

## FCC RADIO TEST REPORT

Applicant's company	Motorola Solutions, Inc.
Applicant Address	One Motorola Plaza Holtsville, NY 11742 USA
FCC ID	UZ7AP0622
Manufacturer's company	Joy Technology (ShenZhen) Corporation
Manufacturer Address	HengKeng Ind., Shangpai, Shangwu, Aiqun Rd., Shiyan Town, Shenzhen 518108 China

Product Name	Wireless Dual Band AP
Brand Name	MOTOROLA
Model Name	AP-0622
Test Rule Part(s)	47 CFR FCC Part 15 Subpart C § 15.247
Test Freq. Range	2400 ~ 2483.5MHz / 5725 ~ 5850MHz
Received Date	Sep. 22, 2011
Final Test Date	Feb. 08, 2012
Submission Type	Original Equipment



### Statement

Test result included is only for the IEEE 802.11n, IEEE 802.11b/g part and IEEE 802.11a (5725 ~ 5850MHz) 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 C63.10-2009 and 47 CFR FCC Part 15 Subpart C.

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
FR192220AA	Rev. 01	Initial issue of report	Mar. 07, 2012

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## 1. CERTIFICATE OF COMPLIANCE

Certificate No.: CB10101168

**Product Name** : Wireless Dual Band AP  
**Brand Name** : MOTOROLA  
**Model Name** : AP-0622  
**Applicant** : Motorola Solutions, 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 Sep. 22, 2011 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.



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**Jordan Hsiao**  
**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
4.1	15.207	AC Power Line Conducted Emissions	Complies	11.54 dB
4.2	15.247(b)(3)	Maximum Conducted Output Power	Complies	0.40 dB
4.3	-	Average Output Power	-	-
4.4	15.247(e)	Power Spectral Density	Complies	1.44 dB
4.5	15.247(a)(2)	6dB Spectrum Bandwidth	Complies	-
4.6	15.247(d)	Radiated Emissions	Complies	0.03 dB
4.7	15.247(d)	Band Edge Emissions	Complies	1.00 dB
4.8	15.203	Antenna Requirements	Complies	-

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	±2.3dB	Confidence levels of 95%
Maximum Peak Output Power	±0.8dB	Confidence levels of 95%
Power Spectral Density	±0.5dB	Confidence levels of 95%
6dB Spectrum Bandwidth	±8.5×10 <sup>-8</sup>	Confidence levels of 95%
Radiated Emissions (9kHz~30MHz)	±0.8dB	Confidence levels of 95%
Radiated Emissions (30MHz~1000MHz)	±1.9dB	Confidence levels of 95%
Radiated / Band Edge Emissions (1GHz~18GHz)	±1.9dB	Confidence levels of 95%
Radiated Emissions (18GHz~40GHz)	±1.9dB	Confidence levels of 95%
Temperature	±0.7°C	Confidence levels of 95%
Humidity	±3.2%	Confidence levels of 95%
DC / AC Power Source	±1.4%	Confidence levels of 95%

### 3. GENERAL INFORMATION

#### 3.1. Product Details

##### IEEE 802.11n

Items	Description
Product Type	Please refer to section 3.3
Radio Type	Intentional Transceiver
Power Type	From Power Adapter or POE
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 / 5725 ~ 5850MHz
Channel Number	<p>&lt;For 2.4GHz Band&gt;</p> <p>11 for 20MHz bandwidth ; 7 for 40MHz bandwidth</p> <p>&lt;For 5GHz Band&gt;</p> <p>5 for 20MHz bandwidth ; 2 for 40MHz bandwidth</p>
Channel Band Width (99%)	<p>&lt;For 2.4GHz Band&gt;</p> <p><b>For Embedded (120G00000000A/ 20G00000001A /120G00000002A/ 120G00000003A) antenna:</b></p> <p>Mode 1 (2TX, 2RX): MCS0 (20MHz): 17.92 MHz ; MCS0 (40MHz): 36.08 MHz</p> <p>Mode 2 (2TX, 2RX): MCS0 (20MHz): 17.84 MHz ; MCS0 (40MHz): 36.56 MHz</p> <p><b>For Dipole (ML-2499-FHPA9-01R) antenna:</b></p> <p>Mode 4 (2X, 2RX): MCS0 (20MHz): 17.92 MHz ; MCS0 (40MHz): 36.16 MHz</p> <p>(2X, 2RX): MCS8 (20MHz): 17.68 MHz ; MCS8 (40MHz): 36.32 MHz</p> <p>Mode 5 (1X, 2RX): MCS0 (20MHz): 17.72 MHz ; MCS0 (40MHz): 36.40 MHz</p> <p>(2X, 2RX): MCS0 (20MHz): 17.84 MHz ; MCS0 (40MHz): 36.48 MHz</p> <p>(2X, 2RX): MCS8 (20MHz): 17.68 MHz ; MCS8 (40MHz): 36.40 MHz</p> <p><b>For Patch (ML-2499-SD3-01R) antenna:</b></p> <p>Mode 7 (1X, 2RX): MCS0 (20MHz): 17.72 MHz ; MCS0 (40MHz): 36.32 MHz</p> <p>(2X, 2RX): MCS0 (20MHz): 17.40 MHz ; MCS0 (40MHz): 36.16 MHz</p> <p>Mode 8 (1X, 2RX): MCS0 (20MHz): 17.80 MHz ; MCS0 (40MHz): 36.32 MHz</p> <p>(2X, 2RX): MCS0 (20MHz): 17.88 MHz ; MCS0 (40MHz): 36.56 MHz</p> <p><b>For Panel (ML-2499-BPNA3-01R) antenna:</b></p> <p>Mode 10 (1X, 2RX): MCS0 (20MHz): 17.68 MHz ; MCS0 (40MHz): 36.32 MHz</p> <p>Mode 11 (1X, 2RX): MCS0 (20MHz): 17.38 MHz ; MCS0 (40MHz): 36.32 MHz</p> <p><b>For Yagi (ML-2499-BYGA2-01R) antenna:</b></p> <p>Mode 13 (1X, 2RX): MCS0 (20MHz): 17.68 MHz ; MCS0 (40MHz): 36.32 MHz</p> <p>Mode 14 (1X, 2RX): MCS0 (20MHz): 17.68 MHz ; MCS0 (40MHz): 36.40 MHz</p> <p>&lt;For 5GHz Band&gt;</p>

	<p><b>For Embedded (120G00000002A/ 120G00000003A) antenna:</b> Mode 3 (2TX, 2RX): MCS0 (20MHz): 17.88 MHz ; MCS0 (40MHz): 36.48 MHz</p> <p><b>For Dipole (ML-5299-FHPA10-01R) antenna:</b> Mode 6 (1TX, 2RX): MCS0 (20MHz): 17.72 MHz ; MCS0 (40MHz): 36.40 MHz (2TX, 2RX): MCS0 (20MHz): 17.88 MHz ; MCS0 (40MHz): 36.48 MHz (2TX, 2RX): MCS8 (20MHz): 17.72 MHz ; MCS0 (40MHz): 36.40 MHz</p> <p><b>For Patch (ML-5299-PTA1-01R) antenna:</b> Mode 9 (2TX, 2RX): MCS0 (20MHz): 17.88 MHz ; MCS0 (40MHz): 36.48 MHz</p> <p><b>For Panel (ML-5299-WPNA1-01R) antenna:</b> Mode 12(1TX, 2RX): MCS0 (20MHz): 17.72 MHz ; MCS0 (40MHz): 36.40 MHz</p> <p><b>For Yagi (ML-5299-BYGA15-012) antenna:</b> Mode 15(1TX, 2RX): MCS0 (20MHz): 17.72 MHz ; MCS0 (40MHz): 36.40 MHz</p>
Conducted Output Power	<p><u>&lt;For 2.4GHz Band&gt;</u></p> <p><b>For Embedded (120G00000000A/ 20G00000001A /120G00000002A/ 120G00000003A) antenna:</b> Mode 1 (2TX, 2RX): MCS0 (20MHz): 27.28 dBm ; MCS0 (40MHz): 18.33 dBm Mode 2 (2TX, 2RX): MCS0 (20MHz): 26.93 dBm ; MCS0 (40MHz): 23.39 dBm</p> <p><b>For Dipole (ML-2499-FHPA9-01R) antenna:</b> Mode 4 (2TX, 2RX): MCS0 (20MHz): 22.60 dBm ; MCS0 (40MHz): 16.49 dBm (2TX, 2RX): MCS8 (20MHz): 24.48 dBm ; MCS8 (40MHz): 18.87 dBm Mode 5 (1TX, 2RX): MCS0 (20MHz): 21.24 dBm ; MCS0 (40MHz): 18.03 dBm (2TX, 2RX): MCS0 (20MHz): 20.03 dBm ; MCS0 (40MHz): 18.19 dBm (2TX, 2RX): MCS8 (20MHz): 22.93 dBm ; MCS8 (40MHz): 20.90 dBm</p> <p><b>For Patch (ML-2499-SD3-01R) antenna:</b> Mode 7 (1TX, 2RX): MCS0 (20MHz): 22.86 dBm ; MCS0 (40MHz): 19.58 dBm (2TX, 2RX): MCS0 (20MHz): 24.70 dBm ; MCS0 (40MHz): 21.16 dBm Mode 8 (1TX, 2RX): MCS0 (20MHz): 22.61 dBm ; MCS0 (40MHz): 18.37 dBm (2TX, 2RX): MCS0 (20MHz): 24.97 dBm ; MCS0 (40MHz): 20.62 dBm</p> <p><b>For Panel (ML-2499-BPNA3-01R) antenna:</b> Mode 10 (1TX, 2RX): MCS0 (20MHz): 14.87 dBm ; MCS0 (40MHz): 13.38 dBm Mode 11 (1TX, 2RX): MCS0 (20MHz): 15.00 dBm ; MCS0 (40MHz): 15.19 dBm</p> <p><b>For Yagi (ML-2499-BYGA2-01R) antenna:</b> Mode 13 (1TX, 2RX): MCS0 (20MHz): 21.26 dBm ; MCS0 (40MHz): 18.24 dBm Mode 14 (1TX, 2RX): MCS0 (20MHz): 18.22 dBm ; MCS0 (40MHz): 16.67 dBm</p> <p><u>&lt;For 5GHz Band&gt;</u></p> <p><b>For Embedded (120G00000002A/ 120G00000003A) antenna:</b> Mode 3 (2TX, 2RX): MCS0 (20MHz): 23.27 dBm ; MCS0 (40MHz): 22.91 dBm</p> <p><b>For Dipole (ML-5299-FHPA10-01R) antenna:</b> Mode 6 (1TX, 2RX): MCS0 (20MHz): 22.01 dBm ; MCS0 (40MHz): 21.98 dBm</p>

	<p>(2TX, 2RX): MCS0 (20MHz): 22.68 dBm ; MCS0 (40MHz): 22.80 dBm  (2TX, 2RX): MCS8 (20MHz): 23.32 dBm ; MCS8 (40MHz): 22.74 dBm</p> <p><b>For Patch (ML-5299-PTA1-01R) antenna:</b>  Mode 9 (2TX, 2RX): MCS0 (20MHz): 22.68 dBm ; MCS0 (40MHz): 22.80 dBm</p> <p><b>For Panel (ML-5299-WPNA1-01R) antenna:</b>  Mode 12 (1TX, 2RX): MCS0 (20MHz): 22.30 dBm ; MCS0 (40MHz): 21.98 dBm</p> <p><b>For Yagi (ML-5299-BYGA15-012) antenna:</b>  Mode 15 (1TX, 2RX): MCS0 (20MHz): 22.33 dBm ; MCS0 (40MHz): 22.12 dBm</p>
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3



## 802.11a/b/g

Items	Description
Product Type	Please refer to section 3.3
Radio Type	Intentional Transceiver
Power Type	From Power Adapter or POE
Modulation	DSSS for IEEE 802.11b ; OFDM for IEEE 802.11a/g
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 / 5725 ~ 5850MHz
Channel Number	11b/g: 11 ; 11a: 5
Channel Band Width (99%)	<p>&lt;For 2.4GHz Band&gt;</p> <p><b>For Embedded (120G00000000A/ 20G00000001A /120G00000002A/ 120G00000003A) antenna:</b></p> <p>Mode 1 (1TX, 2RX): 11b: 14.12 MHz (2TX, 2RX): 11g: 16.64 MHz</p> <p>Mode 2 (1TX, 2RX): 11b: 14.00 MHz (2TX, 2RX): 11g: 16.64 MHz</p> <p><b>For Dipole (ML-2499-FHPA9-01R) antenna:</b></p> <p>Mode 4 (1TX, 2RX): 11b: 14.04 MHz (2TX, 2RX): 11g: 16.64 MHz</p> <p>Mode 5 (1TX, 2RX): 11b: 14.36 MHz ; 11g: 16.64 MHz (2TX, 2RX): 11g: 16.52 MHz</p> <p><b>For Patch (ML-2499-SD3-01R) antenna:</b></p> <p>Mode 7 (1TX, 2RX): 11b: 14.08 MHz ; 11g: 16.60 MHz (2TX, 2RX): 11g: 16.48 MHz</p> <p>Mode 8 (1TX, 2RX): 11b: 14.36 MHz ; 11g: 16.72 MHz (2TX, 2RX): 11g: 16.64 MHz ; 11a: 16.60 MHz</p> <p><b>For Panel (ML-2499-BPNA3-01R) antenna:</b></p> <p>Mode 10 (1TX, 2RX): 11b: 13.92 MHz ; 11g: 16.52 MHz</p> <p>Mode 11 (1TX, 2RX): 11b: 13.92 MHz ; 11g: 16.56 MHz; 11a: 16.56 MHz</p> <p><b>For Yagi (ML-2499-BYGA2-01R) antenna:</b></p> <p>Mode 13 (1TX, 2RX): 11b: 14.08 MHz ; 11g: 16.52 MHz</p> <p>Mode 14 (1TX, 2RX): 11b: 13.88 MHz ; 11g: 16.32 MHz; 11a: 16.56 MHz</p> <p>&lt;For 5GHz Band&gt;</p> <p><b>For Embedded (120G00000002A/ 120G00000003A) antenna:</b></p> <p>Mode 3 (2TX, 2RX): 11a: 16.48 MHz</p> <p><b>For Dipole (ML-5299-FHPA10-01R) antenna:</b></p> <p>Mode 6 (1TX, 2RX): 11a: 16.56 MHz</p>

	<p>(2TX, 2RX): 11a: 16.60 MHz</p> <p><b>For Patch (ML-5299-PTA1-01R) antenna:</b></p> <p>Mode 9 (2TX, 2RX): 11a: 16.60 MHz</p> <p><b>For Panel (ML-5299-WPNA1-01R) antenna:</b></p> <p>Mode 12 (1TX, 2RX): 11a: 16.56 MHz</p> <p><b>For Yagi (ML-5299-BYGA15-012) antenna:</b></p> <p>Mode 15 (1TX, 2RX): 11a: 16.56 MHz</p>
Conducted Output Power	<p><u>&lt;For 2.4GHz Band&gt;</u></p> <p><b>For Embedded (120G00000000A/ 20G00000001A /120G00000002A/ 120G00000003A) antenna:</b></p> <p>Mode 1 (1TX, 2RX): 11b: 24.42 dBm (2TX, 2RX): 11g: 26.35 dBm</p> <p>Mode 2 (1TX, 2RX): 11b: 21.71 dBm (2TX, 2RX): 11g: 26.28 dBm ;</p> <p><b>For Dipole (ML-2499-FHPA9-01R) antenna:</b></p> <p>Mode 4 (1TX, 2RX): 11b: 22.96 dBm ; (2TX, 2RX): 11g: 23.96 dBm</p> <p>Mode 5 (1TX, 2RX): 11b: 23.22 dBm ;11g: 22.22 dBm (2TX, 2RX): 11g: 19.34 dBm</p> <p><b>For Patch (ML-2499-SD3-01R) antenna:</b></p> <p>Mode 7 (1TX, 2RX): 11b: 23.65 dBm ; 11g: 22.98 dBm (2TX, 2RX): 11g: 24.62 dBm</p> <p>Mode 8 (1TX, 2RX): 11b: 23.29 dBm ; 11g: 22.95 dBm (2TX, 2RX): 11g: 25.41 dBm</p> <p><b>For Panel (ML-2499-BPNA3-01R) antenna:</b></p> <p>Mode 10 (1TX, 2RX): 11b: 20.04 dBm ; 11g: 14.19 dBm</p> <p>Mode 11 (1TX, 2RX): 11b: 18.56 dBm ; 11g: 15.21 dBm</p> <p><b>For Yagi (ML-2499-BYGA2-01R) antenna:</b></p> <p>Mode 13 (1TX, 2RX): 11b: 22.79 dBm ; 11g: 21.76 dBm</p> <p>Mode 14 (1TX, 2RX): 11b: 20.54 dBm ; 11g: 15.93 dBm;</p> <p><u>&lt;For 5GHz Band&gt;</u></p> <p><b>For Embedded (120G00000002A/ 120G00000003A) antenna:</b></p> <p>Mode 3 (2TX, 2RX):11a: 24.56 dBm</p> <p><b>For Dipole (ML-5299-FHPA10-01R) antenna:</b></p> <p>Mode 6 (1TX, 2RX): 11a: 21.19 dBm (2TX, 2RX): 11a: 23.57 dBm</p> <p><b>For Patch (ML-5299-PTA1-01R) antenna:</b></p> <p>Mode 9 (2TX, 2RX): 11a: 23.57 dBm</p>

	<b>For Panel (ML-5299-WPNA1-01R) antenna:</b> Mode 12 (1TX, 2RX): 11a:21.97dBm <b>For Yagi (ML-5299-BYGA15-012) antenna:</b> Mode 15 (1TX, 2RX): 11a:21.98 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

#### IEEE 802.11n spec

MCS Index	Nss	Modulation	R	NBPSC	NCBPS		NDBPS		Datarate(Mbps)			
									800nsGI		400nsGI	
					20MHz	40MHz	20MHz	40MHz	20MHz	40MHz	20MHz	40MHz
0	1	BPSK	1/2	1	52	108	26	54	6.5	13.5	7.200	15
1	1	QPSK	1/2	2	104	216	52	108	13.0	27.0	14.400	30
2	1	QPSK	3/4	2	104	216	78	162	19.5	40.5	21.700	45
3	1	16-QAM	1/2	4	208	432	104	216	26.0	54.0	28.900	60
4	1	16-QAM	3/4	4	208	432	156	324	39.0	81.0	43.300	90
5	1	64-QAM	2/3	6	312	648	208	432	52.0	108.0	57.800	120
6	1	64-QAM	3/4	6	312	648	234	486	58.5	121.5	65.000	135
7	1	64-QAM	5/6	6	312	648	260	540	65.0	135.0	72.200	150
8	2	BPSK	1/2	1	104	216	52	108	13.0	27.0	14.444	30
9	2	QPSK	1/2	2	208	432	104	216	26.0	54.0	28.889	60
10	2	QPSK	3/4	2	208	432	156	324	39.0	81.0	43.333	90
11	2	16-QAM	1/2	4	416	864	208	432	52.0	108.0	57.778	120
12	2	16-QAM	3/4	4	416	864	312	648	78.0	162.0	86.667	180
13	2	64-QAM	2/3	6	624	1296	416	864	104.0	216.0	115.556	240
14	2	64-QAM	3/4	6	624	1296	468	972	117.0	243.0	130.000	270
15	2	64-QAM	5/6	6	624	1296	520	1080	130.0	270.0	144.444	300

Symbol	Explanation
NSS	Number of spatial streams
R	Code rate
NBPSC	Number of coded bits per single carrier
NCBPS	Number of coded bits per symbol
NDBPS	Number of data bits per symbol
GI	guard interval

### 3.2. Accessories

Power	Brand	Model	Rating
Adapter	HIPRO	HP-A0502R3D	Input: 100-240VAC, 50-60Hz, 2.4A Output: 12VDC, 4.16A
<b>Remark:</b> The EUT has POE Function, test with IEEE 802.3 af / at compliance PoE device.			

### 3.3. Table for Filed Antenna

Ant.	Model Name	Antenna Type	Chip/Radio	Gain (dBi)	
				2.4GHz	5GHz
1	120G00000000A	Embedded	Radio1-CH1	3.92	-
	120G00000001A	Embedded	Radio1-CH2	3.77	-
2	120G00000002A	Embedded	Radio2-CH1	4.08	7.5
	120G00000003A	Embedded	Radio2-CH2	4.44	5.52
3	ML-2499-FHPA9-01R	Dipole	Radio1/2-CH1/2	8.5	-
4	ML-2499-SD3-01R	Patch	Radio1/2-CH1/2	3.5	-
5	ML-2499-BPNA3-01R	Panel	Radio1/2-CH1/2	10.9	-
6	ML-2499-BYGA2-01R	Yagi	Radio1/2-CH1/2	11.1	-
7	ML-5299-FHPA10-01R	Dipole	Radio1/2-CH1/2	-	9
8	ML-5299-PTA1-01R	Patch	Radio1/2-CH1/2	-	4.6
9	ML-5299-WPNA1-01R	Panel	Radio1/2-CH1/2	-	12.5
10	ML-5299-BYGA15-012	Yagi	Radio1/2-CH1/2	-	11
11	ML-2499-5PNL-72-N	Panel	Radio1/2-CH1/2	5	-
12	ML-2499-APA2-01	Dipole	Radio1/2-CH1/2	2	-
13	ML-2499-HPA3-01R	Dipole	Radio1/2-CH1/2	4.7	-
14	ML-5299-APA1-01R	Dipole	Radio1/2-CH1/2	-	2
15	ML-5299-HPA1-01R	Dipole	Radio1/2-CH1/2	-	5
16	ML-2452-APA2-01	Dipole	Radio1/2-CH1/2	3	5
17	ML-2452-PNA5-01R	Panel	Radio1/2-CH1/2	4.5	5
18	ML-2452-PNA7-01R	Panel	Radio1/2-CH1/2	7	9
19	ML-2452-HPA5-036	Dipole	Radio1/2-CH1/2	3	5

Note:

- There are two chips, Radio 1 and Radio 2 respectively. Radio 1 support Chain 2.4GHz function and Radio 2 support Chain 2.4GHz+5GHz function. Radio 1 is hardware configured as 2.4GHz only and Radio 2 is software restricted to 5GHz only.
- There are 19 antennas in the antenna table list, antenna 1 to 10 are the highest gain antennas. They were selected to perform the test and recorded in this report.
- Rx function is always 2Rx for 2Tx, but may be either 1Rx or 2Rx for 1Tx.

Table of TX/RX Function in each antenna:

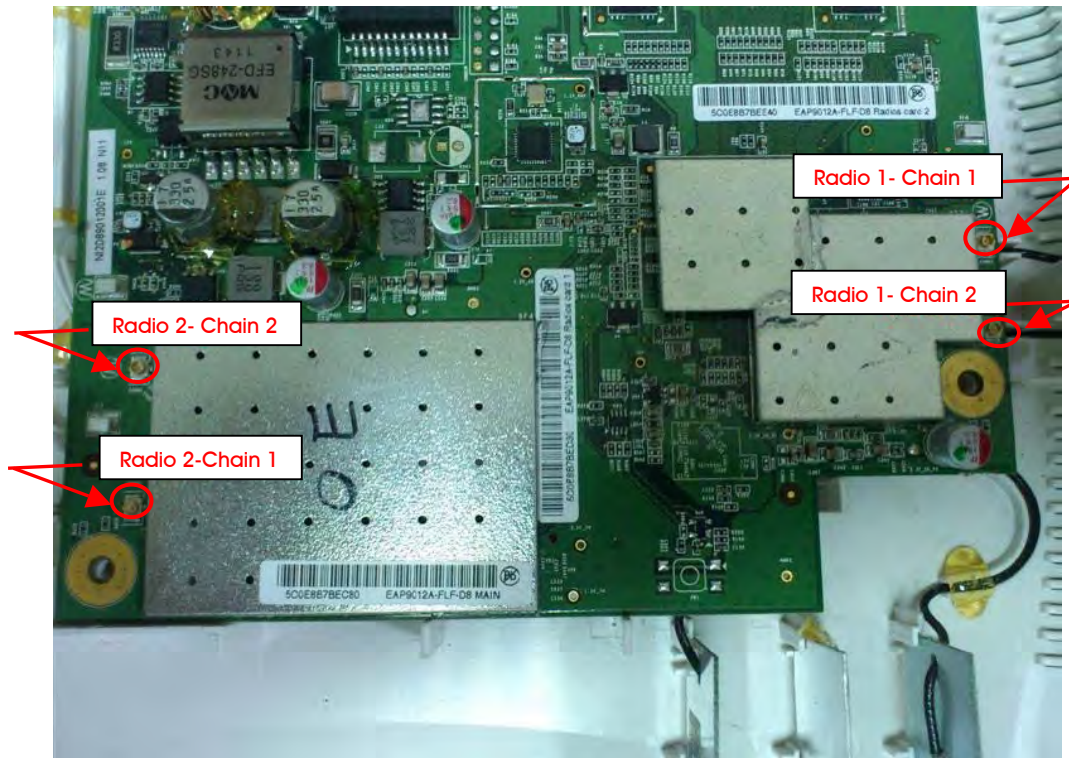
Item			Radio 1				Radio 2			
			Chain 1		Chain 2		Chain 1		Chain 2	
			TX	RX	TX	RX	TX	RX	TX	RX
Ant. 1	2.4GHz	*11b	-	V	V	V	-	-	-	-
		11g	V	V	V	V	-	-	-	-
		11n	V	V	V	V	-	-	-	-
Ant. 2	2.4GHz	*11b	-	-	-	-	V	V	-	V
		11g	-	-	-	-	V	V	V	V
		11n	-	-	-	-	V	V	V	V
	5GHz	11a	-	-	-	-	V	V	V	V
		11n	-	-	-	-	V	V	V	V
Ant. 3	2.4GHz	*11b	-	V	V	V	V	V	-	V
		*11g	-	-	-	-	V	V	-	V
		11g	V	V	V	V	V	V	V	V
		*11n	-	-	-	-	V	V	-	V
		11n	V	V	V	V	V	V	V	V
Ant. 4	2.4GHz	*11b	-	V	V	V	V	V	-	V
		*11g	-	V	V	V	V	V	-	V
		11g	V	V	V	V	V	V	V	V
		*11n	-	V	V	V	V	V	-	V
		11n	V	V	V	V	V	V	V	V
Ant. 5	2.4GHz	*11b	-	V	V	V	V	V	-	V
		*11g	-	V	V	V	V	V	-	V
		*11n	-	V	V	V	V	V	-	V
Ant. 6	2.4GHz	*11b	-	V	V	V	V	V	-	V
		*11g	-	V	V	V	V	V	-	V
		*11n	-	V	-	V	V	V	-	V
Ant. 7	5GHz	*11a	-	V	V	V	V	V	-	V
		11a	V	V	V	V	V	V	V	V
		*11n	-	V	V	V	V	V	-	V
		11n	V	V	V	V	V	V	V	V
Ant. 8	5GHz	11a	V	V	V	V	V	V	V	V
		11n	V	V	V	V	V	V	V	V
Ant. 9	5GHz	*11a	-	V	V	V	V	V	-	V
		*11n	-	V	V	V	V	V	-	V
Ant. 10	5GHz	*11a	-	V	V	V	V	V	-	V
		*11n	-	V	V	V	V	V	-	V

Note: Marked "-" on behalf of no function.

Marked "\*" Rx function may be either 1Rx or 2Rx for 1Tx.

Radio 1 support Chain 2 and Radio 2 support Chain 1 when perform the 1TX function.

Chip/Radio	Required 1TX Port
Radio 1-2.4G	Chain 2
Radio 2-2.4G	Chain 1
Radio 2-5G	Chain 1



### 3.4. Table for Carrier Frequencies

#### For 2.4GHz Band:

For IEEE 802.11b/g, use Channel 1~Channel 11.

There are two bandwidth systems for IEEE 802.11n.

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

For both 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	-	-

#### For 5GHz Band:

For IEEE 802.11a, use Channel 149, 153, 157, 161, 165.

There are two bandwidth systems for IEEE 802.11n.

For 20MHz bandwidth systems, use Channel 149, 153, 157, 161, 165.

For 40MHz bandwidth systems, use Channel 151, 159.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5725~5850 MHz Band 4	149	5745 MHz	159	5795 MHz
	151	5755 MHz	161	5805 MHz
	153	5765 MHz	165	5825 MHz
	157	5785 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.

#### For 2.4GHz Band

Test Items	Mode	Data Rate	Channel	Chain
AC Power Line Conducted Emissions	Normal Link	Auto	-	-
Peak Output Power	MCS0/20MHz	6.5 Mbps	1/6/11	1/2/1+2
Average Output Power	MCS0/40MHz	13.5 Mbps	3/6/9	1/2/1+2
Power Spectral Density	MCS8/20MHz	13 Mbps	1/6/11	1/2/1+2
	MCS8/40MHz	27 Mbps	3/6/9	1/2/1+2
	11b/CCK	1 Mbps	1/6/11	1
	11g/BPSK	6 Mbps	1/6/11	1/2/1+2
6dB Spectrum Bandwidth	MCS0/20MHz	6.5 Mbps	1/6/11	1+2
	MCS0/40MHz	13.5 Mbps	3/6/9	1+2
	MCS8/20MHz	13 Mbps	1/6/11	1/2/1+2
	MCS8/40MHz	27 Mbps	3/6/9	1/2/1+2
	11b/CCK	1 Mbps	1/6/11	1
	11g/BPSK	6 Mbps	1/6/11	1+2
Radiated Emissions Below 1GHz	Normal Link	Auto	-	-
Radiated Emissions Above 1GHz	MCS0/20MHz	6.5 Mbps	1/6/11	1+2
	MCS0/40MHz	13.5 Mbps	3/6/9	1+2
	MCS8/20MHz	13 Mbps	1/6/11	1/2/1+2
	MCS8/40MHz	27 Mbps	3/6/9	1/2/1+2
	11b/CCK	1 Mbps	1/6/11	1
	11g/BPSK	6 Mbps	1/6/11	1/2/1+2
Band Edge Emissions	MCS0/20MHz	6.5 Mbps	1/11	1+2
	MCS0/40MHz	13.5 Mbps	3/9	1+2
	MCS8/20MHz	13 Mbps	1/6/11	1/2/1+2
	MCS8/40MHz	27 Mbps	3/6/9	1/2/1+2
	11b/CCK	1 Mbps	1/11	1
	11g/BPSK	6 Mbps	1/11	1/2/1+2



### For 5GHz Band

Test Items	Mode	Data Rate	Channel	Chain
AC Power Line Conducted Emissions	Normal Link	Auto	-	-
Peak Output Power	MCS0/20MHz	6.5 Mbps	149/157/165	1/2/1+2
Average Output Power	MCS0/40MHz	13.5 Mbps	151/159	1/2/1+2
Power Spectral Density	MCS8/20MHz	13 Mbps	1/6/11	1/2/1+2
	MCS8/40MHz	27 Mbps	3/6/9	1/2/1+2
	11a/BPSK	6 Mbps	149/157/165	1/2/1+2
6dB Spectrum Bandwidth	MCS0/20MHz	6.5 Mbps	149/157/165	1+2
	MCS0/40MHz	13.5 Mbps	151/159	1+2
	MCS8/20MHz	13 Mbps	1/6/11	1/2/1+2
	MCS8/40MHz	27 Mbps	3/6/9	1/2/1+2
	11a/BPSK	6 Mbps	149/157/165	1+2
Radiated Emissions Below 1GHz	Normal Link	Auto	-	-
Radiated Emissions Above 1GHz	MCS0/20MHz	6.5 Mbps	149/157/165	1+2
	MCS0/40MHz	13.5 Mbps	151/159	1+2
	MCS8/20MHz	13 Mbps	1/6/11	1/2/1+2
	MCS8/40MHz	27 Mbps	3/6/9	1/2/1+2
	11a/BPSK	6 Mbps	149/157/165	1+2
Band Edge Emissions	MCS0/20MHz	6.5 Mbps	149/157/165	1+2
	MCS0/40MHz	13.5 Mbps	151/159	1+2
	MCS8/20MHz	13 Mbps	1/6/11	1/2/1+2
	MCS8/40MHz	27 Mbps	3/6/9	1/2/1+2
	11a/BPSK	6 Mbps	149/157/165	1+2

Note: The CPU of the product is operated at either 560MHz or 600MHz and it does not affect the test result of emissions.

The following test modes were performed for all tests:

#### <Conducted Emissions test>

Mode 1. EUT (Iron case) + Adapter

Mode 2. EUT (Plastic case) + Adapter

#### <Radiated emissions test>

#### For radiated emission 30MHz~ 1GHz:

Mode 1. EUT 1 (Iron case) + Dipole antenna <Ant. 3 (2.4GHz antenna) / Ant. 7 (5GHz antenna)> + POE

Mode 2. EUT 1 (Iron case) + Panel antenna <Ant. 5 (2.4GHz antenna) / Ant. 9 (5GHz antenna)> + POE

Mode 3. EUT 1 (Iron case) + Patch antenna <Ant. 4 (2.4GHz antenna) / Ant. 8 (5GHz antenna)> + POE

Mode 4. EUT 1 (Iron case) + Yagi antenna <Ant. 6 (2.4GHz antenna) / Ant. 10 (5GHz antenna)> + POE

Mode 3 generated the worst test result when this device operates among mode 1 ~ mode 4, thus measurement under mode 5 base on this setting with adapter mode.

Mode 5. EUT 1 (Iron case) + Patch antenna <Ant. 4 (2.4GHz antenna) / Ant. 8 (5GHz antenna)> + Adapter

Mode 6. EUT 2 (Plastic case) + Embedded antenna (Ant. 1/2) + POE

Mode 7. EUT 2 (Plastic case) + Embedded antenna (Ant. 1/2) + Adapter

Due to Mode 3 and Mode 6 generated the worst test results, both of them were recorded in the report.

