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FCC RADIO TEST REPORT

Applicant's company	**Wistron NeWeb Corporation**
Applicant Address	20 Park Avenue II, Hsinchu Science Park, Hsinchu 308,Taiwan,R.O.C.
FCC ID	**NKR-DHURW32**
Manufacturer's company	**Wistron NeWeb Corporation**
Manufacturer Address	20 Park Avenue II, Hsinchu Science Park, Hsinchu 308,Taiwan,R.O.C.

Product Name	802.11 abgn + BT module
Brand Name	WNC
Model No.	DHUR-W32
Test Rule	47 CFR FCC Part 15 Subpart C § 15.247
Test Freq. Range	2400 ~ 2483.5MHz
Received Date	Jul. 13, 2016
Final Test Date	Aug. 13, 2016
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**, **KDB558074 D01 v04** and **KDB 662911 D01 v02r01**.

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

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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR671331AA	Rev. 01	Initial issue of report	Sep. 12, 2017

1. VERIFICATION OF COMPLIANCE

Product Name	:	802.11 abgn + BT module
Brand Name	:	WNC
Model No.	:	DHUR-W32
Applicant	:	Wistron NeWeb Corporation
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. 13, 2016 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.

Cliff Chang
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**
4.1	15.207	AC Power Line Conducted Emissions	Complies
4.2	15.247(b)(3)	Maximum Conducted Output Power	Complies
4.3	15.247(e)	Power Spectral Density	Complies
4.4	15.247(a)(2)	6dB Spectrum Bandwidth	Complies
4.5	15.247(d)	Radiated Emissions	Complies
4.6	15.247(d)	Band Edge Emissions	Complies
4.7	15.203	Antenna Requirements	Complies

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	WLAN (2TX, 2RX)
Radio Type	Intentional Transceiver
Power Type	From host system
Modulation	IEEE 802.11b: DSSS IEEE 802.11g: OFDM IEEE 802.11n: see the below table
Data Modulation	IEEE 802.11b: DSSS (BPSK / QPSK / CCK) IEEE 802.11g/n: OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	IEEE 802.11b: DSSS (1/ 2/ 5.5/11) IEEE 802.11g: OFDM (6/9/12/18/24/36/48/54) IEEE 802.11n: see the below table
Frequency Range	2400 ~ 2483.5MHz
Channel Number	11 for 20MHz bandwidth ; 7 for 40MHz bandwidth
Channel Bandwidth (99%)	IEEE 802.11b: 12.32 MHz IEEE 802.11g: 28.04 MHz IEEE 802.11n MCS0 (HT20): 29.08 MHz IEEE 802.11n MCS0 (HT40): 36.90 MHz
Maximum Conducted Output Power	IEEE 802.11b: 19.32 dBm IEEE 802.11g: 25.04 dBm IEEE 802.11n MCS0 (HT20): 25.41 dBm IEEE 802.11n MCS0 (HT40): 20.11 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 Bandwidth

Antenna	Two (TX)	
Bandwidth Mode	20 MHz	40 MHz
IEEE 802.11b	V	X
IEEE 802.11g	V	X
IEEE 802.11n	V	V

IEEE 11n Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	2	MCS 0-15
802.11n (HT40)	2	MCS 0-15
Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT supports HT20 and HT40. Note 2: Modulation modes consist of below configuration: HT20/HT40: IEEE 802.11n		

3.2. Accessories

N/A

3.3. Table for Filed Antenna

Ant.	Brand	Part Number	Antenna Type	Connector	Gain (dBi)	
					WLAN 2.4GHz	WLAN 5GHz
1	WNC	3ADHUBW69S2-111	PIFA Antenna	N/A	2.04	4.95
2	WNC	3ADHUAW08S1-111	PIFA Antenna	N/A	2.37	6.52
Ant.	**Brand**	**Part Number**	**Antenna Type**	**Connector**	**Gain (dBi)**	
					Bluetooth	
3	WNC	81.EEW15.GM3	PIFA Antenna	I-PEX	-1.39	
4	WNC	81.EEW15.GM4	PIFA Antenna	I-PEX	-1.99	

Note: The EUT has four antennas.

For WLAN function (2TX/2RX):

Ant. 1 and Ant. 2 can be used as transmitting/receiving antenna.

Ant. 1 and Ant. 2 could transmit/receive simultaneously.

For Bluetooth function (1TX/1RX):

Because Ant. 3 and Ant. 4 are the same type antennas, only the higher gain antenna "Ant. 3" was tested and recorded in the report.

3.4. Table for Carrier Frequencies

There are two bandwidth systems.

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

For 40MHz bandwidth systems, use Channel 3~Channel 9.

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	Ant.
AC Power Line Conducted Emissions	Normal Link	-	-	-
Maximum Conducted Output Power	11b/CCK	1 Mbps	1/6/11	1+2
	11g/BPSK	6 Mbps	1/6/11	1+2
	11n HT20	MCS0	1/6/11	1+2
	11n HT40	MCS0	3/6/9	1+2
Power Spectral Density	11b/CCK	1 Mbps	1/6/11	1+2
	11g/BPSK	6 Mbps	1/6/11	1+2
	11n HT20	MCS0	1/6/11	1+2
	11n HT40	MCS0	3/6/9	1+2
6dB Spectrum Bandwidth	11b/CCK	1 Mbps	1/6/11	1+2
	11g/BPSK	6 Mbps	1/6/11	1+2
	11n HT20	MCS0	1/6/11	1+2
	11n HT40	MCS0	3/6/9	1+2
Radiated Emissions 9kHz~1GHz	Normal Link	-	-	-
Radiated Emissions 1GHz~10th Harmonic	11b/CCK	1 Mbps	1/6/11	1+2
	11g/BPSK	6 Mbps	1/6/11	1+2
	11n HT20	MCS0	1/6/11	1+2
	11n HT40	MCS0	3/6/9	1+2
Band Edge Emissions	11b/CCK	1 Mbps	1/6/11	1+2
	11g/BPSK	6 Mbps	1/6/11	1+2
	11n HT20	MCS0	1/6/11	1+2
	11n HT40	MCS0	3/6/9	1+2

The following test modes were performed for all tests:

For AC Power Line Conducted Emissions test:

Mode 1. 2.4GHz WLAN function + Bluetooth function

Mode 2. 5GHz WLAN function + Bluetooth function

Mode 1 is the worst case, so it was selected to record in this test report.

For Radiated Emissions below 1GHz test:

Mode 1. EUT Y axis - 2.4GHz WLAN function + Bluetooth function

Mode 2. EUT Z axis - 2.4GHz WLAN function + Bluetooth function

Mode 1 has been evaluated to be the worst case among Mode 1~2, thus measurement for Mode 3 will follow this same test mode.

Mode 3. EUT Y axis - 5GHz WLAN function + Bluetooth function

Mode 1 is the worst case, so it was selected to record in this test report.

For Radiated Emissions above1GHz test:

The EUT was performed at X axis, Y axis and Z axis position for Radiated Emissions above1GHz test, and the worst case was found at X axis. So the measurement will follow this same test configuration.

For Radiated Emission Co-location test:

Mode 1. EUT Y axis - 2.4GHz WLAN function + Bluetooth function

Mode 2. EUT Z axis - 2.4GHz WLAN function + Bluetooth function

Mode 3. EUT Y axis - 5GHz WLAN function + Bluetooth function

Mode 4. EUT Z axis - 5GHz WLAN function + Bluetooth function

Mode 2 and Mode 4 are worst test result among Mode 1~4, and the test result of those two modes are selected to record in the test report.

For Co-location MPE and Radiated Emission Co-location test:

The EUT could be applied with 2.4GHz WLAN function, 5GHz WLAN function and Bluetooth function; therefore Co-location Maximum Permissible Exposure (Please refer to FA671331) and Radiated Emission Co-location (please refer to Appendix B) tests are added for simultaneously transmit between 2.4GHz WLAN function, 5GHz WLAN function and Bluetooth function.

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 Designation No.**	**IC File No.**
03CH01-CB	SAC	Hsin Chu	TW0006	IC 4086D
CO02-CB	Conduction	Hsin Chu	TW0006	IC 4086D
TH01-CB	OVEN Room	Hsin Chu	-	-

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

3.7. Table for Supporting Units

For Test Site No: 03CH01-CB (below 1GHz)

Support Unit	Brand	Model	FCC ID
WLAN AP	Netgear	R7500	PY314300288
Earphone	e-Power	S90W	N/A
NB	DELL	E4300	DoC
Mouse	Logitech	M-U0026	DoC
BT Speaker	MARUS	MSK06C-RD	DoC
Flash disk3.0	Silicon Power	B06	DoC

For Test Site No: 03CH01-CB (above1GHz) and TH01-CB

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	DoC

For Test Site No: CO02-CB

Support Unit	Brand	Model	FCC ID
AP Router	Planex	GW-AP54SGX	KA220030603014-1
NB	DELL	E4300	DoC
Earphone	SHYARO CHI	MIC-04	DoC
Flash disk3.0	ADATA	C103	DoC
BT Speaker	MARUS	MSK06C-RD	DoC

3.8. 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.

Test Software Version	MT7662UQA V1.0.3.14					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		
	2412 MHz	2437 MHz	2462 MHz	2422 MHz	2437 MHz	2452 MHz
802.11b	20/1E	21/1F	1E/1D	-	-	-
802.11g	24/23	3E/3E	26/26	-	-	-
802.11n MCS0 HT20	24/21	3E/3E	26/24	-	-	-
802.11n MCS0 HT40	-	-	-	1D/1C	25/24	23/22

3.9. EUT Operation during Test

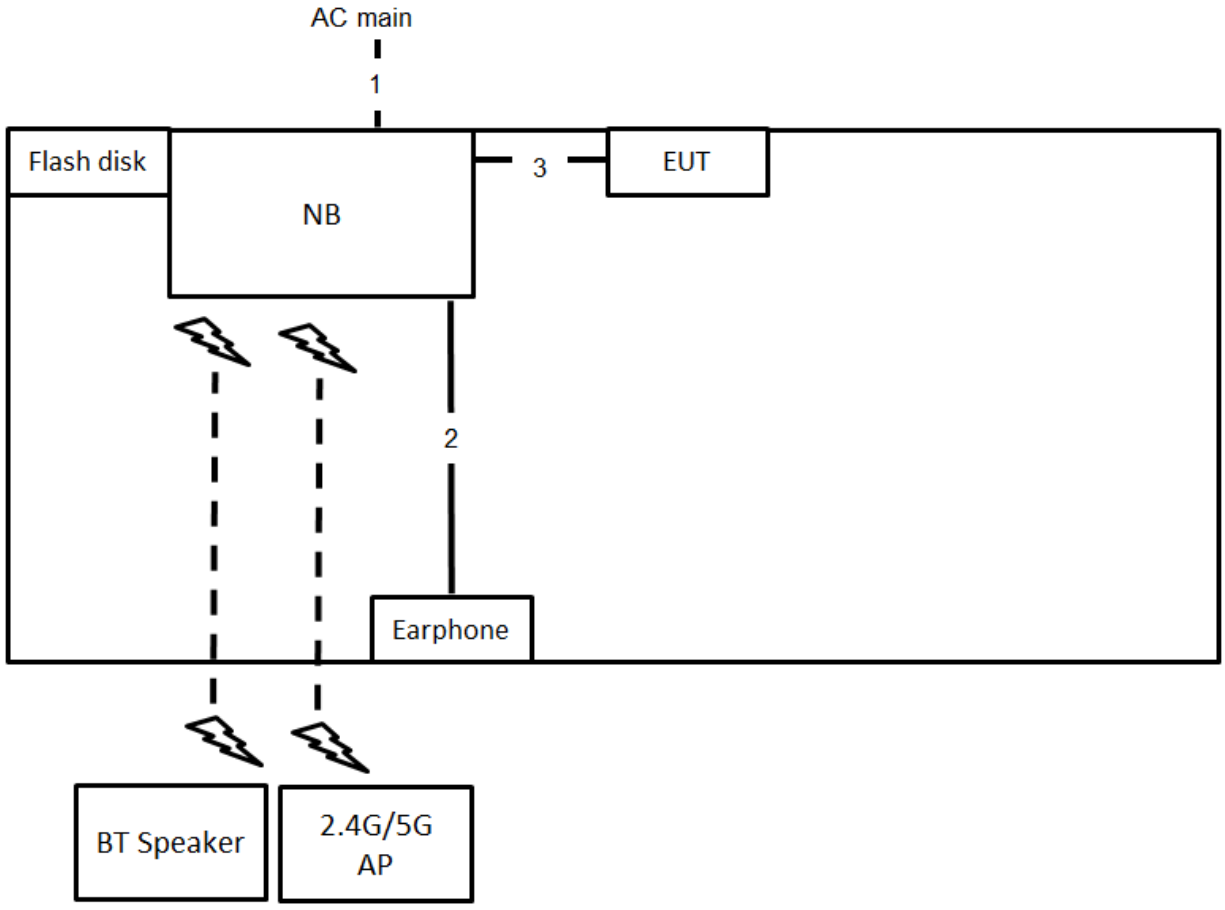
The EUT was programmed to be in continuously transmitting mode.

3.10. Duty Cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11b	1.000	1.000	100.00	0.00	0.01
802.11g	1.442	1.460	98.77	0.05	0.01
802.11n MCS0 HT20	1.330	1.370	97.08	0.13	0.75
802.11n MCS0 HT40	0.640	0.680	94.12	0.26	1.56

3.11. Test Configurations

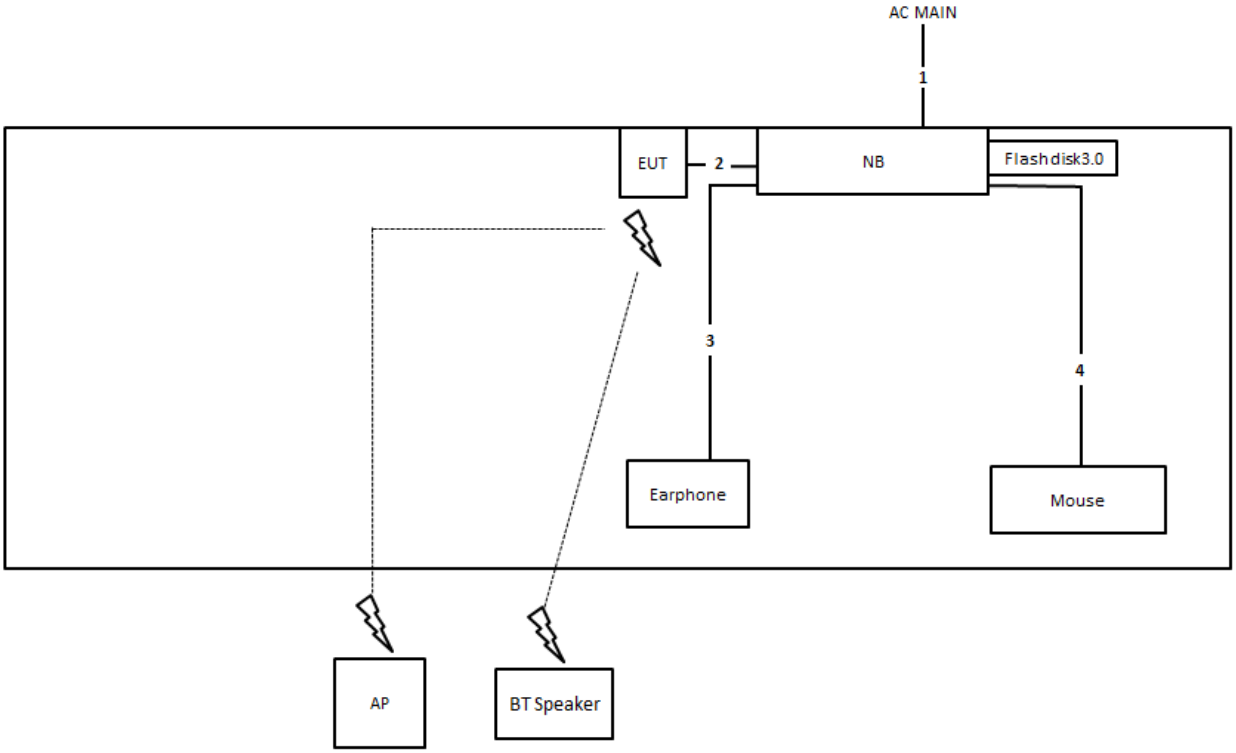
3.11.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	2.6m
2	Audio cable	No	1.1m
3	USB cable	No	0.7m

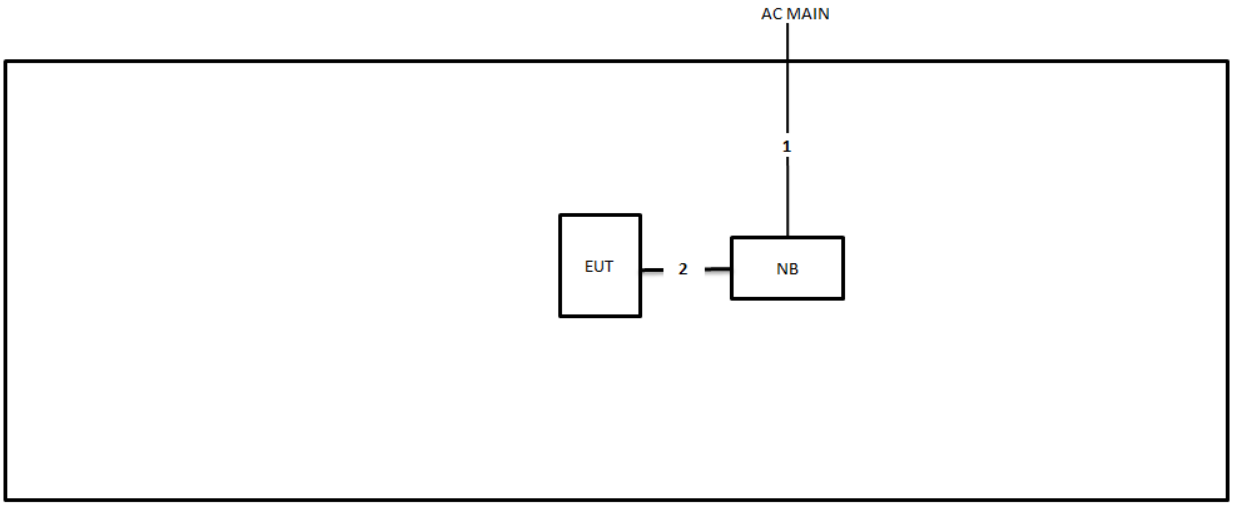
3.11.2. Radiation Emissions Test Configuration

Test Configuration: 30MHz~1GHz



Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	USB cable	Yes	0.1m
3	Audio cable	No	1.4m
4	USB cable	Yes	1.8m

Test Configuration: above 1GHz



Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	USB cable	Yes	0.1m

4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

For this product which is designed to be connected to the AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed below limits table.

Frequency (MHz)	QP Limit (dBuV)	AV Limit (dBuV)
0.15~0.5	66~56	56~46
0.5~5	56	46
5~30	60	50

4.1.2. Measuring Instruments and Setting

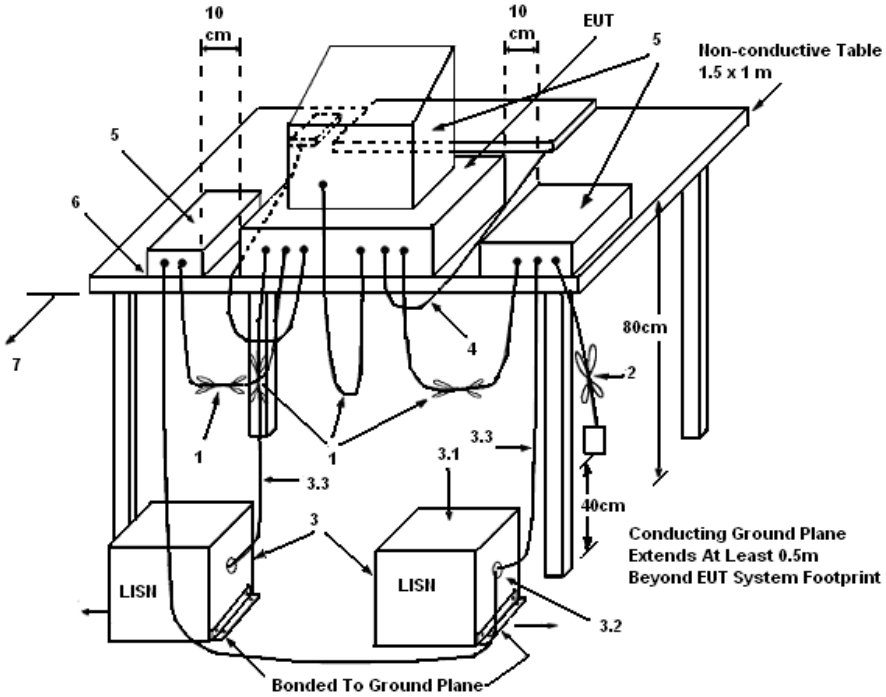
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

4.1.3. Test Procedures

1. Configure the EUT according to ANSI C63.10. The EUT or host of EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
4. The frequency range from 150 kHz to 30 MHz was searched.
5. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. The measurement has to be done between each power line and ground at the power terminal.

