FCC PART 15, SUBPART B and C
TEST REPORT

for

ROKU REMOTE

MODEL: RC07

Prepared for

ROKU, INC.
12980 SARATOGA AVENUE, SUITE #D
SARATOGA, CALIFORNIA 95070

Prepared by:_____

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DATE: SEPTEMBER 22, 2013

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GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Compatible Electronics Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced without the written permission of Compatible Electronics, unless done so in full.

This report must not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Device Tested:	Roku Remote Model: RC07 S/N: N/A
Product Description:	See Expository Statement.
Modifications:	The EUT was not modified during the testing.
Customer:	Roku, Inc. 12980 Saratoga Avenue, Suite #D Saratoga, California 95070
Manufacturer:	Universal Electronics, Inc. 201 East Sandpointe Avenue, 8th Floor Santa Ana, California 92707
Test Dates:	September 3, 4, 11, and 12, 2013
Test Specifications:	EMI requirements CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.247
Test Procedure:	ANSI C63.4 and ANSI C63.10
Test Deviations:	The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz – 30 MHz	This test was not performed because the EUT is a battery powered device and cannot be plugged into the AC public mains.
2	Spurious Radiated RF Emissions, 30 MHz – 1000 MHz	Complies with the **Class B** limits of CFR Title 47, Part 15 Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, section 15.209
3	Spurious Radiated RF Emissions, 10 kHz – 30 MHz and 1000 MHz – 40000 MHz	Complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and CFR Title 47, Part 15, Subpart C, section 15.247(d)
4	Fundamental and Emissions produced by the intentional radiator in non-restricted bands, 10 kHz – 40 GHz	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247(d)
5	Emissions produced by the intentional radiator in restricted bands, 10 kHz – 40 GHz	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.205, 15.209, and section 15.247 (d)
6	DTS Bandwidth	Complies with the relevant requirements of FCC Title 47, Part 15, Subpart C, section 15.247 (a)(2)
7	Peak Power Output	Complies with the relevant requirements of FCC Title 47, Part 15, Subpart C, section 15.247 (b)(3)
8	RF Conducted Antenna Test	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247 (d)
9	Peak Power Spectral Density from the Intentional Radiator to the Antenna	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247 (e)

1. PURPOSE

This document is a qualification test report based on the emissions tests performed on the Roku Remote, Model: RC07. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the Class B specification limits defined by CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.247.

Note: For the unintentional radiator portion of the test, the EUT was within the **Class B** specification limits defined by CFR Title 47, Part 15, Subpart B.

2. ADMINISTRATIVE DATA

2.1 Location of Testing

The EMI tests described herein were perform ed at the test facility of Com patible Electronics, 114 Olinda Drive, Brea, California 92823.

2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

2.3 Cognizant Personnel

Roku, Inc.

Greg Garner	Director of Hardware Engineering

Compatible Electronics Inc.

James Ross	Test Engineer
Kyle Fujimoto	Test Engineer
Michael Christensen	Lab Manager, Brea Division

2.4 Date Test Sample was Received

The test sample was received prior to the date of testing.

2.5 Disposition of the Test Sample

The test sample has not been returned to Roku, Inc. as of the date of this test report.

2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
HP	Hewlett Packard
ITE	Information Technology Equipment
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network
N/A	Not Applicable

3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this EMI Test Report.

SPEC	TITLE
FCC Title 47, Part 15 Subpart C	FCC Rules - Radio frequency devices (including digital devices) – Intentional Radiators
ANSI C63.4 2009	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz
FCC Title 47, Part 15 Subpart B	FCC Rules - Radio frequency devices (including digital devices) – Unintentional Radiators
KDB 558074	Guidance for Performing Compliance Measurements on Digital Transmissions Systems (DTS) Operating Under 15.247
ANSI C63.10 2009	American National Standard for Testing Unlicensed Wireless Devices

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration - Emissions

The Roku Remote, Model: RC07 (EUT) was connected to a pair of headphones via its headphones port. The EUT was tested in three orthogonal axis.

The EUT had a special program that allowed the EUT to continuously transmit at the low, middle, and high channels at the worst data rate in both 802.11 g and 802.11 a modes. The program also allowed the EUT to either transmit via antenna 1 or antenna 2.

The final radiated data for the EUT as was taken in modes described above. Please see Appendix E for the data sheets.

4.1.1 Cable Construction and Termination

Cable 1 This is a 1-meter unshielded cable connecting the EUT to the headphones. The cable has a 1/8 inch stereo connector at the EUT end is and is hard wired into the headphones.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
ROKU REMOTE (EUT)	ROKU, INC.	RC07	N/A	TC2-RC07
HEADPHONES	N/A	N/A	N/A	N/A

5.2 EMI Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CAL. CYCLE
GENERAL TEST EQUIPMENT USED IN LAB B					
Computer	Compaq	CQ5210F	CNX9360CF9	N/A	N/A
Monitor	Hewlett Packard	HPs2031a	3CQ046N3MD	N/A	N/A
EMI Receiver	Rohde & Schwarz	ESIB40	100194	November 19, 2012	2 Year
GENERAL TEST EQUIPMENT USED IN LAB A					
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	2637A03618	May 30, 2013	1 Year
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	2648A13404	May 30, 2013	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650A	2811A01363	May 30, 2013	1 Year
Monitor	Hewlett Packard	D5258A	TW74500641	N/A	N/A
Computer	Hewlett Packard	4530	US91912319	N/A	N/A
RF RADIATED EMISSIONS TEST EQUIPMENT					
CombiLog Antenna	Com-Power	AC-220	61060	May 29, 2013	1 Year
Preamplifier	Com-Power	PA-103	1582	December 28, 2012	1 Year
Preamplifier	Com-Power	PA-118	181656	December 27, 2012	1 Year
Preamplifier	Com-Power	PA-840	711013	May 17, 2012	2 Year
Loop Antenna	Com-Power	AL-130	17089	January 29, 2013	2 Year
Horn Antenna	Com-Power	AH-118	071175	February 29, 2012	2 Year
Horn Antenna	Antenna Research	MWH-2640/B	1011	N/A	N/A
Horn Antenna	Com-Power	AH-826	0071957	N/A	N/A
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A
PEAK POWER OUTPUT TEST EQUIPMENT					
Power Measuring Analyzer	Boonton Electronics	4500A-01	1282	June 26, 2013	1 Year
Peak Power Sensor	Boonton Electronics	57318	3724	June 26, 2013	1 Year

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 and 7.1 of this report for EMI test location.

6.2 EUT Mounting, Bonding and Grounding

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

The EUT was not grounded.

7. CHARACTERISTICS OF THE TRANSMITTER

7.1 Transmitter Power

Transmit power is herein defined as the power delivered to a 50 ohm load at the RF output of the EUT.

Power	Frequency
16.11 dBm	2412 MHz
15.84 dBm	2437 MHz
15.53 dBm	2462 MHz
9.28 dBm	5745 MHz
5.73 dBm	5785 MHz
8.17 dBm	5825 MHz

7.2 Channel Number and Frequencies

There are a total of 11 channels for 802.11 g.

