



FCC PART 15, SUBPART C  
ISEDC RSS-247, ISSUE 2, FEBRUARY 2017  
RSS-GEN ISSUE 5, MARCH 2019  
TEST REPORT

For

**Roku Inc.**

150 Winchester Circle,

Los Gatos, CA 95032, USA

**FCC ID: TC2-RCB14  
IC: 5959A-RCB14**

<b>Report Type:</b> Class II Permissive Change	<b>Models:</b> RC-AL5, RC-AL7
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<b>Prepared By:</b> Test Engineer	
<b>Report Number:</b> R1905306-407	
<b>Report Date:</b> 2019-07-18	
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**Note:** This test report was prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This test report **shall not** be used by the customer to claim product certification, approval, or endorsement by A2LA or any agency of the United States Government or any foreign government.

- \* This test report may contain data and test methods that are not covered by BACL's scope of accreditation as of the test report date shown above. These items are marked within the test report text with an asterisk “\*”
- † The customer issued a Declaration Of Similarity, which is included in this test report for reference purposes only. The validity and applicability of the Declaration of Similarity is the sole responsibility of the customer. Please refer to Annex D (Informative) of this test report which contains the customer's Declaration of Similarity.

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## DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1905306-407	CIIPC Report	2018-07-18

## 1 General Description

### 1.1 Product Description for Equipment under Test (EUT)

This test and measurement report was prepared on behalf of *Roku Inc.*, and their product model: *RC-AL5 and RC-AL7*, FCC ID: TC2-RCB14, IC: 5959A-RCB14 the “EUT” as referred to in this report. It is a remote control.

The EUTs are modified by adding one extra mute button and RF circuitry is identical from RC-AL2.

The difference between RC-AL5 and RC-AL7 is only mechanical printing art work on the enclosure. The radiated spurious emissions tests were performed only for RC-AL7 due to the similarity. Please refer to the Appendix D Declaration of Similarity for details.

### 1.2 Objective

This report is prepared on behalf of *Roku, Inc* in accordance with FCC CFR47 §15.407 and ISEDC RSS-247 Issue 2, February 2017.

The objective is to determine compliance with FCC Part 15.407 and ISEDC RSS-247 rules for Radiated Spurious Emissions testing and to verify the Output Power.

This project is a Permissive Change II submission for the purpose of adding one extra mute button compared with model RC-AL2.

### 1.3 Related Submittal(s)/Grant(s)

FCC Part 15, Subpart C, Equipment DTS and RSS-247 Report with FCC ID: TC2-RCB14, IC: 5959A-RCB14

### 1.4 Test Methodology

All measurements contained in this report were conducted in accordance with ANSI C63.10-2013, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz, and FCC KDB 789033 D02 General UNII Test Procedure New Rules v02r01.

### 1.5 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Parameter	Measurement uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.57 dB
Power Spectral Density, conducted	±1.48dB
Unwanted Emissions, conducted	±1.57dB
All emissions, radiated	±4.0 dB
AC power line Conducted Emission	±2.0 dB
Temperature	±2 ° C
Humidity	±5 %
DC and low frequency voltages	±1.0 %
Time	±2 %
Duty Cycle	±3 %

## 1.6 Test Facility Registrations

BACL's test facilities that are used to perform Radiated and Conducted Emissions tests are currently recognized by the Federal Communications Commission as Accredited with NIST Designation Number US1129.

BACL's test facilities that are used to perform Radiated and Conducted Emissions tests are currently registered with Industry Canada under Registration Numbers: 3062A-1, 3062A-2, and 3062A-3.

BACL is a Chinese Taipei Bureau of Standards Metrology and Inspection (BSMI) validated Conformity Assessment Body (CAB), under Appendix B, Phase I Procedures of the APEC Mutual Recognition Arrangement (MRA). BACL's BSMI Lab Code Number is: SL2-IN-E-1002R

BACL's test facilities that are used to perform AC Line Conducted Emissions, Telecommunications Line Conducted Emissions, Radiated Emissions from 30 MHz to 1 GHz, and Radiated Emissions from 1 GHz to 6 GHz are currently recognized as Accredited in accordance with the Voluntary Control Council for Interference [VCCI] Article 15 procedures under Registration Number A-0027.

## 1.7 Test Facility Accreditations

Bay Area Compliance Laboratories Corp. (BACL) is:

**A- An independent, 3<sup>rd</sup>-Party, Commercial Test Laboratory accredited to ISO/IEC 17025:2005 by A2LA (Test Laboratory Accreditation Certificate Number 3279.02),** in the fields of: Electromagnetic Compatibility and Telecommunications. Unless noted by an Asterisk (\*) in the Compliance Matrix (See Section 3 of this Test Report), BACL's ISO/IEC 17025:2005 Scope of Accreditation includes all of the Test Method Standards and/or the Product Family Standards detailed in this Test Report..

