TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: XE500T1C

FCC ID: A3LXE500T1C & A3LXE500T1C-N

Industry Canada Certification Number: 649E-XE500T1C & 649E-XE500T1CN

To: FCC Part 15.407: 2011 & Industry Canada RSS-210 Issue 8
December 2010, RSS-Gen Issue 3 December 2010

Test Report Serial No.:
RFI-RPT-RP89958JD05B V5.0
Version 5.0 Supersedes All Previous Versions

This Test Report Is Issued Under The Authority Of John Newell, Group Quality Manager:	
Checked By:	Sarah Williams
Signature:	pp
Date of Issue:	09 October 2012

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1. Customer Information

Company Name:	Samsung Electronics Co., Ltd.
Address:	416, Maetan-3Dong, Yeongtong-Gu, Suwon-City, Gyeonggi-Do, 443-742, Korea

2. Summary of Testing

2.1. General Information

Specification Reference:	47CFR15.407
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2011: Part 15 Subpart E (Unlicensed National Information Infrastructure Devices) – Section 15.407.
Specification Reference:	47CFR15.107 and 47CFR15.109
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2011: Part 15 Subpart B (Unintentional Radiators) - Sections 15.107 and 15.109
Specification Reference:	47CFR15.207 and 47CFR15.209
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2011: Part 15 Subpart C (Intentional Radiators) - Sections 15.207 and 15.209
Specification Reference:	RSS-Gen Issue 3 December 2010
Specification Title:	General Requirements and Information for the Certification of Radio Apparatus
Specification Reference:	RSS-210 Issue 8 December 2010
Specification Title:	Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment.
Site Registration:	FCC: 209735; Industry Canada: 3245B-2
Location of Testing:	RFI Global Services Ltd., RFI Global Services LtdWade Road, Basingstoke, Hampshire, RG24 8AH.
Test Dates:	21 August 2012 to 28 August 2012

2.2. Summary of Test Results

FCC Reference (47CFR)	IC Reference	Measurement	Result
Part 15.107(a)	RSS-Gen 7.2.4	Receiver/Idle Mode AC Conducted Emissions	✓
Part 15.109	RSS-Gen 4.10	Receiver/Idle Mode Radiated Spurious Emissions	✓
Part 15.207	RSS-Gen 7.2.4	Transmitter AC Conducted Emissions	✓
Part 15.403(i)	N/A	Transmitter 26 dB Emission Bandwidth	✓
N/A	RSS-Gen 4.6.1 / RSS-210 A9.2	Transmitter 99% Emission Bandwidth	✓
Part 15.407(a)(1)	N/A	Transmitter Maximum Conducted Output Power (5.15-5.25 GHz band)	✓
Part 15.407(a)(2)	RSS-Gen 4.8 / RSS-210 A9.2(2) & A9.2(3)	Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands)	✓
N/A	RSS-Gen 4.8 / RSS-210 A9.2(1)	Transmitter Maximum Equivalent Isotropically Radiated Power (EIRP) (5.15-5.25 GHz band)	✓
N/A	RSS-Gen 4.8 / RSS-210 A9.2(2) & A9.2(3)	Transmitter Maximum Equivalent Isotropically Radiated Power (EIRP) (5.25-5.35 GHz & 5.47-5.725 GHz bands)	✓
Part 15.407(a)(1)	N/A	Transmitter Peak Power Spectral Density (5.15-5.25 GHz band)	✓
N/A	RSS-210 A9.2(1)	Transmitter EIRP Spectral Density (5.15-5.25 GHz band)	✓
Part 15.407(a)(2)	RSS-210 A9.2(2) & A9.2(3)	Transmitter Peak Power Spectral Density (5.25-5.35 GHz & 5.47-5.725 GHz bands)	✓
Part 15.407(a)(6)	N/A	Transmitter Peak Excursion	✓
Part 15.407(b)/ 15.209(a)	RSS-Gen 4.9 RSS-210 A9.2(1),(2),(3) & (4)	Transmitter Out of Band Radiated Emissions	✓
Part 15.407(b)/ 15.209(a)	RSS-Gen 4.9 RSS-210 A9.2(1),(2),(3) & (4)	Transmitter Band Edge Radiated Emissions	✓
Part 15.407(g)	RSS-Gen 4.7	Transmitter Frequency Stability (Temperature & Voltage Variation)	✓ Note 1
Part 15.407(h)(1)	RSS-210 A9.2	Transmitter Power Control	Note 2

Key to Results

✓ = Complied ✗ = Did not comply

Note(s):

1. Frequency stability is better than 20 ppm which ensures that the signal remains in the allocated bands under all operational conditions stated in the user manual.
2. Transmit Power Control was not tested as the maximum EIRP is less than 500 mW (27 dBm).
3. DFS test results can be found in RFI test report RFI-RPT-RP89958JD05C

2.3. Methods and Procedures

Reference:	ANSI C63.4 (2009)
Title:	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
Reference:	ANSI C63.10 (2009)
Title:	American National Standard for Testing Unlicensed Wireless Devices
Reference:	FCC KDB 789033 D01 v01r01 3/5/2012
Title:	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E
Reference:	FCC Response To Inquiry
Title:	Tracking Number 969369 Date: 21 February 2012

2.4. Deviations from the Test Specification

For the measurements contained within this test report, there were no deviations from, additions to, or exclusions from the test specifications identified above.

3. Equipment Under Test (EUT)

3.1. Identification of Equipment Under Test (EUT)

Brand Name:	Samsung
Model Name or Number:	XE500T1C
Serial Number:	HX2W91SC700004R (Radiated sample)
Hardware Version Number:	PV
Software Version Number:	Window OS
FCC ID:	A3LXE500T1C
FCC ID:	A3LXE500T1C-N
Industry Canada Certification Number:	649E-XE500T1C
Industry Canada Certification Number:	649E-XE500T1CN

Brand Name:	Samsung
Model Name or Number:	XE500T1C
Serial Number:	HX2W91SC700031T (Conducted sample RF port)
Hardware Version Number:	PV
Software Version Number:	Window OS
FCC ID:	A3LXE500T1C
FCC ID:	A3LXE500T1C-N
Industry Canada Certification Number:	649E-XE500T1C
Industry Canada Certification Number:	649E-XE500T1CN

Brand Name:	Chicony
Description:	AC Charger
Model Name or Number:	A12-040N1A
Serial Number:	CNS440001595DON825J00RA

Brand Name:	Not stated
Description:	HDMI cable
Model Name or Number:	Not stated

3.2. Description of EUT

The equipment under test was a Tablet PC with, *Bluetooth* and IEEE 802.11a,b,g,n operating in the 2.4 GHz and 5 GHz bands. The Tablet PC has an integral antenna.

The EUT supports DFS as a Client without Radar Detection.

3.3. Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing.

3.4. Maximum Output Power

Frequency Range (MHz)	Mode	Conducted Output Power (dBm)
5150 MHz to 5250 MHz	802.11a	6.1
5250 MHz to 5350 MHz	802.11a	6.6
5470 MHz to 5725 MHz	802.11a	7.7

3.5. Additional Information Related to Testing

Technology Tested:	IEEE 802.11		
Type of Unit:	Transceiver		
Modulation:	CCK, BPSK, QPSK, 16QAM, 64QAM		
Data rates:	802.11a	6, 9, 12, 18, 24, 36 ,48 & 54 Mbps	
	802.11n	6.5, 13, 19.5, 26, 39, 52, 58.5 & 65 Mbps	
Power Supply Requirement(s):	Nominal	12 VDC via 120 VAC 60 Hz adaptor	
Antenna Gain:	5150 to 5350 MHz	6.2 dBi	
	5470 to 5725 MHz	2.55 dBi	
Channel Spacing:	20 MHz		
Transmit & Receive Frequency Band:	5150 MHz to 5250 MHz		
Transmit & Receive Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency (MHz)**
	Bottom	36	5180
	Middle	40	5200
	Top	48	5240
Transmit & Receive Frequency Band:	5250 MHz to 5350 MHz		
Transmit & Receive Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency (MHz)**
	Bottom	52	5260
	Middle	60	5300
	Top	64	5320
Transmit & Receive Frequency Band:	5470 MHz to 5725 MHz		
Transmit & Receive Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency (MHz)**
	Bottom	100	5500
	Middle	120	5600
	Top	140	5700

3.6. Support Equipment

The following support equipment was used to exercise the EUT during testing:

Description:	USIM
Brand Name:	Comprion
Model Name or Number:	Micro USIM

Description:	SD RAM
Brand Name:	San Disk
Model Name or Number:	8 GB

Description:	USB Hub
Brand Name:	Belkin
Model Name or Number:	F5U404-BLK
Serial Number:	D12-00047182

Description:	USB cable
Brand Name:	Generic
Model Name or Number:	Not stated

Description:	Cyclone Micro Media Player Adaptor
Brand Name:	Sumvision
Model Name or Number:	Cyclone Micro
Serial Number:	RFI Asset No. A1986

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

The EUT was tested in the following operating mode(s):

- Receiver/Idle mode. The 802.11 mode was active but not transmitting.
- Continuously transmitting with a modulated carrier at maximum power on the bottom, middle and top channels as required using the supported data rates/modulation types.

4.2. Configuration and Peripherals

The EUT was tested in the following configuration(s):

- Controlled using a bespoke application on the EUT, by pressing sequence of buttons on the front panel display which placed the unit into test mode. The application was used to enable continuous transmission and receive mode and to select the test channels, data rates and modulation schemes as required
- Receive/Idle tests: The 802.11 mode was active but not transmitting
- The EUT supports 20 MHz channel bandwidth only. The Customer has declared the worst case data rates as:
    - 802.11a: 6 Mbps.
    - 802.11n: 6.5 Mbps / MCS0.
- Transmitter radiated spurious emissions final measurements were performed using the 802.11a, 6 Mbps configuration as it was previously measured and found to produce the highest EIRP.
- AC conducted and Radiated spurious emissions were performed with all possible ports terminated.

5. Measurements, Examinations and Derived Results

5.1. General Comments

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to *Section* 6 *Measurement Uncertainty* for details.

In accordance with UKAS requirements all the measurement equipment is on a calibration schedule. All equipment was within the calibration period on the date of testing.

5.2. Test Results

5.2.1. Receiver/Idle Mode AC Conducted Spurious Emissions

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	23 August 2012
Test Sample Serial Number:	HX2W91SC700004R		

FCC Reference:	Part 15.107(a)
Industry Canada Reference:	RSS-Gen 7.2.4
Test Method Used:	As detailed in ANSI C63.10 Section 6.2 referencing ANSI C63.4

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	45

Results: Live / Quasi Peak

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.155	Live	51.0	65.8	14.8	Complied
0.1680	Live	51.5	65.1	13.6	Complied
0.222	Live	42.0	62.7	20.7	Complied
14.361	Live	24.6	60.0	35.4	Complied
16.899	Live	32.3	60.0	27.7	Complied
19.280	Live	31.3	60.0	28.7	Complied

Receiver/Idle Mode AC Conducted Spurious Emissions (continued)

Results: Live / Average

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.164	Live	37.9	55.3	17.4	Complied
0.168	Live	33.3	55.1	21.8	Complied
0.267	Live	28.4	51.2	22.8	Complied
14.028	Live	18.6	50.0	31.4	Complied
14.276	Live	23.3	50.0	26.7	Complied
19.284	Live	28.4	50.0	21.6	Complied

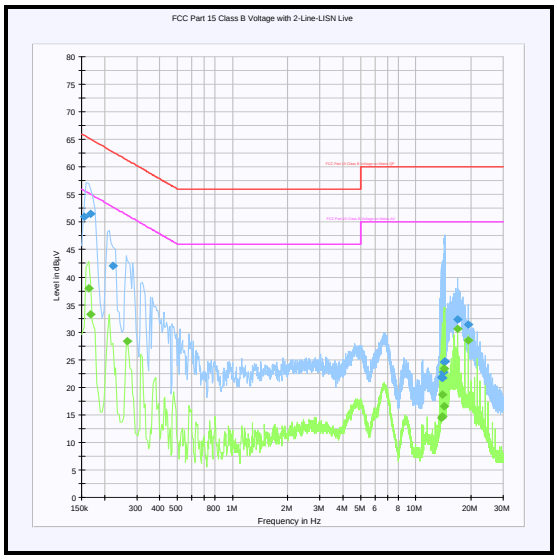
Results: Neutral / Quasi Peak

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.159	Neutral	52.1	65.5	13.4	Complied
0.168	Neutral	50.3	65.1	14.8	Complied
0.222	Neutral	40.7	62.7	22.0	Complied
14.267	Neutral	25.1	60.0	34.9	Complied
14.388	Neutral	26.6	60.0	33.4	Complied
17.025	Neutral	38.9	60.0	21.1	Complied

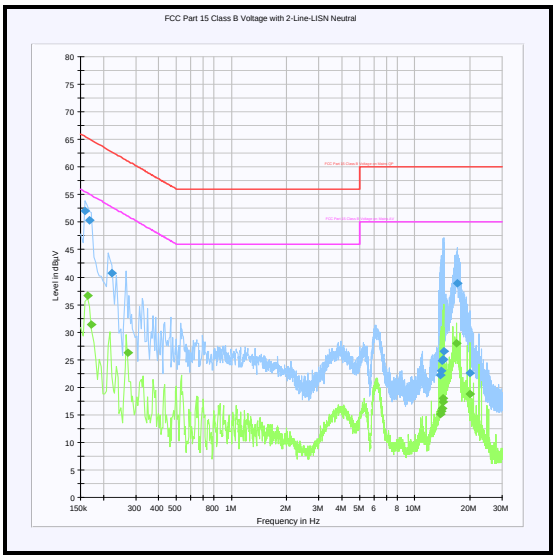
Results: Neutral / Average

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.164	Neutral	36.6	55.3	18.7	Complied
0.173	Neutral	31.3	54.8	23.5	Complied
0.272	Neutral	26.2	51.1	24.9	Complied
14.357	Neutral	17.9	50.0	32.1	Complied
16.962	Neutral	28.0	50.0	22.0	Complied
20.058	Neutral	18.7	50.0	31.3	Complied

Receiver/Idle Mode AC Conducted Spurious Emissions (continued)



Live



Neutral

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Test Equipment Used:

RFI ID	Instrument Description	Model Number	Calibration Due	Calibration Interval (Months)
M1263	EMI Test Receiver	ESIB7	04 Apr 2013	12
A1830	Pulse Limiter	ESH3-Z2	25 Feb 2013	12
A649	Single Phase LISN	ESH3-Z5	19 Feb 2013	12

5.2.2. Receiver/Idle Mode Radiated Spurious Emissions

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	21 August 2012
Test Sample Serial Number:	HX2W91SC700004R		

FCC Reference:	Part 15.109
Industry Canada Reference:	RSS-Gen 4.10
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3 and 6.5 referencing ANSI C63.4
Frequency Range:	30 MHz to 1000 MHz

Environmental Conditions:

Temperature (°C):	29
Relative Humidity (%):	35

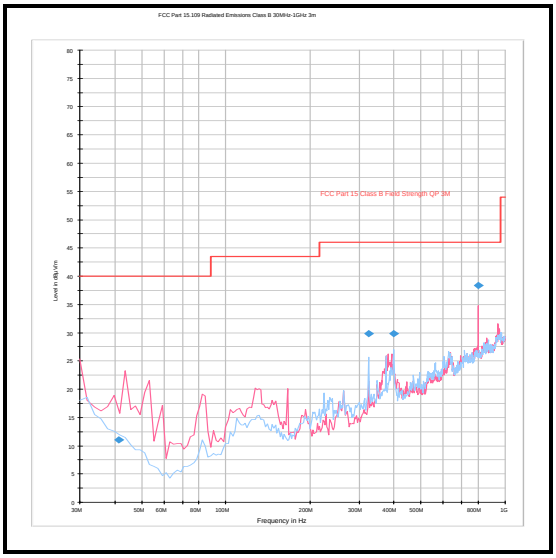
Note(s):

1. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
2. All other emissions shown on the pre-scan plot were investigated and found to be ambient or >20 dB below the applicable limit or below the measurement system noise floor.
3. Measurements below 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.

Results: Quasi Peak

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
41.486	Vertical	11.1	40.0	28.9	Complied
324.484	Horizontal	29.9	46.0	16.1	Complied
399.372	Horizontal	29.8	46.0	16.2	Complied
798.745	Vertical	38.3	46.0	7.7	Complied

Receiver/Idle Mode Radiated Spurious Emissions (continued)



Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying table.

Test Equipment Used:

RFI ID	Instrument Description	Model Number	Calibration Due	Calibration Interval (Months)
K0001	5 m Semi-Anechoic Chamber	N/A	31 Aug 2012	12
M1273	Test Receiver	ESIB 26	03 Feb 2013	12
A1834	Attenuator	8491B	29 Jan 2013	12
G0543	Amplifier 9KHz - 1GHz	310N	15 Oct 2012	12
A553	Bi-log Antenna	CBL6111A	15 Feb 2013	12

Receiver/Idle Mode Radiated Spurious Emissions (continued)

Test Summary:

Test Engineer:	Nick Steele & Andrew Edwards	**Test Date:**	22 August 2012 & 24 August 2012
Test Sample Serial Number:	HX2W91SC700004R		

FCC Reference:	Part 15.109
Industry Canada Reference:	RSS-Gen 4.10
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3 and 6.6 referencing ANSI C63.4
Frequency Range:	1 GHz to 30 GHz

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	44

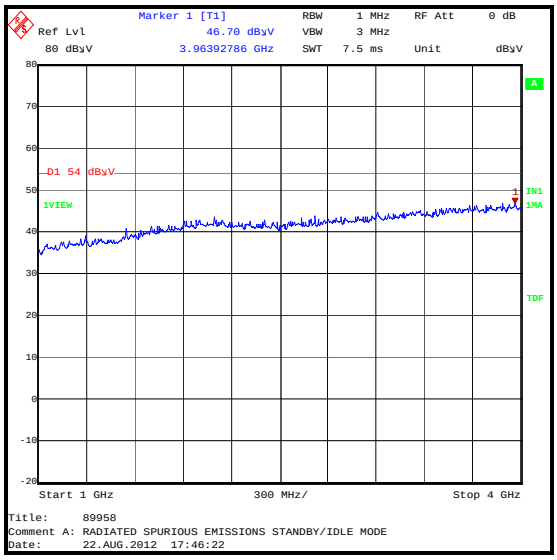
Note(s):

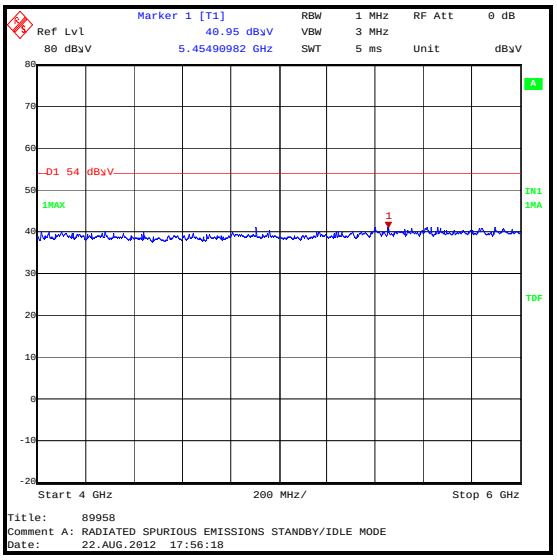
1. The final measured value, for the given emission, in the table below incorporates the calibrated antenna factor and cable loss.
2. No spurious emissions were detected above the noise floor of the measuring receiver therefore the highest peak noise floor reading of the measuring receiver was recorded as shown in the table below. The peak level was compared to the average limit as opposed to being compared to the peak limit because this is the more onerous limit.
3. Pre-scans above 1 GHz were performed in a fully anechoic chamber (RFI Asset Number K0002) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. Final measurements above 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.

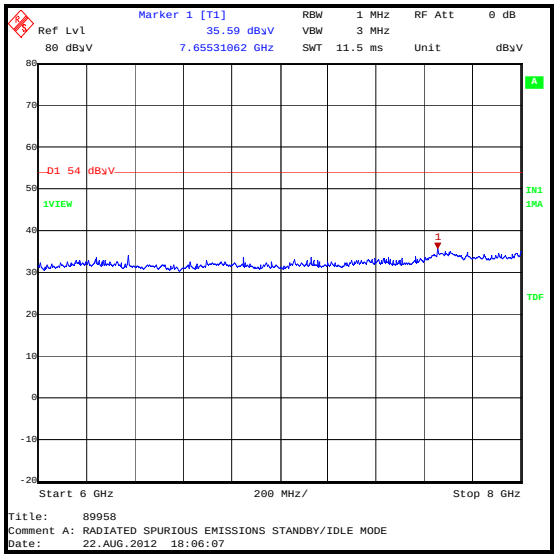
Results:

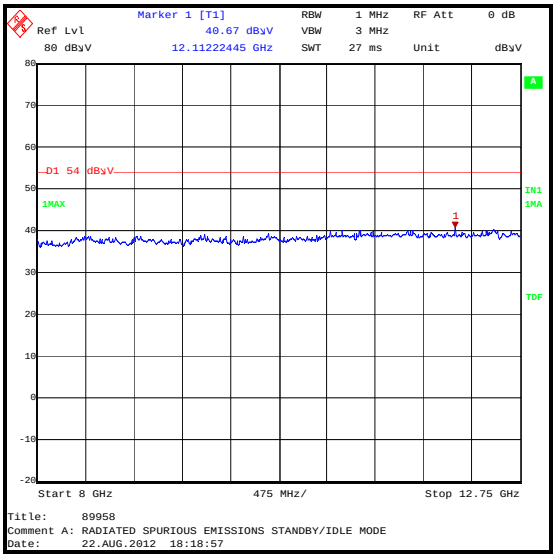
Frequency (MHz)	Antenna Polarity	Peak Level (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
26312.625	Vertical	51.2	54.0	2.8	Complied

Receiver/Idle Mode Radiated Spurious Emissions (continued)

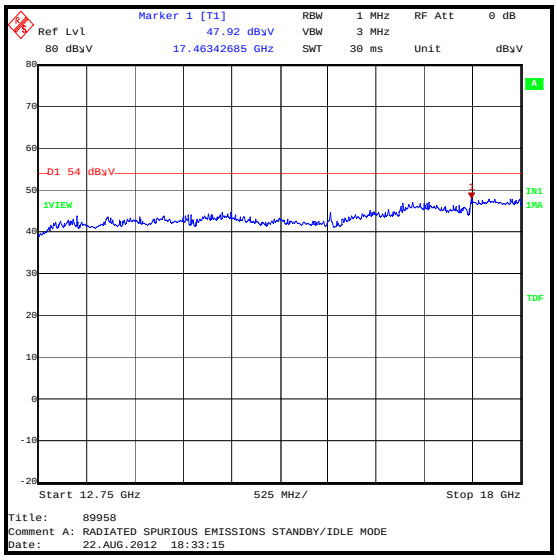


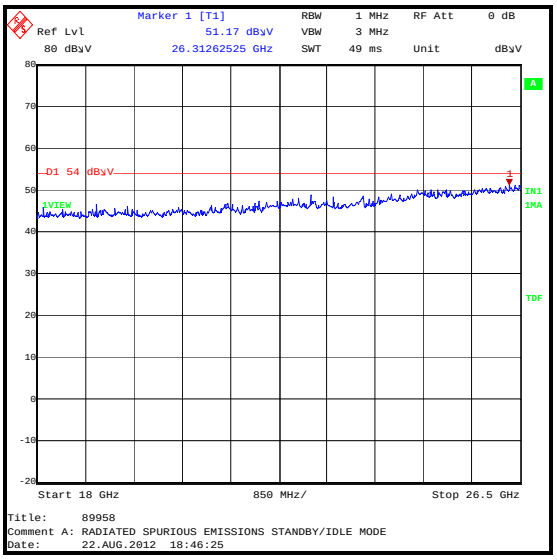


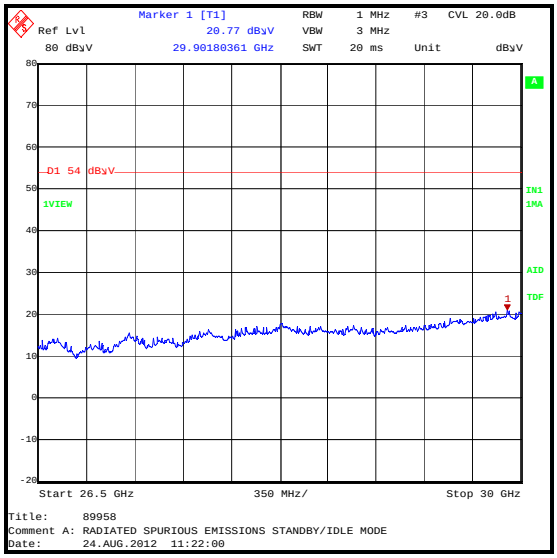




Receiver/Idle Mode Radiated Spurious Emissions (continued)







Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Receiver/Idle Mode Radiated Spurious Emissions (continued)

Test Equipment Used:

RFI ID	Instrument Description	Model Number	Calibration Due	Calibration Interval (Months)
K0002	3m RSE Chamber	N/A	09 Oct 2012	12
M1124	Test Receiver	ESIB 26	14 Aug 2013	12
A1534	Pre Amplifier	8449B	09 Oct 2012	12
A1818	1-18GHz Horn Antenna	3115	09 Oct 2012	12
A253	WG 12 Microwave Horn	12240-20	09 Oct 2012	12
A254	WG 14 Microwave Horn	14240-20	09 Oct 2012	12
A255	WG 16 Microwave Horn	16240-20	09 Oct 2012	12
A256	WG 18 Microwave Horn	18240-20	09 Oct 2012	12
A436	WG 20 Microwave Horn	20240-20	09 Oct 2012	12
A203	WG 22 Microwave Horn	22240-20	11 May 2013	36
M1390	26.5 GHz to 40 GHz Harmonic Mixer	WHMP 28	Calibrated before use	-
A1785	26.5 GHz to 40 GHz Pre-amplifier	FLNA-28-30	Calibrated before use	-
A366	Isolator	FRR-400	Calibrated before use	-
S0537	DC Power Supply Unit	EL302D	Calibrate not required	-
M1269	Multimeter	179	30 Jul 2013	12

5.2.3. Transmitter AC Conducted Spurious Emissions

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	23 August 2012
Test Sample Serial Number:	HX2W91SC700004R		

FCC Reference:	Part 15.207
Industry Canada Reference:	RSS-Gen 7.2.4
Test Method Used:	As detailed in ANSI C63.10 Section 6.2 referencing ANSI C63.4

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	45

Transmitter AC Conducted Spurious Emissions (continued)

Results: Live / Quasi Peak

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.155	Live	51.4	65.8	14.4	Complied
0.159	Live	51.2	65.5	14.3	Complied
0.195	Live	42.3	63.8	21.5	Complied
16.476	Live	31.6	60.0	28.4	Complied
16.935	Live	31.6	60.0	28.4	Complied
17.498	Live	30.2	60.0	29.8	Complied

Results: Live / Average

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.164	Live	35.2	55.3	20.1	Complied
0.209	Live	28.4	53.3	24.9	Complied
14.271	Live	23.0	50.0	27.0	Complied
14.456	Live	20.5	50.0	29.5	Complied
16.229	Live	31.8	50.0	18.2	Complied
16.971	Live	24.2	50.0	25.8	Complied

Transmitter AC Conducted Spurious Emissions (continued)