2412 MHz (Channel 1)	2417 (Channel 2)
2422 MHz (Channel 3)	2427 (Channel 4)
2432 MHz (Channel 5)	2437 (Channel 6)
2442 MHz (Channel 7)	2447 (Channel 8)
2452 MHz (Channel 9)	2457 (Channel 10)
2462 MHz (Channel 11)	

There are a total of 5 channel for 802.11 a

5745 MHz (Channel 149)	5765 MHz (Channel 153)
5785 MHz (Channel 157)	5805 MHz (Channel 161)
5825 MHz (Channel 165)	

7.3 Antenna Gain

The maximum gain of the antenna is 0.26 dBi for the 802.11 g mode.
The maximum gain of the antenna is 2.28 dBi for the 802.11 a mode.

8. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

8.1 RF Emissions

8.1.1 Conducted Emissions Test

The spectrum analyzer was used as a measuring meter. The data was collected with the spectrum analyzer in the peak detect mode with the "Max Hold" feature activated. The quasi-peak was used only where indicated in the data sheets. A transient limiter was used for the protection of the spectrum analyzer input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the spectrum analyzer. The output of the second LISN was terminated by a 50 ohm termination. The effective measurement bandwidth used for this test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI C63.4: 2009. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The conducted emissions from the EUT were maximized for operating mode as well as cable placement. The final data was collected under program control by the Compatible Electronics conducted emissions software in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave. The final qualification data is located in Appendix E.

Test Results:

This test was not performed because the EUT is a battery powered device and cannot be plugged into the AC public mains.

8.1.2 Radiated Emissions (Spurious and Harmonics) Test

The spectrum analyzer and EMI Receiver were used as a measuring meter along with the quasi-peak adapter. Amplifiers were used to increase the sensitivity of the instrument. The Com Power Preamplifier Model: PA-103 was used for frequencies from 30 MHz to 1 GHz, the Com Power Microwave Preamplifier Model: PA-118 was used for frequencies above 1 GHz, and the Com Power Microwave Preamplifier Model: PA-840 was used for frequencies above 18 GHz. The spectrum analyzer was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the spectrum analyzer records the highest measured reading over all the sweeps.

The quasi-peak adapter was used only for those readings which are marked accordingly on the data sheets.

The frequencies above 1 GHz were averaged by using the RMS average detector function on the EMI Receiver.

The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
10 kHz to 150 kHz	200 Hz	Active Loop Antenna
150 kHz to 30 MHz	9 kHz	Active Loop Antenna
30 MHz to 1 GHz	120 kHz	CombiLog Antenna
1 GHz to 40 GHz	1 MHz	Horn Antenna

The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4: 2009. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT by the Radiated Emission Manual Test software. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna in order to ensure accurate results.

Radiated Emissions (Spurious and Harmonics) Test (con't)

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT. The EUT was tested at a 3 meter test distance from 10 kHz to 40 GHz to obtain the final test data.

Test Results:

The EUT complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, Sections 15.209 and 15.247 (d) for radiated emissions. Please see Appendix E for the data sheets.

8.1.3 RF Emissions Test Results

Table 1.0 RADIATED EMISSION RESULTS
Roku Remote, Model: RC07

Frequency MHz	Corrected Reading* dBuV	Specification Limit dBuV	Delta (Cor. Reading – Spec. Limit) dB
2390 (H) (Antenna 2)	53.47 (A)	54.00	-0.53
2483.5 (H) (Antenna 2)	52.74 (A)	54.00	-1.26
2390 (V) (Antenna 1)	52.20 (A)	54.00	-1.80
2390 (H) (Antenna 1)	52.12 (A)	54.00	-1.88
2483.5 (H) (Antenna 1)	52.09 (A)	54.00	-1.91
208.888 (H) (Antenna 1)	41.13 (QP)	43.50	-2.37

Notes:

* The complete emissions data is given in Appendix E of this report.
QP Quasi-Peak Reading
A Average Reading

8.2 DTS Bandwidth

The DTS Bandwidth was measured using the EMI Receiver. The bandwidth was measured using a direct connection from the RF output of the EUT. The following steps were performed for measuring the DTS Bandwidth.

1. Set resolution bandwidth (RBW) = 100 kHz
2. Set the video bandwidth (VBW) to equal or greater than 3 times the RBW
3. Detector = Peak
4. Trace Mode = Max Hold
5. Sweep = Auto Couple
6. Allow the trace to stabilize
7. Measure the maximum width of the emissions that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (a)(2). The 6 dB bandwidth is greater than 500 kHz. Please see the data sheets located in Appendix E.

8.3 Peak Output Power

The Peak Output Power was taken using the power meter and power sensor. The EUT was directly connected to the power sensor, which was directly connected to the power meter. The Peak Output Power was then taken. The worst case data rate was used.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C, section 15.247 (b)(3). Please see the data sheets located in Appendix E.

8.4 RF Antenna Conducted Test

The RF antenna conducted test was performed using the EMI Receiver. The RF antenna conducted test measured using a direct connection from the RF out on the EUT into the input of the EMI Receiver. The resolution bandwidth was 100 kHz, and the video bandwidth was 300 kHz. The spans were wide enough to include all the harmonics and emissions that were produced by the intentional radiator.

Test Results:

The EUT complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247 (d). Please see the data sheets located in Appendix E.

8.5 RF Band Edges

For the 2400 MHz to 2483.5 MHz band: The RF band edges were taken at the edges of the ISM spectrum (2400 MHz when the EUT was on the low channel and 2483.5 MHz when the EUT was on the high channel) using the EMI Receiver. A preamplifier was used to boost the signal level, with the plots being taken at a 3 meter test distance. The radiated emissions test procedure as describe in section 8.1.2 of this test report was used to maximize the emission.

For the 5725 MHz to 5850 MHz band: The RF band edges were taken at the edges of the ISM spectrum (5725 MHz when the EUT was on the low channel and 5850 MHz when the EUT was on the high channel) using the EMI Receiver. The RBW was set to 100 kHz and the VBW was set to 300 kHz. Plots of the fundamental were taken to ensure the amplitude at the band edges were at least 20 dB down from the peak of the fundamental emission.

Test Results:

For the 2400 MHz to 2483.5 MHz band: The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (d). The RF power at the restricted bands closest to the band edges at 2390 MHz and 2483.5 MHz meet the limits of section 15.209. Please see the data sheets located in Appendix E.

For the 5725 MHz to 5850 MHz band: The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (d). The RF power at the band edges at 5725 MHz and 5850 MHz meet the requirements of FCC Title 47, Part 15, Subpart C section 15.247 (d). Please see the data sheets located in Appendix E.

8.6 Spectral Density Test

The spectrum density output was measured using the EMI Receiver. The spectral density output was measured using a direct connection from the RF out on the EUT into the input of the EMI Receiver. The following steps were performed for measuring the spectral density.

1. Set the RBW to 3 kHz <= RBW <= 100 kHz
2. Set the VBW >= 3 X RBW.
3. Set the span to 1.5 times the DTS bandwidth
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Allow trace to fully stabilize
8. Use the peak marker function to determine the maximum amplitude level within the RBW.
9. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (e).

