



# Test Report

## FCC Part15 Subpart C

Product Name : BLUETOOTH EARPHONE

Model No. : LTI700

FCC ID : Y2SLTI700

Applicant : Libratone A/S

Address : Sundkaj 9, 2150 Nordhavn, Denmark

Date of Receipt : Mar. 12, 2019

Test Date : Mar. 12, 2019 ~ Apr. 02, 2019

Issued Date : Apr. 18, 2019

Report No. : 1932105R-RF-US-P06V02

Report Version : V1.0

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

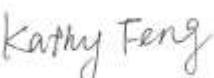
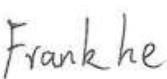
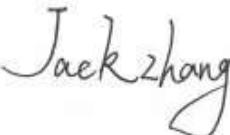
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# Test Report Certification

Issued Date: Apr. 18, 2019  
Report No. : 1932105R-RF-US-P06V02



Product Name	:	BLUETOOTH EARPHONE
Applicant	:	Libratone A/S
Address	:	Sundkaj 9, 2150 Nordhavn, Denmark
Manufacturer	:	Libratone A/S
Address	:	Sundkaj 9, 2150 Nordhavn, Denmark
Factory	:	Goertek Inc.
Address	:	West of Weian Road, North of Yingqian Street, High-tech Industrial Development Zone, Weifang, Shandong Province, China 261031
Model No.	:	LTI700
FCC ID	:	Y2SLTI700
EUT Voltage	:	DC 3.7V
Test Voltage	:	AC120V/60Hz
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart C KDB 558074 D01v05r01 ANSI C63.10: 2013
Test Result	:	Complied
Performed Location	:	DEKRA Testing & Certification (Suzhou) Co., Ltd. No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006, Jiangsu, China TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098 FCC Designation Number: CN1199
Documented By	:	 (Adm. Specialist: Kathy Feng)
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Approved By	:	 (Engineer Supervisor: Jack Zhang )

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## History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
1932105R-RF-US-P06V02	V1.0	Initial Issued Report	Apr. 18, 2019

## 1. General Information

### 1.1. EUT Description

Product Name	BLUETOOTH EARPHONE					
Model No.	LTI700					
EUT Voltage	DC 3.7V					
Test Voltage	AC 120V/60Hz					
Bluetooth Specification	V5.0					
Frequency Range	2402- 2480 MHz					
Channel Number	V5.0: 40					
Channel Separation	V5.0: 2MHz					
Type of Modulation	V5.0: GFSK					
PHYs	<input checked="" type="checkbox"/>	LE 1M	<input type="checkbox"/>	LE 2M	<input type="checkbox"/>	LE Coded S=2/8
Data Rate	<input checked="" type="checkbox"/>	1Mbit/s	<input type="checkbox"/>	2Mbit/s	<input type="checkbox"/>	500/125 Kbit/s
Antenna Type	Reference to Antenna List					
Peak Antenna Gain	Reference to Antenna List					

## 1.2. Working Frequency of Each Channel:

Bluetooth Working Frequency of Each Channel: (For V5.0)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
00	2402 MHz	01	2404 MHz	02	2406 MHz	03	2408 MHz
04	2410 MHz	05	2412 MHz	06	2414 MHz	07	2416 MHz
08	2418 MHz	09	2420 MHz	10	2422 MHz	11	2424 MHz
12	2426 MHz	13	2428 MHz	14	2430 MHz	15	2432 MHz
16	2434 MHz	17	2436 MHz	18	2438 MHz	19	2440 MHz
20	2442 MHz	21	2444 MHz	22	2446 MHz	23	2448 MHz
24	2450 MHz	25	2452 MHz	26	2454 MHz	27	2456 MHz
28	2458 MHz	29	2460 MHz	30	2462 MHz	31	2464 MHz
32	2466 MHz	33	2468 MHz	34	2470 MHz	35	2472 MHz
36	2474 MHz	37	2476 MHz	38	2478 MHz	39	2480 MHz

## 1.3. Antenna information

Antenna manufacturer	N/A						
Antenna Delivery	<input checked="" type="checkbox"/>	1*TX+1*RX		<input type="checkbox"/>	2*TX+2*RX	<input type="checkbox"/>	3*TX+3*RX
Antenna technology	<input checked="" type="checkbox"/>	SISO					
	<input type="checkbox"/>	<input type="checkbox"/>	Basic				
	<input type="checkbox"/>	<input type="checkbox"/>	CDD				
	<input type="checkbox"/>	<input type="checkbox"/>	Beam-forming				
Antenna Type	<input type="checkbox"/>	External	<input type="checkbox"/>	Dipole			
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PIFA				
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	PCB				
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Ceramic Chip Antenna				
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Stamping Antenna				
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Metal plate type F antenna				
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Monopole antenna				
Antenna Gain	2.7dBi						

#### 1.4. Mode of Operation

Test Mode
Mode 1: Transmit-1Mbps(GFSK_LE 1M)

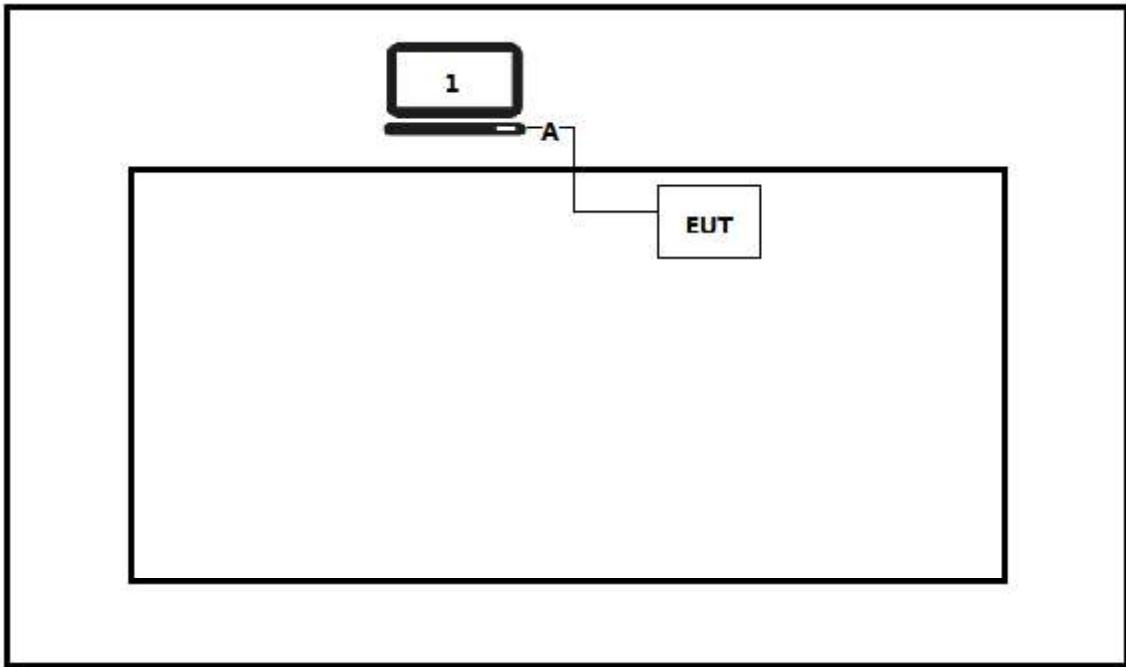
#### 1.5. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

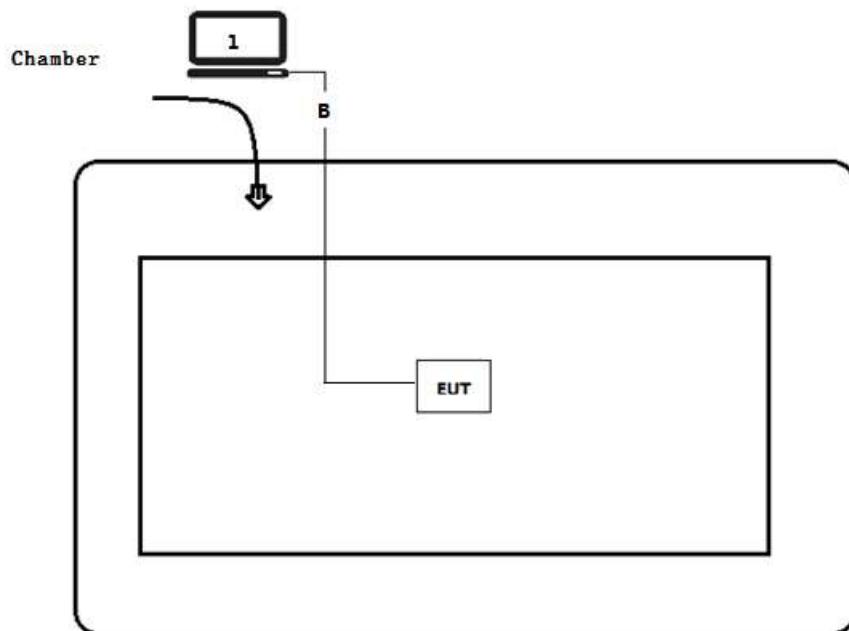
No.	Product	Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook	Think Pad	2526	LV-A3285	Power by adapter
A	USB cable	N/A	N/A	N/A	Shielded,0.5m
B	USB cable	N/A	N/A	N/A	Shielded,10m

## 1.6. Configuration of Tested System

Test setup Diagram- AC Line Conducted Emission Test



Test setup Diagram- Radiated Emission



## 1.7. EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of all equipment.
3	Run RF software [Bluetest 3], and set the test mode and channel, then press OK to start to continue transmit.

## 2. Technical Test

### 2.1. Summary of Test Result

Performed Test Item	Normative References	Limit	Result
AC Power Line Conducted Emission	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.207	FCC 15.207	PASS
Emissions in restricted frequency bands	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.209	FCC 15.209	PASS
Emissions in non-restricted frequency bands	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(d)	≥20dBc	PASS
Radiated Emission Band Edge	FCC CFR Title 47 Part 15 Subpart C: 2015 15.247(d)	FCC 15.209	PASS
Occupied Bandwidth	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(a)(2)	≥500kHz	PASS
Fundamental emission output power	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(b)(3)	≤30dBm	PASS
Power Spectral Density	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.247(e)	≤8dBm/3kHz	PASS
Antenna Requirement	FCC CFR Title 47 Part 15 Subpart C: 2015 Section 15.203	FCC 15.203	PASS

**2.2. Test Frequency configuration:**

Modulation Mode	Channel	Frequency	Channel	Frequency	Channel	Frequency
LE 1M	00	2402 MHz	19	2440 MHz	39	2480MHz

### 2.3. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	21
Humidity (%RH)	25-75	50
Barometric pressure (mbar)	860-1060	950-1000

### 2.4. Measurement Uncertainty

Test Items	Uncertainty
AC Power Line Conducted Emission	±2.02dB
Radiated Emission	Below 1GHz ±3.8 dB
	Above 1GHz ±3.9 dB
RF Antenna Port Conducted Emission	±1.27dB
Radiated Emission Band Edge	±3.9dB
Occupied Bandwidth	±1kHz
Power Spectral Density	±1.27dB

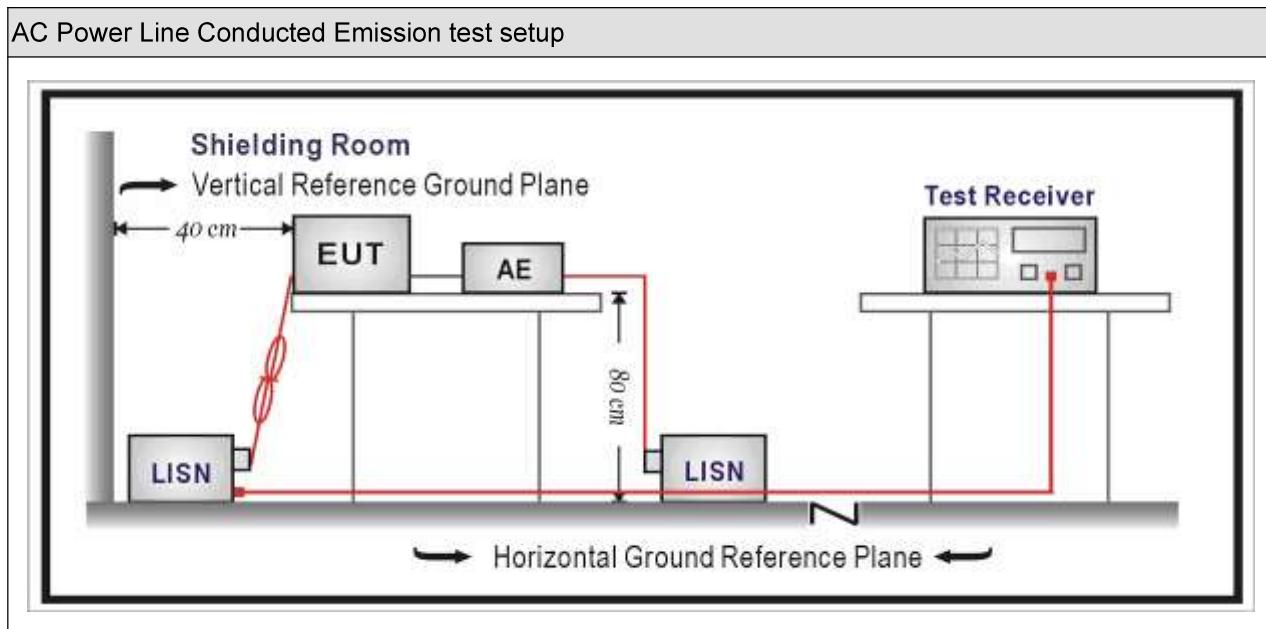
### 3. AC Power Line Conducted Emission

#### 3.1. Test Equipment

AC Power Line Conducted Emission / TR-1					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100906	2019.03.05	2020.03.04
Two-Line V-Network	R&S	ENV 216	101189	2018.07.16	2019.07.15
Two-Line V-Network	R&S	ENV 216	101044	2018.09.16	2019.09.15
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	N/A	N/A
50ohm Termination	SHX	TF2	07081402	2018.09.16	2019.09.15
Temperature/Humidity Meter	Zhichen	ZC1-2	TR1-TH	2019.01.04	2020.01.03
Quietek EMI V3(test software)	Quietek	N/A	N/A	N/A	N/A