4.1.4. Test Setup Layout



LEGEND:

(1) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

(2) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

(3) EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω. LISN can be placed on top of, or immediately beneath, reference ground plane.

(3.1) All other equipment powered from additional LISN(s).

(3.2) Multiple outlet strip can be used for multiple power cords of non-EUT equipment.

(3.3) LISN at least 80 cm from nearest part of EUT chassis.

(4) Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.

(5) Non-EUT components of EUT system being tested.

(6) Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.

(7) Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

4.1.5. Test Deviation

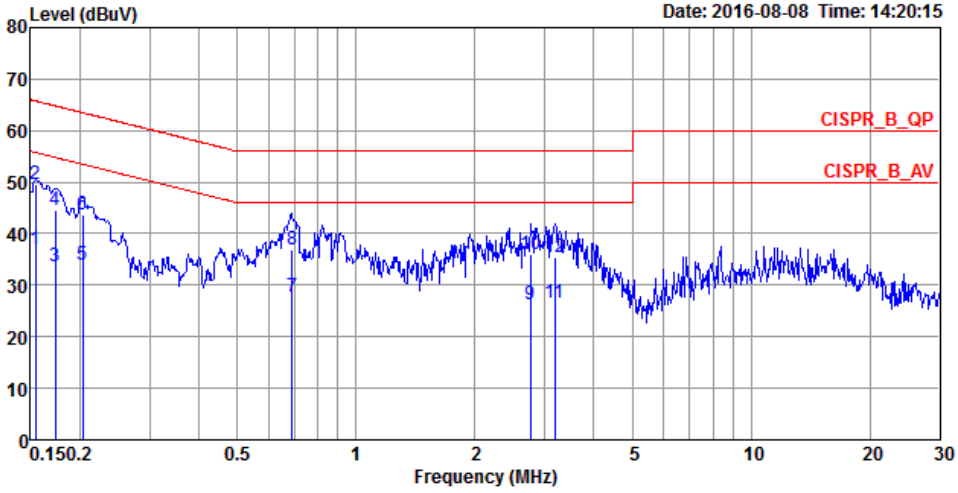
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

The EUT was placed on the test table and programmed in normal function.

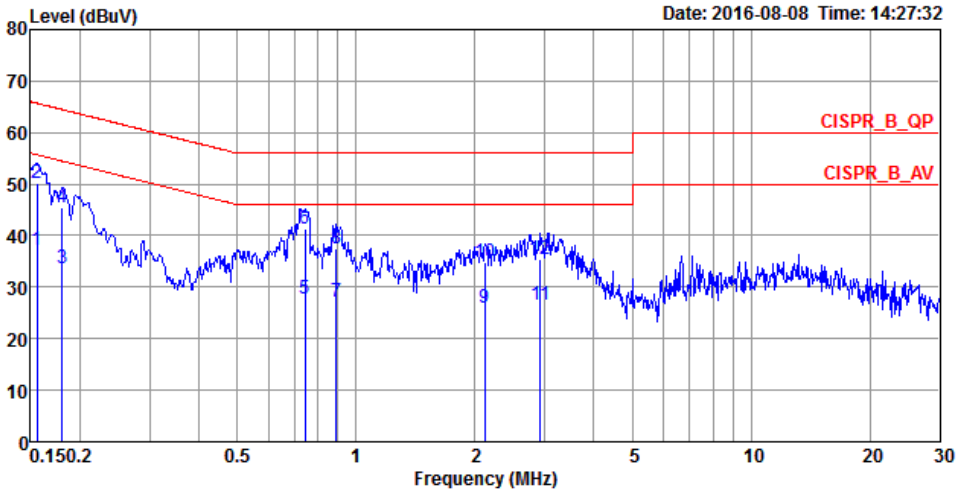
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	23°C	Humidity	62%
Test Engineer	Ryo Fan	Phase	Line
Configuration	Normal Link	Test Mode	Mode 1



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1540	36.95	-18.83	55.78	26.83	9.96	0.16	Average	LINE
2	0.1540	49.58	-16.20	65.78	39.46	9.96	0.16	QP	LINE
3	0.1731	33.74	-21.07	54.81	23.62	9.96	0.16	Average	LINE
4	0.1731	44.63	-20.18	64.81	34.51	9.96	0.16	QP	LINE
5	0.2029	34.04	-19.45	53.49	23.91	9.95	0.18	Average	LINE
6	0.2029	43.67	-19.82	63.49	33.54	9.95	0.18	QP	LINE
7	0.6893	27.64	-18.36	46.00	17.42	10.03	0.19	Average	LINE
8	0.6893	36.95	-19.05	56.00	26.73	10.03	0.19	QP	LINE
9	2.7648	26.32	-19.68	46.00	15.94	10.09	0.29	Average	LINE
10	2.7648	35.90	-20.10	56.00	25.52	10.09	0.29	QP	LINE
11	3.1900	26.64	-19.36	46.00	16.24	10.10	0.30	Average	LINE
12	3.1900	35.45	-20.55	56.00	25.05	10.10	0.30	QP	LINE

Temperature	23°C	Humidity	62%
Test Engineer	Ryo Fan	Phase	Neutral
Configuration	Normal Link	Test Mode	Mode 1



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1557	37.29	-18.40	55.69	27.17	9.96	0.16	Average	NEUTRAL
2	0.1557	50.20	-15.49	65.69	40.08	9.96	0.16	QP	NEUTRAL
3	0.1806	33.79	-20.67	54.46	23.65	9.96	0.18	Average	NEUTRAL
4	0.1806	45.46	-19.00	64.46	35.32	9.96	0.18	QP	NEUTRAL
5	0.7430	27.82	-18.18	46.00	17.66	9.97	0.19	Average	NEUTRAL
6	0.7430	41.23	-14.77	56.00	31.07	9.97	0.19	QP	NEUTRAL
7	0.8897	27.25	-18.75	46.00	17.09	9.97	0.19	Average	NEUTRAL
8	0.8897	37.53	-18.47	56.00	27.37	9.97	0.19	QP	NEUTRAL
9	2.1213	25.91	-20.09	46.00	15.66	9.99	0.26	Average	NEUTRAL
10	2.1213	34.84	-21.16	56.00	24.59	9.99	0.26	QP	NEUTRAL
11	2.9307	26.67	-19.33	46.00	16.37	10.01	0.29	Average	NEUTRAL
12	2.9307	35.55	-20.45	56.00	25.25	10.01	0.29	QP	NEUTRAL

Note:

Level = Read Level + LISN Factor + Cable Loss.

4.2. Maximum Conducted Output Power Measurement

4.2.1. Limit

The limit for output power is 30dBm.

4.2.2. Measuring Instruments and Setting

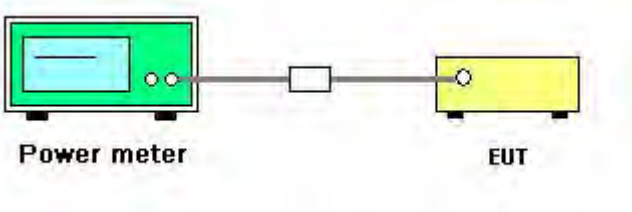
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

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

4.2.3. Test Procedures

1. Test procedures refer KDB558074 D01 v04 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.

4.2.4. 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 Maximum Conducted Output Power

Temperature	25°C	Humidity	56%
Test Engineer	Gary Chu	Test Date	Jul. 29, 2016~Aug. 13, 2016

Mode	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Ant. 1	Ant. 2	Total		
802.11b	2412 MHz	16.31	16.18	19.26	30.00	Complies
	2437 MHz	16.16	16.45	19.32	30.00	Complies
	2462 MHz	14.15	14.01	17.09	30.00	Complies
802.11g	2412 MHz	17.44	17.23	20.35	30.00	Complies
	2437 MHz	22.02	22.04	25.04	30.00	Complies
	2462 MHz	17.22	17.17	20.21	30.00	Complies
802.11n MCS0 HT20	2412 MHz	16.42	16.72	19.58	30.00	Complies
	2437 MHz	22.31	22.49	25.41	30.00	Complies
	2462 MHz	16.02	16.12	19.08	30.00	Complies
802.11n MCS0 HT40	2422 MHz	13.82	13.66	16.75	30.00	Complies
	2437 MHz	17.21	16.98	20.11	30.00	Complies
	2452 MHz	15.72	15.43	18.59	30.00	Complies

4.3. Power Spectral Density Measurement

4.3.1. 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.

4.3.2. Measuring Instruments and Setting

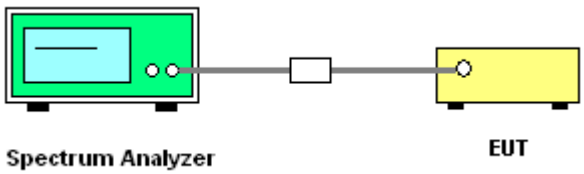
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum 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

4.3.3. Test Procedures

1. Test was performed in accordance with KDB558074 D01 v04 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.

4.3.4. Test Setup Layout



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 Power Spectral Density

Temperature	25°C	Humidity	56%
Test Engineer	Gary Chu		

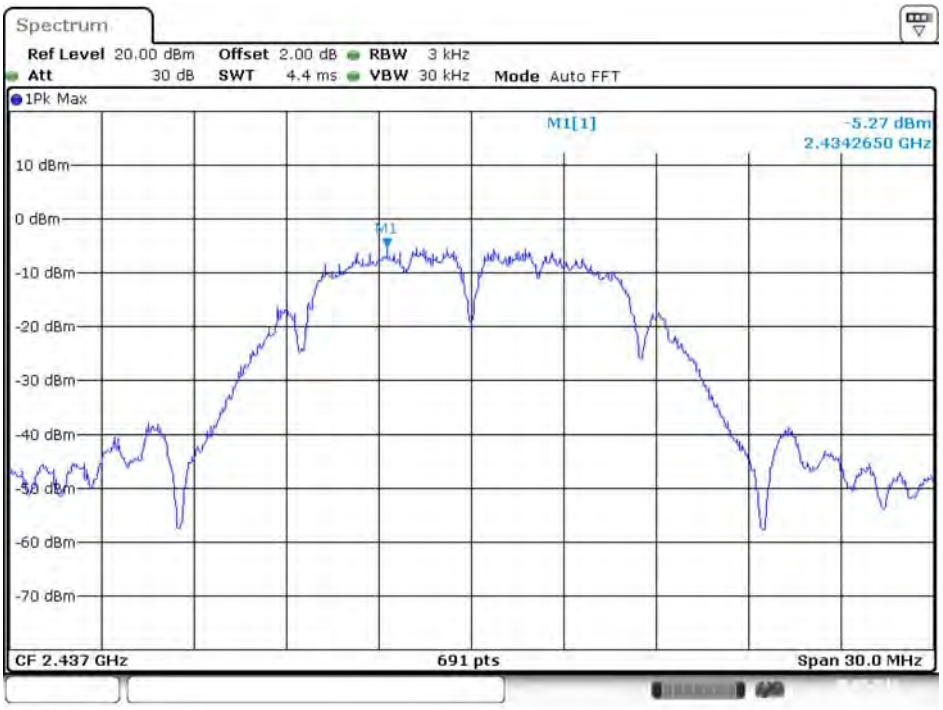
Mode	Frequency	Power Density (dBm/3kHz)			Power Density Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 2	Total		
802.11b	2412 MHz	-7.13	-7.00	-4.05	8.00	Complies
	2437 MHz	-5.27	-6.91	-3.00	8.00	Complies
	2462 MHz	-6.86	-8.87	-4.74	8.00	Complies
802.11g	2412 MHz	-5.74	-7.47	-3.51	8.00	Complies
	2437 MHz	-1.73	-1.91	1.19	8.00	Complies
	2462 MHz	-4.98	-6.63	-2.72	8.00	Complies
802.11n MCS0 HT20	2412 MHz	-7.05	-8.15	-4.55	8.00	Complies
	2437 MHz	-3.41	-2.26	0.21	8.00	Complies
	2462 MHz	-6.70	-9.26	-4.78	8.00	Complies
802.11n MCS0 HT40	2422 MHz	-13.60	-12.19	-9.83	8.00	Complies
	2437 MHz	-8.42	-11.48	-6.68	8.00	Complies
	2452 MHz	-12.95	-10.42	-8.49	8.00	Complies

Note: $Directional\,Gain = 10\log\left[\frac{\sum_{j=1}^{Nss}\left\{\sum_{K=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =5.22dBi <6dBi, so the limit doesn't reduce.

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

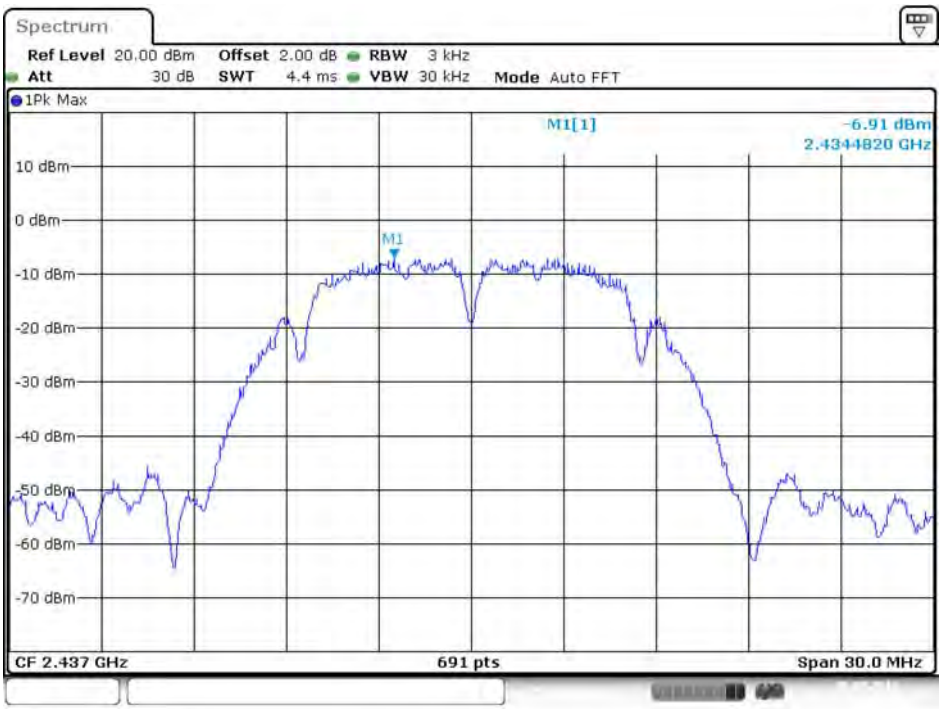
For plots, only the channel with worse result was shown.

