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# **MEASUREMENT REPORT**

# FCC PART 15 Subpart C WLAN 802.11b/g/n

FCC ID: BKMAE-STI6110

APPLICANT: SEIKO EPSON CORPORATION

ification
ification

Product: Streaming Media Player

Model No.: STI6110-D101(RoHS)

Brand Name: EPSON

**FCC Classification:** Digital Transmission System (DTS)

**FCC Rule Part(s):** Part15 Subpart C (Section 15.247)

Test Procedure(s):

Test Date:

Reviewed By:

Approved By:

am per (Paddy Chen) (Chenz Ker)

KDB 662911 D01v02r01

May 10 ~ June 11, 2019



The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013. Test results reported herein relate only to the item(s) tested.

ANSI C63.10-2013, KDB 558074 D01v05r02

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FCC ID: BKMAE-STI6110



# **Revision History**

Report No.	Version	Description	Issue Date	Note
1905TW0109-U3	Rev. 01	Initial report	06-18-2019	Valid



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# §2.1033 General Information

Applicant:	SEIKO EPSON CORPORATION		
Applicant Address:	3-5, Owa 3-chome, Suwa-shi, Nagano-ken 392-8502 Japan		
Manufacturer:	SEIKO EPSON CORPORATION		
Manufacturer Address:	3-5, Owa 3-chome, Suwa-shi, Nagano-ken 392-8502 Japan		
Test Site:	MRT Technology (Taiwan) Co., Ltd		
Test Site Address:	No. 38, Fuxing Second Rd., Guishan Dist., Taoyuan City 333,		
	Taiwan (R.O.C)		
Test Device Serial No.:	N/A Droduction Pre-Production Dengineering		

**Test Facility / Accreditations** 

Measurements were performed at MRT Laboratory located in Fuxing Rd., Taoyuan, Taiwan (R.O.C)

- •MRT facility is a FCC registered (Reg. No. 153292 and 291082) test facility with the site description report on file and is designated by the FCC as an Accredited Test Firm.
- MRT facility is an IC registered (MRT Reg. No. 21723-1) test laboratory with the site description on file at Industry Canada.
- MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (TAF) under the American Association for Laboratory Accreditation Program (TAF Cert. No. 3261) in EMC, Telecommunications and Radio testing for FCC, Industry Taiwan, EU and TELEC Rules.



# 1. INTRODUCTION

### 1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

## 1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taoyuan City. These measurement tests were conducted at the MRT Technology (Taiwan) Co., Ltd. Facility located at No.38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 33377, Taiwan (R.O.C).





# 2. PRODUCT INFORMATION

# 2.1. Feature of Equipment under Test

Product Name:	Streaming Media Player
Model No.:	STI6110-D101(RoHS)
Brand Name:	EPSON
Wi-Fi Specification:	802.11a/b/g/n/ac
Bluetooth Specification:	v4.2 dual mode

## 2.2. Product Specification Subjective to this Report

Frequency Range:	802.11b/g/n-HT20: 2412 ~ 2462MHz
Channel Number:	802.11b/g/n-HT20: 11
Type of Modulation:	802.11b: DSSS
	802.11g/n: OFDM
Data Rate:	802.11b: 1/2/5.5/11Mbps
	802.11g: 6/9/12/18/24/36/48/54Mbps
	802.11n: up to 144.4Mbps

Note: For other features of this EUT, test report will be issued separately.



# 2.3. Working Frequencies for this report

#### 802.11b/g/n-HT20

Channel	Frequency	Channel	Frequency	Channel	Frequency
01	2412 MHz	02	2417 MHz	03	2422 MHz
04	2427 MHz	05	2432 MHz	06	2437 MHz
07	2442 MHz	08	2447 MHz	09	2452 MHz
10	2457 MHz	11	2462 MHz		

#### 2.4. Description of Available Antennas

Antenna Type	Frequency	T <sub>X</sub>	Max Antenna Gain	CDD Directional Gain (dBi)	
	Band (MHz)	Paths	(dBi)	For Power	For PSD
Wi-Fi Antenna					
	2412 ~ 2462	2	1.8	1.8	4.81
PCB Antenna	5150 ~ 5250	2	7.1	7.1	10.11
	5725 ~ 5850	2	3.0	3.0	6.01
Bluetooth Antenna					
PCB Antenna	2402 ~ 2480	1	1.6		

Note:

The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.

For CDD transmissions, directional gain is calculated as follows,  $N_{ANT}$  = 2,  $N_{SS}$  = 1.

If all antennas have the same gain,  $G_{ANT}$ , Directional gain =  $G_{ANT}$  + Array Gain, where Array Gain is as follows.

• For power spectral density (PSD) measurements on all devices,

Array Gain = 10 log ( $N_{ANT}$ /  $N_{SS}$ ) dB = 3.01;

• For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB for  $N_{ANT} \le 4$ ;



# 2.5. Description of Antenna RF Port

Wi-Fi & Bluetooth Antenna RF Port					
Software Control Port	Ant 1 (Wi-Fi)	Ant 2 (Wi-Fi & Bluetooth)			
Ant 2					
A set of the set of					

## 2.6. Test Mode

Test Mode	Mode 1: Transmit by 802.11b (1Mbps)
	Mode 2: Transmit by 802.11g (6Mbps)
	Mode 3: Transmit by 802.11n-HT20 (MCS0)

## 2.7. Description of Test Software

The test utility software used during testing was "Ampak RFTestTool", and the version was VER 5.8.



# 2.8. Device Capabilities

This device contains the following capabilities:

2.4GHz WLAN (DTS), 5GHz WLAN (UNII), Bluetooth v4.2 (DSS / DTS)

**Note:** 2.4GHz WLAN (DTS) operation is possible in channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

Model No.	Test Mode	Duty Cycle
STI6110-D101(RoHS)	802.11b	97.94%
	802.11g	92.03%
	802.11n-HT20	92.52%





# 2.9. Test Configuration

The device was tested per the guidance of ANSI C63.10-2013. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing.

# 2.10. EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

# 2.11. Labeling Requirements

#### Per 2.1074 & 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase. However, when the device is so small wherein placement of the label with specified statement is not practical, only the FCC ID must be displayed on the device per Section 15.19(a)(5). Please see attachment for FCC ID label and label location.



# 3. DESCRIPTION of TEST

### 3.1. Evaluation Procedure

The measurement procedures described in the American National Standard for Testing Unlicensed Wireless Devices (ANSI C63.10-2013), and the guidance was used in the measurement of the device.

Deviation from measurement procedure.....None

## 3.2. AC Line Conducted Emissions

The line-conducted facility is located inside an 8'x4'x4' shielded enclosure. A 1m x 2m wooden table 80cm high is placed 40cm away from the vertical wall and 80cm away from the sidewall of the shielded room. Two 10kHz-30MHz,  $50\Omega/50$ uH Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room floor. Power to the LISNs is filtered by external high-current high-insertion loss power line filters. These filters attenuate ambient signal noise from entering the measurement lines. These filters are also bonded to the shielded enclosure.

The EUT is powered from one LISN and the support equipment is powered from the second LISN. All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference ground-plane. Power cables for support equipment were routed down to the second LISN while ensuring that that cables were not draped over the second LISN.

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the receiver and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The receiver was scanned from 150kHz to 30MHz. The detector function was set to peak mode for exploratory measurements while the bandwidth of the analyzer was set to 9kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Each emission was also maximized by varying: power lines, the mode of operation or data exchange speed, or support equipment whichever determined the worst-case emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions are used for final measurements on the same test site. The analyzer is set to CISPR quasi-peak and average detectors with a 9kHz resolution bandwidth for final measurements.

An extension cord was used to connect to a single LISN which powered by EUT. The extension cord was calibrated with LISN, the impedance and insertion loss are compliance with the requirements as stated in ANSI C63.10-2013.



# 3.3. Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1GHz, the absorbers are removed. A MF Model 210SS turntable is used for radiated measurement. It is a continuously rotatable, remote controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm high PVC support structure is placed on top of the turntable. For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33(b)(1) depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up for frequencies below 1GHz was placed on top of the 0.8 meter high, 1 x 1.5 meter table; and test set-up for frequencies 1-40GHz was placed on top of the 1.5 meter high, 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, if applicable, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions. According to 3dB Beam-Width of horn antenna, the horn antenna should be always directed to the EUT when rising height.



# 4. ANTENNA REQUIREMENTS

#### Excerpt from §15.203 of the FCC Rules/Regulations:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

- The antenna of the device is **permanently attached**.
- There are no provisions for connection to an external antenna.

#### Conclusion:

The unit complies with the requirement of §15.203.



