APPLICATION CERTIFICATION
On Behalf of
Nicetex Electronics Limited

Bluetooth Bookshelf Speakers with USB
Model No.: NE-830, MP-830

FCC ID: 2AE3J-MP-830

Prepared for	:	Nicetex Electronics Limited
Address	:	RM 20-21, 14/F., BLK A, Hi-Tech Industrial Centre, 5-21 Pak Tin Par St., Tsuen Wan, N.T., Hong Kong.
Prepared by	:	ACCURATE TECHNOLOGY CO. LTD
Address	:	F1, Bldg. A, Changyuan New Material Port, Keyuan Rd. Science & Industry Park, Nanshan, Shenzhen, Guangdong P.R. China Tel: (0755) 26503290 Fax: (0755) 26503396

Report Number	:	ATE20151337
Date of Test	:	Jun 18-Jul 07,2015
Date of Report	:	Jul 08,2015

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Description Page

Test Report Certification

Applicant	:	Nicetex Electronics Limited
Manufacturer	:	Nicetex Electronics Limited
EUT Description	:	Bluetooth Bookshelf Speakers with USB
		(A) MODEL NO.: NE-830, MP-830
		(B) POWER SUPPLY: AC 100-240V(Adapter)

Measurement Procedure Used:

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

The device described above is tested by 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 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 ACCURATE TECHNOLOGY CO. LTD.

Date of Test :	Apr 22-May 06,2015
Date of Report :	May 07,2015
Prepared by :	Eric Zhang
	(Eric Zhang, Engineer)
Approved & Authorized Signer :	Sean Liu
	(Sean Liu, Manager)

1. GENERAL INFORMATION

1.1.Description of Device (EUT)

EUT	:	Bluetooth Bookshelf Speakers with USB
Model Number	:	NE-830
Frequency Band	:	2402MHz-2480MHz
Number of Channels	:	79
Bluetooth Version	:	3.0+EDR
Modulation type	:	GFSK, Π/4-DQPSK, 8DPSK
Antenna Gain	:	1dBi
Antenna type	:	PCB Antenna
Rating	:	AC 100-240V supplied from Adapter
Adapter	:	Model number: AS650-220-AB273 Input: AC 100-240V; 50/60Hz 1.5A Output: DC 22V/2.73A Line: Non-shielded, Non-detachable, 1.5m
Applicant	:	Nicetex Electronics Limited
Address	:	RM 20-21, 14/F., BLK A, Hi-Tech Industrial Centre, 5-21 Pak Tin Par St., Tsuen Wan, N.T., Hong Kong.
Manufacturer	:	Nicetex Electronics Limited
Address	:	RM 20-21, 14/F., BLK A, Hi-Tech Industrial Centre, 5-21 Pak Tin Par St., Tsuen Wan, N.T., Hong Kong.
Date of sample received	:	Jun 18,2015
Date of Test	:	Jun 18-Jul 07,2015

1.2.Description of Test Facility

EMC Lab	:	Accredited by TUV Rheinland Shenzhen Listed by FCC The Registration Number is 752051 Listed by Industry Canada The Registration Number is 5077A-2 Accredited by China National Accreditation Committee for Laboratories The Certificate Registration Number is L3193
Name of Firm	:	ACCURATE TECHNOLOGY CO. LTD
Site Location	:	F1, Bldg. A, Changyuan New Material Port, Keyuan Rd. Science & Industry Park, Nanshan, Shenzhen, Guangdong P.R. China

1.3.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	Cal. Interval
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 11, 2015	One Year
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 11, 2015	One Year
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 11, 2015	One Year
Pre-Amplifier	Rohde&Schwarz	CBLU1183540-01	3791	Jan. 11, 2015	One Year
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 15, 2015	One Year
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 15, 2015	One Year
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 15, 2015	One Year
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1067	Jan. 15, 2015	One Year
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 11, 2015	One Year
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 11, 2015	One Year
Highpass Filter	Wainwright Instruments	WHKX3.6/18G-10SS	N/A	Jan. 11, 2015	One Year
Band Reject Filter	Wainwright Instruments	WRCG2400/2485-2375/2510-60/11SS	N/A	Jan. 11, 2015	One Year

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

3.2.Configuration and peripherals

EUT

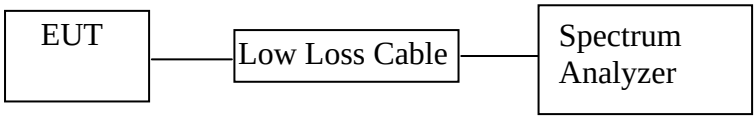
(EUT: Bluetooth Bookshelf Speakers with USB)

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: Bluetooth Bookshelf Speakers with USB)

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 30 kHz and VBW to 100 kHz.

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

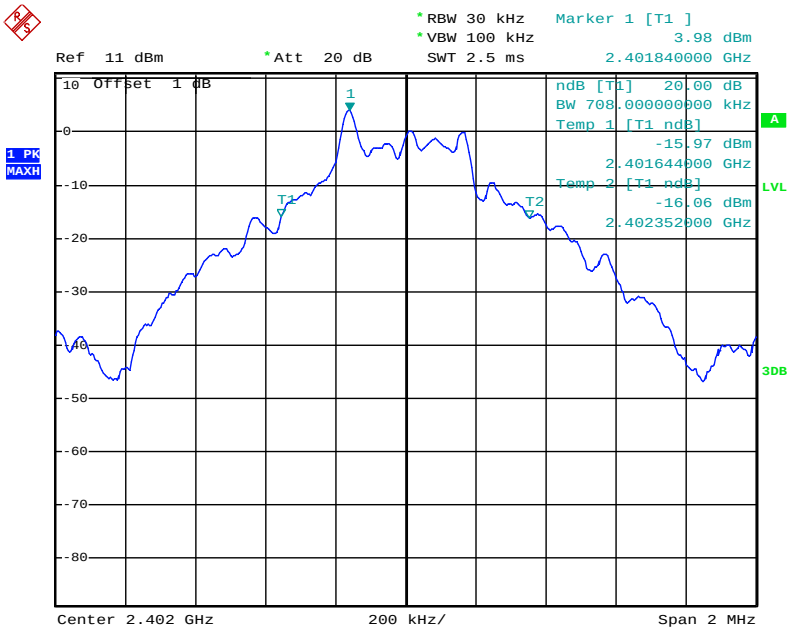
5.6.Test Result

Channel	Frequency (MHz)	GFSK 20dB Bandwidth (MHz)	Π/4-DQPSK 20dB Bandwidth (MHz)	8DPSK 20dB Bandwidth (MHz)	Result
Low	2402	0.708	1.116	1.160	Pass
Middle	2441	0.704	1.116	1.164	Pass
High	2480	0.704	1.112	1.164	Pass

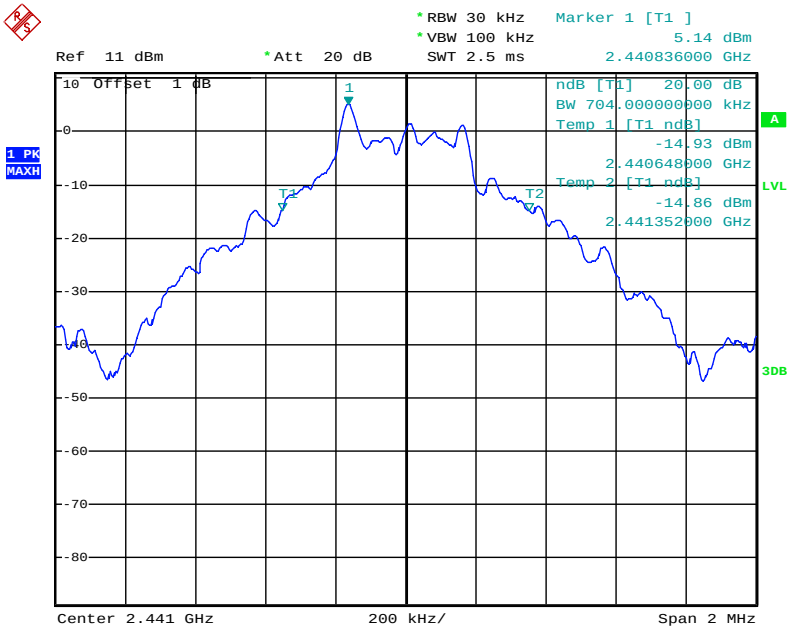
The spectrum analyzer plots are attached as below.

GFSK Mode

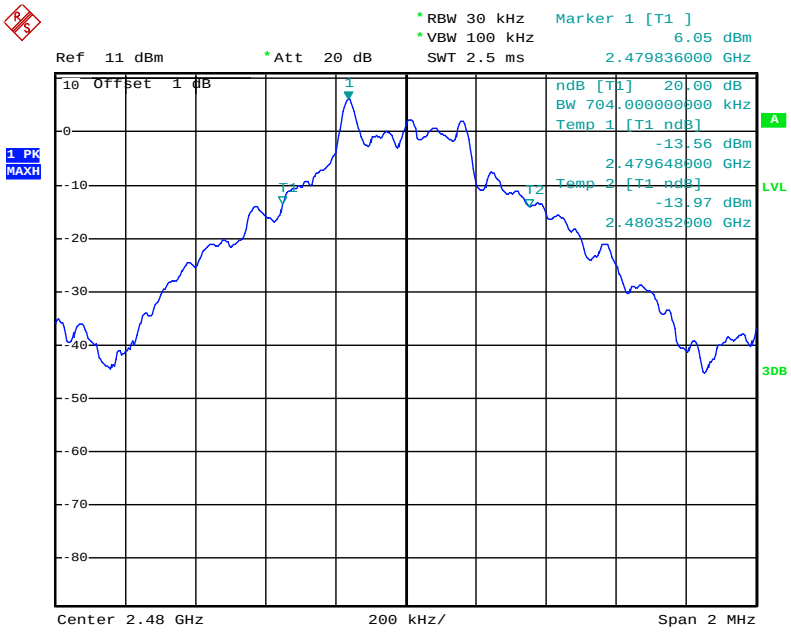
Low channel



Middle channel

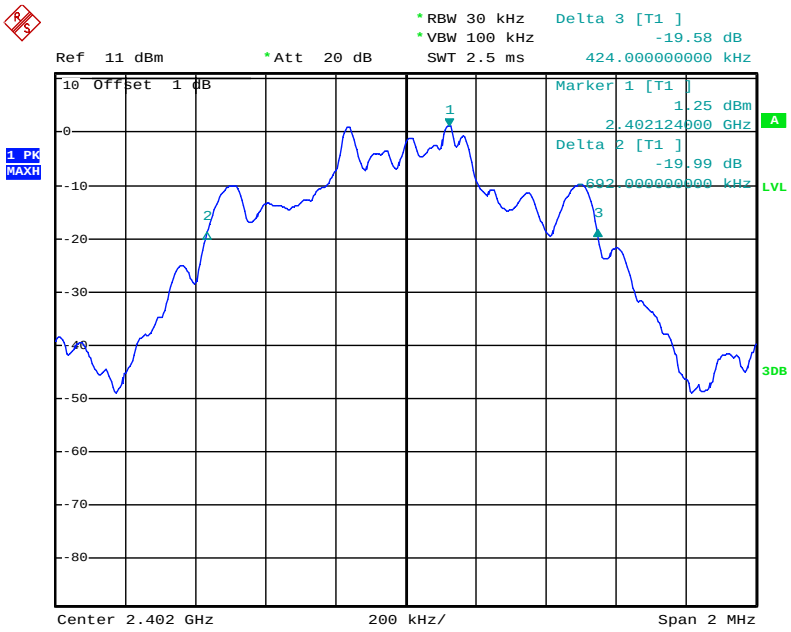


High channel

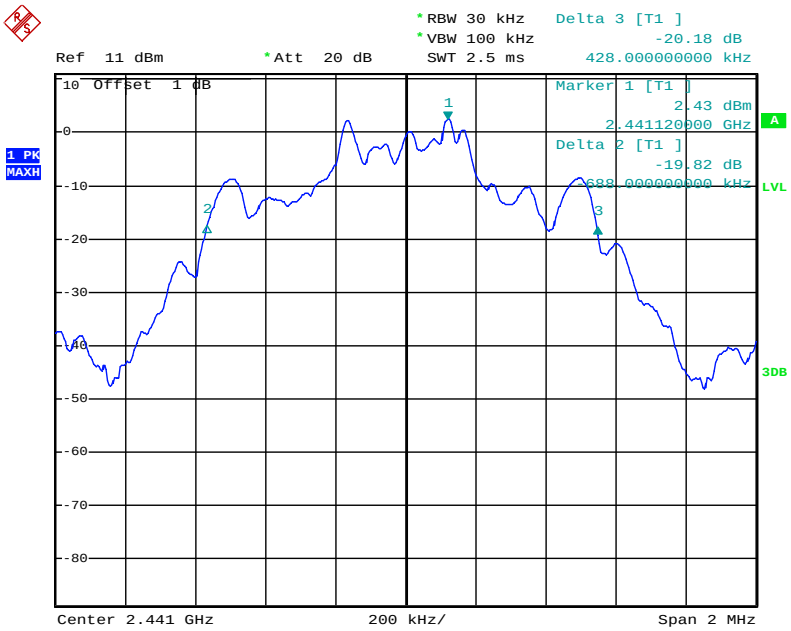


Π/4-DQPSK Mode

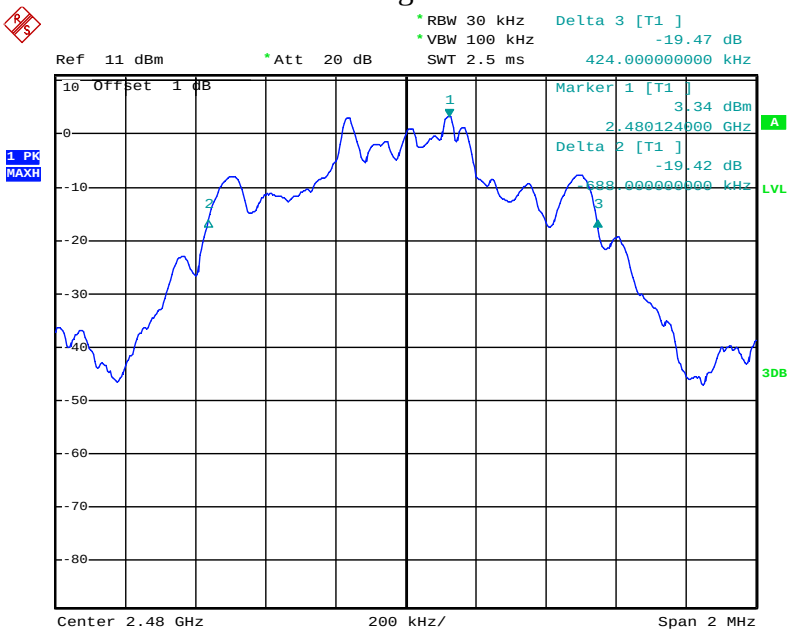
Low channel



Middle channel

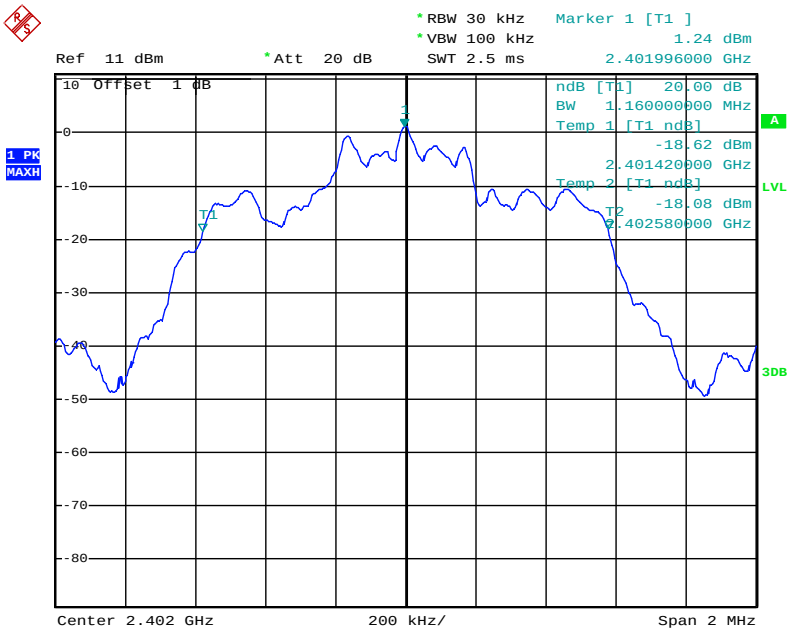


High channel

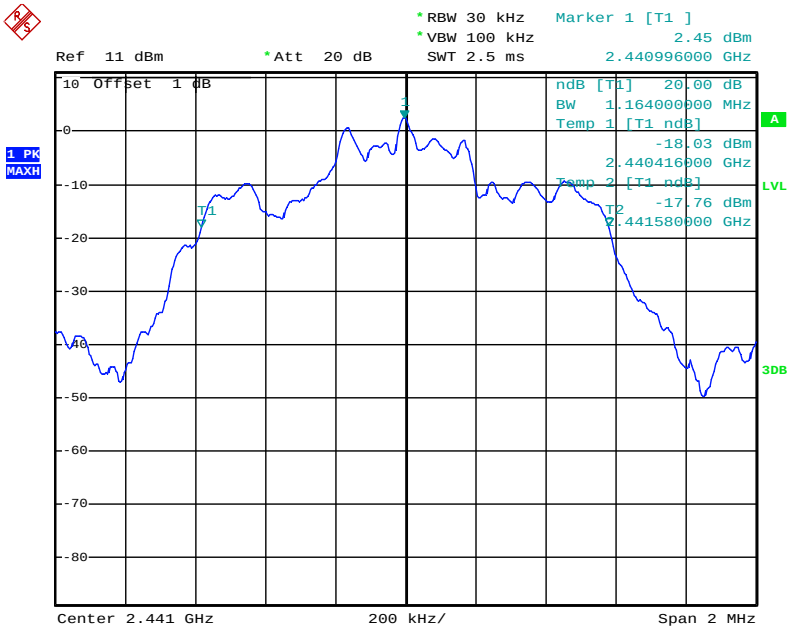


8DPSK Mode

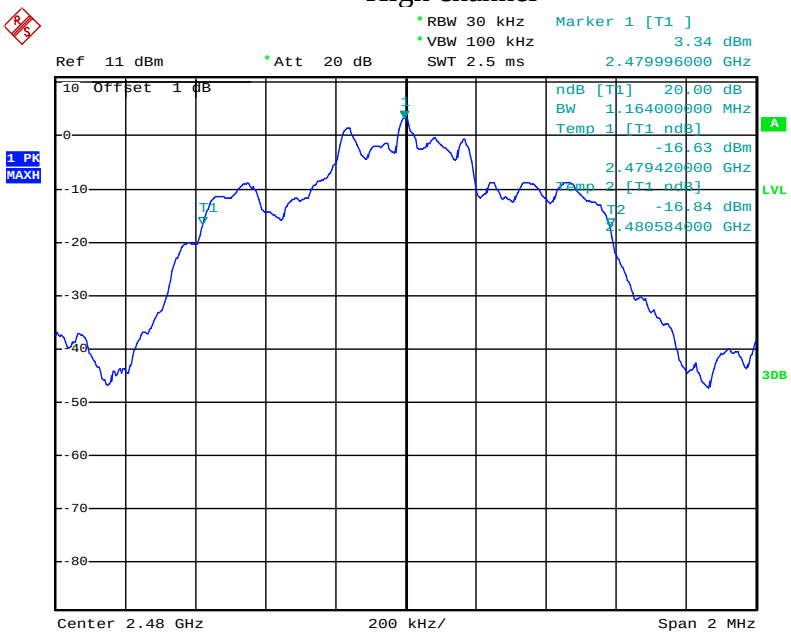
Low channel



Middle channel

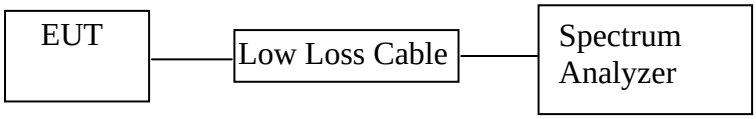


High channel



6. CARRIER FREQUENCY SEPARATION TEST

6.1.Block Diagram of Test Setup



(EUT: Bluetooth Bookshelf Speakers with USB)

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 3 MHz.

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

6.5.4.Measurement the channel separation

6.6.Test Result

GFSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.000	25KHz or 20dB bandwidth	PASS
	2403			
Middle	2440	1.000	25KHz or20dB bandwidth	PASS
	2441			
High	2479	1.000	25KHz or 20dB bandwidth	PASS
	2480			

Π/4-DQPSK

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			

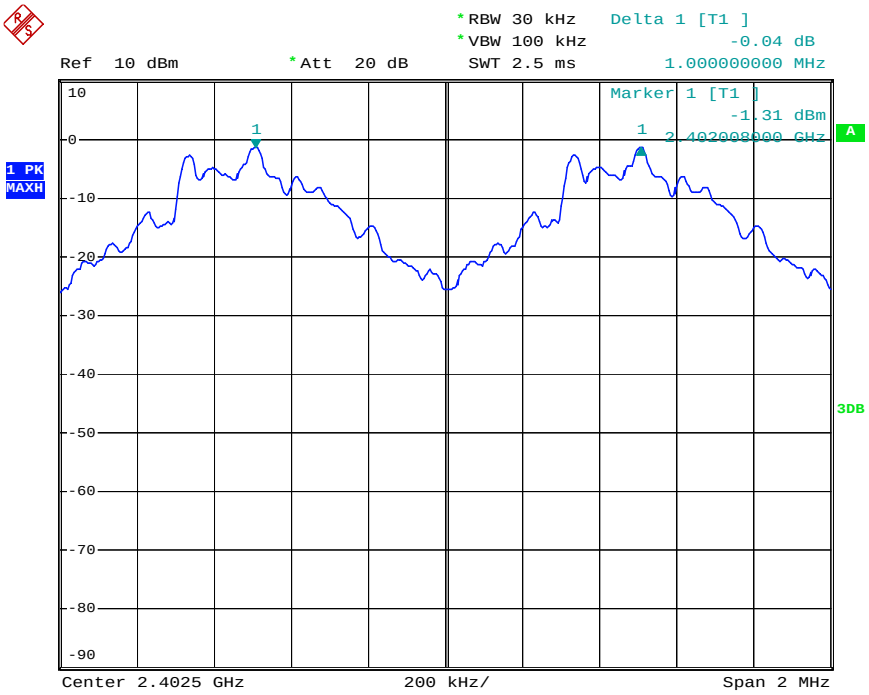
8DPSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.000	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			

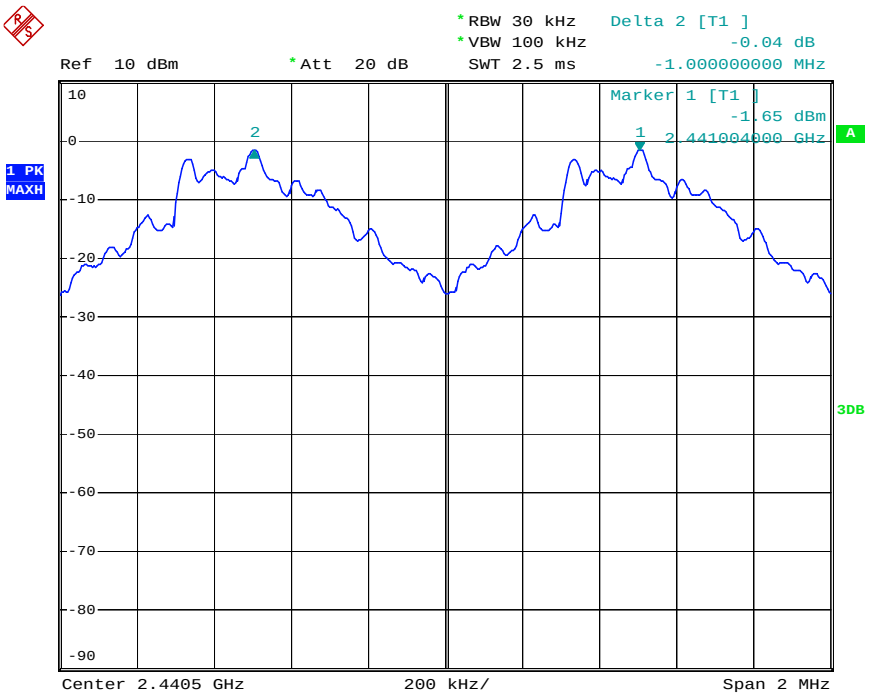
The spectrum analyzer plots are attached as below.

