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WLAN TEST REPORT

Report Number: **102334393LEX-001**
Project Number: **G102334393**

Report Issue Date: **12/03/2015**

Product Name: **Road iQ**
Model Number: **ROADIQ-VDS-01**

FCC Standards: **Title 47 CFR 15 Subpart B and CTitle 47 CFR 15 Subpart B and C**
RSS-247 Issue 1 & RSS-GEN Issue 4

Tested by:
Intertek Testing Services NA, Inc.
731 Enterprise Drive
Lexington, KY 40510

Client:
Road-iQ LLC
2183 Alpine Way
Bellingham, WA 98226

Report prepared by
Carmen Davis, Project Engineer

Report reviewed by
Bryan Taylor, Team Lead-Engineering

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1 Introduction and Conclusion

The tests indicated in section 2 were performed on the product constructed as described in section 3. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test method, a list of the actual test equipment used, documentation photos, results and raw data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested complied with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested.

The INTERTEK-Lexington is located at 731 Enterprise Drive, Lexington Kentucky, 40510. The radiated emission test site is a 10-meter semi-anechoic chamber. The chamber meets the characteristics of CISPR 16-1 and ANSI C63.4. For measurements, a remotely controlled flush-mount metal-top turntable is used to rotate the EUT a full 360 degrees. A remote controlled non-conductive antenna mast is used to scan the antenna height from one to four meters. The test site is listed with the FCC under registration number 485103. The test site is listed with Industry Canada under site number IC 2042M-1.

2 Test Summary

Page	Test full name	FCC Reference	IC Reference	Result
6	Peak Conducted Power	§ 15.247(b)(3)(4)	RSS-247 (5.4)	Pass
8	Occupied Bandwidth	§ 15.247(a)(2)	RSS-247 (5.2) RSS-GEN (4.6.1)	Pass
21	Conducted Spurious Emissions	§ 15.247(d)	RSS-247 (5.5)	Pass
25	Power Spectral Density	§ 15.247(e)	RSS-247 (5.2)	Pass
31	Radiated Spurious Emissions (Transmitter)	§ 15.247(d), § 15.209, and § 15.205	RSS-247 (5.5)	Pass
37	Radiated Spurious Emissions (Receiver)	§ 15.109	RSS-Gen (6.1)	Pass
39	AC Powerline Conducted Emissions	§ 15.107, § 15.207	RSS-Gen (7.2.4)	Pass
44	Antenna Requirement per FCC Part 15.203	§ 15.203	RSS-Gen (7.1.2)	Pass

3 Description of Equipment Under Test

Equipment Under Test	
Manufacturer	Road-iQ LLC
Model Number	ROADIQ-VDS-01
Serial Number	93, 94, and 95
Receive Date	11/10/2015
Test Start Date	11/18/2015
Test End Date	11/30/2015
Device Received Condition	Good
Test Sample Type	Production
Frequency Band	2412MHz – 2462MHz
Mode(s) of Operation	802.11b,g,n
Modulation Type	BPSK, QPSK, CCK, OFDM
Duty Cycle	100%
Transmission Control	Test Commands
Maximum Output Power	26.03 dbm
Test Channels	1,6,11
Antenna Type (15.203)	External Antenna
Operating Voltage	12Vdc

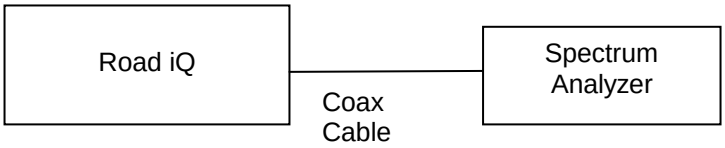
Description of Equipment Under Test
The Road-iQ VideoData Server is a video and data display, acquisition, and playback system. The Road-iQ VideoData Server is designed to collect and record video data from up to six (6) cameras installed on your vehicle, as well as system parameters from your vehicle-bus communication network and GPS location, all in-sync. Live video ca be displayed on an iPad on the vehicle's dash in real-time, and recorded video and data can be reviewed on the tablet or transferred to a personal computer. Further, the Road-iQ VideoData Server allows the definition of triggers, which use vehicle parameters to define significant events (Excessive speed, panic braking, etc.) which are then marked in the recorded files for easy locating.

Operating modes of the EUT:

No.	Descriptions of EUT Exercising
1	Transmitting 802.11 b, g or n on low, mid or high channels
2	Receive mode / idle mode

3.1 System setup including cable interconnection details, support equipment and simplified block diagram

3.2 EUT Block Diagram:



Conducted Output Measurements

Radiated Measurements

3.3 Cables:

Cables					
Description	Length	Shielding	Ferrites	Connection	
				From	To
SPI cable	8ft	None	None	EUT	Laptop
Ethernet	8ft	None	None	EUT	Laptop
USB	8ft	None	None	EUT	Laptop
12vdc	2ft	None	None	EUT	DC Power Supply

3.4 Support Equipment:

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
Laptop	Hewlett Packard	EliteBook 8440p	24889
Camera	Road iQ	Not labeled	Not labeled

4 Peak Conducted Power

4.1 Test Limits

§ 15.247(b)(3): For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the *maximum conducted output power* is the highest total transmit power occurring in any mode.

§ 15.247(b)(4): The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

4.2 Test Procedure

ANSI C63.10: 2013 and KDB Publication No. 558074: Guidance on Measurements for Digital Transmission Systems (47 CFR 15.247). The peak output power was measured using a power meter.

4.3 Test Equipment Used:

Description	Serial Number	Manufacturer	Model	Cal. Date	Cal. Due
Wideband Power Sensor	4022	Rohde & Schwarz	NRP-Z81	9/20/2015	9/20/2016

4.4 Results: The sample was found to be compliant.

Mode	Frequency (MHz)	Channel Number	Type	Conducted Power (dBm)			
				Data Rate (Mbps)			
				1	2	5.5	11
802.11b	2412	1	Peak	20.42	20.33	20.43	20.41
			Avg	17.87	17.87	17.85	17.82
	2437	6	Peak	20.26	20.05	20.18	20.31
			Avg	17.78	17.6	17.56	17.73
	2462	11	Peak	20.13	20.36	20.29	20.27
			Avg	17.63	17.82	17.71	17.68

Mode	Frequency (MHz)	Channel Number	Type	Conducted Power (dBm)							
				Data Rate (Mbps)							
				6	9	12	18	24	36	48	54
802.11g	2412	1	Peak	25.97	25.8	25.99	25.87	26.03	26.01	25.8	25.85
			Avg	18.25	18.25	18.25	18.11	18.11	17.98	16.8	16.5
	2437	6	Peak	25.9	25.86	25.93	25.94	26.01	25.95	25.65	25.76
			Avg	18.09	18.06	18.05	18.09	18.1	17.79	16.53	16.25
	2462	11	Peak	25.81	25.79	25.82	25.66	25.82	25.79	25.5	25.72
			Avg	18.03	18.08	18.06	18.07	17.9	17.72	16.35	16.5

Mode	Frequency (MHz)	Channel Number		Conducted Power (dBm)							
				MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
				6.5	13	19.5	26	39	52	58.5	65
802.11n	2412	1	Peak	25.89	25.9	25.92	25.99	25.94	22.25	23.14	22.18
			Avg	18.14	18.01	18.09	17.98	17.88	11.99	11.78	11.7
	2437	6	Peak	25.82	25.85	25.87	25.82	26	22.22	23.15	22.33
			Avg	17.98	17.84	17.89	17.8	17.78	11.83	11.74	11.67
	2462	11	Peak	25.69	25.7	25.8	25.7	25.66	22.09	23.18	22.22
			Avg	17.89	17.75	17.9	17.73	17.6	11.72	11.72	11.65

5 Occupied Bandwidth

5.1 Test Limits

§ 15.247(a)(2): For digital modulation systems, the minimum 6dB bandwidth shall be at least 500kHz.

5.2 Test Procedure

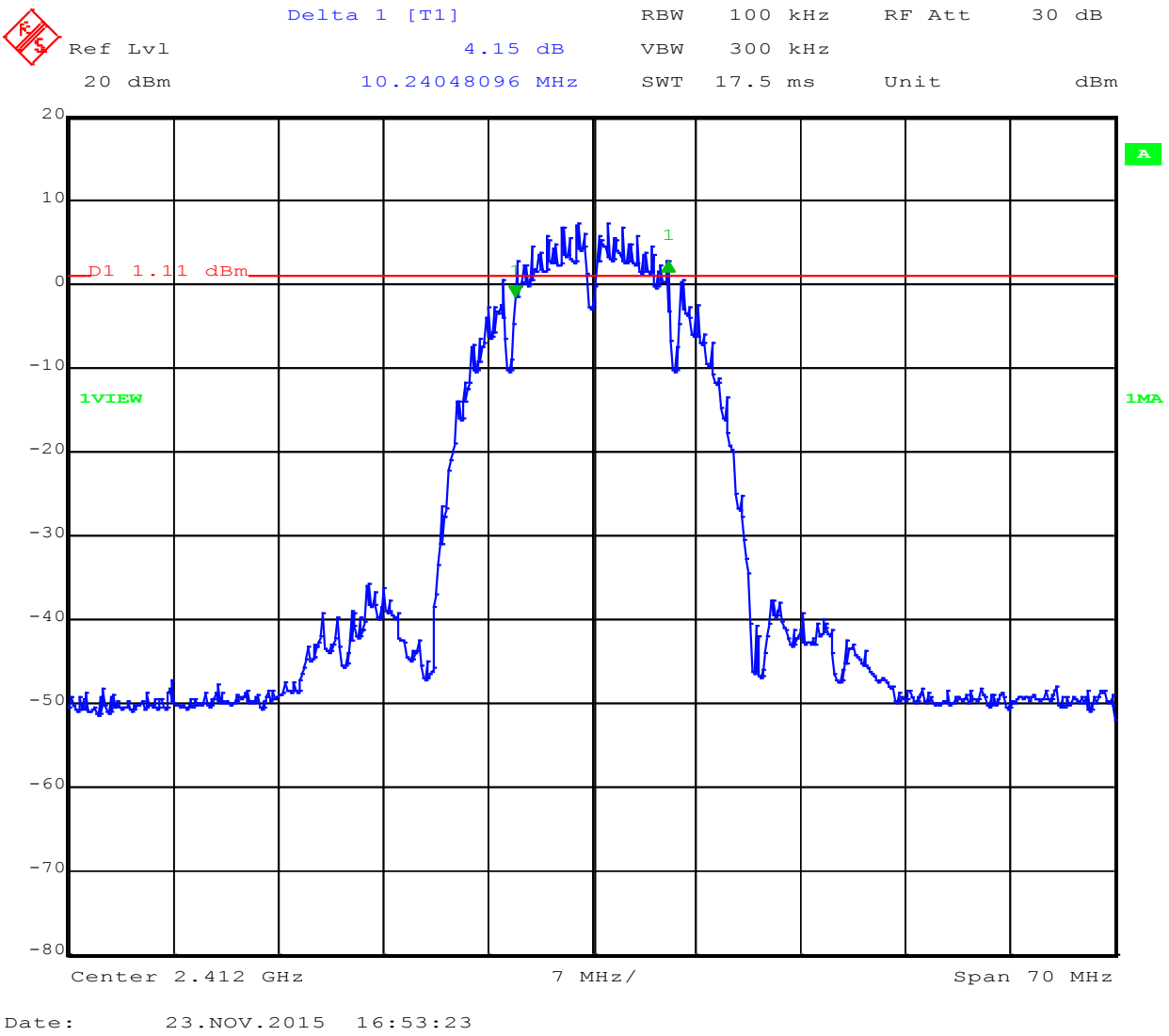
ANSI C63.10: 2013 and KDB Publication No. 558074: Guidance on Measurements for Digital Transmission Systems (47 CFR 15.247)

5.3 Test Equipment Used:

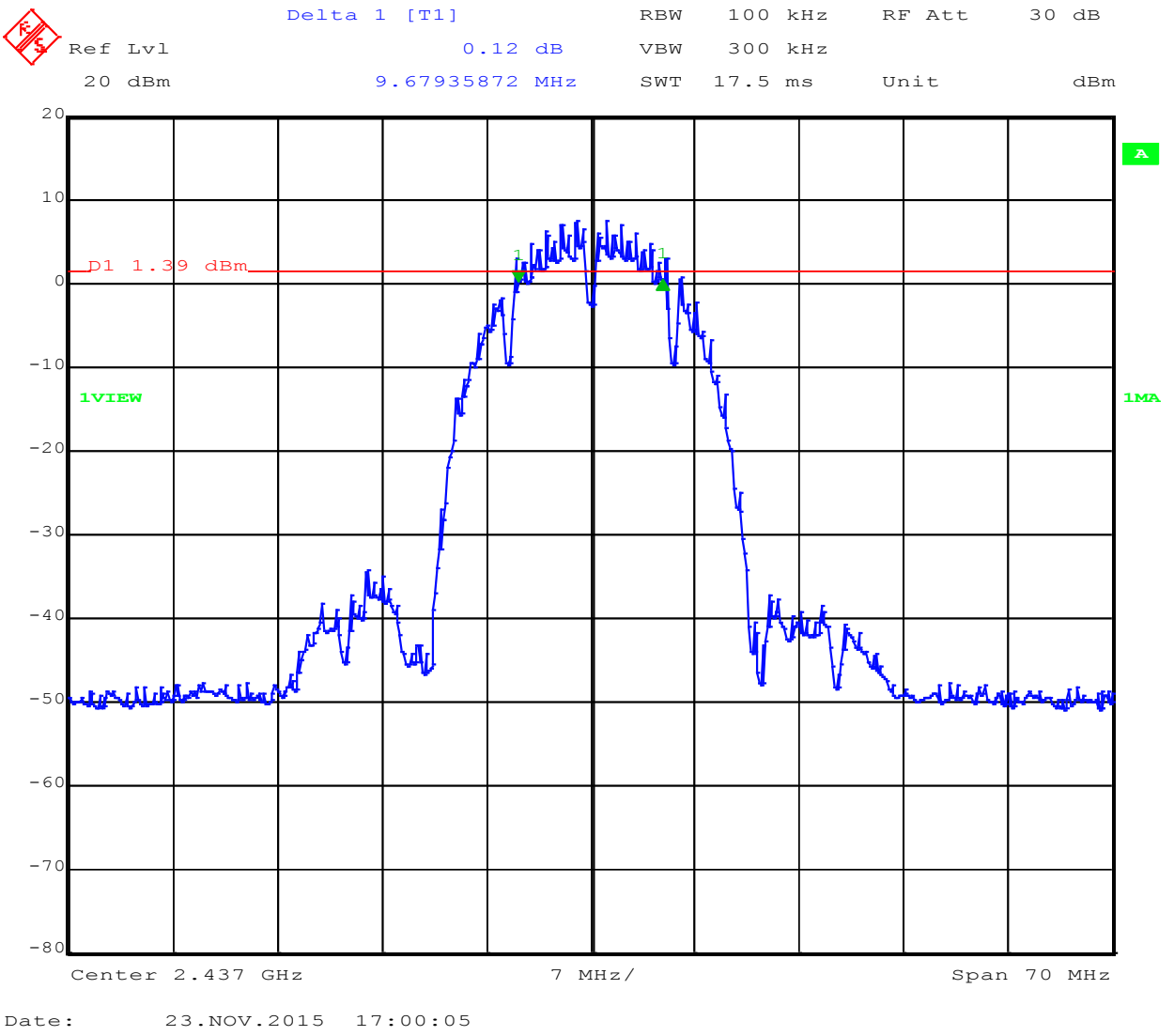
Description	Serial Number	Manufacturer	Model	Cal. Date	Cal. Due
Spectrum Analyzer	3720	Rohde & Schwarz	FSEK 30	9/20/2015	9/20/2016

