FCC PART 15C TEST REPORT FOR CERTIFICATION
On Behalf of

TCL Technoly Electronics (Huizhou) Co.,Ltd.

System Name : Sound Bar
(Active Speaker System and Active Subwoofer)

System Model Number : HT-CT180 (SA-CT180 and SA-WCT180)

Brand Name : Sony

EUT Name	EUT Model No.
Active Speaker System	SA-CT180

FCC ID: ZVASB000013

Prepared for : TCL Technoly Electronics (Huizhou) Co.,Ltd.
Section 37, Zhongkai High-tech Development Zone,
Huizhou City, GuangDong Province, P.R. China

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-F14355
Date of Test : Nov.01~05, 2014
Date of Report : Dec.05, 2014

TABLE OF CONTENTS

TEST REPORT CERTIFICATION

Applicant	:	TCL Technoly Electronics (Huizhou) Co.,Ltd.
Manufacturer	:	Sony Corporation
System Name	:	Sound Bar (Active Speaker System and Active Subwoofer)
System Model Number	:	HT-CT180 (SA-CT180 and SA-WCT180)
EUT Description	:	Active Speaker System
FCC ID	:	ZVASB000013

(A) EUT Name & EUT Model Number :

EUT Name	EUT Model No.
Active Speaker System	SA-CT180

(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: 2013
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 : Nov.01~05, 2014 Report of date: Dec.05, 2014

Prepared by : Cindy Zhu
Cindy Zhu / 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

Approved & Authorized Signer :
David Jin / 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 15C: 15.207 ANSI C63.10-2009	PASS
Radiated Emission Test	FCC Part 15C: 15.209 FCC Part 15C: 15.249 ANSI C63.10-2009	PASS
Band Edge Compliance Test	FCC Part 15: 15.249 ANSI C63.10-2009	PASS
20dB Bandwidth Test	FCC Part 15: 15.215 ANSI C63.10-2009	PASS

2. GENERAL INFORMATION

2.1.Description of Device (EUT)

System Name : Sound Bar
(Active Speaker System and Active Subwoofer)

System Model Number : HT-CT180(SA-CT180 and SA-WCT180)

Brand Name : Sony

EUT Name & EUT Model Number :

Brand Name	EUT Model No.
Active Speaker System	SA-CT180

FCC ID : ZVASB000013

Operation frequency : 2402-2480MHz; 2403-2478MHz

Modulation : Bluetooth V3.0+EDR: GFSK, π/4DQPSK, 8DPSK;
Bluetooth V4.0: GFSK;
General 2.4GHz wireless: GFSK

Radio : Bluetooth V3.0+EDR;
Bluetooth V4.0;
General 2.4GHz wireless

Antenna : Integrated PCB Antenna, 2.0dBi PK gain

Applicant : TCL Technoly Electronics (Huizhou) Co.,Ltd.
Secion 37, Zhongkai High-tech Development Zone,
Huizhou City, Guangdong Province, P.R. China

Manufacturer : Sony Corporation
1-7-1 Konan, Minato-Ku, Tokyo, 108-0075 Japan

Power Cord : Unshielded, Undetectable, 1.2m

Remote Controller : Brand: Sony, Model Number: RMT-AH100U

Date of Test : Nov.01~04, 2014

Date of Receipt : Sep.27, 2014

Sample Type : Prototype production

The Product covered in this report was Sound bar; This product consists of Active Speaker System (SA-CT180) and Active Subwoofer (SA-WCT180)

2.2.Special Test information

The test software “Hy Perterminal Applet.exe” was used to control EUT work in Continuous TX mode, and select test channel.

Tested mode, channel, and data rate information			
Mode	data rate (Mbps)	Channel	Frequency (MHz)
Tx Mode GFSK modulation	1	Low :CH 1	2403
	1	Middle: CH13	2441
	1	High: CH24	2478

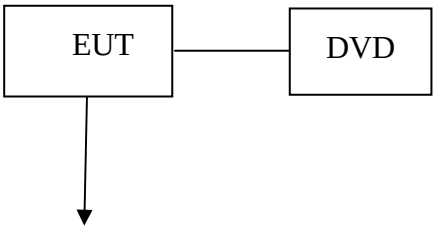
2.3.Channel List

CH	Frequency(MHz)	CH	Frequency(MHz)
1	2403	14	2443
2	2405	15	2446
3	2408	16	2449
4	2412	17	2452
5	2415	18	2455
6	2418	19	2459
7	2421	20	2464
8	2424	21	2468
9	2427	22	2472
10	2432	23	2476
11	2435	24	2478
12	2438		
13	2441		

2.4.Tested Supporting System Details

	Description	ACS No.	Manufacturer	Model	Serial Number	Approved type
1.	notebook	N/A	DELL	PP09S	N/A	☑FCC DoC ☑BSMI ID R41108
		Power Cord: Unshielded, Detachabled, 1.8m Power Adapter: Manufacturer: DELL, M/N: LA65NS1-00 Cable: Unshielded, Detachabled, 4.0m(Bond one ferrite core)----				
2.	DVD Player	ACS-EMC-DVD01	DENON	DVD-3910	4098400342E	-----
		Data Cable: Shielded, Detachabled, 1.8m Power cord: Unshielded, Detachabled , 1.8m				

2.5.EUT Configuration and operation conditions for test.



(EUT: Active Speaker System)

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: 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, 2015

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

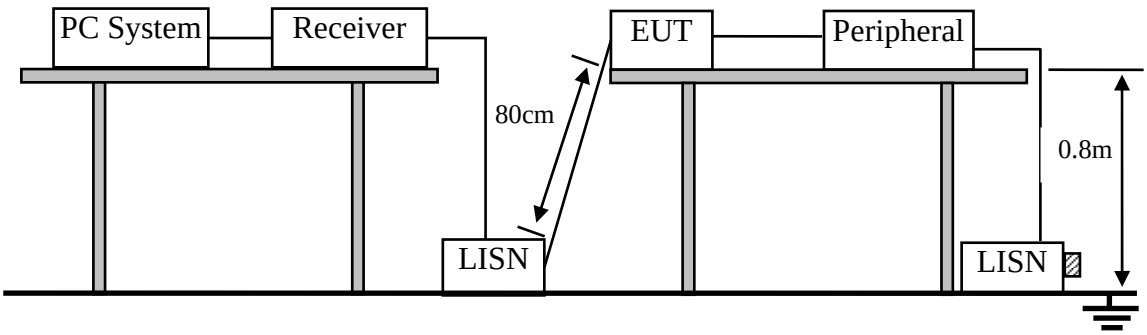
Test Item	Uncertainty
Uncertainty for Conduction emission test in No. 1 Conduction	3.10dB(150kHz to 30MHz)
Uncertainty for Radiation Emission test in 3m chamber	3.22 dB(30~200MHz, Polarize: H)
	3.23 dB(30~200MHz, Polarize: V)
	3.49 dB(200M~1GHz, Polarize: H)
	3.39 dB(200M~1GHz, Polarize: V)
Uncertainty for Radiation Emission test in 3m chamber (1GHz-18GHz)	4.97 dB (1~6GHz, Distance: 3m)
	4.99 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 TEST

3.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	1# Shielding Room	AUDIX	N/A	N/A	Apr.17,14	1 Year
2.	Test Receiver	Rohde & Schwarz	ESHS10	838693/001	Oct.29, 14	1 Year
3.	L.I.S.N.#1	Rohde & Schwarz	ESH2-Z5	100429	Jan.22, 14	1 Year
4.	L.I.S.N.#3	Kyoritsu	KNW-242C	8-1920-1	Apr. 28,14	1 Year
5.	Terminator	Hubersuhner	50Ω	No. 1	Apr. 28,14	1 Year
6.	Terminator	Hubersuhner	50Ω	No. 2	Apr. 28,14	1 Year
7.	RF Cable	Hubersuhner	RG58	0100.6954.20#	Jan.22, 14	1Year
8.	Coaxial Switch	Anritsu	MP59B	6200298346	Apr. 28,14	1 Year
9.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	101838	Jan.22, 14	1 Year

3.2.Block Diagram of Test Setup



▨ :50Ω Terminator

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.Active Speaker System (EUT)

Model Number : SA-CT180
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

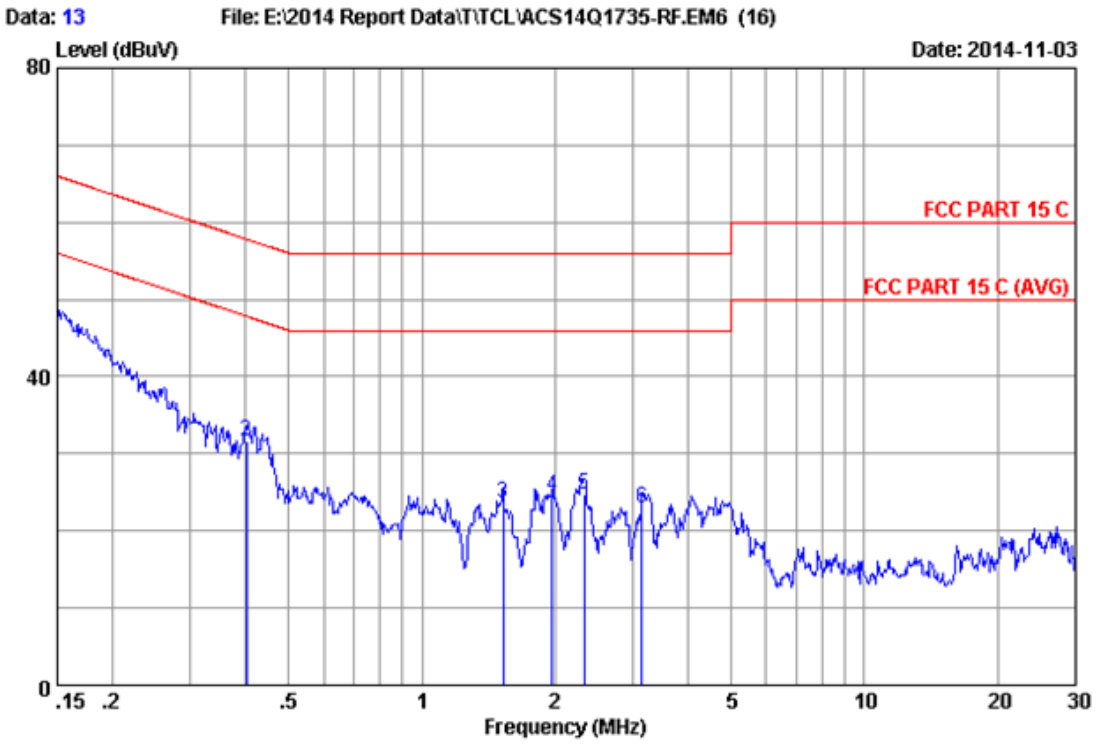
The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N. #1). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#3). 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 9kHz.

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

3.7. Conducted Disturbance at Mains Terminals Test Results

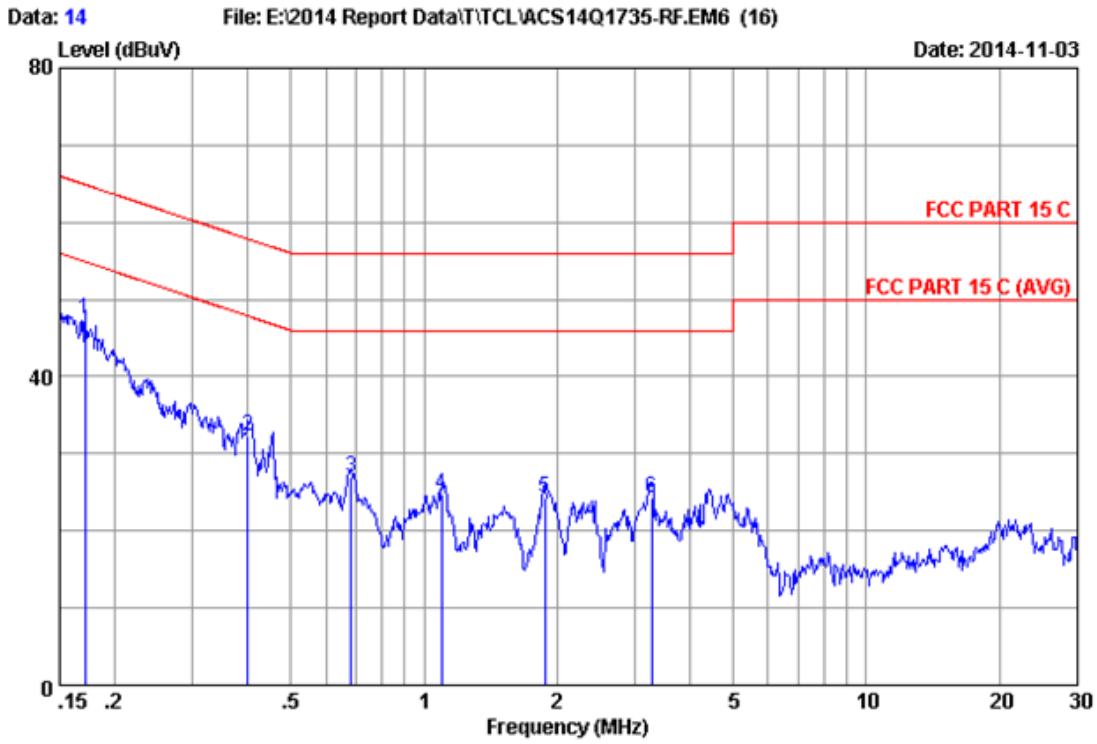
PASS. (All emissions not reported below are too low against the prescribed limits.)



