

## 4.4 CONDUCTED OUTPUT POWER

### 4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

Per KDB 662911 D01 Multiple Transmitter Output v02r01 Method of conducted output power measurement on IEEE 802.11 devices,

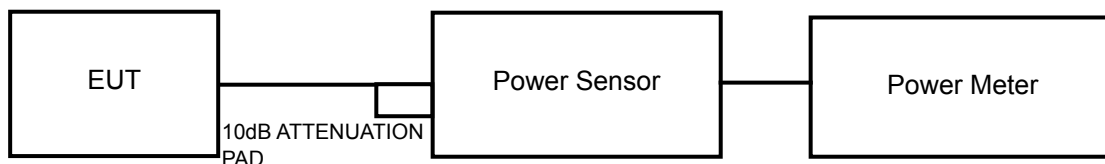
Array Gain = 0 dB (i.e., no array gain) for  $NANT \leq 4$ ;

Array Gain = 0 dB (i.e., no array gain) for channel widths  $\geq 40$  MHz for any NANT;

Array Gain =  $5 \log(NANT/NSS)$  dB or 3 dB, whichever is less for 20-MHz channel widths with  $NANT \geq 5$ .

For power measurements on all other devices: Array Gain =  $10 \log(NANT/NSS)$  dB.

### 4.4.2 TEST SETUP



### 4.4.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

### 4.4.4 TEST PROCEDURES

An average power sensor was used on the output port of the EUT. A power meter was used to read the response of the average power sensor. Record the power level.

#### 4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.2.6.



## 4.4.7 TEST RESULTS

## TEST MODE A

## 802.11b

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 1     | 2412              | 23.47            | 22.27   | 22.54   | 570.459          | 27.56             | 30          | PASS        |
| 6     | 2437              | 22.60            | 21.21   | 22.28   | 483.144          | 26.84             | 30          | PASS        |
| 11    | 2462              | 21.98            | 20.77   | 21.68   | 424.391          | 26.28             | 30          | PASS        |

## 802.11g

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 1     | 2412              | 20.34            | 19.12   | 19.48   | 278.517          | 24.45             | 30          | PASS        |
| 6     | 2437              | 24.22            | 23.55   | 24.18   | <b>752.523</b>   | 28.77             | 30          | PASS        |
| 11    | 2462              | 20.33            | 19.26   | 19.82   | 288.168          | 24.60             | 30          | PASS        |

## 802.11n (20MHz)

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 1     | 2412              | 16.40            | 15.18   | 15.41   | 111.367          | 20.47             | 30          | PASS        |
| 6     | 2437              | 23.12            | 21.50   | 22.34   | 517.766          | 27.14             | 30          | PASS        |
| 11    | 2462              | 17.61            | 16.24   | 17.22   | 152.473          | 21.83             | 30          | PASS        |

## 802.11n (40MHz)

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 3     | 2422              | 13.85            | 12.73   | 13.25   | 64.151           | 18.07             | 30          | PASS        |
| 6     | 2437              | 17.05            | 16.21   | 16.91   | 141.573          | 21.51             | 30          | PASS        |
| 9     | 2452              | 11.76            | 10.90   | 11.83   | 42.541           | 16.29             | 30          | PASS        |

**TEST MODE B****802.11b**

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 1     | 2412              | 12.35            | 11.43   | 11.67   | 45.768           | 16.61             | 23.5        | PASS        |
| 6     | 2437              | 15.45            | 14.45   | 15.30   | <b>96.820</b>    | 19.86             | 23.5        | PASS        |
| 11    | 2462              | 14.52            | 13.47   | 14.67   | 79.856           | 19.02             | 23.5        | PASS        |

**NOTE:** Antenna gain = 12.5dBi > 6dBi, so the power limit shall be reduced to  $30-(12.5-6) = 23.5$ dBm.

**802.11g**

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 1     | 2412              | 10.23            | 9.34    | 9.70    | 28.467           | 14.54             | 23.5        | PASS        |
| 6     | 2437              | 12.51            | 11.50   | 12.00   | 47.798           | 16.79             | 23.5        | PASS        |
| 11    | 2462              | 11.95            | 10.85   | 11.77   | 42.861           | 16.32             | 23.5        | PASS        |

**NOTE:** Antenna gain = 12.5dBi > 6dBi, so the power limit shall be reduced to  $30-(12.5-6) = 23.5$ dBm.

**802.11n (20MHz)**

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 1     | 2412              | 10.52            | 9.67    | 9.82    | 30.134           | 14.79             | 23.5        | PASS        |
| 6     | 2437              | 12.24            | 11.19   | 12.17   | 46.383           | 16.66             | 23.5        | PASS        |
| 11    | 2462              | 11.80            | 10.83   | 11.74   | 42.170           | 16.25             | 23.5        | PASS        |

**NOTE:** Antenna gain = 12.5dBi > 6dBi, so the power limit shall be reduced to  $30-(12.5-6) = 23.5$ dBm.

**802.11n (40MHz)**

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 3     | 2422              | 6.55             | 5.64    | 6.13    | 12.285           | 10.89             | 23.5        | PASS        |
| 6     | 2437              | 11.30            | 10.30   | 10.87   | 36.423           | 15.61             | 23.5        | PASS        |
| 9     | 2452              | 5.50             | 4.55    | 5.41    | 9.874            | 9.94              | 23.5        | PASS        |

**NOTE:** Antenna gain = 12.5dBi > 6dBi, so the power limit shall be reduced to  $30-(12.5-6) = 23.5$ dBm.



**TEST MODE C**

**802.11b**

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 1     | 2412              | 16.52            | 15.55   | 15.96   | 120.213          | 20.80             | 26.5        | PASS        |
| 6     | 2437              | 22.03            | 20.25   | 21.27   | <b>399.481</b>   | 26.01             | 26.5        | PASS        |
| 11    | 2462              | 19.03            | 17.81   | 18.88   | 217.646          | 23.38             | 26.5        | PASS        |

**NOTE:** Antenna gain = 9.5dBi > 6dBi, so the power limit shall be reduced to  $30-(9.5-6) = 26.5$ dBm.

**802.11g**

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 1     | 2412              | 15.62            | 14.23   | 14.78   | 93.021           | 19.69             | 26.5        | PASS        |
| 6     | 2437              | 20.68            | 19.65   | 20.63   | 324.818          | 25.12             | 26.5        | PASS        |
| 11    | 2462              | 15.42            | 14.47   | 15.53   | 98.551           | 19.94             | 26.5        | PASS        |

**NOTE:** Antenna gain = 9.5dBi > 6dBi, so the power limit shall be reduced to  $30-(9.5-6) = 26.5$ dBm.

**802.11n (20MHz)**

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 1     | 2412              | 14.23            | 13.16   | 13.70   | 70.628           | 18.49             | 26.5        | PASS        |
| 6     | 2437              | 20.88            | 19.85   | 20.40   | 328.715          | 25.17             | 26.5        | PASS        |
| 11    | 2462              | 14.66            | 13.72   | 14.61   | 81.699           | 19.12             | 26.5        | PASS        |

**NOTE:** Antenna gain = 9.5dBi > 6dBi, so the power limit shall be reduced to  $30-(9.5-6) = 26.5$ dBm.

**802.11n (40MHz)**

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 3     | 2422              | 10.84            | 9.73    | 10.21   | 32.026           | 15.06             | 26.5        | PASS        |
| 6     | 2437              | 16.51            | 15.13   | 15.73   | 114.766          | 20.60             | 26.5        | PASS        |
| 9     | 2452              | 11.05            | 9.92    | 10.81   | 34.602           | 15.39             | 26.5        | PASS        |

**NOTE:** Antenna gain = 9.5dBi > 6dBi, so the power limit shall be reduced to  $30-(9.5-6) = 26.5$ dBm.



**TEST MODE D**

**802.11b**

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 1     | 2412              | 20.95            | 20.93   | 21.22   | 380.765          | 25.81             | 30          | PASS        |
| 6     | 2437              | 23.85            | 23.69   | 24.69   | <b>770.987</b>   | 28.87             | 30          | PASS        |
| 11    | 2462              | 19.72            | 18.13   | 19.31   | 244.079          | 23.88             | 30          | PASS        |

**802.11g**

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 1     | 2412              | 15.57            | 15.19   | 16.83   | 117.290          | 20.69             | 30          | PASS        |
| 6     | 2437              | 21.33            | 21.27   | 22.38   | 442.781          | 26.46             | 30          | PASS        |
| 11    | 2462              | 16.87            | 15.87   | 16.99   | 137.281          | 21.38             | 30          | PASS        |

**802.11n (20MHz)**

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 1     | 2412              | 14.21            | 14.07   | 15.10   | 84.249           | 19.26             | 30          | PASS        |
| 6     | 2437              | 19.87            | 18.99   | 19.97   | 275.613          | 24.40             | 30          | PASS        |
| 11    | 2462              | 15.64            | 14.73   | 15.98   | 105.989          | 20.25             | 30          | PASS        |

**802.11n (40MHz)**

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 3     | 2422              | 11.01            | 10.67   | 11.50   | 38.411           | 15.84             | 30          | PASS        |
| 6     | 2437              | 15.15            | 14.34   | 15.35   | 94.175           | 19.74             | 30          | PASS        |
| 9     | 2452              | 11.46            | 11.14   | 11.79   | 42.099           | 16.24             | 30          | PASS        |



## TEST MODE E

## 802.11b

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 |                  |                   |             |             |
| 1     | 2412              | 23.40            | 22.61   | 401.166          | 26.03             | 30          | PASS        |
| 6     | 2437              | 26.67            | 25.83   | <b>847.340</b>   | 29.28             | 30          | PASS        |
| 11    | 2462              | 23.95            | 22.72   | 435.381          | 26.39             | 30          | PASS        |

## 802.11g

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 |                  |                   |             |             |
| 1     | 2412              | 20.88            | 20.05   | 223.620          | 23.50             | 30          | PASS        |
| 6     | 2437              | 26.25            | 25.91   | 811.639          | 29.09             | 30          | PASS        |
| 11    | 2462              | 20.27            | 19.64   | 198.459          | 22.98             | 30          | PASS        |

