Shenzhen Asia Test Technology Co., Ltd.

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FCC RADIO TEST REPORT
FCC ID: 2AB4AH-02

Product： BLUETOOTH HEADPHONE

Trade Name： N/A

Model Name： H-02

Serial Model： H-01, H-03, H-04, H-05, H-06, H-07, H-08

Prepared for

New Tech Development Co., Ltd

Building 2, Yuanzheng Industry Park, Wuhe Avenue Bantian Town, Longgang District Shenzhen China

Prepared by

Shenzhen Asia Test Technology Co.,Ltd.

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TEST RESULT CERTIFICATION

Applicant's name ..... New Tech Development Co., Ltd

Address ..... Building 2, Yuanzheng Industry Park, Wuhe Avenue Bantian Town, Longgang District Shenzhen China

Manufacture's Name..... New Tech Development Co., Ltd

Address ..... Building 2, Yuanzheng Industry Park, Wuhe Avenue Bantian Town, Longgang District Shenzhen China

Product description

Product name ..... BLUETOOTH HEADPHONE

Model and/or type reference H-02

Additional Model H-01, H-03, H-04, H-05, H-06, H-07, H-08

Standards ..... FCC Part15.247

Test procedure ..... ANSI C63.4-2003

This device described above has been tested by ATT, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test .....

Date (s) of performance of tests ..... Jun. 02 2015 ~Jun. 18 2015

Date of Issue..... Jun. 18 2015

Test Result..... **Pass**

Testing Engineer : Jack Yu

(Jack Yu)

Technical Manager : Jerry You

(Jerry You)

Authorized Signatory : Can Liu

(Can Liu)

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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247(a)(1)	Hopping Channel Separation	PASS	
15.247(b)(1)	Peak Output Power	PASS	
15.247(c)	Radiated Spurious Emission	PASS	
15.247(a)(iii)	Number of Hopping Frequency	PASS	
15.247(a)(iii)	Dwell Time	PASS	
15.247(a)(1)	Bandwidth	PASS	
15.205	Band Edge Emission	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1)” N/A” denotes test is not applicable in this Test Report

1.1 TEST FACILITY

Asia Institute Technology (DongGuan) Limited
No. 22,JinQianLing Street 3, JiTiGang Village, Huang-Jiang Town, DongGuan, Guangdong, 523757 China
FCC Registration No.: 248337

1.2 MEASUREMENT UNCERTAINTY

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

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	BLUETOOTH HEADPHONE
Model Name	H-02
Serial number	HD001145
Serial Model	H-01, H-03, H-04, H-05, H-06, H-07, H-08
Model Difference	All models are identical except model name.
Product Description	The EUT is a BLUETOOTH HEADPHONE Operation Frequency: 2402~2480 MHz Modulation Type: GFSK Bit Rate of Transmitter 1Mbps Number Of Channel 79 CH Antenna Designation: Please see Note 3. Output Power(Conducted): 3.25 dBm PK Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.
Channel List	Please refer to the Note 2.
Ratings	3.7Vdc
Adapter	N/A
Battery	DC 3.7V
Connecting I/O Port(s)	Please refer to the User's Manual
hardware version	H_02_AQN6553_20150
Software version	V1

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2.

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457

02	2404	29	2431	56	2458
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		
26	2428	53	2455		

3.

Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	N/A	PCB Antenna	N/A	0	

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	CH00
Mode 2	CH39
Mode 3	CH78
Mode 4	Link BT

For Conducted Emission	
Final Test Mode	Description
Mode 4	Link BT

For Radiated Emission	
Final Test Mode	Description
Mode 1	CH00
Mode 2	CH39
Mode 3	CH78

Note:

(1) The measurements are performed at the highest, middle, lowest available channels.

(2) Measurements are performed according to the Public Notice-DA 00-705.

(3) The relevant RF Conducted Measurement is performed by a temporary antenna connector, please refer to the Equipment List for the detail

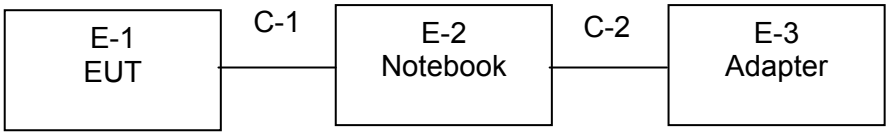
2.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of FHSS

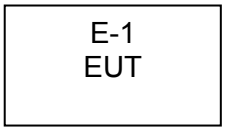
Test software Version	Test program: Broadcom		
Frequency	2402 MHz	2441 MHz	2480 MHz
Parameters(1Mbps)	DEF	DEF	DEF

2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

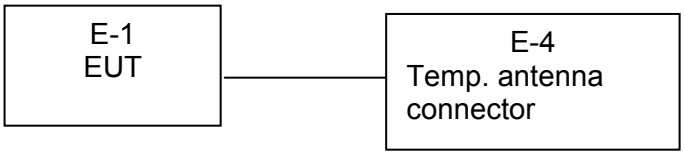
CE



RE



RF conducted measurement



2.5 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
E-1	BLUETOOTH HEADPHONE	N/A	H-02	N/A	EUT
E-2	Notebook	Lenovo	8817		
E-3	Adapter	Lenovo	AP01901500A		
E-4	Temp. antenna connector	DOKMA	KYS-0944	22550510	Impedance=50ohm cable loss=0.9db

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	80cm	
C-2	NO	NO	120cm	

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.
(3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

2.6 EQUIPMENTS LIST FOR ALL TEST ITEMS

NO	Equipment Name	Model	Serial Number	Manufacturer	Cal DUE Date	Cal Period
1	Vector Signal Analyzer	FSV40	100903	R&S	2015.07.30	1 year
2	Bluetooth Tester	CBT32	100584	R&S	2015.07.30	1 year
3	Chamber	FCT5-2.0	4166	ETS-Lindgren	2016.05.29	1 year
4	Spectrum Analyzer	FSP40	100378	R&S	2015.12.20	1 year
5	EMI Measuring Receiver	ESR	101160	R&S	2015.06.26	1 year
6	Bilog Antenna	VULB9160	3206	SCHWARZBECK	2015.12.03	1 year
7	Horn Ant	BBHA 9170	9170-181	Schwarzbeck	2016.05.29	1 year
8	Horn Antenna	BBHA 9120D	452	SCHWARZBECK	2015.12.03	1 year
9	Loop Antenna	HLA6120	35779	TESEQ	2016.05.29	1 year
10	Signal Generator	SMR40	100541	R&S	2015.12.20	1 year
11	Coaxial Switch	MP59B	6200264417	Anritsu	2015.06.26	1 year
12	Preamplifier	MLA-10K01-B01-27	1205323	Tsj	2015.06.26	1 year
13	Preamplifier	MLA-0120-A02-34	2648A04738	Tsj	2015.06.26	1 year
14	Power Mete	ML2487B	110553	Anritsu	2015.07.10	1 year
15	Power Sensor	MA2411B	100345	Anritsu	2015.07.10	1 year
16	RF Cable 30-1000MHz	AIT001	R001	N/A	2015.07.10	1 year
17	RF Cable 1-25GHz	AIT002	R002	N/A	2015.07.10	1 year
18	L.I.S.N.#1	KNW-242	8-837-4	Kyoritsu	2015.06.26	1 year
19	L.I.S.N.#2	KNW-407	8-1789-4	Kyoritsu	2015.06.26	1 year
20	EMI Receiver	ESCI	100124	R&S	2015.06.26	1 year
21	Coaxial Switch	MP59B	6200264416	Anritsu	2015.06.26	1 year
22	Cable 0.09-30MHz	AIT005	C001	N/A	2015.07.10	1 year

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.1.2 TEST PROCEDURE

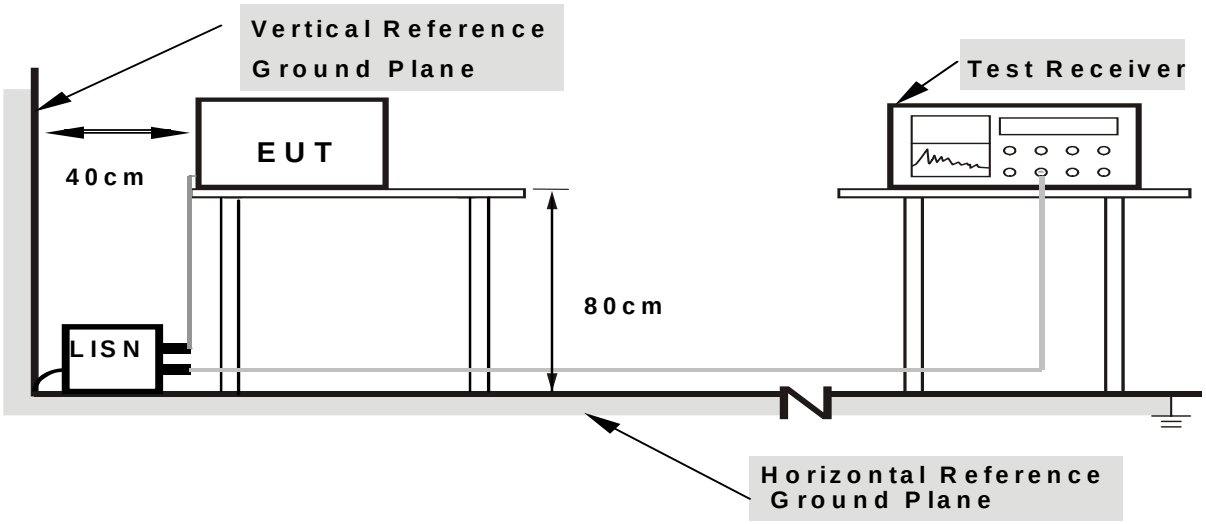
a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:The device can be charged by using the AC adapter(JINLI, M/N:JZ05001000A, Input:100-240V, 50/60Hz, 0.6A, output:DC 5V, 1A) and the laptop, so these 2 charging conditions had been taken into the consideration during the AC power line conducted test. After evaluations, charging device through the laptop is the worstcase and only record the worst case here.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.5 EUT OPERATING CONDITIONS