BACL's ISO/IEC 17025:2005 Scope of Accreditation includes a comprehensive suite of EMC Emissions, EMC Immunity, Radio, RF Exposure, Safety and wireline Telecommunications test methods applicable to a wide range of product categories. These product categories include Central Office Telecommunications Equipment [including NEBS - Network Equipment Building Systems], Unlicensed and Licensed Wireless and RF devices, Information Technology Equipment (ITE); Telecommunications Terminal Equipment (TTE); Medical Electrical Equipment; Industrial, Scientific and Medical Test Equipment; Professional Audio and Video Equipment; Industrial and Scientific Instruments and Laboratory Apparatus; Cable Distribution Systems, and Energy Efficient Lighting.

**B- A Product Certification Body accredited to ISO/IEC 17065:2012 by A2LA (Product Certification Body Accreditation Certificate Number 3279.03) to certify**

- For the USA (Federal Communications Commission):

- 1- All Unlicensed radio frequency devices within FCC Scopes A1, A2, A3, and A4;
- 2- All Licensed radio frequency devices within FCC Scopes B1, B2, B3, and B4;
- 3- All Telephone Terminal Equipment within FCC Scope C.

- For the Canada (Industry Canada):

- 1 All Scope 1-Licence-Exempt Radio Frequency Devices;
- 2 All Scope 2-Licensed Personal Mobile Radio Services;
- 3 All Scope 3-Licensed General Mobile & Fixed Radio Services;
- 4 All Scope 4-Licensed Maritime & Aviation Radio Services;
- 5 All Scope 5-Licensed Fixed Microwave Radio Services
- 6 All Broadcasting Technical Standards (BETS) in the Category I Equipment Standards List.

- For Singapore (Info-Communications Development Authority (IDA)):

- 1 All Line Terminal Equipment: All Technical Specifications for Line Terminal Equipment – Table 1 of IDA MRA Recognition Scheme: 2011, Annex 2
2. All Radio-Communication Equipment: All Technical Specifications for Radio-Communication Equipment – Table 2 of IDA MRA Recognition Scheme: 2011, Annex 2

- For the Hong Kong Special Administrative Region:

- 1 All Radio Equipment, per KHCA 10XX-series Specifications;
- 2 All GMDSS Marine Radio Equipment, per HKCA 12XX-series Specifications;
- 3 All Fixed Network Equipment, per HKCA 20XX-series Specifications.

- For Japan:

- 1 MIC Telecommunication Business Law (Terminal Equipment):
  - All Scope A1 - Terminal Equipment for the Purpose of Calls;
  - All Scope A2 - Other Terminal Equipment
- 2 Radio Law (Radio Equipment):
  - All Scope B1 - Specified Radio Equipment specified in Article 38-2-2, paragraph 1, item 1 of the Radio Law
  - All Scope B2 - Specified Radio Equipment specified in Article 38-2-2, paragraph 1, item 2 of the Radio Law
  - All Scope B3 - Specified Radio Equipment specified in Article 38-2-2, paragraph 1, item 3 of the Radio Law

**C- A Product Certification Body accredited to ISO/IEC 17065:2012 by A2LA (Product Certification Body Accreditation Certificate Number 3279.01) to certify Products to USA's Environmental Protection Agency (EPA) ENERGY STAR Product Specifications for:**

- 1 Electronics and Office Equipment:
  - for Telephony (ver. 3.0)
  - for Audio/Video (ver. 3.0)
  - for Battery Charging Systems (ver. 1.1)
  - for Set-top Boxes & Cable Boxes (ver. 4.1)
  - for Televisions (ver. 6.1)
  - for Computers (ver. 6.0)
  - for Displays (ver. 6.0)
  - for Imaging Equipment (ver. 2.0)
  - for Computer Servers (ver. 2.0)
- 2 Commercial Food Service Equipment
  - for Commercial Dishwashers (ver. 2.0)
  - for Commercial Ice Machines (ver. 2.0)

- for Commercial Ovens (ver. 2.1)
- for Commercial Refrigerators and Freezers
- 3 Lighting Products
  - For Decorative Light Strings (ver. 1.5)
  - For Luminaires (including sub-components) and Lamps (ver. 1.2)
  - For Compact Fluorescent Lamps (CFLs) (ver. 4.3)
  - For Integral LED Lamps (ver. 1.4)
- 4 Heating, Ventilation, and AC Products
  - for Residential Ceiling Fans (ver. 3.0)
  - for Residential Ventilating Fans (ver. 3.2)
- 5 Other
  - For Water Coolers (ver. 3.0)

