

# FCC AND ISCED CERTIFICATION TEST REPORT

FOR

|                             |   |   |
|-----------------------------|---|---|
| <b>Applicant</b>            | : | Harman International Industries, Inc.                         |
| <b>Address</b>              | : | 8500 Balboa Boulevard, Northridge, CA 91329,<br>UNITED STATES |
| <b>Equipment under Test</b> | : | Multi-Channel Soundbar with wireless subwoofer                |
| <b>Model No.</b>            | : | BAR 700   |
| <b>Trade Mark</b>           | : | JBL   |
| <b>FCC ID</b>               | : | APIBAR800   |
| <b>IC</b>                   | : | 6132A-BAR800  |
| <b>Manufacturer</b>         | : | Harman International Industries, Inc.                         |
| <b>Address</b>              | : | 8500 Balboa Boulevard, Northridge, CA 91329,<br>UNITED STATES |

**Issued By: Dongguan Dongdian Testing Service Co., Ltd.**

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# REPORT

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## Test Report Declare

|                             |   |  |
|-----------------------------|---|--|
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| <b>Address</b>              | : | 8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES |

### Test Standard Used:

FCC Rules and Regulations Part 15 Subpart C, RSS-247 Issue 2 February 2017.

### Test Procedure Used:

ANSI C63.10:2013, RSS-Gen Issue 5, Apr. 2018, Amendment 2 (February 2021)

### We Declare:

The equipment described above is tested by Dongguan Dongdian Testing Service Co., Ltd. and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Dongguan Dongdian Testing Service Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

**After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above FCC&ISED standards.**

|                         |                    |                      |                               |
|-------------------------|--------------------|----------------------|-------------------------------|
| <b>Report No.:</b>      | DDT-R22112306-2E03 |                      |                               |
| <b>Date of Receipt:</b> | Nov. 23, 2022      | <b>Date of Test:</b> | Nov. 23, 2022 ~ Dec. 05, 2022 |

**Prepared By:**

*Ella Gong*

**Ella Gong/Engineer**

**Approved By:**



**Damon Hu/EMC Manager**

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Dongguan Dongdian Testing Service Co., Ltd.

## Revision History

| Rev. | Revisions     | Issue Date    | Revised By |
|------|---------------|---------------|------------|
| ---  | Initial issue | Dec. 08, 2022 |            |
|      |               |               |            |

## 1. Summary of Test Results

| The EUT have been tested according to the applicable standards as referenced below.   |   |         |
|---|---|---------|
| Description of Test Item  | Standard  | Verdict |
| Radiation Emission  | FCC Part 15: 15.247<br>ANSI C63.10:2013<br>RSS-247 Issue 2<br>RSS-Gen Issue 5 | Pass    |
| Power Line Conducted Emission   | FCC Part 15: 15.207<br>ANSI C63.10: 2013<br>RSS-Gen Issue 5                   | Pass    |
| <p>Note:</p> <p>1. This report added a model BAR 700 based on the report DDT-R21123117-2E03, the difference is that BAR 700 has two less overhead speakers and one less power amplifier IC on Power amplifier board than BAR 800. This change based on engineering judgment that only Radiated Emission (below 1 GHz) and Power Line Conducted Emissions need to test.</p> <p>2. Please refer to report DDT-R21123117-2E03 for the other original data.</p> |   |         |

## 2. General Test Information

### 2.1. Description of EUT

|                          |  |
|--------------------------|--|
| EUT* Name                | : Multi-Channel Soundbar with wireless subwoofer |
| Model Number             | : BAR 700  |
| EUT Function Description | : Please reference user manual of this device    |
| Power Supply             | : AC 100-240V-50/60Hz 70W                        |
| Radio Specification      | : 2.4GHz SRD                                     |
| Operation Frequency      | : 2406 MHz - 2474 MHz                            |
| Modulation               | : GFSK   |
| Data Rate                | : 1 Mbps   |
| Antenna Gain             | : PCB antenna, Maximum PK gain: 1.10 dBi         |
| Sample Number            | : S22112306-03                                   |

Note: EUT is the ab. of equipment under test.

| Channel information |                 |         |                 |         |                 |
|---------------------|-----------------|---------|-----------------|---------|-----------------|
| Channel             | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 0                   | 2406            | 6       | 2438            | 12      | 2462            |
| 1                   | 2410            | 7       | 2442            | 13      | 2466            |
| 2                   | 2414            | 8       | 2446            | 14      | 2470            |
| 3                   | 2418            | 9       | 2450            | 15      | 2474            |
| 4                   | 2422            | 10      | 2454            |         |                 |
| 5                   | 2434            | 11      | 2458            |         |                 |

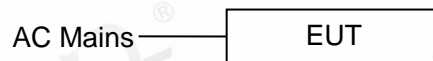
### 2.2. Accessories of EUT

| Description of Accessories | Manufacturer | Model number | Description | Other                                  |
|----------------------------|--------------|--------------|-------------|--|
| AC cable                   | Harman       | N/A          | N/A         | Length: 1.85m,                         |
| HDMI cable                 | Harman       | N/A          | N/A         | Length: 1.15m, with two magnetic rings |
| Remote control             | Harman       | N/A          | N/A         | N/A                                    |

### 2.3. Assistant equipment used for test

| Assistant equipment | Manufacturer | Model number | EMC Compliance | SN  |
|---------------------|--------------|--------------|----------------|-----|
| N/A                 | N/A          | N/A          | N/A            | N/A |

### 2.4. Block diagram of EUT configuration for test



Test software: Non\_Signaling\_Test\_Tool.exe

The test software was used to control EUT work in Continuous Tx mode, and select test channel, wireless mode as below table:

The pathloss of external cable: 0.5dB (According to the manufacturer's claims)

| Tested mode, channel, information |                  |         |                 |
|-----------------------------------|------------------|---------|-----------------|
| Mode                              | Setting Tx Power | Channel | Frequency (MHz) |
| GFSK                              | 7.5              | CH0     | 2406            |
|                                   | 7.5              | CH7     | 2442            |
|                                   | 7.5              | CH15    | 2474            |

### 2.5. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

|                    |                   |
|--------------------|-------------------|
| Temperature range: | +21 °C to +25 °C  |
| Humidity range:    | 40% to 75%        |
| Pressure range:    | 86 kPa to 106 kPa |

### 2.6. Deviations of test standard

No deviation.

## 2.7. Test laboratory

Dongguan Dongdian Testing Service Co., Ltd.