GFSK Mode

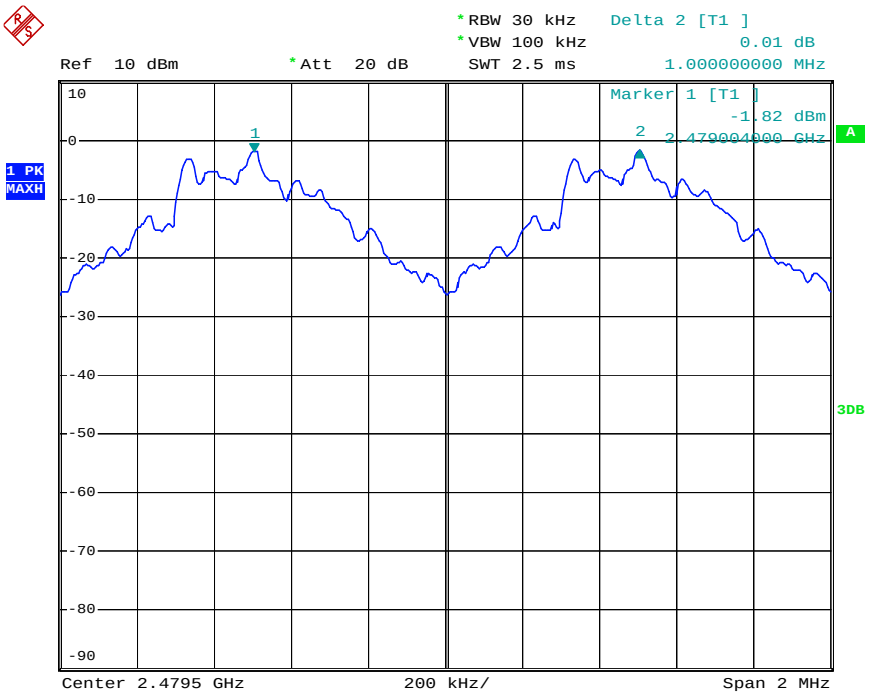
Low channel



Middle channel

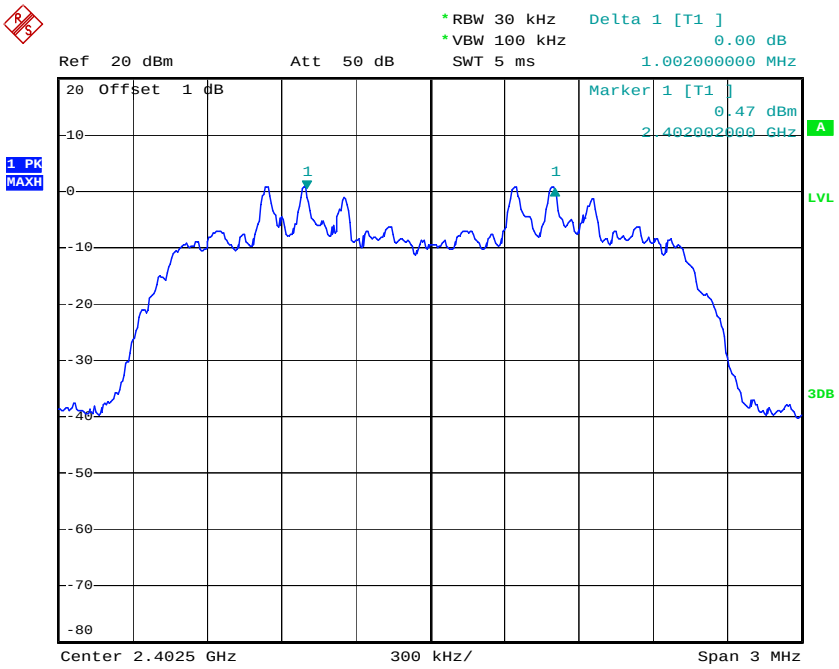


High channel

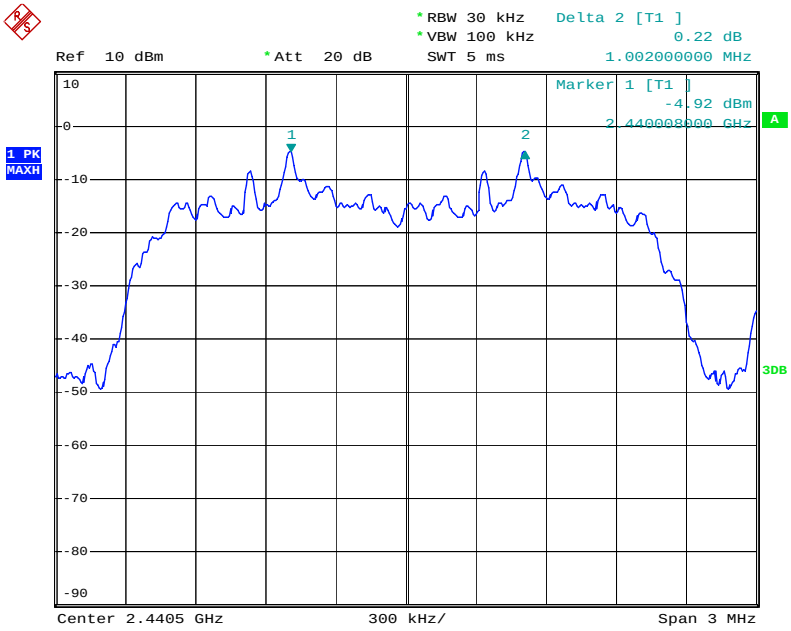


Π/4-DQPSK Mode

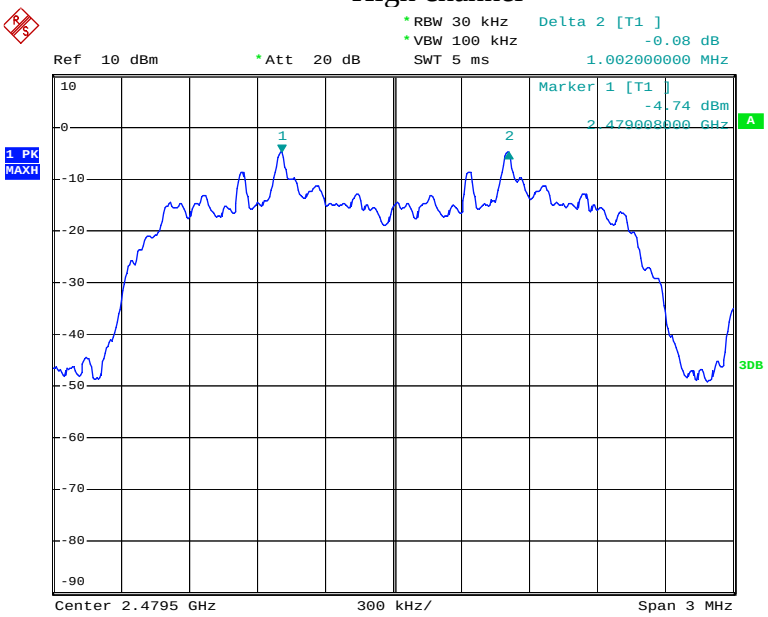
Low channel



Middle channel

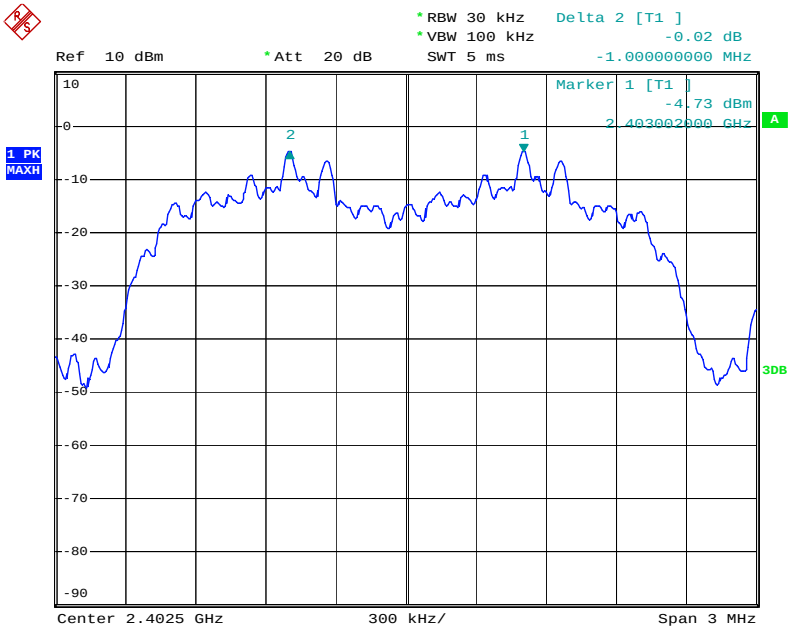


High channel

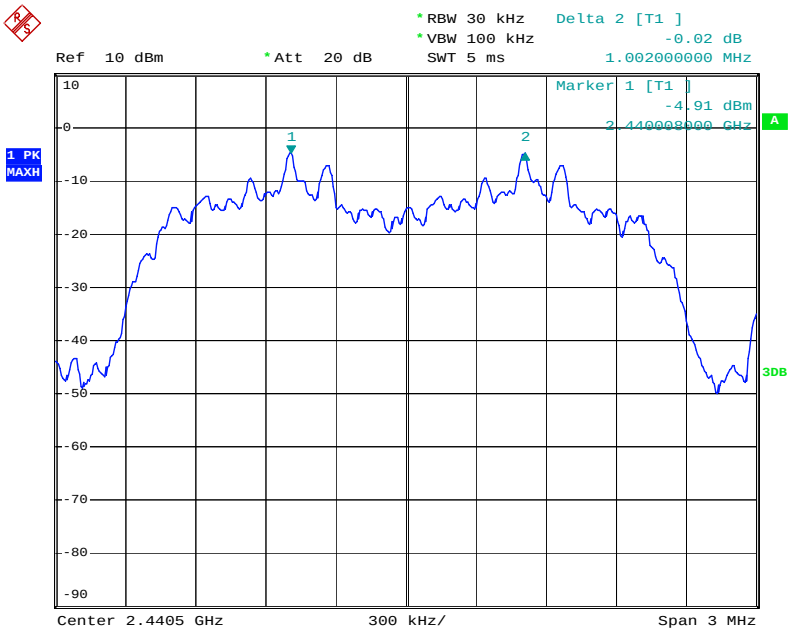


8DPSK Mode

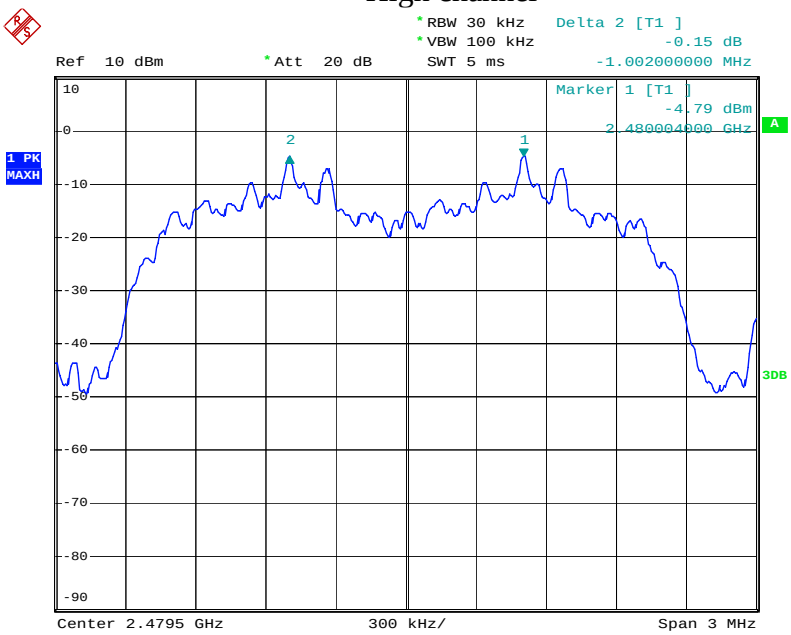
Low channel



Middle channel

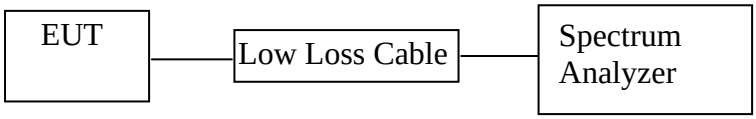


High channel



7. NUMBER OF HOPPING FREQUENCY TEST

7.1.Block Diagram of Test Setup



(EUT: Bluetooth Bookshelf Speakers with USB)

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 Span=83.5MHz, RBW=100 kHz, VBW=300 kHz.

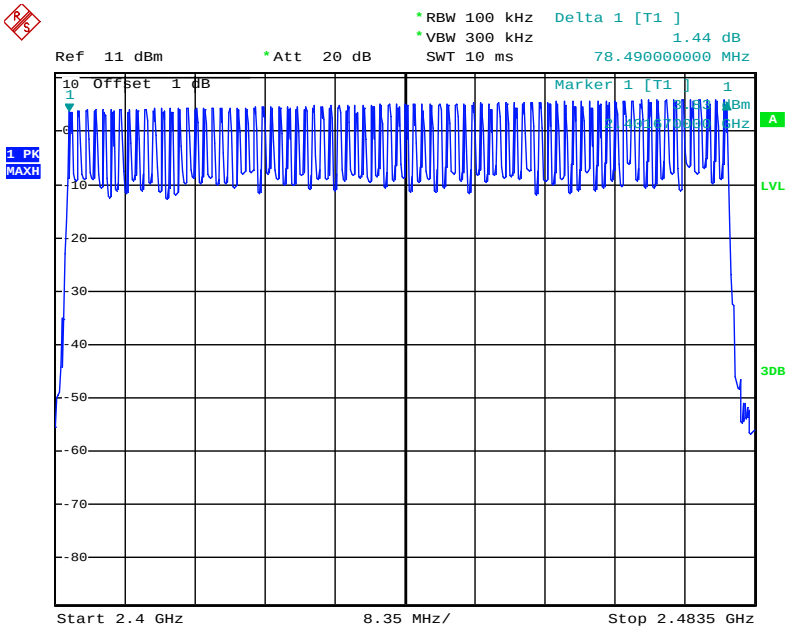
7.5.3.Max hold, view and count how many channel in the band.

7.6.Test Result

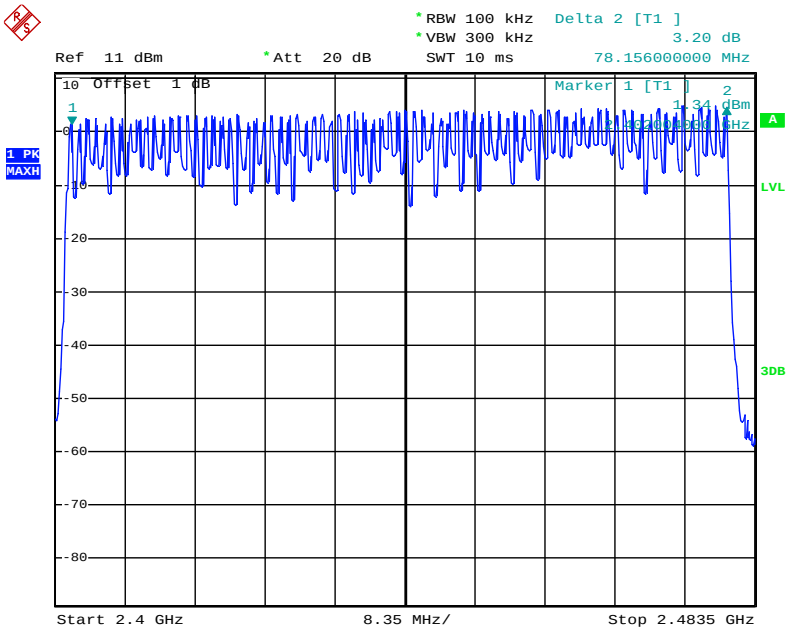
Total number of hopping channel	Measurement result(CH)	Limit(CH)
	79	⩾15

The spectrum analyzer plots are attached as below.

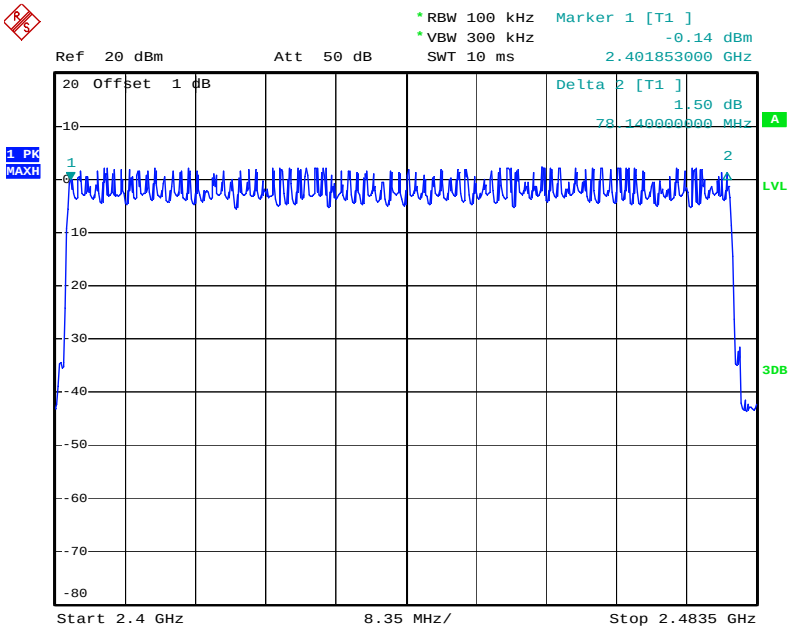
Number of hopping channels(GFSK)



Number of hopping channels(Π/4-DQPSK)

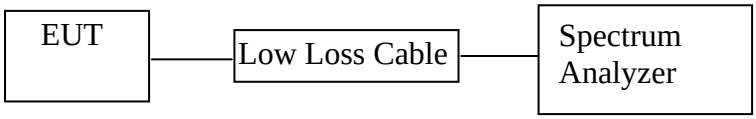


Number of hopping channels(8DPSK)



8. DWELL TIME TEST

8.1.Block Diagram of Test Setup



(EUT: Bluetooth Bookshelf Speakers with USB)

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.

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

8.6.Test Result

GFSK Mode

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.415	132.80	400
	2441	0.410	131.20	400
	2480	0.415	132.80	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(2*79))×31.6				
DH3	2402	1.680	268.80	400
	2441	1.695	271.20	400
	2480	1.680	268.80	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(4*79))×31.6				
DH5	2402	2.960	315.73	400
	2441	2.960	315.73	400
	2480	2.960	315.73	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	0.415	132.80	400
	2441	0.420	134.40	400
	2480	0.420	134.40	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(2*79))×31.6				
DH3	2402	1.695	271.20	400
	2441	1.695	271.20	400
	2480	1.695	271.20	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(4*79))×31.6				
DH5	2402	2.960	315.73	400
	2441	2.960	315.73	400
	2480	2.960	315.73	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(6*79))×31.6				

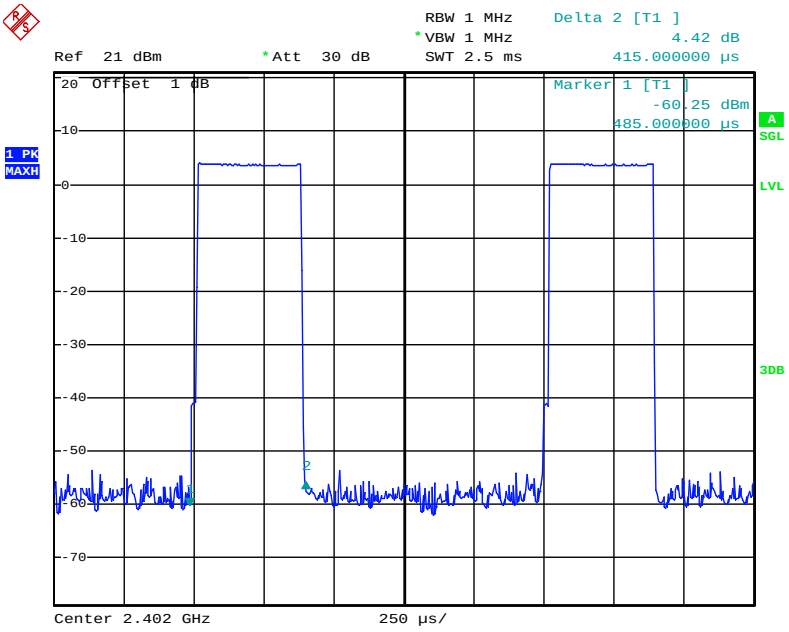
8DPSK Mode

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.420	134.40	400
	2441	0.420	134.40	400
	2480	0.420	134.40	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(2*79))×31.6				
DH3	2402	1.680	268.80	400
	2441	1.680	268.80	400
	2480	1.695	271.20	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(4*79))×31.6				
DH5	2402	2.960	315.73	400
	2441	2.960	315.73	400
	2480	2.960	315.73	400
A period transmit time = 0.4 × 79 = 31.6 Dwell time = pulse time × (1600/(6*79))×31.6				

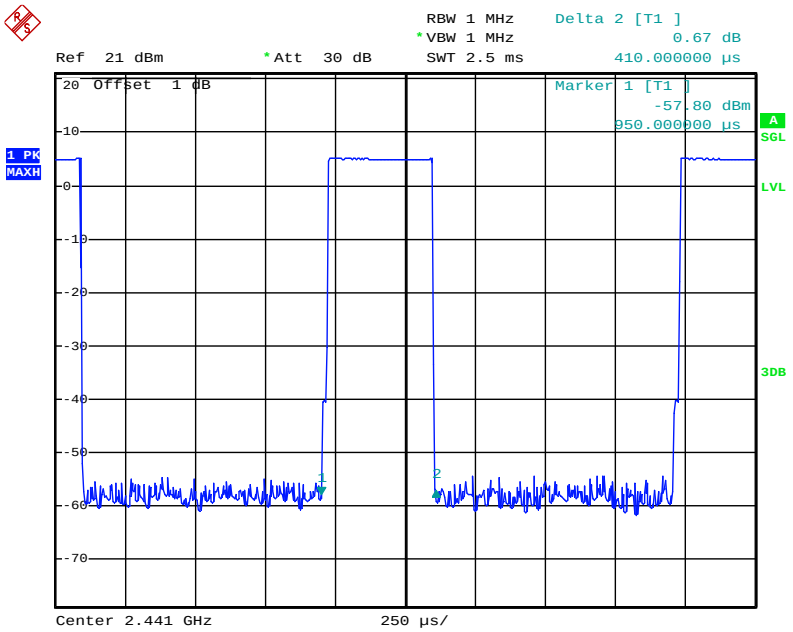
The spectrum analyzer plots are attached as below.

