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FCC RADIO TEST REPORT

Applicant's company	**NETGEAR, Inc.**
Applicant Address	350 East Plumeria Drive, San Jose, California 95134, USA
FCC ID	**PY314200265**

Product Name	Arlo Camera
Brand Name	NETGEAR
Model No.	VMC3010, VMC3030
Test Rule	47 CFR FCC Part 15 Subpart C § 15.247
Test Freq. Range	2400 ~ 2483.5MHz
Received Date	Jul. 02, 2014
Final Test Date	Oct. 09, 2014
Submission Type	Original Equipment

Statement

Test result included in this report is for the IEEE 802.11n and IEEE 802.11b/g of the product.

The test result in this report refers exclusively to the presented test model / sample.

Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.10-2013**, **47 CFR FCC Part 15 Subpart C**, **KDB 558074 D01 v03r02** and **KDB 662911 D01 v02r01**.

The test equipment used to perform the test is calibrated and traceable to NML/ROC.

Testing Laboratory
1190

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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR450706-01	Rev. 01	Initial issue of report	Oct. 21, 2014

Certificate No.: CB10310092

1. CERTIFICATE OF COMPLIANCE

Product Name	:	Arlo Camera
Brand Name	:	NETGEAR
Model No.	:	VMC3010, VMC3030
Applicant	:	NETGEAR, Inc.
Test Rule Part(s)	:	47 CFR FCC Part 15 Subpart C § 15.247

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Jul. 02, 2014 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

Sam Chen

Sam Chen

SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart C				
Part	Rule Section	Description of Test	Result	Under Limit
-	15.207	AC Power Line Conducted Emissions	Complies	-
4.1	15.247(b)(3)	Maximum Conducted Output Power	Complies	10.34 dB
4.2	15.247(e)	Power Spectral Density	Complies	9.68 dB
4.3	15.247(a)(2)	6dB Spectrum Bandwidth	Complies	-
4.4	15.247(d)	Radiated Emissions	Complies	4.33 dB
4.5	15.247(d)	Band Edge Emissions	Complies	0.25 dB
4.6	15.203	Antenna Requirements	Complies	-

Note: It was supplied power by Lithium battery for EUT; it's not necessary to apply to AC Power Port Conducted emission.

3. GENERAL INFORMATION

3.1. Product Details

IEEE 802.11n

Items	Description
Product Type	WLAN (1TX, 1RX)
Radio Type	Intentional Transceiver
Power Type	From Lithium Battery 3V*4
Modulation	see the below table for IEEE 802.11n
Data Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	see the below table for IEEE 802.11n
Frequency Range	2400 ~ 2483.5MHz
Channel Number	11 for 20MHz bandwidth
Channel Band Width (99%)	MCS0 (HT20): 19.04 MHz
Maximum Conducted Output Power	MCS0 (HT20): 19.49 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

IEEE 802.11b/g

Items	Description
Product Type	WLAN (1TX, 1RX)
Radio Type	Intentional Transceiver
Power Type	From Lithium Battery 3V*4
Modulation	DSSS for IEEE 802.11b ; OFDM for IEEE 802.11g
Data Modulation	DSSS (BPSK / QPSK / CCK) ; OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	DSSS (1/ 2/ 5.5/11) ; OFDM (6/9/12/18/24/36/48/54)
Frequency Range	2400 ~ 2483.5MHz
Channel Number	11
Channel Band Width (99%)	11b: 13.20 MHz ; 11g: 18.88 MHz
Maximum Conducted Output Power	11b: 19.66 dBm ; 11g: 18.99 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Items	Description	
Beamforming Function	☐ With beamforming	☒ Without beamforming

Antenna and Band width

Antenna	Single (TX)
Band width Mode	20 MHz
IEEE 802.11b	V
IEEE 802.11g	V
IEEE 802.11n	V

IEEE 11n Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	1	MCS 0-7
Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT support HT20. Note 2: Modulation modes consist of below configuration: HT20: IEEE 802.11n		

3.2. Accessories

N/A

3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Frequency (MHz)	Gain (dBi)
1	MAGIC	NGC02	Metal	N/A	2412	1.18
					2437	1.35
					2462	0.71
2	MAGIC	NGC02	Metal	N/A	2412	0.35
					2437	0.99
					2462	0.5

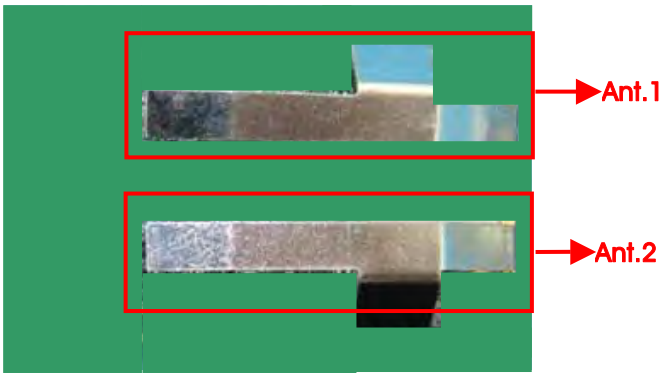
Note: The EUT has two antennas (1TX, 1RX).

For IEEE 802.11b/g/n mode (1TX/1RX):

The EUT supports the antenna with TX and RX diversity functions.

Both Ant.1 and Ant.2 support transmit and receive functions, but only one of them will be used at one time.

The Ant.1 generated the worst case, so it was selected to test and record in the report.



3.4. Table for Carrier Frequencies

There is one bandwidth system

For 20MHz bandwidth systems, use Channel 1~Channel 11.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
2400~2483.5MHz	1	2412 MHz	7	2442 MHz
	2	2417 MHz	8	2447 MHz
	3	2422 MHz	9	2452 MHz
	4	2427 MHz	10	2457 MHz
	5	2432 MHz	11	2462 MHz
	6	2437 MHz	-	-

3.5. Table for Test Modes

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Data Rate	Channel	Antenna
Maximum Conducted Output Power	802.11n HT20	MCS0	1/6/11	1
	11b/BPSK	1 Mbps	1/6/11	1
	11g/BPSK	6 Mbps	1/6/11	1
Power Spectral Density	802.11n HT20	MCS0	1/6/11	1
	11b/BPSK	1 Mbps	1/6/11	1
	11g/BPSK	6 Mbps	1/6/11	1
6dB Spectrum Bandwidth	802.11n HT20	MCS0	1/6/11	1
	11b/BPSK	1 Mbps	1/6/11	1
	11g/BPSK	6 Mbps	1/6/11	1
Radiated Emissions 9kHz~1GHz	Normal Link	-	-	-
Radiated Emissions 1GHz~10th Harmonic	802.11n HT20	MCS0	1/6/11	1
	11b/BPSK	1 Mbps	1/6/11	1
	11g/BPSK	6 Mbps	1/6/11	1
Band Edge Emissions	802.11n HT20	MCS0	1/6/11	1
	11b/BPSK	1 Mbps	1/6/11	1
	11g/BPSK	6 Mbps	1/6/11	1

The following test modes were performed for all tests:

For Radiated Emission (Below 1G) test:

Mode 1 EUT laying

Mode 2 EUT Standing

Mode 2 is the worst case, so it was selected to record in this test report.

For Radiated Emission (Above 1G) test:

The EUT was performed at EUT standing and EUT laying position. The worst case was found at EUT standing, so it was selected to perform test and its test result was written in the report.

3.6. Table for Testing Locations

Test Site Location				
Address:	No.8, Lane 724, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.			
TEL:	886-3-656-9065			
FAX:	886-3-656-9085			
Test Site No.	Site Category	Location	FCC Reg. No.	IC File No.
03CH01-CB	SAC	Hsin Chu	262045	IC 4086D
TH01-CB	OVEN Room	Hsin Chu	262045	IC 4086D

Open Area Test Site (OATS); Semi Anechoic Chamber (SAC).

3.7. Table for Multiple Listing

The EUT has two model names which are identical to each other in all aspects except for the following table:

Product Name	Model No.	IR LEDs	Removable IR light filter	Ambient Light sensor	Description
Arlo Camera	VMC3010	w/o	w/o	w/o	For day use only.
	VMC3030	w/	w/	w/	1. For day and night use. 2. Include two additional batteries to assist powering the IR LEDs. 3. Include optical night vision capability.

Note: According to above, there is only VMC3030 were selected to test and record in the report as a result.

3.8. Table for Supporting Units

For Test Site No: 03CH01-CB (Below 1G)

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E6430	QDS-BRCM1049LE
Wireless AP	Planex	GW-AP54SGX	N/A

For Test Site No: 03CH01-CB (Above 1G)

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E6430	QDS-BRCM1049LE
Fixture	Skylight	NGC01-INTERFACE-01	N/A

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E6220	DoC
Fixture	Skylight	NGC01-INTERFACE-01	N/A

3.9. Table for Parameters of Test Software Setting

During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Power Parameters of IEEE 802.11n

Test Software Version	Terminal		
Frequency	2412 MHz	2437 MHz	2462 MHz
MCS0 HT20	17	21	16

Power Parameters of IEEE 802.11b/g

Test Software Version	Terminal		
Frequency	2412 MHz	2437 MHz	2462 MHz
IEEE 802.11b	21	21	21
IEEE 802.11g	17	21	16

3.10. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

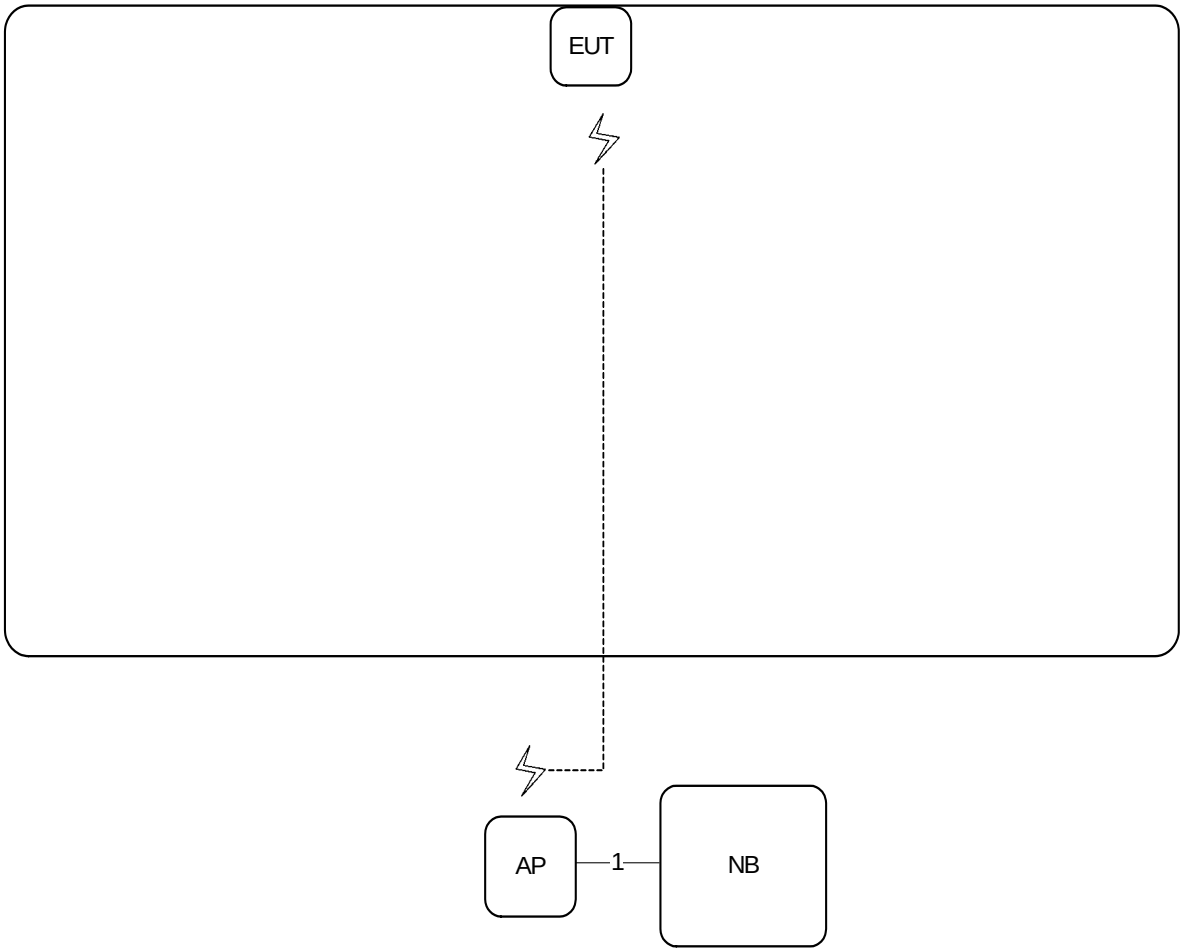
3.11. Duty Cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11n MCS0 HT20	1.326	1.434	92.47%	0.34	0.75
802.11b	8.609	8.724	98.68%	0.06	0.01
802.11g	1.406	1.500	93.72%	0.28	0.71