**For radiated emission above 1GHz:**

Antenna/Radio Mode		11b 1TX	11a/g 1TX	11a/g 2TX	HT20 1TX (MCS0)	H20 2TX (MCS0)	HT40 1TX (MCS0)	H40 2TX (MCS0)	HT20 2TX (MCS8)	H40 2TX (MCS8)
Mode 1	Internal-R1-2G, Antenna 1	v	-	v	-	v	-	v	-	-
Mode 2	Internal-R2-2G, Antenna 2	v	-	v	-	v	-	v	-	-
Mode 3	Internal-R2-5G, Antenna 2	-	-	v	-	v	-	v	-	-
Mode 4	Dipole-R1-2G, Antenna 3	v	-	v	-	v	-	v	v	v
Mode 5	Dipole-R2-2G, Antenna 3	v	v	v	v	v	v	v	v	v
Mode 6	Dipole-R2-5G, Antenna 7	-	v	v	v	v	v	v	v	v
Mode 7	Patch-R1-2.4G, Antenna 4	v	v	v	v	v	v	v	-	-
Mode 8	Patch-R2-2.4G, Antenna 4	v	v	v	v	v	v	v	-	-
Mode 9	Patch-R2-5G, Antenna 8	-	-	v	-	v	-	v	-	-
Mode 10	Panel-R1-2.4G, Antenna 5	v	v	-	v	-	v	-	-	-
Mode 11	Panel-R2-2.4G, Antenna 5	v	v	-	v	-	v	-	-	-
Mode 12	Panel-R2-5G, Antenna 9	-	v	-	v	-	v	-	-	-
Mode 13	Yagi-R1-2.4G, Antenna 6	v	v	-	v	-	v	-	-	-

Mode 14	Yagi-R2-2.4G, Antenna 6	v	v	-	v	-	v	-	-	-
Mode 15	Yagi-R2-5G, Antenna 10	-	v	-	v	-	v	-	-	-

Note:

1. For HT20/40 2TX, MCS8 (2-stream) limit are higher than MCS0 (1-stream) limits due to no array gain reduction on conducted limits. MCS8 signals on 2TX are completely uncorrelated when the direct mapping is configured. If antenna gain is greater than 5 dBi, this mode should be included to realize higher conducted testing limits.
2. EUT has two modules, R1 is regard to Radio 1 module (2.4GHz), R2 is regard to Radio 2 module (2.4GHz + 5GHz).

<For MPE and Co-location Test>:

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

### 3.6. Table for Testing Locations

Test Site No.	Site Category	Location	FCC Reg. No.	IC File No.	VCCI Reg. No
03CH01-CB	SAC	Hsin Chu	262045	IC 4086D	-
CO01-CB	Conduction	Hsin Chu	262045	IC 4086D	-
TH01-CB	OVEN Room	Hsin Chu	-	-	-

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

Please refer section 6 for Test Site Address.

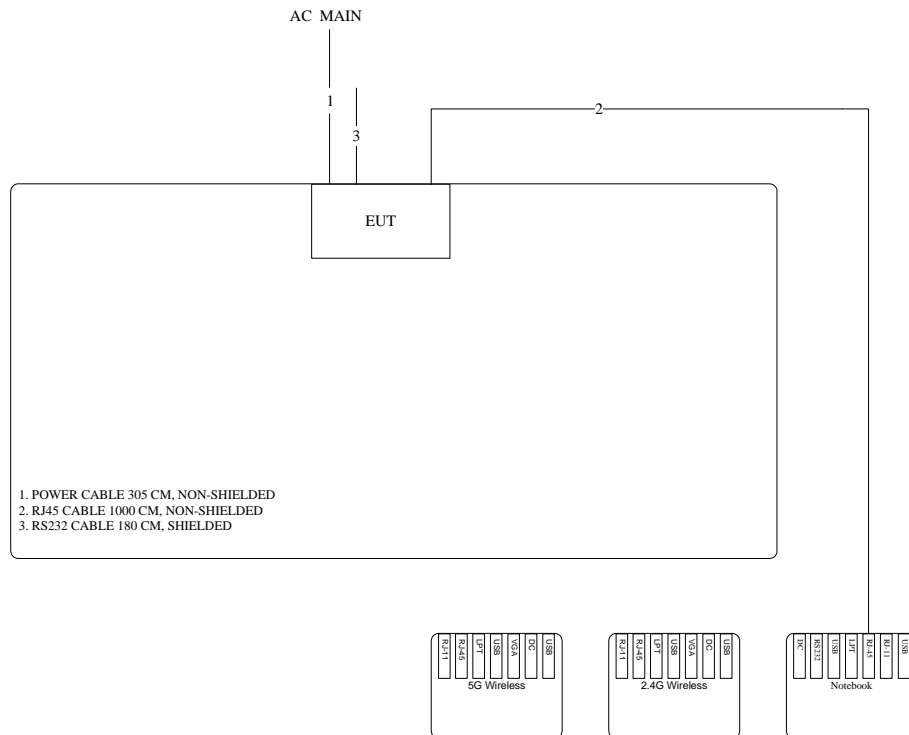
### 3.7. Table for Supporting Units

Support Unit	Brand	Model	FCC ID
Notebook	DELL	D400	E2K24GBRL

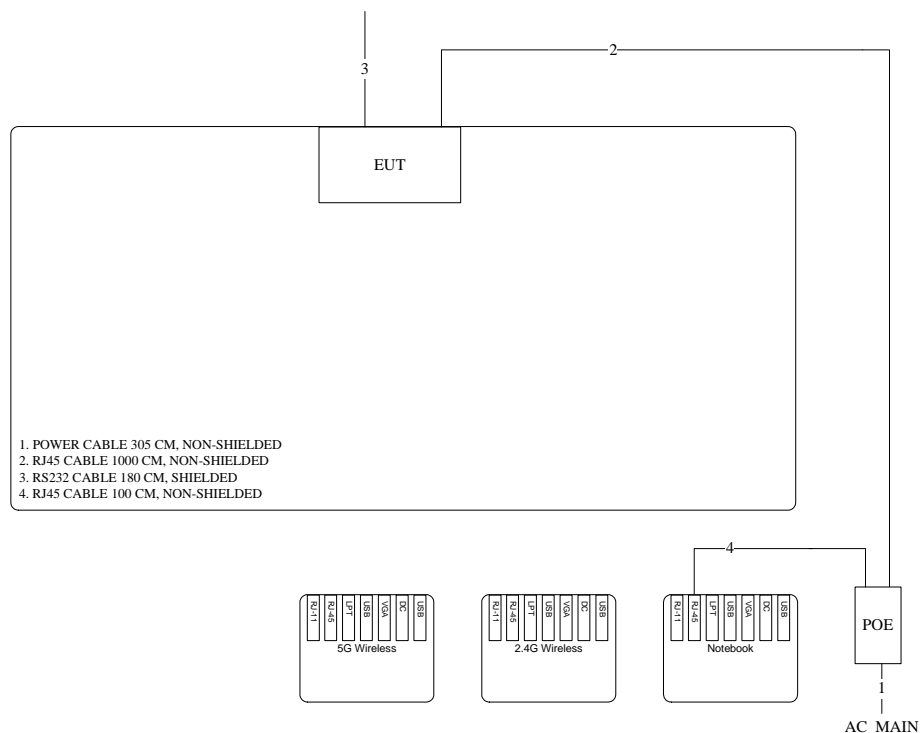
## 3.8. Test Configurations

### 3.8.1. Radiation Emissions Test Configuration

Power from Adapter:

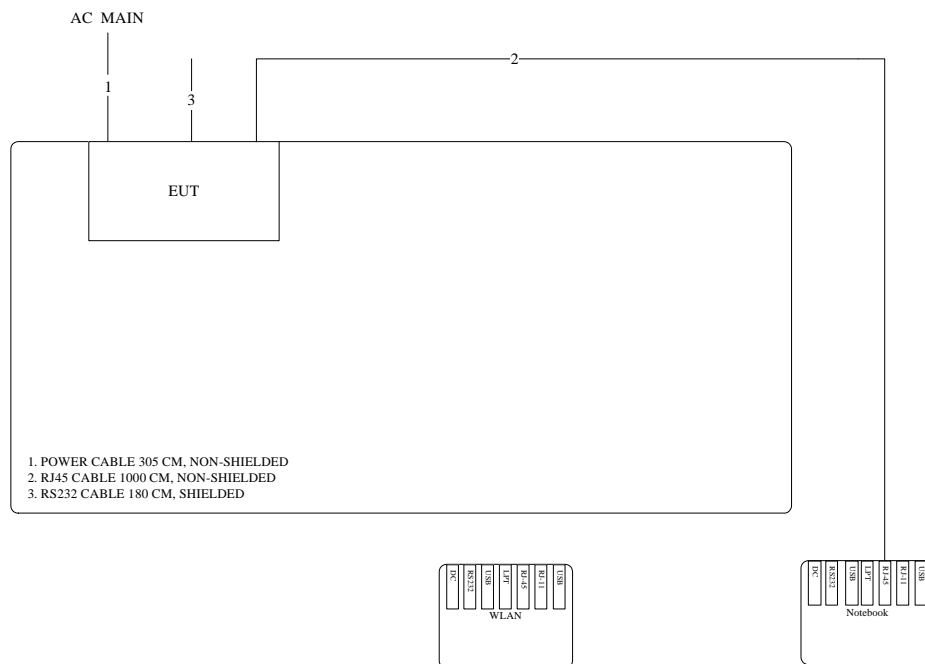


Power from POE:

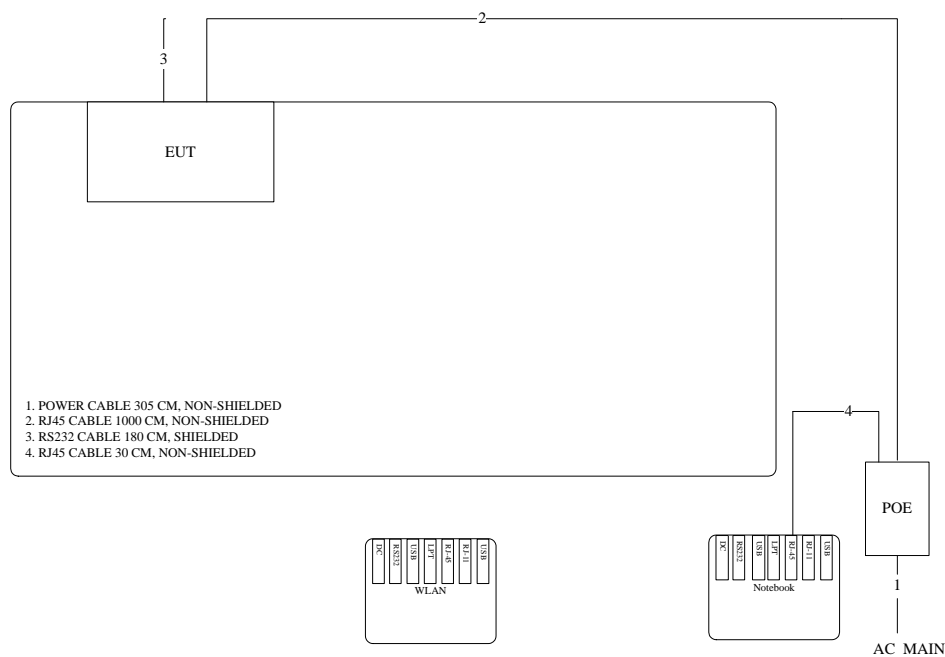


### 3.8.2. AC Power Line Conduction Emissions Test Configuration

Power from Adapter:



Power from POE:



## 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

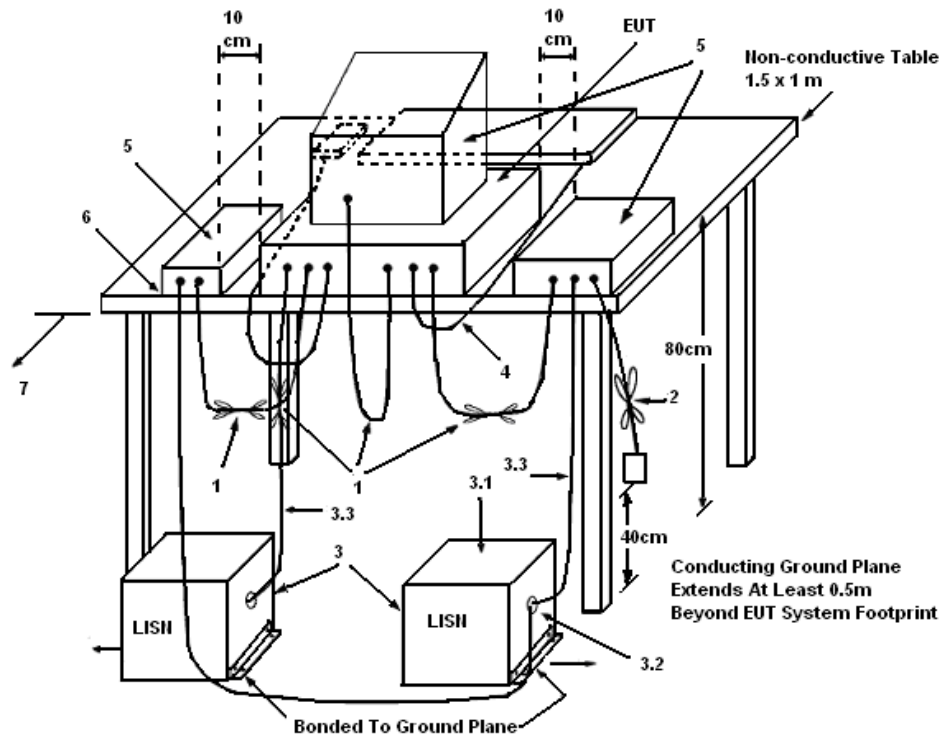
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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  $\Omega$ . 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

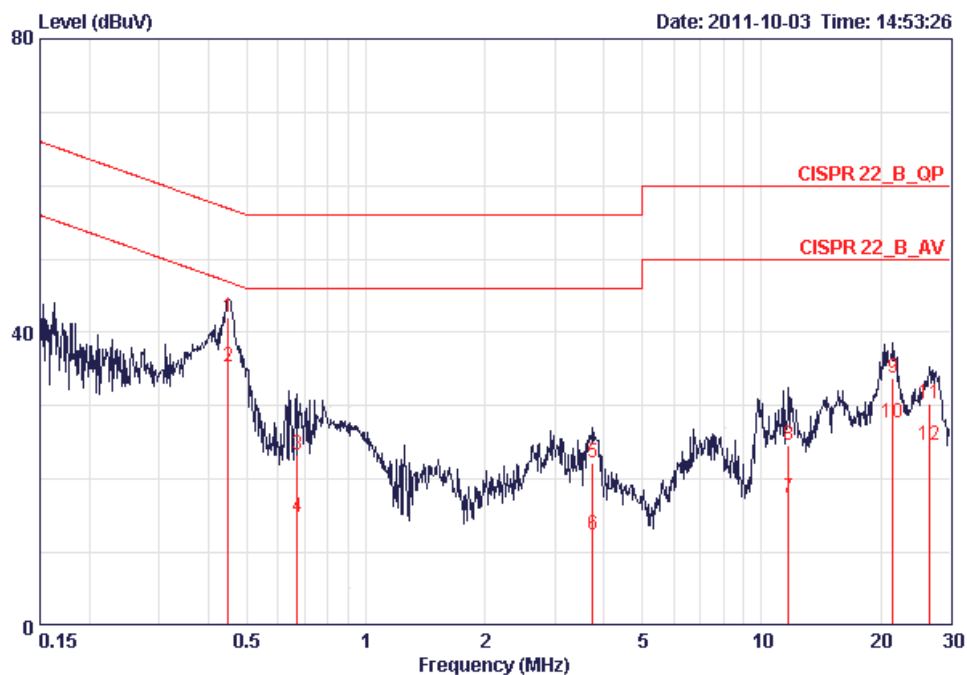
There is no deviation with the original standard.

#### 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

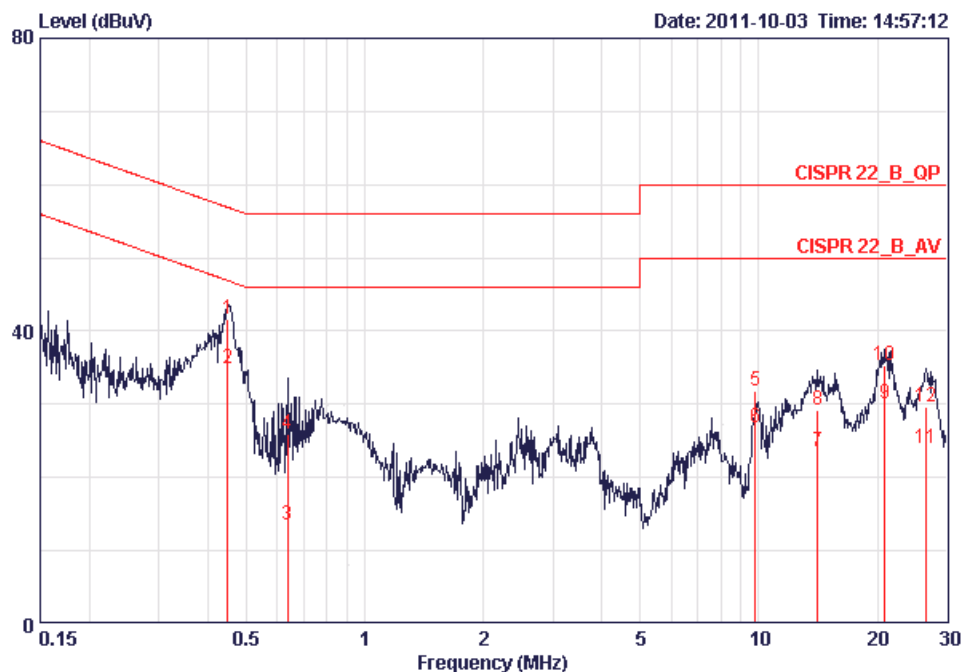
Temperature	21°C	Humidity	59%
Test Engineer	Simon Yang	Phase	Line
Configuration	Normal Link / Mode 1		



	Freq	Level	Limit	Line	Read	LISN	Cable	
	MHz	dBuV	dB	dBuV	dBuV	dB	Loss	Remark
1	0.44916	42.08	-14.81	56.89	41.85	0.03	0.20	QP
2	0.44916	35.35	-11.54	46.89	35.12	0.03	0.20	AVERAGE
3	0.67187	23.31	-32.69	56.00	23.08	0.03	0.20	QP
4	0.67187	14.84	-31.16	46.00	14.61	0.03	0.20	AVERAGE
5	3.740	22.33	-33.67	56.00	21.93	0.10	0.30	QP
6	3.740	12.39	-33.61	46.00	11.99	0.10	0.30	AVERAGE
7	11.683	17.53	-32.47	50.00	16.70	0.43	0.40	AVERAGE
8	11.683	24.72	-35.28	60.00	23.89	0.43	0.40	QP
9	21.486	33.76	-26.24	60.00	32.34	0.92	0.50	QP
10	21.486	27.66	-22.34	50.00	26.24	0.92	0.50	AVERAGE
11	26.558	30.33	-29.67	60.00	28.59	1.24	0.50	QP
12	26.558	24.70	-25.30	50.00	22.96	1.24	0.50	AVERAGE



Temperature	21°C	Humidity	59%
Test Engineer	Simon Yang	Phase	Neutral
Configuration	Normal Link / Mode 1		

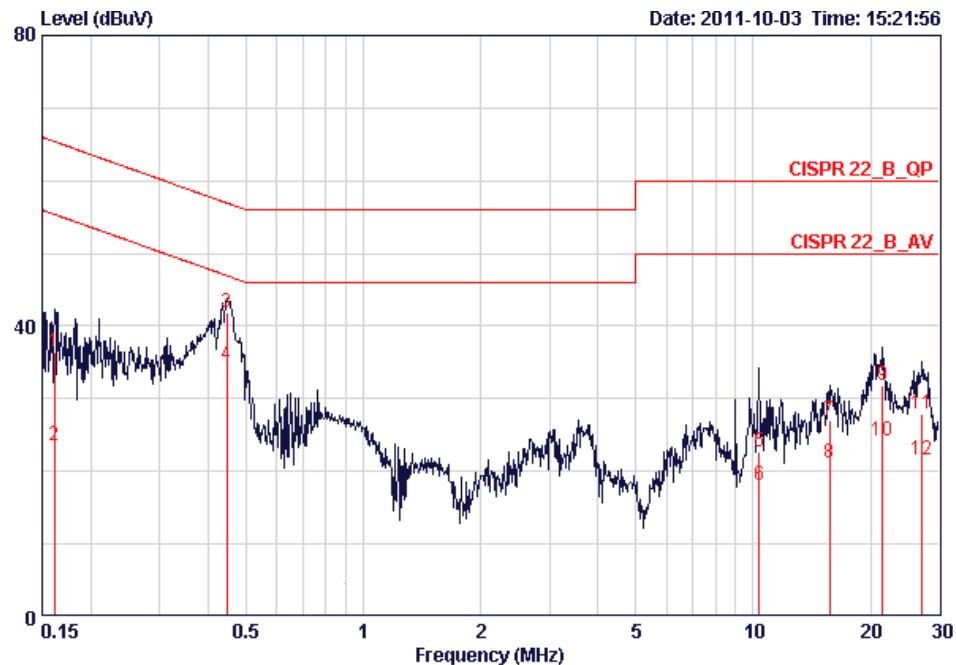


	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.44916	41.58	-15.31	56.89	41.31	0.07	0.20	QP
2	0.44916	34.98	-11.91	46.89	34.71	0.07	0.20	AVERAGE
3	0.63798	13.54	-32.46	46.00	13.27	0.07	0.20	AVERAGE
4	0.63798	26.01	-29.99	56.00	25.74	0.07	0.20	QP
5	9.809	31.82	-28.18	60.00	31.14	0.38	0.30	QP
6	9.809	26.76	-23.24	50.00	26.08	0.38	0.30	AVERAGE
7	14.138	23.45	-26.55	50.00	22.51	0.54	0.40	AVERAGE
8	14.138	29.22	-30.78	60.00	28.28	0.54	0.40	QP
9	20.924	30.11	-19.89	50.00	28.73	0.88	0.50	AVERAGE
10	20.924	35.42	-24.58	60.00	34.04	0.88	0.50	QP
11	26.558	23.99	-26.01	50.00	22.21	1.28	0.50	AVERAGE
12	26.558	29.64	-30.36	60.00	27.86	1.28	0.50	QP

Note:

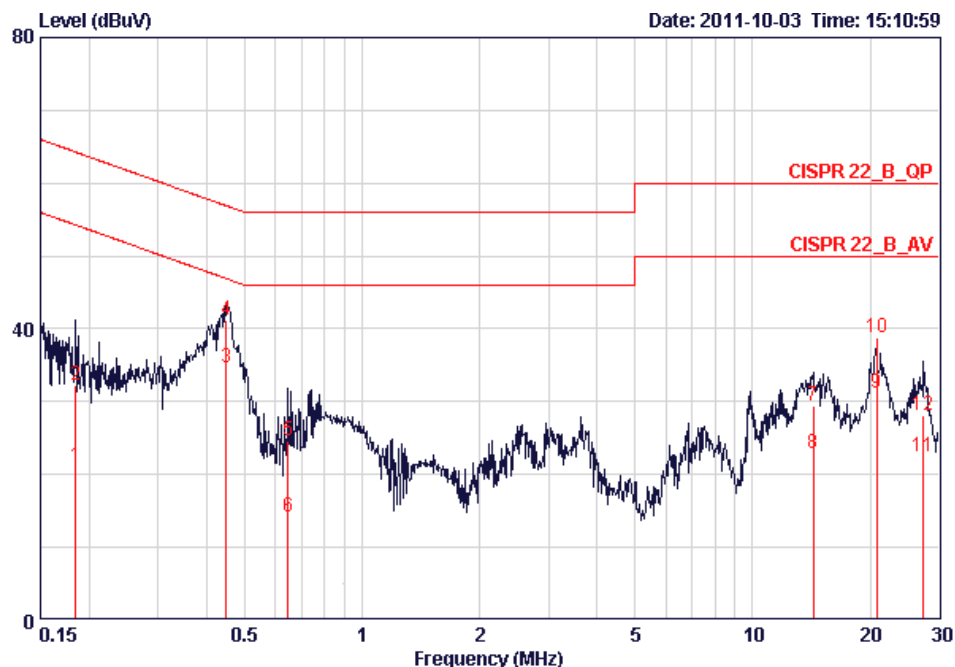
Level = Read Level + LISN Factor + Cable Loss

Temperature	21°C	Humidity	59%
Test Engineer	Simon Yang	Phase	Line
Configuration	Normal Link / Mode 2		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.16155	36.39	-29.00	65.38	36.12	0.07	0.20	QP
2	0.16155	23.50	-31.89	55.38	23.23	0.07	0.20	AVERAGE
3	0.44679	41.78	-15.15	56.93	41.55	0.03	0.20	QP
4 @	0.44679	34.65	-12.28	46.93	34.42	0.03	0.20	AVERAGE
5	10.342	22.66	-37.34	60.00	21.93	0.37	0.37	QP
6	10.342	18.15	-31.85	50.00	17.42	0.37	0.37	AVERAGE
7	15.718	26.94	-33.07	60.00	25.94	0.60	0.40	QP
8	15.718	21.21	-28.80	50.00	20.21	0.60	0.40	AVERAGE
9	21.486	31.78	-28.22	60.00	30.36	0.92	0.50	QP
10	21.486	24.28	-25.72	50.00	22.86	0.92	0.50	AVERAGE
11	27.127	27.79	-32.21	60.00	25.93	1.26	0.60	QP
12	27.127	21.65	-28.35	50.00	19.79	1.26	0.60	AVERAGE

Temperature	21°C	Humidity	59%
Test Engineer	Simon Yang	Phase	Neutral
Configuration	Normal Link / Mode 2		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.18443	21.17	-33.12	54.28	20.88	0.09	0.20	AVERAGE
2	0.18443	32.32	-31.97	64.28	32.03	0.09	0.20	QP
3	0.44966	34.65	-12.23	46.88	34.38	0.07	0.20	AVERAGE
4	0.44966	41.28	-15.60	56.88	41.01	0.07	0.20	QP
5	0.64740	24.69	-31.31	56.00	24.42	0.07	0.20	QP
6	0.64740	14.18	-31.82	46.00	13.91	0.07	0.20	AVERAGE
7	14.288	29.48	-30.52	60.00	28.53	0.55	0.40	QP
8	14.288	22.91	-27.09	50.00	21.96	0.55	0.40	AVERAGE
9	20.814	31.10	-18.90	50.00	29.73	0.87	0.50	AVERAGE
10	20.814	38.78	-21.22	60.00	37.41	0.87	0.50	QP
11	27.416	22.43	-27.57	50.00	20.50	1.33	0.60	AVERAGE
12	27.416	28.05	-31.95	60.00	26.12	1.33	0.60	QP

Note:

Level = Read Level + LISN Factor + Cable Loss

## 4.2. Maximum Conducted Output Power Measurement

### 4.2.1. Limit

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak 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. Systems operating in the 5725-5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter peak output power.

### 4.2.2. Measuring Instruments and Setting

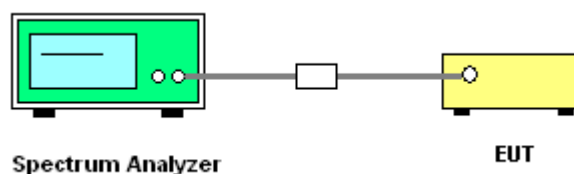
Please refer to section 5 of equipments list in this report. The following table is the setting of the peak power meter.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	1MHz
VB	3MHz
Detector	Sample
Trace	Average 100
Sweep Time	Auto

### 4.2.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Test was performed in accordance with Measurement of Digital Transmission Systems Operating under Section 15.247 March 23, 2005.
3. When measuring maximum conducted output power with multiple antenna systems, add every result of the values by mathematic formula

### 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	57%
Test Engineer	Sean Ku	Configurations	IEEE 802.11n
Test Date	Jan. 17, 2012	Test Mode	Mode 1

For 2.4GHz Band

Configuration IEEE 802.11n MCS0 20MHz (2TX, 2RX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
1	2412 MHz	14.75	14.43	17.60	29.14	Complies
6	2437 MHz	24.15	24.38	27.28	29.14	Complies
11	2462 MHz	14.89	14.07	17.51	29.14	Complies

NOTE: Directional gain =  $+ / 2 = 6.86\text{dBi} > 6\text{dBi}$ , so the conducted power limit =  $30 - (6.86 - 6) = 29.14\text{dBm}$ .

Configuration IEEE 802.11n MCS0 40MHz (2TX, 2RX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
3	2422 MHz	12.42	11.84	15.15	29.14	Complies
6	2437 MHz	15.25	15.39	18.33	29.14	Complies
9	2452 MHz	13.38	12.99	16.20	29.14	Complies

NOTE: Directional gain =  $+ / 2 = 6.86\text{dBi} > 6\text{dBi}$ , so the conducted power limit =  $30 - (6.86 - 6) = 29.14\text{dBm}$ .

Temperature	25°C	Humidity	57%
Test Engineer	Sean Ku	Configurations	IEEE 802.11 b/g
Test Date	Jan. 17, 2012	Test Mode	Mode 1

#### Configuration IEEE 802.11b / Chain 2 (1TX, 2RX)

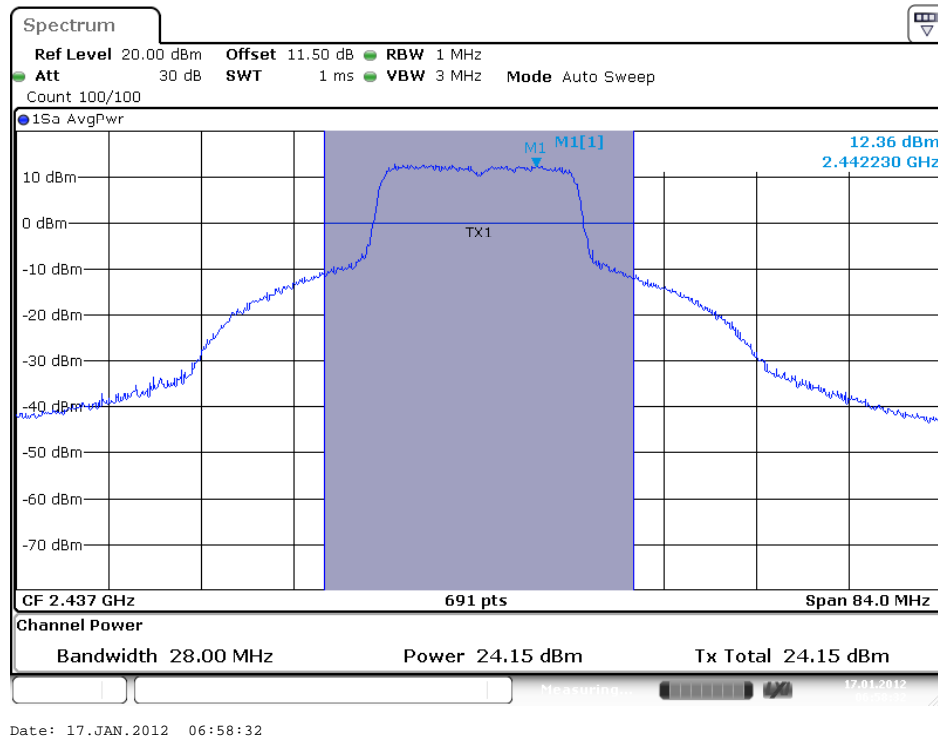
Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	21.71	30.00	Complies
6	2437 MHz	24.42	30.00	Complies
11	2462 MHz	21.64	30.00	Complies

#### Configuration IEEE 802.11g / Chain 1 + Chain 2 (2TX, 2RX)

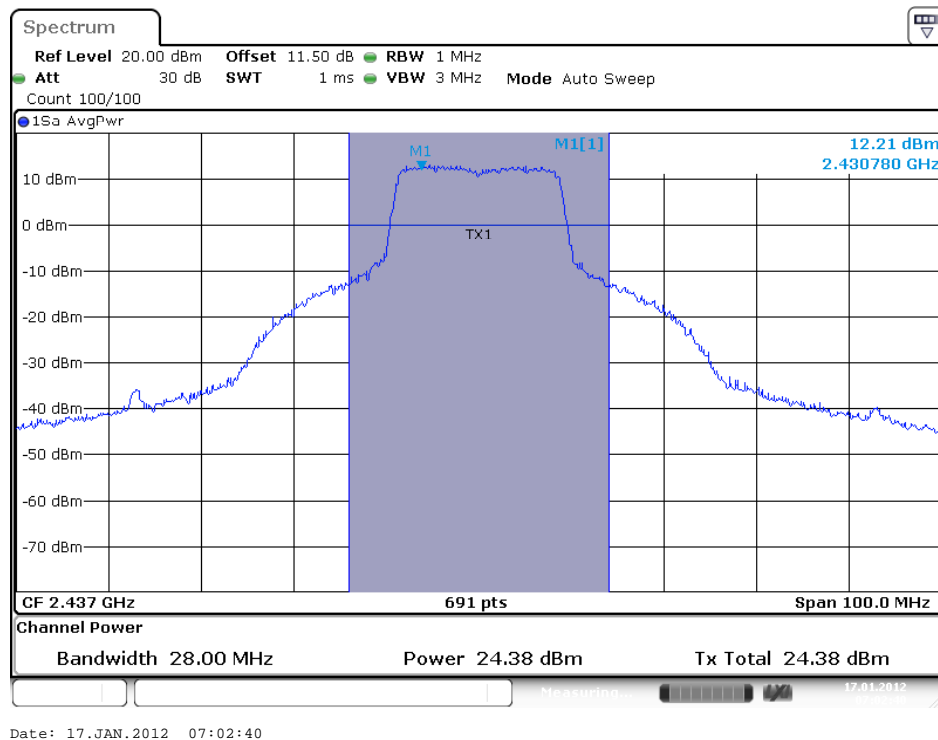
Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
1	2412 MHz	15.21	15.16	18.20	29.14	Complies
6	2437 MHz	23.00	23.65	26.35	29.14	Complies
11	2462 MHz	15.00	14.57	17.80	29.14	Complies

NOTE: Directional gain = + /2=6.86dBi > 6dBi, so the conducted power limit =30-(6.86-6)=29.14dBm.