5.4 Results:

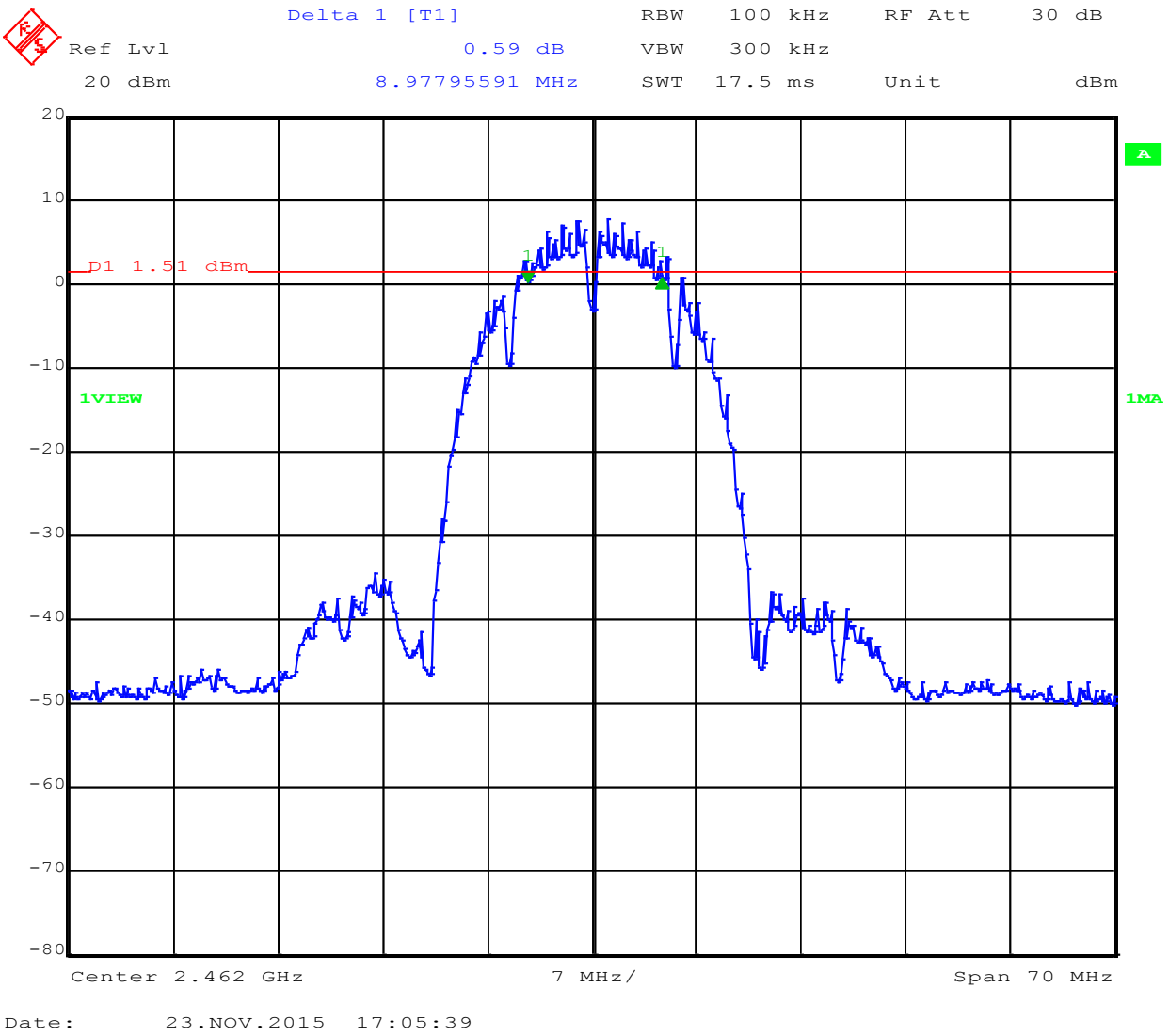
Mode	Channel Number	Frequency (MHz)	6dB Bandwidth	99% Power Bandwidth	Result
802.11b	1	2412	10.24Mhz	---	Pass
802.11b	6	2437	9.67Mhz	15.29Mhz	Pass
802.11b	11	2462	8.97Mhz	---	Pass
802.11g	1	2412	16.27Mhz	---	Pass
802.11g	6	2437	15.85Mhz	16.41Mhz	Pass
802.11g	11	2462	16.55Mhz	---	Pass
802.11n	1	2412	17.53Mhz	---	Pass
802.11n	6	2437	17.53Mhz	17.53Hhz	Pass
802.11n	11	2462	17.53Mhz	---	Pass



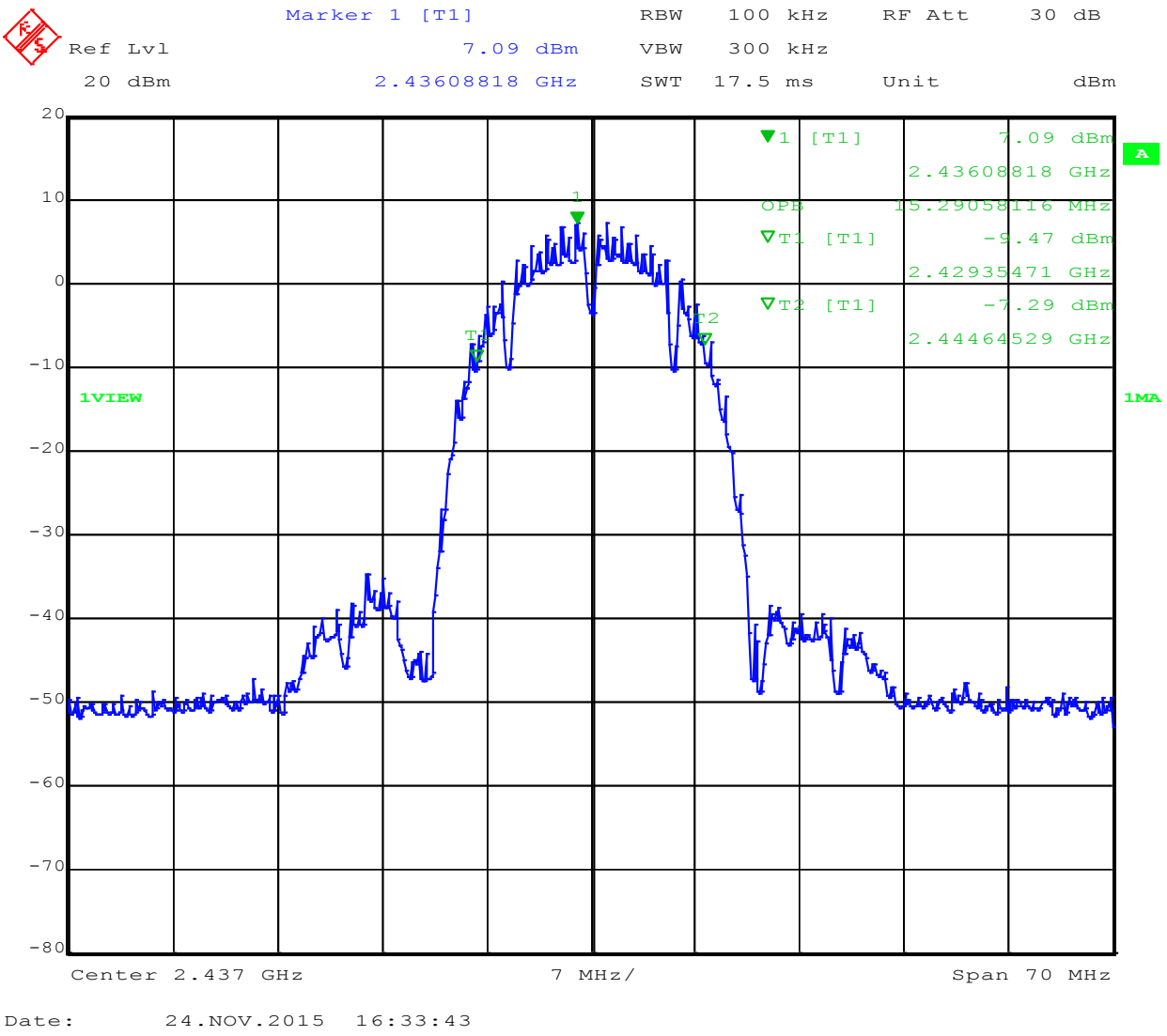
6dB Bandwidth Plot (Channel 1) – 802.11b mode



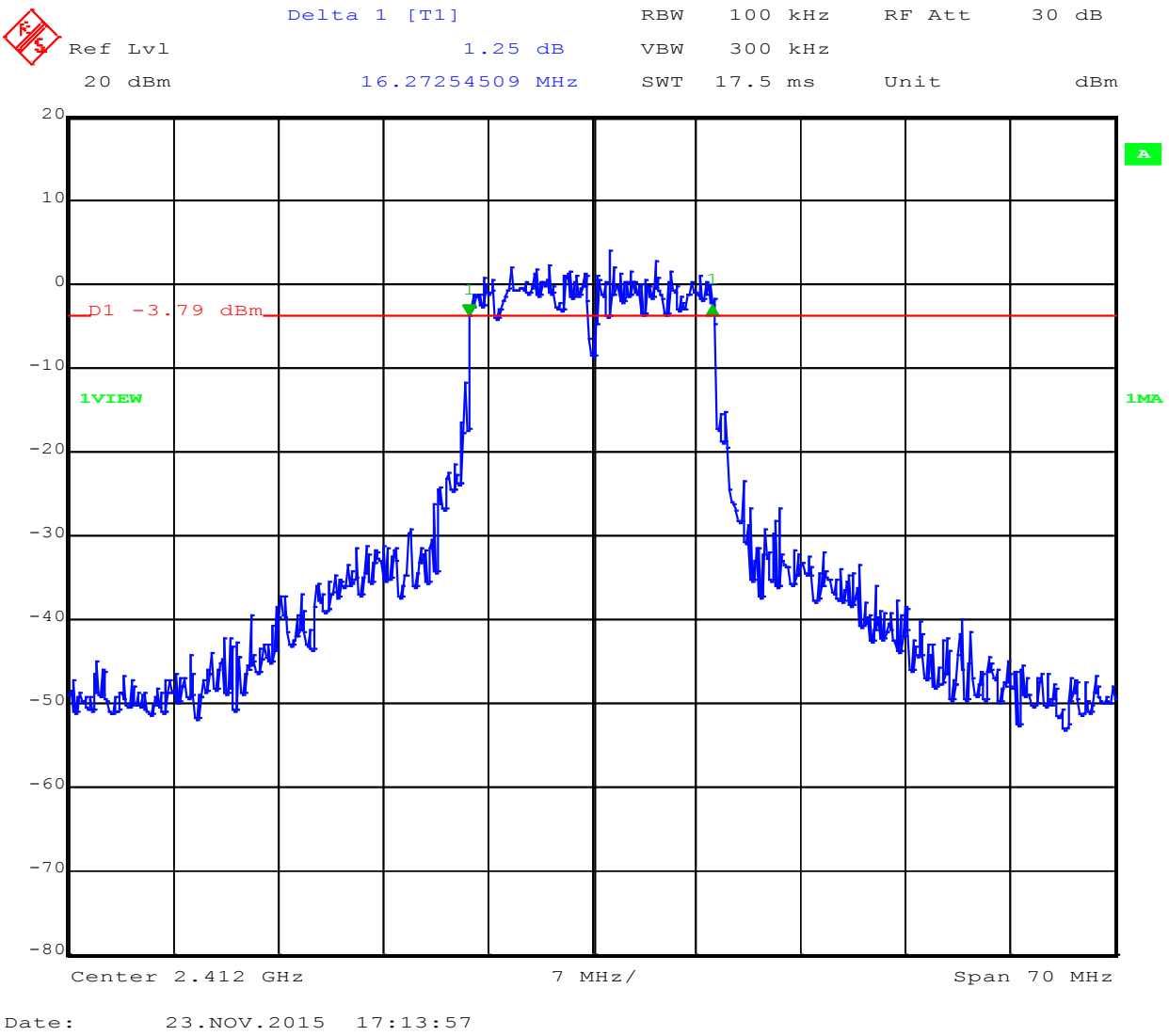
6dB Bandwidth Plot (Channel 6) – 802.11b mode



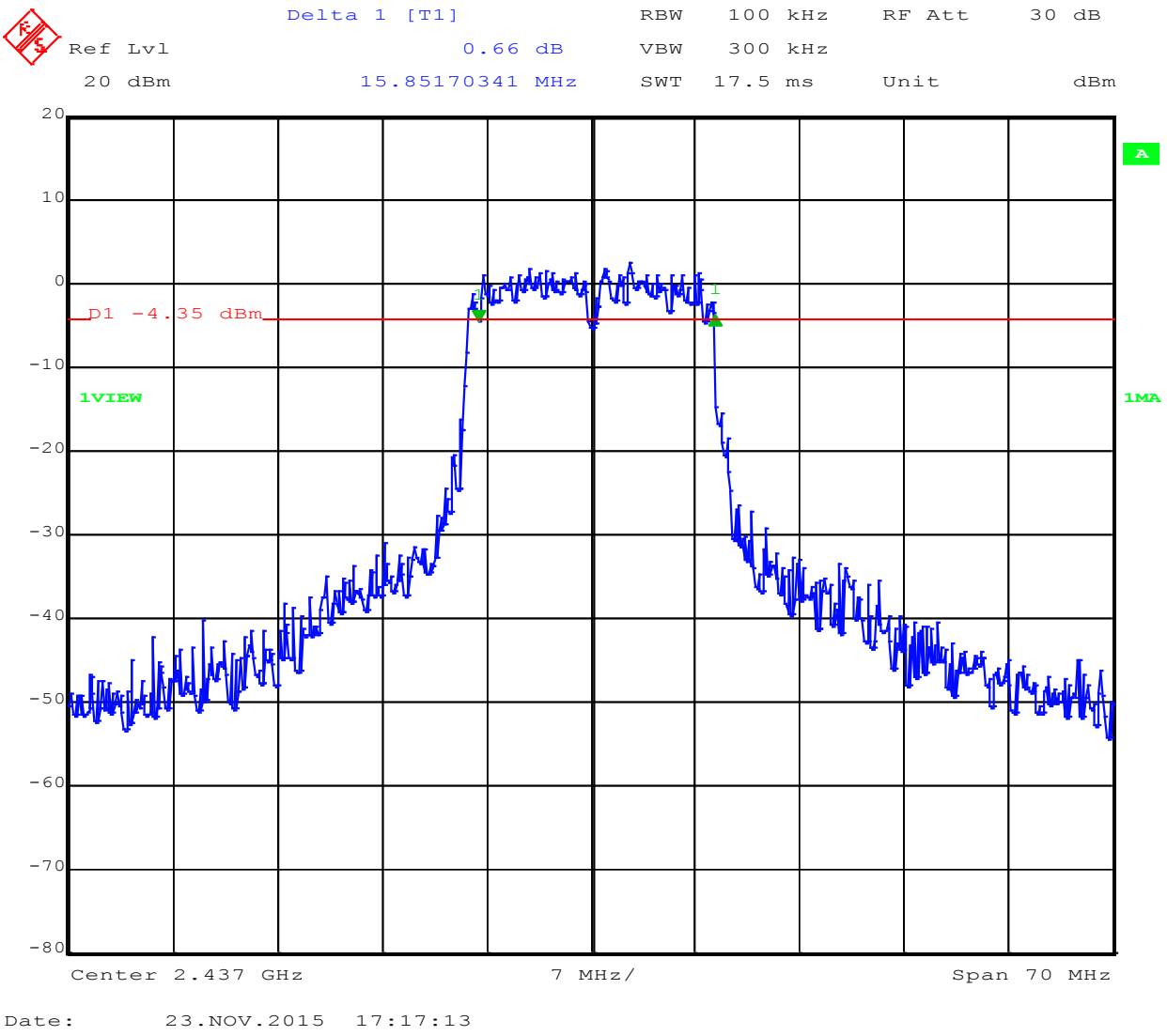
6dB Bandwidth Plot (Channel 11) – 802.11b mode



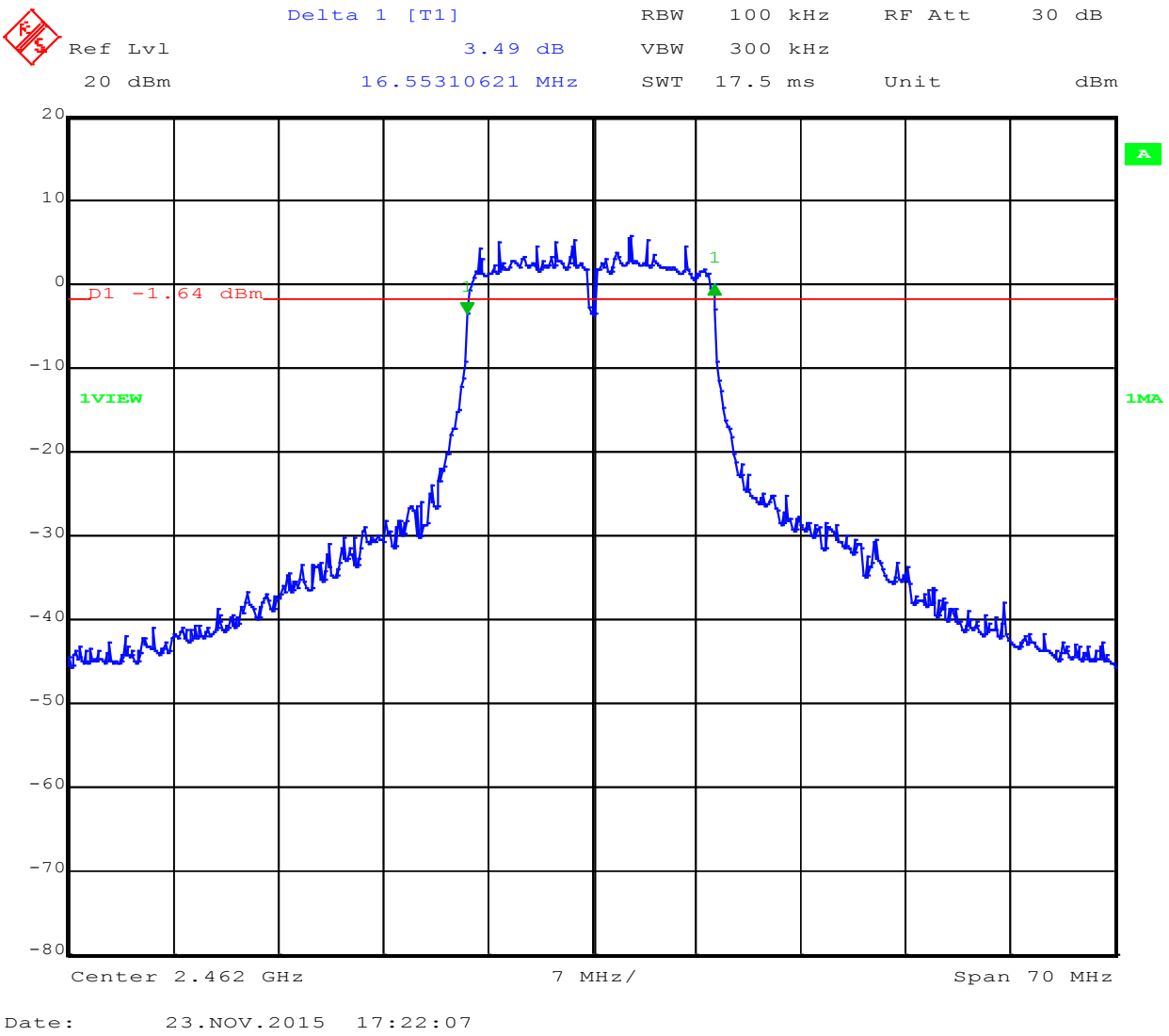
99% Power Bandwidth Plot (Channel 6) – 802.11b mode