9. CONCLUSIONS

The Roku Remote, Model: RC07 meets all of the specification limits defined in FCC Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.247.

Note: For the unintentional radiator portion of the test, the EUT was within the **Class B** specification limits defined by CFR Title 47, Part 15, Subpart B.

APPENDIX A

LABORATORY ACCREDITATIONS AND RECOGNITIONS

LABORATORY ACCREDITATIONS AND RECOGNITIONS

NVLAP LAB CODES 200063-0, 200528-0, 200527-0

For US, Canada, Australia/New Zealand, Japan, Taiwan, Korea, and the European Union, Compatible Electronics is currently accredited by NVLAP to ISO/IEC 17025. Please follow the link to the NIST/NVLAP site for each of our facilities' NVLAP certificate and scope of accreditation

NVLAP listing links

Agoura Division / **Brea Division** / **Silverado/Lake Forest Division**

.Quote from ISO-ILAC-IAF Communiqué on 17025:

"A laboratory's fulfilment of the requirements of ISO/IEC 17025:2005 means the laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results and calibrations. The management system requirements in ISO/IEC 17025:2005 (Section 4) are written in language relevant to laboratory operations and meet the principles of ISO 9001:2008 Quality Management Systems — Requirements."

ANSI listing CETCB

Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for EMC under the US/EU Mutual Recognition Agreement (MRA).
US/EU MRA list NIST MRA site

Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for Taiwan/BSMI under the US/APEC (Asia-Pacific Economic Cooperation) Mutual Recognition Agreement (MRA).
APEC MRA list NIST MRA site

We are also listed for IT products by the following country/agency:

VCCI Support member: Please visit http://www.vcci.jp/vcci_e/

FCC Listing, from FCC OET site
FCC test lab search https://fjallfoss.fcc.gov/oetcf/eas/reports/TestFirmSearch.cfm

Compatible Electronics IC listing can be found at:
http://www.ic.gc.ca/eic/site/ic1.nsf/eng/home

APPENDIX B

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC Subpart B and FCC 15.247 specifications.

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

No modifications were made to the EUT during the testing.

APPENDIX C

ADDITIONAL MODELS COVERED UNDER THIS REPORT

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

Roku Remote
Model: RC07
S/N: N/A

There were no additional models covered under this report.

APPENDIX D

DIAGRAMS AND CHARTS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

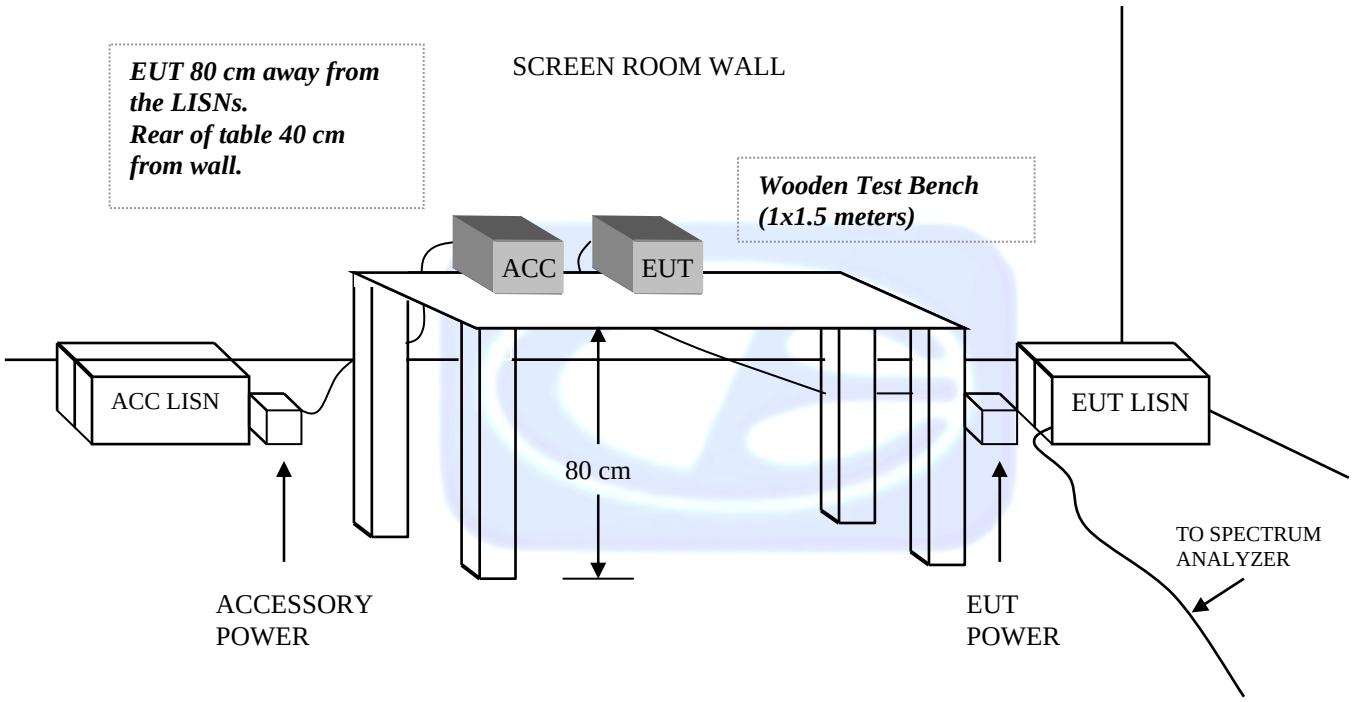
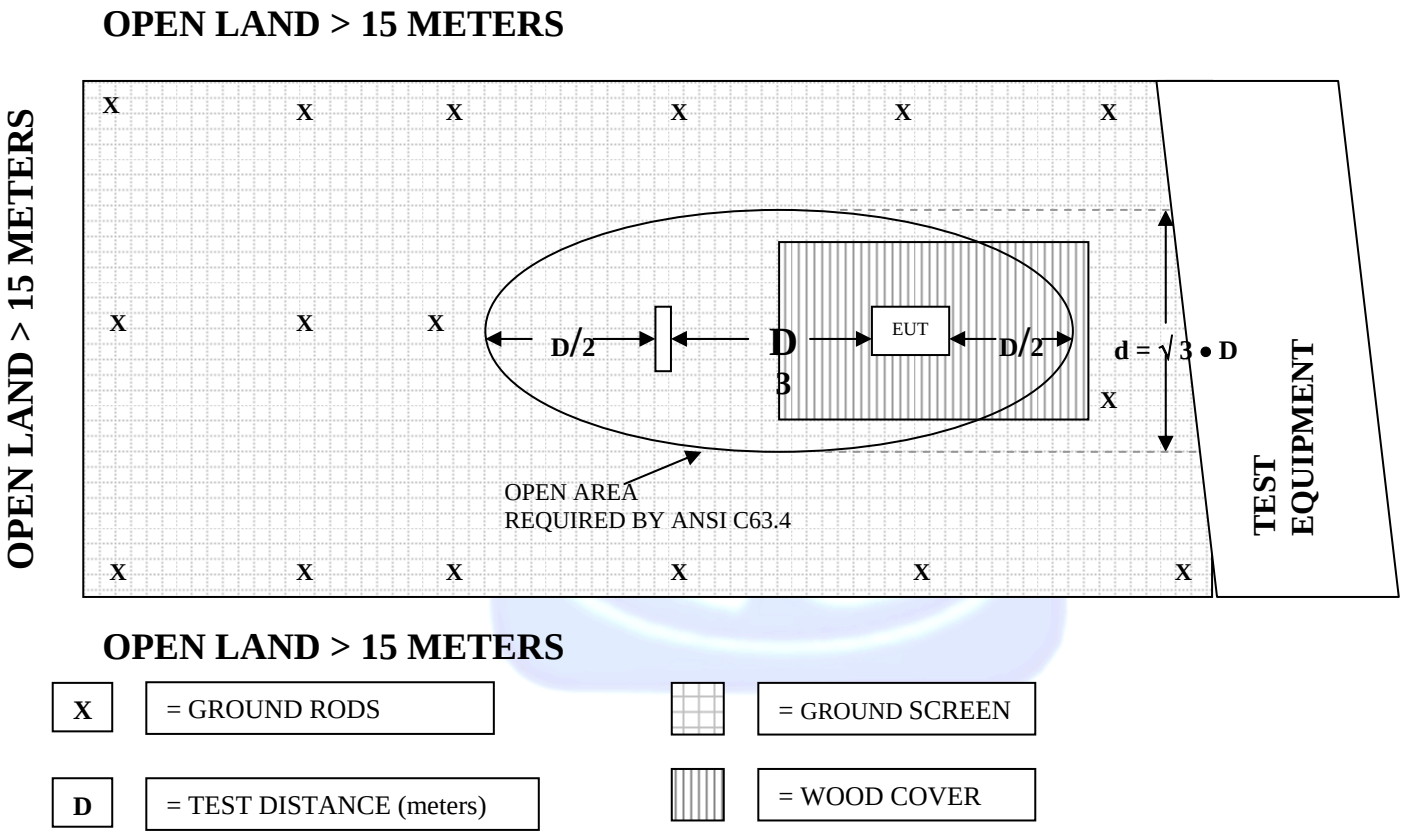


