

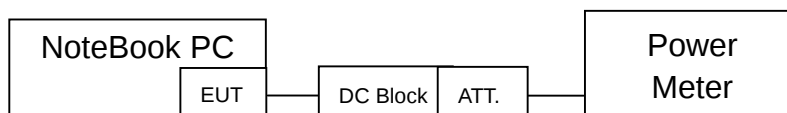
4 Maximum Peak output power test

4.1 Limit

According to FCC Part15.247 (b)(3) requirement :

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: The maximum conducted output power shall be less than 1Watt.

4.2 Configuration of Measurement



4.3 Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

For FCC §15.247(b) the power output was measured on the EUT using a 50 ohm SMA cable connected to peak power meter via power sensor. Peak output power was read directly from power meter. The test was performed at 3 channels (lowest, middle and highest).

4.4 Test Result

PASS.

The final test data is shown on as following pages.

Maximum output power

2.4GHz

Single Tx

Mode : 802.11 b Chain A				
CH	Temp. (°C)	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
1	26	17.49	30	-12.51
6	26	17.80	30	-12.20
11	26	17.32	30	-12.68

Mode : 802.11 b Chain B				
CH	Temp. (°C)	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
1	26	17.08	30	-12.92
6	26	17.43	30	-12.57
11	26	17.00	30	-13.00

Mode : 802.11 b Chain C				
CH	Temp. (°C)	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
1	26	17.75	30	-12.25
6	26	16.88	30	-13.12
11	26	17.25	30	-12.75

Mode : 802.11 g Chain A				
CH	Temp. (°C)	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
1	26	13.93	30	-16.07
6	26	13.97	30	-16.03
11	26	13.27	30	-16.73

Mode : 802.11 g Chain B				
CH	Temp. (°C)	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
1	26	14.18	30	-15.82
6	26	13.82	30	-16.18
11	26	13.71	30	-16.29

Mode : 802.11 g Chain C				
CH	Temp. (°C)	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
1	26	12.72	30	-17.28
6	26	12.78	30	-17.22
11	26	15.15	30	-14.85

Mode : 802.11 n (HT20) Chain A				
CH	Temp. (°C)	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
1	26	13.77	30	-16.23
6	26	13.57	30	-16.43
11	26	13.31	30	-16.69

Mode : 802.11 n (HT20) Chain B				
CH	Temp. (°C)	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
1	26	12.28	30	-17.72
6	26	12.19	30	-17.81
11	26	12.20	30	-17.80

Mode : 802.11 n (HT20) Chain C				
CH	Temp. (°C)	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
1	26	12.50	30	-17.50
6	26	12.30	30	-17.70
11	26	14.56	30	-15.44

Mode : 802.11 n (HT40) Chain A				
CH	Temp. (°C)	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
3	26	11.35	30	-18.65
6	26	11.10	30	-18.90
9	26	10.81	30	-19.19

Mode : 802.11 n (HT40) Chain B				
CH	Temp. (°C)	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
3	26	11.66	30	-18.34
6	26	11.53	30	-18.47
9	26	11.60	30	-18.40

Mode : 802.11 n (HT40) Chain C				
CH	Temp. (°C)	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
3	26	11.27	30	-18.73
6	26	11.59	30	-18.41
9	26	12.76	30	-17.24

5GHz

Single Tx

Mode : 802.11 a Chain A				
CH	Temp. (°C)	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
149	26	15.69	30	-14.31
157	26	15.34	30	-14.66
165	26	15.28	30	-14.72

Mode : 802.11 a Chain B				
CH	Temp. (°C)	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
149	26	15.15	30	-14.85
157	26	15.72	30	-14.28
165	26	15.19	30	-14.81

Mode : 802.11 a Chain C				
CH	Temp. (°C)	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
149	26	13.44	30	-16.56
157	26	16.07	30	-13.93
165	26	13.23	30	-16.77

Mode : 802.11 n (HT20) Chain A				
CH	Temp. (°C)	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
149	26	15.53	30	-14.47
157	26	15.67	30	-14.33
165	26	15.24	30	-14.76

Mode : 802.11 n (HT20) Chain B				
CH	Temp. (°C)	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
149	26	15.06	30	-14.94
157	26	15.70	30	-14.30
165	26	15.17	30	-14.83

Mode : 802.11 n (HT20) Chain C				
CH	Temp. (°C)	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
149	26	13.26	30	-16.74
157	26	15.94	30	-14.06
165	26	13.02	30	-16.98

Mode : 802.11 n (HT40) Chain A				
CH	Temp. (°C)	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
151	26	15.43	30	-14.57
159	26	15.65	30	-14.35

Mode : 802.11 n (HT40) Chain B				
CH	Temp. (°C)	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
151	26	15.28	30	-14.72
159	26	15.63	30	-14.37

Mode : 802.11 n (HT40) Chain C				
CH	Temp. (°C)	Maximum transmit power (dBm)	Limit (dBm)	Margin (dB)
151	26	14.07	30	-15.93
159	26	15.48	30	-14.52

2.4GHz

Dual Tx

Mode : 802.11 n (HT20) Chain A+B						
CH	Temp. (°C)	Maximum transmit power (dBm)		Total Output Power (dBm)	Limit (dBm)	Margin (dB)
		Chain A	Chain B			
1	26	12.01	12.31	15.17	30	-14.83
6	26	11.61	12.17	14.91	30	-15.09
11	26	11.23	11.98	14.63	30	-15.37

Mode : 802.11 n (HT20) Chain B+C						
CH	Temp. (°C)	Maximum transmit power (dBm)		Total Output Power (dBm)	Limit (dBm)	Margin (dB)
		Chain B	Chain C			
1	26	12.63	11.76	15.23	30	-14.77
6	26	12.26	11.86	15.07	30	-14.93
11	26	12.16	13.63	15.97	30	-14.03

Mode : 802.11 n (HT20) Chain A+C						
CH	Temp. (°C)	Maximum transmit power (dBm)		Total Output Power (dBm)	Limit (dBm)	Margin (dB)
		Chain A	Chain C			
1	26	12.15	11.51	14.85	30	-15.15
6	26	11.67	11.53	14.61	30	-15.39
11	26	11.47	13.74	15.76	30	-14.24

Mode : 802.11 n (HT40) Chain A+B						
CH	Temp. (°C)	Maximum transmit power (dBm)		Total Output Power (dBm)	Limit (dBm)	Margin (dB)
		Chain A	Chain B			
3	26	8.71	9.42	12.09	30	-17.91
6	26	8.38	8.98	11.70	30	-18.30
9	26	8.53	9.08	11.82	30	-18.18

Mode : 802.11 n (HT40) Chain B+C						
CH	Temp. (°C)	Maximum transmit power (dBm)		Total Output Power (dBm)	Limit (dBm)	Margin (dB)
		Chain B	Chain C			
3	26	10.13	10.65	13.41	30	-16.59
6	26	10.47	10.52	13.51	30	-16.49
9	26	10.23	10.14	13.20	30	-16.80

Mode : 802.11 n (HT40) Chain A+C						
CH	Temp. (°C)	Maximum transmit power (dBm)		Total Output Power (dBm)	Limit (dBm)	Margin (dB)
		Chain A	Chain C			
3	26	9.91	10.57	13.26	30	-16.74
6	26	9.67	10.34	13.03	30	-16.97
9	26	9.30	9.97	12.66	30	-17.34

5GHz

Dual Tx

Mode : 802.11 n (HT20) Chain A+B						
CH	Temp. (°C)	Maximum transmit power (dBm)		Total Output Power (dBm)	Limit (dBm)	Margin (dB)
		Chain A	Chain B			
149	26	13.80	15.96	18.02	30	-11.98
157	26	13.77	16.54	18.38	30	-11.62
165	26	13.40	16.27	18.08	30	-11.92

Mode : 802.11 n (HT20) Chain B+C						
CH	Temp. (°C)	Maximum transmit power (dBm)		Total Output Power (dBm)	Limit (dBm)	Margin (dB)
		Chain B	Chain C			
149	26	15.77	11.23	17.08	30	-12.92
157	26	16.67	14.04	18.56	30	-11.44
165	26	16.24	11.20	17.42	30	-12.58

Mode : 802.11 n (HT20) Chain A+C						
CH	Temp. (°C)	Maximum transmit power (dBm)		Total Output Power (dBm)	Limit (dBm)	Margin (dB)
		Chain A	Chain C			
149	26	13.96	11.18	15.80	30	-14.20
157	26	13.92	14.41	17.18	30	-12.82
165	26	14.20	11.28	15.99	30	-14.01

Mode : 802.11 n (HT40) Chain A+B						
CH	Temp. (°C)	Maximum transmit power (dBm)		Total Output Power (dBm)	Limit (dBm)	Margin (dB)
		Chain A	Chain B			
151	26	14.17	16.05	18.22	30	-11.78
159	26	13.91	16.78	18.59	30	-11.41

Mode : 802.11 n (HT40) Chain B+C						
CH	Temp. (°C)	Maximum transmit power (dBm)		Total Output Power (dBm)	Limit (dBm)	Margin (dB)
		Chain B	Chain C			
151	26	16.21	12.00	17.61	30	-12.39
159	26	16.68	13.53	18.39	30	-11.61

Mode : 802.11 n (HT40) Chain A+C						
CH	Temp. (°C)	Maximum transmit power (dBm)		Total Output Power (dBm)	Limit (dBm)	Margin (dB)
		Chain A	Chain C			
151	26	14.00	12.52	16.33	30	-13.67
159	26	13.95	13.52	16.75	30	-13.25

2.4GHz

Triple Tx

Mode : 802.11 n (HT20) Chain A+B+C							
CH	Temp. (°C)	Maximum transmit power (dBm)			Total Output Power (dBm)	Limit (dBm)	Margin (dB)
		Chain A	Chain B	Chain C			
1	25	9.59	10.30	8.98	14.43	30	-15.57
6	25	9.87	10.00	9.69	14.63	30	-15.37
11	25	9.92	9.96	11.95	15.49	30	-14.51

Mode : 802.11 n (HT40) Chain A+B+C							
CH	Temp. (°C)	Maximum transmit power (dBm)			Total Output Power (dBm)	Limit (dBm)	Margin (dB)
		Chain A	Chain B	Chain C			
3	25	8.63	8.93	8.23	13.38	30	-16.62
6	25	8.47	8.72	8.45	13.32	30	-16.68
9	25	8.65	8.91	9.90	13.96	30	-16.04

5GHz

Triple Tx

Mode : 802.11 n (HT20) Chain A+B+C							
CH	Temp. (°C)	Maximum transmit power (dBm)			Total Output Power (dBm)	Limit (dBm)	Margin (dB)
		Chain A	Chain B	Chain C			
149	25	13.46	15.54	10.77	18.45	30	-11.55
157	25	13.96	16.28	13.70	19.58	30	-10.42
165	25	13.04	16.20	10.78	18.68	30	-11.32

Mode : 802.11 n (HT40) Chain A+B+C							
CH	Temp. (°C)	Maximum transmit power (dBm)			Total Output Power (dBm)	Limit (dBm)	Margin (dB)
		Chain A	Chain B	Chain C			
151	25	13.45	15.76	11.54	18.70	30	-11.30
159	25	13.78	16.39	12.87	19.38	30	-10.62

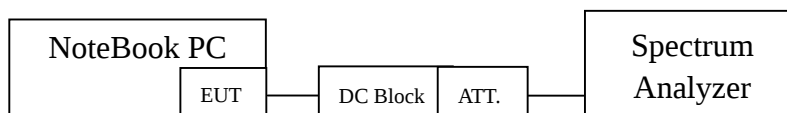
5 6dB Bandwidth

5.1 Limit

According to FCC Part15.247 (a)(2) requirement :

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6dB bandwidth shall be at least 500 kHz.

5.2 Configuration of Measurement



5.3 Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The minimum 6dB bandwidth was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at 100kHz, the video bandwidth set $\geq$ RBW, and the SPAN>>RBW. The test was performed at 3 channels (lowest, middle and highest).

5.4 Test Result

PASS.

The final test data is shown on as following pages.

