APPLICATION CERTIFICATION FCC Part 15C
On Behalf of

Avantree Technology Co., Ltd.

ANC Headphones
Model No.: BTHS-ANC032

FCC ID: 2AITF-BTHS-ANC032

Prepared for	:	Avantree Technology Co., Ltd.
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Report No.	:	ATE20181482
Date of Test	:	August 13, 2018
Date of Report	:	August 14, 2018

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Test Report Certification

Applicant	:	Avantree Technology Co., Ltd.
Manufacturer	:	Avantree Technology Co., Ltd.
EUT Description	:	ANC Headphones
Model No.	:	BTHS-ANC032
Trade Name	:	Avantree

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247: 2018
ANSI C63.10: 2013

The device described above is tested by Shenzhen Accurate Technology Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.247 limits. The measurement results are contained in this test report and Shenzhen Accurate Technology Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Shenzhen Accurate Technology Co., Ltd.

Date of Test : August 13, 2018
Date of Report : August 14, 2018

Test Engineer : (Bob Wang, Engineer)

Prepared by : (Bob Wang, Engineer)

Approved & Authorized Signer : (Sean Liu, Manager)

1. GENERAL INFORMATION

1.1.Description of Device (EUT)

Model Number	:	BTHS-ANC032
Bluetooth version	:	V 4.1 This report is for BT classic mode
Frequency Range	:	2402MHz-2480MHz
Number of Channels	:	79
Antenna Gain(Max)	:	2.5dBi
Antenna type	:	PCB antenna
Adapter Input Voltage	:	DC 3.7V (Powered by battery) or DC 5V (Powered by USB port)
Rated Voltage	:	DC 3.7V Battery
Battery Capacity	:	350 mAh
Modulation mode	:	GFSK, π/4 DQPSK, 8DPSK
Hardware version	:	V08
software version	:	V1.0
Applicant	:	Avantree Technology Co., Ltd.
Address	:	The 4th Floor, Yuepeng Building, No.1019 Jiabin Rd, Luohu District, Shenzhen, China
Manufacturer	:	Avantree Technology Co., Ltd.
Address	:	The 4th Floor, Yuepeng Building, No.1019 Jiabin Rd, Luohu District, Shenzhen, China

1.2.Accessory and Auxiliary Equipment

AC/DC Power Adapter: (provided by laboratory)	:	Model:TEKA006-0501000UKU
		Input: 100-240V~50/60Hz 0.3A
		Output: DC 5V/1A

1.3.Description of Test Facility

EMC Lab	:	Recognition of accreditation by Federal Communications Commission (FCC) The Designation Number is CN1189 The Registration Number is 708358 Listed by Innovation, Science and Economic Development Canada (ISEDC) The Registration Number is 5077A-2 Accredited by China National Accreditation Service for Conformity Assessment (CNAS) The Registration Number is CNAS L3193 Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 4297.01
Name of Firm	:	Shenzhen Accurate Technology Co., Ltd.
Site Location	:	1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

1.4.Measurement Uncertainty

Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty (9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty (30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty (Above 1GHz)	=	4.06dB, k=2

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated dates	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 06, 2018	1 Year
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 06, 2018	1 Year
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 06, 2018	1 Year
Pre-Amplifier	Rohde&Schwarz	CBLU1183540-01	3791	Jan. 06, 2018	1 Year
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 06, 2018	1 Year
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 06, 2018	1 Year
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 06, 2018	1 Year
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 06, 2018	1 Year
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 06, 2018	1 Year
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 06, 2018	1 Year
Highpass Filter	Wainwright Instruments	WHKX3.6/18G-10SS	N/A	Jan. 06, 2018	1 Year
Band Reject Filter	Wainwright Instruments	WRCG2400/2485-2375/2510-60/11SS	N/A	Jan. 06, 2018	1 Year
RF COAXIAL CABLE	SUHNER	N-5m(Frequency range:9KHz-26.5GHz)	NO.3	Jan. 06, 2018	1 Year
RF COAXIAL CABLE	SUHNER	N-5m(Frequency range:9KHz-26.5GHz)	NO.4	Jan. 06, 2018	1 Year
RF COAXIAL CABLE	SUHNER	N-1m(Frequency range:9KHz-26.5GHz)	NO.5	Jan. 06, 2018	1 Year
RF COAXIAL CABLE	SUHNER	N-1m(Frequency range:9KHz-26.5GHz)	NO.6	Jan. 06, 2018	1 Year
Temporary antenna connector	NTGS	14AE	N/A	March 21, 2018	N/A

Note: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

3. OPERATION OF EUT DURING TESTING

3.1.Operating Mode

The mode is used: Transmitting mode
Low Channel: 2402MHz
Middle Channel: 2441MHz
High Channel: 2480MHz
Hopping

Note: The equipment under test (EUT) was tested under fully-charged battery.
The Bluetooth has been tested under continuous transmission mode.

3.2.Configuration and peripherals

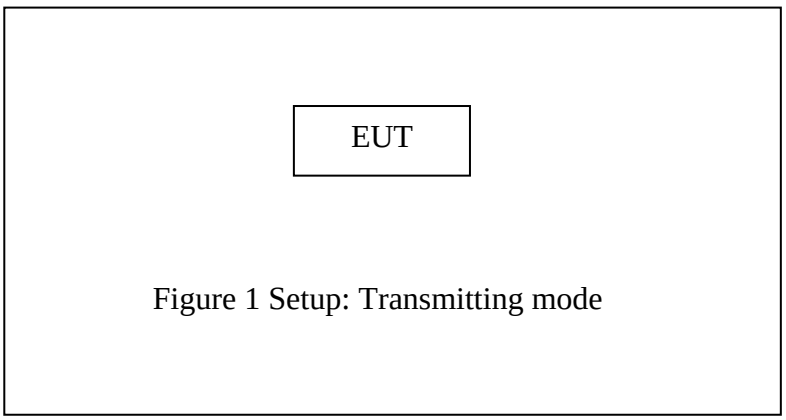


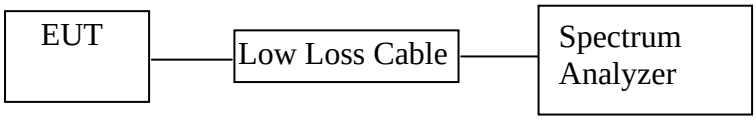
Figure 1 Setup: Transmitting mode

4. TEST PROCEDURES AND RESULTS

FCC Rules	Description of Test	Result
Section 15.207	Conducted Emission Test	Compliant
Section 15.247(a)(1)	20dB Bandwidth Test	Compliant
Section 15.247(a)(1)	Carrier Frequency Separation Test	Compliant
Section 15.247(a)(1)(iii)	Number Of Hopping Frequency Test	Compliant
Section 15.247(a)(1)(iii)	Dwell Time Test	Compliant
Section 15.247(b)(1)	Maximum Peak Output Power Test	Compliant
Section 15.247(d) Section 15.209	Radiated Emission Test	Compliant
Section 15.247(d)	Band Edge Compliance Test	Compliant
Section 15.203	Antenna Requirement	Compliant

5. 20DB BANDWIDTH TEST

5.1.Block Diagram of Test Setup



(EUT: ANC Headphones)

5.2.The Requirement For Section 15.247(a)(1)

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

5.3.EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

5.4.Operating Condition of EUT

5.4.1.Setup the EUT and simulator as shown as Section 5.1.

5.4.2.Turn on the power of all equipment.

5.4.3.Let the EUT work in TX (Hopping off) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

5.5.Test Procedure

5.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.

5.5.2.Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz.

5.5.3.The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

5.6.Test Result

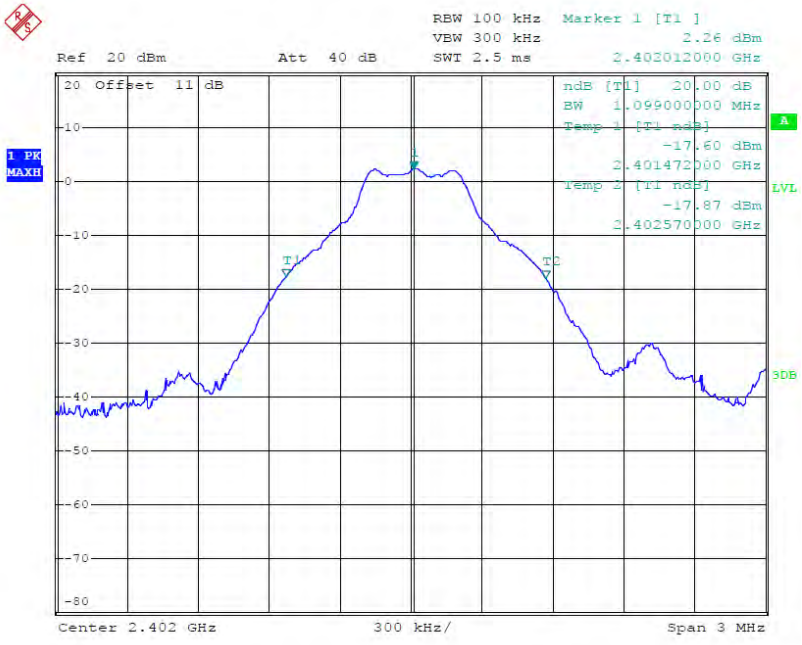
Test Lab: Shielding room
Test Engineer: Bob

Channel	Frequency (MHz)	GFSK 20dB Bandwidth (MHz)	Π/4-DQPSK 20dB Bandwidth (MHz)	8DPSK 20dB Bandwidth (MHz)	Result
Low	2402	1.099	1.363	1.351	Pass
Middle	2441	1.099	1.355	1.343	Pass
High	2480	1.111	1.355	1.343	Pass

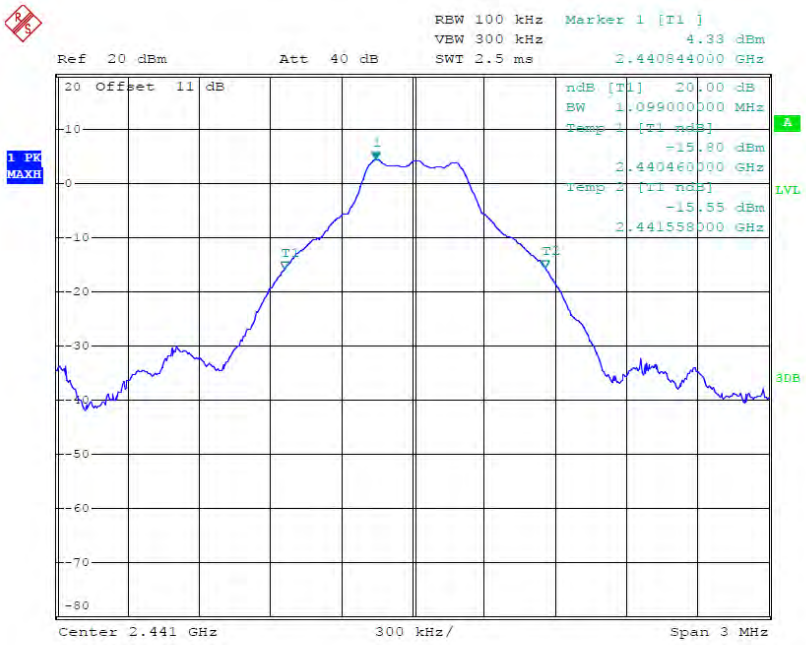
The spectrum analyzer plots are attached as below.

GFSK Mode

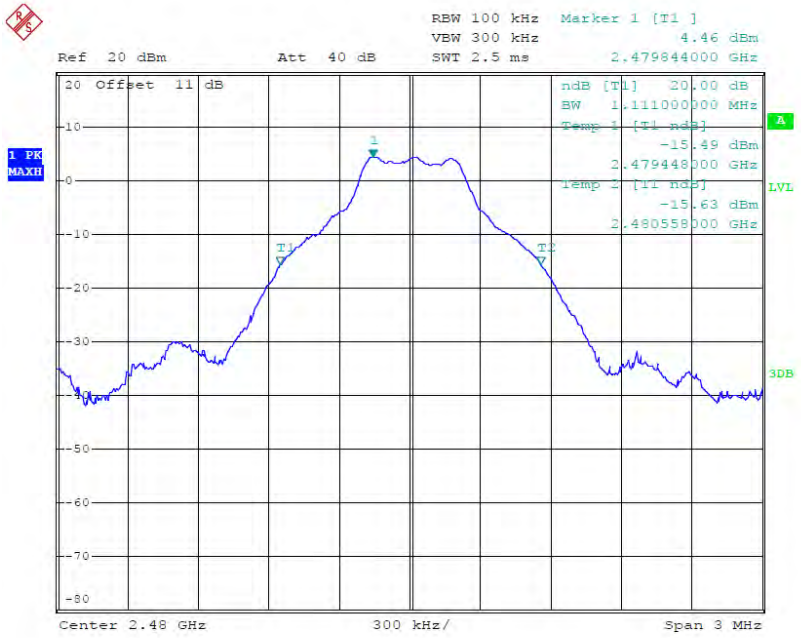
Low channel



Middle channel

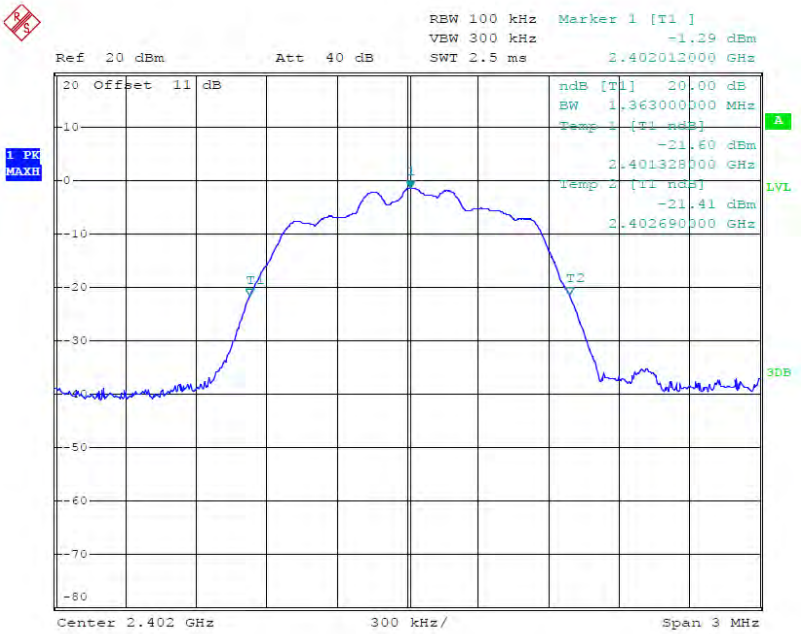


High channel

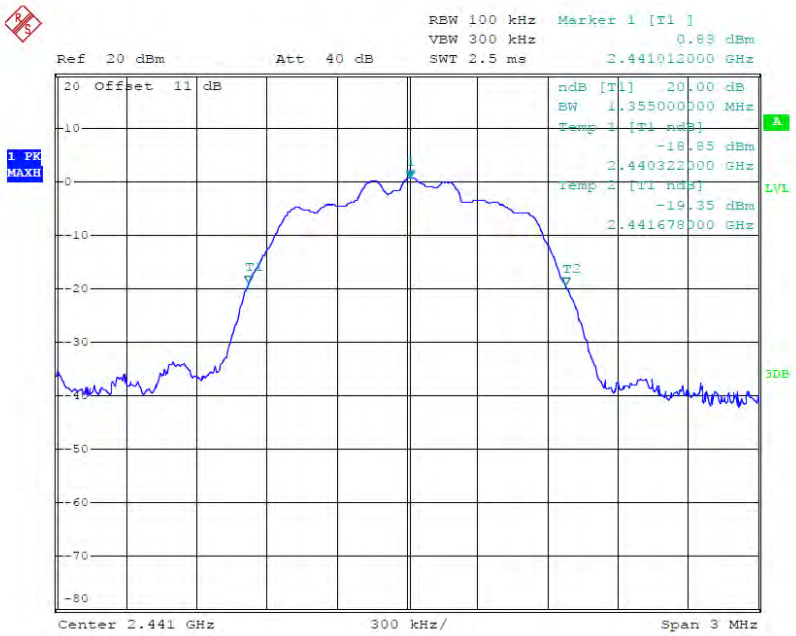


Π/4-DQPSK Mode

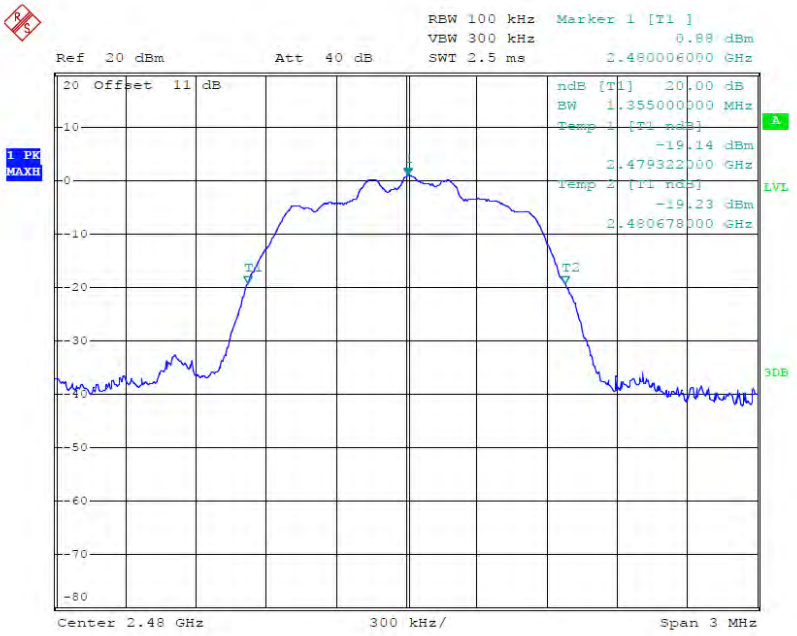
Low channel



Middle channel

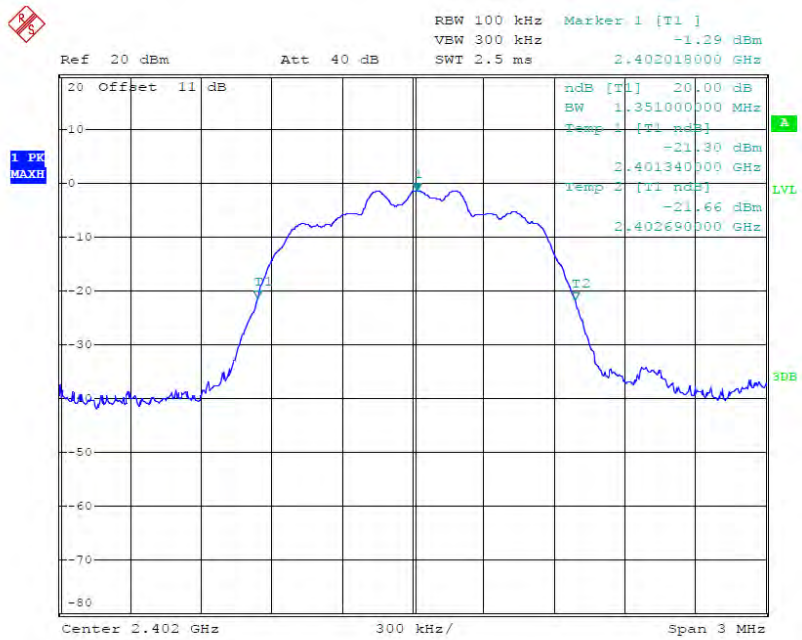


High channel

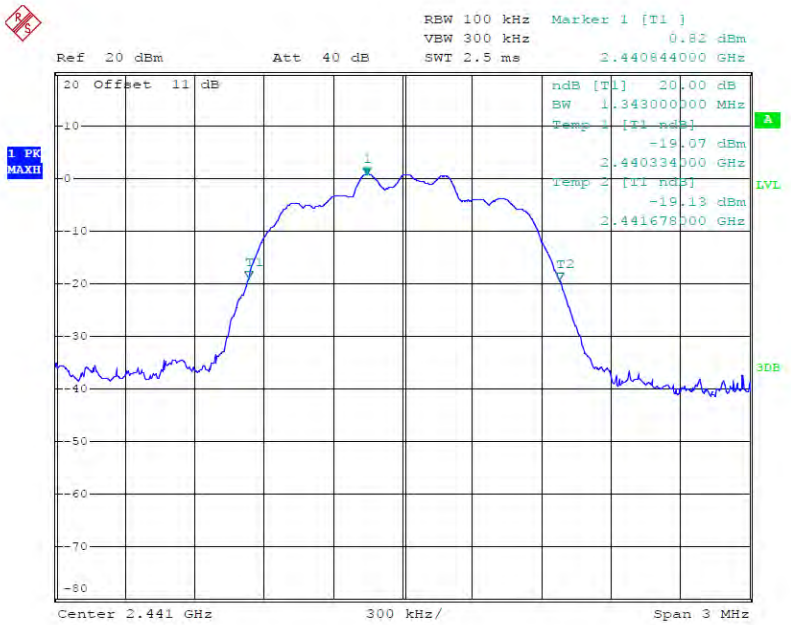


8DPSK Mode

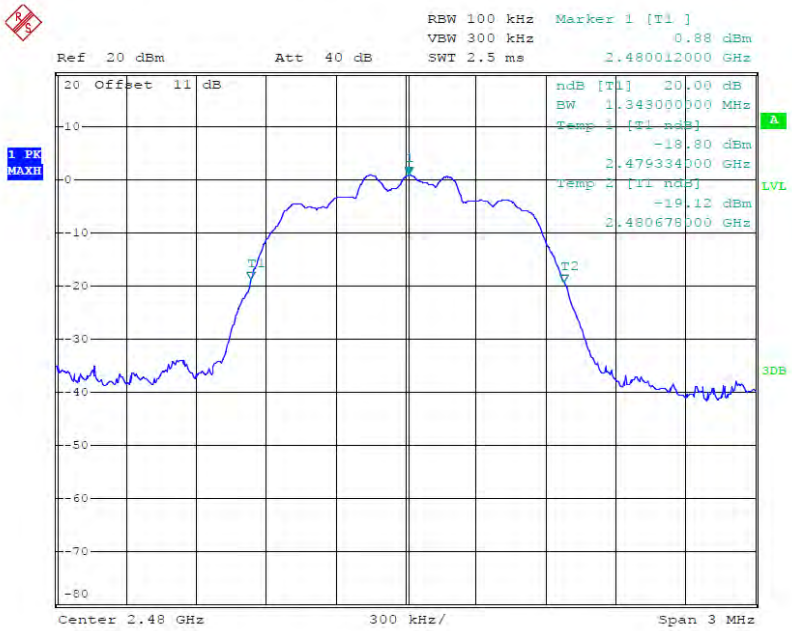
Low channel



Middle channel

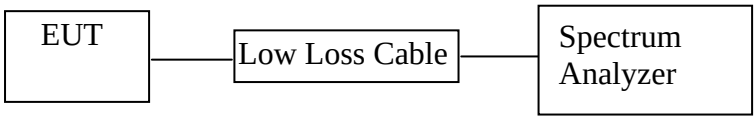


High channel



6. CARRIER FREQUENCY SEPARATION TEST

6.1.Block Diagram of Test Setup



(EUT: ANC Headphones)

6.2.The Requirement For Section 15.247(a)(1)

Section 15.247(a)(1): Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, 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, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudorandomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

6.3.EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

6.4.Operating Condition of EUT

6.4.1.Setup the EUT and simulator as shown as Section 6.1.

6.4.2.Turn on the power of all equipment.

6.4.3.Let the EUT work in TX (Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

6.5.Test Procedure

6.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.

6.5.2.Set RBW of spectrum analyzer to 30 kHz and VBW to 100 kHz. Adjust Span to 2MHz.

6.5.3.Set the adjacent channel of the EUT Maxhold another trace.

6.5.4.Measurement the channel separation

6.6.Test Result

Test Lab: Shielding room
Test Engineer: Bob

GFSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.002	25KHz or 2/3*20dB bandwidth	PASS
	2403			
Middle	2440	1.002	25KHz or 2/3*20dB bandwidth	PASS
	2441			
High	2479	1.002	25KHz or 2/3*20dB bandwidth	PASS
	2480			

Π/4-DQPSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.008	25KHz or 2/3*20dB bandwidth	PASS
	2403			
Middle	2440	1.002	25KHz or 2/3*20dB bandwidth	PASS
	2441			
High	2479	1.008	25KHz or 2/3*20dB bandwidth	PASS
	2480			

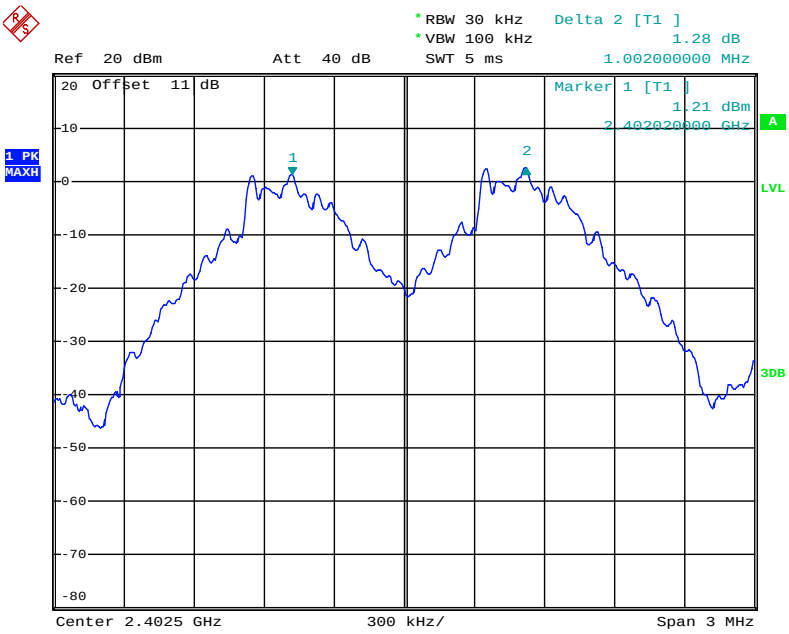
8DPSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.002	25KHz or 2/3*20dB bandwidth	PASS
	2403			
Middle	2440	1.002	25KHz or 2/3*20dB bandwidth	PASS
	2441			
High	2479	1.002	25KHz or 2/3*20dB bandwidth	PASS
	2480			

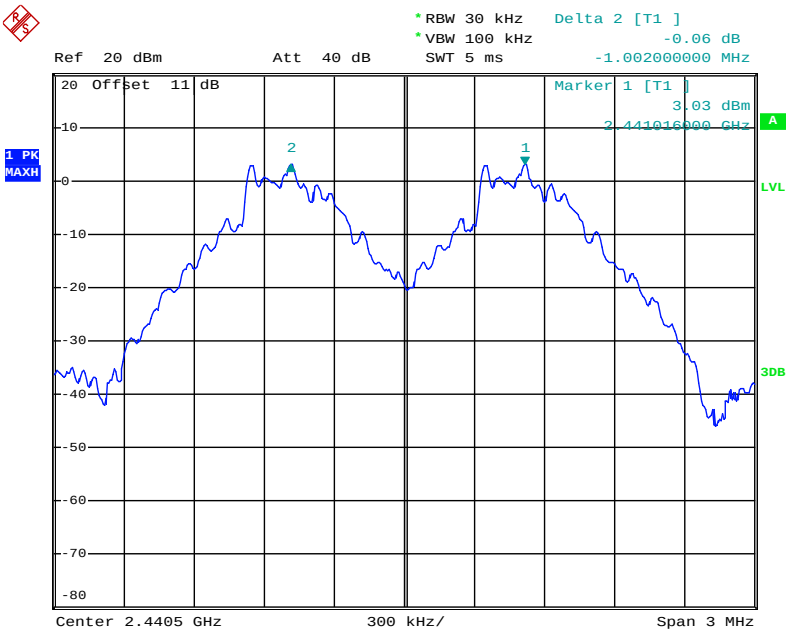
The spectrum analyzer plots are attached as below.