**D- A NIST Designated Phase-I and Phase-II Conformity Assessment Body (CAB) for the following economies and regulatory authorities under the terms of the stated MRAs/Treaties:**

- Australia: ACMA (Australian Communication and Media Authority) – APEC Tel MRA -Phase I;
- Canada: (Innovation, Science and Economic development Canada - ISEDC) Foreign Certification Body – FCB – APEC Tel MRA -Phase I & Phase II;
- Chinese Taipei (Republic of China – Taiwan):
  - o BSMI (Bureau of Standards, Metrology and Inspection) APEC Tel MRA -Phase I;
  - o NCC (National Communications Commission) APEC Tel MRA -Phase I;
- European Union:
  - o EMC Directive 2014/30/EU US-EU EMC & Telecom MRA CAB (NB)
  - o Radio Equipment (RE) Directive 2014/53/EU US-EU EMC & Telecom MRA CAB (NB)
  - o Low Voltage Directive (LVD) 2014/35/EU
- Hong Kong Special Administrative Region: (Office of the Telecommunications Authority – OFTA) APEC Tel MRA -Phase I & Phase II
- Israel – US-Israel MRA Phase I
- Republic of Korea (Ministry of Communications - Radio Research Laboratory) APEC Tel MRA -Phase I
- Singapore: (Infocomm Media Development Authority - IMDA) APEC Tel MRA -Phase I & Phase II;
- Japan: VCCI - Voluntary Control Council for Interference US-Japan Telecom Treaty VCCI Side Letter-
- USA:
  - o ENERGY STAR Recognized Test Laboratory – US EPA
  - o Telecommunications Certification Body (TCB) – US FCC;
  - o Nationally Recognized Test Laboratory (NRTL) – US OSHA
- Vietnam: APEC Tel MRA -Phase I;

## 2 System Test Configuration

### 2.1 Justification

The EUT was configured for testing according to ANSI C63.10-2013 and FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

The EUT was tested in a testing mode to represent worst-case results during the final qualification test.

The worst-case data rates are determined by measuring the average power, peak power and PPSD across all data rates bandwidths, and modulations.

### 2.2 EUT Exercise Software

The test firmware used was the TeraTerm serial terminal and setup commands provided by Roku Inc., the software is compliant with the standard requirements being tested against.

Please refer to the following power setting table.

Modulation	Channel	Frequency (MHz)	Power Setting
802.11a mode	36	5180	Spl 10
	40	5200	Spl 10
	48	5240	Spl 8
	149	5745	Spl 10
	157	5785	Spl 10
	165	5825	Spl 10

\*Data rates tested: 802.11a mode: 6Mbps

### Average output power

#### 5150 - 5250 MHz

#### FCC Results

Frequency (MHz)	Conducted Average Power (dBm)	FCC Limit (dBm)
802.11a mode		
5180	7.32	24
5200	7.48	24
5240	6.55	24

## ISED Results

Modulation	Frequency (MHz)	Conducted Output Power (dBm)	Antenna Gain (dBi)	EIRP Output Power (dBm)	ISEDC Limit (dBm)
802.11a mode	5180	7.32	1.7	9.02	22.87
	5200	7.48	1.7	9.18	22.97
	5240	6.55	1.7	8.25	22.84

## 5725 - 5850 MHz

Frequency (MHz)	Conducted Average Power (dBm)	FCC/ISEDC Limit (dBm)
802.11a mode		
5745	4.75	30
5785	5.35	30
5825	4.68	30

Average output power table is referred from R1706263-407 report. FCC ID: TC2-RCB14, IC: 5959A-RCB14

## 2.3 Equipment Modifications

N/A

## 2.4 Local Support Equipment

Manufacturer	Description	Model	Serial Number
Dell	Laptop	Latitude E6410	3CKRAQ1

## 2.5 Support Equipment

Manufacturer	Description	Model
Atmel Corp.	Debug/Programmer Board (USB-JTAG Jig), FASTPCB	LJ001-3v4

## 2.6 Interface Ports and Cabling

Cable Description	Length (m)	To	From
Standard USB Adapter (A-Male to B-Male)	< 1m	Laptop	EUT
Ribbon Cable	< 1m	EUT	Debug/Programmer Board

### 3 Summary of Test Results

FCC and IC Rules	Description of Test	Result
FCC §2.1053, §15.205, §15.209, 15.407(b) ISEDC RSS-247 §6.2 ISEDC RSS-Gen §8.9 and §8.10	Spurious Radiated Emissions	Compliant