6dB bandwidth

2.4GHz

Test Mode : 802.11b					
CH No.	Freq. (MHz)	6dB Bandwidth (MHz)			Limit (kHz)
		Chain A	Chain B	Chain C	
1	2412	10.32	11.16	12.12	>500
6	2437	10.32	10.28	11.20	>500
11	2462	11.20	11.20	11.20	>500

Test Mode : 802.11g					
CH No.	Freq. (MHz)	6dB Bandwidth (MHz)			Limit (kHz)
		Chain A	Chain B	Chain C	
1	2412	16.44	16.44	16.48	>500
6	2437	16.40	16.40	16.44	>500
11	2462	16.44	16.48	16.48	>500

Test Mode : 802.11n (HT20)					
CH No.	Freq. (MHz)	6dB Bandwidth (MHz)			Limit (kHz)
		Chain A	Chain B	Chain C	
1	2412	17.44	17.68	17.64	>500
6	2437	17.40	17.44	17.68	>500
11	2462	17.64	17.64	17.68	>500

Test Mode : 802.11n (HT40)					
CH No.	Freq. (MHz)	6dB Bandwidth (MHz)			Limit (kHz)
		Chain A	Chain B	Chain C	
1	2412	35.36	35.28	35.36	>500
6	2437	35.52	35.36	35.36	>500
11	2462	35.52	35.36	35.36	>500

5GHz

Test Mode : 802.11a					
CH No.	Freq. (MHz)	6dB Bandwidth (MHz)			Limit (kHz)
		Chain A	Chain B	Chain C	
149	5745	16.44	16.44	16.44	>500
157	5785	16.44	16.44	16.44	>500
165	5825	16.44	16.44	16.48	>500

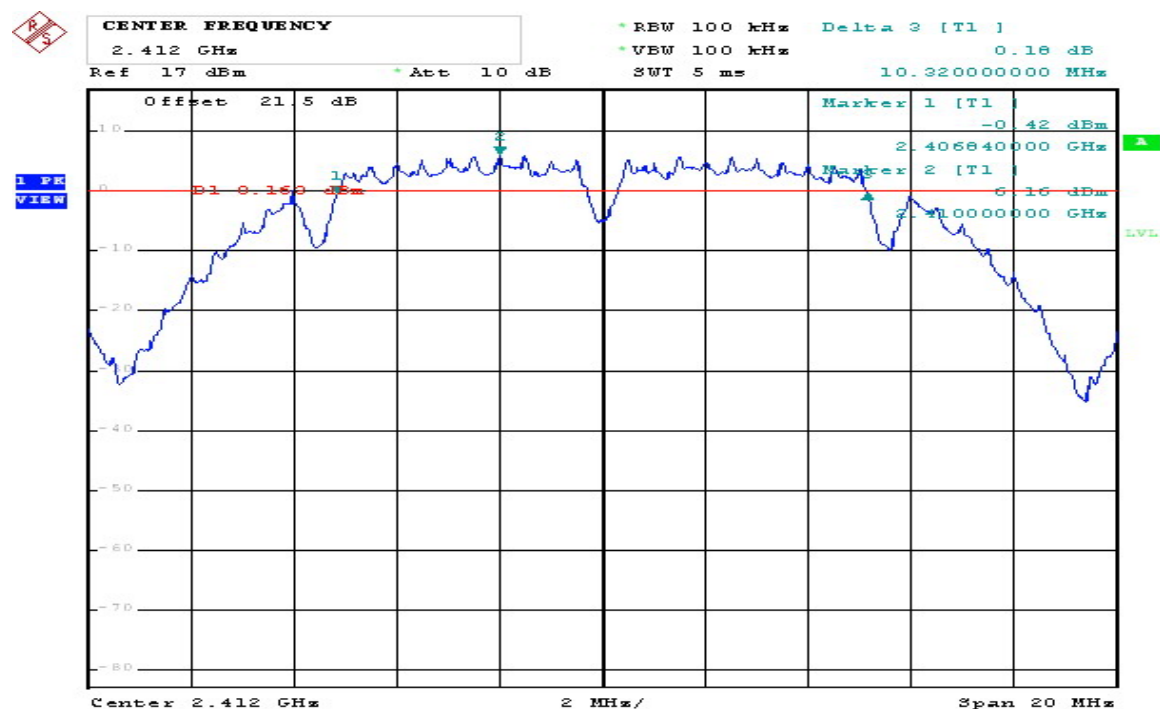
Test Mode : 802.11n (HT20)					
CH No.	Freq. (MHz)	6dB Bandwidth (MHz)			Limit (kHz)
		Chain A	Chain B	Chain C	
149	5745	17.68	17.64	17.28	>500
157	5785	17.68	17.64	17.44	>500
165	5825	17.40	17.64	17.64	>500

Test Mode : 802.11n (HT40)					
CH No.	Freq. (MHz)	6dB Bandwidth (MHz)			Limit (kHz)
		Chain A	Chain B	Chain C	
151	5755	35.36	35.60	35.52	>500
159	5795	35.36	35.52	35.52	>500

6dB Bandwidth

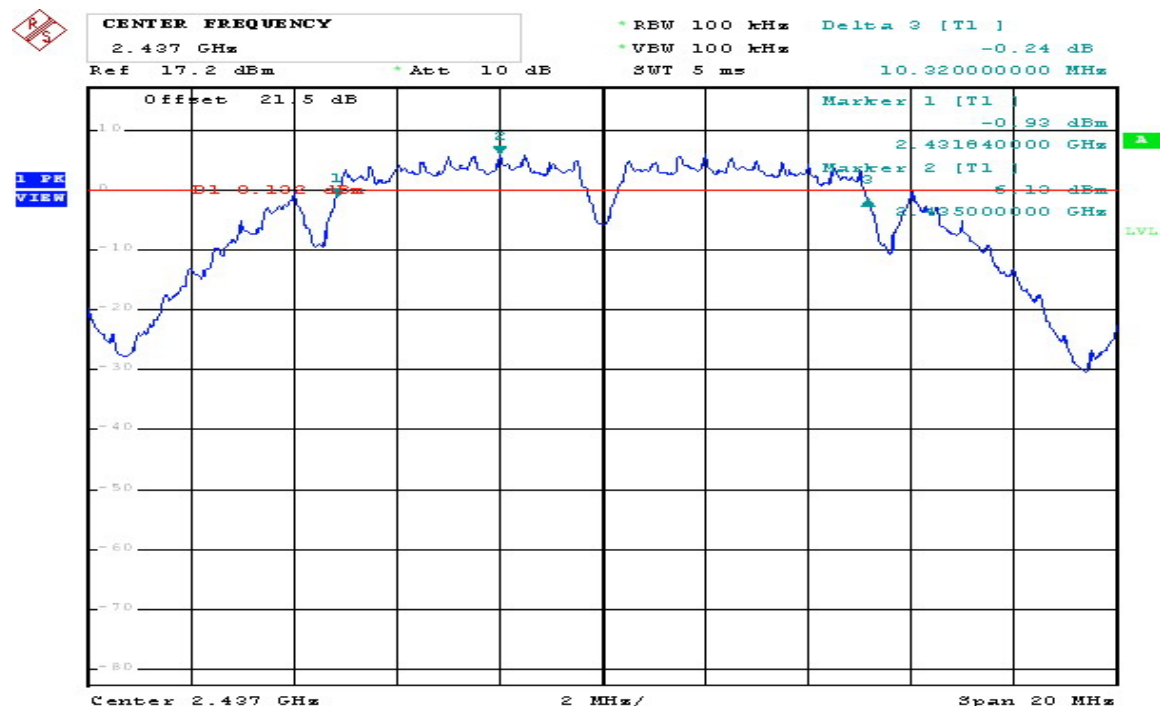
2.4GHz

802.11b CH1 2412MHz Chain A

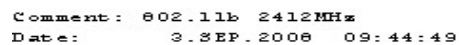
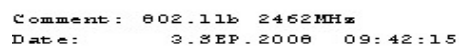


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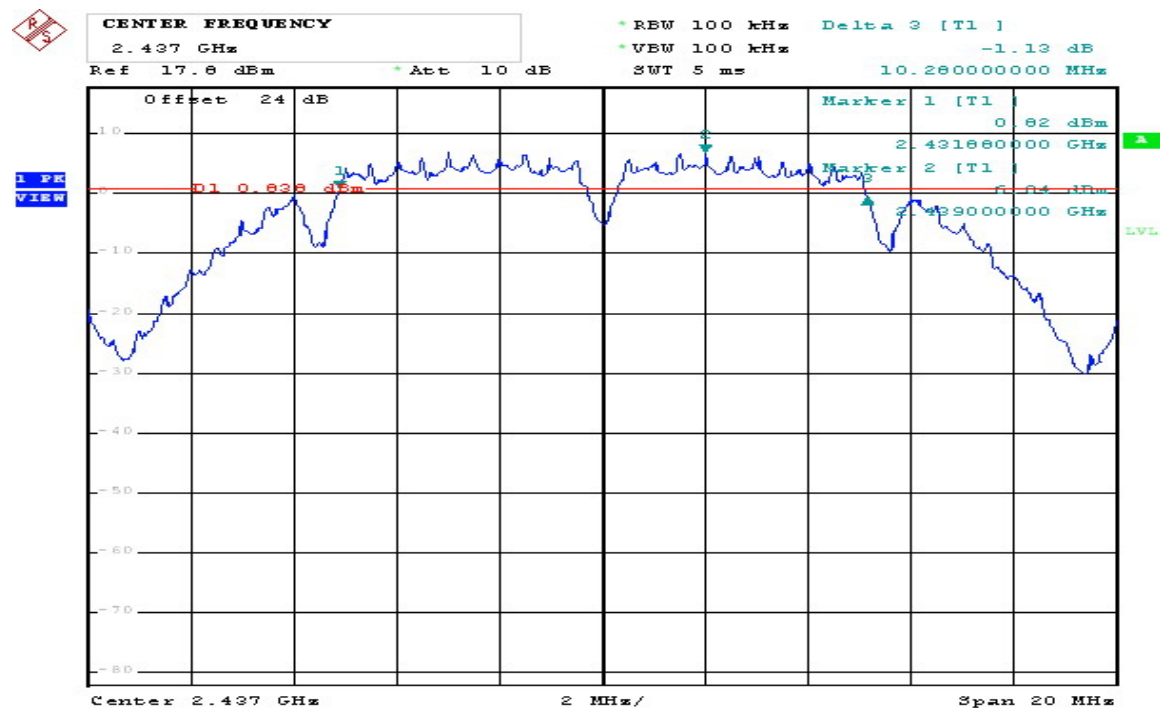
802.11b CH6 2437MHz Chain A



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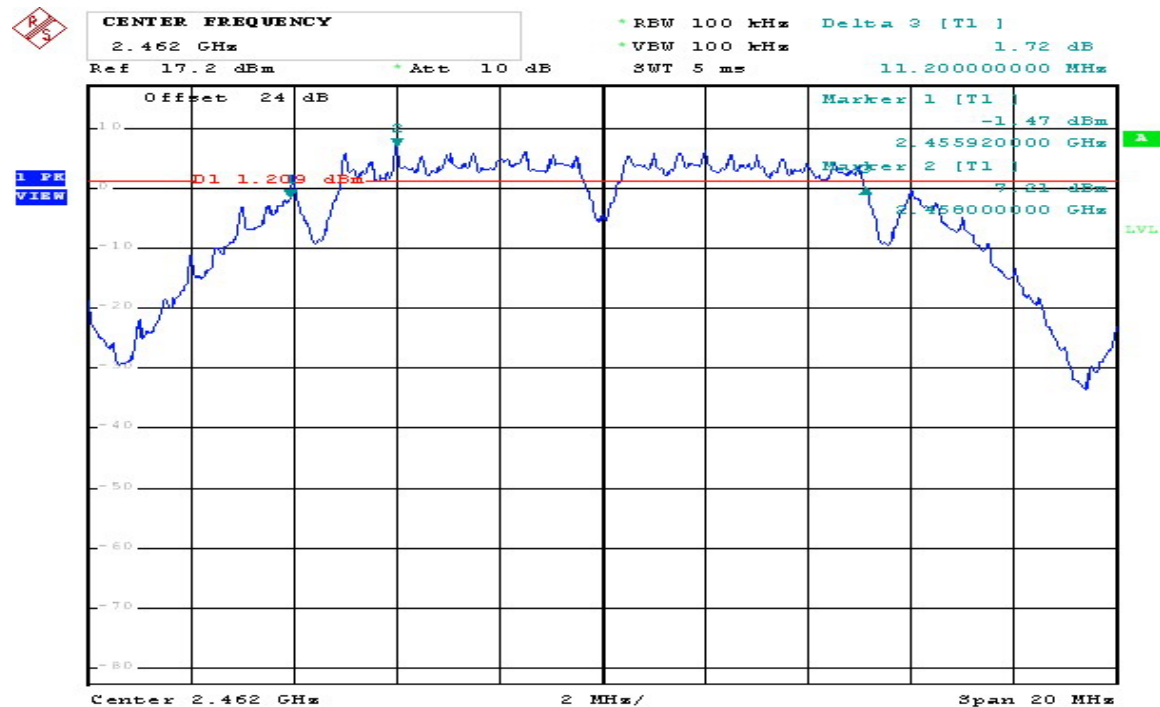


