FCC PART 15C TEST REPORT FOR CERTIFICATION
On Behalf of

Harman International Industries, Incorporated

System Name : Soundbar Speaker System

System Model Number : SB26

EUT Name : Soundbar

Brand Name	Model No.
Harman	SB26 CNTR

FCC ID: APISB26CTC

Prepared for : Harman International Industries, Incorporated
8500 Balboa Blvd, Northridge, CA 91329, UNITED STATES

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

Tel: (0755) 26639496

Report Number : ACS-F13167
Date of Test : Jun.20~24, 2013
Date of Report : Jul.09, 2013

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TEST REPORT CERTIFICATION

Applicant	:	Harman International Industries, Incorporated
Manufacturer	:	Harman International Industries, Incorporated
System Name	:	Soundbar Speaker System
System Model Number	:	SB26 CNTR
EUT Name	:	Soundbar
FCC ID	:	APISB26CTC

(A) MODEL NO.& BRAND NAME :

Brand Name	Model No.
Harman	SB26 CNTR

(B) SERIAL NO. : N/A
(C)POWER SUPPLY : AC 120V/60Hz
(D)TEST VOLTAGE : AC 120V/60Hz

Tested for comply with:
FCC Rules and Regulations Part 15 Subpart C: 2012
Test procedure used:
ANSI C63.10:2009

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 : Jun.20~24, 2013 Report of date: Jul.09, 2013

Prepared by : Lisa Liang
Lisa Liang / Assistant

Reviewed by :
Sunny Lu / Assistant Manager

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 7.9

Approved & Authorized Signer :
David Jin / Deputy Manager

1. SUMMARY OF STANDARDS AND RESULTS

1.1.Description of Standards and Results

The EUT have 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 :2009	PASS
Radiated Emission Test	FCC Part 15: 15.209 FCC Part 15: 15.249 ANSI C63.10 :2009	PASS
20dB Bandwidth Test	FCC Part 15: 15.215 ANSI C63.10 :2009	PASS
Band Edge Compliance Test	FCC Part 15: 15.249 ANSI C63.10 :2009	PASS
N/A is an abbreviation for Not Applicable.。		

2. GENERAL INFORMATION

2.1.Description of Device (EUT)

System Name	:	Soundbar Speaker System
System Model Number	:	SB26
EUT Name	:	Soundbar
Model Number & Brand Name	:	Brand Name: Harman; Model No.: SB26 CNTR
FCC ID	:	APISB26CTC
Operation frequency	:	2403.35MHz-2477.35MHz
Antenna	:	Integrated PCB Antenna, 3.9dBi PK gain
Modulation	:	GFSK
Applicant	:	Harman International Industries, Incorporated 8500 Balboa Blvd, Northridge, CA 91329, UNITED STATES
Manufacturer	:	Harman International Industries, Incorporated 8500 Balboa Blvd, Northridge, CA 91329, UNITED STATES
Power Adapter	:	Manufacturer: Harman/ Kardon M/N: TNUA2402703 Unshielded, Detachabled, 1.0m
Date of Test	:	Jun.20~24, 2013
Date of Receipt	:	May.25, 2013
Sample Type	:	Prototype production

2.2.Special Test information

The Special test software was used to control EUT work in Continuous TX mode, and select test channel.

This transmitter contain two antennas, in normal working mode, those two antenna can not transmit simultaneously, the antenna which have better signal will be selected Automatically. All item were tested on the antenna which has worse case emission.

Tested mode, channel, and data rate information			
Mode	data rate (Mbps)	Channel	Frequency (MHz)
Tx Mode GFSK modulation	1	Low :CH 1	2403.35
	1	Middle: CH20	2441.35
	1	High: CH38	2477.35

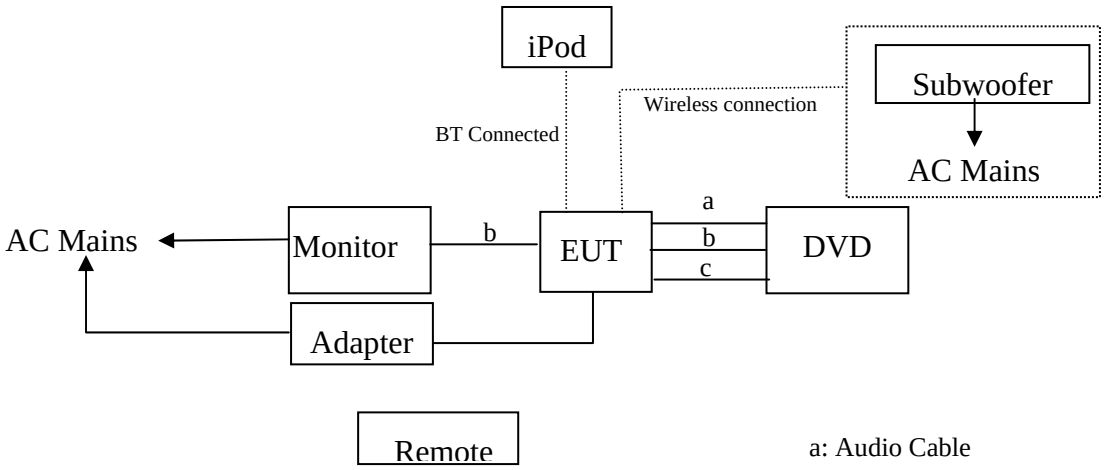
2.3.Channel List

CH	Frequency(MHz)	CH	Frequency(MHz)
1	2403.35	20	2441.35
2	2405.35	21	2443.35
3	2407.35	22	2445.35
4	2409.35	23	2447.35
5	2411.35	24	2449.35
6	2413.35	25	2451.35
7	2415.35	26	2453.35
8	2417.35	27	2455.35
9	2419.35	28	2457.35
10	2421.35	29	2459.35
11	2423.35	30	2461.35
12	2425.35	31	2463.35
13	2427.35	32	2465.35
14	2429.35	33	2467.35
15	2431.35	34	2469.35
16	2433.35	35	2471.35
17	2435.35	36	2473.35
18	2437.35	37	2475.35
19	2439.35	38	2477.35

2.4.Tested Supporting System Details

	Description	ACS No.	Manufacturer	Model	Serial Number	Approved type
1.	iPod nano	ACS-EMC-IP01	APPLE	A1199	YM706MLDVQ5	☑FCC DoC ☑BSMI ID: R33057
		Data Cable: Shielded, Detachabled, 1.0m				
2.	Monitor	ACS-EMC-LM04R	DELL	1907FPt	CN-009759-71618-6AP-ACPP	☑FCC DoC ☑BSMI ID: R3A002
		Power Cord: Unshielded, Detachable, 1.8m VGA Cable: Shielded, Detachable, 2.0m (with two cores) DVI Cable: Shielded, Detachable, 2.0m (with two cores)				
3.	Audio Cable	Shielded, Detachable, 1.0m				
4.	HDMI Cable	Shielded, Detachable, 1.5m				
5.	Optical Cable	Unshielded, Detachable, 1.0m				

2.5.Block Diagram of Test Setup



a: Audio Cable
b: HDMI Cable
c: OPTICAL Cable

(EUT: Soundbar)

2.6.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: Feb.22, 2015
3m & 10m Anechoic Chamber	:	Certificated by FCC, USA Registration Number: 794232 Valid Date: Oct.31, 2015
EMC Lab.	:	Certificated by Industry Canada Registration Number: IC 5183A-1 Valid Date: Jun.13, 2014
		Certificated by DAkkS, Germany Registration No: D-PL-12151-01-01 Valid Date: Feb.01, 2014
		Accredited by NVLAP, USA NVLAP Code: 200372-0 Valid Date: Mar.31, 2014

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

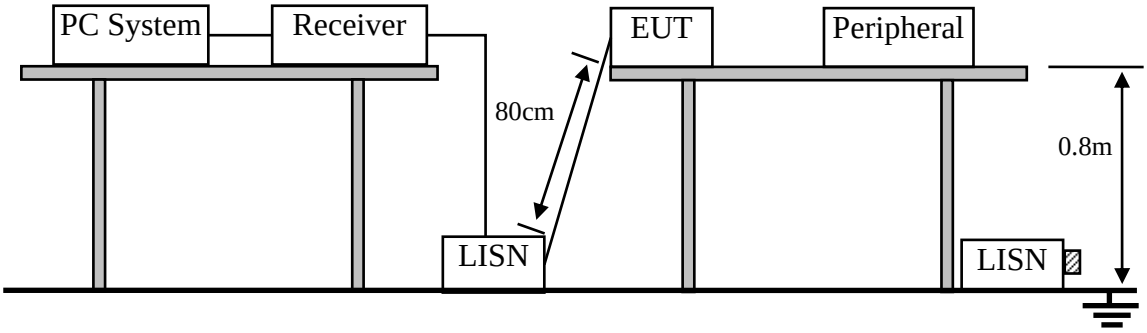
Test Item	Uncertainty
Uncertainty for Conduction emission test in No. 1 Conduction	3.08dB(9KHz to 150KHz)
	3.1dB (150KHz to 30MHz)
Uncertainty for Radiation Emission test in 3m chamber	3.22 dB(30~200MHz, Polarize: H)
	3.23 dB(30~200MHz, Polarize: V)
	3.49 dB(200M~1GHz, Polarize: H)
	3.39 dB(200M~1GHz, Polarize: V)
Uncertainty for Radiation Emission test in 3m chamber (1GHz-18GHz)	5.04 dB (1~6GHz, Distance: 3m)
	5.06 dB (6~18GHz, Distance: 3m)
Uncertainty for Radiated Spurious Emission test in RF chamber	3.57 dB
Uncertainty for Conduction Spurious emission test	2.00 dB
Uncertainty for Output power test	0.73 dB
Uncertainty for Bandwidth test	83 kHz
Uncertainty for DC power test	0.038 %
Uncertainty for test site temperature and humidity	0.6℃
	3%

3. POWER LINE CONDUCTED EMISSION MEASUREMENT

3.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESHS10	838693/001	Oct.31, 12	1 Year
2.	L.I.S.N.#1	Rohde & Schwarz	ESH2-Z5	834066/011	Oct.31, 12	1 Year
3.	L.I.S.N.#3	Kyoritsu	KNW-242C	8-1920-1	May.08, 13	1 Year
4.	Terminator	Hubersuhner	50Ω	No. 1	May.08, 13	1 Year
5.	Terminator	Hubersuhner	50Ω	No. 2	May.08, 13	1 Year
6.	RF Cable	Fujikura	3D-2W	No.1	May.08, 13	1Year
7.	Coaxial Switch	Anritsu	MP59B	M50564	May.08, 13	1 Year
8.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100341	May.08, 13	1 Year

3.2.Block Diagram of Test Setup



3.3. Power Line Conducted Emission Test Limits

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Notes: 1. * Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

3.4. Configuration of EUT on Test

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

3.4.1. Soundbar (EUT)
Model Number : SB26 CNTR
Serial Number : N/A

3.5. Operating Condition of EUT

3.5.1. Setup the EUT and simulator as shown as Section 3.2.
3.5.2. Turn on the power of all equipment.
3.5.3. Let the EUT work in test mode (TX Mode) and measure it.

3.6. Test Procedure

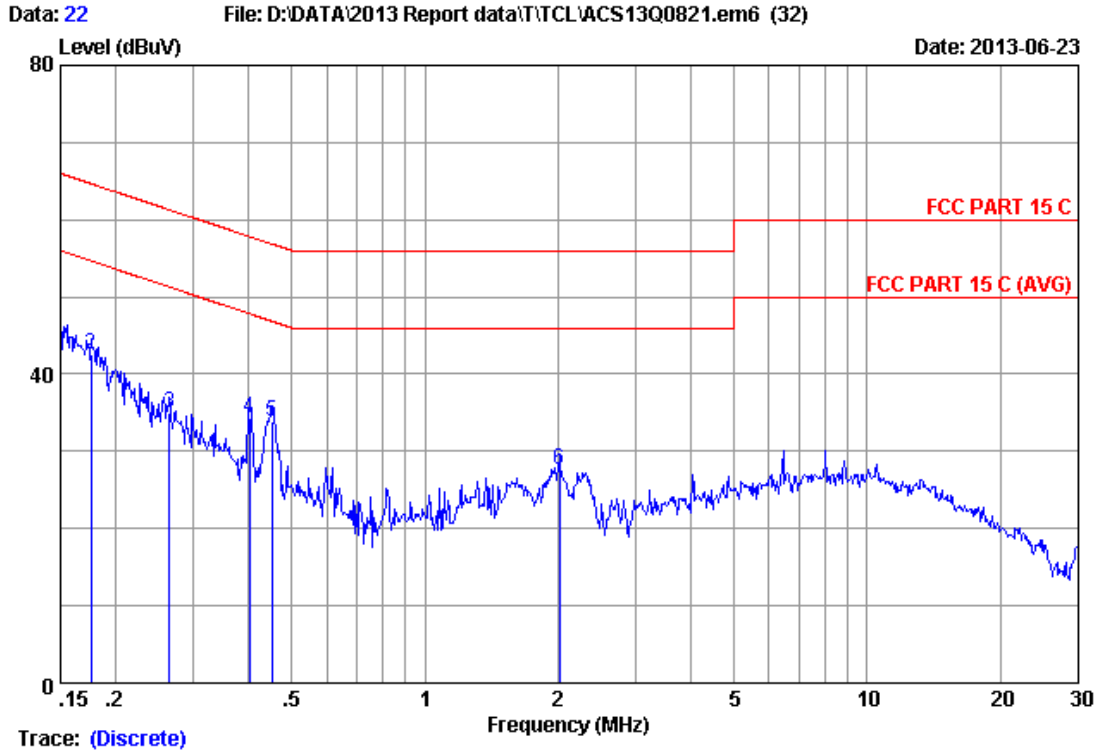
The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N. 1#). this provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4-2009 on conducted Emission test.

