

*FCC PART 15, SUBPART B and E
TEST REPORT**for***ROKU REMOTE****MODEL: RC07**

Prepared for

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DATE: SEPTEMBER 22, 2013

	REPORT BODY	APPENDICES					TOTAL
		<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	
PAGES	23	2	2	2	11	74	114

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TABLE OF CONTENTS

Section / Title	PAGE
GENERAL REPORT SUMMARY	4
SUMMARY OF TEST RESULTS	5
1. PURPOSE	6
2. ADMINISTRATIVE DATA	7
2.1 Location of Testing	7
2.2 Traceability Statement	7
2.3 Cognizant Personnel	7
2.4 Date Test Sample was Received	7
2.5 Disposition of the Test Sample	7
2.6 Abbreviations and Acronyms	7
3. APPLICABLE DOCUMENTS	8
4. DESCRIPTION OF TEST CONFIGURATION	9
4.1 Description of Test Configuration - Emissions	9
4.1.1 Cable Construction and Termination	10
5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT	11
5.1 EUT and Accessory List	11
6. TEST SITE DESCRIPTION	13
6.1 Test Facility Description	13
6.2 EUT Mounting, Bonding and Grounding	13
7. CHARACTERISTICS OF THE TRANSMITTER	14
7.1 Transmitter Power	14
7.2 Channel Number and Frequencies	14
7.3 Antenna Gain	14
8. TEST PROCEDURES	15
8.1 RF Emissions	15
8.1.1 Conducted Emissions Test	15
8.1.2 Radiated Emissions (Spurious and Harmonics) Test	16
8.1.3 RF Emissions Test Results	18
8.2 Emission Bandwidth – 20 and 26 dB for UNII Devices	19
8.3 Peak Output Power for UNII Devices	19
8.4 Peak Power Spectral Density for UNII Devices	20
8.5 Peak Excursion for UNII Devices	21
8.5 RF Band Edges	22
9. CONCLUSIONS	23

LIST OF APPENDICES

APPENDIX	TITLE
A	Laboratory Accreditations and Recognitions
B	Modifications to the EUT
C	Additional Models Covered Under This Report
D	Diagrams, Charts, and Photos <ul style="list-style-type: none">• Test Setup Diagrams• Radiated and Conducted Emissions Photos• Antenna and Effective Gain Factors
E	Data Sheets

LIST OF FIGURES

FIGURE	TITLE
1	Conducted Emissions Test Setup
2	Plot Map And Layout of Test Site

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 5, 11, and 12, 2013

Test Specifications: EMI requirements
CFR Title 47, Part 15, Subpart B; and Subpart E

Test Procedure: ANSI C63.4 and ANSI C63.10

Test Deviations: The test procedure was not deviated from during the testing.

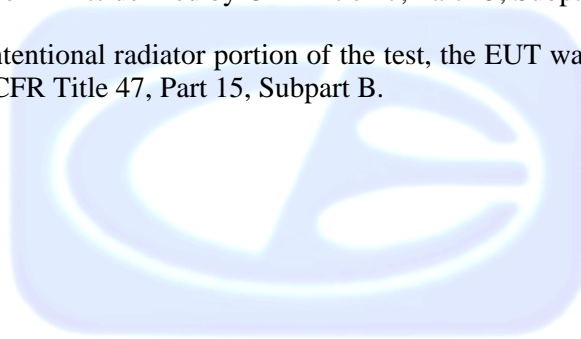
SUMMARY OF TEST RESULTS

<i>TEST</i>	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz – 30 MHz	This test was not performed because the EUT is battery power only 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
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 the limits of CFR Title 47, Part 15, Subpart E
4	Spurious Radiated RF Emissions from the Transmitter Portion, 10 kHz –30 MHz and 1000 MHz – 40000 MHz	Complies with the limits of CFR Title 47, Part 15, Subpart E, Section 15.407 (b)(1)
5	Emissions produced by the intentional radiator in restricted bands, 10 kHz – 40 GHz	Complies with the Class B limits of CFR Title 47, Part 15, Subpart B; and the limits of CFR Title 47, Part 15, Subpart E (b)(6) and (b)(7)
6	Emission Bandwidth – 26 dB for UNII devices	This test was performed to get B as required by CFR Title 47, Part 15, Subpart E, section 15.407 (a)(1)
7	Peak Power for UNII devices	Complies with the requirements of CFR Title 47, Part 15, Subpart E, section 15.407 (a)(1)
8	Peak Power Spectral Density for UNII devices	Complies with the requirements of CFR Title 47, Part 15, Subpart E, section 15.407 (a)(1)
9	Peak Excursion for UNII devices	Complies with the requirements of CFR Title 47, Part 15, Subpart E, section 15.407 (a)(6)

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 E.

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 performed at the test facility of Compatible 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 E	FCC Rules – Unlicensed National Information Infrastructure Devices
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 789033	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E
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 the 5150 MHz to 5250 MHz band. 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	MANUFACTURER	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

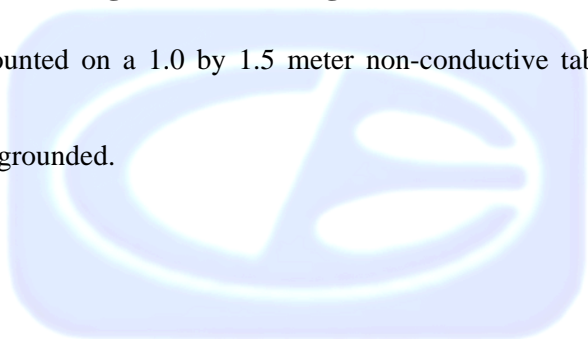
6. TEST SITE DESCRIPTION**6.1 Test Facility Description**

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
11.33 dBm	5180 MHz
11.34 dBm	5220 MHz
11.34 dBm	5240 MHz

7.2 Channel Number and Frequencies

There are a total of 6 channels for the 5150 MHz to 5250 MHz 802.11 a band.

5180 MHz (Channel 36)
5200 MHz (Channel 40)
5210 MHz (Channel 42)
5220 MHz (Channel 44)
5230 MHz (Channel 46)
5240 MHz (Channel 48)

7.3 Antenna Gain

The maximum gain of the antenna is 2.41 dBi.

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

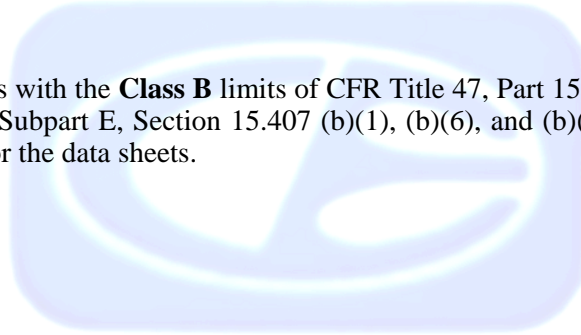
The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4: 2009. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a 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 E, Section 15.407 (b)(1), (b)(6), and (b)(7) 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
208.888 (H)	41.13 (QP)	43.50	-2.37
208.906 (V)	40.97 (QP)	43.50	-2.53
110.589 (V)	35.63	43.50	-7.87
5029.36 (V)	45.38 (A)	54.00	-8.62
5026.55 (H)	45.02 (A)	54.00	-8.98
5028.00 (H)	43.95 (A)	54.00	-10.05

Notes:

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

8.2 Emission Bandwidth – 20 and 26 dB for UNII Devices

The transmitter output is directly connected to 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 26 dB Emission Bandwidth.

1. Set resolution bandwidth (RBW) = approximately 1% of the emission bandwidth.
2. Set the video bandwidth (VBW) > resolution bandwidth (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 26 dB down from the peak of the emissions. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/VBW ratio is approximately 1%.

Test Results:

The 26 dB Bandwidth is 36.43286573 MHz for Channel 36, 35.95190381 MHz for Channel 44, and 37.51503006 MHz for Channel 48.

8.3 Peak Output Power for UNII Devices

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 requirements of CFR Title 47, Part 15, Subpart E, section 15.407 (a)(1).

8.4 Peak Power Spectral Density for UNII Devices

The EUT is directly connected to the EMI Receiver. The Peak Power Spectral Density was measured using a direct connection from the RF output of the EUT. The following steps were performed for measuring the Peak Power Spectral Density.

For FCC:

1. Set span to encompass the entire 26-dB emission bandwidth (EBW)
2. Set RBW = 1 MHz.
3. Set VBW \geq 3 MHz.
4. Number of points in sweep \geq 2 Span / RBW
5. Sweep Time = Auto
6. Detector = RMS
7. Trace average at least 100 traces in power averaging (RMS) mode
8. Use the peak search function on the instrument to find the peak of the spectrum.
9. The result is the PPSD.

For RSS-210: All of the steps mentioned above were used to find the PPSD for RSS-210, except for step #6, which was Detector = Peak.

For FCC: The limit is +4 dBm / MHz for the 5150 MHz to 5250 MHz band.

For RSS-210: The limit is +10 dBm / MHz for the 5150 MHz to 5250 MHz band.

Test Results:

The EUT complies with the requirements of CFR Title 47, Part 15, Subpart E, section 15.407 (a)(1).

8.5 Peak Excursion for UNII Devices

The EUT was directly connected to the EMI Receiver. The Peak Excursion was measured using a direct connection from the RF output of the EUT. The following steps were performed for measuring the Peak Excursion.

1. Set the spectrum analyzer or EMI receiver span to view the entire emission bandwidth.
2. Set RBW = 1 MHz
3. VBW \geq 3 MHz
4. Detector = Peak
5. Trace mode = max-hold
6. Allow the sweeps to continue until the trace stabilizes
7. Use the peak search function to find the peak of the spectrum
8. Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD that was determined by using section 8.4 of this test report.

The worst case scenario was when the EUT was operating at 6 Mbps (BPSK modulation) with an OFDM signal type.

Test Results:

The EUT complies with the requirements of CFR Title 47, Part 15, Subpart E, section 15.407 (a)(6). Please see the data sheets located in Appendix E of this test report.

8.5 RF Band Edges

The RF band edges were taken at the edges of the frequency band (5150 MHz when the EUT was on the low channel and 5350 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 8.2 of this test report was used to maximize the emission.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart E section 15.407 (b)(1) and (b)(7). The RF power at the restricted bands closest to the band edges at 5150 MHz and 5350 MHz meet the limits of section 15.407 (b)(1) and (b)(7). Please see the data sheets located in Appendix E.

Note: There was no emissions detected at the band edge at 5350 MHz when the EUT was set on channel 48 (5240 MHz).

9. CONCLUSIONS

The Roku Remote, Model: RC07 meets all of the specification limits defined in FCC Title 47, Part 15, Subpart E.

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

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

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](#)

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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) <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>

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400



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 Subpart E 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***

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500**Agoura Division**
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600**Silverado Division**
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700**Lake Forest Division**
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

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, CHARTS, AND PHOTOS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

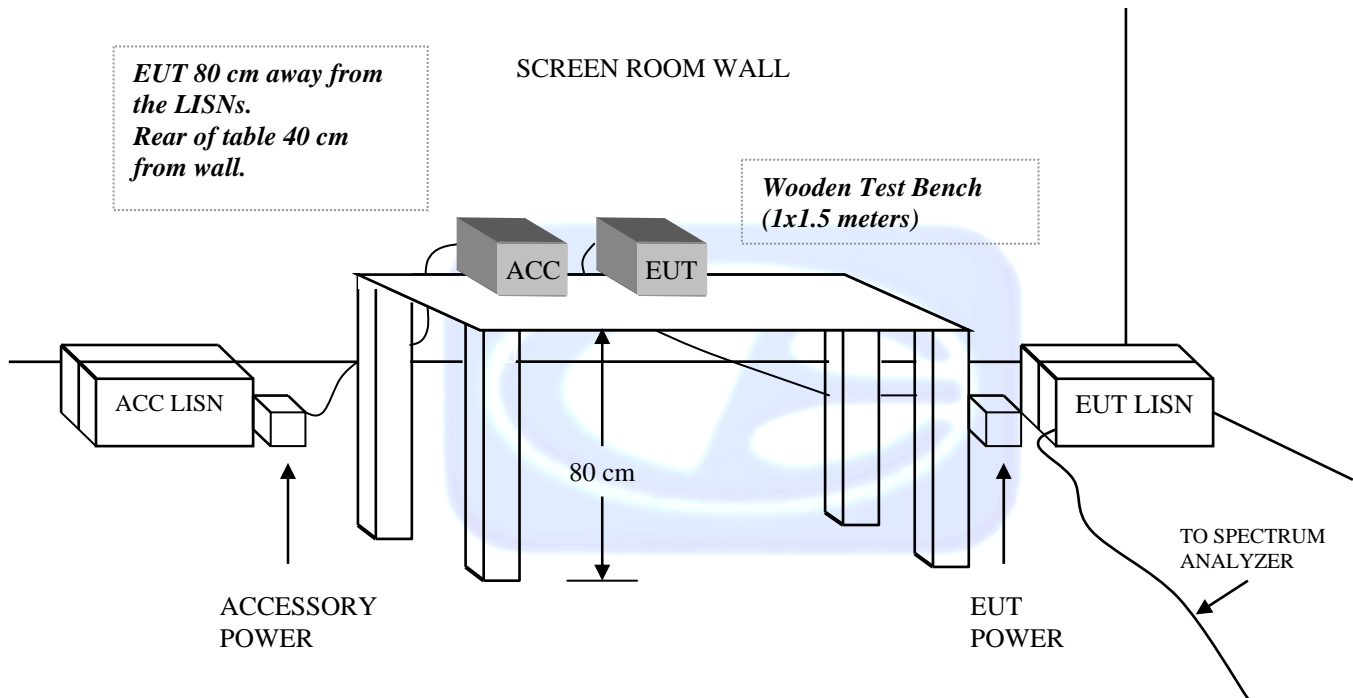
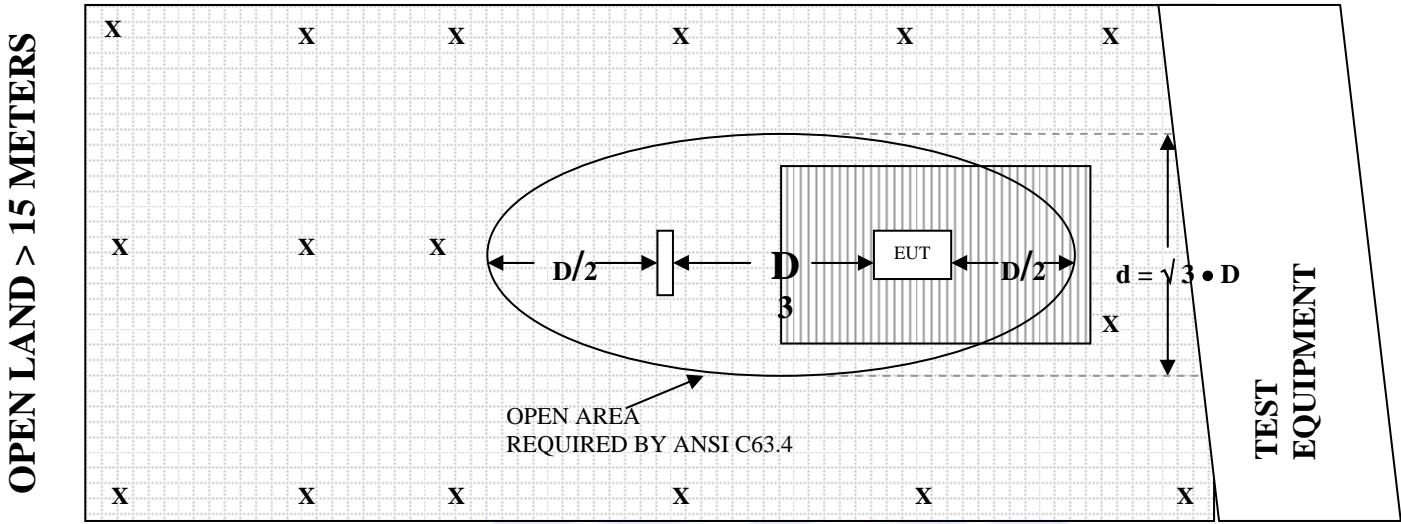


FIGURE 2: PLOT MAP AND LAYOUT OF RADIATED SITE

OPEN LAND > 15 METERS



OPEN LAND > 15 METERS

- | | | | |
|----------|--------------------------|--|-----------------|
| X | = GROUND RODS | | = GROUND SCREEN |
| D | = TEST DISTANCE (meters) | | = WOOD COVER |