## 802.11n (20MHz)

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 |                  |                   |             |             |
| 1     | 2412              | 18.57            | 17.80   | 132.201          | 21.21             | 30          | PASS        |
| 6     | 2437              | 26.40            | 26.09   | 842.959          | 29.26             | 30          | PASS        |
| 11    | 2462              | 18.78            | 18.25   | 142.343          | 21.53             | 30          | PASS        |

## 802.11n (40MHz)

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 |                  |                   |             |             |
| 3     | 2422              | 14.31            | 13.57   | 49.728           | 16.97             | 30          | PASS        |
| 6     | 2437              | 18.81            | 17.75   | 135.599          | 21.32             | 30          | PASS        |
| 9     | 2452              | 13.22            | 12.77   | 39.912           | 16.01             | 30          | PASS        |



A D T

TEST MODE F

802.11b

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 1     | 2412              | 19.44            | 18.02   | 17.32   | 205.240          | 23.12             | 30          | PASS        |
| 6     | 2437              | 25.64            | 24.09   | 24.88   | <b>930.496</b>   | 29.69             | 30          | PASS        |
| 11    | 2462              | 20.72            | 18.46   | 17.98   | 250.984          | 24.00             | 30          | PASS        |

802.11g

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 1     | 2412              | 18.69            | 17.42   | 16.29   | 171.729          | 22.35             | 30          | PASS        |
| 6     | 2437              | 21.74            | 20.45   | 20.31   | 367.595          | 25.65             | 30          | PASS        |
| 11    | 2462              | 16.56            | 15.49   | 15.11   | 113.124          | 20.54             | 30          | PASS        |

802.11n (20MHz)

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 1     | 2412              | 17.75            | 16.55   | 16.41   | 148.504          | 21.72             | 30          | PASS        |
| 6     | 2437              | 20.54            | 18.54   | 15.80   | 222.709          | 23.48             | 30          | PASS        |
| 11    | 2462              | 15.37            | 14.23   | 14.42   | 88.589           | 19.47             | 30          | PASS        |

802.11n (40MHz)

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 3     | 2422              | 12.35            | 11.58   | 10.92   | 43.926           | 16.43             | 30          | PASS        |
| 6     | 2437              | 17.09            | 16.66   | 15.88   | 136.239          | 21.34             | 30          | PASS        |
| 9     | 2452              | 10.90            | 9.89    | 8.63    | 29.348           | 14.68             | 30          | PASS        |





**TEST MODE G**

**802.11b**

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 1     | 2412              | 16.25            | 15.16   | 15.30   | 108.864          | 20.37             | 30          | PASS        |
| 6     | 2437              | 21.34            | 20.24   | 21.21   | <b>373.956</b>   | 25.73             | 30          | PASS        |
| 11    | 2462              | 19.00            | 17.88   | 19.07   | 221.533          | 23.45             | 30          | PASS        |

**802.11g**

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 1     | 2412              | 15.79            | 14.59   | 14.72   | 96.353           | 19.84             | 30          | PASS        |
| 6     | 2437              | 20.94            | 19.81   | 20.74   | 338.461          | 25.30             | 30          | PASS        |
| 11    | 2462              | 15.98            | 14.61   | 15.88   | 107.261          | 20.30             | 30          | PASS        |

**802.11n (20MHz)**

| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 1     | 2412              | 14.10            | 12.79   | 13.22   | 65.704           | 18.18             | 30          | PASS        |
| 6     | 2437              | 20.55            | 19.62   | 20.12   | 307.925          | 24.88             | 30          | PASS        |
| 11    | 2462              | 15.29            | 14.19   | 15.08   | 92.259           | 19.65             | 30          | PASS        |

**802.11n (40MHz)**

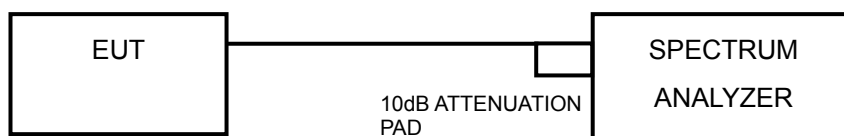
| CHAN. | CHAN. FREQ. (MHz) | AVG. POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|------------------|---------|---------|------------------|-------------------|-------------|-------------|
|       |                   | CHAIN 0          | CHAIN 1 | CHAIN 2 |                  |                   |             |             |
| 3     | 2422              | 10.75            | 9.44    | 9.88    | 30.402           | 14.83             | 30          | PASS        |
| 6     | 2437              | 14.91            | 13.96   | 14.72   | 85.511           | 19.32             | 30          | PASS        |
| 9     | 2452              | 8.88             | 8.01    | 8.32    | 20.843           | 13.19             | 30          | PASS        |

## 4.5 POWER SPECTRAL DENSITY MEASUREMENT

### 4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

### 4.5.2 TEST SETUP



### 4.5.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

### 4.5.4 TEST PROCEDURE

- Set the RBW = 3 kHz, VBW = 10 kHz, Detector = peak.
- Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

### 4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

### 4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6



## 4.5.7 TEST RESULTS

### TEST MODE A

#### 802.11b

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|----------------------|------------------|------------|
| 0        | 1     | 2412        | -8.50          | 4.77            | -3.73                | 4.23             | PASS       |
|          | 6     | 2437        | -9.56          | 4.77            | -4.79                | 4.23             | PASS       |
|          | 11    | 2462        | -10.19         | 4.77            | -5.42                | 4.23             | PASS       |
| 1        | 1     | 2412        | -8.39          | 4.77            | -3.62                | 4.23             | PASS       |
|          | 6     | 2437        | -10.73         | 4.77            | -5.96                | 4.23             | PASS       |
|          | 11    | 2462        | -10.65         | 4.77            | -5.88                | 4.23             | PASS       |
| 2        | 1     | 2412        | -9.23          | 4.77            | -4.46                | 4.23             | PASS       |
|          | 6     | 2437        | -9.50          | 4.77            | -4.73                | 4.23             | PASS       |
|          | 11    | 2462        | -9.76          | 4.77            | -4.99                | 4.23             | PASS       |

**NOTE:** Directional gain = 5dBi + 10log(3) = 9.77dBi > 6dBi, so the power density limit shall be reduced to 8-(9.77-6) = 4.23dBm.

#### 802.11g

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD W/O DUTY FACTOR (dBm/3kHz) | DUTY FACTOR | Total PSD WITH DUTY FACTOR (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|--------------------------------------|-------------|---------------------------------------|------------------|------------|
| 0        | 1     | 2412        | -11.94         | 4.77            | -7.17                                | 0.16        | -7.01                                 | 4.23             | PASS       |
|          | 6     | 2437        | -9.35          | 4.77            | -4.58                                | 0.16        | -4.42                                 | 4.23             | PASS       |
|          | 11    | 2462        | -13.05         | 4.77            | -8.28                                | 0.16        | -8.12                                 | 4.23             | PASS       |
| 1        | 1     | 2412        | -12.89         | 4.77            | -8.12                                | 0.16        | -7.96                                 | 4.23             | PASS       |
|          | 6     | 2437        | -8.87          | 4.77            | -4.10                                | 0.16        | -3.94                                 | 4.23             | PASS       |
|          | 11    | 2462        | -14.33         | 4.77            | -9.56                                | 0.16        | -9.40                                 | 4.23             | PASS       |
| 2        | 1     | 2412        | -13.49         | 4.77            | -8.72                                | 0.16        | -8.56                                 | 4.23             | PASS       |
|          | 6     | 2437        | -10.03         | 4.77            | -5.26                                | 0.16        | -5.10                                 | 4.23             | PASS       |
|          | 11    | 2462        | -13.53         | 4.77            | -8.76                                | 0.16        | -8.60                                 | 4.23             | PASS       |

**NOTE:**

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 5dBi + 10log(3) = 9.77dBi > 6dBi, so the power density limit shall be reduced to 8-(9.77-6) = 4.23dBm.
- Refer to section 3.3 for duty cycle spectrum plot.



802.11n (20MHz)

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD W/O DUTY FACTOR (dBm/3kHz) | DUTY FACTOR | Total PSD WITH DUTY FACTOR (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|--------------------------------------|-------------|---------------------------------------|------------------|------------|
| 0        | 1     | 2412        | -17.03         | 4.77            | -12.26                               | 0.17        | -12.09                                | 4.23             | PASS       |
|          | 6     | 2437        | -10.95         | 4.77            | -6.18                                | 0.17        | -6.01                                 | 4.23             | PASS       |
|          | 11    | 2462        | -16.03         | 4.77            | -11.26                               | 0.17        | -11.09                                | 4.23             | PASS       |
| 1        | 1     | 2412        | -17.96         | 4.77            | -13.19                               | 0.17        | -13.02                                | 4.23             | PASS       |
|          | 6     | 2437        | -11.85         | 4.77            | -7.08                                | 0.17        | -6.91                                 | 4.23             | PASS       |
|          | 11    | 2462        | -16.79         | 4.77            | -12.02                               | 0.17        | -11.85                                | 4.23             | PASS       |
| 2        | 1     | 2412        | -18.77         | 4.77            | -14.00                               | 0.17        | -13.83                                | 4.23             | PASS       |
|          | 6     | 2437        | -11.77         | 4.77            | -7.00                                | 0.17        | -6.83                                 | 4.23             | PASS       |
|          | 11    | 2462        | -16.57         | 4.77            | -11.80                               | 0.17        | -11.63                                | 4.23             | PASS       |

NOTE:

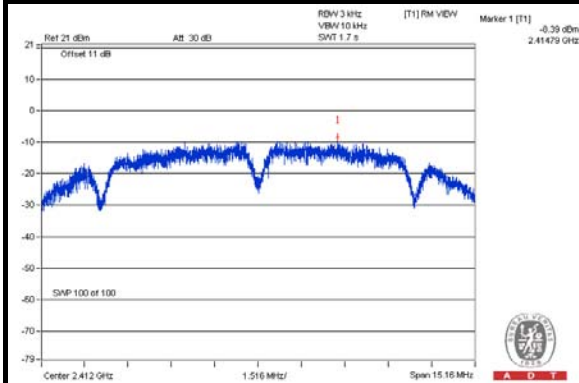
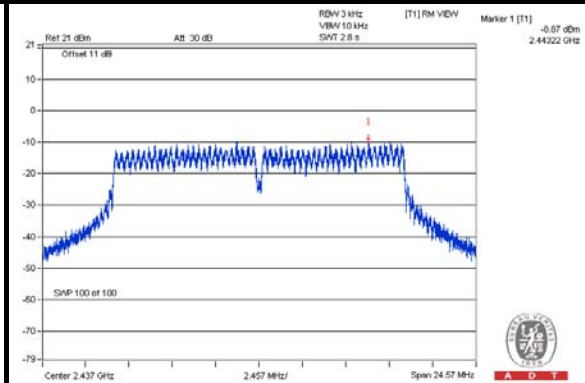
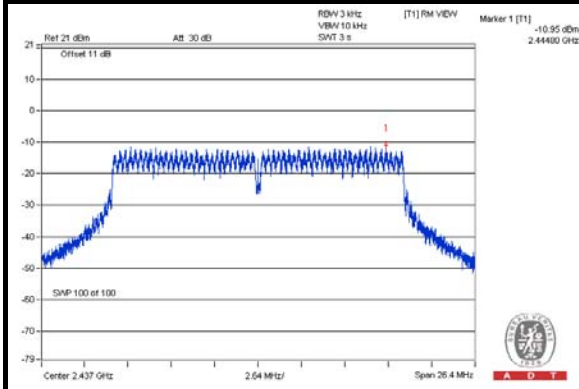
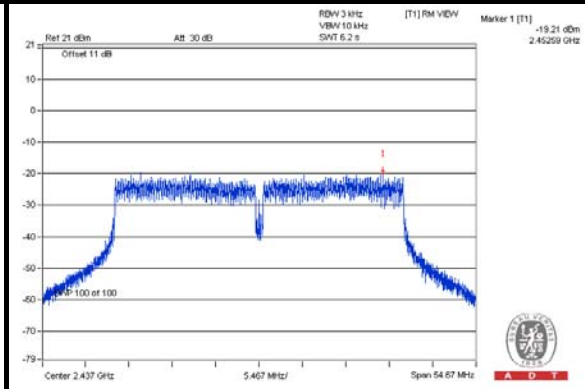
- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 5dBi + 10log(3) = 9.77dBi > 6dBi, so the power density limit shall be reduced to 8-(9.77-6) = 4.23dBm.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11n (40MHz)

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD W/O DUTY FACTOR (dBm/3kHz) | DUTY FACTOR | Total PSD WITH DUTY FACTOR (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|--------------------------------------|-------------|---------------------------------------|------------------|------------|
| 0        | 3     | 2422        | -23.34         | 4.77            | -18.57                               | 0.27        | -18.30                                | 4.23             | PASS       |
|          | 6     | 2437        | -19.21         | 4.77            | -14.44                               | 0.27        | -14.17                                | 4.23             | PASS       |
|          | 9     | 2452        | -24.48         | 4.77            | -19.71                               | 0.27        | -19.44                                | 4.23             | PASS       |
| 1        | 3     | 2422        | -22.55         | 4.77            | -17.78                               | 0.27        | -17.51                                | 4.23             | PASS       |
|          | 6     | 2437        | -19.64         | 4.77            | -14.87                               | 0.27        | -14.60                                | 4.23             | PASS       |
|          | 9     | 2452        | -24.22         | 4.77            | -19.45                               | 0.27        | -19.18                                | 4.23             | PASS       |
| 2        | 3     | 2422        | -22.09         | 4.77            | -17.32                               | 0.27        | -17.05                                | 4.23             | PASS       |
|          | 6     | 2437        | -20.04         | 4.77            | -15.27                               | 0.27        | -15.00                                | 4.23             | PASS       |
|          | 9     | 2452        | -21.76         | 4.77            | -16.99                               | 0.27        | -16.72                                | 4.23             | PASS       |

NOTE:

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 5dBi + 10log(3) = 9.77dBi > 6dBi, so the power density limit shall be reduced to 8-(9.77-6) = 4.23dBm.
- Refer to section 3.3 for duty cycle spectrum plot.

**SPECTRUM PLOT OF WORST VALUE****802.11b****802.11g****802.11n (20MHz)****802.11n (40MHz)**



**TEST MODE B**

**802.11b**

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|----------------------|------------------|------------|
| 0        | 1     | 2412        | -19.43         | 4.77            | -14.66               | -3.27            | PASS       |
|          | 6     | 2437        | -16.00         | 4.77            | -11.23               | -3.27            | PASS       |
|          | 11    | 2462        | -17.74         | 4.77            | -12.97               | -3.27            | PASS       |
| 1        | 1     | 2412        | -21.27         | 4.77            | -16.50               | -3.27            | PASS       |
|          | 6     | 2437        | -18.19         | 4.77            | -13.42               | -3.27            | PASS       |
|          | 11    | 2462        | -18.20         | 4.77            | -13.43               | -3.27            | PASS       |
| 2        | 1     | 2412        | -20.12         | 4.77            | -15.35               | -3.27            | PASS       |
|          | 6     | 2437        | -15.17         | 4.77            | -10.40               | -3.27            | PASS       |
|          | 11    | 2462        | -15.99         | 4.77            | -11.22               | -3.27            | PASS       |

**NOTE:** Directional gain = 12.5dBi + 10log(3) = 17.27dBi > 6dBi, so the power density limit shall be reduced to 8-(17.27-6) = -3.27dBm.

**802.11g**

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD W/O DUTY FACTOR (dBm/3kHz) | DUTY FACTOR | Total PSD WITH DUTY FACTOR (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|--------------------------------------|-------------|---------------------------------------|------------------|------------|
| 0        | 1     | 2412        | -22.69         | 4.77            | -17.92                               | 0.16        | -17.76                                | -3.27            | PASS       |
|          | 6     | 2437        | -21.37         | 4.77            | -16.60                               | 0.16        | -16.44                                | -3.27            | PASS       |
|          | 11    | 2462        | -22.65         | 4.77            | -17.88                               | 0.16        | -17.72                                | -3.27            | PASS       |
| 1        | 1     | 2412        | -24.47         | 4.77            | -19.70                               | 0.16        | -19.54                                | -3.27            | PASS       |
|          | 6     | 2437        | -22.65         | 4.77            | -17.88                               | 0.16        | -17.72                                | -3.27            | PASS       |
|          | 11    | 2462        | -23.28         | 4.77            | -18.51                               | 0.16        | -18.35                                | -3.27            | PASS       |
| 2        | 1     | 2412        | -23.54         | 4.77            | -18.77                               | 0.16        | -18.61                                | -3.27            | PASS       |
|          | 6     | 2437        | -21.49         | 4.77            | -16.72                               | 0.16        | -16.56                                | -3.27            | PASS       |
|          | 11    | 2462        | -21.50         | 4.77            | -16.73                               | 0.16        | -16.57                                | -3.27            | PASS       |

**NOTE:**

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 12.5dBi + 10log(3) = 17.27dBi > 6dBi, so the power density limit shall be reduced to 8-(17.27-6) = -3.27dBm.
- Refer to section 3.3 for duty cycle spectrum plot.



802.11n (20MHz)

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD W/O DUTY FACTOR (dBm/3kHz) | DUTY FACTOR | Total PSD WITH DUTY FACTOR (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|--------------------------------------|-------------|---------------------------------------|------------------|------------|
| 0        | 1     | 2412        | -23.78         | 4.77            | -19.01                               | 0.18        | -18.83                                | -3.27            | PASS       |
|          | 6     | 2437        | -22.35         | 4.77            | -17.58                               | 0.18        | -17.40                                | -3.27            | PASS       |
|          | 11    | 2462        | -22.09         | 4.77            | -17.32                               | 0.18        | -17.14                                | -3.27            | PASS       |
| 1        | 1     | 2412        | -24.26         | 4.77            | -19.49                               | 0.18        | -19.31                                | -3.27            | PASS       |
|          | 6     | 2437        | -21.58         | 4.77            | -16.81                               | 0.18        | -16.63                                | -3.27            | PASS       |
|          | 11    | 2462        | -22.66         | 4.77            | -17.89                               | 0.18        | -17.71                                | -3.27            | PASS       |
| 2        | 1     | 2412        | -23.72         | 4.77            | -18.95                               | 0.18        | -18.77                                | -3.27            | PASS       |
|          | 6     | 2437        | -21.47         | 4.77            | -16.70                               | 0.18        | -16.52                                | -3.27            | PASS       |
|          | 11    | 2462        | -22.01         | 4.77            | -17.24                               | 0.18        | -17.06                                | -3.27            | PASS       |

NOTE:

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 12.5dBi + 10log(3) = 17.27dBi > 6dBi, so the power density limit shall be reduced to 8-(17.27-6) = -3.27dBm.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11n (40MHz)

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD W/O DUTY FACTOR (dBm/3kHz) | DUTY FACTOR | Total PSD WITH DUTY FACTOR (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|--------------------------------------|-------------|---------------------------------------|------------------|------------|
| 0        | 3     | 2422        | -29.66         | 4.77            | -24.89                               | 0.33        | -24.56                                | -3.27            | PASS       |
|          | 6     | 2437        | -26.41         | 4.77            | -21.64                               | 0.33        | -21.31                                | -3.27            | PASS       |
|          | 9     | 2452        | -31.78         | 4.77            | -27.01                               | 0.33        | -26.68                                | -3.27            | PASS       |
| 1        | 3     | 2422        | -29.30         | 4.77            | -24.53                               | 0.33        | -24.20                                | -3.27            | PASS       |
|          | 6     | 2437        | -25.26         | 4.77            | -20.49                               | 0.33        | -20.16                                | -3.27            | PASS       |
|          | 9     | 2452        | -30.52         | 4.77            | -25.75                               | 0.33        | -25.42                                | -3.27            | PASS       |
| 2        | 3     | 2422        | -29.20         | 4.77            | -24.43                               | 0.33        | -24.10                                | -3.27            | PASS       |
|          | 6     | 2437        | -24.10         | 4.77            | -19.33                               | 0.33        | -19.00                                | -3.27            | PASS       |
|          | 9     | 2452        | -30.94         | 4.77            | -26.17                               | 0.33        | -25.84                                | -3.27            | PASS       |

NOTE:

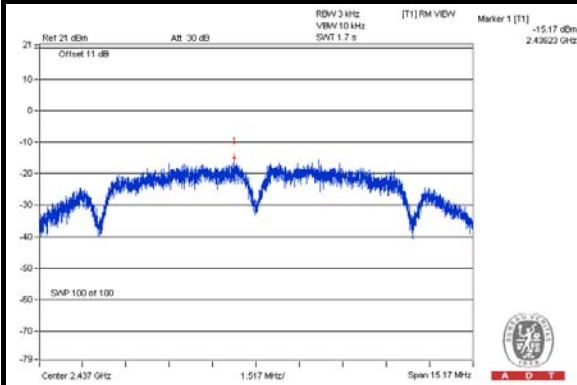
- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 12.5dBi + 10log(3) = 17.27dBi > 6dBi, so the power density limit shall be reduced to 8-(17.27-6) = -3.27dBm.
- Refer to section 3.3 for duty cycle spectrum plot.