Site no :1# Conduction Data No :13
Dis./Ant. :2014 KNW-242C-VA
Limit :FCC PART 15 C
Env./Ins. :24.1*C/47% Engineer :Kevin_He
EUT :Active Speaker System M/N:SA-CT180
Power Rating :AC 120V/60Hz
Test Mode :TX Mode

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15000	0.34	9.87	36.74	46.95	66.00	19.05	QP
2	0.40187	0.34	9.88	21.43	31.65	57.81	26.16	QP
3	1.527	0.41	9.90	13.37	23.68	56.00	32.32	QP
4	1.970	0.41	9.91	14.17	24.49	56.00	31.51	QP
5	2.321	0.42	9.91	14.44	24.77	56.00	31.23	QP
6	3.140	0.44	9.92	12.61	22.97	56.00	33.03	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)
+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 :14
Dis./Ant. :2014 KNW-242C-VB
Limit :FCC PART 15 C
Env./Ins. :24.1*C/47% Engineer :Kevin_He
EUT :Active Speaker System M/N:SA-CT180
Power Rating :AC 120V/60Hz
Test Mode :TX Mode

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.17124	0.06	9.87	37.54	47.47	64.90	17.43	QP
2	0.39974	0.04	9.88	22.37	32.29	57.86	25.57	QP
3	0.68263	0.05	9.89	17.08	27.02	56.00	28.98	QP
4	1.094	0.06	9.89	14.87	24.82	56.00	31.18	QP
5	1.878	0.06	9.91	14.25	24.22	56.00	31.78	QP
6	3.276	0.09	9.93	14.18	24.20	56.00	31.80	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)
+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 TEST

4.1.Test Equipment

Frequency rang: 30~1000MHz

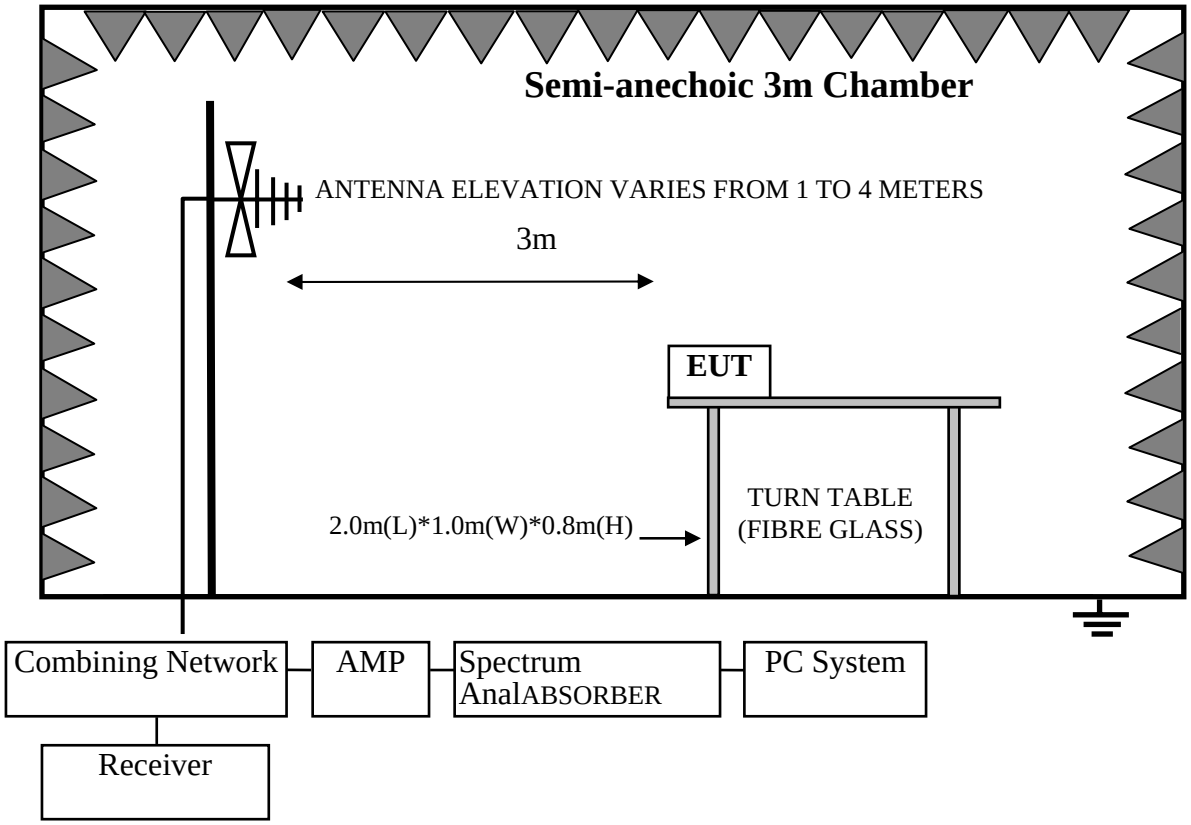
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	3#Chamber	AUDIX	N/A	N/A	Nov.24, 13	1 Year
2.	EMI Spectrum	Agilent	E4407B	MY41440292	Apr. 28,14	1 Year
3.	Test Receiver	Rohde & Schwarz	ESVS10	834468/011	Apr. 28,14	1 Year
4.	Amplifier	HP	8447D	2648A04738	Apr. 28,14	1 Year
5.	Bilog Antenna	TESEQ	CBL6112D	35375	Jun. 18, 14	1 Year
6.	RF Cable	MIYAZAKI	CFD400-NL	3# Chamber No.1	Apr. 28,14	1 Year
7.	Coaxial Switch	Anritsu	MP59B	6200313662	Apr. 28,14	1 Year

Frequency rang: above 1000MHz

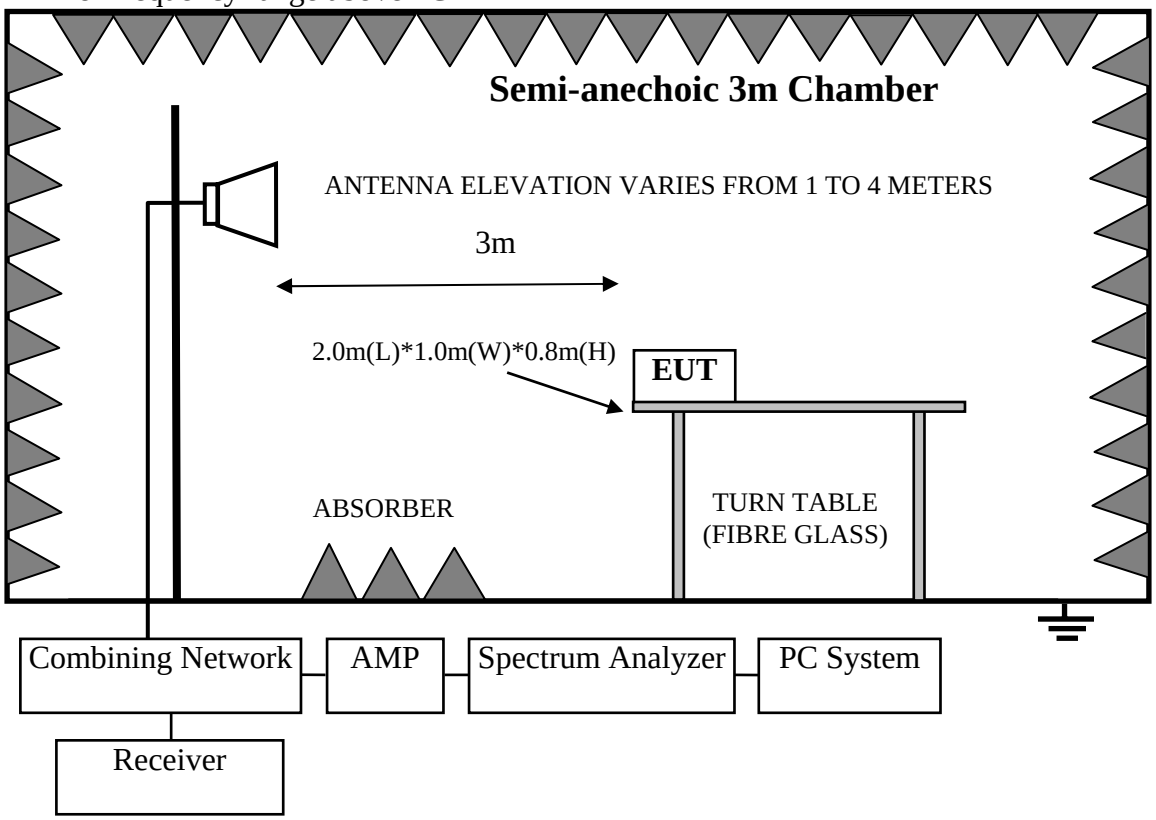
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	3#Chamber	AUDIX	N/A	N/A	Nov.02, 14	1 Year
2.	Spectrum Analyzer	Agilent	E4407B	MY41440292	Apr. 28,14	1 Year
3.	Horn Antenna	ETS	3115	9607-4877	Sep.20, 14	1 Year
4.	Amplifier	Agilent	8449B	3008A00863	Apr. 28,14	1 Year
5.	RF Cable	Hubersuhner	SUCOFLEX106	77977/6	Apr. 28,14	1 Year
6.	RF Cable	Hubersuhner	SUCOFLEX106	28616/2	Apr. 28,14	1 Year
7.	Horn Antenna	ETS	3116	00060089	Sep.20, 14	1 Year

4.2.Block Diagram of Test Setup

For frequency range 30MHz-1000MHz



For frequency range above 1GHz



4.3. Radiated Emission Limit Standard: FCC 15.209 and 15.249

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)	
Field Strength of fundamental emissions for 2.4GHz-2.4835GHz	3	114.0 dB(μV)/m (Peak) 94.0 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.

4.5.Operating Condition of EUT

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

During the pretest the EUT was rotated through three orthogonal axes to determine the attitude that maximizes the emissions.

After that the EUT was manually handled to find the orientation that has the maximum emission, which is the orientation show in the test setup photos.

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 duty cycle of the test signal is 100%.