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

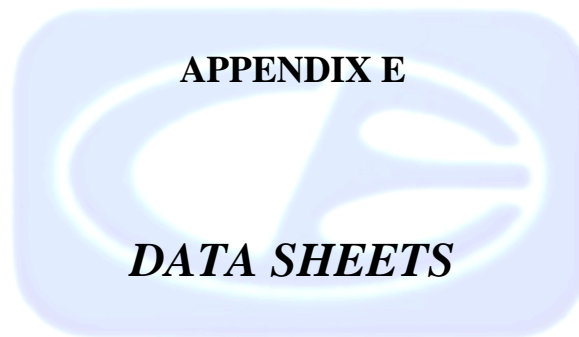
FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
0.50	25.29	6.00	25.75
0.60	25.26	6.50	25.28
0.70	25.23	7.00	24.83
0.80	25.13	7.50	24.49
0.90	24.91	8.00	24.38
1.00	24.68	8.50	25.06
1.25	25.85	9.00	25.55
1.50	26.23	9.50	25.32
1.75	26.42	10.0	25.25
2.00	26.48	10.5	25.31
2.25	26.55	11.0	24.99
2.50	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





RADIATED EMISSIONS

DATA SHEETS

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

Channel 36 - 802.11 a Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - X-Axis - 5.18 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10360	50.74	V	88.2	-37.46	Peak	1.35	165	
10360	39.62	V	68.2	-28.58	Avg	1.35	165	
15540	52.28	V	74	-21.72	Peak	1.45	175	
15540	40.71	V	54	-13.29	Avg	1.45	175	
20720								No Emission Detected
20720								Detected
25900								No Emission Detected
25900								Detected
31080								No Emission Detected
31080								Detected
36260								No Emission Detected
36260								Detected

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

Channel 36 - 802.11 a Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - X-Axis - 5.18 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10360	52.59	H	88.2	-35.61	Peak	1.25	225	
10360	39.38	H	68.2	-28.82	Avg	1.25	225	
15540	51.69	H	74	-22.31	Peak	1.35	135	
15540	40.11	H	54	-13.89	Avg	1.35	135	
20720								No Emission
20720								Detected
25900								No Emission
25900								Detected
31080								No Emission
31080								Detected
36260								No Emission
36260								Detected

FCC Subpart ERoku, Inc.
Roku Remote
Model: RC07Dates: 09/05/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujimoto**Channel 36 - 802.11 a Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - Y-Axis - 5.18 GHz Harmonics**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10360	51.39	V	88.2	-36.81	Peak	1.35	235	
10360	39.69	V	68.2	-28.51	Avg	1.35	235	
15540	51.38	V	74	-22.62	Peak	1.25	245	
15540	41.91	V	54	-12.09	Avg	1.25	245	
20720								No Emission Detected
25900								No Emission Detected
31080								No Emission Detected
36260								No Emission Detected

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013

Lab: B

Tested By: Kyle Fujimoto

Channel 36 - 802.11 a Mode - 6 Mbps Worst Case - Antenna 1

Transmit Mode - Y-Axis - 5.18 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10360	51.83	H	88.2	-36.37	Peak	1.35	235	
10360	39.15	H	68.2	-29.05	Avg	1.35	235	
15540	55.45	H	74	-18.55	Peak	1.25	225	
15540	40.61	H	54	-13.39	Avg	1.25	225	
20720								No Emission
20720								Detected
25900								No Emission
25900								Detected
31080								No Emission
31080								Detected
36260								No Emission
36260								Detected

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

Channel 36 - 802.11 a Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - Z-Axis - 5.18 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10360	51.02	V	88.2	-37.18	Peak	1.25	225	
10360	39.03	V	68.2	-29.17	Avg	1.25	225	
15540	50.81	V	74	-23.19	Peak	1.35	315	
15540	40.03	V	54	-13.97	Avg	1.35	315	
20720								No Emission Detected
20720								
25900								No Emission Detected
25900								
31080								No Emission Detected
31080								
36260								No Emission Detected
36260								

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

**Channel 36 - 802.11 a Mode - 6 Mbps Worst Case - Antenna 1
 Transmit Mode - Z-Axis - 5.18 GHz Harmonics**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10360	51.81	H	88.2	-36.39	Peak	1.25	150	
10360	39.81	H	68.2	-28.39	Avg	1.25	150	
15540	52.34	H	74	-21.66	Peak	1.35	165	
15540	40.56	H	54	-13.44	Avg	1.35	165	
20720								No Emission Detected
20720								
25900								No Emission Detected
25900								
31080								No Emission Detected
31080								
36260								No Emission Detected
36260								

FCC Subpart E

 Roku, Inc.
 Roku Remote
 Model: RC07

 Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

Channel 44 - 802.11 a Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - X-Axis - 5.22 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10440	50.68	V	88.2	-37.52	Peak	1.35	165	
10440	39.05	V	68.2	-29.15	Avg	1.35	165	
15660	51.87	V	74	-22.13	Peak	1.25	175	
15660	41.16	V	54	-12.84	Avg	1.25	175	
20880								No Emission Detected
20880								
26100								No Emission Detected
26100								
31320								No Emission Detected
31320								
36540								No Emission Detected
36540								

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013

Lab: B

Tested By: Kyle Fujimoto

Channel 44 - 802.11 a Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - X-Axis - 5.22 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10440	50.16	H	88.2	-38.04	Peak	1.35	145	
10440	38.67	H	68.2	-29.53	Avg	1.35	145	
15660	51.78	H	74	-22.22	Peak	1.25	155	
15660	40.56	H	54	-13.44	Avg	1.25	155	
20880								No Emission Detected
20880								
26100								No Emission Detected
26100								
31320								No Emission Detected
31320								
36540								No Emission Detected
36540								

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

Channel 44 - 802.11 a Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - Y-Axis - 5.22 GHz Harmonics

Freq. (MHz)	Level (dBUV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10440	57.42	H	88.2	-30.78	Peak	1.35	165	
10440	46.87	H	68.2	-21.33	Avg	1.35	165	
15660	52.39	H	74	-21.61	Peak	1.45	175	
15660	40.78	H	54	-13.22	Avg	1.45	175	
20880								No Emission Detected
26100								No Emission Detected
31320								No Emission Detected
36540								No Emission Detected

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

Channel 44 - 802.11 a Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - Z-Axis - 5.22 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10440	50.46	V	88.2	-37.74	Peak	1.25	155	
10440	39.02	V	68.2	-29.18	Avg	1.25	155	
15660	51.31	V	74	-22.69	Peak	1.55	165	
15660	40.91	V	54	-13.09	Avg	1.55	165	
20880								No Emission
20880								Detected
26100								No Emission
26100								Detected
31320								No Emission
31320								Detected
36540								No Emission
36540								Detected

FCC Subpart E

Roku, Inc.
Roku Remote
Model: RC07

Dates: 09/05/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujimoto

**Channel 44 - 802.11 a Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - Z-Axis - 5.22 GHz Harmonics**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10440	49.49	H	88.2	-38.71	Peak	1.35	265	
10440	38.32	H	68.2	-29.88	Avg	1.35	265	
15660	51.89	H	74	-22.11	Peak	1.25	275	
15660	40.34	H	54	-13.66	Avg	1.25	275	
20880								No Emission Detected
26100								No Emission Detected
31320								No Emission Detected
36540								No Emission Detected

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

Channel 48 - 802.11 a Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - X-Axis - 5.24 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10480	50.57	V	88.2	-37.63	Peak	1.35	165	
10480	39.01	V	68.2	-29.19	Avg	1.35	165	
15720	50.77	V	74	-23.23	Peak	1.25	175	
15720	40.63	V	54	-13.37	Avg	1.25	175	
20960								No Emission Detected
26200								No Emission Detected
31440								No Emission Detected
36680								No Emission Detected

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

Channel 48 - 802.11 a Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - X-Axis - 5.24 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10480	47.85	H	88.2	-40.35	Peak	1.35	165	
10480	38.97	H	68.2	-29.23	Avg	1.35	165	
15720	49.57	H	74	-24.43	Peak	1.25	175	
15720	40.46	H	54	-13.54	Avg	1.25	175	
20960								No Emission Detected
20960								
26200								No Emission Detected
26200								
31440								No Emission Detected
31440								
36680								No Emission Detected
36680								

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

Channel 48 - 802.11 a Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - Y-Axis - 5.24 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10480	50.11	V	88.2	-38.09	Peak	1.35	165	
10480	38.73	V	68.2	-29.47	Avg	1.35	165	
15720	50.19	V	74	-23.81	Peak	1.25	175	
15720	41.43	V	54	-12.57	Avg	1.25	175	
20960								No Emission Detected
20960								
26200								No Emission Detected
26200								
31440								No Emission Detected
31440								
36680								No Emission Detected
36680								

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

**Channel 48 - 802.11 a Mode - 6 Mbps Worst Case - Antenna 1
 Transmit Mode - Y-Axis - 5.24 GHz Harmonics**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10480	49.33	H	88.2	-38.87	Peak	1.35	165	
10480	38.94	H	68.2	-29.26	Avg	1.35	165	
15720	51.96	H	74	-22.04	Peak	1.25	175	
15720	41.41	H	54	-12.59	Avg	1.25	175	
20960								No Emission Detected
20960								Detected
26200								No Emission Detected
26200								Detected
31440								No Emission Detected
31440								Detected
36680								No Emission Detected
36680								Detected

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

**Channel 48 - 802.11 a Mode - 6 Mbps Worst Case - Antenna 1
 Transmit Mode - Z-Axis - 5.24 GHz Harmonics**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10480	49.91	V	88.2	-38.29	Peak	1.35	165	
10480	38.96	V	68.2	-29.24	Avg	1.35	165	
15720	51.34	V	74	-22.66	Peak	1.25	175	
15720	40.51	V	54	-13.49	Avg	1.25	175	
20960								No Emission Detected
20960								Detected
26200								No Emission Detected
26200								Detected
31440								No Emission Detected
31440								Detected
36680								No Emission Detected
36680								Detected

FCC Subpart E

 Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013

Lab: B

Tested By: Kyle Fujimoto

Channel 48 - 802.11 a Mode - 6 Mbps Worst Case - Antenna 1
Transmit Mode - Z-Axis - 5.24 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10480	48.93	H	88.2	-39.27	Peak	1.35	165	
10480	38.91	H	68.2	-29.29	Avg	1.35	165	
15720	50.77	H	74	-23.23	Peak	1.25	185	
15720	41.45	H	54	-12.55	Avg	1.25	185	
20960								No Emission
20960								Detected
26200								No Emission
26200								Detected
31440								No Emission
31440								Detected
36680								No Emission
36680								Detected

FCC Subpart B and FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

802.11 a Mode - Antenna 1

Digital Portion and Non-Harmonic Emissions of the Transmitter - 1 GHz to 40 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 a Mode from 1000 MHz to 40000 MHz for both Vertical and Horizontal Polarizations
								No Emissions Found for the Non-Harmonic Emissions of the Tx in 802.11 a Mode from 1000 MHz to 40000 MHz for both Vertical and Horizontal Polarizations
								Tested in the X-Axis, Y-Axis, and Z-Axis

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013

Lab: B

Tested By: Kyle Fujimoto

Channel 36 - 802.11 a Mode - 6 Mbps Worst Case
Transmit Mode - X-Axis - Antenna 2 - 5.18 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10360	49.93	H	88.2	-38.27	Peak	1.35	165	
10360	39.53	H	68.2	-28.67	Avg	1.35	165	
15540	51.61	H	74	-22.39	Peak	1.25	175	
15540	40.17	H	54	-13.83	Avg	1.25	175	
20720								No Emission
20720								Detected
25900								No Emission
25900								Detected
31080								No Emission
31080								Detected
36260								No Emission
36260								Detected

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

Channel 36 - 802.11 a Mode - 6 Mbps Worst Case
Transmit Mode - Y-Axis - Antenna 2 - 5.18 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10360	50.79	V	88.2	-37.41	Peak	1.35	225	
10360	39.99	V	68.2	-28.21	Avg	1.35	225	
15540	50.25	V	74	-23.75	Peak	1.45	235	
15540	40.28	V	54	-13.72	Avg	1.45	235	
20720								No Emission Detected
20720								Detected
25900								No Emission Detected
25900								Detected
31080								No Emission Detected
31080								Detected
36260								No Emission Detected
36260								Detected

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

Channel 36 - 802.11 a Mode - 6 Mbps Worst Case
Transmit Mode - Y-Axis - Antenna 2 - 5.18 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10360	52.26	H	88.2	-35.94	Peak	1.25	155	
10360	40.93	H	68.2	-27.27	Avg	1.25	155	
15540	51.26	H	74	-22.74	Peak	1.35	145	
15540	40.25	H	54	-13.75	Avg	1.35	145	
20720								No Emission
20720								Detected
25900								No Emission
25900								Detected
31080								No Emission
31080								Detected
36260								No Emission
36260								Detected

FCC Subpart E

 Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013

Lab: B

Tested By: Kyle Fujimoto

Channel 36 - 802.11 a Mode - 6 Mbps Worst Case
Transmit Mode - Z-Axis - Antenna 2 - 5.18 GHz Harmonics

Freq. (MHz)	Level (dBUV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10360	51.44	V	88.2	-36.76	Peak	1.25	155	
10360	39.63	V	68.2	-28.57	Avg	1.25	155	
15540	50.68	V	74	-23.32	Peak	1.35	145	
15540	40.24	V	54	-13.76	Avg	1.35	145	
20720								No Emission Detected
25900								No Emission Detected
31080								No Emission Detected
36260								No Emission Detected

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

Channel 36 - 802.11 a Mode - 6 Mbps Worst Case
Transmit Mode - Z-Axis - Antenna 2 - 5.18 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10360	51.91	H	88.2	-36.29	Peak	1.25	155	
10360	40.21	H	68.2	-27.99	Avg	1.25	155	
15540	51.57	H	74	-22.43	Peak	1.35	165	
15540	39.76	H	54	-14.24	Avg	1.35	165	
20720								No Emission
20720								Detected
25900								No Emission
25900								Detected
31080								No Emission
31080								Detected
36260								No Emission
36260								Detected

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

Channel 44 - 802.11 a Mode - 6 Mbps Worst Case
Transmit Mode - X-Axis - Antenna 2 - 5.22 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10440	51.25	V	88.2	-36.95	Peak	1.25	175	
10440	39.49	V	68.2	-28.71	Avg	1.25	175	
15660	51.68	V	74	-22.32	Peak	1.35	185	
15660	40.76	V	54	-13.24	Avg	1.35	185	
20880								No Emission
20880								Detected
26100								No Emission
26100								Detected
31320								No Emission
31320								Detected
36540								No Emission
36540								Detected

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013

Lab: B
 Tested By: Kyle Fujimoto

Channel 44 - 802.11 a Mode - 6 Mbps Worst Case
Transmit Mode - X-Axis - Antenna 2 - 5.22 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10440	49.69	H	88.2	-38.51	Peak	1.35	145	
10440	39.56	H	68.2	-28.64	Avg	1.35	145	
15660	50.78	H	74	-23.22	Peak	1.25	155	
15660	40.29	H	54	-13.71	Avg	1.25	155	
20880								No Emission
20880								Detected
26100								No Emission
26100								Detected
31320								No Emission
31320								Detected
36540								No Emission
36540								Detected

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013

Lab: B

Tested By: Kyle Fujimoto

Channel 44 - 802.11 a Mode - 6 Mbps Worst Case
Transmit Mode - Y-Axis - Antenna 2 - 5.22 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10440	51.13	V	88.2	-37.07	Peak	1.25	175	
10440	39.65	V	68.2	-28.55	Avg	1.25	175	
15660	51.58	V	74	-22.42	Peak	1.35	185	
15660	40.12	V	54	-13.88	Avg	1.35	185	
20880								No Emission
20880								Detected
26100								No Emission
26100								Detected
31320								No Emission
31320								Detected
36540								No Emission
36540								Detected

FCC Subpart E

 Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013

Lab: B

Tested By: Kyle Fujimoto

Channel 44 - 802.11 a Mode - 6 Mbps Worst Case
Transmit Mode - Y-Axis - Antenna 2 - 5.22 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10440	51.52	H	88.2	-36.68	Peak	1.35	145	
10440	39.37	H	68.2	-28.83	Avg	1.35	145	
15660	50.81	H	74	-23.19	Peak	1.25	145	
15660	40.39	H	54	-13.61	Avg	1.25	145	
20880								No Emission
20880								Detected
26100								No Emission
26100								Detected
31320								No Emission
31320								Detected
36540								No Emission
36540								Detected

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013

Lab: B
 Tested By: Kyle Fujimoto

Channel 44 - 802.11 a Mode - 6 Mbps Worst Case
Transmit Mode - Z-Axis - Antenna 2 - 5.22 GHz Harmonics

Freq. (MHz)	Level (dBUV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10440	50.68	V	88.2	-37.52	Peak	1.25	145	
10440	39.51	V	68.2	-28.69	Avg	1.25	145	
15660	51.55	V	74	-22.45	Peak	1.35	175	
15660	39.92	V	54	-14.08	Avg	1.35	175	
20880								No Emission Detected
26100								No Emission Detected
31320								No Emission Detected
36540								No Emission Detected