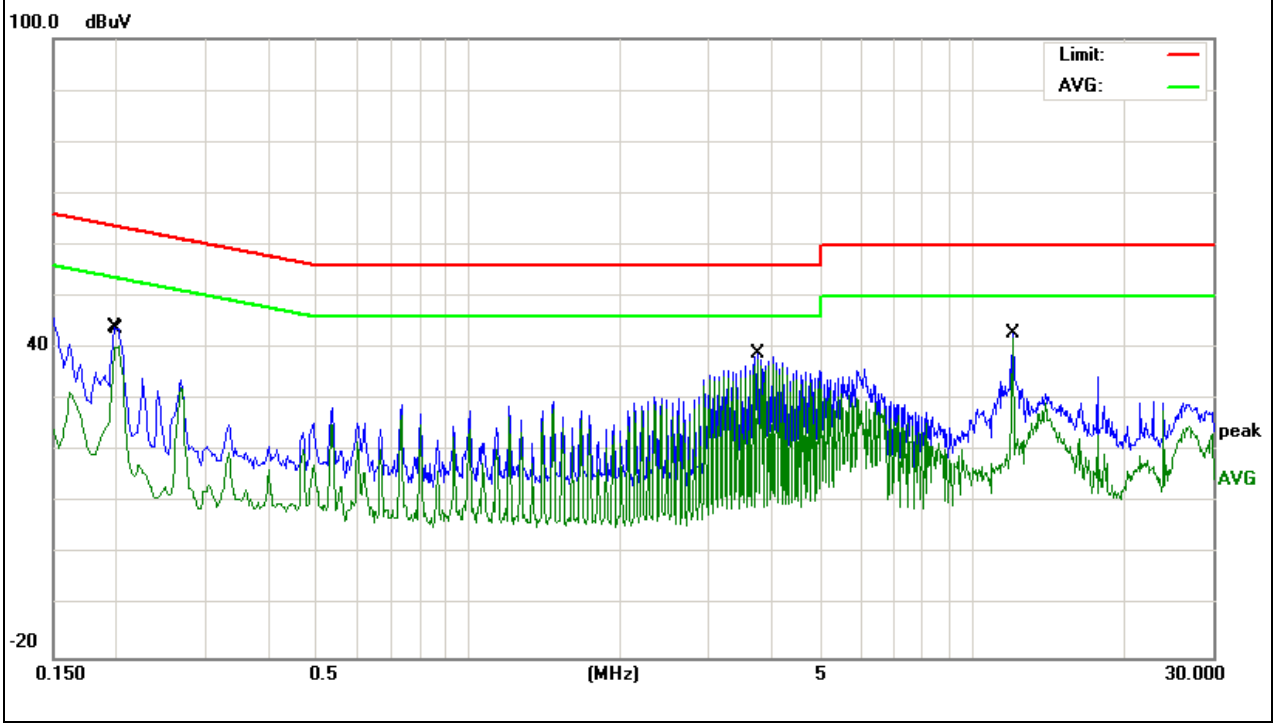
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

3.1.6 TEST RESULTS

EUT：	BLUETOOTH HEADPHONE	Model Name ：	H-02
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	L
Test Voltage ：	DC 5V from Laptop AC 120V/60Hz	Test Mode：	4

Freq. (MHz)	Reading (dBuV)	Factor (dBuV)	Measurement (dBuV)	Limit (dBuV)	Over (dB)	Detector
0.198	33.62	10.44	44.06	63.69	-19.63	QP
0.202	29.92	10.44	40.36	53.52	-13.16	AVG
3.75	28.23	10.62	38.85	56	-17.15	QP
3.75	27.26	10.62	37.88	46	-8.12	AVG
12.0018	32.21	10.69	42.9	60	-17.1	QP
12.0018	31.35	10.69	42.04	50	-7.96	AVG

Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. N/A means All Data have pass Limit

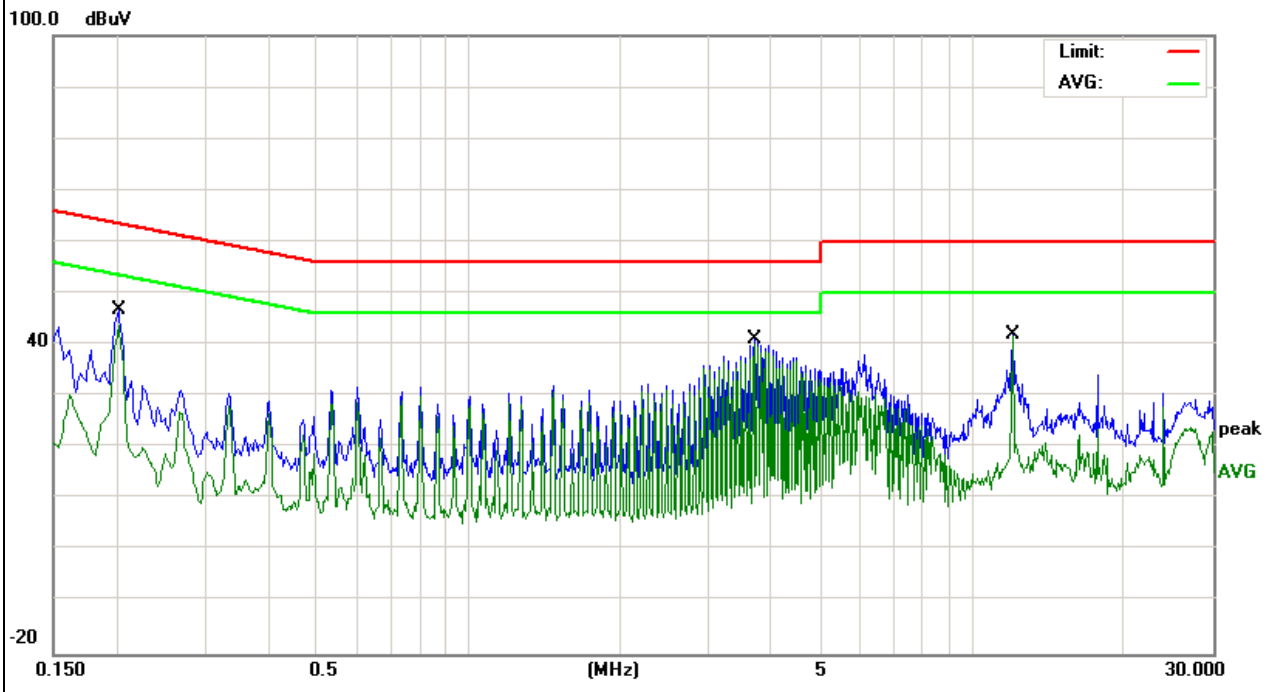


EUT：	BLUETOOTH HEADPHONE	Model Name ：	H-02

EUT：	BLUETOOTH HEADPHONE	Model Name ：	H-02
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	N
Test Voltage ：	DC 5V from Laptop AC 120V/60Hz	Test Mode：	4

Freq. (MHz)	Reading (dBuV)	Factor (dBuV)	Measurement (dBuV)	Limit (dBuV)	Over (dB)	Detector
0.202	36.4	10.43	46.83	63.52	-16.69	QP
0.202	33.41	10.43	43.84	53.52	-9.68	AVG
3.6819	30.48	10.65	41.13	56	-14.87	QP
3.6819	29.42	10.65	40.07	46	-5.93	AVG
12.0018	31.33	10.71	42.04	60	-17.96	QP
12.0018	30.99	10.71	41.7	50	-8.3	AVG

Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. N/A means All Data have pass Limit



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

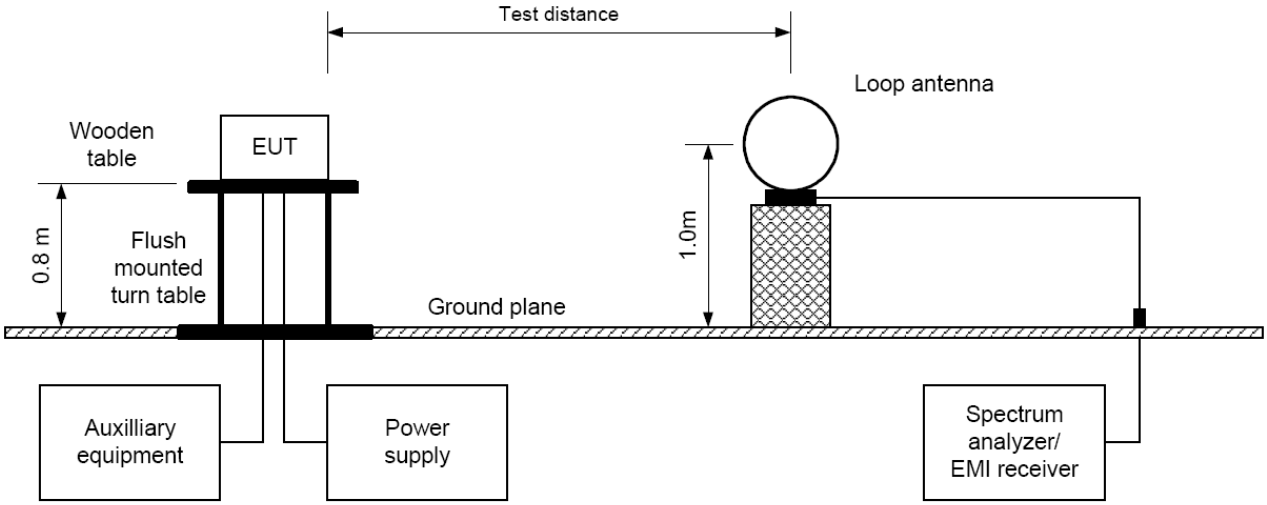
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