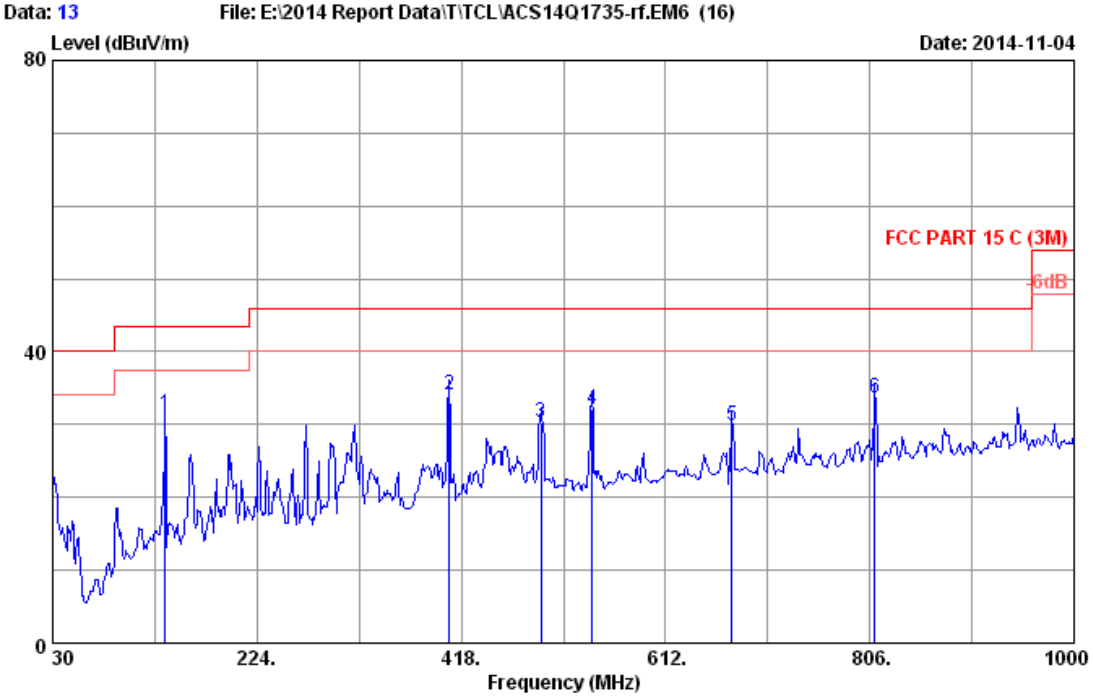
The frequency range from 30MHz to 10th harmonic (25GHz) are checked. and no any emissions were found from 18GHz to 25 GHz, So the radiated emissions from 18GHz to 25GHz were not record.

4.7. Radiated Emission Test Results

PASS.

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

Frequency: 30MHz~1GHz

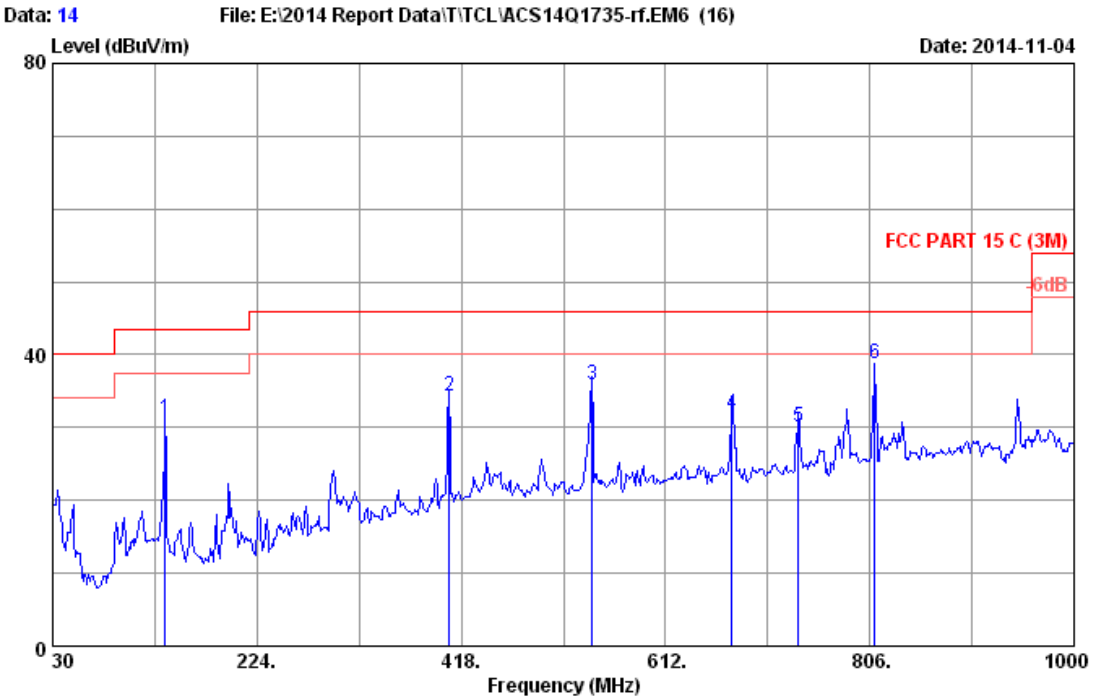


Site no. : 3m Chamber
Dis. / Ant. : 3m 2014 CBL6112D 35375
Limit : FCC PART 15 C (3M)
Env. / Ins. : 23.7*C/51%
EUT : Active Speaker System
Power rating : AC 120V/60Hz
Test Mode : TX Mode
M/N: SA-CT180

Data no. : 13
Ant. pol. : HORIZONTAL
Engineer : donjon_huang

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	136.700	12.19	1.44	17.78	31.41	43.50	12.09	QP
2	406.360	17.15	2.83	14.22	34.20	46.00	11.80	QP
3	493.660	18.15	3.20	8.96	30.31	46.00	15.69	QP
4	542.160	18.69	3.44	9.90	32.03	46.00	13.97	QP
5	675.050	20.00	4.02	5.82	29.84	46.00	16.16	QP
6	810.850	21.00	4.52	8.07	33.59	46.00	12.41	QP

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



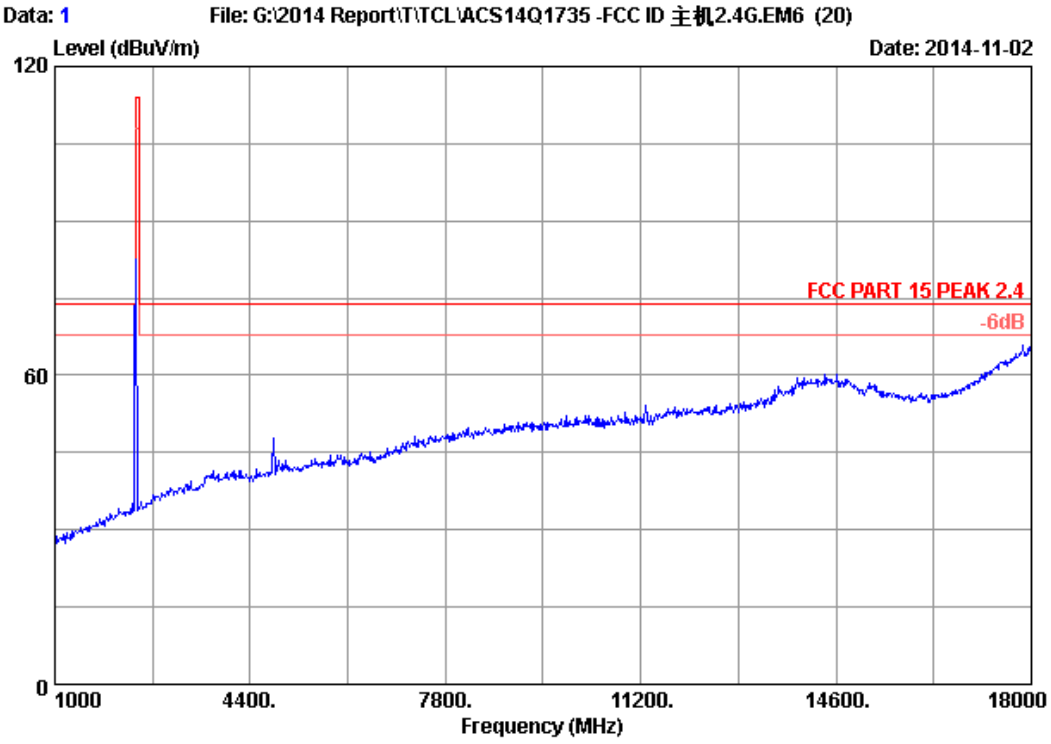
Site no. : 3m Chamber
Dis. / Ant. : 3m 2014 CBL6112D 35375
Limit : FCC PART 15 C (3M)
Env. / Ins. : 23.7*C/51%
EUT : Active Speaker System
Power rating : AC 120V/60Hz
Test Mode : TX Mode
M/N: SA-CT180

Data no. : 14
Ant. pol. : VERTICAL
Engineer : donjon_huang

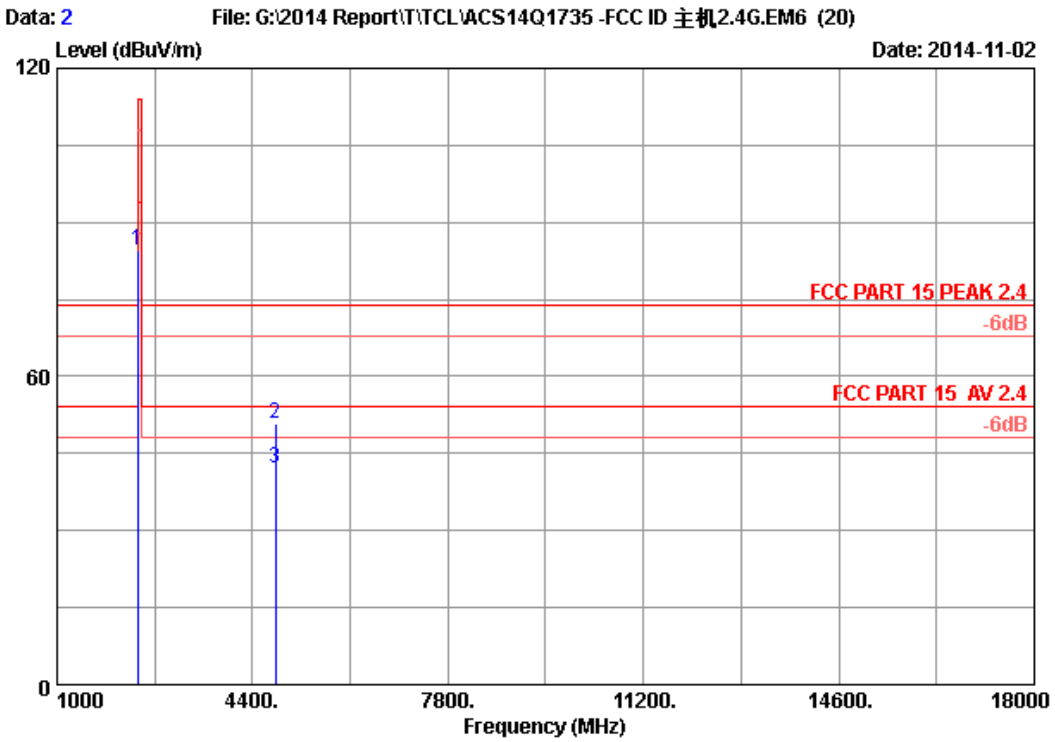
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	136.700	12.19	1.44	17.68	31.31	43.50	12.19	QP
2	406.360	17.15	2.83	14.23	34.21	46.00	11.79	QP
3	542.160	18.69	3.44	13.78	35.91	46.00	10.09	QP
4	675.050	20.00	4.02	7.82	31.84	46.00	14.16	QP
5	738.100	20.56	4.26	5.37	30.19	46.00	15.81	QP
6	810.850	21.00	4.52	13.36	38.88	46.00	7.12	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



