TEST REPORT

Report Number: 100681263MPK-001
Project Number: G100681263
May 25, 2012

Testing performed on the
Wireless Print Server RF Module
Model Number: LEX-M01-005
FCC ID: IYLLEXM01005
IC ID: 2376A-M01005

to
FCC Part 15, Subpart E
RSS-210 Issue 8
FCC Part 15, Subpart B
Industry Canada ICES-003

for

Lexmark International, Inc.

Test Performed by:	Test Authorized by:
Intertek	Lexmark International, Inc.
1365 Adams Court	740 New Circle Road, NW F61/004-2
Menlo Park, CA 94025 USA	Lexington, KY 40511, USA

Prepared by: _____ **Date:** May 25, 2012
Krishna K Vemuri

Reviewed by: _____ **Date:** May 25, 2012
Ollie Moyrong

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program. This report must not be used to claim product endorsement by A2LA, NIST nor any other agency of the U.S. Government.

Report No. 100681263MPK-001

Equipment Under Test:	Wireless Print Server RF Module
Trade Name:	Lexmark International, Inc.
Model No.:	LEX-M01-005
Serial No.:	MPK1204051030-003**,** MPK1204051030-004
Applicant:	Lexmark International, Inc.
Contact:	Mr. Michael Klave
Address:	740 New Circle Road, NW F61/004-2 Lexington, KY 40511
Country	USA
Tel. Number:	(859) 232-3512
Email:	klavem@lexmark.com
Applicable Regulation:	FCC Part 15, Subpart E RSS-210 Issue 8 FCC Part 15, Subpart B Industry Canada ICES-003
Date of Test:	April 02 to May 23, 2012

We attest to the accuracy of this report:

Krishna K Vemuri	Ollie Moyrong
EMC Senior Staff Engineer	Engineering Manager

TABLE OF CONTENTS

1.0 Introduction

1.1 Summary of Tests

Test	Reference FCC	Reference RSS-210	Result
26 dB/Occupied Bandwidth	15.407(a)(1)(2)	A9.2(1)(2)(3)	Complies
Conducted Output Power	15.407(a)(1)(2)	A9.2(1)(2)(3)	Complies
Peak Power Spectral Density	15.407(a)(1)(2)	A9.2(1)(2)(3)	Complies
Ratio of the Peak Excursion of the Modulation Eenvelope	15.407(a)(6)	--	Complies
Out-of-Band Antenna Conducted Emission	15.407(b)(1)(2)(3)	A9.2(1)(2)(3)	Complies
Transmitter Radiated Emissions	15.407(b)(1)(2)(3) 15.209, 15.205	A9.2(1)(2)(3)	Complies
Radiated Emission from Digital Part and Receiver	15.109	ICES-003	Complies
Frequency Stability	15.407(g)	--	Complies
AC Line-conducted Emission	15.207	RSS-Gen	Complies
Dynamic Frequency Selection (DFS)	15.407(h)(2)(iii)(iv)	A9.3 (b)(iii)(iv)(v)	Complies
RF Exposure Requirement	2.1091	RSS-102	Complies
Antenna Requirement	15.203	RSS-Gen	Complies. The EUT uses a PCB antenna or unique antenna connector

EUT receive date: April 02, 2012
EUT receive condition: The prototype version of the EUT was received in good condition with no apparent damage. As declared by the Applicant it is identical to the production units.
Test start date: April 02, 2012
Test completion date: May 23, 2012
The test results in this report pertain only to the item tested.

2.0 General Description

2.1 Product Description

The Equipment Under Test (EUT) is a Wireless Print Server RF Module, model: LEX-M01-005. It consists of one 2.4 GHz radio and one 5GHz radio which will be installed in various printer models. This test report covers only the 5GHz radio. Separate test reports cover the operation in other bands. Report # 100596665LEX-001 covers the 2.4GHz radio band and report # 100681263MPK-005 covers the other 5GHz radio band (5725 – 5850 MHz). The RF Module contains two antenna ports, Antenna Port 1 is PCB antenna and Antenna Port 2 is PCB antenna or external antenna. The EUT can operate with any one of the antenna ports, but they can never operate at the same time.

The EUT supports a wide range of data rates in the 5GHz band:

IEEE 802.11a: 54, 48, 36, 24, 18, 12, 9, 6Mbps

IEEE 802.11n: MCS0, MCS1, MCS2, MCS3, MCS4, MCS5, MCS6, MCS7

Note: In 802.11n HT20 an 802.11n HT40 modes, the nominal bandwidth is 20 MHz and 40 MHz respectively.

Information about the 5GHz radio, installed in the model LEX-M01-005:

Applicant	Lexmark International, Inc.
Model No.	LEX-M01-005
FCC Identifier	FCC ID: IYLLEXM01005
IC Identifier	IC ID: 2376A-M01005
Use of Product	Wireless Print Server RF Module
Modulation Technique	OFDM
Rated RF Output	23.4mW or 13.7dBm (average)
Frequency Range	5150 – 5250 MHz 5250 – 5350 MHz 5470 – 5725 MHz 5725 – 5850 MHz
Type of modulation	64-QAM, 16-QAM, QPSK, BPSK
Number of Channel(s)	**IEEE 802.11a, IEEE 802.11n HT20** 5150 – 5250 MHz 5180 MHz, 5200 MHz, 5220 MHz, 5240 MHz 5250 – 5350 MHz 5260 MHz, 5280 MHz, 5300 MHz, 5320 MHz 5470 – 5725 MHz 5500 MHz, 5520 MHz, 5540 MHz, 5560 MHz, 5580 MHz, 5680 MHz, 5700 MHz 5725 – 5850 MHz 5745 MHz, 5765 MHz, 5785 MHz, 5805 MHz, 5825 MHz **IEEE 802.11n HT40** 5150 – 5250 MHz 5190 MHz, 5230 MHz 5250 – 5350 MHz 5270 MHz, 5310 MHz 5470 – 5725 MHz 5510 MHz, 5550 MHz, 5670 MHz 5725 – 5850 MHz 5755 MHz, 5795 MHz
Antenna(s) & Gain	The EUT is capable of 2 antenna configurations: ***Configuration 1*** Antenna Port 1: Internal PCB antenna, 1.8dBi to 5.6dBi peak gain Antenna Port 2: Internal PCB antenna, 1.8dBi to 5.6dBi peak gain ***Configuration 2*** Antenna Port 1: Internal PCB antenna, 1.8dBi to 5.6dBi peak gain Antenna Port 2: External Omni-directional antenna, 3dBi to 3.6dBi peak gain, IPEX U.FL connector Note: Only one antenna port can transmit at any given time.
Manufacturer Name & Address	Lexmark International, Inc. 740 New Circle Road, NW F61/004-2 Lexington, KY 40511, USA

The EUT supports the following configurations:

Channels in 5150 – 5250 MHz band					
Number	Frequency, MHz	a/n HT20 mode		n HT40 mode	
36	5180	√	X		
38	5190			√	X
40	5200	√	X		
44	5220	√			
46	5230			√	X
48	5240	√	X		

Channels in 5250 – 5350 MHz band					
Number	Frequency, MHz	a/n HT20 mode		n HT40 mode	
52	5260	√	X		
54	5270			√	X
56	5280	√			
60	5300	√	X		
62	5310			√	X
64	5320	√	X		

Channels in 5470 – 5725 MHz band					
Number	Frequency, MHz	a/n HT20 mode		n HT40 mode	
100	5500	√	X		
102	5510			√	X
104	5520	√			
108	5540	√			
110	5550			√	X
112	5560	√			
116	5580	√	X		
134	5670			√	X
136	5680	√			
140	5700	√	X		

Channels in 5725 – 5850 MHz band					
Number	Frequency, MHz	a/n HT20 mode		n HT40 mode	
149	5745	√	X		
151	5755			√	X
153	5765	√			
157	5785	√	X		
159	5795			√	X
161	5805	√			
165	5825	√	X		

List of Channels:
√ - Available
X - Tested

2.2 Related Submittal(s) Grants

None.

2.3 Test Methodology

Both conducted and radiated emissions measurements were performed according to the procedures in ANSI C63.4. Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the **"Data Sheet"** of this Application. All other measurements were made in accordance with the procedures in parts 2 and 15 of CFR 47.

2.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is site 1 (10-m semi-anechoic chamber). This test facility and site measurement data have been fully placed on file with the FCC, IC and A2LA accredited.

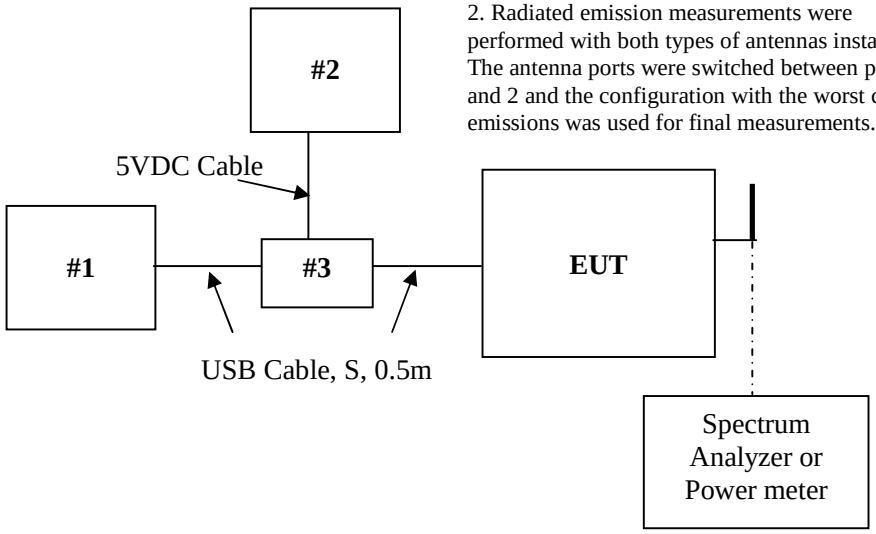
3.0 System Test Configuration

3.1 Support Equipment

Item #	Description	Model No.	Serial No.
1	Compaq Laptop	nc6400	CND7062PVK
2	EXTECH Power Supply	EP-3003	D30030012
3	Test Board	001-15	Not Labeled

3.2 Block Diagram of Test Setup

EUT can be configured with either 2 internal PCB antennas for ports 1 and 2, or with 1 internal PCB antenna on port 1 and 1 external antenna on port 2. Radiated emission measurements were performed with both types of antennas installed. The antenna ports were switched between ports 1 and 2 and the configuration with the worst case emissions was used for final measurements.



S = Shielded	**F** = With Ferrite
U = Unshielded	**m** = Meter

3.3 Justification

Preliminary testing was performed for all modulation/data rate modes. The following modes, in which the highest power was detected, were selected for final measurements:
OFDM, 6 Mbps – for 802.11a
OFDM, MCS0 – for 802.11n HT20
OFDM, MCS0 – for 802.11n HT40

3.4 Mode of Operation During Test

During transmitter testing, the transmitter was setup to transmit continuously at maximum RF power on low, middle and high channels.

3.5 Modifications Required for Compliance

Intertek installed no modifications during compliance testing in order to bring the product into compliance.

3.6 Additions, Deviations and Exclusions from Standards

No additions, deviations or exclusion have been made from standard.

4.0 Measurement Results

4.1 26-dB Bandwidth and Occupied Bandwidth
15.407(a)(1)(2)

4.1.1 Procedure

The procedure described in FCC Publication 789033 was used.

The antenna port of the EUT was connected to the input port of a spectrum analyzer. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK output reading was taken, a DISPLAY line was drawn 26 dB lower than the PEAK level. The 26-dB bandwidth was determined from where the channel output spectrum intersected the display line.

The Occupied Bandwidth was measured using the spectrum analyzer measurement function for 99% Power Bandwidth measurement.

4.1.2 Test Result

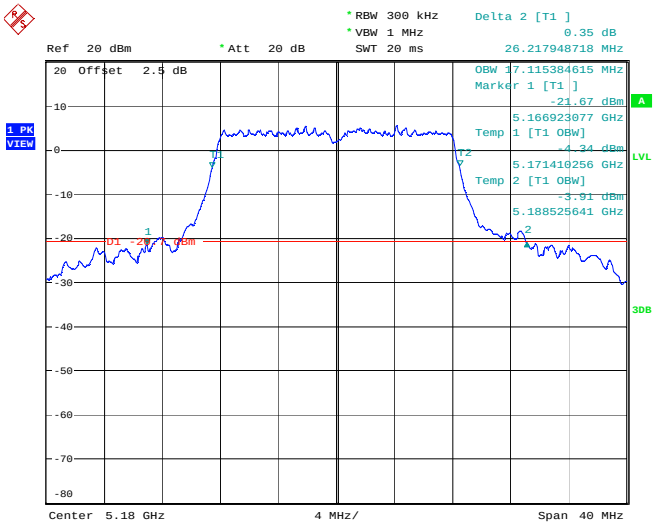
Refer to the following plots for the test results:

Channel	Frequency MHz	Standard/ Data rate	26-dB Bandwidth MHz	Occupied Bandwidth MHz	Plot #
36	5180	802.11a, 6 Mbps	26.2	17.1	1.1
		802.11n, HT20 MCS0	31.6	18.2	1.2
38	5190	802.11n, HT40, MCS0	50.9	36.5	1.19
40	5200	802.11a, 6 Mbps	30.4	17.1	1.4
		802.11n, HT20 MCS0	31.9	18.2	1.3
46	5230	802.11n, HT40, MCS0	50.6	36.5	1.20
48	5240	802.11a, 6 Mbps	33.3	17.2	1.5
		802.11n, HT20 MCS0	34.4	18.3	1.6

Channel	Frequency MHz	Standard/ Data rate	26-dB Bandwidth MHz	Occupied Bandwidth MHz	Plot #
52	5260	802.11a, 6 Mbps	33.2	17.2	1.8
		802.11n, HT20 MCS0	34.9	18.3	1.7
54	5270	802.11n, HT40, MCS0	63.5	36.5	1.21
60	5300	802.11a, 6 Mbps	26.2	17.1	1.9
		802.11n, HT20 MCS0	31.8	18.1	1.10
62	5310	802.11n, HT40, MCS0	59.4	36.5	1.22
64	5320	802.11a, 6 Mbps	26.2	17.1	1.12
		802.11n, HT20 MCS0	29.9	18.1	1.11

Channel	Frequency MHz	Standard/ Data rate	26-dB Bandwidth MHz	Occupied Bandwidth MHz	Plot #
100	5500	802.11a, 6 Mbps	34.7	17.5	1.13
		802.11n, HT20 MCS0	35.8	18.5	1.14
102	5510	802.11n, HT40, MCS0	56.4	36.5	1.23
110	5550	802.11n, HT40, MCS0	53.8	36.5	1.24
116	5580	802.11a, 6 Mbps	35.0	17.7	1.15
		802.11n, HT20 MCS0	37.5	18.9	1.16
134	5670	802.11n, HT40, MCS0	52.3	36.5	1.25
140	5700	802.11a, 6 Mbps	31.3	17.2	1.18
		802.11n, HT20 MCS0	33.1	18.3	1.17