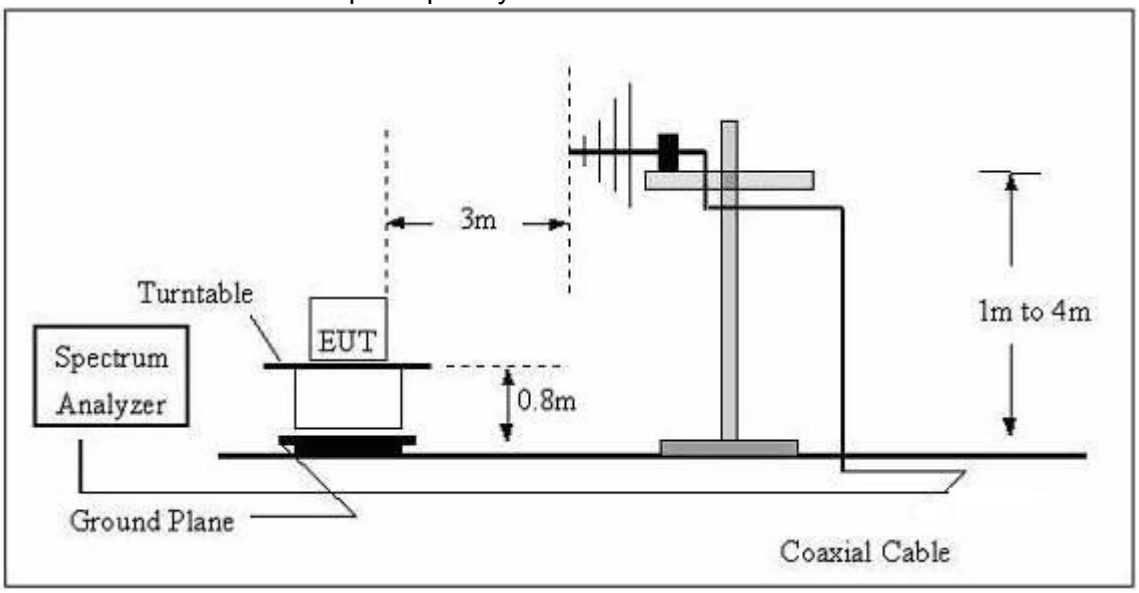
No deviation

3.2.4 TEST SETUP

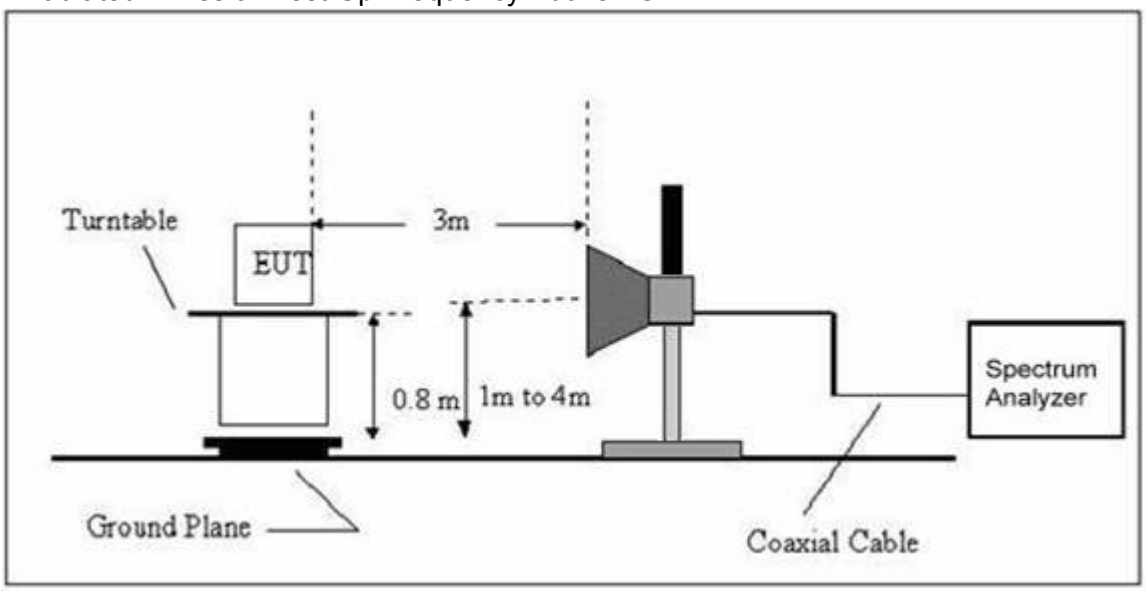
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.6 TEST RESULTS (BELOW 30 MHZ)

EUT：	BLUETOOTH HEADPHONE	Model Name ：	H-02
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	3.7V
Test Mode ：	TX	Polarization :	---

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	P
--	--	--	--	P

NOTE:
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =20 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

3.2.7 TEST RESULTS (BETWEEN 30M – 1000 MHZ)

EUT：	BLUETOOTH HEADPHONE	Model Name ：	H-02
Temperature：	24 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Test Mode：	TX 2402
Test Voltage ：	3.7V		

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
V	51.1208	23.74	8.46	32.2	40	-7.8	QP
V	151.5971	22.75	10.64	33.39	43.5	-10.11	QP
V	294.1136	25.85	12.47	38.32	46	-7.68	QP
V	337.64	21.78	15.74	37.52	46	-8.48	QP
V	421.84	20.84	16.77	37.61	46	-8.39	QP
V	497.85	19.85	17.06	36.91	46	-9.09	QP
H	48.95	21.78	8.75	30.53	40	-9.47	QP
H	115.85	27.85	9.16	37.01	43.5	-6.49	QP
H	184.95	26.96	10.47	37.43	43.5	-6.07	QP
H	239.86	29.75	11.37	41.12	46	-4.88	QP
H	356.48	26.33	13.58	39.91	46	-6.09	QP
H	481.85	24.18	14.74	38.92	46	-7.08	QP

Remark:
Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit

Note: test performed on low/middle/high channel, the worst case is Low channel.

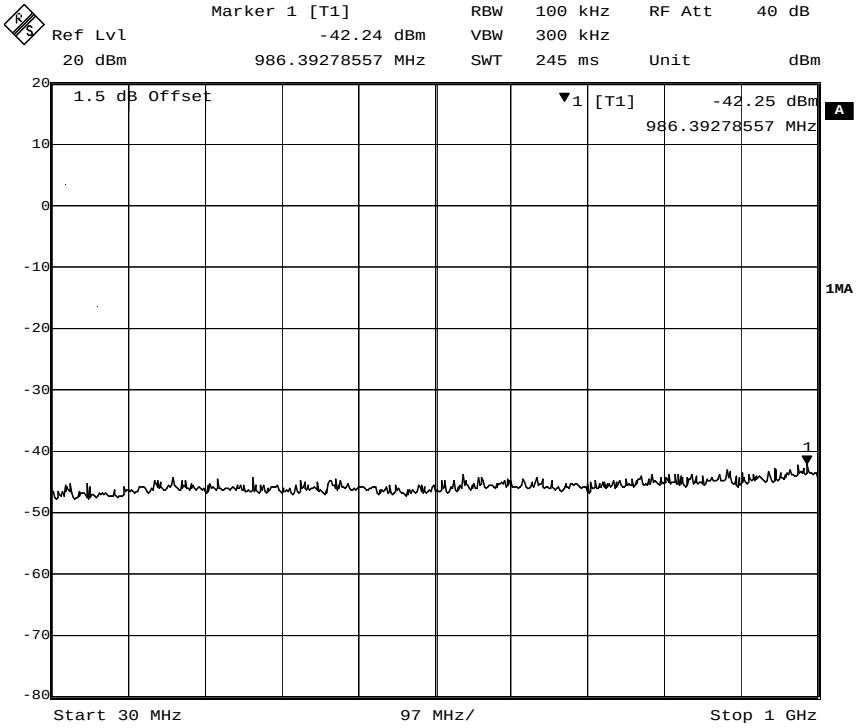
3.2.8 TEST RESULTS (Above 1GHz~ 10th harmonic)

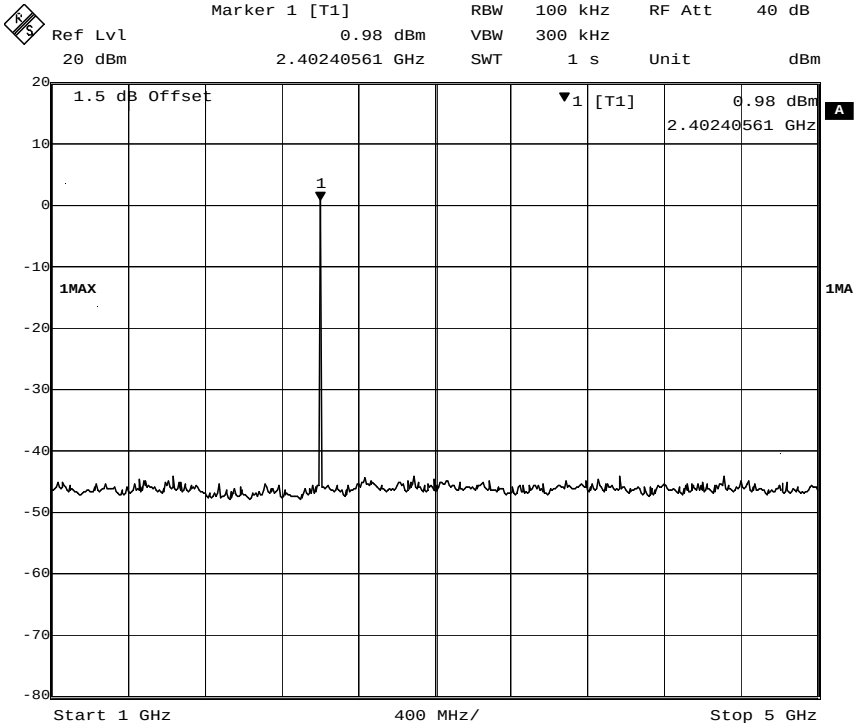
EUT：	BLUETOOTH HEADPHONE	Model Name ：	H-02
Temperature：	24 ℃	Relative Humidity：	48%
Pressure：	1010hPa	Test Mode：	TX
Test Voltage：	3.7V		