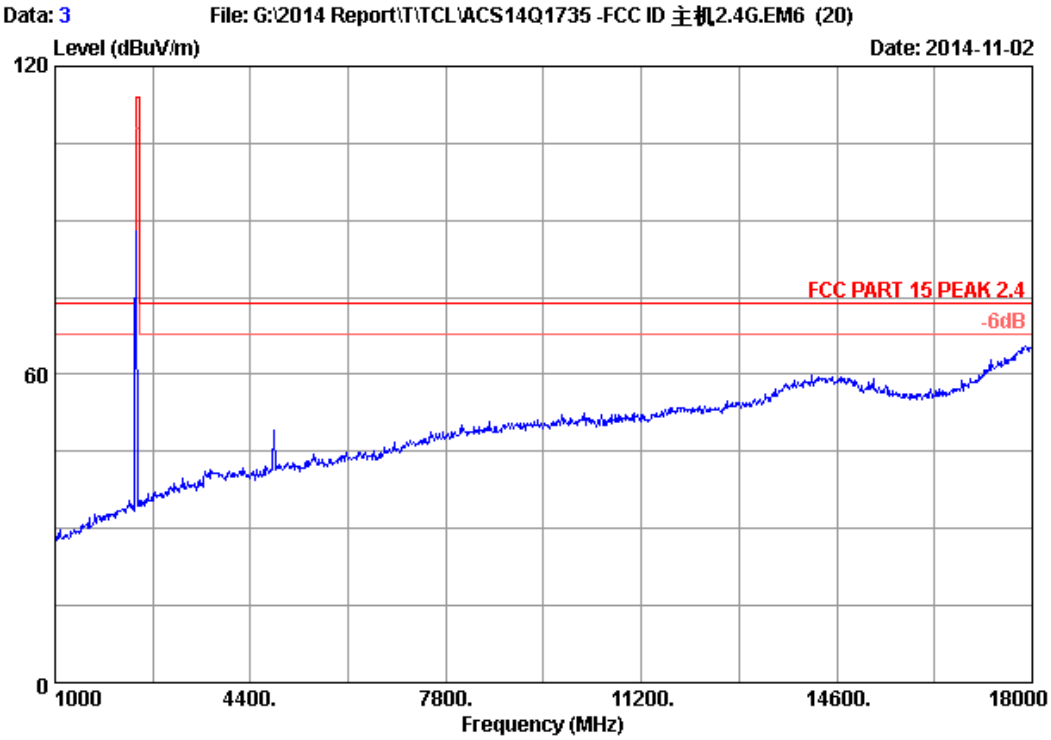

```
Site no.      : 3m Chamber                    Data no.  : 1
Dis. / Ant.   : 3m   2014 3115 (4580)         Ant. pol. : VERTICAL
Limit         : FCC PART 15 PEAK 2.4
Env. / Ins.   : 24*C/56%                      Engineer  : Kobe-Huang
EUT           : Active Speaker System
Power rating  : AC 120V/60Hz
Test Mode     : 2403MHz
M/N           : SA-CT180
```



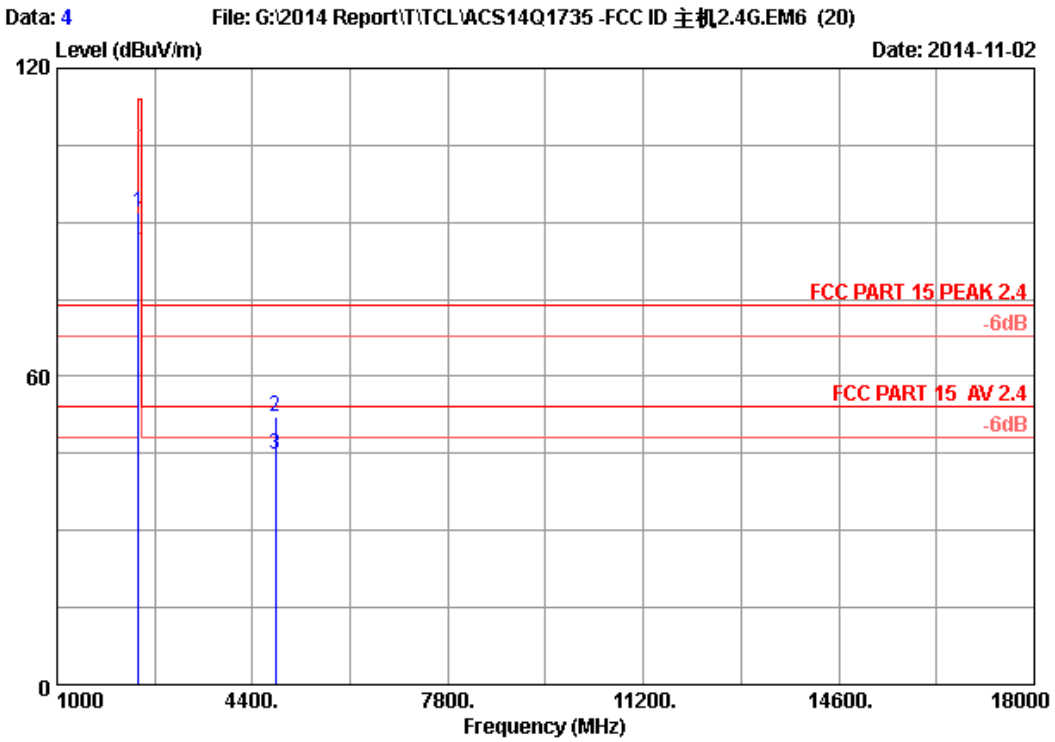
Site no. : 3m Chamber Data no. : 2
Dis. / Ant. : 3m 2014 3115 (4580) Ant. pol. : VERTICAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 24*C/56% Engineer : Kobe-Huang
EUT : Active Speaker System
Power rating : AC 120V/60Hz
Test Mode : 2403MHz
M/N : SA-CT180

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	2403.000	28.19	5.80	35.70	86.26	84.55	114.00	29.45	Peak
2	4806.000	32.85	8.56	35.70	45.16	50.87	74.00	23.13	Peak
3	4806.000	32.85	8.56	35.70	36.46	42.17	54.00	11.83	Average

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.



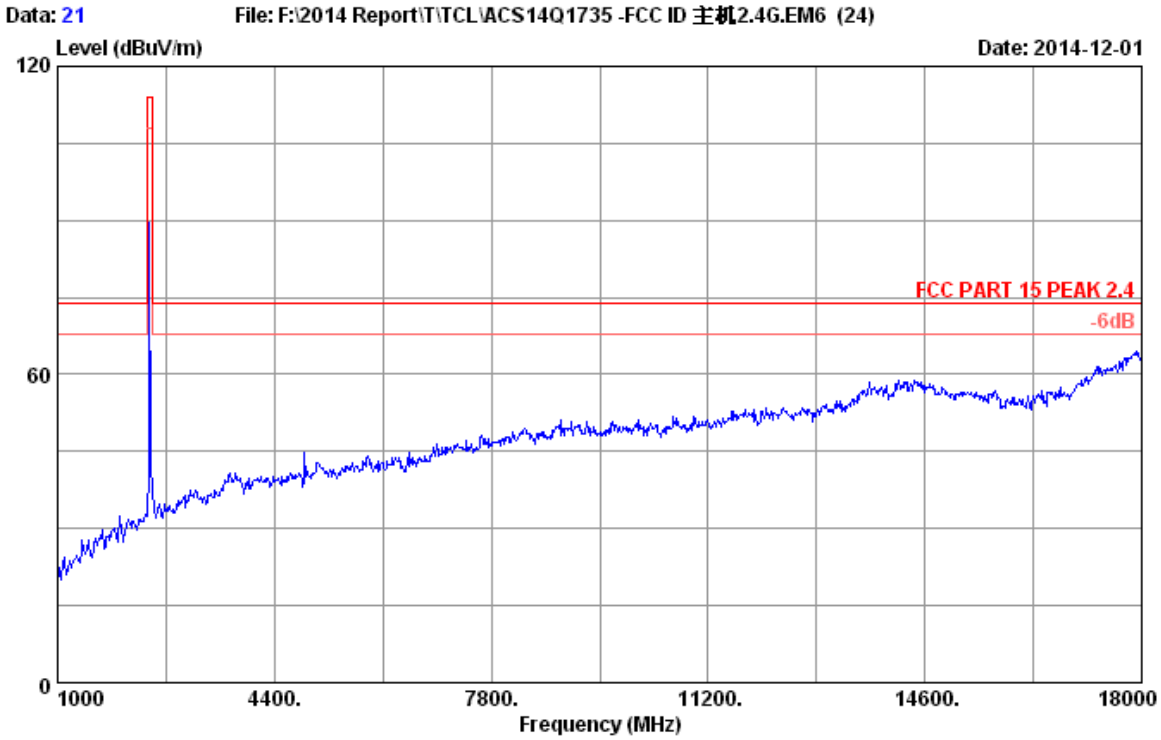
Site no.	: 3m Chamber	Data no.	: 3
Dis. / Ant.	: 3m 2014 3115 (4580)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 24*C/56%	Engineer	: Kobe-Huang
EUT	: Active Speaker System		
Power rating	: AC 120V/60Hz		
Test Mode	: 2403MHz		
M/N	: SA-CT180		



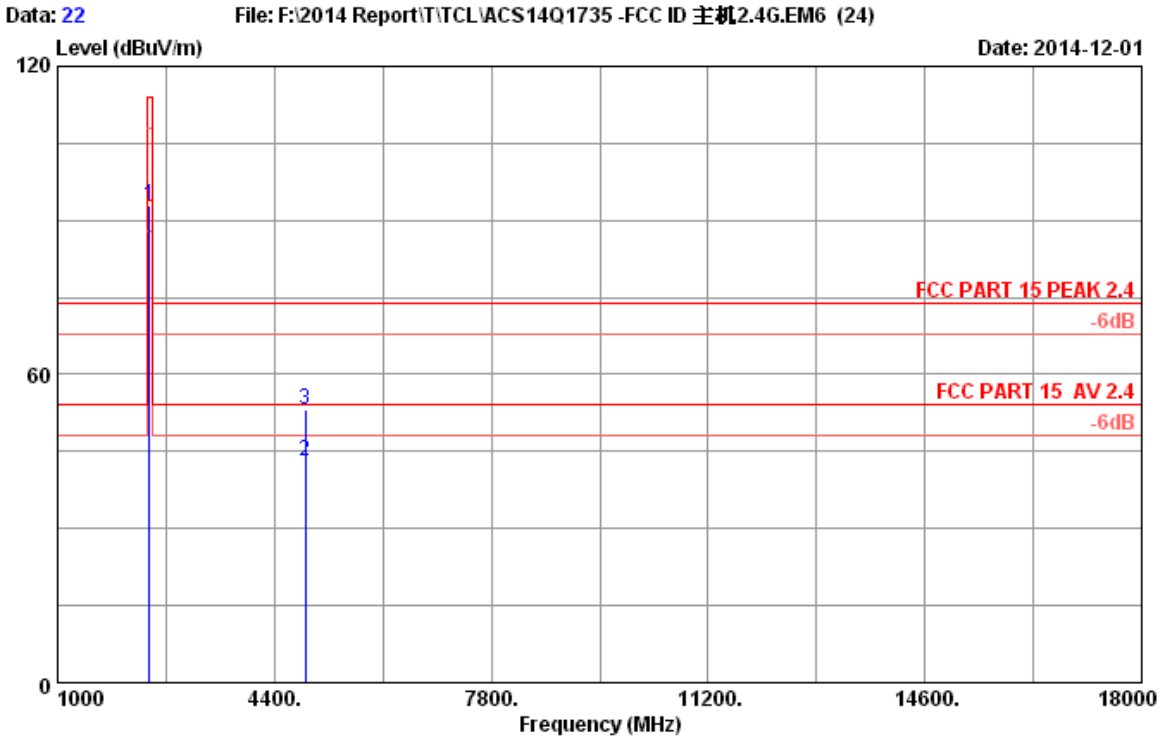
Site no. : 3m Chamber Data no. : 4
Dis. / Ant. : 3m 2014 3115 (4580) Ant. pol. : HORIZONTAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 24*C/56% Engineer : Kobe-Huang
EUT : Active Speaker System
Power rating : AC 120V/60Hz
Test Mode : 2403MHz
M/N : SA-CT180

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	2411.000	28.20	5.81	35.70	93.76	92.07	114.00	21.93	Peak
2	4806.000	32.85	8.56	35.70	46.46	52.17	74.00	21.83	Peak
3	4806.000	32.85	8.56	35.70	38.96	44.67	54.00	9.33	Average

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.