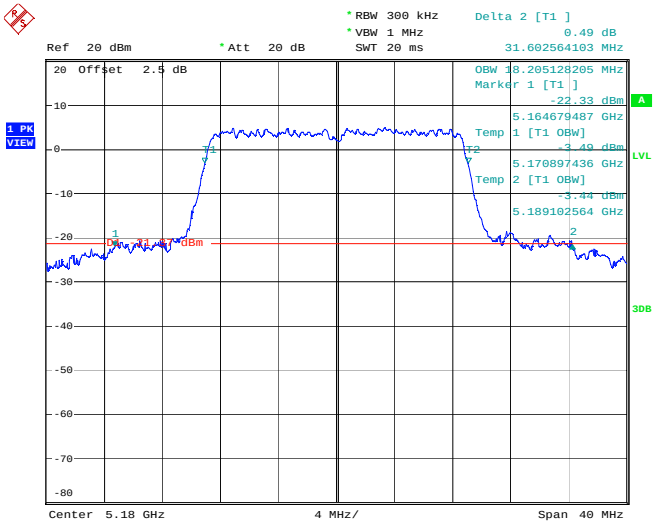
Plot 1. 1



26-dB bandwidth and OBW, 802.11a, 6Mbps

Date: 6.APR.2012 10:59:46

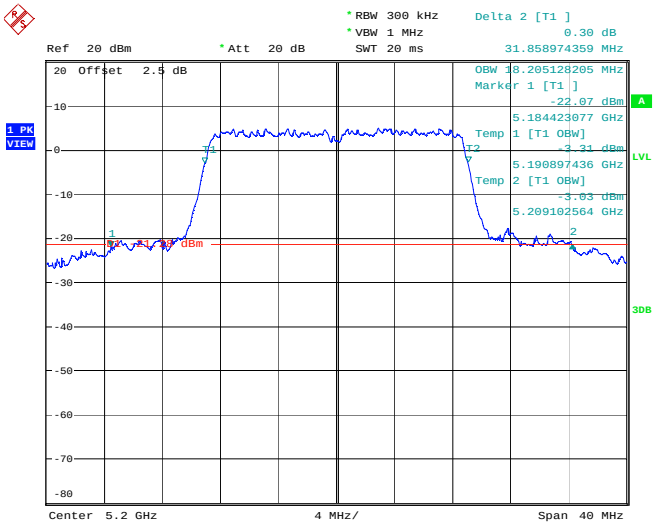
Plot 1. 2



26-dB bandwidth and OBW, 802.11n, HT20, MCS0

Date: 6.APR.2012 11:02:19

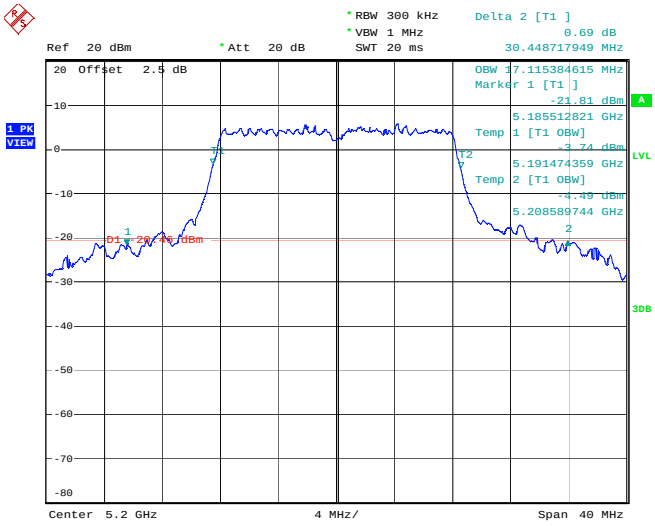
Plot 1. 3



26-dB bandwidth and OBW, 802.11n, HT20, MCS0

Date: 6.APR.2012 11:03:49

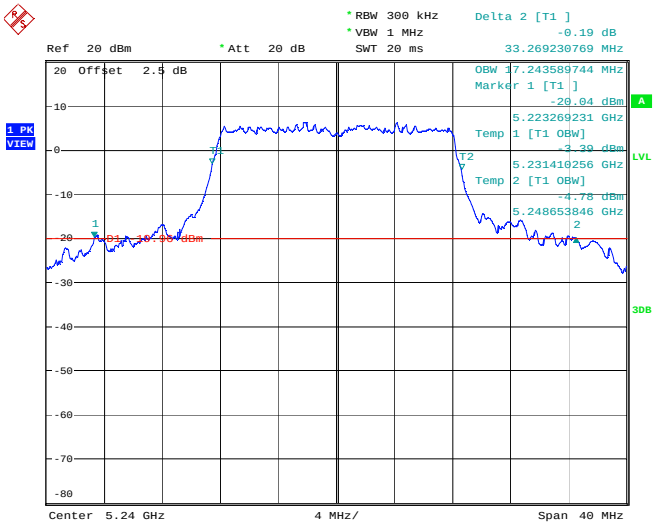
Plot 1. 4



26-dB bandwidth and OBW, 802.11a, 6Mbps

Date: 6.APR.2012 11:08:24

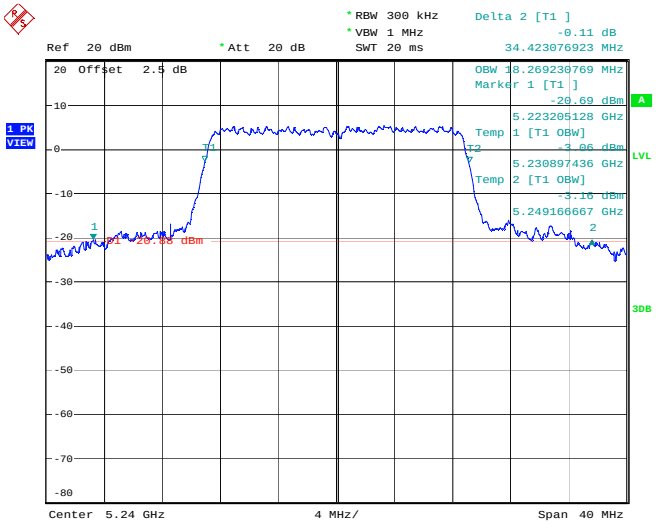
Plot 1. 5



26-dB bandwidth and OBW, 802.11a, 6Mbps

Date: 6.APR.2012 11:10:01

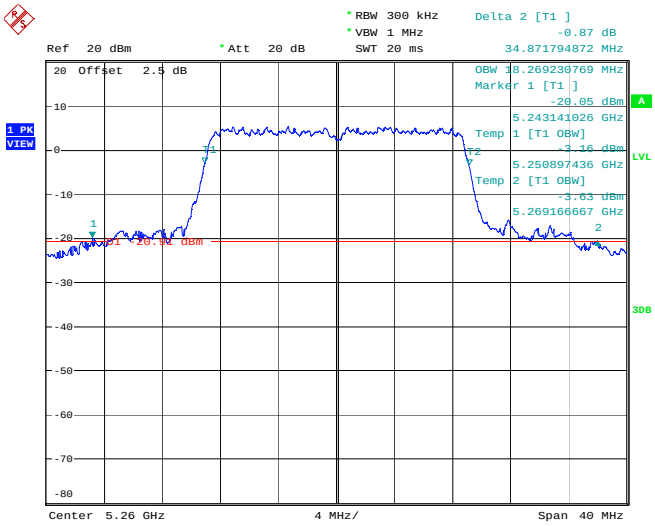
Plot 1. 6



26-dB bandwidth and OBW, 802.11n, HT20, MCS0

Date: 6.APR.2012 11:12:18

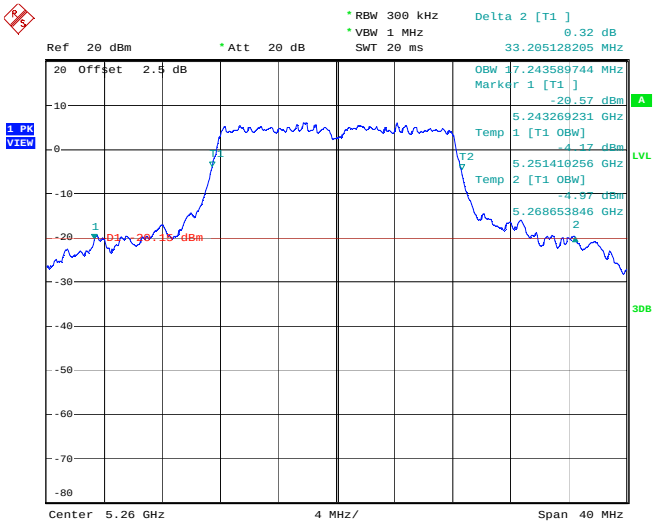
Plot 1. 7



26-dB bandwidth and OBW, 802.11n, HT20, MCS0

Date: 6.APR.2012 11:16:25

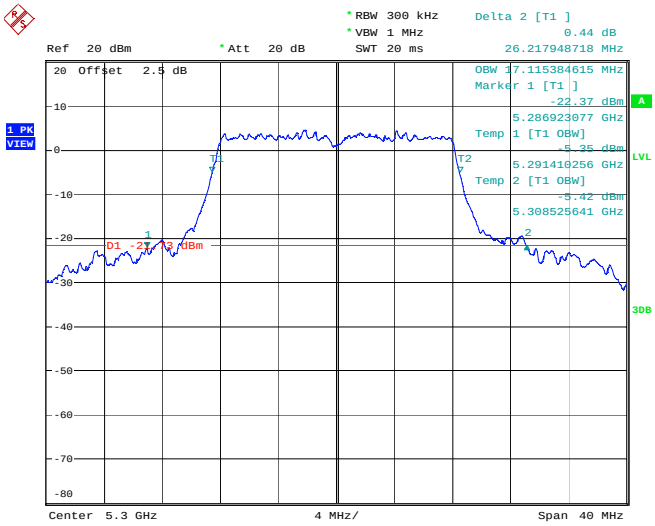
Plot 1. 8



26-dB bandwidth and OBW, 802.11a, 6Mbps

Date: 6.APR.2012 11:18:02

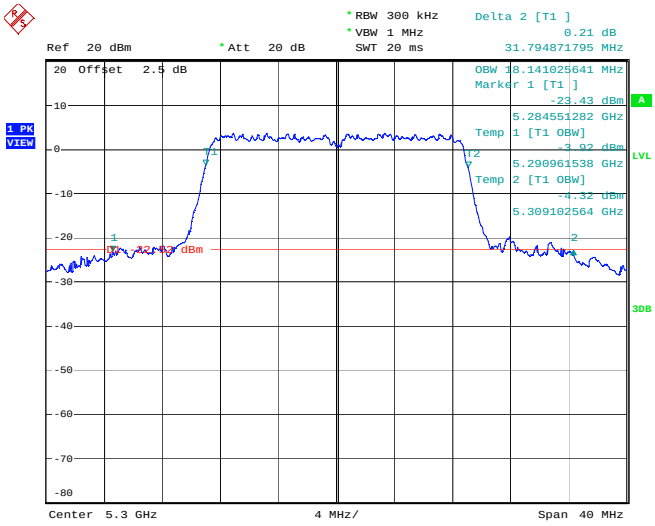
Plot 1. 9



26-dB bandwidth and OBW, 802.11a, 6Mbps

Date: 6.APR.2012 11:19:40

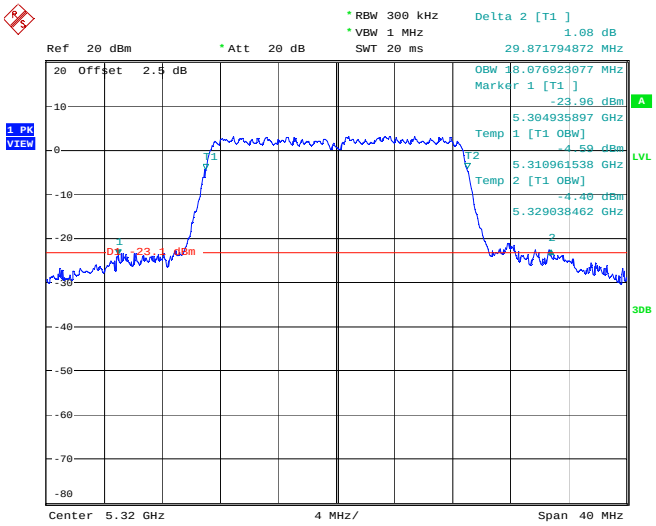
Plot 1. 10



26-dB bandwidth and OBW, 802.11n, HT20, MCS0

Date: 6.APR.2012 11:21:13

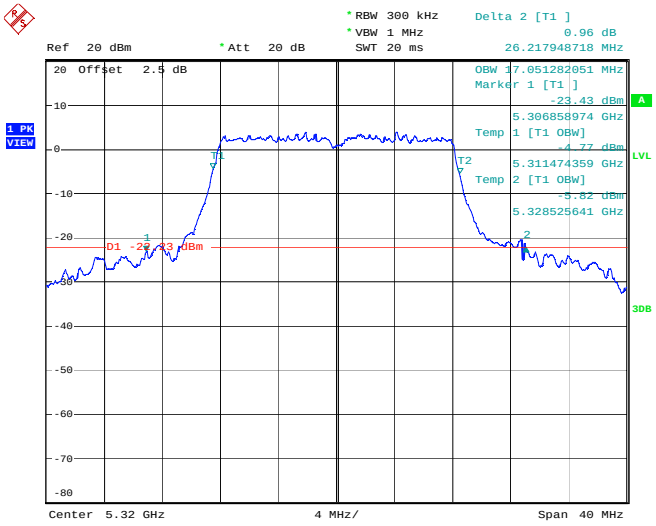
Plot 1. 11



26-dB bandwidth and OBW, 802.11n, HT20, MCS0

Date: 6.APR.2012 11:23:14

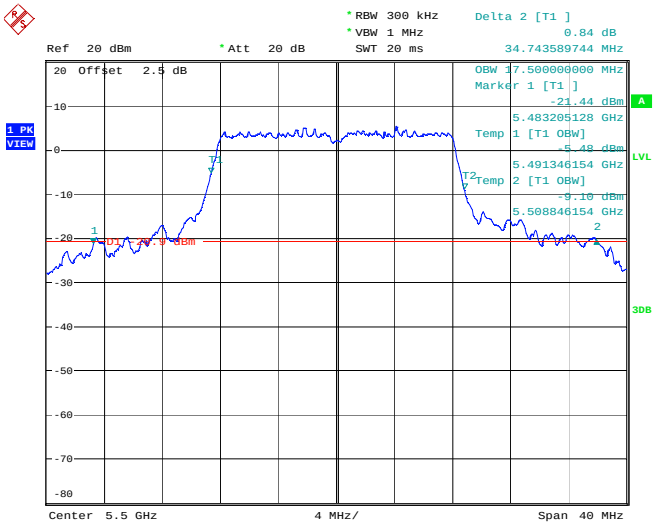
Plot 1. 12



26-dB bandwidth and OBW, 802.11a, 6Mbps

Date: 6.APR.2012 11:24:30

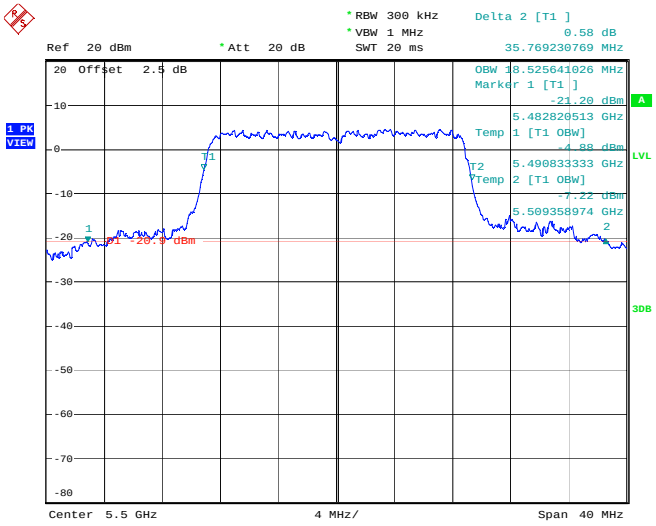
Plot 1. 13



26-dB bandwidth and OBW, 802.11a, 6Mbps

Date: 6.APR.2012 11:26:07

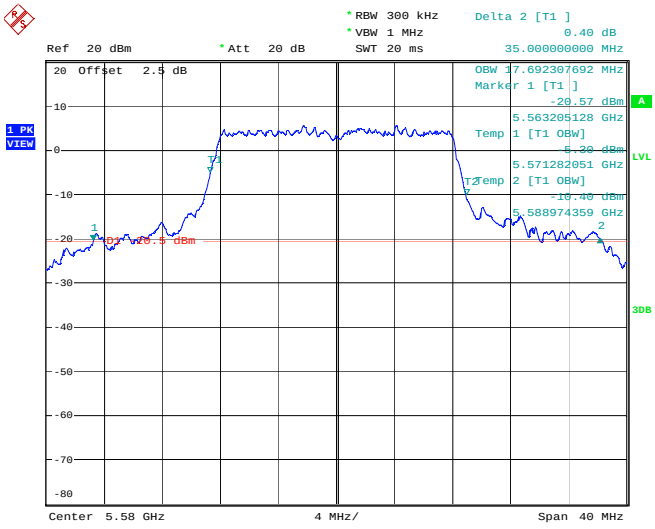
Plot 1. 14



26-dB bandwidth and OBW, 802.11n, HT20, MCS0

Date: 6.APR.2012 11:31:01

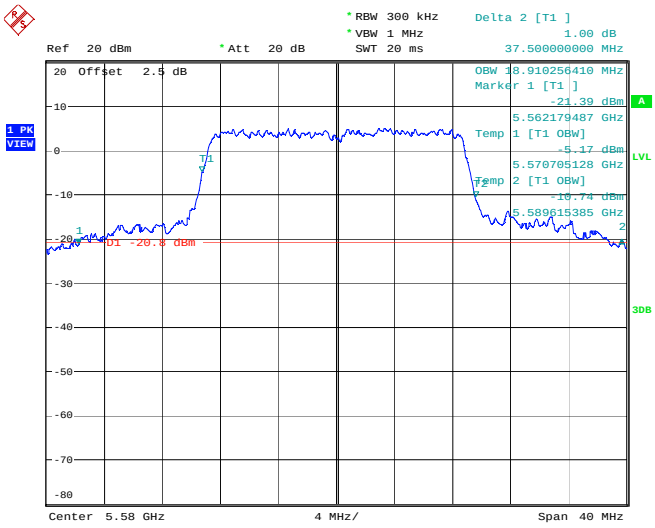
Plot 1. 15



26-dB bandwidth and OBW, 802.11a, 6Mbps

Date: 6.APR.2012 13:12:18

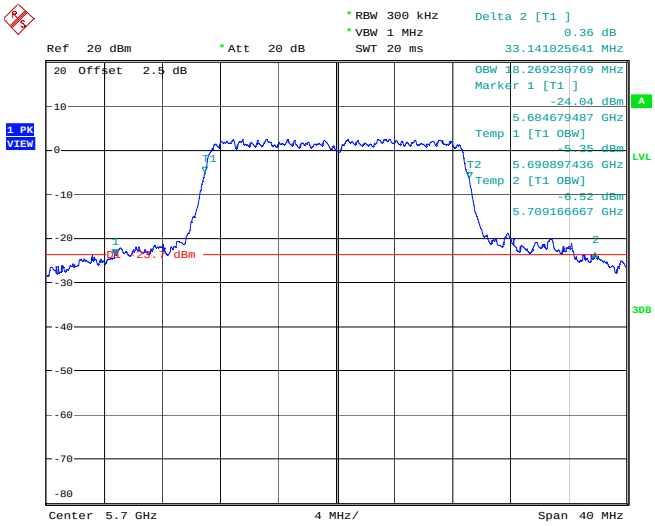
Plot 1. 16



26-dB bandwidth and OBW, 802.11n, HT20, MCS0

Date: 6.APR.2012 13:20:57

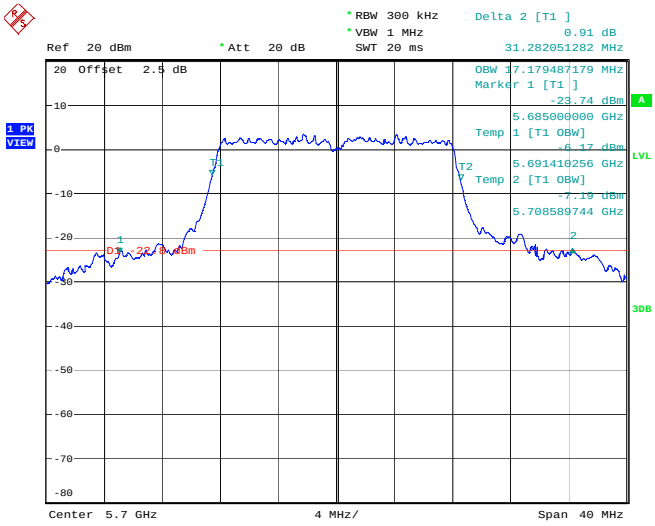
Plot 1. 17



26-dB bandwidth and OBW, 802.11n, HT20, MCS0

Date: 6.APR.2012 11:33:33

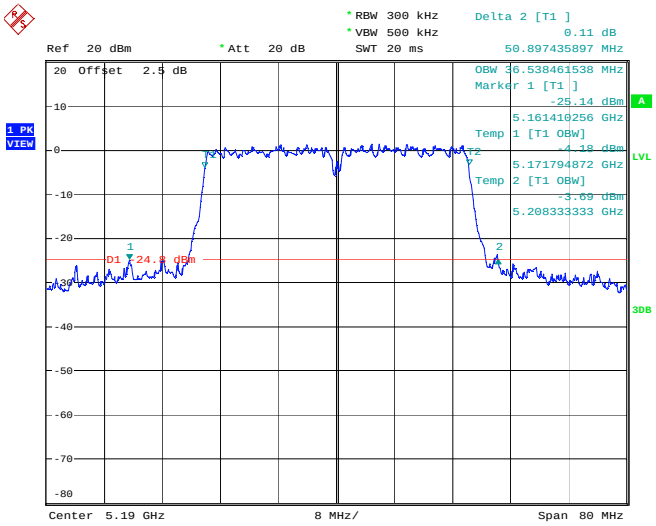
Plot 1. 18



26-dB bandwidth and OBW, 802.11a, 6Mbps

Date: 6.APR.2012 11:34:54

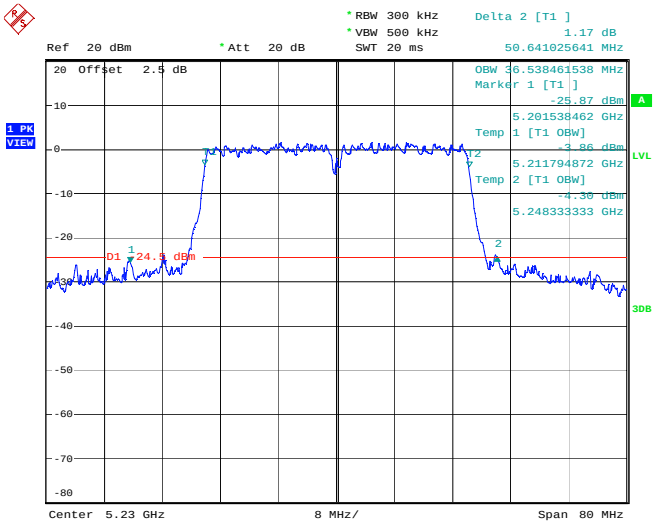
Plot 1. 19



26-dB bandwidth and OBW, 802.11n, HT40, MCS0

Date: 6.APR.2012 12:11:06

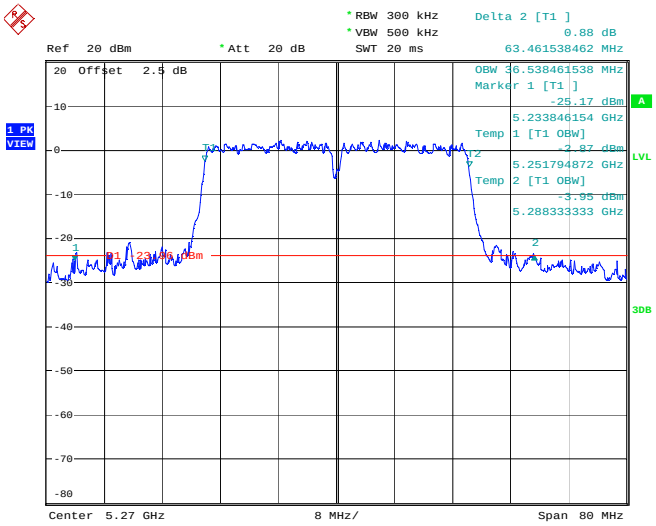
Plot 1. 20



26-dB bandwidth and OBW, 802.11n, HT40, MCS0

Date: 6.APR.2012 12:12:49

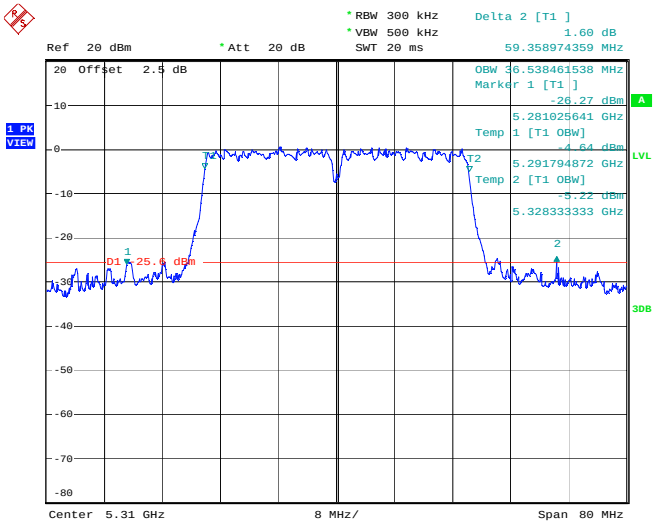
Plot 1. 21



26-dB bandwidth and OBW, 802.11n, HT40, MCS0

Date: 6.APR.2012 12:15:56

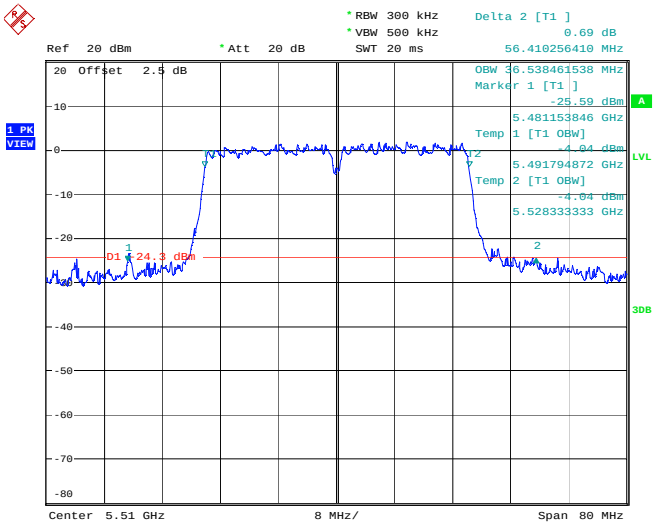
Plot 1. 22



26-dB bandwidth and OBW, 802.11n, HT40, MCS0

Date: 6.APR.2012 12:17:26

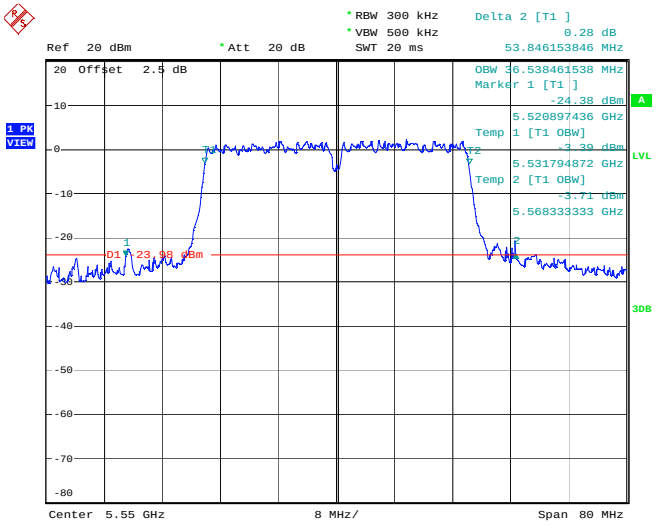
Plot 1. 23



26-dB bandwidth and OBW, 802.11n, HT40, MCS0

Date: 6.APR.2012 12:19:41

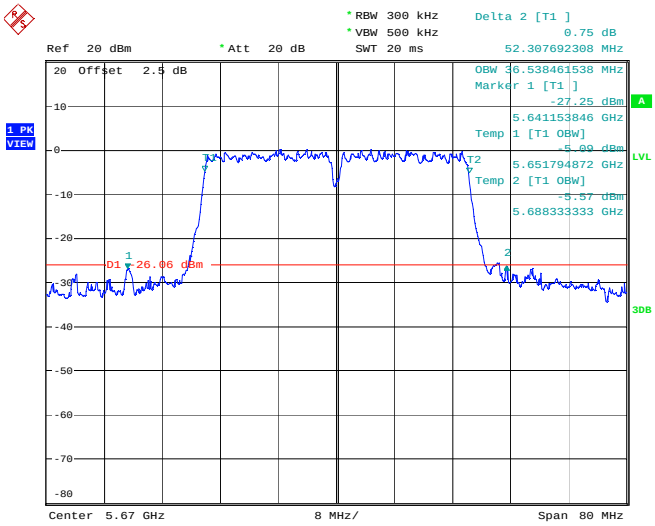
Plot 1. 24



26-dB bandwidth and OBW, 802.11n, HT40, MCS0

Date: 6.APR.2012 12:21:19

Plot 1. 25



26-dB bandwidth and OBW, 802.11n, HT40, MCS0

Date: 6.APR.2012 12:24:38

4.2 Conducted Output Power
FCC Rule 15.407(a)(1)(2)

4.2.1 Requirement

For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B. For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

4.2.2 Procedure

The antenna port of the EUT was connected to the input port of a spectrum analyzer/power meter to measure the Maximum Conducted Transmitter Output Power.

The procedure described in FCC Publication 789033, was used. Method C)3)c), Method SA-1 Alternative was used.

4.2.3 Test Results

Refer to the following plots for the test results:

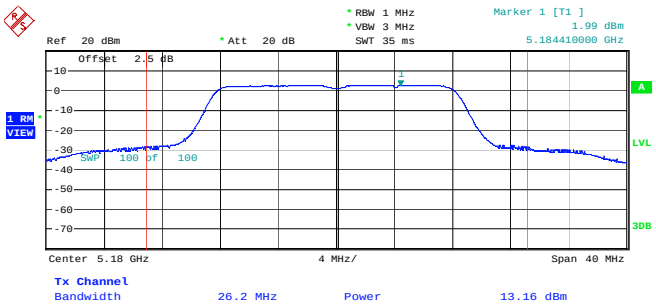
Channel	Frequency MHz	Standard/ Data rate	Conducted Power (Average) dBm	Conducted Power Limit dBm	Plot #
36	5180	802.11a, 6 Mbps	13.2	17.0	2.1
		802.11n, HT20 MCS0	13.1	17.0	2.2
38	5190	802.11n, HT40, MCS0	9.5	17.0	2.19
40	5200	802.11a, 6 Mbps	13.4	17.0	2.4
		802.11n, HT20 MCS0	13.2	17.0	2.3
46	5230	802.11n, HT40, MCS0	13.5	17.0	2.20
48	5240	802.11a, 6 Mbps	13.7	17.0	2.5
		802.11n, HT20 MCS0	13.6	17.0	2.6

Channel	Frequency MHz	Standard/ Data rate	Conducted Power (Average) dBm	Conducted Power Limit dBm	Plot #
52	5260	802.11a, 6 Mbps	13.7	24.0	2.8
		802.11n, HT20 MCS0	13.5	24.0	2.7
54	5270	802.11n, HT40, MCS0	13.7	24.0	2.21
60	5300	802.11a, 6 Mbps	13.3	24.0	2.9
		802.11n, HT20 MCS0	13.2	24.0	2.10
62	5310	802.11n, HT40, MCS0	9.8	24.0	2.22
64	5320	802.11a, 6 Mbps	13.4	24.0	2.12
		802.11n, HT20 MCS0	13.4	24.0	2.11

Channel	Frequency MHz	Standard/ Data rate	Conducted Power (Average) dBm	Conducted Power Limit dBm	Plot #
100	5500	802.11a, 6 Mbps	12.7	24.0	2.13
		802.11n, HT20 MCS0	12.5	24.0	2.14
102	5510	802.11n, HT40, MCS0	9.5	24.0	2.23
110	5550	802.11n, HT40, MCS0	13.5	24.0	2.24
116	5580	802.11a, 6 Mbps	13.3	24.0	2.15
		802.11n, HT20 MCS0	13.3	24.0	2.16
134	5670	802.11n, HT40, MCS0	11.8	24.0	2.25
140	5700	802.11a, 6 Mbps	11.7	24.0	2.18
		802.11n, HT20 MCS0	11.7	24.0	2.17

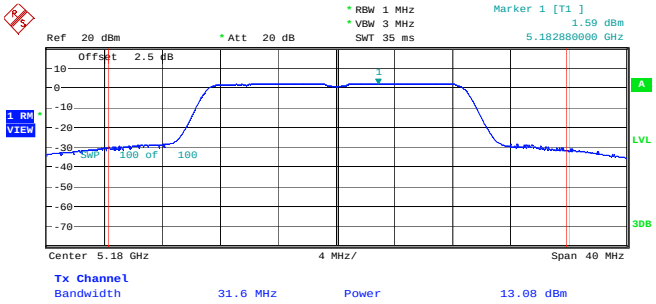
Notes:
For all channels in 802.11a mode & 802.11n HT20, software power settings = 14.
For all channels in 802.11n HT40 mode, except Ch 38 (5190MHz), Ch 62 (5310MHz) and Ch 102 (5510MHz), software power settings = 14.
For channels Ch 38 (5190MHz), Ch 62 (5310MHz) and Ch 102 (5510MHz) in 802.11n HT40 mode, software power settings = 10.

Plot 2. 1



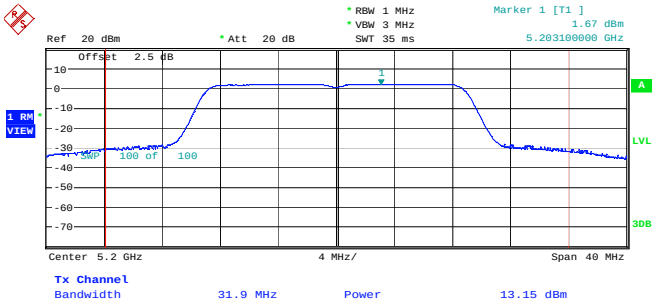
Channel Power, 802.11a, 6Mbps
Date: 6.APR.2012 15:15:29

Plot 2. 2



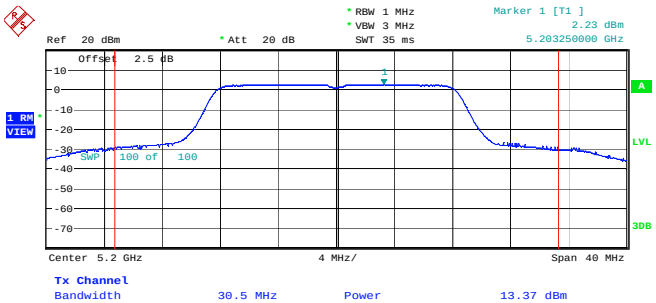
Channel Power, 802.11n, HT20, MCS0
Date: 6.APR.2012 15:21:57

Plot 2. 3



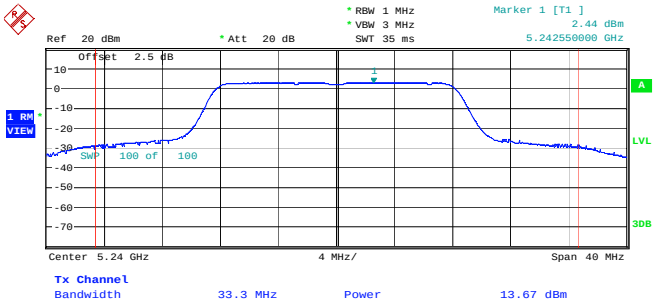
Channel Power, 802.11n, HT20, MCS0
Date: 6.APR.2012 15:25:50

Plot 2. 4



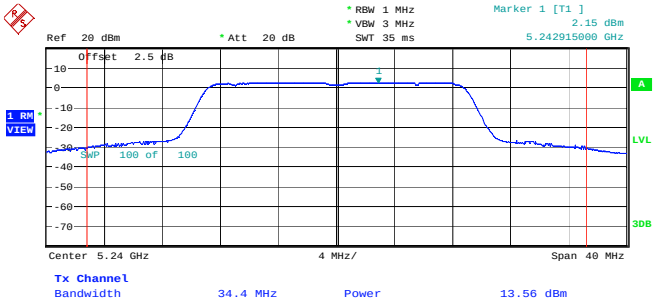
Channel Power, 802.11a, 6Mbps
Date: 6.APR.2012 15:27:01

Plot 2. 5



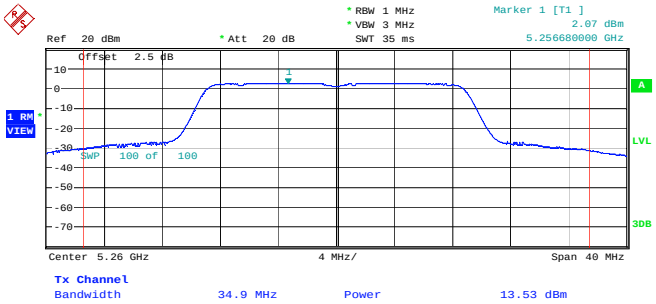
Channel Power, 802.11a, 6Mbps
Date: 6.APR.2012 15:29:27

Plot 2. 6



Channel Power, 802.11n, HT20, MCS0
Date: 6.APR.2012 15:30:51

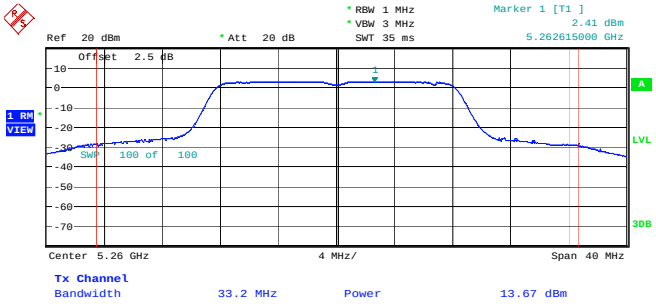
Plot 2. 7



Channel Power, 802.11n, HT20, MCS0

Date: 6.APR.2012 15:34:32

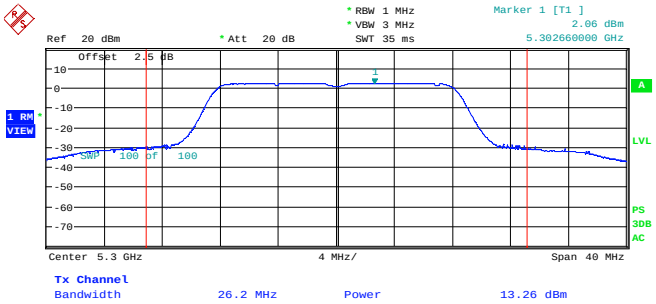
Plot 2. 8



Channel Power, 802.11a, 6Mbps

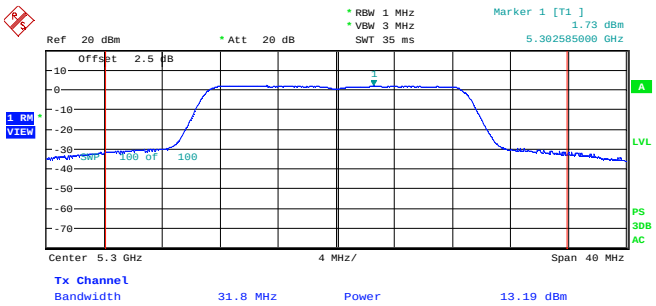
Date: 6.APR.2012 15:36:09

Plot 2. 9



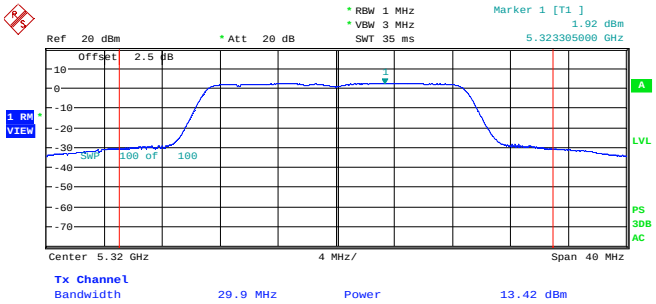
Channel Power, 802.11a, 6Mbps
Date: 4.MAY.2012 21:42:50

Plot 2. 10



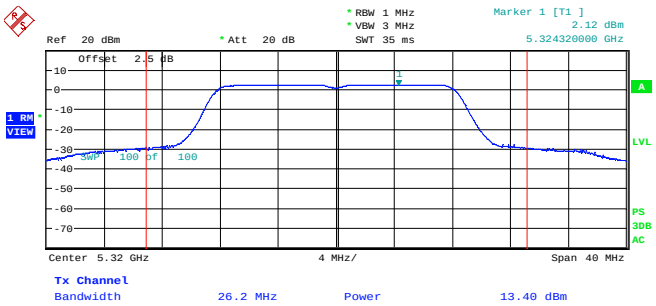
Channel Power, 802.11n, HT20, MCS0
Date: 4.MAY.2012 21:44:08

Plot 2. 11



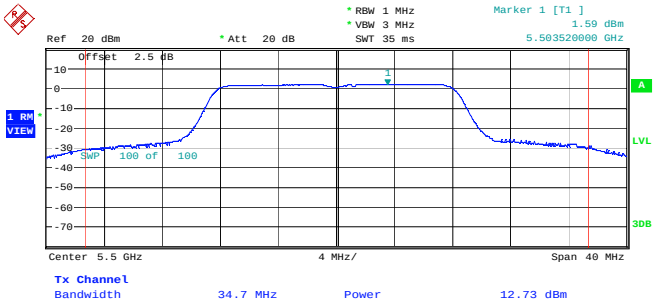
Channel Power, 802.11n, HT20, MCS0
Date: 4.MAY.2012 21:37:52

Plot 2. 12



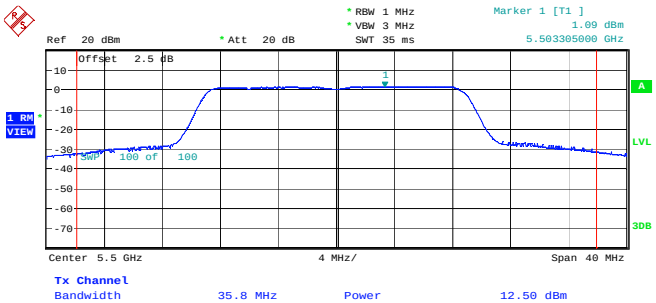
Channel Power, 802.11a, 6Mbps
Date: 4.MAY.2012 21:39:48

Plot 2. 13



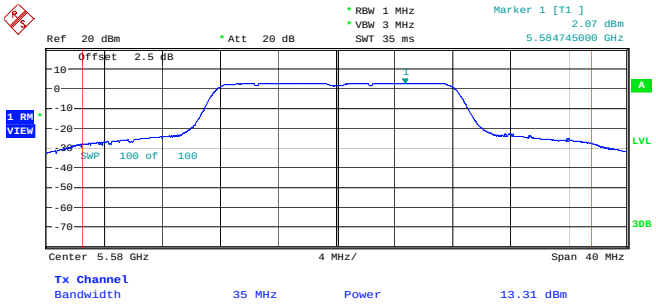
Channel Power, 802.11a, 6Mbps
Date: 6.APR.2012 15:54:53

Plot 2. 14



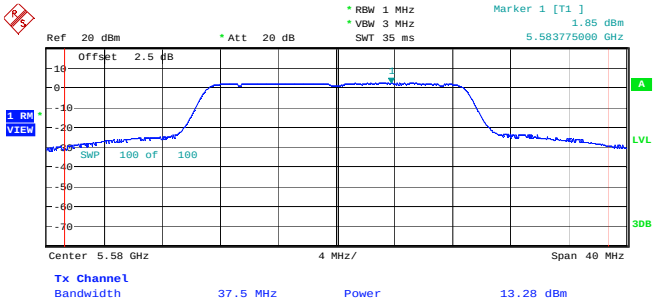
Channel Power, 802.11n, HT20, MCS0
Date: 6.APR.2012 15:56:36