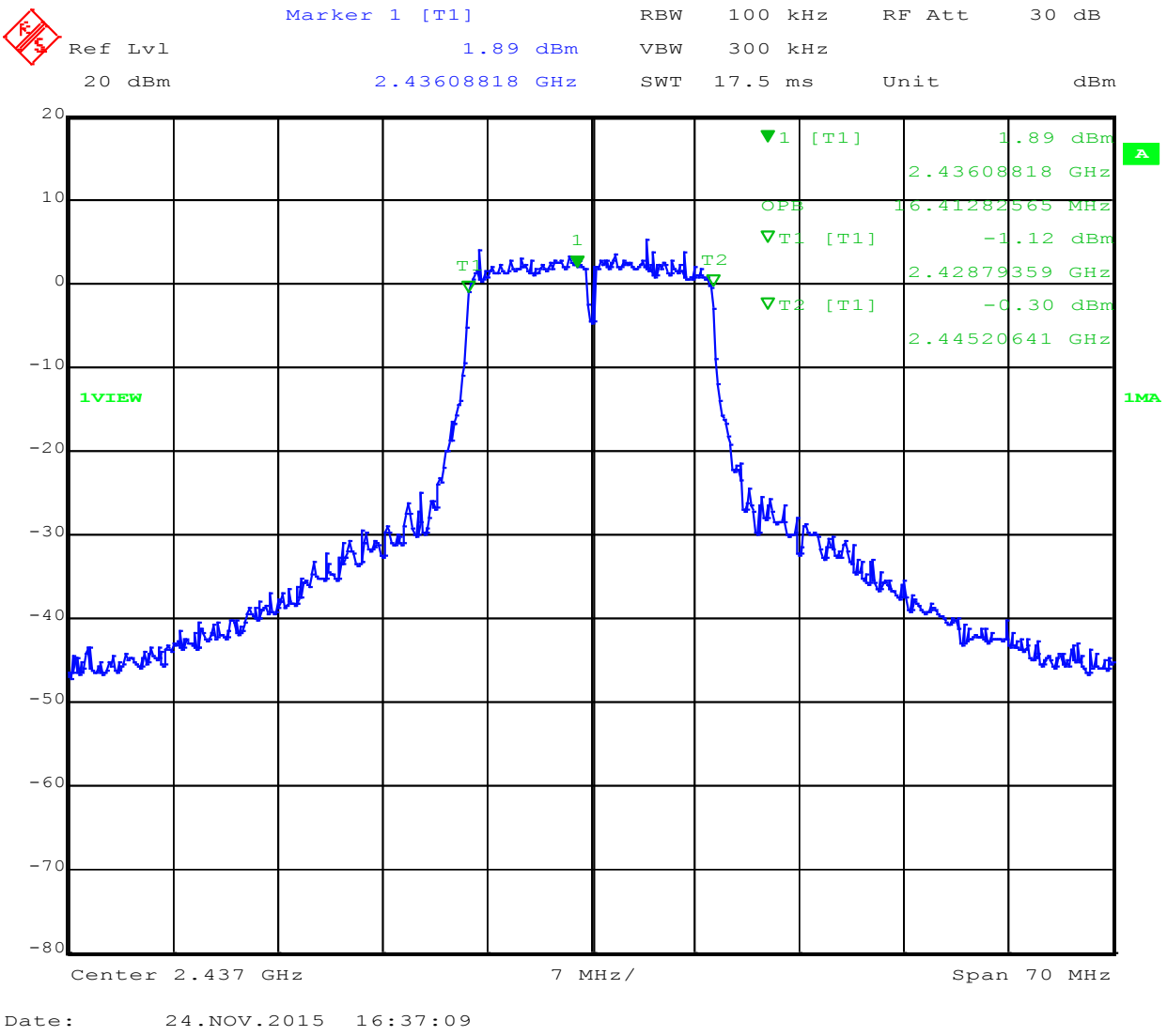
6dB Bandwidth Plot (Channel 1) – 802.11g mode



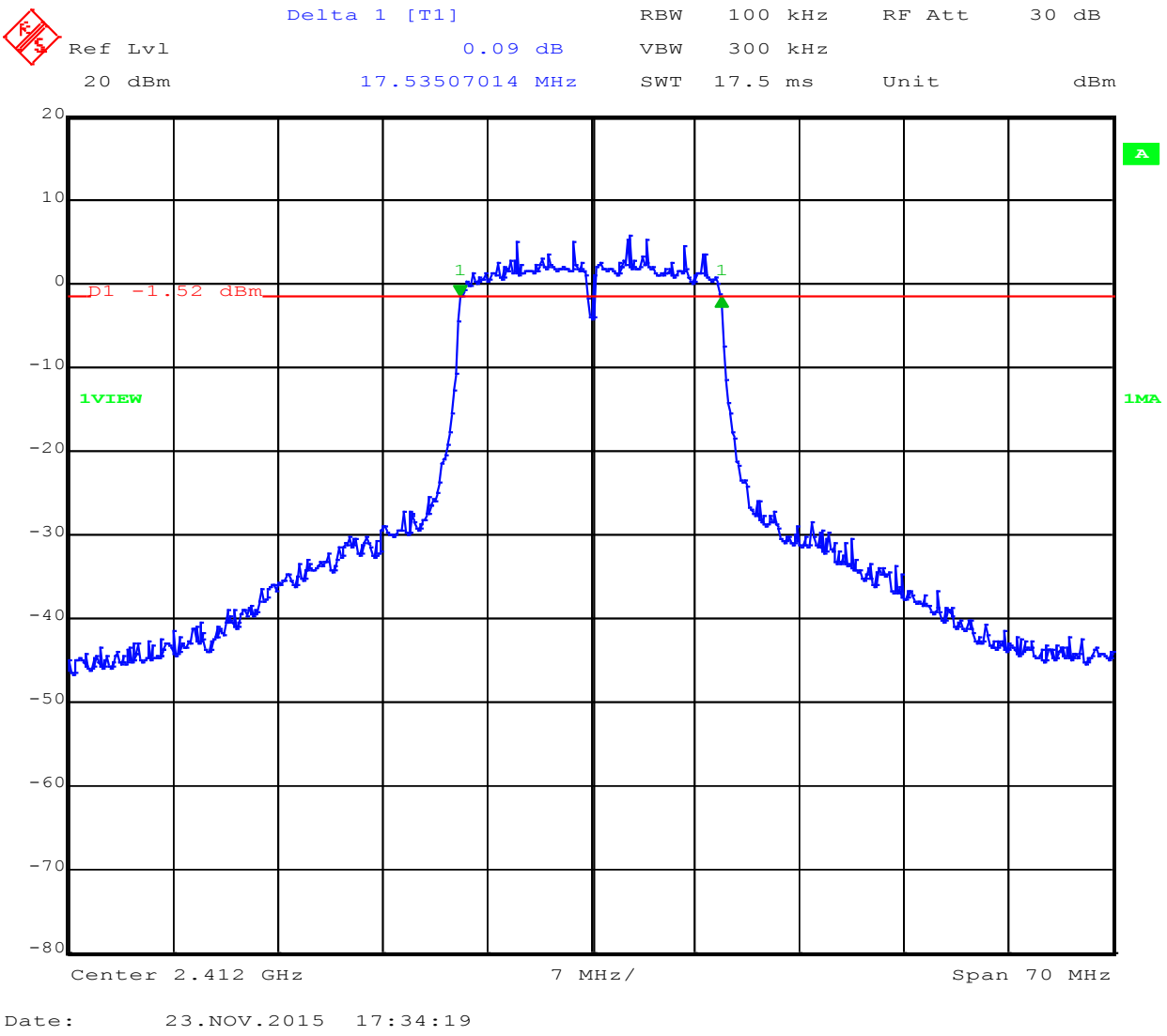
6dB Bandwidth Plot (Channel 6) – 802.11g mode



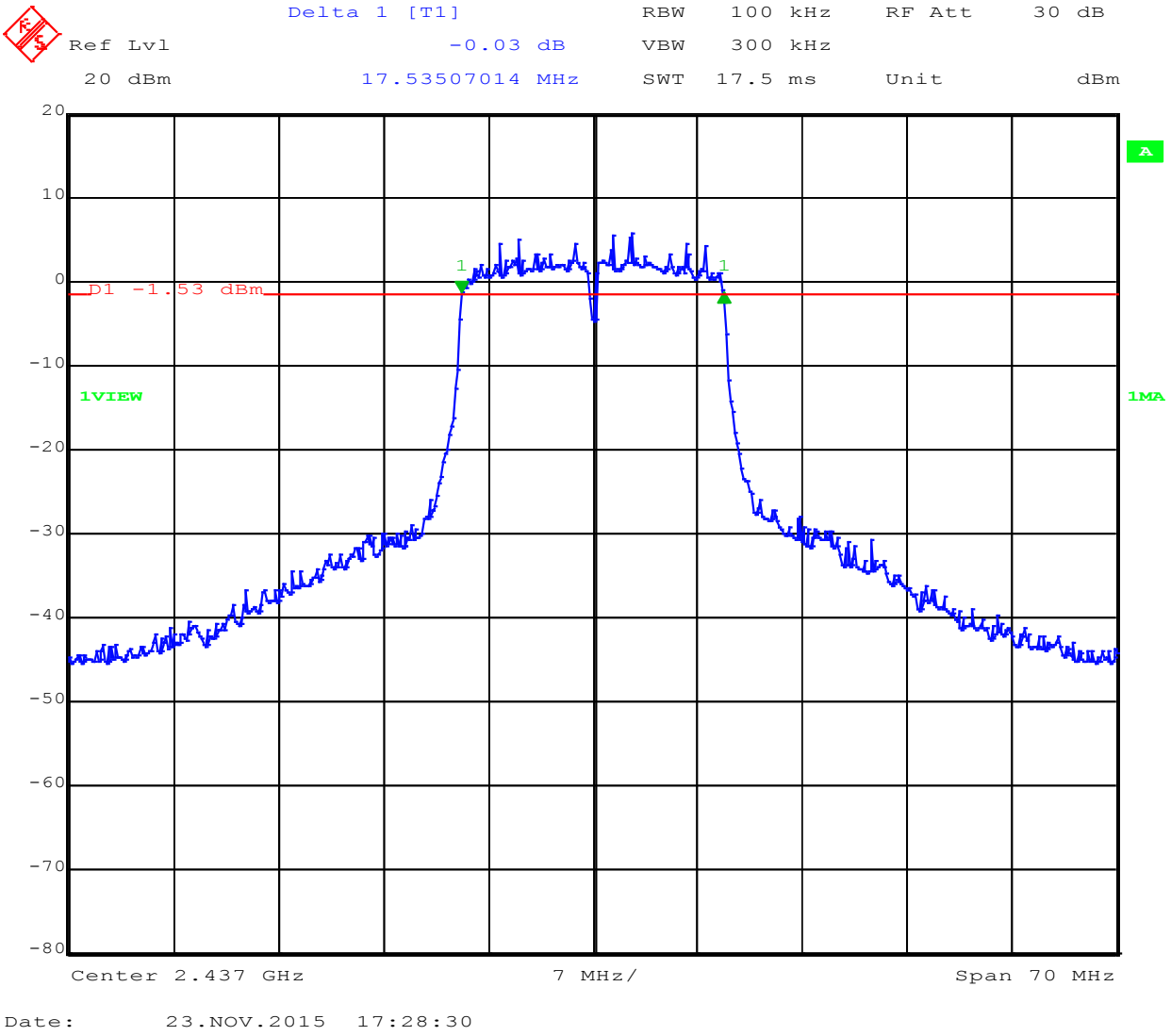
6dB Bandwidth Plot (Channel 11) – 802.11g mode



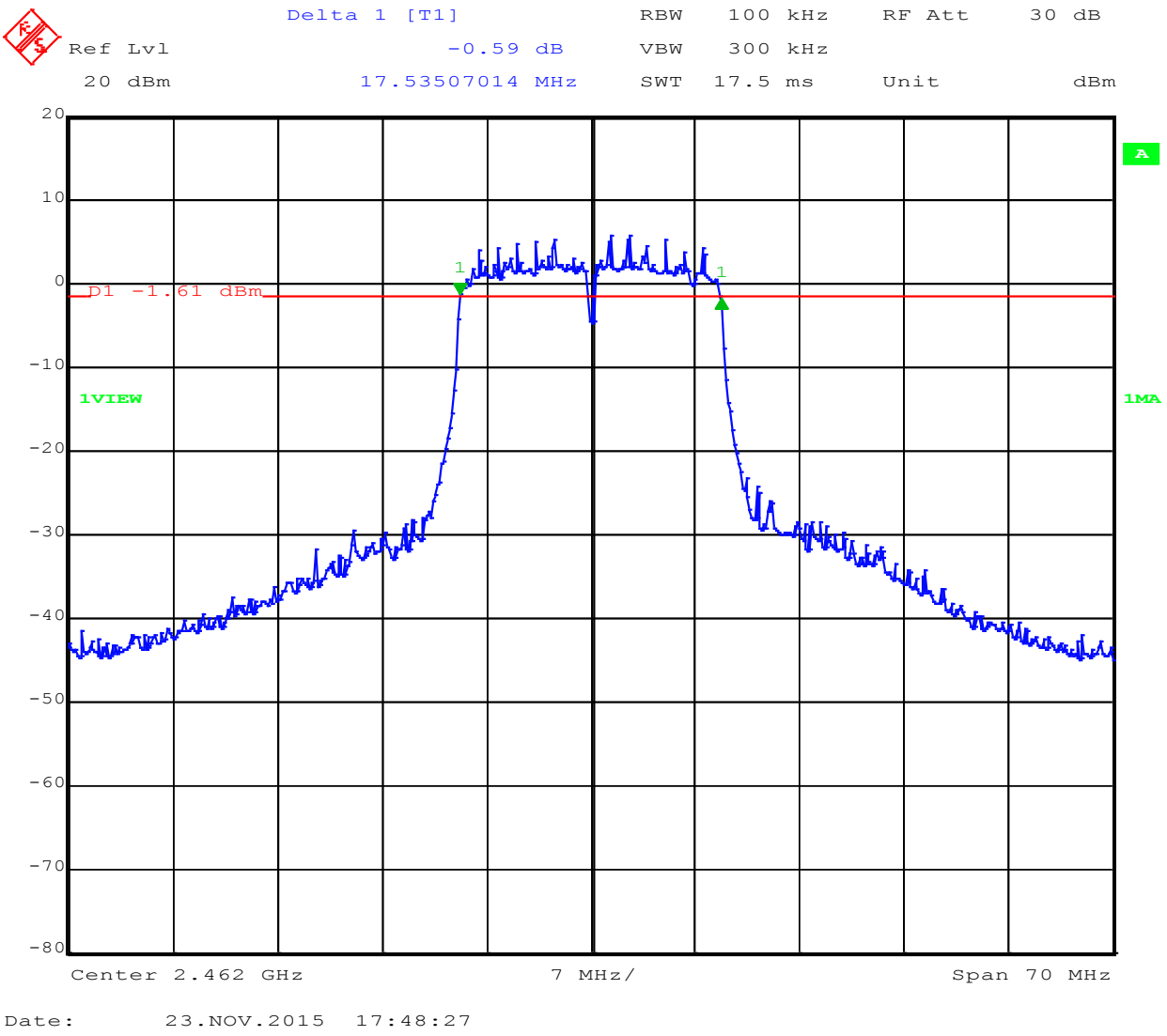
99% Power Bandwidth Plot (Channel 6) – 802.11g mode