## 4 FCC §15.209, §15.407(b) & ISEDC RSS-247 §6.2 - Spurious Radiated Emissions

### 4.1 Applicable Standard

As Per FCC §15.205(a) except as show in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 – 0.110	16.42 – 16.423	960 – 1240	4.5 – 5.15
0.495 – 0.505	16.69475 – 16.69525	1300 – 1427	5.35 – 5.46
2.1735 – 2.1905	25.5 – 25.67	1435 – 1626.5	7.25 – 7.75
4.125 – 4.128	37.5 – 38.25	1645.5 – 1646.5	8.025 – 8.5
4.17725 – 4.17775	73 – 74.6	1660 – 1710	9.0 – 9.2
4.20725 – 4.20775	74.8 – 75.2	1718.8 – 1722.2	9.3 – 9.5
6.215 – 6.218	108 – 121.94	2200 – 2300	10.6 – 12.7
6.26775 – 6.26825	123 – 138	2310 – 2390	13.25 – 13.4
6.31175 – 6.31225	149.9 – 150.05	2483.5 – 2500	14.47 – 14.5
8.291 – 8.294	156.52475 – 156.52525	2690 – 2900	15.35 – 16.2
8.362 – 8.366	156.7 – 156.9	3260 – 3267	17.7 – 21.4
8.37625 – 8.38675	162.0125 – 167.17	3.332 – 3.339	22.01 – 23.12
8.41425 – 8.41475	167.72 – 173.2	3.3458 – 3.358	23.6 – 24.0
12.29 – 12.293	240 – 285	3.600 – 4.400	31.2 – 31.8
12.51975 – 12.52025	322 – 335.4		36.43 – 36.5
12.57675 – 12.57725	399.9 – 410		Above 38.6
13.36 – 13.41	608 – 614		

As per FCC §15.209: The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table

Frequency (MHz)	Field Strength (micro volts/meter)	Measurement Distance (meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100 Note 1	3
88 - 216	150 Note 1	3
216 - 960	200 Note 1	3
Above 960	500	3

Note 1: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

As per FCC Part 15.407 (b)

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of -27 dBm/MHz.

(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.

(7) The provisions of §15.205 apply to intentional radiators operating under this section.

As per ISEDC RSS-247 §6.2

For transmitters operating in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. However, any unwanted emissions that fall into the band 5250- 5350 MHz must be 26 dBc, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth, above 5.25 GHz. Otherwise, the transmission is considered as intentional and the devices shall implement dynamic frequency selection (DFS) and transmitter power control (TPC) as per the requirements for the band 5250-5350 MHz

For devices with both operating frequencies and channel bandwidths contained within the band 5250-5350 MHz, the device shall comply with the following:

1. All emissions outside the band 5250-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. if the equipment is intended for outdoor use; or
2. All emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. and any emissions within the band 5150-5250 MHz shall meet the power spectral density limits of Section 6.2.1. The device shall be labelled “for indoor use only.”

For devices with operating frequencies in the band 5250-5350 MHz but having a channel bandwidth that overlaps the band 5150-5250 MHz, the devices’ unwanted emission shall not exceed -27 dBm/MHz e.i.r.p. outside the band 5150-5350 MHz and its power shall comply with the spectral power density for operation within the band 5150-5250 MHz. The device shall be labelled “for indoor use only.”

For transmitters operating in the band 5470-5725 MHz, emissions outside the band shall not exceed -27 dBm/MHz e.i.r.p.

For the band 5725-5850 MHz, emissions at frequencies from the band edges to 10 MHz above or below the band edges shall not exceed -17 dBm/MHz e.i.r.p. For emissions at frequencies more than 10 MHz above or below the band edges, the emissions power shall not exceed -27 dBm/MHz.

## 4.2 Test Setup

The radiated emissions tests were performed in the 5-meter Chamber, using the setup in accordance with ANSI C63.10-2013. The specification used was the FCC 15.407 and ISED RSS-247 limits.

The spacing between the peripherals was 10 centimeters.

External I/O cables were draped along the edge of the test table and bundle when necessary.

## 4.3 Test Procedure

For the radiated emissions test, the EUT host, and all support equipment power cords were connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The EUT is set 3 meter away from the testing antenna, which is varied from 1-4 meter, and the EUT is placed on a turntable, which is 0.8 meter or 1.5 meter above ground plane, the table shall be rotated for 360 degrees to find out the highest emission. The receiving antenna should be changed the polarization both of horizontal and vertical.