# 5. TEST EQUIPMENT CALIBRATION DATE

**Conducted Emissions** 

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Two-Line V-Network	R&S	ENV216	MRTTWA00019	1 year	2020/03/25
Two-Line V-Network	R&S	ENV216	MRTTWA00020	1 year	2020/04/25
8-Wire ISN (T8)	R&S	ENY81	MRTTWA00018	1 year	2020/04/23
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2020/03/25
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00033	1 year	2020/05/20

#### **Radiated Emissions**

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Acitve Loop Antenna	SCHWARZBECK	FMZB 1519B	MRTTWA00002	1 year	2020/04/29
Broadband TRILOG Antenna	SCHWARZBECK	VULB 9162	MRTTWA00001	1 year	2020/05/22
Broadband Hornantenna	SCHWARZBECK	BBHA 9120D	MRTTWA00003	1 year	2020/04/22
Breitband Hornantenna	SCHWARZBECK	BBHA 9170	MRTTWA00004	1 year	2020/04/23
Broadband Preamplifier	SCHWARZBECK	BBV 9718	MRTTWA00005	1 year	2020/04/24
Broadband Amplifier	SCHWARZBECK	BBV 9721	MRTTWA00006	1 year	2020/04/24
Signal Analyzer	R&S	FSV40	MRTTWA00007	1 year	2020/03/26
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2020/03/25
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2019/07/30
Antenna Cable	HUBERSUHNER	SF106	MRTTWE00010	1 year	2019/06/18
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00032	1 year	2020/05/20

#### Conducted Test Equipment

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date	
X-Series USB Peak and	KEVSIGHT	11202174		1 yoar	2020/04/22	
Average Power Sensor	RETSIGITI	0202174		i yeai	2020/04/22	
Wideband Radio				1 voor	2020/01/29	
Communication Taster	Ras		MR11WA00041	i year	2020/01/20	
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2019/07/30	
EXA Signal Analyzer	KEYSIGHT	N9010B	MRTSUE06457	1 year	2019/07/19	
Signal Analyzer	R&S	FSV40	MRTTWA00007	1 year	2020/03/26	
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00033	1 year	2020/05/20	

Software	Version	Function
e3	9.160520a	EMI Test Software



# 6. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.

AC Conducted Emission Measurement - SR1
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)):
150kHz~30MHz: 2.53dB
Radiated Emission Measurement - AC1
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)):
9kHz ~ 1GHz: 4.25dB
1GHz ~ 25GHz: 4.45dB
1GHz ~ 25GHz: 4.45dB



# 7. TEST RESULT

### 7.1. Summary

FCC	Test	Test Limit	Test	Test Result	Reference	
Section(s)	Description		Condition			
15.247(a)(2)	6dB Bandwidth	≥ 500kHz		Pass	Section 7.2	
15.247(b)(3)	Output Power	≤ 30dBm		Pass	Section 7.3	
15.247(0)	Power Spectral	< 9dDm/3kHz		Pass	Section 7.4	
15.247(e)	Density		Conducted	Fass	Section 7.4	
	Band Edge /					
15.247(d)	Out-of-Band	≤ 30dBc(Average)		Pass	Section 7.5	
	Emissions					
	General Field					
	Strength Limits	Emissions in				
15 205	(Restricted	restricted bands		Pass	Section	
15.205	Bands and	must meet the	Radiated			
15.209	Radiated	radiated limits			7.0 & 7.7	
	Emission	detailed in 15.209				
	Limits)					
	AC Conducted					
15 207	Emissions	< FCC 15.207	Line	Daga	Section 7.9	
10.207	150kHz -	limits	Conducted	F 855		
	30MHz					

#### Notes:

- The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
- 2) All modes of operation and data rates were investigated. For radiated emission test, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst case emissions.
- Test Items "6dB Bandwidth" & "Band Edge / Out-of-Band Emissions" have been assessed MIMO transmission, and showed the worst test data in this report.



### 7.2. 6dB Bandwidth Measurement

#### 7.2.1.Test Limit

The minimum 6dB bandwidth shall be at least 500 kHz.

#### 7.2.2.Test Procedure used

ANSI C63.10 Section 11.8

#### 7.2.3.Test Setting

 The Spectrum's automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 6. The bandwidth

measurement was not influenced by any intermediate power nulls in the fundamental emission.

- 2. Set RBW = 100 kHz
- 3. VBW  $\geq$  3 × RBW
- 4. Detector = Peak
- 5. Trace mode = max hold
- 6. Sweep = auto couple
- 7. Allow the trace was allowed to stabilize

#### 7.2.4.Test Setup

#### Spectrum Analyzer





#### 7.2.5.Test Result

Product	Streaming Media Player	Temperature	23°C
Test Engineer	Kevin Ker	Relative Humidity	54%
Test Site	SR1	Test Date	2019/06/05

Test Mode	Data Rate /	Channel No.	Frequency	6dB Bandwidth	Limit	Result
	MCS		(MHz)	(MHz)	(MHz)	
802.11b	1Mbps	01	2412	9.09	≥ 0.5	Pass
802.11b	1Mbps	06	2437	9.10	≥ 0.5	Pass
802.11b	1Mbps	11	2462	9.10	≥ 0.5	Pass
802.11g	6Mbps	01	2412	16.37	≥ 0.5	Pass
802.11g	6Mbps	06	2437	16.36	≥ 0.5	Pass
802.11g	6Mbps	11	2462	16.35	≥ 0.5	Pass
802.11n-HT20	MCS0	01	2412	17.60	≥ 0.5	Pass
802.11n-HT20	MCS0	06	2437	17.60	≥ 0.5	Pass
802.11n-HT20	MCS0	11	2462	17.60	≥ 0.5	Pass







802.11g 6dB Bandw	802.11g 6dB Bandwidth - Ant 1 / Ant 1+2							
Channel 01 (2412MHz)	Channel 06 (2437MHz)							
Spectrum Anwayzer Image: Solid Solid Network Program (Solid Solid Network) Program (Solid Solid Network) Program (Solid Solid Network)   KEVSIGHT Insul Group Solid Solid Network Program (Solid Solid Network) Program (Solid Solid Network) Program (Solid Solid Network)   I Solid Solid Network Program (Solid Solid Network) Program (Solid Network) Program (Solid Network) Program (Solid Network)   I Solid Network Program (Solid Network) Program (Solid Network) Program (Solid Network) Program (Solid Network)   I Solid Network Program (Solid Network) Program (Solid Network) Program (Solid Network) Program (Solid Network)   I Solid Network Program (Solid Network) Program (Solid Network) Program (Solid Network) Program (Solid Network)   I Solid Network Program (Solid Network) Program (Solid Network) Program (Solid Network) Program (Solid Network)   I Solid Network Program (Solid Network) Program (Solid Network) Program (Solid Network) Program (Solid Network)   I Solid Network Program (Solid Network) Program (Solid Network) Program (Solid Network) Program (Solid Network)   I Solid Network Program (Solid Network) Program (Solid Network) Program (Solid Network) Program (Solid Network)   I Solid Network Program (Solid Network) Pr	Specification Analyzed 1 Image 2600 March 1000 March 10000 March 1000 March 1000 March 1000 March 1000 March 1000							
Channel 11 (2462MHz)								
Sporture Analyzer 1 Implifying 2000 Implifying 20000 Implifying 2000 Implifying 20000								







# 7.3. Output Power Measurement

#### 7.3.1.Test Limit

The maximum output power shall be less 1 Watt (30dBm).

The conducted output power limit specified in paragraph FCC Part 15.247(b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs FCC Part 15.247(b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### 7.3.2.Test Procedure Used

ANSI C63.10 Section 11.9.2.3.2

#### 7.3.3.Test Setting

#### Average Power Measurement

Average power measurements were perform only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.

#### 7.3.4.Test Setup





# 7.3.5.Test Result

Power output test was verified over all data rates of each mode shown as below table, and then choose the maximum power output (gray marker) for final test of each channel.

Test Mode	Bandwidth (MHz)	Channel No.	Frequency (MHz)	Data Rate / Mbps	Average Power (dBm)
				1Mbps	19.95
802.11b	20	06	2437	5.5Mbps	19.34
				11Mbps	19.02
				6Mbps	19.83
802.11g	20	06	2437	24Mbps	19.45
				54Mbps	19.10
				MCS0	19.98
802.11n	20	06	2437	MCS3	19.54
				MCS7	19.03

Pre-Test RF Output Power at various data rates Ant 1 / Ant 1 + 2



Product	Streaming Media Player	Temperature	25°C
Test Engineer	Kevin Ker	Relative Humidity	56%
Test Site	SR1	Test Date	2019/06/04

Test Mode	Data Rate/	Channel	Freq.	Ant 1	Ant 2	Total	Limit	Result
	MCS	No.	(MHz)	Average	Average	Average	(dBm)	
				Power (dBm)	Power (dBm)	Power (dBm)		
802.11b	1Mbps	01	2412	18.37	17.83	21.12	≤ 30.00	Pass
802.11b	1Mbps	06	2437	19.95	19.63	22.80	≤ 30.00	Pass
802.11b	1Mbps	11	2462	18.75	18.34	21.56	≤ 30.00	Pass
802.11g	6Mbps	01	2412	14.39	13.95	17.19	≤ 30.00	Pass
802.11g	6Mbps	06	2437	19.83	19.91	22.88	≤ 30.00	Pass
802.11g	6Mbps	11	2462	15.59	15.13	18.38	≤ 30.00	Pass
802.11n-HT20	MCS0	01	2412	15.73	15.47	18.61	≤ 30.00	Pass
802.11n-HT20	MCS0	06	2437	19.98	20.06	23.03	≤ 30.00	Pass
802.11n-HT20	MCS0	11	2462	14.36	14.17	17.28	≤ 30.00	Pass

Note: Total Average Power (dBm) = 10\*log {10<sup>(Ant 1 Average Power /10)</sup> +10<sup>(Ant 2 Average Power /10)</sup>}



# 7.4. Power Spectral Density Measurement

#### 7.4.1.Test Limit

The maximum permissible power spectral density is 8dBm in any 3 kHz band.

