EMC
TEST REPORT

Report No. : TS08070126-EME

Model No. : WI5200

Issued Date : Aug. 13, 2008

Applicant: AboCom System,Inc
77, Yu-Yih Rd., Chu-Nan Chen, Miao-Lih Hsuan,
Taiwan

Test Method/ Standard: 47 CFR FCC Part 15.247 & ANSI C63.4 2003

Test By: Intertek Testing Services Taiwan Ltd.
No. 11, Lane 275, Ko-Nan 1 Street, Chia-Tung Li,
Shiang-Shan District, Hsinchu City, Taiwan

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Report Engineer

Julie Wang
Julie Wang

Project Engineer

Jacky Chen
Jacky Chen

Reviewed By

Jimmie Liu
Jimmie Liu

Table of Contents

1. Summary of Test Data

Test/Requirement Description	Applicable Rule	Result
Minimum 6 dB Bandwidth	15.247(a)(2)	Pass
Maximum Output Power	15.247(b)	Pass
Power Spectral Density	15.247(e)	Pass
RF Antenna Conducted Spurious	15.247(d)	Pass
Radiated Spurious Emission	15.247(d), 15.205, 15.209	Pass
Emission on the Band Edge	15.247(d)	Pass
AC Power Line Conducted Emission	15.207	Pass

2. General Information

Identification of the EUT

Applicant:	AboCom System,Inc
Product:	802.11b/g/n iNIC module
Model No.:	WI5200
FCC ID.:	MQ4WI5200
Frequency Range:	1. 2412 MHz to 2462 MHz for 802.11b, 802.11g, 802.11n HT20
	2. 2422 MHz to 2452 MHz for 802.11n HT40
Channel Number:	1. 11 channels for 802.11b, 802.11g, 802.11n HT20
	2. 7 channels for 802.11n HT40
Rated Power:	DC 3.3 V
Sample Received:	Jul. 22, 2008
Test Date(s):	Aug. 02, 2008 ~ Aug. 06, 2008

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Note 2: When determining the test conclusion, the Measurement Uncertainty of test has been considered.

Description of EUT

The EUT is an 802.11b/g/n iNIC module, it supports two transmitted and three received MIMO functions and was defined as information technology equipment.

For more detail features, please refer to User's manual as file name "Installation guide.pdf"

Antenna description

DAC0 for 802.11b/g/n

The antenna is affixed to the EUT using a unique connector, which allows for replacement of a broken antenna, but DOES NOT use a standard antenna jack or electrical connector.

Antenna Gain   : 2.3 dBi max

Antenna Type   : Dipole antenna

Connector Type   : SMA Plug Reverse

DAC1 for 802.11n

The antenna is affixed to the EUT using a unique connector, which allows for replacement of a broken antenna, but DOES NOT use a standard antenna jack or electrical connector.

Antenna Gain   : 2.3 dBi max

Antenna Type   : Dipole antenna

Connector Type   : SMA Plug Reverse

Operation mode

The EUT was supplied with DC 3.3 V and it was run in TX mode that was controlled by "QA" test program. 802.11b/g only transmit from DAC0 antenna path.

The EUT was transmitted continuously during the test.

With individual verifying, the maximum output power was found at 1 Mbps data rate for 802.11b mode, 6 Mbps data rate for 802.11g mode, 6.5 Mbps data rate for 802.11n HT20 mode and 13 Mbps data rate for 802.11n HT40 mode. The final tests were executed under these conditions and recorded in this report individually.

802.11b (ch6 2437 MHz)	
Data rate	PK
1Mbps	17.56
2Mbps	16.83
5.5Mbps	16.22
11Mbps	15.71

802.11g (ch6 2437 MHz)	
Data rate	PK
6Mbps	26.52
9Mbps	26.09
12Mbps	25.75
18Mbps	25.47
24Mbps	25.13
36Mbps	24.87
48Mbps	24.66
54Mbps	24.52

802.11n HT20 (ch6 2437 MHz)

Data rate	PK
6.5Mbps	27.06
13Mbps	26.51
19.5Mbps	26.25
26Mbps	26.01
39Mbps	25.74
52Mbps	25.55
58.5Mbps	25.26
65Mbps	25.14

802.11n HT40 (ch6 2437 MHz)

Data rate	PK
13Mbps	27.10
26Mbps	26.99
39Mbps	26.91
52Mbps	26.58
78Mbps	26.22
104Mbps	25.90
117Mbps	25.62
130Mbps	25.40

3. Maximum 6 dB Bandwidth

Name of Test	Maximum 6 dB Bandwidth
Base Standard	FCC 15.247 (a)(2)

Test Result: Complies

Measurement Data: See Table & plots below

Method of Measurement:

Reference FCC document: KDB558074

A portion of the transmitted signal is coupled to a Spectrum Analyzer with a resolution bandwidth of at least 1 % of the bandwidth of the transmitted signal. The resolution bandwidth is chosen so as not to reduce the peak level of the measured waveform. The appropriate bandwidth mask is applied to the output waveform to verify compliance.

Test Diagram:

Spectrum Analyzer

Note: The EUT was tested while in a continuous transmit mode and the worst case data rates are 1 Mbps data rate for 802.11b mode, 6 Mbps data rate for 802.11g mode, 6.5 Mbps data rate for 802.11n HT20 mode and 13 Mbps data rate for 802.11n HT40 mode. The EUT was tuned to a low, middle and high channel.
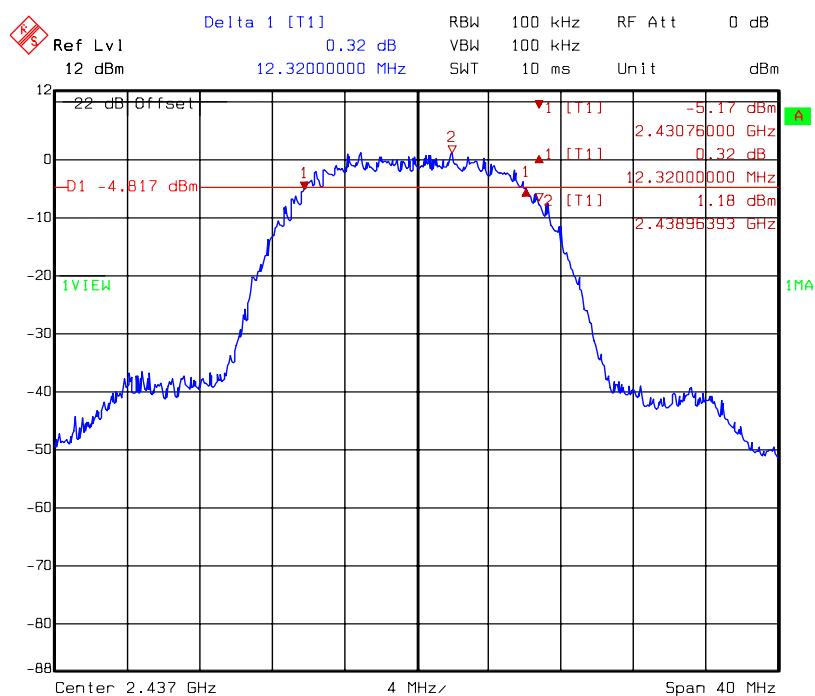
Table1. Maximum 6 dB Bandwidth

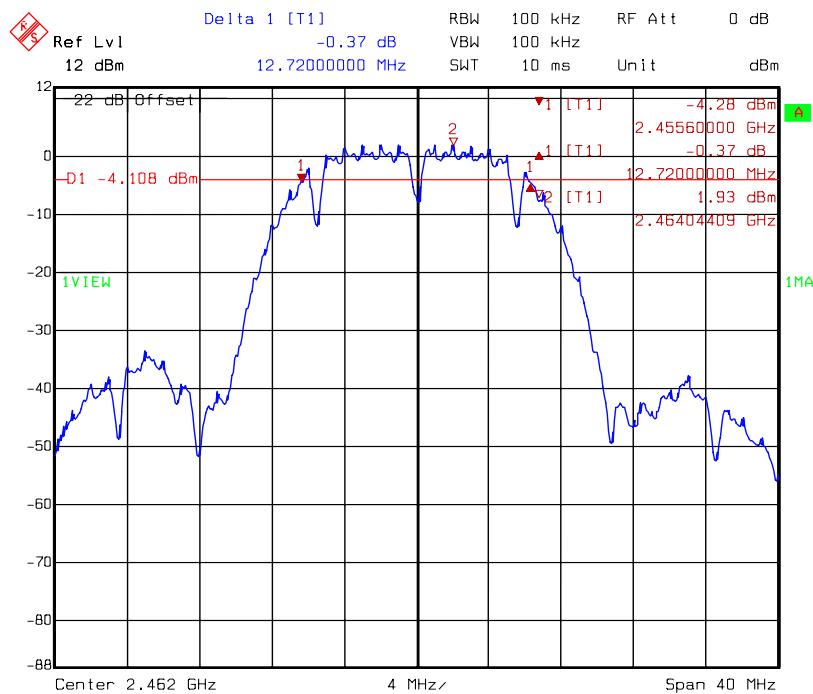| Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Min. Limit (MHz)	Pass/Fail
			DAC0	DAC1		
802.11b	1	2412	12.80	-	0.5	Pass
	6	2437	12.32	-	0.5	Pass
	11	2462	12.72	-	0.5	Pass
802.11g	1	2412	16.80	-	0.5	Pass
	6	2437	16.80	-	0.5	Pass
	11	2462	16.80	-	0.5	Pass
802.11n HT20	1	2412	17.84	18.00	0.5	Pass
	6	2437	17.84	17.92	0.5	Pass
	11	2462	17.84	17.84	0.5	Pass
802.11n HT40	3	2422	36.78	36.66	0.5	Pass
	6	2437	36.78	36.78	0.5	Pass
	9	2452	36.78	36.78	0.5	Pass

Single Tx

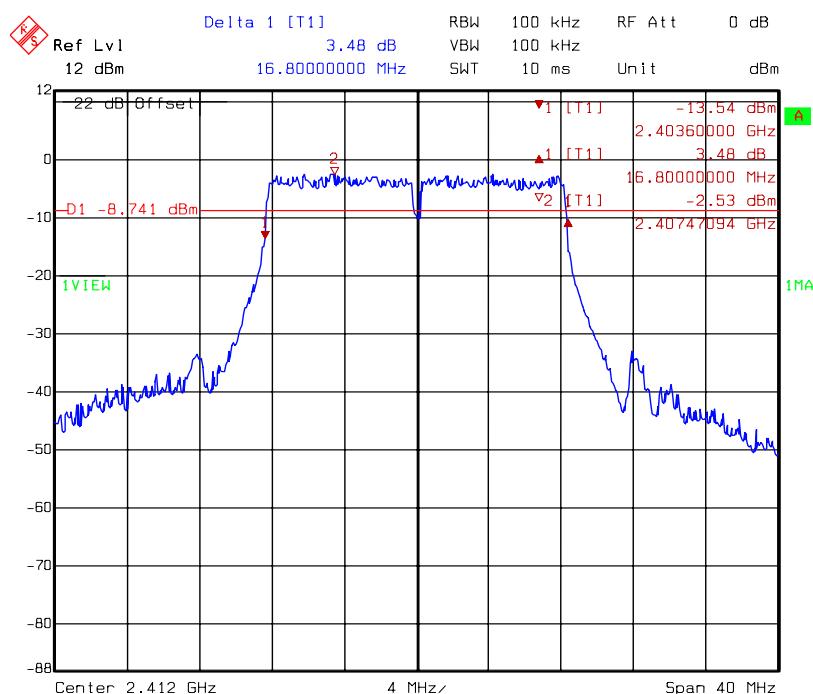## DAC0:6 dB Bandwidth @ 802.11b mode channel 1


```
Title:      6dB Band-Width
Comment A: CH 1 at 802.11b mode DAC 0
Date:      04.AUG.2008  11:47:56
```

DAC0:6 dB Bandwidth @ 802.11b mode channel 6


```
Title:      6dB Band-Width
Comment A: CH 6 at 802.11b mode DAC 0
Date:      04.AUG.2008  11:51:09
```

DAC0:6 dB Bandwidth @ 802.11b mode channel 11

```
                    Delta 1 [T1]         RBW   100 kHz   RF Att     0 dB
        Ref Lvl            -0.37 dB      VBW   100 kHz
        12 dBm      12.72000000 MHz      SWT    10 ms    Unit       dBm
   12
       22 dB Offset                              ▼1 [T1]          -4.28 dBm   A
                                                              2.45560000 GHz
    0                                            ▲1 [T1]          -0.37 dB
      D1 -4.108 dBm                                          12.72000000 MHz
  -10                                            ▽2 [T1]           1.93 dBm
                                                              2.46404409 GHz
  -20  1VIEW                                                              1MA
  -30
  -40
  -50
  -60
  -70
  -80
  -88
        Center 2.462 GHz           4 MHz/                  Span 40 MHz
```

```
Title:      6dB Band-Width
Comment A: CH 11 at 802.11b mode DAC 0
Date:       04.AUG.2008  11:55:06
```

DAC0:6 dB Bandwidth @ 802.11g mode channel 1

```
                    Delta 1 [T1]         RBW   100 kHz   RF Att     0 dB
        Ref Lvl             3.48 dB      VBW   100 kHz
        12 dBm      16.80000000 MHz      SWT    10 ms    Unit       dBm
   12
       22 dB Offset                              ▼1 [T1]         -13.54 dBm   A
                                                              2.40360000 GHz
    0                                            ▲1 [T1]           3.48 dB
      D1 -8.741 dBm                                          16.80000000 MHz
  -10                                            ▽2 [T1]          -2.53 dBm
                                                              2.40747094 GHz
  -20  1VIEW                                                              1MA
  -30
  -40
  -50
  -60
  -70
  -80
  -88
        Center 2.412 GHz           4 MHz/                  Span 40 MHz
```

```
Title:      6dB Band-Width
Comment A: CH 1 at 802.11g mode DAC 0
Date:       04.AUG.2008  12:12:21
```

DAC0:6 dB Bandwidth @ 802.11g mode channel 6

Title: 6dB Band-Width
Comment A: CH 6 at 802.11g mode DAC 0
Date: 04.AUG.2008 12:16:07

DAC0:6 dB Bandwidth @ 802.11g mode channel 11

Title: 6dB Band-Width
Comment A: CH 11 at 802.11g mode DAC 0
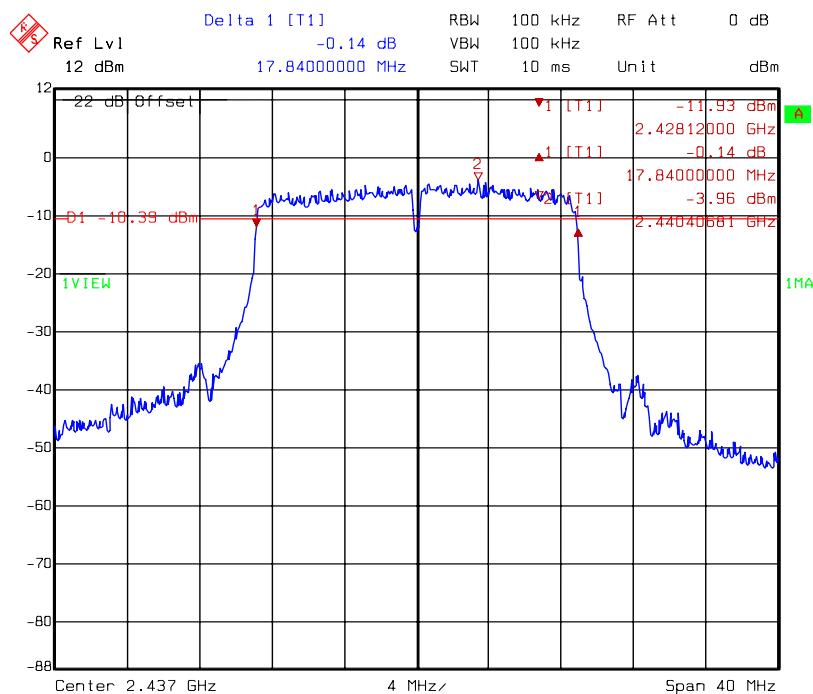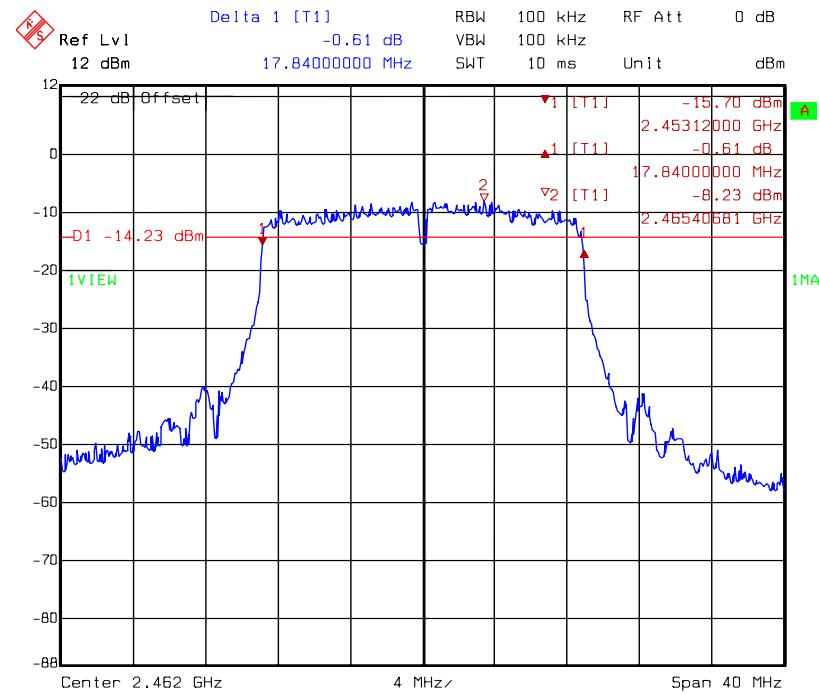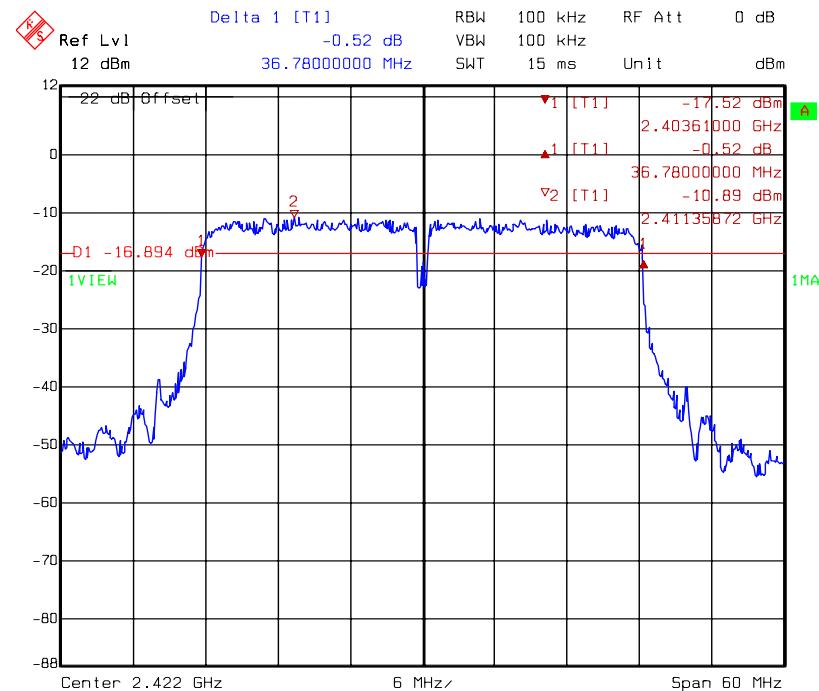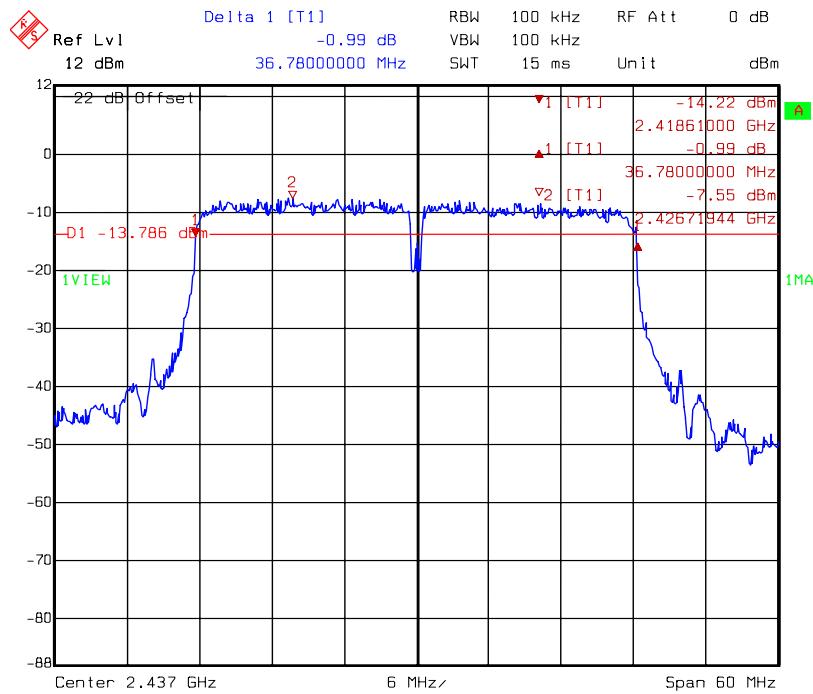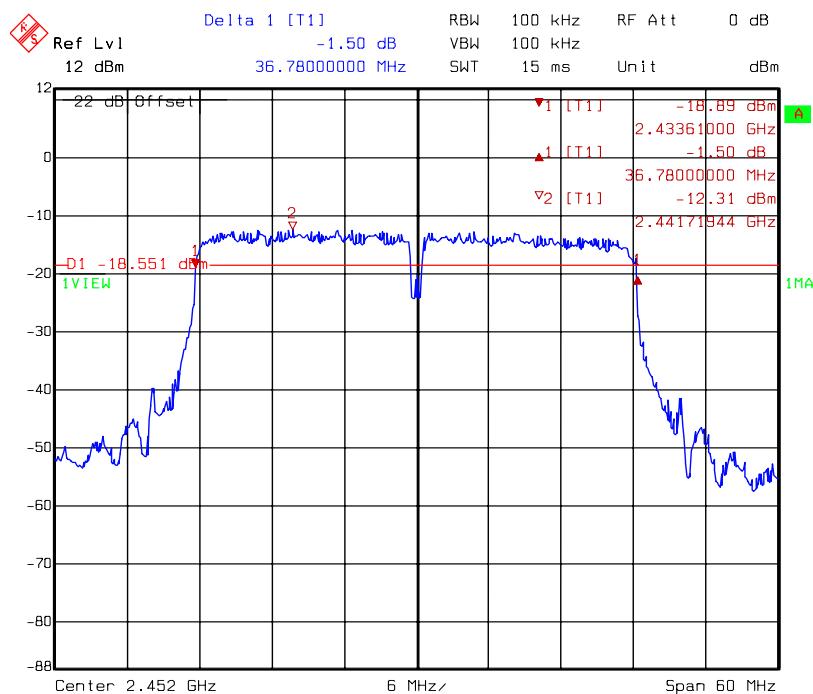Date: 04.AUG.2008 12:19:30

Dual Tx

DAC0: 6dB Bandwidth @ 802.11n HT20 mode channel 1

Title: 6dB Band-Width
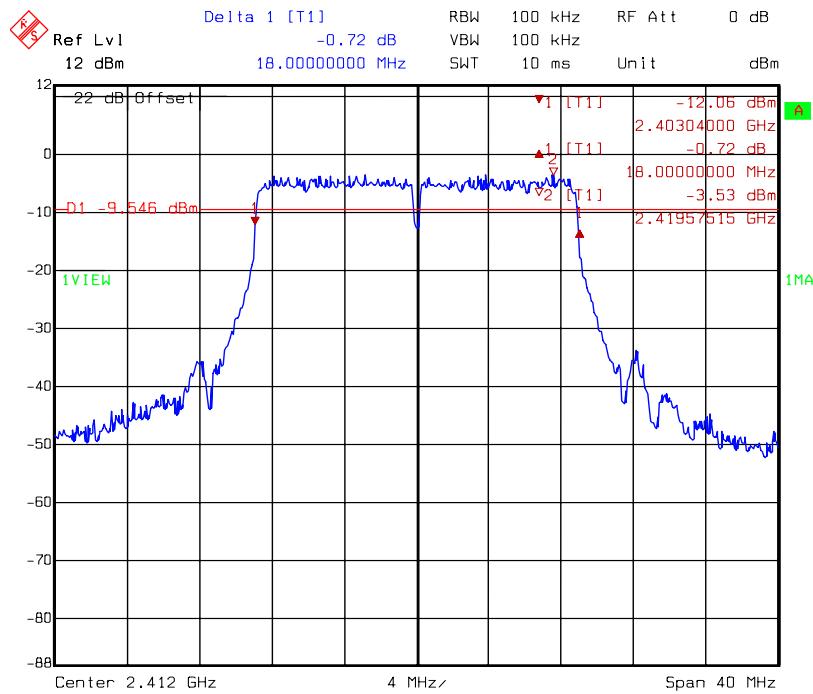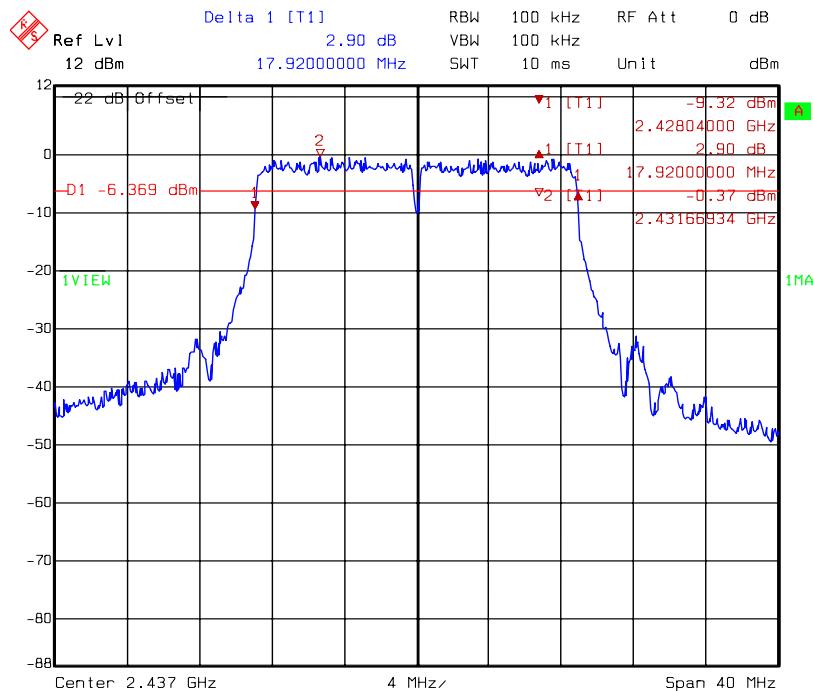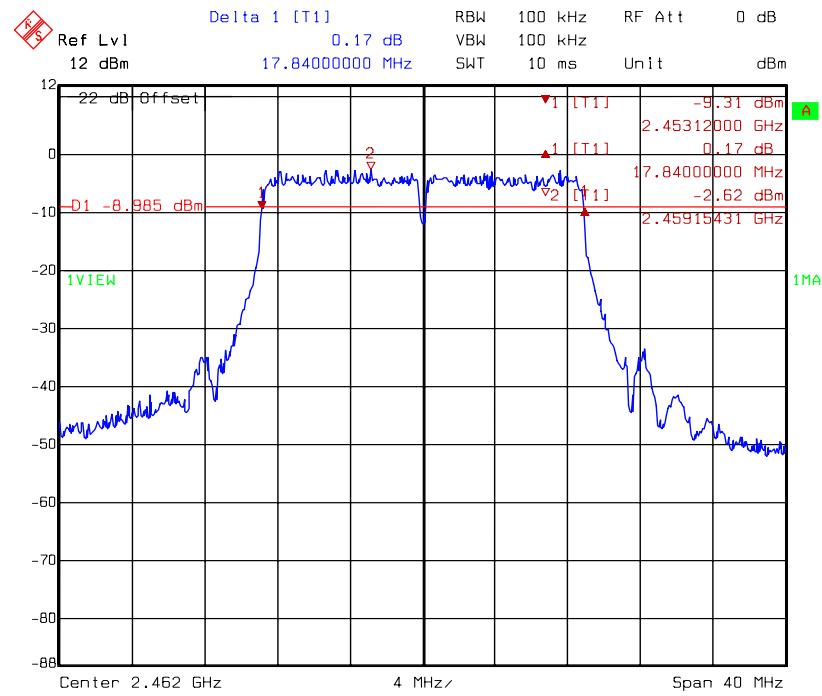Comment A: CH 1 at 802.11n 20MHz mode DAC 0
Date: 04.AUG.2008 13:54:14
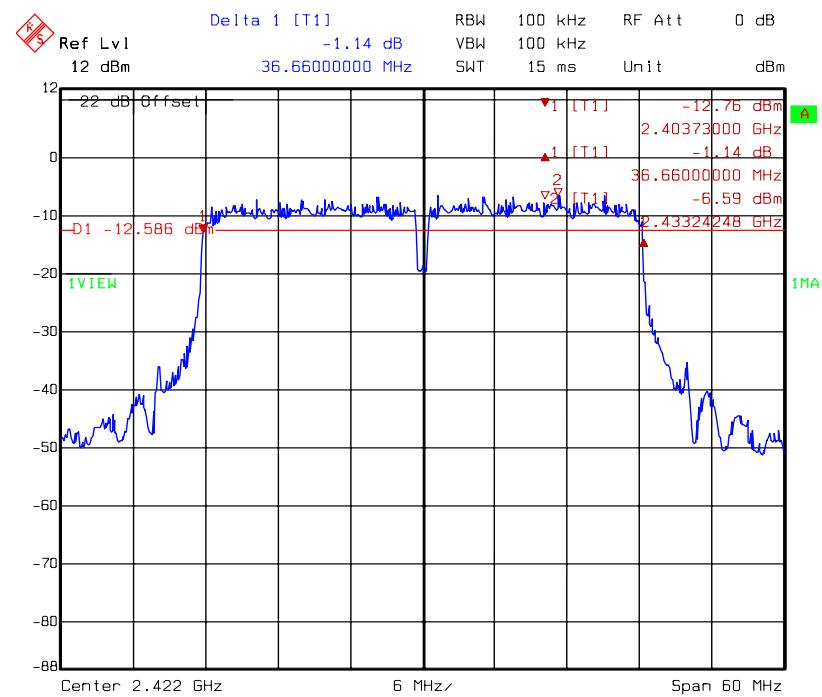
DAC0: 6dB Bandwidth @ 802.11n HT20 mode channel 6

Title: 6dB Band-Width
Comment A: CH 6 at 802.11n 20MHz mode DAC 0
Date: 04.AUG.2008 13:57:30
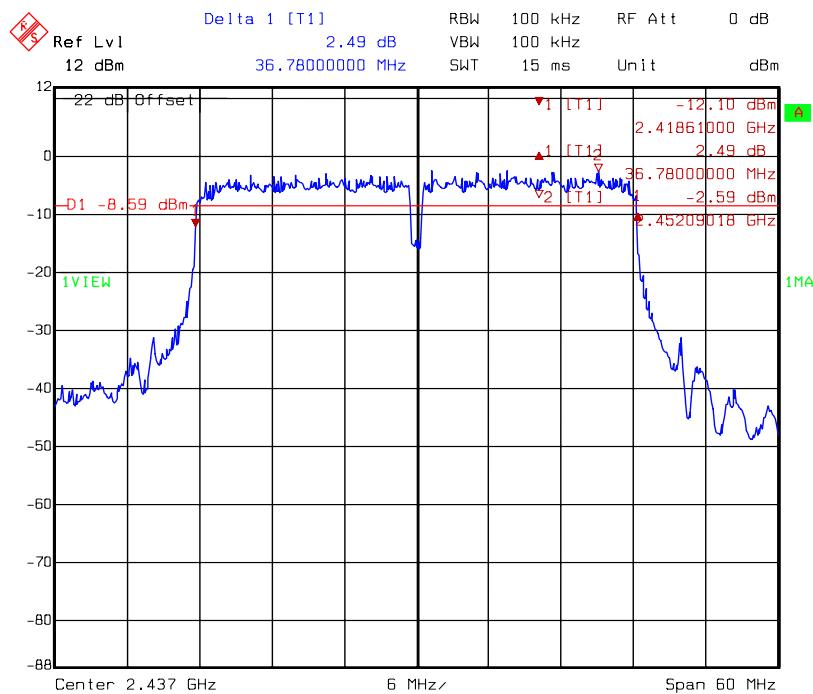
### DAC0: 6dB Bandwidth @ 802.11n HT20 mode channel 11


```
Title:      6dB Band-Width
Comment A: CH 11 at 802.11n 20MHz mode DAC 0
Date:       04.AUG.2008  14:01:33
```

DAC0: 6dB Bandwidth @ 802.11n HT40 mode channel 3


```
Title:      6dB Band-Width
Comment A: CH 3 at 802.11n 40MHz mode DAC 0
Date:       04.AUG.2008  14:06:07
```

DAC0: 6dB Bandwidth @ 802.11n HT40 mode channel 6

Title: 6dB Band-Width
Comment A: CH 6 at 802.11n 40MHz mode DAC 0
Date: 04.AUG.2008 14:09:39

DAC0: 6dB Bandwidth @ 802.11n HT40 mode channel 9

Title: 6dB Band-Width
Comment A: CH 9 at 802.11n 40MHz mode DAC 0
Date: 04.AUG.2008 14:13:05

DAC1: 6dB Bandwidth @ 802.11n HT20 mode channel 1

Title: 6dB Band-Width
Comment A: CH 1 at 802.11n 20MHz mode DAC 1
Date: 04.AUG.2008   14:34:42

DAC1: 6dB Bandwidth @ 802.11n HT20 mode channel 6

Title: 6dB Band-Width
Comment A: CH 6 at 802.11n 20MHz mode DAC 1
Date: 04.AUG.2008   14:39:13

DAC1: 6dB Bandwidth @ 802.11n HT20 mode channel 11


```
Title:      6dB Band-Width
Comment A: CH 11 at 802.11n 20MHz mode DAC 1
Date:       04.AUG.2008  14:42:35
```

DAC1: 6dB Bandwidth @ 802.11n HT40 mode channel 3


```
Title:      6dB Band-Width
Comment A: CH 3 at 802.11n 40MHz mode DAC 1
Date:       04.AUG.2008  14:46:43
```

DAC1: 6dB Bandwidth @ 802.11n HT40 mode channel 6

Title: 6dB Band-Width
Comment A: CH 6 at 802.11n 40MHz mode DAC 1
Date: 04.AUG.2008 14:49:46

DAC1: 6dB Bandwidth @ 802.11n HT40 mode channel 9

Title: 6dB Band-Width
Comment A: CH 9 at 802.11n 40MHz mode DAC 1
Date: 04.AUG.2008 14:52:49
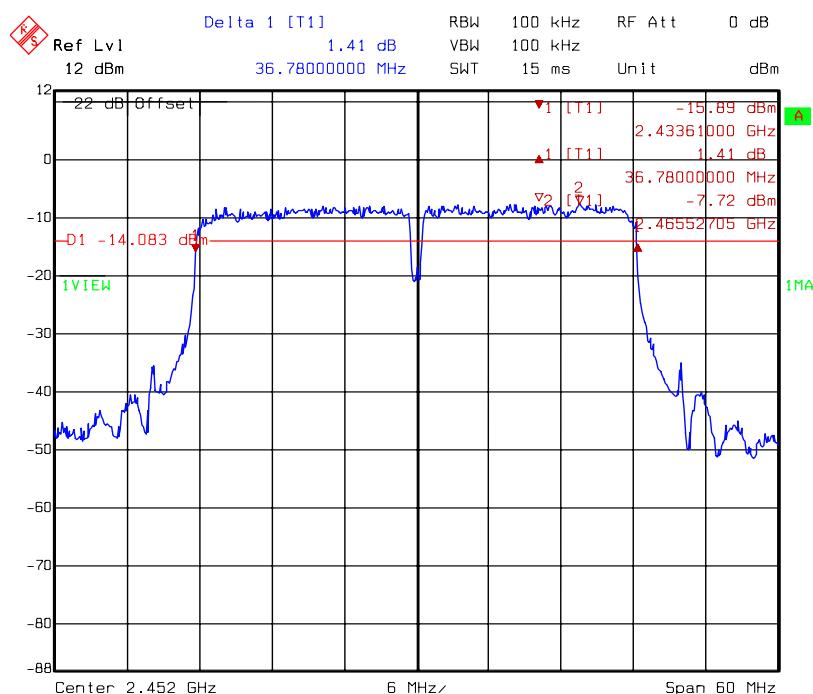
4. 99 % Occupied Bandwidth

Name of Test	99 % Occupied Bandwidth
Base Standard	None; for reporting purposes only

Test Result: Complies

Measurement Data: See Table & plots below

Method of Measurement:

Reference FCC document: KDB558074

A portion of the transmitted signal is coupled to a Spectrum Analyzer with a resolution bandwidth of at least 1 % of the bandwidth of the transmitted signal. The resolution bandwidth is chosen so as not to reduce the peak level of the measured waveform. The appropriate bandwidth mask is applied to the output waveform to verify compliance.