Plot 2. 15



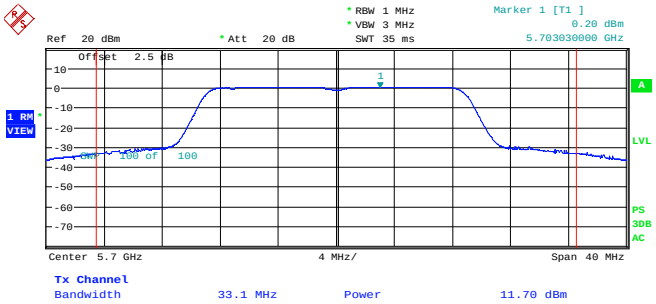
Channel Power, 802.11a, 6Mbps
Date: 6.APR.2012 15:59:34

Plot 2. 16



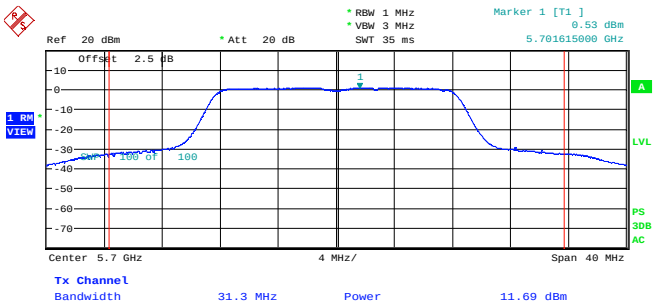
Channel Power, 802.11n, HT20, MCS0
Date: 6.APR.2012 16:01:00

Plot 2. 17



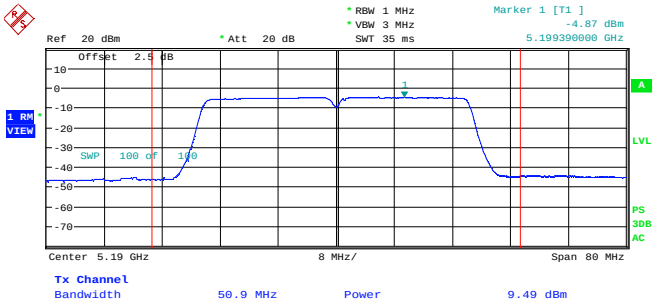
Channel Power, 802.11n, HT20, MCS0
Date: 4.MAY.2012 21:34:01

Plot 2. 18



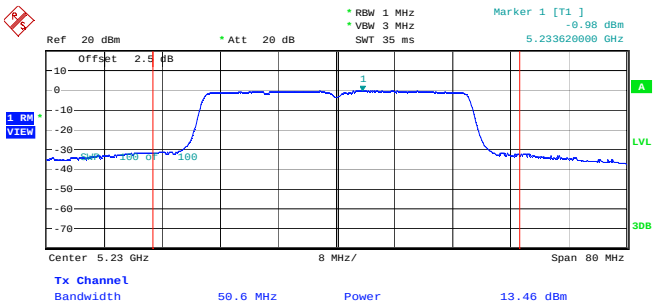
Channel Power, 802.11a, 6Mbps
Date: 4.MAY.2012 21:31:46

Plot 2. 19



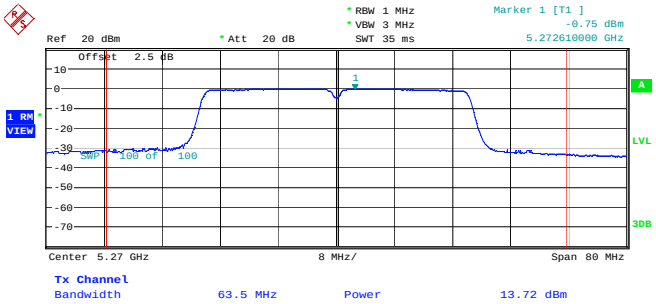
Channel Power, 802.11n, HT40, MCS0
Date: 4.MAY.2012 21:11:31

Plot 2. 20



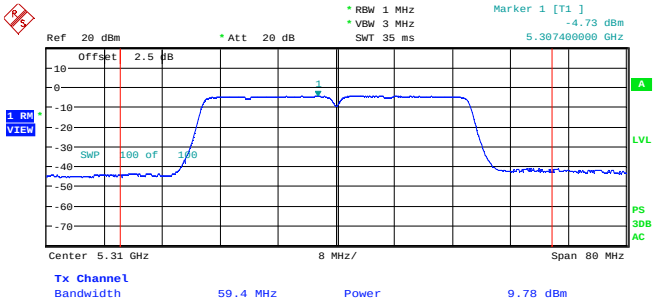
Channel Power, 802.11n, HT40, MCS0
Date: 6.APR.2012 16:35:20

Plot 2. 21



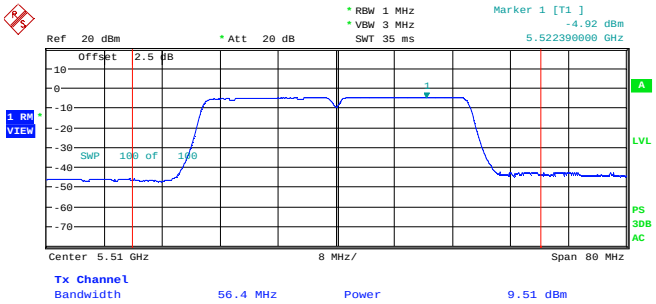
Channel Power, 802.11n, HT40, MCS0
Date: 6.APR.2012 16:36:36

Plot 2. 22



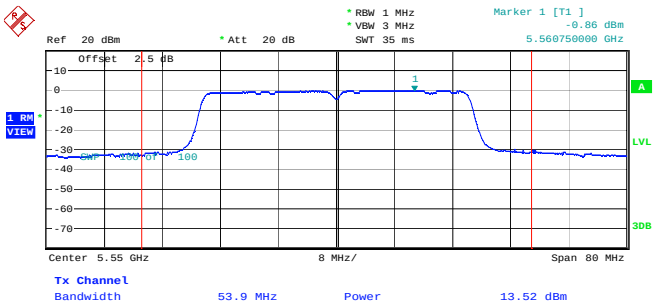
Channel Power, 802.11n, HT40, MCS0
Date: 4.MAY.2012 21:14:59

Plot 2. 23



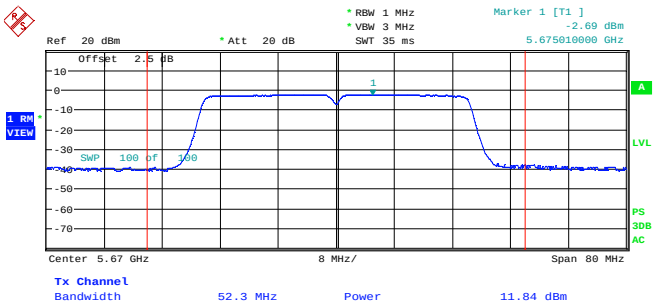
Channel Power, 802.11n, HT40, MCS0
Date: 4.MAY.2012 21:24:43

Plot 2. 24



Channel Power, 802.11n, HT40, MCS0
Date: 6.APR.2012 16:40:45

Plot 2. 25



Channel Power, 802.11n, HT40, MCS0
Date: 4.MAY.2012 21:48:54

4.3 Peak Power Spectral Density
FCC Rule 15.407(a)(1)(2)

4.3.1 Requirement

For the band 5.15–5.25 GHz, the peak power spectral density shall not exceed 4 dBm in any 1 MHz band. For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the peak power spectral density shall not exceed 11 dBm in any 1 MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

4.3.2 Procedure

The antenna port of the EUT was connected to the input port of a spectrum analyzer to measure the Peak Power Spectral Density (PPSD).

The procedure described in the FCC Publication 789033, was used. Method E)1) was used.

4.3.3 Test Result

Refer to the following plots in report section 4.2.3 for the test results:

Channel	Frequency MHz	Standard/ Data rate	PSD (Peak) dBm	PSD Limit dBm	Plot #
36	5180	802.11a, 6 Mbps	2.0	4.0	2.1
		802.11n, HT20 MCS0	1.6	4.0	2.2
38	5190	802.11n, HT40, MCS0	-4.9	4.0	2.19
40	5200	802.11a, 6 Mbps	2.2	4.0	2.4
		802.11n, HT20 MCS0	1.7	4.0	2.3
46	5230	802.11n, HT40, MCS0	-1.0	4.0	2.20
48	5240	802.11a, 6 Mbps	2.4	4.0	2.5
		802.11n, HT20 MCS0	2.2	4.0	2.6

Channel	Frequency MHz	Standard/ Data rate	PSD (Peak) dBm	PSD Limit dBm	Plot #
52	5260	802.11a, 6 Mbps	2.4	11.0	2.8
		802.11n, HT20 MCS0	2.1	11.0	2.7
54	5270	802.11n, HT40, MCS0	-0.8	11.0	2.21
60	5300	802.11a, 6 Mbps	2.1	11.0	2.9
		802.11n, HT20 MCS0	1.7	11.0	2.10
62	5310	802.11n, HT40, MCS0	-4.7	11.0	2.22
64	5320	802.11a, 6 Mbps	2.1	11.0	2.12
		802.11n, HT20 MCS0	1.9	11.0	2.11

Channel	Frequency MHz	Standard/ Data rate	PSD (Peak) dBm	PSD Limit dBm	Plot #
100	5500	802.11a, 6 Mbps	1.6	11.0	2.13
		802.11n, HT20 MCS0	1.1	11.0	2.14
102	5510	802.11n, HT40, MCS0	-4.9	11.0	2.23
110	5550	802.11n, HT40, MCS0	-0.9	11.0	2.24
116	5580	802.11a, 6 Mbps	2.1	11.0	2.15
		802.11n, HT20 MCS0	1.9	11.0	2.16
134	5670	802.11n, HT40, MCS0	-2.7	11.0	2.25
140	5700	802.11a, 6 Mbps	0.5	11.0	2.18
		802.11n, HT20 MCS0	0.2	11.0	2.17

4.4 Ratio of the Peak Excursion of the Modulation Envelope
FCC Rule: 15.407(a)(6)

4.4.1 Requirement

The Ratio of the peak excursion of the modulation envelope to the maximum conducted output power shall not exceed 13 dB across any 1 megahertz bandwidth.

4.4.2 Procedure

The antenna port of the EUT was connected to the input of a spectrum analyzer to measure the Ratio of the Peak Excursion of the modulation envelope.

The procedure described in FCC Publication 789033 was used. Method C)F) was used. The Peak Excursion measurement is the measured max peak hold of the spectrum using a Peak detector and max peak hold spectrum using the procedure of PPSD. The difference of these peaks is the Ratio of the Peak Excursion of the modulation envelope.

4.4.3 Results

Refer to the following plots for the test results:

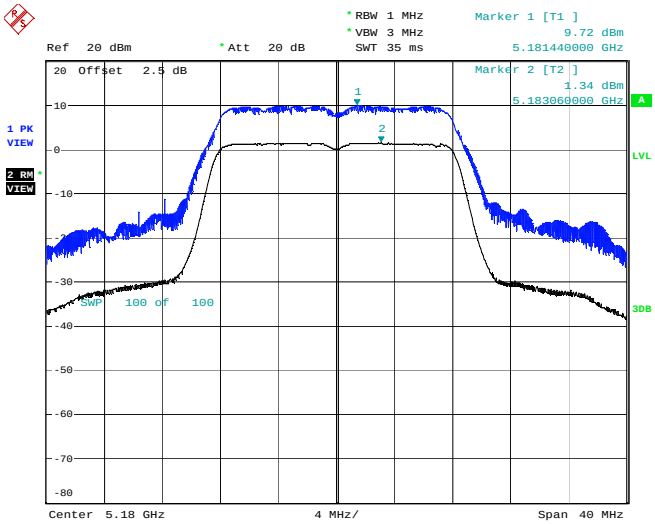
Channel	Frequency MHz	Standard/ Data rate	Ratio of the Peak Excursion dBm	Margin to 13 dBm limit dB	Plot #
36	5180	802.11a, 6 Mbps	8.4	-4.5	4.1
		802.11n, HT20 MCS0	8.5	-4.1	4.2
38	5190	802.11n, HT40, MCS0	8.9	-4.8	4.19
40	5200	802.11a, 6 Mbps	8.2	-4.5	4.4
		802.11n, HT20 MCS0	8.5	-4.2	4.3
46	5230	802.11n, HT40, MCS0	8.8	-4.8	4.20
48	5240	802.11a, 6 Mbps	8.2	-4.3	4.6
		802.11n, HT20 MCS0	8.7	-4.5	4.5

Channel	Frequency MHz	Standard/ Data rate	Ratio of the Peak Excursion dBm	Margin to 13 dBm limit dB	Plot #
52	5260	802.11a, 6 Mbps	8.3	-4.7	4.7
		802.11n, HT20 MCS0	8.5	-4.5	4.8
54	5270	802.11n, HT40, MCS0	8.6	-4.4	4.21
60	5300	802.11a, 6 Mbps	8.5	-4.5	4.9
		802.11n, HT20 MCS0	8.7	-4.3	4.10
62	5310	802.11n, HT40, MCS0	8.6	-4.4	4.22
64	5320	802.11a, 6 Mbps	8.4	-4.6	4.12
		802.11n, HT20 MCS0	9.0	-4.0	4.11

Channel	Frequency MHz	Standard/ Data rate	Ratio of the Peak Excursion dBm	Margin to 13 dBm limit dB	Plot #
100	5500	802.11a, 6 Mbps	8.1	-4.9	4.13
		802.11n, HT20 MCS0	8.5	-4.5	4.14
102	5510	802.11n, HT40, MCS0	8.6	-4.4	4.23
110	5550	802.11n, HT40, MCS0	8.4	-4.6	4.24
116	5580	802.11a, 6 Mbps	8.2	-4.8	4.16
		802.11n, HT20 MCS0	8.6	-4.4	4.15
134	5670	802.11n, HT40, MCS0	8.7	-4.3	4.25
140	5700	802.11a, 6 Mbps	8.4	-4.6	4.18
		802.11n, HT20 MCS0	8.6	-4.4	4.17

The EUT passed by 4.0 dB.

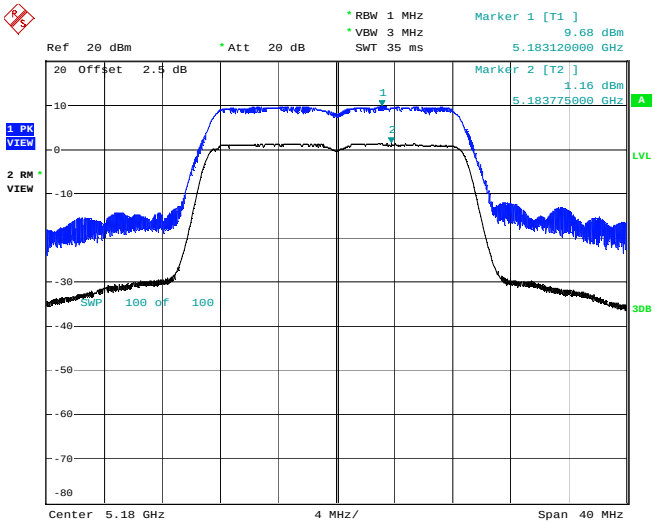
Plot 4. 1



Peak excursion, 802.11a, 6Mbps

Date: 9.APR.2012 10:50:02

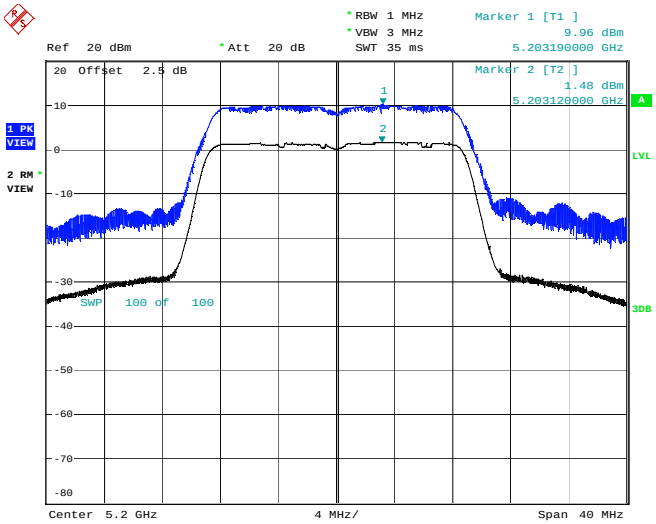
Plot 4. 2



Peak excursion, 802.11n, HT20, MCS0

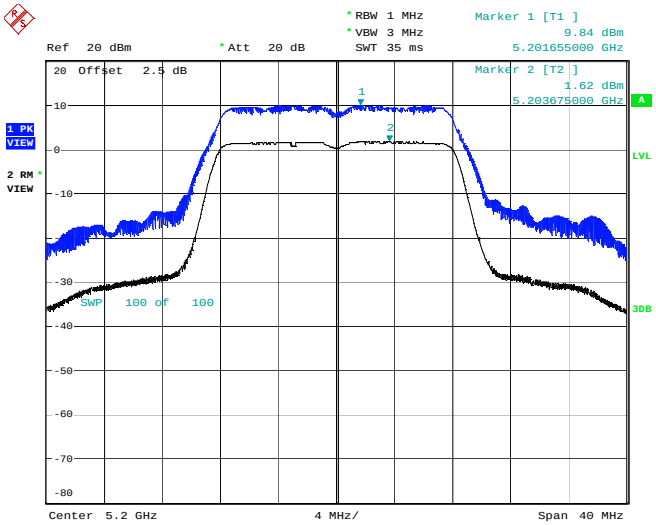
Date: 9.APR.2012 10:52:10

Plot 4. 3



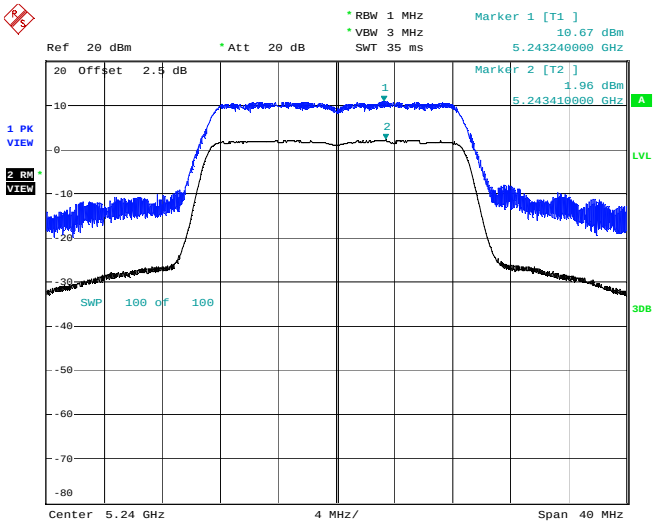
Peak excursion, 802.11n, HT20, MCS0
Date: 9.APR.2012 10:56:05

Plot 4. 4



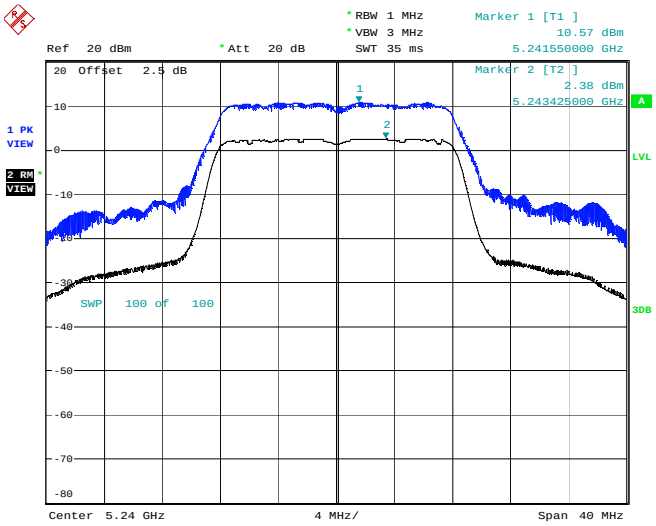
Peak excursion, 802.11a, 6Mbps
Date: 9.APR.2012 10:59:58

Plot 4. 5



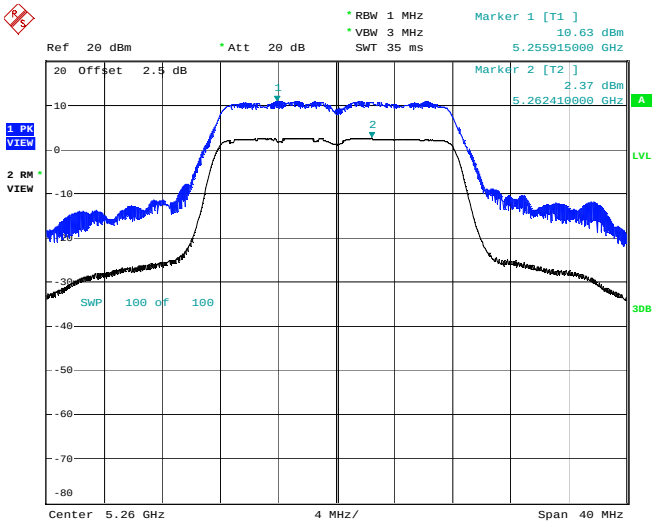
Peak excursion, 802.11n, HT20, MCS0
Date: 9.APR.2012 11:12:02

Plot 4. 6



Peak excursion, 802.11a, 6Mbps
Date: 9.APR.2012 11:15:07

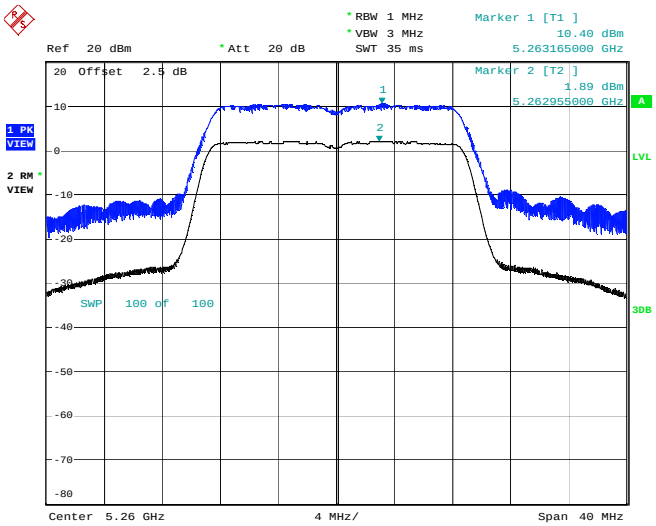
Plot 4. 7



Peak excursion, 802.11a, 6Mbps

Date: 9.APR.2012 11:05:06

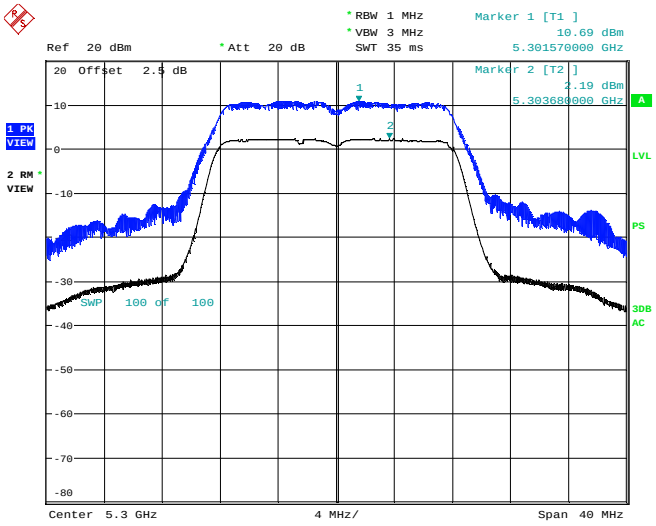
Plot 4. 8



Peak excursion, 802.11n, HT20, MCS0

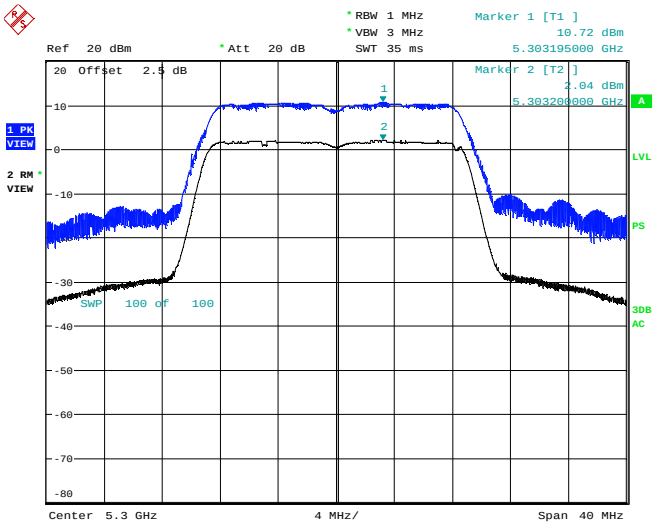
Date: 9.APR.2012 11:06:52

Plot 4. 9



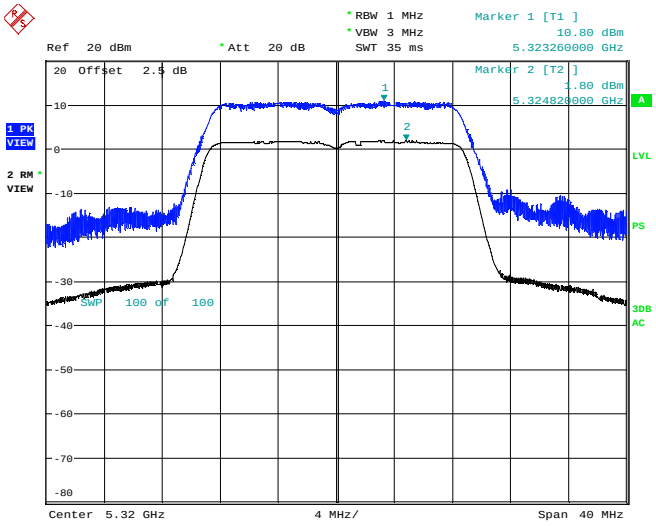
Peak excursion, 802.11a, 6Mbps
Date: 4.MAY.2012 22:43:48

Plot 4. 10



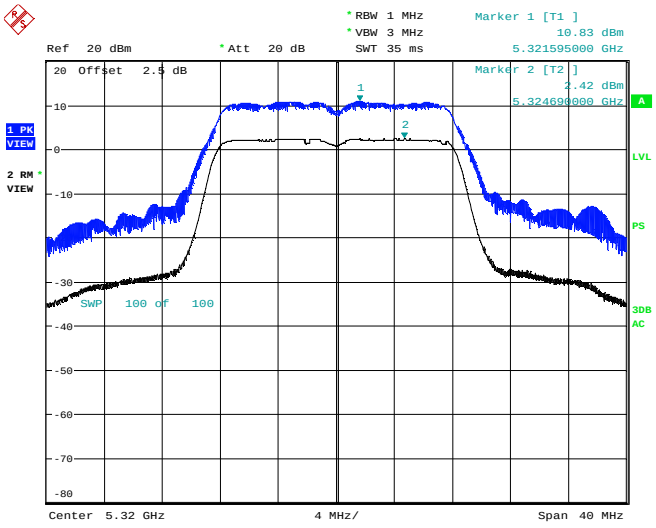
Peak excursion, 802.11n, HT20, MCS0
Date: 4.MAY.2012 22:45:56

Plot 4. 11



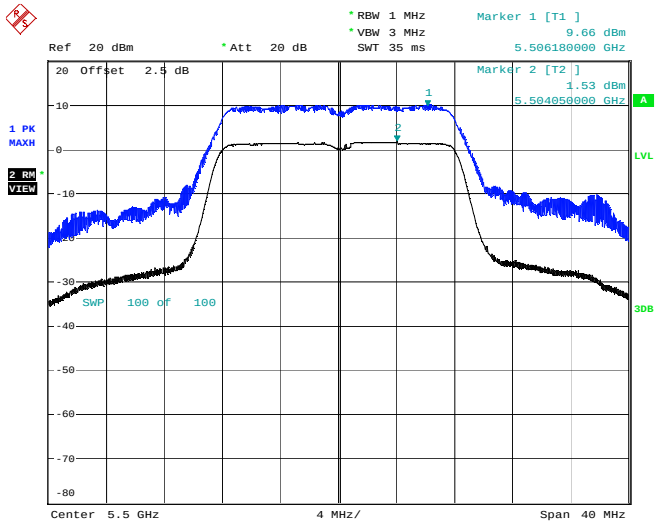
Peak excursion, 802.11n, HT20, MCS0
Date: 4.MAY.2012 22:48:53