3.12. Test Configurations

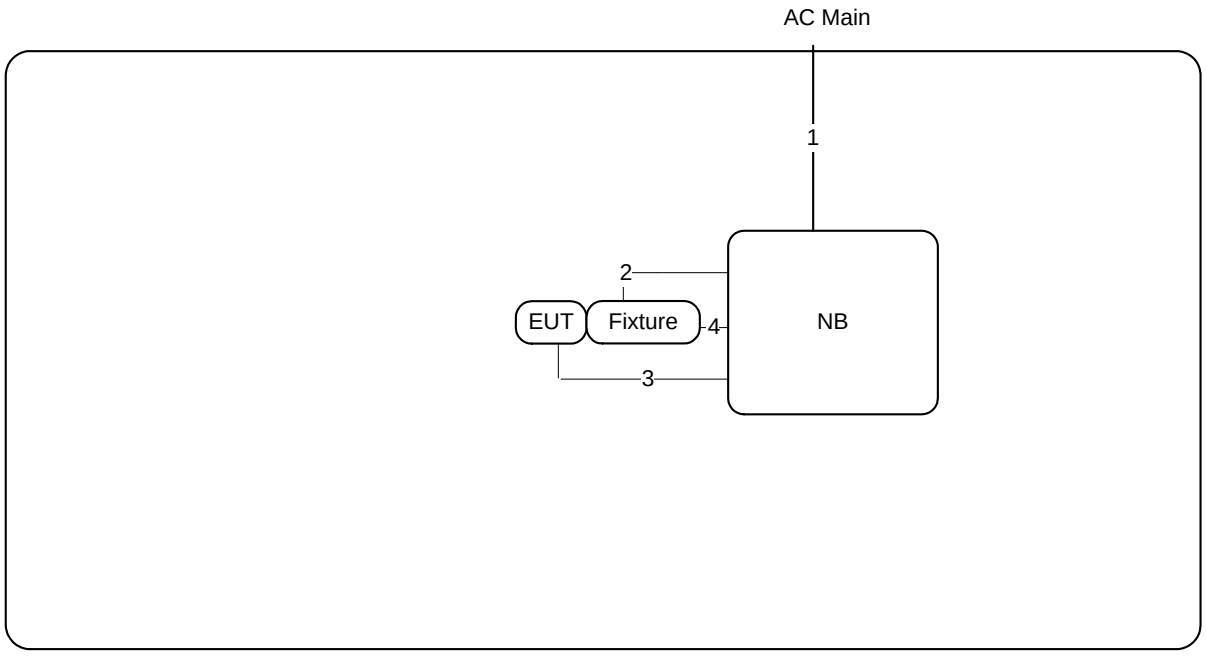
3.12.1. Radiation Emissions Test Configuration

Test Configuration: 30MHz~1GHz



Item	Connection	Shielded	Length (m)
1	RJ-45 cable	No	1.5

Test Configuration: above 1GHz



Item	Connection	Shielded	Length (m)
1	AC power cable	No	2.6m
2	USB cable	Yes	1m
3	USB cable	Yes	1m
4	Console cable	No	0.3m

4. TEST RESULT

4.1. Maximum Conducted Output Power Measurement

4.1.1. Limit

For systems using digital modulation in the 2400-2483.5MHz, the limit for output power is 30dBm. The limited has to be reduced by the amount in dB that the gain of the antenna exceed 6dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

4.1.2. Measuring Instruments and Setting

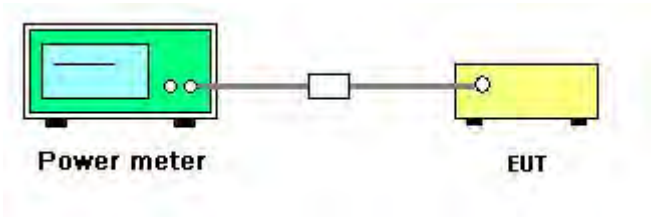
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Bandwidth	50MHz bandwidth is greater than the EUT emission bandwidth
Detector	Average

4.1.3. Test Procedures

1. Test procedures refer KDB 558074 D01 v03r02 section 9.2.3.2 Measurement using a power meter (PM).
2. Multiple antenna systems was performed in accordance with KDB 662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
3. This procedure provides an alternative for determining the RMS output power using a broadband RF average power meter with a thermocouple detector.

4.1.4. Test Setup Layout



4.1.5. Test Deviation

There is no deviation with the original standard.

4.1.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.1.7. Test Result of Maximum Conducted Output Power

Temperature	26°C	Humidity	63%
Test Engineer	Jim Huang	Configurations	IEEE 802.11n
Test Date	Oct. 07, 2014		

Configuration IEEE 802.11n MCS0 HT20 / Ant.1

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	17.07	30.00	Complies
6	2437 MHz	19.49	30.00	Complies
11	2462 MHz	16.55	30.00	Complies

Temperature	26°C	Humidity	63%
Test Engineer	Jim Huang	Configurations	IEEE 802.11b/g
Test Date	Oct. 07, 2014		

Configuration IEEE 802.11b / Ant.1

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	19.27	30.00	Complies
6	2437 MHz	19.55	30.00	Complies
11	2462 MHz	19.66	30.00	Complies

Configuration IEEE 802.11g / Ant.1

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	17.00	30.00	Complies
6	2437 MHz	18.99	30.00	Complies
11	2462 MHz	16.40	30.00	Complies

4.2. Power Spectral Density Measurement

4.2.1. Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

4.2.2. Measuring Instruments and Setting

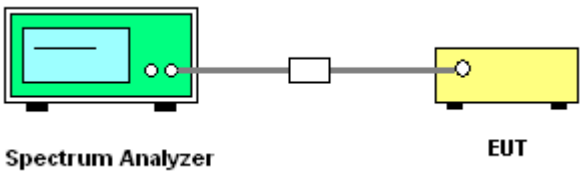
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Set the span to 1.5 times the DTS channel bandwidth.
RBW	3 kHz ≤ RBW ≤ 100kHz
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto couple

4.2.3. Test Procedures

1. Test was performed in accordance with KDB 558074 D01 v03r02 for Performing Compliance Measurements on Digital Transmission Systems (DTS) - section 10.2 Method PKPSD (peak PSD) and KDB 662911 D01 v02r01 section In-Band Power Spectral Density (PSD) Measurements option (b) Measure and sum spectral maximal across the outputs.
2. Use this procedure when the maximum conducted output power in the fundamental emission is used to demonstrate compliance. The EUT must be configured to transmit continuously at full power over the measurement duration.
3. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW (use of a greater number of measurement points than this minimum requirement is recommended).
4. Use the peak marker function to determine the maximum level in any 3 kHz band segment within the fundamental EBW.
5. The resulting PSD level must be ≤ 8 dBm.

4.2.4. Test Setup Layout



4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.2.7. Test Result of Power Spectral Density

Temperature	26°C	Humidity	63%
Test Engineer	Jim Huang	Configurations	IEEE 802.11n

Configuration IEEE 802.11n MCS0 HT20 / Ant.1

Channel	Frequency	Power Density (dBm/3kHz)	Power Density Limit (dBm/3kHz)	Result
1	2412 MHz	-8.44	8.00	Complies
6	2437 MHz	-6.25	8.00	Complies
11	2462 MHz	-8.55	8.00	Complies

Temperature	26°C	Humidity	63%
Test Engineer	Jim Huang	Configurations	IEEE 802.11b/g

Configuration IEEE 802.11b / Ant.1

Channel	Frequency	Power Density (dBm/3kHz)	Power Density Limit (dBm/3kHz)	Result
1	2412 MHz	-1.79	8.00	Complies
6	2437 MHz	-2.15	8.00	Complies
11	2462 MHz	-1.68	8.00	Complies

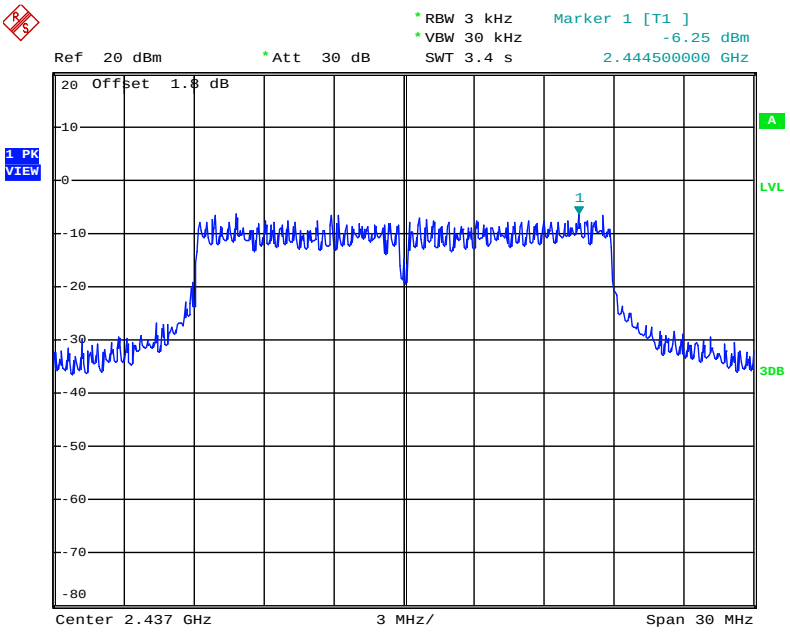
Configuration IEEE 802.11g / Ant.1

Channel	Frequency	Power Density (dBm/3kHz)	Power Density Limit (dBm/3kHz)	Result
1	2412 MHz	-8.03	8.00	Complies
6	2437 MHz	-6.34	8.00	Complies
11	2462 MHz	-8.36	8.00	Complies

Note: All the test values were listed in the report.

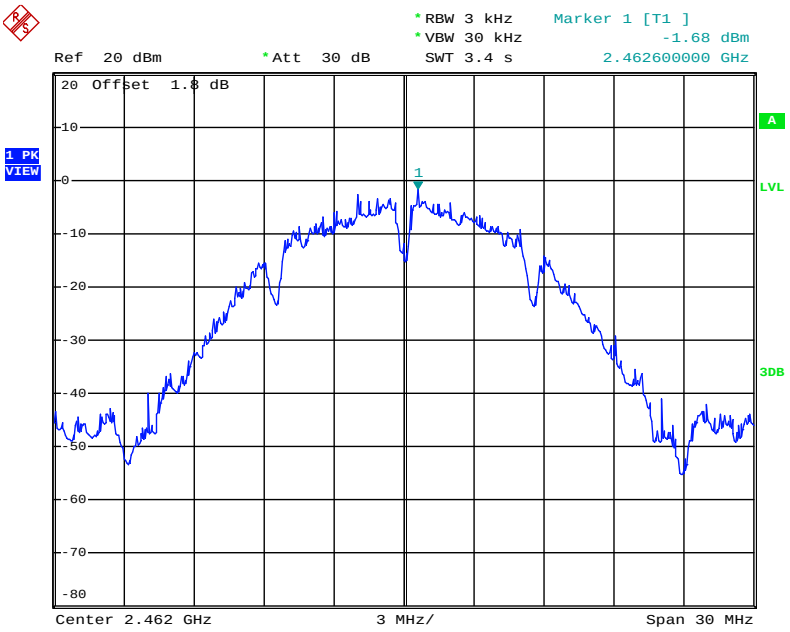
For plots, only the channel with worse result was shown.