Test Diagram:

Note: The EUT was tested while in a continuous transmit mode and the worst case data rates are 1 Mbps data rate for 802.11b mode, 6 Mbps data rate for 802.11g mode, 6.5 Mbps data rate for 802.11n HT20 mode and 13 Mbps data rate for 802.11n HT40 mode. The EUT was tuned to a low, middle and high channel.

Table 2. 99 % Occupied Bandwidth

Mode	Channel	Frequency (MHz)	99% Bandwidth (MHz)	
			DAC0	DAC1
802.11b	1	2412	15.07	-
	6	2437	15.23	-
	11	2462	14.99	-
802.11g	1	2412	16.43	-
	6	2437	16.43	-
	11	2462	16.51	-
802.11n HT20	1	2412	17.64	17.64
	6	2437	17.56	17.64
	11	2462	17.56	17.64
802.11n HT40	3	2422	36.07	36.07
	6	2437	36.07	36.07
	9	2452	36.07	36.07

Single Tx

DAC0:99 % Occupied Bandwidth @ 802.11b mode channel 1
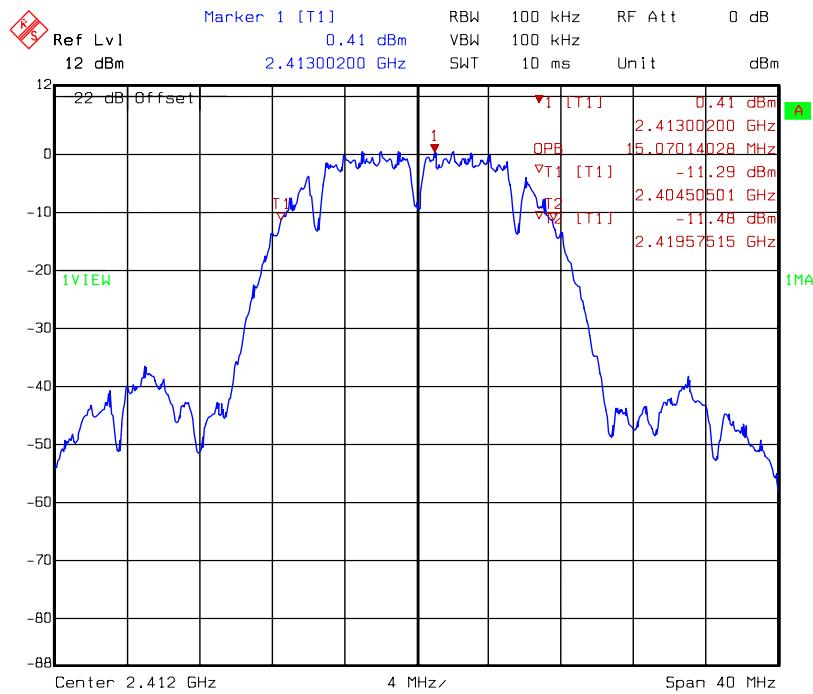
Title: Occupied Band-Width
Comment A: CH 1 at 802.11b mode DAC 0
Date: 04.AUG.2008 11:49:40

DAC0:99 % Occupied Bandwidth @ 802.11b mode channel 6
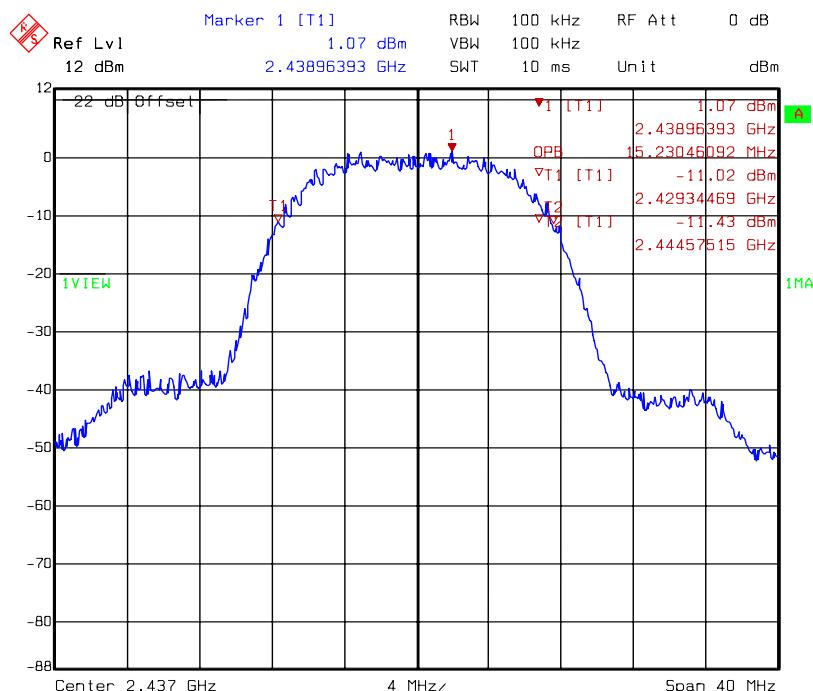
Title: Occupied Band-Width
Comment A: CH 6 at 802.11b mode DAC 0
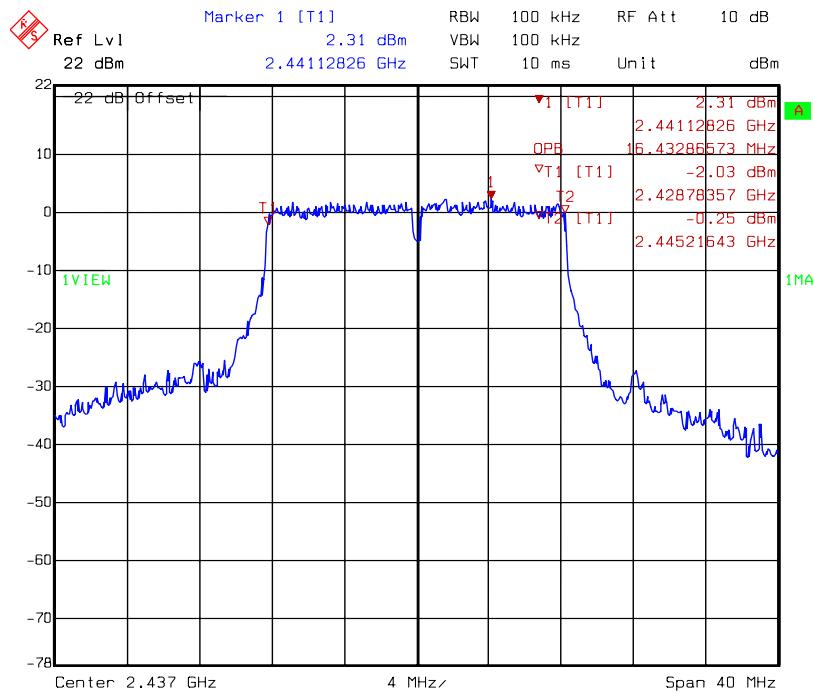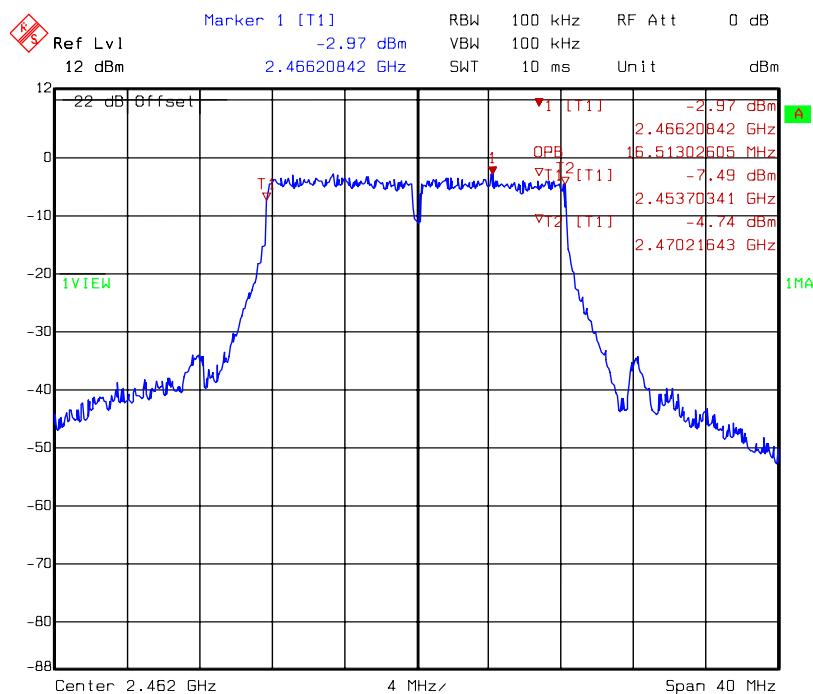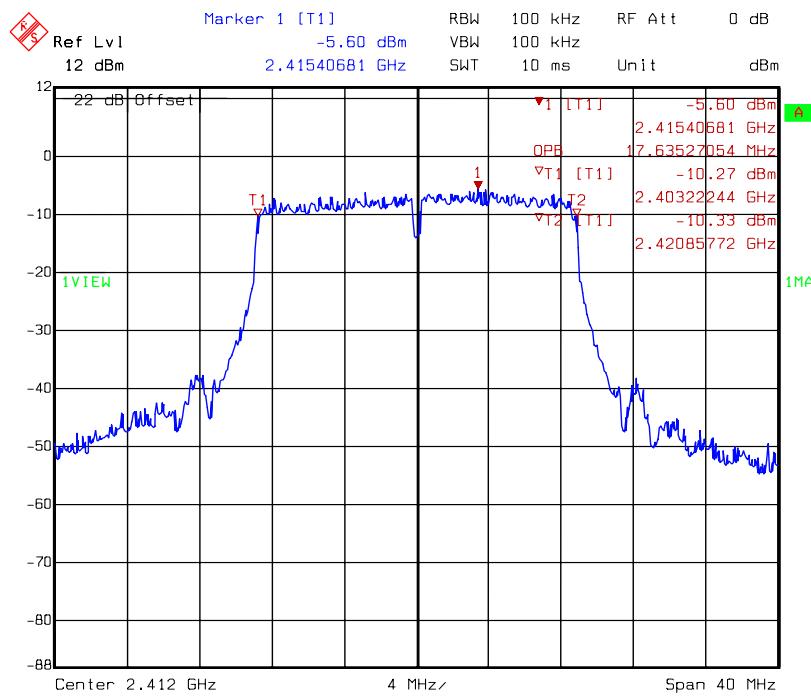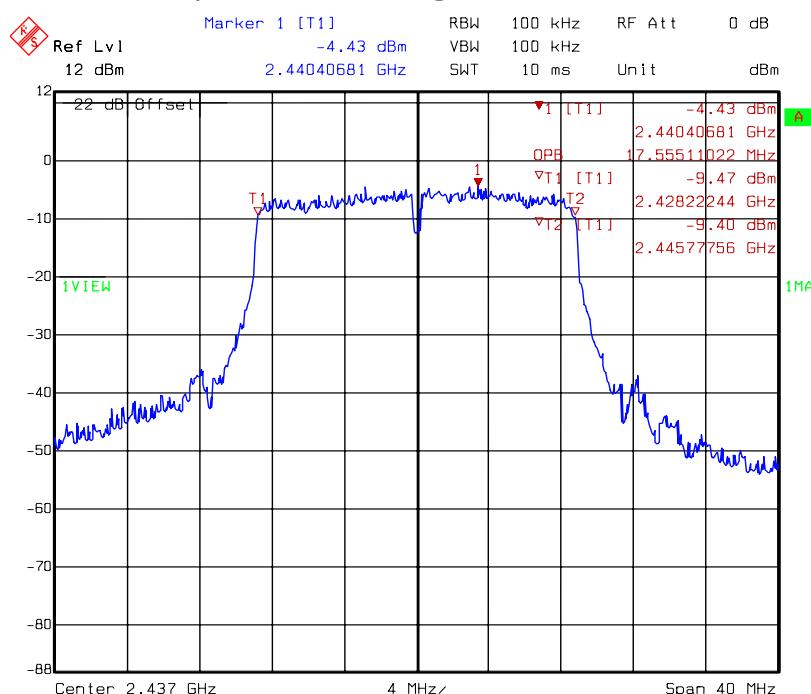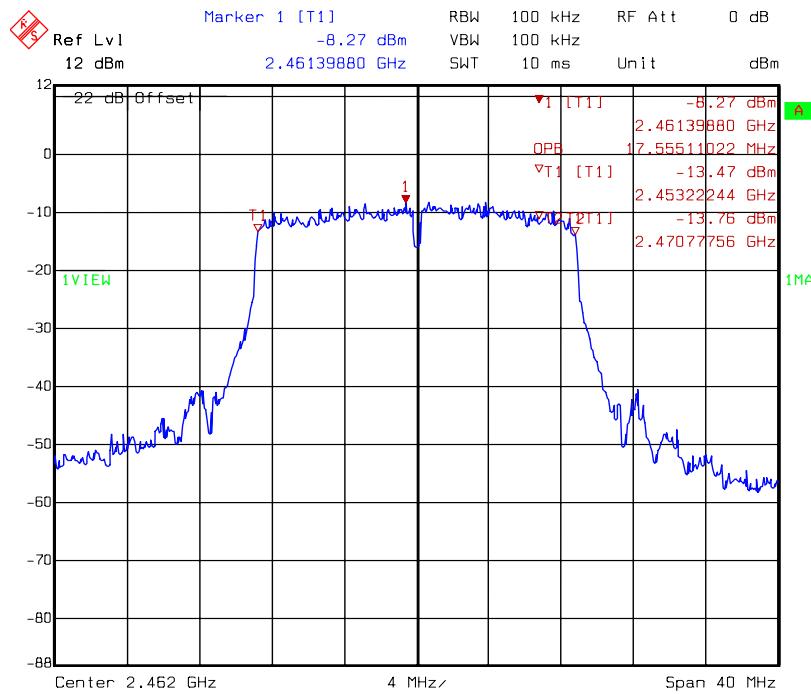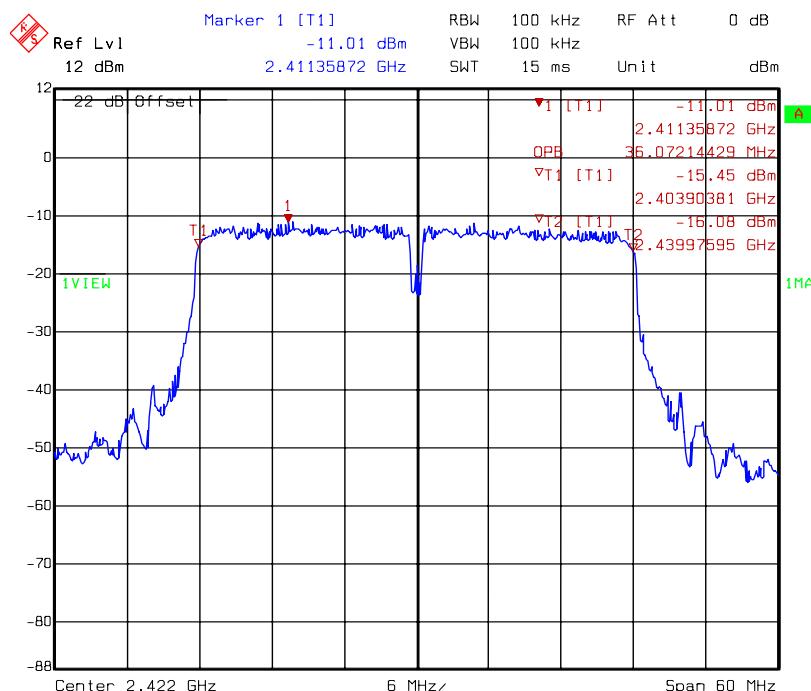Date: 04.AUG.2008 11:52:52
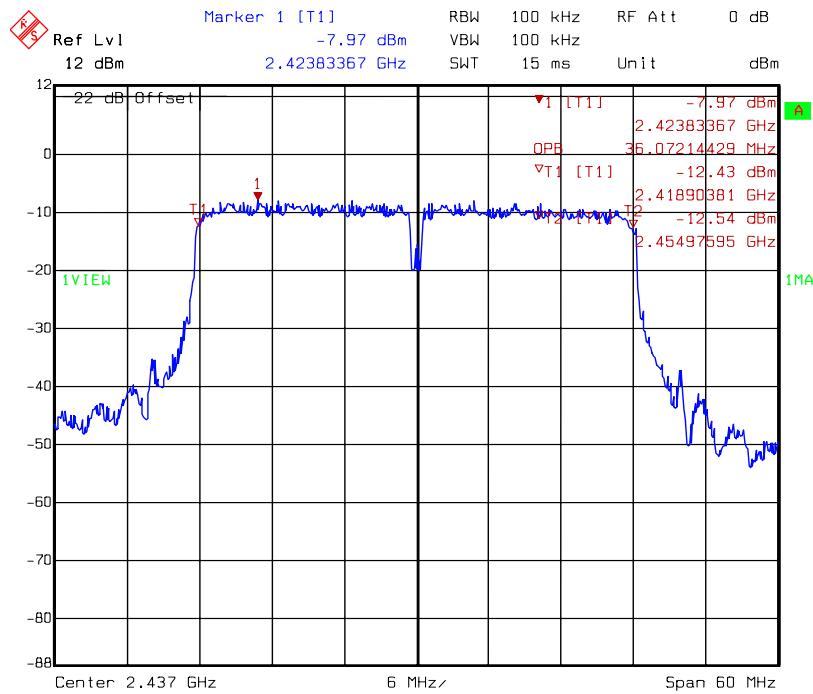
DAC0:99 % Occupied Bandwidth @ 802.11b mode channel 11

```
R&S   Ref Lvl          Marker 1 [T1]      RBW   100 kHz    RF Att     0 dB
      12 dBm            1.73 dBm           VBW   100 kHz
                        2.46003607 GHz     SWT   10 ms      Unit       dBm
```

▼1 [T1]   1.73 dBm
             2.46003607 GHz
OPB   14.98997996 MHz
▽T1 [T1]   -9.86 dBm
             2.45450501 GHz
▽T2 [T1]   -10.44 dBm
             2.46949499 GHz

```
Center 2.462 GHz          4 MHz/              Span 40 MHz
```
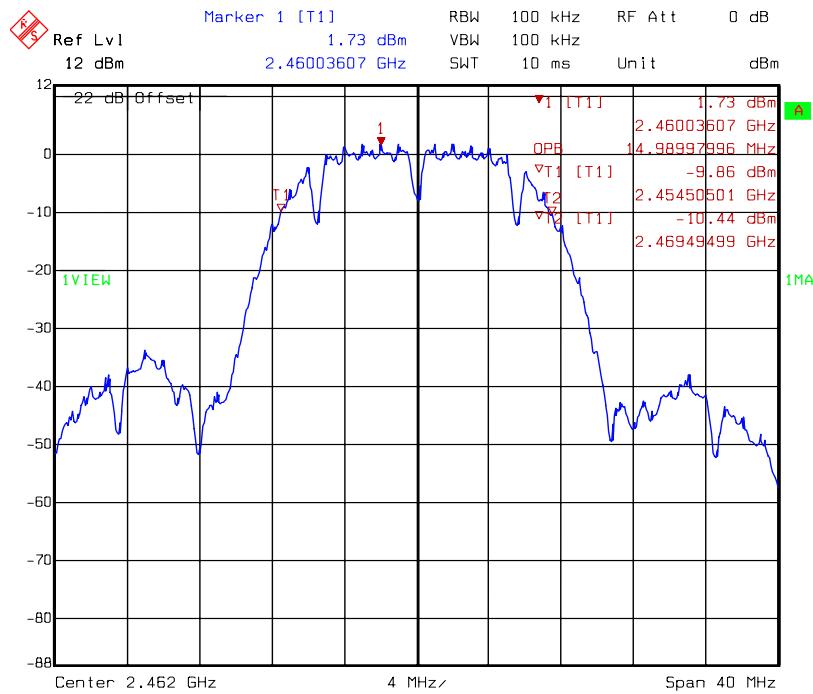
Title: Occupied Band-Width
Comment A: CH 11 at 802.11b mode DAC 0
Date: 04.AUG.2008 11:56:50

DAC0:99 % Occupied Bandwidth @ 802.11g mode channel 1

```
R&S   Ref Lvl          Marker 1 [T1]      RBW   100 kHz    RF Att     0 dB
      12 dBm            -2.48 dBm          VBW   100 kHz
                        2.40739078 GHz     SWT   10 ms      Unit       dBm
```

▼1 [T1]   -2.48 dBm
             2.40739078 GHz
OPB   16.43286573 MHz
▽T1 [T1]   -6.47 dBm
             2.40378357 GHz
▽T2 [T1]   -4.40 dBm
             2.42021643 GHz

```
Center 2.412 GHz          4 MHz/              Span 40 MHz
```
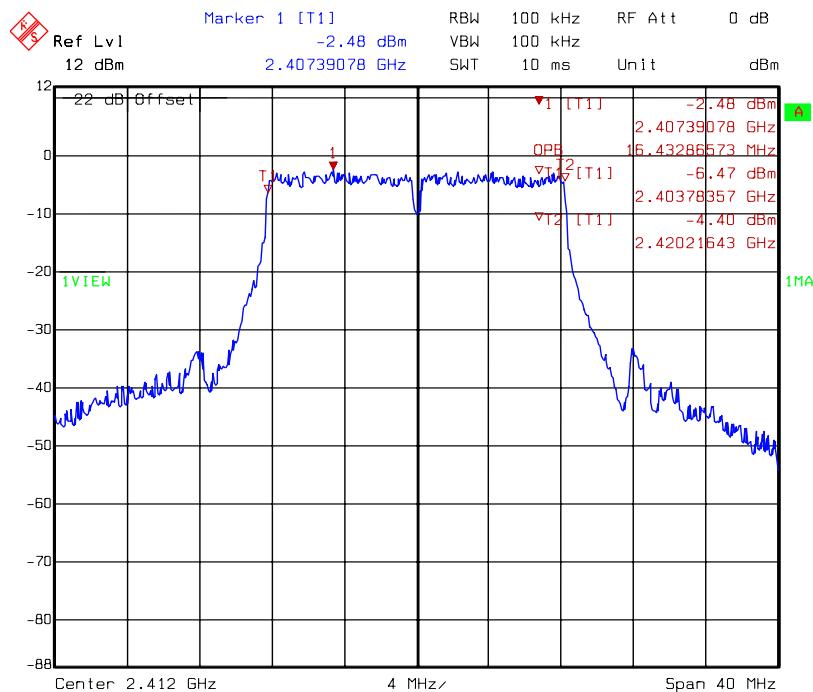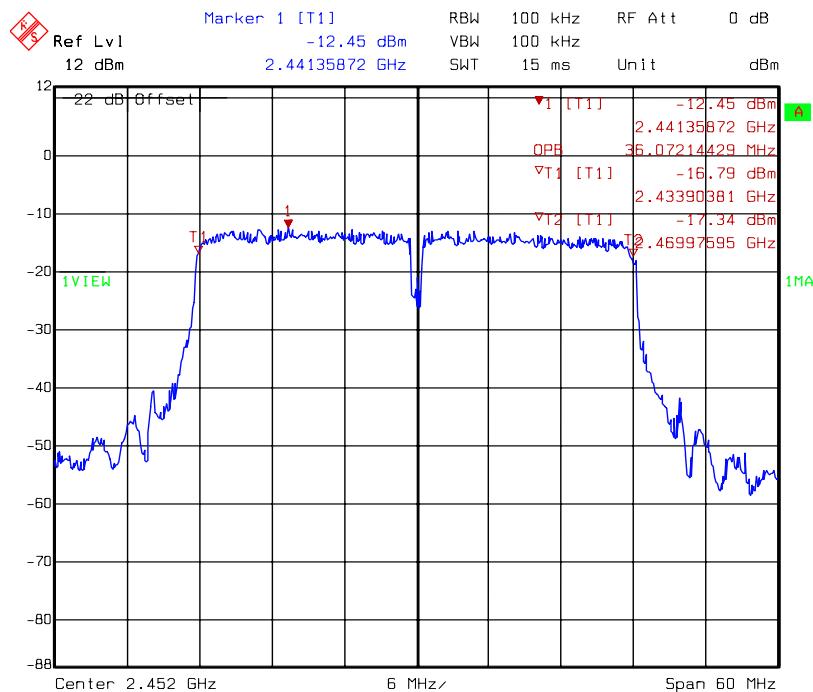
Title: Occupied Band-Width
Comment A: CH 1 at 802.11g mode DAC 0
Date: 04.AUG.2008 12:14:04
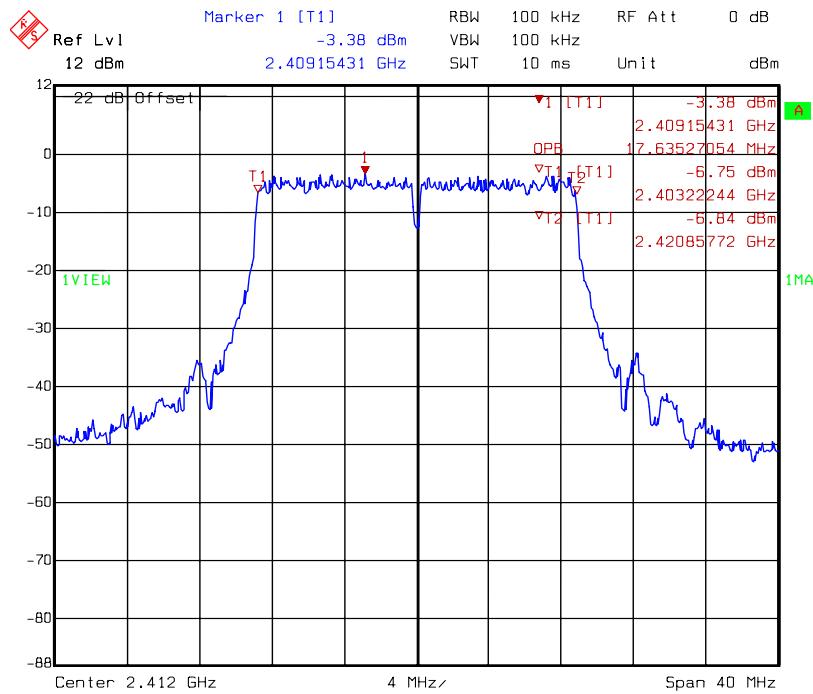
DAC0:99 % Occupied Bandwidth @ 802.11g mode channel 6

Marker 1 [T1]   RBW   100 kHz   RF Att   10 dB
Ref Lvl   2.31 dBm   VBW   100 kHz
22 dBm   2.44112826 GHz   SWT   10 ms   Unit   dBm

Title: Occupied Band-Width
Comment A: CH 6 at 802.11g mode DAC 0
Date: 04.AUG.2008 12:17:56

DAC0:99 % Occupied Bandwidth @ 802.11g mode channel 11

Marker 1 [T1]   RBW   100 kHz   RF Att   0 dB
Ref Lvl   -2.97 dBm   VBW   100 kHz
12 dBm   2.46620842 GHz   SWT   10 ms   Unit   dBm

Title: Occupied Band-Width
Comment A: CH 11 at 802.11g mode DAC 0
Date: 04.AUG.2008 12:21:14

Dual Tx

DAC0:99 % Occupied Bandwidth @ 802.11n HT20 mode channel 1

DAC0:99 % Occupied Bandwidth @802.11n HT20 mode channel 6

DAC0:99 % Occupied Bandwidth @ 802.11n HT20 mode channel 11

Title: Occupied Band-Width
Comment A: CH 11 at 802.11n 20MHz mode DAC 0
Date: 04.AUG.2008 14:03:17

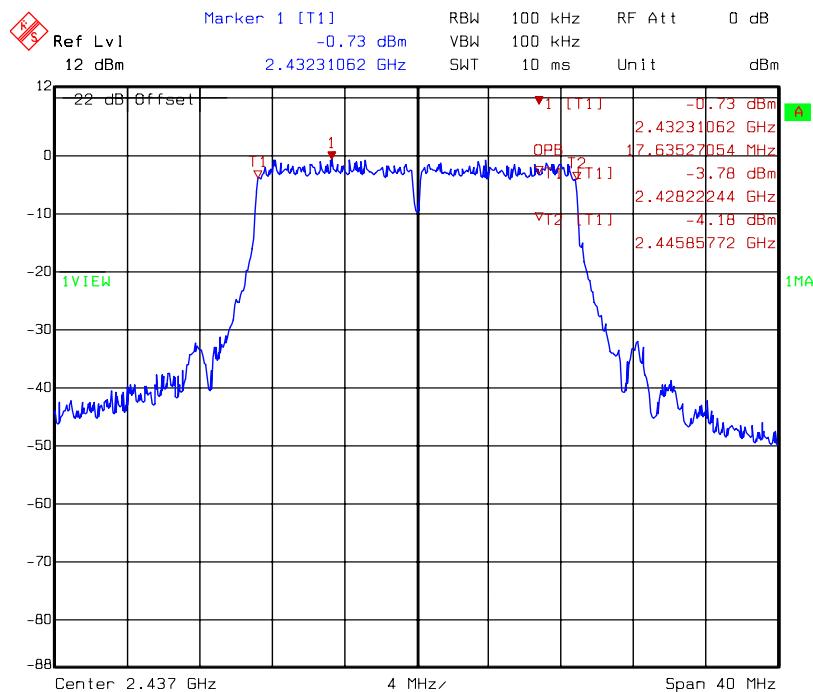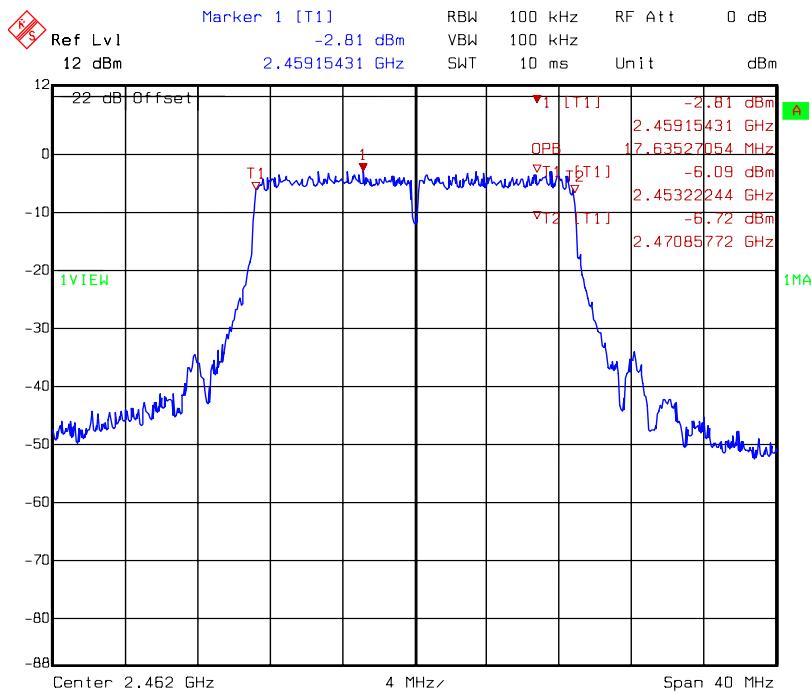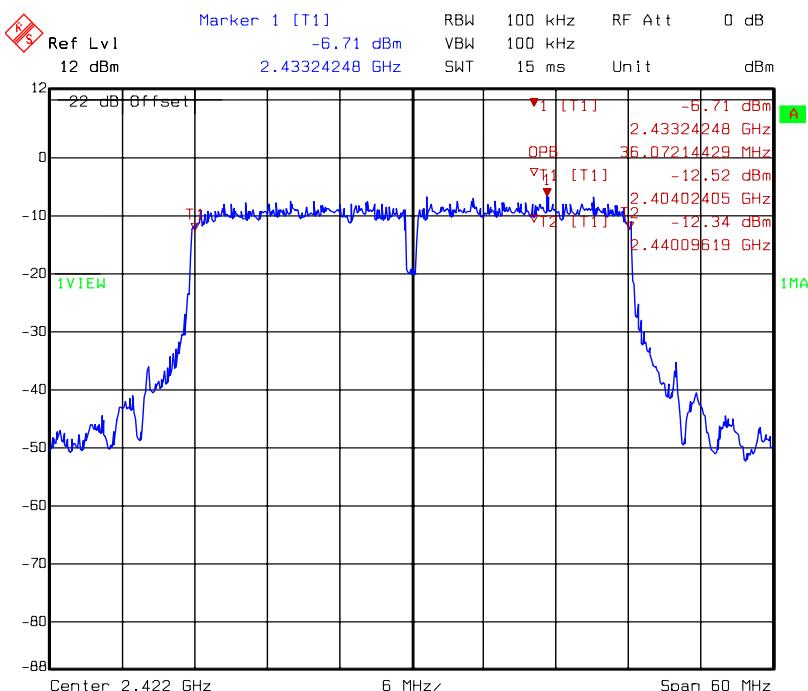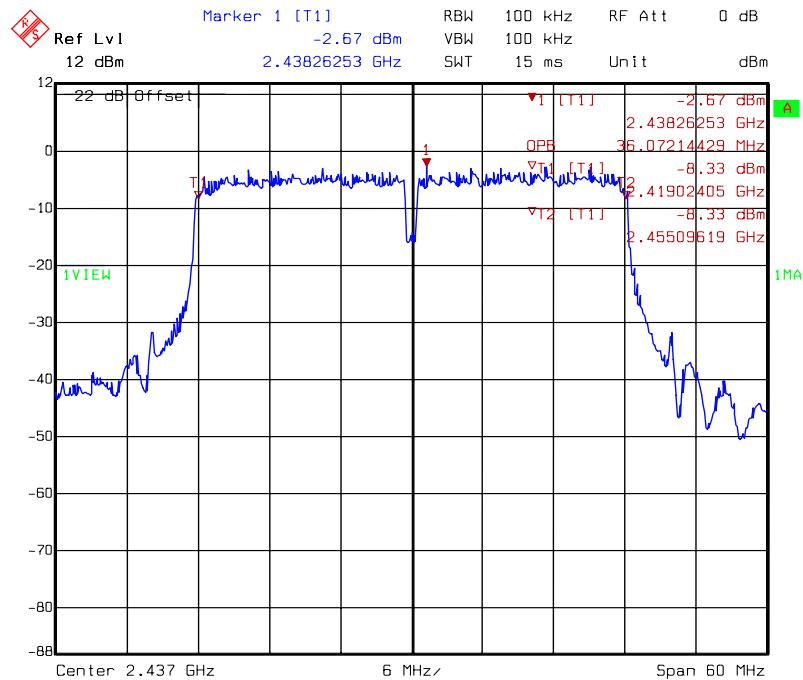## DAC0:99 % Occupied Bandwidth @ 802.11n HT40 mode channel 3
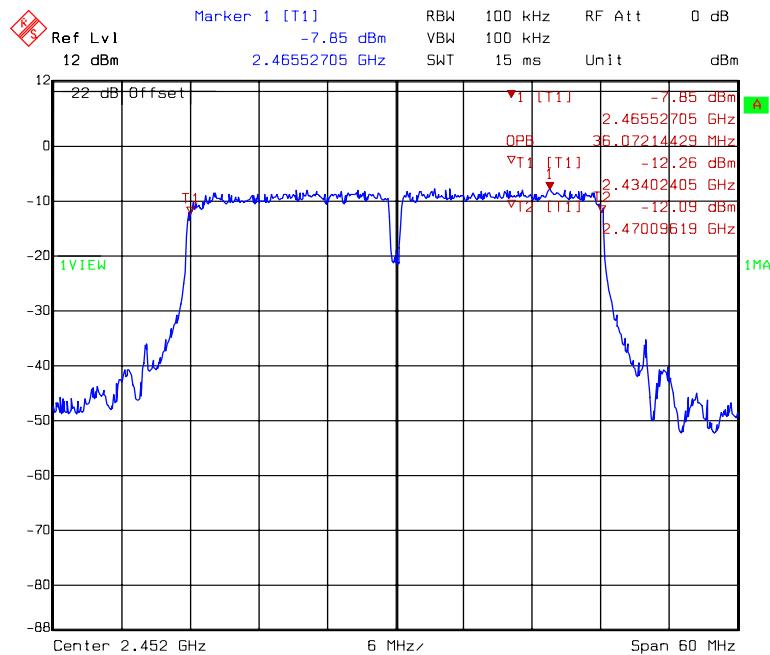

Title: Occupied Band-Width
Comment A: CH 3 at 802.11n 40MHz mode DAC 0
Date: 04.AUG.2008 14:07:50

DAC0:99 % Occupied Bandwidth @ 802.11n HT40 mode channel 6


```
Title:      Occupied Band-Width
Comment A: CH 6 at 802.11n 40MHz mode DAC 0
Date:      04.AUG.2008  14:11:23
```

DAC0:99 % Occupied Bandwidth @ 802.11n HT40 mode channel 9


```
Title:      Occupied Band-Width
Comment A: CH 9 at 802.11n 40MHz mode DAC 0
Date:      04.AUG.2008  14:14:49
```

DAC1:99 % Occupied Bandwidth @ 802.11n HT20 mode channel 1

Title: Occupied Band-Width
Comment A: CH 1 at 802.11n 20MHz mode DAC 1
Date: 04.AUG.2008 14:36:26

DAC1:99 % Occupied Bandwidth @ 802.11n HT20 mode channel 6

Title: Occupied Band-Width
Comment A: CH 6 at 802.11n 20MHz mode DAC 1
Date: 04.AUG.2008 14:40:57

DAC1:99 % Occupied Bandwidth @ 802.11n HT20 mode channel 11

Title: Occupied Band-Width
Comment A: CH 11 at 802.11n 20MHz mode DAC 1
Date: 04.AUG.2008 14:44:19

DAC1:99 % Occupied Bandwidth @ 802.11n HT40 mode channel 3

Title: Occupied Band-Width
Comment A: CH 3 at 802.11n 40MHz mode DAC 1
Date: 04.AUG.2008 14:48:27

DAC1:99 % Occupied Bandwidth @ 802.11n HT40 mode channel 6

Title: Occupied Band-Width
Comment A: CH 6 at 802.11n 40MHz mode DAC 1
Date: 04.AUG.2008 14:51:30

DAC1:99 % Occupied Bandwidth @ 802.11n HT40 mode channel 9

Title: Occupied Band-Width
Comment A: CH 9 at 802.11n 40MHz mode DAC 1
Date: 04.AUG.2008 14:54:32

5. Maximum Output Power

Name of Test	Maximum output power
Base Standard	FCC 15.247(b)

Measurement Uncertainty: ±2dB (k=2)

Test Result: Complies

Measurement Data: See Table below

Method of Measurement:

Reference FCC document: KDB558074

The power output was measured on the EUT using a 50 ohm SMA Cable connected to peak power meter via power sensor for below 20MHz bandwidth. For 40MHz bandwidth (HT40 mode), the spectrum analyzer was used.