FCC Subpart E

Roku, Inc.
Roku Remote
Model: RC07

Dates: 09/05/2013 and 09/11/2013
Lab: B
Tested By: Kyle Fujimoto

Channel 44 - 802.11 a Mode - 6 Mbps Worst Case
Transmit Mode - Z-Axis - Antenna 2 - 5.22 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10440	48.81	H	88.2	-39.39	Peak	1.35	145	
10440	39.13	H	68.2	-29.07	Avg	1.35	145	
15660	51.79	H	74	-22.21	Peak	1.25	135	
15660	39.91	H	54	-14.09	Avg	1.25	135	
20880								No Emission
20880								Detected
26100								No Emission
26100								Detected
31320								No Emission
31320								Detected
36540								No Emission
36540								Detected

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

Channel 48 - 802.11 a Mode - 6 Mbps Worst Case
Transmit Mode - X-Axis - Antenna 2 - 5.24 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10480	50.31	V	88.2	-37.89	Peak	1.25	165	
10480	39.31	V	68.2	-28.89	Avg	1.25	165	
15720	52.26	V	74	-21.74	Peak	1.35	175	
15720	41.17	V	54	-12.83	Avg	1.35	175	
20960								No Emission Detected
20960								Detected
26200								No Emission Detected
26200								Detected
31440								No Emission Detected
31440								Detected
36680								No Emission Detected
36680								Detected

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

Channel 48 - 802.11 a Mode - 6 Mbps Worst Case
Transmit Mode - X-Axis - Antenna 2 - 5.24 GHz Harmonics

Freq. (MHz)	Level (dBUV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10480	50.38	H	88.2	-37.82	Peak	1.35	165	
10480	39.19	H	68.2	-29.01	Avg	1.35	165	
15720	51.25	H	74	-22.75	Peak	1.45	175	
15720	40.52	H	54	-13.48	Avg	1.45	175	
20960								No Emission Detected
20960								Detected
26200								No Emission Detected
26200								Detected
31440								No Emission Detected
31440								Detected
36680								No Emission Detected
36680								Detected

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013

Lab: B

Tested By: Kyle Fujimoto

Channel 48 - 802.11 a Mode - 6 Mbps Worst Case
Transmit Mode - Y-Axis - Antenna 2 - 5.24 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10480	49.91	V	88.2	-38.29	Peak	1.25	165	
10480	39.97	V	68.2	-28.23	Avg	1.25	165	
15720	51.64	V	74	-22.36	Peak	1.35	175	
15720	40.15	V	54	-13.85	Avg	1.35	175	
20960								No Emission Detected
20960								
26200								No Emission Detected
26200								
31440								No Emission Detected
31440								
36680								No Emission Detected
36680								

FCC Subpart E

 Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013

Lab: B

Tested By: Kyle Fujimoto

Channel 48 - 802.11 a Mode - 6 Mbps Worst Case
Transmit Mode - Y-Axis - Antenna 2 - 5.24 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10480	50.35	H	88.2	-37.85	Peak	1.35	155	
10480	38.73	H	68.2	-29.47	Avg	1.35	155	
15720	51.09	H	74	-22.91	Peak	1.25	165	
15720	40.63	H	54	-13.37	Avg	1.25	165	
20960								No Emission
20960								Detected
26200								No Emission
26200								Detected
31440								No Emission
31440								Detected
36680								No Emission
36680								Detected

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

Channel 48 - 802.11 a Mode - 6 Mbps Worst Case
Transmit Mode - Z-Axis - Antenna 2 - 5.24 GHz Harmonics

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10480	52.83	V	88.2	-35.37	Peak	1.35	165	
10480	39.05	V	68.2	-29.15	Avg	1.35	165	
15720	51.07	V	74	-22.93	Peak	1.25	175	
15720	40.31	V	54	-13.69	Avg	1.25	175	
20960								No Emission Detected
20960								Detected
26200								No Emission Detected
26200								Detected
31440								No Emission Detected
31440								Detected
36680								No Emission Detected
36680								Detected

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

Channel 48 - 802.11 a Mode - 6 Mbps Worst Case
Transmit Mode - Z-Axis - Antenna 2 - 5.24 GHz Harmonics

Freq. (MHz)	Level (dBUV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
10480	50.23	H	88.2	-37.97	Peak	1.15	145	
10480	38.78	H	68.2	-29.42	Avg	1.15	145	
15720	52.13	H	74	-21.87	Peak	1.25	155	
15720	40.01	H	54	-13.99	Avg	1.25	155	
20960								No Emission
20960								Detected
26200								No Emission
26200								Detected
31440								No Emission
31440								Detected
36680								No Emission
36680								Detected

FCC Subpart B and FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

802.11 a Mode - Antenna 2

Digital Portion and Non-Harmonic Emissions of the Transmitter - 1 GHz to 40 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 a Mode from 1000 MHz to 40000 MHz for both Vertical and Horizontal Polarizations
								No Emissions Found for the Non-Harmonic Emissions of the Tx in 802.11 a Mode from 1000 MHz to 40000 MHz for both Vertical and Horizontal Polarizations
								Tested in the X-Axis, Y-Axis, and Z-Axis

Test Location : Compatible Electronics	Page : 1/2
Customer : Roku, Inc.	Date : 09 / 11 / 2013
Manufacturer : Roku, Inc.	Time : 01:53:52 PM
Eut name : Roku Remote	Lab : A
Model : RC07	Test Distance : 3.00
Serial # : N/A	
Specification : FCC B	

Distance correction factor (20 * log(test/spec)) : 0.00

Test Type: Spurious Emissions Qualification Scan
Test Range: 10 kHz to 1 GHz (Vertical and Horizontal)
Test Engineer: James Ross
EUT Antenna 1: 802.11a (low band & high band) and 802.11g

Pol	Freq	Rdng	Cable	Ant	Amp	Cor'd	Limit	Delta
	MHz	dBuV	loss	factor	gain	rdg = R	= L	R-L
			dB	dB	dB	dBuV	dBuV/m	dB

802.11g Mode

H	208.878	63.00	2.07	9.51	32.64	41.94	43.50	-1.56
H	208.878Qp	60.55	2.07	9.51	32.64	39.49	43.50	-4.01
H	233.459	52.50	2.23	10.64	32.33	33.04	46.00	-12.96
H	184.304	49.60	1.87	8.63	32.86	27.24	43.50	-16.26
H	331.778	44.80	2.99	13.36	32.24	28.91	46.00	-17.09
V	184.309	51.90	1.87	8.63	32.86	29.54	43.50	-13.96
V	208.926	64.30	2.07	9.51	32.64	43.25	43.50	-0.25
V	208.926Qp	61.86	2.07	9.51	32.64	40.81	43.50	-2.69
V	233.470	51.10	2.23	10.64	32.33	31.64	46.00	-14.36
V	258.048	46.90	2.40	11.48	32.31	28.47	46.00	-17.53

802.11a (5.15 GHz to 5.25 GHz) Mode

V	135.162	54.40	1.68	9.25	33.00	32.33	43.50	-11.17
V	159.722	53.30	1.80	8.96	32.96	31.10	43.50	-12.40
V	184.306	51.90	1.87	8.63	32.86	29.54	43.50	-13.96
V	208.906	63.60	2.07	9.51	32.64	42.54	43.50	-0.96
V	208.906Qp	62.03	2.07	9.51	32.64	40.97	43.50	-2.53
V	233.460	50.60	2.23	10.64	32.33	31.14	46.00	-14.86
H	135.164	45.90	1.68	9.24	33.00	23.83	43.50	-19.67
H	159.744	47.70	1.80	8.96	32.96	25.50	43.50	-18.00
H	184.324	49.10	1.87	8.63	32.86	26.74	43.50	-16.76
H	208.874	63.60	2.07	9.51	32.64	42.54	43.50	-0.96
H	208.888Qp	62.19	2.07	9.51	32.64	41.13	43.50	-2.37
H	233.471	52.40	2.23	10.64	32.33	32.94	46.00	-13.06
H	258.051	46.00	2.40	11.48	32.31	27.57	46.00	-18.43
H	110.582	50.50	1.43	9.70	33.00	28.63	43.50	-14.87

802.11a (5.725 GHz to 5.850 GHz) Mode

H	110.582	50.90	1.43	9.70	33.00	29.03	43.50	-14.47
H	135.169	46.50	1.68	9.24	33.00	24.43	43.50	-19.07
H	159.738	48.40	1.80	8.96	32.96	26.20	43.50	-17.30

Test Location : Compatible Electronics **Page** : 2/2
Customer : Roku, Inc. **Date** : 09 / 11 / 2013
Manufacturer : Roku, Inc. **Time** : 01:53:52 PM
Eut name : Roku Remote **Lab** : A
Model : RC07 **Test Distance** : 3.00
Serial # : N/A
Specification : FCC B
Distance correction factor (20 * log(test/spec)) : 0.00

Test Type: Spurious Emissions Qualification Scan
Test Range: 10 kHz to 1 GHz (Vertical and Horizontal)
Test Engineer: James Ross
EUT Antenna 1: 802.11a (low band & high band) and 802.11g

Pol	Freq MHz	Rdng dBuV	Cable loss dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	Limit = L dBuV/m	Delta R-L dB
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Continuing: 802.11a (5.725 GHz to 5.850 GHz) Mode

H	184.329	48.80	1.87	8.63	32.86	26.44	43.50	-17.06
H	208.888	59.50	2.07	9.51	32.64	38.44	43.50	-5.06
H	233.492	51.20	2.23	10.64	32.33	31.74	46.00	-14.26
H	258.053	47.80	2.40	11.48	32.31	29.37	46.00	-16.63
H	331.790	45.80	2.99	13.36	32.24	29.91	46.00	-16.09
H	356.370	42.10	3.15	14.33	32.22	27.36	46.00	-18.64
V	110.582	55.80	1.43	9.70	33.00	33.93	43.50	-9.57
V	135.162	55.30	1.68	9.25	33.00	33.23	43.50	-10.27
V	159.746	53.90	1.80	8.96	32.96	31.70	43.50	-11.80
V	184.326	49.30	1.87	8.63	32.86	26.94	43.50	-16.56
V	208.899	58.80	2.07	9.51	32.64	37.74	43.50	-5.76
V	233.479	48.20	2.23	10.64	32.33	28.74	46.00	-17.26
V	258.059	46.60	2.40	11.48	32.31	28.17	46.00	-17.83

Test Location : Compatible Electronics **Page:** 1/2
Customer : Roku, Inc. **Date:** 09 / 12 / 2013
Manufacturer : Roku, Inc. **Time:** 11:23:08 AM
Eut name : Roku Remote **Lab:** A
Model : RC07 **Test Distance** : 3.00
Serial # : N/A
Specification : FCC B
Distance correction factor (20 * log(test/spec)) : 0.00

Test Type: Spurious Emissions Qualification Scan
Test Range: 10 kHz to 1 GHz (Vertical and Horizontal)
Test Engineer: James Ross
EUT Antenna 2: 802.11a (low band & high band) and 802.11g

Pol	Freq MHz	Rdng dBuV	Cable loss dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	Limit = L dBuV/m	Delta R-L dB
-----	-------------	--------------	---------------------	---------------------	-------------------	--------------------------	------------------------	--------------------

802.11g Mode

V	110.606	56.80	1.43	9.70	33.00	34.93	43.50	-8.57
V	135.170	53.70	1.68	9.24	33.00	31.63	43.50	-11.87
V	159.750	54.20	1.80	8.96	32.96	32.00	43.50	-11.50
V	184.330	47.80	1.87	8.63	32.86	25.44	43.50	-18.06
V	208.910	56.70	2.07	9.51	32.64	35.65	43.50	-7.85
V	233.483	47.20	2.23	10.64	32.33	27.74	46.00	-18.26
V	258.063	49.80	2.40	11.48	32.31	31.37	46.00	-14.63
H	110.600	51.20	1.43	9.70	33.00	29.33	43.50	-14.17
H	135.180	46.40	1.68	9.24	33.00	24.32	43.50	-19.18
H	159.745	48.50	1.80	8.96	32.96	26.30	43.50	-17.20
H	184.325	47.70	1.87	8.63	32.86	25.34	43.50	-18.16
H	208.892	55.20	2.07	9.51	32.64	34.14	43.50	-9.36
H	233.468	47.30	2.23	10.64	32.33	27.84	46.00	-18.16
H	258.050	45.70	2.40	11.48	32.31	27.27	46.00	-18.73

802.11a (5.15 GHz to 5.25 GHz) Mode

H	110.591	51.00	1.43	9.70	33.00	29.13	43.50	-14.37
H	135.171	44.80	1.68	9.24	33.00	22.73	43.50	-20.77
H	159.750	48.50	1.80	8.96	32.96	26.30	43.50	-17.20
H	184.322	46.80	1.87	8.63	32.86	24.44	43.50	-19.06
H	208.902	51.10	2.07	9.51	32.64	30.04	43.50	-13.46
H	233.482	47.80	2.23	10.64	32.33	28.34	46.00	-17.66
H	258.062	46.20	2.40	11.48	32.31	27.77	46.00	-18.23
H	307.209	43.40	2.84	12.23	32.26	26.22	46.00	-19.78
H	331.789	42.60	2.99	13.36	32.24	26.71	46.00	-19.29
V	110.589	57.50	1.43	9.70	33.00	35.63	43.50	-7.87
V	135.169	53.70	1.68	9.24	33.00	31.63	43.50	-11.87
V	159.749	54.50	1.80	8.96	32.96	32.30	43.50	-11.20
V	184.329	49.30	1.87	8.63	32.86	26.94	43.50	-16.56
V	208.909	54.20	2.07	9.51	32.64	33.15	43.50	-10.35
V	233.489	47.40	2.23	10.64	32.33	27.94	46.00	-18.06

Test Location : Compatible Electronics **Page** : 2/2
Customer : Roku, Inc. **Date** : 09 / 12 / 2013
Manufacturer : Roku, Inc. **Time** : 11:23:08 AM
Eut name : Roku Remote **Lab** : A
Model : RC07 **Test Distance** : 3.00
Serial # : N/A
Specification : FCC B

Distance correction factor (20 * log(test/spec)) : 0.00
Test Type: Spurious Emissions Qualification Scan
Test Range: 10 kHz to 1 GHz (Vertical and Horizontal)
Test Engineer: James Ross
EUT Antenna 2: 802.11a (low band & high band) and 802.11g

Pol	Freq MHz	Rdng dBuV	Cable loss dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	Limit = L dBuV/m	Delta R-L dB
-----	-------------	--------------	---------------------	---------------------	-------------------	--------------------------	------------------------	--------------------

Continued: 802.11a (5.15 GHz to 5.25 GHz) Mode

V	258.055	47.20	2.40	11.48	32.31	28.77	46.00	-17.23
V	307.206	43.70	2.84	12.23	32.26	26.52	46.00	-19.48
V	331.768	47.40	2.99	13.36	32.24	31.51	46.00	-14.49
V	356.348	41.70	3.15	14.33	32.22	26.96	46.00	-19.04