GFSK Mode

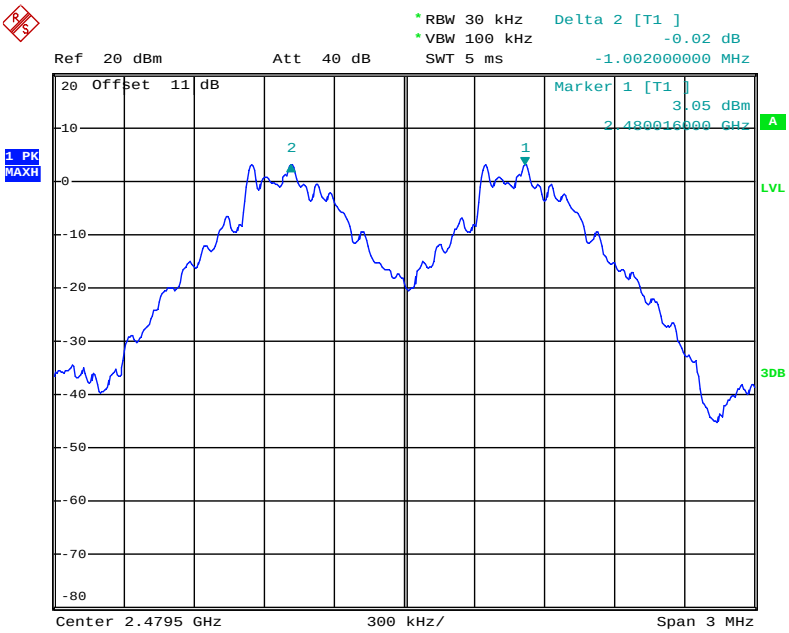
Low channel



Middle channel

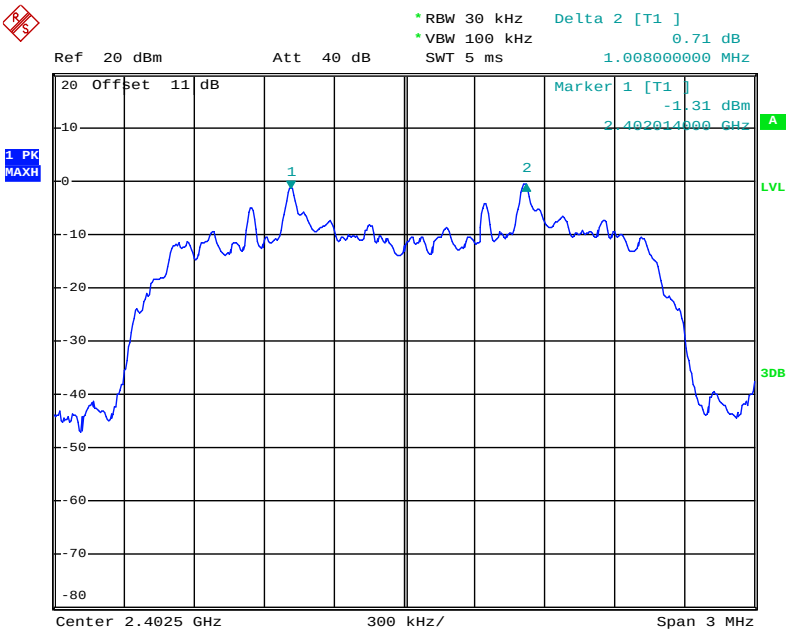


High channel

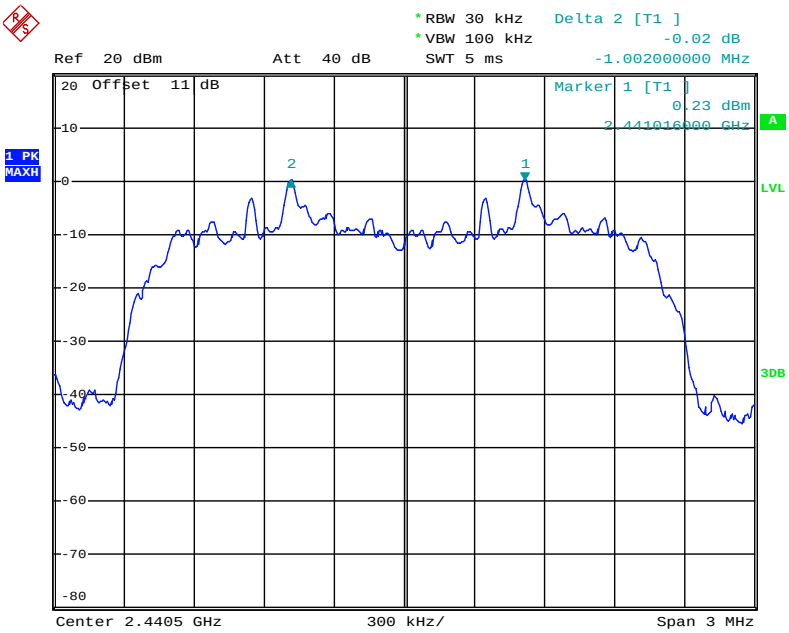


Π/4-DQPSK Mode

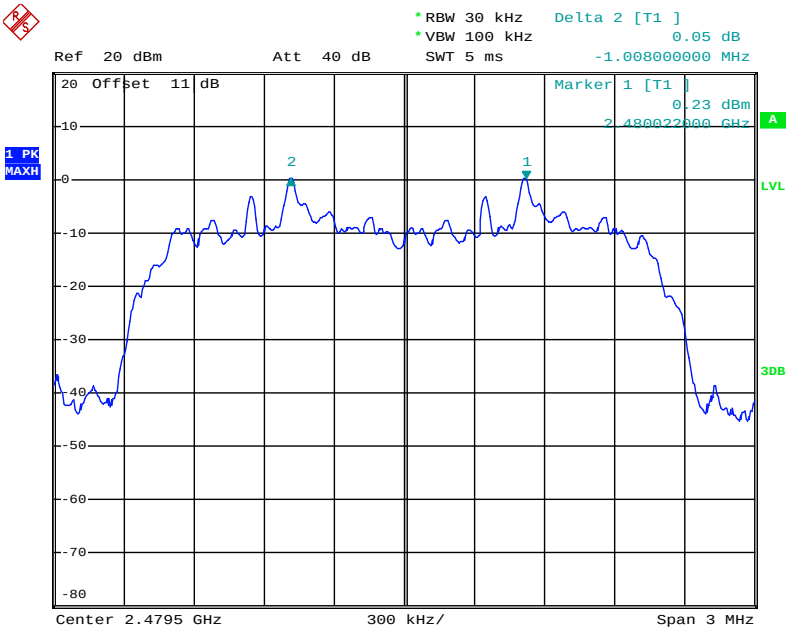
Low channel



Middle channel

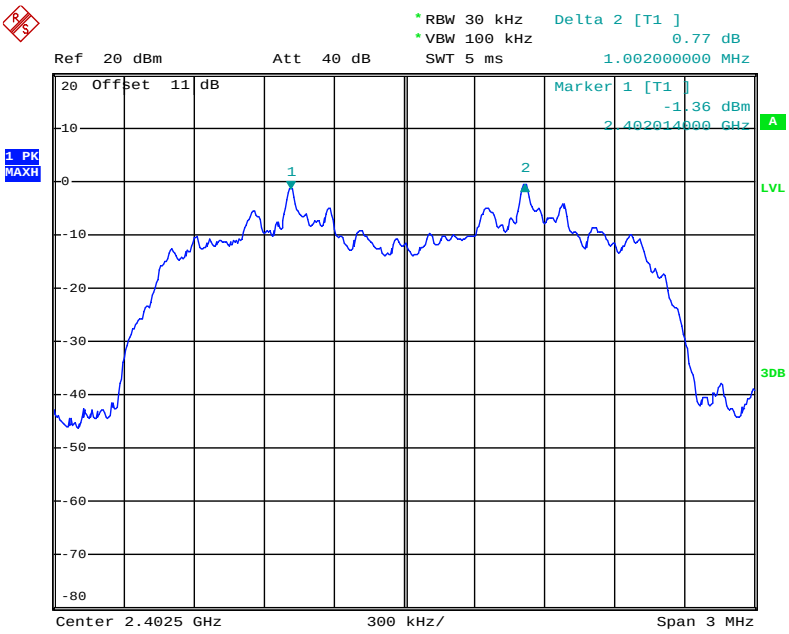


High channel

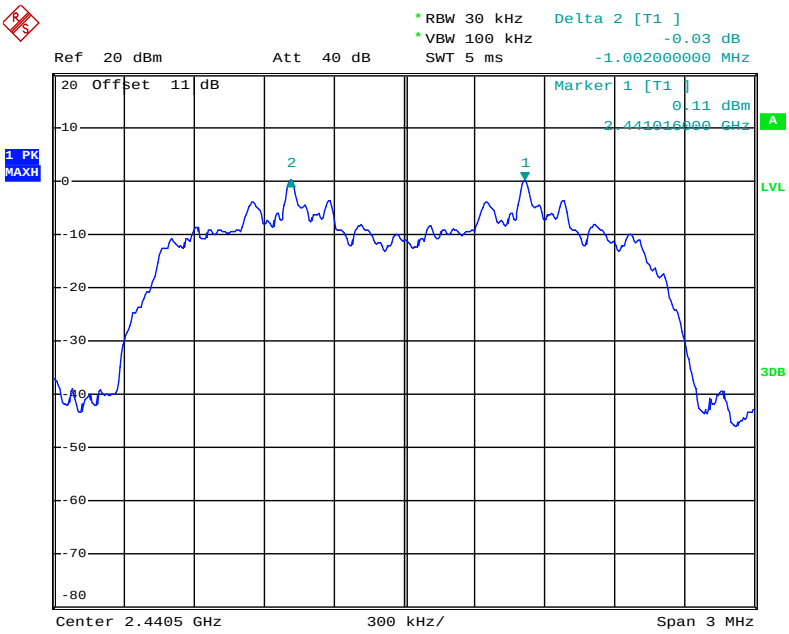


8DPSK Mode

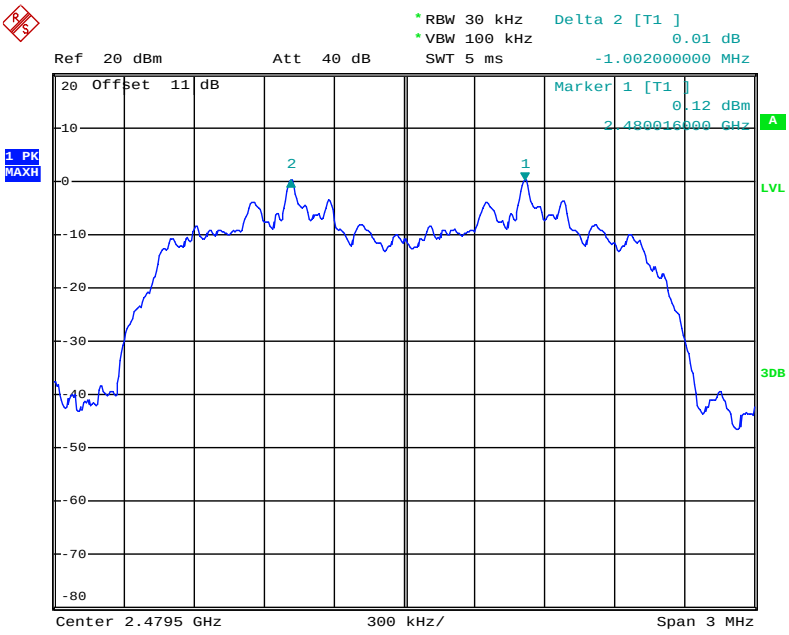
Low channel



Middle channel

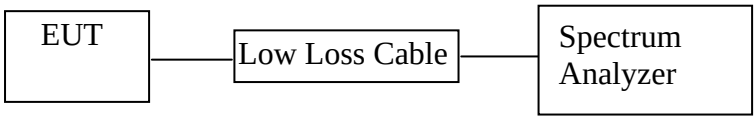


High channel



7. NUMBER OF HOPPING FREQUENCY TEST

7.1.Block Diagram of Test Setup



(EUT: ANC Headphones)

7.2.The Requirement For Section 15.247(a)(1)(iii)

Section 15.247(a)(1)(iii): Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

7.3.EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

7.4.Operating Condition of EUT

7.4.1.Setup the EUT and simulator as shown as Section 7.1.

7.4.2.Turn on the power of all equipment.

7.4.3.Let the EUT work in TX (Hopping on) modes measure it.

7.5.Test Procedure

7.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.

7.5.2.Set the spectrum analyzer as RBW=100 kHz, VBW=300 kHz.

7.5.3.Max hold, view and count how many channel in the band.

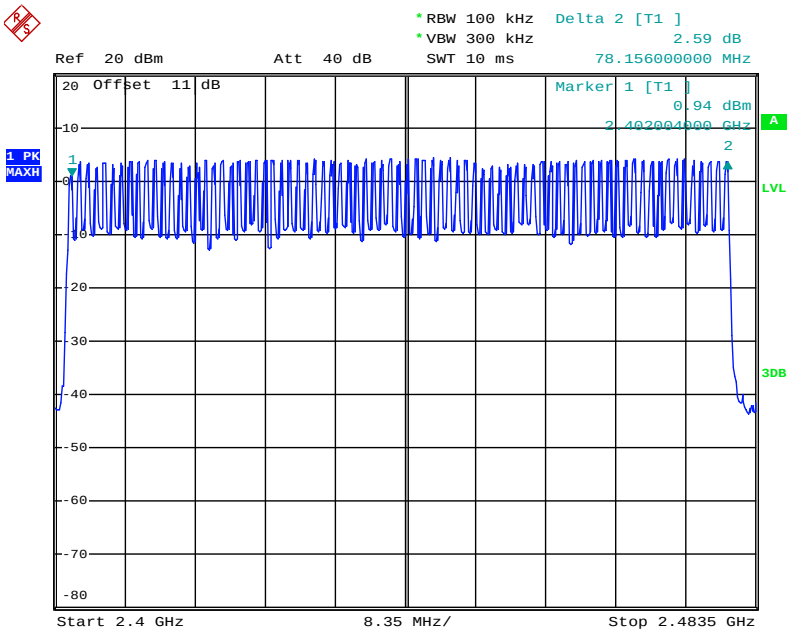
7.6.Test Result

Test Lab: Shielding room
Test Engineer: Bob

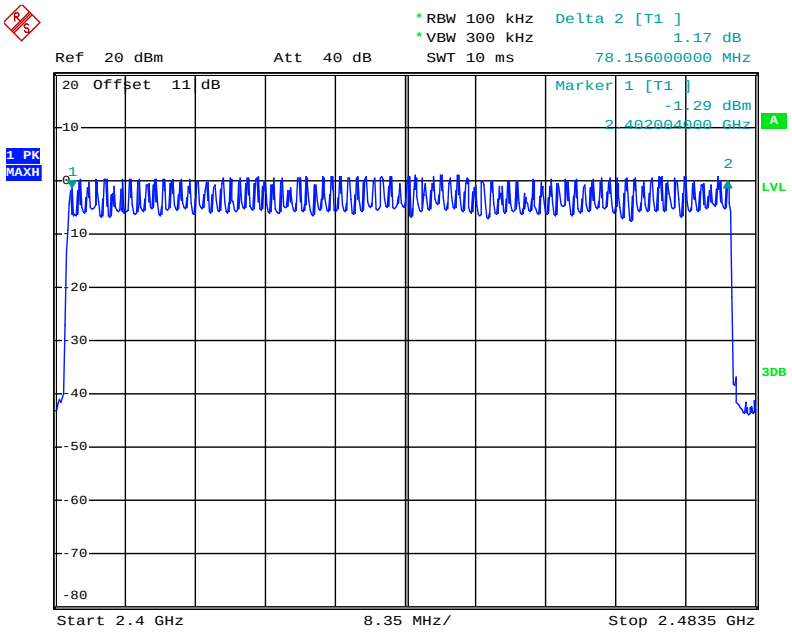
Total number of hopping channel	Measurement result(CH)	Limit(CH)
	79	⩾15

The spectrum analyzer plots are attached as below.

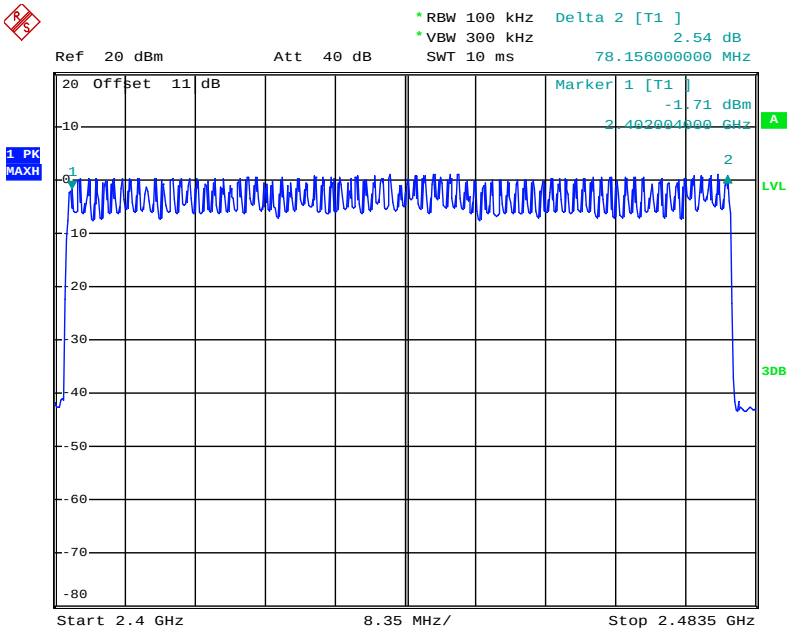
Number of hopping channels(GFSK)



Number of hopping channels(Π/4-DQPSK)

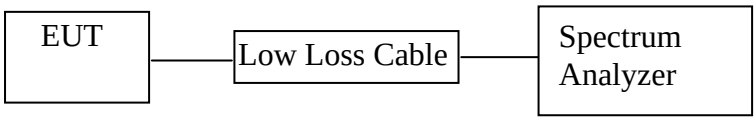


Number of hopping channels(8DPSK)



8. DWELL TIME TEST

8.1.Block Diagram of Test Setup



(EUT: ANC Headphones)

8.2.The Requirement For Section 15.247(a)(1)(iii)

Section 15.247(a)(1)(iii): Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

8.3.EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

8.4.Operating Condition of EUT

8.4.1.Setup the EUT and simulator as shown as Section 8.1.

8.4.2.Turn on the power of all equipment.

8.4.3.Let the EUT work in TX (Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

8.5.Test Procedure

8.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.

8.5.2.Set center frequency of spectrum analyzer = operating frequency.

8.5.3.Set the spectrum analyzer as RBW=1MHz, VBW=3MHz, Span=0Hz, Adjust Sweep=5ms, 10ms, 15ms. Get the pulse time.

8.5.4.Repeat above procedures until all frequency measured were complete.

8.6.Test Result

Test Lab: Shielding room
Test Engineer: Bob

GFSK Mode

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.440	140.80	400
	2441	0.440	140.80	400
	2480	0.440	140.80	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(2*79))×31.6				
DH3	2402	1.720	275.20	400
	2441	1.720	275.20	400
	2480	1.720	275.20	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(4*79))×31.6				
DH5	2402	2.980	317.87	400
	2441	2.980	317.87	400
	2480	2.950	314.67	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(6*79))×31.6				

Π/4-DQPSK

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.450	144.00	400
	2441	0.450	144.00	400
	2480	0.450	144.00	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(2*79))×31.6				
DH3	2402	1.750	280.00	400
	2441	1.750	280.00	400
	2480	1.730	276.80	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(4*79))×31.6				
DH5	2402	2.990	318.93	400
	2441	2.990	318.93	400
	2480	2.990	318.93	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(6*79))×31.6				

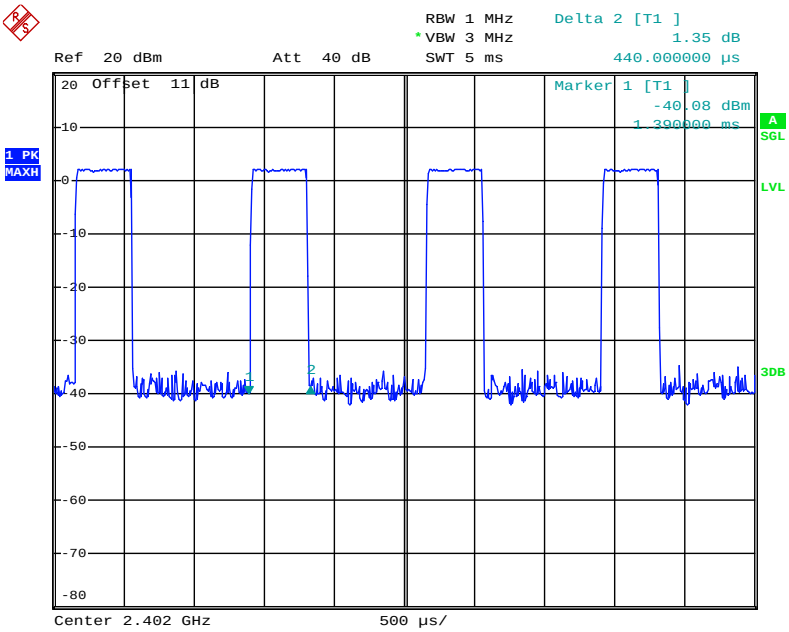
8DPSK Mode

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.450	144.00	400
	2441	0.450	144.00	400
	2480	0.450	144.00	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(2*79))×31.6				
DH3	2402	1.710	273.60	400
	2441	1.710	273.60	400
	2480	1.710	273.60	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(4*79))×31.6				
DH5	2402	3.000	320.00	400
	2441	3.000	320.00	400
	2480	3.000	320.00	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(6*79))×31.6				

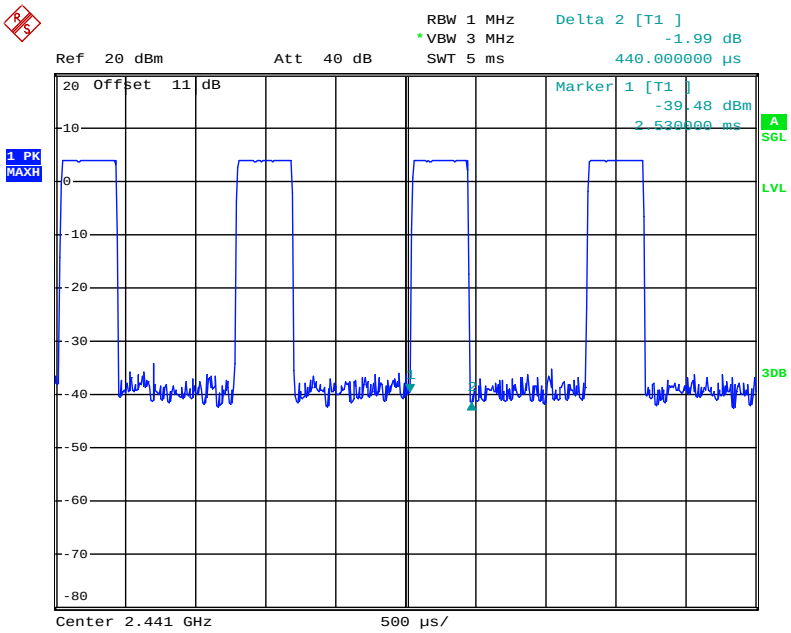
The spectrum analyzer plots are attached as below.