Power output was measured with the maximum rated input level.

Test Diagram:
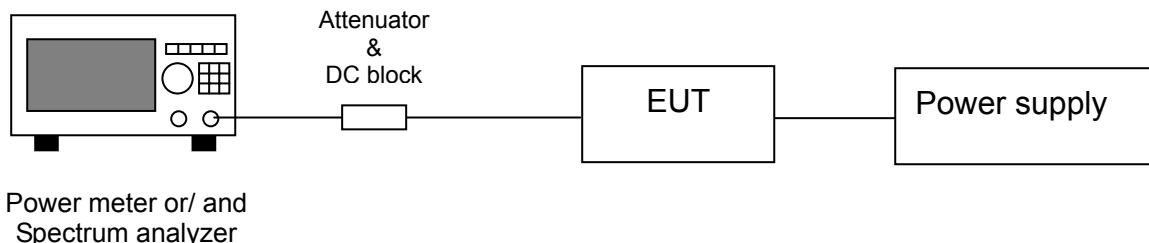
Power meter or/ and
Spectrum analyzer

Note: The EUT was tested while in a continuous transmit mode and the worst case data rates are 1 Mbps data rate for 802.11b mode, 6 Mbps data rate for 802.11g mode, 6.5 Mbps data rate for 802.11n HT20 mode and 13 Mbps data rate for 802.11n HT40 mode. The EUT was tuned to a low, middle and high channel.

Table 3. Maximum output power

Single Tx

| Mode	Channel	Frequency (MHz)	Output Power (dBm) DAC0		Limit (dBm)	Result
			PK	AV		
802.11b	1	2412	17.29	14.19	30	Pass
	6	2437	17.56	14.48	30	Pass
	11	2462	19.27	16.18	30	Pass
802.11g	1	2412	23.95	13.8	30	Pass
	6	2437	26.52	18.57	30	Pass
	11	2462	23.24	13.65	30	Pass

Dual Tx

By power meter measured

Mode	Channel	Frequency (MHz)	Output Power (dBm) DAC0		DAC1		Total Power (PK)		Total Power (AV)		Limit (dBm)
			PK	AV	PK	AV	mW	dBm	mW	dBm	
802.11n HT20	1	2412	18.62	9.73	21.80	12.80	224.13	23.51	28.45	14.54	30
	6	2437	20.64	11.41	25.93	15.61	507.62	27.06	50.23	17.01	30
	11	2462	16.82	7.67	24.16	13.57	308.70	24.90	28.60	14.56	30

By spectrum analyzer measured

| Mode	Channel	Frequency (MHz)	Output Power (dBm) DAC0	DAC1	Total Power (PK)		Limit (dBm)
			PK	PK	mW	dBm	
802.11n HT40	3	2422	18.50	20.03	171.49	22.34	30
	6	2437	21.39	25.65	505.00	27.03	30
	9	2452	16.42	21.50	185.11	22.67	30

Dual Tx

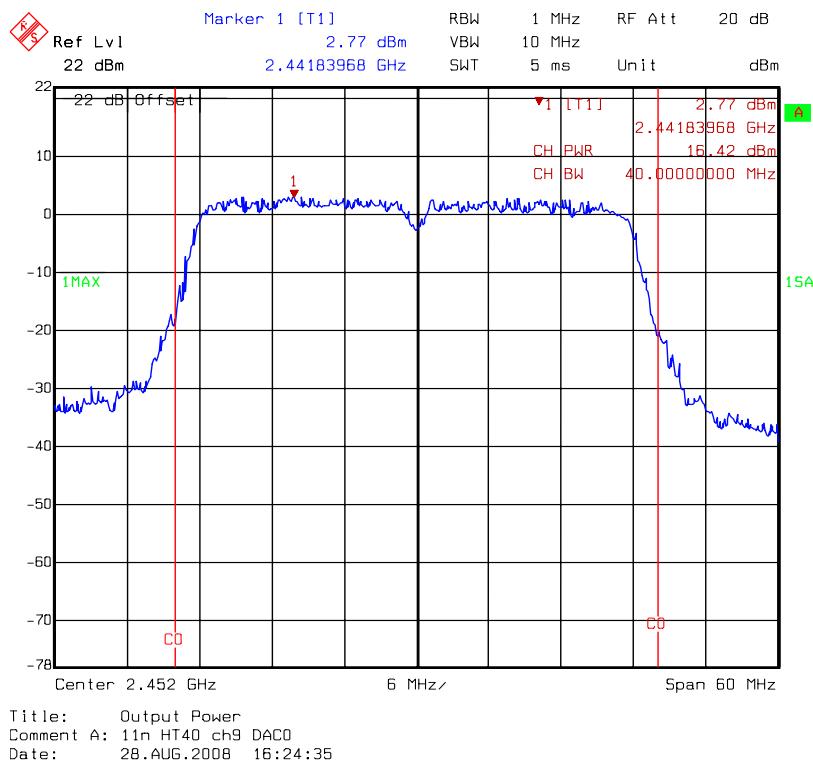### DAC0 : Maximum Output Power @ 802.11n HT40 mode channel 3
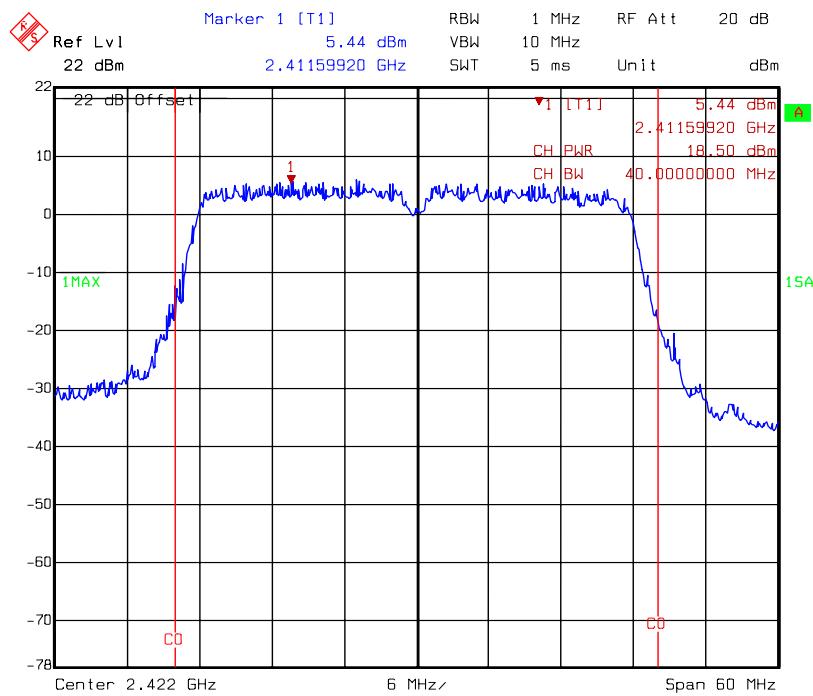
Title: Output Power
Comment A: 11n HT40 ch3 DAC0
Date: 28.AUG.2008 16:31:19

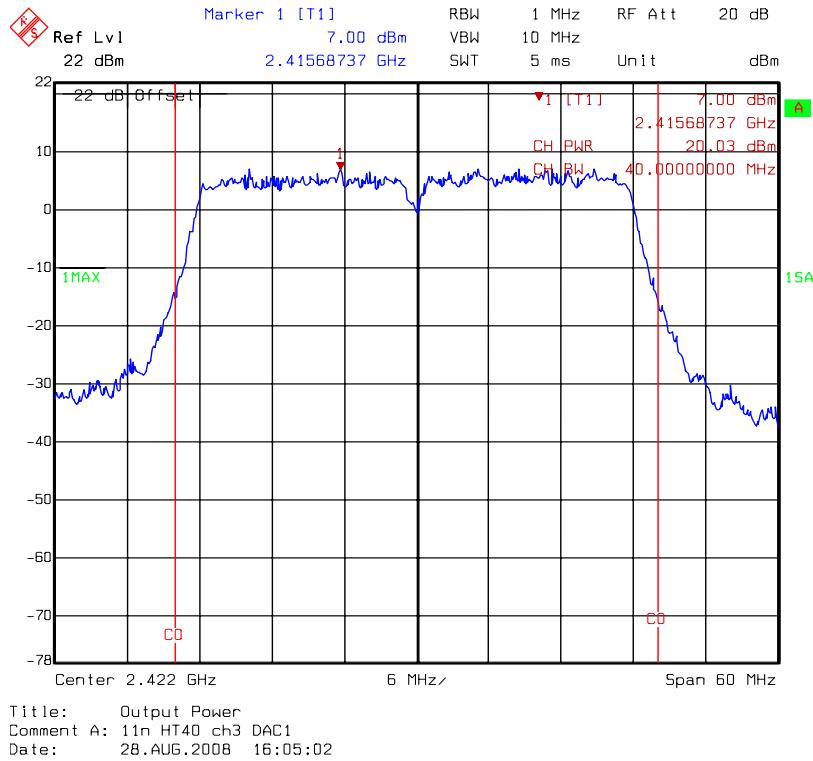### DAC0 : Maximum Output Power @ 802.11n HT40 mode channel 6
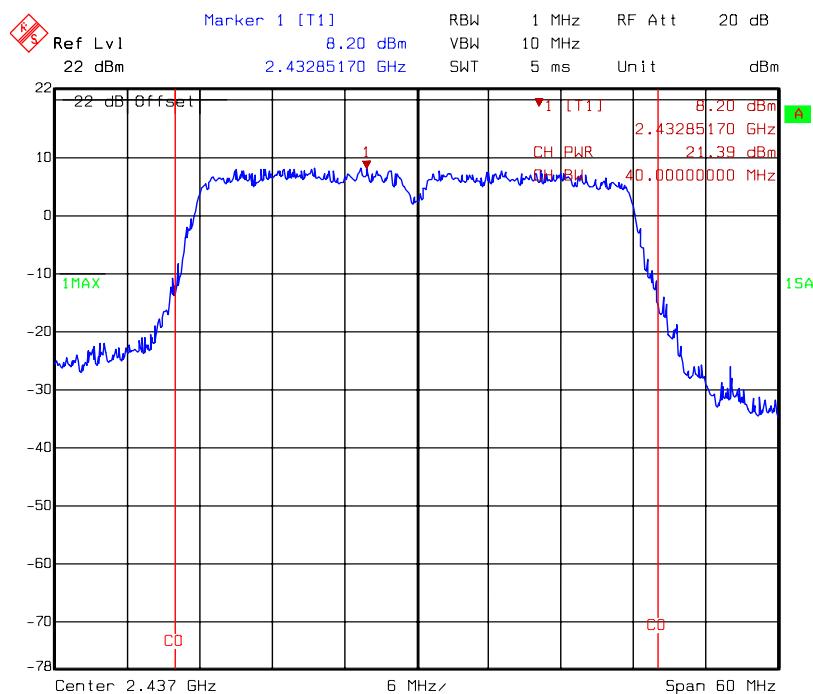
Title: Output Power
Comment A: 11n HT40 ch6 DAC0
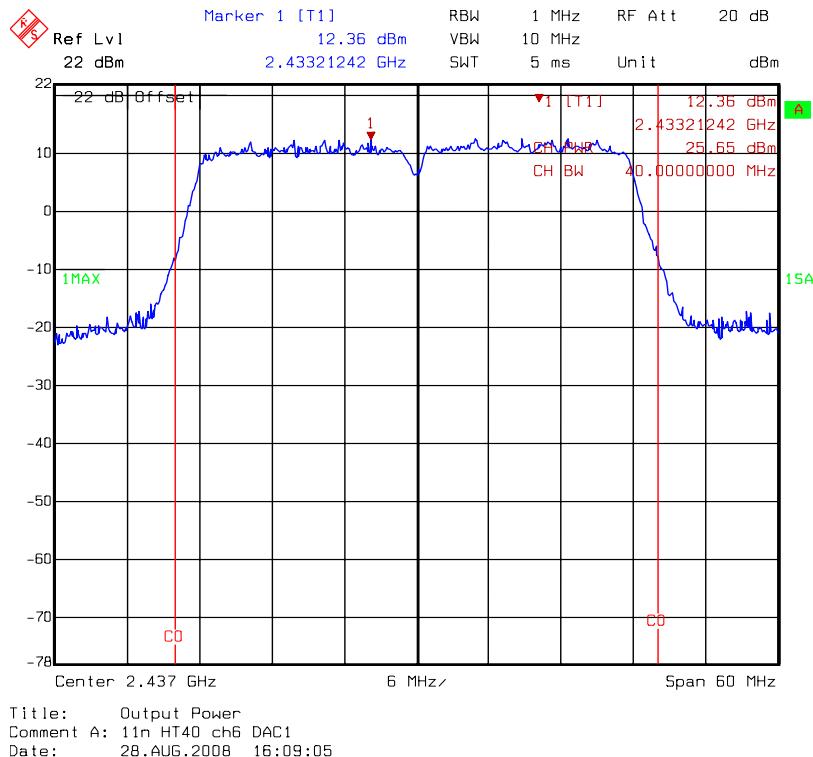Date: 28.AUG.2008 16:28:40

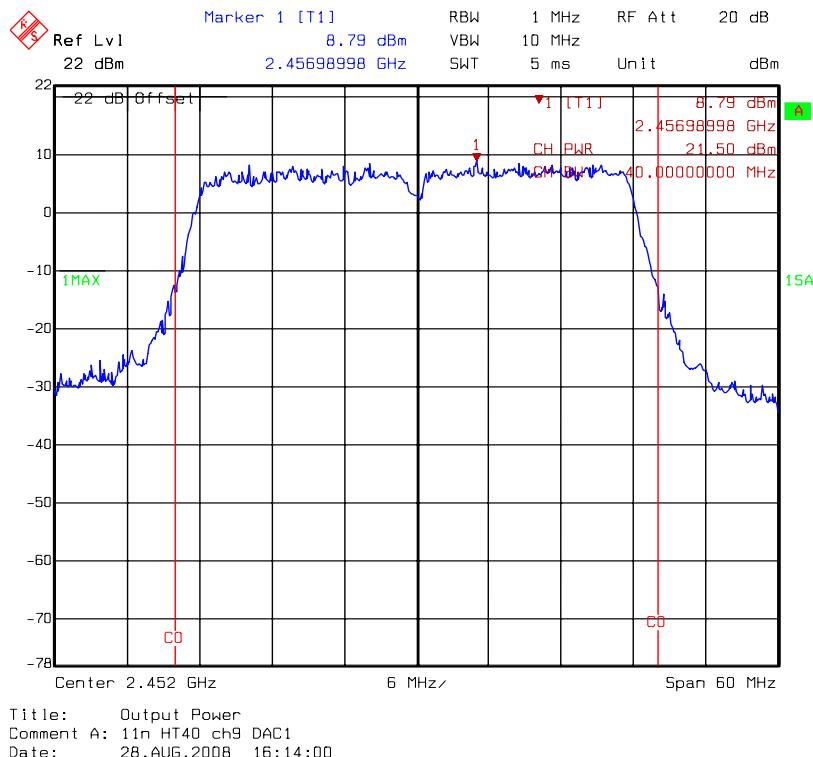## DAC0 : Maximum Output Power @ 802.11n HT40 mode channel 9

```
Marker 1 [T1]              RBW    1 MHz    RF Att   20 dB
Ref Lvl                    VBW   10 MHz
22 dBm          2.77 dBm   SWT    5 ms     Unit     dBm
                2.44183968 GHz
```

Ref Lvl 22 dBm — 22 dB Offset

▼1 [T1]   2.77 dBm
                  2.44183968 GHz
CH PWR   16.42 dBm
CH BW   40.00000000 MHz

1MAX   1SA

C0   C0

Center 2.452 GHz   6 MHz/   Span 60 MHz

```
Title:      Output Power
Comment A: 11n HT40 ch9 DAC0
Date:       28.AUG.2008  16:24:35
```

DAC1 : Maximum Output Power @ 802.11n HT40 mode channel 3

```
Marker 1 [T1]              RBW    1 MHz    RF Att   20 dB
Ref Lvl                    VBW   10 MHz
22 dBm          7.00 dBm   SWT    5 ms     Unit     dBm
                2.41568737 GHz
```

Ref Lvl 22 dBm — 22 dB Offset

▼1 [T1]   7.00 dBm
                  2.41568737 GHz
CH PWR   20.03 dBm
CH BW   40.00000000 MHz

1MAX   1SA

C0   C0

Center 2.422 GHz   6 MHz/   Span 60 MHz

```
Title:      Output Power
Comment A: 11n HT40 ch3 DAC1
Date:       28.AUG.2008  16:05:02
```

DAC1 : Maximum Output Power @ 802.11n HT40 mode channel 6


```
                    Marker 1 [T1]              RBW    1 MHz    RF Att    20 dB
    Ref Lvl                    12.36 dBm      VBW   10 MHz
    22 dBm              2.43321242 GHz        SWT    5 ms     Unit        dBm
```

Title: Output Power
Comment A: 11n HT40 ch6 DAC1
Date: 28.AUG.2008 16:09:05

DAC1 : Maximum Output Power @ 802.11n HT40 mode channel 9


```
                    Marker 1 [T1]              RBW    1 MHz    RF Att    20 dB
    Ref Lvl                     8.79 dBm      VBW   10 MHz
    22 dBm              2.45698998 GHz        SWT    5 ms     Unit        dBm
```

Title: Output Power
Comment A: 11n HT40 ch9 DAC1
Date: 28.AUG.2008 16:14:00

6. Power Spectral Density

Name of Test	Power Spectral Density
Base Standard	FCC 15.247(e)

Test Result: Complies

Measurement Data: See Table & plots below

Method of Measurement:

Reference FCC document: KDB558074

A portion of the transmitted signal is coupled to a Spectrum Analyzer with a resolution bandwidth of at least 1 % of the bandwidth of the transmitted signal. The resolution bandwidth is chosen so as not to reduce the peak level of the measured waveform. The appropriate bandwidth mask is applied to the output waveform to verify compliance.

Test Diagram:

Note: The EUT was tested while in a continuous transmit mode and the worst case data rates are 1 Mbps data rate for 802.11b mode, 6 Mbps data rate for 802.11g mode, 6.5 Mbps data rate for 802.11n HT20 mode and 13 Mbps data rate for 802.11n HT40 mode. The EUT was tuned to a low, middle and high channel.

Table 4. Power Spectral Density

Single Tx

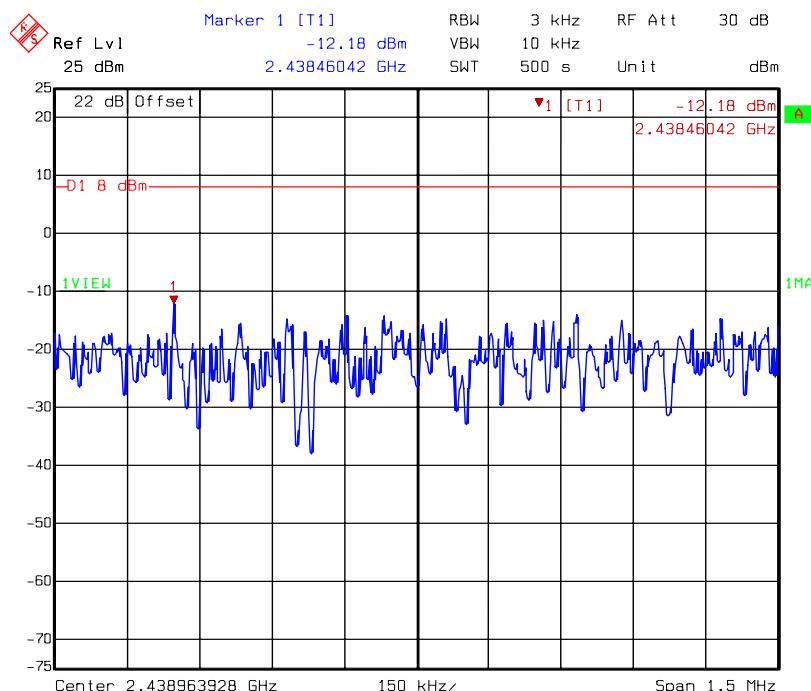| Mode	Channel	Frequency (MHz)	Data rate Mbps	PPSD (dBm) DAC0	Limit (dBm)
802.11b	1	2412	1	-17.27	8
	6	2437		-12.18	8
	11	2462		-16.70	8
802.11g	1	2412	6	-17.89	8
	6	2437		-12.51	8
	11	2462		-17.95	8

Dual Tx

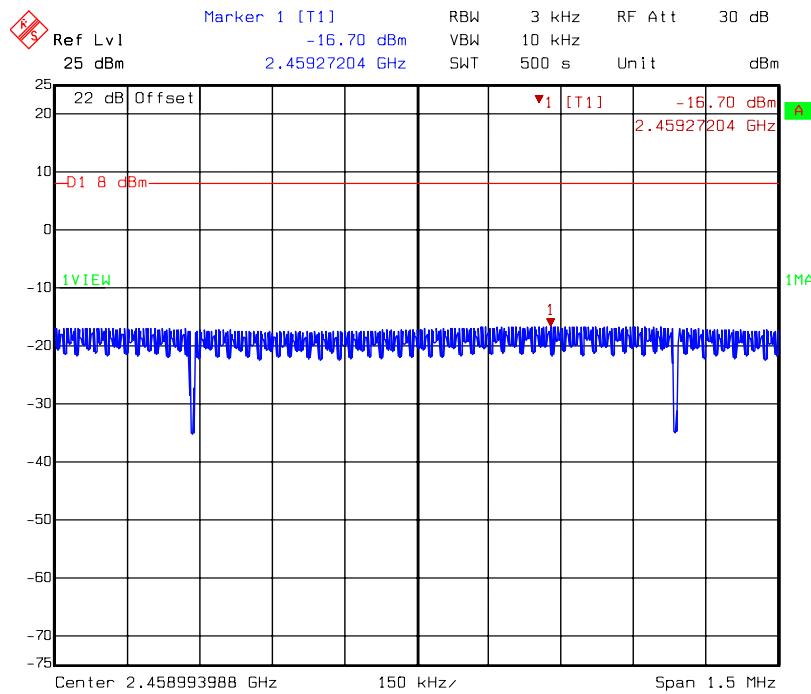| Mode	Channel	Frequency (MHz)	Data rate Mbps	PPSD (dBm)		Total PPSD		Limit (dBm)
				DAC0	DAC1	mW	dBm	
802.11n HT20	1	2412	6.5	-19.79	-18.44	0.02	-16.05	8
	6	2437		-18.8	-15.13	0.04	-13.58	8
	11	2462		-22.77	-17.6	0.02	-16.45	8
802.11n HT40	3	2422	13	-24.96	-22.68	0.01	-20.66	8
	6	2437		-21.51	-18.48	0.02	-16.73	8
	9	2452		-26.48	-21.74	0.01	-20.48	8

Single Tx

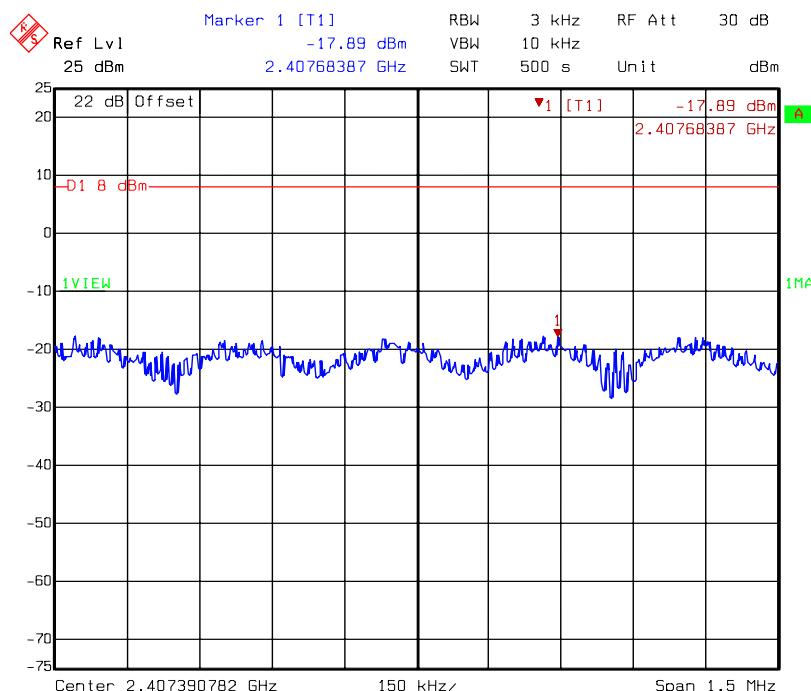### DAC0 :Power Spectral Density @ 802.11b mode channel 1


```
                  Marker 1 [T1]        RBW     3 kHz   RF Att    30 dB
Ref Lvl             -17.27 dBm         VBW    10 kHz
 25 dBm          2.41279008 GHz        SWT    500 s    Unit        dBm

 25
    22 dB Offset                              ▼1 [T1]      -17.27 dBm    A
 20                                                      2.41279008 GHz

 10
  D1 8 dBm

  0

-10 1VIEW                                                              1MA
                                      1
-20

-30

-40

-50

-60

-70

-75
    Center 2.413002004 GHz      150 kHz/          Span 1.5 MHz
```

Title: Power density
Comment A: CH 1 at 802.11b mode DAC 0
Date: 04.AUG.2008 11:48:11

DAC0 :Power Spectral Density @ 802.11b mode channel 6


```
                  Marker 1 [T1]        RBW     3 kHz   RF Att    30 dB
Ref Lvl             -12.18 dBm         VBW    10 kHz
 25 dBm          2.43846042 GHz        SWT    500 s    Unit        dBm

 25
    22 dB Offset                              ▼1 [T1]      -12.18 dBm    A
 20                                                      2.43846042 GHz

 10
  D1 8 dBm

  0

-10 1VIEW      1                                                       1MA

-20

-30

-40

-50

-60

-70

-75
    Center 2.438963928 GHz      150 kHz/          Span 1.5 MHz
```

Title: Power density
Comment A: CH 6 at 802.11b mode DAC 0
Date: 04.AUG.2008 11:51:25

DAC0 :Power Spectral Density @ 802.11b mode channel 11


```
         Marker 1 [T1]        RBW    3 kHz   RF Att   30 dB
Ref Lvl            -16.70 dBm  VBW   10 kHz
25 dBm        2.45927204 GHz  SWT   500 s   Unit      dBm
```

Title: Power density
Comment A: CH 11 at 802.11b mode DAC 0
Date: 04.AUG.2008 11:55:22

DAC0 :Power Spectral Density @ 802.11g mode channel 1


```
         Marker 1 [T1]        RBW    3 kHz   RF Att   30 dB
Ref Lvl            -17.89 dBm  VBW   10 kHz
25 dBm        2.40768387 GHz  SWT   500 s   Unit      dBm
```

Title: Power density
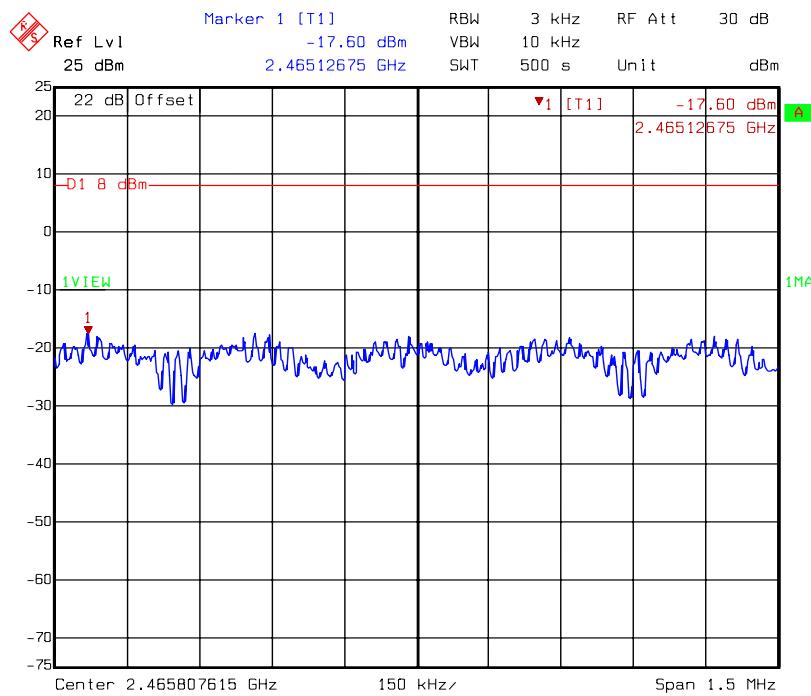Comment A: CH 1 at 802.11g mode DAC 0
Date: 04.AUG.2008 12:12:36

DAC0 :Power Spectral Density @ 802.11g mode channel 6

Title: Power density
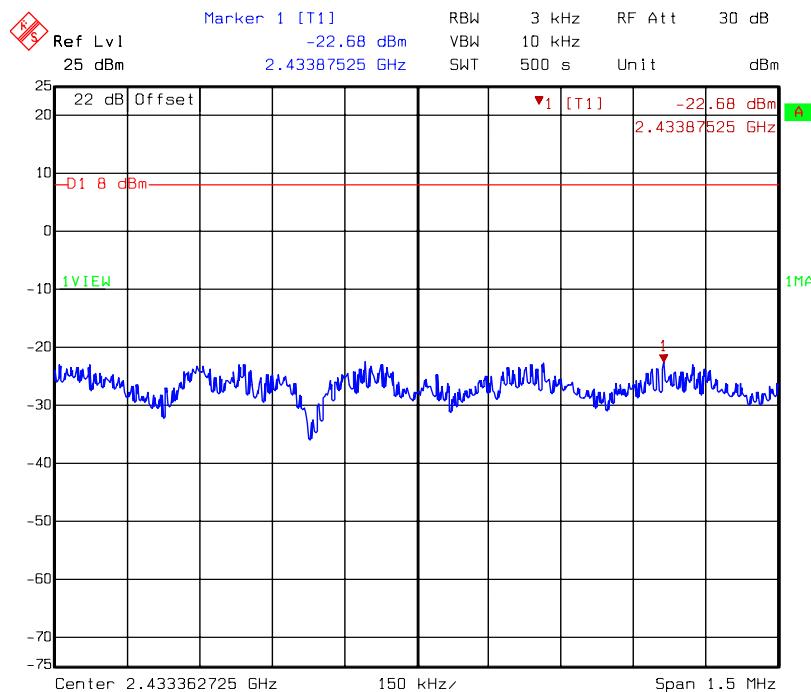Comment A: CH 6 at 802.11g mode DAC 0
Date: 04.AUG.2008 12:16:22

DAC0 :Power Spectral Density @ 802.11g mode channel 11

Title: Power density
Comment A: CH 11 at 802.11g mode DAC 0
Date: 04.AUG.2008 12:19:46

Dual Tx

DAC0 :Power Spectral Density @ 802.11n HT20 mode channel 1

Title: Power density
Comment A: CH 1 at 802.11n 20MHz mode DAC 0
Date: 04.AUG.2008 13:54:30

DAC0 :Power Spectral Density @ 802.11n HT20 mode channel 6

Title: Power density
Comment A: CH 6 at 802.11n 20MHz mode DAC 0
Date: 04.AUG.2008 13:57:47

DAC0 :Power Spectral Density @ 802.11n HT20 mode channel 11
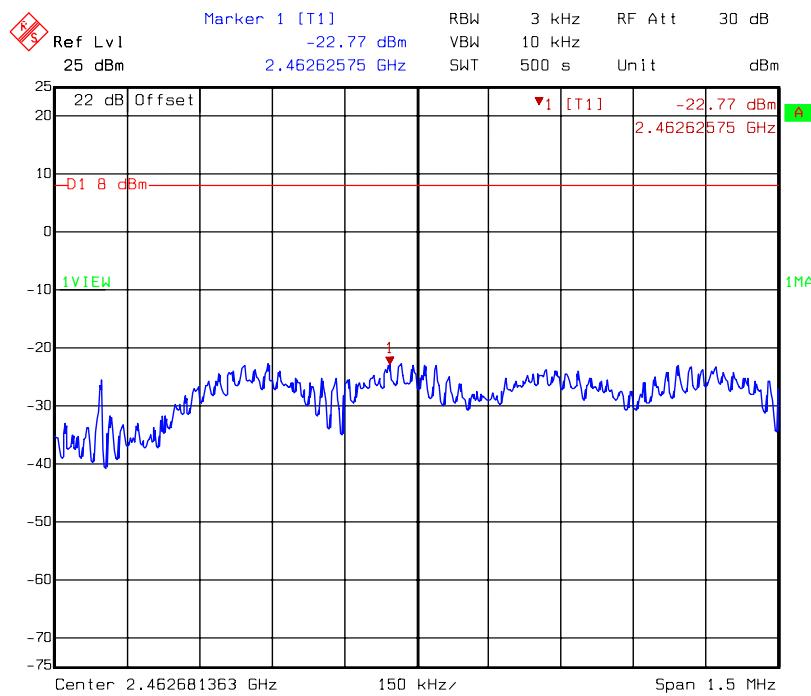
DAC0 :Power Spectral Density @ 802.11n HT40 mode channel 3
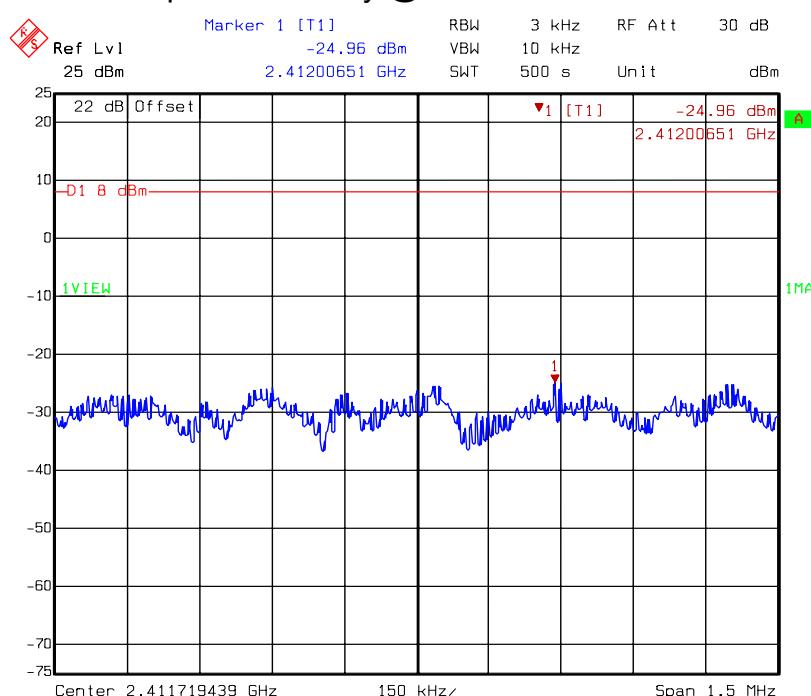
DAC0 :Power Spectral Density @ 802.11n HT40 mode channel 6
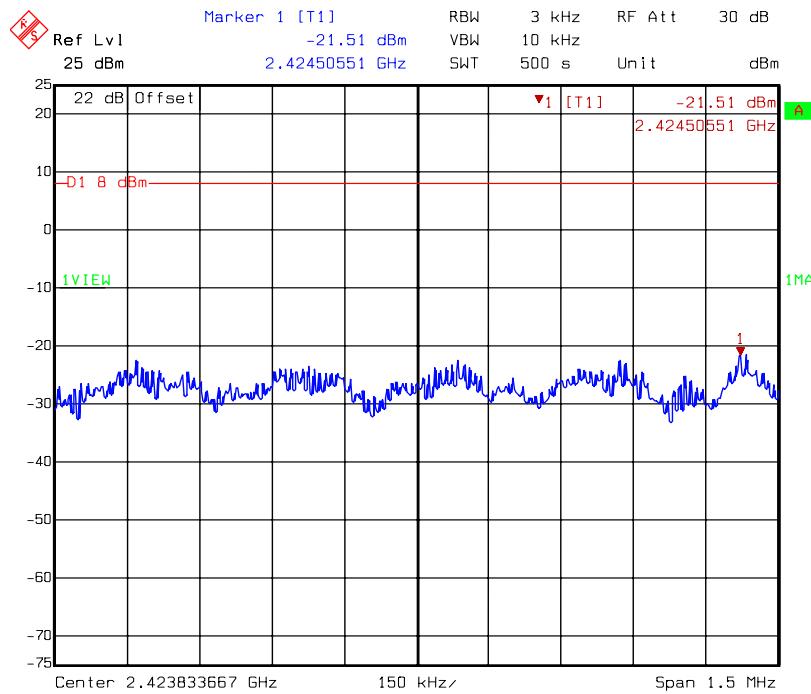
Title: Power density
Comment A: CH 6 at 802.11n 40MHz mode DAC 0
Date: 04.AUG.2008 14:09:55