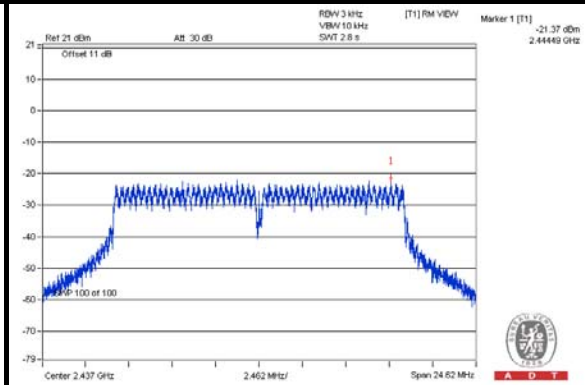
A D T

### SPECTRUM PLOT OF WORST VALUE

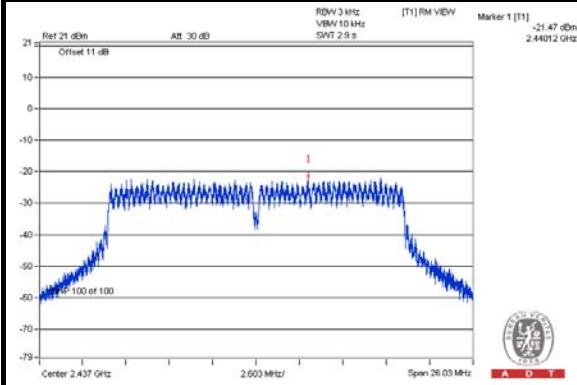
802.11b



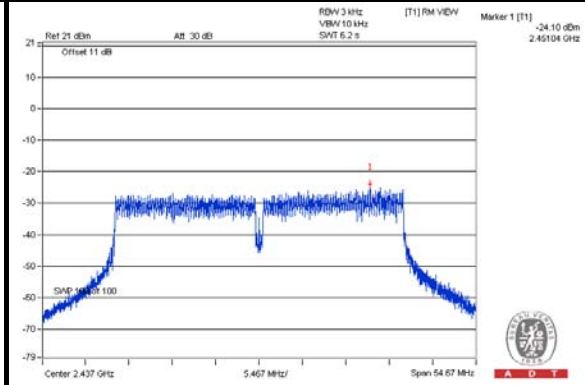
802.11g



802.11n (20MHz)



802.11n (40MHz)







**TEST MODE C**

**802.11b**

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|----------------------|------------------|------------|
| 0        | 1     | 2412        | -16.32         | 4.77            | -11.55               | -0.27            | PASS       |
|          | 6     | 2437        | -10.27         | 4.77            | -5.50                | -0.27            | PASS       |
|          | 11    | 2462        | -14.08         | 4.77            | -9.31                | -0.27            | PASS       |
| 1        | 1     | 2412        | -16.82         | 4.77            | -12.05               | -0.27            | PASS       |
|          | 6     | 2437        | -10.74         | 4.77            | -5.97                | -0.27            | PASS       |
|          | 11    | 2462        | -14.70         | 4.77            | -9.93                | -0.27            | PASS       |
| 2        | 1     | 2412        | -17.15         | 4.77            | -12.38               | -0.27            | PASS       |
|          | 6     | 2437        | -10.77         | 4.77            | -6.00                | -0.27            | PASS       |
|          | 11    | 2462        | -13.84         | 4.77            | -9.07                | -0.27            | PASS       |

**NOTE:** Directional gain = 9.5dBi + 10log(3) = 14.27dBi > 6dBi, so the power density limit shall be reduced to 8-(14.27-6) = -0.27dBm.

**802.11g**

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD W/O DUTY FACTOR (dBm/3kHz) | DUTY FACTOR | Total PSD WITH DUTY FACTOR (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|--------------------------------------|-------------|---------------------------------------|------------------|------------|
| 0        | 1     | 2412        | -18.12         | 4.77            | -13.35                               | 0.16        | -13.19                                | -0.27            | PASS       |
|          | 6     | 2437        | -13.44         | 4.77            | -8.67                                | 0.16        | -8.51                                 | -0.27            | PASS       |
|          | 11    | 2462        | -19.07         | 4.77            | -14.30                               | 0.16        | -14.14                                | -0.27            | PASS       |
| 1        | 1     | 2412        | -19.60         | 4.77            | -14.83                               | 0.16        | -14.67                                | -0.27            | PASS       |
|          | 6     | 2437        | -14.53         | 4.77            | -9.76                                | 0.16        | -9.60                                 | -0.27            | PASS       |
|          | 11    | 2462        | -19.96         | 4.77            | -15.19                               | 0.16        | -15.03                                | -0.27            | PASS       |
| 2        | 1     | 2412        | -19.52         | 4.77            | -14.75                               | 0.16        | -14.59                                | -0.27            | PASS       |
|          | 6     | 2437        | -14.01         | 4.77            | -9.24                                | 0.16        | -9.08                                 | -0.27            | PASS       |
|          | 11    | 2462        | -19.11         | 4.77            | -14.34                               | 0.16        | -14.18                                | -0.27            | PASS       |

**NOTE:**

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 9.5dBi + 10log(3) = 14.27dBi > 6dBi, so the power density limit shall be reduced to 8-(14.27-6) = -0.27dBm.
- Refer to section 3.3 for duty cycle spectrum plot.

**802.11n (20MHz)**

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD W/O DUTY FACTOR (dBm/3kHz) | DUTY FACTOR | Total PSD WITH DUTY FACTOR (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|--------------------------------------|-------------|---------------------------------------|------------------|------------|
| 0        | 1     | 2412        | -20.35         | 4.77            | -15.58                               | 0.17        | -15.41                                | -0.27            | PASS       |
|          | 6     | 2437        | -13.16         | 4.77            | -8.39                                | 0.17        | -8.22                                 | -0.27            | PASS       |
|          | 11    | 2462        | -20.00         | 4.77            | -15.23                               | 0.17        | -15.06                                | -0.27            | PASS       |
| 1        | 1     | 2412        | -20.26         | 4.77            | -15.49                               | 0.17        | -15.32                                | -0.27            | PASS       |
|          | 6     | 2437        | -14.87         | 4.77            | -10.10                               | 0.17        | -9.93                                 | -0.27            | PASS       |
|          | 11    | 2462        | -20.38         | 4.77            | -15.61                               | 0.17        | -15.44                                | -0.27            | PASS       |
| 2        | 1     | 2412        | -21.16         | 4.77            | -16.39                               | 0.17        | -16.22                                | -0.27            | PASS       |
|          | 6     | 2437        | -13.66         | 4.77            | -8.89                                | 0.17        | -8.72                                 | -0.27            | PASS       |
|          | 11    | 2462        | -20.79         | 4.77            | -16.02                               | 0.17        | -15.85                                | -0.27            | PASS       |

**NOTE:**

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 9.5dBi + 10log(3) = 14.27dBi > 6dBi, so the power density limit shall be reduced to 8-(14.27-6) = -0.27dBm.
- Refer to section 3.3 for duty cycle spectrum plot.

**802.11n (40MHz)**

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD W/O DUTY FACTOR (dBm/3kHz) | DUTY FACTOR | Total PSD WITH DUTY FACTOR (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|--------------------------------------|-------------|---------------------------------------|------------------|------------|
| 0        | 3     | 2422        | -24.82         | 4.77            | -20.05                               | 0.25        | -19.80                                | -0.27            | PASS       |
|          | 6     | 2437        | -21.67         | 4.77            | -16.90                               | 0.25        | -16.65                                | -0.27            | PASS       |
|          | 9     | 2452        | -26.22         | 4.77            | -21.45                               | 0.25        | -21.20                                | -0.27            | PASS       |
| 1        | 3     | 2422        | -26.10         | 4.77            | -21.33                               | 0.25        | -21.08                                | -0.27            | PASS       |
|          | 6     | 2437        | -21.48         | 4.77            | -16.71                               | 0.25        | -16.46                                | -0.27            | PASS       |
|          | 9     | 2452        | -27.18         | 4.77            | -22.41                               | 0.25        | -22.16                                | -0.27            | PASS       |
| 2        | 3     | 2422        | -25.60         | 4.77            | -20.83                               | 0.25        | -20.58                                | -0.27            | PASS       |
|          | 6     | 2437        | -20.21         | 4.77            | -15.44                               | 0.25        | -15.19                                | -0.27            | PASS       |
|          | 9     | 2452        | -26.44         | 4.77            | -21.67                               | 0.25        | -21.42                                | -0.27            | PASS       |

**NOTE:**

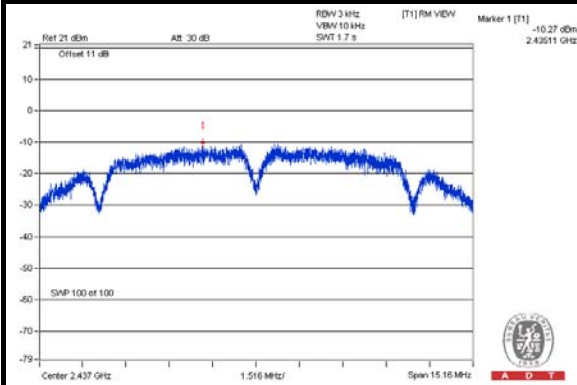
- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 9.5dBi + 10log(3) = 14.27dBi > 6dBi, so the power density limit shall be reduced to 8-(14.27-6) = -0.27dBm.
- Refer to section 3.3 for duty cycle spectrum plot.