Note: All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

#### 3.2. Test Setup



### 3.3. Limit

Frequency of Emission (MHz)	Conducted Limit	
	Quasi-peak (dB $\mu$ V)	Average(dB $\mu$ V)
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

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

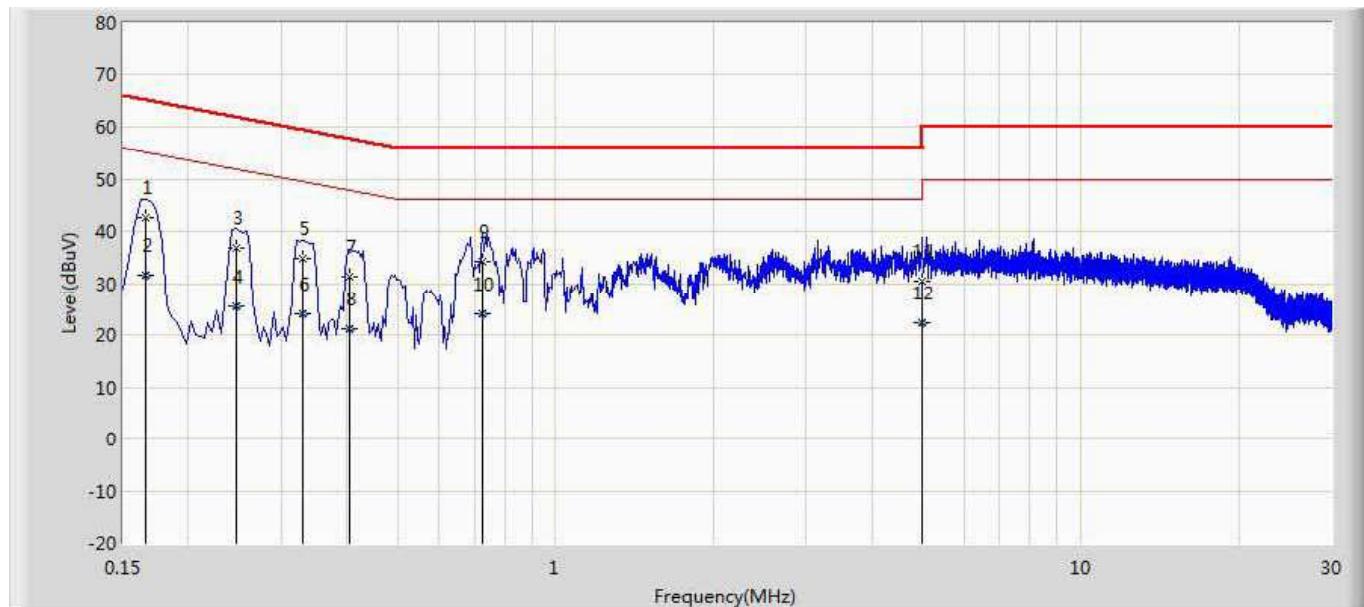
Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

### 3.4. Test Procedure

Test Method			
	References Rule	Chapter	Item
<input checked="" type="checkbox"/>	ANSI C63.10-2013	6.2	Standard test method for ac power-line conducted emissions from unlicensed wireless devices

### 3.5. Test Result

Site: TR1	Time: 2019/03/18
Limit: FCC_Part15.207_CE_AC Power	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Line
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1	

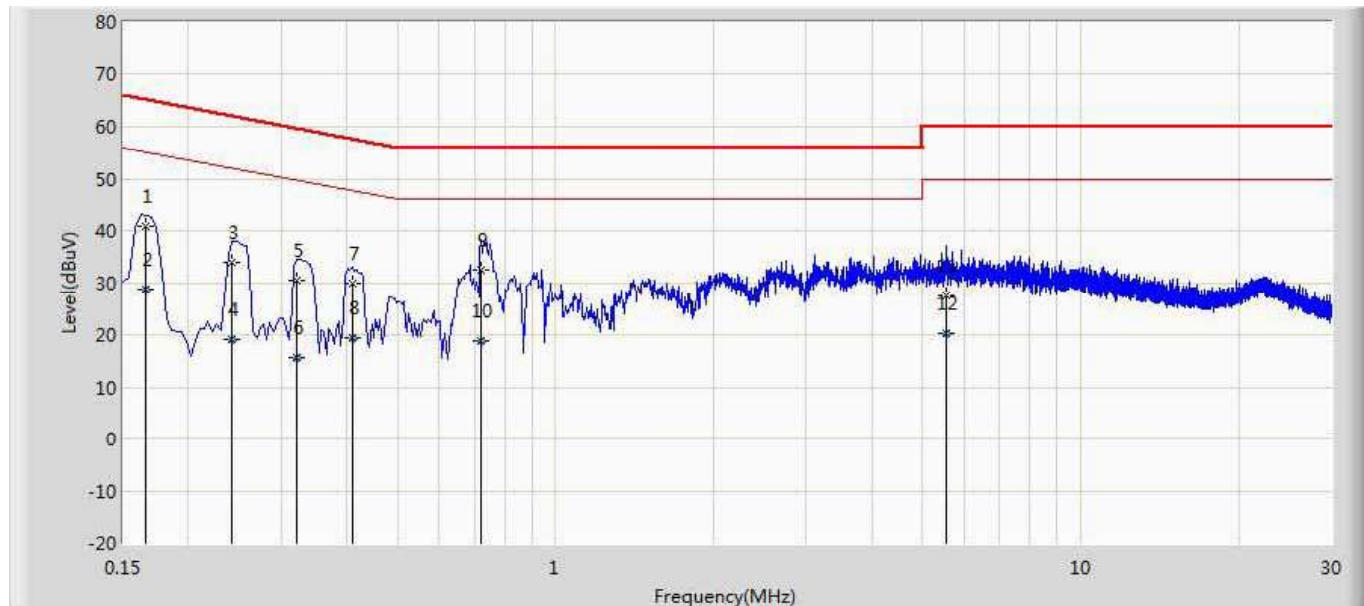


N o	Mar k	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.166	42.584	32.984	-22.574	65.158	9.571	0.028	0.000	QP
2		0.166	31.610	22.010	-23.548	55.158	9.571	0.028	0.000	AV
3		0.246	36.804	27.254	-25.087	61.891	9.519	0.031	0.000	QP
4		0.246	25.545	15.995	-26.346	51.891	9.519	0.031	0.000	AV
5		0.330	34.642	25.071	-24.809	59.451	9.536	0.035	0.000	QP
6		0.330	23.996	14.425	-25.455	49.451	9.536	0.035	0.000	AV
7		0.406	31.333	21.743	-26.397	57.730	9.551	0.039	0.000	QP
8		0.406	21.015	11.425	-26.715	47.730	9.551	0.039	0.000	AV
9	*	0.726	34.223	24.545	-21.777	56.000	9.628	0.050	0.000	QP
10		0.726	24.128	14.449	-21.872	46.000	9.628	0.050	0.000	AV
11		4.986	30.515	20.663	-25.485	56.000	9.710	0.142	0.000	QP
12		4.986	22.235	12.383	-23.765	46.000	9.710	0.142	0.000	AV

Note:

1. "\*" means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: TR1	Time: 2019/03/18
Limit: FCC_Part15.207_CE_AC Power	Margin: 0
Probe: ENV216_101044(0.009-30MHz)	Polarity: Neutral
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1	



N o	Mar k	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.166	40.890	31.321	-24.269	65.158	9.541	0.028	0.000	QP
2		0.166	28.611	19.042	-26.547	55.158	9.541	0.028	0.000	AV
3		0.242	34.034	24.483	-27.993	62.027	9.521	0.030	0.000	QP
4		0.242	19.172	9.622	-32.855	52.027	9.521	0.030	0.000	AV
5		0.322	30.567	20.972	-29.088	59.655	9.561	0.035	0.000	QP
6		0.322	15.703	6.108	-33.952	49.655	9.561	0.035	0.000	AV
7		0.410	29.754	20.110	-27.895	57.648	9.605	0.039	0.000	QP
8		0.410	19.448	9.805	-28.200	47.648	9.605	0.039	0.000	AV
9	*	0.722	32.396	22.738	-23.604	56.000	9.608	0.050	0.000	QP
10		0.722	18.970	9.313	-27.030	46.000	9.608	0.050	0.000	AV
11		5.538	27.656	17.723	-32.344	60.000	9.783	0.150	0.000	QP
12		5.538	20.286	10.353	-29.714	50.000	9.783	0.150	0.000	AV

Note:

1. " \* ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp)

## 4. Emissions in restricted frequency bands

### 4.1. Test Equipment

Radiated Emission(Below 1GHz) / AC-2					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100573	2019.03.29	2020.03.28
Loop Antenna	R&S	HFH2-Z2	833799/003	2018.11.16	2019.11.15
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2018.10.16	2019.10.15
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2019.03.02	2020.03.01
Temperature/Humidity Meter	Zhichen	ZC1-2	AC2-TH	2019.01.03	2020.01.02
Quietek EMI V3(test software)	Quietek	N/A	N/A	N/A	N/A

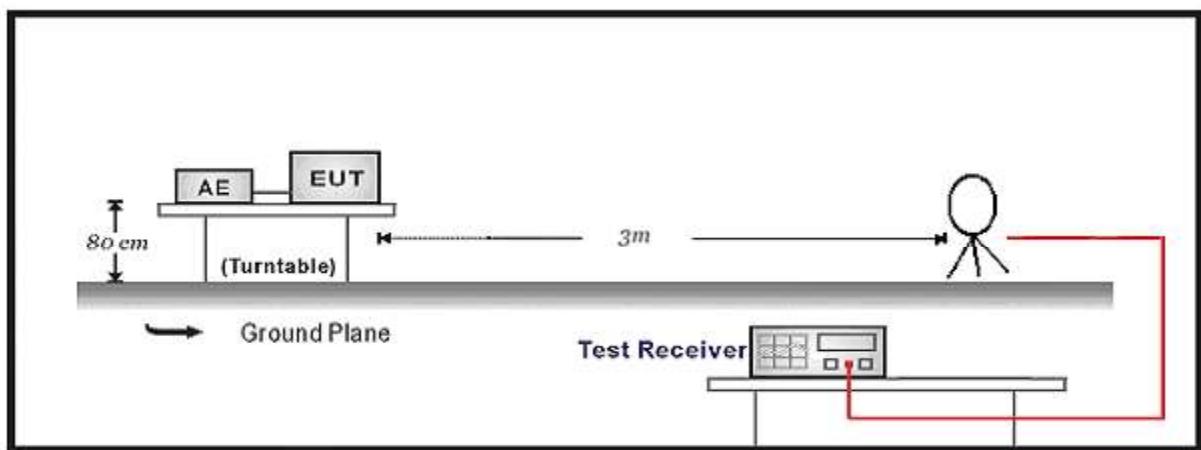
Note: All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

Radiated Emission(Above 1GHz) / AC-5					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2019.01.04	2020.01.03
Preamplifier	Miteq	NSP1800-25	1364185	2018.05.06	2019.05.05
Preamplifier	QuieTek	AP-040G	CHM-0906001	2018.05.06	2019.05.05
DRG Horn	ETS-Lindgren	3117	00123988	2019.01.22	2020.01.21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2018.11.25	2019.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2019.03.02	2020.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2019.03.02	2020.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2019.03.02	2020.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2018.06.10	2019.06.09
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2019.01.04	2020.01.03
Quietek EMI V3(test software)	Quietek	N/A	N/A	N/A	N/A