The spectrum analyzer or receiver is set as:

Below 1000 MHz:

$$\text{RBW} = 100 \text{ kHz} / \text{VBW} = 300 \text{ kHz} / \text{Sweep} = \text{Auto}$$

Above 1000 MHz:

- (1) Peak:  $\text{RBW} = 1\text{MHz} / \text{VBW} = 3\text{MHz} / \text{Sweep} = 100\text{ms}$
- (2) Average:  $\text{RBW} = 1\text{MHz} / \text{VBW} = 10\text{Hz} \text{ or } 1/\text{T} / \text{Sweep} = \text{Auto}$

## 4.4 Corrected Amplitude and Margin Calculation

The Corrected Amplitude (CA) is calculated by adding the Antenna Factor (AF), the Cable Loss (CL), the Attenuator Factor (Atten) and subtracting the Amplifier Gain (Ga) to indicated Amplitude (Ai) reading. The basic equation is as follows:

$$\text{CA} = \text{Ai} + \text{AF} + \text{CL} + \text{Atten} - \text{Ga}$$

For example, a corrected amplitude of 40.3 dBuV/m = Indicated Reading (32.5 dBuV) + Antenna Factor (+23.5dB) + Cable Loss (3.7 dB) + Attenuator (10 dB) - Amplifier Gain (29.4 dB)

The “Margin” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the maximum limit for Class A. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corrected Amplitude} - \text{Limit}$$

## 4.5 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Interval
Rohde & Schwarz	Receiver, EMI Test	ESCI 1166.5950.03	100338	2018-07-05	2 year
Agilent	Analyzer, Spectrum	E4446A	US44300386	2018-06-01	13 months
Sunol Science Corp	System Controller	SC99V	011003-1	N/R	N/R
Sunol Sciences	Antenna, Biconi-Log	JB1	A013105-3	2018-02-26	2 year
Sunol Sciences	Antenna, Horn	DRH-118	A052704	2019-04-02	2 years
Wisewave	Antenna, Horn	ARH-4223-02	10555-02	2017-12-15	2 years
Wisewave	Antenna, Horn	ARH-2823-02	10555-01	2018-01-18	2 years
A.H. Systems	Pre-Amplifier	PAM 1840V	170	2018-09-10	1 year
Agilent	Amplifier, Pre	8447D	2944A10187	2019-04-11	1 year
HP	Pre-Amplifier	8449B	3008A01978	2018-08-10	1 year
A.H. Systems	Pre-Amplifier	PAM 1840V	170	2018-09-10	1 year
Insulated Wire Corp.	157 Series 2.92 SM (x2) Armored 33 ft. Cable	KPS-1571AN-3960-KPS	DC 1917	2019-05-08	1 Year
-	SMA cable	-	C0002	Each time <sup>1</sup>	N/A
-	N-Type Cable	-	C00013	Each time <sup>1</sup>	N/A
-	N-Type Cable	-	C00014	Each time <sup>1</sup>	N/A
Vasona	Test software	V6.0 build 11	10400213	N/R	N/R

Note<sup>1</sup>: cable and attenuator included in the test set-up will be checked each time before testing.

**Statement of Traceability:** *BACL Corp.* attests that all calibrations have been performed per the A2LA requirements, traceable to the NIST.

## 4.6 Test Environmental Conditions

<b>Temperature:</b>	20-22 °C
<b>Relative Humidity:</b>	42-50 %
<b>ATM Pressure:</b>	102.7 kPa

The testing was performed by Frank Wang from 2019-06-18 to 2019-06-19 in 5m chamber 3.