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



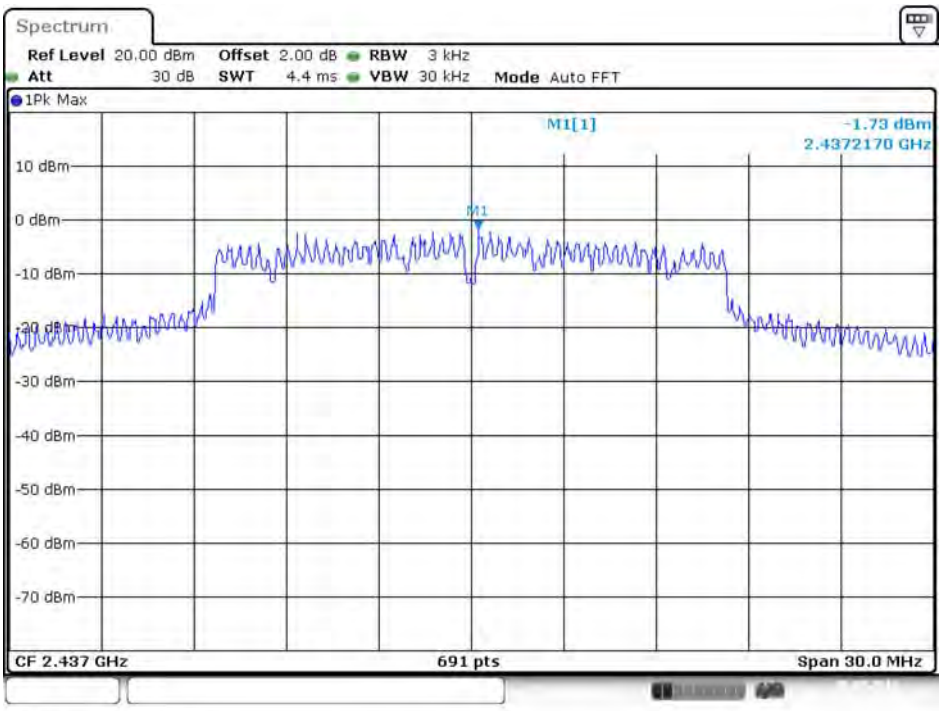
Date: 30.JUL.2016 19:06:09

Power Density Plot on Configuration IEEE 802.11b / 2437 MHz / Ant. 2



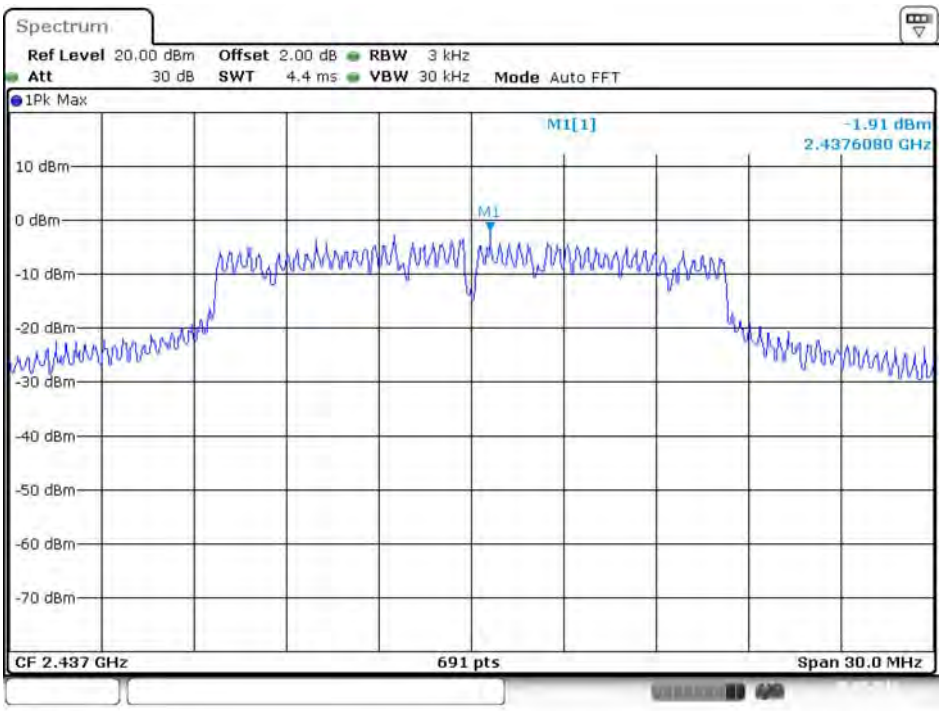
Date: 30.JUL.2016 19:05:40

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



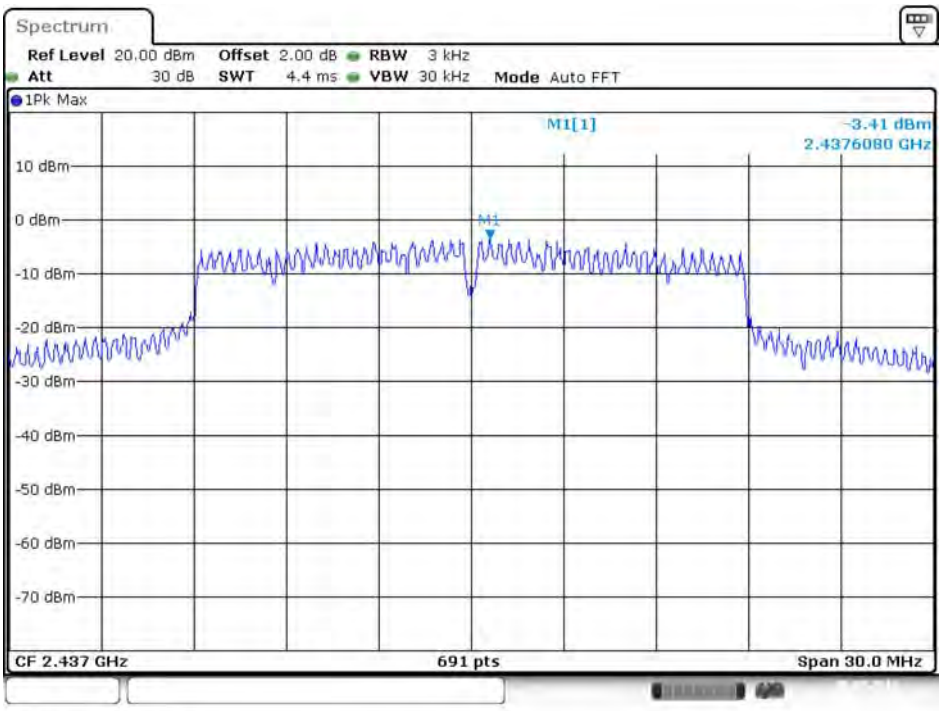
Date: 30.JUL.2016 19:14:47

Power Density Plot on Configuration IEEE 802.11g / 2437 MHz / Ant. 2



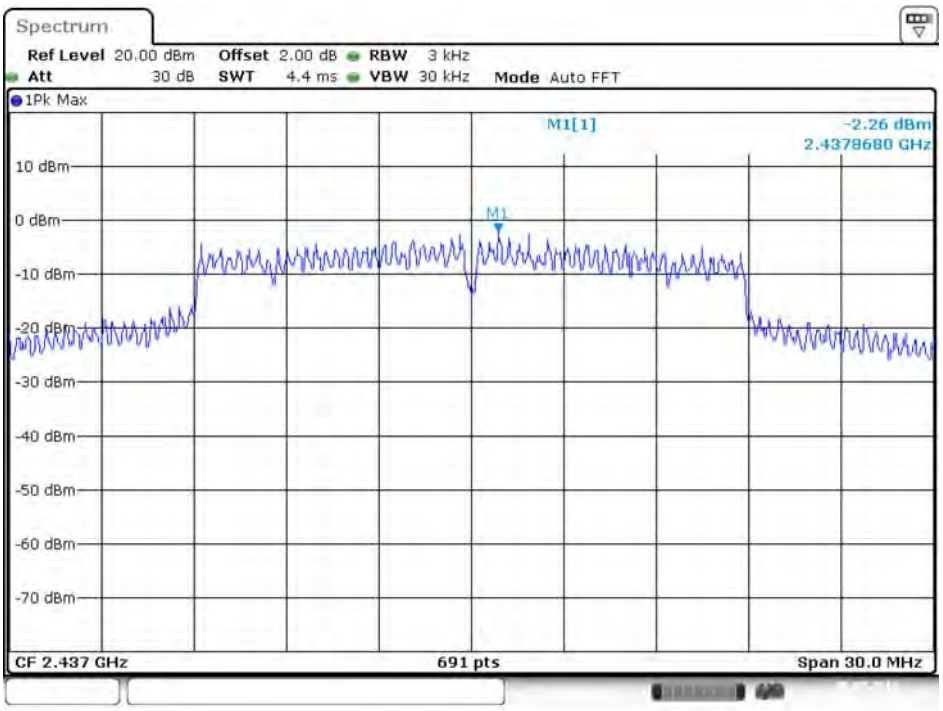
Date: 30.JUL.2016 19:15:09

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



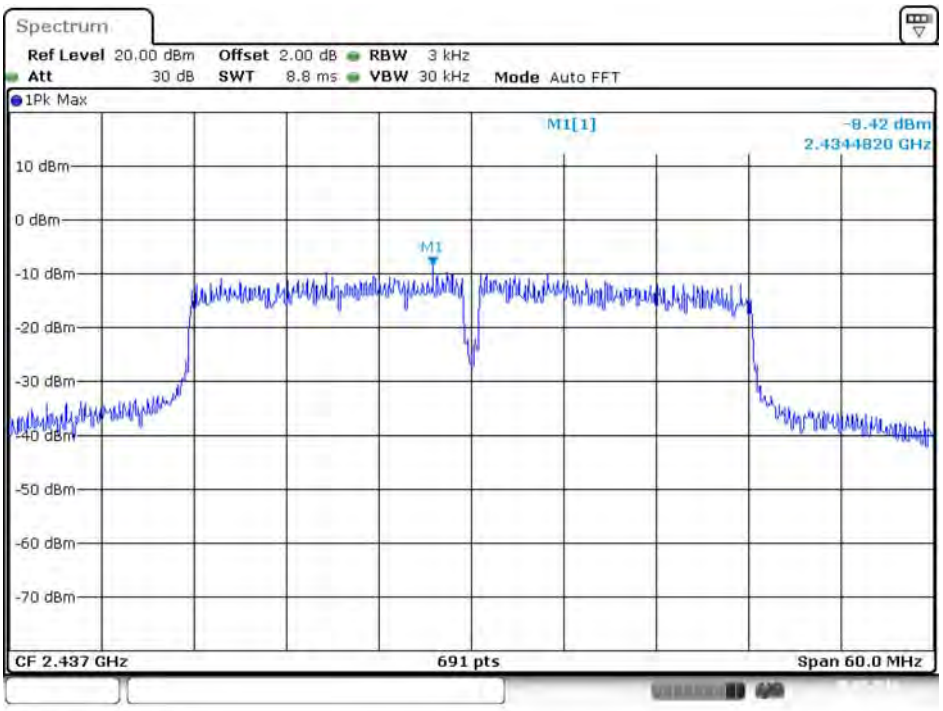
Date: 30.JUL.2016 19:19:10

Power Density Plot on Configuration IEEE 802.11n MCS0 HT20 / 2437 MHz / Ant. 2



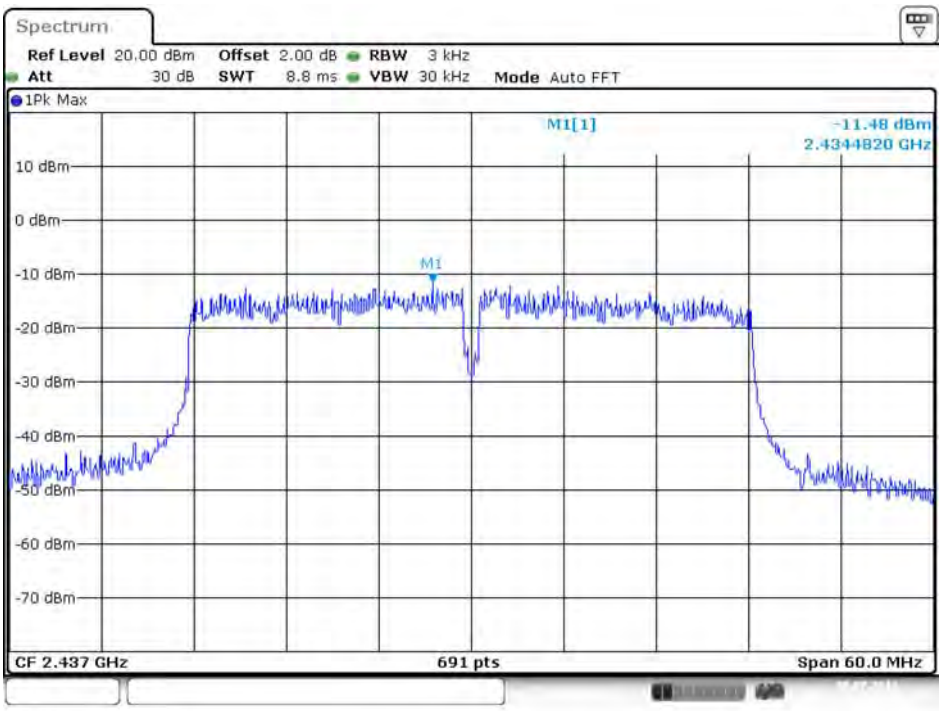
Date: 30.JUL.2016 19:19:29

Power Density Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437 MHz / Ant. 1



Date: 30.JUL.2016 19:22:47

Power Density Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437 MHz / Ant. 2



Date: 30.JUL.2016 19:23:10

4.4. 6dB Spectrum Bandwidth Measurement

4.4.1. Limit

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

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 the Spectrum Analyzer.

6dB Spectrum Bandwidth	
Spectrum Parameters	**Setting**
Attenuation	Auto
Span Frequency	> 6dB Bandwidth
RBW	100kHz
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto
99% Occupied Bandwidth	
Spectrum Parameters	**Setting**
Span	1.5 times to 5.0 times the OBW
RBW	1 % to 5 % of the OBW
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold

4.4.3. 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 KDB558074 D01 v04 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.

4.4.4. Test Setup Layout

For Radiated 6dB Bandwidth Measurement:

This test setup layout is the same as that shown in section 4.5.4.

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. Test Result of 6dB Spectrum Bandwidth

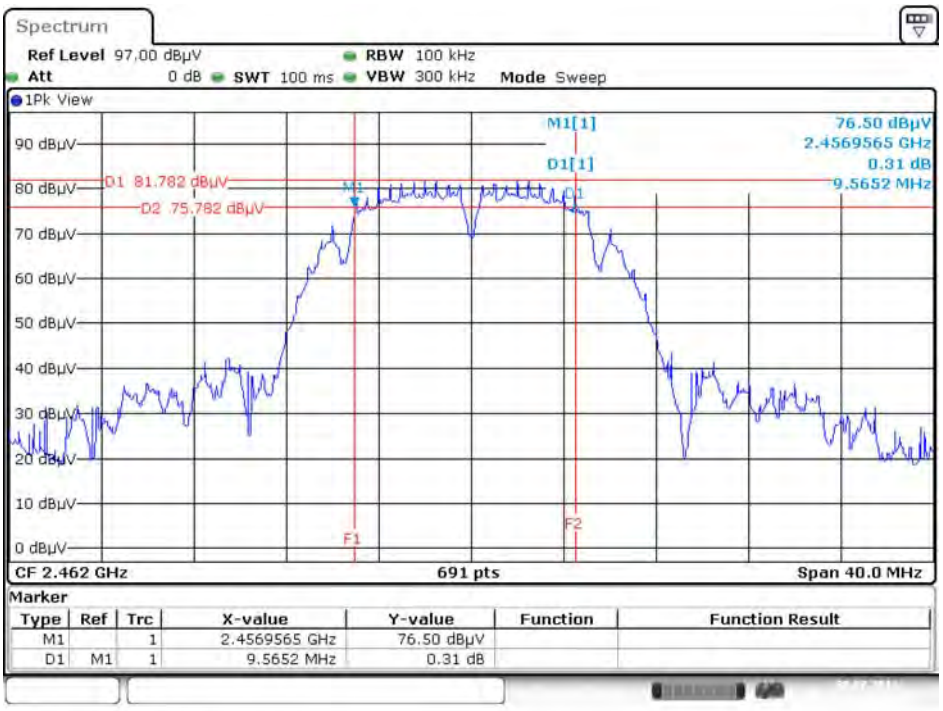
Temperature	25°C	Humidity	56%
Test Engineer	Gary Chu		

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11b	2412 MHz	9.97	12.32	500	Complies
	2437 MHz	9.97	12.32	500	Complies
	2462 MHz	9.56	12.32	500	Complies
802.11g	2412 MHz	16.29	17.01	500	Complies
	2437 MHz	16.34	28.04	500	Complies
	2462 MHz	16.05	17.19	500	Complies
802.11n MCS0 HT20	2412 MHz	16.87	17.97	500	Complies
	2437 MHz	17.15	29.08	500	Complies
	2462 MHz	17.56	18.23	500	Complies
802.11n MCS0 HT40	2422 MHz	35.13	36.75	500	Complies
	2437 MHz	35.94	36.90	500	Complies
	2452 MHz	35.13	36.61	500	Complies

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

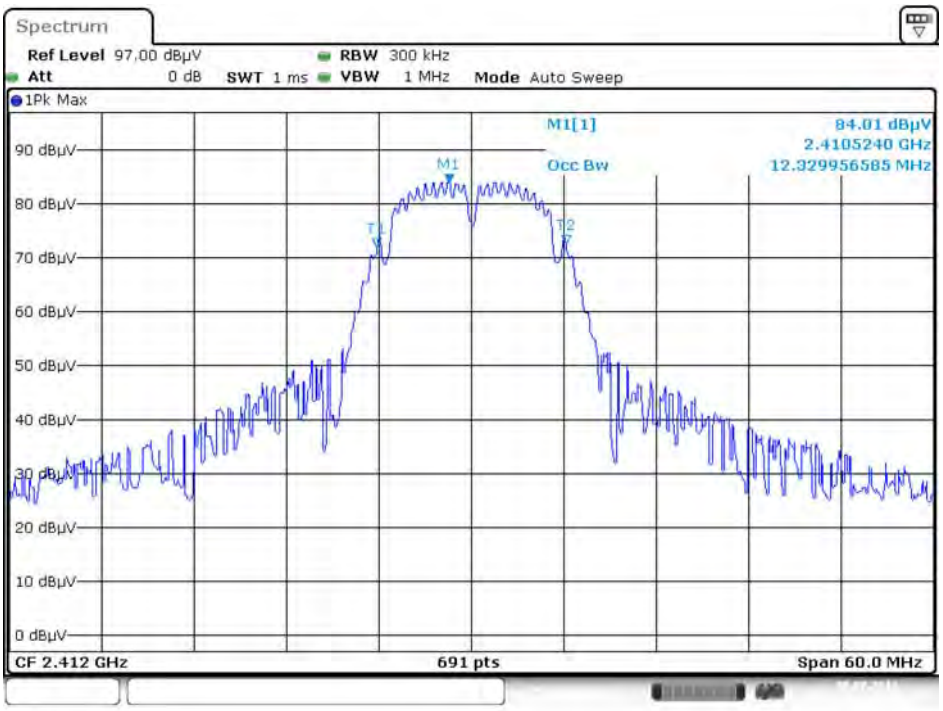
For plots, only the channel with worse result was shown.

6 dB Bandwidth Plot on Configuration IEEE 802.11b / 2462 MHz / Ant. 1 + Ant. 2



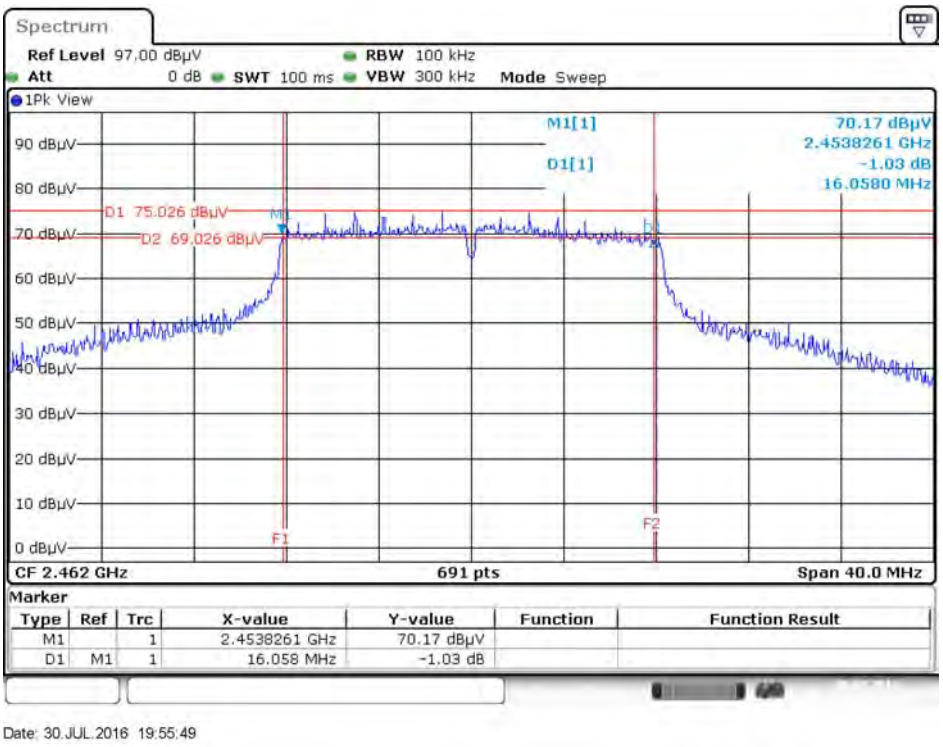
Date: 30.JUL.2016 19:54:29

99% Occupied Bandwidth Plot on Configuration IEEE 802.11b / 2412 MHz / Ant. 1 + Ant. 2



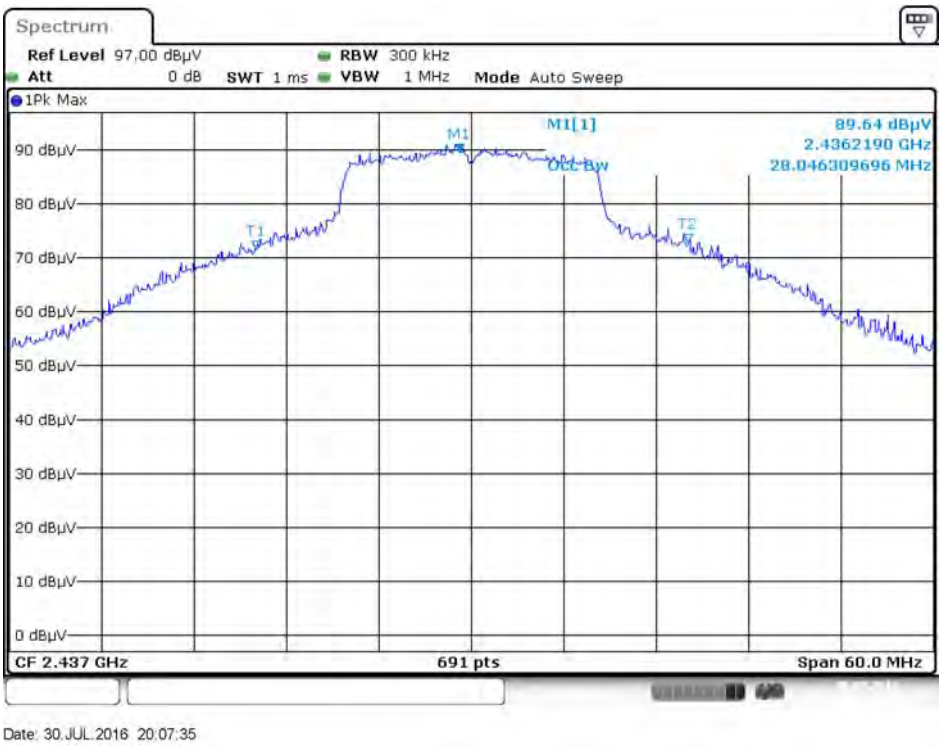
Date: 30.JUL.2016 20:10:35

6 dB Bandwidth Plot on Configuration IEEE 802.11g / 2462 MHz / Ant. 1 + Ant. 2



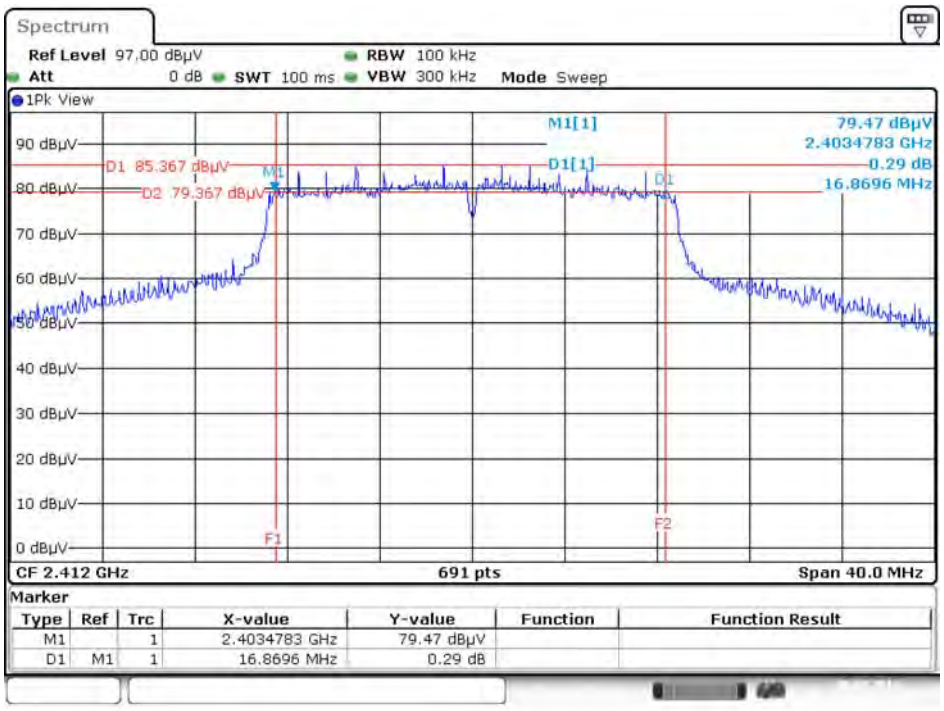
Date: 30.JUL.2016 19:55:49

99% Occupied Bandwidth Plot on Configuration IEEE 802.11g / 2437 MHz / Ant. 1 + Ant. 2