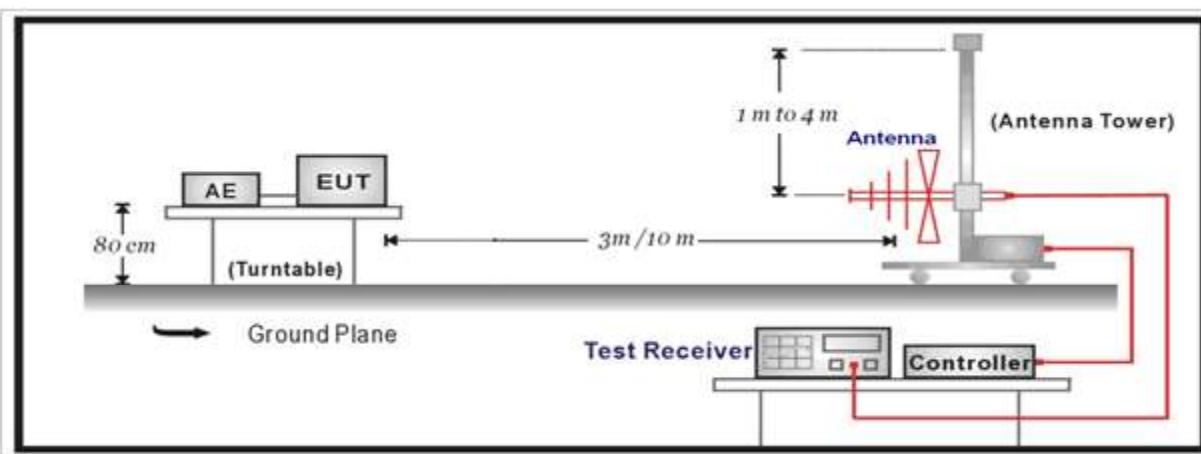
Note: All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

#### 4.2. Test Setup

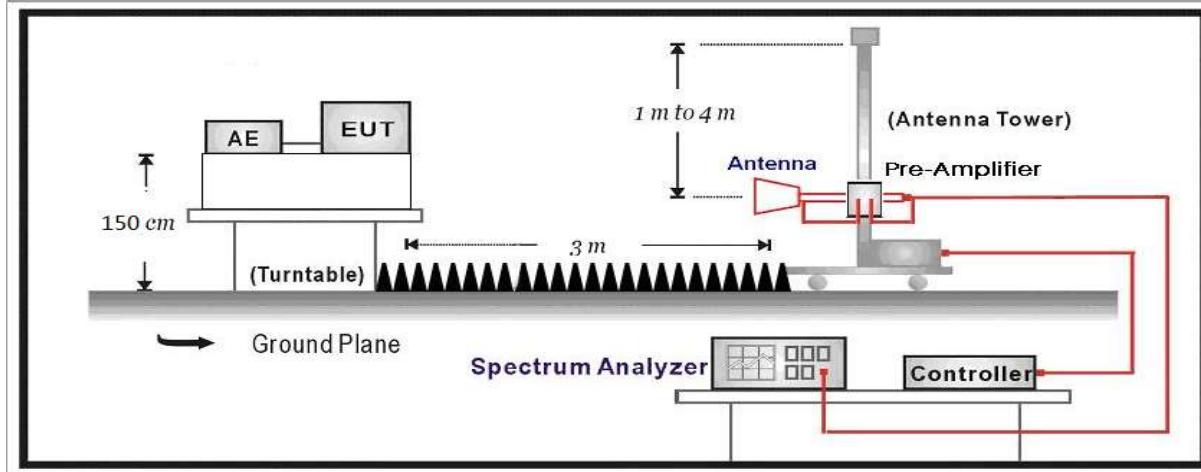
Below 30MHz Test Setup:



30MHz-1GHz Test Setup:



Above 1GHz Test Setup:



#### 4.3. Limit

Restricted Bands of operation			
Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 – 0.110	16.42 – 16.423	399.9 – 410	4.5 – 5.15
0.495 – 0.505	16.69475 – 16.69525	608 – 614	5.35 – 5.46
2.1735 – 2.1905	16.80425 – 16.80475	960 – 1240	7.25 – 7.75
4.125 – 4.128	25.5 – 25.67	1300 – 1427	8.025 – 8.5
4.17725 – 4.17775	37.5 – 38.25	1435 – 1626.5	9.0 – 9.2
4.20725 – 4.20775	73 – 74.6	1645.5 – 1646.5	9.3 – 9.5
6.215 – 6.218	74.8 – 75.2	1660 – 1710	10.6 – 12.7
6.26775 – 6.26825	108 – 121.94	1718.8 – 1722.2	13.25 – 13.4
6.31175 – 6.31225	123 – 138	2200 – 2300	14.47 – 14.5
8.291 – 8.294	149.9 – 150.05	2310 – 2390	15.35 – 16.2
8.362 – 8.366	156.52475 – 156.52525	2483.5 – 2500	17.7 – 21.4
8.37625 – 8.38675	156.7 – 156.9	2690 – 2900	22.01 – 23.12
8.81425 – 8.81475	162.0125 – 167.17	3260 – 3267	23.6 – 24.0
12.29 – 12.293	167.72 – 173.2	3332 – 3339	31.2 – 31.8
12.51975 – 12.52025	240 – 285	3345.8 – 3358	36.43 – 36.5
12.57675 – 12.57725	322 – 335.4	3600 – 4400	
13.36 – 13.41			

Restricted Band Emissions Limit			
Frequency (MHz)	Field strength ( $\mu\text{V/m}$ )	Field strength (dB $\mu\text{V/m}$ )	Measurement distance (m)
0.009 - 0.49	$2400/F(\text{kHz})$	48.5 – 13.8	300 (Note 1)
0.49 - 1.705	$24000/F(\text{kHz})$	33.8 - 23	30 (Note 1)
1.705 - 30	30	29.5	30 (Note 1)
30 - 88	100	40	3 (Note 2)
88 - 216	150	43.5	3 (Note 2)
216 - 960	200	46	3 (Note 2)
Above 960	500	54	3 (Note 2)

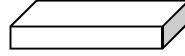
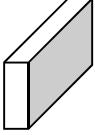
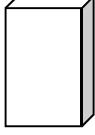
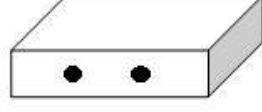
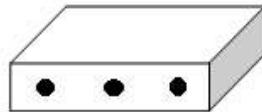
Note 1: At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

Note 2: At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

#### 4.4. Test Procedure

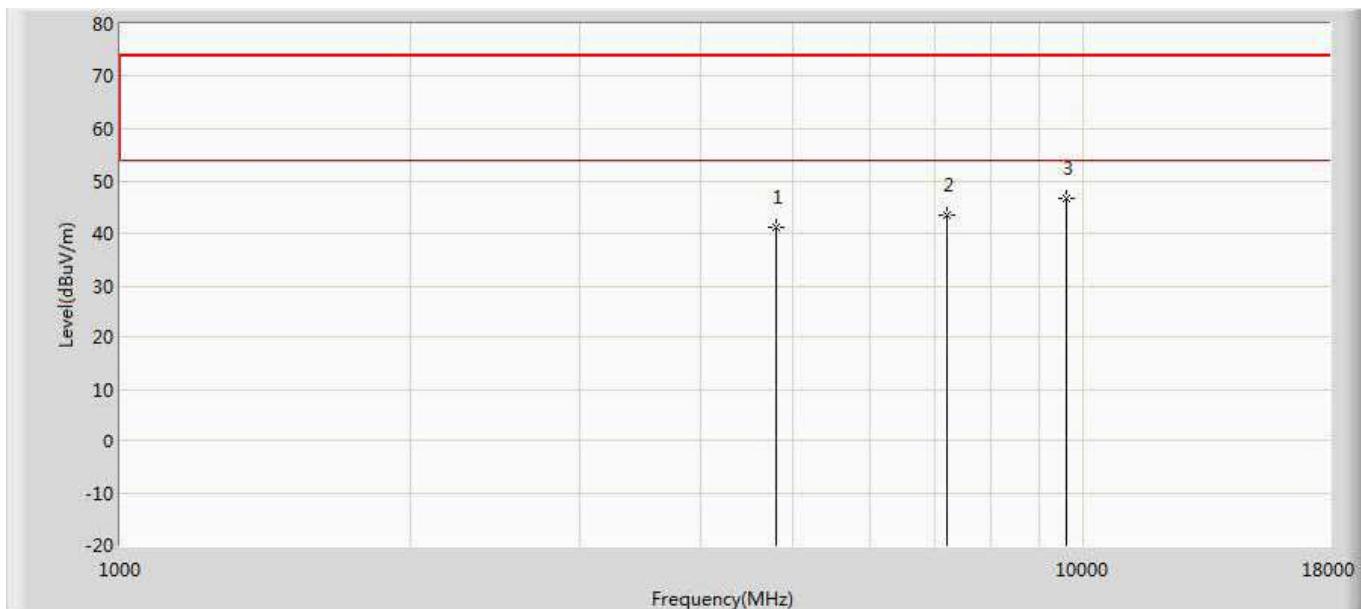
Test Method			
	References Rule	Chapter	Description
<input type="checkbox"/>	ANSI C63.10	11.11	Emissions in non-restricted frequency bands
<input type="checkbox"/>	<input type="checkbox"/> ANSI C63.10	11.11.2	Reference level measurement
	<input type="checkbox"/> ANSI C63.10	11.11.3	Emission level measurement
<input checked="" type="checkbox"/>	ANSI C63.10	11.12	Emissions in restricted frequency bands
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> ANSI C63.10	11.12.1	Radiated emission measurements
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.7	Radiated spurious emission test
	<input checked="" type="checkbox"/> ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
	<input checked="" type="checkbox"/> ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz
	<input type="checkbox"/> ANSI C63.10	11.12.2.3	Quasi-peak measurement procedure
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.4	Peak power measurement procedure
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.5	Average power measurement procedures
<input type="checkbox"/>	<input type="checkbox"/> ANSI C63.10	11.12.2.5.1	Trace averaging with continuous EUT transmission at full power
	<input type="checkbox"/> ANSI C63.10	11.12.2.5.2	Trace averaging across ON and OFF times of the EUT transmissions followed by duty cycle correction
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.5.3	Reduced VBW averaging across ON and OFF times of the EUT transmissions with max hold

#### 4.5. EUT test Axis definition

Item	Emissions in restricted frequency bands			
Device Category	<input type="checkbox"/>	Fixed point-to-point		
	<input type="checkbox"/>	Emit multiple directional beams, simultaneously or sequentially		
	<input checked="" type="checkbox"/>	Other cases		
Test mode	Mode 1~2			
Test method	<input checked="" type="checkbox"/>	Radiated		
		X Axis	Y Axis	Z Axis
				
		Worst Axis <input checked="" type="checkbox"/>	Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>
	<input type="checkbox"/>	Conducted		
	<input type="checkbox"/>	Chain 1		
				
	<input type="checkbox"/>	Chain 1	Chain 2	
				
	<input type="checkbox"/>	Chain 1	Chain 2	Chain 3
				

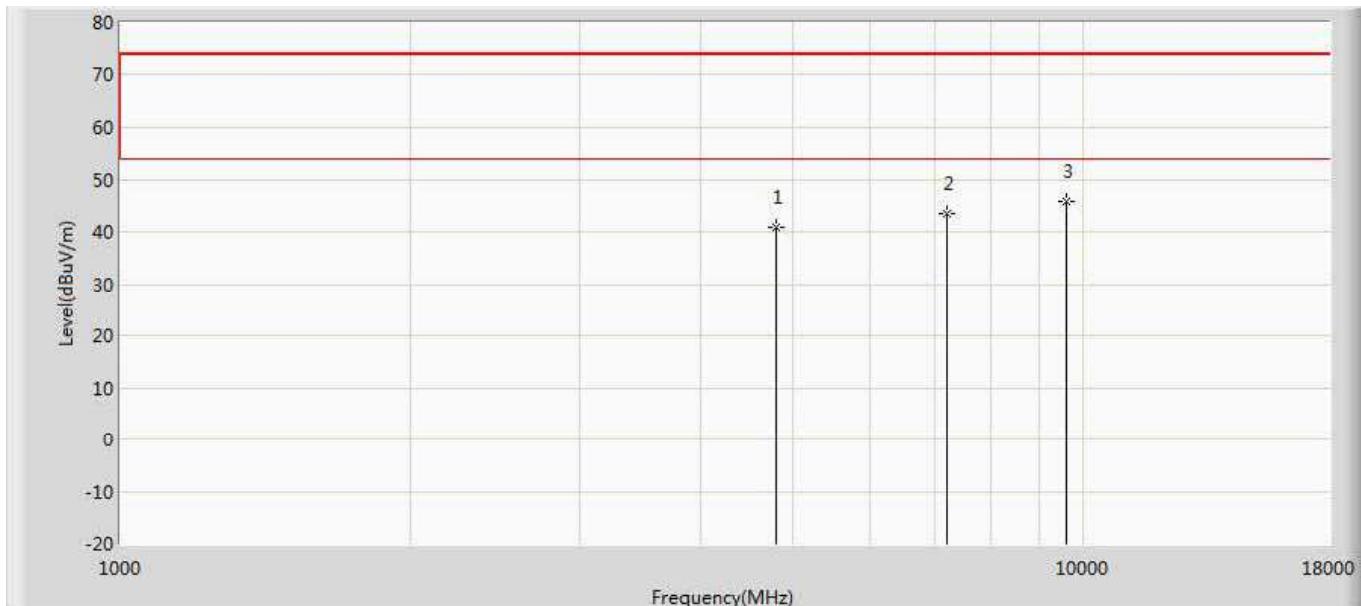
#### 4.6. Test Result

Engineer: Simon	
Site: AC5	Time: 2019/04/01 - 13:21
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2402MHz by BLE	