802.11a (5.725 GHz to 5.850 GHz) Mode

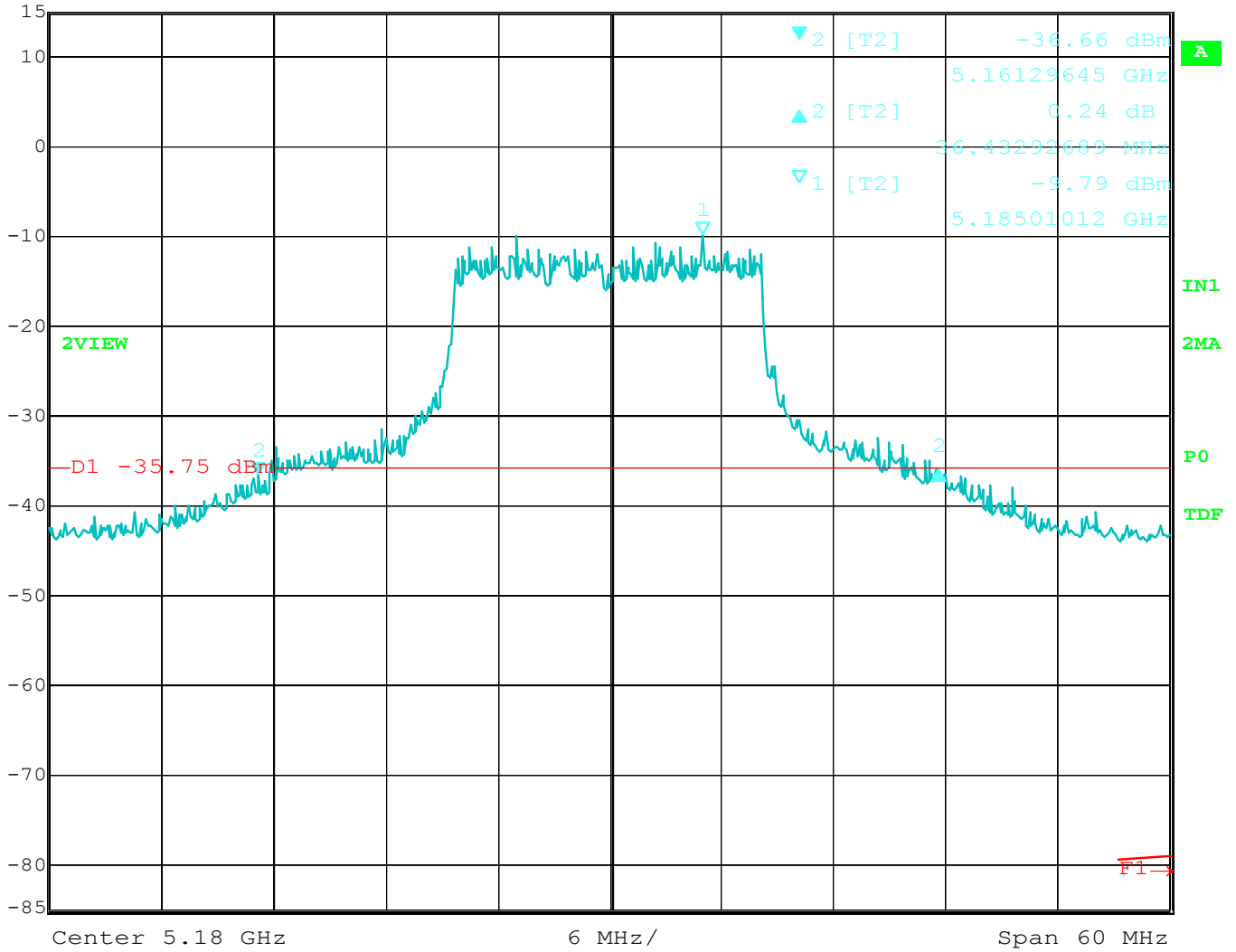
V	110.602	55.00	1.43	9.70	33.00	33.13	43.50	-10.37
V	135.182	53.80	1.68	9.24	33.00	31.72	43.50	-11.78
V	159.762	52.40	1.80	8.95	32.96	30.19	43.50	-13.31
V	184.323	49.40	1.87	8.63	32.86	27.04	43.50	-16.46
V	208.914	59.20	2.07	9.51	32.64	38.15	43.50	-5.35
V	233.500	49.30	2.23	10.64	32.33	29.84	46.00	-16.16
V	258.050	46.10	2.40	11.48	32.31	27.67	46.00	-18.33
V	331.753	47.90	2.99	13.36	32.24	32.01	46.00	-13.99
V	356.378	43.10	3.15	14.33	32.22	28.36	46.00	-17.64
V	380.921	41.60	3.35	14.82	32.19	27.57	46.00	-18.43
V	405.501	39.90	3.54	15.34	32.17	26.62	46.00	-19.38
H	110.603	50.70	1.43	9.70	33.00	28.83	43.50	-14.67
H	135.158	46.30	1.68	9.25	33.00	24.23	43.50	-19.27
H	159.738	48.50	1.80	8.96	32.96	26.30	43.50	-17.20
H	184.318	44.80	1.87	8.63	32.86	22.44	43.50	-21.06
H	208.911	57.50	2.07	9.51	32.64	36.45	43.50	-7.05
H	233.491	47.70	2.23	10.64	32.33	28.24	46.00	-17.76
H	258.071	44.50	2.40	11.48	32.31	26.07	46.00	-19.93
H	356.391	40.90	3.15	14.33	32.22	26.16	46.00	-19.84

-26 dB BANDWIDTH

DATA SHEETS



Delta 2 [T2] RBW 500 kHz RF Att 40 dB
 Ref Lvl 0.24 dB VBW 2 MHz
 15 dBm 36.43292689 MHz SWT 60 ms Unit dBm

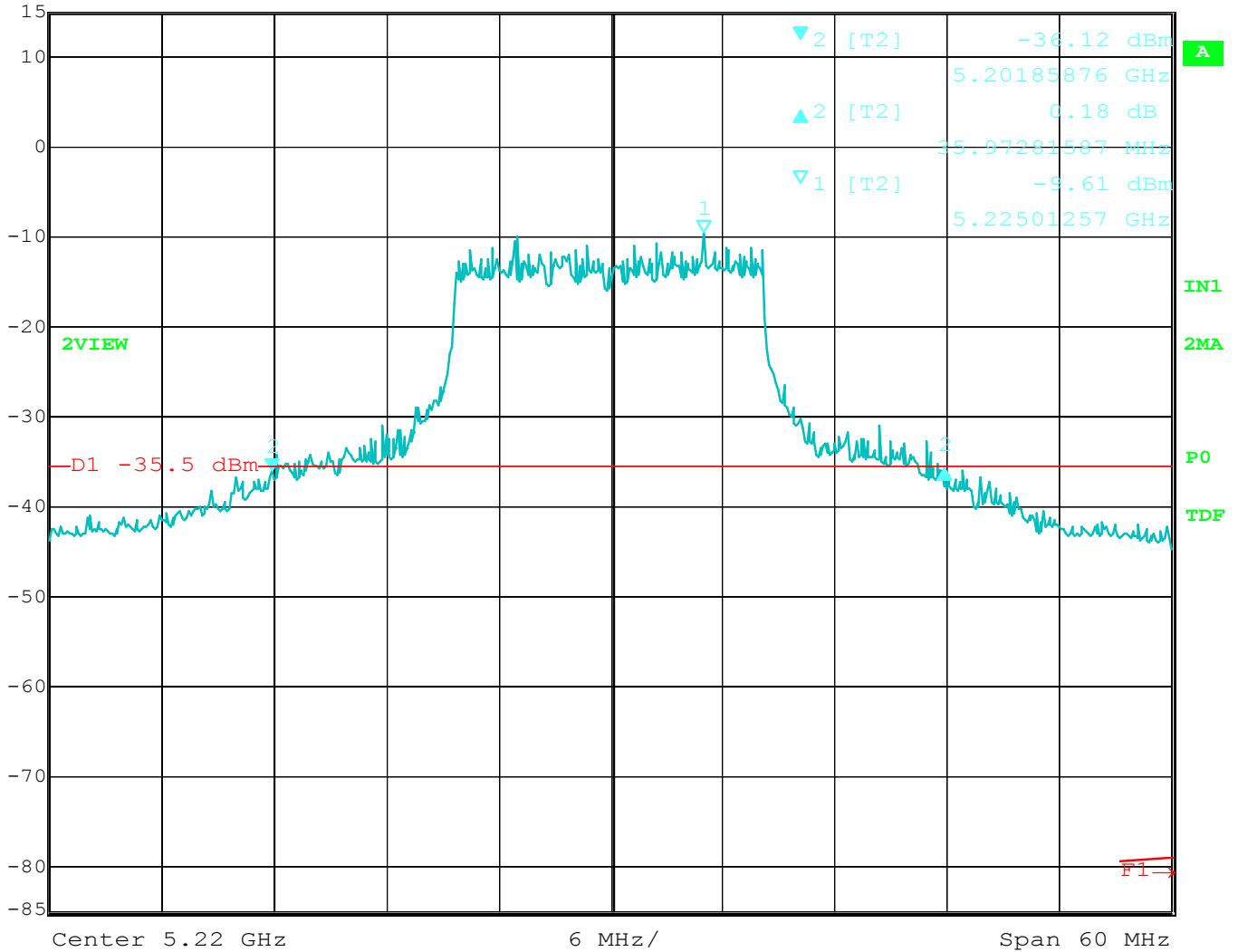


Date: 31.OCT.2013 17:15:24

Bandwidth 26 dB – Channel 36 – 802.11 a Mode



Delta 2 [T2] RBW 500 kHz RF Att 40 dB
 Ref Lvl 0.18 dB VBW 2 MHz
 15 dBm 35.97281587 MHz SWT 60 ms Unit dBm

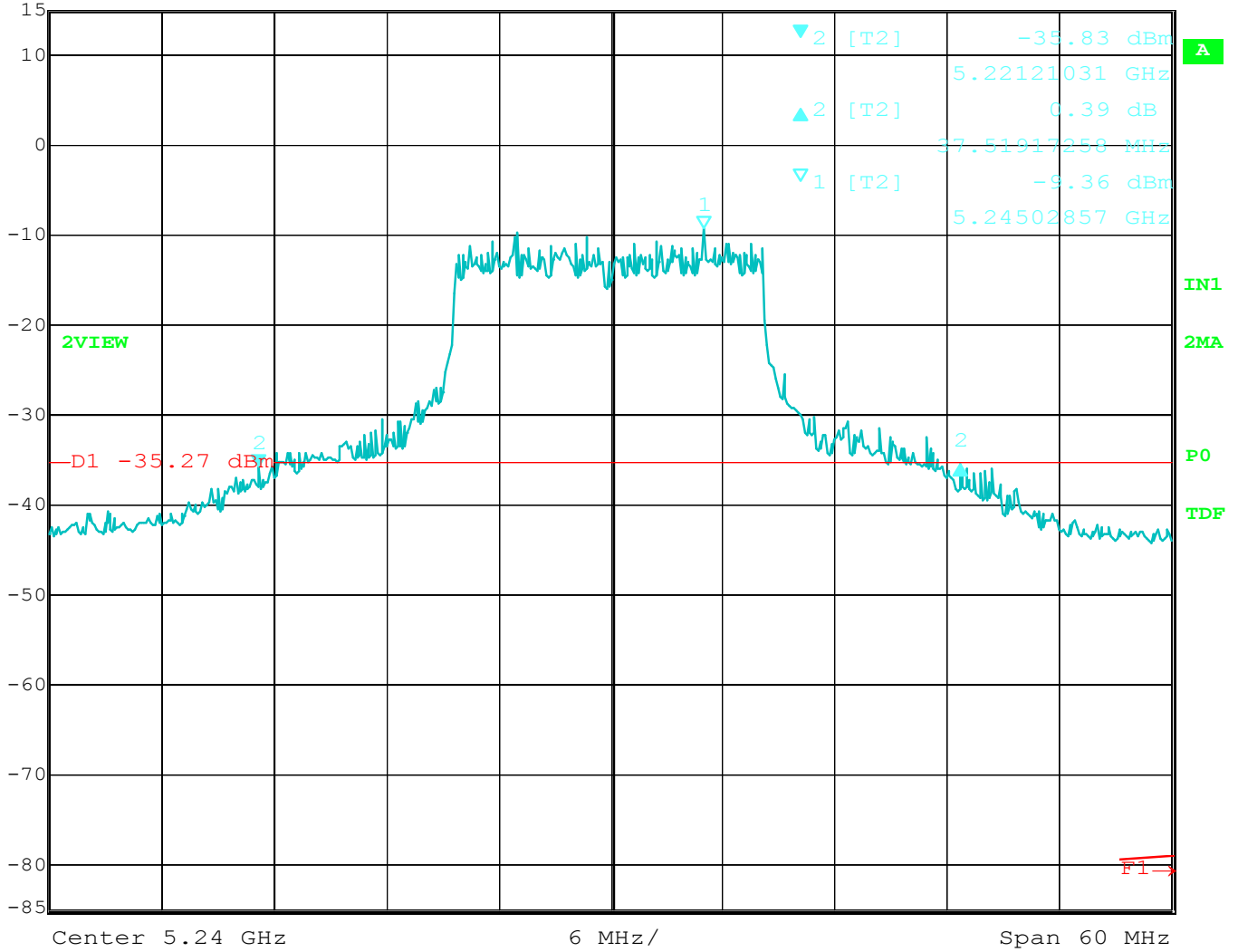


Date: 31.OCT.2013 17:23:56

Bandwidth 26 dB – Channel 44 – 802.11 a Mode



Delta 2 [T2] RBW 500 kHz RF Att 40 dB
 Ref Lvl 0.31 dB VBW 2 MHz
 15 dBm 37.51917258 MHz SWT 60 ms Unit dBm



Date: 31.OCT.2013 17:31:09

Bandwidth 26 dB – Channel 48 – 802.11 a Mode

PEAK POWER OUTPUT

DATA SHEETS

PEAK OUTPUT POWER**ROKU REMOTE****MODEL: RC07**

CHANNEL	Peak Power (dBm)
36 (5180 MHz)	11.33
44 (5220 MHz)	11.34
48 (5240 MHz)	11.34



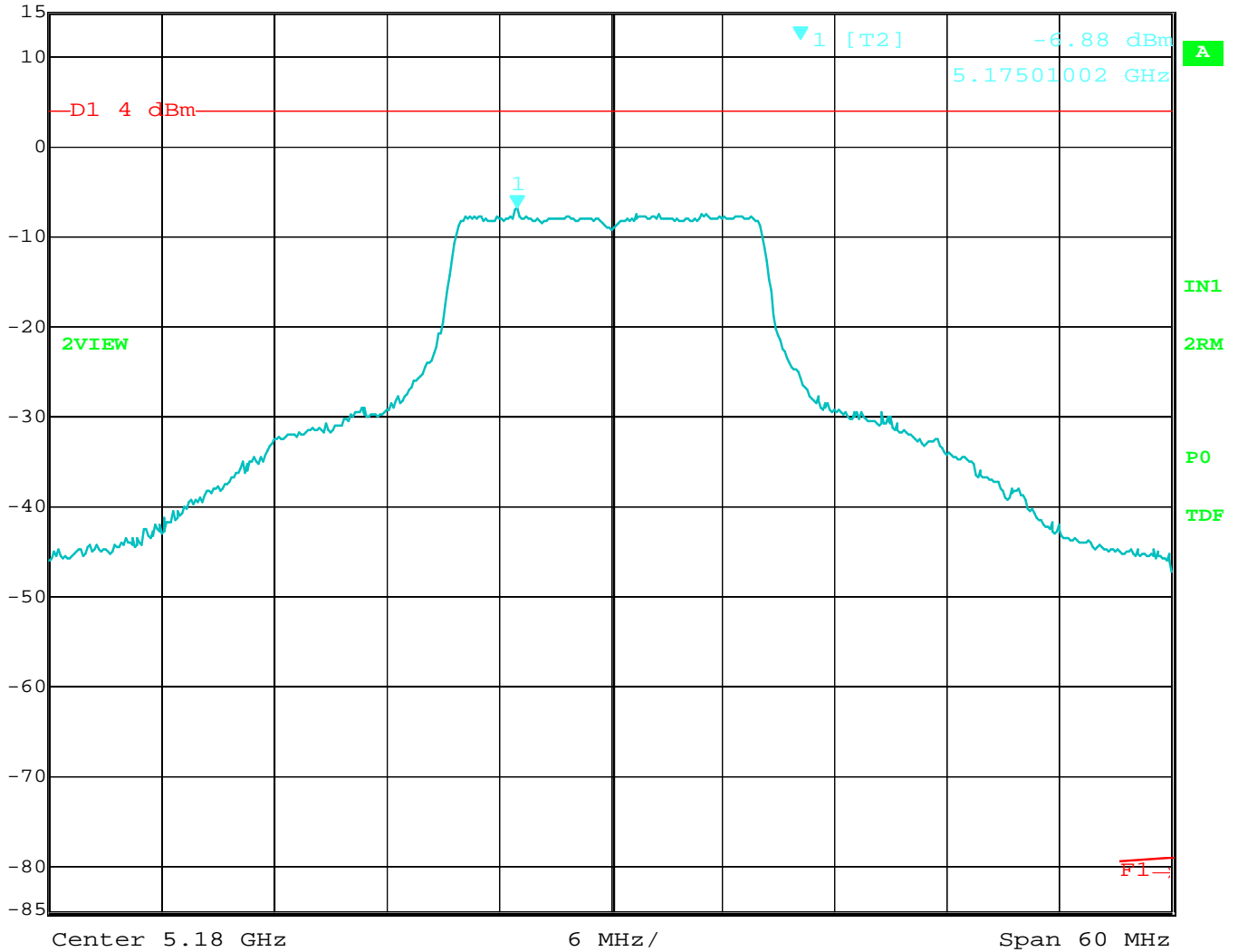


SPECTRAL DENSITY OUTPUT

DATA SHEETS



Ref Lvl	Marker 1 [T2]	RBW	1 MHz	RF Att	40 dB
15 dBm	-6.88 dBm	VBW	3 MHz		
	5.17501002 GHz	SWT	5 ms	Unit	dBm

