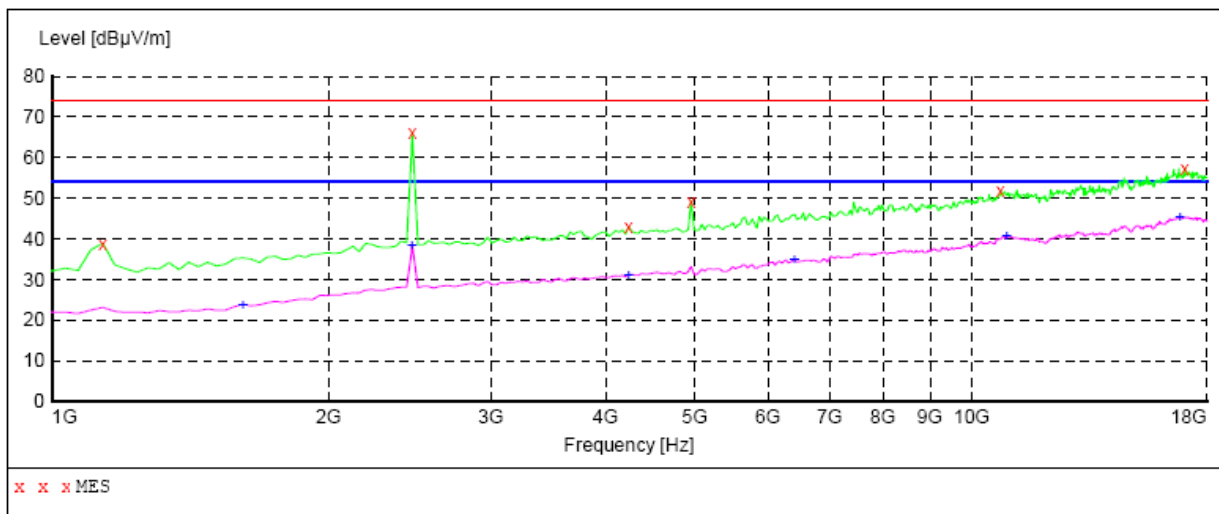
### MEASUREMENT RESULT:

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1613.226453	23.70	-12.4	54.0	30.3	AV	100.0	53.00	HORIZONTAL
4168.336673	31.20	-5.6	54.0	22.8	AV	100.0	13.00	HORIZONTAL
6621.242485	34.80	-2.3	54.0	19.2	AV	100.0	31.00	HORIZONTAL
11016.032064	40.60	3.4	54.0	13.4	AV	100.0	31.00	HORIZONTAL
17046.092184	45.50	10.3	54.0	8.5	AV	100.0	25.00	HORIZONTAL



## The Spurious Emission (Above 1GHz) Of Vertical (BT TX Model H)

EUT: Bluetooth headset  
M/N: T9+  
Operating Condition: BT TX Channel High  
Test Site: 10m CHAMBER  
Operator: Owen Li  
Test Specification: DC 5V  
Comment: Polarization: Vertical  
Tem:23°C Hum:50%



### MEASUREMENT RESULT:

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1136.272545	38.90	-14.1	74.0	35.1	PK	100.0	53.00	VERTICAL
4236.472946	42.90	-5.5	74.0	31.1	PK	100.0	13.00	VERTICAL
4951.903808	49.30	-4.7	74.0	24.7	PK	100.0	37.00	VERTICAL
10743.486974	51.80	2.7	74.0	22.2	PK	100.0	56.00	VERTICAL
17046.092184	57.50	10.3	74.0	16.5	PK	100.0	59.00	VERTICAL

### MEASUREMENT RESULT:

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
1613.226453	23.80	-12.4	54.0	30.2	AV	100.0	50.00	VERTICAL
4236.472946	31.20	-5.5	54.0	22.8	AV	100.0	44.00	VERTICAL
6416.833667	34.70	-2.5	54.0	19.3	AV	100.0	31.00	VERTICAL
10913.827655	40.60	3.2	54.0	13.4	AV	100.0	37.00	VERTICAL
16841.683367	45.50	10.1	54.0	8.5	AV	100.0	44.00	VERTICAL

## **12. ANTENNA REQUIREMENT**

### **12.1 Standard Applicable**

Section 15.203:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Section 15.247(b)/(c):

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

If the intentional radiator is used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

### **12.2 Antenna Connected Construction**

The antenna used in this product is complied with Standard. The maximum Gain of the antenna lower than 6.0dBi and the antenna is integrated, fixed on PCB.