TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: DN200

FCC ID: OFD-2003DN001

IC Certification Number: 10366A-2006DN

To: FCC Parts 15.207, 15.209, 15.247(b), 15.247(d), 15.247(e) & Industry Canada RSS-Gen 7.2.4, 4.8, 4.9; RSS-210 A8.2, 8.4, 8.5

Test Report Serial No.:
RFI-RPT-RP85509JD08C V2.0

Version 2.0 Supersedes All Previous Versions

This Test Report Is Issued Under The Authority Of John Newell, Group Quality Manager:	
Checked By:	Ian Watch
Signature:	
Date of Issue:	08 August 2012

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1. Customer Information

Company Name:	Datasat Technologies A.G.
Address:	Industriestrasse 7 Zug Switzerland

2. Summary of Testing

2.1. General Information

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:	47CFR15.247
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2011: Part 15 Subpart C (Intentional Radiators) - Section 15.247
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, Wade Road, Basingstoke, Hampshire, RG24 8AH.
Test Dates:	25 April 2012 to 17 May 2012

2.2. Summary of Test Results

FCC Reference (47CFR)	IC Reference	Measurement	Result
Part 15.207	RSS-Gen 7.2.4	Transmitter AC Conducted Emissions	✓
Part 15.247(e)	RSS-210 A8.2(b)	Transmitter Power Spectral Density	✓
Part 15.247(b)(3)	RSS-Gen 4.8 RSS-210 A8.4(4)	Transmitter Maximum Peak Output Power	✓
Part 15.247(d)	RSS-Gen 4.9 RSS-210 A8.5	Transmitter Conducted Emissions	✓
Part 15.247(d)	RSS-Gen 4.9 RSS-210 A8.5	Transmitter Band Edge Conducted Emissions	✓
Part 15.247(d)/ 15.209(a)	RSS-Gen 4.9 RSS-210 A8.5	Transmitter Radiated Emissions	✓
Part 15.247(d)/ 15.209(a)	RSS-Gen 4.9 RSS-210 A8.5	Transmitter Band Edge Radiated Emissions	✓

Key to Results

✓ = Complied ✗ = Did not comply

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:	KDB 558074 D01 v01 1/18/2012
Title:	Guidance for Performing Compliance Measurements on Digital Transmission System (DTS) devices operating Under 15.247
Reference:	KDB 662911 D01 v01r01 10/25/2011
Title:	Multiple Transmitter Output
Reference:	KDB 662911 D02 v01 10/25/2011
Title:	MIMO with Cross-Polarized Antennas

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 specification identified above.

3. Equipment Under Test (EUT)

3.1. Identification of Equipment Under Test (EUT)

Brand Name:	Datasat
Model Number:	DN200
Hardware Version:	Rev 1.0
Software Version:	Rev 1.0
Serial Number:	261293
FCC ID:	OFD-2003DN001
IC Certification Number:	10366A-2006DN

Description:	Power Supply
Brand Name:	Mean Well
Model Name or Number:	PLN-60-48
Serial Number:	Not marked or stated

3.2.Description of EUT

The equipment under test was a dual band multi radio Wireless Network System containing four RF modules operating in accordance with IEEE 802.11a,b,g,n transmitting in the 2.4 to 2.4835 GHz, 5.15 to 5.25 GHz & 5.725 to 5.825 GHz bands. The EUT has eight external antenna ports, two transmit per radio module, MIMO is supported. The EUT is designed to work in various configurations and with various antenna types depending on the end user requirements.

A 120 VAC 60 Hz to 48 VDC power supply is used to provide power.

3.3. Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing.

3.4. Additional Information Related to Testing

Technology Tested:	IEEE 802.11a,b,g,n		
Type of Unit:	Transceiver		
Modulation:	CCK, BPSK, QPSK, 16QAM, 64QAM		
Data rates:	802.11b	1, 2, 5.5 & 11 Mbps	
	802.11g	6, 9, 12, 18, 24, 36 ,48 and 54 Mbps	
	802.11n 20 MHz	6.5, 13, 19.5, 26, 39, 52, 58.5, 65, 78, 104, 117, 130 Mbps	
	802.11n 40 MHz	13.5, 27, 40.5, 54, 81, 108, 121.5, 135, 162, 216, 243 & 270 Mbps	
Power Supply Requirement(s):	Nominal	48 VDC via 120 VAC 60 Hz PSU	
Channel Spacing:	20 MHz		
Transmit Frequency Range:	2412 MHz to 2462 MHz		
Transmit Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency (MHz)**
	Bottom	1	2412
	Middle	6	2437
	Top	11	2462
Channel Spacing:	40 MHz		
Transmit Frequency Range:	2422 MHz to 2452 MHz		
Transmit Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency (MHz)**
	Bottom	3	2422
	Middle	6	2437
	Top	9	2452

3.5. Support Equipment

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

Description:	Laptop
Brand Name:	Dell
Model Name or Number:	D610
Serial Number:	RFI Global Services Ltd 00062

Description:	Ethernet hub
Brand Name:	Netgear
Model Name or Number:	GS605
Serial Number:	1YG19430021A1

Description:	Sectorised antenna (5 dBi Gain)
Brand Name:	MARS Antennas & RF Systems Ltd.
Model Name or Number:	MA-WE2485-2H2

Description:	Omnidirectional antenna (15 dBi Gain)
Brand Name:	Solwise
Model Name or Number:	NET-WL-ANT-015ON

Description:	Sectorised antenna (16.5 dBi Gain)
Brand Name:	Pacific Wireless
Model Name or Number:	SA24-90-17

Description:	Point to Point antenna (19 dBi Gain)
Brand Name:	MARS Antennas & RF Systems Ltd.
Model Name or Number:	MA-WA25-DP19

3.6. Antenna

The table below lists the antennas that the Customer intends to use with this product:

Type	Stated Gain (dBi)	Model	Part No.	Used for Testing	Note
Omnidirectional	3.0	390645/TWS5000W	DT-OM360I-2403-RPTNC		3
Omnidirectional	9.0	024-9RPTNC	DT-OM360I-2409-RPTNC		3
Omnidirectional	15.0	NET-WL-ANT-015ON	DT-OM360O-2415-N	X	2
Sectorised	5.0	MA-WE2485-2H2	DT-ST120O-5805-N	X	1
Sectorised	7.5	MA-WC2458-2H	DT-ST060O-5875-N		2
Sectorised	16.5	SA24-90-17	DT-ST090O-2416-N	X	2
Point to Point	19.0	MA-W25-DP19	DT-PT017O-2419-N	X	2

X = This antenna was used for testing purposes

Note(s):

1. This antenna was used for testing as it has a gain of less than 6 dBi and therefore has the highest conducted power.
2. This antenna was used for testing as it has the highest gain for the type of antenna and therefore has the highest EIRP.
3. This antenna is a lower gain antenna of the same type to that tested. Therefore it was not tested.

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

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

- The unit operates in transceiver mode only.
- Continuously transmitting at maximum power with >99% duty cycle on the bottom, middle and top channels as required using the supported data rates.

4.2. Configuration and Peripherals

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

- Controlled using a bespoke application on a laptop PC. The application was used to enable continuous transmission and to select the test channels, data rates and modulation schemes as required.
- The EUT supports four radio modules each containing 2 x 2 MIMO. Preliminary testing was performed on all modules and ports. The radio module with the highest conducted output power was used to make measurements as this was deemed to be worst case.
- All active ports were terminated with 50 Ohm loads during radiated spurious emissions and AC conducted emissions testing. Ports stated as inactive by the Customer were not terminated.
- AC conducted emissions testing was performed with the power supply connected to a 120 VAC 60 Hz single phase supply via a LISN. The EUT was set to transmit at maximum power on the top channel during the test.

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.

5.2. Test Results

5.2.1. Transmitter AC Conducted Spurious Emissions

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	08 May 2012
Test Sample Serial No.:	261293		

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):	22
Relative Humidity (%):	34

Results: Live / Quasi Peak

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.245	Live	47.9	61.9	14.0	Complied
0.488	Live	39.9	56.2	16.3	Complied
0.974	Live	37.0	56.0	19.0	Complied
2.567	Live	30.9	56.0	25.1	Complied
3.080	Live	33.2	56.0	22.8	Complied
4.056	Live	34.3	56.0	21.7	Complied
4.547	Live	32.2	56.0	23.8	Complied
5.321	Live	39.8	60.0	20.2	Complied
5.433	Live	34.9	60.0	25.1	Complied
5.811	Live	39.4	60.0	20.6	Complied

Results: Live / Average

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.245	Live	47.3	51.9	4.6	Complied
0.488	Live	40.6	46.2	5.6	Complied
0.731	Live	38.7	46.0	7.3	Complied
0.974	Live	35.3	46.0	10.7	Complied
1.217	Live	29.7	46.0	16.3	Complied
11.675	Live	26.2	50.0	23.8	Complied

Transmitter AC Conducted Spurious Emissions (continued)

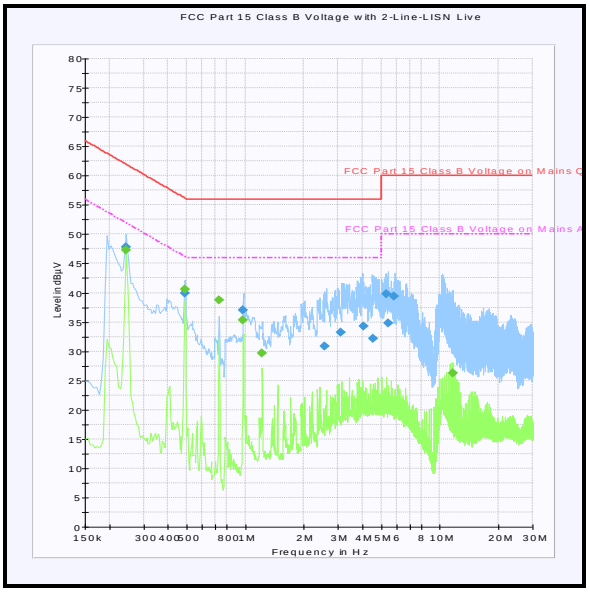
Results: Neutral / Quasi Peak

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.182	Neutral	52.7	64.4	11.7	Complied
0.245	Neutral	48.3	61.9	13.6	Complied
0.488	Neutral	40.3	56.2	15.9	Complied
3.489	Neutral	33.4	56.0	22.6	Complied
3.791	Neutral	38.8	56.0	17.2	Complied
4.277	Neutral	36.2	56.0	19.8	Complied
4.412	Neutral	35.0	56.0	21.0	Complied
4.780	Neutral	36.6	56.0	19.4	Complied
4.790	Neutral	34.0	56.0	22.0	Complied
4.943	Neutral	33.3	56.0	22.7	Complied

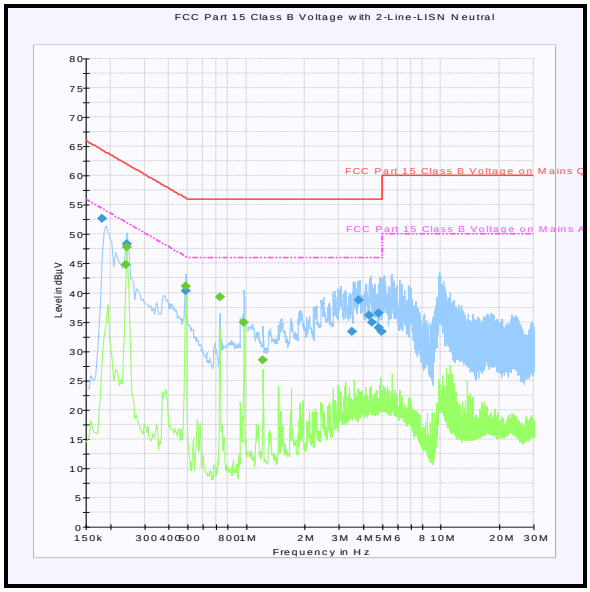
Results: Neutral / Average

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.240	Neutral	44.8	52.1	7.3	Complied
0.245	Neutral	47.8	51.9	4.1	Complied
0.488	Neutral	41.1	46.2	5.1	Complied
0.731	Neutral	39.3	46.0	6.7	Complied
0.974	Neutral	35.0	46.0	11.0	Complied
1.217	Neutral	28.5	46.0	17.5	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.

5.2.2. Transmitter Power Spectral Density

Test Summary:

Test Engineer:	Sarah Williams	**Test Date:**	15 May 2012
Test Sample Serial No:	261293		

FCC Reference:	Part 15.247(e)
Industry Canada Reference:	RSS-210 A8.2(b)
Test Method Used:	FCC KDB 558074 Section 5.3.1

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	36

Note(s):

1. Transmitter Power Spectral Density tests in all bands were performed using a spectrum analyser in accordance with FCC KDB 558074 Section 5.3.1 Measurement Procedure PKPSD.
2. The EUT has four radio modules with two RF ports on each module. Initial measurements were performed on one channel on all eight ports to find the radio module with the highest power spectral density. Radio module 1 had the highest power spectral density. The module ports are numbered Port 0 and Port 1. Power spectral density from both ports was measured and combined using the measure-and-sum method stated in FCC KDB 662911 D01. A 20 dB attenuator and RF cable were used to connect the measurement equipment to the EUT. The combined cable and attenuator loss was measured prior to performing the measurements and the loss compensation incorporated into the measurement results.
3. Preliminary tests were made on one frequency for all supported data rates and modulation types to determine worst-case operation. Using the test method in KDB 558074, 11 Mbps for 802.11b, 54 Mbps for 802.11g, MCS15 for both 802.11n 20 MHz and 40 MHz channel bandwidths were found to have the highest PSD levels. The module was previously compliance tested with 1 Mbps for 802.11b, 6 Mbps for 802.11a and MCS0 for 20 MHz and 40 MHz channel bandwidths. Results for both modulation schemes for 802.11b, 802.11g and 802.11n have been recorded in the following tables.
4. The EUT was configured using a power setting of 9.0.
5. In accordance with FCC KDB 558074 Section 5.3.1, the measurements were performed using a 100 kHz resolution bandwidth. A Band Width Correction Factor of 15.2 dB was then subtracted from the combined results as the limit is specified in a 3 kHz bandwidth. The correction factor (BWCF) was calculated as shown below:

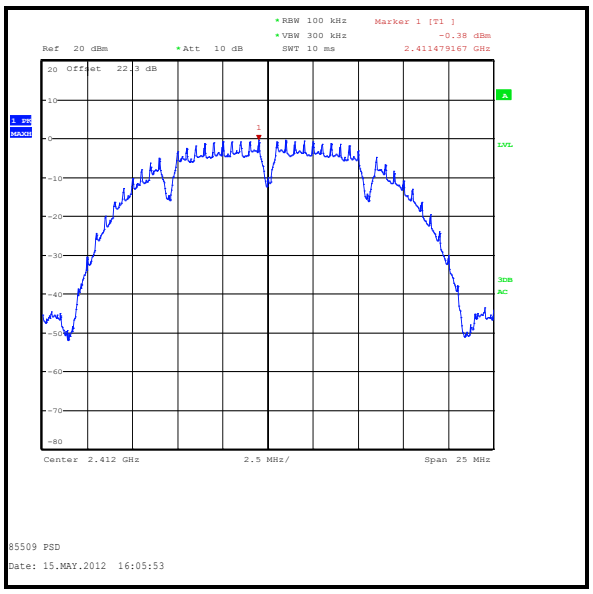
$$10 \log_{10} (3 \text{ kHz} / 100 \text{ kHz}) = -15.2 \text{ dB}.$$

Transmitter Power Spectral Density (continued)

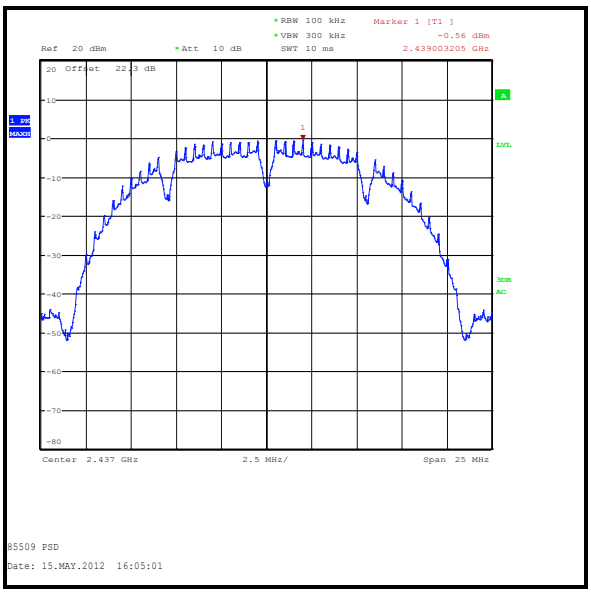
Results: 802.11b / 20 MHz / 1 Mbps / CCK

Channel	PSD at Port 0 (dBm / 100 kHz)	PSD at Port 1 (dBm / 100 kHz)	Combined PSD (dBm / 100 kHz)	Combined PSD (dBm / 3 kHz)	PSD Limit (dBm / 3 kHz)	Margin (dB)	Result
Bottom	-0.4	-0.1	2.8	-12.4	8.0	20.4	Complied
Middle	-0.6	-0.6	2.4	-12.8	8.0	20.8	Complied
Top	-1.0	-0.9	2.1	-13.1	8.0	21.1	Complied

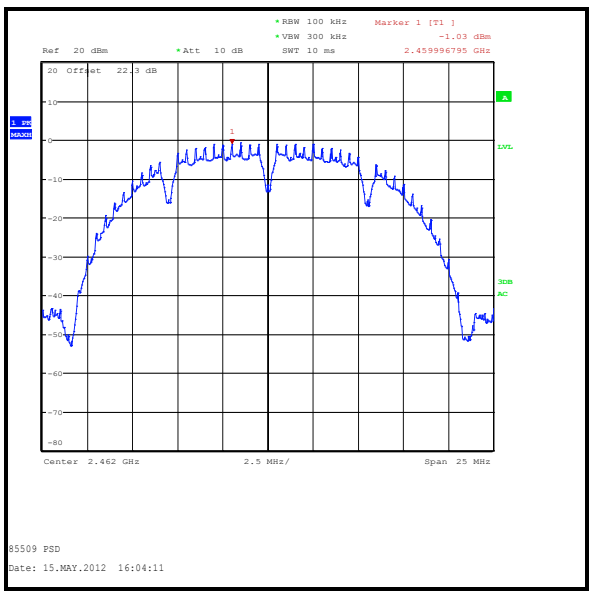
Results: 802.11b / 20 MHz / 1 Mbps / CCK / Port 0



Bottom Channel



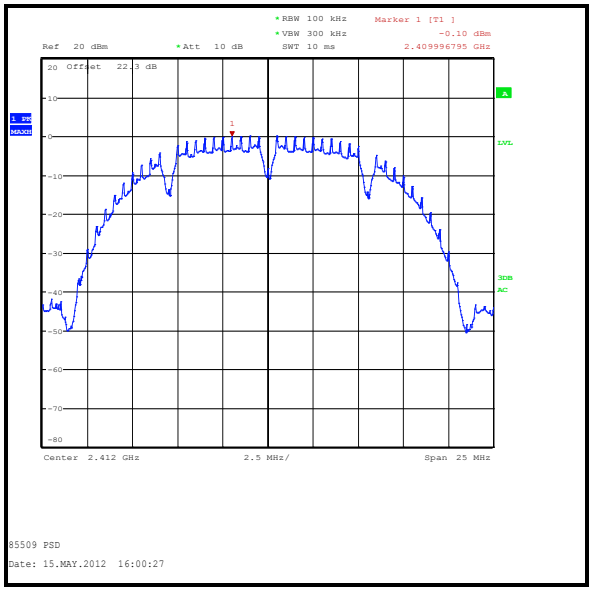
Middle Channel



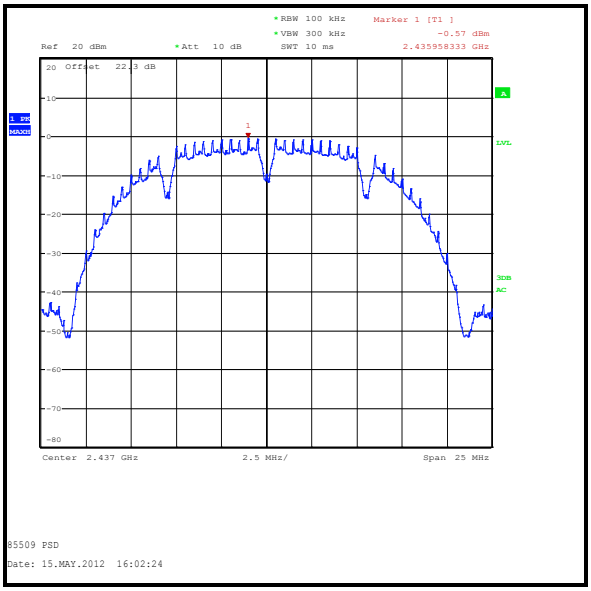
Top Channel

Transmitter Power Spectral Density (continued)

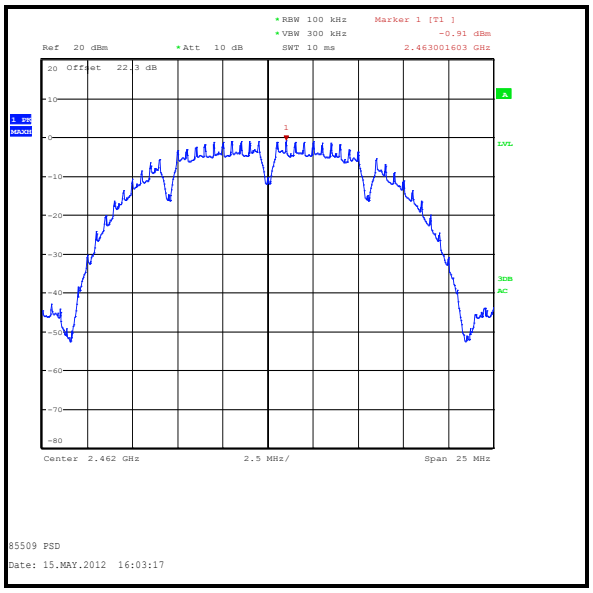
Results: 802.11b / 20 MHz / 1 Mbps / CCK / Port 1



Bottom Channel



Middle Channel



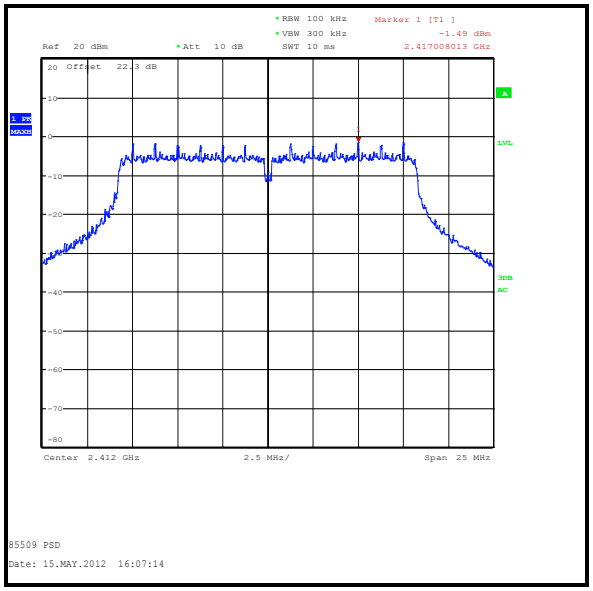
Top Channel

Transmitter Power Spectral Density (continued)

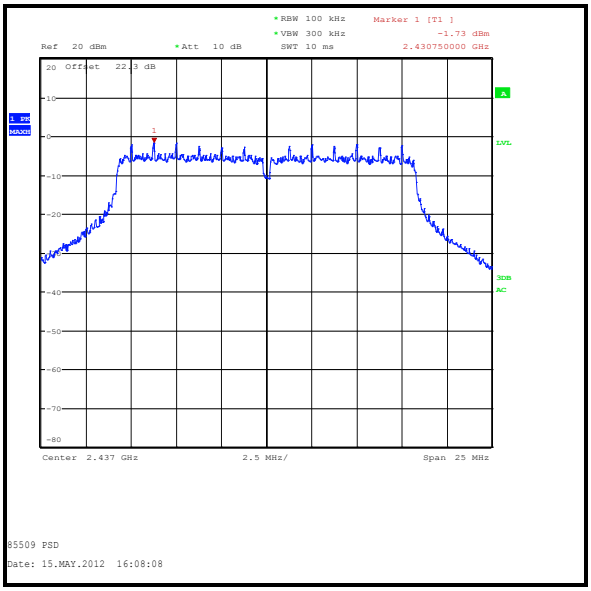
Results: 802.11g / 20 MHz / 6 Mbps / BPSK

Channel	PSD at Port 0 (dBm / 100 kHz)	PSD at Port 1 (dBm / 100 kHz)	Combined PSD (dBm / 100 kHz)	Combined PSD (dBm / 3 kHz)	PSD Limit (dBm / 3 kHz)	Margin (dB)	Result
Bottom	-1.5	-1.4	1.6	-13.6	8.0	21.6	Complied
Middle	-1.7	-1.5	1.4	-13.8	8.0	21.8	Complied
Top	-1.9	-2.1	1.0	-14.2	8.0	22.2	Complied

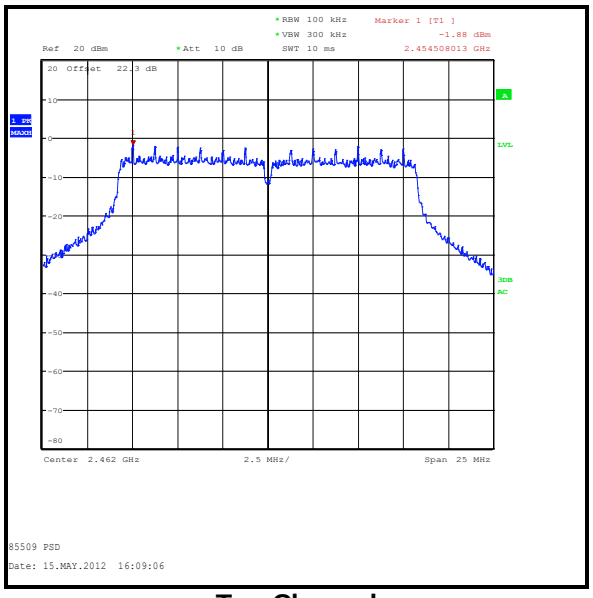
Results: 802.11g / 20 MHz / 6 Mbps / BPSK / Port 0



Bottom Channel



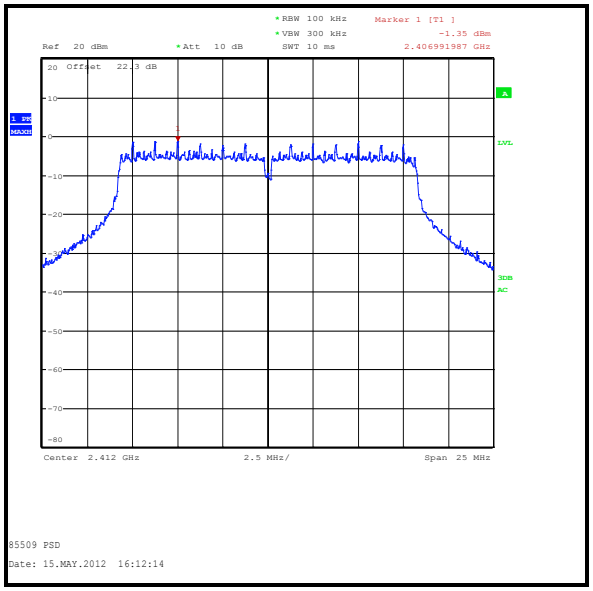
Middle Channel



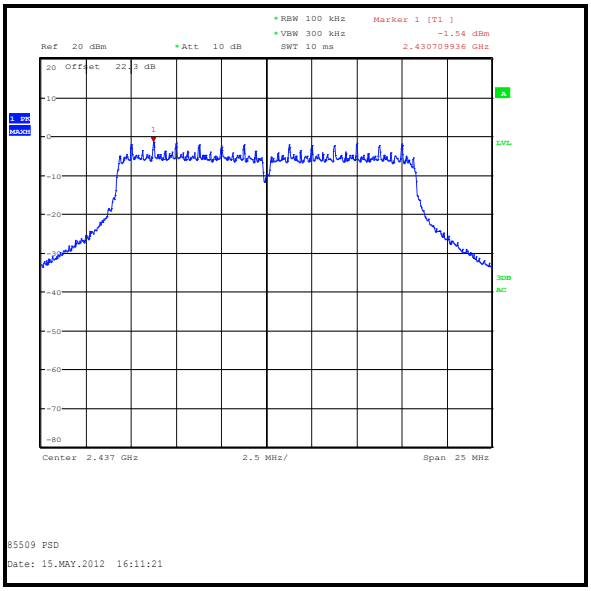
Top Channel

Transmitter Power Spectral Density (continued)

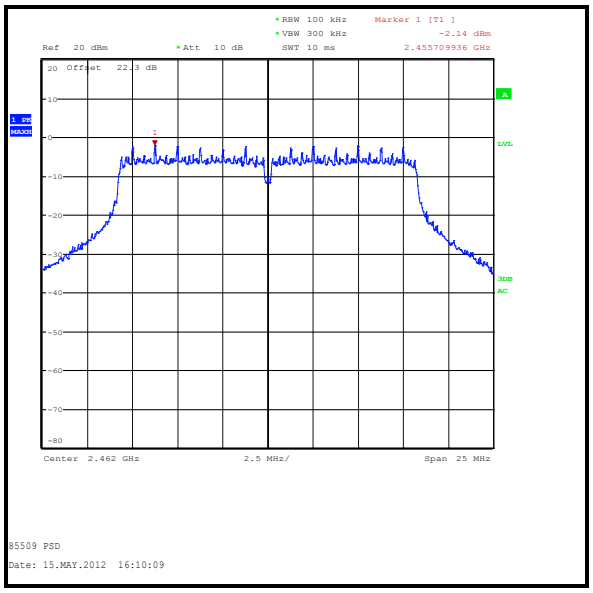
Results: 802.11g / 20 MHz / 6 Mbps / BPSK / Port 1



Bottom Channel



Middle Channel



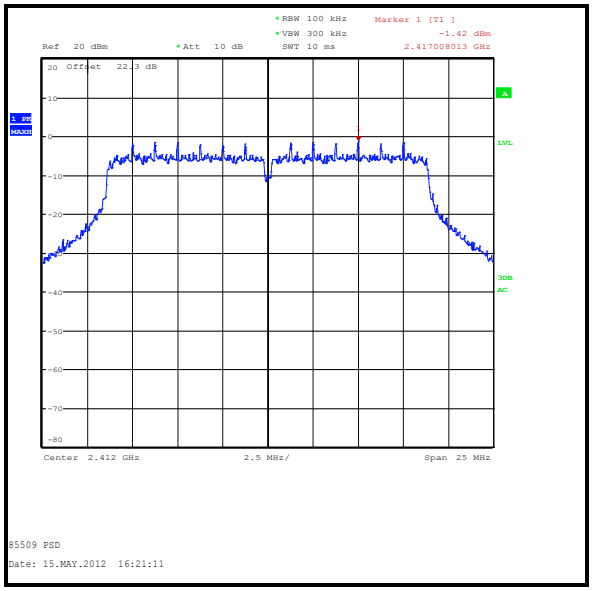
Top Channel

Transmitter Power Spectral Density (continued)

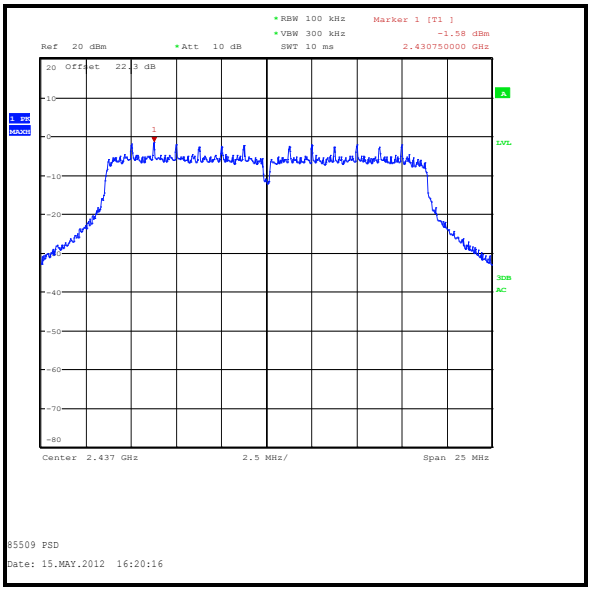
Results: 802.11n / 20 MHz / 6.5 Mbps / BPSK / MCS0

Channel	PSD at Port 0 (dBm / 100 kHz)	PSD at Port 1 (dBm / 100 kHz)	Combined PSD (dBm / 100 kHz)	Combined PSD (dBm / 3 kHz)	PSD Limit (dBm / 3 kHz)	Margin (dB)	Result
Bottom	-1.4	-1.2	1.7	-13.5	8.0	21.5	Complied
Middle	-1.6	-1.5	1.5	-13.7	8.0	21.7	Complied
Top	-1.6	-2.1	1.2	-14.0	8.0	22.0	Complied

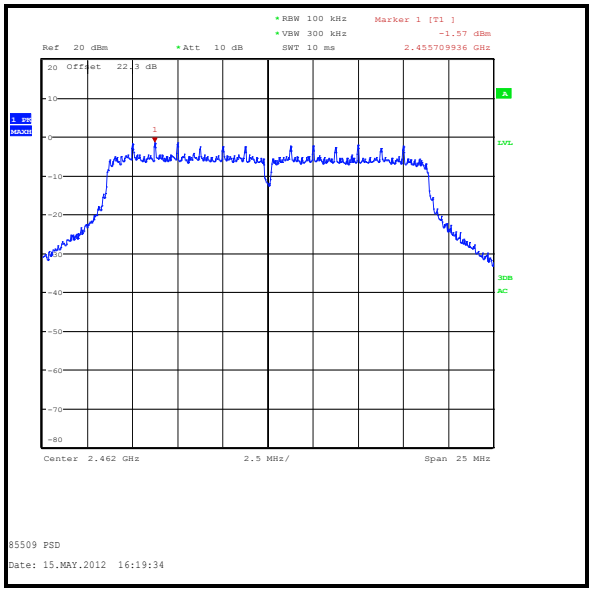
Results: 802.11n / 20 MHz / 6.5 Mbps / BPSK / MCS0 / Port 0



Bottom Channel



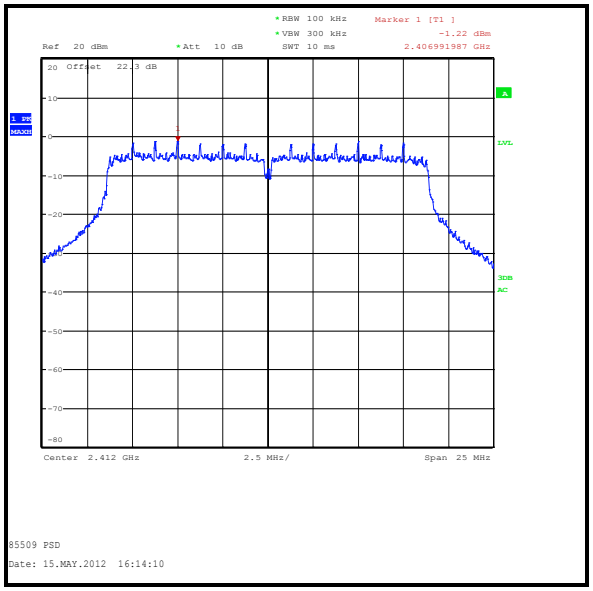
Middle Channel



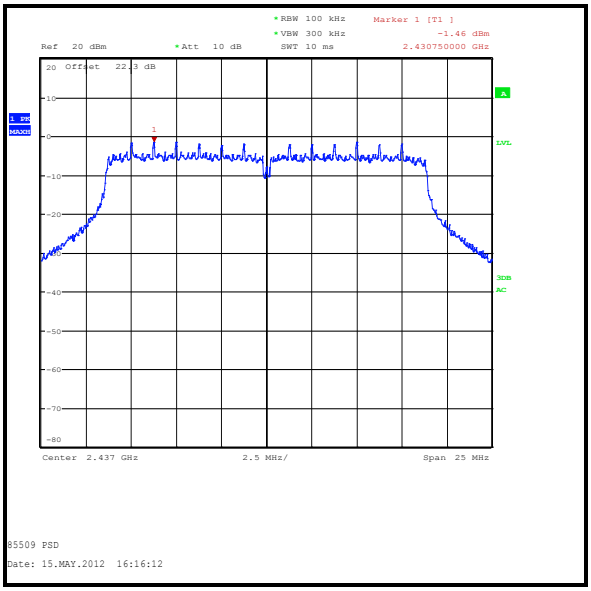
Top Channel

Transmitter Power Spectral Density (continued)

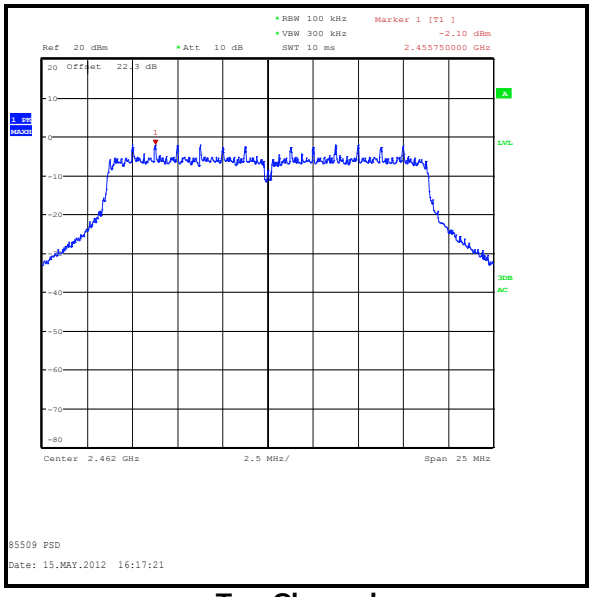
Results: 802.11n / 20 MHz / 6.5 Mbps / BPSK / MCS0 / Port 1



Bottom Channel



Middle Channel



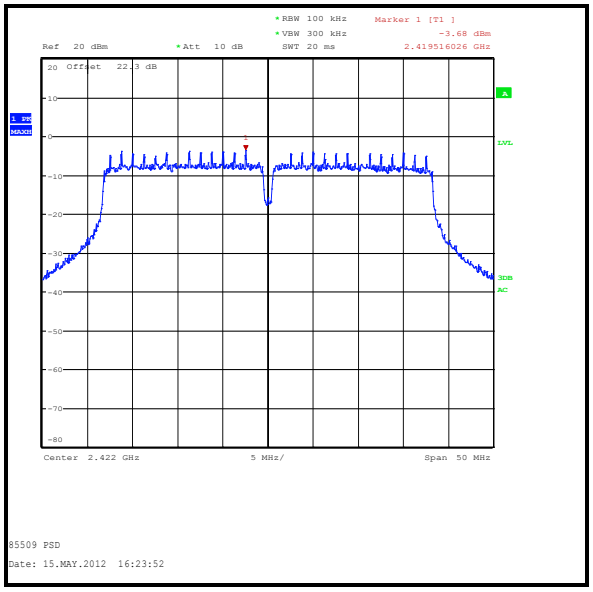
Top Channel

Transmitter Power Spectral Density (continued)

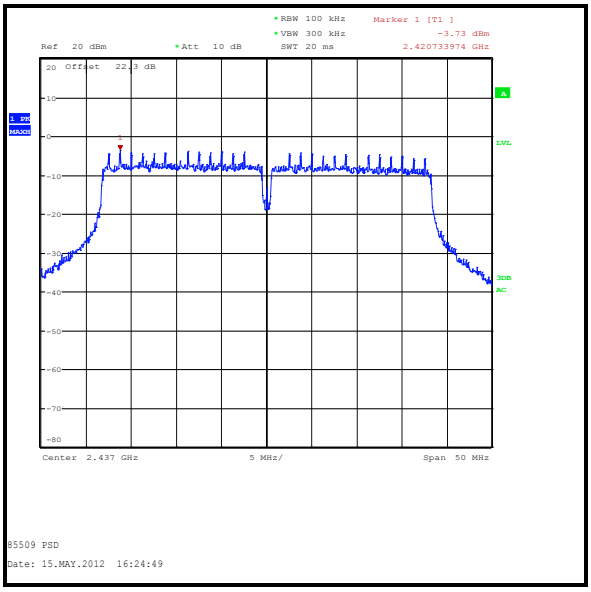
Results: 802.11n / 40 MHz / 13.5 Mbps / BPSK / MCS0

Channel	PSD at Port 0 (dBm / 100 kHz)	PSD at Port 1 (dBm / 100 kHz)	Combined PSD (dBm / 100 kHz)	Combined PSD (dBm / 3 kHz)	PSD Limit (dBm / 3 kHz)	Margin (dB)	Result
Bottom	-3.6	-3.2	-0.4	-15.6	8.0	23.6	Complied
Middle	-3.7	-3.5	-0.6	-15.8	8.0	23.8	Complied
Top	-3.7	-3.7	-0.7	-15.9	8.0	23.9	Complied

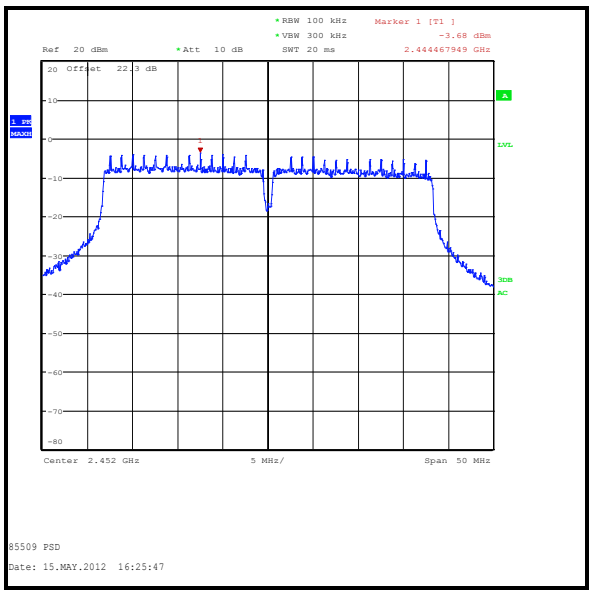
Results: 802.11n / 40 MHz / 13.5 Mbps / BPSK / MCS0 / Port 0



Bottom Channel



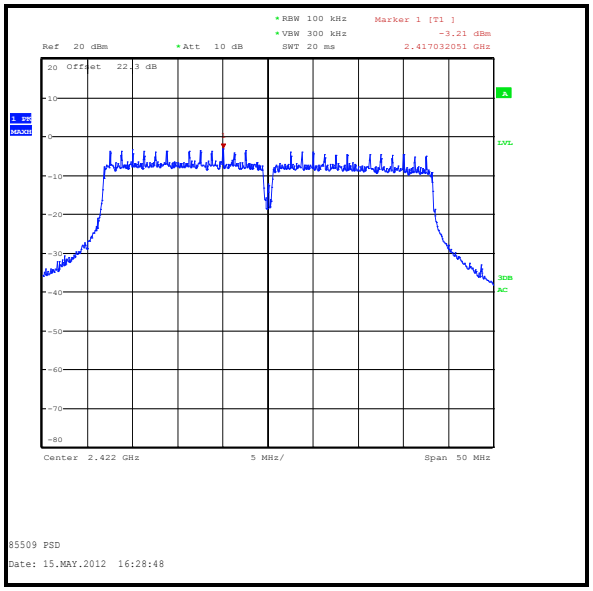
Middle Channel



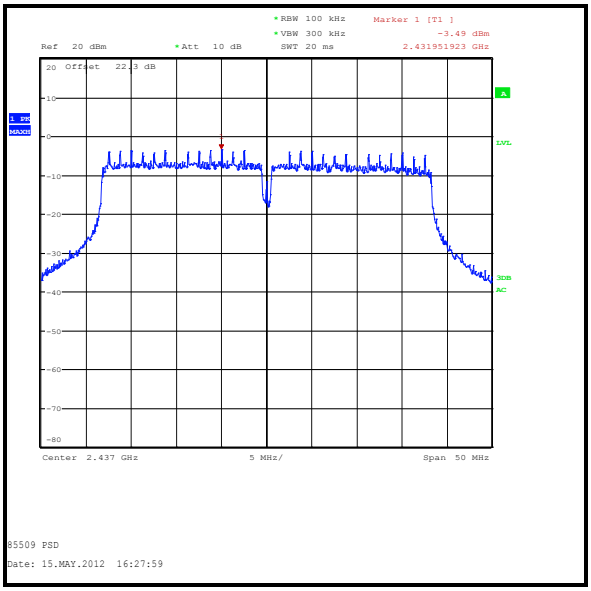
Top Channel

Transmitter Power Spectral Density (continued)

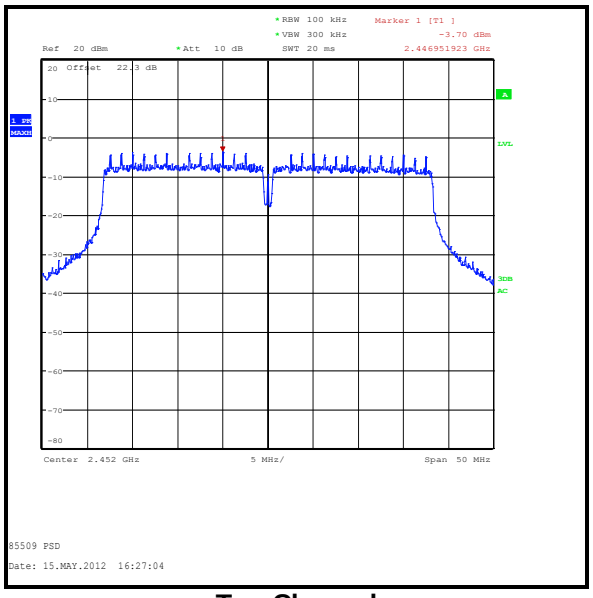
Results: 802.11n / 40 MHz / 13.5 Mbps / BPSK / MCS0 / Port 1



Bottom Channel



Middle Channel



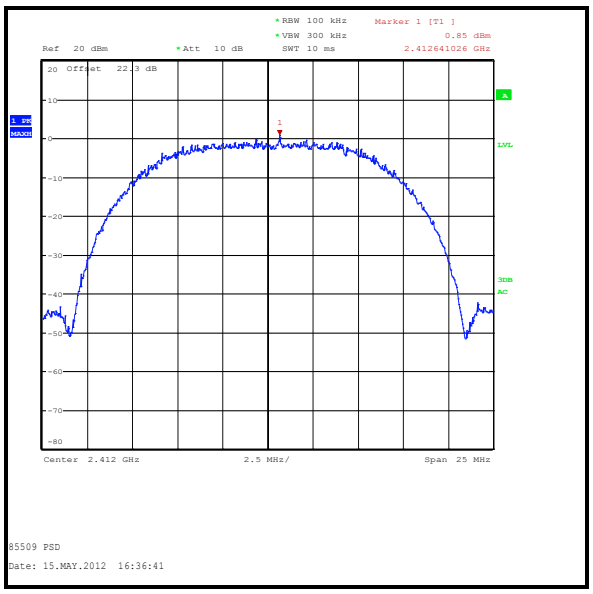
Top Channel

Transmitter Power Spectral Density (continued)

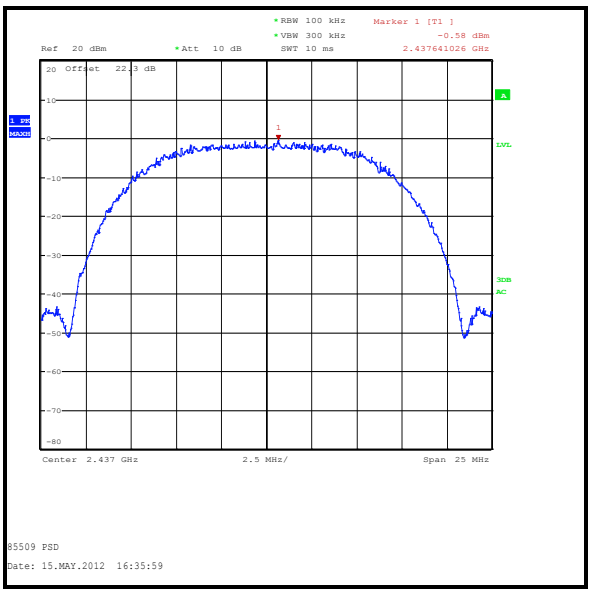
Results: 802.11b / 20 MHz / 11 Mbps / CCK

Channel	PSD at Port 0 (dBm / 100 kHz)	PSD at Port 1 (dBm / 100 kHz)	Combined PSD (dBm / 100 kHz)	Combined PSD (dBm / 3 kHz)	PSD Limit (dBm / 3 kHz)	Margin (dB)	Result
Bottom	0.9	0.5	3.7	-11.5	8.0	19.5	Complied
Middle	-0.6	0.7	3.1	-12.1	8.0	20.1	Complied
Top	0.3	0.4	3.4	-11.8	8.0	19.8	Complied

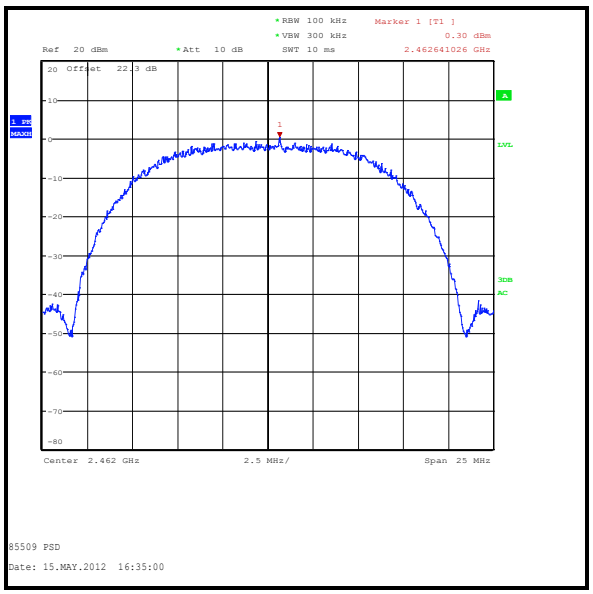
Results: 802.11b / 20 MHz / 11 Mbps / CCK / Port 0



Bottom Channel



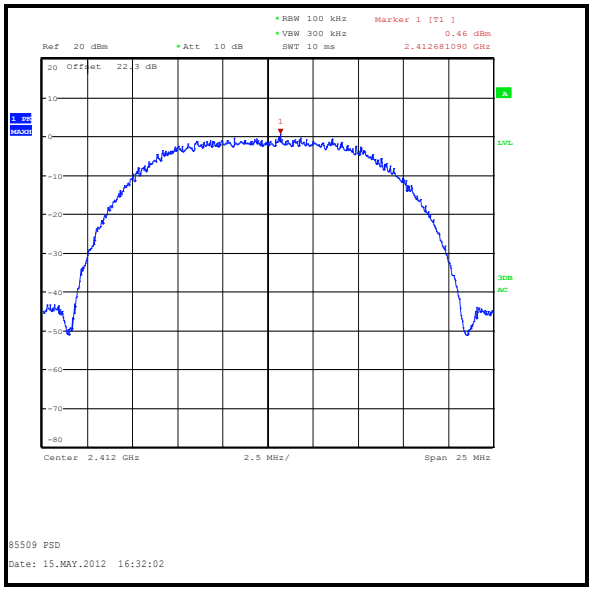
Middle Channel



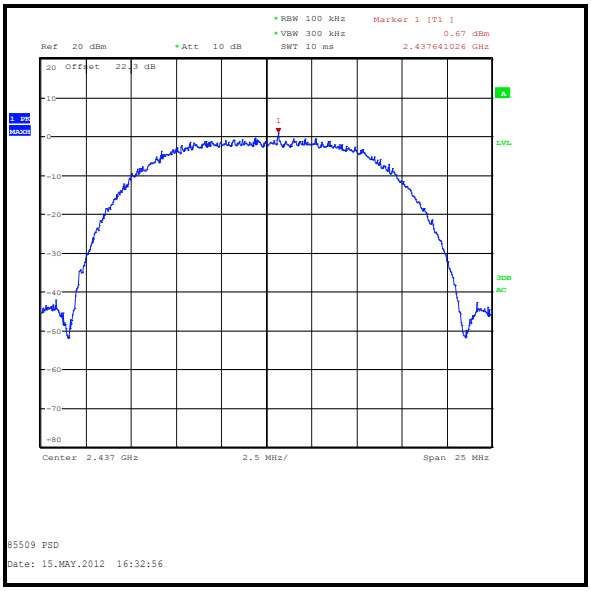
Top Channel

Transmitter Power Spectral Density (continued)

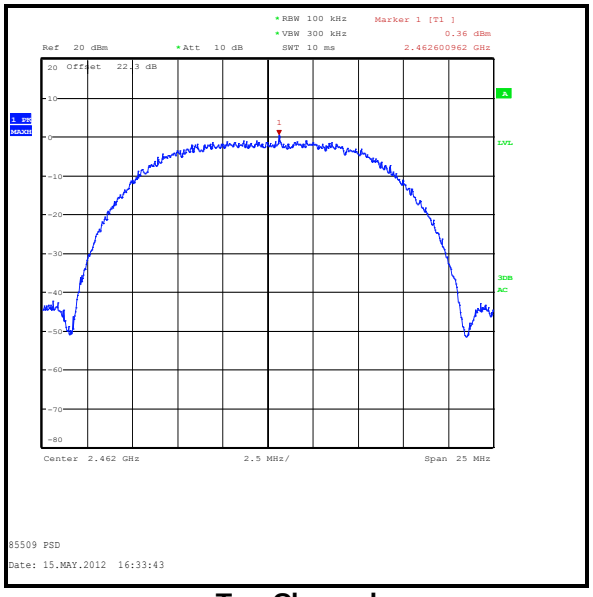
Results: 802.11b / 20 MHz / 11 Mbps / CCK / Port 1



Bottom Channel



Middle Channel



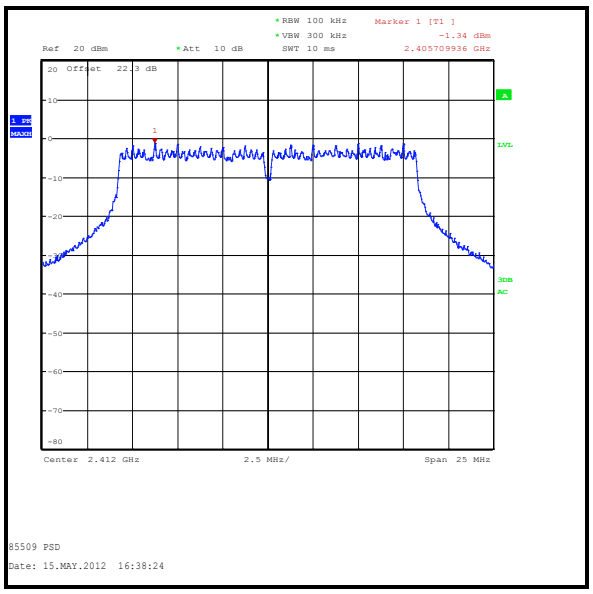
Top Channel

Transmitter Power Spectral Density (continued)

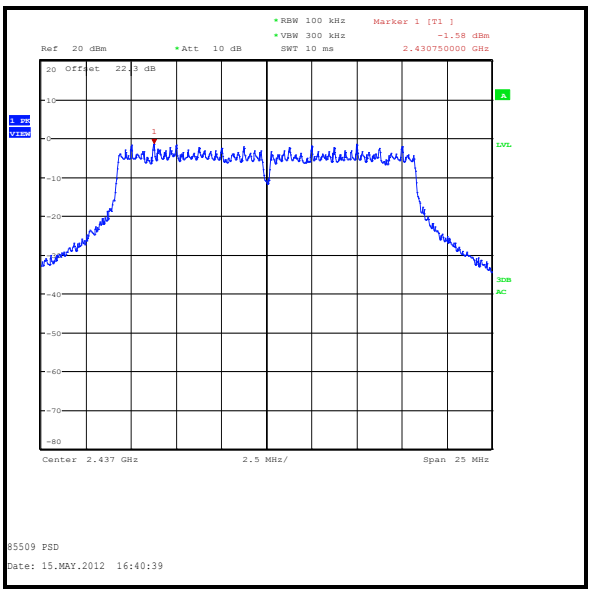
Results: 802.11g / 20 MHz / 54 Mbps / 64QAM