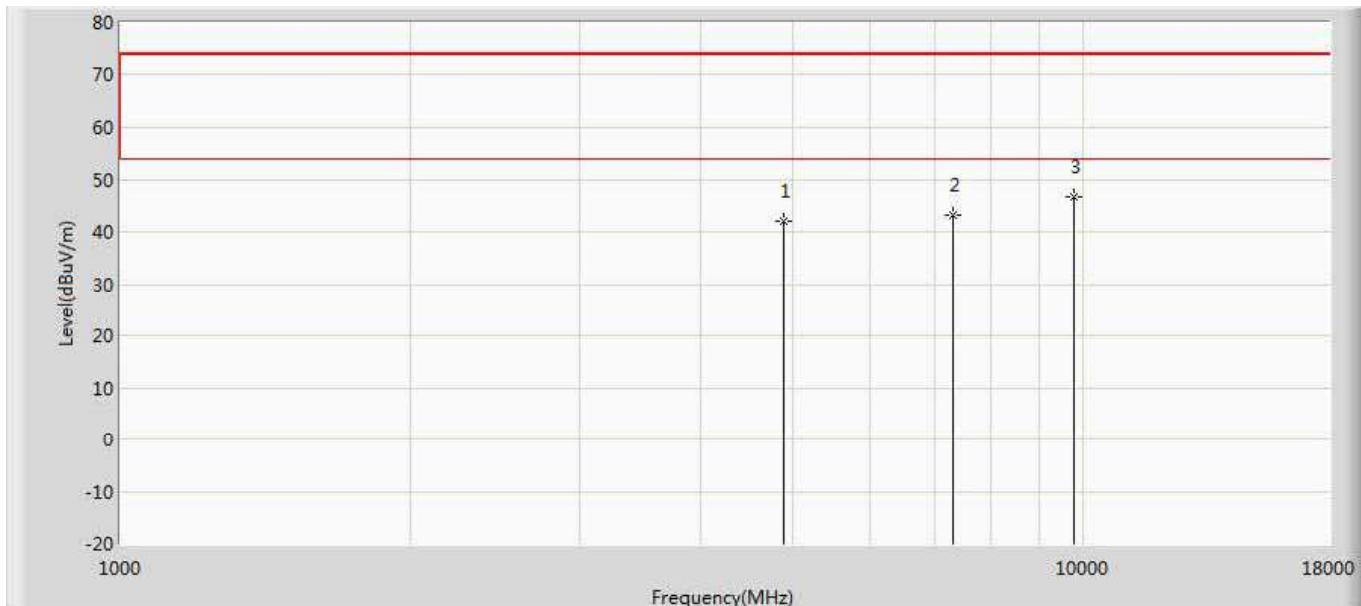
N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	41.256	41.027	-32.744	74.000	0.229	PK
2		7206.000	43.445	40.019	-30.555	74.000	3.426	PK
3	*	9608.000	46.641	38.121	-27.359	74.000	8.519	PK

Engineer: Simon	
Site: AC5	Time: 2019/04/01 - 13:21
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2402MHz by BLE	



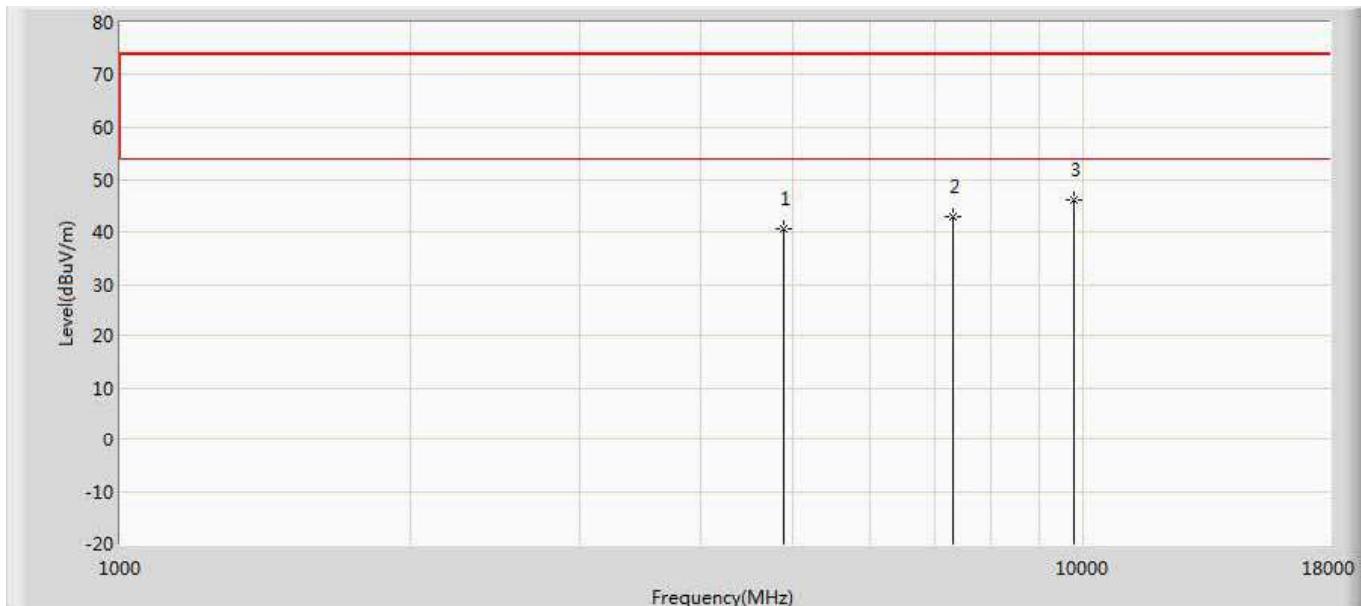
N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	40.785	40.556	-33.215	74.000	0.229	PK
2		7206.000	43.439	40.013	-30.561	74.000	3.426	PK
3	*	9608.000	45.895	37.375	-28.105	74.000	8.519	PK

Engineer: Simon	
Site: AC5	Time: 2019/04/01 - 13:21
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2440MHz by BLE	



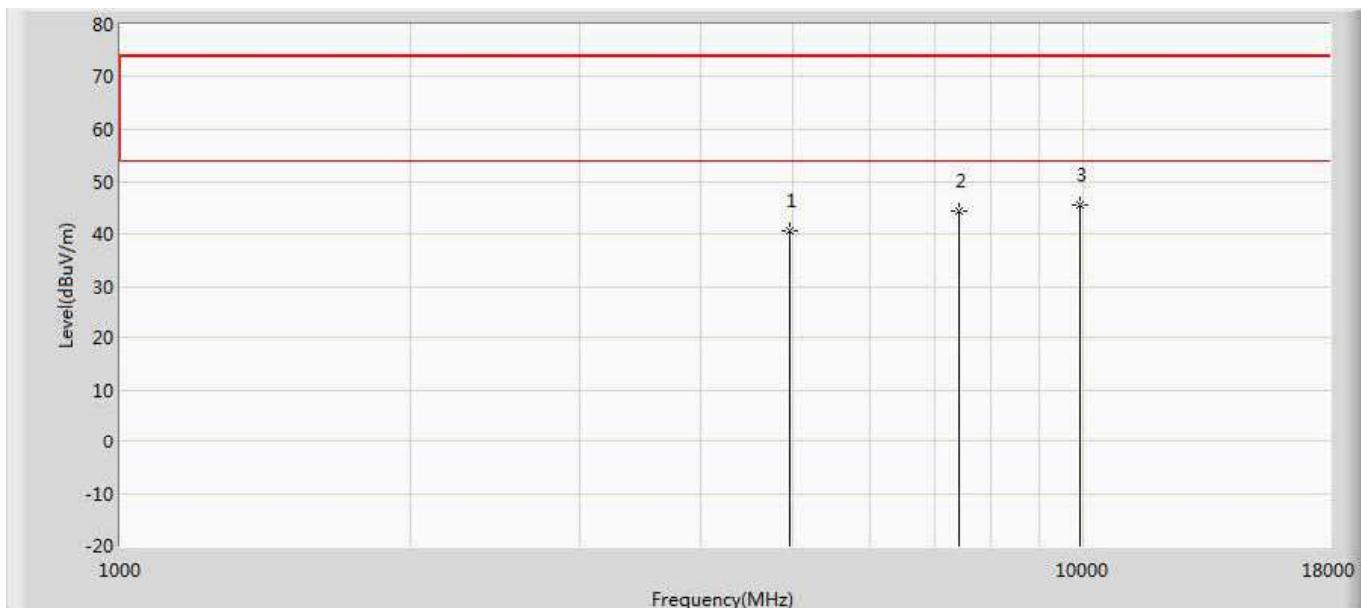
N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	42.111	41.623	-31.889	74.000	0.489	PK
2		7320.000	43.246	39.696	-30.754	74.000	3.550	PK
3	*	9760.000	46.634	37.161	-27.366	74.000	9.473	PK

Engineer: Simon	
Site: AC5	Time: 2019/04/01 - 13:21
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2440MHz by BLE	



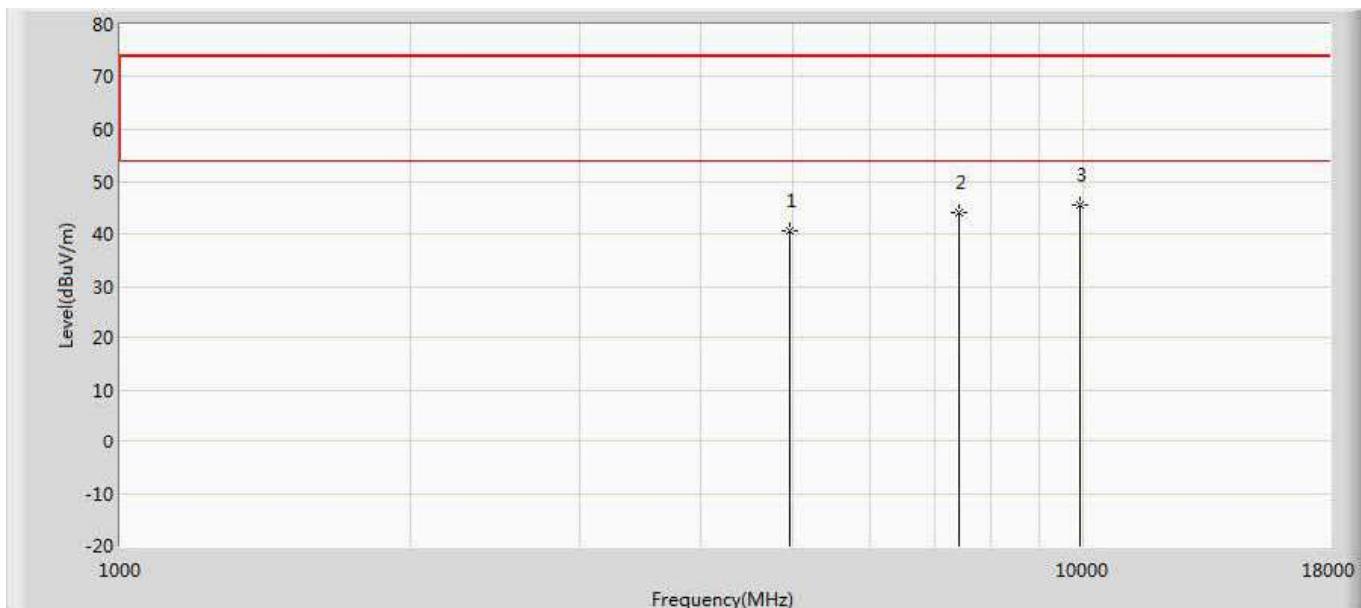
N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	40.699	40.211	-33.301	74.000	0.489	PK
2		7320.000	42.817	39.267	-31.183	74.000	3.550	PK
3	*	9760.000	46.057	36.584	-27.943	74.000	9.473	PK

Engineer: Simon	
Site: AC5	Time: 2019/04/01 - 13:21
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2480MHz by BLE	



N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	40.527	39.856	-33.473	74.000	0.671	PK
2		7440.000	44.450	39.723	-29.550	74.000	4.727	PK
3	*	9920.000	45.541	37.140	-28.459	74.000	8.401	PK

Engineer: Simon	
Site: AC5	Time: 2019/04/01 - 13:21
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2480MHz by BLE	