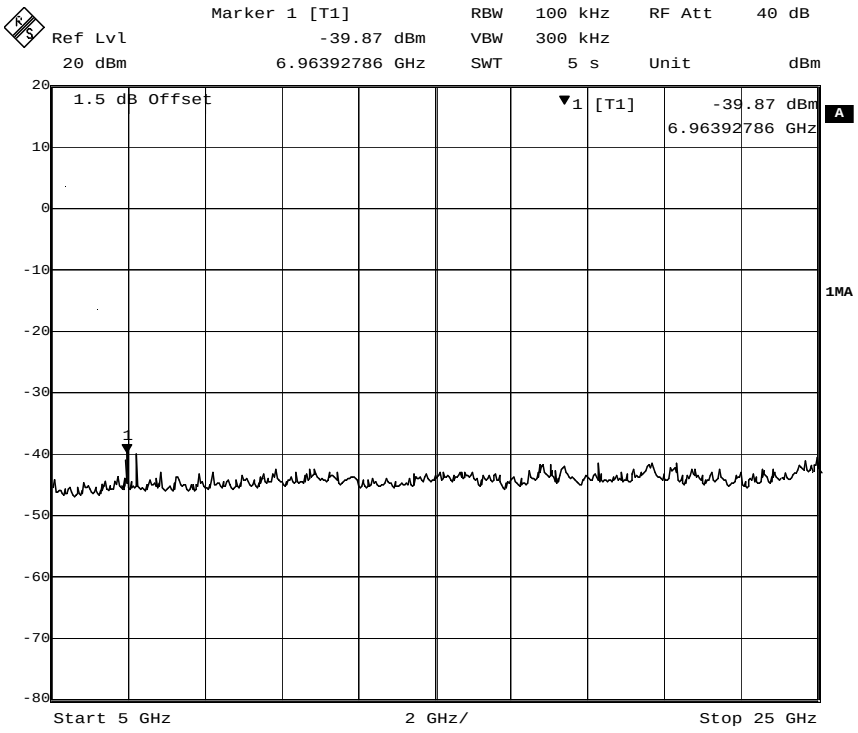
Low Channel (2402 MHz)-Above 1G							
Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detect or Type	Polar (H/V)
4803.64	58.75	-3.16	55.59	74	-18.41	Pk	Vertical
4803.64	47.37	-3.16	44.21	54	-9.79	Av	Vertical
7206.05	59.85	-2.05	57.8	74	-16.2	Pk	Vertical
7206.05	48.73	-2.05	46.68	54	-7.32	Av	Vertical
4804.11	56.85	-3.43	53.42	74	-20.58	Pk	Horizontal
4804.11	44.74	-3.43	41.31	54	-12.69	Av	Horizontal
7206.26	53.84	-2.72	51.12	74	-22.88	Pk	Horizontal
7206.26	41.84	-2.72	39.12	54	-14.88	Av	Horizontal
Mid Channel (2441 MHz)-Above 1G							
4880.22	57.64	-3.73	53.91	74	-20.09	Pk	Vertical
4880.22	48.63	-3.73	44.9	54	-9.1	Av	Vertical
7324.15	56.27	-0.94	55.33	74	-18.67	Pk	Vertical
7324.15	47.47	-0.94	46.53	54	-7.47	Av	Vertical
4881.26	55.38	-3.12	52.26	74	-21.74	Pk	Horizontal
4881.26	46.673	-3.12	43.553	54	-10.447	Av	Horizontal
7324.17	51.57	-0.97	50.6	74	-23.4	Pk	Horizontal
7324.17	43.74	-0.97	42.77	54	-11.23	Av	Horizontal
High Channel (2480MHz)- Above 1G							
4960.35	58.74	-3.67	55.07	74	-18.93	Pk	Vertical
4960.35	46.38	-3.67	42.71	54	-11.29	Av	Vertical
7440.12	54.27	-0.73	53.54	74	-20.46	Pk	Vertical
7440.12	46.74	-0.73	46.01	54	-7.99	Av	Vertical
4960.23	52.17	-3.47	48.7	74	-25.3	Pk	Horizontal
4960.23	44.73	-3.47	41.26	54	-12.74	Av	Horizontal
7440.28	50.63	-0.54	50.09	74	-23.91	Pk	Horizontal
7440.28	43.27	-0.54	42.73	54	-11.27	Av	Horizontal

Conducted Spurious Emissions at Antenna Port
(there are 150001 points are used for each measurement plot)