The bandwidth of test receiver (R&S TEST RECEIVER ESHS10) is set at 9 kHz.

The frequency range from 150kHz to 30MHz is checked. The test result are reported on Section 3.7.

3.7. Conducted Emission at Mains Terminals Test Results

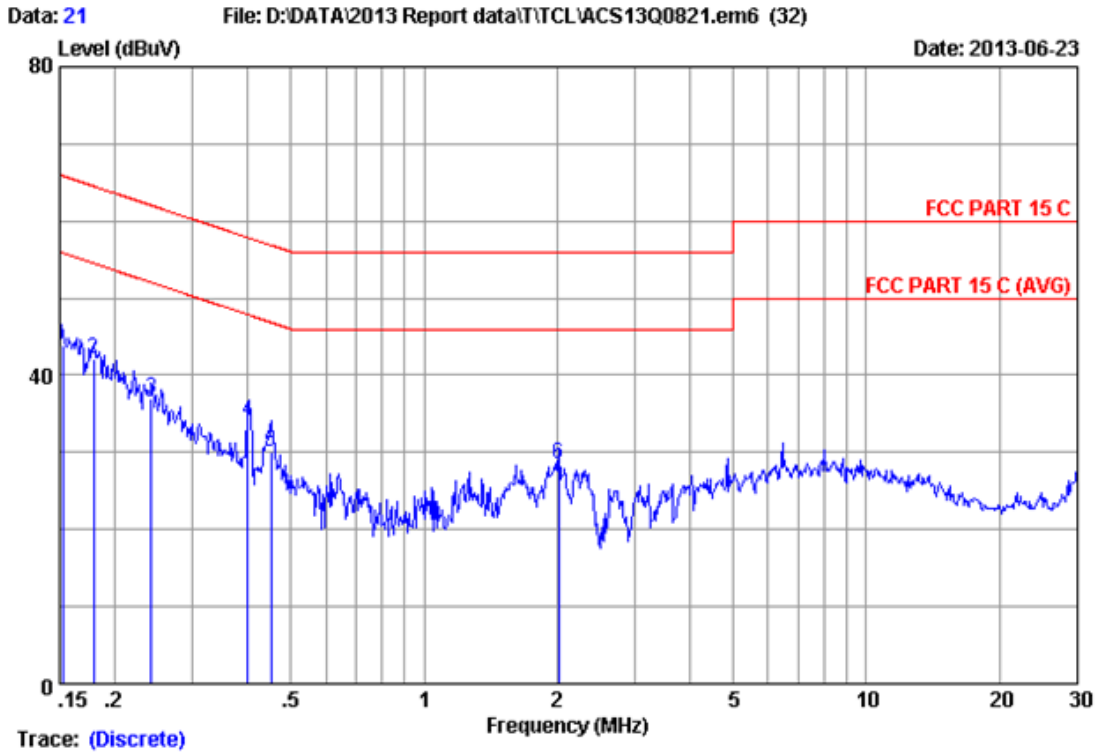
PASS. (All emissions not reported below are too low against the prescribed limits.)



Site no :1#conduction Data No :22
Dis./Ant. :** 2012 ESH2-Z5 LINE
Limit :FCC PART 15 C
Env./Ins. :24.5*C/56% Engineer :Alan_Chen
EUT :Soundbar
Power Rating :AC 120V/60Hz
Test Mode :Tx Mode
M/N:SB26 CNTR

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15000	0.19	0.01	44.15	44.35	66.00	21.65	QP
2	0.17584	0.19	0.01	42.31	42.51	64.68	22.17	QP
3	0.26442	0.19	0.01	34.75	34.95	61.29	26.34	QP
4	0.40187	0.19	0.02	34.17	34.38	57.81	23.43	QP
5	0.45155	0.19	0.02	33.67	33.88	56.85	22.97	QP
6	2.012	0.24	0.04	27.38	27.66	56.00	28.34	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
2.If the average limit is met when useing a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.



Site no :1#conduction Data No :21
Dis./Ant. :** 2012 ESH2-Z5 NEUTRAL
Limit :FCC PART 15 C
Env./Ins. :24.5*C/56% Engineer :Alan_Chen
EUT :Soundbar
Power Rating :AC 120V/60Hz
Test Mode :Tx Mode
M/N:SB26 CNTR

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15240	0.21	0.01	43.60	43.82	65.87	22.05	QP
2	0.17866	0.21	0.01	41.93	42.15	64.55	22.40	QP
3	0.24165	0.21	0.01	36.71	36.93	62.04	25.11	QP
4	0.39974	0.23	0.02	33.89	34.14	57.86	23.72	QP
5	0.45155	0.23	0.02	29.80	30.05	56.85	26.80	QP
6	2.012	0.28	0.04	28.23	28.55	56.00	27.45	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
2.If the average limit is met when useing a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

4. RADIATED EMISSION MEASUREMENT

4.1.Test Equipment

Frequency rang: 30~1000MHz

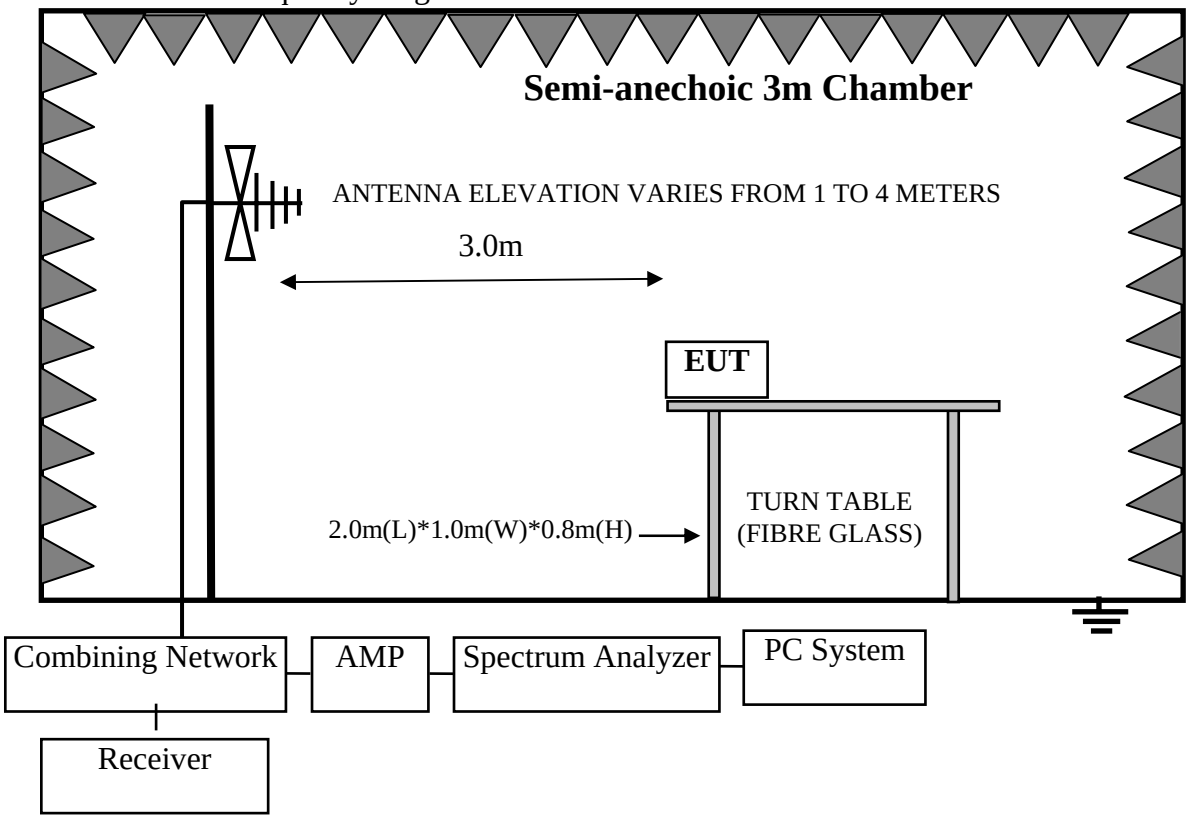
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	3#Chamber	AUDIX	N/A	N/A	Nov.24,12	1 Year
2	EMI Spectrum	Agilent	E4407B	MY41440292	May.08, 13	1 Year
3	Test Receiver	Rohde & Schwarz	ESVS10	834468/011	May.08, 13	1 Year
4	Amplifier	HP	8447D	2648A04738	May.08, 13	1 Year
5	Bilog Antenna	Schaffner	CBL6111C	2598	Mar.14,13	1 Year
6	RF Cable	MIYAZAKI	CFD400-NL	3# Chamber No.1	May.08, 13	1 Year
7	Coaxial Switch	Anritsu	MP59B	M74389	May.08, 13	1 Year

Frequency rang: above 1000MHz

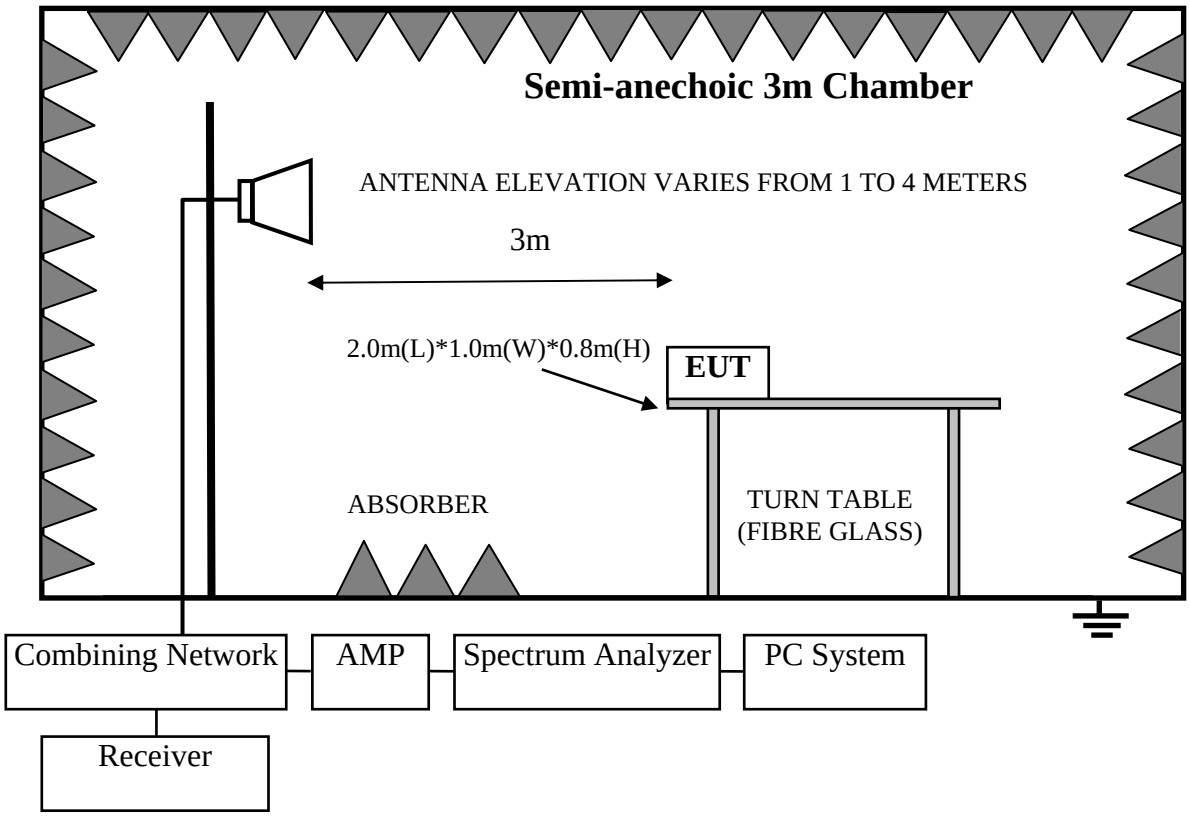
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E4407B	MY41440292	May.08, 13	1 Year
2	Horn Antenna	EMCO	3115	9607-4877	Aug.28, 13	1 Year
3	Amplifier	Agilent	8449B	3008A00863	May.08, 13	1 Year
4	RF Cable	Hubersuhner	SUCOFLEX106	77980/6	May.08, 13	1 Year
5	RF Cable	Hubersuhner	SUCOFLEX106	77977/6	May.08, 13	1 Year
6	Horn Antenna	EMCO	3116	00060089	Aug.28, 12	1 Year

4.2.Block Diagram of Test Setup

For frequency range 30MHz-1000MHz



For frequency range 1GHz-25GHz



4.3. Radiated Emission Limit Standard: FCC 15.209

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/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 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

Remark： (1) Emission level dBμV = 20 log Emission level μV/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 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

4.4.EUT Configuration on Test

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

4.4.1. Soundbar (EUT)

Model Number	:	SB26 CNTR
Serial Number	:	N/A

4.5.Operating Condition of EUT

4.5.1. Setup the EUT and simulator as shown as Section 3.2.
4.5.2. Turned on the power of all equipment.
4.5.3. Let EUT work in Tx mode.