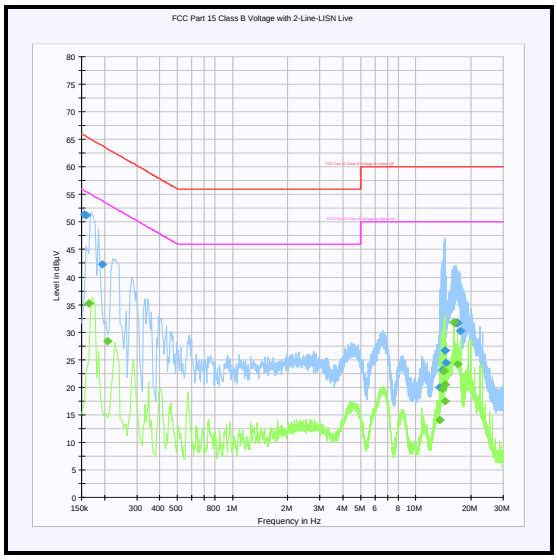
Results: Neutral / Quasi Peak

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.150	Neutral	49.7	66.0	16.3	Complied
0.155	Neutral	48.8	65.8	17.0	Complied
14.361	Neutral	20.5	60.0	39.5	Complied
14.469	Neutral	22.8	60.0	37.2	Complied
16.773	Neutral	30.6	60.0	29.4	Complied
17.219	Neutral	29.4	60.0	30.6	Complied

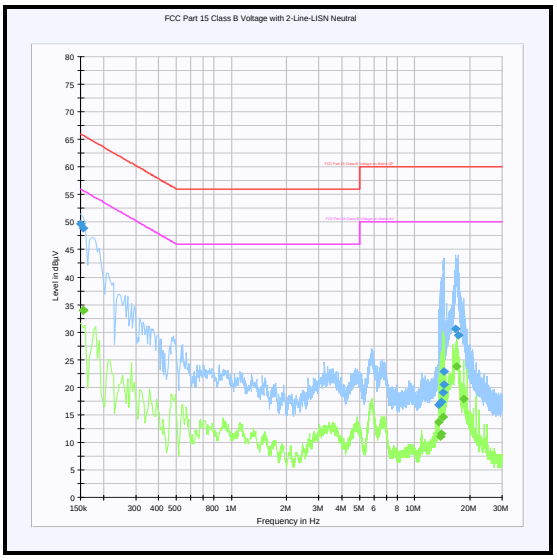
Results: Neutral / Average

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.155	Neutral	34.1	55.8	21.7	Complied
0.155	Neutral	33.9	55.8	21.9	Complied
13.479	Neutral	13.7	50.0	36.4	Complied
14.352	Neutral	14.6	50.0	35.4	Complied
16.899	Neutral	23.8	50.0	26.2	Complied
18.546	Neutral	17.9	50.0	32.1	Complied

Transmitter AC Conducted Spurious Emissions (continued)



Live



Neutral

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Test Equipment Used:

RFI ID	Instrument Description	Model Number	Calibration Due	Calibration Interval (Months)
M1263	EMI Test Receiver	ESIB7	04 Apr 2013	12
A1830	Pulse Limiter	ESH3-Z2	25 Feb 2013	12
A649	Single Phase LISN	ESH3-Z5	19 Feb 2012	12

5.2.4. Transmitter 26 dB Emission Bandwidth

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	22 August 2012
Test Sample Serial Number:	HX2W91SC700031T		

FCC Reference:	Part 15.403(i)
Industry Canada Reference:	N/A
Test Method Used:	FCC KDB 789033 Section D)

Environmental Conditions:

Temperature (°C):	28
Relative Humidity (%):	39

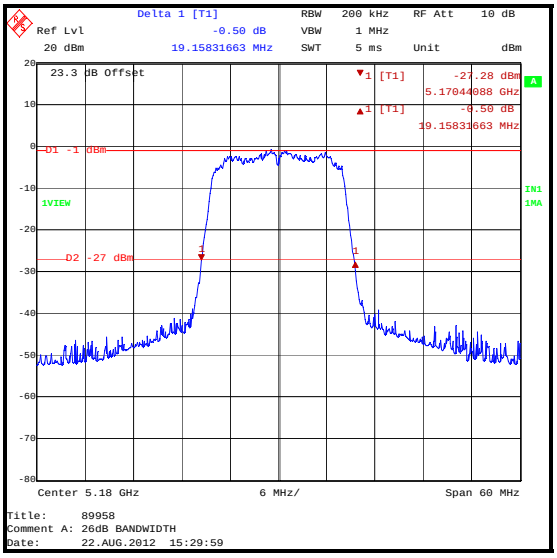
Note(s):

1. Measurements were performed on the worst case data rates declared by the customer.
    - 802.11a: 6 Mbps.
    - 802.11n: 6.5 Mbps / MCS0.
2. Final measurements were performed in each supported operating band using the above configurations on the bottom, middle and top channels.

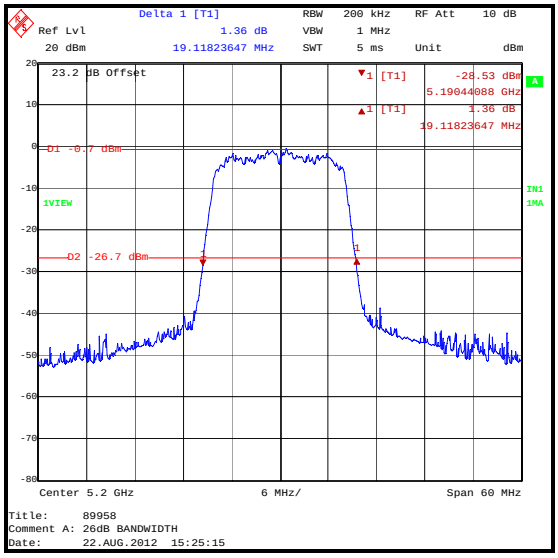
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11a / 20 MHz / 5.15-5.25 GHz band

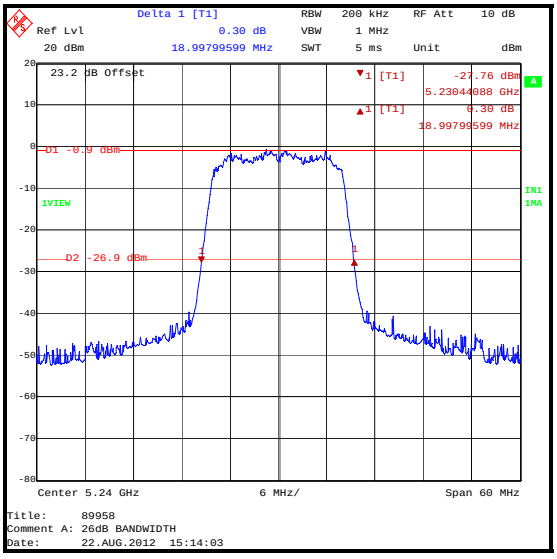
Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps	26 dB Emission Bandwidth (MHz)
Bottom	5180	BPSK	6	19.158
Middle	5200	BPSK	6	19.118
Top	5240	BPSK	6	18.998



Bottom Channel



Middle Channel

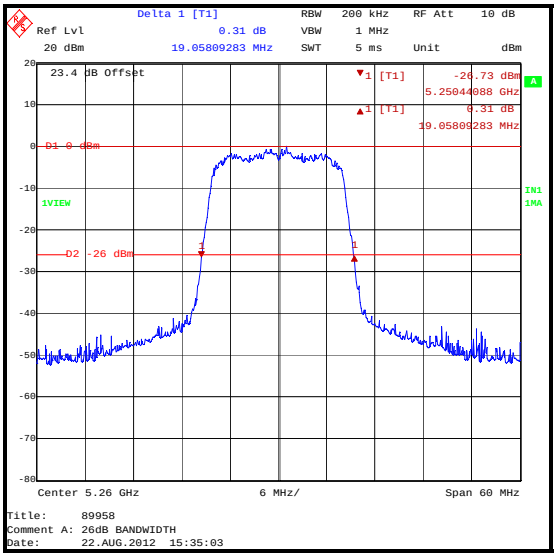


Top Channel

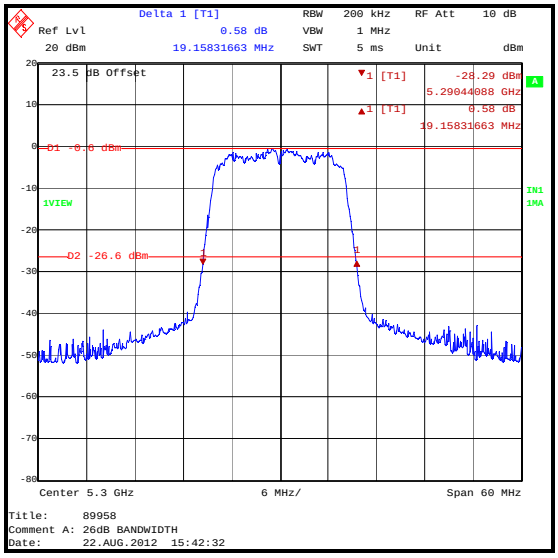
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11a / 20 MHz / 5.25-5.35 GHz band

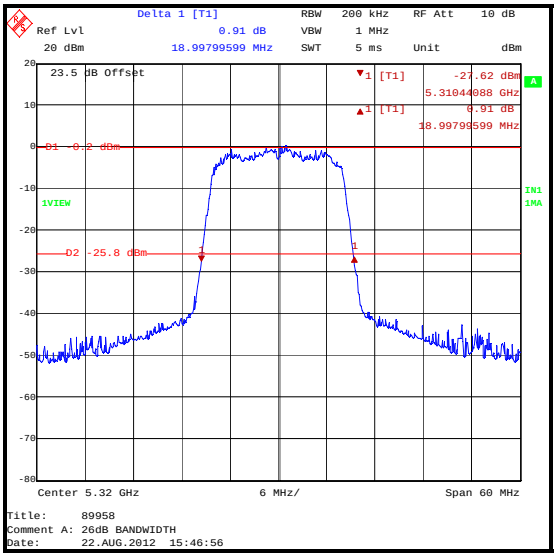
Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps	26 dB Emission Bandwidth (MHz)
Bottom	5260	BPSK	6	19.058
Middle	5300	BPSK	6	19.158
Top	5320	BPSK	6	18.998



Bottom Channel



Middle Channel

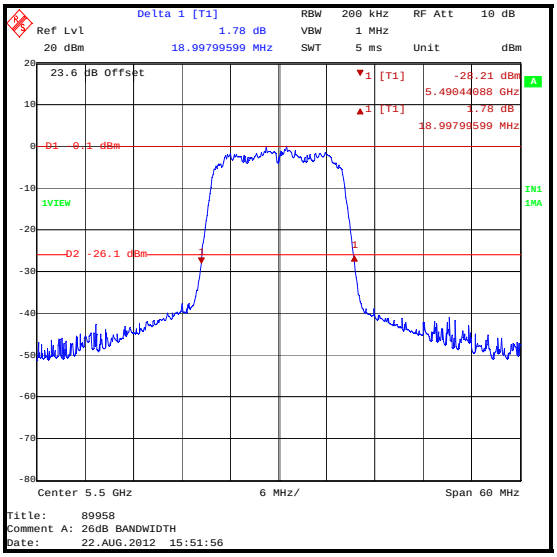


Top Channel

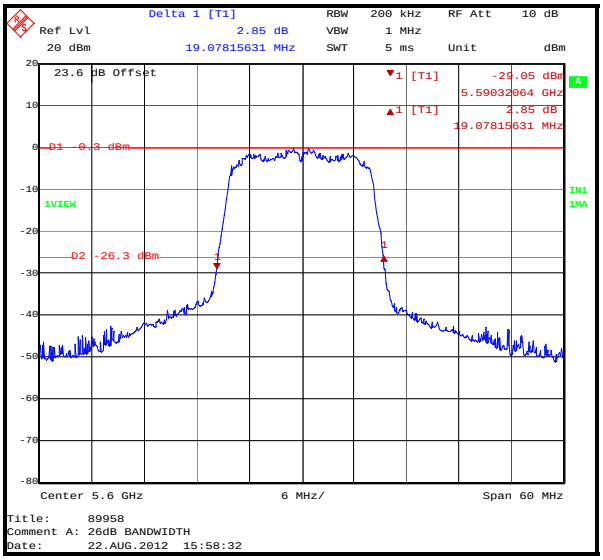
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11a / 20 MHz / 5.47-5.725 GHz band

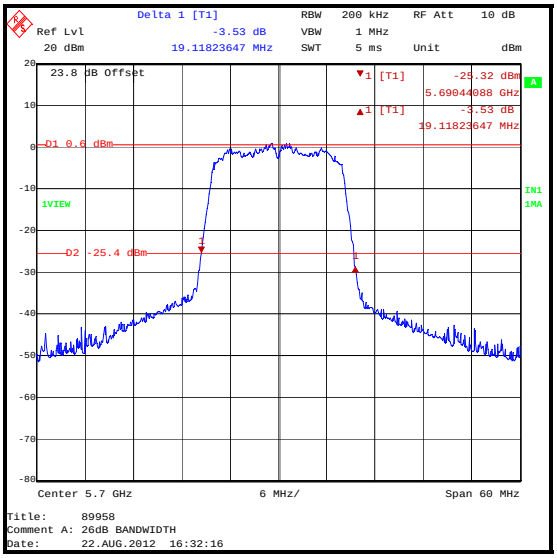
Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps	26 dB Emission Bandwidth (MHz)
Bottom	5500	BPSK	6	18.998
Middle	5600	BPSK	6	19.078
Top	5700	BPSK	6	19.118



Bottom Channel



Middle Channel

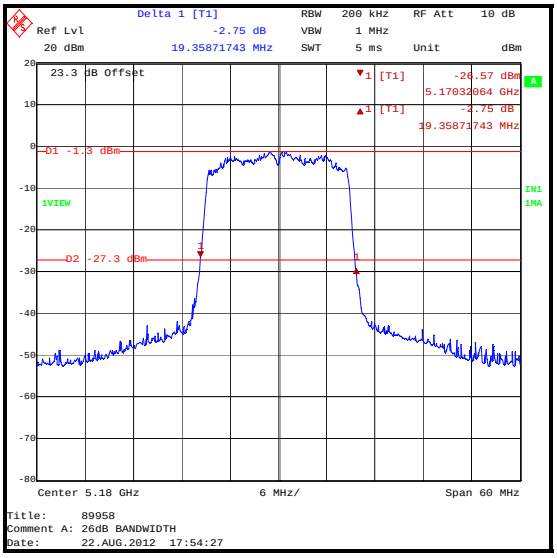


Top Channel

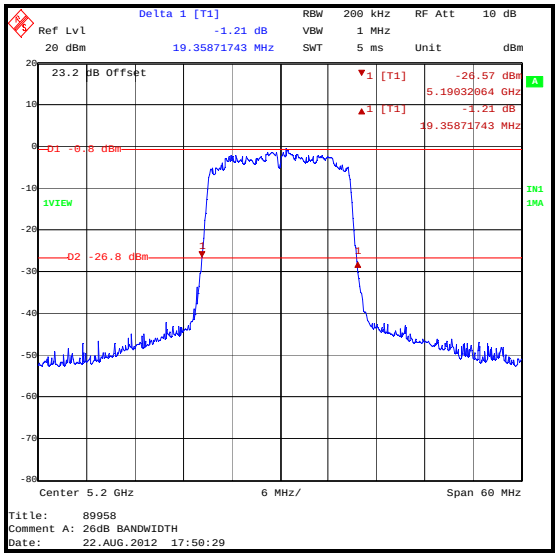
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 20 MHz / 5.15-5.25 GHz band

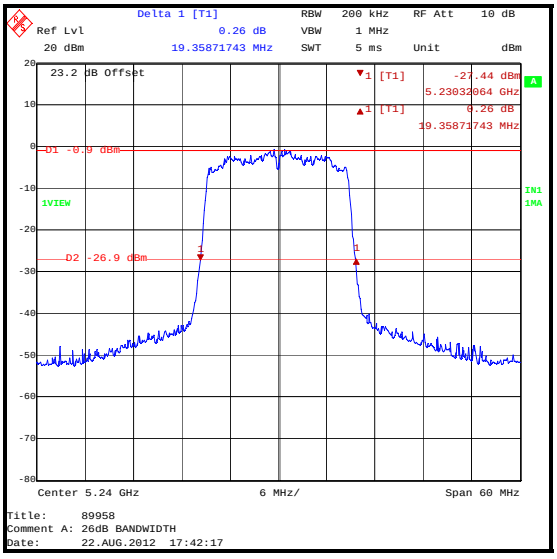
Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5180	BPSK	6.5 / 0	19.359
Middle	5200	BPSK	6.5 / 0	19.359
Top	5240	BPSK	6.5 / 0	19.359



Bottom Channel



Middle Channel

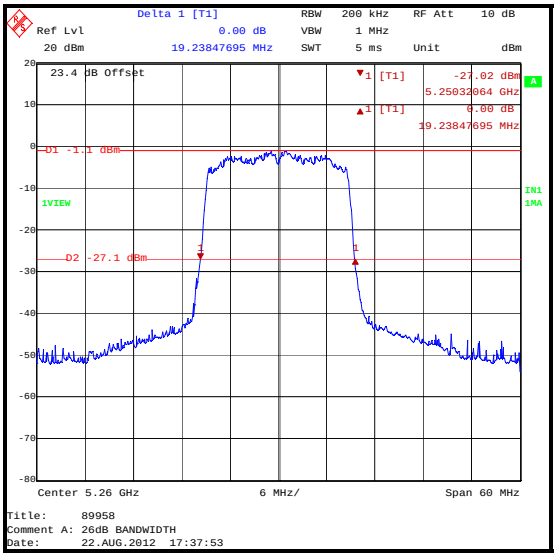


Top Channel

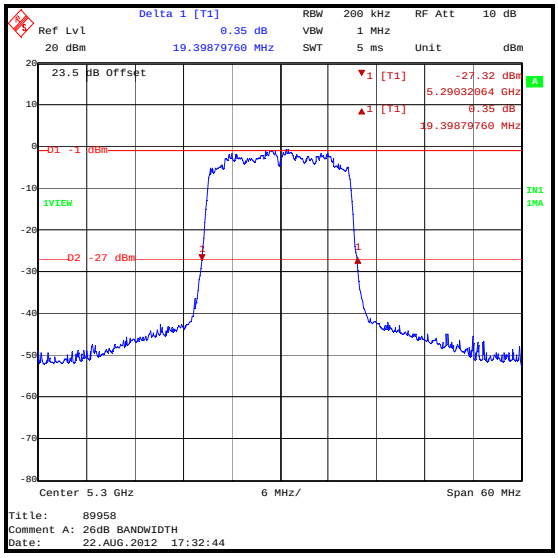
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 20 MHz / 5.25-5.35 GHz band

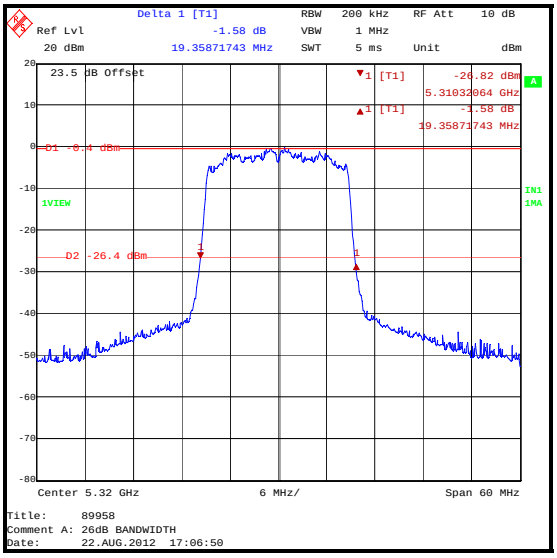
Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5260	BPSK	6.5 / 0	19.238
Middle	5300	BPSK	6.5 / 0	19.399
Top	5320	BPSK	6.5 / 0	19.359



Bottom Channel



Middle Channel

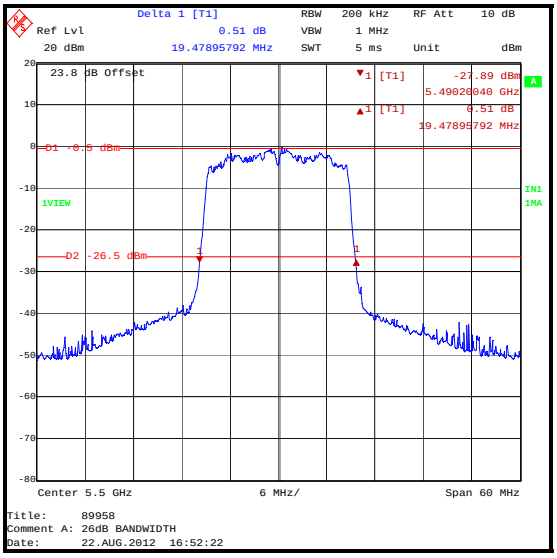


Top Channel

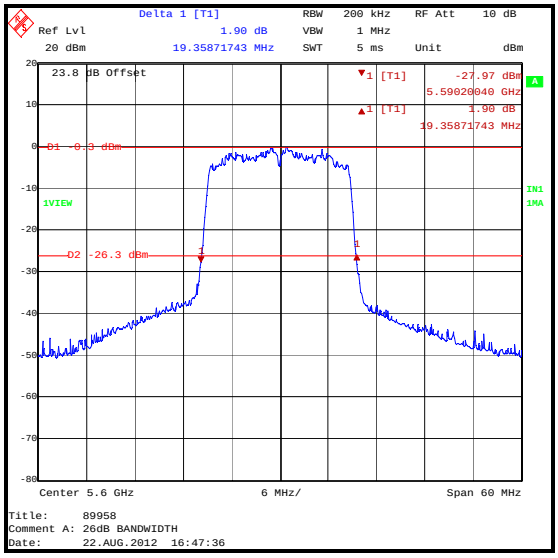
Transmitter 26 dB Emission Bandwidth (continued)

Results: 802.11n / 20 MHz / 5.47-5.725 GHz band

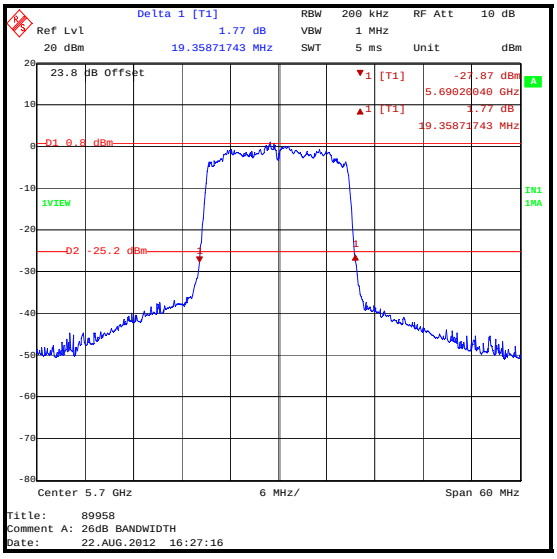
Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	26 dB Emission Bandwidth (MHz)
Bottom	5500	BPSK	6.5 / 0	19.479
Middle	5600	BPSK	6.5 / 0	19.359
Top	5700	BPSK	6.5 / 0	19.359



Bottom Channel



Middle Channel



Top Channel

Transmitter 26 dB Emission Bandwidth (continued)

Test Equipment Used:

RFI ID	Instrument Description	Model Number	Calibration Due	Calibration Interval (Months)
L1067	Test Receiver	ESIB 40	29 May 2013	12
A2142	Attenuator	AN18-20	25 May 2013	12

5.2.5. Transmitter 99% Emission Bandwidth

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	22 August 2012
Test Sample Serial Number:	HX2W91SC700031T		

FCC Reference:	N/A
Industry Canada Reference:	RSS-210 A9.2
Test Method Used:	RSS-Gen 4.6.1 & FCC KDB 789033 D) / Tested using the occupied bandwidth function of a test receiver

Environmental Conditions:

Temperature (°C):	28
Relative Humidity (%):	40

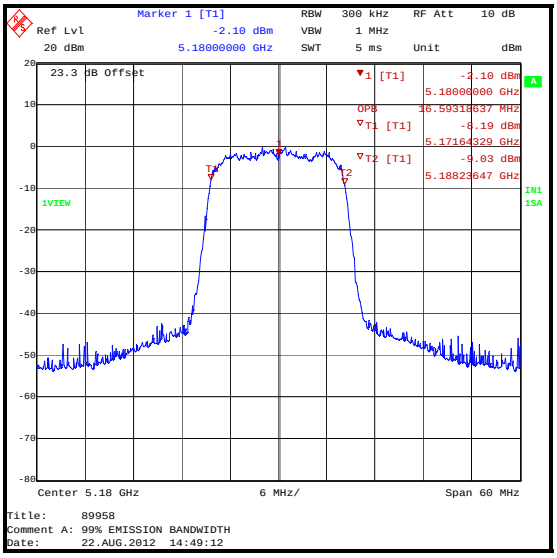
Note(s):

1. Occupied bandwidth (99% bandwidth) was measured using a test receiver occupied bandwidth function with the test receiver set to the appropriate bandwidth according to the channel width under test. Measurement bandwidths were set automatically by the test receiver.
3. The Measurements were performed on the worst case data rates declared by the customer.
    - 802.11a: 6 Mbps.
    - 802.11n: 6.5 Mbps / MCS0.
2. Final measurements were performed in each supported operating band using the above configurations on the bottom, middle and top channels.