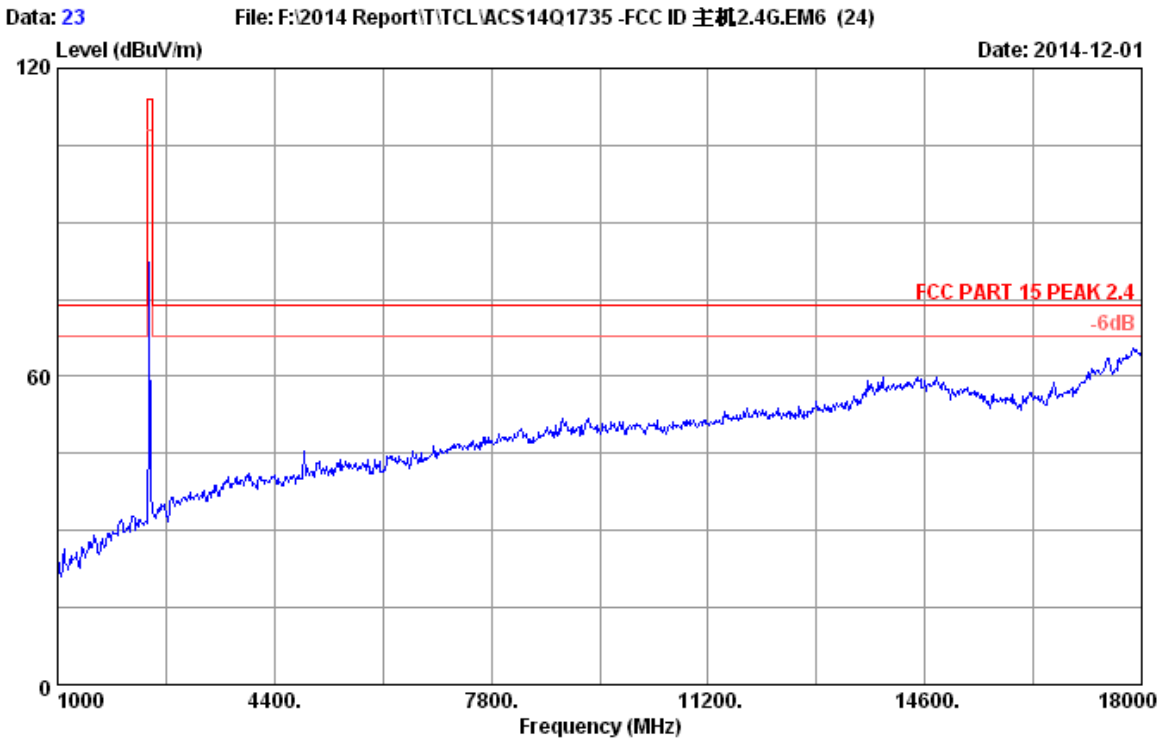
Site no.	: 3m Chamber	Data no.	: 21
Dis. / Ant.	: 3m 2014 3115 (4580)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 24*C/56%	Engineer	: Kobe-Huang
EUT	: Active Speaker System		
Power rating	: AC 120V/60Hz		
Test Mode	: 2441MHz		
M/N	: SA-CT180		



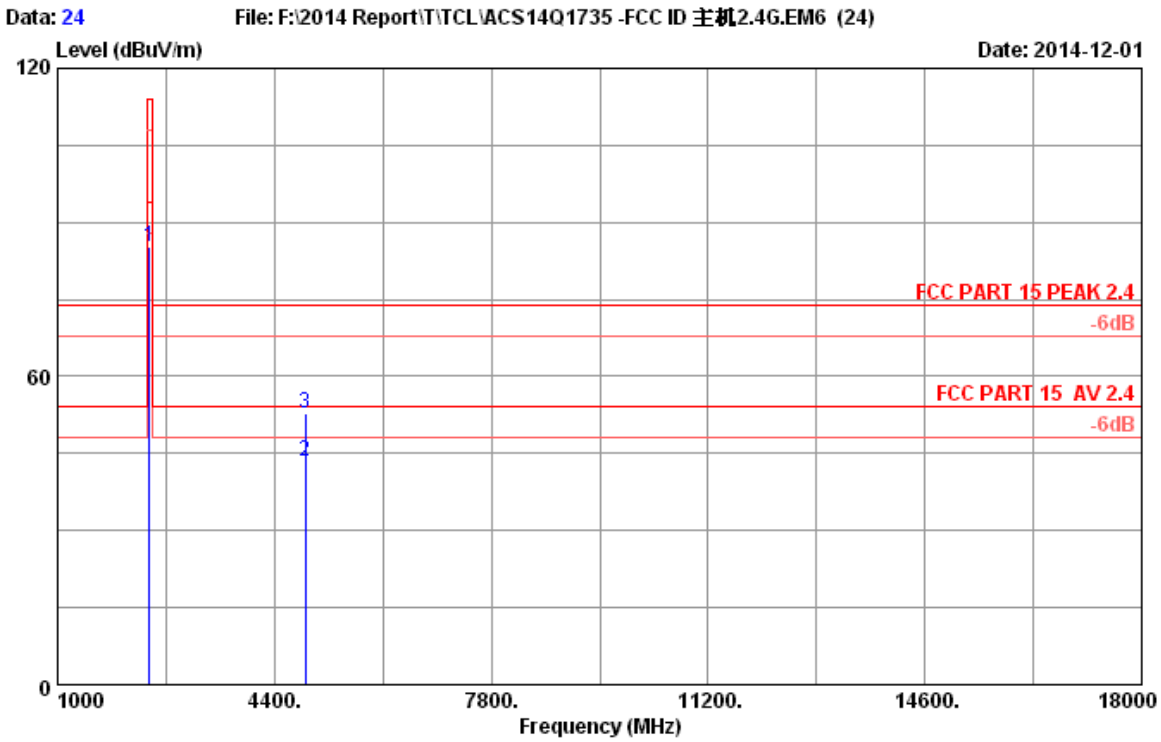
Site no. : 3m Chamber Data no. : 22
Dis. / Ant. : 3m 2014 3115 (4580) Ant. pol. : HORIZONTAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 24*C/56% Engineer : Kobe-Huang
EUT : Active Speaker System
Power rating : AC 120V/60Hz
Test Mode : 2441MHz
M/N : SA-CT180

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	28.27	5.86	35.70	94.55	92.98	114.00	21.02	Peak
2	4882.000	32.99	8.64	35.70	37.12	43.05	54.00	10.95	Average
3	4882.000	32.99	8.64	35.70	47.14	53.07	74.00	20.93	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.



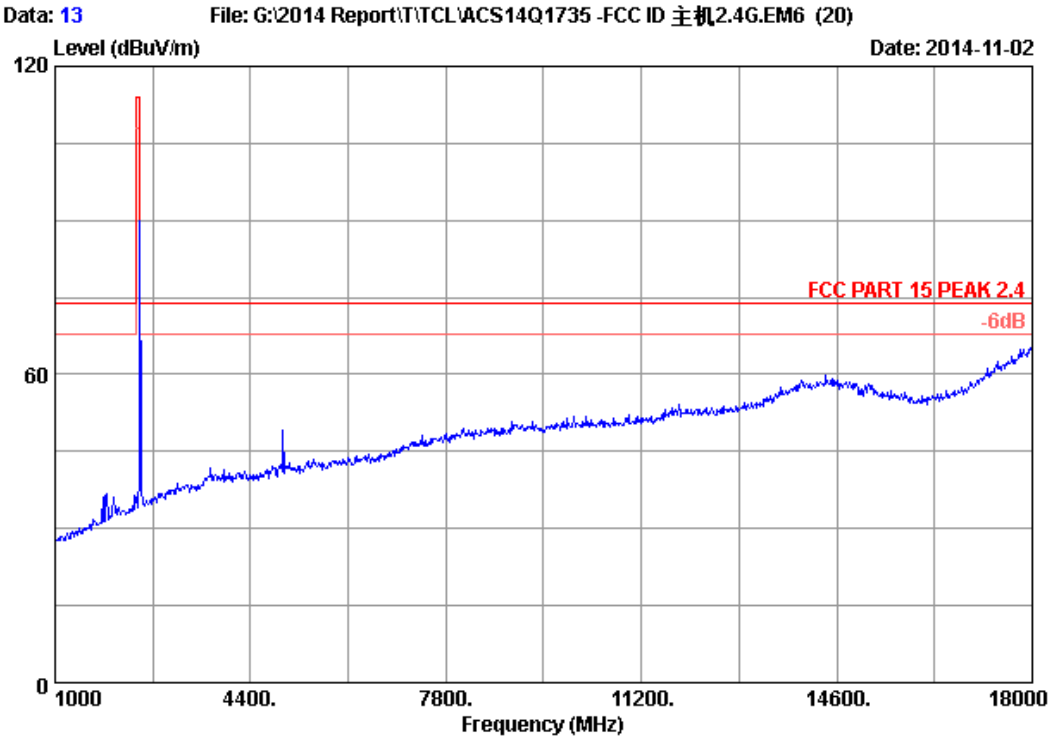
Site no.	: 3m Chamber	Data no.	: 23
Dis. / Ant.	: 3m 2014 3115 (4580)	Ant. pol.	: VERTICAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 24*C/56%	Engineer	: Kobe-Huang
EUT	: Active Speaker System		
Power rating	: AC 120V/60Hz		
Test Mode	: 2441MHz		
M/N	: SA-CT180		



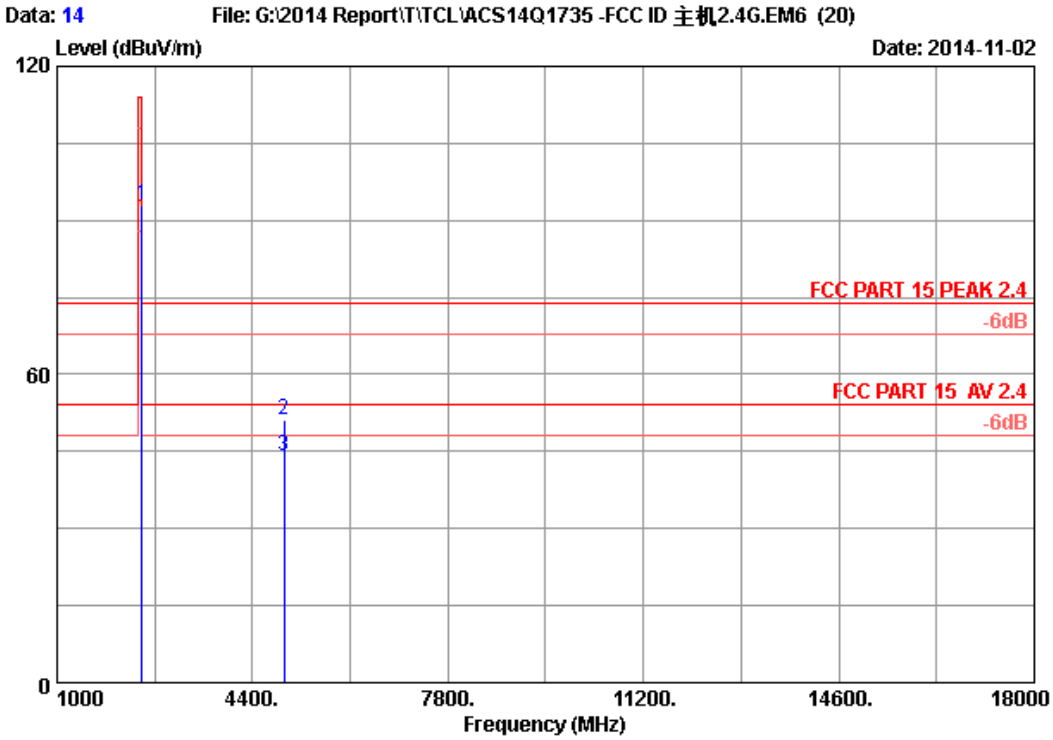
Site no. : 3m Chamber Data no. : 24
Dis. / Ant. : 3m 2014 3115 (4580) Ant. pol. : VERTICAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 24*C/56% Engineer : Kobe-Huang
EUT : Active Speaker System
Power rating : AC 120V/60Hz
Test Mode : 2441MHz
M/N : SA-CT180

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	28.27	5.86	35.70	86.95	85.38	114.00	28.62	Peak
2	4882.000	32.99	8.64	35.70	37.42	43.35	54.00	10.65	Average
3	4882.000	32.99	8.64	35.70	46.85	52.78	74.00	21.22	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.