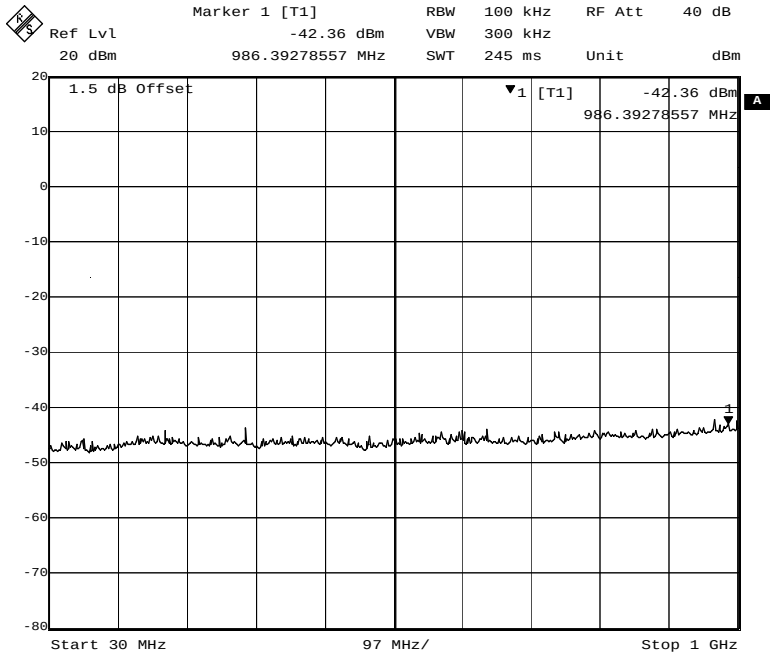
CH00

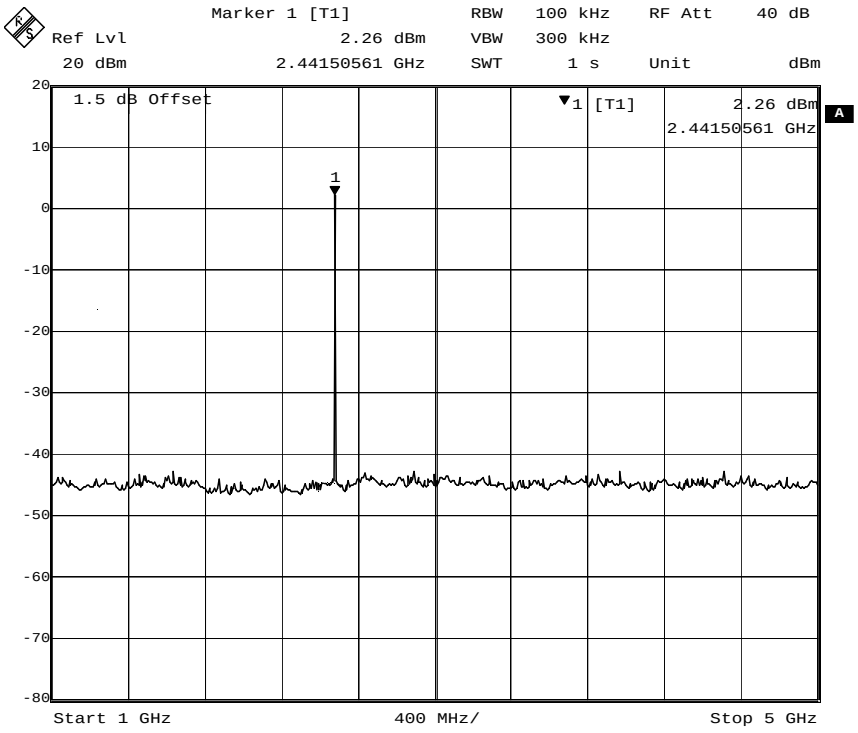


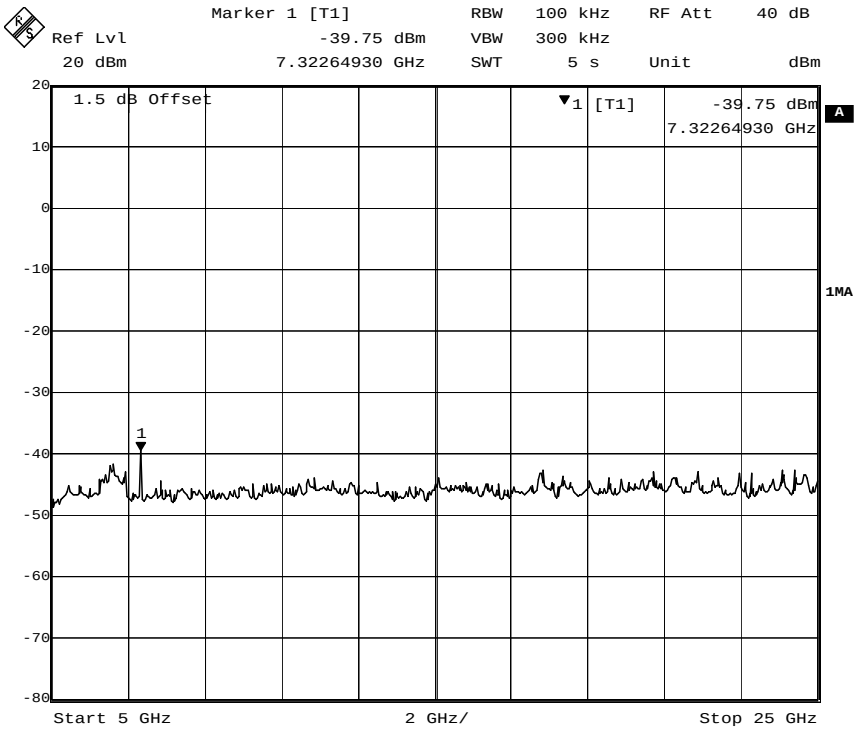




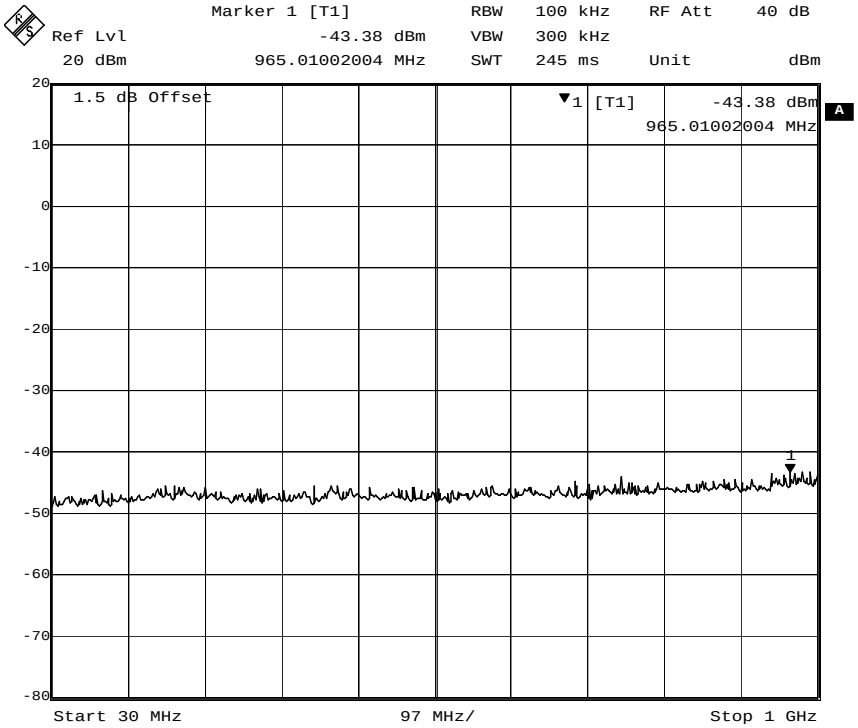
CH39

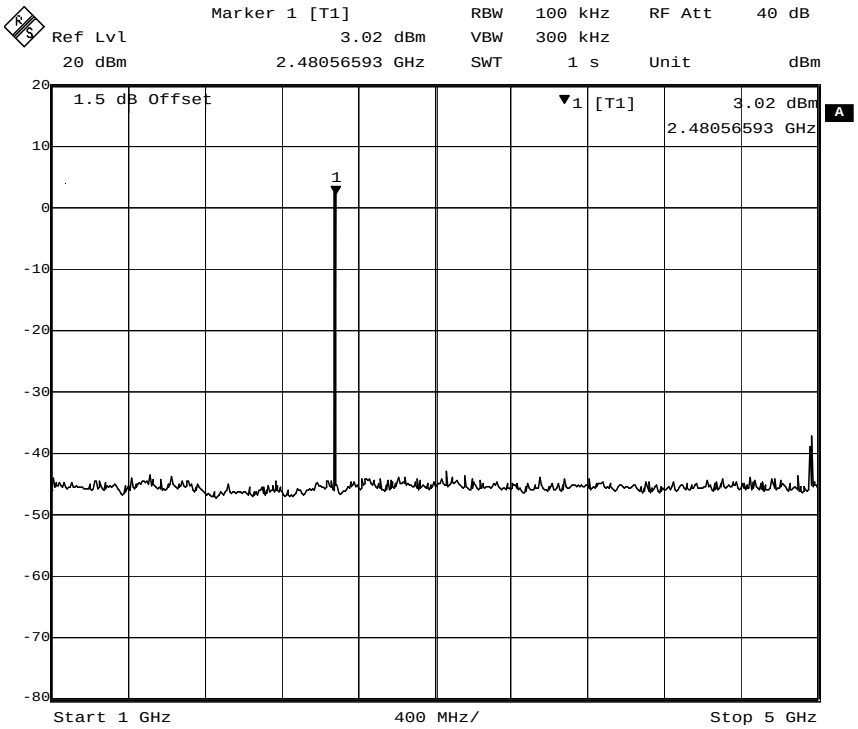


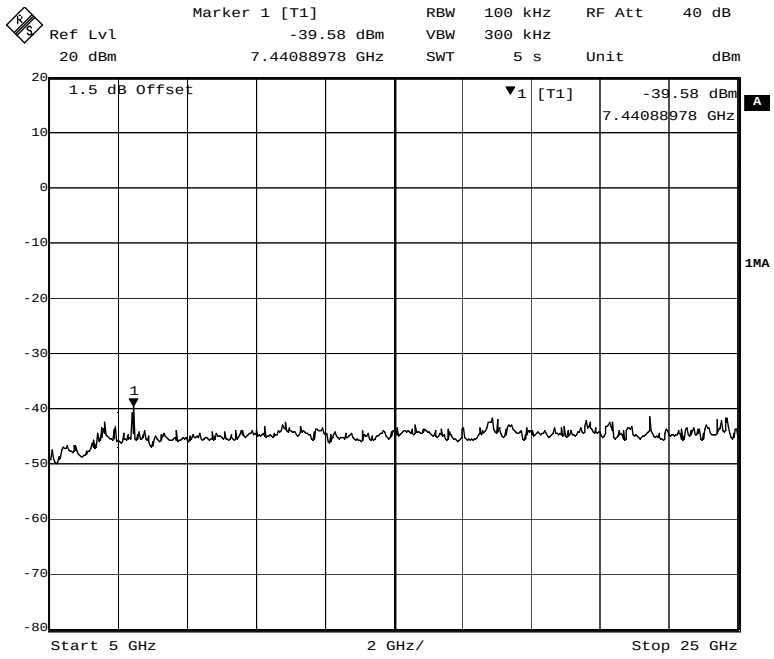




CH78







4. NUMBER OF HOPPING CHANNEL

4.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (a)(1)(iii)	Number of Hopping Channel	≥15	2400-2483.5	PASS

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	= the frequency band of operation
RB	RBW=500kHz
VB	VBW ≥ RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

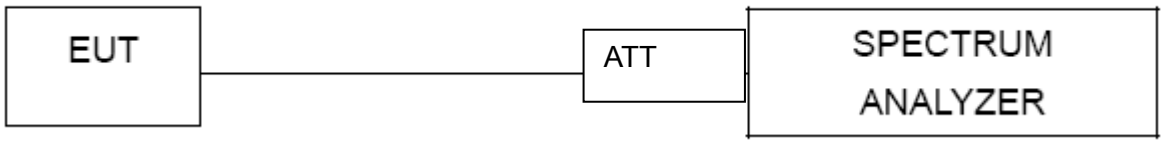
4.1.1 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW= 500kHz, VBW=1000kHz, Sweep time = Auto.

4.1.2 DEVIATION FROM STANDARD

No deviation.

4.1.3 TEST SETUP



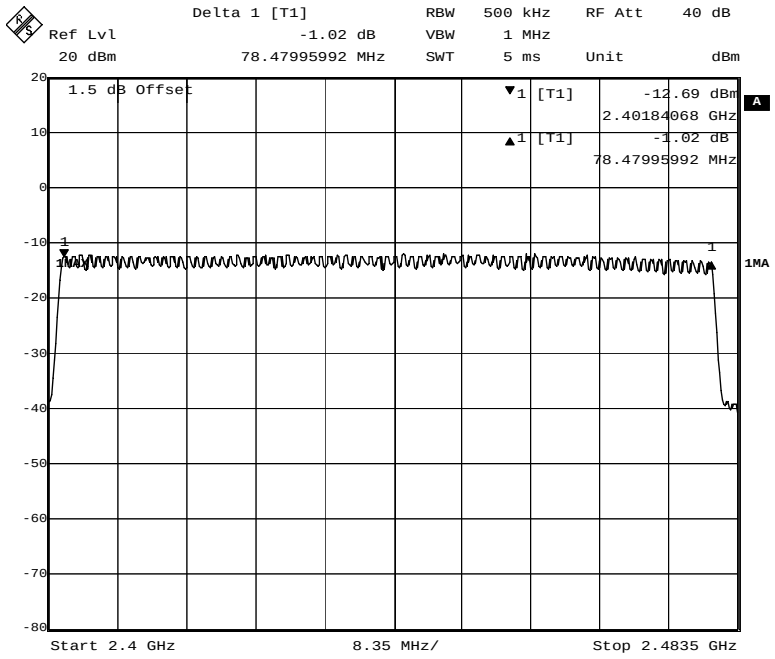
4.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

4.1.5 TEST RESULTS

EUT：	BLUETOOTH HEADPHONE	Model Name ：	H-02
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1015 hPa	Test Voltage ：	3.7V
Test Mode ：	Hopping Mode		

Number of Hopping Channel	79



5. AVERAGE TIME OF OCCUPANCY

5.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (a)(1)(iii)	Average Time of Occupancy	0.4sec	2400-2483.5	PASS

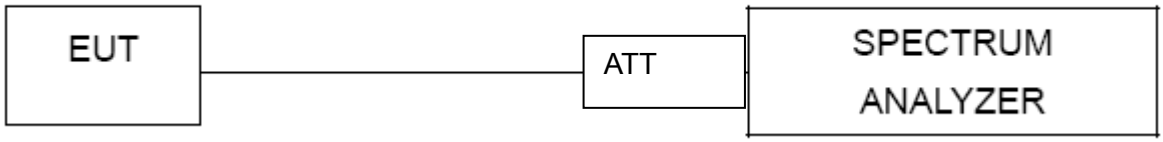
5.1.1 TEST PROCEDURE

a. The transmitter output (antenna port) was connected to the spectrum analyzer
b. Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
c. Use a video trigger with the trigger level set to enable triggering only on full pulses.
d. Sweep Time is more than once pulse time.
e. Set the center frequency on any frequency would be measure and set the frequency span to zero span.
f. Measure the maximum time duration of one single pulse.
h. Measure the maximum time duration of one single pulse.

5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP



5.1.4 EUT OPERATION CONDITIONS

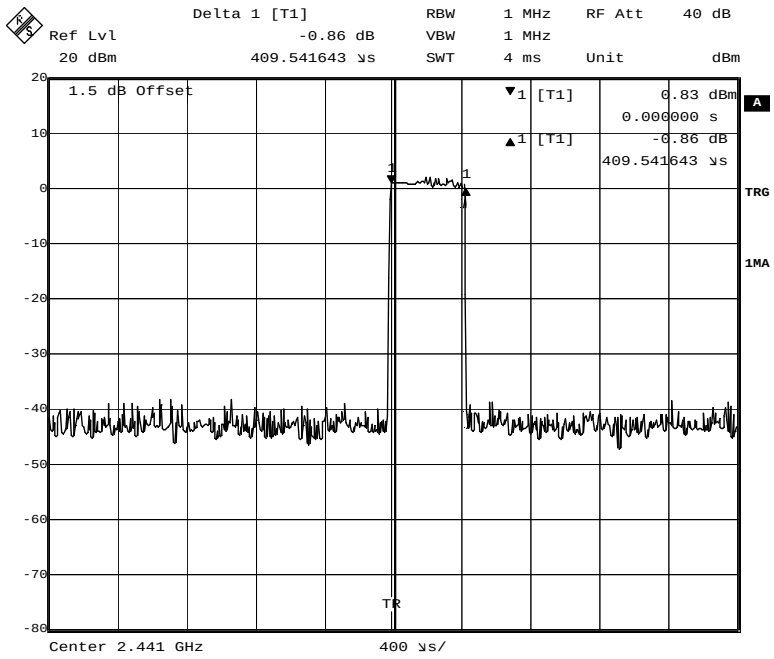
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

