

FCC PART 15C TEST REPORT FOR CERTIFICATION
On Behalf of

Sounding Audio Industrial Co., Ltd

Mobile audio system wall mount unit

Model No.: AWM968

FCC ID: OPDAWM968BK

Prepared for : Sounding Audio Industrial Co., Ltd
Unit N, 7/F, Stage 2. Wah Fung Industrial Center 33-39
Kwai Fung Road, Kwai Chung, Hong Kong

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Date of Test : Apr.21~Jun.08, 2016
Date of Report : Jun.12, 2016

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TEST REPORT CERTIFICATION

Applicant : Sounding Audio Industrial Co., Ltd
Manufacturer : AR Electronics Co., Ltd.
Product : Mobile audio system wall mount unit
FCC ID : OPDAWM968BK
(A) Model No. : AWM968
(B) Power Supply : DC 12V
(C) Test Voltage : DC 12V

Tested for comply with:
FCC CFR47 Part 15 Subpart C: 2014
Test procedure used:
ANSI C63.10: 2013

The device described above is tested by AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. to confirm comply with all the FCC Part 15 Subpart C requirements. The test results are contained in this test report and AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. is assumed full responsibility for the accuracy and completeness of these tests. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC and IC requirements. This report contains data that are not covered by the NVLAP accreditation.

This Report is made under FCC Part 2.1075. No modifications were required during testing to bring this product into compliance.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Date of Test : Apr.21~Jun.08, 2016 Report of date: Jun.12, 2016

Prepared by : Monica Liu Reviewed by : Sunny Lu
Monica Liu / Assistant Sunny Lu / Assistant Manager

Approved & Authorized Signer :

AUDIX[®] 信華科技(深圳)有限公司
Audix Technology (Shenzhen) Co., Ltd.
EMC 部門報告專用章
Stamp only for EMC Dept. Report
Signature: David Jin
David Jin / Manager

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT has been tested according to the applicable standards as referenced below.

EMISSION		
Description of Test Item	Standard	Results
Power Line Conducted Emission Test	FCC Part 15: 15.207 ANSI C63.10 : 2013	N/A
Radiated Emission Test	FCC Part 15: 15.209 FCC Part 15: 15.247(d) ANSI C63.10 : 2013	PASS
Conducted Spurious Emissions	FCC Part 15: 15.247(a)(1) ANSI C63.10 : 2013	PASS
Carrier Frequency Separation Test	FCC Part 15: 15.247(a)(1) ANSI C63.10 : 2013	PASS
20dB Bandwidth Test	FCC Part 15: 15.215 ANSI C63.10 : 2013	PASS
Number Of Hopping Frequency Test	FCC Part 15: 15.247(a)(1)(iii) ANSI C63.10 : 2013	PASS
Dwell Time Test	FCC Part 15: 15.247(a)(1)(iii) ANSI C63.10 : 2013	PASS
Maximum Peak Output Power Test	FCC Part 15: 15.247(b)(1)\ ANSI C63.10 : 2013	PASS
Band Edge Compliance Test	FCC Part 15: 15.247(d) ANSI C63.10 : 2013	PASS
N/A is an abbreviation for Not Applicable.		

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

Product	: Mobile audio system wall mount unit
Model No.	: AWM968
FCC ID	: OPDAWM968BK
Radio	: Bluetooth V2.1 + EDR
Operation frequency	: 2402-2480MHz
Channel Number	: 79 channels
Modulation Technology	: GFSK, $\pi/4$ DQPSK, 8-DPSK
Antenna Type	: Embedded with designed PCB antenna, 0dBi PK Gain
Applicant	: Sounding Audio Industrial Co., Ltd Unit N, 7/F, Stage 2. Wah Fung Industrial Center 33-39 Kwai Fung Road, Kwai Chung, Hong Kong
Manufacturer	: AR Electronics Co., Ltd. Sima District, Changping, Dongguan, Guangdong
Date of Test	: Apr.21~Jun.08, 2016
Date of Receipt	: Apr.19, 2016
Sample Type	: Prototype production

2.2. Test information

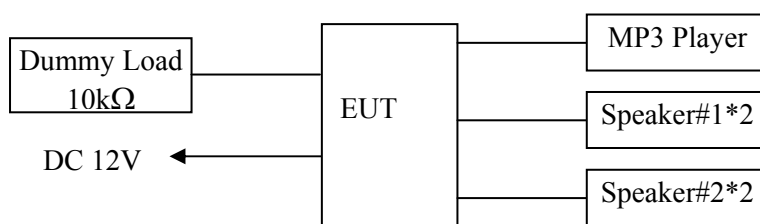
A special software was used to control EUT work in continuous TX mode (GFSK, $\pi/4$ DQPSK, 8-DPSK Modulation)

Tested mode, channel, and data rate information			
Mode	data rate (Mbps)	Channel	Frequency (MHz)
Tx Mode GFSK modulation	1	Low :CH 0	2402
	1	Middle: CH39	2441
	1	High: CH78	2480
Tx Mode 8-DPSK modulation	3	Low :CH 0	2402
	3	Middle: CH39	2441
	3	High: CH78	2480
Note: $\pi/4$ DQPSK modulation is same type modulation with 8-DPSK, and according exploratory test, 8-DPSK will have worse emissions, so the final test were only performed with GFSK and 8-DPSK modulation.			

2.3. Tested Supporting System Details

No.	Description	ACS No.	Manufacturer	Model	Serial No.
1.	Speaker #1*2	N/A	Samsung	PS-J320	N/A
		Cable: Shielded, Undetachable, 0.9m			
2.	Speaker #2*2	N/A	SONY	SS-CEX100	N/A
		Cable: Shielded, Undetachable, 0.9m			
3.	MP3 Player	N/A	Sony	BNP-1	N/A
		Audio In Cable: Unshielded, Detectable, 1.2m			

2.4. Block Diagram of Test Setup



(EUT: Mobile audio system wall mount unit)

2.5. Test Facility

Site Description

Name of Firm

Audix Technology (Shenzhen) Co., Ltd.
No. 6, Ke Feng Rd., 52 Block, Shenzhen
Science & Industrial Park, Nantou, Shenzhen,
Guangdong, China

3m Anechoic Chamber

Certificated by FCC, USA
: Registration Number: 90454
Valid Date: Dec.30, 2017

3m & 10m Anechoic Chamber

Certificated by FCC, USA
: Registration Number: 794232
Valid Date: Jul.12, 2017

EMC Lab.

Certificated by Industry Canada
: Registration Number: IC 5183A-1
Valid Date: May.14, 2017

Certificated by DAkkS, Germany
: Registration No: D-PL-12151-01-00
Valid Date: Dec.15, 2016

Accredited by NVLAP, USA
: NVLAP Code: 200372-0
Valid Date: Mar.31, 2017

2.6. Measurement Uncertainty (95% confidence levels, k=2)

Test Item	Uncertainty
Uncertainty for Radiation Emission test in 3m chamber	2.6 dB(30~200MHz, Polarization: H)
	2.6 dB(30~200MHz, Polarization: V)
	3.0 dB(200M~1GHz, Polarization: H)
	2.8 dB(200M~1GHz, Polarization: V)
Uncertainty for Radiation Emission test in 3m chamber (1GHz-18GHz)	6.3 dB (1~6GHz, Distance: 3m)
	5.7 dB (6~18GHz, Distance: 3m)
Uncertainty for Radiated Spurious Emission test in RF chamber	3.6 dB
Uncertainty for Conduction Spurious emission test	2.0 dB
Uncertainty for Output power test	0.8 dB
Uncertainty for Bandwidth test	83 kHz
Uncertainty for DC power test	0.1 %
Uncertainty for test site temperature and humidity	0.6°C
	3%

3. POWER LINE CONDUCTED EMISSION TEST

According to Paragraph (c) of FCC Part 15 section 15.207, Tests to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines.

4. RADIATED EMISSION MEASUREMENT

4.1. Test Equipments

4.1.1. Frequency range: 30~1000MHz (In 3m Anechoic Chamber)

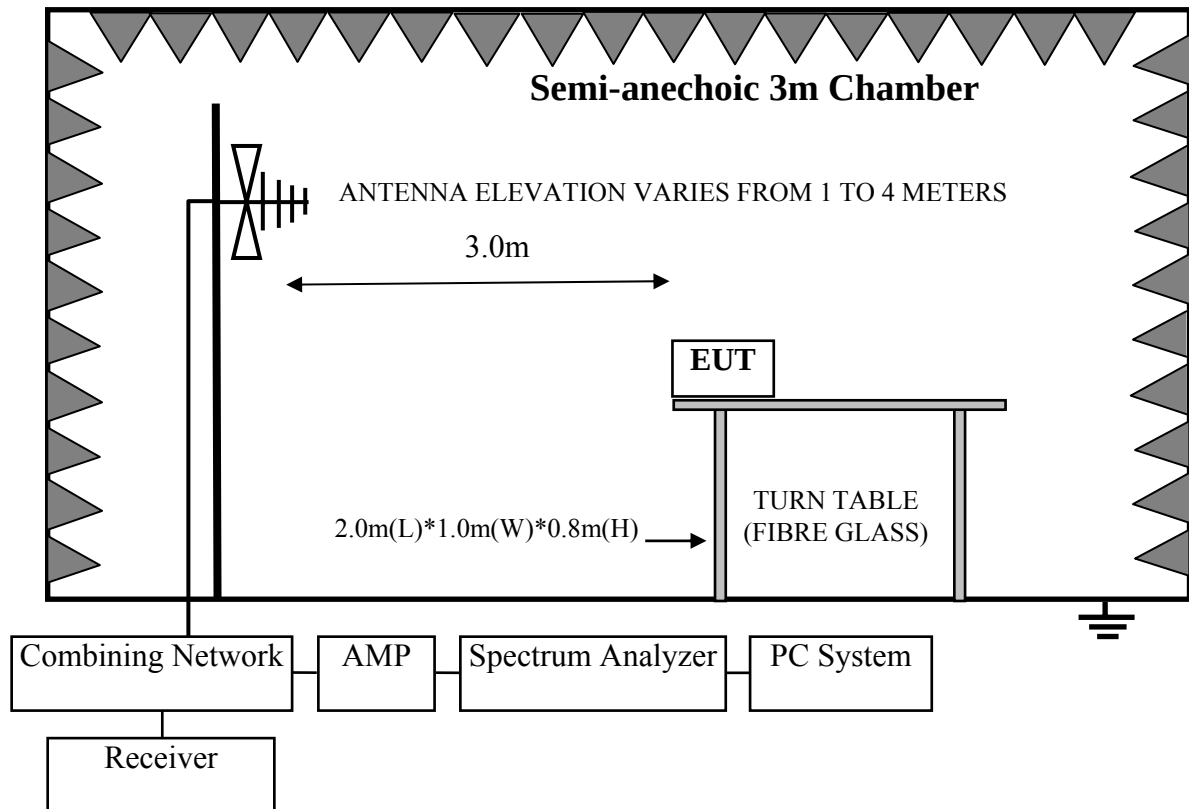
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	3#Chamber	AUDIX	N/A	N/A	Mar.28,16	1 Year
2.	EMI Spectrum	Agilent	E4407B	MY41440292	Apr.24,16	1 Year
3.	Test Receiver	Rohde & Schwarz	ESVS10	834468/011	Apr.24,16	1 Year
4.	Amplifier	HP	8447D	2648A04738	Apr.24,16	1 Year
5.	Bi-log Antenna	TESEQ	CBL6112D	35375	Jun.30,15	1 Year
6.	RF Cable	MIYAZAKI	CFD400-N W(3.5M)	No.3	Apr.24,16	1 Year
7.	RF Cable	MIYAZAKI	CFD400-L W(22M)	No.7	Apr.24,16	1 Year
8.	Coaxial Switch	Anritsu	MP59B	6201397222	Apr.23,16	1 Year
9.	Test Software	AUDIX	e3	6.2009-5-21a(n)	N/A	N/A

4.1.2. For frequency range 1GHz~25GHz (In 3m Anechoic Chamber)

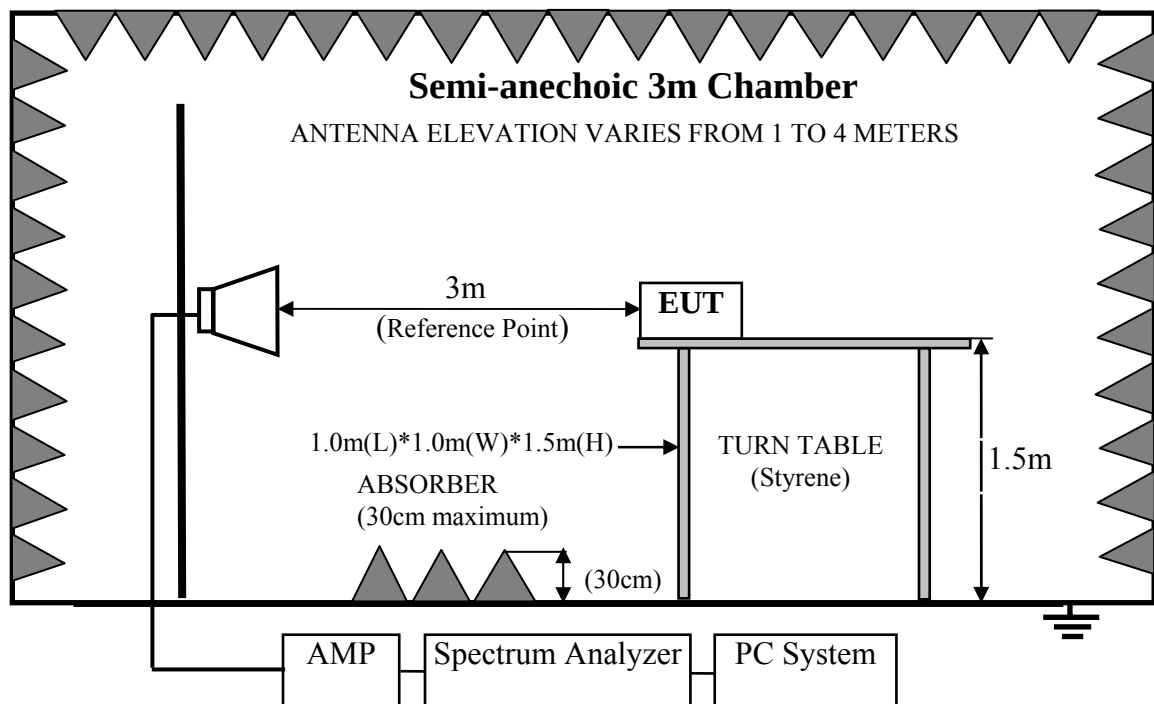
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Agilent	E4446A	US44300459	Apr.28,15	1 Year
2.	Horn Antenna	ETS	3115	9510-4877	Oct.15,15	1 Year
3.	Amplifier	Agilent	8449B	3008A02495	Apr.28,15	1 Year
4.	RF Cable	Hubersuhner	SUCOFLEX106	77977/6	Apr.28,15	1 Year
5.	Horn Antenna	ETS	3116	00060089	Oct.15,15	1 Year
6.	Test Software	AUDIX	e3	6.2009-5-21a(n)	N/A	N/A

4.2. Block Diagram of Test Setup

4.2.1. For frequency range 30MHz-1000MHz



4.2.2. For frequency range 1GHz-25GHz



4.3. Radiated Emission Limit Standard: FCC 15.209

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000MHz	3	74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	

Remark : (1) Emission level $\text{dB}\mu\text{V} = 20 \log$ Emission level $\mu\text{V/m}$

- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.
- (4) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

4.4.EUT Configuration on Test

4.4.1.Mobile audio system wall mount unit (EUT)

Model No. : AWM968
Serial No. : N/A

4.4.2.Support Equipment: As Tested Supporting System Details, in Section 2.2.

4.5.Operating Condition of EUT

4.5.1.Setup the EUT and simulator as shown as Section 4.2.

4.5.2. Turn on the power of all equipments.

4.5.3. Let EUT work in BT 3.0 Tx mode.

4.6.Test Procedure

EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground for frequency 30MHz~1000MHz, 1.5 meter high above ground for frequency above 1GHz and put the absorbing with 2.4m(L)*2.4m(W)*0.3m(H) on the ground . The turn table can rotate 360 degrees to determine the position of the maximum emission level. Power on the EUT and let it working in test mode, then test it.EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna for frequency 30MHz~1000MHz, and the Horn antenna is used as receiving antenna for frequency above 1GHz. Both horizontal and vertical polarization of the antenna is set on Test. 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 Test.

This test was performed with EUT in X, Y, Z position, and the worse case was found when EUT in X position as the test photo indicated.

The bandwidth of the EMI test receiver (R&S ESVS10) is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's RBW is set at 1MHz and VBW is set at 3MHz for peak emissions measurement above 1GHz

This device is pulse Modulated, a duty cycle factor was used to calculated average level based measured peak level.

The frequency range from 30MHz to 10th harmonic (25GHz) are checked. and no any emissions were found from 18GHz to 25 GHz, So the radiated emissions from 18GHz to 25GHz were not record.

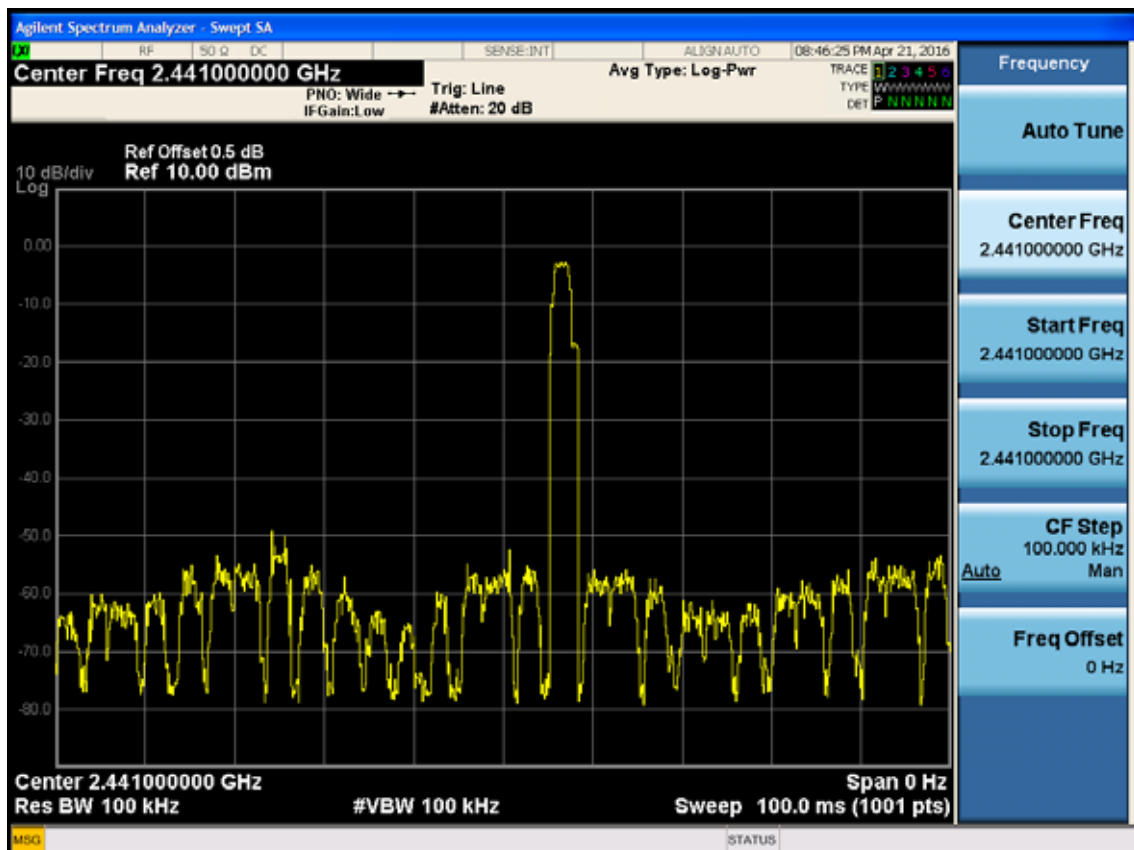
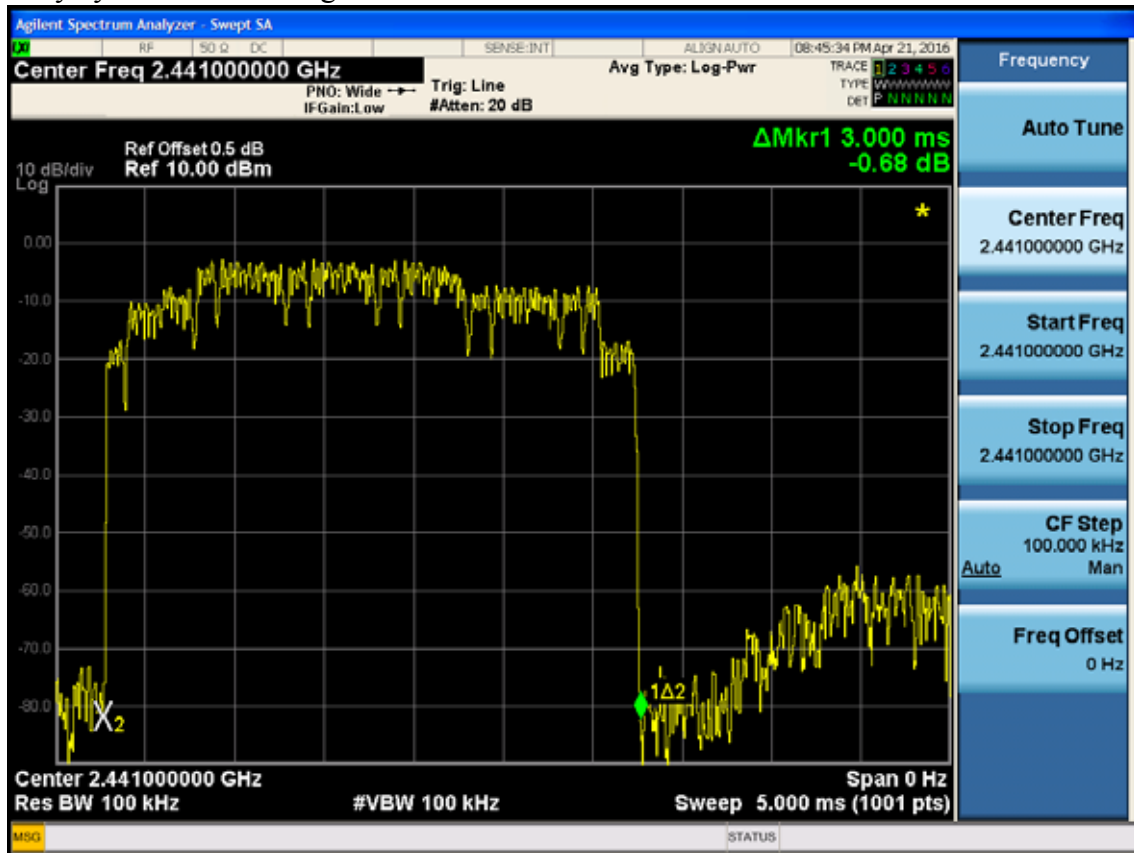
4.7.Radiated Emission Test Results

PASS.

All the emissions from 30MHz to 25GHz were comply with the 15.209 Limit.

Note: The duty cycle factor for calculate average level is -30.458dB, and average limit is 20dB below peak limit, so if peak measured level comply with average limit, the average level was deemed to comply with average limit.

Duty cycle factor = $20\log (\text{Dwell time}/100\text{ms}) = -30.458\text{dB}$

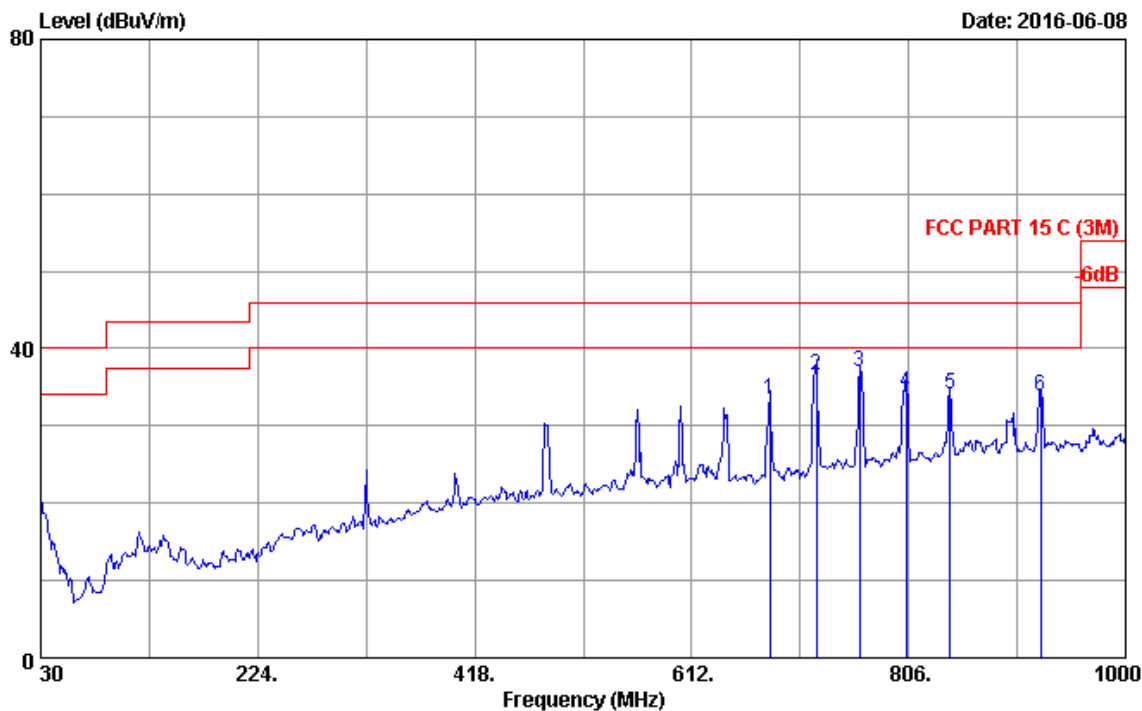


Frequency: 30MHz~1GHz

Data: 16

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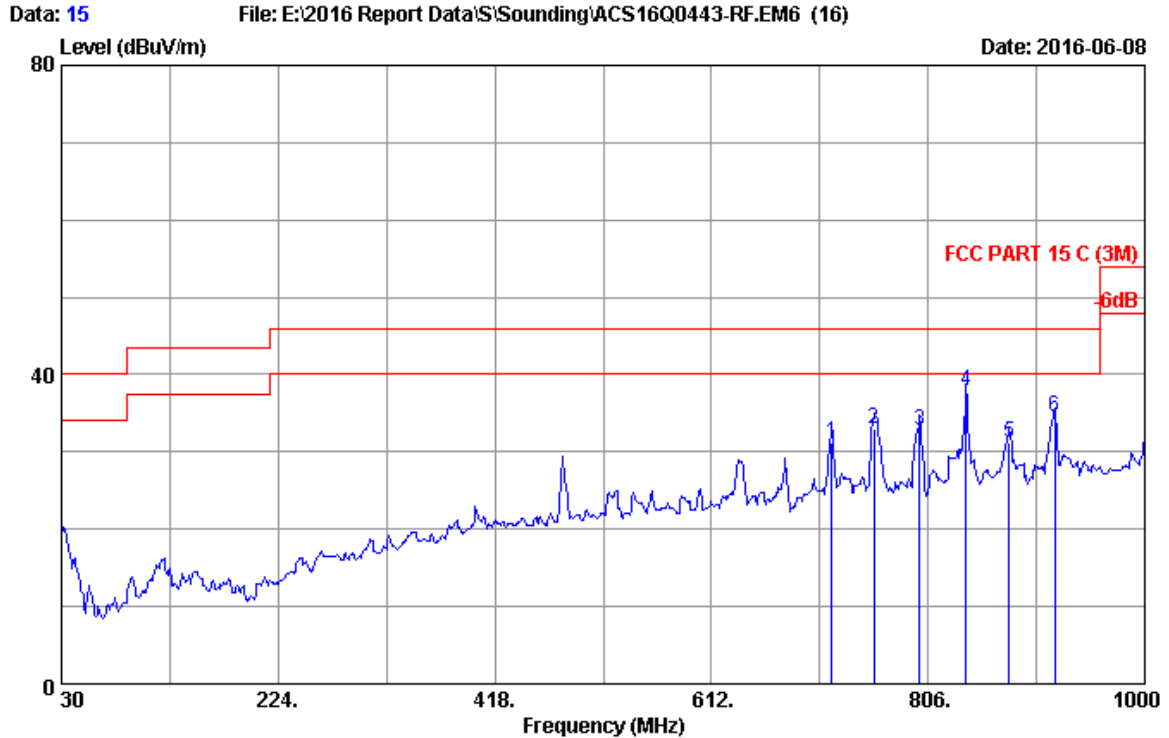
Date: 2016-06-08



Site no. : 3m Chamber Data no. : 16
Dis. / Ant. : 3m 2015 CBL6112D 35375 Ant. pol. : HORIZONTAL
Limit : FCC PART 15 C (3M)
Env. / Ins. : 23.8.0°C/46% Engineer : Frank
EUT : Mobile audio system wall mount unit
Power rating : DC 12V
Test Mode : Tx Mode
M/N : AWM968

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	681.840	19.95	4.05	9.48	33.48	46.00	12.52	QP
2	723.550	20.33	4.29	11.92	36.54	46.00	9.46	QP
3	762.350	20.72	4.53	11.73	36.98	46.00	9.02	QP
4	804.060	21.13	4.77	8.49	34.39	46.00	11.61	QP
5	842.860	21.48	4.90	7.62	34.00	46.00	12.00	QP
6	924.340	22.12	5.14	6.51	33.77	46.00	12.23	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber Data no. : 15
 Dis. / Ant. : 3m 2015 CBL6112D 35375 Ant. pol. : VERTICAL
 Limit : FCC PART 15 C (3M)
 Env. / Ins. : 23.8.0°C/46% Engineer : Frank
 EUT : Mobile audio system wall mount unit
 Power rating : DC 12V
 Test Mode : Tx Mode
 M/N : AWM968

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	719.670	20.29	4.27	6.64	31.20	46.00	14.80	QP
2	757.500	20.67	4.50	7.84	33.01	46.00	12.99	QP
3	798.240	21.08	4.75	6.88	32.71	46.00	13.29	QP
4	839.950	21.46	4.89	11.48	37.83	46.00	8.17	QP
5	878.750	21.81	5.02	4.43	31.26	46.00	14.74	QP
6	919.490	22.10	5.13	7.39	34.62	46.00	11.38	QP

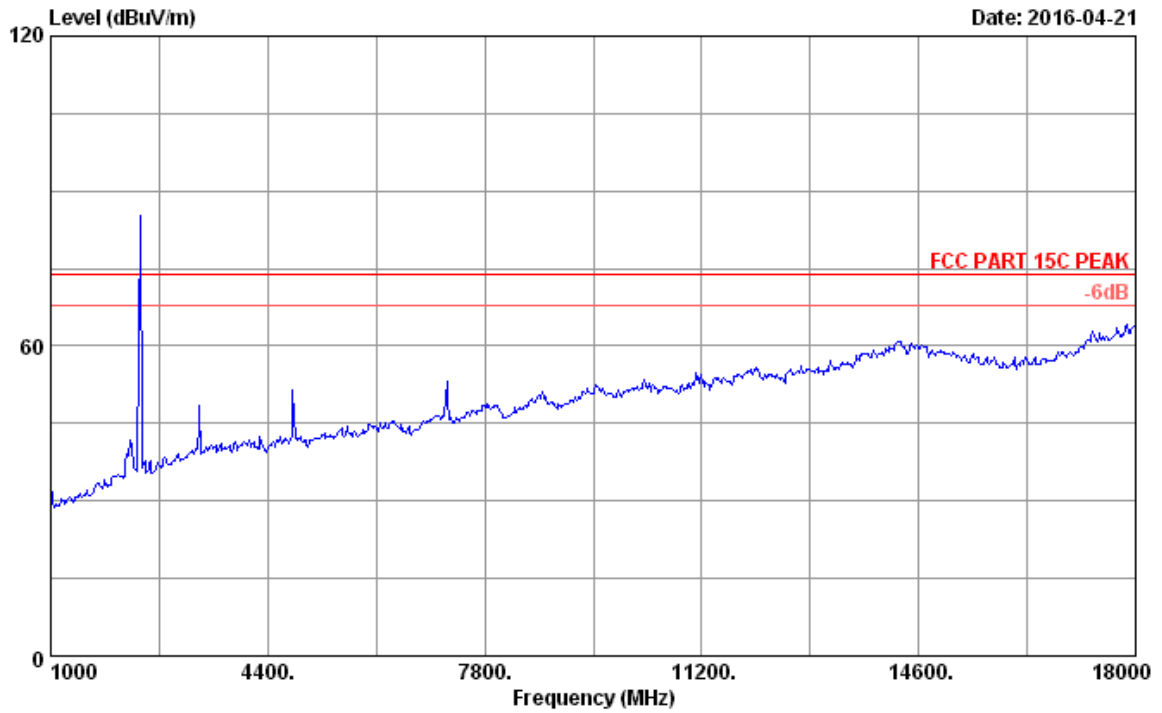
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Frequency: 1GHz~18GHz