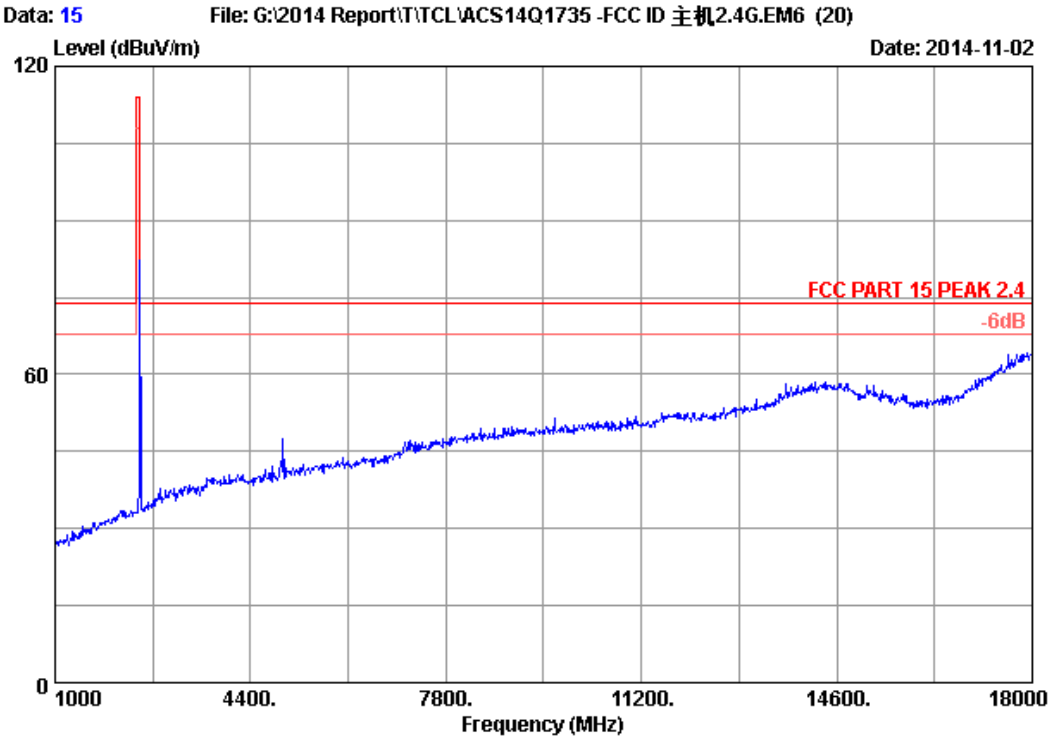
Site no. : 3m Chamber Data no. : 13
Dis. / Ant. : 3m 2014 3115 (4580) Ant. pol. : HORIZONTAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 24*C/56% Engineer : Kobe-Huang
EUT : Active Speaker System
Power rating : AC 120V/60Hz
Test Mode : 2478MHz
M/N : SA-CT180



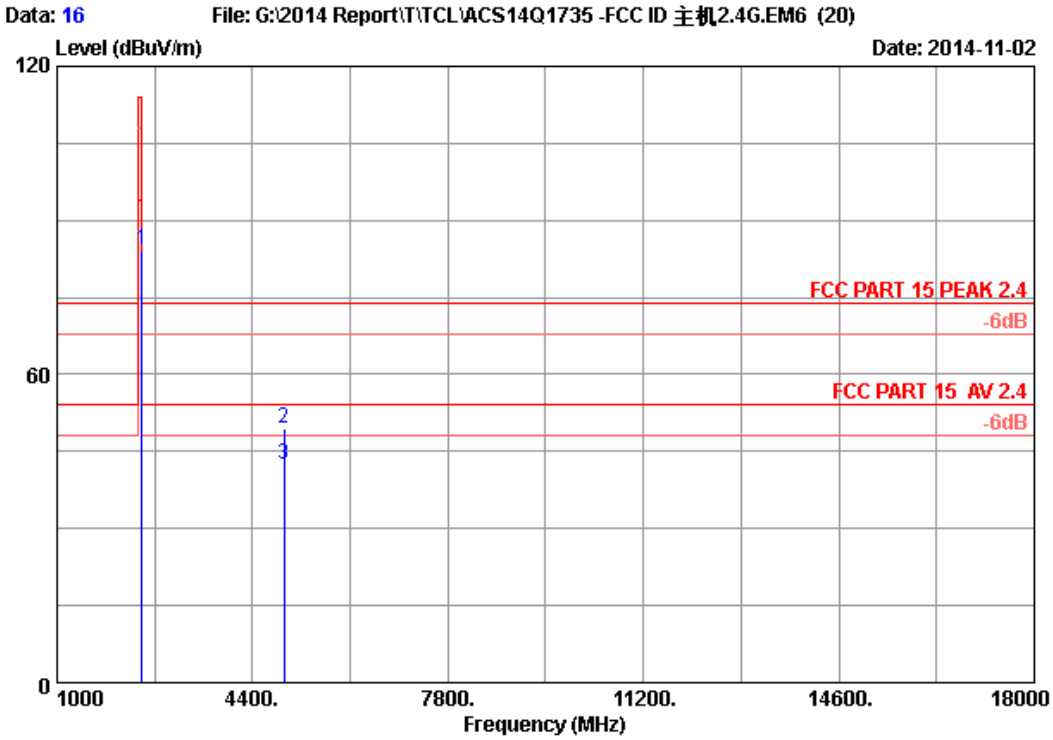
Site no. : 3m Chamber Data no. : 14
Dis. / Ant. : 3m 2014 3115 (4580) Ant. pol. : HORIZONTAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 24*C/56% Engineer : Kobe-Huang
EUT : Active Speaker System
Power rating : AC 120V/60Hz
Test Mode : 2478MHz
M/N : SA-CT180

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	2478.000	28.35	5.91	35.70	94.31	92.87	114.00	21.13	Peak
2	4956.000	33.12	8.72	35.70	45.10	51.24	74.00	22.76	Peak
3	4956.000	33.12	8.72	35.70	37.89	44.03	54.00	9.97	Average

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 2014 3115 (4580) Ant. pol. : VERTICAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 24*C/56% Engineer : Kobe-Huang
EUT : Active Speaker System
Power rating : AC 120V/60Hz
Test Mode : 2478MHz
M/N : SA-CT180



Site no. : 3m Chamber Data no. : 16
Dis. / Ant. : 3m 2014 3115 (4580) Ant. pol. : VERTICAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 24*C/56% Engineer : Kobe-Huang
EUT : Active Speaker System
Power rating : AC 120V/60Hz
Test Mode : 2478MHz
M/N : SA-CT180

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	2478.000	28.35	5.91	35.70	85.51	84.07	114.00	29.93	Peak
2	4956.000	33.12	8.72	35.70	43.24	49.38	74.00	24.62	Peak
3	4956.000	33.12	8.72	35.70	36.34	42.48	54.00	11.52	Average

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.

5. 20 DB BANDWIDTH TEST

5.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	N9030A	MY51380221	Sep. 29, 14	1Year
2.	Attenuator (20dB)	Agilent	8491B	MY39262165	Apr. 28,14	1 Year
3.	RF Cable	Hubersuhner	SUCOFLEX102	28620/2	Apr. 28,14	1 Year

5.2.Limit

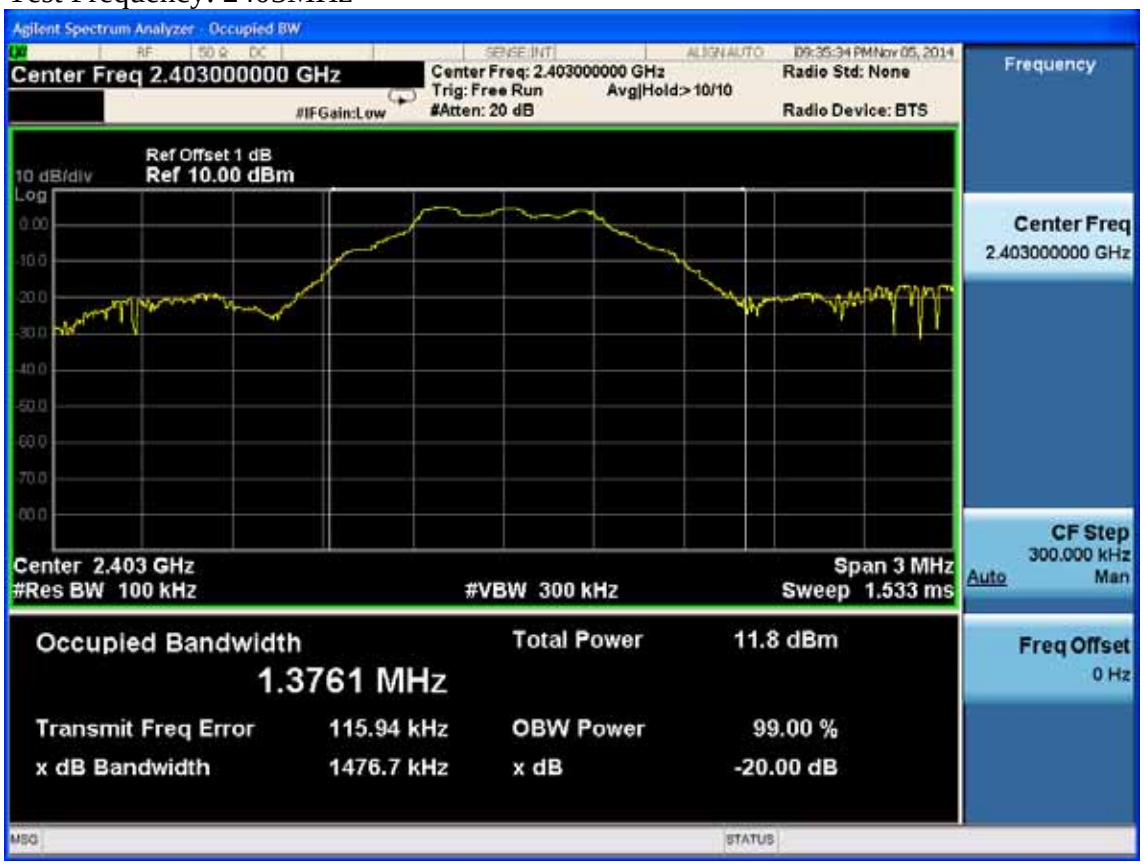
Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific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

5.3.Test Results

EUT:Active Speaker System		
M/N:SA-CT180		
Test date:2014-11-05	Pressure:101.2±1.0kpa	Humidity: 52.1±3.0 %
Tested by:Kobe_Huang	Test site: RF site	Temperature:22.4±0.6 ℃

Test Mode	Frequency (MHz)	20dB bandwidth (KHz)	Limit (KHz)
Tx	2403	1476.7	N/A
	2441	1278	N/A
	2478	1754.1	N/A
Conclusion：PASS			

Test Frequency: 2403MHz



Test Frequency: 2441MHz

Test Frequency: 2478MHz

6. BAND EDGE COMPLIANCE TEST

6.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Amp	HP	8449B	3008A02495	Apr. 28,14	1 Year
2.	Horn Antenna	ETS	3115	9510-4580	Jun. 06, 14	1 Year
3.	HF Cable	Hubersuhner	Sucoflex104	274094/4	Apr. 28,14	1 Year
4.	RF Cable	Hubersuhner	Sucoflex102	28610/2	Apr. 28,14	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.