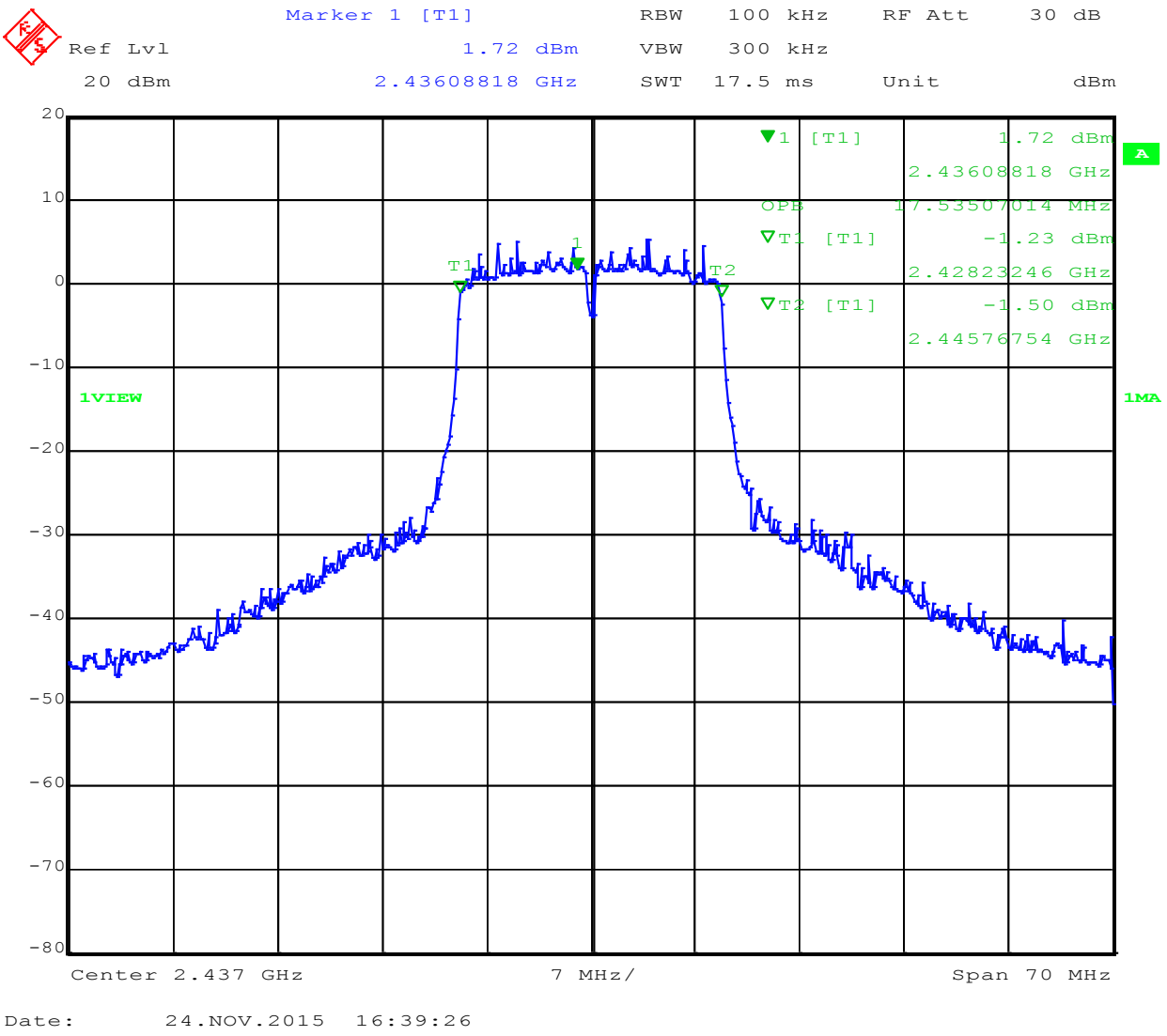
6dB Bandwidth Plot (Channel 1) – 802.11n mode



6dB Bandwidth Plot (Channel 6) – 802.11n mode



6dB Bandwidth Plot (Channel 11) – 802.11n mode



99% Power Bandwidth Plot (Channel 6) – 802.11n mode

6 Conducted Spurious Emissions

6.1 Test Limits

§ 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

6.2 Test Procedure

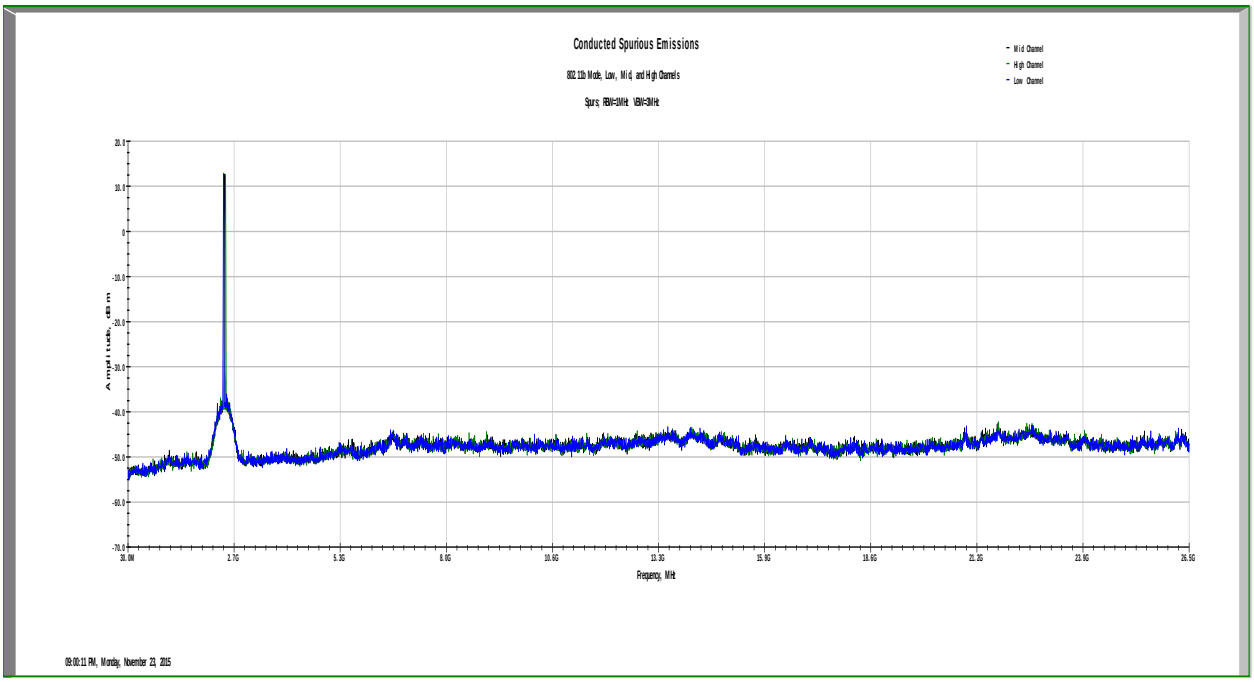
ANSI C63.10: 2013 and KDB Publication No. 558074: Guidance on Measurements for Digital Transmission Systems (47 CFR 15.247)

6.3 Test Equipment Used:

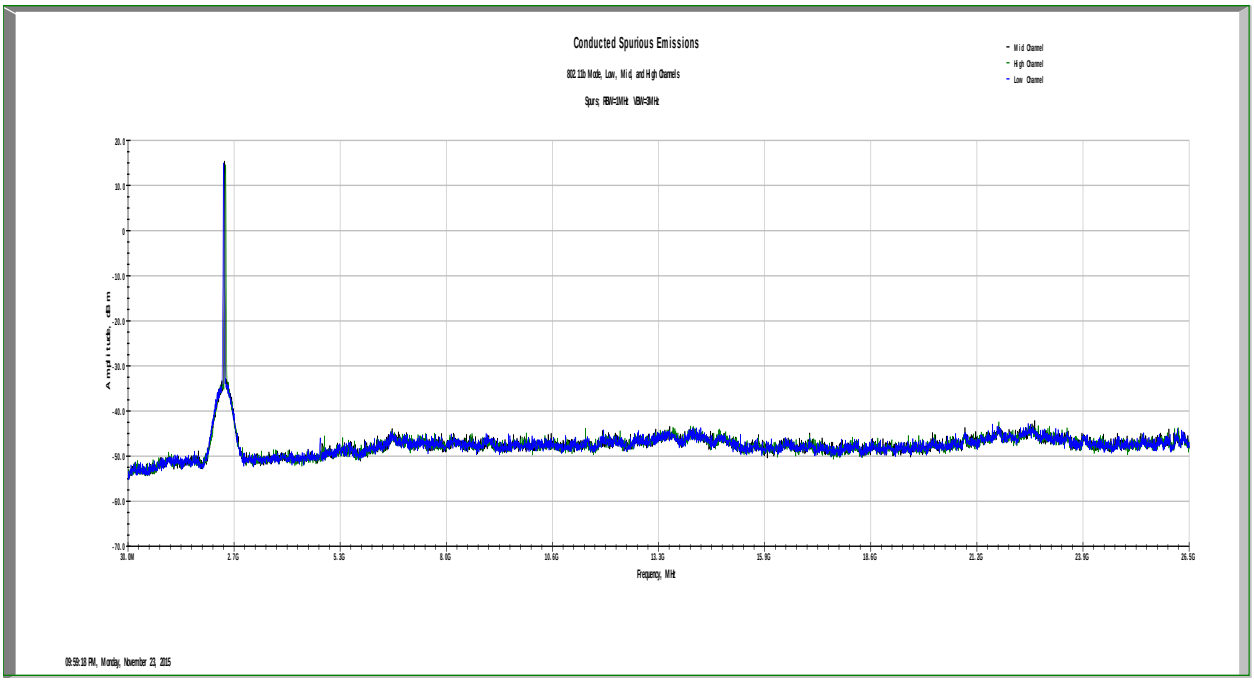
Description	Serial Number	Manufacturer	Model	Cal. Date	Cal. Due
Spectrum Analyzer	3720	Rohde & Schwarz	FSEK 30	9/20/2015	9/20/2016

6.4 Results:

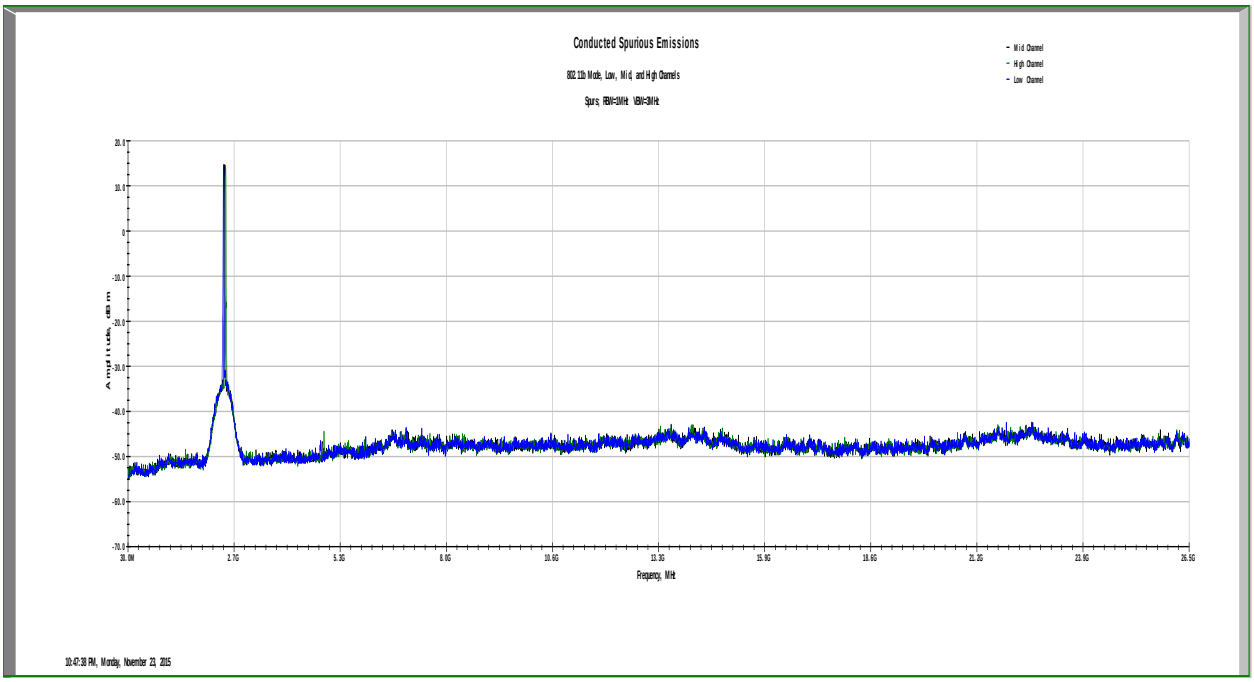
The following plots show that there are no conducted spurious emissions exceeding the 20dB down criteria.



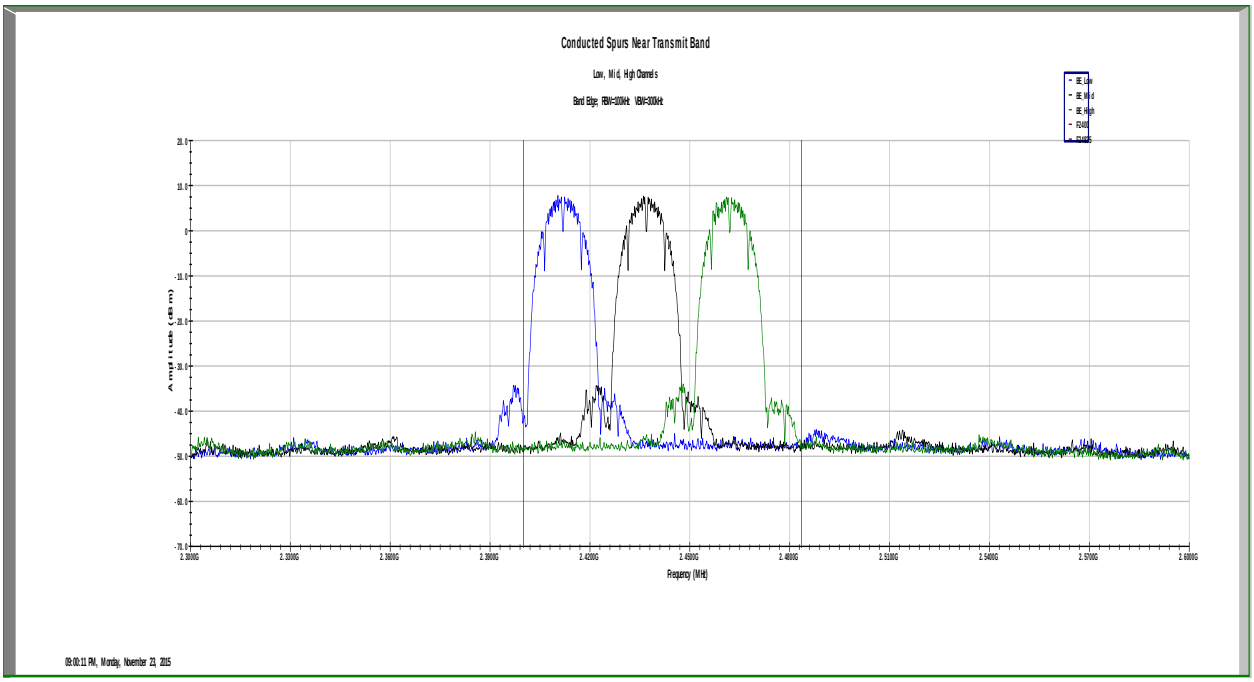
Conducted Spurious Emissions - 802.11b Mode



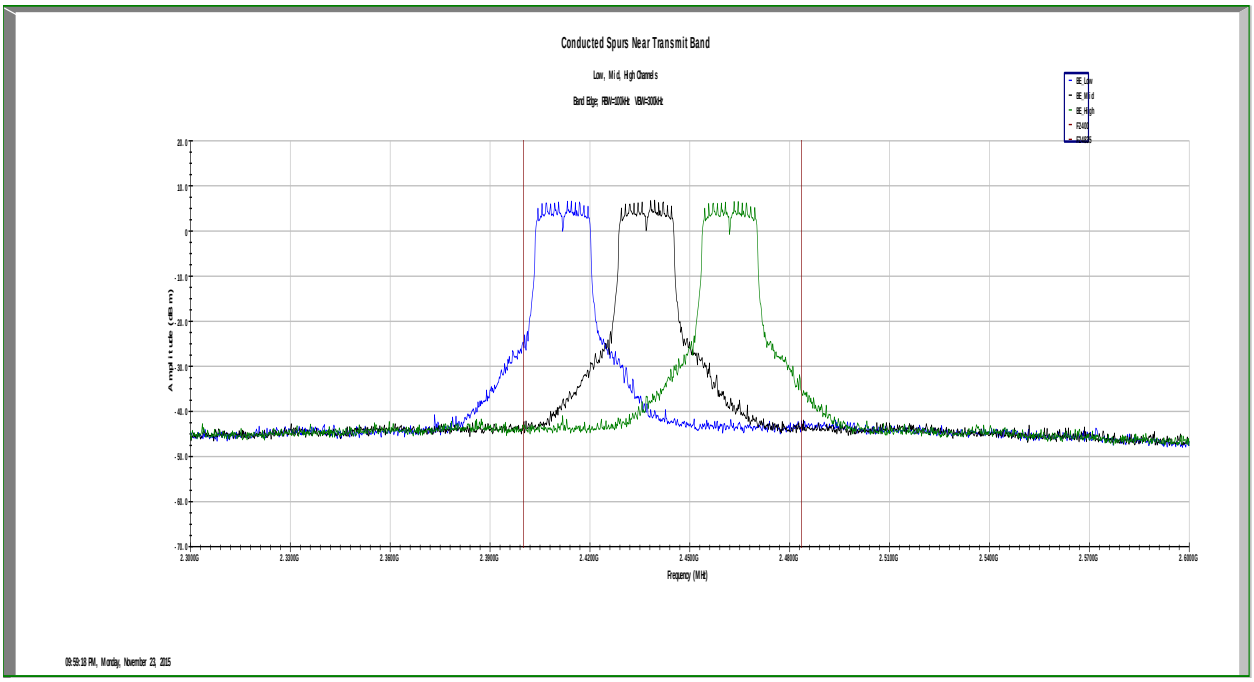
Conducted Spurious Emissions - 802.11g Mode