Channel	PSD at Port 0 (dBm / 100 kHz)	PSD at Port 1 (dBm / 100 kHz)	Combined PSD (dBm / 100 kHz)	Combined PSD (dBm / 3 kHz)	PSD Limit (dBm / 3 kHz)	Margin (dB)	Result
Bottom	-1.3	-1.2	1.8	-13.4	8.0	21.4	Complied
Middle	-1.6	-1.4	1.5	-13.7	8.0	21.7	Complied
Top	-1.6	-1.7	1.5	-13.7	8.0	21.7	Complied

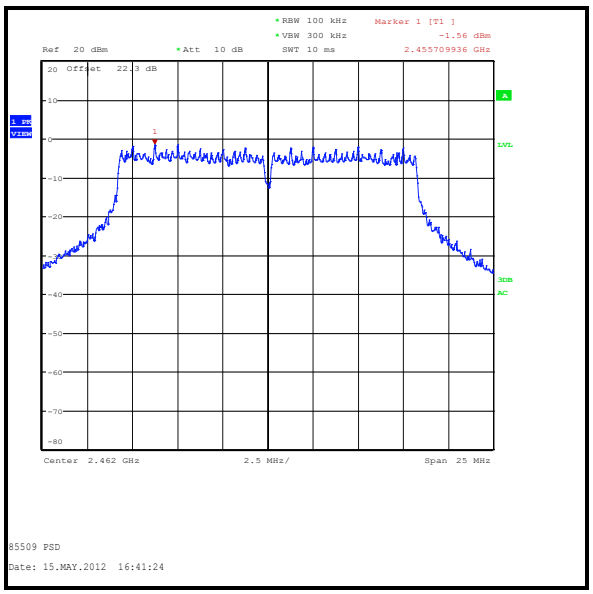
Results: 802.11g / 20 MHz / 54 Mbps / 64QAM / Port 0



Bottom Channel



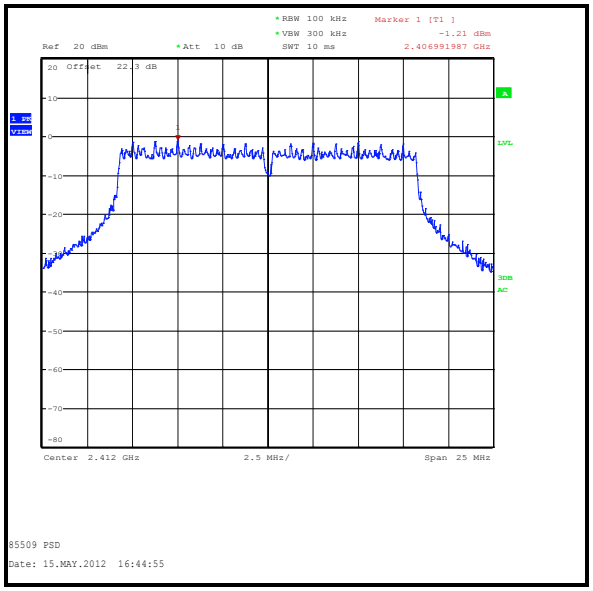
Middle Channel



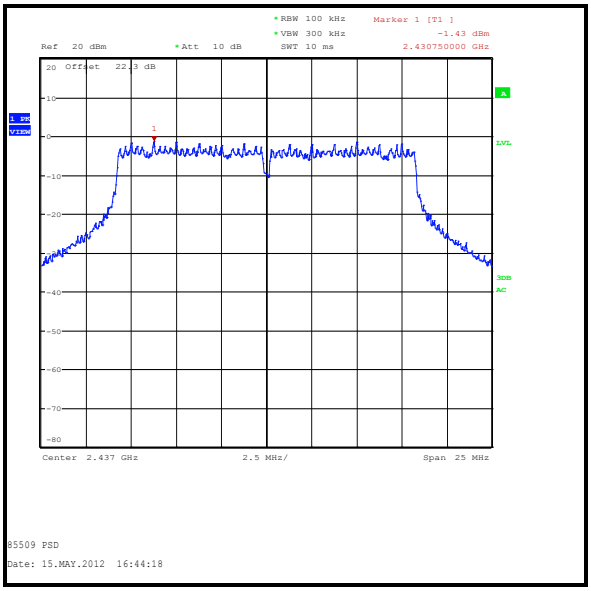
Top Channel

Transmitter Power Spectral Density (continued)

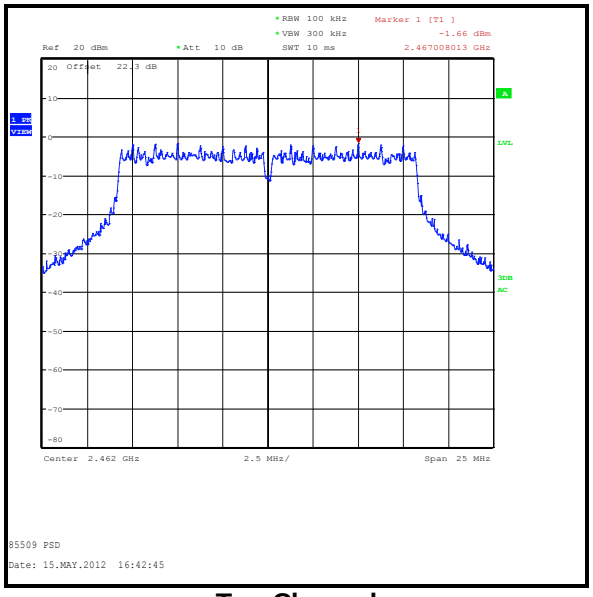
Results: 802.11g / 20 MHz / 54 Mbps / 64QAM / Port 1



Bottom Channel



Middle Channel



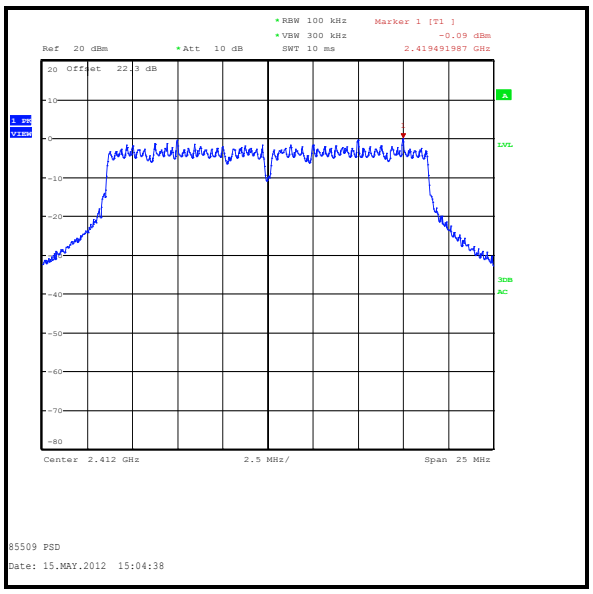
Top Channel

Transmitter Power Spectral Density (continued)

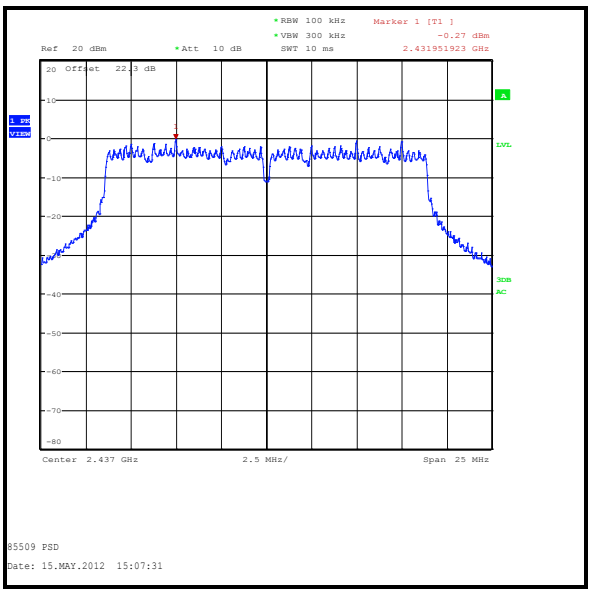
Results: 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15

Channel	PSD at Port 0 (dBm / 100 kHz)	PSD at Port 1 (dBm / 100 kHz)	Combined PSD (dBm / 100 kHz)	Combined PSD (dBm / 3 kHz)	PSD Limit (dBm / 3 kHz)	Margin (dB)	Result
Bottom	-0.1	-0.4	2.8	-12.4	8.0	20.4	Complied
Middle	-0.3	-0.6	2.6	-12.6	8.0	20.6	Complied
Top	-0.7	-0.8	2.3	-12.9	8.0	20.9	Complied

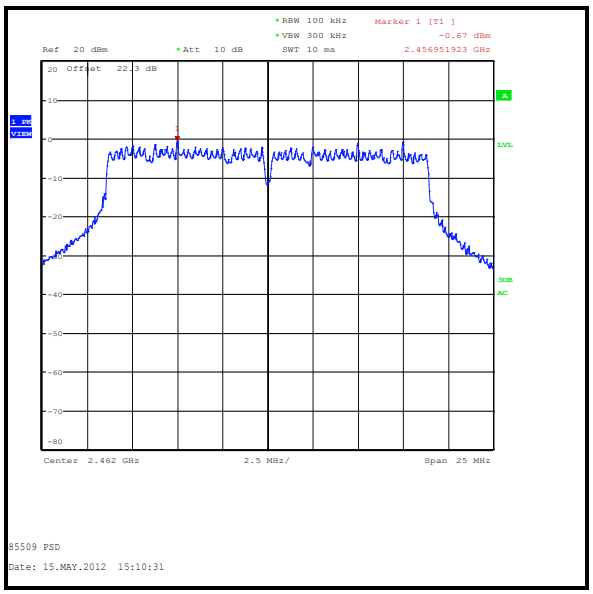
Results: 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 0



Bottom Channel



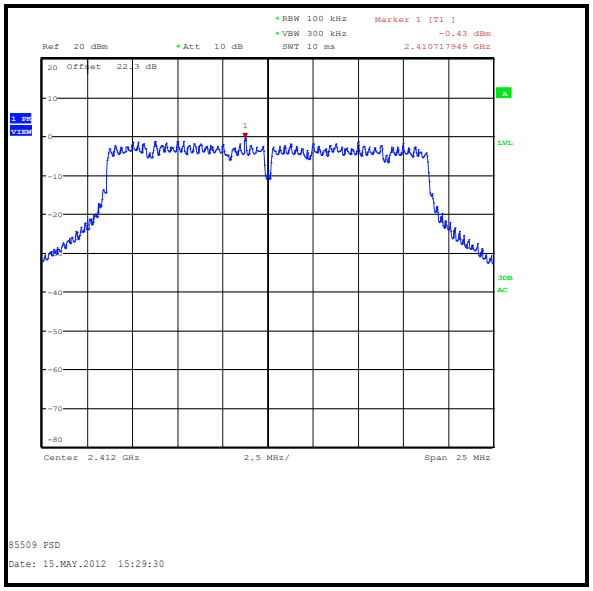
Middle Channel



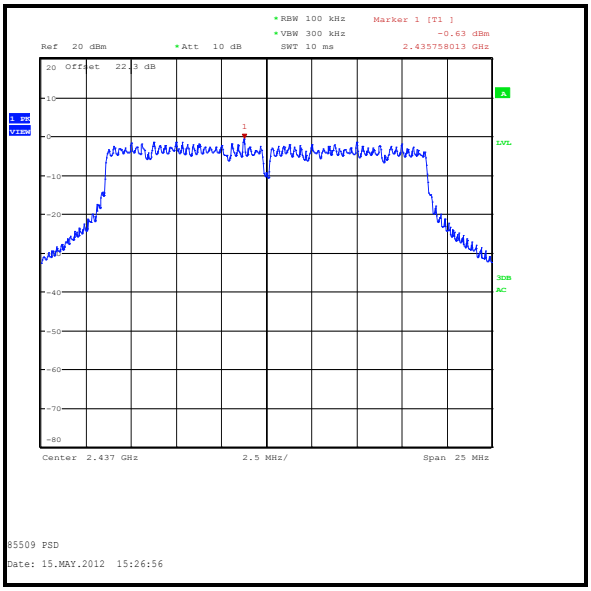
Top Channel

Transmitter Power Spectral Density (continued)

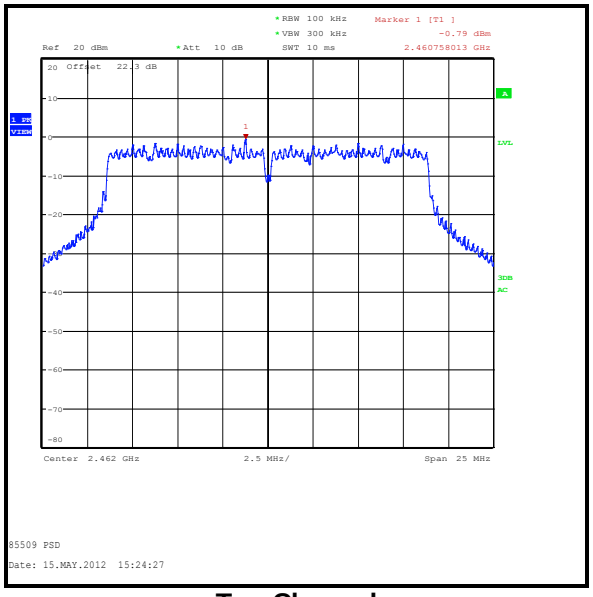
Results: 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 1



Bottom Channel



Middle Channel



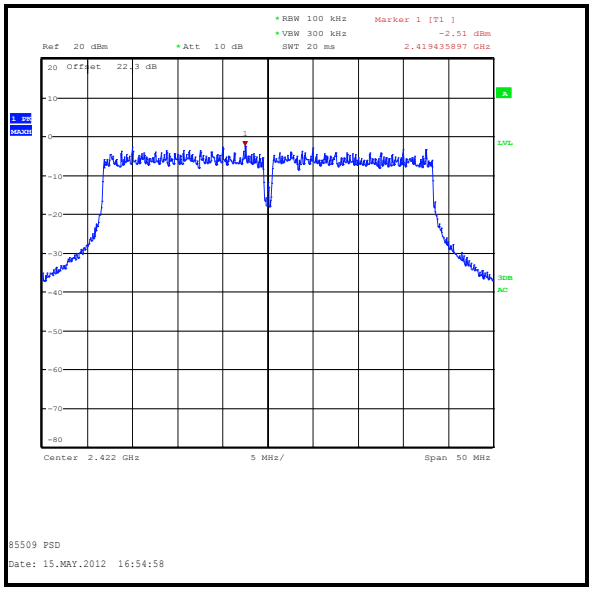
Top Channel

Transmitter Power Spectral Density (continued)

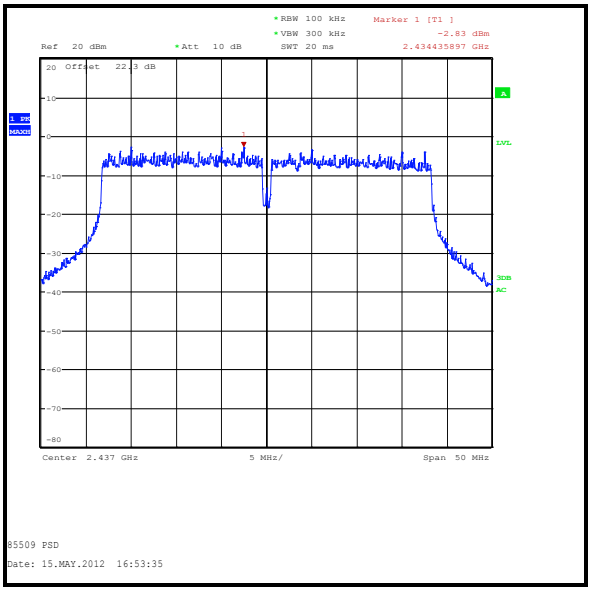
Results: 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15

Channel	PSD at Port 0 (dBm / 100 kHz)	PSD at Port 1 (dBm / 100 kHz)	Combined PSD (dBm / 100 kHz)	Combined PSD (dBm / 3 kHz)	PSD Limit (dBm / 3 kHz)	Margin (dB)	Result
Bottom	-2.5	-2.6	0.5	-14.7	8.0	22.7	Complied
Middle	-2.8	-2.8	0.2	-15.0	8.0	23.0	Complied
Top	-2.6	-2.9	0.3	-14.9	8.0	22.9	Complied

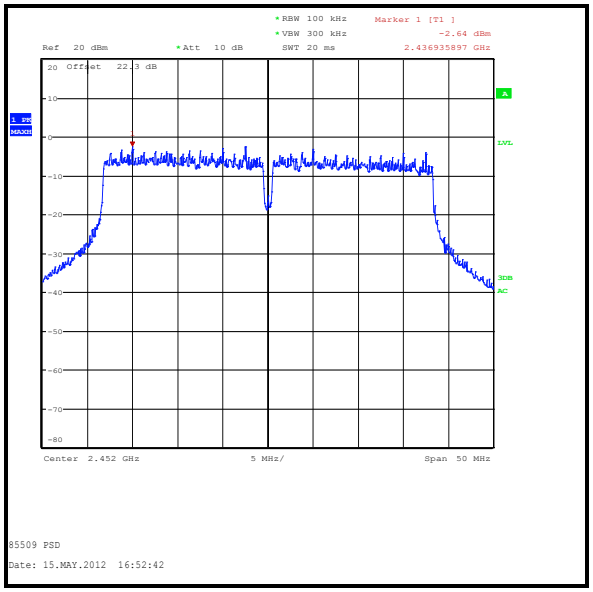
Results: 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 0



Bottom Channel



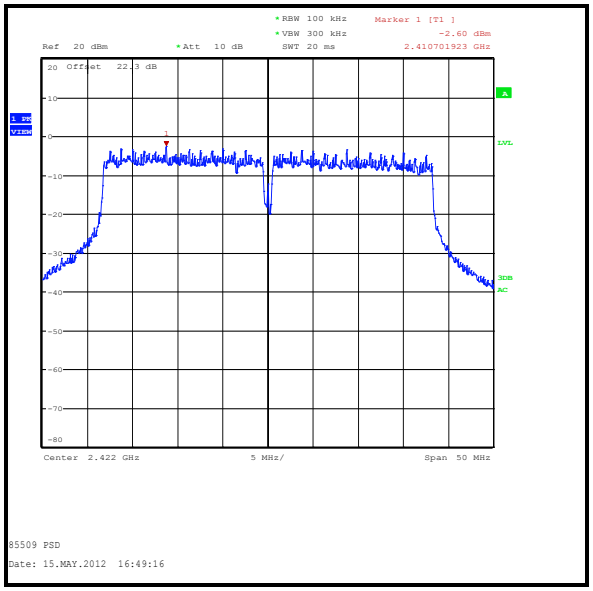
Middle Channel



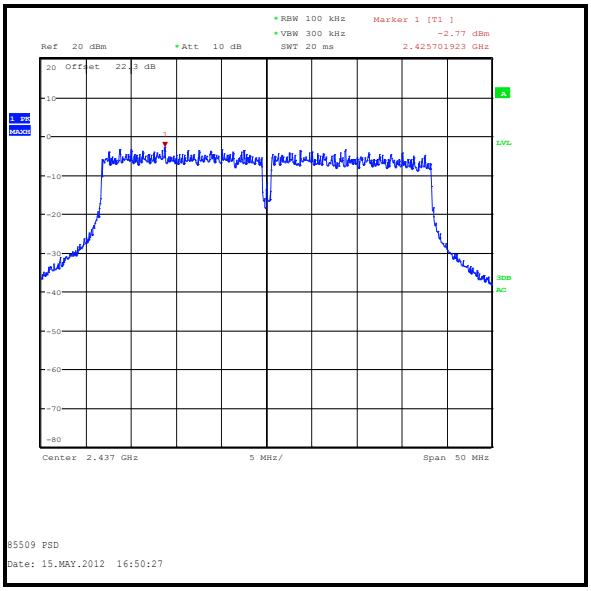
Top Channel

Transmitter Power Spectral Density (continued)

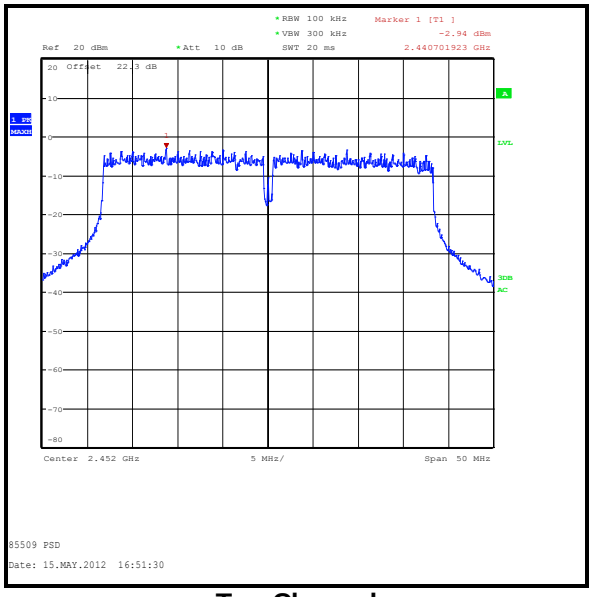
Results: 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS 15 / Port 1



Bottom Channel



Middle Channel



Top Channel

5.2.3. Transmitter Maximum Peak Output Power

Test Summary:

Test Engineer:	Sarah Williams	**Test Dates:**	16 May 2012 & 17 May 2012
Test Sample Serial No:	261293		

FCC Reference:	Part 15.247(b)(3)
Industry Canada Reference:	RSS-Gen 4.8, RSS-210 A8.4(4)
Test Method Used:	As detailed in FCC KDB 558074 Section 5.2.1.2

Environmental Conditions:

Temperature (°C):	21 to 23
Relative Humidity (%):	34 to 39

Note(s):

1. Conducted power tests in all bands were performed using a spectrum analyser in accordance with FCC KDB 558074 Section 5.2.1.2 Measurement Procedure PK2.
2. Initial measurements were performed on one channel on all eight ports to find the radio module with the highest power. Radio module 1 was found to have the highest power. The ports are numbered Port 0 and Port 1. Power from both ports was measured and combined using the measure-and-sum method stated in FCC KDB 662911 D01. The combined cable and attenuator loss was measured prior to performing the measurements and the loss compensation incorporated into the measurement results.
3. Preliminary tests were made on one frequency for all supported data rates and modulation types to determine worst-case operation. Data rates of 11 Mbps for 802.11b, 54 Mbps for 802.11g, MCS15 for both 802.11n 20 MHz and 40 MHz channel bandwidths had the highest levels. The module was previously compliance tested with 1 Mbps for 802.11b, 6 Mbps for 802.11g and MCS0 for 20 MHz and 40 MHz channel bandwidths. Results for both modulation schemes for 802.11b, 802.11g and 802.11n have been recorded in this section.
4. The EUT has various antennas of several different types with differing gains that can be used. The Customer supplied a suitably terminated RF cable, 2.1 metres in length and with a measured loss of 1.4 dB. The cable loss was added to the declared antenna gain. The net gain was added to the combined and conducted power from both ports and compared to the EIRP limits.
5. Conducted measurements were performed for the highest gain antenna of each type declared by the Customer. The lowest gain antenna had the highest conducted power and the highest gain antenna had the lowest conducted power. Power settings on the EUT were adjusted in order for the lowest gain antenna and highest gain antenna to meet conducted power, EIRP and spurious emissions requirements.

   Various antennas have gains of less than 6 dBi. Tests were performed and results calculated based on the 5 dBi gain sectorised antenna. The conducted power limit is therefore 30 dBm for both FCC and Industry Canada with an EIRP limit of 4 Watts (36 dBm). For both FCC and Industry Canada the EUT was configured with a power setting of 9.0. The RF cable loss of 1.4 dB was taken into account during calculations.

   One antenna is omnidirectional and has a declared gain of 15 dBi. The FCC conducted output power limit of 30 dBm was reduced to 21 dBm as the 6 dBi gain allowed was exceeded by 9 dB. This was then reduced 1 dB for every 1 dB (9 dB) according to Part 15.247(b)(4). The FCC de-facto EIRP limit is 36 dBm. The Industry Canada conducted output power limit is 30 dBm with an EIRP limit of 4 Watts (RSS-210 Section A8.4(4)). For both FCC and Industry Canada the EUT is configured with a power setting of 2.0. The RF cable loss of 1.4 dB was taken into account during calculations.

Transmitter Maximum Peak Output Power (continued)

Notes:

One antenna is for sectorised use and has a declared gain of 16.5 dBi. The FCC conducted output power limit of 30 dBm was reduced to 26 dBm as the 6 dBi directional antenna gain is exceeded by 10.5 dB. This was then reduced 1 dB for every 3 dB (a total of 4 dB) according to Part 15.247(c)(2)(ii). The Industry Canada conducted output power limit is 30 dBm with an EIRP limit of 4 Watts (RSS-210 Section A8.4(4)). For both FCC and Industry Canada tests, the EUT was configured with a power setting of 1.5. The RF cable loss of 1.4 dB was taken into account during calculations.

One antenna is for point-to-point operation and has a declared gain of 19 dBi. The FCC conducted output power limit of 30 dBm was reduced to 25 dBm as the 6 dBi directional antenna gain is exceeded by 13 dB. The limit was reduced 1 dB for every 3 dB (a total of 5 dB) according to Part 15.247(c)(1). The Industry Canada conducted output power limit is 30 dBm with an EIRP limit allowed to be greater than 4 Watts (RSS-210 Section A8.4(5)). For both FCC and Industry Canada tests, the EUT was configured with a power setting of 0.5. The RF cable loss of 1.4 dB was taken into account during calculations.

Transmitter Maximum Peak Output Power (continued)

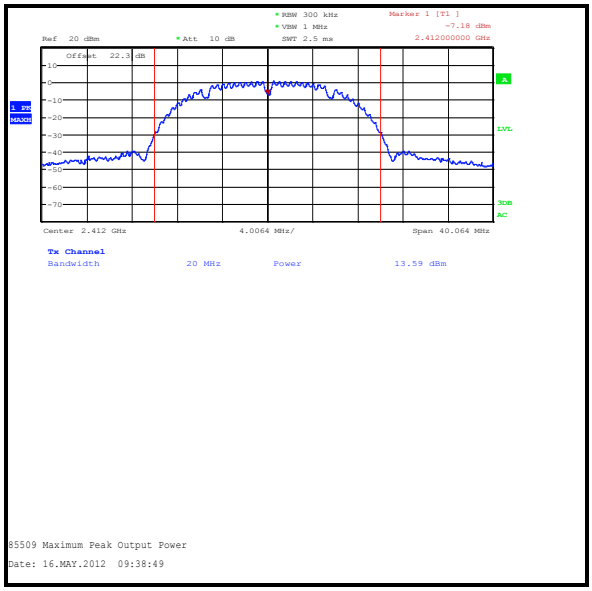
FCC and Industry Canada Results: 802.11b / 20 MHz / 1 Mbps / CCK / 5 dBi sectorised antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	13.6	13.8	16.7	30.0	13.3	Complied
Middle	13.5	13.4	16.5	30.0	13.5	Complied
Top	13.1	13.2	16.2	30.0	13.8	Complied

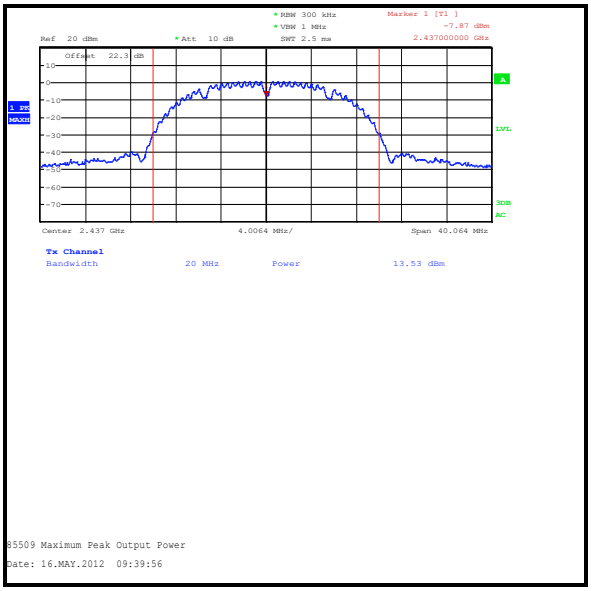
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	16.7	3.6	20.3	36.0	15.7	Complied
Middle	16.5	3.6	20.1	36.0	15.9	Complied
Top	16.2	3.6	19.8	36.0	16.2	Complied

Transmitter Maximum Peak Output Power (continued)

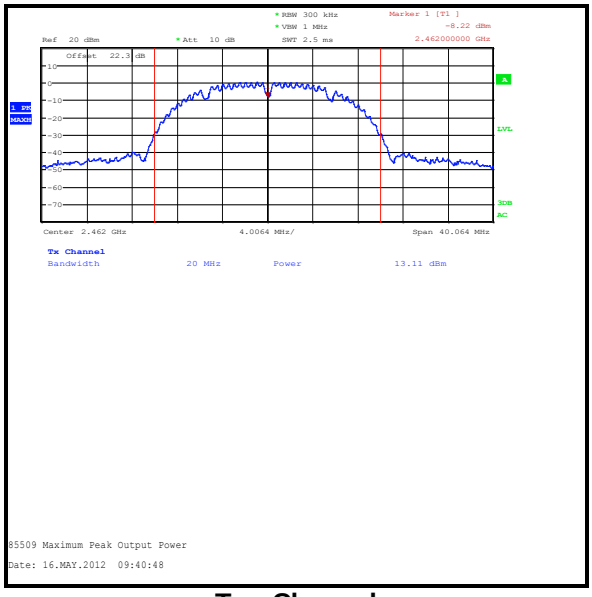
Results: 802.11b / 20 MHz / 1 Mbps / CCK / Port 0 / 5 dBi sectorised antenna



Bottom Channel



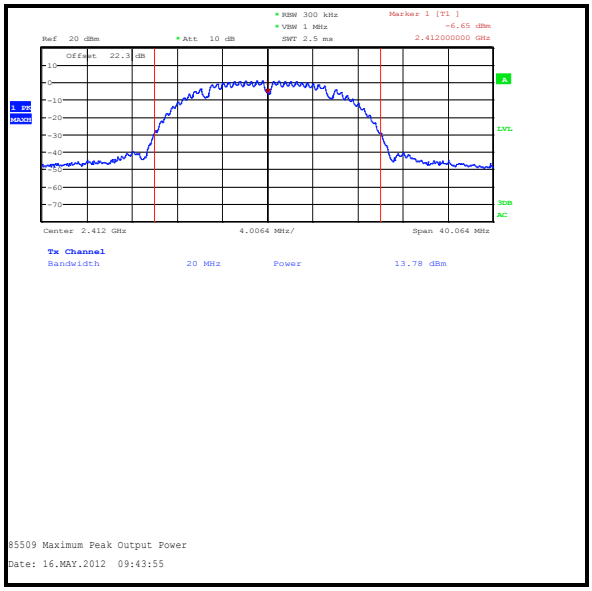
Middle Channel



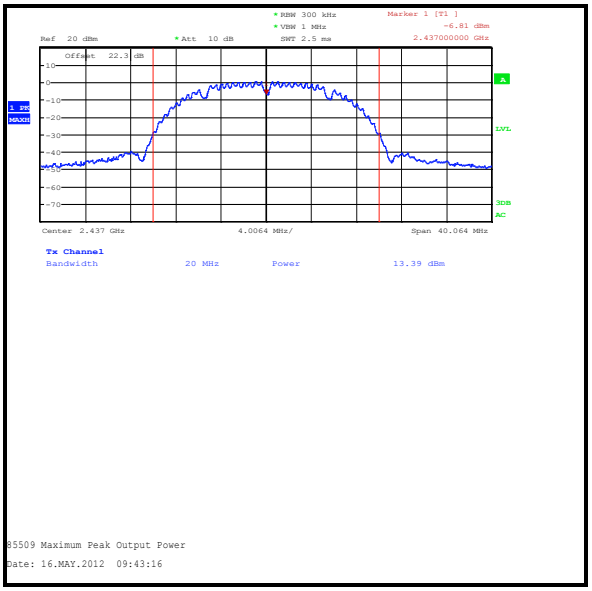
Top Channel

Transmitter Maximum Peak Output Power (continued)

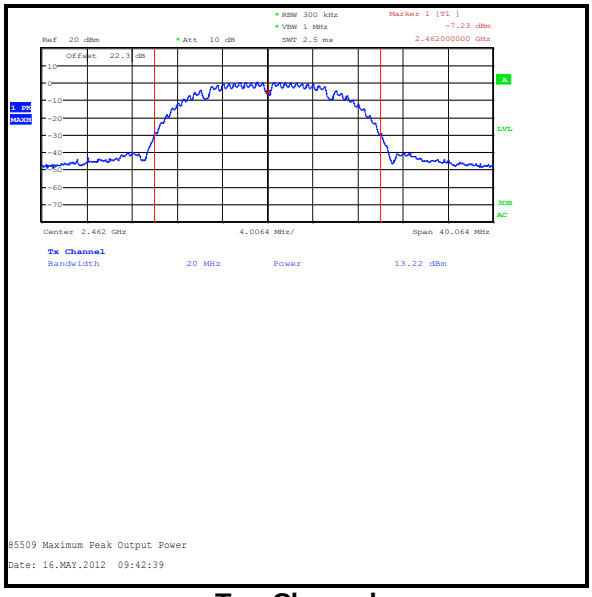
Results: 802.11b / 20 MHz / 1 Mbps / CCK / Port 1 / 5 dBi sectorised antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11b / 20 MHz / 1 Mbps / CCK / 15 dBi omnidirectional antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	4.8	-3.1	5.5	21.0	15.5	Complied
Middle	-4.7	-4.2	-1.4	21.0	22.4	Complied
Top	1.2	-4.8	2.2	21.0	18.8	Complied

Industry Canada Results: 802.11b / 20 MHz / 1 Mbps / CCK / 15 dBi omnidirectional antenna

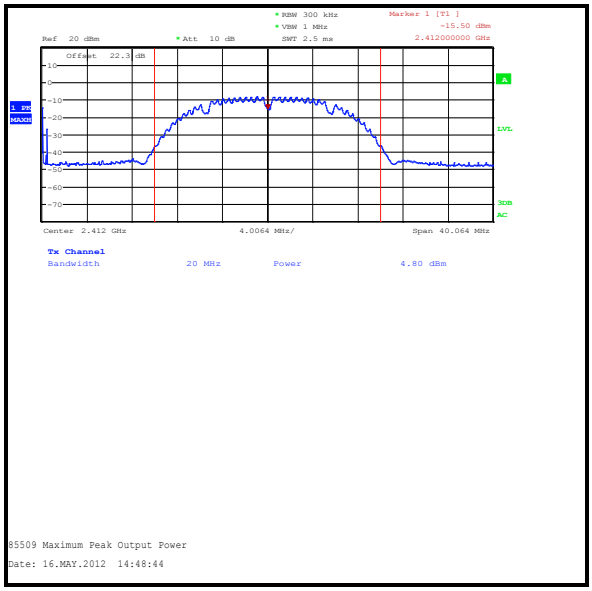
Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	4.8	-3.1	5.5	30.0	24.5	Complied
Middle	-4.7	-4.2	-1.4	30.0	31.4	Complied
Top	1.2	-4.8	2.2	30.0	27.8	Complied

FCC and Industry Canada Results: 802.11b / 20 MHz / 1 Mbps / CCK / 15 dBi omnidirectional antenna

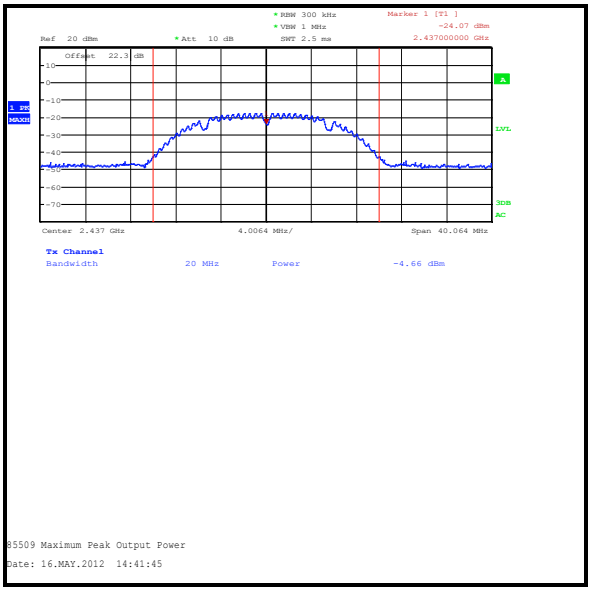
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	5.5	13.6	19.1	36.0	16.9	Complied
Middle	-1.4	13.6	12.2	36.0	23.8	Complied
Top	2.2	13.6	15.8	36.0	20.2	Complied

Transmitter Maximum Peak Output Power (continued)

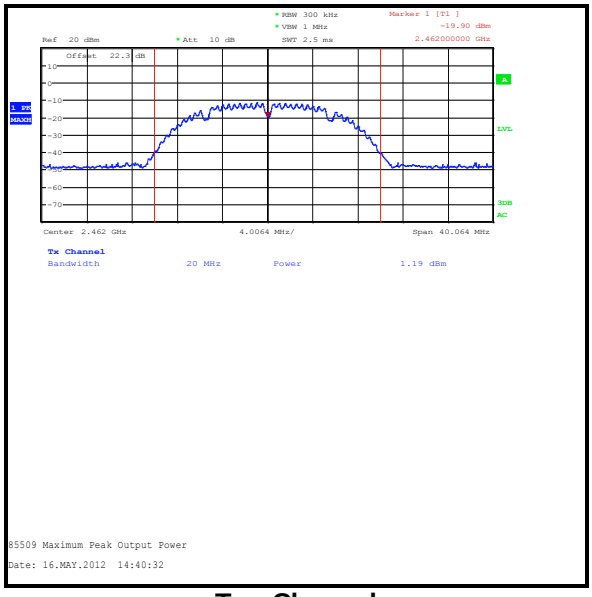
Results: 802.11b / 20 MHz / 1 Mbps / CCK / Port 0 / 15 dBi omnidirectional antenna



Bottom Channel



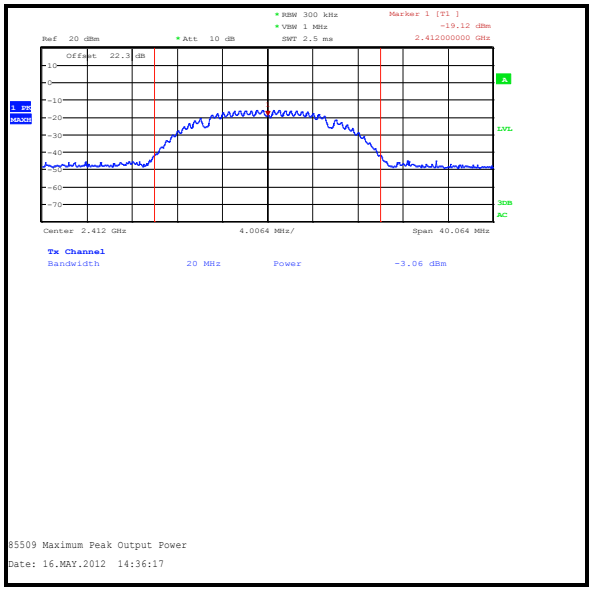
Middle Channel



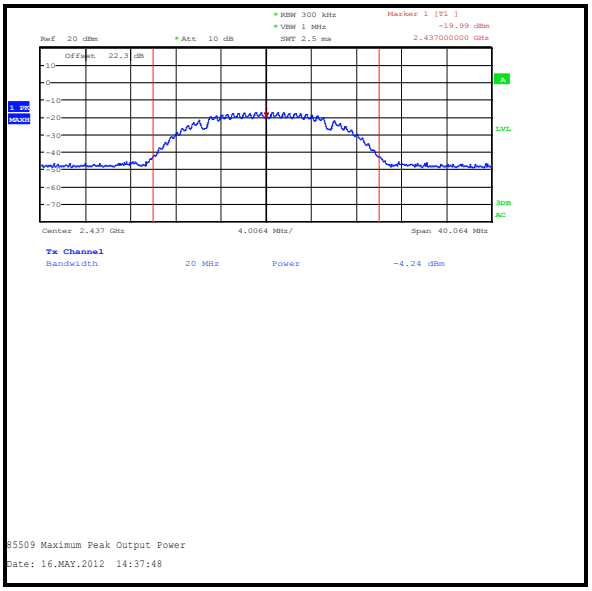
Top Channel

Transmitter Maximum Peak Output Power (continued)

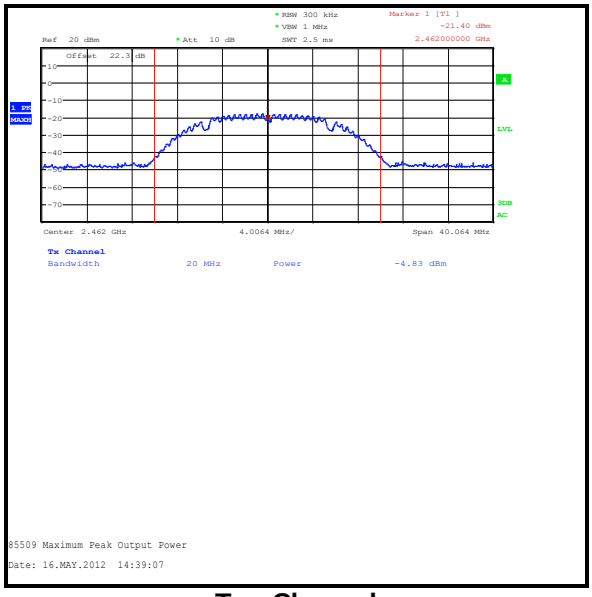
Results: 802.11b / 20 MHz / 1 Mbps / CCK / Port 1 / 15 dBi omnidirectional antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11b / 20 MHz / 1 Mbps / CCK / 16.5 dBi sectorised antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	4.0	-3.1	4.8	26.0	21.2	Complied
Middle	-4.7	-4.3	-1.5	26.0	27.5	Complied
Top	-4.7	-4.9	-1.8	26.0	27.8	Complied

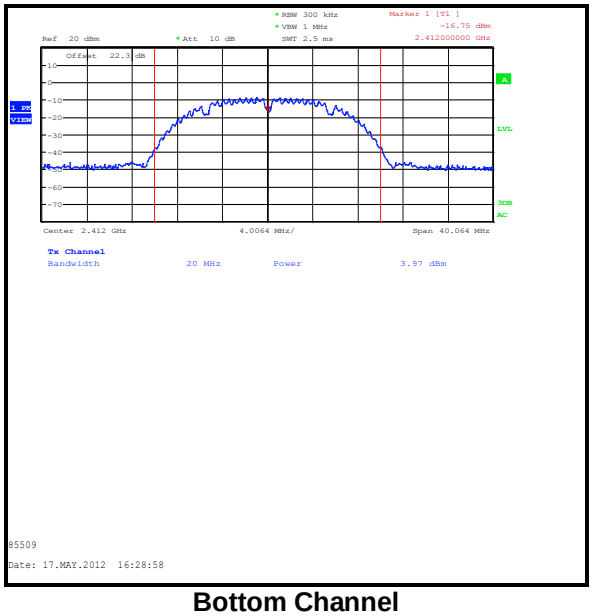
Industry Canada Results: 802.11b / 20 MHz / 1 Mbps / CCK/ 16.5 dBi sectorised antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	4.0	-3.1	4.8	30.0	25.2	Complied
Middle	-4.7	-4.3	-1.5	30.0	31.5	Complied
Top	-4.7	-4.9	-1.8	30.0	31.8	Complied

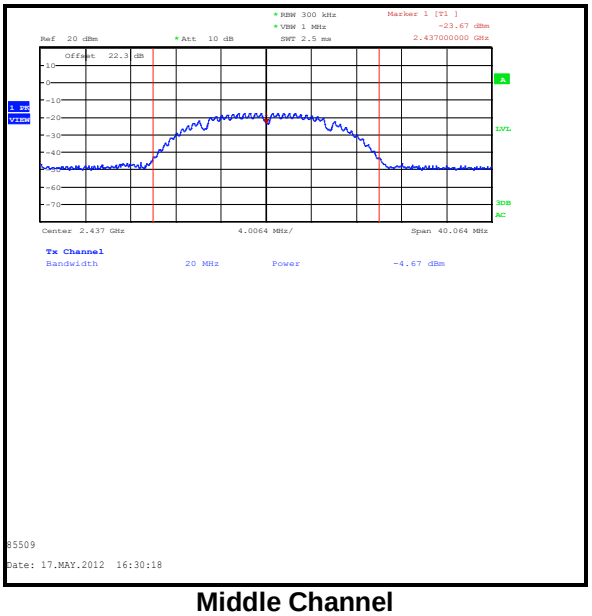
FCC and Industry Canada Results: 802.11b / 20 MHz / 1 Mbps / CCK/ 16.5 dBi sectorised antenna

Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	4.8	15.1	19.9	36.0	16.1	Complied
Middle	-1.5	15.1	13.6	36.0	22.4	Complied
Top	-1.8	15.1	13.3	36.0	22.7	Complied

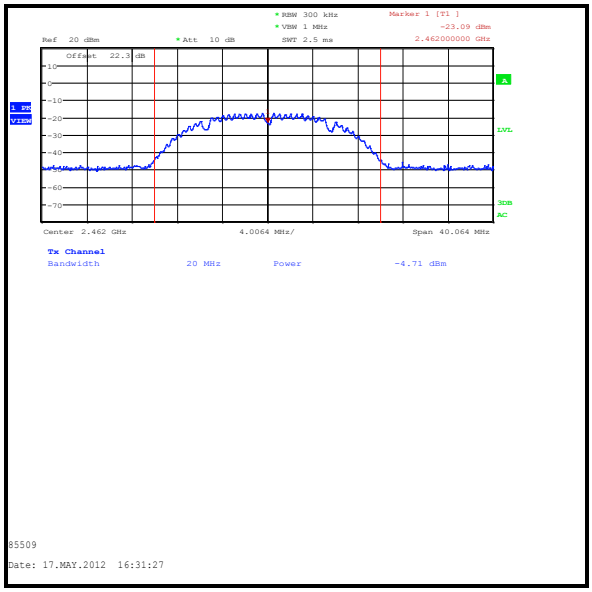
Results: 802.11b / 20 MHz / 1 Mbps / CCK / Port 0 / 16.5 dBi sectorised antenna



Bottom Channel



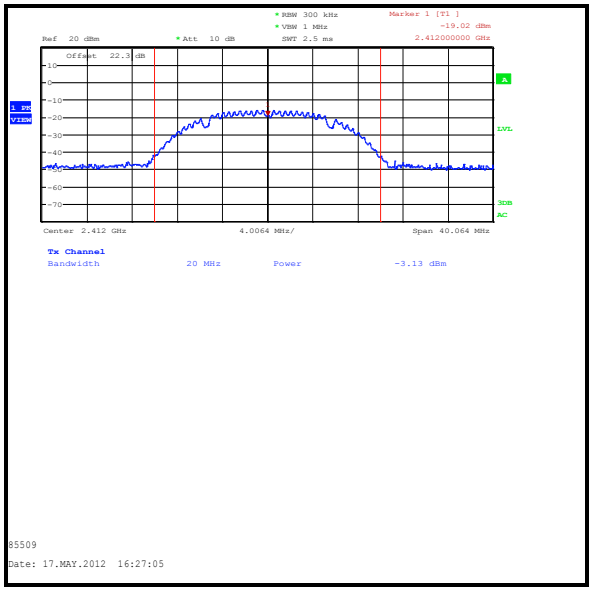
Middle Channel



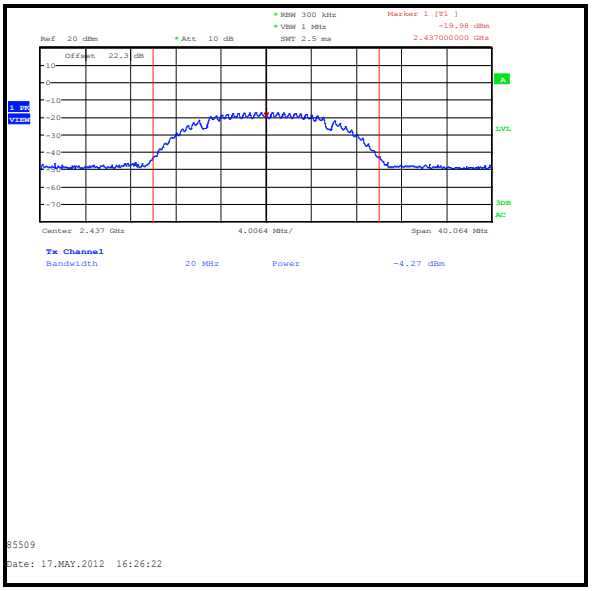
Top Channel

Transmitter Maximum Peak Output Power (continued)

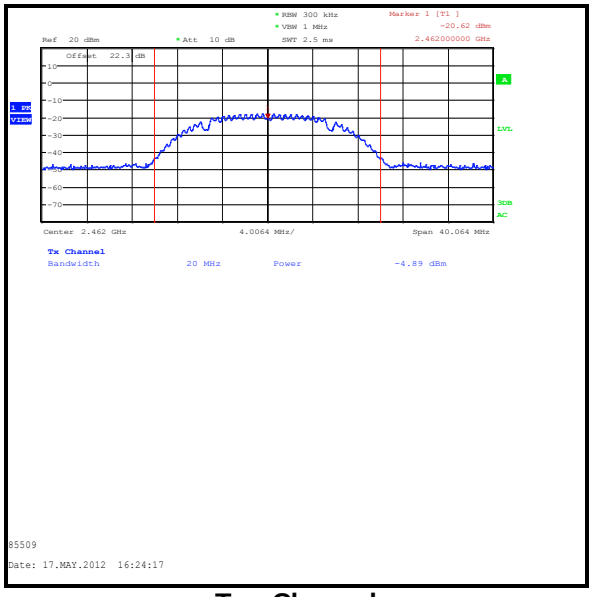
Results: 802.11b / 20 MHz / 1 Mbps / CCK / Port 1 / 16.5 dBi sectorised antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11b / 20 MHz / 1 Mbps / CCK / 19 dBi PTP antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	0.4	-3.2	2.0	25.0	23.0	Complied
Middle	-4.6	-4.3	-1.4	25.0	26.4	Complied
Top	-5.5	-4.9	-2.2	25.0	27.2	Complied

Industry Canada Results: 802.11b / 20 MHz / 1 Mbps / CCK / 19 dBi PTP antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	0.4	-3.2	2.0	30.0	28.0	Complied
Middle	-4.6	-4.3	-1.4	30.0	31.4	Complied
Top	-5.5	-4.9	-2.2	30.0	32.2	Complied

Industry Canada Results: 802.11b / 20 MHz / 1 Mbps / CCK / 19 dBi PTP antenna

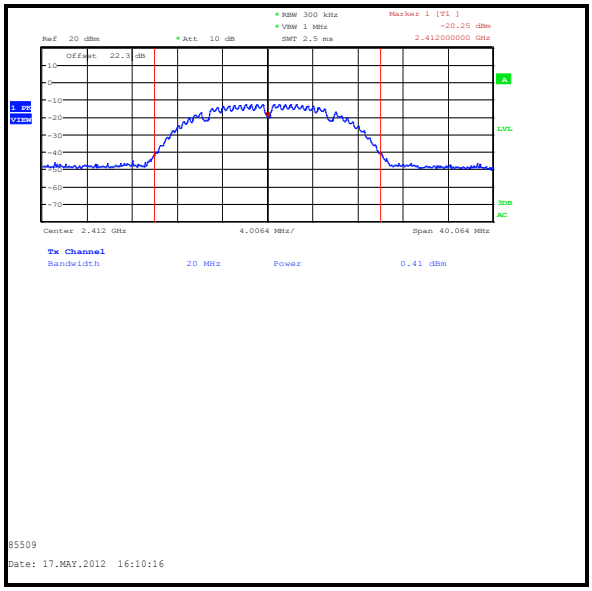
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Result
Bottom	2.0	17.6	19.6	See note below	Complied
Middle	-1.4	17.6	16.2	See note below	Complied
Top	-2.2	17.6	15.4	See note below	Complied

RSS-210 A8.4(5) Point-to-point systems in the 2400-2483.5 MHz band are permitted to have an e.i.r.p higher than 4 W provided that the higher e.i.r.p is achieved by employing higher gain directional antennas and not higher transmitter output powers.

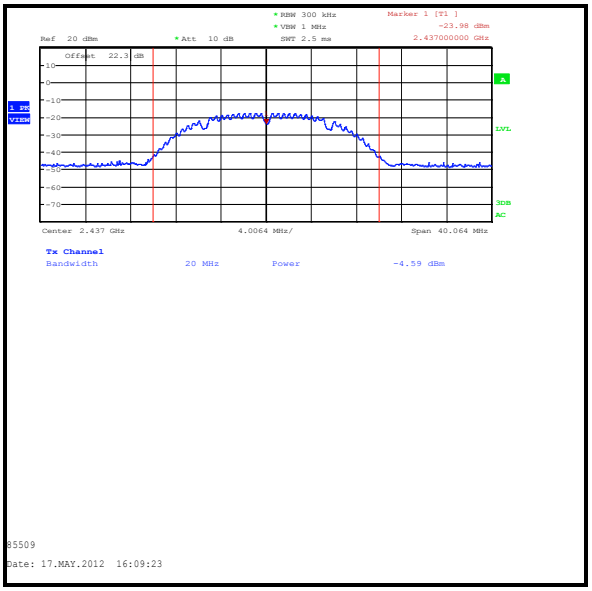
Therefore, as long as the conducted power requirements are met, there is no restriction on e.i.r.p.