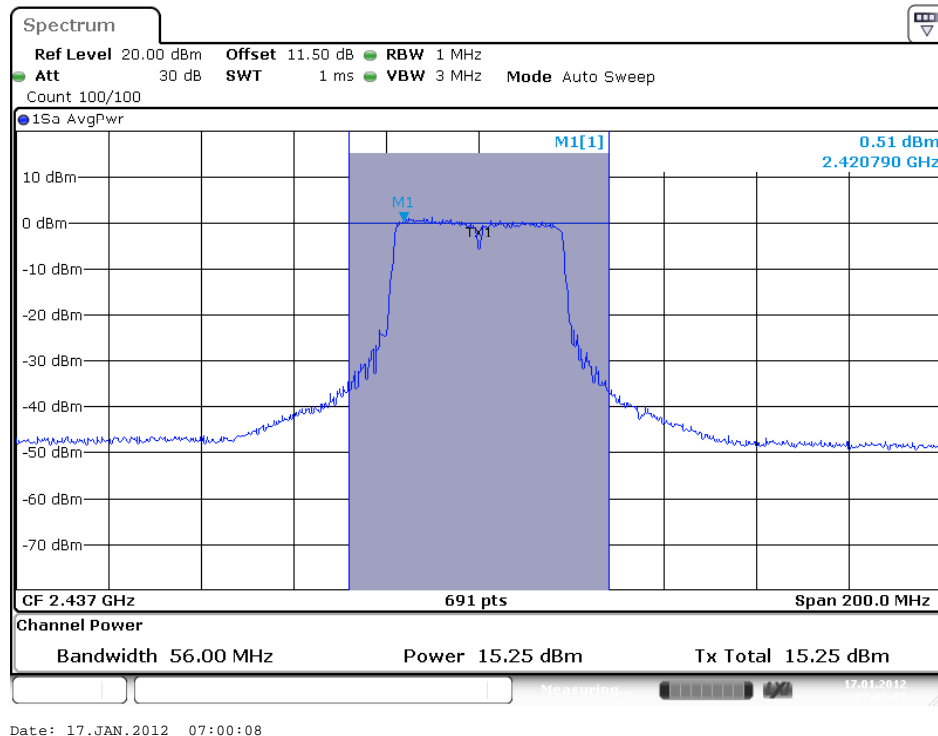
## Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / 2437 MHz/ Chain 1 / Mode 1 (2TX, 2RX)



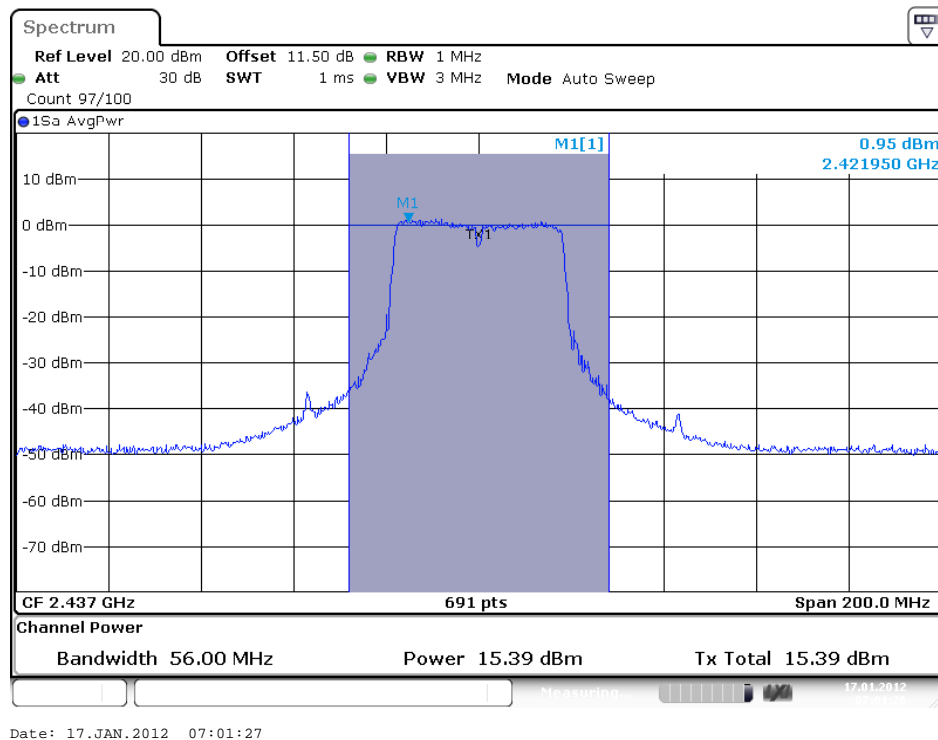
## Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / 2437 MHz/ Chain 2/ Mode 1 (2TX, 2RX)



# Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 40MHz / Chain 1/ 2437 MHz / Mode 1 (2TX, 2RX)

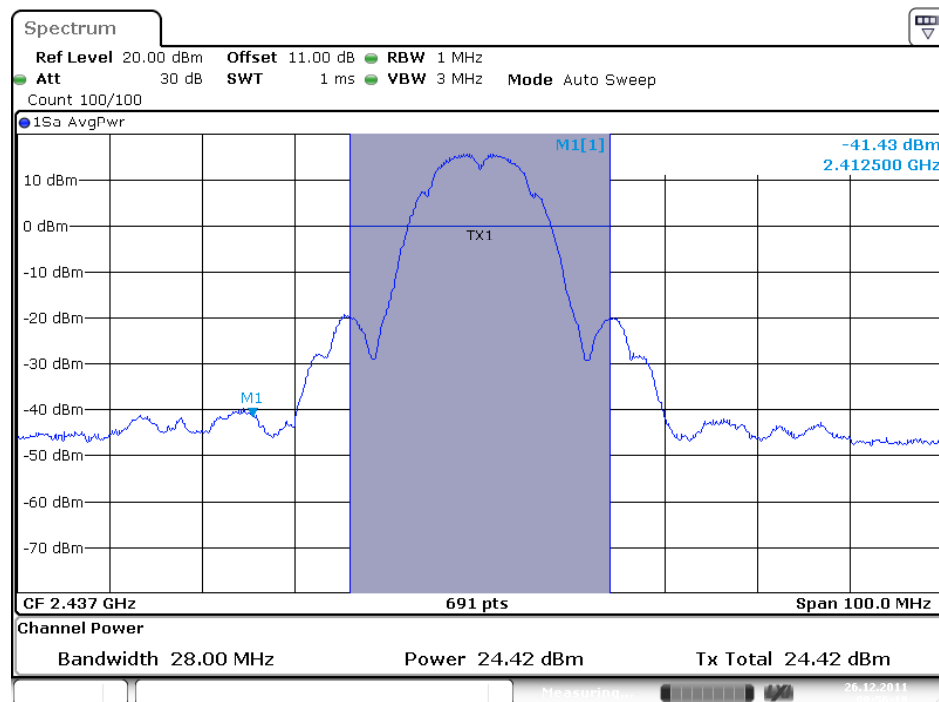


# Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 40MHz / Chain 2/ 2437 MHz / Mode 1 (2TX, 2RX)



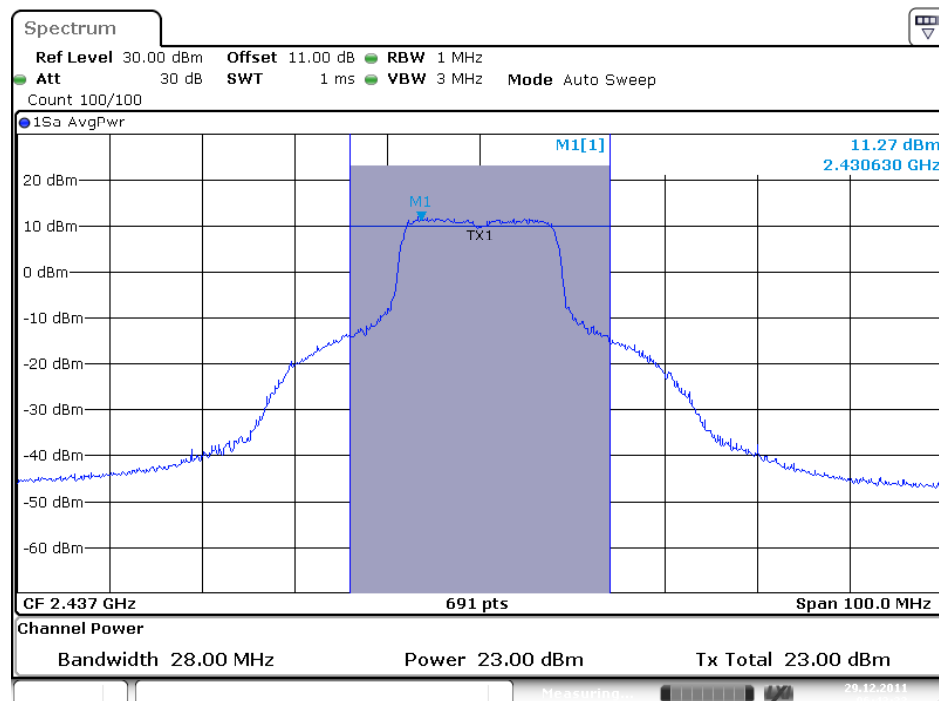


### Conducted Output Power Plot on Configuration IEEE 802.11b / Chain 1 / 2437 MHz/ Mode 1 (2TX, 2RX)



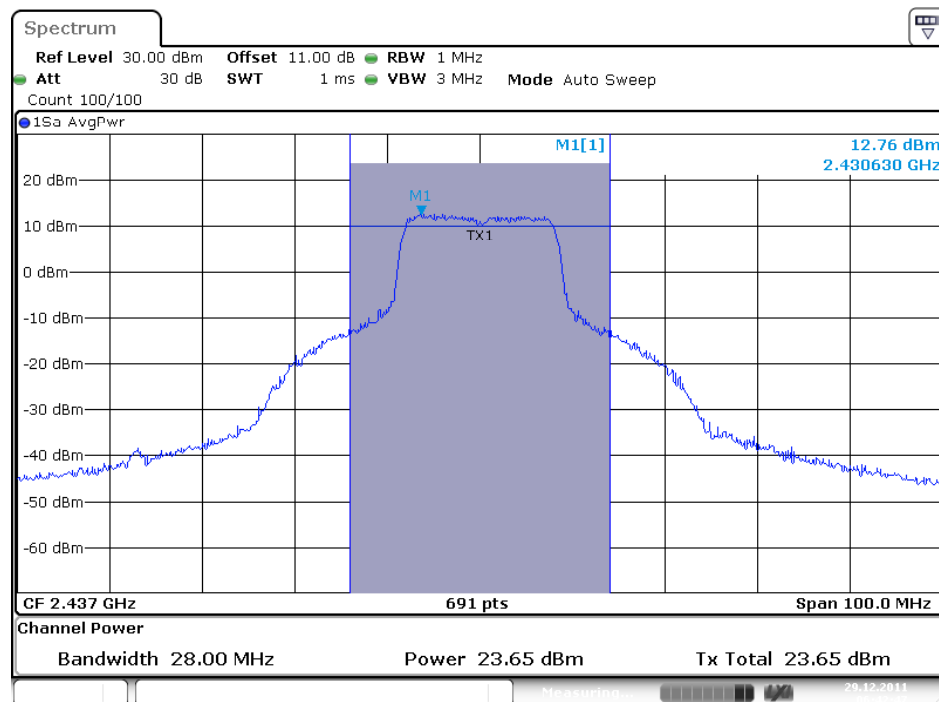
Date: 26.DEC.2011 08:56:18

### Conducted Output Power Plot on Configuration IEEE 802.11g / Chain 1 / 2437 MHz/ Mode 1 (2TX, 2RX)



Date: 29.DEC.2011 06:43:33

# Conducted Output Power Plot on Configuration IEEE 802.11g / Chain 2 / 2437 MHz/ Mode 1 (2TX, 2RX)



Date: 29.DEC.2011 06:42:47

Temperature	25°C	Humidity	57%
Test Engineer	Sean Ku	Configurations	IEEE 802.11n
Test Date	Jan. 17, 2012	Test Mode	Mode 2

#### Configuration IEEE 802.11n MCS0 20MHz (2TX, 2RX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
1	2412 MHz	18.00	18.55	21.29	28.73	Complies
6	2437 MHz	23.67	24.16	26.93	28.73	Complies
11	2462 MHz	18.27	18.75	21.53	28.73	Complies

NOTE: Directional gain =  $+ / 2 = 7.27\text{dBi} > 6\text{dBi}$ , so the conducted power limit  $= 30 - (7.27 - 6) = 28.73\text{dBm}$ .

#### Configuration IEEE 802.11n MCS0 40MHz (2TX, 2RX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
3	2422 MHz	16.06	16.63	19.36	28.73	Complies
6	2437 MHz	19.75	20.93	23.39	28.73	Complies
9	2452 MHz	15.27	16.25	18.80	28.73	Complies

NOTE: Directional gain =  $+ / 2 = 7.27\text{dBi} > 6\text{dBi}$ , so the conducted power limit  $= 30 - (7.27 - 6) = 28.73\text{dBm}$ .

Temperature	25°C	Humidity	57%
Test Engineer	Sean Ku	Configurations	IEEE 802.11b/g
Test Date	Jan. 17, 2012	Test Mode	Mode 2

#### Configuration IEEE 802.11b / Chain 1 (1TX, 2RX)

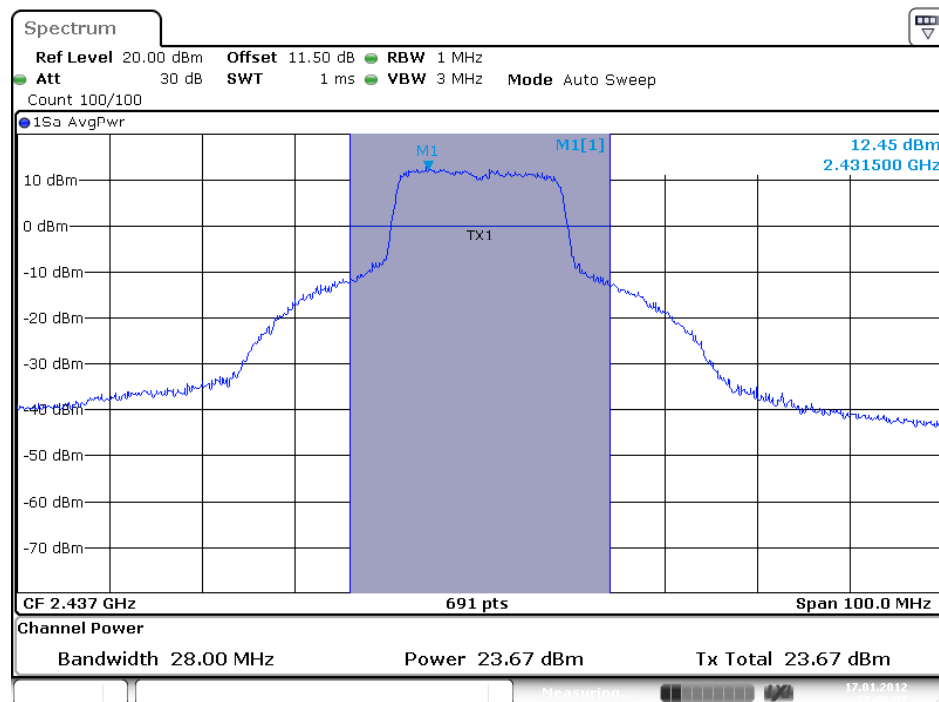
Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	20.36	30.00	Complies
6	2437 MHz	19.70	30.00	Complies
11	2462 MHz	21.71	30.00	Complies

#### Configuration IEEE 802.11g / Chain 1 + Chain 2 (2TX, 2RX)

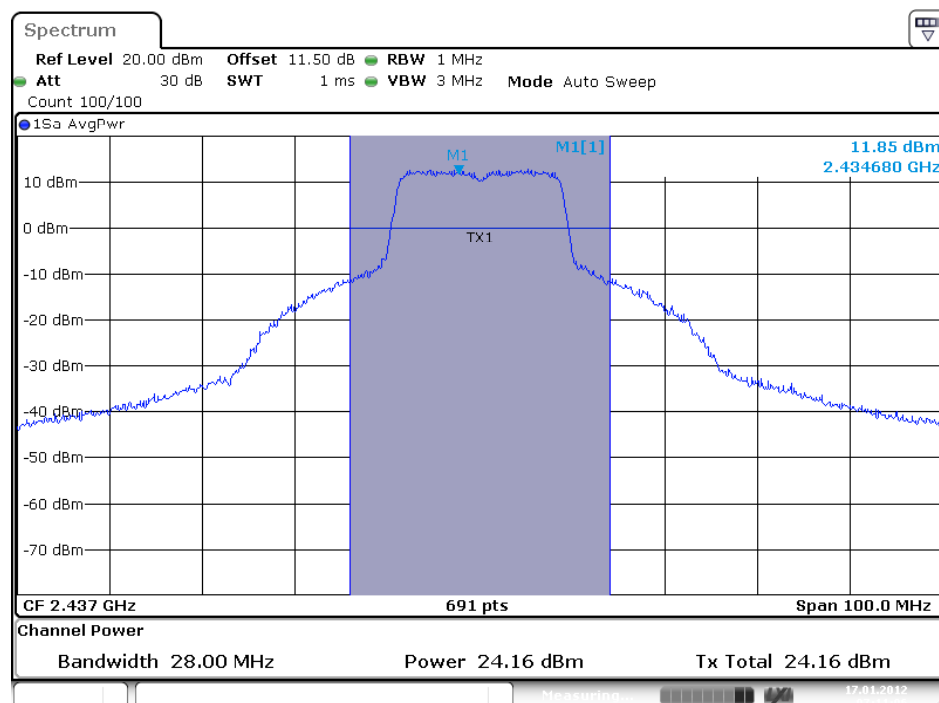
Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
1	2412 MHz	17.70	18.22	20.98	28.73	Complies
6	2437 MHz	22.76	23.73	26.28	28.73	Complies
11	2462 MHz	18.78	19.14	21.97	28.73	Complies

NOTE: Directional gain =  $+ / 2 = 7.27\text{dBi}$  >  $6\text{dBi}$ , so the conducted power limit =  $30 - (7.27 - 6) = 28.73\text{dBm}$ .

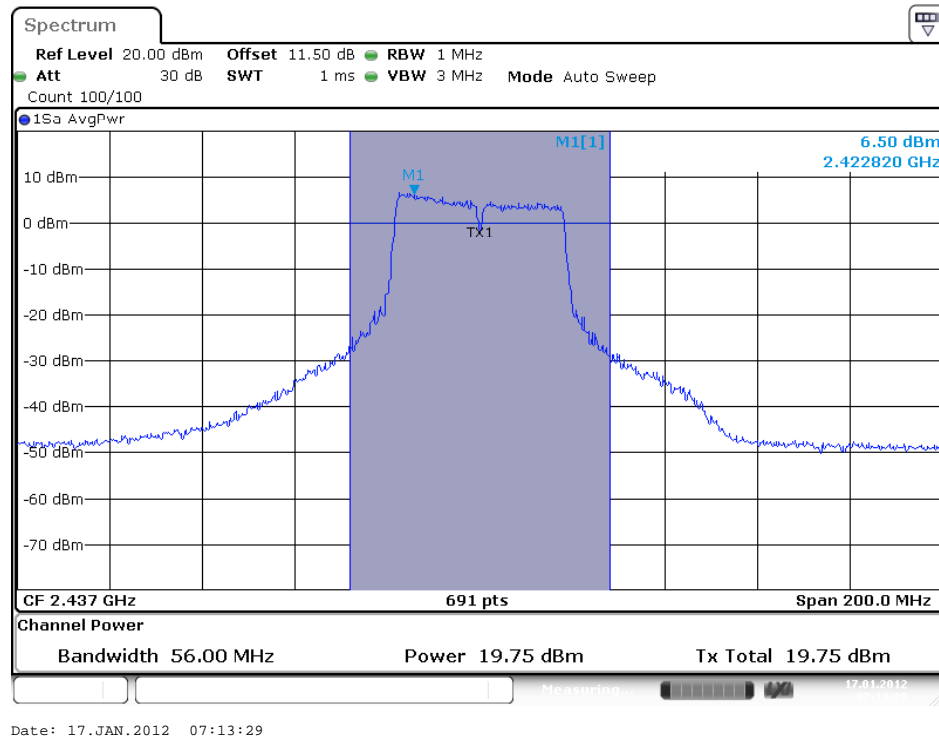
### Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / 2437 MHz/ Chain 1 / Mode 2



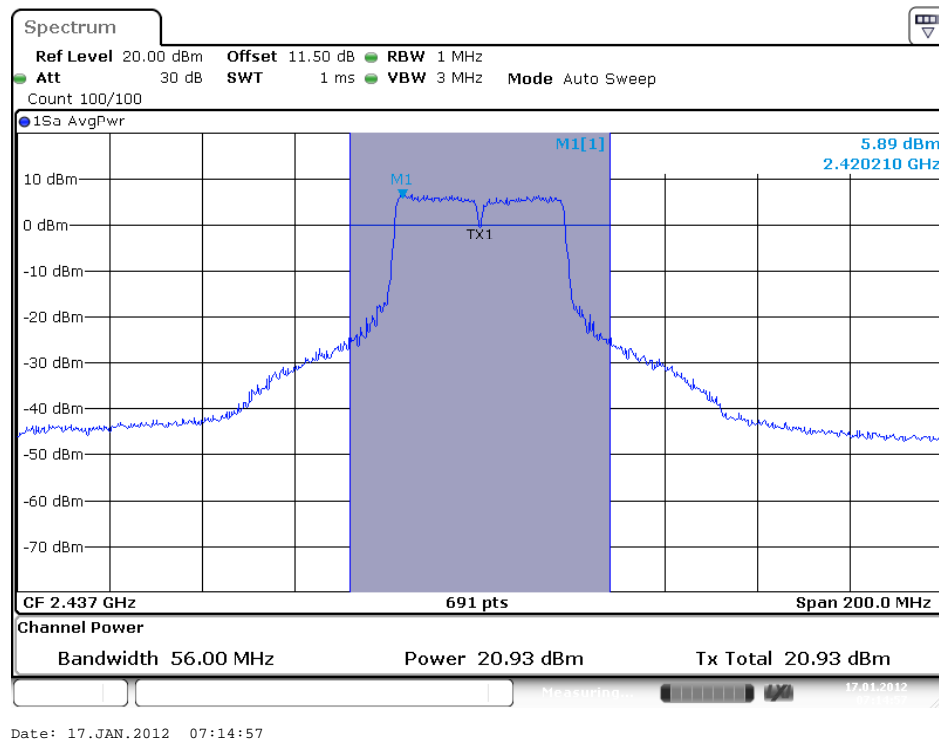
### Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / 2437 MHz/ Chain 2/ Mode 2



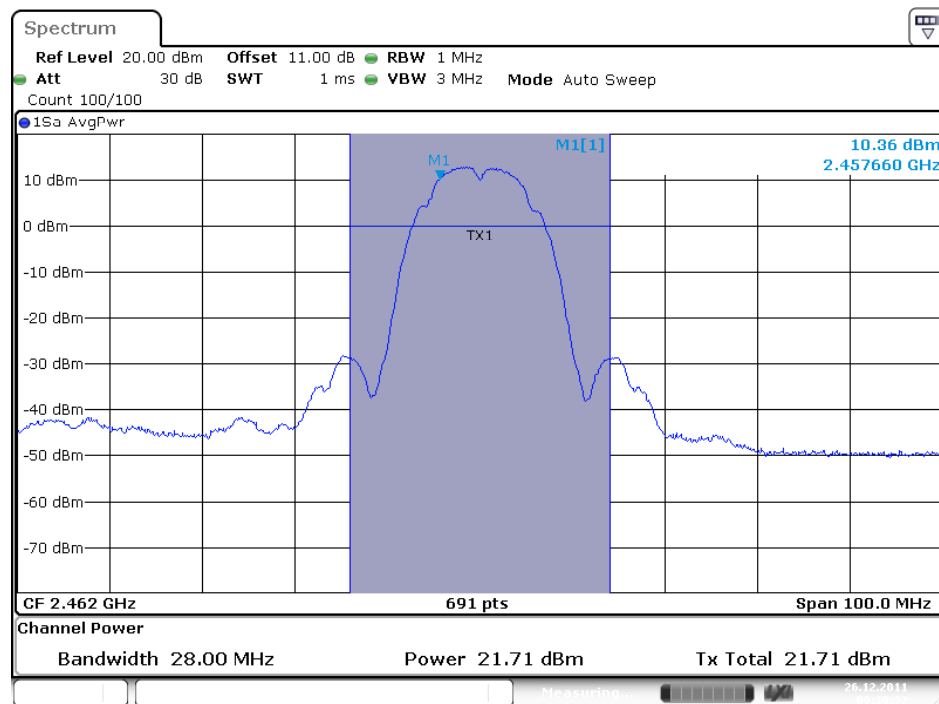
## Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 40MHz / Chain 1 / 2437 MHz / Mode 2



## Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 40MHz / Chain 2 / 2437 MHz / Mode 2

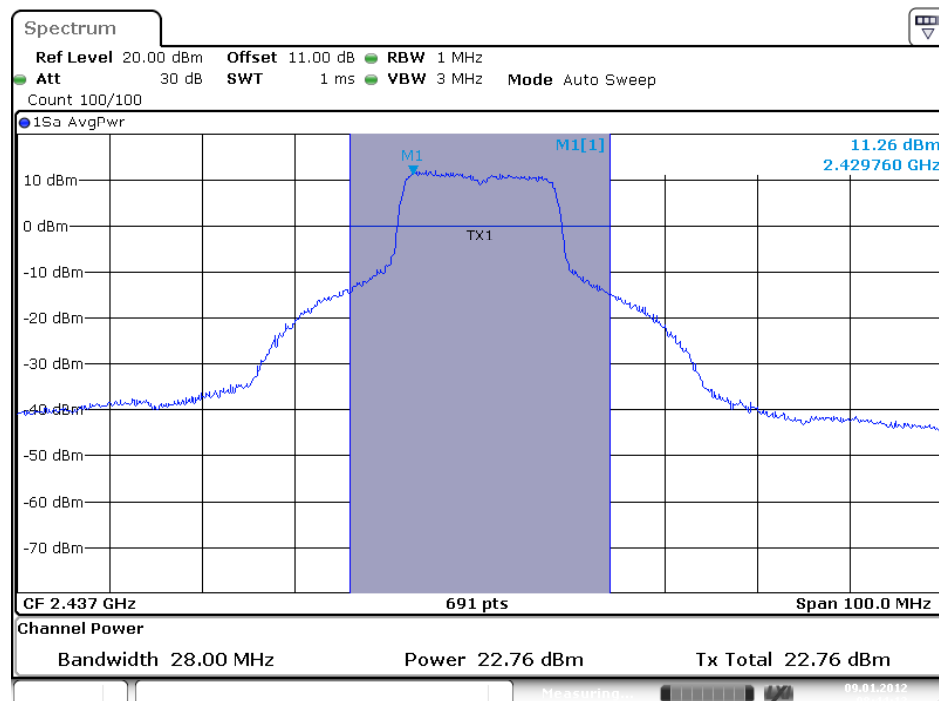


### Conducted Output Power Plot on Configuration IEEE 802.11b / Chain 1 / 2437 MHz/ Mode 2



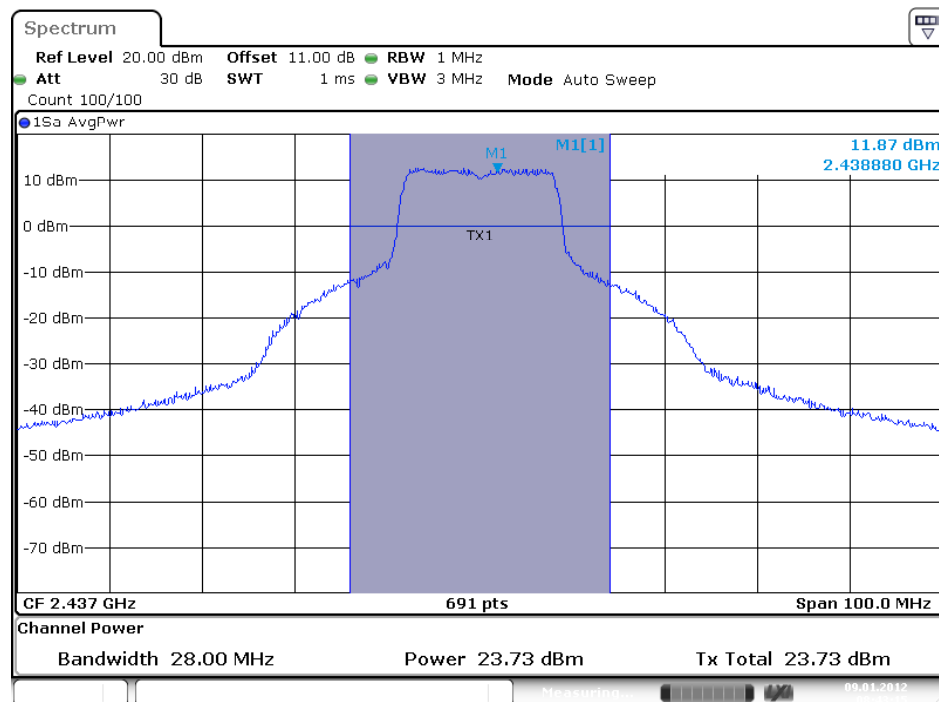
Date: 26.DEC.2011 09:39:32

### Conducted Output Power Plot on Configuration IEEE 802.11g / Chain 1 / 2437 MHz/ Mode 2



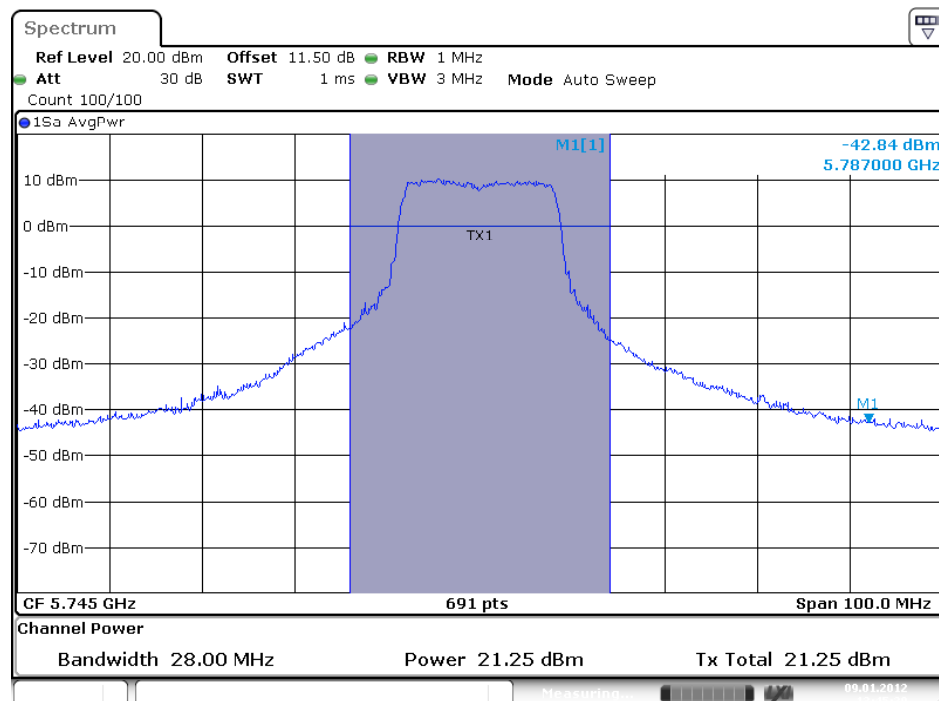
Date: 9.JAN.2012 08:44:13

### Conducted Output Power Plot on Configuration IEEE 802.11g / Chain 2 / 2437 MHz/ Mode 2



Date: 9.JAN.2012 08:43:15

### Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 1 / 5745 MHz/ Mode 2 (2TX, 2RX)



Date: 9.JAN.2012 13:45:29



Temperature	25°C	Humidity	57%
Test Engineer	Sean Ku	Configurations	IEEE 802.11n
Test Date	Jan. 17, 2012	Test Mode	Mode 3

#### Configuration IEEE 802.11n MCS0 20MHz (2TX, 2RX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
149	5745 MHz	19.97	20.06	23.03	26.42	Complies
157	5785 MHz	20.4	20.12	23.27	26.42	Complies
165	5825 MHz	19.71	19.74	22.74	26.42	Complies

NOTE: Directional gain = + /2=9.58dBi > 6dBi, so the conducted power limit =30-(9.58-6)=26.42dBm..

#### Configuration IEEE 802.11n MCS0 40MHz (2TX, 2RX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
151	5755 MHz	19.97	19.83	22.91	26.42	Complies
159	5795 MHz	19.40	19.39	22.41	26.42	Complies

NOTE: Directional gain = + /2=9.58dBi > 6dBi, so the conducted power limit =30-(9.58-6)=26.42dBm..