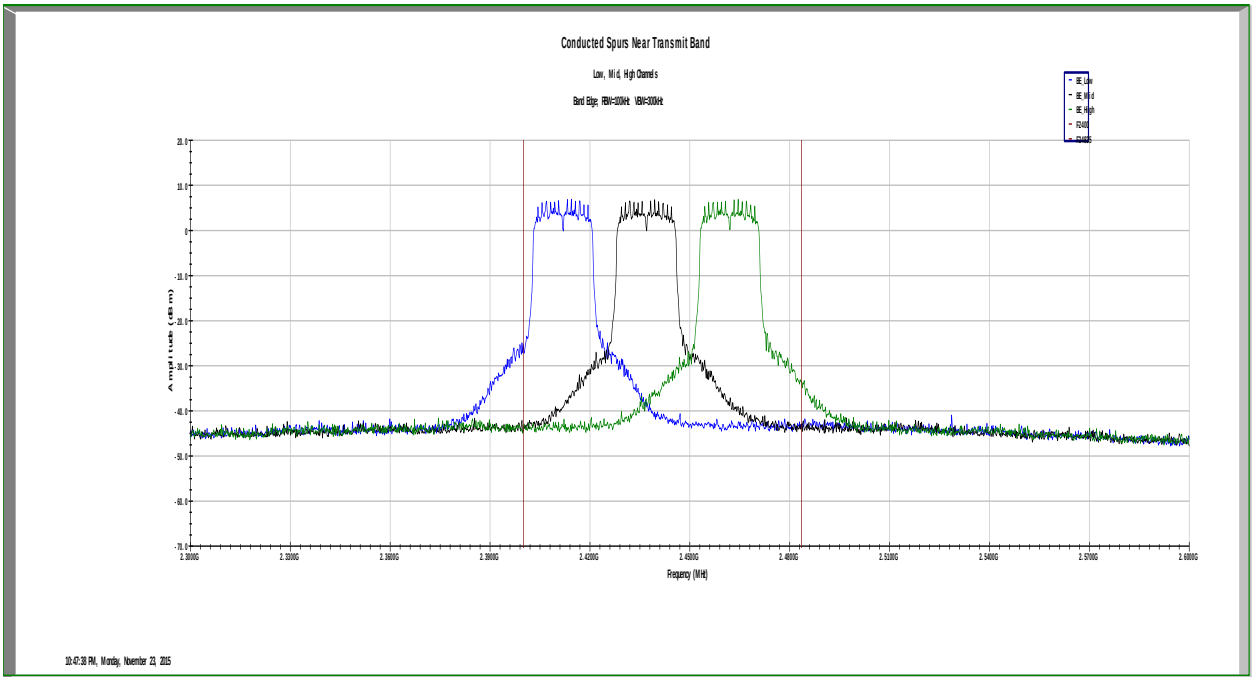
Conducted Spurious Emissions - 802.11n Mode



Emissions Close to Band Edge - 802.11b Mode



Emissions Close to Band Edge - 802.11g Mode



Emissions Close to Band Edge - 802.11n Mode

7 Power Spectral Density

7.1 Test Limits

§ 15.247(e): For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

7.2 Test Procedure

ANSI C63.10: 2013 and KDB Publication No. 558074: Guidance on Measurements for Digital Transmission Systems (47 CFR 15.247)

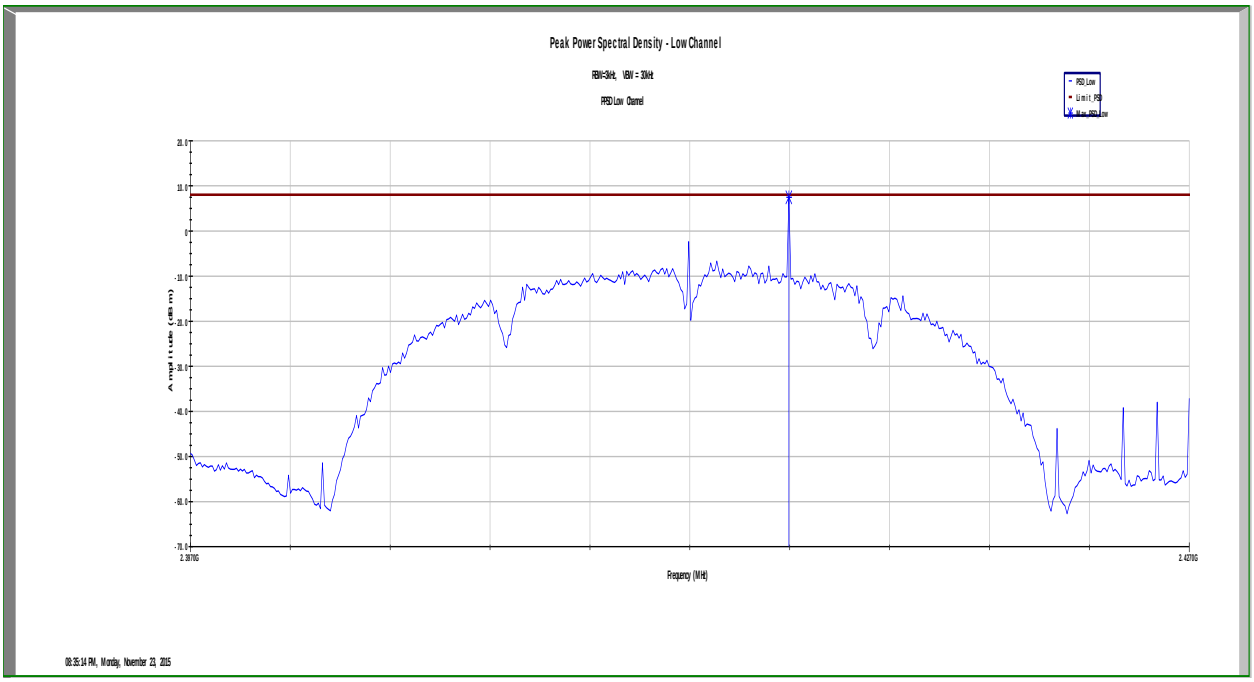
7.3 Test Equipment Used:

Description	Serial Number	Manufacturer	Model	Cal. Date	Cal. Due
Spectrum Analyzer	3720	Rohde & Schwarz	FSEK 30	9/20/2015	9/20/2016
Power Sensor	4022	Rohde& Schwarz	NRP-Z81	9/20/2015	9/20/2016

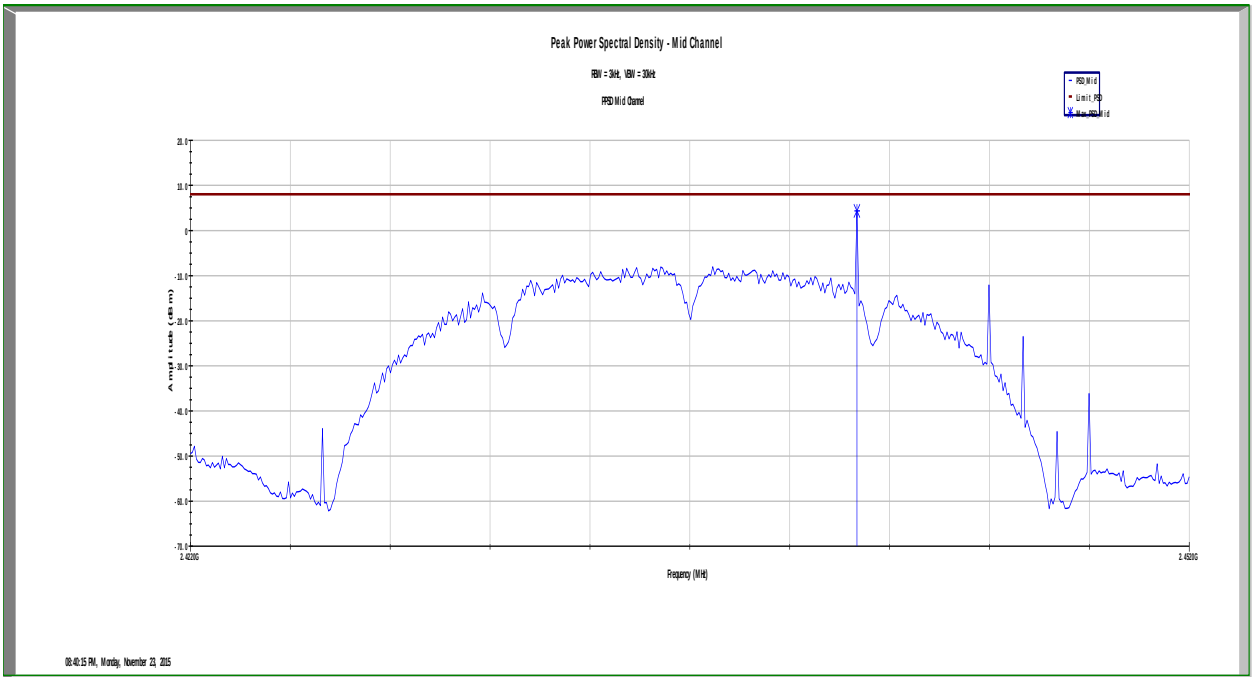
7.4 Results:

*PSD Option 1 Method

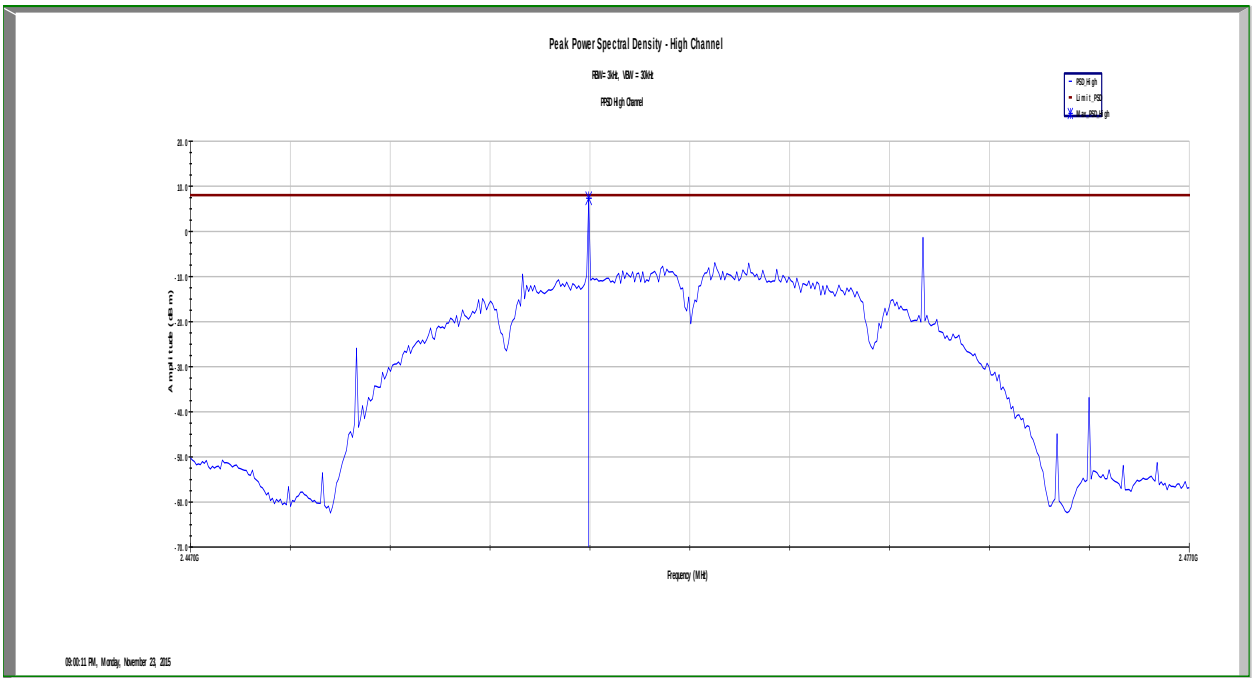
Mode	Channel Number	Frequency (MHz)	PSD in 3kHz BW (dBm)	Limit (dBm)	Margin (dBm)	Result
802.11b	1	2412	7.450	8.0	.55	Pass
802.11b	6	2437	4.285	8.0	3.715	Pass
802.11b	11	2462	7.312	8.0	.688	Pass
802.11g	1	2412	-7.530	8.0	15.53	Pass
802.11g	6	2437	-6.892	8.0	14.892	Pass
802.11g	11	2462	-8.086	8.0	16.086	Pass
802.11n	1	2412	-7.547	8.0	15.547	Pass
802.11n	6	2437	-7.789	8.0	15.789	Pass
802.11n	11	2462	-7.325	8.0	15.325	Pass



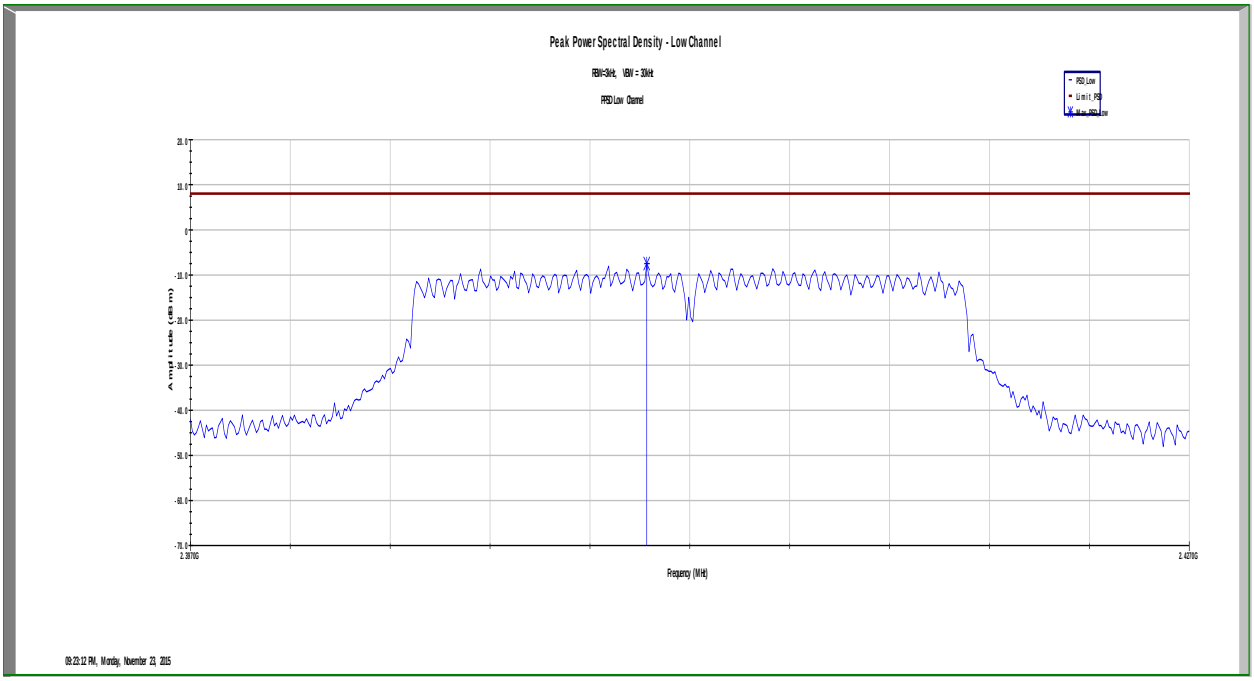
Power Spectral Density – Channel 1 802.11b mode