Mode 1: GFSK Link Mode

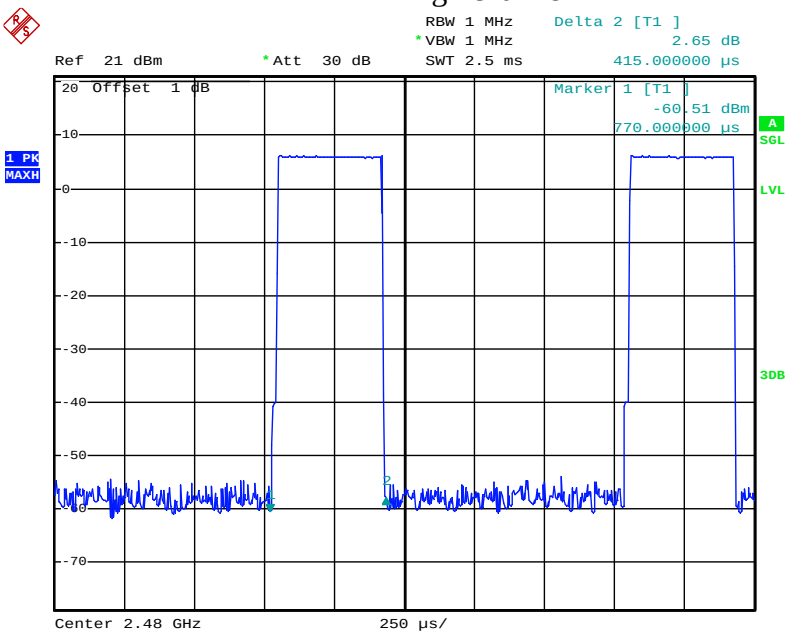
DH1 Low channel



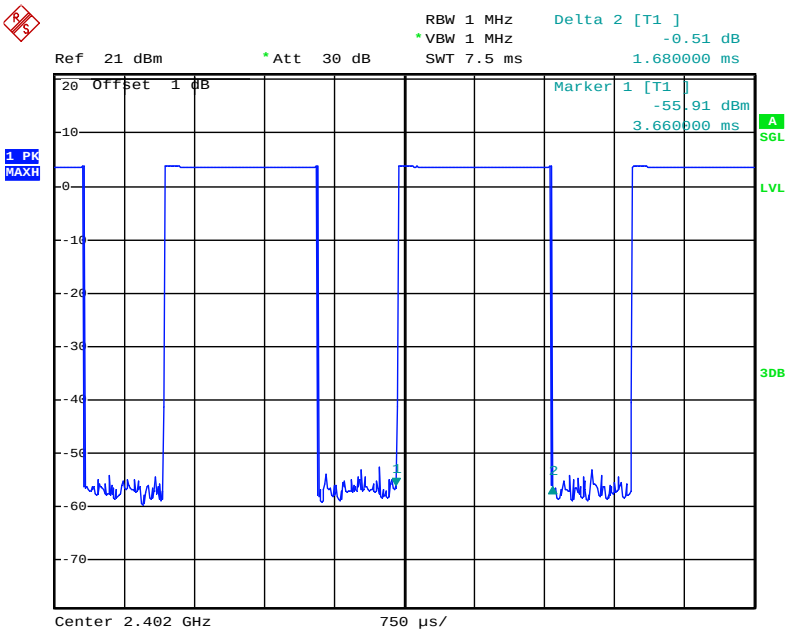
DH1 Middle channel



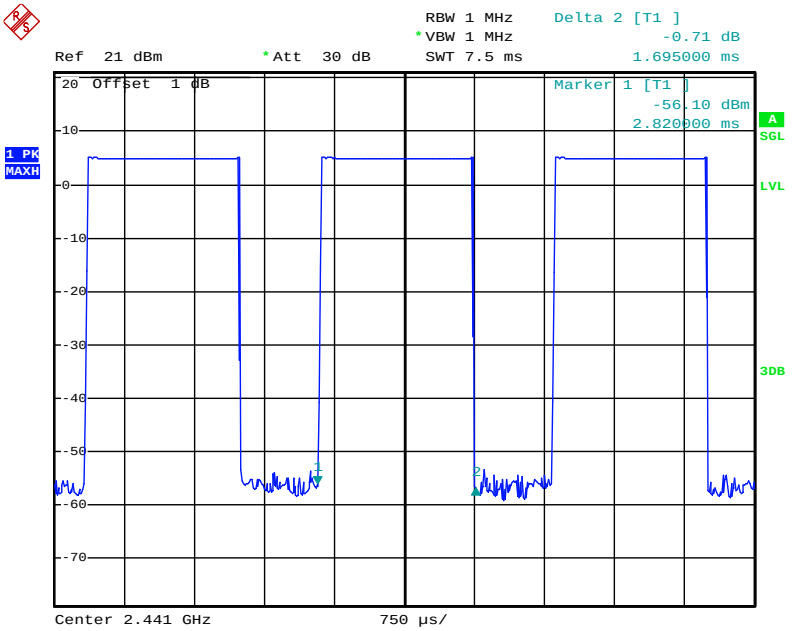
DH1 High channel



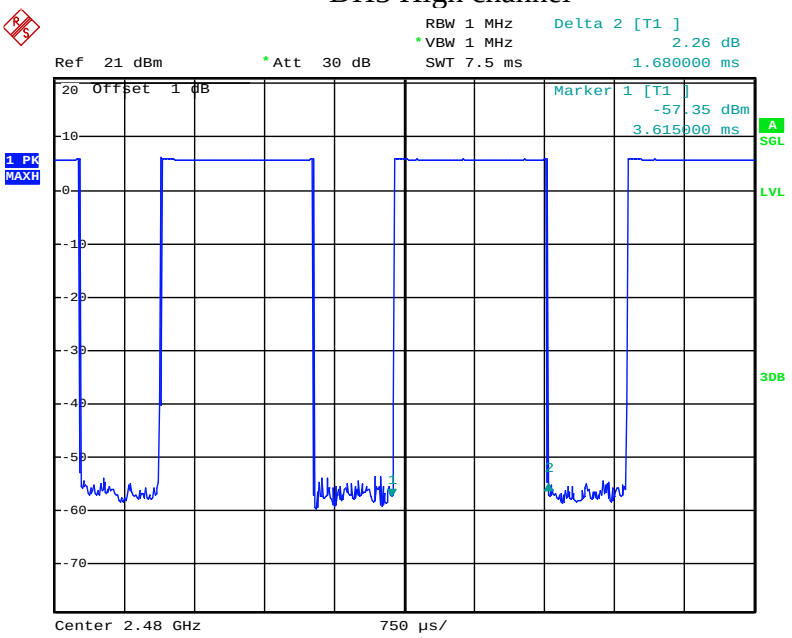
DH3 Low channel



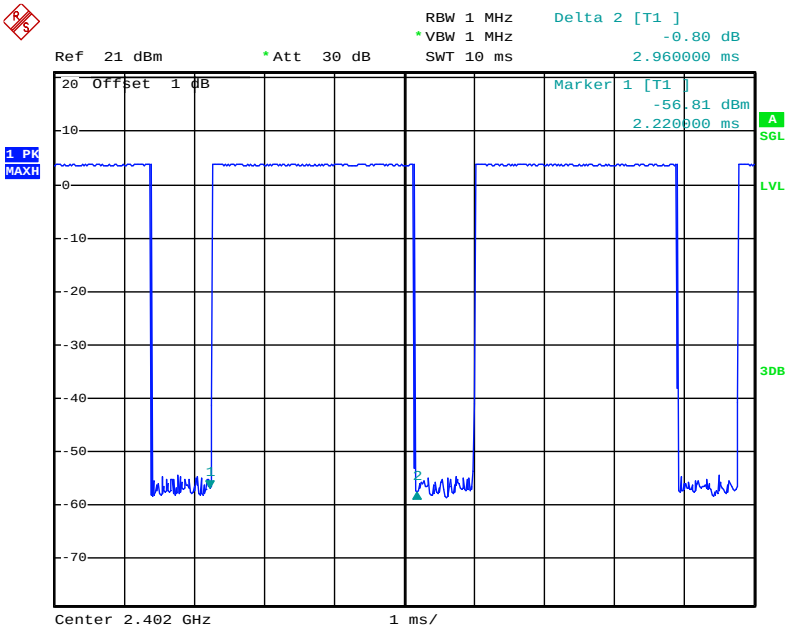
DH3 Middle channel



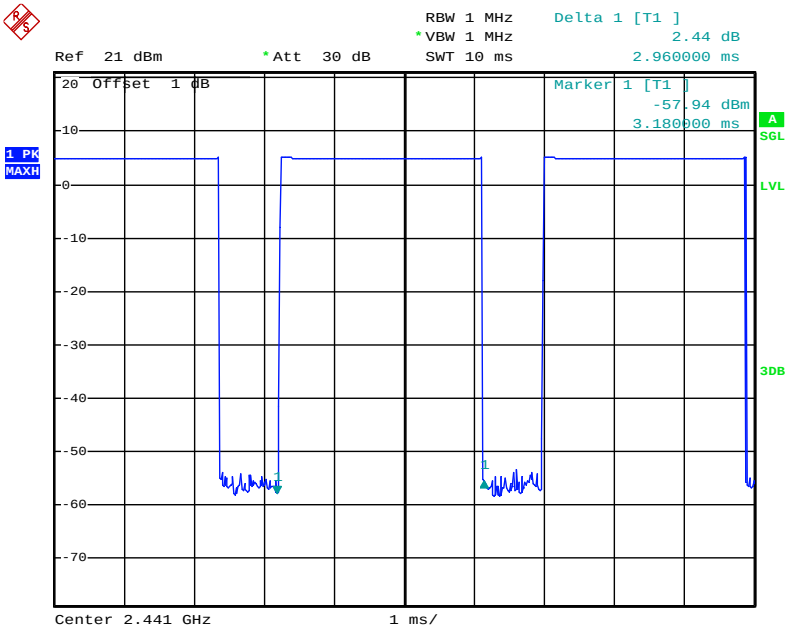
DH3 High channel



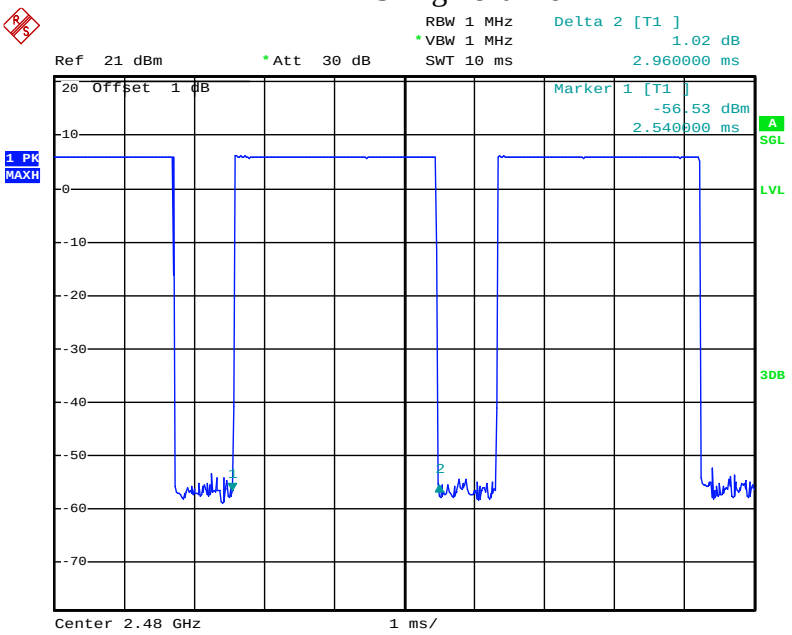
DH5 Low channel



DH5 Middle channel

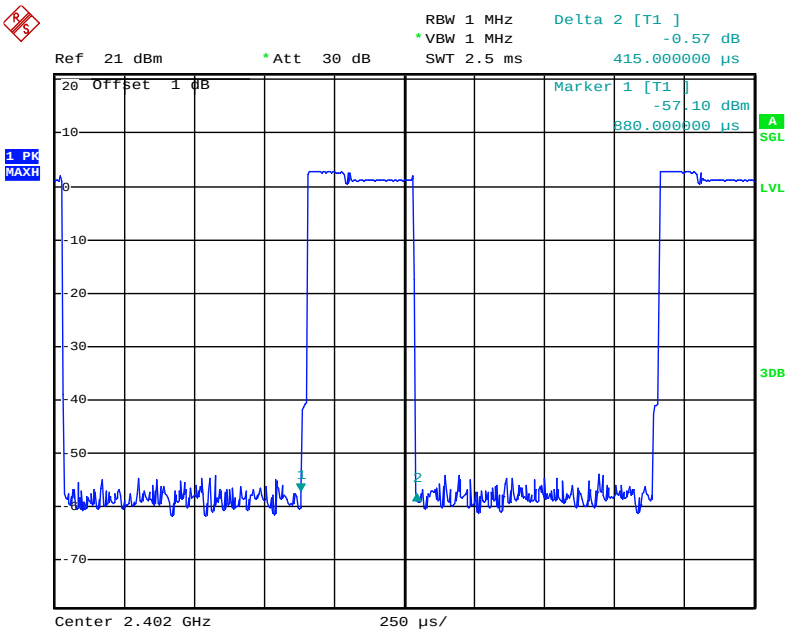


DH5 High channel

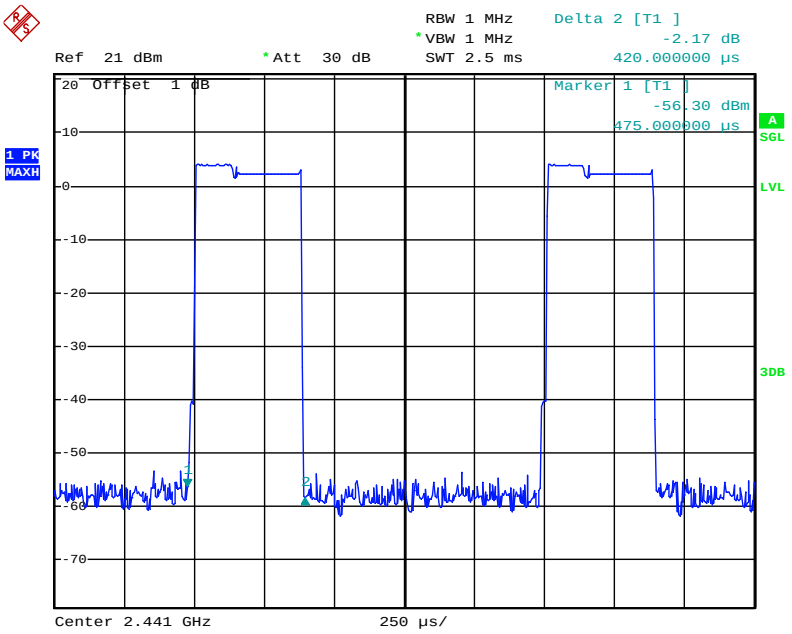


Mode 2: π/4 DQPSK Link Mode

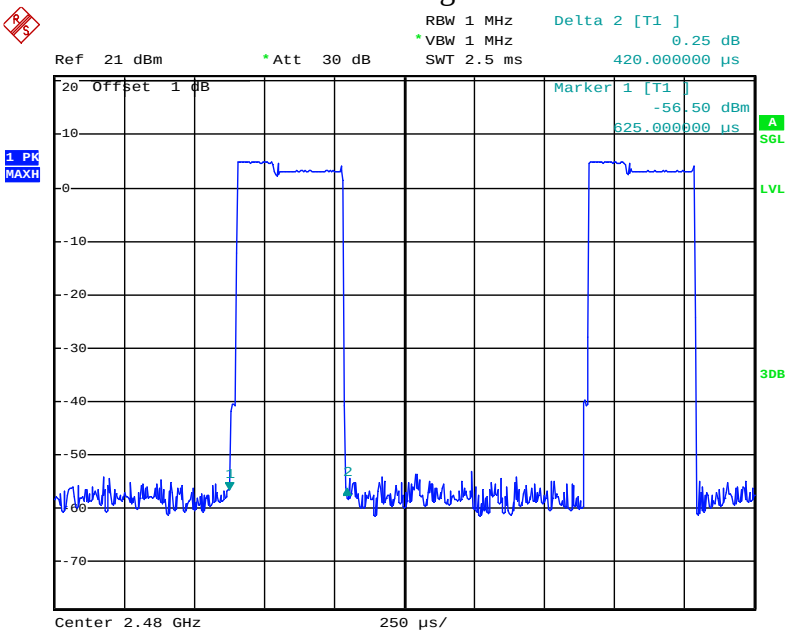
2DH1 Low channel



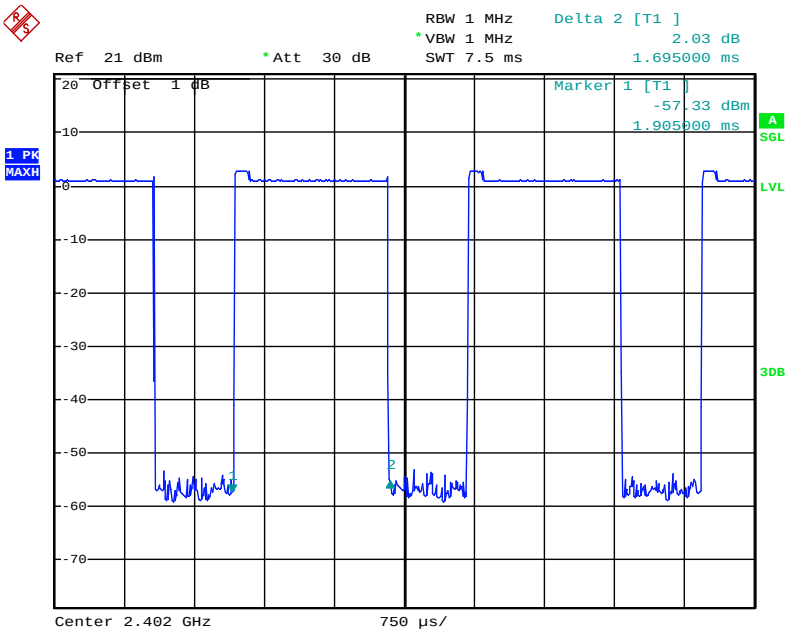
2DH1 Middle channel



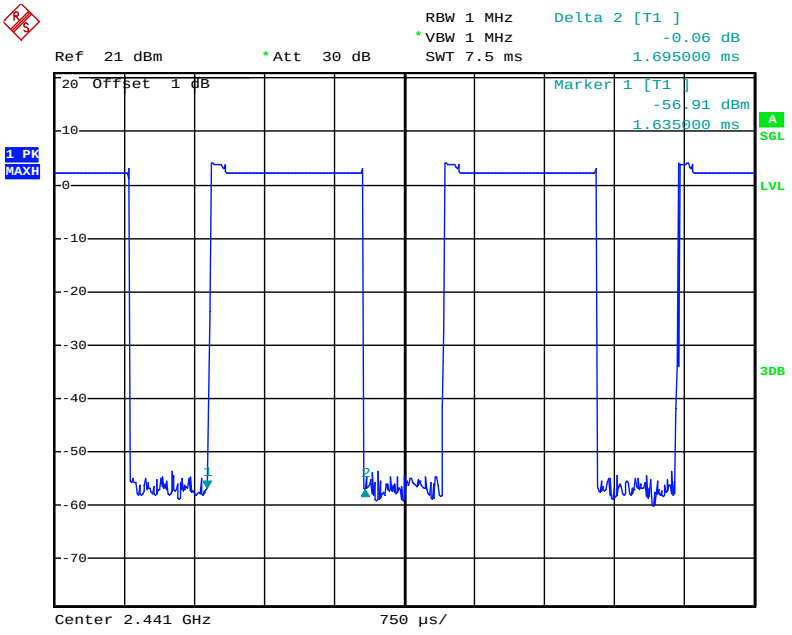
2DH1 High channel



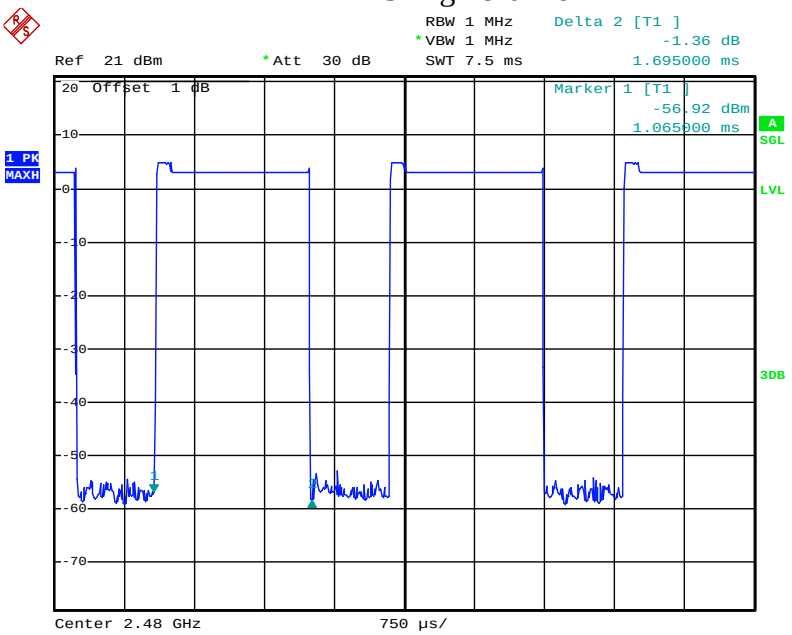
2DH3 Low channel



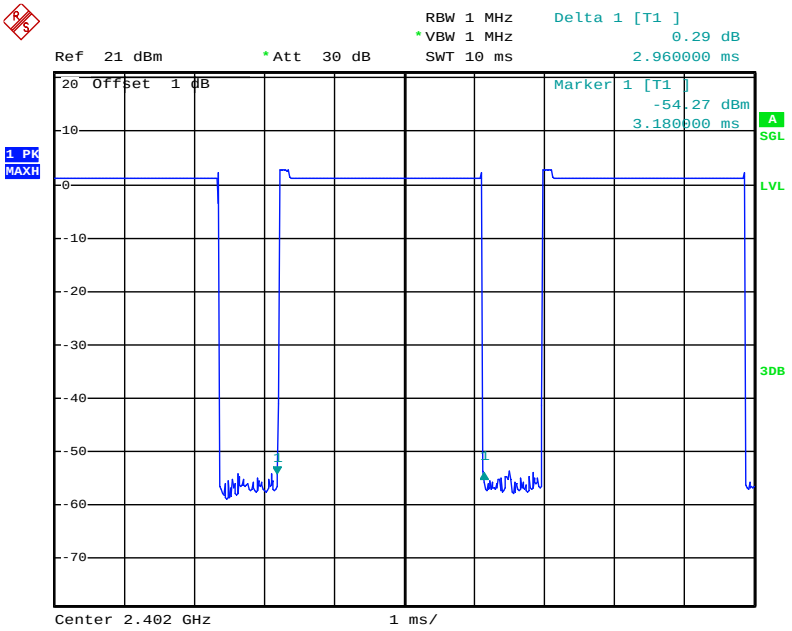
2DH3 Middle channel



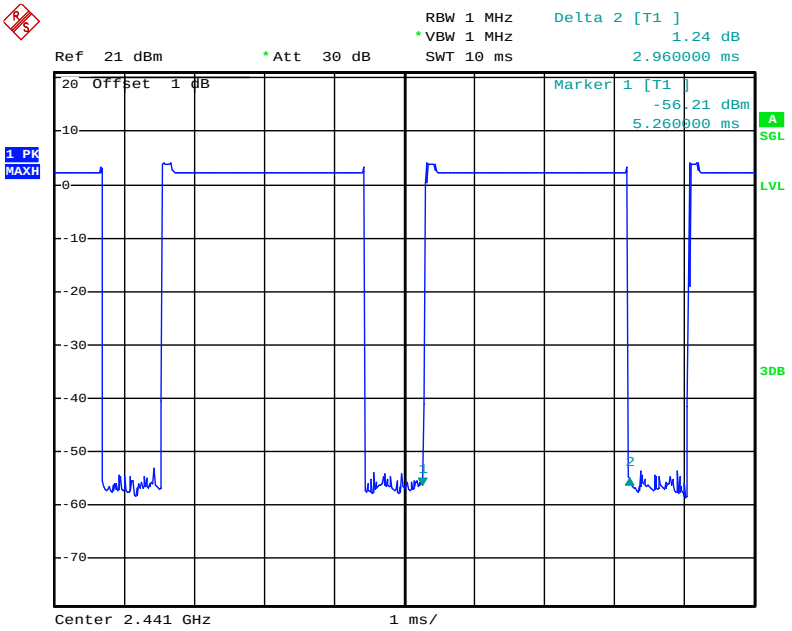
2DH3 High channel



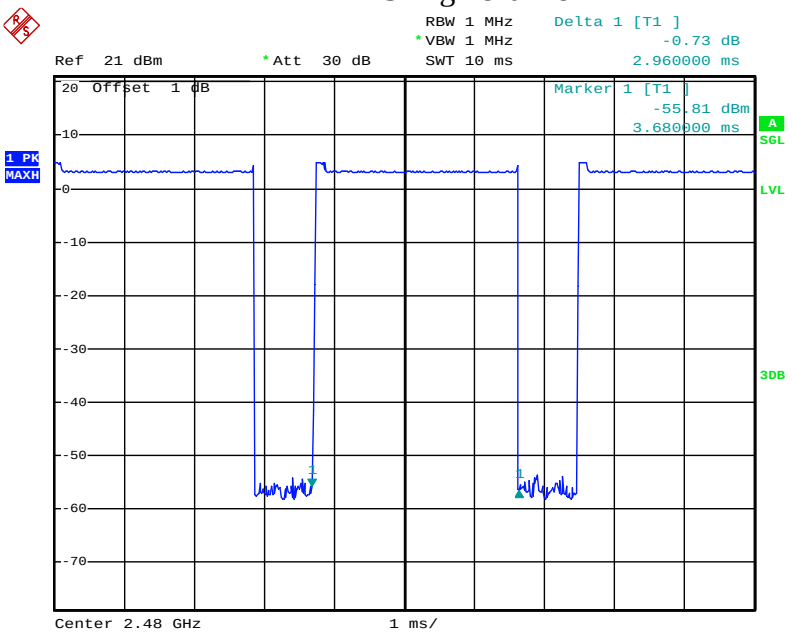
2DH5 Low channel



2DH5 Middle channel

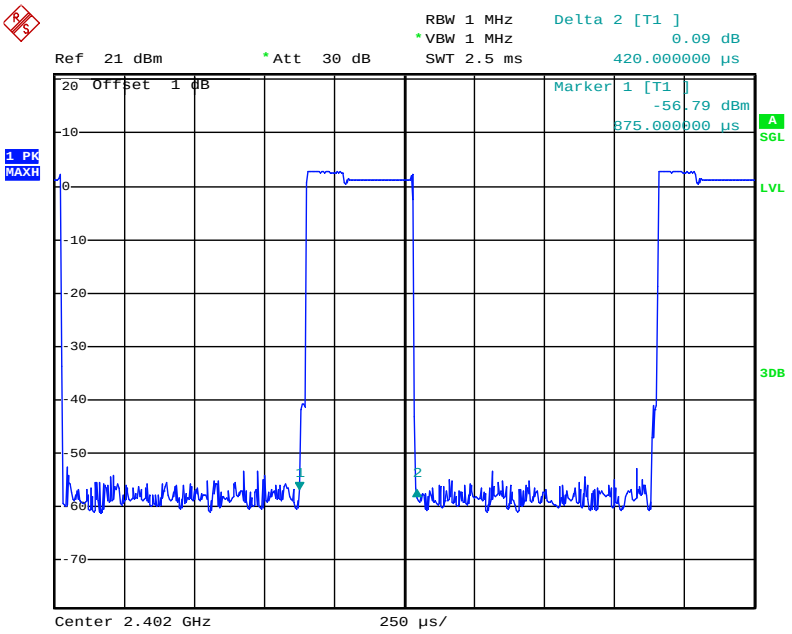


2DH5 High channel

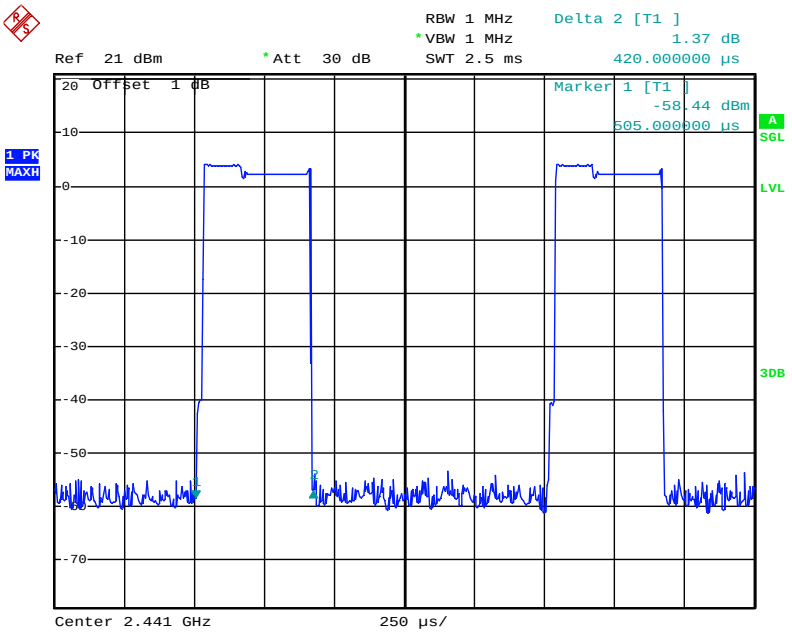


Mode 3: 8DPSK Link Mode

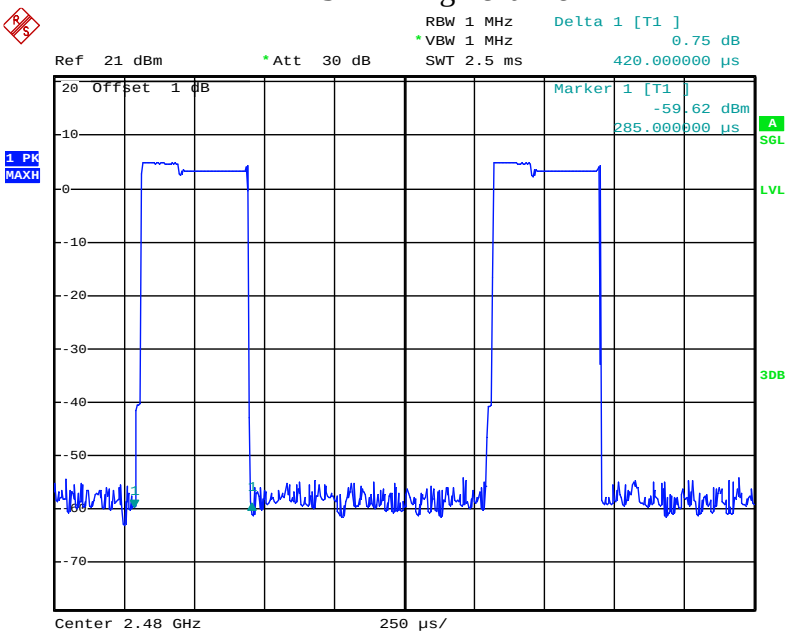
3DH1 Low channel



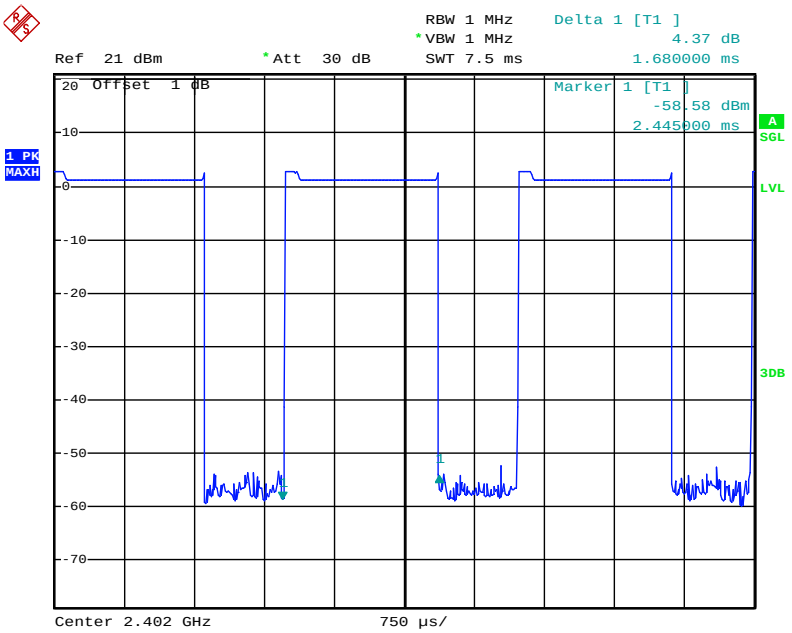
3DH1 Middle channel



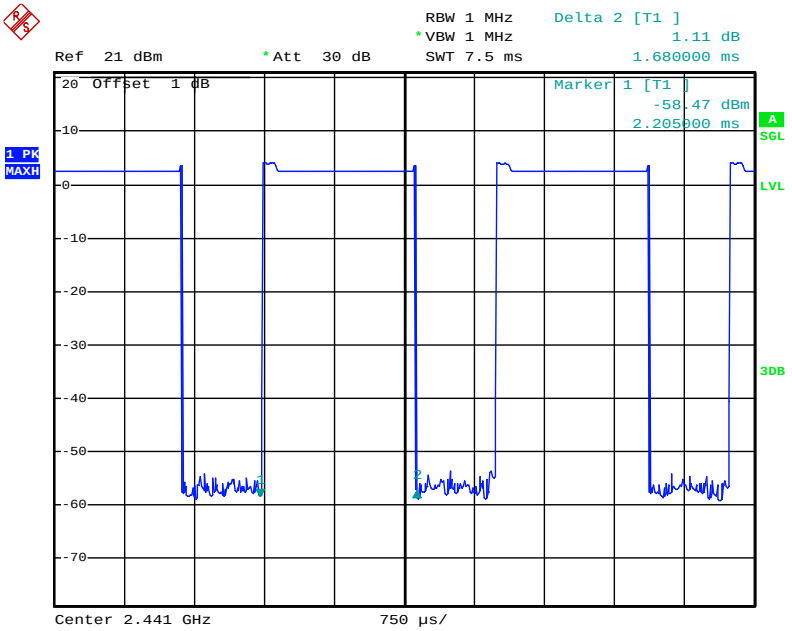
3DH1 High channel



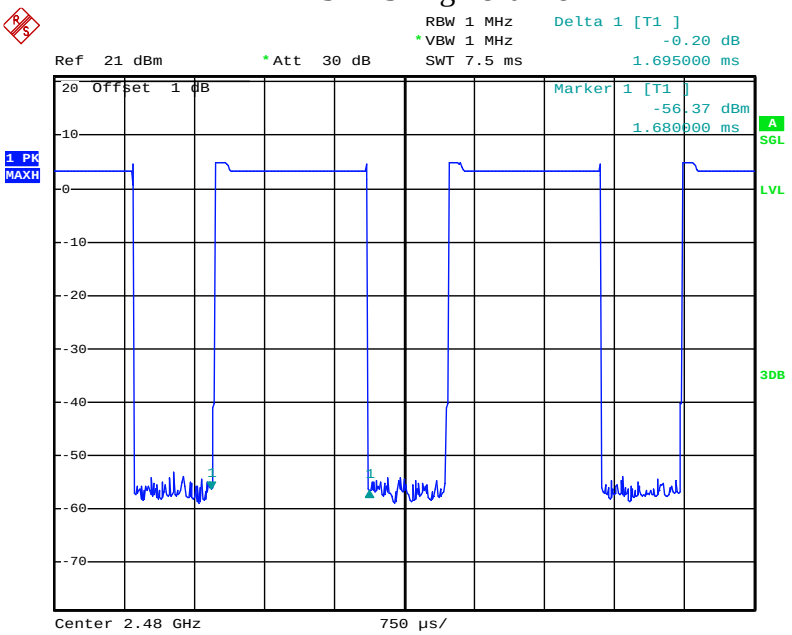
3DH3 Low channel



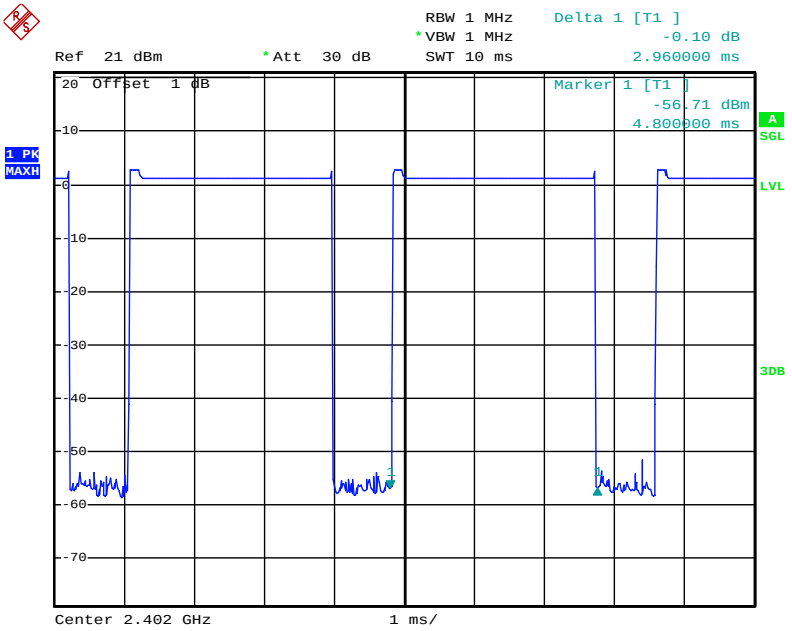
3DH3 Middle channel



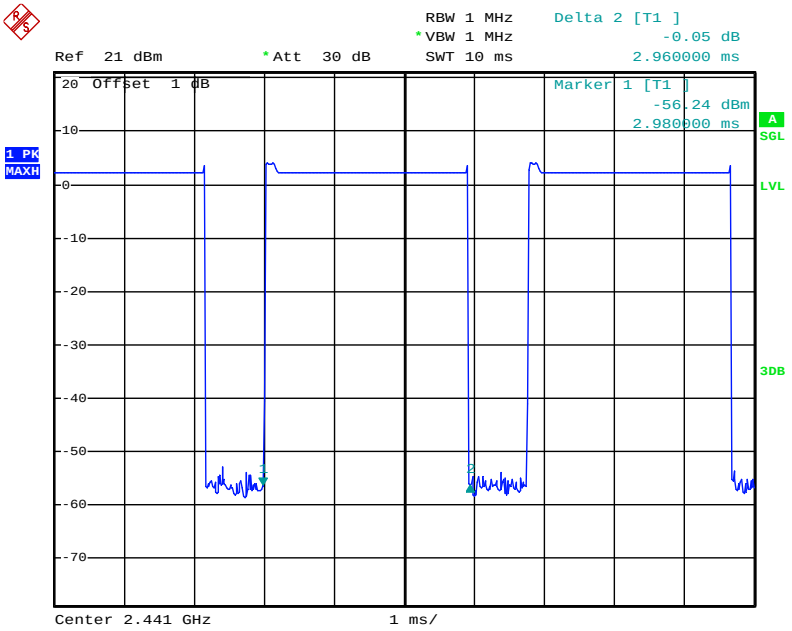
3DH3 High channel



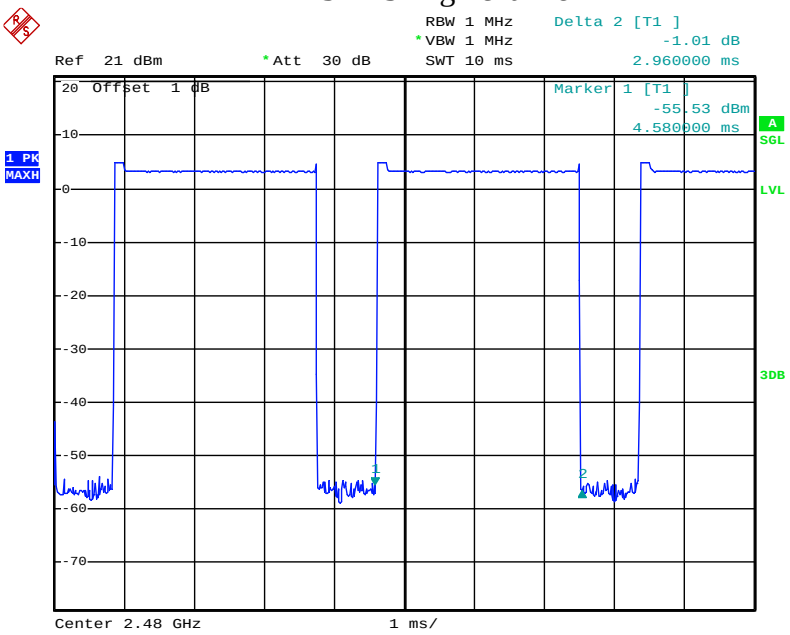
3DH5 Low channel



3DH5 Middle channel

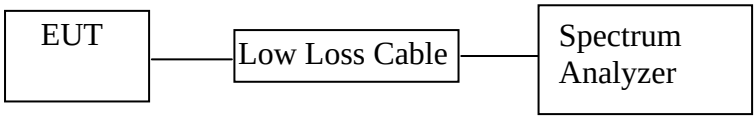


3DH5 High channel



9. MAXIMUM PEAK OUTPUT POWER TEST

9.1.Block Diagram of Test Setup



(EUT: Bluetooth Bookshelf Speakers with USB)

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 1MHz and VBW to 3MHz for GFSK mode

9.5.3.Set RBW of spectrum analyzer to 3MHz and VBW to 3MHz for other mode

9.5.4.Measurement the maximum peak output power.