4.6.Test Procedure

The EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The 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. 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 C63.10-2009 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, the RBW is set at 1MHz and VBW is set at 10Hz for average emission measurement above 1GHz.

The duty cycle of the test signal is 100%.

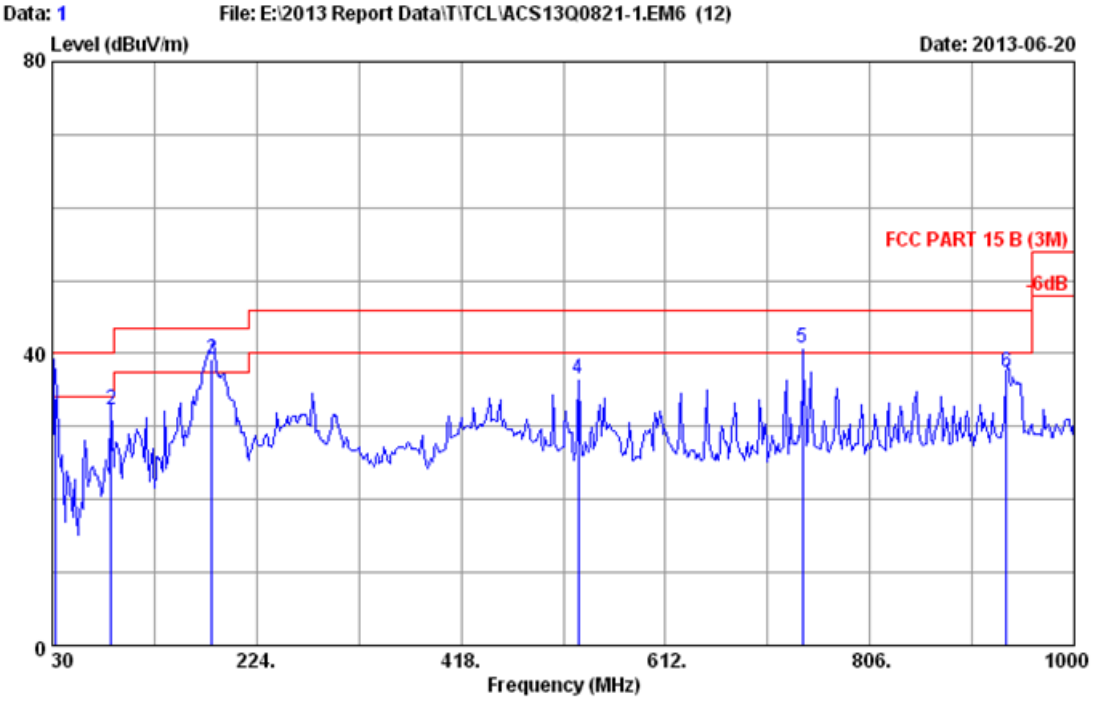
The frequency range from 30MHz to 10th harmonic (25GHz) are checked. and no any emissions were found from 18GHz to 25 GHz, So the radiated emissions from 18GHz to 25GHz were not record.

4.7.Radiated Emission Test Results

PASS.

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

Frequency: 30MHz~1GHz

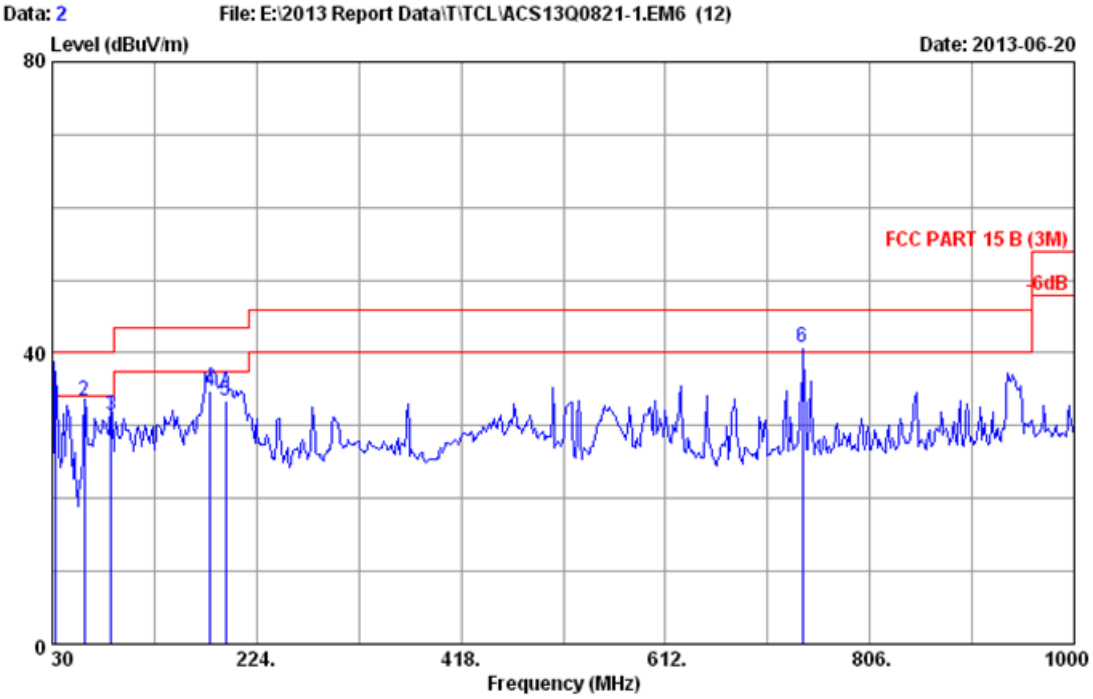


Site no. : 3m Chamber
Dis. / Ant. : 3m 2013 CBL6111C 2598
Limit : FCC PART 15 B (3M)
Env. / Ins. : 24*C/65%
EUT : Soundbar
Power rating : AC 120V/60Hz
Test Mode : Tx Mode
M/N:SB26 CNTR

Data no. : 1
Ant. pol. : HORIZONTAL
Engineer : Victory

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	32.580	18.52	0.88	14.50	33.90	40.00	6.10	QP
2	85.690	8.67	1.35	22.30	32.32	40.00	7.68	QP
3	181.280	9.34	1.72	28.19	39.25	43.50	4.25	QP
4	528.950	18.60	2.83	15.20	36.63	46.00	9.37	QP
5	741.780	21.94	3.44	15.40	40.78	46.00	5.22	QP
6	935.960	23.80	4.04	9.70	37.54	46.00	8.46	QP

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



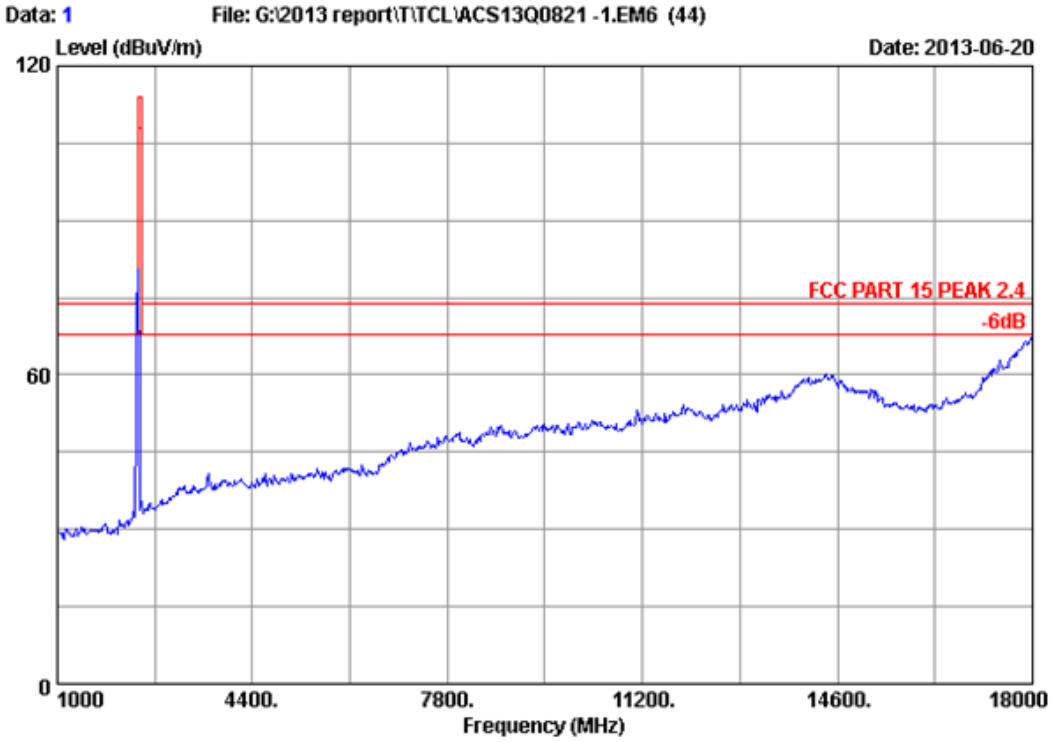
Site no. : 3m Chamber
Dis. / Ant. : 3m 2013 CBL6111C 2598
Limit : FCC PART 15 B (3M)
Env. / Ins. : 24*C/65%
EUT : Soundbar
Power rating : AC 120V/60Hz
Test Mode : Tx Mode
M/N:SB26 CNTR

Data no. : 2
Ant. pol. : VERTICAL
Engineer : Victory

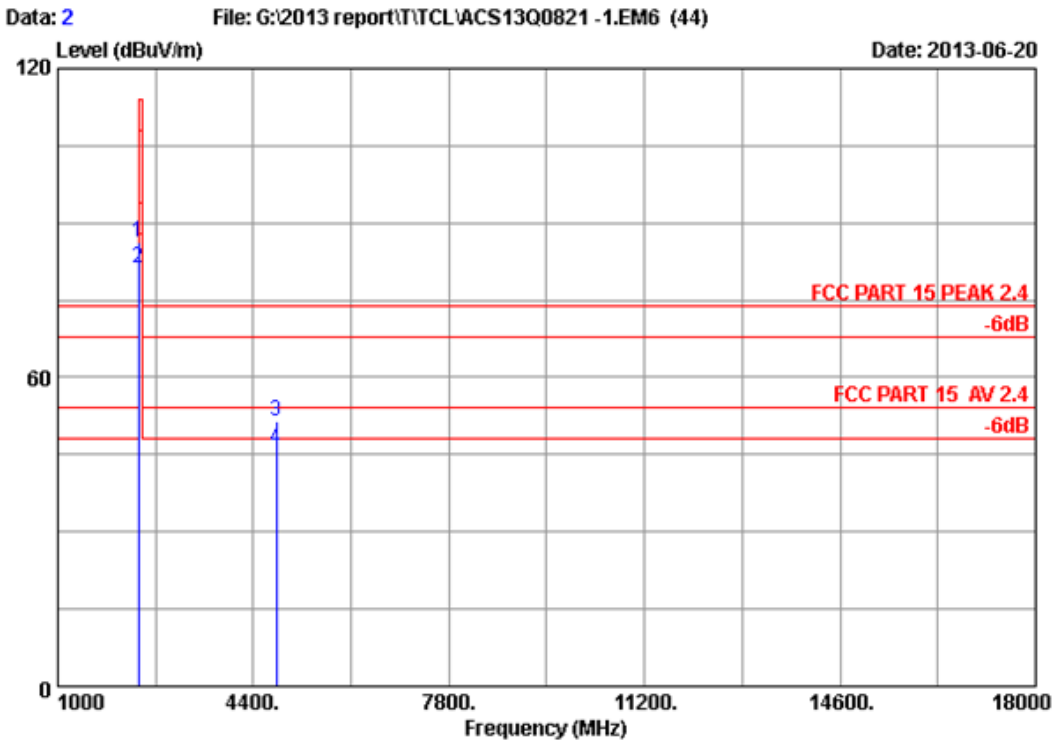
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	32.630	18.49	0.88	16.60	35.97	40.00	4.03	QP
2	60.430	6.10	1.24	26.20	33.54	40.00	6.46	QP
3	85.660	8.67	1.35	21.39	31.41	40.00	8.59	QP
4	180.030	9.40	1.71	23.70	34.81	43.50	8.69	QP
5	194.460	9.55	1.77	22.19	33.51	43.50	9.99	QP
6	741.860	21.94	3.44	15.50	40.88	46.00	5.12	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



Site no.	: 3m Chamber	Data no.	: 1
Dis. / Ant.	: 3m 2012 3115 (4580)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 22.4'C/41%	Engineer	: Kevin_Hu
EUT	: Soundbar		
Power supply	: AC 120V/60Hz		
Test mode	: Tx Mode 2403.35MHz		
M/N	: SB26 CNTR		
	:		