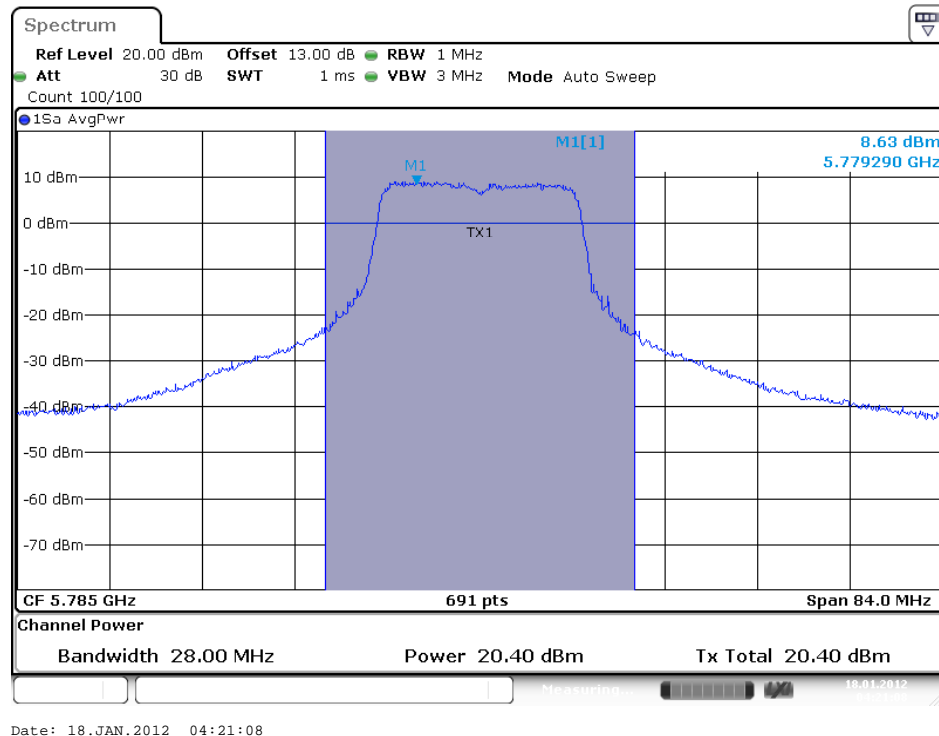
Temperature	25°C	Humidity	57%
Test Engineer	Sean Ku	Configurations	IEEE 802.11a
Test Date	Jan. 17, 2012	Test Mode	Mode 3

#### Configuration IEEE 802.11a / Chain 1 + Chain 2 (2TX, 2RX)

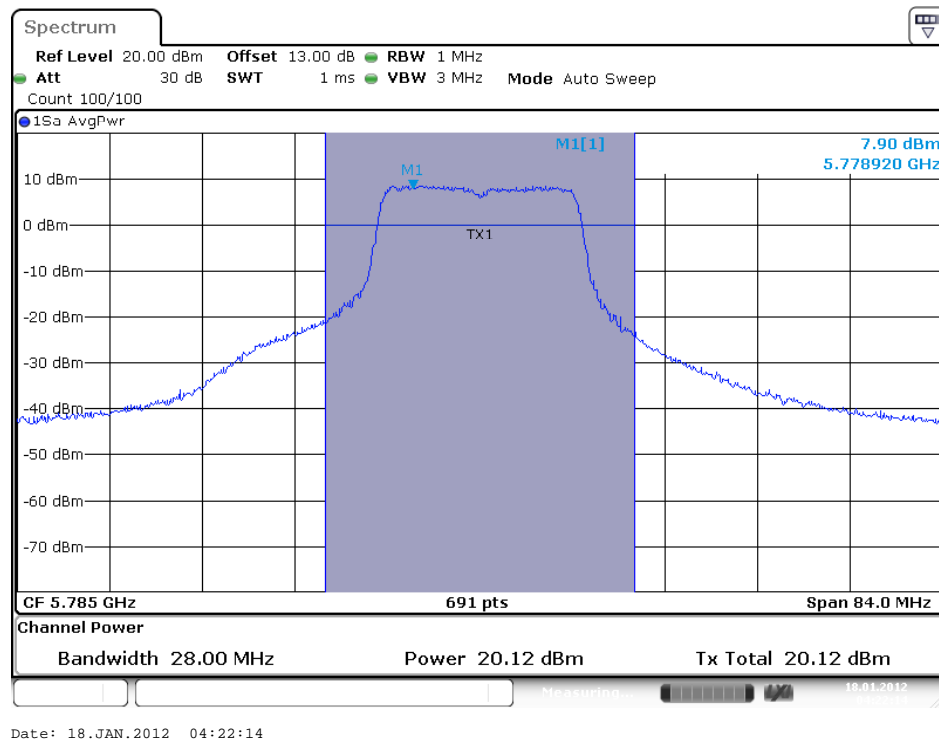
Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
149	5745 MHz	21.25	21.83	24.56	26.42	Complies
157	5785 MHz	21.5	21.33	24.43	26.42	Complies
165	5825 MHz	20.8	21.09	23.96	26.42	Complies

NOTE: Directional gain = + /2=9.58dBi > 6dBi, so the conducted power limit =30-(9.58-6)=26.42dBm..

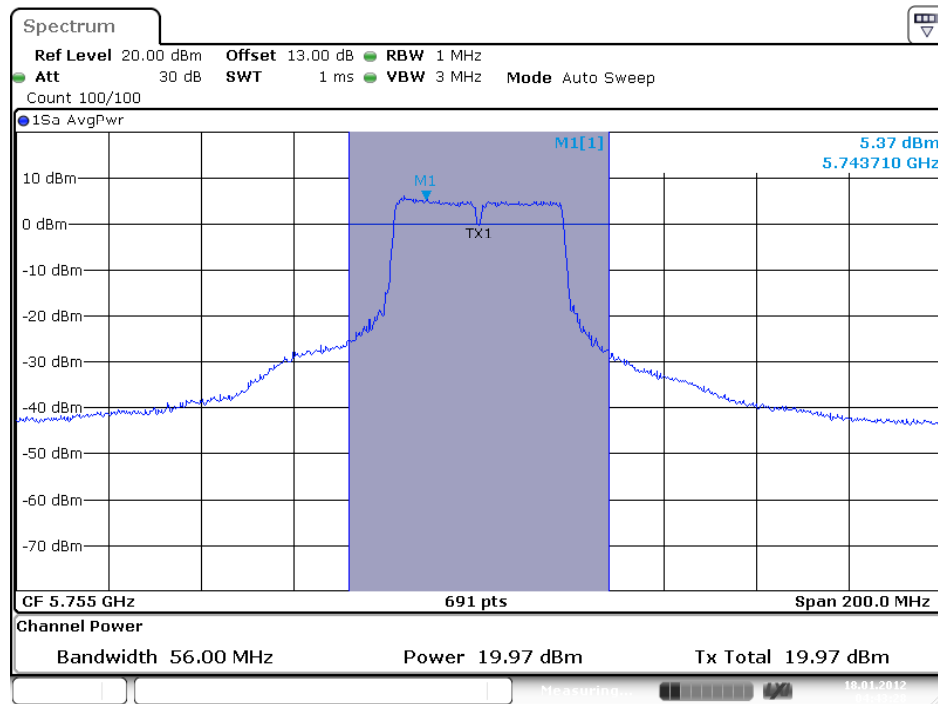
### Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / 5785 MHz/ Chain 1 / Mode 3 (2TX, 2RX)



### Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / 5785 MHz/ Chain 2/ Mode 3 (2TX, 2RX)

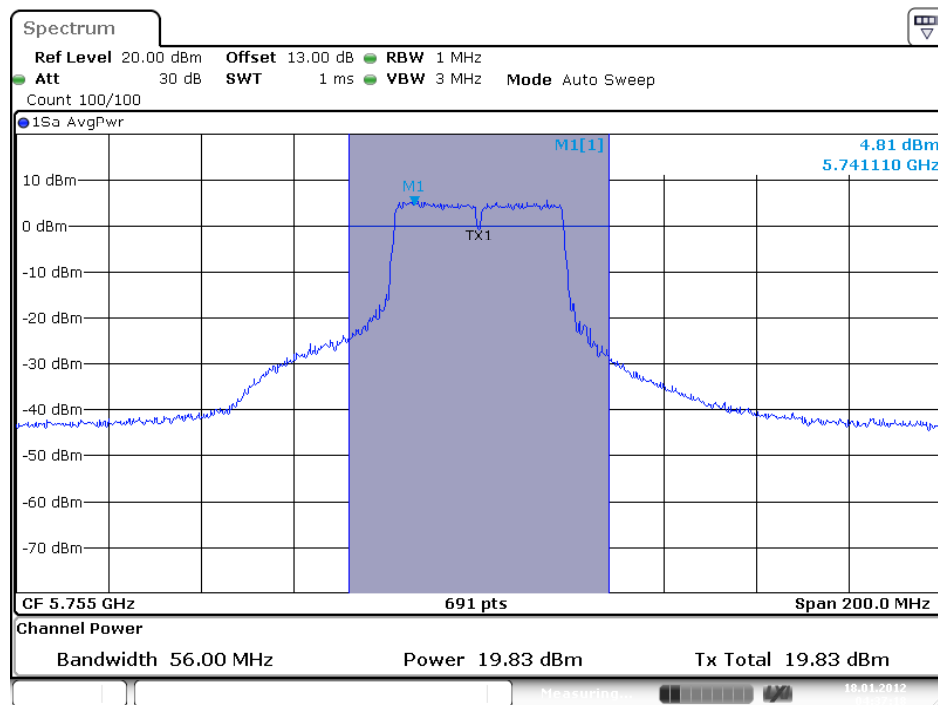


### Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 40MHz / 5755 MHz/ Chain 1 / Mode 3 (2TX, 2RX)



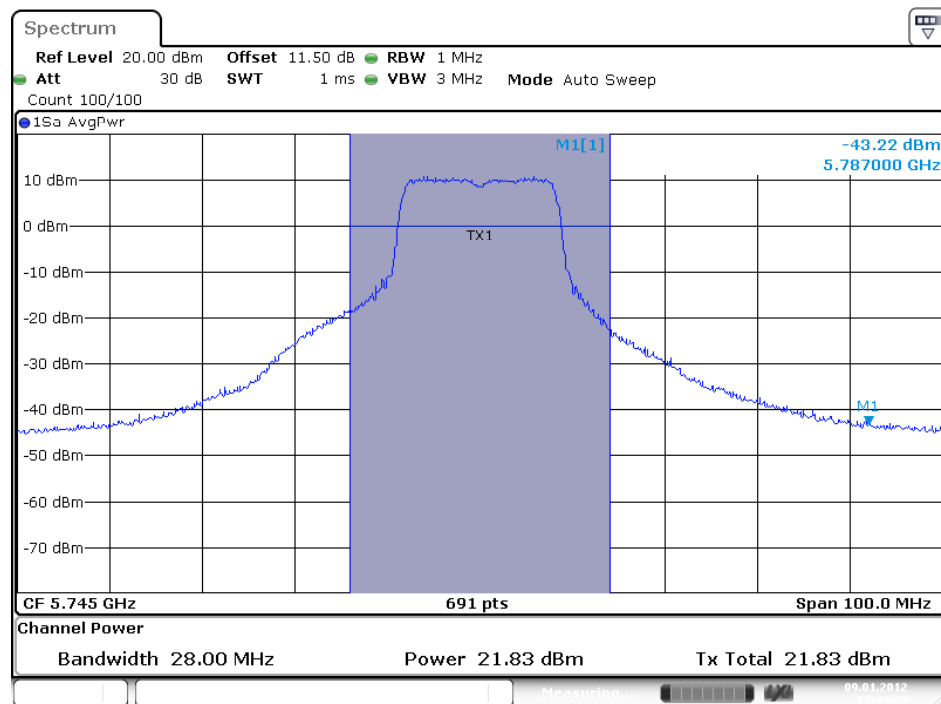
Date: 18.JAN.2012 04:43:28

### Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / 5755 MHz/ Chain 2/ Mode 3 (2TX, 2RX)



Date: 18.JAN.2012 04:37:18

# Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 2 / 5745 MHz/ Mode 3 (2TX, 2RX)



Date: 9.JAN.2012 13:44:35

Temperature	25°C	Humidity	56%
Test Engineer	Allen Liu	Configurations	IEEE 802.11n
Test Date	Feb. 01, 2012	Test Mode	Mode 4

#### Configuration IEEE 802.11n MCS0 20MHz (2TX, 2RX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
1	2412 MHz	14.56	13.95	17.28	24.49	Complies
6	2437 MHz	19.69	19.49	22.60	24.49	Complies
11	2462 MHz	11.43	10.98	14.22	24.49	Complies

NOTE: Directional gain = 8.5dBi + 10log(2)=11.51dBi > 6dBi , so the conducted power limit  
=30-(11.51-6)=24.49dBm.

#### Configuration IEEE 802.11n MCS0 40MHz (2TX, 2RX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
3	2422 MHz	10.7	10.08	13.41	24.49	Complies
6	2437 MHz	13.46	13.49	16.49	24.49	Complies
9	2452 MHz	9.28	9.01	12.16	24.49	Complies

NOTE: Directional gain = 8.5dBi + 10log(2)=11.51dBi > 6dBi, so the conducted power limit  
=30-(11.51-6)=24.49dBm.

#### Configuration IEEE 802.11n MCS8 20MHz (2TX, 2RX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
1	2412 MHz	16.58	15.74	19.19	27.50	Complies
6	2437 MHz	21.48	21.45	24.48	27.50	Complies
11	2462 MHz	13.34	13.14	16.25	27.50	Complies

#### Configuration IEEE 802.11n MCS8 40MHz (2TX, 2RX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
3	2422 MHz	13.03	12.49	15.78	27.50	Complies
6	2437 MHz	15.73	15.99	18.87	27.50	Complies
9	2452 MHz	11.02	11.18	14.11	27.50	Complies

Temperature	25°C	Humidity	57%
Test Engineer	Allen Liu	Configurations	IEEE 802.11b/g
Test Date	Feb. 01, 2012	Test Mode	Mode 4

#### Configuration IEEE 802.11b / Chain 2 (1TX, 1RX)

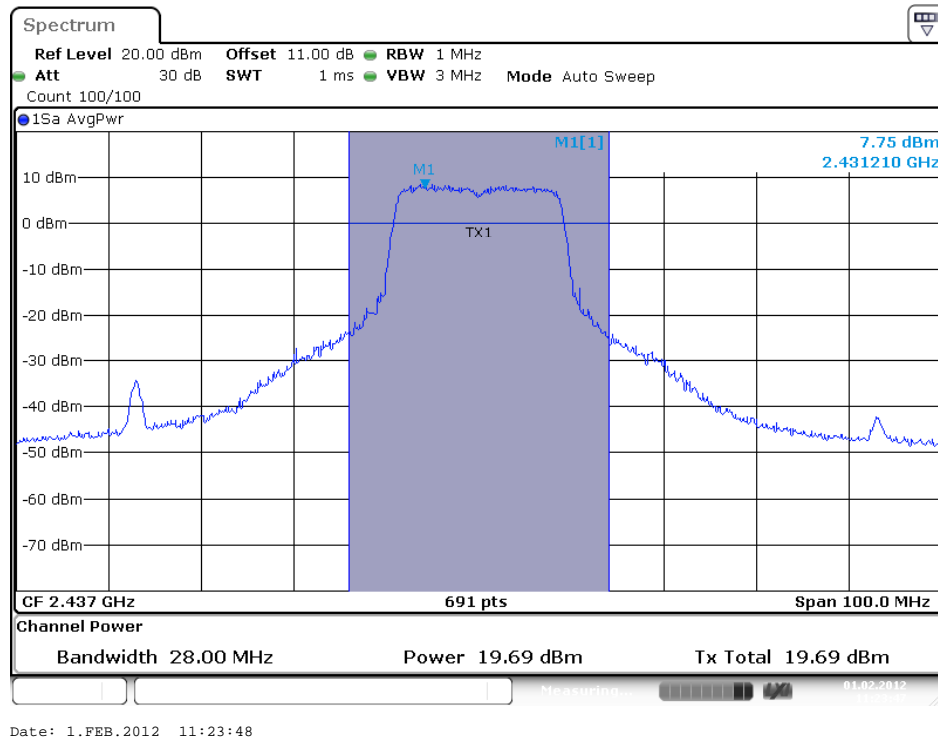
Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	22.77	27.50	Complies
6	2437 MHz	22.96	27.50	Complies
11	2462 MHz	22.96	27.50	Complies

#### Configuration IEEE 802.11g / Chain 1 + Chain 2 (2TX, 2RX)

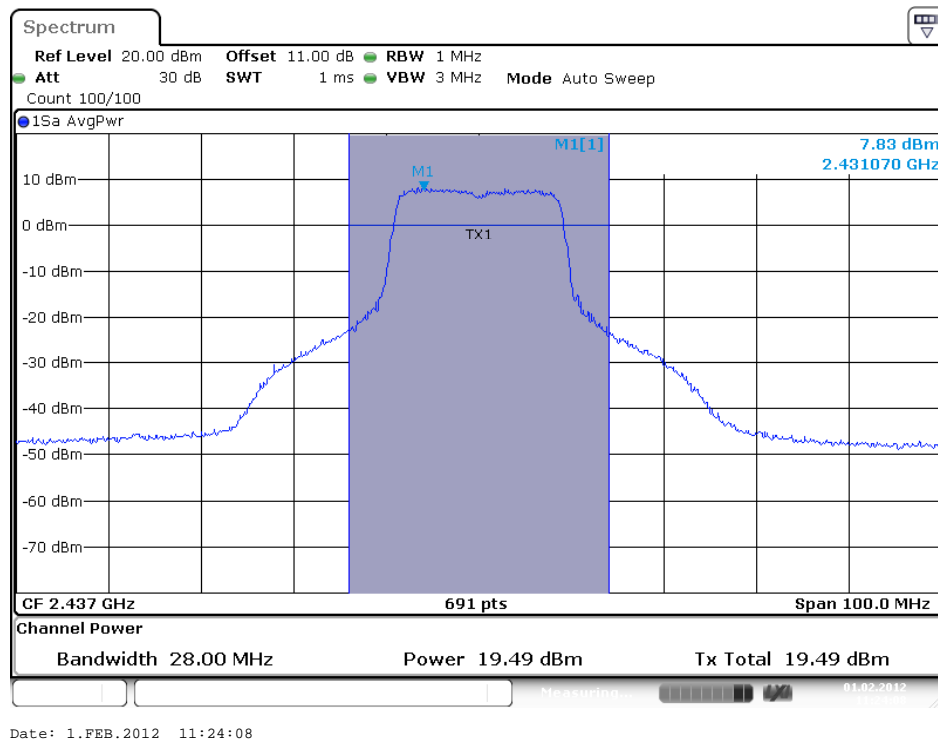
Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
1	2412 MHz	14.14	14.11	17.14	24.49	Complies
6	2437 MHz	20.86	21.03	23.96	24.49	Complies
11	2462 MHz	14.44	14.51	17.49	24.49	Complies

NOTE: Directional gain = 8.5dBi + 10log(2)=11.51dBi > 6dBi, so the conducted power limit = 30-(11.51-6)=24.49dBm.

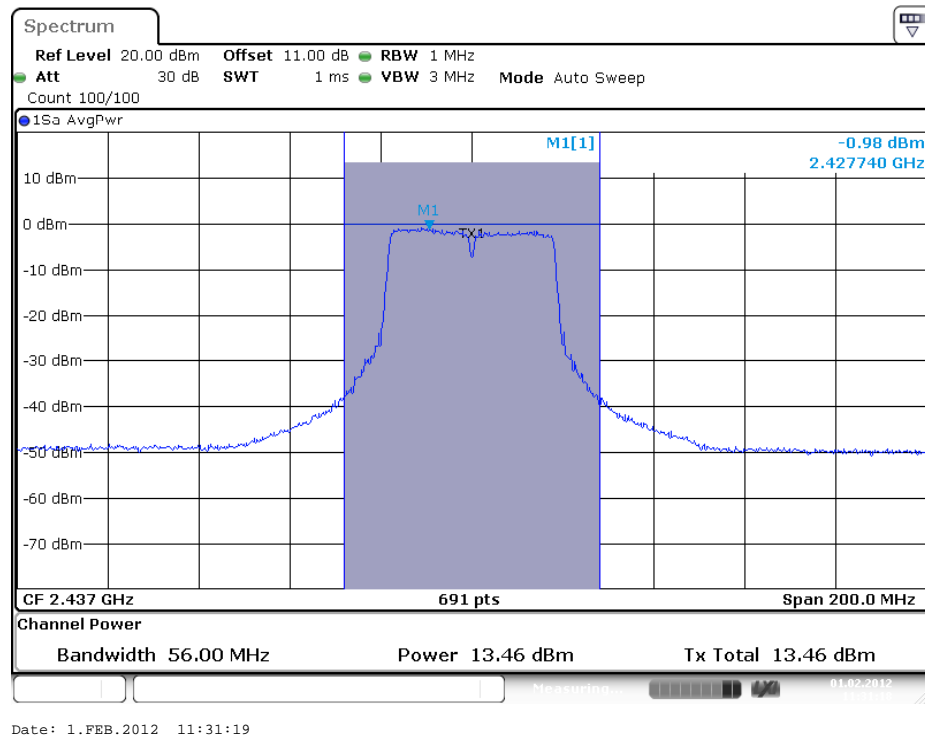
# Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / 2437 MHz/ Chain 1 / Mode 4 (2TX, 2RX)



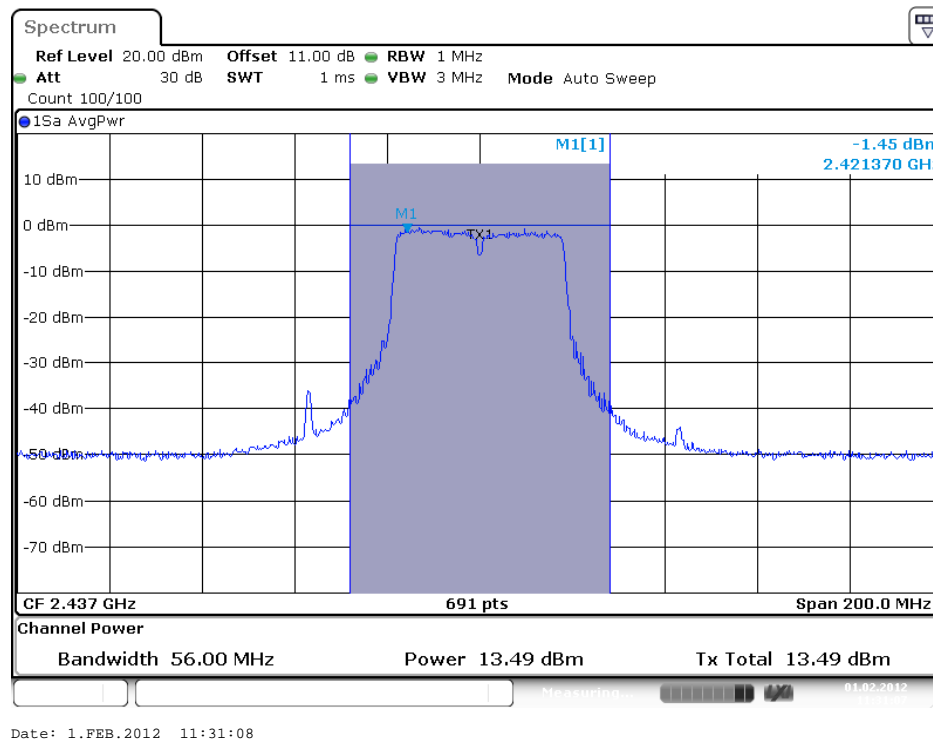
# Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / 2437 MHz/ Chain 2/ Mode 4 (2TX, 2RX)



# Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 40MHz / Chain 1/ 2437 MHz / Mode 4 (2TX, 2RX)

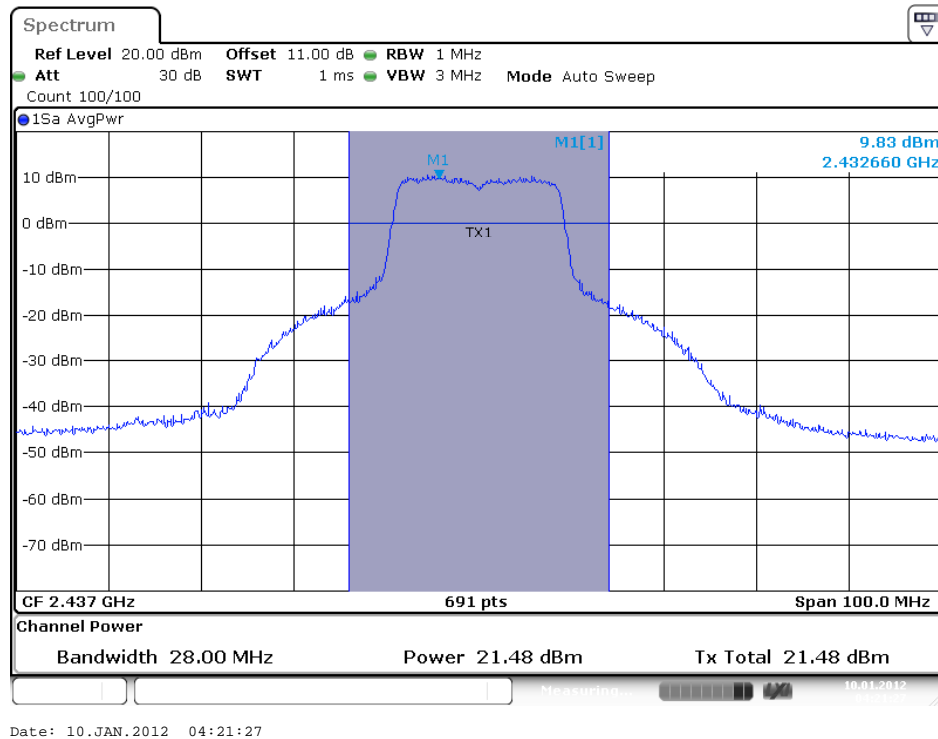


# Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 40MHz / Chain 2/ 2437 MHz / Mode 4 (2TX, 2RX)

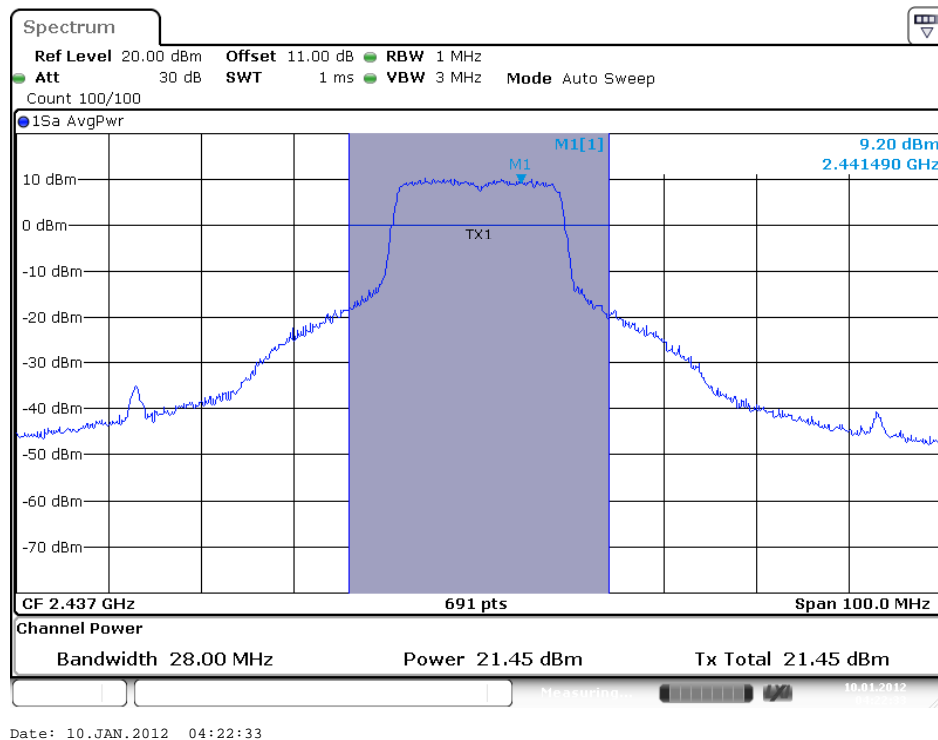




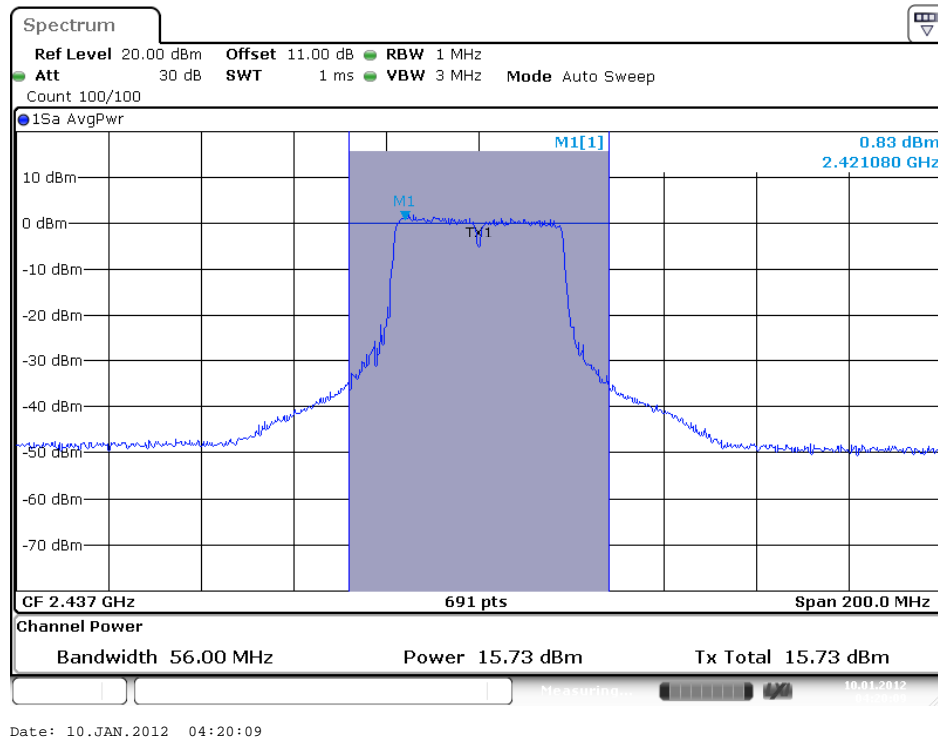
# Conducted Output Power Plot on Configuration IEEE 802.11n MCS8 20MHz / 2437 MHz/ Chain 1 / Mode 4 (2TX, 2RX)



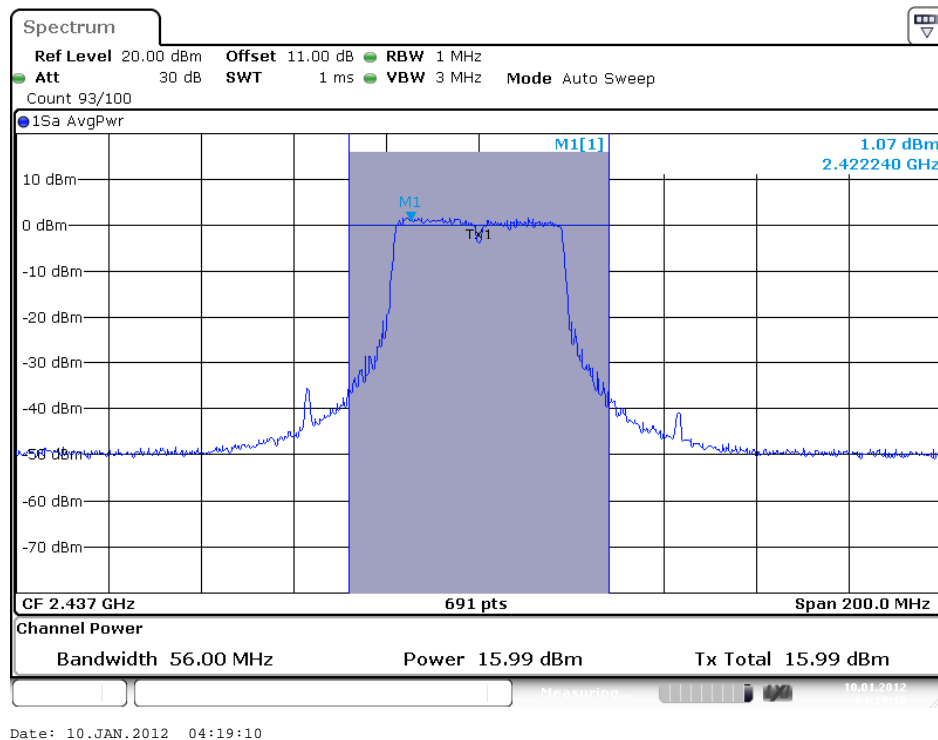
# Conducted Output Power Plot on Configuration IEEE 802.11n MCS8 20MHz / 2437 MHz/ Chain 2/ Mode 4 (2TX, 2RX)



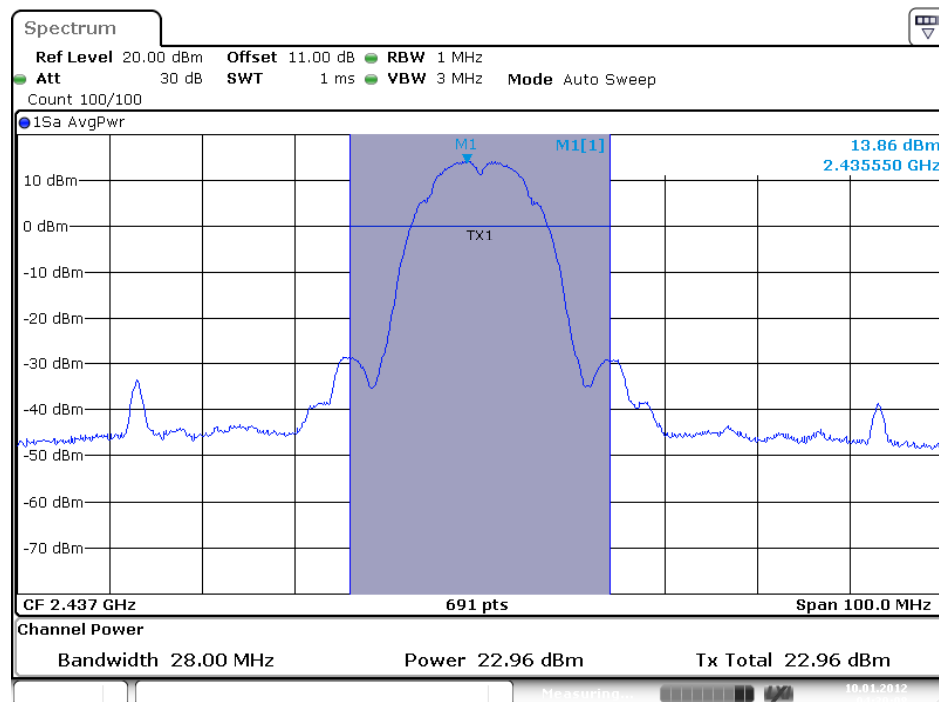
# Conducted Output Power Plot on Configuration IEEE 802.11n MCS8 40MHz / Chain 1/ 2437 MHz / Mode 4 (2TX, 2RX)