9.6.Test Result

GFSK Mode

Channel	Frequency (MHz)	Peak Output Power(dBm)	Peak Output Power(mW)	Limits dBm / W
Low	2402	3.61	2.30	30/1.0
Middle	2441	2.48	1.77	30/1.0
High	2480	2.43	1.75	30/1.0

∏/4-DQPSK Mode

Channel	Frequency (MHz)	Peak Output Power(dBm)	Peak Output Power(mW)	Limits dBm / W
Low	2402	2.33	1.71	21 / 0.125
Middle	2441	1.64	1.46	21 / 0.125
High	2480	2.43	1.75	21 / 0.125

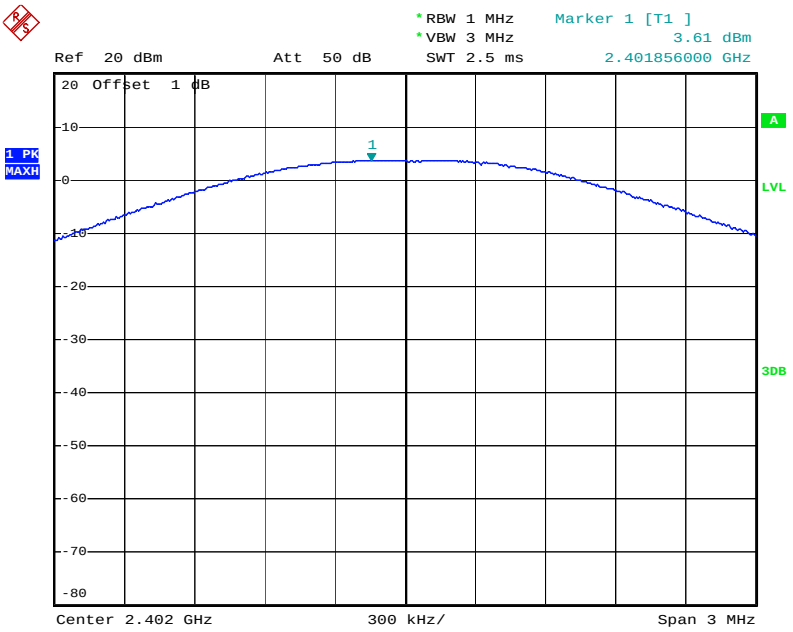
8DPSK Mode

Channel	Frequency (MHz)	Peak Output Power(dBm)	Peak Output Power(mW)	Limits dBm / W
Low	2402	2.42	1.75	21 / 0.125
Middle	2441	1.72	1.49	21 / 0.125
High	2480	3.53	2.25	21 / 0.125

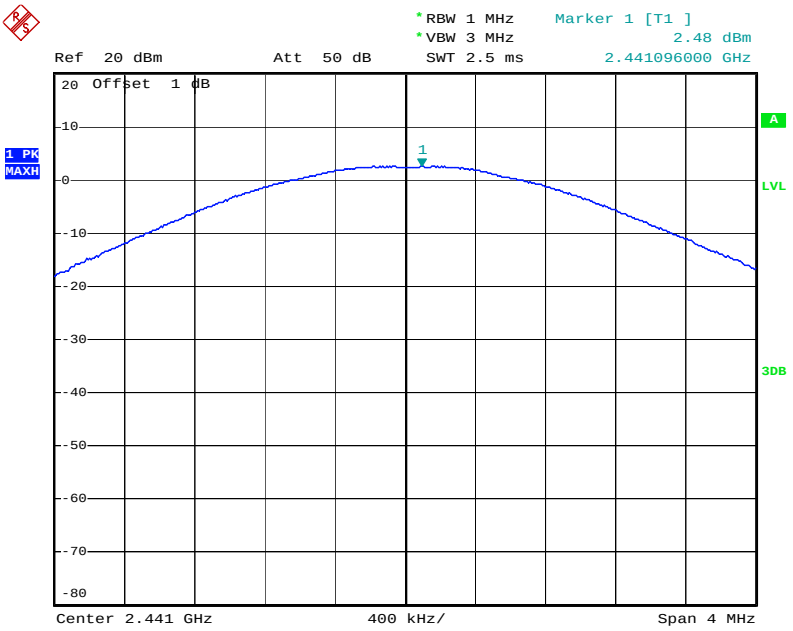
The spectrum analyzer plots are attached as below.

GFSK Mode

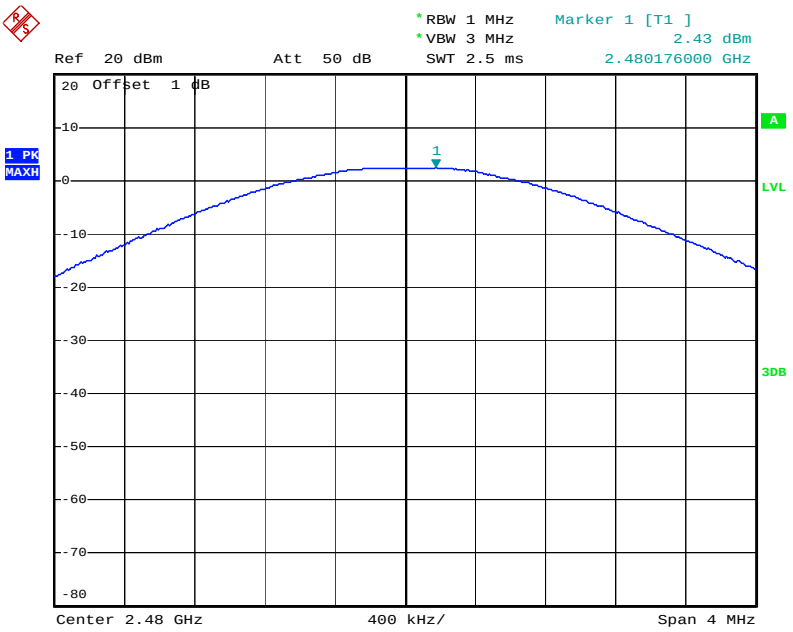
Low channel



Middle channel

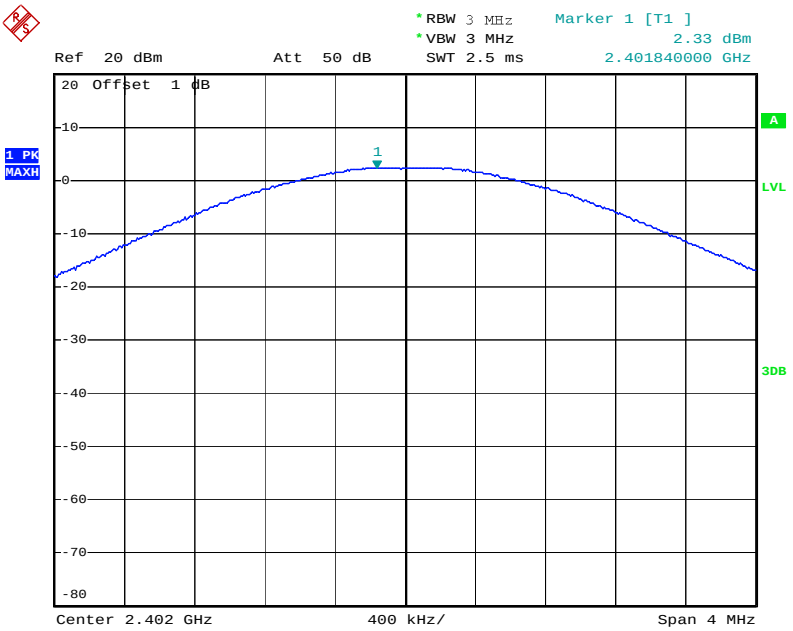


High channel

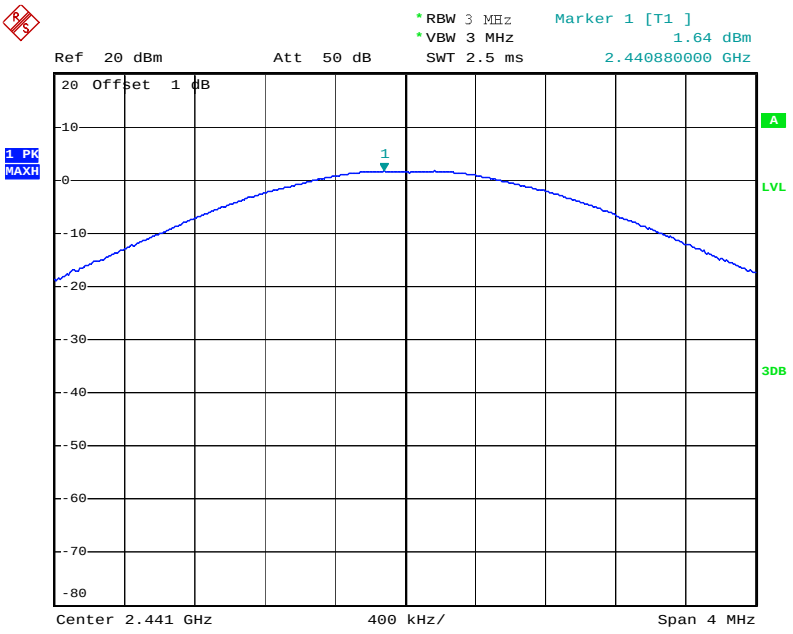


Π/4-DQPSK Mode

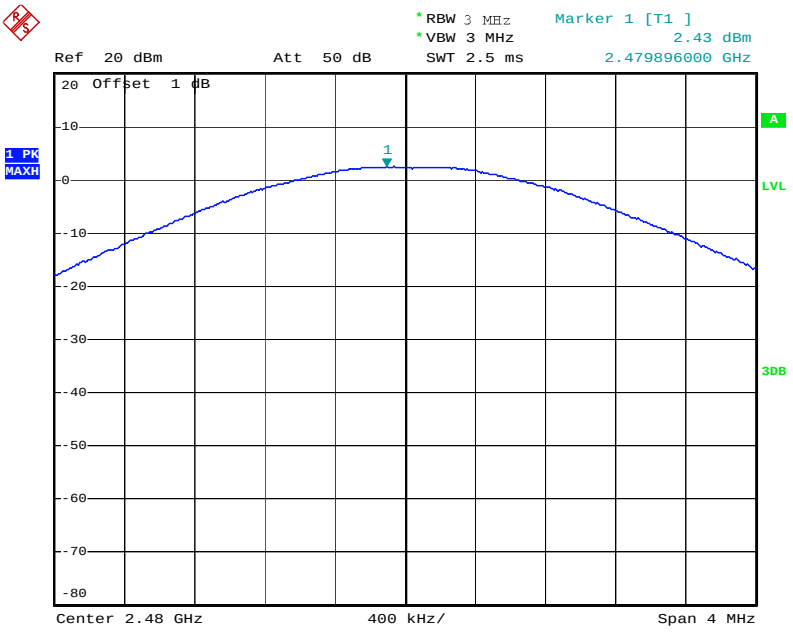
Low channel



Middle channel

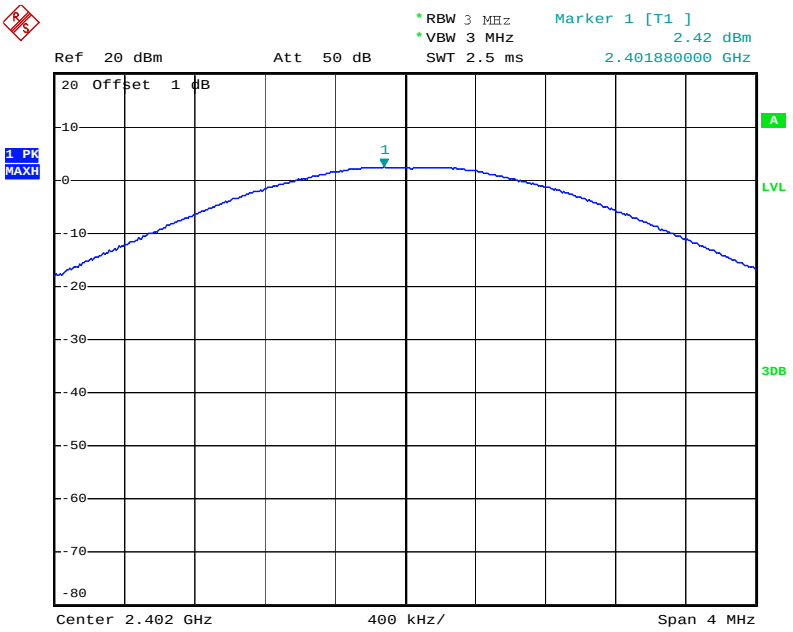


High channel

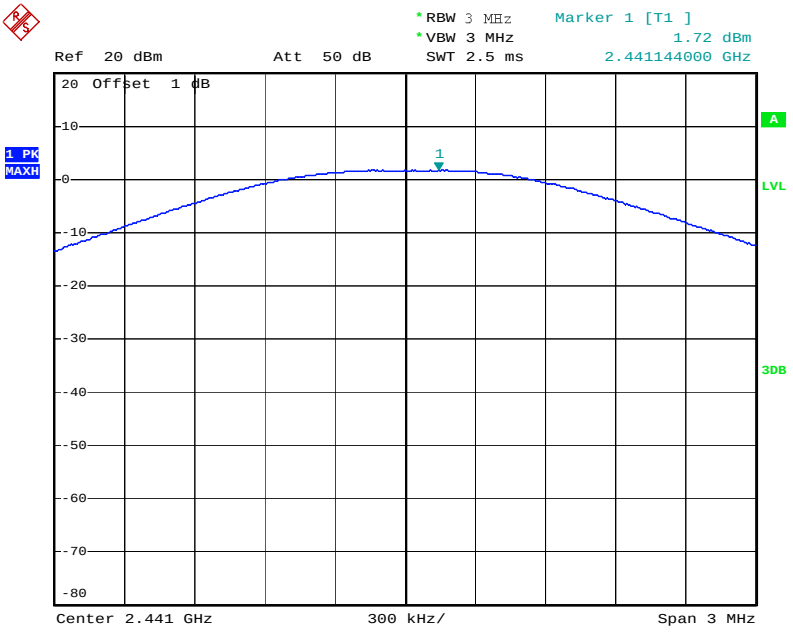


8DPSK Mode

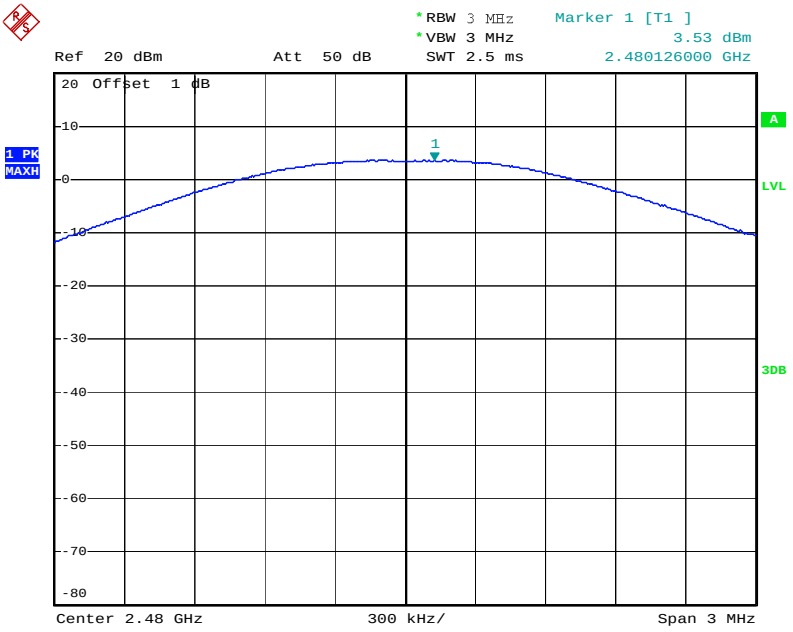
Low channel



Middle channel



High channel



10.RADIATED EMISSION TEST

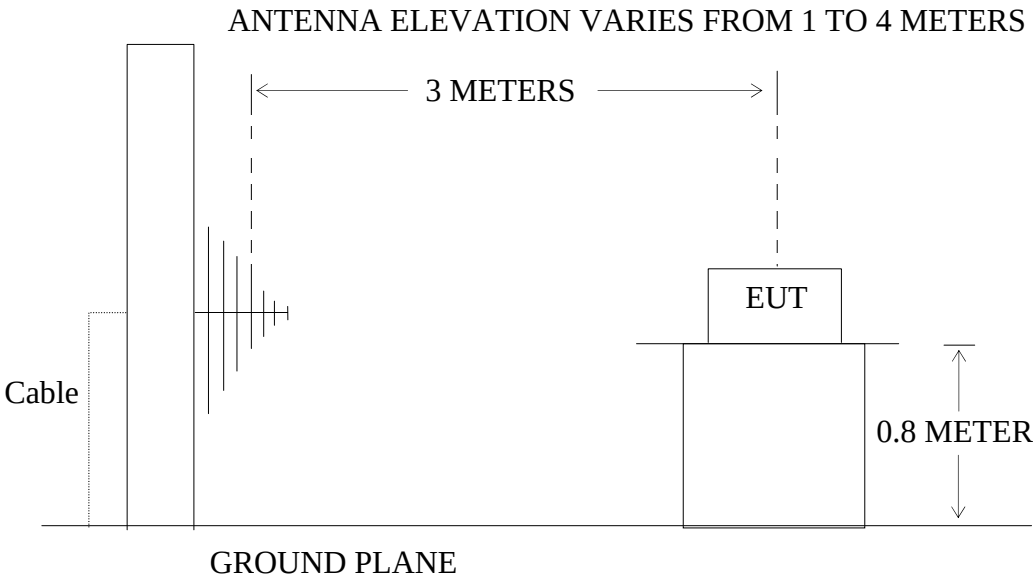
10.1.Block Diagram of Test Setup

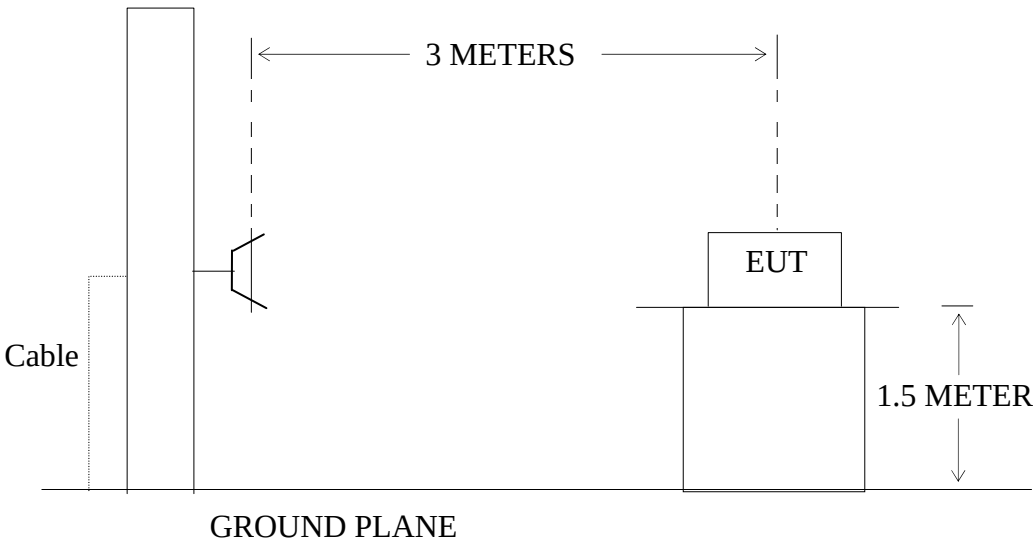
10.1.1.Block diagram of connection between the EUT and simulators

EUT

(EUT: Bluetooth Bookshelf Speakers with USB)

10.1.2.Anechoic Chamber Test Setup Diagram





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 are 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.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. 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 bilog 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 interface cables must be manipulated according to ANSI C63.10- 2013 on radiated emission measurement.
The final measurement in band 9-90 kHz, 110-490 kHz and above 1000MHz is performed with Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

RBW (120 kHz), VBW (300 kHz) for QP detector below 1GHz
Peak detector above 1GHz
RBW (1 MHz), VBW (3MHz) for Peak measurement
RBW (1 MHz), VBW (10Hz) for AV measurement

If the peak-detected amplitude can be shown to comply with the average limit, then it is not necessary to perform a separate average measurement.

10.6.The Field Strength of Radiation Emission Measurement Results

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

2. The fundamental radiated emissions were reduced by 2.4G Band Reject Filter in the attached plots.

3. The 18-25GHz emissions are not reported, because the levels are too low against the limit.

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Site: 1# Chamber
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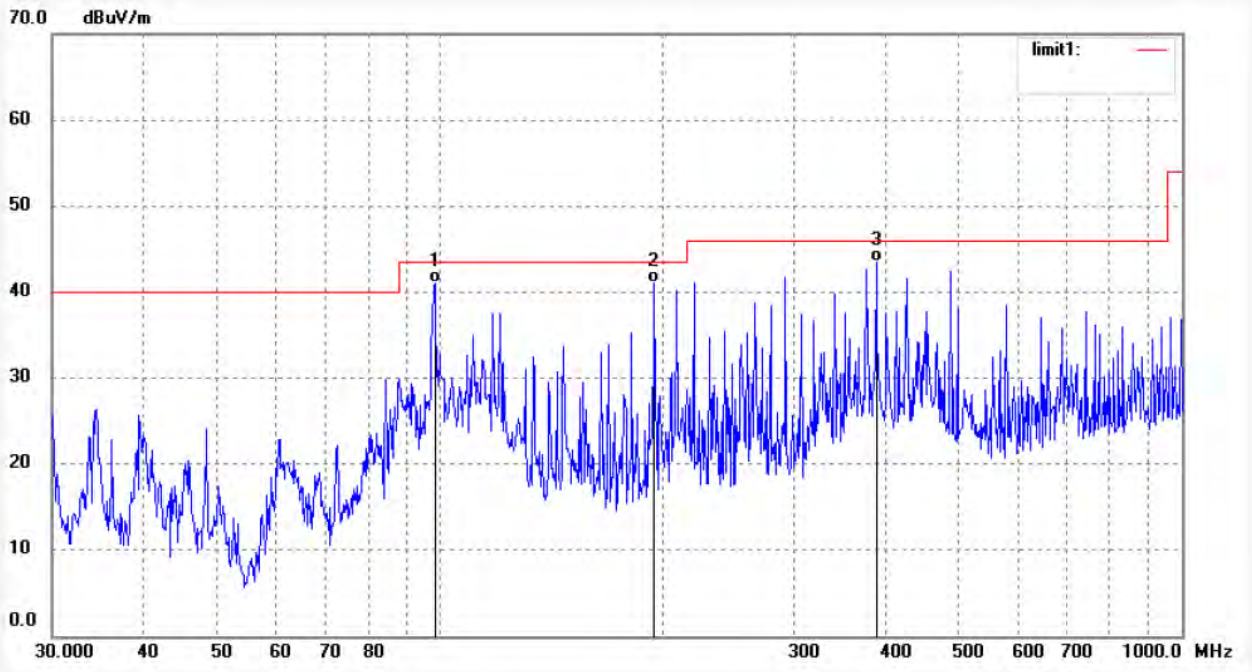
Fax:+86-0755-26503396

Job No.: STAR2015 #1160	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2015/07/04
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 17:42:05
EUT: Bluetooth Hi-Fi Multimedia Speaker	Engineer Signature:
Mode: TX 2402MHz	Distance: 3m
Model: NE830	
Manufacturer: NICETEX	

Note: Report No.:ATE20151337



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	98.3752	62.60	-21.61	40.99	43.50	-2.51	QP			
2	194.4985	60.14	-19.02	41.12	43.50	-2.38	QP			
3	387.2565	57.63	-14.11	43.52	46.00	-2.48	QP			

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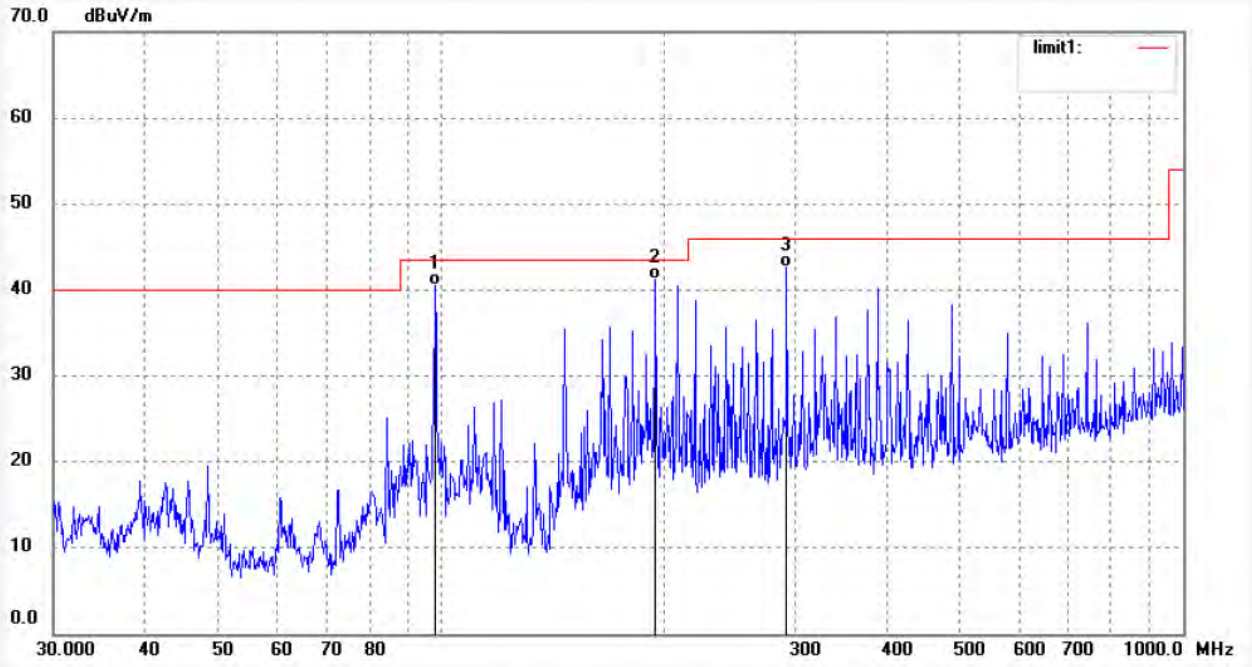
Job No.: STAR2015 #1161
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Hi-Fi Multimedia Speaker
Mode: TX 2402MHz
Model: NE830
Manufacturer: NICETEX

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2015/07/04
Time: 17:42:58
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20151337



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	98.0302	62.09	-21.61	40.48	43.50	-3.02	QP			
2	194.4985	60.32	-19.02	41.30	43.50	-2.20	QP			
3	292.3643	59.13	-16.45	42.68	46.00	-3.32	QP			

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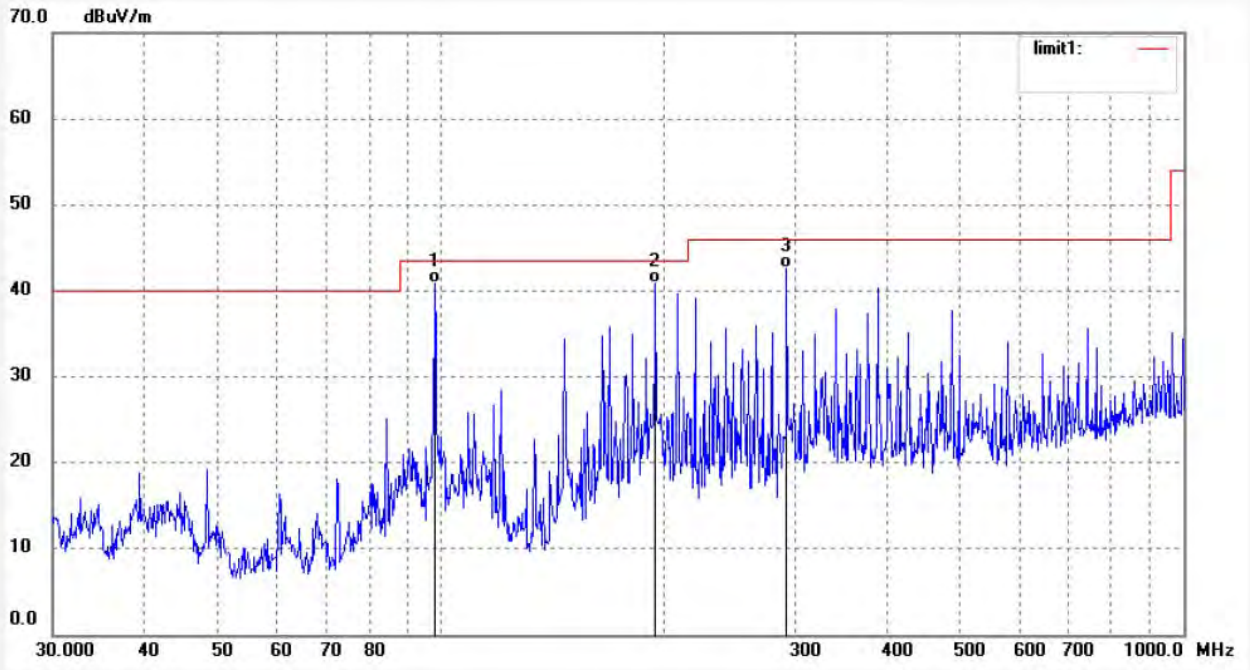
Job No.: STAR2015 #1162
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Hi-Fi Multimedia Speaker
Mode: TX 2441MHz
Model: NE830
Manufacturer: NICETEX