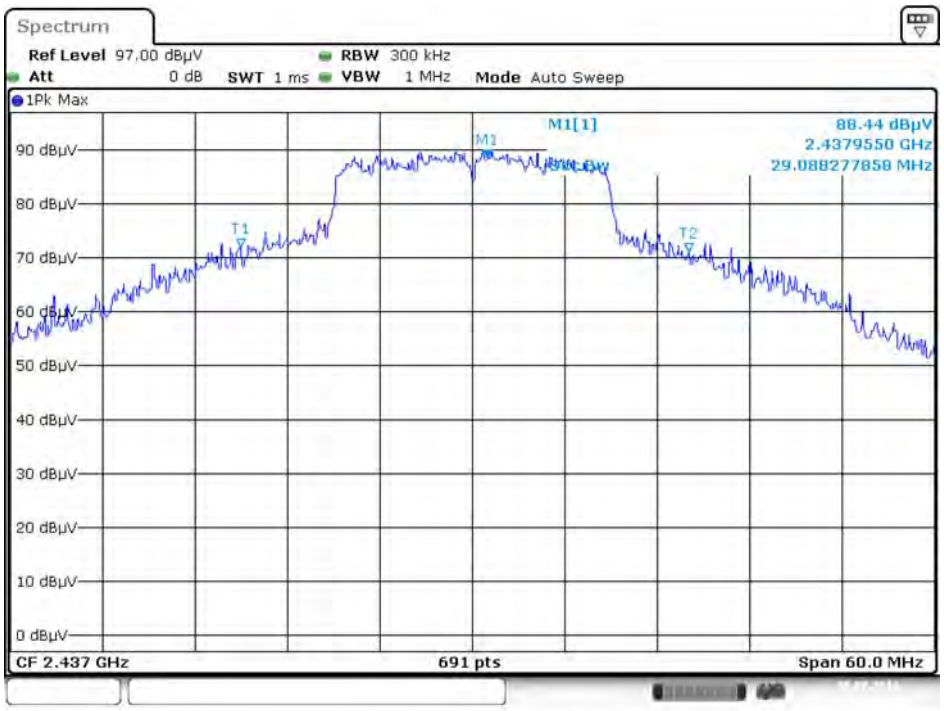
Date: 30.JUL.2016 20:07:35

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412 MHz / Ant. 1 + Ant. 2



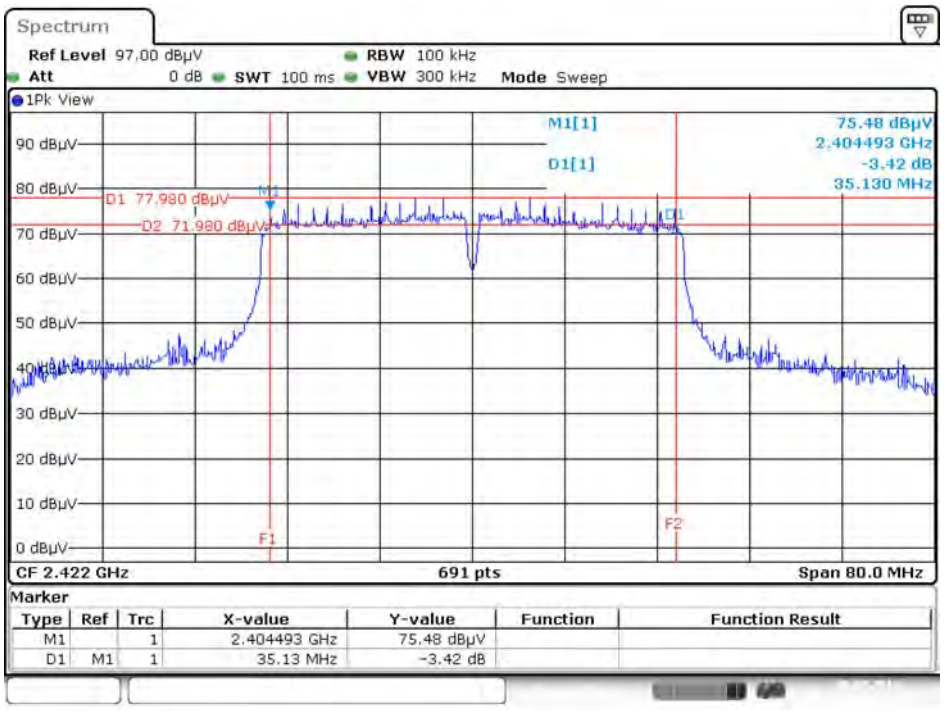
Date: 30.JUL.2016 19:57:33

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / 2437 MHz / Ant. 1 + Ant. 2



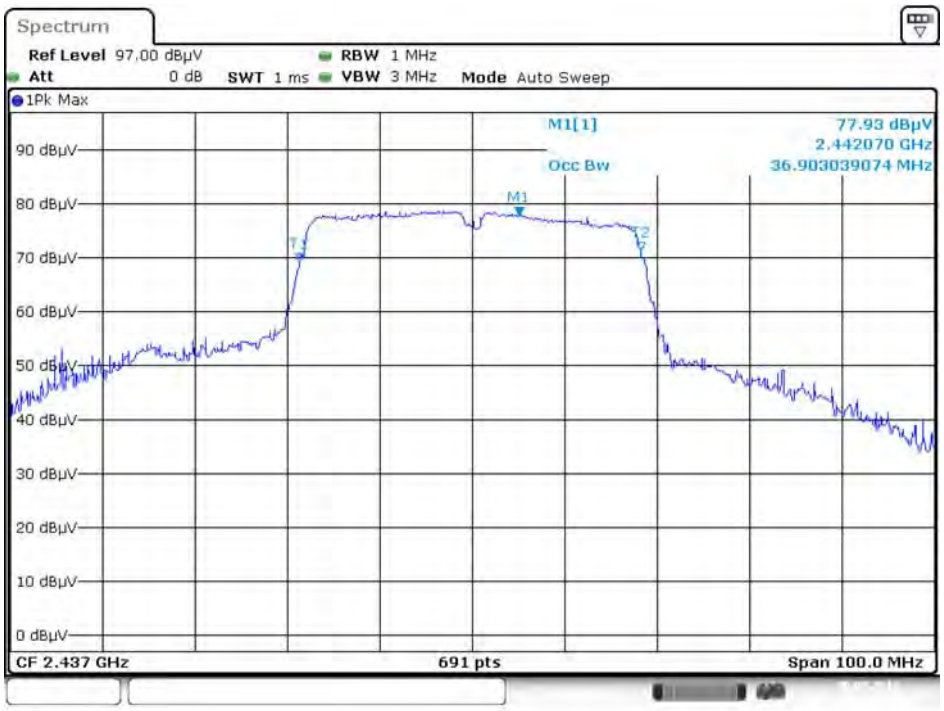
Date: 30.JUL.2016 20:04:47

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / 2422 MHz / Ant. 1 + Ant. 2



Date: 30.JUL.2016 19:51:37

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437 MHz / Ant. 1 + Ant. 2



Date: 30.JUL.2016 20:13:25

4.5. Radiated 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 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

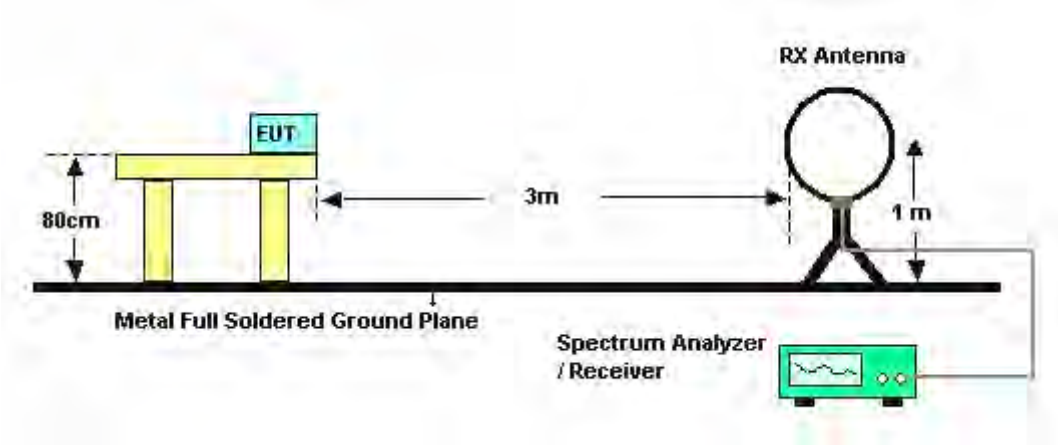
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.5.3. Test Procedures

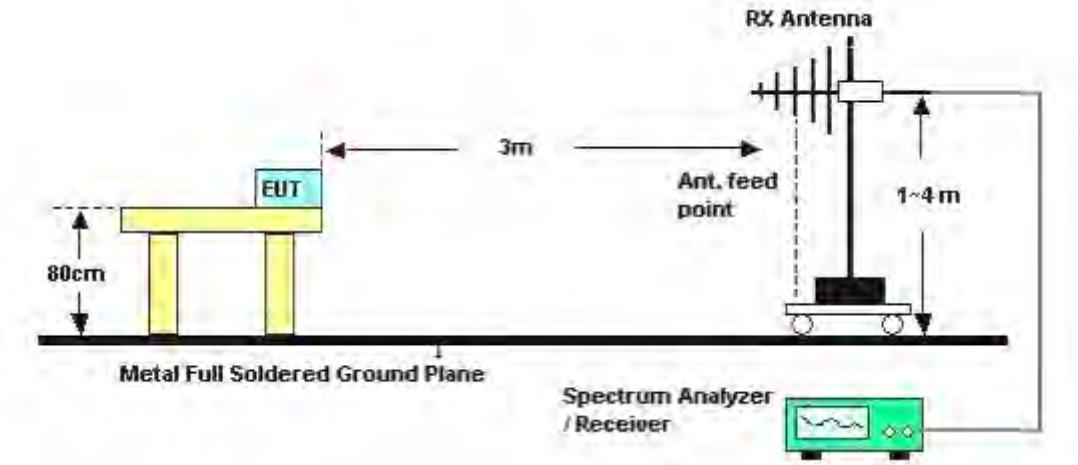
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 1m & 3m far away from the turntable.
2. Power on the EUT and all the supporting 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.

4.5.4. Test Setup Layout

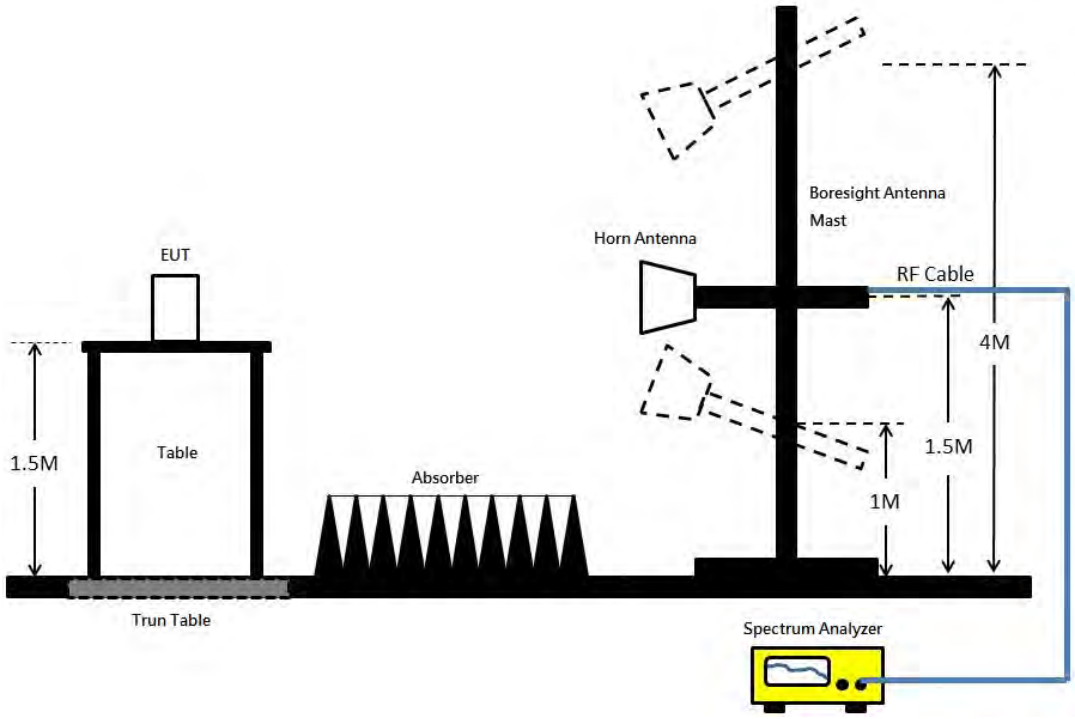
For Radiated Emissions: 9kHz ~30MHz



For Radiated Emissions: 30MHz~1GHz



For Radiated Emissions: Above 1GHz



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

Temperature	22.2°C	Humidity	51%
Test Engineer	John Tang, Zero Chen	Configurations	Normal Link
Test Date	Aug. 01, 2016	Test Mode	Mode 1

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.

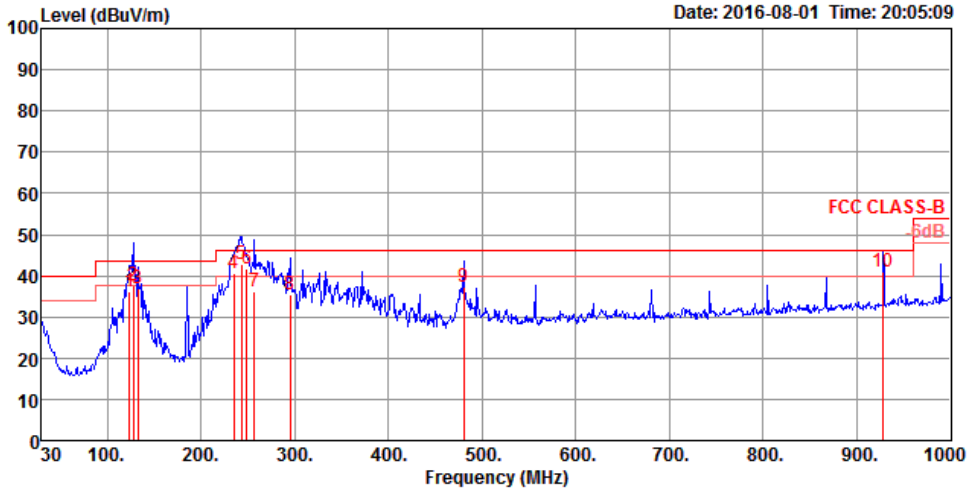
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

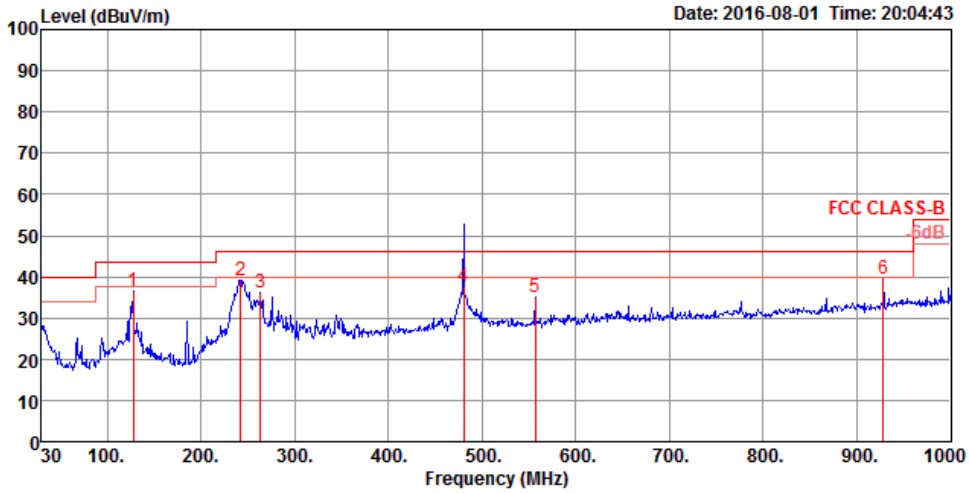
Temperature	22.2°C	Humidity	51%
Test Engineer	John Tang, Zero Chen	Configurations	Normal Link
Test Mode	Mode 1		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	124.09	36.33	43.50	-7.17	48.77	0.96	18.97	32.37	100	192	QP	HORIZONTAL
2	127.97	37.76	43.50	-5.74	50.30	0.98	18.85	32.37	200	167	QP	HORIZONTAL
3	132.82	36.96	43.50	-6.54	49.71	0.99	18.63	32.37	200	148	QP	HORIZONTAL
4	234.67	40.53	46.00	-5.47	53.58	1.31	17.95	32.31	150	164	QP	HORIZONTAL
5	243.40	42.95	46.00	-3.05	55.30	1.33	18.63	32.31	150	156	QP	HORIZONTAL
6	249.22	41.85	46.00	-4.15	53.77	1.34	19.04	32.30	100	149	QP	HORIZONTAL
7	256.98	36.04	46.00	-9.96	47.30	1.36	19.68	32.30	150	142	QP	HORIZONTAL
8	294.81	35.38	46.00	-10.62	46.29	1.47	19.90	32.28	100	128	QP	HORIZONTAL
9	480.08	37.26	46.00	-8.74	44.00	1.90	23.71	32.35	200	3	QP	HORIZONTAL
10	928.22	40.85	46.00	-5.15	41.74	2.63	27.94	31.46	100	88	QP	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	127.97	36.44	43.50	-7.06	48.98	0.98	18.85	32.37	200	103	Peak	VERTICAL
2	242.43	39.17	46.00	-6.83	51.58	1.32	18.58	32.31	200	90	Peak	VERTICAL
3	263.77	36.08	46.00	-9.92	47.21	1.38	19.79	32.30	150	110	Peak	VERTICAL
4	480.08	37.76	46.00	-8.24	44.50	1.90	23.71	32.35	100	216	QP	VERTICAL
5	556.71	35.08	46.00	-10.92	40.55	2.04	24.88	32.39	100	272	Peak	VERTICAL
6	928.22	39.63	46.00	-6.37	40.52	2.63	27.94	31.46	100	239	Peak	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.