5.1.5 TEST RESULTS

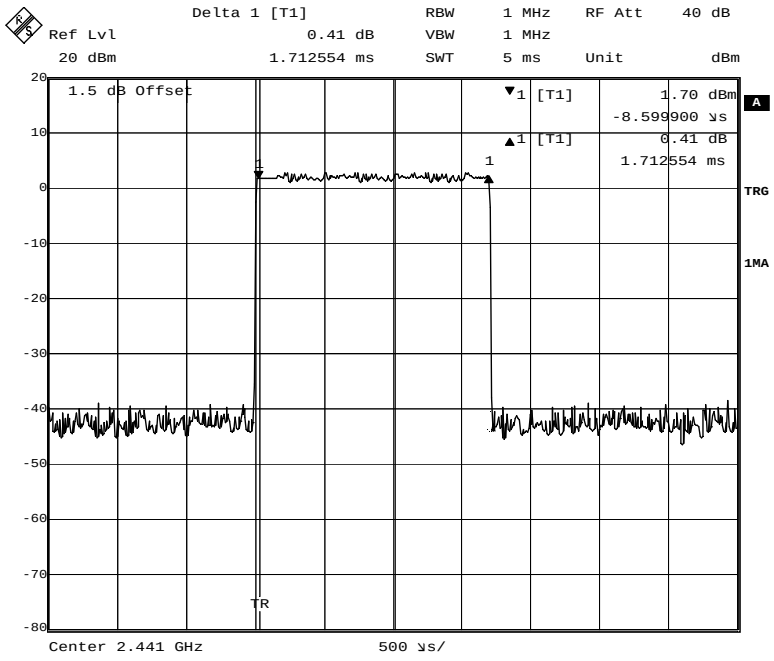
EUT：	BLUETOOTH HEADPHONE	Model Name ：	H-02
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	3.7V
Test Mode ：	TX		

Data rate	Frequency	Plus Duration（ms）	Dwell Time（s）	Limits（s）
DH1	2441MHz	0.409	0.130	0.4
DH3	2441MHz	1.713	0.284	0.4
DH5	2441MHz	2.904	0.309	0.4

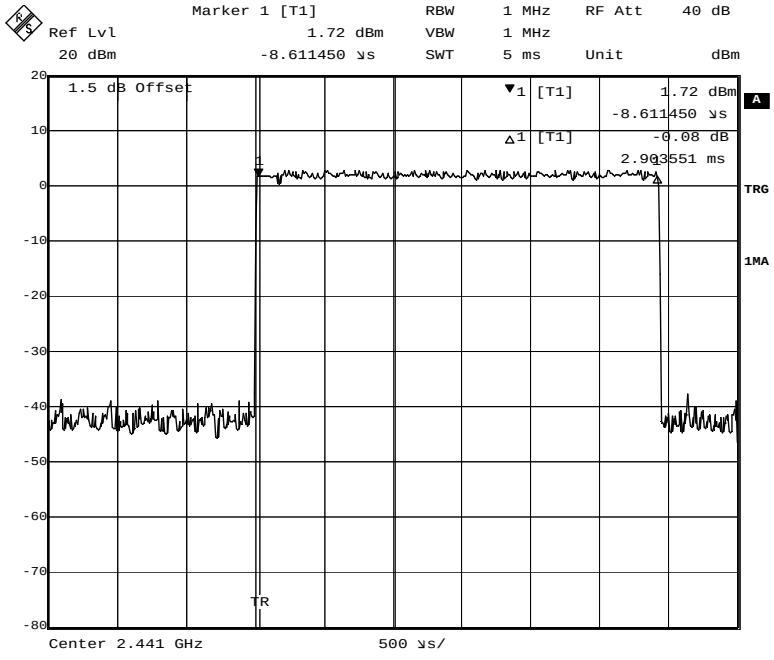
DH1



DH3



DH5



6. HOPPING CHANNEL SEPARATION MEASUREMENT

6.1 APPLIED PROCEDURES / LIMIT

Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	30kHz
VB	100kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

6.1.1 TEST PROCEDURE

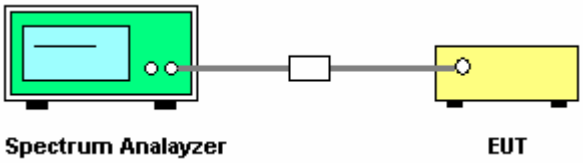
a. The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.

b. The resolution bandwidth of 30 kHz and the video bandwidth of 100 kHz were utilised for channel separation measurement.

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

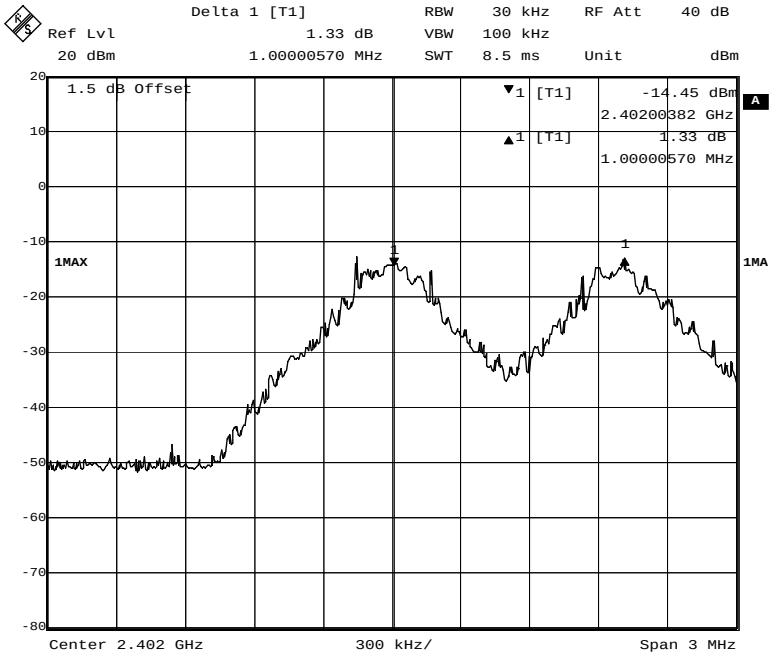
6.1.5 TEST RESULTS

EUT：	BLUETOOTH HEADPHONE	Model Name ：	H-02
Temperature：	24 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	3.7V
Test Mode ：	CH00 / CH39 /CH78 (1Mbps Mode)		

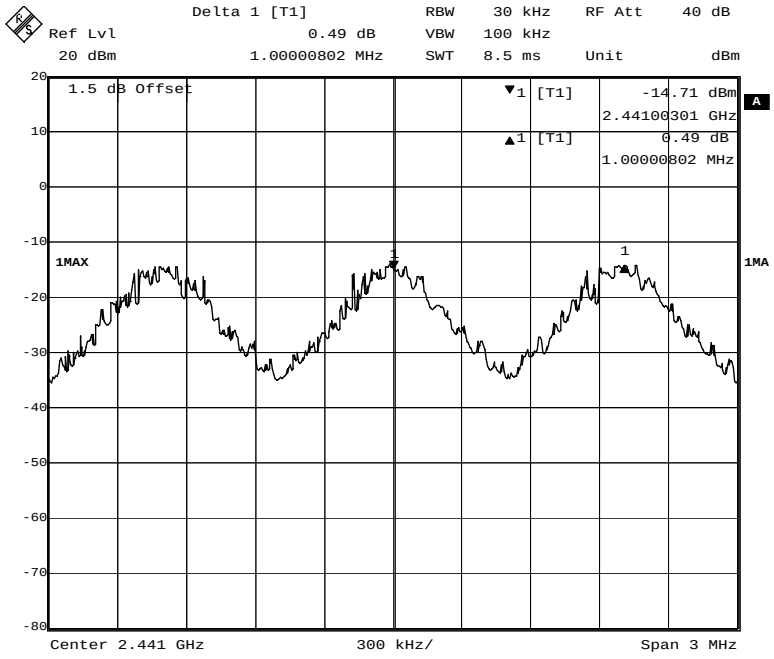
Frequency	Ch. Separation (MHz)	Result
2402 MHz	1.000	**Complies**
2441 MHz	1.000	**Complies**
2480 MHz	1.008	**Complies**

Ch. Separation Limits: >20dB bandwidth

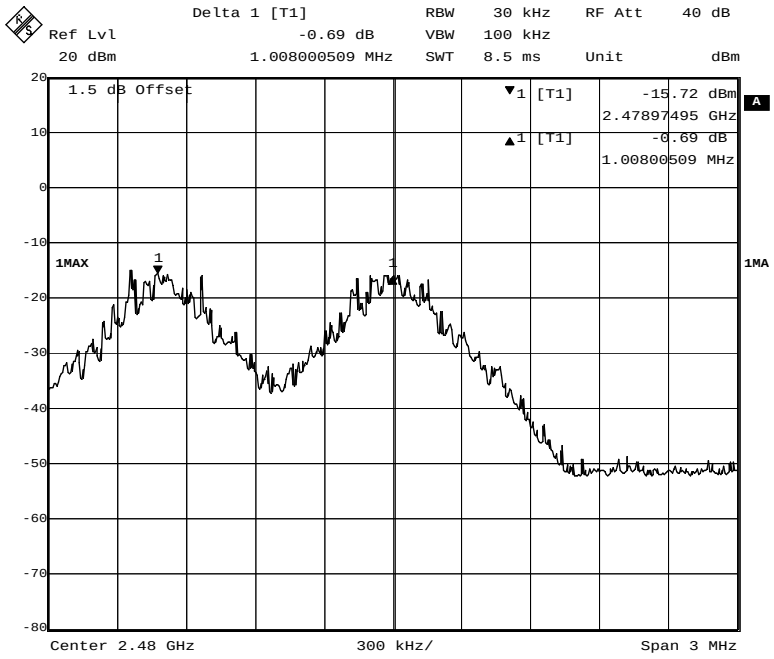
CH00 -1Mbps



CH39 -1Mbps



CH78 -1Mbps



7. BANDWIDTH TEST

7.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (a)(1)	Bandwidth	(20dB bandwidth)	2400-2483.5	PASS

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	30kHz
VB	100kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

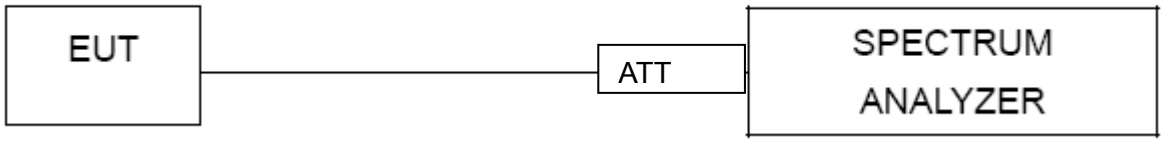
7.1.1 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW= 30KHz, VBW=100KHz, Sweep time = Auto.