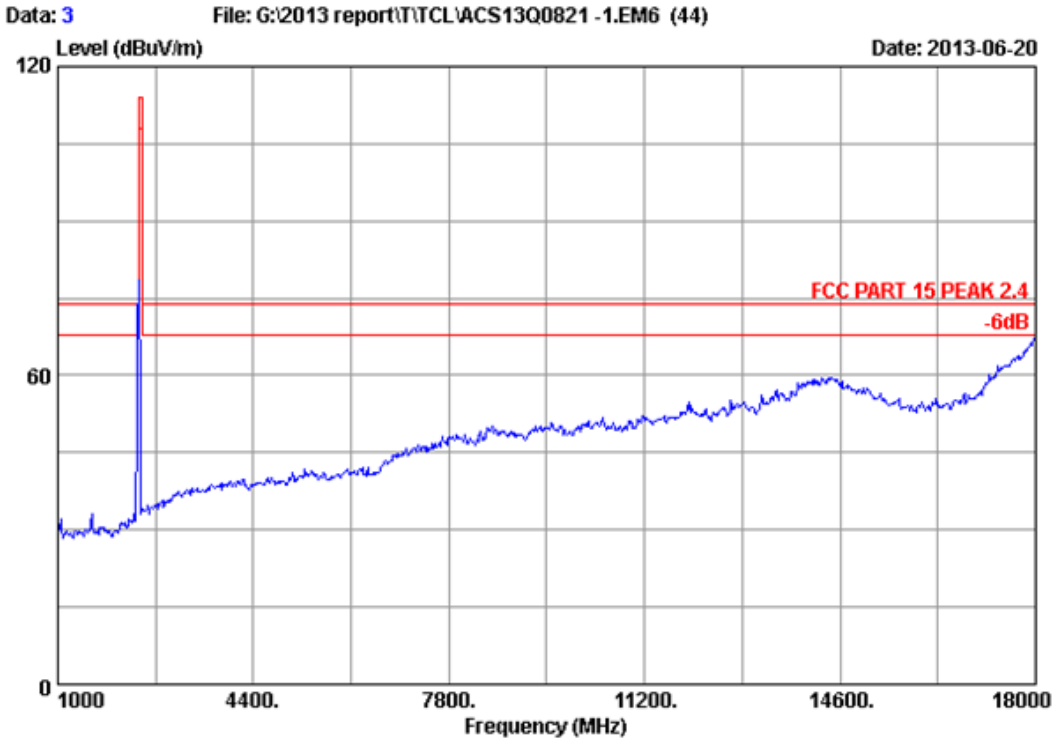


Site no. : 3m Chamber
Dis. / Ant. : 3m 2012 3115 (4580)
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 22.4'C/41%
EUT : Soundbar
Power supply : AC 120V/60Hz
Test mode : Tx Mode 2403.35MHz
M/N : SB26 CNTR
:

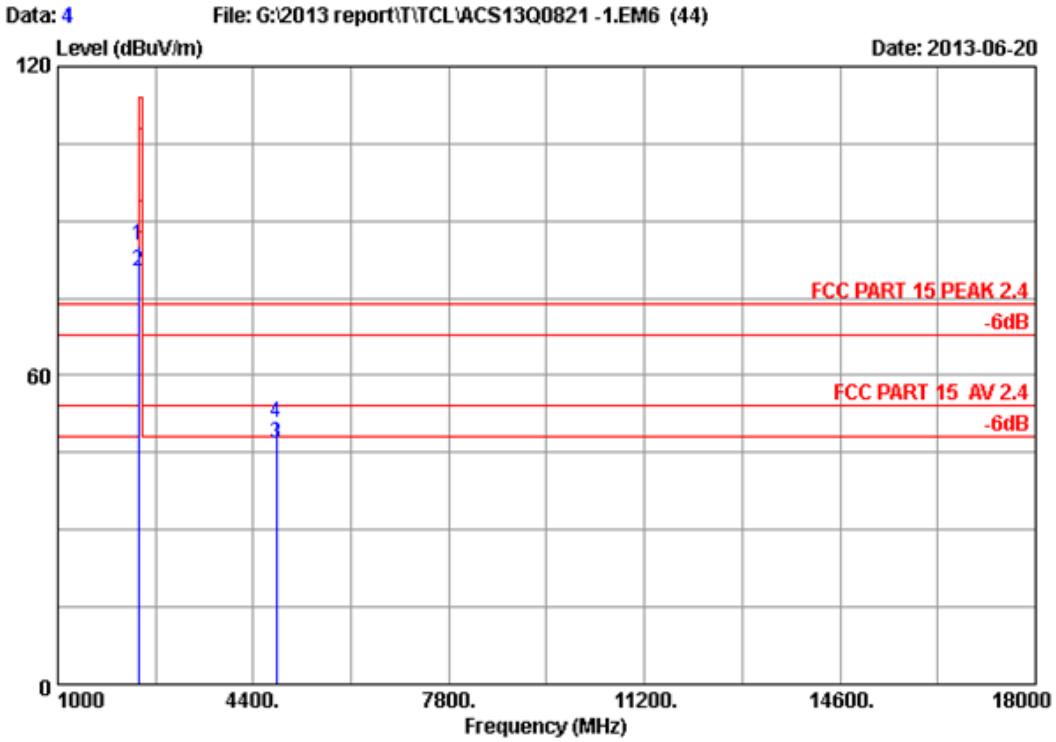
Data no. : 2
Ant. pol. : HORIZONTAL
Engineer : Kevin_Hu

	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	2403.000	26.78	6.02	35.70	89.02	86.12	114.00	27.88	Peak
2	2403.000	26.78	6.02	35.70	84.12	81.22	94.00	12.78	Average
3	4806.000	32.47	8.67	35.70	45.93	51.37	74.00	22.63	Peak
4	4806.000	32.47	8.67	35.70	40.67	46.11	54.00	7.89	Average

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



Site no.	: 3m Chamber	Data no.	: 3
Dis. / Ant.	: 3m 2012 3115 (4580)	Ant. pol.	: VERTICAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 22.4'C/41%	Engineer	: Kevin_Hu
EUT	: Soundbar		
Power supply	: AC 120V/60Hz		
Test mode	: Tx Mode 2403.35MHz		
M/N	: SB26 CNTR		
	:		

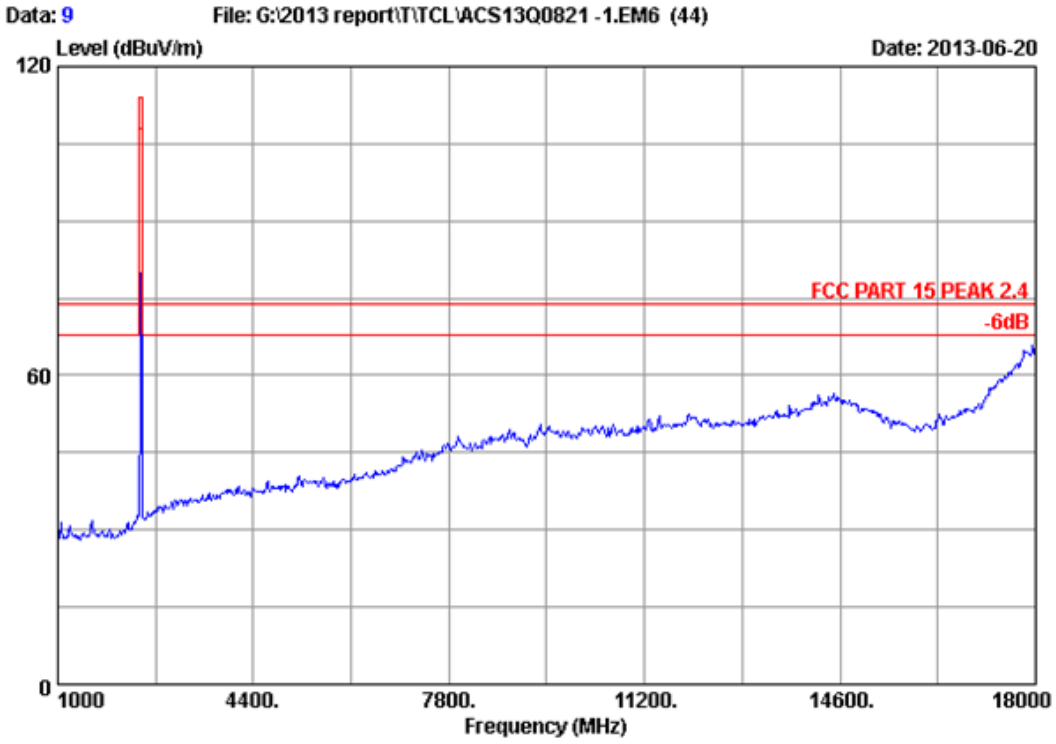


Site no. : 3m Chamber
Dis. / Ant. : 3m 2012 3115 (4580)
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 22.4'C/41%
EUT : Soundbar
Power supply : AC 120V/60Hz
Test mode : Tx Mode 2403.35MHz
M/N : SB26 CNTR
:

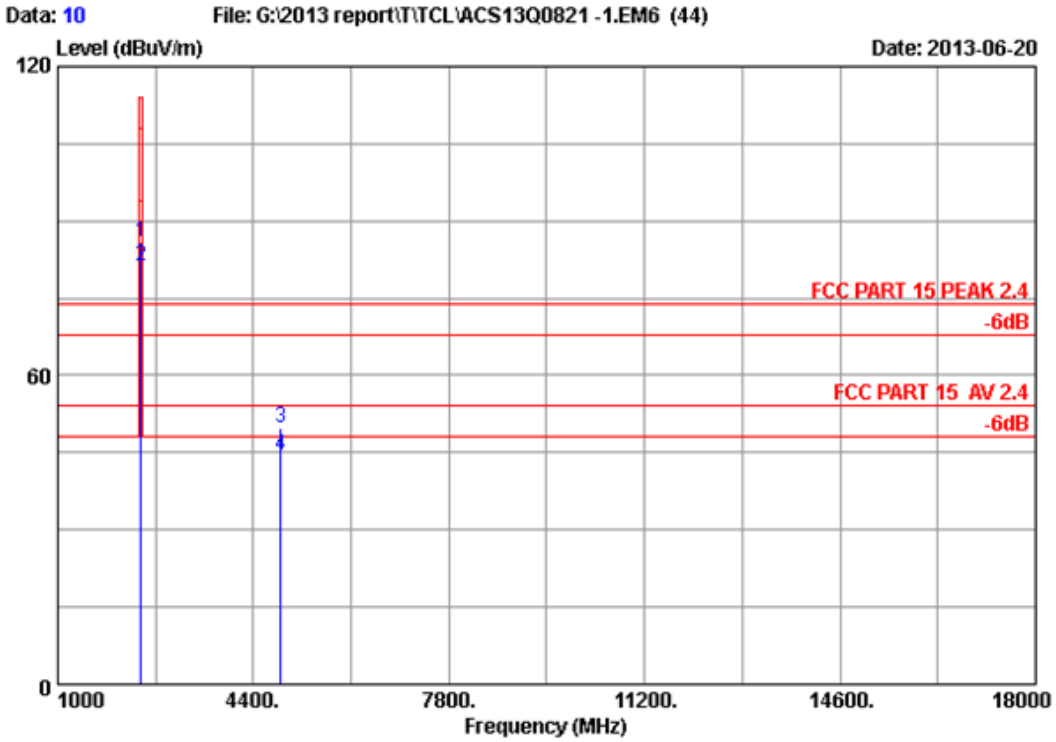
Data no. : 4
Ant. pol. : VERTICAL
Engineer : Kevin_Hu

	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	2403.000	26.78	6.02	35.70	88.04	85.14	114.00	28.86	Peak
2	2403.000	26.78	6.02	35.70	83.11	80.21	94.00	13.79	Average
3	4806.000	32.47	8.67	35.70	41.25	46.69	54.00	7.31	Average
4	4806.000	32.47	8.67	35.70	45.31	50.75	74.00	23.25	Peak

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



Site no.	: 3m Chamber	Data no.	: 9
Dis. / Ant.	: 3m 2012 3115 (4580)	Ant. pol.	: VERTICAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 22.4'C/41%	Engineer	: Kevin_Hu
EUT	: Soundbar		
Power supply	: AC 120V/60Hz		
Test mode	: Tx Mode 2441.35MHz		
M/N	: SB26 CNTR		
	:		