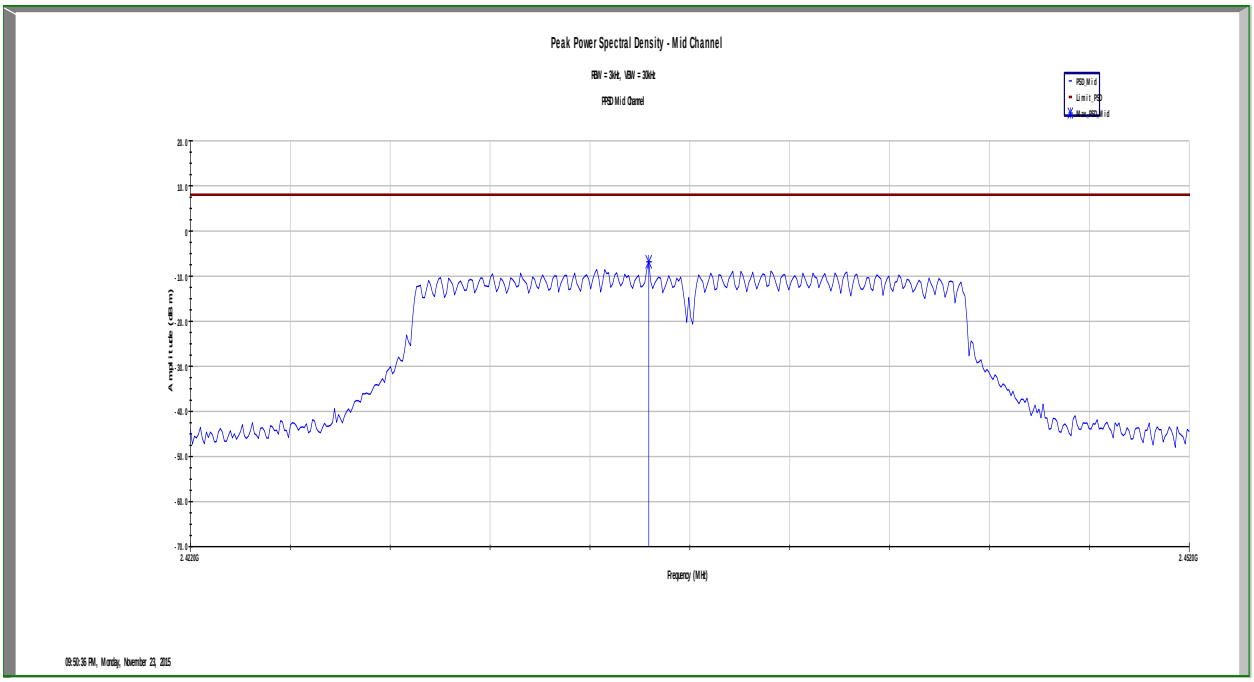
Power Spectral Density – Channel 6 802.11b mode



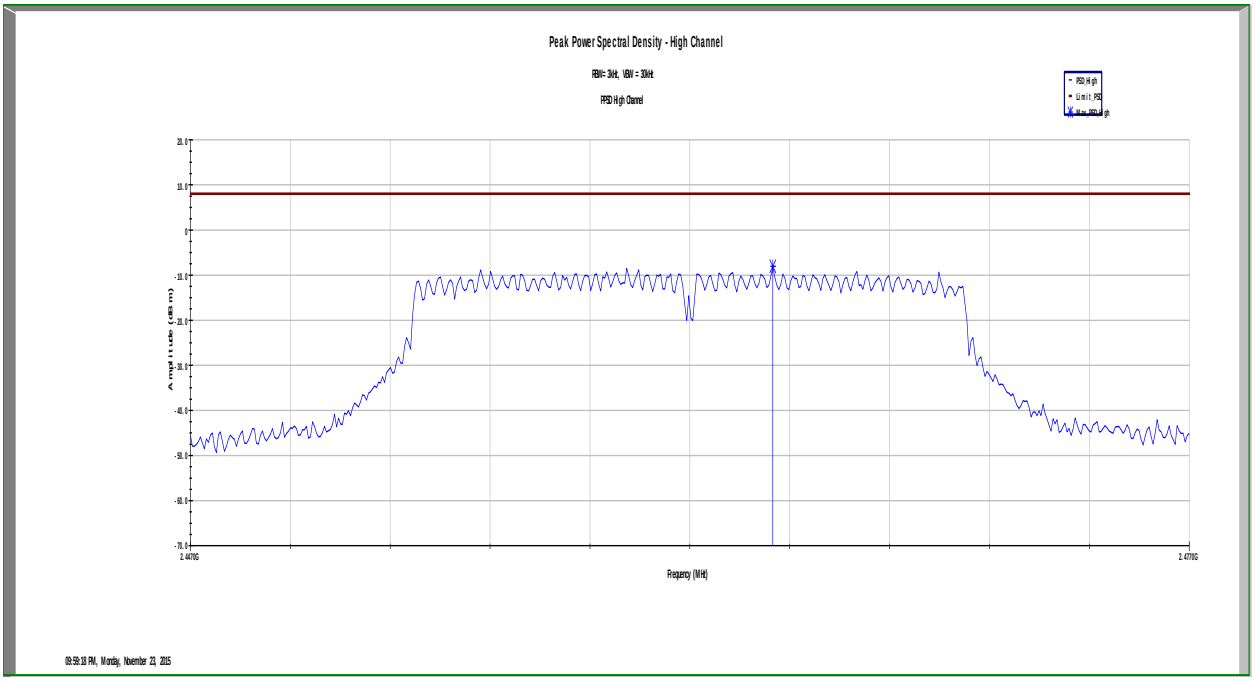
Power Spectral Density – Channel 11 802.11b mode



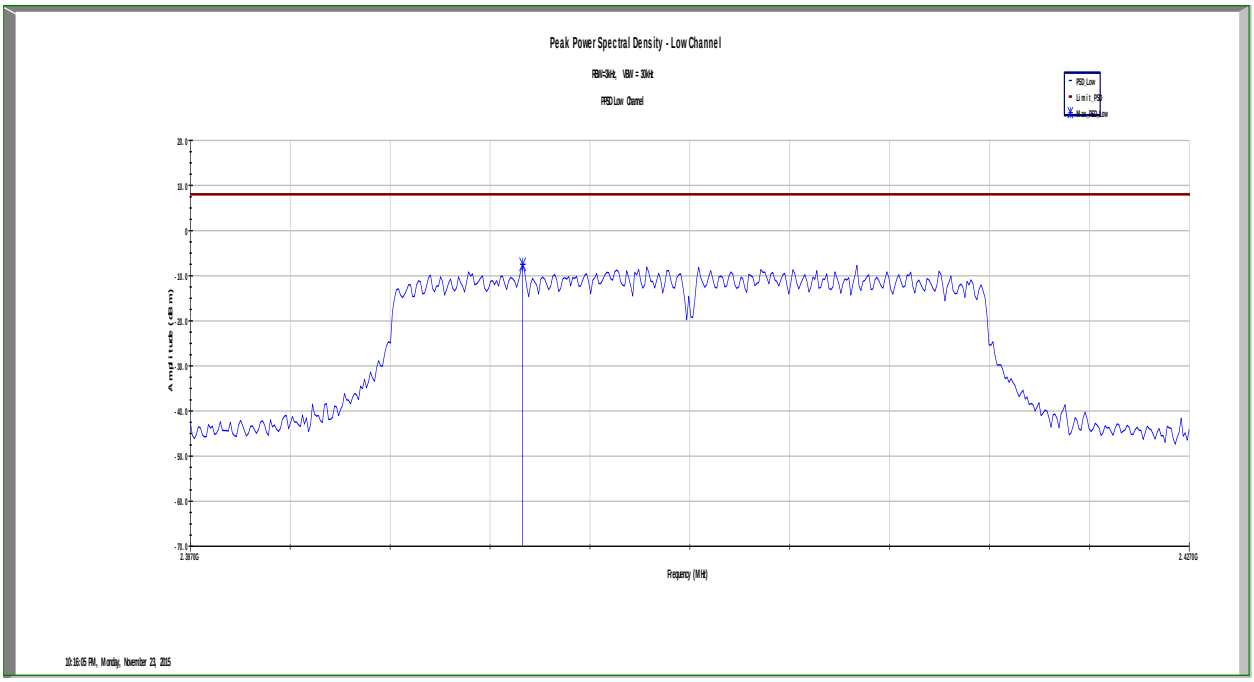
Power Spectral Density – Channel 1 802.11g mode



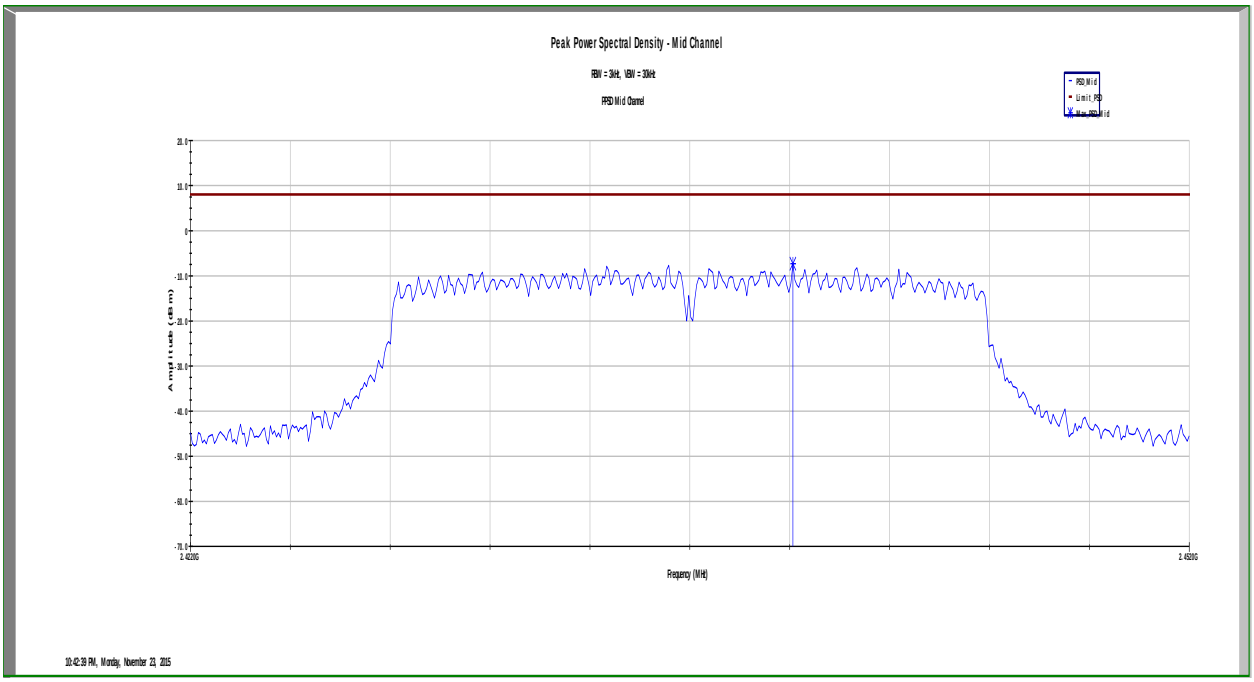
Power Spectral Density – Channel 6 802.11g mode



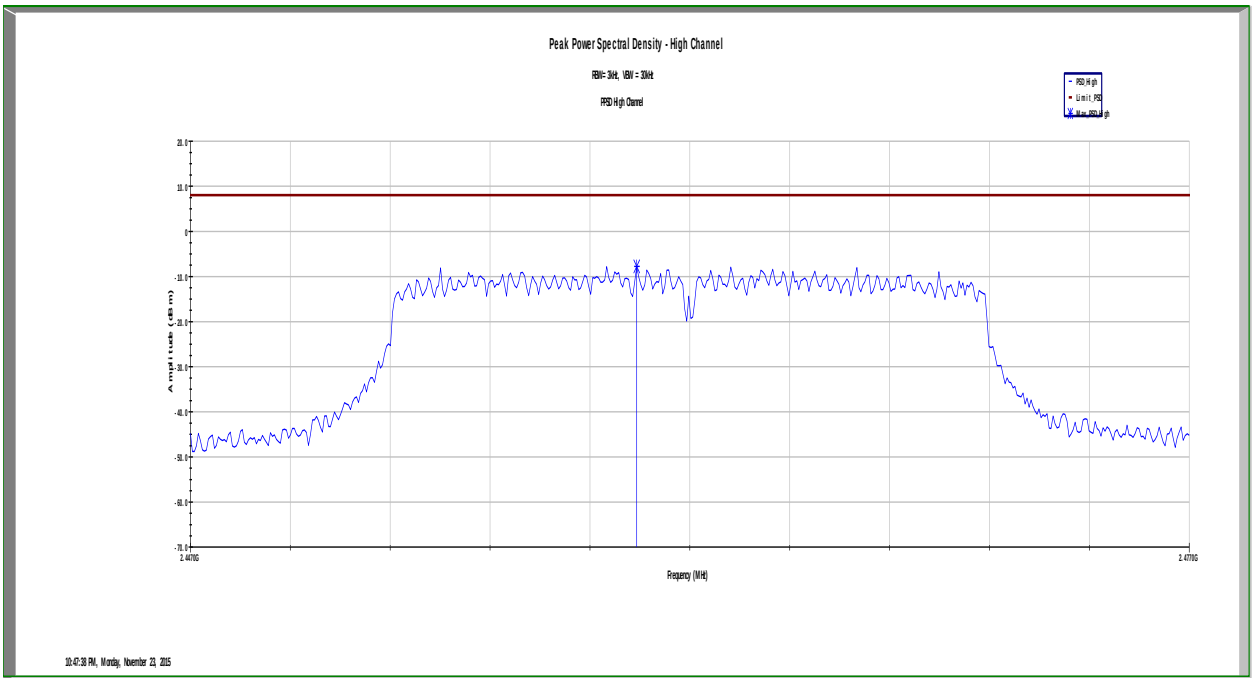
Power Spectral Density – Channel 11 802.11g mode



Power Spectral Density – Channel 1 802.11n mode



Power Spectral Density – Channel 6 802.11n mode



Power Spectral Density – Channel 11 802.11n mode

8 Radiated Spurious Emissions (Transmitter)

8.1 Test Limits

§ 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Part 15.205(a): Restricted Bands of Operations

MHz	MHz	MHz	GHz
0.090–0.110	16.42–16.423	399.9–410	4.5–5.15
[1] 0.495–0.505	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225	123–138	2200–2300	14.47–14.5
8.291–8.294	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675	156.7–156.9	2655–2900	22.01–23.12
8.41425–8.41475	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025	240–285	3345.8–3358	36.43–36.5
12.57675–12.57725	322–335.4	3600–4400	[2]
13.36–13.41.			

[1] Until February 1, 1999, this restricted band shall be 0.490–0.510 MHz.
[2] Above 38.6

Part 15.209(a): Field Strength Limits for Restricted Bands of Operation

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 - 0.490	2,400 / F (kHz)	300
0.490 - 1.705	24,000 / F (kHz)	30
1.705 - 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 – 960	200	3
Above 960	500	3

8.2 Test Procedure

ANSI C63.10: 2013 and KDB Publication No. 558074: Guidance on Measurements for Digital Transmission Systems (47 CFR 15.247)

8.3 Example of Field Strength Calculation Method:

The measured field strength was calculated by summing the readings taken from the spectrum analyzer with the appropriate correction factors associated with the antenna losses and cable losses. The calculation formula and sample calculations are listed below:

Formula:
FS = RA + AF + CF

FS = Field Strength in dBμV/m
RA = Receiver Amplitude in dBμV
AF = Antenna Factor in dB
CF = Cable Attenuation Factor in dB (Including preamplifier and filter attenuation)

Example Calculation:

RA = 19.48 dBμV
AF = 18.52 dB
CF = 0.78 dB

FS = 19.48 + 18.52 + 0.78 = 38.78 dBμV/m
Level in μV/m = Common Antilogarithm [(38.78 dBμV/m)/20] = 86.89 μV/m

8.4 Test Equipment Used:

Description	Serial Number	Manufacturer	Model	Cal. Date	Cal. Due
EMI Test Receiver	1302.6005.40	Rohde&Schwarz	ESU40	9/19/2015	9/19/2016
Preamplifier	122005	Rohde&Schwarz	TS-PR18	11/19/2015	11/19/2016
Preamplifier	100050	Rohde&Schwarz	TS-PR26	11/19/2015	11/19/2016
Horn Antenna (18 – 40GHz)	00117798	ETS	3116c	4/22/2015	4/22/2016
Horn Antenna	00156319	ETS	3117	5/15/2015	5/15/2016
Bilog Antenna	00051864	ETS	3142C	1/20/2015	1/20/2016
System Controller	121701-1	Sunol Sciences	SC99V	Time of Use	Time of Use
High Pass Filter	1	Wainwright	WHKX12-2533.85-2710-18000-40SS	Time of Use	Time of Use
EMC Software	Version 9.15.02	Rohde&Schwarz	EMC32	Time of Use	Time of Use

8.5 Results:

All spurious emissions were attenuated by at least 20dB below the level of the fundamental as required by Part 15.247(d). Additionally, all emissions falling within restricted bands of operation and at the band edges were found to be below the limit specified in Part 15.209(a). The spurious emissions listed in the following tables are the worst case emissions.