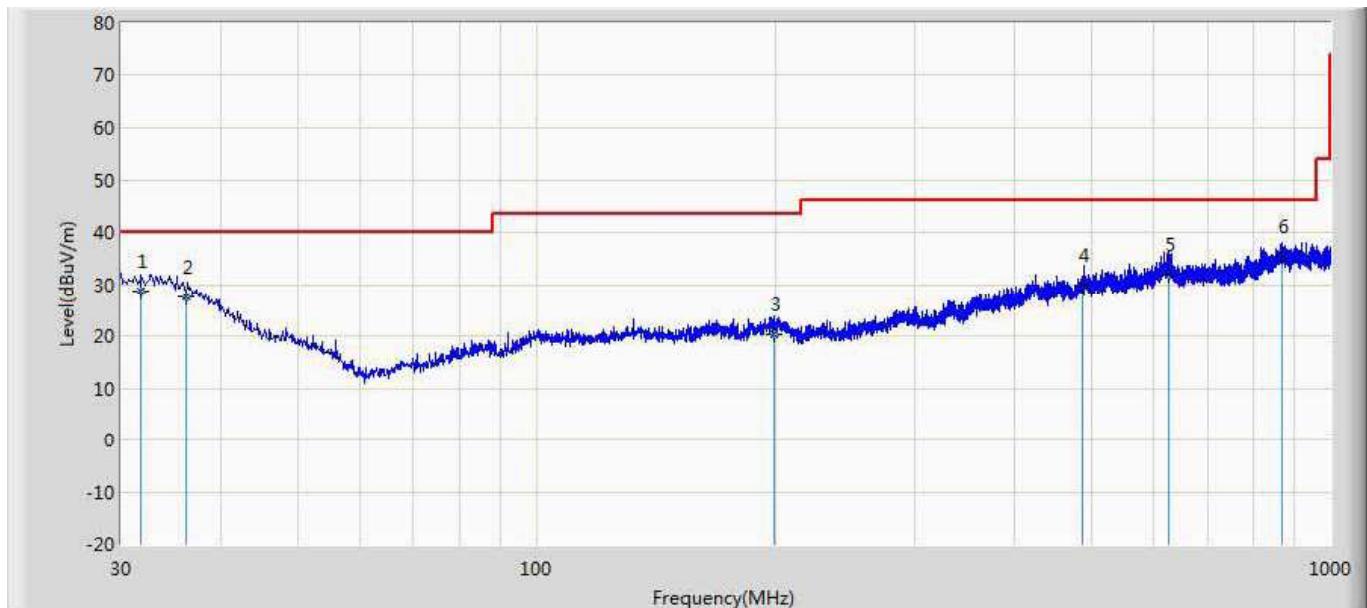
N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	40.646	39.975	-33.354	74.000	0.671	PK
2		7440.000	44.182	39.455	-29.818	74.000	4.727	PK
3	*	9920.000	45.424	37.023	-28.576	74.000	8.401	PK

#### Note:

1. Measured Level = Reading Level + Factor.
2. The test frequency range, 9kHz~30MHz, 18GHz~26GHz, both of the worst case are at least 20dB below the limits, therefore no data appear in the report.
3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.
4. As the radiated emission was performed, so conducted emission was not tested.

**The worst case of Radiated Emission below 1GHz:**

Site: AC2	Time: 2019/03/14
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: AC2_3M(30-1000M)	Polarity: Horizontal
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1	

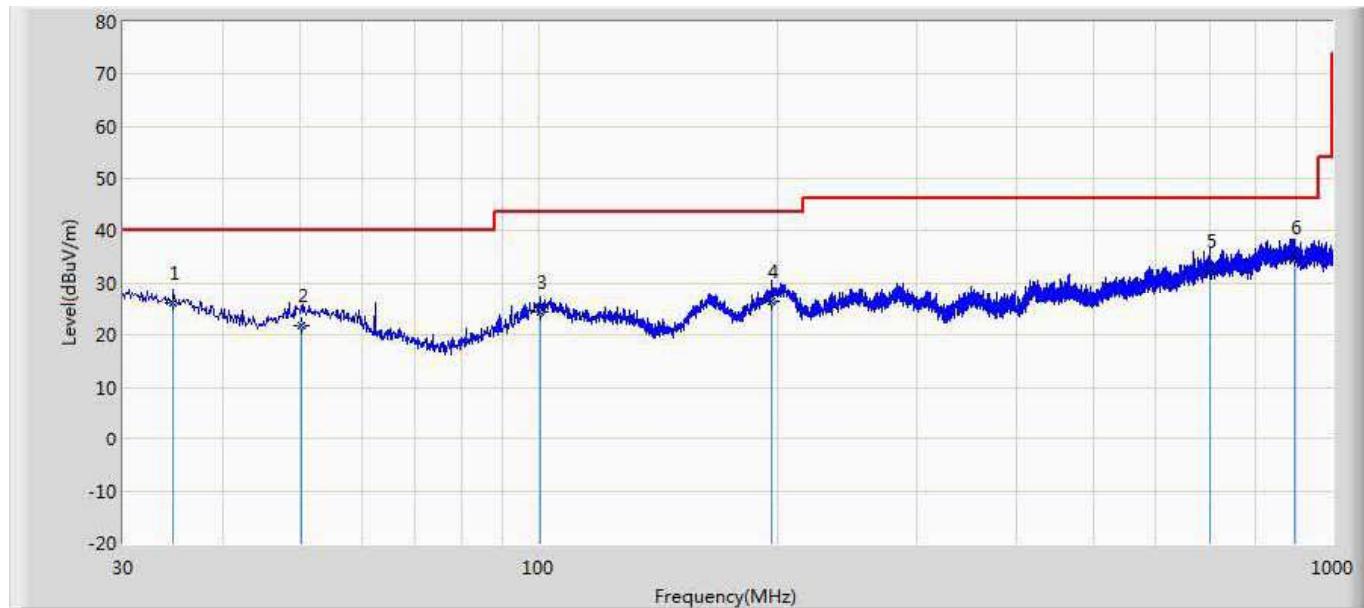


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Prob e (dB/m)	Cabl e (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		31.820	28.726	1.320	-11.274	40.000	20.76 7	6.63 9	0.00 0	100	36	QP
2		36.210	27.461	1.320	-12.539	40.000	19.49 9	6.64 2	0.00 0	100	238	QP
3		199.200	20.203	2.320	-23.297	43.500	10.54 4	7.33 9	0.00 0	100	66	QP
4		488.320	29.918	1.920	-16.082	46.000	19.96 9	8.02 9	0.00 0	200	128	QP
5		625.250	32.006	1.320	-13.994	46.000	22.11 6	8.57 0	0.00 0	100	236	QP
6	*	867.635	35.334	2.320	-10.666	46.000	23.84 1	9.17 2	0.00 0	200	214	QP

Note:

1. "\*" means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable+Amp).

Site: AC2	Time: 2019/03/14
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: AC2_3M(30-1000M)	Polarity: Vertical
EUT: BLUETOOTH EARPHONE	Power: AC 120V/60Hz
Note: Mode 1	



N o	Mar k	Frequen cy (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/ m)	Prob e (dB/ m)	Cabl e (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Typ e
1		34.650	25.957	2.950	-14.043	40.000	16.33 9	6.66 8	0.00 0	100	140	QP
2		50.320	21.838	2.320	-18.162	40.000	12.96 8	6.55 0	0.00 0	200	336	QP
3		100.420	24.375	2.331	-19.125	43.500	15.16 9	6.87 5	0.00 0	100	221	QP
4		196.950	26.443	3.620	-17.057	43.500	15.48 8	7.33 4	0.00 0	100	78	QP
5		699.650	32.135	1.250	-13.865	46.000	22.13 6	8.74 9	0.00 0	100	12	QP
6	*	897.620	34.750	1.320	-11.250	46.000	24.18 6	9.24 4	0.00 0	200	265	QP

Note:

1. Measured Level = Reading Level + Factor.

2. The test frequency range, 9kHz~30MHz, 18GHz~40GHz, both of the worst case are at least 20dB below the limits, therefore no data appear in the report.
3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.
4. As the radiated emission was performed, so conducted emission was not tested.

## 5. Emissions in non-restricted frequency bands

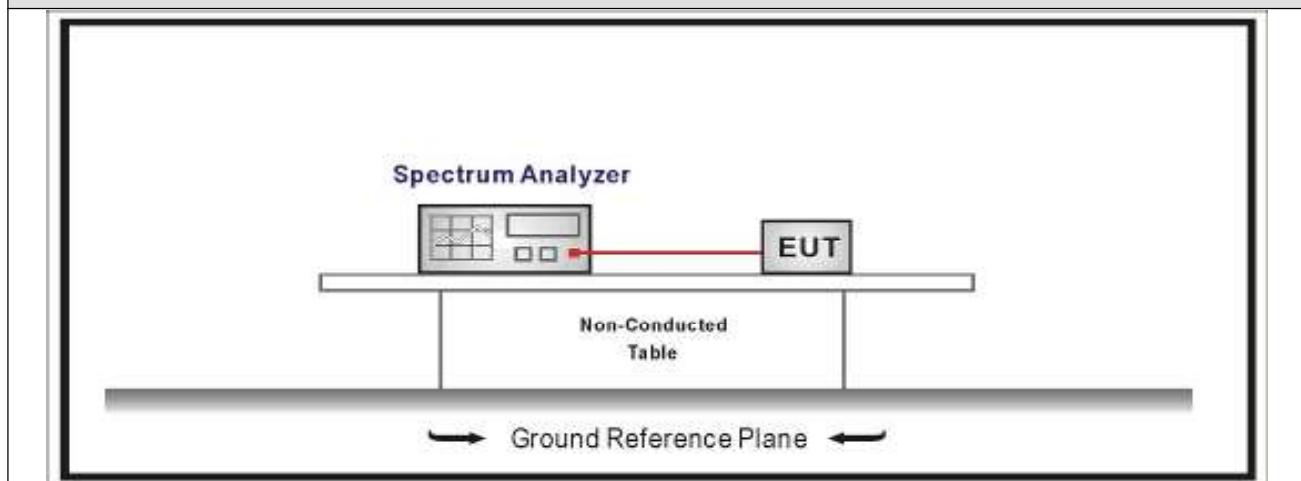
### 5.1. Test Equipment

Emissions in non-restricted frequency bands / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2019.02.04	2020.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2018.04.09	2019.04.08
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2018.04.09	2019.04.08
Temperature/Humidity Meterzhichen		ZC1-2	TR8-TH	2018.04.10	2019.04.09

Note: All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

### 5.2. Test Setup

Emissions in non-restricted frequency bands test setup:



### 5.3. Limit

Un-Restricted Band Emissions Limit	
RF Output power (Detection methods)	Limit(dB)
RF Output power(Average detector)	30c(Note1)
RF Output power(PK detector)	20c(Note2)

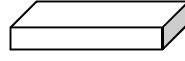
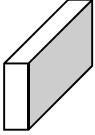
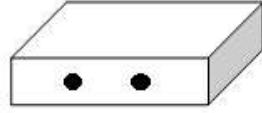
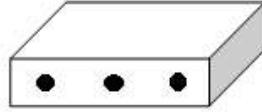
Note 1: If maximum conducted (average) output power was used to demonstrate compliance as described in 9.2, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 30 dBc).

Note 2: If the maximum peak conducted output power procedure was used, then the peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 20 dBc).

#### 5.4. Test Procedure

Test Method			
	References Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	11.11	Emissions in non-restricted frequency bands
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> ANSI C63.10	11.11.2	Reference level measurement
	<input checked="" type="checkbox"/> ANSI C63.10	11.11.3	Emission level measurement
<input type="checkbox"/>	ANSI C63.10	11.12	Emissions in restricted frequency bands
<input type="checkbox"/>	<input type="checkbox"/> ANSI C63.10	11.12.1	Radiated emission measurements
	<input type="checkbox"/> ANSI C63.10	11.12.2.7	Radiated spurious emission test
<input type="checkbox"/>	ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
<input type="checkbox"/>	ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
<input type="checkbox"/>	ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz
<input checked="" type="checkbox"/>	ANSI C63.10	11.12.2	Antenna-port conducted measurements
	<input type="checkbox"/> ANSI C63.10	11.12.2.3	Quasi-peak measurement procedure
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.4	Peak power measurement procedure
	<input type="checkbox"/> ANSI C63.10	11.12.2.5	Average power measurement procedures
<input type="checkbox"/>	<input type="checkbox"/> ANSI C63.10	11.12.2.5.1	Trace averaging with continuous EUT transmission at full power
	<input type="checkbox"/> ANSI C63.10	11.12.2.5.2	Trace averaging across ON and OFF times of the EUT transmissions followed by duty cycle correction
	<input type="checkbox"/> ANSI C63.10	11.12.2.5.3	Reduced VBW averaging across ON and OFF times of the EUT transmissions with max hold

## 5.5. EUT test Axis definition

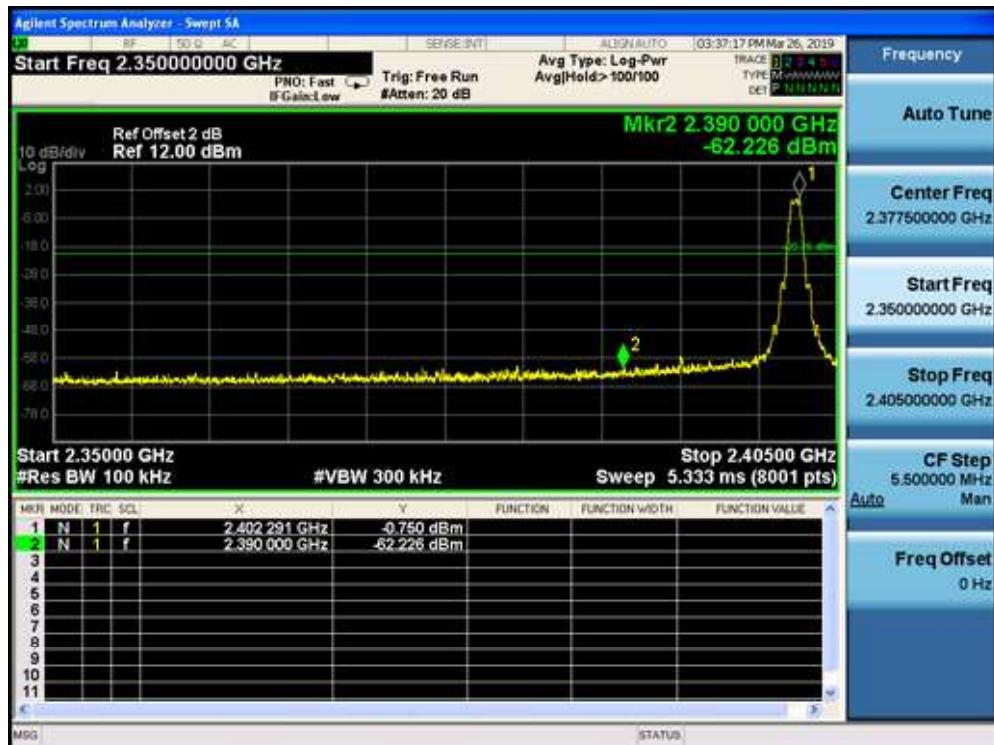
Item	Emissions in non-restricted frequency bands			
Device Category	<input type="checkbox"/>	Fixed point-to-point		
	<input type="checkbox"/>	Emit multiple directional beams, simultaneously or sequentially		
	<input checked="" type="checkbox"/>	Other cases		
Test mode	Mode 1			
Test method	<input type="checkbox"/>	Radiated		
		X Axis	Y Axis	
				
		Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>	
	<input checked="" type="checkbox"/>	Conducted		
	<input checked="" type="checkbox"/>	Chain 1		
				
	<input type="checkbox"/>	Chain 1	Chain 2	
				
	<input type="checkbox"/>	Chain 1	Chain 2	Chain 3
				

## 5.6. Test Result

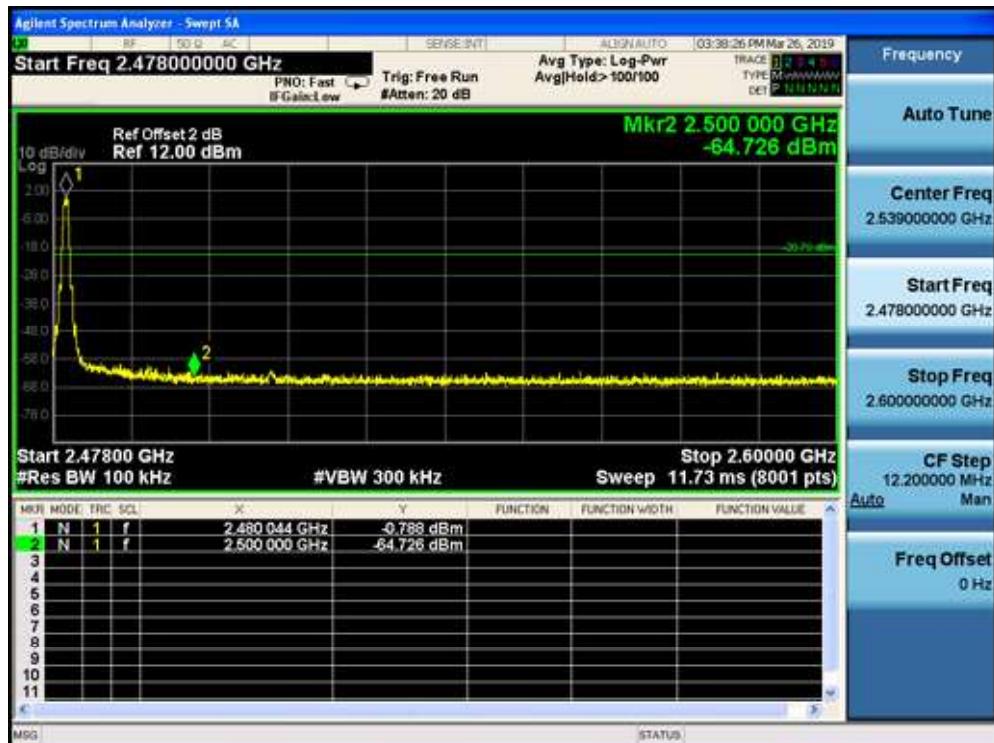
Product Name	:	BLUETOOTH EARPHONE	Test Voltage	:	AC 120V/60Hz
Test Mode	:	Mode 1	Test Site	:	TR-8
Test Date	:	2019.03.26	Test Engineer	:	Simon

Mode	Channel	Test Frequency (MHz)	In-Band PSD[a] (dBm/100kHz)	Frequency (MHz)	Out-Band PSD[b] (dBm/100kHz)	[a]-[b] (dB)	Limit (dB)	Result
1	00	2402	-0.750	2400.00	-62.226	61.476	>20	Pass
1	39	2480	-0.788	2500.00	-64.726	63.938	>20	Pass

### Mode 1 CH00 (2402MHz)



## Mode 1 CH39 (2480MHz)



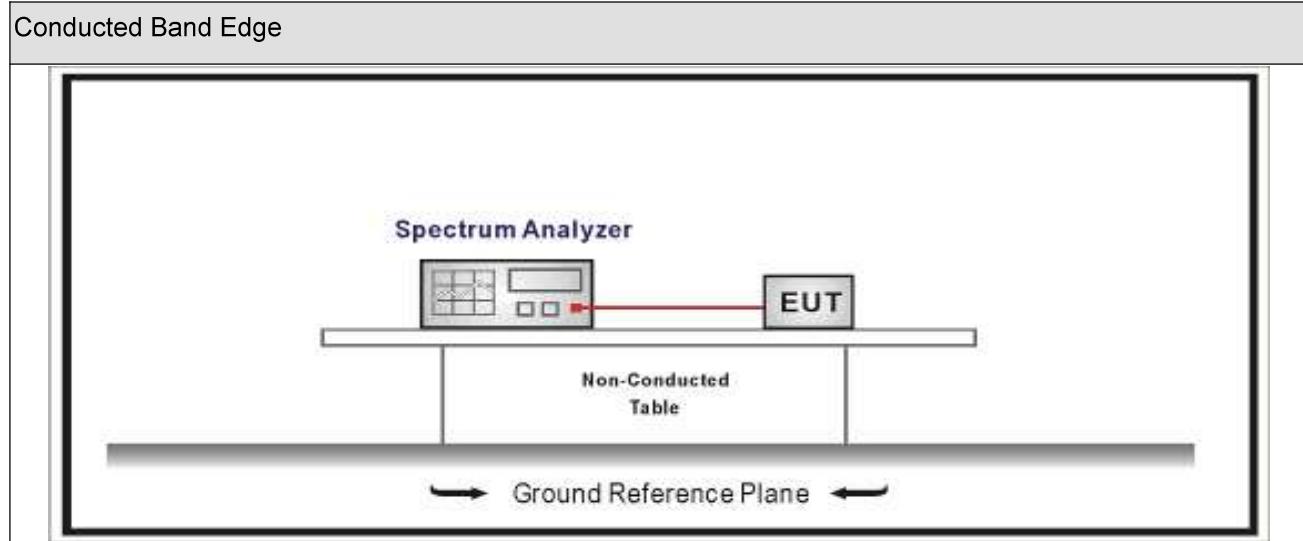
## 6. Conducted Band Edge

### 6.1. Test Equipment

Conducted Band Edge / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2019.02.04	2020.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2018.04.09	2019.04.08
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2018.04.09	2019.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2018.04.10	2019.04.09

Note: All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

## 6.2. Test Setup



## 6.3. Limit

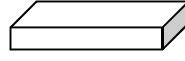
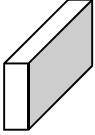
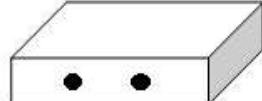
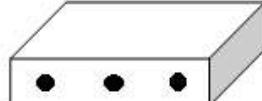
Band edge Limit				
Frequency bands (MHz)	Detector	Limit (dB $\mu$ V/m)	RBW (MHz)	Distance (m)
2310-2390	PK	74	1	3
	AV	54	1	3

Note: The field strength of emissions appearing within these frequency bands shall not exceed the limits.

## 6.4. Test Procedure

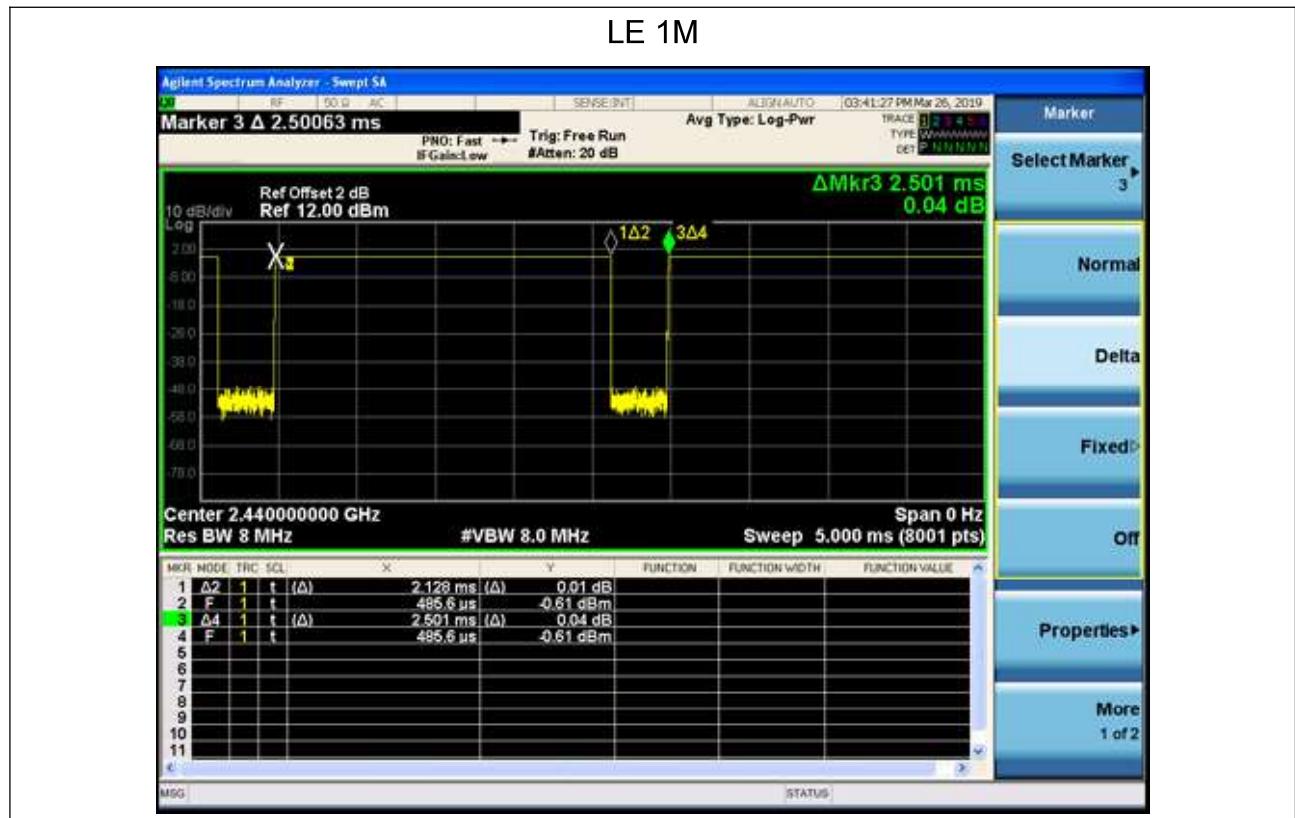
Conducted Band Edge			
	References Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	6.10	Band-edge testing
<input checked="" type="checkbox"/>	ANSI C63.10	6.10.5	Restricted-band band-edge measurements
	<input type="checkbox"/> ANSI C63.10	6.10.6	Marker-delta method
<input type="checkbox"/>	ANSI C63.10	11.12	Emissions in restricted frequency bands
<input type="checkbox"/>	ANSI C63.10	11.12.1	Radiated emission measurements
	<input type="checkbox"/> ANSI C63.10	11.12.2.7	Radiated spurious emission test
<input type="checkbox"/>	ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
<input type="checkbox"/>	ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
<input type="checkbox"/>	ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz
<input checked="" type="checkbox"/>	ANSI C63.10	11.12.2	Antenna-port conducted measurements
	<input type="checkbox"/> ANSI C63.10	11.12.2.3	Quasi-peak measurement procedure
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.4	Peak power measurement procedure
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.5	Average power measurement procedures
	<input type="checkbox"/> ANSI C63.10	11.12.2.5.1	Trace averaging with continuous EUT transmission at full power
	<input type="checkbox"/> ANSI C63.10	11.12.2.5.2	Trace averaging across ON and OFF times of the EUT transmissions followed by duty cycle correction
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.5.3	Reduced VBW averaging across ON and OFF times of the EUT transmissions with max hold

## 6.5. EUT test definition

Item	Radiated Emission Band Edge			
Device Category	<input type="checkbox"/>	Fixed point-to-point		
	<input type="checkbox"/>	Emit multiple directional beams, simultaneously or sequentially		
	<input checked="" type="checkbox"/>	Other cases		
Test mode	Mode 1~2			
Test method	<input type="checkbox"/>	Radiated		
		X Axis	Y Axis	
				
		Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>	
	<input checked="" type="checkbox"/>	Conducted		
	<input checked="" type="checkbox"/>	Chain 1		
				