Power Density Plot on Configuration IEEE 802.11n MCS0 HT20 / 2437 MHz/ Ant.1



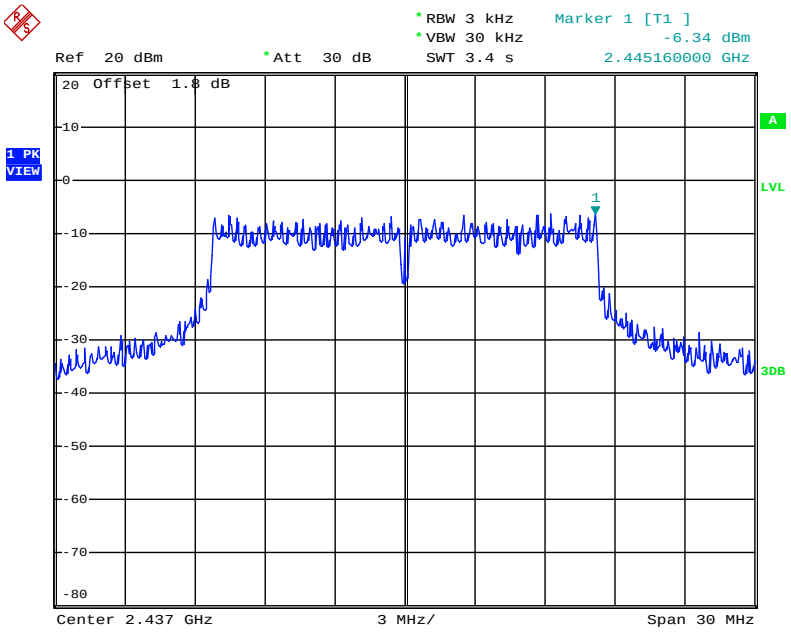
Date: 7.OCT.2014 12:47:30

Power Density Plot on Configuration IEEE 802.11b / 2462 MHz / Ant.1



Date: 7.OCT.2014 12:43:01

Power Density Plot on Configuration IEEE 802.11g / 2437 MHz / Ant.1



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4.3. 6dB Spectrum Bandwidth Measurement

4.3.1. Limit

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

4.3.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 6dB Bandwidth
RBW	100kHz
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.3.3. Test Procedures

For Radiated 6dB Bandwidth Measurement:

1. The transmitter was radiated to the spectrum analyzer in peak hold mode.
2. Test was performed in accordance with KDB 558074 D01 v03r02 for Performing Compliance Measurements on Digital Transmission Systems (DTS) - section 8.0 DTS bandwidth=> 8.1 Option 1.
3. Multiple antenna system was performed in accordance with KDB 662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. Measured the spectrum width with power higher than 6dB below carrier.

4.3.4. Test Setup Layout

For Radiated 6dB Bandwidth Measurement:

This test setup layout is the same as that shown in section 4.4.4.

4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.3.7. Test Result of 6dB Spectrum Bandwidth

Temperature	26℃	Humidity	63%
Test Engineer	Jim Huang	Configurations	IEEE 802.11n

Configuration IEEE 802.11n MCS0 HT20 / Ant.1

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	17.60	17.84	500	Complies
6	2437 MHz	17.60	19.04	500	Complies
11	2462 MHz	17.60	17.84	500	Complies

Temperature	26℃	Humidity	63%
Test Engineer	Jim Huang	Configurations	IEEE 802.11b/g

Configuration IEEE 802.11b / Ant.1

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	6.64	13.20	500	Complies
6	2437 MHz	7.52	13.20	500	Complies
11	2462 MHz	7.60	13.20	500	Complies

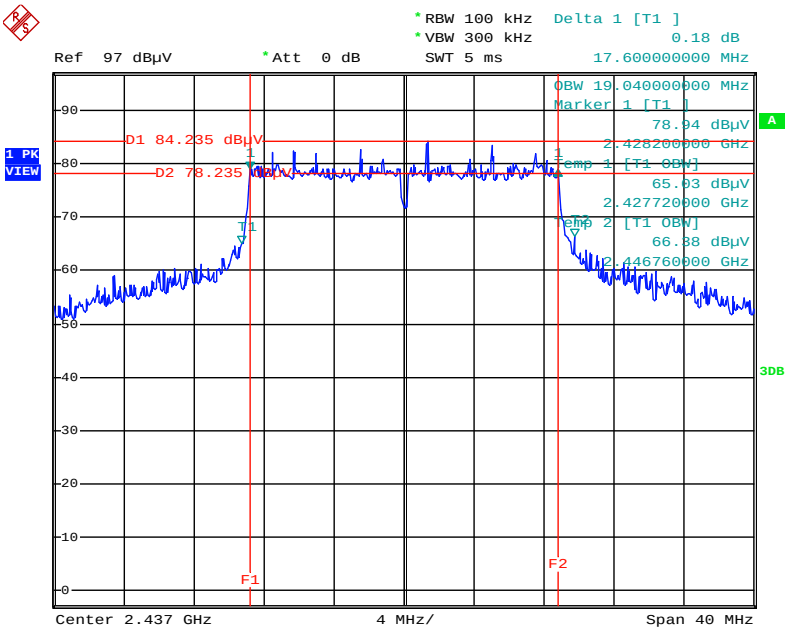
Configuration IEEE 802.11g / Ant.1

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	16.40	16.72	500	Complies
6	2437 MHz	16.40	18.88	500	Complies
11	2462 MHz	16.40	16.72	500	Complies

Note: All the test values were listed in the report.

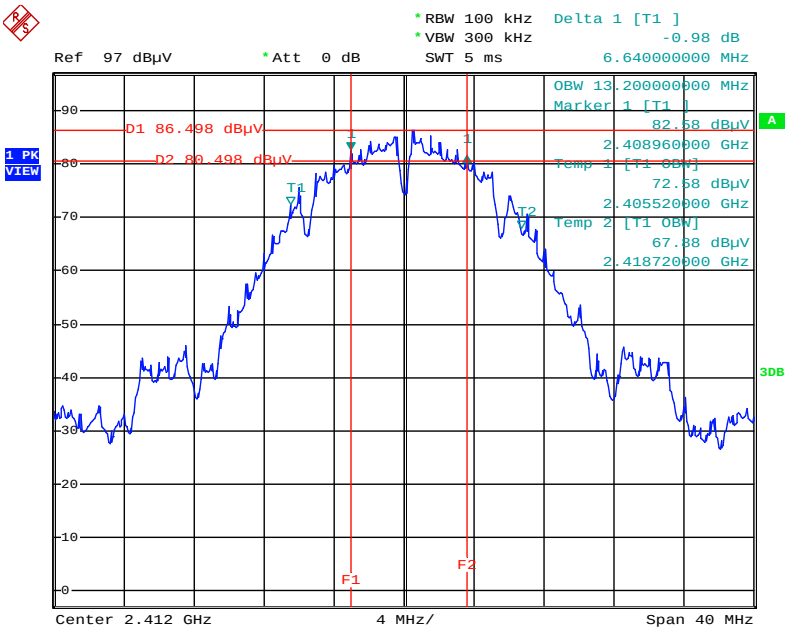
For plots, only the channel with worse result was shown.

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / 2437 MHz / Ant.1



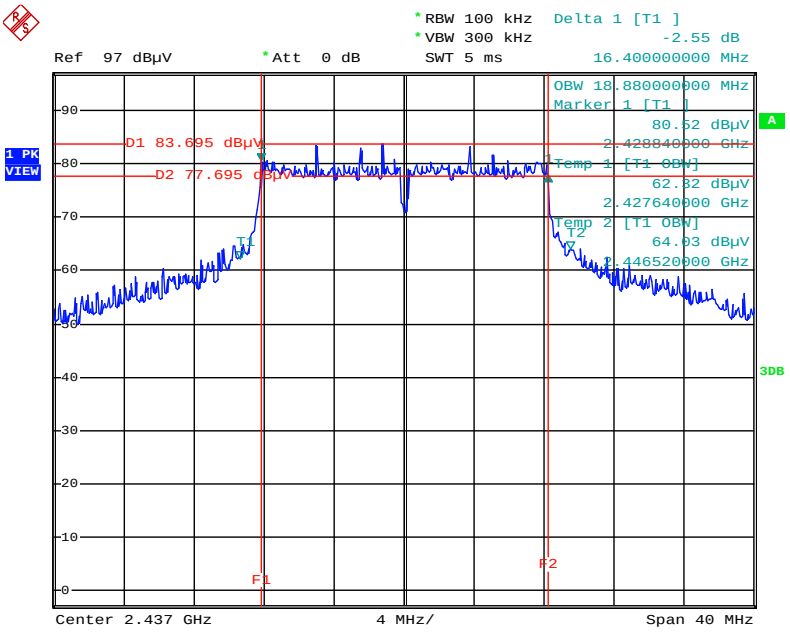
Date: 7.OCT.2014 12:52:27

6 dB Bandwidth Plot on Configuration IEEE 802.11b / 2412 MHz / Ant.1



Date: 7.OCT.2014 12:54:18

6 dB Bandwidth Plot on Configuration IEEE 802.11g / 2437 MHz / Ant.1



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4.4. Radiated Emissions Measurement

4.4.1. Limit

30dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

4.4.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average
RBW / VBW (Emission in non-restricted band)	100kHz / 300kHz for peak

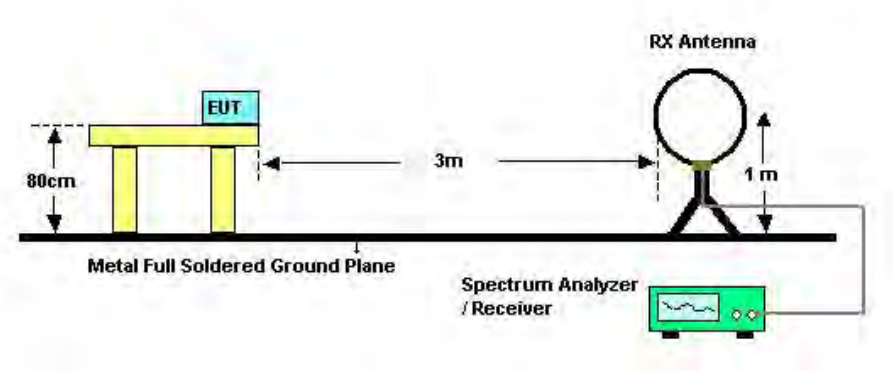
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.4.3. Test Procedures

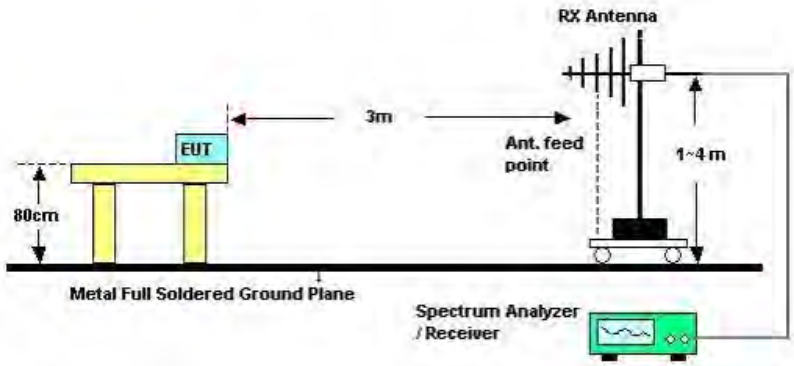
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 m to 4 m) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and 3MHz RBW for peak reading. Then 1MHz RBW and 1/T VBW for average reading in spectrum analyzer.
7. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
8. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
9. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

4.4.4. Test Setup Layout

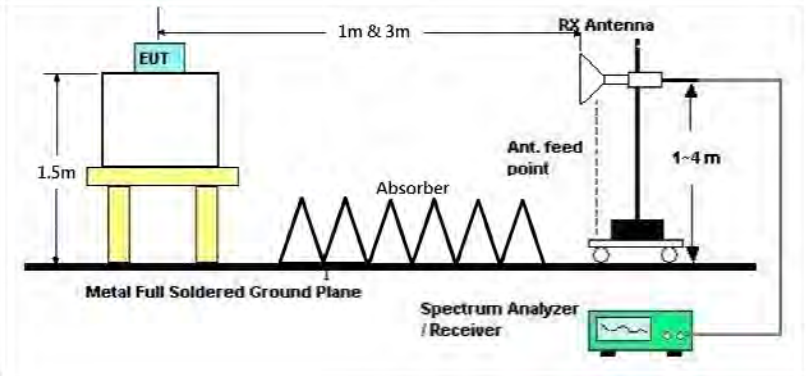
For Radiated Emissions: 9kHz ~30MHz



For Radiated Emissions: 30MHz~1GHz



For Radiated Emissions: Above 1GHz



4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Results of Radiated Emissions (9kHz~30MHz)