GFSK Mode

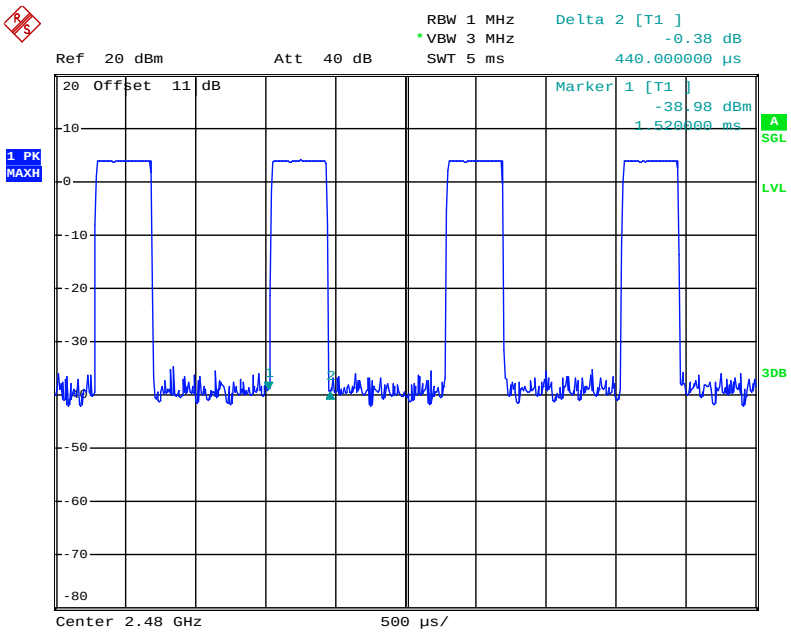
DH1 Low channel



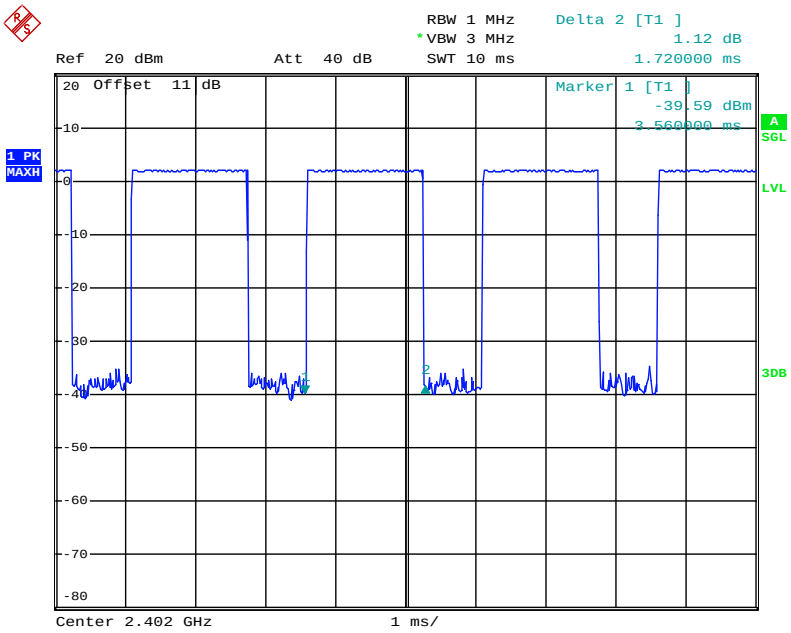
DH1 Middle channel



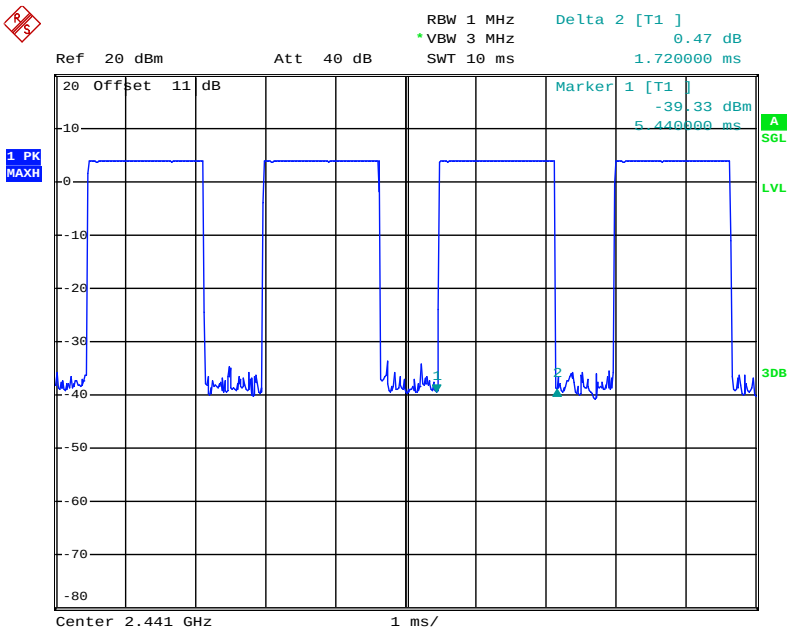
DH1 High channel



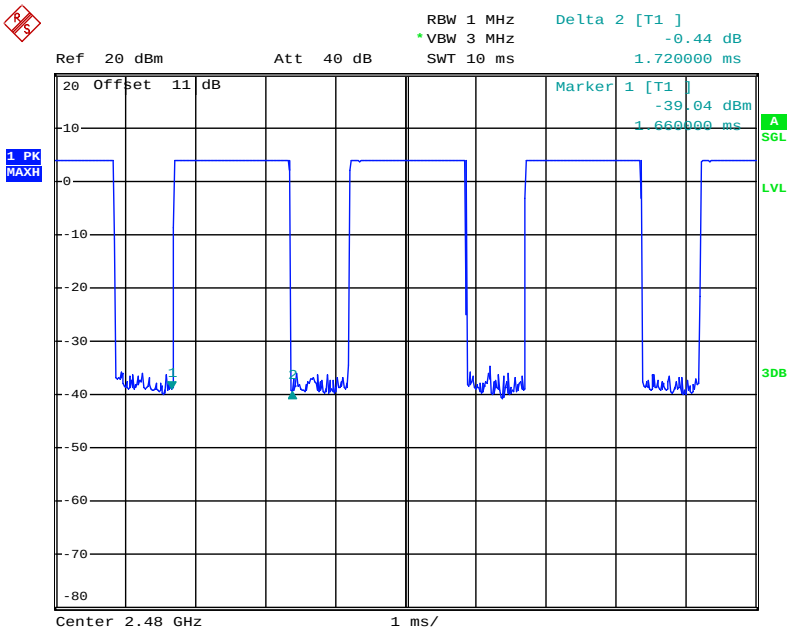
DH3 Low channel



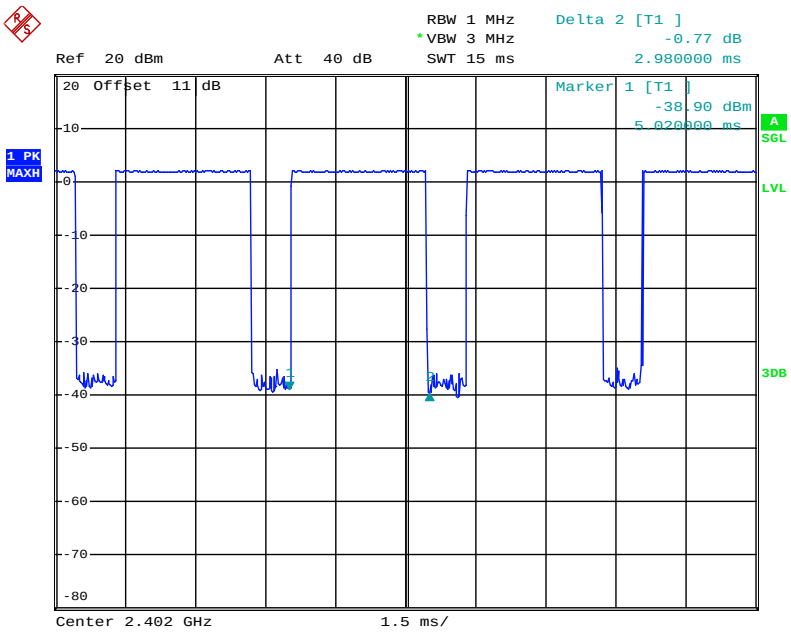
DH3 Middle channel



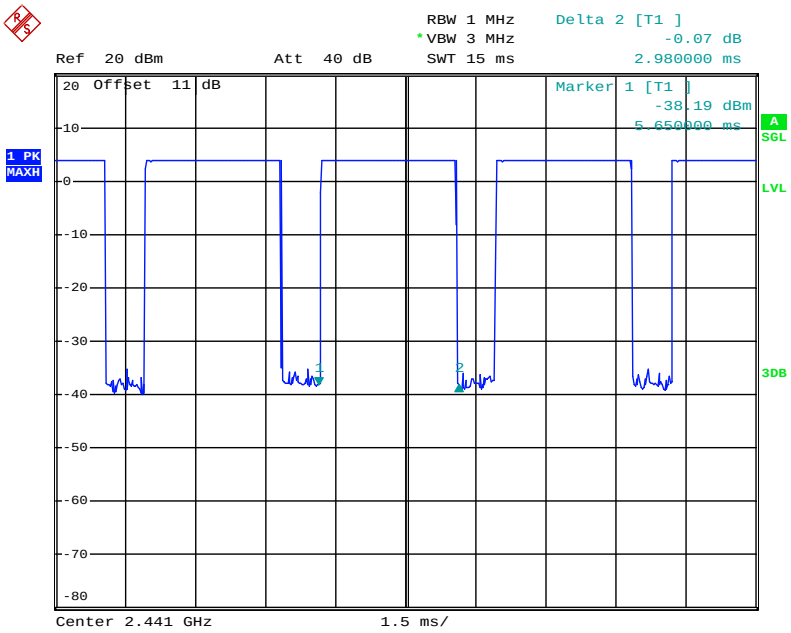
DH3 High channel



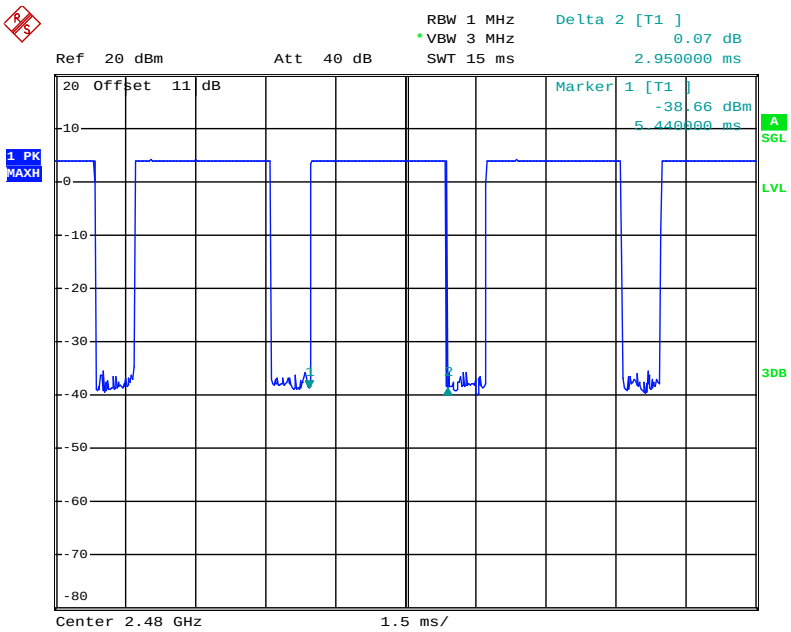
DH5 Low channel



DH5 Middle channel

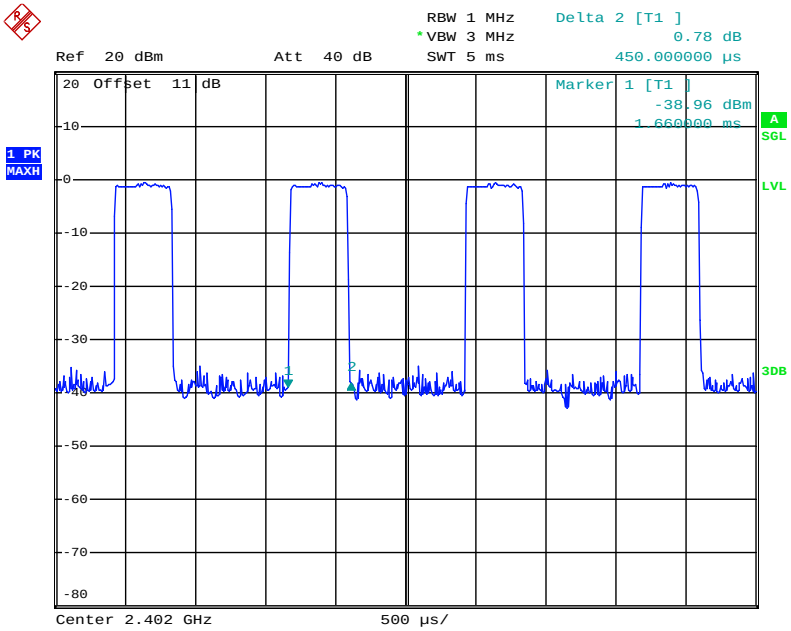


DH5 High channel

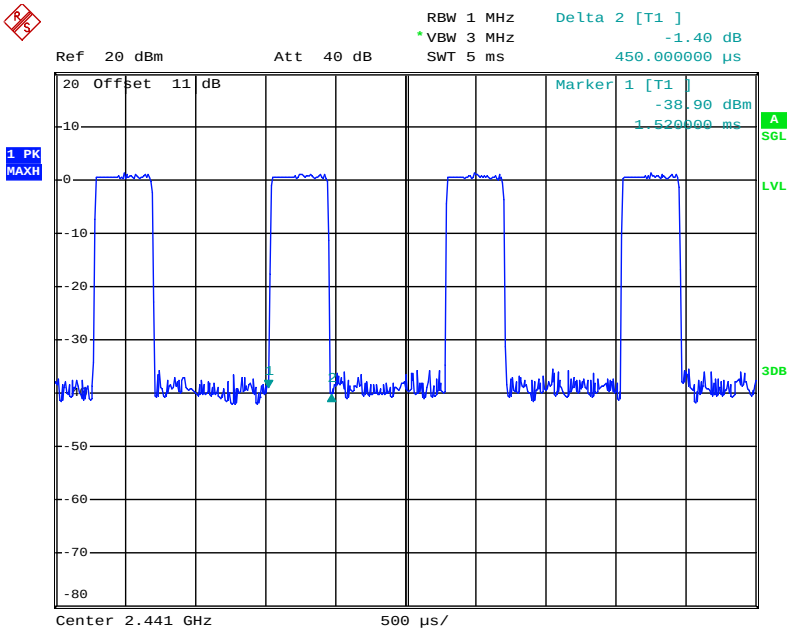


Π/4-DQPSK

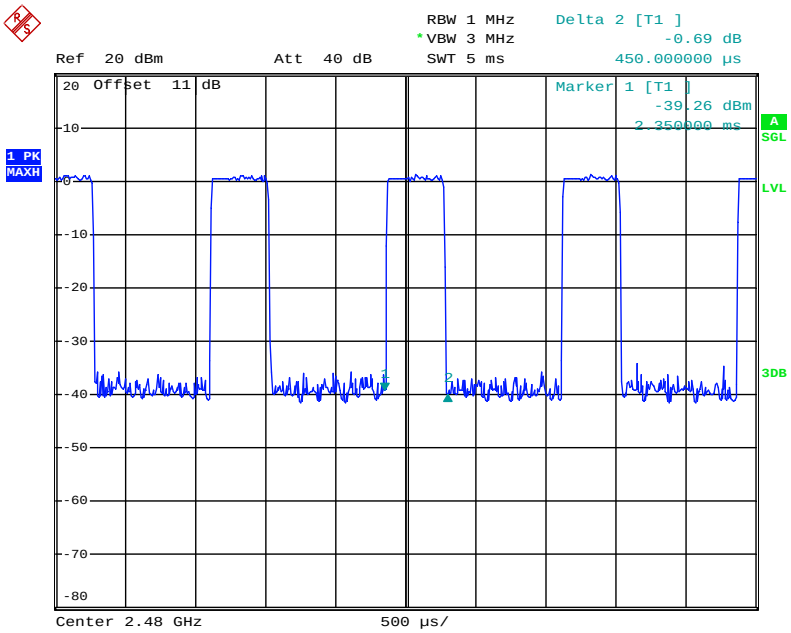
2DH1 Low channel



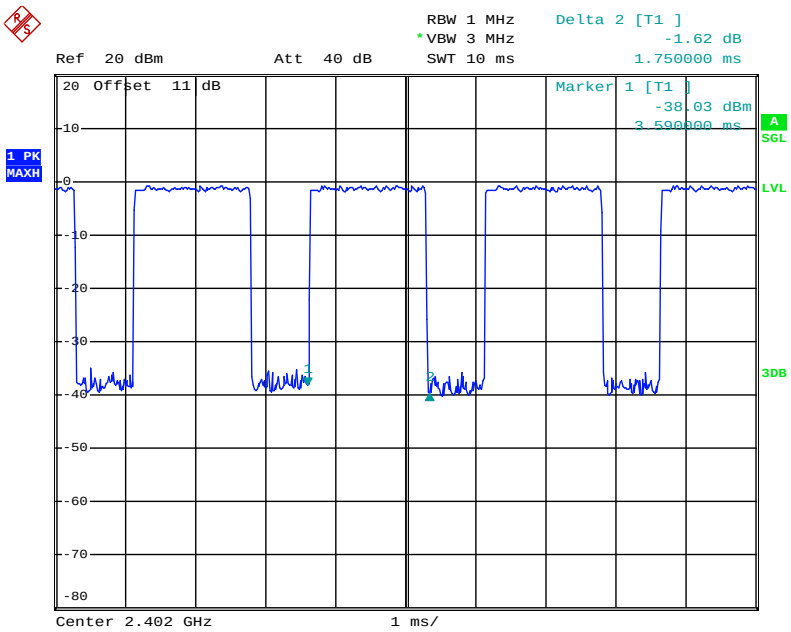
2DH1 Middle channel



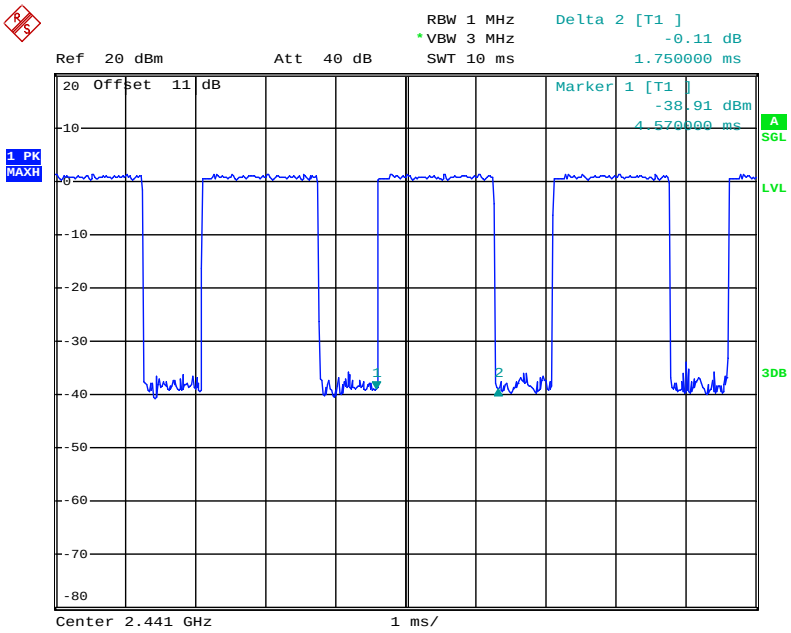
2DH1 High channel



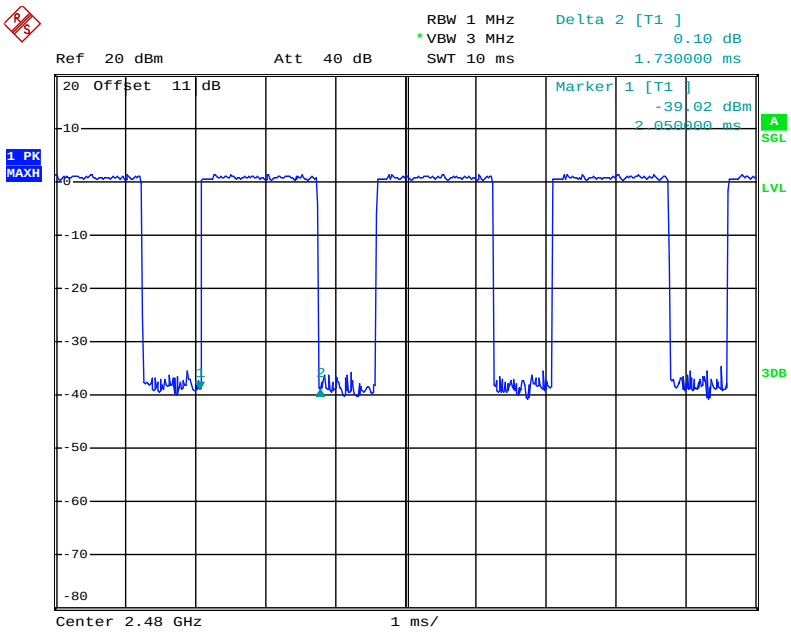
2DH3 Low channel



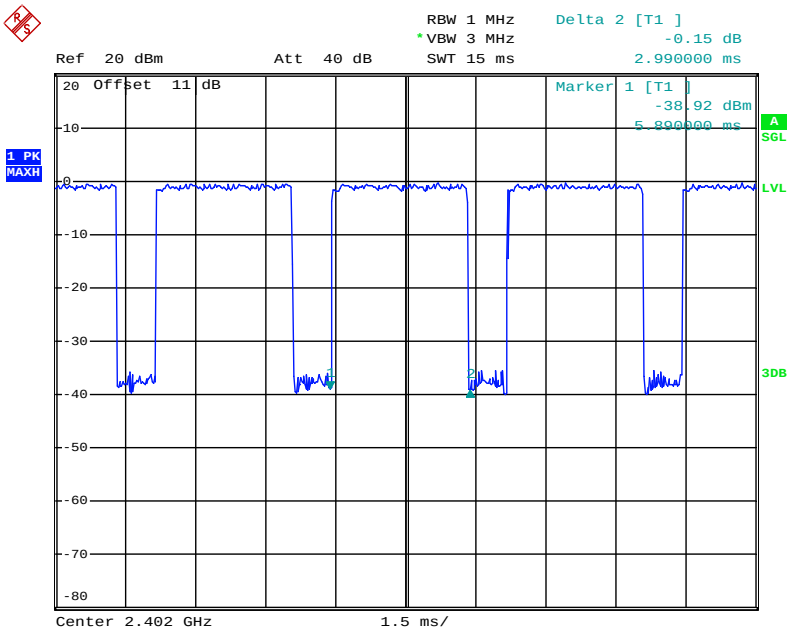
2DH3 Middle channel



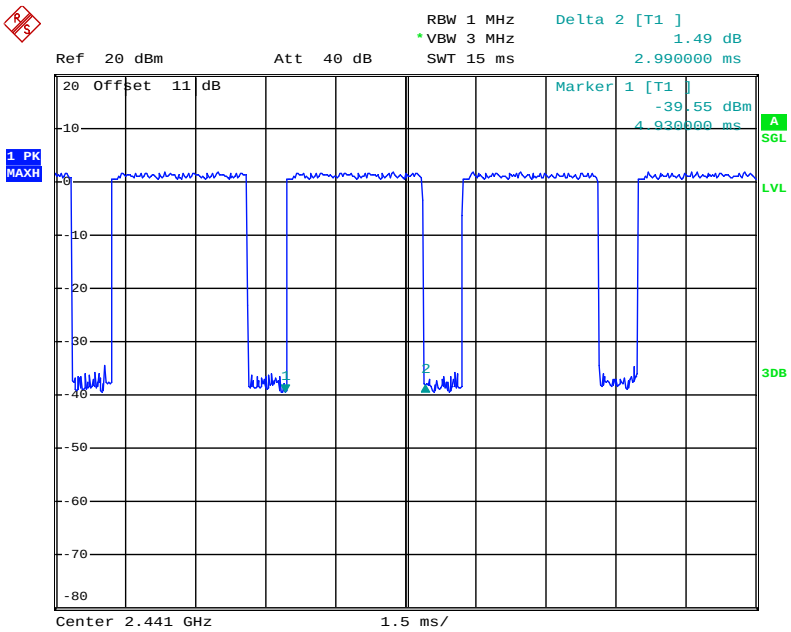
2DH3 High channel



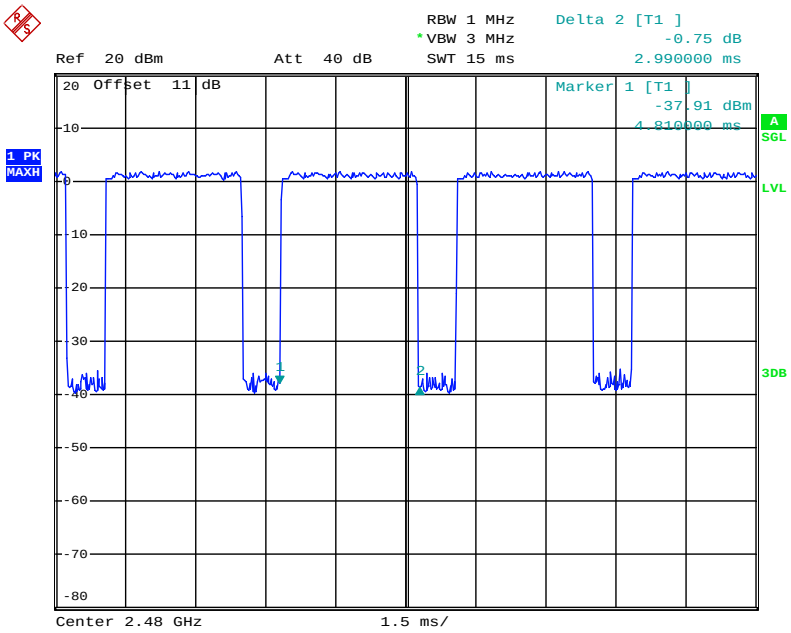
2DH5 Low channel



2DH5 Middle channel

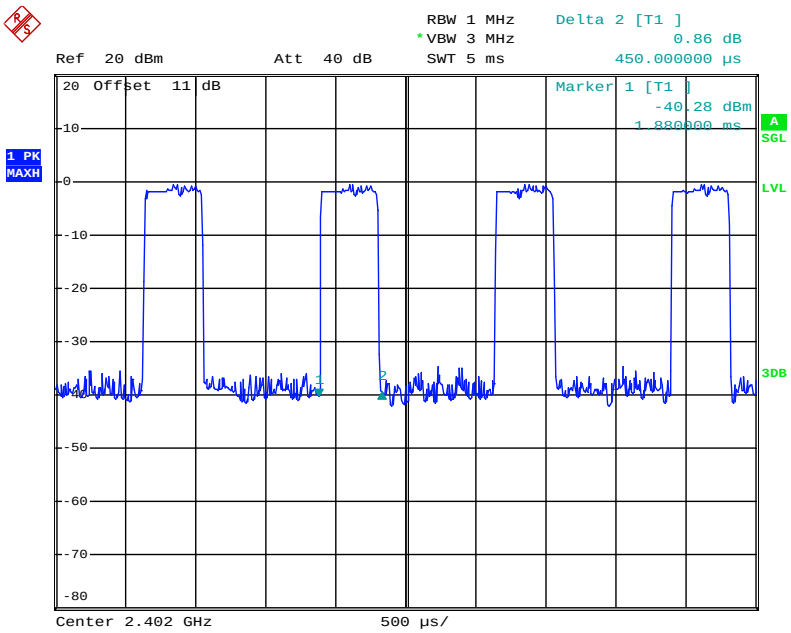


2DH5 High channel

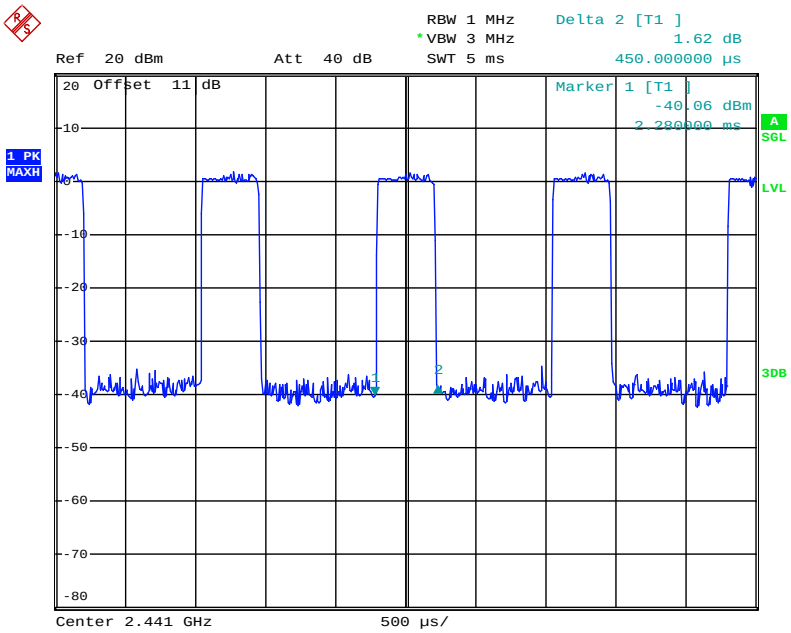


8DPSK Mode

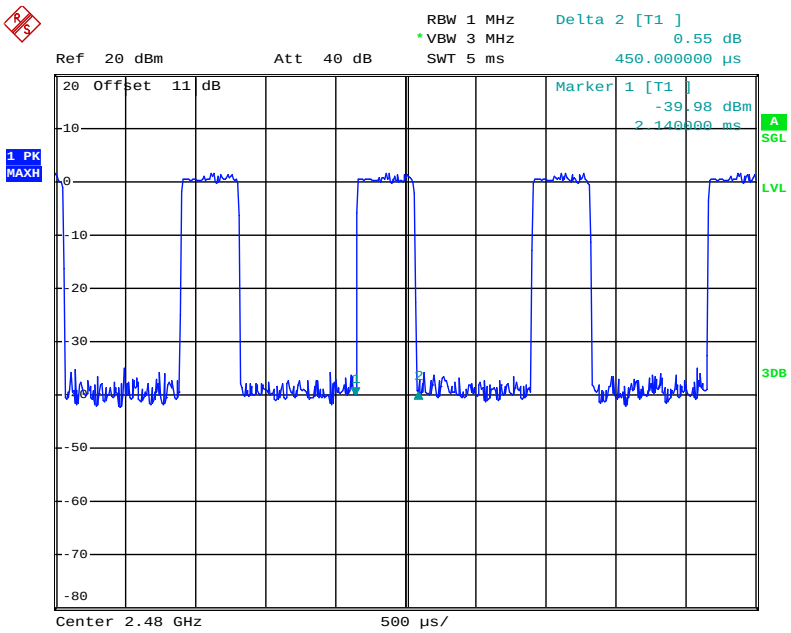
3DH1 Low channel



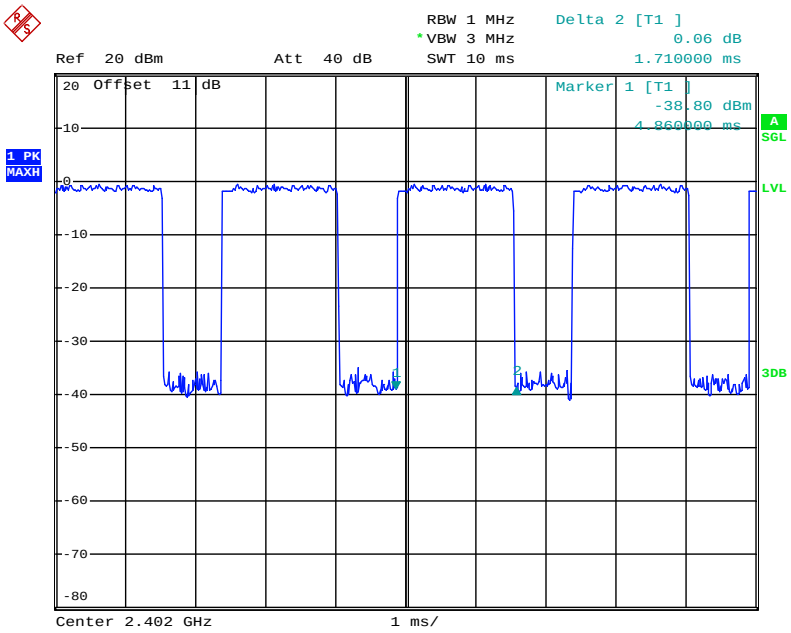
3DH1 Middle channel



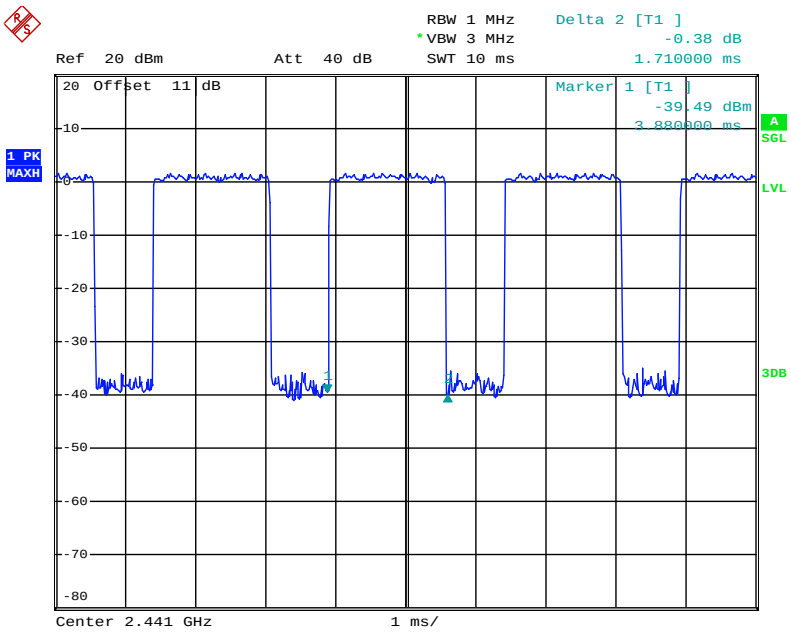
3DH1 High channel



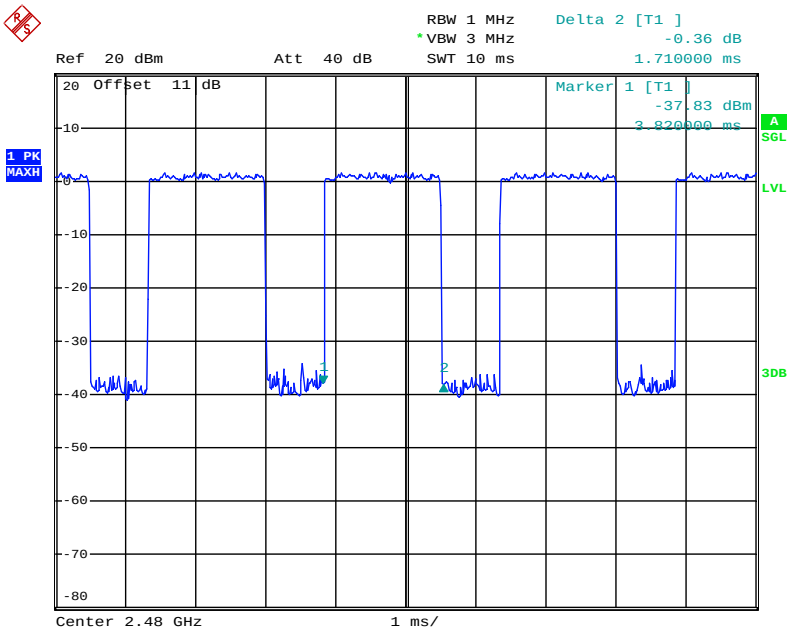
3DH3 Low channel



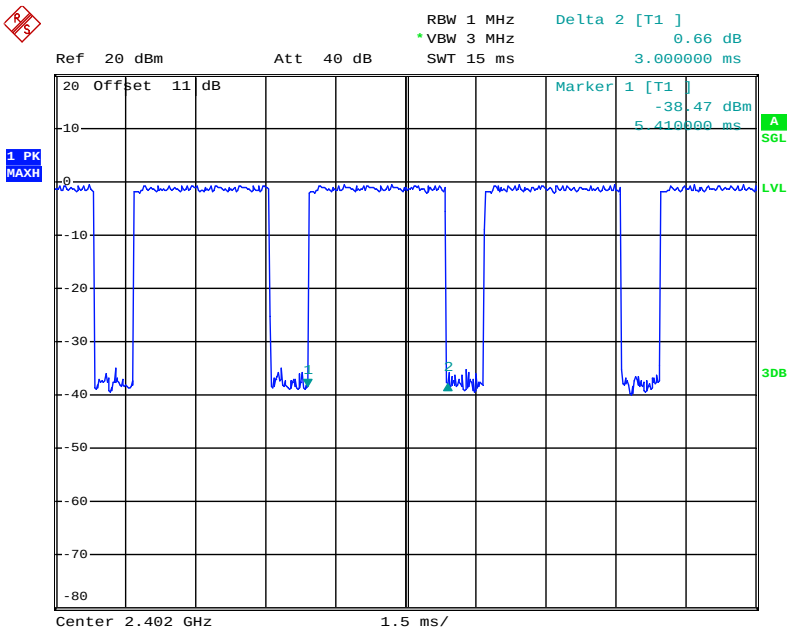
3DH3 Middle channel



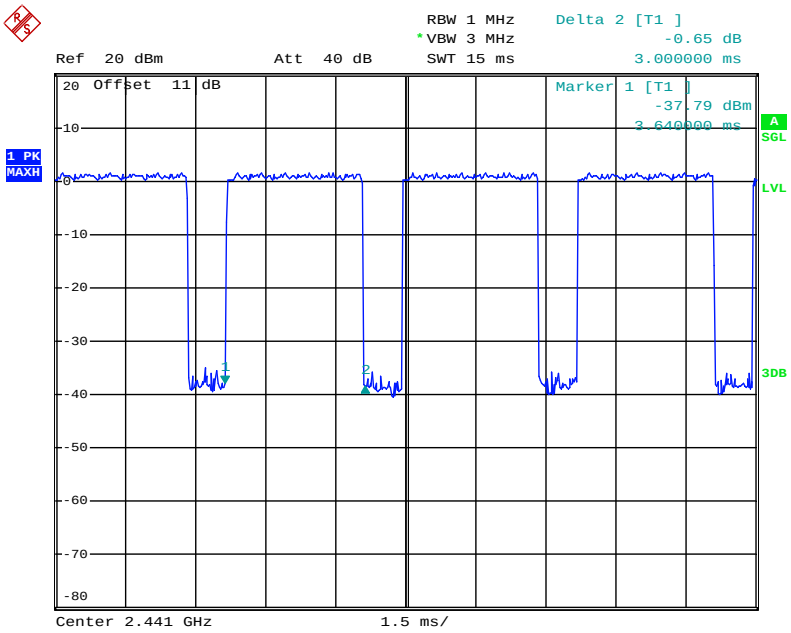
3DH3 High channel



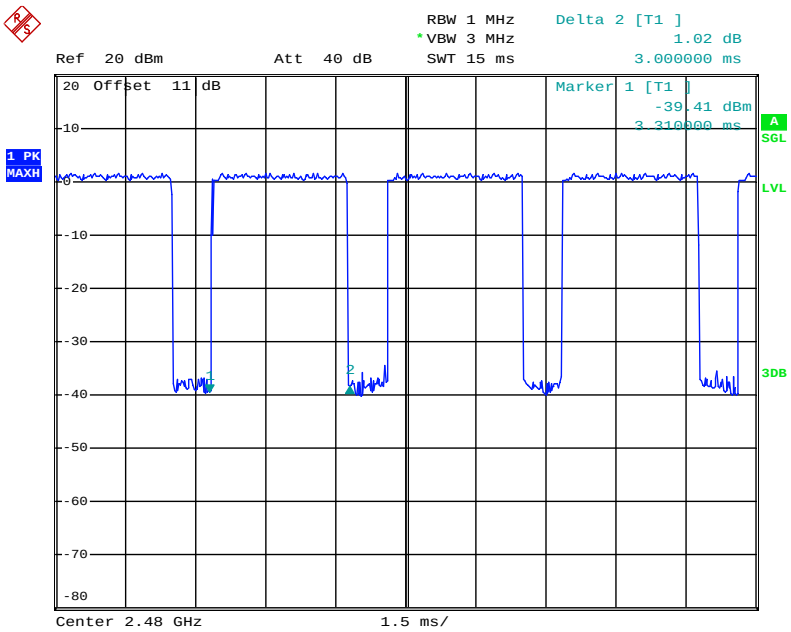
3DH5 Low channel



3DH5 Middle channel

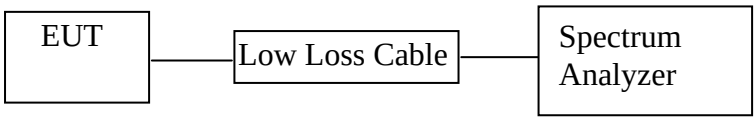


3DH5 High channel



9. MAXIMUM PEAK OUTPUT POWER TEST

9.1.Block Diagram of Test Setup



(EUT: ANC Headphones)

9.2.The Requirement For Section 15.247(b)(1)

Section 15.247(b)(1): For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

9.3.EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

9.4.Operating Condition of EUT

9.4.1.Setup the EUT and simulator as shown as Section 9.1.

9.4.2.Turn on the power of all equipment.

9.4.3.Let the EUT work in TX (Hopping off) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

9.5.Test Procedure

9.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.

9.5.2.Set RBW of spectrum analyzer to 3MHz and VBW to 3MHz.

9.5.3.Measurement the maximum peak output power.