# Conducted Output Power Plot on Configuration IEEE 802.11n MCS8 40MHz / Chain 2/ 2437 MHz / Mode 4 (2TX, 2RX)

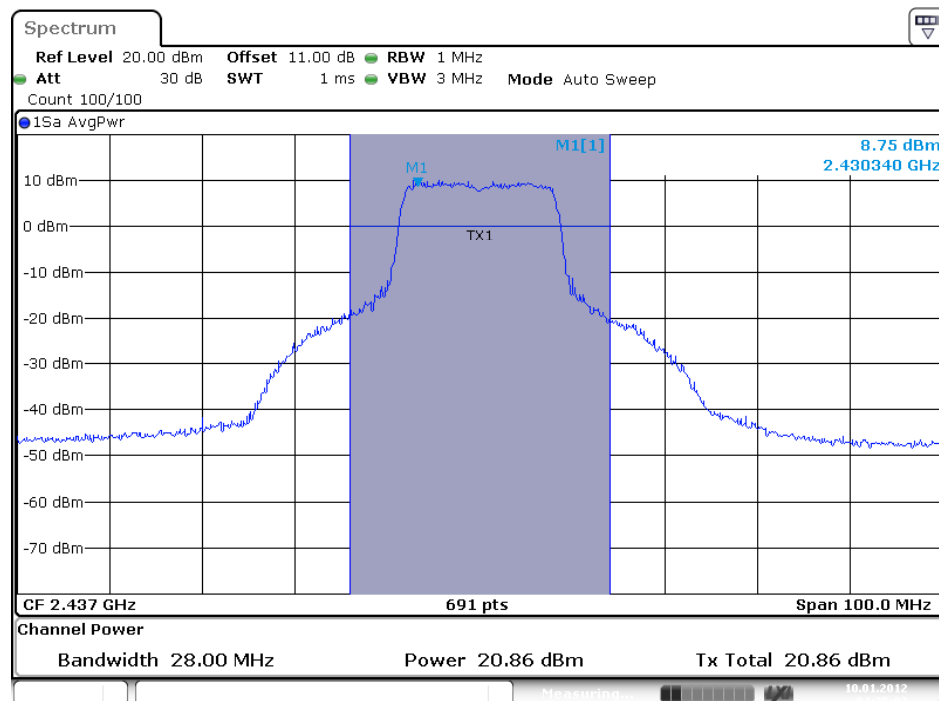


### Conducted Output Power Plot on Configuration IEEE 802.11b / Chain 1 / 2437 MHz/ Mode 4 (1TX, 2RX)



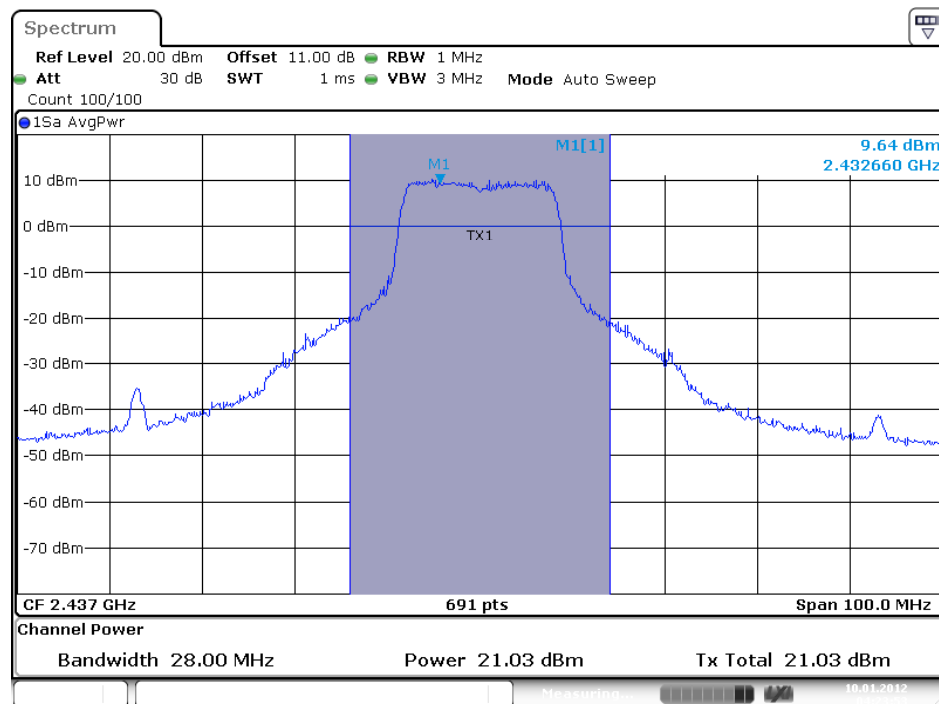
Date: 10.JAN.2012 04:30:08

### Conducted Output Power Plot on Configuration IEEE 802.11g / Chain 1 / 2437 MHz/ Mode 4 (2TX, 2RX)



Date: 10.JAN.2012 04:25:03

# Conducted Output Power Plot on Configuration IEEE 802.11g / Chain 2 / 2437 MHz/ Mode 4 (2TX, 2RX)



Date: 10.JAN.2012 04:23:53

Temperature	25°C	Humidity	56%
Test Engineer	Allen Liu	Configurations	IEEE 802.11n
Test Date	Feb. 03, 2012	Test Mode	Mode 5

**Configuration IEEE 802.11n MCS0 20MHz / Chain 1 (1TX, 2RX)**

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	17.66	27.50	Complies
6	2437 MHz	21.21	27.50	Complies
11	2462 MHz	17.33	27.50	Complies

**Configuration IEEE 802.11n MCS0 40MHz / Chain 1(1TX, 2RX)**

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
3	2422 MHz	16.48	27.50	Complies
6	2437 MHz	17.96	27.50	Complies
9	2452 MHz	14.82	27.50	Complies

**Configuration IEEE 802.11n MCS0 20MHz (2TX, 2RX)**

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
1	2412 MHz	14.85	14.11	17.51	24.49	Complies
6	2437 MHz	17.21	16.82	20.03	24.49	Complies
11	2462 MHz	14.23	13.84	17.05	24.49	Complies

NOTE: Directional gain=8.5dBi+10log(2)=11.51dBi>6dBi, so the conducted power limit  
=30-(10.51-6)=24.49dBm.

**Configuration IEEE 802.11n MCS0 40MHz (2TX, 2RX)**

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
3	2422 MHz	9.21	8.21	11.75	24.49	Complies
6	2437 MHz	15.2	15.15	18.19	24.49	Complies
9	2452 MHz	7.97	7.89	10.94	24.49	Complies

NOTE: Directional gain=8.5dBi+10log(2)=11.51dBi>6dBi, so the conducted power limit  
=30-(10.51-6)=24.49dBm.

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**Configuration IEEE 802.11n MCS8 20MHz (2TX, 2RX)**

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
1	2412 MHz	15.9	15.62	18.77	27.50	Complies
6	2437 MHz	20.01	19.82	22.93	27.50	Complies
11	2462 MHz	15.98	15.97	18.99	27.50	Complies

**Configuration IEEE 802.11n MCS8 40MHz (2TX, 2RX)**

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
3	2422 MHz	12.63	11.38	15.06	27.50	Complies
6	2437 MHz	18.22	17.53	20.90	27.50	Complies
9	2452 MHz	13.53	13.24	16.40	27.50	Complies

Temperature	25°C	Humidity	56%
Test Engineer	Allen Liu	Configurations	IEEE 802.11b/g
Test Date	Feb. 03, 2012	Test Mode	Mode 5

#### Configuration IEEE 802.11b / Chain 1 (1TX)

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	21.60	27.50	Complies
6	2437 MHz	23.22	27.50	Complies
11	2462 MHz	22.02	27.50	Complies

#### Configuration IEEE 802.11g / Chain 1 (1TX)

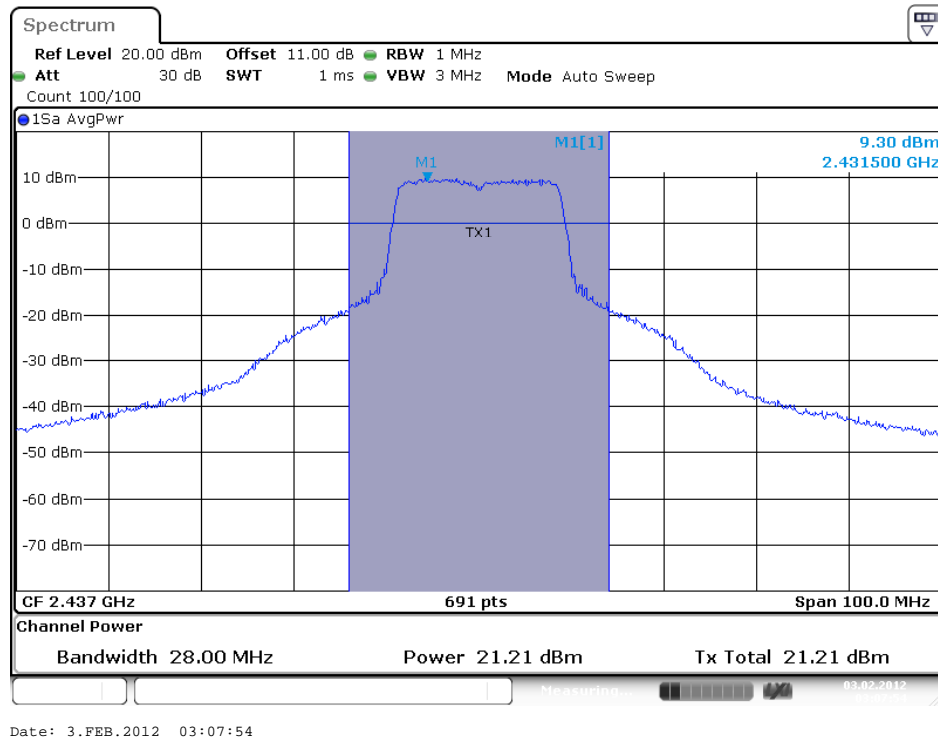
Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	16.53	27.50	Complies
6	2437 MHz	22.22	27.50	Complies
11	2462 MHz	17.56	27.50	Complies

#### Configuration IEEE 802.11g / Chain 1 + Chain 2 (2TX)

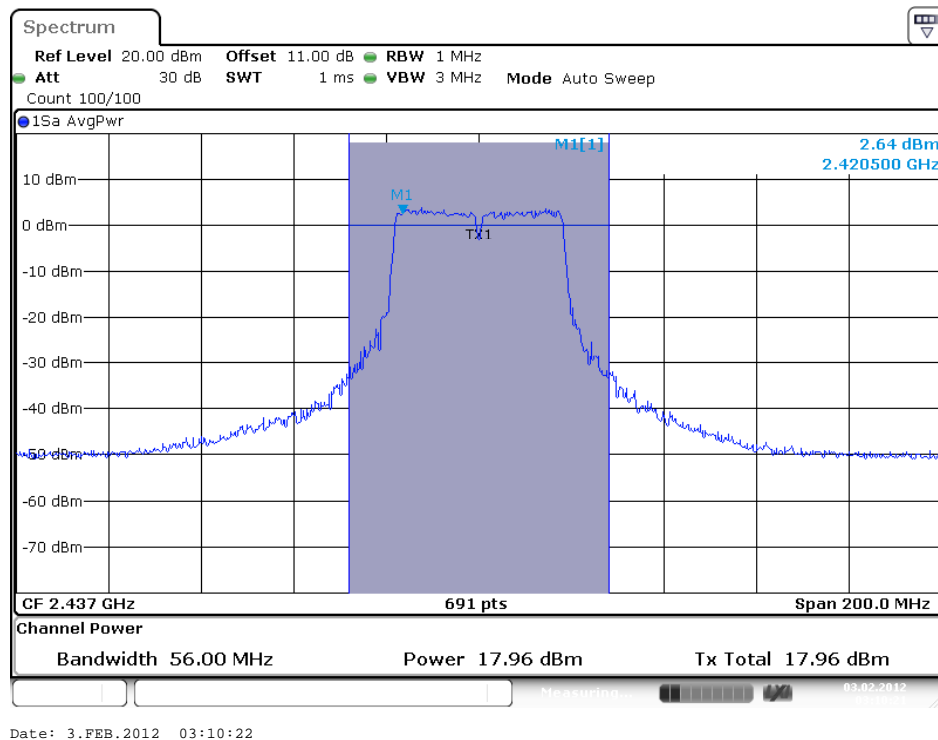
Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
1	2412 MHz	16.00	16.08	19.05	24.49	Complies
6	2437 MHz	16.18	16.47	19.34	24.49	Complies
11	2462 MHz	15.16	15.29	18.24	24.49	Complies

NOTE: Directional gain = 8.5dBi + 10log(2)=11.51dBi > 6dBi, so the conducted power limit = 30-(11.51-6)=24.49dBm.

## Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / 2437 MHz/ Chain 1 / Mode 5 (1TX, 2RX)

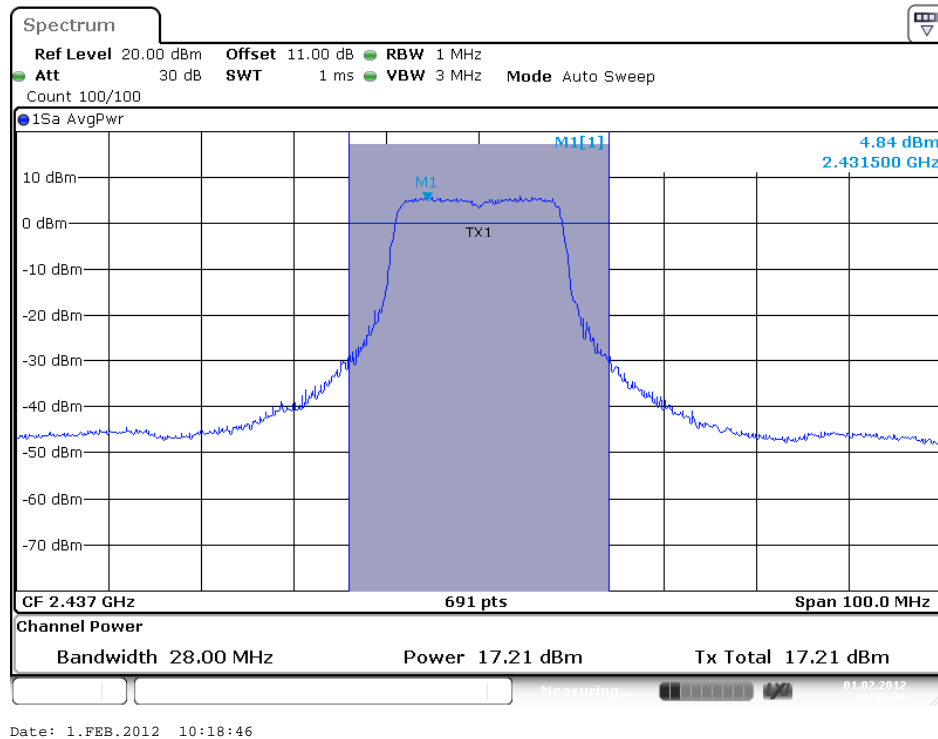


## Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 40MHz / Chain 1/ 2437 MHz / Mode 5 (1TX, 2RX)

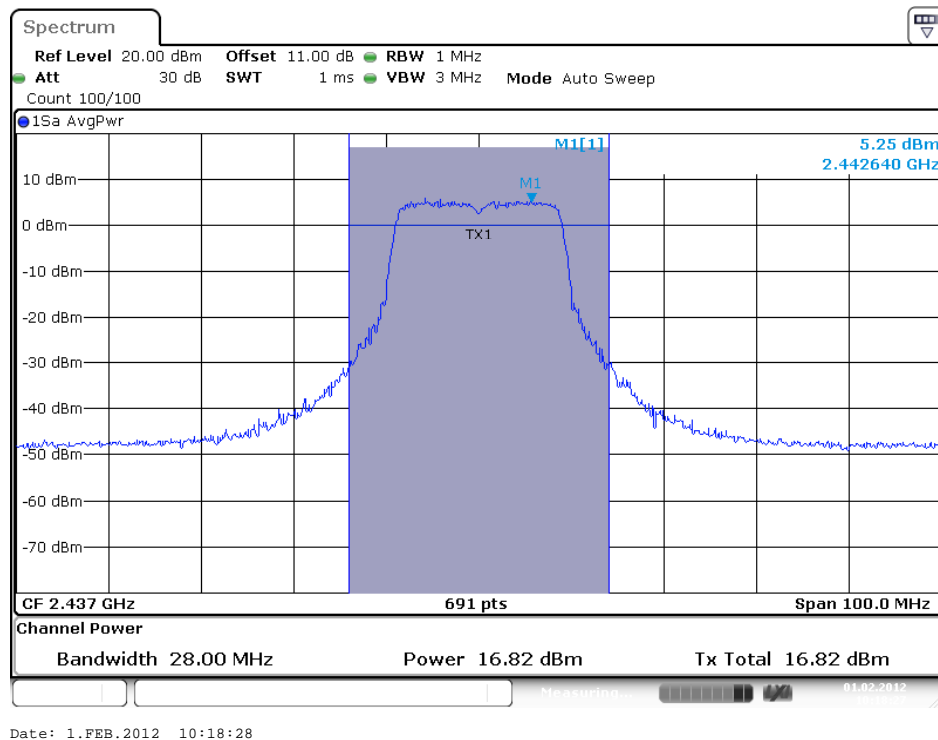




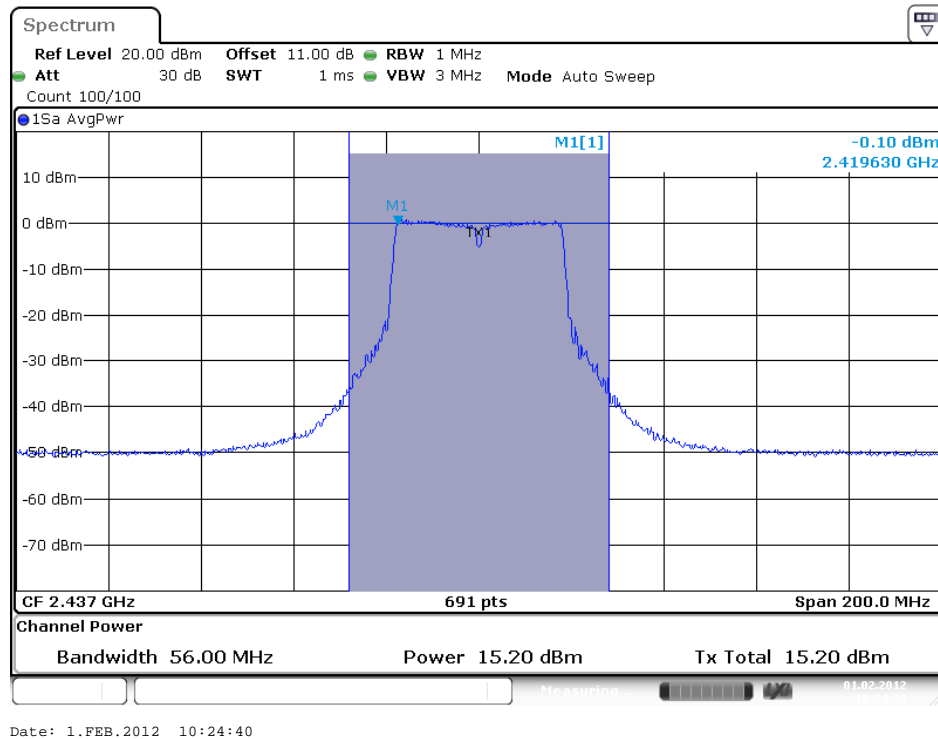
# Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / 2437 MHz/ Chain 1 / Mode 5 (2TX, 2RX)



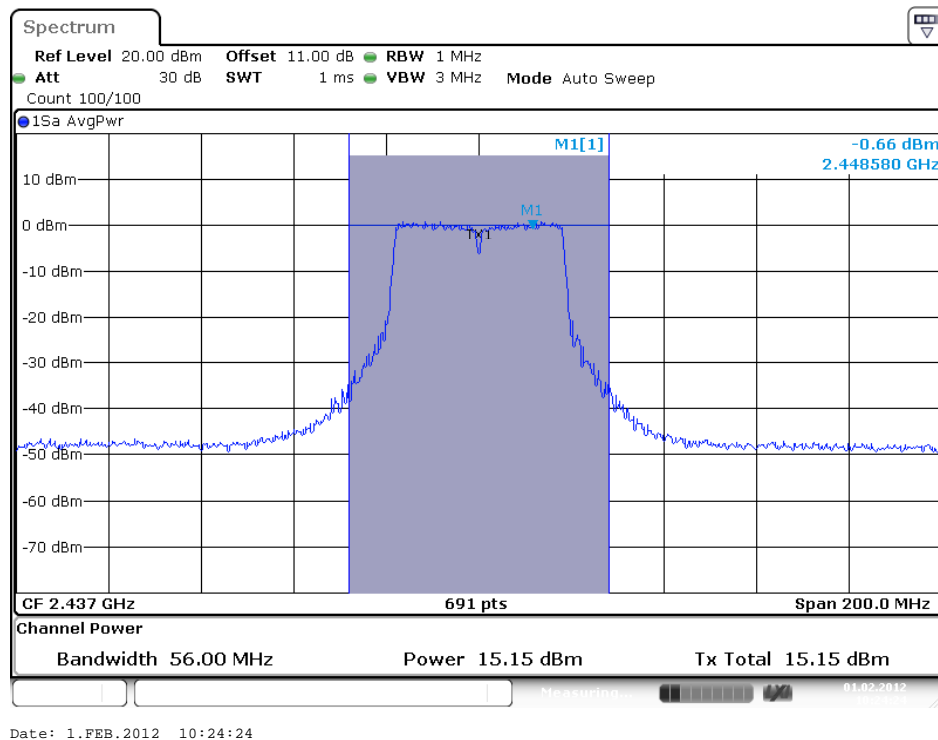
# Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / Chain 2/ 2437 MHz / Mode 5 (2TX, 2RX)



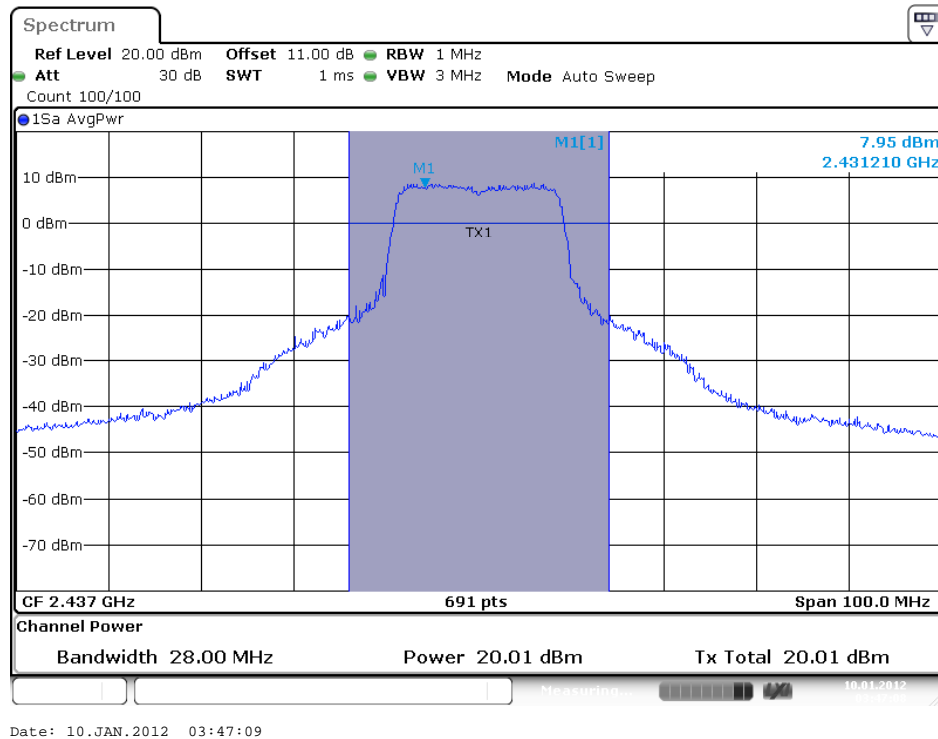
## Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 40MHz / Chain 1/ 2437 MHz / Mode 5 (2TX, 2RX)



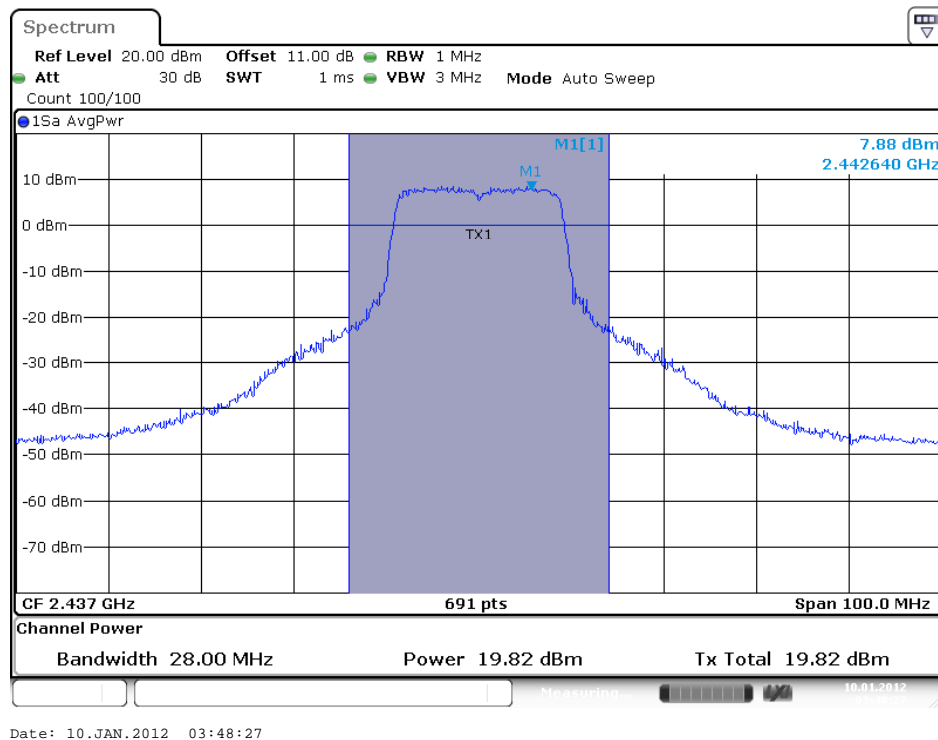
## Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 40MHz / Chain 2/ 2437 MHz / Mode 5 (2TX, 2RX)



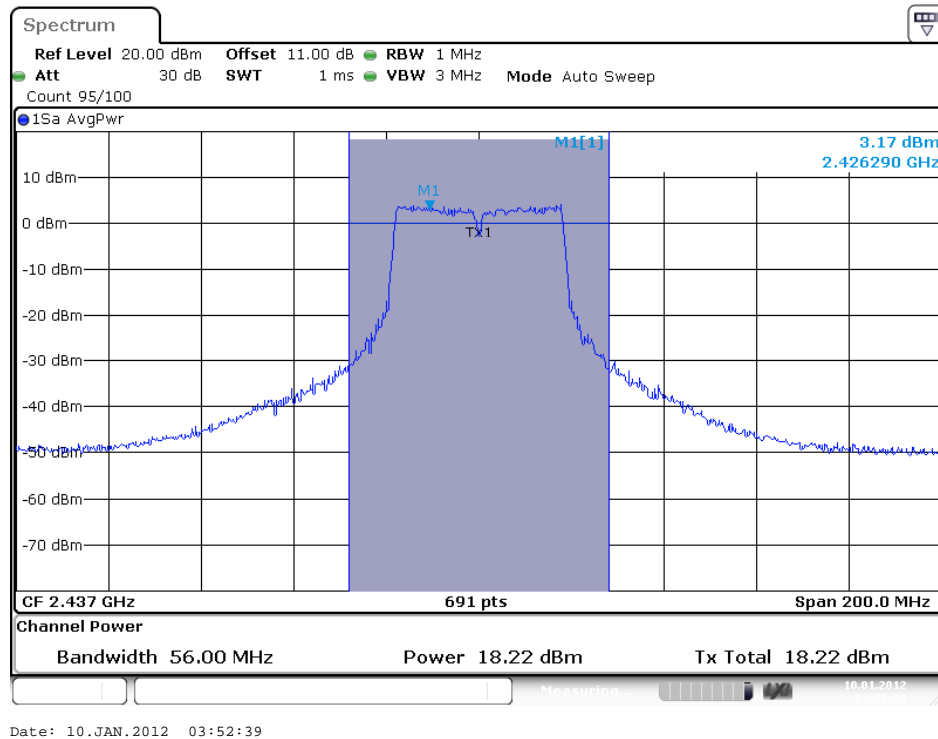
# Conducted Output Power Plot on Configuration IEEE 802.11n MCS8 20MHz / Chain 1/ 2437 MHz / Mode 5 (2TX, 2RX)



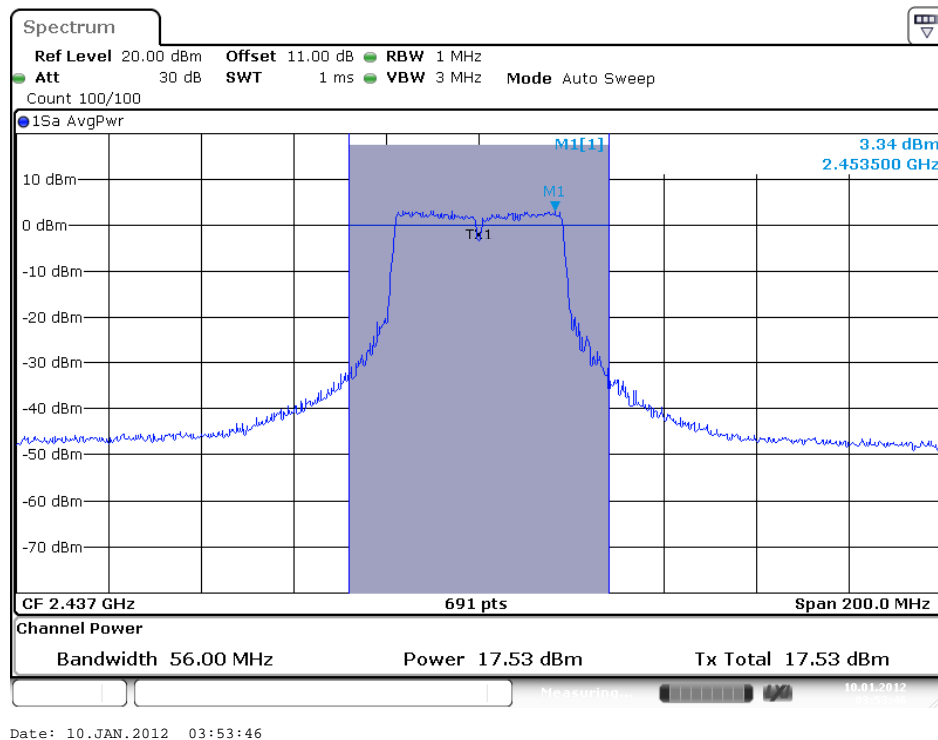
# Conducted Output Power Plot on Configuration IEEE 802.11n MCS8 20MHz / Chain 2/ 2437 MHz / Mode 5 (2TX, 2RX)



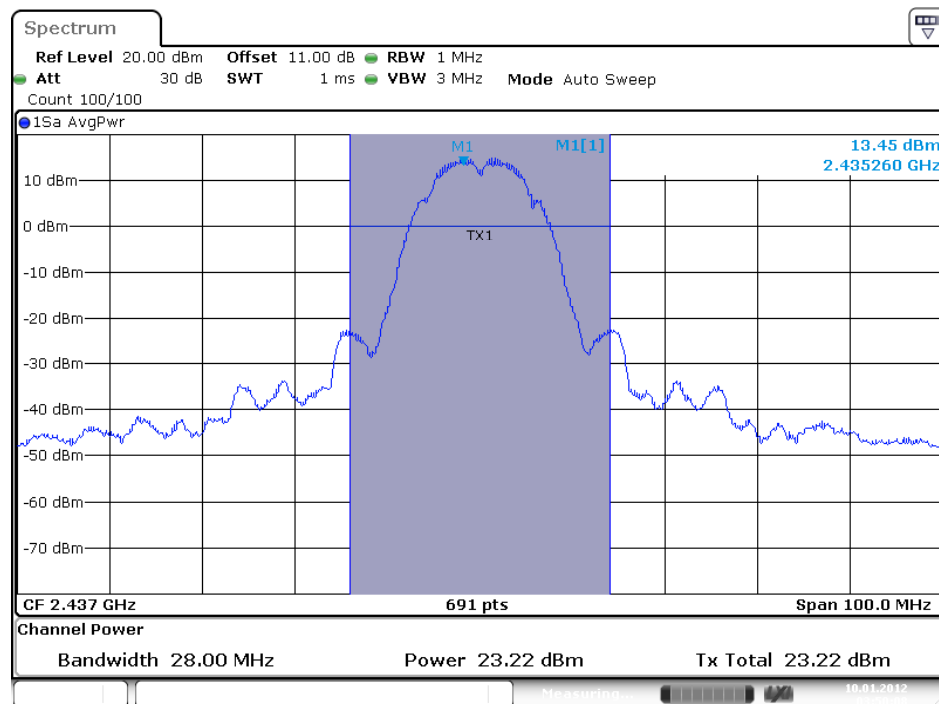
## Conducted Output Power Plot on Configuration IEEE 802.11n MCS8 40MHz / Chain 1/ 2437 MHz / Mode 5 (2TX, 2RX)