FIGURE 2: PLOT MAP AND LAYOUT OF RADIATED SITE



COM-POWER AL-130

LOOP ANTENNA

S/N: 17089

CALIBRATION DATE: JANUARY 29, 2013

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-42.5	9
0.01	-42.3	9.2
0.02	-42.1	9.4
0.03	-41.4	10.1
0.04	-41.8	9.7
0.05	-42.4	9.1
0.06	-42.3	9.2
0.07	-42.5	9
0.08	-42.4	9.1
0.09	-42.5	9
0.1	-42.5	9
0.2	-42.7	8.8
0.3	-42.6	8.9
0.4	-42.5	9
0.5	-42.7	8.8
0.6	-42.7	8.8
0.7	-42.5	9
0.8	-42.3	9.2
0.9	-42.2	9.3
1	-42.2	9.3
2	-41.8	9.7
3	-41.7	9.8
4	-41.7	9.8
5	-41.5	10
6	-41.6	9.9
7	-41.4	10.1
8	-41	10.5
9	-40.8	10.7
10	-41.3	10.2
15	-41.4	10.1
20	-41.2	10.3
25	-42.6	8.9
30	-41.7	9.8

COM-POWER AC-220

COMBILOG ANTENNA

S/N: 61060

CALIBRATION DATE: MAY 29, 2013

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	19.40	200	9.10
35	19.10	250	11.40
40	19.70	300	11.90
45	18.00	350	14.20
50	16.80	400	15.20
60	12.50	450	16.50
70	7.30	500	17.10
80	4.40	550	16.20
90	8.00	600	17.70
100	8.80	650	19.10
120	10.50	700	20.00
125	10.60	750	21.50
140	8.60	800	21.50
150	11.20	850	21.70
160	8.90	900	22.70
175	9.60	950	22.10
180	8.50	1000	22.90

COM POWER AH-118

HORN ANTENNA

S/N: 071175

CALIBRATION DATE: FEBRUARY 29, 2012

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	23.6	10.0	37.7
1.5	22.0	10.5	38.4
2.0	28.7	11.0	38.0
2.5	29.3	11.5	38.2
3.0	30.6	12.0	39.0
3.5	30.4	12.5	42.4
4.0	31.1	13.0	40.8
4.5	33.4	13.5	40.0
5.0	35.3	14.0	39.7
5.5	35.1	14.5	43.5
6.0	36.9	15.0	42.7
6.5	37.4	15.5	39.7
7.0	37.6	16.0	39.2
7.5	36.2	16.5	39.7
8.0	38.4	17.0	42.2
8.5	39.3	17.5	47.6
9.0	37.4	18.0	51.2
9.5	38.0		

COM-POWER AH826

HORN ANTENNA

S/N: 71957

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	33.5	22.5	35.5
18.5	33.5	23.0	35.9
19.0	34.0	23.5	35.7
19.5	34.0	24.0	35.6
20.0	34.3	24.5	36.0
20.5	34.9	25.0	36.2
21.0	34.7	25.5	36.1
21.5	35.0	26.0	36.2
22.0	35.0	26.5	35.7

ANTENNA RESEARCH MWH-2640/B

HORN ANTENNA

S/N: 1011

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
26.5	39.3	31.0	42.4
27.0	40.4	31.5	41.8
27.5	39.8	32.0	40.1
28.0	40.0	32.5	39.6
28.5	41.0	33.0	39.8
29.0	41.0	33.5	39.9
29.5	41.4	34.0	39.6
30.0	41.5	34.5	40.4
30.5	42.0	40.0	39.6

COM-POWER PA-103

PREAMPLIFIER

S/N: 1582

CALIBRATION DATE: DECEMBER 28, 2012

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	32.80	300	32.26
40	33.10	350	32.23
50	33.10	400	32.17
60	33.10	450	32.16
70	33.00	500	32.11
80	33.00	550	32.07
90	33.10	600	32.02
100	33.00	650	31.97
125	33.00	700	31.87
150	33.00	750	31.81
175	32.90	800	31.73
200	32.80	850	31.57
225	32.34	900	31.43
250	32.32	950	31.29
275	32.28	1000	31.14

COM-POWER PA-118

PREAMPLIFIER

S/N: 181656

CALIBRATION DATE: DECEMBER 27, 2012

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
0.50	25.29	6.00	25.75
0.60	25.26	6.50	25.28
0.70	25.23	7.00	24.83
0.80	25.13	7.50	24.49
0.90	24.91	8.00	24.38
1.00	24.68	8.50	25.06
1.25	25.85	9.00	25.55
1.50	26.23	9.50	25.32
1.75	26.42	10.0	25.25
2.00	26.48	10.5	25.31
2.25	26.55	11.0	24.99
2.50	26.59	11.5	24.84
2.75	26.64	12.0	25.08
3.00	26.67	12.5	24.64
3.25	26.67	13.0	24.44
3.50	26.66	13.5	24.85
3.75	26.58	14.0	25.02
4.00	26.82	14.5	25.41
4.25	26.60	15.0	26.12
4.50	26.46	15.5	26.74
4.75	26.36	16.0	25.67
5.00	26.22	16.5	24.48
5.25	26.11	17.0	24.33
5.50	25.98	17.5	25.19
5.75	25.90	18.0	26.75