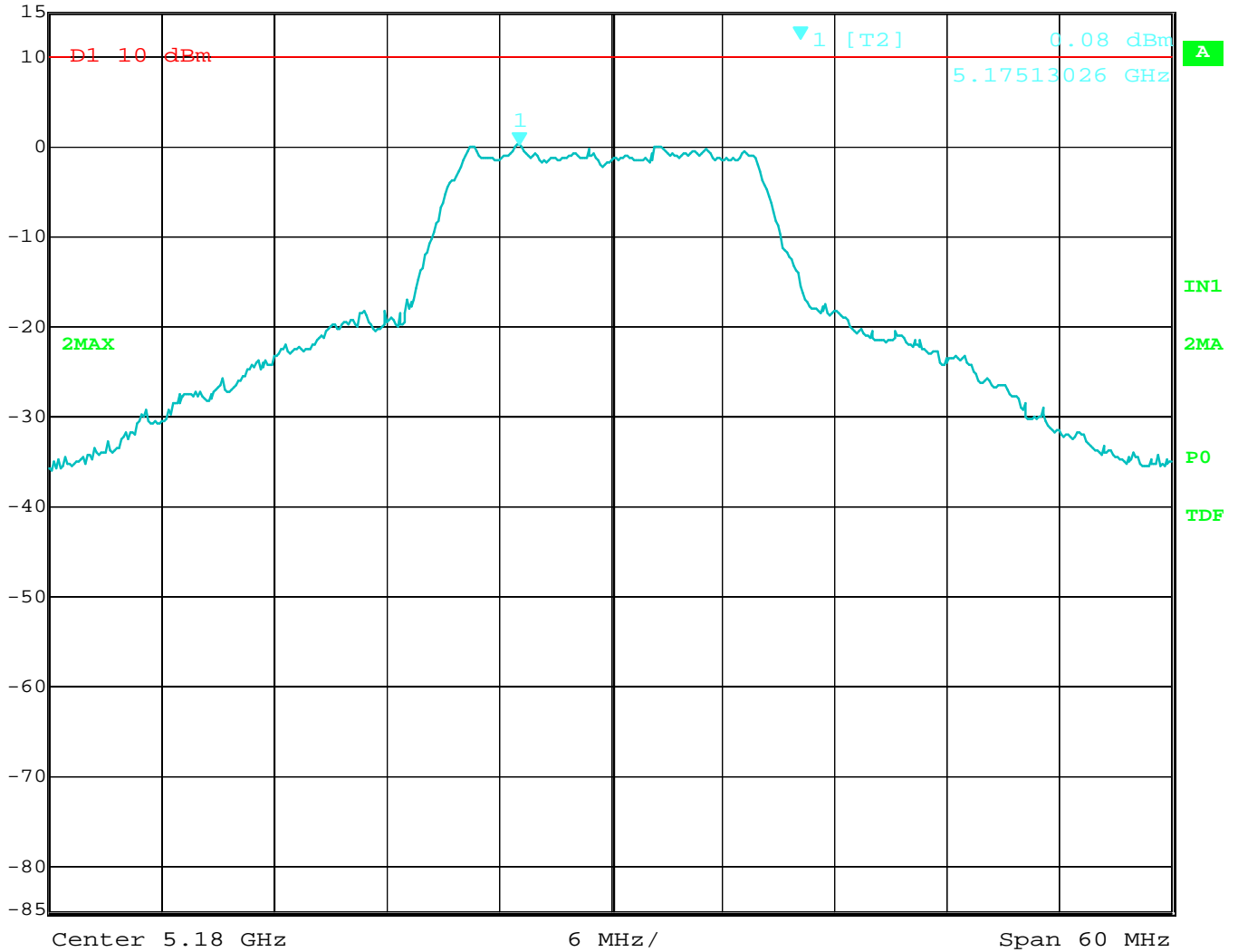


Date: 11.SEP.2013 13:26:15

Peak Power Spectral Density – Channel 36 – FCC Method



Ref Lvl	Marker 1 [T2]	RBW	1 MHz	RF Att	40 dB
15 dBm	0.08 dBm	VBW	3 MHz		
	5.17513026 GHz	SWT	5 ms	Unit	dBm

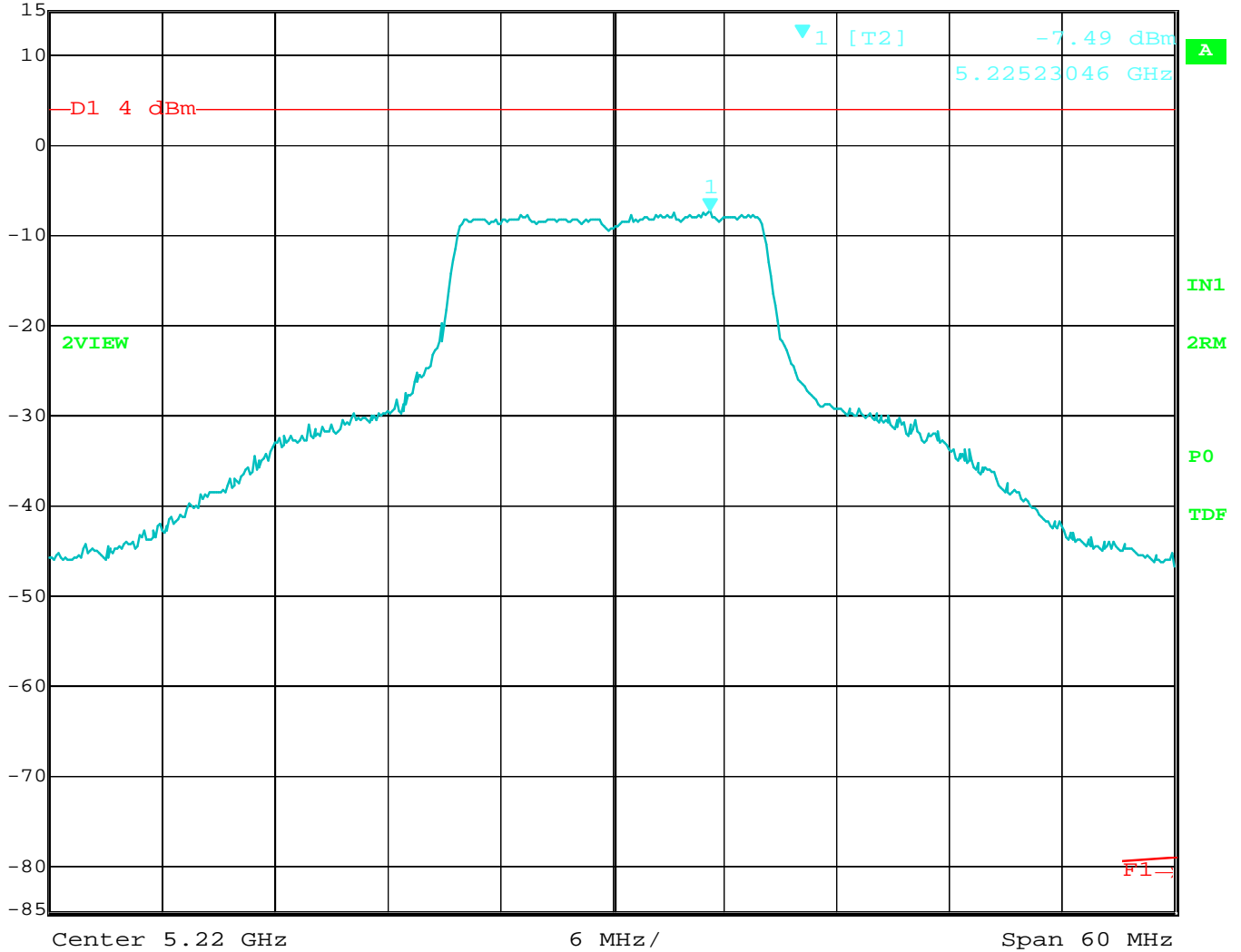


Date: 11.SEP.2013 13:45:54

Peak Power Spectral Density – Channel 36 – RSS-210 Method



Ref Lvl	Marker 1 [T2]	RBW	1 MHz	RF Att	40 dB
15 dBm	-7.49 dBm	VBW	3 MHz		
	5.22523046 GHz	SWT	5 ms	Unit	dBm

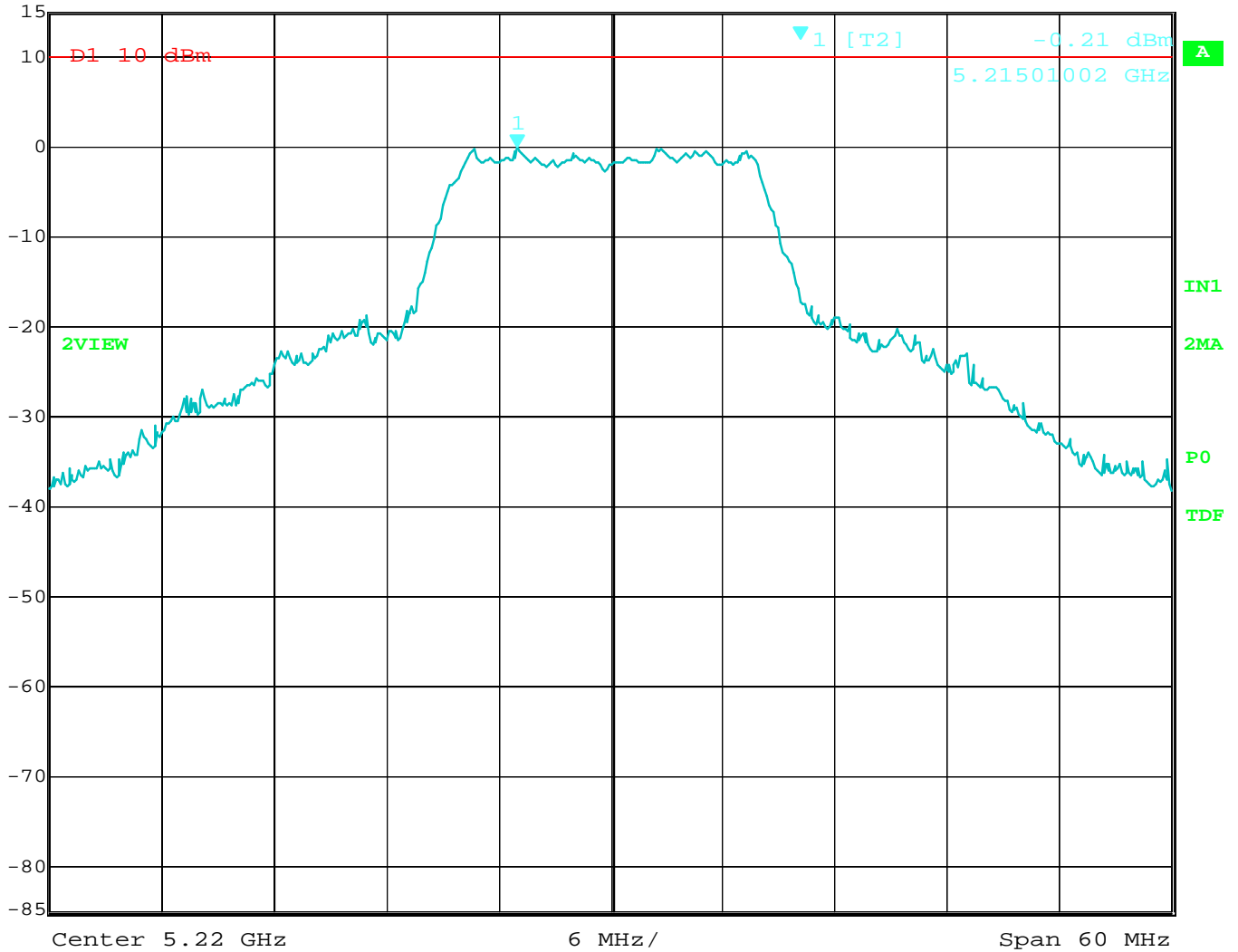


Date: 11.SEP.2013 13:25:14

Peak Power Spectral Density – Channel 44 – FCC Method



Marker 1 [T2] RBW 1 MHz RF Att 40 dB
 Ref Lvl -0.21 dBm VBW 3 MHz
 15 dBm 5.21501002 GHz SWT 5 ms Unit dBm

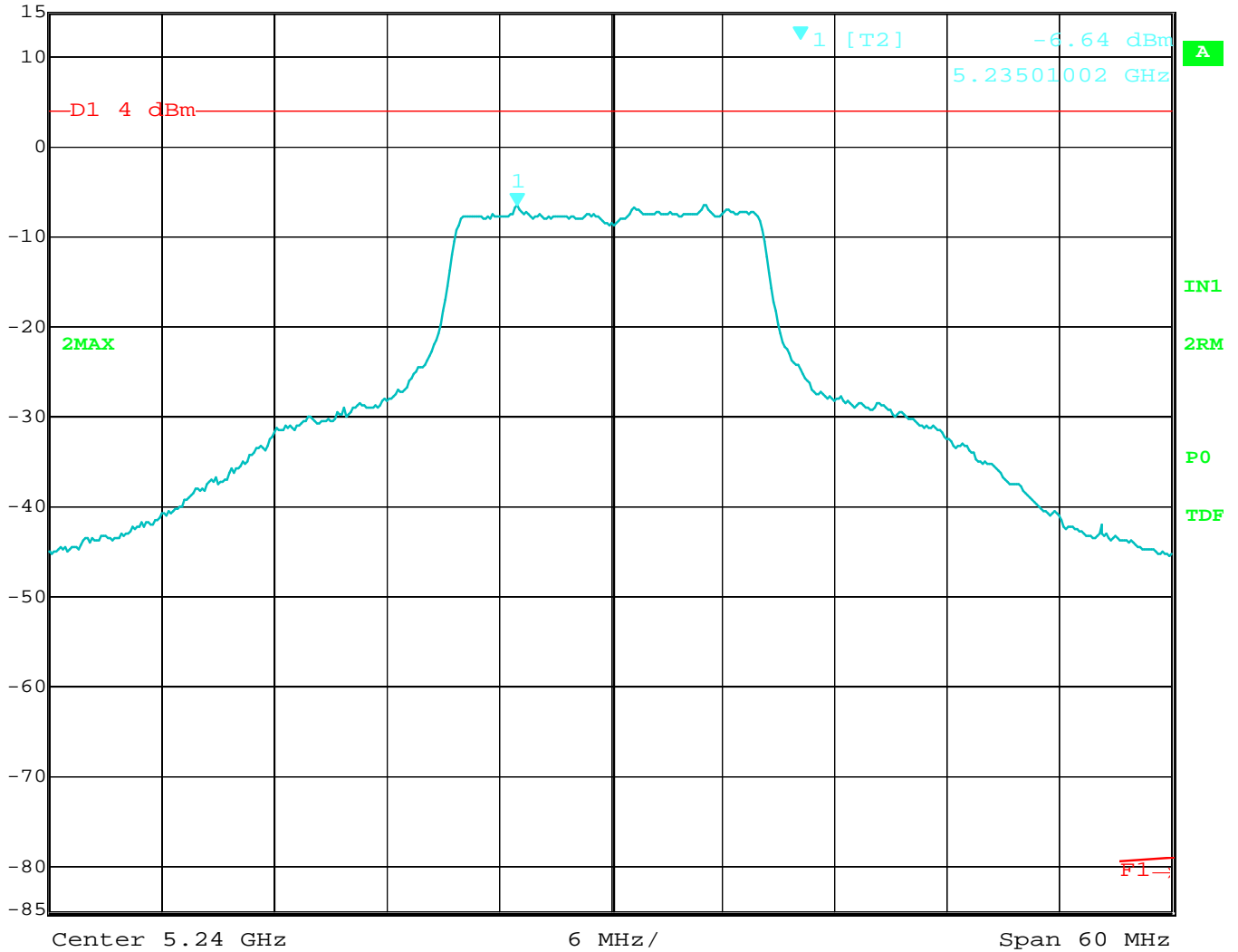


Date: 11.SEP.2013 13:46:36

Peak Power Spectral Density – Channel 44 – RSS-210 Method



Marker 1 [T2] RBW 1 MHz RF Att 40 dB
 Ref Lvl -6.64 dBm VBW 3 MHz
 15 dBm 5.23501002 GHz SWT 5 ms Unit dBm