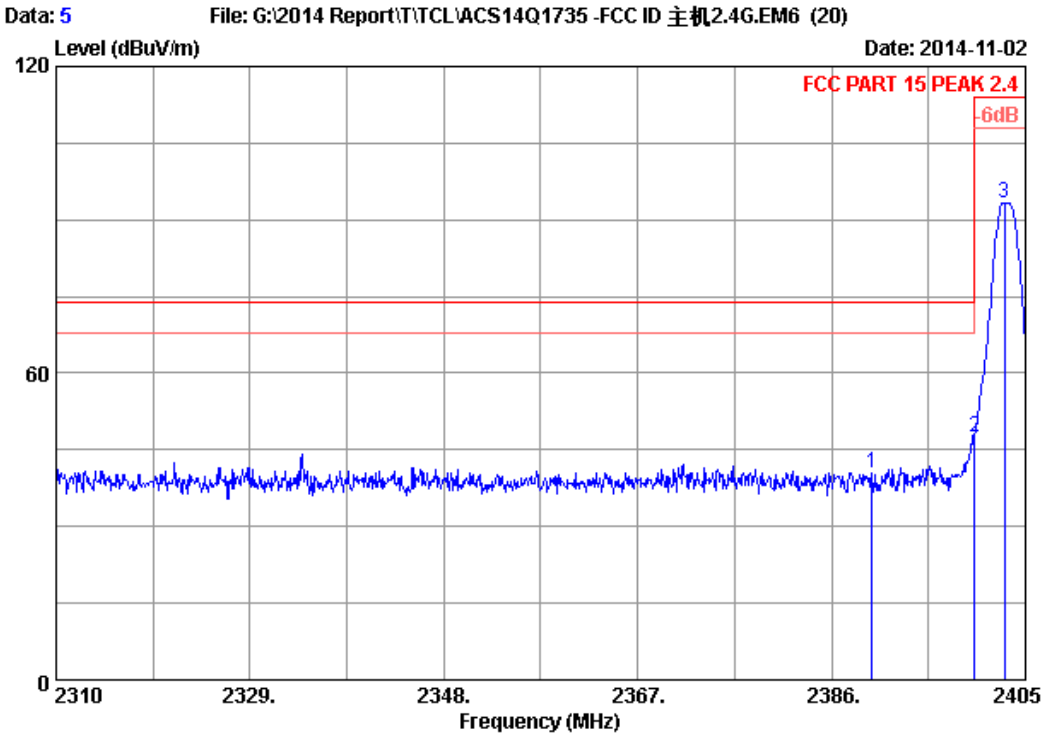
6.3. Test Produce

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)Average: RBM=1MHz; VBM:=10Hz; Sweep= AUTO

6.4. Test Results

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

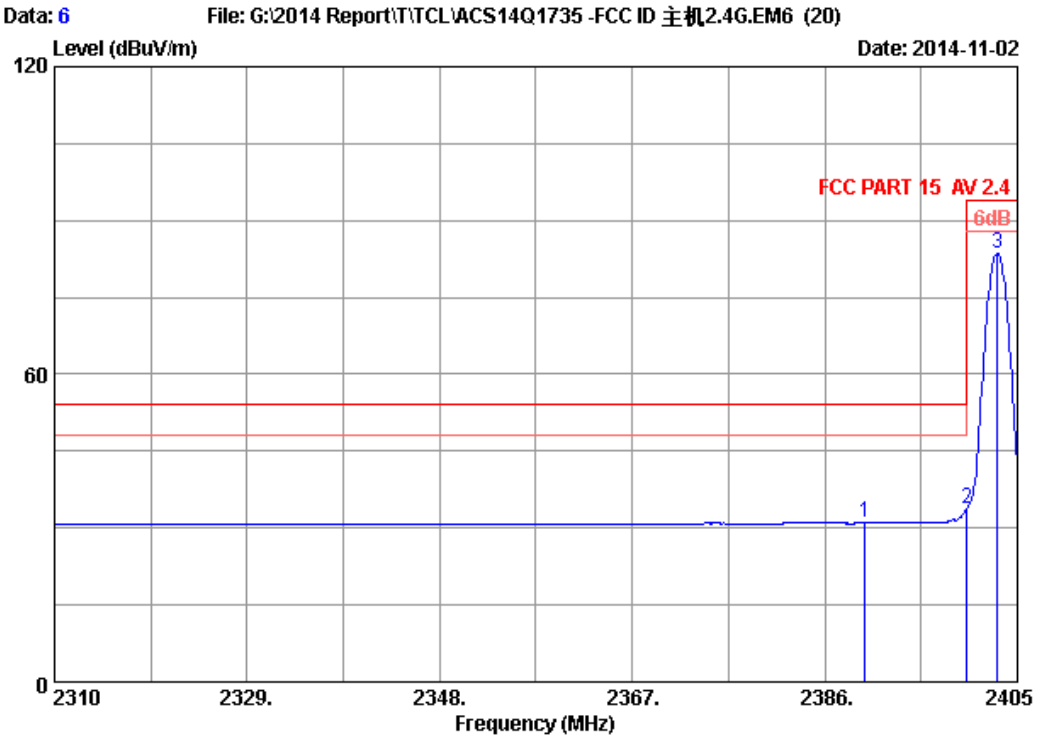
Note: If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.



Site no. : 3m Chamber Data no. : 5
Dis. / Ant. : 3m 2014 3115 (4580) Ant. pol. : HORIZONTAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 24*C/56% Engineer : Kobe-Huang
EUT : Active Speaker System
Power rating : AC 120V/60Hz
Test Mode : 2403MHz
M/N : SA-CT180

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	28.16	5.78	35.70	42.11	40.35	74.00	33.65	Peak
2	2400.000	28.18	5.80	35.70	49.29	47.57	74.00	26.43	Peak
3	2402.910	28.19	5.80	35.70	95.11	93.40	114.00	20.60	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.

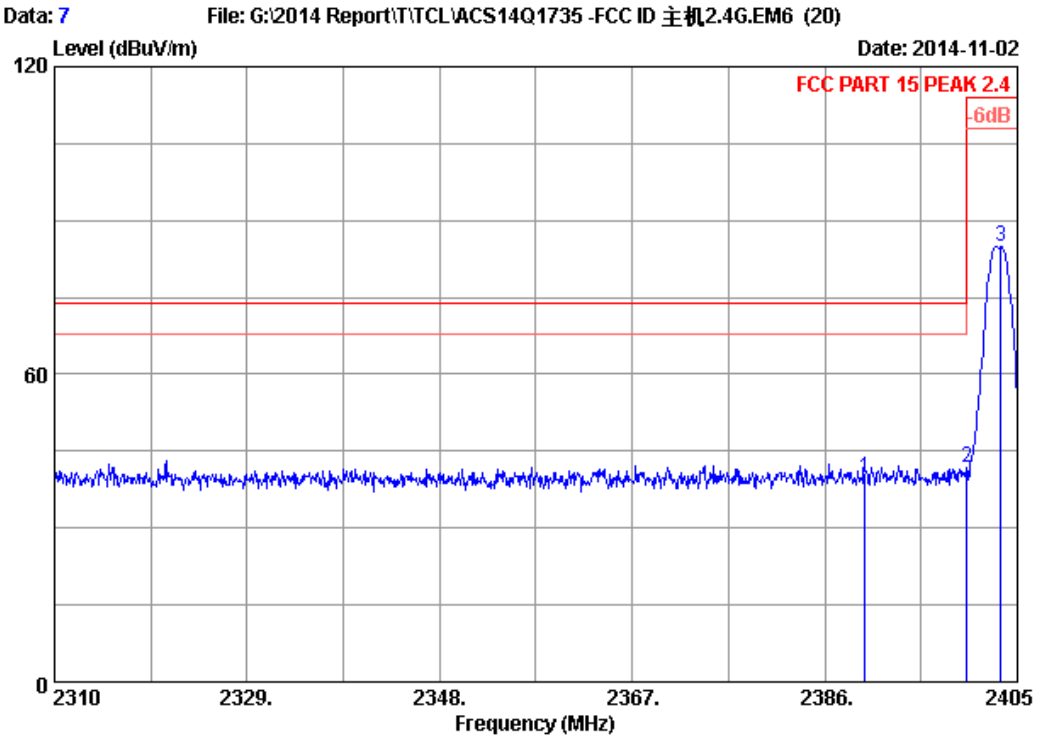


Site no. : 3m Chamber
Dis. / Ant. : 3m 2014 3115 (4580)
Limit : FCC PART 15 AV 2.4
Env. / Ins. : 24*C/56%
EUT : Active Speaker System
Power rating : AC 120V/60Hz
Test Mode : 2403MHz
M/N : SA-CT180

Data no. : 6
Ant. pol. : HORIZONTAL
Engineer : Kobe-Huang

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	28.16	5.78	35.70	32.72	30.96	54.00	23.04	Average
2	2400.000	28.18	5.80	35.70	35.42	33.70	54.00	20.30	Average
3	2403.005	28.19	5.80	35.70	85.36	83.65	94.00	10.35	Average

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.

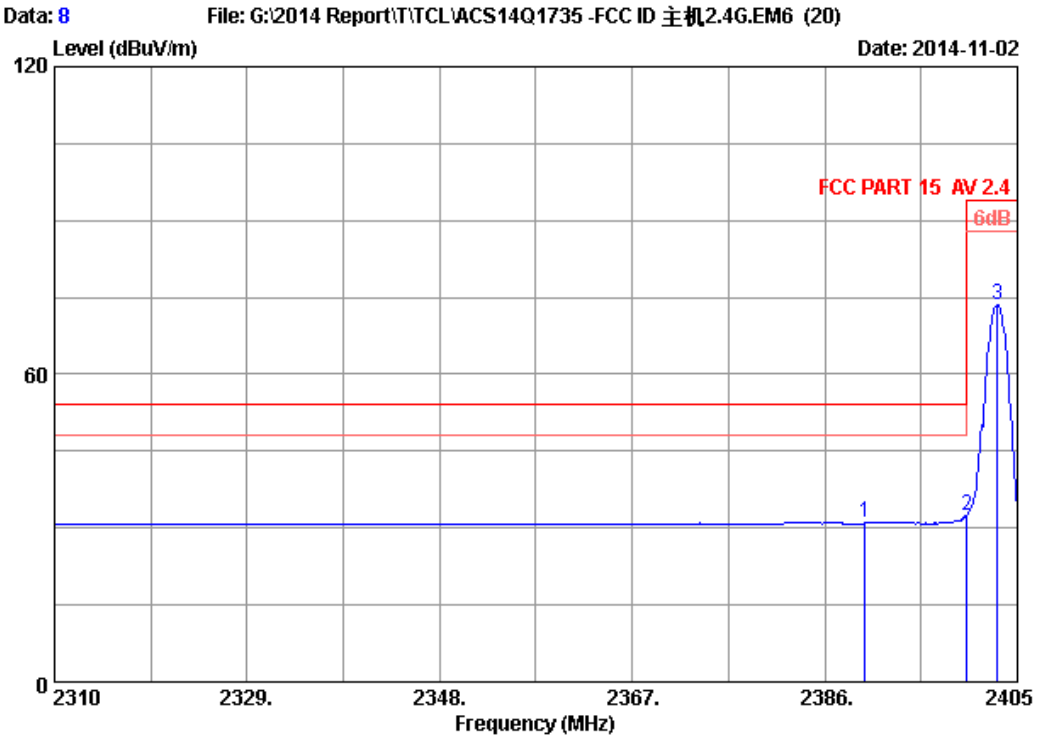


Site no. : 3m Chamber
Dis. / Ant. : 3m 2014 3115 (4580)
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 24*C/56%
EUT : Active Speaker System
Power rating : AC 120V/60Hz
Test Mode : 2403MHz
M/N : SA-CT180

Data no. : 7
Ant. pol. : VERTICAL
Engineer : Kobe-Huang

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	28.16	5.78	35.70	41.63	39.87	74.00	34.13	Peak
2	2400.000	28.18	5.80	35.70	43.58	41.86	74.00	32.14	Peak
3	2403.385	28.19	5.80	35.70	86.54	84.83	114.00	29.17	Peak

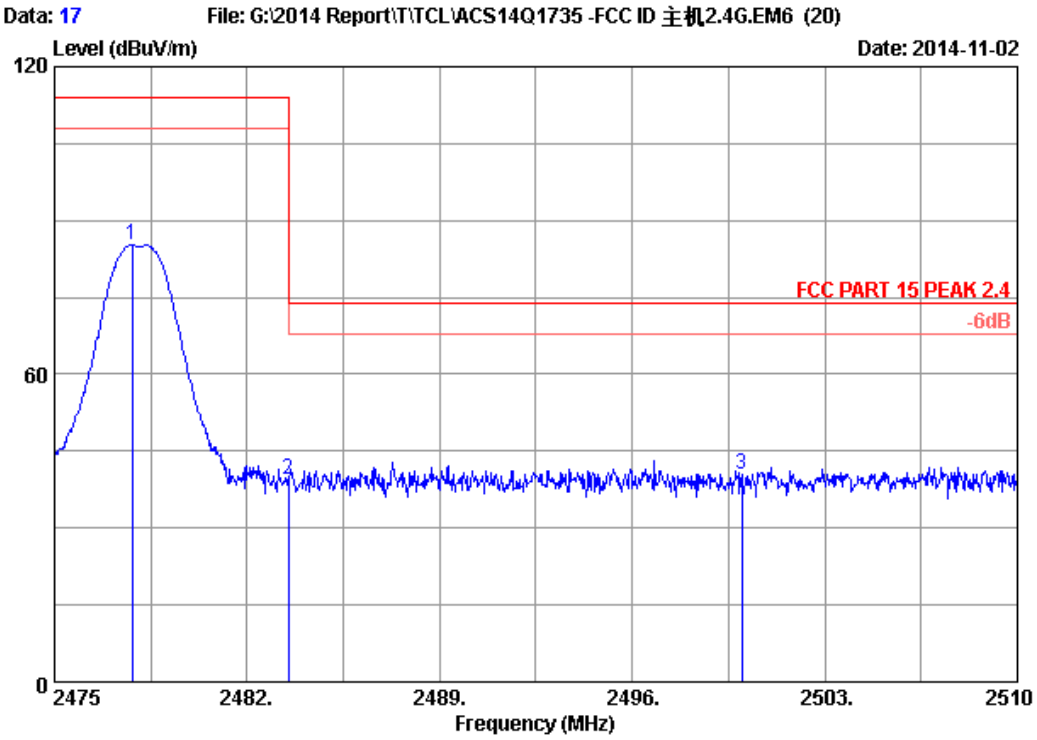
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp Factor
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber
Data no. : 8
Dis. / Ant. : 3m 2014 3115 (4580)
Ant. pol. : VERTICAL
Limit : FCC PART 15 AV 2.4
Env. / Ins. : 24*C/56%
Engineer : Kobe-Huang
EUT : Active Speaker System
Power rating : AC 120V/60Hz
Test Mode : 2403MHz
M/N : SA-CT180