9.6.Test Result

Test Lab: Shielding room
Test Engineer: Bob

GFSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	3.02/0.0020	21 / 0.125
Middle	2441	4.15/0.0026	21 / 0.125
High	2480	4.10/0.0026	21 / 0.125

Π/4-DQPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	0.57/0.0011	21 / 0.125
Middle	2441	2.68/0.0019	21 / 0.125
High	2480	2.66/0.0019	21 / 0.125

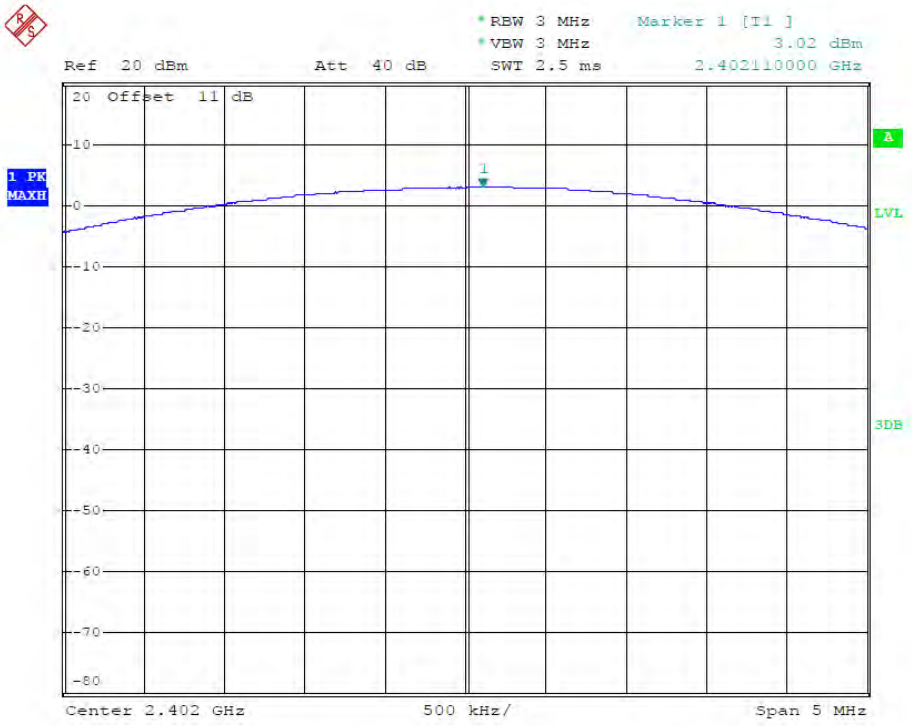
8DPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	0.65/0.0012	21 / 0.125
Middle	2441	2.43/0.0018	21 / 0.125
High	2480	2.28/0.0017	21 / 0.125

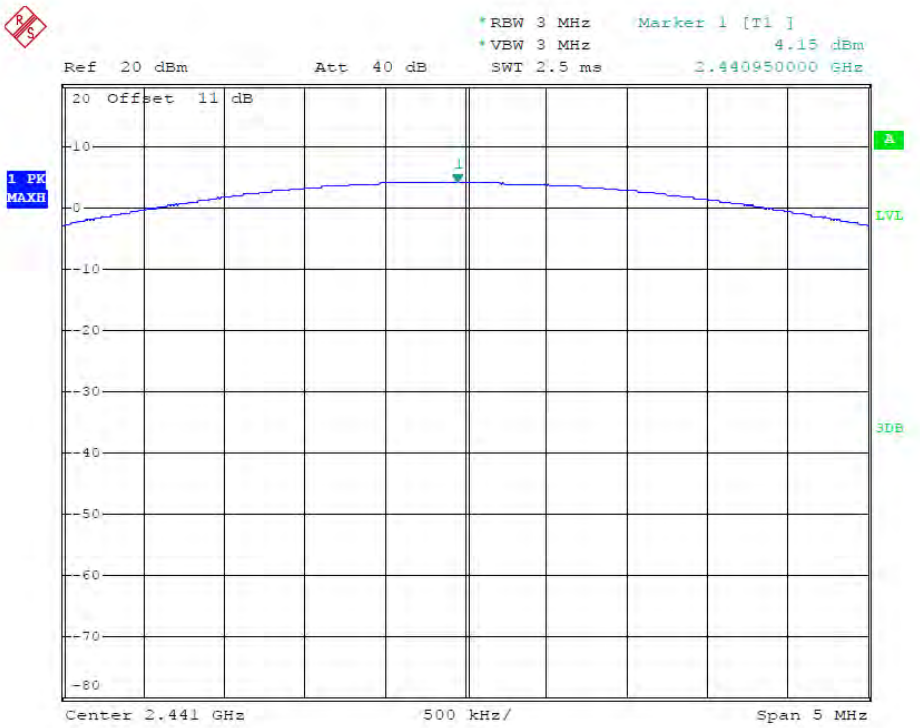
The spectrum analyzer plots are attached as below.

GFSK Mode

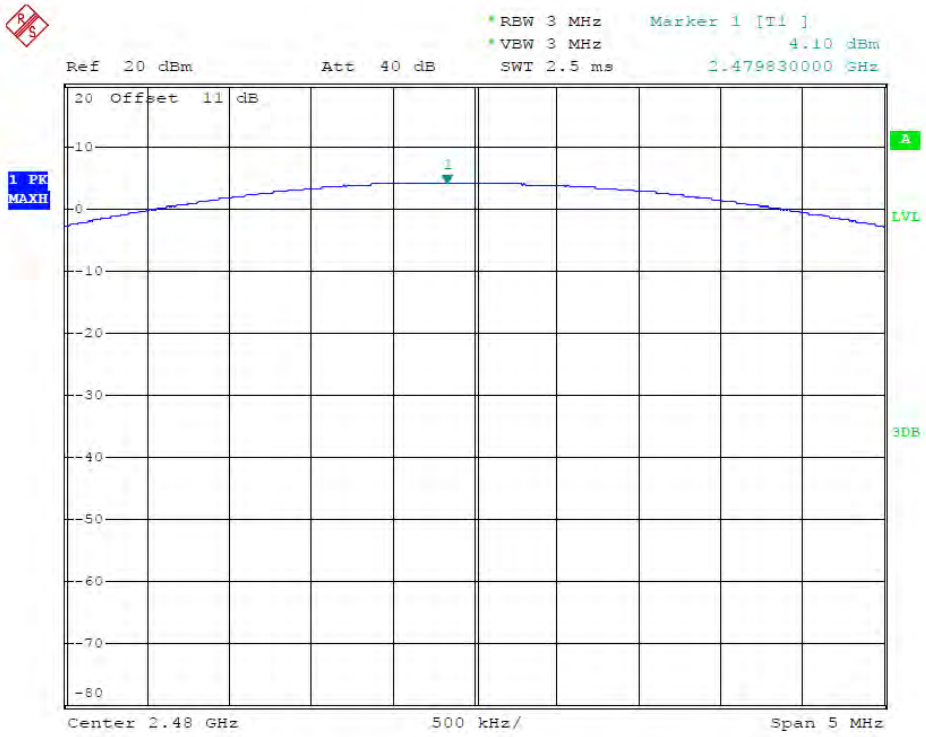
Low channel



Middle channel

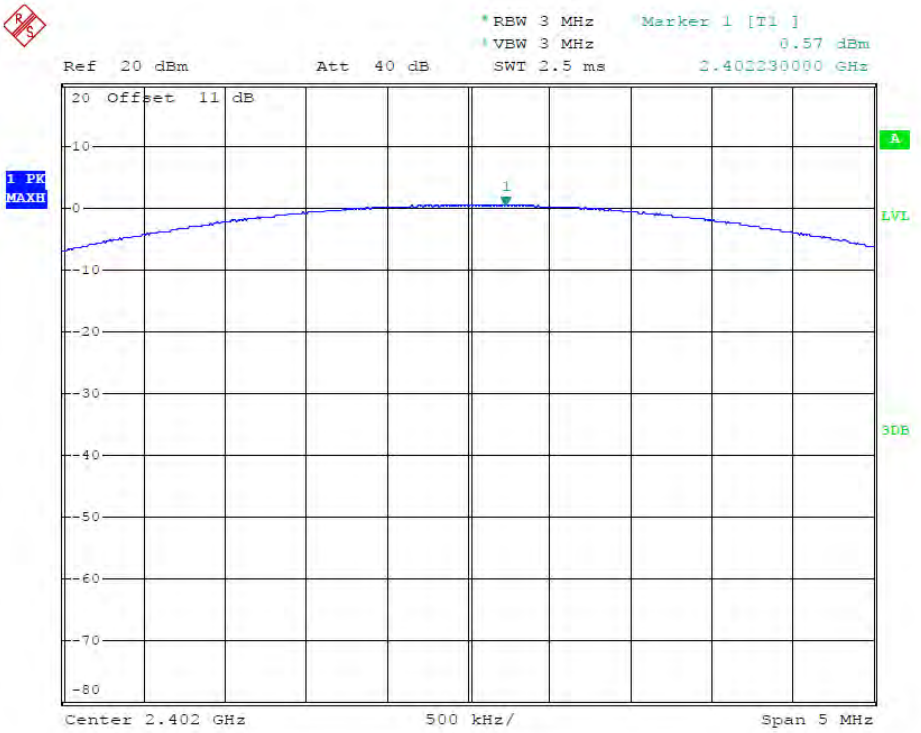


High channel

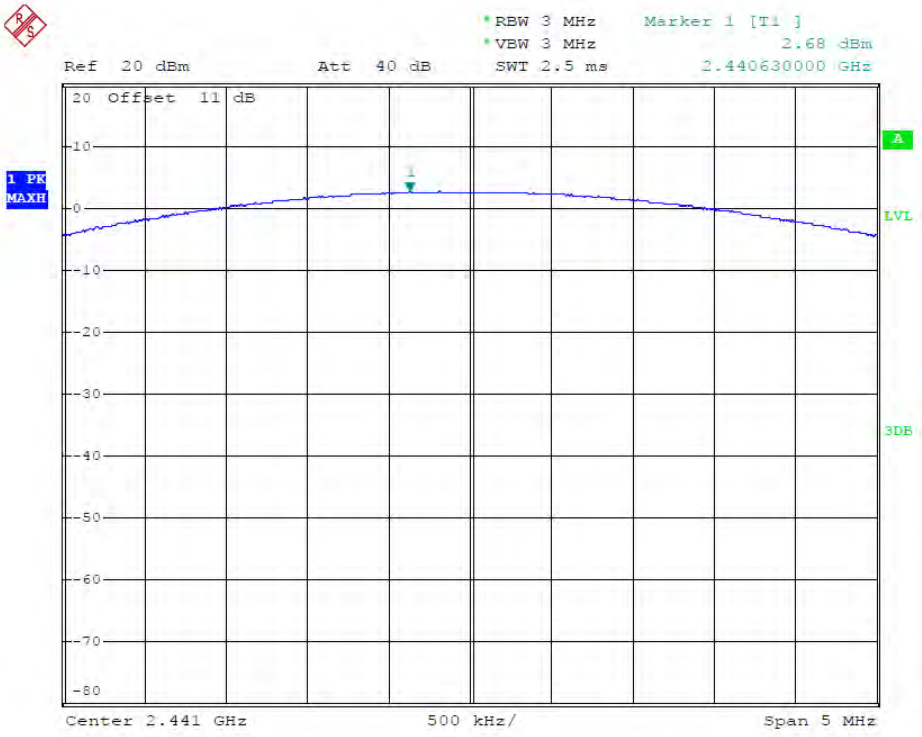


Π/4-DQPSK Mode

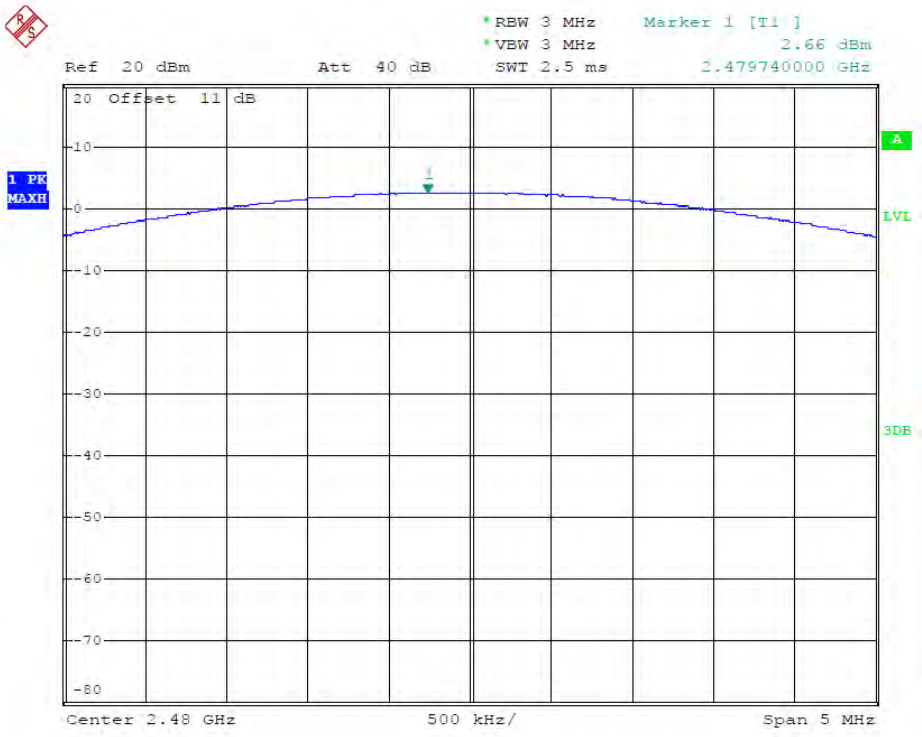
Low channel



Middle channel

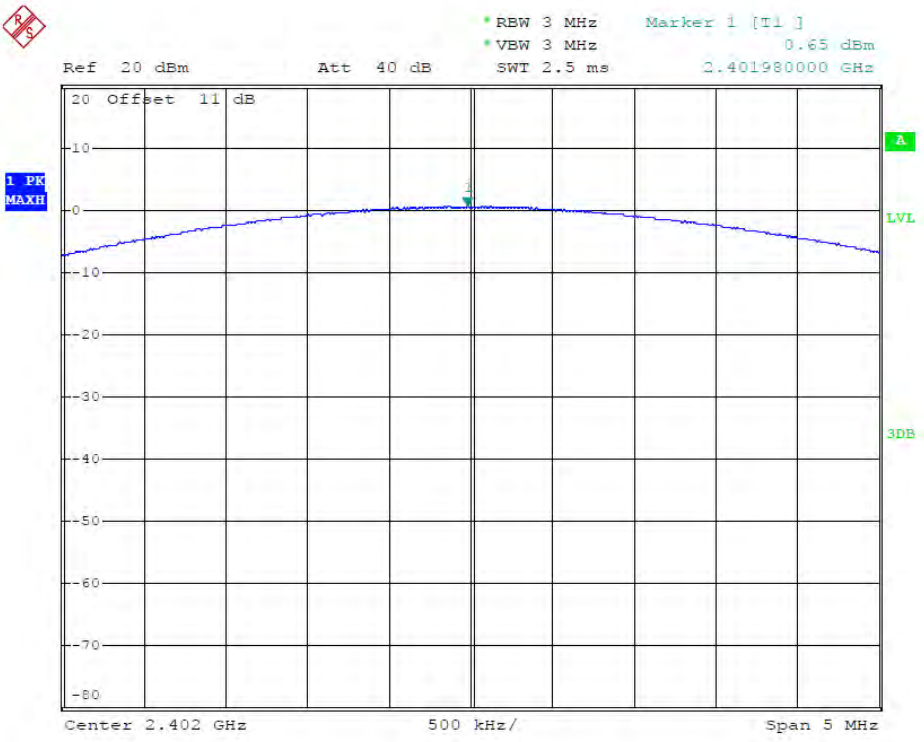


High channel

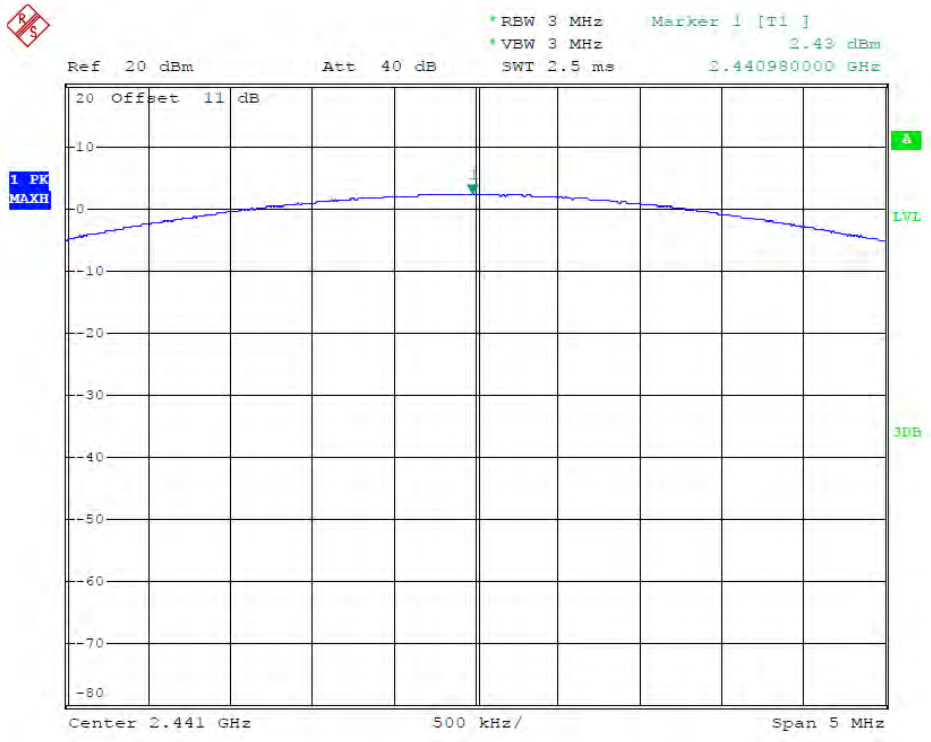


8DPSK Mode

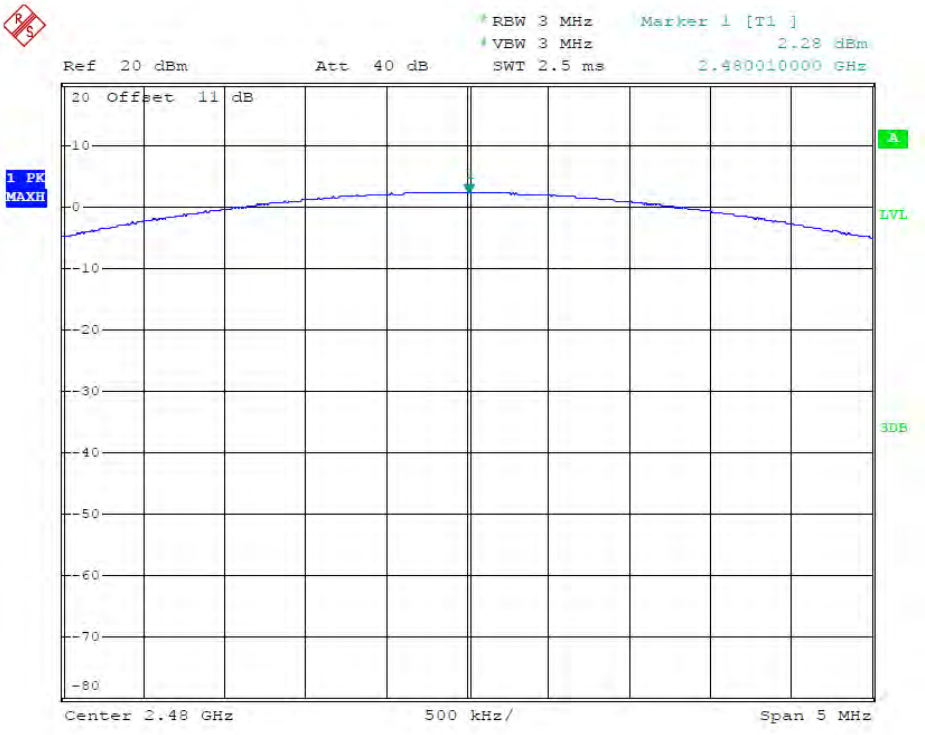
Low channel



Middle channel



High channel



10. RADIATED EMISSION TEST

10.1. Block Diagram of Test Setup

10.1.1. Block diagram of connection between the EUT and peripherals

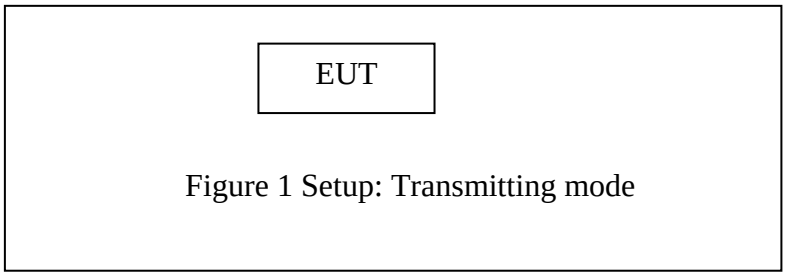
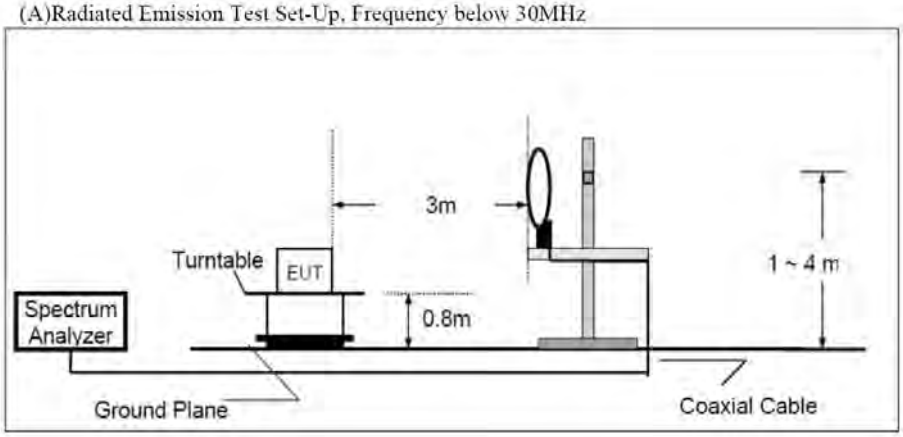


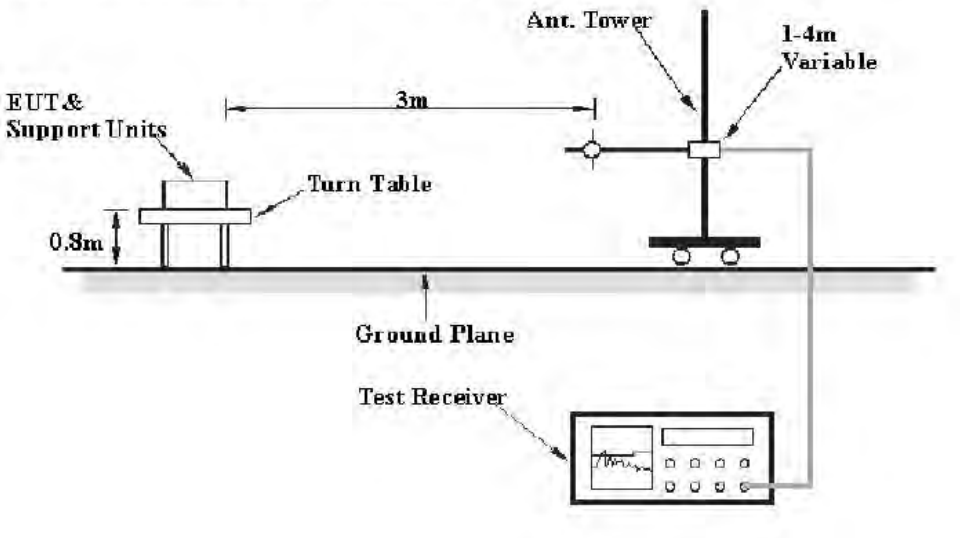
Figure 1 Setup: Transmitting mode

10.1.2. Semi-Anechoic Chamber Test Setup Diagram

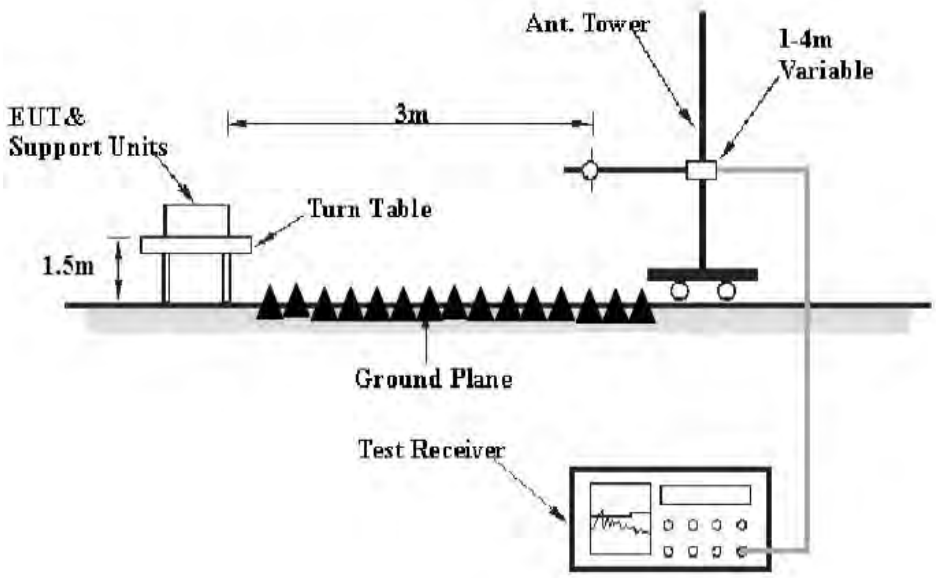
(A)Radiated Emission Test Set-Up, Frequency below 30MHz



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



(C) Radiated Emission Test Set-Up, Frequency above 1GHz



10.2.The Limit For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, 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 Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

10.3.Restricted bands of operation

10.3.1.FCC Part 15.205 Restricted bands of operation

(a) Except as shown in paragraph (d) of this section, Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]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
8.41425-8.41475	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	([2])
13.36-13.41			

[1]Until February 1, 1999, this restricted band shall be 0.490-0.510
[2]Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in Section15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

10.4.Configuration of EUT on Measurement

The equipment is installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

10.5. Operating Condition of EUT

10.5.1. Setup the EUT and simulator as shown as Section 10.1.

10.5.2. Turn on the power of all equipment.

10.5.3. Let the EUT work in TX modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

10.6. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground(Below 1GHz). The EUT and its simulators are placed on a turntable, which is 1.5 meter high above ground(Above 1GHz). The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. This EUT was tested in 3 orthogonal positions and the worst case position data was reported.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

10.7.Data Sample

Frequency (MHz)	Reading (dBμv)	Factor (dB/m)	Result (dBμv/m)	Limit (dBμv/m)	Margin (dB)	Remark
X.XX	28.66	-15.19	13.47	40.0	-26.53	QP

Frequency(MHz) = Emission frequency in MHz
Reading(dBμv) = Uncorrected Analyzer/Receiver reading
Factor (dB/m) = Antenna factor + Cable Loss – Amplifier gain
Result(dBμv/m) = Reading(dBμv) + Factor(dB/m)
Limit (dBμv/m) = Limit stated in standard
Margin (dB) = Result(dBμv/m) - Limit (dBμv/m)
QP = Quasi-peak Reading

Calculation Formula:
Margin(dB) = Result (dBμV/m)–Limit(dBμV/m)
Result(dBμV/m)= Reading(dBμV)+ Factor(dB/m)

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the limit.

10.8.The Field Strength of Radiation Emission Measurement Results

PASS.
Test Lab: 3m Anechoic chamber
Test Engineer: Bob

Note: 1.We tested GFSK mode, Π/4-DQPSK Mode & 8QPSK mode and recorded the worst case data (GFSK mode) for all test mode.

2. Testing is carried out with frequency rang 9kHz to the tenth harmonics, which above 3th Harmonics are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

The measurements greater than 20dB below the limit from 9kHz to 30MHz and 18 to 25GHz.

The spectrum analyzer plots are attached as below.

Below 1GHz

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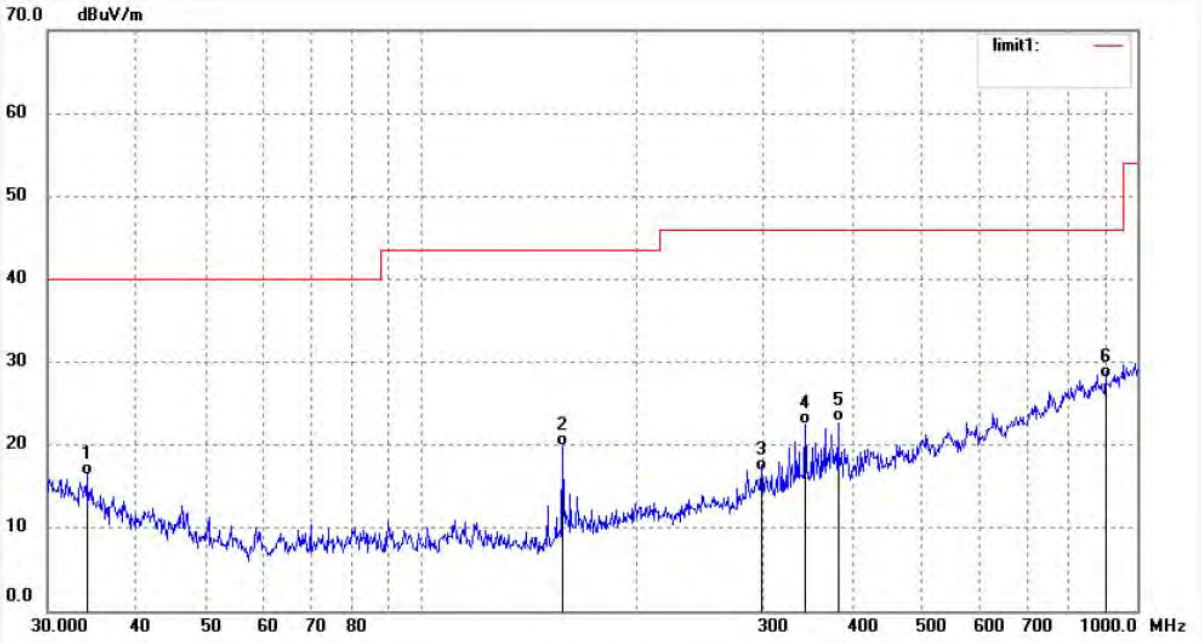
Job No.: STAR2018 #136
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: TX 2402MHz (GFSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Horizontal
Power Source: DC 3.7V
Date: 2018/08/13
Time: 08:40:45
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	34.0451	37.65	-21.22	16.43	40.00	-23.57	QP	200	153	
2	157.5290	47.12	-27.34	19.78	43.50	-23.72	QP	200	89	
3	298.5932	38.15	-21.28	16.87	46.00	-29.13	QP	200	156	
4	343.6506	42.15	-19.58	22.57	46.00	-23.43	QP	200	46	
5	381.8520	41.45	-18.60	22.85	46.00	-23.15	QP	200	41	
6	903.1253	35.15	-7.14	28.01	46.00	-17.99	QP	200	125	

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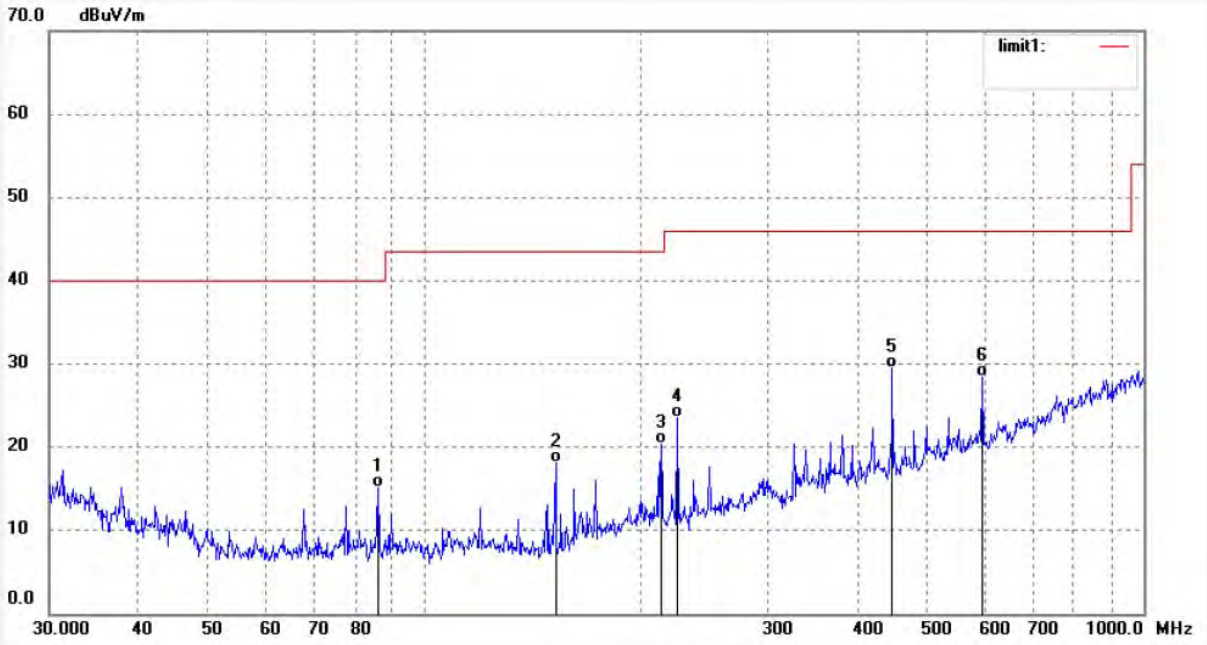
Job No.: STAR2018 #137
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: TX 2402MHz (GFSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Vertical
Power Source: DC 3.7V
Date: 2018/08/13
Time: 08:41:30
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	86.0794	42.68	-27.46	15.22	40.00	-24.78	QP	100	302	
2	152.0902	45.94	-27.87	18.07	43.50	-25.43	QP	100	56	
3	213.1035	44.50	-24.08	20.42	43.50	-23.08	QP	100	320	
4	224.6361	47.51	-23.94	23.57	46.00	-22.43	QP	100	148	
5	447.2619	46.75	-17.32	29.43	46.00	-16.57	QP	100	87	
6	596.6068	42.16	-13.76	28.40	46.00	-17.60	QP	100	154	