Transmitter Maximum Peak Output Power (continued)

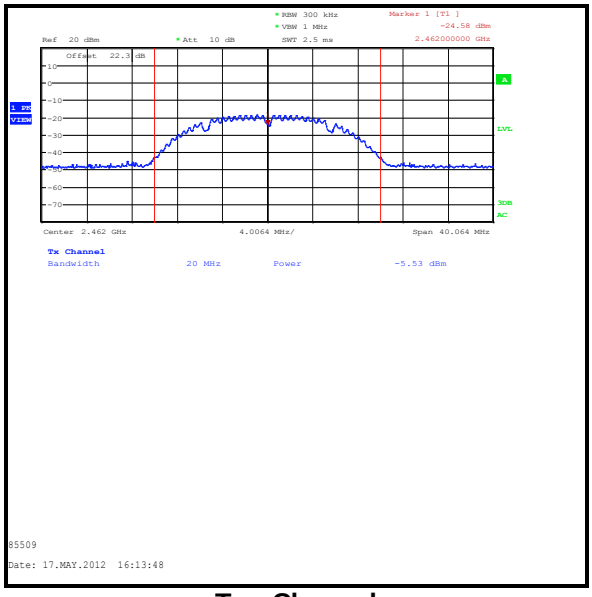
Results: 802.11b / 20 MHz / 1 Mbps / CCK / Port 0 / 19 dBi PTP antenna



Bottom Channel



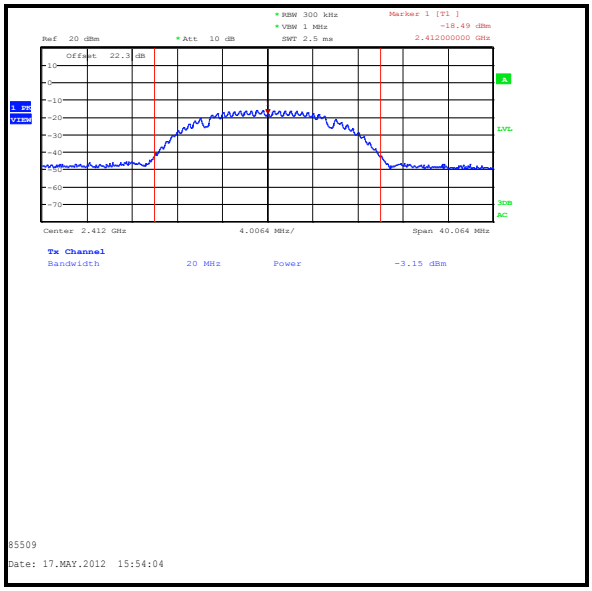
Middle Channel



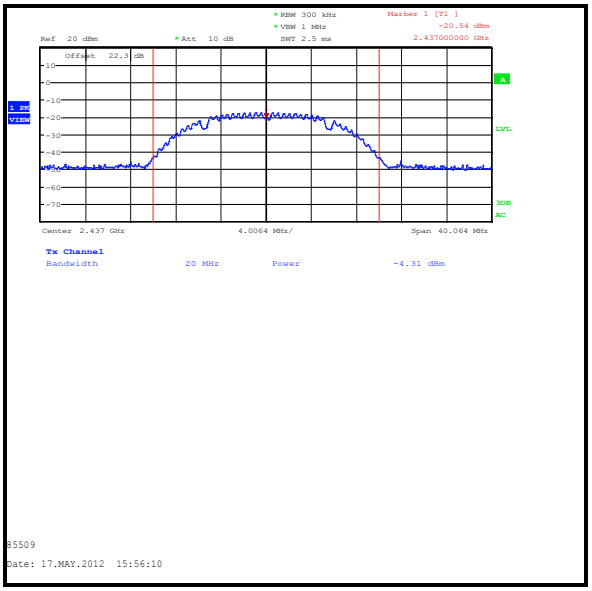
Top Channel

Transmitter Maximum Peak Output Power (continued)

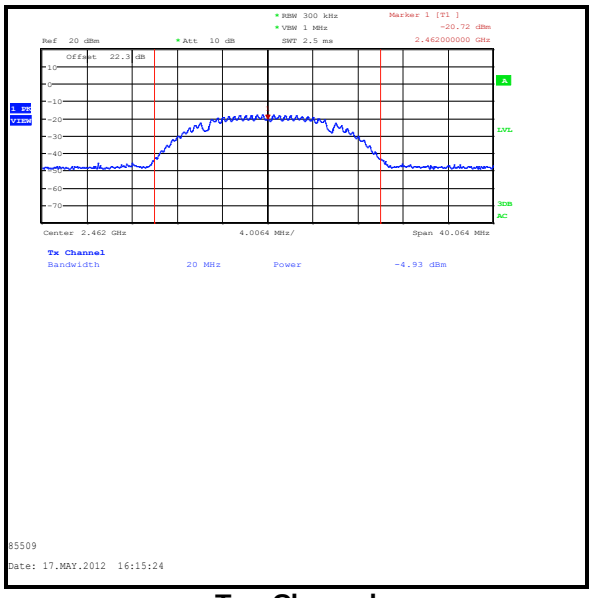
Results: 802.11b / 20 MHz / 1 Mbps / CCK / Port 1 / 19 dBi PTP antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

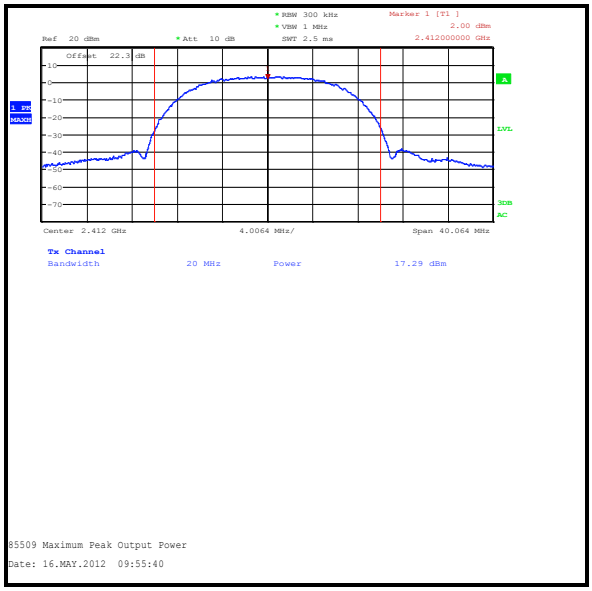
FCC and Industry Canada Results: 802.11b / 20 MHz / 11 Mbps / CCK / 5 dBi sectorised antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	17.3	17.5	20.4	30.0	9.6	Complied
Middle	16.9	17.4	20.2	30.0	9.8	Complied
Top	16.8	17.0	19.9	30.0	10.1	Complied

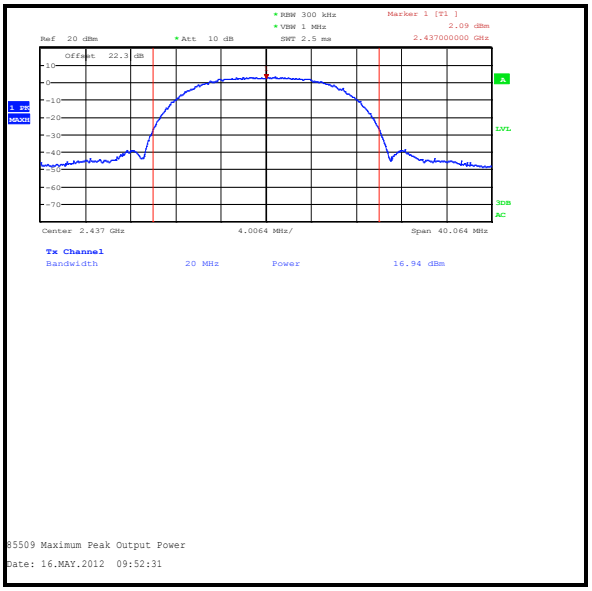
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	20.4	3.6	24.0	36.0	12.0	Complied
Middle	20.2	3.6	23.8	36.0	12.2	Complied
Top	19.9	3.6	23.5	36.0	12.5	Complied

Transmitter Maximum Peak Output Power (continued)

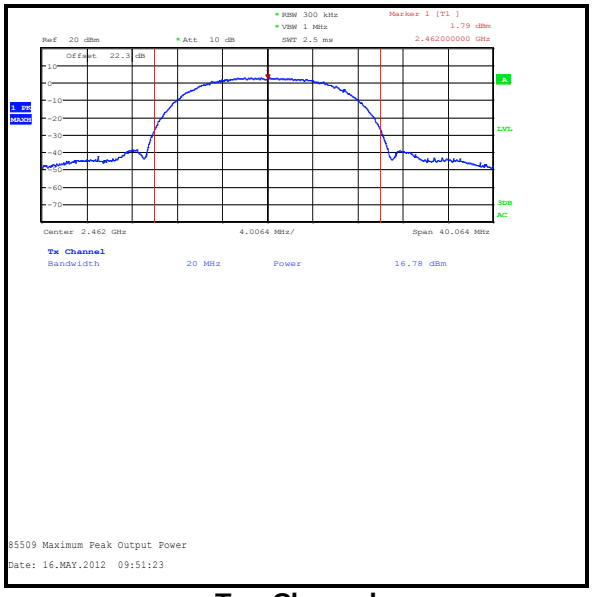
Results: 802.11b / 20 MHz / 11 Mbps / CCK / Port 0 CCK / 5 dBi sectorised antenna



Bottom Channel



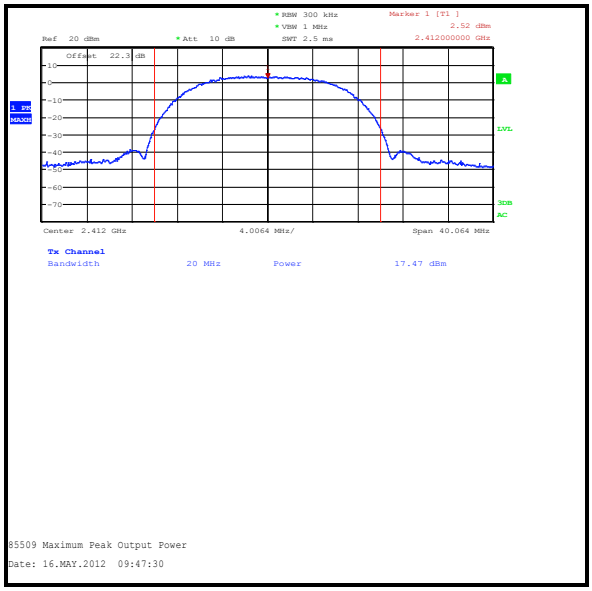
Middle Channel



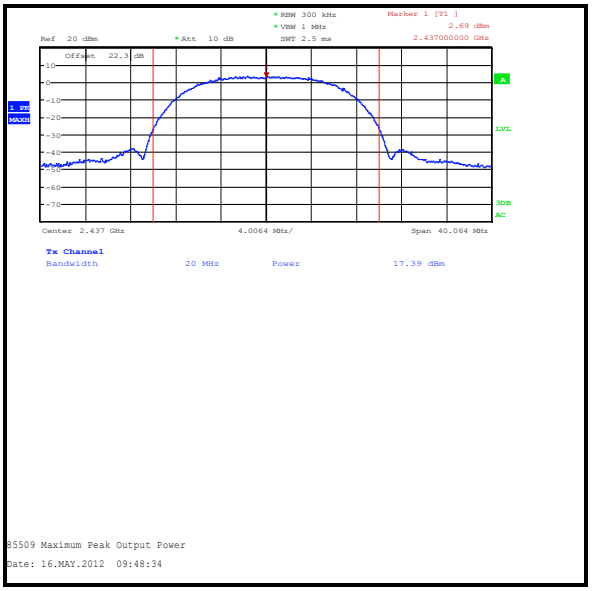
Top Channel

Transmitter Maximum Peak Output Power (continued)

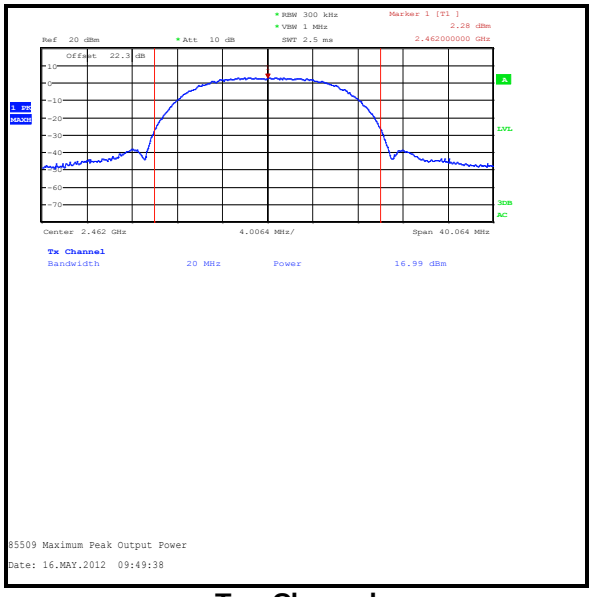
Results: 802.11b / 20 MHz / 11 Mbps / CCK / Port 1 / 5 dBi sectorised antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11b / 20 MHz / 11 Mbps / CCK / 15 dBi omnidirectional antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	8.2	0.9	8.9	21.0	12.1	Complied
Middle	-0.7	-0.3	2.5	21.0	18.5	Complied
Top	4.5	-0.8	5.6	21.0	15.4	Complied

Industry Canada Results: 802.11b / 20 MHz / 11 Mbps / CCK / 15 dBi omnidirectional antenna

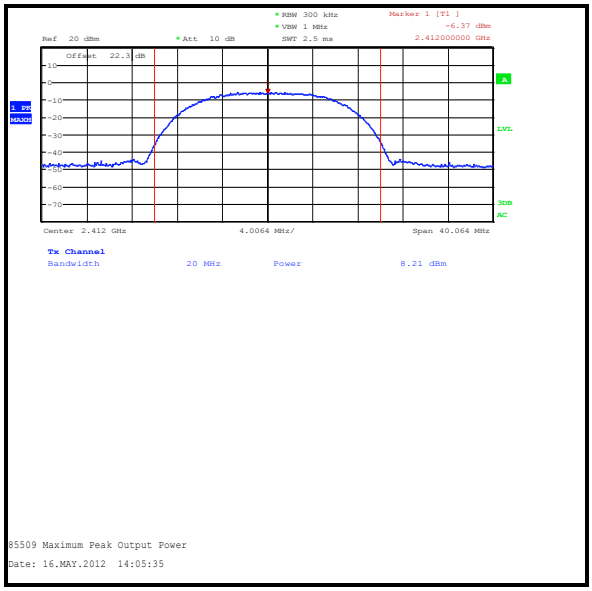
Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	8.2	0.9	8.9	30.0	21.1	Complied
Middle	-0.7	-0.3	2.5	30.0	27.5	Complied
Top	4.5	-0.8	5.6	30.0	24.4	Complied

FCC and Industry Canada Results: 802.11b / 20 MHz / 11 Mbps / CCK / 15 dBi omnidirectional antenna

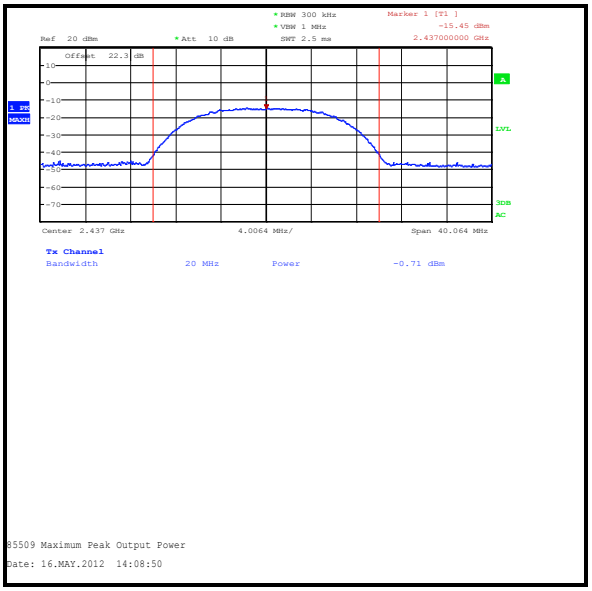
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	8.9	13.6	22.5	36.0	13.5	Complied
Middle	2.5	13.6	16.1	36.0	19.9	Complied
Top	5.6	13.6	19.2	36.0	16.8	Complied

Transmitter Maximum Peak Output Power (continued)

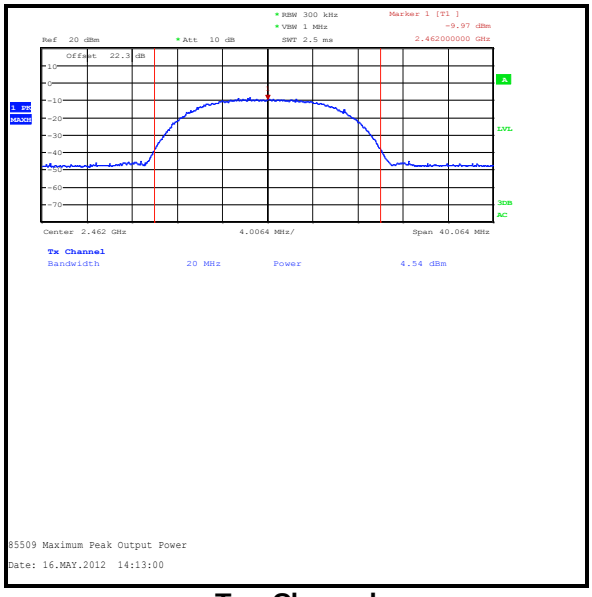
Results: 802.11b / 20 MHz / 11 Mbps / CCK / Port 0 / 15 dBi omnidirectional antenna



Bottom Channel



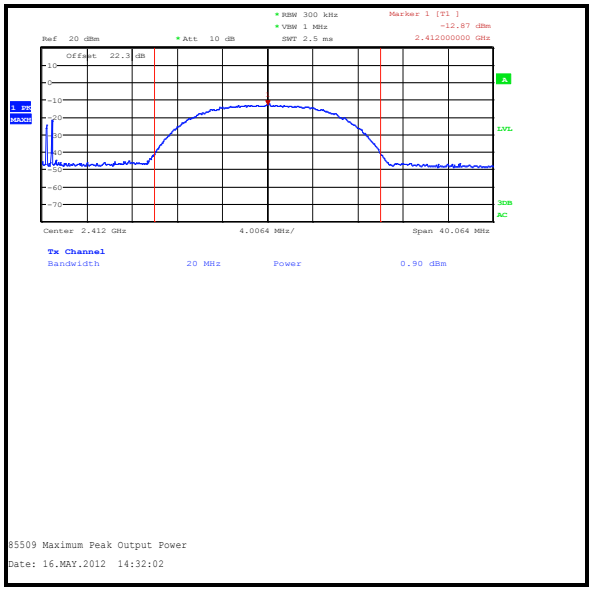
Middle Channel



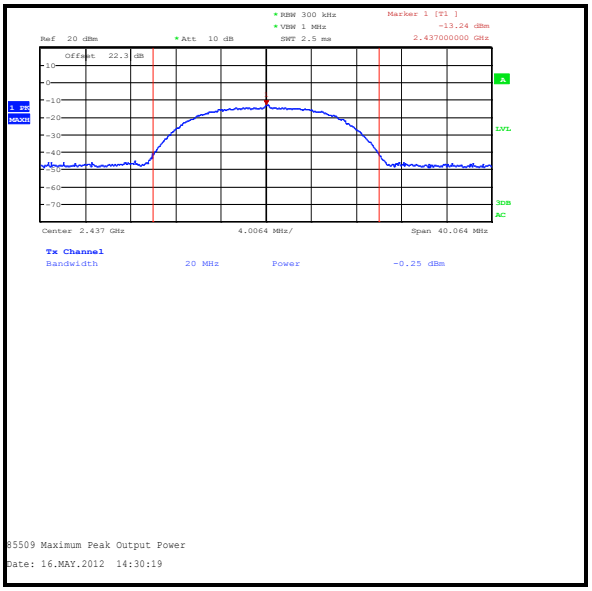
Top Channel

Transmitter Maximum Peak Output Power (continued)

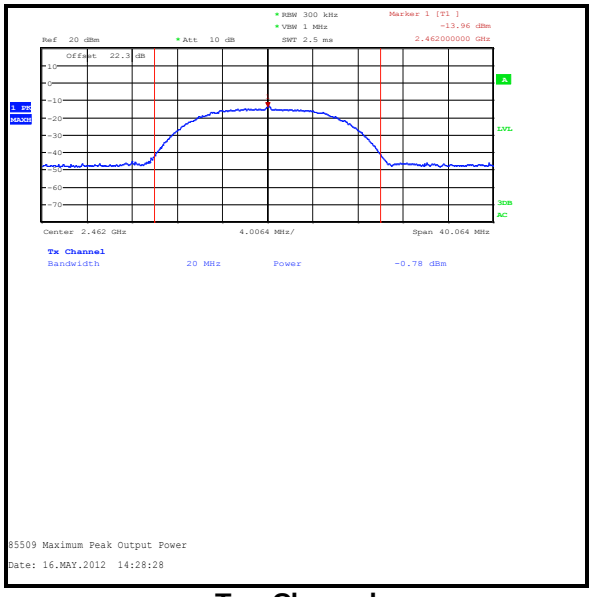
Results: 802.11b / 20 MHz / 11 Mbps / CCK / Port 1 / 15 dBi omnidirectional antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11b / 20 MHz / 11 Mbps / CCK / 16.5 dBi sectorised antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	7.0	0.6	7.9	26.0	18.1	Complied
Middle	-0.9	-0.4	2.4	26.0	23.6	Complied
Top	-1.0	-1.0	2.0	26.0	24.0	Complied

Industry Canada Results: 802.11b / 20 MHz / 11 Mbps / CCK / 16.5 dBi sectorised antenna

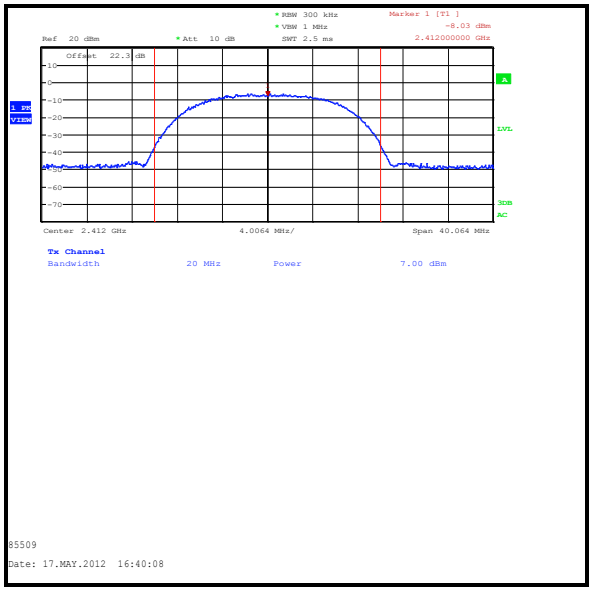
Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	7.0	0.6	7.9	30.0	22.1	Complied
Middle	-0.9	-0.4	2.4	30.0	27.6	Complied
Top	-1.0	-1.0	2.0	30.0	28.0	Complied

FCC and Industry Canada Results: 802.11b / 20 MHz / 11 Mbps / CCK / 16.5 dBi sectorised antenna

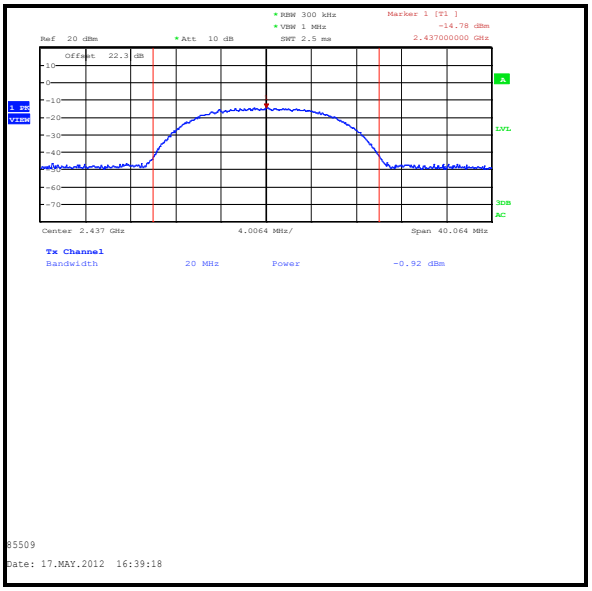
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	7.9	15.1	23.0	36.0	13.0	Complied
Middle	2.4	15.1	17.5	36.0	18.5	Complied
Top	2.0	15.1	17.1	36.0	18.9	Complied

Transmitter Maximum Peak Output Power (continued)

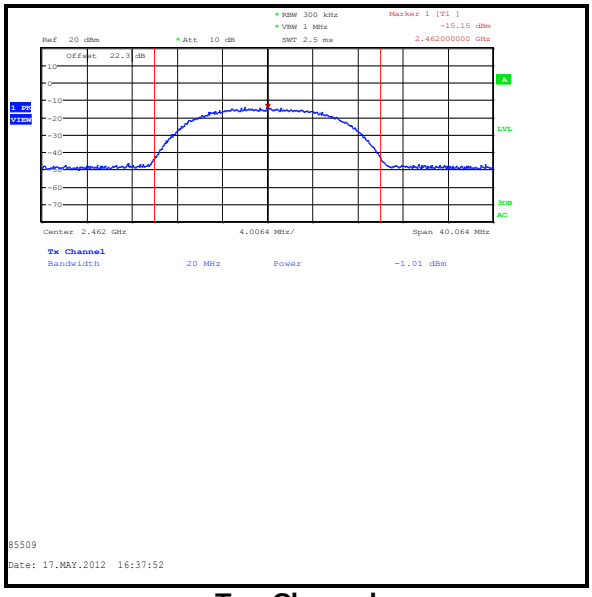
Results: 802.11b / 20 MHz / 11 Mbps / CCK / Port 0 / 16.5 dBi sectorised antenna



Bottom Channel



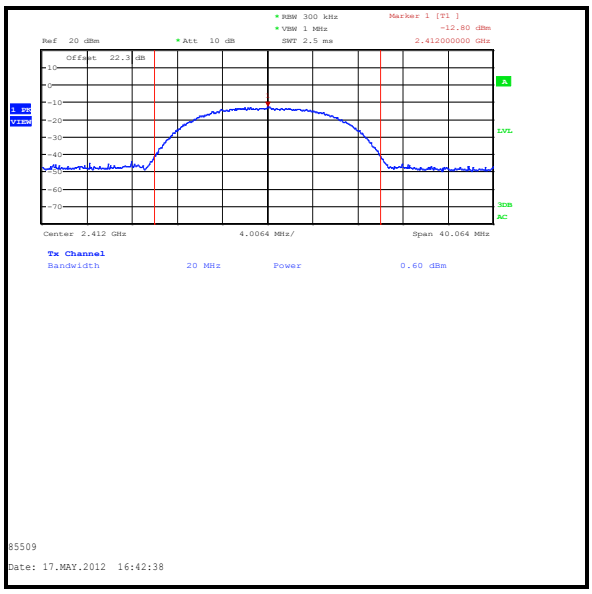
Middle Channel



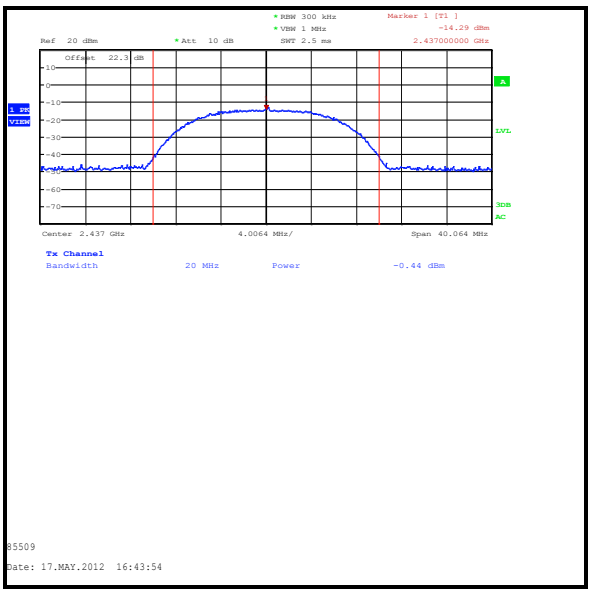
Top Channel

Transmitter Maximum Peak Output Power (continued)

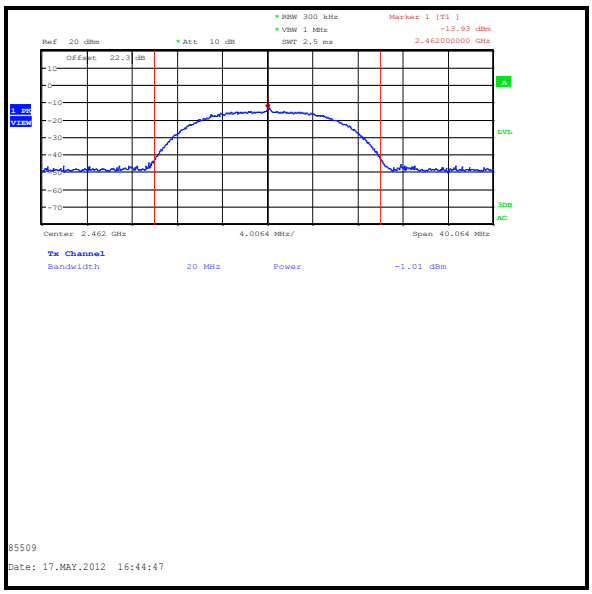
Results: 802.11b / 20 MHz / 11 Mbps / CCK / Port 1 / 16.5 dBi sectorised antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11b / 20 MHz / 11 Mbps / CCK / 19 dBi PTP antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	3.6	0.5	5.3	25.0	19.7	Complied
Middle	-0.8	-0.5	2.4	25.0	22.6	Complied
Top	-1.7	-1.1	1.6	25.0	23.4	Complied

Industry Canada Results: 802.11b / 20 MHz / 11 Mbps / CCK / 19 dBi PTP antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	3.6	0.5	5.3	30.0	24.7	Complied
Middle	-0.8	-0.5	2.4	30.0	27.6	Complied
Top	-1.7	-1.1	1.6	30.0	28.4	Complied

Industry Canada Results: 802.11b / 20 MHz / 11 Mbps / CCK / 19 dBi PTP antenna

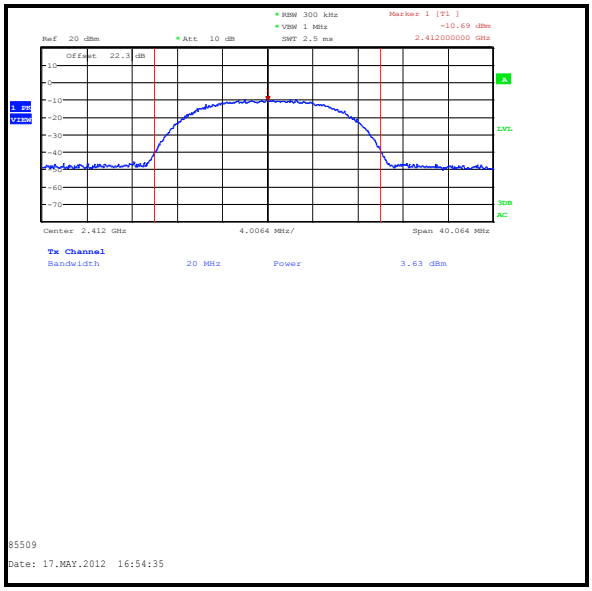
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Result
Bottom	5.3	17.6	22.9	See note below	Complied
Middle	2.4	17.6	20.0	See note below	Complied
Top	1.6	17.6	19.2	See note below	Complied

RSS-210 A8.4(5) Point-to-point systems in the 2400-2483.5 MHz band are permitted to have an e.i.r.p higher than 4 W provided that the higher e.i.r.p is achieved by employing higher gain directional antennas and not higher transmitter output powers.

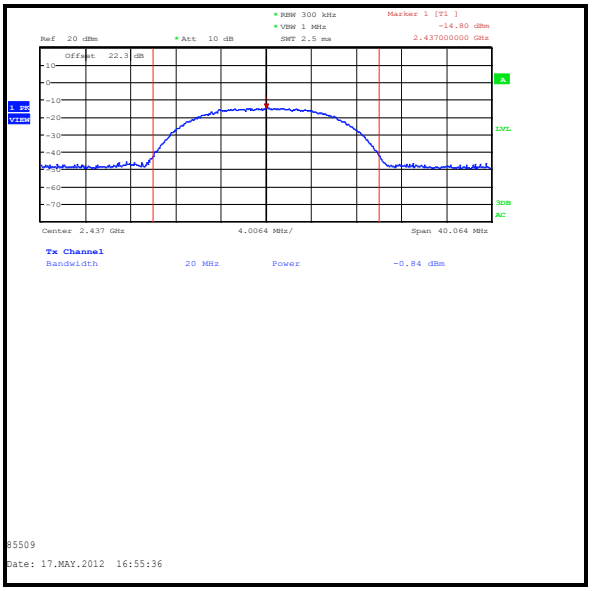
Therefore, as long as the conducted power requirements are met, there is no restriction on e.i.r.p.

Transmitter Maximum Peak Output Power (continued)

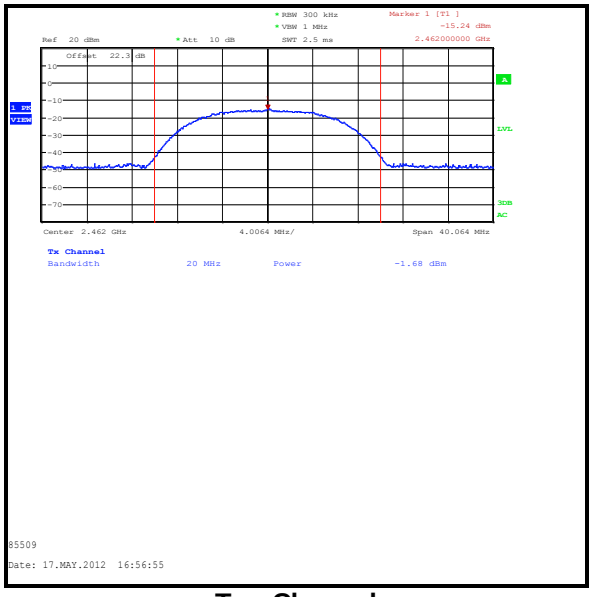
Results: 802.11b / 20 MHz / 11 Mbps / CCK / Port 0 / 19 dBi PTP antenna



Bottom Channel



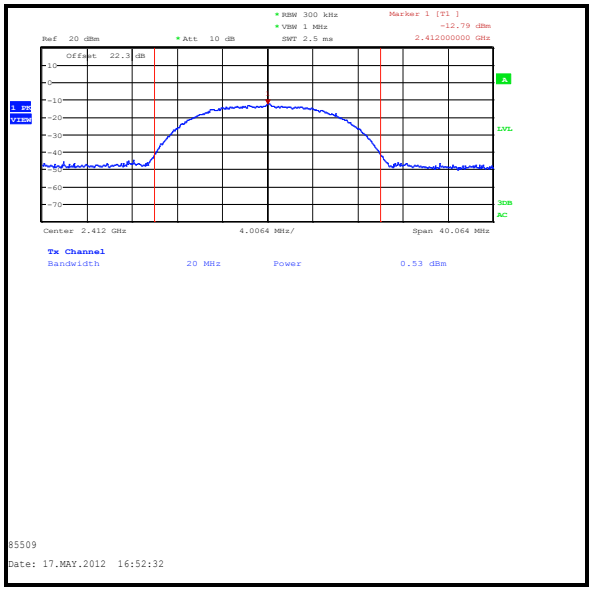
Middle Channel



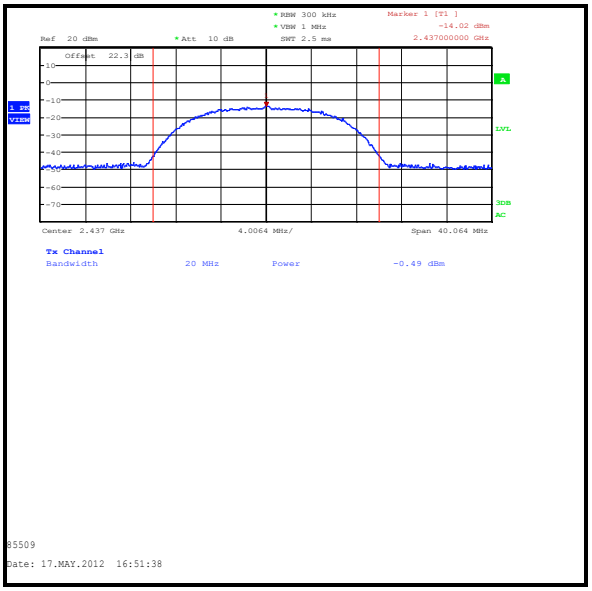
Top Channel

Transmitter Maximum Peak Output Power (continued)

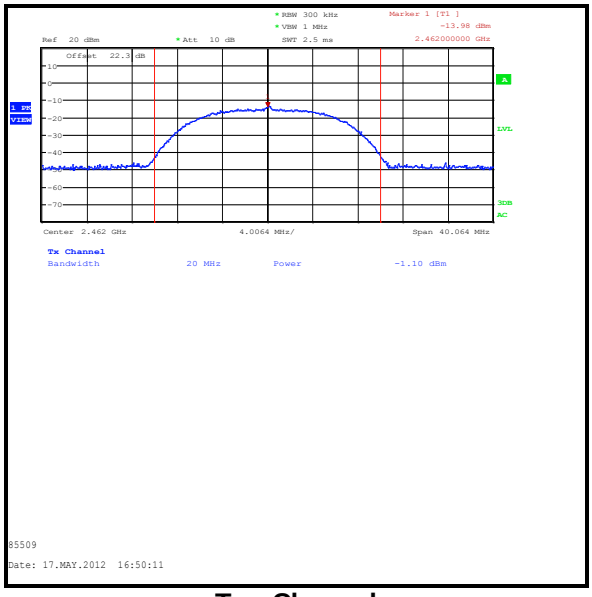
Results: 802.11b / 20 MHz / 11 Mbps / CCK / Port 1 / 19 dBi PTP antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

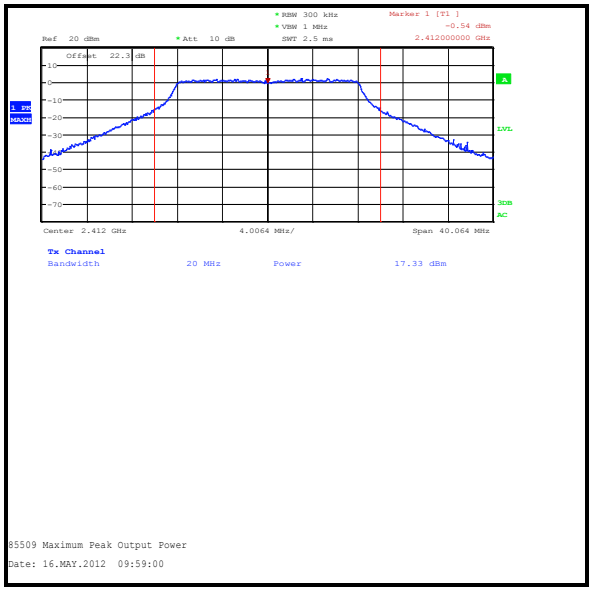
FCC and Industry Canada Results: 802.11g / 20 MHz / 6 Mbps / BPSK / 5 dBi sectorised antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	17.3	17.9	20.6	30.0	9.4	Complied
Middle	17.0	17.7	20.4	30.0	9.6	Complied
Top	16.9	17.2	20.1	30.0	9.9	Complied

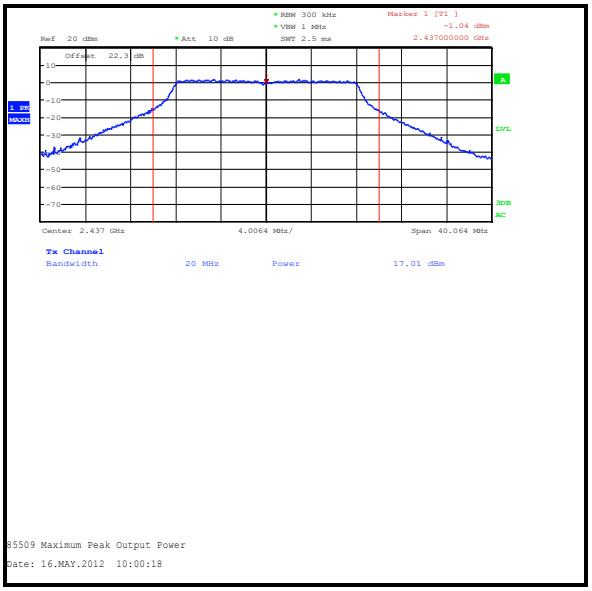
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	20.6	3.6	24.2	36.0	11.8	Complied
Middle	20.4	3.6	24.0	36.0	11.6	Complied
Top	20.1	3.6	23.7	36.0	11.3	Complied

Transmitter Maximum Peak Output Power (continued)

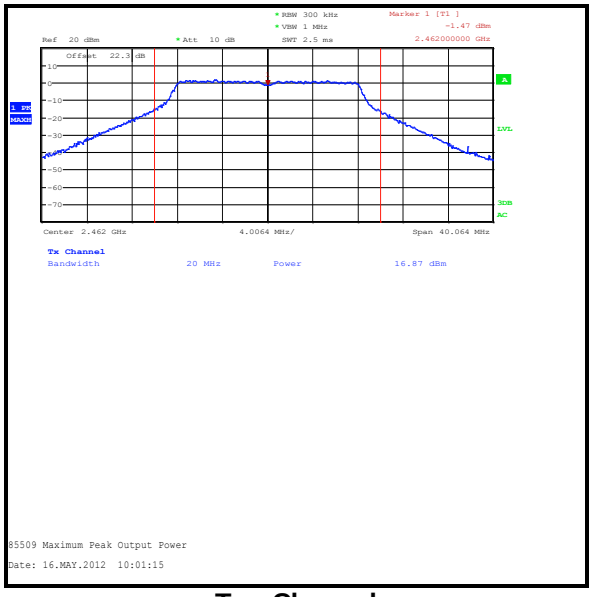
Results: 802.11g / 20 MHz / 6 Mbps / BPSK / Port 0 / 5 dBi sectorised antenna



Bottom Channel



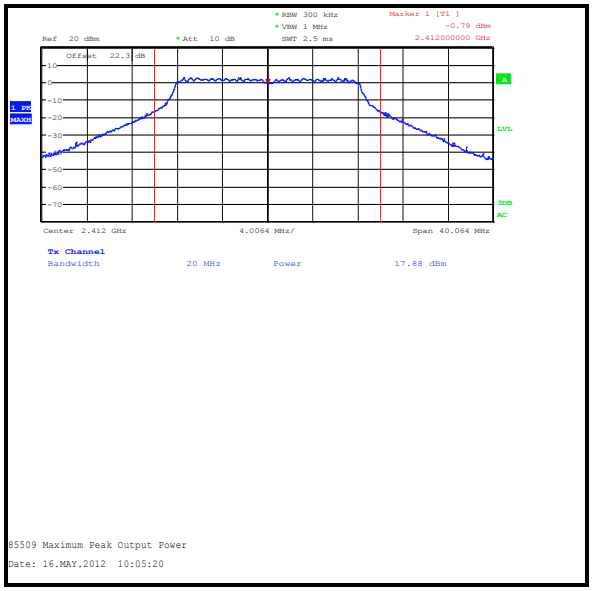
Middle Channel



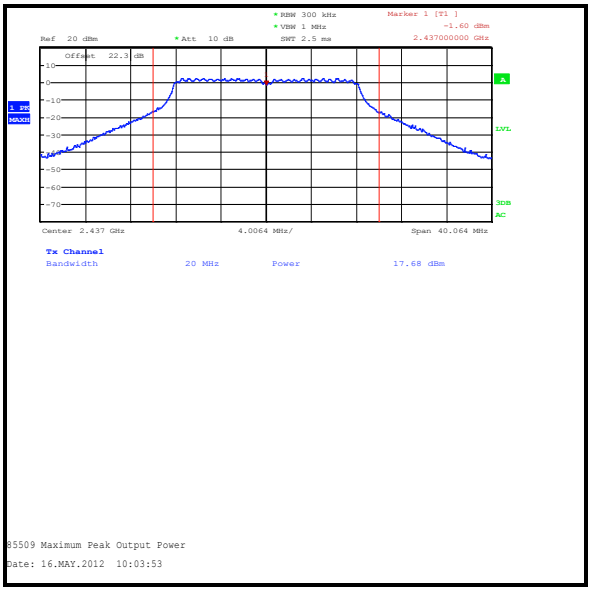
Top Channel

Transmitter Maximum Peak Output Power (continued)

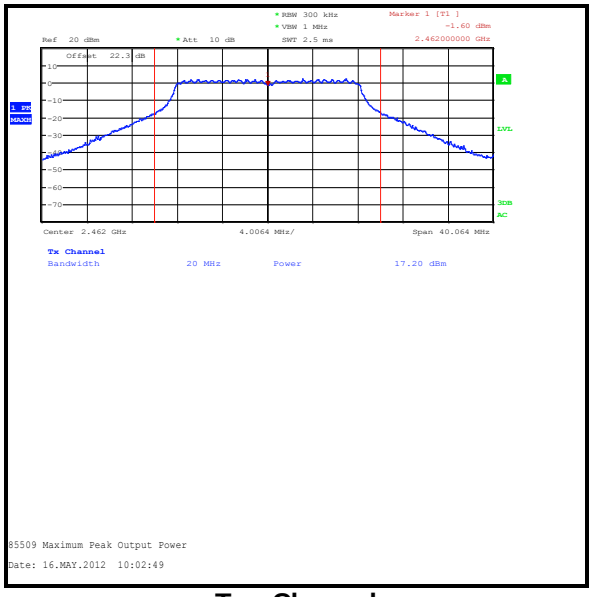
Results: 802.11g / 20 MHz / 6 Mbps / BPSK / Port 1 / 5 dBi sectorised antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11g / 20 MHz / 6 Mbps / BPSK / 15 dBi omnidirectional antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	8.5	-5.5	8.7	21.0	12.3	Complied
Middle	-8.1	-5.4	-3.5	21.0	24.5	Complied
Top	4.0	-5.2	4.5	21.0	16.5	Complied

Industry Canada Results: 802.11g / 20 MHz / 6 Mbps / BPSK / 15 dBi omnidirectional antenna

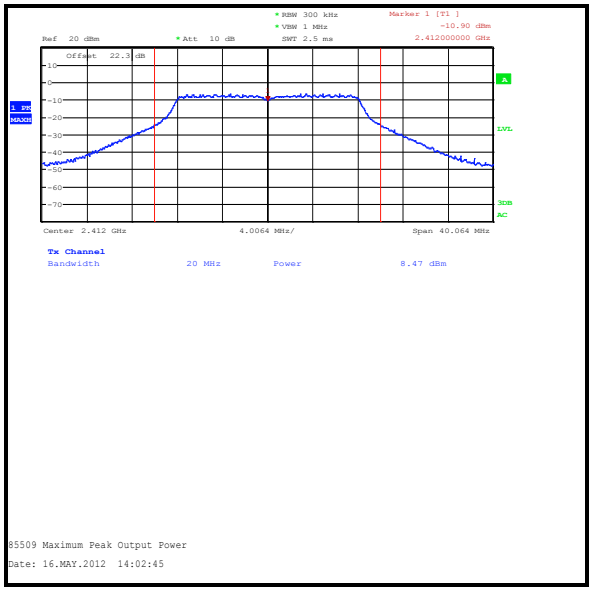
Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	8.5	-5.5	8.7	30.0	21.3	Complied
Middle	-8.1	-5.4	-3.5	30.0	33.5	Complied
Top	4.0	-5.2	4.5	30.0	25.5	Complied

FCC and Industry Canada Results: 802.11g / 20 MHz / 6 Mbps / BPSK / 15 dBi omnidirectional antenna

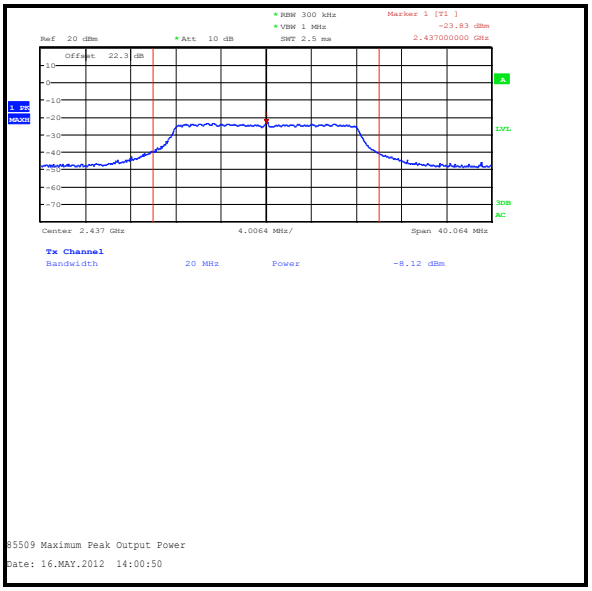
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	8.7	13.6	22.3	36.0	13.7	Complied
Middle	-3.5	13.6	10.1	36.0	25.9	Complied
Top	4.5	13.6	18.1	36.0	17.9	Complied

Transmitter Maximum Peak Output Power (continued)

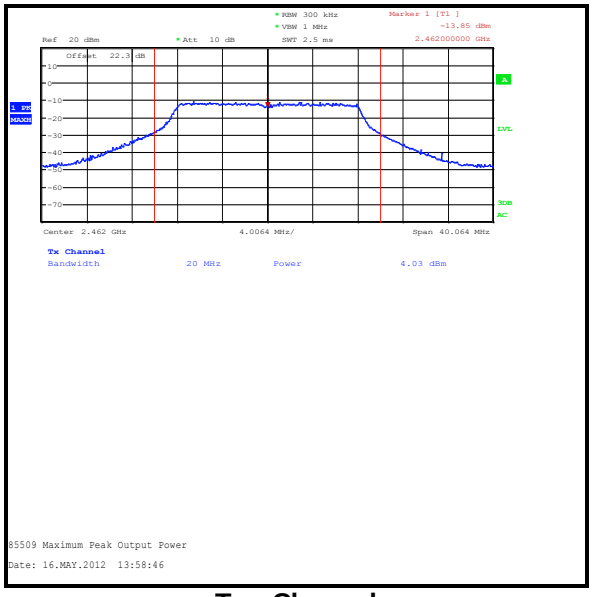
Results: 802.11g / 20 MHz / 6 Mbps / BPSK / Port 0 / 15 dBi omnidirectional antenna



Bottom Channel



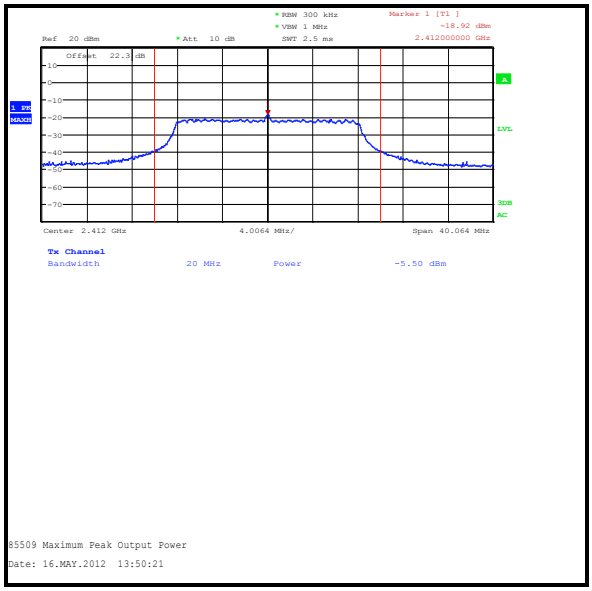
Middle Channel



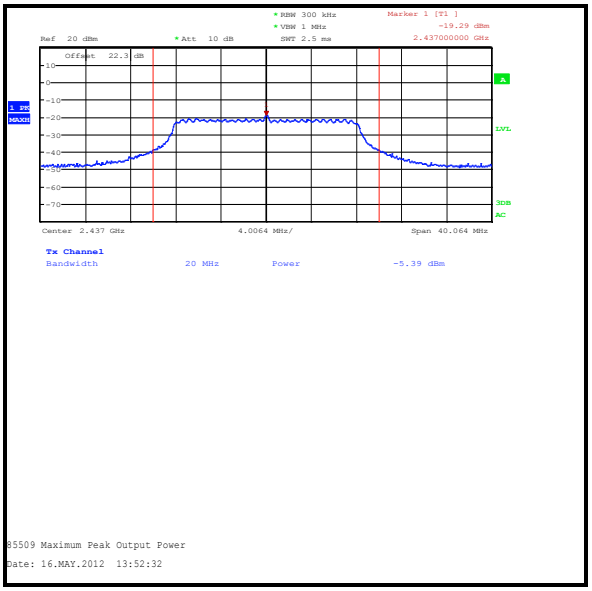
Top Channel

Transmitter Maximum Peak Output Power (continued)

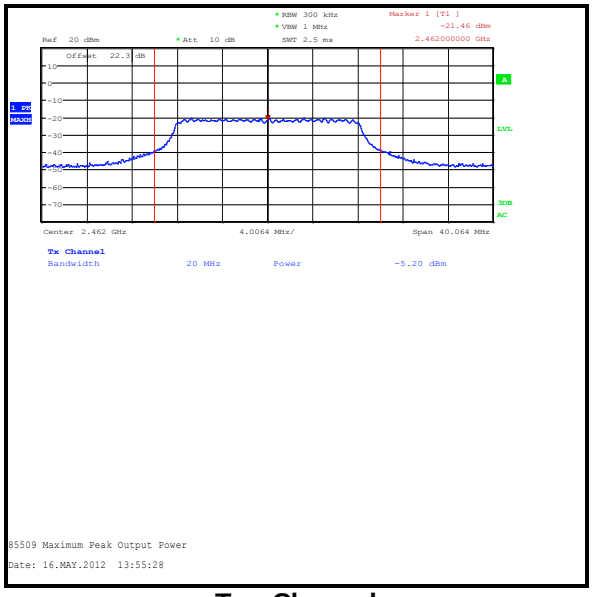
Results: 802.11g / 20 MHz / 6 Mbps / BPSK / Port 1 / 15 dBi omnidirectional antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11g / 20 MHz / 6 Mbps / BPSK / 16.5 dBi sectorised antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	7.1	13.8	14.6	26.0	11.4	Complied
Middle	-8.4	12.5	12.5	26.0	13.5	Complied
Top	-0.9	12.1	12.3	26.0	13.7	Complied

Industry Canada Results: 802.11g / 20 MHz / 6 Mbps / BPSK / 16.5 dBi sectorised antenna

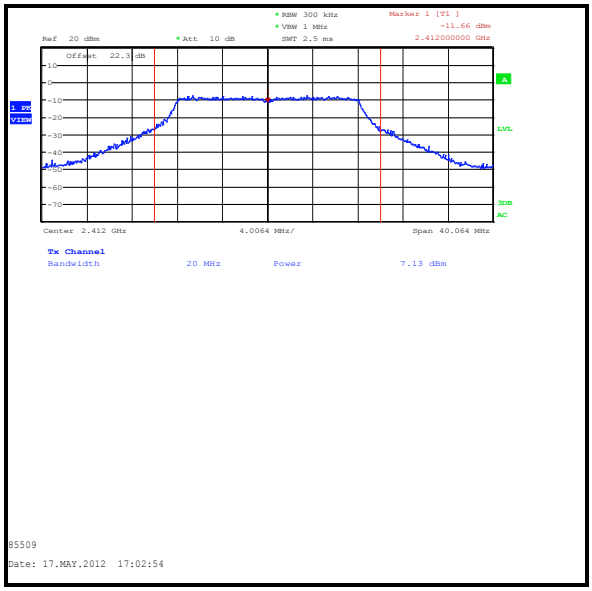
Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	7.1	13.8	14.6	30.0	15.4	Complied
Middle	-8.4	12.5	12.5	30.0	17.5	Complied
Top	-0.9	12.1	12.3	30.0	17.7	Complied

FCC and Industry Canada Results: 802.11g / 20 MHz / 6 Mbps / BPSK / 16.5 dBi sectorised antenna

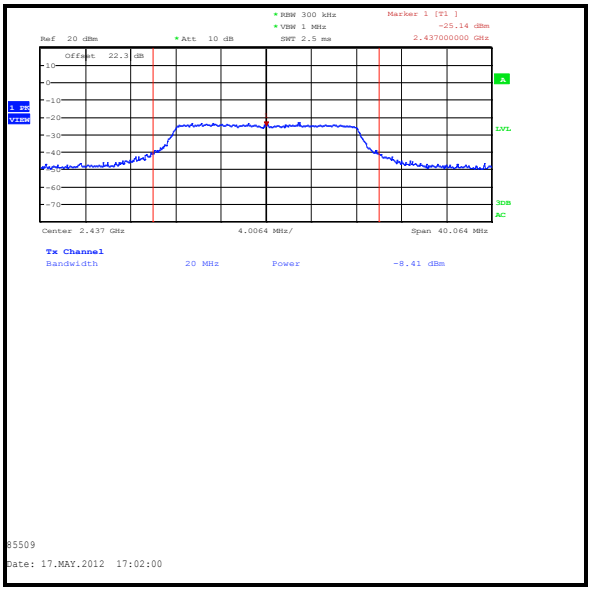
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	14.6	15.1	29.7	36.0	6.3	Complied
Middle	12.5	15.1	27.6	36.0	8.4	Complied
Top	12.3	15.1	27.4	36.0	8.6	Complied

Transmitter Maximum Peak Output Power (continued)

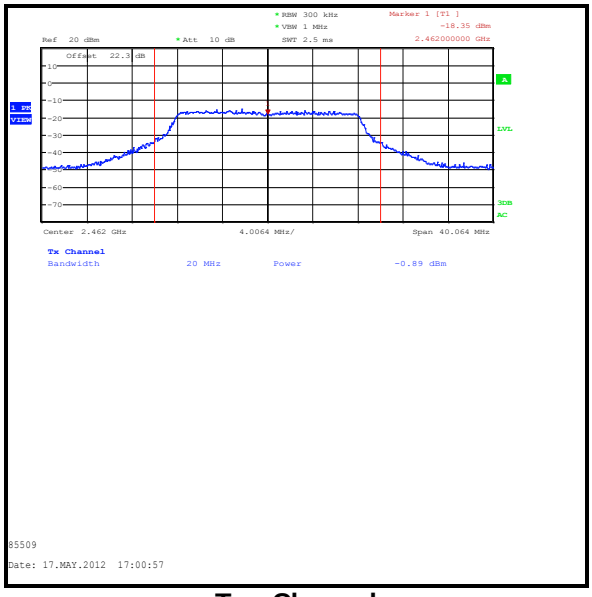
Results: 802.11g / 20 MHz / 6 Mbps / BPSK / Port 0 / 16.5 dBi sectorised antenna



Bottom Channel



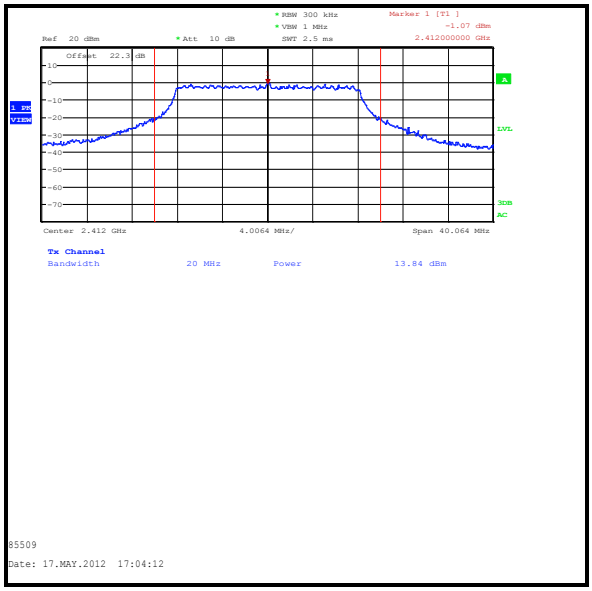
Middle Channel



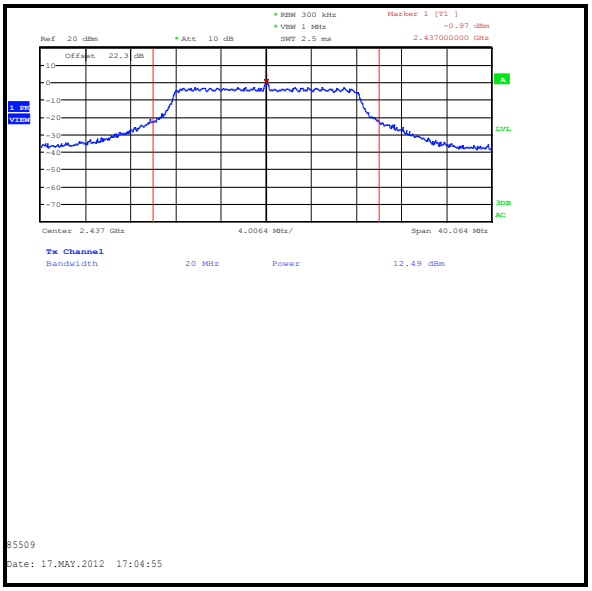
Top Channel

Transmitter Maximum Peak Output Power (continued)

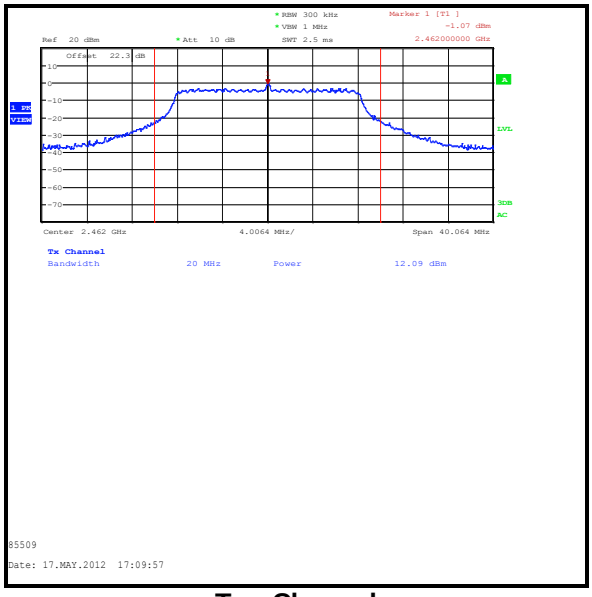
Results: 802.11g / 20 MHz / 6 Mbps / BPSK / Port 1 / 16.5 dBi sectorised antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11g / 20 MHz / 6 Mbps / BPSK / 19 dBi PTP antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	3.8	13.7	14.1	25.0	10.9	Complied
Middle	-8.5	12.5	12.5	25.0	12.5	Complied
Top	-9.6	12.0	12.0	25.0	13.0	Complied

Industry Canada Results: 802.11g / 20 MHz / 6 Mbps / BPSK / 19 dBi PTP antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	3.8	13.7	14.1	30.0	15.9	Complied
Middle	-8.5	12.5	12.5	30.0	17.5	Complied
Top	-9.6	12.0	12.0	30.0	18.0	Complied

Industry Canada Results: 802.11g / 20 MHz / 6 Mbps / BPSK / 19 dBi PTP antenna

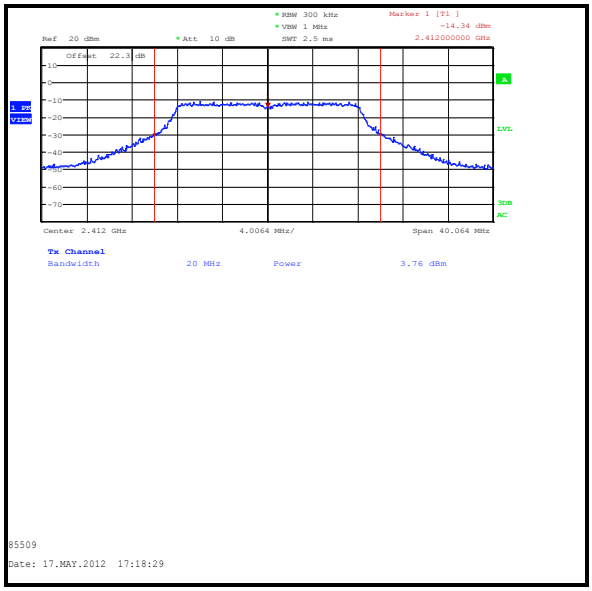
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Result
Bottom	14.1	17.6	31.7	See note below	Complied
Middle	12.5	17.6	30.1	See note below	Complied
Top	12.0	17.6	29.6	See note below	Complied

RSS-210 A8.4(5) Point-to-point systems in the 2400-2483.5 MHz band are permitted to have an e.i.r.p higher than 4 W provided that the higher e.i.r.p is achieved by employing higher gain directional antennas and not higher transmitter output powers.