## Conducted Output Power Plot on Configuration IEEE 802.11n MCS8 40MHz / Chain 2/ 2437 MHz / Mode 5 (2TX, 2RX)

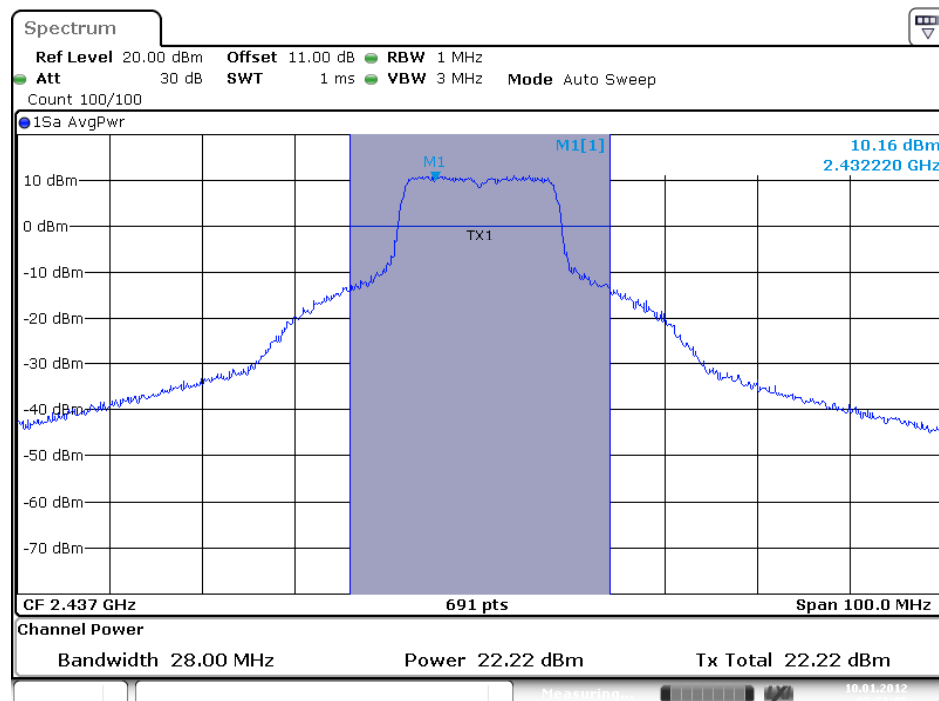


### Conducted Output Power Plot on Configuration IEEE 802.11b / Chain 1 / 2437 MHz/ Mode 5 (1TX, 2RX)



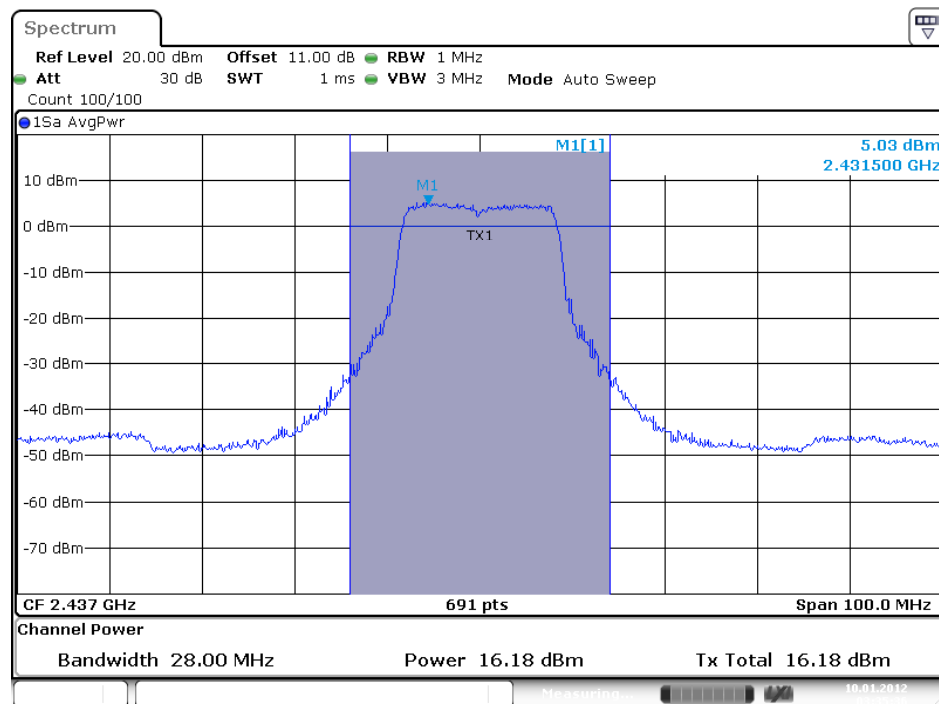
Date: 10.JAN.2012 03:50:08

### Conducted Output Power Plot on Configuration IEEE 802.11g / Chain 1 / 2437 MHz/ Mode 5 (1TX, 2RX)



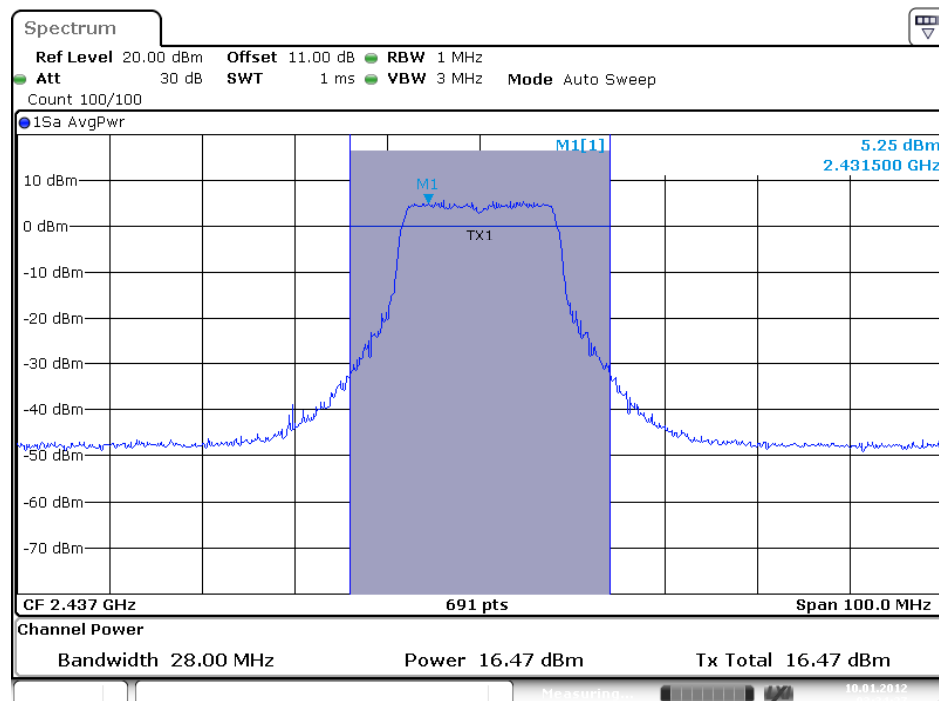
Date: 10.JAN.2012 03:51:05

### Conducted Output Power Plot on Configuration IEEE 802.11g / Chain 1 / 2437 MHz/ Mode 5 (2TX, 2RX)



Date: 10.JAN.2012 03:35:37

### Conducted Output Power Plot on Configuration IEEE 802.11g / Chain 2 / 2437 MHz/ Mode 5 (2TX, 2RX)



Date: 10.JAN.2012 03:34:28

Temperature	25°C	Humidity	56%
Test Engineer	Allen Liu	Configurations	IEEE 802.11n
Test Date	Feb. 03, 2012	Test Mode	Mode 6

**Configuration IEEE 802.11n MCS0 20MHz / Chain 1 (1TX, 2RX)**

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
149	5745 MHz	22.01	27.00	Complies
157	5785 MHz	21.94	27.00	Complies
165	5825 MHz	21.85	27.00	Complies

**Configuration IEEE 802.11n MCS0 40MHz / Chain 1 (1TX, 2RX)**

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
151	5755 MHz	21.98	27.00	Complies
159	5795 MHz	21.85	27.00	Complies

**Configuration IEEE 802.11n MCS0 20MHz (2TX, 2RX)**

Channel	Frequency	Conducted Power (dBm)		Total Conducted Peak Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
149	5745 MHz	19.49	19.31	22.41	23.99	Complies
157	5785 MHz	19.13	19.83	22.50	23.99	Complies
165	5825 MHz	19.47	19.86	22.68	23.99	Complies

NOTE: Directional gain = 9dBi + 10log(2)=12.01dBi > 6dBi, so the conducted power limit  
= 30-(12.01-6)=23.99dBm.

**Configuration IEEE 802.11n MCS0 40MHz (2TX, 2RX)**

Channel	Frequency	Conducted Power (dBm)		Total Conducted Peak Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
151	5755 MHz	19.78	19.80	22.80	23.99	Complies
159	5795 MHz	19.17	19.54	22.37	23.99	Complies

NOTE: Directional gain = 9dBi + 10log(2)=12.01dBi > 6dBi, so the conducted power limit  
= 30-(12.01-6)=23.99dBm.

**Configuration IEEE 802.11n MCS8 20MHz (2TX, 2RX)**

Channel	Frequency	Conducted Power (dBm)		Total Conducted Peak Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
149	5745 MHz	20.05	19.45	22.77	27.00	Complies
157	5785 MHz	19.96	20.16	23.07	27.00	Complies
165	5825 MHz	20.05	20.56	23.32	27.00	Complies

**Configuration IEEE 802.11n MCS8 40MHz (2TX, 2RX)**

Channel	Frequency	Conducted Power (dBm)		Total Conducted Peak Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
151	5755 MHz	19.34	19.28	22.32	27.00	Complies
159	5795 MHz	19.17	20.22	22.74	27.00	Complies



Temperature	25°C	Humidity	56%
Test Engineer	Allen Liu	Configurations	IEEE 802.11a
Test Date	Feb. 03, 2012	Test Mode	Mode 6

#### Configuration IEEE 802.11a / Chain 1 (1TX, 2RX)

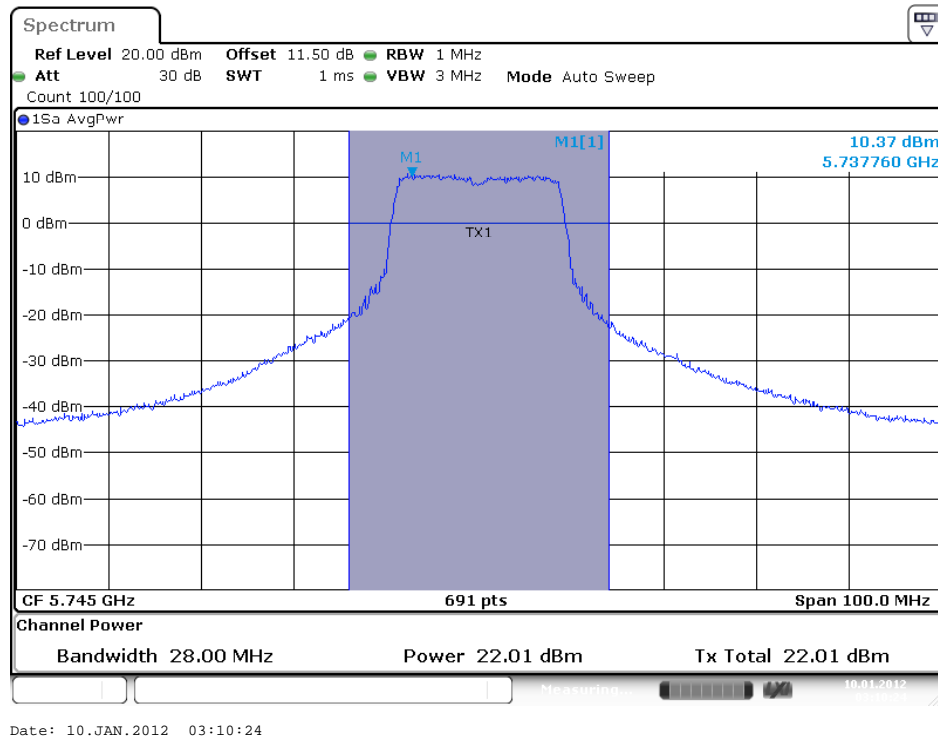
Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
149	5745 MHz	21.00	27.00	Complies
157	5785 MHz	21.03	27.00	Complies
165	5825 MHz	21.19	27.00	Complies

#### Configuration IEEE 802.11a / Chain 1 + Chain 2 (2TX, 2RX)

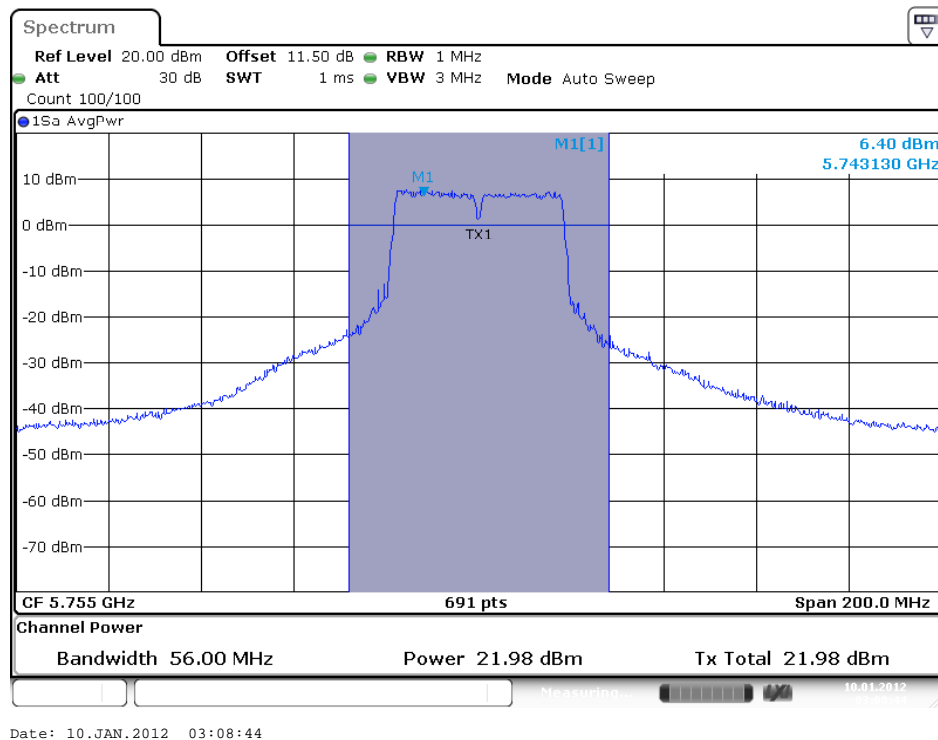
Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
149	5745 MHz	19.20	20.17	22.72	23.99	Complies
157	5785 MHz	19.23	20.98	23.20	23.99	Complies
165	5825 MHz	19.39	21.48	23.57	23.99	Complies

NOTE: Directional gain = 9dBi + 10log(2) = 12.01dBi > 6dBi, so the conducted power limit = 30 - (12.01 - 6) = 23.99dBm.

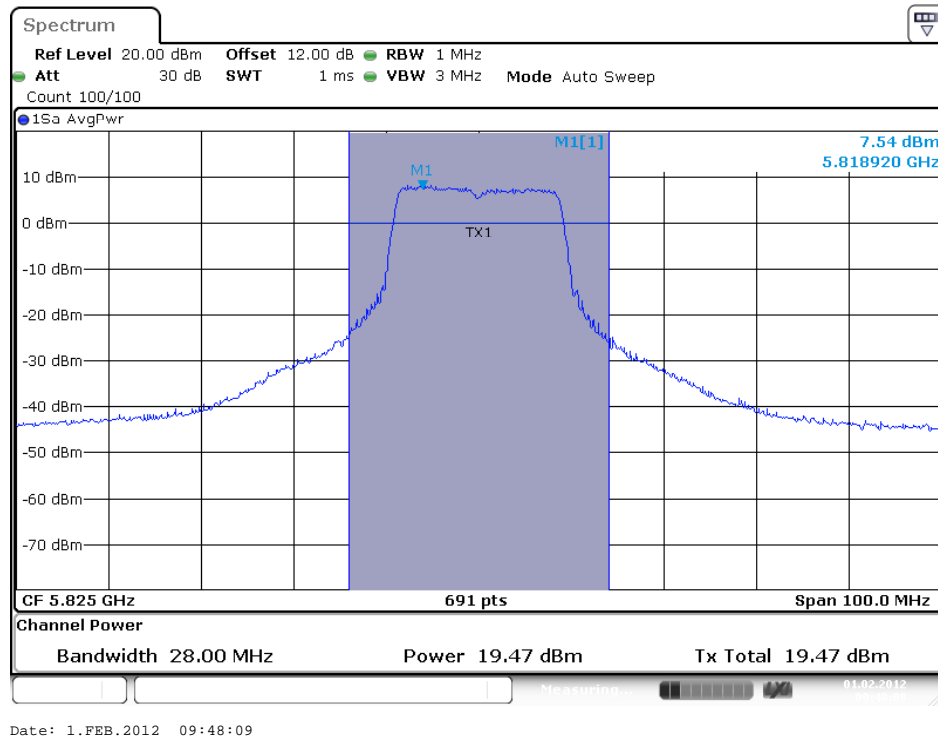
## Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / 5745 MHz/ Chain 1 / Mode 6 (1TX, 2RX)



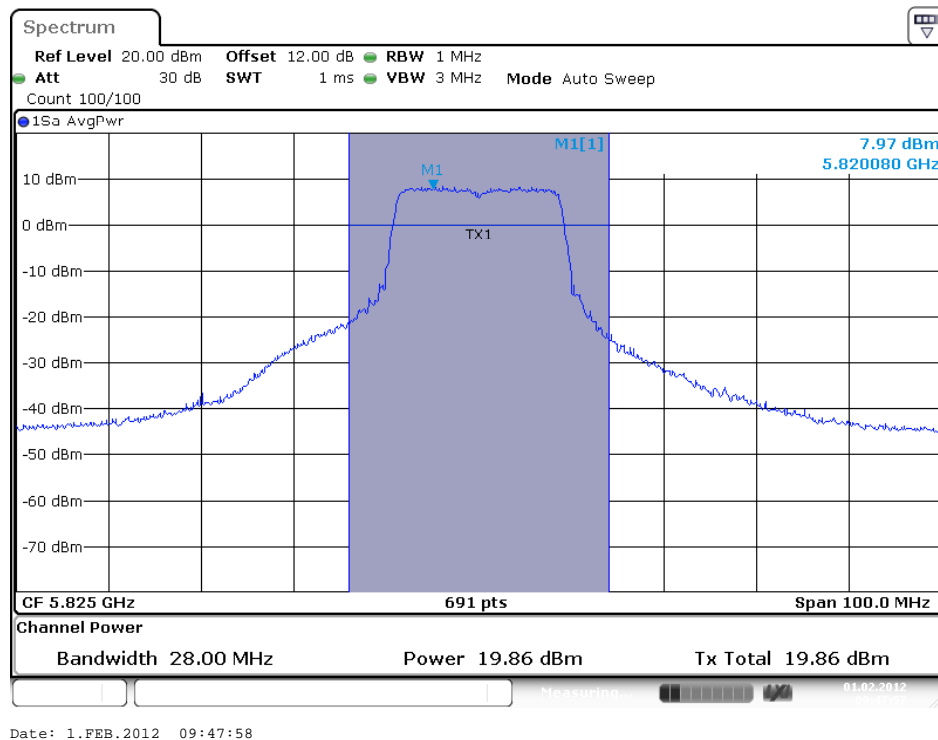
## Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 40MHz / 5755 MHz/ Chain 1/ Mode 6 (1TX, 2RX)



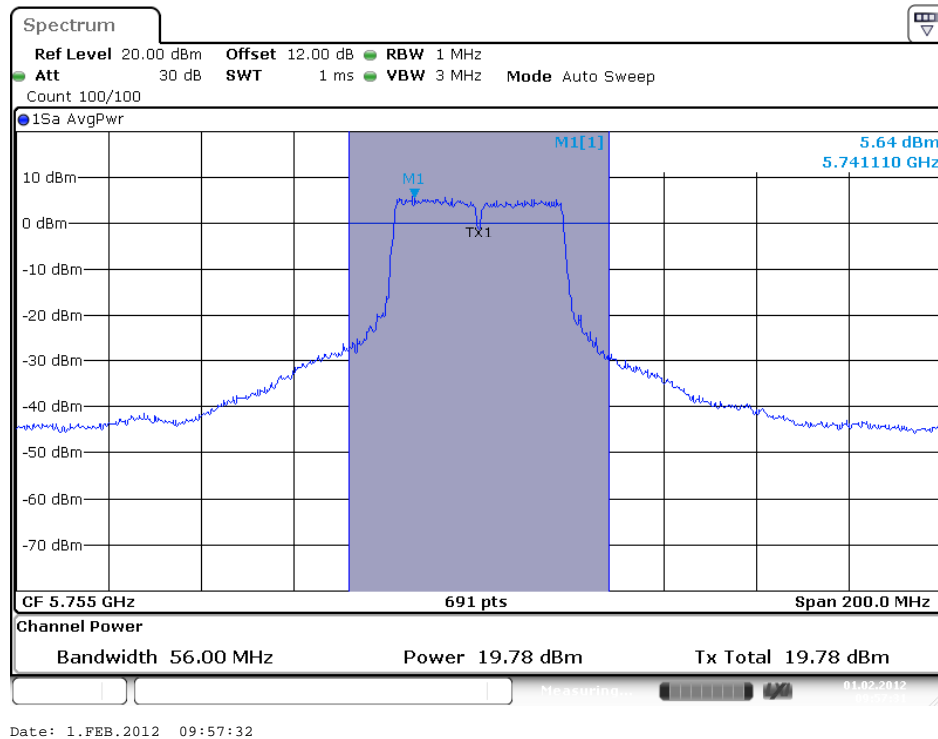
# Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / 5825 MHz/ Chain 1 / Mode 6 (2TX, 2RX)



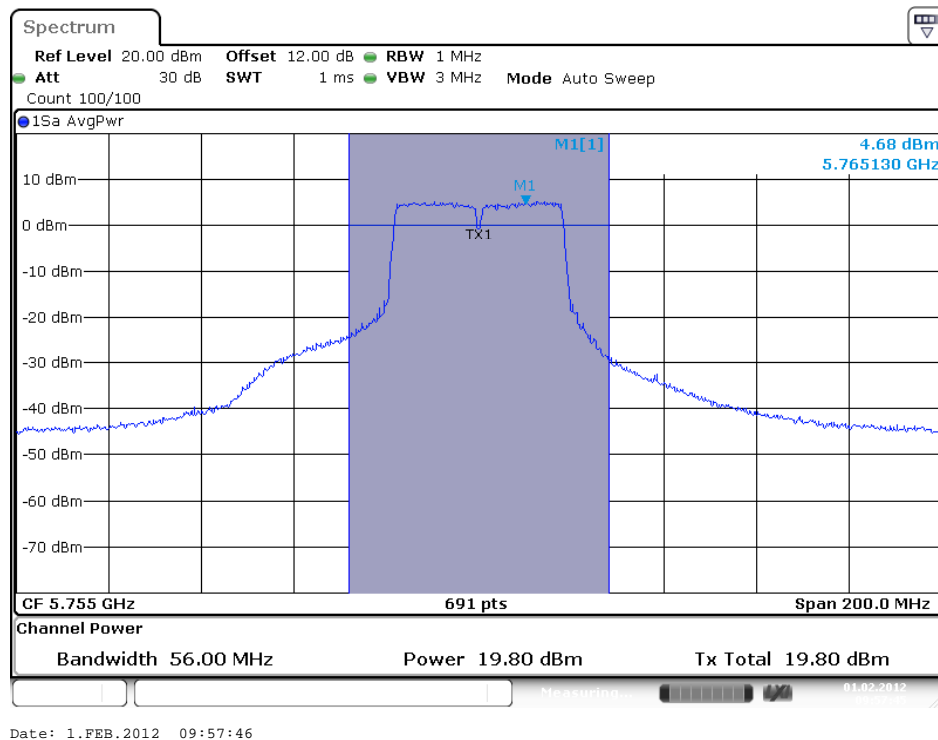
# Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / 5825 MHz/ Chain 2 / Mode 6 (2TX, 2RX)



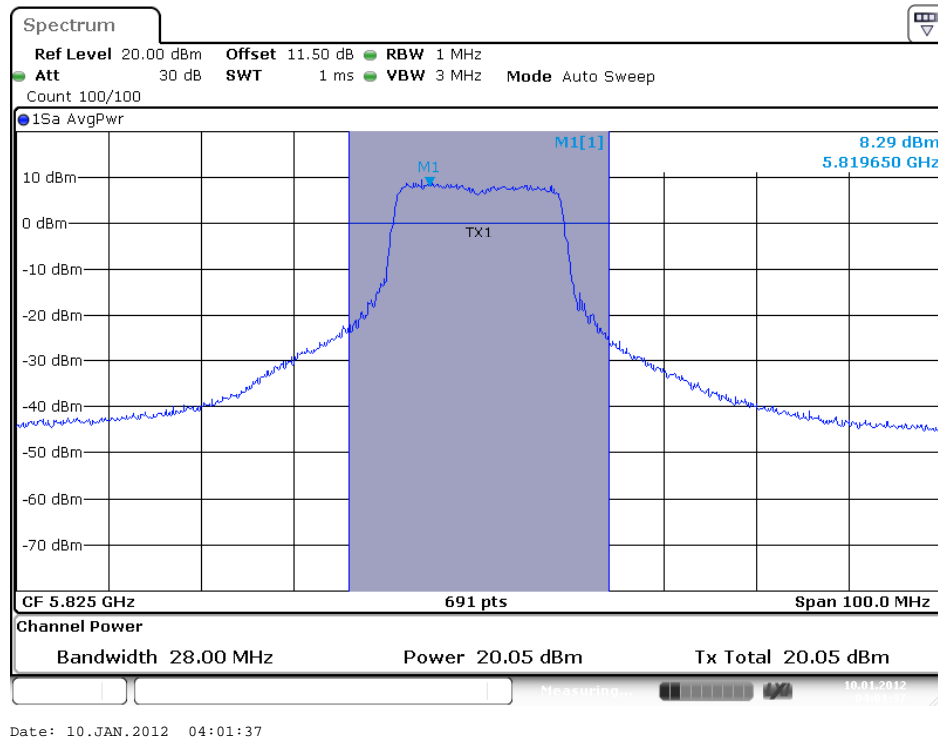
# Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 40MHz / 5755 MHz/ Chain 1/ Mode 6 (2TX, 2RX)



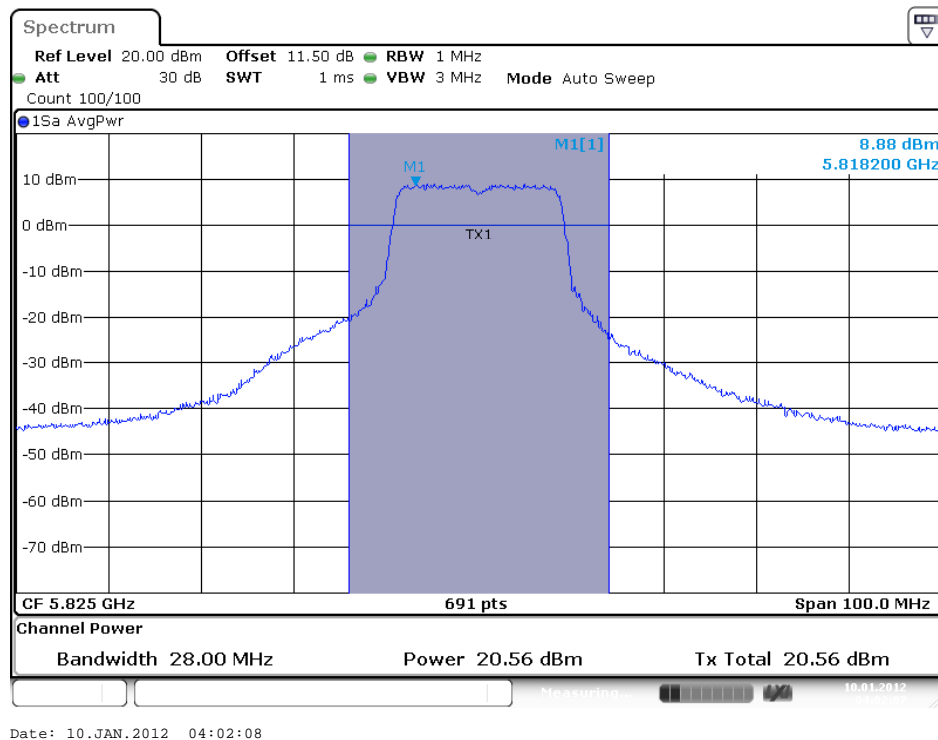
# Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 40MHz / 5755 MHz/ Chain 2/ Mode 6 (2TX, 2RX)



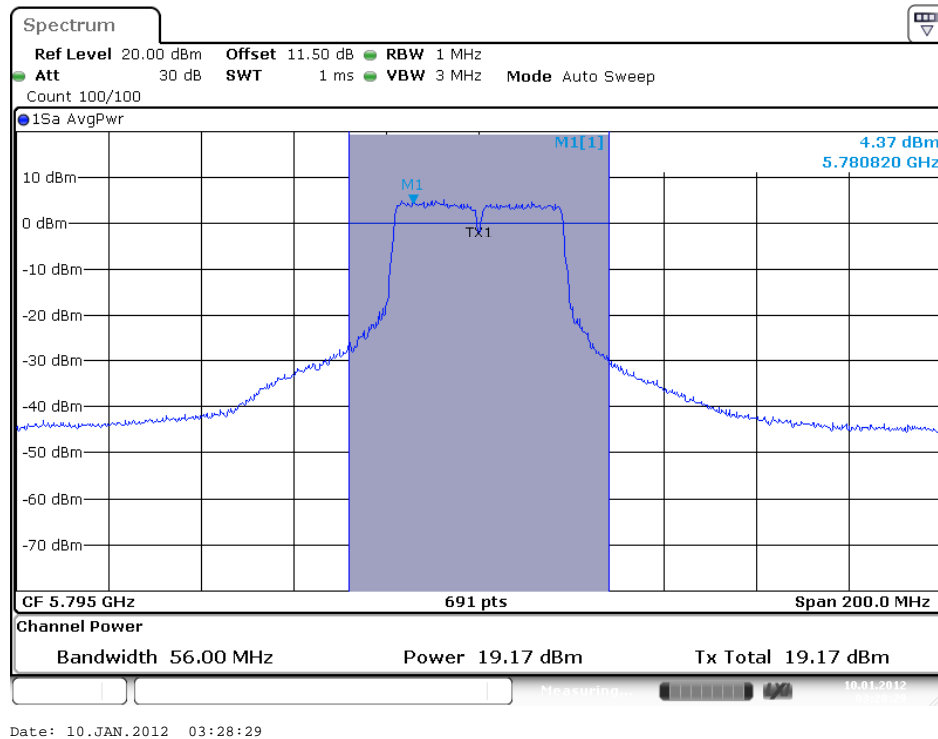
# Conducted Output Power Plot on Configuration IEEE 802.11n MCS8 20MHz / 5825 MHz/ Chain 1 / Mode 6 (2TX, 2RX)



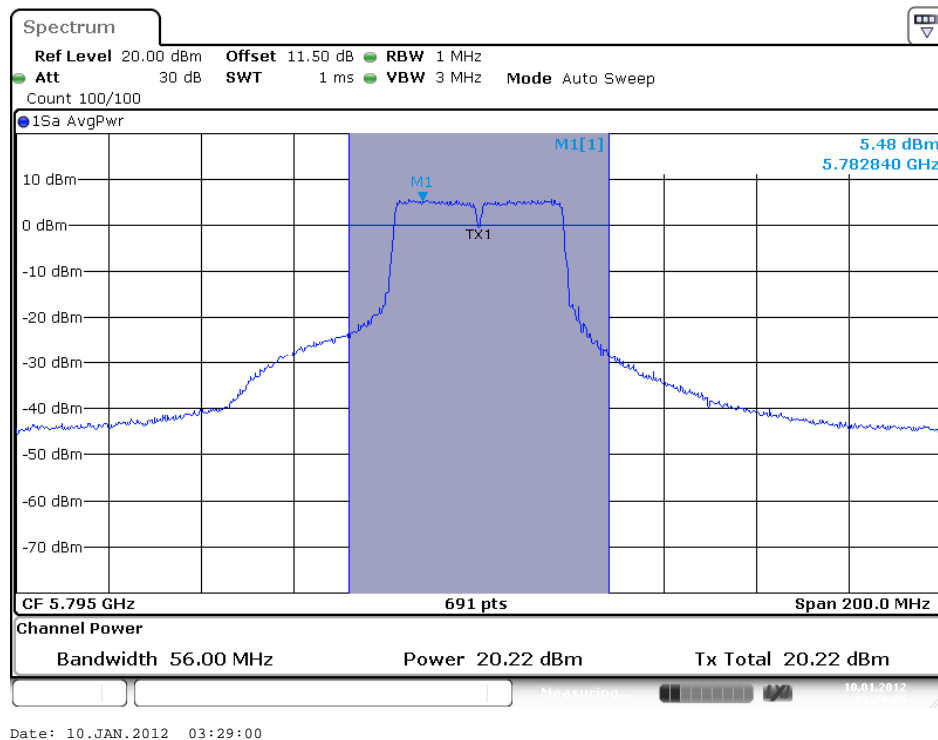
# Conducted Output Power Plot on Configuration IEEE 802.11n MCS8 20MHz / 5825 MHz/ Chain 2 / Mode 6 (2TX, 2RX)



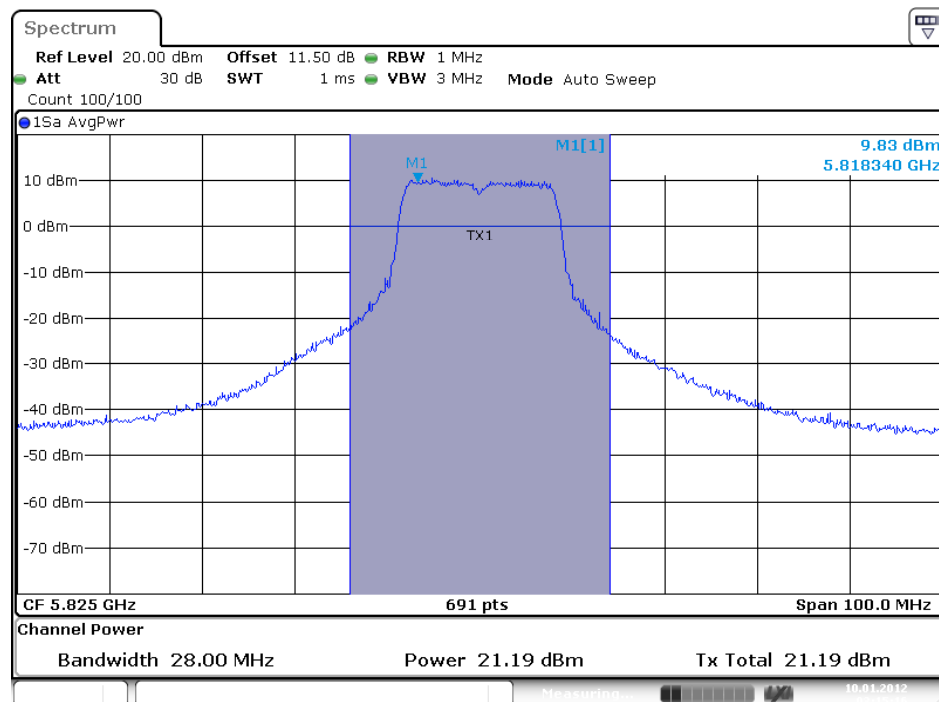
# Conducted Output Power Plot on Configuration IEEE 802.11n MCS8 40MHz / 5795 MHz/ Chain 1/ Mode 6 (2TX, 2RX)