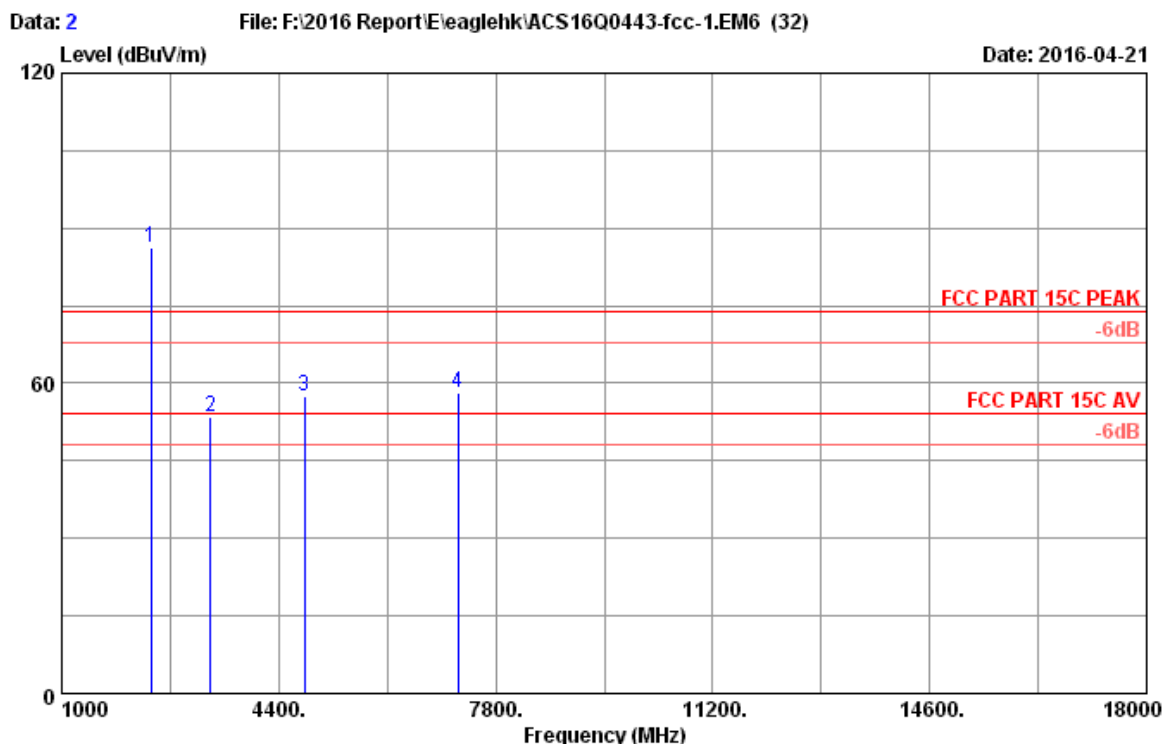
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Date: 2016-04-21



Site no. : 3m Chamber Data no. : 1
 Dis. / Ant. : 3m 2015 3115-4877 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 22.5°C/51.6%
 Engineer : Donjon_Huang
 EUT : Mobile audio system wall mount unit
 Power rating : DC 12V
 Test Mode : GFSK 2402MHz Tx Mode
 M/N : AWM968

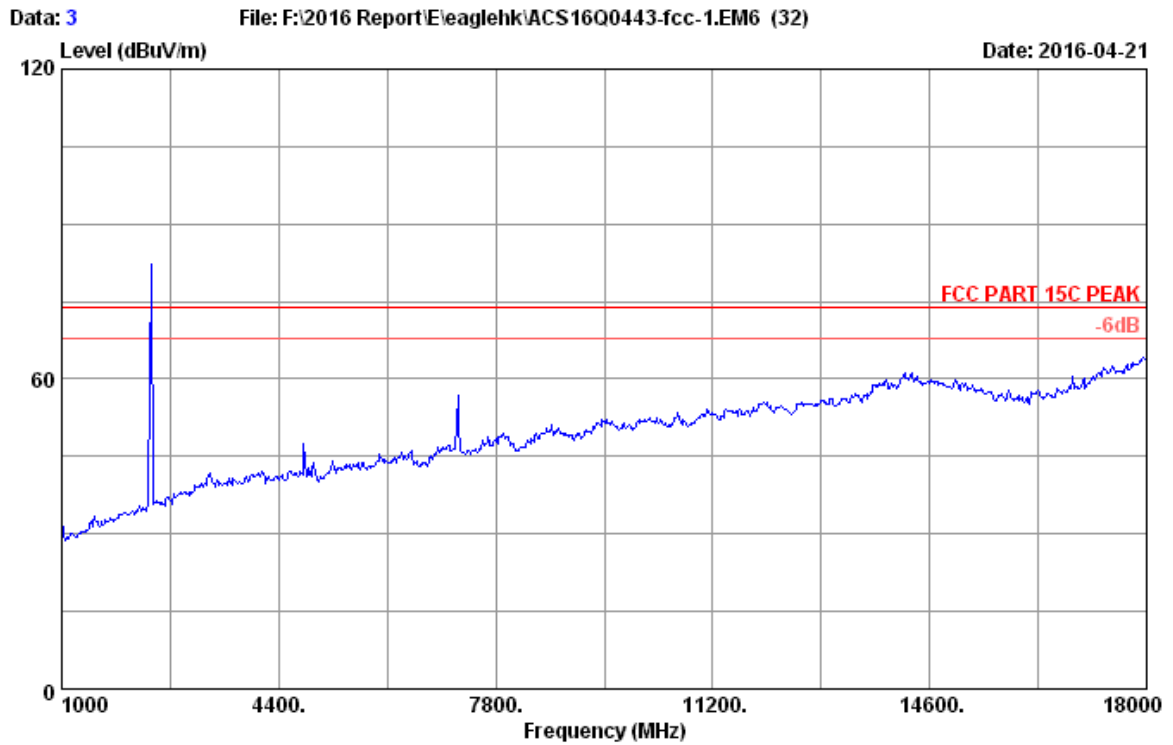


Site no. : 3m Chamber Data no. : 2
 Dis. / Ant. : 3m 2015 3115-4877 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 22.5°C/51.6%
 Engineer : Donjon_Huang
 EUT : Mobile audio system wall mount unit
 Power rating : DC 12V
 Test Mode : GFSK 2402MHz Tx Mode
 M/N : AWM968

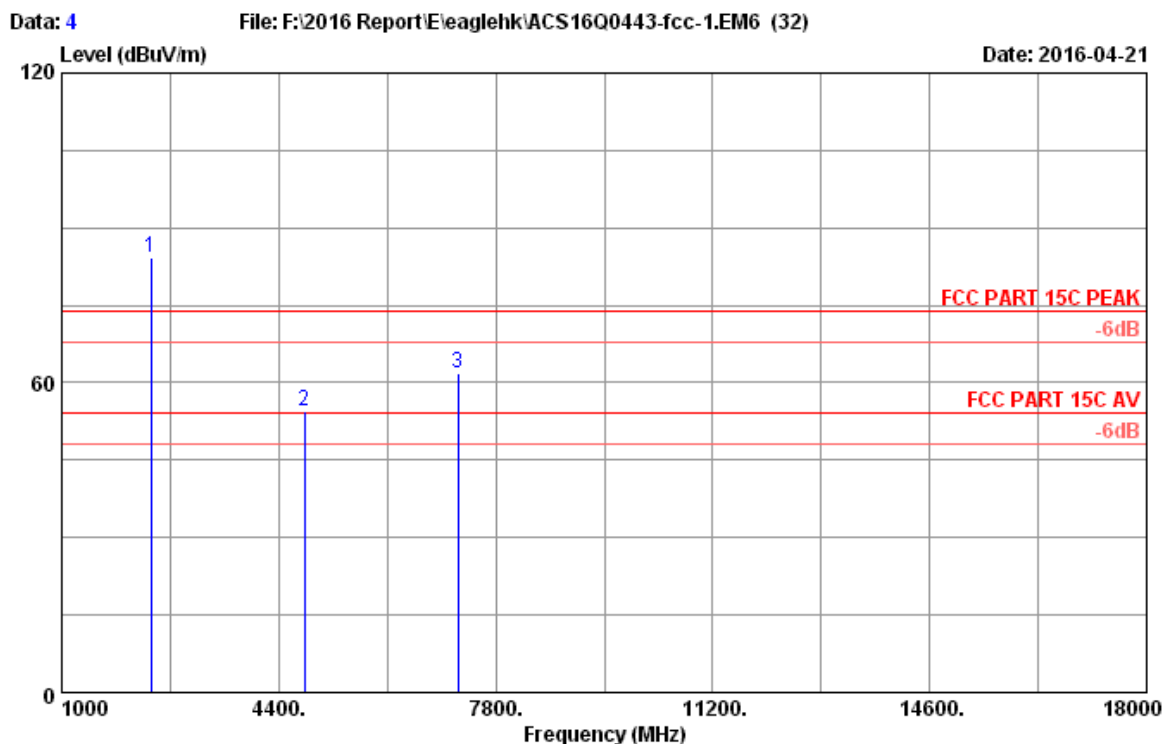
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2402.000	28.28	7.32	36.62	87.15	86.13	74.00	-12.13	Peak
2	3329.000	30.89	8.76	36.20	49.94	53.39	74.00	20.61	Peak
3	4804.000	33.11	9.46	35.54	50.54	57.57	74.00	16.43	Peak
4	7206.000	35.99	10.68	35.48	47.04	58.23	74.00	15.77	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuv/m)	Conclusion
4804.000	57.57	-30.458	27.112	54	Pass
7206.000	58.23	-30.458	27.772	54	Pass



Site no.	: 3m Chamber	Data no.	: 3
Dis. / Ant.	: 3m 2015 3115-4877	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 22.5°C/51.6%		
Engineer	: Donjon_Huang		
EUT	: Mobile audio system wall mount unit		
Power rating	: DC 12V		
Test Mode	: GFSK 2402MHz Tx Mode		
M/N	: AWM968		

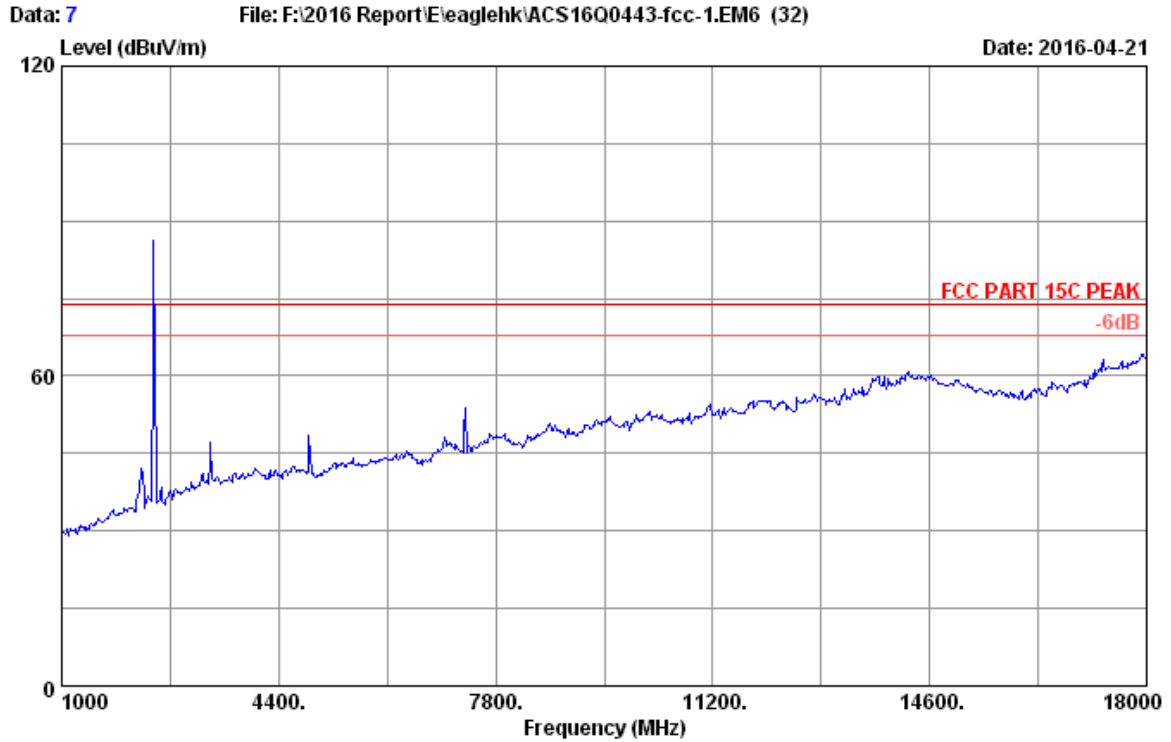


Site no. : 3m Chamber Data no. : 4
 Dis. / Ant. : 3m 2015 3115-4877 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 22.5°C/51.6%
 Engineer : Donjon_Huang
 EUT : Mobile audio system wall mount unit
 Power rating : DC 12V
 Test Mode : GFSK 2402MHz Tx Mode
 M/N : AWM968

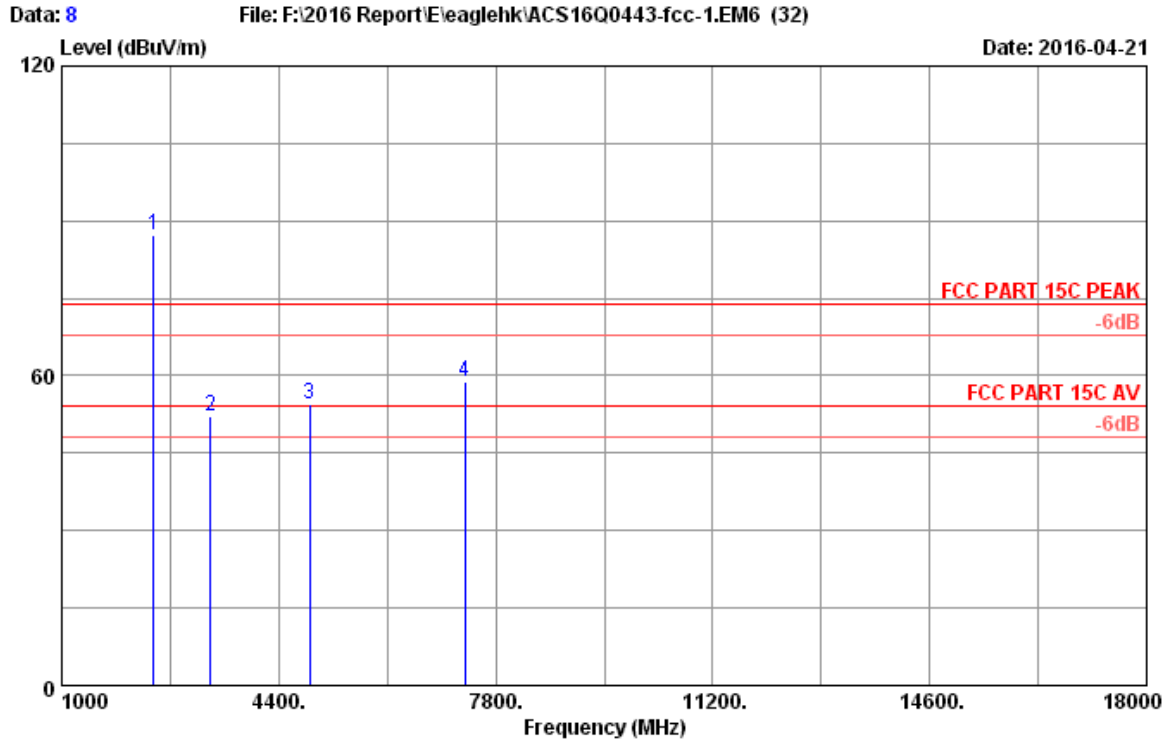
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2402.000	28.28	7.32	36.62	85.34	84.32	74.00	-10.32	Peak
2	4804.000	33.11	9.46	35.54	47.60	54.63	74.00	19.37	Peak
3	7206.000	35.99	10.68	35.48	50.64	61.83	74.00	12.17	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
4804.000	54.63	-30.458	24.172	54	Pass
7206.000	61.83	-30.458	31.372	54	Pass



Site no.	: 3m Chamber	Data no.	: 7
Dis. / Ant.	: 3m 2015 3115-4877	Ant. pol.	: VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 22.5°C/51.6%		
Engineer	: Donjon_Huang		
EUT	: Mobile audio system wall mount unit		
Power rating	: DC 12V		
Test Mode	: GFSK 2441MHz Tx Mode		
M/N	: AWM968		

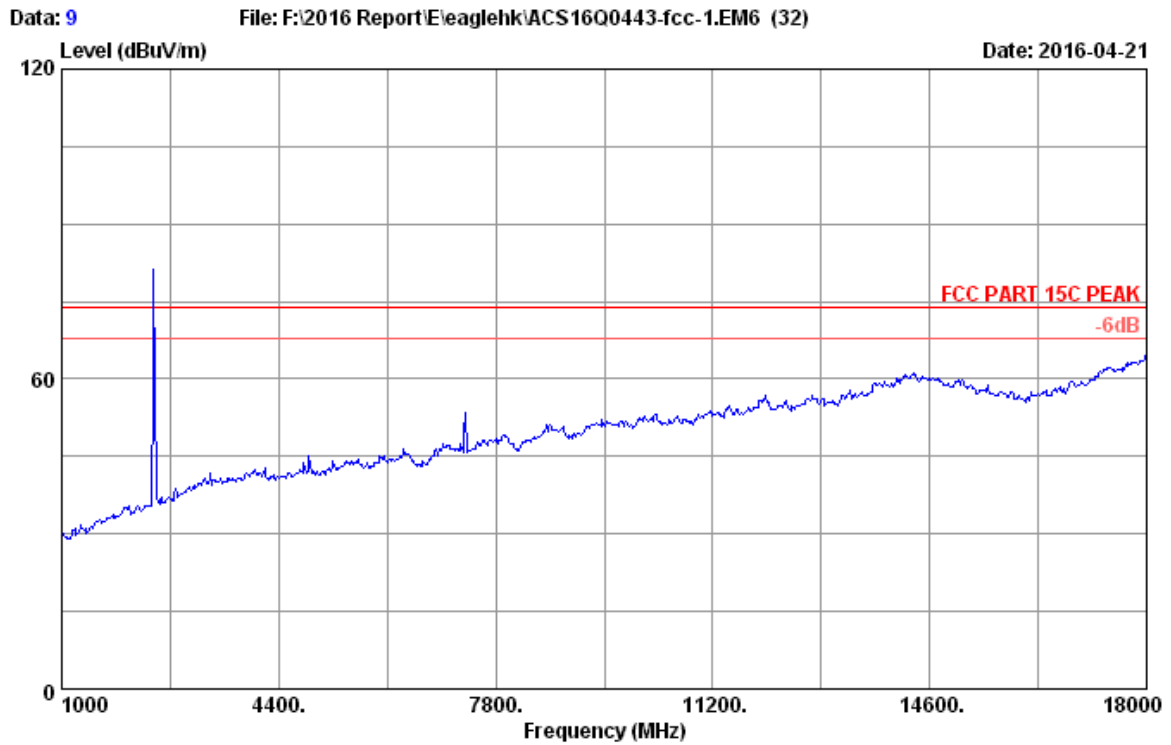


Site no. : 3m Chamber Data no. : 8
Dis. / Ant. : 3m 2015 3115-4877 Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 22.5°C/51.6%
Engineer : Donjon_Huang
EUT : Mobile audio system wall mount unit
Power rating : DC 12V
Test Mode : GFSK 2441MHz Tx Mode
M/N : AWM968

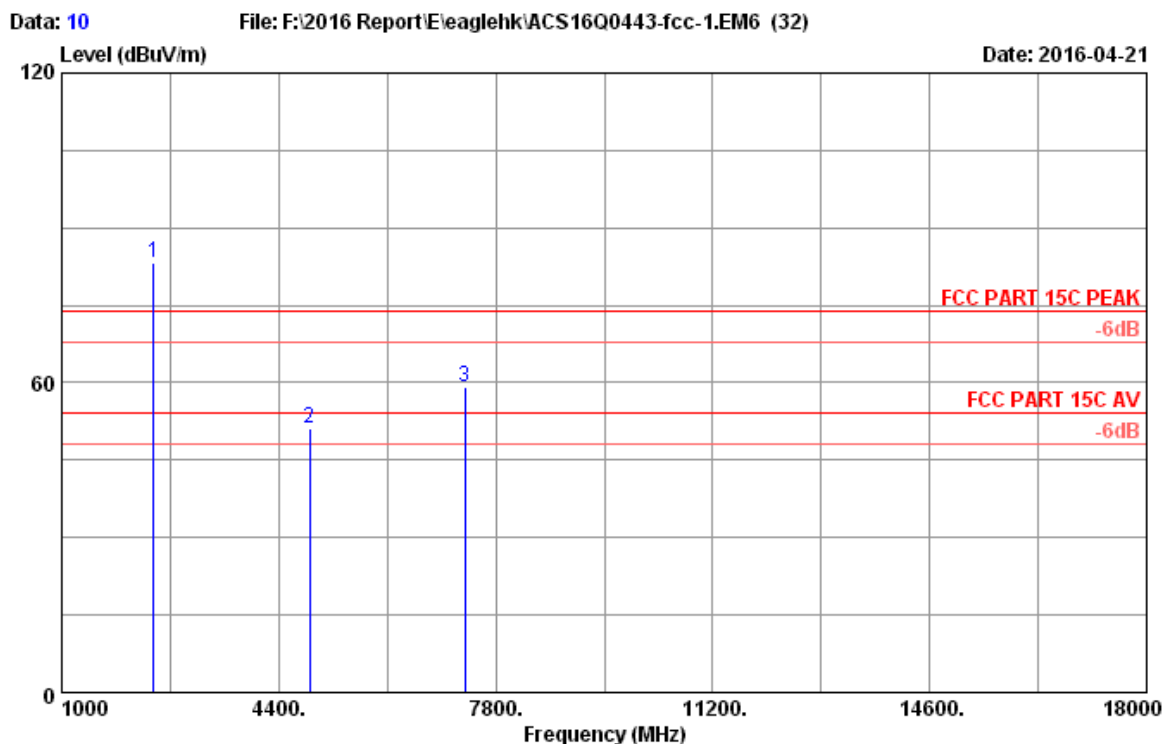
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2441.000	28.33	7.39	36.60	88.01	87.13	74.00	-13.13	Peak
2	3329.000	30.89	8.76	36.20	48.55	52.00	74.00	22.00	Peak
3	4882.000	33.26	9.49	35.51	47.14	54.38	74.00	19.62	Peak
4	7323.000	36.28	10.81	35.53	47.34	58.90	74.00	15.10	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
-Amp Factor
2. The emission levels that are 20dB below the official
limit are not reported.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
4882.000	54.38	-30.458	23.922	54	Pass
7323.000	58.90	-30.458	28.442	54	Pass



Site no.	: 3m Chamber	Data no.	: 9
Dis. / Ant.	: 3m 2015 3115-4877	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 22.5°C/51.6%		
Engineer	: Donjon_Huang		
EUT	: Mobile audio system wall mount unit		
Power rating	: DC 12V		
Test Mode	: GFSK 2441MHz Tx Mode		
M/N	: AWM968		

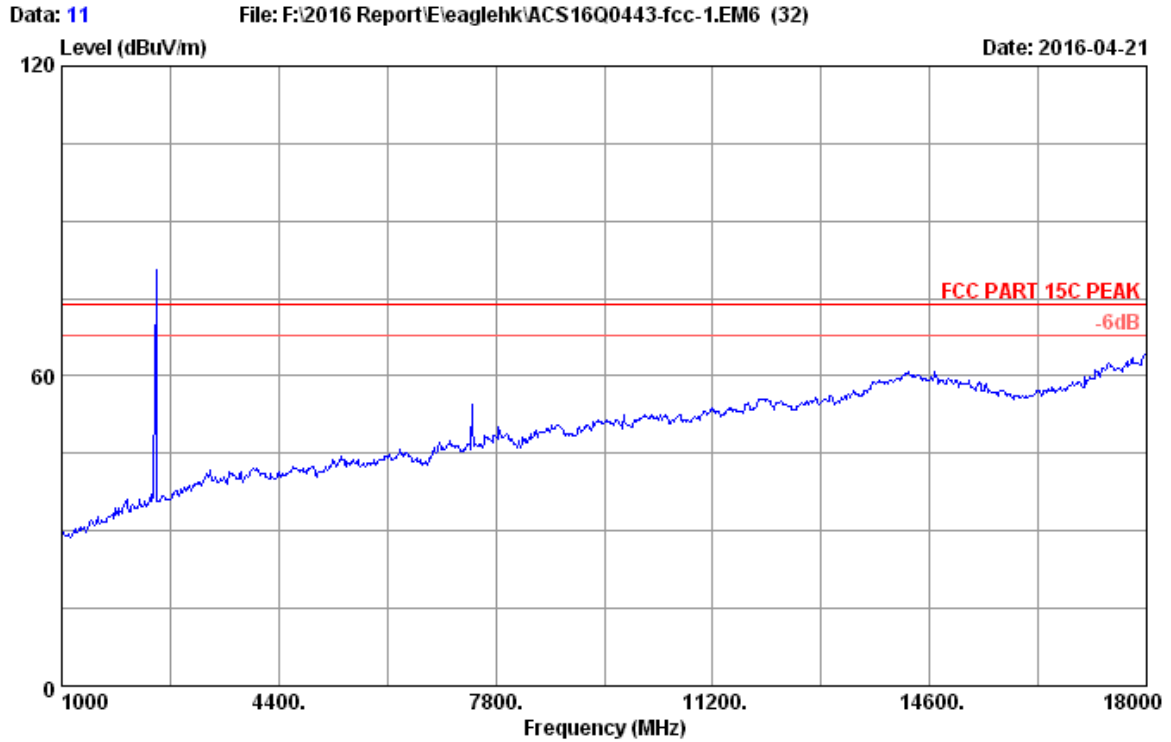


Site no. : 3m Chamber Data no. : 10
 Dis. / Ant. : 3m 2015 3115-4877 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 22.5°C/51.6%
 Engineer : Donjon_Huang
 EUT : Mobile audio system wall mount unit
 Power rating : DC 12V
 Test Mode : GFSK 2441MHz Tx Mode
 M/N : AWM968

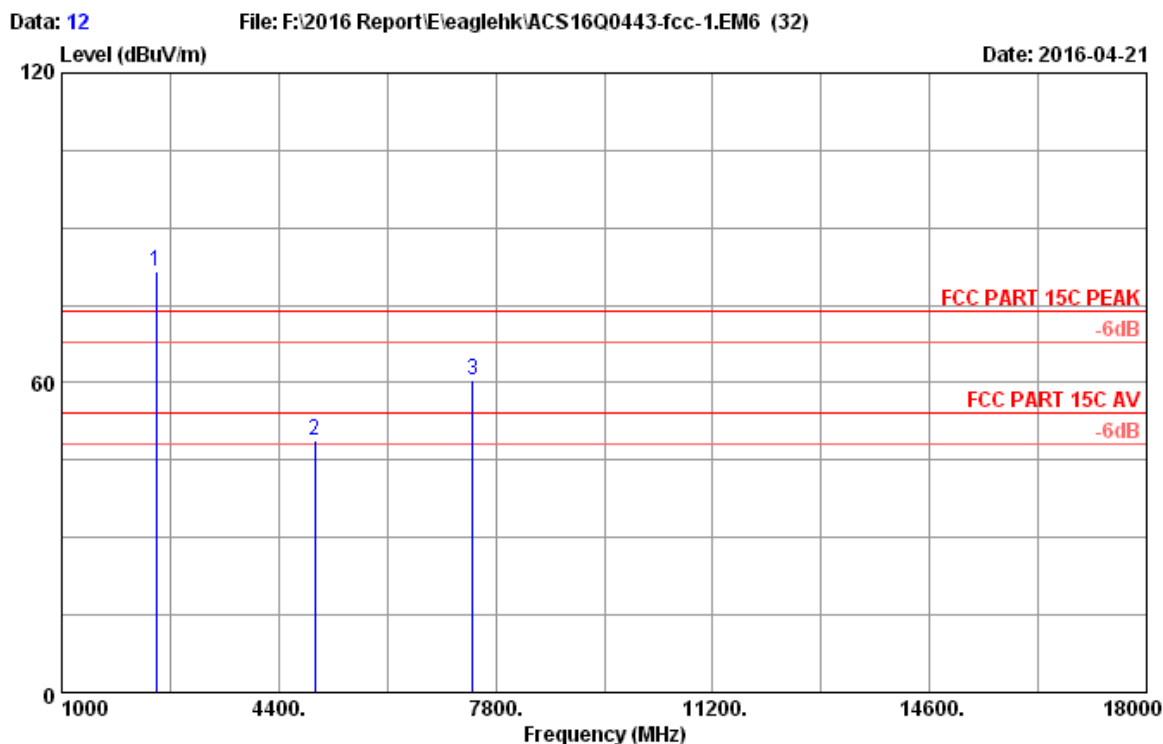
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2441.000	28.33	7.39	36.60	83.99	83.11	74.00	-9.11	Peak
2	4882.000	33.26	9.49	35.51	44.02	51.26	74.00	22.74	Peak
3	7323.000	36.28	10.81	35.53	47.77	59.33	74.00	14.67	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
7323.000	59.33	-30.458	28.872	54	Pass



Site no.	: 3m Chamber	Data no.	: 11
Dis. / Ant.	: 3m 2015 3115-4877	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 22.5°C/51.6%		
Engineer	: Donjon_Huang		
EUT	: Mobile audio system wall mount unit		
Power rating	: DC 12V		
Test Mode	: GFSK 2480MHz Tx Mode		
M/N	: AWM968		

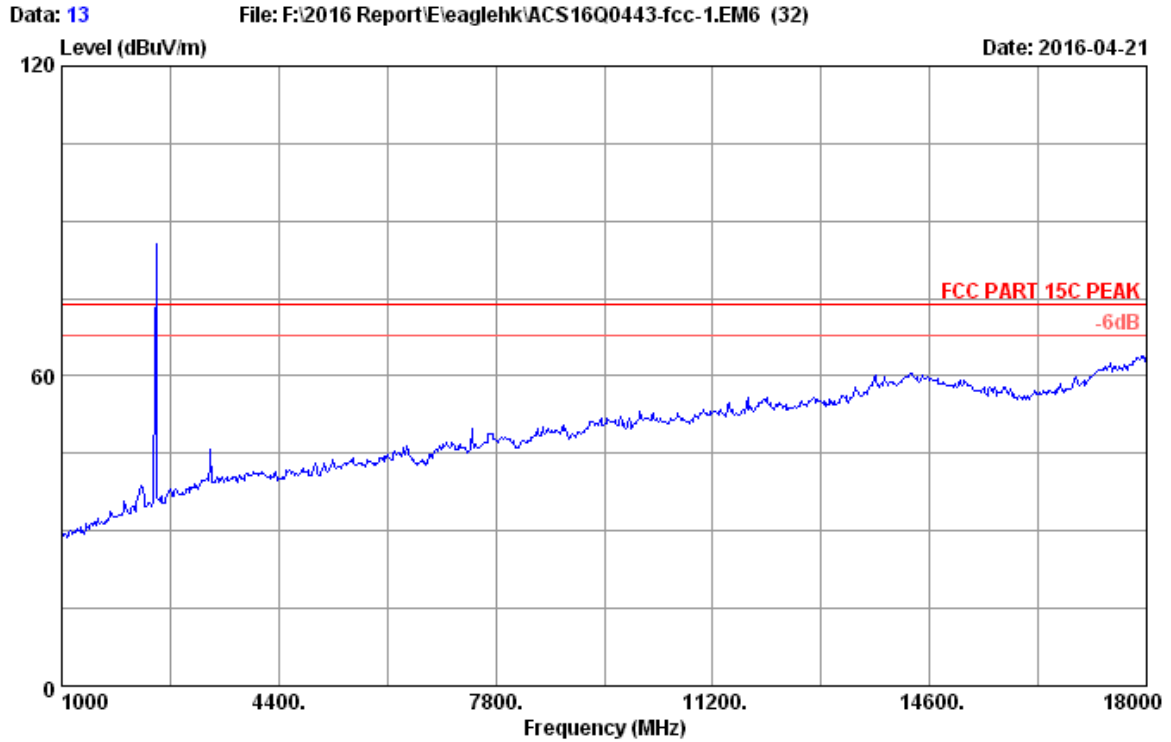


Site no. : 3m Chamber Data no. : 12
 Dis. / Ant. : 3m 2015 3115-4877 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 22.5°C/51.6%
 Engineer : Donjon_Huang
 EUT : Mobile audio system wall mount unit
 Power rating : DC 12V
 Test Mode : GFSK 2480MHz Tx Mode
 M/N : AWM968