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2015/07/04
Time: 17:43:43
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20151337



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	98.0301	62.42	-21.61	40.81	43.50	-2.69	QP			
2	194.4985	59.81	-19.02	40.79	43.50	-2.71	QP			
3	292.3643	59.10	-16.45	42.65	46.00	-3.35	QP			

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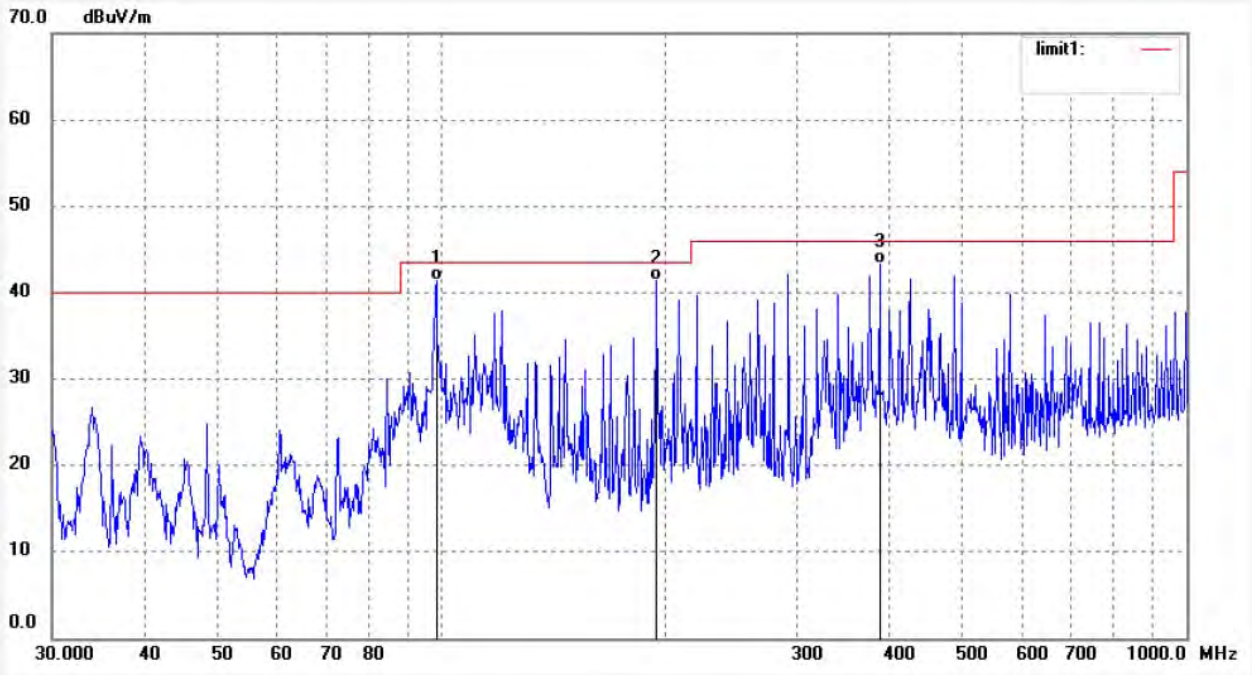
Job No.: STAR2015 #1163
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Hi-Fi Multimedia Speaker
Mode: TX 2441MHz
Model: NE830
Manufacturer: NICETEX

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2015/07/04
Time: 17:44:40
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20151337



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	98.3752	62.97	-21.61	41.36	43.50	-2.14	QP			
2	194.4985	60.44	-19.02	41.42	43.50	-2.08	QP			
3	387.2565	57.39	-14.11	43.28	46.00	-2.72	QP			

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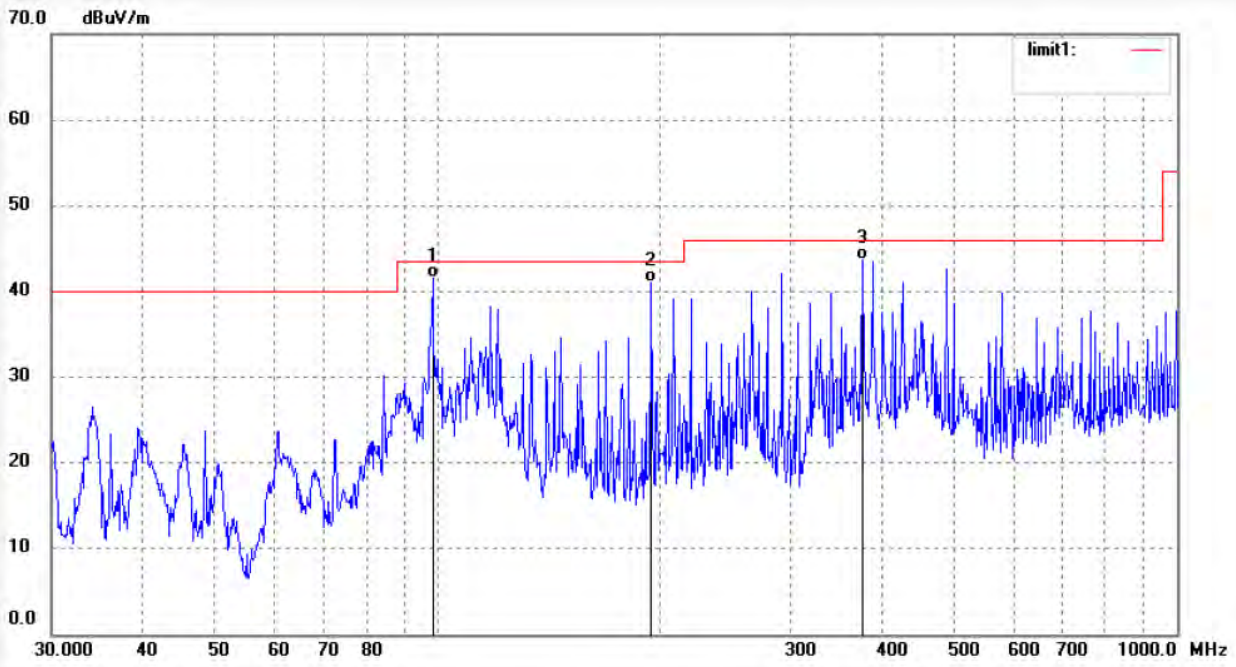
Job No.: STAR2015 #1164	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2015/07/04
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 17:45:33
EUT: Bluetooth Hi-Fi Multimedia Speaker	Engineer Signature:
Mode: TX 2480MHz	Distance: 3m
Model: NE830	
Manufacturer: NICETEX	

Note: Report No.:ATE20151337



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	98.3752	63.15	-21.61	41.54	43.50	-1.96	QP			
2	194.4985	60.14	-19.02	41.12	43.50	-2.38	QP			
3	375.2022	57.91	-14.19	43.72	46.00	-2.28	QP			

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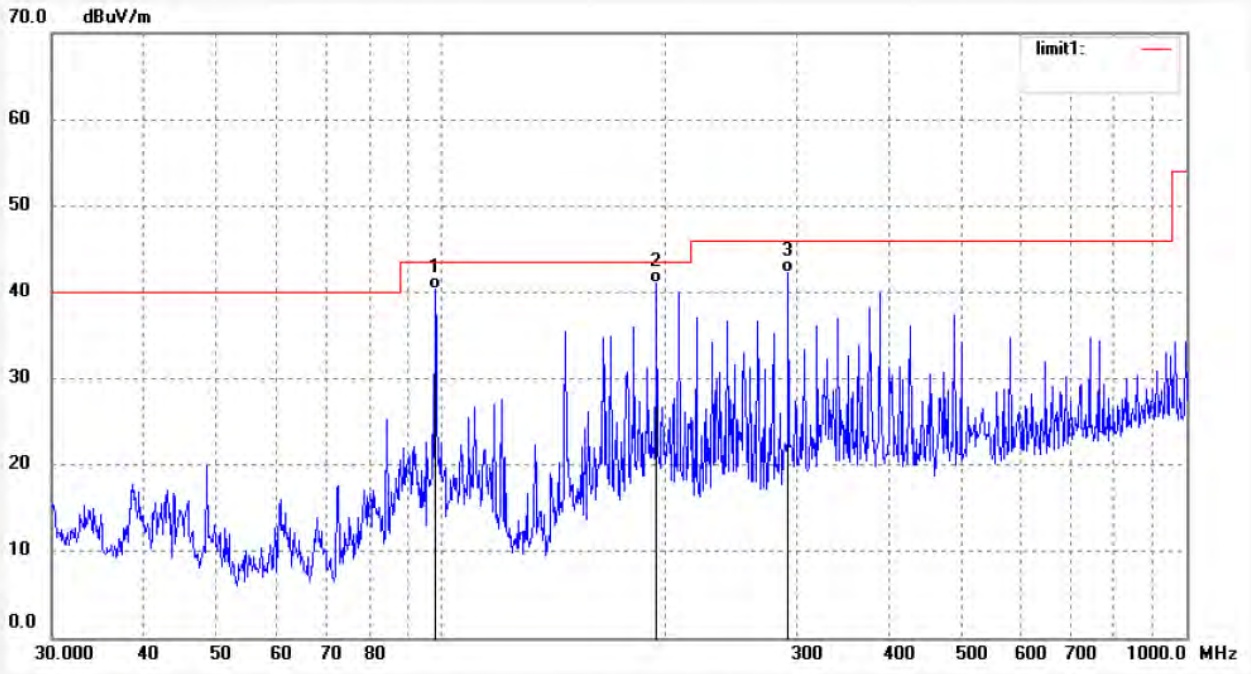
Job No.: STAR2015 #1165	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2015/07/04
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 17:46:23
EUT: Bluetooth Hi-Fi Multimedia Speaker	Engineer Signature:
Mode: TX 2480MHz	Distance: 3m
Model: NE830	
Manufacturer: NICETEX	

Note: Report No.:ATE20151337



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	98.0302	61.99	-21.61	40.38	43.50	-3.12	QP			
2	194.4985	60.02	-19.02	41.00	43.50	-2.50	QP			
3	292.3643	58.64	-16.45	42.19	46.00	-3.81	QP			

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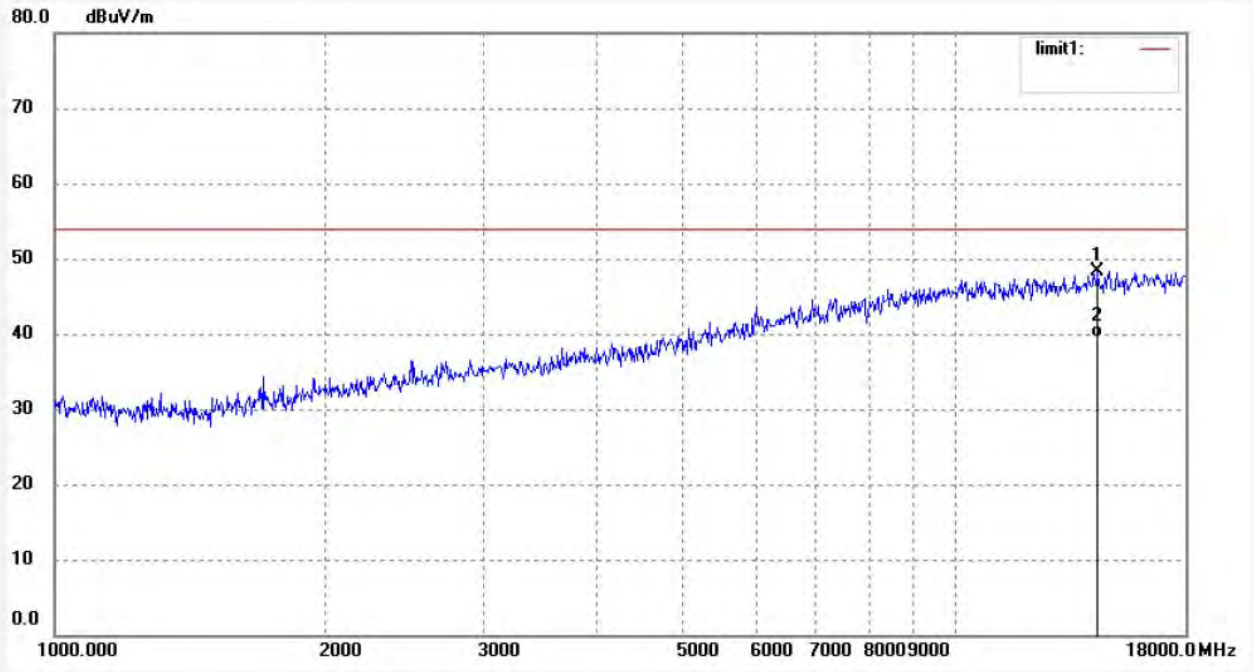
Job No.: STAR2015 #1166
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Hi-Fi Multimedia Speaker
Mode: TX 2402MHz
Model: NE830
Manufacturer: NICETEX

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2015/07/04
Time: 17:48:20
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20151337



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	14385.838	34.64	13.73	48.37	54.00	-5.63	peak			
2	14385.838	25.80	13.73	39.53	54.00	-14.47	AVG			

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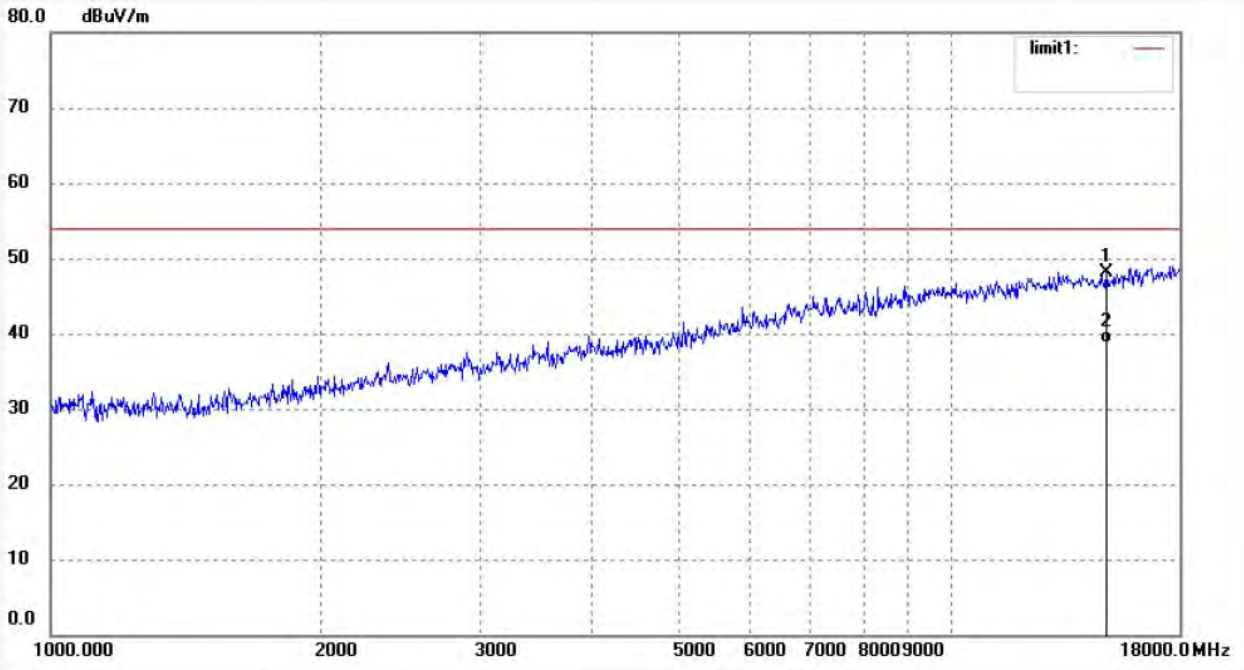
Job No.: STAR2015 #1167	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2015/07/04
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 17:49:01
EUT: Bluetooth Hi-Fi Multimedia Speaker	Engineer Signature:
Mode: TX 2402MHz	Distance: 3m
Model: NE830	
Manufacturer: NICETEX	

Note: Report No.:ATE20151337



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	14940.624	34.62	13.42	48.04	54.00	-5.96	peak			
2	14940.624	25.33	13.42	38.75	54.00	-15.25	AVG			

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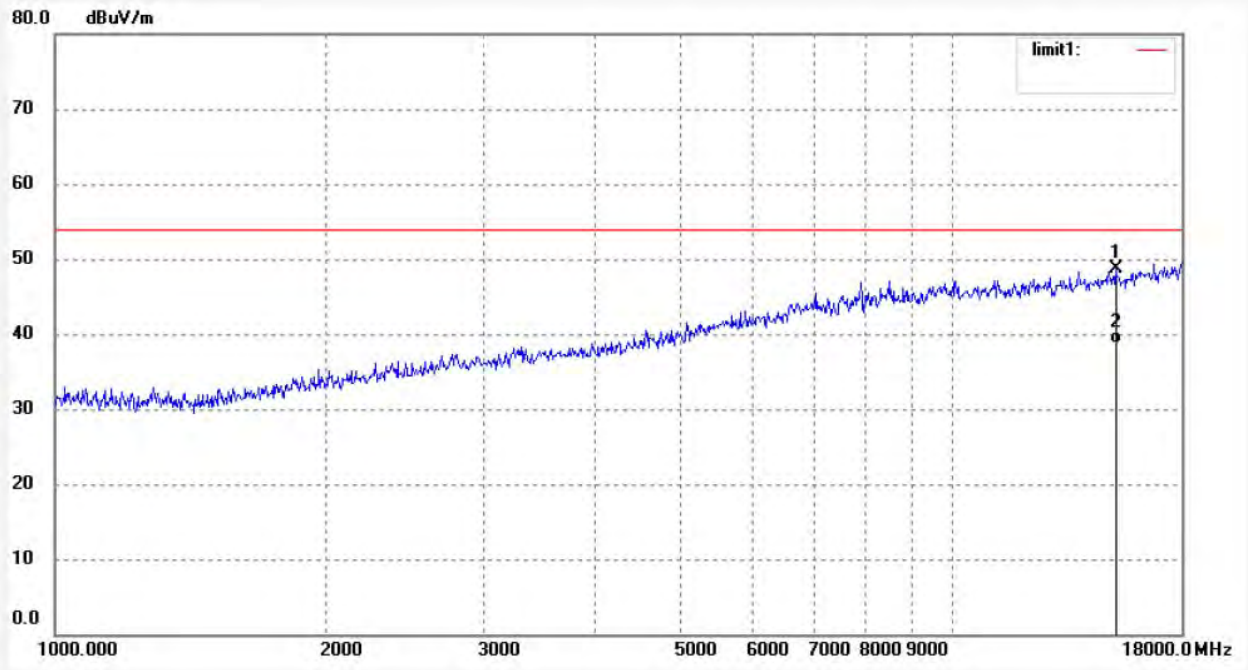
Job No.: STAR2015 #1168	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2015/07/04
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 17:52:10
EUT: Bluetooth Hi-Fi Multimedia Speaker	Engineer Signature:
Mode: TX 2441MHz	Distance: 3m
Model: NE830	
Manufacturer: NICETEX	

Note: Report No.:ATE20151337



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	15203.846	35.78	13.00	48.78	54.00	-5.22	peak			
2	15203.846	25.69	13.00	38.69	54.00	-15.31	AVG			

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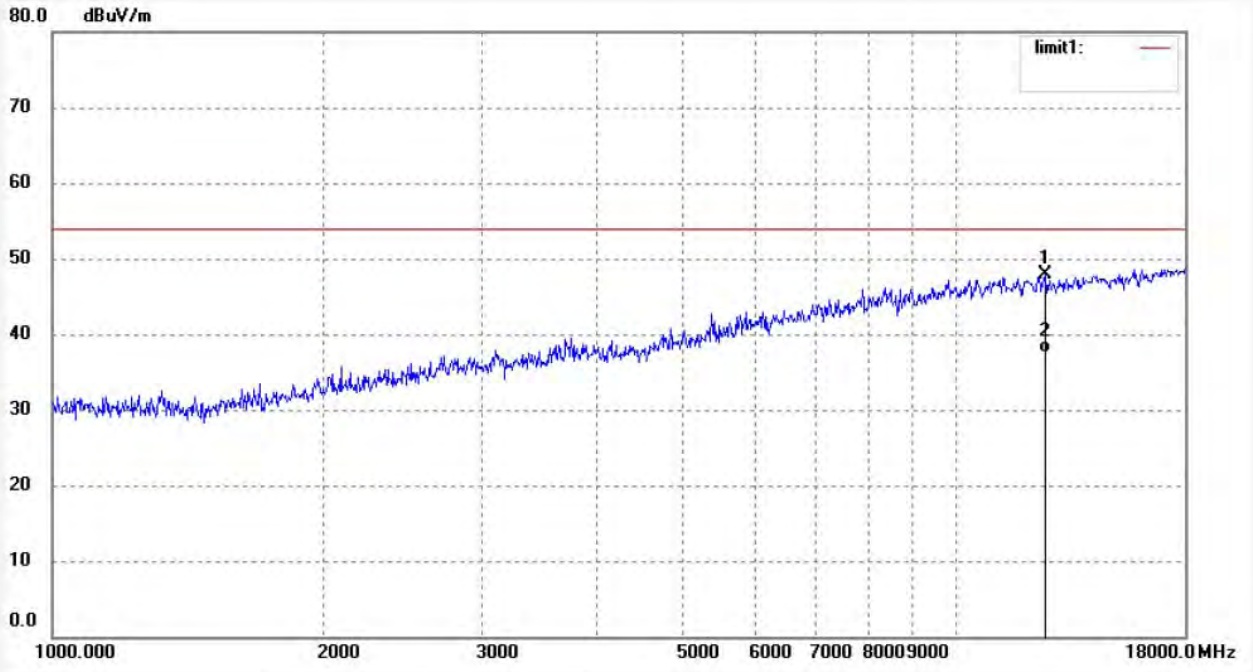
Job No.: STAR2015 #1169
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Hi-Fi Multimedia Speaker
Mode: TX 2441MHz
Model: NE830
Manufacturer: NICETEX

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2015/07/04
Time: 17:53:04
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20151337



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	12619.719	39.35	8.46	47.81	54.00	-6.19	peak			
2	12619.719	28.96	8.46	37.42	54.00	-16.58	AVG			

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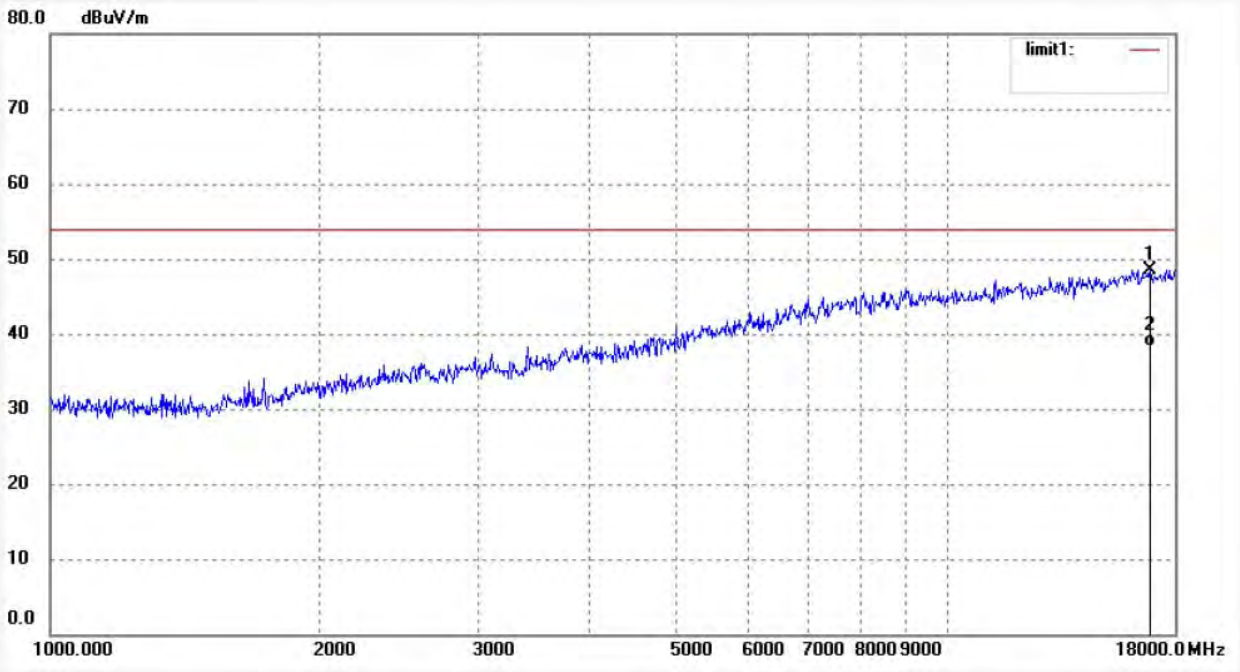
Job No.: STAR2015 #1170	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2015/07/04
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 17:53:56
EUT: Bluetooth Hi-Fi Multimedia Speaker	Engineer Signature:
Mode: TX 2480MHz	Distance: 3m
Model: NE830	
Manufacturer: NICETEX	

Note: Report No.:ATE20151337



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	16883.475	33.90	14.56	48.46	54.00	-5.54	peak			
2	16883.475	23.68	14.56	38.24	54.00	-15.76	AVG			

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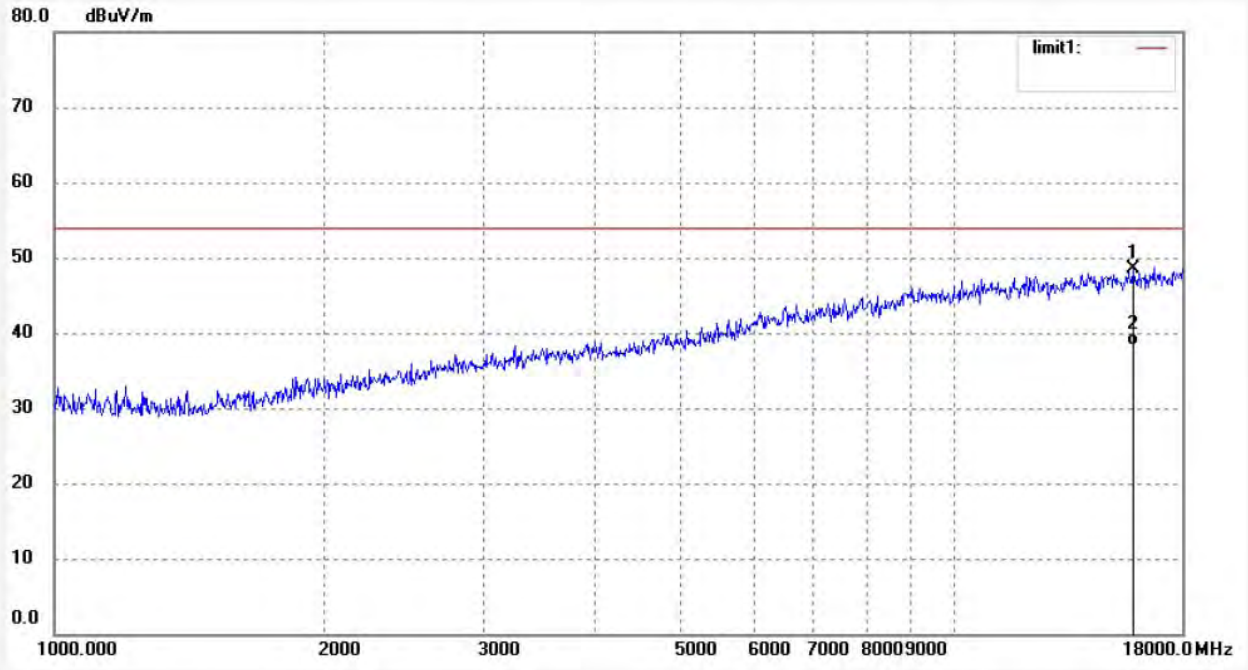
Job No.: STAR2015 #1171	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2015/07/04
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 17:54:49
EUT: Bluetooth Hi-Fi Multimedia Speaker	Engineer Signature:
Mode: TX 2480MHz	Distance: 3m
Model: NE830	
Manufacturer: NICETEX	

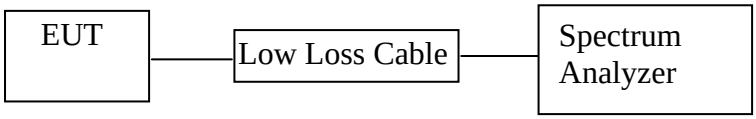
Note: Report No.:ATE20151337



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	15882.369	35.74	12.75	48.49	54.00	-5.51	peak			
2	15882.369	25.47	12.75	38.22	54.00	-15.78	AVG			

11.BAND EDGE COMPLIANCE TEST

11.1.Block Diagram of Test Setup



(EUT: Bluetooth Bookshelf Speakers with USB)

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.