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Tel.: +86-0769-38826678, <http://www.dgddt.com>, Email: ddt@dgddt.com.

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01

FCC Designation Number: CN1182, Test Firm Registration Number: 540522

Innovation, Science and Economic Development Canada Site Registration Number: 10288A

Conformity Assessment Body identifier: CN0048

VCCI facility registration number: C-20087, T-20088, R-20123, R-20155, G-20118

## 2.8. Measurement uncertainty

| Test Item  | Uncertainty  |
|--|--|
| Bandwidth  | 1.1%   |
| Peak Output Power (Conducted) (Spectrum analyzer)        | 0.86 dB ( $10 \text{ MHz} \leq f < 3.6 \text{ GHz}$ ); |
|  | 1.38 dB ( $3.6 \text{ GHz} \leq f < 8 \text{ GHz}$ )   |
| Peak Output Power (Conducted) (Power Sensor)             | 0.74 dB  |
| Power Spectral Density                                   | 0.74 dB ( $10 \text{ MHz} \leq f < 3.6 \text{ GHz}$ ); |
|  | 1.38 dB ( $3.6 \text{ GHz} \leq f < 8 \text{ GHz}$ )   |
| Frequencies Stability                                    | $6.7 \times 10^{-8}$ (Antenna couple method)           |
|  | $5.5 \times 10^{-8}$ (Conducted method)                |
| Conducted spurious emissions                             | 0.86 dB ( $10 \text{ MHz} \leq f < 3.6 \text{ GHz}$ ); |
|  | 1.40 dB ( $3.6 \text{ GHz} \leq f < 8 \text{ GHz}$ )   |
|  | 1.66 dB ( $8 \text{ GHz} \leq f < 22 \text{ GHz}$ )    |
| Uncertainty for radio frequency (RBW < 20 kHz)           | $3 \times 10^{-8}$                                     |
| Temperature  | 0.4 °C   |
| Humidity   | 2 %  |
| Uncertainty for Radiation Emission Test (9 kHz - 30 MHz) | 3.44 dB  |
| Uncertainty for Radiation Emission test (30 MHz - 1 GHz) | 4.70 dB (Antenna Polarize: V)                          |
|  | 4.84 dB (Antenna Polarize: H)                          |
| Uncertainty for Radiation Emission test (1 GHz - 40 GHz) | 4.10 dB (1 - 6 GHz)                                    |
|  | 4.40 dB (6 GHz - 18 GHz)                               |
|  | 3.54 dB (18 GHz - 26 GHz)                              |
|  | 4.30 dB (26 GHz - 40 GHz)                              |
| Uncertainty for Power line conduction emission test      | 3.32 dB (150 kHz - 30 MHz)                             |

Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



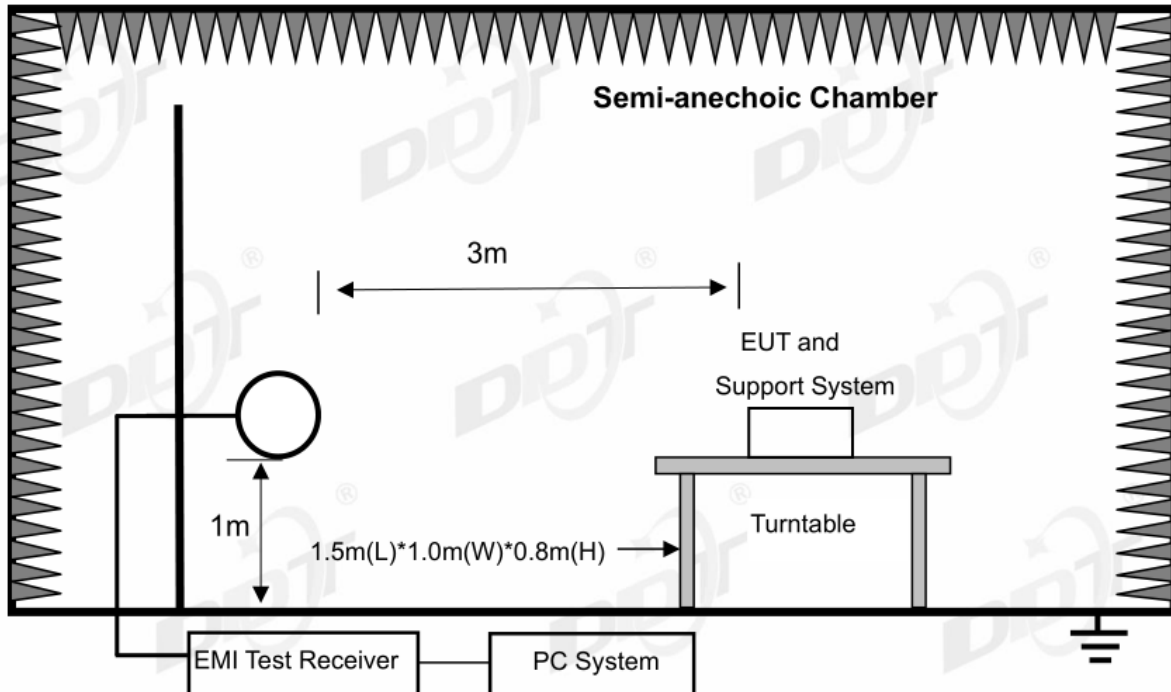
### 3. Equipment Used During Test

| Equipment                                      | Manufacturer    | Model No.  | Serial No.            | Last Cal.     | Cal. Interval |
|--|-----------------|--|-----------------------|---------------|---------------|
| <b>☑Radiation 3#chamber</b>                    |                 |  |                       |               |               |
| EMI Test Receiver                              | R&S             | ESU26  | 100472                | May 19, 2022  | 1 Year        |
| Spectrum analyzer                              | Agilent         | E4447A   | MY50180031            | May 17, 2022  | 1 Year        |
| Active Loop antenna                            | Schwarzbeck     | FMZB-1519  | 1519-038              | Sep. 29, 2022 | 1 Year        |
| Trilog Broadband Antenna                       | Schwarzbeck     | VULB 9163  | 01429                 | Jul. 22, 2022 | 1 Year        |
| Double Ridged Horn Antenna                     | Schwarzbeck     | BBHA9120 D   | 02468                 | Sep. 29, 2022 | 1 Year        |
| Broad Band Horn Antenna                        | Schwarzbeck     | BBHA 9170  | 790                   | May 06, 2022  | 1 Year        |
| Pre-amplifier                                  | COM-POWER       | PAM-118A   | 18040084              | Aug.17, 2022  | 1 Year        |
| Pre-amplifier                                  | COM-POWER       | PAM-840A   | 461369                | Apr. 11, 2022 | 1 Year        |
| RE Cable                                       | N/A             | W23.02 CP1-X2 +<br>W23.09 AP1-X8+<br>JCT26S-NJ-NJ-1.5<br>M+<br>JCT26S-NJ-NJ-1.5<br>M | 4.5M+8M+1.5<br>M+1.5M | Aug.17, 2022  | 1 Year        |
| RF Cable                                       | Yuhu Technology | JCTB810-NJ-NJ-9<br>M   | 21123964              | May. 19,2022  | 1 Year        |
| RF Cable                                       | Yuhu Technology | ZT26S-SMAJ-SMA<br>J-1M   | 21073466              | Aug.17, 2022  | 1 Year        |
| Test software                                  | Tonscend        | JS32-RE  | V 5.0.0.1             | N/A           | N/A           |
| Test software                                  | Audix           | E3   | V 6.1.1.1             | N/A           | N/A           |
| <b>☑Power Line Conducted Emissions Test 1#</b> |                 |  |                       |               |               |
| Test Receiver                                  | R&S             | ESCI   | 100551                | Aug. 26, 2022 | 1 Year        |
| LISN 1   | R&S             | ENV216   | 101109                | Aug. 26, 2022 | 1 Year        |
| LISN 2   | R&S             | ESH2-Z5  | 100309                | Aug. 26, 2022 | 1 Year        |
| Pulse Limiter                                  | R&S             | ESH3-Z2  | 101242                | Aug. 26, 2022 | 1 Year        |
| CE Cable 1                                     | HUBSER          | N/A  | W10.01                | Aug. 26, 2022 | 1 Year        |
| Test software                                  | Audix           | E3   | V 6.11111b            | N/A           | N/A           |
| Test Receiver                                  | R&S             | ESCI   | 100551                | Aug. 26, 2022 | 1 Year        |

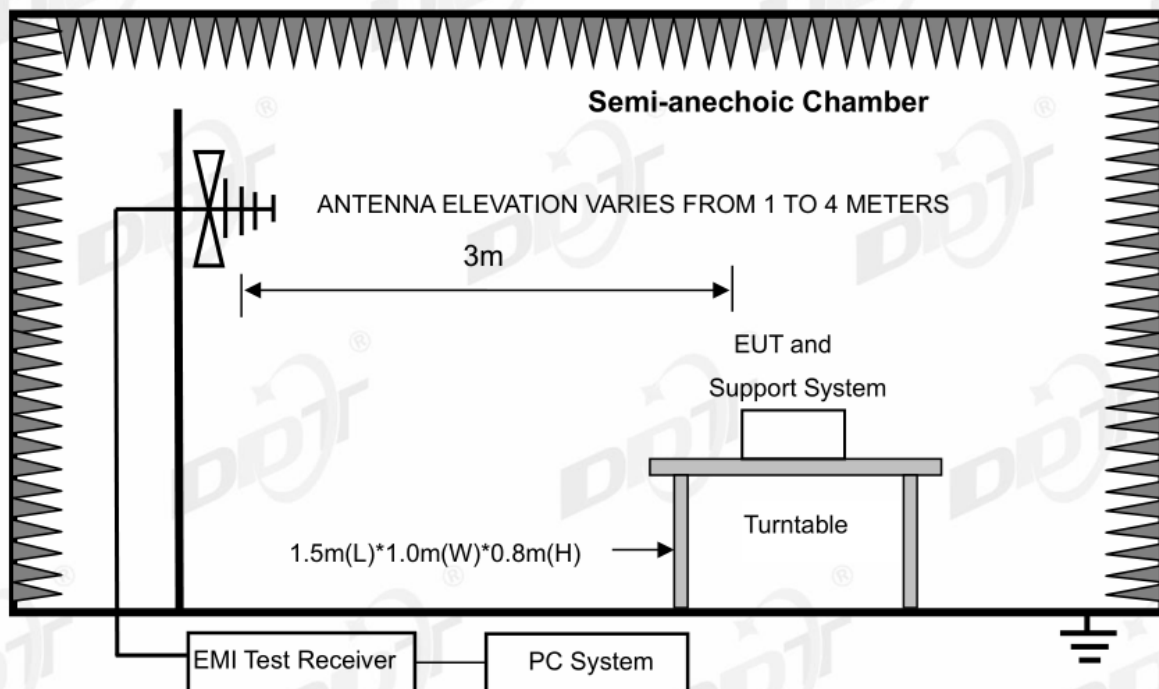
## 4. Radiated Emission

### 4.1. Block diagram of test setup

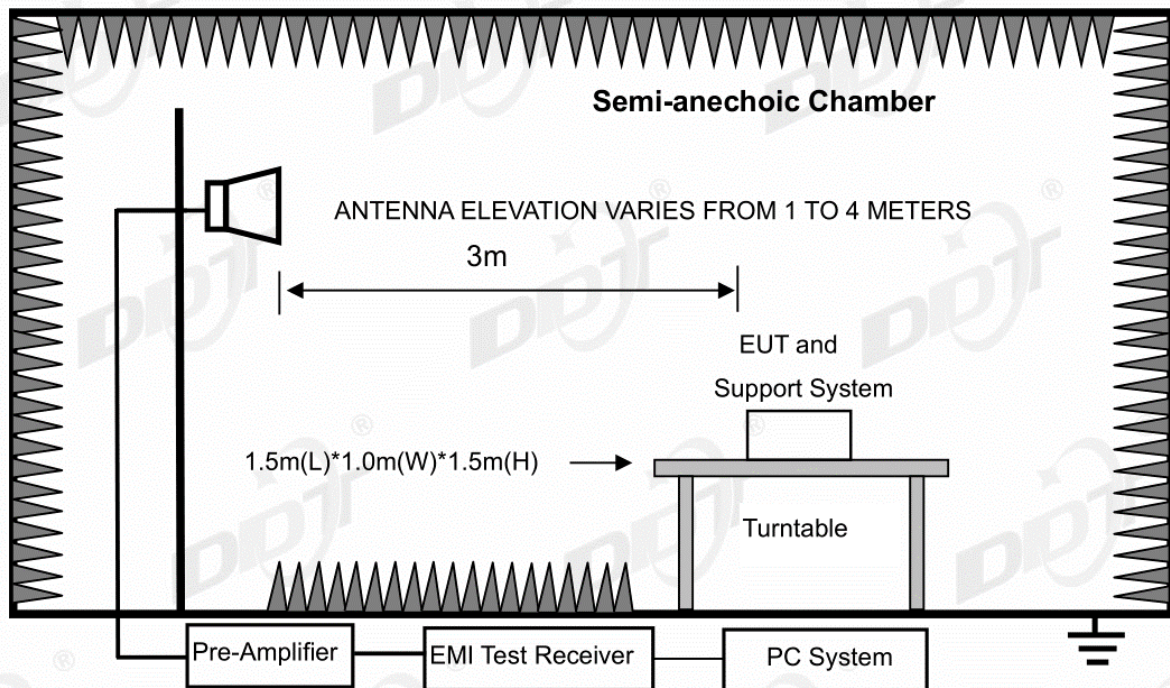
In 3 m Anechoic Chamber, test setup diagram for 9 kHz - 30 MHz:



In 3 m Anechoic Chamber, test setup diagram for 30 MHz - 1 GHz:



In 3 m Anechoic Chamber, test setup diagram for frequency above 1 GHz:



Note: For harmonic emissions test an appropriate high pass filter was inserted in the input port of AMP.

## 4.2. Limit

(1) FCC 15.205 Restricted frequency band

| MHz                      | MHz                 | MHz           | GHz              |
|--------------------------|---------------------|---------------|------------------|
| 0.090-0.110              | 16.42-16.423        | 399.9-410     | 4.5-5.15         |
| <sup>1</sup> 0.495-0.505 | 16.69475-16.69525   | 608-614       | 5.35-5.46        |
| 2.1735-2.1905            | 16.80425-16.80475   | 960-1240      | 7.25-7.75        |
| 4.125-4.128              | 25.5-25.67          | 1300-1427     | 8.025-8.5        |
| 4.1772&4.17775           | 37.5-38.25          | 1435-1626.5   | 9.0-9.2          |
| 4.2072&4.20775           | 73-74.6             | 1645.5-1646.5 | 9.3-9.5          |
| 6.215-6.218              | 74.8-75.2           | 1660-1710     | 10.6-12.7        |
| 6.26775-6.26825          | 108-121.94          | 1718.8-1722.2 | 13.25-13.4       |
| 6.31175-6.31225          | 123-138             | 2200-2300     | 14.47-14.5       |
| 8.291-8.294              | 149.9-150.05        | 2310-2390     | 15.35-16.2       |
| 8.362-8.366              | 156.52475-156.52525 | 2483.5-2500   | 17.7-21.4        |
| 8.37625-8.38675          | 156.7-156.9         | 2690-2900     | 22.01-23.12      |
| 8.41425-8.41475          | 162.0125-167.17     | 3260-3267     | 23.6-24.0        |
| 12.29-12.293             | 167.72-173.2        | 3332-3339     | 31.2-31.8        |
| 12.51975-12.52025        | 240-285             | 3345.8-3358   | 36.43-36.5       |
| 12.57675-12.57725        | 322-335.4           | 3600-4400     | ( <sup>2</sup> ) |
| 13.36-13.41              |                     |               |                  |

<sup>1</sup>Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup>Above 38.6

## RSS-Gen section 8.10 Restricted frequency bands\*

| MHz             | MHz                 | MHz           | GHz         |
|-----------------|---------------------|---------------|-------------|
| 0.090-0.110     | 12.51975-12.52025   | 240-285       | 3.5-4.4     |
| 0.495-0.505     | 12.57675-12.57725   | 322-335.4     | 4.5-5.15    |
| 2.1735-2.1905   | 13.36-13.41         | 399.9-410     | 5.35-5.46   |
| 3.020-3.026     | 16.42-16.423        | 608-614       | 7.25-7.75   |
| 4.125-4.128     | 16.69475-16.69525   | 960-1427      | 8.025-8.5   |
| 4.1772&4.17775  | 16.80425-16.80475   | 1435-1626.5   | 9.0-9.2     |
| 4.2072&4.20775  | 25.5-25.67          | 1645.5-1646.5 | 9.3-9.5     |
| 5.677-5.683     | 37.5-38.25          | 1660-1710     | 10.6-12.7   |
| 6.215-6.218     | 73-74.6             | 1718.8-1722.2 | 13.25-13.4  |
| 6.26775-6.26825 | 74.8-75.2           | 2200-2300     | 14.47-14.5  |
| 6.31175-6.31225 | 108-138             | 2310-2390     | 15.35-16.2  |
| 8.291-8.294     | 149.9-150.05        | 2483.5-2500   | 17.7-21.4   |
| 8.362-8.366     | 156.52475-156.52525 | 2655-2900     | 22.01-23.12 |
| 8.37625-8.38675 | 156.7-156.9         | 3260-3267     | 23.6-24.0   |
| 8.41425-8.41475 | 162.0125-167.17     | 3332-3339     | 31.2-31.8   |
| 12.29-12.293    | 167.72-173.2        | 3345.8-3358   | 36.43-36.5  |
|                 |                     |               | Above 38.6  |

\* Certain frequency bands listed in table 7 and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.

## (2) FCC 15.209 Limit &amp; RSS-Gen section 8.9 Limit

| FREQUENCY<br>MHz | DISTANCE<br>Meters | FIELD STRENGTHS LIMIT   |                                   |
|------------------|--------------------|---|-----------------------------------|
|                  |                    | $\mu\text{V/m}$   | $\text{dB}(\mu\text{V})/\text{m}$ |
| 0.009 ~ 0.490    | 300                | $2400/\text{F}(\text{kHz})$   | $67.6-20\log(\text{F})$           |
| 0.490 ~ 1.705    | 30                 | $24000/\text{F}(\text{kHz})$  | $87.6-20\log(\text{F})$           |
| 1.705 ~ 30.0     | 30                 | 30  | 29.54                             |
| 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 1000       | 3                  | 74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak)<br>54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average) |                                   |

Note: (1) The emission limits shown in the above table are based on measurements employing a CISPR QP detector except for the frequency bands 9 - 90 kHz, 110 - 490 kHz and above 1000 MHz. Radiated emissions limits in these three bands are based on measurements employing an average detector.