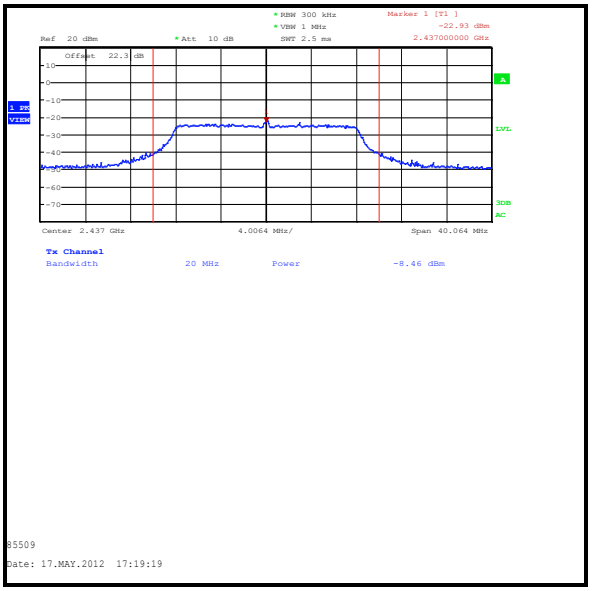
Therefore, as long as the conducted power requirements are met, there is no restriction on e.i.r.p.

Transmitter Maximum Peak Output Power (continued)

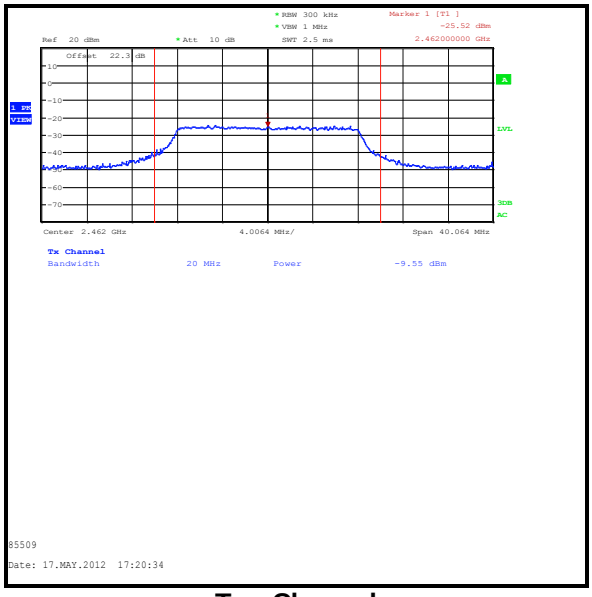
Results: 802.11g / 20 MHz / 6 Mbps / BPSK / Port 0 / 19 dBi PTP antenna



Bottom Channel



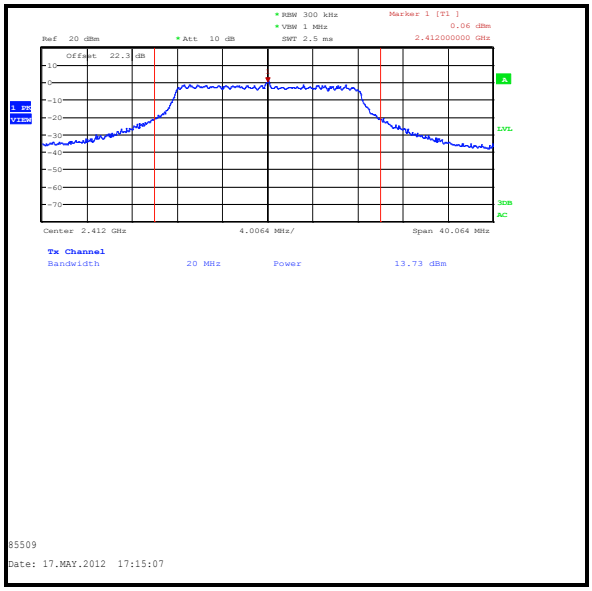
Middle Channel



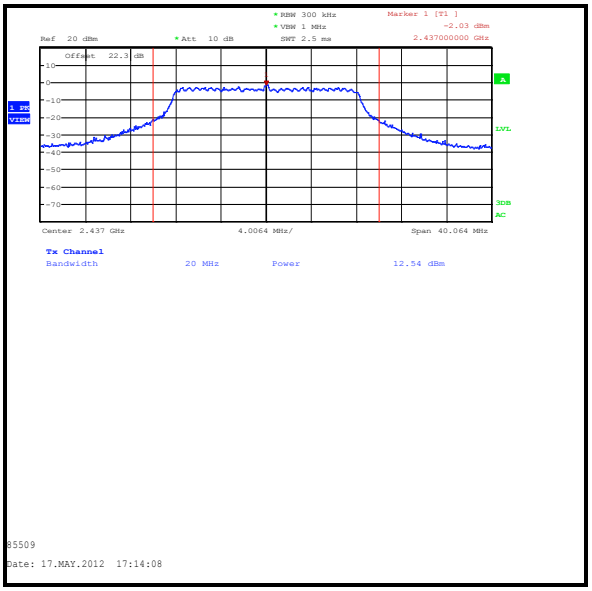
Top Channel

Transmitter Maximum Peak Output Power (continued)

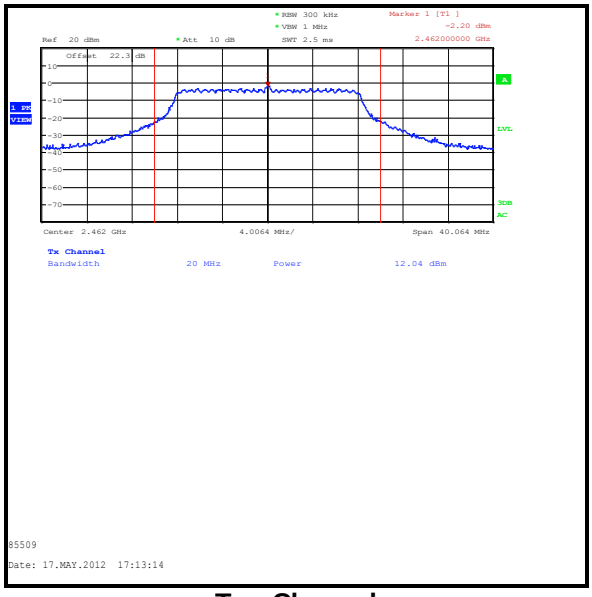
Results: 802.11g / 20 MHz / 6 Mbps / BPSK / Port 1 / 19 dBi PTP antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

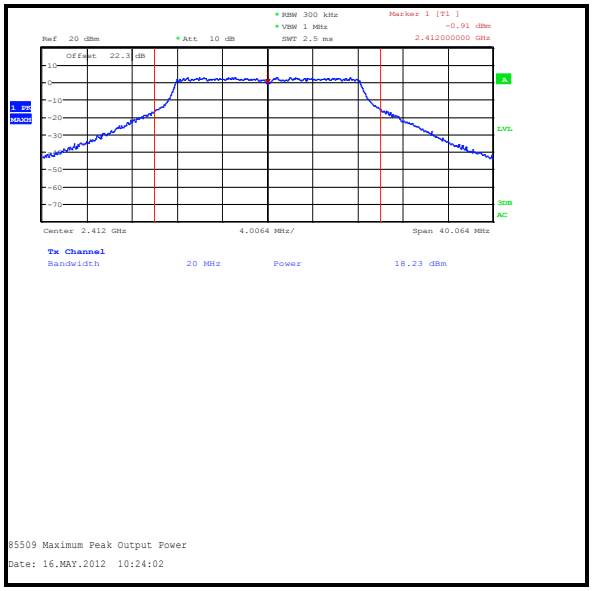
FCC and Industry Canada Results: 802.11g / 20 MHz / 54 Mbps / 64QAM / 5 dBi sectorised antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	18.2	18.3	21.3	30.0	8.7	Complied
Middle	18.2	18.3	21.3	30.0	8.7	Complied
Top	17.8	18.1	21.0	30.0	9.0	Complied

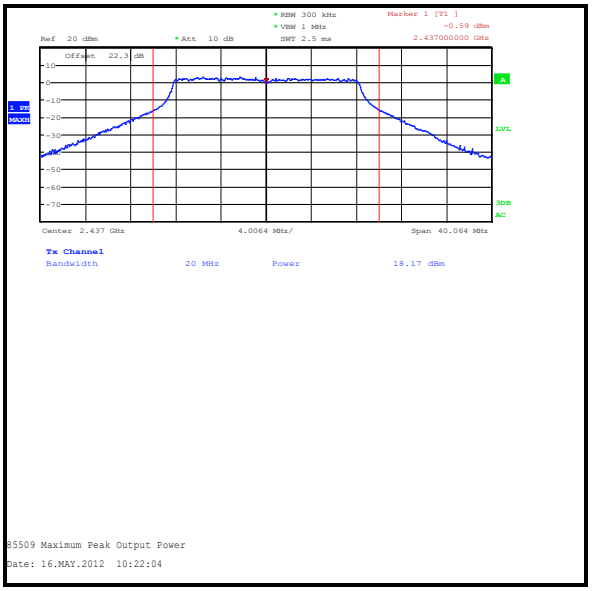
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	21.3	3.6	24.9	36.0	11.1	Complied
Middle	21.3	3.6	24.9	36.0	11.1	Complied
Top	21.0	3.6	24.6	36.0	11.4	Complied

Transmitter Maximum Peak Output Power (continued)

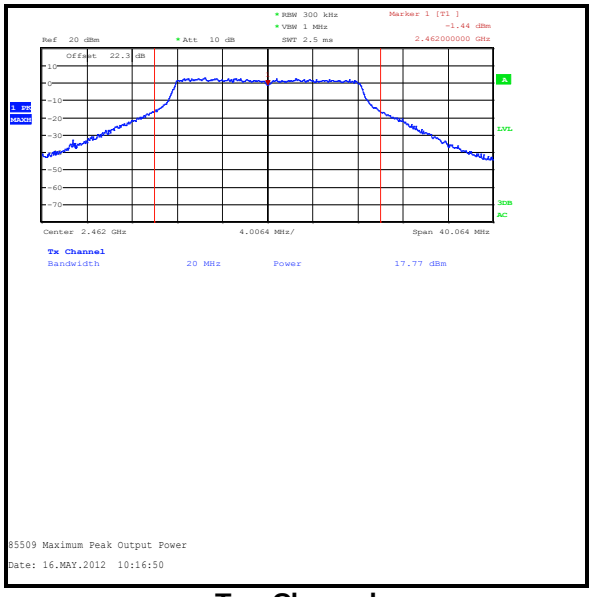
Results: 802.11g / 20 MHz / 54 Mbps / 64QAM / Port 0 / 5 dBi sectorised antenna



Bottom Channel



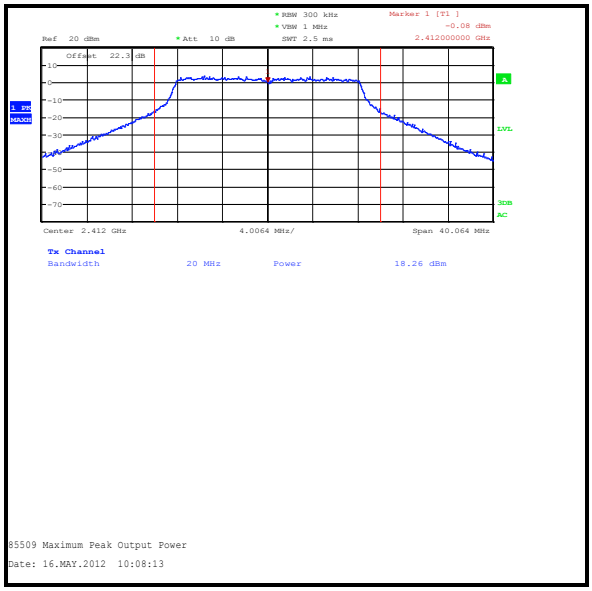
Middle Channel



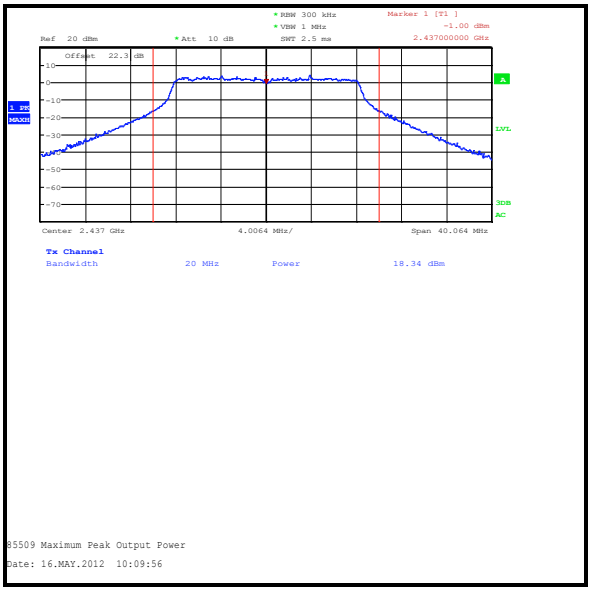
Top Channel

Transmitter Maximum Peak Output Power (continued)

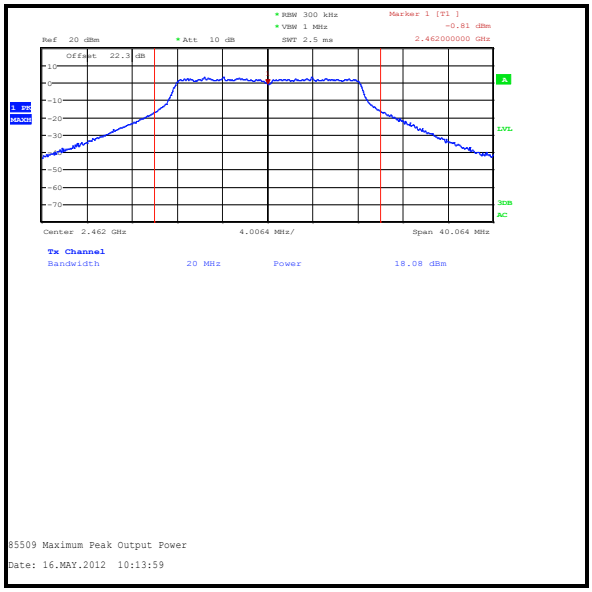
Results: 802.11g / 20 MHz / 54 Mbps / 64QAM / Port 1 / 5 dBi sectorised antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11g / 20 MHz / 54 Mbps / 64QAM / 15 dBi omnidirectional antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	8.1	-5.6	8.3	21.0	12.7	Complied
Middle	-6.4	-5.0	-2.6	21.0	23.6	Complied
Top	5.5	-5.5	5.8	21.0	15.2	Complied

Industry Canada Results: 802.11g / 20 MHz / 54 Mbps / 64QAM / 15 dBi omnidirectional antenna

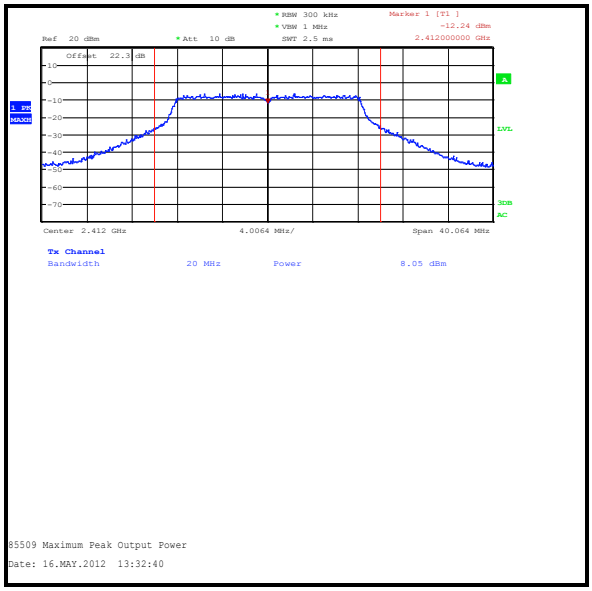
Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	8.1	-5.6	8.3	30.0	21.7	Complied
Middle	-6.4	-5.0	-2.6	30.0	32.6	Complied
Top	5.5	-5.5	5.8	30.0	24.2	Complied

FCC and Industry Canada Results: 802.11g / 20 MHz / 54 Mbps / 64QAM / 15 dBi omnidirectional antenna

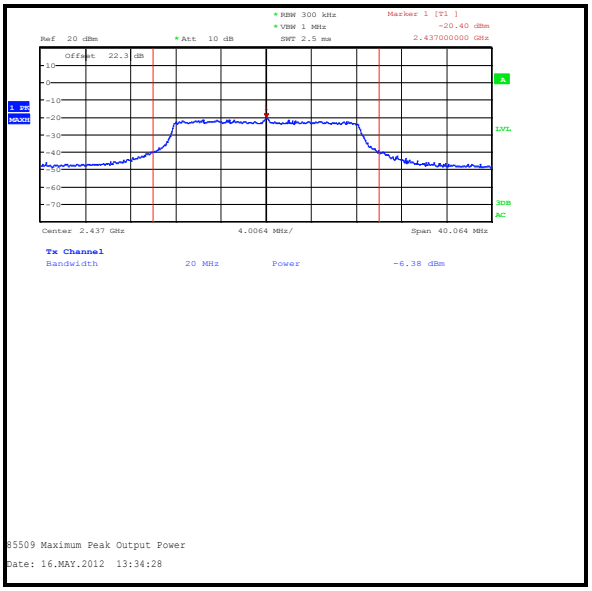
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	8.3	13.6	21.9	36.0	14.1	Complied
Middle	-2.6	13.6	11.0	36.0	25.0	Complied
Top	5.8	13.6	19.4	36.0	16.6	Complied

Transmitter Maximum Peak Output Power (continued)

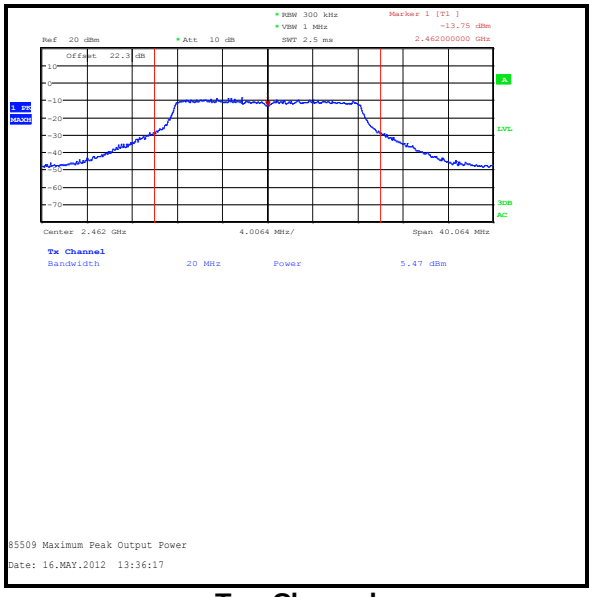
Results: 802.11g / 20 MHz / 54 Mbps / 64QAM / Port 0 / 15 dBi omnidirectional antenna



Bottom Channel



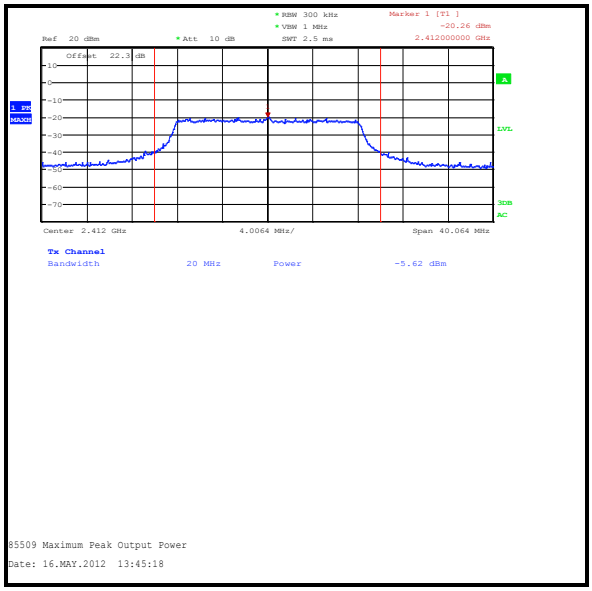
Middle Channel



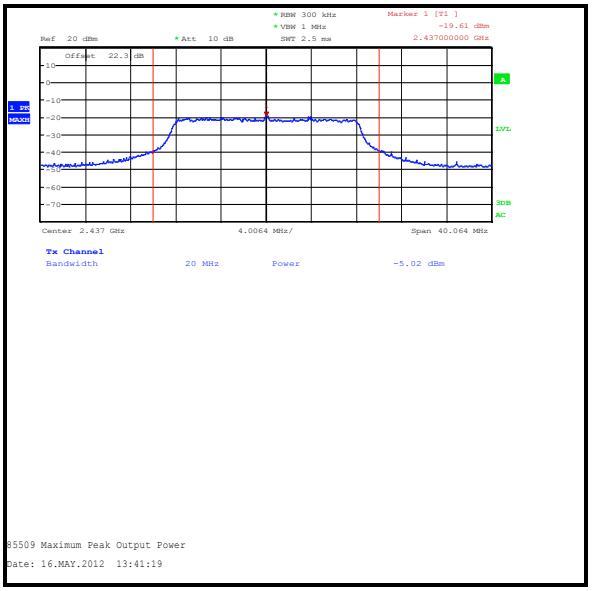
Top Channel

Transmitter Maximum Peak Output Power (continued)

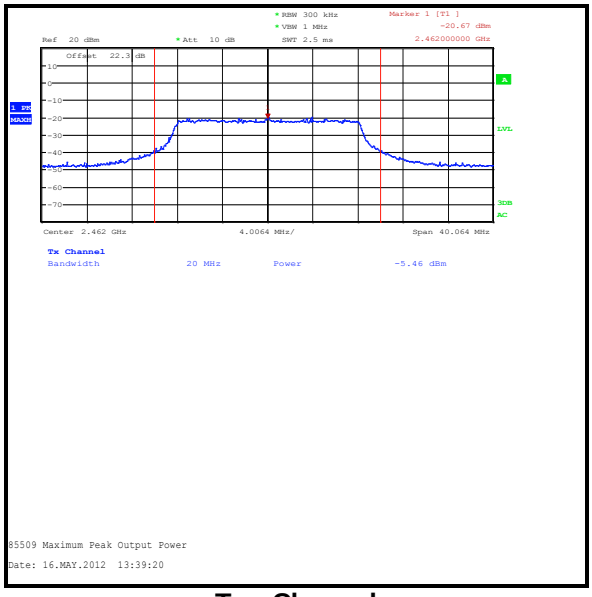
Results: 802.11g / 20 MHz / 54 Mbps / 64QAM / Port 1 / 15 dBi omnidirectional antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11g / 20 MHz / 54 Mbps / 64QAM / 16.5 dBi sectorised antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	7.9	-6.1	8.1	26.0	17.9	Complied
Middle	-7.4	-7.1	-4.2	26.0	30.2	Complied
Top	1.0	-7.8	1.5	26.0	24.5	Complied

Industry Canada Results: 802.11g / 20 MHz / 54 Mbps / 64QAM / 16.5 dBi sectorised antenna

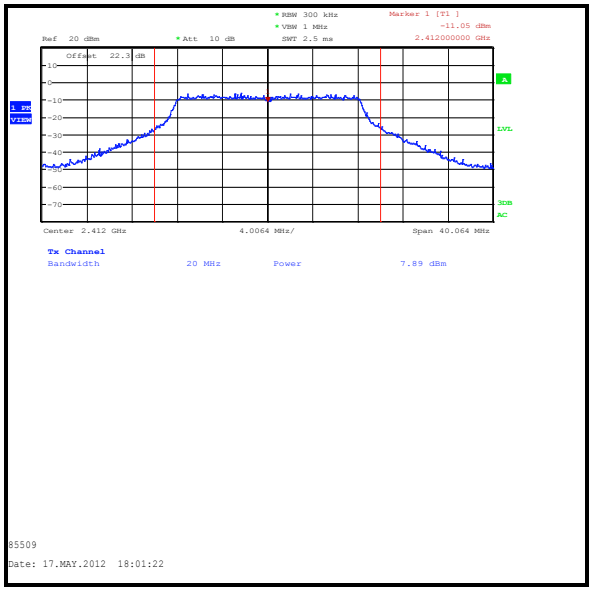
Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	7.9	-6.1	8.1	30.0	21.9	Complied
Middle	-7.4	-7.1	-4.2	30.0	34.2	Complied
Top	1.0	-7.8	1.5	30.0	28.5	Complied

FCC and Industry Canada Results: 802.11g / 20 MHz / 54 Mbps / 64QAM / 16.5 dBi sectorised antenna

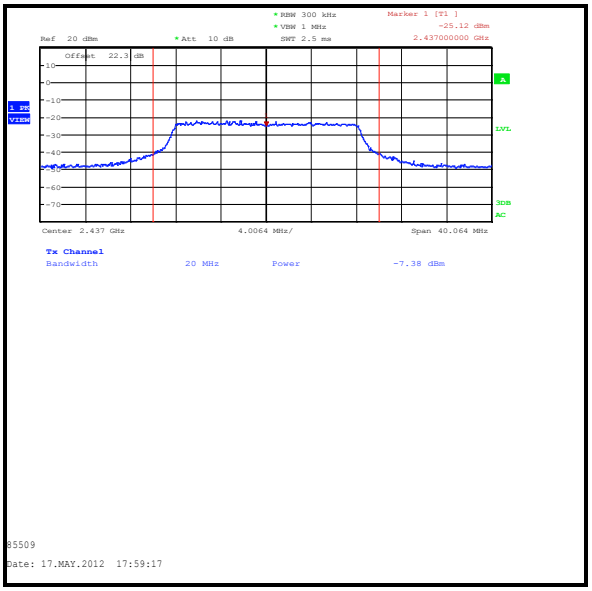
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	8.1	15.1	23.2	36.0	12.8	Complied
Middle	-4.2	15.1	10.9	36.0	25.1	Complied
Top	1.5	15.1	16.6	36.0	19.4	Complied

Transmitter Maximum Peak Output Power (continued)

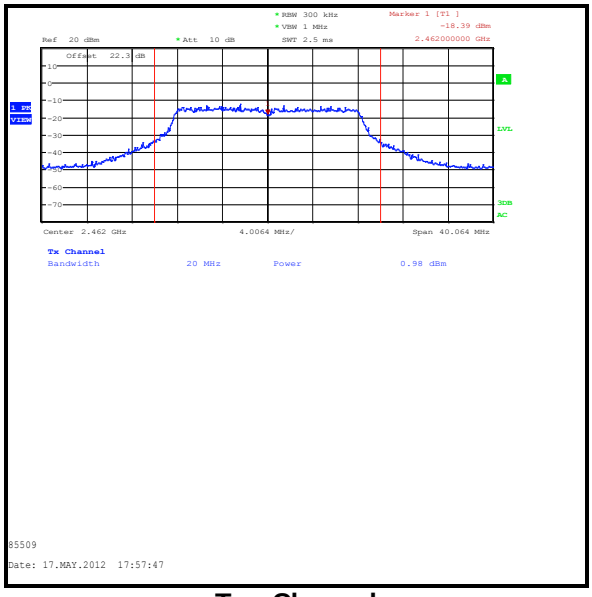
Results: 802.11g / 20 MHz / 54 Mbps / 64QAM / Port 0 / 16.5 dBi sectorised antenna



Bottom Channel



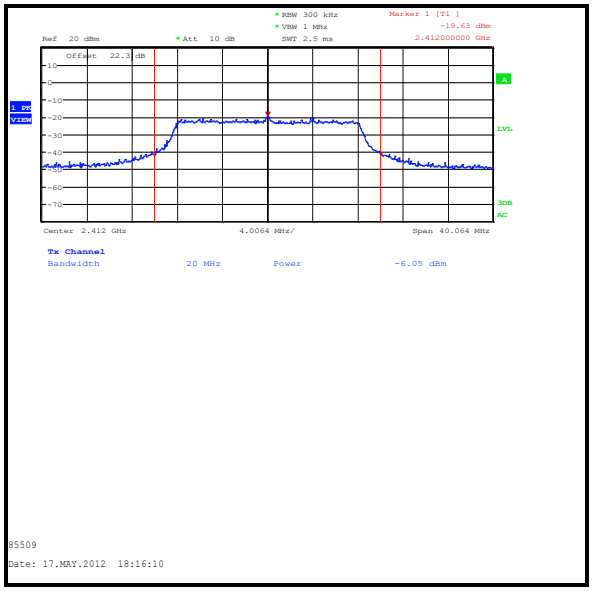
Middle Channel



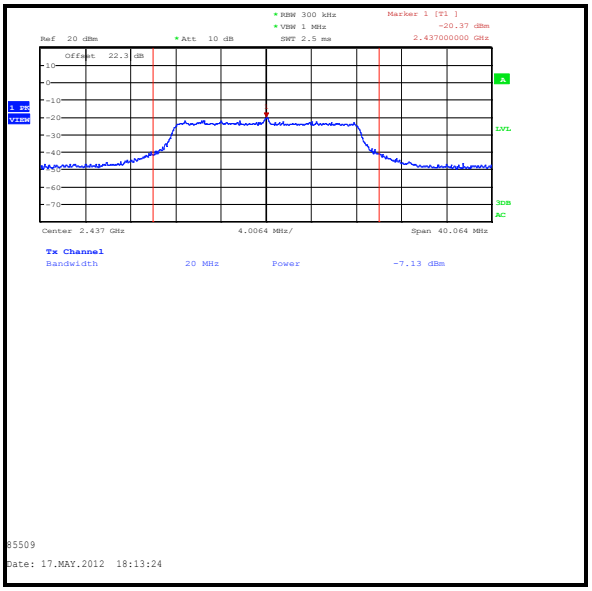
Top Channel

Transmitter Maximum Peak Output Power (continued)

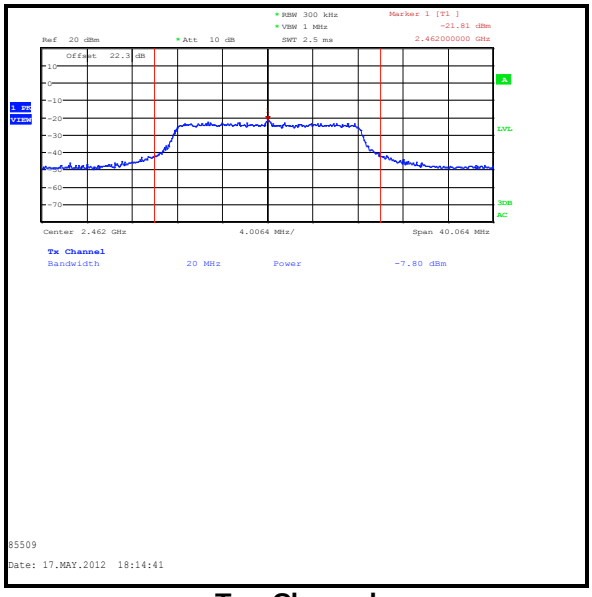
Results: 802.11g / 20 MHz / 54 Mbps / 64QAM / Port 1 / 16.5 dBi sectorised antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11g / 20 MHz / 54 Mbps / 64QAM / 19 dBi PTP antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	4.1	-6.1	4.5	25.0	20.5	Complied
Middle	-7.7	-7.0	-4.3	25.0	29.3	Complied
Top	-8.6	-7.7	-5.1	25.0	30.1	Complied

Industry Canada Results: 802.11g / 20 MHz / 54 Mbps / 64QAM / 19 dBi PTP antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	4.1	-6.1	4.5	30.0	25.5	Complied
Middle	-7.7	-7.0	-4.3	30.0	34.3	Complied
Top	-8.6	-7.7	-5.1	30.0	35.1	Complied

FCC and Industry Canada Results: 802.11g / 20 MHz / 54 Mbps / 64QAM / 19 dBi PTP antenna

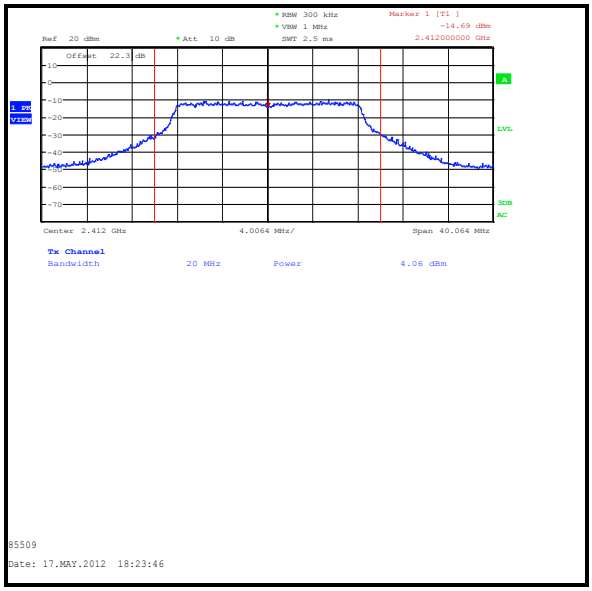
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Result
Bottom	4.5	17.6	22.1	See note below	Complied
Middle	-4.3	17.6	13.3	See note below	Complied
Top	-5.1	17.6	12.5	See note below	Complied

RSS-210 A8.4(5) Point-to-point systems in the 2400-2483.5 MHz band are permitted to have an e.i.r.p higher than 4 W provided that the higher e.i.r.p is achieved by employing higher gain directional antennas and not higher transmitter output powers.

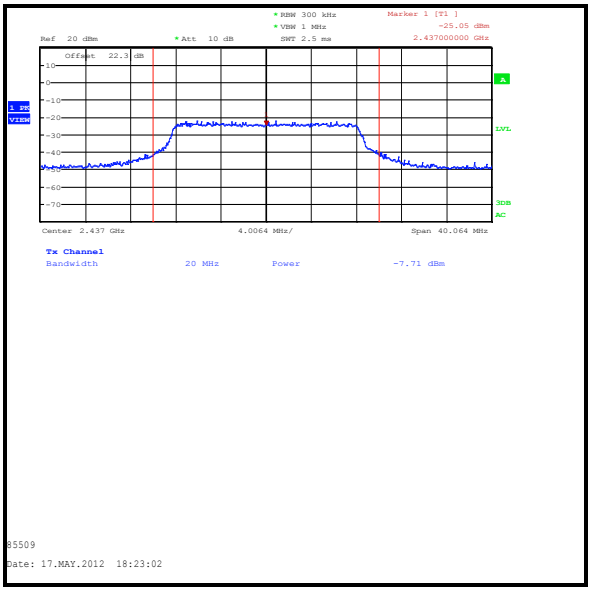
Therefore, as long as the conducted power requirements are met, there is no restriction on e.i.r.p.

Transmitter Maximum Peak Output Power (continued)

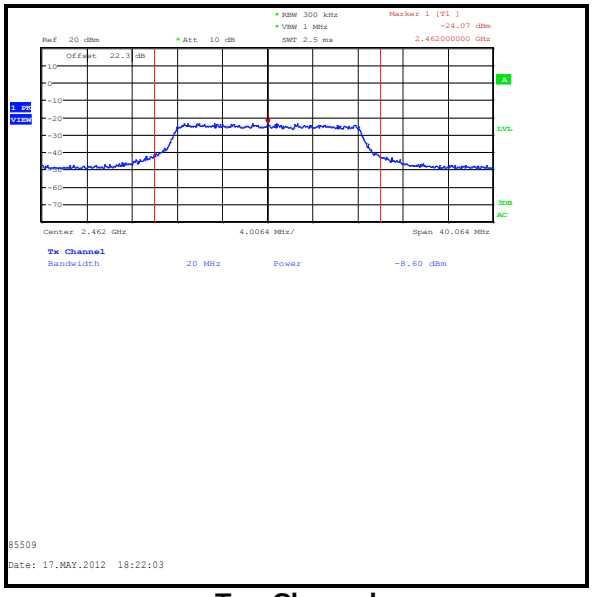
Results: 802.11g / 20 MHz / 54 Mbps / 64QAM / Port 0 / 19 dBi PTP antenna



Bottom Channel



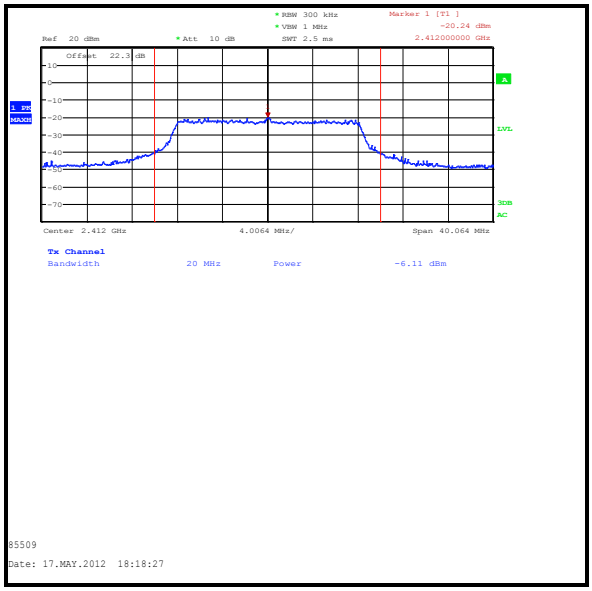
Middle Channel



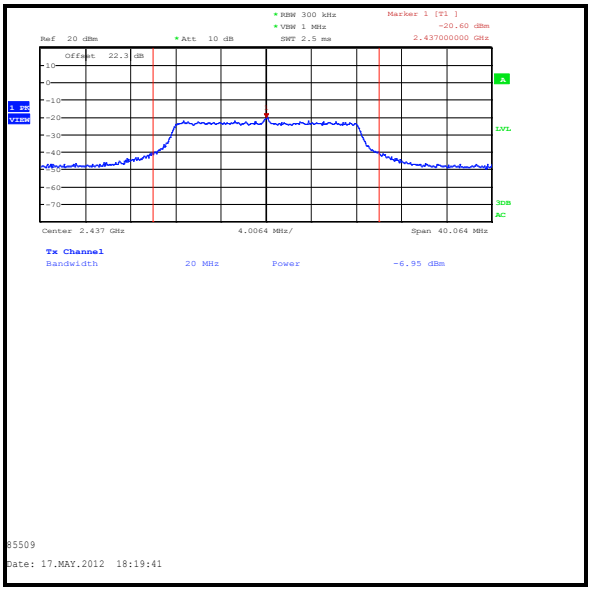
Top Channel

Transmitter Maximum Peak Output Power (continued)

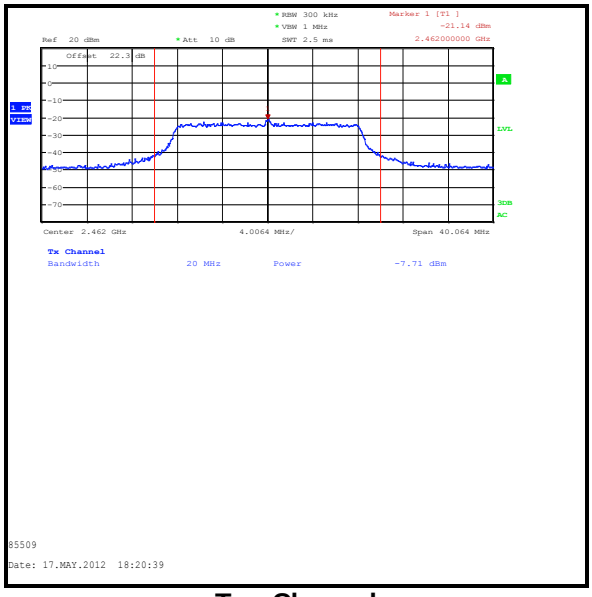
Results: 802.11g / 20 MHz / 54 Mbps / 64QAM / Port 1 / 19 dBi PTP antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

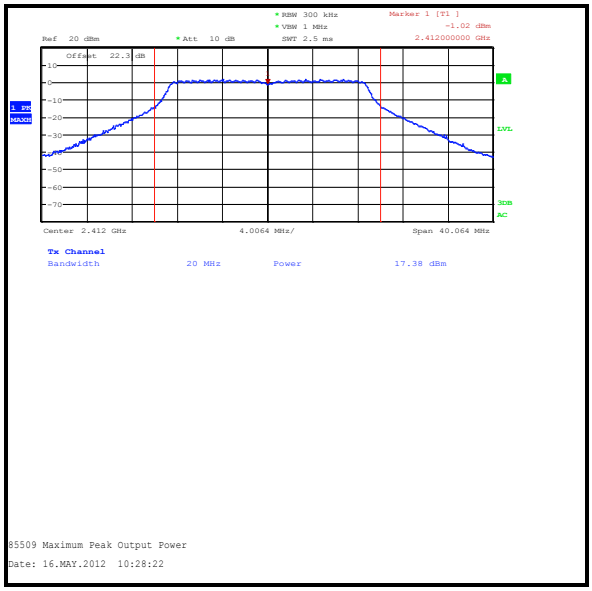
FCC and Industry Canada Results: 802.11n / 20 MHz / 6.5 Mbps / BPSK / MCS0 / 5 dBi sectorised antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	17.4	17.4	20.4	30.0	9.6	Complied
Middle	16.9	17.3	20.1	30.0	9.9	Complied
Top	16.8	17.0	19.9	30.0	10.1	Complied

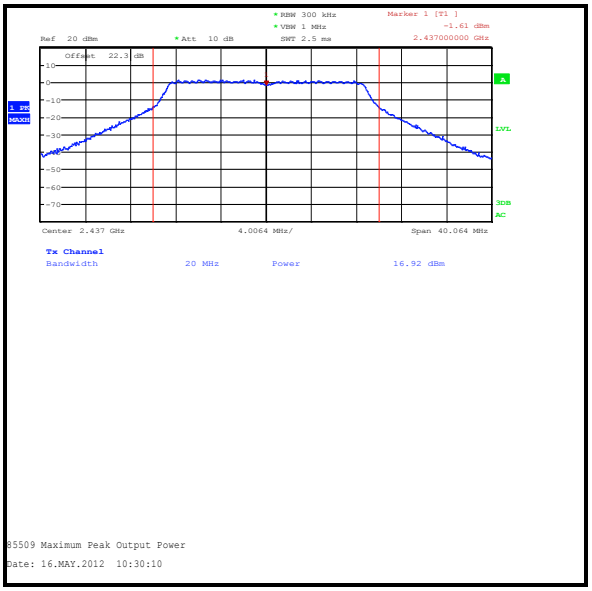
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	20.4	3.6	24.0	36.0	12.0	Complied
Middle	20.1	3.6	23.7	36.0	12.3	Complied
Top	19.9	3.6	23.5	36.0	12.5	Complied

Transmitter Maximum Peak Output Power (continued)

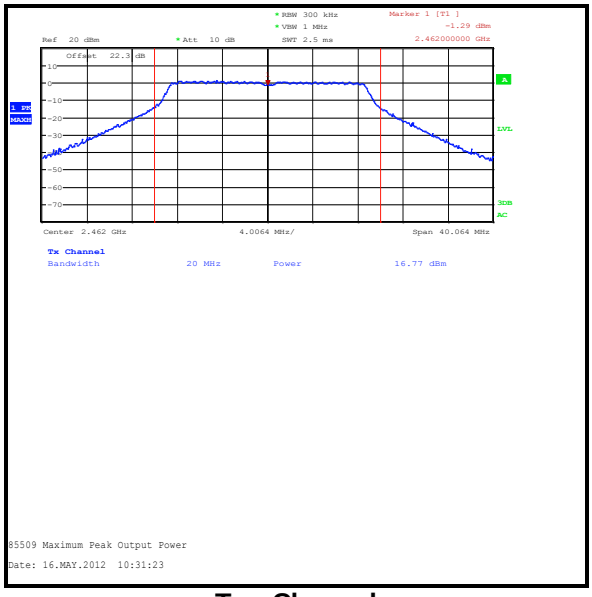
Results: 802.11n / 20 MHz / 6.5 Mbps / BPSK / MCS0 / Port 0 / 5 dBi sectorised antenna



Bottom Channel



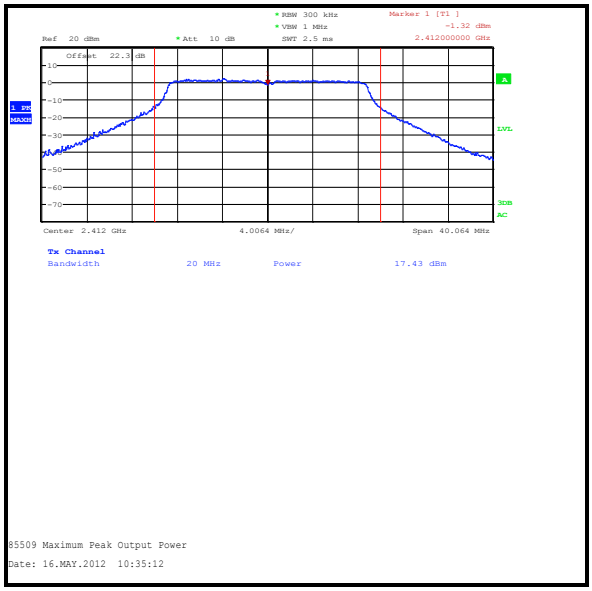
Middle Channel



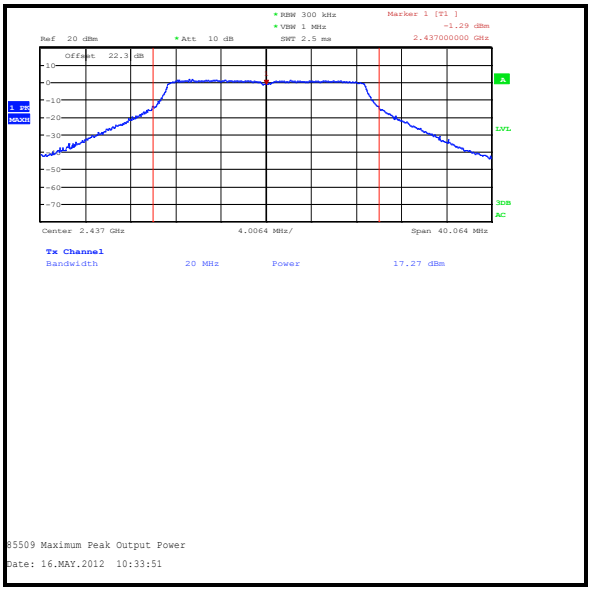
Top Channel

Transmitter Maximum Peak Output Power (continued)

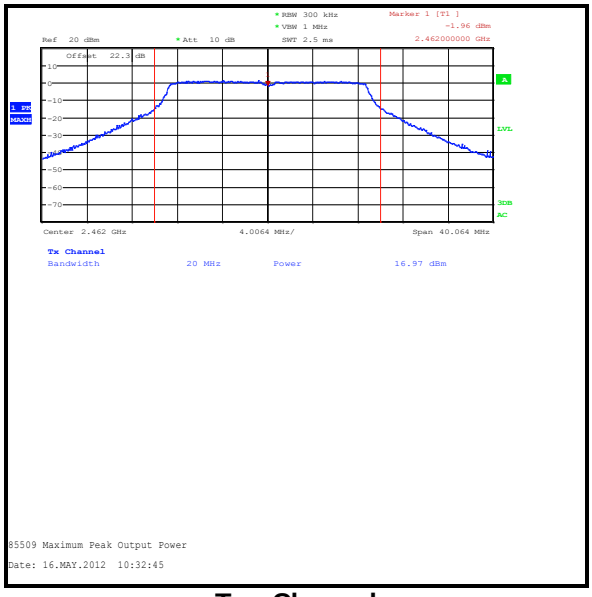
Results: 802.11n / 20 MHz / 6.5 Mbps / BPSK / MCS0 / Port 1 / 5 dBi sectorised antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11n / 20 MHz / 6.5 Mbps / BPSK / MCS0 / 15 dBi omnidirectional antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	8.4	-5.3	8.6	21.0	12.4	Complied
Middle	-8.2	-5.2	-3.4	21.0	24.4	Complied
Top	4.9	-5.6	5.3	21.0	15.7	Complied

Industry Canada Results: 802.11n / 20 MHz / 6.5 Mbps / BPSK / MCS0 / 15 dBi omnidirectional antenna

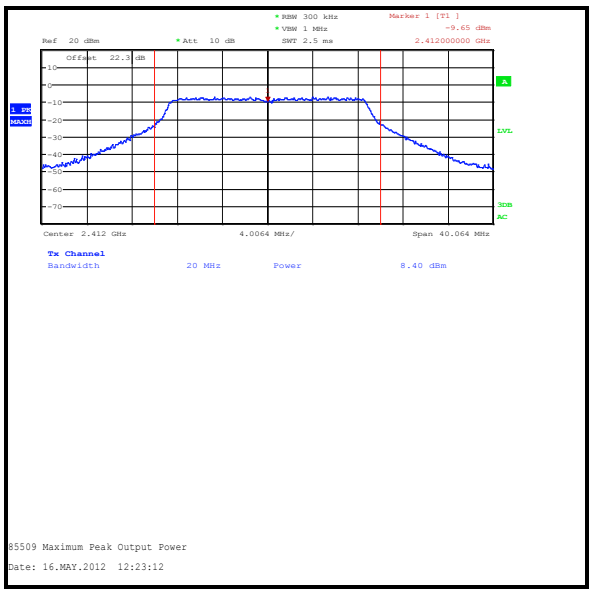
Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	8.4	-5.3	8.6	30.0	21.4	Complied
Middle	-8.2	-5.2	-3.4	30.0	33.4	Complied
Top	4.9	-5.6	5.3	30.0	24.7	Complied

FCC and Industry Canada Results: 802.11n / 20 MHz / 6.5 Mbps / BPSK / MCS0 / 15 dBi omnidirectional antenna