COM-POWER PA-840

MICROWAVE PREAMPLIFIER

S/N: 711013

CALIBRATION DATE: MAY 17, 2012

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	25.81	31.0	25.77
19.0	24.57	31.5	25.36
20.0	23.46	32.0	25.15
21.0	22.51	32.5	25.13
22.0	23.85	33.0	25.52
23.0	23.31	33.5	25.24
24.0	24.44	34.0	25.08
25.0	25.42	34.5	25.27
26.0	25.71	35.0	23.99
26.5	25.66	35.5	24.67
27.0	25.84	36.5	24.80
27.5	25.29	37.0	26.27
28.0	25.46	37.5	24.86
28.5	25.58	38.0	24.64
29.0	26.16	38.5	23.46
29.5	26.14	39.0	21.29
30.0	26.01	39.5	20.83
30.5	25.67	40.0	19.96

APPENDIX E

DATA SHEETS

RADIATED EMISSIONS

DATA SHEETS

FCC 15.247
Roku, Inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 1 - 802.11 g Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - X-Axis - 2412 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	49.92	V	74	-24.08	Peak	1.5	45	
4824	36.72	V	54	-17.28	Avg	1.5	45	
7236	45.53	V	74	-28.47	Peak	1.25	55	
7236	34.86	V	54	-19.14	Avg	1.25	55	
9648								No Emission
9648								Detected
12060								No Emission
12060								Detected
14472								No Emission
14472								Detected
16884								No Emission
16884								Detected
19296								No Emission
19296								Detected
21708								No Emission
21708								Detected
24120								No Emission
24120								Detected

FCC 15.247
Roku, Inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 1 - 802.11 g Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - X-Axis - 2412 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	48.64	H	74	-25.36	Peak	1.25	135	
4824	41.28	H	54	-12.72	Avg	1.25	135	
7236	46.26	H	74	-27.74	Peak	1.35	145	
7236	35.18	H	54	-18.82	Avg	1.35	145	
9648								No Emission
9648								Detected
12060								No Emission
12060								Detected
14472								No Emission
14472								Detected
16884								No Emission
16884								Detected
19296								No Emission
19296								Detected
21708								No Emission
21708								Detected
24120								No Emission
24120								Detected

FCC 15.247
Roku, Inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 1 - 802.11 g Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - Y-Axis - 2412 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	54.11	V	74	-19.89	Peak	1.25	225	
4824	40.88	V	54	-13.12	Avg	1.25	225	
7236	46.46	V	74	-27.54	Peak	1.35	135	
7236	34.88	V	54	-19.12	Avg	1.35	135	
9648								No Emission
9648								Detected
12060								No Emission
12060								Detected
14472								No Emission
14472								Detected
16884								No Emission
16884								Detected
19296								No Emission
19296								Detected
21708								No Emission
21708								Detected
24120								No Emission
24120								Detected

FCC 15.247
Roku, Inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 1 - 802.11 g Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - Y-Axis - 2412 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	49.87	H	74	-24.13	Peak	1.25	0	
4824	36.31	H	54	-17.69	Avg	1.25	0	
7236	46.63	H	74	-27.37	Peak	1	125	
7236	34.97	H	54	-19.03	Avg	1	125	
9648								No Emission
9648								Detected
12060								No Emission
12060								Detected
14472								No Emission
14472								Detected
16884								No Emission
16884								Detected
19296								No Emission
19296								Detected
21708								No Emission
21708								Detected
24120								No Emission
24120								Detected

FCC 15.247
Roku, Inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 1 - 802.11 g Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - Z-Axis - 2412 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	49.96	V	74	-24.04	Peak	1.25	225	
4824	38.43	V	54	-15.57	Avg	1.25	225	
7236	46.62	V	74	-27.38	Peak	1.35	315	
7236	34.87	V	54	-19.13	Avg	1.35	315	
9648								No Emission
9648								Detected
12060								No Emission
12060								Detected
14472								No Emission
14472								Detected
16884								No Emission
16884								Detected
19296								No Emission
19296								Detected
21708								No Emission
21708								Detected
24120								No Emission
24120								Detected

FCC 15.247
Roku, Inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 1 - 802.11 g Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - Z-Axis - 2412 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	49.89	H	74	-24.11	Peak	1.25	222	
4824	35.78	H	54	-18.22	Avg	1.25	225	
7236	46.26	H	74	-27.74	Peak	1.25	180	
7236	35.16	H	54	-18.84	Avg	1.25	180	
9648								No Emission
9648								Detected
12060								No Emission
12060								Detected
14472								No Emission
14472								Detected
16884								No Emission
16884								Detected
19296								No Emission
19296								Detected
21708								No Emission
21708								Detected
24120								No Emission
24120								Detected

FCC 15.247
Roku, Inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 6 - 802.11 g Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - X-Axis - 2437 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	52.09	V	74	-21.91	Peak	1.35	145	
4874	40.75	V	54	-13.25	Avg	1.35	145	
7311	46.12	V	74	-27.88	Peak	1.25	155	
7311	35.48	V	54	-18.52	Avg	1.25	155	
9748								No Emission
9748								Detected
12185								No Emission
12185								Detected
14622								No Emission
14622								Detected
17059								No Emission
17059								Detected
19496								No Emission
19496								Detected
21933								No Emission
21933								Detected
24370								No Emission
24370								Detected

FCC 15.247
Roku, Inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 6 - 802.11 g Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - X-Axis - 2437 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	47.33	H	74	-26.67	Peak	1.35	145	
4874	39.23	H	54	-14.77	Avg	1.35	145	
7311	46.38	H	74	-27.62	Peak	1.25	155	
7311	34.94	H	54	-19.06	Avg	1.25	155	
9748								No Emission
9748								Detected
12185								No Emission
12185								Detected
14622								No Emission
14622								Detected
17059								No Emission
17059								Detected
19496								No Emission
19496								Detected
21933								No Emission
21933								Detected
24370								No Emission
24370								Detected

FCC 15.247
Roku, Inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 6 - 802.11 g Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - Y-Axis - 2437 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	59.67	V	74	-14.33	Peak	1.35	155	
4874	47.13	V	54	-6.87	Avg	1.35	155	
7311	47.78	V	74	-26.22	Peak	1.25	165	
7311	37.37	V	54	-16.63	Avg	1.25	165	
9748								No Emission
9748								Detected
12185								No Emission
12185								Detected
14622								No Emission
14622								Detected
17059								No Emission
17059								Detected
19496								No Emission
19496								Detected
21933								No Emission
21933								Detected
24370								No Emission
24370								Detected