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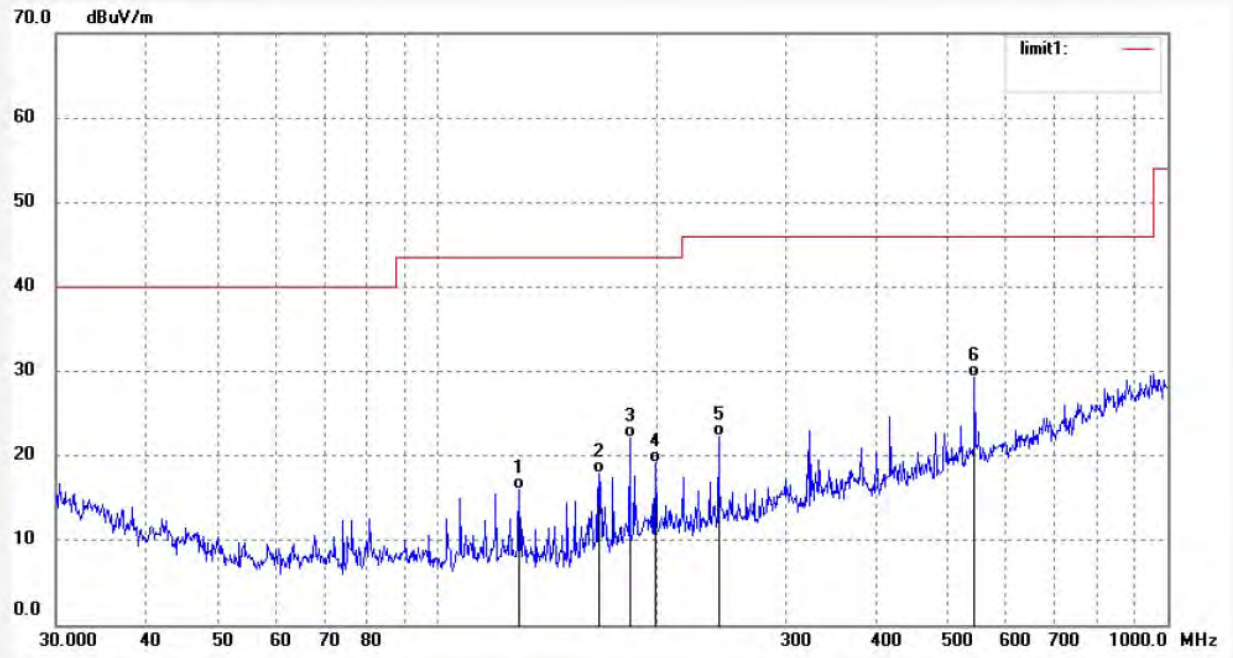
Job No.: STAR2018 #138
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: TX 2441MHz (GFSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Vertical
Power Source: DC 3.7V
Date: 2018/08/13
Time: 08:42:31
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	129.3923	43.79	-27.70	16.09	43.50	-27.41	QP	100	341	
2	166.6382	44.29	-26.36	17.93	43.50	-25.57	QP	100	125	
3	183.2211	47.87	-25.71	22.16	43.50	-21.34	QP	100	165	
4	198.6424	43.52	-24.44	19.08	43.50	-24.42	QP	100	302	
5	242.6888	45.98	-23.70	22.28	46.00	-23.72	QP	100	92	
6	544.5202	44.36	-14.97	29.39	46.00	-16.61	QP	100	132	

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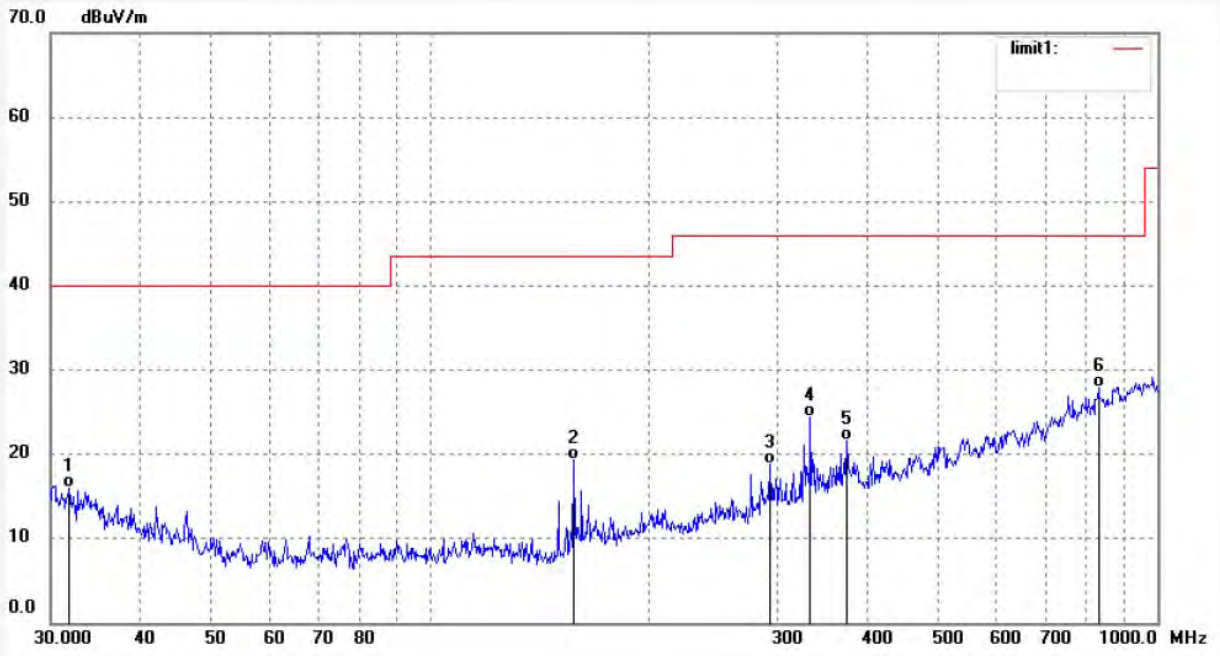
Job No.: STAR2018 #139
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: TX 2441MHz (GFSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Horizontal
Power Source: DC 3.7V
Date: 2018/08/13
Time: 08:43:41
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	31.8465	36.72	-20.66	16.06	40.00	-23.94	QP	200	95	
2	157.5290	46.72	-27.34	19.38	43.50	-24.12	QP	200	121	
3	293.3933	40.28	-21.51	18.77	46.00	-27.23	QP	200	132	
4	332.9536	44.35	-19.99	24.36	46.00	-21.64	QP	200	54	
5	373.8861	40.38	-18.71	21.67	46.00	-24.33	QP	200	82	
6	830.0909	36.37	-8.39	27.98	46.00	-18.02	QP	200	103	

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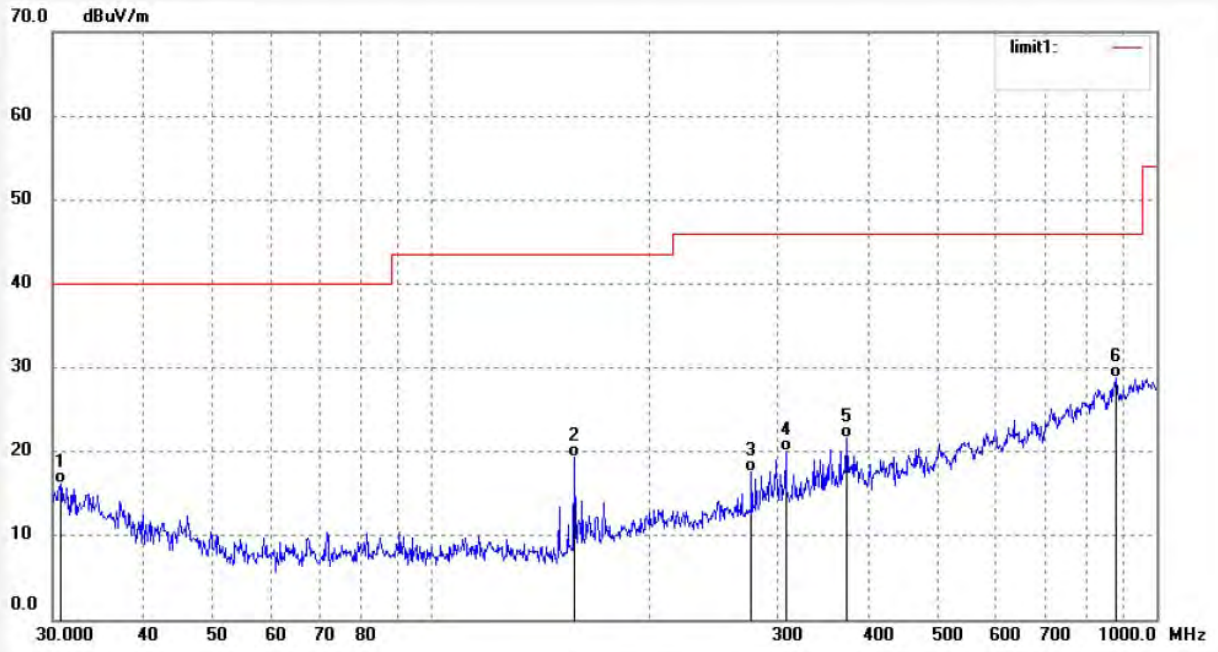
Job No.: STAR2018 #140
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: TX 2480MHz (GFSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Horizontal
Power Source: DC 3.7V
Date: 2018/08/13
Time: 08:44:29
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	30.7470	36.51	-20.39	16.12	40.00	-23.88	QP	200	160	
2	157.5290	46.71	-27.34	19.37	43.50	-24.13	QP	200	302	
3	276.3818	39.86	-22.33	17.53	46.00	-28.47	QP	200	74	
4	308.1862	41.02	-21.00	20.02	46.00	-25.98	QP	200	49	
5	373.8861	40.35	-18.71	21.64	46.00	-24.36	QP	200	210	
6	881.1838	36.29	-7.50	28.79	46.00	-17.21	QP	200	103	

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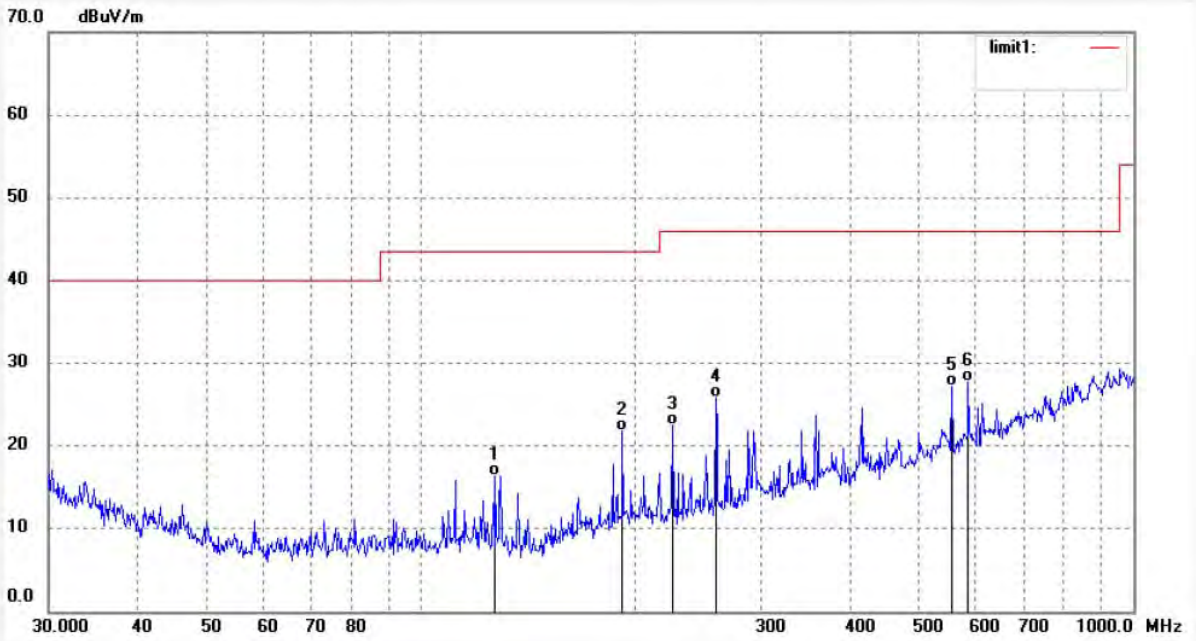
Job No.: STAR2018 #141
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: TX 2480MHz (GFSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Vertical
Power Source: DC 3.7V
Date: 2018/08/13
Time: 08:45:40
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	127.1389	44.04	-27.64	16.40	43.50	-27.10	QP	100	125	
2	191.7840	46.81	-24.95	21.86	43.50	-21.64	QP	100	91	
3	225.4267	46.34	-23.93	22.41	46.00	-23.59	QP	100	215	
4	259.4433	48.80	-23.07	25.73	46.00	-20.27	QP	100	110	
5	556.1213	41.96	-14.67	27.29	46.00	-18.71	QP	100	302	
6	586.2172	41.75	-13.98	27.77	46.00	-18.23	QP	100	46	

Above 1GHz

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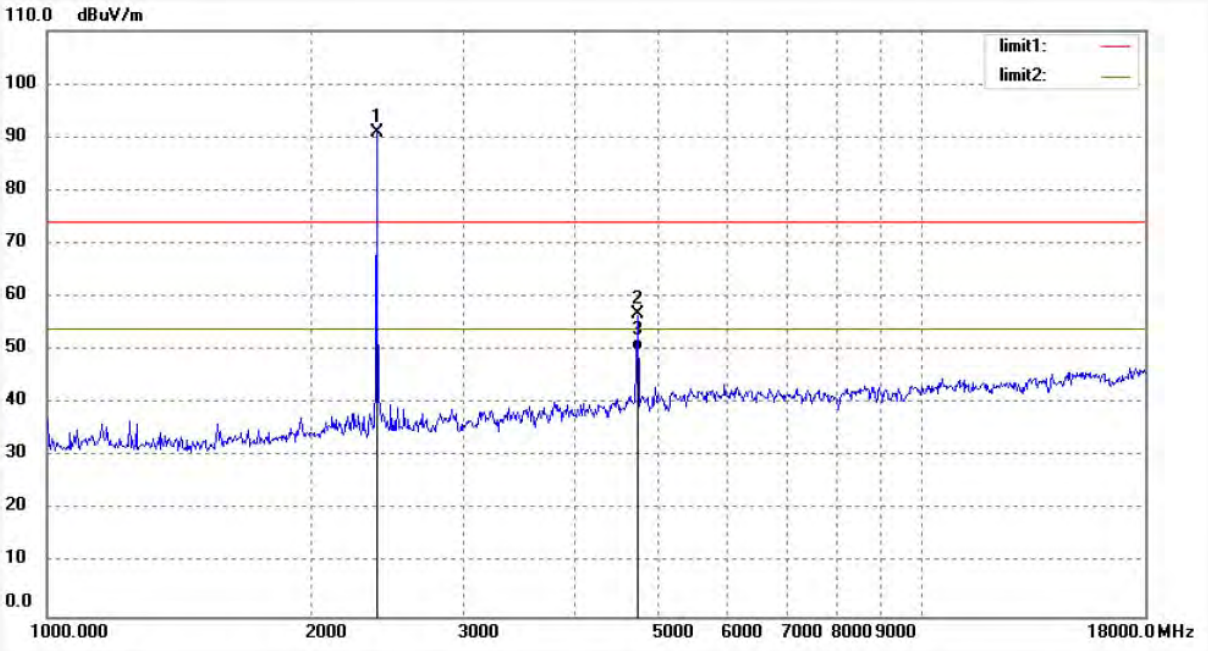
Job No.: STAR2018 #142
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: TX 2402MHz (GFSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Vertical
Power Source: DC 3.7V
Date: 2018/08/13
Time: 08:49:42
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.000	97.31	-6.37	90.94			peak	150	94	
2	4804.000	56.01	0.70	56.71	74.00	-17.29	peak	150	168	
3	47804.00	49.32	0.70	50.02	54.00	-3.98	AVG	150	102	

Note: Average measurement with peak detection at No.3

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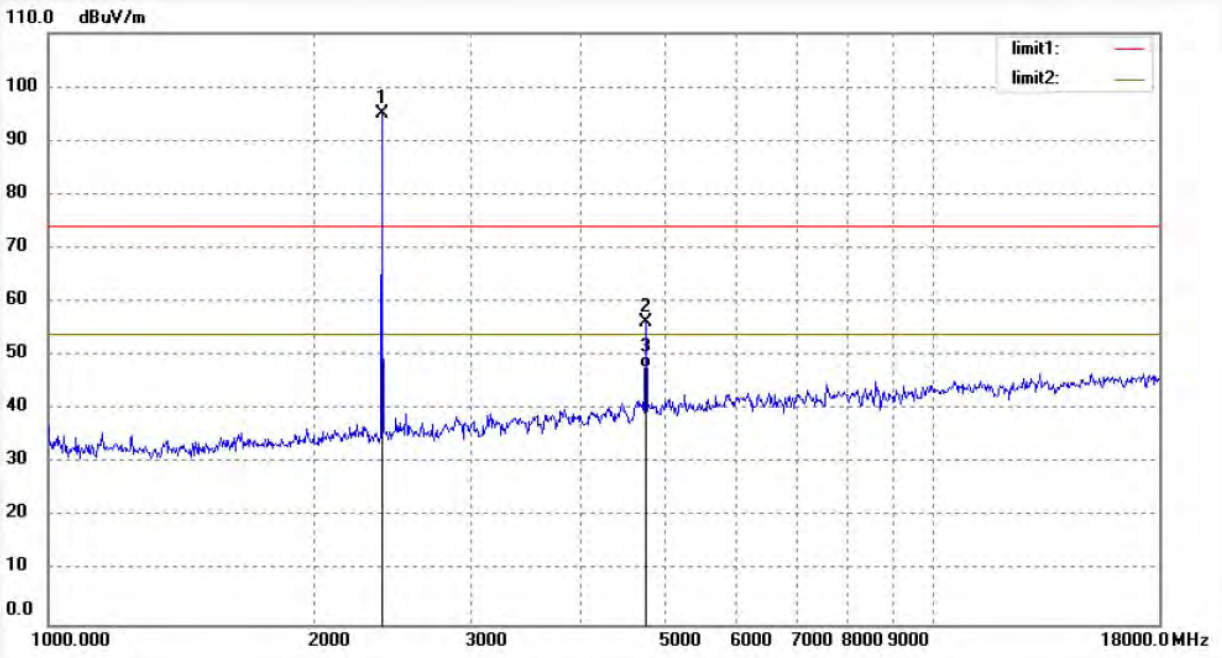
Job No.: STAR2018 #143
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: TX 2402MHz (GFSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Horizontal
Power Source: DC 3.7V
Date: 2018/08/13
Time: 08:51:11
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.000	101.41	-6.37	95.04			peak	200	102	
2	4804.000	55.43	0.70	56.13	74.00	-17.87	peak	200	134	
3	4804.000	47.12	0.70	47.82	54.00	-6.18	AVG	200	311	

Note: Average measurement with peak detection at No.3

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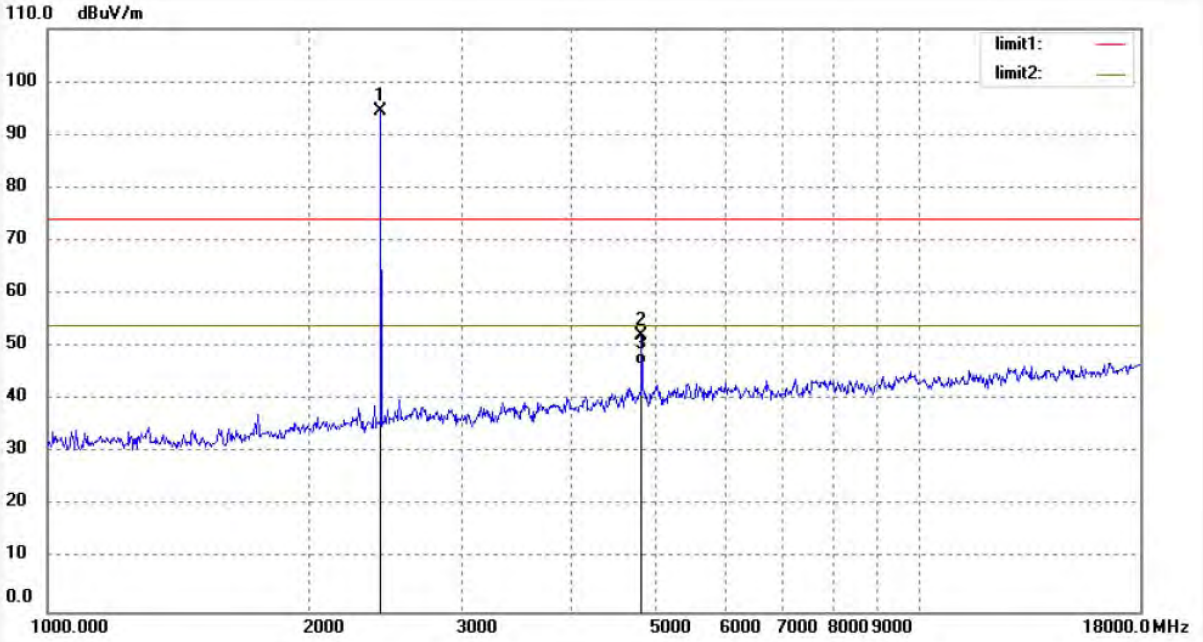
Job No.: STAR2018 #144	Polarization: Horizontal
Standard: FCC PK	Power Source: DC 3.7V
Test item: Radiation Test	Date: 2018/08/13
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 08:53:12
EUT: ANC Headphones	Engineer Signature: Bob
Mode: TX 2441MHz (GFSK)	Distance: 3m
Model: BTHS-ANC032	
Manufacturer: Avantree Technology Co.,Ltd	

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2441.000	100.56	-6.20	94.36			peak	200	78	
2	4882.000	50.96	1.07	52.03	74.00	-21.97	peak	200	102	
3	4882.000	45.63	1.07	46.70	54.00	-7.30	AVG	200	116	

Note: Average measurement with peak detection at No.3

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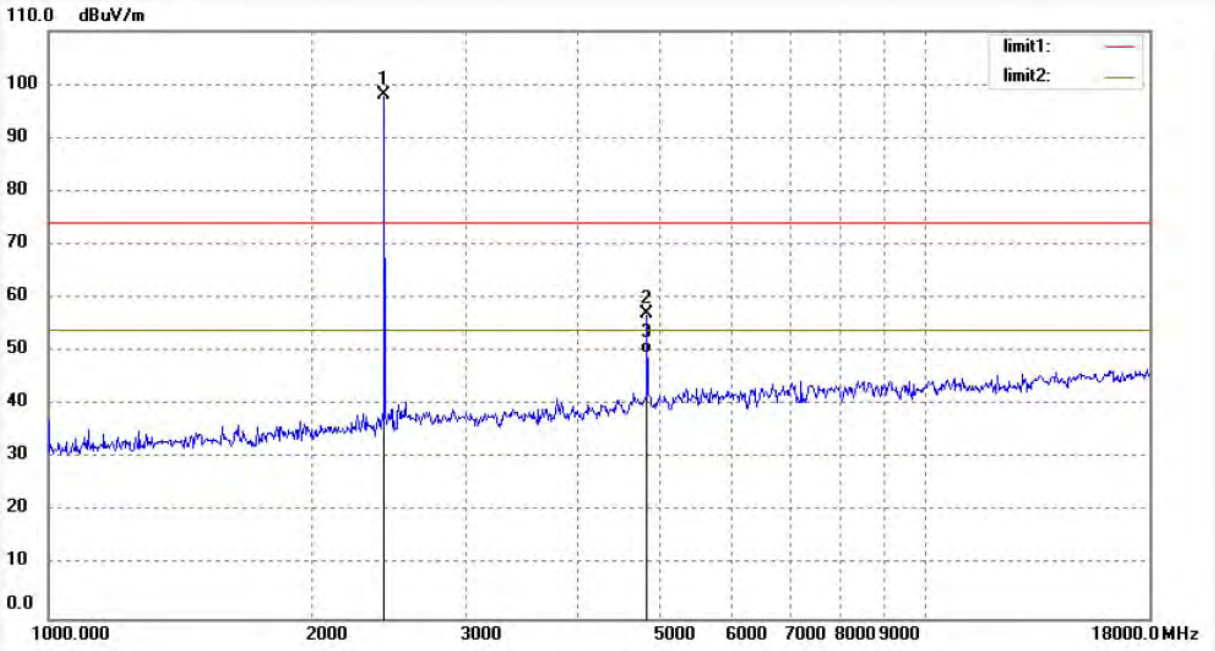
Job No.: STAR2018 #145
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: TX 2441MHz (GFSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Vertical
Power Source: DC 3.7V
Date: 2018/08/13
Time: 08:54:49
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2441.000	104.13	-6.20	97.93			peak	150	195	
2	4882.000	56.01	1.07	57.08	74.00	-16.92	peak	150	213	
3	4882.000	48.67	1.07	49.74	54.00	-4.26	AVG	150	103	

Note: Average measurement with peak detection at No.3

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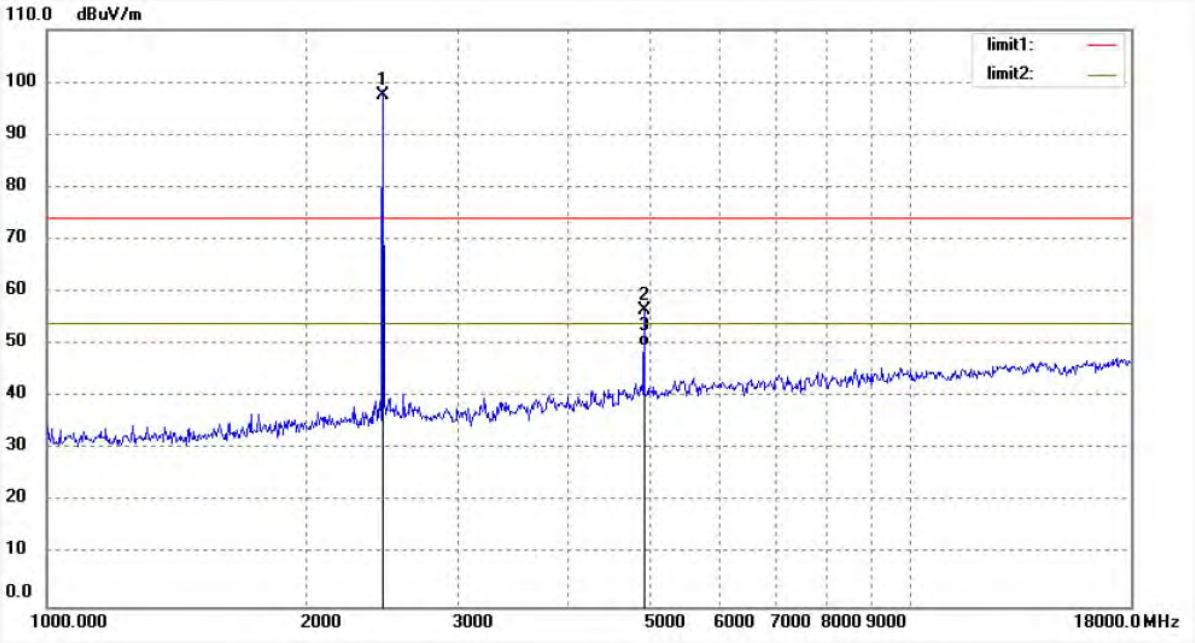
Job No.: STAR2018 #146
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: TX 2480MHz (GFSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Vertical
Power Source: DC 3.7V
Date: 2018/08/13
Time: 08:56:34
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.000	103.54	-6.04	97.50			peak	150	197	
2	4960.000	55.01	1.50	56.51	74.00	-17.49	peak	150	103	
3	4960.000	48.04	1.50	49.54	54.00	-4.46	AVG	150	135	

Note: Average measurement with peak detection at No.3

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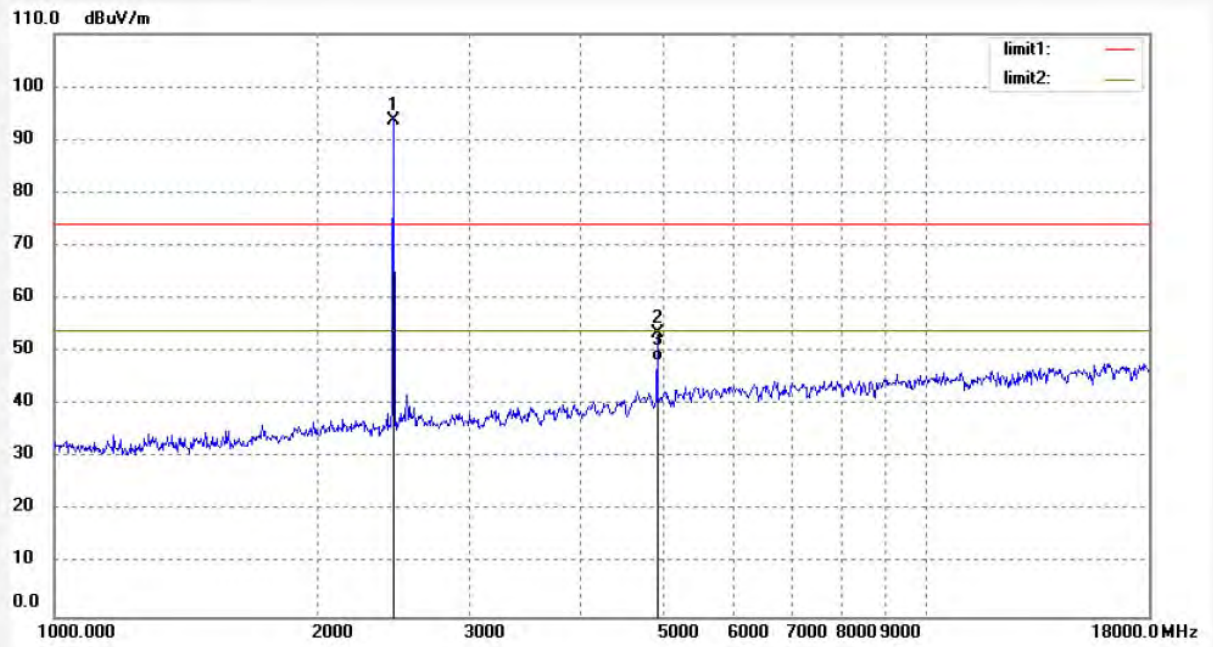
Fax:+86-0755-26503396

Job No.: STAR2018 #147
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: TX 2480MHz (GFSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Horizontal
Power Source: DC 3.7V
Date: 2018/08/13
Time: 08:59:49
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482

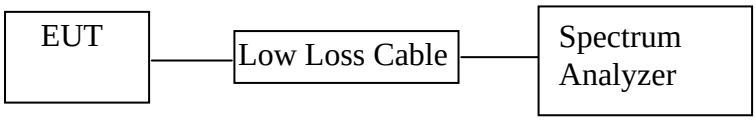


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.000	99.65	-6.04	93.61			peak	200	94	
2	4996.000	52.01	1.50	53.51	74.00	-20.49	peak	200	146	
3	4960.000	46.65	1.50	48.15	54.00	-5.85	AVG	200	102	

Note: Average measurement with peak detection at No.3

11.BAND EDGE COMPLIANCE TEST

11.1.Block Diagram of Test Setup



(EUT: ANC Headphones)

11.2.The Requirement For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, 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 Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

11.3.EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

11.4.Operating Condition of EUT

11.4.1.Setup the EUT and simulator as shown as Section 11.1.