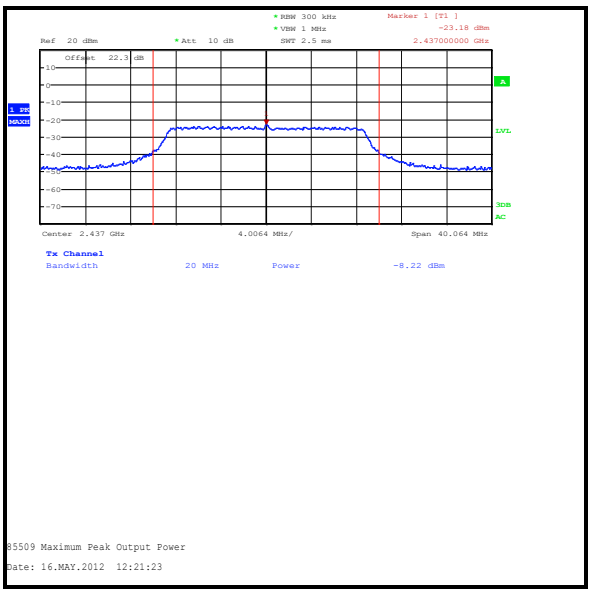
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	8.6	13.6	22.2	36.0	13.8	Complied
Middle	-3.4	13.6	10.2	36.0	25.8	Complied
Top	5.3	13.6	18.9	36.0	17.1	Complied

Transmitter Maximum Peak Output Power (continued)

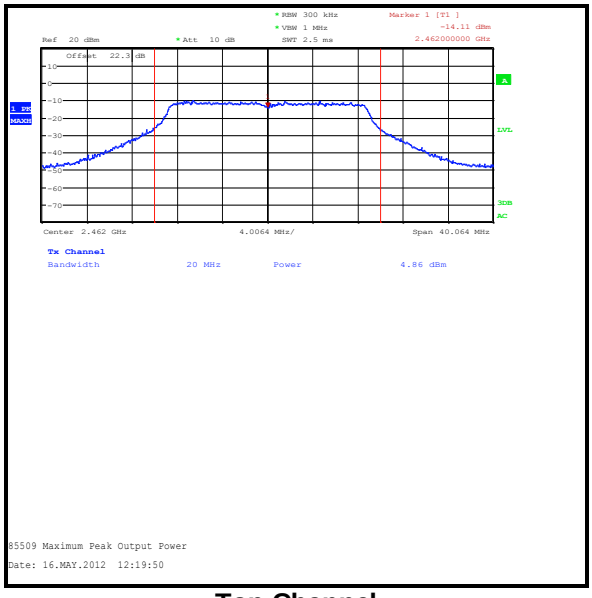
Results: 802.11n / 20 MHz / 6.5 Mbps / BPSK / MCS0 / Port 0 / 15 dBi omnidirectional antenna



Bottom Channel



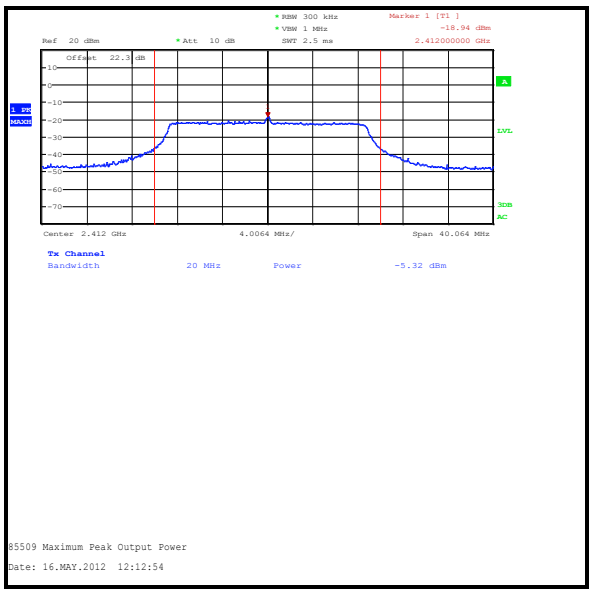
Middle Channel



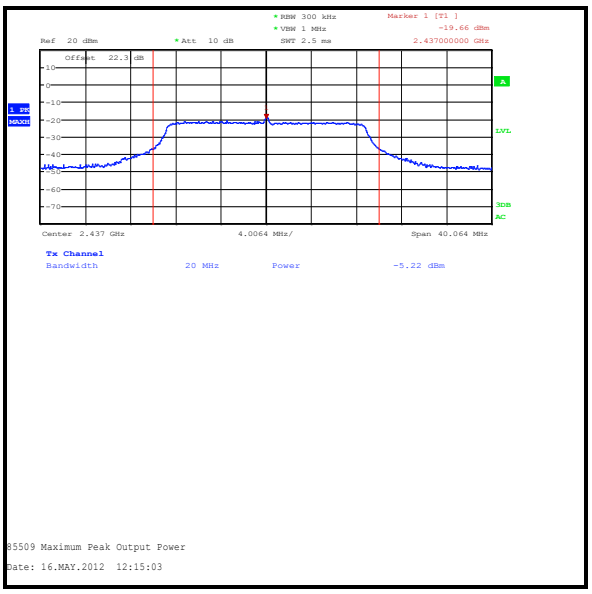
Top Channel

Transmitter Maximum Peak Output Power (continued)

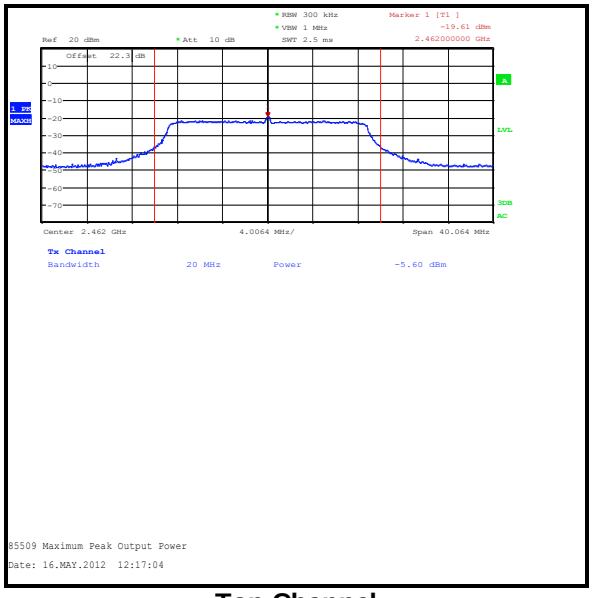
Results: 802.11n / 20 MHz / 6.5 Mbps / BPSK / MCS0 / Port 1 / 15 dBi omnidirectional antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11n / 20 MHz / 6.5 Mbps / BPSK / MCS0 / 16.5 dBi sectorised antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	7.5	-6.7	7.7	26.0	18.3	Complied
Middle	-8.5	-7.8	-5.1	26.0	31.1	Complied
Top	-0.9	-8.3	-0.2	26.0	26.2	Complied

Industry Canada Results: 802.11n / 20 MHz / 6.5 Mbps / BPSK / MCS0 / 16.5 dBi sectorised antenna

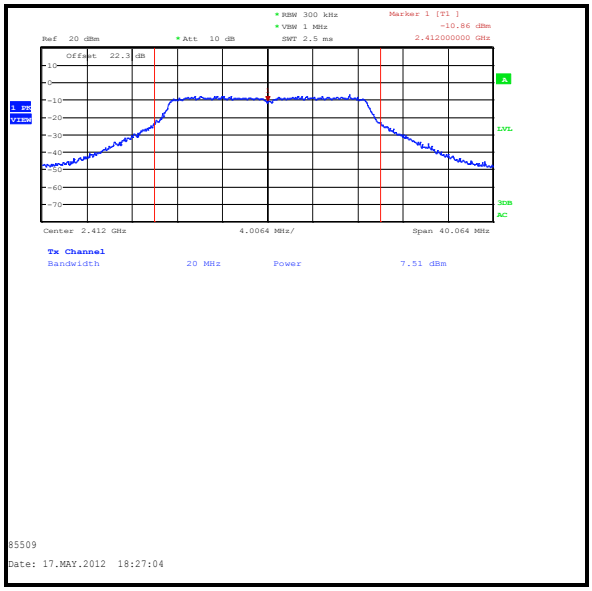
Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	7.5	-6.7	7.7	30.0	22.3	Complied
Middle	-8.5	-7.8	-5.1	30.0	35.1	Complied
Top	-0.9	-8.3	-0.2	30.0	30.2	Complied

FCC and Industry Canada Results: 802.11n / 20 MHz / 6.5 Mbps / BPSK / MCS0 / 16.5 dBi sectorised antenna

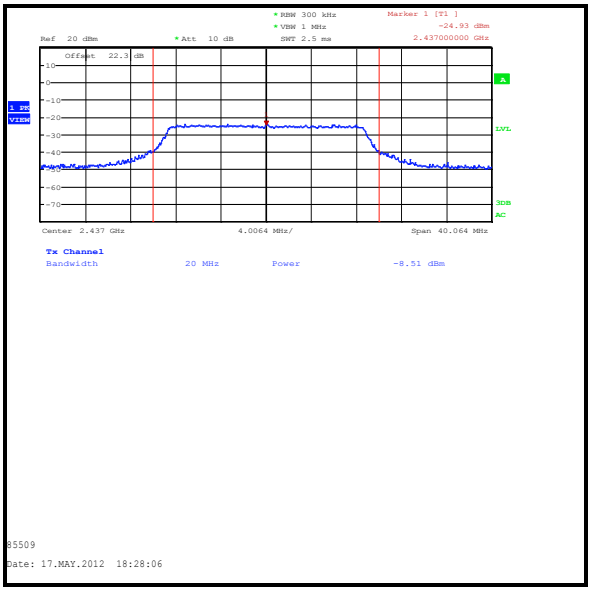
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	7.7	15.1	22.8	36.0	13.2	Complied
Middle	-5.1	15.1	10.0	36.0	26.0	Complied
Top	-0.2	15.1	14.9	36.0	21.1	Complied

Transmitter Maximum Peak Output Power (continued)

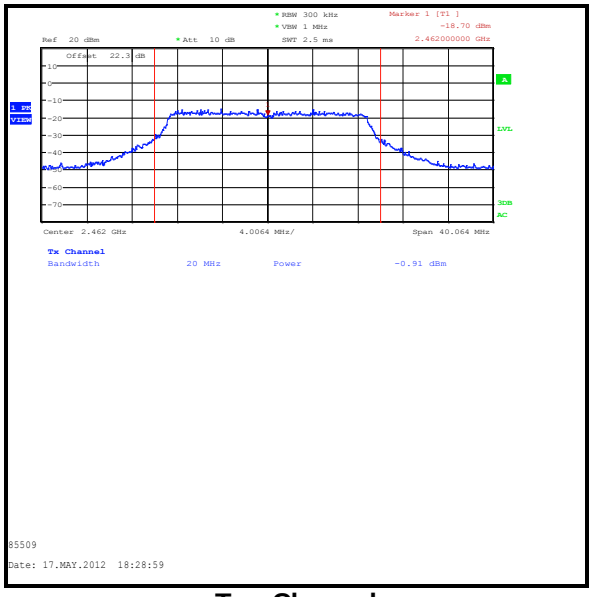
Results: 802.11n / 20 MHz / 6.5 Mbps / BPSK / MCS0 / Port 0 / 16.5 dBi sectorised antenna



Bottom Channel



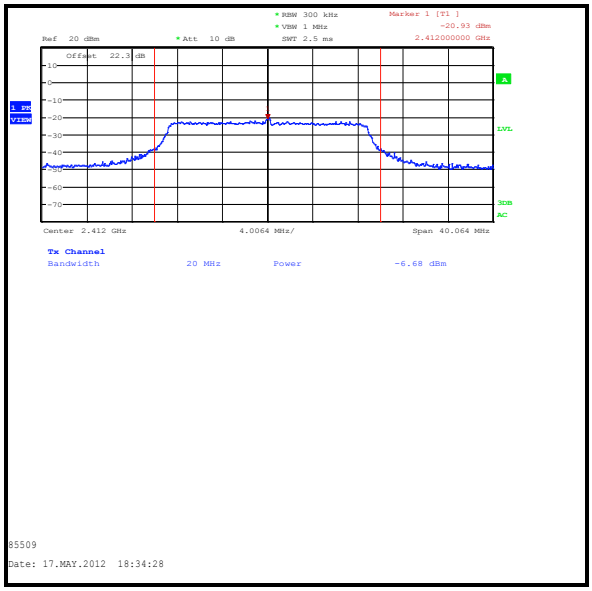
Middle Channel



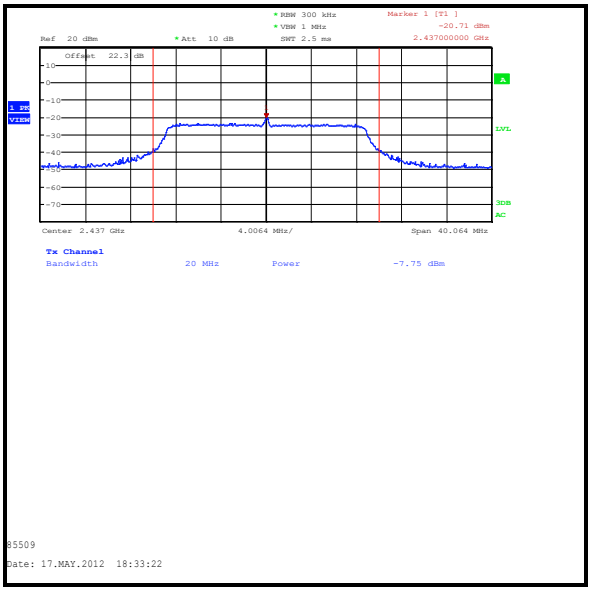
Top Channel

Transmitter Maximum Peak Output Power (continued)

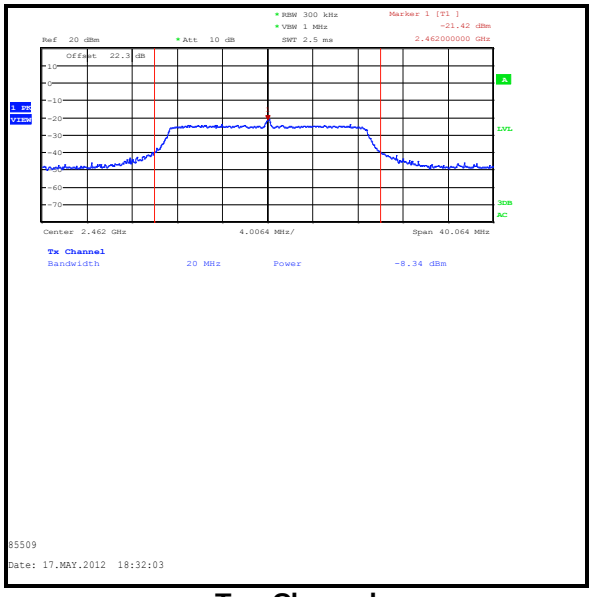
Results: 802.11n / 20 MHz / 6.5 Mbps / BPSK / MCS0 / Port 1 / 16.5 dBi sectorised antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11n / 20 MHz / 6.5 Mbps / BPSK / MCS0 / 19 dBi PTP antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	0.8	-6.9	1.5	25.0	23.5	Complied
Middle	-11.4	-7.9	-6.3	25.0	31.3	Complied
Top	-22.0	-8.5	-8.3	25.0	33.3	Complied

Industry Canada Results: 802.11n / 20 MHz / 6.5 Mbps / BPSK / MCS0 / 19 dBi PTP antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	0.8	-6.9	1.5	30.0	28.5	Complied
Middle	-11.4	-7.9	-6.3	30.0	36.3	Complied
Top	-22.0	-8.5	-8.3	30.0	38.3	Complied

FCC and Industry Canada Results: 802.11n / 20 MHz / 6.5 Mbps / BPSK / MCS0 / 19 dBi PTP antenna

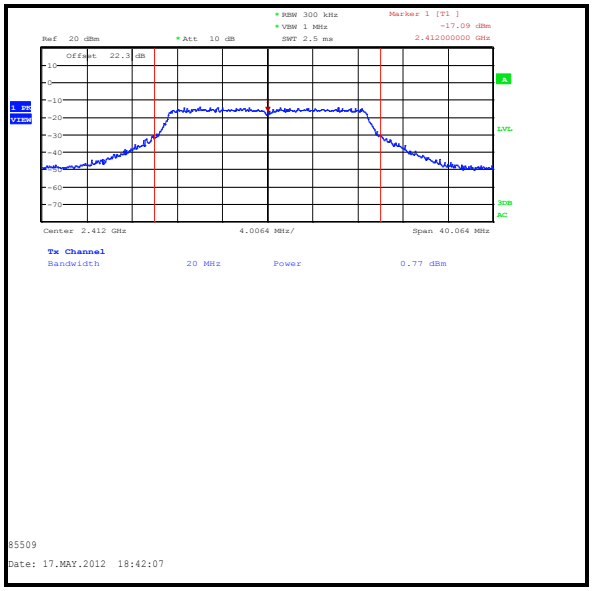
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Result
Bottom	1.5	17.6	19.1	See note below	Complied
Middle	-6.3	17.6	11.3	See note below	Complied
Top	-8.3	17.6	9.3	See note below	Complied

RSS-210 A8.4(5) Point-to-point systems in the 2400-2483.5 MHz band are permitted to have an e.i.r.p higher than 4 W provided that the higher e.i.r.p is achieved by employing higher gain directional antennas and not higher transmitter output powers.

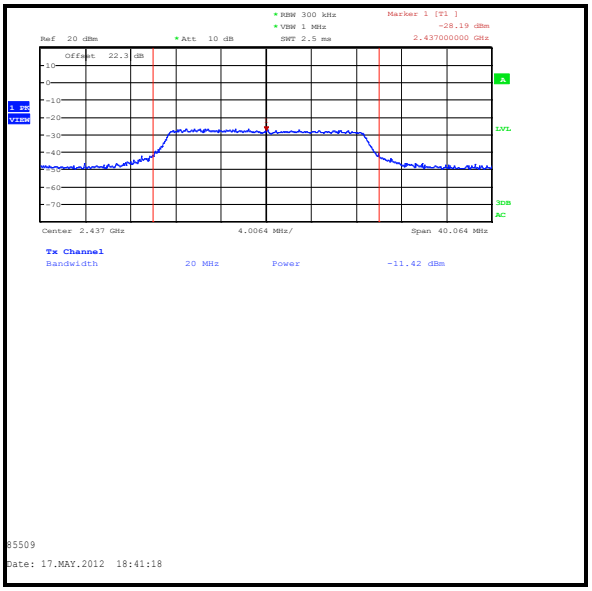
Therefore, as long as the conducted power requirements are met, there is no restriction on e.i.r.p.

Transmitter Maximum Peak Output Power (continued)

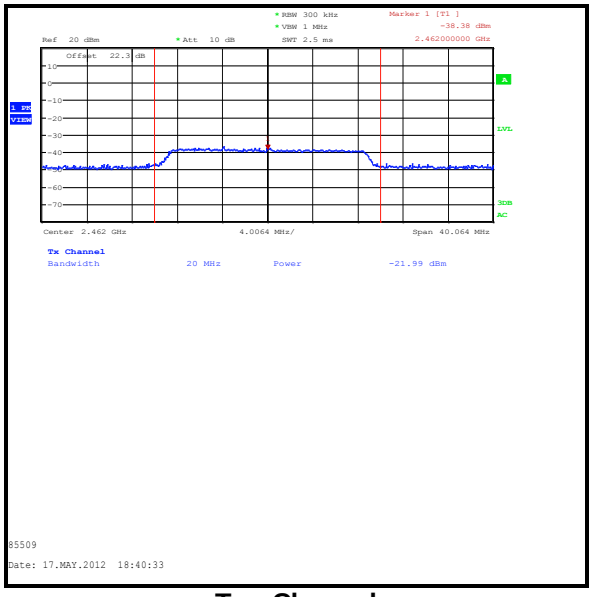
Results: 802.11n / 20 MHz / 6.5 Mbps / BPSK / MCS0 / Port 0 / 19 dBi PTP antenna



Bottom Channel



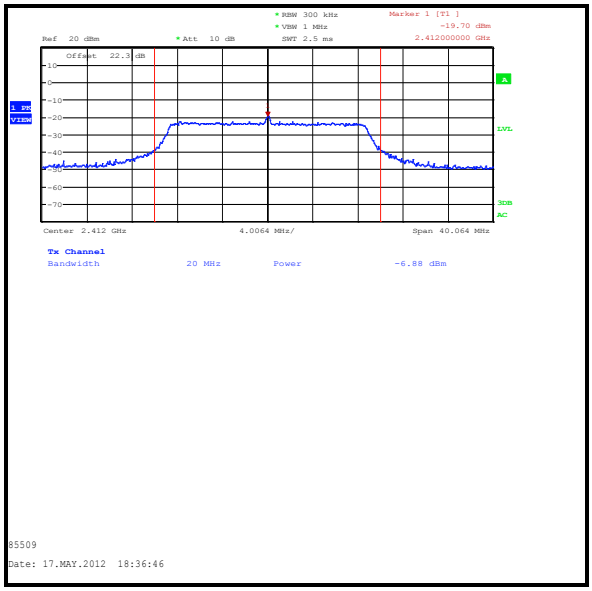
Middle Channel



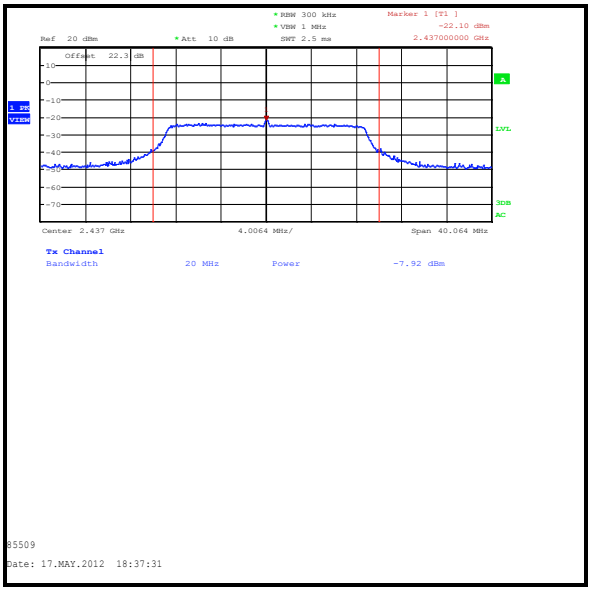
Top Channel

Transmitter Maximum Peak Output Power (continued)

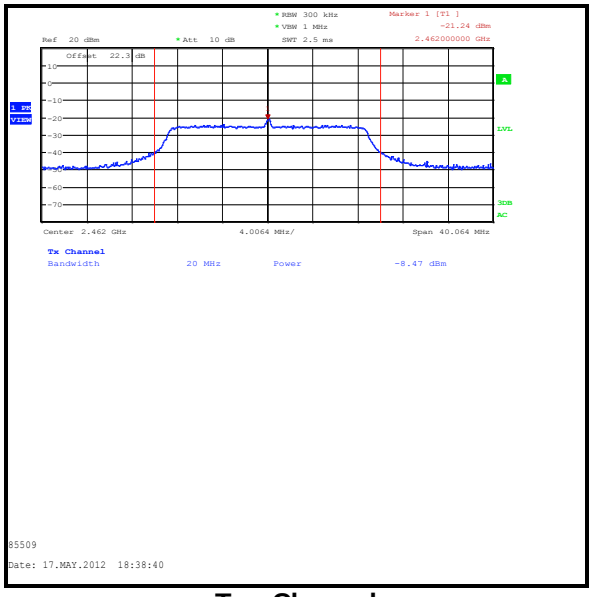
Results: 802.11n / 20 MHz / 6.5 Mbps / BPSK / MCS0 / Port 1 / 19 dBi PTP antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

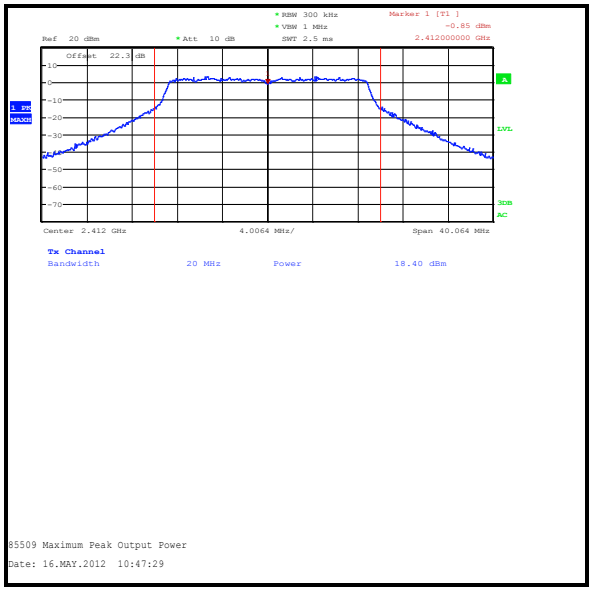
FCC and Industry Canada Results: 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / 5 dBi sectorised antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	18.4	18.6	21.5	30.0	8.5	Complied
Middle	18.2	18.4	21.3	30.0	8.7	Complied
Top	18.0	18.0	21.0	30.0	9.0	Complied

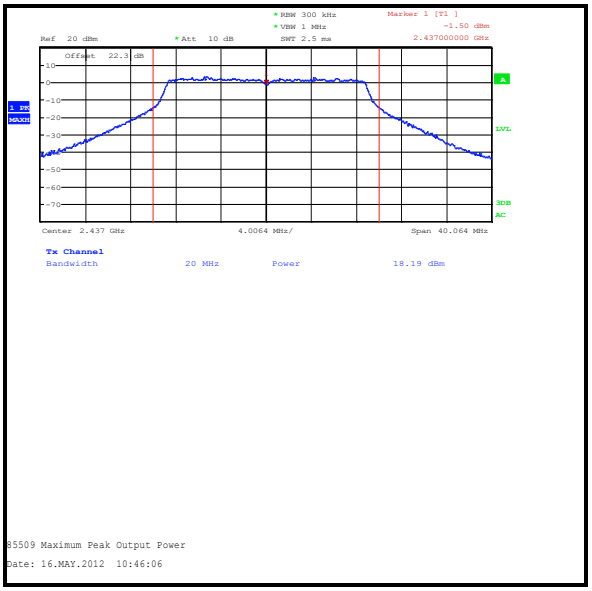
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	21.5	3.6	24.1	36.0	10.9	Complied
Middle	21.3	3.6	24.9	36.0	11.1	Complied
Top	21.0	3.6	24.6	36.0	11.4	Complied

Transmitter Maximum Peak Output Power (continued)

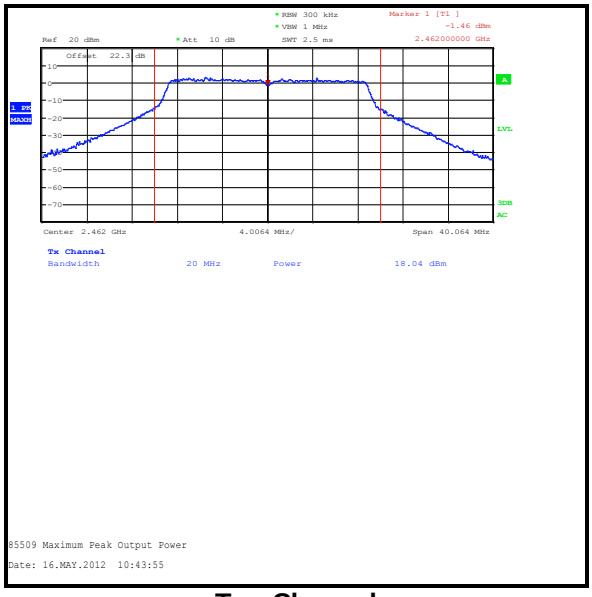
Results: 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 0 / 5 dBi sectorised antenna



Bottom Channel



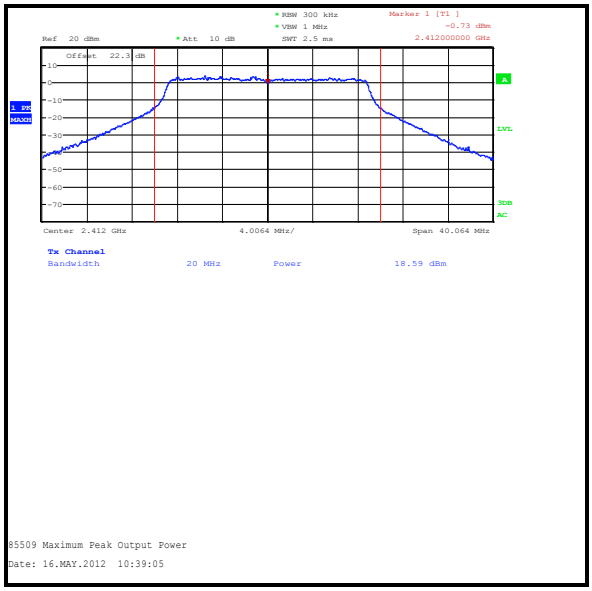
Middle Channel



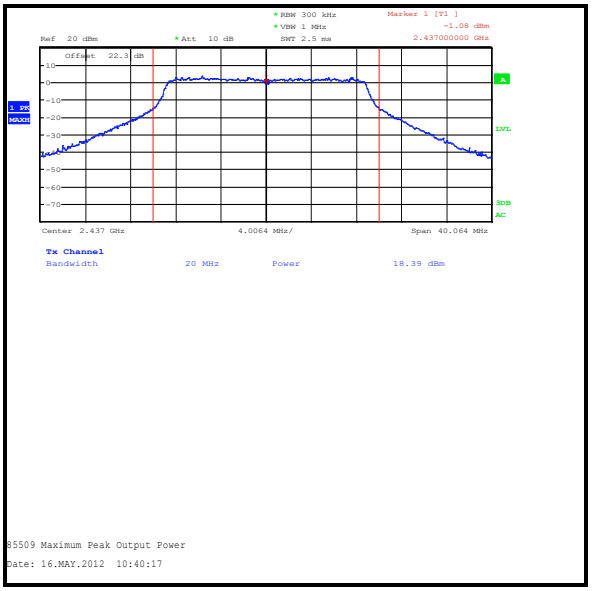
Top Channel

Transmitter Maximum Peak Output Power (continued)

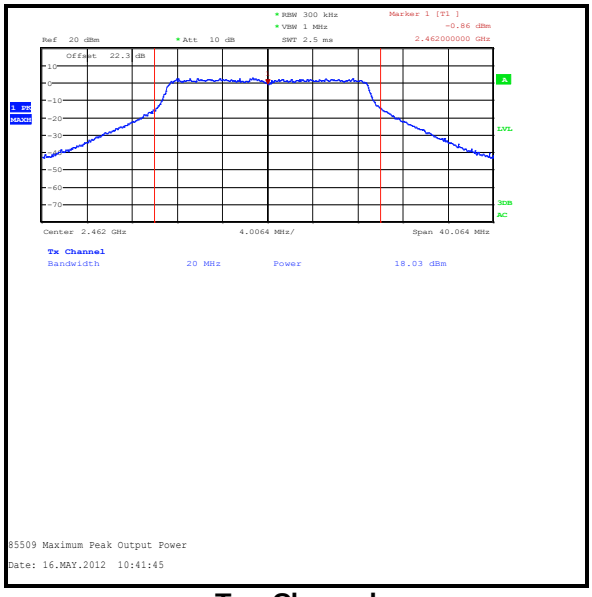
Results: 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 1 / 5 dBi sectorised antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / 15 dBi omnidirectional antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	9.9	-4.8	10.0	21.0	11.0	Complied
Middle	-6.7	-4.4	-2.4	21.0	23.4	Complied
Top	5.5	-4.6	5.9	21.0	15.1	Complied

Industry Canada Results: 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / 15 dBi omnidirectional antenna

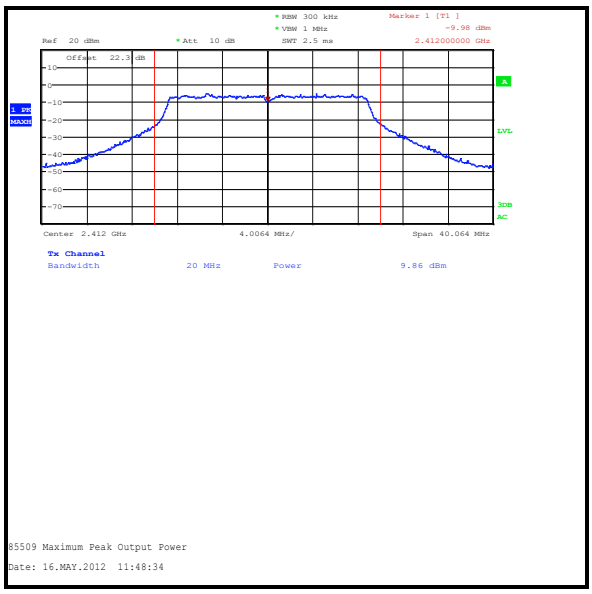
Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	9.9	-4.8	10.0	30.0	20.0	Complied
Middle	-6.7	-4.4	-2.4	30.0	32.4	Complied
Top	5.5	-4.6	5.9	30.0	24.1	Complied

FCC and Industry Canada Results: 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / 15 dBi omnidirectional antenna

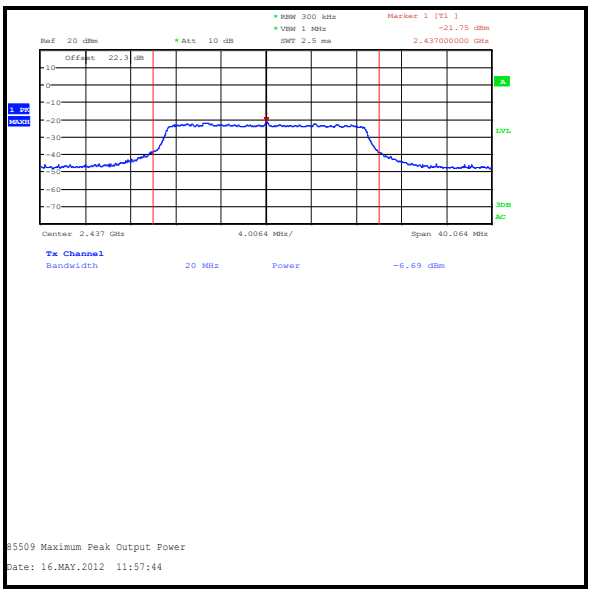
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	10.0	13.6	23.6	36.0	12.4	Complied
Middle	-2.4	13.6	11.2	36.0	24.8	Complied
Top	5.9	13.6	19.5	36.0	16.5	Complied

Transmitter Maximum Peak Output Power (continued)

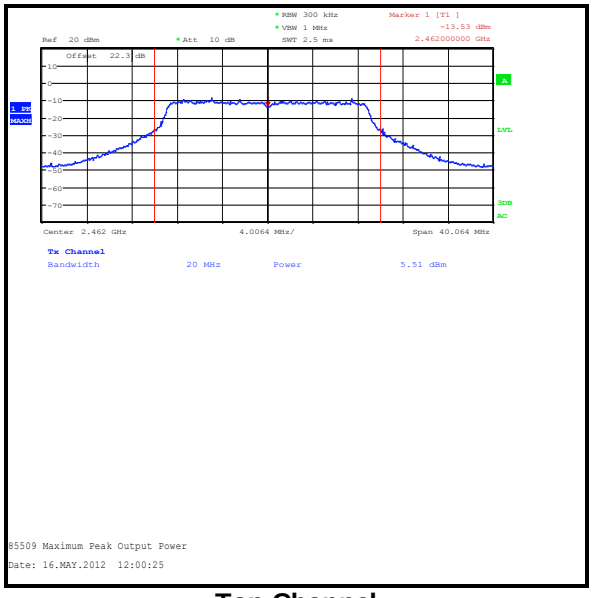
Results: 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 0 / 15 dBi omnidirectional antenna



Bottom Channel



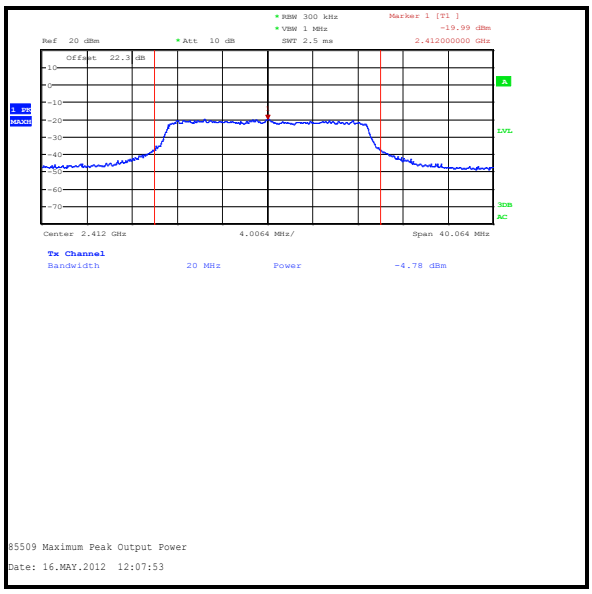
Middle Channel



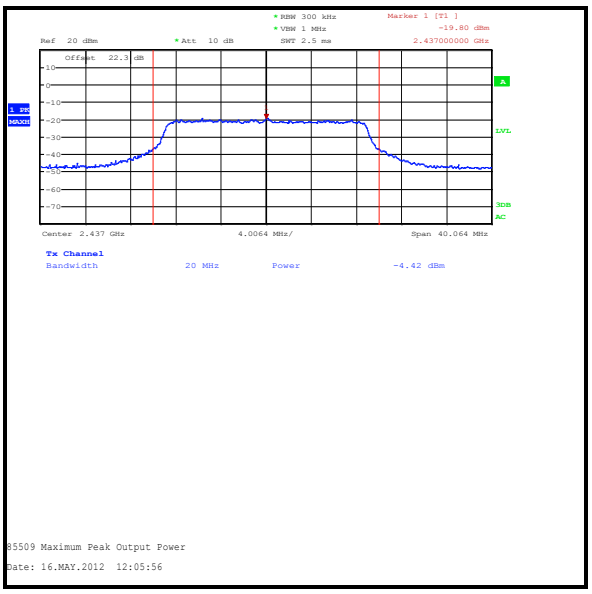
Top Channel

Transmitter Maximum Peak Output Power (continued)

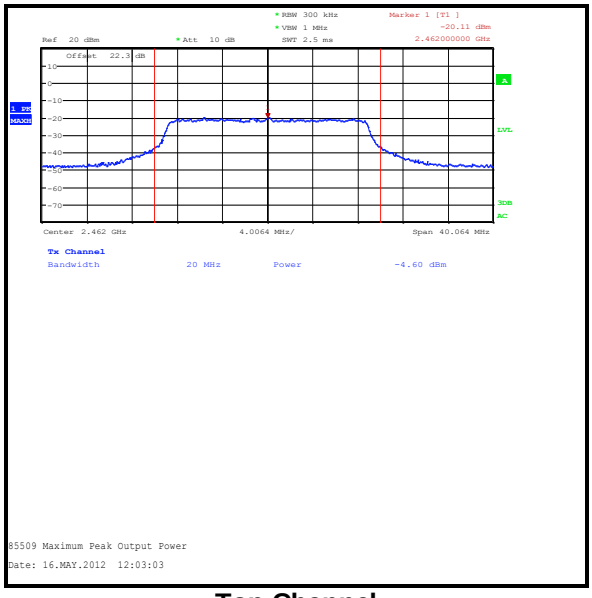
Results: 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 1 / 15 dBi omnidirectional antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / 16.5 dBi sectorised antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	-4.0	-5.7	-1.8	26.0	27.8	Complied
Middle	-12.1	-6.7	-5.6	26.0	31.6	Complied
Top	-12.9	-7.0	-6.0	26.0	32.0	Complied

Industry Canada Results: 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / 16.5 dBi sectorised antenna

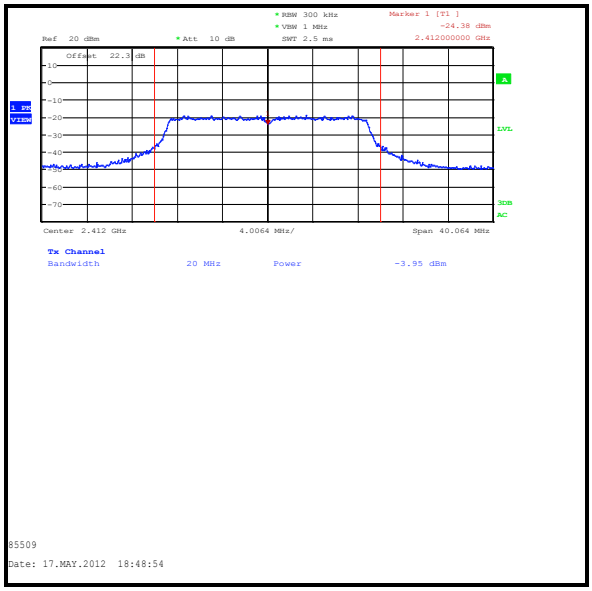
Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	-4.0	-5.7	-1.8	30.0	31.8	Complied
Middle	-12.1	-6.7	-5.6	30.0	35.6	Complied
Top	-12.9	-7.0	-6.0	30.0	36.0	Complied

FCC and Industry Canada Results: 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / 16.5 dBi sectorised antenna

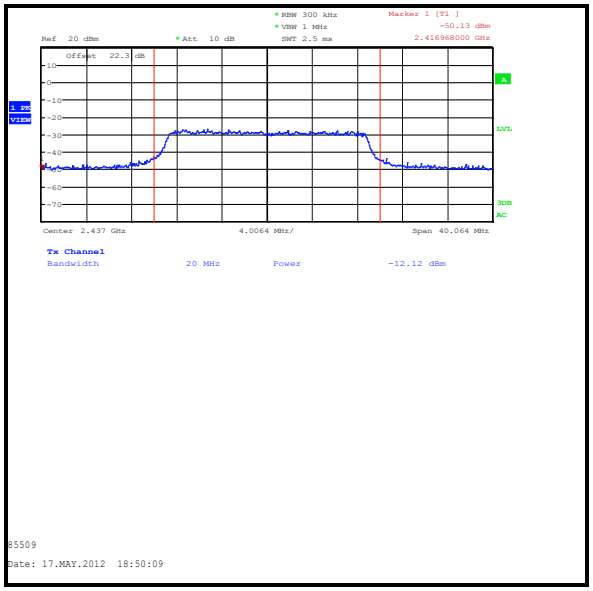
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	-1.8	15.1	13.3	36.0	22.7	Complied
Middle	-5.6	15.1	9.5	36.0	26.5	Complied
Top	-6.0	15.1	9.1	36.0	26.9	Complied

Transmitter Maximum Peak Output Power (continued)

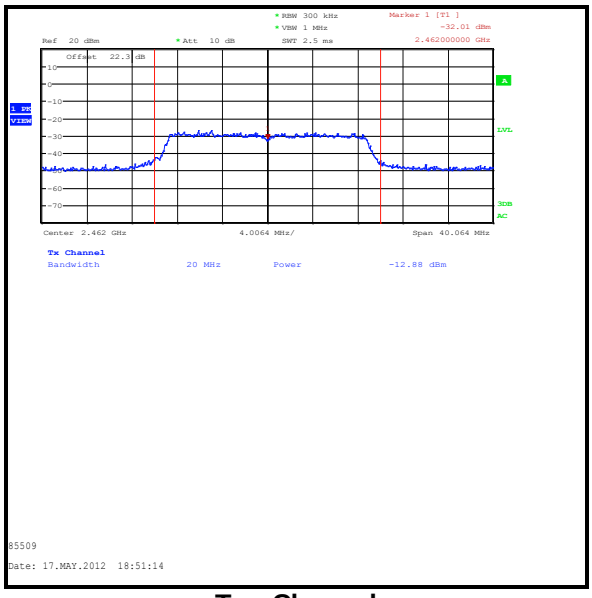
Results: 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 0 / 16.5 dBi sectorised antenna



Bottom Channel



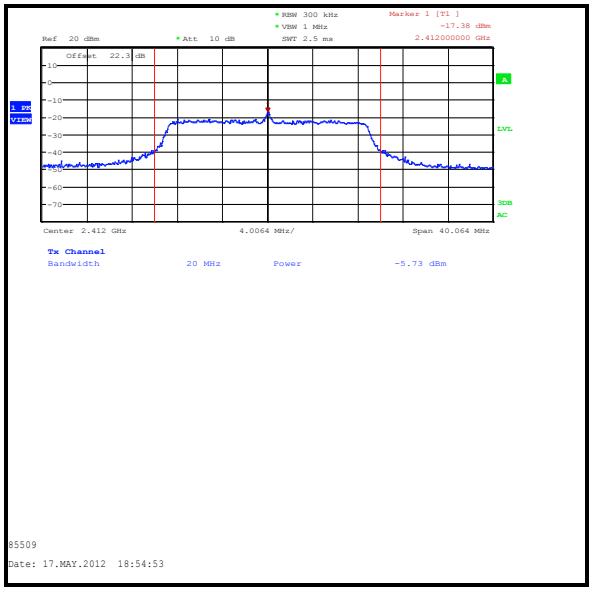
Middle Channel



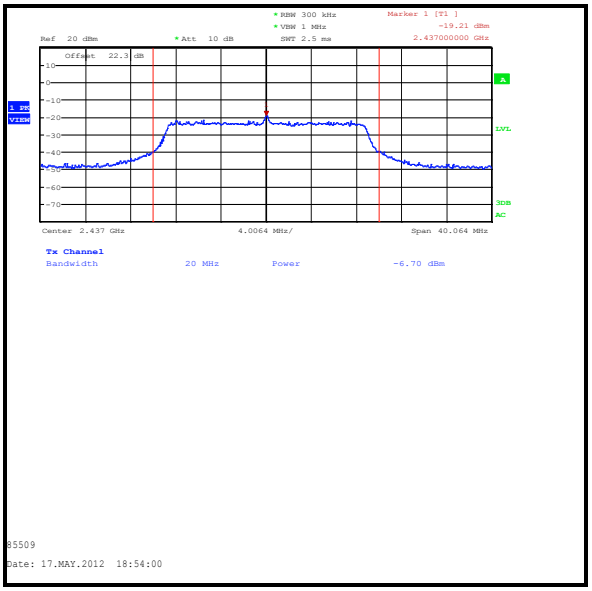
Top Channel

Transmitter Maximum Peak Output Power (continued)

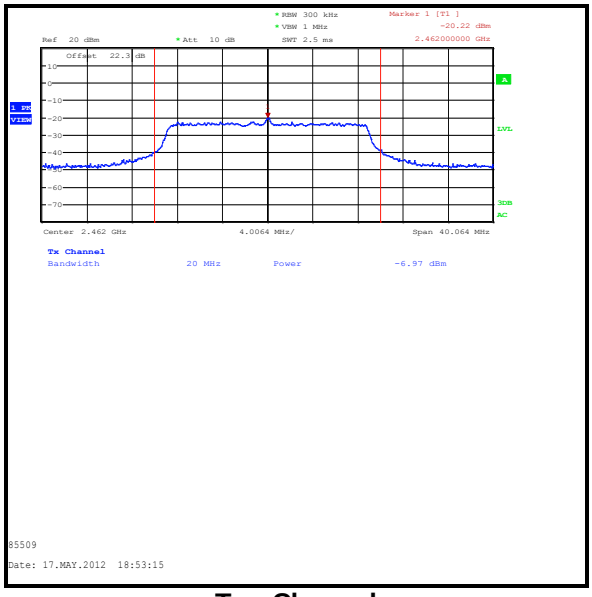
Results: 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 1 / 16.5 dBi sectorised antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / 19 dBi PTP antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	4.7	-5.9	5.1	25.0	19.9	Complied
Middle	-7.3	-6.8	-4.0	25.0	29.0	Complied
Top	-8.2	-7.2	-4.7	25.0	29.7	Complied

Industry Canada Results: 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / 19 dBi PTP antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	4.7	-5.9	5.1	30.0	24.9	Complied
Middle	-7.3	-6.8	-4.0	30.0	34.0	Complied
Top	-8.2	-7.2	-4.7	30.0	34.7	Complied

FCC and Industry Canada Results: 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / 19 dBi PTP antenna

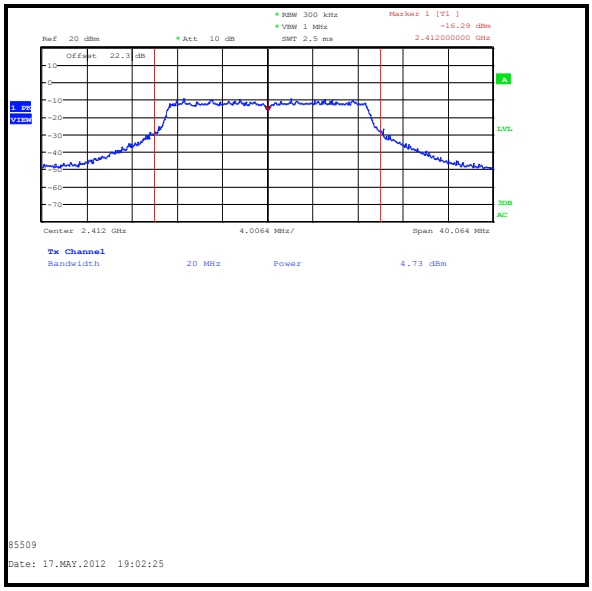
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Result
Bottom	5.1	17.6	22.7	See note below	Complied
Middle	-4.0	17.6	13.6	See note below	Complied
Top	-4.7	17.6	12.9	See note below	Complied

RSS-210 A8.4(5) Point-to-point systems in the 2400-2483.5 MHz band are permitted to have an e.i.r.p higher than 4 W provided that the higher e.i.r.p is achieved by employing higher gain directional antennas and not higher transmitter output powers.

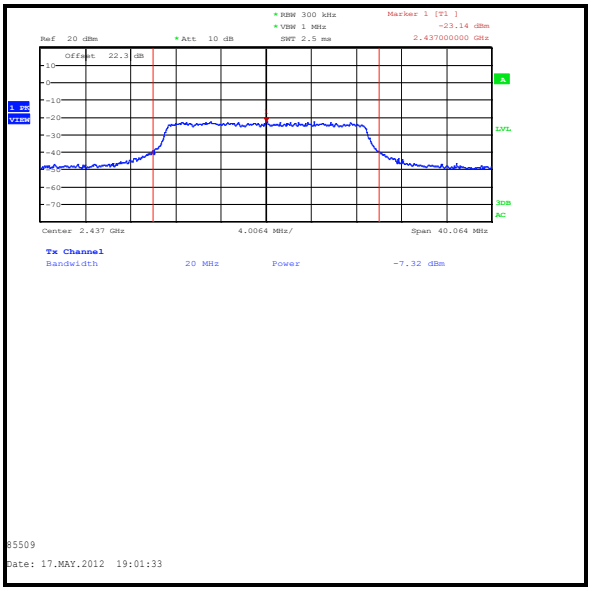
Therefore, as long as the conducted power requirements are met, there is no restriction on e.i.r.p.