The same method of determining the conducted output power shall be used to determine the power

spectral density.

#### 7.4.2.Test Procedure Used

ANSI C63.10 Section 11.10.5

#### 7.4.3.Test Setting

- 1. Measure the duty cycle (x) of the transmitter output signal.
- 2. Set instrument center frequency to DTS channel center frequency.
- 3. Set span to at least 1.5 times the OBW.
- 4. RBW = 10 kHz.
- 5. VBW = 30 kHz.
- 6. Detector = RMS.
- 7. Ensure that the number of measurement points in the sweep  $\ge 2 \times \text{span/RBW}$ .
- 8. Sweep time = auto couple.
- 9. Don't use sweep triggering. Allow sweep to "free run".
- 10. Employ trace averaging (RMS) mode over a minimum of 100 traces.
- 11. Use the peak marker function to determine the maximum amplitude level.
- 12. Add 10 log (1/x), where x is the duty cycle measured in step (a, to the measured PSD to compute the average PSD during the actual transmission time.
- 13. Add Constant Factor = 10\*log(3kHz / 10kHz) = -5.23.



# 7.4.4.Test Setup

Spectrum Analyzer





#### 7.4.5.Test Result

Product	Streaming Media Player	Temperature	23°C
Test Engineer	Kevin Ker	Relative Humidity	54%
Test Site	SR1	Test Date	2019/06/05

Test Mode	Data Rate/	Channel	Freq.	Ant 1 PSD	Ant 2 PSD	Duty Cycle	Total PSD	Limit	Result
	MCS	No.	(MHz)	(dBm/	(dBm/	(%)	(dBm/	(dBm/	
				10kHz)	10kHz)		3kHz)	3kHz)	
802.11b	1Mbps	01	2412	-9.76	-8.68	97.94	-11.31	≤ 8.00	Pass
802.11b	1Mbps	06	2437	-7.80	-7.06	97.94	-9.54	≤ 8.00	Pass
802.11b	1Mbps	11	2462	-8.96	-8.33	97.94	-10.76	≤ 8.00	Pass
802.11g	6Mbps	01	2412	-14.89	-15.66	92.03	-17.12	≤ 8.00	Pass
802.11g	6Mbps	06	2437	-8.07	-7.58	92.03	-9.67	≤ 8.00	Pass
802.11g	6Mbps	11	2462	-13.50	-12.65	92.03	-14.91	≤ 8.00	Pass
802.11n-HT20	MCS0	01	2412	-14.63	-14.11	92.52	-16.24	≤ 8.00	Pass
802.11n-HT20	MCS0	06	2437	-9.31	-8.27	92.52	-10.64	≤ 8.00	Pass
802.11n-HT20	MCS0	11	2462	-15.58	-15.13	92.52	-17.23	≤ 8.00	Pass

Note 1: When EUT duty cycle  $\geq$  98%, Total AVGPSD = 10\*log {10<sup>(Ant 1 AVGPSD/10)</sup> + 10<sup>(Ant 2 AVGPSD/10)</sup>} + Constant Factor. Note 2: When EUT duty cycle < 98%, Total AVGPSD = 10\*log {10<sup>(Ant 1 AVGPSD/10)</sup> + 10<sup>(Ant 2 AVGPSD/10)</sup>} + 10\*log (1/duty cycle) + Constant Factor.

Note 3: Constant Factor = -5.23dB



























# 7.5. Conducted Band Edge and Out-of-Band Emissions

#### 7.5.1.Test Limit

The limit for out-of-band spurious emissions at the band edge is 30dB below the fundamental

emission level, as determined from the in-band power measurement of the DTS channel performed

in a 100 kHz bandwidth per the PSD procedure.

#### 7.5.2.Test Procedure Used

ANSI C63.10 Section 11.11

#### 7.5.3.Test Setting

#### **Reference level measurement**

- 1. Set instrument center frequency to DTS channel center frequency
- 2. Set the span to  $\geq$  1.5 times the DTS bandwidth
- 3. Set the RBW = 100 kHz
- 4. Set the VBW  $\geq$  3 x RBW
- 5. Detector = peak
- 6. Sweep time = auto couple
- 7. Trace mode = max hold
- 8. Allow trace to fully stabilize

#### Emission level measurement

- 1. Set the center frequency and span to encompass frequency range to be measured
- 2. RBW = 1.3MHz
- 3. VBW = 4MHz
- 4. Detector = Peak
- 5. Trace mode = max hold
- 6. Sweep time = auto couple
- 7. The trace was allowed to stabilize



#### **Test Notes**

- 1. RBW was set to 1.3MHz rather than 100 kHz in order to increase the measurement speed.
- 2. The display line shown in the following plots denotes the limit at 30dB below the fundamental emission level measured in a 100 kHz bandwidth. However, since the traces in the following plots are measured with a 1.3MHz RBW, the display line may not necessarily appear to be 30dB below the level of the fundamental in a 1.3MHz bandwidth.
- 3. For plots showing conducted spurious emissions near the limit, the frequencies were investigated with a reduced RBW to ensure that no emissions were present.

#### 7.5.4.Test Setup

Spectrum Analyzer




## 7.5.5.Test Result

Product	Streaming Media Player	Temperature	23°C
Test Engineer	Kevin Ker	Relative Humidity	54%
Test Site	SR1	Test Date	2019/06/05

Test Mode	Data Rate	Channel No.	Frequency	Limit	Result
	/ MCS		(MHz)	(dBc)	
802.11b	1Mbps	01	2412	30	Pass
802.11b	1Mbps	06	2437	30	Pass
802.11b	1Mbps	11	2462	30	Pass
802.11g	6Mbps	01	2412	30	Pass
802.11g	6Mbps	06	2437	30	Pass
802.11g	6Mbps	11	2462	30	Pass
802.11n-HT20	MCS0	01	2412	30	Pass
802.11n-HT20	MCS0	06	2437	30	Pass
802.11n-HT20	MCS0	11	2462	30	Pass



























## 7.6. Radiated Spurious Emission Measurement

## 7.6.1.Test Limit

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209						
Frequency	Measured Distance					
[MHz]	[uV/m]	[Meters]				
0.009 - 0.490	2400/F (kHz)	300				
0.490 - 1.705	24000/F (kHz)	30				
1.705 - 30	30	30				
30 - 88	100	3				
88 - 216	150	3				
216 - 960	200	3				
Above 960	500	3				

## 7.6.2.Test Procedure Used

ANSI C63.10 Section 6.3 (General Requirements)

ANSI C63.10 Section 6.4 (Standard test method below 30MHz)

ANSI C63.10 Section 6.5 (Standard test method above 30MHz to 1GHz)

ANSI C63.10 Section 6.6 (Standard test method above 1GHz)

#### 7.6.3.Test Setting

#### Quasi-Peak Measurements below 1GHz

- 1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
- 2. Span was set greater than 1MHz
- 3. RBW = as specified in Table 1
- 4. Detector = CISPR quasi-peak or average
- 5. Sweep time = auto couple
- 6. Trace was allowed to stabilize



Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz
> 1000 MHz	1 MHz

#### Peak Measurements above 1GHz

- 1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
- 2. RBW = 1MHz
- 3. VBW = 3MHz
- 4. Detector = peak
- 5. Sweep time = auto couple
- 6. Trace mode = max hold
- 7. Trace was allowed to stabilize

#### Average Measurements above 1GHz (Method VB)

- 1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
- 2. RBW = 1MHz
- 3. VBW; If the EUT is configured to transmit with duty cycle  $\ge$  98%, set VBW = 10 Hz.

If the EUT duty cycle is < 98%, set VBW  $\geq$  1/T. T is the minimum transmission duration.

- 4. Detector = Peak
- 5. Sweep time = auto
- 6. Trace mode = max hold
- 7. Trace was allowed to stabilize



## 7.6.4.Test Setup

Below 1GHz Test Setup:



## 7.6.5.Test Result

Product	Streaming Media Player	Temperature	26°C			
Test Engineer	Kevin Ker	Relative Humidity	56%			
Test Site	AC1	Test Date	2019/05/29			
Test Mode	802.11b - Ant 1+2	Test Channel	01			
Note	1. Average measurement was not performed if peak level lower than average					
	limit.					
	2. Other frequency was 20dB below limit line within 1-18GHz, there is not show					
	in the report.					