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

Temperature	22.2℃	Humidity	51%
Test Engineer	John Tang, Zero Chen	Configurations	IEEE 802.11b CH 1 / Ant. 1 + Ant. 2
Test Date	Jul. 26, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4823.97	55.99	74.00	-18.01	51.57	6.33	31.12	33.03	100	309	Peak	HORIZONTAL
2	4823.97	53.57	54.00	-0.43	49.15	6.33	31.12	33.03	100	309	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4823.97	51.56	54.00	-2.44	47.14	6.33	31.12	33.03	100	352	Average	VERTICAL
2	4823.97	53.49	74.00	-20.51	49.07	6.33	31.12	33.03	100	352	Peak	VERTICAL

Temperature	22.2°C	Humidity	51%
Test Engineer	John Tang, Zero Chen	Configurations	IEEE 802.11b CH 6 / Ant. 1 + Ant. 2
Test Date	Jul. 26, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4873.97	56.16	74.00	-17.84	51.61	6.35	31.21	33.01	101	308	Peak	HORIZONTAL
2	4873.99	53.74	54.00	-0.26	49.19	6.35	31.21	33.01	101	308	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Limit	Level	Loss	Factor	Factor	'Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4873.94	50.14	54.00	-3.86	45.59	6.35	31.21	33.01	100	318	Average	VERTICAL
2	4874.00	53.09	74.00	-20.91	48.54	6.35	31.21	33.01	100	318	Peak	VERTICAL

Temperature	22.2°C	Humidity	51%
Test Engineer	John Tang, Zero Chen	Configurations	IEEE 802.11b CH 11 / Ant. 1 + Ant. 2
Test Date	Jul. 26, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4923.92	55.61	74.00	-18.39	50.95	6.36	31.29	32.99	100	309	Peak	HORIZONTAL
2	4924.02	53.56	54.00	-0.44	48.90	6.36	31.29	32.99	100	309	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4923.95	53.11	74.00	-20.89	48.45	6.36	31.29	32.99	100	315	Peak	VERTICAL
2	4923.96	49.79	54.00	-4.21	45.13	6.36	31.29	32.99	100	315	Average	VERTICAL

Temperature	22.2°C	Humidity	51%
Test Engineer	John Tang, Zero Chen	Configurations	IEEE 802.11g CH 1 / Ant. 1 + Ant. 2
Test Date	Jul. 26, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4822.58	44.44	74.00	-29.56	40.02	6.33	31.12	33.03	146	193	Peak	HORIZONTAL
2	4823.90	34.29	54.00	-19.71	29.87	6.33	31.12	33.03	146	193	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4823.92	35.70	54.00	-18.30	31.28	6.33	31.12	33.03	128	251	Average	VERTICAL
2	4824.08	45.69	74.00	-28.31	41.27	6.33	31.12	33.03	128	251	Peak	VERTICAL

Temperature	22.2℃	Humidity	51%
Test Engineer	John Tang, Zero Chen	Configurations	IEEE 802.11g CH 6 / Ant. 1 + Ant. 2
Test Date	Jul. 26, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4874.50	44.67	54.00	-9.33	40.12	6.35	31.21	33.01	171	285	Average	HORIZONTAL
2	4877.44	55.36	74.00	-18.64	50.80	6.35	31.21	33.00	171	285	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4874.48	43.35	54.00	-10.65	38.80	6.35	31.21	33.01	131	160	Average	VERTICAL
2	4878.08	56.77	74.00	-17.23	52.21	6.35	31.21	33.00	131	160	Peak	VERTICAL

Temperature	22.2°C	Humidity	51%
Test Engineer	John Tang, Zero Chen	Configurations	IEEE 802.11g CH 11 / Ant. 1 + Ant. 2
Test Date	Jul. 26, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4922.76	49.68	74.00	-24.32	45.04	6.36	31.27	32.99	152	293	Peak	HORIZONTAL
2	4924.44	38.80	54.00	-15.20	34.14	6.36	31.29	32.99	152	293	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4923.40	45.38	74.00	-28.62	40.74	6.36	31.27	32.99	127	252	Peak	VERTICAL
2	4926.90	33.10	54.00	-20.90	28.43	6.36	31.29	32.98	127	252	Average	VERTICAL

Temperature	22.2℃	Humidity	51%
Test Engineer	John Tang, Zero Chen	Configurations	IEEE 802.11n MCS0 HT20 CH 1 / Ant. 1 + Ant. 2
Test Date	Jul. 26, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4823.68	45.06	74.00	-28.94	40.64	6.33	31.12	33.03	201	126	Peak	HORIZONTAL
2	4823.98	34.70	54.00	-19.30	30.28	6.33	31.12	33.03	201	126	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4823.70	45.63	74.00	-28.37	41.21	6.33	31.12	33.03	159	201	Peak	VERTICAL
2	4824.06	34.53	54.00	-19.47	30.11	6.33	31.12	33.03	159	201	Average	VERTICAL

Temperature	22.2℃	Humidity	51%
Test Engineer	John Tang, Zero Chen	Configurations	IEEE 802.11n MCS0 HT20 CH 6 / Ant. 1 + Ant. 2
Test Date	Jul. 26, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4874.00	35.58	54.00	-18.42	31.03	6.35	31.21	33.01	288	236	Average	HORIZONTAL
2	4877.32	49.13	74.00	-24.87	44.57	6.35	31.21	33.00	288	236	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4870.58	46.02	74.00	-27.98	41.47	6.35	31.21	33.01	159	83	Peak	VERTICAL
2	4874.20	38.26	54.00	-15.74	33.71	6.35	31.21	33.01	159	83	Average	VERTICAL

Temperature	22.2℃	Humidity	51%
Test Engineer	John Tang, Zero Chen	Configurations	IEEE 802.11n MCS0 HT20 CH 11 / Ant. 1 + Ant. 2
Test Date	Jul. 26, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4922.74	36.06	54.00	-17.94	31.42	6.36	31.27	32.99	105	318	Average	HORIZONTAL
2	4924.22	46.99	74.00	-27.01	42.33	6.36	31.29	32.99	105	318	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4922.86	33.27	54.00	-20.73	28.63	6.36	31.27	32.99	169	226	Average	VERTICAL
2	4927.92	44.68	74.00	-29.32	40.01	6.36	31.29	32.98	169	226	Peak	VERTICAL

Temperature	22.2℃	Humidity	51%
Test Engineer	John Tang, Zero Chen	Configurations	IEEE 802.11n MCS0 HT40 CH 3 / Ant. 1 + Ant. 2
Test Date	Jul. 26, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4840.52	44.69	74.00	-29.31	40.21	6.34	31.16	33.02	194	176	Peak	HORIZONTAL
2	4844.38	32.02	54.00	-21.98	27.54	6.34	31.16	33.02	194	176	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4839.02	32.07	54.00	-21.93	27.59	6.34	31.16	33.02	236	211	Average	VERTICAL
2	4840.86	44.57	74.00	-29.43	40.09	6.34	31.16	33.02	236	211	Peak	VERTICAL

Temperature	22.2℃	Humidity	51%
Test Engineer	John Tang, Zero Chen	Configurations	IEEE 802.11n MCS0 HT40 CH 6 / Ant. 1 + Ant. 2
Test Date	Jul. 26, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4873.66	45.05	74.00	-28.95	40.50	6.35	31.21	33.01	155	269	Peak	HORIZONTAL
2	4874.04	32.93	54.00	-21.07	28.38	6.35	31.21	33.01	155	269	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4874.48	45.81	74.00	-28.19	41.26	6.35	31.21	33.01	207	179	Peak	VERTICAL
2	4878.72	32.23	54.00	-21.77	27.67	6.35	31.21	33.00	207	179	Average	VERTICAL

Temperature	22.2℃	Humidity	51%
Test Engineer	John Tang, Zero Chen	Configurations	IEEE 802.11n MCS0 HT40 CH 9 / Ant. 1 + Ant. 2
Test Date	Jul. 26, 2016		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4901.58	45.38	74.00	-28.62	40.76	6.36	31.25	32.99	171	190	Peak	HORIZONTAL
2	4904.46	32.13	54.00	-21.87	27.51	6.36	31.25	32.99	171	190	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4902.16	45.88	74.00	-28.12	41.26	6.36	31.25	32.99	129	87	Peak	VERTICAL
2	4903.90	32.58	54.00	-21.42	27.96	6.36	31.25	32.99	129	87	Average	VERTICAL

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.

4.6. Emissions Measurement

4.6.1. 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

4.6.2. 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

4.6.3. Test Procedures

For Radiated band edges Measurement:

The test procedure is the same as section 4.5.3.

For Radiated Out of Band Emission Measurement:

Test was performed in accordance with KDB558074 D01 v04 for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 11.0 Unwanted Emissions into Non-Restricted Frequency Bands Measurement Procedure.

4.6.4. Test Setup Layout

For Radiated band edges Measurement:

This test setup layout is the same as that shown in section 4.5.4.

For Radiated Out of Band Emission Measurement:

This test setup layout is the same as that shown in section 4.5.4.

4.6.5. Test Deviation

There is no deviation with the original standard.

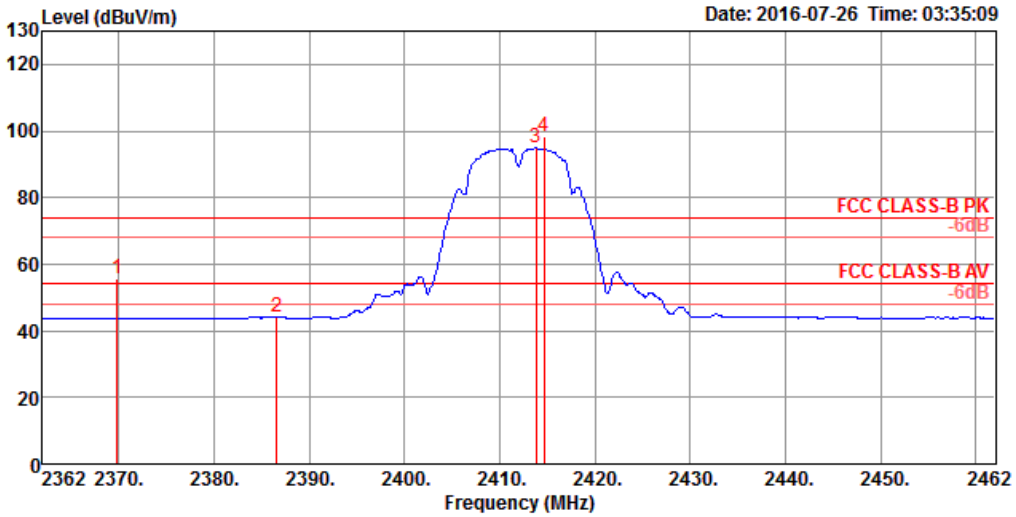
4.6.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.6.7. Test Result of Band Edge and Fundamental Emissions

Temperature	22.2℃	Humidity	51%
Test Engineer	John Tang, Zero Chen	Configurations	IEEE 802.11b CH 1, 6, 11 / Ant. 1 + Ant. 2

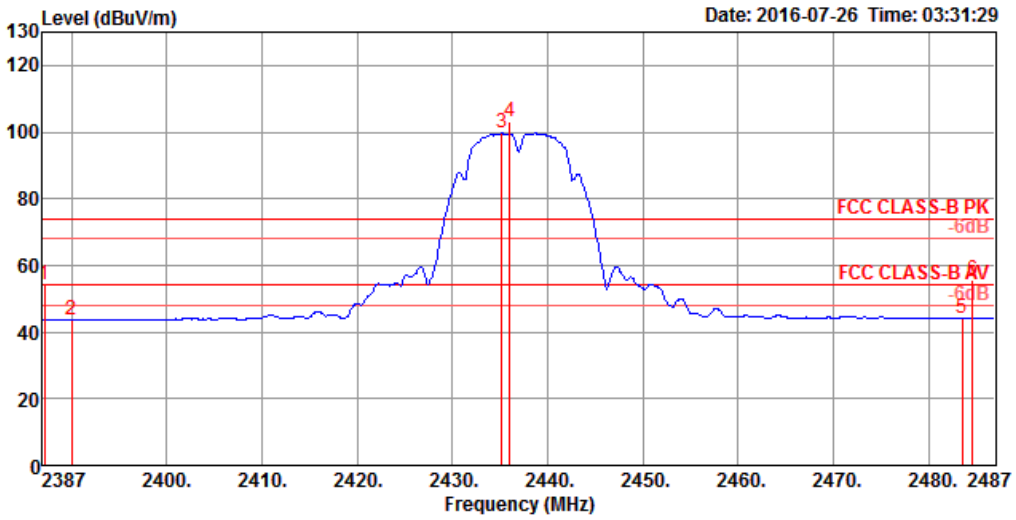
Channel 1



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2369.80	55.72	74.00	-18.28	24.39	4.31	27.02	0.00	100	230	Peak	VERTICAL
2	2386.60	44.24	54.00	-9.76	12.86	4.33	27.05	0.00	100	230	Average	VERTICAL
3 0	2413.80	94.93			63.47	4.35	27.11	0.00	100	230	Average	VERTICAL
4 0	2414.60	98.39			66.93	4.35	27.11	0.00	100	230	Peak	VERTICAL

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

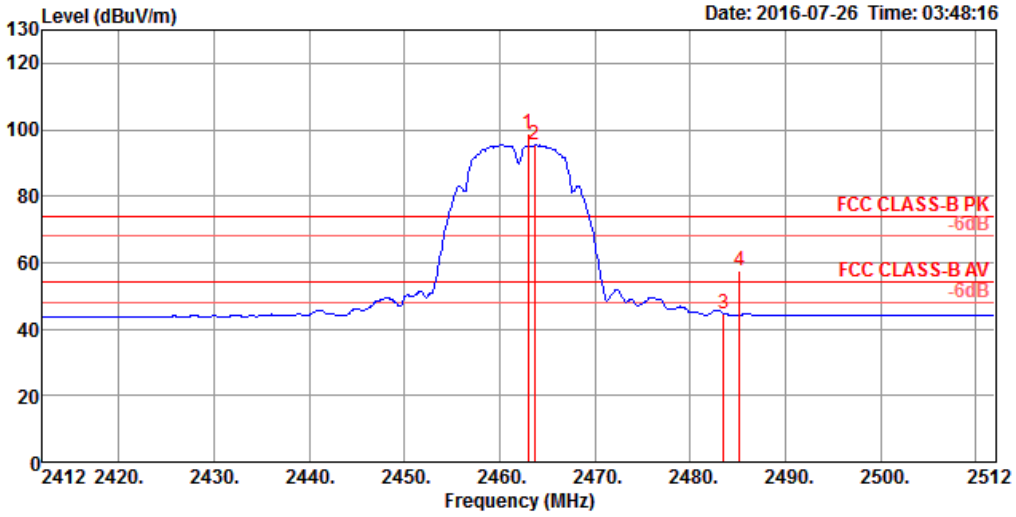
Channel 6



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2387.20	54.38	74.00	-19.62	23.00	4.33	27.05	0.00	113	304	Peak	HORIZONTAL
2	2390.00	43.77	54.00	-10.23	12.39	4.33	27.05	0.00	113	304	Average	HORIZONTAL
3 0	2435.20	99.77			68.24	4.37	27.16	0.00	113	304	Average	HORIZONTAL
4 0	2436.00	103.31			71.78	4.37	27.16	0.00	113	304	Peak	HORIZONTAL
5	2483.50	44.04	54.00	-9.96	12.35	4.42	27.27	0.00	113	304	Average	HORIZONTAL
6	2484.60	55.44	74.00	-18.56	23.75	4.42	27.27	0.00	113	304	Peak	HORIZONTAL

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

Channel 11

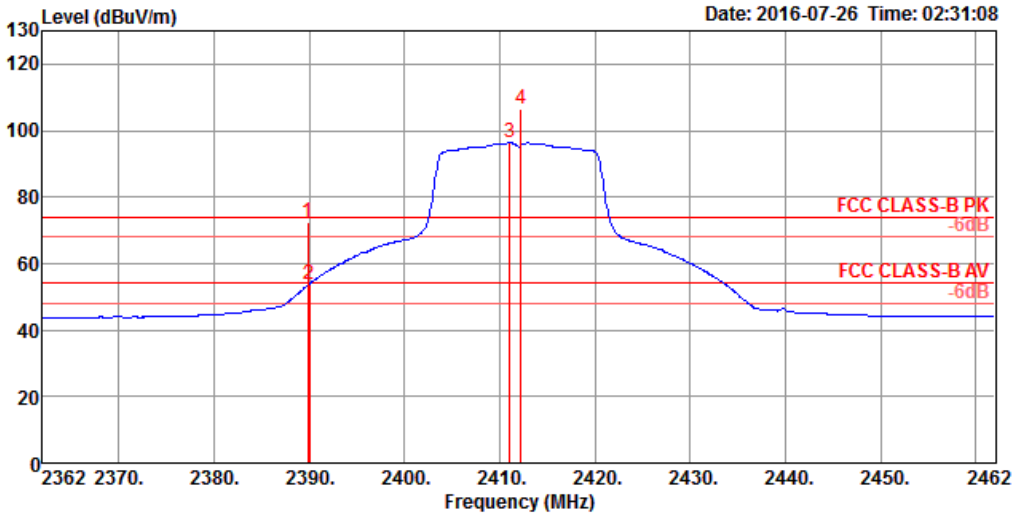


		Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	0	2463.00	99.02			67.40	4.40	27.22	0.00	116	124	Peak	HORIZONTAL
2	0	2463.60	95.43			63.81	4.40	27.22	0.00	116	124	Average	HORIZONTAL
3		2483.50	44.50	54.00	-9.50	12.81	4.42	27.27	0.00	116	124	Average	HORIZONTAL
4		2485.20	57.40	74.00	-16.60	25.71	4.42	27.27	0.00	116	124	Peak	HORIZONTAL

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

Temperature	22.2°C	Humidity	51%
Test Engineer	John Tang, Zero Chen	Configurations	IEEE 802.11g CH 1, 6, 11 / Ant. 1 + Ant. 2

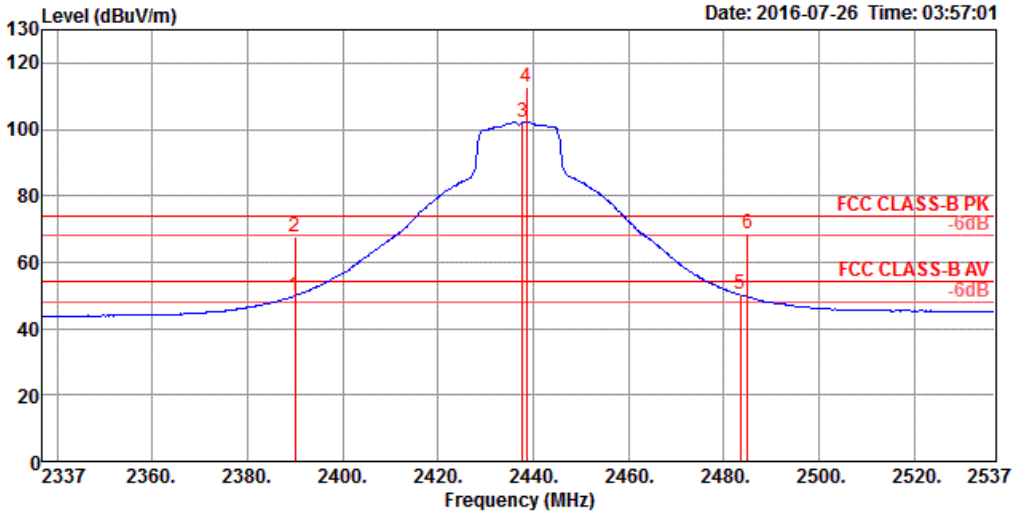
Channel 1



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2389.80	72.46	74.00	-1.54	41.08	4.33	27.05	0.00	100	33	Peak	HORIZONTAL
2	2390.00	53.75	54.00	-0.25	22.37	4.33	27.05	0.00	100	33	Average	HORIZONTAL
3 0	2411.00	96.24			64.79	4.35	27.10	0.00	100	33	Average	HORIZONTAL
4 0	2412.20	106.52			75.06	4.35	27.11	0.00	100	33	Peak	HORIZONTAL

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

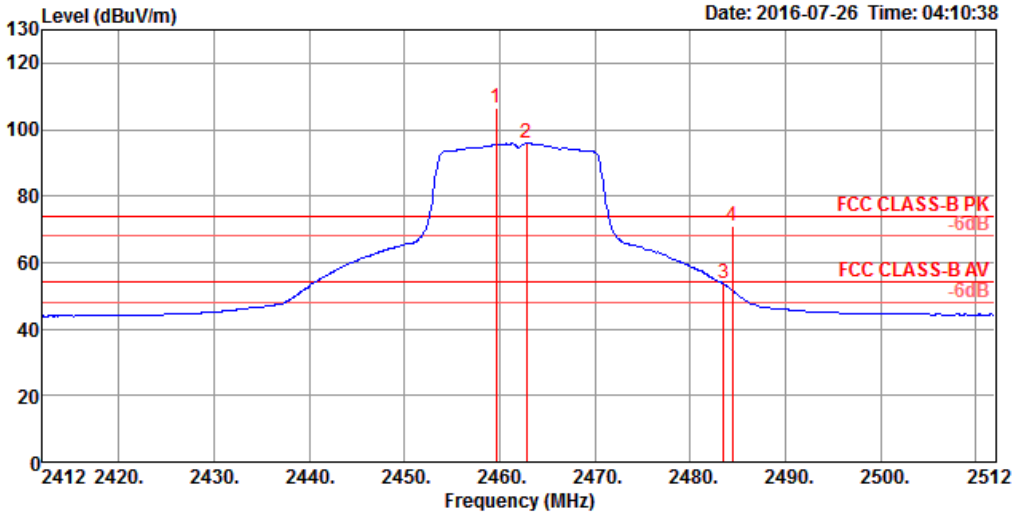
Channel 6



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2390.00	49.95	54.00	-4.05	18.57	4.33	27.05	0.00	117	32	Average	HORIZONTAL
2	2390.00	67.69	74.00	-6.31	36.31	4.33	27.05	0.00	117	32	Peak	HORIZONTAL
3 0	2437.80	102.24			70.71	4.37	27.16	0.00	117	32	Average	HORIZONTAL
4 0	2438.60	112.61			81.08	4.37	27.16	0.00	117	32	Peak	HORIZONTAL
5	2483.50	50.24	54.00	-3.76	18.55	4.42	27.27	0.00	117	32	Average	HORIZONTAL
6	2485.00	68.74	74.00	-5.26	37.05	4.42	27.27	0.00	117	32	Peak	HORIZONTAL