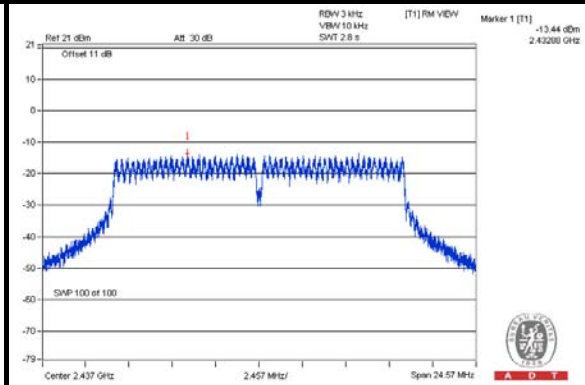
A D T

### SPECTRUM PLOT OF WORST VALUE

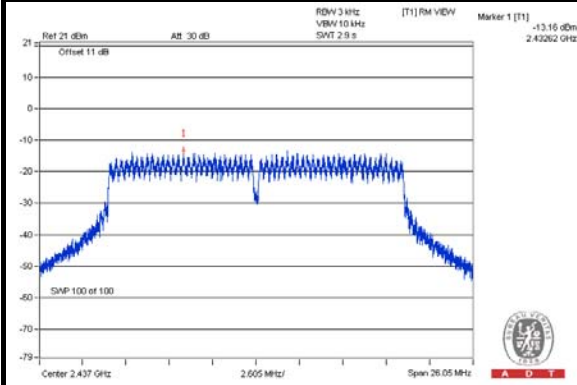
**802.11b**



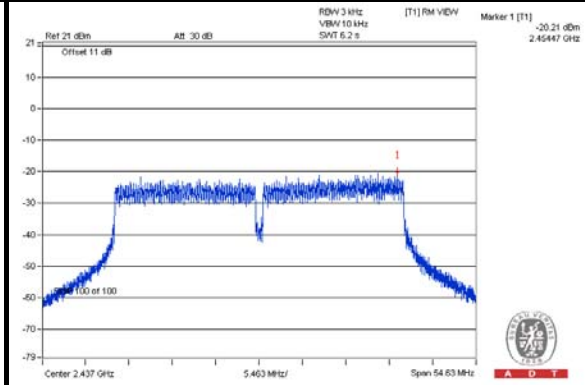
**802.11g**



**802.11n (20MHz)**



**802.11n (40MHz)**





**TEST MODE D**

**802.11b**

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|----------------------|------------------|------------|
| 0        | 1     | 2412        | -10.68         | 4.77            | -5.91                | 7.23             | PASS       |
|          | 6     | 2437        | -9.21          | 4.77            | -4.44                | 7.23             | PASS       |
|          | 11    | 2462        | -12.09         | 4.77            | -7.32                | 7.23             | PASS       |
| 1        | 1     | 2412        | -11.24         | 4.77            | -6.47                | 7.23             | PASS       |
|          | 6     | 2437        | -8.04          | 4.77            | -3.27                | 7.23             | PASS       |
|          | 11    | 2462        | -13.67         | 4.77            | -8.90                | 7.23             | PASS       |
| 2        | 1     | 2412        | -10.68         | 4.77            | -5.91                | 7.23             | PASS       |
|          | 6     | 2437        | -7.17          | 4.77            | -2.40                | 7.23             | PASS       |
|          | 11    | 2462        | -13.29         | 4.77            | -8.52                | 7.23             | PASS       |

**NOTE:** Directional gain = 2dBi + 10log(3) = 6.77dBi > 6dBi, so the power density limit shall be reduced to 8-(6.77-6) = 7.23dBm.

**802.11g**

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD W/O DUTY FACTOR (dBm/3kHz) | DUTY FACTOR | Total PSD WITH DUTY FACTOR (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|--------------------------------------|-------------|---------------------------------------|------------------|------------|
| 0        | 1     | 2412        | -17.47         | 4.77            | -12.70                               | 0.20        | -12.50                                | 7.23             | PASS       |
|          | 6     | 2437        | -11.91         | 4.77            | -7.14                                | 0.20        | -6.94                                 | 7.23             | PASS       |
|          | 11    | 2462        | -16.82         | 4.77            | -12.05                               | 0.20        | -11.85                                | 7.23             | PASS       |
| 1        | 1     | 2412        | -16.95         | 4.77            | -12.18                               | 0.20        | -11.98                                | 7.23             | PASS       |
|          | 6     | 2437        | -12.37         | 4.77            | -7.60                                | 0.20        | -7.40                                 | 7.23             | PASS       |
|          | 11    | 2462        | -17.44         | 4.77            | -12.67                               | 0.20        | -12.47                                | 7.23             | PASS       |
| 2        | 1     | 2412        | -17.63         | 4.77            | -12.86                               | 0.20        | -12.66                                | 7.23             | PASS       |
|          | 6     | 2437        | -12.17         | 4.77            | -7.40                                | 0.20        | -7.20                                 | 7.23             | PASS       |
|          | 11    | 2462        | -17.43         | 4.77            | -12.66                               | 0.20        | -12.46                                | 7.23             | PASS       |

**NOTE:**

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 2dBi + 10log(3) = 6.77dBi > 6dBi, so the power density limit shall be reduced to 8-(6.77-6) = 7.23dBm.
- Refer to section 3.3 for duty cycle spectrum plot.



**802.11n (20MHz)**

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD W/O DUTY FACTOR (dBm/3kHz) | DUTY FACTOR | Total PSD WITH DUTY FACTOR (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|--------------------------------------|-------------|---------------------------------------|------------------|------------|
| 0        | 1     | 2412        | -18.49         | 4.77            | -13.72                               | 0.20        | -13.52                                | 7.23             | PASS       |
|          | 6     | 2437        | -13.72         | 4.77            | -8.95                                | 0.20        | -8.75                                 | 7.23             | PASS       |
|          | 11    | 2462        | -18.38         | 4.77            | -13.61                               | 0.20        | -13.41                                | 7.23             | PASS       |
| 1        | 1     | 2412        | -19.75         | 4.77            | -14.98                               | 0.20        | -14.78                                | 7.23             | PASS       |
|          | 6     | 2437        | -14.80         | 4.77            | -10.03                               | 0.20        | -9.83                                 | 7.23             | PASS       |
|          | 11    | 2462        | -19.79         | 4.77            | -15.02                               | 0.20        | -14.82                                | 7.23             | PASS       |
| 2        | 1     | 2412        | -20.48         | 4.77            | -15.71                               | 0.20        | -15.51                                | 7.23             | PASS       |
|          | 6     | 2437        | -14.87         | 4.77            | -10.10                               | 0.20        | -9.90                                 | 7.23             | PASS       |
|          | 11    | 2462        | -18.88         | 4.77            | -14.11                               | 0.20        | -13.91                                | 7.23             | PASS       |

**NOTE:**

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 2dBi + 10log(3) = 6.77dBi > 6dBi, so the power density limit shall be reduced to 8-(6.77-6) = 7.23dBm.
- Refer to section 3.3 for duty cycle spectrum plot.

**802.11n (40MHz)**

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD W/O DUTY FACTOR (dBm/3kHz) | DUTY FACTOR | Total PSD WITH DUTY FACTOR (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|--------------------------------------|-------------|---------------------------------------|------------------|------------|
| 0        | 3     | 2422        | -24.75         | 4.77            | -19.98                               | 0.28        | -19.70                                | 7.23             | PASS       |
|          | 6     | 2437        | -21.06         | 4.77            | -16.29                               | 0.28        | -16.01                                | 7.23             | PASS       |
|          | 9     | 2452        | -24.74         | 4.77            | -19.97                               | 0.28        | -19.69                                | 7.23             | PASS       |
| 1        | 3     | 2422        | -25.00         | 4.77            | -20.23                               | 0.28        | -19.95                                | 7.23             | PASS       |
|          | 6     | 2437        | -21.39         | 4.77            | -16.62                               | 0.28        | -16.34                                | 7.23             | PASS       |
|          | 9     | 2452        | -25.62         | 4.77            | -20.85                               | 0.28        | -20.57                                | 7.23             | PASS       |
| 2        | 3     | 2422        | -25.70         | 4.77            | -20.93                               | 0.28        | -20.65                                | 7.23             | PASS       |
|          | 6     | 2437        | -21.24         | 4.77            | -16.47                               | 0.28        | -16.19                                | 7.23             | PASS       |
|          | 9     | 2452        | -24.65         | 4.77            | -19.88                               | 0.28        | -19.60                                | 7.23             | PASS       |

**NOTE:**

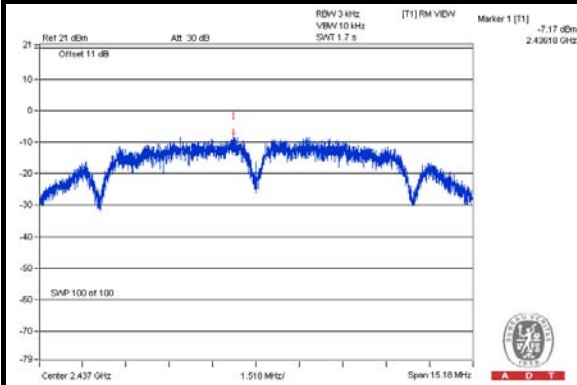
- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 2dBi + 10log(3) = 6.77dBi > 6dBi, so the power density limit shall be reduced to 8-(6.77-6) = 7.23dBm.
- Refer to section 3.3 for duty cycle spectrum plot.