Transmitter Maximum Peak Output Power (continued)

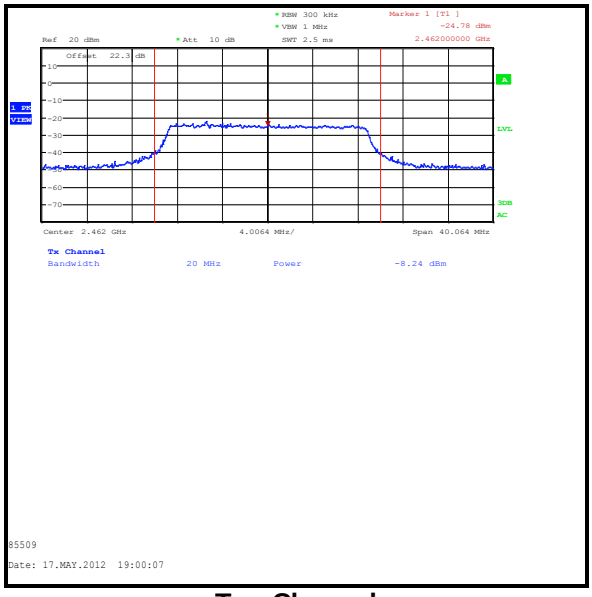
Results: 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 0 / 19 dBi PTP antenna



Bottom Channel



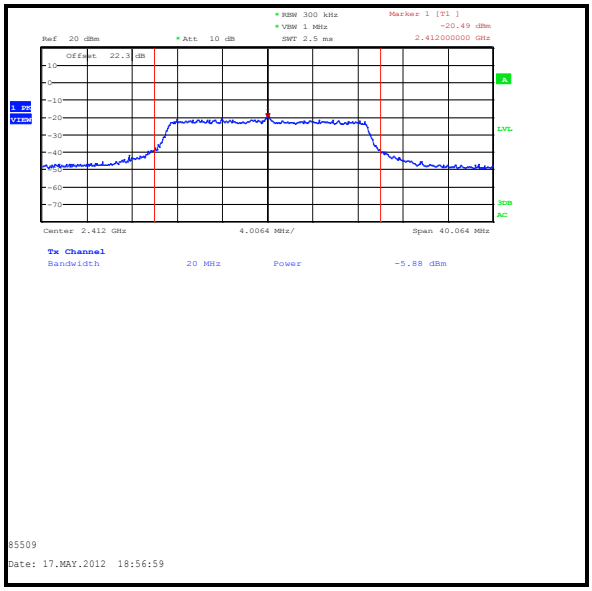
Middle Channel



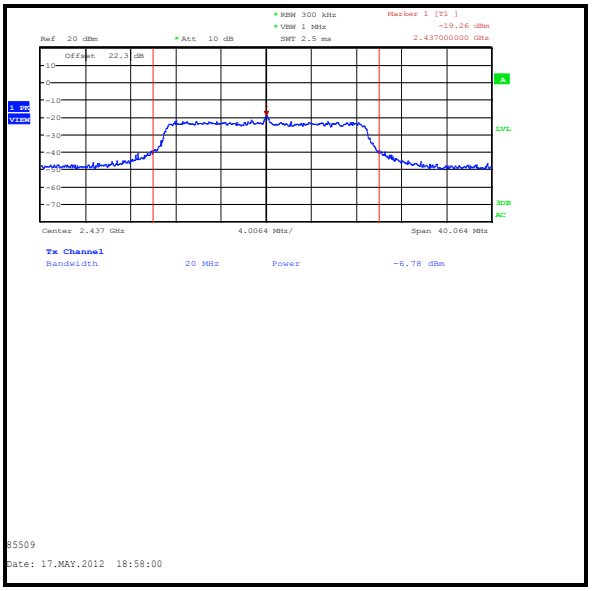
Top Channel

Transmitter Maximum Peak Output Power (continued)

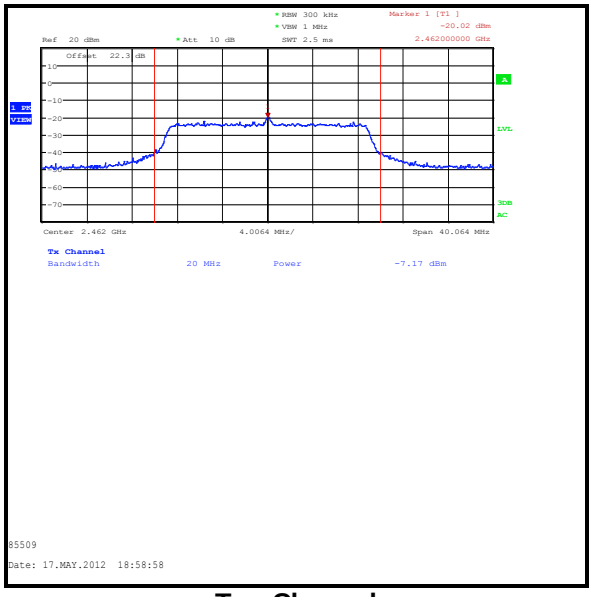
Results: 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 1 / 19 dBi PTP antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

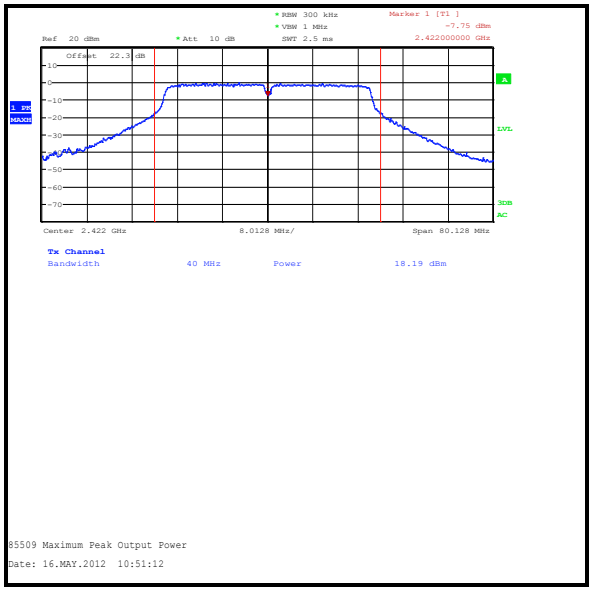
FCC and Industry Canada Results: 802.11n / 40 MHz / 13.5 Mbps / BPSK / MCS0 / 5 dBi sectorised antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	18.2	18.4	21.3	30.0	8.7	Complied
Middle	17.8	18.3	21.1	30.0	8.9	Complied
Top	18.0	18.2	21.1	30.0	8.9	Complied

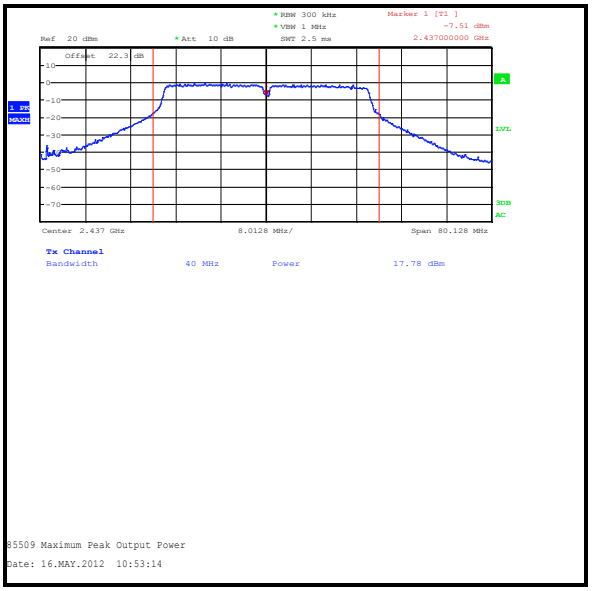
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	21.3	3.6	24.9	36.0	11.1	Complied
Middle	21.1	3.6	24.7	36.0	11.3	Complied
Top	21.1	3.6	24.7	36.0	11.3	Complied

Transmitter Maximum Peak Output Power (continued)

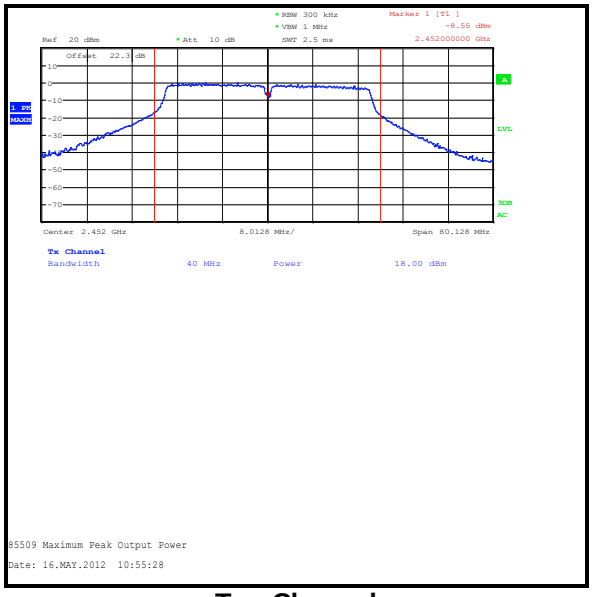
Results: 802.11n / 40 MHz / 13.5 Mbps / BPSK / MCS0 / Port 0 / 5 dBi sectorised antenna



Bottom Channel



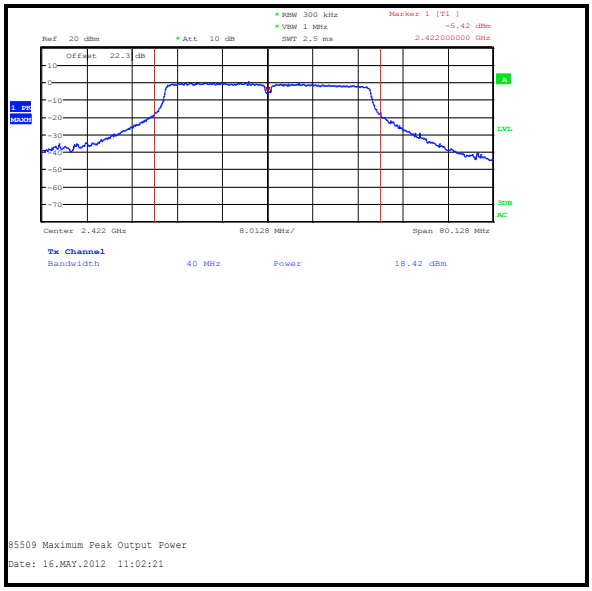
Middle Channel



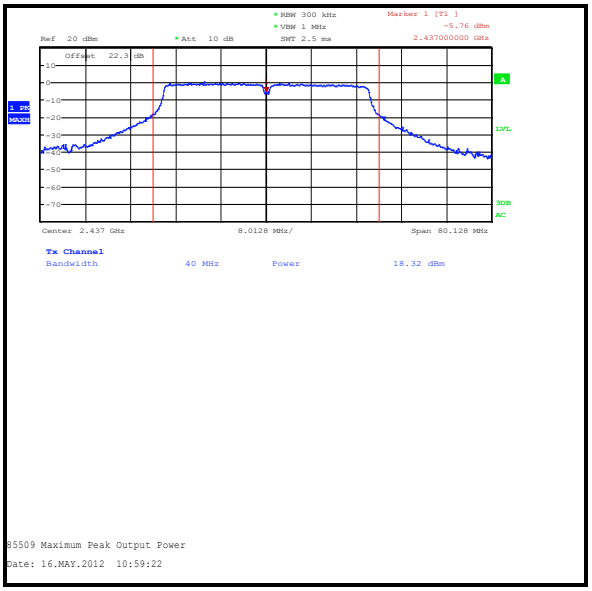
Top Channel

Transmitter Maximum Peak Output Power (continued)

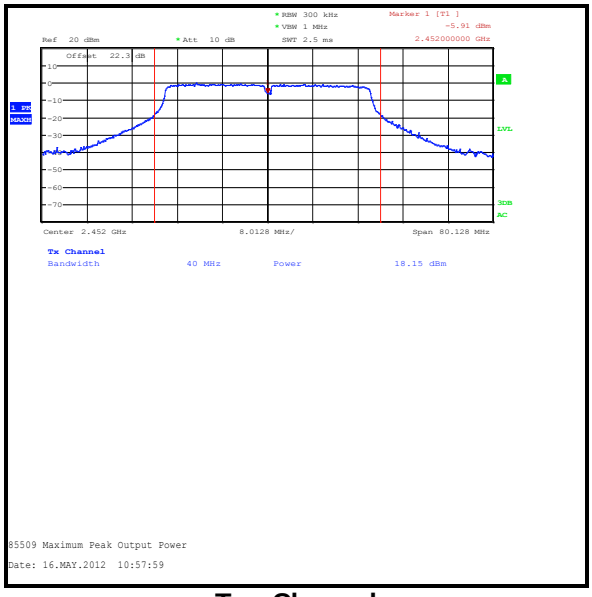
Results: 802.11n / 40 MHz / 13.5 Mbps / BPSK / MCS0 / Port 1 / 5 dBi sectorised antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11n / 40 MHz / 13.5 Mbps / BPSK / MCS0 / 15 dBi omnidirectional antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	9.7	7.1	11.6	21.0	9.4	Complied
Middle	3.1	7.4	8.8	21.0	12.2	Complied
Top	8.0	7.1	10.6	21.0	10.4	Complied

Industry Canada Results: 802.11n / 40 MHz / 13.5 Mbps / BPSK / MCS0 / 15 dBi omnidirectional antenna

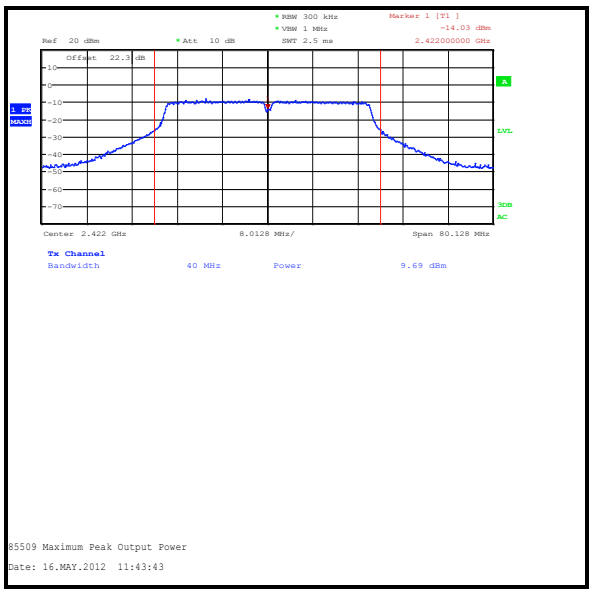
Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	9.7	7.1	11.6	30.0	18.4	Complied
Middle	3.1	7.4	8.8	30.0	21.2	Complied
Top	8.0	7.1	10.6	30.0	19.4	Complied

FCC and Industry Canada Results: 802.11n / 40 MHz / 13.5 Mbps / BPSK / MCS0 / 15 dBi omnidirectional antenna

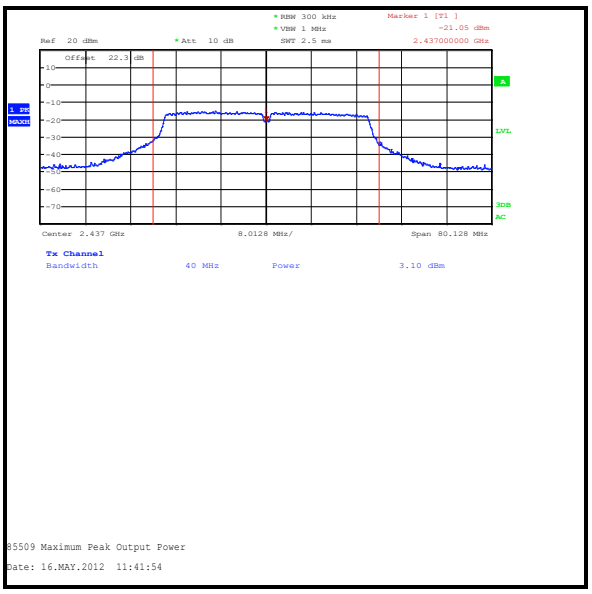
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	11.6	13.6	25.2	36.0	10.8	Complied
Middle	8.8	13.6	22.4	36.0	13.6	Complied
Top	10.6	13.6	24.2	36.0	11.8	Complied

Transmitter Maximum Peak Output Power (continued)

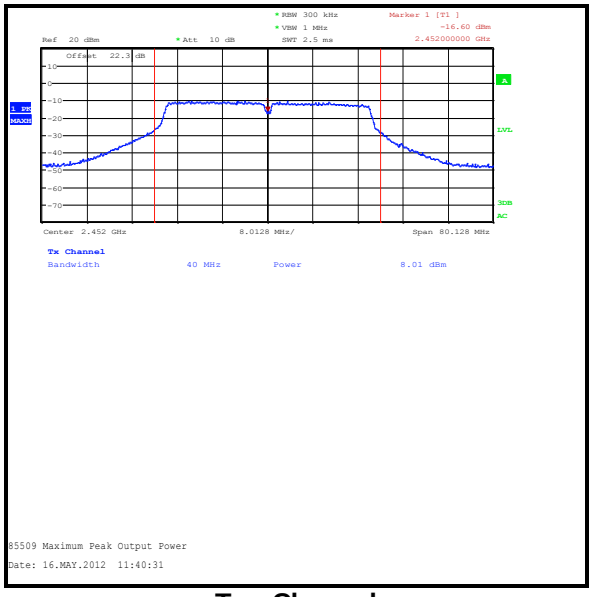
Results: 802.11n / 40 MHz / 13.5 Mbps / BPSK / MCS0 / Port 0 / 15 dBi omnidirectional antenna



Bottom Channel



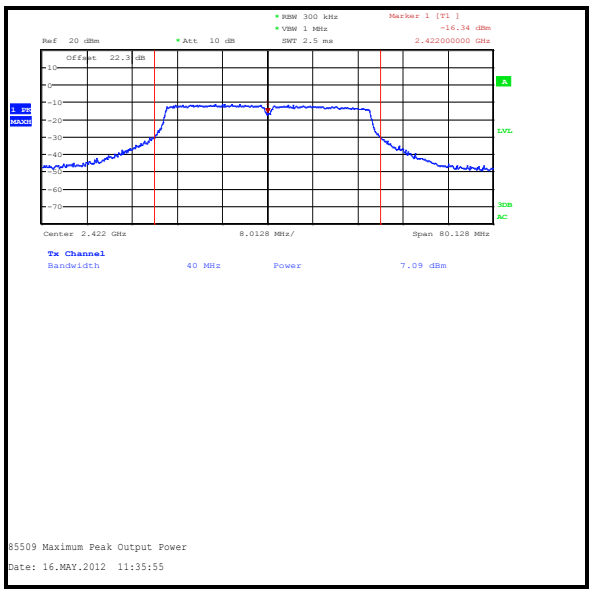
Middle Channel



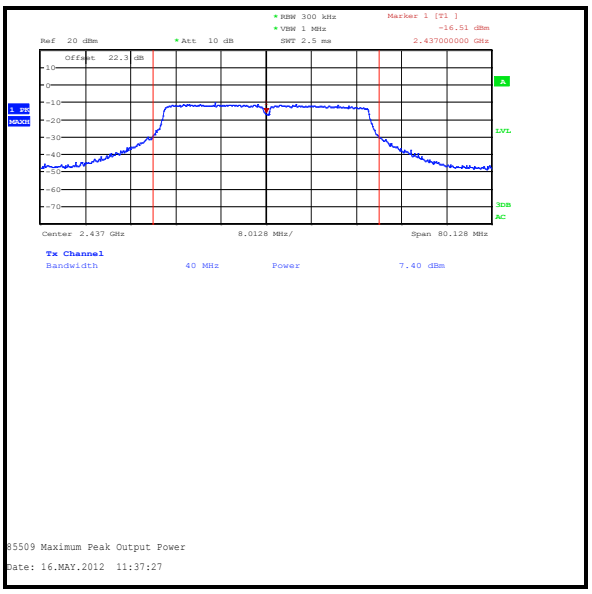
Top Channel

Transmitter Maximum Peak Output Power (continued)

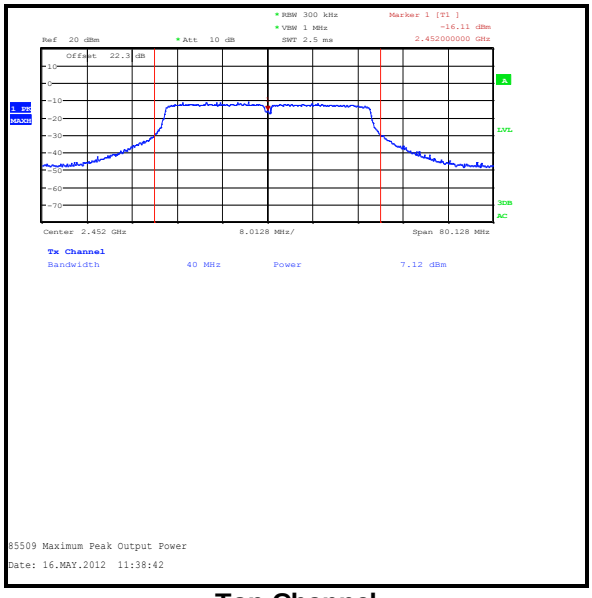
Results: 802.11n / 40 MHz / 13.5 Mbps / BPSK / MCS0 / Port 1 / 15 dBi omnidirectional antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11n / 40 MHz / 13.5 Mbps / BPSK / MCS0 / 16.5 dBi sectorised antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	6.1	1.6	7.4	26.0	18.6	Complied
Middle	-11.0	1.3	1.5	26.0	24.5	Complied
Top	3.7	1.7	5.8	26.0	20.2	Complied

Industry Canada Results: 802.11n / 40 MHz / 13.5 Mbps / BPSK / MCS0 / 16.5 dBi sectorised antenna

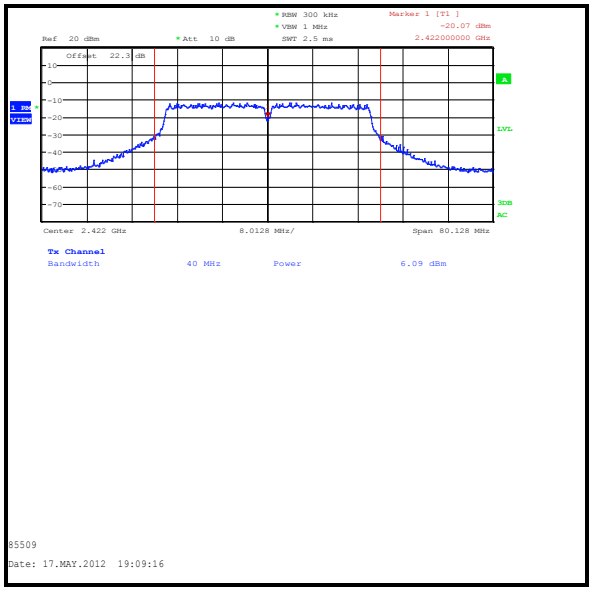
Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	6.1	1.6	7.4	30.0	22.6	Complied
Middle	-11.0	1.3	1.5	30.0	28.5	Complied
Top	3.7	1.7	5.8	30.0	24.2	Complied

FCC and Industry Canada Results: 802.11n / 40 MHz / 13.5 Mbps / BPSK / MCS0 / 16.5 dBi sectorised antenna

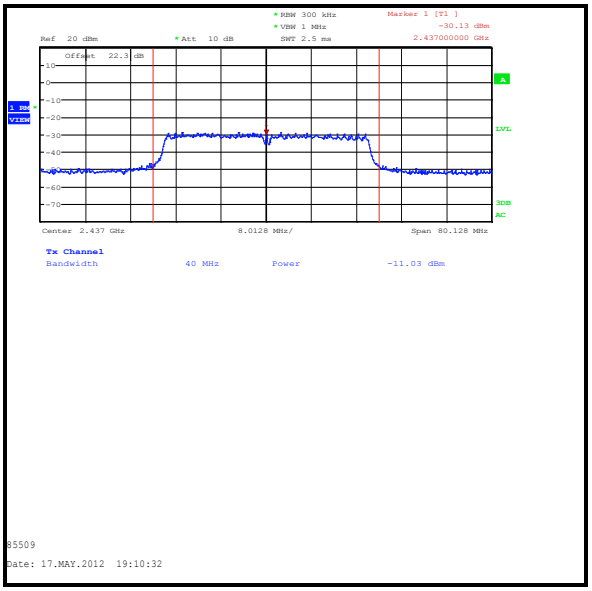
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	7.4	15.1	22.5	36.0	13.5	Complied
Middle	1.5	15.1	16.6	36.0	19.4	Complied
Top	5.8	15.1	20.9	36.0	15.1	Complied

Transmitter Maximum Peak Output Power (continued)

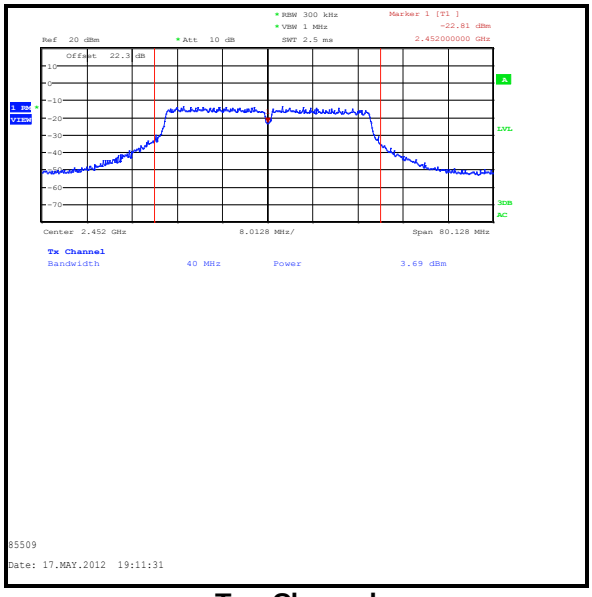
Results: 802.11n / 40 MHz / 13.5 Mbps / BPSK / MCS0 / Port 0 / 16.5 dBi sectorised antenna



Bottom Channel



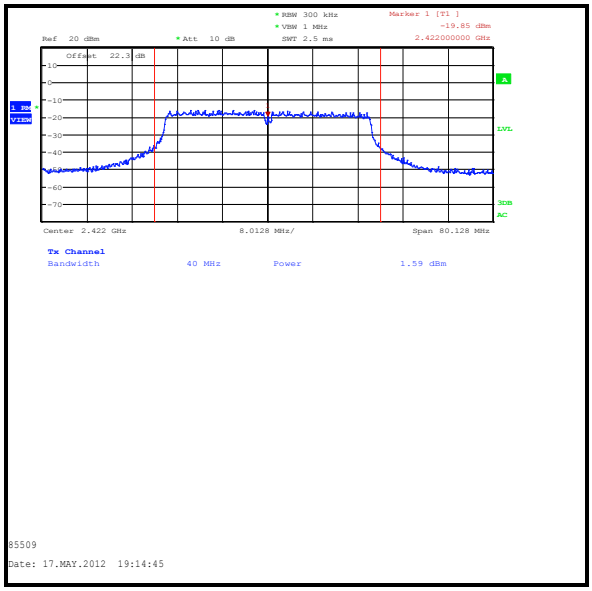
Middle Channel



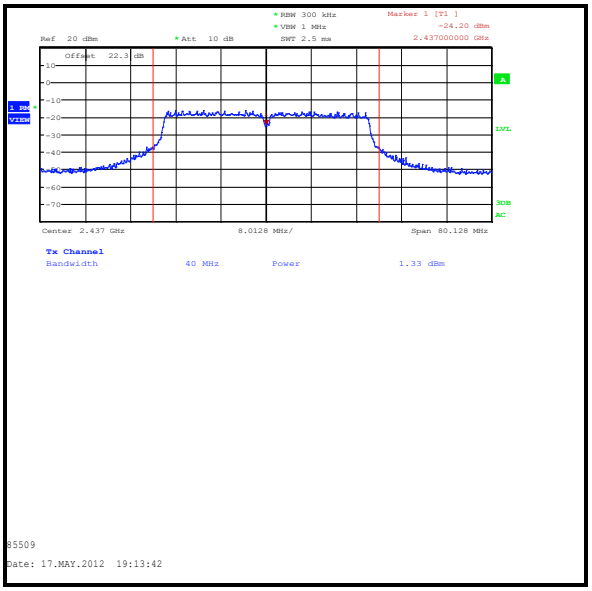
Top Channel

Transmitter Maximum Peak Output Power (continued)

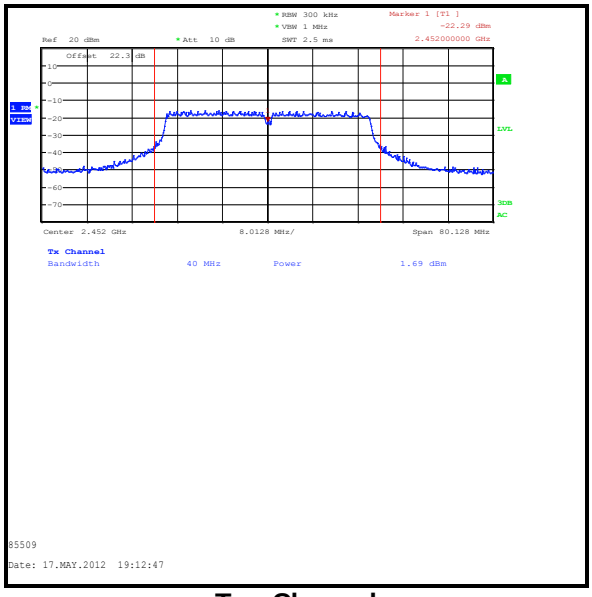
Results: 802.11n / 40 MHz / 13.5 Mbps / BPSK / MCS0 / Port 1 / 16.5 dBi sectorised antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11n / 40 MHz / 13.5 Mbps / BPSK / MCS0 / 19 dBi PTP antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	3.1	-10.1	3.3	25.0	21.7	Complied
Middle	-11.7	-11.2	-8.4	25.0	33.4	Complied
Top	-6.8	-11.5	-5.5	25.0	30.5	Complied

Industry Canada Results: 802.11n / 40 MHz / 13.5 Mbps / BPSK / MCS0 / 19 dBi PTP antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	3.1	-10.1	3.3	30.0	26.7	Complied
Middle	-11.7	-11.2	-8.4	30.0	38.4	Complied
Top	-6.8	-11.5	-5.5	30.0	35.5	Complied

FCC and Industry Canada Results: 802.11n / 40 MHz / 13.5 Mbps / BPSK / MCS0 / 19 dBi PTP antenna

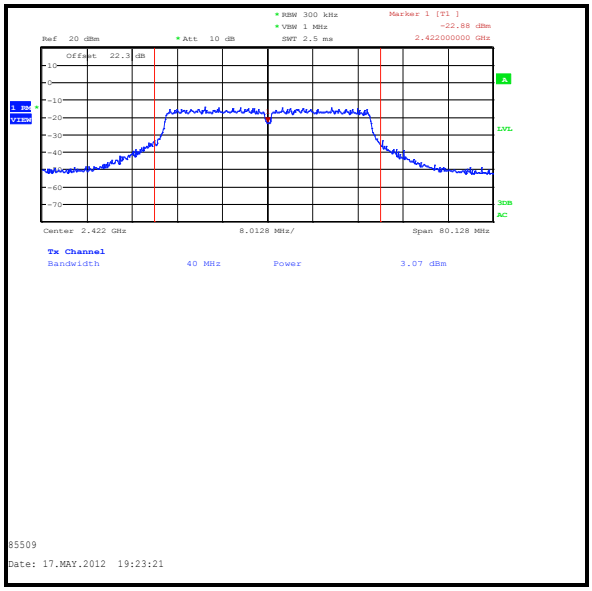
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Result
Bottom	3.3	17.6	20.9	See note below	Complied
Middle	-8.4	17.6	9.2	See note below	Complied
Top	-5.5	17.6	12.1	See note below	Complied

RSS-210 A8.4(5) Point-to-point systems in the 2400-2483.5 MHz band are permitted to have an e.i.r.p higher than 4 W provided that the higher e.i.r.p is achieved by employing higher gain directional antennas and not higher transmitter output powers.

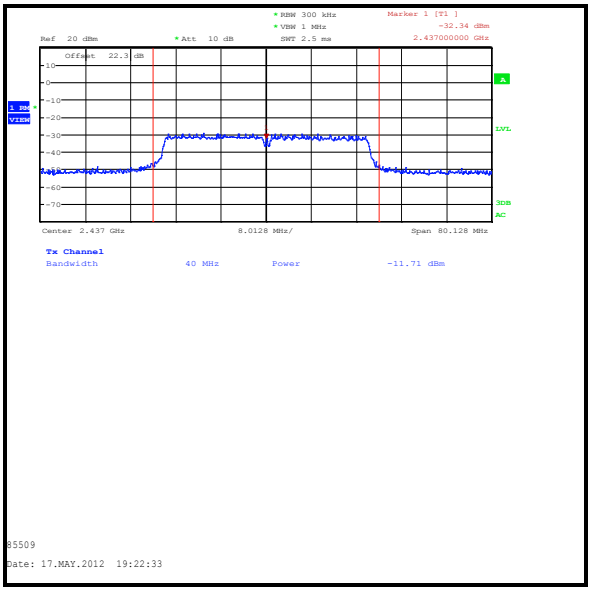
Therefore, as long as the conducted power requirements are met, there is no restriction on e.i.r.p.

Transmitter Maximum Peak Output Power (continued)

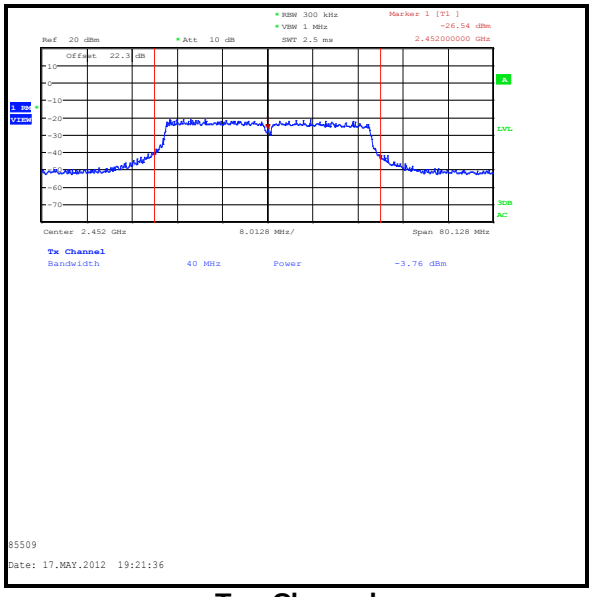
Results: 802.11n / 40 MHz / 13.5 Mbps / BPSK / MCS0 / Port 0 / 19 dBi PTP antenna



Bottom Channel



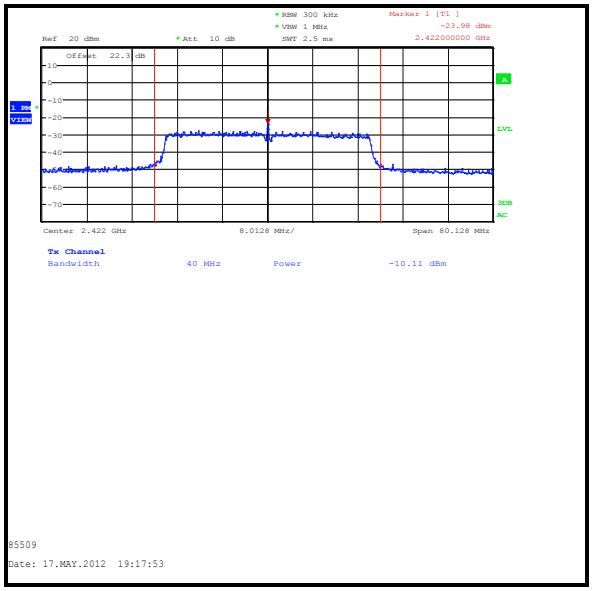
Middle Channel



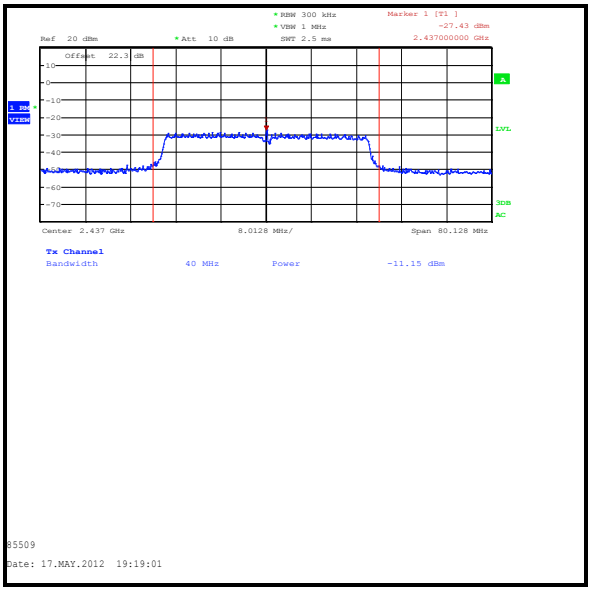
Top Channel

Transmitter Maximum Peak Output Power (continued)

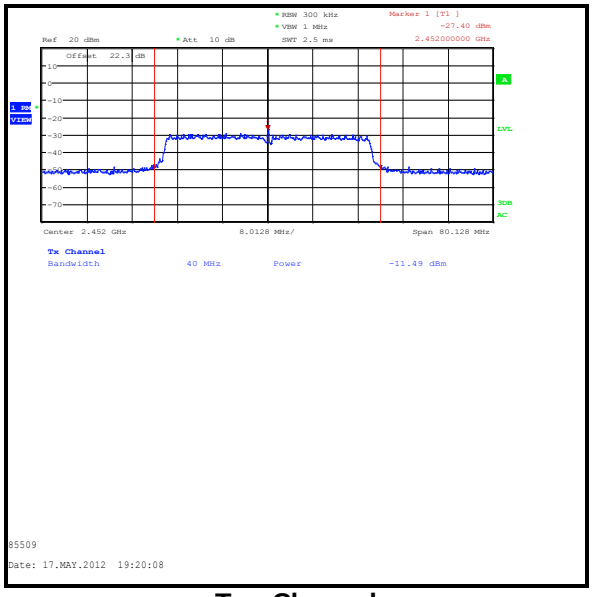
Results: 802.11n / 40 MHz / 13.5 Mbps / BPSK / MCS0 / Port 1 / 19 dBi PTP antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

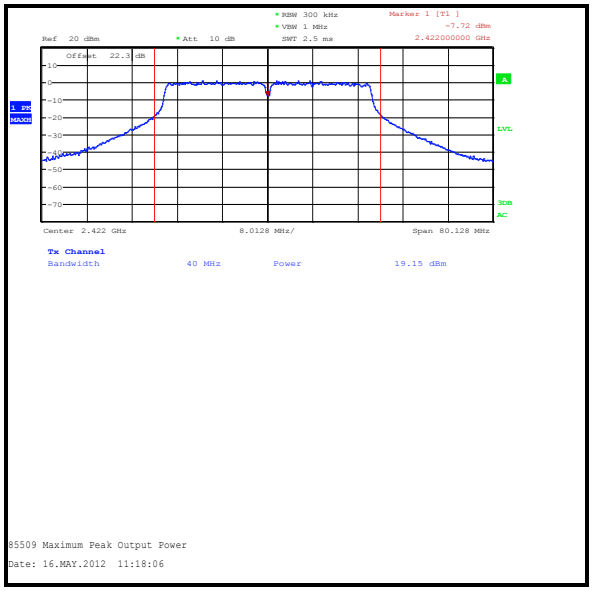
FCC and Industry Canada Results: 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / 5 dBi sectorised antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	19.2	19.2	22.2	30.0	7.8	Complied
Middle	18.6	19.1	21.9	30.0	8.1	Complied
Top	18.6	19.0	21.8	30.0	8.2	Complied

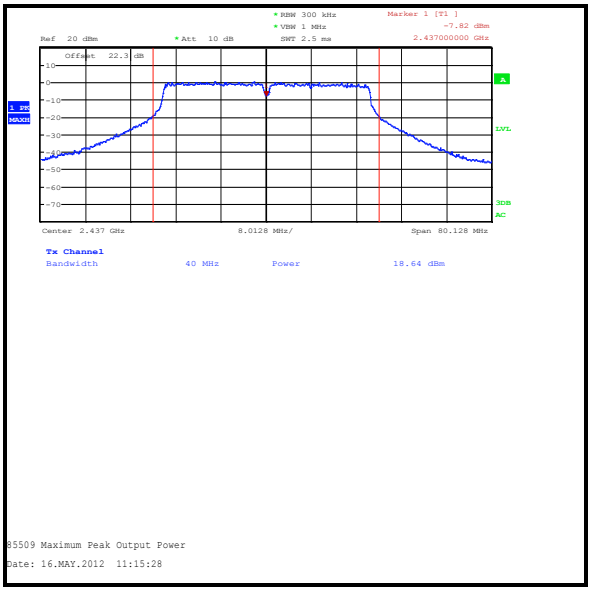
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	22.2	3.6	25.8	36.0	10.2	Complied
Middle	21.9	3.6	25.5	36.0	10.5	Complied
Top	21.8	3.6	25.4	36.0	10.6	Complied

Transmitter Maximum Peak Output Power (continued)

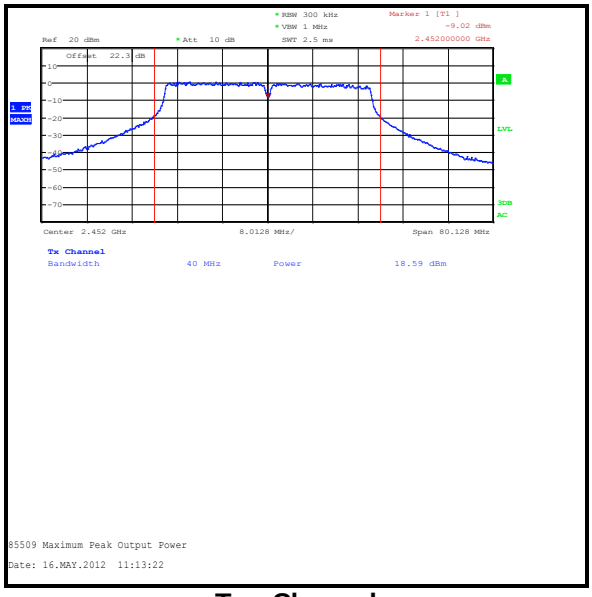
Results: 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 0 / 5 dBi sectorised antenna



Bottom Channel



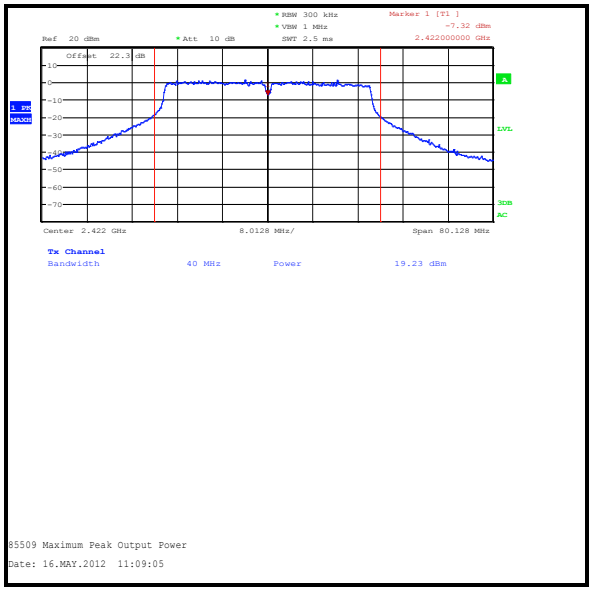
Middle Channel



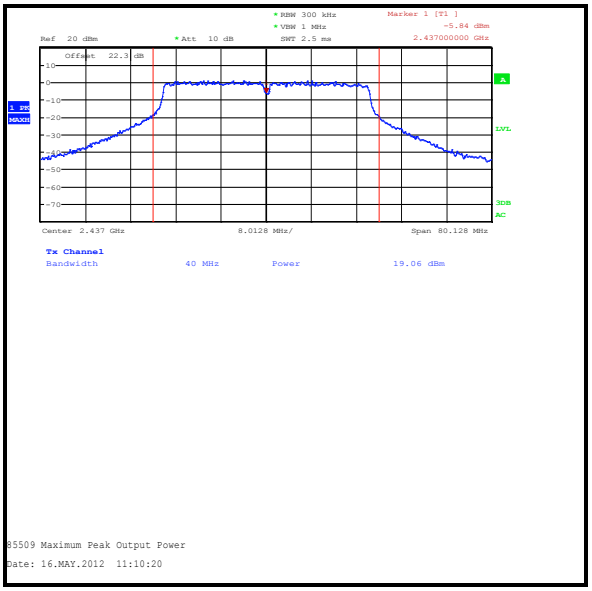
Top Channel

Transmitter Maximum Peak Output Power (continued)

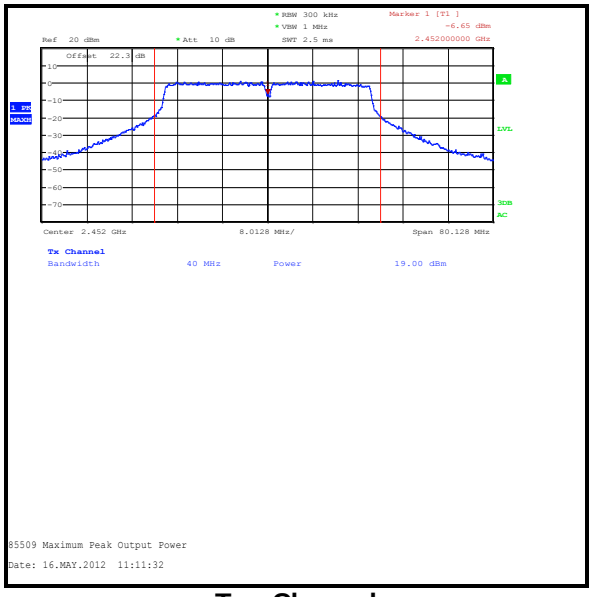
Results: 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 1 / 5 dBi sectorised antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / 15 dBi omnidirectional antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	10.4	8.0	12.4	21.0	8.6	Complied
Middle	3.8	8.5	9.8	21.0	11.2	Complied
Top	8.6	8.4	11.5	21.0	9.5	Complied

Industry Canada Results: 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / 15 dBi omnidirectional antenna

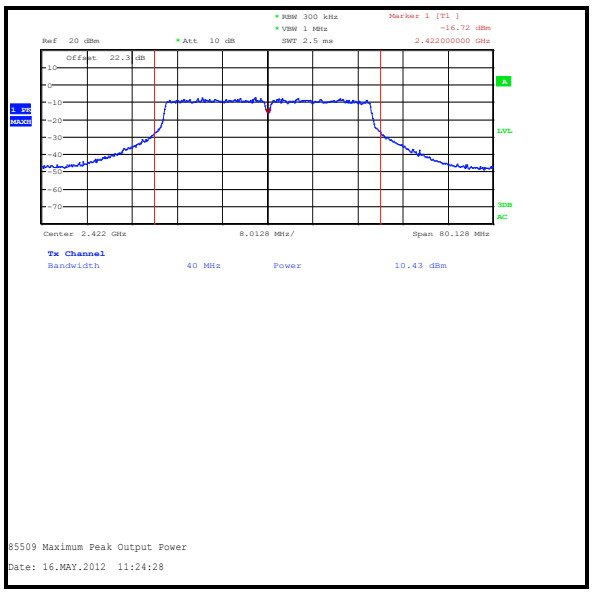
Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	10.4	8.0	12.4	30.0	17.6	Complied
Middle	3.8	8.5	9.8	30.0	20.2	Complied
Top	8.6	8.4	11.5	30.0	18.5	Complied

FCC and Industry Canada Results: 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / 15 dBi omnidirectional antenna

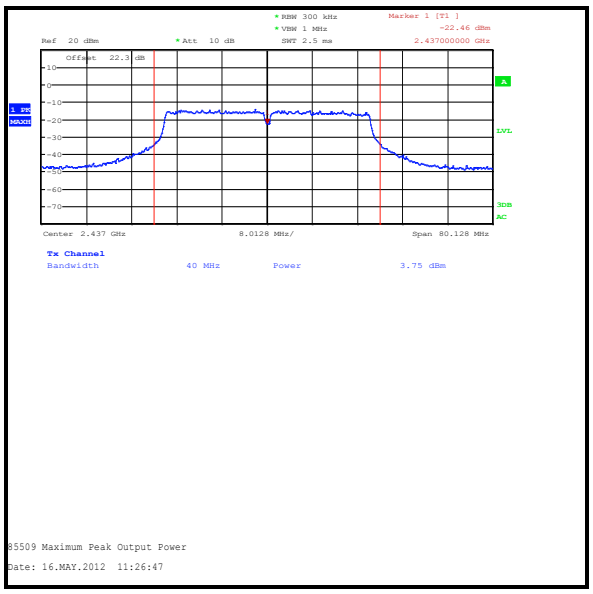
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	12.4	13.6	26.0	36.0	10.0	Complied
Middle	9.8	13.6	23.4	36.0	12.6	Complied
Top	11.5	13.6	25.1	36.0	10.9	Complied

Transmitter Maximum Peak Output Power (continued)

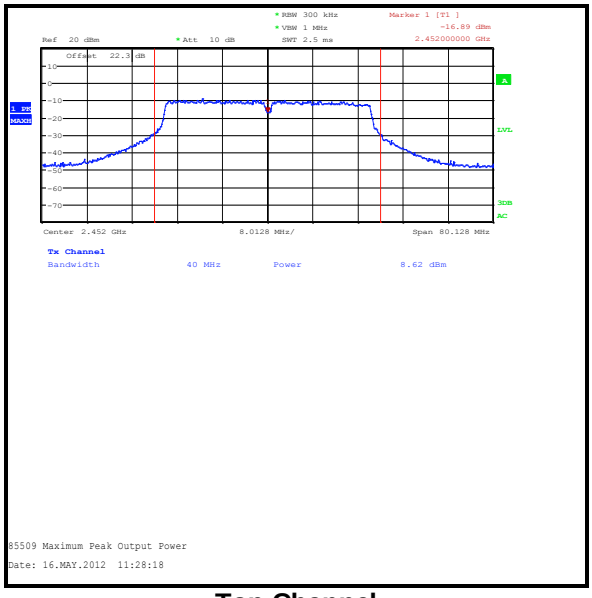
Results: 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 0 / 15 dBi omnidirectional antenna



Bottom Channel



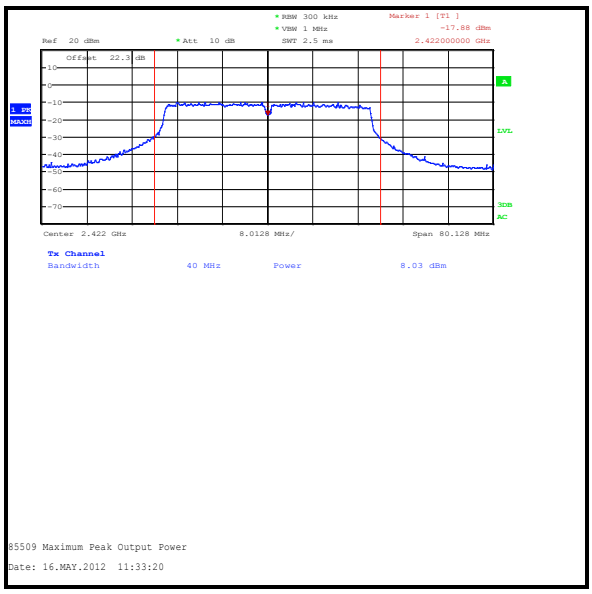
Middle Channel



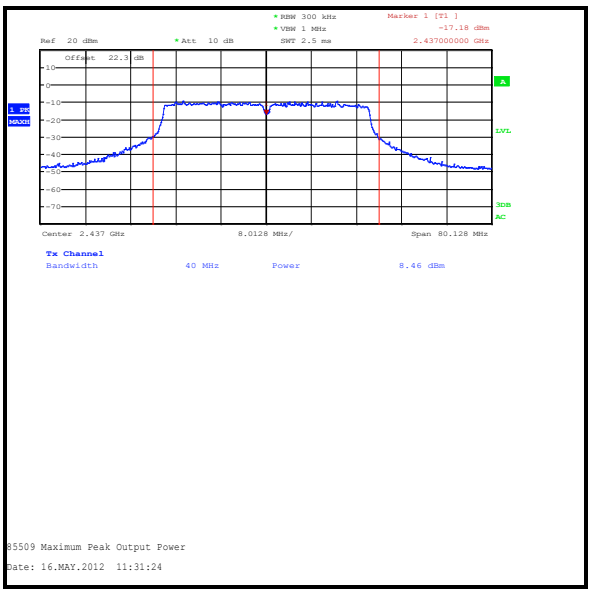
Top Channel

Transmitter Maximum Peak Output Power (continued)

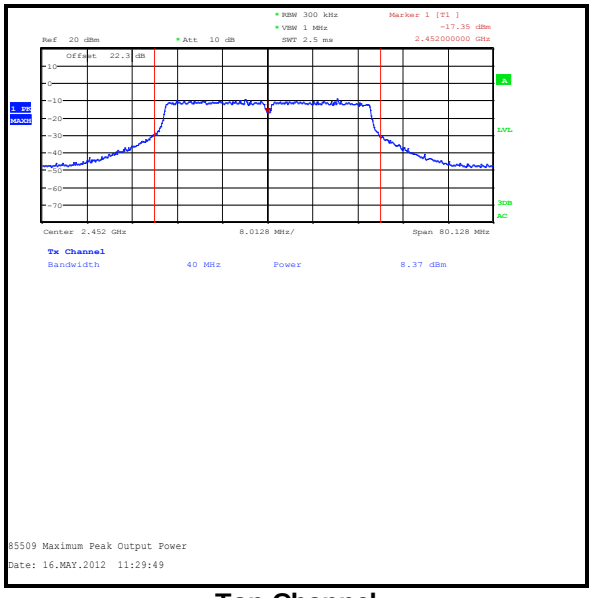
Results: 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 1 / 15 dBi omnidirectional antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / 16.5 dBi sectorised antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	7.2	2.7	8.5	26.0	17.5	Complied
Middle	-10.2	2.8	3.0	26.0	23.0	Complied
Top	5.2	2.9	7.2	26.0	18.8	Complied

Industry Canada Results: 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / 16.5 dBi sectorised antenna

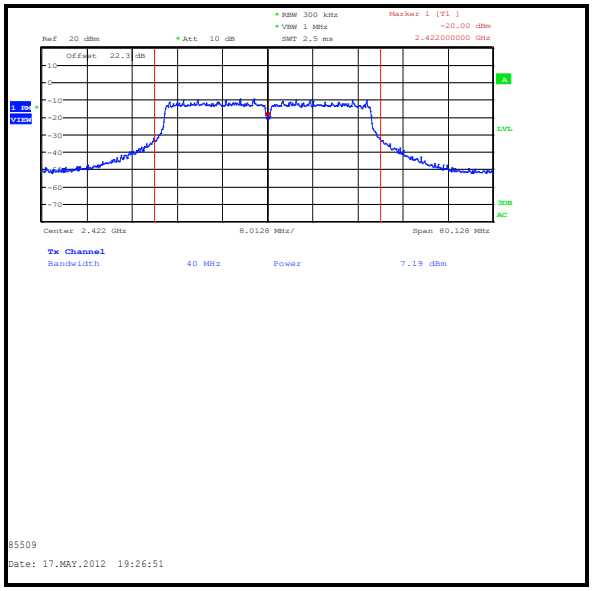
Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	7.2	2.7	8.5	30.0	21.5	Complied
Middle	-10.2	2.8	3.0	30.0	27.0	Complied
Top	5.2	2.9	7.2	30.0	22.8	Complied

FCC and Industry Canada Results: 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / 16.5 dBi sectorised antenna

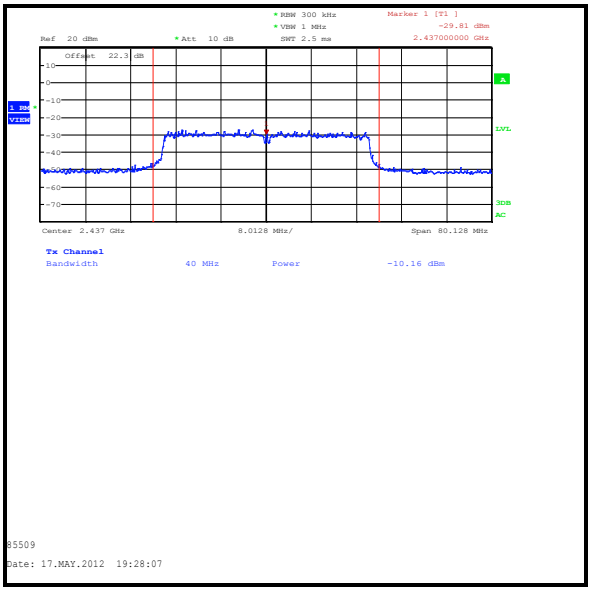
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	8.5	15.1	23.6	36.0	12.4	Complied
Middle	3.0	15.1	18.1	36.0	17.9	Complied
Top	7.2	15.1	22.3	36.0	13.7	Complied

Transmitter Maximum Peak Output Power (continued)

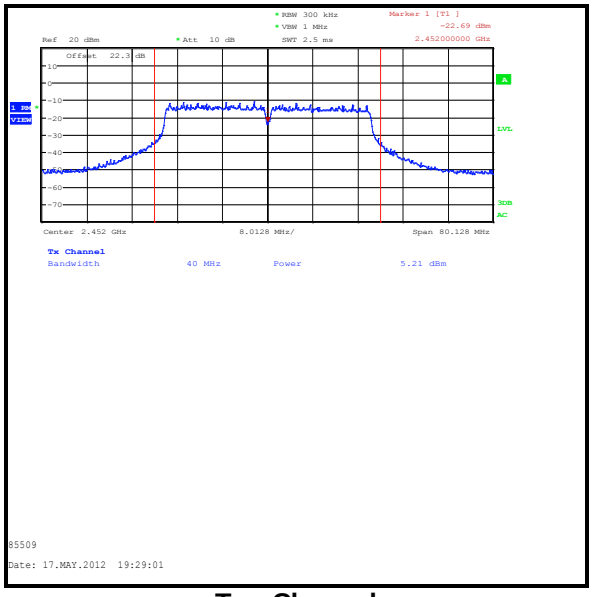
Results: 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 0 / 16.5 dBi sectorised antenna



Bottom Channel



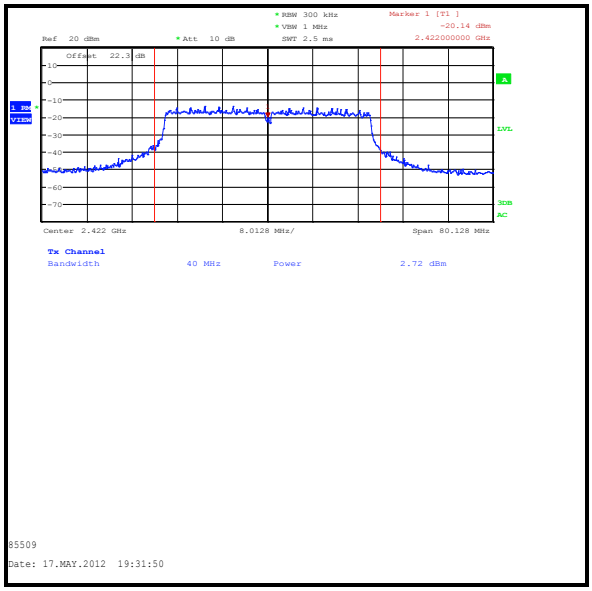
Middle Channel



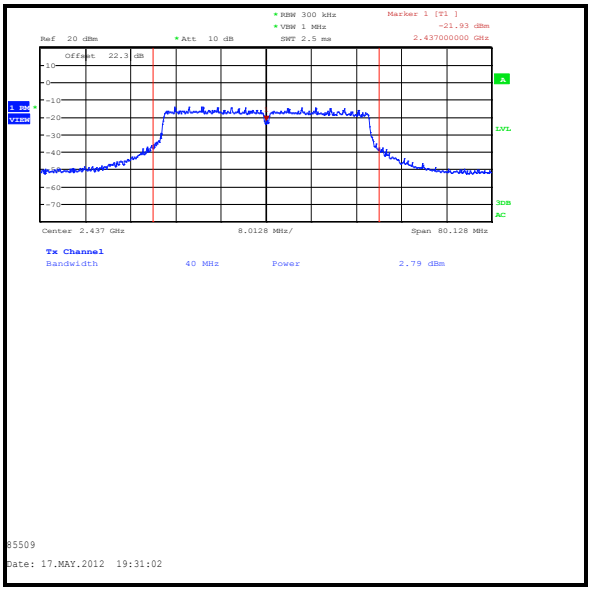
Top Channel

Transmitter Maximum Peak Output Power (continued)

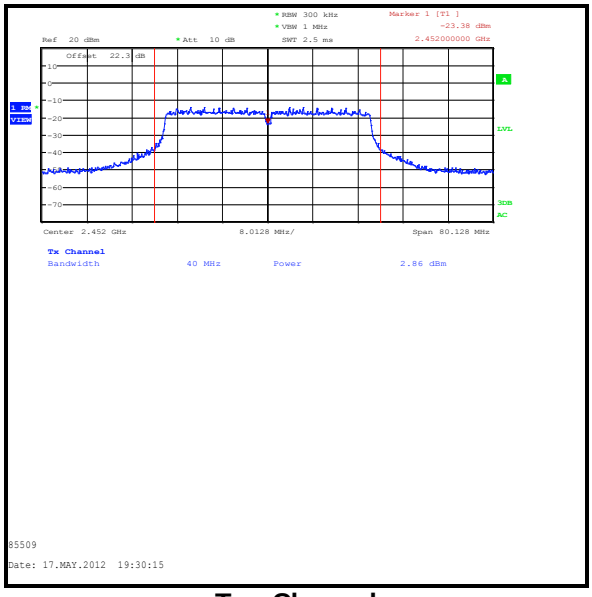
Results: 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 1 / 16.5 dBi sectorised antenna



Bottom Channel



Middle Channel



Top Channel

Transmitter Maximum Peak Output Power (continued)

FCC Results: 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / 19 dBi PTP antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	-8.8	4.3	4.5	25.0	20.5	Complied
Middle	-10.0	-10.4	-7.2	25.0	32.2	Complied
Top	-10.2	-3.1	-2.3	25.0	27.3	Complied

Industry Canada Results: 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / 19 dBi PTP antenna

Channel	Conducted Peak Power at Port 0 (dBm)	Conducted Peak Power at Port 1 (dBm)	Combined Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	4.3	-8.8	4.5	30.0	25.5	Complied
Middle	-10.4	-10.0	-7.2	30.0	37.2	Complied
Top	-3.1	-10.2	-2.3	30.0	32.2	Complied

FCC and Industry Canada Results: 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / 19 dBi PTP antenna

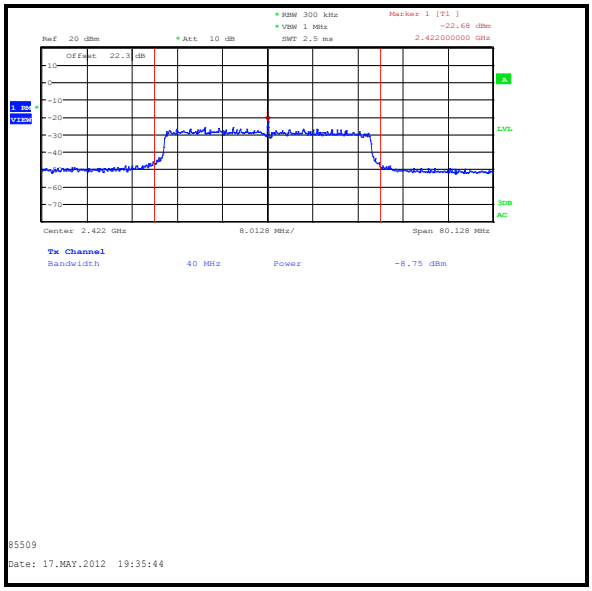
Channel	Combined Conducted Peak Power (dBm)	Declared Antenna Gain + cable loss (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Result
Bottom	4.5	17.6	22.1	See note below	Complied
Middle	-7.2	17.6	10.4	See note below	Complied
Top	-2.3	17.6	15.3	See note below	Complied

RSS-210 A8.4(5) Point-to-point systems in the 2400-2483.5 MHz band are permitted to have an e.i.r.p higher than 4 W provided that the higher e.i.r.p is achieved by employing higher gain directional antennas and not higher transmitter output powers.