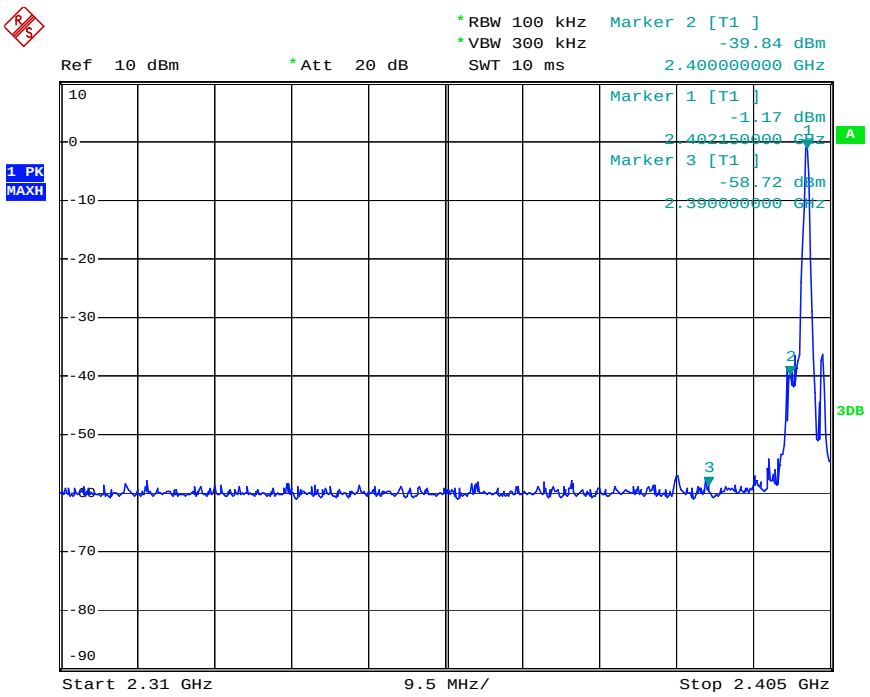
11.5.2.Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz with convenient frequency span including 100 kHz bandwidth from band edge.

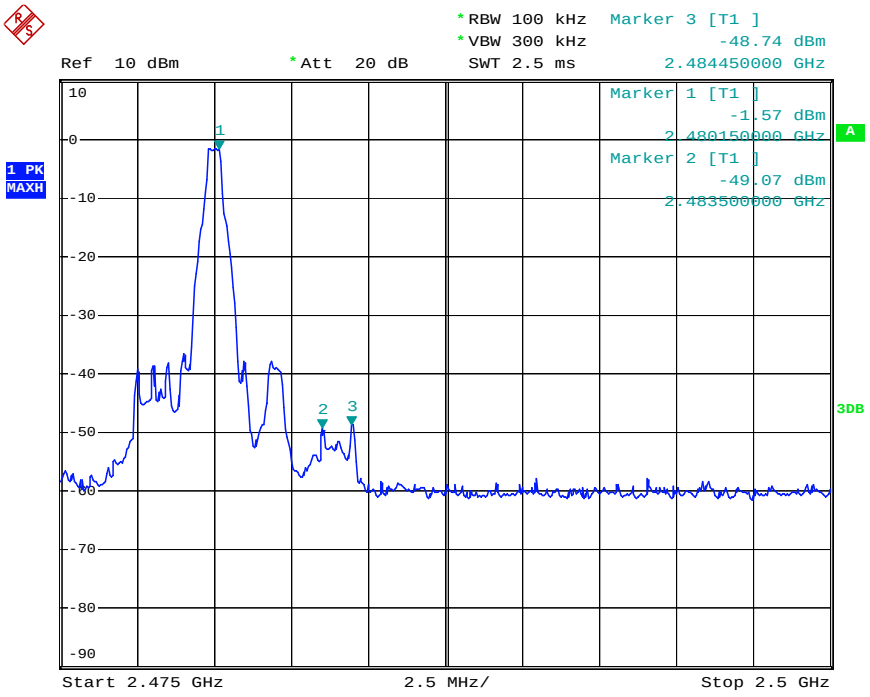
11.5.3.The band edges was measured and recorded.

11.6.Test Result

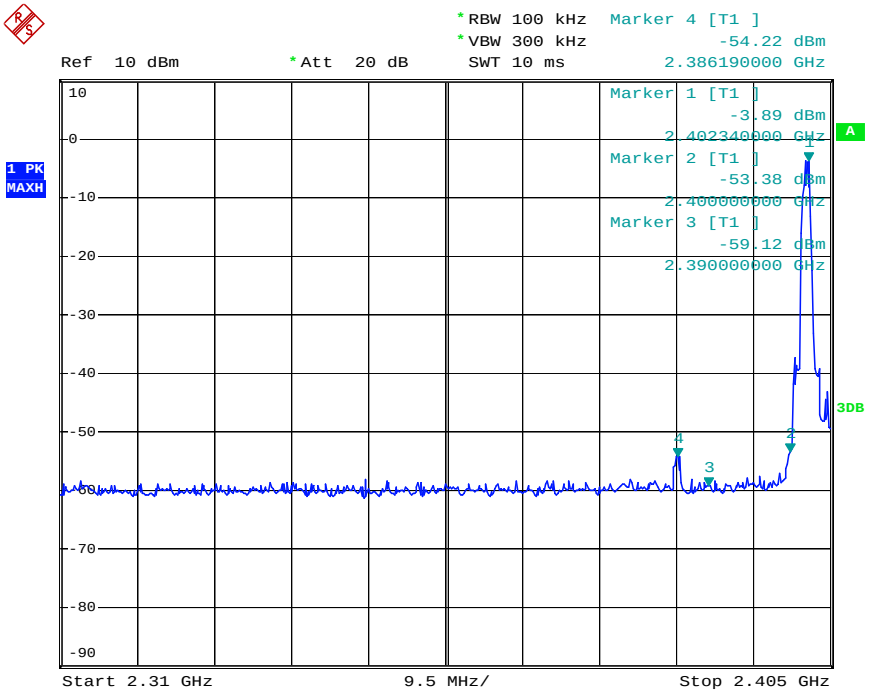
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
GFSK		
2400.00	38.67	> 20dBc
2484.45	47.17	> 20dBc
Π/4-DQPSK Mode		
2400.00	49.49	> 20dBc
2483.50	43.41	> 20dBc
8QPSK		
2400.00	49.25	> 20dBc
2483.50	43.41	> 20dBc

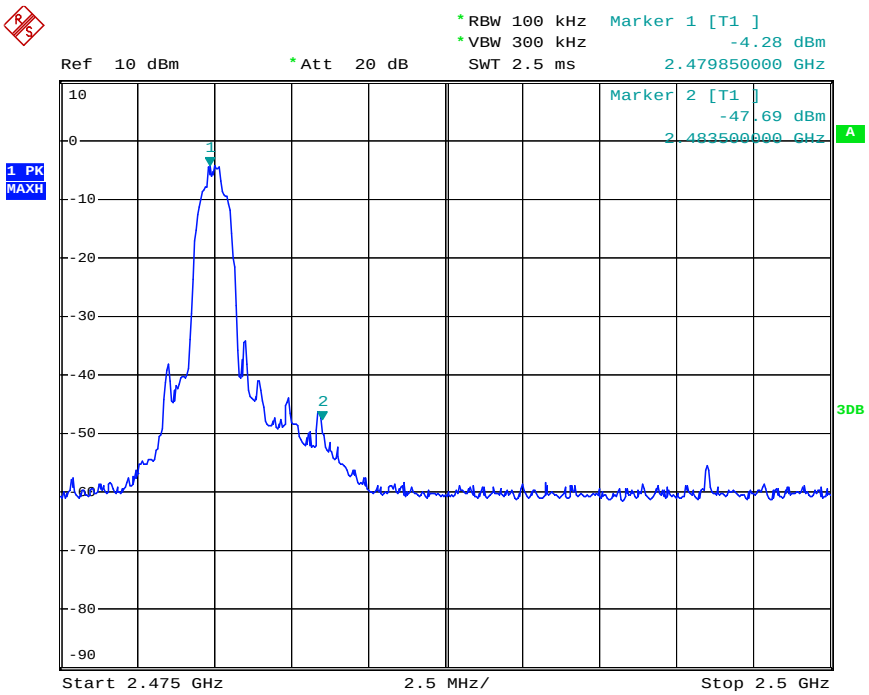
GFSK


*RBW 100 kHz
*VBW 300 kHz
Ref 10 dBm
*Att 20 dB
SWT 10 ms
Marker 2 [T1]
-39.84 dBm
2.400000000 GHz
Marker 1 [T1]
-1.17 dBm
2.402150000 GHz
Marker 3 [T1]
-58.72 dBm
2.390000000 GHz
1 PK
MAXH
A
3DB
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Start 2.31 GHz
9.5 MHz/
Stop 2.405 GHz

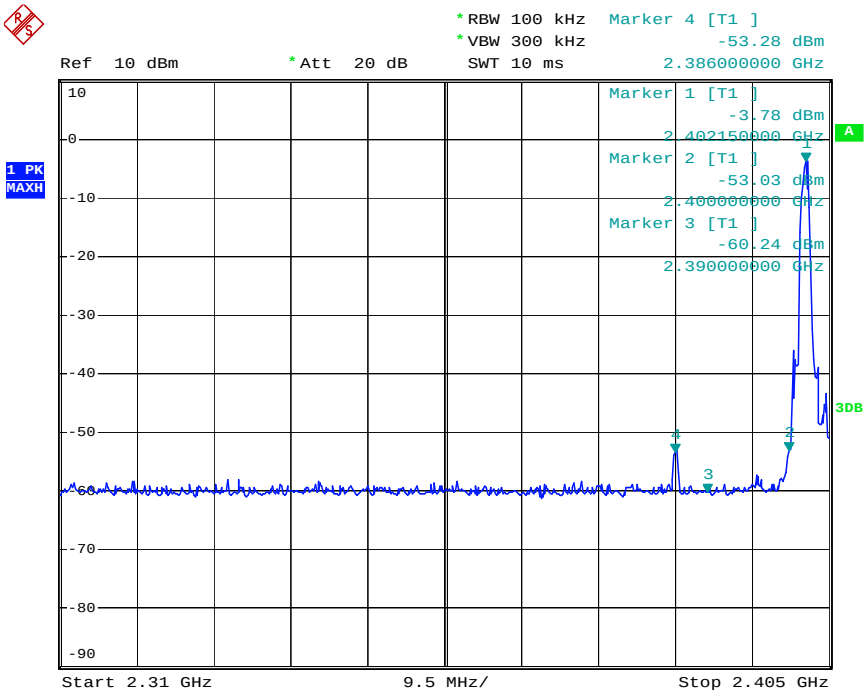

*RBW 100 kHz
*VBW 300 kHz
Ref 10 dBm
*Att 20 dB
SWT 2.5 ms
Marker 3 [T1]
-48.74 dBm
2.484450000 GHz
Marker 1 [T1]
-1.57 dBm
2.480150000 GHz
Marker 2 [T1]
-49.07 dBm
2.483500000 GHz
1 PK
MAXH
A
3DB
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Start 2.475 GHz
2.5 MHz/
Stop 2.5 GHz

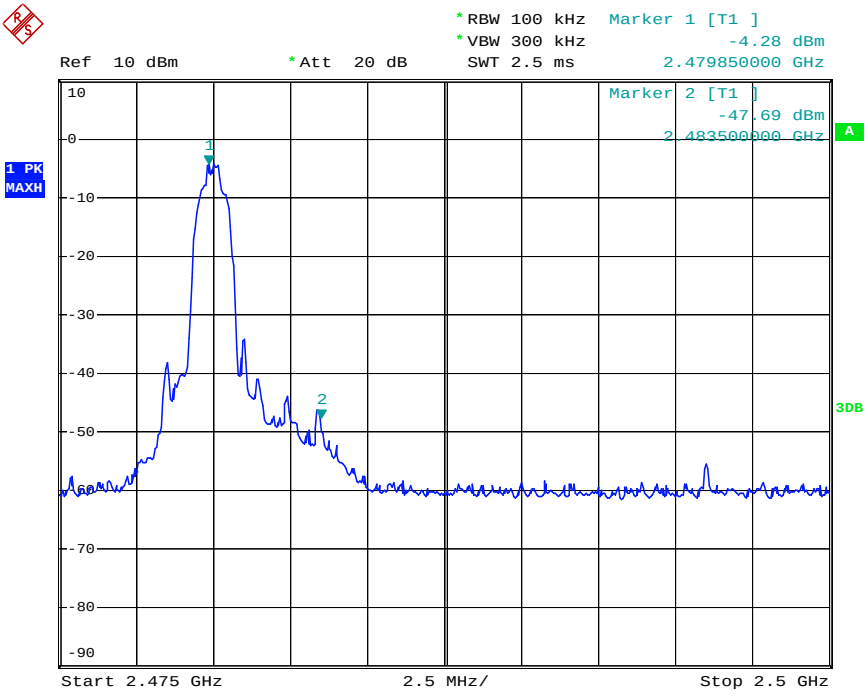
Π/4-DQPSK Mode





8DPSK


*RBW 100 kHz
*VBW 300 kHz
Ref 10 dBm
*Att 20 dB
SWT 10 ms
Marker 4 [T1]
-53.28 dBm
2.386000000 GHz
Marker 1 [T1]
-3.78 dBm
2.402150000 GHz
Marker 2 [T1]
-53.03 dBm
2.400000000 GHz
Marker 3 [T1]
-60.24 dBm
2.390000000 GHz
1 PK
MAXH
A
3DB
Start 2.31 GHz
9.5 MHz/
Stop 2.405 GHz


*RBW 100 kHz
*VBW 300 kHz
Ref 10 dBm
*Att 20 dB
SWT 2.5 ms
Marker 1 [T1]
-4.28 dBm
2.479850000 GHz
Marker 2 [T1]
-47.69 dBm
2.483500000 GHz
1 PK
MAXH
A
3DB
Start 2.475 GHz
2.5 MHz/
Stop 2.5 GHz

Radiated Band Edge Result

Non-hopping mode

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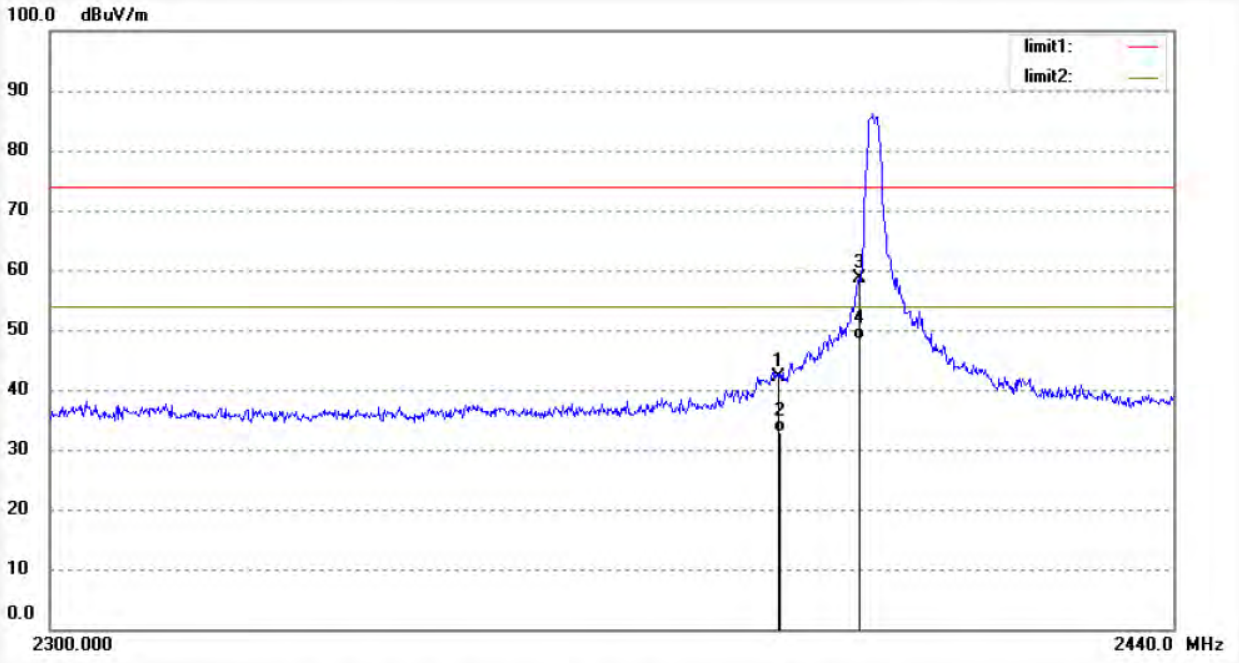
Job No.: STAR #428	Polarization: Vertical
Standard: FCC PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2015/07/05
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 9/22/16
EUT: Bluetooth Hi-Fi Multimedia Speaker	Engineer Signature:
Mode: TX 2402MHz(GFSK)	Distance: 3m
Model: NE-830	
Manufacturer: NICETEX	

Note: Report No.:ATE20151337



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	48.87	-6.78	42.09	74.00	-31.91	peak			
2	2390.000	39.67	-6.78	32.89	54.00	-21.11	AVG			
3	2400.000	65.28	-6.76	58.52	74.00	-15.48	peak			
4	2400.000	55.14	-6.76	48.38	54.00	-5.62	AVG			

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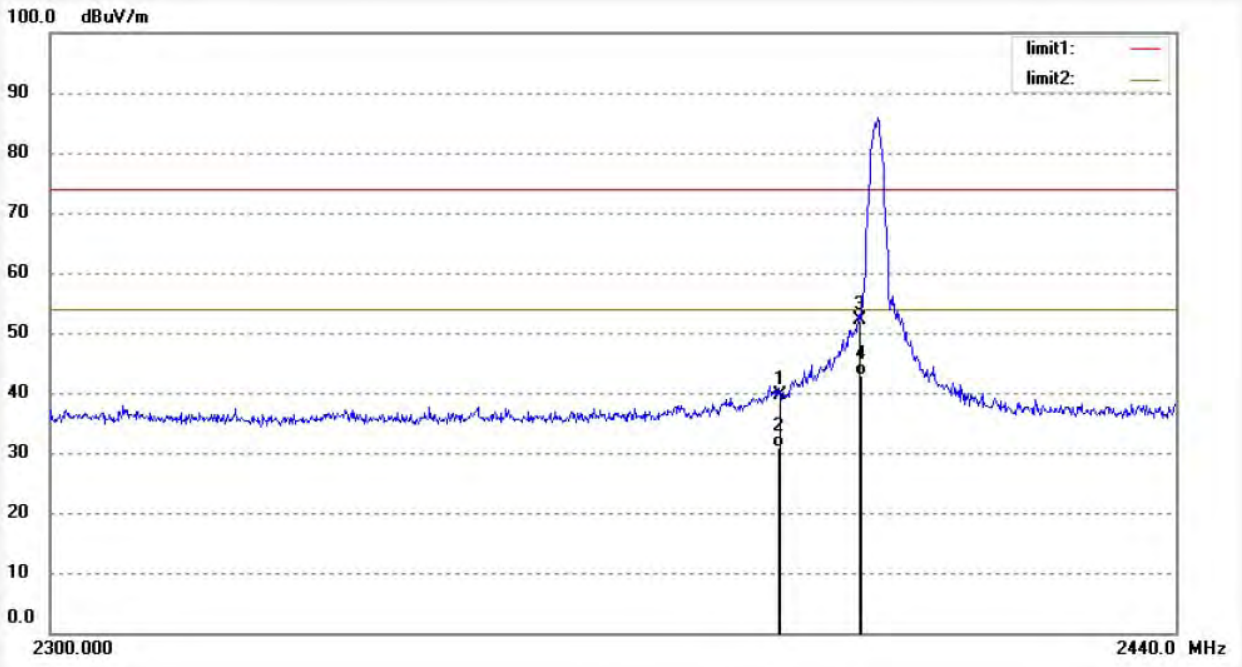
Job No.: STAR #429
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Hi-Fi Multimedia Speaker
Mode: TX 2402MHz(GFSK)
Model: NE-830
Manufacturer: NICETEX

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2015/07/05
Time: 9/26/49
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20151337



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	46.49	-6.78	39.71	74.00	-34.29	peak			
2	2390.000	37.67	-6.78	30.89	54.00	-23.11	AVG			
3	2400.000	58.80	-6.76	52.04	74.00	-21.96	peak			
4	2400.000	49.61	-6.76	42.85	54.00	-11.15	AVG			

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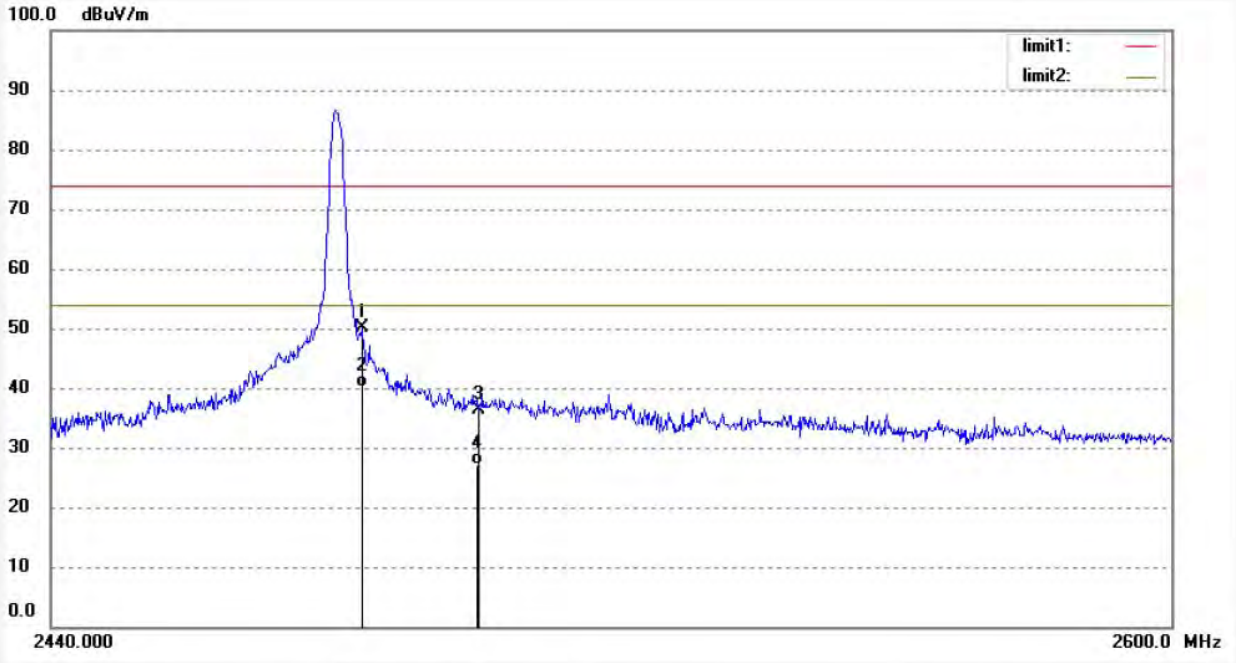
Job No.: STAR #422
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Hi-Fi Multimedia Speaker
Mode: TX 2480MHz(GFSK)
Model: NE-830
Manufacturer: NICETEX

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2015/07/05
Time: 8/55/04
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20151337



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	56.79	-6.54	50.25	74.00	-23.75	peak			
2	2483.500	46.79	-6.54	40.25	54.00	-13.75	AVG			
3	2500.000	42.79	-6.50	36.29	74.00	-37.71	peak			
4	2500.000	33.62	-6.50	27.12	54.00	-26.88	AVG			

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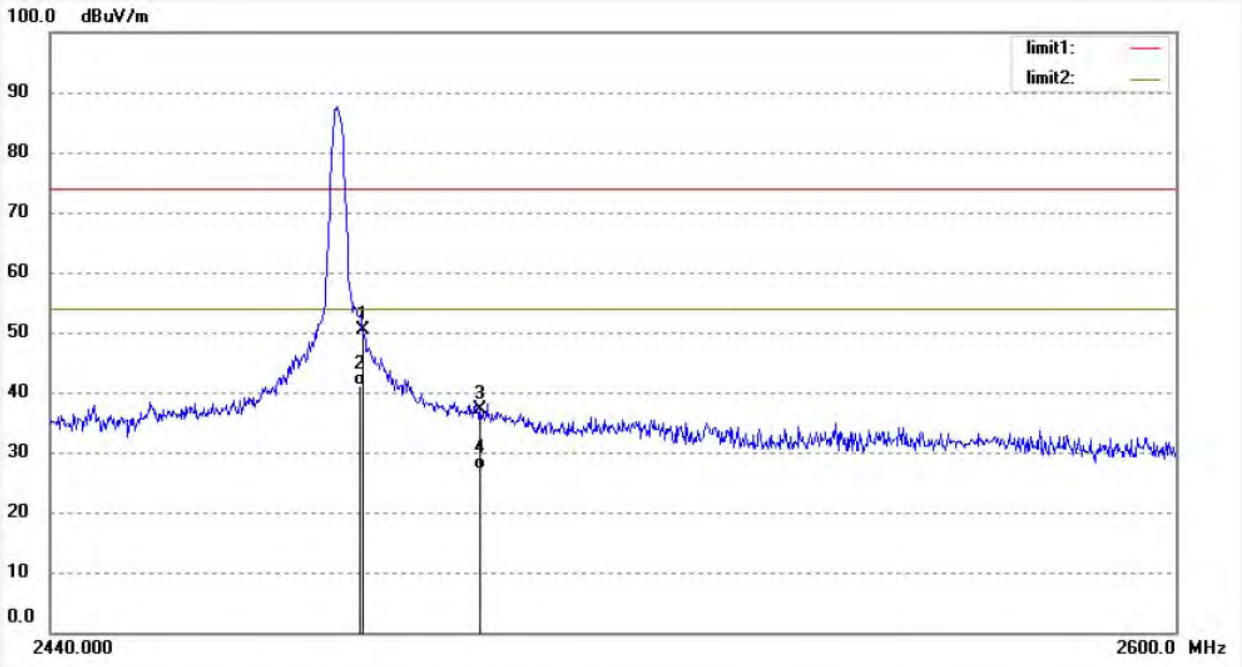
Job No.: STAR #423
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Hi-Fi Multimedia Speaker
Mode: TX 2480MHz(GFSK)
Model: NE-830
Manufacturer: NICETEX

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2015/07/05
Time: 8/58/34
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20151337



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	57.02	-6.54	50.48	74.00	-23.52	peak			
2	2483.500	47.58	-6.54	41.04	54.00	-12.96	AVG			
3	2500.000	43.62	-6.50	37.12	74.00	-36.88	peak			
4	2500.000	33.67	-6.50	27.17	54.00	-26.83	AVG			

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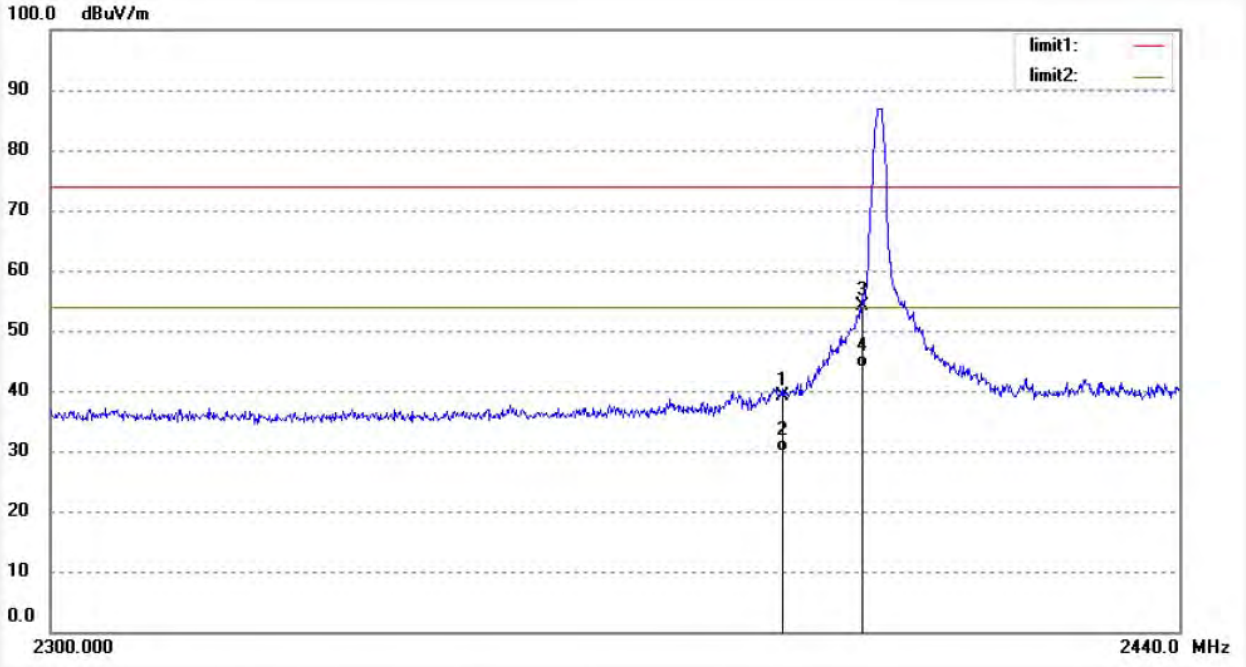
Job No.: STAR #432
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Hi-Fi Multimedia Speaker
Mode: TX 2402MHz(PI/4DQPSK)
Model: NE-830
Manufacturer: NICETEX