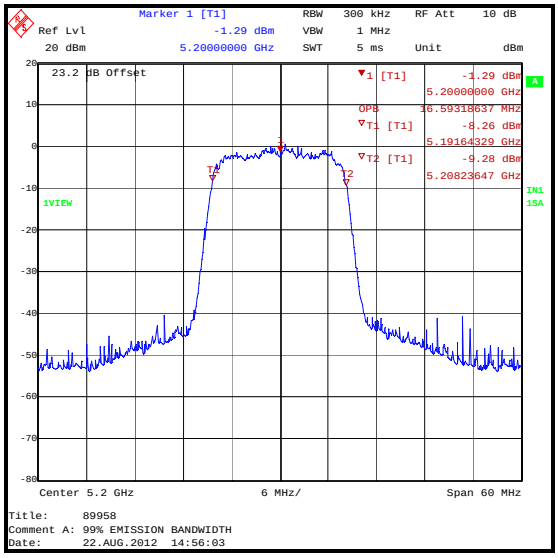
Transmitter 99 % Emission Bandwidth (continued)

Results: 802.11a / 20 MHz / 5.15-5.25 GHz band

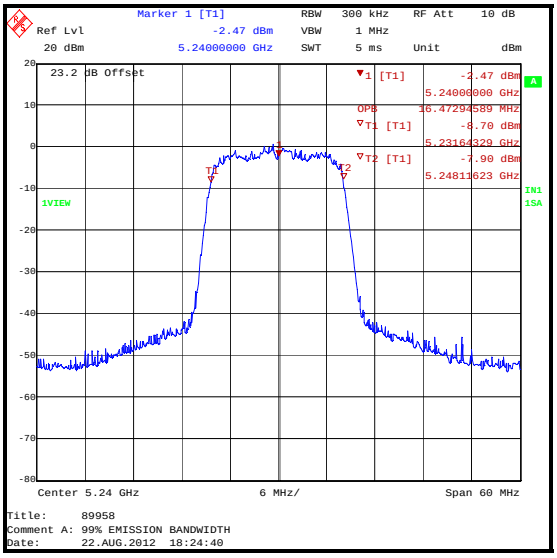
Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps	99 % Emission Bandwidth (MHz)
Bottom	5180	BPSK	6	16.593
Middle	5200	BPSK	6	16.593
Top	5240	BPSK	6	16.473



Bottom Channel



Middle Channel

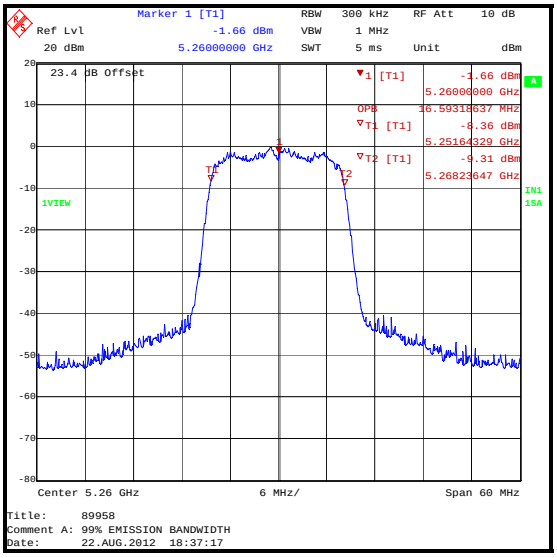


Top Channel

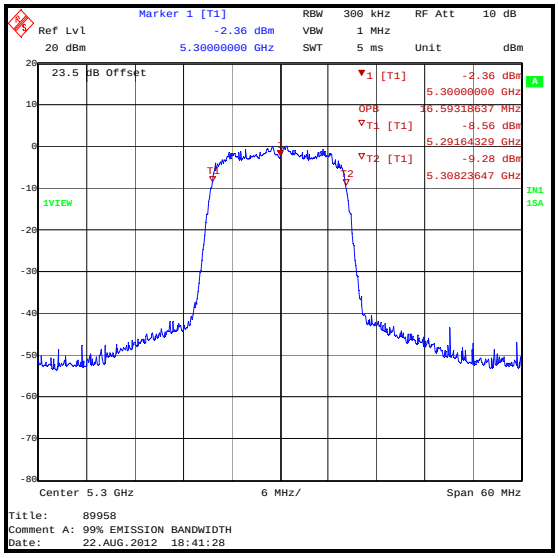
Transmitter 99 % Emission Bandwidth (continued)

Results: 802.11a / 20 MHz / 5.25-5.35 GHz band

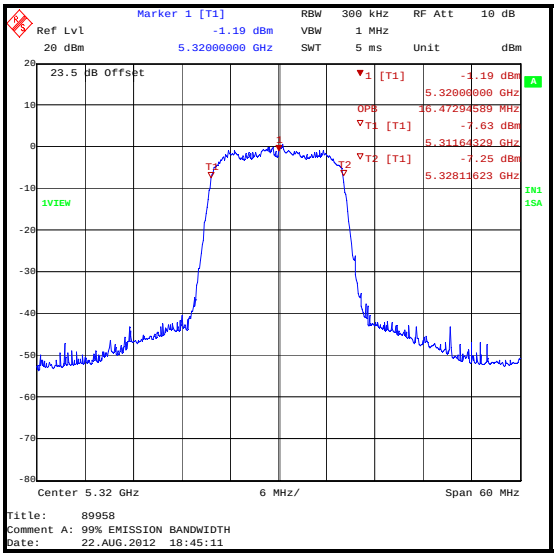
Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps	99 % Emission Bandwidth (MHz)
Bottom	5260	BPSK	6	16.593
Middle	5300	BPSK	6	16.593
Top	5320	BPSK	6	16.473



Bottom Channel



Middle Channel

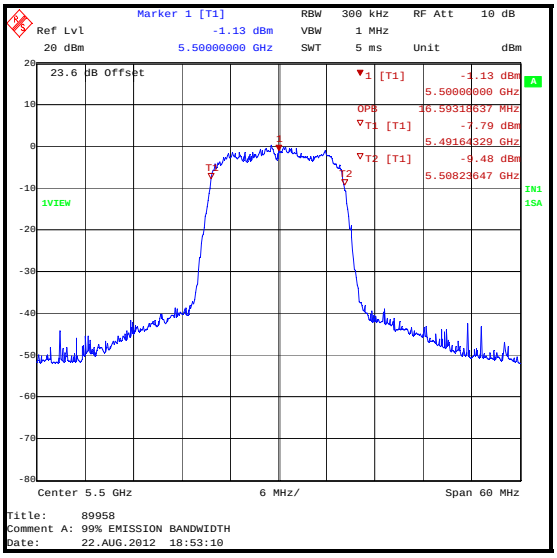


Top Channel

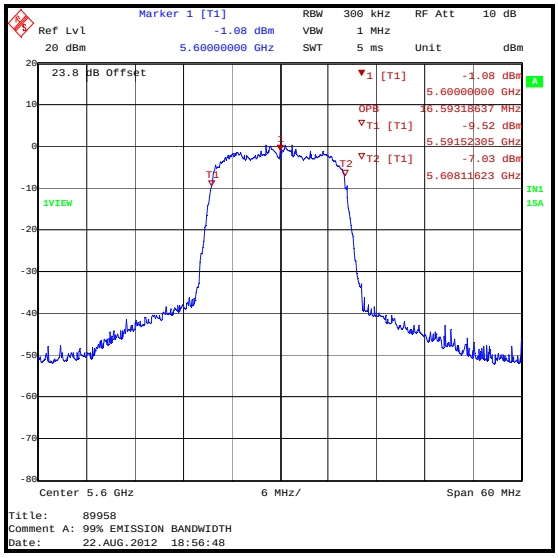
Transmitter 99 % Emission Bandwidth (continued)

Results: 802.11a / 20 MHz / 5.47-5.725 GHz band

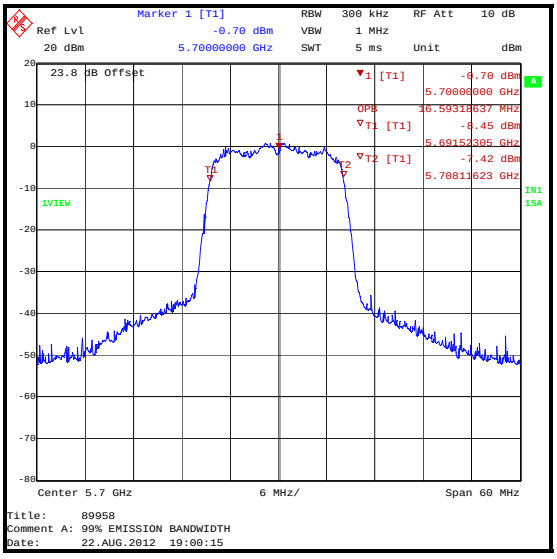
Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps	99 % Emission Bandwidth (MHz)
Bottom	5500	BPSK	6	16.593
Middle	5600	BPSK	6	16.593
Top	5700	BPSK	6	16.593



Bottom Channel



Middle Channel

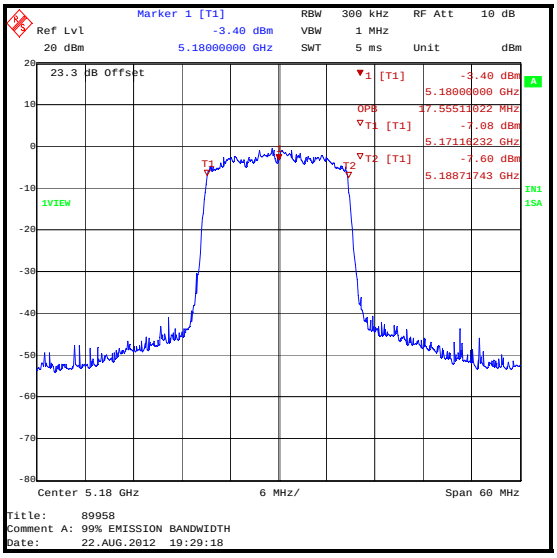


Top Channel

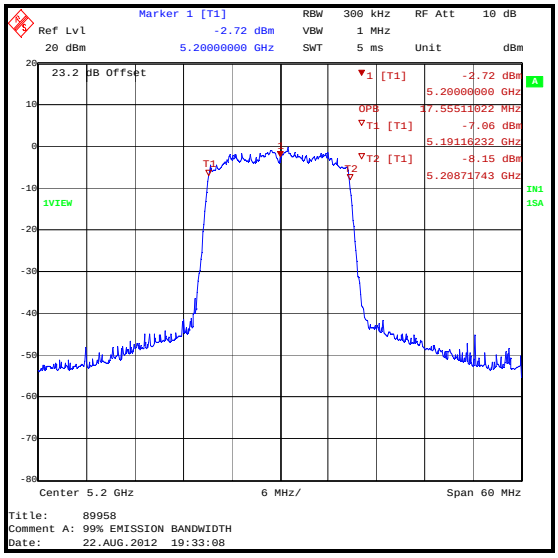
Transmitter 99 % Emission Bandwidth (continued)

Results: 802.11n / 20 MHz / 5.15-5.25 GHz band

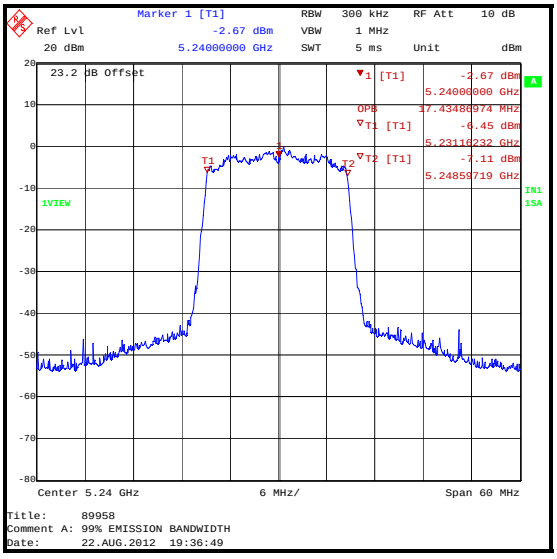
Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	99 % Emission Bandwidth (MHz)
Bottom	5180	BPSK	6.5 / 0	17.555
Middle	5200	BPSK	6.5 / 0	17.555
Top	5240	BPSK	6.5 / 0	17.435



Bottom Channel



Middle Channel

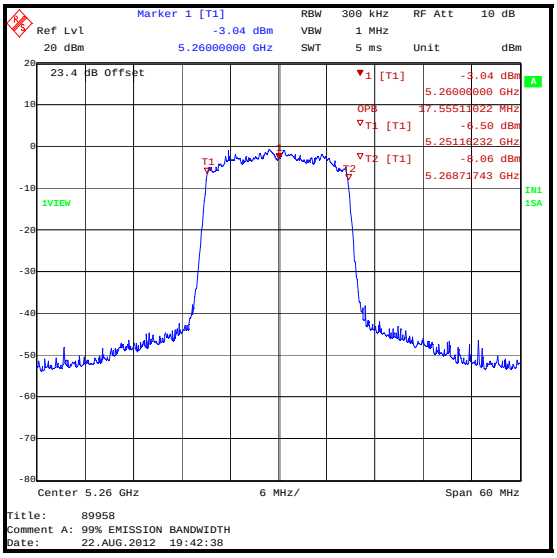


Top Channel

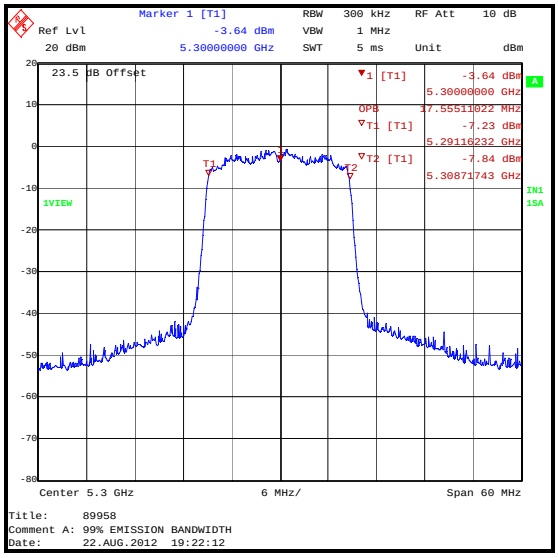
Transmitter 99 % Emission Bandwidth (continued)

Results: 802.11n / 20 MHz / 5.25-5.35 GHz band

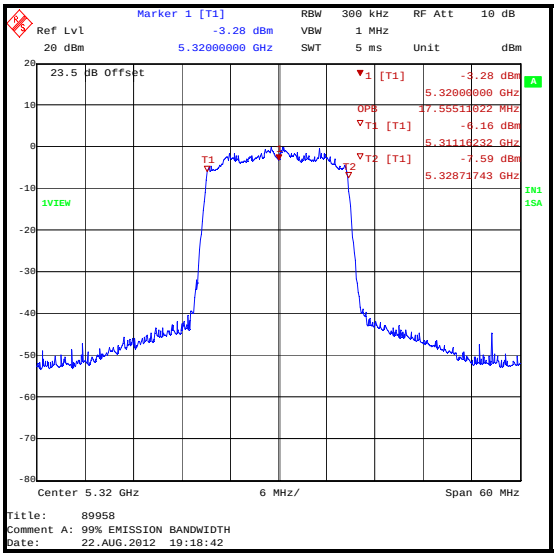
Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	99 % Emission Bandwidth (MHz)
Bottom	5260	BPSK	6.5 / 0	17.555
Middle	5300	BPSK	6.5 / 0	17.555
Top	5320	BPSK	6.5 / 0	17.555



Bottom Channel



Middle Channel

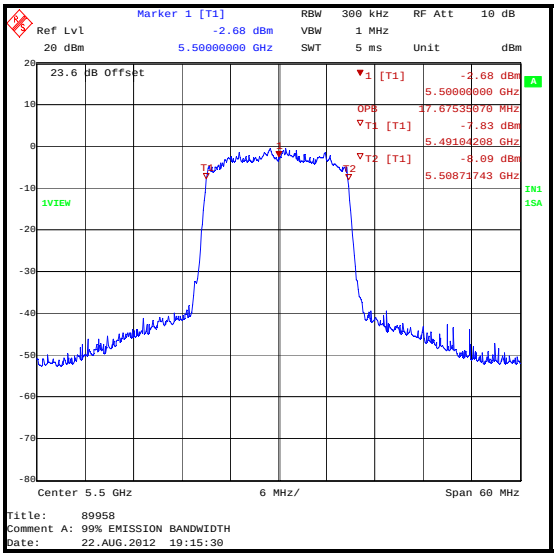


Top Channel

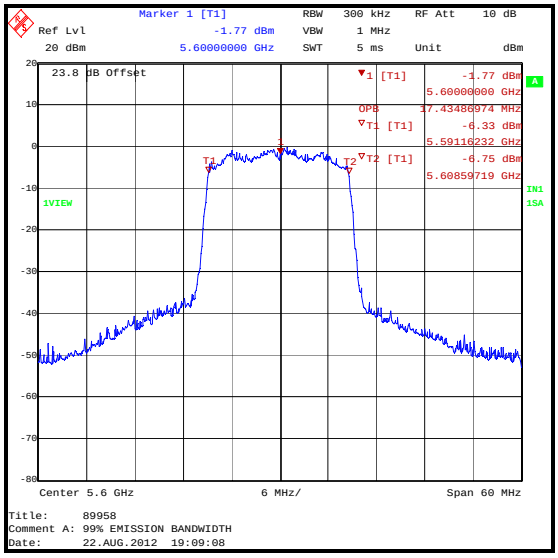
Transmitter 99 % Emission Bandwidth (continued)

Results: 802.11n / 20 MHz / 5.47-5.725 GHz band

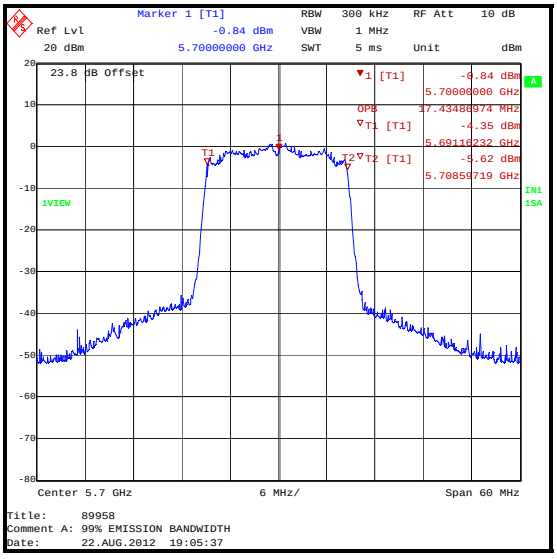
Channel	Frequency (MHz)	Modulation scheme	Data Rate Mbps / MCS	99 % Emission Bandwidth (MHz)
Bottom	5500	BPSK	6.5 / 0	17.675
Middle	5600	BPSK	6.5 / 0	17.435
Top	5700	BPSK	6.5 / 0	17.435



Bottom Channel



Middle Channel



Top Channel

Transmitter 99 % Emission Bandwidth (continued)

Test Equipment Used:

RFI ID	Instrument Description	Model Number	Calibration Due	Calibration Interval (Months)
L1067	Test Receiver	ESIB 40	29 May 2013	12
A2142	Attenuator	AN18-20	25 May 2013	12

5.2.6. Transmitter Maximum Conducted Output Power

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	23 August 2012
Test Sample Serial Number:	HX2W91SC700031T		

FCC Reference:	Part 15.407(a)(1)
Industry Canada Reference:	N/A
Test Method Used:	FCC KDB 789033 D01 Section C)3)b)

Environmental Conditions:

Temperature (°C):	28
Relative Humidity (%):	38

Note(s):

1. All conducted power tests were performed using a spectrum analyser in accordance with FCC KDB 789033 D01 C)3)b) Method SA-1.
2. Measurements were performed on the worst case data rates declared by the customer
    - 802.11a: 6 Mbps.
    - 802.11n: 6.5 Mbps / MCS0.
3. The EUT was transmitting at >99% duty cycle.
4. The Customer declared the antenna gain as 6.2 dBi in the 5.15 to 5.35 GHz bands. The conducted power limit as calculated below has been reduced by 0.2 dB as the 6 dBi gain allowed was exceeded by 0.2 dB according to Part 15.407(a)(1).
5. The Part 15.407(a)(1) limit is the lesser of 50 mW (17.0 dBm) or 4 dBm + 10 $\log_{10}$ B, where B is the previously measured 26 dB emission bandwidth in MHz. The limit for each channel was calculated as below:

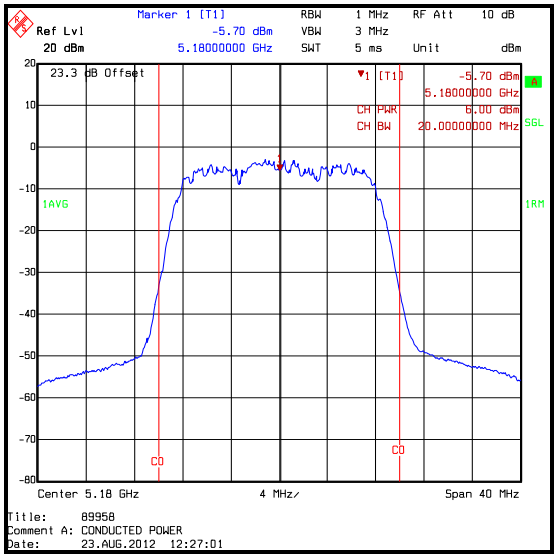
    802.11a 20 MHz channel width / Bottom channel = *4 dBm + 10 $\log_{10}$ 19.2 = 16.9 dBm*
    802.11a 20 MHz channel width / Middle channel = *4 dBm + 10 $\log_{10}$ 19.1 = 16.8 dBm*
    802.11a 20 MHz channel width / Top channel = *4 dBm + 10 $\log_{10}$ 19.0 = 16.8 dBm*
    802.11n 20 MHz channel width / Bottom channel = *4 dBm + 10 $\log_{10}$ 19.4 = 16.9 dBm*
    802.11n 20 MHz channel width / Middle channel = *4 dBm + 10 $\log_{10}$ 19.4 = 16.9 dBm*
    802.11n 20 MHz channel width / Top channel = *4 dBm + 10 $\log_{10}$ 19.4 = 16.9 dBm*

    Therefore the lesser of the two limits is the calculated limit above. This was applied to the results.

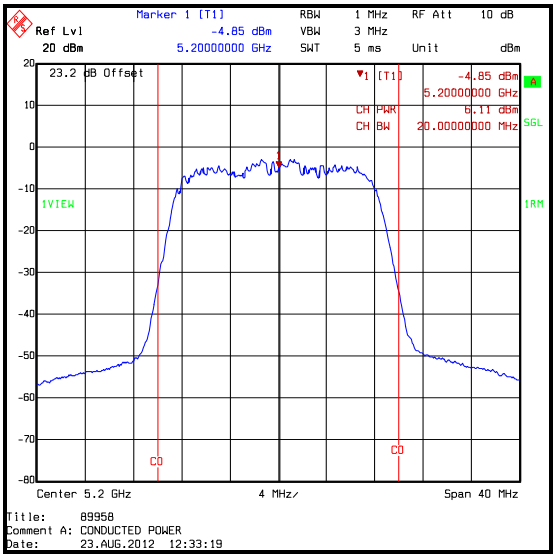
Transmitter Maximum Conducted Output Power (5.15-5.25 GHz band) (continued)

Results: FCC Part 15.407 / 802.11a / 20 MHz / 6 Mbps / BPSK

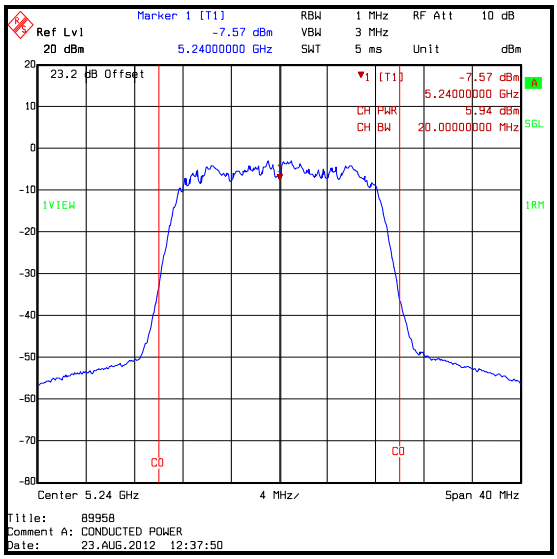
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5180	6.0	16.7	10.7	Complied
Middle	5200	6.1	16.6	10.5	Complied
Top	5240	5.9	16.6	10.7	Complied



Bottom Channel



Middle Channel

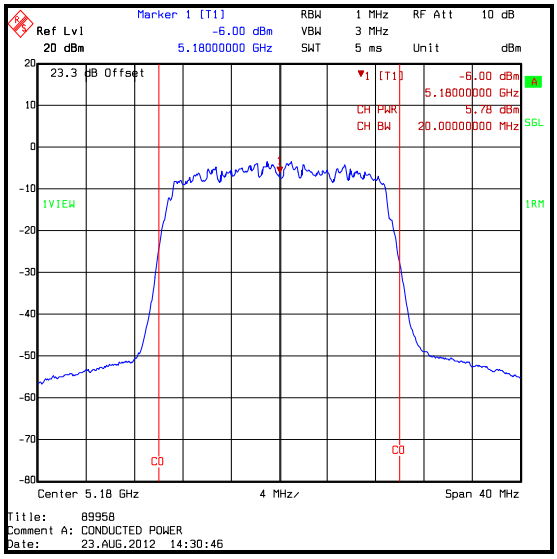


Top Channel

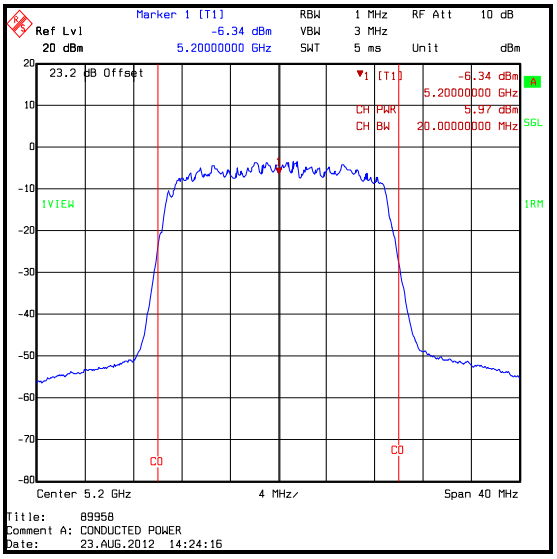
Transmitter Maximum Conducted Output Power (5.15-5.25 GHz band) (continued)

Results: FCC Part 15.407 / 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK

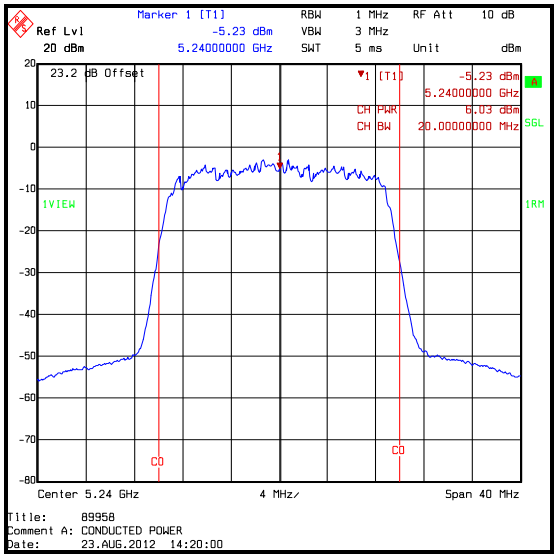
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5180	5.8	16.7	10.9	Complied
Middle	5200	6.0	16.7	10.7	Complied
Top	5240	6.0	16.7	10.7	Complied



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands)

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	23 August 2012
Test Sample Serial Number:	HX2W91SC700031T		

FCC Reference:	Part 15.407(a)(2)
Industry Canada Reference:	RSS-Gen 4.8, RSS-210 A9.2(2) & A9.2(3)
Test Method Used:	FCC KDB 789033 D01 Section C)3)b)

Environmental Conditions:

Temperature (°C):	28
Relative Humidity (%):	38

Note(s):

1. The FCC Part 15.407(a)(2) limit is the lesser of 250 mW (24.0 dBm) or 11 dBm + 10 $\log_{10}$ B, where B is the previously measured 26 dB emission bandwidth in MHz. The limit for each channel was calculated as below:

5.25-5.35 GHz band

802.11a 20 MHz channel width / Bottom channel = *11 dBm + 10 $\log_{10}$ 19.1 = 23.8 dBm*
802.11a 20 MHz channel width / Middle channel = *11 dBm + 10 $\log_{10}$ 19.2 = 23.8 dBm*
802.11a 20 MHz channel width / Top channel = *11 dBm + 10 $\log_{10}$ 19.0 = 23.8 dBm*
802.11n 20 MHz channel width / Bottom channel = *11 dBm + 10 $\log_{10}$ 19.2 = 23.8 dBm*
802.11n 20 MHz channel width / Middle channel = *11 dBm + 10 $\log_{10}$ 19.4 = 23.9 dBm*
802.11n 20 MHz channel width / top channel = *11 dBm + 10 $\log_{10}$ 19.4 = 23.9 dBm*

5.47-5.725 GHz band

802.11a 20 MHz channel width / Bottom channel = *11 dBm + 10 $\log_{10}$ 19.0 = 23.8 dBm*
802.11a 20 MHz channel width / Middle channel = *11 dBm + 10 $\log_{10}$ 19.1 = 23.8 dBm*
802.11a 20 MHz channel width / Top channel = *11 dBm + 10 $\log_{10}$ 19.1 = 23.8 dBm*
802.11n 20 MHz channel width / Bottom channel = *11 dBm + 10 $\log_{10}$ 19.5 = 23.9 dBm*
802.11n 20 MHz channel width / Middle channel = *11 dBm + 10 $\log_{10}$ 19.4 = 23.9 dBm*
802.11n 20 MHz channel width / Top channel = *11 dBm + 10 $\log_{10}$ 19.4 = 23.9 dBm*

The lesser of the two limits is the calculated limit above. This was applied to the FCC Part 15.407 results.

1. The Customer declared the antenna gain as 6.2 dBi in the 5.15 to 5.35 GHz bands. The conducted power limit as calculated above has been reduced by 0.2 dB as the 6 dBi gain allowed was exceeded by 0.2 dB according to Part 15.407(a)(2).

Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

2. The Industry Canada RSS-210 limit is the lesser of 250 mW (24.0 dBm) or 11 dBm + 10 $\log_{10}$ B, where B is the previously measured 99% emission bandwidth The limit for each channel was calculated as below:

5.25-5.35 GHz band

802.11a 20 MHz channel width / Bottom channel = *11 dBm + 10 $\log_{10}$ 16.6 = 23.2 dBm*
802.11a 20 MHz channel width / Middle channel = *11 dBm + 10 $\log_{10}$ 16.6 = 23.2 dBm*
802.11a 20 MHz channel width / Top channel = *11 dBm + 10 $\log_{10}$ 16.5 = 23.2 dBm*
802.11n 20 MHz channel width / Bottom channel = *11 dBm + 10 $\log_{10}$ 17.6 = 23.5 dBm*
802.11n 20 MHz channel width / Middle channel = *11 dBm + 10 $\log_{10}$ 17.6 = 23.5 dBm*
802.11n 20 MHz channel width / Top channel = *11 dBm + 10 $\log_{10}$ 17.6 = 23.5 dBm*

5.47-5.725 GHz band

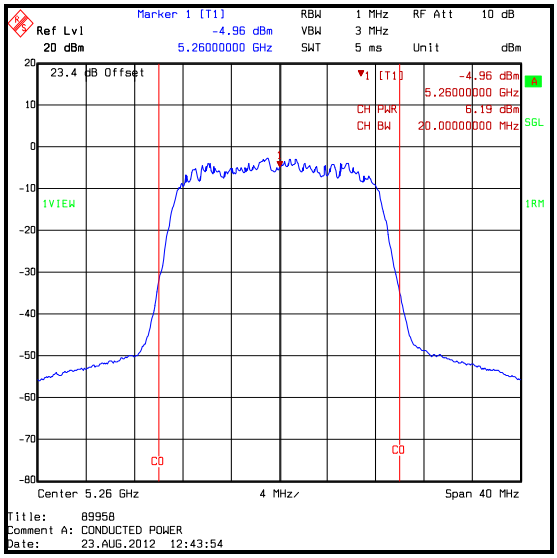
802.11a 20 MHz channel width / Bottom channel = *11 + 10 $\log_{10}$ 16.6 = 23.2 dBm*
802.11a 20 MHz channel width / Middle channel = *11 + 10 $\log_{10}$ 16.6 = 23.2 dBm*
802.11a 20 MHz channel width / Top channel = *11 + 10 $\log_{10}$ 16.6 = 23.2 dBm*
802.11n 20 MHz channel width / Bottom channel = *11 + 10 $\log_{10}$ 17.7 = 23.5 dBm*
802.11n 20 MHz channel width / Middle channel = *11 + 10 $\log_{10}$ 17.4 = 23.4 dBm*
802.11n 20 MHz channel width / Top channel = *11 + 10 $\log_{10}$ 17.4 = 23.4 dBm*

The lesser of the two limits was applied to the Industry Canada RSS-210 results.

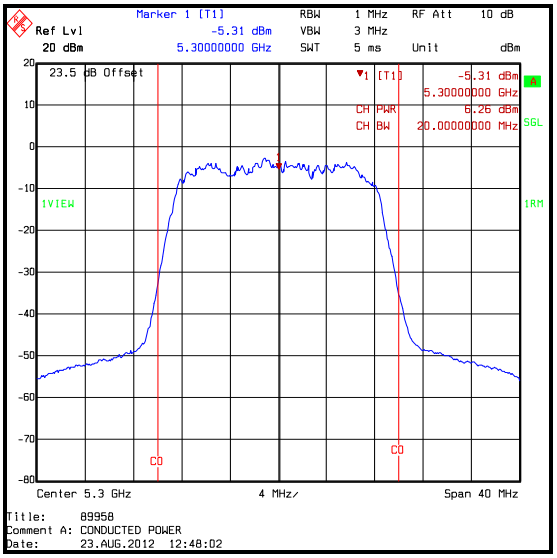
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

Results: FCC Part 15.407 / 802.11a / 20 MHz / 6 Mbps / BPSK / 5.25-5.35 GHz band

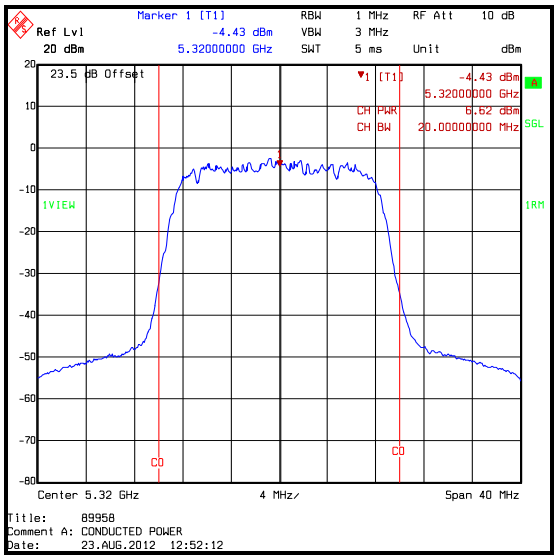
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5260	6.2	23.6	17.4	Complied
Middle	5280	6.3	23.6	17.3	Complied
Top	5320	6.6	23.6	17.0	Complied



Bottom Channel



Middle Channel

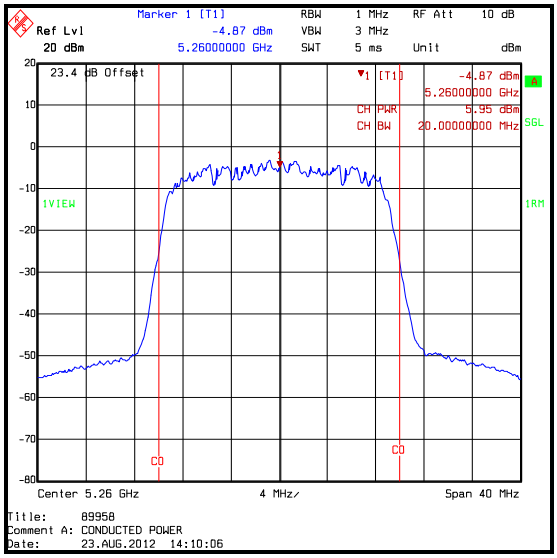


Top Channel

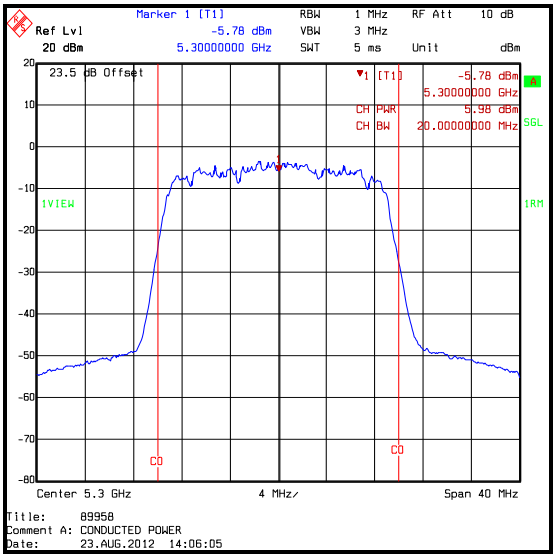
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

Results: FCC Part 15.407 / 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK / 5.25-5.35 GHz band

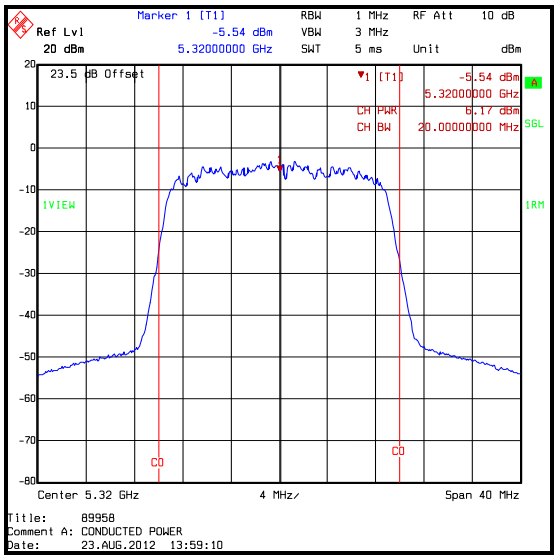
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5260	6.0	23.6	17.6	Complied
Middle	5280	6.0	23.7	17.7	Complied
Top	5320	6.2	23.7	17.5	Complied



Bottom Channel



Middle Channel

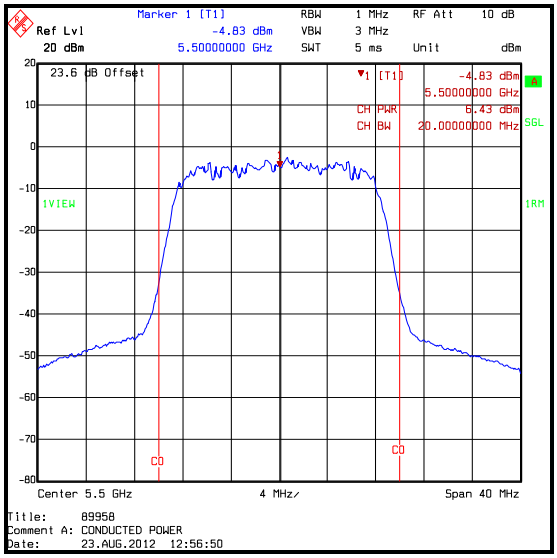


Top Channel

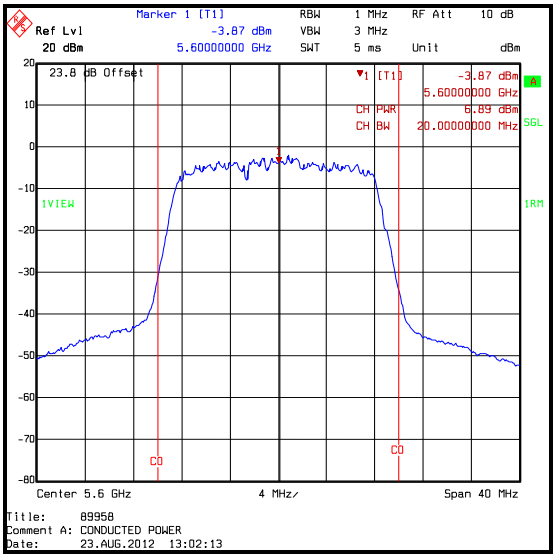
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

Results: FCC Part 15.407 / 802.11a / 20 MHz / 6 Mbps / BPSK / 5.47-5.725 GHz band

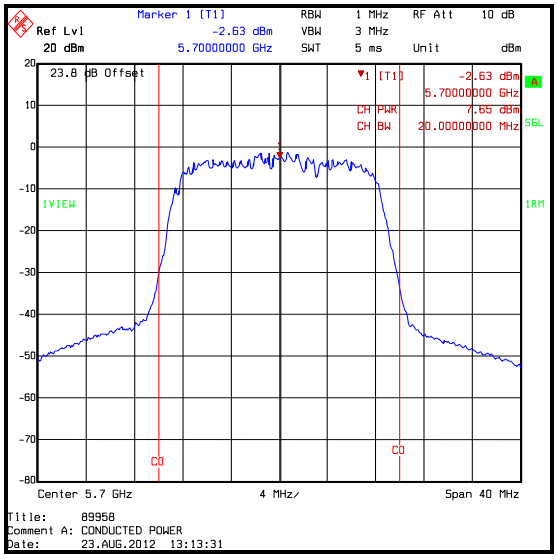
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5500	6.4	23.8	17.4	Complied
Middle	5600	6.9	23.8	16.9	Complied
Top	5700	7.7	23.8	16.1	Complied



Bottom Channel



Middle Channel

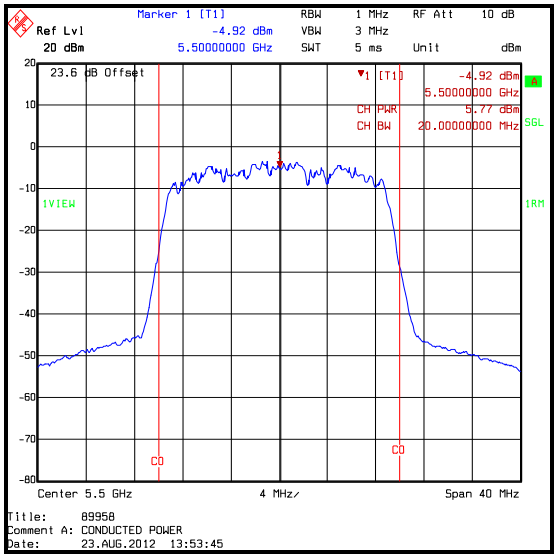


Top Channel

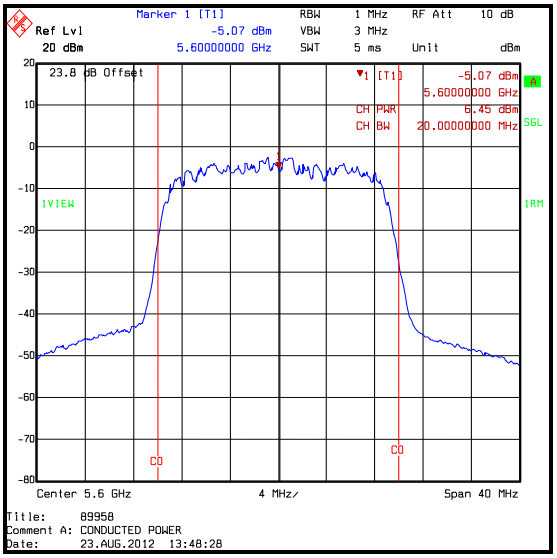
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

Results: FCC Part 15.407 / 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK / 5.47-5.725 GHz band

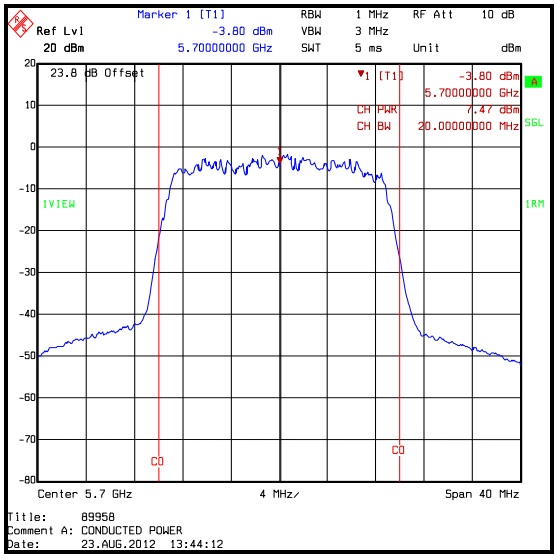
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5500	5.8	23.9	18.1	Complied
Middle	5600	6.5	23.9	17.4	Complied
Top	5700	7.5	23.9	16.4	Complied



Bottom Channel



Middle Channel

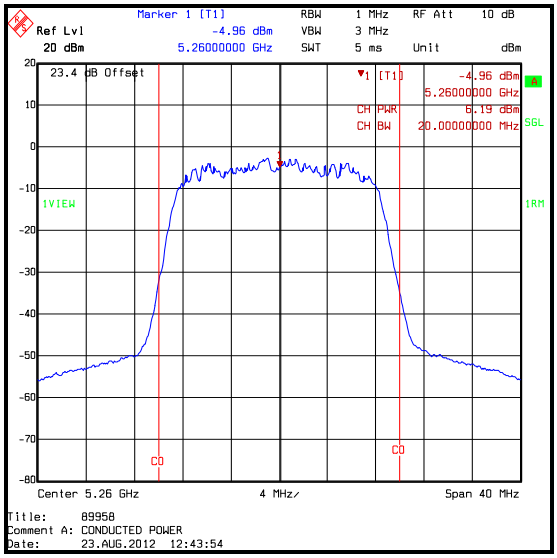


Top Channel

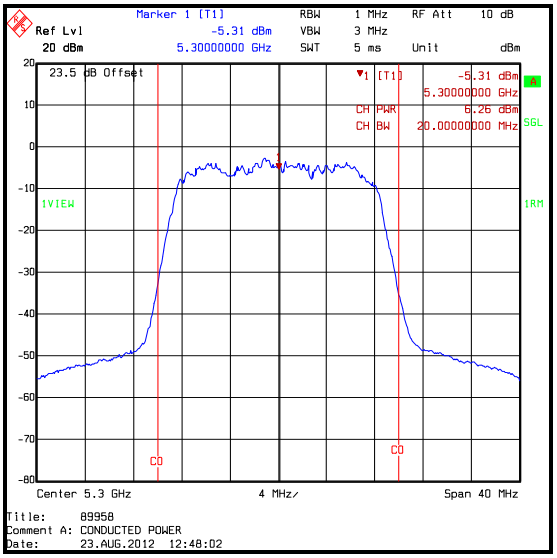
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

Results: Industry Canada RSS-210 / 20 MHz / 6 Mbps / BPSK / 5.25-5.35 GHz band

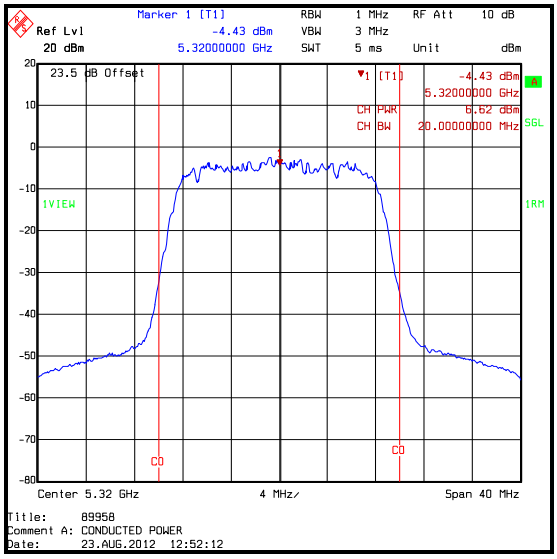
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5260	6.2	23.2	17.0	Complied
Middle	5300	6.3	23.2	16.9	Complied
Top	5320	6.6	23.2	16.6	Complied



Bottom Channel



Middle Channel

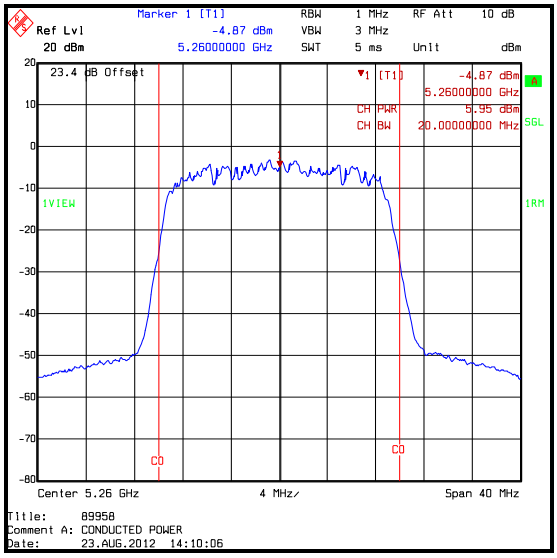


Top Channel

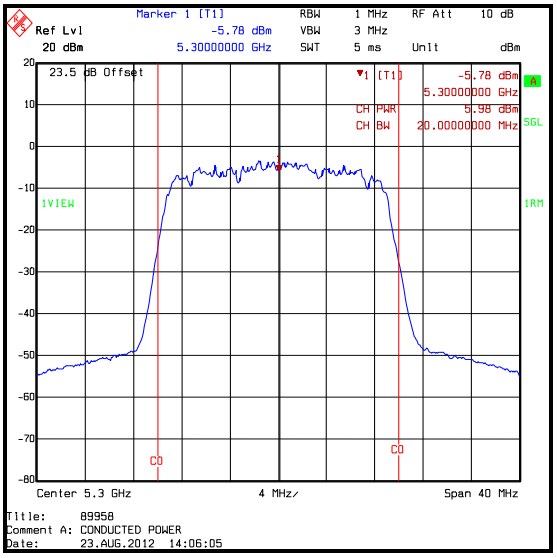
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

Results: Industry Canada RSS-210 / 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK / 5.25-5.35 GHz band

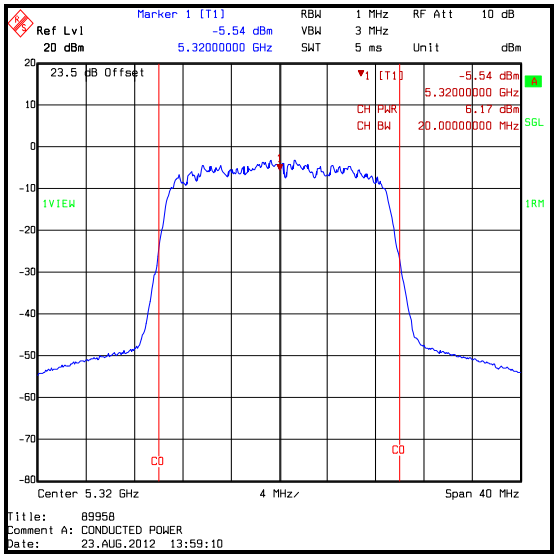
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5260	6.0	23.5	17.5	Complied
Middle	5300	6.0	23.5	17.5	Complied
Top	5320	6.2	23.5	17.3	Complied



Bottom Channel



Middle Channel

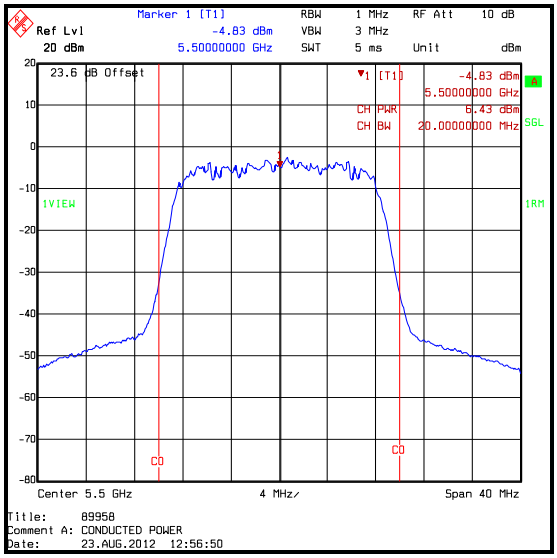


Top Channel

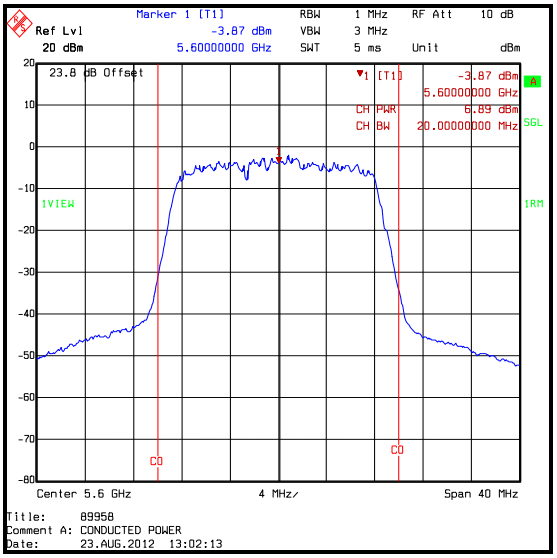
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

Results: Industry Canada RSS-210 / 802.11a / 20 MHz / 6 Mbps / BPSK / 5.47-5.725 GHz band

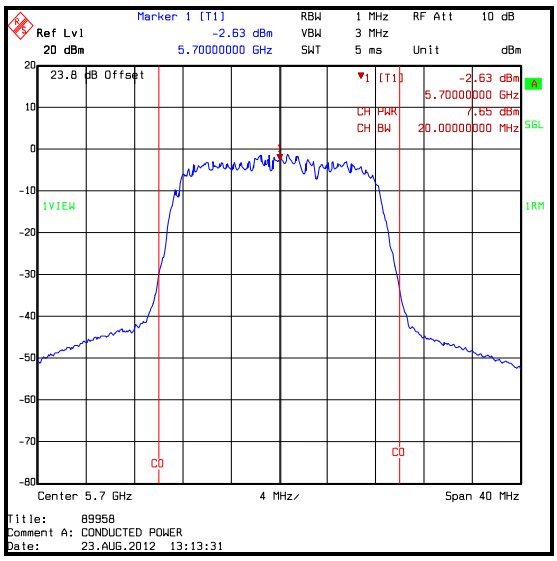
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5500	6.4	23.2	16.9	Complied
Middle	5600	6.9	23.2	16.3	Complied
Top	5700	7.7	23.2	15.5	Complied



Bottom Channel



Middle Channel

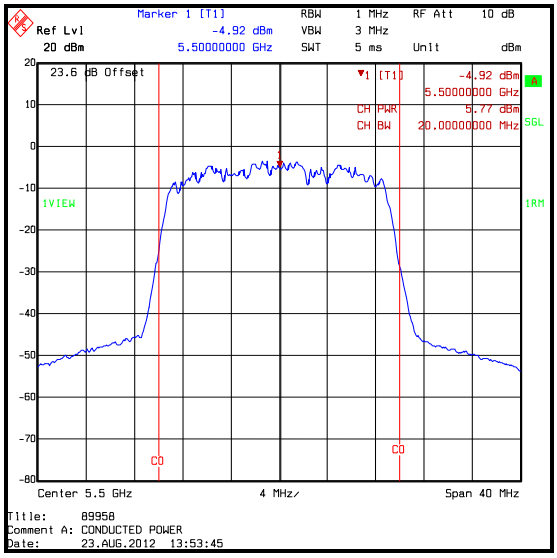


Top Channel

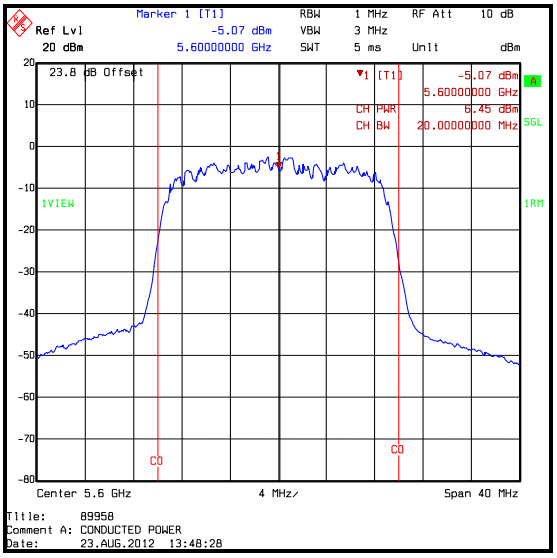
Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

Results: Industry Canada RSS-210 / 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK / 5.47-5.725 GHz band

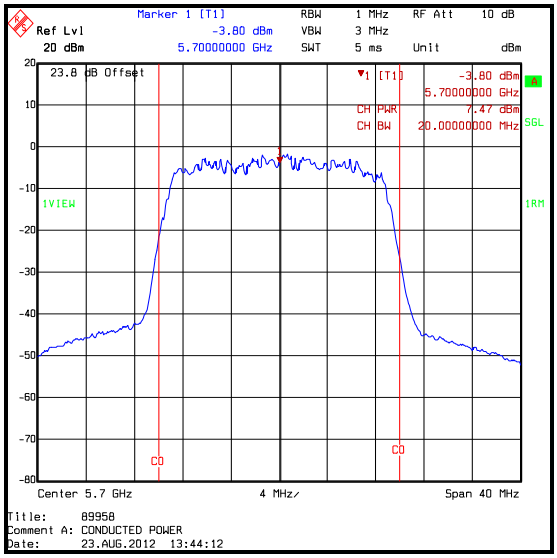
Channel	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5500	5.8	23.5	17.7	Complied
Middle	5600	6.5	23.5	17.0	Complied
Top	5700	7.5	23.5	16.0	Complied



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Conducted Output Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

Test Equipment Used:

RFI ID	Instrument Description	Model Number	Calibration Due	Calibration Interval (Months)
M127	Spectrum Analyzer	FSEB 30	13 Aug 2013	12
A2142	Attenuator	AN18-20	25 May 2013	12
M260	SMP02 Signal Generator	1035.5005.02	14 Jun 2013	12
M199	Power Meter	NRVS	07 Jun 2013	12
M1267	Thermal Power Sensor	NRV-Z52	07 Jun 2013	12

5.2.7. Transmitter Maximum Equivalent Isotropically Radiated Power

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	23 August 2012
Test Sample Serial Number:	HX2W91SC700031T		

FCC Reference:	N/A
Industry Canada Reference:	RSS-210 A9.2(1)
Test Method Used:	FCC KDB 789033 D01 Section C)3)b)

Environmental Conditions:

Temperature (°C):	28
Relative Humidity (%):	38

Note(s):

1. All power tests in all bands were performed using a spectrum analyser in accordance with FCC KDB 789033 D01 C)3)b) Method SA-1.
2. The EUT was transmitting at 100% duty cycle.
3. The Customer declared the antenna gain as 6.2 dBi in the 5.15 to 5.35 GHz bands. The antenna gain was added to the conducted power to calculate the EIRP.
4. Measurements were performed on the worst case data rates declared by the customer
   - o 802.11a: 6 Mbps.
   - o 802.11n: 6.5 Mbps / MCS0.