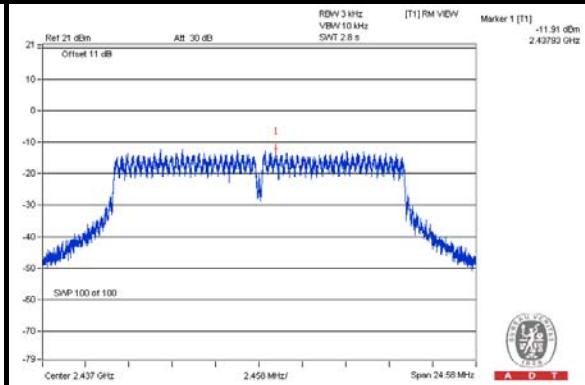
A D T

### SPECTRUM PLOT OF WORST VALUE

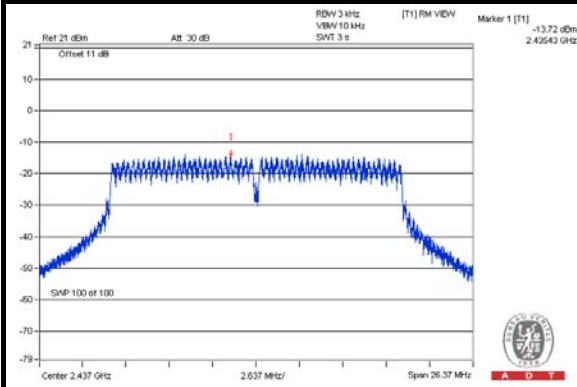
**802.11b**



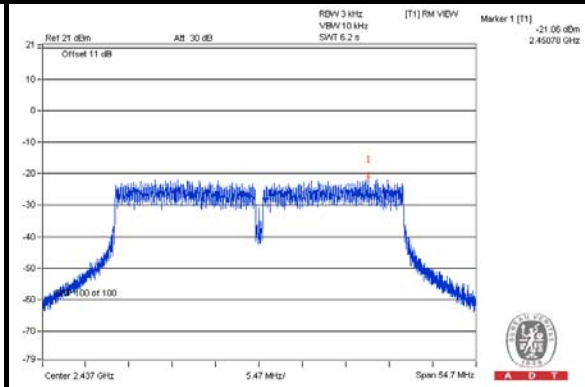
**802.11g**



**802.11n (20MHz)**



**802.11n (40MHz)**





**TEST MODE E**

**802.11b**

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|----------------------|------------------|------------|
| 0        | 1     | 2412        | -8.70          | 3.01            | -5.69                | 8                | PASS       |
|          | 6     | 2437        | -5.49          | 3.01            | -2.48                | 8                | PASS       |
|          | 11    | 2462        | -7.50          | 3.01            | -4.49                | 8                | PASS       |
| 1        | 1     | 2412        | -9.30          | 3.01            | -6.29                | 8                | PASS       |
|          | 6     | 2437        | -5.81          | 3.01            | -2.80                | 8                | PASS       |
|          | 11    | 2462        | -9.07          | 3.01            | -6.06                | 8                | PASS       |

**NOTE:** Directional gain = 2dBi + 10log(2) = 5.01dBi < 6dBi, so the power density limit no need to reduced.

**802.11g**

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD W/O DUTY FACTOR (dBm/3kHz) | DUTY FACTOR | Total PSD WITH DUTY FACTOR (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|--------------------------------------|-------------|---------------------------------------|------------------|------------|
| 0        | 1     | 2412        | -13.29         | 3.01            | -10.28                               | 0.24        | -10.04                                | 8                | PASS       |
|          | 6     | 2437        | -8.09          | 3.01            | -5.08                                | 0.24        | -4.84                                 | 8                | PASS       |
|          | 11    | 2462        | -13.51         | 3.01            | -10.50                               | 0.24        | -10.26                                | 8                | PASS       |
| 1        | 1     | 2412        | -13.22         | 3.01            | -10.21                               | 0.24        | -9.97                                 | 8                | PASS       |
|          | 6     | 2437        | -8.81          | 3.01            | -5.80                                | 0.24        | -5.56                                 | 8                | PASS       |
|          | 11    | 2462        | -14.98         | 3.01            | -11.97                               | 0.24        | -11.73                                | 8                | PASS       |

**NOTE:**

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 2dBi + 10log(2) = 5.01dBi < 6dBi, so the power density limit no need to reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

**802.11n (20MHz)**

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD W/O DUTY FACTOR (dBm/3kHz) | DUTY FACTOR | Total PSD WITH DUTY FACTOR (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|--------------------------------------|-------------|---------------------------------------|------------------|------------|
| 0        | 1     | 2412        | -14.21         | 3.01            | -11.20                               | 0.17        | -11.03                                | 8                | PASS       |
|          | 6     | 2437        | -7.37          | 3.01            | -4.36                                | 0.17        | -4.19                                 | 8                | PASS       |
|          | 11    | 2462        | -15.09         | 3.01            | -12.08                               | 0.17        | -11.91                                | 8                | PASS       |
| 1        | 1     | 2412        | -16.61         | 3.01            | -13.60                               | 0.17        | -13.43                                | 8                | PASS       |
|          | 6     | 2437        | -8.76          | 3.01            | -5.75                                | 0.17        | -5.58                                 | 8                | PASS       |
|          | 11    | 2462        | -16.38         | 3.01            | -13.37                               | 0.17        | -13.20                                | 8                | PASS       |

**NOTE:**

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 2dBi + 10log(2) = 5.01dBi < 6dBi, so the power density limit no need to reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

**802.11n (40MHz)**

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD W/O DUTY FACTOR (dBm/3kHz) | DUTY FACTOR | Total PSD WITH DUTY FACTOR (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|--------------------------------------|-------------|---------------------------------------|------------------|------------|
| 0        | 3     | 2422        | -22.99         | 3.01            | -19.98                               | 0.30        | -19.68                                | 8                | PASS       |
|          | 6     | 2437        | -18.43         | 3.01            | -15.42                               | 0.30        | -15.12                                | 8                | PASS       |
|          | 9     | 2452        | -23.66         | 3.01            | -20.65                               | 0.30        | -20.35                                | 8                | PASS       |
| 1        | 3     | 2422        | -21.15         | 3.01            | -18.14                               | 0.30        | -17.84                                | 8                | PASS       |
|          | 6     | 2437        | -17.96         | 3.01            | -14.95                               | 0.30        | -14.65                                | 8                | PASS       |
|          | 9     | 2452        | -24.58         | 3.01            | -21.57                               | 0.30        | -21.27                                | 8                | PASS       |

**NOTE:**

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 2dBi + 10log(2) = 5.01dBi < 6dBi, so the power density limit no need to reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

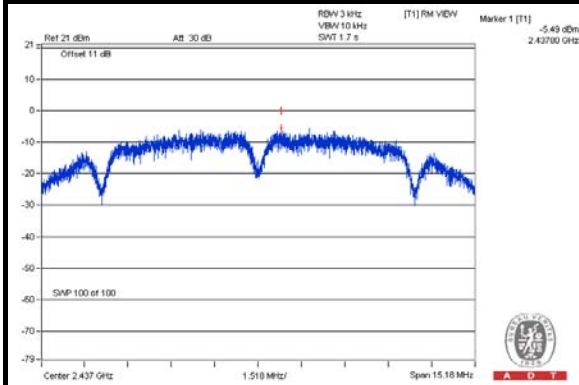




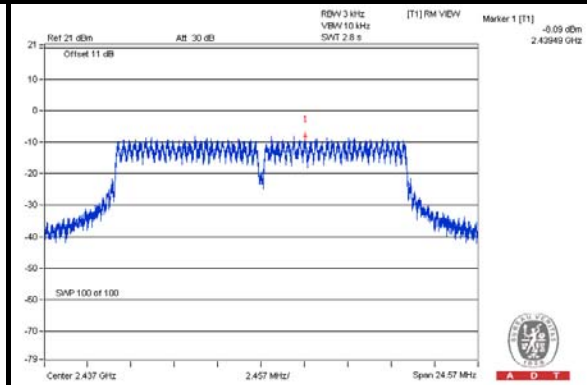
A D T

### SPECTRUM PLOT OF WORST VALUE

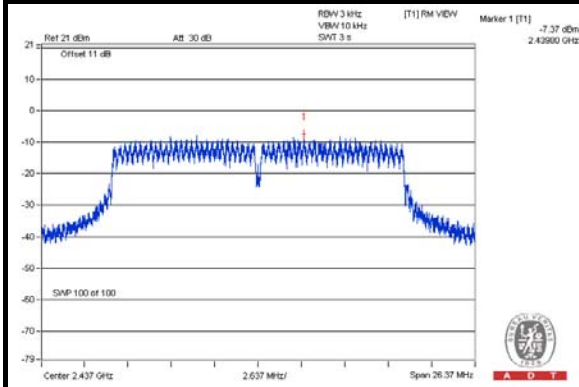
**802.11b**



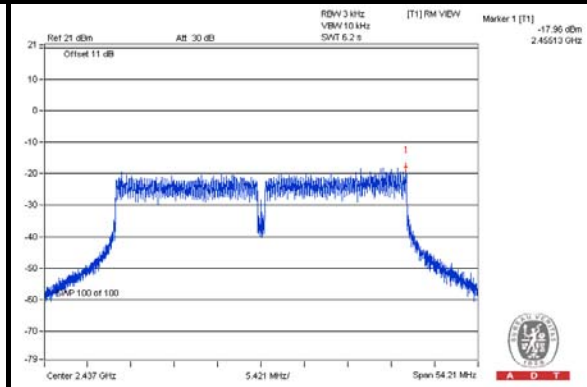
**802.11g**



**802.11n (20MHz)**



**802.11n (40MHz)**





**TEST MODE F**

**802.11b**

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|----------------------|------------------|------------|
| 0        | 1     | 2412        | -12.06         | 4.77            | -7.29                | 4.23             | PASS       |
|          | 6     | 2437        | -6.90          | 4.77            | -2.13                | 4.23             | PASS       |
|          | 11    | 2462        | -10.51         | 4.77            | -5.74                | 4.23             | PASS       |
| 1        | 1     | 2412        | -11.12         | 4.77            | -6.35                | 4.23             | PASS       |
|          | 6     | 2437        | -6.05          | 4.77            | -1.28                | 4.23             | PASS       |
|          | 11    | 2462        | -11.85         | 4.77            | -7.08                | 4.23             | PASS       |
| 2        | 1     | 2412        | -12.22         | 4.77            | -7.45                | 4.23             | PASS       |
|          | 6     | 2437        | -5.24          | 4.77            | -0.47                | 4.23             | PASS       |
|          | 11    | 2462        | -10.67         | 4.77            | -5.90                | 4.23             | PASS       |

**NOTE:** Directional gain = 5dBi + 10log(3) = 9.77dBi > 6dBi, so the power density limit shall be reduced to 8-(9.77-6) = 4.23dBm.