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

Channel 11

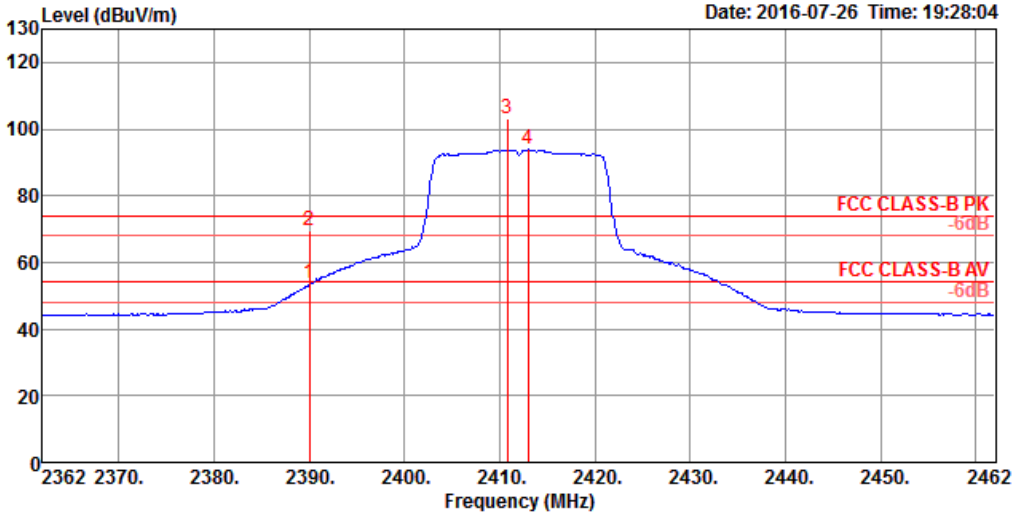


		Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	0	2459.60	106.50			74.90	4.39	27.21	0.00	120	36	Peak	HORIZONTAL
2	0	2462.80	95.88			64.26	4.40	27.22	0.00	120	36	Average	HORIZONTAL
3		2483.50	53.57	54.00	-0.43	21.88	4.42	27.27	0.00	120	36	Average	HORIZONTAL
4		2484.40	70.95	74.00	-3.05	39.26	4.42	27.27	0.00	120	36	Peak	HORIZONTAL

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

Temperature	22.2°C	Humidity	51%
Test Engineer	John Tang, Zero Chen	Configurations	IEEE 802.11n MCS0 HT20 CH 1, 6, 11 / Ant. 1 + Ant. 2

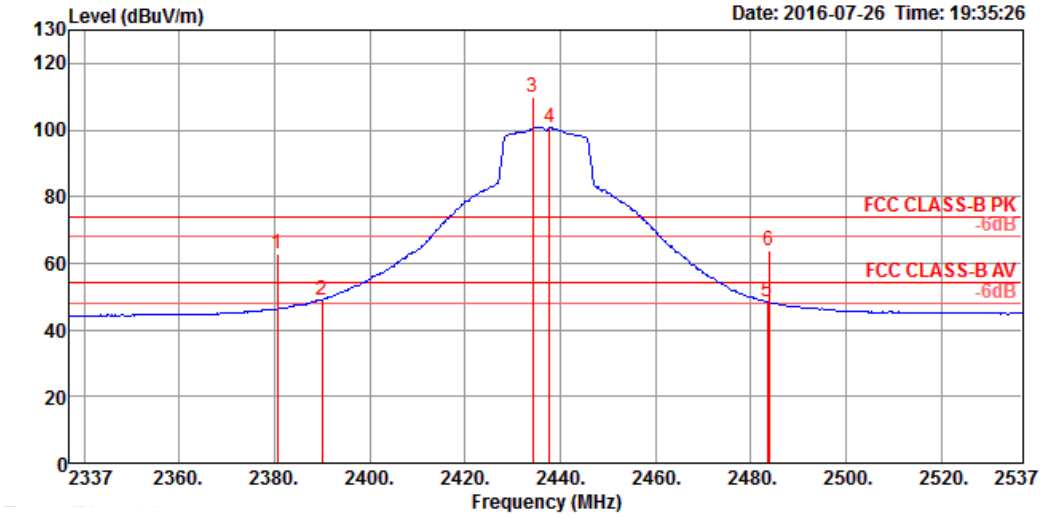
Channel 1



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2390.00	53.55	54.00	-0.45	22.17	4.33	27.05	0.00	131	116	Average	HORIZONTAL
2	2390.00	69.67	74.00	-4.33	38.29	4.33	27.05	0.00	131	116	Peak	HORIZONTAL
3 0	2410.80	103.15			71.70	4.35	27.10	0.00	131	116	Peak	HORIZONTAL
4 0	2413.00	93.79			62.33	4.35	27.11	0.00	131	116	Average	HORIZONTAL

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

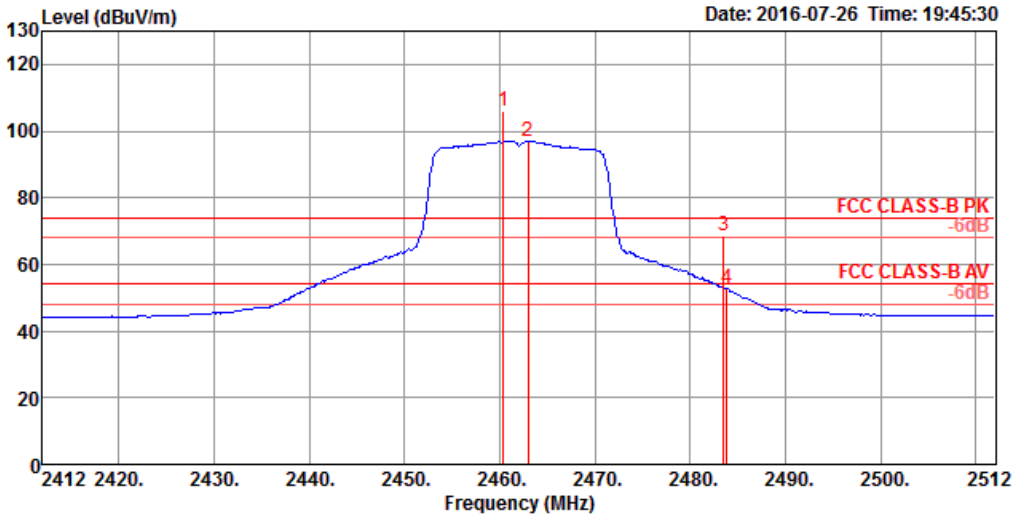
Channel 6



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2380.60	62.70	74.00	-11.30	31.34	4.32	27.04	0.00	130	116	Peak	HORIZONTAL
2	2390.00	49.10	54.00	-4.90	17.72	4.33	27.05	0.00	130	116	Average	HORIZONTAL
3 0	2434.20	109.90			78.37	4.37	27.16	0.00	130	116	Peak	HORIZONTAL
4 0	2437.80	100.77			69.24	4.37	27.16	0.00	130	116	Average	HORIZONTAL
5	2483.50	48.38	54.00	-5.62	16.69	4.42	27.27	0.00	130	116	Average	HORIZONTAL
6	2483.80	63.57	74.00	-10.43	31.88	4.42	27.27	0.00	130	116	Peak	HORIZONTAL

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

Channel 11

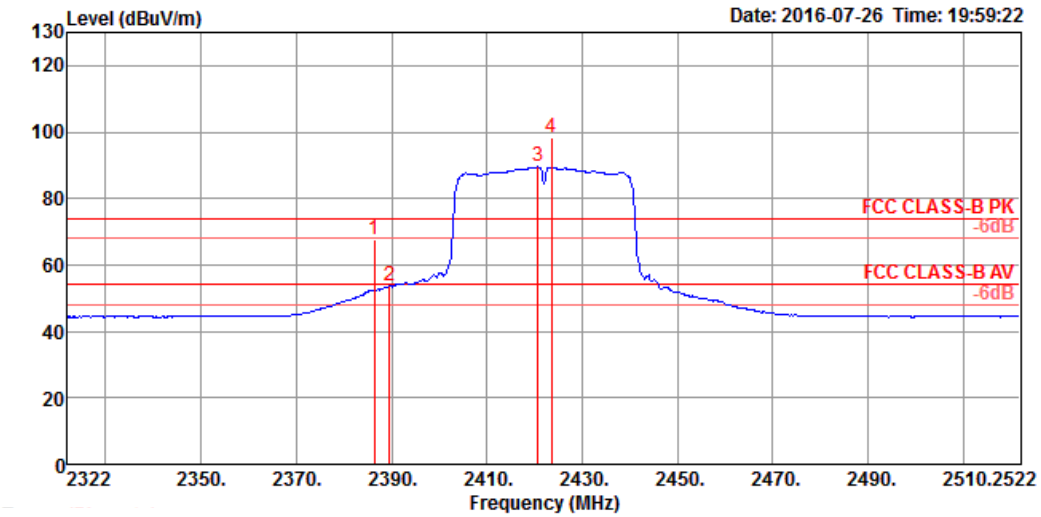


		Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	0	2460.40	106.07			74.47	4.39	27.21	0.00	124	127	Peak	HORIZONTAL
2	0	2463.00	96.96			65.34	4.40	27.22	0.00	124	127	Average	HORIZONTAL
3		2483.50	68.77	74.00	-5.23	37.08	4.42	27.27	0.00	124	127	Peak	HORIZONTAL
4		2483.80	52.78	54.00	-1.22	21.09	4.42	27.27	0.00	124	127	Average	HORIZONTAL

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

Temperature	22.2℃	Humidity	51%
Test Engineer	John Tang, Zero Chen	Configurations	IEEE 802.11n MCS0 HT40 CH 3, 6, 9 / Ant. 1 + Ant. 2

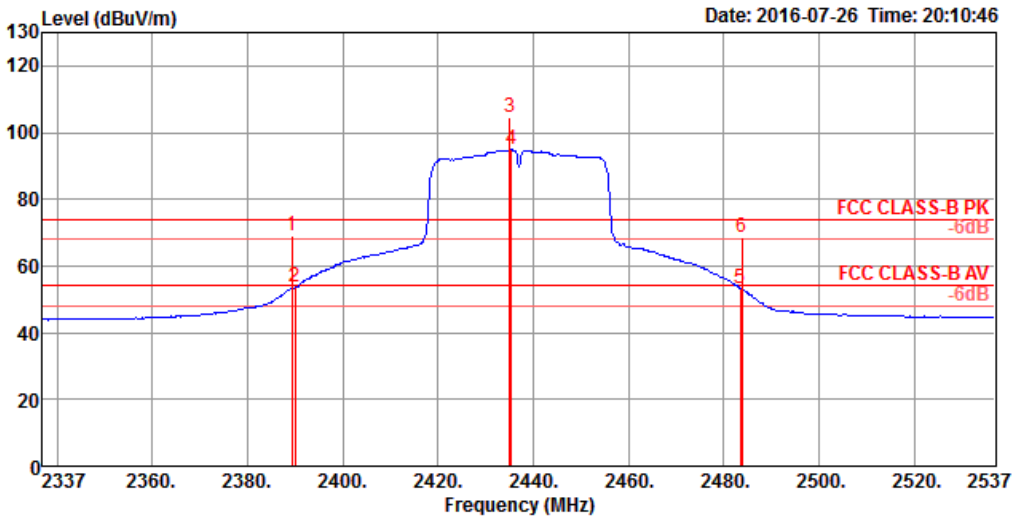
Channel 3



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2386.40	67.71	74.00	-6.29	36.33	4.33	27.05	0.00	100	49	Peak	HORIZONTAL
2	2389.60	53.55	54.00	-0.45	22.17	4.33	27.05	0.00	100	49	Average	HORIZONTAL
3 0	2420.80	89.53			58.04	4.36	27.13	0.00	100	49	Average	HORIZONTAL
4 0	2423.60	98.45			66.96	4.36	27.13	0.00	100	49	Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2422 MHz.

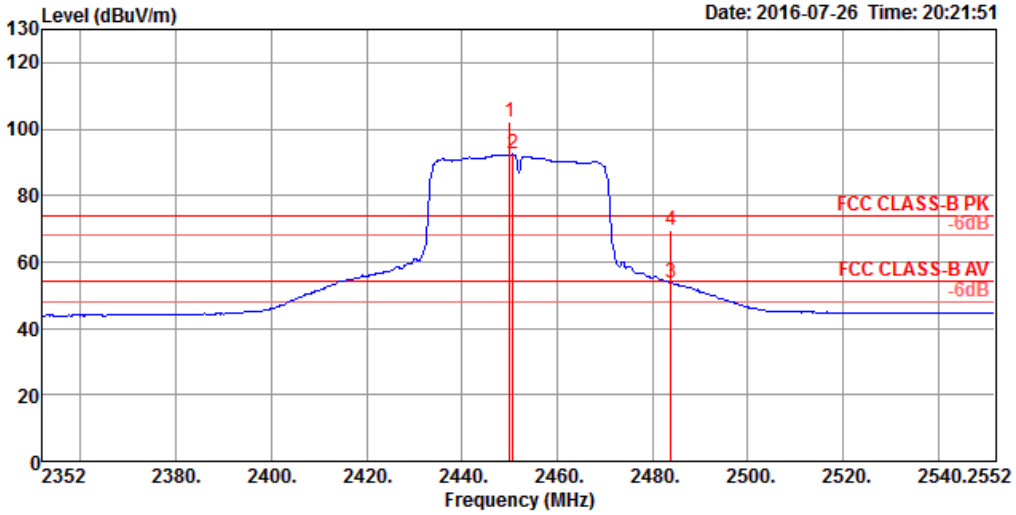
Channel 6



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2389.40	68.99	74.00	-5.01	37.61	4.33	27.05	0.00	129	125	Peak	HORIZONTAL
2	2390.00	53.85	54.00	-0.15	22.47	4.33	27.05	0.00	129	125	Average	HORIZONTAL
3 0	2435.00	104.44			72.91	4.37	27.16	0.00	129	125	Peak	HORIZONTAL
4 0	2435.40	94.80			63.27	4.37	27.16	0.00	129	125	Average	HORIZONTAL
5	2483.50	53.43	54.00	-0.57	21.74	4.42	27.27	0.00	129	125	Average	HORIZONTAL
6	2483.80	68.75	74.00	-5.25	37.06	4.42	27.27	0.00	129	125	Peak	HORIZONTAL

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

Channel 9



		Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	0	2450.00	102.20			70.62	4.39	27.19	0.00	132	123	Peak	HORIZONTAL
2	0	2450.80	92.39			60.81	4.39	27.19	0.00	132	123	Average	HORIZONTAL
3		2484.00	53.66	54.00	-0.34	21.97	4.42	27.27	0.00	132	123	Average	HORIZONTAL
4		2484.00	69.46	74.00	-4.54	37.77	4.42	27.27	0.00	132	123	Peak	HORIZONTAL

Item 1, 2 are the fundamental frequency at 2452 MHz.

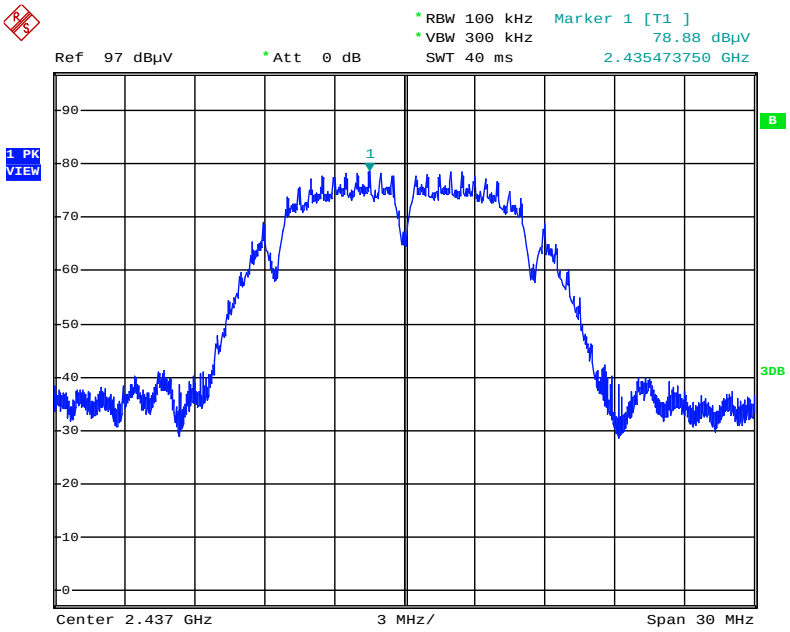
Note:

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

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

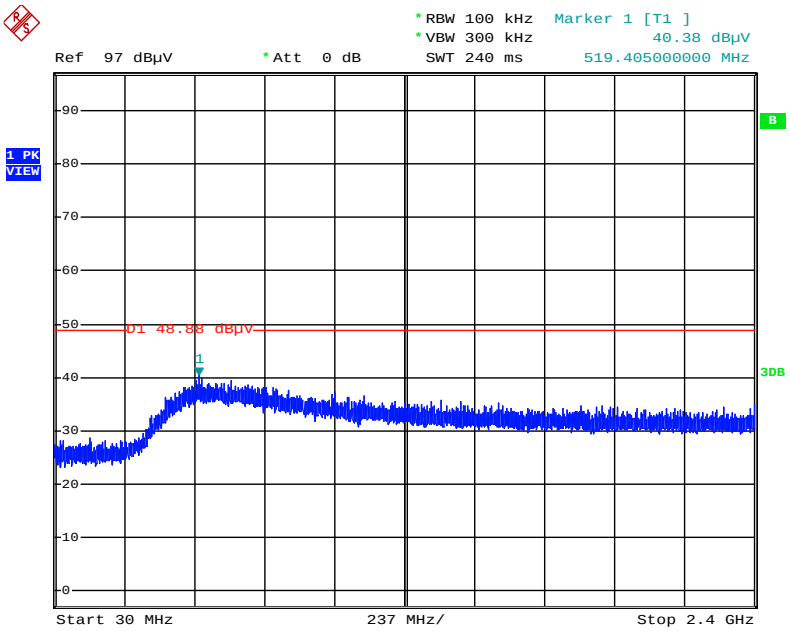
For Emission not in Restricted Band

Plot on Configuration IEEE 802.11b / Reference Level



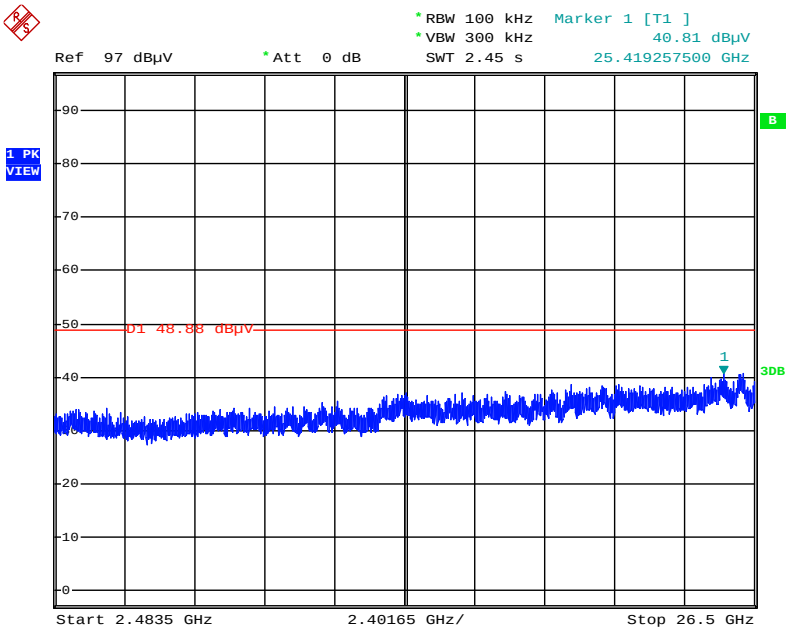
Date: 26.JUL.2016 21:20:58

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



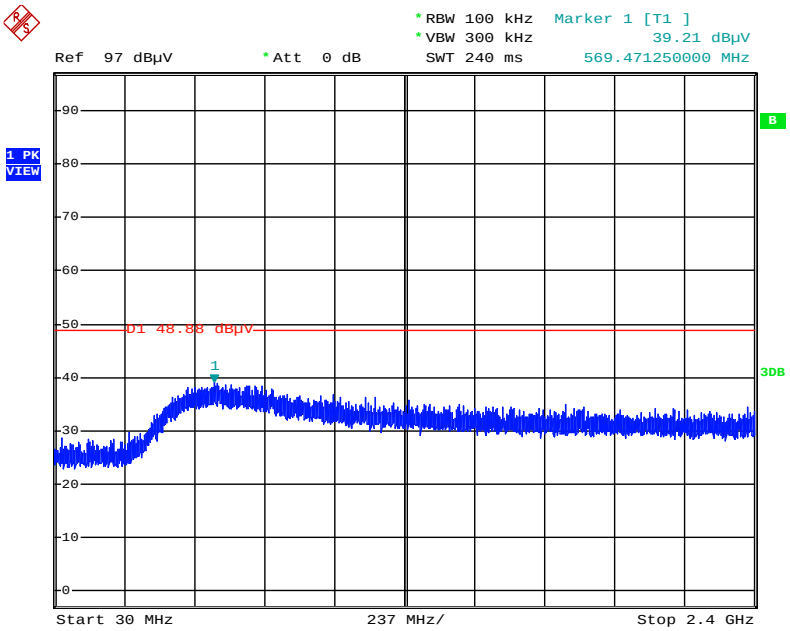
Date: 26.JUL.2016 21:22:36

Plot on Configuration IEEE 802.11b / CH 1 / 2483.5MHz~26500MHz (down 30dBc)