   Conducted output power results previously measured were used to calculate the EIRP.

   Measurements were then performed in these modes on bottom, middle and top channels in all operating bands.
5. The Industry Canada RSS-210 Section A9.2(1) EIRP limit is the lesser of 200 mW (23.0 dBm) or 10 + 10 $\log_{10}$ B, where B is the previously measured 99% emission bandwidth in MHz The limit for each channel was calculated as below:

   802.11a 20 MHz channel width / Bottom channel = $10 + 10 \log_{10} 16.6 = 22.2$ dBm
   802.11a 20 MHz channel width / Middle channel = $10 + 10 \log_{10} 16.6 = 22.2$ dBm
   802.11a 20 MHz channel width / Top channel = $10 + 10 \log_{10} 16.5 = 22.2$ dBm
   802.11n 20 MHz channel width / Bottom channel = $10 + 10 \log_{10} 17.6 = 22.5$ dBm
   802.11n 20 MHz channel width / Middle channel = $10 + 10 \log_{10} 17.6 = 22.5$ dBm
   802.11n 40 MHz channel width / Top channel = $10 + 10 \log_{10} 17.5 = 22.4$ dBm

   The lesser of the two limits was applied to the Industry Canada RSS-210 results.

Transmitter Maximum Equivalent Isotropically Radiated Power (5.15-5.25 GHz band) (continued)

Results: Industry Canada RSS-210 / 802.11a / 20 MHz / 6 Mbps / BPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5180	6.0	6.2	12.2	22.2	10.0	Complied
Middle	5200	6.1	6.2	12.3	22.2	9.9	Complied
Top	5240	5.9	6.2	12.1	22.2	10.1	Complied

Results: Industry Canada RSS-210 / 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5180	5.8	6.2	12.0	22.5	10.5	Complied
Middle	5200	6.0	6.2	12.2	22.5	10.3	Complied
Top	5240	6.0	6.2	12.2	22.4	10.2	Complied

Transmitter Maximum Equivalent Isotropically Radiated Power (5.25-5.35 GHz & 5.47-5.725 GHz bands)

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	23 August 2012
Test Sample Serial Number:	HX2W91SC700031T		

FCC Reference:	N/A
Industry Canada Reference:	RSS-210 A9.2(2) & A9.2(3)
Test Method Used:	FCC KDB 789033 D01 Section C) 4) & FCC KDB 662911 D01

Environmental Conditions:

Temperature (°C):	28
Relative Humidity (%):	38

Note(s):

1. The Industry Canada RSS-210 A9.2(2) & A9.2(3) EIRP limit is the lesser of 1 W (30.0 dBm) or 17 + 10 $\log_{10}$ B, where B is the previously measured 99% emission bandwidth in MHz. The limit for each channel was calculated as below:

5.25-5.35 GHz band

802.11a 20 MHz channel width / Bottom channel = $17 + 10 \log_{10} 16.6 = 29.2$ dBm
802.11a 20 MHz channel width / Middle channel = $17 + 10 \log_{10} 16.6 = 29.2$ dBm
802.11a 20 MHz channel width / Top channel = $17 + 10 \log_{10} 16.6 = 29.2$ dBm
802.11n 20 MHz channel width / Bottom channel = $17 + 10 \log_{10} 17.6 = 29.5$ dBm
802.11n 20 MHz channel width / Middle channel = $17 + 10 \log_{10} 17.6 = 29.5$ dBm
802.11n 20 MHz channel width / Top channel = $17 + 10 \log_{10} 17.6 = 29.5$ dBm

5.47-5.725 GHz band

802.11a 20 MHz channel width / Bottom channel = $17 + 10 \log_{10} 16.6 = 29.2$ dBm
802.11a 20 MHz channel width / Middle channel = $17 + 10 \log_{10} 16.6 = 29.2$ dBm
802.11a 20 MHz channel width / Top channel = $17 + 10 \log_{10} 16.6 = 29.2$ dBm
802.11n 20 MHz channel width / Bottom channel = $17 + 10 \log_{10} 17.7 = 29.5$ dBm
802.11n 20 MHz channel width / Middle channel = $17 + 10 \log_{10} 17.4 = 29.4$ dBm
802.11n 20 MHz channel width / Top channel = $17 + 10 \log_{10} 17.4 = 29.4$ dBm

The lesser of the two limits was applied to the Industry Canada RSS-210 results.

2. The Customer declared the antenna gain as 6.2 dBi in the 5.25 to 5.35 GHz and 2.55 dBi in the 5.47 to 5.725 GHz band.
3. Maximum calculated EIRP was <500 mW (27 dBm) in both operating bands, therefore there is no requirement to implement TPC.

Transmitter Maximum Equivalent Isotropically Radiated Power (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

Results: Industry Canada RSS-210 / 802.11a / 20 MHz / 6 Mbps / BPSK / 5.25-5.35 GHz band

Channel	Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5260	6.2	6.2	12.4	29.2	16.8	Complied
Middle	5300	6.3	6.2	12.5	29.2	16.7	Complied
Top	5320	6.6	6.2	12.8	29.2	16.4	Complied

Results: Industry Canada RSS-210 / 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK / 5.25-5.35 GHz band

Channel	Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5260	6.0	6.2	12.2	29.5	17.3	Complied
Middle	5300	6.0	6.2	12.2	29.5	17.3	Complied
Top	5320	6.2	6.2	12.4	29.5	17.1	Complied

Results: Industry Canada RSS-210 / 802.11a / 20 MHz / 6 Mbps / BPSK / 5.47-5.725 GHz band

Channel	Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5500	6.4	2.55	8.95	29.2	20.25	Complied
Middle	5600	6.9	2.55	9.45	29.2	19.75	Complied
Top	5700	7.7	2.55	10.25	29.2	18.95	Complied

Results: Industry Canada RSS-210 / 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK / 5.47-5.725 GHz band

Channel	Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	5500	5.8	2.55	8.35	29.5	21.05	Complied
Middle	5600	6.5	2.55	9.05	29.4	20.35	Complied
Top	5700	7.5	2.55	10.05	29.4	19.35	Complied

Test Equipment Used:

RFI ID	Instrument Description	Model Number	Calibration Due	Calibration Interval (Months)
M127	Spectrum Analyzer	FSEB 30	13 Aug 2013	12
A2142	Attenuator	AN18-20	25 May 2013	12
M260	SMP02 Signal Generator	1035.5005.02	14 Jun 2013	12
M199	Power Meter	NRVS	07 Jun 2013	12
M1267	Thermal Power Sensor	NRV-Z52	07 Jun 2013	12

5.2.8. Transmitter Peak Power Spectral Density

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	23 August 2012
Test Sample Serial Number:	HX2W91SC700031T		

FCC Reference:	Part 15.407(a)(1)
Industry Canada Reference:	N/A
Test Method Used:	FCC KDB 789033 E) referencing KDB 789033 C)3)b), Method SA-1

Environmental Conditions:

Temperature (°C):	28
Relative Humidity (%):	38

Note(s):

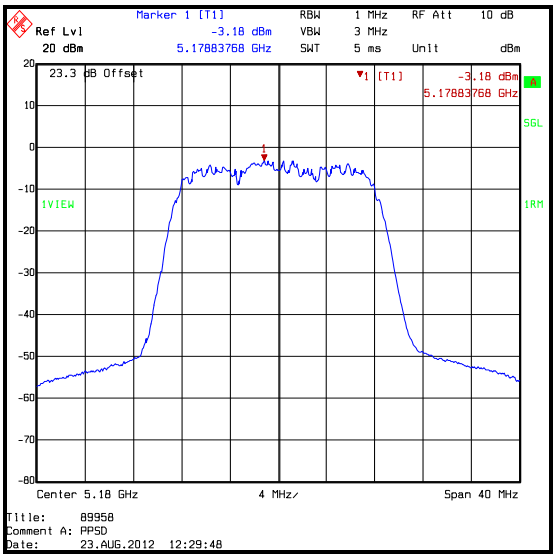
1. Transmitter Peak Power Spectral Density tests in all bands were performed using a test receiver in accordance with FCC KDB 789033 D01 C)b) Method SA-1.
2. The EUT was transmitting at 100% duty cycle.
3. The Customer declared the antenna gain as 6.2 dBi in the 5.15 to 5.35 GHz bands. The peak power spectral density limit of 4 dBm in any 1 MHz band has been reduced to 3.8 dBm as the 6 dBi gain allowed was exceeded by 0.2 dB according to Part 15.407(a)(1).
4. Measurements were performed on the worst case data rates declared by the customer
    - 802.11a: 6 Mbps.
    - 802.11n: 6.5 Mbps / MCS0.

    Measurements were then performed in these modes on bottom, middle and top channels in all operating bands.

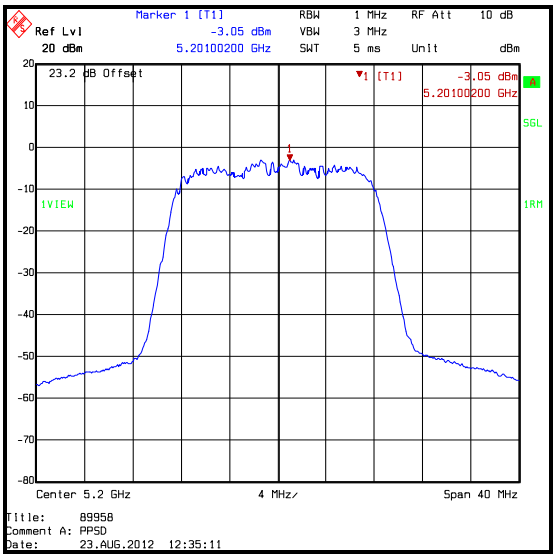
Transmitter Peak Power Spectral Density (5.15-5.25 GHz band) (continued)

Results: 802.11a / 20 MHz / 6 Mbps / BPSK

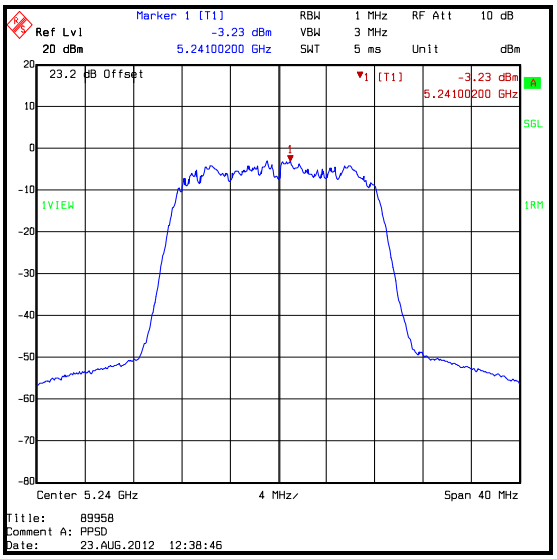
Channel	Frequency (MHz)	PPSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5180	-3.2	3.8	7.0	Complied
Middle	5200	-3.1	3.8	6.9	Complied
Top	5240	-3.2	3.8	7.0	Complied



Bottom Channel



Middle Channel

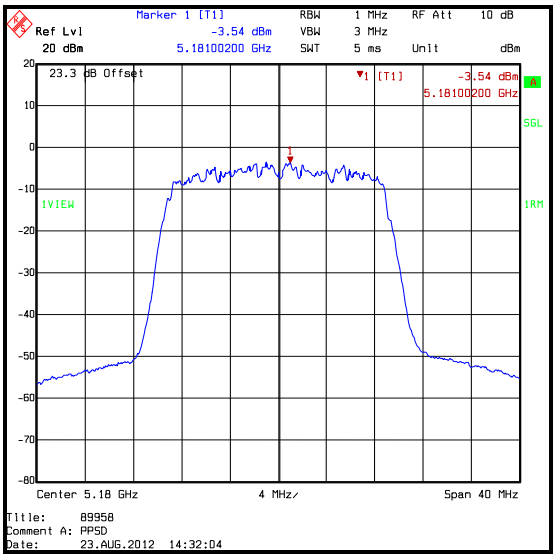


Top Channel

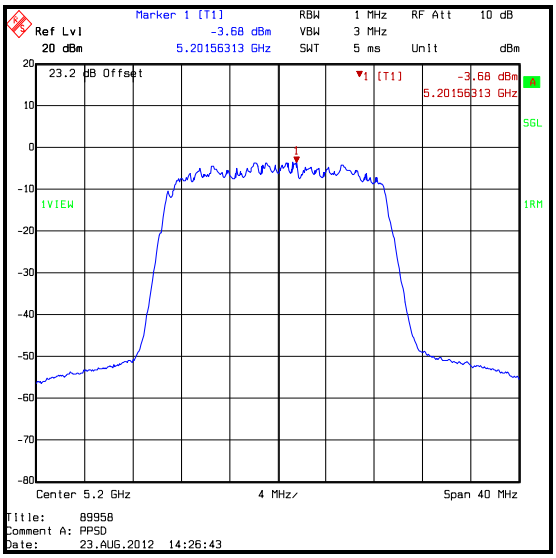
Transmitter Peak Power Spectral Density (5.15-5.25 GHz band) (continued)

Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK

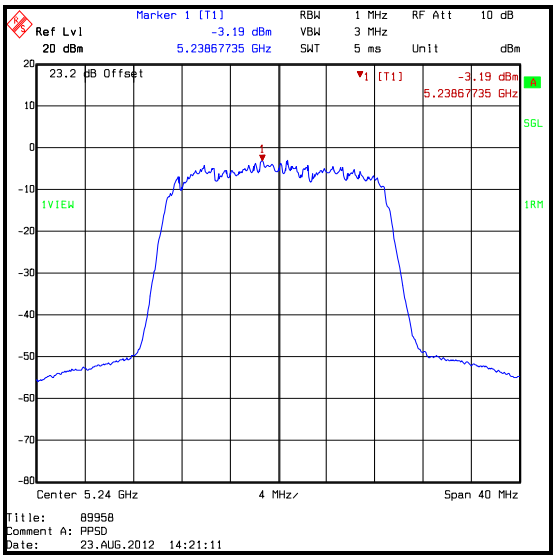
Channel	Frequency (MHz)	PPSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5180	-3.5	3.8	7.3	Complied
Middle	5200	-3.7	3.8	7.5	Complied
Top	5240	-3.2	3.8	7.0	Complied



Bottom Channel



Middle Channel



Top Channel

Transmitter Peak Power Spectral Density (5.15-5.25 GHz band) (continued)

Test Equipment Used:

RFI ID	Instrument Description	Model Number	Calibration Due	Calibration Interval (Months)
M127	Spectrum Analyzer	FSEB 30	13 Aug 2013	12
A2142	Attenuator	AN18-20	25 May 2013	12
M260	SMP02 Signal Generator	1035.5005.02	14 Jun 2013	12
M199	Power Meter	NRVS	07 Jun 2013	12
M1267	Thermal Power Sensor	NRV-Z52	07 Jun 2013	12

Transmitter EIRP Spectral Density (5.15-5.25 GHz band)

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	23 August 2012
Test Sample Serial Number:	HX2W91SC700031T		

FCC Reference:	N/A
Industry Canada Reference:	RSS-210 A9.2(1)
Test Method Used:	FCC KDB 789033 E) referencing KDB 789033 C)3)b), Method SA-1

Environmental Conditions:

Temperature (°C):	28
Relative Humidity (%):	38

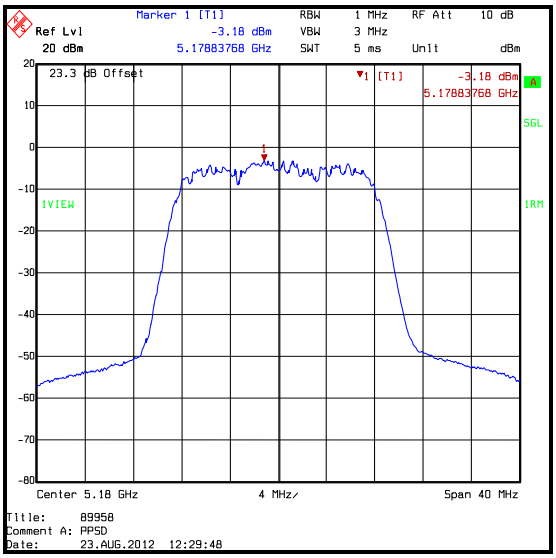
Note(s):

1. EIRP Spectral Density tests in all bands were performed using **a** spectrum analyse**r** in accordance with FCC KDB 789033 D01 C)3)b) Method SA-1.
2. The EUT was transmitting at 100% duty cycle.
3. The Customer declared the antenna gain as 6.2 dBi in the 5.15 to 5.35 GHz bands. The antenna gain was added to the conducted PPSD to calculate the EIRP Spectral Density.
4. Measurements were performed on the worst case data rates declared by the customer
    - 802.11a: 6 Mbps.
    - 802.11n: 6.5 Mbps / MCS0.
3. Conducted PPSD power results previously measured were used to calculate the EIRP Spectral Density. Measurements were then performed in these modes on bottom, middle and top channels in all operating bands.
4. FCC Part 15.407(a)(2) and Industry Canada RSS-210 A9.2(1) limits for EIRP spectral density in the 5.15-5.25 GHz operating band is <10 dBm/MHz.

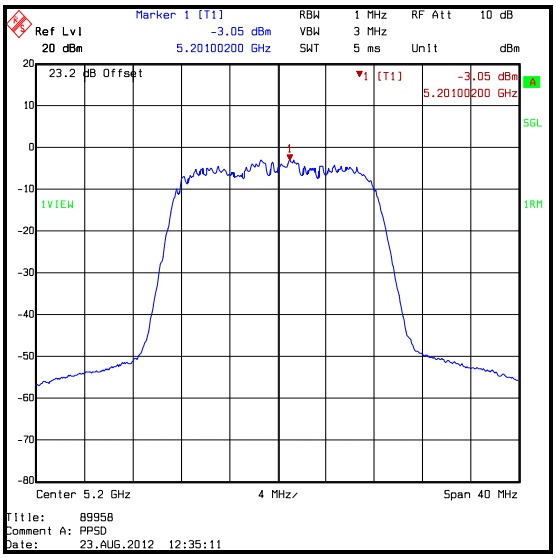
Transmitter EIRP Spectral Density (5.15-5.25 GHz band) (continued)

Results: 802.11a / 20 MHz / 6 Mbps / BPSK

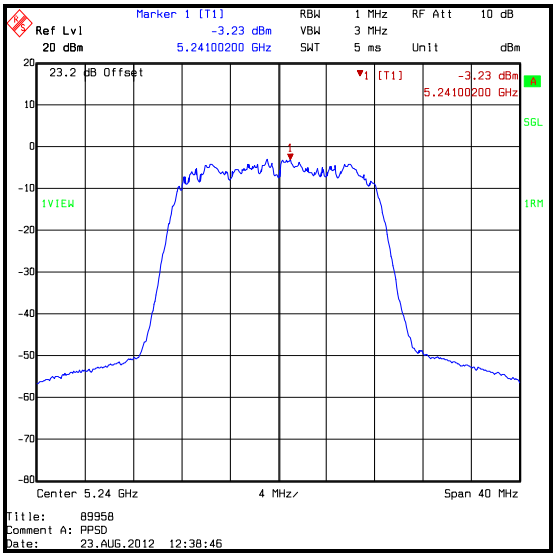
Channel	Frequency (MHz)	PPSD dBm/MHz	Antenna Gain (dBi)	EIRP SD dBm/MHz	Limit (dBm)	Margin (dB)	Result
Bottom	5180	-3.2	6.2	3.0	10.0	7.0	Complied
Middle	5200	-3.1	6.2	3.1	10.0	6.9	Complied
Top	5240	-3.2	6.2	3.0	10.0	7.0	Complied



Bottom Channel



Middle Channel

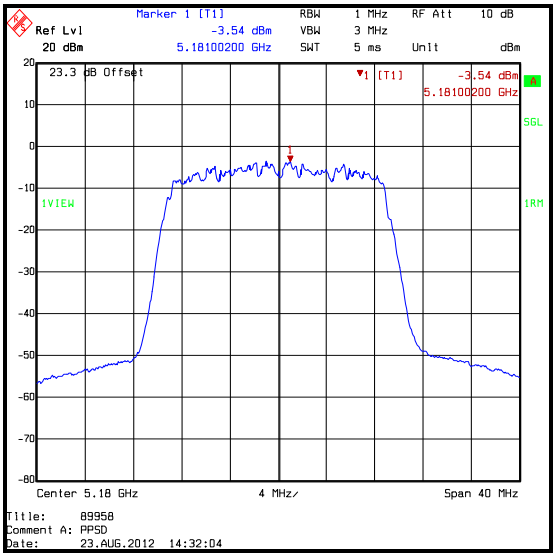


Top Channel

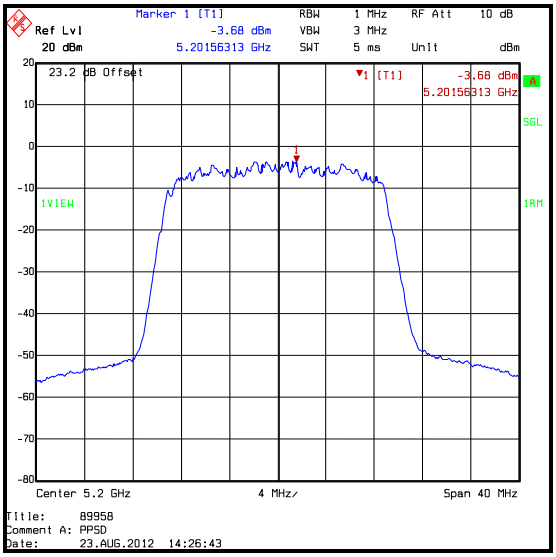
Transmitter EIRP Spectral Density (5.15-5.25 GHz band) (continued)

Results: 802.11a / 20 MHz / 6.5 Mbps / MCS0 / BPSK

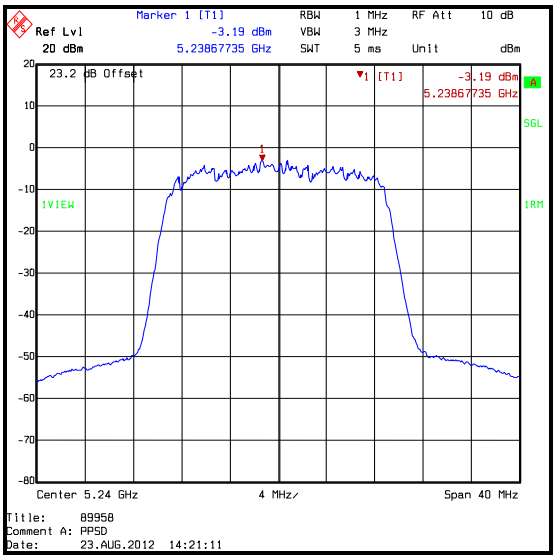
Channel	Frequency (MHz)	PPSD dBm/MHz	Antenna Gain (dBi)	EIRP SD dBm/MHz	Limit (dBm)	Margin (dB)	Result
Bottom	5180	-3.5	6.2	2.7	10.0	7.3	Complied
Middle	5200	-3.7	6.2	2.5	10.0	7.5	Complied
Top	5240	-3.2	6.2	3.0	10.0	7.0	Complied



Bottom Channel



Middle Channel



Top Channel

Transmitter EIRP Spectral Density (5.15-5.25 GHz band) (continued)

Test Equipment Used:

RFI ID	Instrument Description	Model Number	Calibration Due	Calibration Interval (Months)
M127	Spectrum Analyzer	FSEB 30	13 Aug 2013	12
A2142	Attenuator	AN18-20	25 May 2013	12
M260	SMP02 Signal Generator	1035.5005.02	14 Jun 2013	12
M199	Power Meter	NRVS	07 Jun 2013	12
M1267	Thermal Power Sensor	NRV-Z52	07 Jun 2013	12

Transmitter Peak Power Spectral Density (5.25-5.35 GHz & 5.47-5.725 GHz bands)

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	23 August 2012
Test Sample Serial Number:	HX2W91SC700031T		

FCC Reference:	Part 15.407(a)(2)
Industry Canada Reference:	RSS-210 A9.2(2) & A 9.2(3)
Test Method Used:	FCC KDB 789033 E) referencing KDB 789033 C)3)b), Method SA-1

Environmental Conditions:

Temperature (°C):	28
Relative Humidity (%):	38

Note(s):

1. FCC Part 15.407(a)(2) and Industry Canada RSS-210 A9.2(2) & A 9.2(3) limits for PPSD in the 5.25-5.35 GHz and 5.47-5.725 GHz operating bands is <11 dBm/MHz.
2. The Customer declared the antenna gain as 6.2 dBi in the 5.15 to 5.35 GHz bands. The peak power spectral density limit of 11 dBm in any 1 MHz band has been reduced to 10.8 dBm as the 6 dBi gain allowed was exceeded by 0.2 dB according to Part 15.407(a)(2).