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2015/07/05
Time: 9/40/06
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20151337



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	45.90	-6.78	39.12	74.00	-34.88	peak			
2	2390.000	36.77	-6.78	29.99	54.00	-24.01	AVG			
3	2400.000	60.88	-6.76	54.12	74.00	-19.88	peak			
4	2400.000	50.60	-6.76	43.84	54.00	-10.16	AVG			

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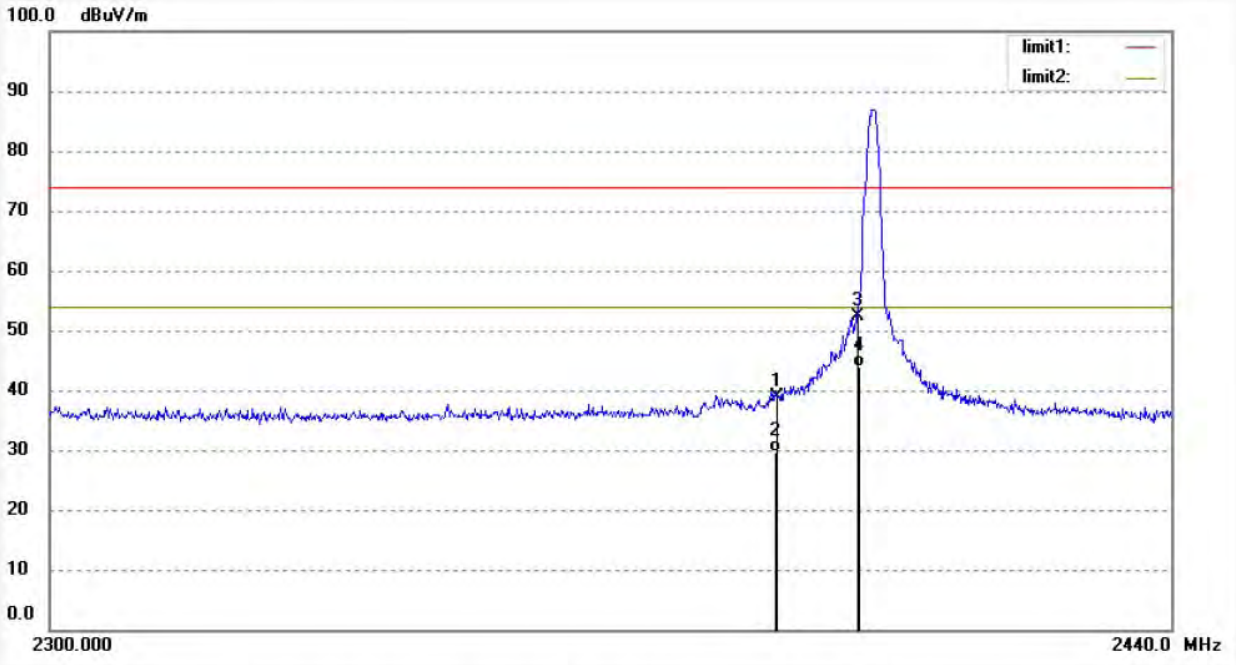
Job No.: STAR #433
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Hi-Fi Multimedia Speaker
Mode: TX 2402MHz(PI/4DQPSK)
Model: NE-830
Manufacturer: NICETEX

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2015/07/05
Time: 9/44/56
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20151337



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	45.57	-6.78	38.79	74.00	-35.21	peak			
2	2390.000	36.40	-6.78	29.62	54.00	-24.38	AVG			
3	2400.000	59.15	-6.76	52.39	74.00	-21.61	peak			
4	2400.000	50.67	-6.76	43.91	54.00	-10.09	AVG			

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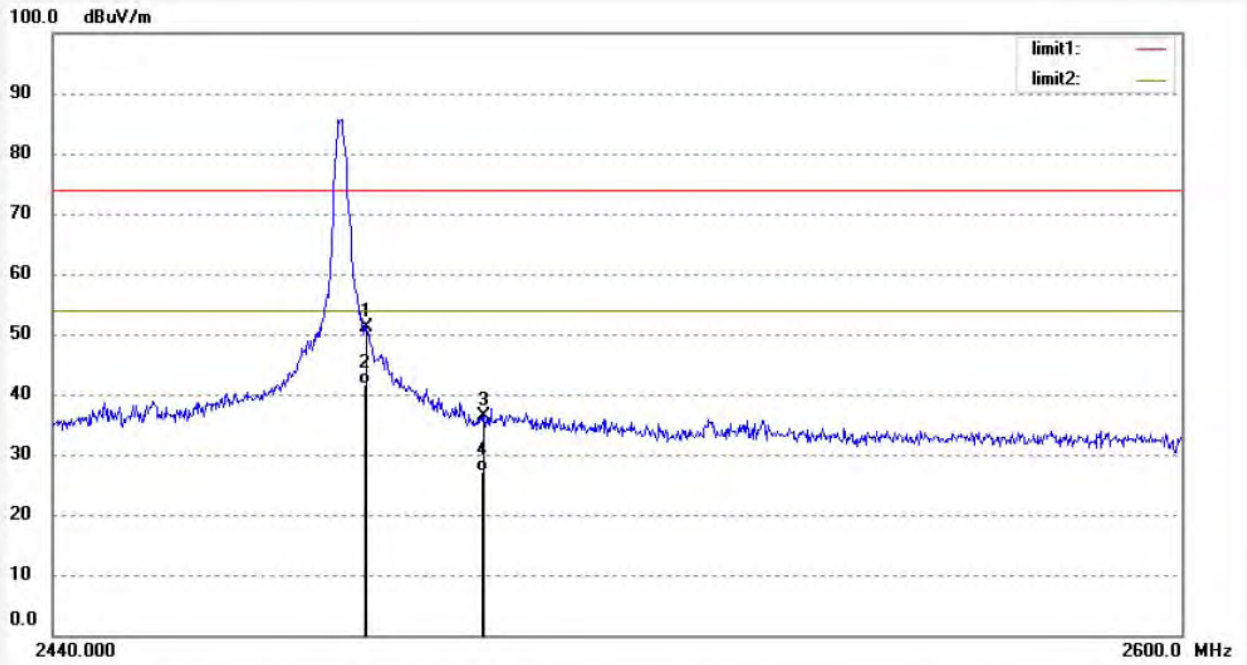
Job No.: STAR #426
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Hi-Fi Multimedia Speaker
Mode: TX 2480MHz(PI/4DQPSK)
Model: NE-830
Manufacturer: NICETEX

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2015/07/05
Time: 9/11/20
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20151337



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	57.77	-6.54	51.23	74.00	-22.77	peak			
2	2483.500	48.16	-6.54	41.62	54.00	-12.38	AVG			
3	2500.000	42.90	-6.50	36.40	74.00	-37.60	peak			
4	2500.000	33.55	-6.50	27.05	54.00	-26.95	AVG			

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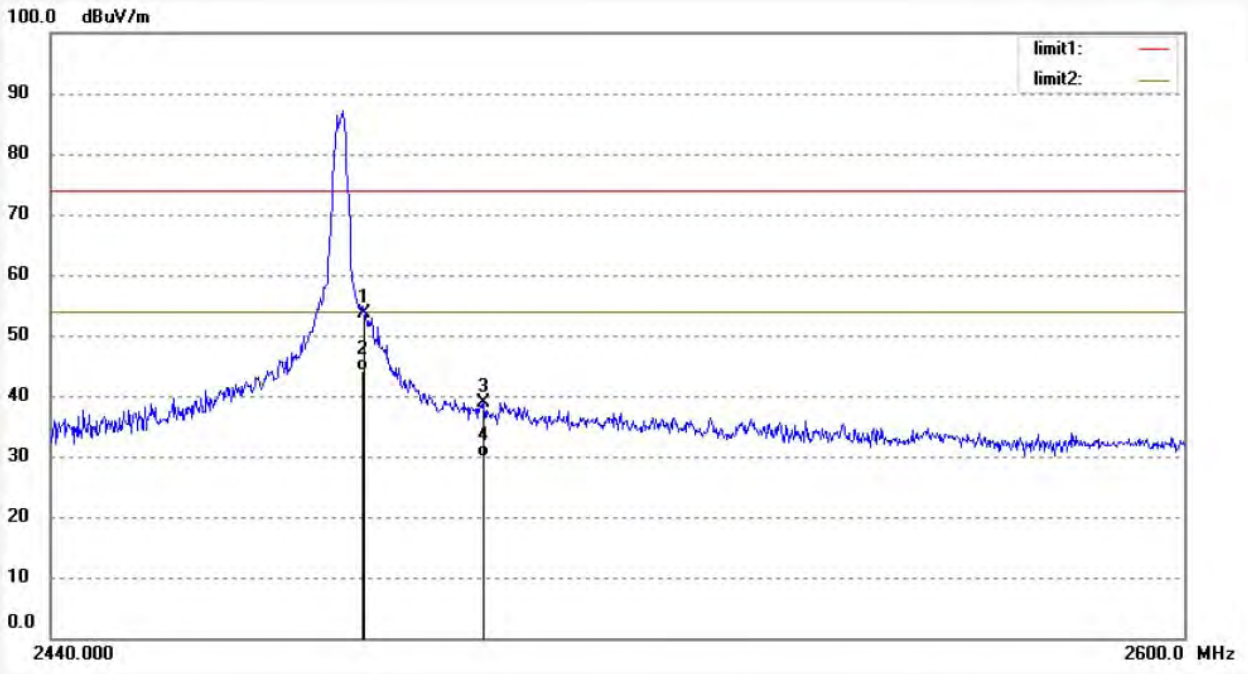
Job No.: STAR #427	Polarization: Horizontal
Standard: FCC PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2015/07/05
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 9/16/07
EUT: Bluetooth Hi-Fi Multimedia Speaker	Engineer Signature:
Mode: TX 2480MHz(PI/4DQPSK)	Distance: 3m
Model: NE-830	
Manufacturer: NICETEX	

Note: Report No.:ATE20151337



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	60.16	-6.54	53.62	74.00	-20.38	peak			
2	2483.500	50.67	-6.54	44.13	54.00	-9.87	AVG			
3	2500.000	45.34	-6.50	38.84	74.00	-35.16	peak			
4	2500.000	36.44	-6.50	29.94	54.00	-24.06	AVG			

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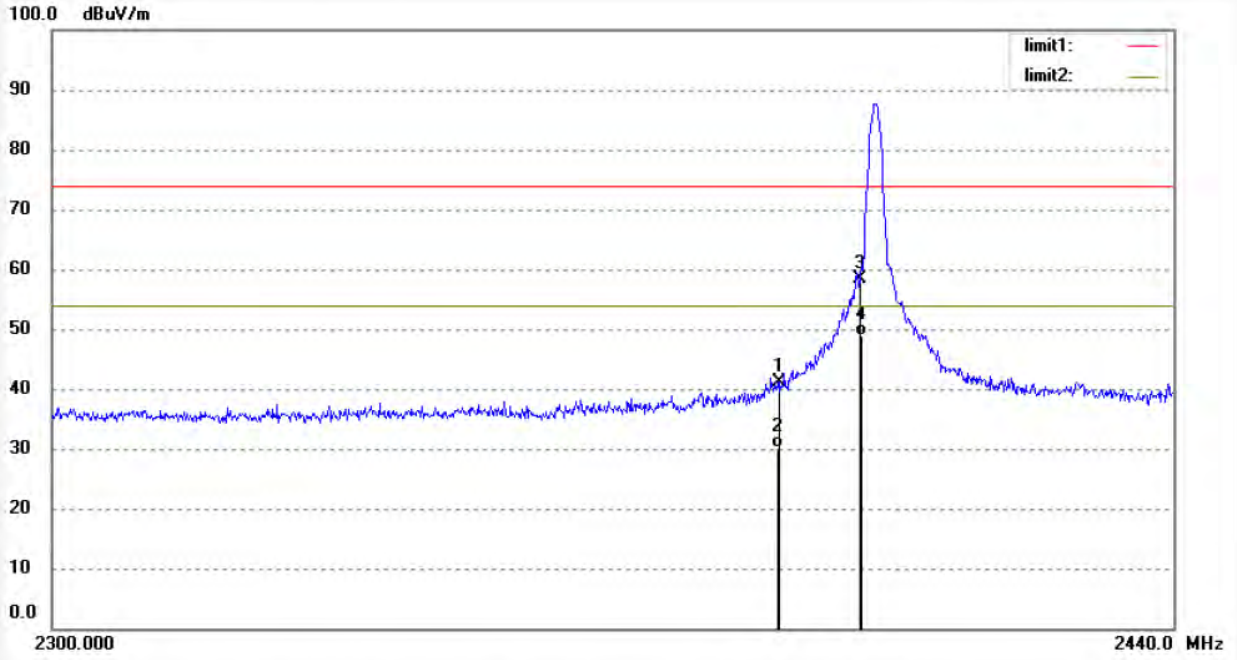
Job No.: STAR #430
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Hi-Fi Multimedia Speaker
Mode: TX 2402MHz(8DPSK)
Model: NE-830
Manufacturer: NICETEX

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2015/07/05
Time: 9/31/22
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20151337



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	47.81	-6.78	41.03	74.00	-32.97	peak			
2	2390.000	36.79	-6.78	30.01	54.00	-23.99	AVG			
3	2400.000	65.22	-6.76	58.46	74.00	-15.54	peak			
4	2400.000	55.67	-6.76	48.91	54.00	-5.09	AVG			

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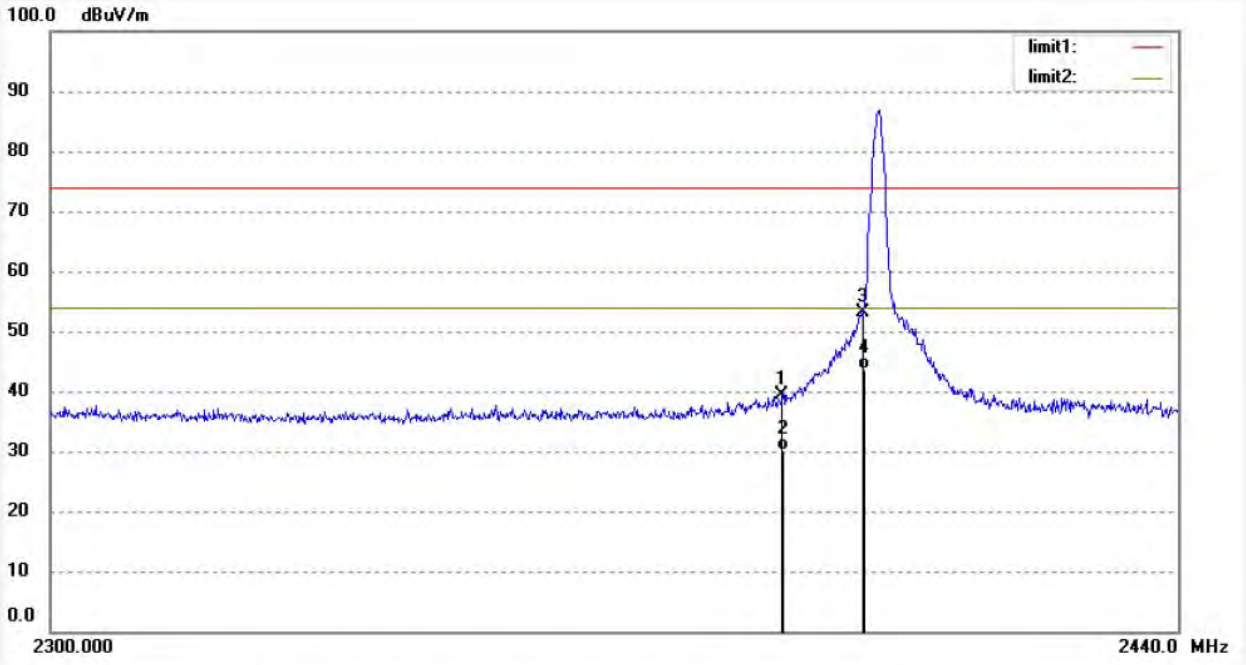
Job No.: STAR #431
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Hi-Fi Multimedia Speaker
Mode: TX 2402MHz(8DPSK)
Model: NE-830
Manufacturer: NICETEX

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2015/07/05
Time: 9/36/10
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20151337



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	46.22	-6.78	39.44	74.00	-34.56	peak			
2	2390.000	36.88	-6.78	30.10	54.00	-23.90	AVG			
3	2400.000	59.87	-6.76	53.11	74.00	-20.89	peak			
4	2400.000	50.34	-6.76	43.58	54.00	-10.42	AVG			

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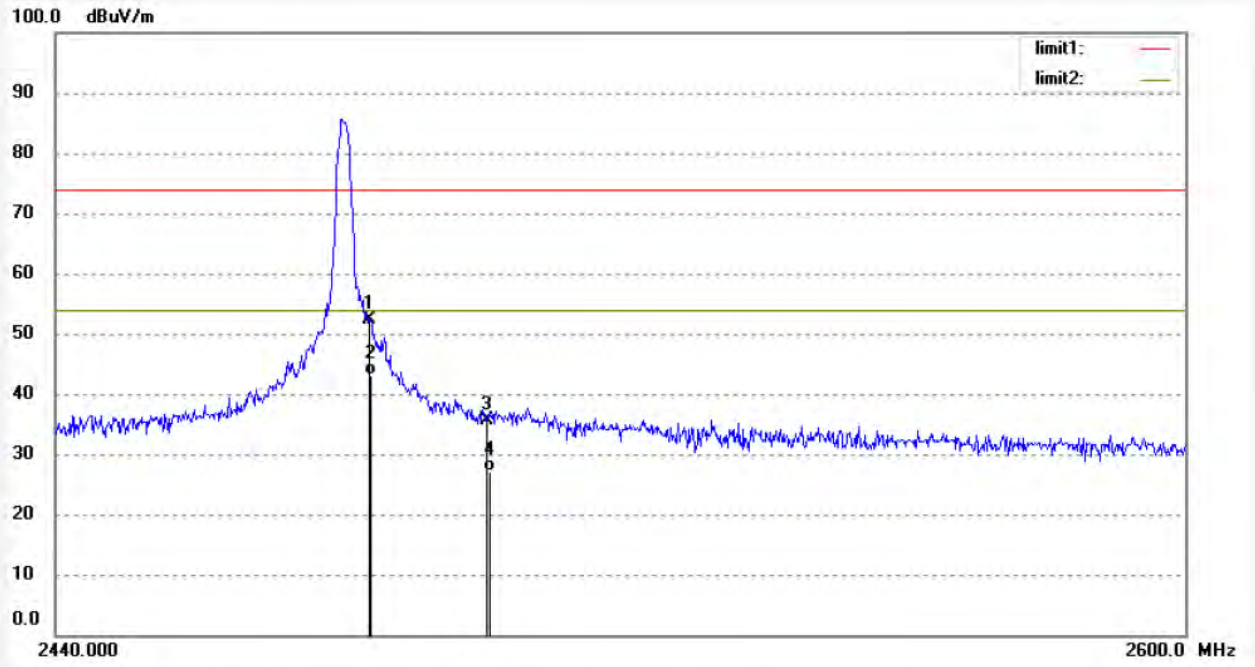
Job No.: STAR #424
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Hi-Fi Multimedia Speaker
Mode: TX 2480MHz(8DPSK)
Model: NE-830
Manufacturer: NICETEX

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2015/07/05
Time: 9/02/59
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20151337



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	58.81	-6.54	52.27	74.00	-21.73	peak			
2	2483.500	49.66	-6.54	43.12	54.00	-10.88	AVG			
3	2500.000	42.02	-6.50	35.52	74.00	-38.48	peak			
4	2500.000	33.51	-6.50	27.01	54.00	-26.99	AVG			

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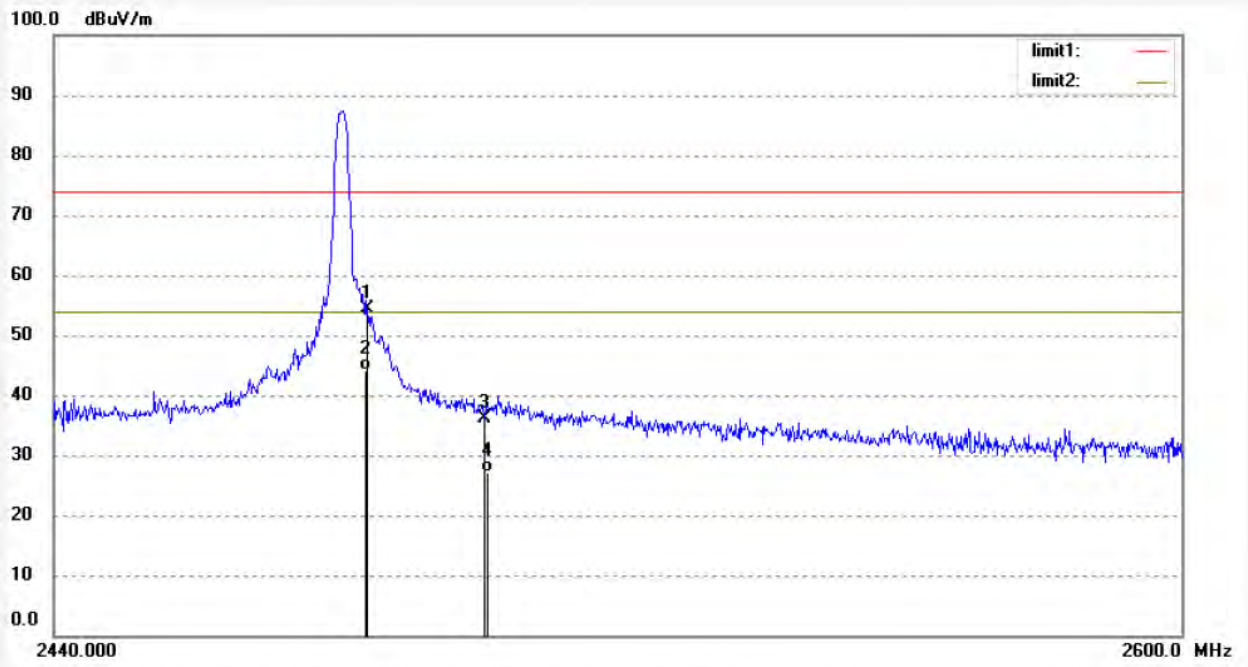
Job No.: STAR #425
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Hi-Fi Multimedia Speaker
Mode: TX 2480MHz(8DPSK)
Model: NE-830
Manufacturer: NICETEX

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2015/07/05
Time: 9/07/53
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20151337



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	60.87	-6.54	54.33	74.00	-19.67	peak			
2	2483.500	50.67	-6.54	44.13	54.00	-9.87	AVG			
3	2500.000	42.60	-6.50	36.10	74.00	-37.90	peak			
4	2500.000	33.67	-6.50	27.17	54.00	-26.83	AVG			

Hopping mode

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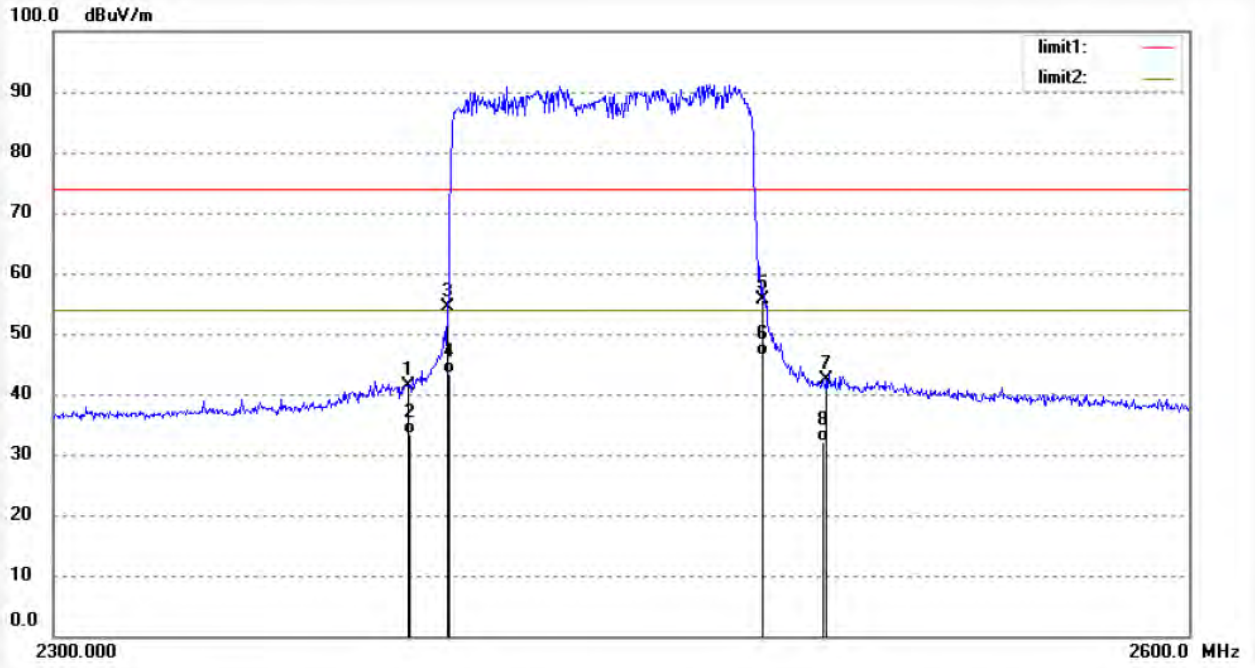
Job No.: STAR #434
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Hi-Fi Multimedia Speaker
Mode: HOPPING (GFSK)
Model: NE-830
Manufacturer: NICETEX

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2015/07/05
Time: 9/48/04
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20151337



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	48.16	-6.78	41.38	74.00	-32.62	peak			
2	2390.000	40.25	-6.78	33.47	54.00	-20.53	AVG			
3	2400.000	61.16	-6.76	54.40	74.00	-19.60	peak			
4	2400.000	50.19	-6.76	43.43	54.00	-10.57	AVG			
5	2483.500	62.21	-6.54	55.67	74.00	-18.33	peak			
6	2483.500	52.80	-6.54	46.26	54.00	-7.74	AVG			
7	2500.000	48.78	-6.50	42.28	74.00	-31.72	peak			
8	2500.000	38.67	-6.50	32.17	54.00	-21.83	AVG			

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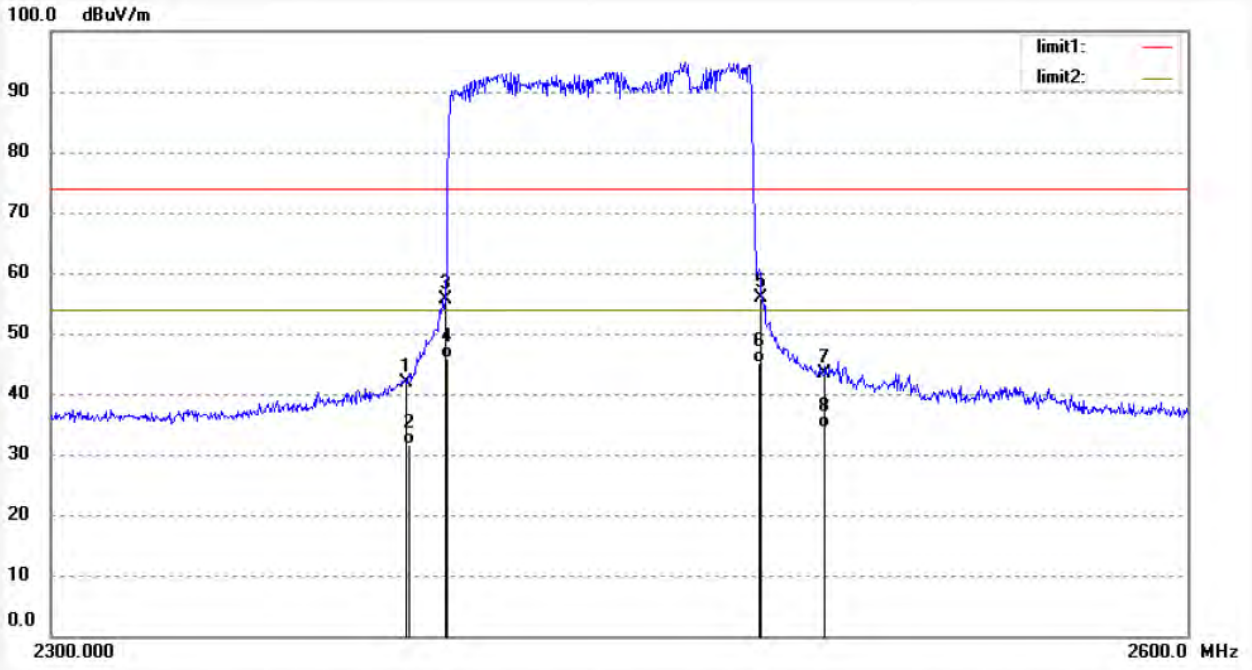
Job No.: STAR #435
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Hi-Fi Multimedia Speaker
Mode: HOPPING (GFSK)
Model: NE-830
Manufacturer: NICETEX