Mark	Frequency	Reading	Factor	Measure	Limit	Margin	Detector	Polarization
	(MHz)	Level	(dB)	Level	(dBµV/m)	(dB)		
		(dBµV)		(dBµV/m)				
	4026.0	40.5	0.7	41.2	74.0	-32.8	Peak	Horizontal
	4825.0	44.7	3.4	48.1	74.0	-25.9	Peak	Horizontal
*	6151.0	38.2	6.8	45.0	79.2	-34.2	Peak	Horizontal
*	6575.0	37.2	8.9	46.1	79.2	-33.1	Peak	Horizontal
	4230.0	39.8	1.5	41.3	74.0	-32.7	Peak	Vertical
	4825.0	49.7	3.4	53.1	74.0	-20.9	Peak	Vertical
*	5760.0	38.6	5.2	43.8	79.2	-35.4	Peak	Vertical
*	6100.0	38.3	6.6	44.9	79.2	-34.3	Peak	Vertical

Note 1: "\*" is not in restricted band, its limit is 30dBc of the fundamental emission level (109.2dBµV/m) or 15.209 which is higher.

Note 2: Measure Level ( $dB\mu V/m$ ) = Reading Level ( $dB\mu V$ ) + Factor (dB)



Product	Streaming Media Player	Temperature	26°C				
Test Engineer	Kevin Ker	Relative Humidity	56%				
Test Site	AC1	Test Date	2019/05/29				
Test Mode	802.11b - Ant 1+2	Test Channel	06				
Note	1. Average measurement was not performed if peak level lower than average						
	limit.						
	2. Other frequency was 20dB below limit line within 1-18GHz, there is not show						
	in the report.						

Mark	Frequency	Reading	Factor	Measure	Limit	Margin	Detector	Polarization
	(MHz)	Level	(dB)	Level	(dBµV/m)	(dB)		
		(dBµV)		(dBµV/m)				
	4298.0	40.0	1.8	41.8	74.0	-32.2	Peak	Horizontal
	4876.0	42.0	3.5	45.5	74.0	-28.5	Peak	Horizontal
*	6006.5	38.0	6.1	44.1	78.5	-34.4	Peak	Horizontal
*	6593.0	37.8	9.0	46.8	78.5	-31.7	Peak	Horizontal
	4298.0	40.1	1.8	41.9	74.0	-32.1	Peak	Vertical
	4876.0	45.5	3.5	49.0	74.0	-25.0	Peak	Vertical
*	5953.0	39.7	5.9	45.6	78.5	-32.9	Peak	Vertical
*	6567.5	37.3	8.9	46.2	78.5	-32.3	Peak	Vertical
Note 1	· "*" is not in r	estricted han	d its limit	is 30dBc of th	ne fundamenta	emission	n level (10	8 5dBuV/m)

Note 1: "\*" is not in restricted band, its limit is 30dBc of the fundamental emission le or 15.209 which is higher.

Note 2: Measure Level ( $dB\mu V/m$ ) = Reading Level ( $dB\mu V$ ) + Factor (dB)



Product	Streaming Media Player	Temperature	26°C				
Test Engineer	Kevin Ker	Relative Humidity	56%				
Test Site	AC1	Test Date	2019/05/29				
Test Mode	802.11b - Ant 1+2	Test Channel	11				
Note	1. Average measurement was not performed if peak level lower than average						
	limit.						
	2. Other frequency was 20dB below limit line within 1-18GHz, there is not show						
	in the report.						

Mark	Frequency	Reading	Factor	Measure	Limit	Margin	Detector	Polarization
	(MHz)	Level	(dB)	Level	(dBµV/m)	(dB)		
		(dBµV)		(dBµV/m)				
	4111.0	40.4	1.0	41.4	74.0	-32.6	Peak	Horizontal
	4927.0	44.4	3.6	48.0	74.0	-26.0	Peak	Horizontal
*	6561.0	37.1	8.8	45.9	77.1	-31.2	Peak	Horizontal
*	6992.5	35.6	11.3	46.9	77.1	-30.2	Peak	Horizontal
	4187.5	39.5	1.4	40.9	74.0	-33.1	Peak	Vertical
	4927.0	46.8	3.6	50.4	74.0	-23.6	Peak	Vertical
*	6380.5	37.6	7.9	45.5	77.1	-31.6	Peak	Vertical
*	6950.0	35.7	11.0	46.7	77.1	-30.4	Peak	Vertical
Note 1	: "*" is not in r	restricted ban	d, its limit	is 30dBc of th	ne fundamenta	l emissior	ı level (10	7.1dBµV/m)

or 15.209 which is higher.

Note 2: Measure Level ( $dB\mu V/m$ ) = Reading Level ( $dB\mu V$ ) + Factor (dB)



Product	Streaming Media Player	Temperature	26°C				
Test Engineer	Kevin Ker	Relative Humidity	56%				
Test Site	AC1	Test Date	2019/05/29				
Test Mode	802.11g - Ant 1+2	Test Channel	01				
Note	1. Average measurement was not performed if peak level lower than average						
	limit.						
	2. Other frequency was 20dB below limit line within 1-18GHz, there is not show						
	in the report.						

Mark	Frequency	Reading	Factor	Measure	Limit	Margin	Detector	Polarization
	(MHz)	Level	(dB)	Level	(dBµV/m)	(dB)		
		(dBµV)		(dBµV/m)				
	4264.0	39.1	1.7	40.8	74.0	-33.2	Peak	Horizontal
	4825.0	41.0	3.4	44.4	74.0	-29.6	Peak	Horizontal
*	5785.5	39.1	5.3	44.4	79.1	-34.7	Peak	Horizontal
*	7009.5	36.0	11.3	47.3	79.1	-31.8	Peak	Horizontal
	4043.0	40.4	0.8	41.2	74.0	-32.8	Peak	Vertical
	4825.0	44.0	3.4	47.4	74.0	-26.6	Peak	Vertical
*	5938.5	39.6	5.9	45.5	79.1	-33.6	Peak	Vertical
*	6748.0	37.2	9.9	47.1	79.1	-32.0	Peak	Vertical
Note 1	Note 1: "*" is not in restricted band, its limit is 30dBc of the fundamental emission level (109.1dBµV/m)							

or 15.209 which is higher.

Note 2: Measure Level ( $dB\mu V/m$ ) = Reading Level ( $dB\mu V$ ) + Factor (dB)



Product	Streaming Media Player	Temperature	26°C				
Test Engineer	Kevin Ker	Relative Humidity	56%				
Test Site	AC1	Test Date	2019/05/29				
Test Mode	802.11g - Ant 1+2	Test Channel	06				
Note	1. Average measurement was not performed if peak level lower than average						
	limit.						
	2. Other frequency was 20dB below limit line within 1-18GHz, there is not show						
	in the report.						

Mark	Frequency	Reading	Factor	Measure	Limit	Margin	Detector	Polarization
	(MHz)	Level	(dB)	Level	(dBµV/m)	(dB)		
		(dBµV)		(dBµV/m)				
	4272.0	39.5	1.7	41.2	74.0	-32.8	Peak	Horizontal
	4876.0	46.7	3.5	50.2	74.0	-23.8	Peak	Horizontal
*	5751.5	39.3	5.1	44.4	79.3	-34.9	Peak	Horizontal
*	7120.0	36.4	11.6	48.0	79.3	-31.3	Peak	Horizontal
	4077.0	40.7	0.9	41.6	74.0	-32.4	Peak	Vertical
	4884.5	48.8	3.5	52.3	74.0	-21.7	Peak	Vertical
*	5760.0	38.3	5.2	43.5	79.3	-35.8	Peak	Vertical
*	6889.0	35.9	10.7	46.6	79.3	-32.7	Peak	Vertical
Note 1	• "*" is not in r	estricted ban	d its limit	is 30dBc of th	ne fundamental		10) امريما	0.3dBuV/m)

Note 1: "\*" is not in restricted band, its limit is 30dBc of the fundamental emission level (109.3dBµV/m) or 15.209 which is higher.

Note 2: Measure Level ( $dB\mu V/m$ ) = Reading Level ( $dB\mu V$ ) + Factor (dB)



Product	Streaming Media Player	Temperature	26°C				
Test Engineer	Kevin Ker	Relative Humidity	56%				
Test Site	AC1	Test Date	2019/05/29				
Test Mode	802.11g - Ant 1+2	Test Channel	11				
Note	1. Average measurement was not perfo	ormed if peak level lo	wer than average				
	limit.						
	2. Other frequency was 20dB below limit line within 1-18GHz, there is not show						
	in the report.						

Mark	Frequency	Reading	Factor	Measure	Limit	Margin	Detector	Polarization
	(MHz)	Level	(dB)	Level	(dBµV/m)	(dB)		
		(dBµV)		(dBµV/m)				
	4272.5	38.9	1.7	40.6	74.0	-33.4	Peak	Horizontal
	4918.5	39.8	3.6	43.4	74.0	-30.6	Peak	Horizontal
*	5462.5	39.1	4.1	43.2	79.6	-36.4	Peak	Horizontal
*	6454.0	36.9	8.3	45.2	79.6	-34.4	Peak	Horizontal
	4034.5	40.4	0.7	41.1	74.0	-32.9	Peak	Vertical
	4935.5	42.6	3.6	46.2	74.0	-27.8	Peak	Vertical
*	5938.5	38.8	5.9	44.7	79.6	-34.9	Peak	Vertical
*	6312.5	37.3	7.6	44.9	79.6	-34.7	Peak	Vertical
Noto 1	· "*" is not in r	estricted ban	d its limit	is 30dBc of th	o fundamenta		ر 10 امریما	0.6dBuV/m

Note 1: "\*" is not in restricted band, its limit is 30dBc of the fundamental emission level (109.6dBµV/m) or 15.209 which is higher.