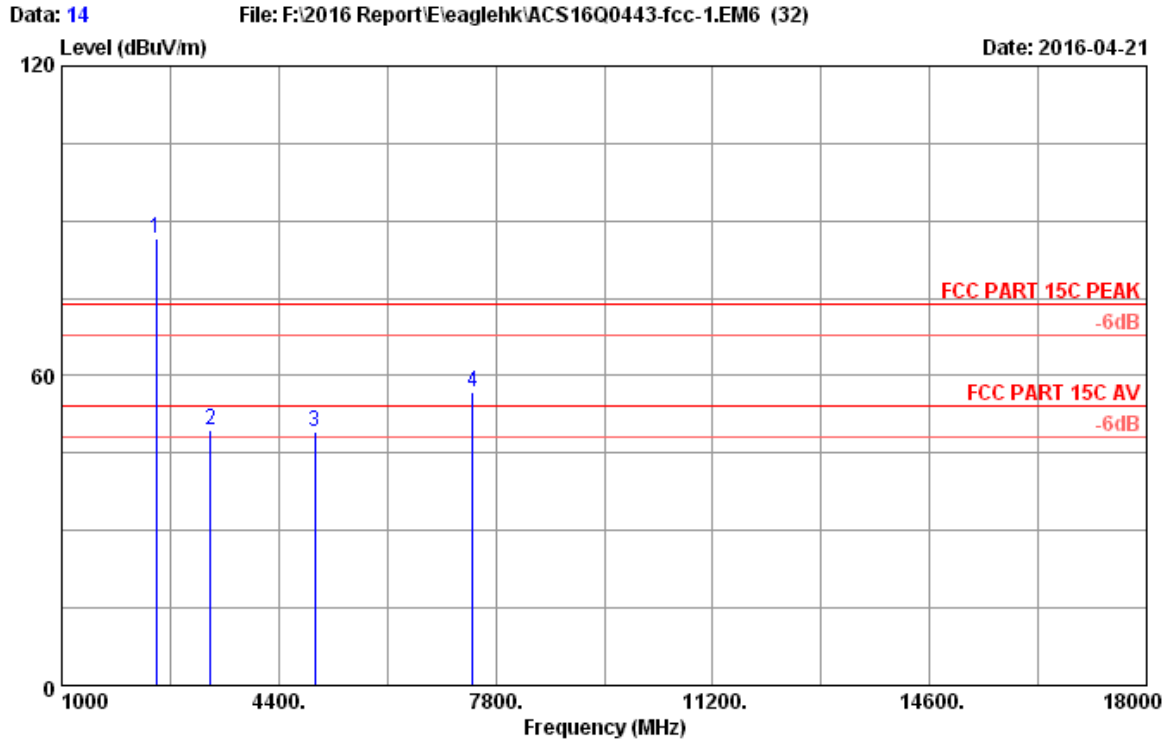
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2480.000	28.38	7.47	36.59	82.22	81.48	74.00	-7.48	Peak
2	4960.000	33.42	9.52	35.47	41.35	48.82	74.00	25.18	Peak
3	7440.000	36.56	10.92	35.58	48.61	60.51	74.00	13.49	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuv/m)	Conclusion
7440.000	60.51	-30.458	30.052	54	Pass



Site no.	: 3m Chamber	Data no.	: 13
Dis. / Ant.	: 3m 2015 3115-4877	Ant. pol.	: VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 22.5°C/51.6%		
Engineer	: Donjon_Huang		
EUT	: Mobile audio system wall mount unit		
Power rating	: DC 12V		
Test Mode	: GFSK 2480MHz Tx Mode		
M/N	: AWM968		

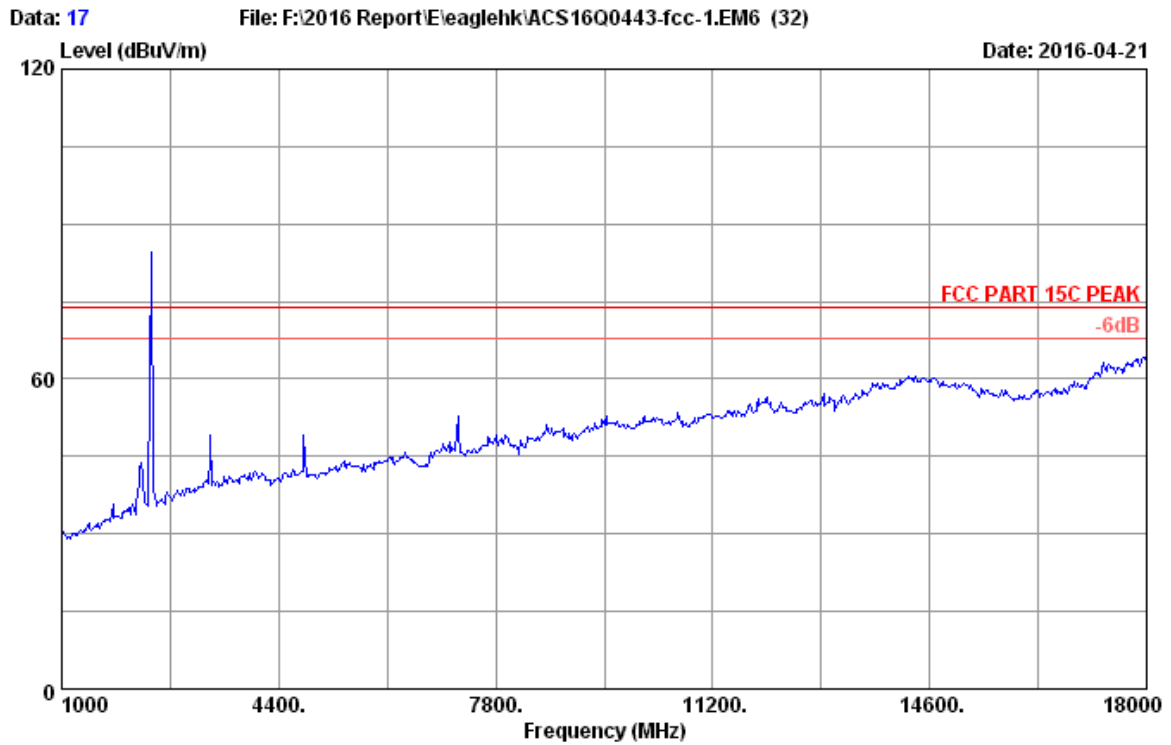


Site no. : 3m Chamber Data no. : 14
 Dis. / Ant. : 3m 2015 3115-4877 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 22.5°C/51.6%
 Engineer : Donjon_Huang
 EUT : Mobile audio system wall mount unit
 Power rating : DC 12V
 Test Mode : GFSK 2480MHz Tx Mode
 M/N : AWM968

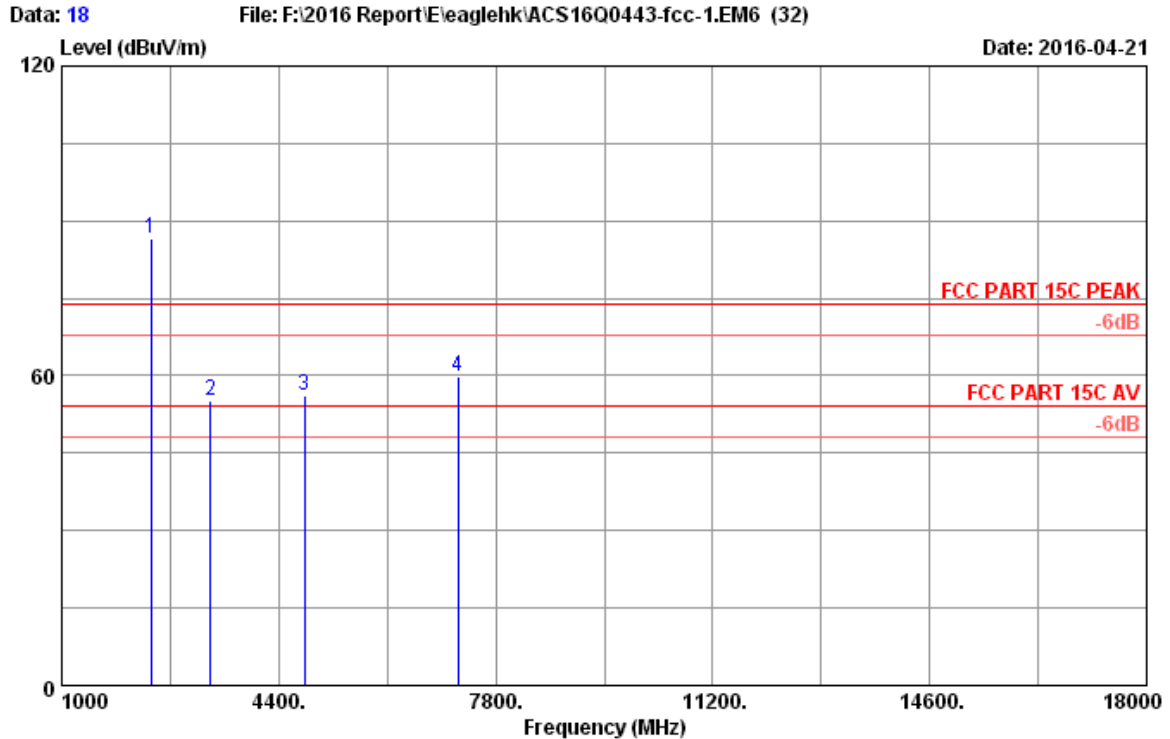
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2480.000	28.38	7.47	36.59	87.35	86.61	74.00	-12.61	Peak
2	3329.000	30.89	8.76	36.20	46.18	49.63	74.00	24.37	Peak
3	4960.000	33.42	9.52	35.47	41.58	49.05	74.00	24.95	Peak
4	7440.000	36.56	10.92	35.58	44.88	56.78	74.00	17.22	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
7440.000	56.78	-30.458	26.322	54	Pass



Site no.	: 3m Chamber	Data no.	: 17
Dis. / Ant.	: 3m 2015 3115-4877	Ant. pol.	: VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 22.5°C/51.6%		
Engineer	: Donjon_Huang		
EUT	: Mobile audio system wall mount unit		
Power rating	: DC 12V		
Test Mode	: 8DPSK 2402MHz Tx Mode		
M/N	: AWM968		

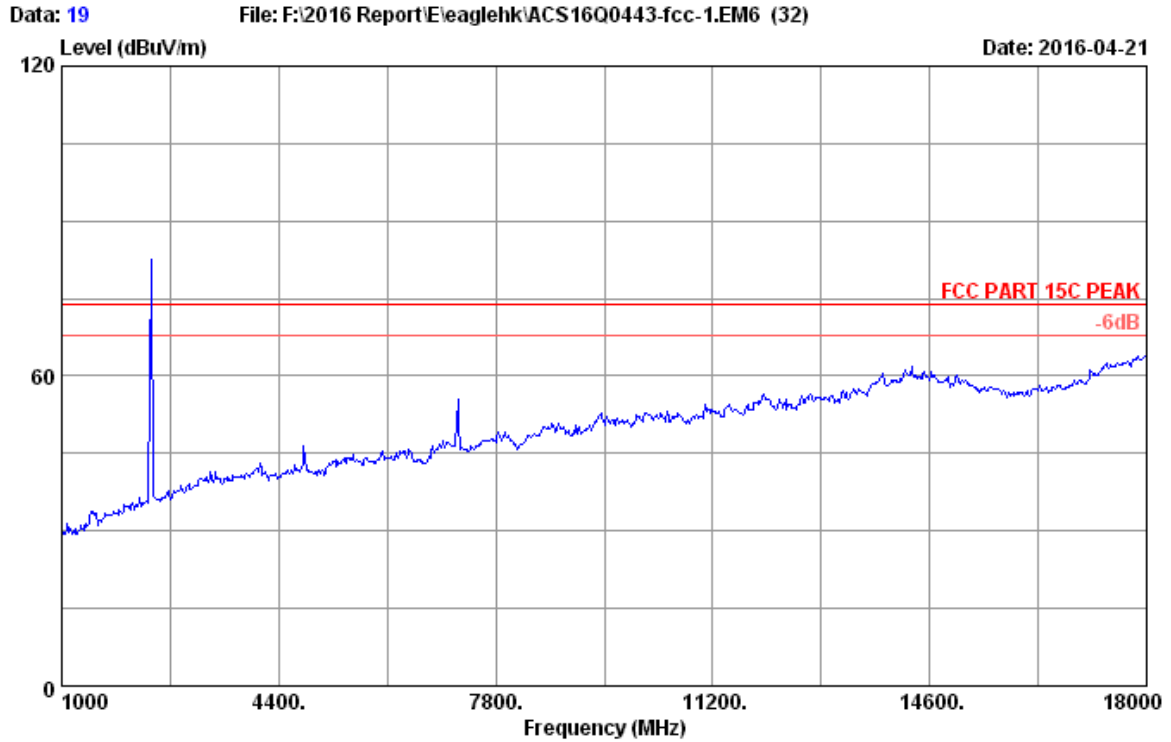


Site no. : 3m Chamber Data no. : 18
 Dis. / Ant. : 3m 2015 3115-4877 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 22.5°C/51.6%
 Engineer : Donjon_Huang
 EUT : Mobile audio system wall mount unit
 Power rating : DC 12V
 Test Mode : 8DPSK 2402MHz Tx Mode
 M/N : AWM968

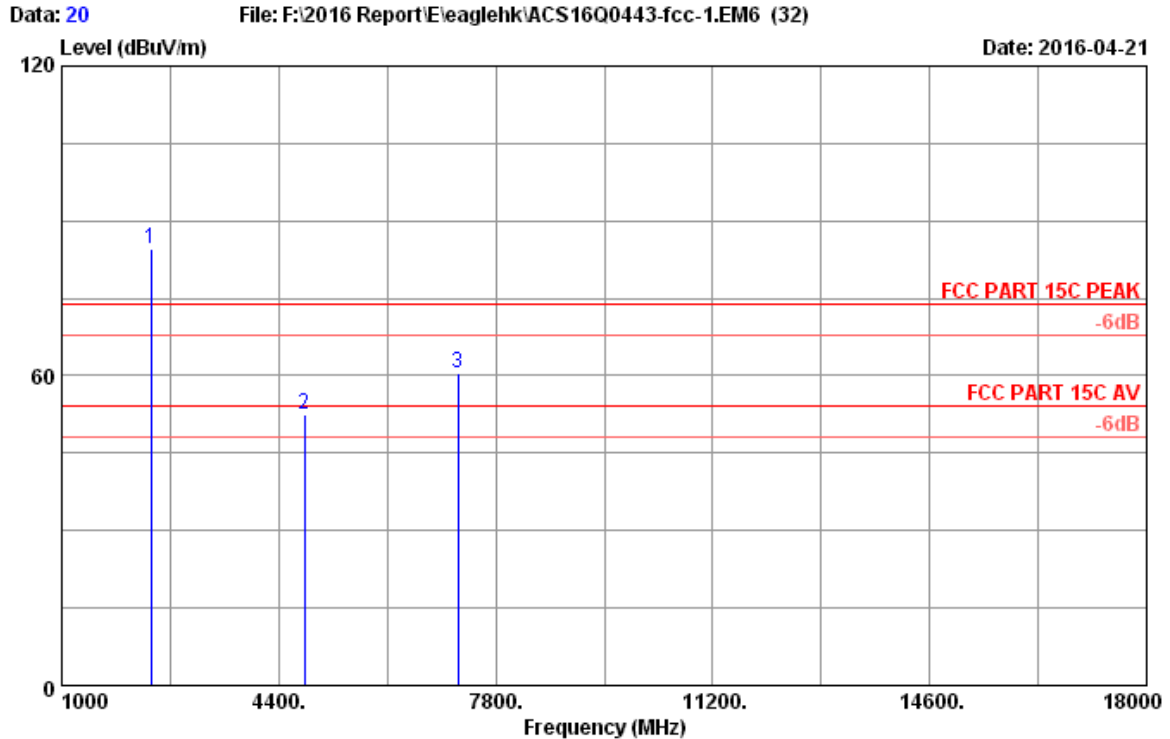
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2402.000	28.28	7.32	36.62	87.66	86.64	74.00	-12.64	Peak
2	3329.000	30.89	8.76	36.20	51.74	55.19	74.00	18.81	Peak
3	4804.000	33.11	9.46	35.54	49.22	56.25	74.00	17.75	Peak
4	7206.000	35.99	10.68	35.48	48.64	59.83	74.00	14.17	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The Emission levels that are 20dB below the official
 limit are not reported.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
3329.000	55.19	-30.458	24.732	54	Pass
4804.000	56.25	-30.458	25.792	54	Pass
7206.000	59.83	-30.458	29.372	54	Pass



Site no.	: 3m Chamber	Data no.	: 19
Dis. / Ant.	: 3m 2015 3115-4877	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 22.5°C/51.6%		
Engineer	: Donjon_Huang		
EUT	: Mobile audio system wall mount unit		
Power rating	: DC 12V		
Test Mode	: 8DPSK 2402MHz Tx Mode		
M/N	: AWM968		

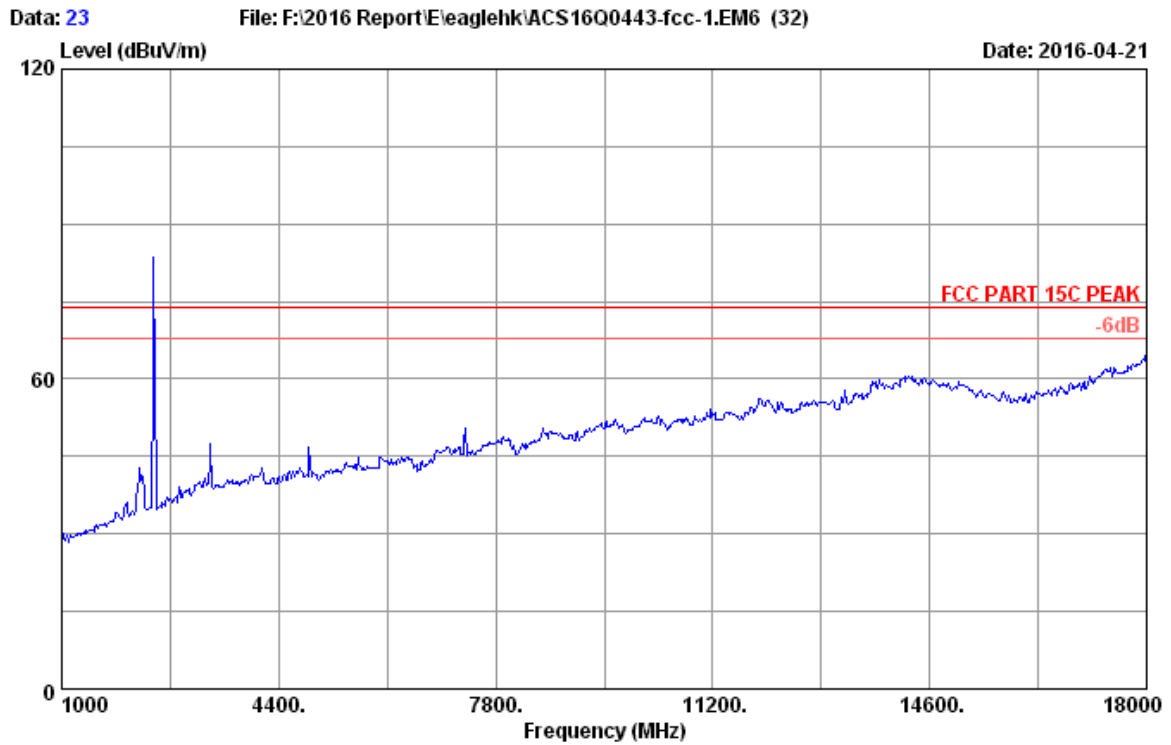


Site no. : 3m Chamber Data no. : 20
 Dis. / Ant. : 3m 2015 3115-4877 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 22.5°C/51.6%
 Engineer : Donjon_Huang
 EUT : Mobile audio system wall mount unit
 Power rating : DC 12V
 Test Mode : 8DPSK 2402MHz Tx Mode
 M/N : AWM968

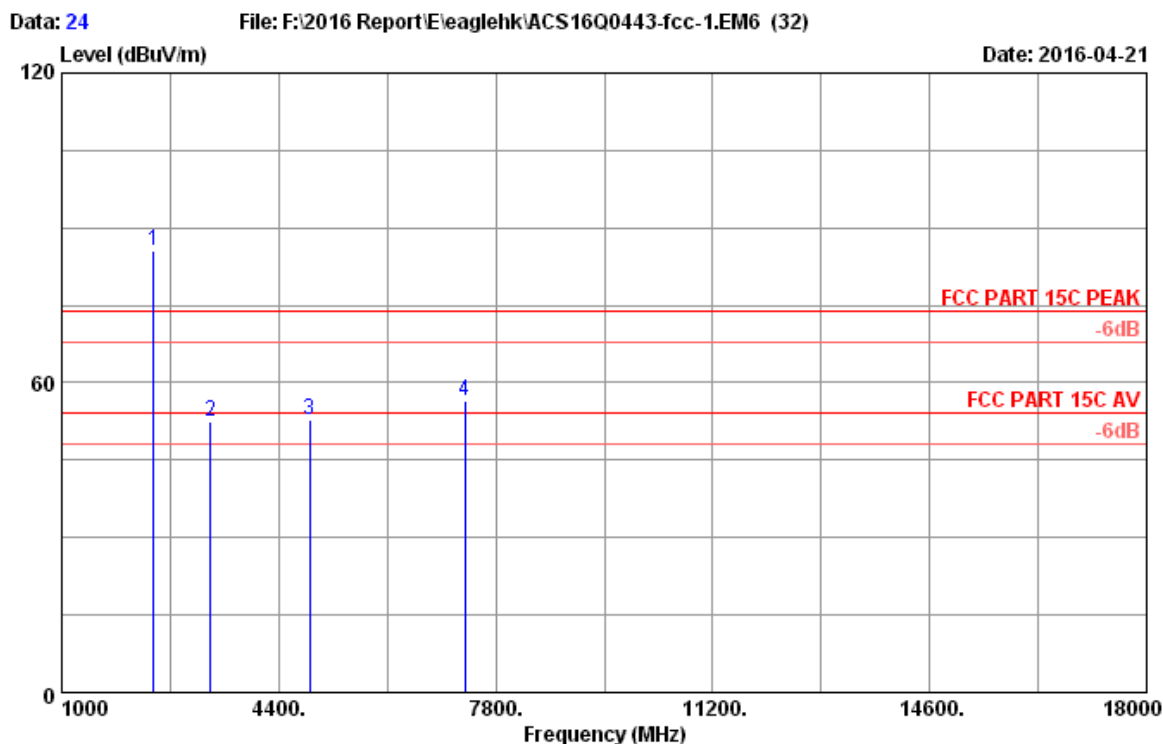
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2402.000	28.28	7.32	36.62	85.59	84.57	74.00	-10.57	Peak
2	4804.000	33.11	9.46	35.54	45.40	52.43	74.00	21.57	Peak
3	7206.000	35.99	10.68	35.48	49.45	60.64	74.00	13.36	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
7206.000	60.64	-30.458	30.182	54	Pass



Site no.	: 3m Chamber	Data no.	: 23
Dis. / Ant.	: 3m 2015 3115-4877	Ant. pol.	: VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 22.5°C/51.6%		
Engineer	: Donjon_Huang		
EUT	: Mobile audio system wall mount unit		
Power rating	: DC 12V		
Test Mode	: 8DPSK 2441MHz Tx Mode		
M/N	: AWM968		

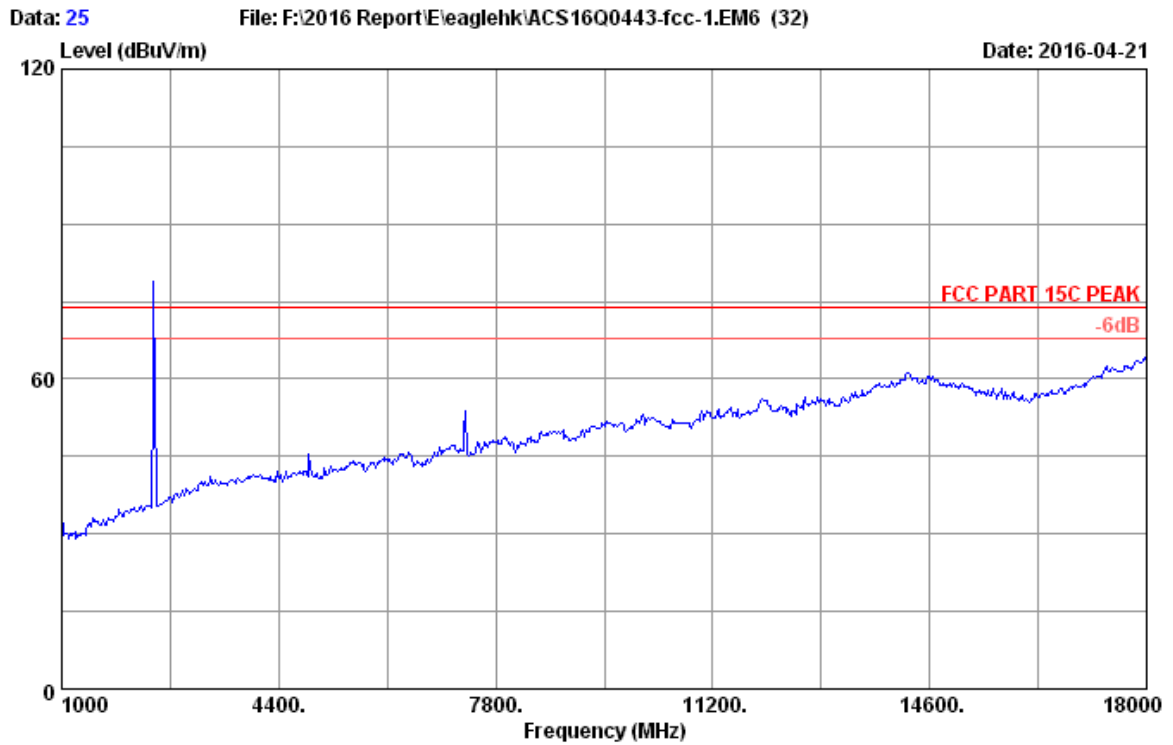


Site no. : 3m Chamber Data no. : 24
 Dis. / Ant. : 3m 2015 3115-4877 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 22.5°C/51.6%
 Engineer : Donjon_Huang
 EUT : Mobile audio system wall mount unit
 Power rating : DC 12V
 Test Mode : 8DPSK 2441MHz Tx Mode
 M/N : AWM968

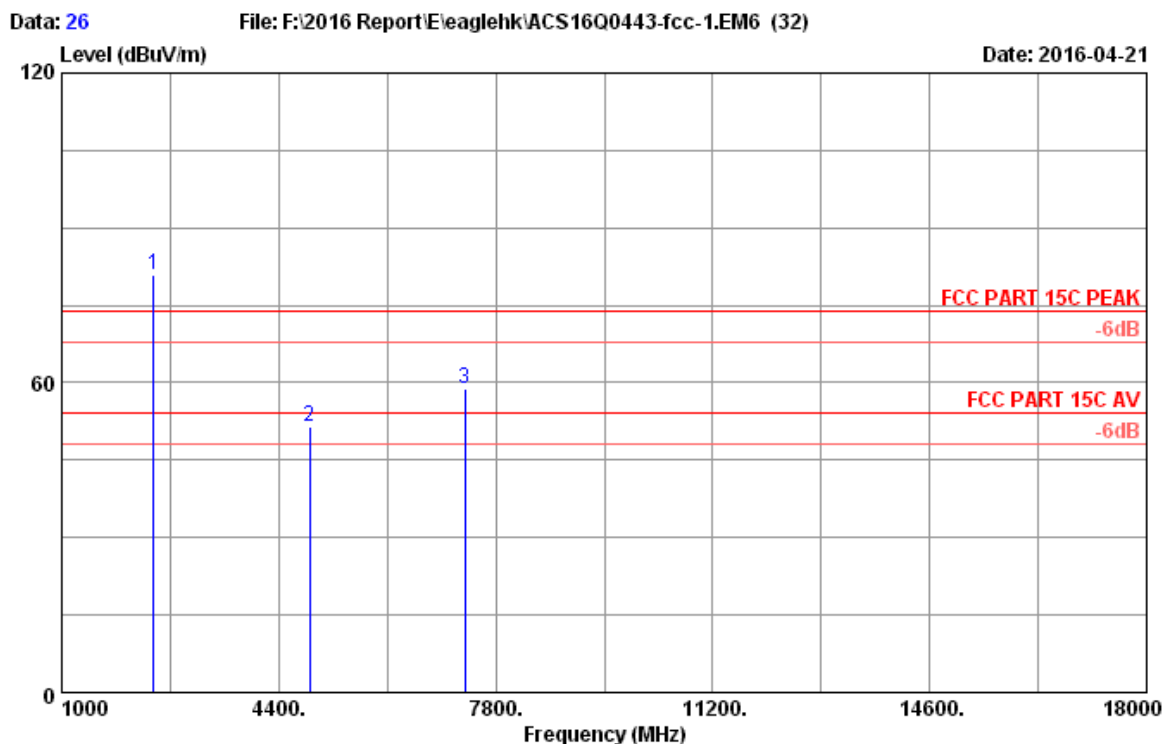
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2441.000	28.33	7.39	36.60	86.60	85.72	74.00	-11.72	Peak
2	3329.000	30.89	8.76	36.20	49.11	52.56	74.00	21.44	Peak
3	4882.000	33.26	9.49	35.51	45.71	52.95	74.00	21.05	Peak
4	7323.000	36.28	10.81	35.53	45.06	56.62	74.00	17.38	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
7323.000	56.62	-30.458	26.162	54	Pass



Site no.	: 3m Chamber	Data no.	: 25
Dis. / Ant.	: 3m 2015 3115-4877	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 22.5°C/51.6%		
Engineer	: Donjon_Huang		
EUT	: Mobile audio system wall mount unit		
Power rating	: DC 12V		
Test Mode	: 8DPSK 2441MHz Tx Mode		
M/N	: AWM968		

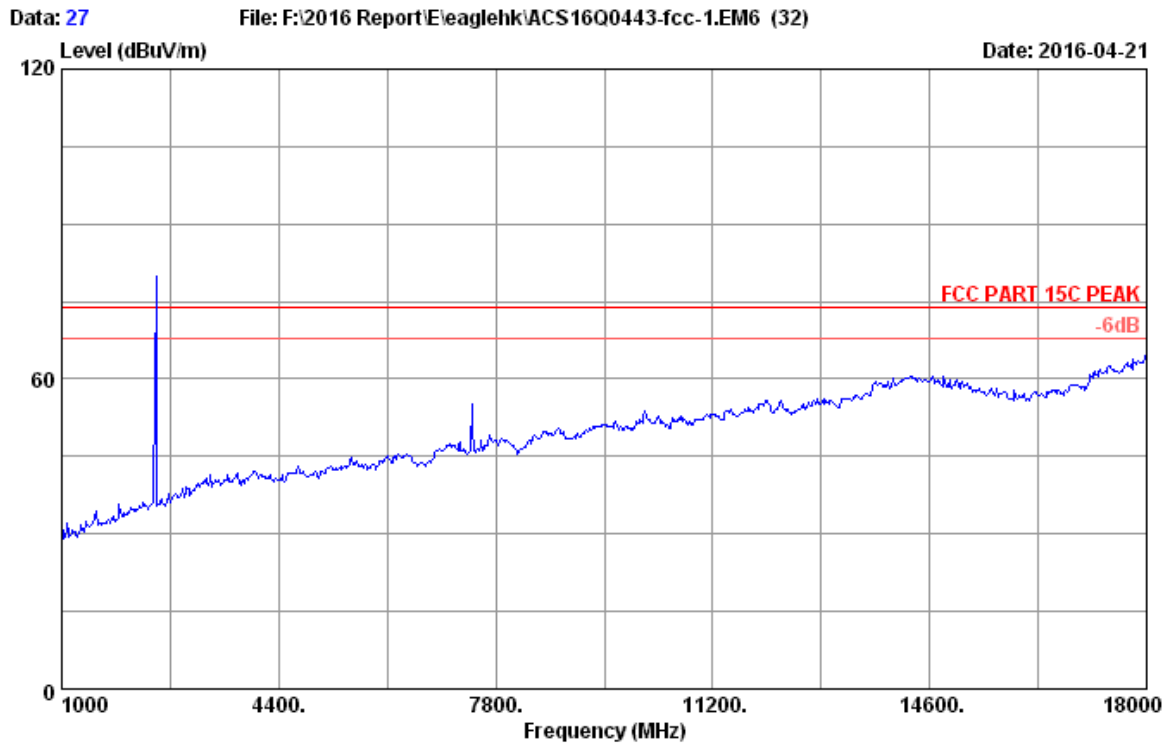


Site no. : 3m Chamber Data no. : 26
 Dis. / Ant. : 3m 2015 3115-4877 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 22.5°C/51.6%
 Engineer : Donjon_Huang
 EUT : Mobile audio system wall mount unit
 Power rating : DC 12V
 Test Mode : 8DPSK 2441MHz Tx Mode
 M/N : AWM968