7.1.2 DEVIATION FROM STANDARD

No deviation.

7.1.3 TEST SETUP



7.1.4 EUT OPERATION CONDITIONS

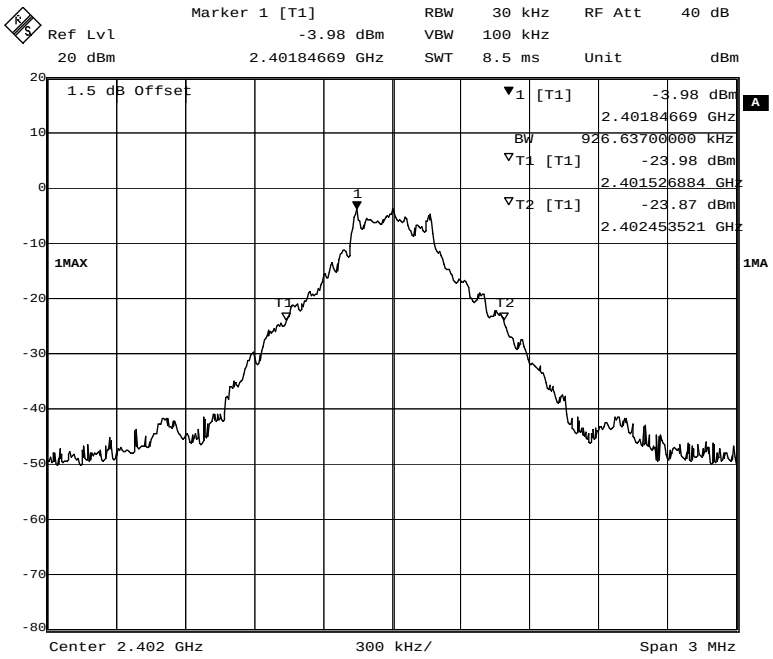
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

7.1.5 TEST RESULTS

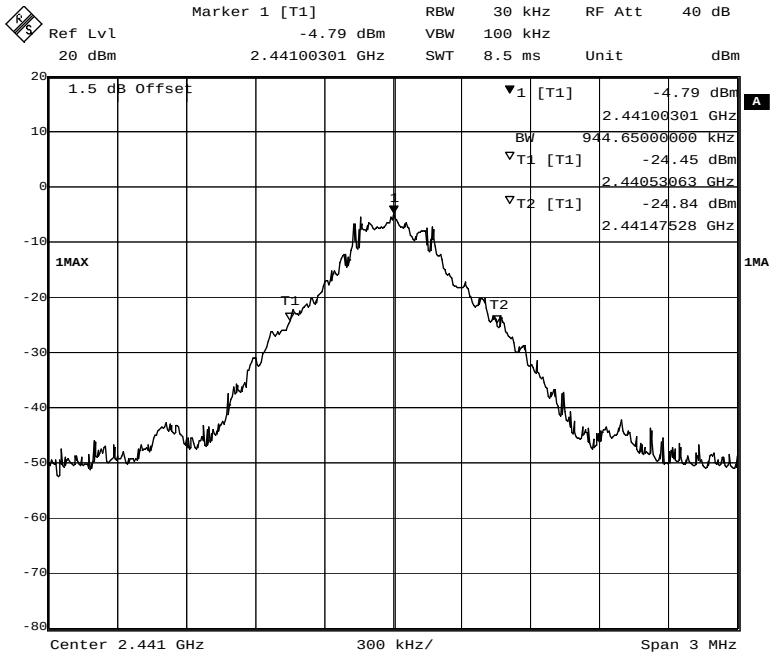
EUT：	BLUETOOTH HEADPHONE	Model Name ：	H-02
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	3.7V
Test Mode ：	CH00 / CH39 /C78**(1Mbps)**		

Frequency	20dB Bandwidth (MHz)	Result
2402 MHz	0.927	**PASS**
2441 MHz	0.945	**PASS**
2480 MHz	0.921	**PASS**

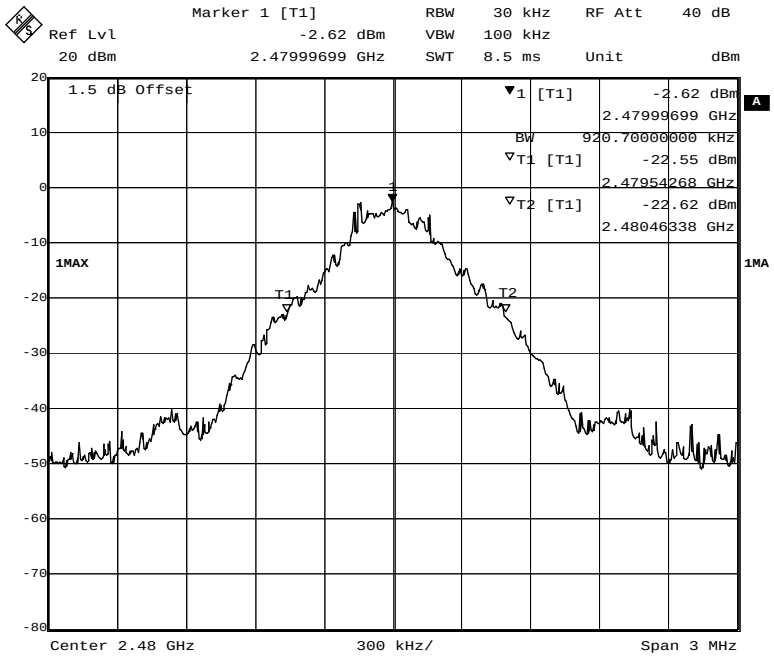
CH00 -1Mbps



CH39 -1Mbps



CH78 -1Mbps



8. PEAK OUTPUT POWER TEST

8.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (b)(i)	Peak Output Power	0.125 w or 1w	2400-2483.5	PASS

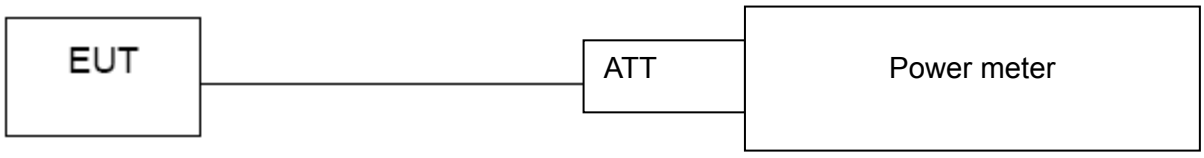
8.1.1 TEST PROCEDURE

a. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Power Meter.

8.1.2 DEVIATION FROM STANDARD

No deviation.

8.1.3 TEST SETUP



8.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

8.1.5 TEST RESULTS

EUT：	BLUETOOTH HEADPHONE	Model Name ：	H-02
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	3.7V
Test Mode ：	CH00/ CH39 /CH78		

Note: The relevant measured result has the offset with cable loss already.

1Mbps			
Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)
CH00	2402	3.25	30
CH39	2440	3.03	30
CH78	2480	3.17	30

9. 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE

APPLICABLE STANDARD

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

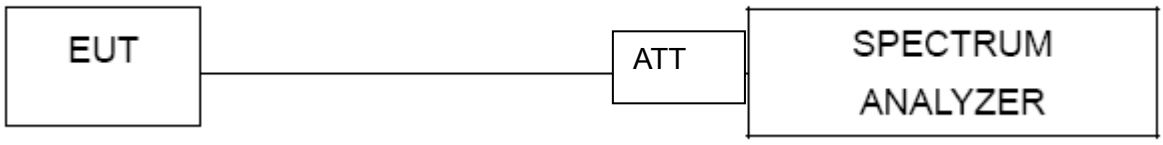
TEST PROCEDURE

a) Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
b) Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
c) Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
d) Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
e) Repeat above procedures until all measured frequencies were complete.

9.1 DEVIATION FROM STANDARD

No deviation.

9.2 TEST SETUP



9.3 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

9.4 TEST RESULTS

EUT：	BLUETOOTH HEADPHONE	Model Name ：	H-02
Temperature：	24 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	3.7V

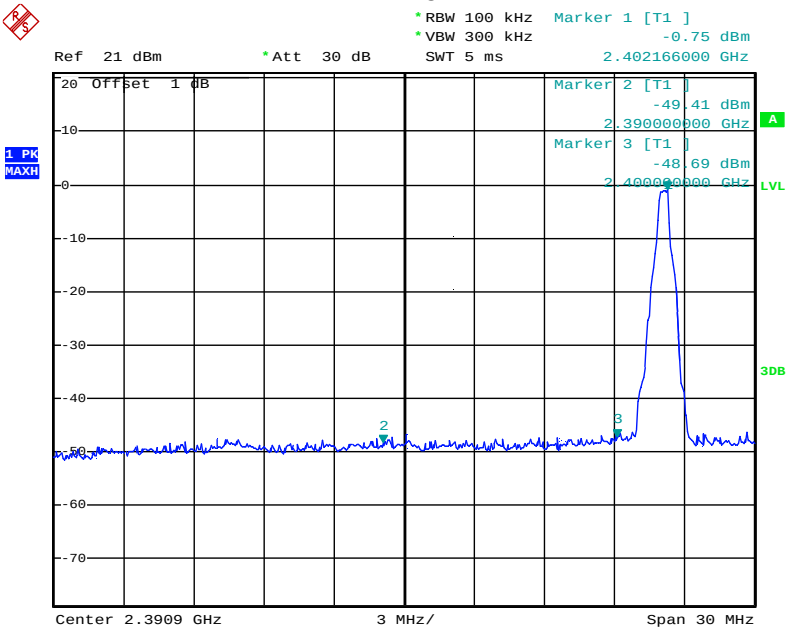
Frequency Band	Delta Peak to band emission (dBc)	＞Limit (dBc)	Result
1Mbps Non-hopping			
Left-band	48.66	20	Pass
Right-band	47.45	20	Pass
1Mbps hopping			
Left-band	47.47	20	Pass
Right-band	46.97	20	Pass