Worst Case Spurious Measurements (802.11b Mode)

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
4823.800000	---	49.35	74.00	24.65	1000.000	236.0	H	308.0	7.5
4823.800000	44.88	---	54.00	9.12	1000.000	236.0	H	308.0	7.5
7235.000000	---	43.96	74.00	30.04	1000.000	259.0	V	249.0	10.4
7235.000000	31.93	---	54.00	22.07	1000.000	259.0	V	249.0	10.4
9648.200000	---	46.37	74.00	27.63	1000.000	281.0	V	262.0	13.6
9648.200000	33.80	---	54.00	20.20	1000.000	281.0	V	262.0	13.6
12059.000000	---	49.61	74.00	24.39	1000.000	410.0	V	245.0	17.4
12059.000000	36.87	---	54.00	17.13	1000.000	410.0	V	245.0	17.4
14471.000000	36.07	---	54.00	17.93	1000.000	289.0	H	0.0	17.2
14471.000000	---	48.15	74.00	25.85	1000.000	289.0	H	0.0	17.2
16885.000000	40.25	---	54.00	13.75	1000.000	279.0	H	281.0	21.7
16885.000000	---	52.76	74.00	21.24	1000.000	279.0	H	281.0	21.7

802.11b Channel 1 Radiated Spurs

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
4873.800000	---	48.65	74.00	25.35	1000.000	317.0	H	247.0	7.4
4873.800000	43.64	---	54.00	10.36	1000.000	317.0	H	247.0	7.4
7310.000000	---	44.76	74.00	29.24	1000.000	393.0	H	114.0	10.5
7310.000000	33.39	---	54.00	20.61	1000.000	393.0	H	114.0	10.5
9747.800000	---	47.56	74.00	26.44	1000.000	373.0	H	294.0	13.7
9747.800000	33.95	---	54.00	20.05	1000.000	373.0	H	294.0	13.7
12186.000000	---	48.88	74.00	25.12	1000.000	344.0	H	267.0	17.2
12186.000000	36.73	---	54.00	17.27	1000.000	344.0	H	267.0	17.2
14622.600000	---	50.11	74.00	23.89	1000.000	285.0	H	176.0	17.3
14622.600000	36.17	---	54.00	17.83	1000.000	285.0	H	176.0	17.3
17058.000000	---	52.77	74.00	21.23	1000.000	363.0	V	289.0	21.4
17058.000000	39.95	---	54.00	14.05	1000.000	363.0	V	289.0	21.4

802.11b Channel 6 Radiated Spurs

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
4923.800000	43.33	---	54.00	10.67	1000.000	358.0	V	166.0	7.3
4923.800000	---	47.91	74.00	26.09	1000.000	358.0	V	166.0	7.3
7387.000000	31.41	---	54.00	22.59	1000.000	342.0	H	324.0	10.7
7387.000000	---	43.81	74.00	30.19	1000.000	342.0	H	324.0	10.7
9848.200000	---	46.80	74.00	27.20	1000.000	283.0	V	269.0	14.0
9848.200000	33.95	---	54.00	20.05	1000.000	283.0	V	269.0	14.0
12309.800000	---	49.61	74.00	24.39	1000.000	377.0	V	261.0	17.1
12309.800000	36.78	---	54.00	17.22	1000.000	377.0	V	261.0	17.1
14773.000000	---	48.95	74.00	25.05	1000.000	341.0	V	195.0	17.7
14773.000000	36.74	---	54.00	17.26	1000.000	341.0	V	195.0	17.7
17233.000000	---	52.67	74.00	21.33	1000.000	205.0	V	132.0	21.0
17233.000000	39.57	---	54.00	14.43	1000.000	205.0	V	132.0	21.0

802.11b Channel 11 Radiated Spurs

*Emissions were investigated with the test sample positioned in 3 orthogonal axis and the worst case reported.

Worst Case Spurious Measurements (802.11g Mode)

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
4824.200000	---	44.47	74.00	29.53	1000.000	410.0	H	304.0	7.5
4824.200000	31.84	---	54.00	22.16	1000.000	410.0	H	304.0	7.5
7235.400000	---	44.84	74.00	29.16	1000.000	100.0	H	136.0	10.4
7235.400000	32.05	---	54.00	21.95	1000.000	100.0	H	136.0	10.4
9647.800000	---	46.33	74.00	27.67	1000.000	341.0	H	262.0	13.6
9647.800000	33.51	---	54.00	20.49	1000.000	341.0	H	262.0	13.6
12060.600000	---	49.41	74.00	24.59	1000.000	348.0	V	240.0	17.4
12060.600000	36.98	---	54.00	17.02	1000.000	348.0	V	240.0	17.4
14471.000000	36.01	---	54.00	17.99	1000.000	224.0	H	278.0	17.2
14471.000000	---	48.53	74.00	25.47	1000.000	224.0	H	278.0	17.2
16885.000000	40.25	---	54.00	13.75	1000.000	344.0	H	273.0	21.7
16885.000000	---	53.06	74.00	20.94	1000.000	344.0	H	273.0	21.7

802.11g Channel 1 Radiated Spurs

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
4874.200000	---	49.26	74.00	24.74	1000.000	239.0	H	302.0	7.4
4874.200000	36.07	---	54.00	17.93	1000.000	239.0	H	302.0	7.4
7310.400000	---	47.40	74.00	26.60	1000.000	397.0	H	134.0	10.5
7310.400000	32.94	---	54.00	21.06	1000.000	397.0	H	134.0	10.5
9747.800000	---	46.15	74.00	27.85	1000.000	410.0	H	288.0	13.7
9747.800000	33.65	---	54.00	20.35	1000.000	410.0	H	288.0	13.7
12186.000000	---	49.22	74.00	24.78	1000.000	410.0	H	267.0	17.2
12186.000000	36.76	---	54.00	17.24	1000.000	410.0	H	267.0	17.2
14622.600000	---	48.59	74.00	25.41	1000.000	380.0	H	314.0	17.3
14622.600000	36.17	---	54.00	17.83	1000.000	380.0	H	314.0	17.3
17058.400000	---	52.98	74.00	21.02	1000.000	370.0	H	259.0	21.4
17058.400000	39.94	---	54.00	14.06	1000.000	370.0	H	259.0	21.4

802.11g Channel 6 Radiated Spurs

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
4924.200000	33.42	---	54.00	20.58	1000.000	320.0	V	174.0	7.3
4924.200000	---	46.47	74.00	27.53	1000.000	320.0	V	174.0	7.3
7387.000000	---	45.69	74.00	28.31	1000.000	295.0	V	278.0	10.7
7387.000000	32.02	---	54.00	21.98	1000.000	295.0	V	278.0	10.7
9848.200000	---	45.75	74.00	28.25	1000.000	410.0	H	304.0	14.0
9848.200000	33.53	---	54.00	20.47	1000.000	410.0	H	304.0	14.0
12309.800000	36.64	---	54.00	17.36	1000.000	410.0	H	305.0	17.1
12309.800000	---	49.38	74.00	24.62	1000.000	410.0	H	305.0	17.1
14773.000000	---	49.61	74.00	24.39	1000.000	244.0	H	280.0	17.7
14773.000000	36.71	---	54.00	17.29	1000.000	244.0	H	280.0	17.7
17233.000000	---	52.52	74.00	21.48	1000.000	333.0	H	166.0	21.0
17233.000000	39.54	---	54.00	14.46	1000.000	333.0	H	166.0	21.0

802.11g Channel 11 Radiated Spurs

*Emissions were investigated with the test sample positioned in 3 orthogonal axis and the worst case reported.

Worst Case Spurious Measurements (802.11n Mode)

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
4823.800000	---	45.59	74.00	28.41	1000.000	410.0	H	302.0	7.5
4823.800000	31.83	---	54.00	22.17	1000.000	410.0	H	302.0	7.5
7236.600000	---	43.41	74.00	30.59	1000.000	316.0	H	312.0	10.4
7236.600000	31.04	---	54.00	22.96	1000.000	316.0	H	312.0	10.4
9648.200000	---	46.11	74.00	27.89	1000.000	301.0	H	312.0	13.6
9648.200000	33.59	---	54.00	20.41	1000.000	301.0	H	312.0	13.6
12059.000000	---	49.56	74.00	24.44	1000.000	199.0	V	242.0	17.4
12059.000000	36.83	---	54.00	17.17	1000.000	199.0	V	242.0	17.4
14471.000000	36.05	---	54.00	17.95	1000.000	304.0	H	199.0	17.2
14471.000000	---	49.12	74.00	24.88	1000.000	304.0	H	199.0	17.2
16885.000000	40.26	---	54.00	13.74	1000.000	339.0	H	341.0	21.7
16885.000000	---	53.03	74.00	20.97	1000.000	339.0	H	341.0	21.7

802.11n Channel 1 Radiated Spurs

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
4873.800000	---	43.64	74.00	30.36	1000.000	231.0	H	294.0	7.4
4873.800000	30.66	---	54.00	23.34	1000.000	231.0	H	294.0	7.4
7311.600000	---	45.78	74.00	28.22	1000.000	383.0	H	132.0	10.5
7311.600000	33.07	---	54.00	20.93	1000.000	383.0	H	132.0	10.5
9747.800000	---	46.06	74.00	27.94	1000.000	399.0	H	282.0	13.7
9747.800000	33.69	---	54.00	20.31	1000.000	399.0	H	282.0	13.7
12185.200000	36.59	---	54.00	17.41	1000.000	294.0	V	256.0	17.2
12185.200000	---	49.33	74.00	24.67	1000.000	294.0	V	256.0	17.2
14622.200000	36.15	---	54.00	17.85	1000.000	283.0	V	269.0	17.3
14622.200000	---	49.14	74.00	24.86	1000.000	283.0	V	269.0	17.3
17058.400000	---	52.54	74.00	21.46	1000.000	343.0	H	245.0	21.4
17058.400000	39.95	---	54.00	14.05	1000.000	343.0	H	245.0	21.4

802.11n Channel 6 Radiated Spurs

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
4923.800000	28.57	---	54.00	25.43	1000.000	292.0	V	344.0	7.3
4923.800000	---	41.06	74.00	32.94	1000.000	292.0	V	344.0	7.3
7387.000000	31.02	---	54.00	22.98	1000.000	216.0	H	118.0	10.7
7387.000000	---	43.64	74.00	30.36	1000.000	216.0	H	118.0	10.7
9848.200000	---	46.08	74.00	27.92	1000.000	242.0	H	146.0	14.0
9848.200000	33.61	---	54.00	20.39	1000.000	242.0	H	146.0	14.0
12309.800000	---	49.01	74.00	24.99	1000.000	284.0	V	324.0	17.1
12309.800000	36.66	---	54.00	17.34	1000.000	284.0	V	324.0	17.1
14773.000000	---	49.77	74.00	24.23	1000.000	348.0	H	306.0	17.7
14773.000000	36.68	---	54.00	17.32	1000.000	348.0	H	306.0	17.7
17233.000000	---	51.97	74.00	22.03	1000.000	331.0	H	128.0	21.0
17233.000000	39.54	---	54.00	14.46	1000.000	331.0	H	128.0	21.0

802.11n Channel 11 Radiated Spurs

*Emissions were investigated with the test sample positioned in 3 orthogonal axis and the worst case reported.

Low Channel Band Edge Emissions - 802.11b Mode

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2390.000000	---	57.27	74.00	16.73	1000.000	336.0	V	178.0	37.7
2390.000000	46.07	---	54.00	7.93	1000.000	336.0	V	178.0	37.7

High Channel Band Edge - 802.11b Mode

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2483.500000	---	56.31	74.00	17.69	1000.000	410.0	V	318.0	37.8
2483.500000	45.75	---	54.00	8.25	1000.000	410.0	V	318.0	37.8

Low Channel Band Edge Emissions - 802.11g Mode

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2390.000000	---	58.75	74.00	15.25	1000.000	304.0	V	247.0	37.7
2390.000000	45.93	---	54.00	8.07	1000.000	304.0	V	247.0	37.7

High Channel Band Edge Emissions - 802.11g Mode

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2483.500000	---	69.58	74.00	4.42	1000.000	313.0	H	324.0	37.8
2483.500000	53.93	---	54.00	0.07	1000.000	313.0	H	324.0	37.8

Low Channel Band Edge Emissions - 802.11n Mode

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2390.000000	---	64.46	74.00	9.54	1000.000	361.0	V	250.0	37.7
2390.000000	48.84	---	54.00	5.16	1000.000	361.0	V	250.0	37.7

High Channel Band Edge Emissions - 802.11n Mode

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2483.500000	---	59.11	74.00	14.89	1000.000	410.0	H	204.0	37.8
2483.500000	45.89	---	54.00	8.11	1000.000	410.0	H	204.0	37.8

9 Radiated Spurious Emissions (Receiver)

9.1 Test Limits

§ 15.109: Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency of emission (MHz)	Field strength (microvolts/meter)	Field strength (dBuV/m)
30–88	100	40
88–216	150	43.5
216–960	200	46
Above 960	500	54

These limits are identical to those in RSS-GEN

9.2 Test Procedure

ANSI C63.4: 2014

9.3 Example of Field Strength Calculation Method:

The measured field strength was calculated by summing the readings taken from the spectrum analyzer with the appropriate correction factors associated with the antenna losses and cable losses. The calculation formula and sample calculations are listed below:

Formula:
FS = RA + AF + CF
FS = Field Strength in dBμV/m
RA = Receiver Amplitude in dBμV
AF = Antenna Factor in dB
CF = Cable Attenuation Factor in dB (Including preamplifier and filter attenuation)

Example Calculation:
RA = 19.48 dBμV
AF = 18.52 dB
CF = 0.78 dB

FS = 19.48 + 18.52 + 0.78 = 38.78 dBμV/m
Level in μV/m = Common Antilogarithm [(38.78 dBμV/m)/20] = 86.89 μV/m

9.4 Test Equipment Used:

Description	Serial Number	Manufacturer	Model	Cal. Date	Cal. Due
EMI Test Receiver	1302.6005.40	Rohde & Schwarz	ESU40	9/19/2015	9/19/2016
Preamplifier	122005	Rohde & Schwarz	TS-PR18	11/19/2015	11/19/2016
Bilog Antenna	00051864	ETS	3142C	1/20/2015	1/20/2016
Horn Antenna	00156319	ETS	3117	5/15/2015	5/15/2016
System Controller	121701-1	Sunol Sciences	SC99V	Time of Use	Time of Use
EMC Software	Version 9.15.02	Rohde & Schwarz	EMC32	Time of Use	Time of Use

9.5 Results:

All spurious emissions with the test sample in receive mode were below the limits specified in Part 15.109 for a class B digital device and RSS-GEN Section 6.1.

EUT Name: Road iQ
Manufacturer: Road iQ, LLC
Temp/Humidity/Pressure: 21.6C, 45.4%, 986.1mbar
Comment: 802.11b Ch.6_1Mbps

Final_Result (30Mhz to 1Ghz)

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
34.680000	28.26	40.00	11.74	120.000	110.1	V	11.0	16.3
48.469000	33.56	40.00	6.44	120.000	108.7	V	340.0	11.0
69.717000	34.99	40.00	5.01	120.000	113.6	V	173.0	8.1
104.760000	37.33	43.52	6.19	120.000	100.3	V	0.0	10.5
104.780000	37.17	43.52	6.35	120.000	119.3	V	318.0	10.4
125.020000	36.57	43.52	6.95	120.000	105.0	V	11.0	9.6
220.880000	39.57	46.02	6.45	120.000	111.9	H	63.0	14.5
310.580000	38.69	46.02	7.33	120.000	100.3	H	117.0	18.0
959.980000	44.25	46.02	1.77	120.000	99.4	H	166.0	30.1

Final_Result (1Ghz to 18Ghz)

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1056.216500	39.79	54.00	14.21	1000.000	125.0	H	219.0	-2.4
1583.848000	40.05	54.00	13.95	1000.000	200.0	H	203.0	-1.4
12883.647900	36.66	54.00	17.34	1000.000	184.0	H	128.0	16.9
16292.152300	40.55	54.00	13.45	1000.000	149.0	V	158.0	20.8
16833.553200	41.29	54.00	12.71	1000.000	161.0	H	314.0	21.6
17913.141100	41.37	54.00	12.63	1000.000	186.0	H	251.0	22.1

10 AC Powerline Conducted Emissions

10.1 Test Limits

§ 15.107(e): Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

*Decreases with the logarithm of the frequency.