**802.11g**

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD W/O DUTY FACTOR (dBm/3kHz) | DUTY FACTOR | Total PSD WITH DUTY FACTOR (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|--------------------------------------|-------------|---------------------------------------|------------------|------------|
| 0        | 1     | 2412        | -13.54         | 4.77            | -8.77                                | 0.16        | -8.61                                 | 4.23             | PASS       |
|          | 6     | 2437        | -11.27         | 4.77            | -6.50                                | 0.16        | -6.34                                 | 4.23             | PASS       |
|          | 11    | 2462        | -16.11         | 4.77            | -11.34                               | 0.16        | -11.18                                | 4.23             | PASS       |
| 1        | 1     | 2412        | -14.13         | 4.77            | -9.36                                | 0.16        | -9.20                                 | 4.23             | PASS       |
|          | 6     | 2437        | -11.56         | 4.77            | -6.79                                | 0.16        | -6.63                                 | 4.23             | PASS       |
|          | 11    | 2462        | -15.90         | 4.77            | -11.13                               | 0.16        | -10.97                                | 4.23             | PASS       |
| 2        | 1     | 2412        | -14.03         | 4.77            | -9.26                                | 0.16        | -9.10                                 | 4.23             | PASS       |
|          | 6     | 2437        | -10.86         | 4.77            | -6.09                                | 0.16        | -5.93                                 | 4.23             | PASS       |
|          | 11    | 2462        | -15.04         | 4.77            | -10.27                               | 0.16        | -10.11                                | 4.23             | PASS       |

**NOTE:**

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 5dBi + 10log(3) = 9.77dBi > 6dBi, so the power density limit shall be reduced to 8-(9.77-6) = 4.23dBm.
- Refer to section 3.3 for duty cycle spectrum plot.

**802.11n (20MHz)**

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD W/O DUTY FACTOR (dBm/3kHz) | DUTY FACTOR | Total PSD WITH DUTY FACTOR (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|--------------------------------------|-------------|---------------------------------------|------------------|------------|
| 0        | 1     | 2412        | -14.96         | 4.77            | -10.19                               | 0.17        | -10.02                                | 4.23             | PASS       |
|          | 6     | 2437        | -12.08         | 4.77            | -7.31                                | 0.17        | -7.14                                 | 4.23             | PASS       |
|          | 11    | 2462        | -17.89         | 4.77            | -13.12                               | 0.17        | -12.95                                | 4.23             | PASS       |
| 1        | 1     | 2412        | -16.12         | 4.77            | -11.35                               | 0.17        | -11.18                                | 4.23             | PASS       |
|          | 6     | 2437        | -12.43         | 4.77            | -7.66                                | 0.17        | -7.49                                 | 4.23             | PASS       |
|          | 11    | 2462        | -18.42         | 4.77            | -13.65                               | 0.17        | -13.48                                | 4.23             | PASS       |
| 2        | 1     | 2412        | -15.10         | 4.77            | -10.33                               | 0.17        | -10.16                                | 4.23             | PASS       |
|          | 6     | 2437        | -12.90         | 4.77            | -8.13                                | 0.17        | -7.96                                 | 4.23             | PASS       |
|          | 11    | 2462        | -17.96         | 4.77            | -13.19                               | 0.17        | -13.02                                | 4.23             | PASS       |

**NOTE:**

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 5dBi + 10log(3) = 9.77dBi > 6dBi, so the power density limit shall be reduced to 8-(9.77-6) = 4.23dBm.
- Refer to section 3.3 for duty cycle spectrum plot.

**802.11n (40MHz)**

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD W/O DUTY FACTOR (dBm/3kHz) | DUTY FACTOR | Total PSD WITH DUTY FACTOR (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|--------------------------------------|-------------|---------------------------------------|------------------|------------|
| 0        | 3     | 2422        | -23.94         | 4.77            | -19.17                               | 0.27        | -18.90                                | 4.23             | PASS       |
|          | 6     | 2437        | -18.76         | 4.77            | -13.99                               | 0.27        | -13.72                                | 4.23             | PASS       |
|          | 9     | 2452        | -25.75         | 4.77            | -20.98                               | 0.27        | -20.71                                | 4.23             | PASS       |
| 1        | 3     | 2422        | -23.60         | 4.77            | -18.83                               | 0.27        | -18.56                                | 4.23             | PASS       |
|          | 6     | 2437        | -19.09         | 4.77            | -14.32                               | 0.27        | -14.05                                | 4.23             | PASS       |
|          | 9     | 2452        | -24.60         | 4.77            | -19.83                               | 0.27        | -19.56                                | 4.23             | PASS       |
| 2        | 3     | 2422        | -24.58         | 4.77            | -19.81                               | 0.27        | -19.54                                | 4.23             | PASS       |
|          | 6     | 2437        | -17.87         | 4.77            | -13.10                               | 0.27        | -12.83                                | 4.23             | PASS       |
|          | 9     | 2452        | -24.83         | 4.77            | -20.06                               | 0.27        | -19.79                                | 4.23             | PASS       |

**NOTE:**

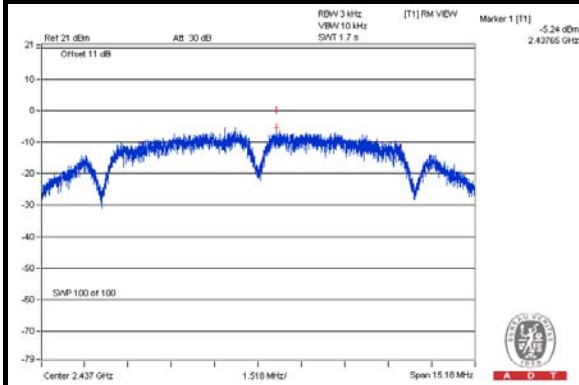
- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 5dBi + 10log(3) = 9.77dBi > 6dBi, so the power density limit shall be reduced to 8-(9.77-6) = 4.23dBm.
- Refer to section 3.3 for duty cycle spectrum plot.



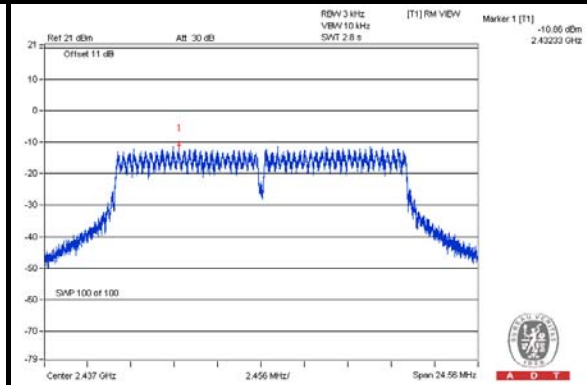
A D T

### SPECTRUM PLOT OF WORST VALUE

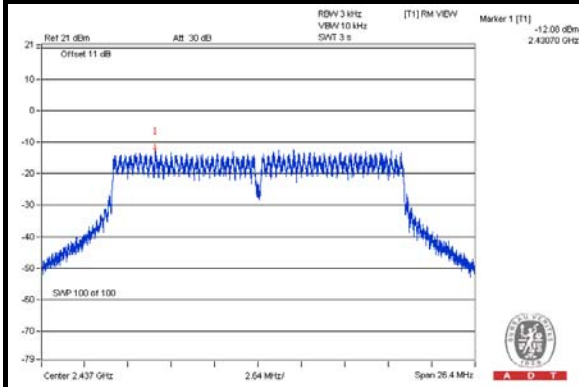
**802.11b**



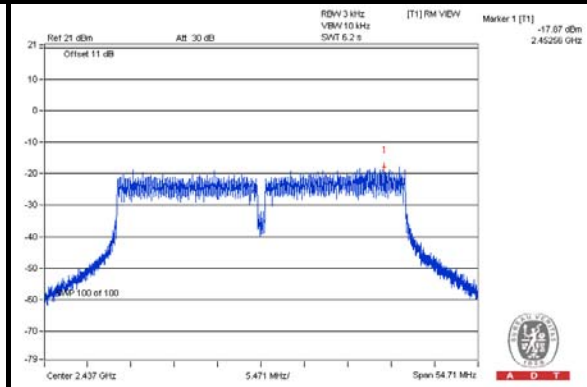
**802.11g**



**802.11n (20MHz)**



**802.11n (40MHz)**





**TEST MODE G**

**802.11b**

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|----------------------|------------------|------------|
| 0        | 1     | 2412        | -14.75         | 4.77            | -9.98                | 3.23             | PASS       |
|          | 6     | 2437        | -10.79         | 4.77            | -6.02                | 3.23             | PASS       |
|          | 11    | 2462        | -12.18         | 4.77            | -7.41                | 3.23             | PASS       |
| 1        | 1     | 2412        | -15.84         | 4.77            | -11.07               | 3.23             | PASS       |
|          | 6     | 2437        | -10.83         | 4.77            | -6.06                | 3.23             | PASS       |
|          | 11    | 2462        | -12.30         | 4.77            | -7.53                | 3.23             | PASS       |
| 2        | 1     | 2412        | -15.91         | 4.77            | -11.14               | 3.23             | PASS       |
|          | 6     | 2437        | -10.70         | 4.77            | -5.93                | 3.23             | PASS       |
|          | 11    | 2462        | -12.31         | 4.77            | -7.54                | 3.23             | PASS       |

**NOTE:** Directional gain = 6dBi + 10log(3) = 10.77dBi > 6dBi, so the power density limit shall be reduced to 8-(10.77-6) = 3.23dBm.

**802.11g**

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD W/O DUTY FACTOR (dBm/3kHz) | DUTY FACTOR | Total PSD WITH DUTY FACTOR (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|--------------------------------------|-------------|---------------------------------------|------------------|------------|
| 0        | 1     | 2412        | -17.09         | 4.77            | -12.32                               | 0.16        | -12.16                                | 3.23             | PASS       |
|          | 6     | 2437        | -12.77         | 4.77            | -8.00                                | 0.16        | -7.84                                 | 3.23             | PASS       |
|          | 11    | 2462        | -16.91         | 4.77            | -12.14                               | 0.16        | -11.98                                | 3.23             | PASS       |
| 1        | 1     | 2412        | -18.12         | 4.77            | -13.35                               | 0.16        | -13.19                                | 3.23             | PASS       |
|          | 6     | 2437        | -13.54         | 4.77            | -8.77                                | 0.16        | -8.61                                 | 3.23             | PASS       |
|          | 11    | 2462        | -18.94         | 4.77            | -14.17                               | 0.16        | -14.01                                | 3.23             | PASS       |
| 2        | 1     | 2412        | -18.28         | 4.77            | -13.51                               | 0.16        | -13.35                                | 3.23             | PASS       |
|          | 6     | 2437        | -12.86         | 4.77            | -8.09                                | 0.16        | -7.93                                 | 3.23             | PASS       |
|          | 11    | 2462        | -18.01         | 4.77            | -13.24                               | 0.16        | -13.08                                | 3.23             | PASS       |

**NOTE:**

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 6dBi + 10log(3) = 10.77dBi > 6dBi, so the power density limit shall be reduced to 8-(10.77-6) = 3.23dBm.
- Refer to section 3.3 for duty cycle spectrum plot.