FCC 15.247
Roku, Inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 6 - 802.11 g Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - Y-Axis - 2437 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	51.95	H	74	-22.05	Peak	1.35	235	
4874	38.75	H	54	-15.25	Avg	1.35	235	
7311	50.88	H	74	-23.12	Peak	1.25	225	
7311	36.55	H	54	-17.45	Avg	1.25	225	
9748								No Emission
9748								Detected
12185								No Emission
12185								Detected
14622								No Emission
14622								Detected
17059								No Emission
17059								Detected
19496								No Emission
19496								Detected
21933								No Emission
21933								Detected
24370								No Emission
24370								Detected

FCC 15.247
Roku, Inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 6 - 802.11 g Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - Z-Axis - 2437 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	55.29	V	74	-18.71	Peak	1.25	155	
4874	40.97	V	54	-13.03	Avg	1.25	155	
7311	54.18	V	74	-19.82	Peak	1.35	165	
7311	42.55	V	54	-11.45	Avg	1.35	165	
9748								No Emission
9748								Detected
12185								No Emission
12185								Detected
14622								No Emission
14622								Detected
17059								No Emission
17059								Detected
19496								No Emission
19496								Detected
21933								No Emission
21933								Detected
24370								No Emission
24370								Detected

FCC 15.247
Roku, Inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 6 - 802.11 g Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - Z-Axis - 2437 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	48.47	H	74	-25.53	Peak	1.25	155	
4874	42.05	H	54	-11.95	Avg	1.25	155	
7311	46.22	H	74	-27.78	Peak	1.35	165	
7311	34.71	H	54	-19.29	Avg	1.35	165	
9748								No Emission
9748								Detected
12185								No Emission
12185								Detected
14622								No Emission
14622								Detected
17059								No Emission
17059								Detected
19496								No Emission
19496								Detected
21933								No Emission
21933								Detected
24370								No Emission
24370								Detected

FCC 15.247
Roku, Inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 11 - 802.11 g Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - X-Axis - 2462 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	57.17	V	74	-16.83	Peak	1.25	180	
4924	44.43	V	54	-9.57	Avg	1.25	180	
7386	47.81	V	74	-26.19	Peak	1.35	175	
7386	35.15	V	54	-18.85	Avg	1.35	175	
9848								No Emission
9848								Detected
12310								No Emission
12310								Detected
14772								No Emission
14772								Detected
17234								No Emission
17234								Detected
19696								No Emission
19696								Detected
22158								No Emission
22158								Detected
24620								No Emission
24620								Detected

FCC 15.247
Roku, Inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 11 - 802.11 g Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - X-Axis - 2462 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	52.61	H	74	-21.39	Peak	1.55	135	
4924	38.99	H	54	-15.01	Avg	1.55	135	
7386	48.82	H	74	-25.18	Peak	1.65	145	
7386	36.04	H	54	-17.96	Avg	1.65	145	
9848								No Emission
9848								Detected
12310								No Emission
12310								Detected
14772								No Emission
14772								Detected
17234								No Emission
17234								Detected
19696								No Emission
19696								Detected
22158								No Emission
22158								Detected
24620								No Emission
24620								Detected

FCC 15.247
Roku, Inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 11 - 802.11 g Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - Y-Axis - 2462 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	58.51	V	74	-15.49	Peak	1.35	225	
4924	43.14	V	54	-10.86	Avg	1.35	225	
7386	46.56	V	74	-27.44	Peak	1.45	235	
7386	35.16	V	54	-18.84	Avg	1.45	235	
9848								No Emission
9848								Detected
12310								No Emission
12310								Detected
14772								No Emission
14772								Detected
17234								No Emission
17234								Detected
19696								No Emission
19696								Detected
22158								No Emission
22158								Detected
24620								No Emission
24620								Detected

FCC 15.247
Roku, Inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 11 - 802.11 g Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - Y-Axis - 2462 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	57.07	H	74	-16.93	Peak	1.35	235	
4924	44.22	H	54	-9.78	Avg	1.35	235	
7386	52.17	H	74	-21.83	Peak	1.45	265	
7386	38.45	H	54	-15.55	Avg	1.45	265	
9848								No Emission
9848								Detected
12310								No Emission
12310								Detected
14772								No Emission
14772								Detected
17234								No Emission
17234								Detected
19696								No Emission
19696								Detected
22158								No Emission
22158								Detected
24620								No Emission
24620								Detected

FCC 15.247
Roku, Inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 11 - 802.11 g Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - Z-Axis - 2462 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	54.49	V	74	-19.51	Peak	1.35	165	
4924	42.33	V	54	-11.67	Avg	1.35	165	
7386	47.28	V	74	-26.72	Peak	1.25	175	
7386	35.37	V	54	-18.63	Avg	1.25	175	
9848								No Emission
9848								Detected
12310								No Emission
12310								Detected
14772								No Emission
14772								Detected
17234								No Emission
17234								Detected
19696								No Emission
19696								Detected
22158								No Emission
22158								Detected
24620								No Emission
24620								Detected

FCC 15.247
Roku, Inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 11 - 802.11 g Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - Z-Axis - 2462 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	58.32	H	74	-15.68	Peak	1.35	270	
4924	44.93	H	54	-9.07	Avg	1.35	270	
7386	47.01	H	74	-26.99	Peak	1.25	225	
7386	34.87	H	54	-19.13	Avg	1.25	225	
9848								No Emission
9848								Detected
12310								No Emission
12310								Detected
14772								No Emission
14772								Detected
17234								No Emission
17234								Detected
19696								No Emission
19696								Detected
22158								No Emission
22158								Detected
24620								No Emission
24620								Detected

FCC Class B
Roku, Inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujimoto

802.11 g Mode - Antenna 1
Digital Portion and Non-Harmonic Emissions of the Transmitter - 1 GHz to 25 GHz

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Found for the
								Digital Portion of the EUT
								in 802.11 g Mode
								from 1000 MHz to 25000 MHz
								for both Vertical and Horizontal
								Polarizations
								No Emissions Found for the
								Non-Harmonic Emissions of the Tx
								in 802.11 g Mode
								from 1000 MHz to 25000 MHz
								for both Vertical and Horizontal
								Polarizations
								Tested in the X-Axis, Y-Axis,
								and Z-Axis

FCC 15.247
Roku, inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 1 - 802.11 g Mode - 6 Mbps Worst Case
Transmit Mode - X-Axis - Antenna 2 - 2412 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	56.37	V	74	-17.63	Peak	1.25	135	
4824	43.91	V	54	-10.09	Avg	1.25	135	
7236	45.94	V	74	-28.06	Peak	1.35	125	
7236	35.85	V	54	-18.15	Avg	1.35	125	
9648								No Emission
9648								Detected
12060								No Emission
12060								Detected
14472								No Emission
14472								Detected
16884								No Emission
16884								Detected
19296								No Emission
19296								Detected
21708								No Emission
21708								Detected
24120								No Emission
24120								Detected