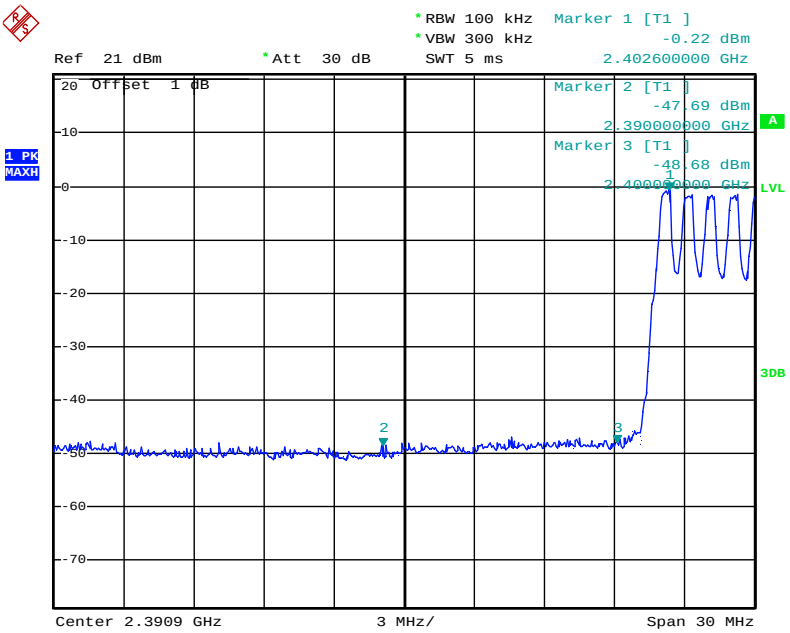
Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
1Mbps Non-hopping							
2390	57.37	-13.06	44.31	54	-9.69	peak	Vertical
2390	55.28	-13.06	42.22	54	-11.78	peak	Horizontal
2483.5	56.94	-12.78	44.16	54	-9.84	peak	Vertical
2483.5	54.18	-12.78	41.4	54	-12.6	peak	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
1Mbps hopping							
2390	55.27	-13.06	42.21	54	-11.79	peak	Vertical
2390	54.95	-13.06	41.89	54	-12.11	peak	Horizontal
2483.5	55.38	-12.78	42.6	54	-11.4	peak	Vertical
2483.5	53.89	-12.78	41.11	54	-12.89	peak	Horizontal

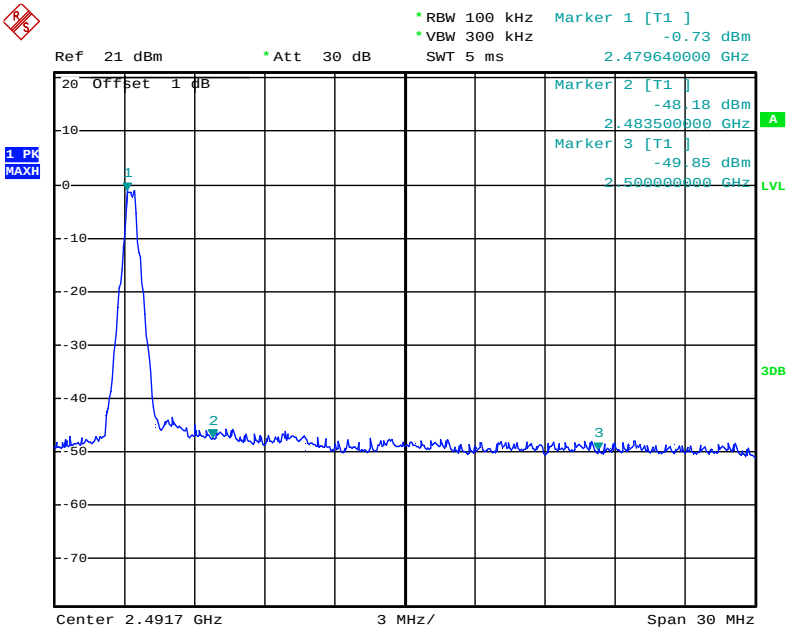
Note: Test method to see chapter 3.2 . When PK value is lower than the Average value limit, average didn't record.

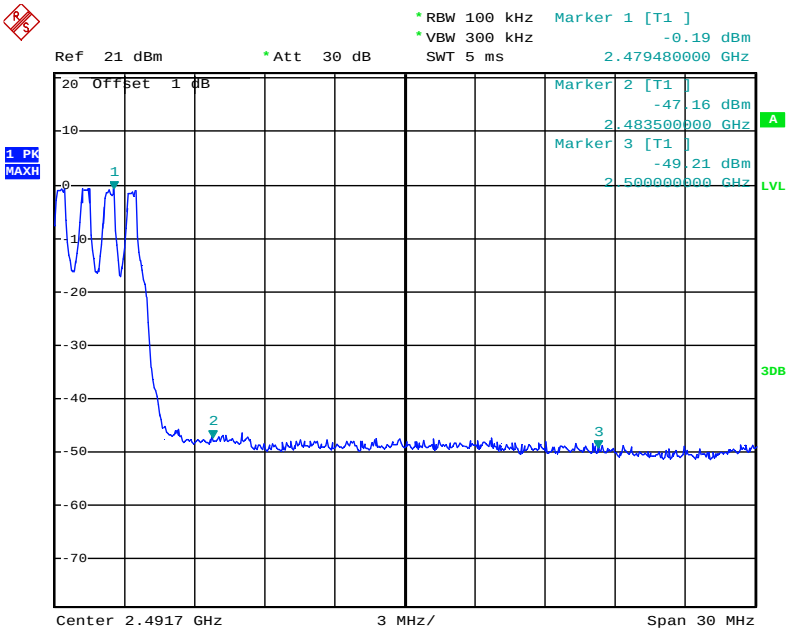
Band Edge, Left Side





Band Edge, Right Side





10. ANTENNA REQUIREMENT

10.1 STANDARD REQUIREMENT

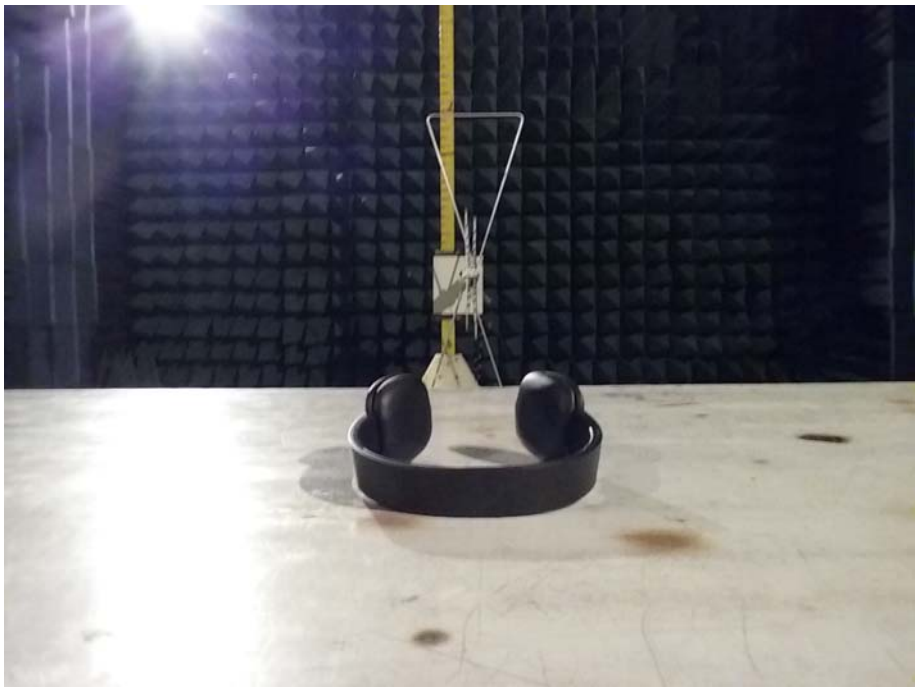
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

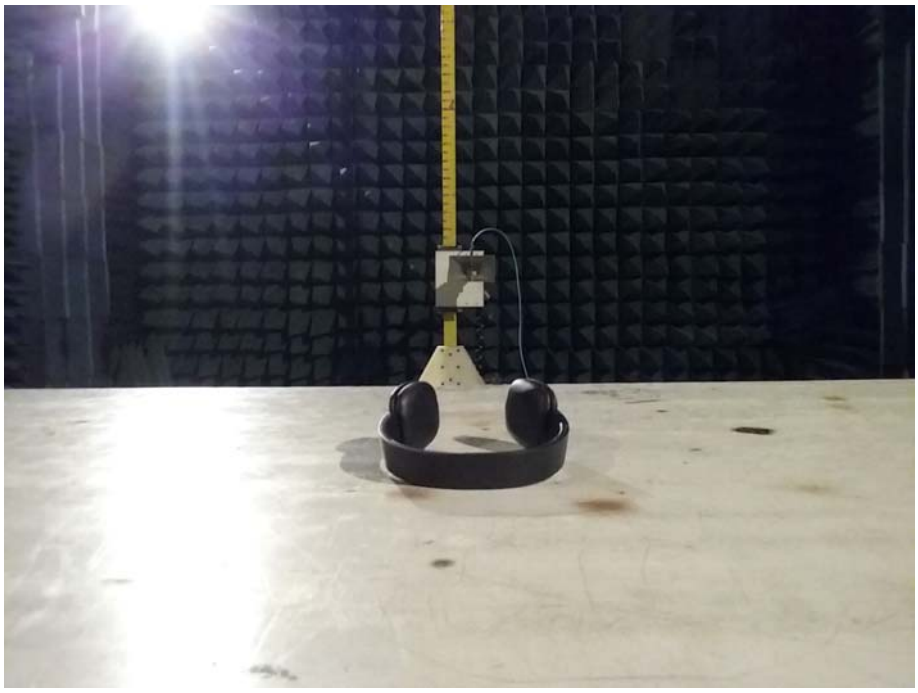
10.2 EUT ANTENNA

The EUT antenna is PCB antenna. It comply with the standard requirement.

11. EUT TEST PHOTO

Radiated Measurement Photos





Conducted Measurement Photos