DAC0 :Power Spectral Density @ 802.11n HT40 mode channel 9
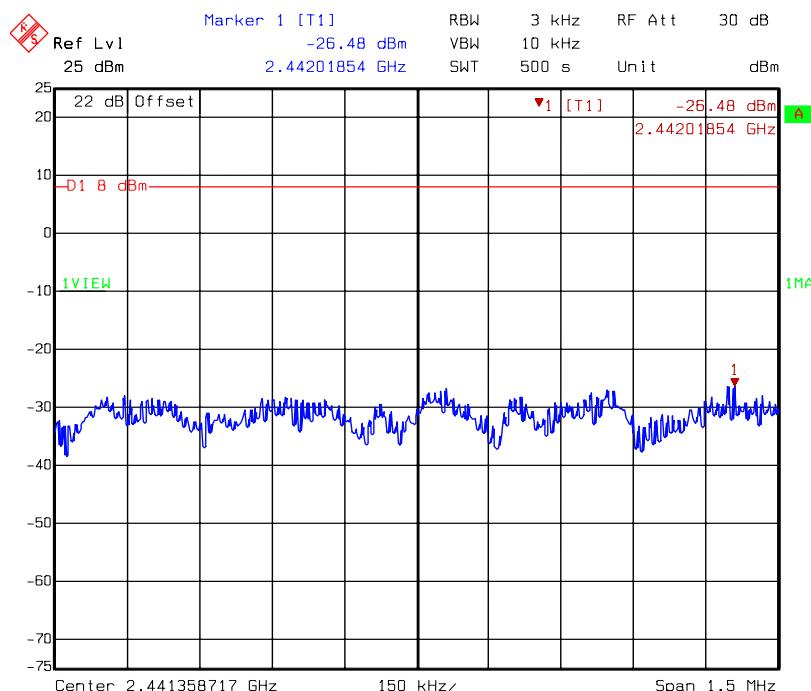
Title: Power density
Comment A: CH 9 at 802.11n 40MHz mode DAC 0
Date: 04.AUG.2008 14:13:20

DAC1 :Power Spectral Density @ 802.11n HT20 mode channel 1
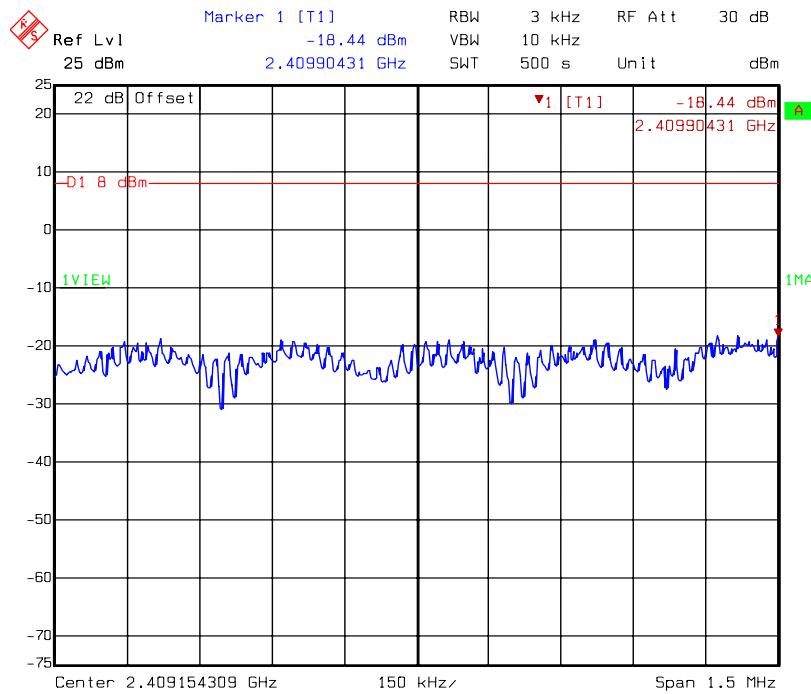
Title: Power density
Comment A: CH 1 at 802.11n 20MHz mode DAC 1
Date: 04.AUG.2008 14:34:58

DAC1 :Power Spectral Density @ 802.11n HT20 mode channel 6

Title: Power density
Comment A: CH 6 at 802.11n 20MHz mode DAC 1
Date: 04.AUG.2008 14:39:29
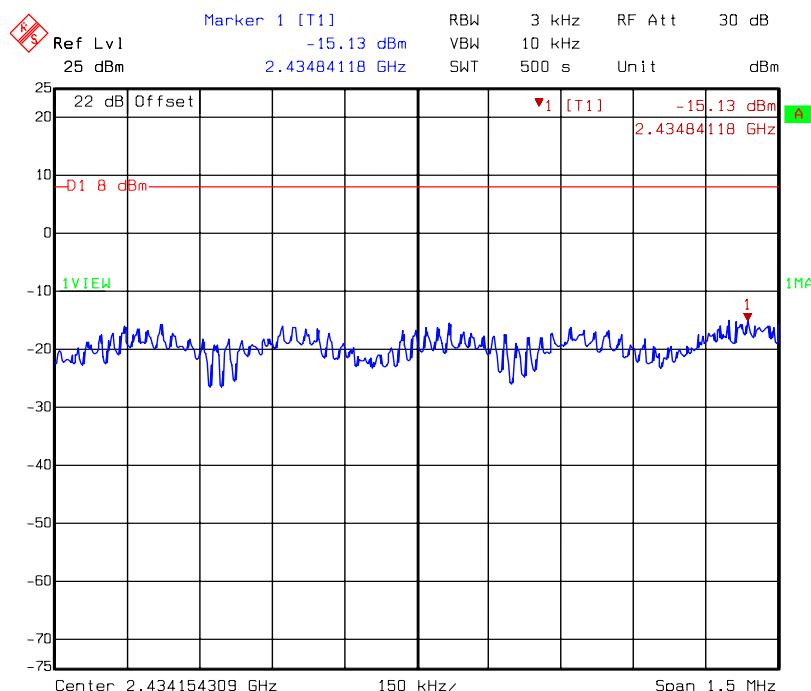
DAC1 : Power Spectral Density @ 802.11n HT20 mode channel 11

Title: Power density
Comment A: CH 11 at 802.11n 20MHz mode DAC 1
Date: 04.AUG.2008 14:42:51

DAC1: Power Spectral Density @ 802.11n HT40 mode channel 3

Title: Power density
Comment A: CH 3 at 802.11n 40MHz mode DAC 1
Date: 04.AUG.2008 14:46:59

DAC1 :Power Spectral Density @ 802.11n HT40 mode channel 6

Title: Power density
Comment A: CH 6 at 802.11n 40MHz mode DAC 1
Date: 04.AUG.2008   14:50:02

DAC1 :Power Spectral Density @ 802.11n HT40 mode channel 9

Title: Power density
Comment A: CH 9 at 802.11n 40MHz mode DAC 1
Date: 04.AUG.2008   14:53:04
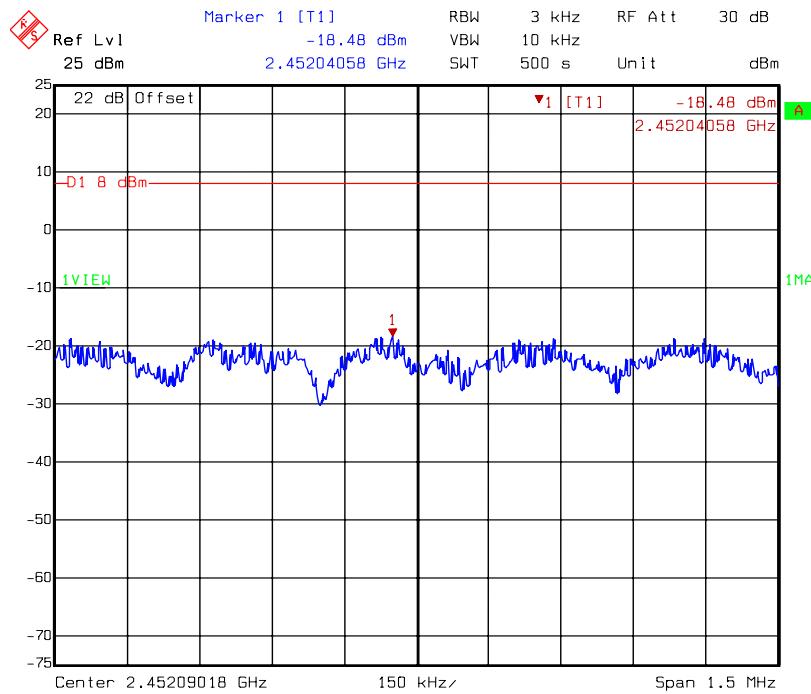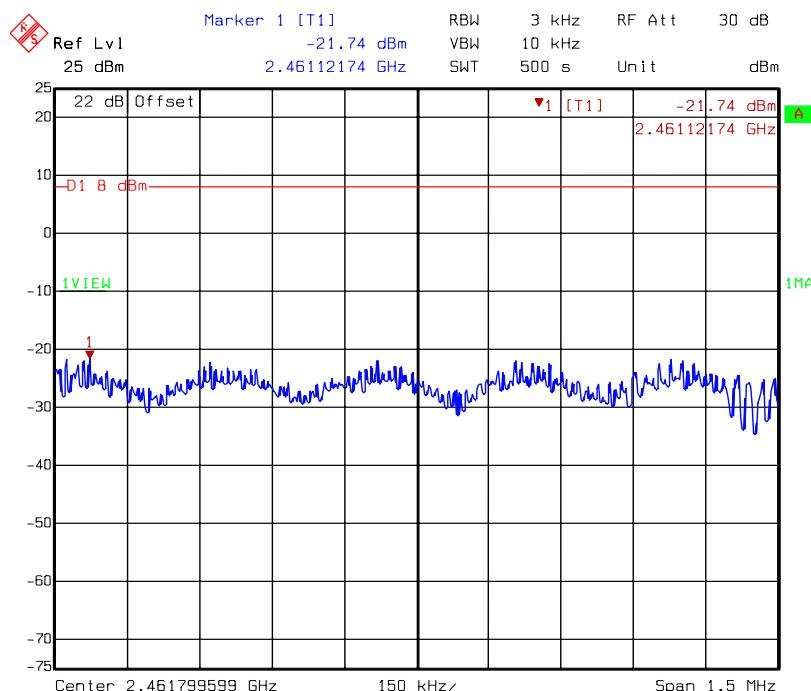
7. RF Antenna conducted Spurious

Name of Test	RF Antenna Conducted Spurious
Base Standard	FCC 15.247(d)

Test Result: Complies

Measurement Data: See plots below

Method of Measurement:

Reference FCC document: KDB558074

The measurements were performed from 30 MHz to 25 GHz RF antenna conducted per FCC 15.247 (d) was measured from the EUT antenna port using a 50 ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 100 kHz. Harmonics and spurious noise must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW. The table below is the results from the highest emission for each channel within the authorized band. This table was used to determine the spurious limits for each channel.

Test Diagram:
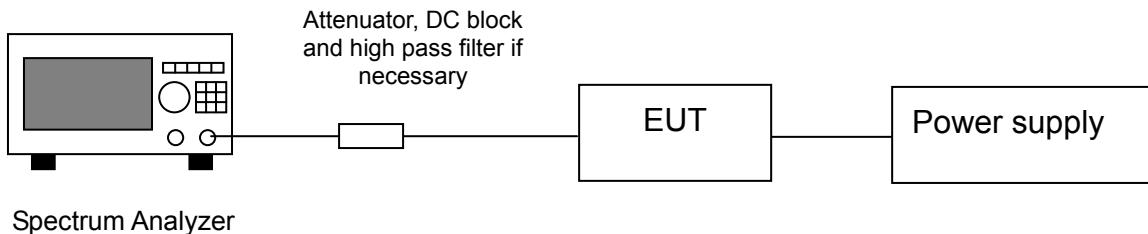
Note: (1) The EUT was tested while in a continuous transmit mode and the worst case data rates are 1 Mbps data rate for 802.11b mode, 6 Mbps data rate for 802.11g mode, 6.5 Mbps data rate for 802.11n HT20 mode and 13 Mbps data rate for 802.11n HT40 mode. The EUT was tuned to a low, middle and high channel.

          (2) The EUT operating at 2.4 GHz ISM band. Frequency Range scanned from 30 MHz to 25 GHz.

Single Tx

DAC0:conducted spurious @ 802.11b mode channel 1 (1 of 3)
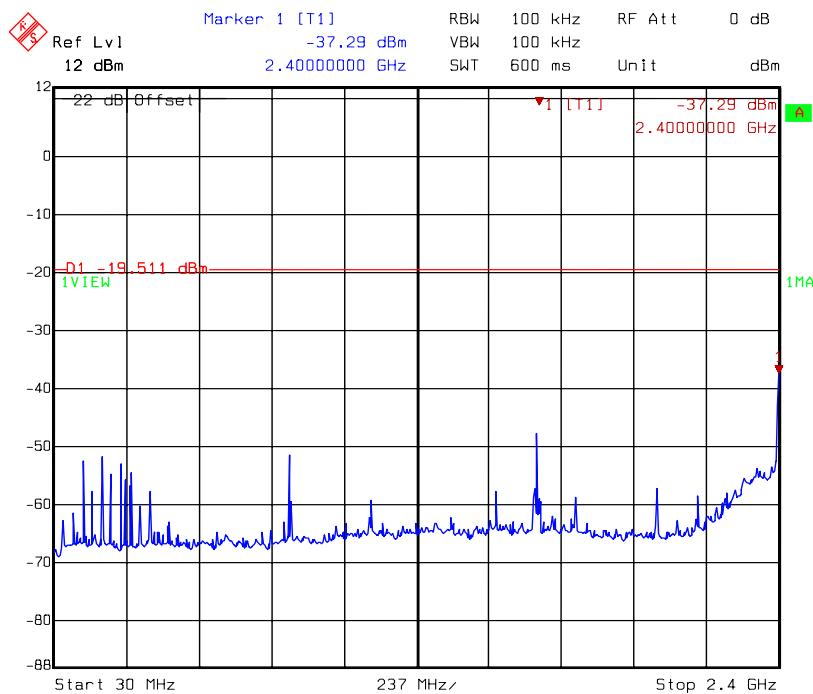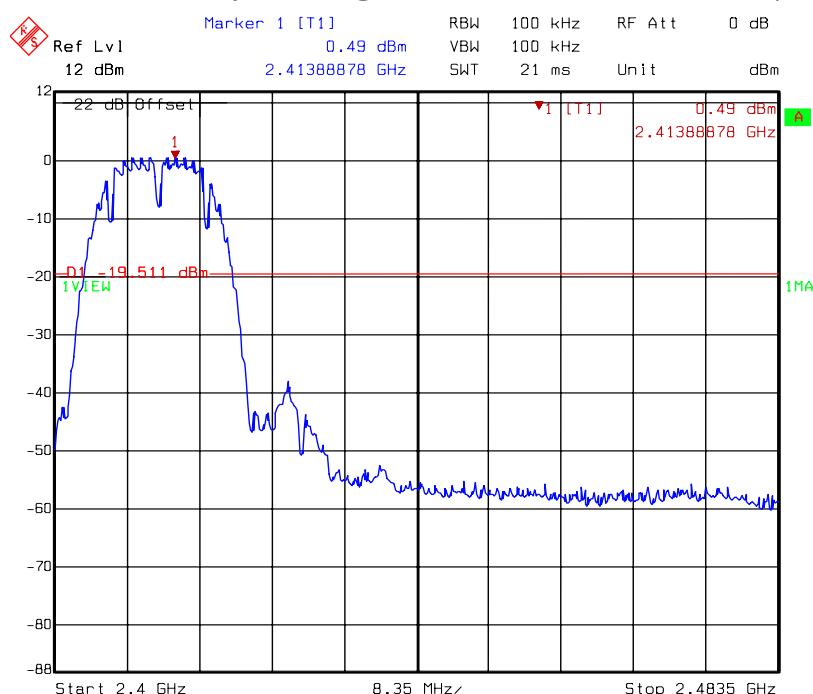

```
Ref Lvl                 Marker 1 [T1]        RBW   100 kHz   RF Att    0 dB
                            -37.29 dBm       VBW   100 kHz
12 dBm                   2.40000000 GHz      SWT   600 ms    Unit      dBm
```
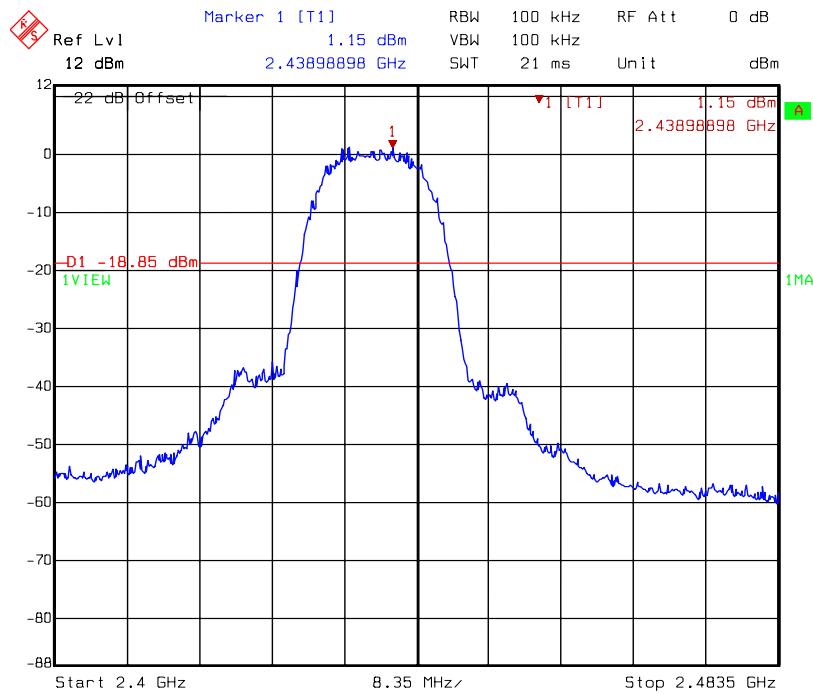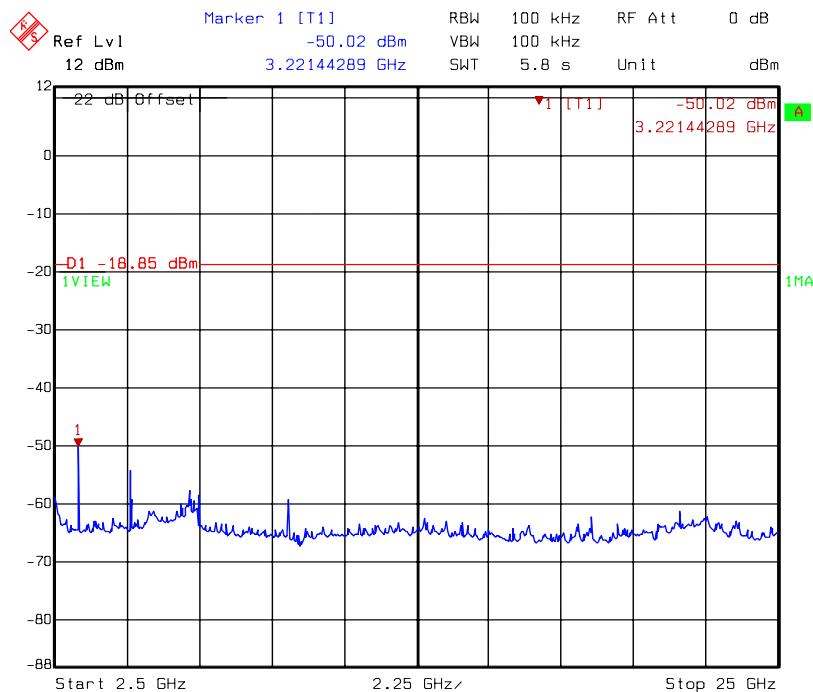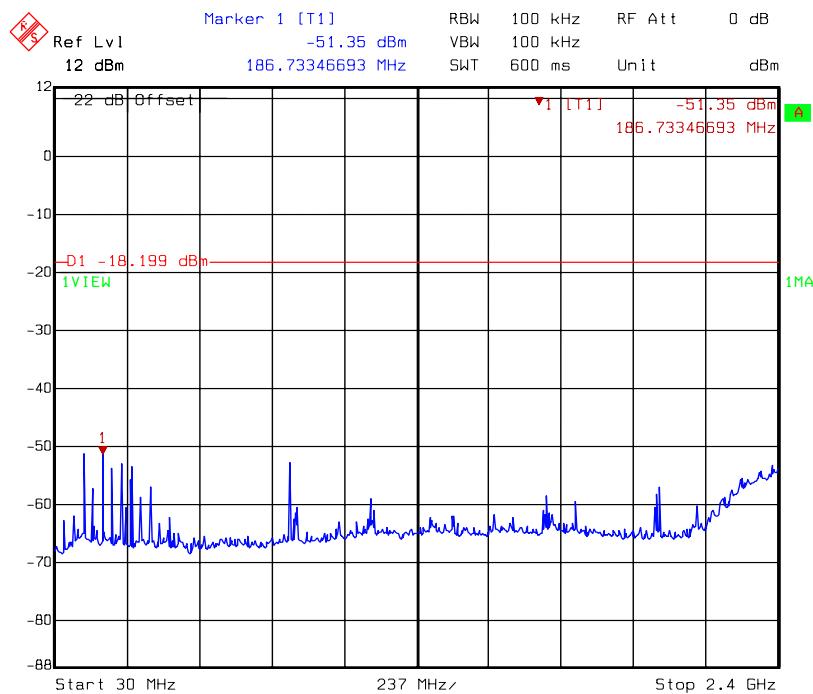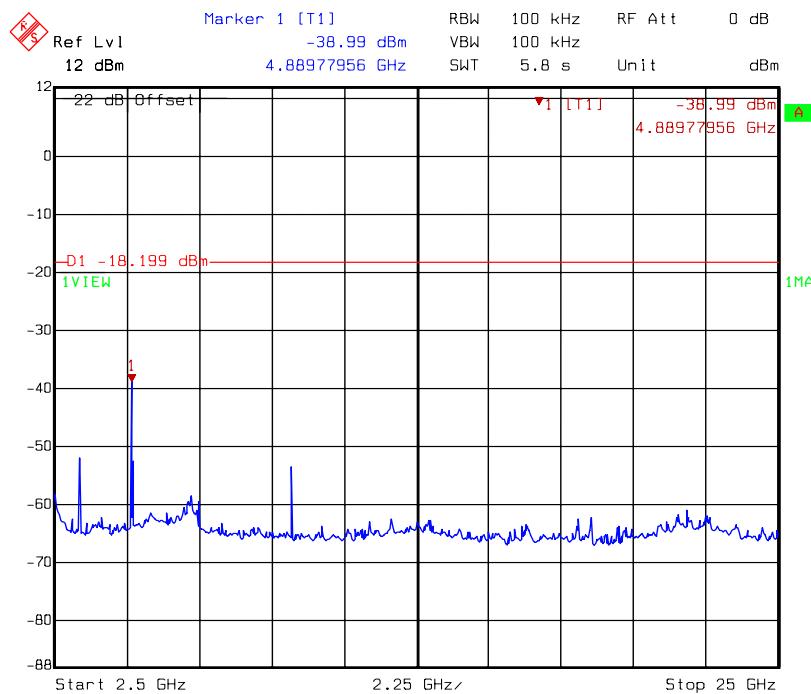
Title: Conductive-Spurious
Comment A: CH 1 at 802.11b mode   30MHz~2400MHzDAC 0
Date: 04.AUG.2008 11:48:53

DAC0:conducted spurious @ 802.11b mode channel 1 (2 of 3)


```
Ref Lvl                 Marker 1 [T1]        RBW   100 kHz   RF Att    0 dB
                             0.49 dBm        VBW   100 kHz
12 dBm                   2.41388878 GHz      SWT   21 ms     Unit      dBm
```
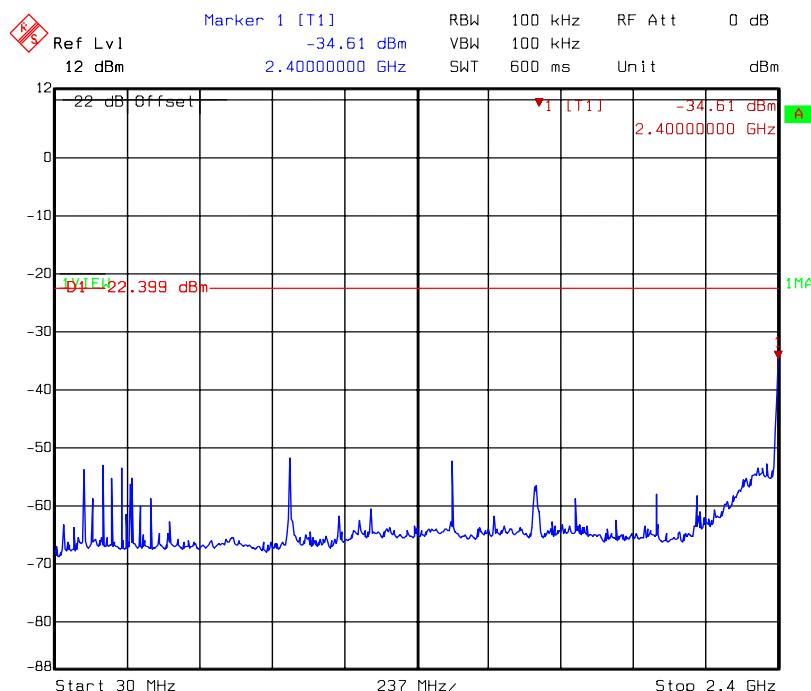
Title: Conductive-Spurious
Comment A: CH 1 at 802.11b mode 2400MHz~2483.5MHzDAC 0
Date: 04.AUG.2008 11:48:32

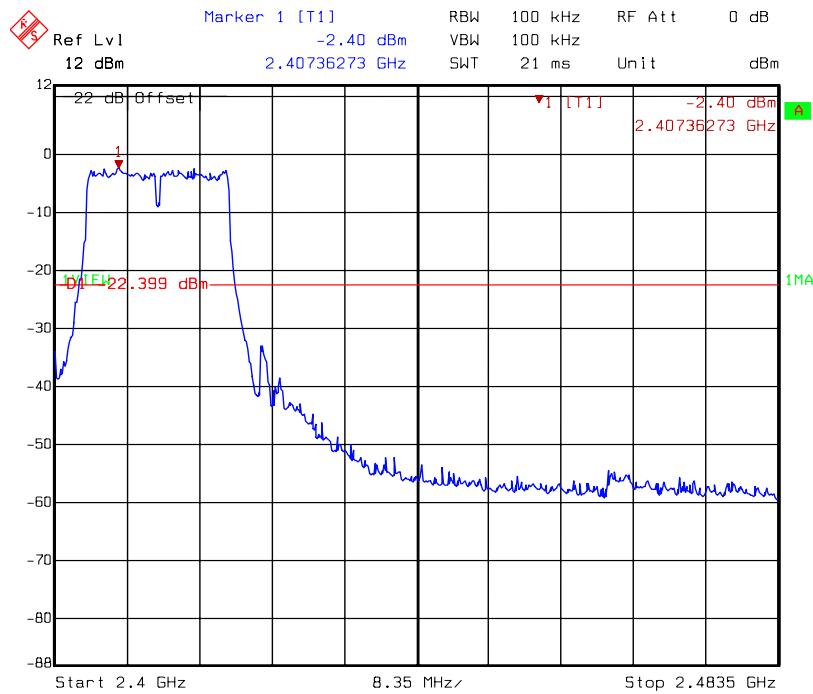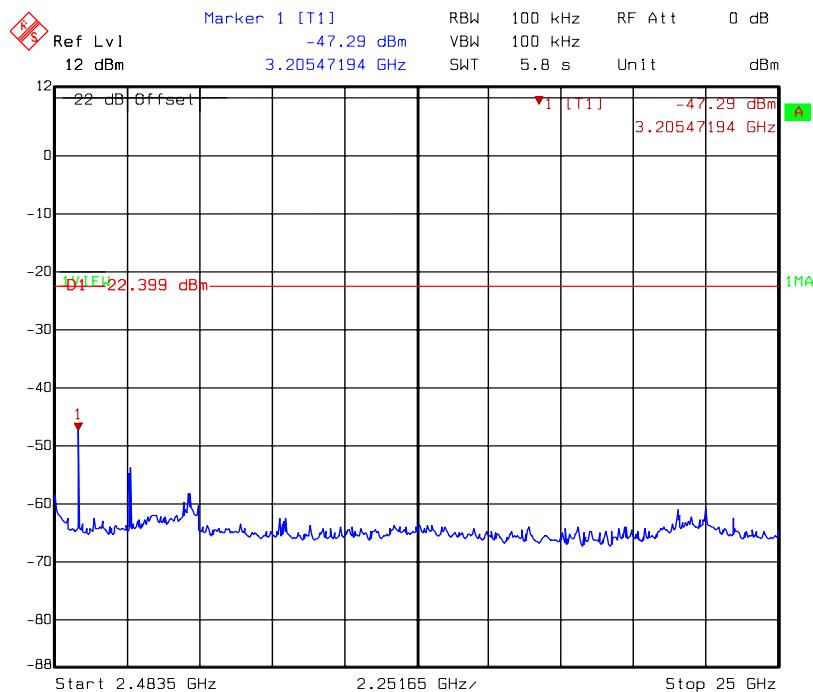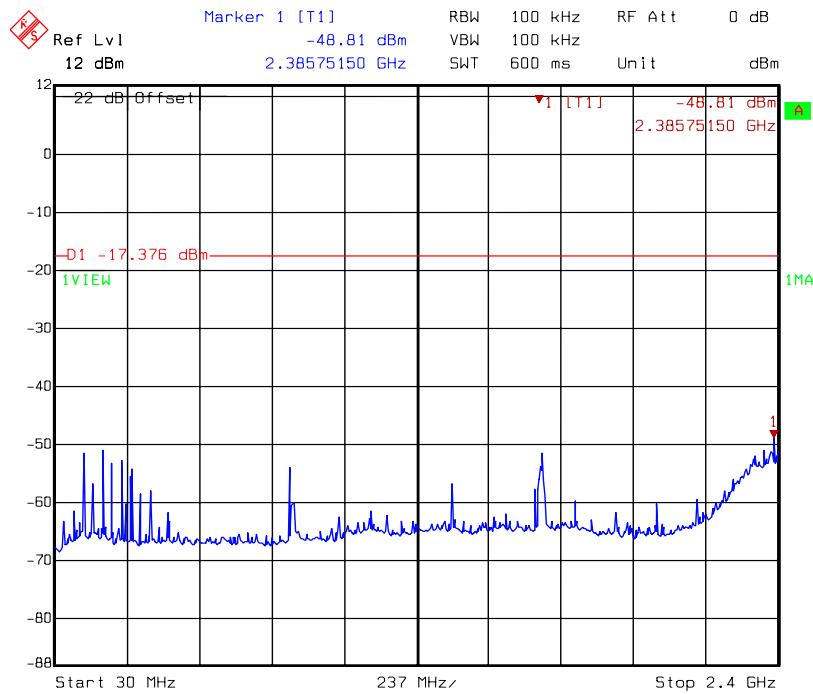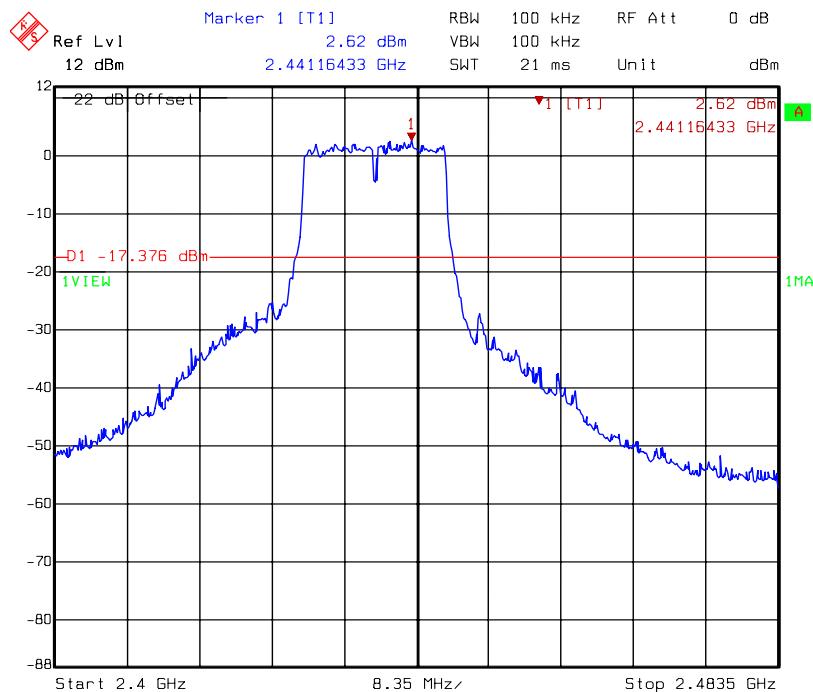## DAC0:conducted spurious @ 802.11b mode channel 1   (3 of 3)


```
          Marker 1 [T1]            RBW    100 kHz   RF Att     0 dB
  Ref Lvl               -42.52 dBm  VBW    100 kHz
   12 dBm           4.79959920 GHz  SWT    5.8 s    Unit        dBm
```
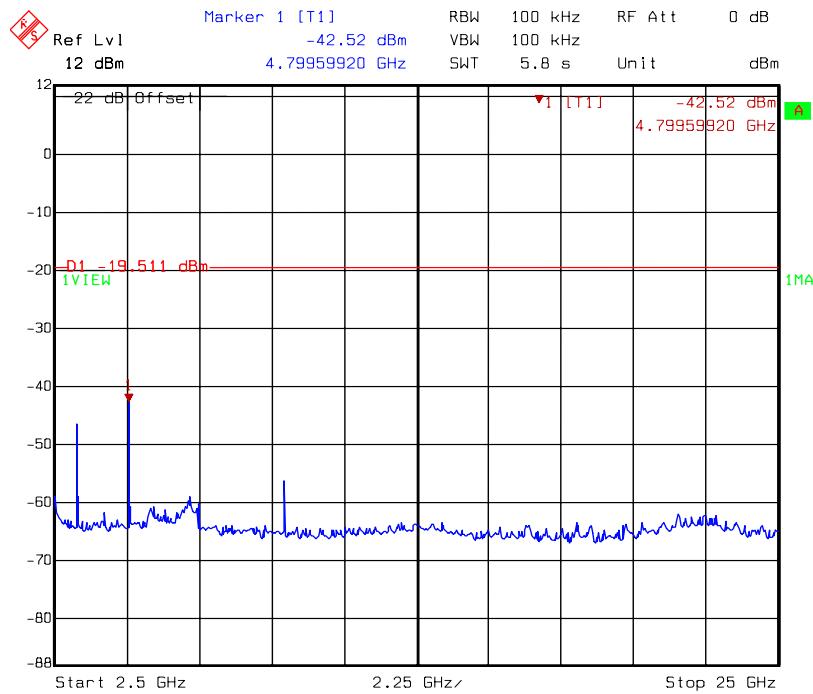
Title: Conductive-Spurious
Comment A: CH 1 at 802.11b mode 2483.5MHz~25GHzDAC 0
Date: 04.AUG.2008 11:49:20