Temperature	25°C	Humidity	57%
Test Engineer	Nick Peng	Configurations	Normal Link
Test Date	Oct. 08, 2014		

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

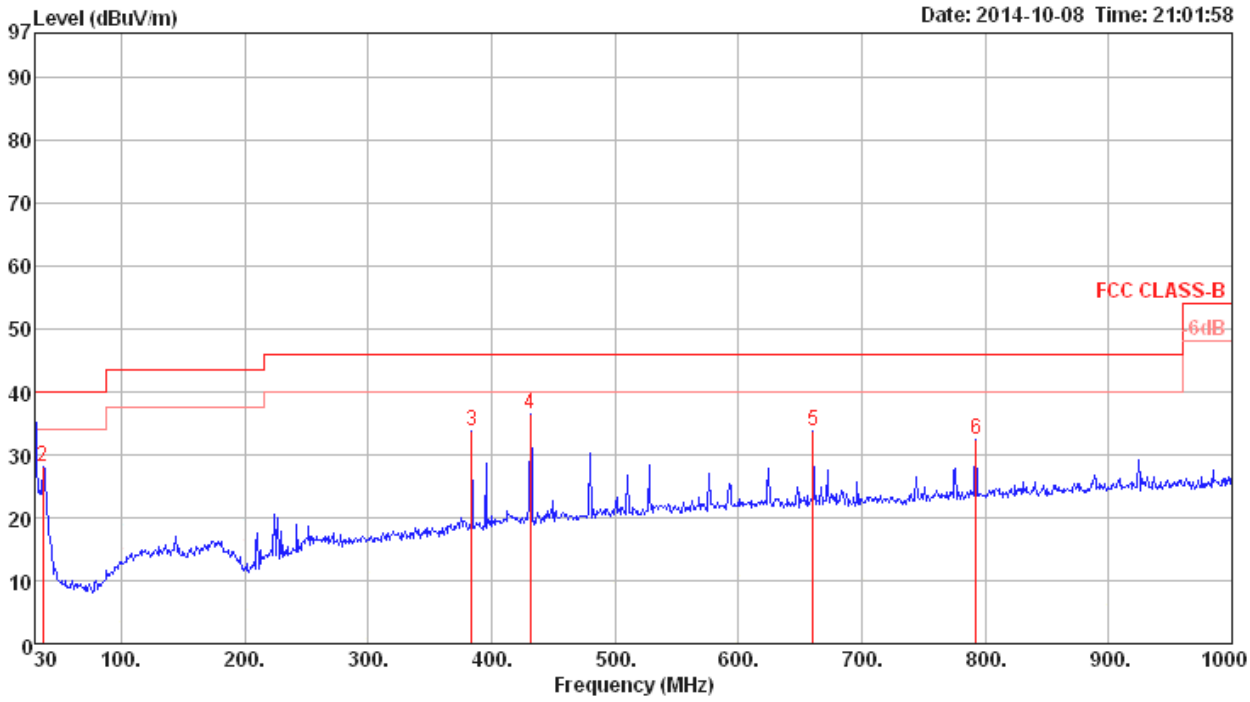
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

4.4.8. Results of Radiated Emissions (30MHz~1GHz)

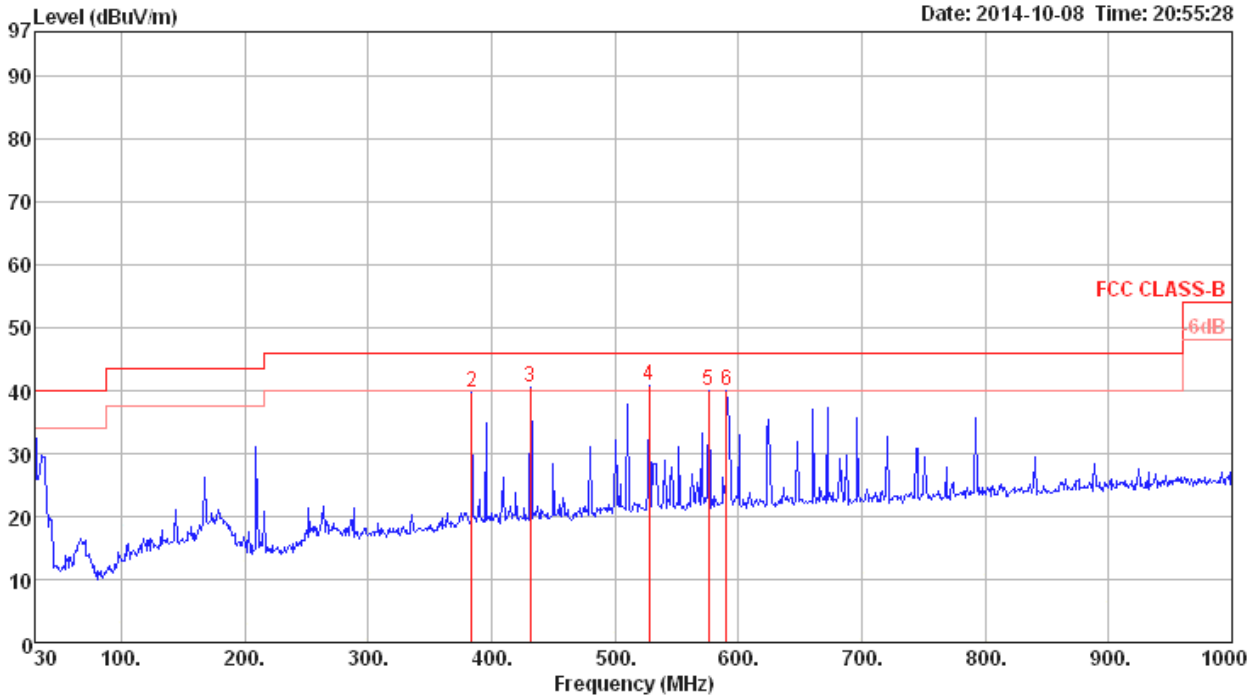
Temperature	25°C	Humidity	57%
Test Engineer	Nick Peng	Configurations	Normal Link
Test Mode:	Mode 2		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	30.00	35.67	40.00	-4.33	44.10	0.61	18.76	27.80	Peak	100	0	HORIZONTAL
2	36.79	28.10	40.00	-11.90	40.33	0.68	14.89	27.80	Peak	100	0	HORIZONTAL
3	384.05	33.89	46.00	-12.11	43.50	2.24	15.64	27.49	Peak	100	0	HORIZONTAL
4	431.58	36.53	46.00	-9.47	45.32	2.41	16.56	27.76	Peak	100	0	HORIZONTAL
5	660.50	33.73	46.00	-12.27	39.80	3.01	18.96	28.04	Peak	100	0	HORIZONTAL
6	792.42	32.53	46.00	-13.47	37.22	3.22	19.72	27.63	Peak	100	0	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	30.00	33.58	40.00	-6.42	42.01	0.61	18.76	27.80	Peak	400	0	VERTICAL
2	384.05	39.81	46.00	-6.19	49.42	2.24	15.64	27.49	Peak	400	0	VERTICAL
3	431.58	40.64	46.00	-5.36	49.43	2.41	16.56	27.76	Peak	400	0	VERTICAL
4	527.61	40.92	46.00	-5.08	48.35	2.73	17.94	28.10	Peak	400	0	VERTICAL
5	576.11	40.09	46.00	-5.91	46.90	2.80	18.49	28.10	Peak	400	0	VERTICAL
6	590.66	40.03	46.00	-5.97	46.67	2.80	18.66	28.10	Peak	400	0	VERTICAL

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4.4.9. Results for Radiated Emissions (1GHz~10th Harmonic)

Temperature	25℃	Humidity	57%
Test Engineer	Nick Peng	Configurations	IEEE 802.11n MCS0 HT20 CH 1 / Ant.1
Test Date	Oct. 04, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4819.77	45.29	74.00	-28.71	42.15	5.68	32.76	35.30	100	223	HORIZONTAL	Peak
2	4833.73	32.47	54.00	-21.53	29.30	5.70	32.77	35.30	100	223	HORIZONTAL	Average
3	7238.32	37.81	54.00	-16.19	29.08	7.03	37.10	35.40	100	211	HORIZONTAL	Average
4	7240.83	51.39	74.00	-22.61	42.66	7.03	37.10	35.40	100	211	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4821.28	45.43	74.00	-28.57	42.29	5.68	32.76	35.30	100	308	VERTICAL	Peak
2	4831.82	32.52	54.00	-21.48	29.35	5.70	32.77	35.30	100	308	VERTICAL	Average
3	7234.03	51.34	74.00	-22.66	42.61	7.03	37.10	35.40	100	280	VERTICAL	Peak
4	7244.42	38.03	54.00	-15.97	29.30	7.03	37.10	35.40	100	280	VERTICAL	Average

Temperature	25°C	Humidity	57%
Test Engineer	Nick Peng	Configurations	IEEE 802.11n MCS0 HT20 CH 6 / Ant.1
Test Date	Oct. 04, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4869.75	45.45	74.00	-28.55	42.22	5.74	32.80	35.31	100	265	HORIZONTAL	Peak
2	4883.26	32.69	54.00	-21.31	29.44	5.76	32.81	35.32	100	265	HORIZONTAL	Average
3	7306.77	38.21	54.00	-15.79	29.40	7.05	37.12	35.36	100	242	HORIZONTAL	Average
4	7314.97	51.01	74.00	-22.99	42.19	7.06	37.12	35.36	100	242	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4882.34	46.75	74.00	-27.25	43.50	5.76	32.81	35.32	100	203	VERTICAL	Peak
2	4882.39	32.62	54.00	-21.38	29.37	5.76	32.81	35.32	100	203	VERTICAL	Average
3	7304.17	52.20	74.00	-21.80	43.39	7.05	37.12	35.36	100	209	VERTICAL	Peak
4	7304.43	38.15	54.00	-15.85	29.34	7.05	37.12	35.36	100	209	VERTICAL	Average

Temperature	25℃	Humidity	57%
Test Engineer	Nick Peng	Configurations	IEEE 802.11n MCS0 HT20 CH 11 / Ant.1
Test Date	Oct. 04, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4916.85	32.87	54.00	-21.13	29.57	5.80	32.83	35.33	100	55	HORIZONTAL	Average
2	4917.84	46.04	74.00	-27.96	42.74	5.80	32.83	35.33	100	55	HORIZONTAL	Peak
3	7379.75	51.73	74.00	-22.27	42.81	7.08	37.16	35.32	100	52	HORIZONTAL	Peak
4	7393.70	38.33	54.00	-15.67	29.39	7.09	37.16	35.31	100	52	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4918.88	46.58	74.00	-27.42	43.28	5.80	32.83	35.33	100	13	VERTICAL	Peak
2	4923.57	32.78	54.00	-21.22	29.47	5.81	32.83	35.33	100	13	VERTICAL	Average
3	7384.90	38.27	54.00	-15.73	29.34	7.09	37.16	35.32	100	36	VERTICAL	Average
4	7385.51	51.32	74.00	-22.68	42.39	7.09	37.16	35.32	100	36	VERTICAL	Peak

Temperature	25°C	Humidity	57%
Test Engineer	Nick Peng	Configurations	IEEE 802.11b CH 1 / Ant.1
Test Date	Oct. 04, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4818.83	45.76	74.00	-28.24	42.61	5.68	32.76	35.29	100	154	HORIZONTAL	Peak
2	4820.66	33.58	54.00	-20.42	30.44	5.68	32.76	35.30	100	154	HORIZONTAL	Average
3	7230.86	51.57	74.00	-22.43	42.90	7.02	37.06	35.41	100	151	HORIZONTAL	Peak
4	7235.12	39.21	54.00	-14.79	30.48	7.03	37.10	35.40	100	151	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4805.55	32.86	54.00	-21.14	29.75	5.66	32.74	35.29	100	12	VERTICAL	Average
2	4818.89	45.82	74.00	-28.18	42.67	5.68	32.76	35.29	100	12	VERTICAL	Peak
3	7233.90	51.46	74.00	-22.54	42.73	7.03	37.10	35.40	100	41	VERTICAL	Peak
4	7234.45	38.35	54.00	-15.65	29.62	7.03	37.10	35.40	100	41	VERTICAL	Average