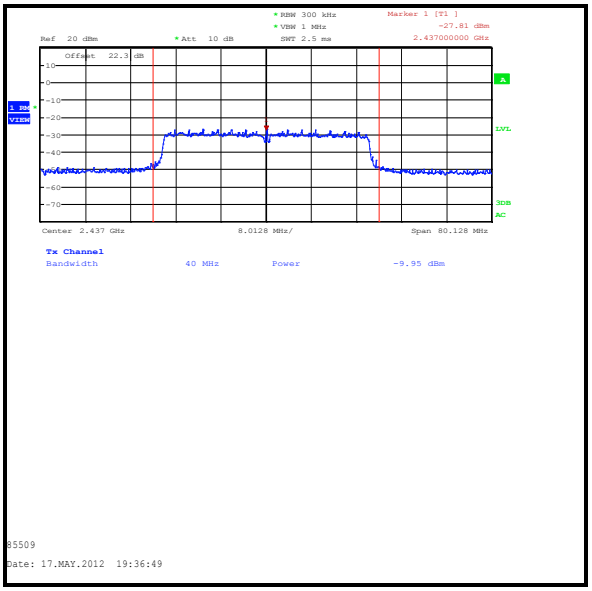
Therefore, as long as the conducted power requirements are met, there is no restriction on e.i.r.p.

Transmitter Maximum Peak Output Power (continued)

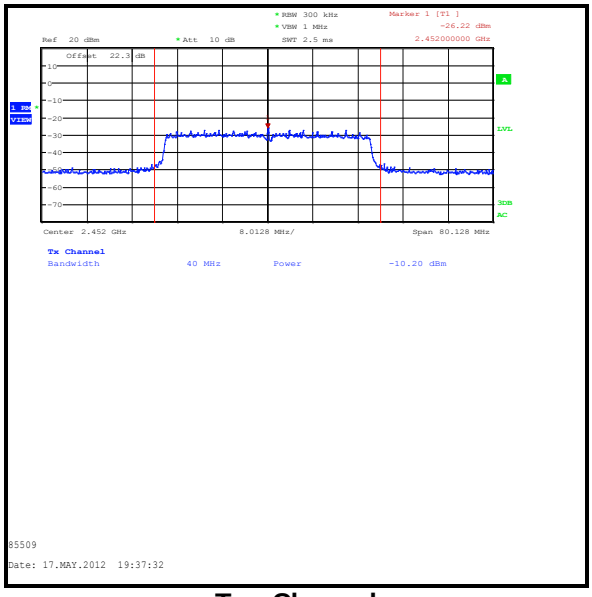
Results: 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 0 / 19 dBi PTP antenna



Bottom Channel



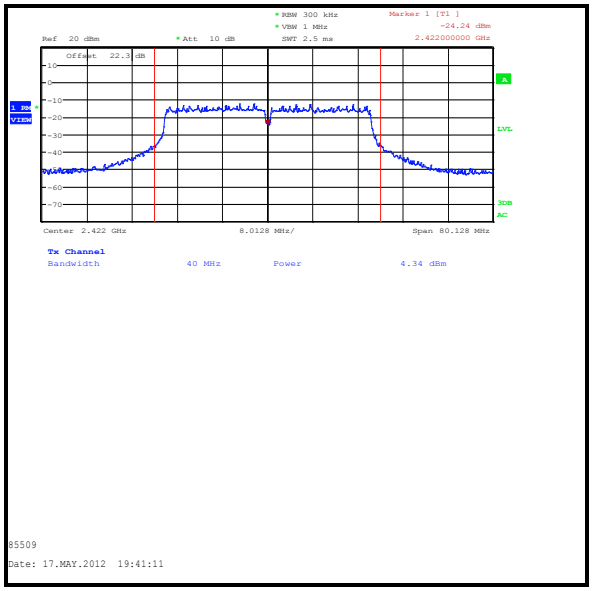
Middle Channel



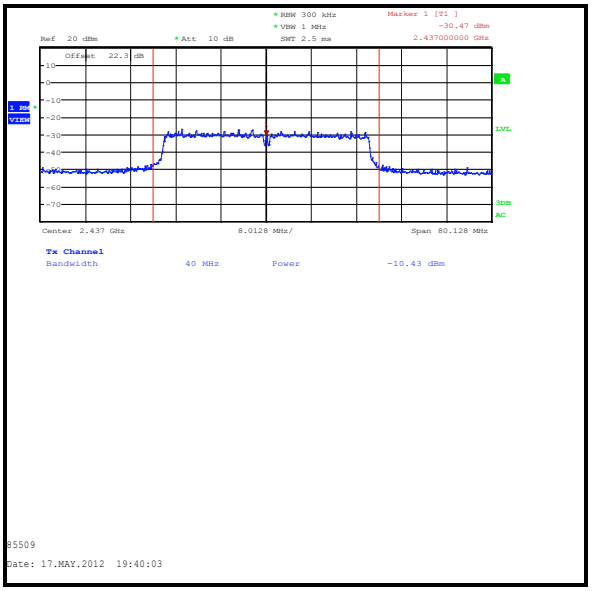
Top Channel

Transmitter Maximum Peak Output Power (continued)

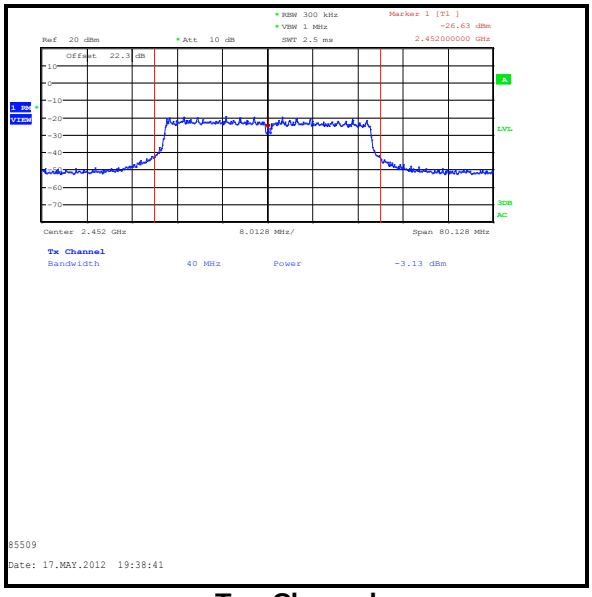
Results: 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 1 / 19 dBi PTP antenna



Bottom Channel



Middle Channel



Top Channel

5.2.4. Transmitter Conducted Emissions

Test Summary:

Test Engineer:	Sarah Williams	**Test Date:**	10 May 2012
Test Sample Serial No:	261293		

FCC Reference:	Part 15.247(d)
Industry Canada Reference:	RSS-Gen 4.9, RSS-210 A8.5
Test Method Used:	FCC KDB 558074 Section 5.4
Frequency Range	30 MHz to 25 GHz

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	48

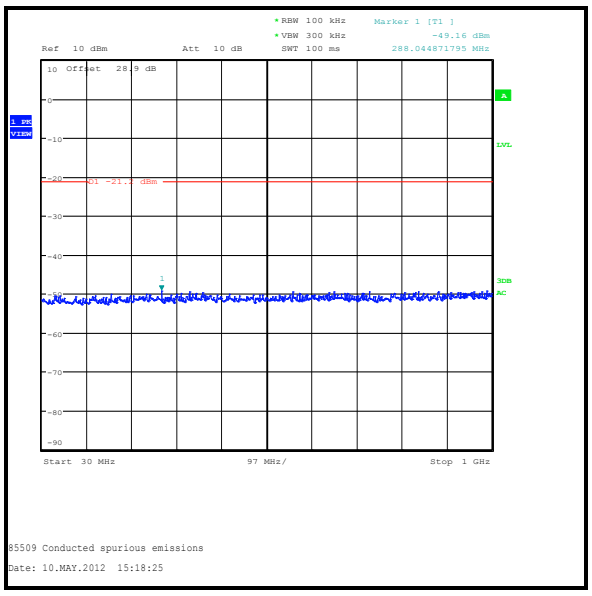
Note(s):

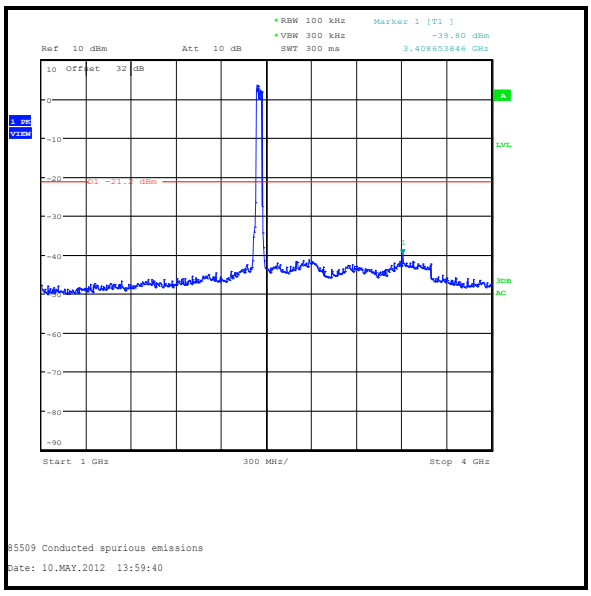
1. Measurements were performed with the EUT transmitting MCS15 / 40 MHz channel width / Port 0 as all configurations were previously measured and this combination produced the highest output power. Pre-scans were performed with the EUT transmitting at >99% duty cycle on the top channel. The EUT was set to power level 9.0.
2. The spectrum analyser was connected to the EUT antenna port via suitable RF cables and attenuators. The RF path loss was calibrated before measurements took place. The path loss appears on the plots as an RF level offset.
3. In accordance with FCC KDB 558074 Section 5.4.1, spurious emissions pre-scans were performed with a peak detector as the in-band PSD was previously measured using a peak detector. The -21.2 dBm limit lines shown on the plots is the restricted band peak limit of 74 dBµV/m (field strength) at 3 metres converted to dBm using a conversion factor of 95.2 dB (74.0 - 95.2 = -21.2 dBm conducted).
4. The emission shown at approximately 2452 MHz on the 1 GHz to 4 GHz plot is the EUT fundamental.
5. 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 results table.
6. As antenna port conducted emissions test were performed, cabinet emissions test were also performed as required in FCC KDB 558074 Section 5.4.2.1.

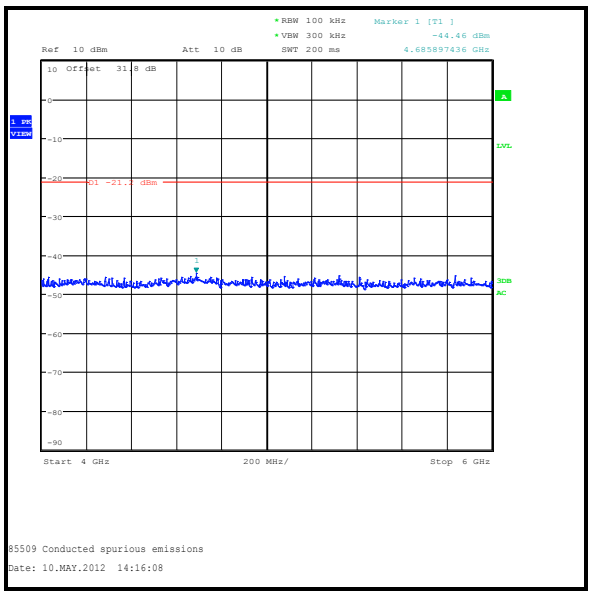
Results: 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Top Channel

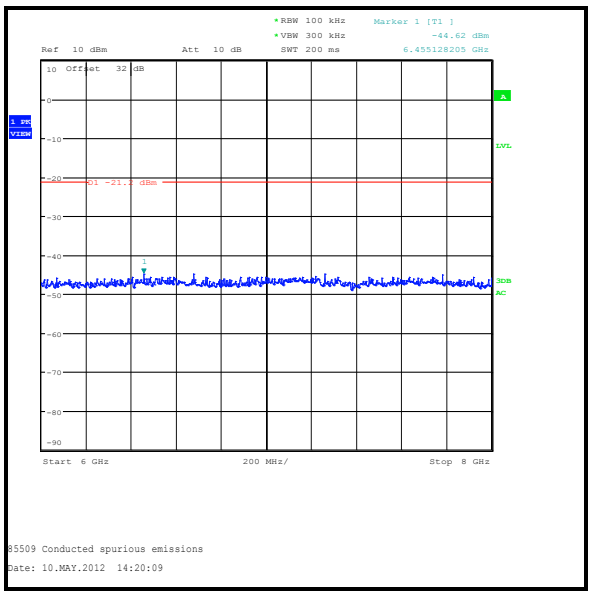
Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
24416.667	-39.7	-21.2	18.5	Complied

Transmitter Conducted Emissions (Continued)

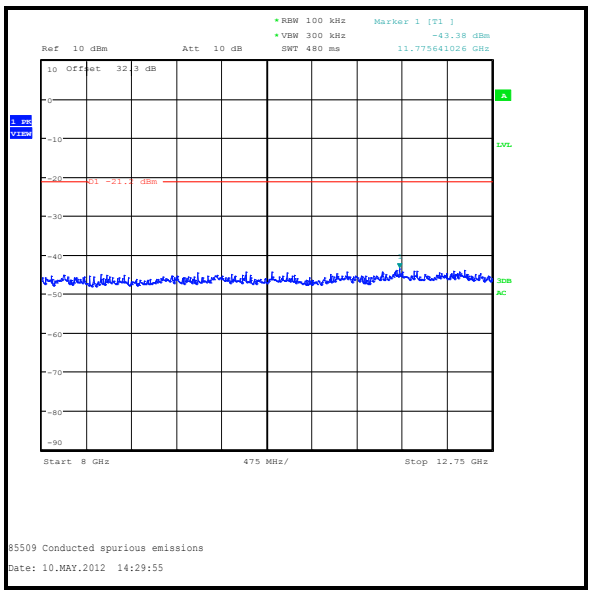


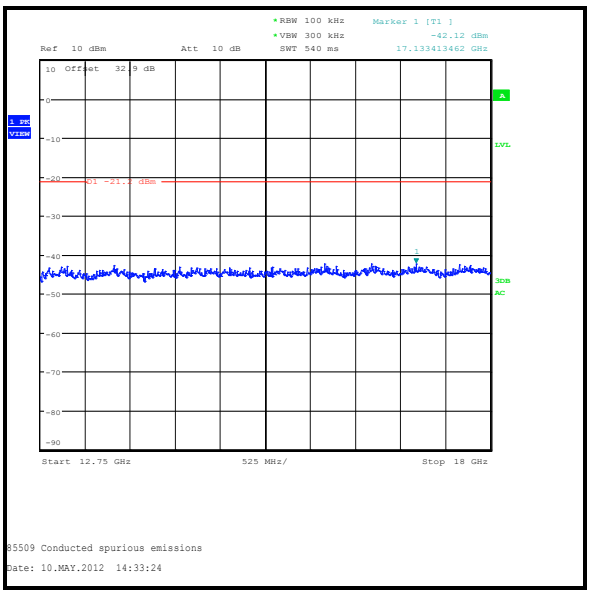


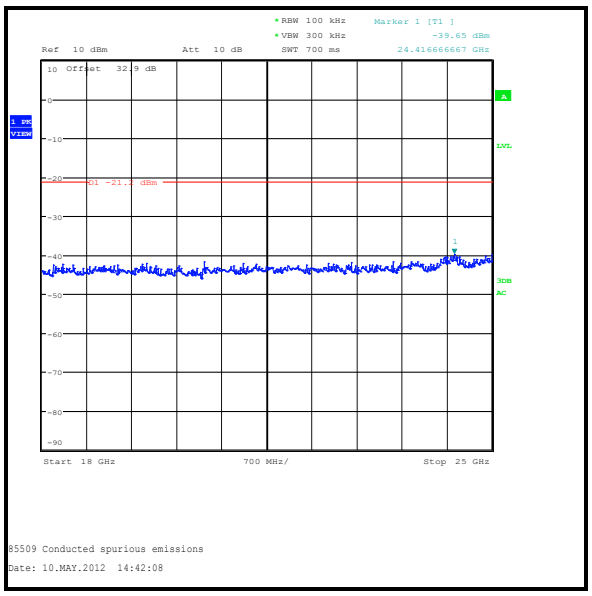




Transmitter Conducted Emissions (Continued)







5.2.5. Transmitter Band Edge Conducted Emissions

Test Summary:

Test Engineer:	Sarah Williams	**Test Date:**	15 May 2012
Test Sample Serial No:	261293		

FCC Reference:	Part 15.247(d)
Industry Canada Reference:	RSS-Gen 4.9 & RSS-210 A8.5
Test Method Used:	FCC KDB 558074 Section 5.4

Environmental Conditions:

Temperature (°C):	21
Relative Humidity (%):	37

Note(s):

1. Conducted measurements at band edges were used for compliance in conjunction with radiated limits. The EUT was set to transmit on the bottom channel when performing measurements at the lower band edge and the top channel when performing measurements at the upper band edge.
2. Band edge measurements were performed with the EUT in the same modes as conducted power measurements were performed in.
3. Non-restricted bands are adjacent to the lower band edge and the -20 dBc limit applies. Power spectral density was previously measured using a 100 kHz bandwidth and a peak detector. In accordance with FCC KDB 558078 Section 5.4 and §15.247(d), the band edge emissions at 2400 MHz were also measured using a 100 kHz bandwidth and peak detector. The -20 dBc limit was relative from the peak of the bottom channel carrier. The antenna gain and RF cable losses were not included at the lower band edge as the -20 dBc limit to peak emission level ratio remains constant with respect to the peak amplitude of the carrier.
4. Various antenna types can be used with the EUT. Band edge measurements were performed for the highest gain antenna for each supported type of antenna. All antennas are connected to the EUT by coaxial cables. The Customer supplied RF cables of 2.1 metres length and a cable loss of 1.4 dB was measured across the 2400-2483.5 MHz band. The EUT power setting was set to the maximum for the omnidirectional antenna tests and the sectorised antenna tests. Where the use of an RF cable was applicable, the cable loss was subtracted from the declared antenna gain in the calculations. Restricted bands are adjacent to the upper band edge, 74 dBµV/m peak and 54 dBµV/m average limits apply.
   In accordance with FCC KDB 558074 Section 5.4.2.2.3, the -21.2 dBm conducted limit line shown on the plots is the restricted band peak field strength limit of 74 dBµV/m at 3 metres converted to dBm using a conversion factor of 95.2 dB (74.0 - 95.2 = -21.2 dBm conducted) and the -41.2 dBm conducted limit line shown on the plots is the restricted band average field strength limit of 54 dBµV/m at 3 metres converted to dBm using a conversion factor of 95.2 dB (54.0 – 95.2 = 41.2 dBm conducted).
5. The Customer stated that the MIMO signals are uncorrelated with all antenna types. Each radiated level was individually measured on both EUT ports on the module that was previously found to transmit the highest power. Calculations were made at the band edges to ensure compliance with the -20 dBc limit at the lower band edge and restricted band limits at the upper band edge.
6. The EUT was configured to transmit in MCS15 configuration as this was found to produce the highest levels at the band edges.
7. Plots at the upper band edges show peak and average results on the same plots. The upper trace shows the peak result and lower trace shows the average result.

Transmitter Band Edge Conducted Emissions (continued)

Results: Peak / 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 0 / 5 dBi sectorised antenna

Frequency (MHz)	Port 0 Peak Level (dBm)	-20 dBc Peak Limit (dBm)	Margin (dB)	Result
2400	-31.3	-22.3	9.0	Complied

Frequency (MHz)	Port 0 Peak Level (dBm)	Antenna Gain + Cable Loss (dBi)	Peak Level + Antenna Gain (dBm EIRP)	Peak Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-37.8	3.6	-34.2	-21.2	13.0	Complied

Frequency (MHz)	Port 0 Average Level (dBm)	Antenna Gain + Cable Loss (dBi)	Average Level + Antenna Gain (dBm EIRP)	Average Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-51.8	3.6	-48.2	-41.2	7.0	Complied

Results: Peak / 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 1 / 5 dBi sectorised antenna

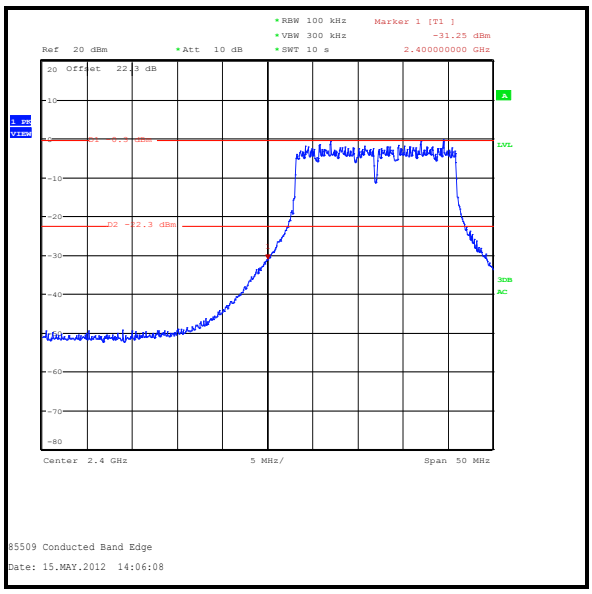
Frequency (MHz)	Port 1 Peak Level (dBm)	-20 dBc Peak Limit (dBm)	Margin (dB)	Result
2400	-31.7	-22.7	9.0	Complied

Frequency (MHz)	Port 1 Peak Level (dBm)	Antenna Gain + Cable Loss (dBi)	Peak Level + Antenna Gain (dBm EIRP)	Peak Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-36.9	3.6	-33.3	-21.2	12.1	Complied

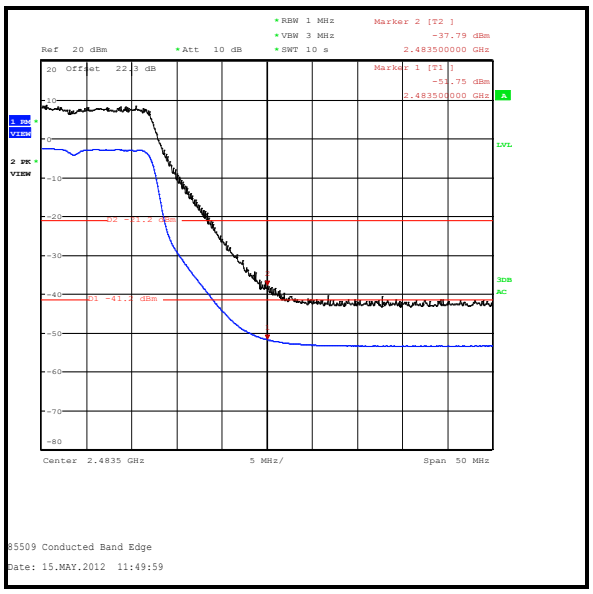
Frequency (MHz)	Port 1 Average Level (dBm)	Antenna Gain + Cable Loss (dBi)	Average Level + Antenna Gain (dBm EIRP)	Average Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-50.7	3.6	-47.1	-41.2	5.9	Complied

Transmitter Band Edge Conducted Emissions (continued)

Results: Peak / 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 0 / 5 dBi sectorised antenna

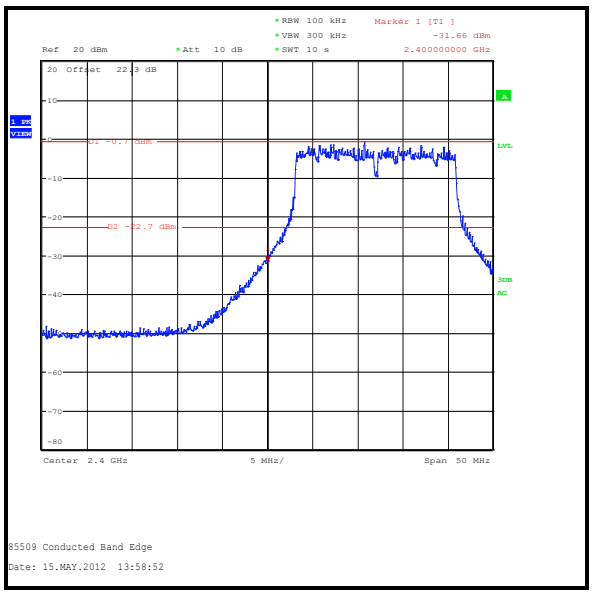


Lower Band Edge Peak Measurement

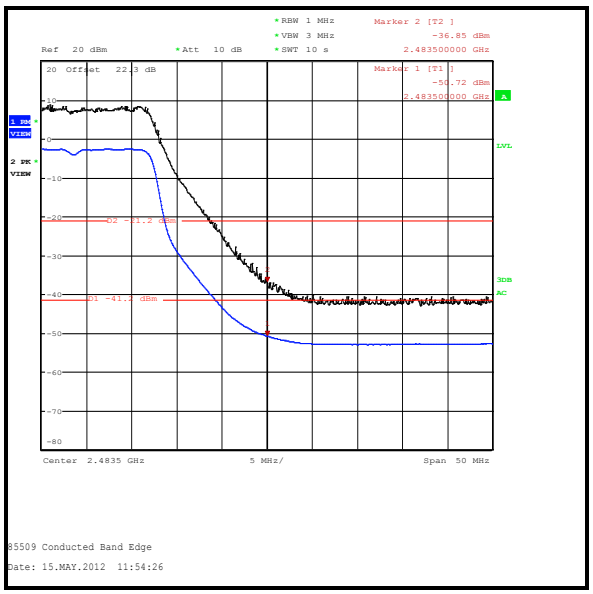


Upper Band Edge Average and Peak Measurement

Results: Peak / 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 1 / 5 dBi sectorised antenna



Lower Band Edge Peak Measurement



Upper Band Edge Average and Peak Measurement

Transmitter Band Edge Conducted Emissions (continued)

Results: Peak / 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 0 / 5 dBi sectorised antenna

Frequency (MHz)	Port 0 Peak Level (dBm)	-20 dBc Peak Limit (dBm)	Margin (dB)	Result
2400	-32.3	-22.7	9.6	Complied

Frequency (MHz)	Port 0 Peak Level (dBm)	Antenna Gain + Cable Loss (dBi)	Peak Level + Antenna Gain (dBm EIRP)	Peak Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-29.2	3.6	-25.6	-21.2	4.4	Complied

Frequency (MHz)	Port 0 Average Level (dBm)	Antenna Gain + Cable Loss (dBi)	Average Level + Antenna Gain (dBm EIRP)	Average Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-46.8	3.6	-43.2	-41.2	2.0	Complied

Results: Peak / 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 1 / 5 dBi sectorised antenna

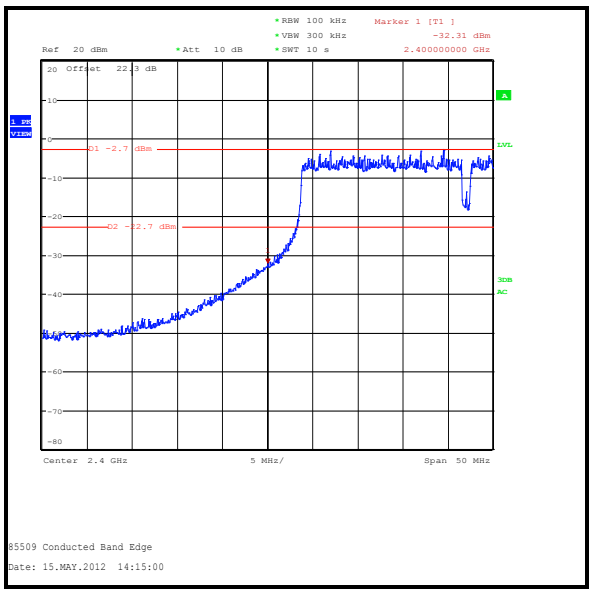
Frequency (MHz)	Port 1 Peak Level (dBm)	-20 dBc Peak Limit (dBm)	Margin (dB)	Result
2400	-30.6	-23.0	7.6	Complied

Frequency (MHz)	Port 1 Peak Level (dBm)	Antenna Gain + Cable Loss (dBi)	Peak Level + Antenna Gain (dBm EIRP)	Peak Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-29.0	3.6	-25.4	-21.2	4.2	Complied

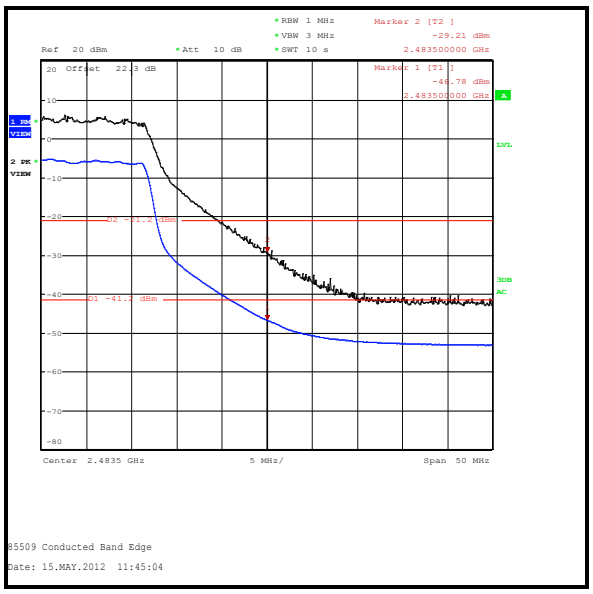
Frequency (MHz)	Port 1 Average Level (dBm)	Antenna Gain + Cable Loss (dBi)	Average Level + Antenna Gain (dBm EIRP)	Average Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-45.2	3.6	-41.6	-41.2	0.4	Complied

Transmitter Band Edge Conducted Emissions (continued)

Results: Peak / 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 0 / 5 dBi sectorised antenna

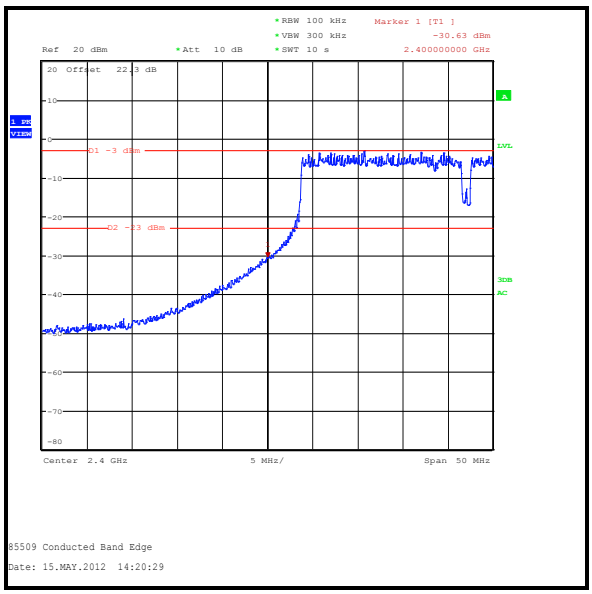


Lower Band Edge Peak Measurement

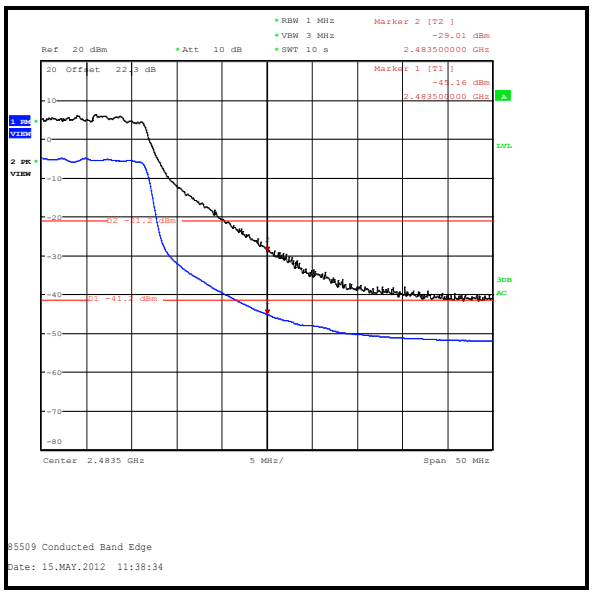


Upper Band Edge Average and Peak Measurement

Results: Peak / 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 1 / 5 dBi sectorised antenna



Lower Band Edge Peak Measurement



Upper Band Edge Average and Peak Measurement

Transmitter Band Edge Conducted Emissions (continued)

Results: Peak / 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 0 / 15 dBi omnidirectional antenna

Frequency (MHz)	Port 0 Peak Level (dBm)	-20 dBc Peak Limit (dBm)	Margin (dB)	Result
2400	-40.0	-28.7	11.3	Complied

Frequency (MHz)	Port 0 Peak Level (dBm)	Antenna Gain + Cable Loss (dBi)	Peak Level + Antenna Gain (dBm EIRP)	Peak Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-49.4	13.6	-35.8	-21.2	14.6	Complied

Frequency (MHz)	Port 0 Average Level (dBm)	Antenna Gain + Cable Loss (dBi)	Average Level + Antenna Gain (dBm EIRP)	Average Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-60.7	13.6	-47.1	-41.2	5.9	Complied

Results: Peak / 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 1 / 15 dBi omnidirectional antenna

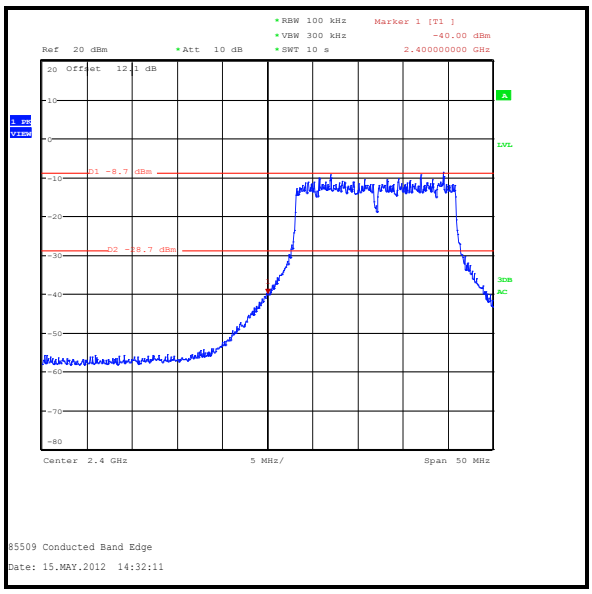
Frequency (MHz)	Port 1 Peak Level (dBm)	-20 dBc Peak Limit (dBm)	Margin (dB)	Result
2400	-51.3	-43.6	7.7	Complied

Frequency (MHz)	Port 1 Peak Level (dBm)	Antenna Gain + Cable Loss (dBi)	Peak Level + Antenna Gain (dBm EIRP)	Peak Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-49.2	13.6	-35.6	-21.2	14.4	Complied

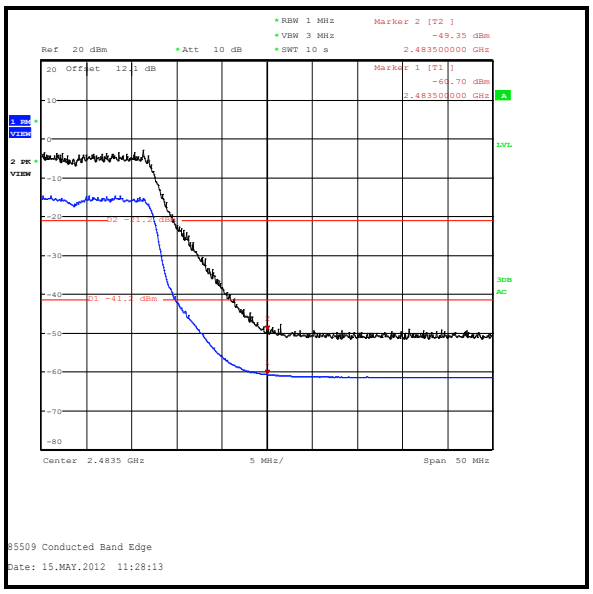
Frequency (MHz)	Port 1 Average Level (dBm)	Antenna Gain + Cable Loss (dBi)	Average Level + Antenna Gain (dBm EIRP)	Average Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-60.3	13.6	-46.7	-41.2	5.5	Complied

Transmitter Band Edge Conducted Emissions (continued)

Results: Peak / 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 0 / 15 dBi omnidirectional antenna

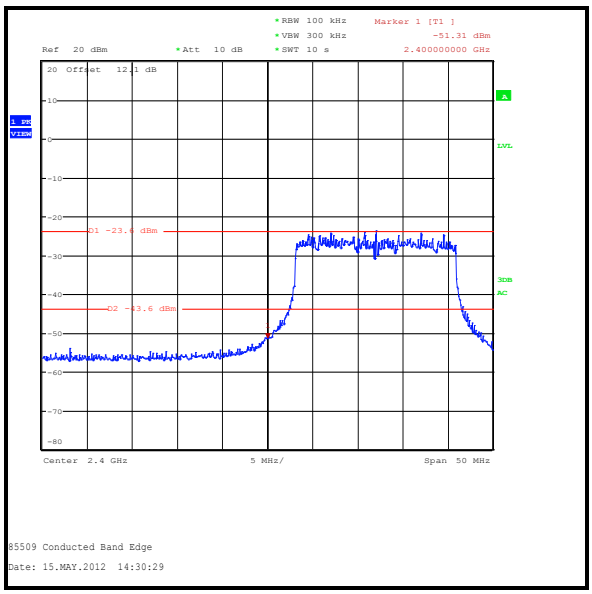


Lower Band Edge Peak Measurement

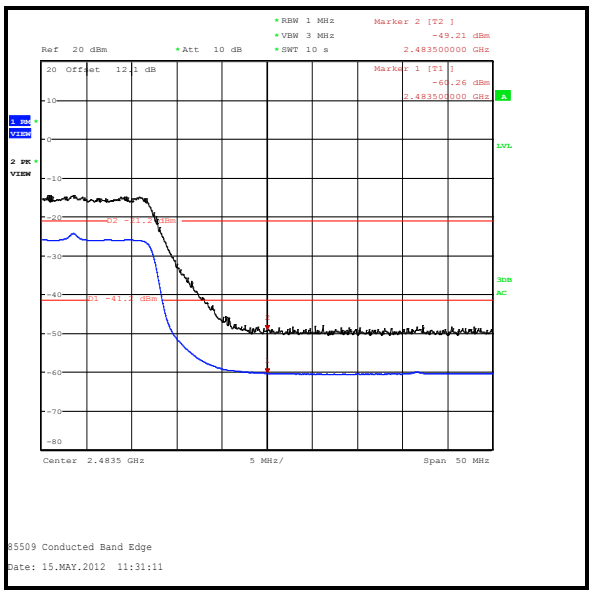


Upper Band Edge Average and Peak Measurement

Results: Peak / 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 1 / 15 dBi omnidirectional antenna



Lower Band Edge Peak Measurement



Upper Band Edge Average and Peak Measurement

Transmitter Band Edge Conducted Emissions (continued)

Results: Peak / 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 0 / 15 dBi omnidirectional antenna

Frequency (MHz)	Port 0 Peak Level (dBm)	-20 dBc Peak Limit (dBm)	Margin (dB)	Result
2400	-40.2	-30.7	9.5	Complied

Frequency (MHz)	Port 0 Peak Level (dBm)	Antenna Gain + Cable Loss (dBi)	Peak Level + Antenna Gain (dBm EIRP)	Peak Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-39.4	13.6	-25.8	-21.2	4.6	Complied

Frequency (MHz)	Port 0 Average Level (dBm)	Antenna Gain + Cable Loss (dBi)	Average Level + Antenna Gain (dBm EIRP)	Average Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-55.8	13.6	-42.2	-41.2	1.0	Complied

Results: Peak / 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 1 / 15 dBi omnidirectional antenna

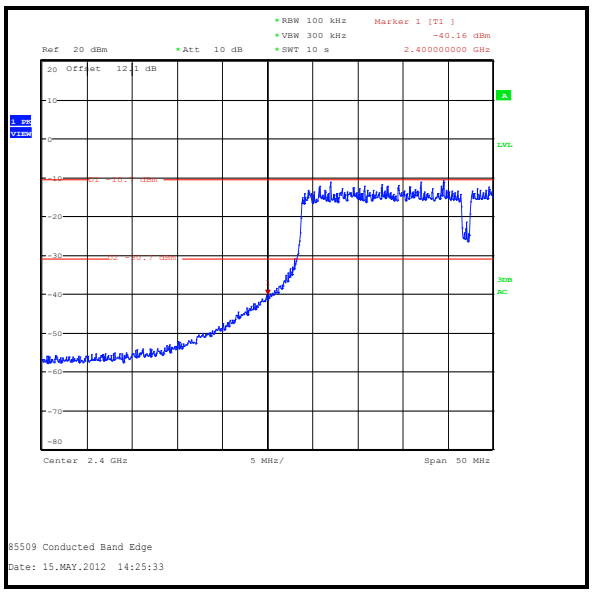
Frequency (MHz)	Port 1 Peak Level (dBm)	-20 dBc Peak Limit (dBm)	Margin (dB)	Result
2400	-42.3	-34.0	8.3	Complied

Frequency (MHz)	Port 1 Peak Level (dBm)	Antenna Gain + Cable Loss (dBi)	Peak Level + Antenna Gain (dBm EIRP)	Peak Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-38.7	13.6	-25.1	-21.2	3.9	Complied

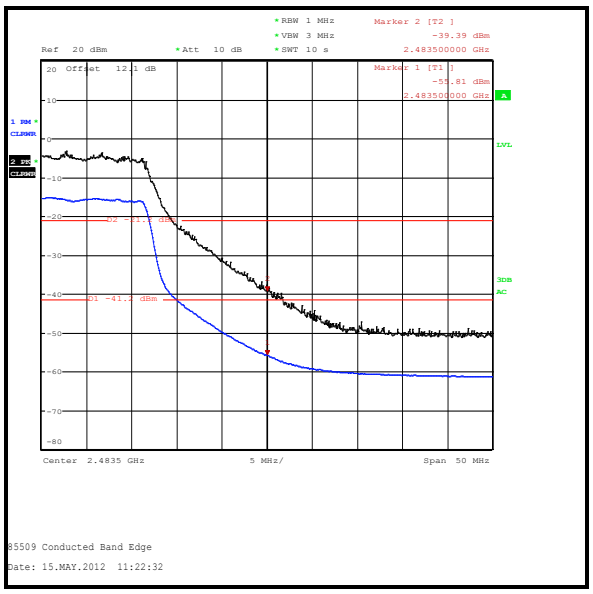
Frequency (MHz)	Port 1 Average Level (dBm)	Antenna Gain + Cable Loss (dBi)	Average Level + Antenna Gain (dBm EIRP)	Average Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-55.7	13.6	-42.1	-41.2	0.9	Complied

Transmitter Band Edge Conducted Emissions (continued)

Results: Peak / 802.11n / 40 MHz / 270 Mbps / 64 QAM / MCS15 / Port 0 / 15 dBi omnidirectional antenna

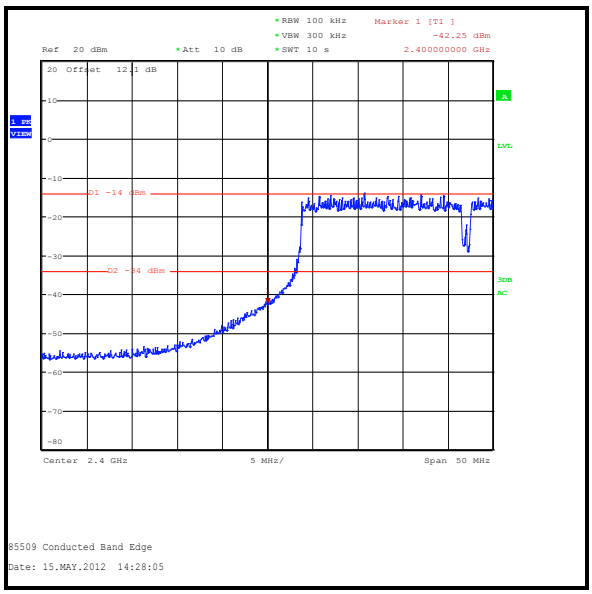


Lower Band Edge Peak Measurement

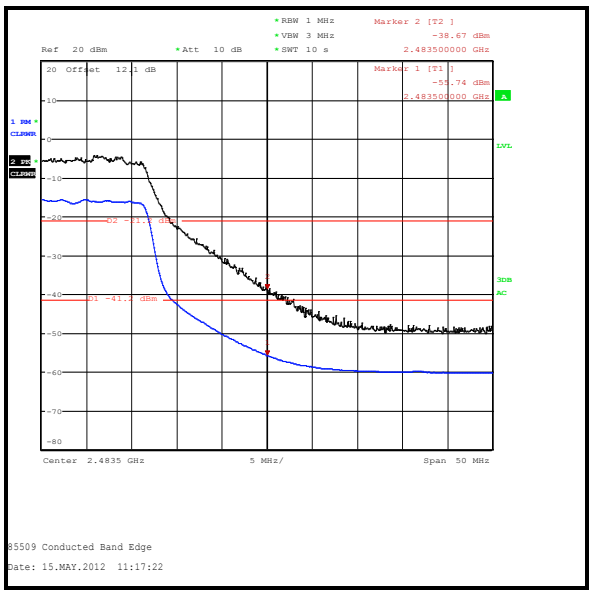


Upper Band Edge Average and Peak Measurement

Results: Peak / 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 1 / 15 dBi omnidirectional antenna



Lower Band Edge Peak Measurement



Upper Band Edge Average and Peak Measurement

Transmitter Band Edge Conducted Emissions (continued)

Results: Peak / 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 0 / 16.5 dBi sectorised antenna

Frequency (MHz)	Port 0 Peak Level (dBm)	-20 dBc Peak Limit (dBm)	Margin (dB)	Result
2400	-40.1	-29.4	10.7	Complied

Frequency (MHz)	Port 0 Peak Level (dBm)	Antenna Gain + Cable Loss (dBi)	Peak Level + Antenna Gain (dBm EIRP)	Peak Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-50.0	15.1	-34.9	-21.2	13.7	Complied

Frequency (MHz)	Port 0 Average Level (dBm)	Antenna Gain + Cable Loss (dBi)	Average Level + Antenna Gain (dBm EIRP)	Average Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-61.0	15.1	-45.9	-41.2	4.7	Complied

Results: Peak / 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 1 / 16.5 dBi sectorised antenna

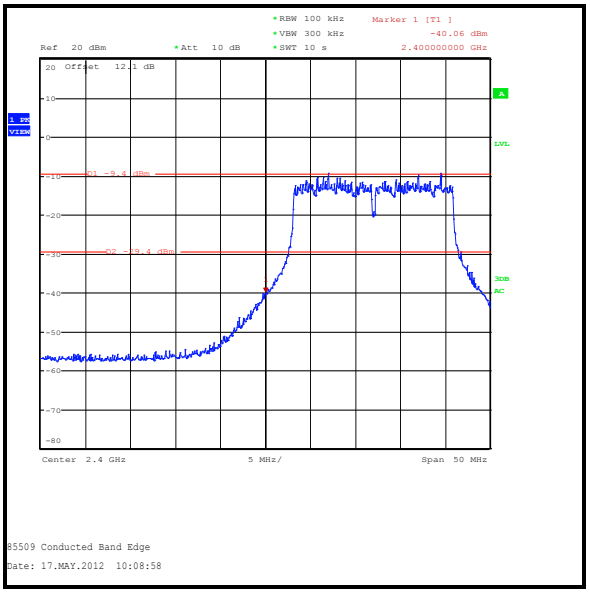
Frequency (MHz)	Port 1 Peak Level (dBm)	-20 dBc Peak Limit (dBm)	Margin (dB)	Result
2400	-51.2	-42.8	8.4	Complied

Frequency (MHz)	Port 1 Peak Level (dBm)	Antenna Gain + Cable Loss (dBi)	Peak Level + Antenna Gain (dBm EIRP)	Peak Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-49.3	15.1	-34.2	-21.2	13.0	Complied

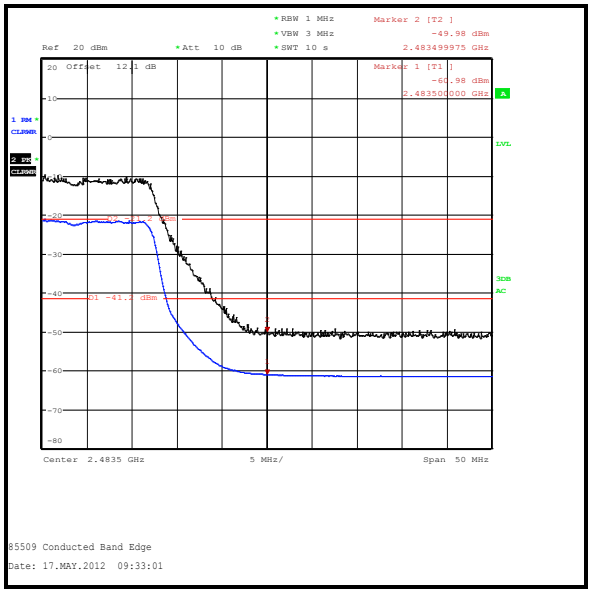
Frequency (MHz)	Port 1 Average Level (dBm)	Antenna Gain + Cable Loss (dBi)	Average Level + Antenna Gain (dBm EIRP)	Average Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-60.1	15.1	-45.0	-41.2	3.8	Complied

Transmitter Band Edge Conducted Emissions (continued)

Results: Peak / 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 0 / 16.5 dBi sectorised antenna

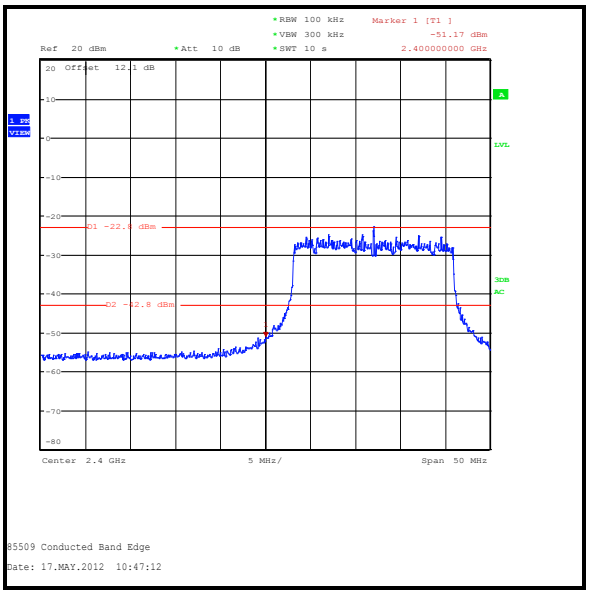


Lower Band Edge Peak Measurement

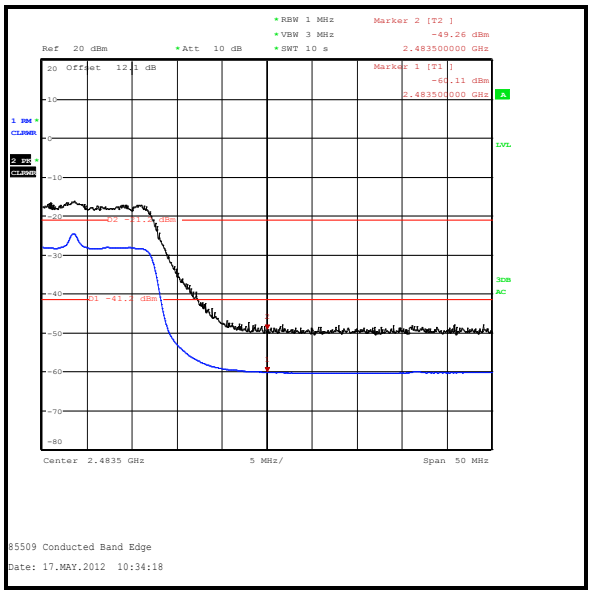


Upper Band Edge Average and Peak Measurement

Results: Peak / 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 1 / 16.5 dBi sectorised antenna



Lower Band Edge Peak Measurement



Upper Band Edge Average and Peak Measurement

Transmitter Band Edge Conducted Emissions (continued)

Results: Peak / 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 0 / 16.5 dBi sectorised antenna

Frequency (MHz)	Port 0 Peak Level (dBm)	-20 dBc Peak Limit (dBm)	Margin (dB)	Result
2400	-41.5	-31.6	9.9	Complied

Frequency (MHz)	Port 0 Peak Level (dBm)	Antenna Gain + Cable Loss (dBi)	Peak Level + Antenna Gain (dBm EIRP)	Peak Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-41.2	15.1	-26.1	-21.2	4.9	Complied

Frequency (MHz)	Port 0 Average Level (dBm)	Antenna Gain + Cable Loss (dBi)	Average Level + Antenna Gain (dBm EIRP)	Average Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-57.5	15.1	-42.4	-41.2	1.2	Complied

Results: Peak / 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 1 / 16.5 dBi sectorised antenna

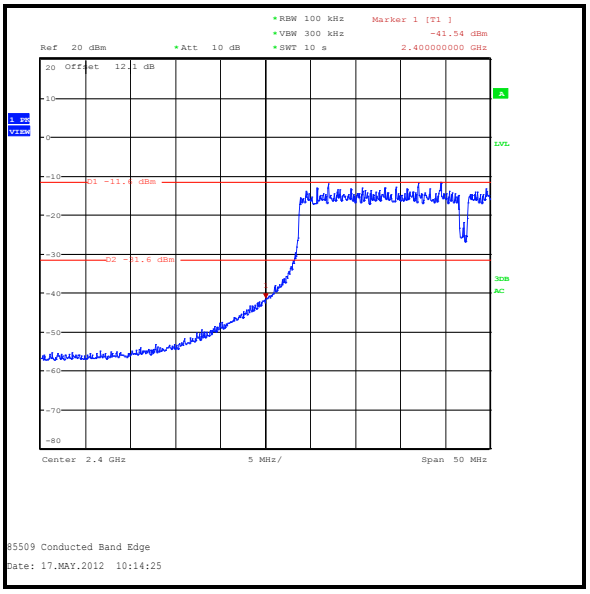
Frequency (MHz)	Port 1 Peak Level (dBm)	-20 dBc Peak Limit (dBm)	Margin (dB)	Result
2400	-43.9	-36.7	7.2	Complied