Plot 4. 12



Peak excursion, 802.11a, 6Mbps
Date: 4.MAY.2012 22:51:21

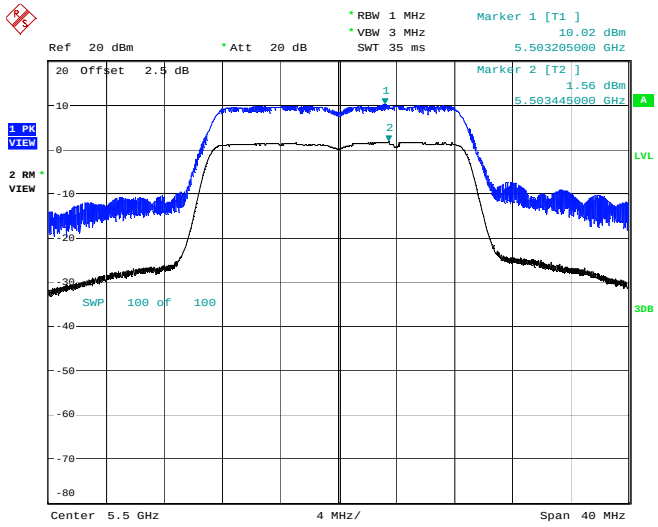
Plot 4. 13



Peak excursion, 802.11a, 6Mbps

Date: 9.APR.2012 11:53:54

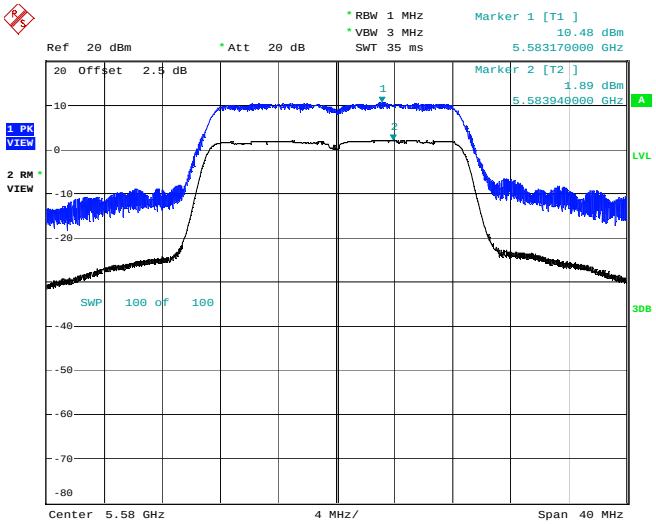
Plot 4. 14



Peak excursion, 802.11n, HT20, MCS0

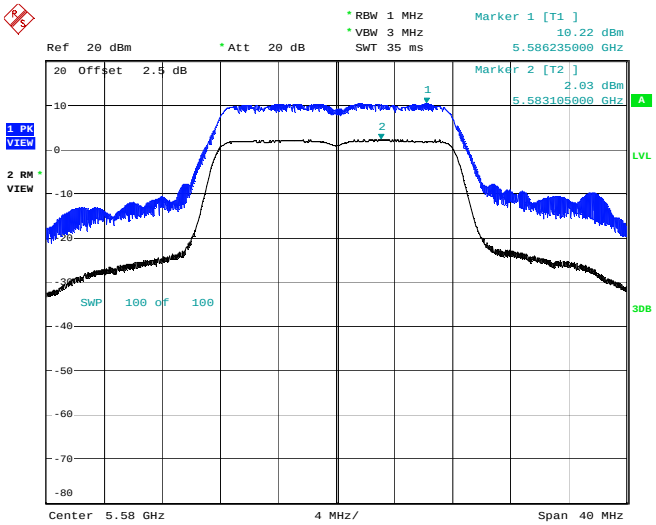
Date: 9.APR.2012 11:57:34

Plot 4. 15



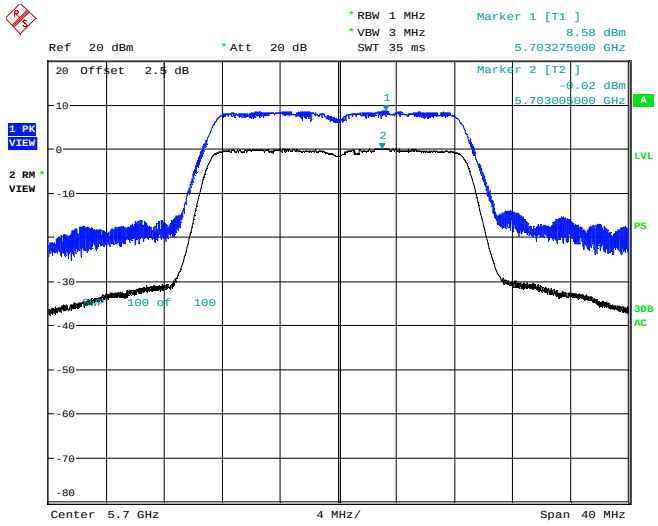
Peak excursion, 802.11n, HT20, MCS0
Date: 9.APR.2012 12:01:44

Plot 4. 16



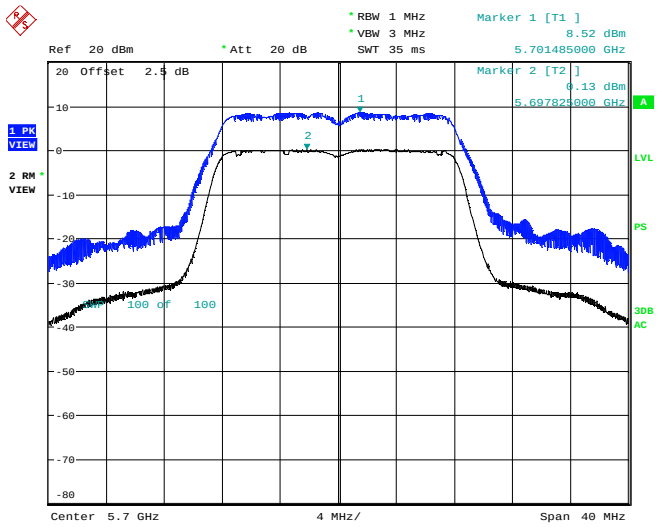
Peak excursion, 802.11a, 6Mbps
Date: 9.APR.2012 12:03:04

Plot 4. 17



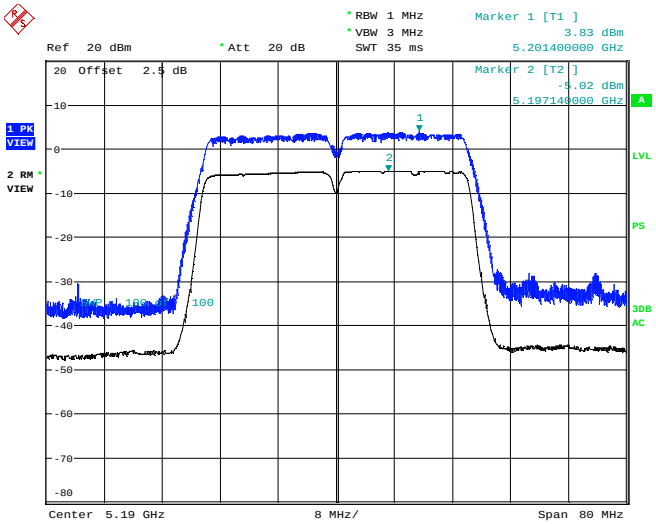
Peak excursion, 802.11n, HT20, MCS0
Date: 4.MAY.2012 22:55:39

Plot 4. 18



Peak excursion, 802.11a, 6Mbps
Date: 4.MAY.2012 22:54:08

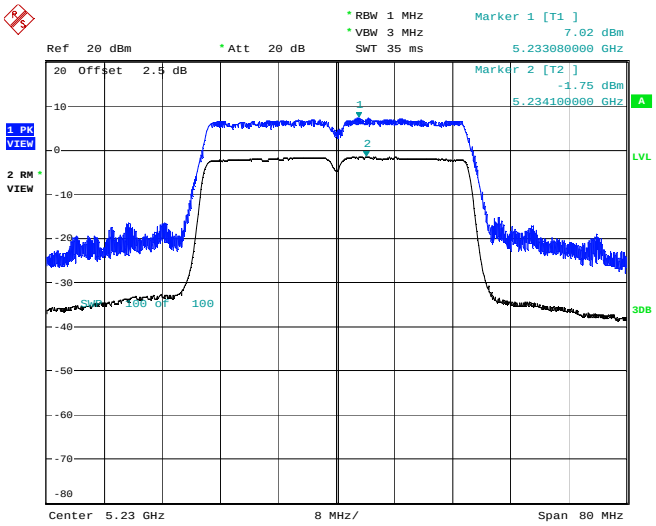
Plot 4. 19



Peak excursion, 802.11n, HT40, MCS0

Date: 4.MAY.2012 22:59:49

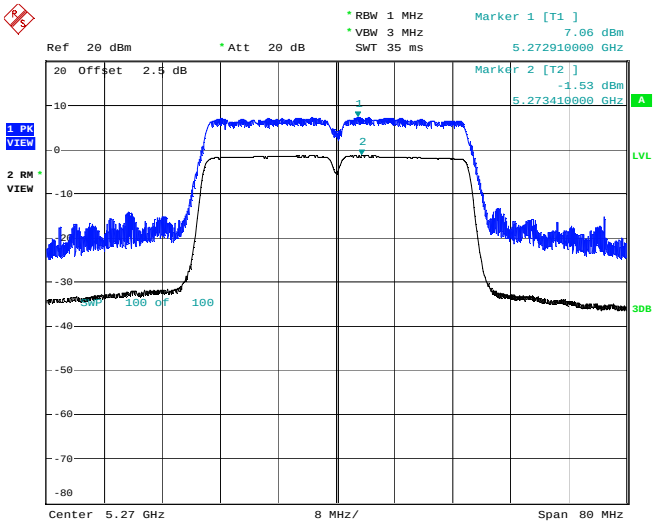
Plot 4. 20



Peak excursion, 802.11n, HT40, MCS0

Date: 9.APR.2012 12:13:23

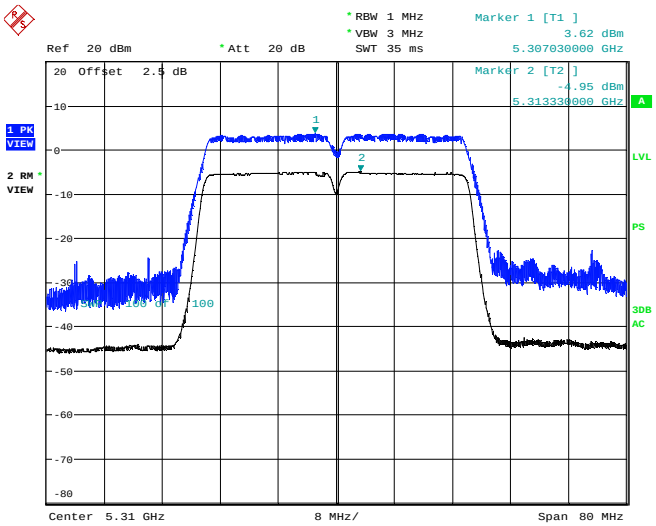
Plot 4. 21



Peak excursion, 802.11n, HT40, MCS0

Date: 9.APR.2012 12:15:40

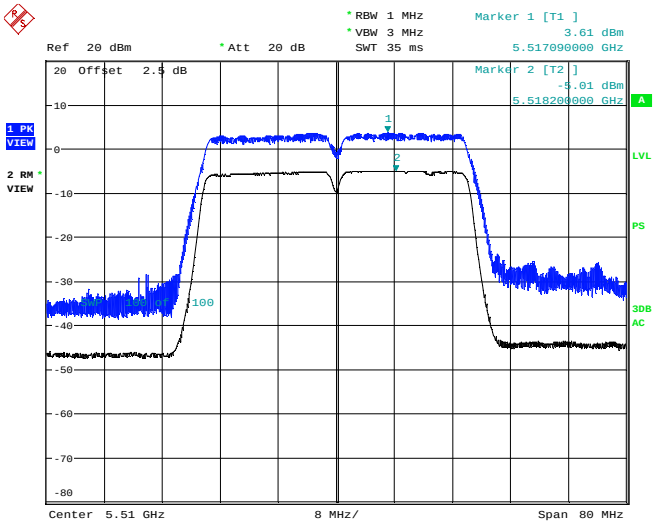
Plot 4. 22



Peak excursion, 802.11n, HT40, MCS0

Date: 4.MAY.2012 23:02:11

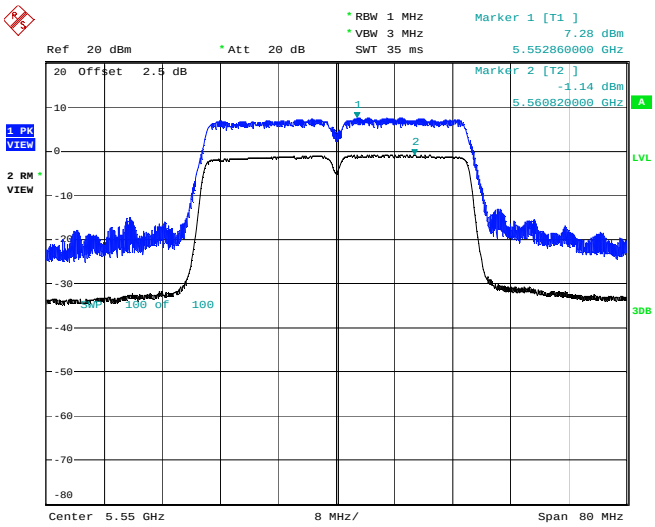
Plot 4. 23



Peak excursion, 802.11n, HT40, MCS0

Date: 4.MAY.2012 23:04:03

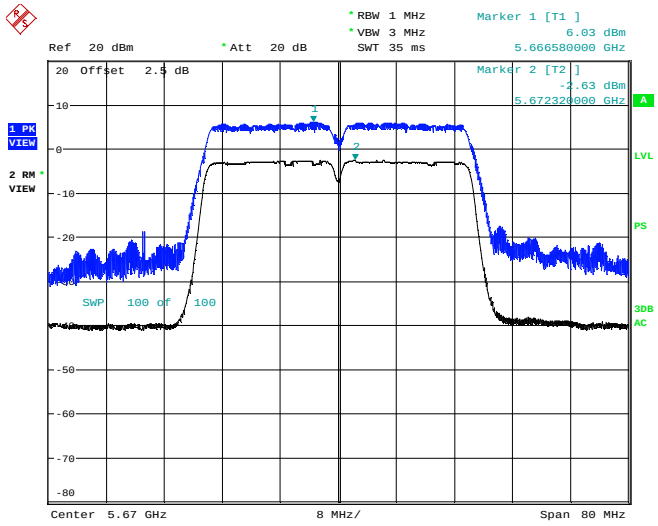
Plot 4. 24



Peak excursion, 802.11n, HT40, MCS0

Date: 9.APR.2012 12:20:53

Plot 4. 25



Peak excursion, 802.11n, HT40, MCS0
Date: 4.MAY.2012 23:05:45

4.5 Out-of-Band Conducted Emissions
FCC Rule: 15.407(b)(1)(2)(3)

4.5.1 Requirements

For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz. For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz. For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of −27 dBm/MHz.

4.5.2 Procedure

A spectrum analyzer was connected to the antenna port of the transmitter. Analyzer Resolution Bandwidth was set to 1 MHz. The out-of-band emissions were measured from 30 MHz to 40 GHz for the low, middle and high channels.

4.5.3 Test Result

Refer to the following plots and out-of-band conducted spurious emissions at the Band-Edges, Tables 5.1 and 5.2 for the test results:

Channel	Frequency MHz	Standard/ Data rate	Description	Plot #
36	5180	802.11a, 6 Mbps*	Scan 30 MHz – 40 GHz	5.1
		802.11n, HT20 MCS0*		
38	5190	802.11n, HT40, MCS0	Scan 30 MHz – 40 GHz	5.10
40	5200	802.11a, 6 Mbps*	Scan 30 MHz – 40 GHz	5.2
		802.11n, HT20 MCS0*		
46	5230	802.11n, HT40, MCS0	Scan 30 MHz – 40 GHz	5.11
48	5240	802.11a, 6 Mbps*	Scan 30 MHz – 40 GHz	5.3
		802.11n, HT20 MCS0*		

*Investigation was performed on 802.11a & 802.n HT20 and worst case data was reported.

Channel	Frequency MHz	Standard/ Data rate	Description	Plot #
52	5260	802.11a, 6 Mbps*	Scan 30 MHz – 40 GHz	5.4
		802.11n, HT20 MCS0*		
54	5270	802.11n, HT40, MCS0	Scan 30 MHz – 40 GHz	5.12
60	5300	802.11a, 6 Mbps*	Scan 30 MHz – 40 GHz	5.5
		802.11n, HT20 MCS0*		
62	5310	802.11n, HT40, MCS0	Scan 30 MHz – 40 GHz	5.13
64	5320	802.11a, 6 Mbps*	Scan 30 MHz – 40 GHz	5.6
		802.11n, HT20 MCS0*		

*Investigation was performed on 802.11a & 802.n HT20 and worst case data was reported.

Channel	Frequency MHz	Standard/ Data rate	Description	Plot #
100	5500	802.11a, 6 Mbps*	Scan 30 MHz – 40 GHz	5.7
		802.11n, HT20 MCS0*		
102	5510	802.11n, HT40, MCS0	Scan 30 MHz – 40 GHz	5.14
110	5550	802.11n, HT40, MCS0	Scan 30 MHz – 40 GHz	5.15
116	5580	802.11a, 6 Mbps*	Scan 30 MHz – 40 GHz	5.8
		802.11n, HT20 MCS0*		
134	5670	802.11n, HT40, MCS0	Scan 30 MHz – 40 GHz	5.16
140	5700	802.11a, 6 Mbps*	Scan 30 MHz – 40 GHz	5.9
		802.11n, HT20 MCS0*		

*Investigation was performed on 802.11a & 802.n HT20 and worst case data was reported.

The EUT passed by 3.4 dB.

Out-of-Band Conducted Spurious Emissions at the Band-Edge:

Table 5.1

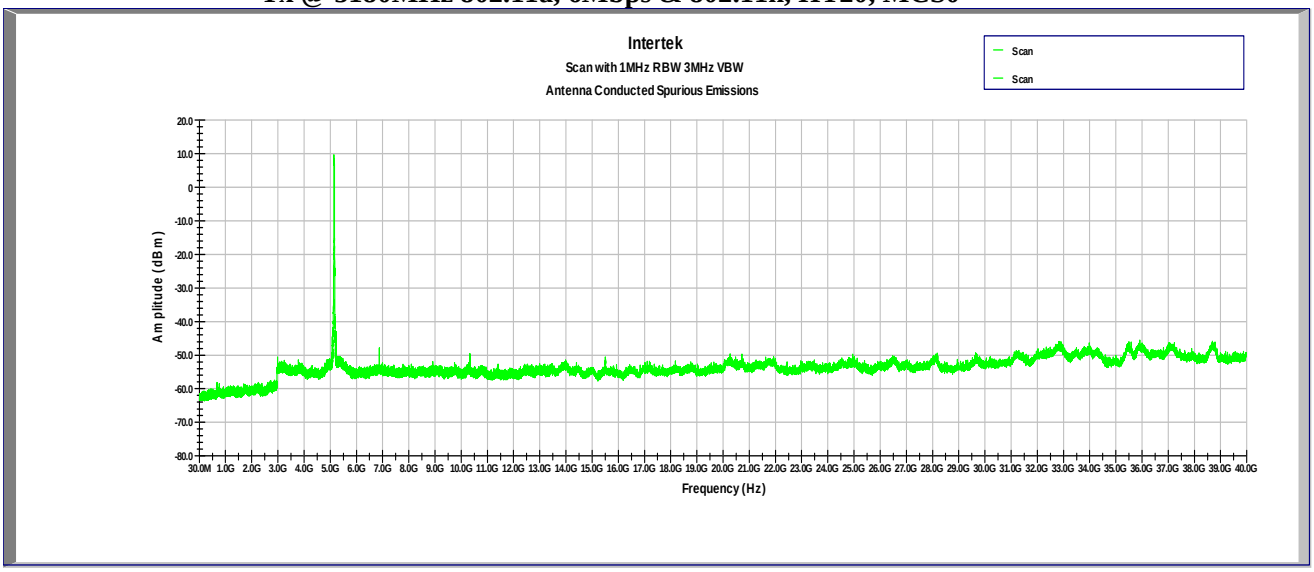
Channel	Frequency MHz	Standard/ Data rate	Peak Conducted Spurious Outside 5.15–5.35 GHz band dBm	Margin to -27dBm/MHz EIRP limit (antenna gain up to 3.6 dBi), dB
36	5180	802.11a, 6 Mbps	-37.3	-6.7
		802.11n, HT20 MCS0	-34.4	-3.8
38	5190	802.11n, HT40, MCS0	-36.6	-6.0
62	5310	802.11n, HT40, MCS0	-34.4	-3.8
64	5320	802.11a, 6 Mbps	-38.6	-8.0
		802.11n, HT20 MCS0	-37.6	-7.0

Table 5.2

Channel	Frequency MHz	Standard/ Data rate	Peak Conducted Spurious Outside 5.47–5.725 GHz band dBm	Margin to -27dBm/MHz EIRP limit (antenna gain up to 3.6 dBi), dB
100	5500	802.11a, 6 Mbps	-36.0	-5.4
		802.11n, HT20 MCS0	-34.4	-3.8
102	5510	802.11n, HT40, MCS0	-35.7	-5.1
140	5700	802.11a, 6 Mbps	-40.0	-9.4
		802.11n, HT20 MCS0	-34.0	-3.4