Temperature	25°C	Humidity	57%
Test Engineer	Nick Peng	Configurations	IEEE 802.11b CH 6 / Ant.1
Test Date	Oct. 04, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4876.55	32.93	54.00	-21.07	29.70	5.75	32.80	35.32	100	120	HORIZONTAL	Average
2	4877.97	46.28	74.00	-27.72	43.05	5.75	32.80	35.32	100	120	HORIZONTAL	Peak
3	7310.16	39.51	54.00	-14.49	30.69	7.06	37.12	35.36	100	118	HORIZONTAL	Average
4	7311.90	52.44	74.00	-21.56	43.62	7.06	37.12	35.36	100	118	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4874.17	33.23	54.00	-20.77	29.99	5.75	32.80	35.31	100	148	VERTICAL	Average
2	4882.05	46.16	74.00	-27.84	42.91	5.76	32.81	35.32	100	148	VERTICAL	Peak
3	7301.36	38.76	54.00	-15.24	29.96	7.05	37.12	35.37	100	203	VERTICAL	Average
4	7303.79	52.13	74.00	-21.87	43.32	7.05	37.12	35.36	100	203	VERTICAL	Peak

Temperature	25°C	Humidity	57%
Test Engineer	Nick Peng	Configurations	IEEE 802.11b CH 11 / Ant.1
Test Date	Oct. 04, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4924.12	34.63	54.00	-19.37	31.31	5.81	32.84	35.33	100	328	HORIZONTAL	Average
2	4926.03	46.28	74.00	-27.72	42.96	5.81	32.84	35.33	100	328	HORIZONTAL	Peak
3	7393.73	51.44	74.00	-22.56	42.50	7.09	37.16	35.31	100	317	HORIZONTAL	Peak
4	7395.18	38.47	54.00	-15.53	29.53	7.09	37.16	35.31	100	317	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4924.09	33.84	54.00	-20.16	30.52	5.81	32.84	35.33	100	358	VERTICAL	Average
2	4925.94	46.86	74.00	-27.14	43.54	5.81	32.84	35.33	100	358	VERTICAL	Peak
3	7380.99	51.68	74.00	-22.32	42.76	7.08	37.16	35.32	100	311	VERTICAL	Peak
4	7393.29	38.82	54.00	-15.18	29.88	7.09	37.16	35.31	100	311	VERTICAL	Average

Temperature	25℃	Humidity	57%
Test Engineer	Nick Peng	Configurations	IEEE 802.11g CH 1 / Ant.1
Test Date	Oct. 04, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4815.52	45.40	74.00	-28.60	42.25	5.68	32.76	35.29	100	218	HORIZONTAL	Peak
2	4833.35	32.66	54.00	-21.34	29.49	5.70	32.77	35.30	100	218	HORIZONTAL	Average
3	7230.79	37.98	54.00	-16.02	29.31	7.02	37.06	35.41	100	214	HORIZONTAL	Average
4	7245.58	50.91	74.00	-23.09	42.18	7.03	37.10	35.40	100	214	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4833.12	45.52	74.00	-28.48	42.35	5.70	32.77	35.30	100	229	VERTICAL	Peak
2	4833.64	32.67	54.00	-21.33	29.50	5.70	32.77	35.30	100	229	VERTICAL	Average
3	7226.25	50.90	74.00	-23.10	42.23	7.02	37.06	35.41	100	222	VERTICAL	Peak
4	7245.41	37.93	54.00	-16.07	29.20	7.03	37.10	35.40	100	222	VERTICAL	Average

Temperature	25℃	Humidity	57%
Test Engineer	Nick Peng	Configurations	IEEE 802.11g CH 6 / Ant.1
Test Date	Oct. 04, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4875.45	32.65	54.00	-21.35	29.42	5.75	32.80	35.32	100	231	HORIZONTAL	Average
2	4882.80	46.00	74.00	-28.00	42.75	5.76	32.81	35.32	100	231	HORIZONTAL	Peak
3	7303.36	38.29	54.00	-15.71	29.48	7.05	37.12	35.36	100	233	HORIZONTAL	Average
4	7305.65	51.97	74.00	-22.03	43.16	7.05	37.12	35.36	100	233	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4880.34	32.92	54.00	-21.08	29.68	5.76	32.80	35.32	100	167	VERTICAL	Average
2	4883.49	45.99	74.00	-28.01	42.74	5.76	32.81	35.32	100	167	VERTICAL	Peak
3	7301.07	38.34	54.00	-15.66	29.54	7.05	37.12	35.37	100	230	VERTICAL	Average
4	7311.84	51.79	74.00	-22.21	42.97	7.06	37.12	35.36	100	230	VERTICAL	Peak

Temperature	25℃	Humidity	57%
Test Engineer	Nick Peng	Configurations	IEEE 802.11g CH 11 / Ant.1
Test Date	Oct. 04, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4917.08	33.01	54.00	-20.99	29.71	5.80	32.83	35.33	100	272	HORIZONTAL	Average
2	4919.75	46.62	74.00	-27.38	43.32	5.80	32.83	35.33	100	272	HORIZONTAL	Peak
3	7384.29	38.47	54.00	-15.53	29.55	7.08	37.16	35.32	100	233	HORIZONTAL	Average
4	7394.45	51.39	74.00	-22.61	42.45	7.09	37.16	35.31	100	233	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4919.08	32.89	54.00	-21.11	29.59	5.80	32.83	35.33	100	222	VERTICAL	Average
2	4920.12	46.81	74.00	-27.19	43.51	5.80	32.83	35.33	100	222	VERTICAL	Peak
3	7394.74	38.48	54.00	-15.52	29.54	7.09	37.16	35.31	100	225	VERTICAL	Average
4	7395.55	51.62	74.00	-22.38	42.68	7.09	37.16	35.31	100	225	VERTICAL	Peak

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4.5. Emissions Measurement

4.5.1. Limit

30dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

4.5.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average
RBW / VBW (30dBc in any 100 kHz bandwidth emission)	100 kHz / 300 kHz for Peak

4.5.3. Test Procedures

For Radiated band edges Measurement:

1. The test procedure is the same as section 4.4.3, only the freqeuncy range investigated is limited to 100MHz around band edges.

For Radiated Out of Band Emission Measurement:

1. Test was performed in accordance with KDB 558074 D01 v03r02 for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 10.1 Unwanted Emissions into Non-Restricted Frequency Bands Measurement Procedure.
2. The radiated emission test is performed on each TX port of operating mode without summing or adding 10log (N) since the limit is relative emission limit.
   Only worst data of each operating mode is presented.

4.5.4. Test Setup Layout

For Radiated band edges Measurement:

This test setup layout is the same as that shown in section 4.4.4.

For Radiated Out of Band Emission Measurement:

This test setup layout is the same as that shown in section 4.4.4.

4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.5.7. Test Result of Band Edge and Fundamental Emissions

Temperature	25°C	Humidity	57%
Test Engineer	Nick Peng	Configurations	IEEE 802.11n MCS0 HT20 CH 1, 6, 11 / Ant.1
Test Date	Oct. 04, 2014		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2390.00	53.75	54.00	-0.25	22.17	3.68	27.90	0.00	142	0	VERTICAL	Average
2	2390.00	73.06	74.00	-0.94	41.48	3.68	27.90	0.00	142	0	VERTICAL	Peak
3	2415.91	104.52			72.93	3.69	27.90	0.00	142	0	VERTICAL	Peak
4	2419.96	94.69			63.09	3.70	27.90	0.00	142	0	VERTICAL	Average

Item 3, 4 are the fundamental frequency at 2412 MHz.

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2390.00	45.76	54.00	-8.24	14.18	3.68	27.90	0.00	162	0	VERTICAL	Average
2	2390.00	57.94	74.00	-16.06	26.36	3.68	27.90	0.00	162	0	VERTICAL	Peak
3	2443.95	104.21			72.60	3.71	27.90	0.00	162	0	VERTICAL	Peak
4	2445.10	94.47			62.86	3.71	27.90	0.00	162	0	VERTICAL	Average
5	2483.50	46.81	54.00	-7.19	15.18	3.73	27.90	0.00	162	0	VERTICAL	Average
6	2483.50	57.93	74.00	-16.07	26.30	3.73	27.90	0.00	162	0	VERTICAL	Peak

Item 3, 4 are the fundamental frequency at 2437 MHz.

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2454.47	93.10			61.48	3.72	27.90	0.00	157	5	VERTICAL	Average
2	2483.50	53.28			21.65	3.73	27.90	0.00	157	5	VERTICAL	Average
3	2483.50	70.85	74.00	-3.15	39.22	3.73	27.90	0.00	157	5	VERTICAL	Peak
4	2483.50	70.85	74.00	-3.15	39.22	3.73	27.90	0.00	157	5	VERTICAL	Peak

Item 1, 2 are the fundamental frequency at 2462 MHz.

Temperature	25℃	Humidity	57%
Test Engineer	Nick Peng	Configurations	IEEE 802.11b CH 1, 6, 11 / Ant.1
Test Date	Oct. 04, 2014		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2383.34	60.00	74.00	-14.00	28.42	3.68	27.90	0.00	144	360	VERTICAL	Peak
2	2388.55	46.35	54.00	-7.65	14.77	3.68	27.90	0.00	144	360	VERTICAL	Average
3	2412.87	101.35			69.76	3.69	27.90	0.00	144	360	VERTICAL	Average
4	2413.01	105.30			73.71	3.69	27.90	0.00	144	360	VERTICAL	Peak

Item 3, 4 are the fundamental frequency at 2412 MHz.

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2390.00	44.51	54.00	-9.49	12.93	3.68	27.90	0.00	134	0	VERTICAL	Average
2	2390.00	57.13	74.00	-16.87	25.55	3.68	27.90	0.00	134	0	VERTICAL	Peak
3	2436.71	104.59			72.98	3.71	27.90	0.00	134	0	VERTICAL	Peak
4	2437.87	100.84			69.23	3.71	27.90	0.00	134	0	VERTICAL	Average
5	2483.50	45.25	54.00	-8.75	13.62	3.73	27.90	0.00	134	0	VERTICAL	Average
6	2483.50	58.80	74.00	-15.20	27.17	3.73	27.90	0.00	134	0	VERTICAL	Peak

Item 3, 4 are the fundamental frequency at 2437 MHz.

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2461.13	104.58			72.96	3.72	27.90	0.00	156	8	VERTICAL	Peak
2	2461.28	100.68			69.06	3.72	27.90	0.00	156	8	VERTICAL	Average
3	2486.39	60.64	74.00	-13.36	29.01	3.73	27.90	0.00	156	8	VERTICAL	Peak
4	2487.70	46.58	54.00	-7.42	14.95	3.73	27.90	0.00	156	8	VERTICAL	Average

Item 1, 2 are the fundamental frequency at 2462 MHz.

Temperature	25℃	Humidity	57%
Test Engineer	Nick Peng	Configurations	IEEE 802.11g CH 1, 6, 11 / Ant.1
Test Date	Oct. 04, 2014		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2390.00	51.84	54.00	-2.16	20.26	3.68	27.90	0.00	148	0	VERTICAL	Average
2	2390.00	71.20	74.00	-2.80	39.62	3.68	27.90	0.00	148	0	VERTICAL	Peak
3	2412.00	105.42			73.83	3.69	27.90	0.00	148	0	VERTICAL	Peak
4	2419.38	94.29			62.69	3.70	27.90	0.00	148	0	VERTICAL	Average

Item 3, 4 are the fundamental frequency at 2412 MHz.

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2390.00	45.33	54.00	-8.67	13.75	3.68	27.90	0.00	157	360	VERTICAL	Average
2	2390.00	57.73	74.00	-16.27	26.15	3.68	27.90	0.00	157	360	VERTICAL	Peak
3	2443.37	104.03			72.42	3.71	27.90	0.00	157	360	VERTICAL	Peak
4	2444.53	94.19			62.58	3.71	27.90	0.00	157	360	VERTICAL	Average
5	2483.50	46.59	54.00	-7.41	14.96	3.73	27.90	0.00	157	360	VERTICAL	Average
6	2486.39	58.13	74.00	-15.87	26.50	3.73	27.90	0.00	157	360	VERTICAL	Peak

Item 3, 4 are the fundamental frequency at 2437 MHz.

