

# TEST REPORT

For

## **4.1 Channel SoundBar (Home Theater System)**

**Model Number: S90, S90HD**

**FCC ID: Z9G-EDF65**

**IC: 10004A-EDF65**

**Report Number : WT188005025**

Test Laboratory	:	Shenzhen Academy of Metrology and Quality Inspection National Digital Electronic Product Testing Center
Site Location	:	NETC Building, No.4 Tongfa Rd., Xili, Nanshan, Shenzhen, China
Tel	:	0086-755-86928965
Fax	:	0086-755-86009898-31396
Web	:	www.smq.com.cn
E-mail	:	emcrf@smq.com.cn

## Test report declaration

Applicant : Edifier International Limited  
Address : P.O. Box 6264 General Post Office Hong Kong  
Manufacturer : Edifier International Limited  
Address : P.O. Box 6264 General Post Office Hong Kong  
EUT Description : 4.1 Channel SoundBar (Home Theater System)  
Model No : S90, S90HD  
HVIN : S90, S90HD  
Trade mark : EDIFIER  
FCC ID : Z9G-EDF65  
IC : 10004A-EDF65

Test Standards:

**FCC Rules and Regulations Part 15 Subpart C Section 15.247**

**FCC Rules and Regulations Part 15 Subpart E Section 15.407**

**RSS-247 Issue 2(2017-02) RSS-Gen Issue 5(2018-04)**

The EUT described above is tested by Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory to determine the maximum emissions from the EUT. Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory is assumed full responsibility for the accuracy of the test results. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with FCC Rules Part 15.209, 15.247, 15.407 and IC Rules RSS-247 Issue 2(2017-02) , RSS-Gen Issue 5(2018-04)

The test report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.

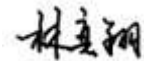
Project  
Engineer:



(Chen Silin 陈司林)

Date: Aug.22, 2018

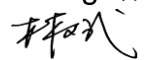
Checked by:



(Lin Yixiang 林奕翔)

Date: Aug.22, 2018

Approved by:



(Lin Bin 林斌)

Date: Aug.22, 2018

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## 1. TEST RESULTS SUMMARY

Table 1 Test Results Summary

Test Items	FCC Rules	IC Rules	Test Results
Radiated spurious emission & Radiated restricted band measurement (26.5GHz~40GHz)	15.209& 15.247 (d)	RSS-247 Clause 5.5 RSS-GEN Clause 8.9	Pass
Undesirable emission(26.5GHz~40GHz)	15.209& 15.407(b)	RSS-247 Clause 6.2.4.2 RSS-GEN Clause 8.9	Pass

Remark: "N/A" means "Not applicable."

## **2. GENERAL INFORMATION**

### **2.1. Report information**

This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that SMQ approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that SMQ in any way guarantees the later performance of the product/equipment.

The sample/s mentioned in this report is/are supplied by Applicant, SMQ therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through SMQ, unless the applicant has authorized SMQ in writing to do so.

### **2.2. Laboratory Accreditation and Relationship to Customer**

The testing report were performed by the Shenzhen Academy of Metrology and quality Inspection EMC Laboratory (Guangdong EMC compliance testing center), in their facilities located at NETC Building, No.4 Tongfa Rd., Xili, Nanshan, Shenzhen, China. At the time of testing, Laboratory is accredited by the following organizations:

China National Accreditation Service for Conformity Assessment (CNAS) accredits the Laboratory for conformance to FCC standards, EMC international standards and EN standards. The Registration Number is CNAS L0579.

The Laboratory is Accredited Testing Laboratory of FCC with Designation number CN1165 and Site registration number 582918.

The Laboratory is registered to perform emission tests with Industry Canada (IC), and the registration number is 11177A-1 11177A-2.

TUV Rhineland accredits the Laboratory for conformance to IEC and EN standards, the registration number is E2024086Z02.

### **2.3. Measurement Uncertainty**

Radiated Emission  
26.5GHz~40GHz 4.6dB

### 3. PRODUCT DESCRIPTION

#### 3.1.EUT Description

##### Technical Specification of Bluetooth( BDR & EDR mode)

Description	: 4.1 Channel SoundBar (Home Theater System)
Manufacturer	: Edifier International Limited
Model Number	: S90, S90HD
Operate Frequency	: 2402MHz~2480MHz
Modulation	: FHSS(GFSK, pi/4-DQPSK, 8PSK)
Operation Voltage	: AC 100-240,50/60Hz
Antenna Designation	: Internal Antenna 2.5 dBi

##### Technical Specification of 5.8GHz

Description	: 4.1 Channel SoundBar (Home Theater System)
Manufacturer	: Edifier International Limited
Model Number	: S90, S90HD
Operate Frequency	: 5730.35MHz~5820.35MHz
Number of Channel	: 46
Receiver category	: 3
Modulation	: pi/4-DQPSK
Operation Voltage	: AC 100-240,50/60Hz
Antenna Designation	: Internal Antenna 2.2 dBi

Remark: Above series are identical in schematic, structure and critical components, Only the model name is different from the market requirement, Therefore, only the S90 is used for testing.