(2) At frequencies below 30 MHz, measurement may be performed at a distance closer than that specified, and the limit at closer measurement distance can be extrapolated by below formula:

$$\text{Limit}_{3\text{m}}(\text{dB}\mu\text{V}/\text{m}) = \text{Limit}_{30\text{m}}(\text{dB}\mu\text{V}/\text{m}) + 40\log(30\text{m}/3\text{m})$$

## (3) Limit for this EUT

The emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, and the emissions appearing within RSS-Gen section 8.10 Restricted frequency bands shall not exceed the limits shown in RSS-Gen section 8.9, all the other emissions shall be at least 20 dB below the fundamental emissions or comply with 15.209 limits and RSS-Gen section 8.9 limits.

#### 4.3. Test Procedure

- (1) EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber for below 1 GHz and 150 cm above the ground plane inside a semi-anechoic chamber for above 1 GHz.
- (2) Test antenna was located 3 m from the EUT on an adjustable mast, and the antenna used as below table.

| Test frequency range | Test antenna used                              | Test antenna distance |
|----------------------|--|-----------------------|
| 9 kHz - 30 MHz       | Active Loop antenna                            | 3 m                   |
| 30 MHz - 1 GHz       | Trilog Broadband Antenna                       | 3 m                   |
| 1 GHz - 18 GHz       | Double Ridged Horn Antenna<br>(1 GHz - 18 GHz) | 3 m                   |
| 18 GHz - 40 GHz      | Horn Antenna<br>(18 GHz - 40 GHz)              | 1 m                   |

According ANSI C63.10:2013 clause 6.4.4.2 and 6.5.3, for measurements below 30 MHz, Antenna was located 3 m from EUT, the loop antenna was positioned in three antenna orientations (parallel, perpendicular, and round-parallel), for each measurement antenna alignment, the EUT shall be rotated through 0° to 360° on a turntable, and the lowest height of the magnetic antenna shall be 1 m above the ground. For measurement above 30 MHz, the trilog Broadband Antenna or Horn Antenna was located 3 m from EUT, Measurements were made with the antenna positioned in both the horizontal and vertical planes of Polarization, and the measurement antenna was varied from 1 m to 4 m. in height above the reference ground plane to obtain the maximum signal strength.

- (3) Below pre-scan procedure was first performed in order to find prominent frequency spectrum radiated emissions from 9 kHz to 25 GHz:

- (a) Scanning the peak frequency spectrum with the antenna specified in step (3), and the EUT was rotated 360 degree, the antenna height was varied from 1 m to 4 m (Except loop antenna, it's fixed 1 m above ground.)

- (b) Change work frequency or channel of device if practicable.

- (c) Change modulation type of device if practicable.

- (d) Change power supply range from 85% to 115% of the rated supply voltage

- (e) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions.

Spectrum frequency from 9 kHz to 25 GHz (tenth harmonic of fundamental frequency) was investigated, and no any obvious emission were detected from 9 kHz to 30 MHz and 18 GHz



to 25 GHz, so below final test was performed with frequency range from 30 MHz to 18 GHz.

- (4) For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied between 1 m and 4 m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10:2013 on Radiated Emission test.
- (5) The emissions from 9 kHz to 1 GHz were measured based on CISPR QP detector except for the frequency bands 9 - 90 kHz, 110 - 490 kHz, for emissions from 9 kHz - 90 kHz, 110 kHz - 490 kHz and above 1 GHz were measured based on average detector, for emissions above 1 GHz, peak emissions also be measured and need comply with Peak limit.
- (6) The emissions from 9 kHz to 1 GHz, QP or average values were measured with EMI receiver with below RBW

| Frequency band   | RBW     |
|------------------|---------|
| 9 kHz - 150 kHz  | 200 Hz  |
| 150 kHz - 30 MHz | 9 kHz   |
| 30 MHz - 1 GHz   | 120 kHz |

- (7) For emissions above 1 GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1 MHz, VBW is set at 3 MHz for Peak measure; According ANSI C63.10:2013 clause 4.1.4.2.2 procedure for average measure.
- (8) X axis, Y axis, Z axis are tested, and worse setup X axis is reported.

#### 4.4. Test result

Pass. (See below detailed test result)

All the emissions except fundamental emission from 9 kHz to 25 GHz were comply with 15.209 limits and RSS-Gen section 8.9 limits.

Note1: According exploratory test, the emission levels are 20 dB below the limit detected from 9 kHz to 30 MHz and 18 GHz to 25 GHz, so the final test was performed with frequency range from 30 MHz to 18 GHz and recorded in below.

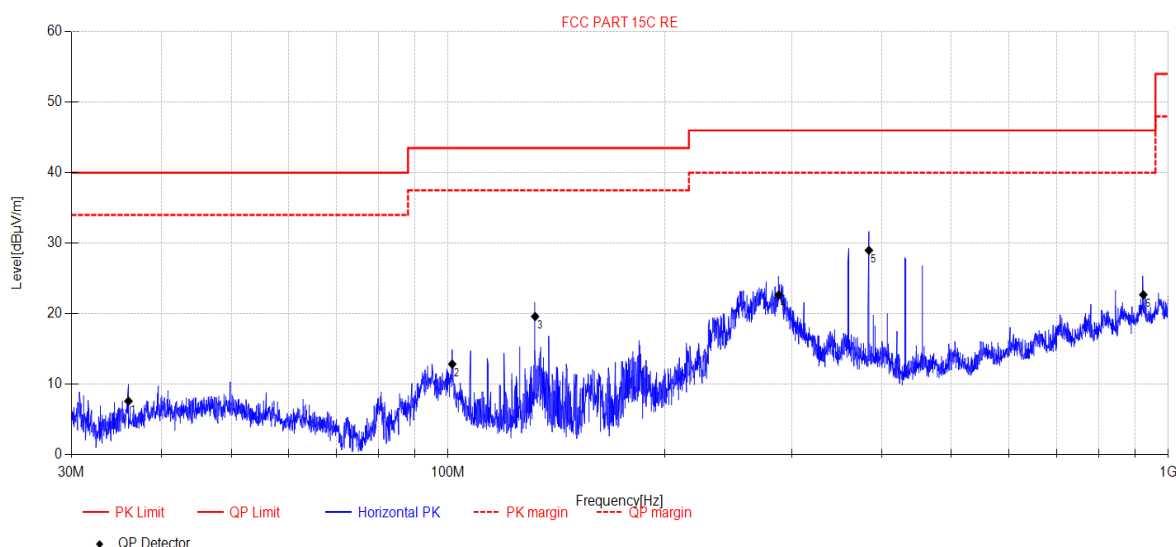
Note2: For emissions below 1 GHz, according exploratory explorer test, when change Tx mode and channel, have no distinct influence on emissions level, so for emissions below 1 GHz, the final test was only performed with EUT working in Tx 2474 MHz mode.