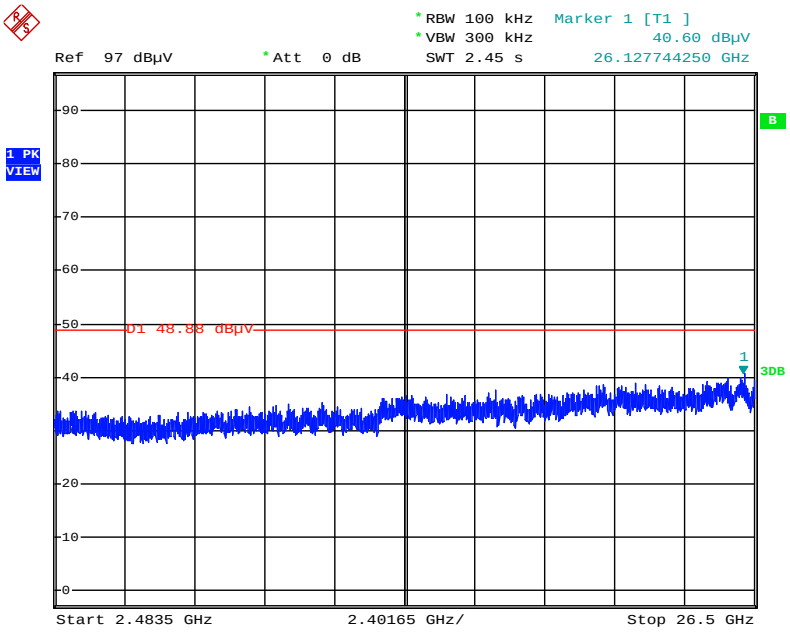
Date: 26.JUL.2016 21:23:23

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



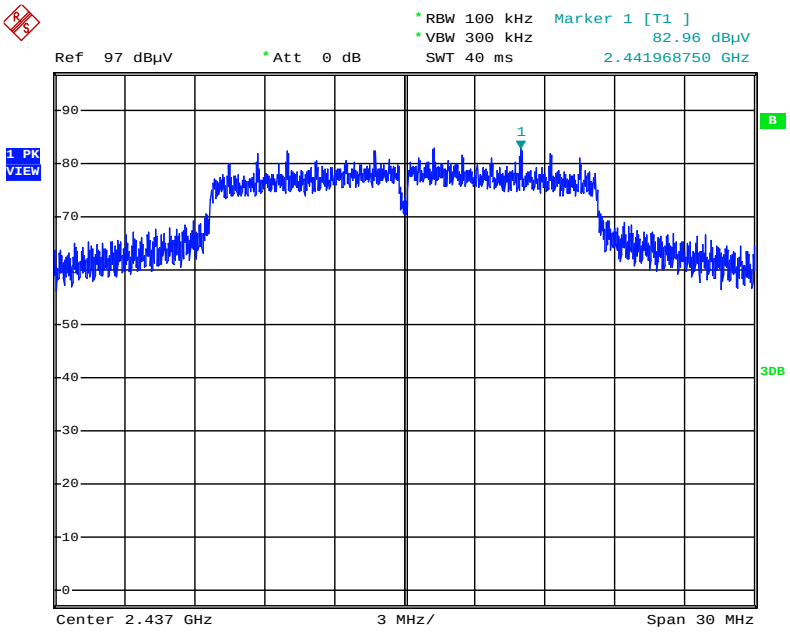
Date: 26.JUL.2016 21:24:37

Plot on Configuration IEEE 802.11b / CH 11 / 2483.5MHz~26500MHz (down 30dBc)



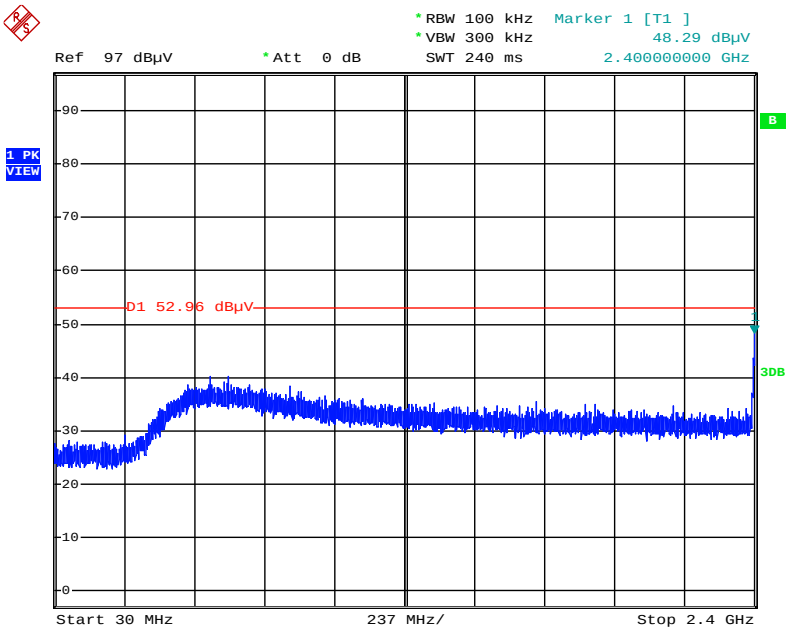
Date: 26.JUL.2016 21:25:20

Plot on Configuration IEEE 802.11g / Reference Level



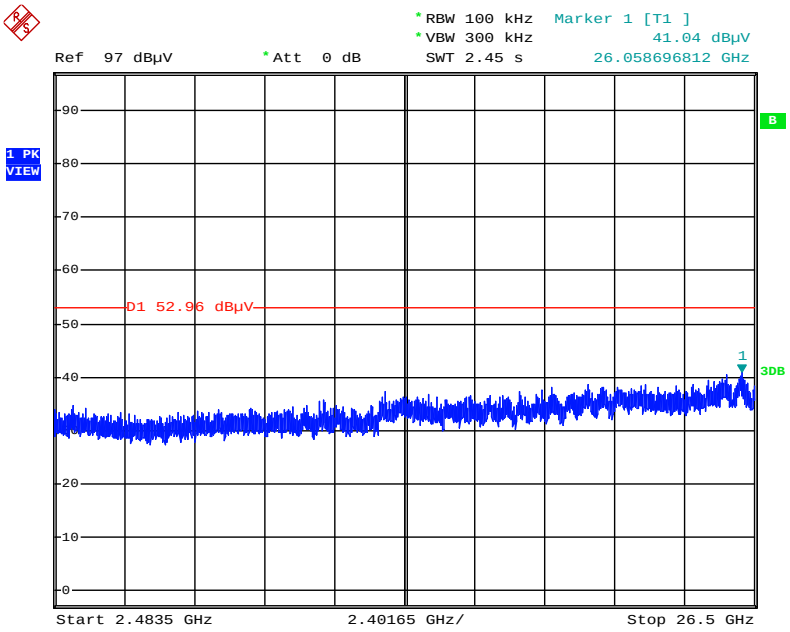
Date: 26.JUL.2016 21:27:25

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



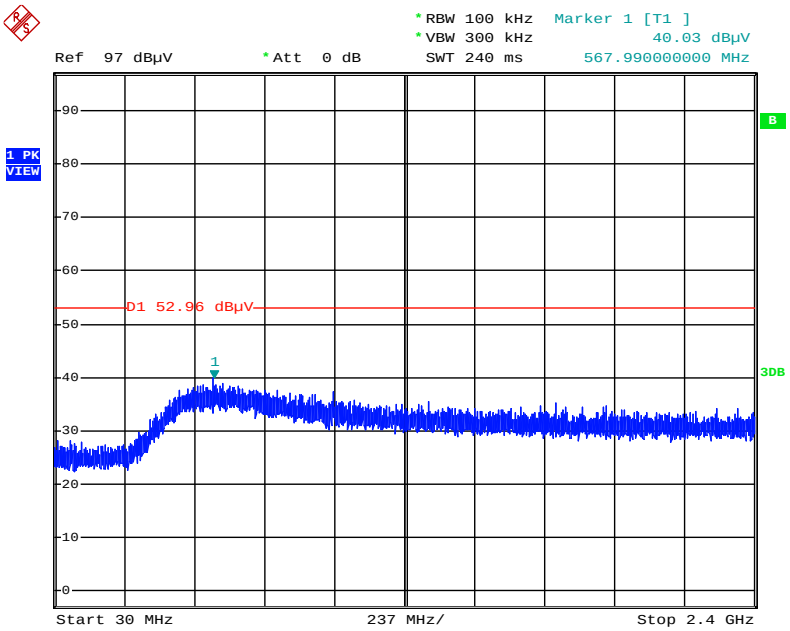
Date: 26.JUL.2016 21:28:54

Plot on Configuration IEEE 802.11g / CH 1 / 2483.5MHz~26500MHz (down 30dBc)



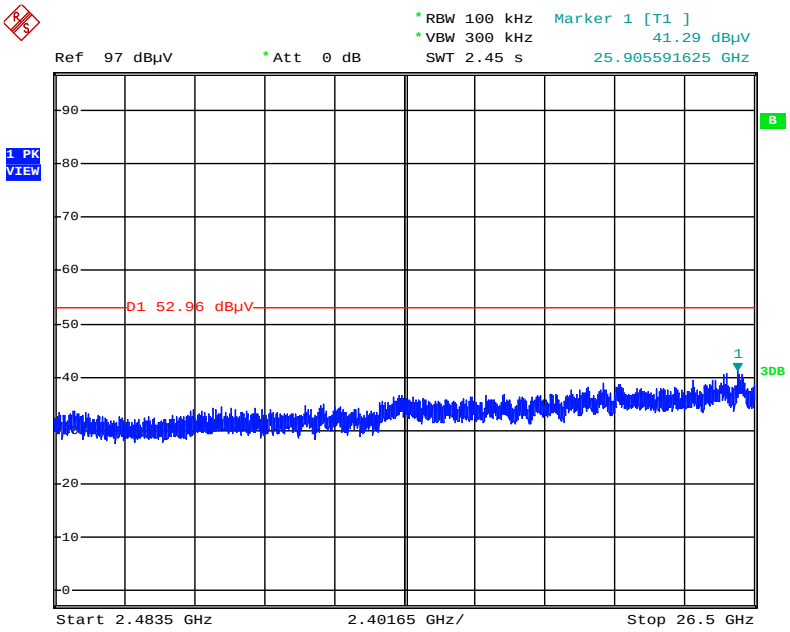
Date: 26.JUL.2016 21:29:27

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



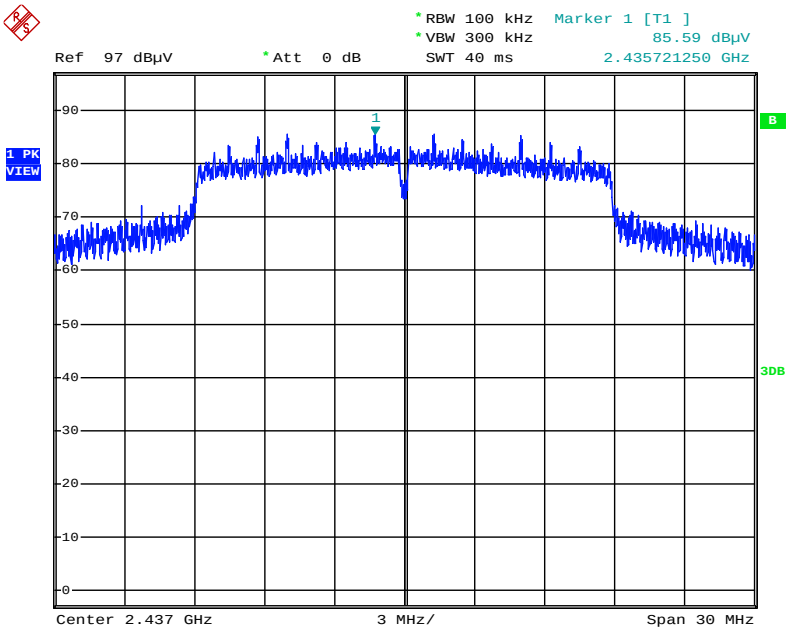
Date: 26.JUL.2016 21:30:27

Plot on Configuration IEEE 802.11g / CH 11 / 2483.5MHz~26500MHz (down 30dBc)



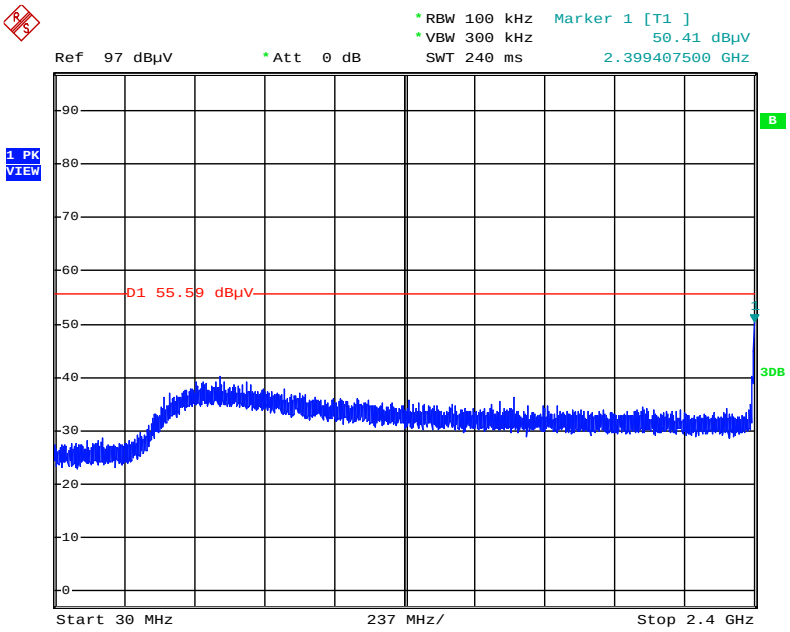
Date: 26.JUL.2016 21:31:01

Plot on Configuration IEEE 802.11n MCS0 HT20 / Reference Level



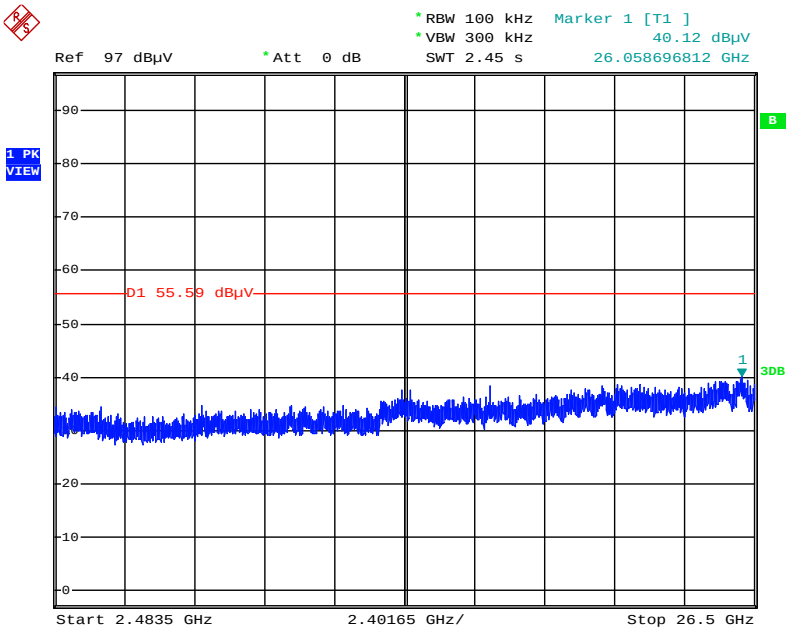
Date: 26.JUL.2016 21:33:15

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



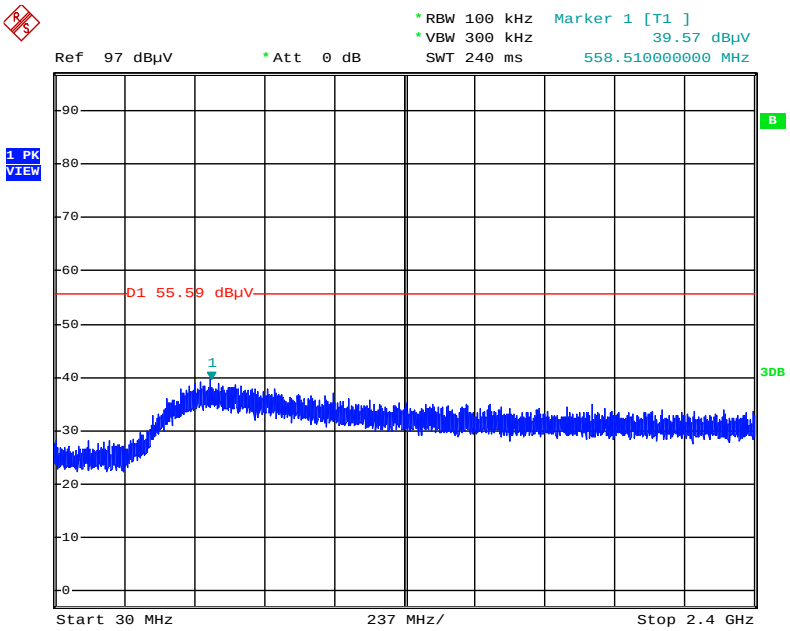
Date: 26.JUL.2016 21:35:01

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 1 / 2483.5MHz~26500MHz (down 30dBc)