802.11b CH6 2437MHz Chain B



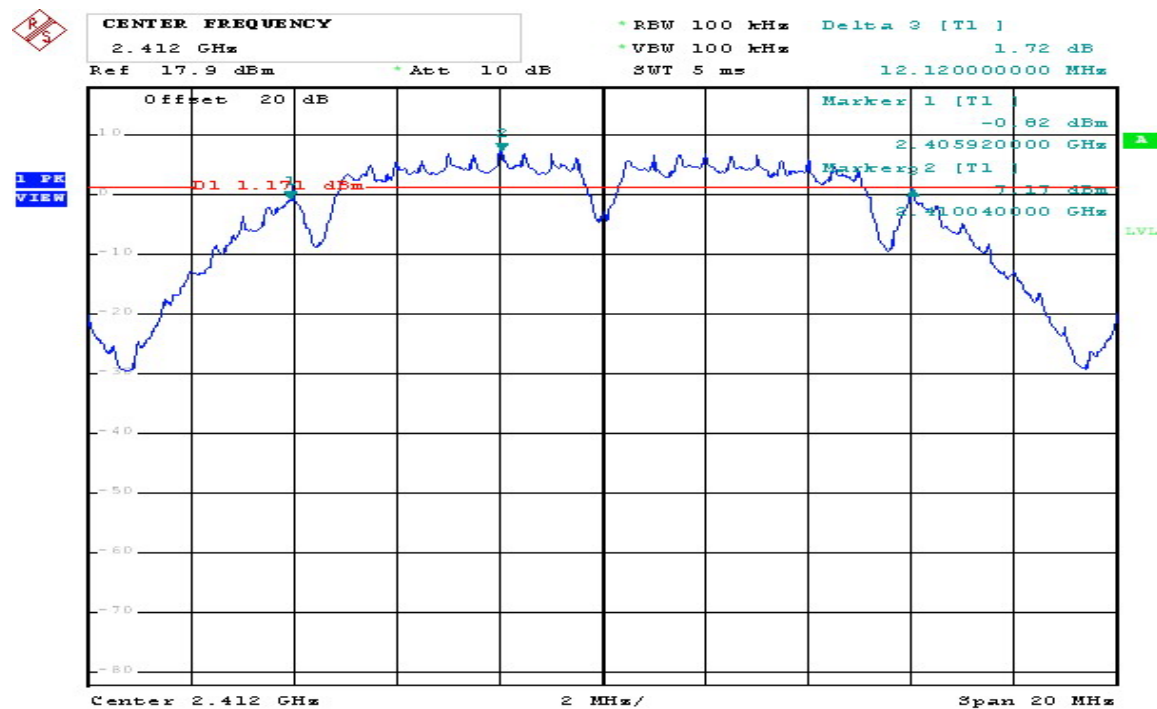
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802.11b CH11 2462MHz Chain B



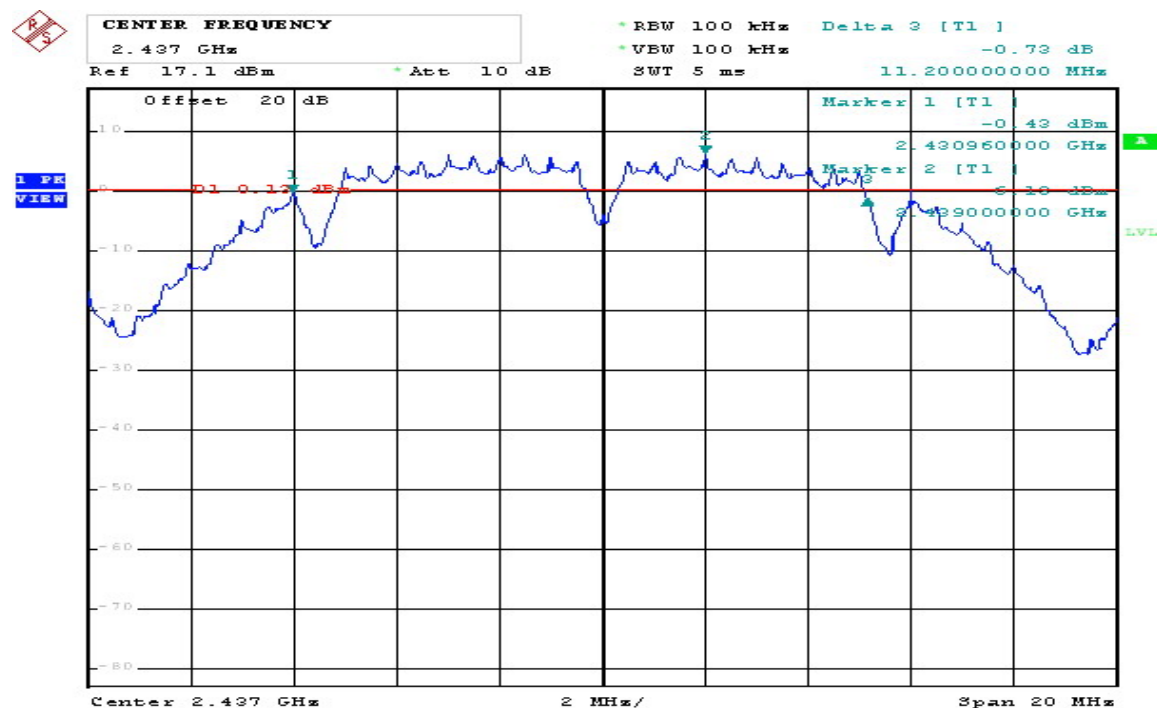
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802.11b CH1 2412MHz Chain C



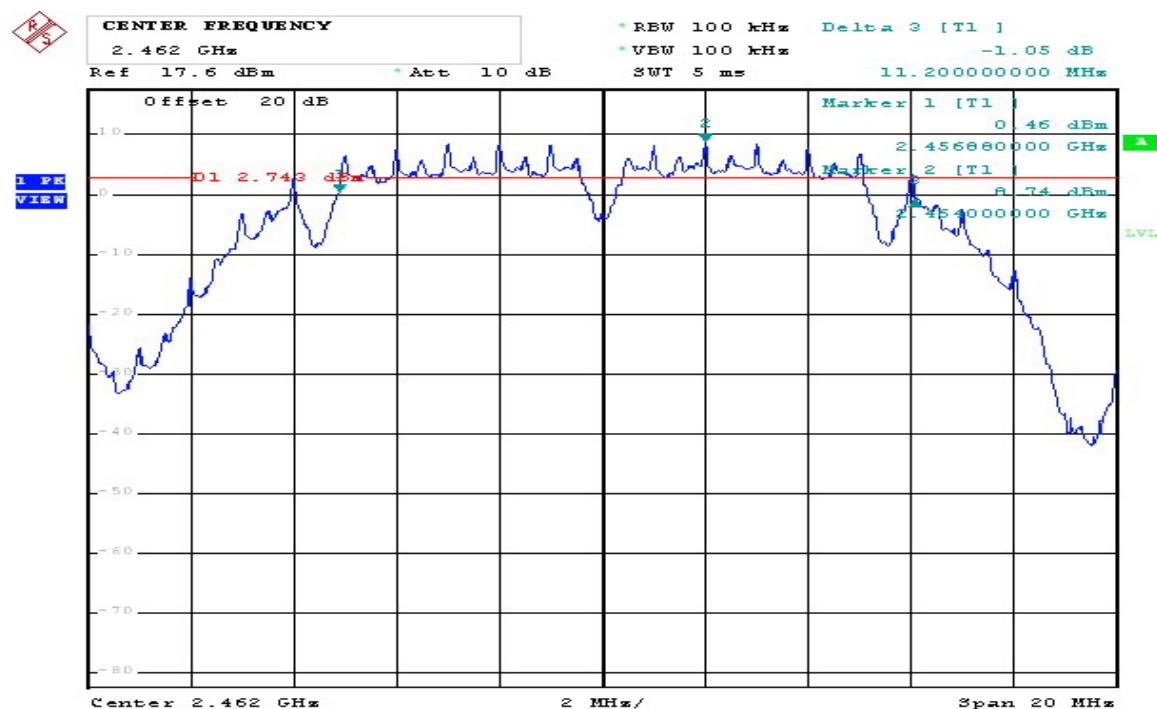
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802.11b CH6 2437MHz Chain C



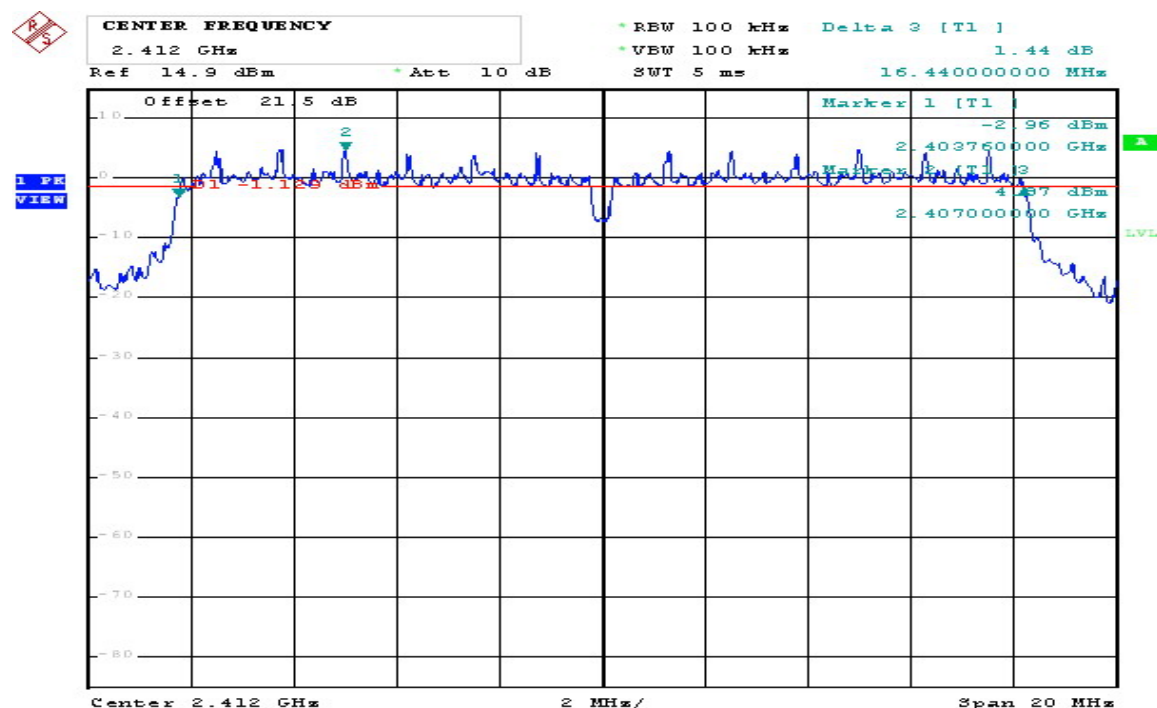
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802.11b CH11 2462MHz Chain C