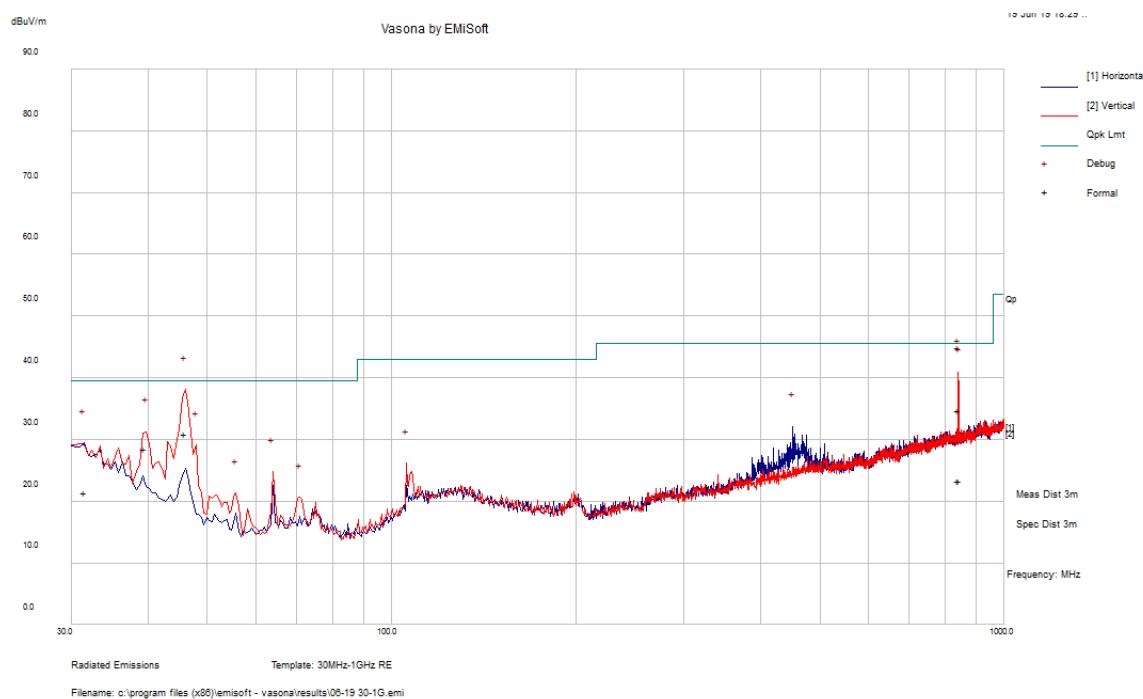
#### 4.7 Summary of Test Results

According to the data hereinafter, the EUT complied with the FCC Part 15.407 and RSS-247 standards' radiated emissions limits, and had the worst margin of:

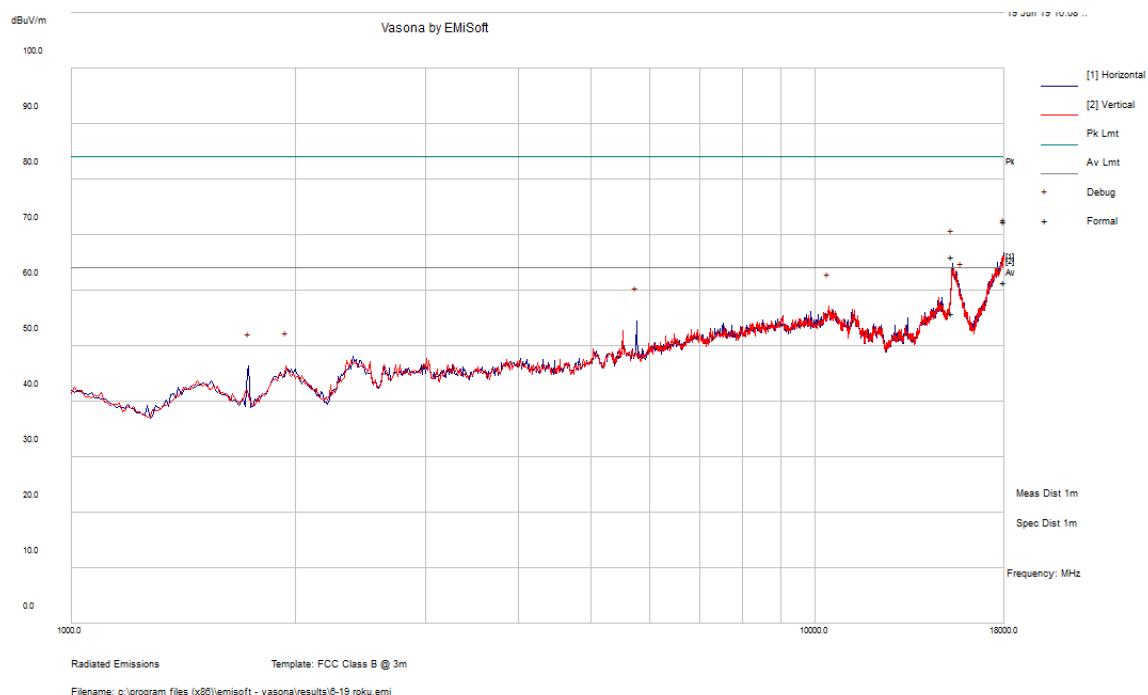
<b>Mode: Transmitting</b>			
<b>Margin (dB)</b>	<b>Frequency (MHz)</b>	<b>Polarization (Horizontal/Vertical)</b>	<b>Mode, Channel</b>
-0.48	39555.611	Horizontal	802.11a mode, 5200 MHz