Transmitter Peak Power Spectral Density (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

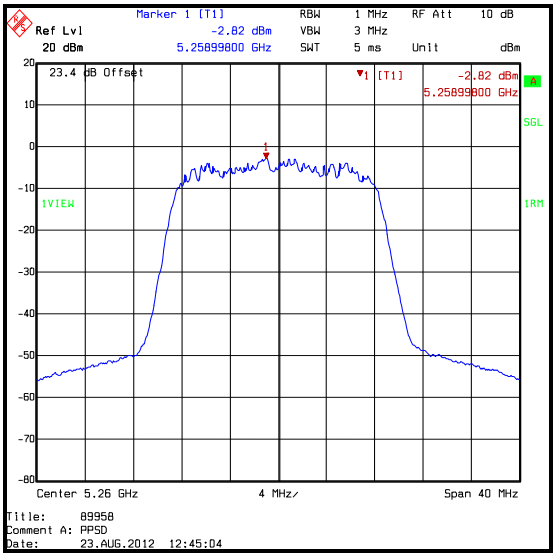
FCC Results: 802.11a / 20 MHz / 6 Mbps / BPSK / 5.25-5.35 GHz band

Channel	Frequency (MHz)	PPSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5260	-2.8	10.8	13.6	Complied
Middle	5300	-2.9	10.8	13.7	Complied
Top	5320	-2.5	10.8	13.3	Complied

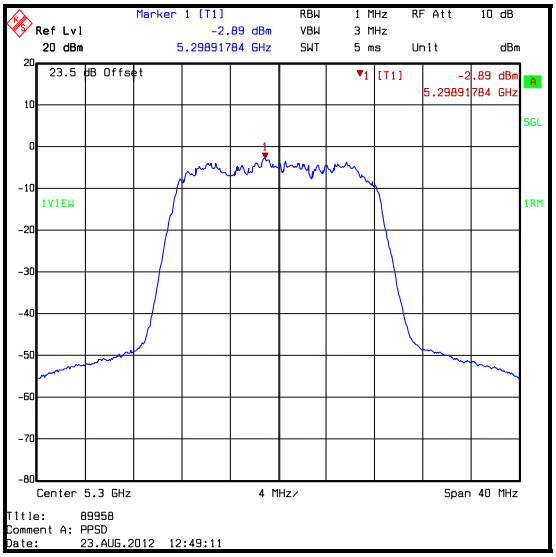
Industry Canada Results: 802.11a / 20 MHz / 6 Mbps / BPSK / 5.25-5.35 GHz band

Channel	Frequency (MHz)	PPSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5260	-2.8	11.0	13.8	Complied
Middle	5300	-2.9	11.0	13.9	Complied
Top	5320	-2.5	11.0	13.5	Complied

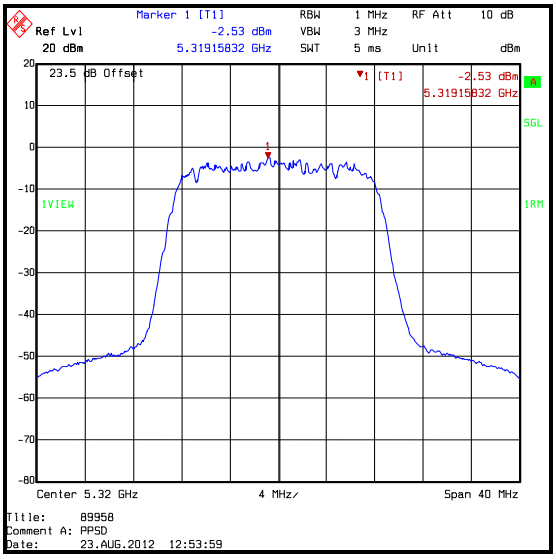
Transmitter Peak Power Spectral Density (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)



Bottom Channel



Middle Channel



Top Channel

Transmitter Peak Power Spectral Density (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

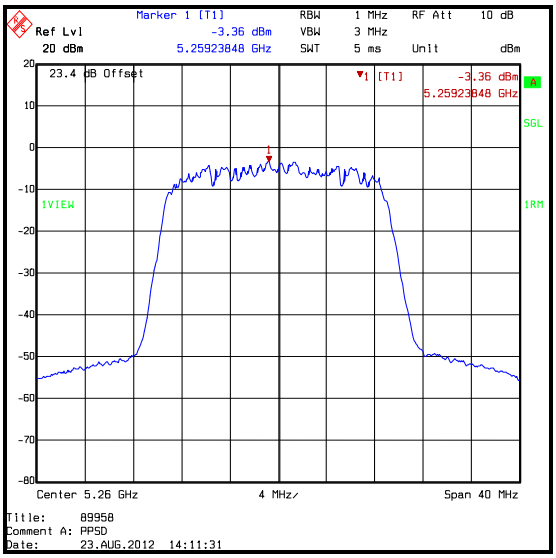
FCC Results: 802.11a / 20 MHz / 6.5 Mbps / MCS0 / BPSK / 5.25-5.35 GHz band

Channel	Frequency (MHz)	PPSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5260	-3.4	10.8	14.2	Complied
Middle	5300	-3.5	10.8	14.3	Complied
Top	5320	-3.3	10.8	14.1	Complied

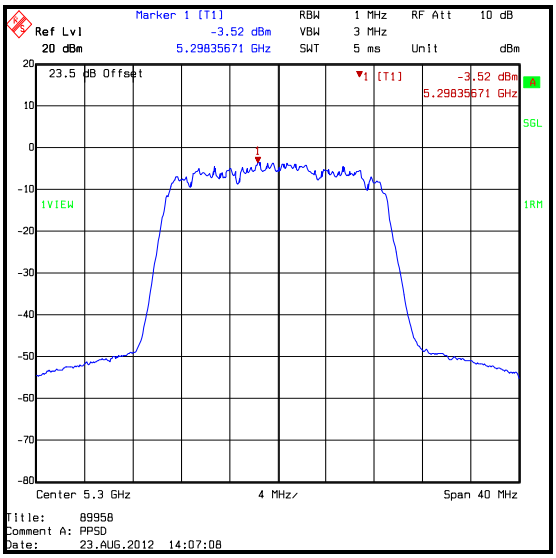
Industry Canada Results: 802.11a / 20 MHz / 6.5 Mbps / MCS0 / BPSK / 5.25-5.35 GHz band

Channel	Frequency (MHz)	PPSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5260	-3.4	11.0	14.4	Complied
Middle	5300	-3.5	11.0	14.5	Complied
Top	5320	-3.3	11.0	14.3	Complied

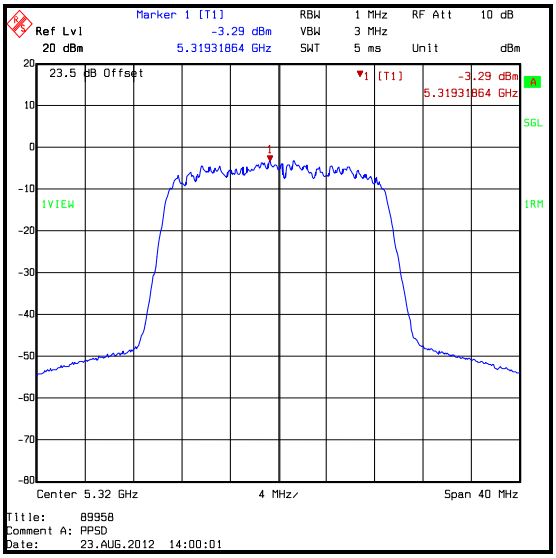
Transmitter Peak Power Spectral Density (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)



Bottom Channel



Middle Channel

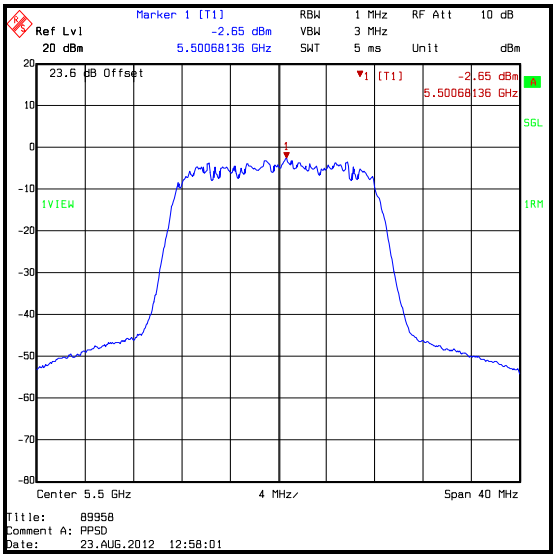


Top Channel

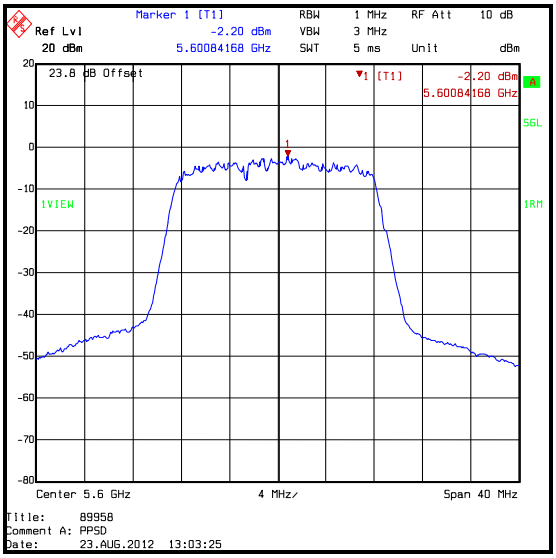
Transmitter Peak Power Spectral Density (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

Results: 802.11a / 20 MHz / 6 Mbps / BPSK / 5.47-5.725 GHz band

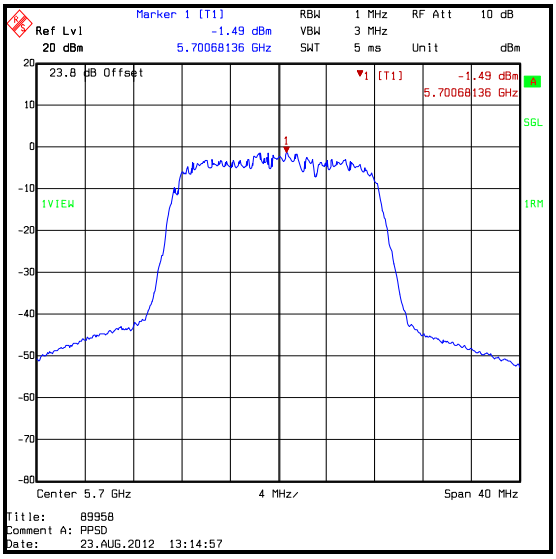
Channel	Frequency (MHz)	PPSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5500	-2.7	11.0	13.7	Complied
Middle	5600	-2.2	11.0	13.2	Complied
Top	5700	-1.5	11.0	12.5	Complied



Bottom Channel



Middle Channel

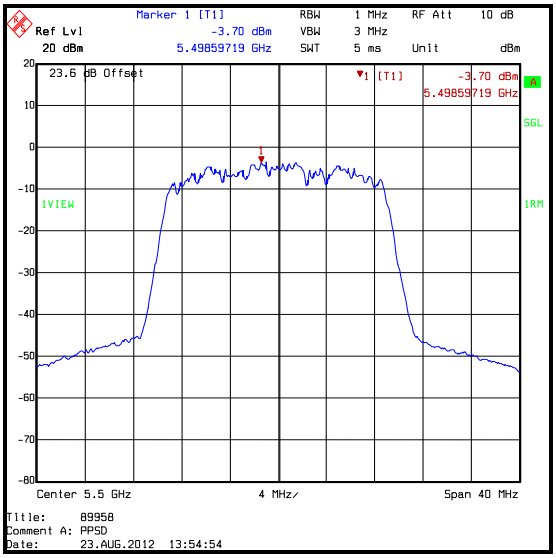


Top Channel

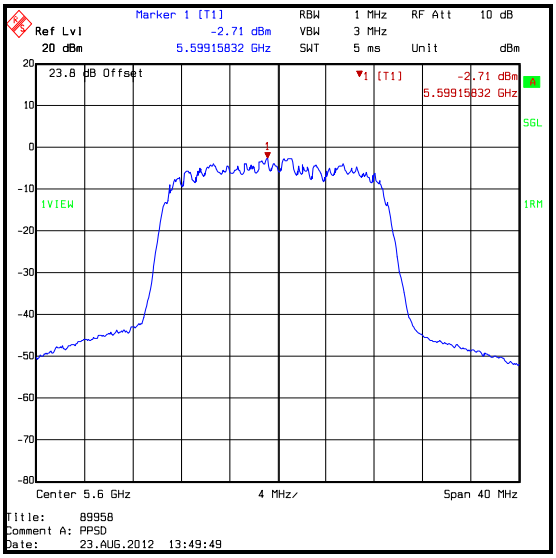
Transmitter Peak Power Spectral Density (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

Results: 802.11a / 20 MHz / 6.5 Mbps / MCS0 / BPSK / 5.47-5.725 GHz band

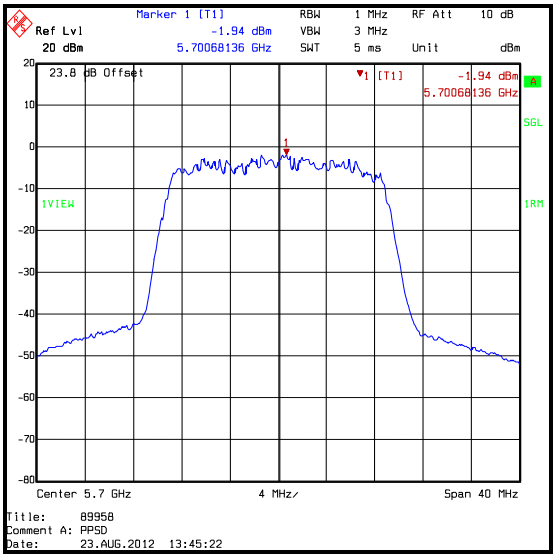
Channel	Frequency (MHz)	PPSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5500	-3.7	11.0	14.7	Complied
Middle	5600	-2.7	11.0	13.7	Complied
Top	5700	-1.9	11.0	12.9	Complied



Bottom Channel



Middle Channel



Top Channel

Transmitter Peak Power Spectral Density (5.25-5.35 GHz & 5.47-5.725 GHz bands) (continued)

Test Equipment Used:

RFI ID	Instrument Description	Model Number	Calibration Due	Calibration Interval (Months)
M127	Spectrum Analyzer	FSEB 30	13 Aug 2013	12
A2142	Attenuator	AN18-20	25 May 2013	12
M260	SMP02 Signal Generator	1035.5005.02	14 Jun 2013	12
M199	Power Meter	NRVS	07 Jun 2013	12
M1267	Thermal Power Sensor	NRV-Z52	07 Jun 2013	12

5.2.9. Transmitter Peak Excursion

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	23 August 2012
Test Sample Serial Number:	HX2W91SC700031T		

FCC Reference:	Part 15.407(a)(6)
Industry Canada Reference:	N/A
Test Method Used:	FCC KDB 789033 F)

Environmental Conditions:

Temperature (°C):	27
Relative Humidity (%):	40

Note(s):

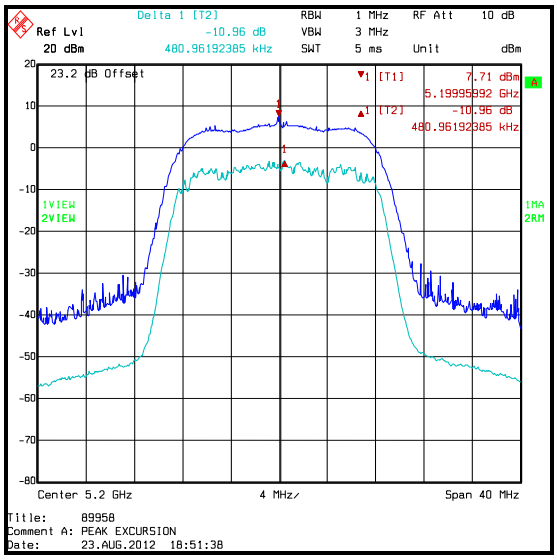
1. Measurements were performed on the worst case data rates declared by the customer
    - 802.11a: 6 Mbps.
    - 802.11n: 6.5 Mbps / MCS0.

    Measurements were then performed in these modes on middle channels in all operating bands.
2. The peak measurement (first trace) was performed in accordance with FCC KDB 789033 F) using a peak detector. The second measurement (trace 2) was performed in accordance with FCC KDB 789033 E) and FCC KDB 789033 C)3)b) Method SA-1 using an RMS detector. A marker was placed at the peak of the first trace. A delta marker was placed of at the peak of the second trace. The peak excursion is the delta between the two limit lines.
3. The EUT was transmitting at 100% duty cycle.

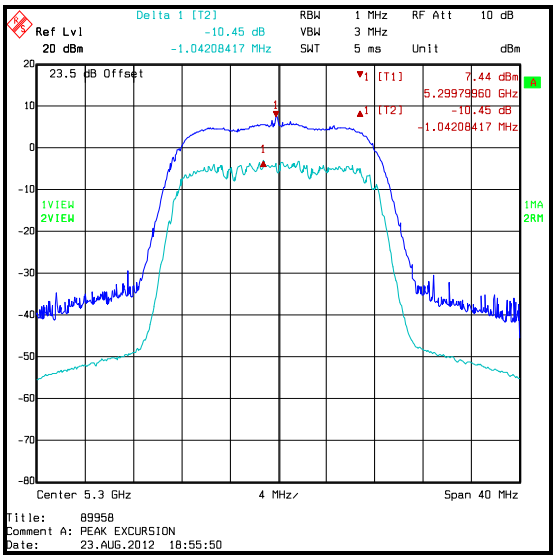
Transmitter Peak Excursion (continued)

Results: 802.11a / 20 MHz / 6 Mbps / BPSK

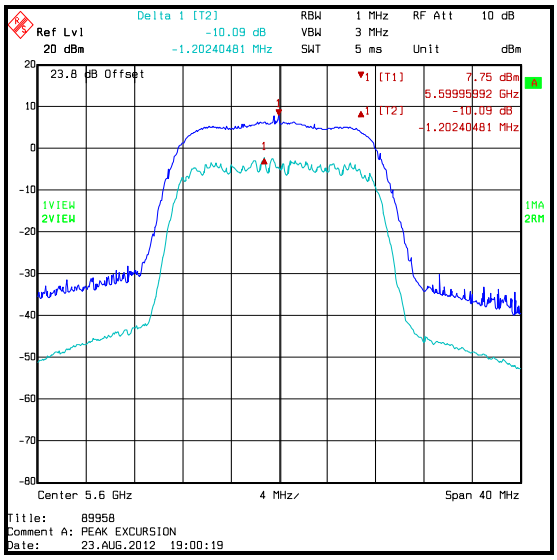
Band (GHz)	Middle Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
5.15-5.25	5200	11.0	13.0	2.0	Complied
5.25-5.35	5300	10.5	13.0	2.5	Complied
5.47-5.725	5600	10.1	13.0	2.9	Complied



Middle Channel / 5.15-5.25 GHz band



Middle Channel / 5.25-5.35 GHz band

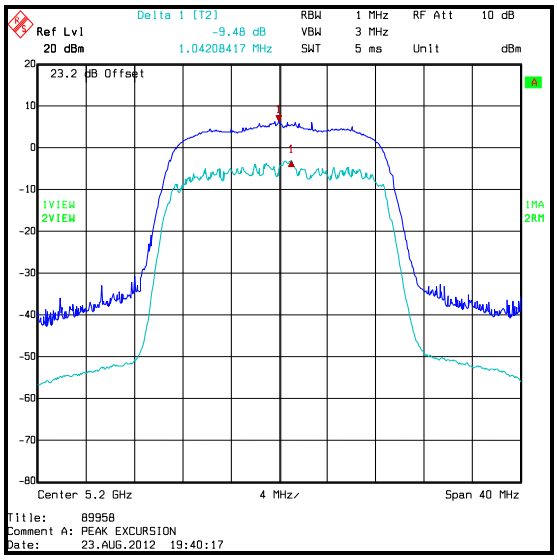


Middle Channel / 5.47-5.725 GHz band

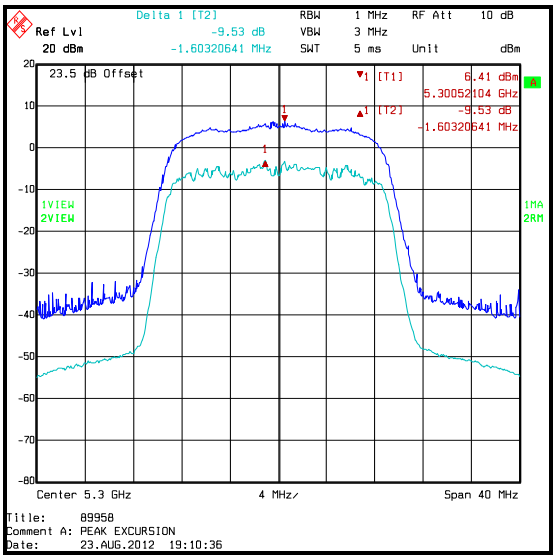
Transmitter Peak Excursion (continued)

Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK

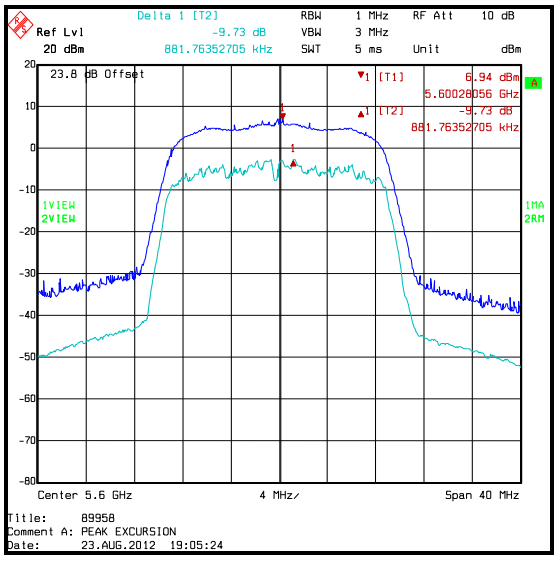
Band (GHz)	Middle Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
5.15-5.25	5200	9.5	13.0	3.5	Complied
5.25-5.35	5300	9.5	13.0	3.5	Complied
5.47-5.725	5600	9.7	13.0	3.3	Complied



Middle Channel / 5.15-5.25 GHz band



Middle Channel / 5.25-5.35 GHz band



Middle Channel / 5.47-5.725 GHz band

Transmitter Peak Excursion (continued)

Test Equipment Used:

RFI ID	Instrument Description	Model Number	Calibration Due	Calibration Interval (Months)
M127	Spectrum Analyzer	FSEB 30	13 Aug 2013	12
A2142	Attenuator	AN18-20	25 May 2013	12
M260	SMP02 Signal Generator	1035.5005.02	14 Jun 2013	12
M199	Power Meter	NRVS	07 Jun 2013	12
M1267	Thermal Power Sensor	NRV-Z52	07 Jun 2013	12

5.2.10. Transmitter Out of Band Radiated Emissions

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	25 August 2012
Test Sample Serial Number:	HX2W91SC700004R		

FCC Reference:	Parts 15.407(b)(1),(6),(7) & 15.209(a)
Industry Canada Reference:	RSS-Gen 4.9 / RSS-210 A9.2(1)
Test Method Used:	FCC KDB 789033 G) & ANSI C63.10 Sections 6.3 and 6.5
Frequency Range:	30 MHz to 1000 MHz

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	47

Note(s):

1. Pre-scans with the EUT transmitting on the top channel were measured according to FCC Part 15.407(b)(1). This states that for transmitters operating in the band 5.15 to 5.25 GHz: all emissions outside of the 5.15-5.35 GHz band will not exceed an EIRP of -27 dBm/MHz. Part15.407(b)(6) states unwanted emissions below 1 GHz must comply with the general field strength limits set forth in 15.209. Part15.407(b)(7) states the provisions of 15.205 apply, eg restricted bands of operation.
2. Industry Canada RSS-210 A9.2(1) states emissions outside the band 5150 to 5250 MHz shall not exceed -27 dBm/MHz e.i.r.p. As the measurement was performed with a quasi-peak detector the results were converted from dBμV/m to EIRP (dBm) using the calculation as detailed in ANSI C63.10 Section 7.10.3.8.
3. The final measured value, for the given emission in the field strength result tables, incorporates the calibrated antenna factor and cable loss.
4. The preliminary scans showed similar emission levels below 1 GHz, for each channel of operation. Therefore final radiated emissions measurements were performed with the EUT set to the top channel only.
5. All other emissions were at least 20 dB below the appropriate limit or below the noise floor of the measurement system.
6. Measurements below 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.

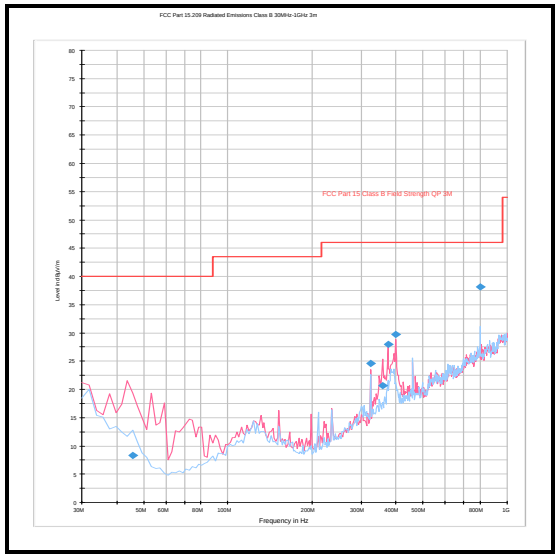
Transmitter Out of Band Radiated Emissions (5.15-5.25 GHz band operation) continued

Results: Top Channel / Field Strength

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
324.485	Vertical	24.5	46.0	21.5	Complied

Results: Top Channel / EIRP

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
324.485	Vertical	-70.7	-27.0	43.7	Complied



Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying tables.

Transmitter Out of Band Radiated Emissions (5.15-5.25 GHz band operation) (continued)

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	24 August 2012
Test Sample Serial Number:	HX2W91SC700004R		

FCC Reference:	Parts 15.407(b)(1),(7) & 15.209(a)
Industry Canada Reference:	RSS-Gen 4.9 / RSS-210 A9.2(1)
Test Method Used:	FCC KDB 789033 G) & ANSI C63.10 Sections 6.3 and 6.6
Frequency Range:	1 GHz to 40 GHz

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	49

Note(s):

1. FCC Part 15.407(b)(1) states for devices operating in the 5.15 to 5.25 GHz band, all emissions outside the 5.15-5.35 GHz band shall not exceed and EIRP of -27 dBm/MHz. Part 15.407(b)(7) states the provisions of 15.205 apply, eg restricted bands of operation.
2. Industry Canada RSS-210 A9.2(1) states emissions outside the band 5150 to 5250 MHz shall not exceed -27 dBm/MHz e.i.r.p.
3. Pre-scans above 1 GHz were performed with the EUT transmitting in the 5.47-5.725 GHz band as it produced the highest conducted output power in this band. However, final measurements were performed on any emission seen for each band as stated in FCC Response to Inquiry (Tracking Number 917954 / Date: 14th February 2012).
4. Measurements were performed with the EUT transmitting 802.11 a 6 Mbps 20 MHz channel width as all configurations were previously measured and this combination produced the highest output power. Pre-scans were performed with the EUT transmitting on the top channel.
5. The emission shown at approximately 5700 MHz on the 4 GHz to 6 GHz plot is the EUT fundamental.
6. The final measured value, for the given emission in the field strength result tables, incorporates the calibrated antenna factor and cable loss.
7. Final measurements above 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.

Transmitter Out of Band Radiated Emissions (5.15-5.25 GHz band operation) (continued)

Results: Bottom Channel / EIRP

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
4604.664	Horizontal	-43.5	-27.0	16.5	Complied

Results: Bottom Channel / Field strength / Peak

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
4604.664	Horizontal	51.7	74.0	22.3	Complied

Results: Bottom Channel / Field strength / Average

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
4604.374	Horizontal	43.5	54.0	10.5	Complied

Results: Middle Channel / EIRP

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
4621.759	Horizontal	-44.9	-27.0	17.9	Complied

Results: Middle Channel / Field strength / Peak

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
4621.759	Horizontal	50.9	74.0	23.1	Complied

Results: Middle Channel / Field strength / Average

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
4622.229	Horizontal	43.5	54.0	10.5	Complied

Transmitter Out of Band Radiated Emissions (5.15-5.25 GHz band operation) (continued)

Results: Top Channel / EIRP

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
4657.730	Horizontal	-44.1	-27.0	17.1	Complied

Results: Top Channel / Field strength / Peak

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
4657.730	Horizontal	51.1	74.0	22.9	Complied

Results: Top Channel / Field strength / Average

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
4657.730	Horizontal	44.2	54.0	9.8	Complied

Transmitter Out of Band Radiated Emissions (5.25-5.35 GHz band)

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	25 August 2012
Test Sample Serial Number:	HX2W91SC700004R		

FCC Reference:	Parts 15.407(b)(2),(6),(7) & 15.209(a)
Industry Canada Reference:	RSS-Gen 4.9 / RSS-210 A9.2(2)
Test Method Used:	FCC KDB 789033 G) & ANSI C63.10 Sections 6.3 and 6.5
Frequency Range:	30 MHz to 1000 MHz

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	46

Note(s):

1. Pre-scans with the EUT transmitting on the top channel were measured according to FCC Part 15.407(b)(2). This states devices operating in the 5.25 to 5.35 GHz band that generate emissions in the 5.15 to 5.25 GHz band must meet all applicable technical requirements for operation in the 5.15 to 5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15 to 5.25 GHz band. Emissions below 1 GHz must comply with the general field strength limits set forth in FCC part 15.209.
2. Industry Canada RSS-210 A9.2(2) states emissions outside the band 5150 to 5250 MHz shall not exceed -27 dBm/MHz e.i.r.p. As the measurement was performed with a quasi-peak detector the results were converted from dBμV/m to EIRP (dBm) using the calculation as detailed in ANSI C63.10 Section 7.10.3.8.
3. The final measured value, for the given emission in the field strength result tables, incorporates the calibrated antenna factor and cable loss.
4. The preliminary scans showed similar emission levels below 1 GHz, for each channel of operation. Therefore final radiated emissions measurements were performed with the EUT set to the top channel only.
5. All other emissions were at least 20 dB below the appropriate limit or below the noise floor of the measurement system.
6. Measurements below 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.