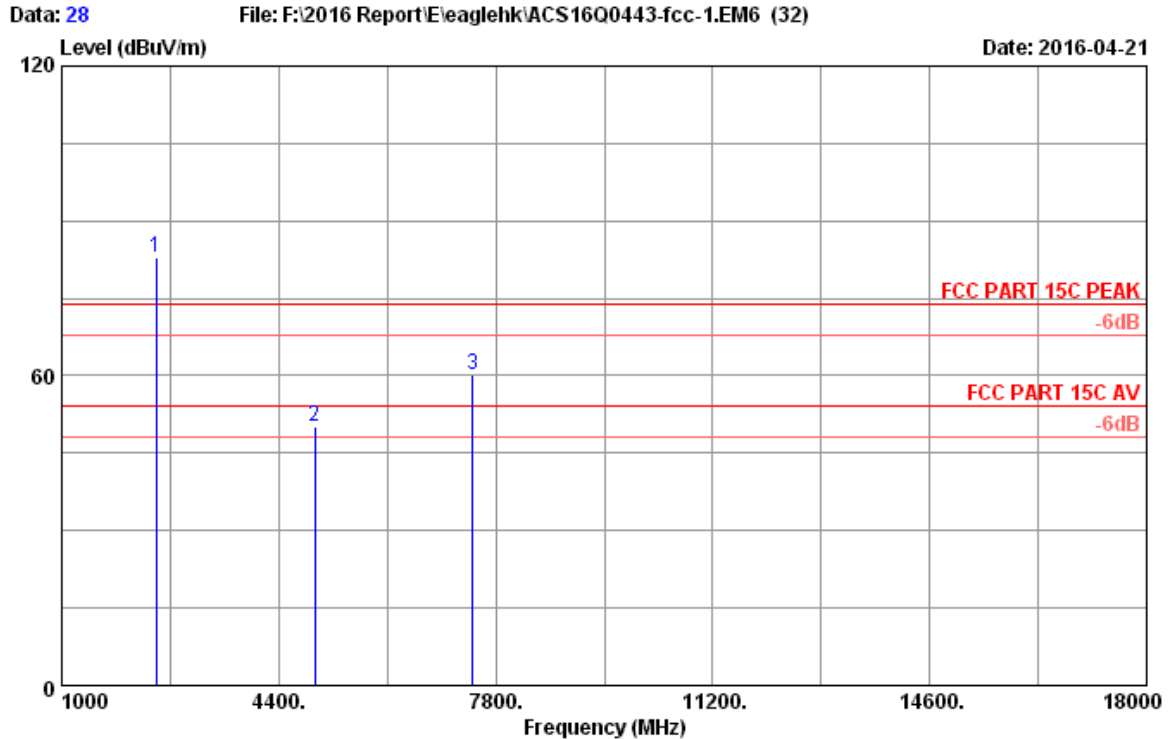
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2441.000	28.33	7.39	36.60	81.74	80.86	74.00	-6.86	Peak
2	4882.000	33.26	9.49	35.51	44.30	51.54	74.00	22.46	Peak
3	7323.000	36.28	10.81	35.53	47.35	58.91	74.00	15.09	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
7323.000	59.91	-30.458	29.452	54	Pass



Site no.	: 3m Chamber	Data no.	: 27
Dis. / Ant.	: 3m 2015 3115-4877	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 22.5°C/51.6%		
Engineer	: Donjon_Huang		
EUT	: Mobile audio system wall mount unit		
Power rating	: DC 12V		
Test Mode	: 8DPSK 2480MHz Tx Mode		
M/N	: AWM968		

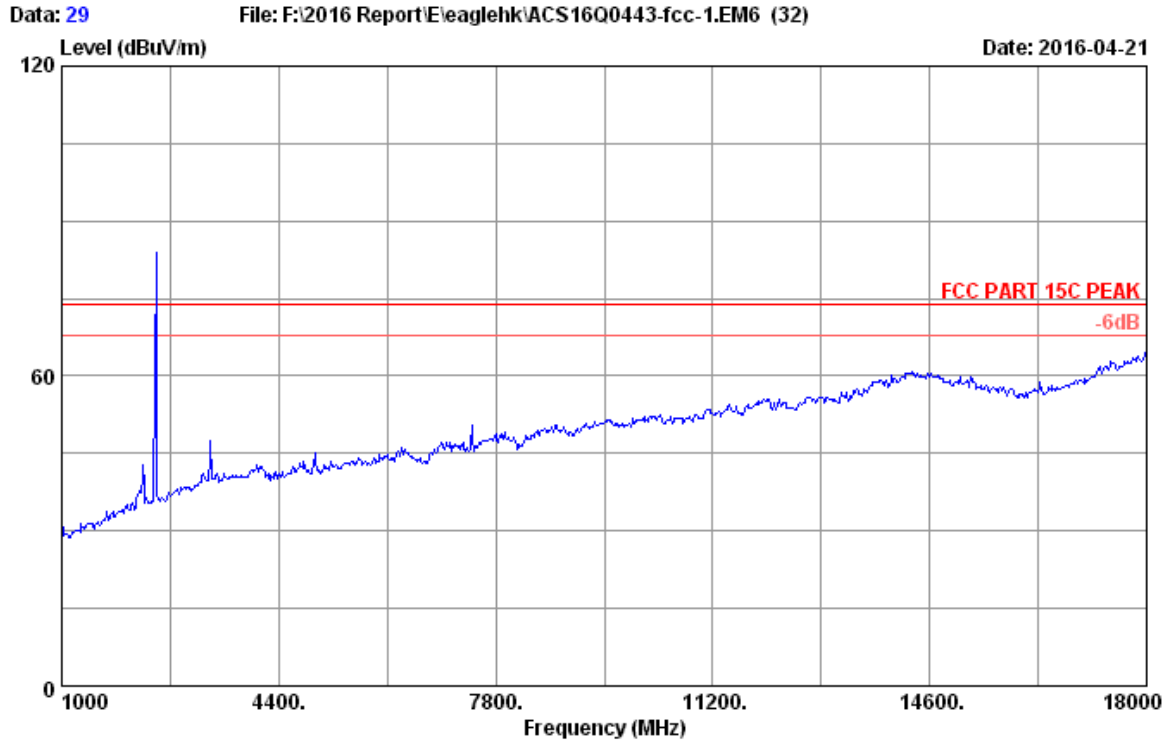


Site no. : 3m Chamber Data no. : 28
 Dis. / Ant. : 3m 2015 3115-4877 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 22.5°C/51.6%
 Engineer : Donjon_Huang
 EUT : Mobile audio system wall mount unit
 Power rating : DC 12V
 Test Mode : 8DPSK 2480MHz Tx Mode
 M/N : AWM968

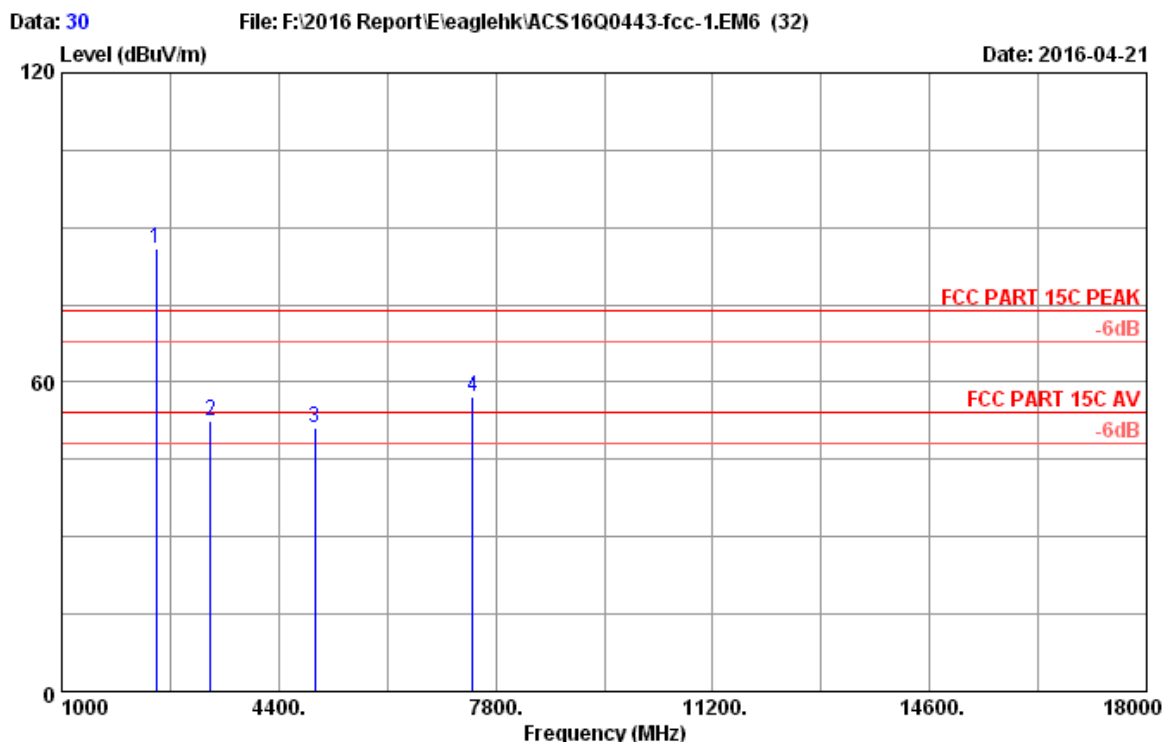
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2480.000	28.38	7.47	36.59	83.64	82.90	74.00	-8.90	Peak
2	4960.000	33.42	9.52	35.47	42.81	50.28	74.00	23.72	Peak
3	7440.000	36.56	10.92	35.58	48.10	60.00	74.00	14.00	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
7440.000	60.00	-30.458	29.542	54	Pass



Site no.	: 3m Chamber	Data no.	: 29
Dis. / Ant.	: 3m 2015 3115-4877	Ant. pol.	: VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 22.5°C/51.6%		
Engineer	: Donjon_Huang		
EUT	: Mobile audio system wall mount unit		
Power rating	: DC 12V		
Test Mode	: 8DPSK 2480MHz Tx Mode		
M/N	: AWM968		



Site no. : 3m Chamber Data no. : 30
Dis. / Ant. : 3m 2015 3115-4877 Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 22.5°C/51.6%
Engineer : Donjon_Huang
EUT : Mobile audio system wall mount unit
Power rating : DC 12V
Test Mode : 8DPSK 2480MHz Tx Mode
M/N : AWM968

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2480.000	28.38	7.47	36.59	86.70	85.96	74.00	-11.96	Peak
2	3329.000	30.89	8.76	36.20	48.94	52.39	74.00	21.61	Peak
3	4960.000	33.42	9.52	35.47	43.71	51.18	74.00	22.82	Peak
4	7440.000	36.56	10.92	35.58	45.42	57.32	74.00	16.68	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
-Amp Factor
2. The emission levels that are 20dB below the official
limit are not reported.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
7440.000	57.32	-30.458	26.862	54	Pass

5. CONDUCTED SPURIOUS EMISSIONS

5.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	N9030A	MY51380221	Oct.17,15	1 Year
2.	Attenuator (20dB)	Agilent	8491B	MY39262165	Apr. 28,15	1 Year
3.	RF Cable	Marvelous Microwave Inc	SFL402105FLEX	No.1	Oct.17,15	1 Year

5.2. Limit

In any 100kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

5.3. Test Procedure

The transmitter output was connected to a spectrum analyzer, the resolution bandwidth is set to 100 kHz, the video bandwidth is set to 300 kHz and measure all the emissions with peak detector.

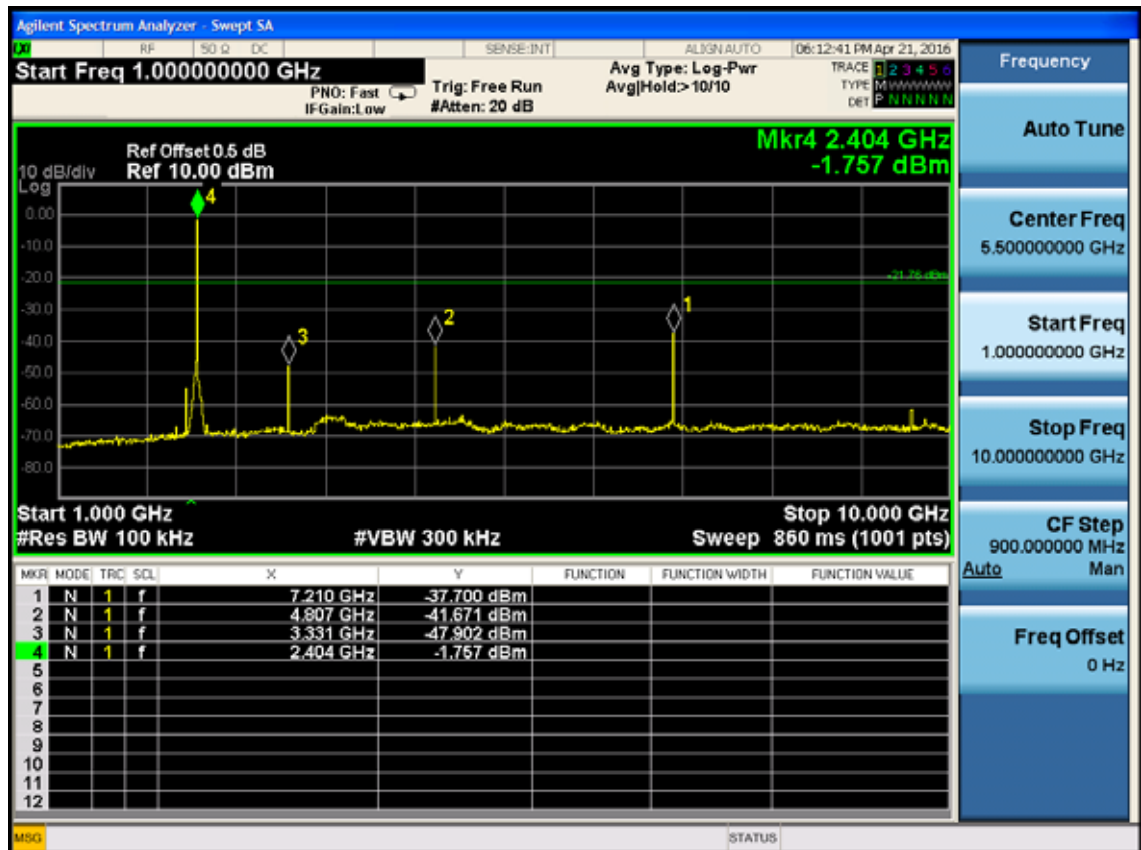
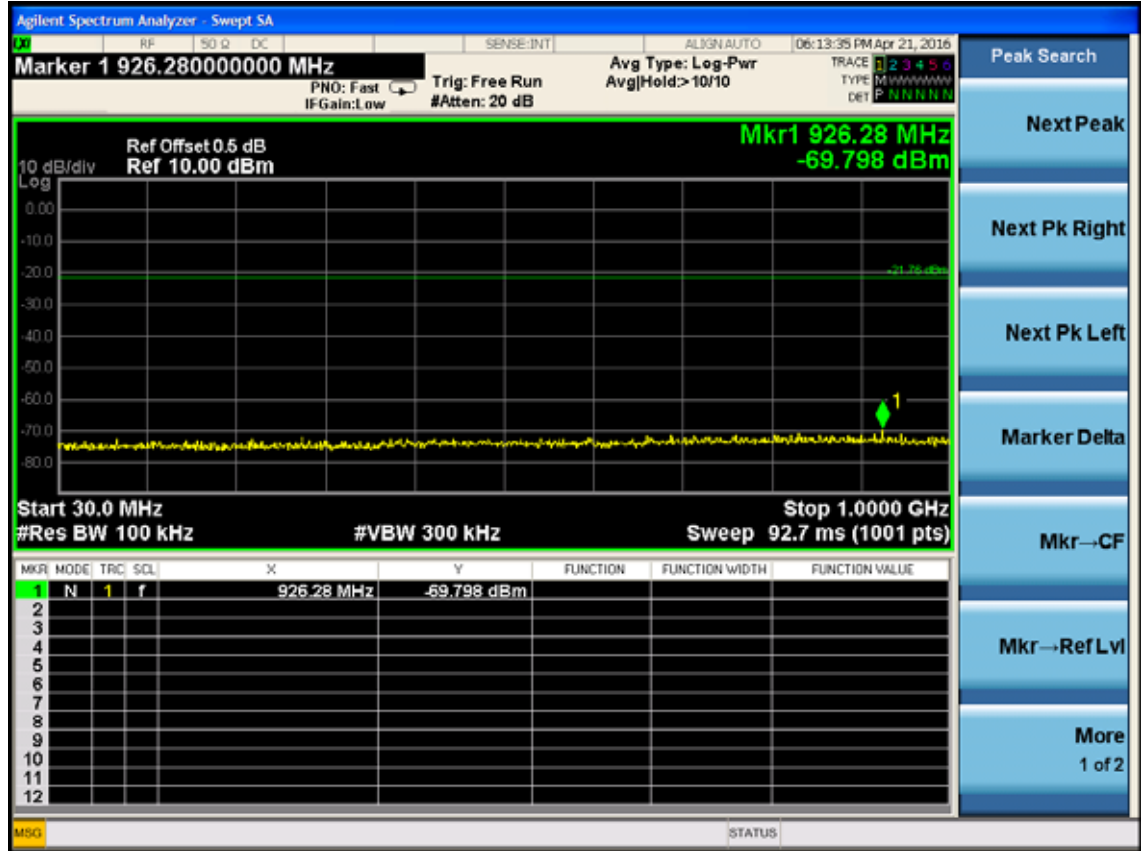
5.4. Test result

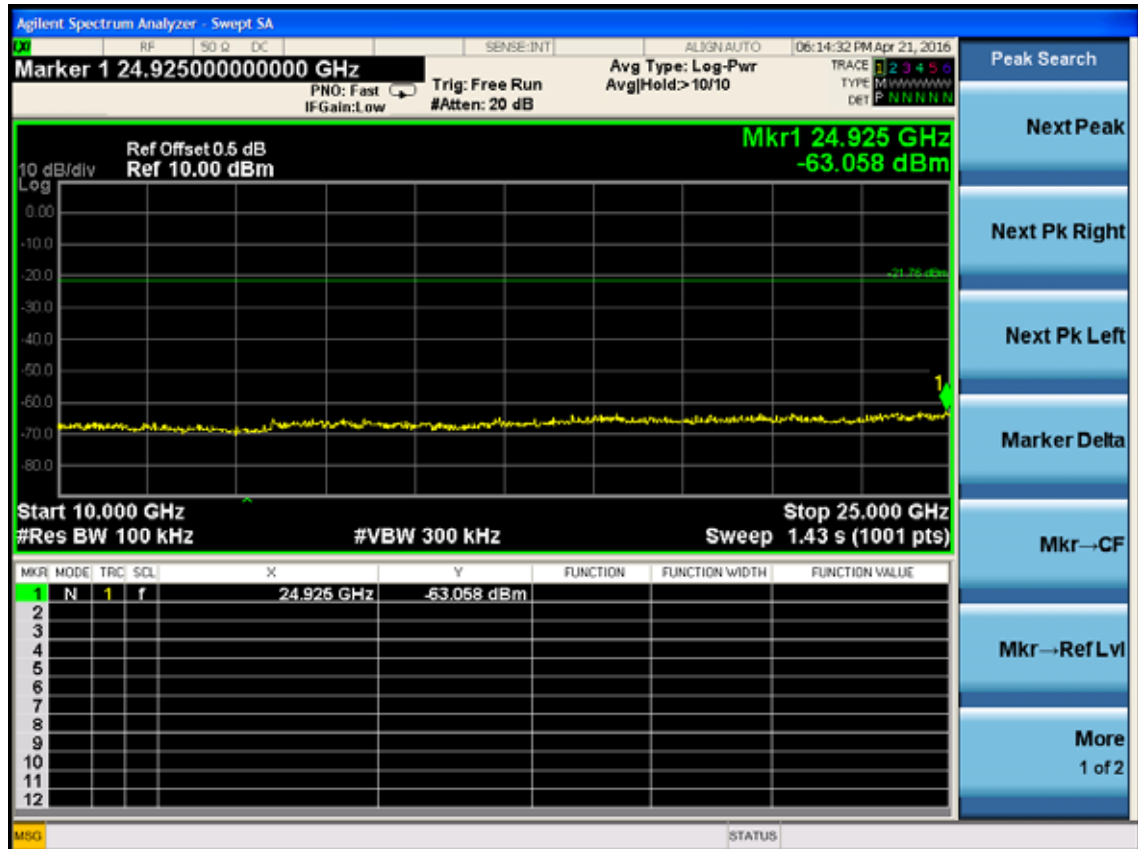
PASS (The testing data was attached in the next pages.)

Hopping Off

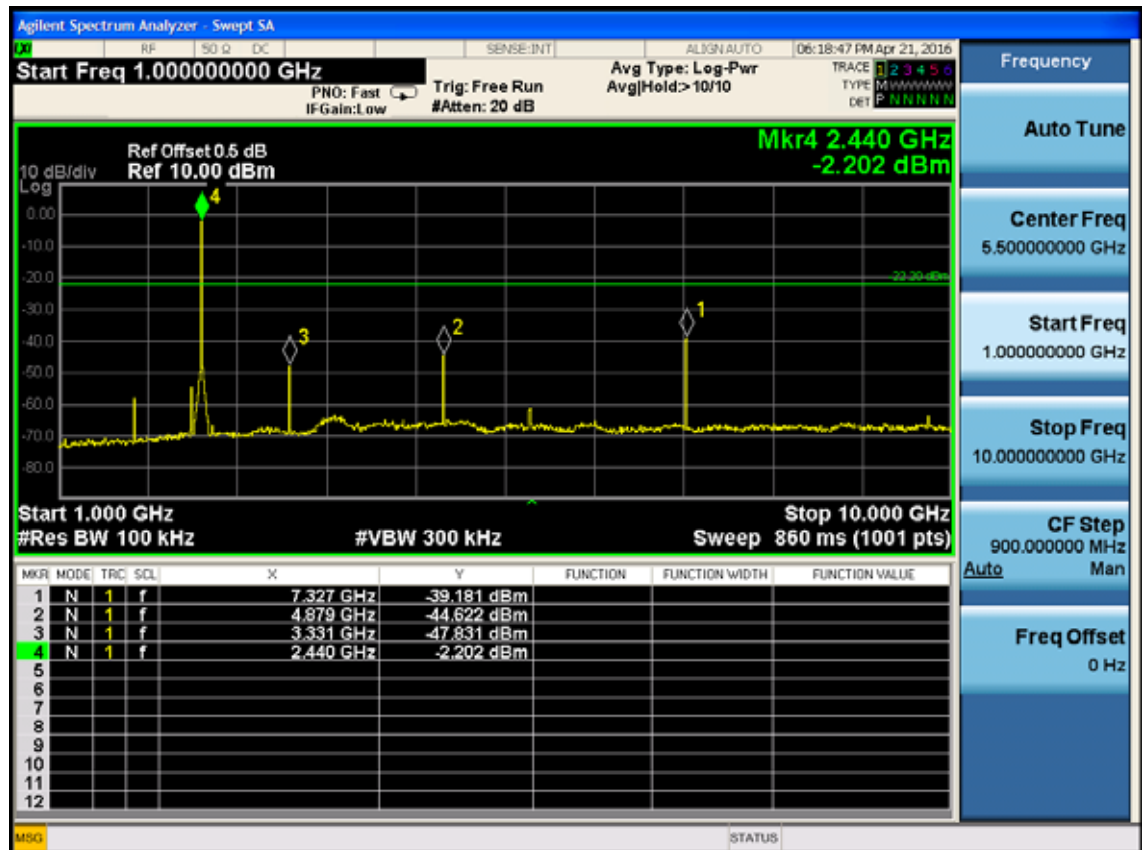
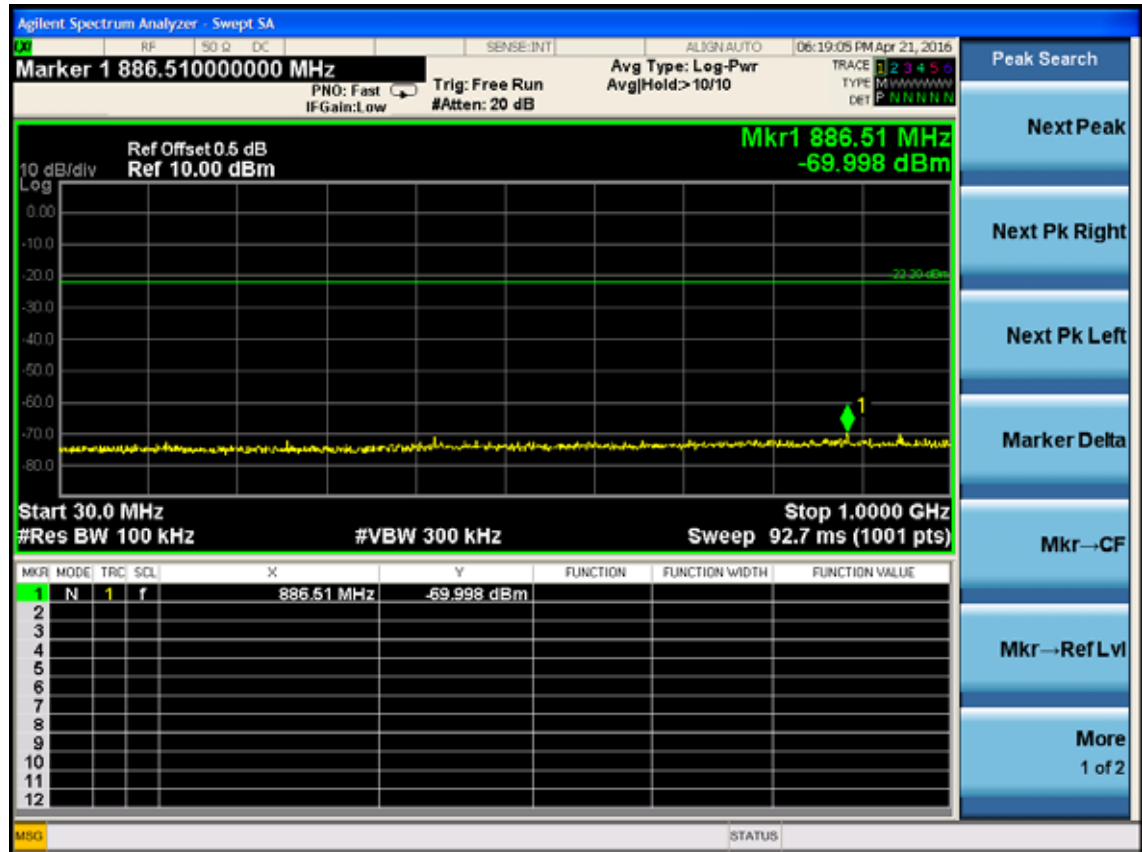
GFSK