## 4.8 Radiated Emissions Test Result Data

### 1) 30 MHz – 1 GHz Worst Case, Measured at 3 meters

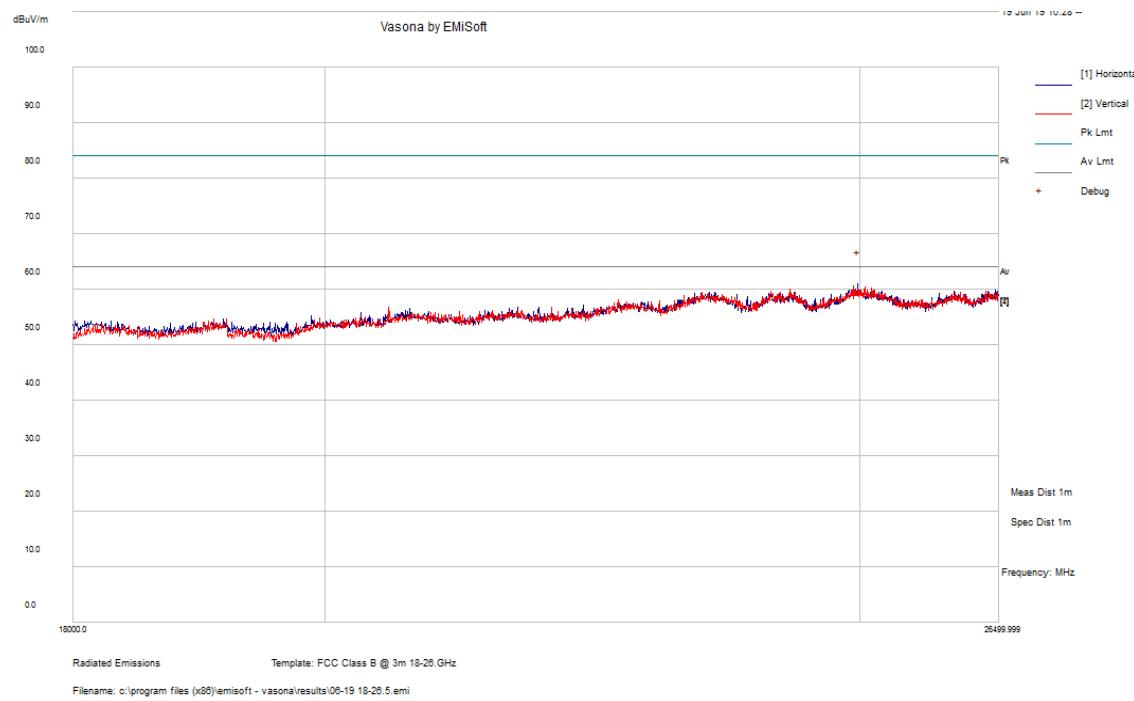


Frequency (MHz)	Corrected Amplitude (dB $\mu$ V/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dB $\mu$ V/m)	Margin (dB)	Comments (PK/QP/Ave.)
45.93975	30.85	105	V	65	39.5	-8.65	QP
840.3078	23.36	170	V	95	45.5	-22.14	QP
842.3523	34.67	265	V	161	45.5	-10.83	QP
844.1345	23.29	101	V	6	45.5	-22.21	QP
39.47975	28.45	188	V	20	39.5	-11.05	QP
31.499	21.41	272	H	238	39.5	-18.09	QP

**2) 1-40 GHz Worst Case, Measured at 1 meter****1-18 GHz Worst Case, Measured at 1 meter**

Frequency (MHz)	Corrected Amplitude (dB $\mu$ V/m)	Antenna Polarity (H/V)	Antenna Height (cm)	Turtable Azimuth (degrees)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector (Peak /Ave.)
18000	72.43	H	295	5	84	-11.57	Peak
18000	61.54	H	295	5	64	-2.46	Ave
15324.24	66.07	H	287	9	84	-17.93	Peak
15324.24	55.83	H	287	9	64	-8.17	Ave