	<input type="checkbox"/>	Chain 1	Chain 2	
				
	<input type="checkbox"/>	Chain 1	Chain 2	Chain 3
				

## 6.6. Duty Cycle

Test Mode	Tx On (ms)	Tx Off (ms)	Reduced VBW (Hz)	Tx On + Tx Off (ms)	Duty Cycle
LE 1M	2.128	0.373	470	2.501	85.09%

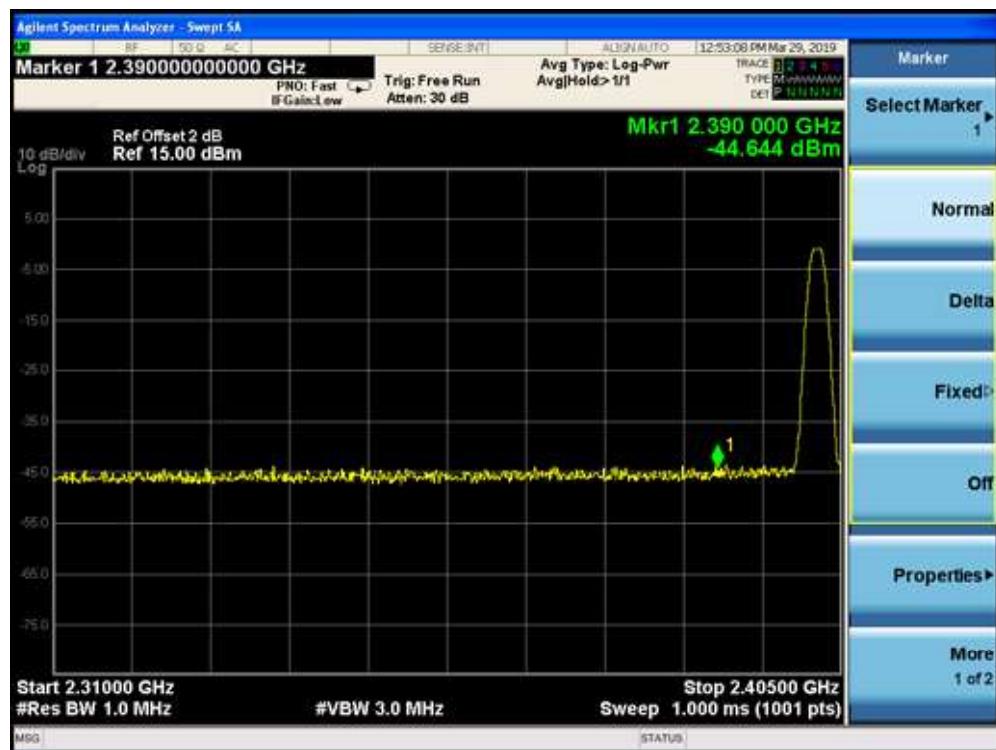


## 6.7. Test Result

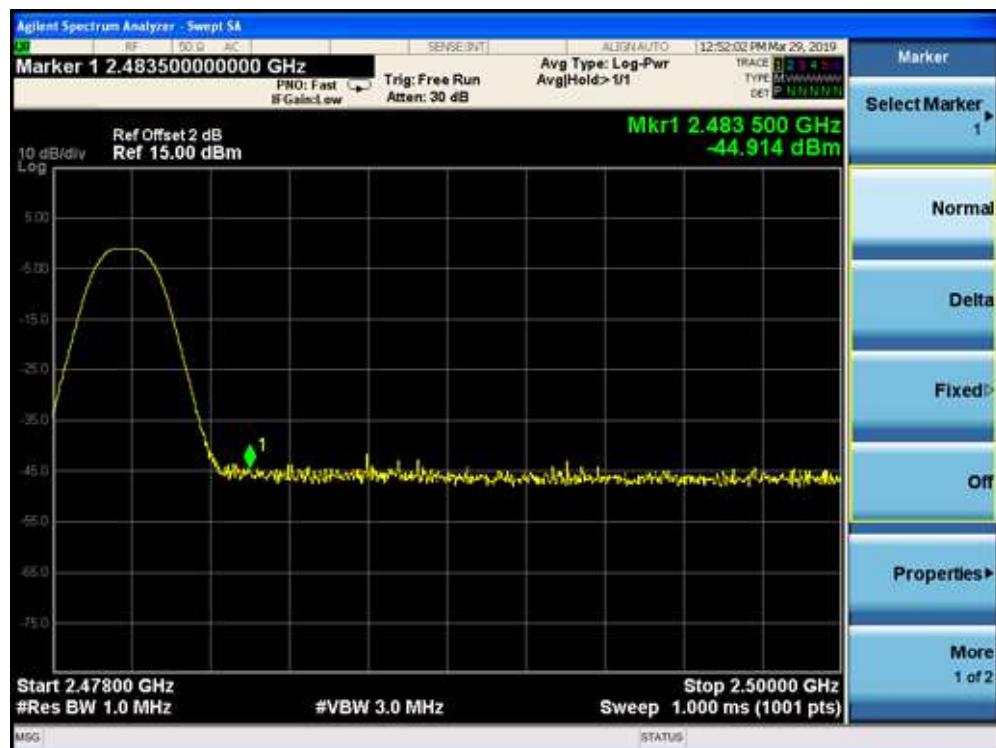
PK Limit=74dB<sub>V/m</sub>-95.2-2.7(Antenna Gain) = -23.9dbm

AV Limit=54dB<sub>V/m</sub>-95.2-2.7(Antenna Gain) = -43.9dbm

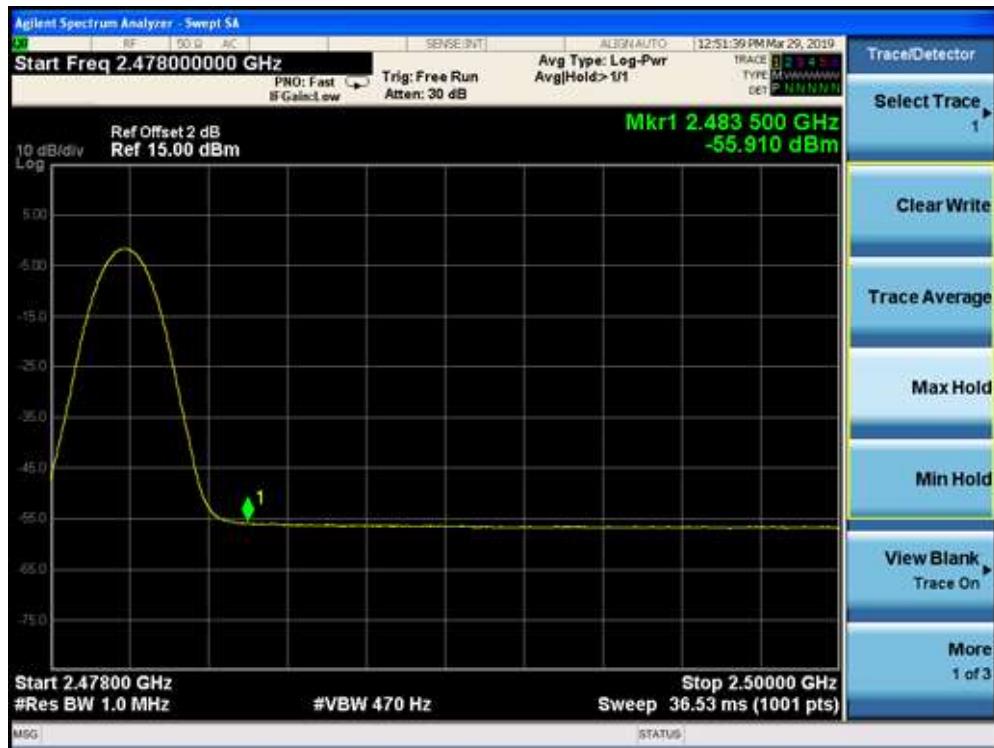
LE 1M / PK / 2402MHz:



LE 1M / PK / 2480MHz:



**LE 1M / AV / 2402MHz:**

**LE 1M / AV / 2480MHz:**


## 7. Occupied Bandwidth

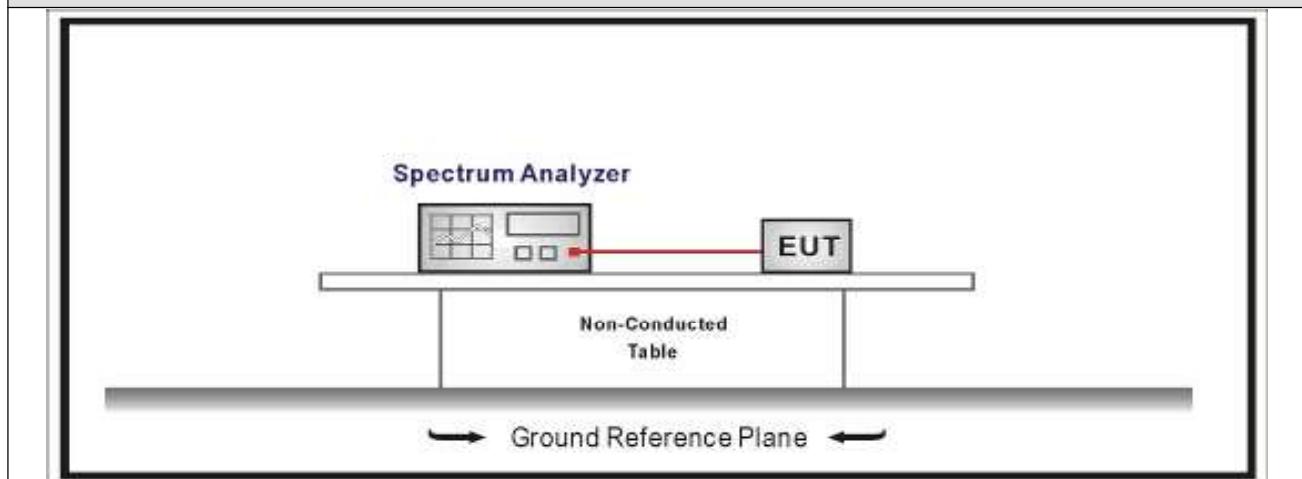
### 7.1. Test Equipment

Occupied Bandwidth / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2019.02.04	2020.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2018.04.09	2019.04.08
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2018.04.09	2019.04.08
Temperature/Humidity Meterzhichen		ZC1-2	TR8-TH	2018.04.10	2019.04.09

Note: All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

### 7.2. Test Setup

Occupied Bandwidth test setup:



### 7.3. Limit

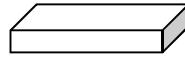
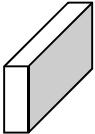
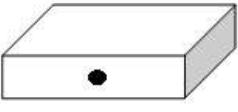
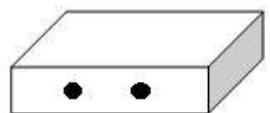
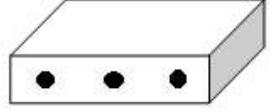
#### Occupied Bandwidth

Systems using digital modulation techniques operate in the 2400-2483.5 MHz. The minimum 6 dB bandwidth shall be at least 500 kHz

### 7.4. Test Procedure

Test Method			
	Reference Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	11.8	DTS bandwidth
<input type="checkbox"/>	ANSI C63.10	11.8.1	Option 1
	<input checked="" type="checkbox"/>	11.8.2	Option 2

## 7.5. EUT test definition

Item	Occupied Bandwidth			
Device Category	<input type="checkbox"/>	Fixed point-to-point		
	<input type="checkbox"/>	Emit multiple directional beams, simultaneously or sequentially		
	<input checked="" type="checkbox"/>	Other cases		
Test mode	Mode 1~2			
Test method	<input type="checkbox"/>	Radiated		
		X Axis	Y Axis	
				
		Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>	
	<input checked="" type="checkbox"/>	Conducted		
	<input checked="" type="checkbox"/>	Chain 1		
				
	<input type="checkbox"/>	Chain 1	Chain 2	
				
	<input type="checkbox"/>	Chain 1	Chain 2	Chain 3
				

## 7.6. Test Result

Product Name	:	BLUETOOTH EARPHONE	Test Voltage	:	AC 120V/60Hz
Test Mode	:	Mode 1	Test Site	:	TR-8
Test Date	:	2019.03.26	Test Engineer	:	Simon

Mode	CH.	Test Freq. (MHz)	99% Occupied Bandwidth (kHz)	6dB Occupied Bandwidth (kHz)	Limit (kHz)	Result
1	00	2402	1065.0	728.2	>500	Pass
1	19	2440	1061.2	714.6	>500	Pass
1	39	2480	1063.9	714.6	>500	Pass