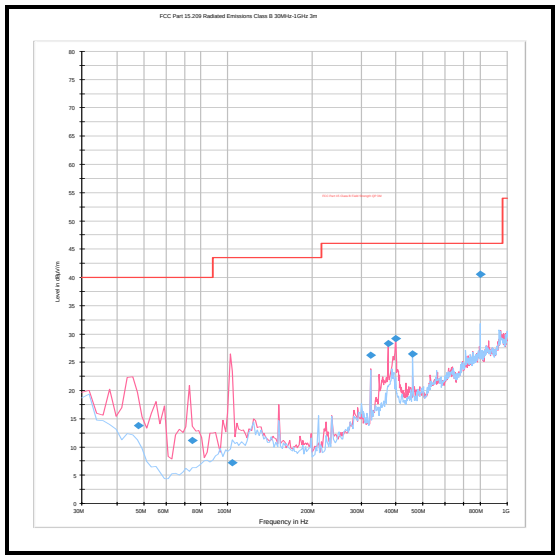
Transmitter Out of Band Radiated Emissions (5.25-5.35 GHz band operation) (continued)

Results: Top Channel / Field Strength

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
324.494	Horizontal	26.2	19.8	46.0	Complied

Results: Top Channel / EIRP

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
324.494	Horizontal	-69.0	-27.0	42.0	Complied



Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying tables.

Transmitter Out of Band Radiated Emissions (5.25-5.35 GHz band operation) (continued)

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	24 August 2012
Test Sample Serial Number:	HX2W91SC700004R		

FCC Reference:	Parts 15.407(b)(2),(7) & 15.209(a)
Industry Canada Reference:	RSS-Gen 4.9 / RSS-210 A9.2(2)
Test Method Used:	FCC KDB 789033 G) & ANSI C63.10 Sections 6.3 and 6.6
Frequency Range:	1 GHz to 40 GHz

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	46

Note(s):

1. FCC Part 15.407(b)(2) states for devices operating in the 5.25 to 5.35 GHz band that generate emissions in the 5.15 to 5.25 GHz band must meet all applicable technical requirements for operation in the 5.15 to 5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15 to 5.25 GHz band. Part 15.407(b)(7) states the provisions of 15.205 apply eg restricted bands of operation.
2. Industry Canada RSS-210 A9.2(2) states emissions outside the band 5250 to 5350 MHz shall not exceed -27 dBm/MHz EIRP.
3. Pre-scans were performed on the 5.47-5.725 GHz band as it produced the highest conducted output power. However, final measurements were performed on any emission seen for each band as stated in FCC Response to Inquiry (Tracking Number 917954 / Date: 14th February 2012).
4. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss.
5. Final measurements above 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.

Transmitter Out of Band Radiated Emissions (5.25-5.35 GHz band operation) (continued)

Results: Bottom Channel / EIRP

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
4675.346	Horizontal	-43.6	-27.0	16.6	Complied

Results: Bottom Channel / Field strength / Peak

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
4675.346	Horizontal	51.6	74.0	22.4	Complied

Results: Bottom Channel / Field strength / Average

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
4675.516	Horizontal	44.9	54.0	9.1	Complied

Results: Middle Channel / EIRP

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
4711.068	Horizontal	-43.9	-27.0	16.9	Complied

Results: Middle Channel / Field strength / Peak

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
4711.907	Vertical	51.3	74.0	22.8	Complied

Results: Middle Channel / Field strength / Average

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
4711.097	Horizontal	45.7	54.0	8.3	Complied

Transmitter Out of Band Radiated Emissions (5.25-5.35 GHz band operation) (continued)

Results: Top Channel / EIRP

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
4728.892	Horizontal	-43.7	-27.0	16.7	Complied

Results: Top Channel / Field strength / Peak

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
4729.033	Horizontal	51.5	74.0	22.5	Complied

Results: Top Channel / Field strength

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
4728.892	Horizontal	45.5	54.0	8.5	Complied

Transmitter Out of Band Radiated Emissions (5.47-5.725 GHz band)

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	25 August 2012
Test Sample Serial Number:	HX2W91SC700004R		

FCC Reference:	Parts 15.407(b)(3),(6),(7) & 15.209(a)
Industry Canada Reference:	RSS-Gen 4.9 / RSS-210 A9.2(3)
Test Method Used:	FCC KDB 789033 G) & ANSI C63.10 Sections 6.3 and 6.5
Frequency Range:	30 MHz to 1000 MHz

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	46

Note(s):

1. Pre-scans with the EUT transmitting on the top channel were measured according to FCC Part 15.407(b)(3) which states for transmitters operating in the band 5.47 to 5.725 GHz: all emissions outside of the band shall not exceed -27 dBm/MHz. Part(b)(6) states unwanted emissions below 1 GHz must comply with the general field strength limits set forth in 15.209. Part(b)(7) states the provisions of 15.205 apply, eg restricted bands of operation.
2. Industry Canada RSS-210 A9.2(3) states emissions outside the band 5470 to 5725 MHz shall not exceed -27 dBm/MHz EIRP. As the measurement was performed with a quasi-peak detector the results were converted from dBμV/m to EIRP (dBm) using the calculation as detailed in ANSI C63.10 Section 7.10.3.8.
3. The final measured value, for the given emission in the field strength result tables, incorporates the calibrated antenna factor and cable loss.
4. The preliminary scans showed similar emission levels below 1 GHz, for each channel of operation. Therefore final radiated emissions measurements were performed with the EUT set to the top channel only.
5. All other emissions were at least 20 dB below the appropriate limit or below the noise floor of the measurement system.
6. Measurements below 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.

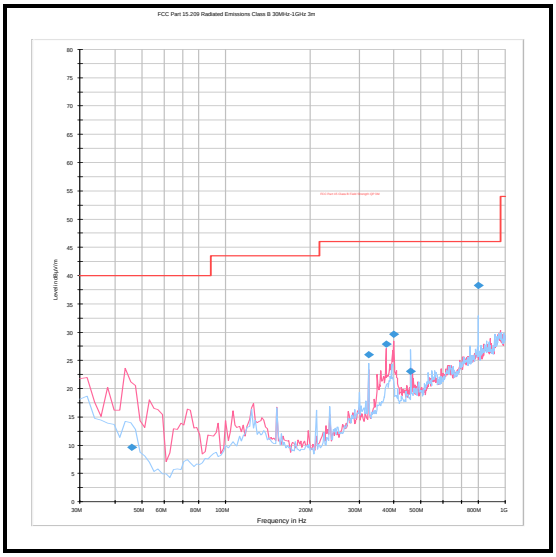
Transmitter Out of Band Radiated Emissions (5.47-5.725 GHz band operation) (continued)

Results: Top Channel / Field Strength

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
324.484	Horizontal	26.0	46.0	20.0	Complied

Results: Top Channel / EIRP

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
324.484	Horizontal	-69.2	-27.0	42.2	Complied



Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying tables.

Test Equipment Used:

RFI ID	Instrument Description	Model Number	Calibration Due	Calibration Interval (Months)
K0001	5 m Semi-Anechoic Chamber	N/A	31 Aug 2012	12
M1273	Test Receiver	ESIB 26	03 Feb 2013	12
A1834	Attenuator	8491B	29 Jan 2013	12
G0543	Amplifier 9KHz - 1GHz	310N	15 Oct 2012	12
A553	Bi-log Antenna	CBL6111A	15 Feb 2013	12

Transmitter Out of Band Radiated Emissions (5.47-5.725 GHz band operation) (continued)

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	24 August 2012
Test Sample Serial Number:	HX2W91SC700004R		

FCC Part:	15.407(b)(3),(7) & 15.209(a)
Industry Canada Reference:	RSS-Gen 4.9 / RSS-210 A9.2(3)
Test Method Used:	FCC KDB 789033 G) & ANSI C63.10 Sections 6.3 and 6.6
Frequency Range:	1 GHz to 40 GHz

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	46

Note(s):

1. FCC Part 15.407(b)(3) states for transmitters operating in the band 5.47 to 5.725 GHz: all emissions outside of the band will not exceed -27 dBm/MHz. Part(b)(7) states the provisions of 15.205 apply eg restricted bands of operation. Final emissions have additionally been compared with the general 15.209/RSS GEN limits on pages 93 to 94.
2. Industry Canada RSS-210 A9.2(3) states emissions outside the band 5470 to 5725 MHz shall not exceed -27 dBm/MHz EIRP.
3. Pre-scans were performed on the 5.47-5.725 GHz band as it produced the highest conducted output power. However, final measurements were performed on any emission seen for each band as stated in FCC Response to Inquiry (Tracking Number 917954 / Date: 14th February 2012).
4. The final measured value, for the given emission in the field strength result tables, incorporates the calibrated antenna factor and cable loss.
5. All other emissions shown on the pre-scan plot were investigated and found to be ambient or >20 dB below the applicable limit or below the measurement system noise floor.
6. The emission shown on the 4 GHz to 6 GHz plot is the EUT fundamental.
7. Measurements were performed across the two restricted bands closest to the bands of operation with the EUT transmitting on the top channel in the 5.47 to 5.725 GHz band. Plots are included in this section of the test report. Peak and average measurements were made. No emissions were observed above the noise floor of the measurements system.
8. Pre-scans above 1 GHz were performed in a fully anechoic chamber (RFI Asset Number K0002) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. Final measurements above 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.

Transmitter Out of Band Radiated Emissions (5.47-5.725 GHz band operation) (continued)

Results: Bottom Channel / EIRP

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
4889.093	Horizontal	-42.7	-27.0	15.7	Complied

Results: Bottom Channel / Field strength / Peak

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
4889.093	Horizontal	52.5	74.0	21.5	Complied

Results: Bottom Channel / Field strength / Average

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
4888.882	Horizontal	46.7	54.0	7.3	Complied

Results: Middle Channel / EIRP

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
4977.607	Horizontal	-40.9	-27.0	13.9	Complied

Results: Middle Channel / Field strength / Peak

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
4977.607	Horizontal	54.3	74.0	19.7	Complied

Results: Middle Channel / Field strength / Average

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
4977.768	Horizontal	48.2	54.0	5.8	Complied

Transmitter Out of Band Radiated Emissions (5.47-5.725 GHz band operation) (continued)

Results: Top Channel / EIRP

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
5066.377	Horizontal	-42.0	-27.0	15.0	Complied

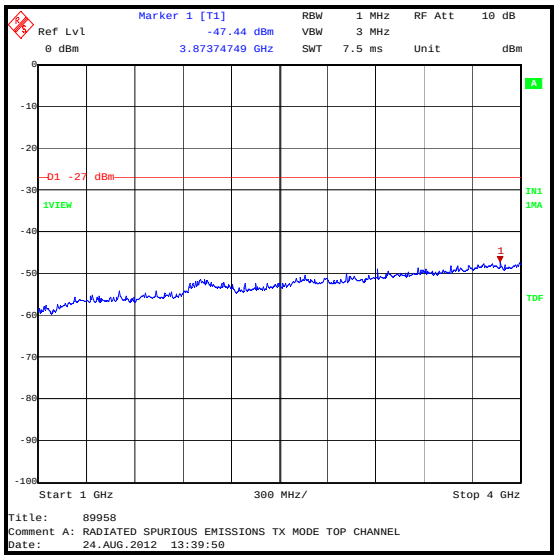
Results: Top Channel / Field strength / Peak

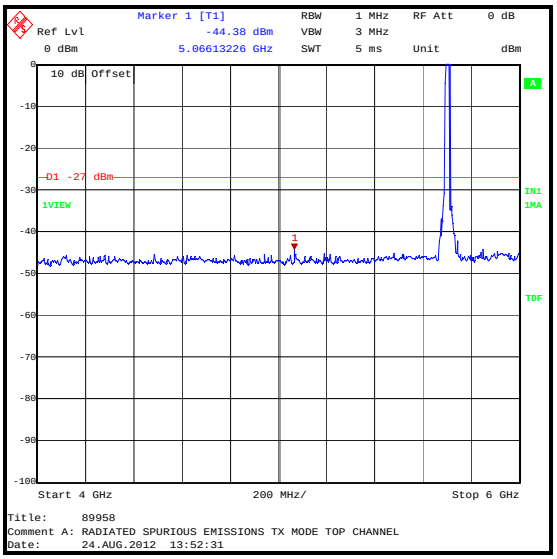
Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
5066.377	Horizontal	53.2	74.0	20.8	Complied

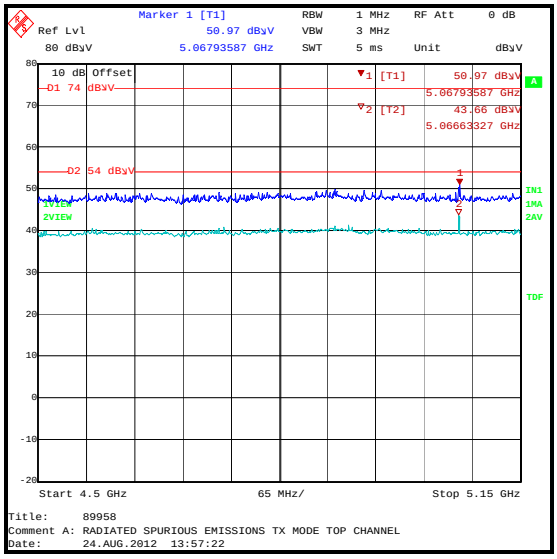
Results: Top Channel / Field strength / Average

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
5066.452	Horizontal	48.7	54.0	5.3	Complied

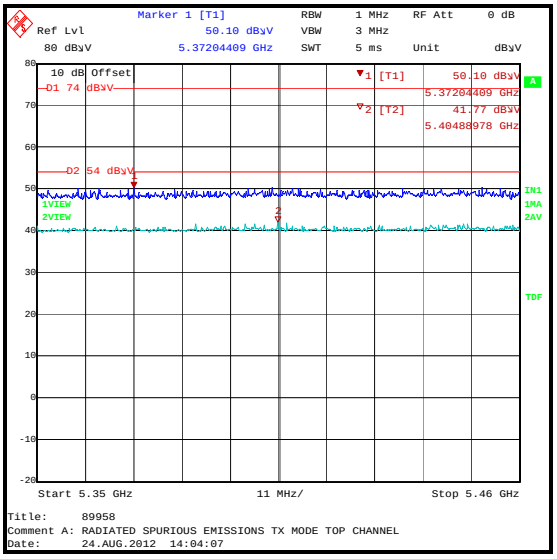
Transmitter Out of Band Radiated Emissions (5.47-5.725 GHz band operation) (continued)





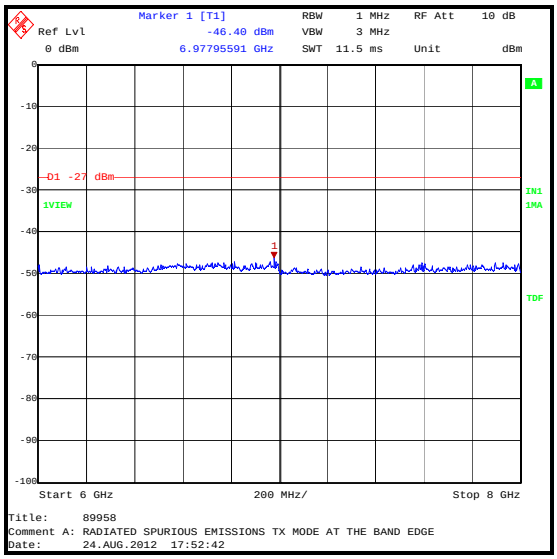


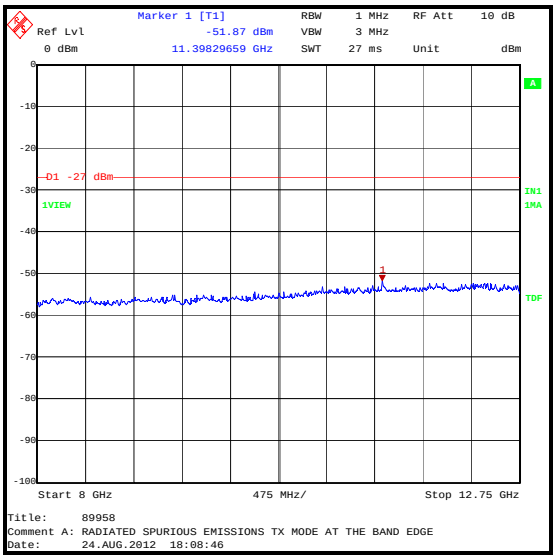
Restricted Band 4.5 GHz to 5.15 GHz

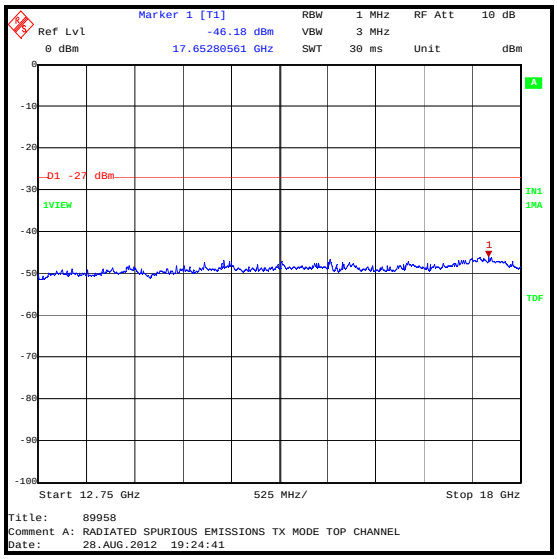


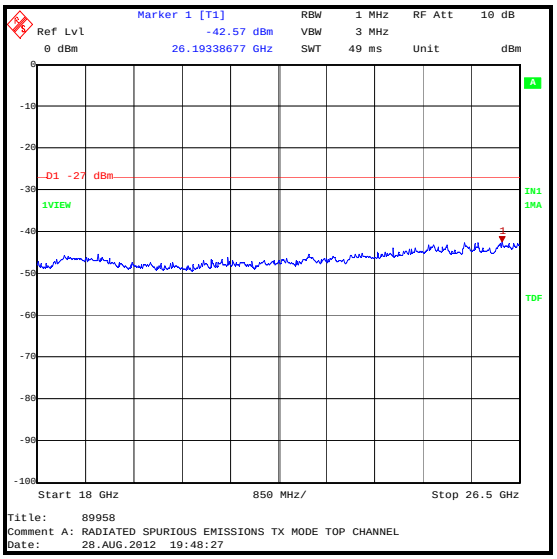
Restricted Band 5.35 GHz to 5.46 GHz

Transmitter Out of Band Radiated Emissions (5.47-5.725 GHz band operation) (continued)

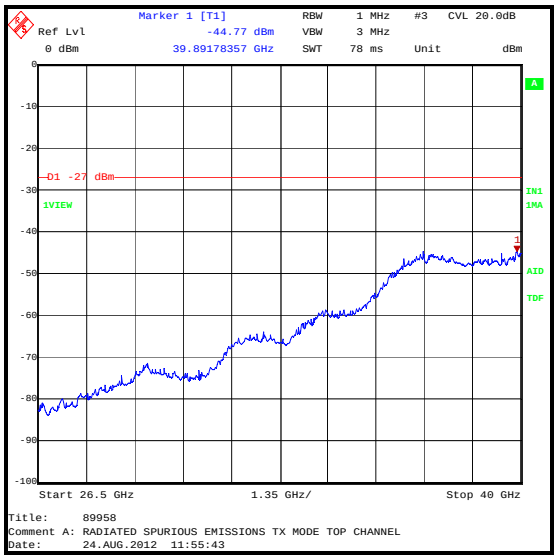








Transmitter Out of Band Radiated Emissions (5.47-5.725 GHz band operation) (continued)



Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Transmitter Out of Band Radiated Emissions (5.47-5.725 GHz band operation) (continued)

Test Equipment Used:

RFI ID	Instrument Description	Model Number	Calibration Due	Calibration Interval (Months)
K0002	3m RSE Chamber	N/A	09 Oct 2012	12
M1124	Test Receiver	ESIB 26	14 Aug 2013	12
A1534	Pre Amplifier	8449B	09 Oct 2012	12
A1818	1-18GHz Horn Antenna	3115	09 Oct 2012	12
A1396	Attenuator	6810.17.B	06 Jul 2013	12
A2176	High Pass Filter 7-18 GHz	AFH-07000	25 May 2013	12
A253	WG 12 Microwave Horn	12240-20	09 Oct 2012	12
A254	WG 14 Microwave Horn	14240-20	09 Oct 2012	12
A255	WG 16 Microwave Horn	16240-20	09 Oct 2012	12
A256	WG 18 Microwave Horn	18240-20	09 Oct 2012	12
A436	WG 20 Microwave Horn	20240-20	09 Oct 2012	12
A203	WG 22 Microwave Horn	22240-20	11 May 2013	36
M1390	26.5 GHz to 40 GHz Harmonic Mixer	WHMP 28	Calibrated before use	-
A1785	26.5 GHz to 40 GHz Pre-amplifier	FLNA-28-30	Calibrated before use	-
A366	Isolator	FRR-400	Calibrated before use	-
S0537	DC Power Supply Unit	EL302D	Calibrate not required	-
M1269	Multimeter	179	30 Jul 2013	12

5.2.11. Transmitter Band Edge Radiated Emissions

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	28 August 2012
Test Sample Serial Number:	HX2W91SC700004R		

FCC Reference:	Parts 15.407(b)(1), 15.407(b)(7), 15.205 & 15.209(a)
Industry Canada Reference:	RSS-Gen 4.9 / RSS-210 A9.2(1)
Test Method Used:	ANSI C63.10 Section 6.9.2

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	47

Note(s):

1. Measurements were performed on the worst case data rates declared by the customer
    - 802.11a: 6 Mbps.
    - 802.11n: 6.5 Mbps / MCS0.

    Band edge testing was performed in both modes.
2. Lower band edge measurements were performed with the EUT transmitting on the bottom channel. Upper band edge measurements were performed with the EUT transmitting on the top channel.
3. For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. However, there are restricted bands of operation below the lower band edge at 4.5-5.15 GHz and also above the upper band edge at 5.35-5.46 GHz therefore the provisions of FCC Part 15.205 apply.
4. Field strength measurements using peak and average detectors were performed in the restricted bands below 5.15 GHz and above 5.35 GHz. Field strength and EIRP results were found to be compliant with the restricted band limits and Part 15.407 out-of-band limits.

Transmitter Band Edge Radiated Emissions (5.15-5.25 GHz band operation) (continued)

Results: 802.11a / 20 MHz / 6 Mbps / Peak

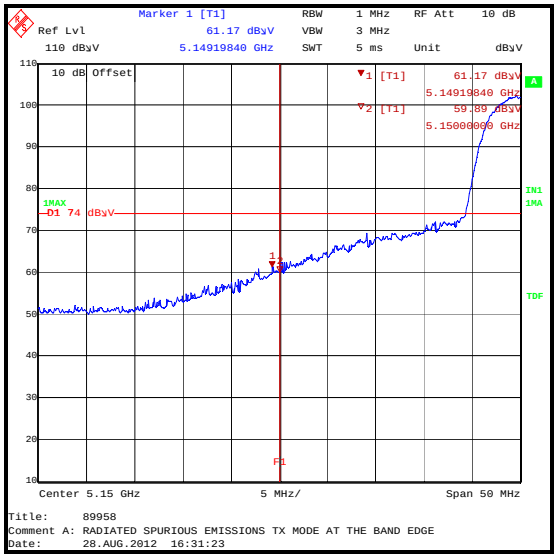
Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5149.198	61.2	74.0	12.8	Complied
5150	59.9	74.0	14.1	Complied
5350	51.3	74.0	22.7	Complied
5400.701	54.0	74.0	20.0	Complied

Results: 802.11a / 20 MHz / 6 Mbps / Average

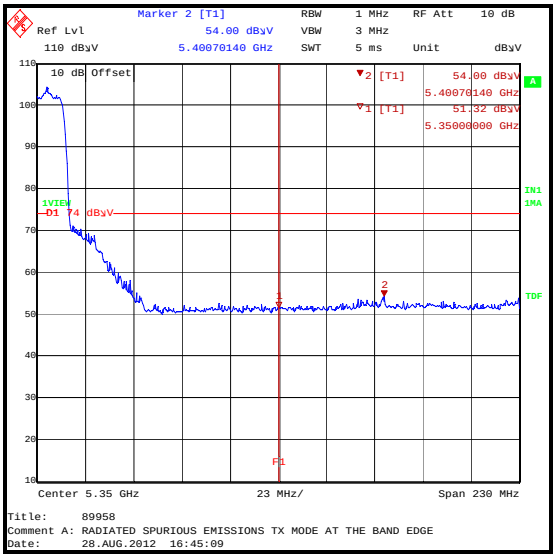
Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5150	39.1	54.0	14.9	Complied
5350	39.7	54.0	14.3	Complied
5399.796	42.7	54.0	11.3	Complied

Transmitter Band Edge Radiated Emissions (5.15-5.25 GHz band operation) (continued)

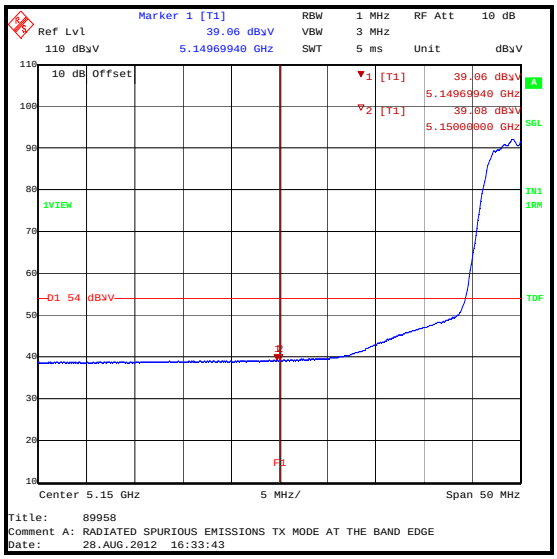
Results: 802.11a / 20 MHz / 6 Mbps



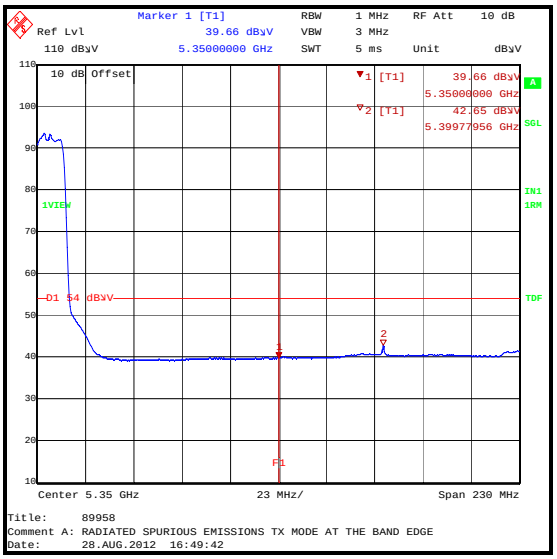
Lower Band Edge Peak



Upper Band Edge Peak



Lower Band Edge Average



Upper Band Edge Average

Transmitter Band Edge Radiated Emissions (5.15-5.25 GHz band operation) (continued)

Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / Peak

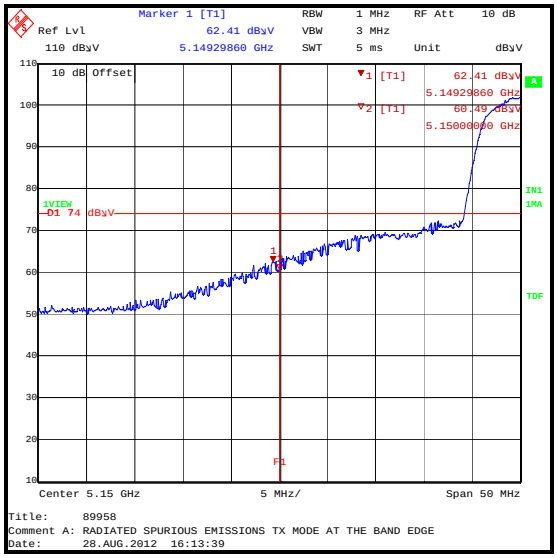
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
5149.299	62.4	74.0	11.6	Complied
5150	60.5	74.0	13.5	Complied
5350	51.3	74.0	22.7	Complied
5400.200	55.4	74.0	18.6	Complied

Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / Average

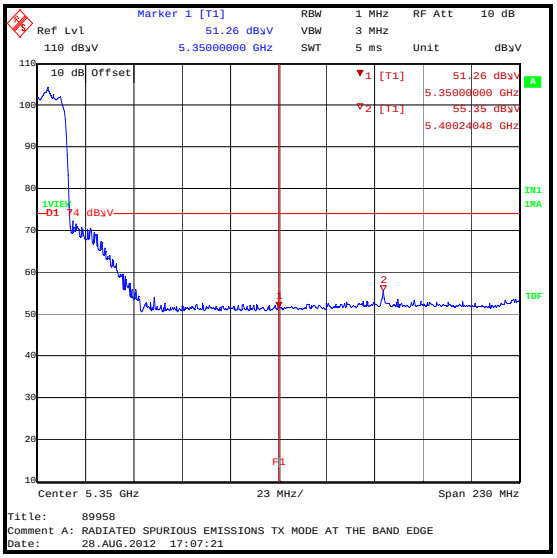
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
5150	39.1	54.0	14.9	Complied
5350	39.6	54.0	14.4	Complied
5399.77956	42.7	54.0	11.3	Complied

Transmitter Band Edge Radiated Emissions (5.15-5.25 GHz band operation) (continued)

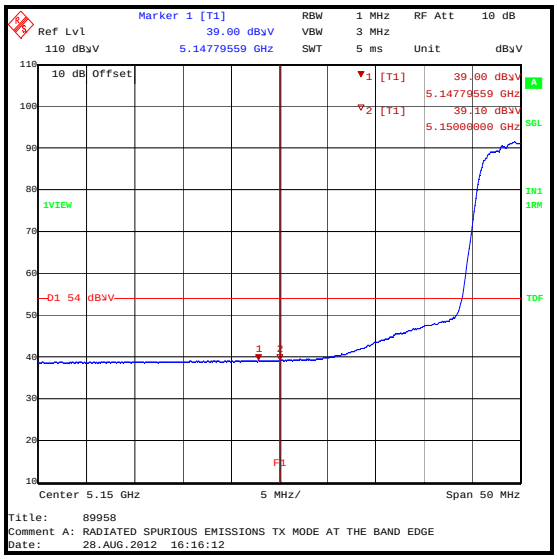
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0



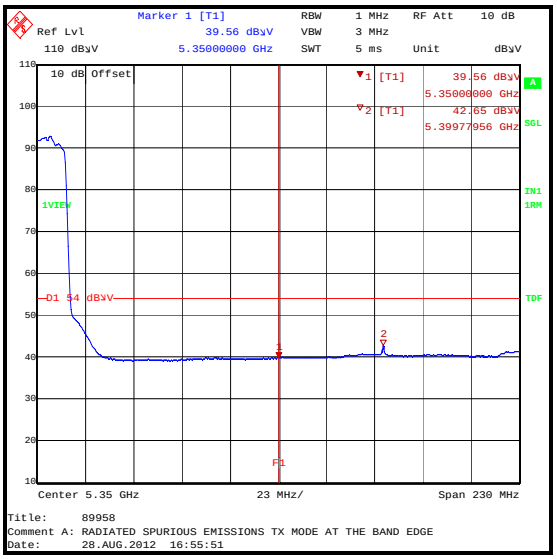
Lower Band Edge Peak



Upper Band Edge Peak



Lower Band Edge Average



Upper Band Edge Average

Transmitter Band Edge Radiated Emissions (5.25-5.35 GHz band)

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	28 August 2012
Test Sample Serial Number:	HX2W91SC700004R		

FCC Reference:	Parts 15.407(b)(2), 15.407(b)(7), 15.205 & 15.209(a)
Industry Canada Reference:	RSS-Gen 4.9 / RSS-210 A9.2(2)
Test Method Used:	ANSI C63.10 Section 6.9.2

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	48

Note(s):

1. Measurements were performed on the worst case data rates declared by the customer
    - 802.11a: 6 Mbps.
    - 802.11n: 6.5 Mbps / MCS0.

    Band edge testing was performed in both modes.
2. Lower band edge measurements were performed with the EUT transmitting on the bottom channel. Upper band edge measurements were performed with the EUT transmitting on the top channel.
3. For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. However, there are restricted bands of operation below the lower band edge at 4.5-5.15 GHz and also above the upper band edge at 5.35-5.46 GHz therefore the provisions of FCC Part 15.205 apply.
4. Field strength measurements using peak and average detectors were performed in the restricted bands below 5.15 GHz and above 5.35 GHz. Field strength and EIRP results were found to be compliant with the restricted band limits and Part 15.407 out-of-band limits.

Transmitter Band Edge Radiated Emissions (5.25-5.35 GHz band operation) (continued)

Results: 802.11a / 20 MHz / 6 Mbps / Peak

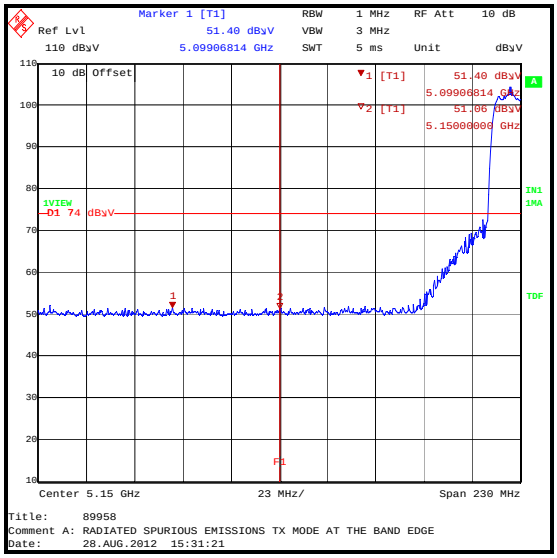
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
5099.068	54.4	74.0	19.6	Complied
5150	51.1	74.0	22.9	Complied
5350	61.8	74.0	12.2	Complied
5351.002	63.0	74.0	11.0	Complied

Results: 802.11a / 20 MHz / 6 Mbps / Average

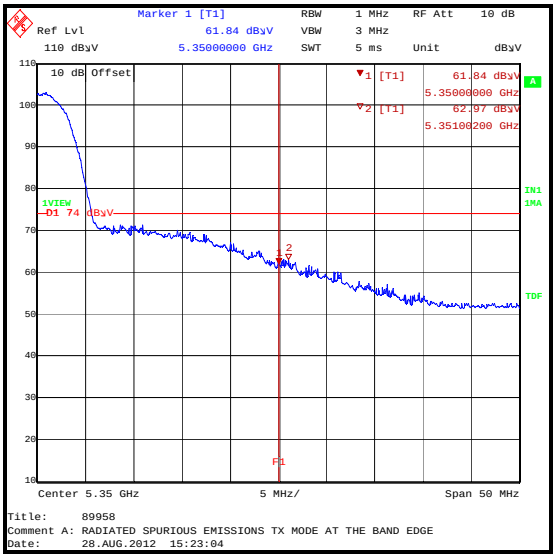
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
5099.990	39.3	54.0	14.7	Complied
5150	38.7	54.0	15.3	Complied
5350	40.0	54.0	14.0	Complied

Transmitter Band Edge Radiated Emissions (5.25-5.35 GHz band operation) (continued)

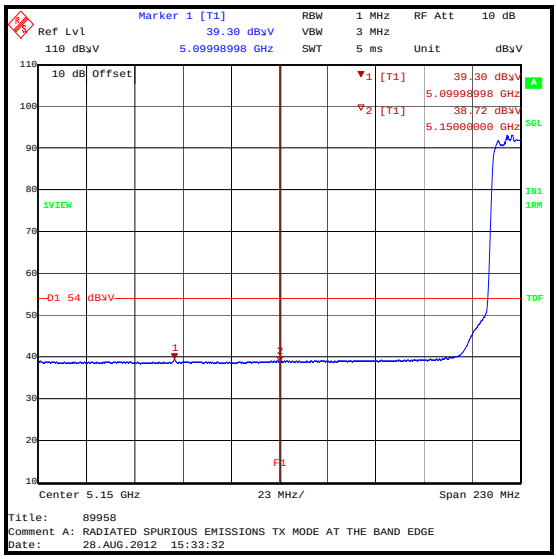
Results: 802.11a / 20 MHz / 6 Mbps



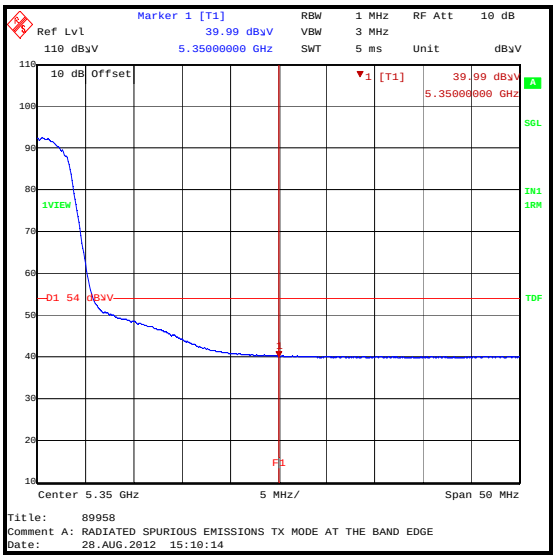
Lower Band Edge Peak



Upper Band Edge Peak



Lower Band Edge Average



Upper Band Edge Average

Transmitter Band Edge Radiated Emissions (5.25-5.35 GHz band operation) (continued)

Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / Peak

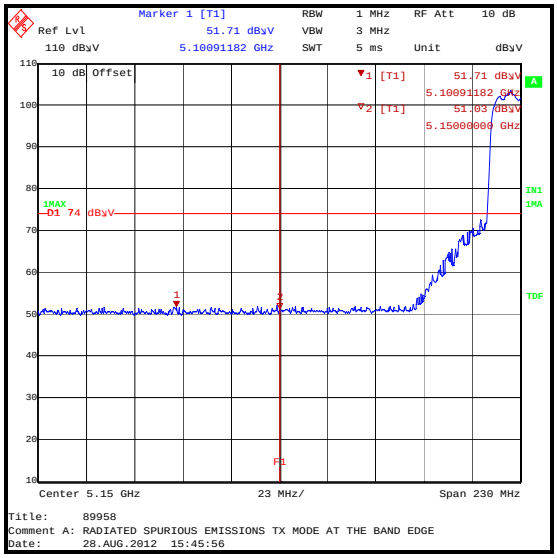
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
5100.912	51.7	74.0	22.3	Complied
5150	51.0	74.0	23.0	Complied
5350	63.6	74.0	10.4	Complied

Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / Average

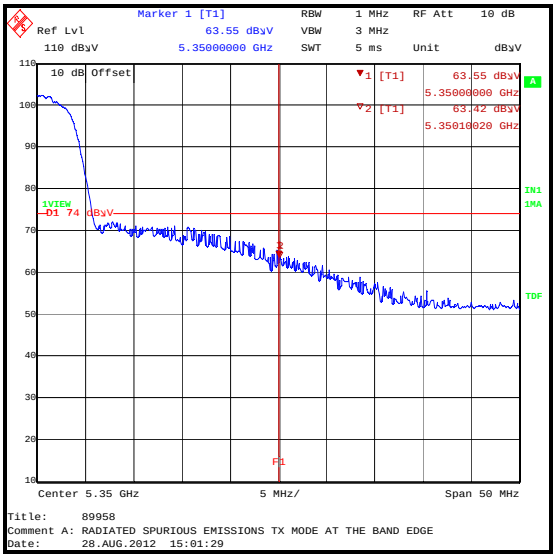
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
5099.990	39.2	54.0	14.8	Complied
5150	38.3	54.0	15.7	Complied
5350	40.0	54.0	14.0	Complied

Transmitter Band Edge Radiated Emissions (5.25-5.35 GHz band operation) (continued)

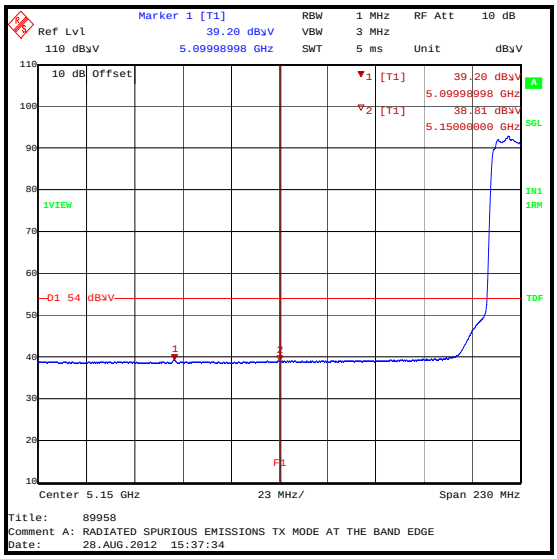
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0



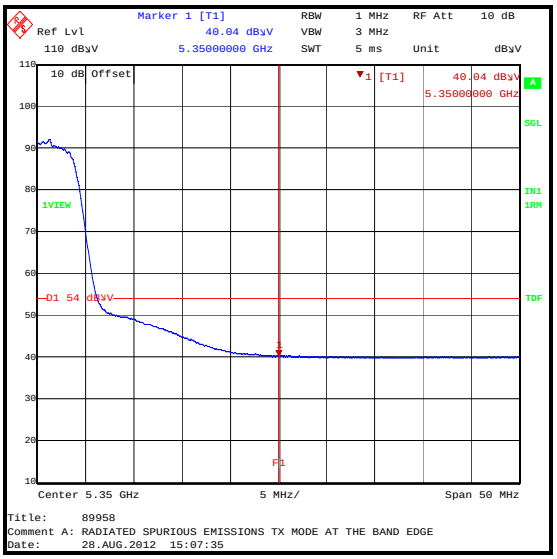
Lower Band Edge Peak



Upper Band Edge Peak



Lower Band Edge Average



Upper Band Edge Average

Transmitter Band Edge Radiated Emissions (5.47-5.725 GHz band)

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	28 August 2012
Test Sample Serial Number:	HX2W91SC700004R		

FCC Reference:	Parts 15.407(b)(3), 15.407(b)(7), 15.205 & 15.209(a)
Industry Canada Reference:	RSS-Gen 4.9 / RSS-210 A9.2(3)
Test Method Used:	ANSI C63.10 Section 6.9.2 & FCC KDB 789033 G)

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	49

Note(s):

1. Measurements were performed on the worst case data rates declared by the customer
    - 802.11a: 6 Mbps.
    - 802.11n: 6.5 Mbps / MCS0.

    Band edge testing was performed in both modes.
2. Lower band edge measurements were performed with the EUT transmitting on the bottom channel. Upper band edge measurements were performed with the EUT transmitting on the top channel.
3. For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz. However, there are restricted bands of operation below the lower band edge at 4.5-5.15 GHz and also at 5.35-5.46 GHz therefore the provisions of FCC Part 15.205 apply. Tests were performed in these restricted bands of operation with the EUT transmitting on the bottom and top channels within 5.47-5.725 GHz band, the results are included in the transmitter 5.47-5.725 GHz band radiated spurious emissions section of this test report.
4. Field strength measurements using peak and average detectors were performed in the restricted bands below 5.15 GHz and above 5.35 GHz. Field strength and EIRP results were found to be compliant with the restricted band limits and Part 15.407 out-of-band limits.
5. For completeness, results are also shown as EIRP measured at a distance of 3 metres in dBm and also as field strength in dBµV/m. Measured field strength was converted to EIRP in accordance with FCC KDB 789033G)3)d)(iii) using a conversion factor of 95.2.

Transmitter Band Edge Radiated Emissions (5.47-5.725 GHz band operation) (continued)

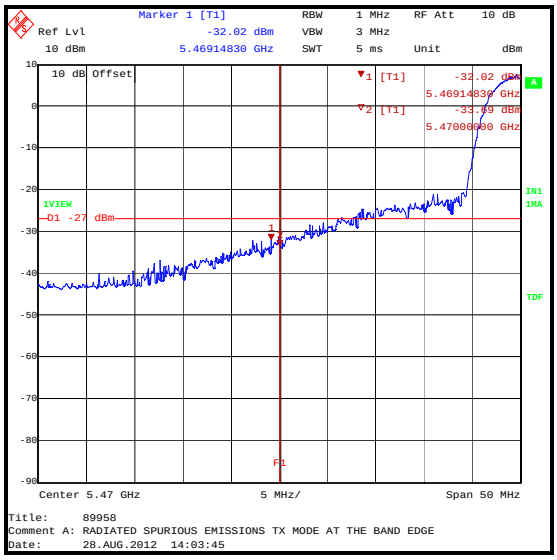
Results: 802.11a / 20 MHz / 6 Mbps / Peak

Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Result
5469.148	-32.0	-27.0	5.0	Complied
5470	-33.7	-27.0	6.7	Complied
5725	-30.3	-27.0	3.3	Complied
5725.200	-29.5	-27.0	2.5	Complied

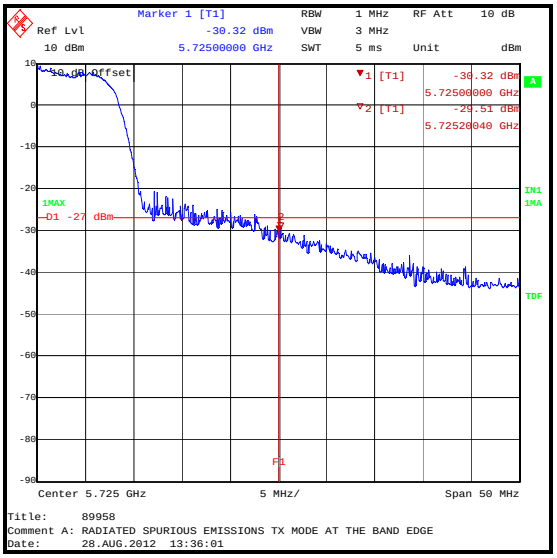
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
5470	62.6	68.2	5.6	Complied
5725	64.4	68.2	3.8	Complied
5725.301	66.0	68.2	2.2	Complied

Transmitter Band Edge Radiated Emissions (5.47-5.725 GHz band operation) (continued)

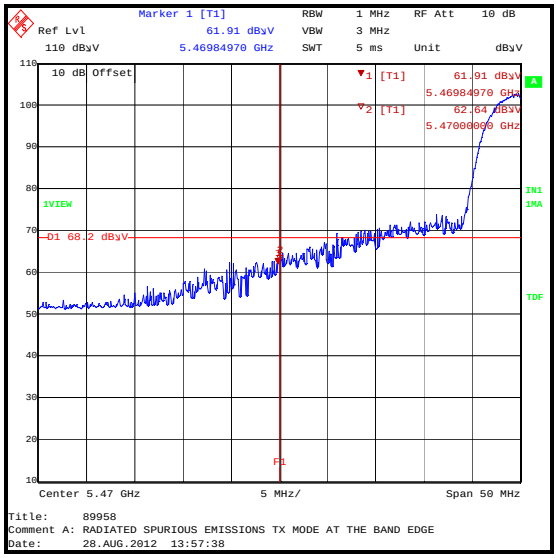
Results: 802.11a / 20 MHz / 6 Mbps / Peak



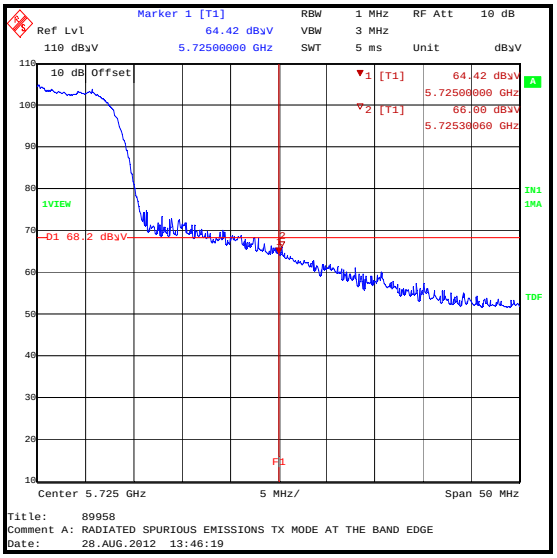
Lower Band Edge Peak Measurement



Upper Band Edge Peak Measurement



Lower Band Edge Peak Measurement



Upper Band Edge Peak Measurement

Transmitter Band Edge Radiated Emissions (5.47-5.725 GHz band operation) (continued)

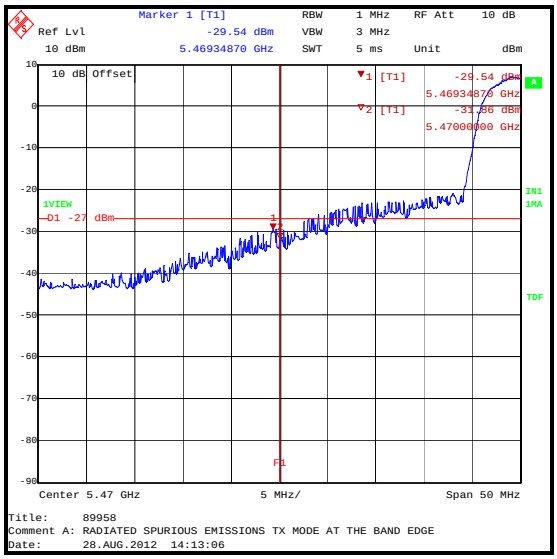
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / Peak

Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Result
5469.349	-29.5	-27.0	2.5	Complied
5470	-31.9	-27.0	4.9	Complied
5725	-38.3	-27.0	11.3	Complied
5725.200	-38.0	-27.0	11.0	Complied

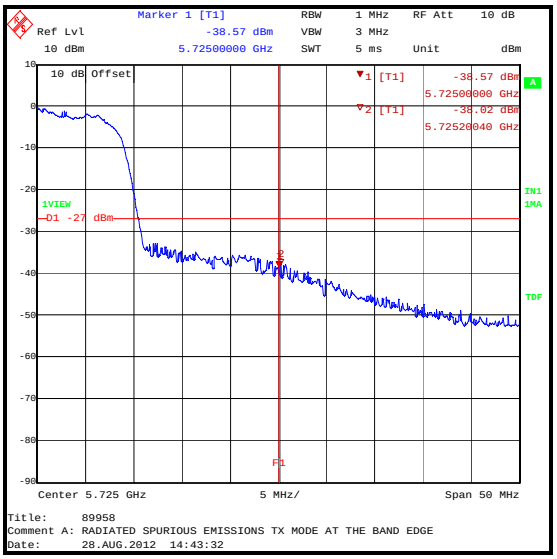
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
5470	65.5	68.2	2.7	Complied
5725	64.4	68.2	3.8	Complied
5725.100	66.7	68.2	1.5	Complied

Transmitter Band Edge Radiated Emissions (5.47-5.725 GHz band operation) (continued)

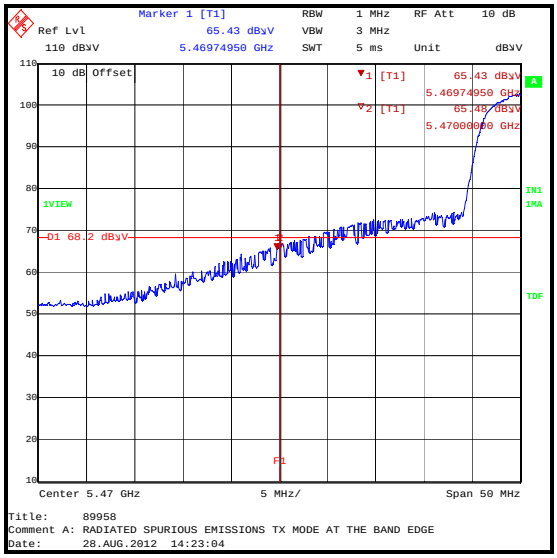
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / Peak



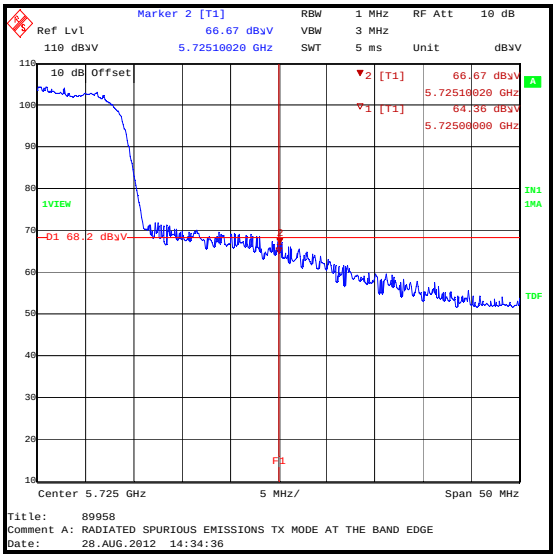
Lower Band Edge Peak Measurement



Upper Band Edge Peak Measurement



Lower Band Edge Peak Measurement



Upper Band Edge Peak Measurement

Transmitter Band Edge Radiated Emissions (5.47-5.725 GHz band operation) (continued)

Test Equipment Used:

RFI ID	Instrument Description	Model Number	Calibration Due	Calibration Interval (Months)
K0002	3m RSE Chamber	N/A	09 Oct 2012	12
M1124	Test Receiver	ESIB 26	14 Aug 2013	12
A1534	Pre Amplifier	8449B	09 Oct 2012	12
A1396	Attenuator	6810.17.B	06 Jul 2013	12
A253	WG 12 Microwave Horn	12240-20	09 Oct 2012	12

6. Measurement Uncertainty

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor such that a confidence level of approximately 95% is maintained. For the purposes of this document “approximately” is interpreted as meaning “effectively” or “for most practical purposes”.

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
AC Conducted Spurious Emissions	0.15 MHz to 30 MHz	95%	±3.25 dB
Maximum Conducted Output Power	5.15 GHz to 5.825 GHz	95%	±0.27 dB
Peak Power Spectral Density	5.15 GHz to 5.825 GHz	95%	±0.27 dB
Peak Excursion	5.15 GHz to 5.825 GHz	95%	±0.27 dB
99% / 26 dB Emission Bandwidth	5.15 GHz to 5.825 GHz	95%	±0.92 ppm
Radiated Spurious Emissions	30 MHz to 40 GHz	95%	±2.94 dB

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty the published guidance of the appropriate accreditation body is followed.

7. Report Revision History

Version Number	Revision Details		
	Page No(s)	Clause	Details
1.0	-	-	Initial Version
2.0	-	-	Added setup photos and power versus frequency table
3.0	-	-	FCC ID updated
4.0	9		Typo corrected
5.0	92	-	Clarification provided on test limit.