# Conducted Output Power Plot on Configuration IEEE 802.11n MCS8 40MHz / 5795 MHz/ Chain 2/ Mode 6 (2TX, 2RX)

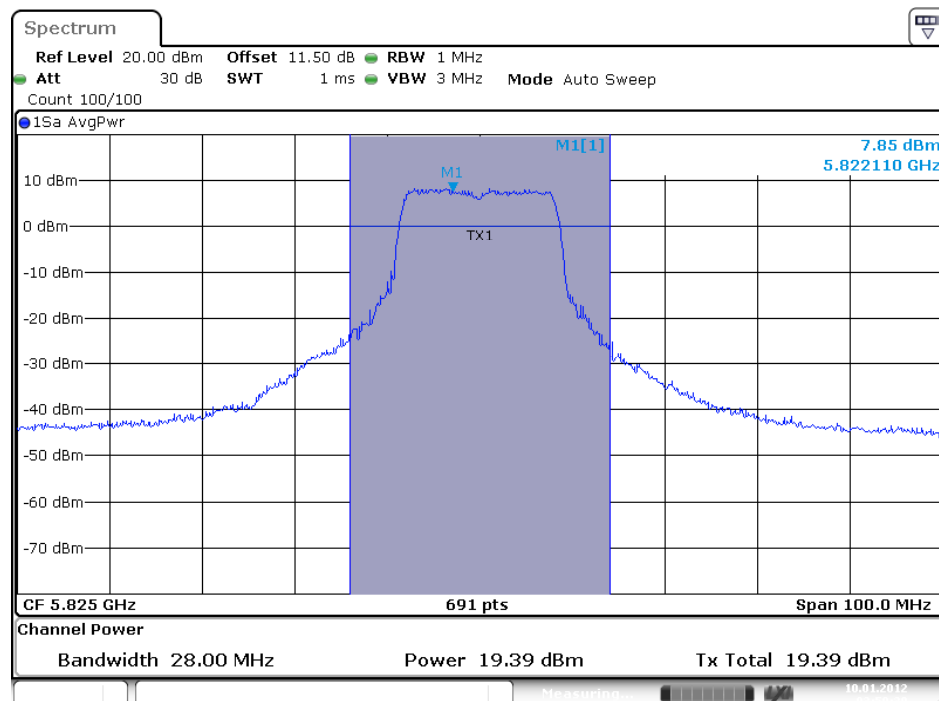


### Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 1 / 5825 MHz/ Mode 6 (1TX, 2RX)



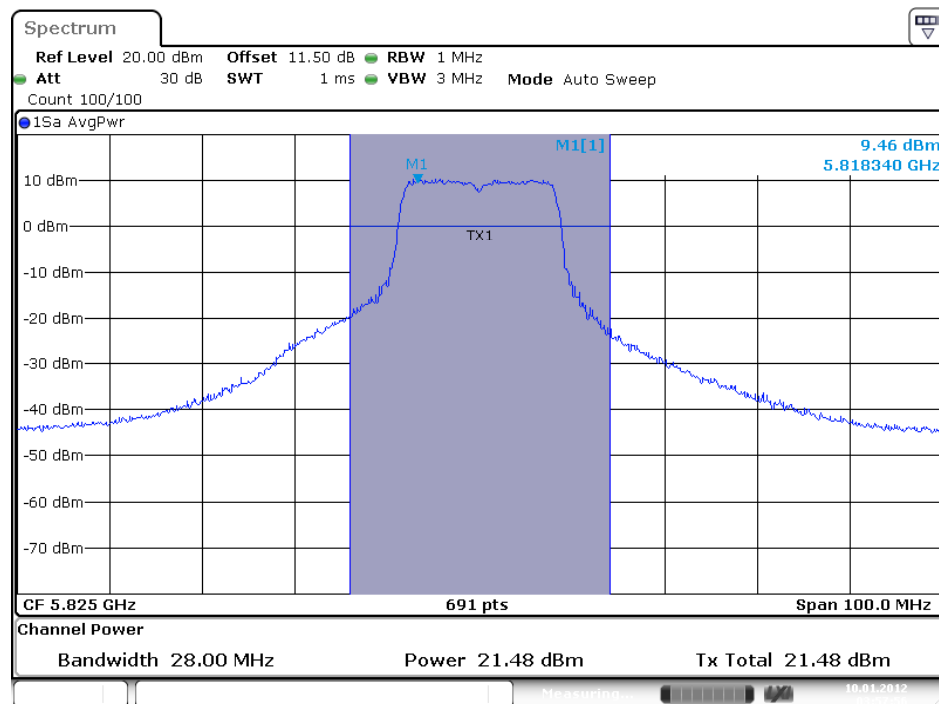
Date: 10.JAN.2012 03:15:16

### Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 1 / 5825 MHz/ Mode 6 (2TX, 2RX)



Date: 10.JAN.2012 03:59:30

# Conducted Output Power Plot on Configuration IEEE 802.11a / Chain 2 / 5825 MHz/ Mode 6 (2TX, 2RX)



Date: 10.JAN.2012 03:57:56



Temperature	25°C	Humidity	57%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11n
Test Date	Feb. 08, 2012	Test Mode	Mode 7

**Configuration IEEE 802.11n MCS0 20MHz / Chain 2 (1TX, 2RX)**

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	19.04	30.00	Complies
6	2437 MHz	22.86	30.00	Complies
11	2462 MHz	19.50	30.00	Complies

**Configuration IEEE 802.11n MCS0 40MHz / Chain 2 (1TX, 2RX)**

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
3	2422 MHz	18.86	30.00	Complies
6	2437 MHz	19.58	30.00	Complies
9	2452 MHz	17.73	30.00	Complies

**Configuration IEEE 802.11n MCS0 20MHz (2TX, 2RX)**

Channel	Frequency	Conducted Power (dBm)		Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
1	2412 MHz	18.4	18.23	21.33	29.49	Complies
6	2437 MHz	21.43	21.93	24.70	29.49	Complies
11	2462 MHz	16.73	17.21	19.99	29.49	Complies

NOTE: Directional gain = 3.5dBi + 10log(2)=6.51dBi > 6dBi, so the conducted power limit  
= 30-(6.51-6)=29.49dBm.

**Configuration IEEE 802.11n MCS0 40MHz (2TX, 2RX)**

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
3	2422 MHz	16.13	16.52	19.34	29.49	Complies
6	2437 MHz	17.91	18.37	21.16	29.49	Complies
9	2452 MHz	12.74	13.10	15.93	29.49	Complies

NOTE: Directional gain = 3.5dBi + 10log(2)=6.51dBi > 6dBi, so the conducted power limit  
= 30-(6.51-6)=29.49dBm.

Temperature	25°C	Humidity	57%
Test Engineer	Sean Ku	Configurations	IEEE 802.11 b/g
Test Date	Feb. 08, 2012	Test Mode	Mode 7

#### Configuration IEEE 802.11b / Chain 2 (1TX, 2RX)

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	23.65	30.00	Complies
6	2437 MHz	23.55	30.00	Complies
11	2462 MHz	23.48	30.00	Complies

#### Configuration IEEE 802.11g / Chain 2 (1TX, 2RX)

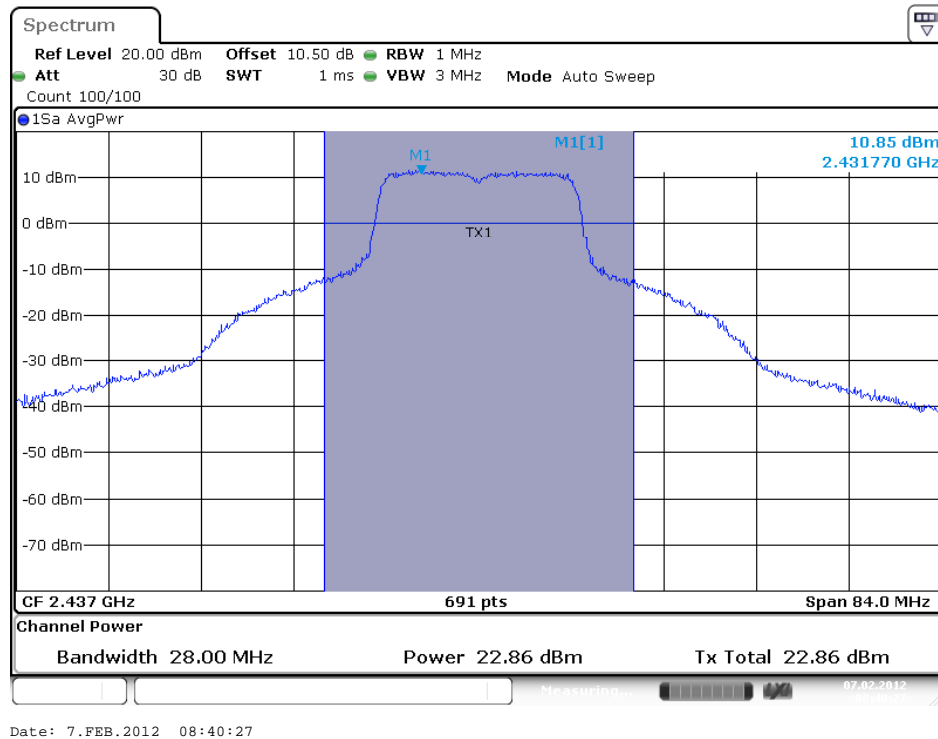
Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	19.61	30.00	Complies
6	2437 MHz	22.98	30.00	Complies
11	2462 MHz	20.31	30.00	Complies

#### Configuration IEEE 802.11g / Chain 1 + Chain 2 (2TX)

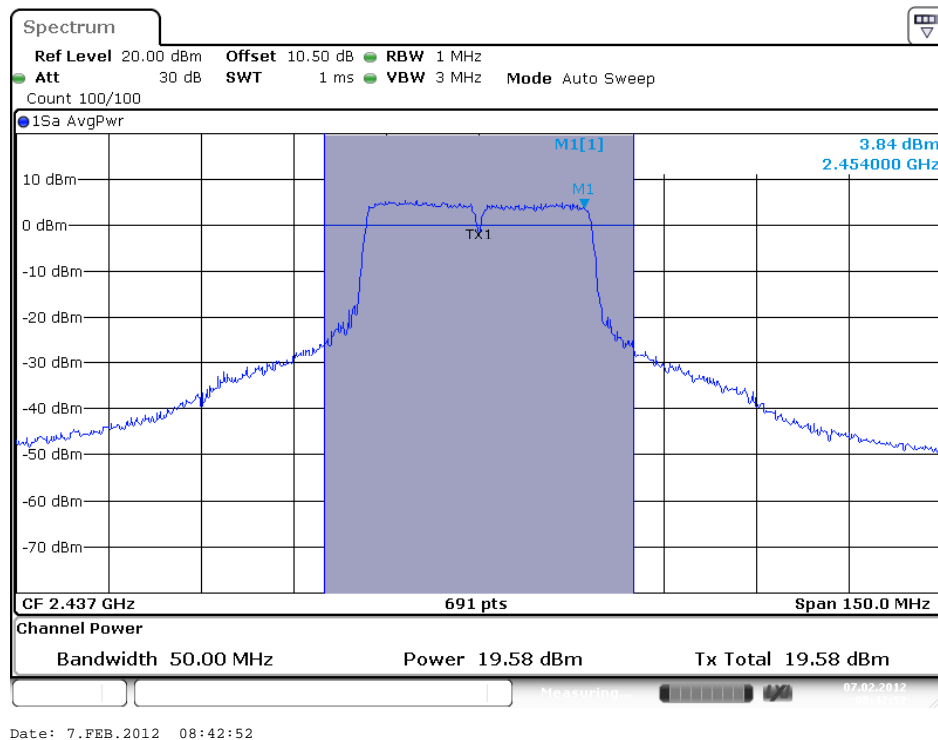
Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
1	2412 MHz	18.76	18.67	21.73	29.49	Complies
6	2437 MHz	21.48	21.73	24.62	29.49	Complies
11	2462 MHz	17.58	17.76	20.68	29.49	Complies

NOTE: Directional gain = 3.5dBi + 10log(2)=6.51dBi > 6dBi, so the conducted power limit  
= 30-(6.51-6)=29.49dBm.

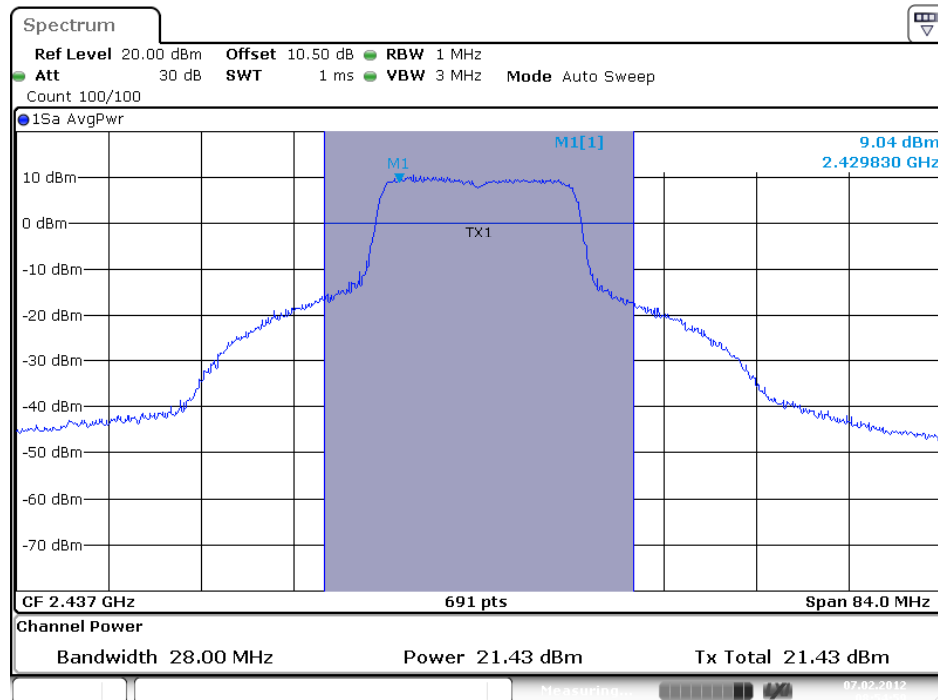
## Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / 2437 MHz/ Chain 2 / Mode 7 (1TX, 2RX)



## Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 40MHz / 2437 MHz/ Chain 2/ Mode 7 (1TX, 2RX)

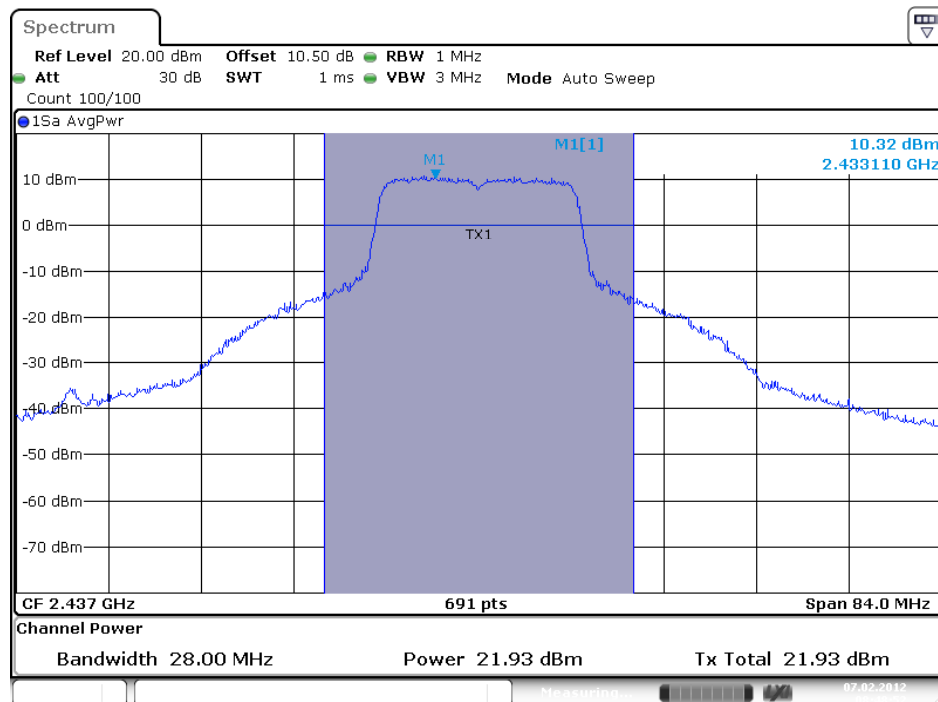


## Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / Chain 1/ 2437 MHz / Mode 7 (2TX, 2RX)



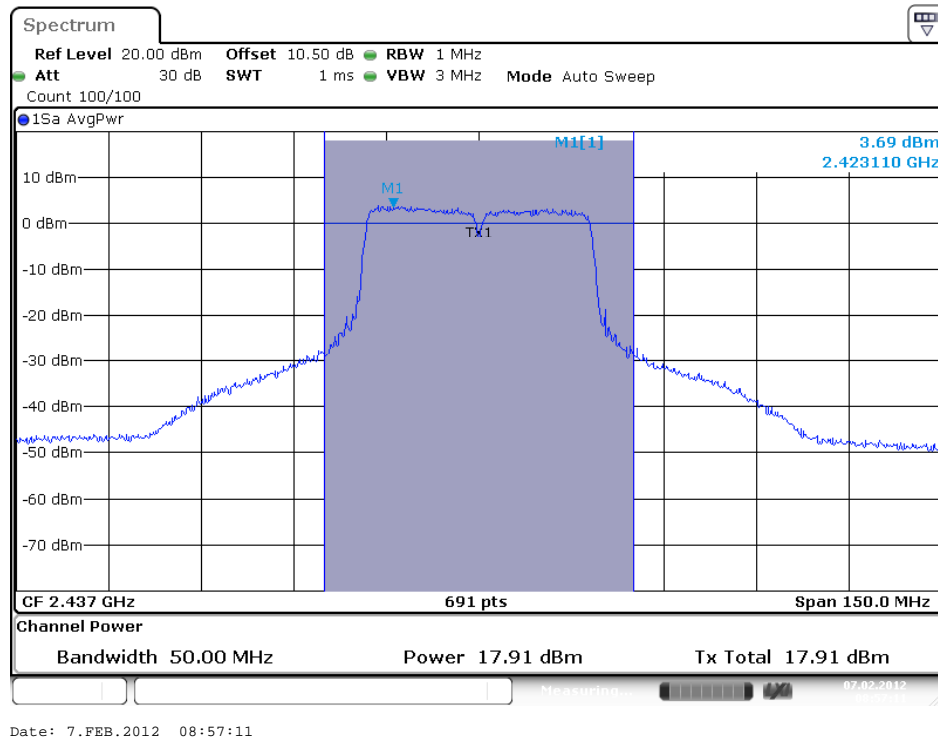
Date: 7.FEB.2012 08:54:59

## Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / Chain 2/ 2437 MHz / Mode 7 (2TX, 2RX)

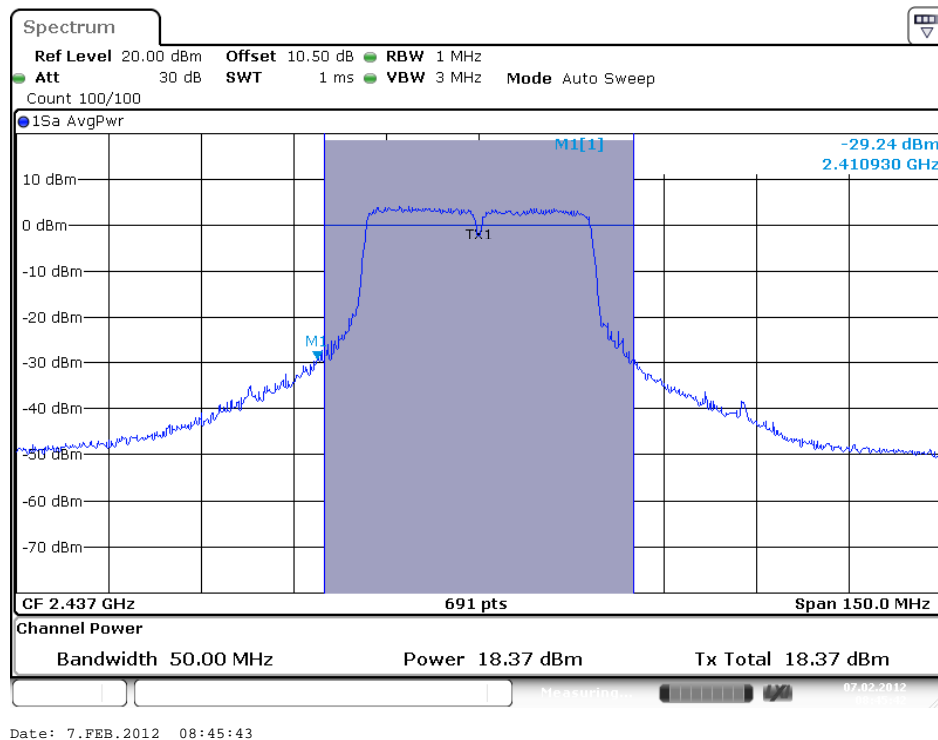


Date: 7.FEB.2012 08:48:53

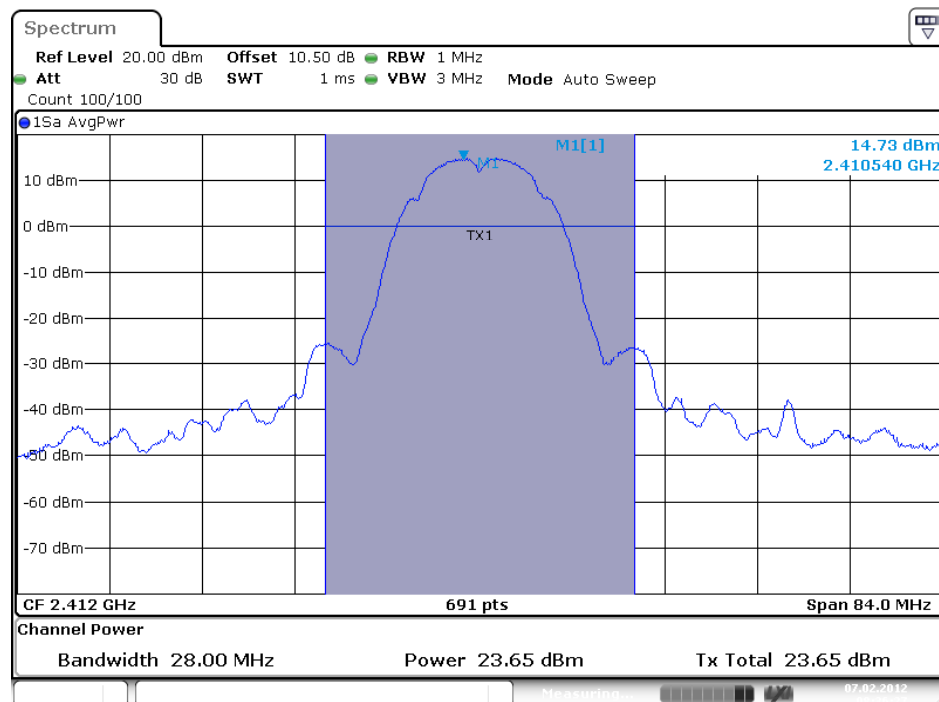
## Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 40MHz / Chain 1/ 2437 MHz / Mode 7 (2TX, 2RX)



## Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 40MHz / Chain 2/ 2437 MHz / Mode 7 (2TX, 2RX)

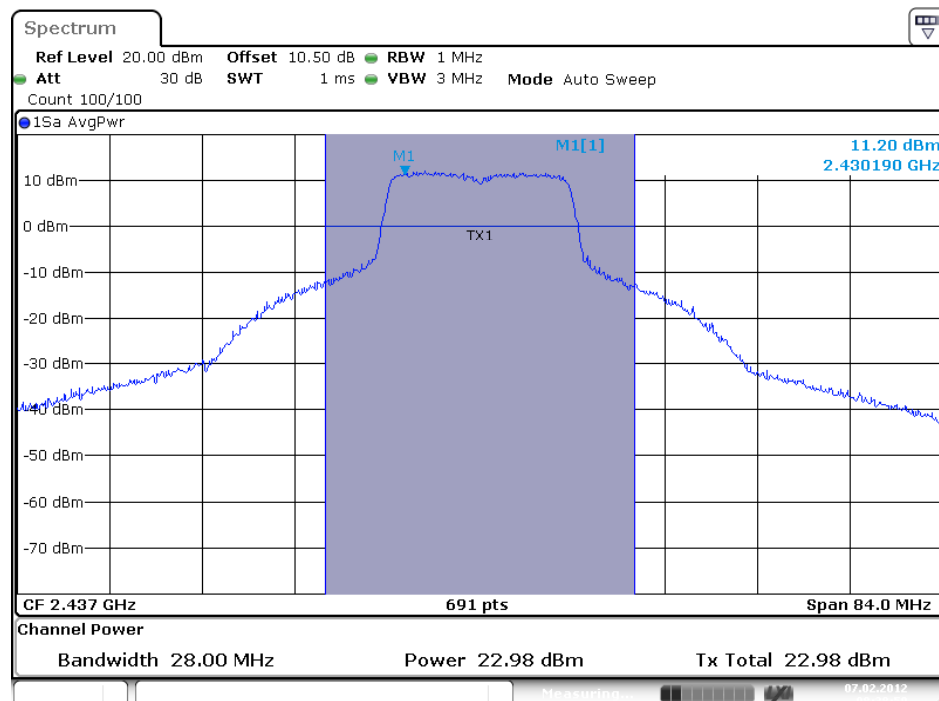


### Conducted Output Power Plot on Configuration IEEE 802.11b / Chain 1 / 2412 MHz/ Mode 7 (1TX, 2RX)



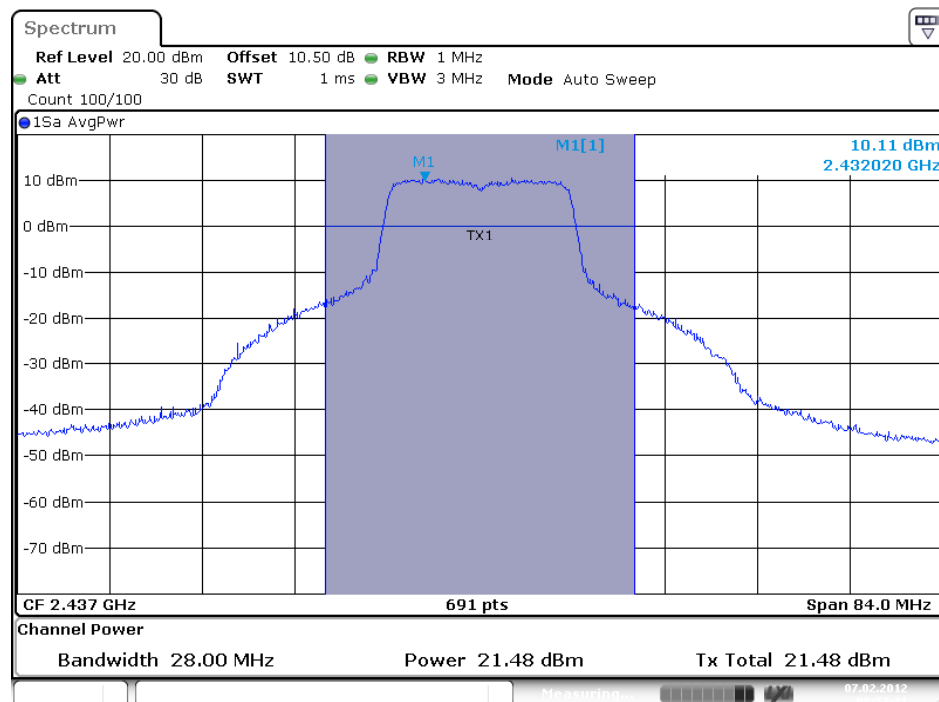
Date: 7.FEB.2012 08:36:27

### Conducted Output Power Plot on Configuration IEEE 802.11g / Chain 1 / 2437 MHz/ Mode 7 (1TX, 2RX)



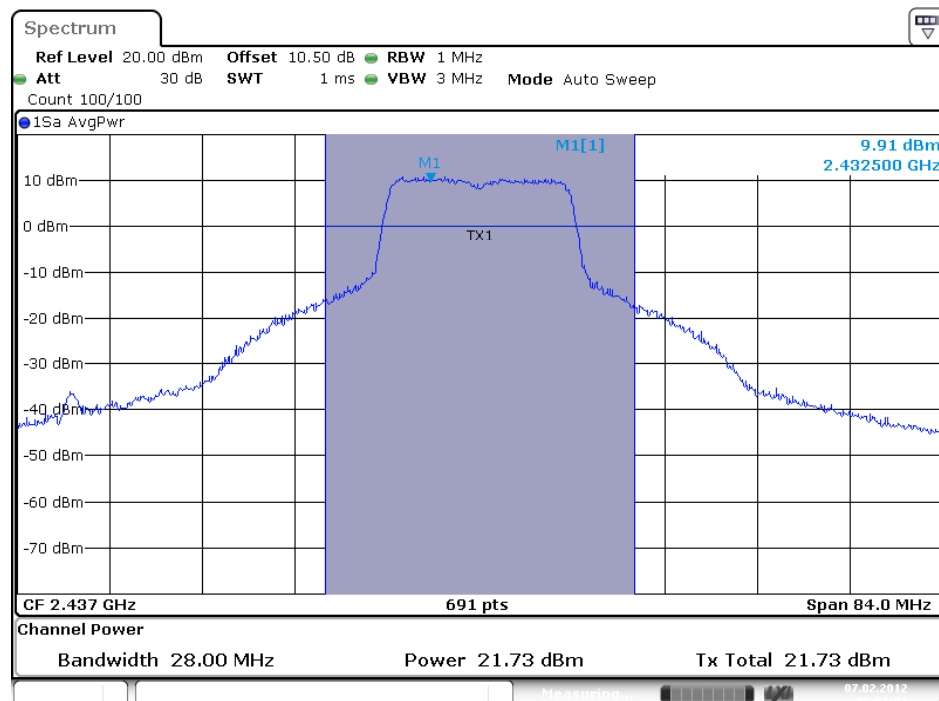
Date: 7.FEB.2012 08:38:50

### Conducted Output Power Plot on Configuration IEEE 802.11g / Chain 1 / 2437 MHz/ Mode 7 (2TX, 2RX)



Date: 7.FEB.2012 08:53:31

### Conducted Output Power Plot on Configuration IEEE 802.11g / Chain 2 / 2437 MHz/ Mode 7 (2TX, 2RX)



Date: 7.FEB.2012 08:51:01

Temperature	25°C	Humidity	56%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11n
Test Date	Feb. 06, 2012	Test Mode	Mode 8

**Configuration IEEE 802.11n MCS0 20MHz / Chain 1 (1TX, 2RX)**

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	17.87	30.00	Complies
6	2437 MHz	22.61	30.00	Complies
11	2462 MHz	18.18	30.00	Complies

**Configuration IEEE 802.11n MCS0 40MHz / Chain 1(1TX, 2RX)**

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
3	2422 MHz	16.90	30.00	Complies
6	2437 MHz	18.37	30.00	Complies
9	2452 MHz	17.15	30.00	Complies

**Configuration IEEE 802.11n MCS0 20MHz (2TX, 2RX)**

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
1	2412 MHz	16.49	16.35	19.43	29.49	Complies
6	2437 MHz	22.11	21.81	24.97	29.49	Complies
11	2462 MHz	17.02	16.50	19.78	29.49	Complies

NOTE: Directional gain = 3.5dBi + 10log(2)=6.5dBi > 6dBi, so the conducted power limit  
= 30-(6.51-6)=29.49dBm.

**Configuration IEEE 802.11n MCS0 40MHz (2TX, 2RX)**

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
3	2422 MHz	15.36	14.71	18.06	29.49	Complies
6	2437 MHz	17.82	17.38	20.62	29.49	Complies
9	2452 MHz	15.58	15.94	18.77	29.49	Complies

NOTE: Directional gain = 3.5dBi + 10log(2)=6.5dBi > 6dBi, so the conducted power limit  
= 30-(6.51-6)=29.49dBm.