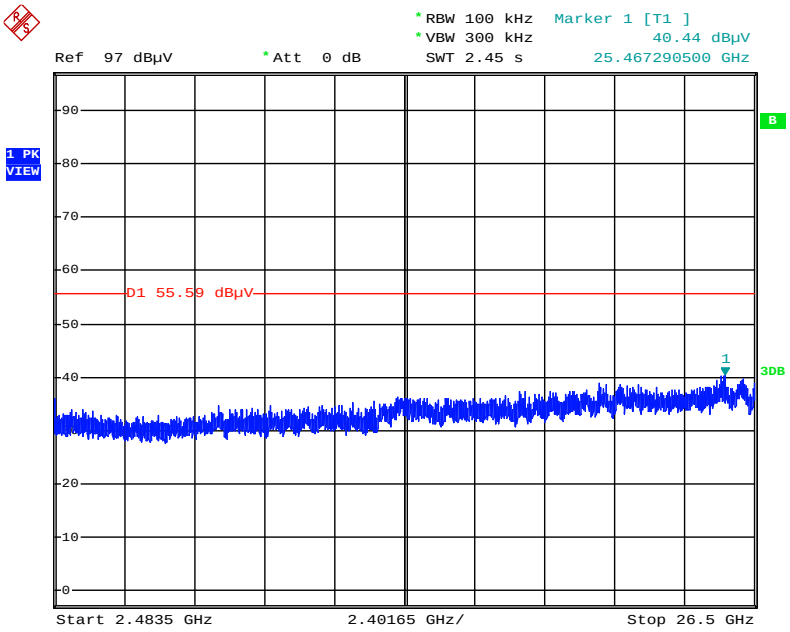
Date: 26.JUL.2016 21:35:35

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



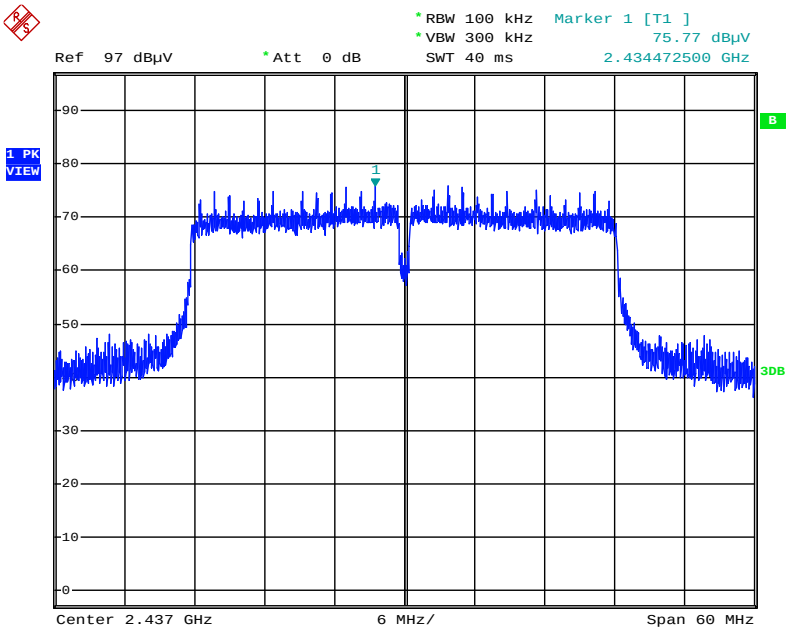
Date: 26.JUL.2016 21:36:42

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 11 / 2483.5MHz~26500MHz (down 30dBc)



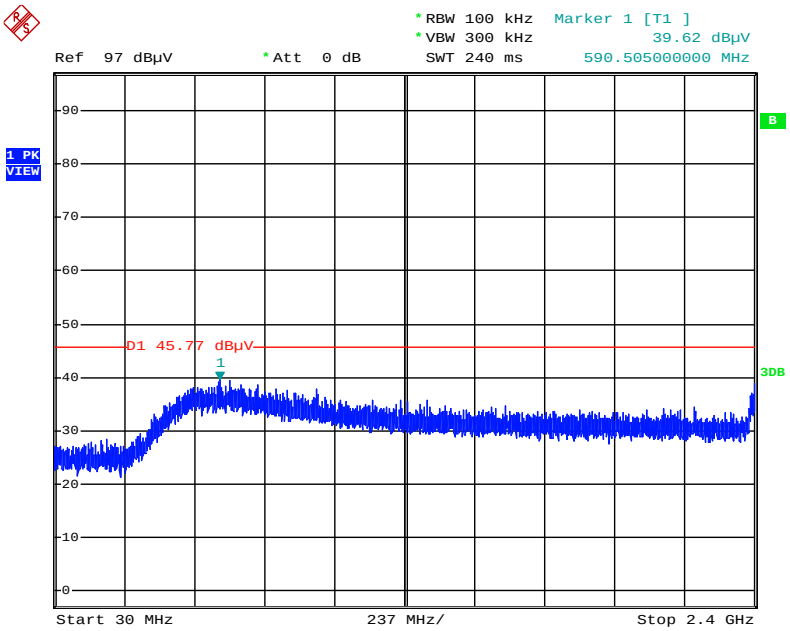
Date: 26.JUL.2016 21:37:23

Plot on Configuration IEEE 802.11n MCS0 HT40 / Reference Level



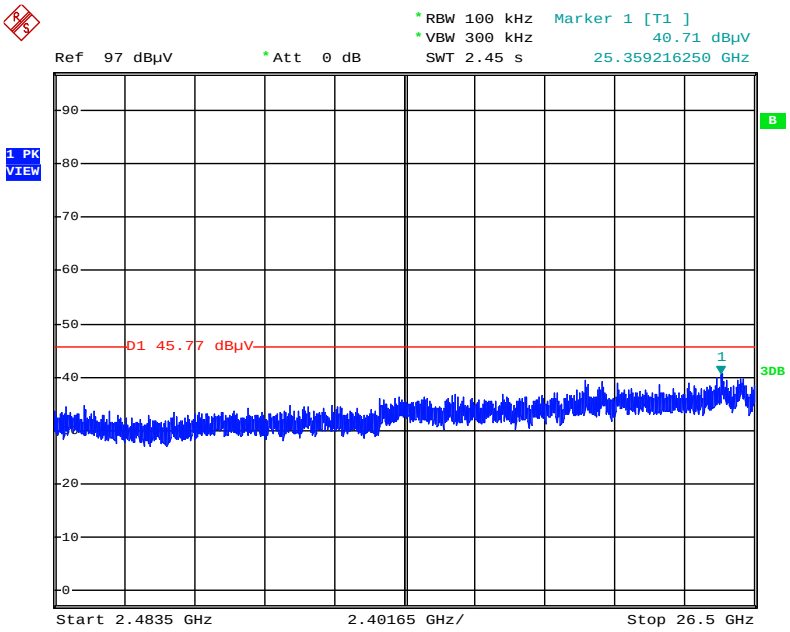
Date: 26.JUL.2016 21:39:43

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 3 / 30MHz~2400MHz (down 30dBc)



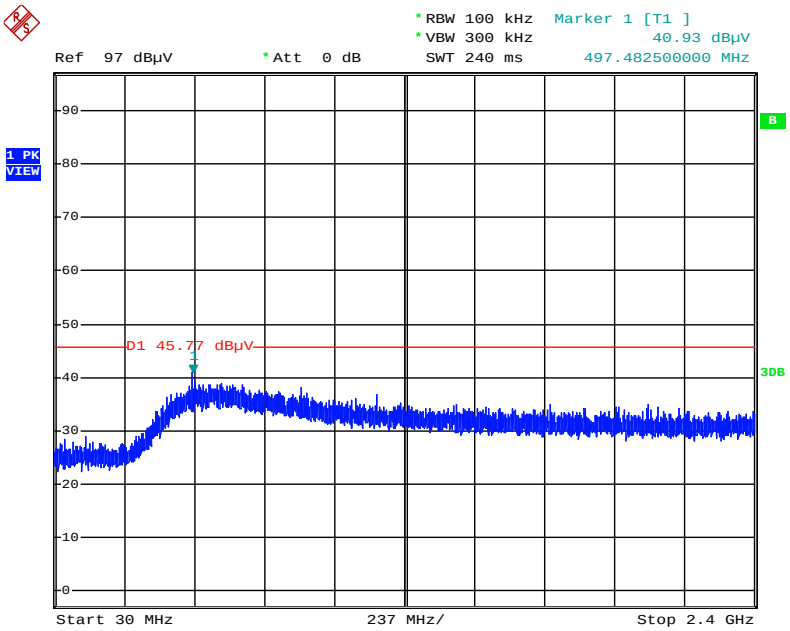
Date: 26.JUL.2016 21:40:59

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 3 / 2483.5MHz~26500MHz (down 30dBc)



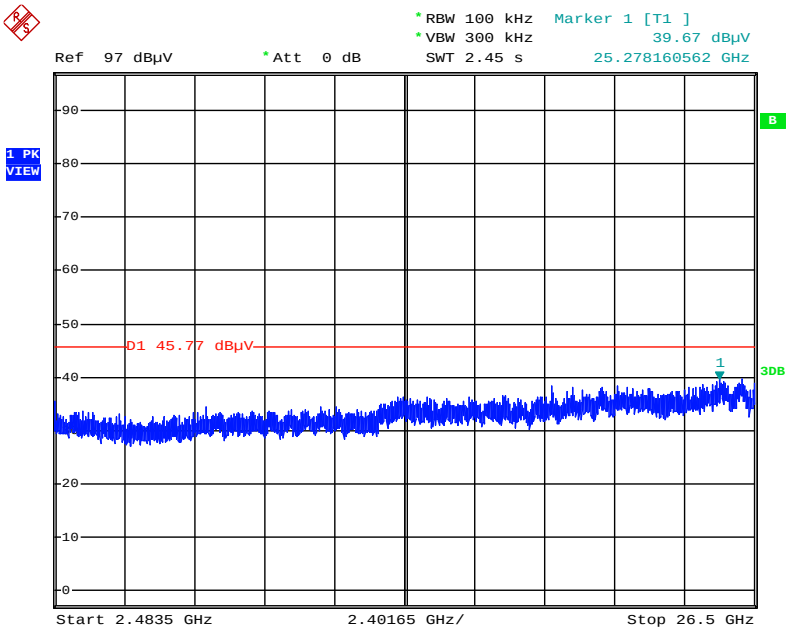
Date: 26.JUL.2016 21:41:29

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 9 / 30MHz~2400MHz (down 30dBc)



Date: 26.JUL.2016 21:42:45

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 9 / 2483.5MHz~26500MHz (down 30dBc)



Date: 26.JUL.2016 21:43:15

4.7. Antenna Requirements

4.7.1. 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.

4.7.2. 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
LISN	Schwarzbeck	NSLK 8127	8127650	9kHz ~ 30MHz	Nov. 16, 2015	Conduction (CO02-CB)
LISN	Schwarzbeck	NSLK 8127	8127478	9kHz ~ 30MHz	Nov. 13, 2015	Conduction (CO02-CB)
EMI Receiver	Agilent	N9038A	MY52260140	9kHz ~ 8.4GHz	Jan. 18, 2016	Conduction (CO02-CB)
COND Cable	Woken	Cable	01	0.15MHz ~ 30MHz	Dec. 01, 2015	Conduction (CO02-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	Conduction (CO02-CB)
Pulse Limiter	Schwarzbeck	VTSD 9561F	9561-F073	9kHz ~ 30MHz	Sep. 30, 2015	Conduction (CO02-CB)
Bilog Antenna	TESEQ	CBL6112D	37880	20MHz ~ 2GHz	Sep. 03, 2015	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Oct. 22, 2015	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 25, 2016	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Mar. 15, 2016	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 18, 2016	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 13, 2015	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Oct. 27, 2015	Radiation (03CH01-CB)
EMI Test	R&S	ESCS	100355	9kHz ~ 2.75GHz	May 16, 2016	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz ~ 1 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-17	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
Test Software	Audix	E3	6.2009-I0-7	N/A	N/A	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 16, 2016*	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 09, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 02, 2015	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

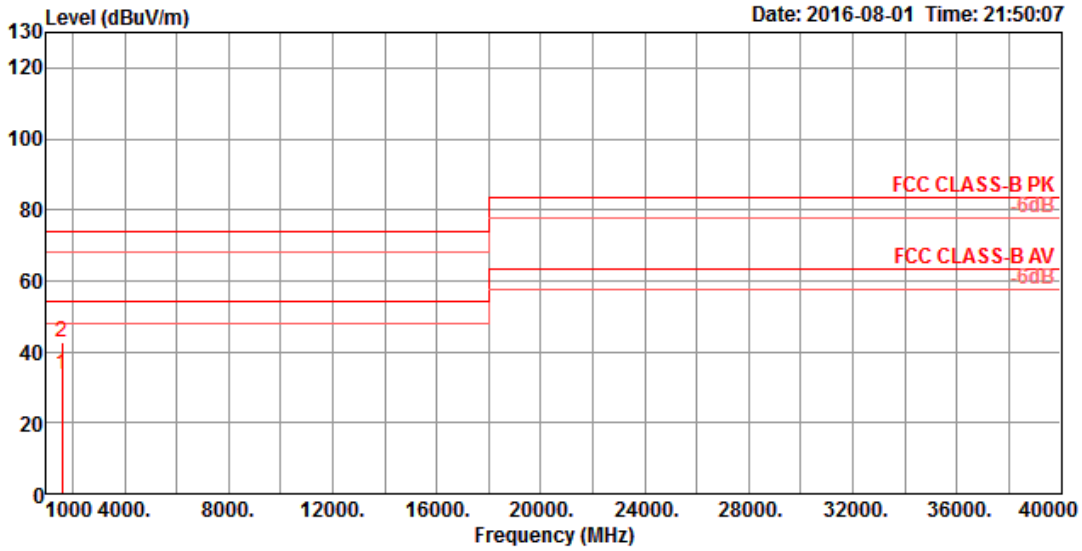
Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.2 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.7 dB	Confidence levels of 95%
Output Power Measurement	1.33 dB	Confidence levels of 95%
Power Density Measurement	1.27 dB	Confidence levels of 95%
Bandwidth Measurement	9.74×10^{-8}	Confidence levels of 95%

Appendix B. Radiated Emission Co-location Report

1. Results of Radiated Emissions for Co-located

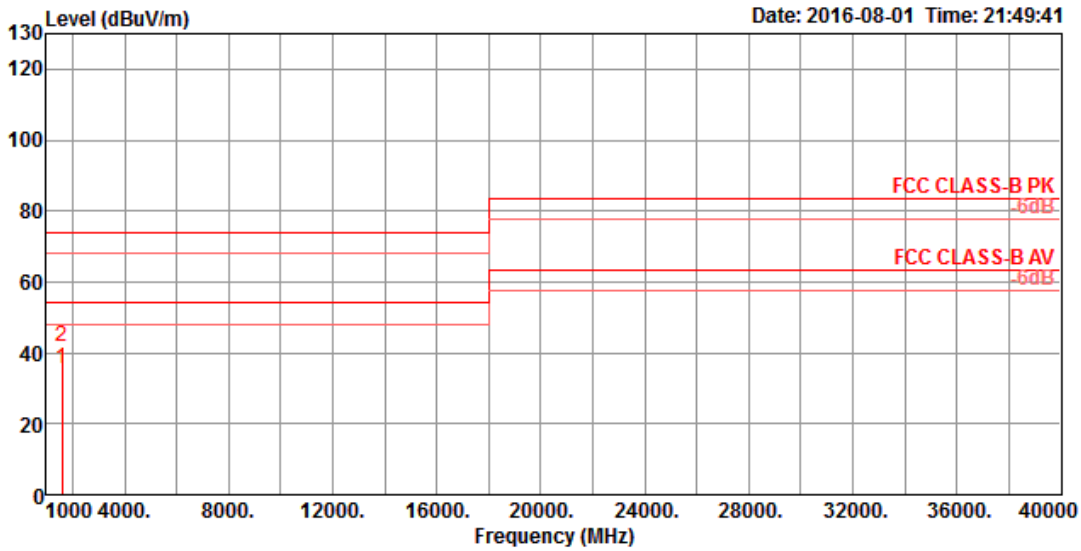
Temperature	22.2℃	Humidity	51%
Test Engineer	John Tang, Zero Chen	Configurations	2.4GHz WLAN + Bluetooth
Test Mode	Mode 2. EUT Z axis - 2.4GHz WLAN function + Bluetooth function		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	1608.76	33.62	54.00	-20.38	36.30	4.56	25.59	32.83	113	78	Average	HORIZONTAL
2	1609.00	42.92	74.00	-31.08	45.58	4.57	25.60	32.83	113	78	Peak	HORIZONTAL

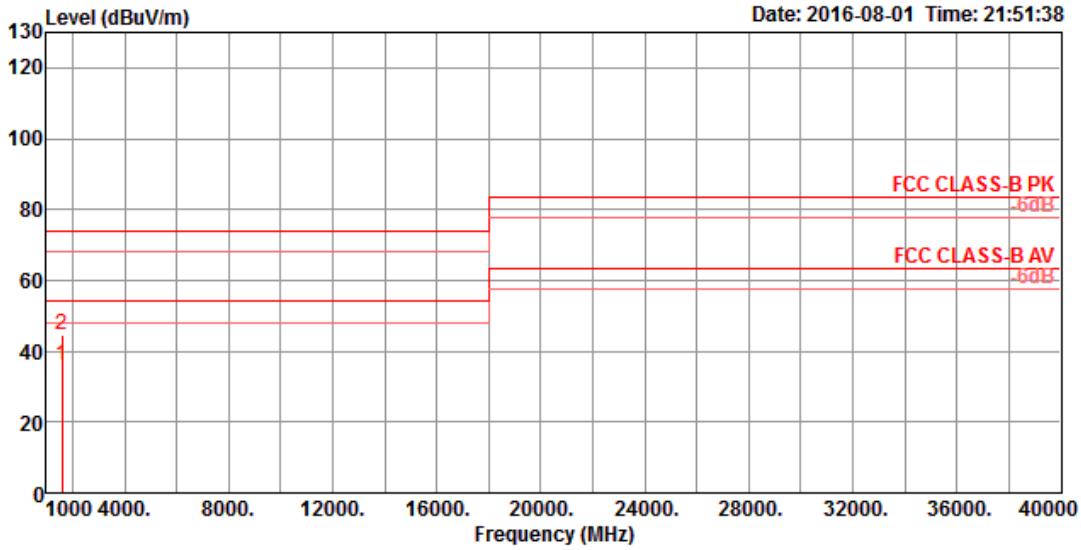
Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	1608.92	35.62	54.00	-18.38	38.28	4.57	25.60	32.83	103	221	Average	VERTICAL
2	1609.06	41.78	74.00	-32.22	44.44	4.57	25.60	32.83	103	221	Peak	VERTICAL

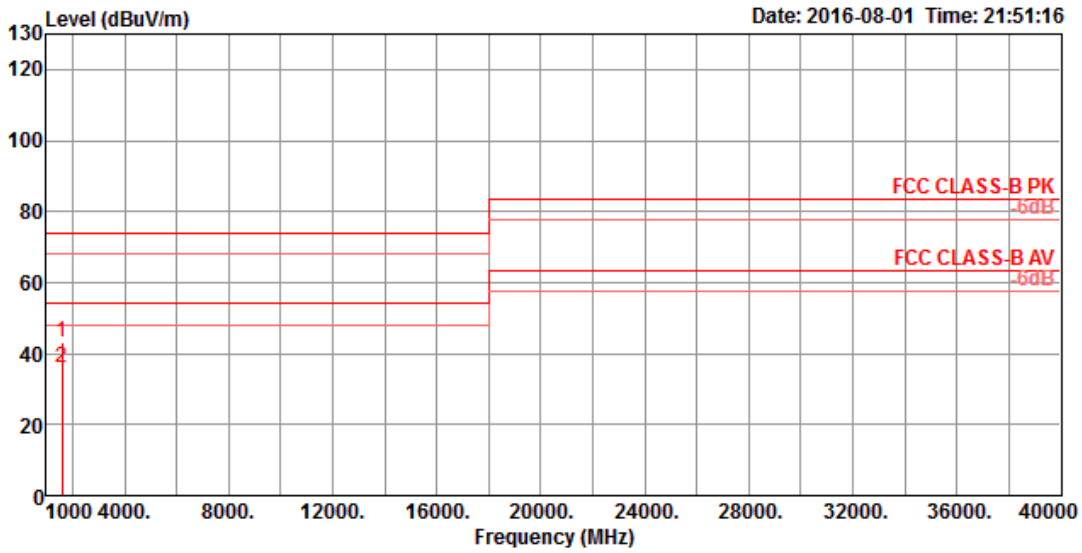
Temperature	22.2℃	Humidity	51%
Test Engineer	John Tang, Zero Chen	Configurations	5GHz WLAN + Bluetooth
Test Mode	Mode 4. EUT Z axis - 5GHz WLAN function + Bluetooth function		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	1608.86	35.83	54.00	-18.17	38.49	4.57	25.60	32.83	115	321	Average	HORIZONTAL
2	1609.04	44.62	74.00	-29.38	47.28	4.57	25.60	32.83	115	321	Peak	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	1608.60	43.18	74.00	-30.82	45.86	4.56	25.59	32.83	104	278	Peak	VERTICAL
2	1608.86	35.78	54.00	-18.22	38.44	4.57	25.60	32.83	104	278	Average	VERTICAL