DAC0:conducted spurious @ 802.11b mode channel 6   (1 of 3)


```
          Marker 1 [T1]            RBW    100 kHz   RF Att     0 dB
  Ref Lvl               -52.13 dBm  VBW    100 kHz
   12 dBm          186.73346693 MHz SWT    600 ms   Unit        dBm
```
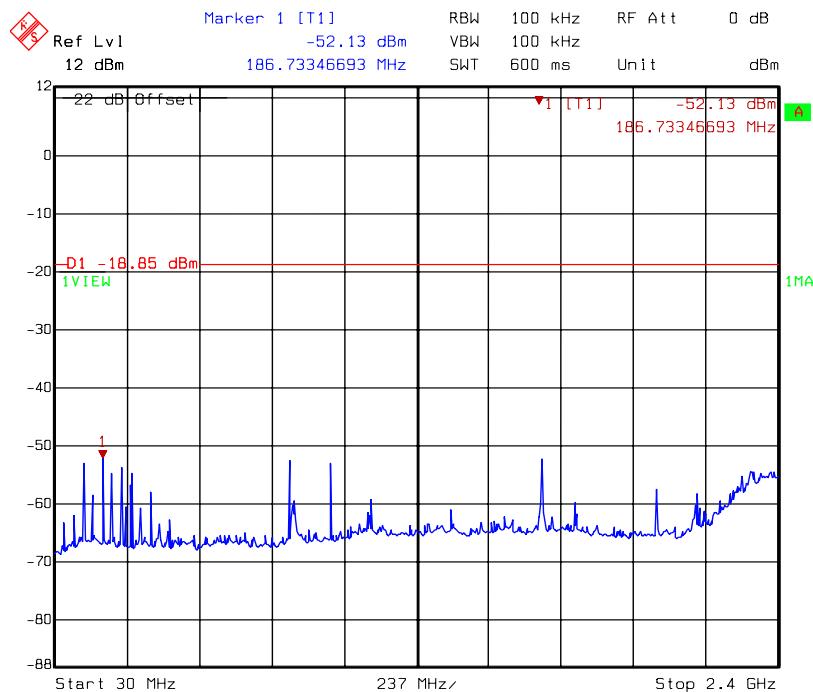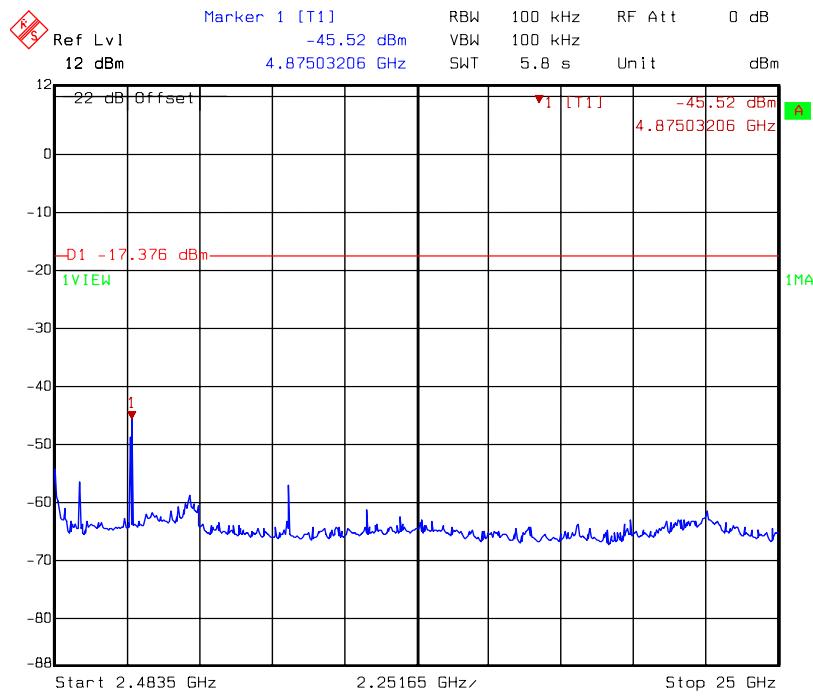
Title: Conductive-Spurious
Comment A: CH 6 at 802.11b mode 30MHz~2400MHzDAC 0
Date: 04.AUG.2008 11:52:06

DAC0:conducted spurious @ 802.11b mode channel 6   (2 of 3)

	Marker 1 [T1]		RBW	100 kHz	RF Att	0 dB
Ref Lvl		1.15 dBm	VBW	100 kHz	
12 dBm		2.43898898 GHz	SWT	21 ms	Unit	dBm


```
Title:      Conductive-Spurious
Comment A: CH 6 at 802.11b mode 2400MHz~2483.5MHzDAC 0
Date:       04.AUG.2008  11:51:45
```
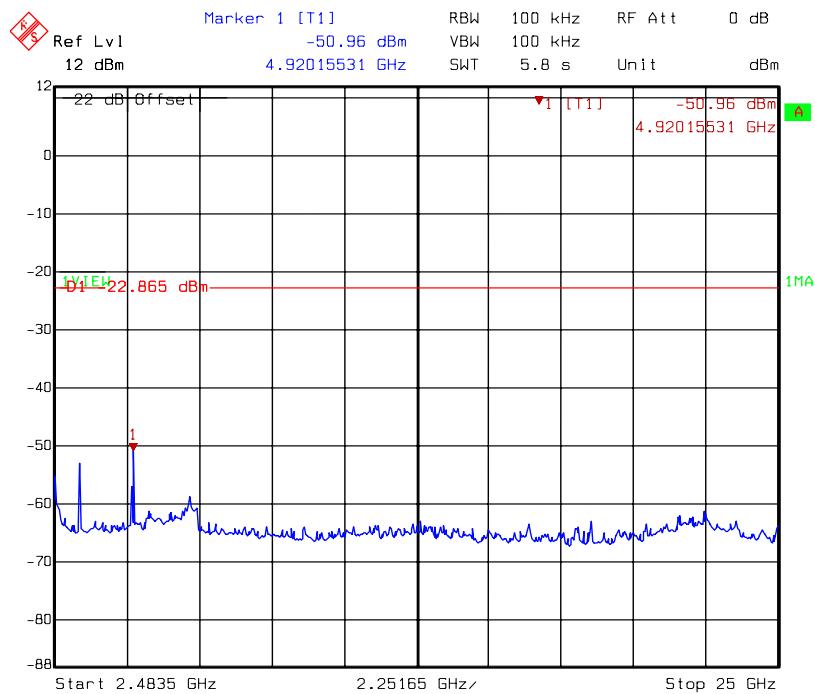
DAC0:conducted spurious @ 802.11b mode channel 6   (3 of 3)

	Marker 1 [T1]		RBW	100 kHz	RF Att	0 dB
Ref Lvl		-50.02 dBm	VBW	100 kHz	
12 dBm		3.22144289 GHz	SWT	5.8 s	Unit	dBm


```
Title:      Conductive-Spurious
Comment A: CH 6 at 802.11b mode 2483.5MHz~25GHzDAC 0
Date:       04.AUG.2008  11:52:33
```

DAC0:conducted spurious @ 802.11b mode channel 11 (1 of 3)

Ref Lvl	Marker 1 [T1]	RBW	100 kHz	RF Att	0 dB
12 dBm	-51.35 dBm	VBW	100 kHz		
	186.73346693 MHz	SWT	600 ms	Unit	dBm

22 dB Offset

▼1 [T1]   -51.35 dBm
186.73346693 MHz

A

D1 -18.199 dBm
1VIEW

1MA

Start 30 MHz   237 MHz/   Stop 2.4 GHz

Title: Conductive-Spurious
Comment A: CH 11 at 802.11b mode   30MHz~2400MHzDAC 0
Date: 04.AUG.2008 11:56:03
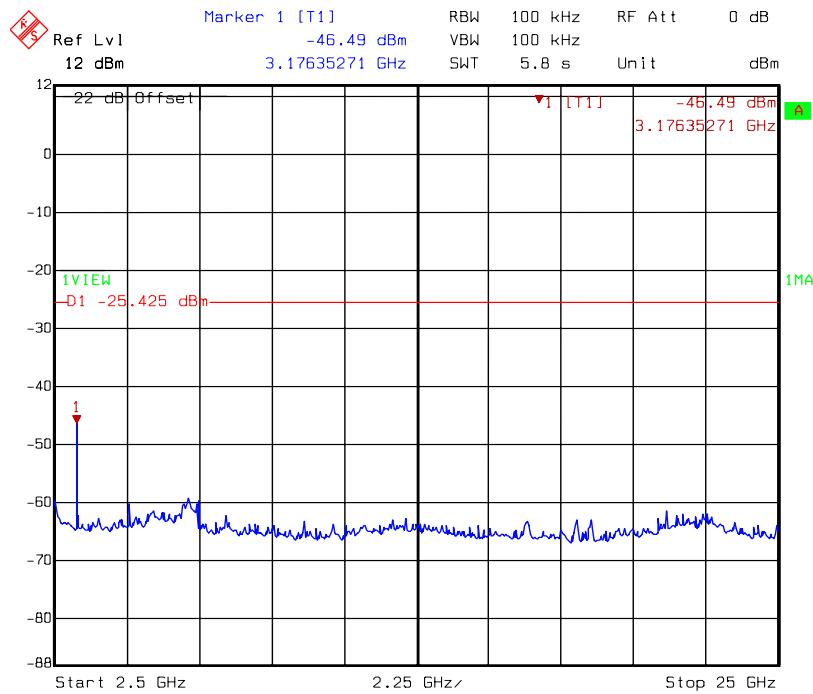
DAC0:conducted spurious @ 802.11b mode channel 11 (2 of 3)

Ref Lvl	Marker 1 [T1]	RBW	100 kHz	RF Att	0 dB
12 dBm	1.80 dBm	VBW	100 kHz		
	2.45906914 GHz	SWT	21 ms	Unit	dBm

22 dB Offset

▼1 [T1]   1.80 dBm
1   2.45906914 GHz

A

D1 -18.199 dBm
1VIEW

1MA

Start 2.4 GHz   8.35 MHz/   Stop 2.4835 GHz
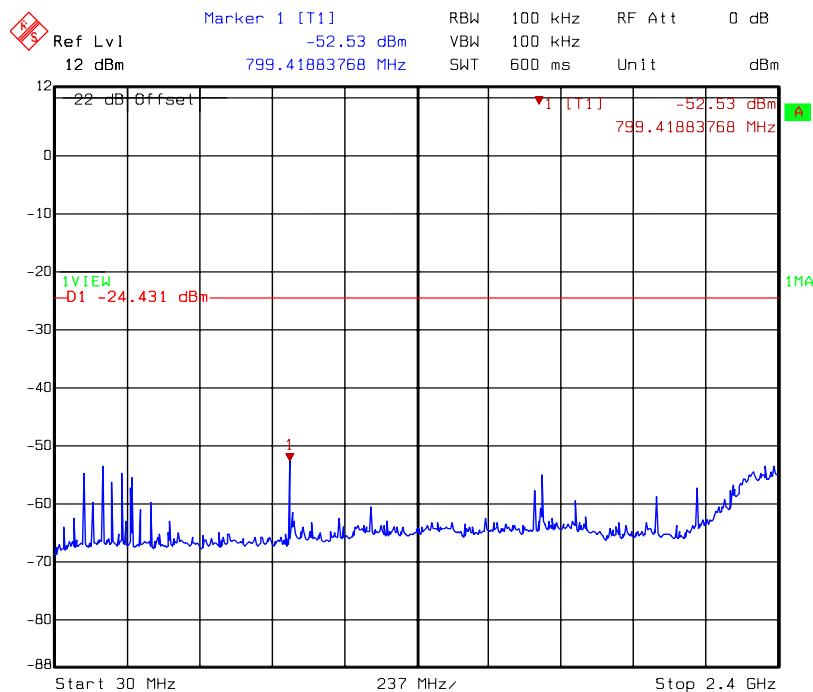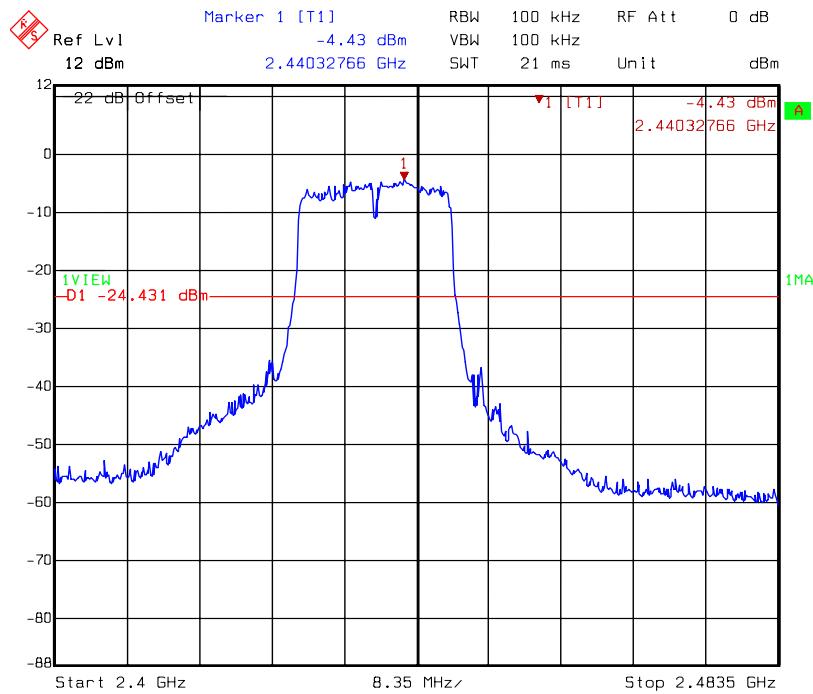
Title: Conductive-Spurious
Comment A: CH 11 at 802.11b mode 2400MHz~2483.5MHzDAC 0
Date: 04.AUG.2008 11:55:42

DAC0:conducted spurious @ 802.11b mode channel 11   (3 of 3)


```
                    Marker 1 [T1]          RBW    100 kHz    RF Att     0 dB
      Ref Lvl          -38.99 dBm          VBW    100 kHz
      12 dBm         4.88977956 GHz        SWT    5.8 s      Unit       dBm

 12
      -22 dB Offset                                    ▼1 [T1]      -38.99 dBm    A
  0                                                              4.88977956 GHz
 -10
      D1 -18.199 dBm
 -20                                                                           1MA
      1VIEW
 -30

 -40        1

 -50

 -60

 -70

 -80
      Start 2.5 GHz              2.25 GHz/              Stop 25 GHz
```
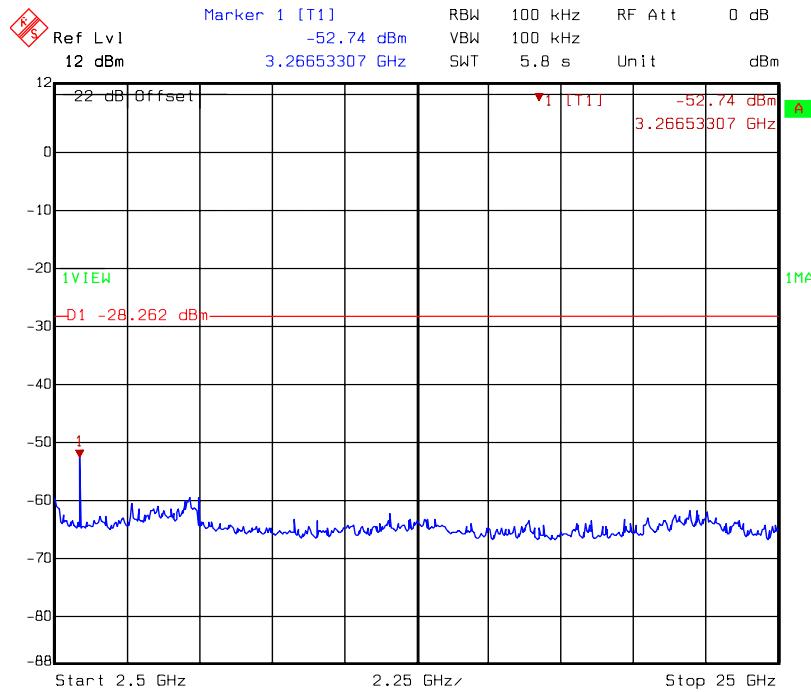
Title: Conductive-Spurious
Comment A: CH 11 at 802.11b mode 2483.5MHz~25GHzDAC 0
Date: 04.AUG.2008 11:56:30

DAC0:conducted spurious @ 802.11g mode channel 1   (1 of 3)


```
                    Marker 1 [T1]          RBW    100 kHz    RF Att     0 dB
      Ref Lvl          -34.61 dBm          VBW    100 kHz
      12 dBm         2.40000000 GHz        SWT    600 ms     Unit       dBm

 12
      -22 dB Offset                                    ▼1 [T1]      -34.61 dBm    A
  0                                                              2.40000000 GHz
 -10

 -20  1VIEW -22.399 dBm                                                         1MA

 -30

 -40

 -50

 -60

 -70

 -80
      Start 30 MHz               237 MHz/               Stop 2.4 GHz
```

Title: Conductive-Spurious
Comment A: CH 1 at 802.11g mode 30MHz~2400MHzDAC 0
Date: 04.AUG.2008 12:13:18

DAC0:conducted spurious @ 802.11g mode channel 1   (2 of 3)
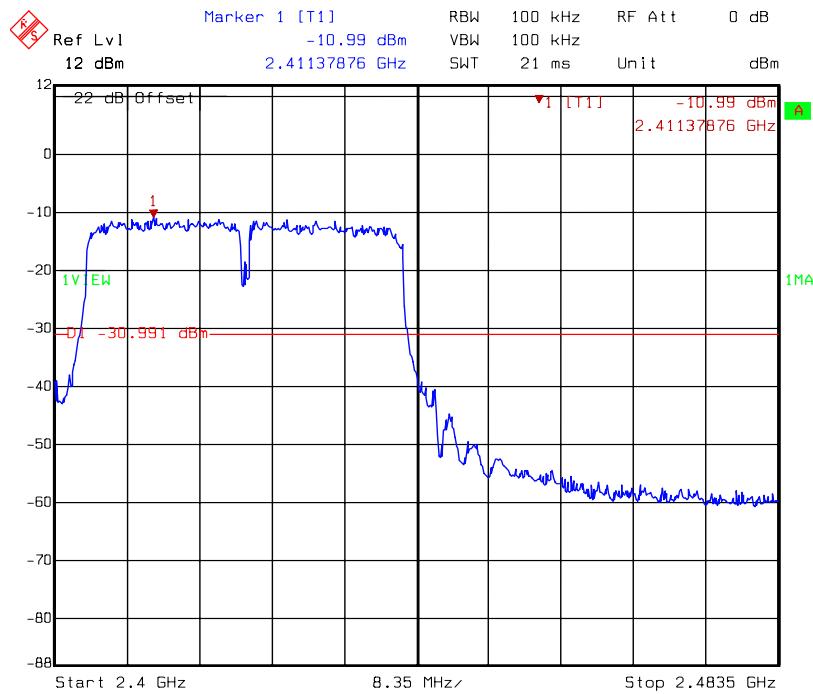


```
Marker 1 [T1]          RBW    100 kHz    RF Att    0 dB
Ref Lvl         -2.40 dBm     VBW    100 kHz
12 dBm      2.40736273 GHz    SWT    21 ms      Unit      dBm
```

Title: Conductive-Spurious
Comment A: CH 1 at 802.11g mode 2400MHz~2483.5MHzDAC O
Date: 04.AUG.2008 12:12:57

DAC0:conducted spurious @ 802.11g mode channel 1   (3 of 3)


```
Marker 1 [T1]          RBW    100 kHz    RF Att    0 dB
Ref Lvl        -47.29 dBm     VBW    100 kHz
12 dBm      3.20547194 GHz    SWT    5.8 s      Unit      dBm
```

Title: Conductive-Spurious
Comment A: CH 1 at 802.11g mode 2483.5MHz~25000MHzDAC O
Date: 04.AUG.2008 12:13:45

DAC0:conducted spurious @ 802.11g mode channel 6 (1 of 3)

Title: Conductive-Spurious
Comment A: CH 6 at 802.11g mode 30MHz~2400MHzDAC 0
Date: 04.AUG.2008 12:17:04

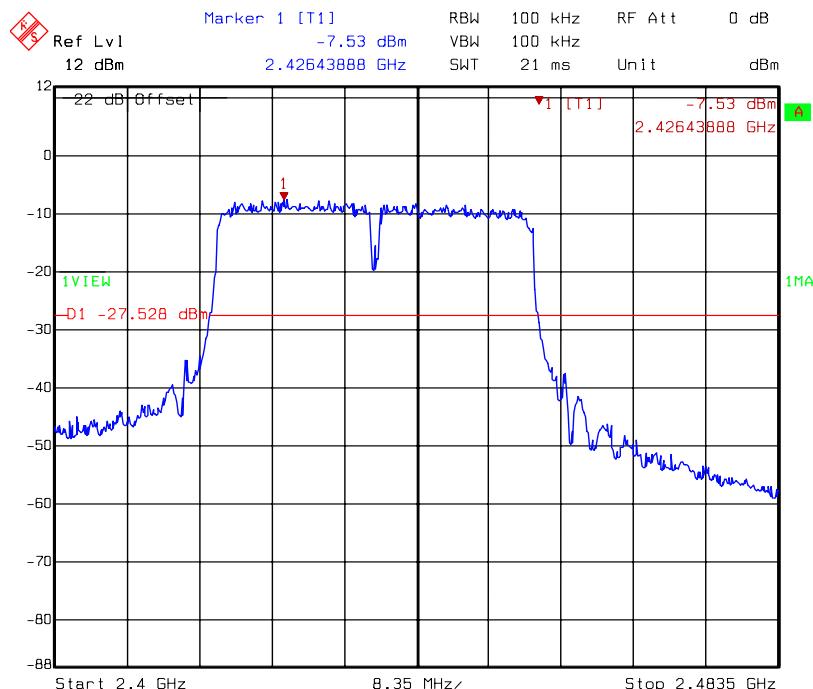## DAC0:conducted spurious @ 802.11g mode channel 6 (2 of 3)

Title: Conductive-Spurious
Comment A: CH 6 at 802.11g mode 2400MHz~2483.5MHzDAC 0
Date: 04.AUG.2008 12:16:43

DAC0:conducted spurious @ 802.11g mode channel 6   (3 of 3)
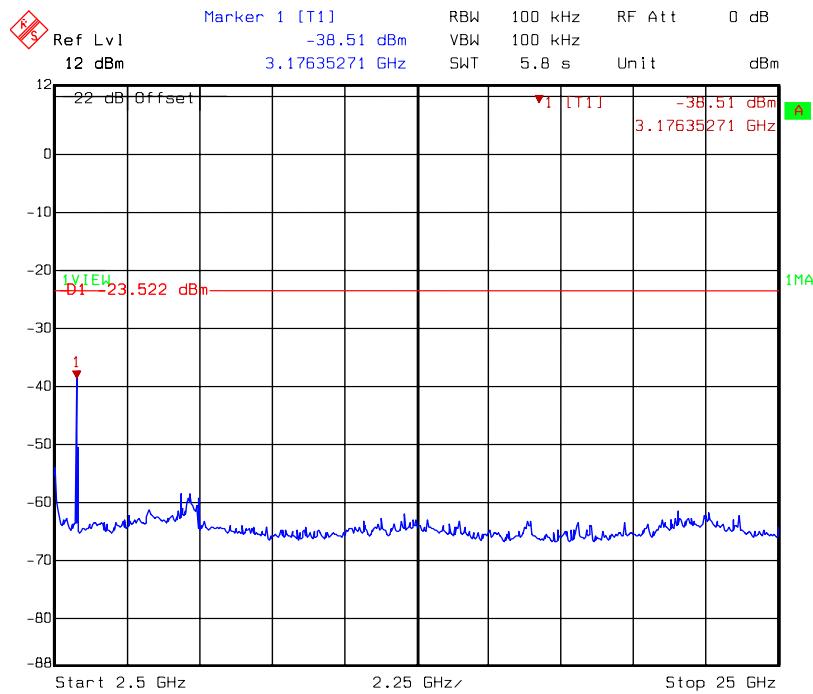
```
                    Marker 1 [T1]         RBW    100 kHz    RF Att     0 dB
         Ref Lvl              -45.52 dBm  VBW    100 kHz
         12 dBm          4.87503206 GHz   SWT    5.8 s      Unit       dBm
    12
         22 dB Offset                          ▼1 [T1]        -45.52 dBm    A
     0                                                     4.87503206 GHz
    -10
    D1 -17.376 dBm
    -20                                                                    1MA
    1VIEW
    -30
    -40
    -50      1
    -60
    -70
    -80
    -88
         Start 2.4835 GHz        2.25165 GHz/          Stop 25 GHz

Title:      Conductive-Spurious
Comment A: CH 6 at 802.11g mode 2483.5MHz~25000MHzDAC 0
Date:       04.AUG.2008  12:17:31
```

DAC0:conducted spurious @ 802.11g mode channel 11   (1 of 3)
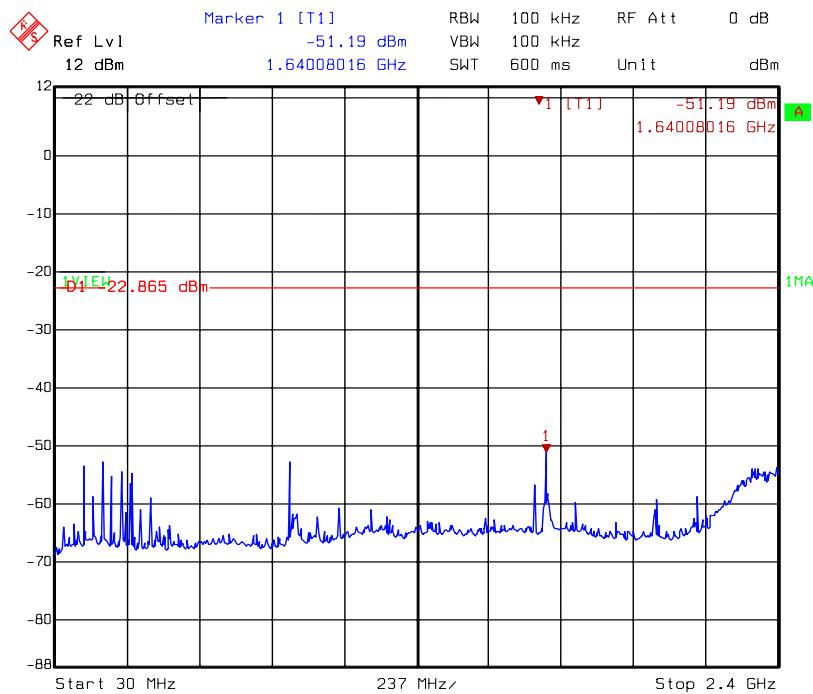
```
                    Marker 1 [T1]         RBW    100 kHz    RF Att     0 dB
         Ref Lvl              -51.19 dBm  VBW    100 kHz
         12 dBm          1.64008016 GHz   SWT    600 ms     Unit       dBm
    12
         22 dB Offset                          ▼1 [T1]        -51.19 dBm    A
     0                                                     1.64008016 GHz
    -10
    -20  1VIEW
    D1 -22.865 dBm                                                         1MA
    -30
    -40
    -50                                         1
    -60
    -70
    -80
    -88
         Start 30 MHz            237 MHz/             Stop 2.4 GHz

Title:      Conductive-Spurious
Comment A: CH 11 at 802.11g mode  30MHz~2400MHzDAC 0
Date:       04.AUG.2008  12:20:27
```

DAC0:conducted spurious @ 802.11g mode channel 11　(2 of 3)
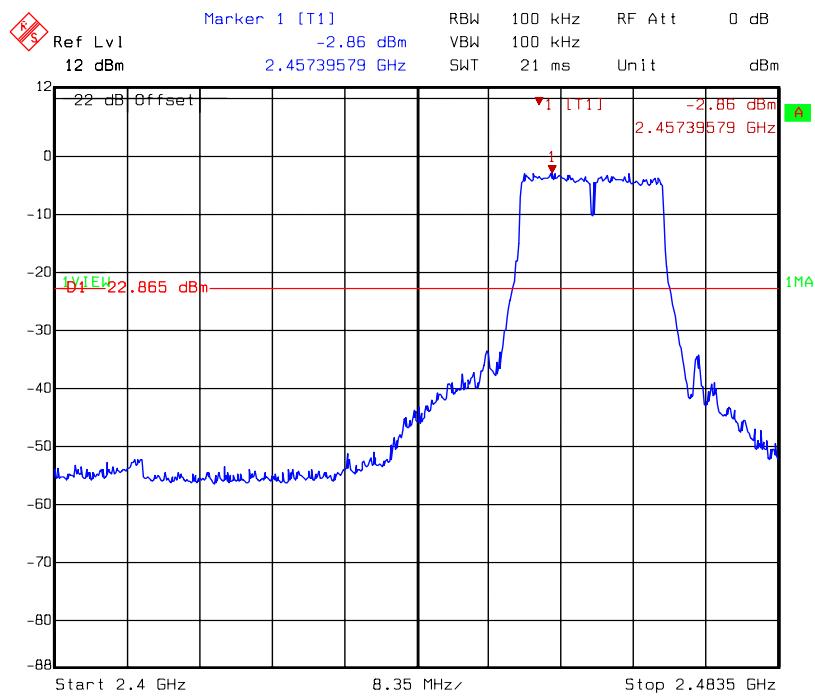

```
          Marker 1 [T1]          RBW   100 kHz   RF Att    0 dB
Ref Lvl                -2.86 dBm  VBW   100 kHz
12 dBm         2.45739579 GHz    SWT    21 ms    Unit      dBm
```

```
Title:     Conductive-Spurious
Comment A: CH 11 at 802.11g mode 2400MHz~2483.5MHzDAC 0
Date:      04.AUG.2008  12:20:06
```

DAC0:conducted spurious @ 802.11g mode channel 11　(3 of 3)


```
          Marker 1 [T1]          RBW   100 kHz   RF Att    0 dB
Ref Lvl               -50.96 dBm  VBW   100 kHz
12 dBm         4.92015531 GHz    SWT    5.8 s    Unit      dBm
```

```
Title:     Conductive-Spurious
Comment A: CH 11 at 802.11g mode 2483.5MHz~25000MHzDAC 0
Date:      04.AUG.2008  12:20:54
```

Dual Tx

DAC0:conducted spurious @ 802.11n HT20 mode channel 1 (1of 3)
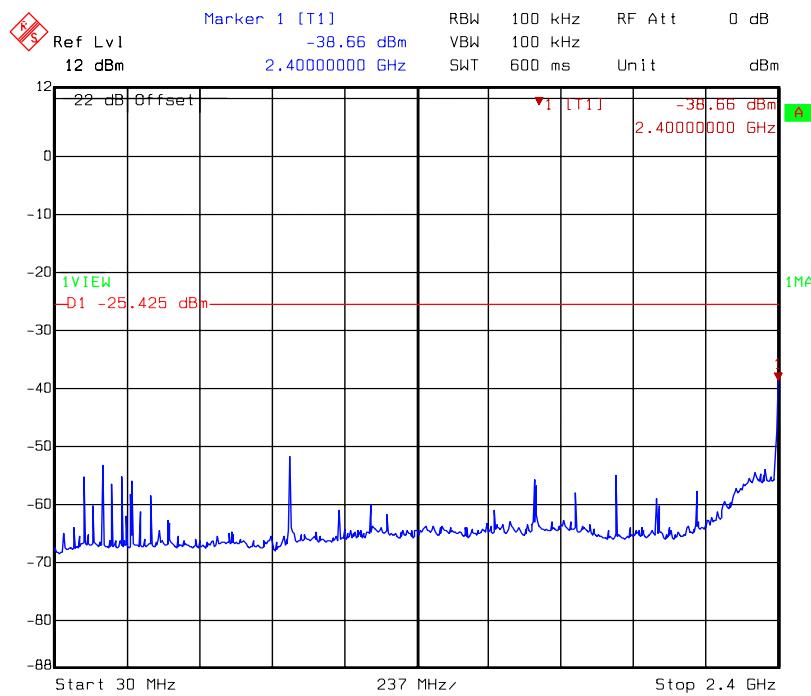

```
Title:      Conductive-Spurious
Comment A: CH 1 at 802.11n 20MHz mode DAC 0
Date:       04.AUG.2008  13:55:12
```

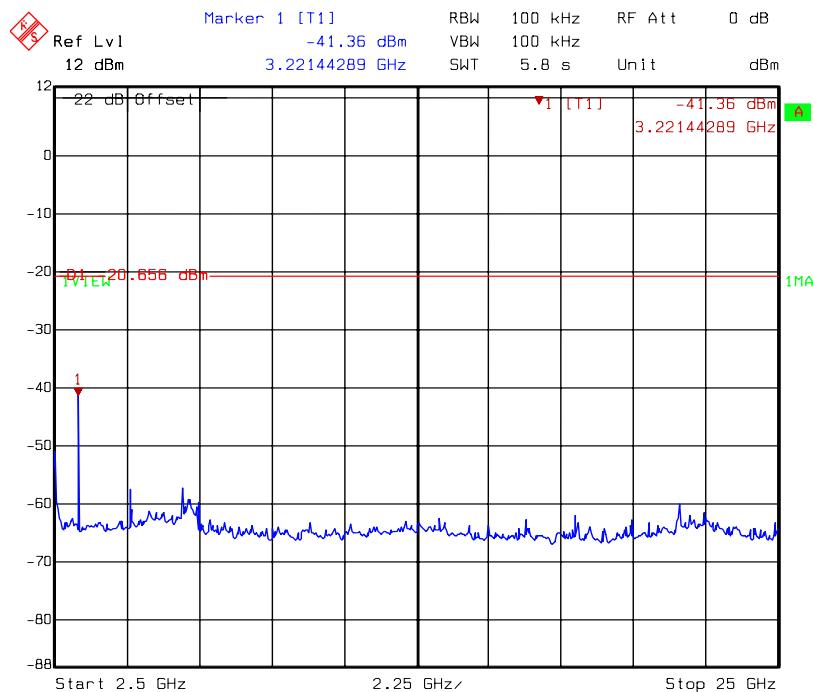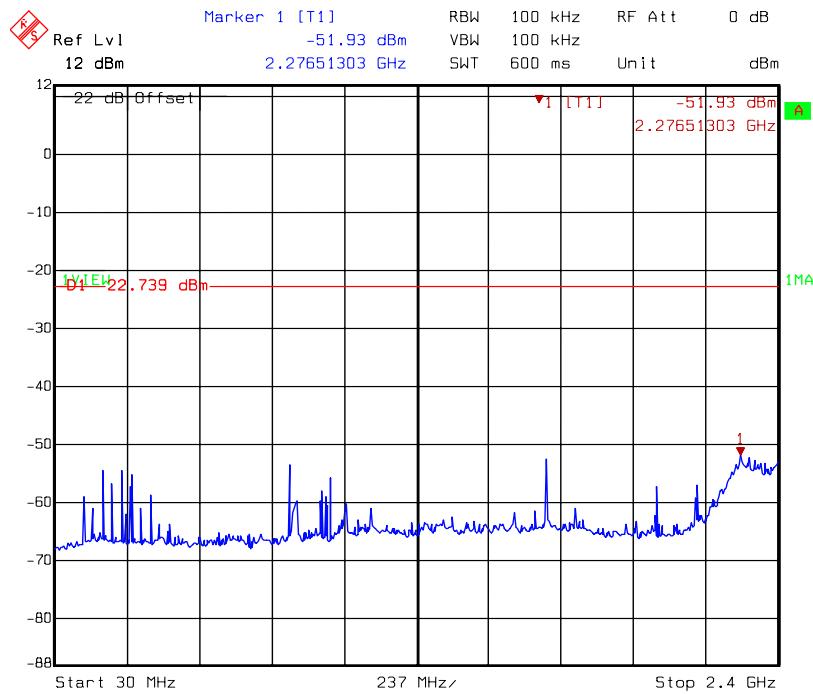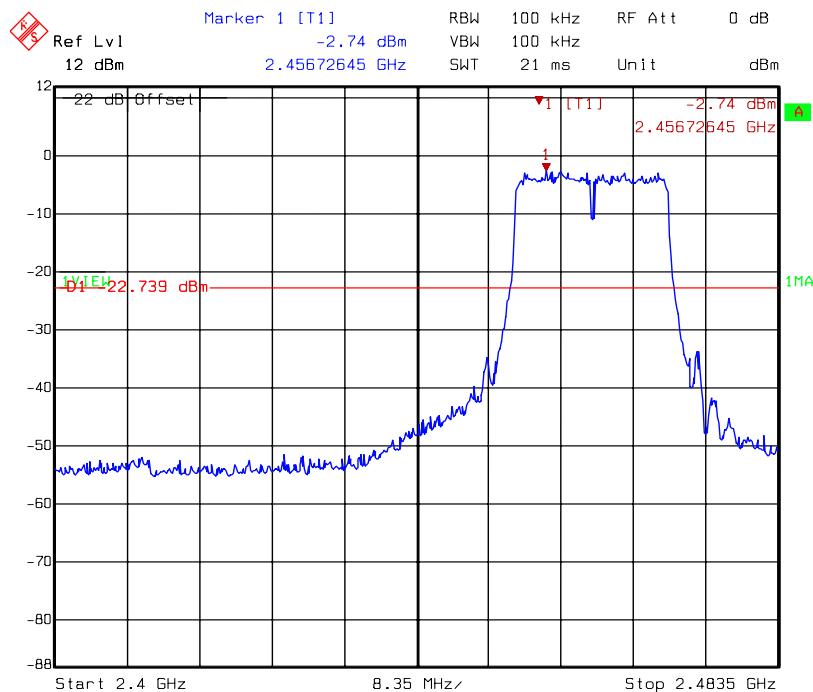### DAC0:conducted spurious @ 802.11n HT20 mode channel 1 (2 of 3)
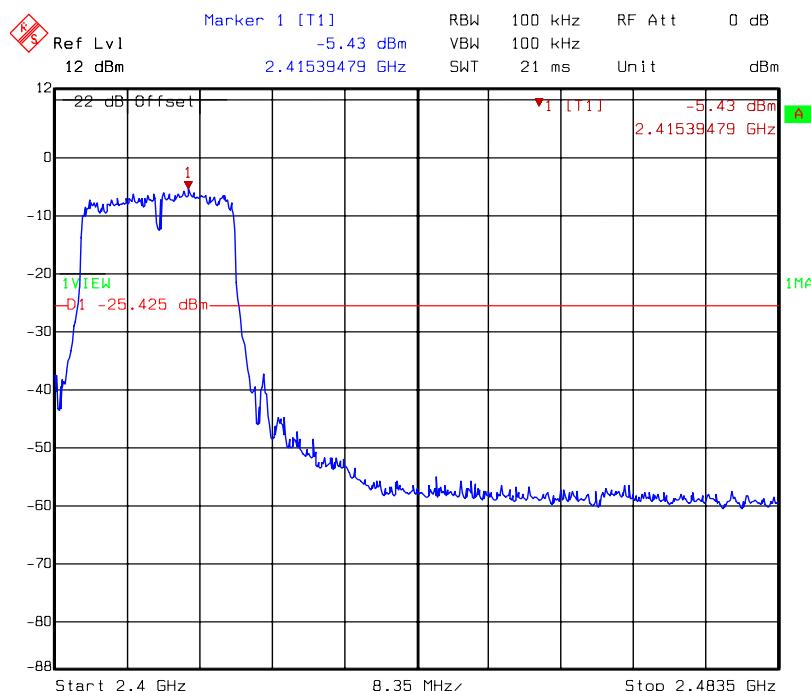

```
Title:      Conductive-Spurious
Comment A: CH 1 at 802.11n 20MHz mode DAC 0
Date:       04.AUG.2008  13:54:51
```