Temperature	25°C	Humidity	56%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11b/g
Test Date	Feb. 06, 2012	Test Mode	Mode 8

#### Configuration IEEE 802.11b / Chain 1 (1TX, 2RX)

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	22.07	30.00	Complies
6	2437 MHz	23.29	30.00	Complies
11	2462 MHz	22.15	30.00	Complies

#### Configuration IEEE 802.11g / Chain 1 (1TX, 2RX)

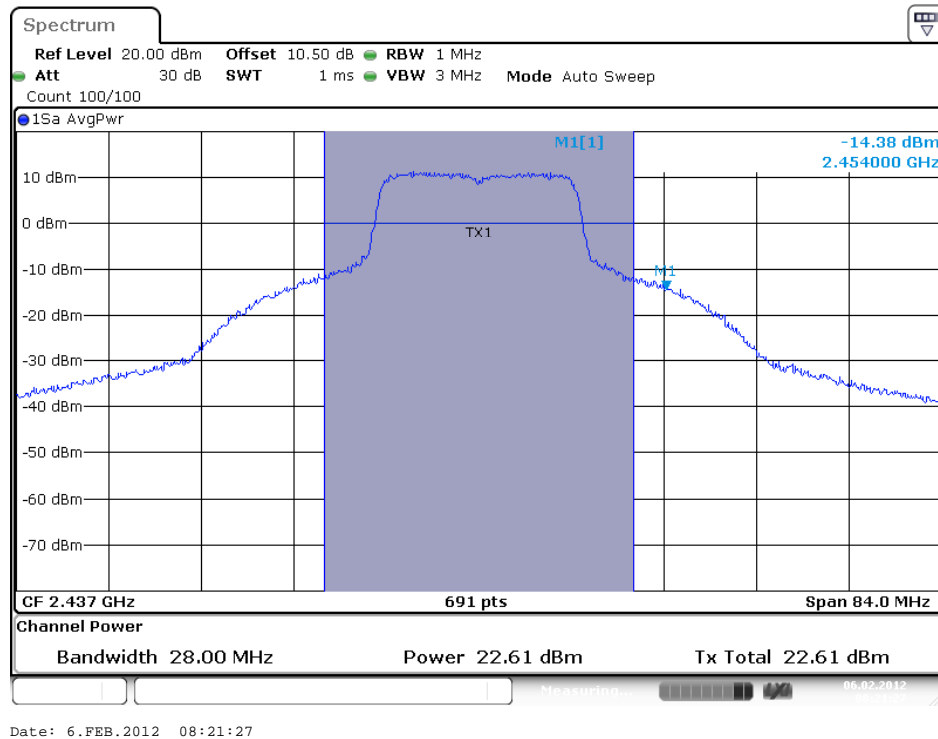
Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	18.41	30.00	Complies
6	2437 MHz	22.95	30.00	Complies
11	2462 MHz	19.09	30.00	Complies

#### Configuration IEEE 802.11g / Chain 1 + Chain 2 (2TX, 2RX)

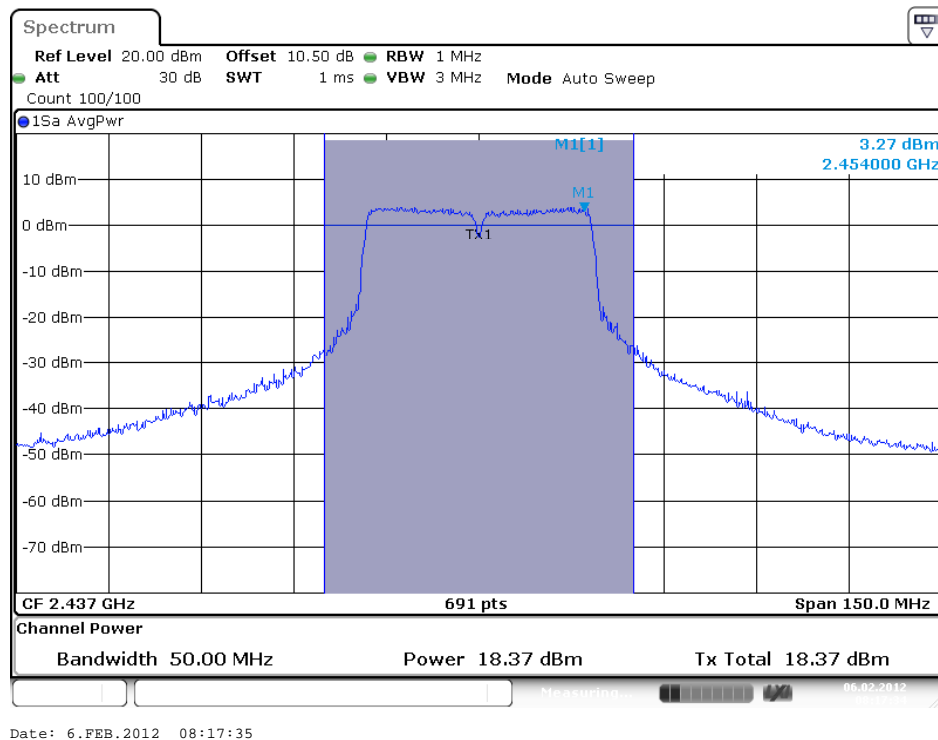
Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
1	2412 MHz	17.68	17.42	20.56	29.49	Complies
6	2437 MHz	22.65	22.14	25.41	29.49	Complies
11	2462 MHz	18.11	17.45	20.80	29.49	Complies

NOTE: Directional gain =  $3.5\text{dBi} + 10\log(2) = 6.5\text{dBi} > 6\text{dBi}$ , so the conducted power limit  
 $= 30 - (6.51 - 6) = 29.49\text{dBm}$ .

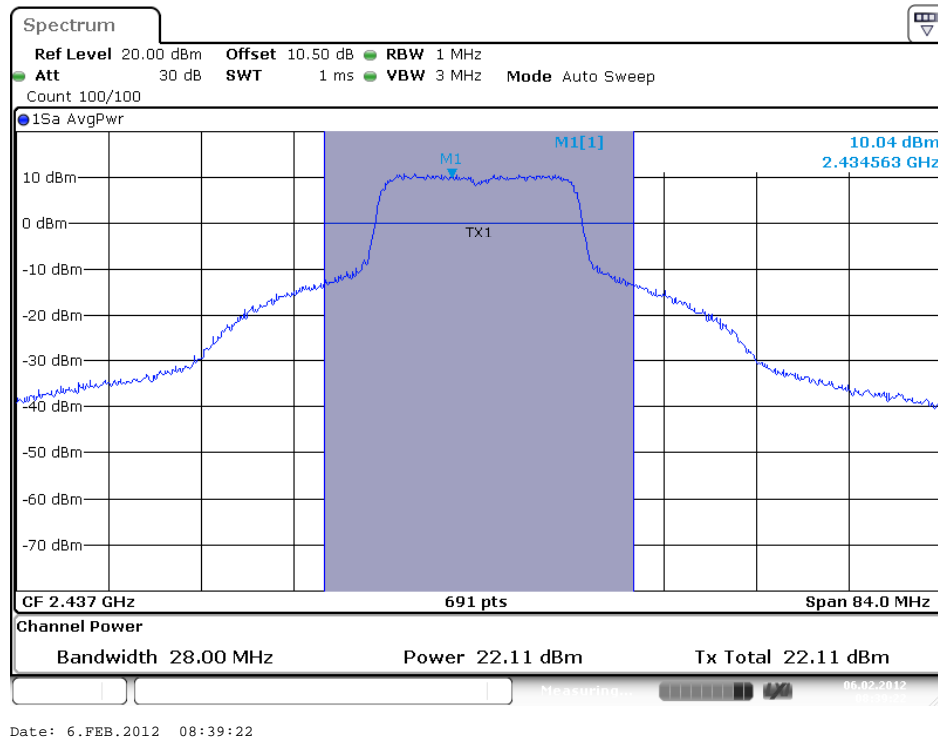
# Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / 2437 MHz/ Chain 1 / Mode 8 (1TX, 2RX)



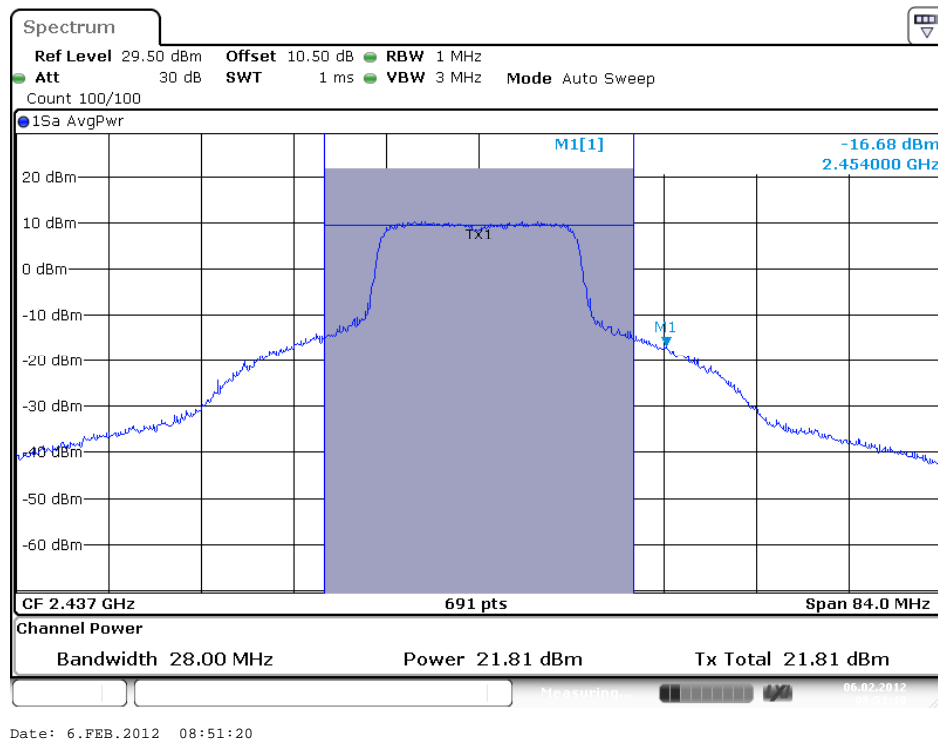
# Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 40MHz / Chain 1 / 2437 MHz / Mode 8 (1TX, 2RX)



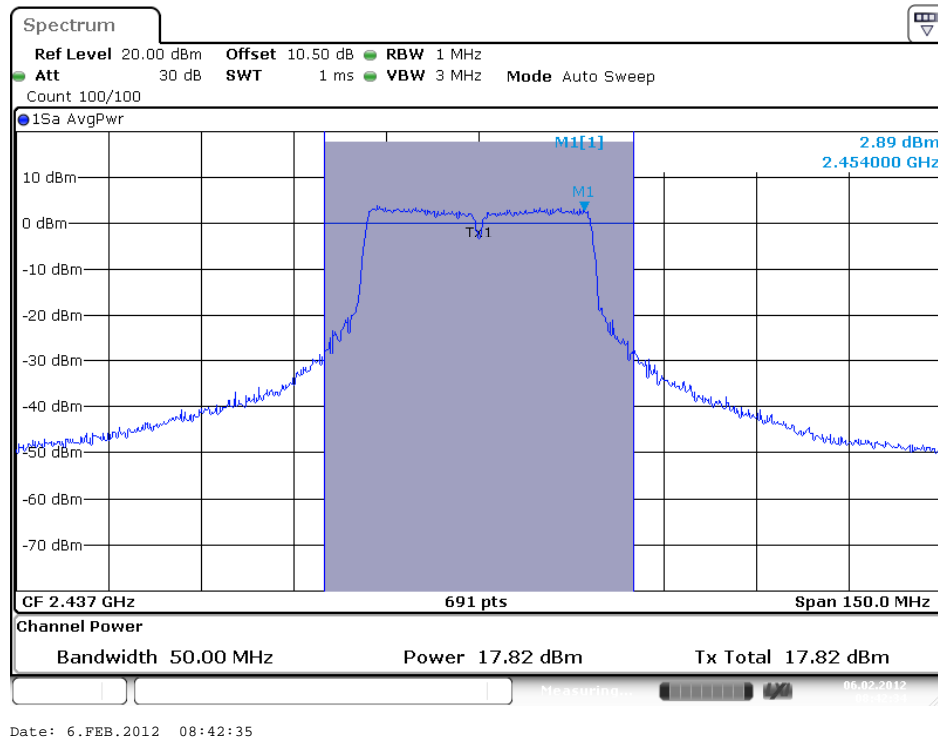
# Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / 2437 MHz/ Chain 1 / Mode 8 (2TX, 2RX)



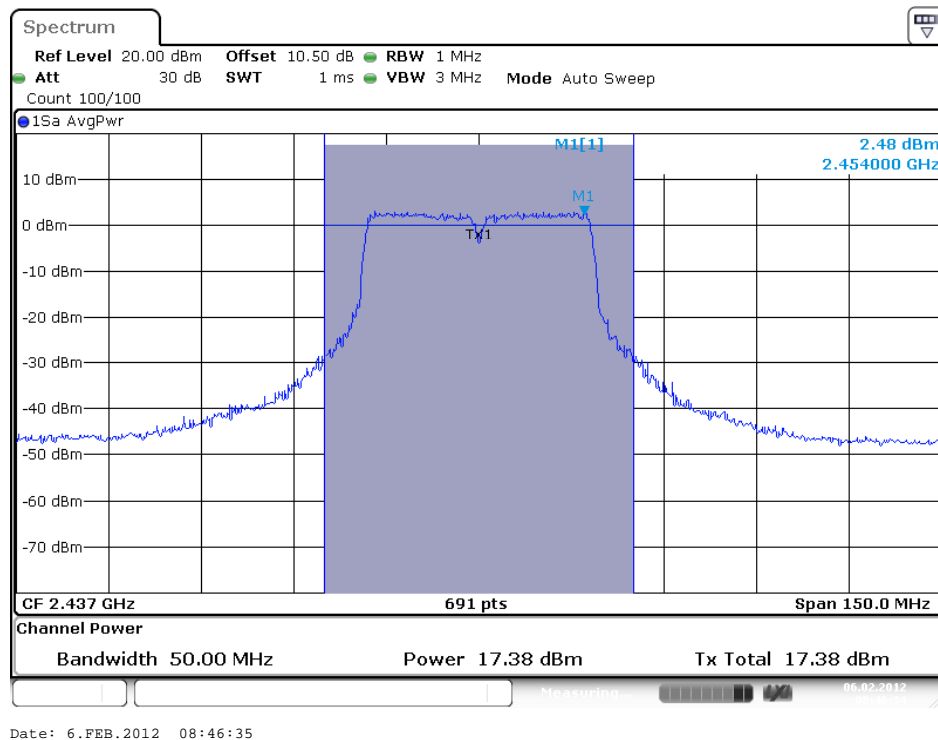
# Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / Chain 2 / 2437 MHz /Mode 8 (2TX, 2RX)



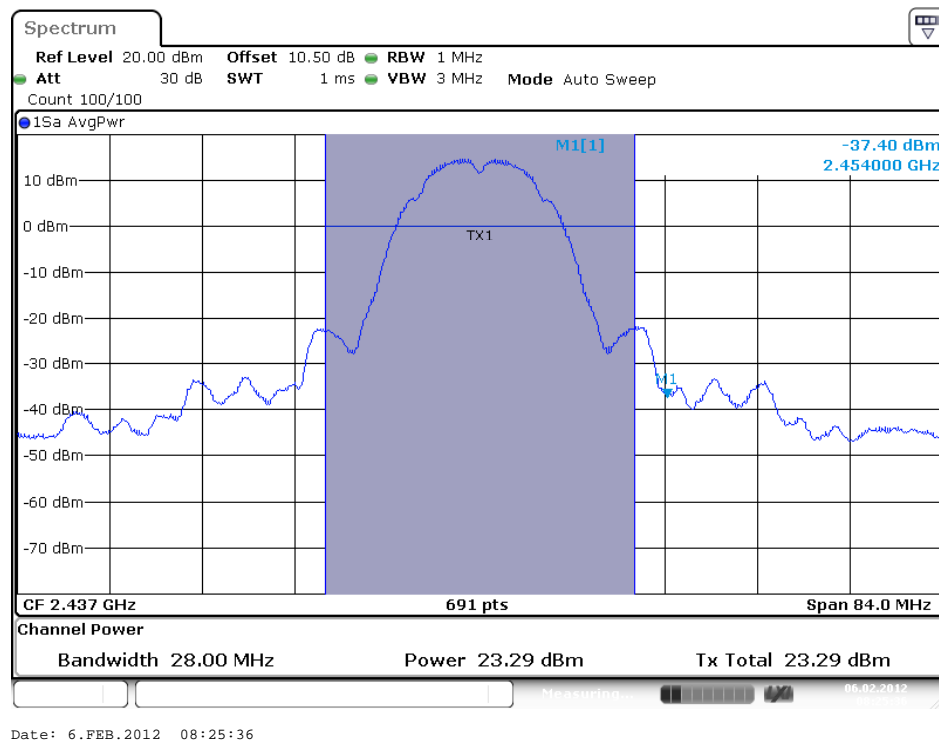
## Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 40MHz / Chain 1 / 2437 MHz /Mode 8 (2TX, 2RX)



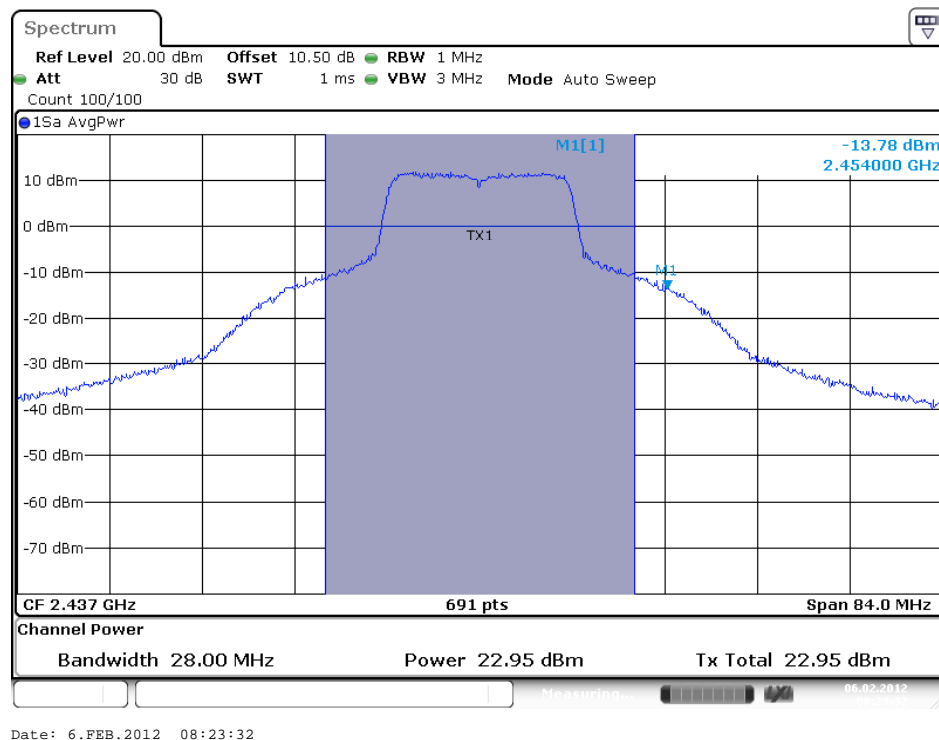
## Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 40MHz / Chain 2 / 2437 MHz /Mode 8 (2TX, 2RX)



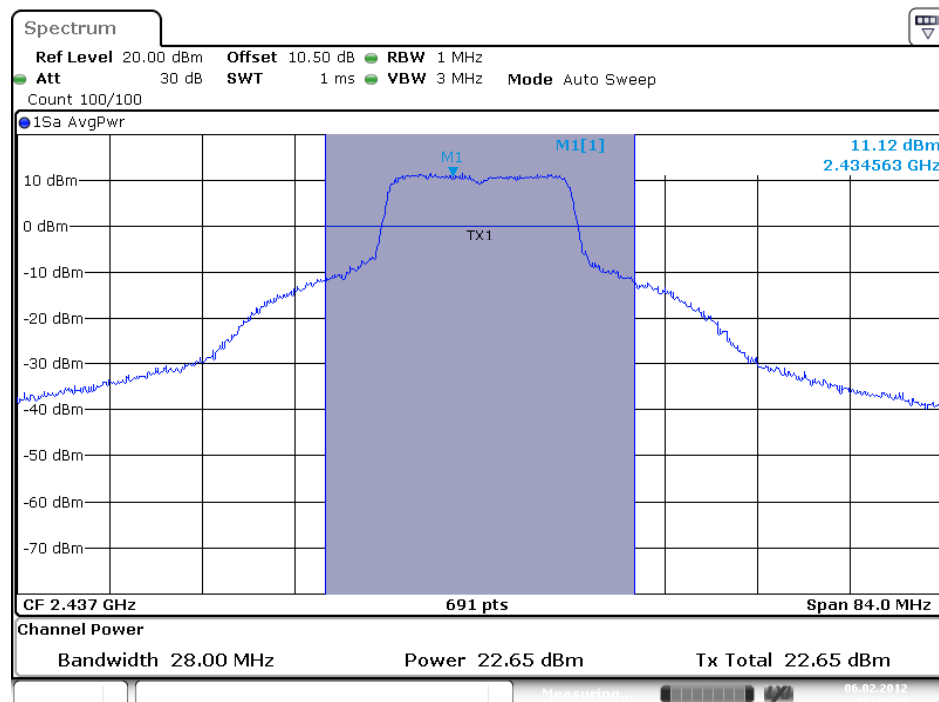
### Conducted Output Power Plot on Configuration IEEE 802.11b / Chain 1 / 2437 MHz/ Mode 8 (1TX, 2RX)



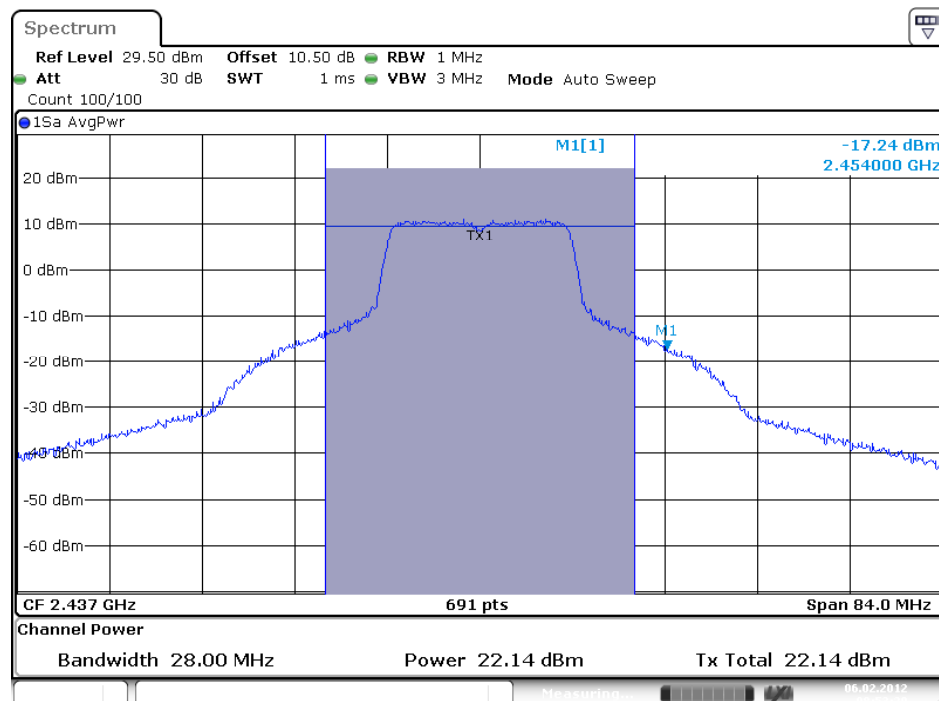
### Conducted Output Power Plot on Configuration IEEE 802.11g / Chain 1 / 2437 MHz/ Mode 8 (1TX, 2RX)



### Conducted Output Power Plot on Configuration IEEE 802.11g / Chain 1 / 2437 MHz/ Mode 8 (2TX, 2RX)



### Conducted Output Power Plot on Configuration IEEE 802.11g / Chain 2 / 2437 MHz/ Mode 8 (2TX, 2RX)



Temperature	25°C	Humidity	56%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11n
Test Date	Feb. 06, 2012	Test Mode	Mode 9

#### Configuration IEEE 802.11n MCS0 20MHz (2TX, 2RX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Peak Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
149	5745 MHz	19.49	19.31	22.41	28.39	Complies
157	5785 MHz	19.13	19.83	22.50	28.39	Complies
165	5825 MHz	19.47	19.86	22.68	28.39	Complies

NOTE: Directional gain = 4.6dBi + 10log(2)=7.61dBi > 6dBi, so the Power Spectral Density limit  
= 30-(7.61-6)=28.39dBm.

#### Configuration IEEE 802.11n MCS0 40MHz (2TX, 2RX)

Channel	Frequency	Conducted Power (dBm)		Total Conducted Peak Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
151	5755 MHz	19.78	19.80	22.80	28.39	Complies
159	5795 MHz	19.17	19.54	22.37	28.39	Complies

NOTE: Directional gain = 4.6dBi + 10log(2)=7.61dBi > 6dBi, so the Power Spectral Density limit  
= 30-(7.61-6)=28.39dBm.

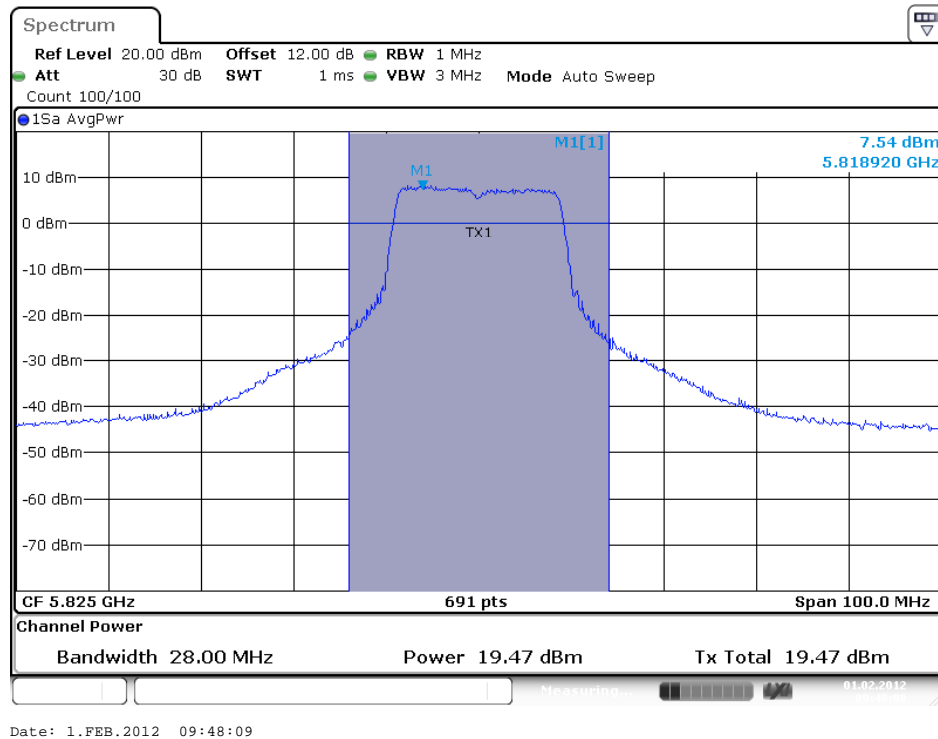
Temperature	25°C	Humidity	56%
Test Engineer	Satoshi Yang	Configurations	IEEE 802.11a
Test Date	Feb. 06, 2012	Test Mode	Mode 8

#### Configuration IEEE 802.11a / Chain 1 + Chain 2 (2TX, 2RX)

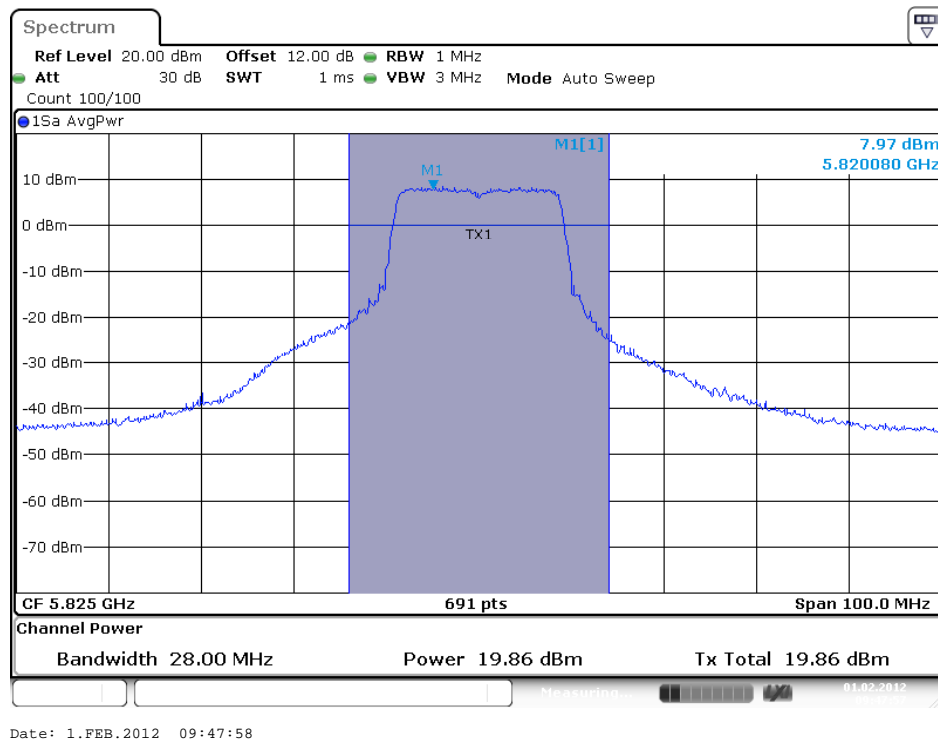
Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2			
149	5745 MHz	19.20	20.17	22.72	28.39	Complies
157	5785 MHz	19.23	20.98	23.20	28.39	Complies
165	5825 MHz	19.39	21.48	23.57	28.39	Complies

NOTE: Directional gain = 4.6dBi + 10log(2)=7.61dBi > 6dBi, so the Power Spectral Density limit  
= 30-(7.61-6)=28.39dBm.

# Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / 5825 MHz/ Chain 1 / Mode 9 (2TX, 2RX)

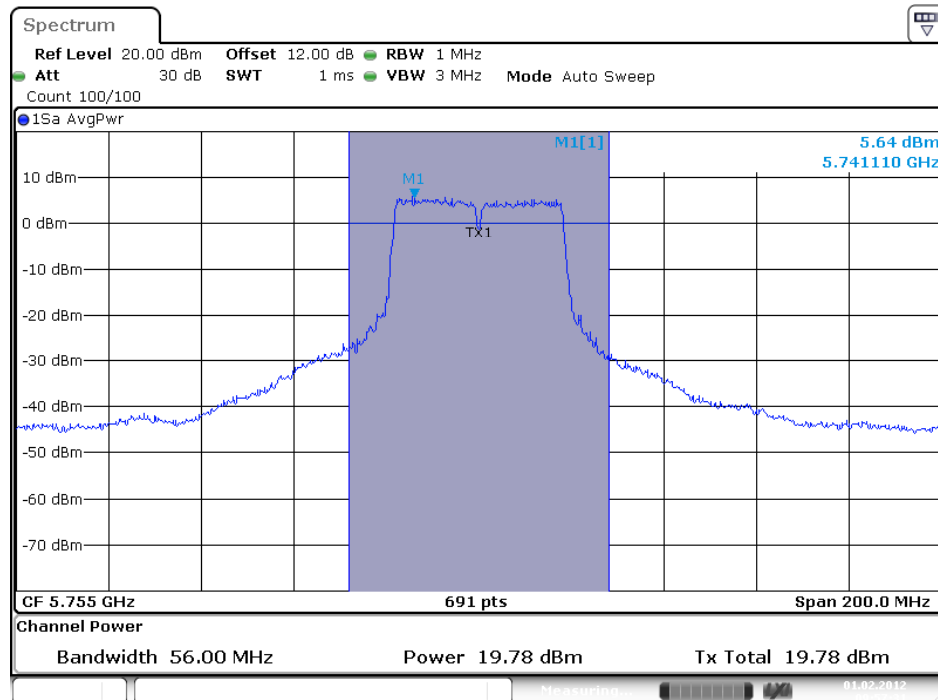


# Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / 5825 MHz/ Chain 2 / Mode 9 (2TX, 2RX)



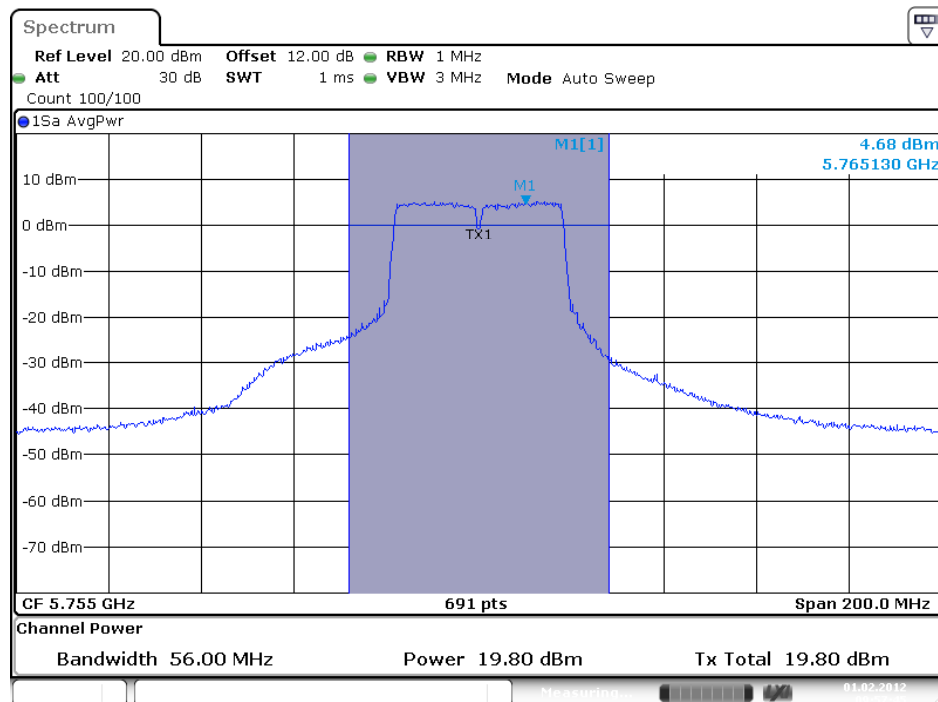


## Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 40MHz / 5755 MHz/ Chain 1 / Mode 9 (2TX, 2RX)



Date: 1.FEB.2012 09:57:32

## Conducted Output Power Plot on Configuration IEEE 802.11n MCS0 20MHz / 5755 MHz/ Chain 2 / Mode 9 (2TX, 2RX)



Date: 1.FEB.2012 09:57:46