Note3: For emissions above 1 GHz. If peak results comply with AV limit, AV Result is deemed to comply with AV limit.

## Radiated Emission test (below 1 GHz)

## TR-4-E-009 Radiated Emission Test Result

**Test Date:** 2022-11-28 **Tested By:** Johnson Huang  
**EUT:** Multi-Channel Soundbar with wireless subwoofer **Model Number:** BAR 700  
**Test Mode:** TX Mode **Power Supply:** AC 120V/60Hz  
**Condition:** Temp:23.4°C;Humi:46.5%;Press:100.3kPa **Test Site:** DDT 3# Chamber  
**File Path:** d:\ts\2022 report data\Q22112306-BAR700\FCC BELOW 1G\20221128-112309\_H  
**Memo:** SRD



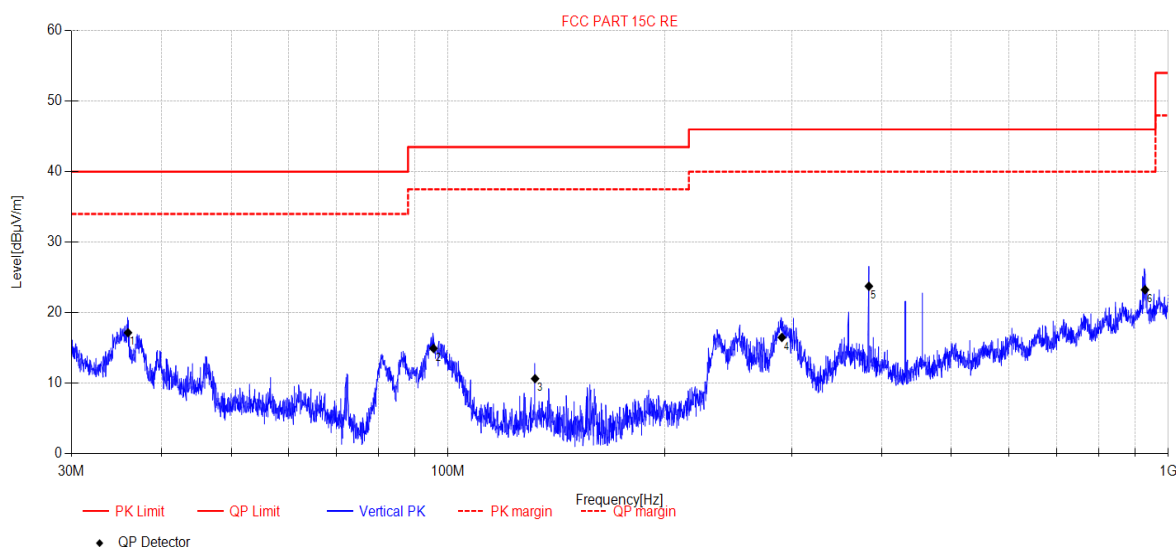
| Final Data List |             |                  |             |                 |                |             |          |            |
|-----------------|-------------|------------------|-------------|-----------------|----------------|-------------|----------|------------|
| NO.             | Freq. [MHz] | Reading [dBμV/m] | Factor [dB] | Result [dBμV/m] | Limit [dBμV/m] | Margin [dB] | Detector | Polarity   |
| 1               | 36.00       | 28.1             | -20.52      | 7.58            | 40.00          | 32.42       | QP       | Horizontal |
| 2               | 101.33      | 33.04            | -20.20      | 12.84           | 43.50          | 30.66       | QP       | Horizontal |
| 3               | 132.09      | 42.92            | -23.33      | 19.59           | 43.50          | 23.91       | QP       | Horizontal |
| 4               | 287.86      | 40.19            | -17.52      | 22.67           | 46.00          | 23.33       | QP       | Horizontal |
| 5               | 384.01      | 44.11            | -15.13      | 28.98           | 46.00          | 17.02       | QP       | Horizontal |
| 6               | 923.18      | 28.55            | -5.87       | 22.68           | 46.00          | 23.32       | QP       | Horizontal |

## Note:

1. Result Level = Read Level + Factor
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Date:** 2022-11-28  
**Tested By:** Johnson Huang  
**EUT:** Multi-Channel Soundbar with wireless subwoofer  
**Model Number:** BAR 700  
**Test Mode:** TX Mode  
**Power Supply:** AC 120V/60Hz  
**Condition:** Temp:23.4°C;Humi:46.5%;Press:100.3kPa  
**Test Site:** DDT 3# Chamber  
**File Path:** d:\ts\2022 report data\Q22112306-BAR700\FCC BELOW 1G\20221128-112329\_V  
**Memo:** SRD



| Final Data List |             |                  |             |                 |                |             |          |          |
|-----------------|-------------|------------------|-------------|-----------------|----------------|-------------|----------|----------|
| NO.             | Freq. [MHz] | Reading [dBμV/m] | Factor [dB] | Result [dBμV/m] | Limit [dBμV/m] | Margin [dB] | Detector | Polarity |
| 1               | 35.95       | 37.69            | -20.54      | 17.15           | 40.00          | 22.85       | QP       | Vertical |
| 2               | 95.47       | 35.77            | -20.85      | 14.92           | 43.50          | 28.58       | QP       | Vertical |
| 3               | 132.09      | 33.96            | -23.33      | 10.63           | 43.50          | 32.87       | QP       | Vertical |
| 4               | 290.70      | 33.95            | -17.47      | 16.48           | 46.00          | 29.52       | QP       | Vertical |
| 5               | 384.01      | 38.87            | -15.13      | 23.74           | 46.00          | 22.26       | QP       | Vertical |
| 6               | 928.37      | 29.04            | -5.80       | 23.24           | 46.00          | 22.76       | QP       | Vertical |