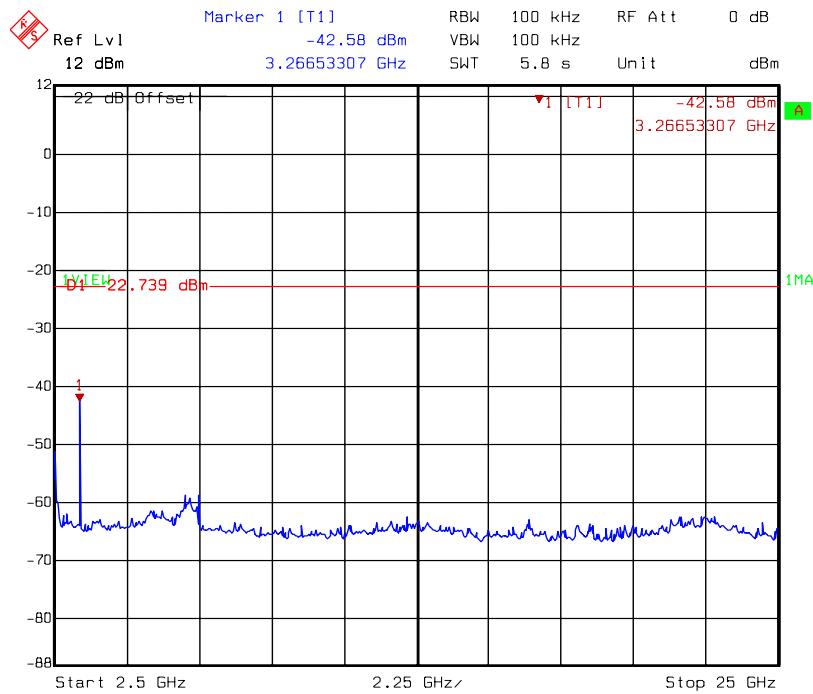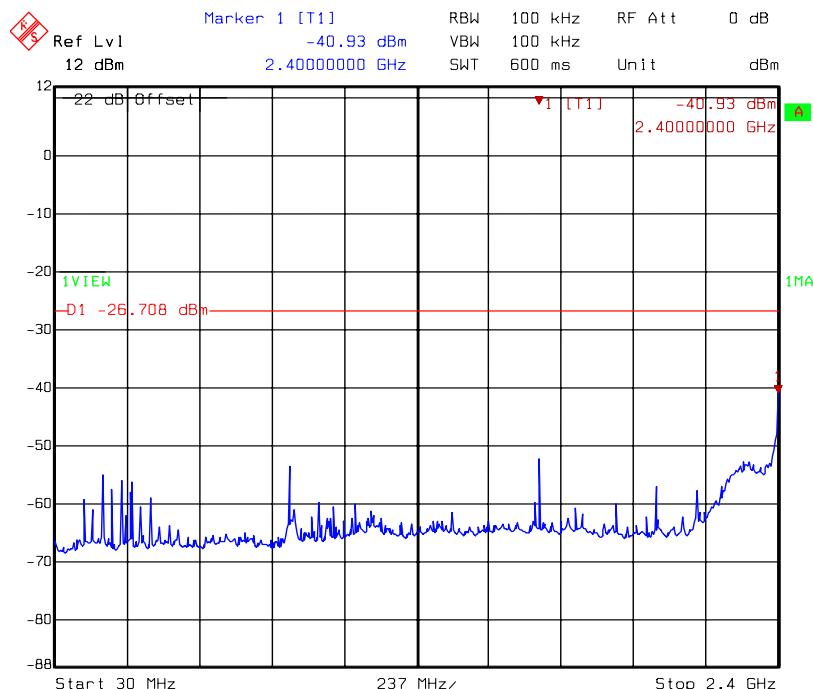## DAC0:conducted spurious @ 802.11n HT20 mode channel 1 (3 of 3)

Title: Conductive-Spurious
Comment A: CH 1 at 802.11n 20MHz mode DAC 0
Date: 04.AUG.2008 13:55:39

DAC0:conducted spurious @ 802.11n HT20 mode channel 6 (1 of 3)
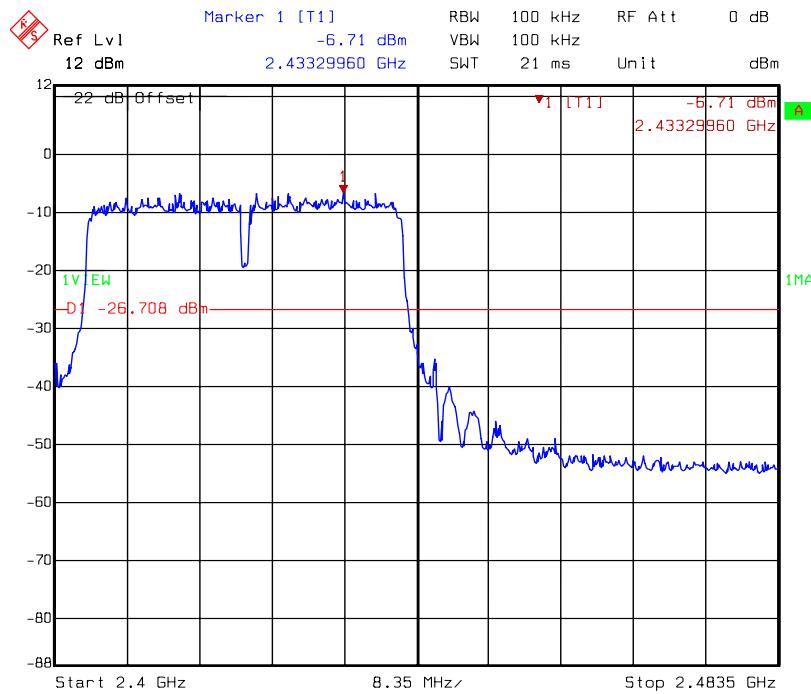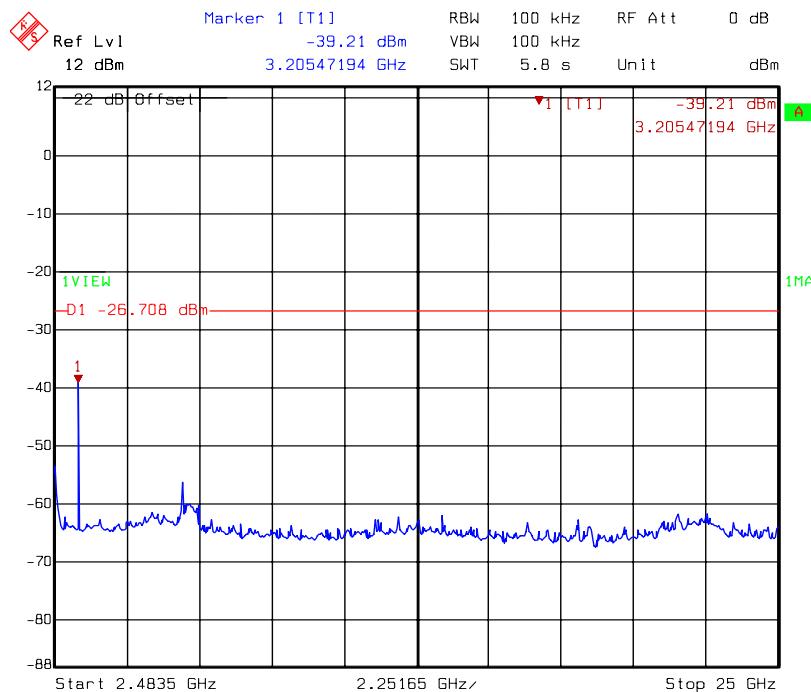

Title: Conductive-Spurious
Comment A: CH 6 at 802.11n 20MHz mode DAC 0
Date: 04.AUG.2008 13:58:29

DAC0:conducted spurious @ 802.11n HT20 mode channel 6 (2 of 3)


```
        Marker 1 [T1]           RBW   100 kHz    RF Att    0 dB
Ref Lvl                -4.43 dBm  VBW   100 kHz
12 dBm         2.44032766 GHz    SWT    21 ms    Unit      dBm
```

Title: Conductive-Spurious
Comment A: CH 6 at 802.11n 20MHz mode DAC 0
Date: 04.AUG.2008 13:58:07

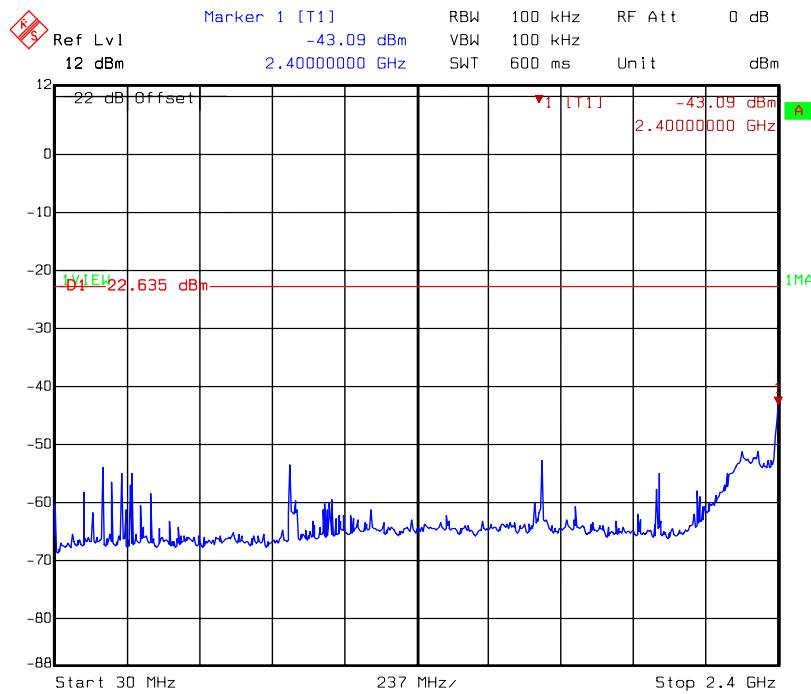## DAC0:conducted spurious @ 802.11n HT20 mode channel 6 (3 of 3)


```
        Marker 1 [T1]           RBW   100 kHz    RF Att    0 dB
Ref Lvl               -50.54 dBm  VBW   100 kHz
12 dBm         3.22144289 GHz    SWT    5.8 s    Unit      dBm
```
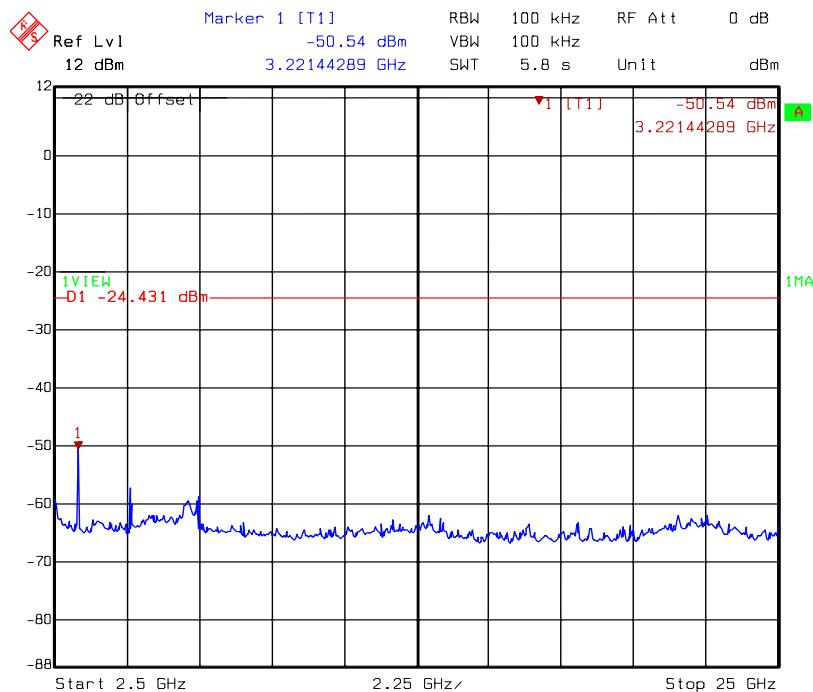
Title: Conductive-Spurious
Comment A: CH 6 at 802.11n 20MHz mode DAC 0
Date: 04.AUG.2008 13:58:56

DAC0:conducted spurious @ 802.11n HT20 mode channel 11 (1 of 3)
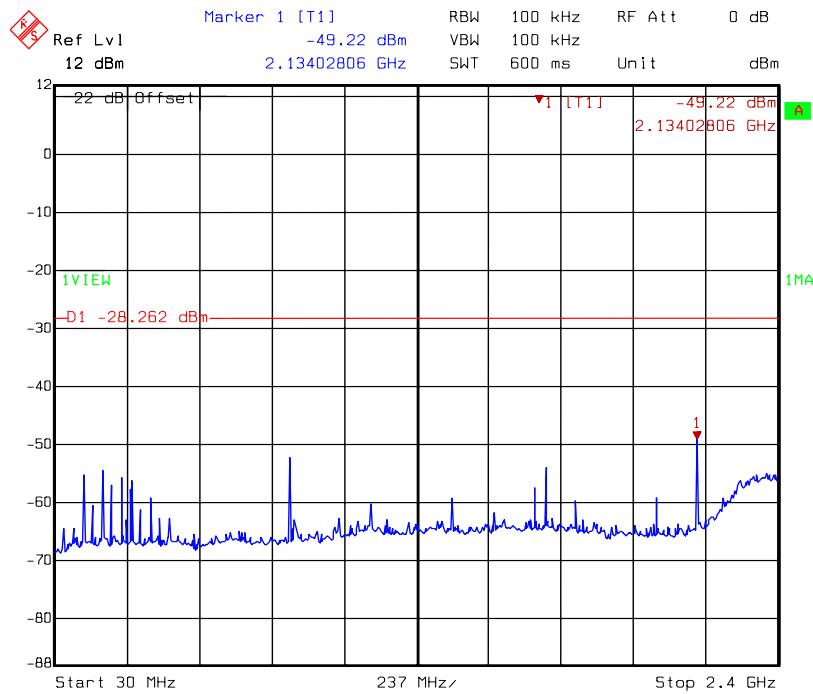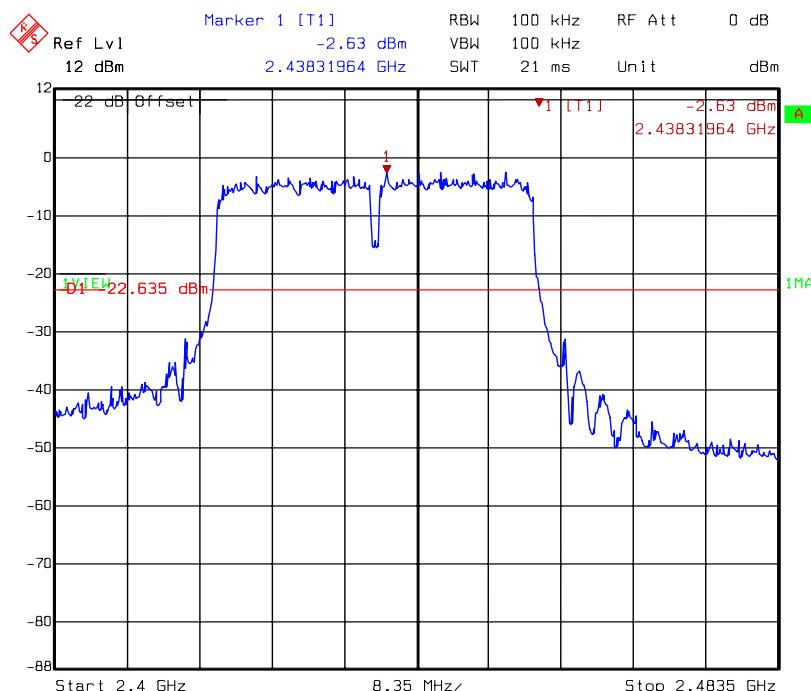

Title: Conductive-Spurious
Comment A: CH 11 at 802.11n 20MHz mode DAC 0
Date: 04.AUG.2008   14:02:31

DAC0:conducted spurious @ 802.11n HT20 mode channel 11 (2 of 3)
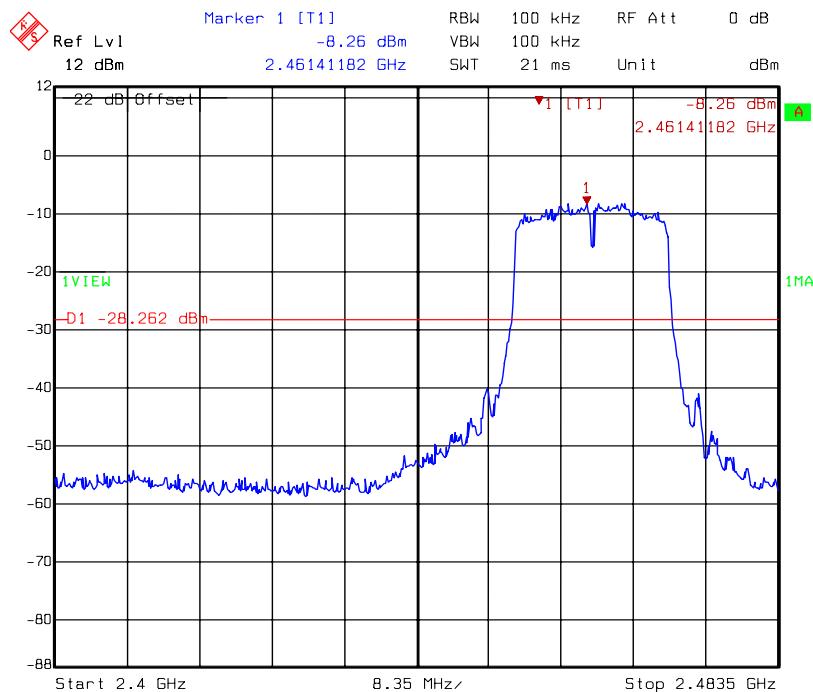
Title: Conductive-Spurious
Comment A: CH 11 at 802.11n 20MHz mode DAC 0
Date: 04.AUG.2008   14:02:09

DAC0:conducted spurious @ 802.11n HT20 mode channel 11 (3 of 3)

Title: Conductive-Spurious
Comment A: CH 11 at 802.11n 20MHz mode DAC 0
Date: 04.AUG.2008 14:02:58

DAC0:conducted spurious @ 802.11n HT40 mode channel 3 (1 of 3)
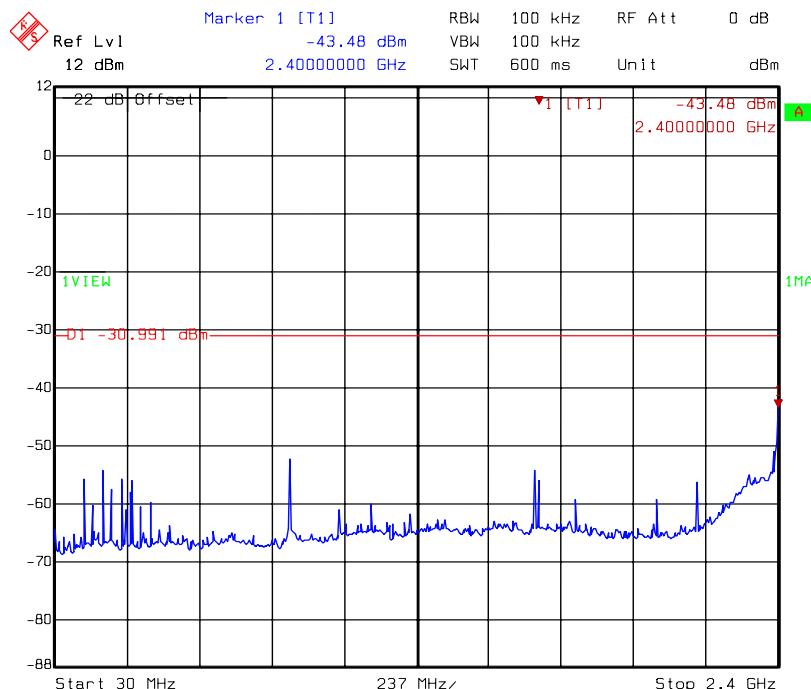
Title: Conductive-Spurious
Comment A: CH 3 at 802.11n 40MHz mode DAC 0
Date: 04.AUG.2008 14:07:04

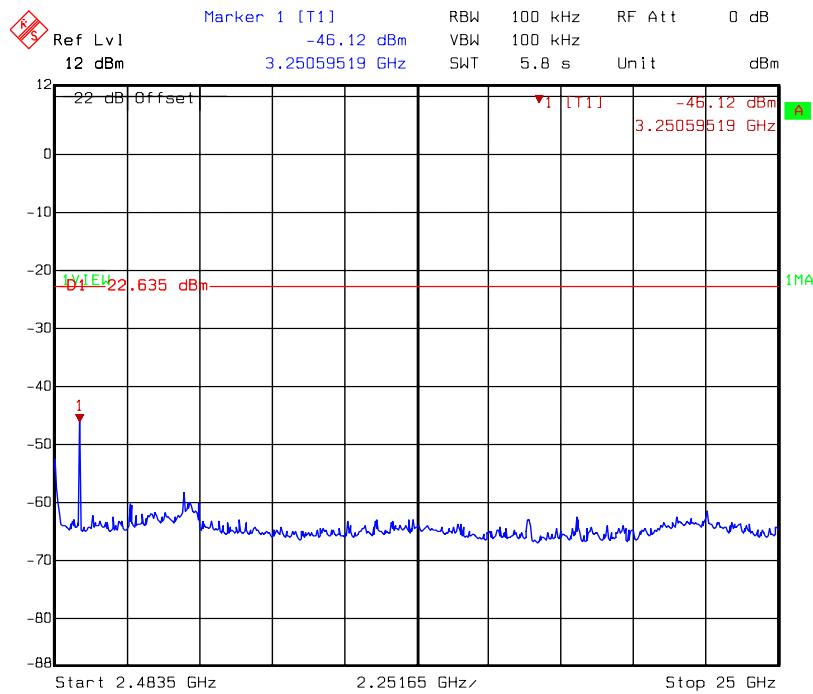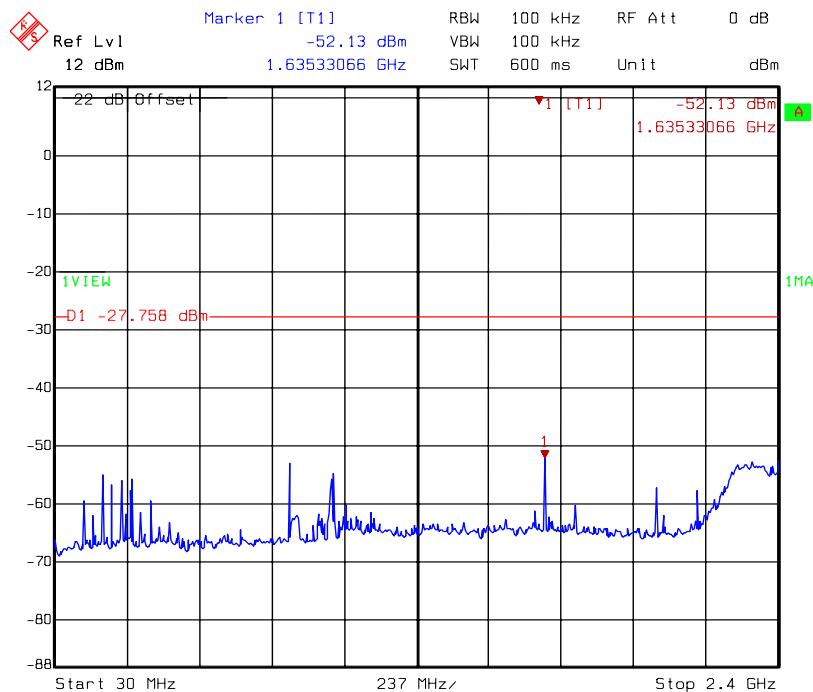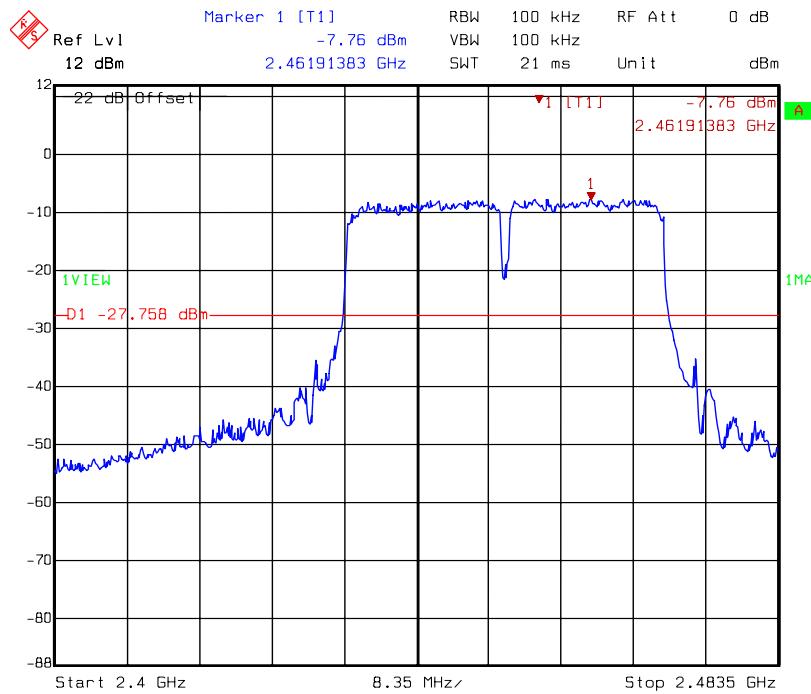## DAC0:conducted spurious @ 802.11n HT40 mode channel 3 (2 of 3)


```
Marker 1 [T1]              RBW   100 kHz    RF Att    0 dB
Ref Lvl        -10.99 dBm  VBW   100 kHz
12 dBm      2.41137876 GHz  SWT   21 ms     Unit      dBm
```
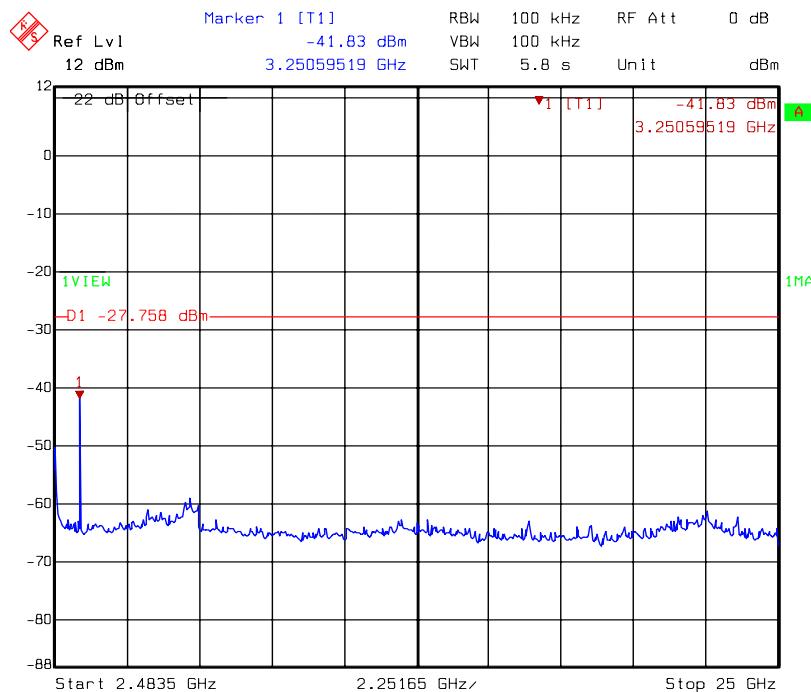
Title: Conductive-Spurious
Comment A: CH 3 at 802.11n 40MHz mode DAC 0
Date: 04.AUG.2008 14:06:43

DAC0:conducted spurious @ 802.11n HT40 mode channel 3 (3 of 3)


```
Marker 1 [T1]              RBW   100 kHz    RF Att    0 dB
Ref Lvl        -48.14 dBm  VBW   100 kHz
12 dBm      3.20547194 GHz  SWT   5.8 s     Unit      dBm
```
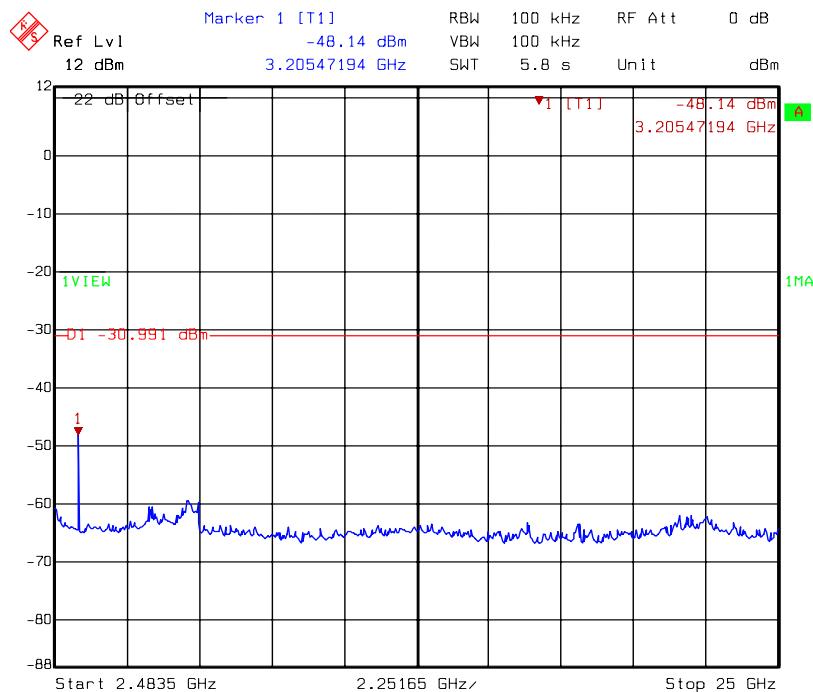
Title: Conductive-Spurious
Comment A: CH 3 at 802.11n 40MHz mode DAC 0
Date: 04.AUG.2008 14:07:31

DAC0:conducted spurious @ 802.11n HT40 mode channel 6 (1 of 3)
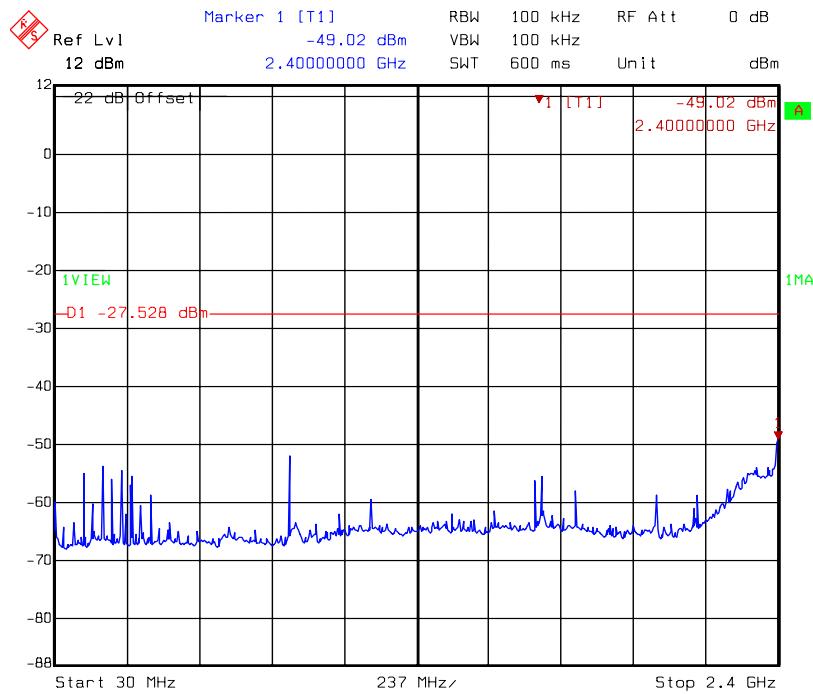
Title: Conductive-Spurious
Comment A: CH 6 at 802.11n 40MHz mode DAC 0
Date: 04.AUG.2008   14:10:36

DAC0:conducted spurious @ 802.11n HT40 mode channel 6 (2 of 3)

Title: Conductive-Spurious
Comment A: CH 6 at 802.11n 40MHz mode DAC 0
Date: 04.AUG.2008   14:10:15

DAC0:conducted spurious @ 802.11n HT40 mode channel 6 (3 of 3)
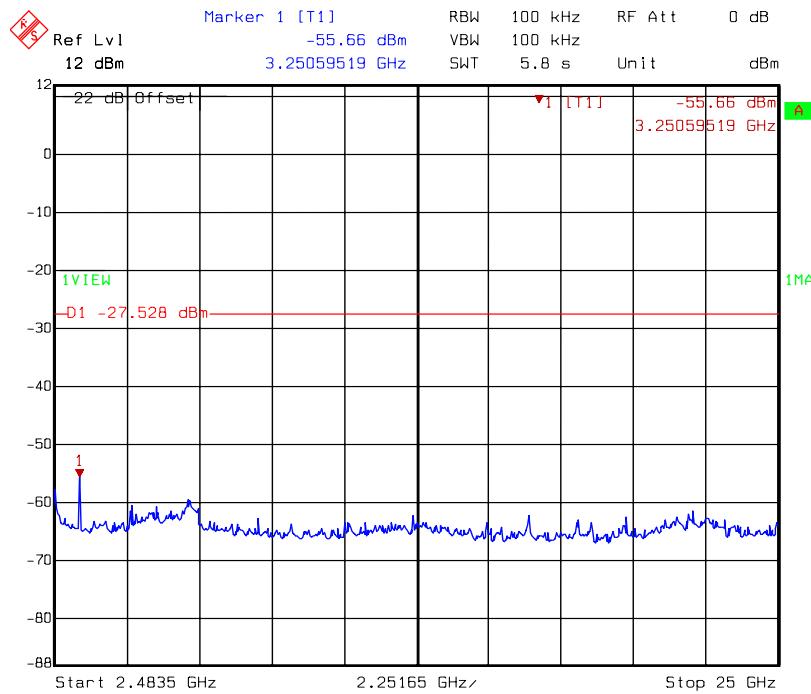
Title: Conductive-Spurious
Comment A: CH 6 at 802.11n 40MHz mode DAC 0
Date: 04.AUG.2008 14:11:03

DAC0:conducted spurious @ 802.11n HT40 mode channel 9 (1 of 3)
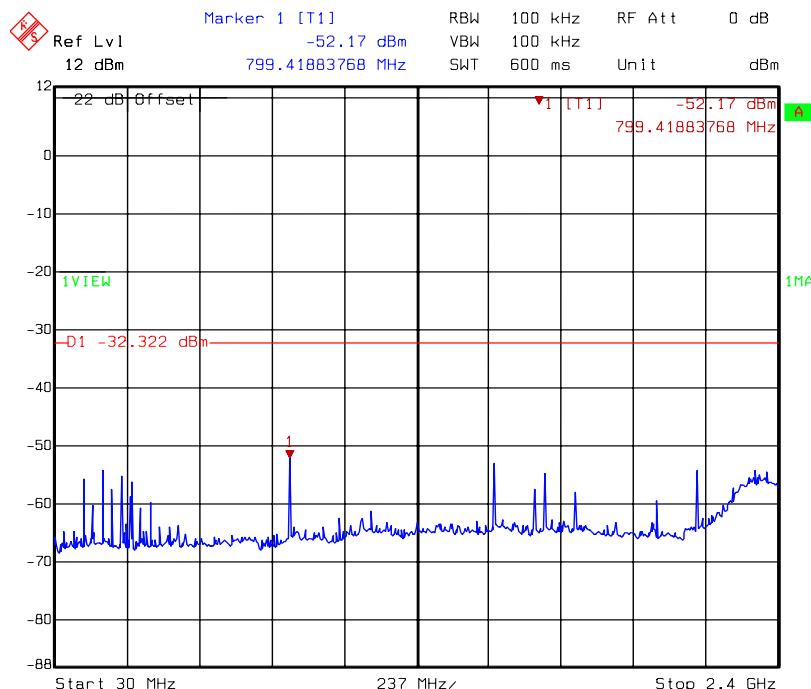
Title: Conductive-Spurious
Comment A: CH 9 at 802.11n 40MHz mode DAC 0
Date: 04.AUG.2008 14:14:02