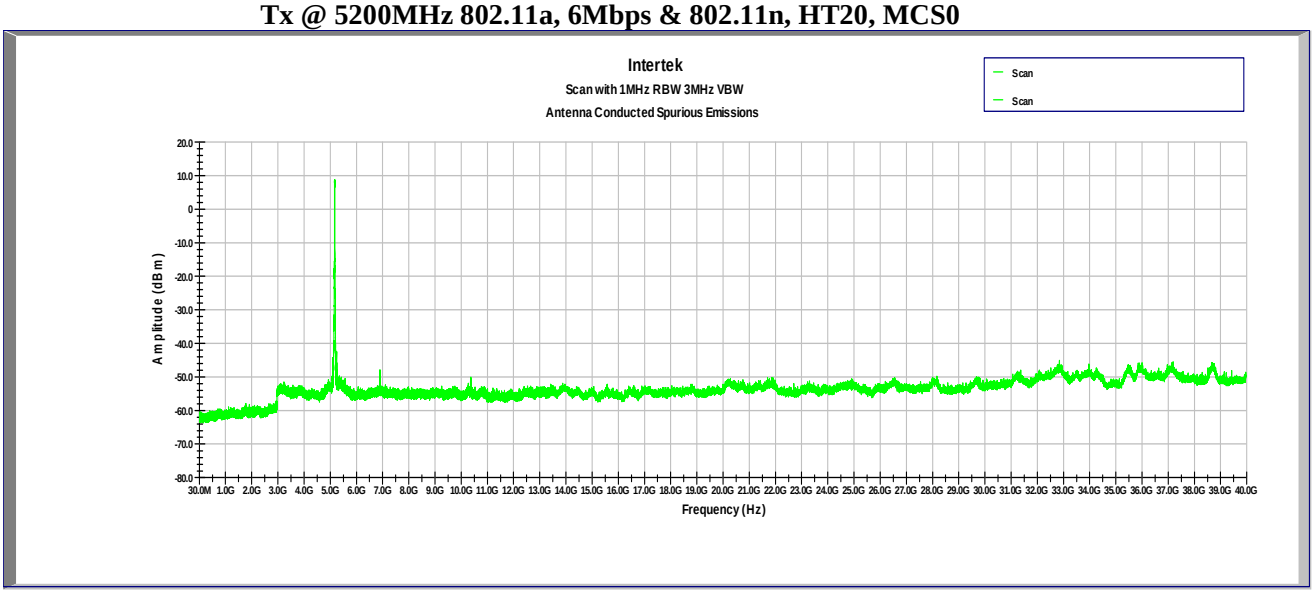
Plot 5.1

Tx @ 5180MHz 802.11a, 6Mbps & 802.11n, HT20, MCS0



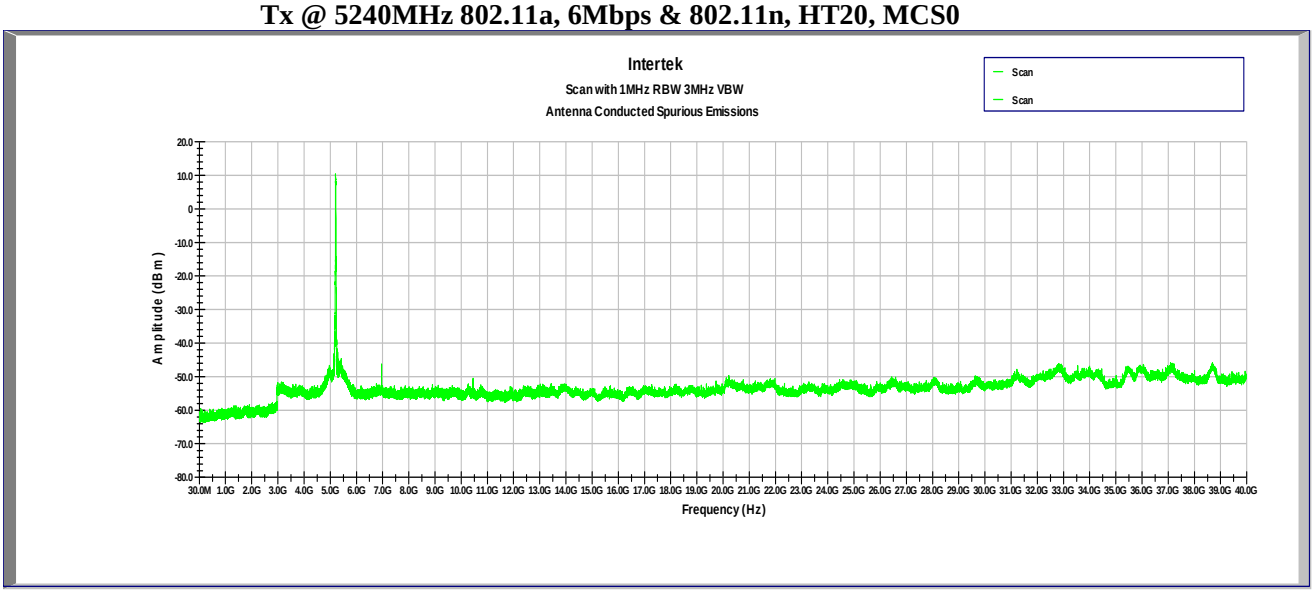
Plot 5.2

Tx @ 5200MHz 802.11a, 6Mbps & 802.11n, HT20, MCS0



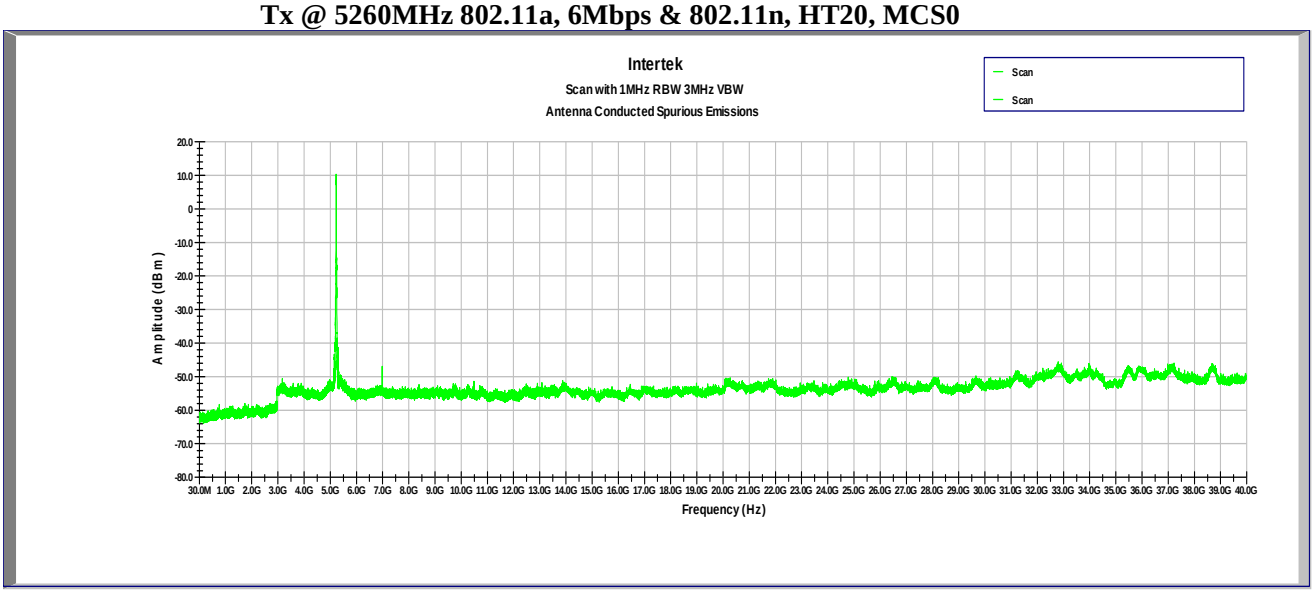
Plot 5.3

Tx @ 5240MHz 802.11a, 6Mbps & 802.11n, HT20, MCS0



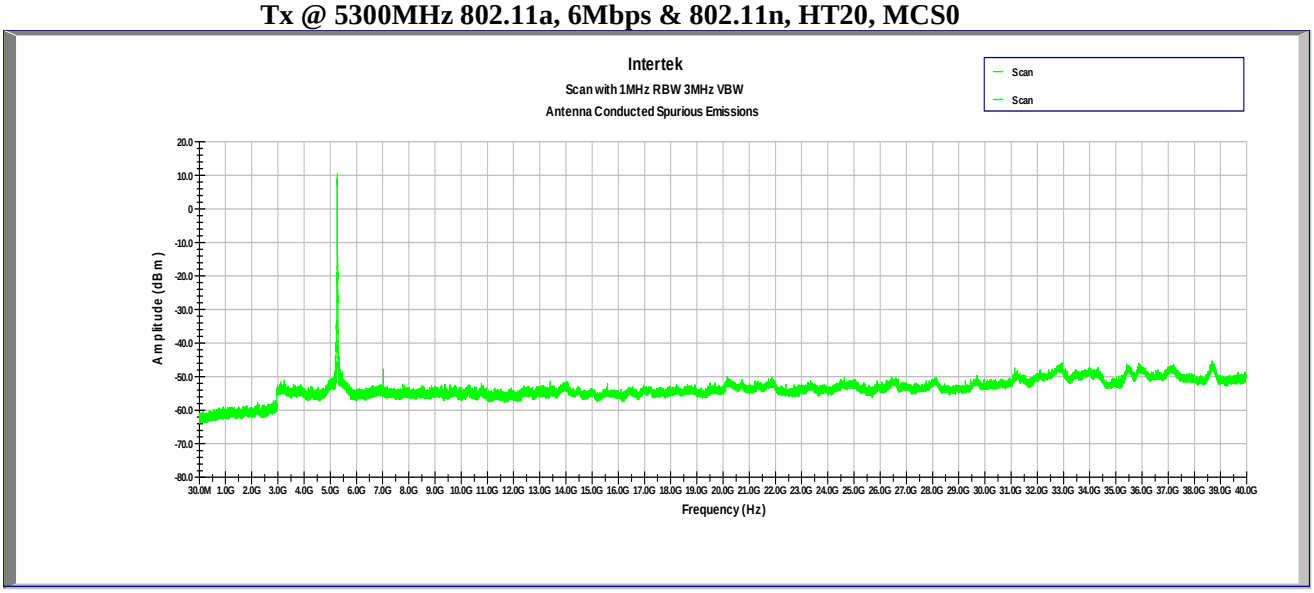
Plot 5.4

Tx @ 5260MHz 802.11a, 6Mbps & 802.11n, HT20, MCS0



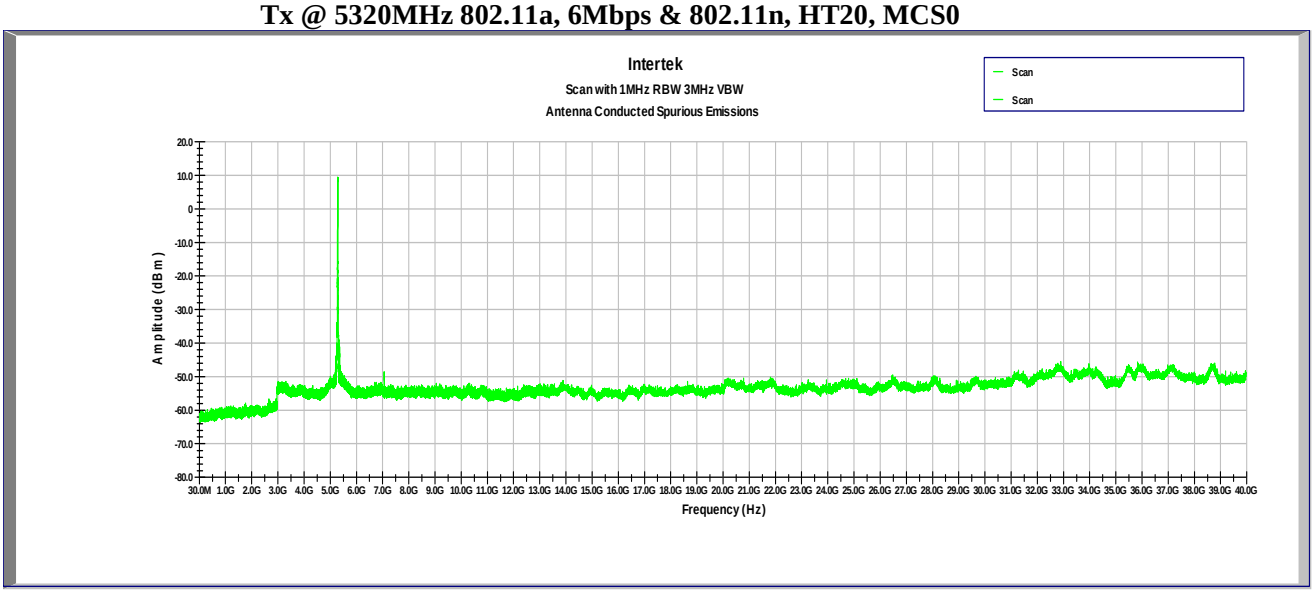
Plot 5.5

Tx @ 5300MHz 802.11a, 6Mbps & 802.11n, HT20, MCS0



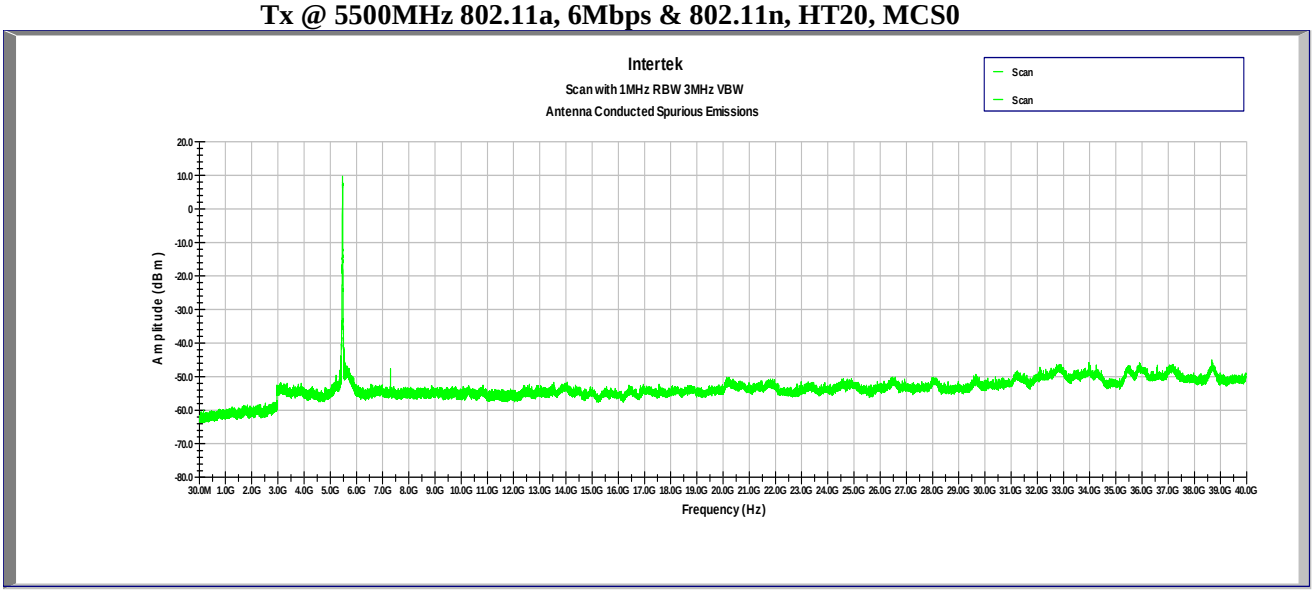
Plot 5.6

Tx @ 5320MHz 802.11a, 6Mbps & 802.11n, HT20, MCS0



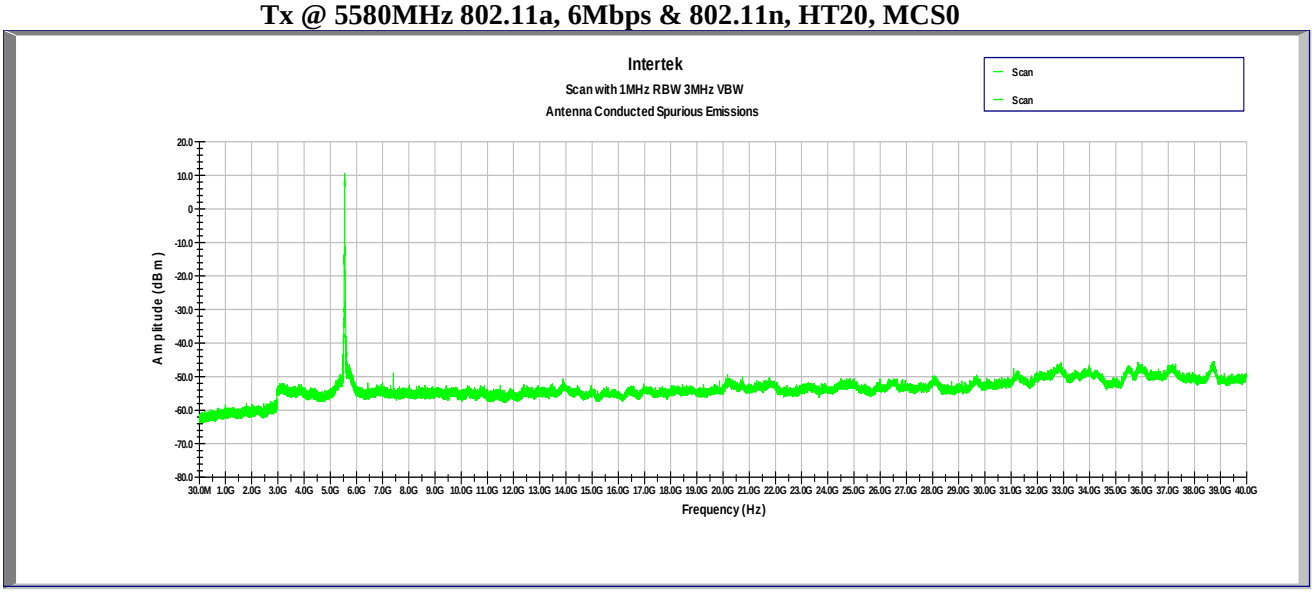
Plot 5.7

Tx @ 5500MHz 802.11a, 6Mbps & 802.11n, HT20, MCS0



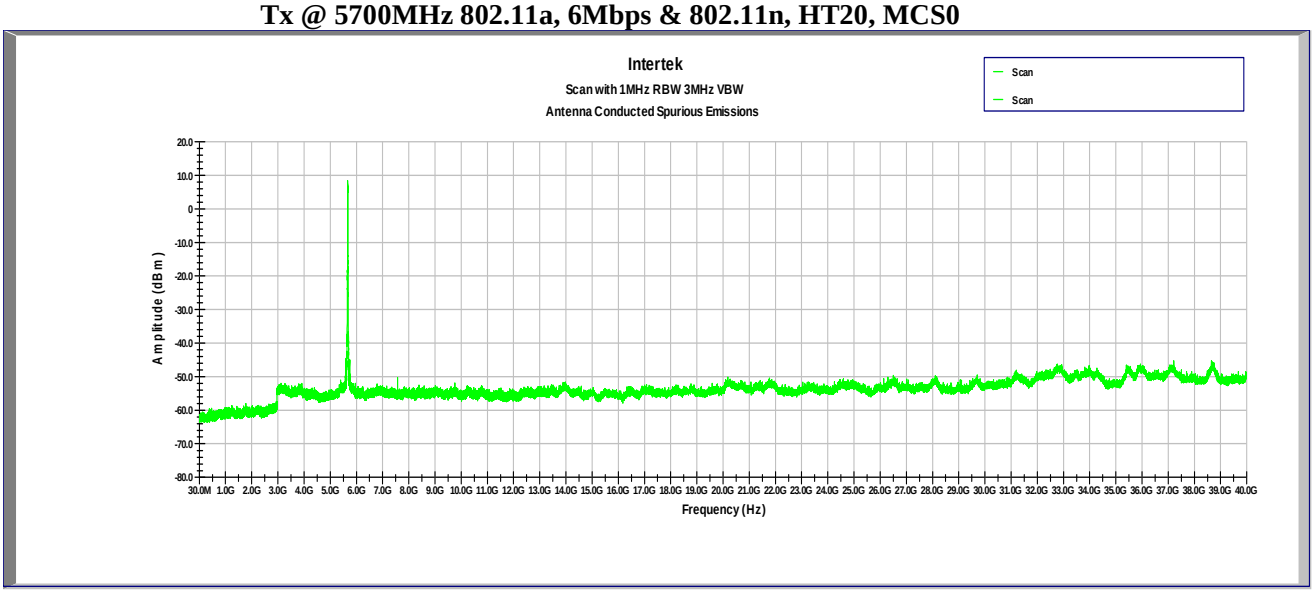
Plot 5.8

Tx @ 5580MHz 802.11a, 6Mbps & 802.11n, HT20, MCS0



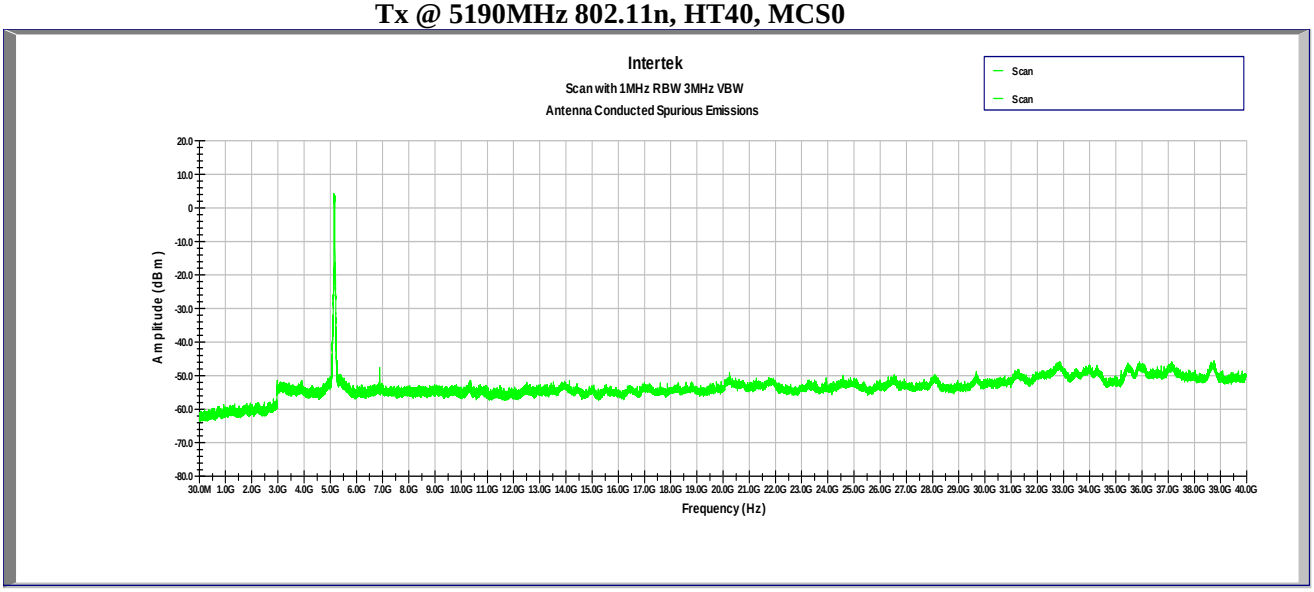
Plot 5.9

Tx @ 5700MHz 802.11a, 6Mbps & 802.11n, HT20, MCS0



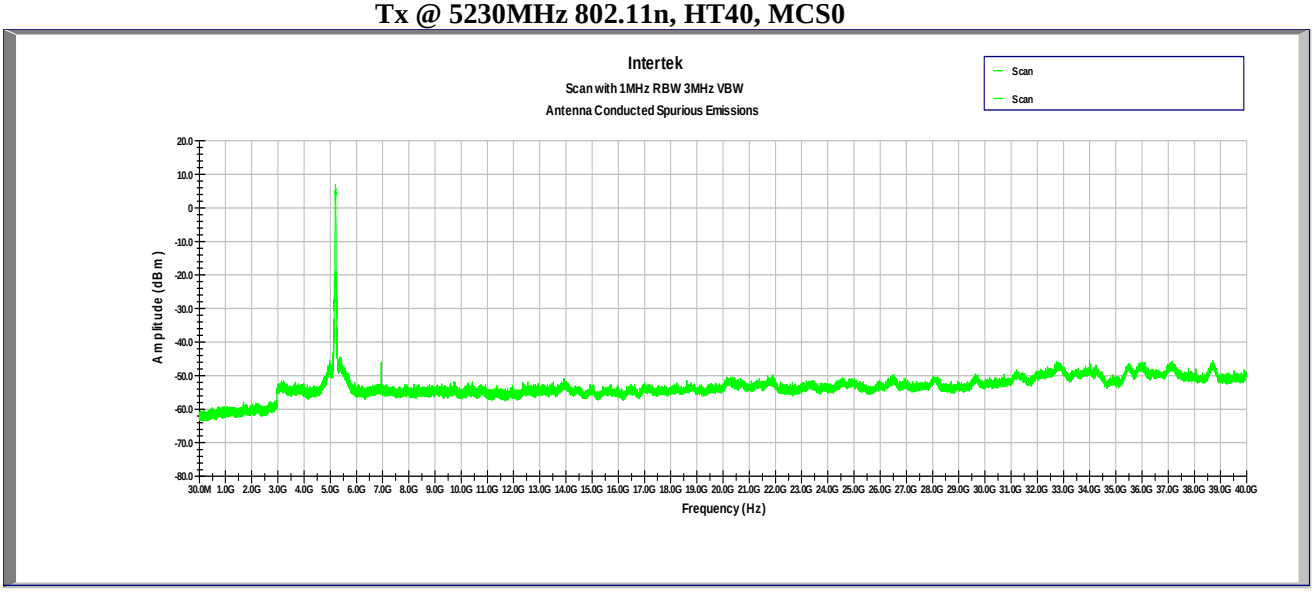
Plot 5.10

Tx @ 5190MHz 802.11n, HT40, MCS0



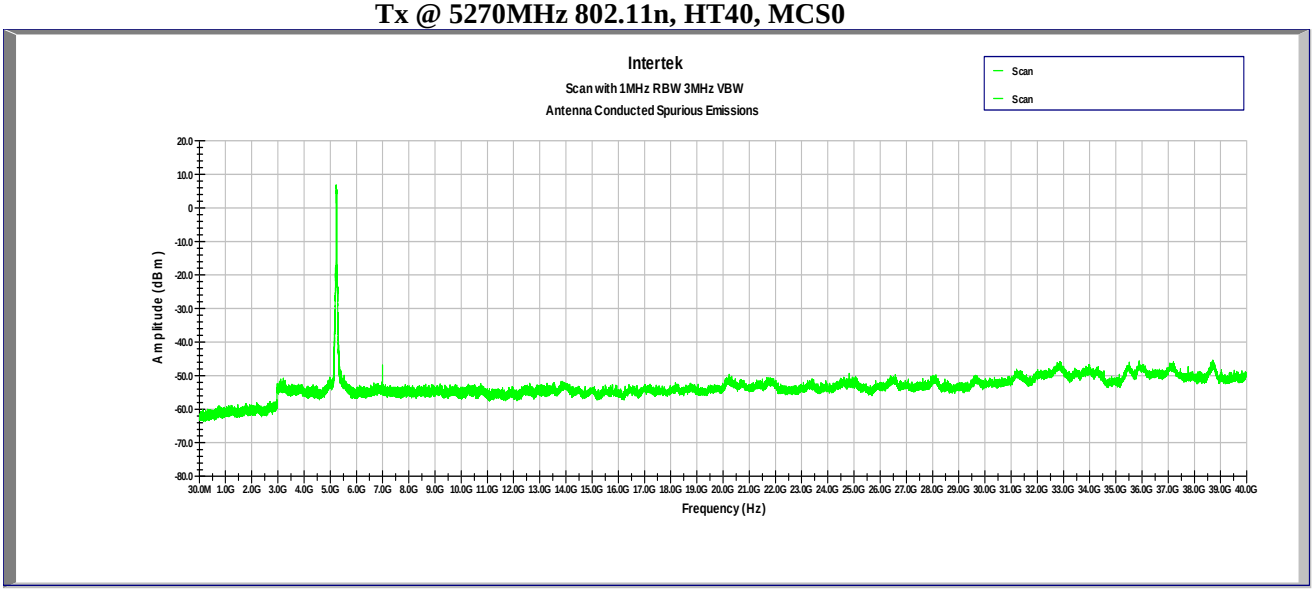
Plot 5.11

Tx @ 5230MHz 802.11n, HT40, MCS0



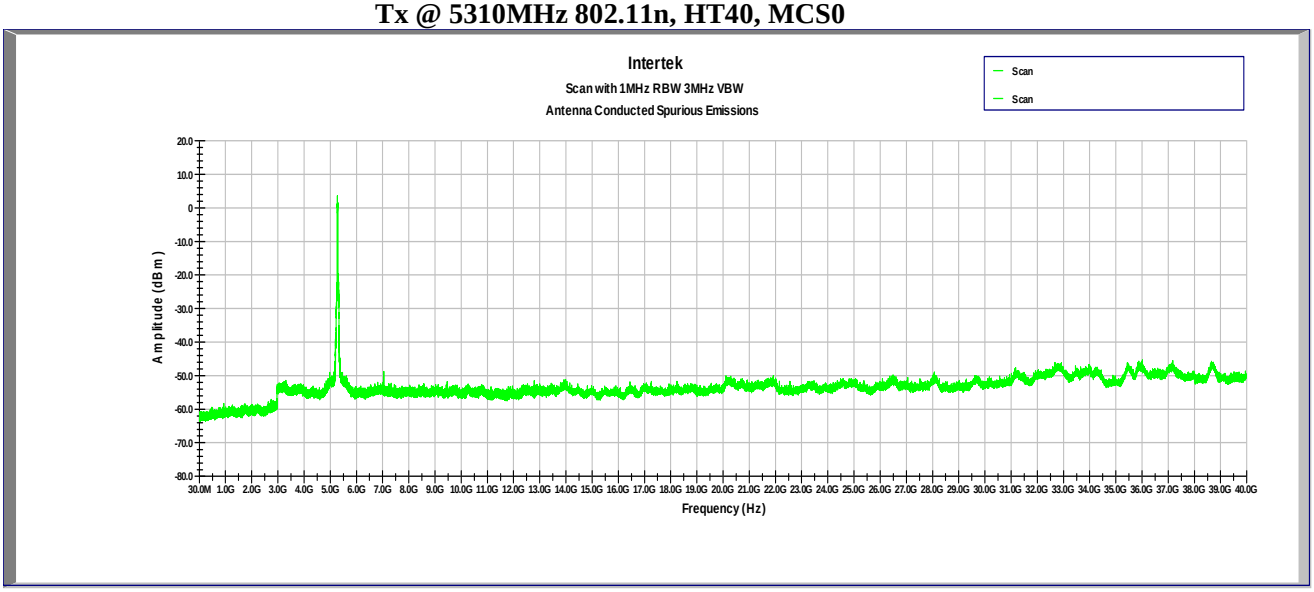
Plot 5.12

Tx @ 5270MHz 802.11n, HT40, MCS0



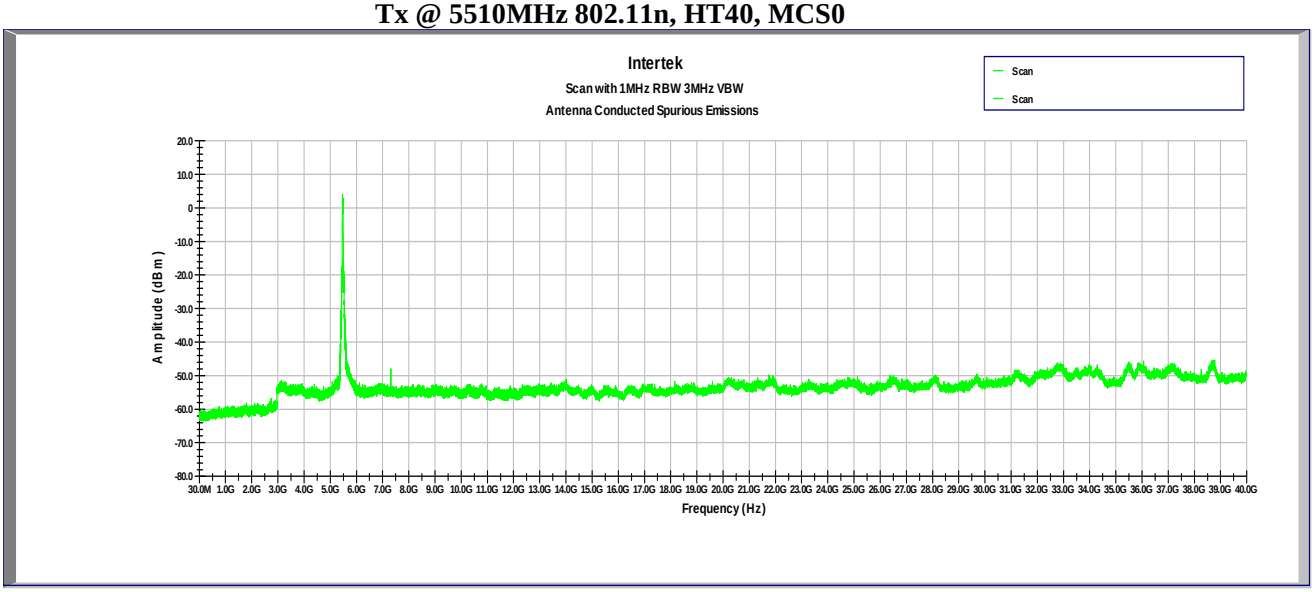
Plot 5.13

Tx @ 5310MHz 802.11n, HT40, MCS0



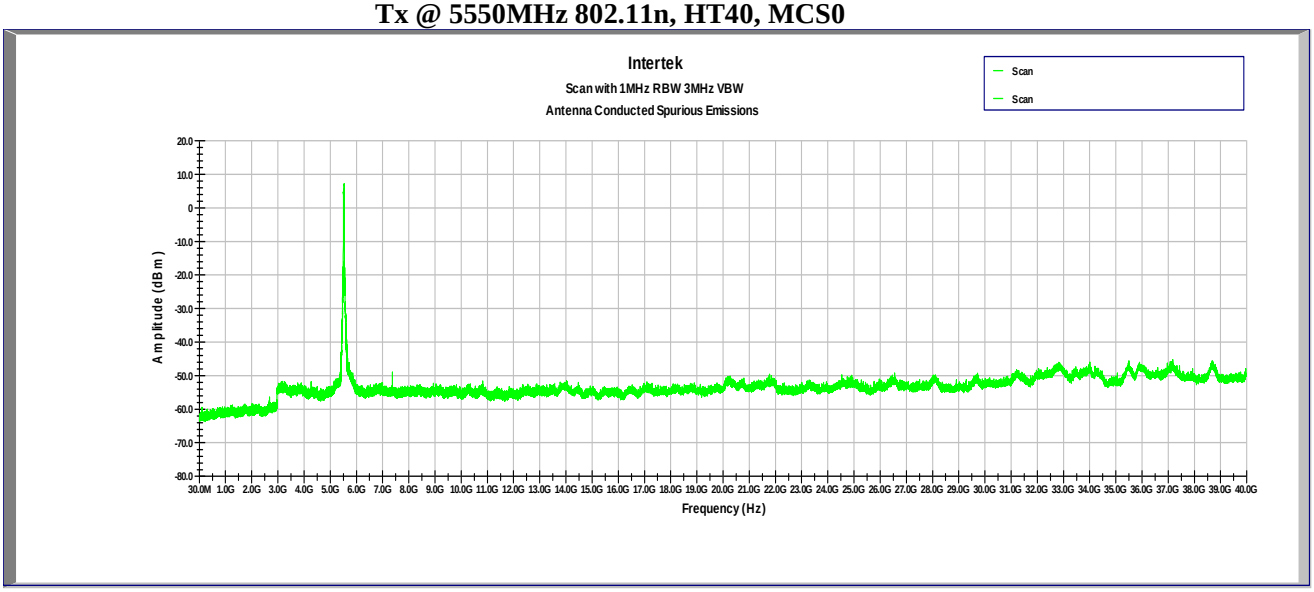
Plot 5.14

Tx @ 5510MHz 802.11n, HT40, MCS0



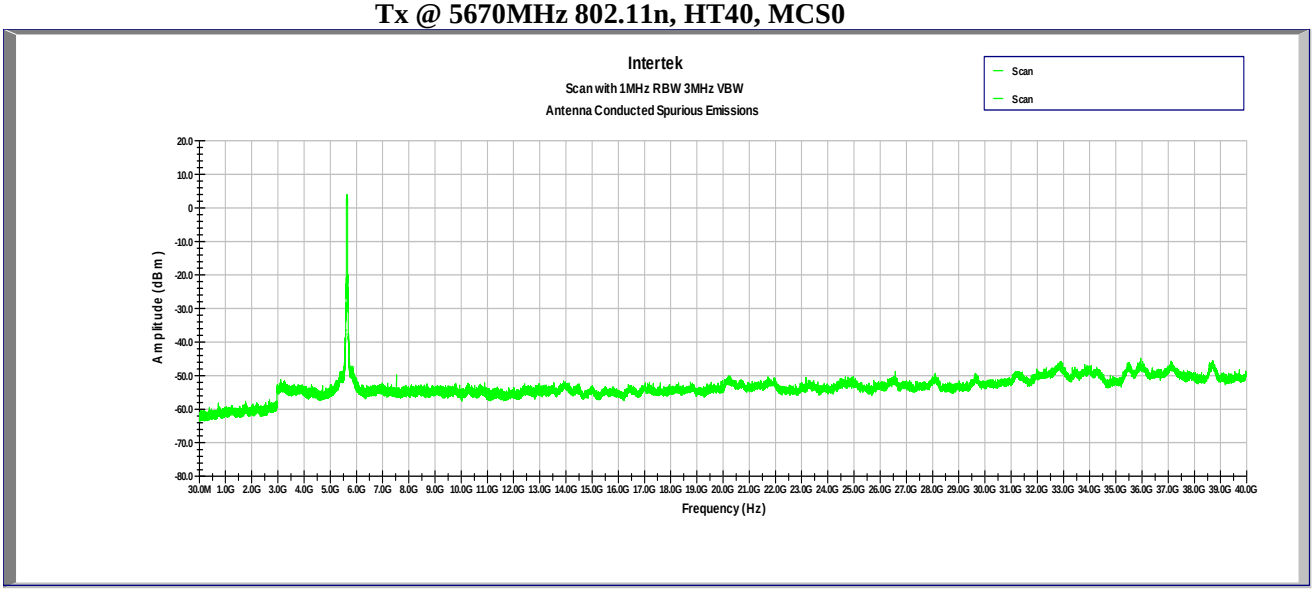
Plot 5.15

Tx @ 5550MHz 802.11n, HT40, MCS0



Plot 5.16

Tx @ 5670MHz 802.11n, HT40, MCS0



4.6 Transmitter Radiated Emissions
FCC Rule 15.407(b)(1)(2)(3) 15.209, 15.205

4.6.1 Requirement

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a), §15.205(c).