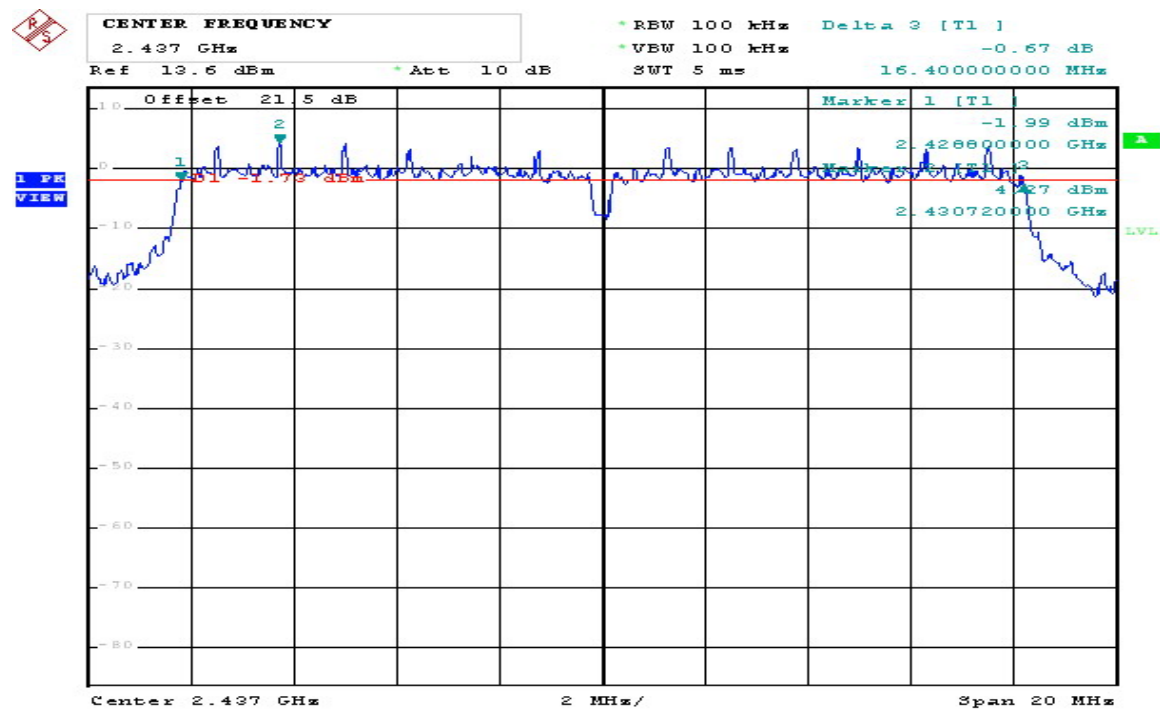
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802.11g CH1 2412MHz Chain A



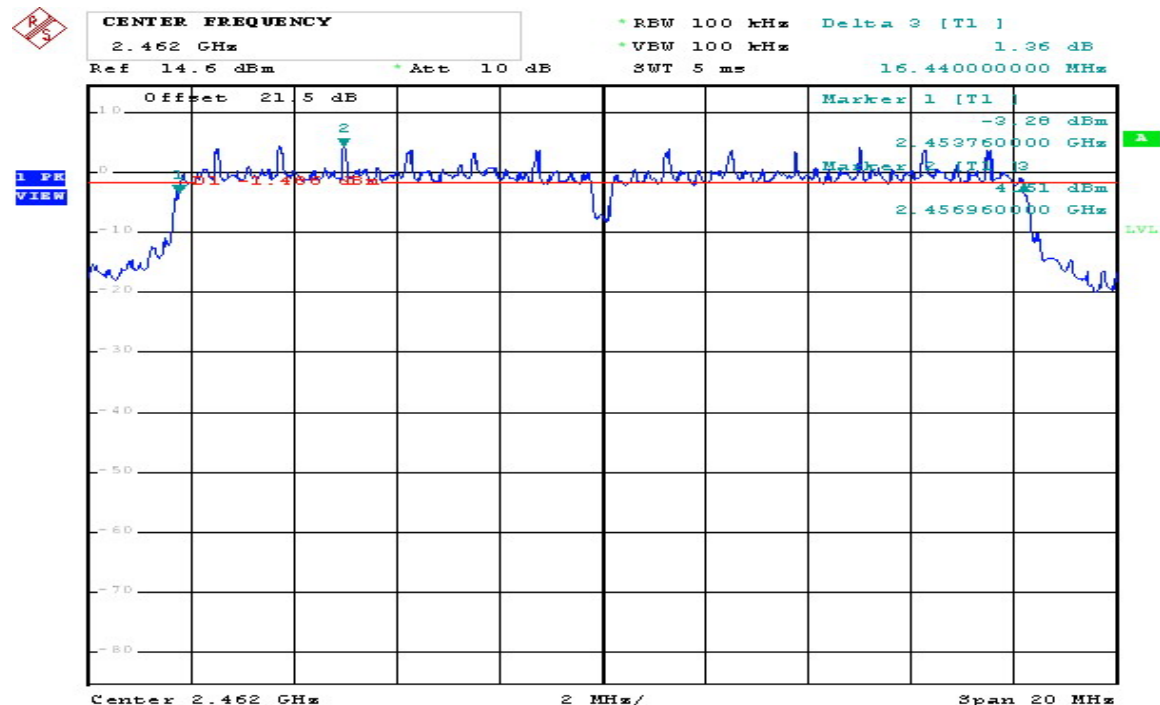
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802.11g CH6 2437MHz Chain A



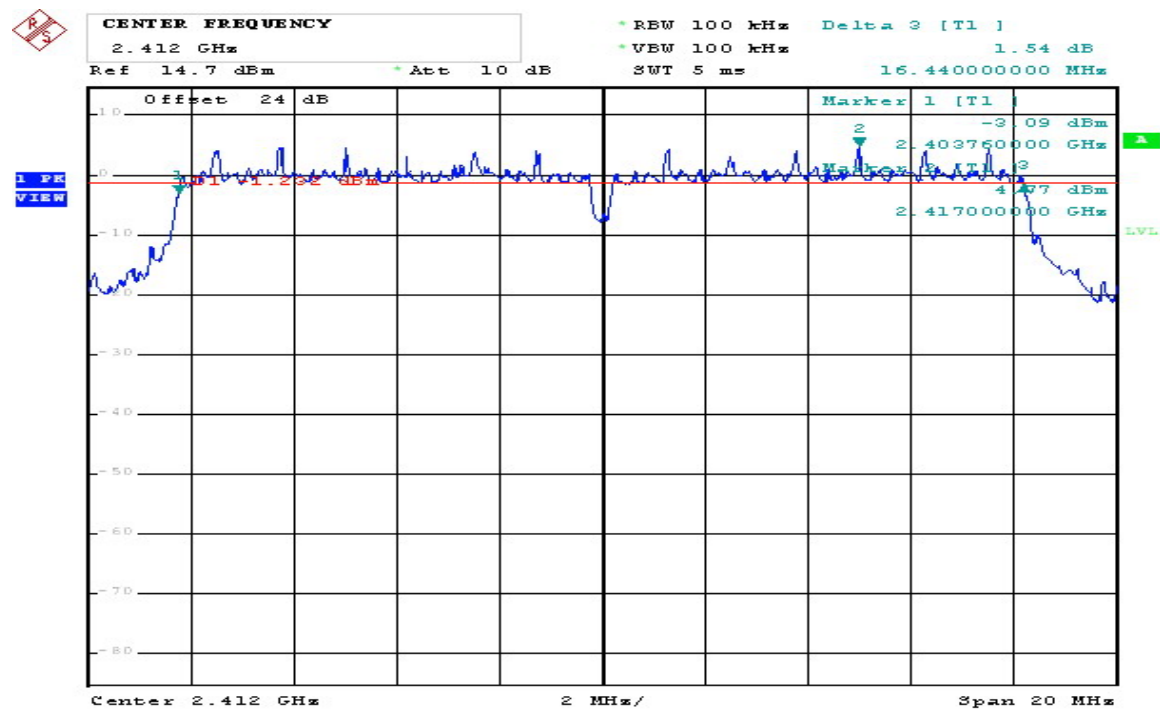
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802.11g CH11 2462MHz Chain A



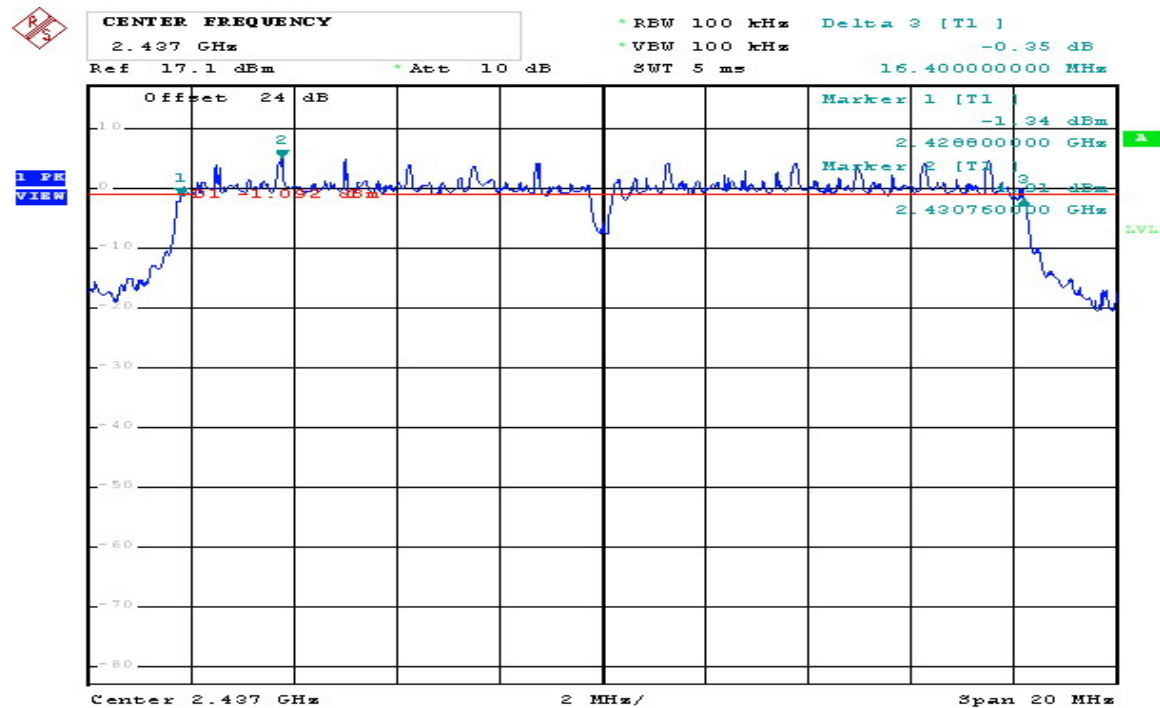
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Date: 3.SEP.2008 10:05:06

802.11g CH1 2412MHz Chain B



Comment: 802.11g 2412MHz
Date: 3.SEP.2008 10:16:24

802.11g CH6 2437MHz Chain B



Comment: 802.11g 2437MHz
Date: 3.SEP.2008 10:09:21

CENTER FREQUENCY
 2.462 GHz
 Ref 13.9 dBm Att 10 dB SWT 5 ms Delta 3 [T1 1] -0.71 dB 16.460000000 MHz

Offset 24 dB
 Marker 1 (T1) -2.97 dBm
 2.453750000 GHz
 2.455720000 GHz
 4.54 dBm
 LVL

Center 2.462 GHz 2 MHz/ Span 20 MHz

CENTER FREQUENCY
 2.412 GHz
 Ref 12 dBm Att 10 dB
 RBW 100 kHz VBW 100 kHz SWT 5 ms
 Delta 3 [T1] -0.18 dB
 16.460000000 MHz

Offset 20 dB
 Marker 1 (T1) -4.41 dBm
 2.403750000 GHz
 2.407000000 GHz
 3.40 dBm
 LVL