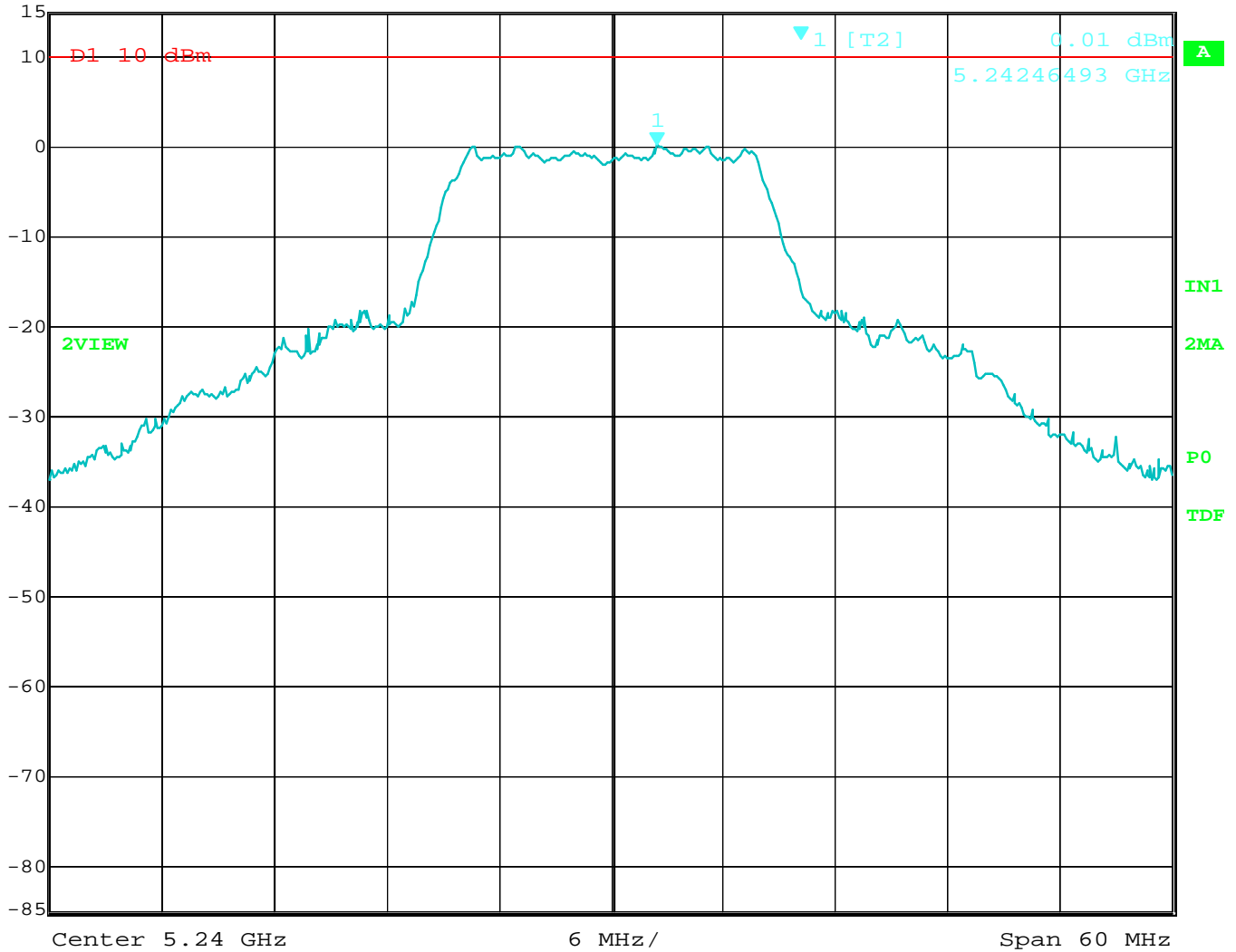


Date: 11.SEP.2013 13:24:04

Peak Power Spectral Density – Channel 48 – FCC Method

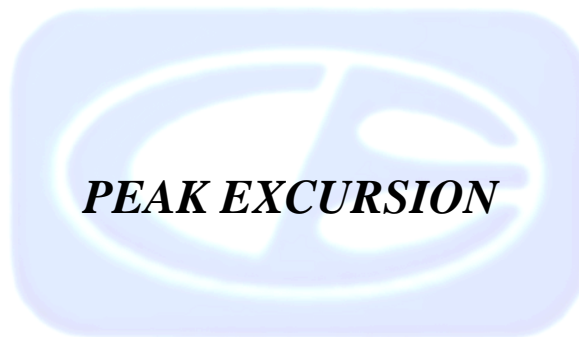


Marker 1 [T2] RBW 1 MHz RF Att 40 dB
 Ref Lvl 0.01 dBm VBW 3 MHz
 15 dBm 5.24246493 GHz SWT 5 ms Unit dBm



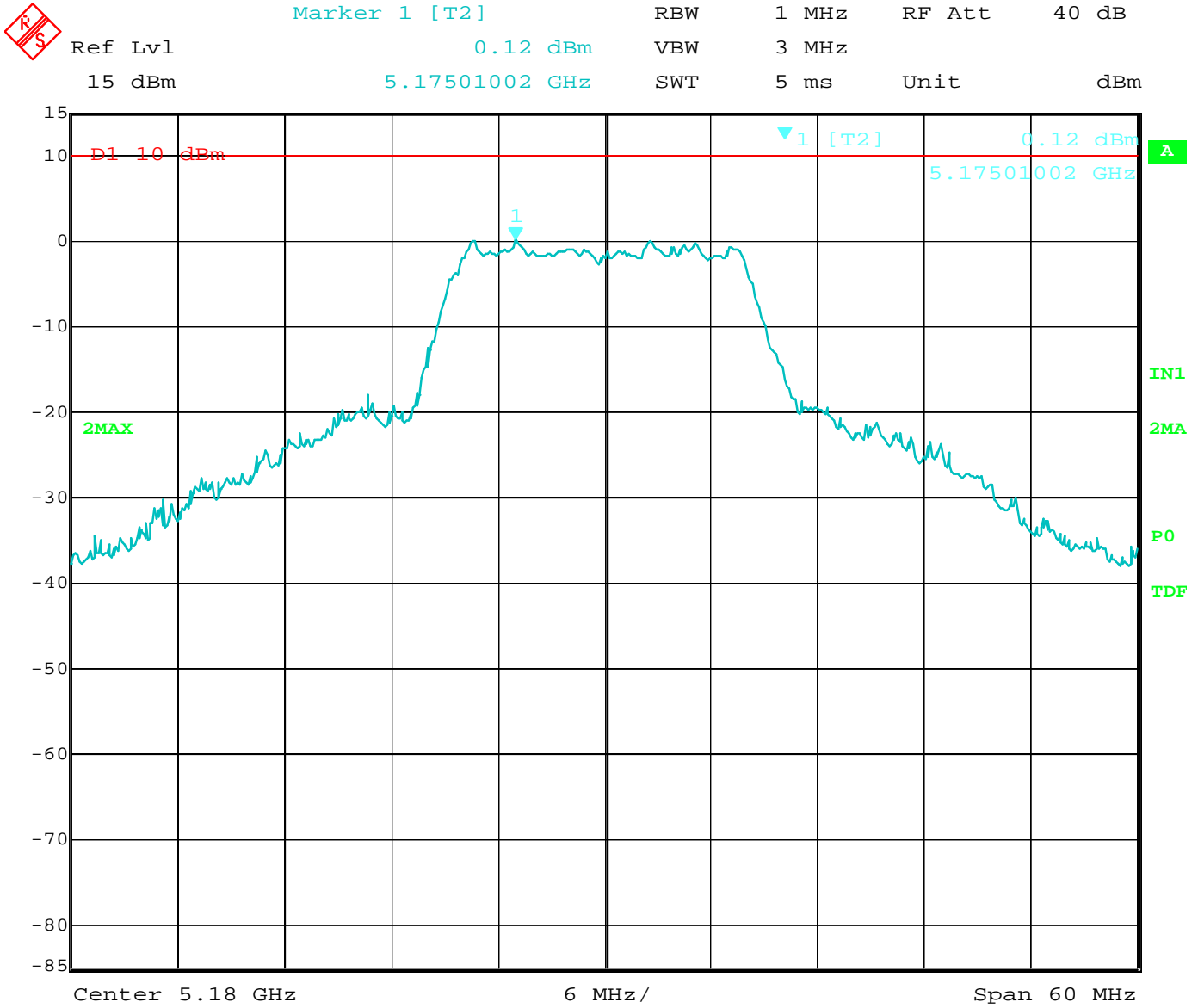
Date: 11.SEP.2013 13:49:24

Peak Power Spectral Density – Channel 48 – RSS-210 Method



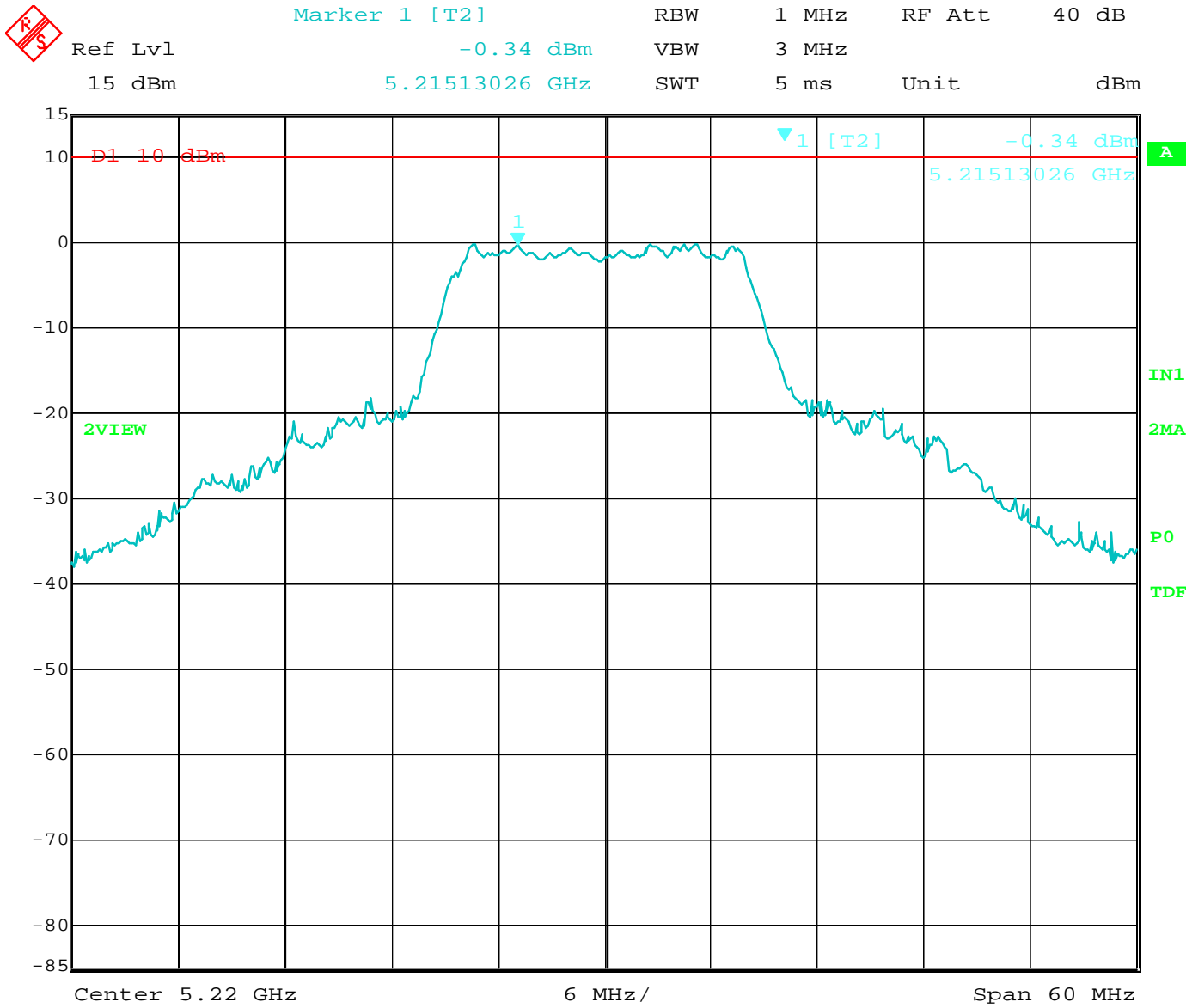
PEAK EXCURSION

DATA SHEETS



Date: 11.SEP.2013 14:02:54

Peak Excursion – Channel 36 – 6 Mbps, BPSK Modulation, OFDM Signal Type (Worst Case)
 The PPSD is -6.88 dBm so the Peak Excursion is [0.12 dBm - (-6.88 dBm)] = 7 dB
 Limit = 13 dB

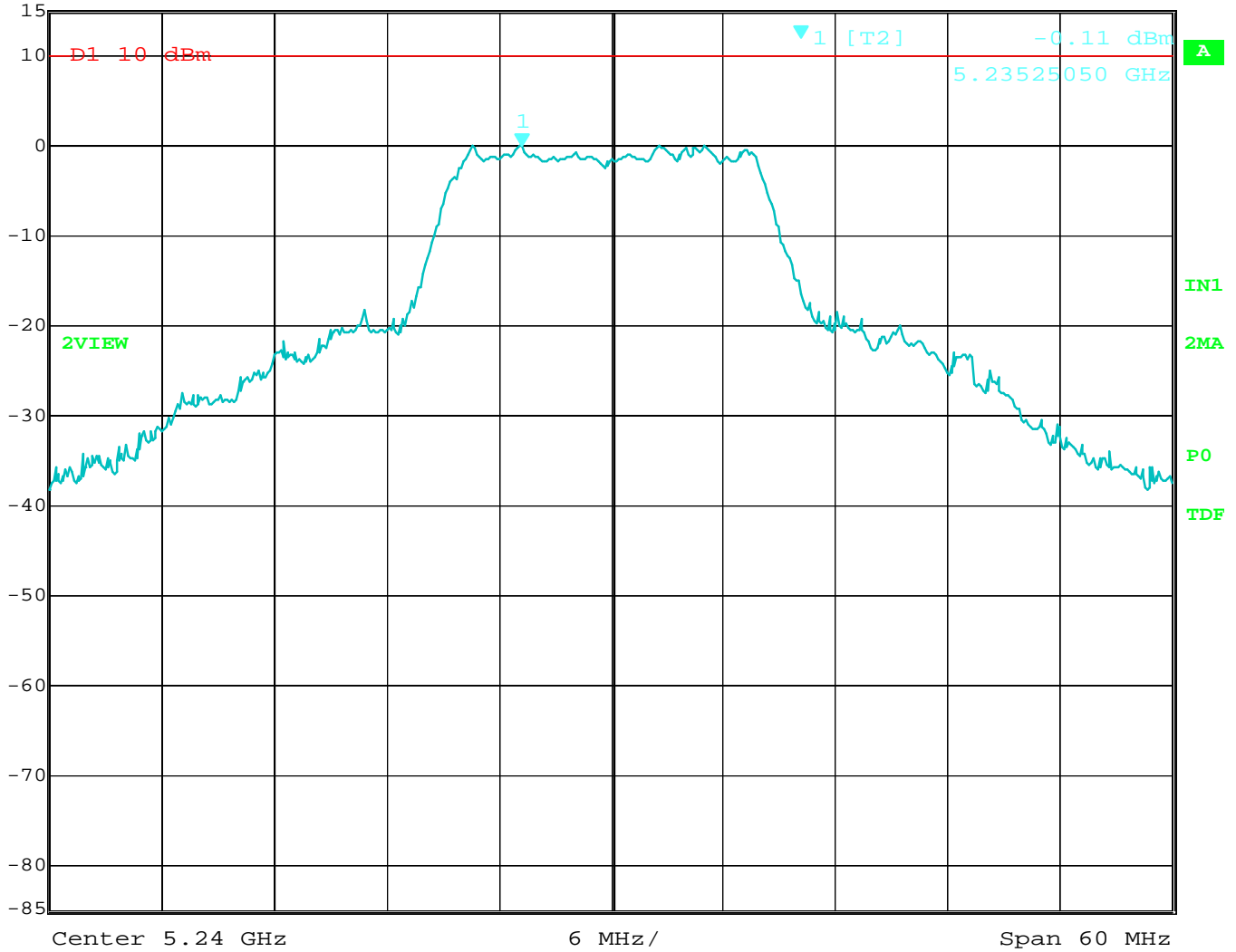


Date: 11.SEP.2013 14:02:16

Peak Excursion – Channel 44 – 6 Mbps, BPSK Modulation, OFDM Signal Type (Worst Case)
 The PPSD is -7.49 dBm so the Peak Excursion is [-0.34 dBm - (-7.49 dBm)] = 7.15 dB
 Limit = 13 dB

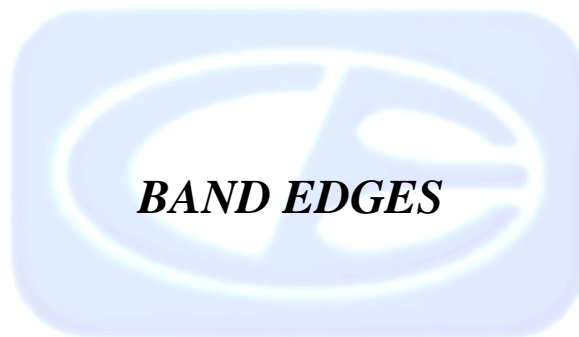


Marker 1 [T2] RBW 1 MHz RF Att 40 dB
 Ref Lvl -0.11 dBm VBW 3 MHz
 15 dBm 5.23525050 GHz SWT 5 ms Unit dBm



Date: 11.SEP.2013 13:57:16

Peak Excursion – Channel 48 – 6 Mbps, BPSK Modulation, OFDM Signal Type (Worst Case)
 The PPSD is -6.64 dBm so the Peak Excursion is $[-0.11 \text{ dBm} - (-6.64 \text{ dBm})] = 6.53 \text{ dB}$
 Limit = 13 dB