For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz. For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz. For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of −27 dBm/MHz. Note: This corresponds to the field strength level of 68.3 dB(μV/m) at 3 m distance when measure with 1 MHz resolution bandwidth.

4.6.2 Procedure

Radiated emission measurements were performed from 30 MHz to 40,000 MHz. Spectrum Analyzer Resolution Bandwidth is 100 kHz or greater for frequencies 30 MHz to 1000 MHz, 1 MHz for frequencies above 1000 MHz.

The EUT is placed on a plastic turntable that is 80 cm in height. If the EUT attaches to peripherals, they are connected and operational (as typical as possible). During testing, all cables were manipulated to produce worst-case emissions. The signal is maximized through rotation. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters.

Radiated emissions are taken at three meters for frequencies above 1 GHz and at 10 meters for frequencies below 1 GHz.

Data is included of the worst-case configuration (the configuration which resulted in the highest emission levels).

4.6.3 Field Strength Calculation

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF – AG; if measurement is performed at a distance other than specified in the rule, a Distance Correction Factor (DCF) shall be added.

Where FS = Field Strength in dB(µV/m)
RA = Receiver Amplitude (including preamplifier) in dB(µV); AF = Antenna Factor in dB(1/m)
CF = Cable Attenuation Factor in dB; AG = Amplifier Gain in dB

Assume a receiver reading of 52.0 dB(µV) is obtained. The antennas factor of 7.4 dB(1/m) and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving field strength of 32 dB(µV/m). This value in dB(µV/m) was converted to its corresponding level in µV/m.
RA = 52.0 dB(µV)
AF = 7.4 dB(1/m)
CF = 1.6 dB
AG = 29.0 dB
FS = 52.0+7.4+1.6-29.0 = 32 dB(µV/m).
Level in µV/m = Common Antilogarithm [(32 dBµV/m)/20] = 39.8 µV/m.

4.6.4 Test Results

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

The EUT passed the test by 0.5dB.

Table 6.1
Transmitter Radiated Emissions below 1GHz
Tx @ 5180MHz 802.11a, 6Mbps & 802.11n, HT20, MCS0, w/ internal antenna or external antenna

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Horizontal)

Operator: KK
April 13, 2012

Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	AG	AF	CF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB(1/m)	dB
3.647E+07	14.2	30.0	-15.8	28.4	32.1	17.1	0.7
1.504E+08	10.9	30.0	-19.1	33.5	32.0	8.0	1.4
2.782E+08	23.4	37.0	-13.6	40.3	32.0	13.2	2.0
9.952E+08	22.6	37.0	-14.4	26.3	30.9	23.5	3.8

Test Mode: Tx @ 5180MHz
Temp: 21C, Humidity: 42%

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Vertical)

Operator: KK
April 13, 2012

Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	CF	AG	AF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB	dB(1/m)
3.647E+07	14.5	30.0	-15.5	28.7	0.7	32.1	17.1
1.763E+08	12.7	30.0	-17.3	33.4	1.5	32.0	9.8
2.757E+08	26.0	37.0	-11.0	42.8	1.9	32.0	13.3
1.000E+09	22.8	37.0	-14.2	26.6	3.8	30.9	23.3

Test Mode: Tx @ 5180MHz
Temp: 21C, Humidity: 42%
Notes: Measurements made at 10 meters distance.

Table 6.2
Transmitter Radiated Emissions below 1GHz
Tx @ 5200MHz 802.11a, 6Mbps & 802.11n, HT20, MCS0, w/ internal antenna or external antenna

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Horizontal)
Operator: KK
April 13, 2012
Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency (Hz)	Peak FS dB(uV)	Limit@10m dB(uV/m)	Margin dB	RA dB(uV)	AG dB	AF dB(1/m)	CF dB
3.647E+07	14.2	30.0	-15.8	28.4	32.1	17.1	0.7
1.504E+08	10.9	30.0	-19.1	33.5	32.0	8.0	1.4
2.782E+08	23.4	37.0	-13.6	40.3	32.0	13.2	2.0
9.952E+08	22.6	37.0	-14.4	26.3	30.9	23.5	3.8

Test Mode: Tx @ 5200MHz
Temp: 21C, Humidity: 42%

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Vertical)
Operator: KK
April 13, 2012
Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency (Hz)	Peak FS dB(uV)	Limit@10m dB(uV/m)	Margin dB	RA dB(uV)	CF dB	AG dB	AF dB(1/m)
3.647E+07	14.5	30.0	-15.5	28.7	0.7	32.1	17.1
1.763E+08	12.7	30.0	-17.3	33.4	1.5	32.0	9.8
2.757E+08	26.0	37.0	-11.0	42.8	1.9	32.0	13.3
1.000E+09	22.8	37.0	-14.2	26.6	3.8	30.9	23.3

Test Mode: Tx @ 5200MHz
Temp: 21C, Humidity: 42%
Notes: Measurements made at 10 meters distance.

Table 6.3
Transmitter Radiated Emissions below 1GHz
Tx @ 5240MHz 802.11a, 6Mbps & 802.11n, HT20, MCS0, w/ internal antenna or external antenna

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Horizontal)
Operator: KK
April 13, 2012
Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	AG	AF	CF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB(1/m)	dB
3.647E+07	13.7	30.0	-16.3	28.0	32.1	17.1	0.7
2.790E+08	21.0	37.0	-16.0	37.9	32.0	13.1	2.0
9.855E+08	22.7	37.0	-14.3	26.9	31.0	23.0	3.8

Test Mode: Tx @ 5240MHz
Temp: 21C, Humidity: 42%

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Vertical)
Operator: KK
April 13, 2012
Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	CF	AG	AF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB	dB(1/m)
3.566E+07	13.5	30.0	-16.5	27.8	0.7	32.1	17.2
2.329E+08	15.3	37.0	-21.7	33.5	1.8	32.0	12.1
2.774E+08	26.5	37.0	-10.5	43.4	1.9	32.0	13.2
9.903E+08	23.8	37.0	-13.2	27.5	3.8	31.0	23.4

Test Mode: Tx @ 5240MHz
Temp: 21C, Humidity: 42%
Notes: Measurements made at 10 meters distance.

Table 6.4
Transmitter Radiated Emissions below 1GHz
Tx @ 5260MHz 802.11a, 6Mbps & 802.11n, HT20, MCS0, w/ internal antenna or external antenna

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Horizontal)

Operator: KK
April 13, 2012

Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	AG	AF	CF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB(1/m)	dB
3.647E+07	14.1	30.0	-15.9	28.3	32.1	17.1	0.7
2.830E+08	23.8	37.0	-13.2	41.0	32.0	12.9	2.0
9.968E+08	23.0	37.0	-14.0	26.7	30.9	23.4	3.8

Test Mode: Tx @ 5260MHz
Temp: 21C, Humidity: 42%

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Vertical)

Operator: KK
April 13, 2012

Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	CF	AG	AF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB	dB(1/m)
3.500E+07	14.0	30.0	-16.0	27.9	0.7	32.1	17.5
2.774E+08	26.9	37.0	-10.1	43.7	1.9	32.0	13.2
9.984E+08	22.5	37.0	-14.5	26.2	3.8	30.9	23.4

Test Mode: Tx @ 5260MHz
Temp: 21C, Humidity: 42%
Notes: Measurements made at 10 meters distance.

Table 6.5
Transmitter Radiated Emissions below 1GHz
Tx @ 5300MHz 802.11a, 6Mbps & 802.11n, HT20, MCS0, w/ internal antenna or external antenna

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Horizontal)

Operator: KK
April 13, 2012

Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	AG	AF	CF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB(1/m)	dB
3.566E+07	14.2	30.0	-15.8	28.5	32.1	17.2	0.7
2.846E+08	24.2	37.0	-12.8	41.4	32.0	12.7	2.0
9.960E+08	23.5	37.0	-13.5	27.1	30.9	23.5	3.8

Test Mode: Tx @ 5300MHz
Temp: 21C, Humidity: 42%

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Vertical)

Operator: KK
April 13, 2012

Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	CF	AG	AF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB	dB(1/m)
3.500E+07	14.5	30.0	-15.5	28.4	0.7	32.1	17.5
2.757E+08	25.9	37.0	-11.1	42.7	1.9	32.0	13.3
9.984E+08	24.0	37.0	-13.0	27.7	3.8	30.9	23.4

Test Mode: Tx @ 5300MHz
Temp: 21C, Humidity: 42%
Notes: Measurements made at 10 meters distance.

Table 6.6
Transmitter Radiated Emissions below 1GHz
Tx @ 5320MHz 802.11a, 6Mbps & 802.11n, HT20, MCS0, w/ internal antenna or external antenna

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Horizontal)
Operator: KK
April 13, 2012
Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	AG	AF	CF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB(1/m)	dB
3.647E+07	14.1	30.0	-15.9	28.3	32.1	17.1	0.7
2.806E+08	24.3	37.0	-12.7	41.3	32.0	13.1	2.0
9.992E+08	22.7	37.0	-14.3	26.4	30.9	23.3	3.8

Test Mode: Tx @ 5320MHz
Temp: 21C, Humidity: 42%

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Vertical)
Operator: KK
April 13, 2012
Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	CF	AG	AF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB	dB(1/m)
3.647E+07	14.1	30.0	-15.9	28.3	0.7	32.1	17.1
2.774E+08	26.3	37.0	-10.7	43.1	1.9	32.0	13.2
1.000E+09	23.0	37.0	-14.0	26.8	3.8	30.9	23.3

Test Mode: Tx @ 5320MHz
Temp: 21C, Humidity: 42%
Notes: Measurements made at 10 meters distance.

Table 6.7
Transmitter Radiated Emissions below 1GHz
Tx @ 5500MHz 802.11a, 6Mbps & 802.11n, HT20, MCS0, w/ internal antenna or external antenna

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Horizontal)
Operator: KK
April 13, 2012
Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	AG	AF	CF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB(1/m)	dB
3.081E+07	14.1	30.0	-15.9	27.9	32.1	17.7	0.6
2.846E+08	23.6	37.0	-13.4	40.9	32.0	12.7	2.0
9.927E+08	22.9	37.0	-14.1	26.6	30.9	23.5	3.8

Test Mode: Tx @ 5500MHz
Temp: 21C, Humidity: 42%

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Vertical)
Operator: KK
April 13, 2012
Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	CF	AG	AF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB	dB(1/m)
3.647E+07	14.9	30.0	-15.1	29.1	0.7	32.1	17.1
2.774E+08	28.0	37.0	-9.0	44.8	1.9	32.0	13.2
9.976E+08	22.9	37.0	-14.1	26.6	3.8	30.9	23.4

Test Mode: Tx @ 5500MHz
Temp: 21C, Humidity: 42%
Notes: Measurements made at 10 meters distance.

Table 6.8
Transmitter Radiated Emissions below 1GHz
Tx @ 5580MHz 802.11a, 6Mbps & 802.11n, HT20, MCS0, w/ internal antenna or external antenna

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Horizontal)
Operator: KK
April 13, 2012
Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	AG	AF	CF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB(1/m)	dB
3.647E+07	14.5	30.0	-15.5	28.7	32.1	17.1	0.7
2.822E+08	25.0	37.0	-12.0	42.1	32.0	12.9	2.0
9.984E+08	22.8	37.0	-14.2	26.5	30.9	23.4	3.8

Test Mode: Tx @ 5580MHz
Temp: 21C, Humidity: 42%

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Vertical)
Operator: KK
April 13, 2012
Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	CF	AG	AF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB	dB(1/m)
3.404E+07	14.2	30.0	-15.8	28.4	0.7	32.1	17.2
2.790E+08	26.1	37.0	-10.9	43.0	2.0	32.0	13.1
9.976E+08	23.2	37.0	-13.8	26.9	3.8	30.9	23.4

Test Mode: Tx @ 5580MHz
Temp: 21C, Humidity: 42%
Notes: Measurements made at 10 meters distance.

Table 6.9
Transmitter Radiated Emissions below 1GHz
Tx @ 5700MHz 802.11a, 6Mbps & 802.11n, HT20, MCS0, w/ internal antenna or external antenna

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Horizontal)
Operator: KK
April 13, 2012
Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	AG	AF	CF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB(1/m)	dB
3.728E+07	14.2	30.0	-15.8	28.4	32.1	17.2	0.7
2.798E+08	23.4	37.0	-13.6	40.3	32.0	13.1	2.0
9.968E+08	23.2	37.0	-13.8	26.9	30.9	23.4	3.8

Test Mode: Tx @ 5700MHz
Temp: 21C, Humidity: 42%

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Vertical)
Operator: KK
April 13, 2012
Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	CF	AG	AF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB	dB(1/m)
3.808E+07	14.4	30.0	-15.6	28.9	0.7	32.1	16.8
2.790E+08	27.2	37.0	-9.8	44.1	2.0	32.0	13.1
1.000E+09	22.9	37.0	-14.1	26.7	3.8	30.9	23.3

Test Mode: Tx @ 5700MHz
Temp: 21C, Humidity: 42%
Notes: Measurements made at 10 meters distance.

Table 6.10
Transmitter Radiated Emissions below 1GHz
Tx @ 5190MHz 802.11n, HT40, MCS0, w/ internal antenna or external antenna

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Horizontal)

Operator: KK
April 13, 2012

Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	AG	AF	CF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB(1/m)	dB
3.728E+07	14.7	30.0	-15.3	28.9	32.1	17.2	0.7
2.814E+08	24.1	37.0	-12.9	41.1	32.0	13.0	2.0
9.968E+08	22.7	37.0	-14.3	26.4	30.9	23.4	3.8

Test Mode: Tx @ 5190MHz
Temp: 21C, Humidity: 42%

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Vertical)

Operator: KK
April 13, 2012

Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	CF	AG	AF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB	dB(1/m)
3.647E+07	14.6	30.0	-15.4	28.8	0.7	32.1	17.1
2.782E+08	26.6	37.0	-10.4	43.5	2.0	32.0	13.2
9.871E+08	23.0	37.0	-14.0	27.0	3.8	31.0	23.2

Test Mode: Tx @ 5190MHz
Temp: 21C, Humidity: 42%
Notes: Measurements made at 10 meters distance.

Table 6.11
Transmitter Radiated Emissions below 1GHz
Tx @ 5230MHz 802.11n, HT40, MCS0, w/ internal antenna or external antenna

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Horizontal)

Operator: KK
April 13, 2012

Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	AG	AF	CF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB(1/m)	dB
3.404E+07	14.2	30.0	-15.8	28.5	32.1	17.2	0.7
2.806E+08	24.0	37.0	-13.0	41.0	32.0	13.1	2.0
1.000E+09	23.5	37.0	-13.5	27.3	30.9	23.3	3.8

Test Mode: Tx @ 5230MHz
Temp: 21C, Humidity: 42%

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Vertical)

Operator: KK
April 13, 2012

Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	CF	AG	AF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB	dB(1/m)
3.485E+07	14.4	30.0	-15.6	28.4	0.7	32.1	17.5
1.222E+08	9.8	30.0	-20.2	28.7	1.3	32.0	11.8
2.774E+08	26.3	37.0	-10.7	43.1	1.9	32.0	13.2
8.448E+08	25.9	37.0	-11.1	33.6	3.5	32.0	20.8

Test Mode: Tx @ 5230MHz
Temp: 21C, Humidity: 42%
Notes: Measurements made at 10 meters distance.

Table 6.12
Transmitter Radiated Emissions below 1GHz
Tx @ 5270MHz 802.11n, HT40, MCS0, w/ internal antenna or external antenna

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Horizontal)

Operator: KK
April 13, 2012

Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	AG	AF	CF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB(1/m)	dB
3.728E+07	13.9	30.0	-16.1	28.1	32.1	17.2	0.7
2.846E+08	23.3	37.0	-13.7	40.6	32.0	12.7	2.0
9.984E+08	23.9	37.0	-13.1	27.6	30.9	23.4	3.8

Test Mode: Tx @ 5270MHz
Temp: 21C, Humidity: 42%

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Vertical)

Operator: KK
April 13, 2012

Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	CF	AG	AF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB	dB(1/m)
3.404E+07	14.4	30.0	-15.6	28.6	0.7	32.1	17.2
2.774E+08	26.8	37.0	-10.2	43.6	1.9	32.0	13.2
9.968E+08	22.7	37.0	-14.3	26.4	3.8	30.9	23.4

Test Mode: Tx @ 5270MHz
Temp: 21C, Humidity: 42%
Notes: Measurements made at 10 meters distance.

Table 6.13
Transmitter Radiated Emissions below 1GHz
Tx @ 5310MHz 802.11n, HT40, MCS0, w/ internal antenna or external antenna

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Horizontal)

Operator: KK
April 13, 2012

Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	AG	AF	CF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB(1/m)	dB
3.728E+07	14.0	30.0	-16.0	28.2	32.1	17.2	0.7
2.790E+08	23.6	37.0	-13.4	40.5	32.0	13.1	2.0
9.863E+08	22.5	37.0	-14.5	26.6	31.0	23.1	3.8

Test Mode: Tx @ 5310MHz
Temp: 21C, Humidity: 42%

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Vertical)

Operator: KK
April 13, 2012

Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	CF	AG	AF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB	dB(1/m)
3.500E+07	13.9	30.0	-16.1	27.8	0.7	32.1	17.5
2.782E+08	27.8	37.0	-9.2	44.7	2.0	32.0	13.2
9.806E+08	22.5	37.0	-14.5	27.2	3.7	31.0	22.6

Test Mode: Tx @ 5310MHz
Temp: 21C, Humidity: 42%
Notes: Measurements made at 10 meters distance.

Table 6.14
Transmitter Radiated Emissions below 1GHz
Tx @ 5510MHz 802.11n, HT40, MCS0, w/ internal antenna or external antenna

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Horizontal)

Operator: KK
April 13, 2012

Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	AG	AF	CF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB(1/m)	dB
3.566E+07	14.2	30.0	-15.8	28.4	32.1	17.2	0.7
2.830E+08	24.6	37.0	-12.4	41.8	32.0	12.9	2.0
1.000E+09	23.0	37.0	-14.0	26.8	30.9	23.3	3.8

Test Mode: Tx @ 5510MHz
Temp: 21C, Humidity: 42%

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Vertical)

Operator: KK
April 13, 2012

Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	CF	AG	AF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB	dB(1/m)
3.404E+07	14.2	30.0	-15.8	28.4	0.7	32.1	17.2
2.774E+08	26.2	37.0	-10.8	43.0	1.9	32.0	13.2
9.855E+08	23.1	37.0	-13.9	27.3	3.8	31.0	23.0

Test Mode: Tx @ 5510MHz
Temp: 21C, Humidity: 42%
Notes: Measurements made at 10 meters distance.

Table 6.15
Transmitter Radiated Emissions below 1GHz
Tx @ 5550MHz 802.11n, HT40, MCS0, w/ internal antenna or external antenna

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Horizontal)

Operator: KK
April 13, 2012

Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	AG	AF	CF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB(1/m)	dB
3.700E+07	13.8	30.0	-16.2	27.9	32.1	17.3	0.7
2.790E+08	22.9	37.0	-14.1	39.8	32.0	13.1	2.0
9.895E+08	22.3	37.0	-14.7	26.1	31.0	23.4	3.8

Test Mode: Tx @ 5550MHz
Temp: 21C, Humidity: 42%

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Vertical)

Operator: KK
April 13, 2012

Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	CF	AG	AF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB	dB(1/m)
3.500E+07	14.5	30.0	-15.5	28.4	0.7	32.1	17.5
2.774E+08	27.6	37.0	-9.4	44.5	1.9	32.0	13.2
1.000E+09	22.8	37.0	-14.2	26.5	3.8	30.9	23.3

Test Mode: Tx @ 5550MHz
Temp: 21C, Humidity: 42%
Notes: Measurements made at 10 meters distance.

Table 6.16
Transmitter Radiated Emissions below 1GHz
Tx @ 5670MHz 802.11n, HT40, MCS0, w/ internal antenna or external antenna

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Horizontal)

Operator: KK
April 13, 2012

Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	AG	AF	CF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB(1/m)	dB
3.647E+07	14.7	30.0	-15.3	29.0	32.1	17.1	0.7
2.790E+08	23.7	37.0	-13.3	40.6	32.0	13.1	2.0
9.855E+08	23.1	37.0	-13.9	27.3	31.0	23.0	3.8

Test Mode: Tx @ 5670MHz
Temp: 21C, Humidity: 42%

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Vertical)

Operator: KK
April 13, 2012

Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	CF	AG	AF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB	dB(1/m)
3.700E+07	14.2	30.0	-15.8	28.2	0.7	32.1	17.3
2.790E+08	27.2	37.0	-9.8	44.1	2.0	32.0	13.1
9.992E+08	23.1	37.0	-13.9	26.8	3.8	30.9	23.3

Test Mode: Tx @ 5670MHz
Temp: 21C, Humidity: 42%
Notes: Measurements made at 10 meters distance.

Table 6.17

Out-of-Band Radiated spurious emissions at the Band-edge
Radiated spurious emissions in the restricted band 4.5-5.15 GHz and
Radiated spurious emissions outside 5.15–5.35 GHz band, w/ external antenna

Channel/ Frequency MHz	Detector	Standard/ Data rate	SA reading dB(uV)	Corr. Factor dB	FS at 3m dB(uV/m)	FS Limit dB(uV/m)	Margin dB
36 (5180MHz)	Peak	802.11a, 6 Mbps	53.4	13.5	66.9	74.0/68.3	-1.4
	Peak	802.11n, HT20 MCS0	54.2	13.5	67.7	74.0/68.3	-0.6
38 (5190MHz)	Peak	802.11n, HT40, MCS0	54.3	13.5	67.8	74.0/68.3	-0.5
36 (5180MHz)	Ave	802.11a, 6 Mbps	36.4	13.5	49.9	54.0	-4.1
	Ave	802.11n, HT20 MCS0	36.7	13.5	50.2	54.0	-3.8
38 (5190MHz)	Ave	802.11n, HT40, MCS0	39.9	13.5	53.4	54.0	-0.6

a) Correction Factor @ 5.15GHz: Cable loss + High Pass Filter loss - Pre-amplifier gain + Antenna factor
b) FS at 3m = SA reading + Correction Factor

Table 6.18

Out-of-Band Radiated spurious emissions at the Band-edge
Radiated spurious emissions in the restricted band 5.35-5.46 GHz and
Radiated spurious emissions outside 5.15–5.35 GHz band, w/ external antenna

Channel/ Frequency MHz	Detector	Standard/ Data rate	SA reading dB(uV)	Corr. Factor dB	FS at 3m dB(uV/m)	FS Limit dB(uV/m)	Margin dB
62 (5310MHz)	Peak	802.11n, HT40, MCS0	52.5	15.3	67.8	74.0/68.3	-0.5
64 (5320MHz)	Peak	802.11a, 6 Mbps	48.0	15.3	63.3	74.0/68.3	-5.0
	Peak	802.11n, HT20 MCS0	47.2	15.3	62.5	74.0/68.3	-5.8
62 (5310MHz)	Ave	802.11n, HT40, MCS0	37.3	15.3	52.6	54.0	-1.4
64 (5320MHz)	Ave	802.11a, 6 Mbps	33.9	15.3	49.2	54.0	-4.8
	Ave	802.11n, HT20 MCS0	34.1	15.3	49.4	54.0	-4.6

a) Correction Factor @ 5.35GHz: Cable loss + High Pass Filter loss - Pre-amplifier gain + Antenna factor
b) FS at 3m = SA reading + Correction Factor

Table 6.19

Out-of-Band Radiated spurious emissions at the Band-edge
Radiated spurious emissions in the restricted band 5.35-5.46 GHz and
Radiated spurious emissions outside 5.47–5.725 GHz band, w/ external antenna

Channel/ Frequency MHz	Detector	Standard/ Data rate	SA reading dB(uV)	Corr. Factor dB	FS at 3m dB(uV/m)	FS Limit dB(uV/m)	Margin dB
100 (5500MHz)	Peak	802.11a, 6 Mbps	46.9	16.1	63.0	74.0/68.3	-5.3
	Peak	802.11n, HT20 MCS0	49.5	16.1	65.6	74.0/68.3	-2.7
102 (5510MHz)	Peak	802.11n, HT40, MCS0	49.1	16.1	65.2	74.0/68.3	-3.1
100 (5500MHz)	Ave	802.11a, 6 Mbps	29.8	16.1	45.9	54.0	-8.1
	Ave	802.11n, HT20 MCS0	30.5	16.1	46.6	54.0	-7.4
102 (5510MHz)	Ave	802.11n, HT40, MCS0	34.4	16.1	50.5	54.0	-3.5

a) Correction Factor @ 5.46GHz: Cable loss + High Pass Filter loss - Pre-amplifier gain + Antenna factor
b) FS at 3m = SA reading + Correction Factor

Table 6.20

Out-of-Band Radiated spurious emissions at the Band-edge
Radiated spurious emissions outside 5.47–5.725 GHz band, w/ external antenna

Channel/ Frequency MHz	Detector	Standard/ Data rate	SA reading dB(uV)	Corr. Factor dB	FS at 3m dB(uV/m)	FS Limit dB(uV/m)	Margin dB
100 (5500MHz)	Peak	802.11a, 6 Mbps	49.6	16.1	65.7	68.3	-2.6
	Peak	802.11n, HT20 MCS0	51.5	16.1	67.6	68.3	-0.7
102 (5510MHz)	Peak	802.11n, HT40, MCS0	50.4	16.1	66.5	68.3	-1.8
140 (5700MHz)	Peak	802.11a, 6 Mbps	45.9	17.1	63.0	68.3	-5.3
	Peak	802.11n, HT20 MCS0	49.6	17.1	66.7	68.3	-1.6

a) Correction Factor @ 5.47GHz & 5.7GHz: Cable loss + High Pass Filter loss - Pre-amplifier gain + Antenna factor
b) FS at 3m = SA reading + Correction Factor

Table 6.21

Out-of-Band Radiated spurious emissions at the Band-edge
Radiated spurious emissions in the restricted band 4.5-5.15 GHz and
Radiated spurious emissions outside 5.15–5.35 GHz band, w/ internal antenna

Channel/ Frequency MHz	Detector	Standard/ Data rate	SA reading dB(uV)	Corr. Factor dB	FS at 3m dB(uV/m)	FS Limit dB(uV/m)	Margin dB
36 (5180MHz)	Peak	802.11a, 6 Mbps	54.1	13.5	67.6	74.0/68.3	-0.7
	Peak	802.11n, HT20 MCS0	54.3	13.5	67.8	74.0/68.3	-0.5
38 (5190MHz)	Peak	802.11n, HT40, MCS0	53.5	13.5	67	74.0/68.3	-1.3
36 (5180MHz)	Ave	802.11a, 6 Mbps	39.0	13.5	52.5	54.0	-1.5
	Ave	802.11n, HT20 MCS0	39.6	13.5	53.1	54.0	-0.9
38 (5190MHz)	Ave	802.11n, HT40, MCS0	38.8	13.5	52.3	54.0	-1.7

a) Correction Factor @ 5.15GHz: Cable loss + High Pass Filter loss - Pre-amplifier gain + Antenna factor
b) FS at 3m = SA reading + Correction Factor

Table 6.22

Out-of-Band Radiated spurious emissions at the Band-edge
Radiated spurious emissions in the restricted band 5.35-5.46 GHz and
Radiated spurious emissions outside 5.15–5.35 GHz band, w/ internal antenna

Channel/ Frequency MHz	Detector	Standard/ Data rate	SA reading dB(uV)	Corr. Factor dB	FS at 3m dB(uV/m)	FS Limit dB(uV/m)	Margin dB
62 (5310MHz)	Peak	802.11n, HT40, MCS0	52.4	15.3	67.7	74.0/68.3	-0.6
64 (5320MHz)	Peak	802.11a, 6 Mbps	46.0	15.3	61.3	74.0/68.3	-7.0
	Peak	802.11n, HT20 MCS0	46.9	15.3	62.2	74.0/68.3	-6.1
62 (5310MHz)	Ave	802.11n, HT40, MCS0	37.5	15.3	52.8	54.0	-1.2
64 (5320MHz)	Ave	802.11a, 6 Mbps	32.7	15.3	48.0	54.0	-6.0
	Ave	802.11n, HT20 MCS0	32.3	15.3	47.6	54.0	-6.4

a) Correction Factor @ 5.35GHz: Cable loss + High Pass Filter loss - Pre-amplifier gain + Antenna factor
b) FS at 3m = SA reading + Correction Factor

Table 6.23

Out-of-Band Radiated spurious emissions at the Band-edge
Radiated spurious emissions in the restricted band 5.35-5.46 GHz and
Radiated spurious emissions outside 5.47–5.725 GHz band, w/ internal antenna