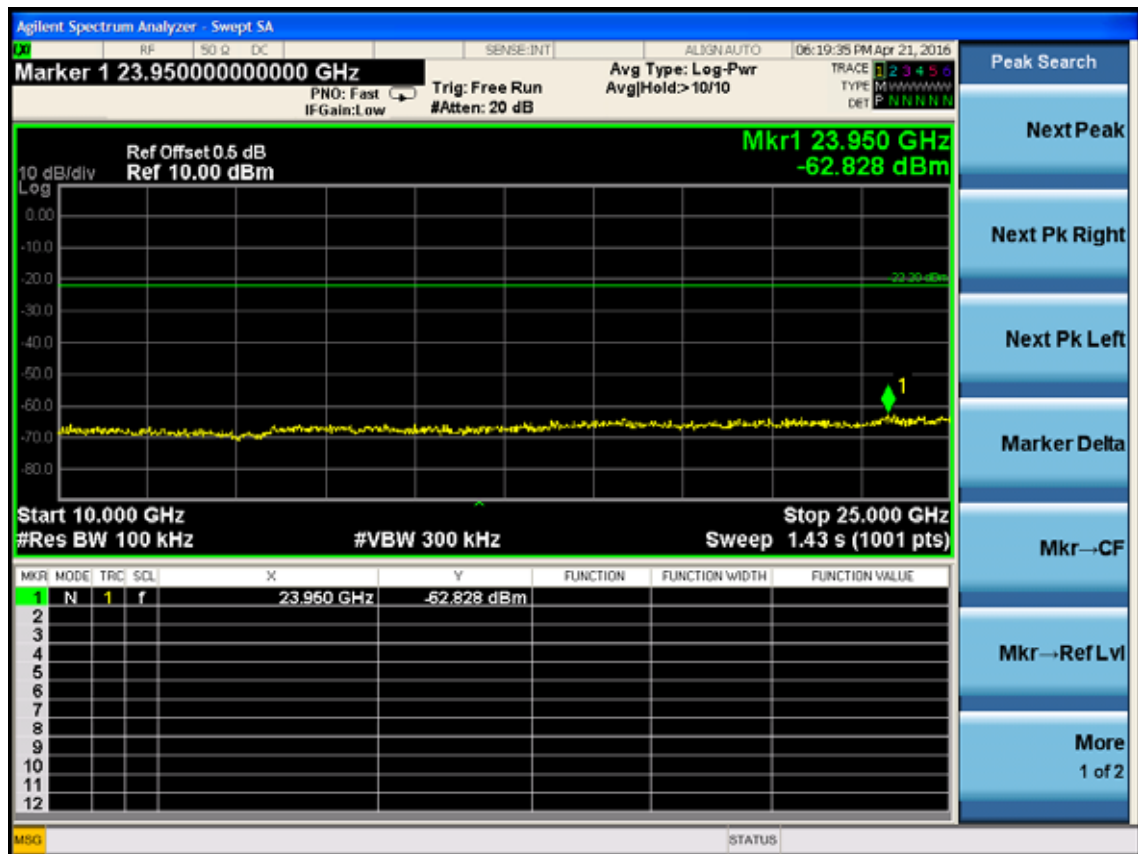
2402MHz



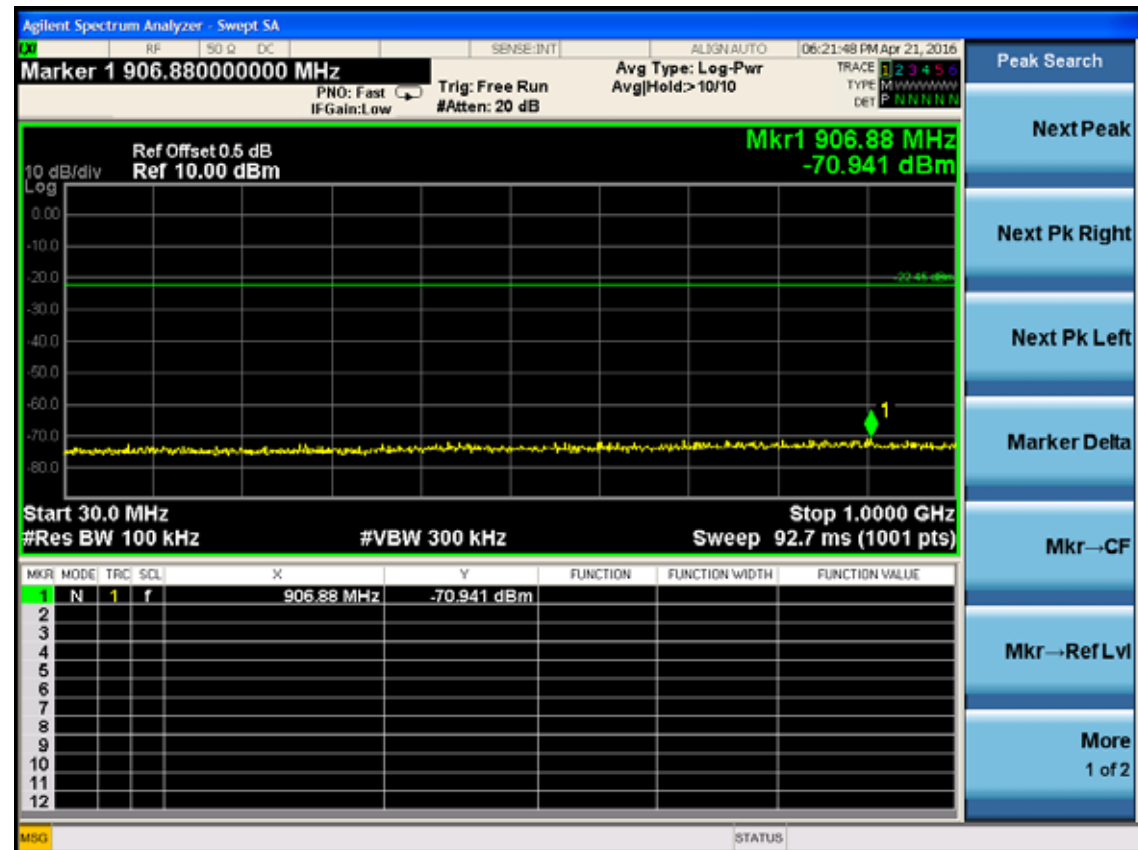


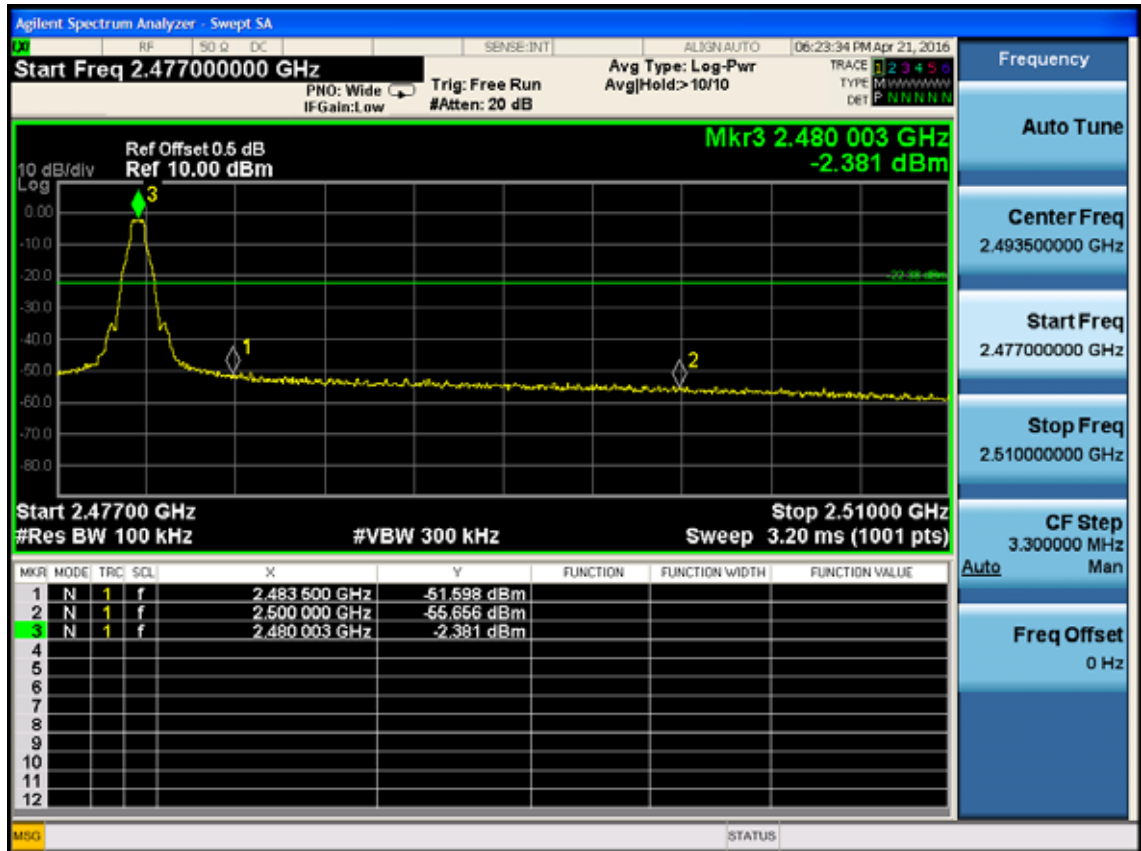
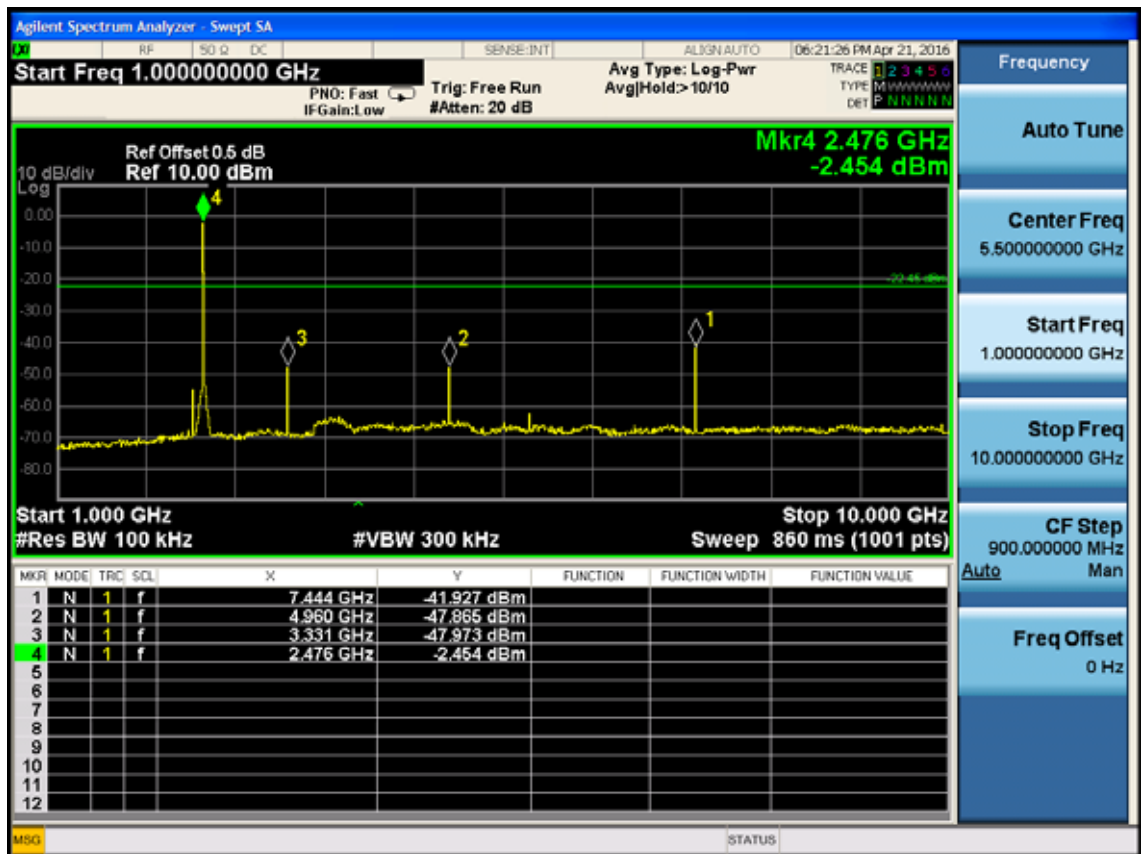
2441MHz

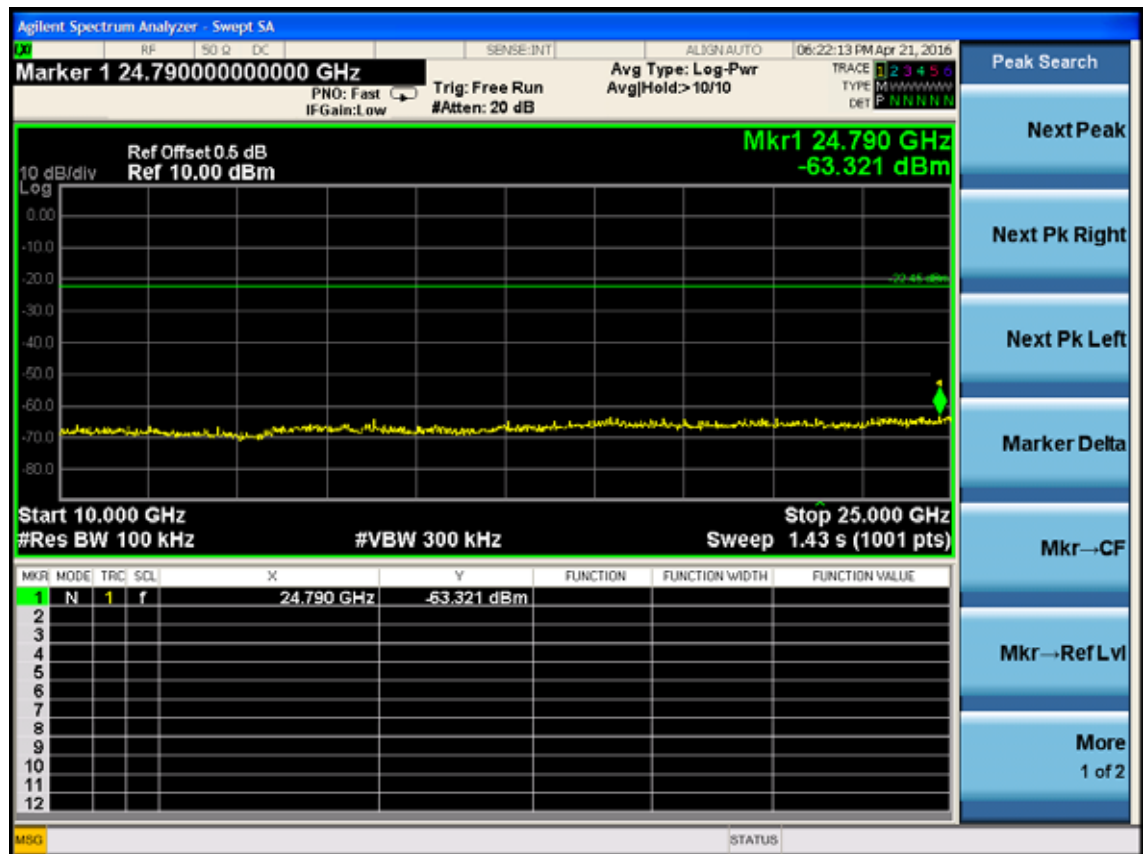




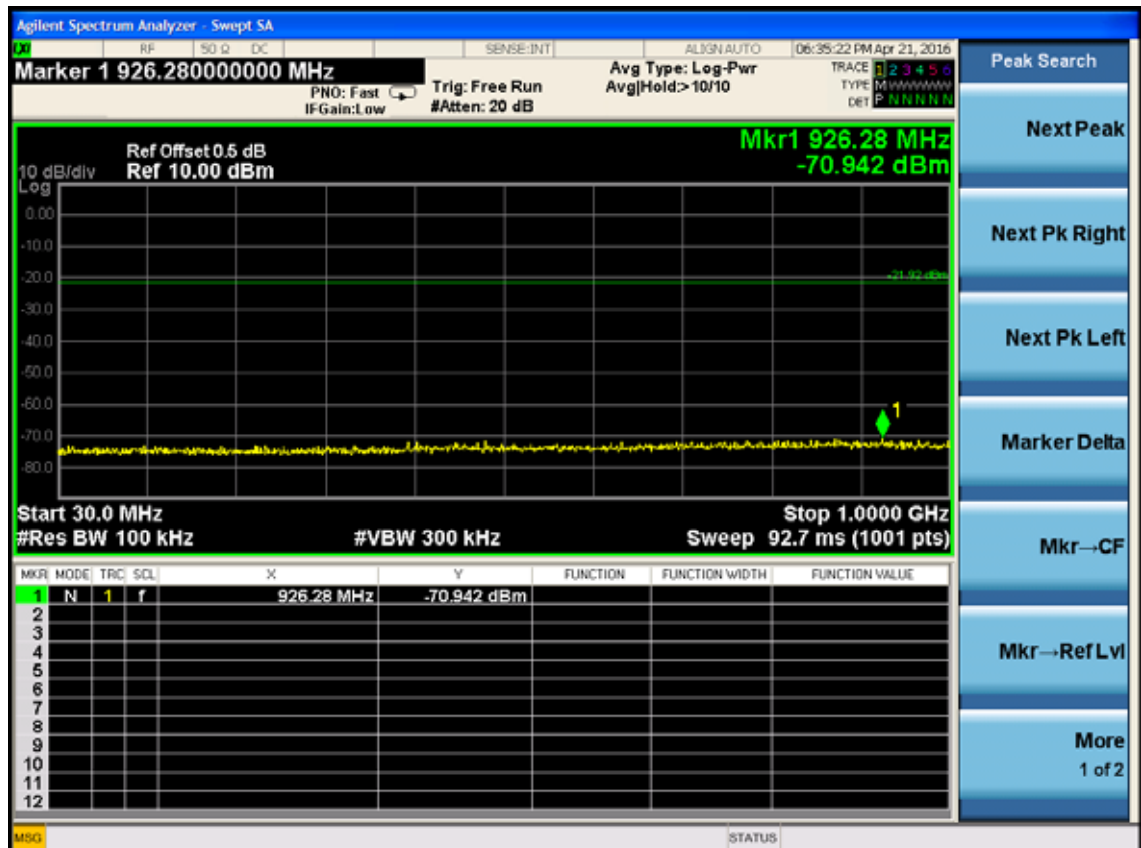
2480MHz

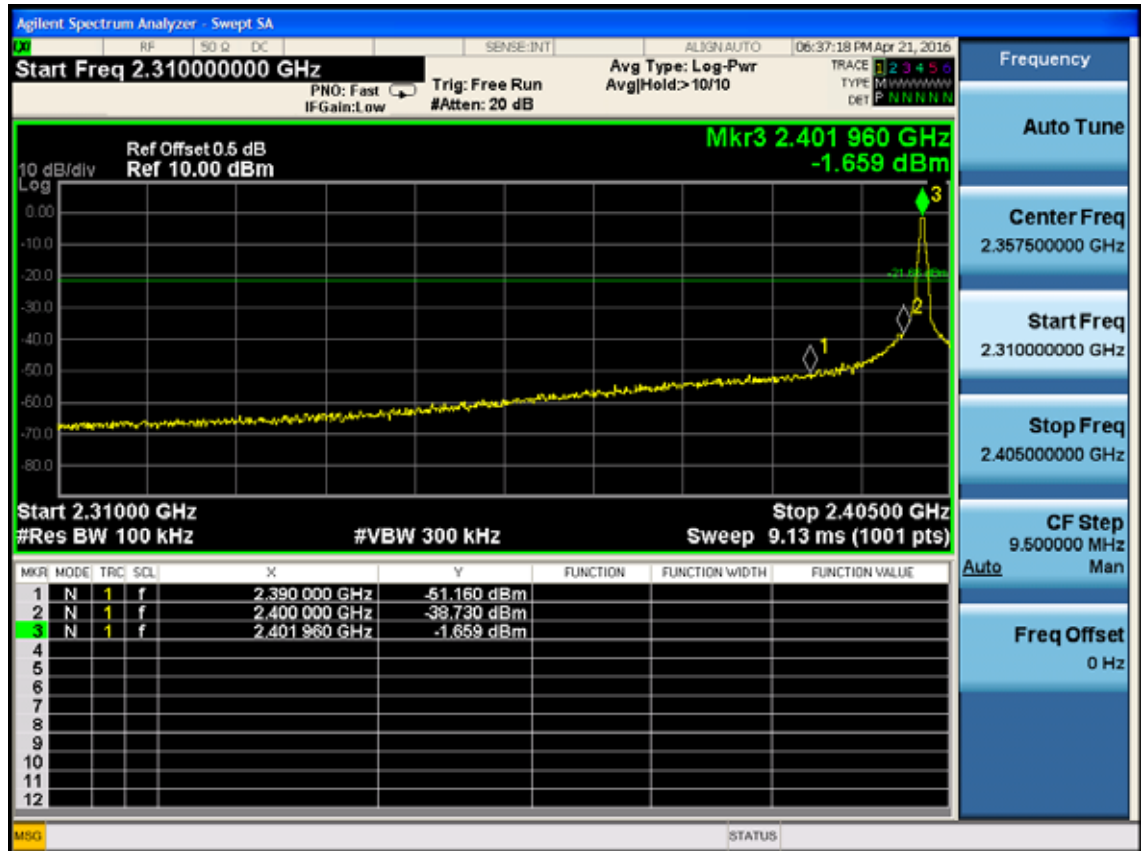
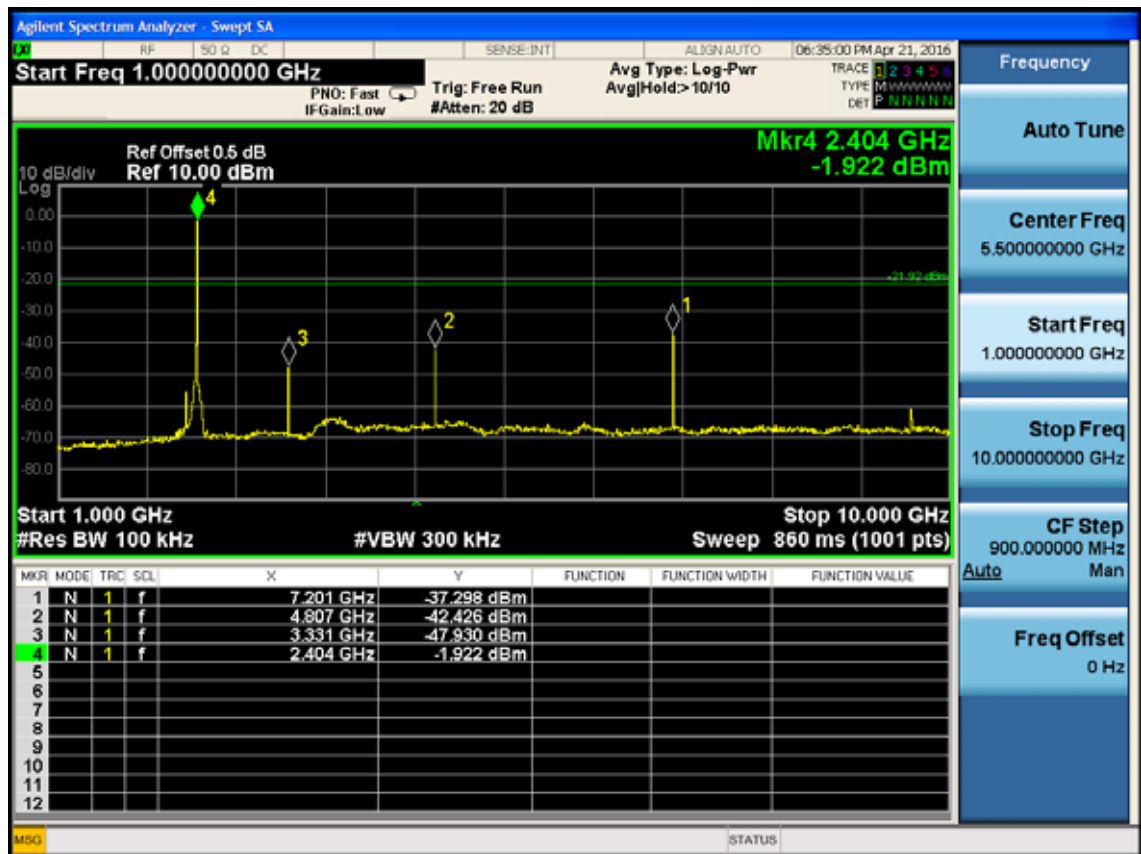


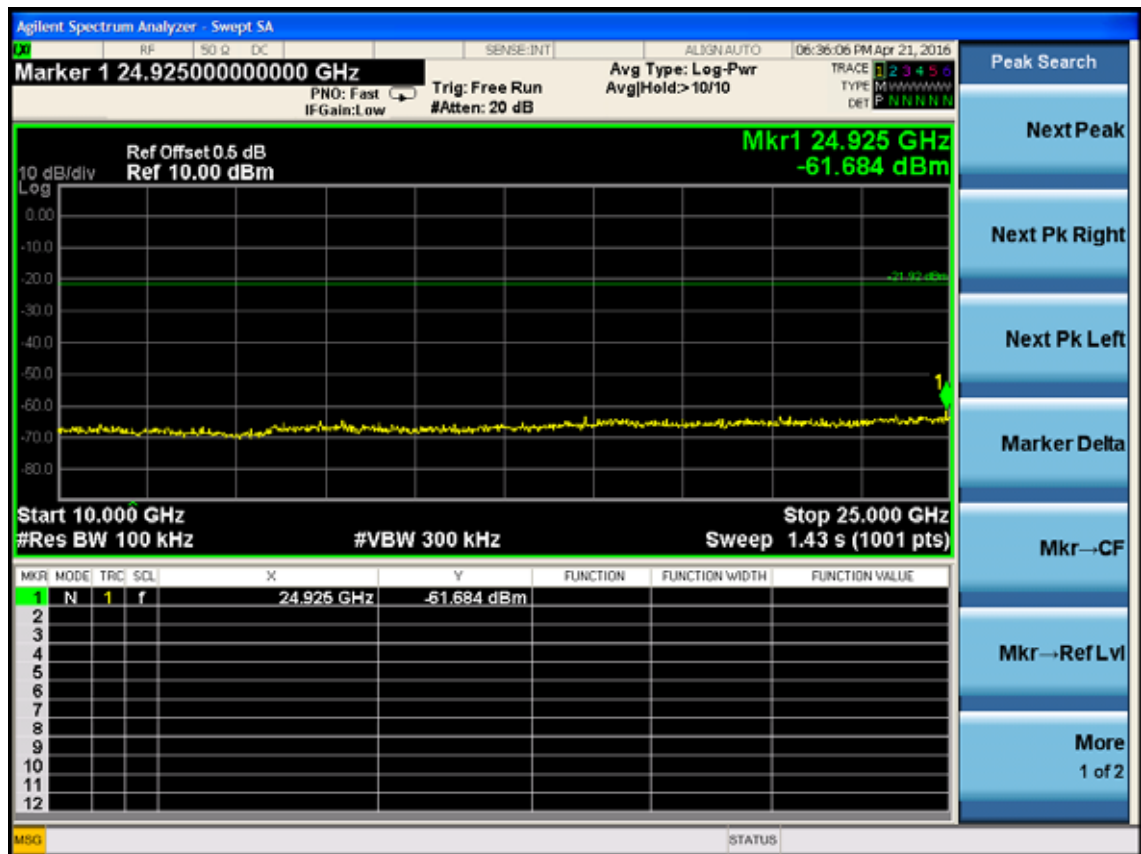




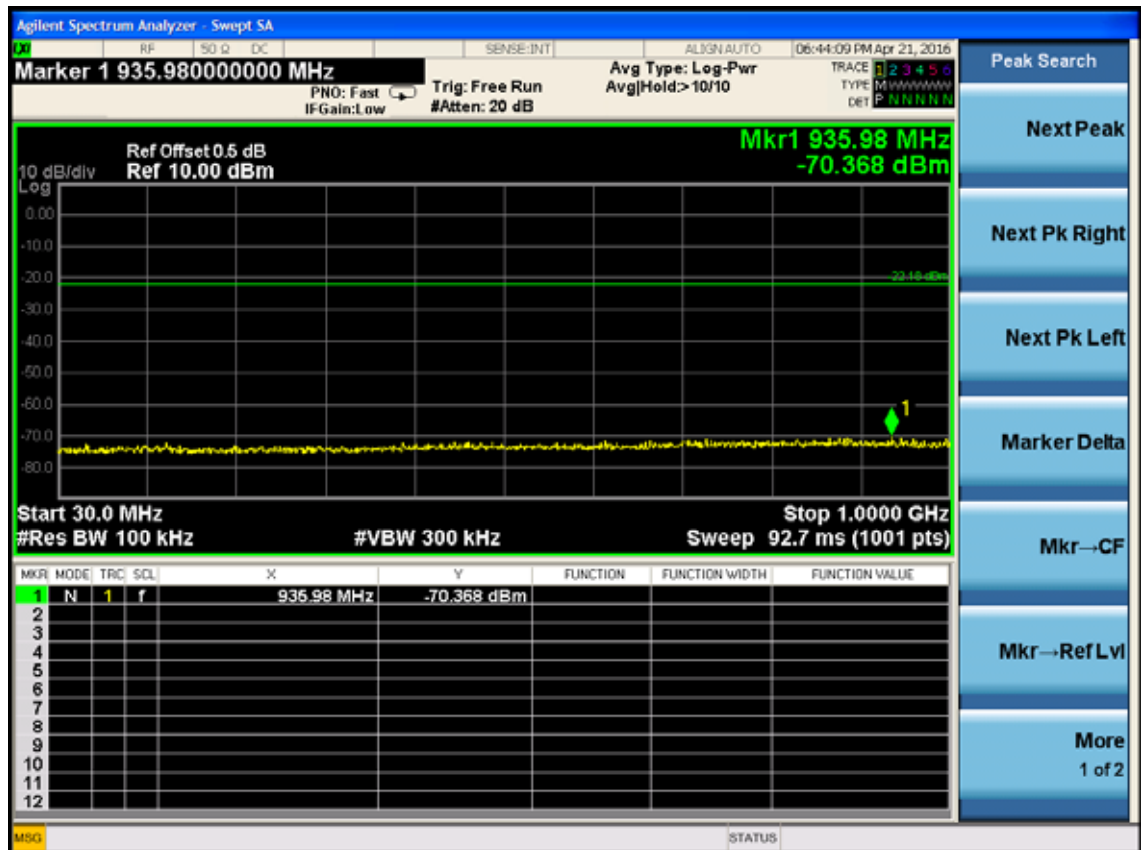
8-DPSK 2402MHz

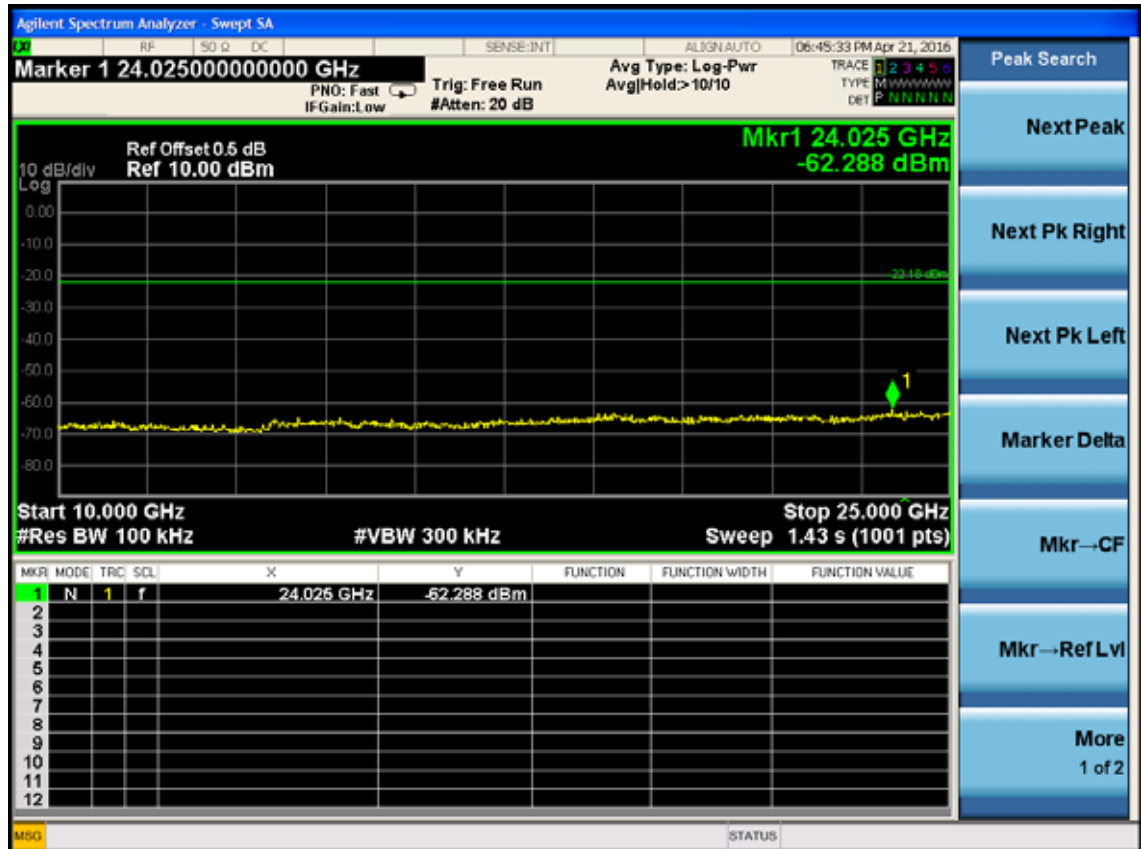
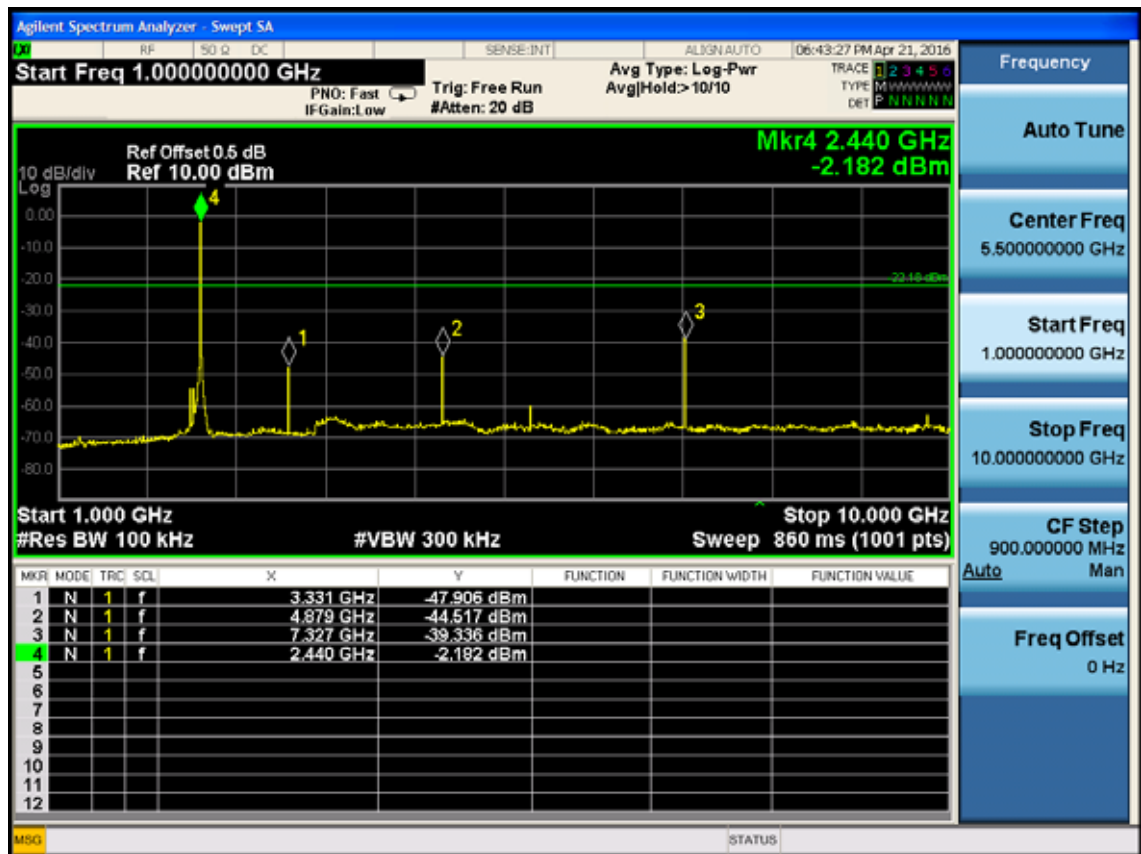