FCC 15.247
Roku, inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 1 - 802.11 g Mode - 6 Mbps Worst Case
Transmit Mode - X-Axis - Antenna 2 - 2412 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	58.93	H	74	-15.07	Peak	1.25	155	
4824	46.66	H	54	-7.34	Avg	1.25	155	
7236	47.16	H	74	-26.84	Peak	1.25	165	
7236	35.11	H	54	-18.89	Avg	1.25	165	
9648								No Emission
9648								Detected
12060								No Emission
12060								Detected
14472								No Emission
14472								Detected
16884								No Emission
16884								Detected
19296								No Emission
19296								Detected
21708								No Emission
21708								Detected
24120								No Emission
24120								Detected

FCC 15.247
Roku, inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 1 - 802.11 g Mode - 6 Mbps Worst Case
Transmit Mode - Y-Axis - Antenna 2 - 2412 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	58.63	V	74	-15.37	Peak	1.25	145	
4824	44.91	V	54	-9.09	Avg	1.25	145	
7236	54.64	V	74	-19.36	Peak	1.25	155	
7236	42.47	V	54	-11.53	Avg	1.25	155	
9648								No Emission
9648								Detected
12060								No Emission
12060								Detected
14472								No Emission
14472								Detected
16884								No Emission
16884								Detected
19296								No Emission
19296								Detected
21708								No Emission
21708								Detected
24120								No Emission
24120								Detected

FCC 15.247
Roku, inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 1 - 802.11 g Mode - 6 Mbps Worst Case
Transmit Mode - Y-Axis - Antenna 2 - 2412 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	55.79	H	74	-18.21	Peak	1.25	165	
4824	41.83	H	54	-12.17	Avg	1.25	165	
7236	46.59	H	74	-27.41	Peak	1.35	175	
7236	35.86	H	54	-18.14	Avg	1.35	175	
9648								No Emission
9648								Detected
12060								No Emission
12060								Detected
14472								No Emission
14472								Detected
16884								No Emission
16884								Detected
19296								No Emission
19296								Detected
21708								No Emission
21708								Detected
24120								No Emission
24120								Detected

FCC 15.247
Roku, inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 1 - 802.11 g Mode - 6 Mbps Worst Case
Transmit Mode - Z-Axis - Antenna 2 - 2412 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	57.71	V	74	-16.29	Peak	1.25	155	
4824	43.38	V	54	-10.62	Avg	1.25	155	
7236	55.31	V	74	-18.69	Peak	1.25	165	
7236	42.49	V	54	-11.51	Avg	1.25	165	
9648								No Emission
9648								Detected
12060								No Emission
12060								Detected
14472								No Emission
14472								Detected
16884								No Emission
16884								Detected
19296								No Emission
19296								Detected
21708								No Emission
21708								Detected
24120								No Emission
24120								Detected

FCC 15.247
Roku, inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 1 - 802.11 g Mode - 6 Mbps Worst Case
Transmit Mode - Z-Axis - Antenna 2 - 2412 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	56.51	H	74	-17.49	Peak	1.35	235	
4824	42.49	H	54	-11.51	Avg	1.35	235	
7236	47.26	H	74	-26.74	Peak	1.25	245	
7236	35.75	H	54	-18.25	Avg	1.25	245	
9648								No Emission
9648								Detected
12060								No Emission
12060								Detected
14472								No Emission
14472								Detected
16884								No Emission
16884								Detected
19296								No Emission
19296								Detected
21708								No Emission
21708								Detected
24120								No Emission
24120								Detected

FCC 15.247
Roku, inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 6 - 802.11 g Mode - 6 Mbps Worst Case
Transmit Mode - X-Axis - Antenna 2 - 2437 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	55.54	V	74	-18.46	Peak	1.25	180	
4874	41.41	V	54	-12.59	Avg	1.25	180	
7311	55.36	V	74	-18.64	Peak	1.35	180	
7311	42.84	V	54	-11.16	Avg	1.35	180	
9748								No Emission
9748								Detected
12185								No Emission
12185								Detected
14622								No Emission
14622								Detected
17059								No Emission
17059								Detected
19496								No Emission
19496								Detected
21933								No Emission
21933								Detected
24370								No Emission
24370								Detected

FCC 15.247
Roku, inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 6 - 802.11 g Mode - 6 Mbps Worst Case
Transmit Mode - X-Axis - Antenna 2 - 2437 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	55.63	H	74	-18.37	Peak	1.25	315	
4874	44.42	H	54	-9.58	Avg	1.25	315	
7311	54.55	H	74	-19.45	Peak	1.35	90	
7311	42.92	H	54	-11.08	Avg	1.35	90	
9748								No Emission
9748								Detected
12185								No Emission
12185								Detected
14622								No Emission
14622								Detected
17059								No Emission
17059								Detected
19496								No Emission
19496								Detected
21933								No Emission
21933								Detected
24370								No Emission
24370								Detected

FCC 15.247
Roku, inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 6 - 802.11 g Mode - 6 Mbps Worst Case
Transmit Mode - Y-Axis - Antenna 2 - 2437 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	57.92	V	74	-16.08	Peak	1.25	225	
4874	45.51	V	54	-8.49	Avg	1.25	225	
7311	46.15	V	74	-27.85	Peak	1.35	235	
7311	35.76	V	54	-18.24	Avg	1.35	235	
9748								No Emission
9748								Detected
12185								No Emission
12185								Detected
14622								No Emission
14622								Detected
17059								No Emission
17059								Detected
19496								No Emission
19496								Detected
21933								No Emission
21933								Detected
24370								No Emission
24370								Detected

FCC 15.247
Roku, inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 6 - 802.11 g Mode - 6 Mbps Worst Case
Transmit Mode - Y-Axis - Antenna 2 - 2437 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	54.91	H	74	-19.09	Peak	1.35	175	
4874	42.41	H	54	-11.59	Avg	1.35	175	
7311	46.83	H	74	-27.17	Peak	1.25	185	
7311	36.98	H	54	-17.02	Avg	1.25	185	
9748								No Emission
9748								Detected
12185								No Emission
12185								Detected
14622								No Emission
14622								Detected
17059								No Emission
17059								Detected
19496								No Emission
19496								Detected
21933								No Emission
21933								Detected
24370								No Emission
24370								Detected

FCC 15.247
Roku, inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 6 - 802.11 g Mode - 6 Mbps Worst Case
Transmit Mode - Z-Axis - Antenna 2 - 2437 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	55.68	V	74	-18.32	Peak	1.25	155	
4874	43.48	V	54	-10.52	Avg	1.25	155	
7311	47.14	V	74	-26.86	Peak	1.25	165	
7311	35.76	V	54	-18.24	Avg	1.25	165	
9748								No Emission
9748								Detected
12185								No Emission
12185								Detected
14622								No Emission
14622								Detected
17059								No Emission
17059								Detected
19496								No Emission
19496								Detected
21933								No Emission
21933								Detected
24370								No Emission
24370								Detected

FCC 15.247
Roku, inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 6 - 802.11 g Mode - 6 Mbps Worst Case
Transmit Mode - Z-Axis - Antenna 2 - 2437 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	58.21	H	74	-15.79	Peak	1.25	155	
4874	45.37	H	54	-8.63	Avg	1.25	155	
7311	55.91	H	74	-18.09	Peak	1.25	165	
7311	42.44	H	54	-11.56	Avg	1.25	165	
9748								No Emission
9748								Detected
12185								No Emission
12185								Detected
14622								No Emission
14622								Detected
17059								No Emission
17059								Detected
19496								No Emission
19496								Detected
21933								No Emission
21933								Detected
24370								No Emission
24370								Detected