Note 2: Measure Level ( $dB\mu V/m$ ) = Reading Level ( $dB\mu V$ ) + Factor (dB)



Product	Streaming Media Player	Temperature	26°C				
Test Engineer	Kevin Ker	Relative Humidity	56%				
Test Site	AC1	Test Date	2019/05/29				
Test Mode	802.11n-HT20 - Ant 1+2	Test Channel	01				
Note	1. Average measurement was not performed if peak level lower than average						
	limit.						
	2. Other frequency was 20dB below limit line within 1-18GHz, there is not show						
	in the report.						

Mark	Frequency	Reading	Factor	Measure	Limit	Margin	Detector	Polarization
	(MHz)	Level	(dB)	Level	(dBµV/m)	(dB)		
		(dBµV)		(dBµV/m)				
	4085.5	39.8	0.9	40.7	74.0	-33.3	Peak	Horizontal
	4816.5	40.5	3.3	43.8	74.0	-30.2	Peak	Horizontal
*	5751.5	38.0	5.1	43.1	77.8	-34.7	Peak	Horizontal
*	6593.0	37.8	9.0	46.8	77.8	-31.0	Peak	Horizontal
	4051.5	39.8	0.8	40.6	74.0	-33.4	Peak	Vertical
	4833.5	42.0	3.4	45.4	74.0	-28.6	Peak	Vertical
*	5930.0	39.9	5.8	45.7	77.8	-32.1	Peak	Vertical
*	6491.0	36.8	8.5	45.3	77.8	-32.5	Peak	Vertical
Note 1	Note 1: "*" is not in restricted band, its limit is 30dBc of the fundamental emission level (107.8dBµV/m)							

or 15.209 which is higher.

Note 2: Measure Level ( $dB\mu V/m$ ) = Reading Level ( $dB\mu V$ ) + Factor (dB)



Product	Streaming Media Player	Temperature	26°C				
Test Engineer	Kevin Ker	Relative Humidity	56%				
Test Site	AC1	Test Date	2019/05/29				
Test Mode	802.11n-HT20 - Ant 1+2	Test Channel	06				
Note	Average measurement was not performed if peak level lower than average						
	limit.						
	2. Other frequency was 20dB below limit line within 1-18GHz, there is not show						
	in the report.						

Mark	Frequency	Reading	Factor	Measure	Limit	Margin	Detector	Polarization	
	(MHz)	Level	(dB)	Level	(dBµV/m)	(dB)			
		(dBµV)		(dBµV/m)					
	4094.0	39.5	1.0	40.5	74.0	-33.5	Peak	Horizontal	
	4876.0	45.2	3.5	48.7	74.0	-25.3	Peak	Horizontal	
*	6100.0	37.7	6.6	44.3	77.4	-33.1	Peak	Horizontal	
*	7239.0	35.8	12.0	47.8	77.4	-29.6	Peak	Horizontal	
	4026.0	39.8	0.7	40.5	74.0	-33.5	Peak	Vertical	
	4884.5	47.5	3.5	51.0	74.0	-23.0	Peak	Vertical	
*	5930.0	39.2	5.8	45.0	77.4	-32.4	Peak	Vertical	
*	6593.0	36.8	9.0	45.8	77.4	-31.6	Peak	Vertical	
Note 1	: "*" is not in r	Note 1: "*" is not in restricted band, its limit is 30dBc of the fundamental emission level (107 4dBuV/m)							

or 15.209 which is higher.

Note 2: Measure Level ( $dB\mu V/m$ ) = Reading Level ( $dB\mu V$ ) + Factor (dB)



Product	Streaming Media Player	Temperature	26°C				
Test Engineer	Kevin Ker	Relative Humidity	56%				
Test Site	AC1	Test Date	2019/05/29				
Test Mode	802.11n-HT20 - Ant 1+2	Test Channel	11				
Note	. Average measurement was not performed if peak level lower than average						
	limit.						
	2. Other frequency was 20dB below limit line within 1-18GHz, there is not show						
	in the report.						

Mark	Frequency	Reading	Factor	Measure	Limit	Margin	Detector	Polarization
	(MHz)	Level	(dB)	Level	(dBµV/m)	(dB)		
		(dBµV)		(dBµV/m)				
	3847.5	40.3	0.1	40.4	74.0	-33.6	Peak	Horizontal
	4833.5	39.5	3.4	42.9	74.0	-31.1	Peak	Horizontal
*	5998.0	37.5	6.1	43.6	78.4	-34.8	Peak	Horizontal
*	6576.0	36.3	8.9	45.2	78.4	-33.2	Peak	Horizontal
	4017.5	40.8	0.7	41.5	74.0	-32.5	Peak	Vertical
	4927.0	40.8	3.6	44.4	74.0	-29.6	Peak	Vertical
*	5930.0	39.0	5.8	44.8	78.4	-33.6	Peak	Vertical
*	7094.5	36.5	11.6	48.1	78.4	-30.3	Peak	Vertical
Noto 1	• "*" is not in r	contricted ban	d ite limit	is 20dBc of th	o fundament	al omissior	$\frac{1}{1000}$	$\frac{1}{2}$

Note 1: "\*" is not in restricted band, its limit is 30dBc of the fundamental emission level (108.4dBµV/m) or 15.209 which is higher.

Note 2: Measure Level ( $dB\mu V/m$ ) = Reading Level ( $dB\mu V$ ) + Factor (dB)



#### The Worst Case of Radiated Emission below 1GHz:

Site: AC1	Time: 2019/06/06 - 19:02
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: VULB 9168 _20-2000MHz	Polarity: Horizontal
EUT: Streaming Media Player	Power: By USB

#### Test Mode: There is the worst case within frequency range 30MHz~1GHz.



No	Flag	Mark	Frequency	Measure	Reading	Margin	Limit	Factor	Туре
			(MHz)	Level	Level	(dB)	(dBuV/m)	(dB)	
				(dBuV/m)	(dBuV)				
1			66.860	17.767	5.528	-22.233	40.000	12.239	QP
2			163.860	24.171	9.112	-19.329	43.500	15.059	QP
3		*	209.935	30.484	18.957	-13.016	43.500	11.527	QP
4			279.775	31.357	17.341	-14.643	46.000	14.016	QP
5			350.100	32.311	16.615	-13.689	46.000	15.696	QP
6			418.000	32.256	15.025	-13.744	46.000	17.232	QP

Note 1: Measure Level (dB $\mu$ V/m) = Reading Level (dB $\mu$ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.



Site: AC1	Time: 2019/06/06 - 19:05
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: VULB 9168 _20-2000MHz	Polarity: Vertical
EUT: Streaming Media Player	Power: By USB

Test Mode: There is the worst case within frequency range 30MHz~1GHz.



No	Flag	Mark	Frequency	Measure	Reading	Margin	Limit	Factor	Туре
			(MHz)	Level	Level	(dB)	(dBuV/m)	(dB)	
				(dBuV/m)	(dBuV)				
1			40.670	15.188	0.554	-24.812	40.000	14.634	QP
2		*	65.405	24.071	11.552	-15.929	40.000	12.519	QP
3			163.860	22.092	7.033	-21.408	43.500	15.059	QP
4			237.095	23.611	10.685	-22.389	46.000	12.926	QP
5			336.035	26.513	11.071	-19.487	46.000	15.442	QP
6			431.500	24.030	6.435	-21.970	46.000	17.595	QP

Note 1: Measure Level (dB $\mu$ V/m) = Reading Level (dB $\mu$ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.



# 7.7. Radiated Restricted Band Edge Measurement

## 7.7.1.Test Limit

## For 15.205 requirement:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a).

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (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
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 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			



All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title

FCC Part 15 Subpart C Paragraph 15.209 Limits								
Frequency	Field Strength	Measured Distance						
[MHz]	[uV/m]	[Meters]						
0.009 - 0.490	2400/F (kHz)	300						
0.490 - 1.705	24000/F (kHz)	30						
1.705 - 30	30	30						
30 - 88	100	3						
88 - 216	150	3						
216 - 960	200	3						
Above 960	500	3						

47CFR must not exceed the limits shown in Table per Section 15.209.

## 7.7.2.Test Procedure Used

ANSI C63.10 Section 6.3 (General Requirements)

ANSI C63.10 Section 6.6 (Standard test method above 1GHz)

## 7.7.3.Test Setting

#### Peak Field Strength Measurements

- 1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
- 2. RBW = 1MHz
- 3. VBW = 3MHz
- 4. Detector = peak
- 5. Sweep time = auto couple
- 6. Trace mode = max hold
- 7. Trace was allowed to stabilize



## Average Measurements above 1GHz (Method VB)

- 1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
- 2. RBW = 1MHz
- 3. VBW; If the EUT is configured to transmit with duty cycle  $\ge$  98%, set VBW = 10 Hz.