Center 2.412 GHz 2 MHz/ Span 20 MHz

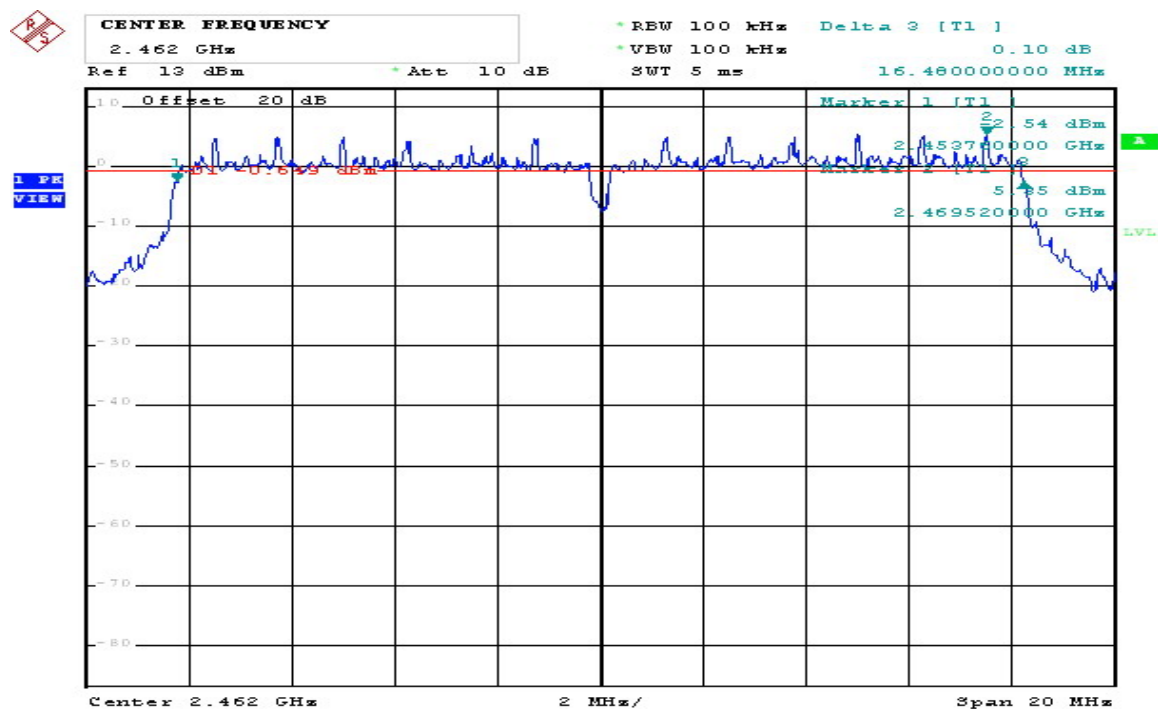
Test Report

802.11g CH6 2437MHz Chain C



Comment: 802.11g 2437MHz
Date: 3.SEP.2008 10:19:30

802.11g CH11 2462MHz Chain C



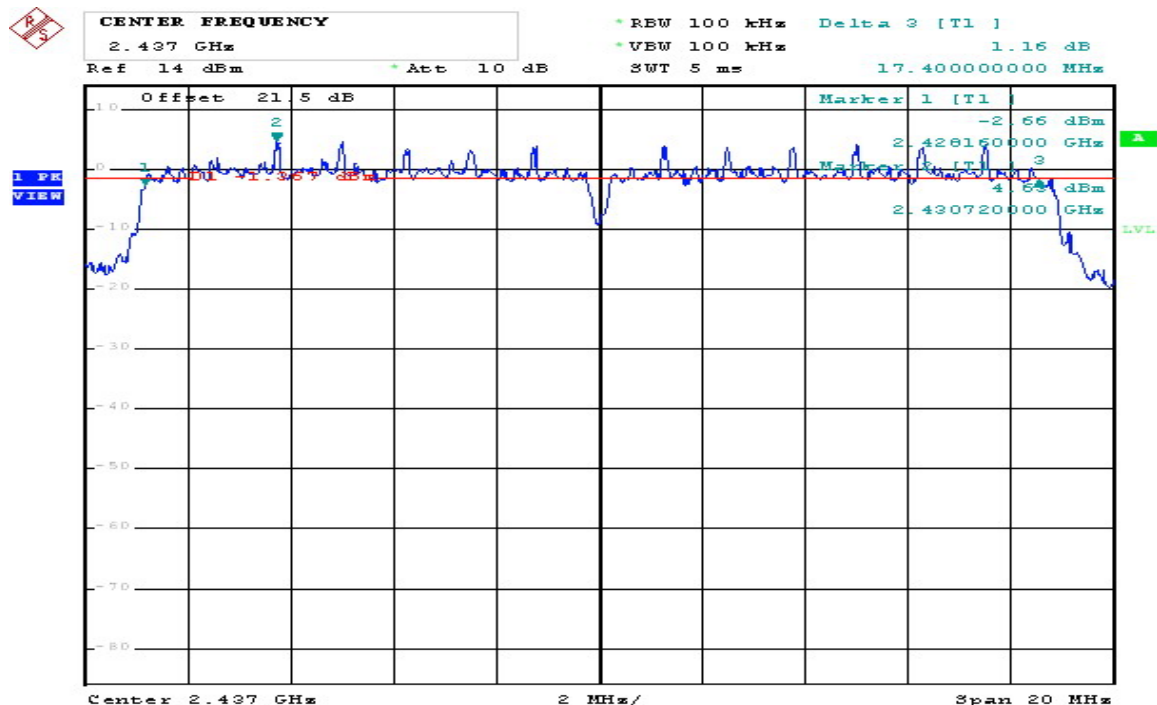
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Date: 3.SEP.2008 10:20:34

CENTER FREQUENCY
 2.412 GHz
 Ref 11.3 dBm Att 10 dB RBW 100 kHz Delta 3 [T1] 2.33 dB
 VBW 100 kHz SWT 5 ms 17.44000000 MHz

Offset 21.5 dB
 Marker 1 [T1] 3.37 dBm
 Marker 2 [T1] 5.16 dBm
 2.403100008 GHz
 2.407000000 GHz