10.2 Test Procedure

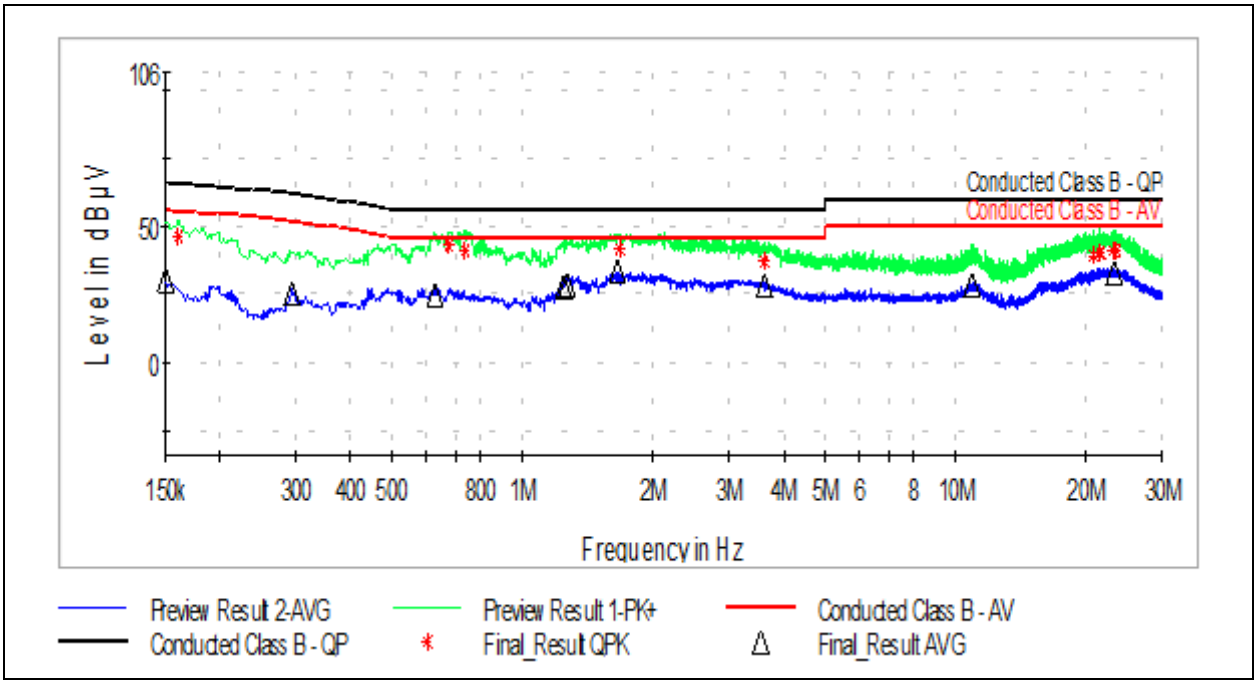
ANSI C63.4: 2014

10.3 Test Equipment Used:

Description	Serial Number	Manufacturer	Model	Cal. Date	Cal. Due
EMI Test Receiver	1302.6005.40	Rohde & Schwarz	ESU40	9/19/2015	9/19/2016
LISN	1026	Fischer Custom Communication	FCC-LISN-50-50-2M	TOU	TOU

10.4 Results: Conducted Voltage Emissions

EUT Name:	Road iQ
Manufacturer:	Road iQ, LLC
Test Engineer:	Carmen Davis
Date:	11/24/2015
Temp/Humidity/Pressure:	21.6C, 45.4%, 986.1mbar
Comment:	Receive mode (Line 1)



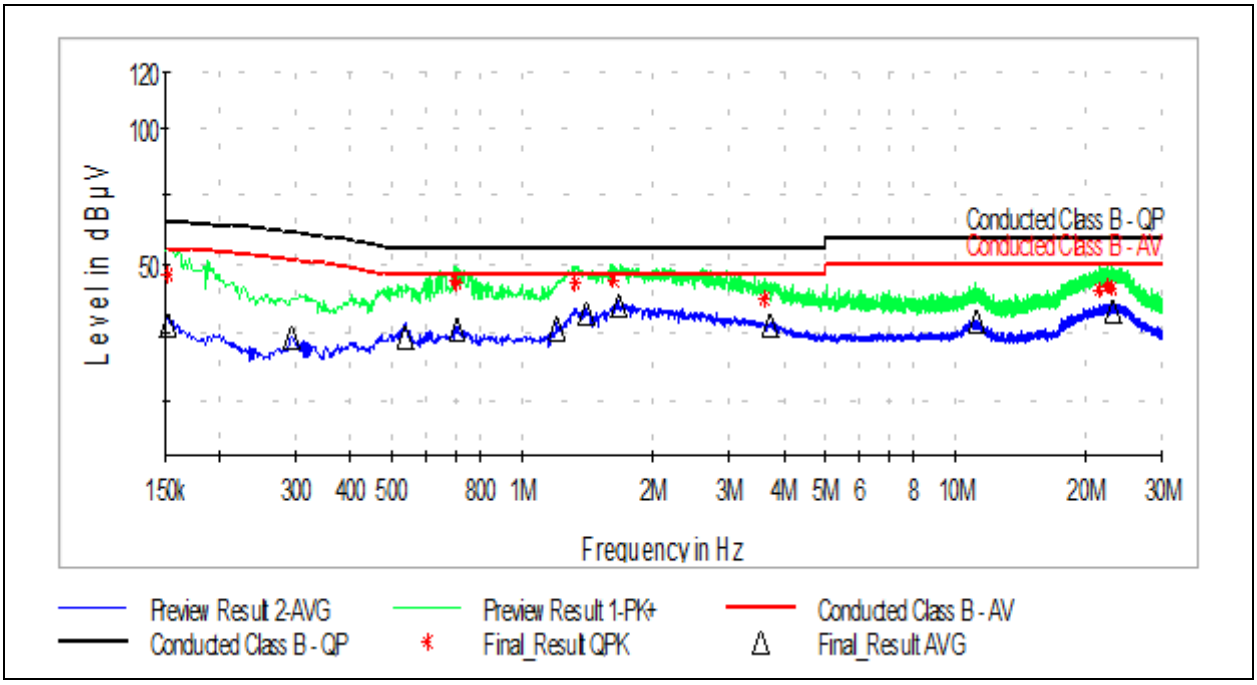
Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Corr. (dB)
0.160000	45.91	66.00	20.09	9.000	0.3
0.676000	42.82	56.00	13.18	9.000	0.4
0.738000	41.25	56.00	14.75	9.000	0.4
1.680000	41.80	56.00	14.20	9.000	0.6
3.620000	37.30	56.00	18.70	9.000	1.0
20.764000	39.35	60.00	20.65	9.000	1.7
21.396000	40.36	60.00	19.64	9.000	1.8
21.540000	40.50	60.00	19.50	9.000	1.8
23.040000	41.04	60.00	18.96	9.000	1.9
23.468000	41.33	60.00	18.67	9.000	2.0

Final_Result_AVG

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Corr. (dB)
0.150000	30.42	56.00	25.58	9.000	0.3
0.294000	25.53	50.00	24.47	9.000	0.3
0.628000	24.41	46.00	21.59	9.000	0.4
1.248000	28.10	46.00	17.90	9.000	0.5
1.268000	28.14	46.00	17.86	9.000	0.5
1.660000	33.40	46.00	12.60	9.000	0.6
3.620000	28.34	46.00	17.66	9.000	1.0
10.936000	28.23	50.00	21.77	9.000	1.4
23.228000	32.68	50.00	17.32	9.000	1.9

EUT Name:	Road iQ
Manufacturer:	Road iQ, LLC
Test Engineer:	Carmen Davis
Date:	11/24/2015
Temp/Humidity/Pressure:	21.6C, 45.4%, 986.1mbar
Comment:	Receive mode (Line 2)



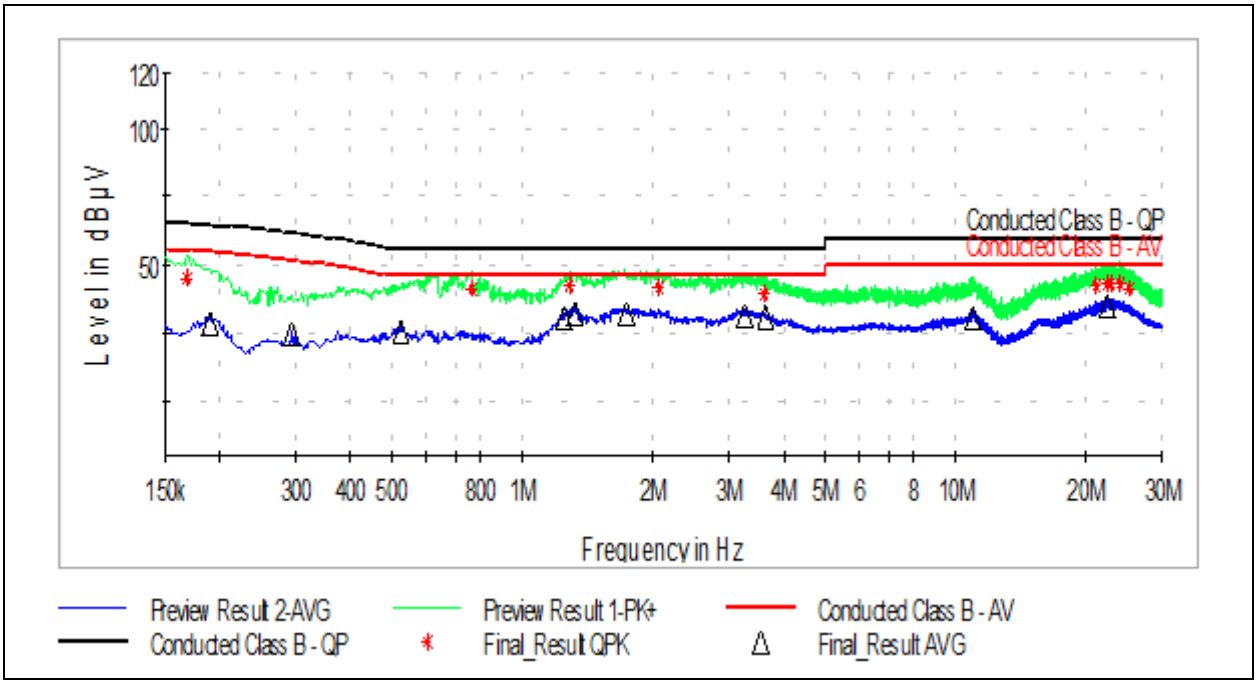
Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Corr. (dB)
0.152000	46.00	66.00	20.00	9.000	0.3
0.698000	44.29	56.00	11.71	9.000	0.4
0.706000	42.93	56.00	13.07	9.000	0.4
1.320000	43.04	56.00	12.96	9.000	0.5
1.620000	44.15	56.00	11.85	9.000	0.6
3.620000	37.59	56.00	18.41	9.000	1.0
21.492000	40.57	60.00	19.43	9.000	1.8
22.440000	41.71	60.00	18.29	9.000	1.9
22.976000	41.00	60.00	19.00	9.000	1.9

Final_Result_AVG

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Corr. (dB)
0.152000	27.72	56.00	28.28	9.000	0.3
0.294000	23.24	50.00	26.76	9.000	0.3
0.536000	23.82	50.00	26.18	9.000	0.4
0.706000	26.02	50.00	23.98	9.000	0.4
1.200000	26.48	50.00	23.52	9.000	0.5
1.408000	32.08	50.00	17.92	9.000	0.5
1.664000	34.88	50.00	15.12	9.000	0.6
3.720000	28.05	50.00	21.95	9.000	1.0
11.172000	29.47	50.00	20.53	9.000	1.4
23.024000	33.03	50.00	16.97	9.000	1.9

EUT Name:	Road iQ
Manufacturer:	Road iQ, LLC
Test Engineer:	Carmen Davis
Date:	11/24/2015
Temp/Humidity/Pressure:	21.6C, 45.4%, 986.1mbar
Comment:	Tx mode (Line 1)



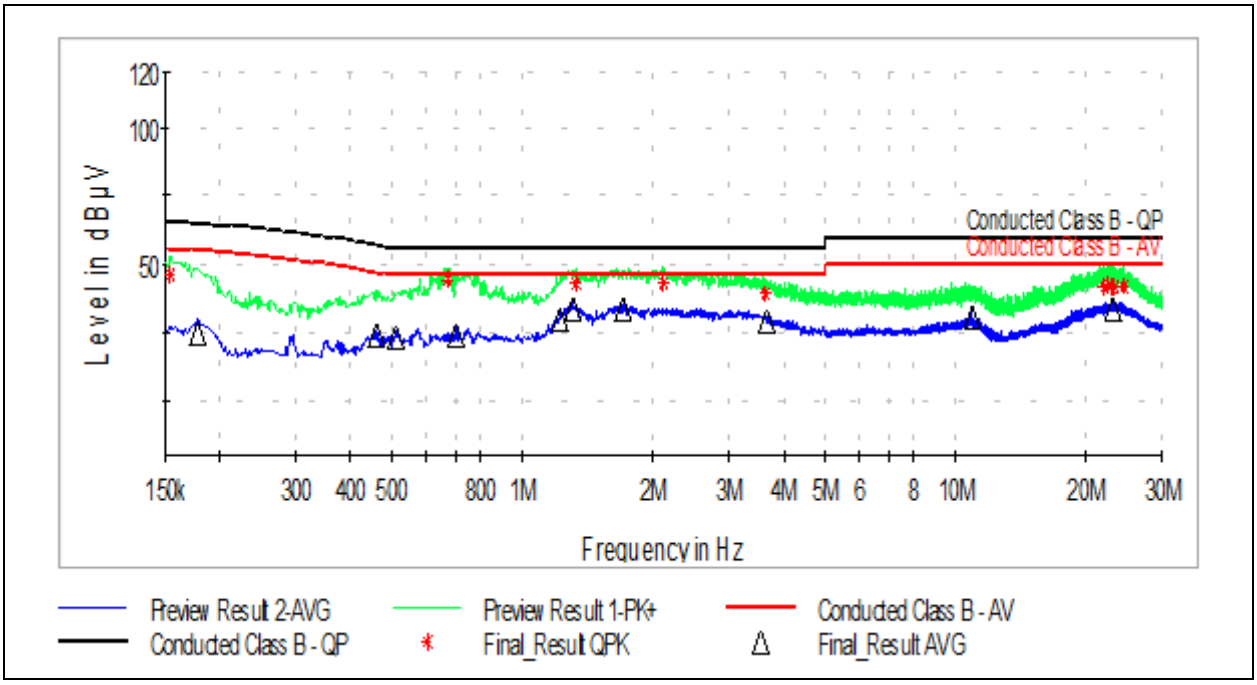
Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Corr. (dB)
0.168000	44.66	66.00	21.34	9.000	0.3
0.764000	41.12	56.00	13.88	9.000	0.5
1.284000	42.72	56.00	13.28	9.000	0.5
2.068000	41.78	56.00	14.22	9.000	0.7
3.616000	39.59	56.00	16.41	9.000	1.0
21.028000	42.70	60.00	17.30	9.000	1.7
22.440000	43.16	60.00	16.84	9.000	1.9
22.776000	43.20	60.00	16.80	9.000	1.9
23.884000	43.25	60.00	16.75	9.000	2.0
25.212000	41.15	60.00	18.85	9.000	2.1

Final_Result_AVG

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Corr. (dB)
0.190000	28.76	55.00	26.24	9.000	0.3
0.294000	24.73	50.00	25.27	9.000	0.3
0.524000	25.18	46.00	20.82	9.000	0.4
1.248000	30.68	46.00	15.32	9.000	0.5
1.324000	32.22	46.00	13.78	9.000	0.5
1.744000	32.53	46.00	13.47	9.000	0.6
3.252000	31.76	46.00	14.24	9.000	0.9
3.636000	30.99	46.00	15.01	9.000	1.0
10.980000	30.49	50.00	19.51	9.000	1.4
22.424000	34.89	50.00	15.11	9.000	1.9

EUT Name:	Road iQ
Manufacturer:	Road iQ, LLC
Test Engineer:	Carmen Davis
Date:	11/24/2015
Temp/Humidity/Pressure:	21.6C, 45.4%, 986.1mbar
Comment:	Tx mode (Neutral)



Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Corr. (dB)
0.154000	46.47	66.00	19.53	9.000	0.3
0.674000	44.11	56.00	11.89	9.000	0.4
1.328000	42.96	56.00	13.04	9.000	0.5
2.120000	43.12	56.00	12.88	9.000	0.7
3.644000	39.25	56.00	16.75	9.000	1.0
21.936000	41.93	60.00	18.07	9.000	1.8
22.512000	42.25	60.00	17.75	9.000	1.9
22.768000	42.05	60.00	17.95	9.000	1.9
23.288000	42.05	60.00	17.95	9.000	1.9
24.396000	41.49	60.00	18.51	9.000	2.0

Final_Result_AVG

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Corr. (dB)
0.178000	25.00	55.00	30.00	9.000	0.3
0.460000	24.32	47.00	22.68	9.000	0.4
0.512000	23.59	46.00	22.41	9.000	0.4
0.702000	24.36	46.00	21.64	9.000	0.4
1.224000	29.71	46.00	16.29	9.000	0.5
1.308000	33.80	46.00	12.20	9.000	0.5
1.712000	33.44	46.00	12.56	9.000	0.6
3.668000	29.18	46.00	16.82	9.000	1.0
10.888000	30.27	50.00	19.73	9.000	1.4
23.100000	33.63	50.00	16.37	9.000	1.9

11 Antenna Requirement per FCC Part 15.203

11.1 Test Limits

§ 15.203: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

11.2 Results:

The sample tested met the antenna requirement. The antenna used was a unique antenna and non-standard connector.

12 Measurement Uncertainty

The measured value related to the corresponding limit will be used to decide whether the equipment meets the requirements.

The measurement uncertainty figures were calculated and correspond to a coverage factor of k = 2, providing a confidence level of respectively 95.45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian).

Measurement uncertainty Table

Parameter	Uncertainty	Notes
Radiated emissions, 30 to 1000 MHz	±3.9dB	
Radiated emissions, 1 to 18 GHz	±4.2dB	
Radiated emissions, 18 to 40 GHz	±4.3dB	
Power Port Conducted emissions, 150kHz to 30 MHz	±2.8dB	

13 Revision History

Revision Level	Date	Report Number	Notes
0	12/03/2015	102334393LEX-001	Original Issue