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	28.16	5.78	35.70	32.71	30.95	54.00	23.05	Average
2	2400.000	28.18	5.80	35.70	34.22	32.50	54.00	21.50	Average
3	2403.005	28.19	5.80	35.70	75.33	73.62	94.00	20.38	Average

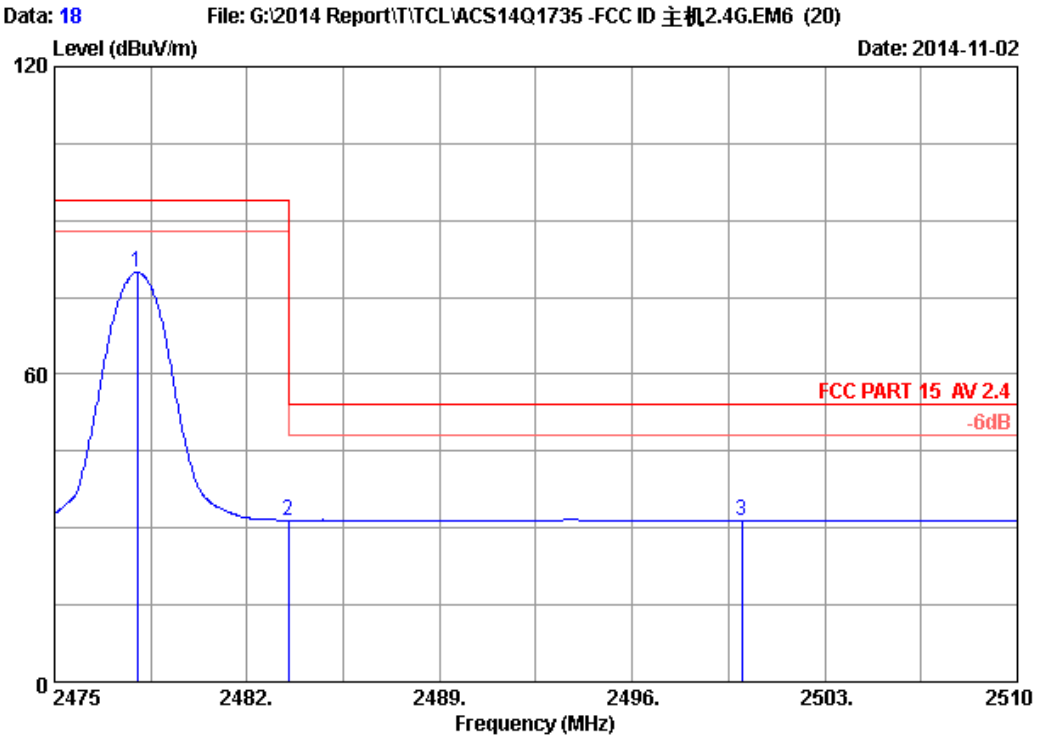
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp Factor
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3m Chamber
Data no. : 17
Dis. / Ant. : 3m 2014 3115 (4580)
Ant. pol. : VERTICAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 24*C/56%
Engineer : Kobe-Huang
EUT : Active Speaker System
Power rating : AC 120V/60Hz
Test Mode : 2478MHz
M/N : SA-CT180

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	2477.835	28.35	5.91	35.70	86.61	85.17	114.00	28.83	Peak
2	2483.500	28.36	5.92	35.70	40.83	39.41	74.00	34.59	Peak
3	2500.000	28.40	5.94	35.70	41.78	40.42	74.00	33.58	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.

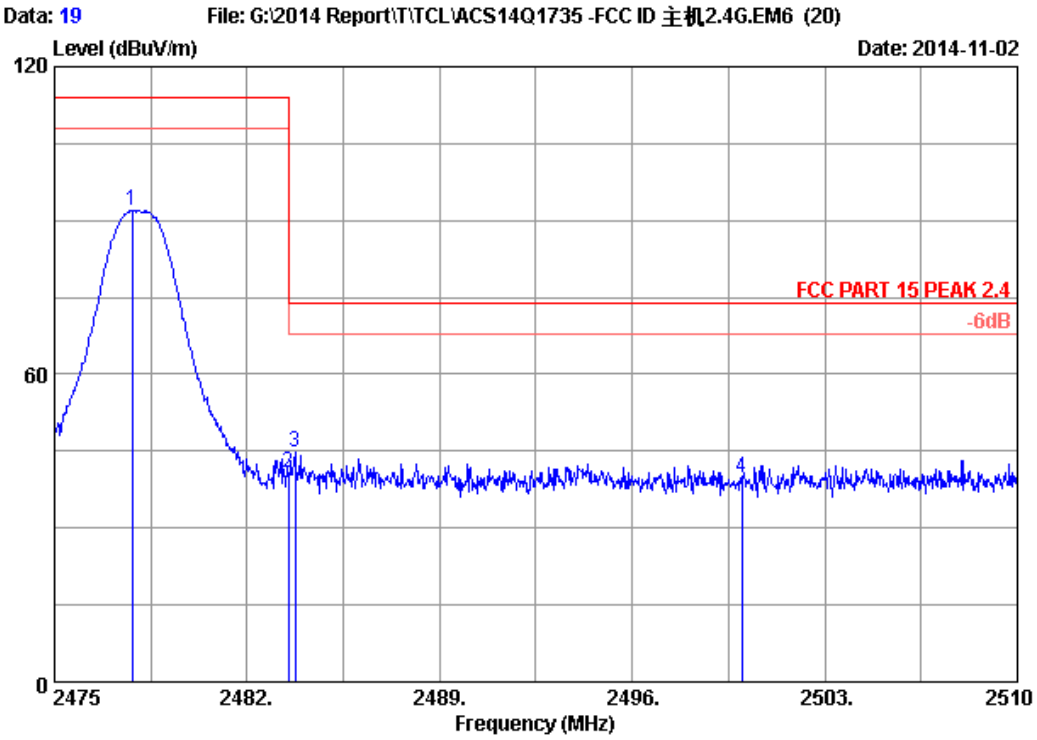


Site no. : 3m Chamber
Dis. / Ant. : 3m 2014 3115 (4580)
Limit : FCC PART 15 AV 2.4
Env. / Ins. : 24*C/56%
EUT : Active Speaker System
Power rating : AC 120V/60Hz
Test Mode : 2478MHz
M/N : SA-CT180

Data no. : 18
Ant. pol. : VERTICAL
Engineer : Kobe-Huang

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	2478.010	28.35	5.91	35.70	81.31	79.87	94.00	14.13	Average
2	2483.500	28.36	5.92	35.70	32.97	31.55	54.00	22.45	Average
3	2500.000	28.40	5.94	35.70	32.86	31.50	54.00	22.50	Average

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.

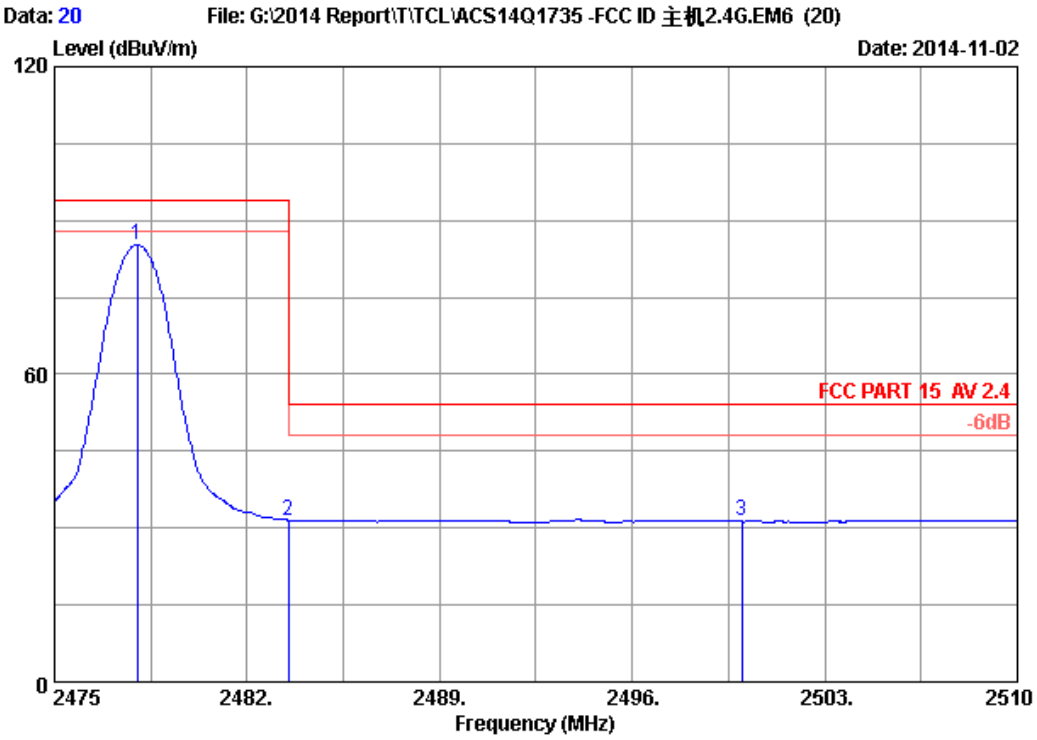


Site no. : 3m Chamber
Dis. / Ant. : 3m 2014 3115 (4580)
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 24*C/56%
EUT : Active Speaker System
Power rating : AC 120V/60Hz
Test Mode : 2478MHz
M/N : SA-CT180

Data no. : 19
Ant. pol. : HORIZONTAL
Engineer : Kobe-Huang

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	2477.835	28.35	5.91	35.70	93.25	91.81	114.00	22.19	Peak
2	2483.500	28.36	5.92	35.70	42.24	40.82	74.00	33.18	Peak
3	2483.750	28.36	5.92	35.70	46.09	44.67	74.00	29.33	Peak
4	2500.000	28.40	5.94	35.70	41.27	39.91	74.00	34.09	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.



Site no. : 3m Chamber
Dis. / Ant. : 3m 2014 3115 (4580)
Limit : FCC PART 15 AV 2.4
Env. / Ins. : 24*C/56%
EUT : Active Speaker System
Power rating : AC 120V/60Hz
Test Mode : 2478MHz
M/N : SA-CT180

Data no. : 20
Ant. pol. : HORIZONTAL
Engineer : Kobe-Huang

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	2478.010	28.35	5.91	35.70	86.73	85.29	94.00	8.71	Average
2	2483.500	28.36	5.92	35.70	32.99	31.57	54.00	22.43	Average
3	2500.000	28.40	5.94	35.70	32.63	31.27	54.00	22.73	Average

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.

7. ANTENNA REQUIREMENT

RESULT : PASS

Test Date : Nov.01~05, 2014

Test standard : FCC Part 15.203

Limit : the use of antennas with directional gains that do not exceed 6 dBi

According to the manufacturer declared, the EUT has an internal antenna, the directional gain of antenna is 2dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply the provision.

8. DEVIATION TO TEST SPECIFICATIONS

[NONE]