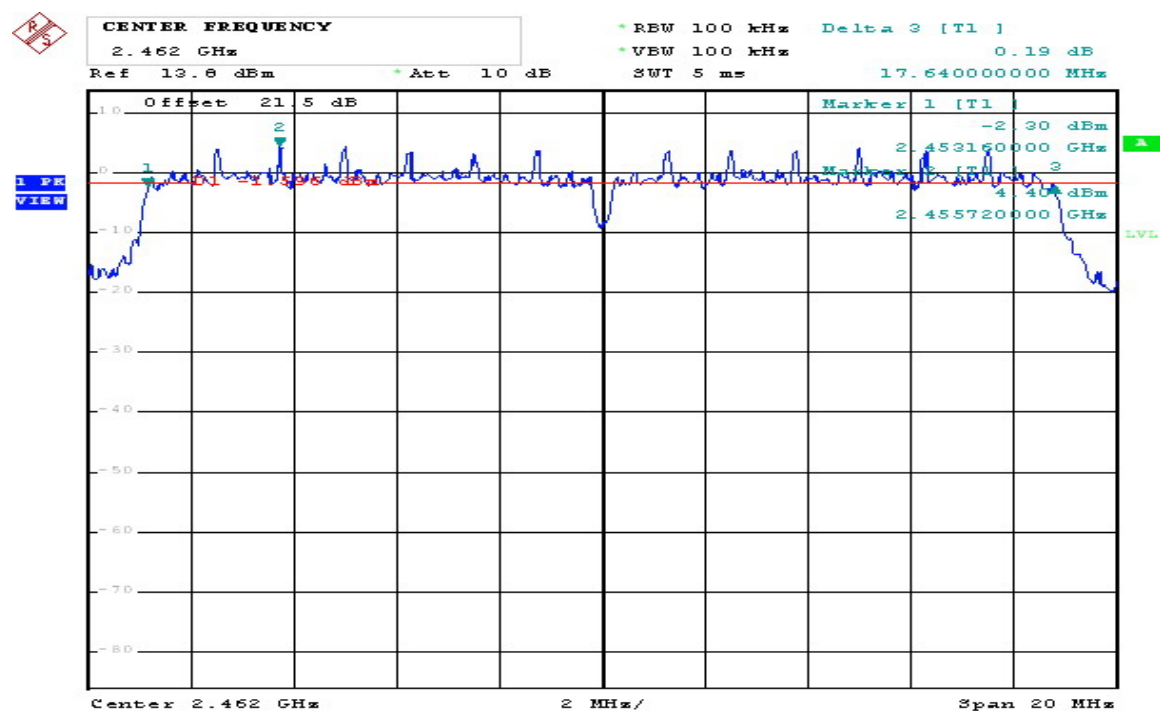
Center 2.412 GHz 2 MHz/ Span 20 MHz

802.11n (HT20) CH6 2437MHz Chain A



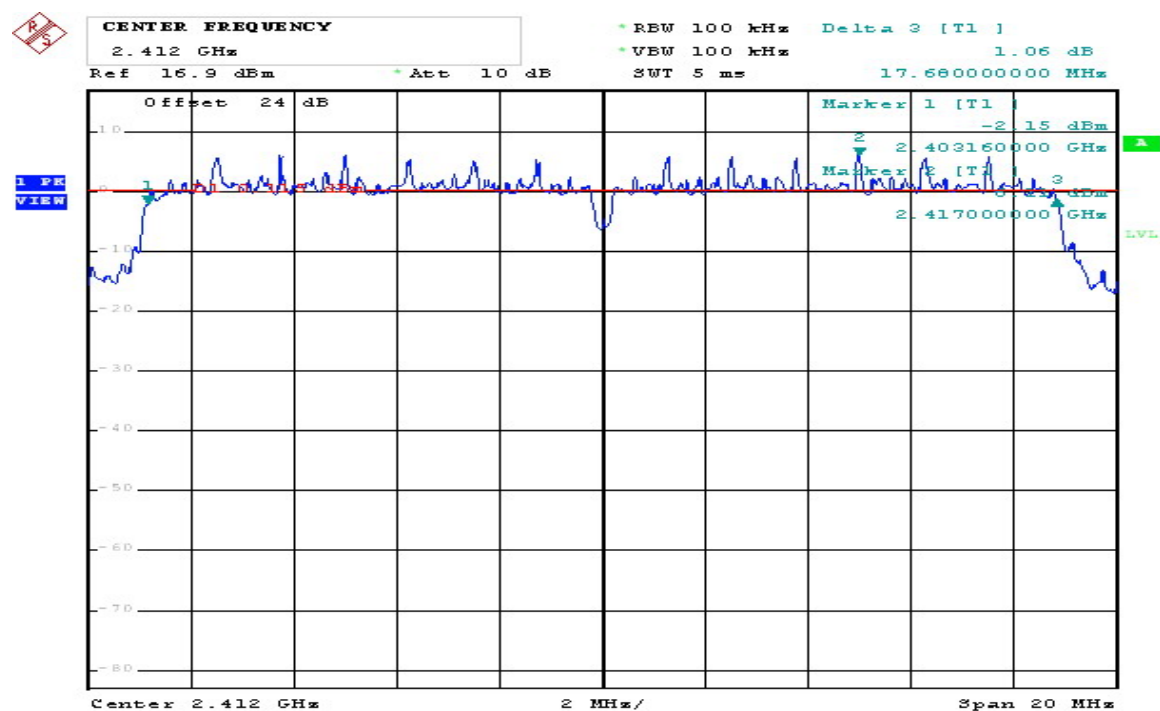
Test Report

802.11n (HT20) CH11 2462MHz Chain A



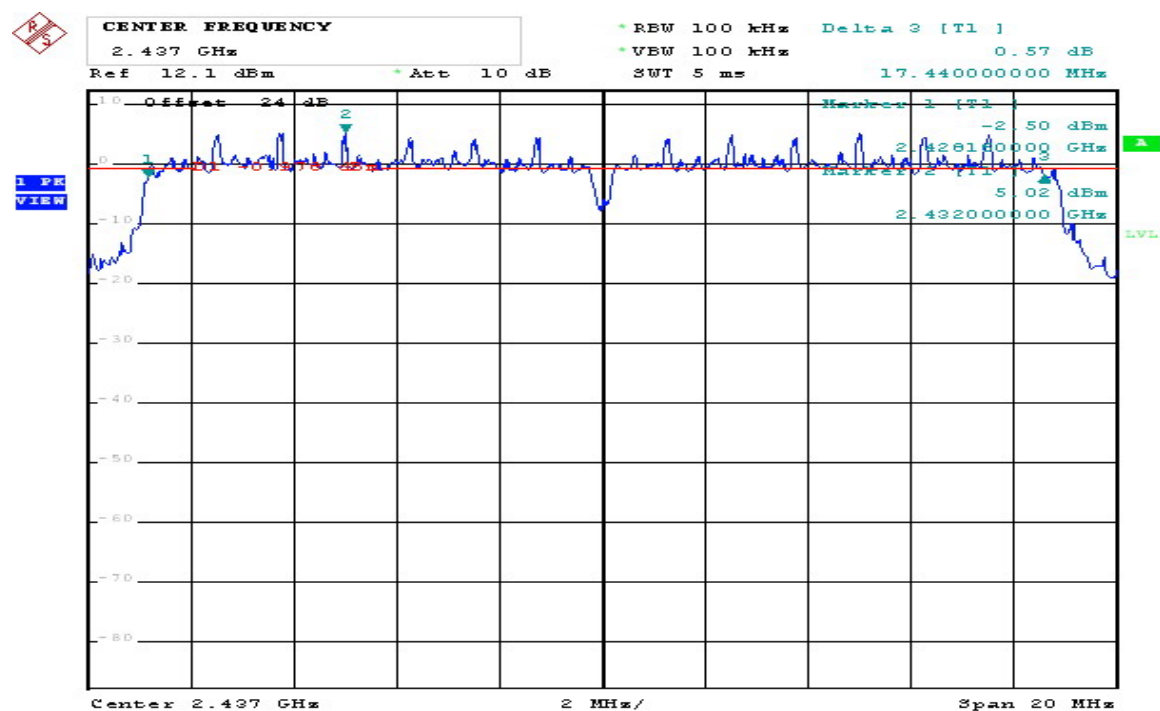
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Date: 3.SEP.2008 10:27:23

802.11n (HT20) CH1 2412MHz Chain B



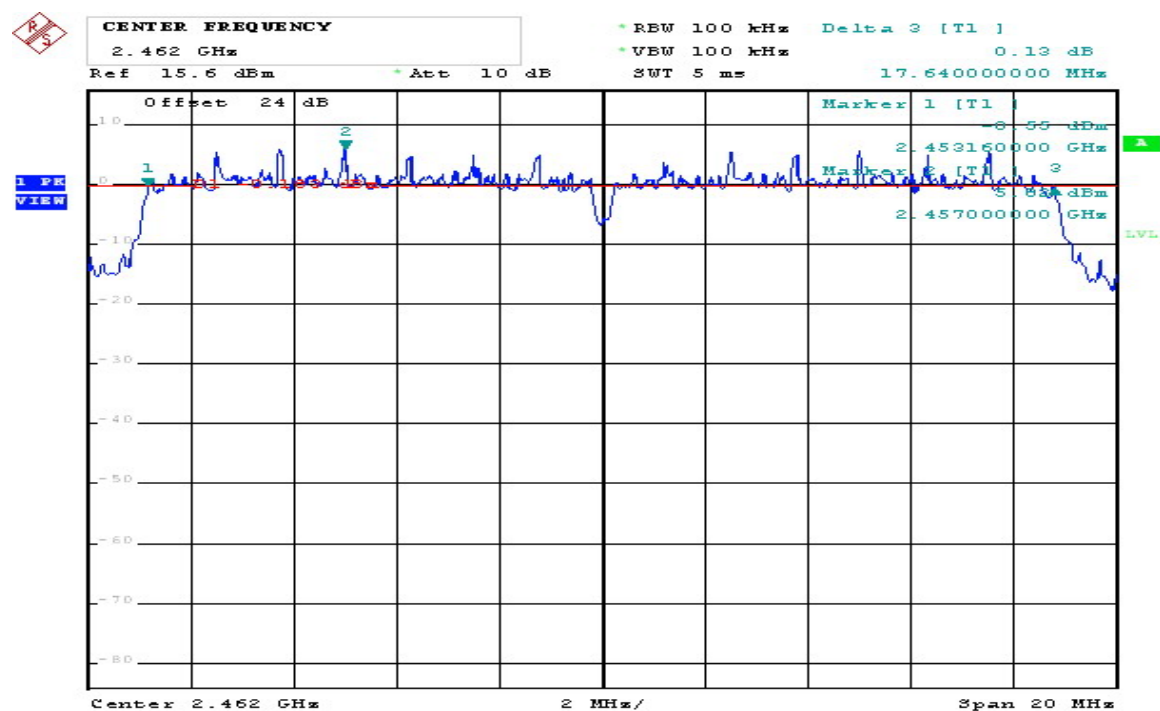
Comment: 802.11n(20) 2412MHz
Date: 3.SEP.2008 10:28:31

802.11n (HT20) CH6 2437MHz Chain B



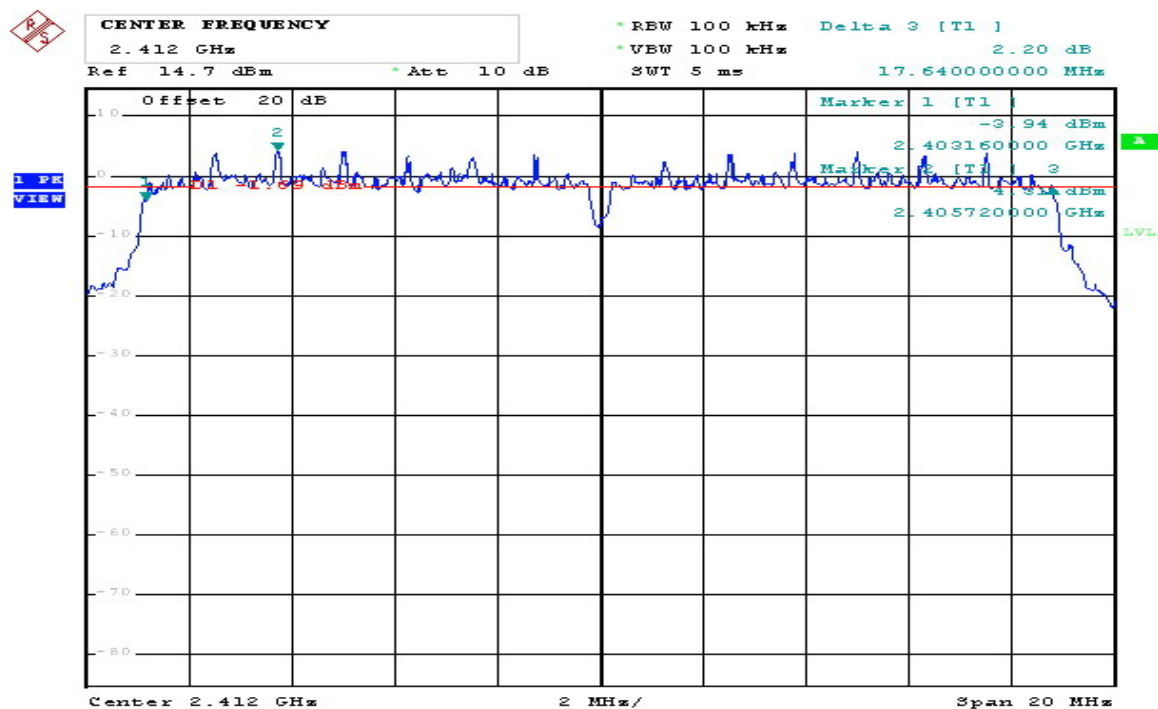
Comment: 802.11n(20) 2437MHz
Date: 3.SEP.2008 10:29:33

802.11n (HT20) CH11 2462MHz Chain B



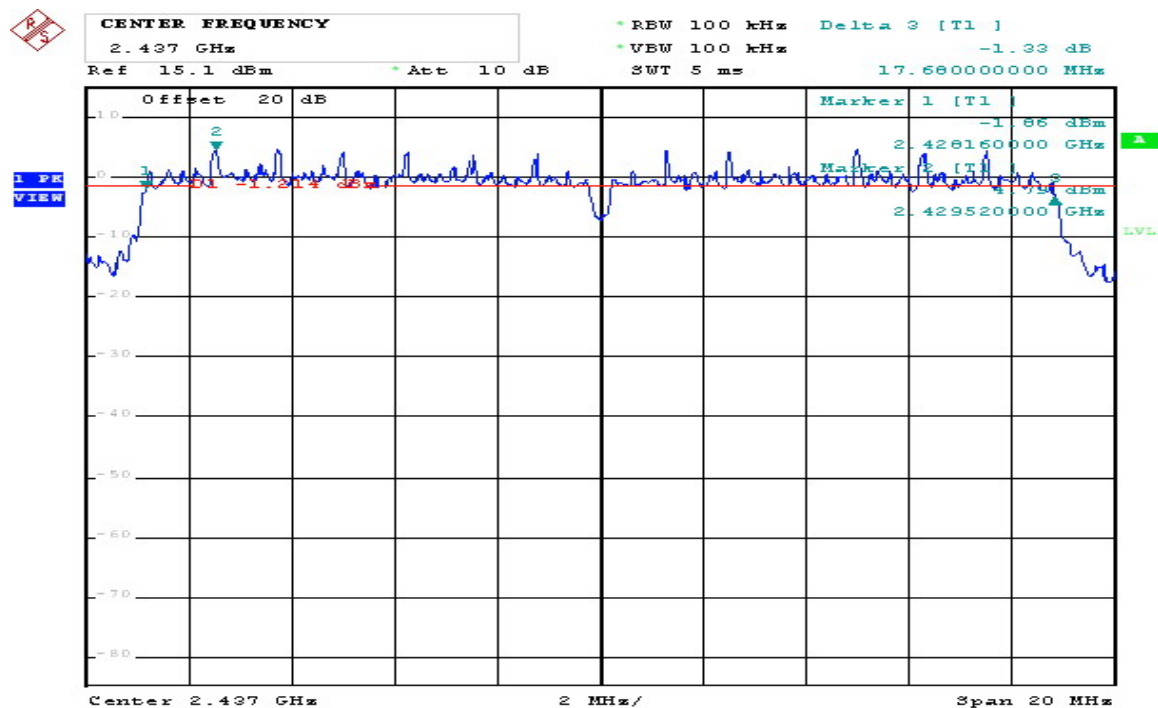
Comment: 802.11n(20) 2462MHz
Date: 3.SEP.2008 10:32:18

802.11n (HT20) CH1 2412MHz Chain C



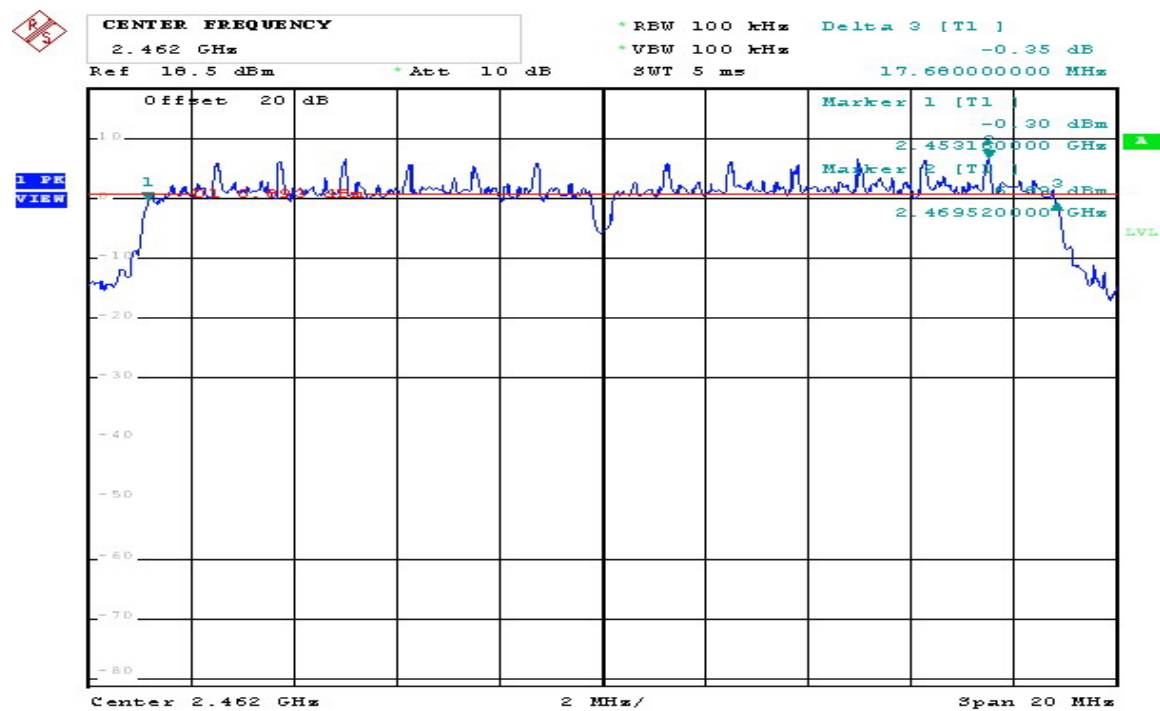
Comment: 802.11n(20) 2412MHz
Date: 3.SEP.2008 10:35:19