If the EUT duty cycle is < 98%, set VBW  $\geq$  1/T. T is the minimum transmission duration.

- 4. Detector = Peak
- 5. Sweep time = auto
- 6. Trace mode = max hold
- 7. Trace was allowed to stabilize

## 7.7.4.Test Setup





# 7.7.5.Test Result

Site	AC1				Т	Time: 2019/05/30 - 06:27			
Limi	t: FCC	_Part15	.209_RSE(3r	n)	E	Engineer: Kevin Ker			
Prob	e: BBH	HA 9120	)D_1-18GHz		P	olarity: Horiz	ontal		
EUT	: Strea	ming M	edia Player		P	ower: By US	В		
Note	e: Trans	smit by	802.11b at Cl	nannel 2412N	ЛНz				
I evel(dBuV/m)	130 80 70 60 40 30 2310	2315 2320		5 2340 2345 235	50 2355 2360 23 Freque	65 2370 2375 23 ncy(MHz)	1 2	395 2400 2405 2	3
No	Flag	Mark	Frequency	Measure	Reading	Margin	Limit	Factor	Туре
			(MHz)	Level	Level	(dB)	(dBuV/m)	(dB)	
				(dBuV/m)	(dBuV)				
1			2386.720	62.922	30.418	-11.078	74.000	32.504	PK
2			2390.000	62.135	29.617	-11.865	74.000	32.518	PK
3		*	2410.632	109.164	76.560	N/A	N/A	32.604	PK

Note: Measure Level (dB $\mu$ V/m) = Reading Level (dB $\mu$ V) + Factor (dB)



Site	AC1				Т	Time: 2019/05/30 - 06:25				
Limi	t: FCC	_Part15	.209_RSE(3r	n)	E	Engineer: Kevin Ker				
Prot	e: BBł	HA 9120	D_1-18GHz		F	olarity: Horiz	ontal			
EUT	: Strea	ming M	edia Player		F	ower: By US	В			
Note	: Tran	smit by	802.11b at Cl	nannel 2412N	ЛНz					
Level(dBuV/m)	130 80 70 60 50 40 30 2310	2315 2320	0 2325 2330 233	5 2340 2345 23	50 2355 2360 23 Freque	165 2370 2375 23 ncy(MHz)		395 2400 2405 2	3	
No	Flag	Mark	Frequency	Measure	Reading	Margin	Limit	Factor	Туре	
			(MHz)	Level	Level	(dB)	(dBuV/m)	(dB)		
				(dBuV/m)	(dBuV)					
1			2387.224	53.083	20.577	-0.917	54.000	32.507	AV	
2			2390.000	52.327	19.809	-1.673	54.000	32.518	AV	
3		*	2411.304	104.287	71.680	N/A	N/A	32.607	AV	

Note: Measure Level (dB $\mu$ V/m) = Reading Level (dB $\mu$ V) + Factor (dB)



Site	AC1				Т	Time: 2019/05/30 - 06:31			
Limi	t: FCC	_Part15	.209_RSE(3r	n)	E	Engineer: Kevin Ker			
Prot	be: BBH	HA 9120	)D_1-18GHz		F	olarity: Vertic	al		
EUT	: Strea	ming M	edia Player		F	ower: By US	В		
Note	e: Trans	smit by	802.11b at Cl	nannel 2412N	ЛНz				
Level(dBuV/m)	130 80 70 60 40 30 2310	2315 2320		5 2340 2345 235	50 2355 2360 23 Freque	афа, Малана укал Анг 165 2370 2375 23 ncy(MHz)	1 2	395 2400 2405 2	3
No	Flag	Mark	Frequency	Measure	Reading	Margin	Limit	Factor	Туре
			(MHz)	Level	Level	(dB)	(dBuV/m)	(dB)	
				(dBuV/m)	(dBuV)				
1			2386.440	61.814	29.311	-12.186	74.000	32.503	РК
2			2390.000	61.042	28.524	-12.958	74.000	32.518	PK
3		*	2413.768	104.405	71.788	N/A	N/A	32.617	PK

Note: Measure Level ( $dB\mu V/m$ ) = Reading Level ( $dB\mu V$ ) + Factor (dB)



Site	Site: AC1						Time: 2019/05/30 - 06:35			
Limi	t: FCC	_Part15	.209_RSE(3r	n)	E	Engineer: Kevin Ker				
Prob	e: BBł	HA 9120	D_1-18GHz		F	Polarity: Vertic	al			
EUT	: Strea	ming M	edia Player		F	Power: By US	В			
Note	: Tran	smit by	802.11b at Cl	nannel 2412N	MHz					
Level(dBuV/m)	130 80 70 60 50 40 30 2310	2315 2320	0 2325 2330 233	5 2340 2345 23	50 2355 2360 23	365 2370 2375 23		395 2400 2405 2	3	
No	Flag	Mark	Frequency	Measure	Reading	Margin	Limit	Factor	Туре	
	-		(MHz)	Level	Level	(dB)	(dBuV/m)	(dB)		
				(dBuV/m)	(dBuV)					
1			2387.280	49.997	17.490	-4.003	54.000	32.507	AV	
2			2390.000	49.789	17.271	-4.211	54.000	32.518	AV	
3		*	2411.192	100.373	67.766	N/A	N/A	32.607	AV	

Note: Measure Level (dB $\mu$ V/m) = Reading Level (dB $\mu$ V) + Factor (dB)



Site	AC1					Time: 2019/06/04 - 14:07				
Limi	Limit: FCC_Part15.209_RSE(3m)						Engineer: Kevin Ker			
Prob	be: BBH	HA 9120	)D_1-18GHz			Polarity: Horiz	ontal			
EUT	: Strea	ming M	edia Player			Power: By US	В			
Note	e: Trans	smit by	802.11b at Cl	hannel 2462N	ЛНz					
Note: Transmit by 802.116 at Channel 2462/MH2										
No	Flag	Mark	Frequency	Measure	Reading	Margin	Limit	Factor	Туре	
			(MHz)	Level	Level	(dB)	(dBuV/m)	(dB)		
				(dBuV/m)	(dBuV)					
1		*	2460.640	105.118	72.303	N/A	N/A	32.815	РК	
2			2483.500	59.554	26.643	-14.446	74.000	32.911	РК	
3			2485.816	60.392	27.471	-13.608	74.000	32.920	РК	

Note: Measure Level  $(dB\mu V/m)$  = Reading Level  $(dB\mu V)$  + Factor (dB)



Site	: AC1				٦	Time: 2019/06/04 - 14:09			
Limi	it: FCC	_Part15	.209_RSE(3r	m)	E	Engineer: Kevin Ker			
Prob	be: BBH	HA 9120	)D_1-18GHz		F	Polarity: Horiz	ontal		
EUT	: Strea	ming M	edia Player		F	Power: By US	В		
Note	e: Trans	smit by	802.11b at C	hannel 2462	MHz				
130 (W) 10 10 10 10 10 10 10 10 10 10						5 2477.5 2480 2 ency(MHz)	2	.5 2490 2492.5 :	2495 2497.5 2500
No	Flag	Mark	Frequency	Measure	Reading	Margin	Limit	Factor	Туре
			(MHz)	Level	Level	(dB)	(dBuV/m)	(dB)	
				(dBuV/m)	(dBuV)				
1		*	2461.240	101.129	68.312	N/A	N/A	32.817	AV
2			2483.500	51.582	18.671	-2.418	54.000	32.911	AV

Note: Measure Level (dBµV/m) = Reading Level (dBµV) + Factor (dB)



Site: AC1	Time: 2019/06/04 - 14:05				
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker				
Probe: BBHA 9120D_1-18GHz	Polarity: Vertical				
EUT: Streaming Media Player	Power: By USB				
Note: Transmit by 802.11b at Channel 2462MHz					

130 1 Level(dBuV/m) 80 70 3 2 60 50 40 30 2455 2457.5 2460 2462.5 2465 2467.5 2470 2472.5 2475 2477.5 2480 2482.5 2485 2487.5 2490 2492.5 2495 2497.5 2500 2452 Frequency(MHz) Flag No Mark Frequency Measure Reading Margin Limit Factor Туре (MHz) (dB) (dBuV/m) (dB) Level Level (dBuV/m) (dBuV)

1	*	2460.736	107.072	74.257	N/A	N/A	32.815	PK
2		2483.500	60.764	27.853	-13.236	74.000	32.911	PK
3		2485.000	61.162	28.245	-12.838	74.000	32.917	PK

Note: Measure Level (dBµV/m) = Reading Level (dBµV) + Factor (dB)



Site: AC1	Time: 2019/06/04 - 14:04		
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker		
Probe: BBHA 9120D_1-18GHz	Polarity: Vertical		
EUT: Streaming Media Player	Power: By USB		
Note: Transmit by 802.11b at Channel 2462MHz			