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2454.62	93.57			61.95	3.72	27.90	0.00	159	12	VERTICAL	Average
2	2462.14	104.43			72.81	3.72	27.90	0.00	159	12	VERTICAL	Peak
3	2483.50	51.85	54.00	-2.15	20.22	3.73	27.90	0.00	159	12	VERTICAL	Average
4	2483.50	72.43	74.00	-1.57	40.80	3.73	27.90	0.00	159	12	VERTICAL	Peak

Item 1, 2 are the fundamental frequency at 2462 MHz.

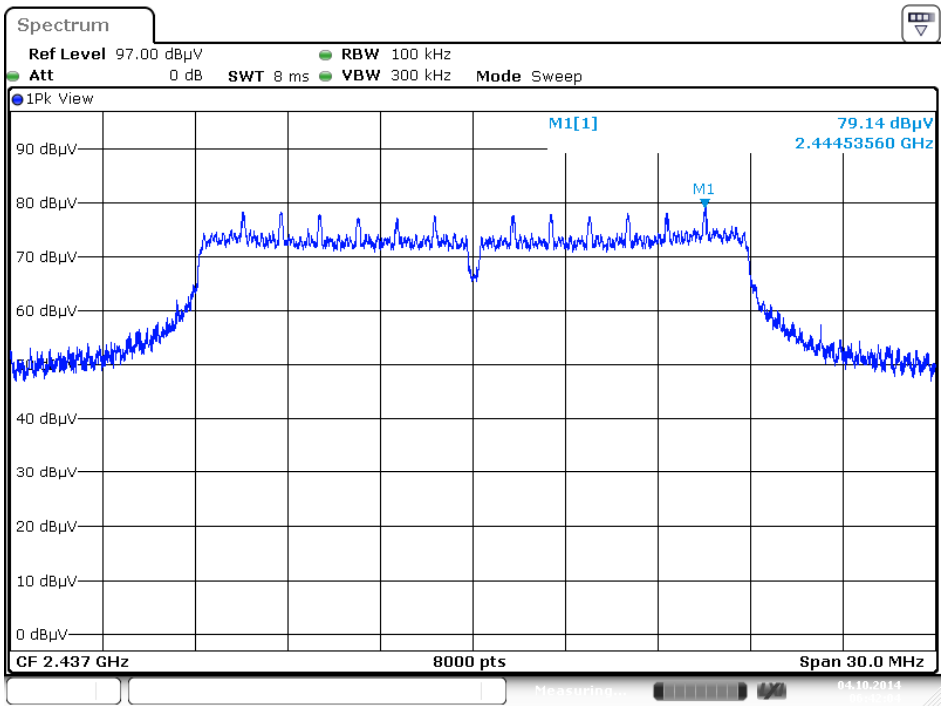
Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

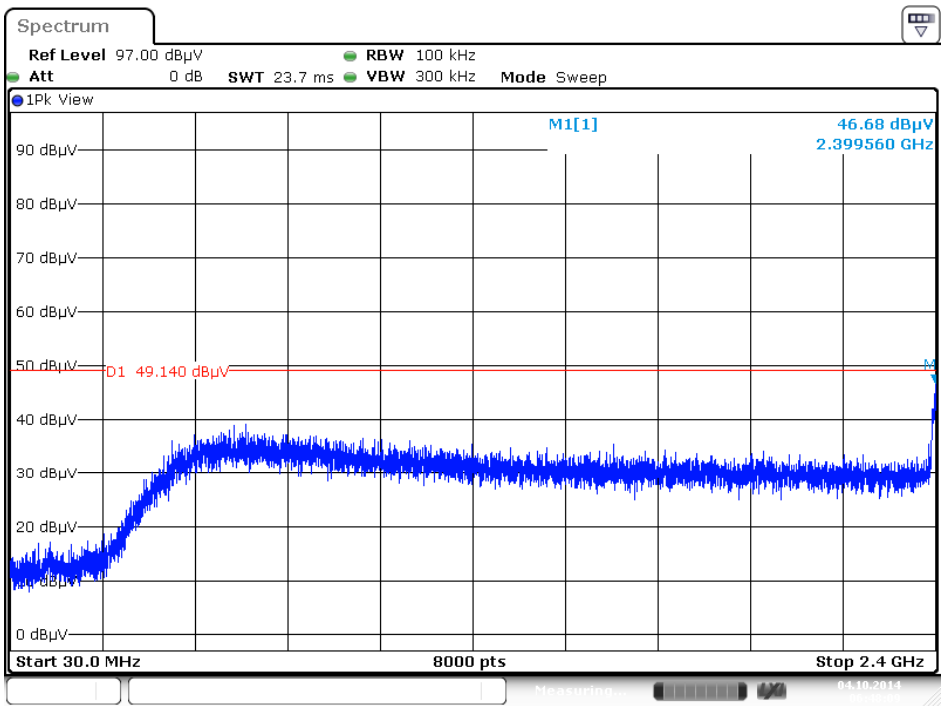
For Emission not in Restricted Band

Plot on Configuration IEEE 802.11n MCS0 HT20 / Reference Level



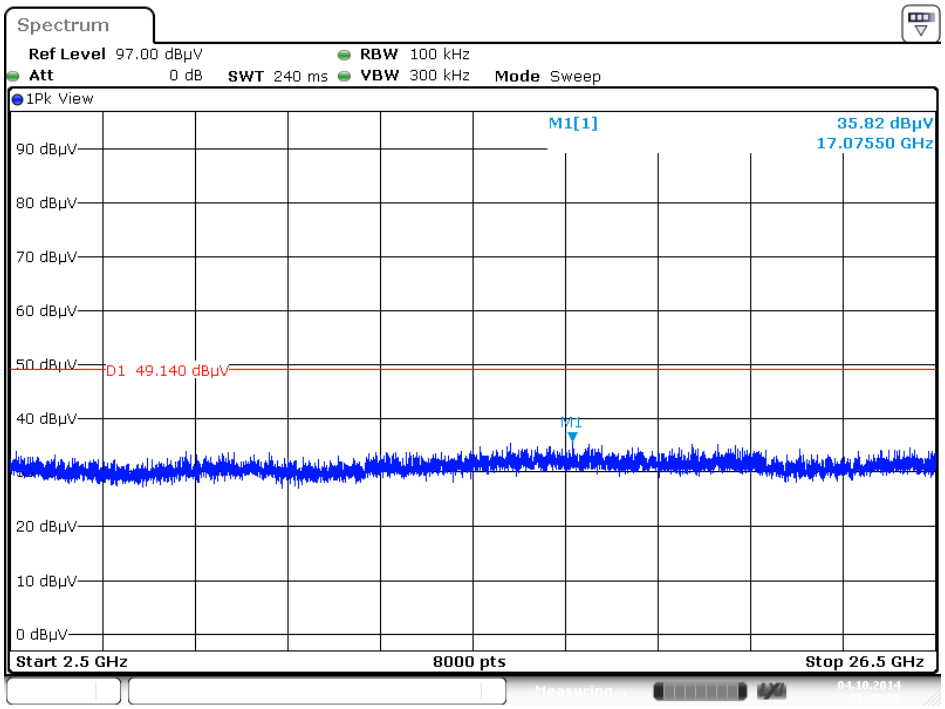
Date: 4.OCT.2014 06:42:04

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 1 / 30MHz~2400MHz (down 30dBc)



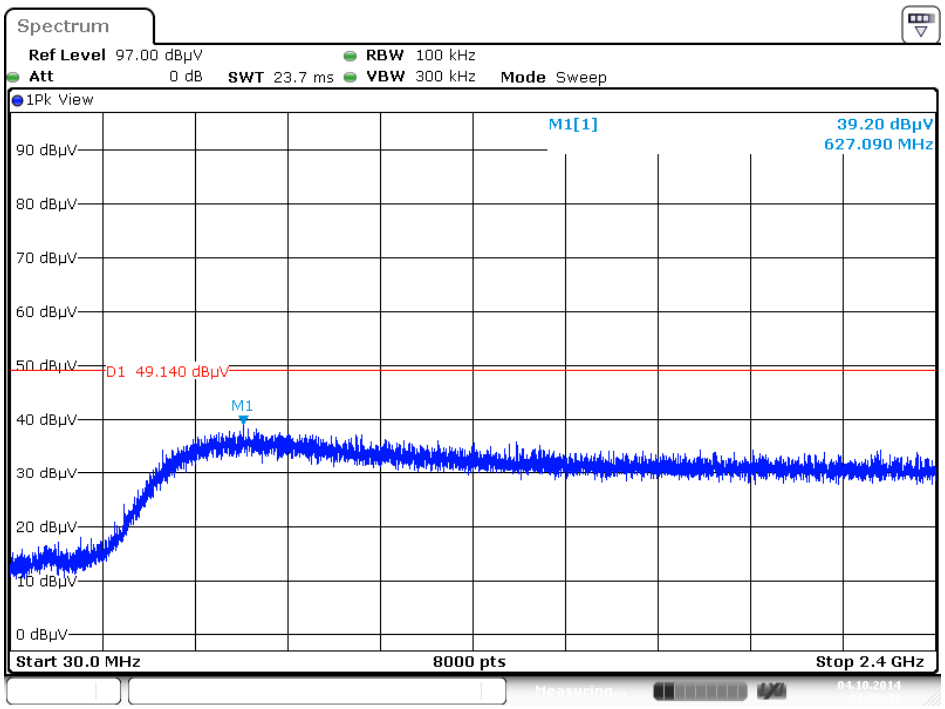
Date: 4.OCT.2014 06:48:09

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 1 / 2500MHz~26500MHz (down 30dBc)



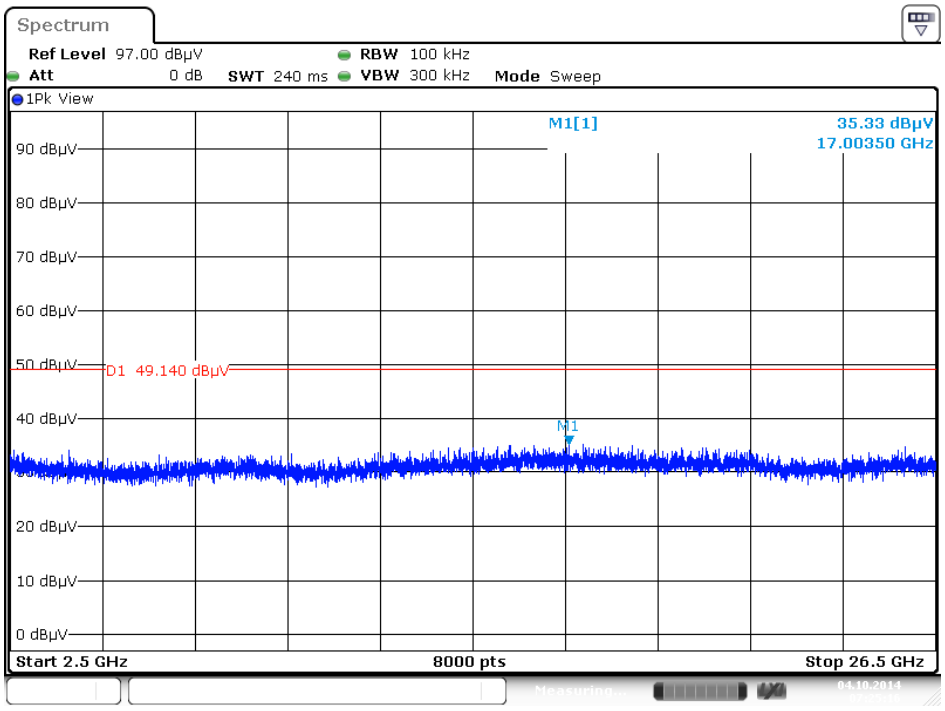
Date: 4.OCT.2014 06:48:59

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 11 / 30MHz~2400MHz (down 30dBc)