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2015/07/05
Time: 9/52/41
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20151337



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	48.75	-6.78	41.97	74.00	-32.03	peak			
2	2390.000	38.46	-6.78	31.68	54.00	-22.32	AVG			
3	2400.000	62.43	-6.76	55.67	74.00	-18.33	peak			
4	2400.000	52.61	-6.76	45.85	54.00	-8.15	AVG			
5	2483.500	62.38	-6.54	55.84	74.00	-18.16	peak			
6	2483.500	51.67	-6.54	45.13	54.00	-8.87	AVG			
7	2500.000	49.85	-6.50	43.35	74.00	-30.65	peak			
8	2500.000	40.77	-6.50	34.27	54.00	-19.73	AVG			

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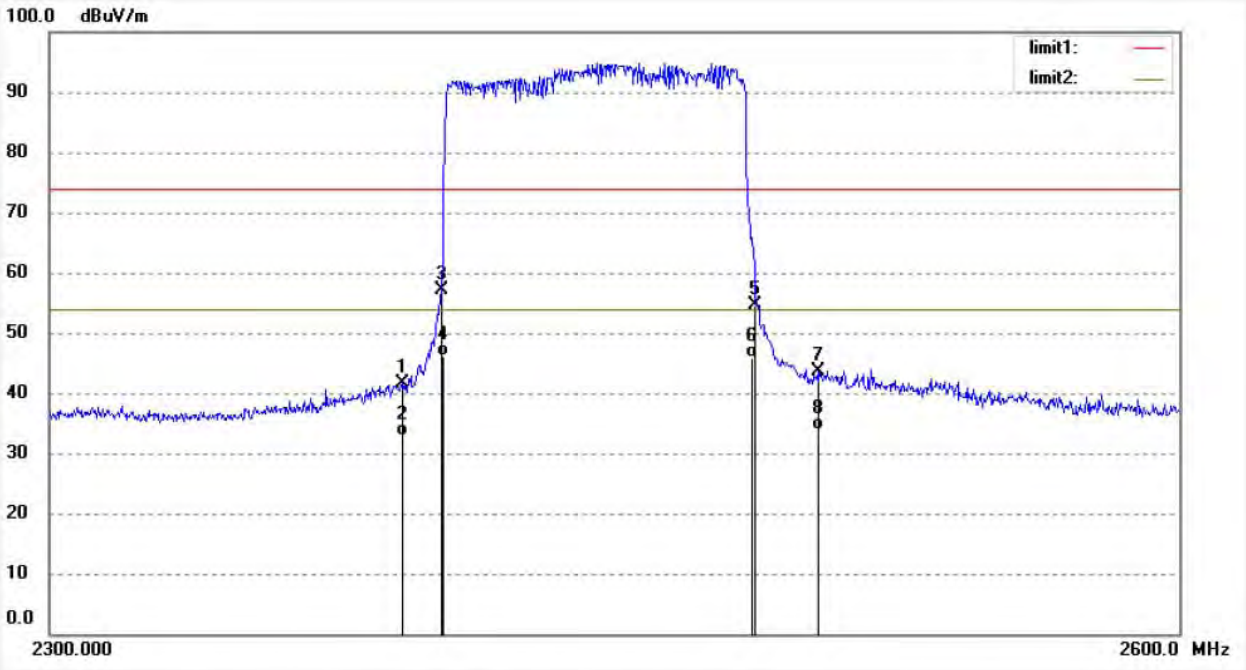
Job No.: STAR #436
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Hi-Fi Multimedia Speaker
Mode: HOPPING (PI/4DQPSK)
Model: NE-830
Manufacturer: NICETEX

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2015/07/05
Time: 9/56/40
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20151337



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	48.39	-6.78	41.61	74.00	-32.39	peak			
2	2390.000	39.56	-6.78	32.78	54.00	-21.22	AVG			
3	2400.000	63.85	-6.76	57.09	74.00	-16.91	peak			
4	2400.000	52.82	-6.76	46.06	54.00	-7.94	AVG			
5	2483.500	61.23	-6.54	54.69	74.00	-19.31	peak			
6	2483.500	52.47	-6.54	45.93	54.00	-8.07	AVG			
7	2500.000	50.12	-6.50	43.62	74.00	-30.38	peak			
8	2500.000	40.37	-6.50	33.87	54.00	-20.13	AVG			

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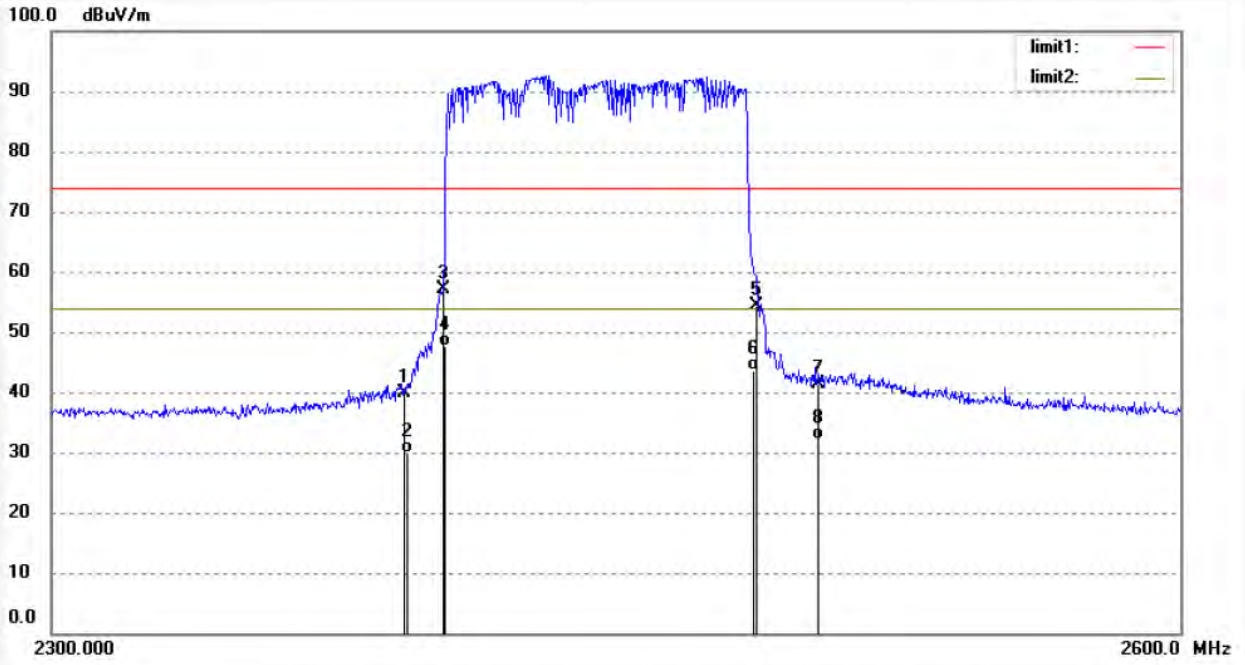
Job No.: STAR #437
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Hi-Fi Multimedia Speaker
Mode: HOPPING (PI/4DQPSK)
Model: NE-830
Manufacturer: NICETEX

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2015/07/05
Time: 10/01/53
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20151337



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	46.67	-6.78	39.89	74.00	-34.11	peak			
2	2390.000	36.78	-6.78	30.00	54.00	-24.00	AVG			
3	2400.000	63.92	-6.76	57.16	74.00	-16.84	peak			
4	2400.000	54.34	-6.76	47.58	54.00	-6.42	AVG			
5	2483.500	61.04	-6.54	54.50	74.00	-19.50	peak			
6	2483.500	50.24	-6.54	43.70	54.00	-10.30	AVG			
7	2500.000	47.82	-6.50	41.32	74.00	-32.68	peak			
8	2500.000	38.55	-6.50	32.05	54.00	-21.95	AVG			

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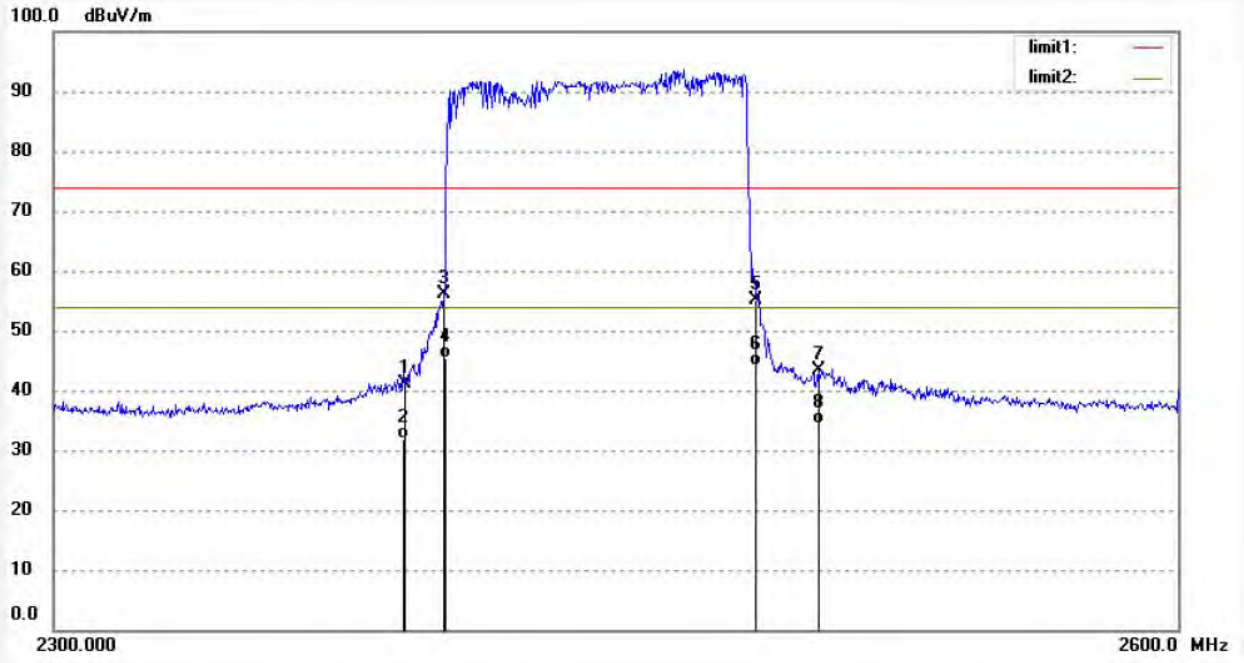
Job No.: STAR #438
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Bluetooth Hi-Fi Multimedia Speaker
Mode: HOPPING (8PSK)
Model: NE-830
Manufacturer: NICETEX

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2015/07/05
Time: 10/06/13
Engineer Signature:
Distance: 3m

Note: Report No.:ATE20151337



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	47.79	-6.78	41.01	74.00	-32.99	peak			
2	2390.000	38.62	-6.78	31.84	54.00	-22.16	AVG			
3	2400.000	62.95	-6.76	56.19	74.00	-17.81	peak			
4	2400.000	52.06	-6.76	45.30	54.00	-8.70	AVG			
5	2483.500	61.62	-6.54	55.08	74.00	-18.92	peak			
6	2483.500	50.79	-6.54	44.25	54.00	-9.75	AVG			
7	2500.000	49.77	-6.50	43.27	74.00	-30.73	peak			
8	2500.000	40.77	-6.50	34.27	54.00	-19.73	AVG			

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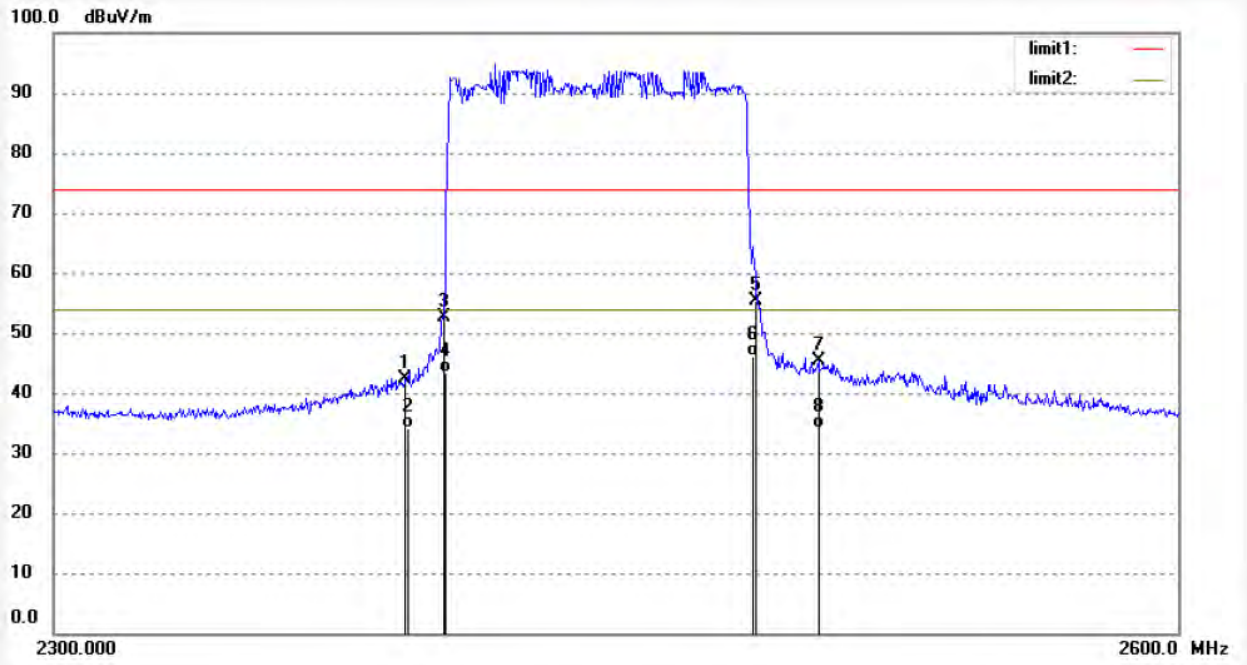
Job No.: STAR #439	Polarization: Vertical
Standard: FCC PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2015/07/05
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 10/12/58
EUT: Bluetooth Hi-Fi Multimedia Speaker	Engineer Signature:
Mode: HOPPING (8PSK)	Distance: 3m
Model: NE-830	
Manufacturer: NICETEX	

Note: Report No.:ATE20151337



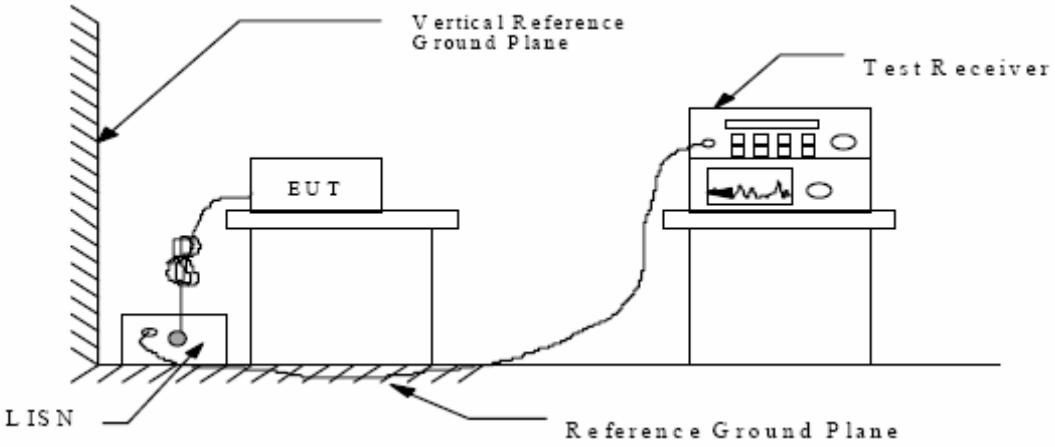
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	49.04	-6.78	42.26	74.00	-31.74	peak			
2	2390.000	40.94	-6.78	34.16	54.00	-19.84	AVG			
3	2400.000	59.42	-6.76	52.66	74.00	-21.34	peak			
4	2400.000	50.14	-6.76	43.38	54.00	-10.62	AVG			
5	2483.500	61.81	-6.54	55.27	74.00	-18.73	peak			
6	2483.500	52.79	-6.54	46.25	54.00	-7.75	AVG			
7	2500.000	51.81	-6.50	45.31	74.00	-28.69	peak			
8	2500.000	40.67	-6.50	34.17	54.00	-19.83	AVG			

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

12.1.2. Shielding Room Test Setup Diagram



(EUT: Bluetooth Bookshelf Speakers with USB)

12.2. The Emission Limit

12.2.1. Conducted Emission Measurement Limits According to Section 15.207(a)

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

* Decreases with the logarithm of the frequency.

12.3.Configuration of EUT on Measurement

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

12.4.Operating Condition of EUT

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

12.4.2.Turn on the power of all equipment.

12.4.3.Let the EUT work in TX (Operation) mode 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 9 kHz.

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

12.6.Power Line Conducted Emission Measurement Results

ACCURATE TECHNOLOGY CO.,LTD

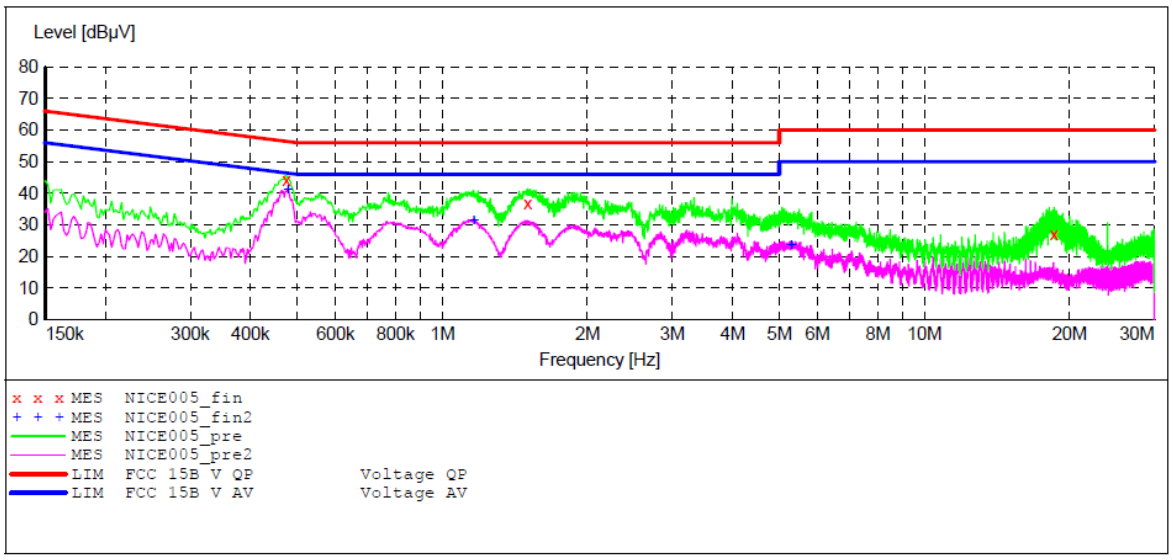
CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: AM/FM HD Radio with Bluetooth M/N:NE830
Manufacturer: NICETEX
Operating Condition: BT
Test Site: 2#Shielding Room
Operator: star
Test Specification: L 120V/60Hz
Comment: Report No.:ATE20151337
Start of Test: 2015-6-24 / 15:36:13

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak Average	1.0 s	9 kHz	LISN(ESH3-Z5)



MEASUREMENT RESULT: "NICE005_fin"

2015-6-24 15:38

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.474000	44.10	11.4	56	12.3	QP	L1	GND
1.502000	36.70	11.6	56	19.3	QP	L1	GND
18.582500	27.00	11.9	60	33.0	QP	L1	GND

MEASUREMENT RESULT: "NICE005_fin2"

2015-6-24 15:38

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.478000	41.10	11.5	46	5.3	AV	L1	GND
1.162000	31.20	11.6	46	14.8	AV	L1	GND
5.298500	23.40	11.8	50	26.6	AV	L1	GND

ACCURATE TECHNOLOGY CO.,LTD

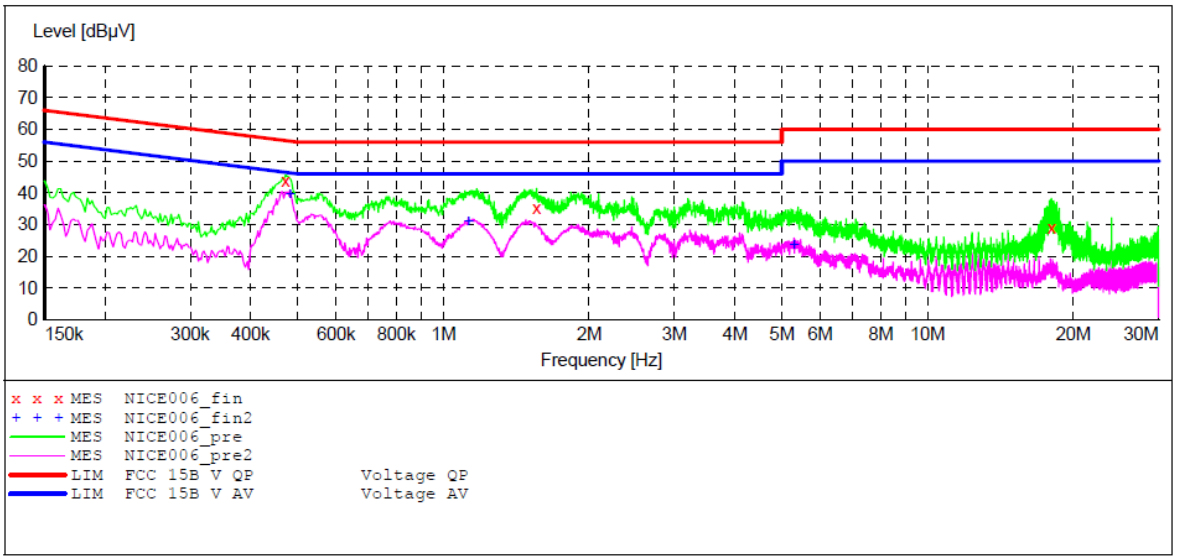
CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: AM/FM HD Radio with Bluetooth M/N:NE830
Manufacturer: NICETEX
Operating Condition: BT
Test Site: 2#Shielding Room
Operator: star
Test Specification: N 120V/60Hz
Comment: Report No.:ATE20151337
Start of Test: 2015-6-24 / 15:39:19

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak Average	1.0 s	9 kHz	LISN(ESH3-Z5)



MEASUREMENT RESULT: "NICE006_fin"

2015-6-24 15:41

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.472000	43.90	11.4	57	12.6	QP	N	GND
1.558000	35.40	11.6	56	20.6	QP	N	GND
18.029000	28.90	11.9	60	31.1	QP	N	GND

MEASUREMENT RESULT: "NICE006_fin2"

2015-6-24 15:41

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.482000	39.70	11.5	46	6.6	AV	N	GND
1.126000	30.90	11.6	46	15.1	AV	N	GND
5.298500	23.40	11.8	50	26.6	AV	N	GND

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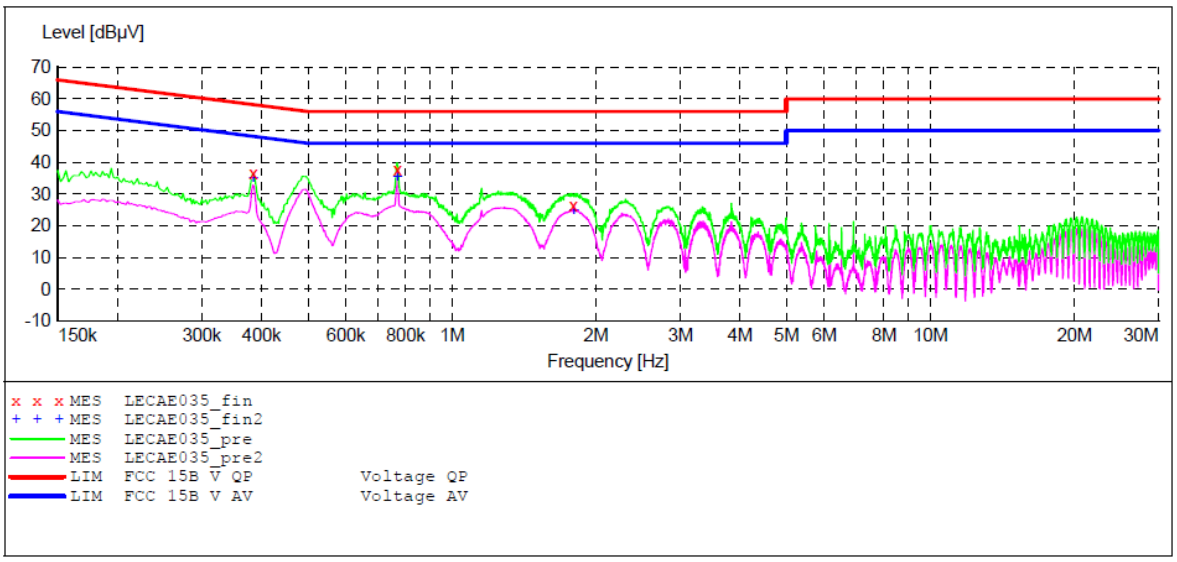
CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: Bluetooth Hi-Fi Multimedia Speaker M/N:NE830
Manufacturer: NICETEX
Operating Condition: BT
Test Site: 2#Shielding Room
Operator: star
Test Specification: N 240V/60Hz
Comment: Report No.:ATE20151337
Start of Test: 2015-7-6 / 8:48:16

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak Average	1.0 s	9 kHz	LISN(ESH3-Z5)



MEASUREMENT RESULT: "LECAE035_fin"

2015-7-6 8:50

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.384000	36.60	11.2	58	21.6	QP	N	GND
0.768000	37.60	11.5	56	18.4	QP	N	GND
1.796000	26.50	11.7	56	29.5	QP	N	GND

MEASUREMENT RESULT: "LECAE035_fin2"

2015-7-6 8:50

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.384000	35.10	11.2	48	13.1	AV	N	GND
0.768000	35.40	11.5	46	10.6	AV	N	GND
1.796000	24.80	11.7	46	21.2	AV	N	GND

ACCURATE TECHNOLOGY CO.,LTD

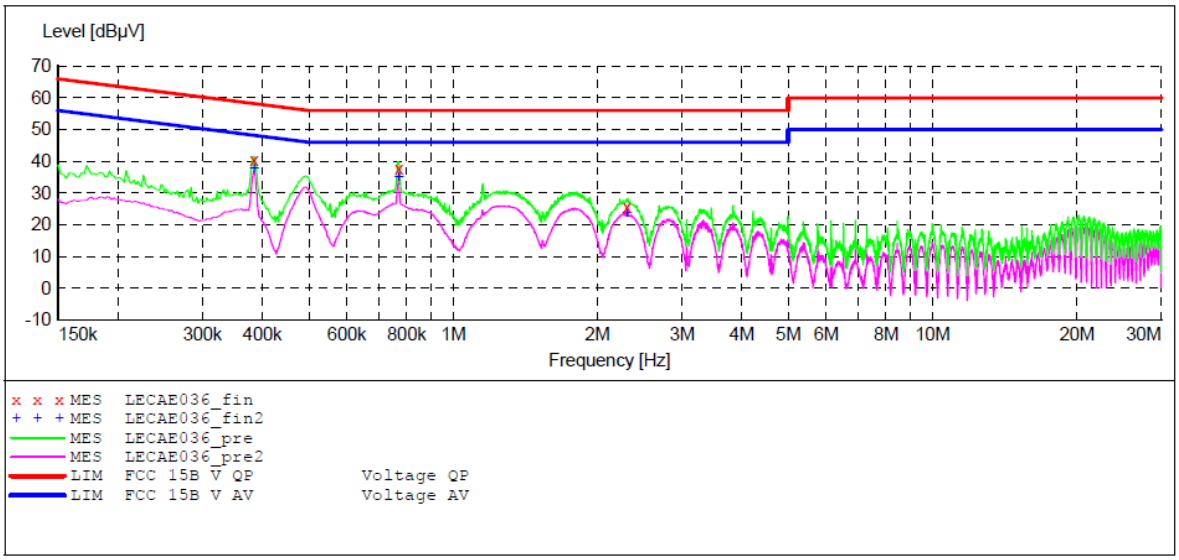
CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: Bluetooth Hi-Fi Multimedia Speaker M/N:NE830
Manufacturer: NICETEX
Operating Condition: BT
Test Site: 2#Shielding Room
Operator: star
Test Specification: L 240V/60Hz
Comment: Report No.:ATE20151337
Start of Test: 2015-7-6 / 8:51:11

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak Average	1.0 s	9 kHz	LISN(ESH3-Z5)



MEASUREMENT RESULT: "LECAE036_fin"

2015-7-6 8:53

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.384000	40.60	11.2	58	17.6	QP	L1	GND
0.770000	37.80	11.5	56	18.2	QP	L1	GND
2.301500	25.70	11.7	56	30.3	QP	L1	GND

MEASUREMENT RESULT: "LECAE036_fin2"

2015-7-6 8:53

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.384000	37.70	11.2	48	10.5	AV	L1	GND
0.770000	35.00	11.5	46	11.0	AV	L1	GND
2.301500	23.50	11.7	46	22.5	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

The antenna is PCB antenna, no consideration of replacement. Therefore, the equipment complies with the antenna requirement of Section 15.203.

Antenna