Note: Measure Level (dB $\mu$ V/m) = Reading Level (dB $\mu$ V) + Factor (dB)



Site: AC1						Time: 2019/06/04 - 03:13				
Limi	Limit: FCC_Part15.209_RSE(3m)						in Ker			
Prob	Probe: BBHA 9120D_1-18GHz						ontal			
EUT: Streaming Media Player						Power: By US	В			
Note	Note: Transmit by 802.11g at Channel 2412MHz									
l evel(dBuV/m)	130 80 70 60 40 30 2310	2315 232	0 2325 2330 233	<b>түралан Мария Лафини</b> 5 2340 2345 233	50 2355 2360 2 Frequ	Кинни или или или или или или или или или	380 2385 2390 2	395 2400 2405 2	2410 2415 2422	
No	Flag	Mark	Frequency	Measure	Reading	Margin	Limit	Factor	Туре	
			(MHz)	Level	Level	(dB)	(dBuV/m)	(dB)		
				(dBuV/m)	(dBuV)					
1			2389.912	67.728	35.210	-6.272	74.000	32.518	PK	
2			2390.000	67.181	34.663	-6.819	74.000	32.518	PK	

Note: Measure Level (dBµV/m) = Reading Level (dBµV) + Factor (dB)

109.141

76.516

N/A

N/A

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

2415.448

\*

3

32.624

ΡK



Site: AC1	Time: 2019/06/04 - 03:08
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Horizontal
EUT: Streaming Media Player	Power: By USB
Note: Transmit by 802 11g at Channel 2412MHz	



Note: Measure Level  $(dB\mu V/m)$  = Reading Level  $(dB\mu V)$  + Factor (dB)

98.688

66.065

N/A

N/A

32.624

AV

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

2415.168

2

\*



Site: AC1					1	Time: 2019/06/04 - 03:15				
Limit: FCC_Part15.209_RSE(3m)						Engineer: Kevin Ker				
Probe: BBHA 9120D_1-18GHz						Polarity: Vertic	al			
EUT	EUT: Streaming Media Player						В			
Note	e: Tran	smit by	802.11g at Cl	nannel 2412N	ЛНz					
Level(dBuV/m)	130 80 70 60 40 30 2310	2315 2320	миниция 2325 2330 233	<b>614-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-</b>	4γεθι-υλ-νημογοιακουν 50 2355 2360 23 Freque	илицияничник Мили 365 2370 2375 23 ency(MHz)	12 12 12 13 12 12 12 12 12 12 12 12 12 12 12 12 12	395 2400 2405 2	410 2415 2422	
No	Flag	Mark	Frequency	Measure	Reading	Margin	Limit	Factor	Туре	
			(MHz)	Level	Level	(dB)	(dBuV/m)	(dB)		
				(dBuV/m)	(dBuV)					
1			2389.352	63.089	30.574	-10.911	74.000	32.515	PK	
2			2390.000	61.718	29.200	-12.282	74.000	32.518	PK	
3		*	2419.368	102.326	69.685	N/A	N/A	32.641	PK	

Note: Measure Level (dB $\mu$ V/m) = Reading Level (dB $\mu$ V) + Factor (dB)



Site: AC1					Т	Time: 2019/06/04 - 03:18				
Limi	t: FCC	_Part15	.209_RSE(3r	n)	E	Engineer: Kevin Ker				
Prot	be: BBI	HA 9120	)D_1-18GHz		F	Polarity: Vertical				
EUT	: Strea	ming M	edia Player		F	Power: By US	В			
Note	e: Tran	smit by	802.11g at C	hannel 2412N	ЛНz					
130 (W) 02. Hig bit Originici 24 12/01/2 130 (W) 02 130 0 0 0 0 0 0 0 0 0 0 0 0 0										
No	Flag	Mark	Frequency	Measure	Reading	Margin	Limit	Factor	Туре	
			(MHz)	Level	Level	(dB)	(dBuV/m)	(dB)		
				(dBuV/m)	(dBuV)					
1			2390.000	49.421	16.903	-4.579	54.000	32.518	AV	
2		*	2414.496	92.625	60.004	N/A	N/A	32.620	AV	

Note: Measure Level ( $dB\mu V/m$ ) = Reading Level ( $dB\mu V$ ) + Factor (dB)


Site	AC1					Time: 2019/06/04 - 04:18					
Limi	t: FCC	_Part15	.209_RSE(3r	n)		Engineer: Kevin Ker					
Prot	e: BBH	HA 9120	D_1-18GHz			Polarity: Horiz	ontal				
EUT: Streaming Media Player						Power: By US	В				
Note	e: Trans	smit by	802.11g at Cl	hannel 2462N	MHz						
Level(dBuV/m)	No Flag Mark Frequency Measure Reading Margin Limit Factor Type										
No	Flag	Mark	Frequency	Measure	Reading	Margin	Limit	Factor	Туре		
			(MHz)	Level	Level	(dB)	(dBuV/m)	(dB)			
				(dBuV/m)	(dBuV)						
1		*	2465.752	109.580	76.744	N/A	N/A	32.836	PK		
2			2483.500	63.495	30.584	-10.505	74.000	32.911	PK		
3	3 2485.912 67.255 34.334			34.334	-6.745	74.000	32.921	РК			



Site: AC1	Time: 2019/06/04 - 04:16
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Horizontal
EUT: Streaming Media Player	Power: By USB
Note: Transmit by 802.11g at Channel 2462MHz	

130 1 Level(dBuV/m) 80 70 60 2 3 50 40 30 2455 2457.5 2460 2462.5 2465 2467.5 2470 2472.5 2475 2477.5 2480 2482.5 2485 2487.5 2490 2492.5 2495 2497.5 2500 2452 Frequency(MHz) Flag Frequency No Mark Measure Reading Limit Factor Margin Туре

		(MHz)	Level	Level	(dB)	(dBuV/m)	(dB)	
			(dBuV/m)	(dBuV)				
1	*	2465.776	99.248	66.412	N/A	N/A	32.836	AV
2		2483.500	52.331	19.420	-1.669	54.000	32.911	AV
3		2484.736	53.451	20.535	-0.549	54.000	32.916	AV

Note: Measure Level (dBµV/m) = Reading Level (dBµV) + Factor (dB)



Site	AC1				-	Time: 2019/06/04 - 04:18					
Limi	t: FCC	_Part15	.209_RSE(3r	n)	I	Engineer: Kevin Ker					
Probe: BBHA 9120D_1-18GHz					I	Polarity: Vertic	al				
EUT: Streaming Media Player					I	Power: By US	В				
Note	e: Trans	smit by	802.11g at Cl	hannel 2462N	MHz						
Level(dBuV/m)	No Flag Mark Frequency Measure Reading Margin Limit Factor Type										
No	Flag	Mark	Frequency	Measure	Reading	Margin	Limit	Factor	Туре		
			(MHz)	Level	Level	(dB)	(dBuV/m)	(dB)			
				(dBuV/m)	(dBuV)						
1		*	2465.104	103.699	70.866	N/A	N/A	32.833	PK		
2			2483.500	62.886	29.975	-11.114	74.000	32.911	PK		
3			2484.640	64.093	31.177	-9.907	74.000	32.916	PK		



Site	: AC1				1	Time: 2019/06/04 - 04:18				
Limi	it: FCC	_Part15	.209_RSE(3r	m)	E	Engineer: Kevin Ker				
Prob	be: BBI	HA 9120	)D_1-18GHz		F	Polarity: Vertic	al			
EUT	EUT: Streaming Media Player					Power: By US	В			
Note	e: Tran	smit by	802.11g at Cl	hannel 2462N	MHz					
I evel(cf8,i)(/m)	130 130 1 1 1 1 1 1 1 1 1 1 1 1 1									
No	Flag	Mark	Frequency	Measure	Reading	Margin	Limit	Factor	Туре	
			(MHz)	Level	Level	(dB)	(dBuV/m)	(dB)		
				(dBuV/m)	(dBuV)					
1		*	2464.672	93.730	60.899	N/A	N/A	32.831	AV	
2			2483.500	50.726	17.815	-3.274	54.000	32.911	AV	







Site	AC1				7	Time: 2019/06/04 - 04:32						
Limi	t: FCC	Part15	5.209_RSE(3r	n)	E	Engineer: Kevin Ker						
Prot	be: BBI	HA 9120	D_1-18GHz		F	Polarity: Horiz	ontal					
EUT	: Strea	ming M	edia Player		F	Power: By US	В					
Note	e: Tran	smit by	802.11n-HT2	0 at Channel	2412MHz							
	130											
(W) 80   70 70   60 12   7 12   7 12   7 12   7 12   7 12   7 12   7 12   7 12 </td												
No	Flag	Mark	Frequency	Measure	Reading	Margin	Limit	Factor	Туре			
	0		(MHz)	Level	Level	(dB)	(dBuV/m)	(dB)				
				(dBuV/m)	(dBuV)							
1			2389.352	53.180	20.665	-0.820	54.000	32.515	AV			
2			2390.000	52.559	20.041	-1.441	54.000	32.518	AV			
3		*	2418.976	97.594	64.955	N/A	N/A	32.640	AV			