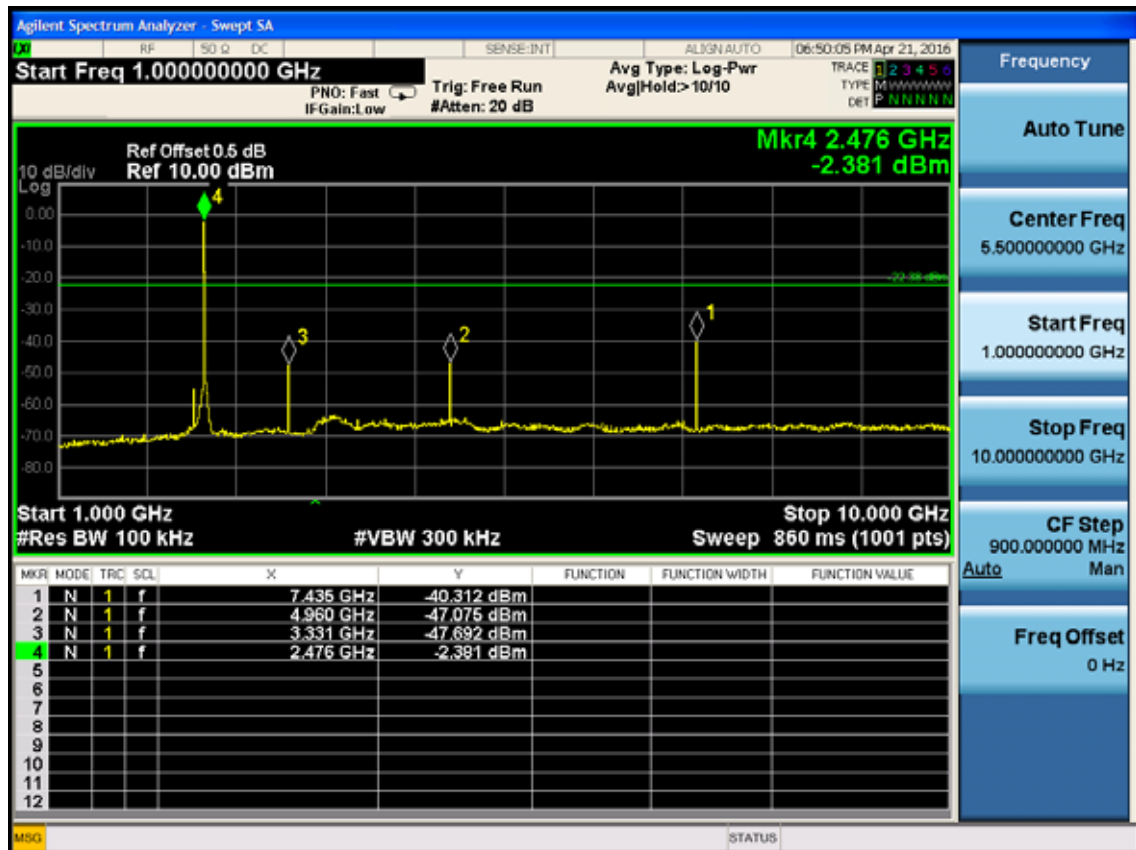
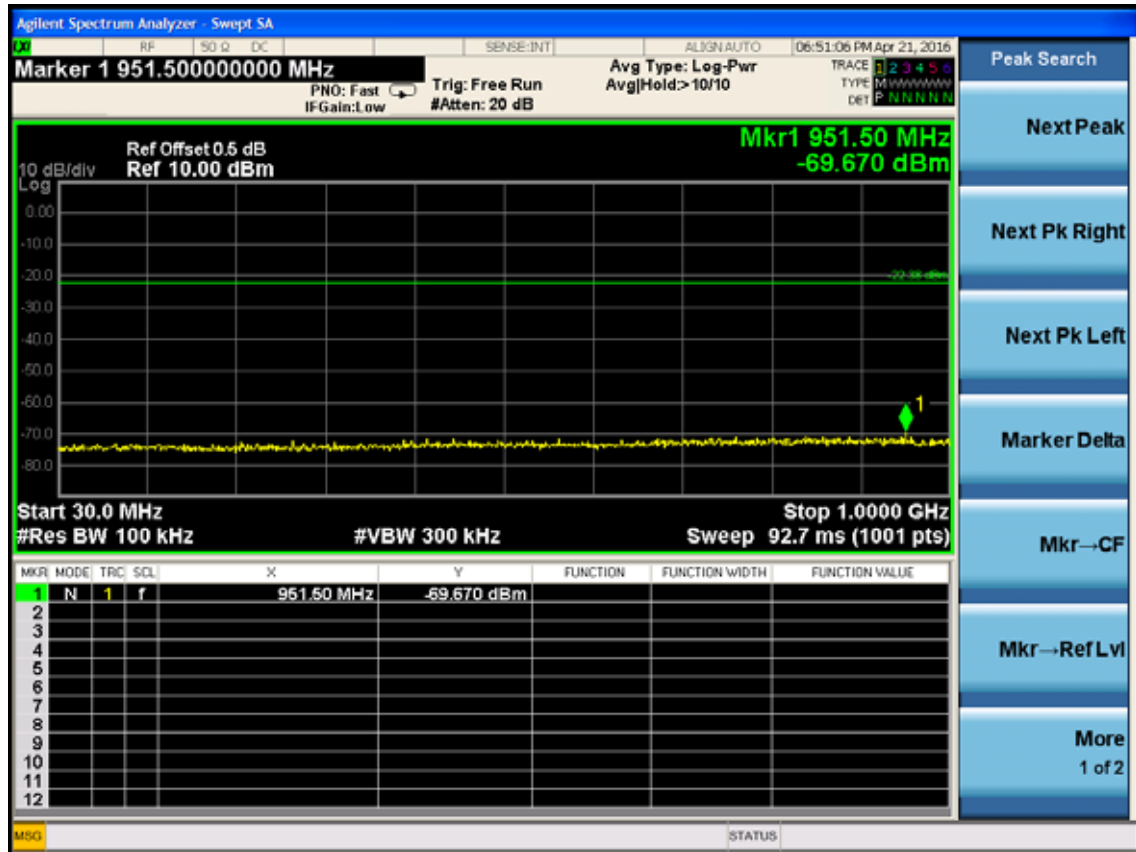


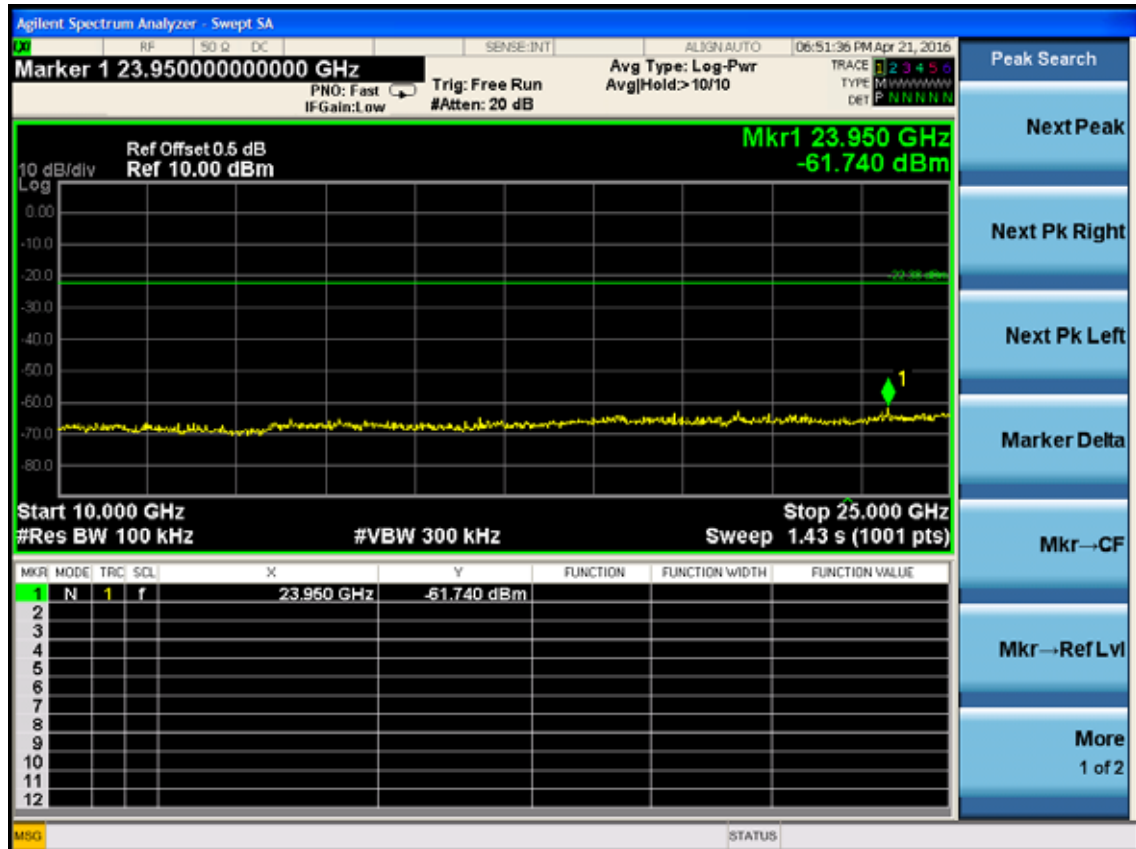
2441MHz



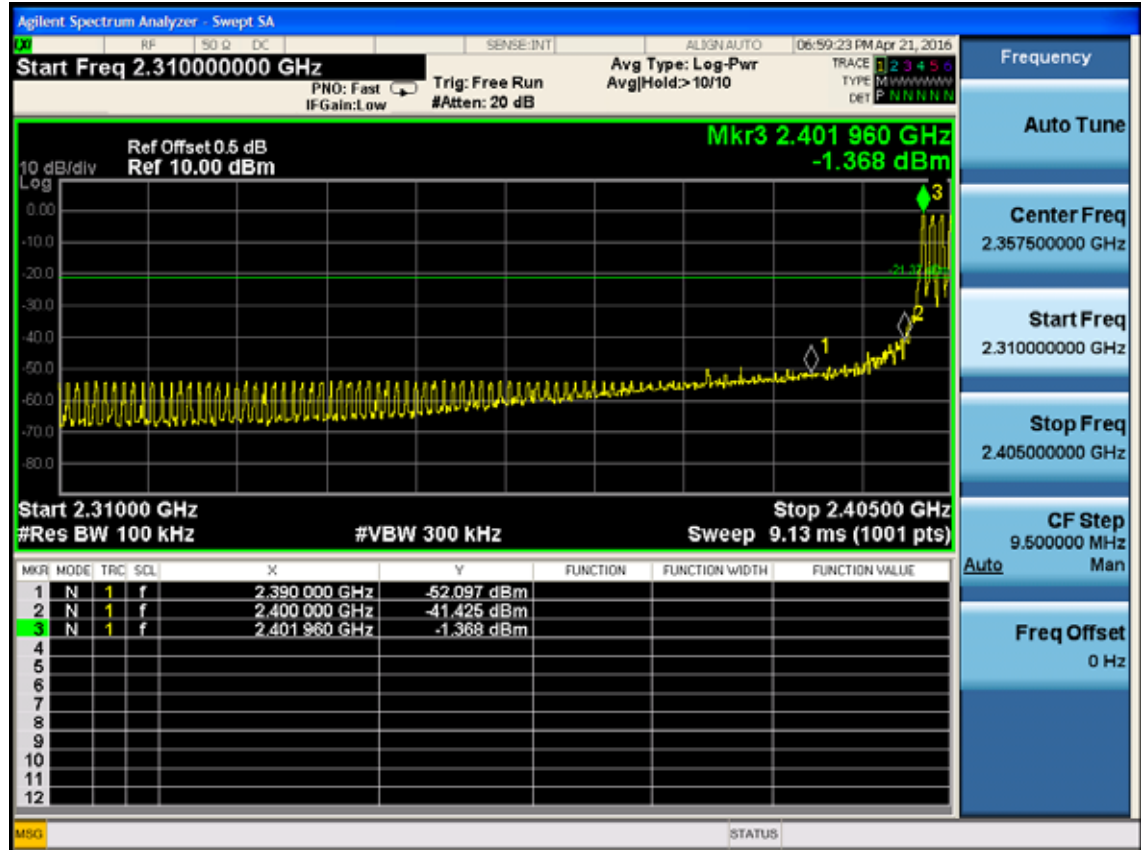


2480MHz

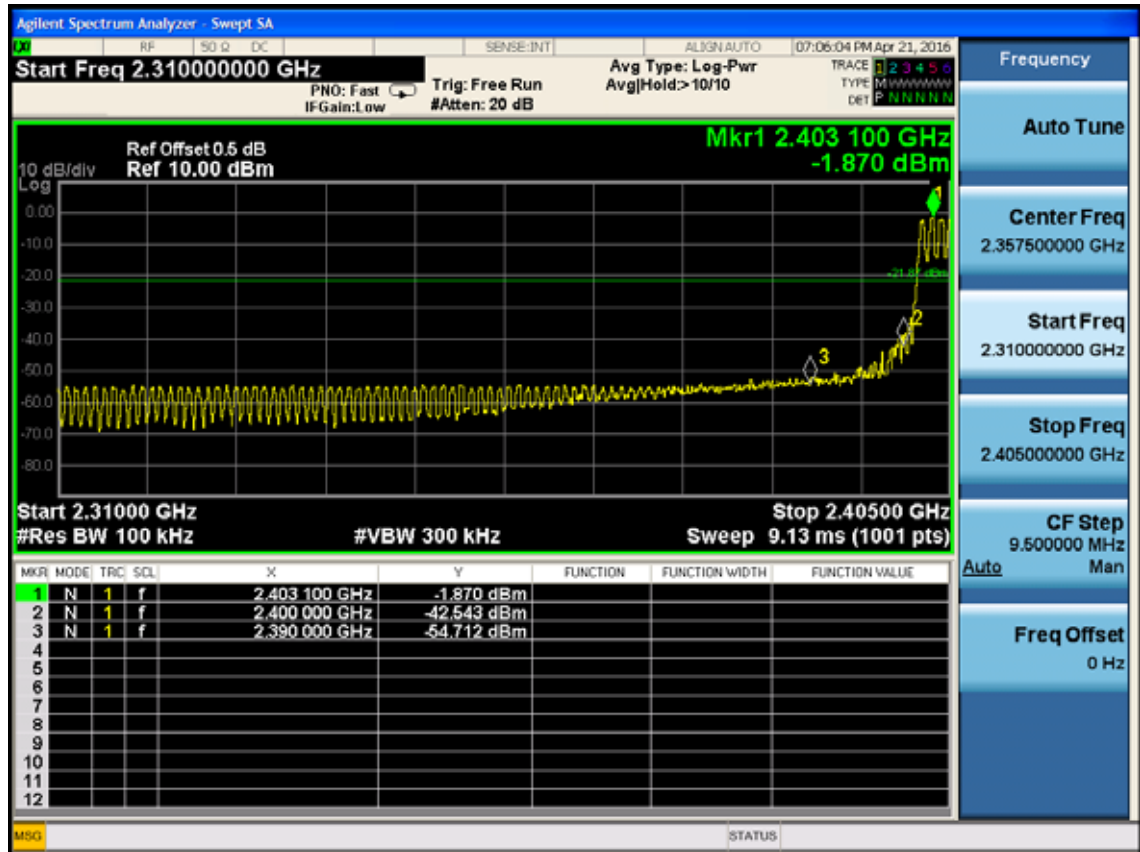




Hopping On GFSK



8-DPSK



6. CARRIER FREQUENCY SEPARATION TEST

6.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	N9030A	MY51380221	Oct.18,15	1 Year
2.	RF Cable	Marvelous Microwave Inc	SFL402105FLEX	NO.1	Oct.17,15	1 Year

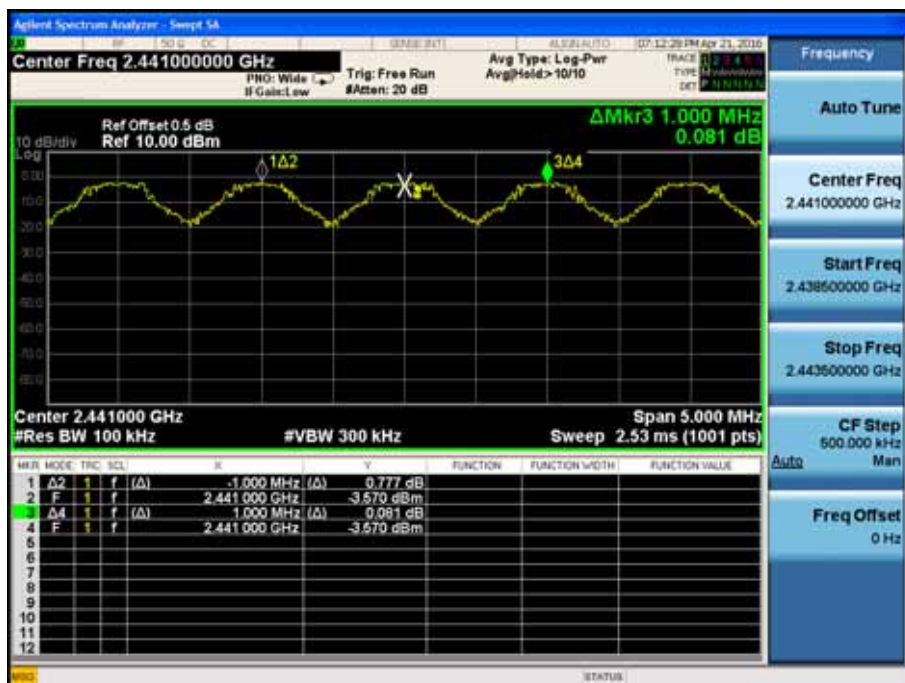
6.2. Limit

Frequency hopping systems shall have hopping channel carrier frequency separated by a minimum of 25kHz or the 20dB 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.

6.3. Test Results.

EUT: Mobile audio system wall mount unit		
M/N: AWM968		
Test date: 2016-04-21	Pressure: 101.2±1.0 kpa	Humidity: 53.3±3.0%
Tested by: Donjon_Huang	Test site: RF Site	Temperature : 22.5±0.6°C

Test Mode	Channel separation	Limit(kHz)	Conclusion
GFSK	1.0MHz	735.33	PASS
8-DPSK	1.0MHz	917.33	PASS



7. 20 DB BANDWIDTH TEST

7.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	N9030A	MY51380221	Oct.18,15	1 Year
2.	Attenuator	Agilent	8491B	MY39262165	Apr. 28,15	1 Year
3.	RF Cable	Marvelous Microwave Inc	SFL402105FLEX	NO.1	Oct.17.15	1 Year

7.2. Limit

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

7.3. Test Results

EUT: Mobile audio system wall mount unit		
M/N: AWM968		
Test date: 2016-04-25	Pressure: 101.2±1.0 kpa	Humidity: 53.3±3.0%
Tested by: Donjon_Huang	Test site: RF Site	Temperature : 22.5±0.6°C

Test Mode	Frequency (MHz)	20dB bandwidth (kHz)	Limit (kHz)
GFSK	2402	1099	N/A
	2441	1057	N/A
	2480	1103	N/A
8-DPSK	2402	1376	N/A
	2441	1371	N/A
	2480	1371	N/A
Conclusion : PASS			

GFSK

Test Frequency: 2402MHz



Test Frequency: 2441MHz

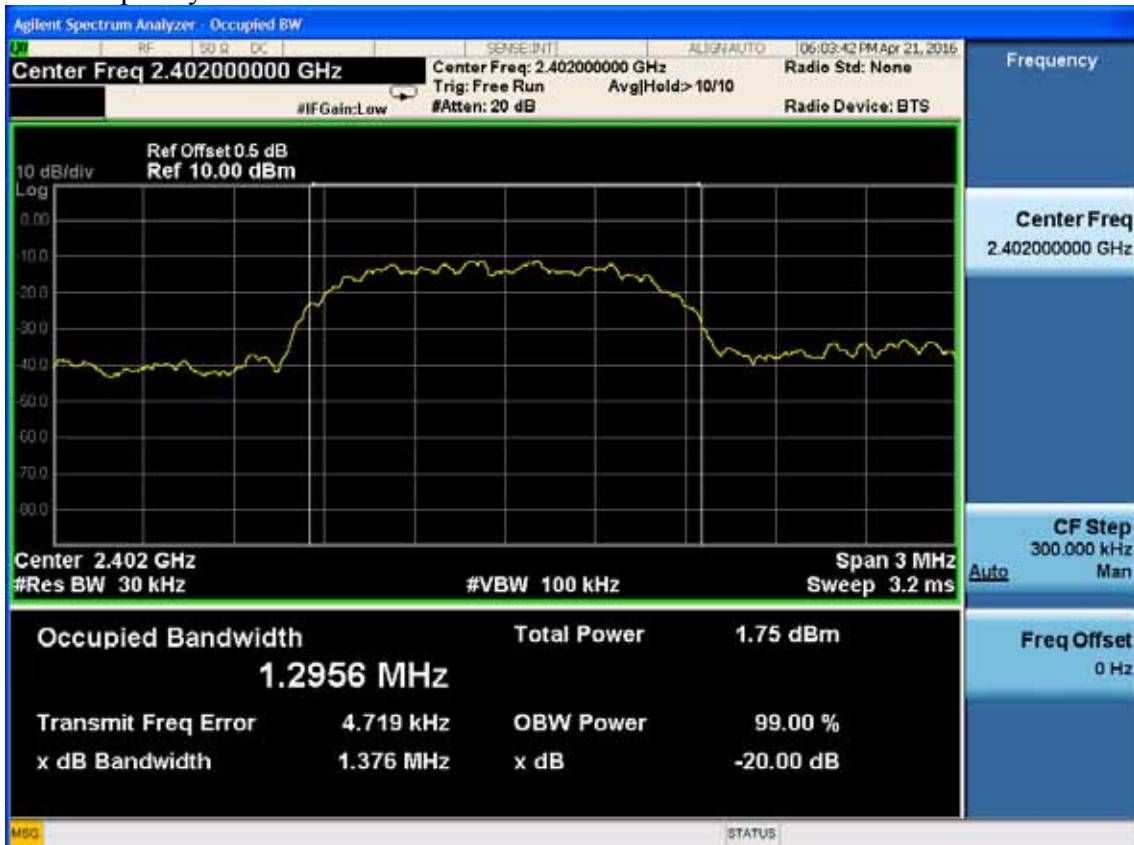


Test Frequency: 2480MHz



8-DPSK

Test Frequency: 2402MHz



Test Frequency: 2441MHz



Test Frequency: 2480MHz



8. NUMBER OF HOPPING FREQUENCY TEST

8.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	N9030A	MY53311015	Oct.18,15	1 Year
2.	RF Cable	Marvelous Microwave Inc	SFL402105FLEX	NO.1	Oct.17,15	1 Year

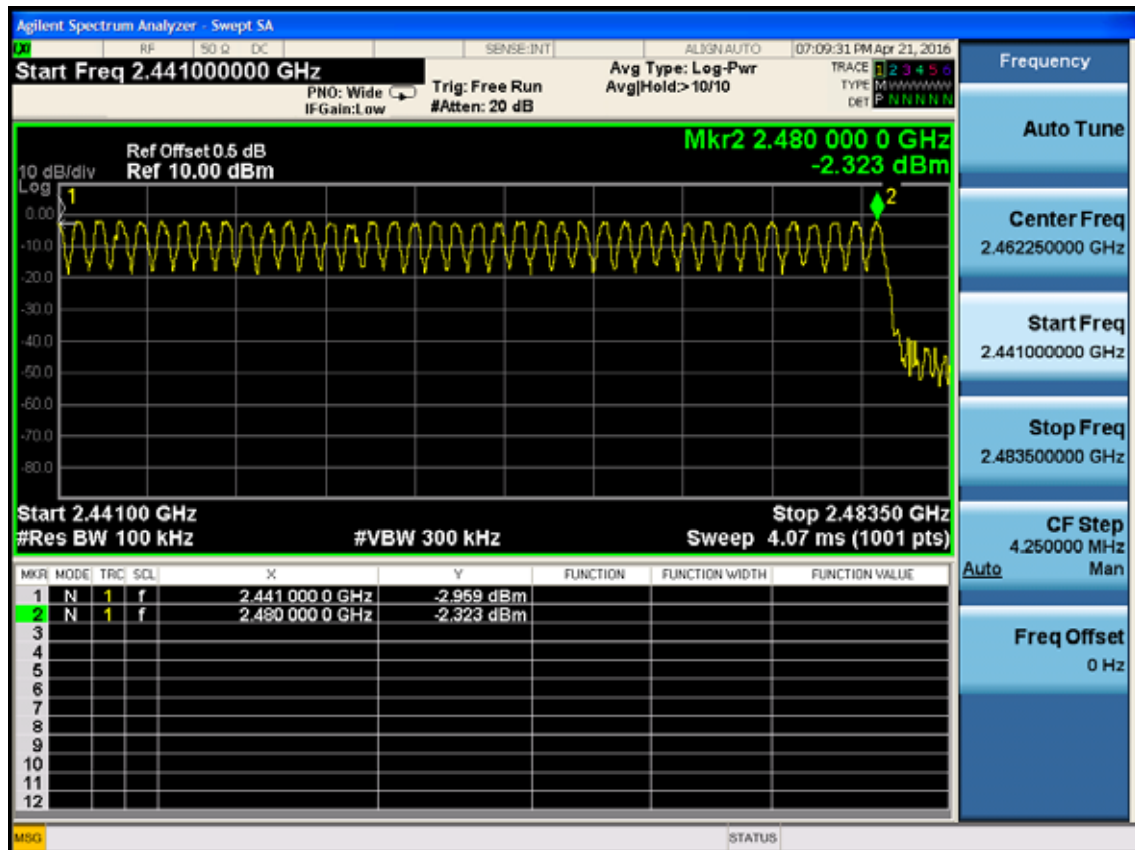
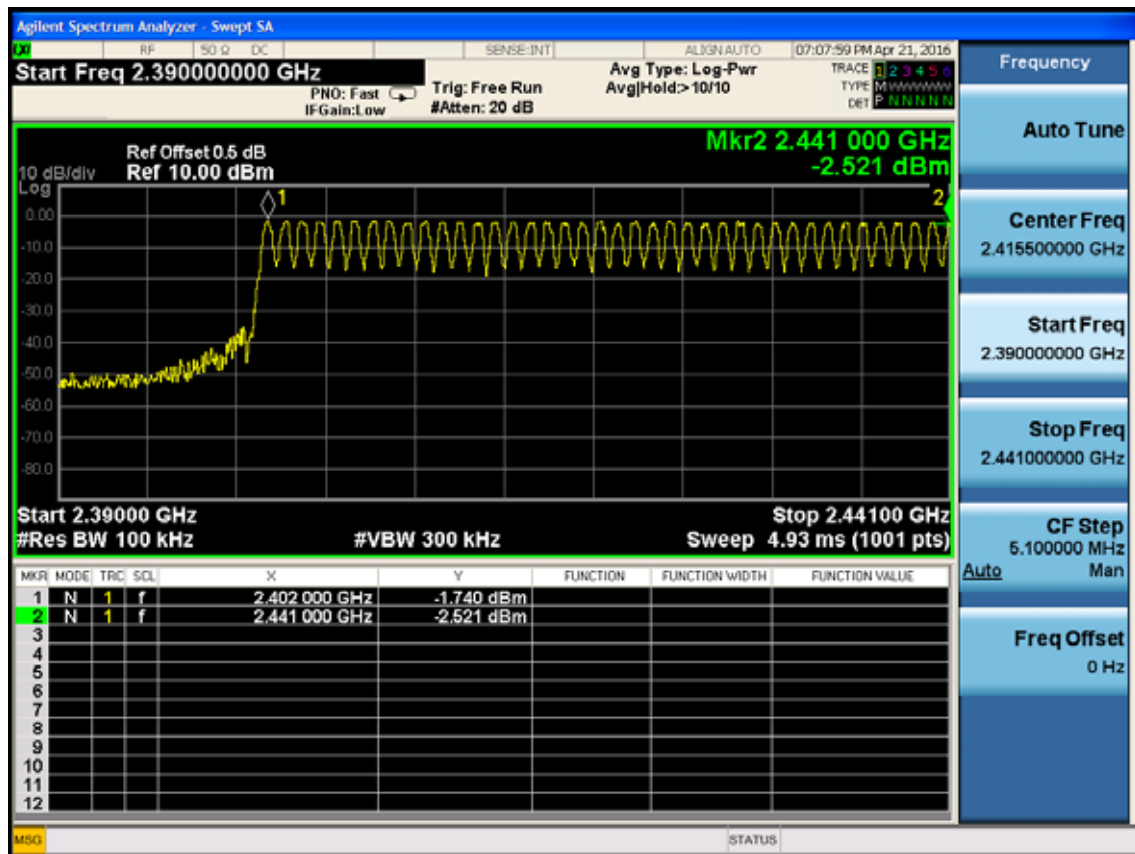
8.2. Limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels

8.3. Test Results

EUT: Mobile audio system wall mount unit		
M/N: AWM968		
Test date: 2016-04-25	Pressure: 101.2±1.0 kpa	Humidity: 53.3±3.0%
Tested by: Donjon_Huang	Test site: RF Site	Temperature : 22.5±0.6°C

Test Mode	Number of channel	Limit	Conclusion
8-DPSK	79	≥15	PASS
GFSK	79	≥15	PASS



9. DWELL TIME

9.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	N9030A	MY51380221	Oct.18,15	1 Year
2.	RF Cable	Marvelous Microwave Inc	SFL402105FLEX	NO.1	Oct.17,15	1 Year

9.2. Limit

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.

9.3. Test Results

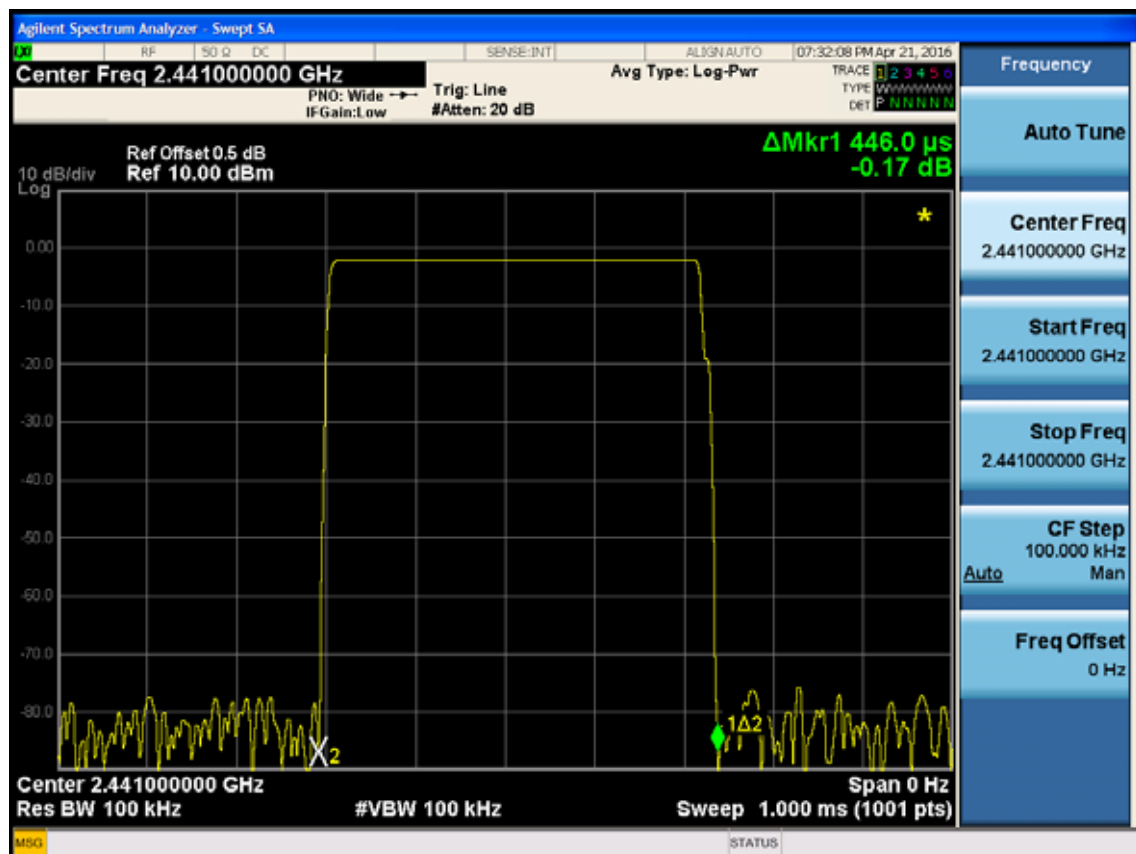
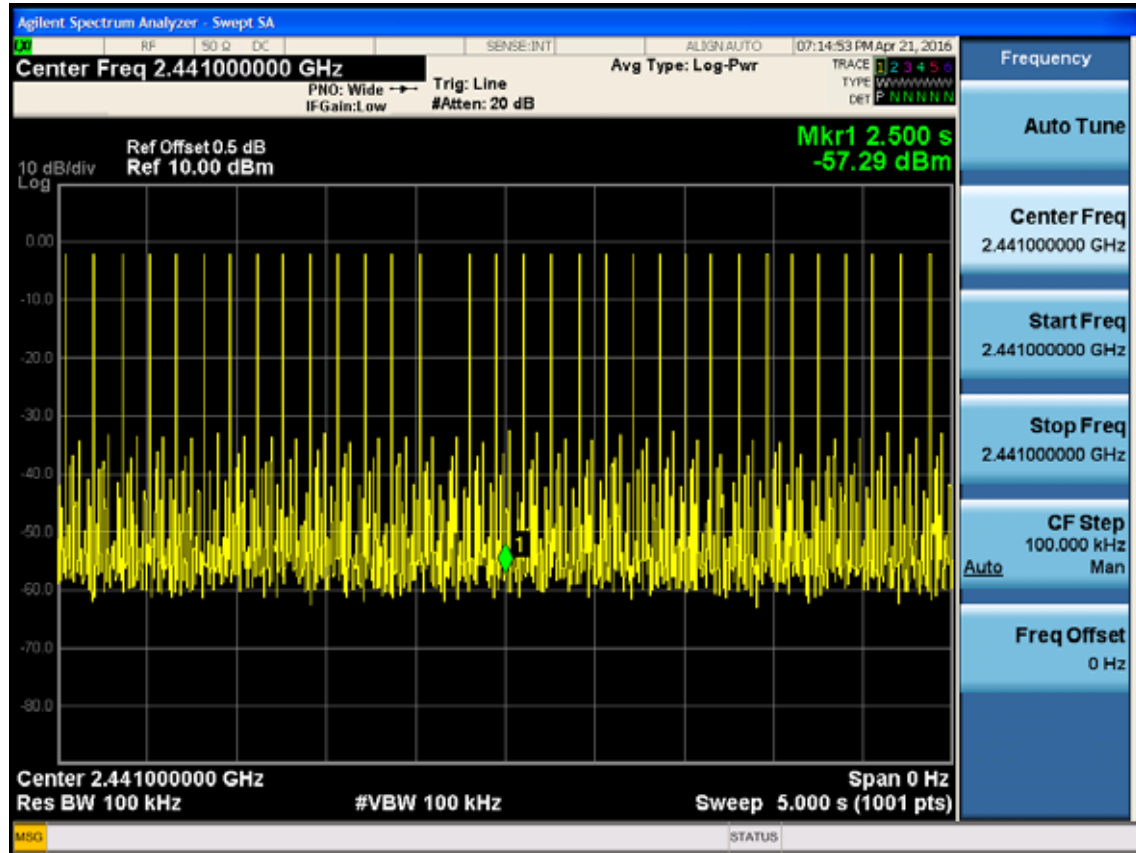
EUT: Mobile audio system wall mount unit		
M/N: AWM968		
Test date: 2016-04-21	Pressure: 101.2±1.0 kpa	Humidity: 53.3±3.0%
Tested by: Donjon_Huang	Test site: RF Site	Temperature : 22.5±0.6°C