802.11n (HT20) CH6 2437MHz Chain C



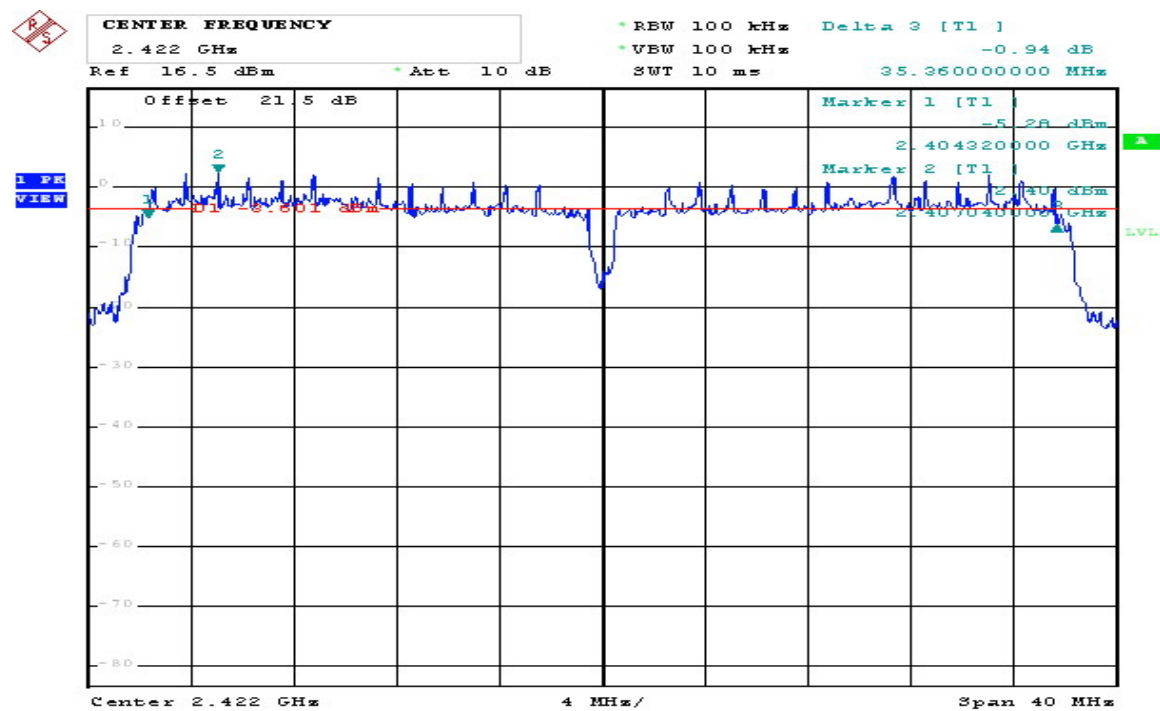
Comment: 802.11n(20) 2437MHz
Date: 3.SEP.2008 10:37:43

802.11n (HT20) CH11 2462MHz Chain C



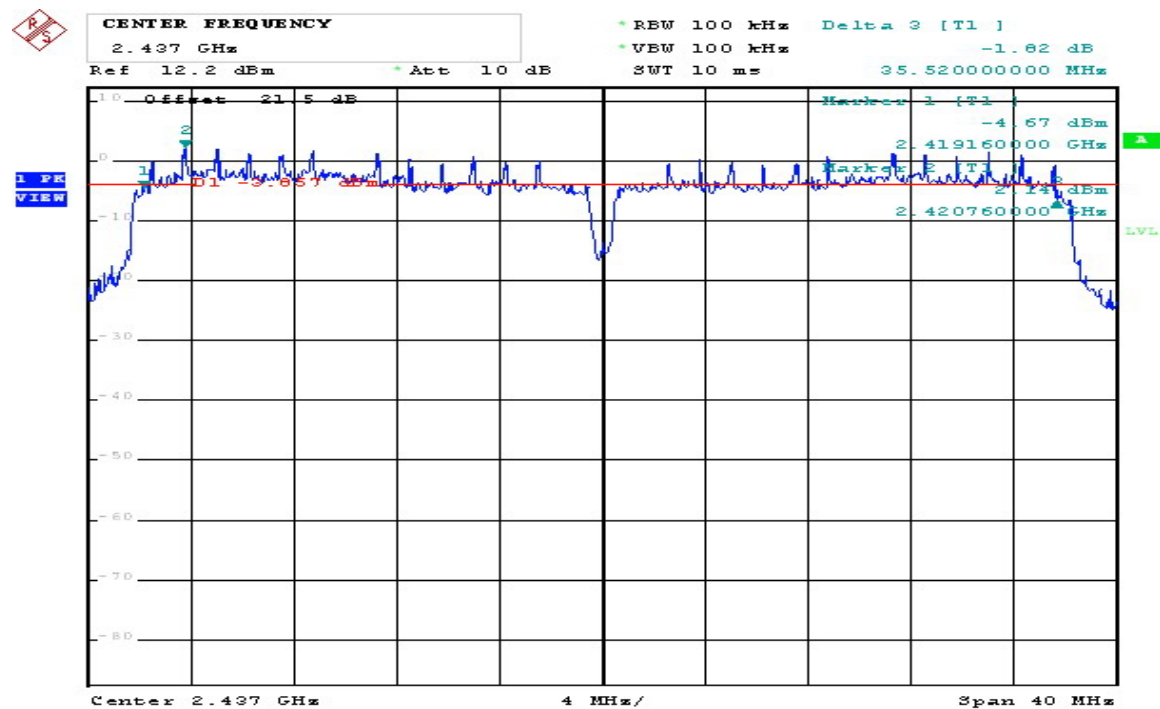
Comment: 802.11n(20) 2462MHz
Date: 3.SEP.2008 10:38:42

802.11n (HT40) CH3 2422MHz Chain A



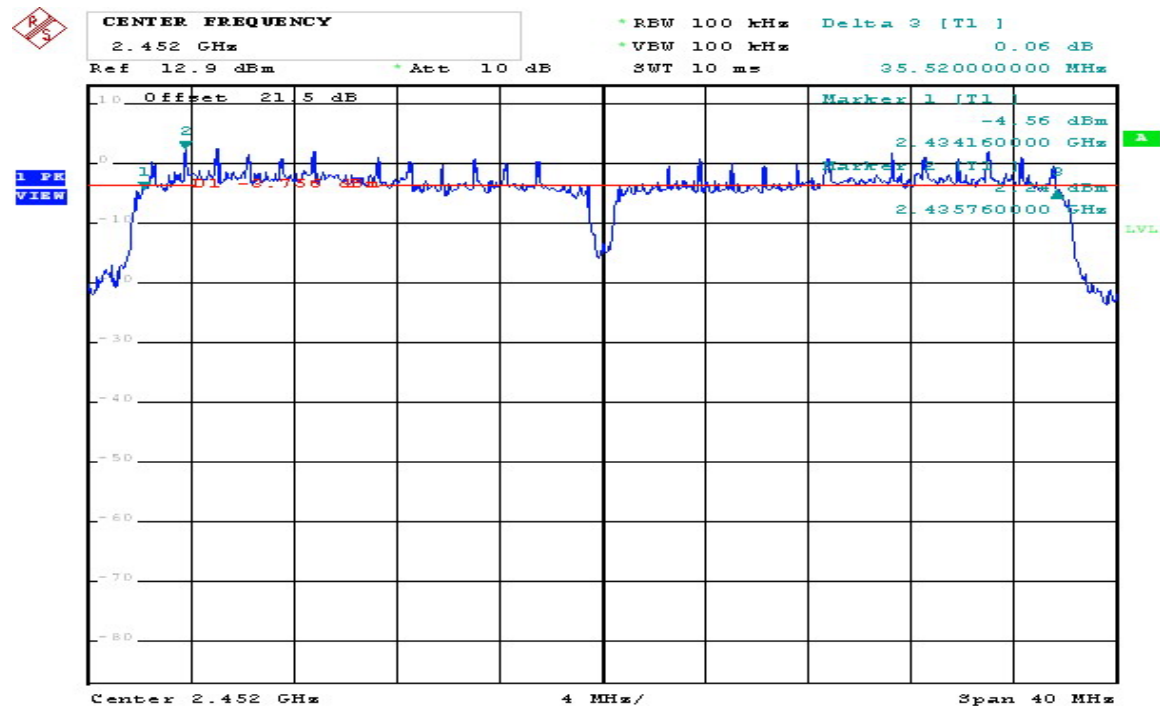
Comment: 802.11n(40) 2422MHz
Date: 3.SEP.2008 10:40:24

802.11n (HT40) CH6 2437MHz Chain A



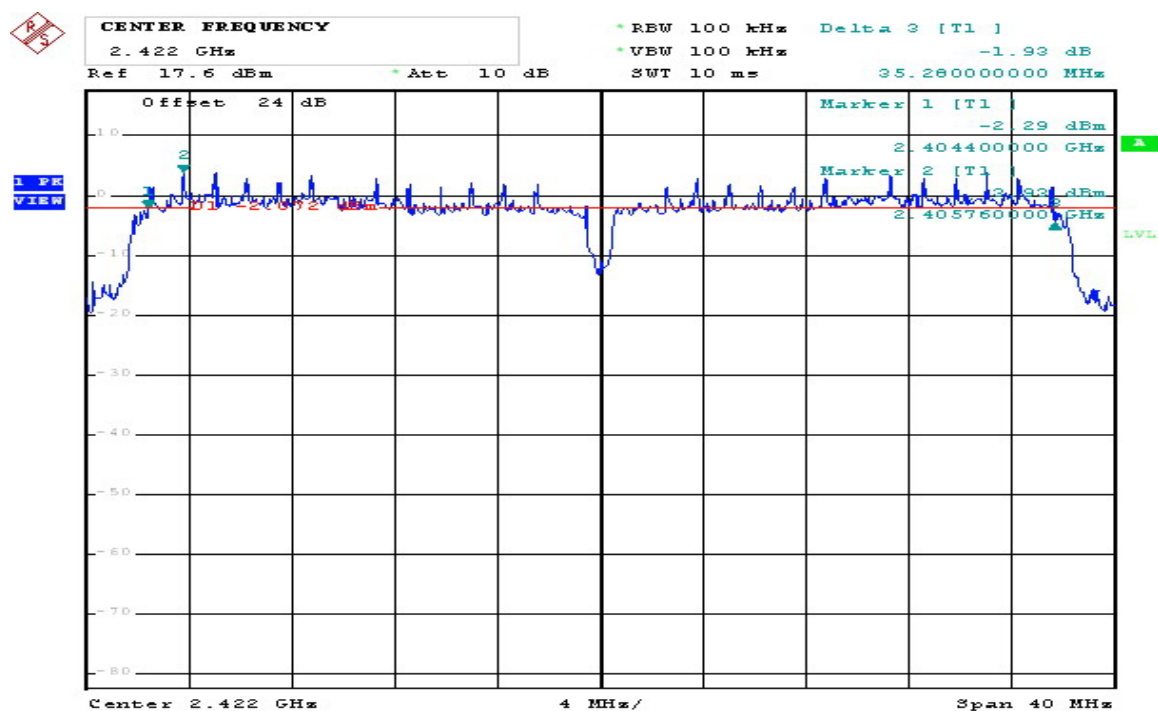
Comment: 802.11n(40) 2437MHz
Date: 3.SEP.2008 10:41:50