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)







Site	: AC1				Т	Time: 2019/06/04 - 04:34					
Limi	it: FCC	_Part15	.209_RSE(3r	m)	E	Engineer: Kevin Ker					
Prob	be: BBI	HA 9120	)D_1-18GHz		F	Polarity: Vertic	al				
EUT	: Strea	ming M	edia Player		F	Power: By US	В				
Note	e: Tran	smit by	802.11n-HT2	0 at Channel	2412MHz						
l evel(dBuV/m)	130 80 70 60 50 40								2		
	2310	2315 232	0 2325 2330 233	5 2340 2345 23	50 2355 2360 23 Freque	365 2370 2375 23 ency(MHz)	380 2385 2390 2	395 2400 2405 2	2410 2415 2422		
No	Flag	Mark	Frequency	Measure	Reading	Margin	Limit	Factor	Туре		
			(MHz)	Level	Level	(dB)	(dBuV/m)	(dB)			
				(dBuV/m)	(dBuV)						
1			2390.000	49.626	17.108	-4.374	54.000	32.518	AV		
2		*	2416.176	91.449	58.821	N/A	N/A	32.628	AV		



Site	AC1				-	Time: 2019/06/04 - 05:09						
Limi	t: FCC	_Part15	.209_RSE(3r	n)	E	Engineer: Kev	in Ker					
Prot	Probe: BBHA 9120D_1-18GHz					Polarity: Horiz	ontal					
EUT	: Strea	ming M	edia Player		F	Power: By US	В					
Note	e: Trans	smit by	802.11n-HT2	0 at Channel	2462MHz							
Level(dBuV/m)	130 130 140 140 150 150 150 150 150 150 150 15											
No	Flag	Mark	Frequency	Measure	Reading	Margin	Limit	Factor	Туре			
			(MHz)	Level	Level	(dB)	(dBuV/m)	(dB)				
				(dBuV/m)	(dBuV)							
1		*	2468.896	108.446	75.597	N/A	N/A	32.850	PK			
2			2483.500	66.790	33.879	-7.210	74.000	32.911	PK			
3	3 2483.920 68.737 35.824				35.824	-5.263	74.000	32.913	PK			



Site: A	AC1				Т	Time: 2019/06/04 - 05:08			
Limit:	FCC P	art15.20	)9 RSE(3m)		E	Engineer: Kevin Ker			
Probe	: BBHA	9120D			F	olarity: Horizo	ntal		
EUT: \$	EUT: Streaming Media Player			F	ower: By USB				
Note:	Transm	it by 80	2.11n-HT20 a	t Channel 24	462MHz	-			
Level(dBuV/m)	80 70 60 50 40 30 2452 2	455 2457	5 2460 2462.5 2	1	0 2472.5 247 Freque	5 2477.5 2480 24 ncy(MHz)	28 32.5 2485 2487.5	2490 2492.5 2	495 2497.5 2500
No	Flag	Mark	Frequency	Measure	Reading	Margin	Limit	Factor	Туре
			(MHz)	Level	Level	(dB)	(dBuV/m)	(dB)	
				(dBuV/m)	(dBuV)				
1		*	2468.992	97.792	64.942	N/A	N/A	32.850	AV

2		2483.500	53.240	20.329	-0.760	54.000	32.911
3		2483.680	53.402	20.490	-0.598	54.000	32.912

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

AV AV



Site	: AC1				٦	Time: 2019/06/04 - 05:10					
Limi	t: FCC	_Part15	5.209_RSE(3r	n)	E	Engineer: Kevin Ker					
Prob	Probe: BBHA 9120D_1-18GHz					Polarity: Vertic	al				
EUT	: Strea	ming M	edia Player		F	Power: By US	В				
Note	e: Trans	smit by	802.11n-HT2	0 at Channel	2462MHz						
Level(dBiJV/m)	130 130 130 10 10 10 10 10 10 10 10 10 1										
No	Flag	Mark	Frequency	Measure	Reading	Margin	Limit	Factor	Туре		
			(MHz)	Level	Level	(dB)	(dBuV/m)	(dB)			
				(dBuV/m)	(dBuV)						
1		*	2466.880	102.342	69.501	N/A	N/A	32.841	PK		
2			2483.500	61.537	28.626	-12.463	74.000	32.911	PK		
3	3 2484.544 62.839 29.924					-11.161	74.000	32.916	РК		



Site	: AC1					Time: 2019/06/04 - 05:10				
Limi	it: FCC	_Part15	5.209_RSE(3r	m)		Engineer: Kevin Ker				
Prot	be: BBH	HA 9120	D_1-18GHz			Polarity: Vertical				
EUT	: Strea	ming M	edia Player			Power: By US	В			
Note	e: Trans	smit by	802.11n-HT2	0 at Channel	2462MHz					
130 130 1 1 1 1 1 1 1 1 1 1 1 1 1										
No	Flag	Mark	Frequency	Measure	Reading	Margin	Limit	Factor	Туре	
			(MHz)	Level	Level	(dB)	(dBuV/m)	(dB)		
				(dBuV/m)	(dBuV)					
1		*	2468.920	92.382	59.533	N/A	N/A	32.850	AV	
2			2483.500	49.871	16.960	-4.129	54.000	32.911	AV	



### 7.8. AC Conducted Emissions Measurement

#### 7.8.1.Test Limit

FCC Part 15 Subpart C Paragraph 15.207 Limits					
Frequency (MHz)	QP (dBuV)	AV (dBuV)			
0.15 - 0.50	66 - 56	56 - 46			
0.50 - 5.0	56	46			
5.0 - 30	60	50			

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

#### 7.8.2.Test Setup





### 7.8.3.Test Result

Site: SR2	Time: 2019/06/11 - 19:57
Limit: FCC_Part15.207_CE_AC Power	Engineer: Kevin Ker
Probe: ENV216 (Filter On)	Polarity: Line
EUT: Streaming Media Player	Power: AC 120V/60Hz

Test Mode: Transmit by 802.11n-HT20 at Channel 2462MHz



No	Flag	Mark	Frequency	Measure	Reading	Margin	Limit	Factor	Туре
			(MHz)	Level	Level	(dB)	(dBuV)	(dB)	
				(dBuV)	(dBuV)				
1		*	0.194	51.682	41.647	-12.182	63.864	10.034	QP
2			0.194	34.359	24.324	-19.505	53.864	10.034	AV
3			0.446	35.899	25.822	-21.050	56.949	10.077	QP
4			0.446	21.898	11.821	-25.052	46.949	10.077	AV
5			0.706	30.875	20.855	-25.125	56.000	10.019	QP
6			0.706	16.673	6.653	-29.327	46.000	10.019	AV
7			1.166	33.445	23.559	-22.555	56.000	9.886	QP
8			1.166	18.018	8.132	-27.982	46.000	9.886	AV
9			1.690	36.735	26.862	-19.265	56.000	9.873	QP
10			1.690	23.046	13.173	-22.954	46.000	9.873	AV
11			5.826	37.617	27.842	-22.383	60.000	9.775	QP
12			5.826	28.495	18.720	-21.505	50.000	9.775	AV

Note: Measure Level (dB $\mu$ V) = Reading Level (dB $\mu$ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB).



Site: SR2	Time: 2019/06/11 - 20:01
Limit: FCC_Part15.207_CE_AC Power	Engineer: Kevin Ker
Probe: ENV216 (Filter On)	Polarity: Neutral
EUT: Streaming Media Player	Power: AC 120V/60Hz
	1

Test Mode: Transmit by 802.11n-HT20 at Channel 2462MHz



No	Flag	Mark	Frequency	Measure	Reading	Margin	Limit	Factor	Туре
			(MHz)	Level	Level	(dB)	(dBuV)	(dB)	
				(dBuV)	(dBuV)				
1		*	0.190	50.888	40.861	-13.149	64.037	10.026	QP
2			0.190	29.578	19.551	-24.459	54.037	10.026	AV
3			0.254	42.976	33.048	-18.649	61.625	9.928	QP
4			0.254	22.143	12.215	-29.482	51.625	9.928	AV
5			0.454	36.362	26.270	-20.439	56.802	10.092	QP
6			0.454	24.428	14.336	-22.374	46.802	10.092	AV
7			2.270	36.094	26.248	-19.906	56.000	9.846	QP
8			2.270	21.917	12.071	-24.083	46.000	9.846	AV
9			2.730	35.277	25.451	-20.723	56.000	9.826	QP
10			2.730	23.380	13.553	-22.620	46.000	9.826	AV
11			5.630	34.570	24.825	-25.430	60.000	9.745	QP
12			5.630	24.539	14.794	-25.461	50.000	9.745	AV

Note: Measure Level (dB $\mu$ V) = Reading Level (dB $\mu$ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB).



## 8. CONCLUSION

The data collected relate only the item(s) tested and show that the Streaming Media Player is in

compliance with Part 15C of the FCC Rules.

The End



# Appendix A - Test Setup Photograph

Refer to "1905TW0109-UT" file.



# Appendix B - EUT Photograph

Refer to "1905TW0109-UE" file.