DATA SHEETS

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

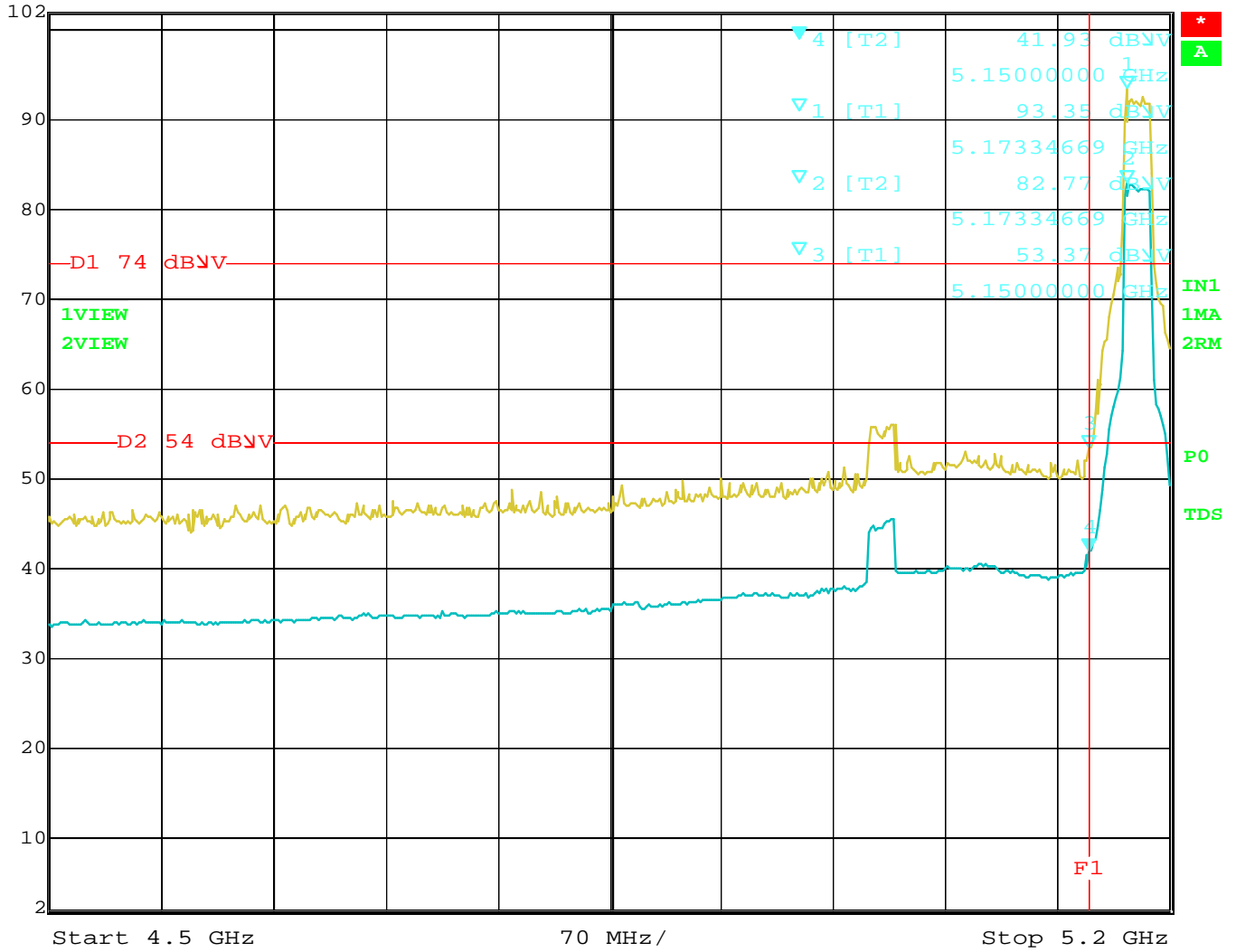
Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

**Band Edges - Vertical Polarization - 802.11 a Mode - Antenna 1
 Worst Case - 6 Mbps - Y-Axis**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
5180	93.35	V	--	--	Peak	1.25	255	Fundamental of Low Channel
5180	82.77	V	--	--	Avg	1.25	255	
5150	53.37	V	74	-20.63	Peak	1.25	225	Band Edge of Low Channel
5150	41.93	V	54	-12.07	Avg	1.25	225	
5029.36	55.92	V	74	-18.08	Peak	1.25	225	Band Edge of Low Channel
5027.95	45.38	V	54	-8.62	Avg	1.25	225	
								Note: No Emissions Detected at 5350 MHz when the EUT was at Channel 48 (5240 MHz)

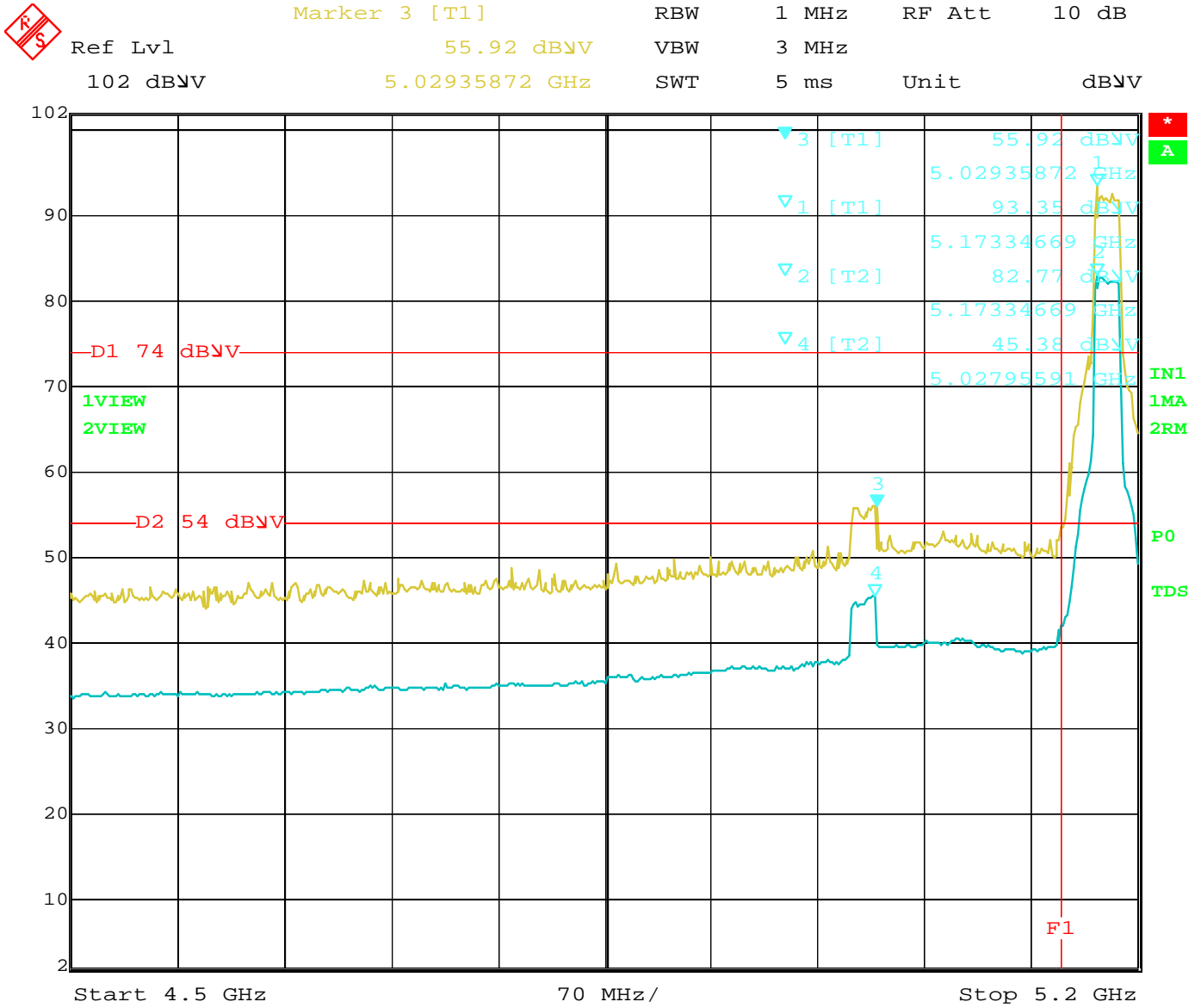


Marker 4 [T2] RBW 1 MHz RF Att 10 dB
 Ref Lvl 41.93 dBV VBW 3 MHz
 102 dBV 5.1500000 GHz SWT 5 ms Unit dBV



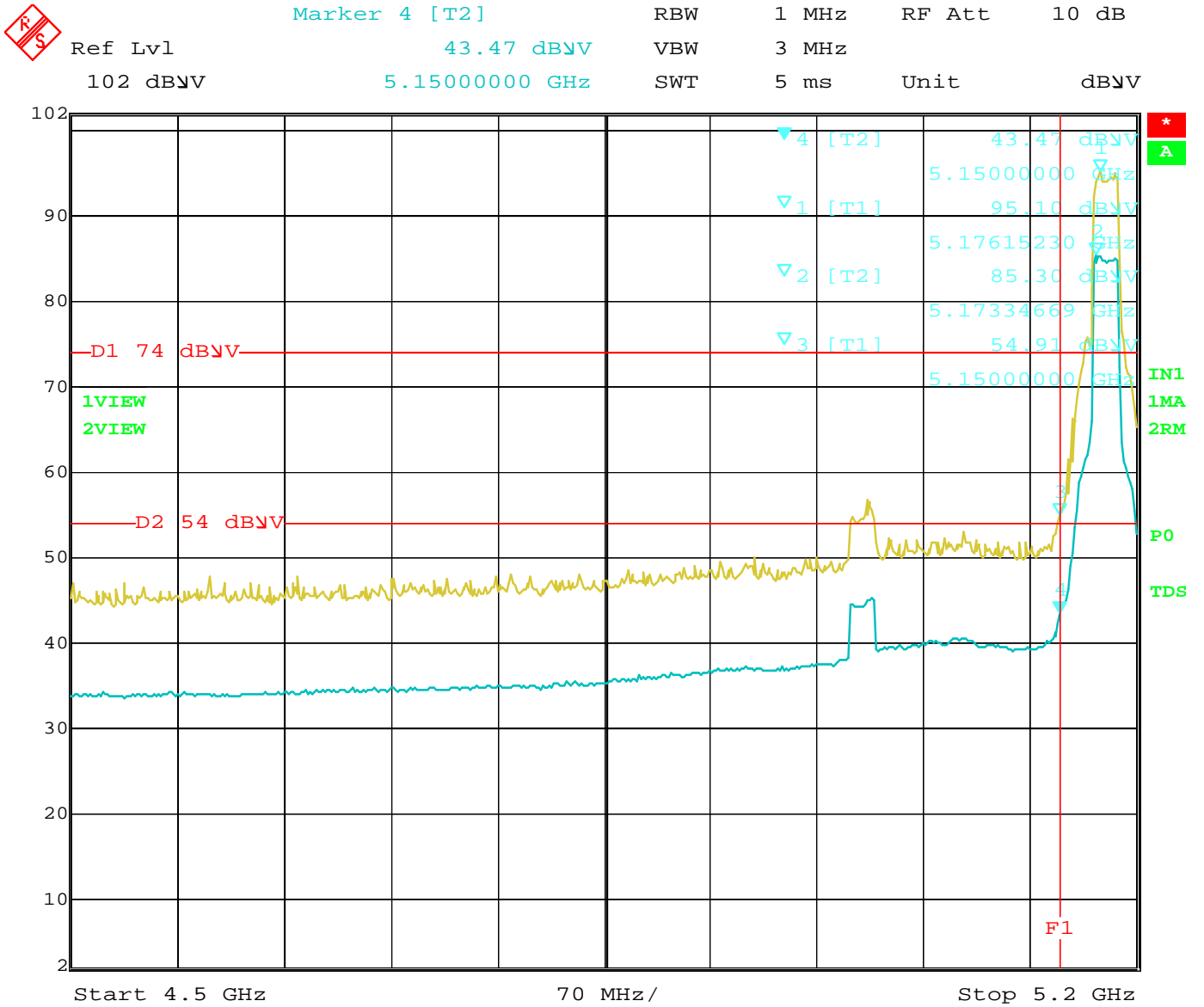
Date: 11.SEP.2013 15:44:52

Band Edge for Low Channel – Antenna 1 – Vertical Polarization – Y-Axis (Worst Case) – Plot #1



Date: 11.SEP.2013 15:45:48

Band Edge for Low Channel – Antenna 1 – Vertical Polarization – Y-Axis (Worst Case) – Plot #2

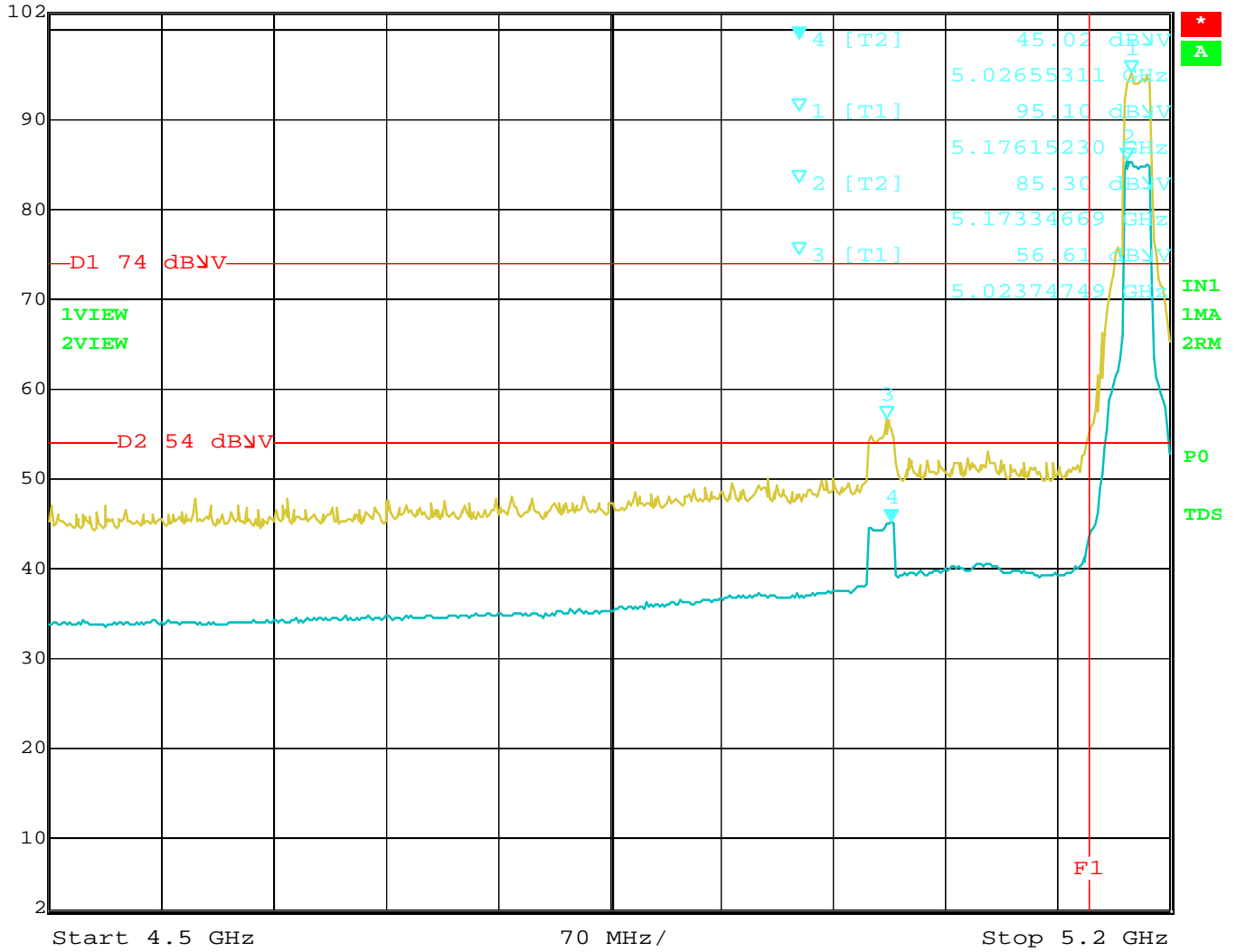


Date: 11.SEP.2013 15:53:07

Band Edge for High Channel – Antenna 1 – Horizontal Polarization – X-Axis (Worst Case) – Plot #1



Marker 4 [T2] RBW 1 MHz RF Att 10 dB
 Ref Lvl 45.02 dBV VBW 3 MHz
 102 dBV 5.02655311 GHz SWT 5 ms Unit dBV



Date: 11.SEP.2013 15:54:15

Band Edge for High Channel – Antenna 1 – Horizontal Polarization – X-Axis (Worst Case) – Plot #2

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

**Band Edges - Vertical Polarization - 802.11 a Mode - Antenna 2
 Worst Case - 6 Mbps - Z-Axis**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
5180	92.14	V	--	--	Peak	1.25	155	Fundamental of Low Channel
5180	82.17	V	--	--	Avg	1.25	155	
5150	52.54	V	74	-21.46	Peak	1.25	155	Band Edge of Low Channel
5150	41.19	V	54	-12.81	Avg	1.25	155	
5025.15	52.48	V	74	-21.52	Peak	1.25	155	Band Edge of Low Channel
5025.15	40.77	V	54	-13.23	Avg	1.25	155	
								Note: No Emissions Detected at 5350 MHz when the EUT was at Channel 48 (5240 MHz)