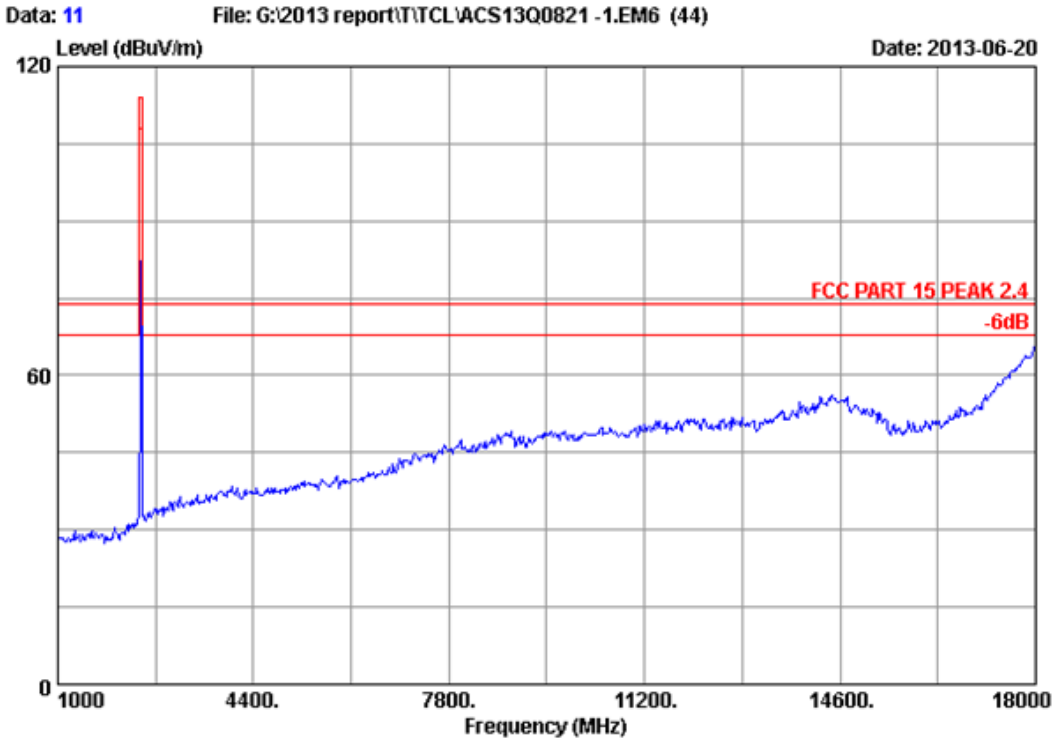


Site no. : 3m Chamber
Dis. / Ant. : 3m 2012 3115 (4580)
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 22.4'C/41%
EUT : Soundbar
Power supply : AC 120V/60Hz
Test mode : Tx Mode 2441.35MHz
M/N : SB26 CNTR
:

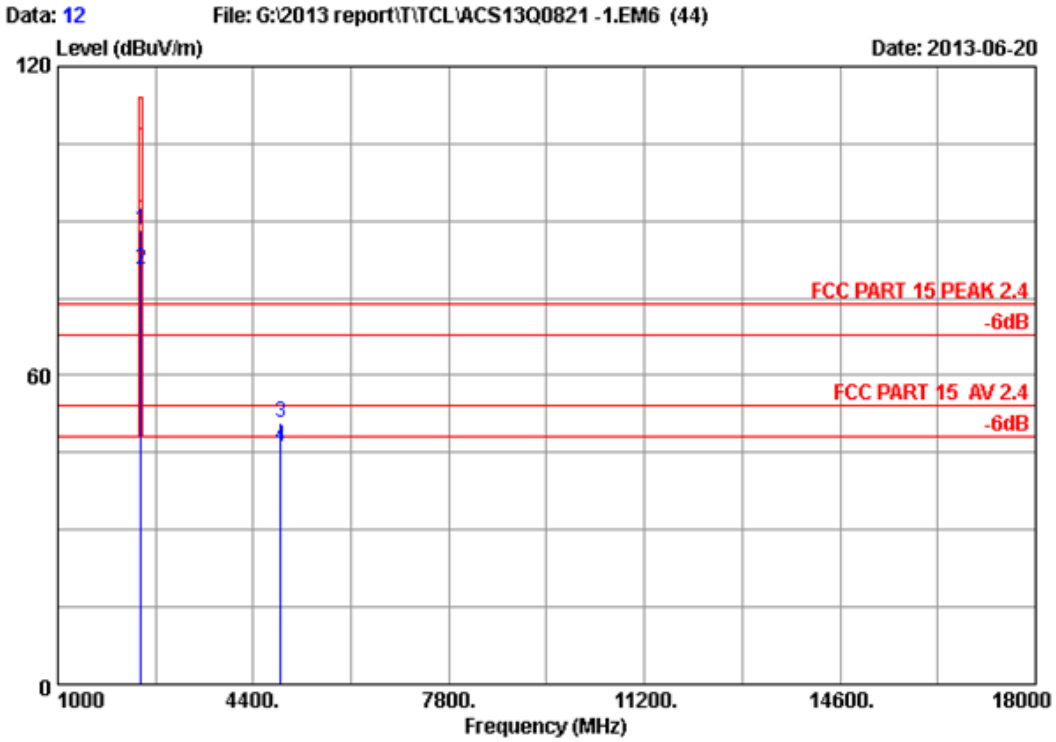
Data no. : 10
Ant. pol. : VERTICAL
Engineer : Kevin_Hu

	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	27.02	5.86	35.70	88.57	85.75	114.00	28.25	Peak
2	2441.000	27.02	5.86	35.70	83.98	81.16	94.00	12.84	Average
3	4882.000	32.64	8.64	35.70	44.06	49.64	74.00	24.36	Peak
4	4882.000	32.64	8.64	35.70	38.79	44.37	54.00	9.63	Average

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



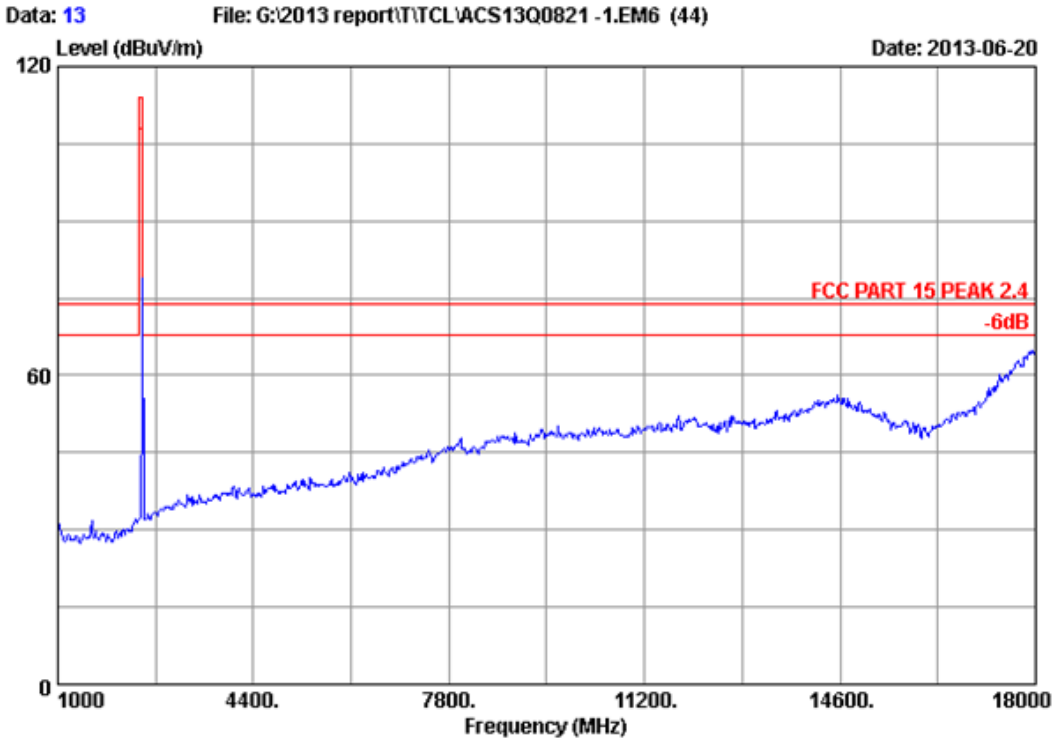
Site no.	: 3m Chamber	Data no.	: 11
Dis. / Ant.	: 3m 2012 3115 (4580)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 22.4'C/41%	Engineer	: Kevin_Hu
EUT	: Soundbar		
Power supply	: AC 120V/60Hz		
Test mode	: Tx Mode 2441.35MHz		
M/N	: SB26 CNTR		
	:		



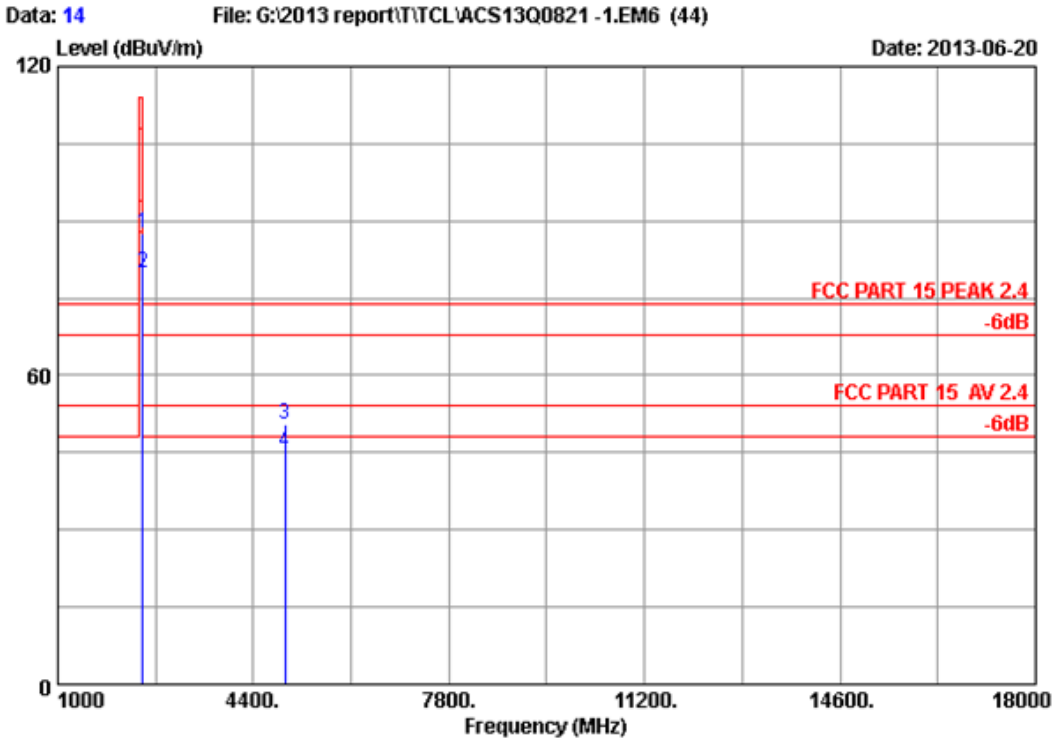
Site no. : 3m Chamber
Data no. : 12
Dis. / Ant. : 3m 2012 3115 (4580)
Ant. pol. : HORIZONTAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 22.4'C/41%
Engineer : Kevin_Hu
EUT : Soundbar
Power supply : AC 120V/60Hz
Test mode : Tx Mode 2441.35MHz
M/N : SB26 CNTR
:

	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	27.02	5.86	35.70	91.11	88.29	114.00	25.71	Peak
2	2441.000	27.02	5.86	35.70	83.41	80.59	94.00	13.41	Average
3	4882.000	32.64	8.64	35.70	45.13	50.71	74.00	23.29	Peak
4	4882.000	32.64	8.64	35.70	40.38	45.96	54.00	8.04	Average

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



Site no.	: 3m Chamber	Data no.	: 13
Dis. / Ant.	: 3m 2012 3115 (4580)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 22.4'C/41%	Engineer	: Kevin_Hu
EUT	: Soundbar		
Power supply	: AC 120V/60Hz		
Test mode	: Tx Mode 2477.35MHz		
M/N	: SB26 CNTR		
	:		

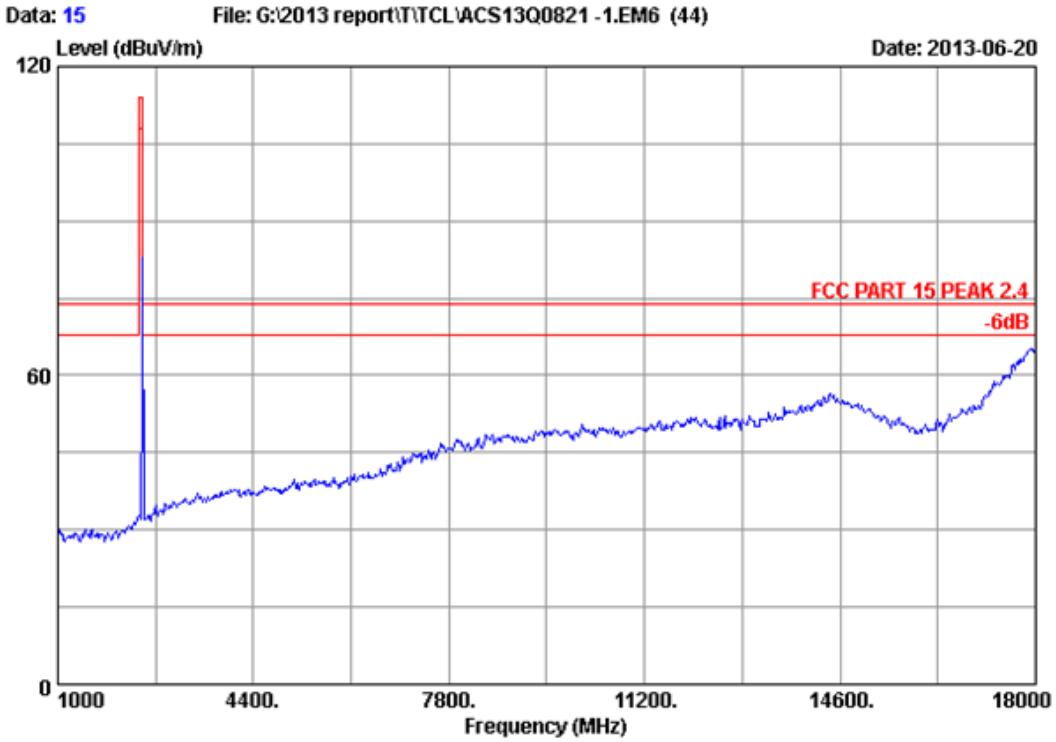


Site no. : 3m Chamber
Dis. / Ant. : 3m 2012 3115 (4580)
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 22.4'C/41%
EUT : Soundbar
Power supply : AC 120V/60Hz
Test mode : Tx Mode 2477.35MHz
M/N : SB26 CNTR
:

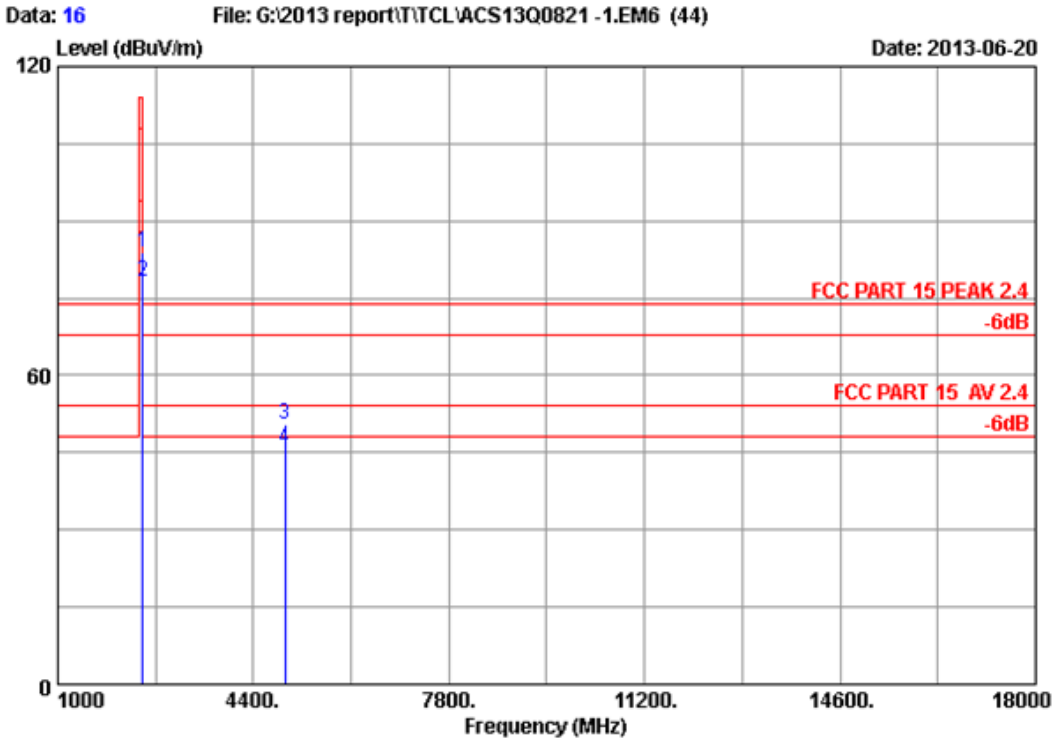
Data no. : 14
Ant. pol. : HORIZONTAL
Engineer : Kevin_Hu

	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	2477.000	27.25	5.91	35.70	89.97	87.43	114.00	26.57	Peak
2	2477.000	27.25	5.91	35.70	82.51	79.97	94.00	14.03	Average
3	4954.000	32.80	8.72	35.70	44.53	50.35	74.00	23.65	Peak
4	4954.000	32.80	8.72	35.70	39.31	45.13	54.00	8.87	Average

Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + 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 2012 3115 (4580)	Ant. pol.	: VERTICAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 22.4'C/41%	Engineer	: Kevin_Hu
EUT	: Soundbar		
Power supply	: AC 120V/60Hz		
Test mode	: Tx Mode 2477.35MHz		
M/N	: SB26 CNTR		
	:		



Site no. : 3m Chamber
Dis. / Ant. : 3m 2012 3115 (4580)
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 22.4'C/41%
EUT : Soundbar
Power supply : AC 120V/60Hz
Test mode : Tx Mode 2477.35MHz
M/N : SB26 CNTR
:

Data no. : 16
Ant. pol. : VERTICAL
Engineer : Kevin_Hu

	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	2477.000	27.25	5.91	35.70	86.41	83.87	114.00	30.13	Peak
2	2477.000	27.25	5.91	35.70	80.62	78.08	94.00	15.92	Average
3	4954.000	32.80	8.72	35.70	44.72	50.54	74.00	23.46	Peak
4	4954.000	32.80	8.72	35.70	40.11	45.93	54.00	8.07	Average

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

5. 20DB BANDWIDTH TEST

5.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	N9030A	MY51380221	Oct.31, 13	1 Year

5.2.Limit

Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

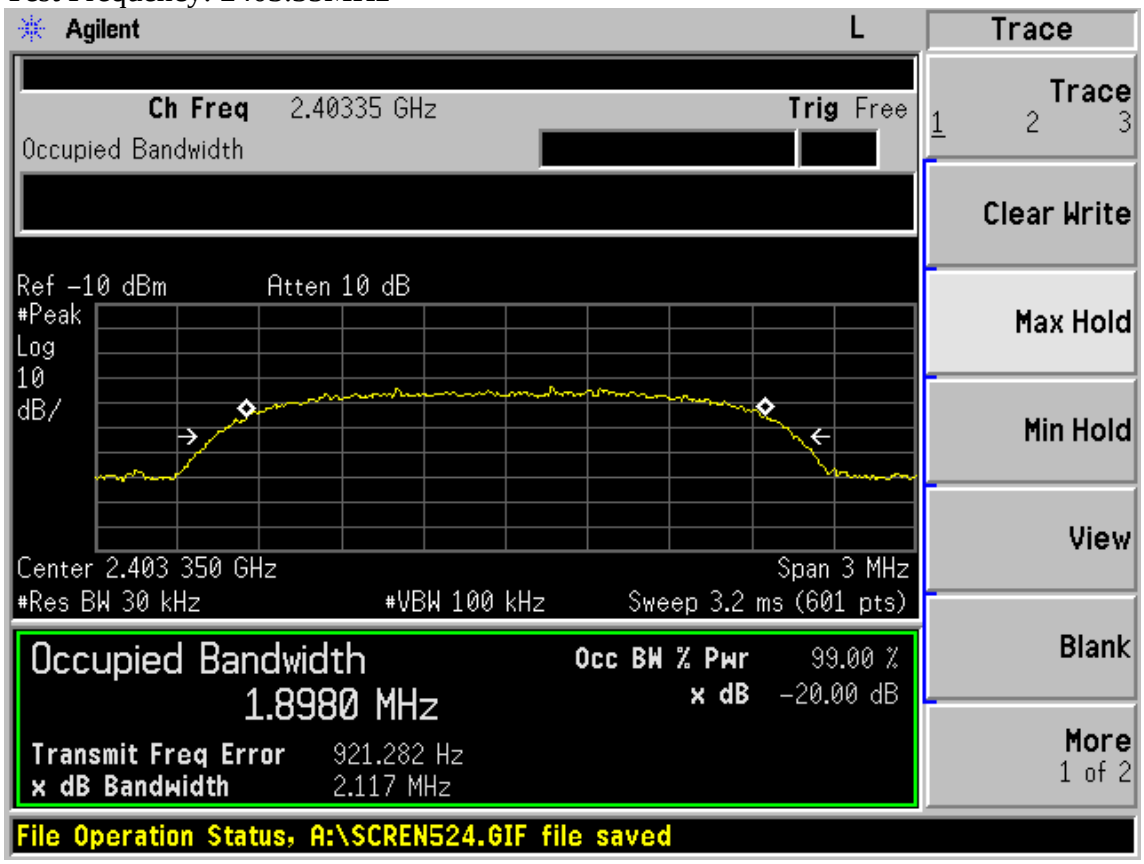
5.3.Test Results

EUT:Soundbar		
M/N: SB26 CNTR		
Test date: 2013-06-24	Pressure: 101.2±1.0 kpa	Humidity: 53.8±3.0%
Tested by: Leo-Li	Test site: RF Site	Temperature：21 .4±0.6℃

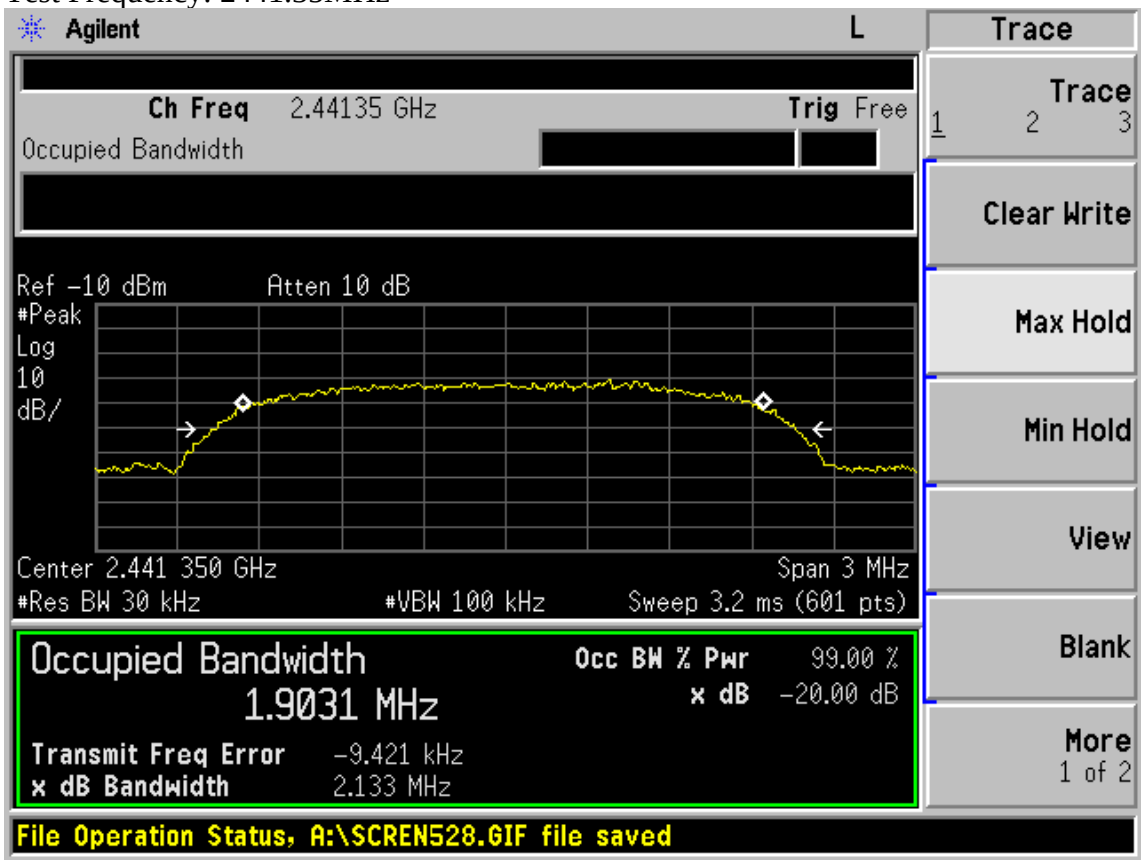
Cable loss: 1 dB		Attenuator loss: 10 dB	
Test Mode	CH （MHz）	20dB bandwidth （KHz）	Limit (KHz)
TX	2403.35	2117	N/A
	2441.35	2133	N/A
	2477.35	2136	N/A
Conclusion：PASS			