### 3.2.Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **Z9G-EDF65** and IC: **10004A-EDF65** filing to comply with Section 15.209, 15.247 of the FCC Part 15 Subpart C, Section 15.407 of the FCC Part 15 Subpart E, RSS-247 Issue 2(2017-02) and RSS-Gen Issue 5(2018-04) Rules.

### 3.3.Block Diagram of EUT Configuration



Figure 1 EUT setup

### 3.4.Operating Condition of EUT

The Radiated spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission (X plane).

For above 1GHz radiated the worst case mode from all possible combinations between available modulations, data rates and antenna ports.

### 3.5.Support Equipment List

Table 2 Support Equipment List

Name	Model No	S/N	Manufacturer
Notebook PC	ThinkPad X240	--	Lenovo

### 3.6.Test Conditions

Date of test : Jul.10, 2018, Jul.23, 2018

Date of EUT Receive : Jul.10, 2018

Temperature: 24 °C

Relative Humidity:(55-56)%

### 3.7.Special Accessories

Not available for this EUT intended for grant.

### 3.8.Equipment Modifications

Not available for this EUT intended for grant.

#### 4. TEST EQUIPMENT USED

Table 3 Test Equipment

No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
SB8501/09	EMI Test Receiver	Rohde & Schwarz	ESU40	Mar.18, 2018	1 Year
SB8501/12	Horn Antenna	ETS-Lindgren	3160-10	Mar.21,2017	3 Year
SB9059	Preamplifier	Rohde & Schwarz	SCU-40	Sep.13,2017	1 Year



## 5. RADIATED DISTURBANCE TEST

### 5.1. Test Standard and Limit

#### 5.1.1. Test Standard

FCC Rules Part 15.209, 15.247, 15.407

RSS-GEN Clause 8.9, RSS-247 Clause 5.5, RSS-247 Clause 6.2.4.2

#### 5.1.2. Test Limit

FCC Rules Part 15.209 & RSS-GEN Clause 8.9

Table 4 Radiation Disturbance Test Limit for FCC (Class B)(Above 1G)

Frequency (MHz)	(dBuV/m) (at 3 meters)	
	PEAK	AVERAGE
Above 1000	74	54

\* The lower limit shall apply at the transition frequency.

\* The test distance is 3m.

FCC Part 15.407(b) & RSS-247 Clause 6.2.4.2

For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

### 5.2. Test Procedure

1. The testing follows the guidelines in ANSI C63.10-2013.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. For measurement below 1GHz, the EUT was placed on a turntable with 0.8 meter, above ground. For measurement above 1 GHz, test at FAR, the EUT is placed on a non-conductive table, which is 1.5 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:  
(1) Span shall wide enough to fully capture the emission being measured;

- (2) Set RBW=100 kHz for  $f < 1$  GHz; VBW  $\geq$  RBW; Sweep = auto; Detector function = peak; Trace = max hold;
- (3) Set RBW = 1 MHz, VBW= 3MHz for  $f > 1$  GHz for peak measurement.

### 5.3. Test Arrangement

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application. The detailed information refers to test picture.

### 5.4. Test Data

The emissions don't show in following result tables are more than 20dB below the limits.

Table 5 Radiated Disturbance Test Data

Frequency MHz	Cable Loss +pre amp(dB)	Antenna Factor (dB)	Readings (dB $\mu$ V/m)	Level (dB $\mu$ V/m)	Polarity (H/V)	Turntable Angle(deg)	Antenna Height (m)	Limits (dB $\mu$ V/m)	Margin (dB)
---	---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---	---
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---	---	---	---	---	---	---	---	---	---
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# Radiated Emission