Mode		dwel time	Limit	Conclusion
GFSK	DH1	32hops/5s*0.4*79chanel*0.446ms =90.199ms	<400ms	PASS
	DH3	14hops/5s*0.4*79chanel*1.731ms =153.159ms	<400ms	PASS
	DH5	13hops/5s*0.4*79chanel*3.170ms =260.447ms	<400ms	PASS
8-DPSK	3-DH1	33hops/5s*0.4*79chanel*0.414ms =86.344ms	<400ms	PASS
	3-DH3	14hops/5s*0.4*79chanel*1.695ms =149.974ms	<400ms	PASS
	3-DH5	13hops/5s*0.4*79chanel*3.325ms =273.182ms	<400ms	PASS

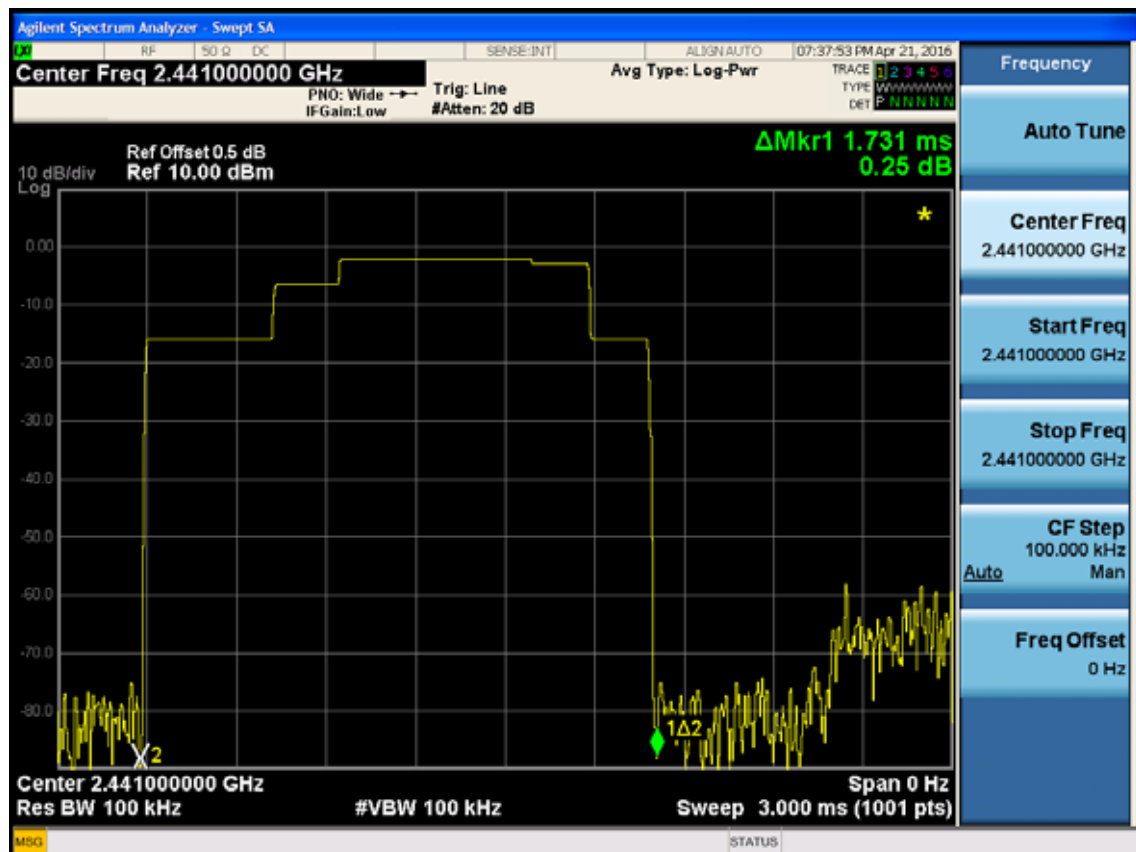
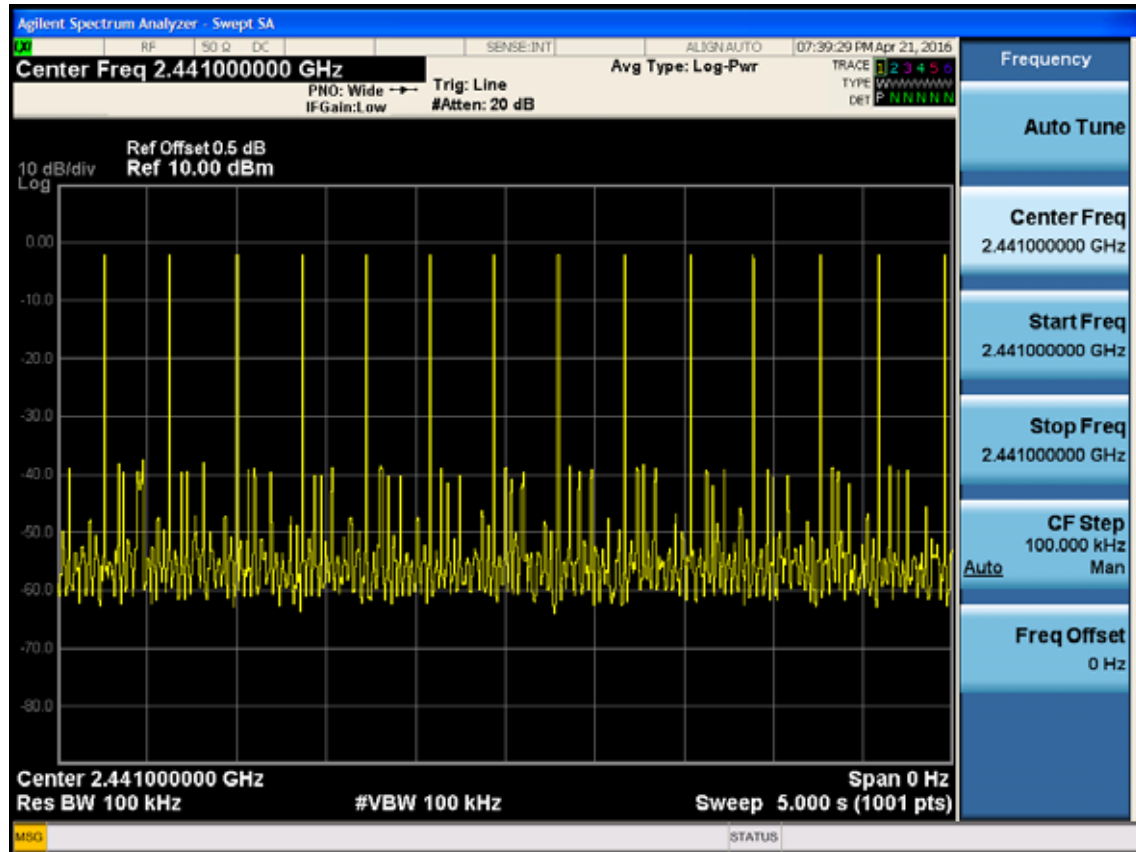
Note: All the lower levels were signal from receiver's, and should not considered in here.

GFSK

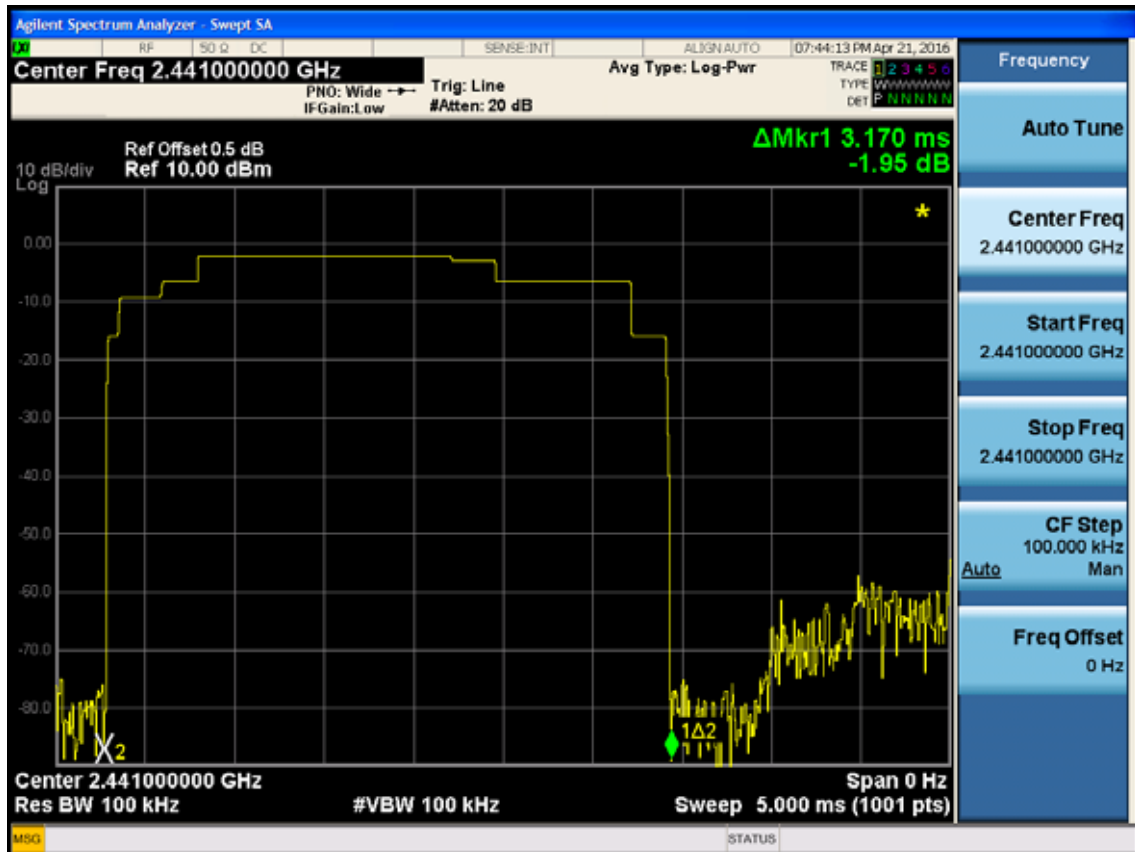
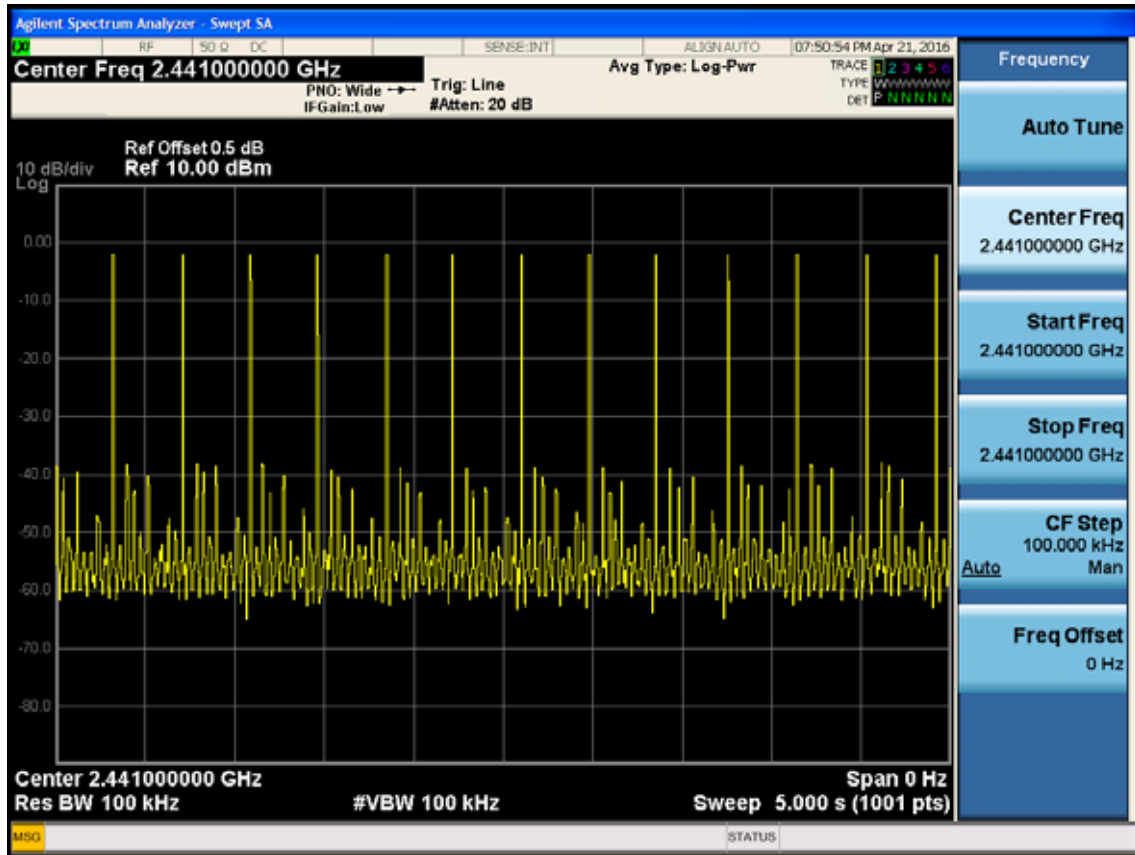
DH 1



DH 3

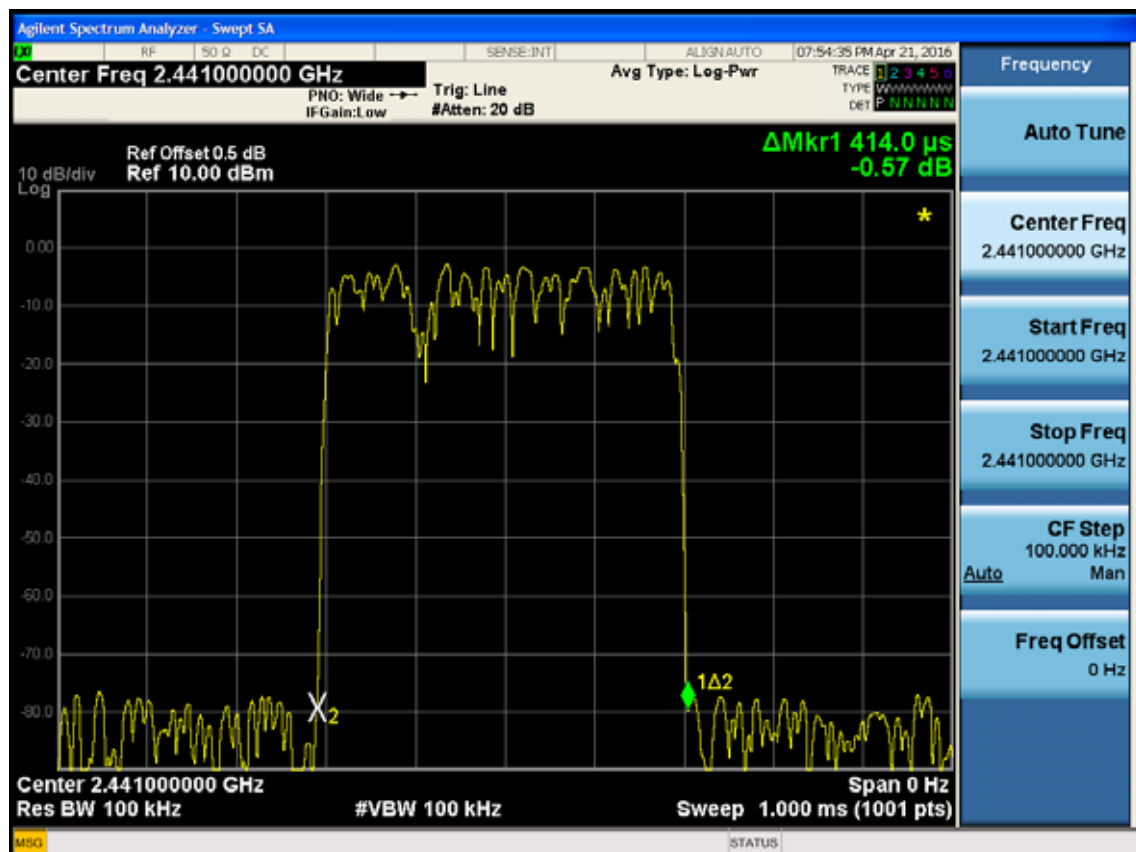
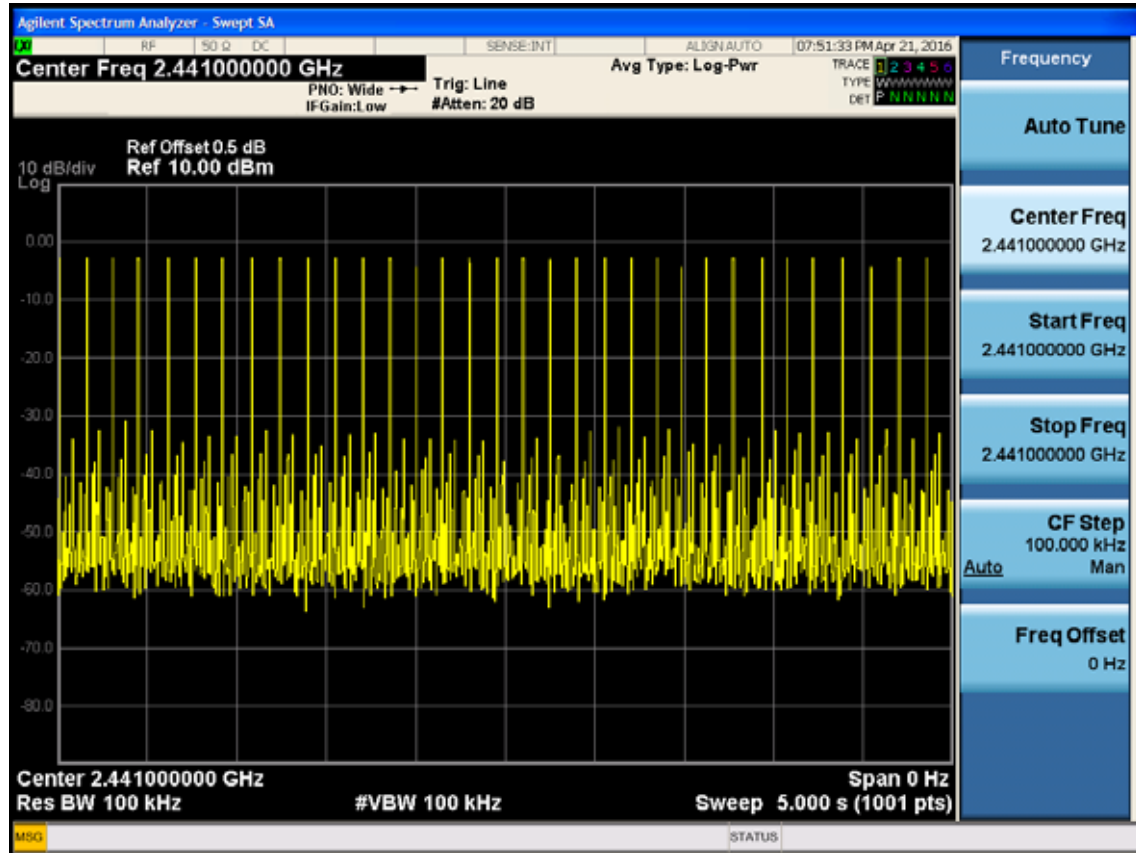


DH 5

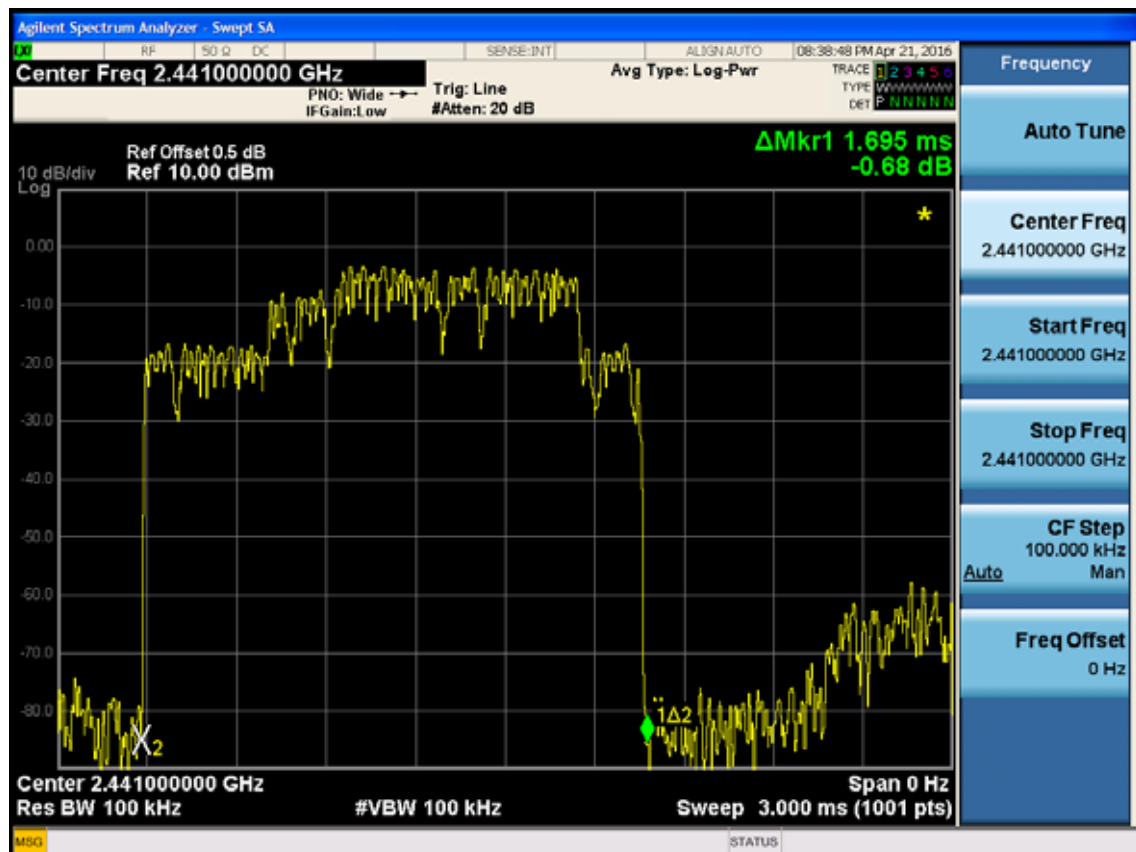
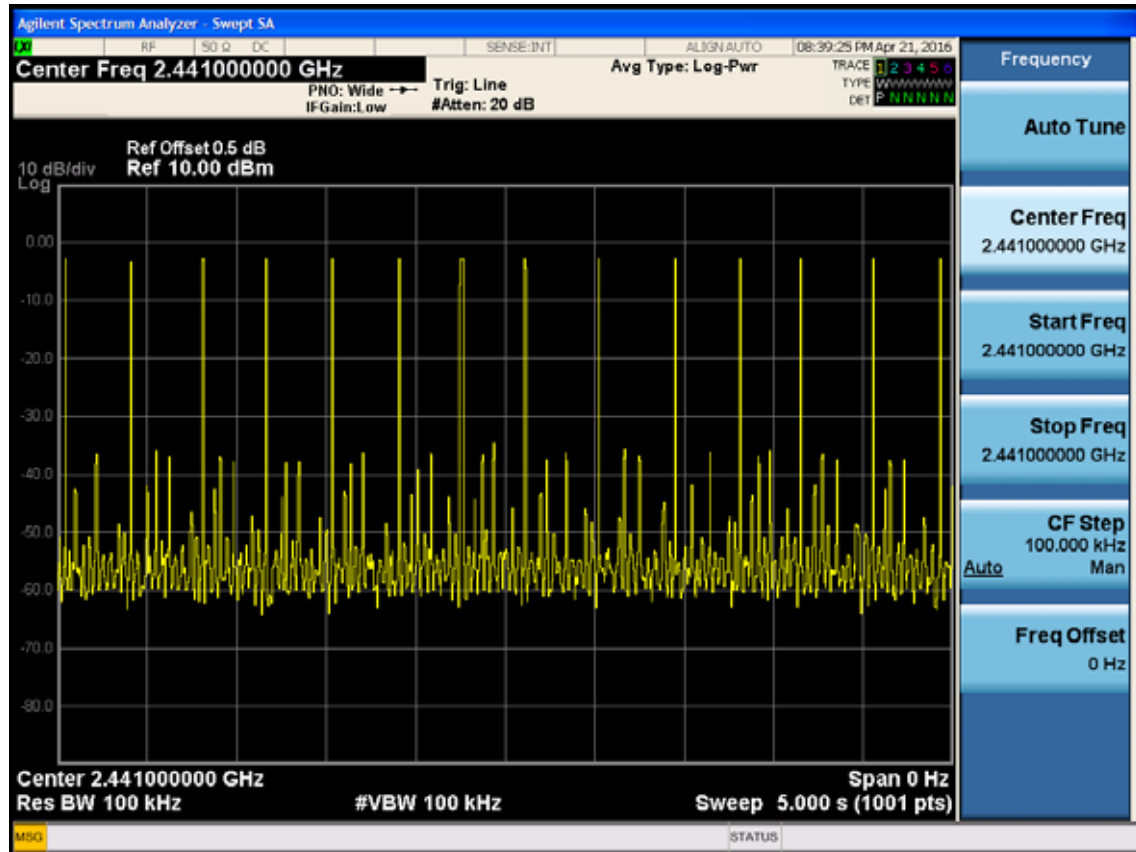


8-DPSK

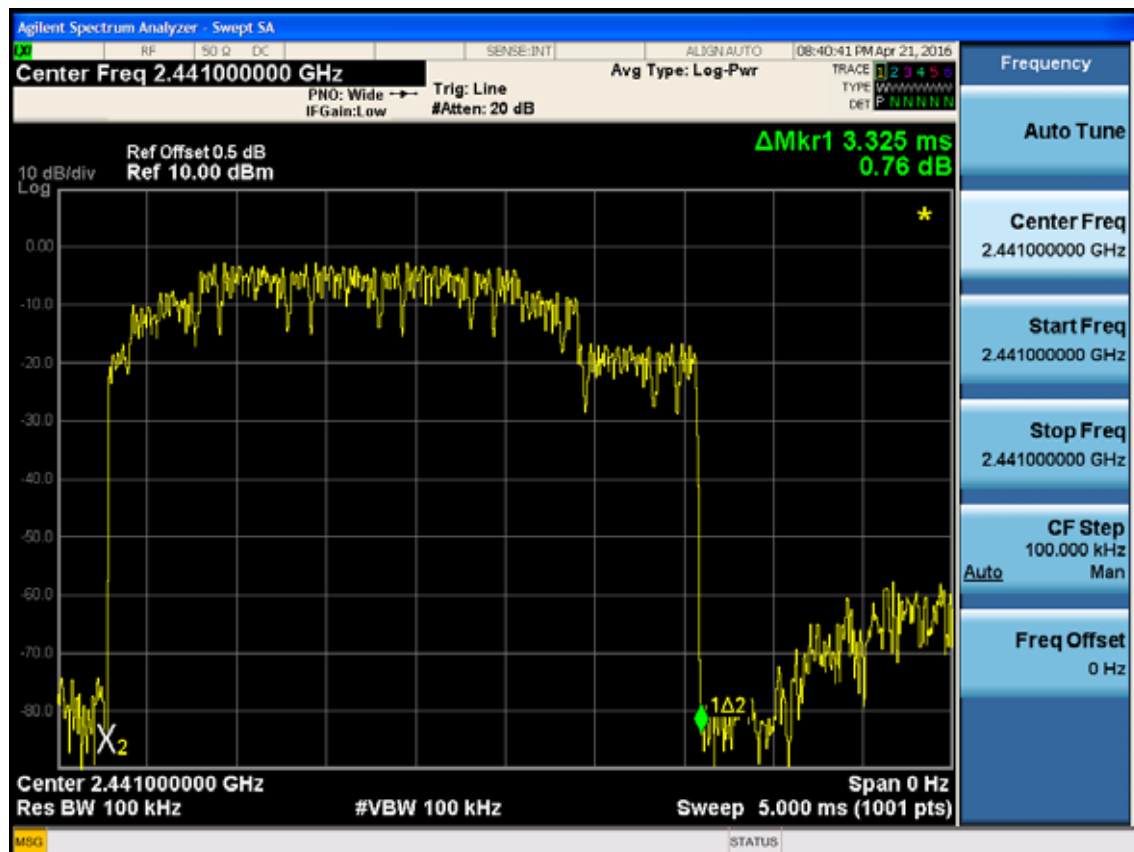
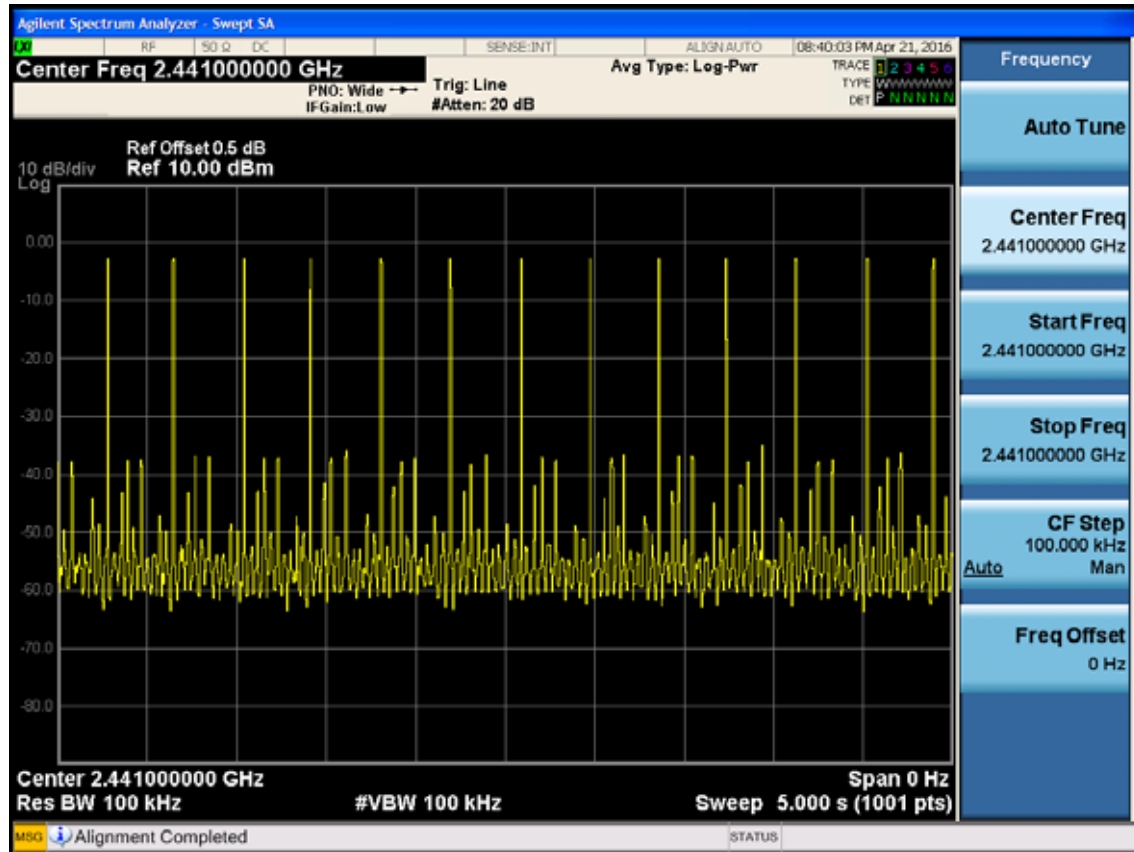
3-DH1



3-DH3



3-DH5



10. MAXIMUM PEAK OUTPUT POWER TEST

10.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	E4446A	US44300459	Apr.28,15	1 Year
2.	Spectrum	Agilent	N9030A	MY51380221	Oct.18,15	1 Year
3.	Power meter	Anritsu	ML2487A	6K00002472	Aug.21,15	1 Year
4.	Power sensor	Anritsu	MA2491A	0033005	Aug.21,15	1 Year
5.	Attenuator (20dB)	Agilent	8491B	MY39262165	Apr.28,15	1 Year
6.	RF Cable	Marvelous Microwave Inc	SFL402105FLEX	NO.1	Oct.17,15	1 Year

10.2. Limit

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.