DAC0:conducted spurious @ 802.11n HT40 mode channel 9 (2 of 3)


```
Ref Lvl          Marker 1 [T1]           RBW    100 kHz    RF Att     0 dB
12 dBm               -12.32 dBm          VBW    100 kHz
                   2.44183367 GHz        SWT    21 ms      Unit       dBm
```
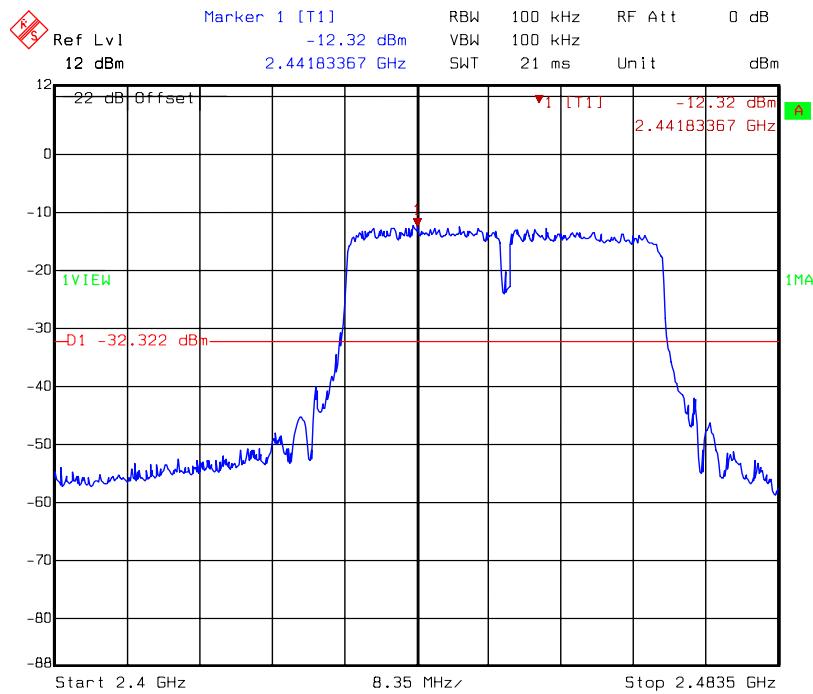
Title: Conductive-Spurious
Comment A: CH 9 at 802.11n 40MHz mode DAC 0
Date: 04.AUG.2008 14:13:41

DAC0:conducted spurious @ 802.11n HT40 mode channel 9 (3 of 3)


```
Ref Lvl          Marker 1 [T1]           RBW    100 kHz    RF Att     0 dB
12 dBm               -51.19 dBm          VBW    100 kHz
                   3.25059519 GHz        SWT    5.8 s      Unit       dBm
```
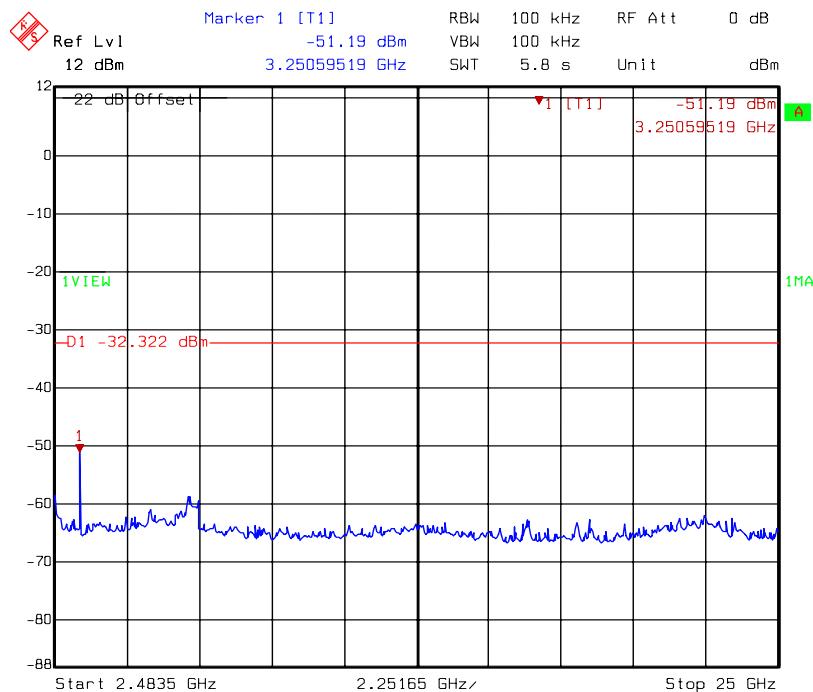
Title: Conductive-Spurious
Comment A: CH 9 at 802.11n 40MHz mode DAC 0
Date: 04.AUG.2008 14:14:29

DAC1: conducted spurious @ 802.11n HT20 mode channel 1 (1 of 3)
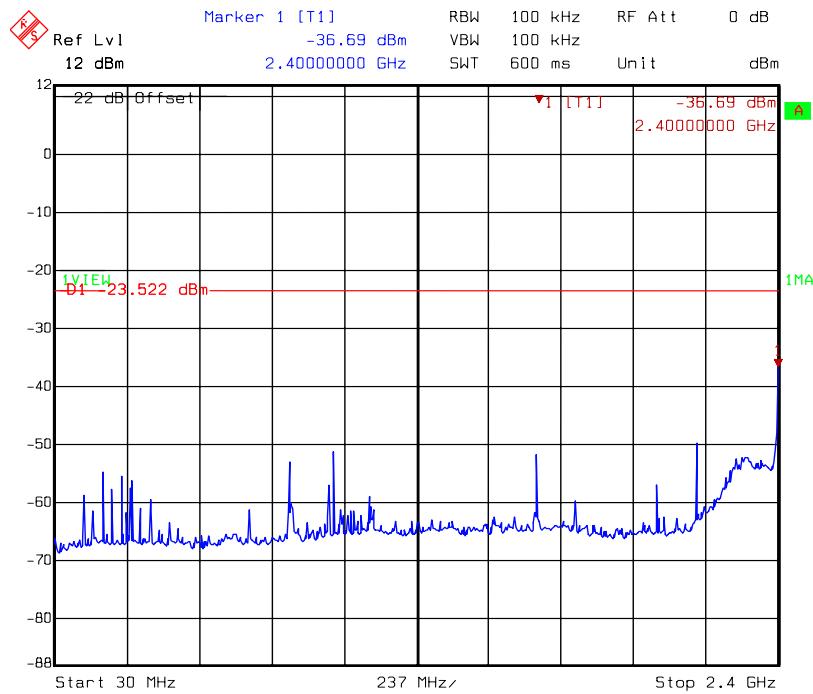

```
Title:       Conductive-Spurious
Comment A: CH 1 at 802.11n 20MHz mode DAC 1
Date:        04.AUG.2008  14:35:39
```

DAC1: conducted spurious @ 802.11n HT20 mode channel 1 (2 of 3)


```
Title:       Conductive-Spurious
Comment A: CH 1 at 802.11n 20MHz mode DAC 1
Date:        04.AUG.2008  14:35:18
```

DAC1:conducted spurious @ 802.11n HT20 mode channel 1 (3of 3)
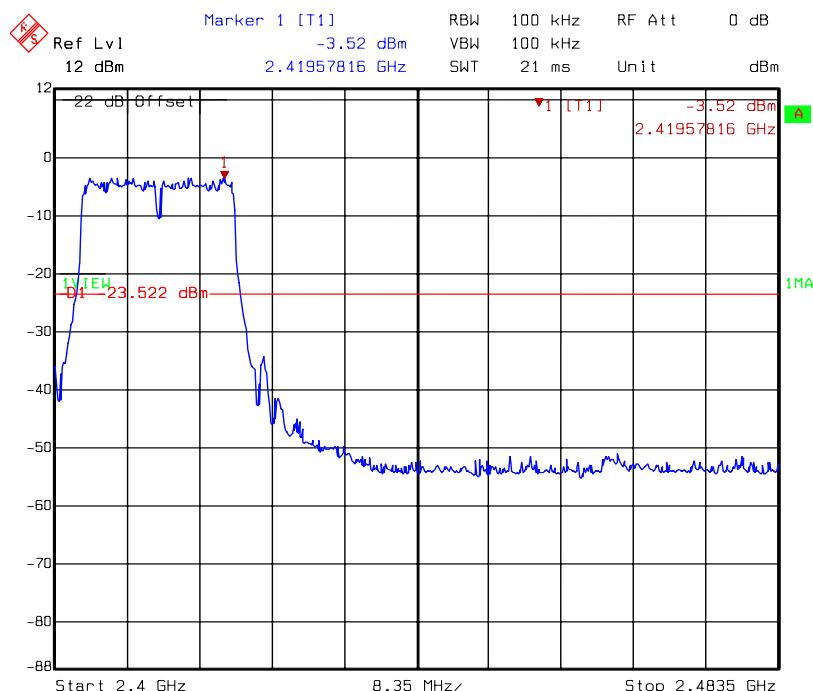
```
              Marker 1 [T1]        RBW    100 kHz    RF Att    0 dB
  Ref Lvl              -38.51 dBm  VBW    100 kHz
  12 dBm          3.17635271 GHz   SWT    5.8 s      Unit      dBm

 12
    -22 dB Offset                       ▼1 [T1]        -38.51 dBm    A
  0                                                3.17635271 GHz

-10

-20
    1VIEW                                                        1MA
    D1 -23.522 dBm
-30

-40    1
       ▼
-50

-60

-70

-80
    Start 2.5 GHz            2.25 GHz/            Stop 25 GHz

Title:      Conductive-Spurious
Comment A: CH 1 at 802.11n 20MHz mode DAC 1
Date:       04.AUG.2008  14:36:07
```

DAC1:conducted spurious @ 802.11n HT20 mode channel 6 (1 of 3)

```
              Marker 1 [T1]        RBW    100 kHz    RF Att    0 dB
  Ref Lvl              -51.09 dBm  VBW    100 kHz
  12 dBm          2.30975952 GHz   SWT    600 ms     Unit      dBm

 12
    -22 dB Offset                       ▼1 [T1]        -51.09 dBm    A
  0                                                2.30975952 GHz

-10

-20  D1 -20.656 dBm                                                1MA
    1VIEW
-30

-40

-50                                                      1
                                                         ▼
-60

-70

-80
    Start 30 MHz             237 MHz/             Stop 2.4 GHz

Title:      Conductive-Spurious
Comment A: CH 6 at 802.11n 20MHz mode DAC 1
Date:       04.AUG.2008  14:40:10
```

DAC1:conducted spurious @ 802.11n HT20 mode channel 6 (2 of 3)


```
Marker 1 [T1]          RBW    100 kHz    RF Att    0 dB
Ref Lvl          -0.66 dBm     VBW    100 kHz
12 dBm       2.43329960 GHz    SWT    21 ms      Unit     dBm
```
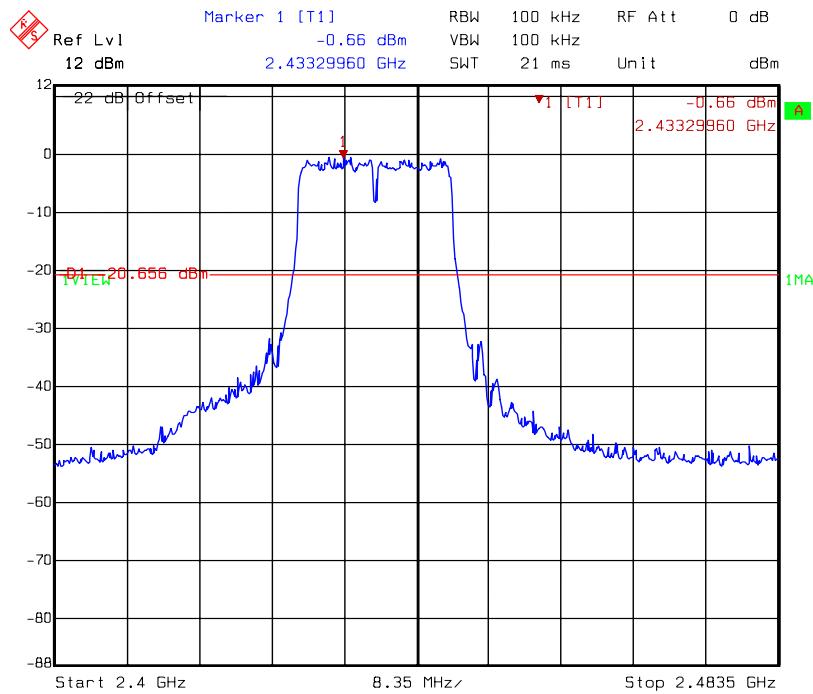
Title: Conductive-Spurious
Comment A: CH 6 at 802.11n 20MHz mode DAC 1
Date: 04.AUG.2008 14:39:49

DAC1:conducted spurious @ 802.11n HT20 mode channel 6 (3 of 3)


```
Marker 1 [T1]          RBW    100 kHz    RF Att    0 dB
Ref Lvl         -41.36 dBm     VBW    100 kHz
12 dBm       3.22144289 GHz    SWT    5.8 s      Unit     dBm
```

Title: Conductive-Spurious
Comment A: CH 6 at 802.11n 20MHz mode DAC 1
Date: 04.AUG.2008 14:40:37

DAC1:conducted spurious @ 802.11n HT20 mode channel 11 (1 of 3)

Title: Conductive-Spurious
Comment A: CH 11 at 802.11n 20MHz mode DAC 1
Date: 04.AUG.2008 14:43:32

DAC1:conducted spurious @ 802.11n HT20 mode channel 11 (2 of 3)

Title: Conductive-Spurious
Comment A: CH 11 at 802.11n 20MHz mode DAC 1
Date: 04.AUG.2008 14:43:11

DAC1:conducted spurious @ 802.11n HT20 mode channel 11 (3 of 3)

Title: Conductive-Spurious
Comment A: CH 11 at 802.11n 20MHz mode DAC 1
Date: 04.AUG.2008 14:43:59

DAC1:conducted spurious @ 802.11n HT40 mode channel 3 (1 of 3)

Title: Conductive-Spurious
Comment A: CH 3 at 802.11n 40MHz mode DAC 1
Date: 04.AUG.2008 14:47:40

DAC1:conducted spurious @ 802.11n HT40 mode channel 3 (2 of 3)

```
              Marker 1 [T1]          RBW    100 kHz   RF Att    0 dB
  Ref Lvl          -6.71 dBm         VBW    100 kHz
  12 dBm       2.43329960 GHz        SWT    21 ms     Unit      dBm

12
  -22 dB Offset                              ▼1 [T1]        -6.71 dBm    A
                                                       2.43329960 GHz
 0

-10

-20
  1VIEW                                                              1MA
  -D1 -26.708 dBm
-30

-40

-50

-60

-70

-80

-88
  Start 2.4 GHz            8.35 MHz/            Stop 2.4835 GHz

Title:     Conductive-Spurious
Comment A: CH 3 at 802.11n 40MHz mode DAC 1
Date:      04.AUG.2008  14:47:19
```

DAC1:conducted spurious @ 802.11n HT40 mode channel 3 (3 of 3)

```
              Marker 1 [T1]          RBW    100 kHz   RF Att    0 dB
  Ref Lvl         -39.21 dBm         VBW    100 kHz
  12 dBm       3.20547194 GHz        SWT    5.8 s     Unit      dBm

12
  -22 dB Offset                              ▼1 [T1]       -39.21 dBm    A
                                                       3.20547194 GHz
 0

-10

-20
  1VIEW                                                              1MA
  -D1 -26.708 dBm
-30

-40

-50

-60

-70

-80

-88
  Start 2.4835 GHz         2.25165 GHz/          Stop 25 GHz

Title:     Conductive-Spurious
Comment A: CH 3 at 802.11n 40MHz mode DAC 1
Date:      04.AUG.2008  14:48:08
```

DAC1:conducted spurious @ 802.11n HT40 mode channel 6 (1 of 3)

Title: Conductive-Spurious
Comment A: CH 6 at 802.11n 40MHz mode DAC 1
Date: 04.AUG.2008 14:50:44

DAC1:conducted spurious @ 802.11n HT40 mode channel 6 (2 of 3)

Title: Conductive-Spurious
Comment A: CH 6 at 802.11n 40MHz mode DAC 1
Date: 04.AUG.2008 14:50:22

DAC1:conducted spurious @ 802.11n HT40 mode channel 6 (3 of 3)

Marker 1 [T1]	RBW	100 kHz	RF Att	0 dB
Ref Lvl	-46.12 dBm	VBW	100 kHz	
12 dBm	3.25059519 GHz	SWT	5.8 s	Unit	dBm

-22 dB Offset
▼1 [T1]   -46.12 dBm
3.25059519 GHz

1VIEW
D1 -22.635 dBm
1MA

Start 2.4835 GHz   2.25165 GHz/   Stop 25 GHz

Title: Conductive-Spurious
Comment A: CH 6 at 802.11n 40MHz mode DAC 1
Date: 04.AUG.2008 14:51:11

DAC1:conducted spurious @ 802.11n HT40 mode channel 9 (1 of 3)

Marker 1 [T1]	RBW	100 kHz	RF Att	0 dB
Ref Lvl	-52.13 dBm	VBW	100 kHz	
12 dBm	1.63533066 GHz	SWT	600 ms	Unit	dBm

-22 dB Offset
▼1 [T1]   -52.13 dBm
1.63533066 GHz

1VIEW
D1 -27.758 dBm
1MA

Start 30 MHz   237 MHz/   Stop 2.4 GHz

Title: Conductive-Spurious
Comment A: CH 9 at 802.11n 40MHz mode DAC 1
Date: 04.AUG.2008 14:53:46

DAC1:conducted spurious @ 802.11n HT40 mode channel 9 (2 of 3)

Ref Lvl	Marker 1 [T1]		RBW	100 kHz	RF Att	0 dB
12 dBm	-7.76 dBm		VBW	100 kHz		
	2.46191383 GHz		SWT	21 ms	Unit	dBm

```
12
      -22 dB Offset                                      ▼1 [T1]        -7.76 dBm   A
                                                                     2.46191383 GHz
 0

-10

-20
   1VIEW                                                                        1MA
   -D1 -27.758 dBm
-30

-40

-50

-60

-70

-80
   Start 2.4 GHz          8.35 MHz/              Stop 2.4835 GHz
```

Title: Conductive-Spurious
Comment A: CH 9 at 802.11n 40MHz mode DAC 1
Date: 04.AUG.2008 14:53:25

DAC1:conducted spurious @ 802.11n HT40 mode channel 9 (3 of 3)

Ref Lvl	Marker 1 [T1]		RBW	100 kHz	RF Att	0 dB
12 dBm	-41.83 dBm		VBW	100 kHz		
	3.25059519 GHz		SWT	5.8 s	Unit	dBm

```
12
      -22 dB Offset                                      ▼1 [T1]       -41.83 dBm   A
                                                                     3.25059519 GHz
 0

-10

-20
   1VIEW                                                                        1MA
   -D1 -27.758 dBm
-30

-40
   1

-50

-60

-70

-80
   Start 2.4835 GHz        2.25165 GHz/            Stop 25 GHz
```

Title: Conductive-Spurious
Comment A: CH 9 at 802.11n 40MHz mode DAC 1
Date: 04.AUG.2008 14:54:13

8. Radiated Spurious Emission

Name of Test	Radiated Spurious Emission
Base Standard	FCC 15.247(d), 15.209, 15.205

Test Result: Complies

Measurement Data: See Tables below

Method of Measurement:

Reference FCC document: KDB558074, ANSI C63.4
The frequency range from 30 MHz to 1000 MHz using Bilog Antenna.
The frequency range over 1 GHz using Horn Antenna.

Radiated emissions were invested cover the frequency range from 30 MHz to 1000 MHz using a receiver RBW of 120 kHz record QP reading, and the frequency over 1 GHz using a spectrum analyzer RBW of 1 MHz and 10 Hz VBW record Average reading. (15.209 paragraph), the Peak reading (1 MHz RBW/VBW) recorded also on the report. The EUT for testing is arranged on a wooden turntable. If some peripherals apply to the EUT, the peripherals will be connected to EUT and the whole system. During the test, all cables were arranged to produce worst-case emissions. The signal is maximized through rotation. The height of antenna and polarization is changing constantly for exploring for maximum signal level. The height of antenna can be up to 4 meters and down to 1 meter. The measurement for radiated emission will be done at the distance of three meters unless the signal level is too low to measure at that distance. In the case of the reading under noise floor, a pre-amplifier is used and/or the test is conducted at a closer distance. And then all readings are extrapolated back to the equivalent 3 meters reading using inverse scaling with distance.

The EUT configuration please refer to the "Spurious set-up photo.pdf".

Test Diagram:
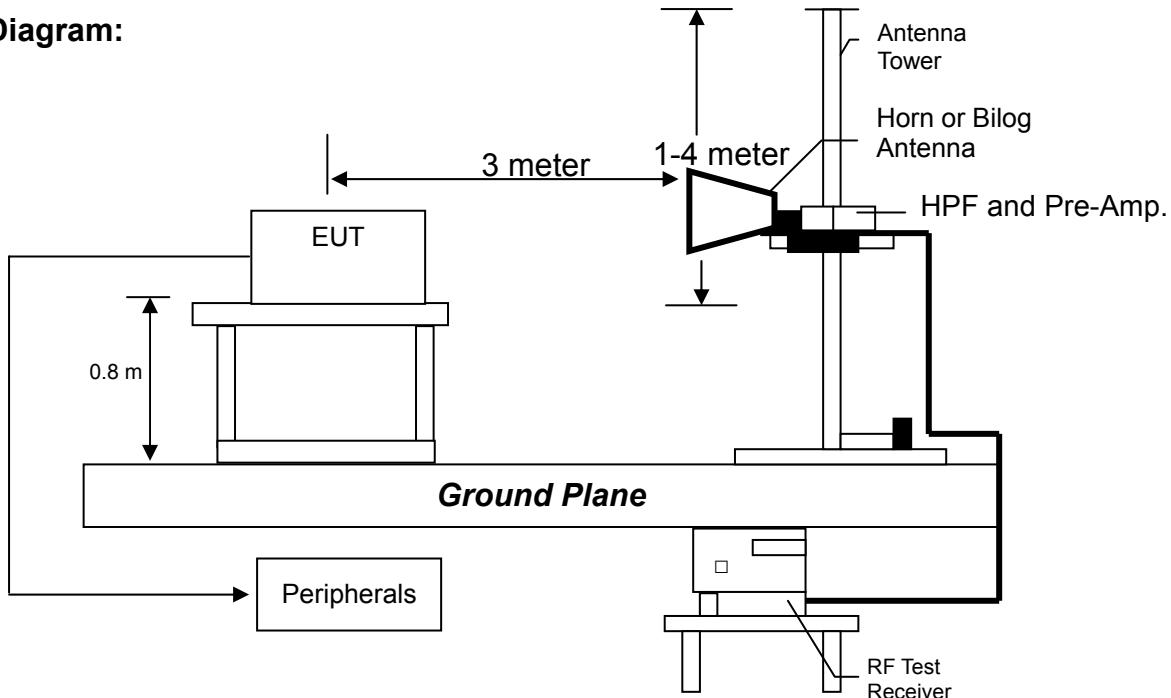
Emission Limit:

The spurious Emission shall test through the 10th harmonic. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

Frequency (MHz)	Limits (dBµV/m@ 3 meter)
30-88	40
88-216	43.5
216-960	46
Above 960	54

Remark:
1. In the above table, the tighter limit applies at the band edges.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

Note: (1) The EUT was tested while in a continuous transmit mode and the worst case data rates are 1 Mbps data rate for 802.11b mode, 6 Mbps data rate for 802.11g mode, 6.5 Mbps data rate for 802.11n HT20 mode and 13 Mbps data rate for 802.11n HT40 mode. The EUT was tuned to a low, middle and high channel.

(1) The EUT operating at 2.4 GHz ISM band. Frequency Range scanned from 30 MHz to 25 GHz.

Measurement results: frequencies equal to or less than 1 GHz

The test was performed on EUT under 802.11b, 802.11g, 802.11n HT20 and 802.11n HT40 continuously transmitting mode. The worst case occurred at 802.11b Tx channel 1 (DAC0).

EUT   :WI5200
Worst Case   :802.11b Tx at channel 1 (DAC0)

Antenna Polariz. (V/H)	Freq. (MHz)	Receiver Detector	Corr. Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
V	33.880	QP	12.60	20.71	33.31	40.00	-6.70
V	125.060	QP	9.47	21.98	31.45	43.50	-12.06
V	374.350	QP	15.06	13.82	28.88	46.00	-17.12
V	533.430	QP	19.46	13.54	33.00	46.00	-13.00
V	799.210	QP	23.19	13.66	36.85	46.00	-9.15
V	925.310	QP	25.13	10.97	36.10	46.00	-9.91
H	125.060	QP	11.62	18.91	30.53	43.50	-12.98
H	132.820	QP	12.32	18.15	30.47	43.50	-13.03
H	374.350	QP	15.48	17.80	33.28	46.00	-12.73
H	450.010	QP	18.16	11.95	30.11	46.00	-15.89
H	799.210	QP	23.52	19.64	43.16	46.00	-2.84
H	849.650	QP	24.04	9.96	34.00	46.00	-12.01

Remark:

    1. Corr. Factor = Antenna Factor + Cable Loss
    2. Corrected Level = Reading + Corr. Factor

Measurement results: frequency above 1GHz

EUT   : WI5200
Test Condition : 802.11b Tx at channel 1 (DAC0)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
1607.00	PK	V	35.59	28.76	28.44	57.2	74	-16.8
1607.00	AV	V	35.59	28.76	22.29	51.05	54	-2.95
1607.00	PK	H	35.59	28.76	19.88	48.64	54	-5.36
3210.00	PK	V	35.54	34.62	47.58	46.66	54	-7.34
4824.00	PK	V	36.07	37.77	59.80	61.50	74	-12.5
4824.00	AV	V	36.07	37.77	51.45	53.15	54	-0.85
4824.00	PK	H	36.07	37.77	40.94	42.64	54	-11.36

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1 GHz to 25 GHz. The data value listed above which is higher than the system noise floor.

EUT   : WI5200
Test Condition : 802.11b Tx at channel 6 (DAC0)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3240.00	PK	V	35.54	34.62	46.86	45.94	54	-8.06
4874.00	PK	V	36.07	37.77	47.20	48.90	54	-5.10
4874.00	PK	H	36.07	37.77	40.70	42.40	54	-11.6

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1 GHz to 25 GHz. The data value listed above which is higher than the system noise floor.

EUT : WI5200
Test Condition : 802.11b Tx at channel 11 (DAC0)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3270.00	PK	V	35.54	34.62	44.39	43.47	54	-10.53
4924.00	PK	V	36.07	37.77	48.42	50.12	54	-3.88
4924.00	PK	H	36.07	37.77	40.18	41.88	54	-12.12

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1 GHz to 25 GHz.The data value listed above which is higher than the system noise floor.

EUT : WI5200
Test Condition : 802.11g Tx at channel 1 (DAC0)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
4824.00	PK	V	36.07	37.77	58.36	60.06	74	-13.94
4824.00	AV	V	36.07	37.77	46.06	47.76	54	-6.24
7236.00	PK	V	36.18	43.97	54.26	62.05	74	-11.95
7236.00	AV	V	36.18	43.97	40.25	48.04	54	-5.96
4824.00	PK	H	36.07	37.77	44.87	46.57	54	-7.43
7236.00	PK	H	36.18	43.97	42.32	50.11	54	-3.89

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1 GHz to 25 GHz.The data value listed above which is higher than the system noise floor.

EUT : WI5200
Test Condition : 802.11g Tx at channel 6 (DAC0)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
4874.00	PK	V	36.07	37.77	59.25	60.95	74	-13.05
4874.00	AV	V	36.07	37.77	46.84	48.54	54	-5.46
7311.00	PK	V	36.18	43.97	58.73	66.52	74	-7.48
7311.00	AV	V	36.18	43.97	45.55	53.34	54	-0.66
9478.00	PK	V	35.82	47.11	49.83	61.12	74	-12.88
9478.00	AV	V	35.82	47.11	36.17	47.46	54	-6.54
4874.00	PK	H	36.07	37.77	48.25	49.95	54	-4.05
7311.00	PK	H	36.18	43.97	43.04	50.83	54	-3.17

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1 GHz to 25 GHz. The data value listed above which is higher than the system noise floor.

EUT : WI5200
Test Condition : 802.11g Tx at channel 11 (DAC0)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3270.00	PK	V	35.54	34.62	45.51	44.59	54	-9.41
4924.00	PK	V	36.07	37.77	48.78	50.48	54	-3.52
7386.00	PK	V	36.18	43.97	43.68	51.47	54	-2.53
4924.00	PK	H	36.07	37.77	39.24	40.94	54	-13.06

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1 GHz to 25 GHz. The data value listed above which is higher than the system noise floor.

EUT : WI5200
Test Condition : 802.11n HT20 Tx at channel 1 (DAC0+DAC1)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3216.00	PK	V	35.54	34.62	58.34	57.42	90.67	-33.25
3216.00	AV	V	35.54	34.62	55.28	54.36	80.98	-26.62
4824.00	PK	V	36.07	37.77	47.01	48.71	54.00	-5.29
7236.00	PK	V	36.18	43.97	42.17	49.96	54.00	-4.04
3210.00	PK	H	35.54	34.62	43.5	42.58	54.00	-11.42
4824.00	PK	H	36.07	37.77	40.38	42.08	54.00	-11.92

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1 GHz to 25 GHz.The data value listed above which is higher than the system noise floor.

EUT : WI5200
Test Condition : 802.11n HT20 Tx at channel 6 (DAC0+DAC1)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3240.00	PK	V	35.54	34.62	51.4	50.48	54	-3.52
4874.00	PK	V	36.07	37.77	58.31	60.01	74	-13.99
4874.00	AV	V	36.07	37.77	41.82	43.52	54	-10.48
7311.00	PK	V	36.18	43.97	45.03	52.82	54	-1.18
4860.00	PK	H	36.07	37.77	44.12	45.82	54	-8.18

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1 GHz to 25 GHz.The data value listed above which is higher than the system noise floor.

EUT : WI5200

Test Condition : 802.11n HT20 Tx at channel 11 (DAC0+DAC1)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3270.00	PK	V	35.54	34.62	50.26	49.34	54	-4.66
4924.00	PK	V	36.07	37.77	50.23	51.93	54	-2.07
4924.00	PK	H	36.07	37.77	39.35	41.05	54	-12.95

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1 GHz to 25 GHz.The data value listed above which is higher than the system noise floor.

EUT : WI5200

Test Condition 802.11n HT40 Tx at channel 3 (DAC0+DAC1)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3229.00	PK	V	35.54	34.62	55.99	55.07	86.91	-31.84
3229.00	AV	V	35.54	34.62	54.74	53.82	76.11	-22.29
4844.00	PK	V	36.07	37.77	42.83	44.53	54	-9.47
4844.00	PK	H	36.07	37.77	38.27	39.97	54	-14.03

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1 GHz to 25 GHz.The data value listed above which is higher than the system noise floor.

EUT : WI5200

Test Condition 802.11n HT40 Tx at channel 6 (DAC0+DAC1)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3240.00	PK	V	35.54	34.62	53.18	52.26	54	-1.74
4874.00	PK	H	36.07	37.77	47.18	48.88	54	-5.12
4874.00	PK	H	36.07	37.77	41.25	42.95	54	-11.05

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1 GHz to 25 GHz.The data value listed above which is higher than the system noise floor.

EUT : WI5200

Test Condition 802.11n HT40 Tx at channel 9 (DAC0+DAC1)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3270.00	PK	V	35.54	34.62	51.62	50.7	54	-3.30
4904.00	PK	H	36.07	37.77	41.26	42.96	54	-11.04
4904.00	PK	H	36.07	37.77	39.42	41.12	54	-12.88

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1 GHz to 25 GHz.The data value listed above which is higher than the system noise floor.

9. Emission on Band Edge

Name of Test	Emission Band Edge
Base Standard	FCC 15.247(d)

Test Result: Complies

Measurement Data: See Tables & plots below

Method of Measurement:

Reference FCC document: KDB558074, ANSI C63.4

The frequency range from 30 MHz to 1000 MHz using Bilog Antenna.
The frequency range over 1 GHz using Horn Antenna.

Radiated emissions were invested cover the frequency range from 30 MHz to 1000 MHz using a receiver RBW of 120 kHz record QP reading, and the frequency over 1 GHz using a spectrum analyzer RBW of 1 MHz and 10 Hz VBW record Average reading. (15.209 paragraph), the Peak reading (1 MHz RBW/VBW) recorded also on the report.