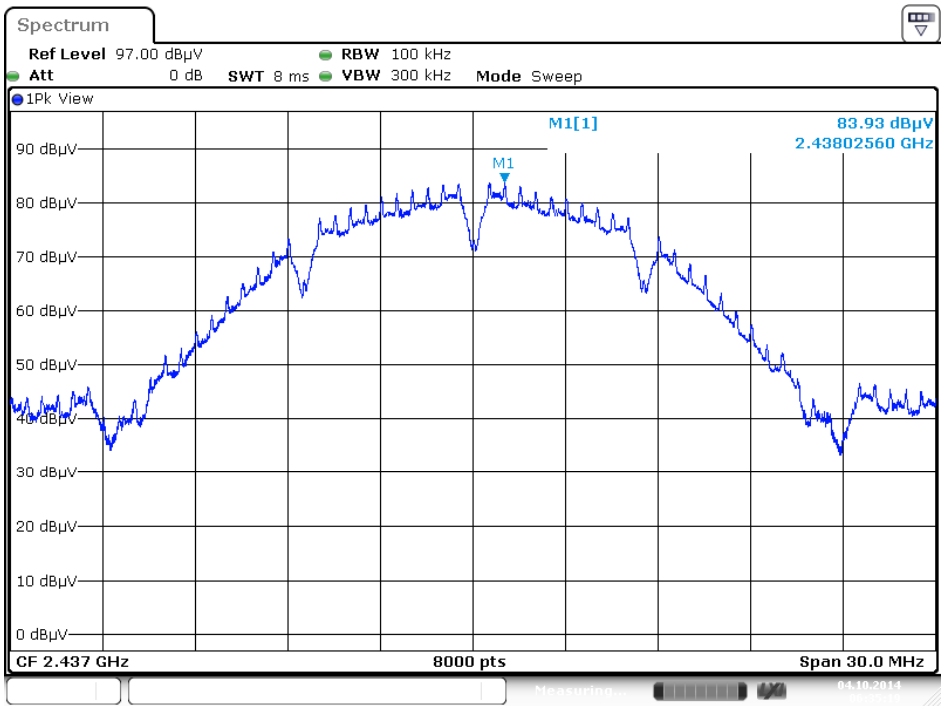


Date: 4.OCT.2014 07:25:43

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 11 / 2500MHz~26500MHz (down 30dBc)

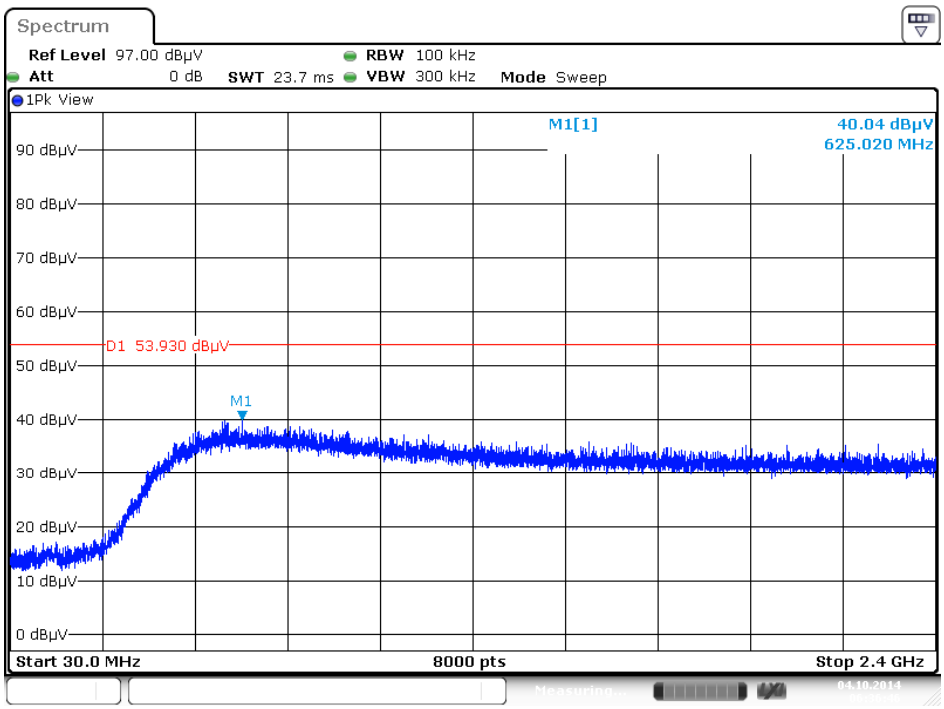


Plot on Configuration IEEE 802.11b / Reference Level



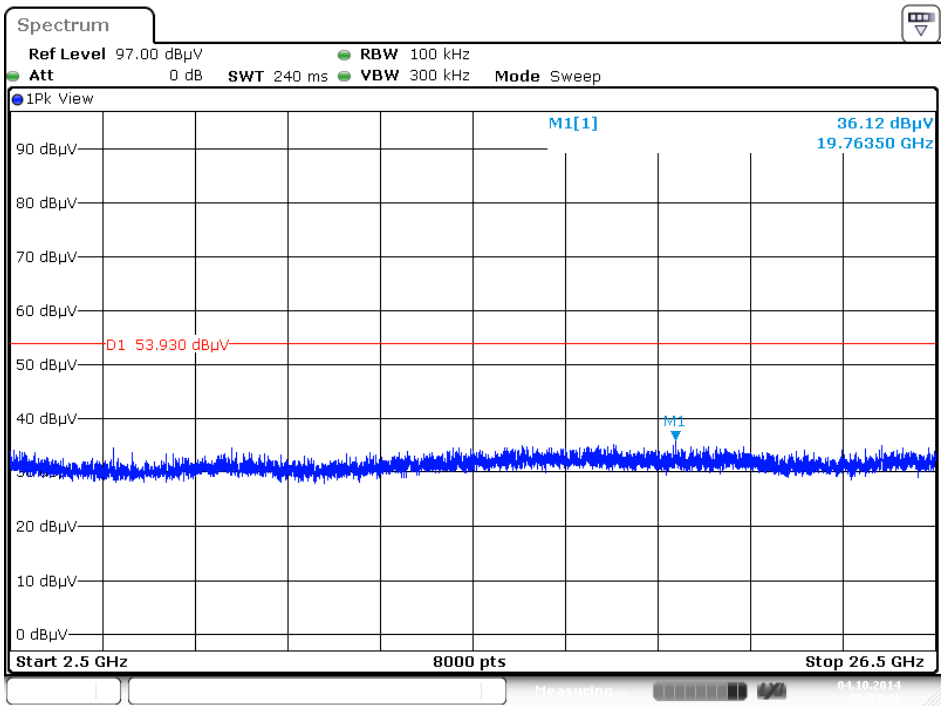
Date: 4.OCT.2014 06:35:19

Plot on Configuration IEEE 802.11b / CH 1 / 30MHz~2400MHz (down 30dBc)



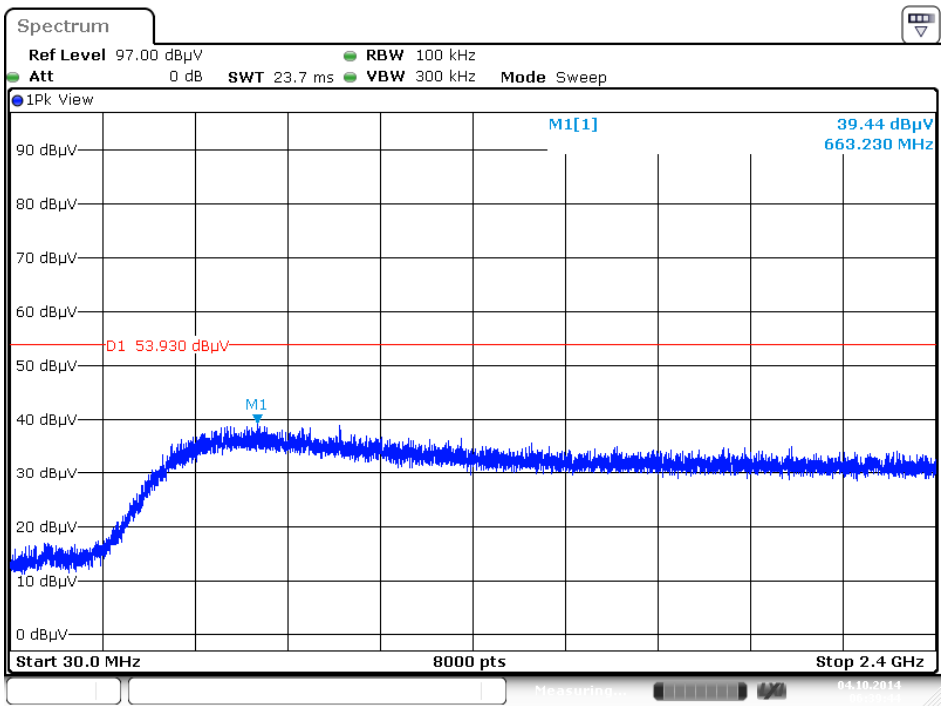
Date: 4.OCT.2014 06:36:47

Plot on Configuration IEEE 802.11b / CH 1 / 2500MHz~26500MHz (down 30dBc)



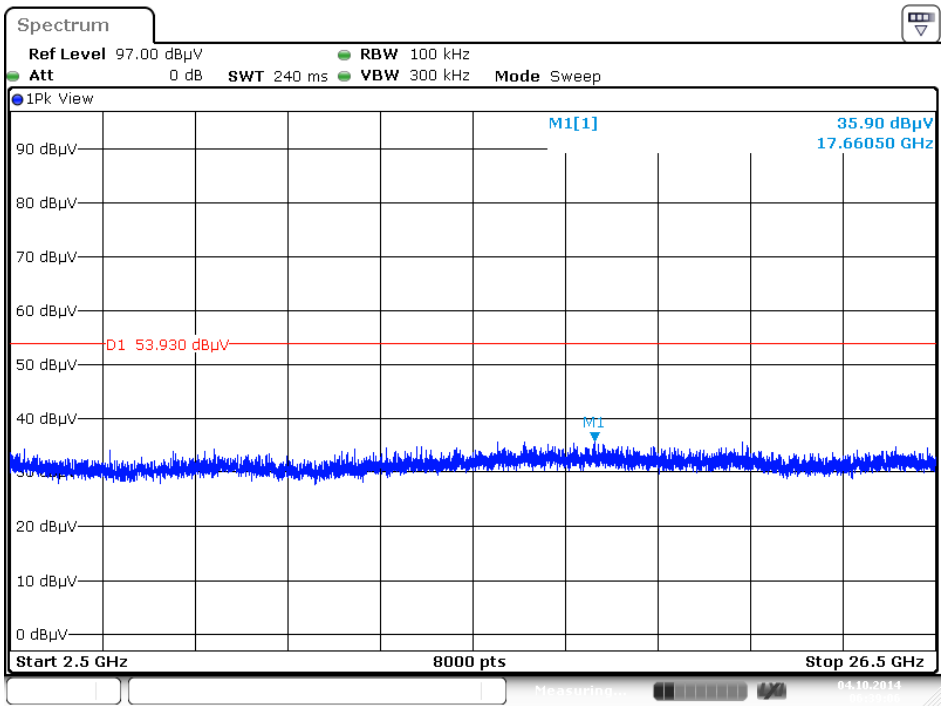
Date: 4.OCT.2014 06:37:46

Plot on Configuration IEEE 802.11b / CH 11 / 30MHz~2400MHz (down 30dBc)