FCC 15.247
Roku, inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 11 - 802.11 g Mode - 6 Mbps Worst Case
Transmit Mode - X-Axis - Antenna 2 - 2462 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	51.19	V	74	-22.81	Peak	1.25	165	
4924	37.81	V	54	-16.19	Avg	1.25	165	
7386	53.13	V	74	-20.87	Peak	1.25	180	
7386	41.85	V	54	-12.15	Avg	1.25	180	
9848								No Emission
9848								Detected
12310								No Emission
12310								Detected
14772								No Emission
14772								Detected
17234								No Emission
17234								Detected
19696								No Emission
19696								Detected
22158								No Emission
22158								Detected
24620								No Emission
24620								Detected

FCC 15.247
Roku, inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 11 - 802.11 g Mode - 6 Mbps Worst Case
Transmit Mode - X-Axis - Antenna 2 - 2462 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	56.81	H	74	-17.19	Peak	1.25	135	
4924	44.32	H	54	-9.68	Avg	1.25	135	
7386	53.81	H	74	-20.19	Peak	1.35	145	
7386	43.01	H	54	-10.99	Avg	1.35	145	
9848								No Emission
9848								Detected
12310								No Emission
12310								Detected
14772								No Emission
14772								Detected
17234								No Emission
17234								Detected
19696								No Emission
19696								Detected
22158								No Emission
22158								Detected
24620								No Emission
24620								Detected

FCC 15.247
Roku, inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 11 - 802.11 g Mode - 6 Mbps Worst Case
Transmit Mode - Y-Axis - Antenna 2 - 2462 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	56.29	V	74	-17.71	Peak	1.25	145	
4924	43.17	V	54	-10.83	Avg	1.25	145	
7386	54.04	V	74	-19.96	Peak	1.35	155	
7386	43.22	V	54	-10.78	Avg	1.35	155	
9848								No Emission
9848								Detected
12310								No Emission
12310								Detected
14772								No Emission
14772								Detected
17234								No Emission
17234								Detected
19696								No Emission
19696								Detected
22158								No Emission
22158								Detected
24620								No Emission
24620								Detected

FCC 15.247
Roku, inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 11 - 802.11 g Mode - 6 Mbps Worst Case
Transmit Mode - Y-Axis - Antenna 2 - 2462 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	54.18	H	74	-19.82	Peak	1.25	155	
4924	41.13	H	54	-12.87	Avg	1.25	155	
7386	54.73	H	74	-19.27	Peak	1.25	165	
7386	42.98	H	54	-11.02	Avg	1.25	165	
9848								No Emission
9848								Detected
12310								No Emission
12310								Detected
14772								No Emission
14772								Detected
17234								No Emission
17234								Detected
19696								No Emission
19696								Detected
22158								No Emission
22158								Detected
24620								No Emission
24620								Detected

FCC 15.247
Roku, inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 11 - 802.11 g Mode - 6 Mbps Worst Case
Transmit Mode - Z-Axis - Antenna 2 - 2462 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	54.96	V	74	-19.04	Peak	1.35	165	
4924	40.36	V	54	-13.64	Avg	1.35	165	
7386	54.94	V	74	-19.06	Peak	1.25	175	
7386	42.51	V	54	-11.49	Avg	1.25	175	
9848								No Emission
9848								Detected
12310								No Emission
12310								Detected
14772								No Emission
14772								Detected
17234								No Emission
17234								Detected
19696								No Emission
19696								Detected
22158								No Emission
22158								Detected
24620								No Emission
24620								Detected

FCC 15.247
Roku, inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 11 - 802.11 g Mode - 6 Mbps Worst Case
Transmit Mode - Z-Axis - Antenna 2 - 2462 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	58.02	H	74	-15.98	Peak	1.25	235	
4924	44.21	H	54	-9.79	Avg	1.25	235	
7386	54.33	H	74	-19.67	Peak	1.35	135	
7386	42.43	H	54	-11.57	Avg	1.35	135	
9848								No Emission
9848								Detected
12310								No Emission
12310								Detected
14772								No Emission
14772								Detected
17234								No Emission
17234								Detected
19696								No Emission
19696								Detected
22158								No Emission
22158								Detected
24620								No Emission
24620								Detected

FCC Class B
Roku, Inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujimoto

802.11 g Mode - Antenna 2
Digital Portion and Non-Harmonic Emissions of the Transmitter - 1 GHz to 25 GHz

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Found for the
								Digital Portion of the EUT
								in 802.11 g Mode
								from 1000 MHz to 25000 MHz
								for both Vertical and Horizontal
								Polarizations
								No Emissions Found for the
								Non-Harmonic Emissions of the Tx
								in 802.11 g Mode
								from 1000 MHz to 25000 MHz
								for both Vertical and Horizontal
								Polarizations
								Tested in the X-Axis, Y-Axis,
								and Z-Axis

FCC 15.247
Roku, inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 149 - 802.11 a Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - X-Axis - 5745 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
11490	51.26	V	74	-22.74	Peak	1.35	165	
11490	38.84	V	54	-15.16	Avg	1.35	165	
17235	56.73	V	74	-17.27	Peak	1.45	175	
17235	46.84	V	54	-7.16	Avg	1.45	175	
22980								No Emission
22980								Detected
28725								No Emission
28725								Detected
34470								No Emission
34470								Detected

FCC 15.247
Roku, inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 149 - 802.11 a Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - X-Axis - 5745 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
11490	49.18	H	74	-24.82	Peak	1.25	225	
11490	39.38	H	54	-14.62	Avg	1.25	225	
17235	57.64	H	74	-16.36	Peak	1.35	135	
17235	46.15	H	54	-7.85	Avg	1.35	135	
22980								No Emission
22980								Detected
28725								No Emission
28725								Detected
34470								No Emission
34470								Detected

FCC 15.247
Roku, inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 149 - 802.11 a Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - Y-Axis - 5745 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
11490	57.31	V	74	-16.69	Peak	1.35	235	
11490	45.81	V	54	-8.19	Avg	1.35	235	
17235	58.48	V	74	-15.52	Peak	1.25	245	
17235	46.47	V	54	-7.53	Avg	1.25	245	
22980								No Emission
22980								Detected
28725								No Emission
28725								Detected
34470								No Emission
34470								Detected

FCC 15.247
Roku, inc.
Roku Remote
Model: RC07

Dates: 09/04/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujmoto

Channel 149 - 802.11 a Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - Y-Axis - 5745 MHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
11490	49.65	H	74	-24.35	Peak	1.35	235	
11490	40.59	H	54	-13.41	Avg	1.35	235	
17235	58.16	H	74	-15.84	Peak	1.25	225	
17235	46.25	H	54	-7.75	Avg	1.25	225	
22980								No Emission
22980								Detected
28725								No Emission
28725								Detected
34470								No Emission
34470								Detected