10.3. Test Procedure

1. Connected the EUT's antenna port to spectrum analyzer.
 2. Set the RBW> Bandwidth of test Frequency and put the test Frequency, Set the Span large enough to capture the entire signal
 3. Use a peak detector on max hold
 4. Reading the value from the Spectrum analyzer
- Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

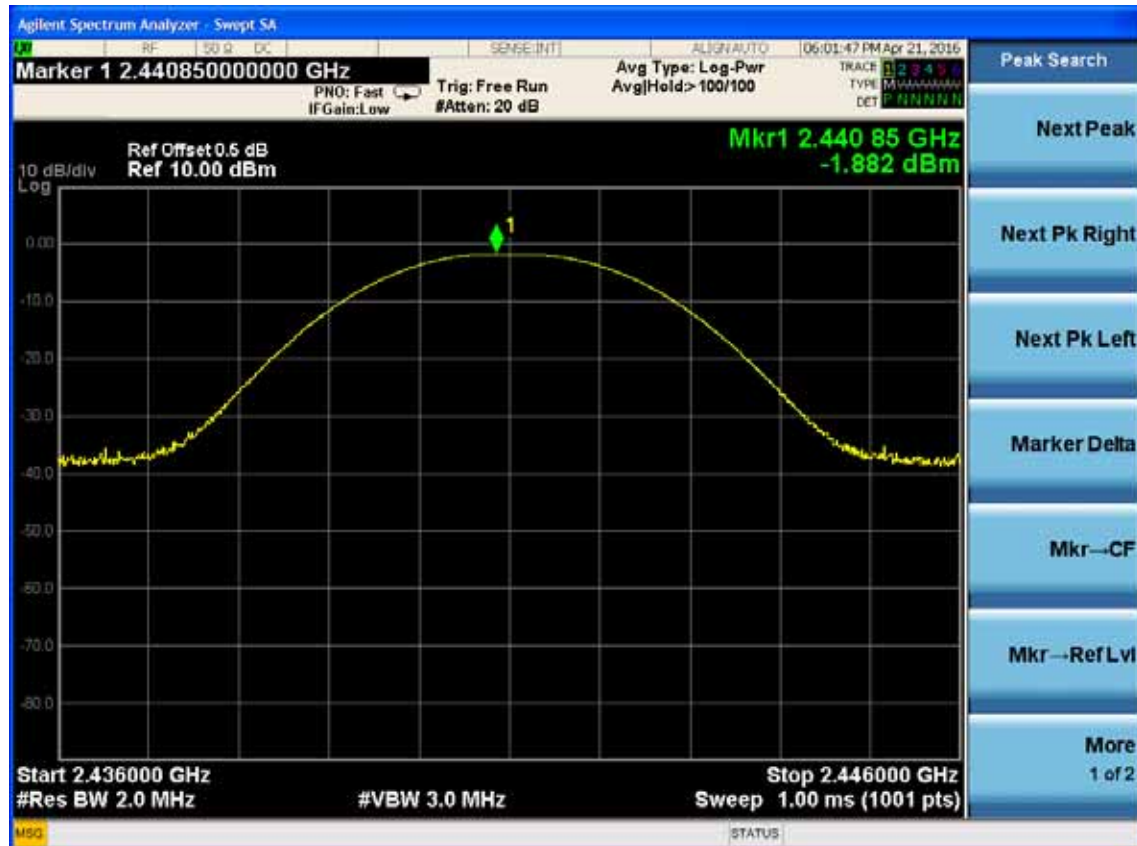
10.4. Test Results

EUT: Mobile audio system wall mount unit			
M/N: AWM968			
Test date: 2016-04-25		Pressure: 101.4±1.0kpa	Humidity: 53.2±1.0%
Tested by: Donjon_Huang		Test site: RF site	Temperature: 22.8±1.0 °C
Test Mode	Frequency (MHz)	Peak output Power (dBm)	Limit (dBm)
GFSK	2402	-1.28	30
	2441	-1.88	30
	2480	-2.18	30
8-DPSK	2402	-2.50	30
	2441	-2.93	30
	2480	-3.28	30
Conclusion: PASS			

GFSK 2402MHz



2441MHz



2480MHz



8-DPSK

2402MHz



2441MHz



2480MHz



11.BAND EDGE COMPLIANCE TEST

11.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	E4446A	US44300459	Apr.28,15	1 Year
2.	Amp	HP	8449B	3008A02495	Apr.28,15	1 Year
3.	Horn Antenna	ETS	3115	9510-4877	Oct.15,15	1 Year
4.	HF Cable	Hubersuhner	Sucoflex104	274094/4	Apr.28,15	1 Year

11.2.Limit

All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

11.3.Test Produce

For upper band emissions that are up to two bandwidths(2MHz) away (2483.5MHz to 2485.5MHz) from the band-edge use below produce:

1. Choose a spectrum analyzer span that encompasses both the peak of the fundamental emission and the band-edge emission under investigation. Set the analyzer RBW to 100KHz and with a video bandwidth 300KHz. Record the peak levels of the fundamental emission and the relevant band-edge emission, Observe the stored trace and measure the amplitude delta between the peak of the fundamental and the peak of the band-edge emission. This is not a field strength measurement, it is only a relative measurement to determine the amount by which the emission drops at the band edge relative to the highest fundamental emission level.
2. Subtract the delta measured in step (1) from the maximum field strengths measured in clause 4 .The resultant field strengths are then used to determine band-edge compliance as required by Section 15.205

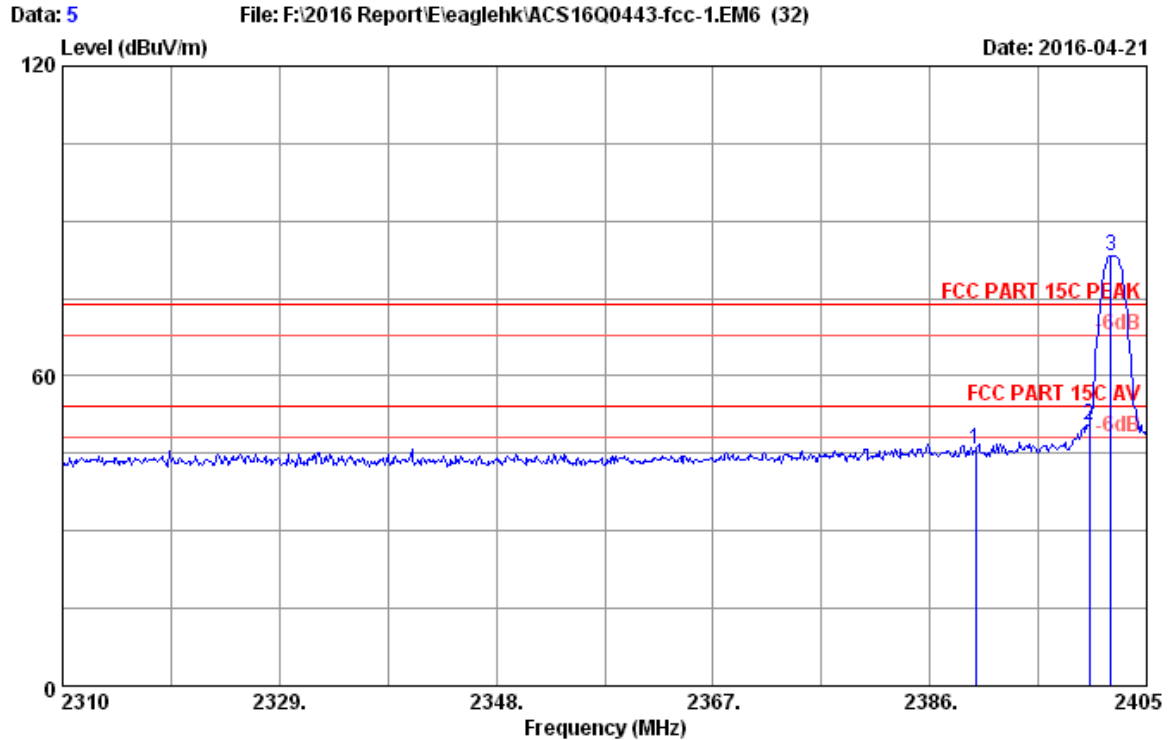
For emissions above two bandwidths away from the band-edge use below produce:

1. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.
2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upperband-edges of the emission:
 - (a) PEAK: RBW=1MHz ;VBW=3MHz, PK detector, Sweep=AUTO
 - (b) This is pulse Modulation device a duty cycle factor was used to calculate average level based measured peak level.

11.4.Test Results

Pass (The testing data was attached in the next pages.)

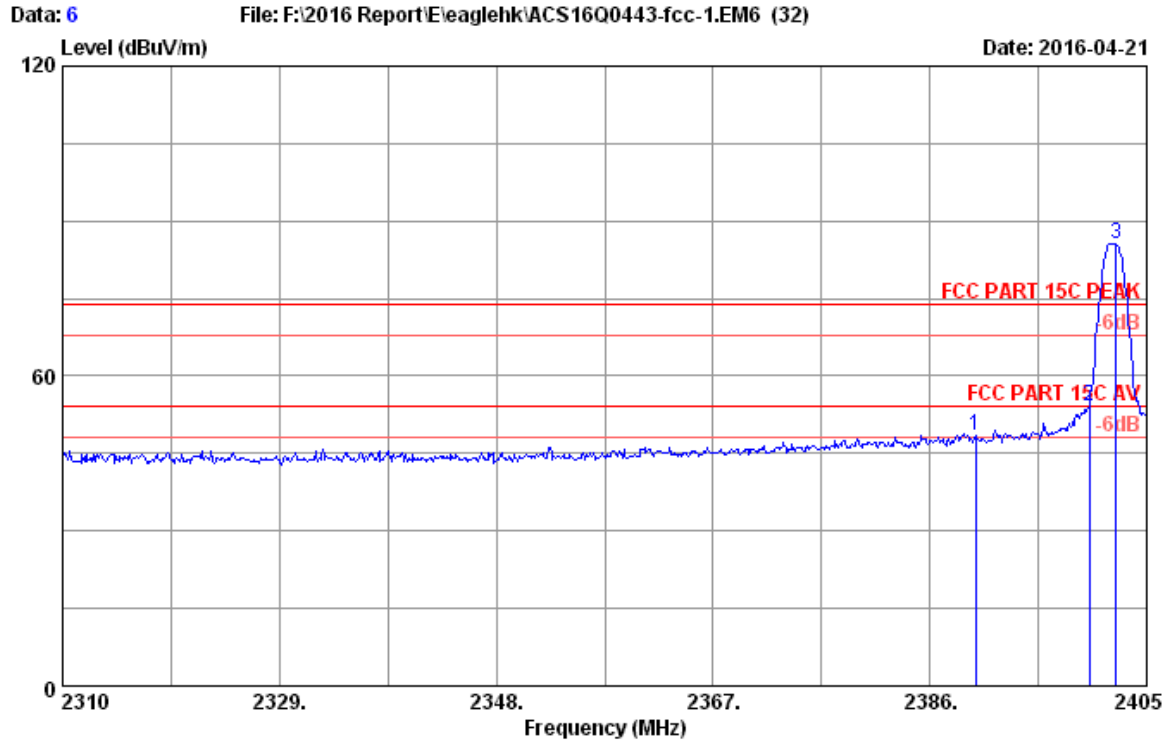
Note: If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.



Site no. : 3m Chamber Data no. : 5
 Dis. / Ant. : 3m 2015 3115-4877 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 22.5°C/51.6%
 Engineer : Donjon_Huang
 EUT : Mobile audio system wall mount unit
 Power rating : DC 12V
 Test Mode : GFSK 2402MHz Tx Mode
 M/N : AWM968

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Emission				Margin	Remark
					Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)			
1	2390.000	28.27	7.28	36.62	46.90	45.83	74.00	28.17	Peak	
2	2400.000	28.28	7.32	36.62	51.43	50.41	74.00	23.59	Peak	
3	2401.865	28.28	7.32	36.62	84.39	83.37	74.00	-9.37	Peak	

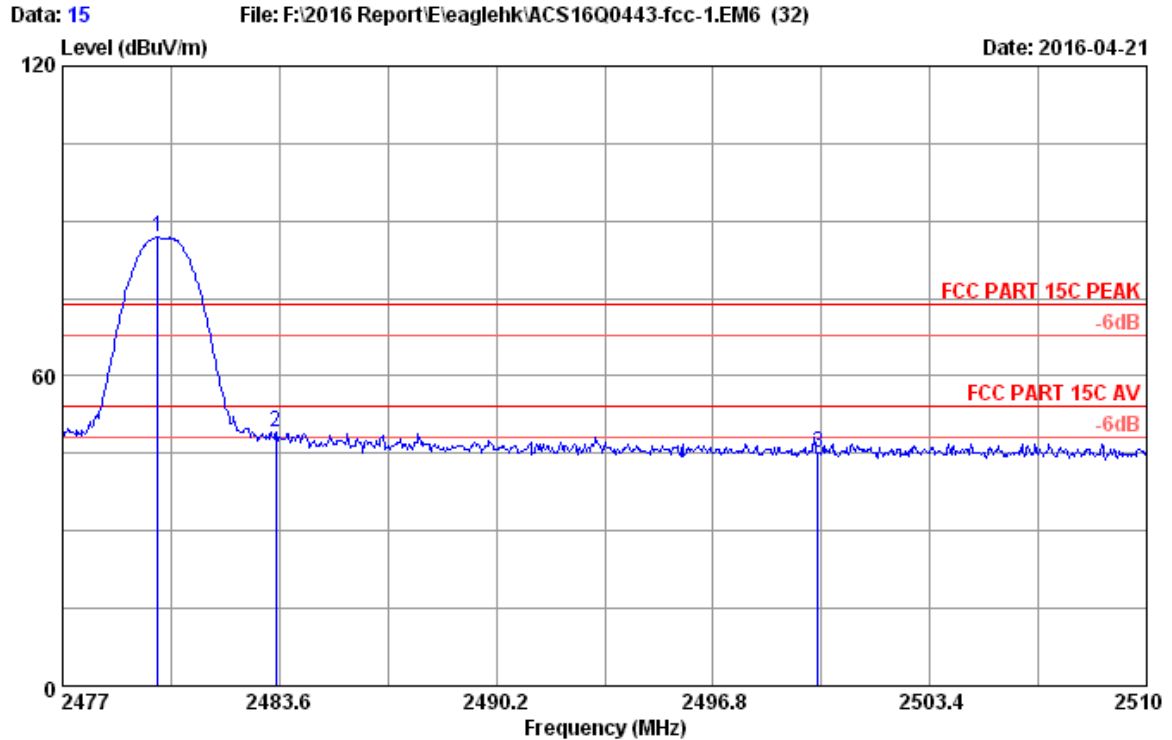
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 6
 Dis. / Ant. : 3m 2015 3115-4877 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 22.5°C/51.6%
 Engineer : Donjon_Huang
 EUT : Mobile audio system wall mount unit
 Power rating : DC 12V
 Test Mode : GFSK 2402MHz Tx Mode
 M/N : AWM968

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	28.27	7.28	36.62	49.70	48.63	74.00	25.37	Peak
2	2400.000	28.28	7.32	36.62	55.08	54.06	74.00	19.94	Peak
3	2402.340	28.28	7.32	36.62	86.69	85.67	74.00	-11.67	Peak

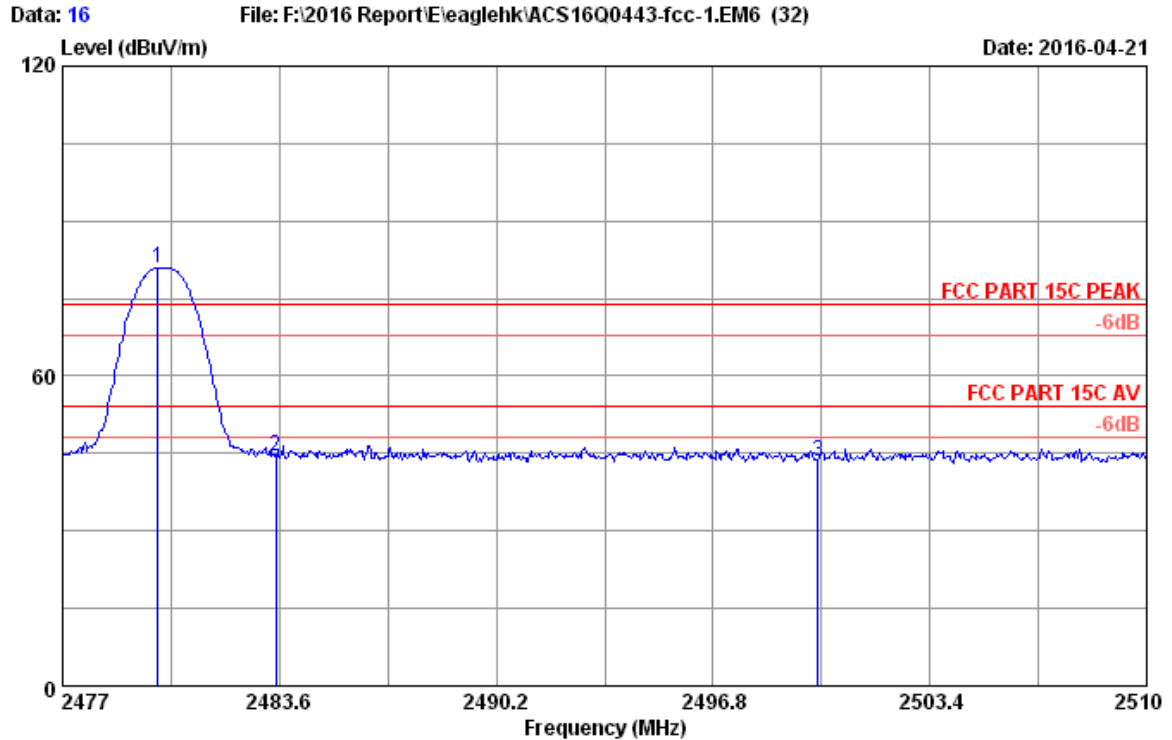
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 15
Dis. / Ant. : 3m 2015 3115-4877 Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 22.5°C/51.6%
Engineer : Donjon_Huang
EUT : Mobile audio system wall mount unit
Power rating : DC 12V
Test Mode : GFSK 2480MHz Tx Mode
M/N : AWM968

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Emission				Margin	Remark
					Reading (dBUV)	Level (dBUV/m)	Limits (dBUV/m)			
1	2479.904	28.38	7.47	36.59	87.52	86.78	74.00	-12.78	Peak	
2	2483.500	28.38	7.51	36.59	49.84	49.14	74.00	24.86	Peak	
3	2500.000	28.40	7.51	36.58	45.75	45.08	74.00	28.92	Peak	

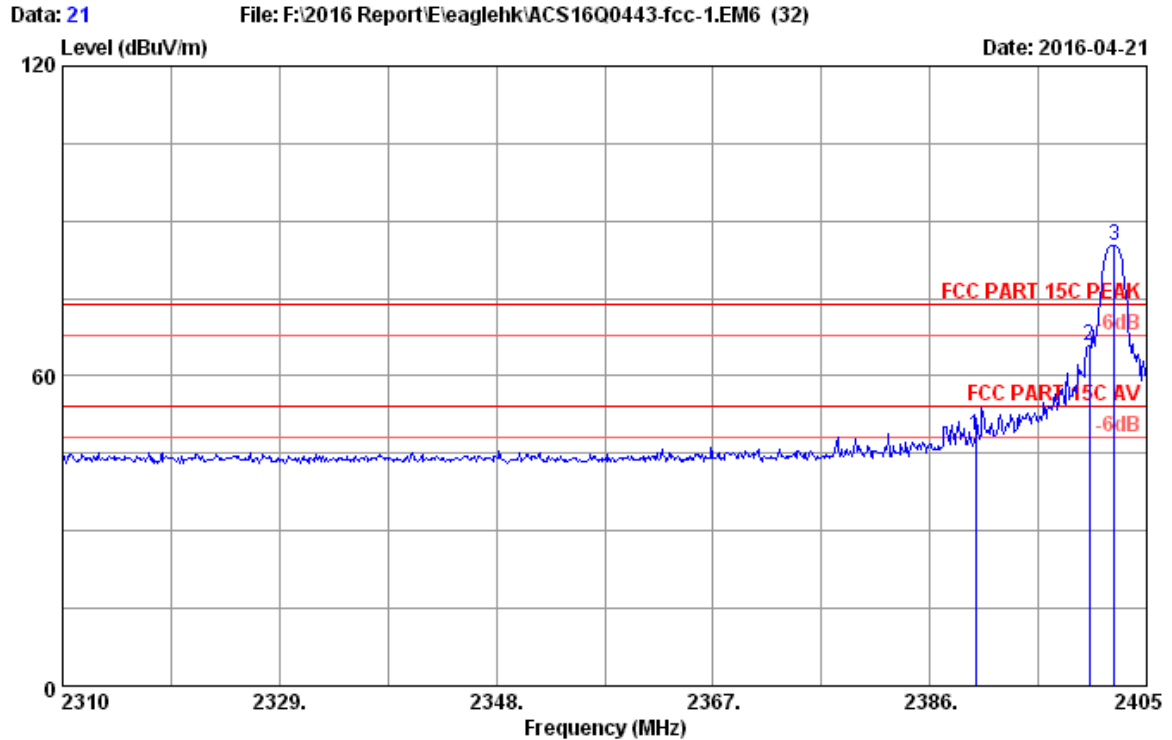
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
-Amp Factor
2. The emission levels that are 20dB below the official
limit are not reported.



Site no. : 3m Chamber Data no. : 16
 Dis. / Ant. : 3m 2015 3115-4877 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 22.5°C/51.6%
 Engineer : Donjon_Huang
 EUT : Mobile audio system wall mount unit
 Power rating : DC 12V
 Test Mode : GFSK 2480MHz Tx Mode
 M/N : AWM968

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2479.904	28.38	7.47	36.59	81.58	80.84	74.00	-6.84	Peak
2	2483.500	28.38	7.51	36.59	45.07	44.37	74.00	29.63	Peak
3	2500.000	28.40	7.51	36.58	44.10	43.43	74.00	30.57	Peak

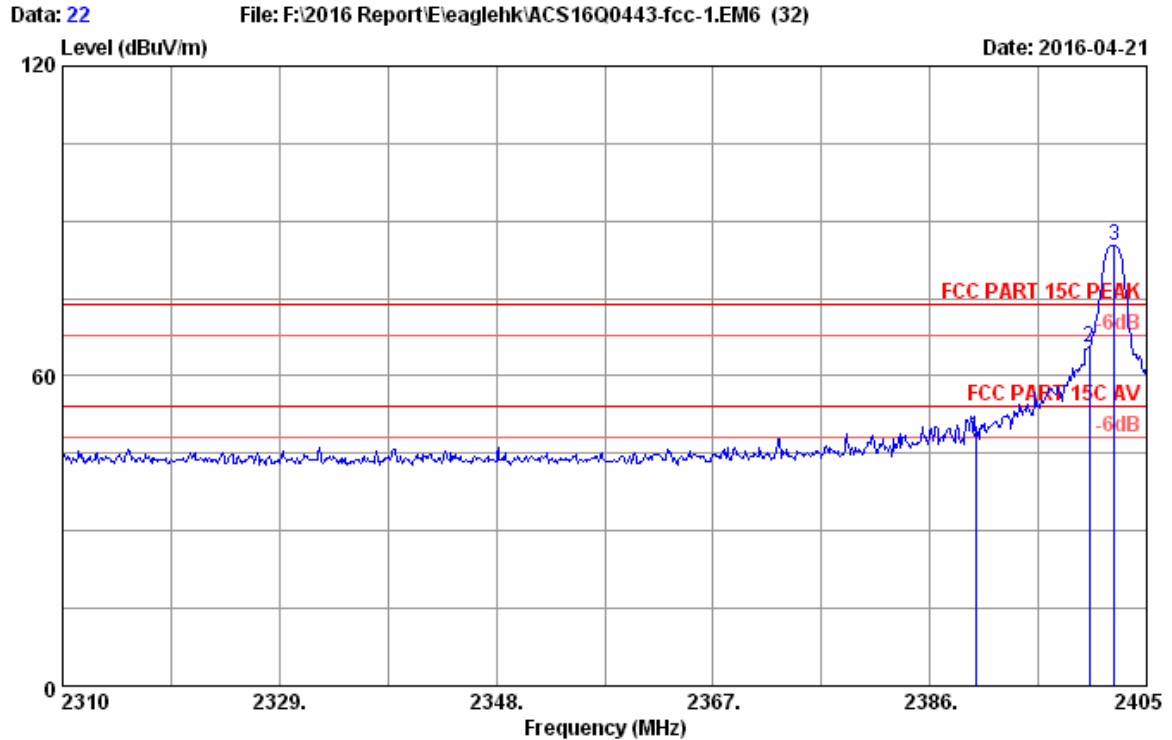
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 21
 Dis. / Ant. : 3m 2015 3115-4877 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 22.5°C/51.6%
 Engineer : Donjon_Huang
 EUT : Mobile audio system wall mount unit
 Power rating : DC 12V
 Test Mode : 8DPSK 2402MHz Tx Mode
 M/N : AWM968

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	28.27	7.28	36.62	49.46	48.39	74.00	25.61	Peak
2	2400.000	28.28	7.32	36.62	67.01	65.99	74.00	8.01	Peak
3	2402.150	28.28	7.32	36.62	86.28	85.26	74.00	-11.26	Peak

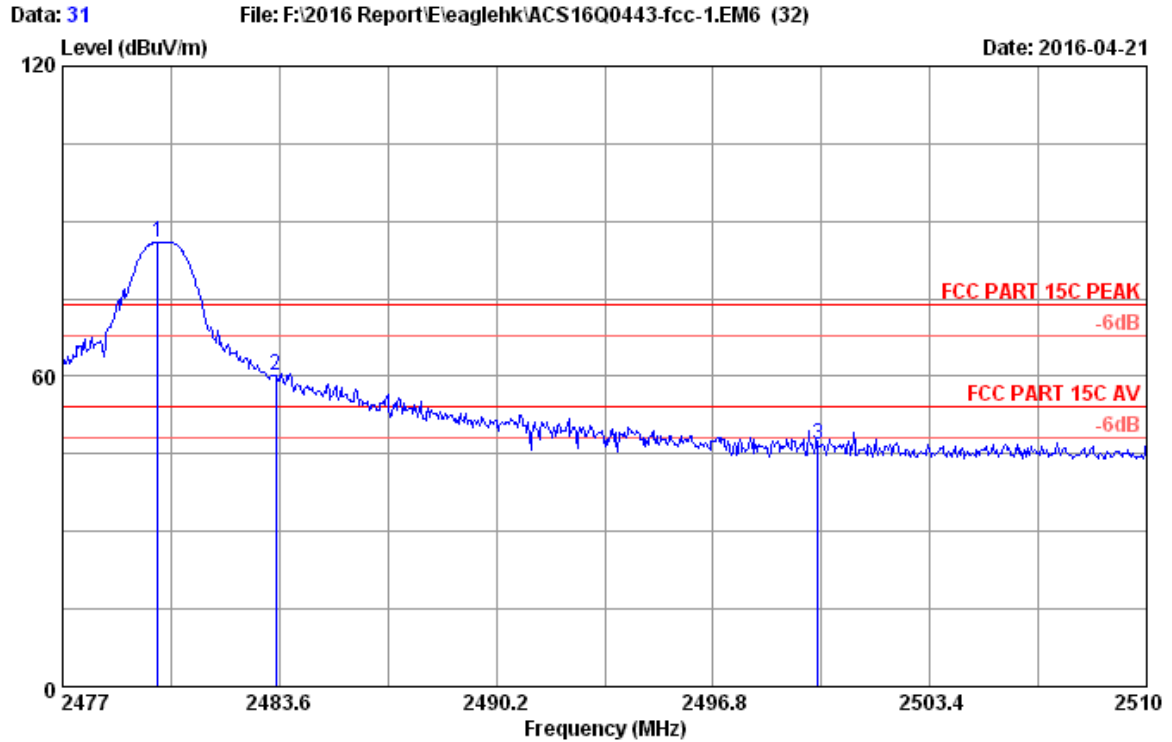
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 22
 Dis. / Ant. : 3m 2015 3115-4877 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 22.5°C/51.6%
 Engineer : Donjon_Huang
 EUT : Mobile audio system wall mount unit
 Power rating : DC 12V
 Test Mode : 8DPSK 2402MHz Tx Mode
 M/N : AWM968

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	28.27	7.28	36.62	49.25	48.18	74.00	25.82	Peak
2	2400.000	28.28	7.32	36.62	66.52	65.50	74.00	8.50	Peak
3	2402.150	28.28	7.32	36.62	86.27	85.25	74.00	-11.25	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

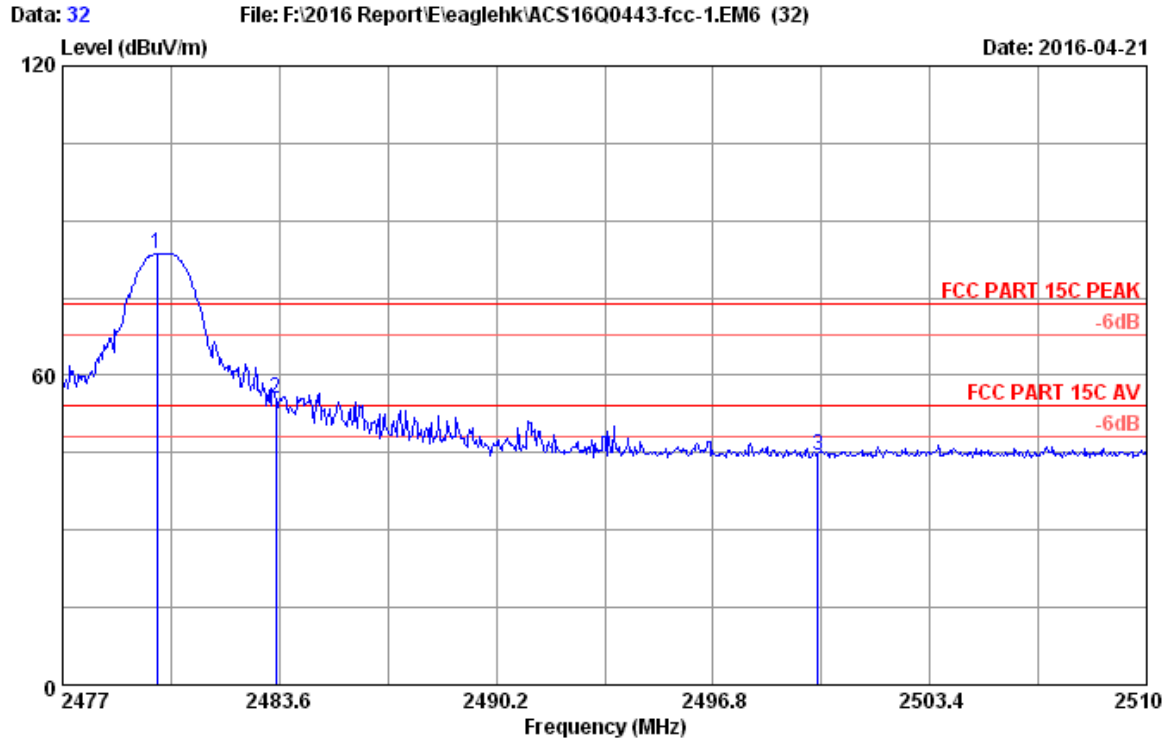


Site no. : 3m Chamber Data no. : 31
 Dis. / Ant. : 3m 2015 3115-4877 Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 22.5°C/51.6%
 Engineer : Donjon_Huang
 EUT : Mobile audio system wall mount unit
 Power rating : DC 12V
 Test Mode : 8DPSK 2480MHz Tx Mode
 M/N : AWM968

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2479.904	28.38	7.47	36.59	86.80	86.06	74.00	-12.06	Peak
2	2483.500	28.38	7.51	36.59	60.95	60.25	74.00	13.75	Peak
3	2500.000	28.40	7.51	36.58	47.58	46.91	74.00	27.09	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
2483.500	60.25	-30.458	29.792	54	Pass



Site no. : 3m Chamber Data no. : 32
 Dis. / Ant. : 3m 2015 3115-4877 Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 22.5°C/51.6%
 Engineer : Donjon_Huang
 EUT : Mobile audio system wall mount unit
 Power rating : DC 12V
 Test Mode : 8DPSK 2480MHz Tx Mode
 M/N : AWM968

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2479.871	28.38	7.47	36.59	84.35	83.61	74.00	-9.61	Peak
2	2483.500	28.38	7.51	36.59	56.11	55.41	74.00	18.59	Peak
3	2500.000	28.40	7.51	36.58	45.16	44.49	74.00	29.51	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.

Frequency (MHz)	Peak level (dBuV/m)	Duty cycle factor (dB)	AV level (dBuV/m)	Limit(dBuV/m)	Conclusion
2483.500	55.41	-30.458	24.952	54	Pass

12.DEVIATION TO TEST SPECIFICATIONS

[NONE]