GFSK

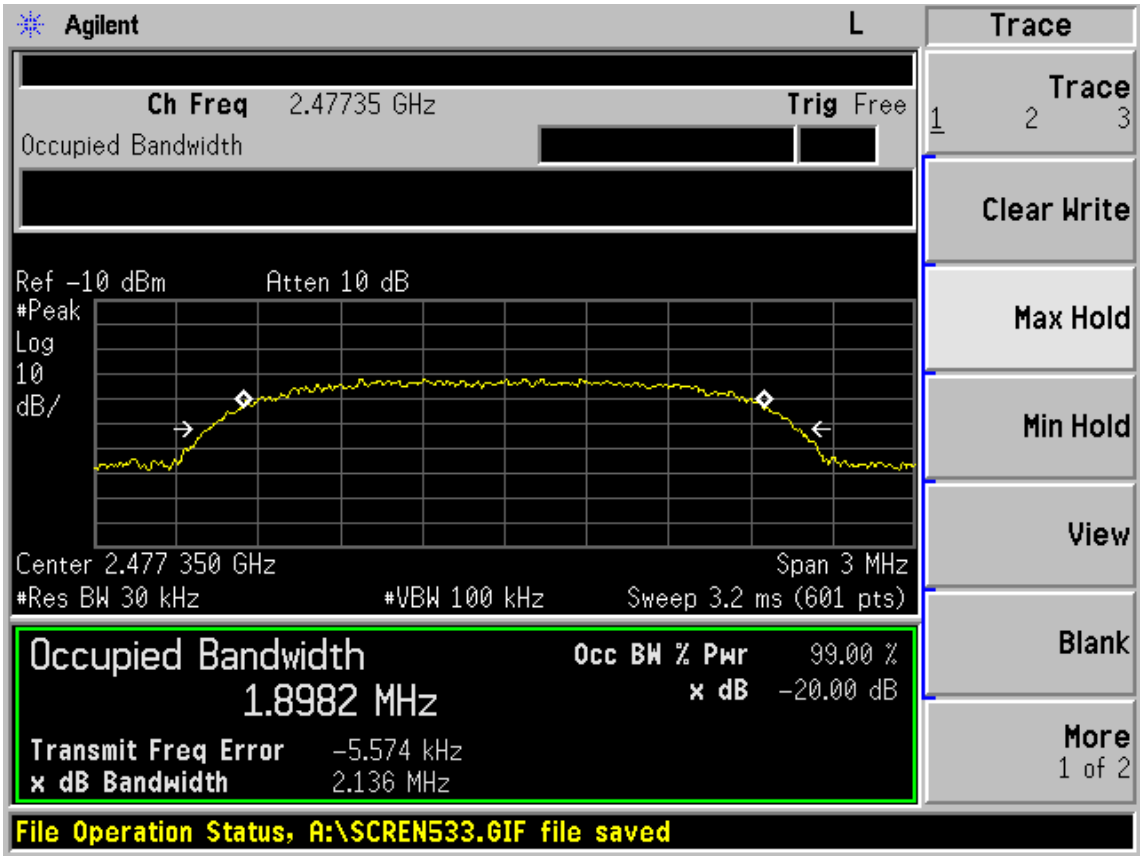
Test Frequency: 2403.35MHz



Test Frequency: 2441.35MHz



Test Frequency: 2477.35MHz



6. BAND EDGE COMPLIANCE TEST

6.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	E4446A	US44300459	May.08, 13	1 Year
2.	Amp	HP	8449B	3008A08495	May.08, 13	1 Year
3.	Antenna	EMCO	3115	4580	May.08, 13	1Year
4.	HF Cable	Hubersuhne	Sucoflex104	-	May.08, 12	1 Year

6.2. 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.

6.3. 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

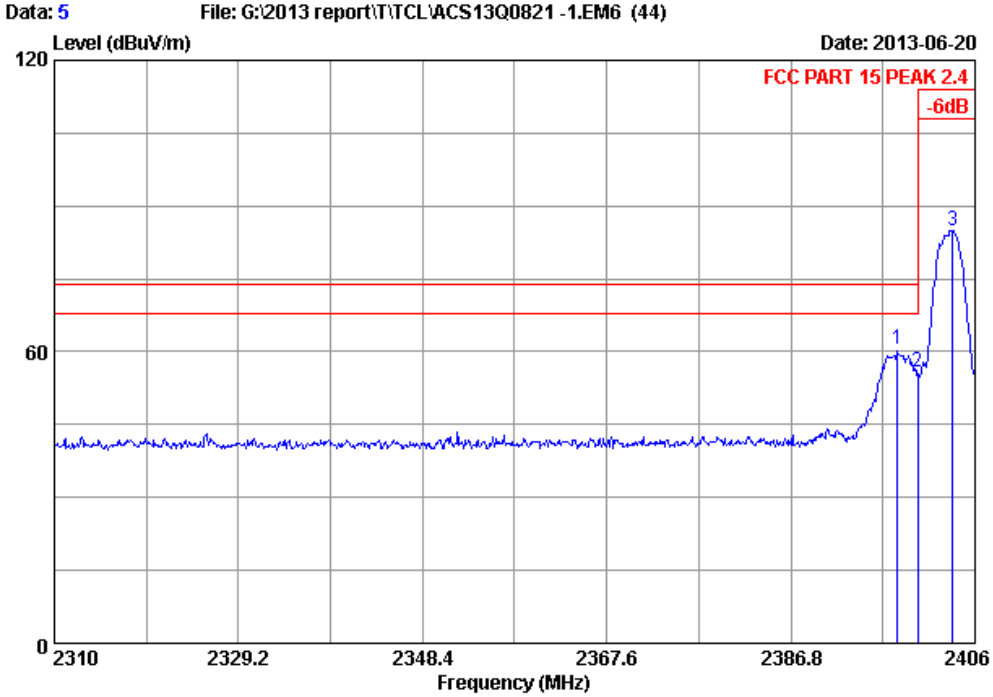
For emissions above two bandwidths away from the band-edge use below produce:

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) AV: RBW=1MHz; VBW=10Hz, Sweep=AUTO

6.4. Test Results

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

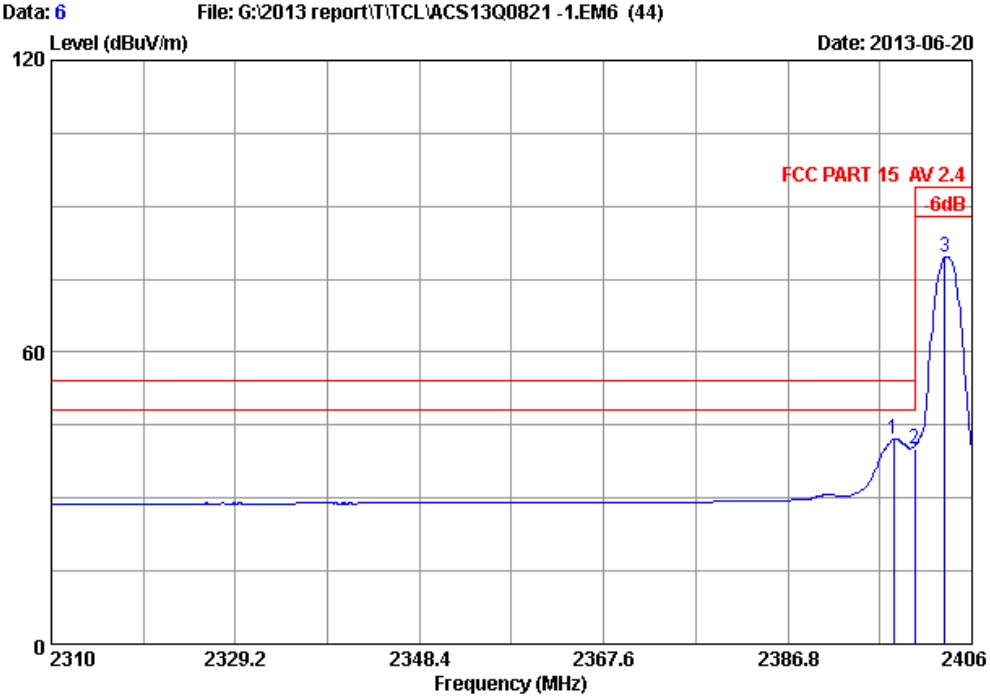
Note: If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.



Site no. : 3m Chamber
Data no. : 5
Dis. / Ant. : 3m 2012 3115 (4580)
Ant. pol. : VERTICAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 22.4'C/41%
Engineer : Kevin_Hu
EUT : Soundbar
Power supply : AC 120V/60Hz
Test mode : Tx Mode 2403.35MHz
M/N : SB26 CNTR
:

	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	2397.950	26.75	6.01	35.70	63.51	60.57	74.00	13.43	Peak
2	2400.000	26.76	6.02	35.70	58.69	55.77	74.00	18.23	Peak
3	2403.696	26.78	6.02	35.70	87.89	84.99	114.00	29.01	Peak

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

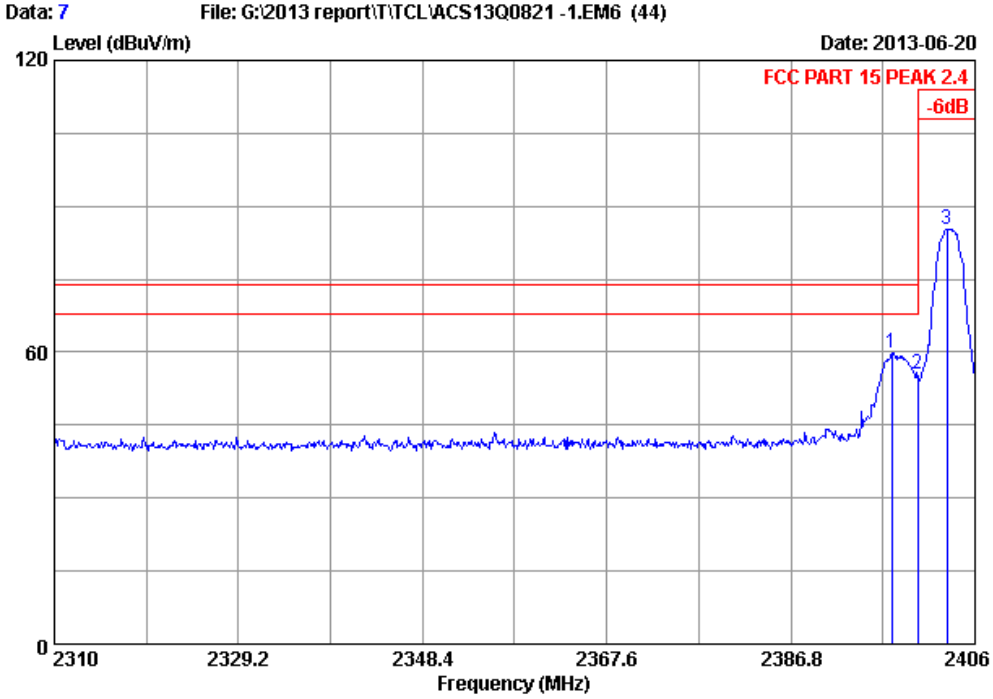


Site no. : 3m Chamber
Dis. / Ant. : 3m 2012 3115 (4580)
Limit : FCC PART 15 AV 2.4
Env. / Ins. : 22.4'C/41%
EUT : Soundbar
Power supply : AC 120V/60Hz
Test mode : Tx Mode 2403.35MHz
M/N : SB26 CNTR
:

Data no. : 6
Ant. pol. : VERTICAL
Engineer : Kevin_Hu

	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	2397.850	26.75	6.01	35.70	44.98	42.04	54.00	11.96	Average
2	2400.000	26.76	6.02	35.70	43.19	40.27	54.00	13.73	Average
3	2403.150	26.78	6.02	35.70	82.59	79.69	94.00	14.31	Average

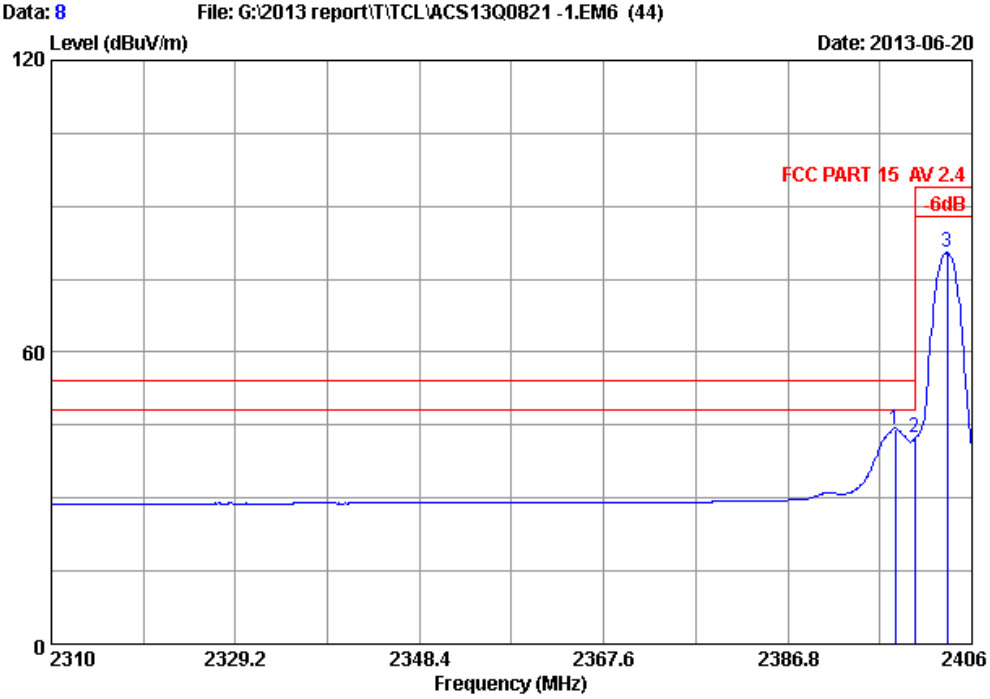
Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber
Data no. : 7
Dis. / Ant. : 3m 2012 3115 (4580)
Ant. pol. : HORIZONTAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 22.4'C/41%
Engineer : Kevin_Hu
EUT : Soundbar
Power supply : AC 120V/60Hz
Test mode : Tx Mode 2403.35MHz
M/N : SB26 CNTR
:

	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	2397.360	26.74	6.01	35.70	62.92	59.97	74.00	14.03	Peak
2	2400.000	26.76	6.02	35.70	58.54	55.62	74.00	18.38	Peak
3	2403.120	26.78	6.02	35.70	88.00	85.10	114.00	28.90	Peak

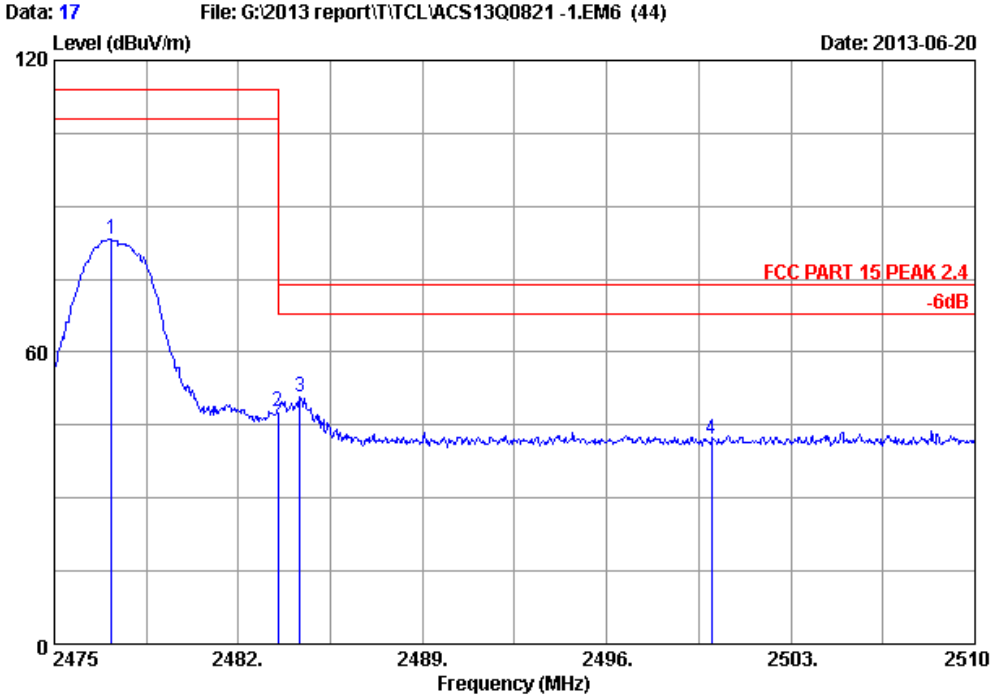
Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber
Data no. : 8
Dis. / Ant. : 3m 2012 3115 (4580)
Ant. pol. : HORIZONTAL
Limit : FCC PART 15 AV 2.4
Env. / Ins. : 22.4'C/41%
Engineer : Kevin_Hu
EUT : Soundbar
Power supply : AC 120V/60Hz
Test mode : Tx Mode 2403.35MHz
M/N : SB26 CNTR
:

	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	2397.985	26.75	6.01	35.70	47.01	44.07	54.00	9.93	Average
2	2400.000	26.76	6.02	35.70	45.31	42.39	54.00	11.61	Average
3	2403.438	26.78	6.02	35.70	83.54	80.64	94.00	13.36	Average

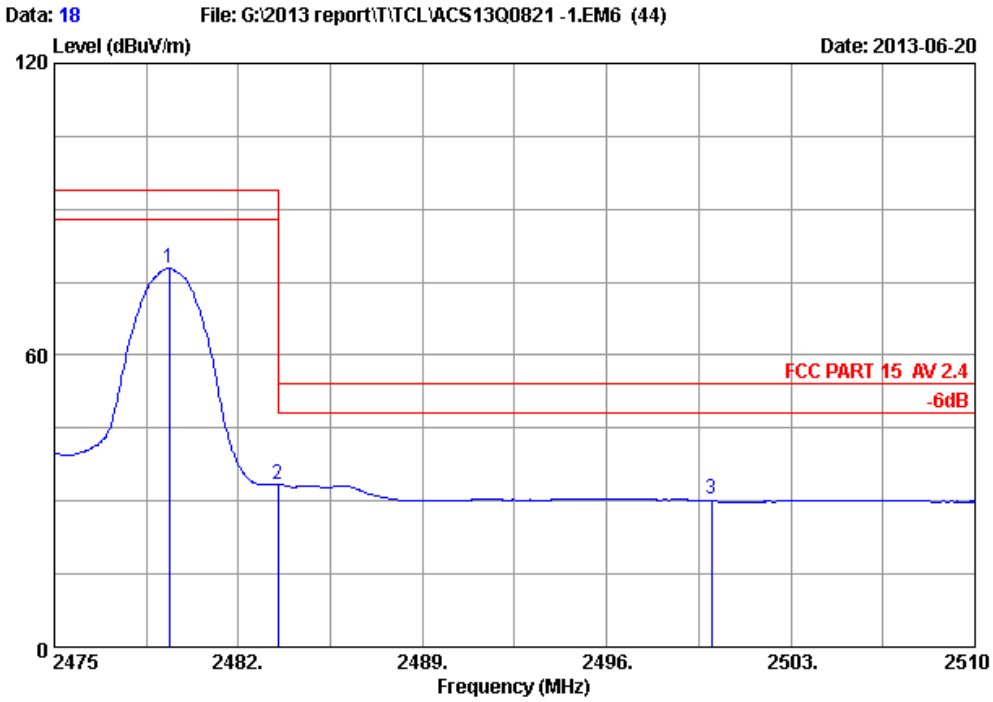
Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber
Data no. : 17
Dis. / Ant. : 3m 2012 3115 (4580)
Ant. pol. : VERTICAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 22.4'C/41%
Engineer : Kevin_Hu
EUT : Soundbar
Power supply : AC 120V/60Hz
Test mode : Tx Mode 2477.35MHz
M/N : SB26 CNTR
:

	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	2477.170	27.25	5.91	35.70	85.72	83.18	114.00	30.82	Peak
2	2483.500	27.29	5.92	35.70	50.41	47.92	74.00	26.08	Peak
3	2484.345	27.30	5.92	35.70	53.12	50.64	74.00	23.36	Peak
4	2500.000	27.40	5.94	35.70	44.62	42.26	74.00	31.74	Peak

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

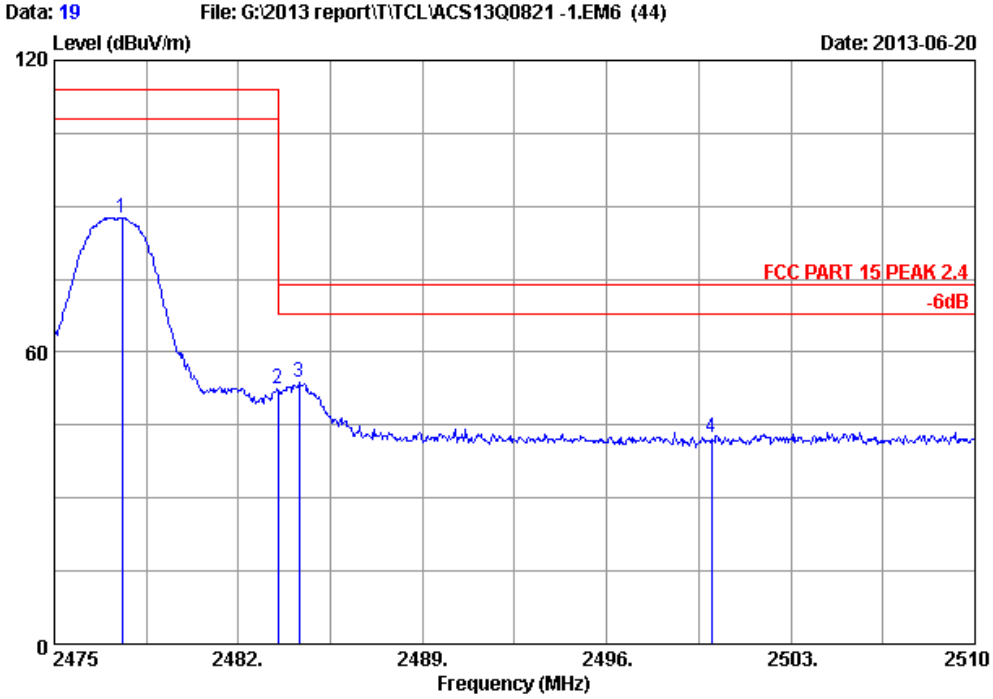


Site no. : 3m Chamber
Dis. / Ant. : 3m 2012 3115 (4580)
Limit : FCC PART 15 AV 2.4
Env. / Ins. : 22.4'C/41%
EUT : Soundbar
Power supply : AC 120V/60Hz
Test mode : Tx Mode 2477.35MHz
M/N : SB26 CNTR
:

Data no. : 18
Ant. pol. : VERTICAL
Engineer : Kevin_Hu

	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	2479.360	27.27	5.91	35.70	80.54	78.02	94.00	15.98	Average
2	2483.500	27.29	5.92	35.70	35.87	33.38	54.00	20.62	Average
3	2500.000	27.40	5.94	35.70	32.78	30.42	54.00	23.58	Average

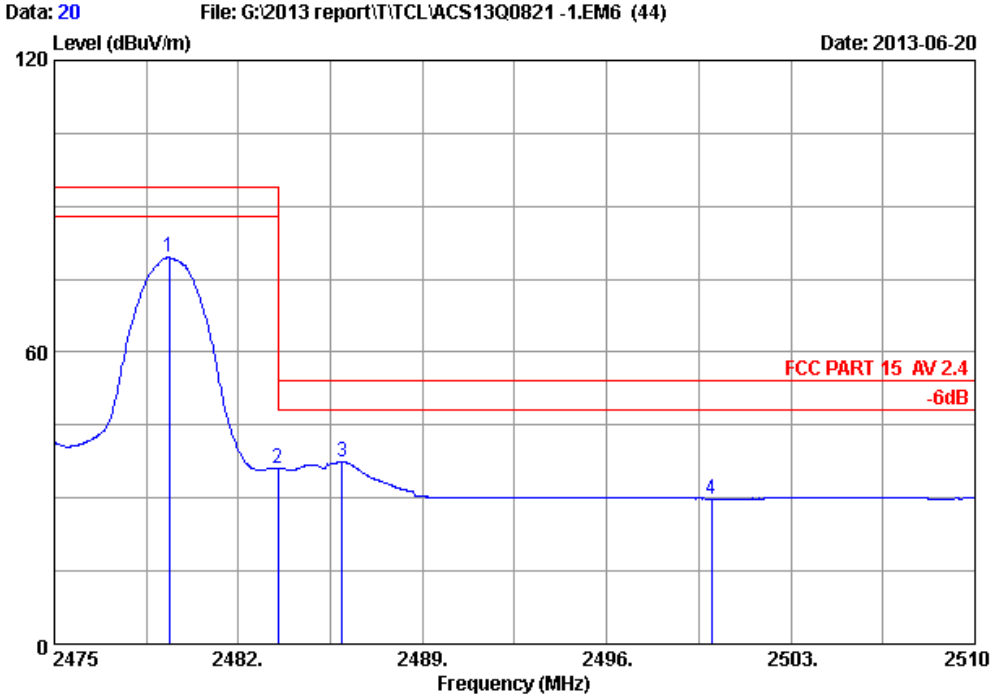
Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber
Data no. : 19
Dis. / Ant. : 3m 2012 3115 (4580)
Ant. pol. : HORIZONTAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 22.4'C/41%
Engineer : Kevin_Hu
EUT : Soundbar
Power supply : AC 120V/60Hz
Test mode : Tx Mode 2477.35MHz
M/N : SB26 CNTR
:

	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	2477.590	27.26	5.91	35.70	90.09	87.56	114.00	26.44	Peak
2	2483.500	27.29	5.92	35.70	55.02	52.53	74.00	21.47	Peak
3	2484.310	27.30	5.92	35.70	56.22	53.74	74.00	20.26	Peak
4	2500.000	27.40	5.94	35.70	44.92	42.56	74.00	31.44	Peak

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



Site no. : 3m Chamber
Data no. : 20
Dis. / Ant. : 3m 2012 3115 (4580)
Ant. pol. : HORIZONTAL
Limit : FCC PART 15 AV 2.4
Env. / Ins. : 22.4'C/41%
Engineer : Kevin_Hu
EUT : Soundbar
Power supply : AC 120V/60Hz
Test mode : Tx Mode 2477.35MHz
M/N : SB26 CNTR
:

	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	2479.369	27.27	5.91	35.70	82.03	79.51	94.00	14.49	Average
2	2483.500	27.29	5.92	35.70	38.62	36.13	54.00	17.87	Average
3	2485.955	27.31	5.92	35.70	39.83	37.36	54.00	16.64	Peak
4	2500.000	27.40	5.94	35.70	31.99	29.63	54.00	24.37	Average

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

7. DEVIATION TO TEST SPECIFICATIONS

[NONE]