802.11n (HT40) CH9 2452MHz Chain A

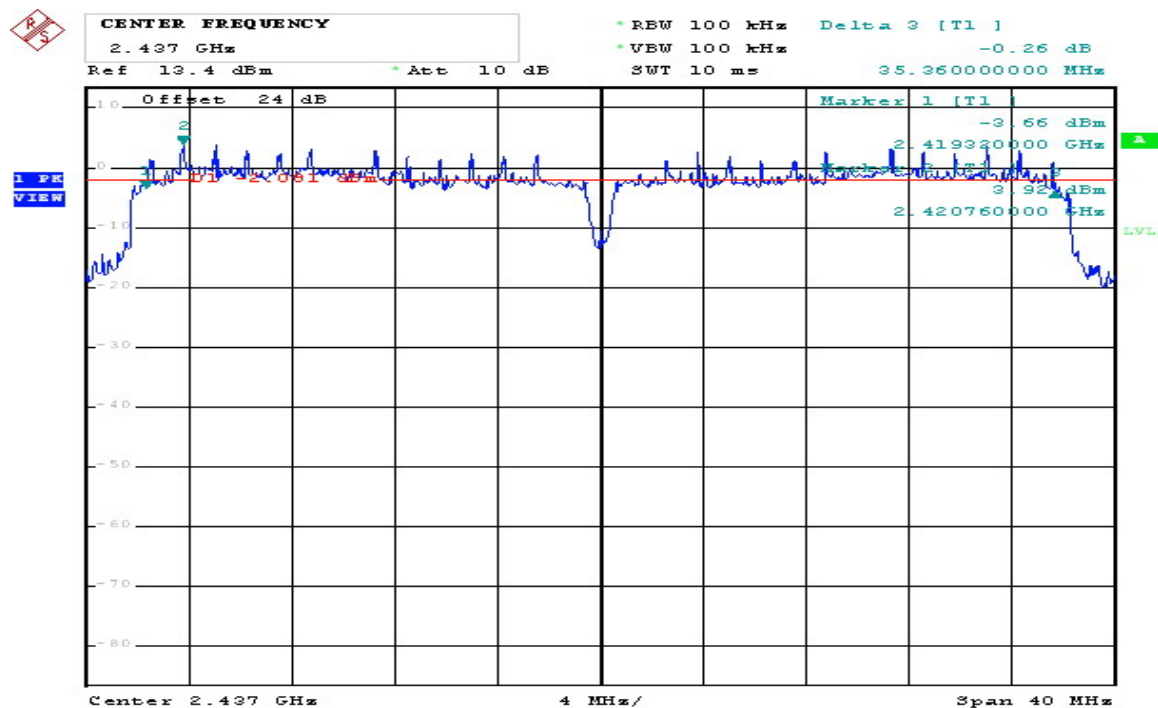


Comment: 802.11n(40) 2452MHz
Date: 3.SEP.2008 10:42:57

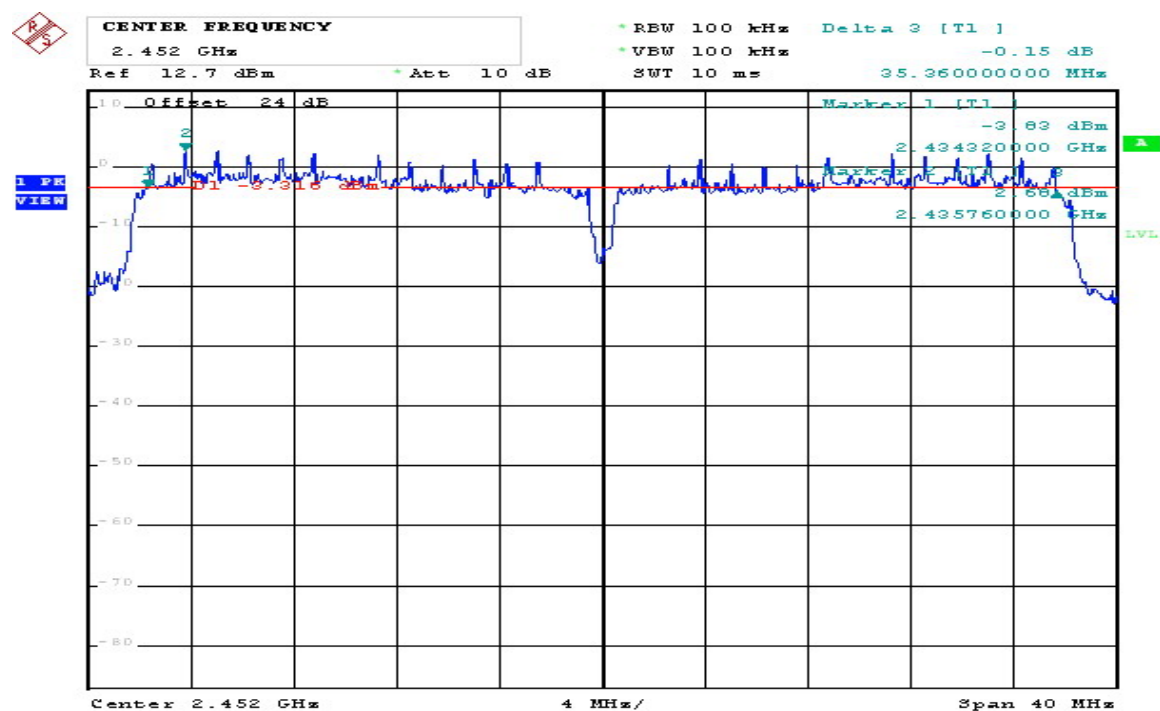
802.11n (HT40) CH3 2422MHz Chain B



802.11n (HT40) CH6 2437MHz Chain B

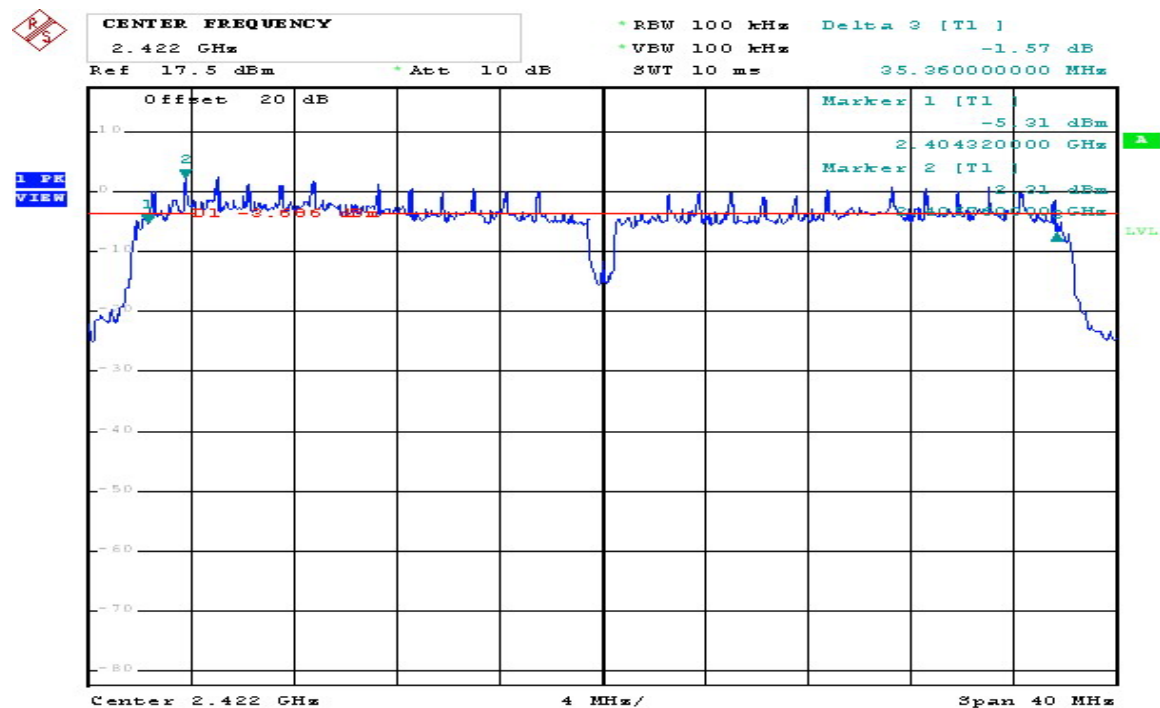


802.11n (HT40) CH9 2452MHz Chain B



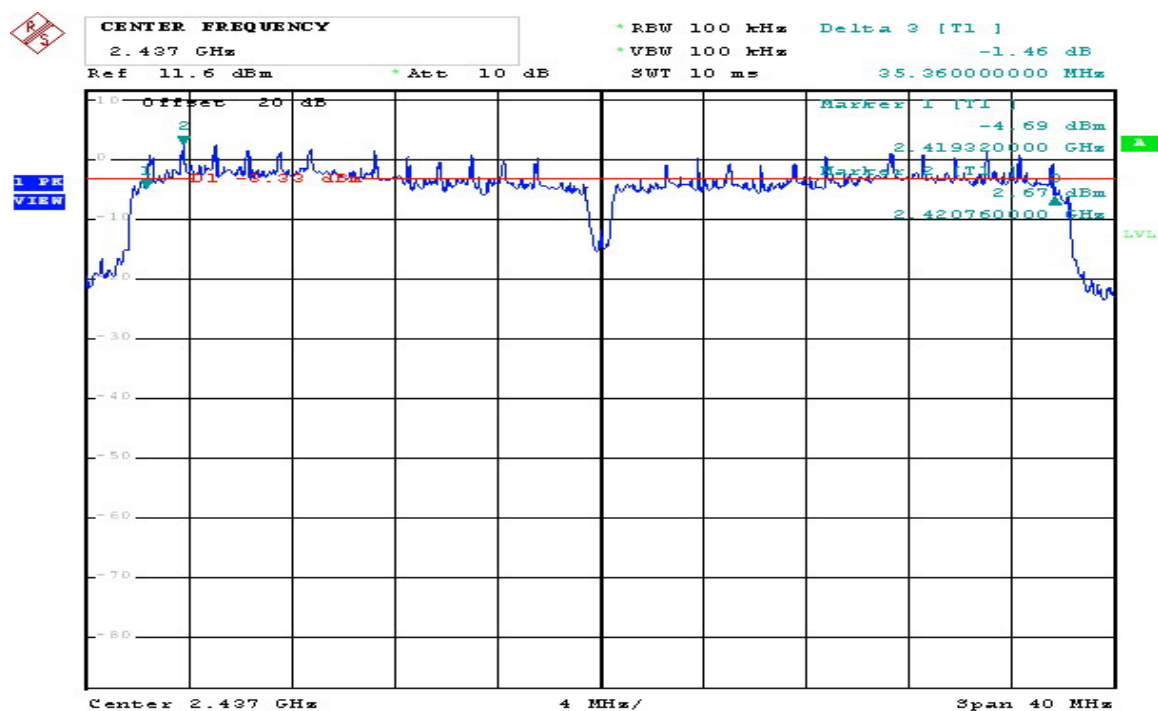
Comment: 802.11n(40) 2452MHz
Date: 3.SEP.2008 10:47:07

802.11n (HT40) CH3 2422MHz Chain C



Comment: 802.11n(40) 2422MHz
Date: 3.SEP.2008 10:55:09

802.11n (HT40) CH6 2437MHz Chain C



Comment: 802.11n(40) 2437MHz
Date: 3.SEP.2008 10:56:18

802.11n (HT40) CH9 2452MHz Chain C



Comment: 802.11n(40) 2452MHz
Date: 3.SEP.2008 10:57:28