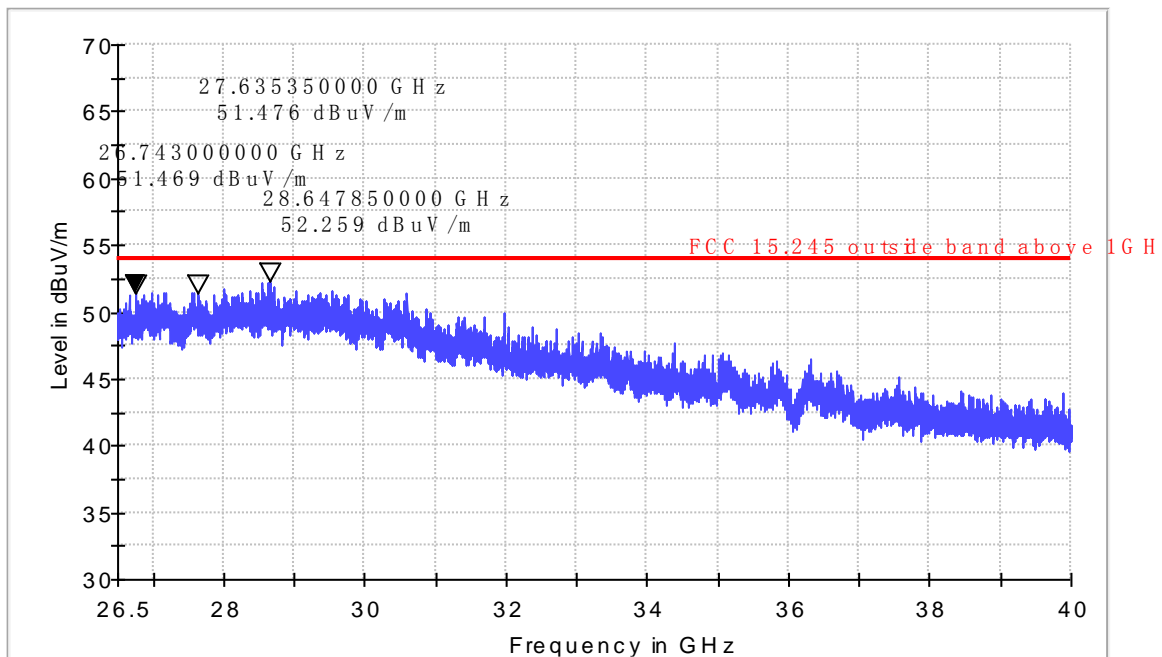
## EUT Information

EUT Model Name:	4.1 Channel SoundBar (Home Theater System) M/N:S90
Operation mode:	TX 5730.35MHz
Test Voltage:	AC 120V/60Hz
Comment:	EDIFIER

## Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 26.5-40GHz



# Radiated Emission

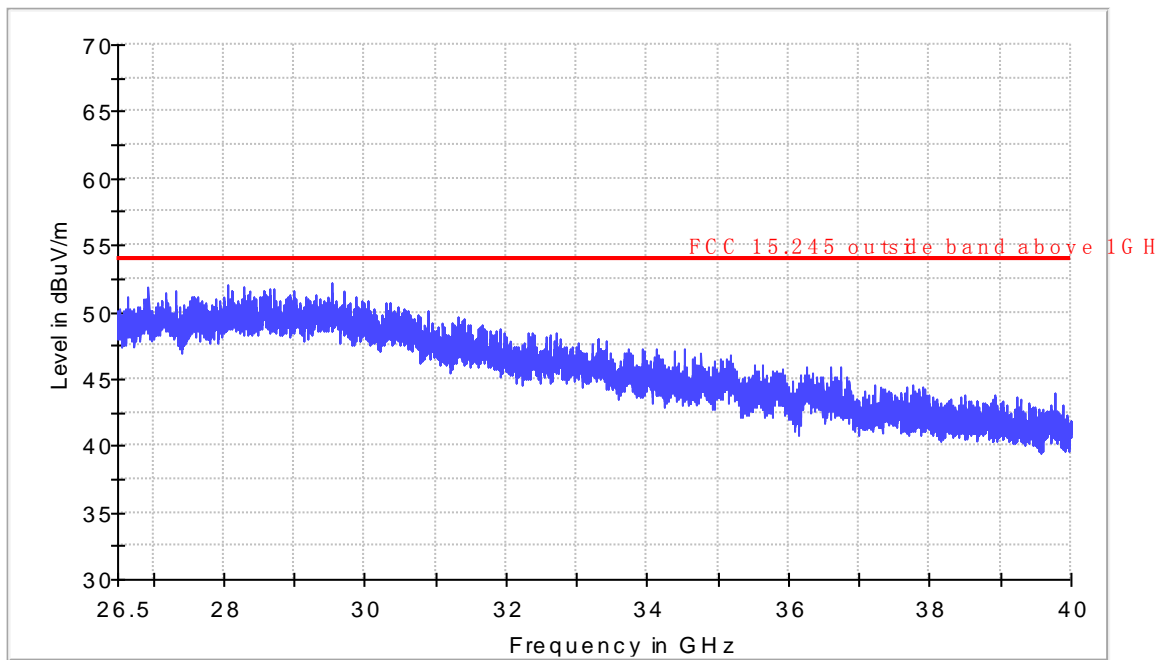
## EUT Information

EUT Model Name:	4.1 Channel SoundBar (Home Theater System) M/N:S90
Operation mode:	TX 5730.35MHz
Test Voltage:	AC 120V/60Hz
Comment:	EDIFIER

## Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 26.5-40GHz



# Radiated Emission

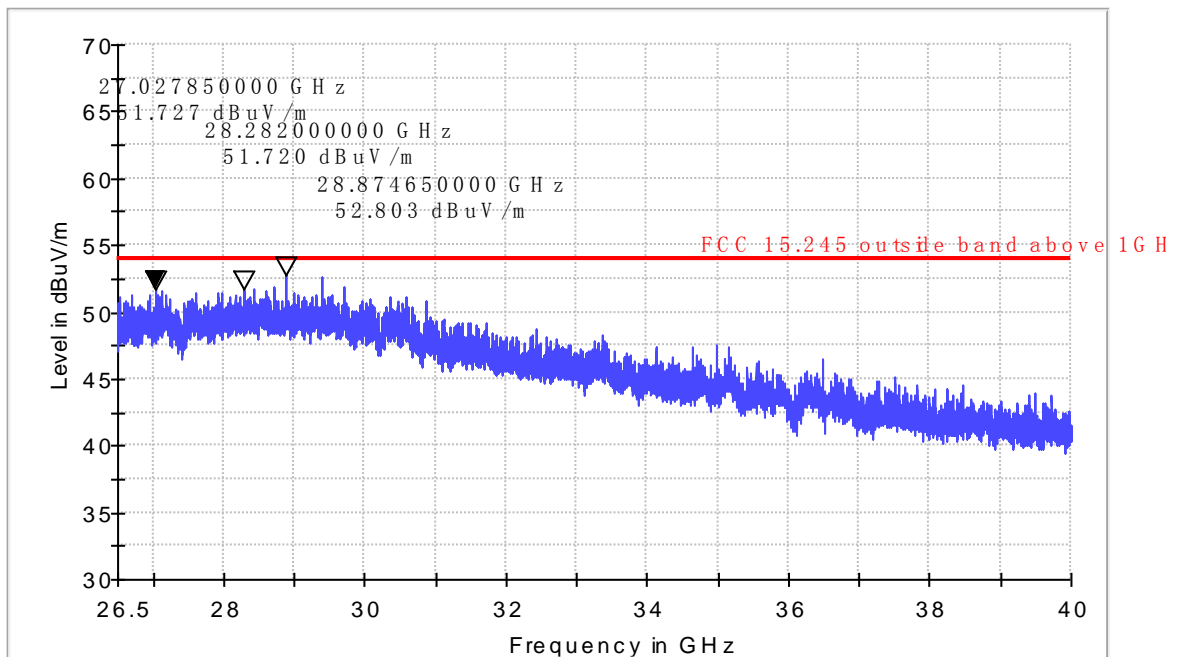
## EUT Information

EUT Model Name:	4.1 Channel SoundBar (Home Theater System) M/N:S90
Operation mode:	TX 5776.35MHz
Test Voltage:	AC 120V/60Hz
Comment:	EDIFIER

## Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 26.5-40GHz



# Radiated Emission

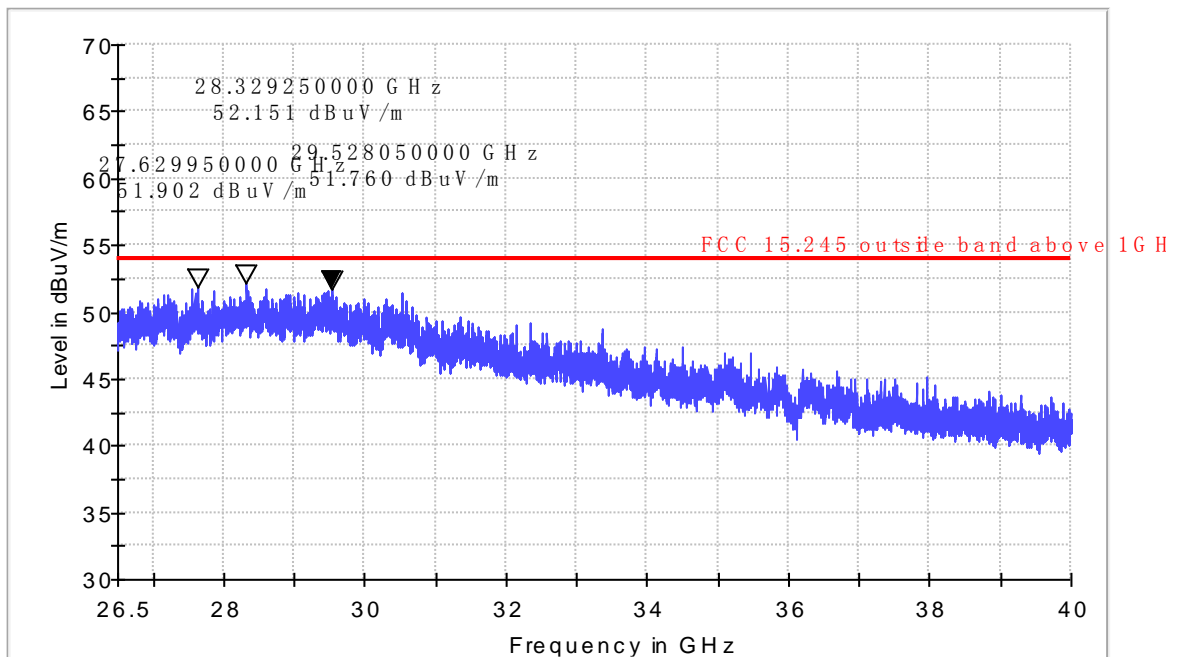
## EUT Information

EUT Model Name:	4.1 Channel SoundBar (Home Theater System) M/N:S90
Operation mode:	TX 5776.35MHz
Test Voltage:	AC 120V/60Hz
Comment:	EDIFIER

## Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 26.5-40GHz



# Radiated Emission

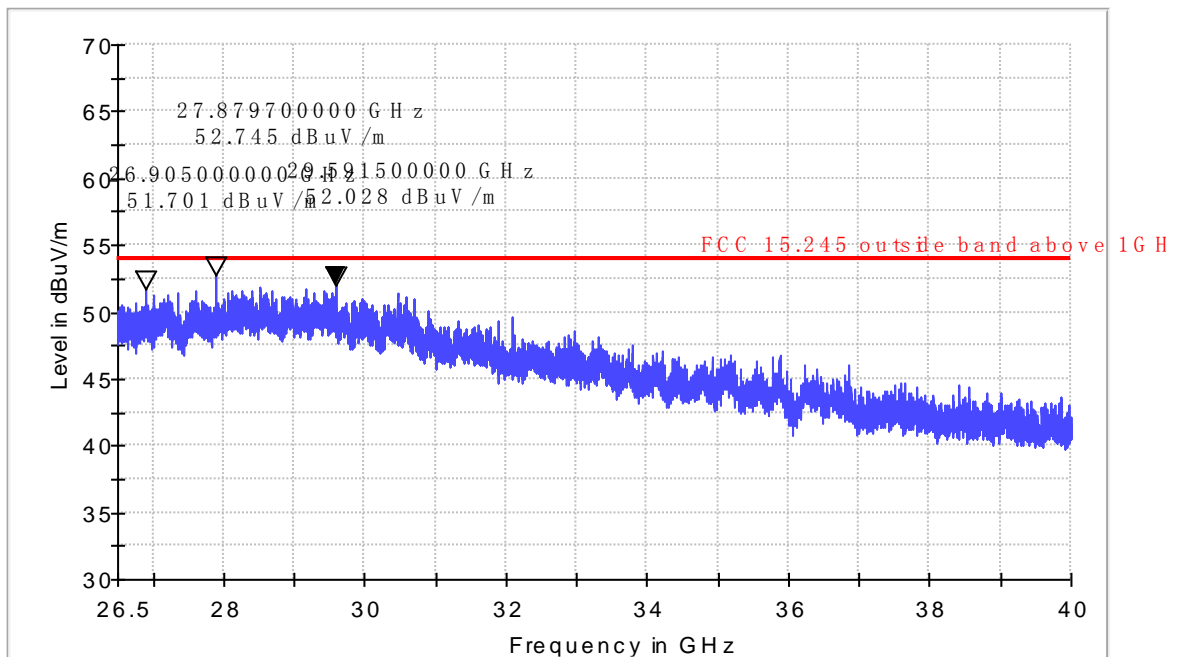
## EUT Information

EUT Model Name:	4.1 Channel SoundBar (Home Theater System) M/N:S90
Operation mode:	TX 5820.35MHz
Test Voltage:	AC 120V/60Hz
Comment:	EDIFIER

## Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 26.5-40GHz



# Radiated Emission

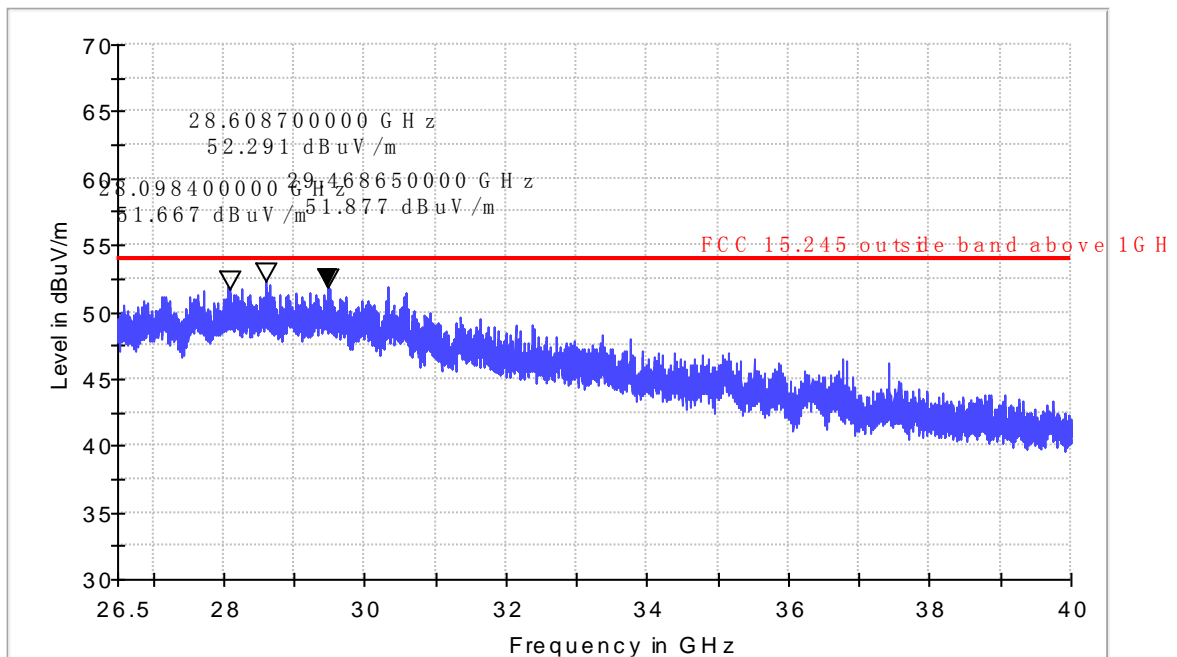
## EUT Information

EUT Model Name:	4.1 Channel SoundBar (Home Theater System) M/N:S90
Operation mode:	TX 5820.35MHz
Test Voltage:	AC 120V/60Hz
Comment:	EDIFIER

## Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 26.5-40GHz





# Radiated Emission

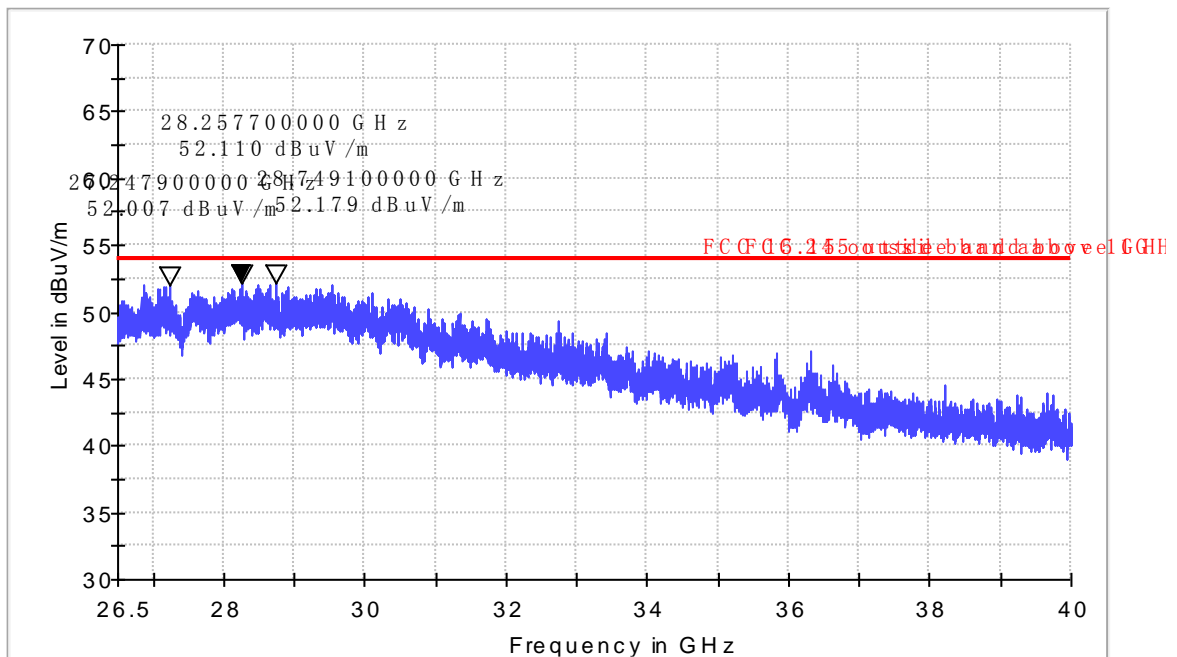
## EUT Information

EUT Model Name:	4.1 Channel SoundBar (Home Theater System) M/N:S90
Operation mode:	TX 2402MHz+TX 5730.35MHz
Test Voltage:	AC 120V/60Hz
Comment:	EDIFIER

## Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 26.5-40GHz



# Radiated Emission

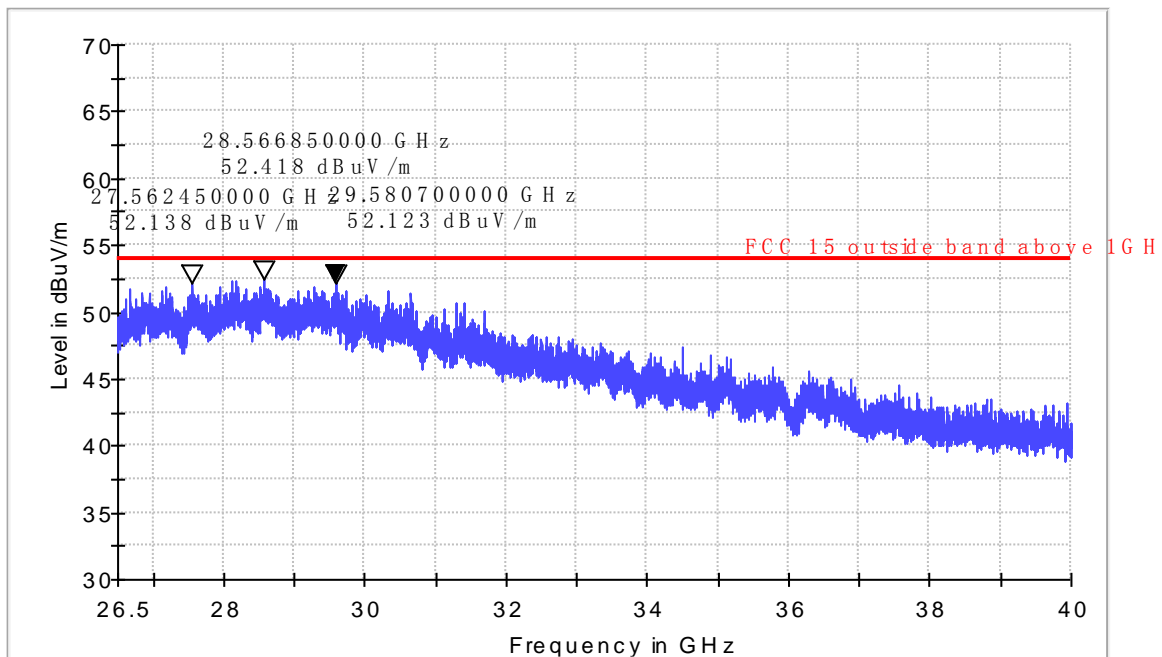
## EUT Information

EUT Model Name:	4.1 Channel SoundBar (Home Theater System) M/N:S90
Operation mode:	TX 2402MHz+TX 5730.35MHz
Test Voltage:	AC 120V/60Hz
Comment:	EDIFIER

## Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 26.5-40GHz



# Radiated Emission

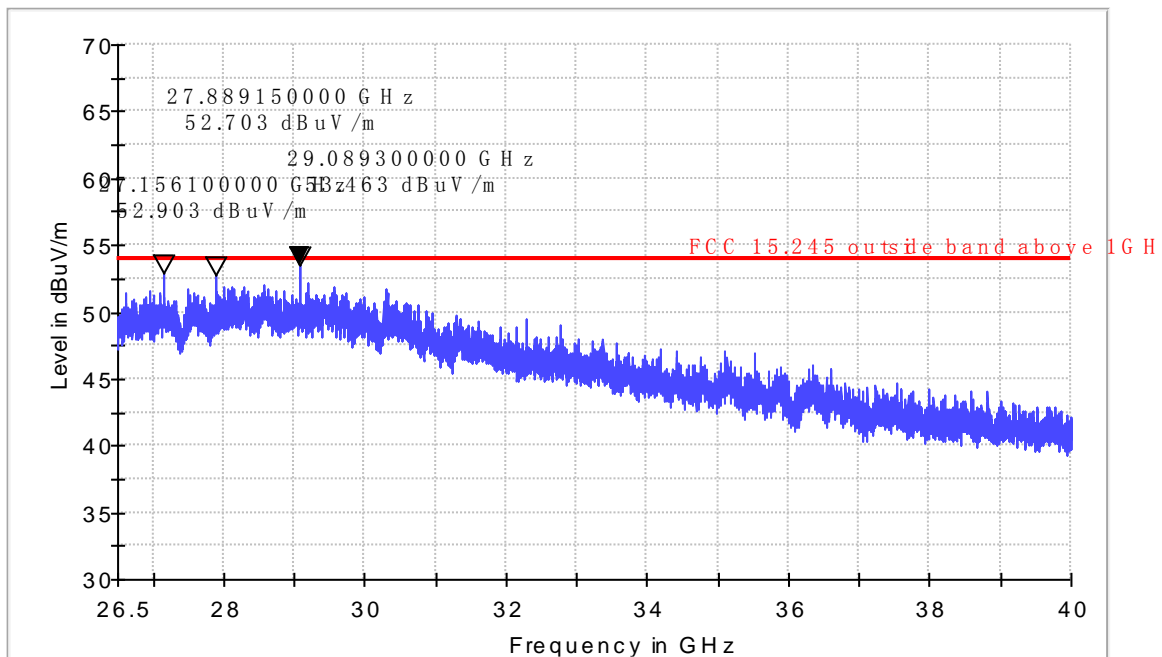
## EUT Information

EUT Model Name:	4.1 Channel SoundBar (Home Theater System) M/N:S90
Operation mode:	TX 2441MHz+TX 5776.35MHz
Test Voltage:	AC 120V/60Hz
Comment:	EDIFIER

## Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 26.5-40GHz



# Radiated Emission

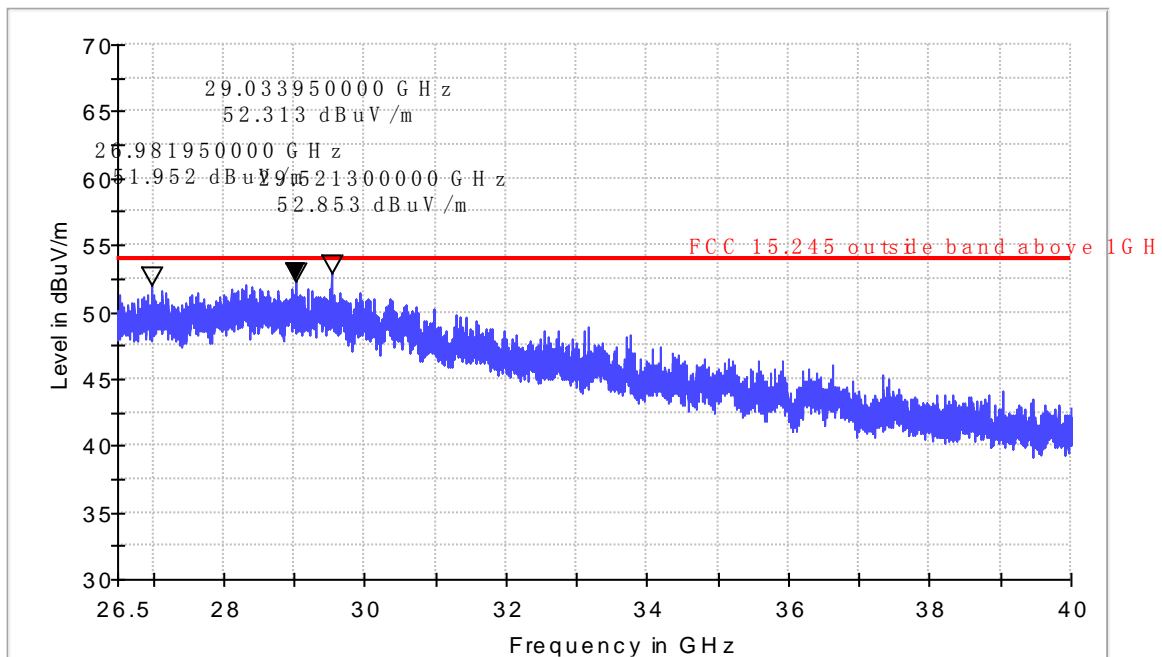
## EUT Information

EUT Model Name:	4.1 Channel SoundBar (Home Theater System) M/N:S90
Operation mode:	TX 2441MHz+TX 5776.35MHz
Test Voltage:	AC 120V/60Hz
Comment:	EDIFIER

## Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 26.5-40GHz



# Radiated Emission

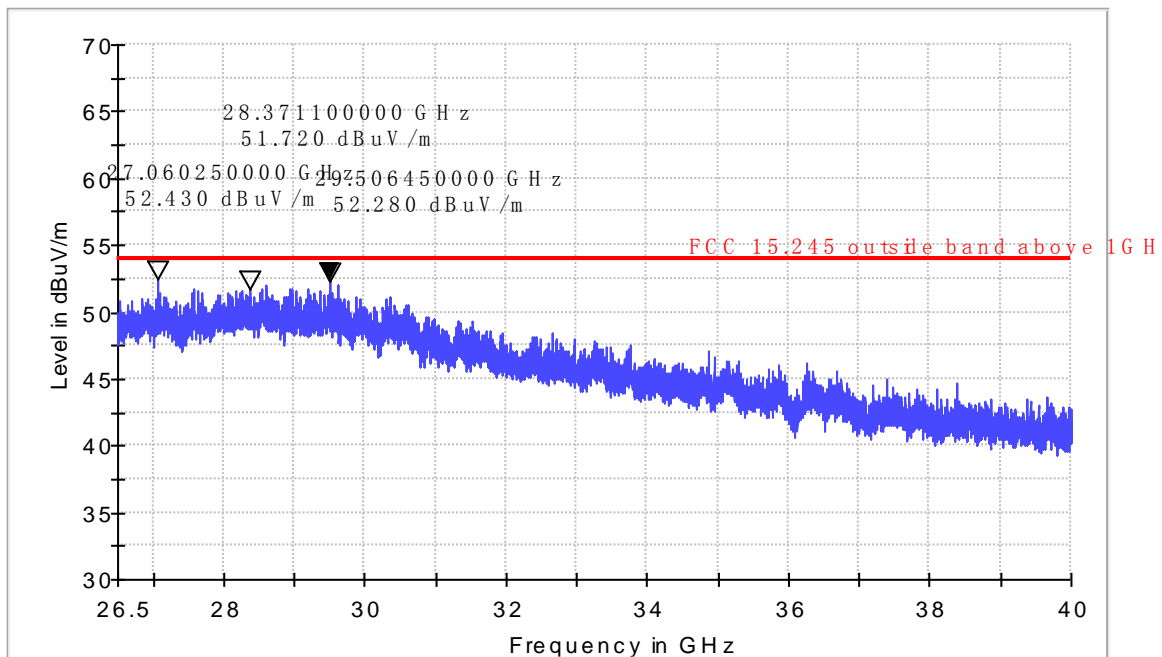
## EUT Information

EUT Model Name:	4.1 Channel SoundBar (Home Theater System) M/N:S90
Operation mode:	TX 2480MHz+TX 5820.25MHz
Test Voltage:	AC 120V/60Hz
Comment:	EDIFIER

## Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 26.5-40GHz



# Radiated Emission

## EUT Information

EUT Model Name:	4.1 Channel SoundBar (Home Theater System) M/N:S90
Operation mode:	TX 2480MHz+TX 5820.25MHz
Test Voltage:	AC 120V/60Hz
Comment:	EDIFIER

## Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 26.5-40GHz