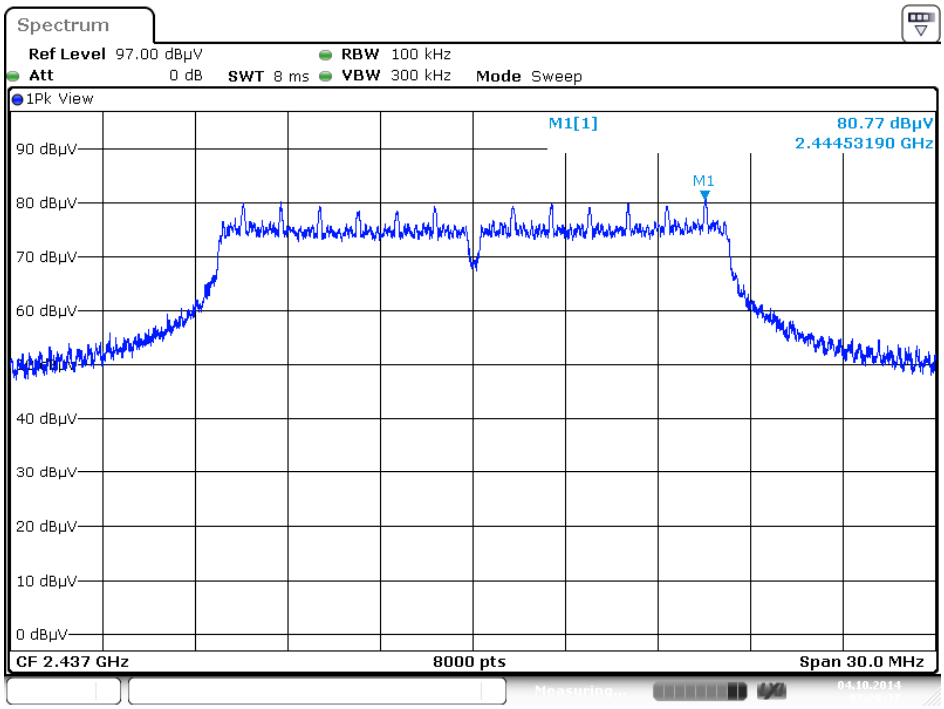
Date: 4.OCT.2014 06:39:44

Plot on Configuration IEEE 802.11b / CH 11 / 2500MHz~26500MHz (down 30dBc)



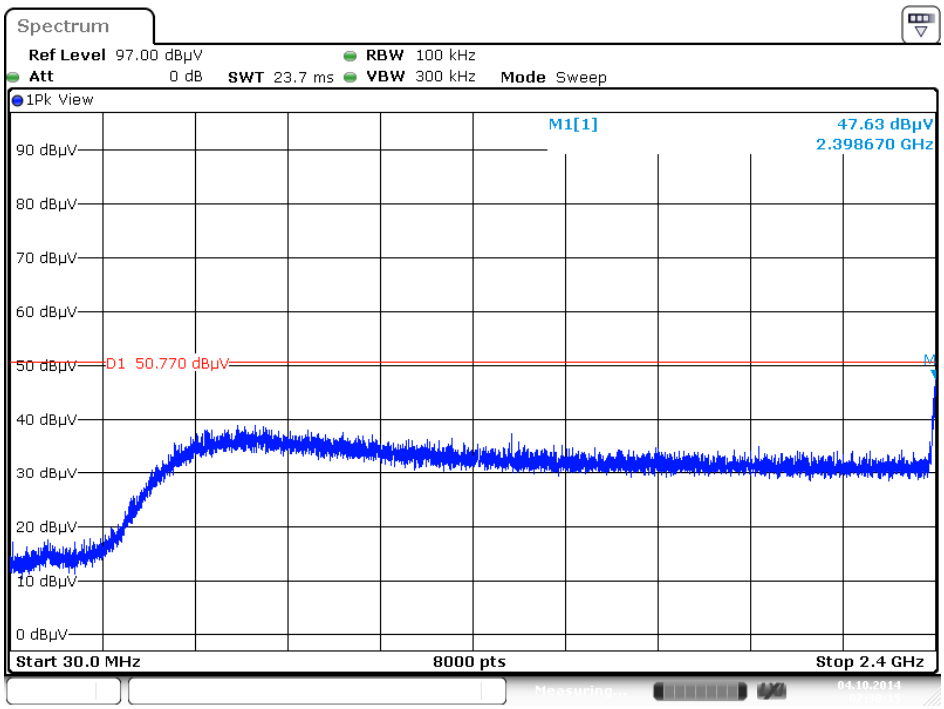
Date: 4.OCT.2014 06:39:06

Plot on Configuration IEEE 802.11g / Reference Level



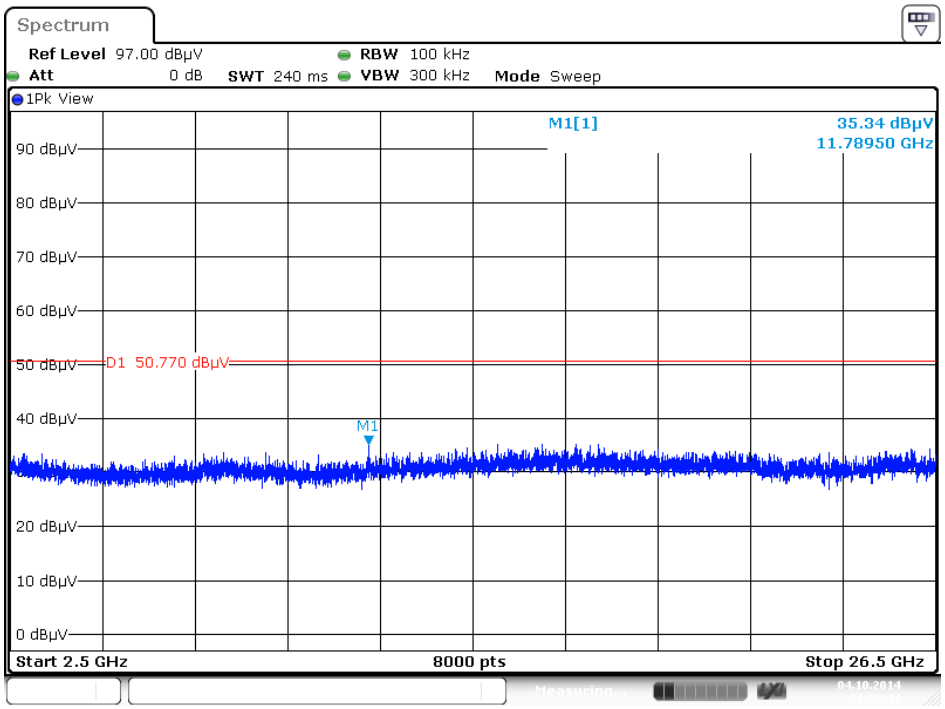
Date: 4.OCT.2014 07:28:37

Plot on Configuration IEEE 802.11g / CH 1 / 30MHz~2400MHz (down 30dBc)



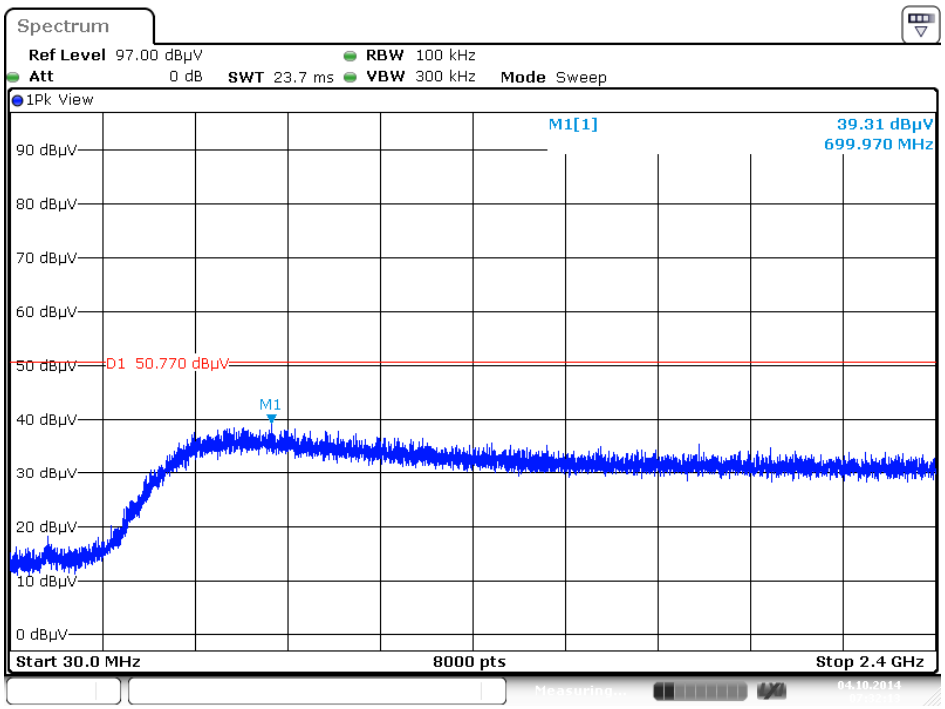
Date: 4.OCT.2014 07:30:15

Plot on Configuration IEEE 802.11g / CH 1 / 2500MHz~26500MHz (down 30dBc)



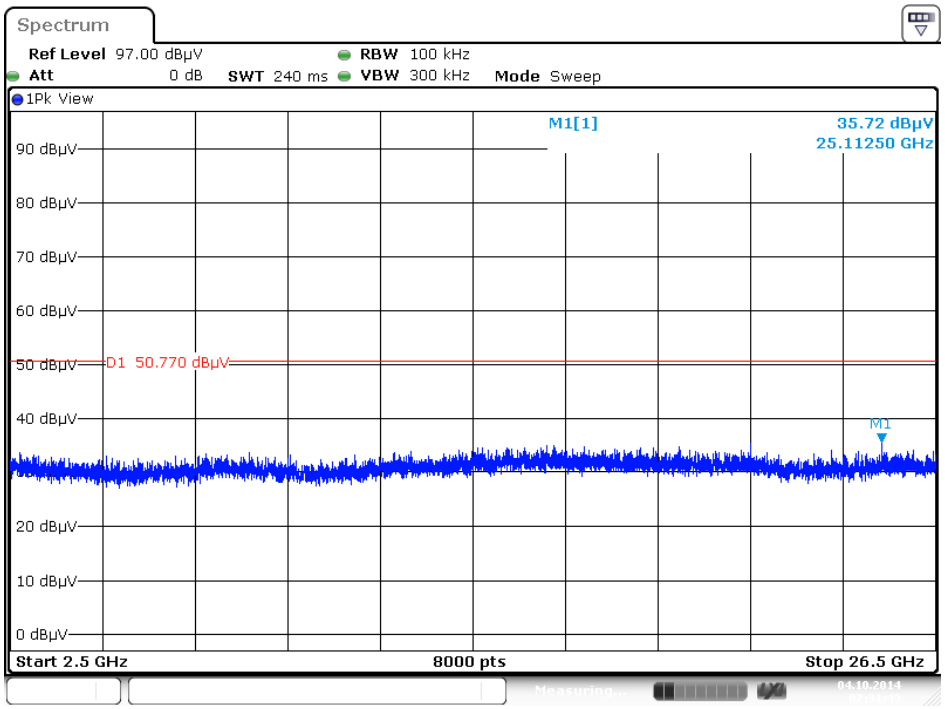
Date: 4.OCT.2014 07:30:44

Plot on Configuration IEEE 802.11g / CH 11 / 30MHz~2400MHz (down 30dBc)



Date: 4.OCT.2014 07:32:14

Plot on Configuration IEEE 802.11g / CH 11 / 2500MHz~26500MHz (down 30dBc)



Date: 4.OCT.2014 07:31:43

4.6. Antenna Requirements

4.6.1. Limit

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

4.6.2. Antenna Connector Construction

Please refer to section 3.3 in this test report; antenna connector complied with the requirements.

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	May 26, 2014	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9 kHz - 30 MHz	Nov. 05, 2012*	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz~18GHz	Nov. 01, 2013	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Aug. 22, 2014	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Nov. 12, 2013	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Dec. 16, 2013	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Oct. 23, 2013	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100019	9kHz~40GHz	Dec. 02, 2013	Radiation (03CH01-CB)
EMI Test Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8GHz	Dec. 12, 2013	Radiation (03CH01-CB)
Turn Table	INN CO	CO 2000	N/A	0 ~ 360 degree	N.C.R.	Radiation (03CH01-CB)
Antenna Mast	INN CO	CO 2000	N/A	1 m - 4 m	N.C.R.	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz - 1 GHz	Nov. 17, 2013	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-3	N/A	1 GHz - 40 GHz	Nov. 17, 2013	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-4	N/A	1 GHz - 40 GHz	Nov. 17, 2013	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-7	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-8	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-9	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-10	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-11	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
Power Sensor	Agilent	E9327A	US40442088	50MHz~18GHz	Dec. 02, 2013	Conducted (TH01-CB)
Power Meter	Agilent	E4416A	GB41291199	50MHz~18GHz	Dec. 02, 2013	Conducted (TH01-CB)

Note: Calibration Interval of instruments listed above is one year.

"*" Calibration Interval of instruments listed above is two years.

N.C.R. means Non-Calibration required.

6. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty	Remark
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.7 dB	Confidence levels of 95%