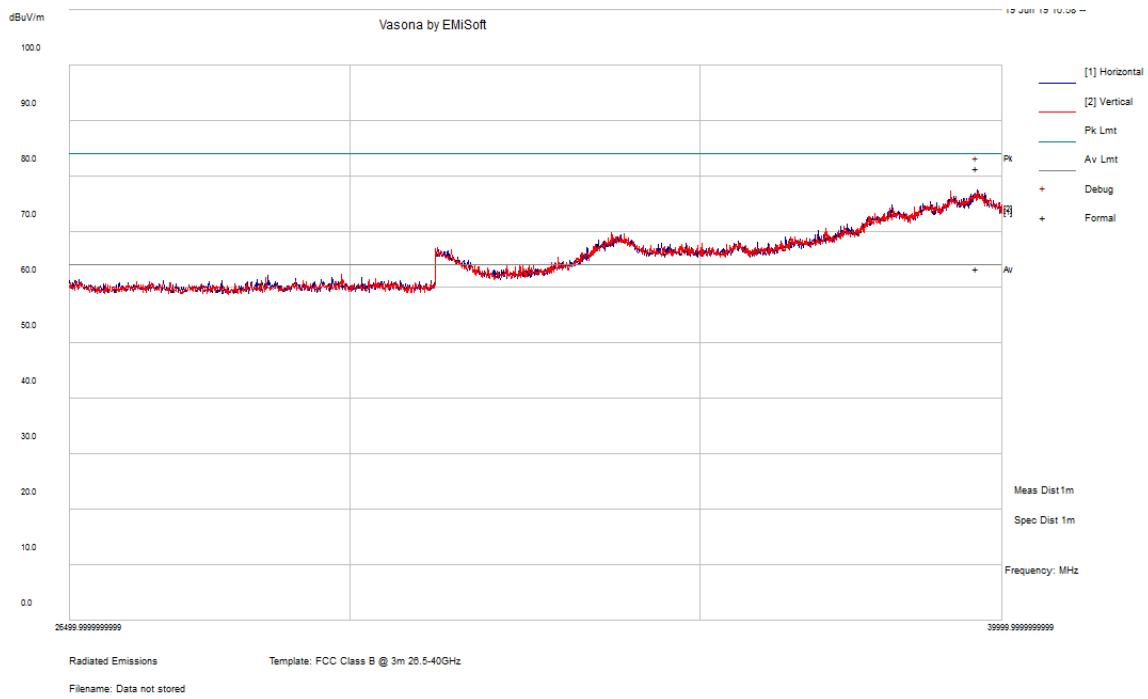
## 18-26.5 GHz Worst Case, Measured at 1 meter:



Frequency (MHz)	Corrected Amplitude (dB $\mu$ V/m)	Antenna Polarity (H/V)	Antenna Height (cm)	Turntable Azimuth (degrees)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector (Peak/Ave.)
24985.94	60.92	H	300	0	64	-3.08	Peak*

Note\*: Due to the testing value by using peak detector is within the average limit, no average detector testing is needed.

## 26.5-40 GHz Worst Case, Measured at 1 meter:



Frequency (MHz)	Corrected Amplitude (dB $\mu$ V/m)	Antenna Polarity (H/V)	Antenna Height (cm)	Turtable Azimuth (degrees)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector (Peak /Ave.)
39555.61	81.70	H	100	236	84	-2.3	Peak
39555.61	63.52	H	100	205	64	<b>-0.48</b>	Ave

## **5 Annex A (Normative) - EUT Test Setup Photographs**

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Please refer to the attachment.

## **6 Annex B (Normative) – EUT External Photographs**

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Please refer to the attachment.

## **7 Annex C (Normative) – EUT Internal Photographs**

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Please refer to the attachment.

## 8 Annex D (Informative) – Declaration of Similarity



Roku, Inc.  
150 Winchester Circle  
Los Gatos, CA 95032  
USA

### DECLARATION OF SIMILARITY

June 28, 2019

Bay Area Compliance Laboratories Corp.  
1274 Anvilwood Ave.  
Sunnyvale, CA 94089  
Phone: 408-732-9162, Fax: 408-732-9164  
<http://www.baclcorp.com>

Dear Sir or Madam:

We **Roku, Inc.** hereby declare that the products below are electrically identical with the same electromagnetic emissions and electromagnetic compatibility characteristics as model: **RC-AL2** tested by BACL, the results of which are featured in BACL project: **R1706262, R1706263 and R1905306**. The product has different market name for different retailer. The differences are also described:

Product Type:		
	Model	Difference
<b>Tested Model:</b>	RC-AL2	
<b>Similar Model:</b>	3801UK-RCU	No different
	3801TT-RCU	No different
	RC-AL5	Have extra button. No Roku tag
	RC-AL7	Have extra button

Please contact me should there be need for any additional clarification or information.

Best Regards,

Tito Thomas, Director, Software Engineering, Wi-Fi-Technologies

## 9 Annex E (Normative) - A2LA Electrical Testing Certificate



### Accredited Laboratory

A2LA has accredited

### BAY AREA COMPLIANCE LABORATORIES CORP.

Sunnyvale, CA

for technical competence in the field of

### Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. This laboratory also meets A2LA R222 - Specific Requirements EPA ENERGY STAR Accreditation Program. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system [refer to joint ISO-ILAC-IAF Communiqué dated April 2017].



Presented this 2nd day of October 2018.

A handwritten signature in blue ink.

Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 3297.02  
Valid to September 30, 2020  
Revised February 21, 2019

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

**--- END OF REPORT ---**