11.4.2.Turn on the power of all equipment.

11.4.3.Let the EUT work in TX (Hopping off, Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2480MHz TX frequency to transmit.

11.5.Test Procedure

11.5.1.The transmitter output was connected to the spectrum analyzer via a low loss cable.

11.5.2.Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz with convenient frequency span including 100 kHz bandwidth from band edge.

11.5.3.The band edges was measured and recorded.

11.6.Test Result

Test Lab: Shielding room
Test Engineer: Bob

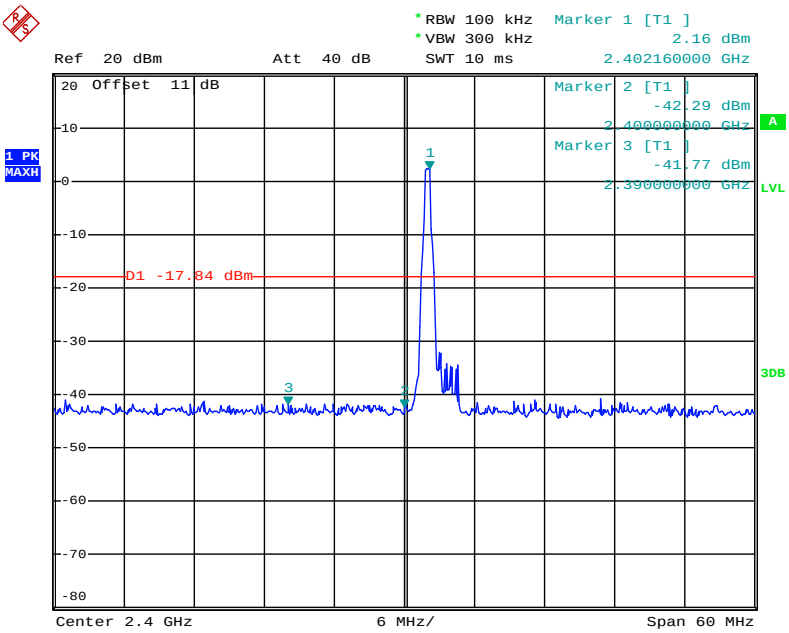
Note: Both hopping-on mode and hopping-off mode had been pre-tested, and only the worst case was recorded in the test report.

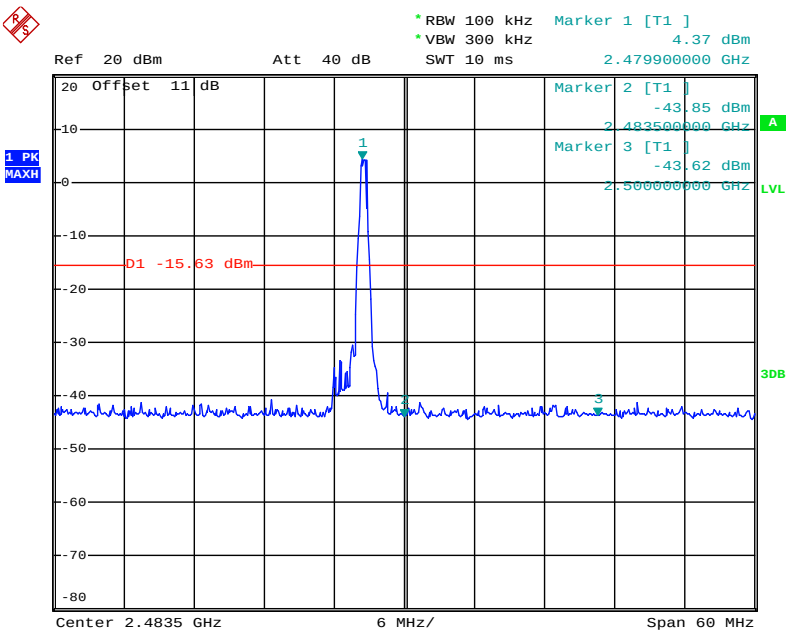
Non-hopping mode

Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
GFSK Mode		
2400.00	44.45	> 20dBc
2483.50	48.22	> 20dBc
Π/4-DQPSK Mode		
2400.00	42.00	> 20dBc
2483.50	45.59	> 20dBc
8DPSK Mode		
2400.00	42.78	> 20dBc
2483.50	45.75	> 20dBc

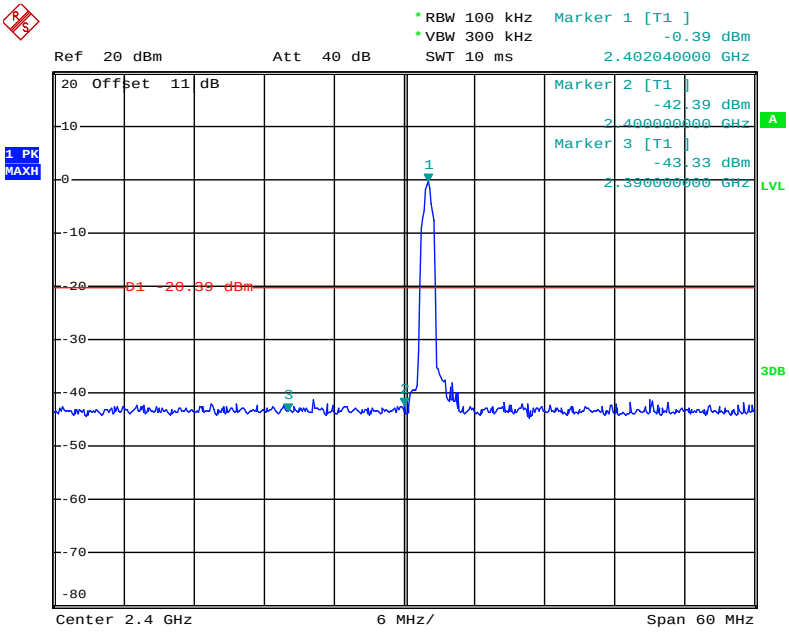
The spectrum analyzer plots are attached as below.

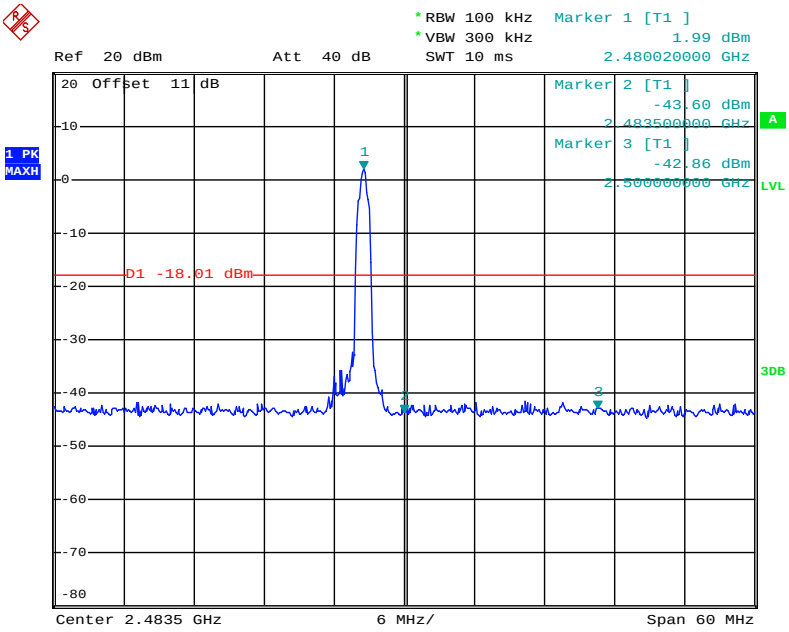
GFSK Mode


RBW 100 kHz
VBW 300 kHz
Ref 20 dBm
Att 40 dB
SWT 10 ms
Marker 1 [T1]
2.16 dBm
2.402160000 GHz
Marker 2 [T1]
-42.29 dBm
2.400000000 GHz
Marker 3 [T1]
-41.77 dBm
2.390000000 GHz
20 Offset 11 dB
D1 -17.84 dBm
1 PK MAXH
A
LVL
3DB
Center 2.4 GHz
6 MHz/
Span 60 MHz

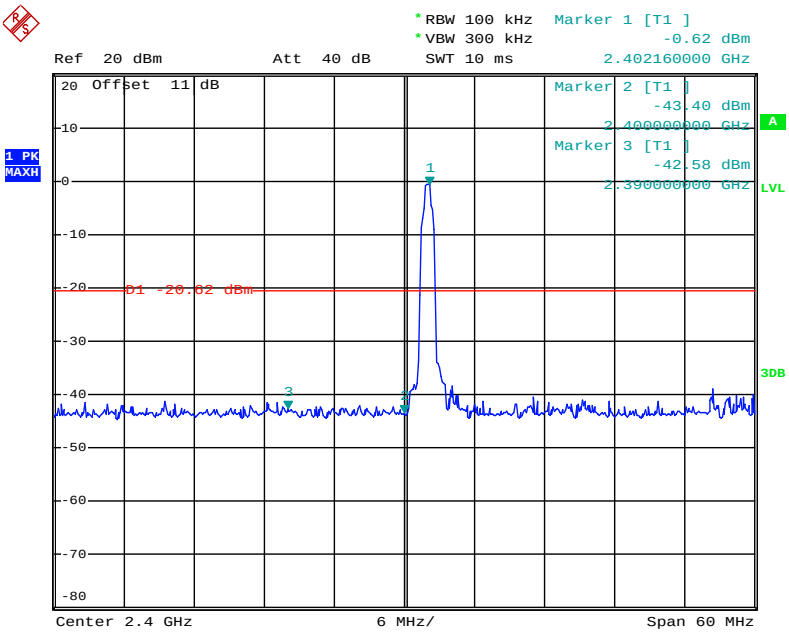

RBW 100 kHz
VBW 300 kHz
Ref 20 dBm
Att 40 dB
SWT 10 ms
Marker 1 [T1]
4.37 dBm
2.479900000 GHz
Marker 2 [T1]
-43.85 dBm
2.483500000 GHz
Marker 3 [T1]
-43.62 dBm
2.500000000 GHz
20 Offset 11 dB
D1 -15.63 dBm
1 PK MAXH
A
LVL
3DB
Center 2.4835 GHz
6 MHz/
Span 60 MHz

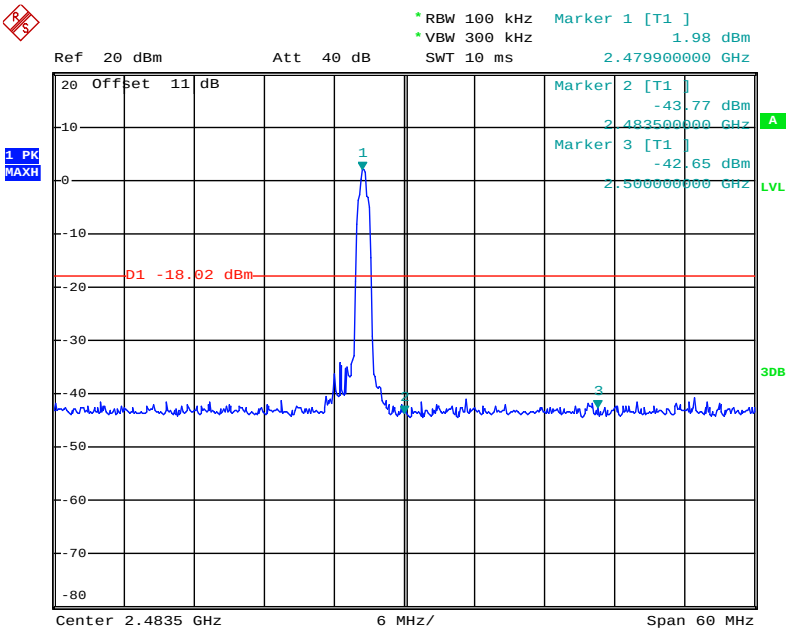
Π/4-DQPSK Mode





8DPSK Mode


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
Marker 1 [T1]
-0.62 dBm
2.402160000 GHz
Ref 20 dBm
Att 40 dB
20 Offset 11 dB
Marker 2 [T1]
-43.40 dBm
2.400000000 GHz
Marker 3 [T1]
-42.58 dBm
2.390000000 GHz
1 PK MAXH
A
LVL
3DB
D1 -20.02 dBm
Center 2.4 GHz
6 MHz/
Span 60 MHz


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
Marker 1 [T1]
1.98 dBm
2.479900000 GHz
Ref 20 dBm
Att 40 dB
20 Offset 11 dB
Marker 2 [T1]
-43.77 dBm
2.483500000 GHz
Marker 3 [T1]
-42.65 dBm
2.500000000 GHz
1 PK MAXH
A
LVL
3DB
D1 -18.02 dBm
Center 2.4835 GHz
6 MHz/
Span 60 MHz

Radiated Band Edge Result

Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

   Result = Reading + Corrected Factor
3. Display the measurement of peak values.

Test Procedure:

The EUT and its simulators are placed on a turntable, which is 1.5 meter high above ground(Above 1GHz). The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

Let the EUT work in TX (Hopping off, Hopping on) modes measure it.
We select 2402MHz, 2480MHz TX frequency to transmit(Hopping off mode).
We select 2402-2480MHz TX frequency to transmit(Hopping on mode).

During the radiated emission test, the spectrum analyzer was set with the following configurations:
1.The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.
2.The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
3.All modes of operation were investigated and the worst-case emissions are reported.

The spectrum analyzer plots are attached as below.

Test Lab: 3m Anechoic chamber
Test Engineer: Bob

Non-hopping mode

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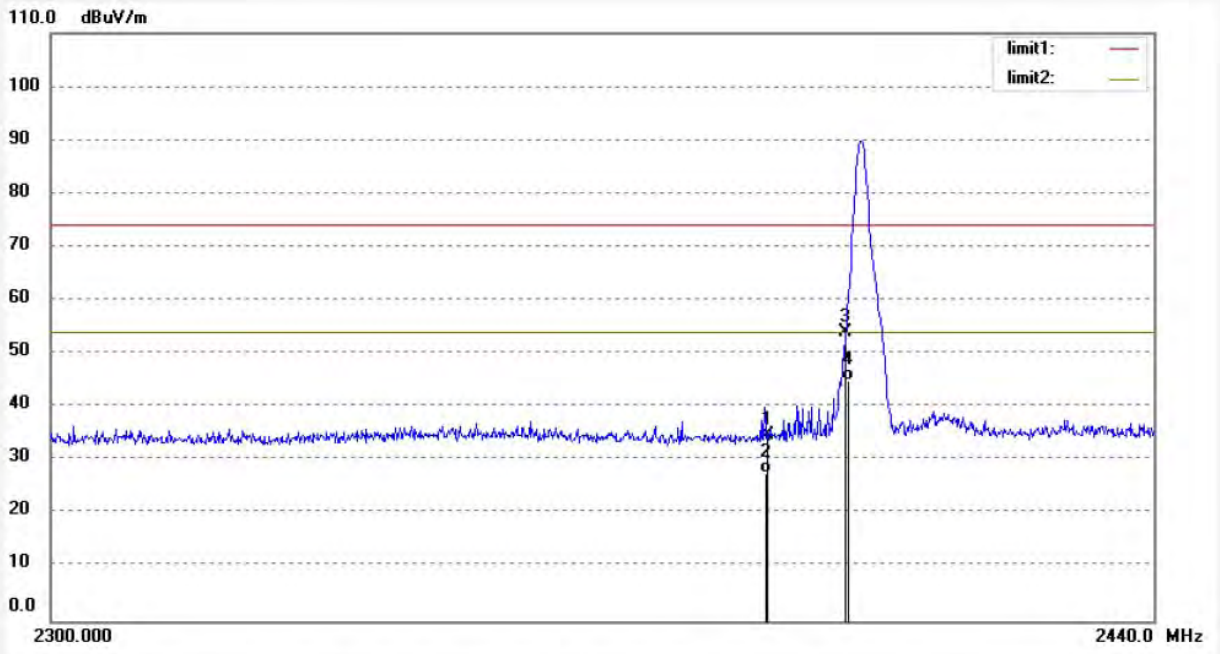
Job No.: STAR2018 #148
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: TX 2402MHz (GFSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Horizontal
Power Source: DC 3.7V
Date: 2018/08/13
Time: 09:04:20
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	41.20	-6.32	34.88	74.00	-39.12	peak	200	51	
2	2390.000	34.01	-6.32	27.69	54.00	-26.31	AVG	200	154	
3	2400.000	60.40	-6.27	54.13	74.00	-19.87	peak	200	212	
4	2400.000	51.12	-6.27	44.85	54.00	-9.15	AVG	200	39	

Note: Average measurement with peak detection at No.2&4

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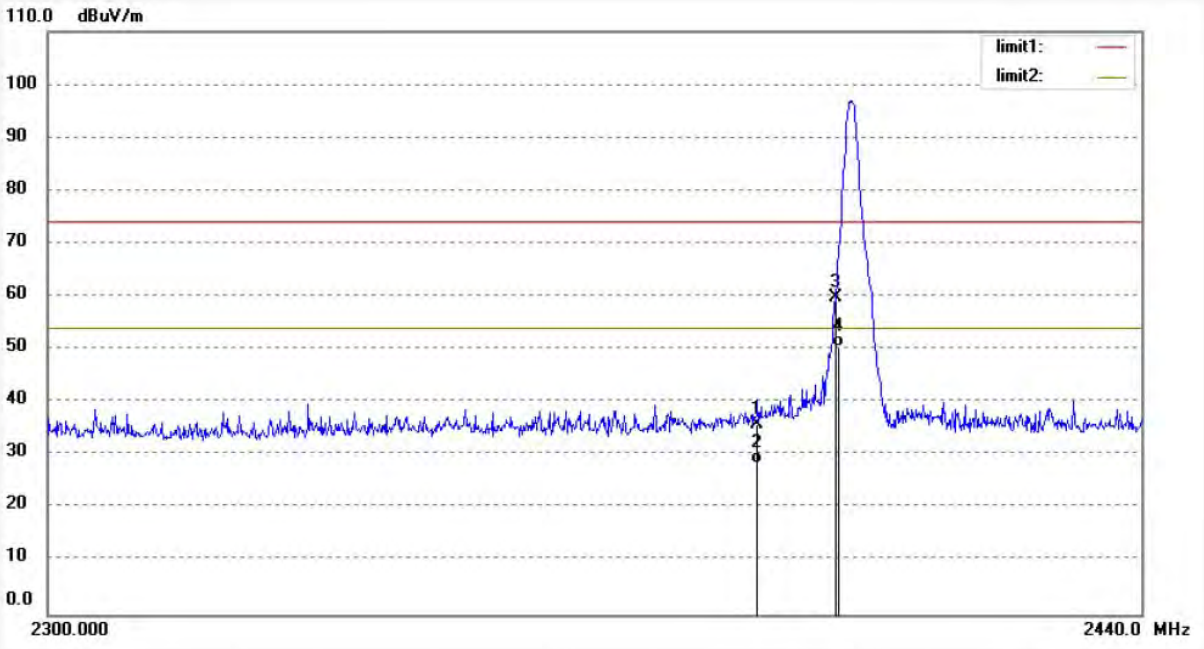
Job No.: STAR2018 #149	Polarization: Vertical
Standard: FCC PK	Power Source: DC 3.7V
Test item: Radiation Test	Date: 2018/08/13
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 09:05:45
EUT: ANC Headphones	Engineer Signature: Bob
Mode: TX 2402MHz (GFSK)	Distance: 3m
Model: BTHS-ANC032	
Manufacturer: Avantree Technology Co.,Ltd	

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	42.30	-6.32	35.98	74.00	-38.02	peak	150	327	
2	2390.000	34.84	-6.32	28.52	54.00	-25.48	AVG	150	204	
3	2400.000	65.98	-6.27	59.71	74.00	-14.29	peak	150	196	
4	2400.000	56.74	-6.27	50.47	54.00	-3.53	AVG	150	36	

Note: Average measurement with peak detection at No.2&4

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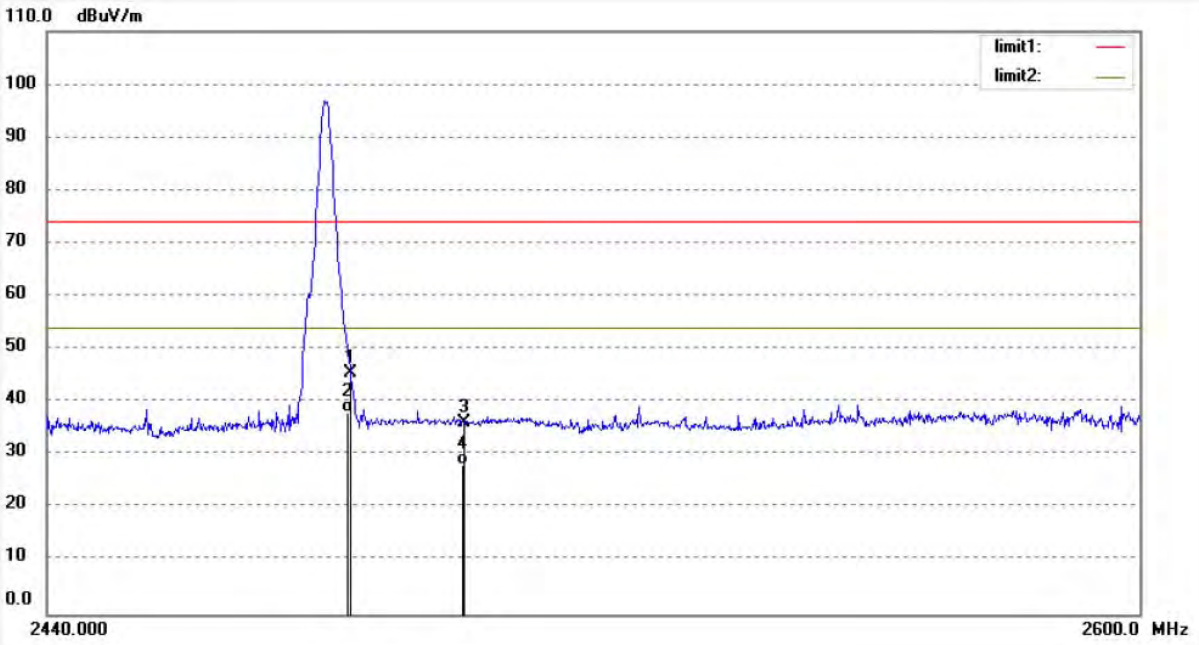
Job No.: STAR2018 #150
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: TX 2480MHz (GFSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Vertical
Power Source: DC 3.7V
Date: 2018/08/13
Time: 09:08:14
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	51.32	-5.89	45.43	74.00	-28.57	peak	150	198	
2	2483.500	44.02	-5.89	38.13	54.00	-15.87	AVG	150	56	
3	2500.000	42.05	-5.81	36.24	74.00	-37.76	peak	150	164	
4	2500.000	34.07	-5.81	28.26	54.00	-25.74	AVG	150	306	

Note: Average measurement with peak detection at No.2&4

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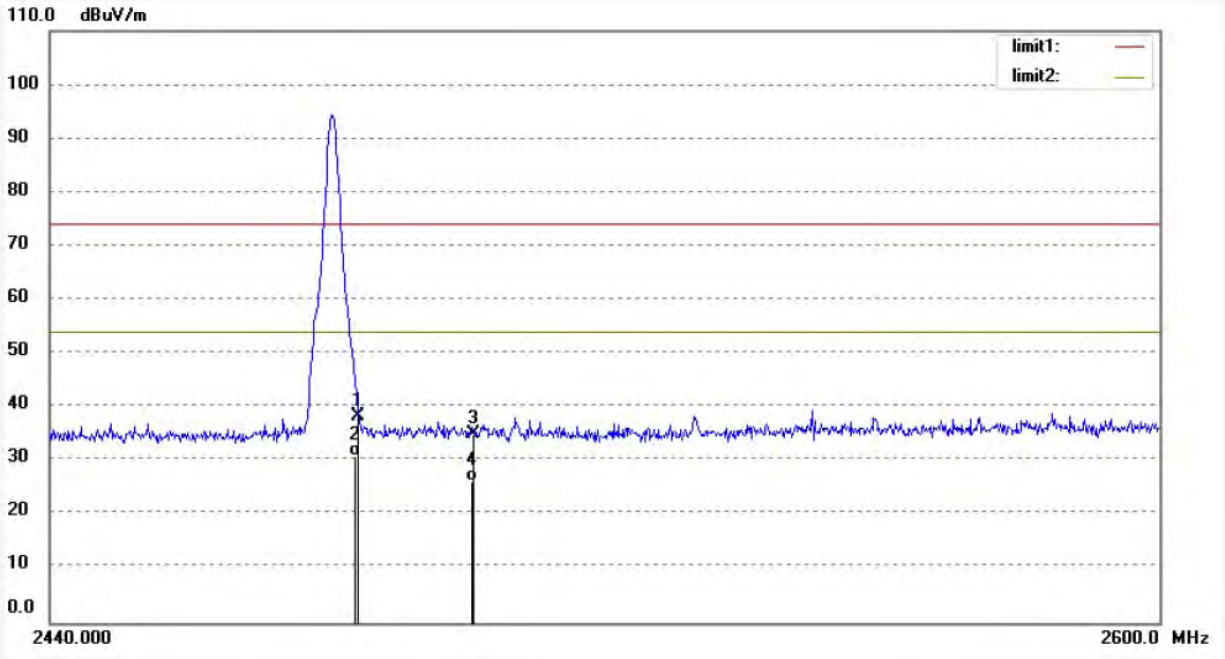
Job No.: STAR2018 #151
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: TX 2480MHz (GFSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Horizontal
Power Source: DC 3.7V
Date: 2018/08/13
Time: 09:08:12
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	44.39	-5.89	38.50	74.00	-35.50	peak	200	98	
2	2483.500	36.87	-5.89	30.98	54.00	-23.02	AVG	200	165	
3	2500.000	41.01	-5.81	35.20	74.00	-38.80	peak	200	219	
4	2500.000	32.05	-5.81	26.24	54.00	-27.76	AVG	200	302	

Note: Average measurement with peak detection at No.2&4

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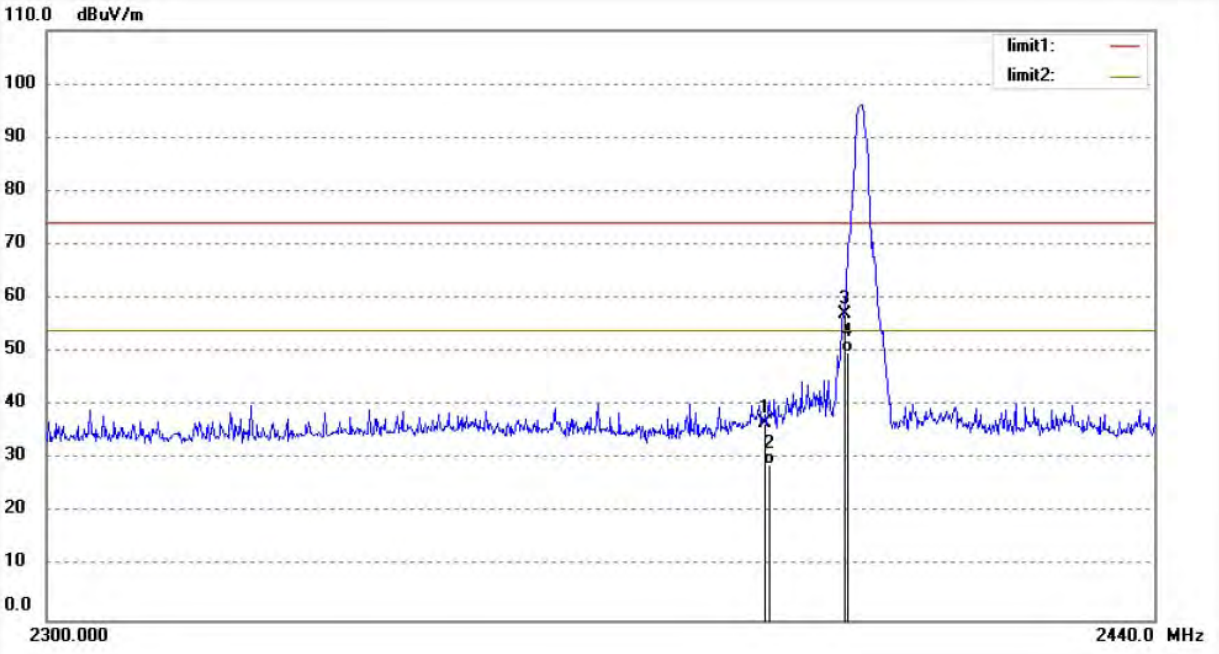
Fax:+86-0755-26503396

Job No.: STAR2018 #154	Polarization: Vertical
Standard: FCC PK	Power Source: DC 3.7V
Test item: Radiation Test	Date: 2018/08/13
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 09:14:45
EUT: ANC Headphones	Engineer Signature: Bob
Mode: TX 2402MHz (π/4 DQPSK)	Distance: 3m
Model: BTHS-ANC032	
Manufacturer: Avantree Technology Co.,Ltd	

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	43.02	-6.32	36.70	74.00	-37.30	peak	150	68	
2	2390.000	35.21	-6.32	28.89	54.00	-25.11	AVG	150	210	
3	2400.000	63.21	-6.27	56.94	74.00	-17.06	peak	150	156	
4	2400.000	56.16	-6.27	49.89	54.00	-4.11	AVG	150	98	