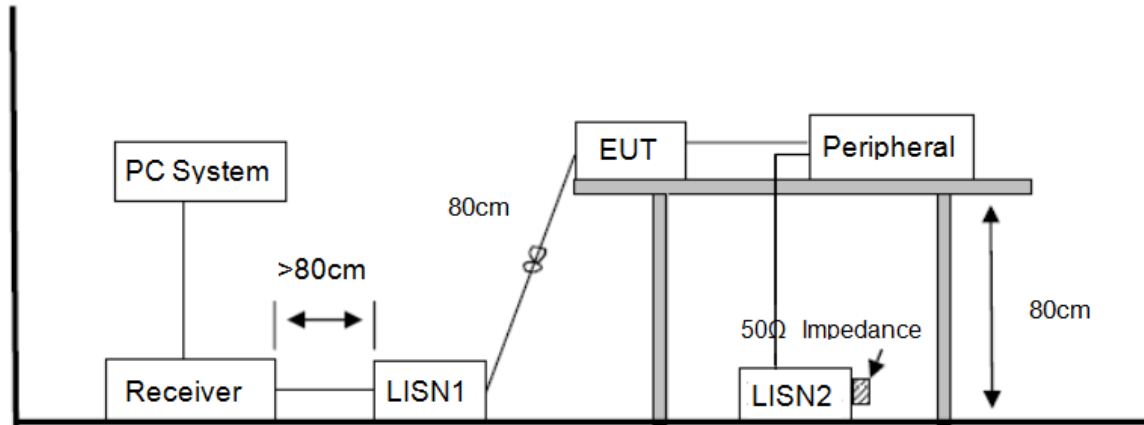
Note:

1. Result Level = Read Level + Factor
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.



## 5. Power Line Conducted Emission

### 5.1. Block diagram of test setup



### 5.2. Power line conducted emission limits

| Frequency         | Quasi-Peak Level<br>dB( $\mu$ V) | Average Level<br>dB( $\mu$ V) |
|-------------------|----------------------------------|-------------------------------|
| 150 kHz ~ 500 kHz | 66 ~ 56*                         | 56 ~ 46*                      |
| 500 kHz ~ 5 MHz   | 56                               | 46                            |
| 5 MHz ~ 30 MHz    | 60                               | 50                            |

Note 1: \* Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.

### 5.3. Test procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80 cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.4 and test equipment as described in clause 5.1 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30 MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.4 were scanned during the preliminary test.

After the preliminary scan, we found the test mode producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 kHz.

#### 5.4. Test result

**Pass. (See below detailed test result)**

Note1: All emissions not reported below are too low against the prescribed limits.

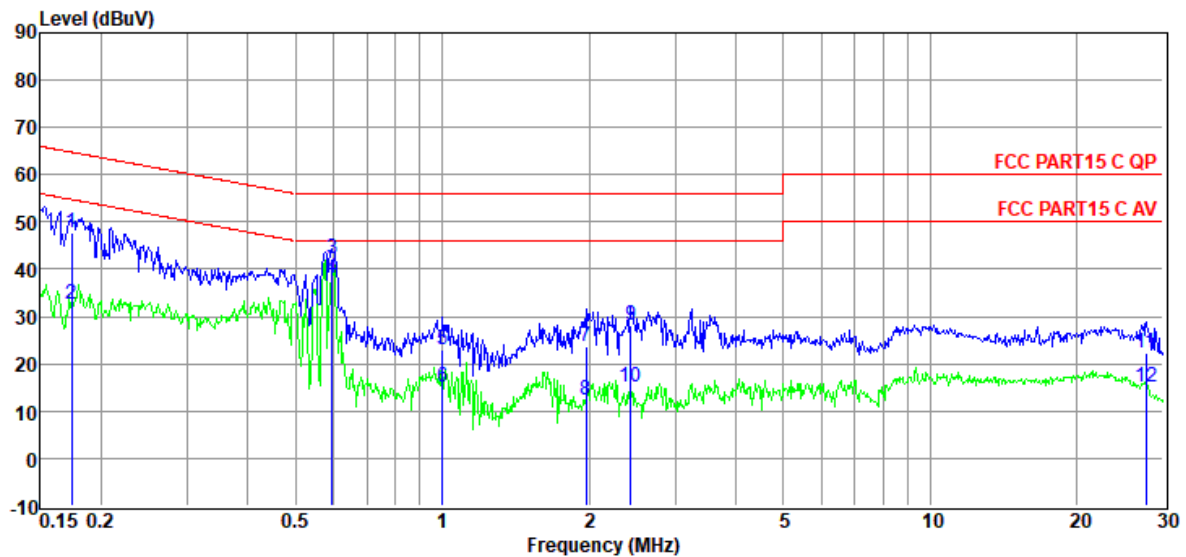
Note2: “----” means Peak detection; “----” means Average detection.

Note3: Pre-test AC conducted emission at both voltage AC 120V/60Hz and AC 240V/50Hz, recorded worse case.

# TR-4-E-010 Conducted Emission Test Result

**Test Site** : DDT 1# Shield Room **D:\2022 CE report date\Q22112306-2E BAR 700\FCC.EM6**  
**Test Date** : 2022-12-01 **Tested By** : Bairong  
**EUT** : Multi-Channel Soundbar with wireless subwoofer **Model Number** : BAR 700  
**Power Supply** : AC 120V/60Hz **Test Mode** : TX mode  
**Condition** : TEMP:24.6°C, RH:54.1%, BP:101.1kPa **LISN** : 2021 1# ENV216/NEUTRAL  
**Memo** : SRD

Data: 12



| Item<br>(Mark) | Freq.<br>(MHz) | Read Level<br>(dBUV) | LISN Factor<br>(dB) | Cable Loss<br>(dB) | Pulse Limiter Factor<br>(dB) | Result Level<br>(dBUV) | Limit Line<br>(dBUV) | Over Limit<br>(dB) | Detector | Phase   |
|----------------|----------------|----------------------|---------------------|--------------------|------------------------------|------------------------|----------------------|--------------------|----------|---------|
| 1              | 0.17           | 27.98                | 9.80                | 0.01               | 9.92                         | 47.71                  | 64.77                | -17.06             | QP       | NEUTRAL |
| 2              | 0.17           | 12.84                | 9.80                | 0.01               | 9.92                         | 32.57                  | 54.77                | -22.20             | Average  | NEUTRAL |
| 3              | 0.59           | 22.67                | 9.65                | 0.02               | 9.91                         | 42.25                  | 56.00                | -13.75             | QP       | NEUTRAL |
| 4              | 0.59           | 18.59                | 9.65                | 0.02               | 9.91                         | 38.17                  | 46.00                | -7.83              | Average  | NEUTRAL |
| 5              | 1.00           | 3.34                 | 9.70                | 0.03               | 9.89                         | 22.96                  | 56.00                | -33.04             | QP       | NEUTRAL |
| 6              | 1.00           | -4.67                | 9.70                | 0.03               | 9.89                         | 14.95                  | 46.00                | -31.05             | Average  | NEUTRAL |
| 7              | 1.97           | 4.15                 | 9.60                | 0.04               | 9.89                         | 23.68                  | 56.00                | -32.32             | QP       | NEUTRAL |
| 8              | 1.97           | -7.27                | 9.60                | 0.04               | 9.89                         | 12.26                  | 46.00                | -33.74             | Average  | NEUTRAL |
| 9              | 2.44           | 8.50                 | 9.66                | 0.05               | 9.90                         | 28.11                  | 56.00                | -27.89             | QP       | NEUTRAL |
| 10             | 2.44           | -4.69                | 9.66                | 0.05               | 9.90                         | 14.92                  | 46.00                | -31.08             | Average  | NEUTRAL |
| 11             | 27.71          | 2.37                 | 9.88                | 0.20               | 9.99                         | 22.44                  | 60.00                | -37.56             | QP       | NEUTRAL |
| 12             | 27.71          | -5.00                | 9.88                | 0.20               | 9.99                         | 15.07                  | 50.00                | -34.93             | Average  | NEUTRAL |