Frequency (MHz)	Port 1 Peak Level (dBm)	Antenna Gain + Cable Loss (dBi)	Peak Level + Antenna Gain (dBm EIRP)	Peak Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-42.1	15.1	-27.0	-21.2	5.8	Complied

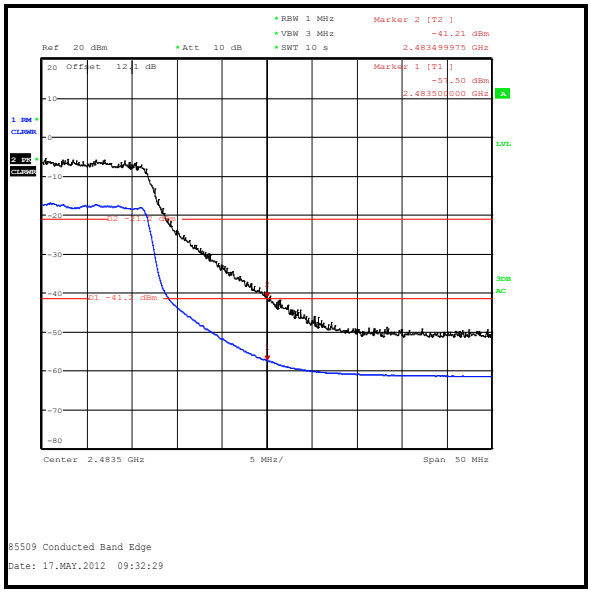
Frequency (MHz)	Port 1 Average Level (dBm)	Antenna Gain + Cable Loss (dBi)	Average Level + Antenna Gain (dBm EIRP)	Average Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-57.4	15.1	-42.3	-41.2	1.1	Complied

Transmitter Band Edge Conducted Emissions (continued)

Results: Peak / 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 0 / 16.5 dBi sectorised antenna

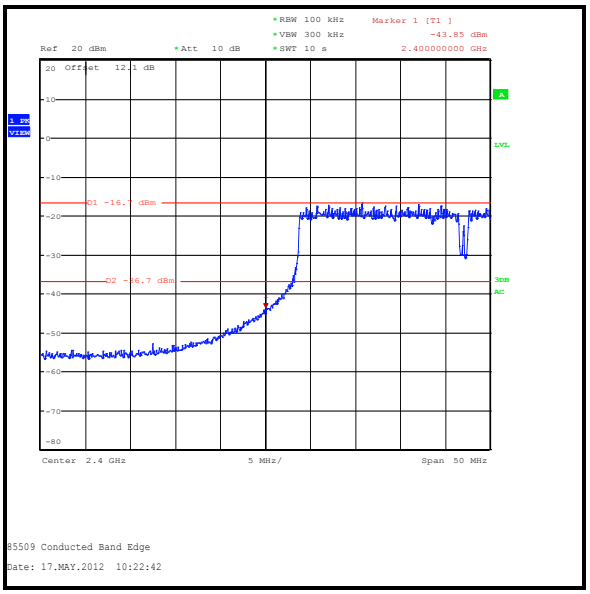


Lower Band Edge Peak Measurement

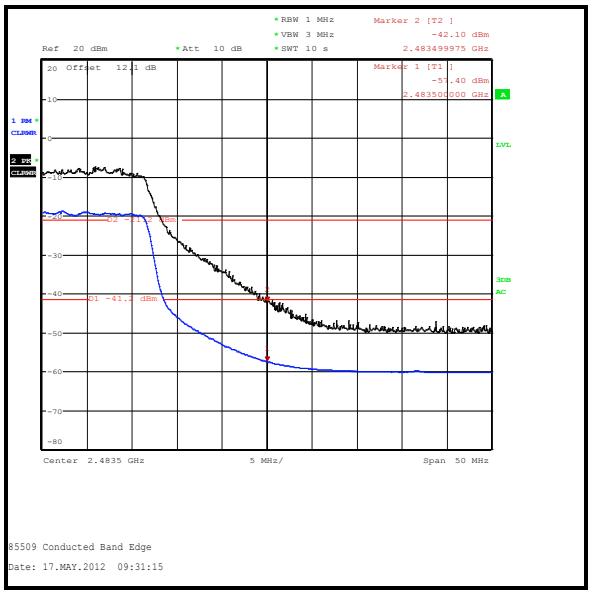


Upper Band Edge Average and Peak Measurement

Results: Peak / 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 1 / 16.5 dBi sectorised antenna



Lower Band Edge Peak Measurement



Upper Band Edge Average and Peak Measurement

Transmitter Band Edge Conducted Emissions (continued)

Results: Peak / 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 0 / 19 dBi PTP antenna

Frequency (MHz)	Port 0 Peak Level (dBm)	-20 dBc Peak Limit (dBm)	Margin (dB)	Result
2400	-44.6	-33.5	11.1	Complied

Frequency (MHz)	Port 0 Peak Level (dBm)	Antenna Gain + Cable Loss (dBi)	Peak Level + Antenna Gain (dBm EIRP)	Peak Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-50.4	17.6	-32.8	-21.2	11.6	Complied

Frequency (MHz)	Port 0 Average Level (dBm)	Antenna Gain + Cable Loss (dBi)	Average Level + Antenna Gain (dBm EIRP)	Average Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-61.1	17.6	-44.0	-41.2	2.8	Complied

Results: Peak / 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 1 / 19 dBi PTP antenna

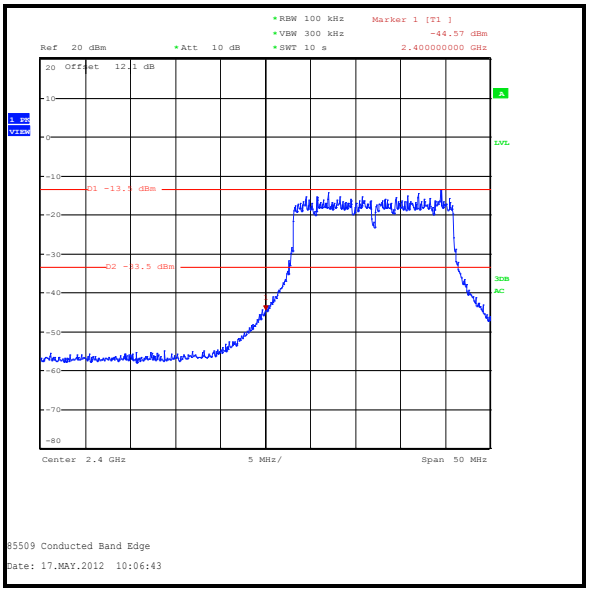
Frequency (MHz)	Port 1 Peak Level (dBm)	-20 dBc Peak Limit (dBm)	Margin (dB)	Result
2400	-50.7	-43.5	7.2	Complied

Frequency (MHz)	Port 1 Peak Level (dBm)	Antenna Gain + Cable Loss (dBi)	Peak Level + Antenna Gain (dBm EIRP)	Peak Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-49.3	17.6	-31.7	-21.2	10.5	Complied

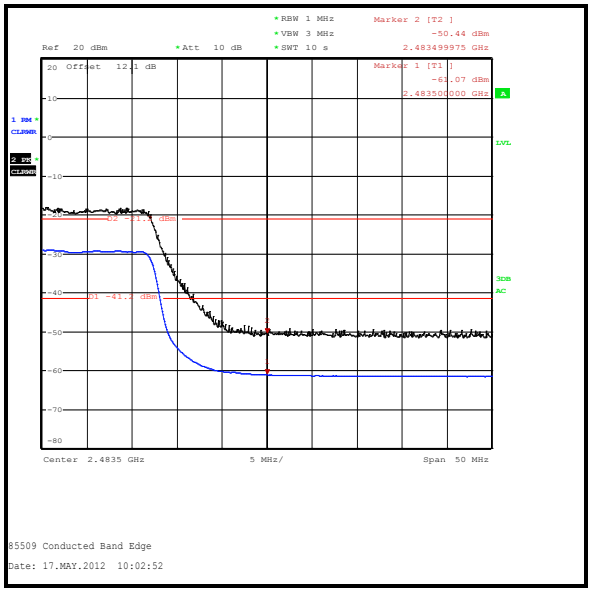
Frequency (MHz)	Port 1 Average Level (dBm)	Antenna Gain + Cable Loss (dBi)	Average Level + Antenna Gain (dBm EIRP)	Average Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-60.3	17.6	-42.7	-41.2	1.5	Complied

Transmitter Band Edge Conducted Emissions (continued)

Results: Peak /802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 0 / 19 dBi PTP antenna

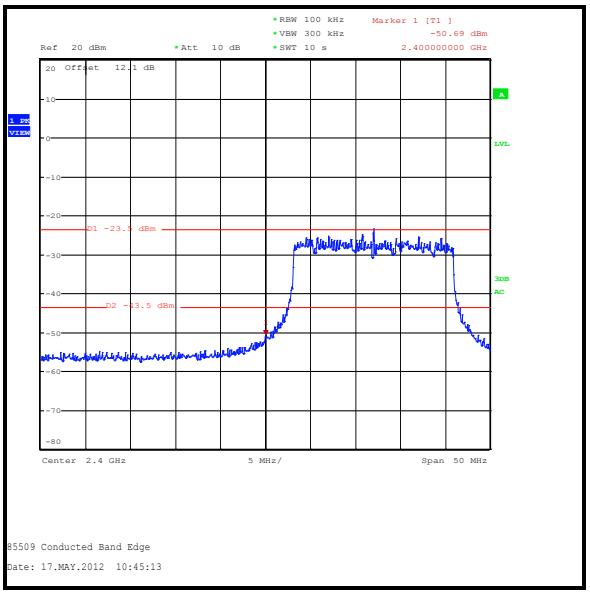


Lower Band Edge Peak Measurement

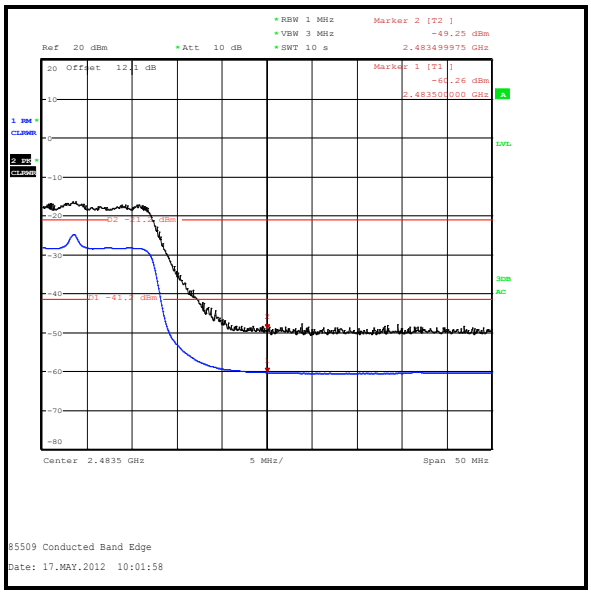


Upper Band Edge Average and Peak Measurement

Results: Peak / 802.11n / 20 MHz / 130 Mbps / 64QAM / MCS15 / Port 1 / 19 dBi PTP antenna



Lower Band Edge Peak Measurement



Upper Band Edge Average and Peak Measurement

Transmitter Band Edge Conducted Emissions (continued)

Results: Peak / 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 0 / 19 dBi PTP antenna

Frequency (MHz)	Port 0 Peak Level (dBm)	-20 dBc Peak Limit (dBm)	Margin (dB)	Result
2400	-43.8	-34.0	9.8	Complied

Frequency (MHz)	Port 0 Peak Level (dBm)	Antenna Gain + Cable Loss (dBi)	Peak Level + Antenna Gain (dBm EIRP)	Peak Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-48.2	17.6	-30.6	-21.2	9.4	Complied

Frequency (MHz)	Port 0 Average Level (dBm)	Antenna Gain + Cable Loss (dBi)	Average Level + Antenna Gain (dBm EIRP)	Average Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-59.8	17.6	-42.2	-41.2	1.0	Complied

Results: Peak / 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 1 / 19 dBi PTP antenna

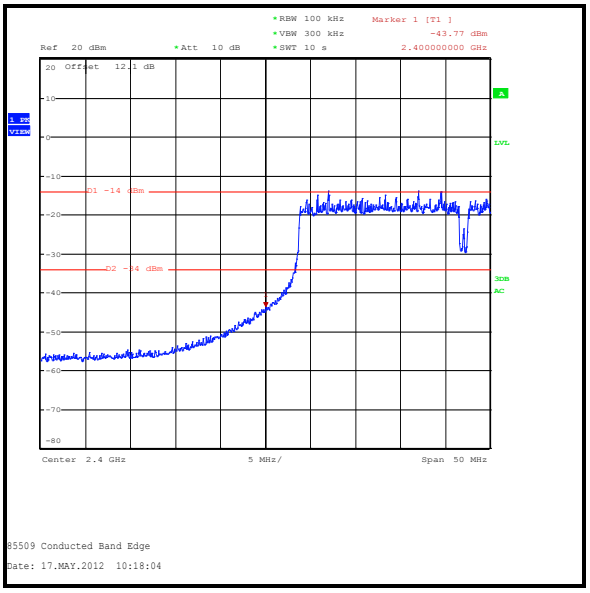
Frequency (MHz)	Port 1 Peak Level (dBm)	-20 dBc Peak Limit (dBm)	Margin (dB)	Result
2400	-52.8	-45.3	7.5	Complied

Frequency (MHz)	Port 1 Peak Level (dBm)	Antenna Gain + Cable Loss (dBi)	Peak Level + Antenna Gain (dBm EIRP)	Peak Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-48.3	17.6	-30.7	-21.2	9.5	Complied

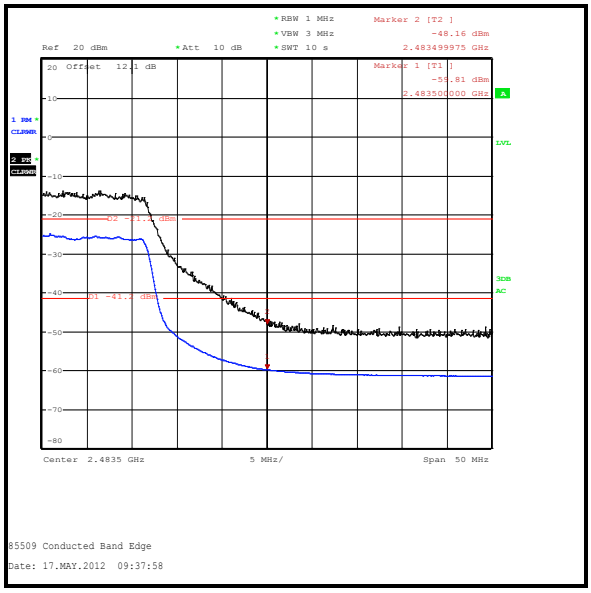
Frequency (MHz)	Port 1 Average Level (dBm)	Antenna Gain + Cable Loss (dBi)	Average Level + Antenna Gain (dBm EIRP)	Average Limit (dBm EIRP)	Margin (dB)	Result
2483.5	-59.3	17.6	-41.7	-41.2	0.5	Complied

Transmitter Band Edge Conducted Emissions (continued)

Results: Peak / 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 0 / 19 dBi PTP antenna

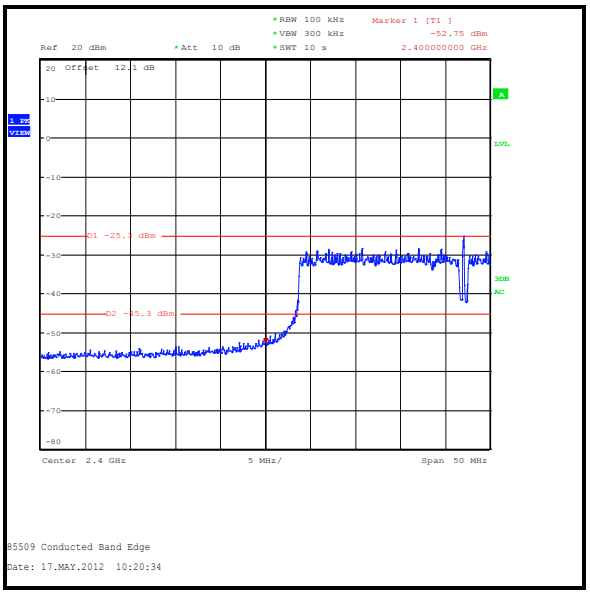


Lower Band Edge Peak Measurement

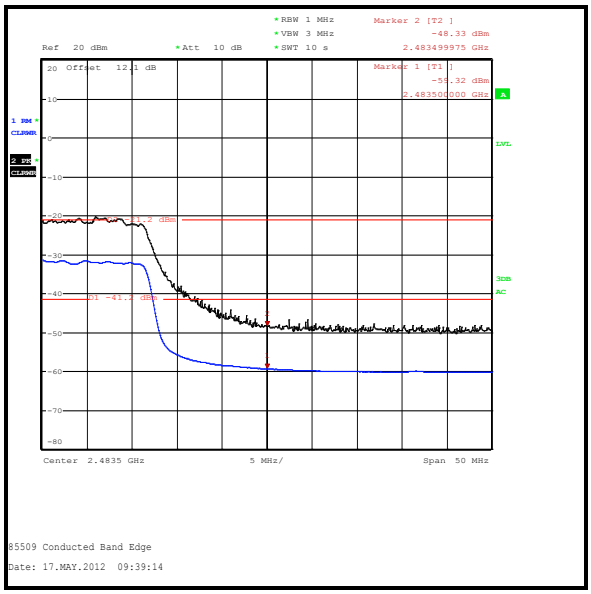


Upper Band Edge Average and Peak Measurement

Results: Peak / 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15 / Port 1 / 19 dBi PTP antenna



Lower Band Edge Peak Measurement



Upper Band Edge Average and Peak Measurement

5.2.6. Transmitter Radiated Emissions

Test Summary:

Test Engineer:	Sarah Williams	**Test Date:**	30 April 2012
Test Sample Serial No:	261293		

FCC Reference:	Parts 15.247(d) & 15.209(a)
Industry Canada Reference:	RSS-Gen 4.9, RSS-210 A8.5
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):	25
Relative Humidity (%):	32

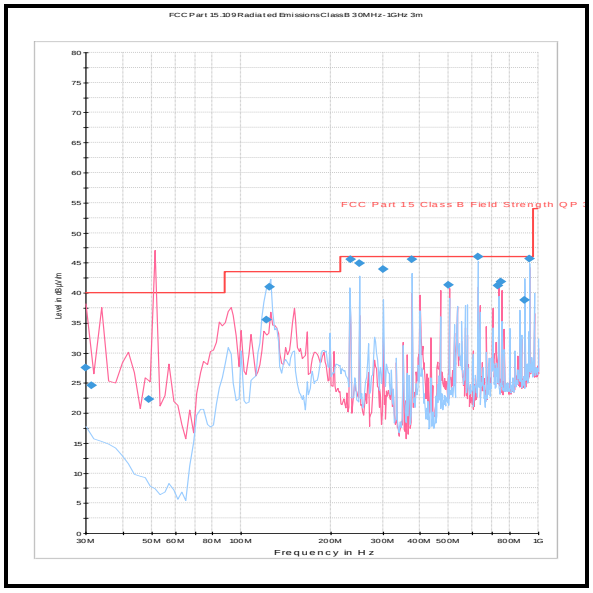
Results: 802.11n / 40 MHz / 270 Mbps / 64QAM / MCS15

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
121.762	Horizontal	35.5	43.5	8.0	Complied
124.967	Horizontal	41.0	43.5	2.5	Complied
249.991	Horizontal	44.9	46.0	1.1	Complied

Note(s):

1. Measurements were performed with the EUT transmitting MCS15 / 270 Mbps / 40 MHz channel width / top channel at the EUT power level setting of 9.0. All configurations were previously measured during pre-scans and this combination produced the highest radiated emission levels.
2. All antenna ports were terminated using 50 Ohm loads.
3. The final measured value, for the given emission, in the table above 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 Radiated Emissions (continued)



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

Transmitter Radiated Emissions (continued)

Test Summary:

Test Engineers:	Sarah Williams & Andrew Edwards	**Test Dates:**	25 April 2012 & 27 April 2012
Test Sample Serial No:	261293		

FCC Reference:	Part 15.247(d) & 15.209(a)
Industry Canada Reference:	RSS-Gen 4.9, RSS-210 A8.5
Test Method Used:	FCC KDB 558074 D01 Section 5.4 & ANSI C63.10 Sections 6.3 and 6.6
Frequency Range:	1 GHz to 25 GHz

Environmental Conditions:

Temperature (°C):	21 to 24
Relative Humidity (%):	22 to 24

Note(s):

1. Measurements were performed with the EUT transmitting MCS15 for both 20 MHz and 40 MHz channel widths 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.
2. All antenna ports were terminated using 50 Ohm loads.
3. The final measured value for the given emissions in the result tables, incorporates the calibrated antenna factor and cable loss.
4. The emission shown at approximately 2462 MHz on the 1 GHz to 4 GHz plot is the EUT fundamental.
5. Pre-scans were performed on the high power setting, while final measurements were performed on both high and low power settings. Final measurements with the high power settings are recorded in the result tables. Final measurements with the low power settings were found to be >20 dB below the applicable limits or below the noise floor of the measurement system and therefore not recorded.
6. Final measurements were made using appropriate RF filters and attenuators where required.
7. 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 Radiated Emissions (continued)

Results: Bottom Channel / 20 MHz channel / MCS15 / Peak / High power setting

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1124.662	Vertical	41.9	74.0	32.1	Complied
4822.798	Horizontal	47.7	74.0	26.3	Complied
7236.501	Vertical	52.6	74.0	21.4	Complied
12066.212	Vertical	43.8	74.0	30.2	Complied

Results: Bottom Channel / 20 MHz channel / MCS15 / Average / High power setting

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1124.662	Vertical	37.8	54.0	16.2	Complied
4822.798	Horizontal	33.0	54.0	21.0	Complied
7236.501	Vertical	35.8	54.0	18.2	Complied
12066.212	Vertical	31.0	54.0	23.0	Complied

Results: Middle Channel / 20 MHz channel / MCS15 / Peak / High power setting

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1124.662	Vertical	41.9	74.0	32.1	Complied
4876.966	Horizontal	49.5	74.0	24.5	Complied
7311.501	Horizontal	53.0	74.0	21.0	Complied
12191.613	Vertical	45.9	74.0	28.1	Complied

Results: Middle Channel / 20 MHz channel / MCS15 / Average / High power setting

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1124.662	Vertical	37.8	54.0	16.2	Complied
4876.966	Horizontal	35.8	54.0	18.2	Complied
7311.501	Horizontal	37.8	54.0	16.2	Complied
12191.613	Vertical	33.4	54.0	20.6	Complied

Transmitter Radiated Emissions (continued)

Results: Top Channel / 20 MHz channel / MCS15 / Peak / High power setting

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1124.662	Vertical	41.9	74.0	32.1	Complied
4925.892	Horizontal	47.2	74.0	26.8	Complied
7386.301	Vertical	56.1	74.0	17.9	Complied
12304.589	Horizontal	47.3	74.0	26.7	Complied

Results: Top Channel / 20 MHz channel / MCS15 / Average / High power setting

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1124.662	Vertical	37.8	54.0	16.2	Complied
4925.892	Horizontal	33.0	54.0	21.0	Complied
7386.301	Vertical	43.5	54.0	10.5	Complied
12304.589	Horizontal	35.1	54.0	18.9	Complied

Transmitter Radiated Emissions (continued)

Results: Bottom Channel / 40 MHz channel / MCS15 / Peak / High power setting

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1124.662	Vertical	41.9	74.0	32.1	Complied
4843.920	Horizontal	41.0	74.0	33.0	Complied
7269.307	Vertical	51.8	74.0	22.2	Complied
12104.188	Vertical	44.9	74.0	29.1	Complied

Results: Bottom Channel / 40 MHz channel / MCS15 / Average / High power setting

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1124.662	Vertical	37.8	54.0	16.2	Complied
4843.920	Horizontal	26.8	54.0	27.2	Complied
7269.307	Vertical	38.9	54.0	15.1	Complied
12104.188	Vertical	31.4	54.0	22.6	Complied

Results: Middle Channel / 40 MHz channel / MCS15 / Peak / High power setting

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1124.662	Vertical	41.9	74.0	32.1	Complied
4873.599	Horizontal	47.1	74.0	26.9	Complied
7318.315	Vertical	52.0	74.0	22.0	Complied
12198.828	Vertical	43.5	74.0	30.5	Complied

Results: Middle Channel / 40 MHz channel / MCS15 / Average / High power setting

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1124.662	Vertical	37.8	54.0	16.2	Complied
4873.599	Horizontal	32.6	54.0	21.4	Complied
7318.315	Vertical	37.6	54.0	16.4	Complied
12198.828	Vertical	30.6	54.0	23.4	Complied

Transmitter Radiated Emissions (continued)

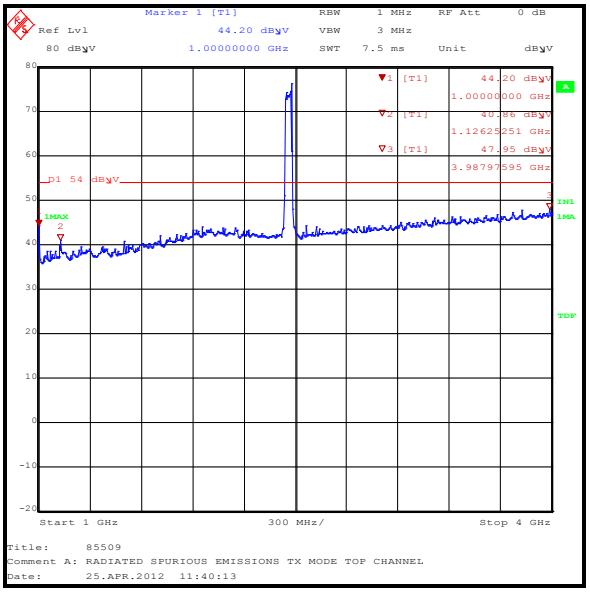
Results: Top Channel / 40 MHz channel / MCS15 / Peak / High power setting

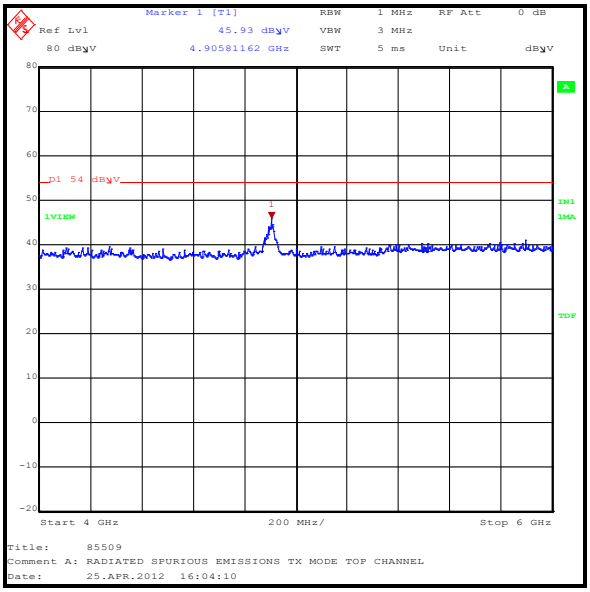
Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1124.662	Vertical	41.9	74.0	32.1	Complied
4904.088	Horizontal	48.1	74.0	25.9	Complied
7360.822	Vertical	52.8	74.0	21.2	Complied
12254.188	Vertical	45.6	74.0	28.4	Complied

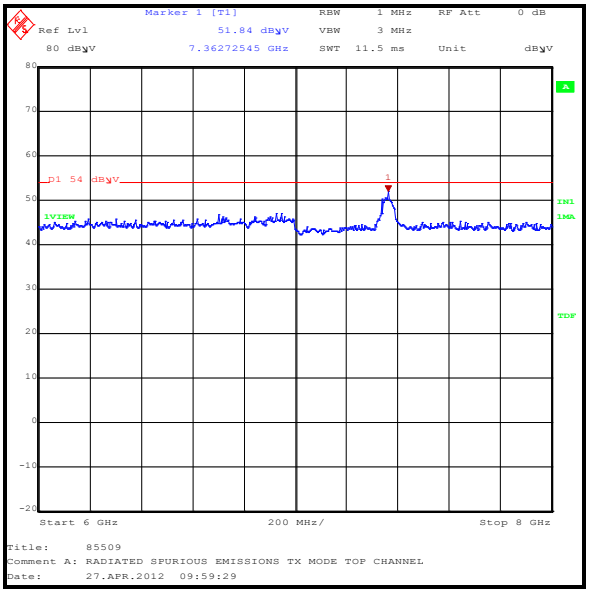
Results: Top Channel / 40 MHz channel / MCS15 / Average / High power setting

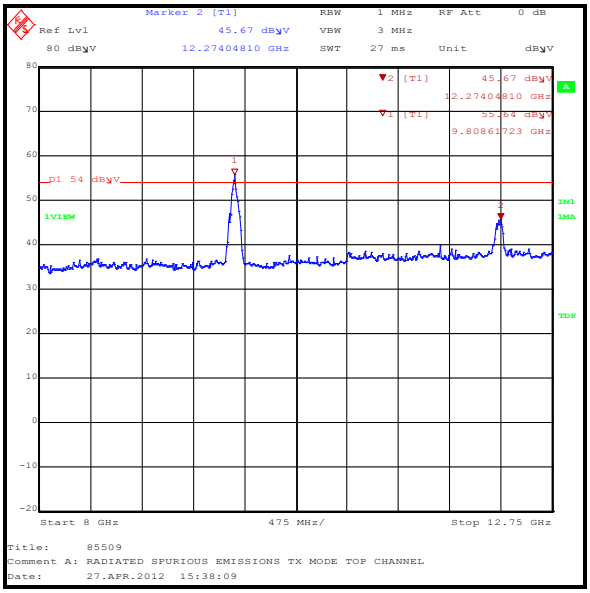
Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1124.662	Vertical	37.8	54.0	16.2	Complied
4904.088	Horizontal	31.6	54.0	22.4	Complied
7360.822	Vertical	40.2	54.0	13.8	Complied
12254.188	Vertical	31.0	54.0	23.0	Complied

Transmitter Radiated Emissions (continued)

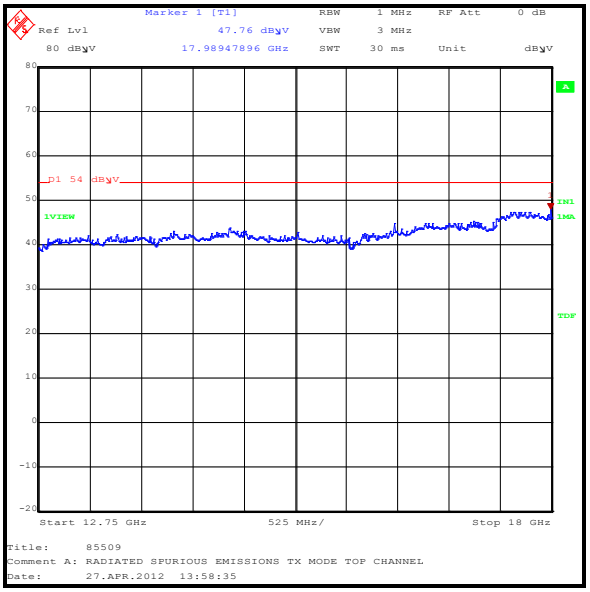


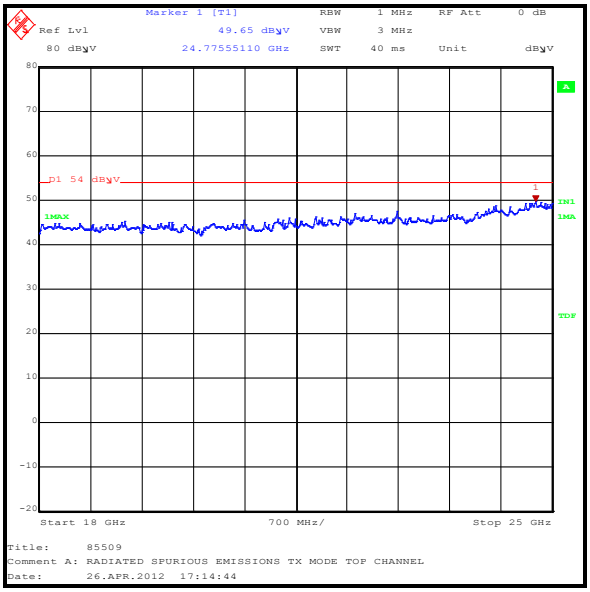






Transmitter Radiated Emissions (continued)





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

5.2.7. Transmitter Band Edge Radiated Emissions

Test Summary:

Test Engineer:	Sarah Williams	**Test Date:**	04 May 2012
Test Sample Serial No:	261293		

FCC Reference:	Part 15.247(d) & 15.209(a)
Industry Canada Reference:	RSS-Gen 4.9, RSS-210 A8.5
Test Method Used:	FCC KDB 558074 Section 5.4 & ANSI C63.10 Section 6.9.2

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	27

Note(s):

1. Conducted measurements at band edges were used for compliance in conjunction with radiated limits, therefore cabinet emissions were also measured with all ports terminated into 50 Ohm loads. The EUT was set to transmit on the bottom channel when performing measurements at the lower band edge and the top channel when performing measurements at the upper band edge.
2. The Customer declared that the transmitter output signals are uncorrelated.
3. The EUT was set to a power level of 9.0 when used in conjunction with the lowest gain antenna and a power level setting of 2.0 when the EUT was used in conjunction with the highest gain antenna.
4. Lower band edge measurements were performed with the EUT transmitting on the bottom channel at maximum power. Upper band edge measurements were performed with the EUT transmitting on the top channel at maximum power.
5. The final measured value, for the given emission in the result tables incorporates the calibrated antenna factor and cable loss.
6. The EUT was configured to transmit in MCS15 configuration as this was found to produce the highest levels at the band edges.
7. *-20 dBc limit applies.

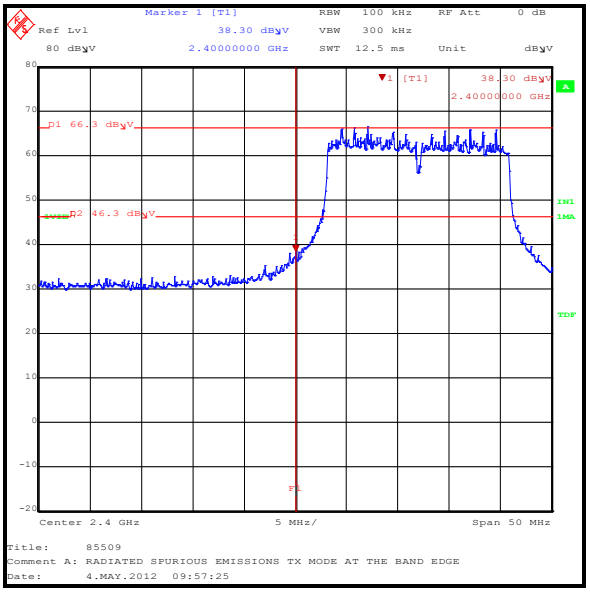
Transmitter Band Edge Radiated Emissions (continued)

Results: 20 MHz Channel / MCS15 / Peak / High power setting

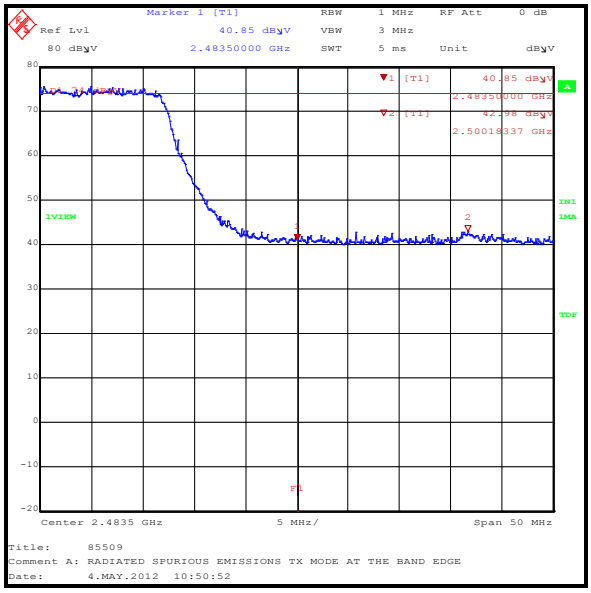
Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2400	38.3	46.3*	8.0	Complied
2483.5	40.9	74.0	33.1	Complied

Results: 20 MHz Channel / MCS15 / Average / High power setting

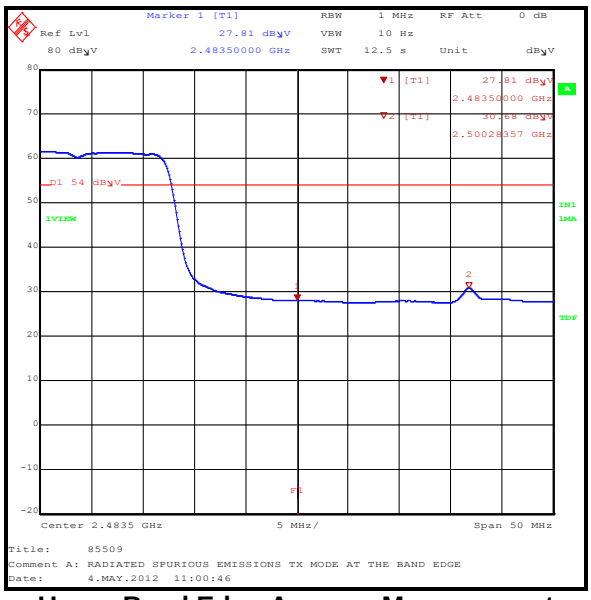
Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2483.5	27.8	54.0	26.2	Complied



Lower Band Edge Peak Measurement



Upper Band Edge Peak Measurement



Upper Band Edge Average Measurement

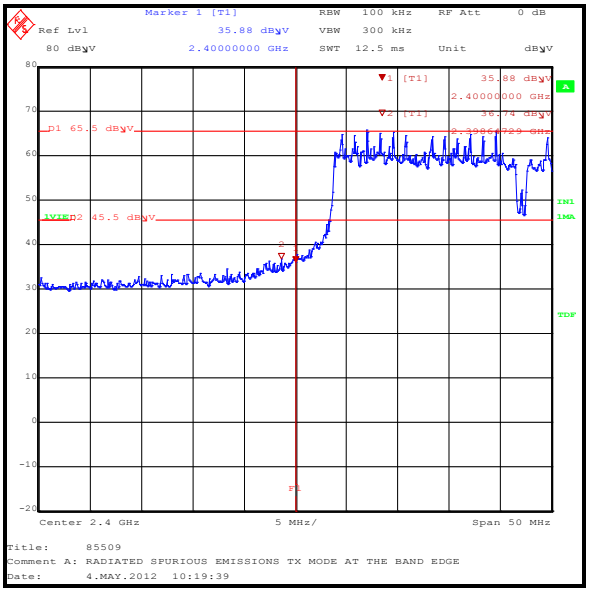
Transmitter Band Edge Radiated Emissions (continued)

Results: 40 MHz Channel / MCS15 / Peak / High power setting

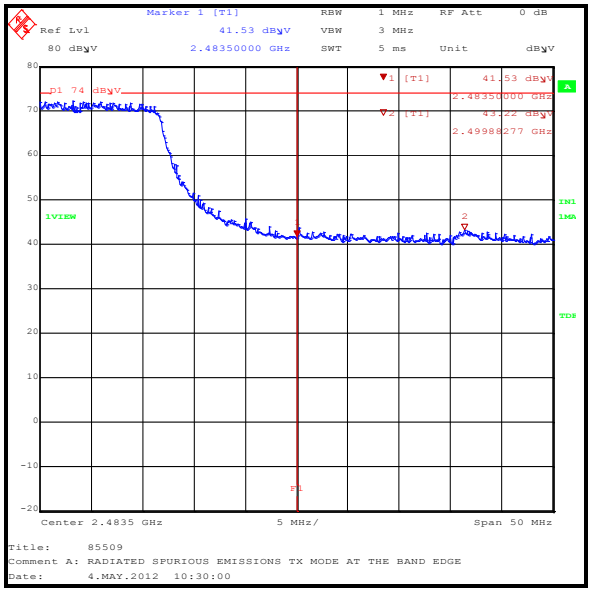
Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2400	35.9	45.5*	9.6	Complied
2483.5	41.5	74.0	32.5	Complied

Results: 40 MHz Channel / MCS15 / Average / High power setting

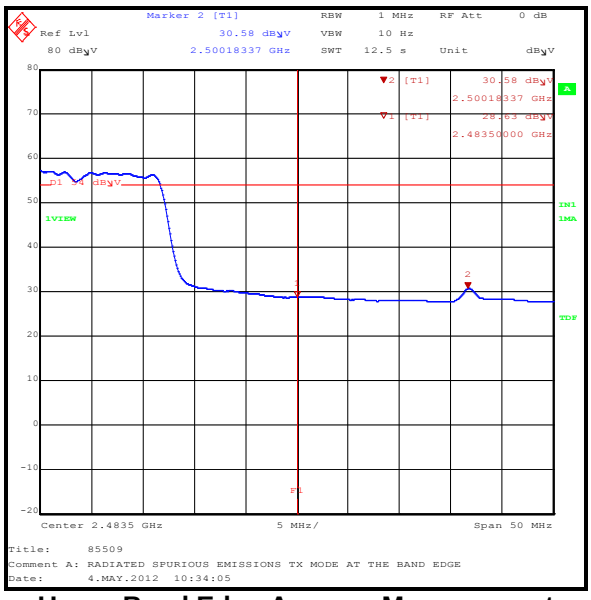
Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2483.5	30.6	54.0	23.4	Complied



Lower Band Edge Peak Measurement



Upper Band Edge Peak Measurement



Upper Band Edge Average Measurement

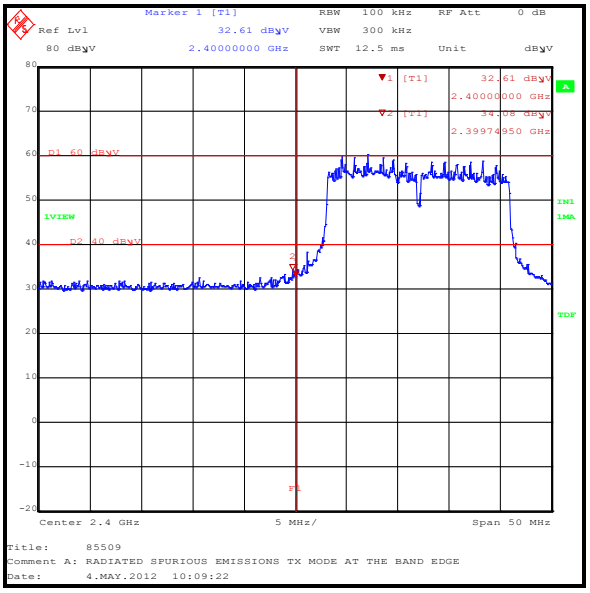
Transmitter Band Edge Radiated Emissions (continued)

Results: 20 MHz Channel / MCS15 / Peak / Low power setting

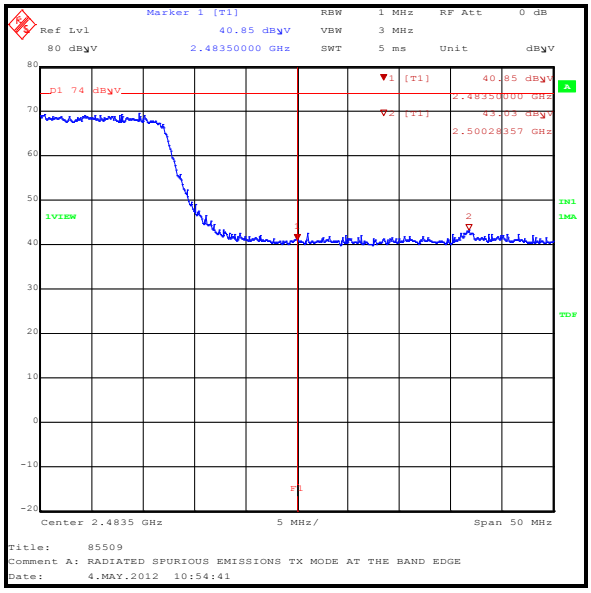
Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2400	32.6	40.0*	7.4	Complied
2483.5	40.9	74.0	33.1	Complied

Results: 20 MHz Channel / MCS15 / Average / Low power setting

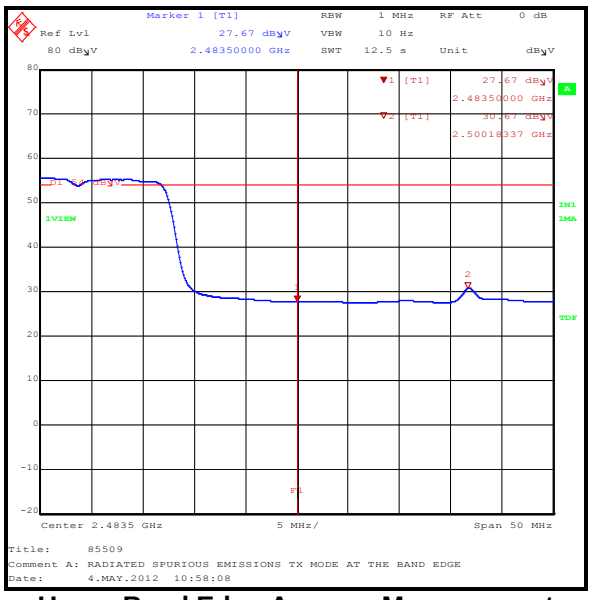
Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2483.5	27.7	54.0	26.3	Complied



Lower Band Edge Peak Measurement



Upper Band Edge Peak Measurement



Upper Band Edge Average Measurement

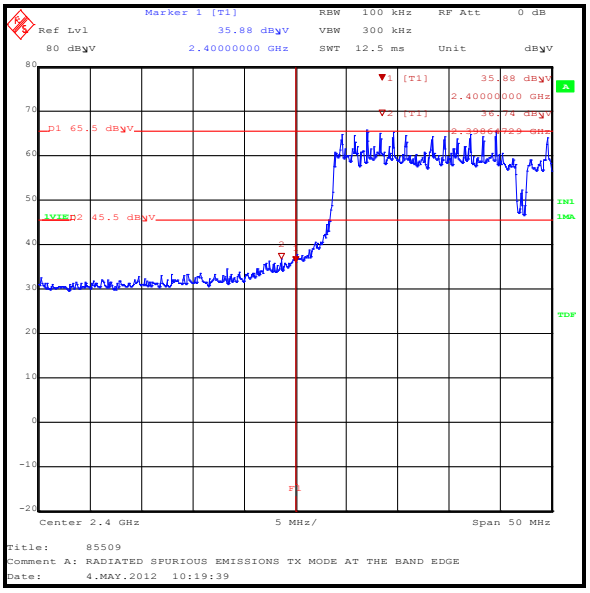
Transmitter Band Edge Radiated Emissions (continued)

Results: 40 MHz Channel / MCS15 / Peak / Low power setting

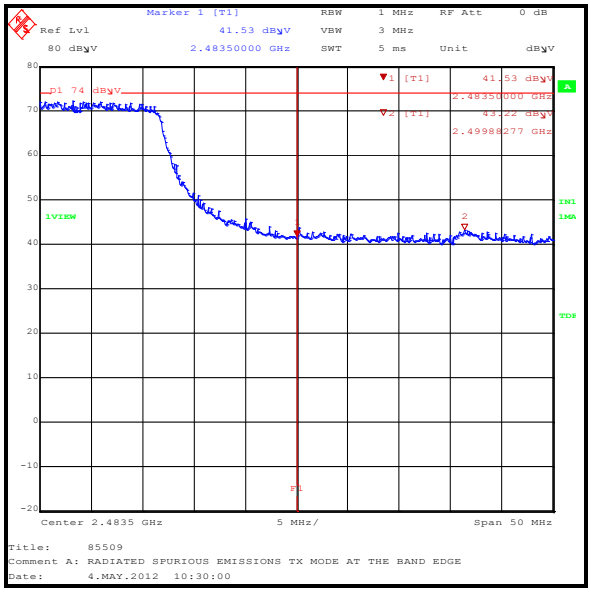
Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2400	35.9	45.5*	9.6	Complied
2483.5	41.5	74.0	32.5	Complied

Results: 40 MHz Channel / MCS15 / Average / Low power setting

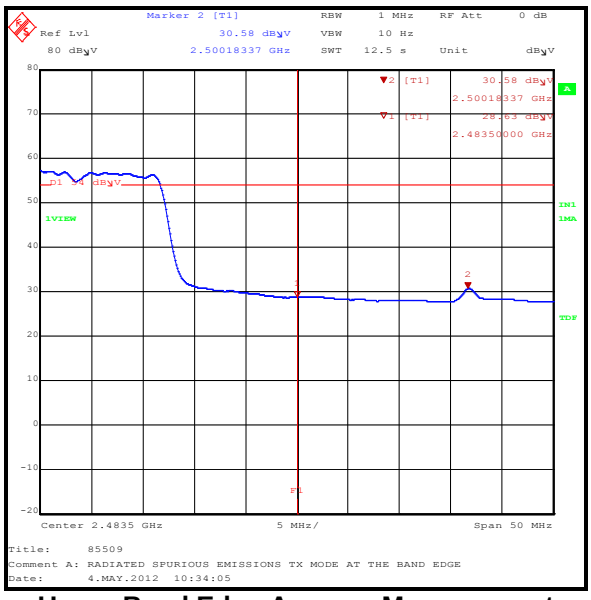
Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2483.5	30.6	54.0	23.4	Complied



Lower Band Edge Peak Measurement



Upper Band Edge Peak Measurement



Upper Band Edge Average Measurement

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
Conducted Maximum Peak Output Power	2.4 GHz to 2.4835 GHz	95%	±0.27 dB
Spectral Power Density	2.4 GHz to 2.4835 GHz	95%	±2.94 dB
Conducted Spurious Emissions	30 MHz to 25 GHz	95%	±2.62 dB
Radiated Spurious Emissions	30 MHz to 25 GHz	95%	±2.94 dB

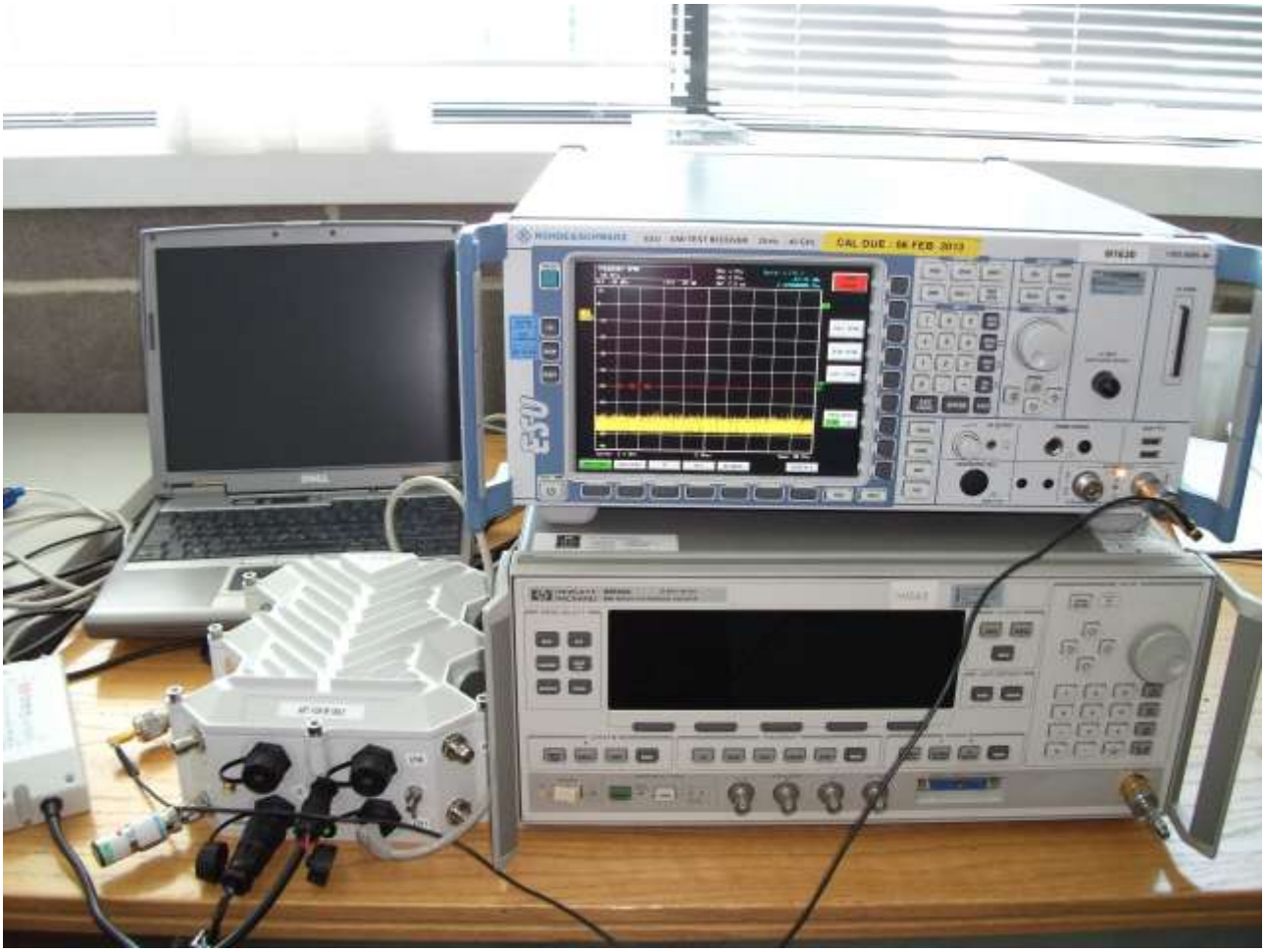
The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty the published guidance of the appropriate accreditation body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

Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (months)
A067	LISN	Rohde & Schwarz	ESH3-Z5	890603/002	02 Jun 2012	12
A1396	Attenuator	Huber & Suhner	757987	6810.17.B	08 Jul 2012	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	09 Oct 2012	12
A1738	Attenuator	Atlantic Microwave	BBS40-10	R1379	Calibrated before use	-
A1818	Antenna	EMCO	3115	00075692	09 Oct 2012	12
A1830	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100668	25 Feb 2013	12
A1834	Attenuator	Hewlett Packard	8491B	10444	29 Jan 2013	12
A1975	High Pass Filter	AtlanTecRF	AFH-03000	090424010	15 Mar 2013	12
A1999	Attenuator	Huber & Suhner	6820.17.B	07101	03 Apr 2013	12
A2055	Attenuator	Atlantic Microwave	WA-54-10-12	A2055	15 Jun 2012	12
A2056	Attenuator	Atlantic Microwave	WA-54-10-12	A2056	15 Jun 2012	12
A253	Antenna	Flann	12240-20	128	09 Oct 2012	12
A254	Antenna	Flann	14240-20	139	09 Oct 2012	12
A255	Antenna	Flann	16240-20	519	09 Oct 2012	12
A256	Antenna	Flann	18240-20	400	09 Oct 2012	12
A436	Antenna	Flann	20240-20	330	09 Oct 2012	12
A553	Antenna	Chase	CBL6111A	1593	15 Feb 2013	12
G0543	Amplifier	Sonoma	310N	230801	13 Jul 2012	3
K0001	5m RSE Chamber	Rainford EMC	N/A	N/A	29 May 2012	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	09 Oct 2012	12
M1124	Spectrum Analyser	Rohde & Schwarz	ESI26	100046K	29 Jun 2012	12
M1252	Signal Generator	Hewlett Packard	83640A	3119A00489	05 Oct 2012	12
M1273	Test Receiver	Rohde & Schwarz	ESIB 26	100275	03 Feb 2013	12
M1379	Test Receiver	Rohde & Schwarz	ESIB 7	100330	20 Sep 2012	12
M1630	Test Receiver	Rohde & Schwarz	ESU 40	100233	06 Feb 2013	12

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

Appendix 2. Test Setup Photographs



Test setup for conducted measurements. DN200 is the white box to the left of the signal generator.