Note: Average measurement with peak detection at No.2&4

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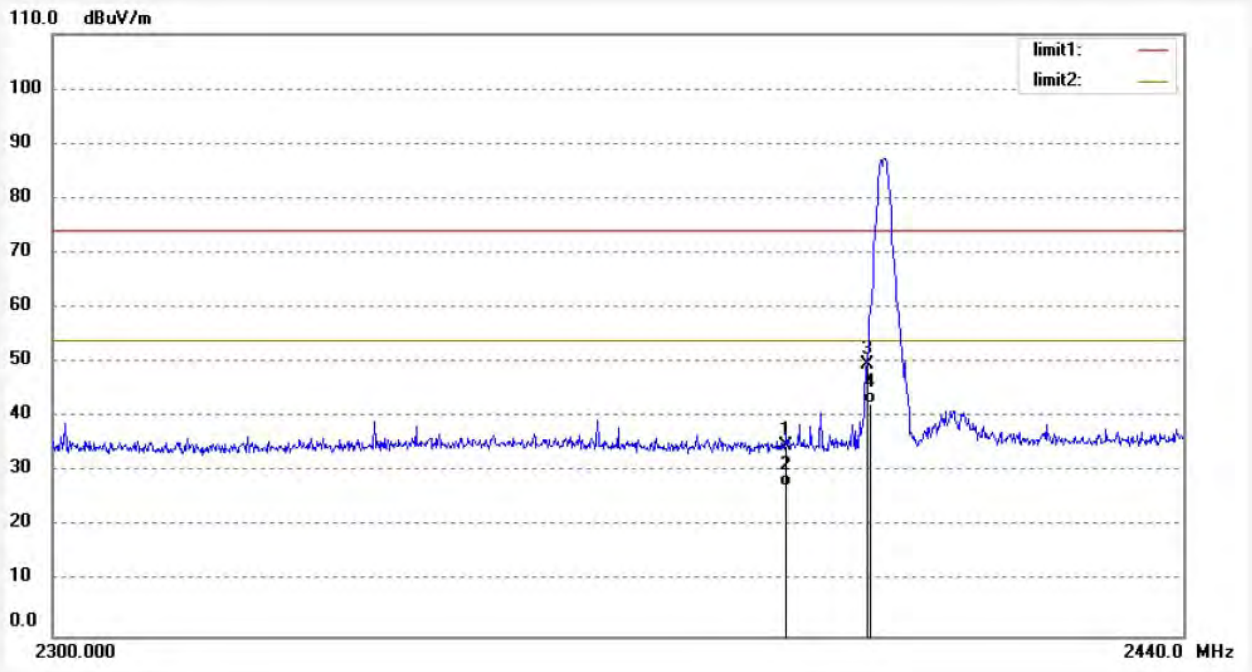
Job No.: STAR2018 #155
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: TX 2402MHz (π/4 DQPSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Horizontal
Power Source: DC 3.7V
Date: 2018/08/13
Time: 09:16:48
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	41.02	-6.32	34.70	74.00	-39.30	peak	200	242	
2	2390.000	33.61	-6.32	27.29	54.00	-26.71	AVG	200	263	
3	2400.000	56.03	-6.27	49.76	74.00	-24.24	peak	200	223	
4	2400.000	48.66	-6.27	42.39	54.00	-11.61	AVG	200	69	

Note: Average measurement with peak detection at No.2&4

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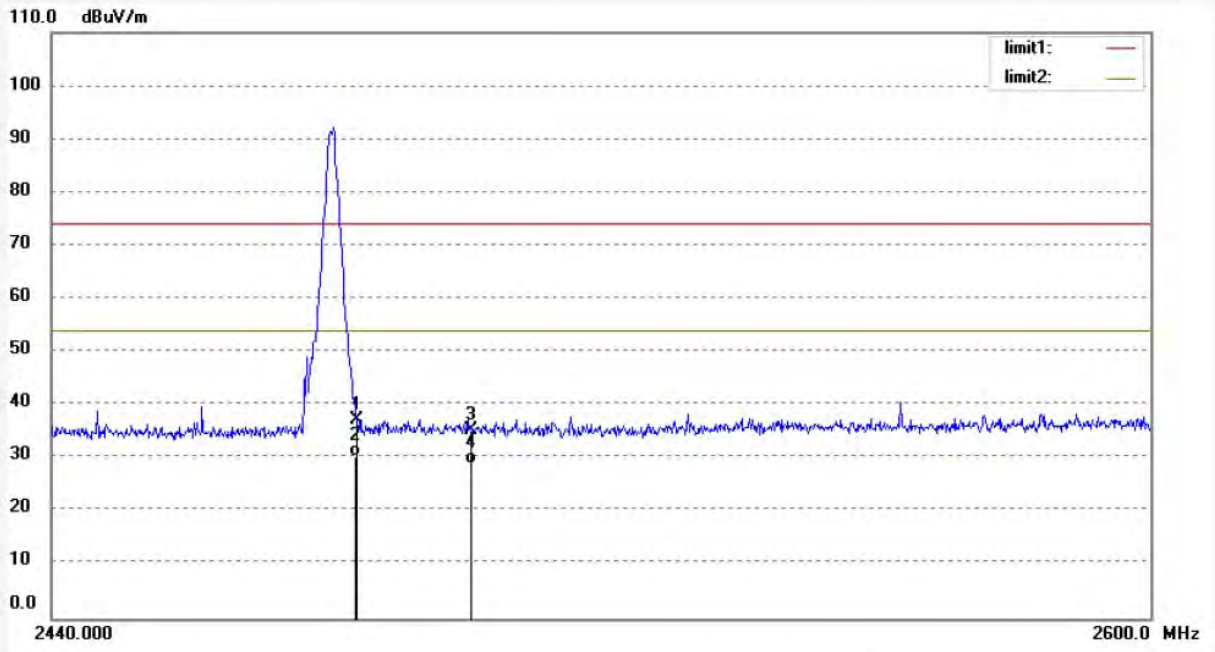
Job No.: STAR2018 #152
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: TX 2480MHz (π/4 DQPSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Horizontal
Power Source: DC 3.7V
Date: 2018/08/13
Time: 09:10:37
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	43.16	-5.89	37.27	74.00	-36.73	peak	200	46	
2	2483.500	36.41	-5.89	30.52	54.00	-23.48	AVG	200	105	
3	2500.000	41.02	-5.81	35.21	74.00	-38.79	peak	200	269	
4	2500.000	34.72	-5.81	28.91	54.00	-25.09	AVG	200	300	

Note: Average measurement with peak detection at No.2&4

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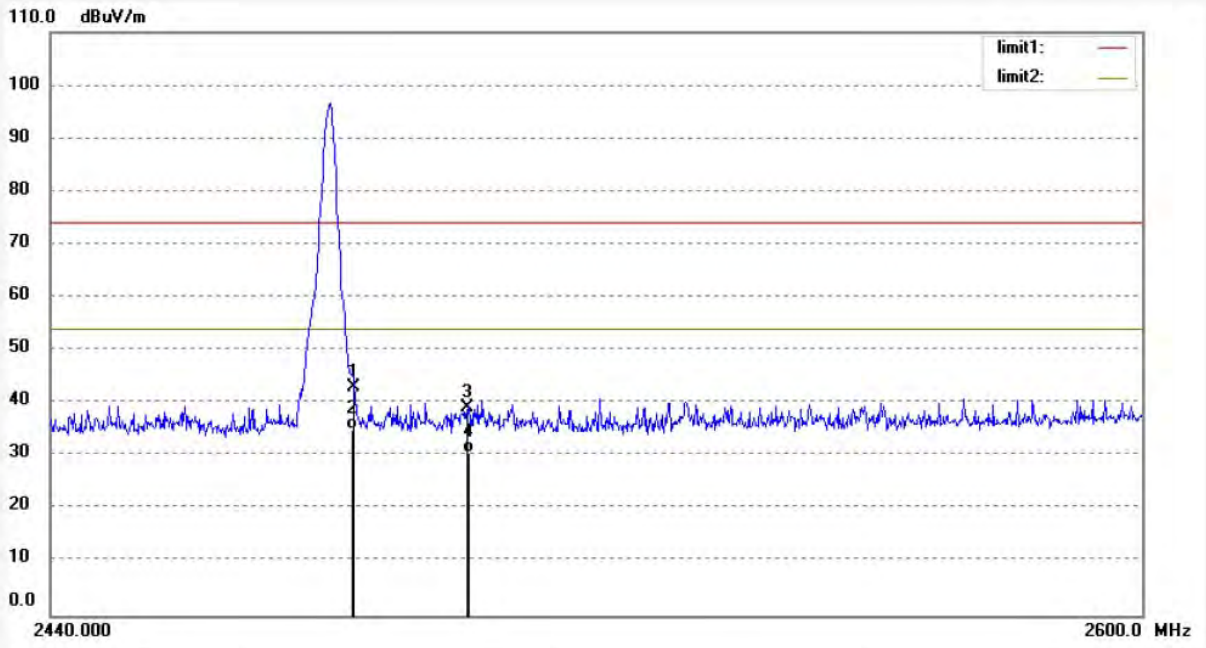
Job No.: STAR2018 #153
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: TX 2480MHz (π/4 DQPSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Vertical
Power Source: DC 3.7V
Date: 2018/08/13
Time: 09:11:41
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	49.02	-5.89	43.13	74.00	-30.87	peak	150	132	
2	2483.500	41.03	-5.89	35.14	54.00	-18.86	AVG	150	66	
3	2500.000	44.96	-5.81	39.15	74.00	-34.85	peak	150	194	
4	2500.000	36.44	-5.81	30.63	54.00	-23.37	AVG	150	61	

Note: Average measurement with peak detection at No.2&4

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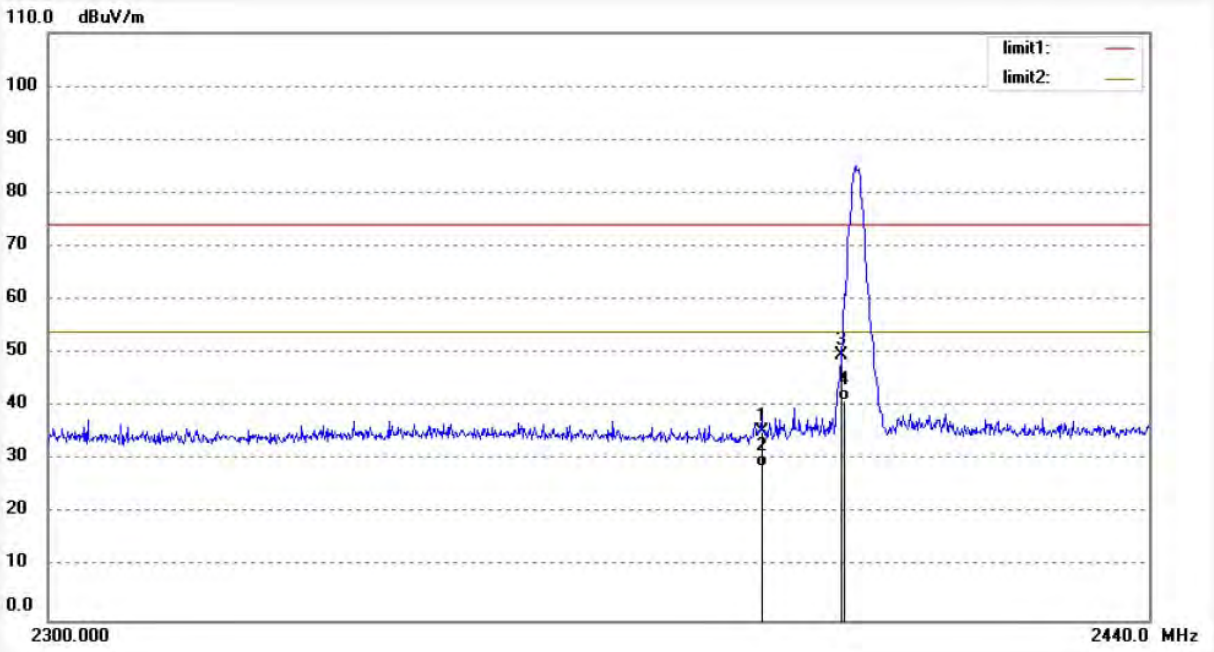
Job No.: STAR2018 #156
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: TX 2402MHz (8DPSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Horizontal
Power Source: DC 3.7V
Date: 2018/08/13
Time: 09:18:54
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	41.64	-6.32	35.32	74.00	-38.68	peak	200	56	
2	2390.000	34.94	-6.32	28.62	54.00	-25.38	AVG	200	41	
3	2400.000	55.83	-6.27	49.56	74.00	-24.44	peak	200	256	
4	2400.000	47.25	-6.27	40.98	54.00	-13.02	AVG	200	210	

Note: Average measurement with peak detection at No.2&4

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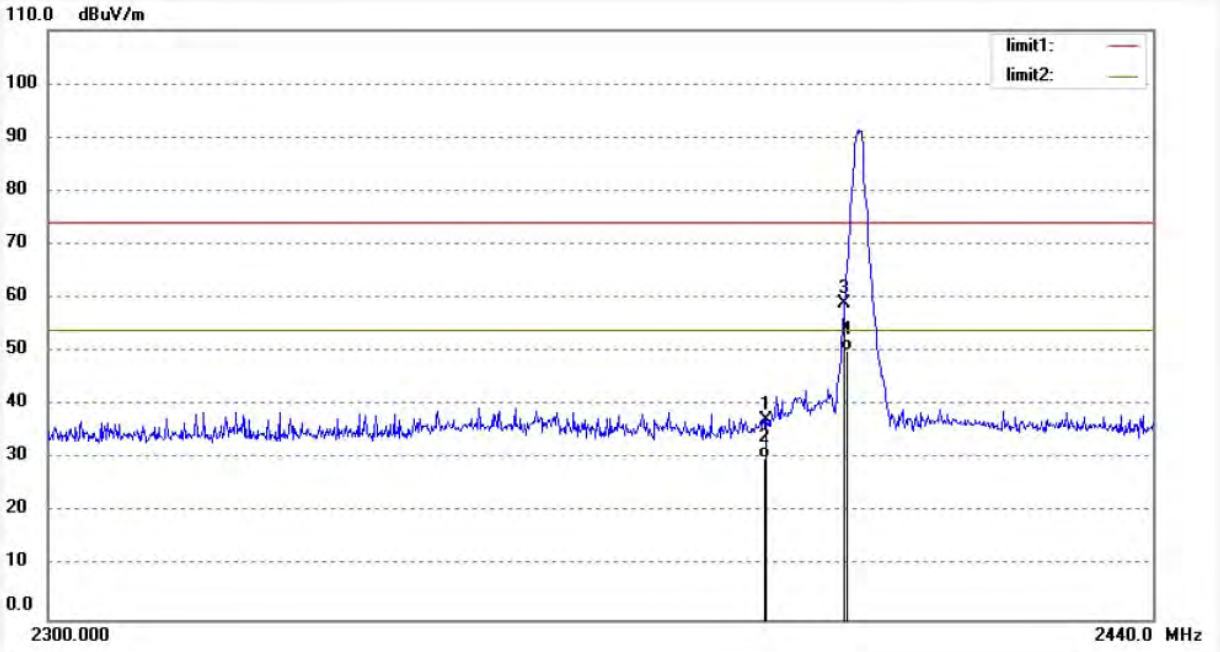
Job No.: STAR2018 #157
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: TX 2402MHz (8DPSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Vertical
Power Source: DC 3.7V
Date: 2018/08/13
Time: 09:21:17
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	43.56	-6.32	37.24	74.00	-36.76	peak	150	139	
2	2390.000	36.39	-6.32	30.07	54.00	-23.93	AVG	150	65	
3	2400.000	65.32	-6.27	59.05	74.00	-14.95	peak	150	44	
4	2400.000	56.42	-6.27	50.15	54.00	-3.85	AVG	150	87	

Note: Average measurement with peak detection at No.2&4

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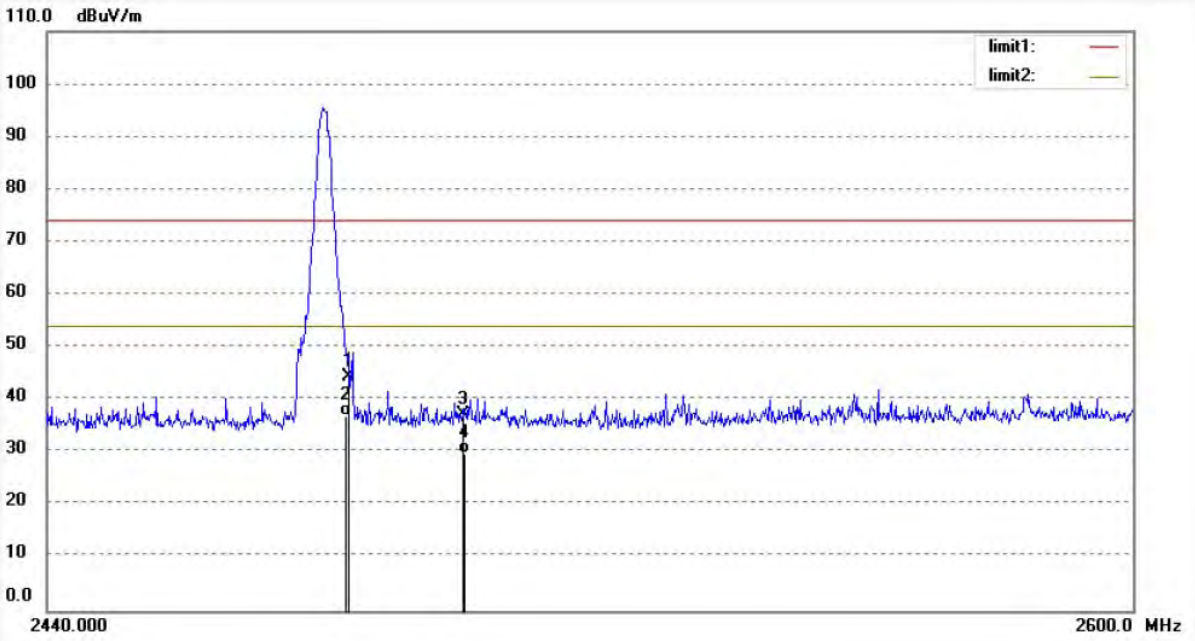
Job No.: STAR2018 #158
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: TX 2480MHz (8DPSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Vertical
Power Source: DC 3.7V
Date: 2018/08/13
Time: 09:24:54
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	50.32	-5.89	44.43	74.00	-29.57	peak	150	922	
2	2483.500	43.00	-5.89	37.11	54.00	-16.89	AVG	150	302	
3	2500.000	43.12	-5.81	37.31	74.00	-36.69	peak	150	164	
4	2500.000	35.65	-5.81	29.84	54.00	-24.16	AVG	150	302	

Note: Average measurement with peak detection at No.2&4

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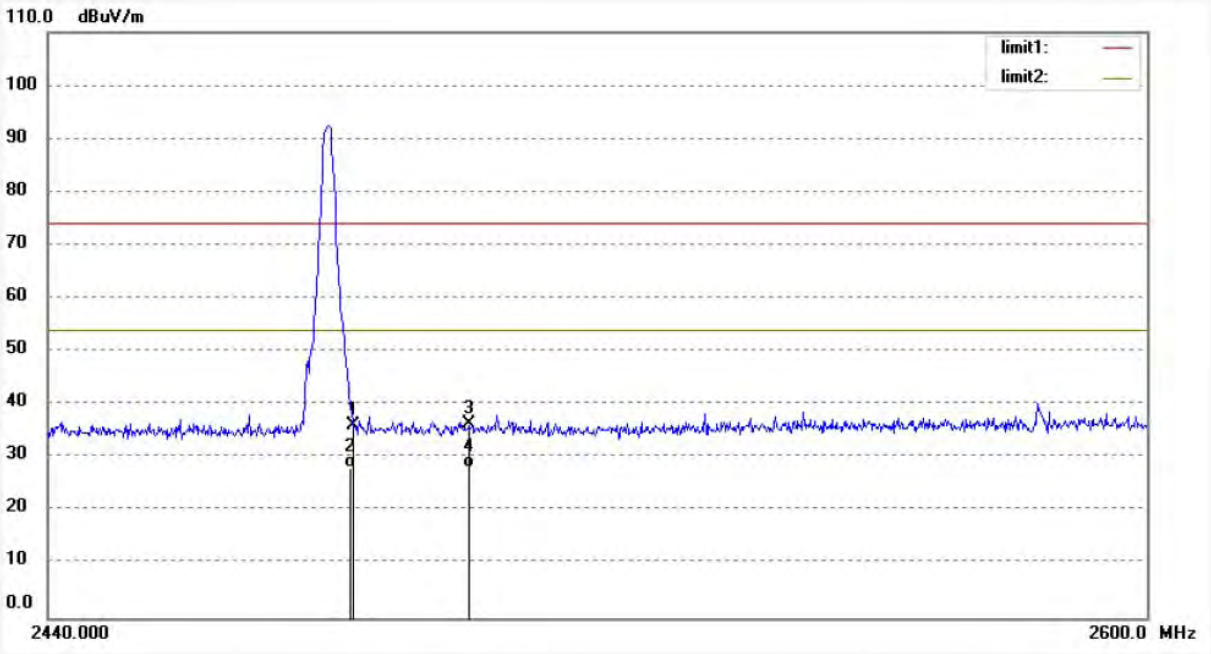
Job No.: STAR2018 #159
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: TX 2480MHz (8DPSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Horizontal
Power Source: 20
Date: 2018/08/13
Time: 09:26:12
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	42.02	-5.89	36.13	74.00	-37.87	peak	200	216	
2	2483.500	34.02	-5.89	28.13	54.00	-25.87	AVG	200	100	
3	2500.000	42.30	-5.81	36.49	74.00	-37.51	peak	200	221	
4	2500.000	34.04	-5.81	28.23	54.00	-25.77	AVG	200	156	

Note: Average measurement with peak detection at No.2&4

Hopping mode

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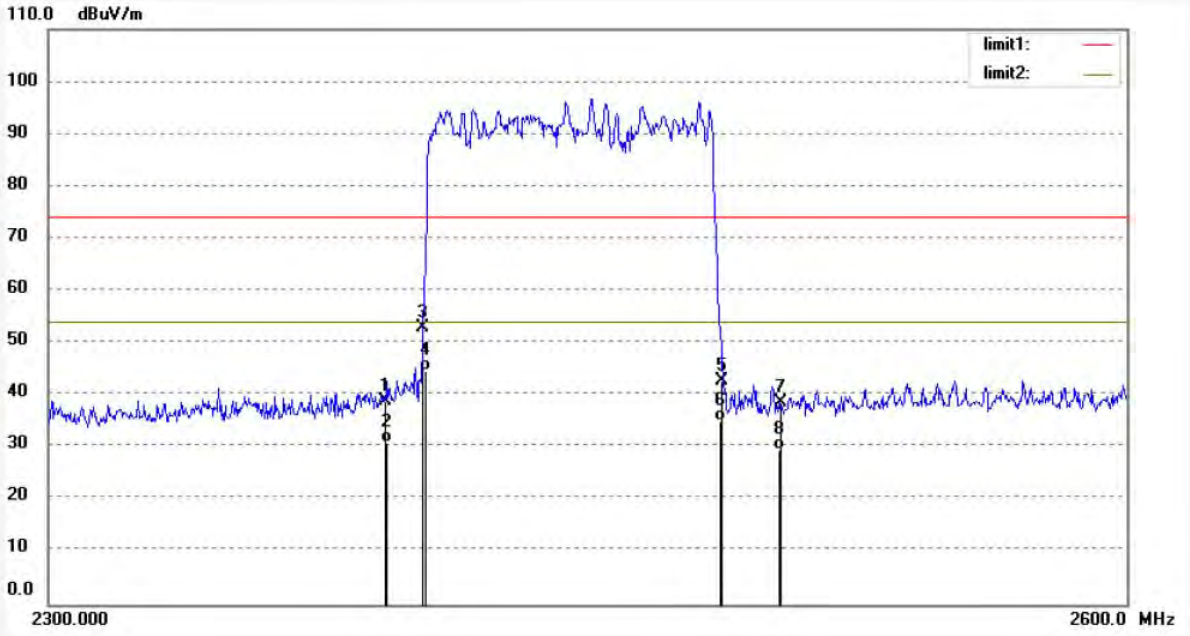
Job No.: STAR2018 #166
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: Hopping (GFSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Vertical
Power Source: DC 3.7V
Date: 2018/08/13
Time: 10:03:25
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	45.37	-6.32	39.05	74.00	-34.95	peak	150	54	
2	2390.000	37.18	-6.32	30.86	54.00	-23.14	AVG	150	262	
3	2400.000	59.30	-6.27	53.03	74.00	-20.97	peak	150	100	
4	2400.000	51.03	-6.27	44.76	54.00	-9.24	AVG	150	113	
5	2483.500	48.65	-5.89	42.76	74.00	-31.24	peak	150	63	
6	2483.500	41.03	-5.89	35.14	54.00	-18.86	AVG	150	102	
7	2500.000	44.32	-5.81	38.51	74.00	-35.49	peak	150	298	
8	2500.000	35.32	-5.81	29.51	54.00	-24.49	AVG	150	203	

Note: Average measurement with peak detection at No.2&4&6&8

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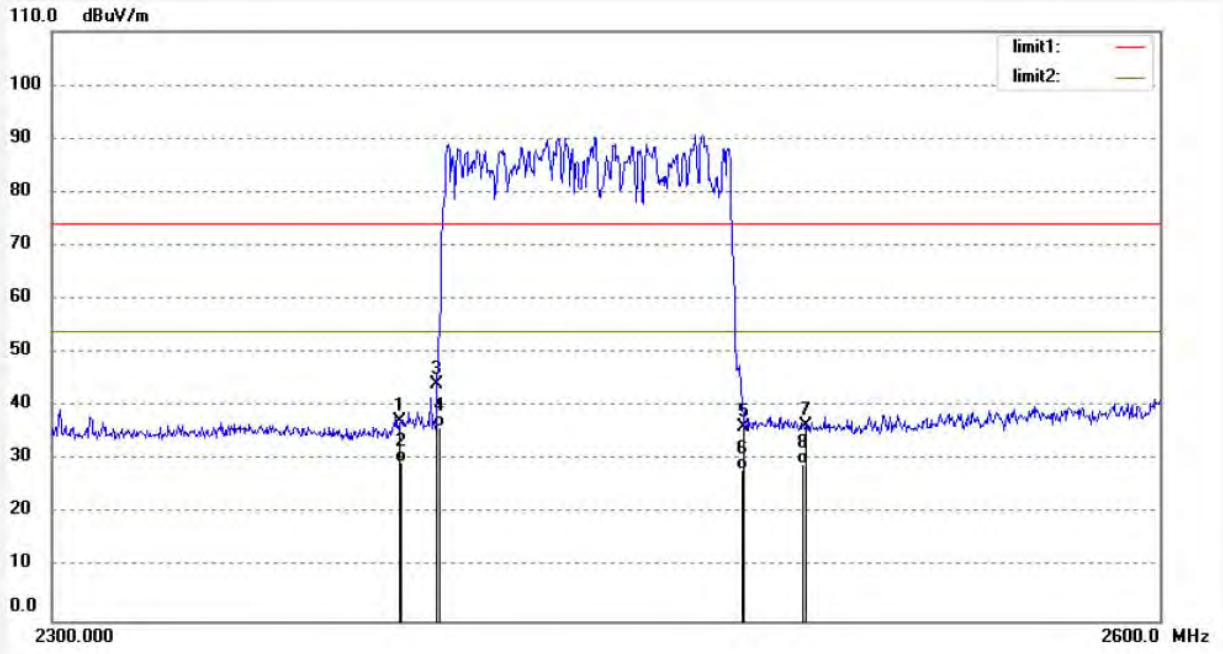
Job No.: STAR2018 #165
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: Hopping (GFSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Horizontal
Power Source: DC 3.7V
Date: 2018/08/13
Time: 09:56:32
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	43.57	-6.32	37.25	74.00	-36.75	peak	200	61	
2	2390.000	36.02	-6.32	29.70	54.00	-24.30	AVG	200	310	
3	2400.000	50.31	-6.27	44.04	74.00	-29.96	peak	200	128	
4	2400.000	42.30	-6.27	36.03	54.00	-17.97	AVG	200	221	
5	2483.500	42.01	-5.89	36.12	74.00	-37.88	peak	200	95	
6	2483.500	34.20	-5.89	28.31	54.00	-25.69	AVG	200	305	
7	2500.000	42.36	-5.81	36.55	74.00	-37.45	peak	200	21	
8	2500.000	35.02	-5.81	29.21	54.00	-24.79	AVG	200	105	

Note: Average measurement with peak detection at No.2&4&6&8

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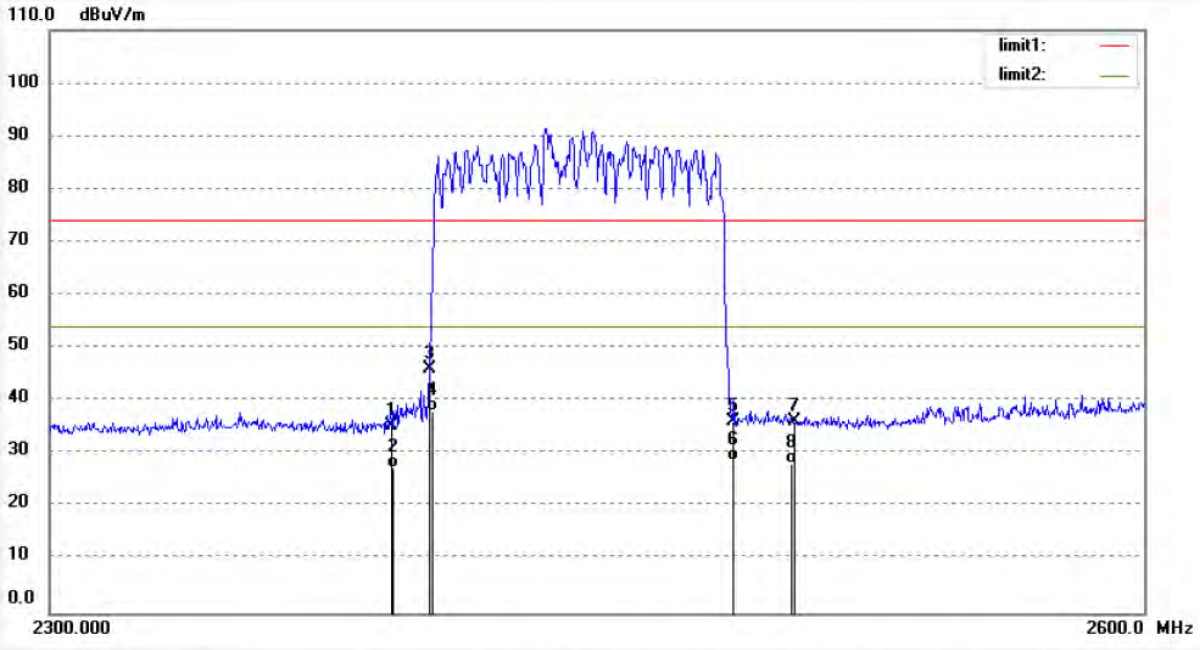
Job No.: STAR2018 #163
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: Hopping (π/4 DQPSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Horizontal
Power Source: DC 3.7V
Date: 2018/08/13
Time: 09:51:12
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	41.63	-6.32	35.31	74.00	-38.69	peak	200	197	
2	2390.000	33.65	-6.32	27.33	54.00	-26.67	AVG	200	51	
3	2400.000	52.40	-6.27	46.13	74.00	-27.87	peak	200	162	
4	2400.000	44.30	-6.27	38.03	54.00	-15.97	AVG	200	231	
5	2483.500	42.07	-5.89	36.18	74.00	-37.82	peak	200	102	
6	2483.500	34.65	-5.89	28.76	54.00	-25.24	AVG	200	46	
7	2500.000	42.03	-5.81	36.22	74.00	-37.78	peak	200	253	
8	2500.000	34.02	-5.81	28.21	54.00	-25.79	AVG	200	305	