FCC Subpart E

Roku, Inc.
 Roku Remote
 Model: RC07

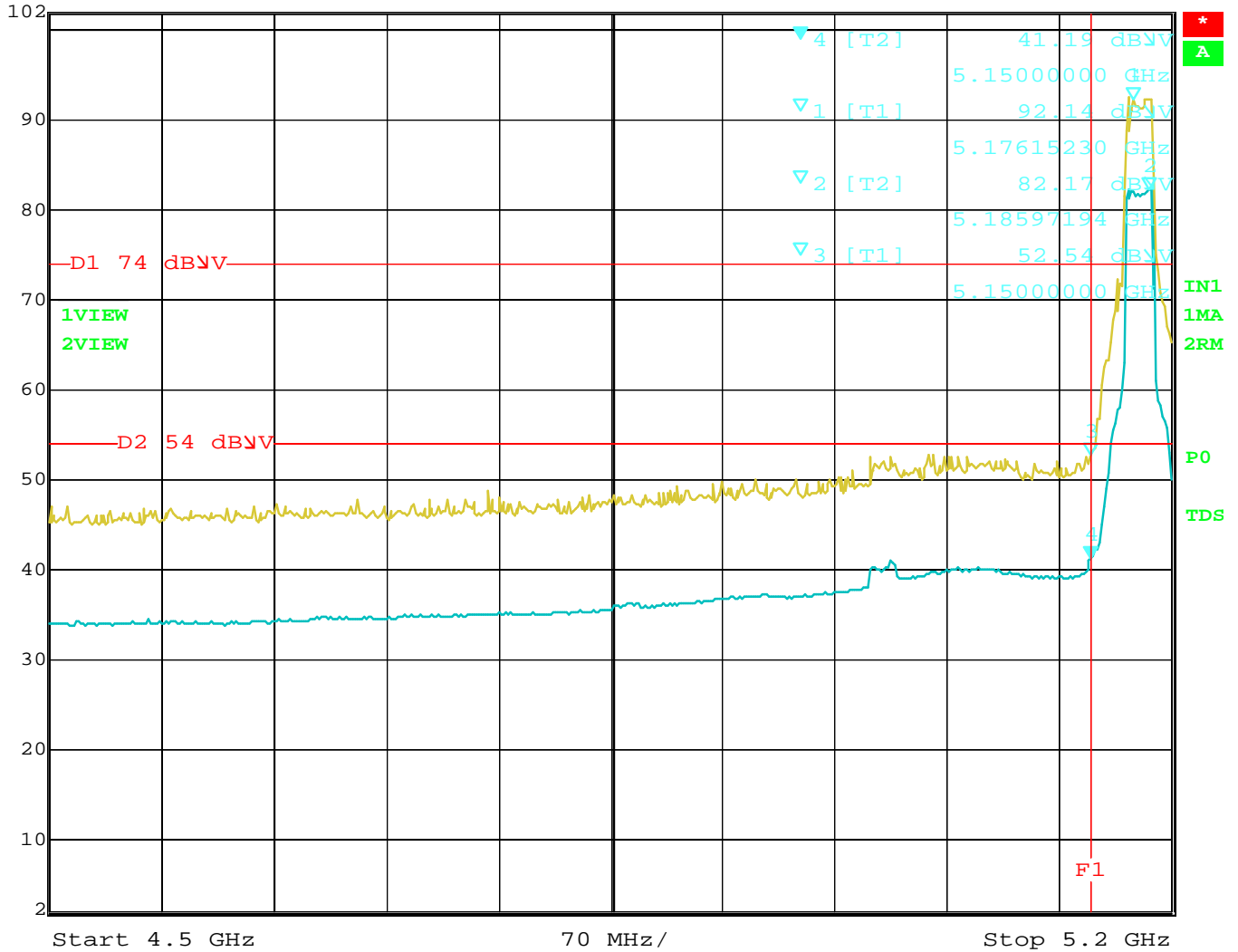
Dates: 09/05/2013 and 09/11/2013
 Lab: B
 Tested By: Kyle Fujimoto

Band Edges - Horizontal Polarization - 802.11 a Mode - Antenna 2
Worst Case - 6 Mbps - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
5180	94.74	H	--	--	Peak	1.25	155	Fundamental of Low Channel
5180	84.48	H	--	--	Avg	1.25	155	
5150	54.26	H	74	-19.74	Peak	1.25	155	Band Edge of High Channel
5150	42.97	H	54	-11.03	Avg	1.25	155	
5023.7	54.87	H	74	-19.13	Peak	1.25	155	Band Edge of High Channel
5028.0	43.95	H	54	-10.05	Avg	1.25	155	
								Note: No Emissions Detected at 5350 MHz when the EUT was at Channel 48 (5240 MHz)

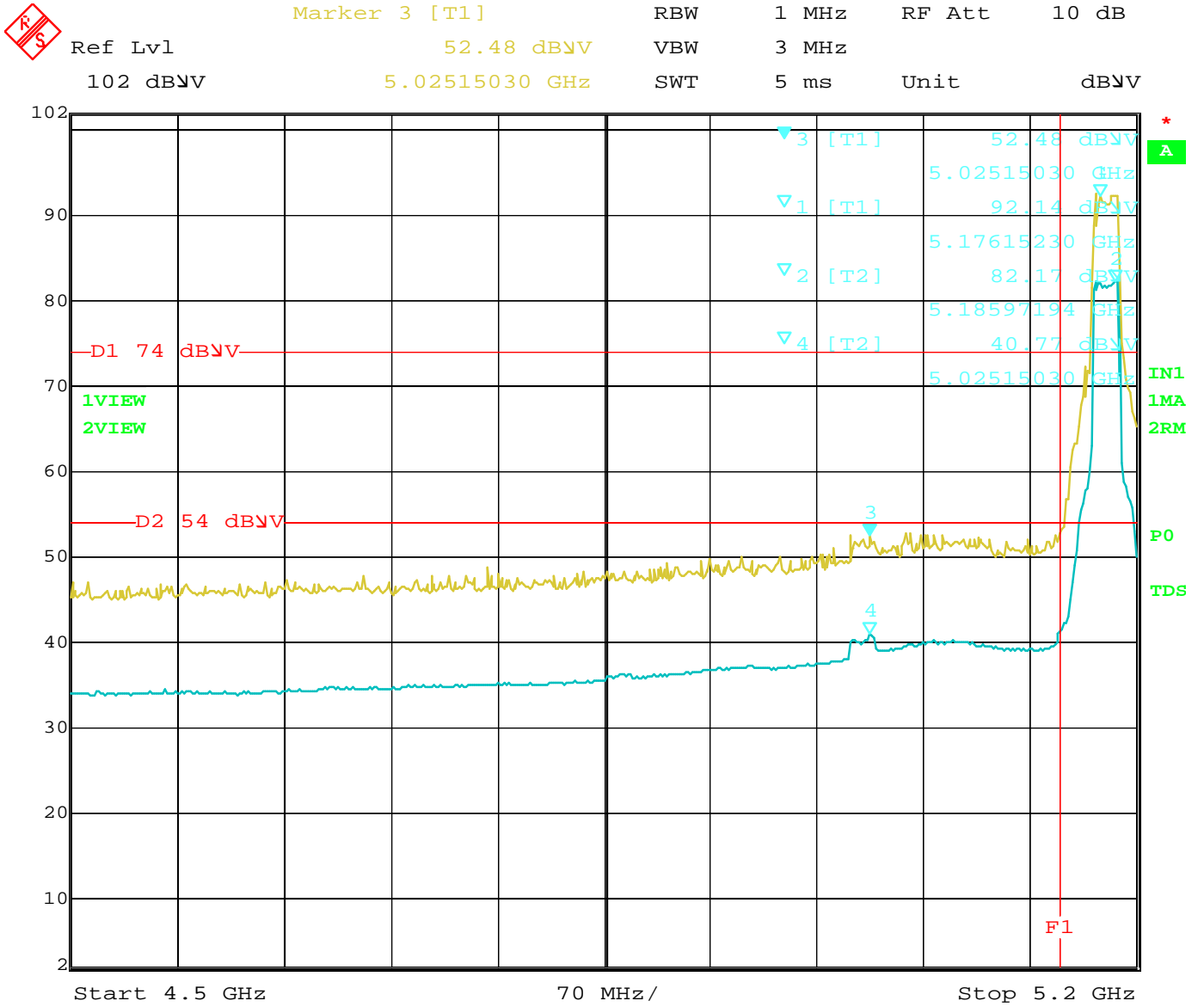


Ref Lvl	Marker 4 [T2]	RBW	1 MHz	RF Att	10 dB
102 dB μ V	41.19 dB μ V	VBW	3 MHz		
	5.15000000 GHz	SWT	5 ms	Unit	dB μ V



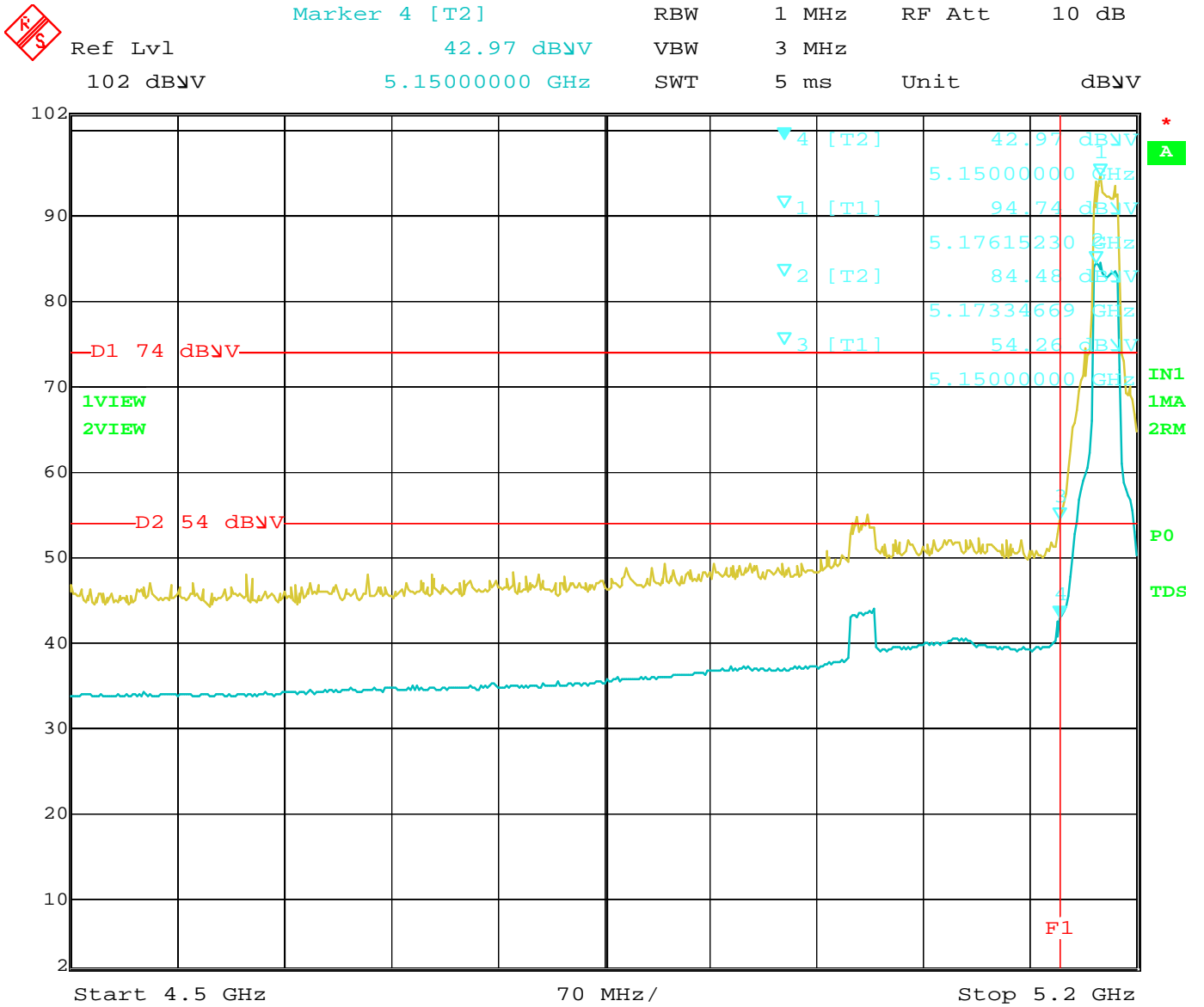
Date: 11.SEP.2013 16:10:08

Band Edge for Low Channel – Antenna 2 – Vertical Polarization – Z-Axis (Worst Case) – Plot #1



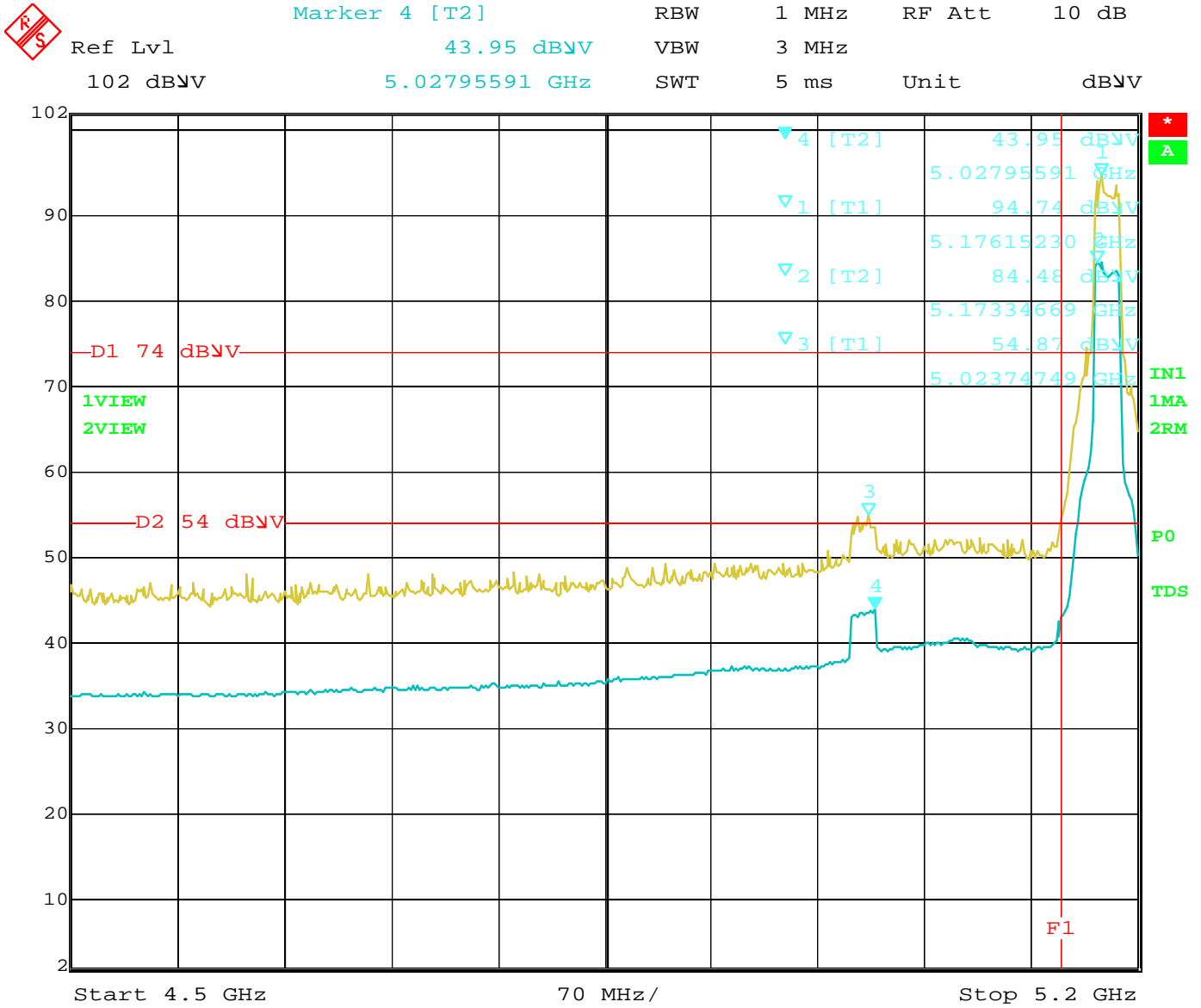
Date: 11.SEP.2013 16:11:42

Band Edge for Low Channel – Antenna 2 – Vertical Polarization – Z-Axis (Worst Case) – Plot #2



Date: 11.SEP.2013 16:03:44

Band Edge for High Channel – Antenna 2 – Horizontal Polarization – X-Axis (Worst Case) – Plot #1



Date: 11.SEP.2013 16:03:27

Band Edge for High Channel – Antenna 2 – Horizontal Polarization – X-Axis (Worst Case) – Plot #2