Channel/ Frequency MHz	Detector	Standard/ Data rate	SA reading dB(uV)	Corr. Factor dB	FS at 3m dB(uV/m)	FS Limit dB(uV/m)	Margin dB
100 (5500MHz)	Peak	802.11a, 6 Mbps	47.6	16.1	63.7	74.0/68.3	-4.6
	Peak	802.11n, HT20 MCS0	47.9	16.1	64	74.0/68.3	-4.3
102 (5510MHz)	Peak	802.11n, HT40, MCS0	49.6	16.1	65.7	74.0/68.3	-2.6
100 (5500MHz)	Ave	802.11a, 6 Mbps	30.2	16.1	46.3	54.0	-7.7
	Ave	802.11n, HT20 MCS0	30.3	16.1	46.4	54.0	-7.6
102 (5510MHz)	Ave	802.11n, HT40, MCS0	34.1	16.1	50.2	54.0	-3.8

a) Correction Factor @ 5.46GHz: Cable loss + High Pass Filter loss - Pre-amplifier gain + Antenna factor
b) FS at 3m = SA reading + Correction Factor

Table 6.24

Out-of-Band Radiated spurious emissions at the Band-edge
Radiated spurious emissions outside 5.47–5.725 GHz band, w/ internal antenna

Channel/ Frequency MHz	Detector	Standard/ Data rate	SA reading dB(uV)	Corr. Factor dB	FS at 3m dB(uV/m)	FS Limit dB(uV/m)	Margin dB
100 (5500MHz)	Peak	802.11a, 6 Mbps	51.4	16.1	67.5	68.3	-0.8
	Peak	802.11n, HT20 MCS0	51.7	16.1	67.8	68.3	-0.5
102 (5510MHz)	Peak	802.11n, HT40, MCS0	50.5	16.1	66.6	68.3	-1.7
140 (5700MHz)	Peak	802.11a, 6 Mbps	46.5	17.1	63.6	68.3	-4.7
	Peak	802.11n, HT20 MCS0	49.8	17.1	66.9	68.3	-1.4

a) Correction Factor @ 5.47GHz & 5.7GHz: Cable loss + High Pass Filter loss - Pre-amplifier gain + Antenna factor
b) FS at 3m = SA reading + Correction Factor

Table 6.25

Transmitter Radiated Emissions above 1GHz, w/ external antenna

Frequency	Detector	SA reading	Corr. Factor	Antenna factor	FS at 3m	FS Limit	Margin
MHz		dB(uV)	dB	dB(1/m)	dB(uV/m)	dB(uV/m)	dB
Ch. 36, 5180 MHz, 802.11a, 6Mbps & 802.11n, HT20, MCS0							
10360	Peak	43.0	-23.6	38.7	58.1	68.3	-10.2
15540	Peak	33.1	-22.0	38.6	49.7	68.3/74.0	-18.6
15540	Average	19.9	-22.0	38.6	36.5	54.0	-17.5
Ch. 40, 5200 MHz, 802.11a, 6Mbps & 802.11n, HT20, MCS0							
10400	Peak	42.8	-23.5	38.8	58.1	68.3	-10.2
15600	Peak	35.0	-22.1	38.5	51.4	68.3/74.0	-16.9
15600	Average	21.9	-22.1	38.5	38.3	54.0	-15.7
Ch. 48, 5240 MHz, 802.11a, 6Mbps & 802.11n, HT20, MCS0							
10480	Peak	42.3	-23.1	38.8	58.0	68.3	-10.3
15720	Peak	33.3	-22.3	38.4	49.4	68.3/74.0	-18.9
15720	Average	20.3	-22.3	38.4	36.4	54.0	-17.6
Ch. 52, 5260 MHz, 802.11a, 6Mbps & 802.11n, HT20, MCS0							
10520	Peak	40.0	-23.6	38.8	55.2	68.3	-13.1
15780	Peak	34.5	-22.2	38.3	50.6	68.3/74.0	-17.7
15780	Average	22.4	-22.2	38.3	38.5	54.0	-15.5
Ch. 60, 5300 MHz, 802.11a, 6Mbps & 802.11n, HT20, MCS0							
10600	Peak	39.0	-23.6	38.8	54.2	68.3/74.0	-14.1
15900	Peak	34.9	-22.1	38.3	51.1	68.3/74.0	-17.2
10600	Average	26.2	-23.6	38.8	41.4	54.0	-12.6
15900	Average	21.3	-22.1	38.3	37.5	54.0	-16.5
Ch. 64, 5320 MHz, 802.11a, 6Mbps & 802.11n, HT20, MCS0							
10640	Peak	38.8	-23.9	38.8	53.7	68.3/74.0	-14.6
15960	Peak	33.5	-22.0	38.4	49.9	68.3/74.0	-18.4
10640	Average	25.2	-23.9	38.8	40.1	54.0	-13.9
15960	Average	20.5	-22.0	38.4	36.9	54.0	-17.1

a) RBW = 1 MHz, VBW = 1 MHz - for peak measurements
RBW = 1MHz, VBW = 10 Hz - for average measurements
b) Correction Factor: Cable loss + High Pass Filter loss - Pre-amplifier gain
c) FS at 3m = SA reading + Correction Factor + Antenna factor
d) Measurements made at 3 meters distance. Radiated emission measurements were performed up to 40GHz. No other emissions were detected above the noise floor which is at least 10 dB below the limit.

Table 6.25 (Continued)

Transmitter Radiated Emissions above 1GHz, w/ external antenna

Frequency	Detector	SA reading	Corr. Factor	Antenna factor	FS at 3m	FS Limit	Margin
MHz		dB(uV)	dB	dB(1/m)	dB(uV/m)	dB(uV/m)	dB
Ch. 100, 5500 MHz, 802.11a, 6Mbps & 802.11n, HT20, MCS0							
11000	Peak	38.6	-24.1	38.4	52.9	68.3/74.0	-15.4
16500	Peak	33.0	-22.0	39.4	50.4	68.3/74.0	-17.9
11000	Average	25.2	-24.1	38.4	39.5	54.0	-14.5
16500	Average	20.2	-22.0	39.4	37.6	54.0	-16.4
Ch. 116, 5580 MHz, 802.11a, 6Mbps & 802.11n, HT20, MCS0							
11160	Peak	35.9	-24.2	38.3	50.0	68.3/74.0	-18.3
16740	Peak	33.2	-21.8	39.5	50.9	68.3/74.0	-17.4
11160	Average	23.2	-24.2	38.3	37.3	54.0	-16.7
16740	Average	20.3	-21.8	39.5	38.0	54.0	-16.0
Ch. 140, 5700 MHz, 802.11a, 6Mbps & 802.11n, HT20, MCS0							
11400	Peak	35.8	-24.3	38.7	50.2	68.3/74.0	-18.1
17100	Peak	33.3	-21.9	40.5	51.9	68.3/74.0	-16.4
11400	Average	22.3	-24.3	38.7	36.7	54.0	-17.3
17100	Average	20.4	-21.9	40.5	39.0	54.0	-15.0
Ch. 38, 5190 MHz, 802.11n, HT40, MCS0							
10380	Peak	39.5	-23.6	38.7	54.6	68.3/74.0	-13.7
15570	Peak	33.0	-22.0	38.5	49.5	68.3/74.0	-18.8
10380	Average	27.6	-23.6	38.7	42.7	54.0	-11.3
15570	Average	19.9	-22.0	38.5	36.4	54.0	-17.6
Ch. 46, 5230 MHz, 802.11n, HT40, MCS0							
10460	Peak	42.5	-23.0	38.8	58.3	68.3/74.0	-10.0
15690	Peak	33.0	-22.0	38.5	49.5	68.3/74.0	-18.8
10460	Average	26.8	-23.0	38.8	42.6	54.0	-11.4
15690	Average	20.0	-22.0	38.5	36.5	54.0	-17.5
Ch. 54, 5270 MHz, 802.11n, HT40, MCS0							
10540	Peak	38.0	-23.6	38.8	53.2	68.3/74.0	-15.1
15810	Peak	32.9	-22.2	38.3	49.0	68.3/74.0	-19.3
10540	Average	26.3	-23.6	38.8	41.5	54.0	-12.5
15810	Average	20.0	-22.2	38.3	36.1	54.0	-17.9

a) RBW = 1 MHz, VBW = 1 MHz - for peak measurements
RBW = 1MHz, VBW = 10 Hz - for average measurements
b) Correction Factor: Cable loss + High Pass Filter loss - Pre-amplifier gain
c) FS at 3m = SA reading + Correction Factor + Antenna factor
d) Measurements made at 3 meters distance. Radiated emission measurements were performed up to 40GHz. No other emissions were detected above the noise floor which is at least 10 dB below the limit.

Table 6.25 (Continued)

Transmitter Radiated Emissions above 1GHz, w/ external antenna

Frequency	Detector	SA reading	Corr. Factor	Antenna factor	FS at 3m	FS Limit	Margin
MHz		dB(uV)	dB	dB(1/m)	dB(uV/m)	dB(uV/m)	dB
Ch. 62, 5310 MHz, 802.11n, HT40, MCS0							
10620	Peak	36.5	-23.9	38.8	51.4	68.3/74.0	-16.9
15930	Peak	34.0	-22.1	38.4	50.3	68.3/74.0	-18.0
10620	Average	24.2	-23.9	38.8	39.1	54.0	-14.9
15930	Average	20.3	-22.1	38.4	36.6	54.0	-17.4
Ch. 102, 5510 MHz, 802.11n, HT40, MCS0							
11020	Peak	36.8	-24.2	38.4	51.0	68.3/74.0	-17.3
16530	Peak	33.0	-22.0	39.5	50.5	68.3	-17.8
11020	Average	24.4	-24.2	38.4	38.6	54.0	-15.4
Ch. 110, 5550 MHz, 802.11n, HT40, MCS0							
11100	Peak	36.0	-24.2	38.3	50.1	68.3/74.0	-18.2
16650	Peak	33.1	-21.9	39.5	50.7	68.3	-17.6
11100	Average	22.6	-24.2	38.3	36.7	54.0	-17.3
Ch. 134, 5670 MHz, 802.11n, HT40, MCS0							
11340	Peak	35.1	-24.3	38.7	49.5	68.3/74.0	-18.8
17010	Peak	33.1	-21.9	40.2	51.4	68.3	-16.9
11340	Average	22.0	-24.3	38.7	36.4	54.0	-17.6

a) RBW = 1 MHz, VBW = 1 MHz - for peak measurements
RBW = 1MHz, VBW = 10 Hz - for average measurements
b) Correction Factor: Cable loss + High Pass Filter loss - Pre-amplifier gain
c) FS at 3m = SA reading + Correction Factor + Antenna factor
d) Measurements made at 3 meters distance. Radiated emission measurements were performed up to 40GHz. No other emissions were detected above the noise floor which is at least 10 dB below the limit.

Table 6.26

Transmitter Radiated Emissions above 1GHz, w/ internal antenna

Frequency	Detector	SA reading	Corr. Factor	Antenna factor	FS at 3m	FS Limit	Margin
MHz		dB(uV)	dB	dB(1/m)	dB(uV/m)	dB(uV/m)	dB
Ch. 36, 5180 MHz, 802.11a, 6Mbps & 802.11n, HT20, MCS0							
10360	Peak	43.1	-23.6	38.7	58.2	68.3	-10.1
15540	Peak	33.1	-22.0	38.6	49.7	68.3/74.0	-18.6
15540	Average	19.9	-22.0	38.6	36.5	54.0	-17.5
Ch. 40, 5200 MHz, 802.11a, 6Mbps & 802.11n, HT20, MCS0							
10400	Peak	41.5	-23.5	38.8	56.8	68.3	-11.5
15600	Peak	35.1	-22.1	38.5	51.5	68.3/74.0	-16.8
15600	Average	21.8	-22.1	38.5	38.2	54.0	-15.8
Ch. 48, 5240 MHz, 802.11a, 6Mbps & 802.11n, HT20, MCS0							
10480	Peak	42.1	-23.1	38.8	57.8	68.3	-10.5
15720	Peak	38.3	-22.3	38.4	54.4	68.3/74.0	-13.9
15720	Average	22.9	-22.3	38.4	39.0	54.0	-15.0
Ch. 52, 5260 MHz, 802.11a, 6Mbps & 802.11n, HT20, MCS0							
10520	Peak	39.7	-23.6	38.8	54.9	68.3	-13.4
15780	Peak	39.1	-22.2	38.3	55.2	68.3/74.0	-13.1
15780	Average	24.1	-22.2	38.3	40.2	54.0	-13.8
Ch. 60, 5300 MHz, 802.11a, 6Mbps & 802.11n, HT20, MCS0							
10600	Peak	39.1	-23.6	38.8	54.3	68.3/74.0	-14.0
15900	Peak	35.2	-22.1	38.3	51.4	68.3/74.0	-16.9
10600	Average	26.3	-23.6	38.8	41.5	54.0	-12.5
15900	Average	21.3	-22.1	38.3	37.5	54.0	-16.5
Ch. 64, 5320 MHz, 802.11a, 6Mbps & 802.11n, HT20, MCS0							
10640	Peak	38.9	-23.9	38.8	53.8	68.3/74.0	-14.5
15960	Peak	34.2	-22.0	38.4	50.6	68.3/74.0	-17.7
10640	Average	25.2	-23.9	38.8	40.1	54.0	-13.9
15960	Average	21.3	-22.0	38.4	37.7	54.0	-16.3

a) RBW = 1 MHz, VBW = 1 MHz - for peak measurements
RBW = 1MHz, VBW = 10 Hz - for average measurements
b) Correction Factor: Cable loss + High Pass Filter loss - Pre-amplifier gain
c) FS at 3m = SA reading + Correction Factor + Antenna factor
d) Measurements made at 3 meters distance. Radiated emission measurements were performed up to 40GHz. No other emissions were detected above the noise floor which is at least 10 dB below the limit.

Table 6.26 (Continued)

Transmitter Radiated Emissions above 1GHz, w/ internal antenna

Frequency	Detector	SA reading	Corr. Factor	Antenna factor	FS at 3m	FS Limit	Margin
MHz		dB(uV)	dB	dB(1/m)	dB(uV/m)	dB(uV/m)	dB
Ch. 100, 5500 MHz, 802.11a, 6Mbps & 802.11n, HT20, MCS0							
11000	Peak	38.0	-24.1	38.4	52.3	68.3/74.0	-16.0
16500	Peak	33.1	-22.0	39.4	50.5	68.3/74.0	-17.8
11000	Average	24.5	-24.1	38.4	38.8	54.0	-15.2
16500	Average	20.2	-22.0	39.4	37.6	54.0	-16.4
Ch. 116, 5580 MHz, 802.11a, 6Mbps & 802.11n, HT20, MCS0							
11160	Peak	36.0	-24.2	38.3	50.1	68.3/74.0	-18.2
16740	Peak	33.3	-21.8	39.5	51.0	68.3/74.0	-17.3
11160	Average	23.4	-24.2	38.3	37.5	54.0	-16.5
16740	Average	20.4	-21.8	39.5	38.1	54.0	-15.9
Ch. 140, 5700 MHz, 802.11a, 6Mbps & 802.11n, HT20, MCS0							
11400	Peak	35.7	-24.3	38.7	50.1	68.3/74.0	-18.2
17100	Peak	33.5	-21.9	40.5	52.1	68.3/74.0	-16.2
11400	Average	22.3	-24.3	38.7	36.7	54.0	-17.3
17100	Average	20.7	-21.9	40.5	39.3	54.0	-14.7
Ch. 38, 5190 MHz, 802.11n, HT40, MCS0							
10380	Peak	39.5	-23.6	38.7	54.6	68.3/74.0	-13.7
15570	Peak	33.0	-22.0	38.5	49.5	68.3/74.0	-18.8
10380	Average	27.8	-23.6	38.7	42.9	54.0	-11.1
15570	Average	19.9	-22.0	38.5	36.4	54.0	-17.6
Ch. 46, 5230 MHz, 802.11n, HT40, MCS0							
10460	Peak	42.1	-23.0	38.8	57.9	68.3/74.0	-10.4
15690	Peak	38.3	-22.0	38.5	54.8	68.3/74.0	-13.5
10460	Average	26.9	-23.0	38.8	42.7	54.0	-11.3
15690	Average	22.9	-22.0	38.5	39.4	54.0	-14.6
Ch. 54, 5270 MHz, 802.11n, HT40, MCS0							
10540	Peak	38.0	-23.6	38.8	53.2	68.3/74.0	-15.1
15810	Peak	39.0	-22.2	38.3	55.1	68.3/74.0	-13.2
10540	Average	26.4	-23.6	38.8	41.6	54.0	-12.4
15810	Average	24.0	-22.2	38.3	40.1	54.0	-13.9

a) RBW = 1 MHz, VBW = 1 MHz - for peak measurements
RBW = 1MHz, VBW = 10 Hz - for average measurements
b) Correction Factor: Cable loss + High Pass Filter loss - Pre-amplifier gain
c) FS at 3m = SA reading + Correction Factor + Antenna factor
d) Measurements made at 3 meters distance. Radiated emission measurements were performed up to 40GHz. No other emissions were detected above the noise floor which is at least 10 dB below the limit.

Table 6.26 (Continued)

Transmitter Radiated Emissions above 1GHz, w/ internal antenna

Frequency	Detector	SA reading	Corr. Factor	Antenna factor	FS at 3m	FS Limit	Margin
MHz		dB(uV)	dB	dB(1/m)	dB(uV/m)	dB(uV/m)	dB
Ch. 62, 5310 MHz, 802.11n, HT40, MCS0							
10620	Peak	36.7	-23.9	38.8	51.6	68.3/74.0	-16.7
15930	Peak	35.0	-22.1	38.4	51.3	68.3/74.0	-17.0
10620	Average	24.2	-23.9	38.8	39.1	54.0	-14.9
15930	Average	21.3	-22.1	38.4	37.6	54.0	-16.4
Ch. 102, 5510 MHz, 802.11n, HT40, MCS0							
11020	Peak	36.9	-24.2	38.4	51.1	68.3/74.0	-17.2
16530	Peak	33.1	-22.0	39.5	50.6	68.3	-17.7
11020	Average	24.4	-24.2	38.4	38.6	54.0	-15.4
Ch. 110, 5550 MHz, 802.11n, HT40, MCS0							
11100	Peak	36.0	-24.2	38.3	50.1	68.3/74.0	-18.2
16650	Peak	33.0	-21.9	39.5	50.6	68.3	-17.7
11100	Average	22.8	-24.2	38.3	36.9	54.0	-17.1
Ch. 134, 5670 MHz, 802.11n, HT40, MCS0							
11340	Peak	35.6	-24.3	38.7	50.0	68.3/74.0	-18.3
17010	Peak	33.3	-21.9	40.2	51.6	68.3	-16.7
11340	Average	22.0	-24.3	38.7	36.4	54.0	-17.6

a) RBW = 1 MHz, VBW = 1 MHz - for peak measurements
   RBW = 1MHz, VBW = 10 Hz - for average measurements
b) Correction Factor: Cable loss + High Pass Filter loss - Pre-amplifier gain
c) FS at 3m = SA reading + Correction Factor + Antenna factor
d) Measurements made at 3 meters distance. Radiated emission measurements were performed up to 40GHz. No other emissions were detected above the noise floor which is at least 10 dB below the limit.

4.6.5 Test Setup Photographs

The following photographs show the testing configurations used.

4.6.5 Test Setup Photographs

4.7 Radiated Emissions from Digital Parts and Receiver
FCC Ref: 15.109

4.7.1 Requirement

Limits for Electromagnetic Radiated Emissions, FCC Section 15.109(b) and ICES 003 *

Frequency (MHz)	**Class A at 10m dB(µV/m)**	**Class B at 3m dB(µV/m)**
30-88	39	40.0
88-216	43.5	43.5
216-960	46.4	46.0
Above 960	49.5	54.0

* According to FCC Part 15.109(g), the limits in CISPR Pub. 22 may be used as an alternatative.

4.7.2 Procedure

Measurements are conducted with a quasi-peak detector instrument in the frequency range of 30 MHz to 1000 MHz and with the average detector instrument in the frequency range above 1000 MHz. The measuring receiver meets the requirements of Section One of CISPR 16 and the measuring antenna correlates to a balanced dipole.

Measurements of the radiated field are made with the antenna located at a distance of 10 meters (below 1GHz) and 3 meters (above 1GHz) from the EUT.

The antenna is adjusted between 1m and 4m in height above the ground plane for maximum meter reading at each test frequency.

The antenna-to-EUT azimuth is varied during the measurement to find the maximum field-strength readings.

The antenna-to-EUT polarization (horizontal and vertical) is varied during the measurements to find the maximum field-strength readings.

The EUT, where intended for tabletop use, is placed on a table whose top is 0.8m above the ground plane. The table is constructed of non-conductive materials. Its dimensions are 1m by 1.5m, but may be extended for a larger EUT.

Floor standing EUTs are placed on a horizontal metal ground plane and isolated from the ground plane by 3 to 12 mm of insulating material.

Equipment setup for radiated disturbance tests followed the guidelines of ANSI C63.4 (2003).

Example Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor to from the measured reading, followed by subtracting the Amplifier Gain (if any) and Distance Correction Factor (if any). The basic equation with a sample calculation is as follows:

FS = RA + AF + CF – PA

Where FS = Field Strength in dB (µV/m)
RA = Receiver Amplitude (including preamplifier) in dB (µV)
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB (1/m)
AG = Amplifier Gain in dB

Assume a receiver reading of 52.0 dB (µV) is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving field strength of 32.0 dB (µV/m).

RA = 52.0 dB (µV)
AF = 7.4 dB (1/m)
CF = 1.6 dB
AG = 29.0 dB
FS = RF + AF + CF – AG
FS = 52.0 + 7.4 + 1.6 – 29.0
FS = 32.0 dB (µV/m)

4.7.3 Test Results

Radiated emission measurements were performed from 30 MHz to 1000 MHz. Spectrum Analyzer Resolution Bandwidth is 100 kHz or greater below 1000 MHz and 1 MHz - above 1000 MHz.

The EUT passed Class B limits.

Table 7.1
Radiated Emissions from Digital Parts and Receiver below 1GHz

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Horizontal)
Operator: KK
April 20, 2012
Model Number: LEX-M01-005
Company: Lexmark International, Inc.

Frequency	Peak FS	Limit@10m	Margin	RA	AG	AF	CF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB(1/m)	dB
3.728E+07	13.8	30.0	-16.2	28.0	32.1	17.2	0.7
2.790E+08	19.5	37.0	-17.5	36.4	32.0	13.1	2.0
9.976E+08	22.7	37.0	-14.3	26.4	30.9	23.4	3.8

Test Mode: Receive Mode
Temp: 23C, Humidity: 49%

Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (Pk-Vertical)
Operator: KK
April 20, 2012
Model Number: LEX-M01-005
Company: Lexmark International, Inc.

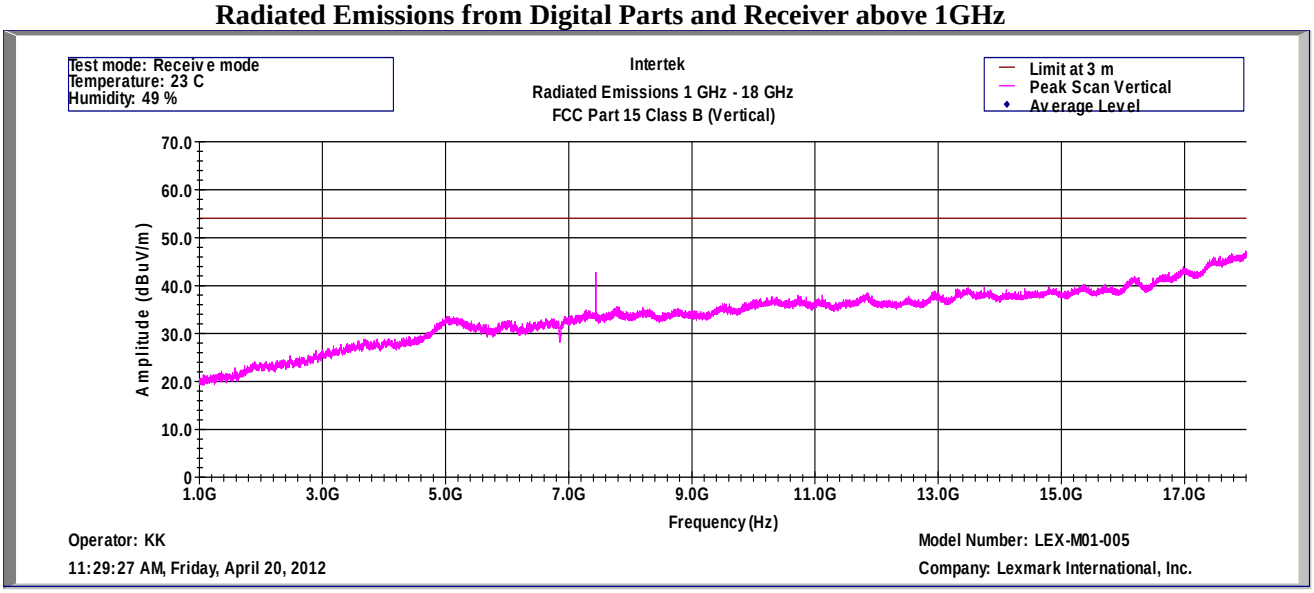
Frequency	Peak FS	Limit@10m	Margin	RA	CF	AG	AF
(Hz)	dB(uV)	dB(uV/m)	dB	dB(uV)	dB	dB	dB(1/m)
3.566E+07	13.6	30.0	-16.4	27.8	0.7	32.1	17.2
2.547E+08	17.9	37.0	-19.1	35.8	1.9	32.0	12.2
9.976E+08	22.9	37.0	-14.1	26.6	3.8	30.9	23.4

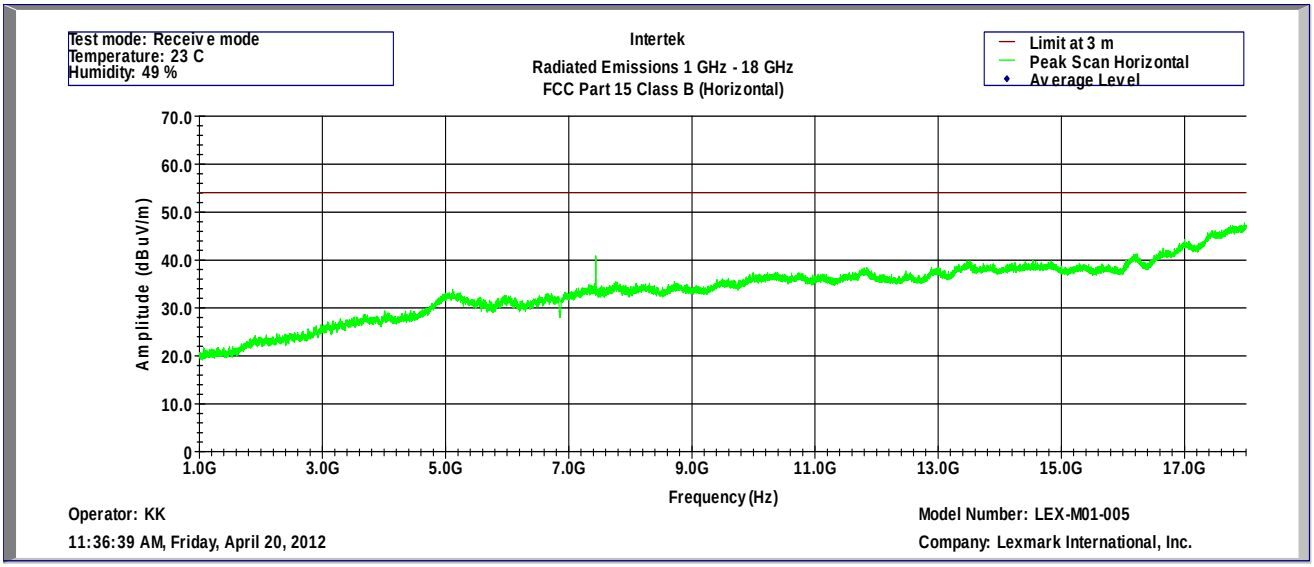
Test Mode: Receive Mode
Temp: 23C, Humidity: 49%

Notes: Measurements made at 10 meters distance.

Table 7.2

Radiated Emissions from Digital Parts and Receiver above 1GHz



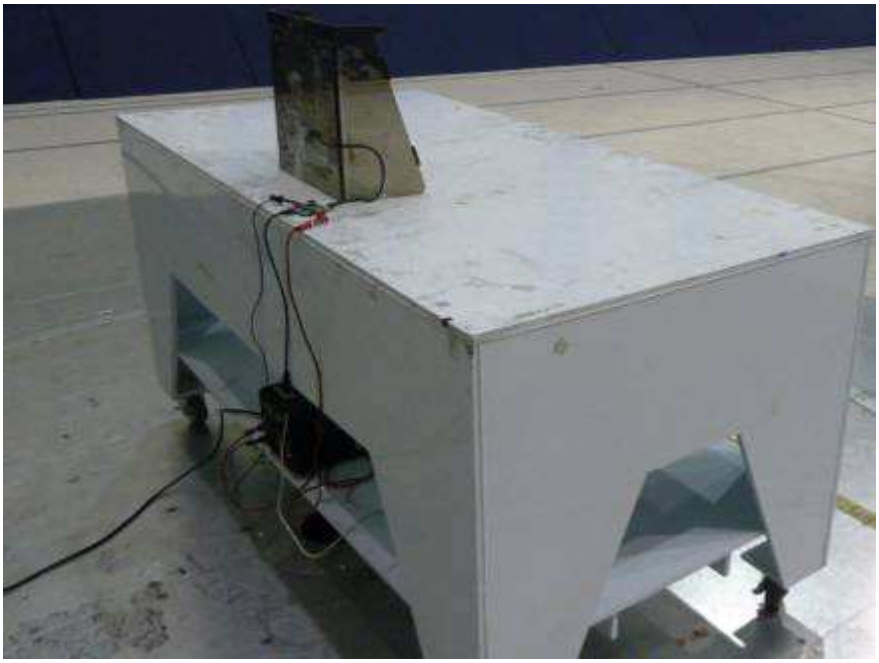


Note: Measurements made at 3 meters distance. Radiated emission measurements were performed up to 40GHz. No other emissions were detected above the noise floor which is at least 10 dB below the limit.