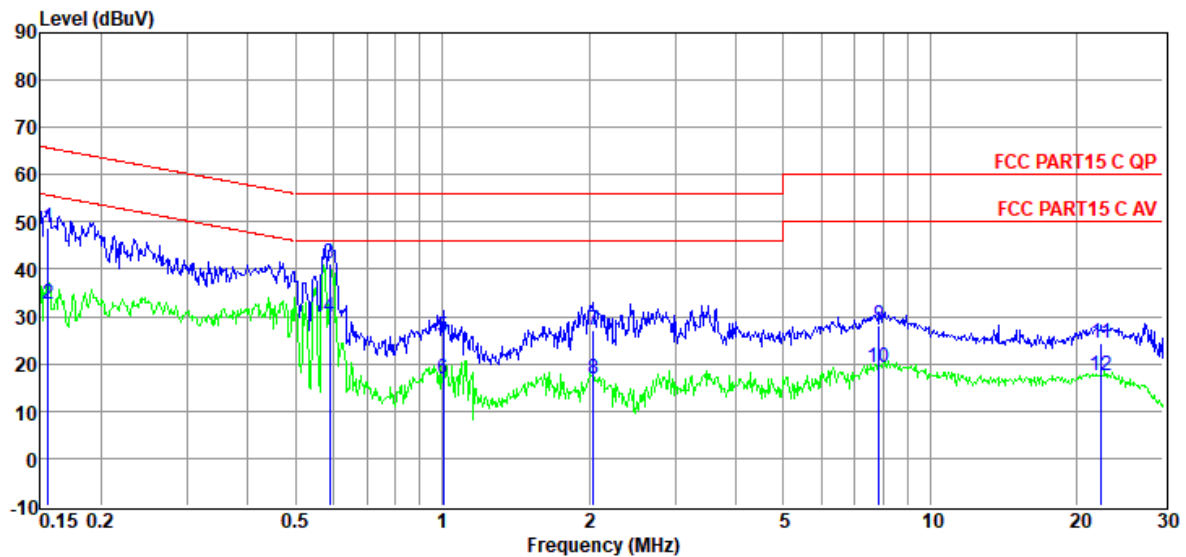
Note:

1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

# TR-4-E-010 Conducted Emission Test Result

**Test Site** : DDT 1# Shield Room **D:\2022 CE report date\Q22112306-2E BAR 700\FCC.EM6**  
**Test Date** : 2022-12-01 **Tested By** : Bairong  
**EUT** : Multi-Channel Soundbar with wireless subwoofer **Model Number** : BAR 700  
**Power Supply** : AC 120V/60Hz **Test Mode** : TX mode  
**Condition** : TEMP:24.6°C, RH:54.1%, BP:101.1kPa **LISN** : 2021 1# ENV216/LINE  
**Memo** : SRD

Data: 14



| Item<br>(Mark) | Freq.<br>(MHz) | Read<br>Level<br>(dBUV) | LISN<br>Factor<br>(dB) | Cable<br>Loss<br>(dB) | Pulse<br>Limiter<br>Factor<br>(dB) | Result<br>Level<br>(dBUV) | Limit<br>Line<br>(dBUV) | Over<br>Limit<br>(dB) | Detector | Phase |
|----------------|----------------|-------------------------|------------------------|-----------------------|------------------------------------|---------------------------|-------------------------|-----------------------|----------|-------|
| 1              | 0.16           | 29.03                   | 9.63                   | 0.01                  | 9.92                               | 48.59                     | 65.69                   | -17.10                | QP       | LINE  |
| 2              | 0.16           | 13.18                   | 9.63                   | 0.01                  | 9.92                               | 32.74                     | 55.69                   | -22.95                | Average  | LINE  |
| 3              | 0.59           | 21.60                   | 9.55                   | 0.02                  | 9.91                               | 41.08                     | 56.00                   | -14.92                | QP       | LINE  |
| 4              | 0.59           | 10.51                   | 9.55                   | 0.02                  | 9.91                               | 29.99                     | 46.00                   | -16.01                | Average  | LINE  |
| 5              | 1.01           | 6.36                    | 9.60                   | 0.03                  | 9.89                               | 25.88                     | 56.00                   | -30.12                | QP       | LINE  |
| 6              | 1.01           | -2.88                   | 9.60                   | 0.03                  | 9.89                               | 16.64                     | 46.00                   | -29.36                | Average  | LINE  |
| 7              | 2.04           | 7.75                    | 9.50                   | 0.04                  | 9.89                               | 27.18                     | 56.00                   | -28.82                | QP       | LINE  |
| 8              | 2.04           | -2.59                   | 9.50                   | 0.04                  | 9.89                               | 16.84                     | 46.00                   | -29.16                | Average  | LINE  |
| 9              | 7.85           | 8.58                    | 9.50                   | 0.09                  | 9.94                               | 28.11                     | 60.00                   | -31.89                | QP       | LINE  |
| 10             | 7.85           | -0.43                   | 9.50                   | 0.09                  | 9.94                               | 19.10                     | 50.00                   | -30.90                | Average  | LINE  |
| 11             | 22.42          | 4.49                    | 9.63                   | 0.18                  | 9.97                               | 24.27                     | 60.00                   | -35.73                | QP       | LINE  |
| 12             | 22.42          | -2.19                   | 9.63                   | 0.18                  | 9.97                               | 17.59                     | 50.00                   | -32.41                | Average  | LINE  |

Note:

1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

## 7. Photos of the EUT

Please refer to appendix III

**END OF REPORT**