Note: Average measurement with peak detection at No.2&4&6&8

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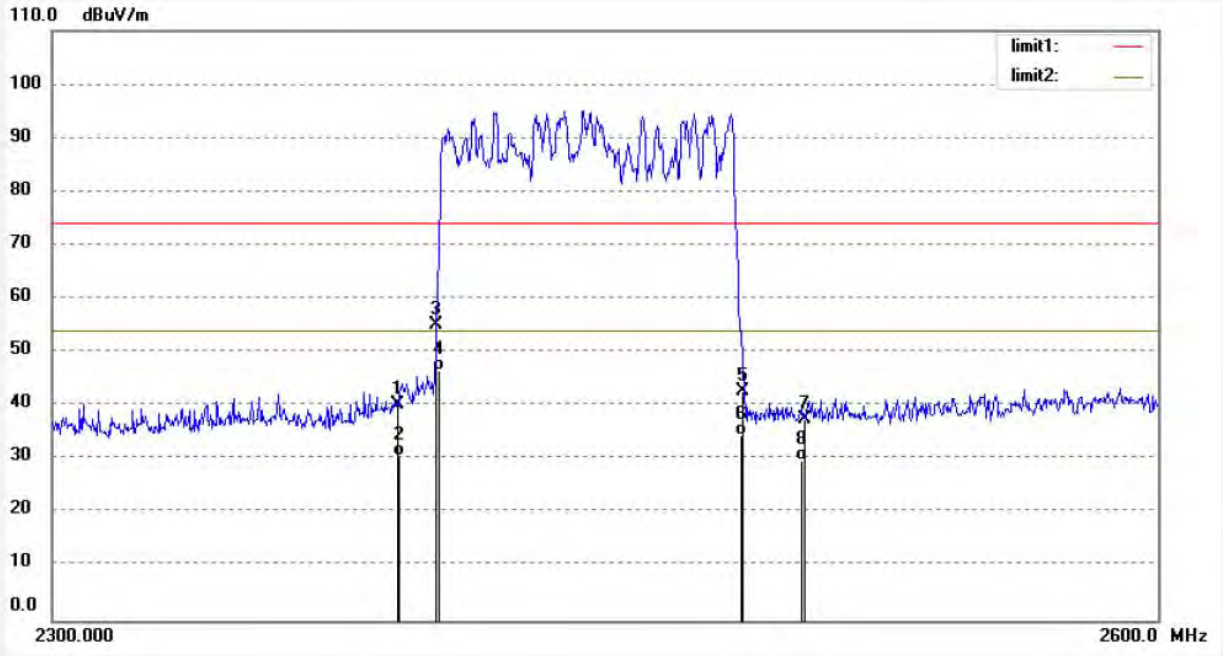
Job No.: STAR2018 #162
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: Hopping (π/4 DQPSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Vertical
Power Source: DC 3.7V
Date: 2018/08/13
Time: 09:47:15
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	46.61	-6.32	40.29	74.00	-33.71	peak	150	61	
2	2390.000	37.01	-6.32	30.69	54.00	-23.31	AVG	150	234	
3	2400.000	61.32	-6.27	55.05	74.00	-18.95	peak	150	162	
4	2400.000	53.02	-6.27	46.75	54.00	-7.25	AVG	150	302	
5	2483.500	48.65	-5.89	42.76	74.00	-31.24	peak	150	198	
6	2483.500	40.38	-5.89	34.49	54.00	-19.51	AVG	150	64	
7	2500.000	43.35	-5.81	37.54	74.00	-36.46	peak	150	168	
8	2500.000	35.60	-5.81	29.79	54.00	-24.21	AVG	150	161	

Note: Average measurement with peak detection at No.2&4&6&8

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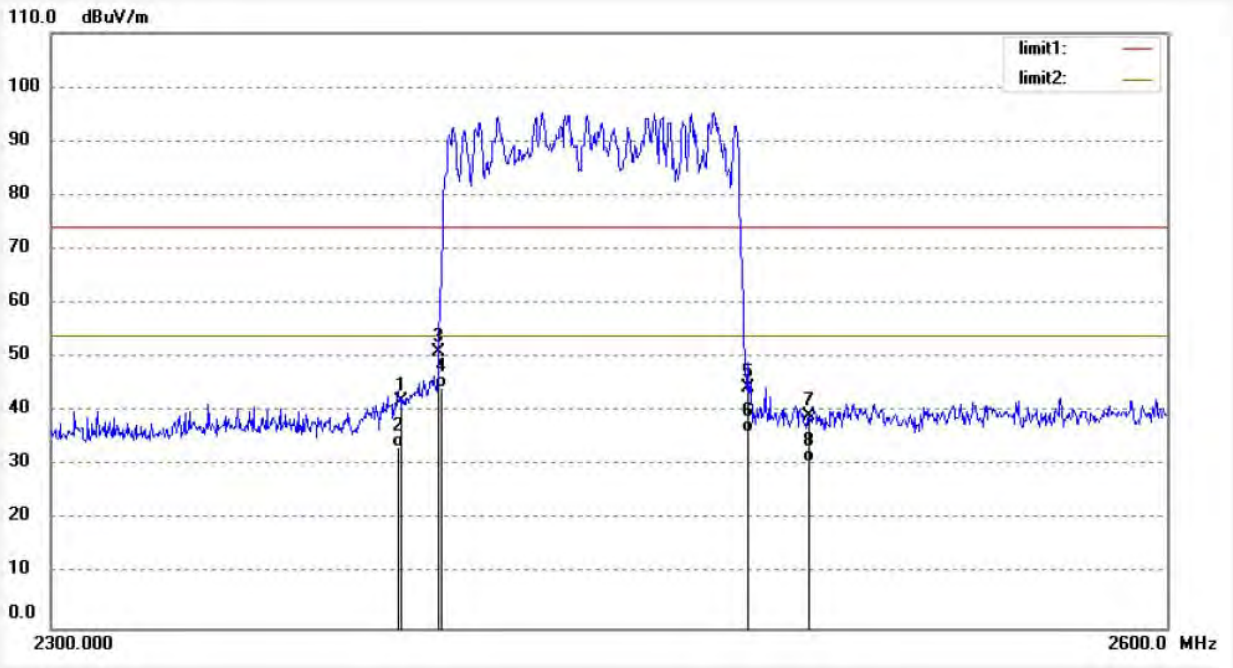
Job No.: STAR2018 #161	Polarization: Vertical
Standard: FCC PK	Power Source: DC 3.7V
Test item: Radiation Test	Date: 2018/08/13
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 09:39:12
EUT: ANC Headphones	Engineer Signature: Bob
Mode: Hopping (8DPSK)	Distance: 3m
Model: BTHS-ANC032	
Manufacturer: Avantree Technology Co.,Ltd	

Note: Report No.:ATE20181482



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	48.32	-6.32	42.00	74.00	-32.00	peak	150	93	
2	2390.000	39.64	-6.32	33.32	54.00	-20.68	AVG	150	320	
3	2400.000	57.16	-6.27	50.89	74.00	-23.11	peak	150	215	
4	2400.000	50.69	-6.27	44.42	54.00	-9.58	AVG	150	163	
5	2483.500	50.32	-5.89	44.43	74.00	-29.57	peak	150	102	
6	2483.500	42.01	-5.89	36.12	54.00	-17.88	AVG	150	96	
7	2500.000	45.02	-5.81	39.21	74.00	-34.79	peak	150	210	
8	2500.000	36.35	-5.81	30.54	54.00	-23.46	AVG	150	168	

Note: Average measurement with peak detection at No.2&4&6&8

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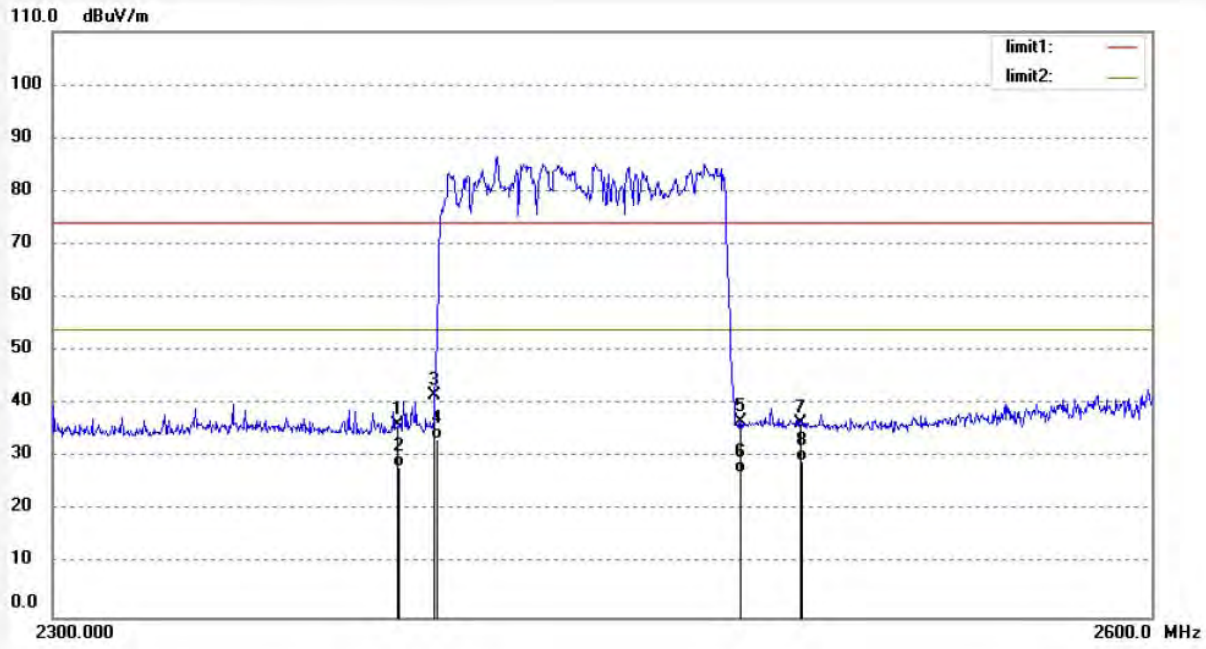
Job No.: STAR2018 #160
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: ANC Headphones
Mode: Hopping (8DPSK)
Model: BTHS-ANC032
Manufacturer: Avantree Technology Co.,Ltd

Polarization: Horizontal
Power Source: DC 3.7V
Date: 2018/08/13
Time: 09:33:45
Engineer Signature: Bob
Distance: 3m

Note: Report No.:ATE20181482



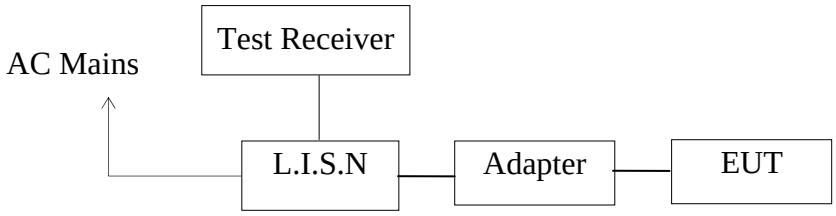
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	42.45	-6.32	36.13	74.00	-37.87	peak	200	97	
2	2390.000	34.55	-6.32	28.23	54.00	-25.77	AVG	200	145	
3	2400.000	48.00	-6.27	41.73	74.00	-32.27	peak	200	203	
4	2400.000	39.57	-6.27	33.30	54.00	-20.70	AVG	200	164	
5	2483.500	42.54	-5.89	36.65	74.00	-37.35	peak	200	93	
6	2483.500	33.11	-5.89	27.22	54.00	-26.78	AVG	200	211	
7	2500.000	42.32	-5.81	36.51	74.00	-37.49	peak	200	210	
8	2500.000	35.11	-5.81	29.30	54.00	-24.70	AVG	200	194	

Note: Average measurement with peak detection at No.2&4&6&8

12. AC POWER LINE CONDUCTED EMISSION FOR FCC PART 15 SECTION 15.207(A)

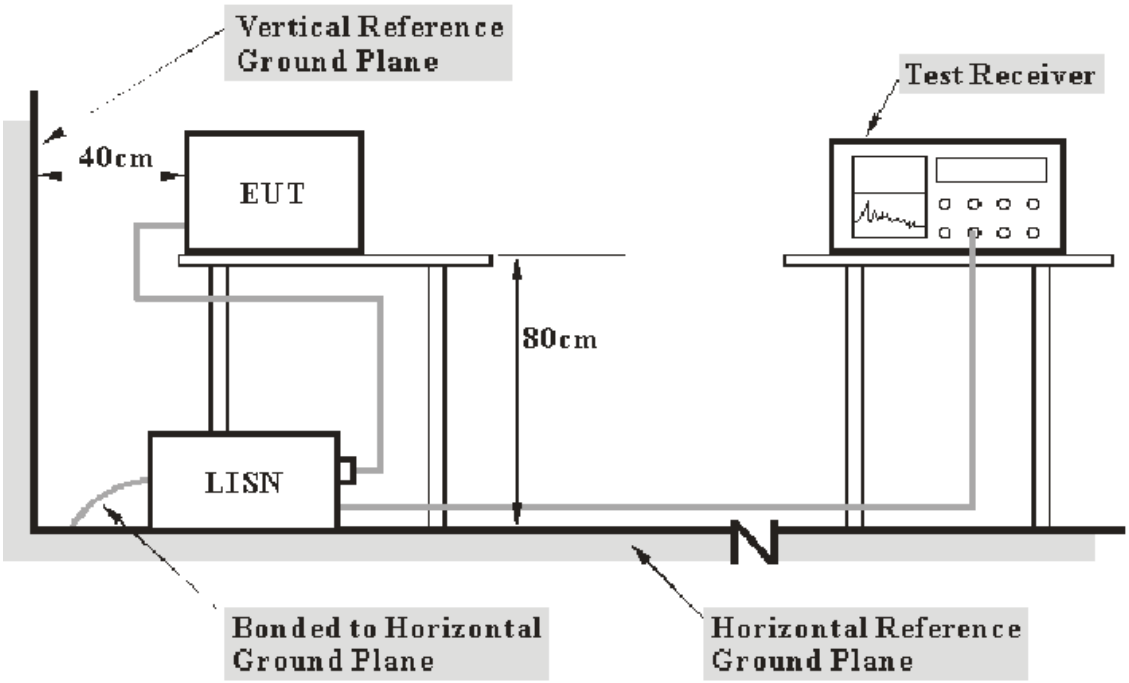
12.1. Block Diagram of Test Setup

12.1.1. Block diagram of connection between the EUT and simulators



(EUT: ANC Headphones)

12.1.2. Test System Setup



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

12.2.Power Line Conducted Emission Measurement Limits

Frequency (MHz)	Limit dB(μV)	
	Quasi-peak Level	Average Level
0.15 - 0.50	66.0 – 56.0 *	56.0 – 46.0 *
0.50 - 5.00	56.0	46.0
5.00 - 30.00	60.0	50.0
NOTE1: The lower limit shall apply at the transition frequencies. NOTE2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.		

12.3.Configuration of EUT on Measurement

The equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

12.4.Operating Condition of EUT

12.4.1.Setup the EUT and simulator as shown as Section 12.1.

12.4.2.Turn on the power of all equipment.

12.4.3.Let the EUT work in test mode and measure it.

12.5.Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2013 on Conducted Emission Measurement.
The bandwidth of test receiver (R & S ESCS30) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

12.6.Data Sample

Frequency (MHz)	Transducer value (dB)	QuasiPeak Level (dBμV)	Average Level (dBμV)	QuasiPeak Limit (dBμV)	Average Limit (dBμV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
X.XX	10.6	25.3	17.0	59.0	49.0	33.4	31.7	Pass

Frequency(MHz) = Emission frequency in MHz
Transducer value(dB) = Insertion loss of LISN + Cable Loss
Level(dBμV) = Quasi-peak Reading/Average Reading + Transducer value
Limit (dBμV) = Limit stated in standard
Margin = Limit (dBμV) - Level (dBμV)

Calculation Formula:
Margin = Limit (dBμV) - Level (dBμV)

12.7.Power Line Conducted Emission Measurement Results

PASS.
Test Lab: Shielding room
Test Engineer: Bob

The frequency range from 150kHz to 30MHz is checked.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.
Emissions attenuated more than 20 dB below the permissible value are not reported.

All data was recorded in the Quasi-peak and average detection mode.

The spectral diagrams are attached as below.

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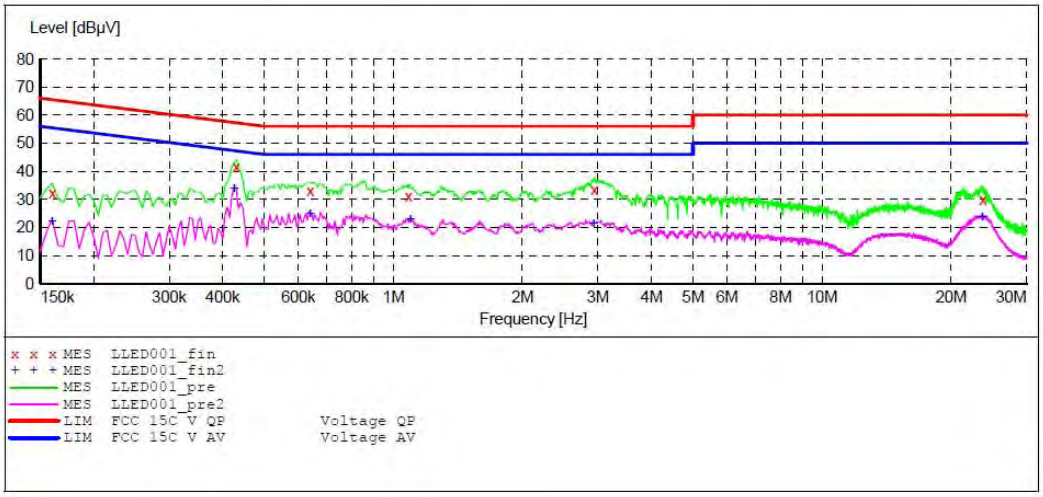
CONDUCTED EMISSION STANDARD FCC PART 15 C

```
EUT:                  ANC Headphones   M/N:BTHS-ANC032
Manufacturer:         Avantree Technology Co., Ltd.
Operating Condition:  BT communication
Test Site:            1#Shielding Room
Operator:             Bob
Test Specification:   L 120V/60Hz
Comment:              Report No.:ATE20172531
Start of Test:        08/13/2018 / 3:14:29PM
```

SCAN TABLE: "V 9K-30MHz fin"

```
  Short Description:                _SUB_STD_VTERM2 1.70
  Start      Stop       Step       Detector  Meas.     IF       Transducer
  Frequency  Frequency  Width                Time      Bandw.
  9.0 kHz    150.0 kHz  100.0 Hz   QuasiPeak 1.0 s     200 Hz   NSLK8126 2008
                                   Average
  150.0 kHz  30.0 MHz   5.0 kHz    QuasiPeak 1.0 s     9 kHz    NSLK8126 2008
                                   Average
```



MEASUREMENT RESULT: "LLED001_fin"

08/13/2018 3:18PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.160000	32.30	10.5	66	33.2	QP	L1	GND
0.430000	41.50	10.7	57	15.8	QP	L1	GND
0.640000	33.00	10.8	56	23.0	QP	L1	GND
1.085000	31.20	10.9	56	24.8	QP	L1	GND
2.940000	33.50	11.1	56	22.5	QP	L1	GND
23.755000	30.00	11.5	60	30.0	QP	L1	GND

MEASUREMENT RESULT: "LLED001_fin2"

08/13/2018 3:18PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.160000	21.90	10.5	56	33.6	AV	L1	GND
0.425000	33.80	10.7	47	13.5	AV	L1	GND
0.640000	24.90	10.8	46	21.1	AV	L1	GND
1.095000	22.70	10.9	46	23.3	AV	L1	GND
2.930000	21.40	11.1	46	24.6	AV	L1	GND
23.635000	23.50	11.5	50	26.5	AV	L1	GND

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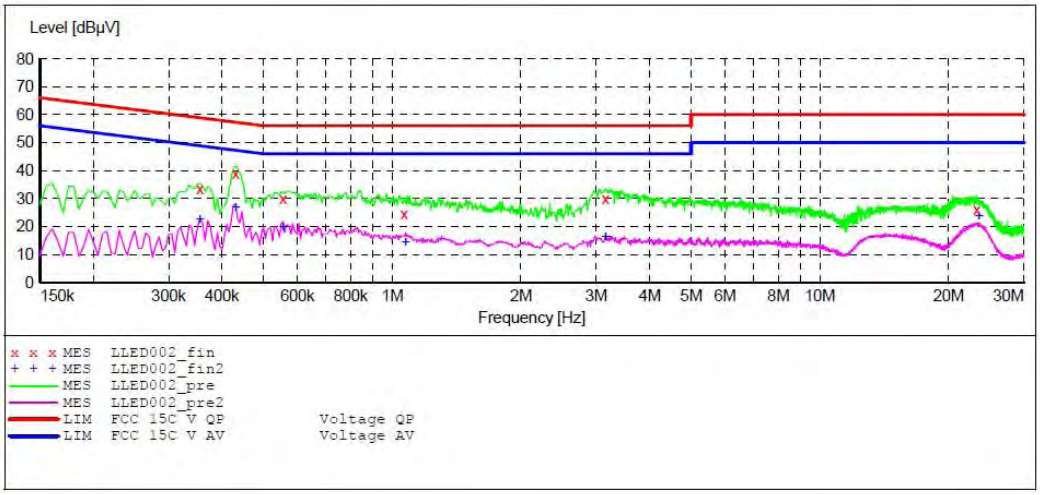
CONDUCTED EMISSION STANDARD FCC PART 15 C

EUT:	ANC Headphones M/N:BTHS-ANC032
Manufacturer:	Avantree Technology Co., Ltd.
Operating Condition:	BT communication
Test Site:	1#Shielding Room
Operator:	Bob
Test Specification:	N 120V/60Hz
Comment:	Report No.:ATE20172531
Start of Test:	08/13/2018 / 3:18:47PM

SCAN TABLE: "V 9K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak Average	1.0 s	200 Hz	NSLK8126 2008
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak Average	1.0 s	9 kHz	NSLK8126 2008



MEASUREMENT RESULT: "LLED002_fin"

08/13/2018 3:23PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.355000	33.20	10.6	59	25.6	QP	N	GND
0.430000	38.70	10.7	57	18.6	QP	N	GND
0.555000	29.70	10.7	56	26.3	QP	N	GND
1.065000	24.40	10.9	56	31.6	QP	N	GND
3.150000	29.80	11.1	56	26.2	QP	N	GND
23.260000	25.80	11.5	60	34.2	QP	N	GND

MEASUREMENT RESULT: "LLED002_fin2"

08/13/2018 3:23PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.355000	22.60	10.6	49	26.2	AV	N	GND
0.430000	26.90	10.7	47	20.4	AV	N	GND
0.555000	19.60	10.7	46	26.4	AV	N	GND
1.075000	14.40	10.9	46	31.6	AV	N	GND
3.150000	16.10	11.1	46	29.9	AV	N	GND
23.560000	23.70	11.5	50	26.3	AV	N	GND

ACCURATE TECHNOLOGY CO.,LTD

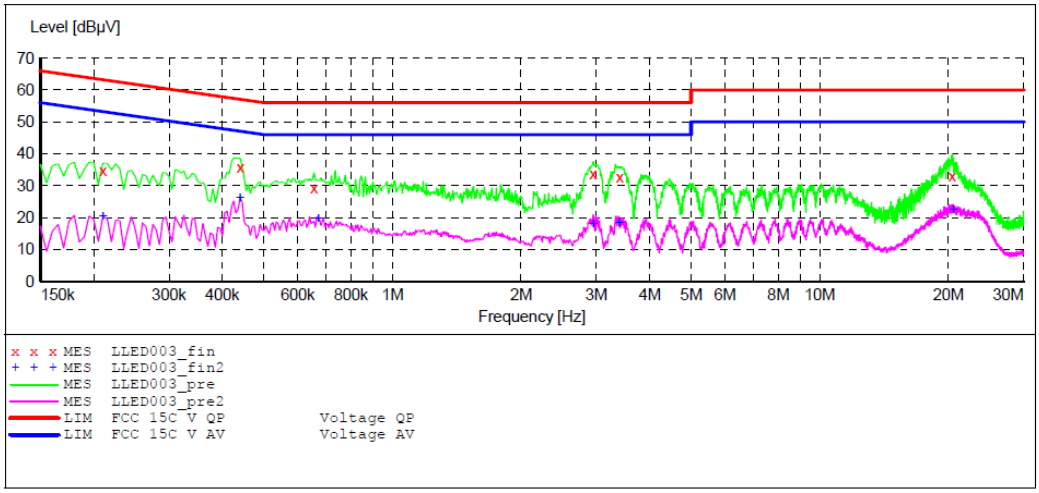
CONDUCTED EMISSION STANDARD FCC PART 15 C

EUT: ANC Headphones M/N:BTHS-ANC032
Manufacturer: Avantree Technology Co., Ltd.
Operating Condition: BT communication
Test Site: 1#Shielding Room
Operator: Bob
Test Specification: N 240V/60Hz
Comment: Report No.:ATE20172531
Start of Test: 08/13/2018 / 3:24:17PM

SCAN TABLE: "V 9K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak Average	1.0 s	200 Hz	NSLK8126 2008
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak Average	1.0 s	9 kHz	NSLK8126 2008



MEASUREMENT RESULT: "LLED003_fin"

08/13/2018 3:27PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.210000	34.60	10.5	63	28.6	QP	N	GND
0.440000	35.60	10.7	57	21.5	QP	N	GND
0.655000	29.10	10.8	56	26.9	QP	N	GND
2.950000	33.70	11.1	56	22.3	QP	N	GND
3.400000	32.60	11.1	56	23.4	QP	N	GND
20.410000	33.10	11.4	60	26.9	QP	N	GND

MEASUREMENT RESULT: "LLED003_fin2"

08/13/2018 3:27PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.210000	20.20	10.5	53	33.0	AV	N	GND
0.440000	26.20	10.7	47	20.9	AV	N	GND
0.670000	19.50	10.8	46	26.5	AV	N	GND
2.950000	18.10	11.1	46	27.9	AV	N	GND
3.390000	18.30	11.1	46	27.7	AV	N	GND
20.530000	22.50	11.4	50	27.5	AV	N	GND

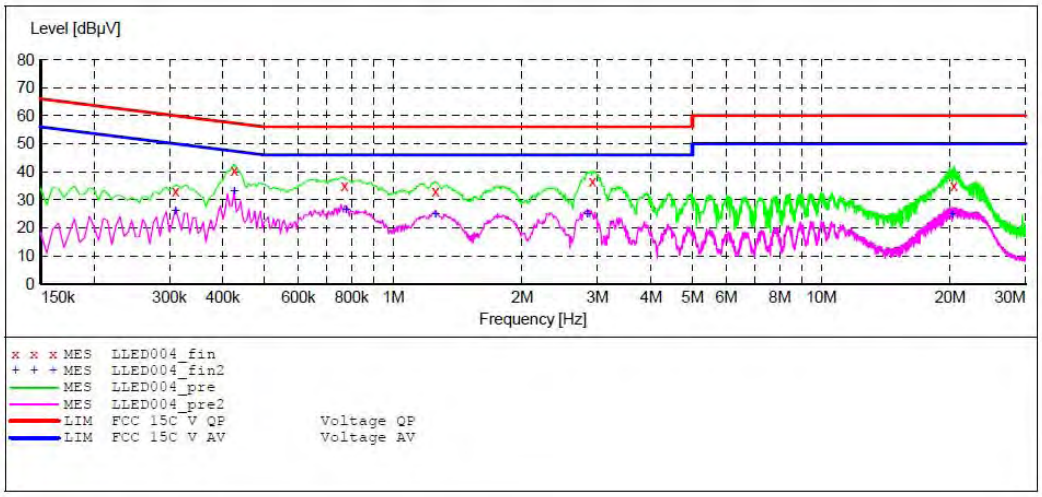
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15 C

```
EUT:                  ANC Headphones   M/N:BTHS-ANC032
Manufacturer:         Avantree Technology Co., Ltd.
Operating Condition:  BT communication
Test Site:            1#Shielding Room
Operator:             Bob
Test Specification:   L 240V/60Hz
Comment:              Report No.:ATE20172531
Start of Test:        08/13/2018 / 3:28:20PM
```

SCAN TABLE: "V 9K-30MHz fin"

```
  Short Description:              _SUB_STD_VTERM2 1.70
  Start      Stop       Step      Detector  Meas.     IF       Transducer
  Frequency  Frequency  Width               Time      Bandw.
  9.0 kHz    150.0 kHz  100.0 Hz  QuasiPeak 1.0 s     200 Hz   NSLK8126 2008
                                  Average
  150.0 kHz  30.0 MHz   5.0 kHz   QuasiPeak 1.0 s     9 kHz    NSLK8126 2008
                                  Average
```



MEASUREMENT RESULT: "LLED004_fin"

```
08/13/2018  3:32PM
  Frequency    Level  Transd  Limit  Margin  Detector  Line   PE
        MHz    dBµV      dB   dBµV      dB

   0.310000    32.90   10.6     60    27.1  QP        L1     GND
   0.425000    40.40   10.7     57    16.9  QP        L1     GND
   0.770000    34.90   10.8     56    21.1  QP        L1     GND
   1.255000    33.00   10.9     56    23.0  QP        L1     GND
   2.920000    36.60   11.1     56    19.4  QP        L1     GND
  20.410000    34.90   11.4     60    25.1  QP        L1     GND
```

MEASUREMENT RESULT: "LLED004_fin2"

```
08/13/2018  3:32PM
  Frequency    Level  Transd  Limit  Margin  Detector  Line   PE
        MHz    dBµV      dB   dBµV      dB

   0.310000    26.10   10.6     50    23.9  AV        L1     GND
   0.425000    32.80   10.7     47    14.5  AV        L1     GND
   0.775000    26.20   10.8     46    19.8  AV        L1     GND
   1.255000    24.70   10.9     46    21.3  AV        L1     GND
   2.840000    25.00   11.0     46    21.0  AV        L1     GND
  20.260000    24.60   11.4     50    25.4  AV        L1     GND
```

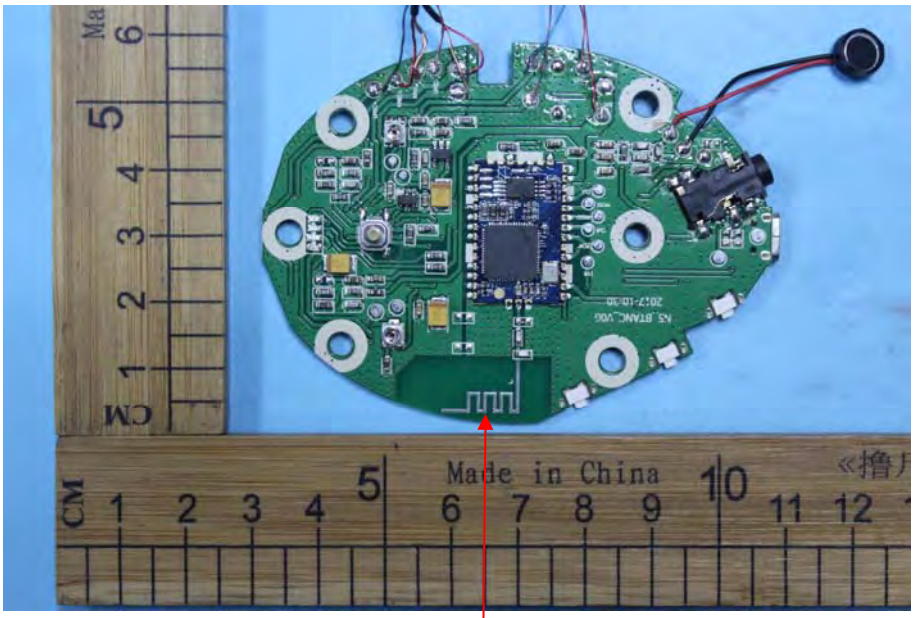
13. ANTENNA REQUIREMENT

13.1. The Requirement

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

13.2. Antenna Construction

Device is equipped with permanent attached antenna, which isn't displaced by other antenna. The Max Antenna gain of EUT is 2.5dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.



Antenna

******* End of Test Report *******