4.7.4 Test Setup Photographs

The following photographs show the testing configurations used.

4.7.4 Test Setup Photographs



4.8 Frequency Stability
FCC 15.407(g)

4.8.1 Requirement

An emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

4.8.2 Procedure

The EUT was placed in a temperature chamber and setup to transmit a carrier without modulation.

The carrier frequency was measured with the spectrum analyzer with resolution bandwidth of 300 Hz. The temperature was varied from 0^0C to 40^0C, the operating temperature range stated in the user manual.

In normal operation, the LEX-M01-005 model is powered from a USB port which is designed to supply ±5VDC ±10%.

At room temperature, the frequency was measured when the EUT was powered with 5VDC (nominal) and with 90% and 110% of the nominal voltage. After the temperature stabilized for approximately 20 minutes, the transmitting frequency was measured.

4.8.3 Result

Temperature, ^{0}C	Frequency at Nominal Voltage, GHz	Maximum Deviation from Frequency at 20°C, ppm
Nominal Frequency: 5180 MHz		
0	5.179994375	-0.36
20	5.179996260	0.00
40	5.180002590	1.22
Nominal Frequency: 5190 MHz		
0	5.189995980	-0.16
20	5.189996790	0.00
40	5.190000850	0.78
Nominal Frequency: 5200 MHz		
0	5.199994480	-0.42
20	5.199996690	0.00
40	5.200001850	0.99
Nominal Frequency: 5240 MHz		
0	5.239999445	-0.04
20	5.239999663	0.00
40	5.240001150	0.28

No change in carrier frequency was observed when the DC voltage was varied.

Temperature, ^{0}C	Frequency at Nominal Voltage, GHz	Maximum Deviation from Frequency at 20°C, ppm
Nominal Frequency: 5260 MHz		
0	5.259994482	-0.44
20	5.259996772	0.00
40	5.259998957	0.42
Nominal Frequency: 5300 MHz		
0	5.299990567	-1.01
20	5.299995937	0.00
40	5.300001122	0.98
Nominal Frequency: 5310 MHz		
0	5.309999668	-0.02
20	5.309999778	0.00
40	5.310000074	0.06
Nominal Frequency: 5320 MHz		
0	5.319994701	-0.38
20	5.319996724	0.00
40	5.319993024	-0.70

No change in carrier frequency was observed when the DC voltage was varied.

Temperature, ^{0}C	Frequency at Nominal Voltage, GHz	Maximum Deviation from Frequency at 20°C, ppm
Nominal Frequency: 5500 MHz		
0	5.500000027	0.88
20	5.499995182	0.00
40	5.499989602	-1.01
Nominal Frequency: 5510 MHz		
0	5.509993566	-0.25
20	5.509994932	0.00
40	5.509990994	-0.71
Nominal Frequency: 5580 MHz		
0	5.579999334	0.77
20	5.579995024	0.00
40	5.580000022	0.90
Nominal Frequency: 5670 MHz		
0	5.669996668	-0.57
20	5.669999893	0.00
40	5.670000047	0.03
Nominal Frequency: 5700 MHz		
0	5.699959488	-1.30
20	5.699966882	0.00
40	5.699959129	-1.36

No change in carrier frequency was observed when the DC voltage was varied.

4.9 AC Line Conducted Emission
FCC 15.207

4.9.1 Requirement

Frequency Band MHz	Class B Limit dB (µV)	
	Quasi-Peak	Average
0.15-0.50	66 to 56 Decreases linearly with the logarithm of the frequency	56 to 46 Decreases linearly with the logarithm of the frequency
0.50-5.00	56	46
5.00-30.00	60	50

Note: At the transition frequency the lower limit applies.

4.9.2 Procedure

Measurements are carried out using quasi-peak and average detector receivers in accordance with CISPR 16. An AMN is required to provide a defined impedance at high frequencies across the power feed at the point of measurement of terminal voltage and also to provide isolation of the circuit under test from the ambient noise on the power lines. An AMN as defined in CISPR 16 shall be used.

The EUT is located so that the distance between the boundary of the EUT and the closest surface of the AMN is 0.8m.

Where a flexible mains cord is provided by the manufacturer, this shall be 1m long or if in excess of 1m, the excess cable is folded back and forth as far as possible so as to form a bundle not exceeding 0.4m in length.

The EUT is arranged and connected with cables terminated in accordance with the product specification.

Conducted disturbance is measured between the phase lead and the reference ground, and between the neutral lead and the reference ground. Both measured values are reported.

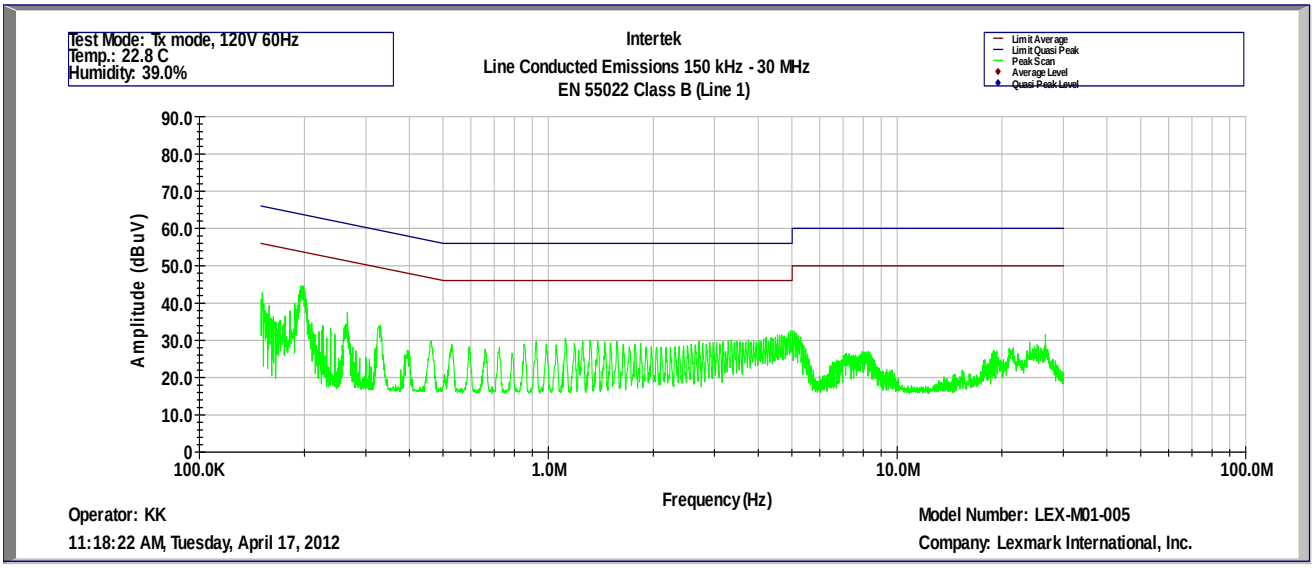
The EUT, where intended for tabletop use, is placed on a table whose top is 0.8m above the ground plane. A vertical, metal reference plane is placed 0.4m from the EUT. The vertical metal reference-plane is at least 2m by 2m. The EUT shall be kept at least 0.8m from any other metal surface or other ground plane not being part of the EUT. The table is constructed of non-conductive materials. Its dimensions are 1m by 1.5m, but may be extended for larger EUT.

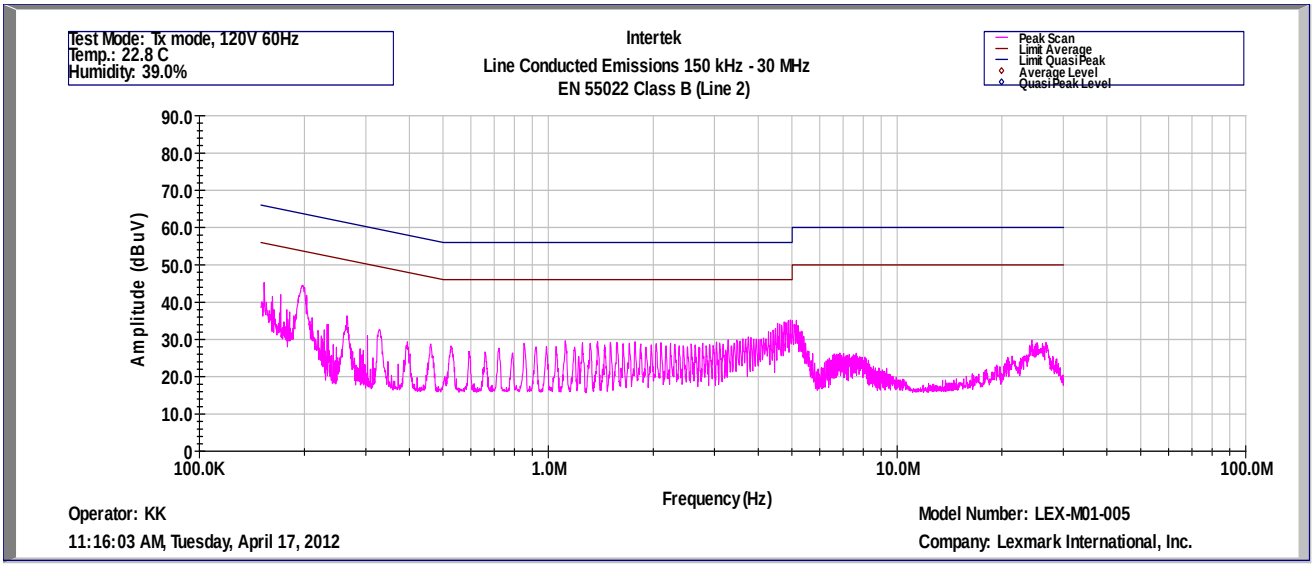
Floor standing EUT are placed on a horizontal metal ground plane and isolated from the ground plane by resting on an insulating material. The metal ground plane extends at least 0.5m beyond the boundaries of the EUT and has minimum dimensions of 2m by 2m.

Equipment setup for conducted disturbance tests followed the guidelines of ANSI C63.4.

4.9.3 Test Result

Conducted Disturbance at AC Mains

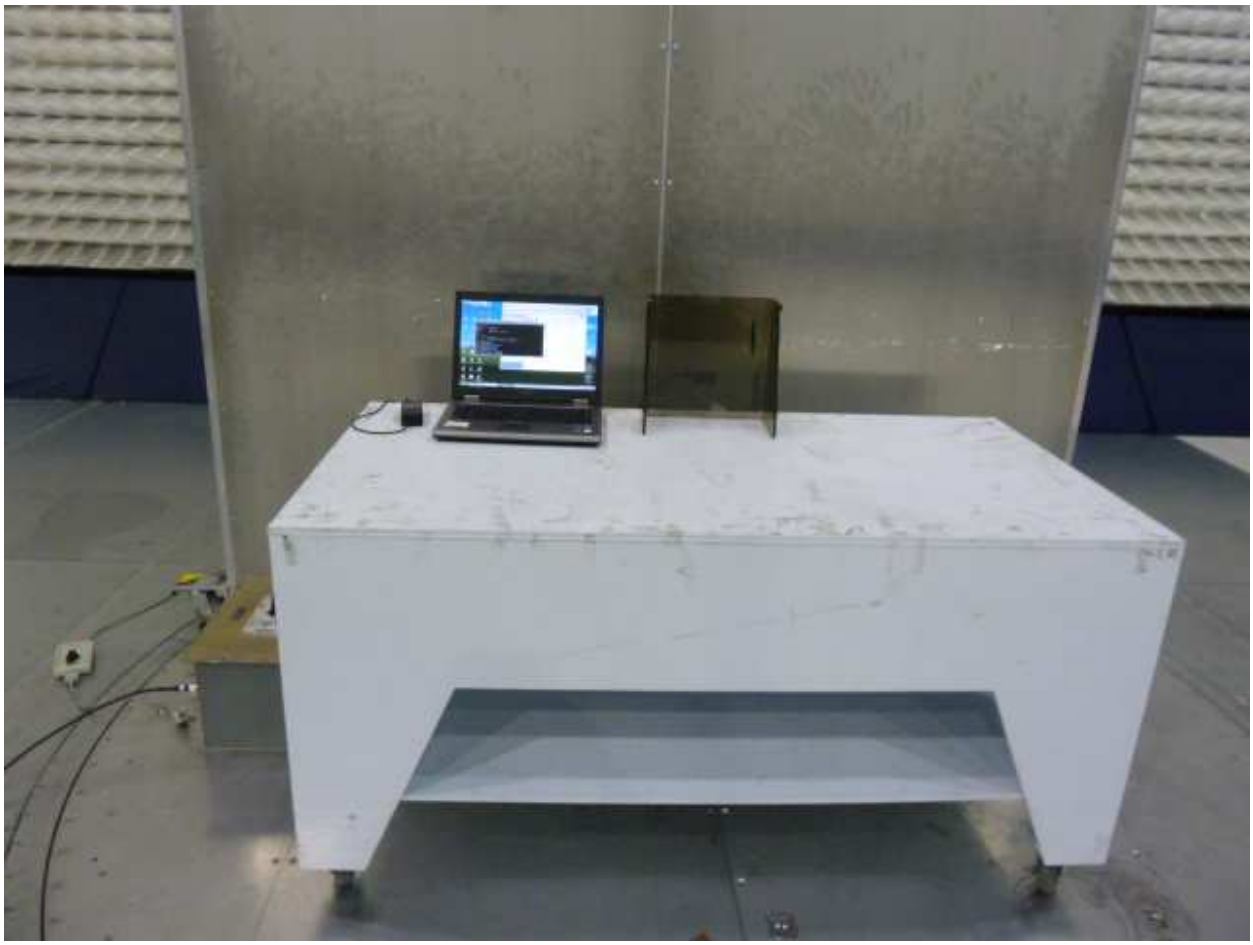




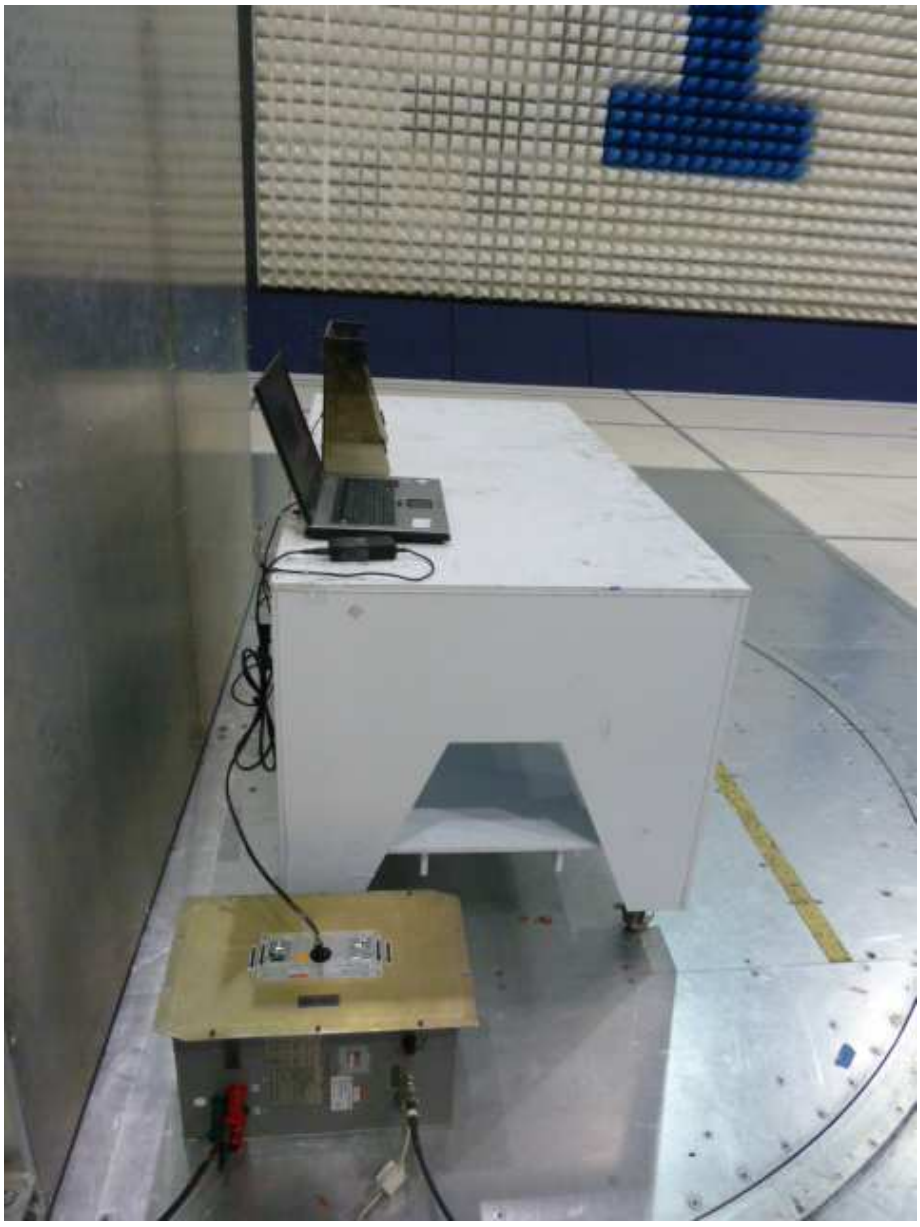
Results	**Complies** by 10.0dB

4.9.4 Test Configuration Photographs

The following photographs show the testing configurations used.



4.9.4 Test Configuration Photographs (continued)



4.10 Dynamic Frequency Selection (DFS)
FCC Rule 15.407(h)(2)(iii)(iv)

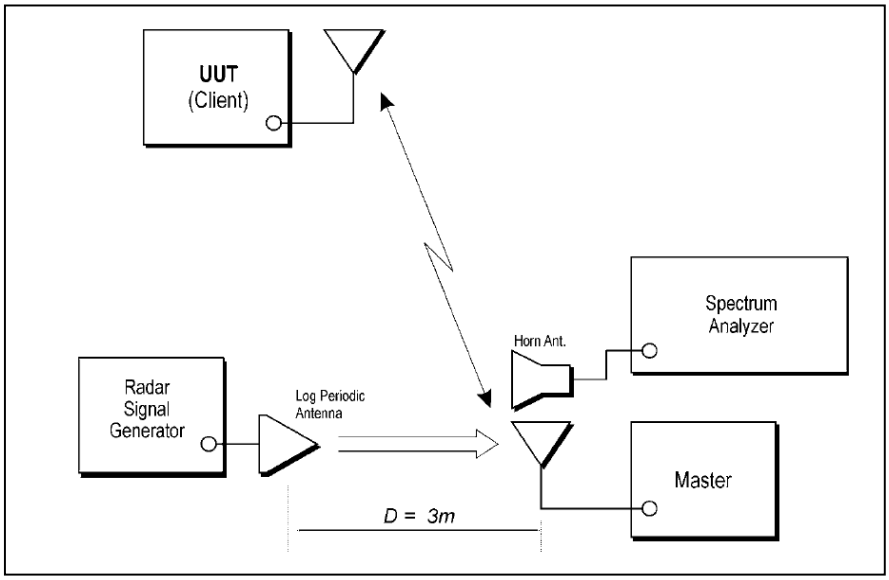
Requirements

The EUT is a client without DFS detection capabilities; therefore, the only requirements to be tested are Channel Closing Transmission Time, Channel Move Time and Non-occupancy Period. The Channel Protocol of the EUT is IP Based.

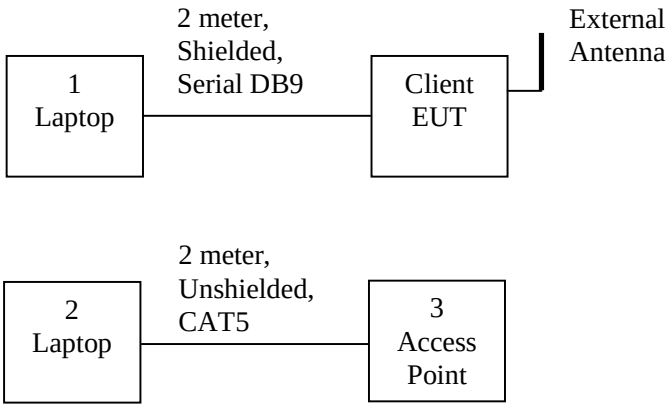
Parameter	**Value**
Channel Move Time	10 Seconds
Channel Closing Transmission Time	200 mS + an aggregate of 60 mS over remaining 10 Second period.
Non-Occupancy Period	Minimum 30 minutes

Procedure

The radiated test method was used and the test setup was made as depicted in the diagram below.



The diagram below depicts the setup of the EUT along with associated support equipment.



Item	Description	Model	Serial
1	Toshiba Laptop	Tecra PTA83U-03202C	76104530H
2	Compaq Laptop	nc6400	CND7062PVK
3	Cisco Systems Access Point FCC ID: LDK102054E	AIR-AP1131AG-A-K9	FTX1244N25E

The Master and Client (EUT) were placed in a semi-anechoic chamber. The simulated radar waveform was transmitted from a horn antenna towards the Master. The signal level of the simulated radar waveform was set to -63dBm and was applied to the Master. The horn antenna connected to the spectrum analyzer was positioned towards the client with the level 10 dB higher than emissions from the Master.

A Rhode & Schwarz Vector Signal Generator with Pulse Sequencer Software was used to generate the DFS radar signals. A Rhode & Schwarz Spectrum Analyzer with DFS Analysis Tool software was used to monitor the transmissions of the Client. The trigger of the spectrum analyzer was aligned with the end of the radar waveform burst from the signal generator.

Channel closing transmission time and channel move time were measured by applying a radar signal to the Master device. The EUT transmissions were observed while Type 3 Radar waveforms were applied. The time between the end of the applied radar waveform and the final transmission on the channel is the channel move time. The channel closing transmission time comprises only those fragments of the channel move time during which the EUT transmits.

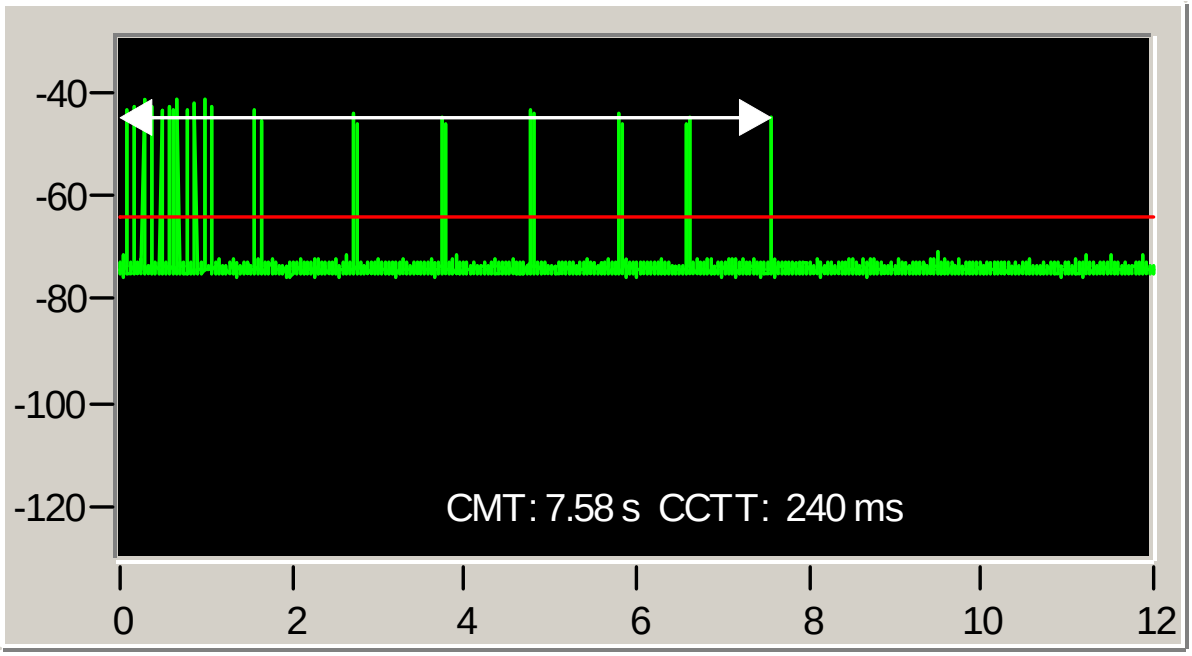
The EUT (client without DFS detection) was configured to communicate with a Master. The FCC MPEG test file was streamed from the Master to the Client.

Test Results

Refer to the following plots 10.1 & 10.2 for test results.

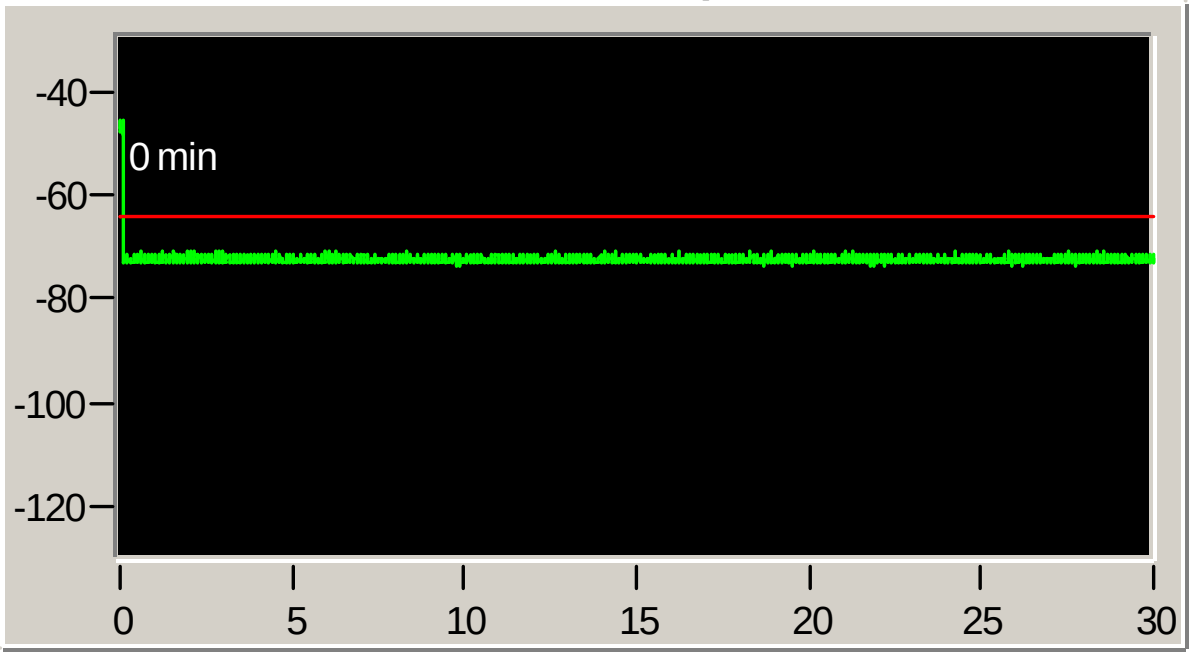
Test Summary					
Description	Radar Type	Frequency MHz	Measured Value	Requirement	Results
Channel Closing Transmission Time	3	5600	240mS	260mS	Pass
Channel Move Time	3	5600	7.58S	10S	Pass
Non-Occupancy Period	3	5600	30 min	30 min	Pass

Plot 10.1
Channel Closing Transmission Time (CCTT) and Channel Move Time (CMT), Radar Type 3 @ 5600 MHz
Client link is established with the Master @ 5600 MHz



RBW: 3 MHz, VBW: 3 MHz, Span: 0, RF Attenuation: 0 dB,
Detector: Peak, Sweep Points: 30001, Sweep time: 12 Seconds
Test Date: May 23, 2012

Plot 10.2
Non-occupancy period, Radar Type 3 @ 5600 MHz
Client link is established with the Master @ 5600 MHz.
The sweep starts after moving to another channel.
No transmissions were observed over a 30 minute period after the channel moved.



RBW: 3 MHz, VBW: 3 MHz, Span: 0, RF Attenuation: 0 dB,
Detector: Peak, Sweep time: 1800 Seconds
Test Date: May 23, 2012

5.0 List of Test Equipment

Measurement equipment used for emission compliance testing utilized the equipment on the following list:

Equipment	Manufacturer	Model/Type	Serial #	Cal Int	Cal Due
RF Filter Section	Hewlett Packard	85460A	3448A00267	12	03/09/13
EMI Receiver	Hewlett Packard	8546A	3710A00373	12	03/09/13
Spectrum Analyzer	Rohde&Schwarz	FSU	200482	12	03/22/13
Spectrum Analyzer	Rohde&Schwarz	FSP-40	100030	12	11/09/12
Spectrum Analyzer	Rohde&Schwarz	ESU	100172	12	10/04/12
BI-Log Antenna	ARA	LPB-2513/A	1154	12	07/06/12
Horn Antenna	EMCO	3115	9107-3712	12	11/16/12
Horn Antenna	EMCO	3115	00126795	12	11/03/12
Pyramidal Horn Antenna	EMCO	3160-09	Not Labeled	#	#
Pyramidal Horn Antenna	EMCO	3160-10	Not Labeled	#	#
Pre-Amplifier	Sonoma	310N	293620	12	11/11/12
Pre-Amplifier	Miteq	AMF-4D-001180-24-10P	799159	12	09/01/12
Pre-Amplifier	Miteq	JSD44-18004000-30-5P	1071636	12	05/09/12
Signal Generator	Hewlett Packard	SMR40	100445	12	09/01/12
Vector Signal Generator	Rohde&Schwarz	SMU200A	102499	12	05/11/13
LISN	FCC	FCC-LISN-50-50-M-H	2012	12	08/28/12

No Calibration required

6.0 Document History

Revision/ Job Number	Writer Initials	Date	Change
1.0 / G100681263	KK	May 25, 2012	Original document