Note: The EUT was tested while in a continuous transmit mode and the worst case data rates are 1 Mbps data rate for 802.11b mode, 6 Mbps data rate for 802.11g mode, 6.5 Mbps data rate for 802.11n HT20 mode and 13 Mbps data rate for 802.11n HT40 mode. The EUT was tuned to a low, middle and high channel.
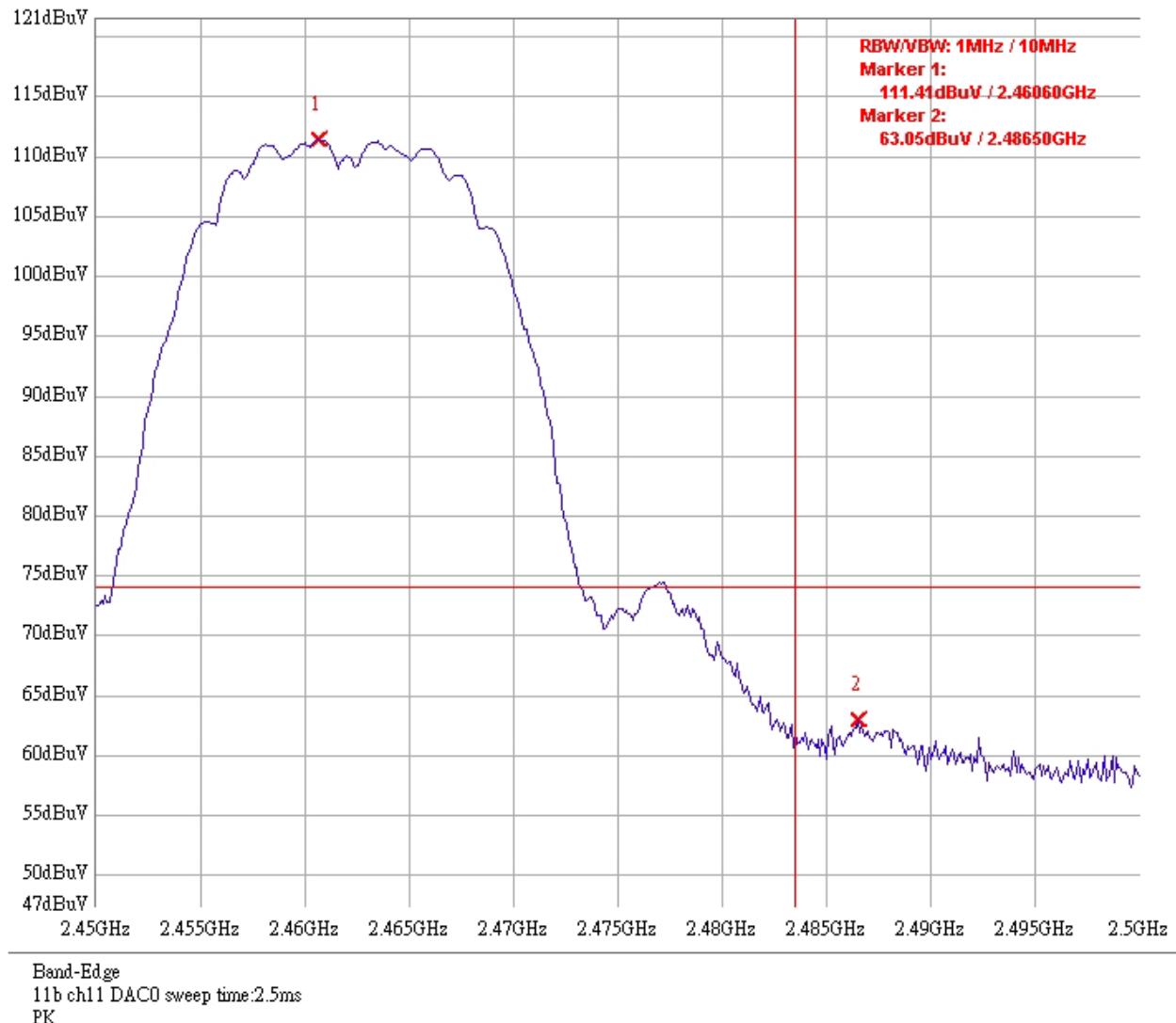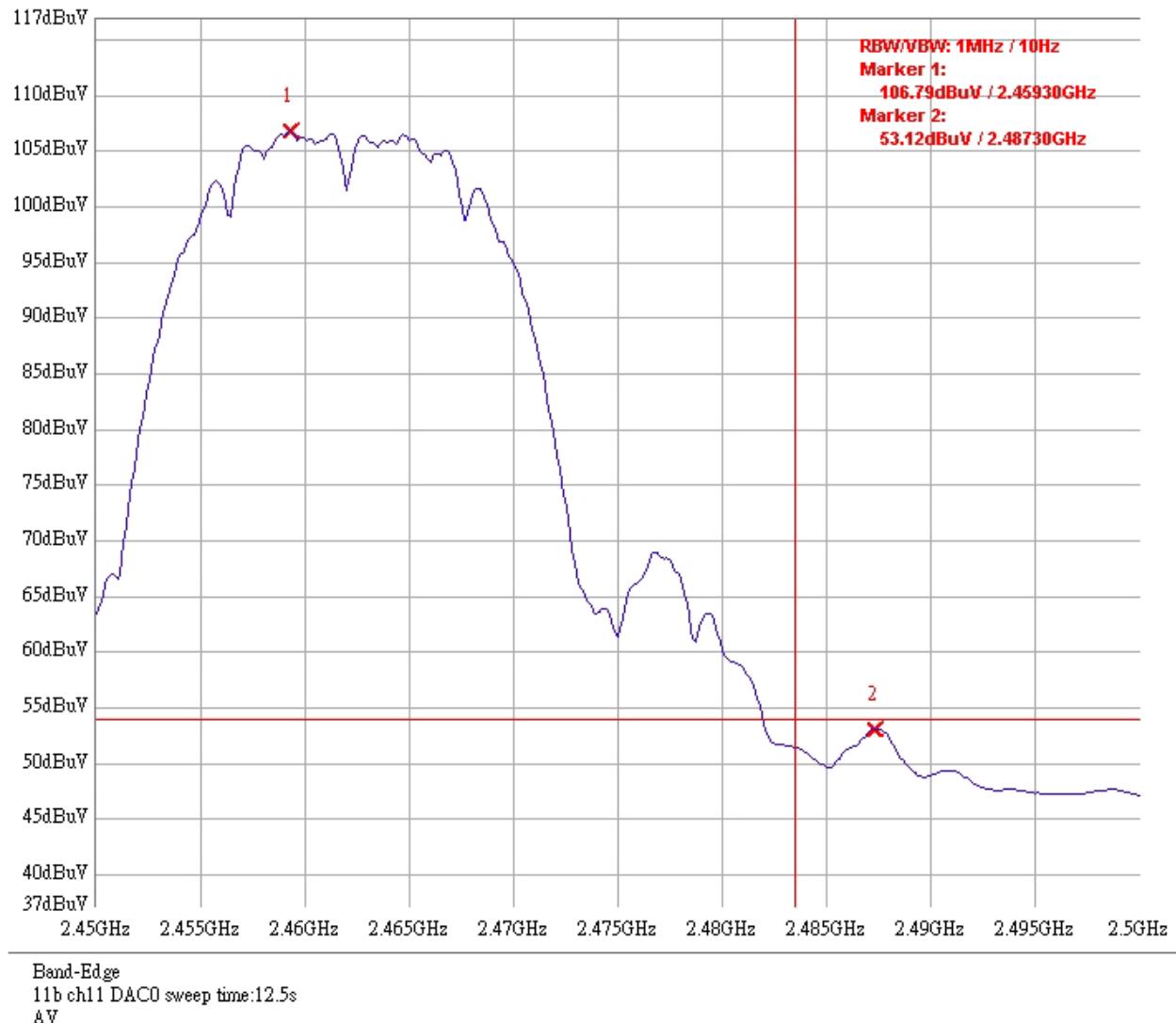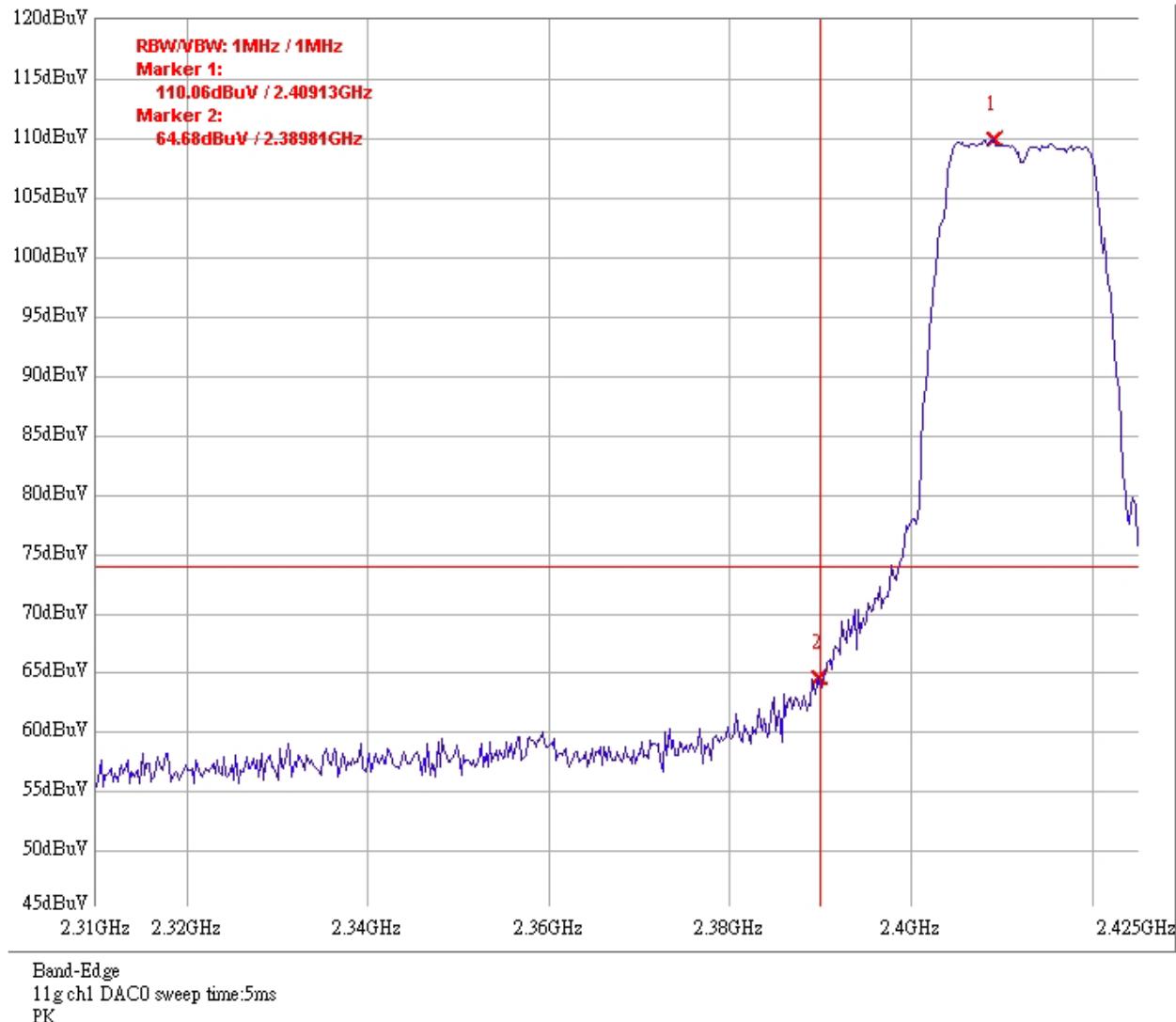
Test Mode: 802.11b (DAC0)

Channel	Measurement Freq.Band (MHz)	Detector	The Max. Field Strength in Restrict Band (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
1 (lowest)	2310-2390	PK	62.04	74	-11.96
		AV	52.64	54	-1.36
11 (highest)	2483.5-2500	PK	63.05	74	-10.95
		AV	53.12	54	-0.88

Test Mode: 802.11g (DAC0)

Channel	Measurement Freq.Band (MHz)	Detector	The Max. Field Strength in Restrict Band (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
1 (lowest)	2310-2390	PK	64.68	74	-9.32
		AV	52.52	54	-1.48
11 (highest)	2483.5-2500	PK	66.65	74	-7.35
		AV	52.21	54	-1.79

Test Mode: 802.11n HT20 (DAC0+DAC1)

Channel	Measurement Freq.Band (MHz)	Detector	The Max. Field Strength in Restrict Band (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
1 (lowest)	2310-2390	PK	67.94	74	-6.06
		AV	52.39	54	-1.61
11 (highest)	2483.5-2500	PK	64.84	74	-9.16
		AV	53.07	54	-0.93

Test Mode: 802.11n HT40 (DAC0+DAC1)

Channel	Measurement Freq.Band (MHz)	Detector	The Max. Field Strength in Restrict Band (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
3 (lowest)	2310-2390	PK	65.23	74	-8.77
		AV	52.88	54	-1.12
9 (highest)	2483.5-2500	PK	64.78	74	-9.22
		AV	53.42	54	-0.58

Test Mode: DAC0 Bandage @ 802.11b mode channel 1 (PK)

RBW/VBW: 1MHz / 1MHz
Marker 1:
109.44dBuV / 2.41074GHz
Marker 2:
62.04dBuV / 2.38659GHz

Band-Edge
11b ch1 DAC0 sweep time:5ms
PK

Test Mode: DAC0 Bandage @ 802.11b mode channel 1 (AV)

Band-Edge
11b ch1 DAC0 sweep time:29S
AV

Test Mode: DAC0 Bandage @ 802.11b mode channel 11 (PK)

RBW/VBW: 1MHz / 10MHz
Marker 1:
111.41dBuV / 2.46060GHz
Marker 2:
63.05dBuV / 2.48650GHz

Band-Edge
11b ch11 DAC0 sweep time:2.5ms
PK

Test Mode: DAC0 Bandage @ 802.11b mode channel 11 (AV)

Band-Edge
11b ch11 DAC0 sweep time:12.5s
AV

Test Mode: DAC0 Bandage @ 802.11g mode channel 1 (PK)

RBW/VBW: 1MHz / 1MHz
Marker 1:
    110.06dBuV / 2.40913GHz
Marker 2:
    64.68dBuV / 2.38981GHz

Band-Edge
11g ch1 DAC0 sweep time:5ms
PK

Test Mode: DAC0 Bandage @ 802.11g mode channel 1 (AV)

Band-Edge
11g ch1 DAC0 sweep time:29s
AV

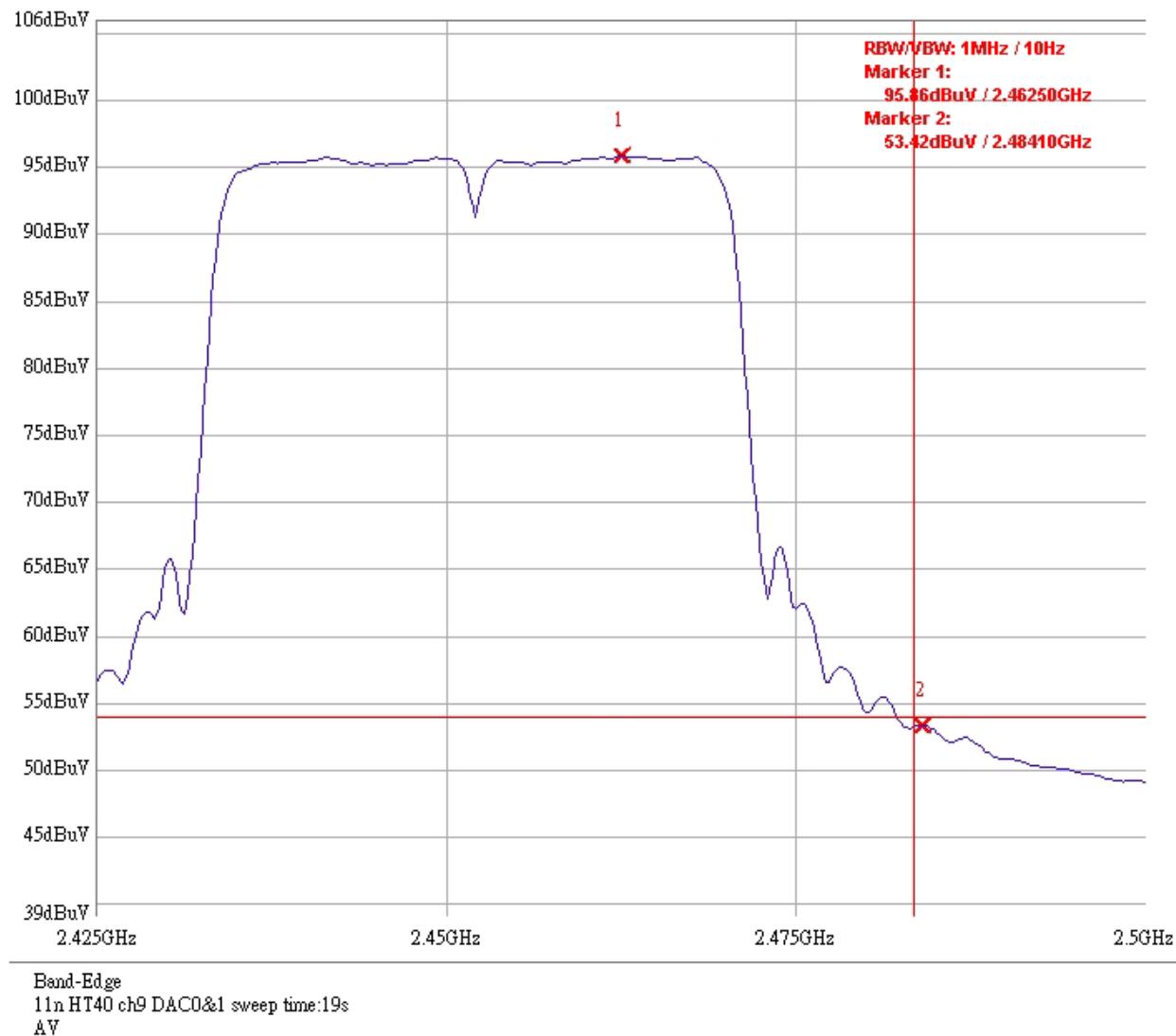**Test Mode: DAC0 Bandage @ 802.11g mode channel 11 (PK)**

Band-Edge
11g ch11 DAC0 sweep time:12.5s
PK

Test Mode: DAC0 Bandage @ 802.11g mode channel 11 (AV)

Band-Edge
11g ch11 DAC0 sweep time:12.5s
AV

Test Mode: DAC0+DAC1 Bandage @ 802.11n HT20 mode channel 1 (PK)

RBW/VBW: 1MHz / 1MHz
Marker 1:
110.67dBuV / 2.40499GHz
Marker 2:
67.94dBuV / 2.38981GHz

Band-Edge
11n HT20 ch1 DAC0&1 sweep time:5ms
PK

Test Mode: DAC0+DAC1 Bandage @ 802.11n HT20 mode channel 1 (AV)

RBW/VBW: 1MHz / 10Hz
Marker 1:
    100.98dBuV / 2.40522GHz
Marker 2:
    52.39dBuV / 2.38981GHz

Band-Edge
11n HT20 ch1 DAC0&1 sweep time:29s
AV

Test Mode: DAC0+DAC1 Bandage @ 802.11n HT20 mode channel 11 (PK)

RBW/VBW: 1MHz / 1MHz
Marker 1:
112.20dBuV / 2.46910GHz
Marker 2:
64.84dBuV / 2.48420GHz

Band-Edge
11n HT20 ch11 DAC0&1 sweep time:2.5ms
PK

Test Mode: DAC0+DAC1 Bandage @ 802.11n HT20 mode channel 11 (AV)

Band-Edge
11n HT20 ch11 DAC0&1 sweep time:12.5s
AV

Test Mode: DAC0+DAC1 Bandage @ 802.11n HT40 mode channel 3 (PK)
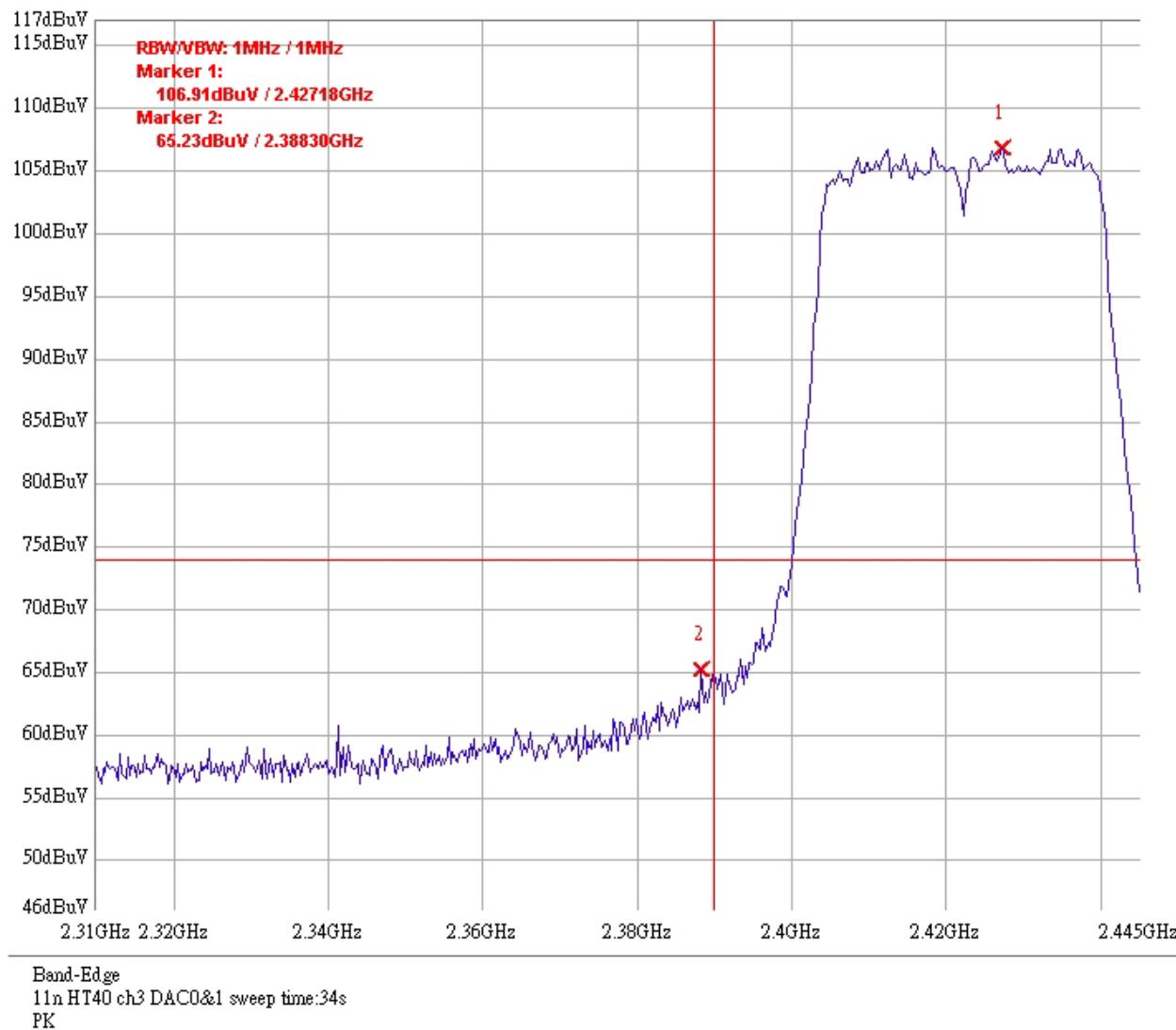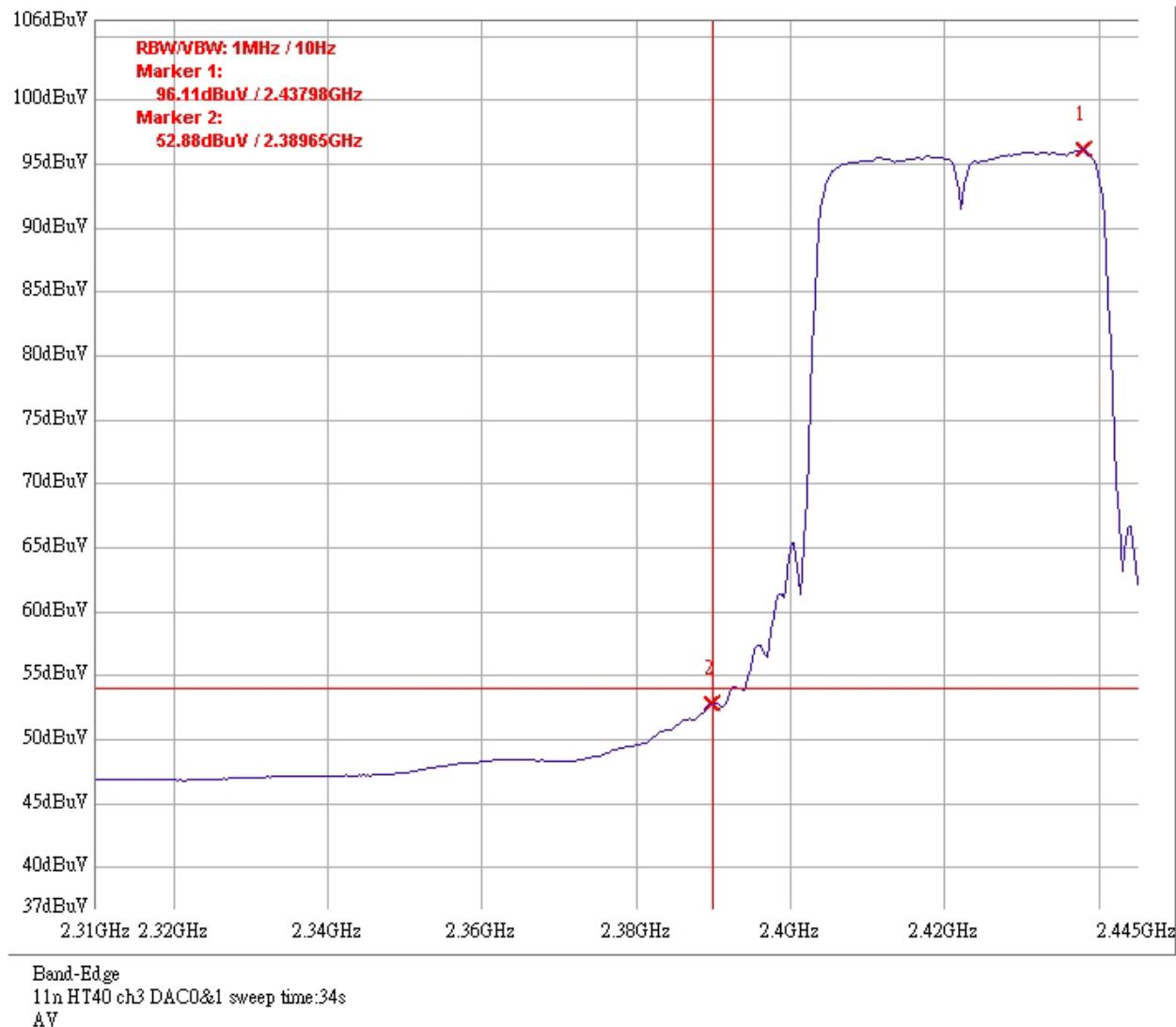
Band-Edge
11n HT40 ch3 DAC0&1 sweep time:34s
PK

Test Mode: DAC0+DAC1 Bandage @ 802.11n HT40 mode channel 3 (AV)

RBW/VBW: 1MHz / 10Hz
Marker 1:
    96.11dBuV / 2.43798GHz
Marker 2:
    52.88dBuV / 2.38965GHz

Band-Edge
11n HT40 ch3 DAC0&1 sweep time:34s
AV

Test Mode: DAC0+DAC1 Bandage @ 802.11n HT40 mode channel 9 (PK)

Band-Edge
11n HT40 ch9 DAC0&1 sweep time:2.5ms
PK

Test Mode: DAC0+DAC1 Bandage @ 802.11n HT40 mode channel 9 (AV)

RBW/VBW: 1MHz / 10Hz
Marker 1:
95.86dBuV / 2.46250GHz
Marker 2:
53.42dBuV / 2.48410GHz
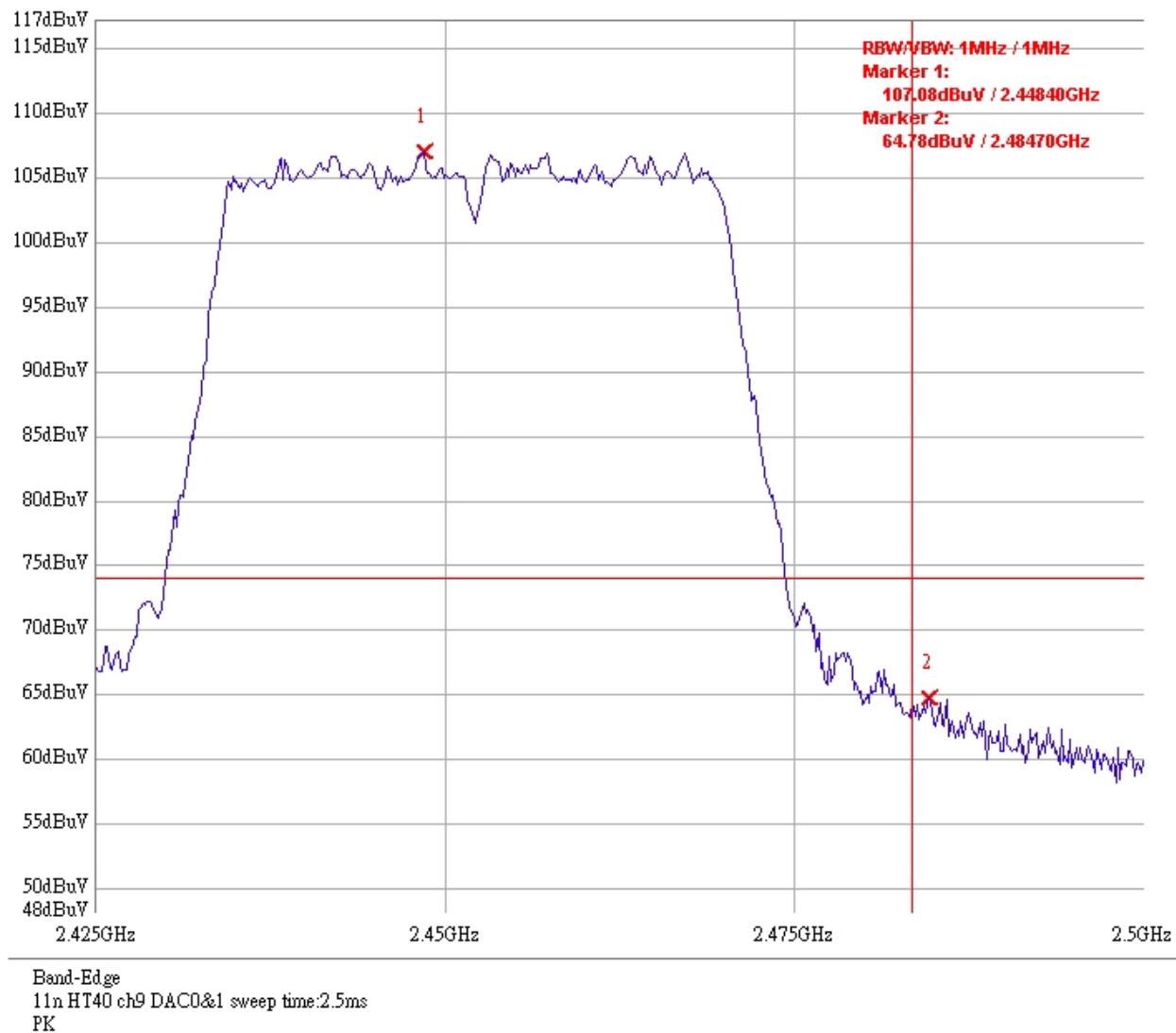
Band-Edge
11n HT40 ch9 DAC0&1 sweep time:19s
AV

10. AC power line conducted emission

Name of Test	AC power line conducted emission
Base Standard	FCC 15.207

Test Result: Complies

Measurement Data: See Tables & plots below

Method of Measurement:

Reference FCC document: KDB558074, ANSI C63.4

The EUT are connected to the main power through a line impedance stabilization network (LISN).   This provides a 50 ohm/50 uH coupling impedance for the measuring equipment.   The peripheral devices are also connected to the main power through a LISN that provides a 50 ohm/ 50 uH coupling impedance with 50 ohm termination.

Both sides (Line and Neutral) of AC line are checked for maximum conducted interference.   In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4/2003 on conducted measurement.
The bandwidth of the field strength meter (R & S Test Receiver ESCS 30) is set at 9kHz.

The EUT configuration please refer to the "Conducted set-up photo.pdf".

Test Diagram:
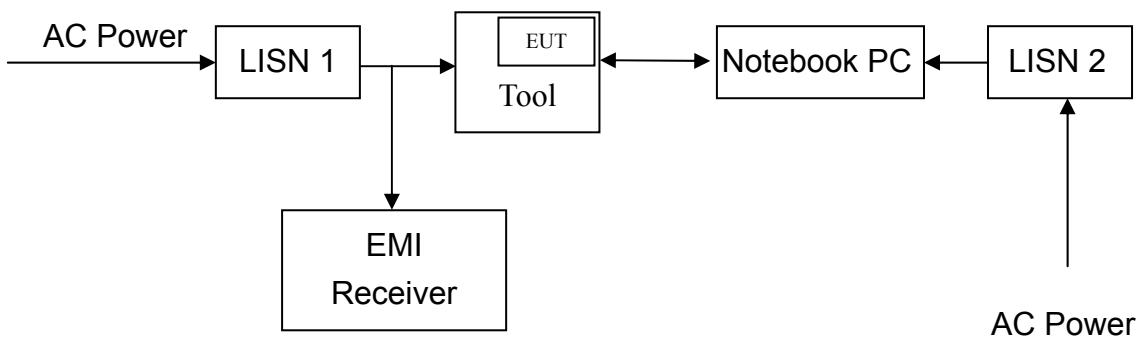
Emission Limit:

Freq. (MHz)	Conducted Limit (dBuV)	
	Q.P.	Ave.
0.15~0.50	66 – 56*	56 – 46*
0.50~5.00	56	46
5.00~30.0	60	50

*Decreases with the logarithm of the frequency.

Note: The EUT was tested while in normal communication mode.

Phase   : Line
EUT   : WI5200
Test Condition   : Normal operating mode

Frequency (MHz)	Corr. Factor (dB)	Level Qp (dBuV)	Limit Qp (dBuV)	Level AV (dBuV)	Limit Av (dBuV)	Margin (dB) Qp	Margin (dB) Av
0.15	0.81	51.80	65.93	23.12	55.93	-14.14	-32.82
0.26	0.53	47.30	61.39	28.90	51.39	-14.09	-22.49
0.37	0.18	43.31	58.41	21.63	48.41	-15.10	-26.78
0.52	0.11	38.96	56.00	29.32	46.00	-17.04	-16.68
0.78	0.11	32.34	56.00	24.91	46.00	-23.66	-21.09
1.04	0.11	23.21	56.00	9.99	46.00	-32.79	-36.01

Remark:
1. Correction Factor (dB)= LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Level (dBuV) – Limit (dBuV)
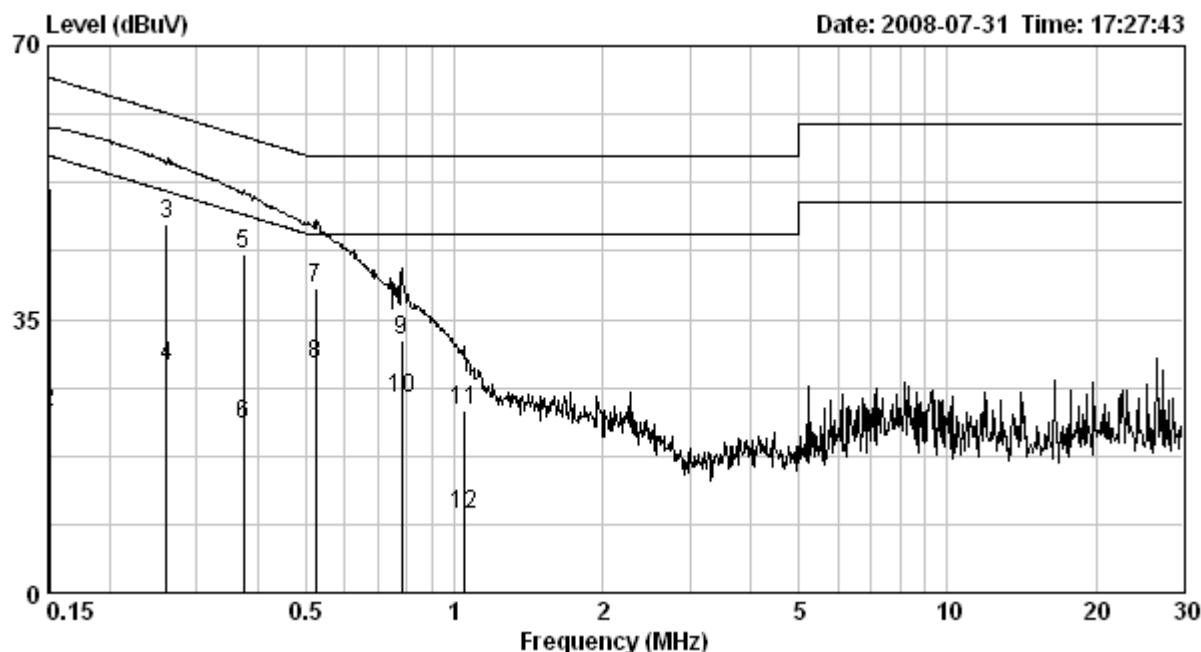
Phase   : Neutral
EUT   : WI5200
Test Condition   : Normal operating mode

Frequency (MHz)	Corr. Factor (dB)	Level Qp (dBuV)	Limit Qp (dBuV)	Level AV (dBuV)	Limit Av (dBuV)	Margin (dB) Qp	Margin (dB) Av
0.15	0.11	51.62	66.00	24.49	56.00	-14.38	-31.51
0.26	0.11	47.96	61.32	28.54	51.32	-13.37	-22.79
0.39	0.11	45.20	58.11	27.16	48.11	-12.91	-20.95
0.52	0.11	43.28	56.00	30.67	46.00	-12.72	-15.33
0.63	0.11	41.33	56.00	27.64	46.00	-14.67	-18.36
0.78	0.11	37.13	56.00	29.38	46.00	-18.87	-16.62

Remark:
1. Correction Factor (dB)= LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Level (dBuV) – Limit (dBuV)
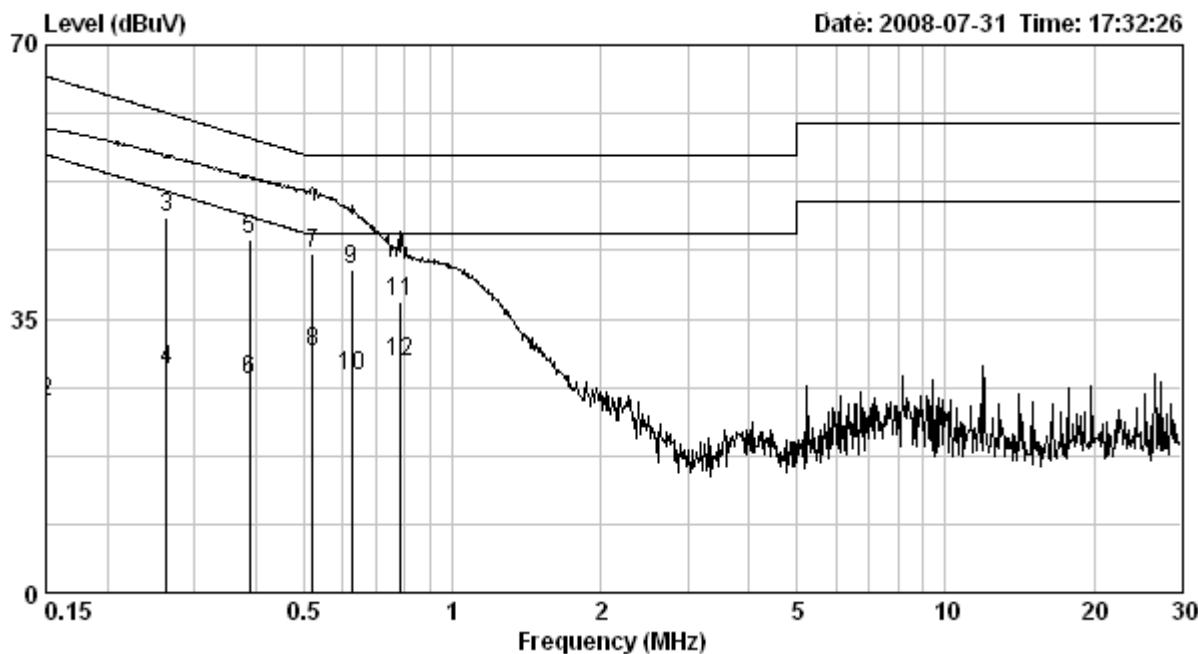
Appendix A: Test Equipment List

Equipment	Brand	Model No.
EMI Test Receiver	Rohde & Schwarz	ESCS 30
Spectrum Analyzer	Rohde & Schwarz	FSP 30
Spectrum Analyzer	Rohde & Schwarz	FSEK 30
Signal Generator	Rohde & Schwarz	SMR27
Horn Antenna	SCHWARZBECK	BBHA 9120 D
Horn Antenna	SCHWARZBECK	BBHA 9170
Bilog Antenna	SCHWARZBECK	VULB 9168
Pre-Amplifier	MITEQ	919981
Pre-Amplifier	MITEQ	828825
Controller	HDGmbH	CM 100
Antenna Tower	HDGmbH	MA 2400
LISN	Rohde & Schwarz	ESH3-Z5
Wideband Peak Power Meter/ Sensor	Anritsu	ML2487A/ MA2491A
Temperature Humidity Test Chamber	Juror	TR-4010

Note: 1. The above equipments are within the valid calibration period.

2. The test antennas (receiving antenna) are calibration per 3 years.

Measurement Uncertainty:

Measurement uncertainty was calculated in accordance with NAMAS NIS 81.

Parameter	Uncertainty
Radiated Emission	±4.98 dB
Conducted Emission	±2.6 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.