### Mode 1 CH00 (2402MHz)



### Mode 1 CH19 (2440MHz)



### Mode 1 CH39 (2480MHz)



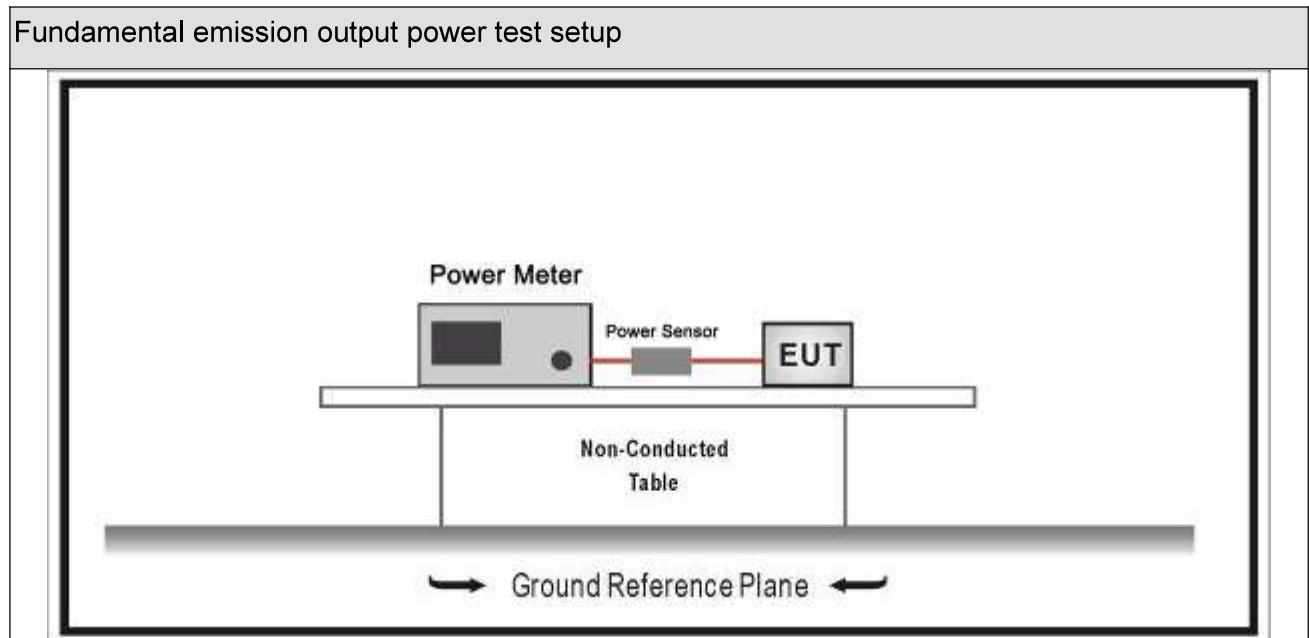
## 8. Fundamental emission output power

### 8.1. Test Equipment

Fundamental emission output power/ TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2019.01.04	2020.01.03
Spectrum Analyzer	Agilent	N9010A	MY48030494	2019.02.04	2020.02.03
Wideband Peak Power Meter	Anritsu	ML2495A	0905006	2018.10.14	2019.10.13
Power Sensor	Anritsu	MA2411B	0846014	2018.10.14	2019.10.13
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2018.04.10	2019.04.09

Note: All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

### 8.2. Test Setup



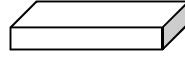
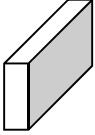
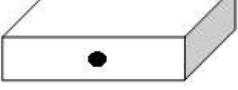
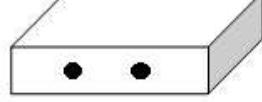
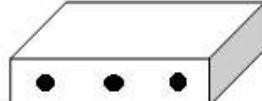
### 8.3. Limit

Fundamental emission output power Limit		
<input checked="" type="checkbox"/>	$G_{Tx} < 6\text{dBi}$	$P_{out} \leq 30\text{dBm}$
<input type="checkbox"/>	$G_{Tx} > 6\text{dBi}$	
	<input type="checkbox"/>	$P_{out} \leq 30 - (G_{Tx} - 6)$
	<input type="checkbox"/>	$P_{out} \leq 30 - [(G_{Tx} - 6)]/3$
	<input type="checkbox"/>	$P_{out} \leq 30 - (G_{Tx} - 6)$
	<input type="checkbox"/>	$P_{out} \leq 30 - [(G_{Tx} - 6)]/3$
	<input type="checkbox"/>	$P_{out} \leq 30 - [(G_{Tx} - 6)]/3$
	<input type="checkbox"/>	$P_{out} \leq 30 - [(G_{Tx} - 6)]/3 + 8\text{dB}$
Note 1 : $G_{Tx}$ directional gain of transmitting antennas.		
Note 2 : $P_{out}$ is maximum peak conducted output power .		

#### 8.4. Test Procedure

Fundamental emission output power Test Method			
	References Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	11.9	Fundamental emission output power
	<input checked="" type="checkbox"/> ANSI C63.10	11.9.1	Maximum peak conducted output power
	<input type="checkbox"/> ANSI C63.10	11.9.1.1	RBW $\geq$ DTS bandwidth
	<input type="checkbox"/> ANSI C63.10	11.9.1.2	Integrated band power method
	<input checked="" type="checkbox"/> ANSI C63.10	11.9.1.3	PKPM1 Peak power meter method
	<input type="checkbox"/> ANSI C63.10	11.9.2	Maximum conducted (average) output power
	<input type="checkbox"/> ANSI C63.10	11.9.2.2	Measurement using a spectrum analyzer (SA)
	<input type="checkbox"/> ANSI C63.10	11.9.2.2.2	Method AVGSA-1(Duty cycle $\geq$ 98%)
	<input type="checkbox"/> ANSI C63.10	11.9.2.2.3	Method AVGSA-1A(Duty cycle $\geq$ 98%)
	<input type="checkbox"/> ANSI C63.10	11.9.2.2.4	Method AVGSA-2(Duty cycle $\leq$ 98%)
	<input type="checkbox"/> ANSI C63.10	11.9.2.2.5	Method AVGSA-2A(Duty cycle $\leq$ 98%)
	<input type="checkbox"/> ANSI C63.10	11.9.2.2.4	Method AVGSA-3
	<input type="checkbox"/> ANSI C63.10	11.9.2.2.5	Method AVGSA-3A
	<input type="checkbox"/> ANSI C63.10	11.9.2.3	Measurement using a power meter (PM)
	<input type="checkbox"/> ANSI C63.10	11.9.2.3.1	Method AVGPM
	<input type="checkbox"/> ANSI C63.10	11.9.2.3.2	Method AVGPM-G

## 8.5. EUT test definition

Item	Fundamental emission output power			
Device Category	<input type="checkbox"/>	Fixed point-to-point		
	<input type="checkbox"/>	Emit multiple directional beams, simultaneously or sequentially		
	<input checked="" type="checkbox"/>	Other cases		
Test mode	Mode 1~2			
Test method	<input type="checkbox"/>	Radiated		
		X Axis	Y Axis	
				
		Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>	
	<input checked="" type="checkbox"/>	Conducted		
	<input checked="" type="checkbox"/>	Chain 1		
				
	<input type="checkbox"/>	Chain 1	Chain 2	
				
	<input type="checkbox"/>	Chain 1	Chain 2	Chain 3
				

## 8.6. Test Result

Product Name	:	BLUETOOTH EARPHONE	Test Voltage	:	AC 120V/60Hz
Test Mode	:	Mode 1	Test Site	:	TR-8
Test Date	:	2019.03.26	Test Engineer	:	Simon

Mode	Channel	Test Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
1	00	2402	-0.81	30	Pass
1	19	2440	-0.90	30	Pass
1	39	2480	-0.96	30	Pass

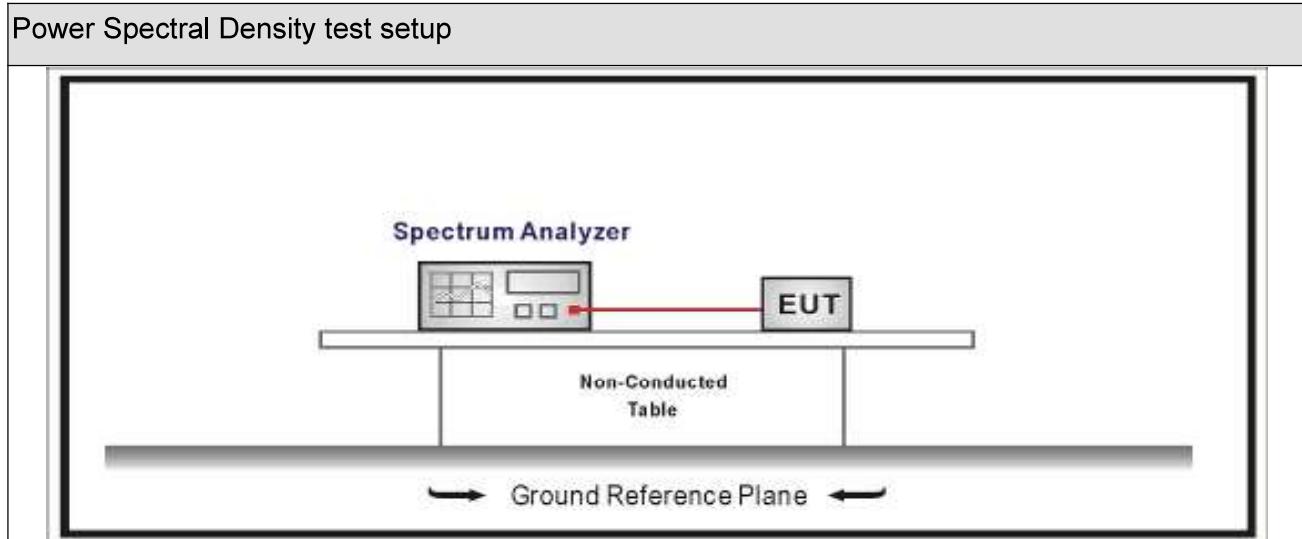
## 9. Power Spectral Density

### 9.1. Test Equipment

Power Spectral Density / TR-8					
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2019.02.04	2020.02.03
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2018.04.09	2019.04.08
MXA Signal Analyzer	Keysight	N9020A	MY56060147	2018.04.09	2019.04.08
Temperature/Humidity Meter	zhichen	ZC1-2	TR8-TH	2018.04.10	2019.04.09

Note: All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

### 9.2. Test Setup



### 9.3. Limit

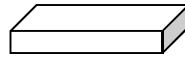
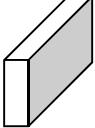
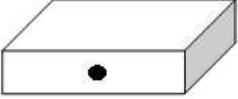
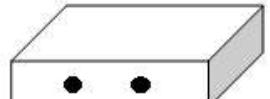
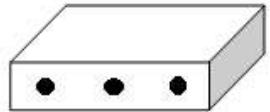
Power Spectral Density Limit

Power Spectral Density  $\leq 8\text{dBm}/3\text{kHz}$

#### 9.4. Test Procedure

Power Spectral Density Test Method			
	References Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	11.10	Maximum power spectral density level in the fundamental emission
	<input checked="" type="checkbox"/> ANSI C63.10	11.10.2	Method PKPSD (peak PSD)
	<input type="checkbox"/> ANSI C63.10	11.10.3	Method AVGPSD-1(Duty cycle $\geq$ 98%)
	<input type="checkbox"/> ANSI C63.10	11.10.4	Method AVGPSD-1A(Duty cycle $\geq$ 98%)
	<input type="checkbox"/> ANSI C63.10	11.10.5	Method AVGPSD-2(Duty cycle<98%)
	<input type="checkbox"/> ANSI C63.10	11.10.6	Method AVGPSD-2A(Duty cycle<98%)
	<input type="checkbox"/> ANSI C63.10	11.10.7	Method AVGPSD-3
	<input type="checkbox"/> ANSI C63.10	11.10.8	Method AVGPSD-3A

## 9.5. EUT test definition

Item	Power Spectral Density Test Method			
Device Category	<input type="checkbox"/>	Fixed point-to-point		
	<input type="checkbox"/>	Emit multiple directional beams, simultaneously or sequentially		
	<input checked="" type="checkbox"/>	Other cases		
Test mode	Mode 1			
Test method	<input type="checkbox"/>	Radiated		
		X Axis	Y Axis	
				
		Worst Axis <input type="checkbox"/>	Worst Axis <input type="checkbox"/>	
	<input checked="" type="checkbox"/>	Conducted		
	<input checked="" type="checkbox"/>	Chain 1		
				
	<input type="checkbox"/>	Chain 1	Chain 2	
				
	<input type="checkbox"/>	Chain 1	Chain 2	Chain 3
				

## 9.6. Test Result

Product Name	:	BLUETOOTH EARPHONE	Test Voltage	:	AC 120V/60Hz
Test Mode	:	Mode 1	Test Site	:	TR-8
Test Date	:	2019.03.26	Test Engineer	:	Simon

Mode	Channel	Test Frequency (MHz)	Measurement PSD (dBm/3kHz)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
1	00	2402	-16.318	-16.318	8	Pass
1	19	2440	-16.473	-16.473	8	Pass
1	39	2480	-16.436	-16.436	8	Pass

### Mode 1 CH00(2402MHz)



## Mode 1 CH19(2440MHz)



## Mode 1 CH39(2480MHz)



## 10. Antenna Requirement

### 10.1. Limit

#### Antenna Requirement Limit

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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

### 10.2. Antenna Connector Construction

#### Antenna Connector Construction

- |                                     |  |
|-------------------------------------|--|
| <input type="checkbox"/>            | The use of a permanently attached antenna                        |
| <input type="checkbox"/>            | The antenna use of a unique coupling to the intentional radiator |
| <input checked="" type="checkbox"/> | The use of a nonstandard antenna jack or electrical connector    |

Please refer to the attached document "Internal Photograph" to show the antenna connector.

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The End

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