**802.11n (20MHz)**

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD W/O DUTY FACTOR (dBm/3kHz) | DUTY FACTOR | Total PSD WITH DUTY FACTOR (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|--------------------------------------|-------------|---------------------------------------|------------------|------------|
| 0        | 1     | 2412        | -20.20         | 4.77            | -15.43                               | 0.17        | -15.26                                | 3.23             | PASS       |
|          | 6     | 2437        | -12.86         | 4.77            | -8.09                                | 0.17        | -7.92                                 | 3.23             | PASS       |
|          | 11    | 2462        | -17.93         | 4.77            | -13.16                               | 0.17        | -12.99                                | 3.23             | PASS       |
| 1        | 1     | 2412        | -20.77         | 4.77            | -16.00                               | 0.17        | -15.83                                | 3.23             | PASS       |
|          | 6     | 2437        | -13.51         | 4.77            | -8.74                                | 0.17        | -8.57                                 | 3.23             | PASS       |
|          | 11    | 2462        | -18.85         | 4.77            | -14.08                               | 0.17        | -13.91                                | 3.23             | PASS       |
| 2        | 1     | 2412        | -19.96         | 4.77            | -15.19                               | 0.17        | -15.02                                | 3.23             | PASS       |
|          | 6     | 2437        | -13.91         | 4.77            | -9.14                                | 0.17        | -8.97                                 | 3.23             | PASS       |
|          | 11    | 2462        | -18.50         | 4.77            | -13.73                               | 0.17        | -13.56                                | 3.23             | PASS       |

**NOTE:**

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 6dBi + 10log(3) = 10.77dBi > 6dBi, so the power density limit shall be reduced to 8-(10.77-6) = 3.23dBm.
- Refer to section 3.3 for duty cycle spectrum plot.

**802.11n (40MHz)**

| TX chain | Chan. | Freq. (MHz) | PSD (dBm/3kHz) | 10 log (N=3) dB | Total PSD W/O DUTY FACTOR (dBm/3kHz) | DUTY FACTOR | Total PSD WITH DUTY FACTOR (dBm/3kHz) | Limit (dBm/3kHz) | PASS /FAIL |
|----------|-------|-------------|----------------|-----------------|--------------------------------------|-------------|---------------------------------------|------------------|------------|
| 0        | 3     | 2422        | -25.61         | 4.77            | -20.84                               | 0.25        | -20.59                                | 3.23             | PASS       |
|          | 6     | 2437        | -22.30         | 4.77            | -17.53                               | 0.25        | -17.28                                | 3.23             | PASS       |
|          | 9     | 2452        | -27.55         | 4.77            | -22.78                               | 0.25        | -22.53                                | 3.23             | PASS       |
| 1        | 3     | 2422        | -26.05         | 4.77            | -21.28                               | 0.25        | -21.03                                | 3.23             | PASS       |
|          | 6     | 2437        | -21.95         | 4.77            | -17.18                               | 0.25        | -16.93                                | 3.23             | PASS       |
|          | 9     | 2452        | -28.01         | 4.77            | -23.24                               | 0.25        | -22.99                                | 3.23             | PASS       |
| 2        | 3     | 2422        | -25.45         | 4.77            | -20.68                               | 0.25        | -20.43                                | 3.23             | PASS       |
|          | 6     | 2437        | -21.72         | 4.77            | -16.95                               | 0.25        | -16.70                                | 3.23             | PASS       |
|          | 9     | 2452        | -26.83         | 4.77            | -22.06                               | 0.25        | -21.81                                | 3.23             | PASS       |

**NOTE:**

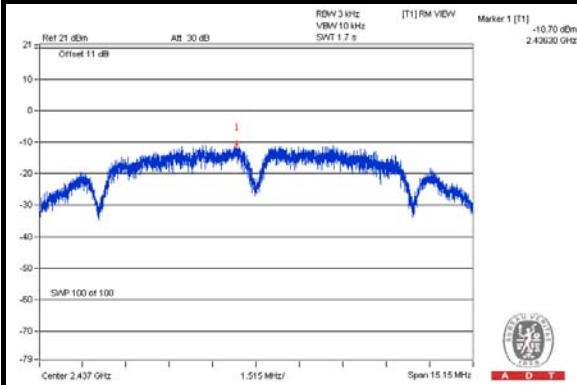
- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = 6dBi + 10log(3) = 10.77dBi > 6dBi, so the power density limit shall be reduced to 8-(10.77-6) = 3.23dBm.
- Refer to section 3.3 for duty cycle spectrum plot.



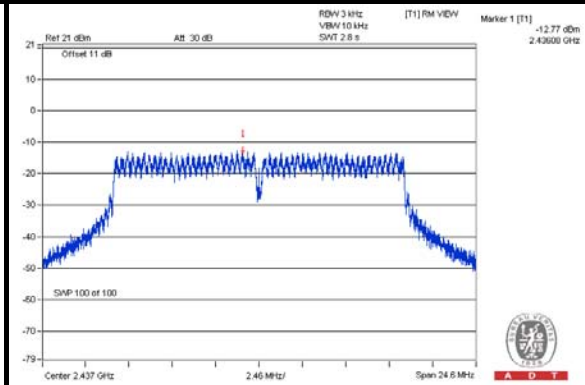
A D T

### SPECTRUM PLOT OF WORST VALUE

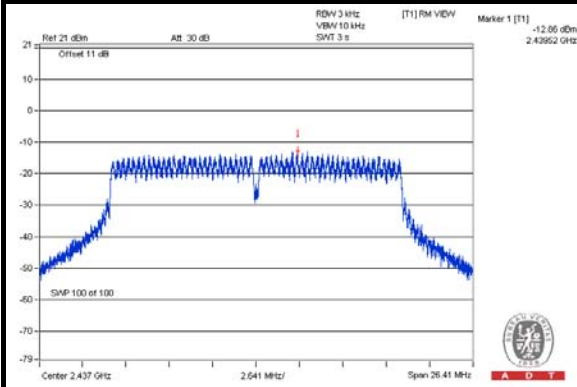
**802.11b**



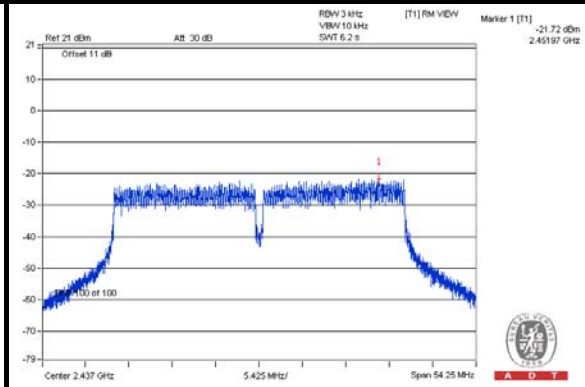
**802.11g**



**802.11n (20MHz)**



**802.11n (40MHz)**

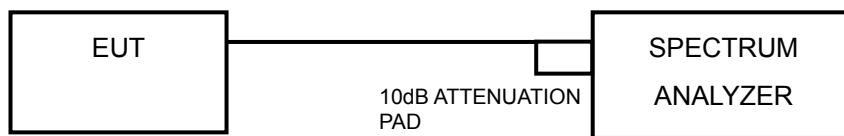


## 4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

### 4.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

Below  $-30\text{dB}$  of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

### 4.6.2 TEST SETUP



### 4.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.





A D T

#### 4.6.4 TEST PROCEDURE

##### **MEASUREMENT PROCEDURE REF**

1. Set the RBW = 100 kHz.
2. Set the VBW  $\geq$  300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

##### **MEASUREMENT PROCEDURE OOB**

1. Set RBW = 100 kHz.
2. Set VBW  $\geq$  300 kHz.
3. Ensure that the number of measurement points  $\geq$  span/RBW
4. According to measurement points to set differ measurement span.
5. Detector = peak.
6. Trace Mode = max hold.
7. Sweep = auto couple.

#### 4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

#### 4.6.7 TEST RESULTS

The conducted emission test is performed on each TX port of operating mode without summing or adding  $10\log(N)$  since the limit is relative emission limit.

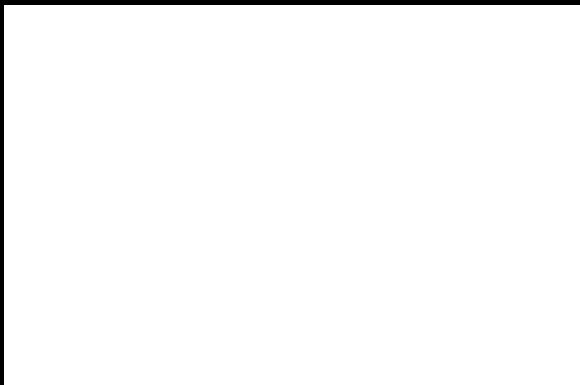
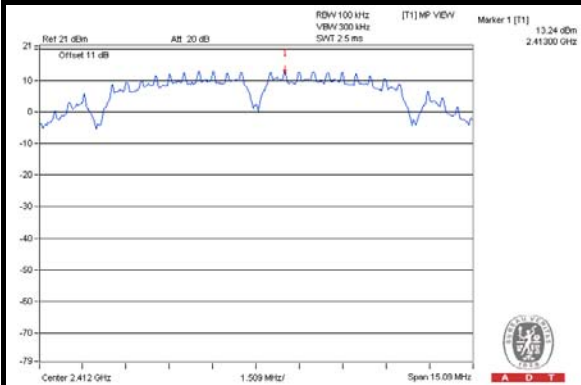
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.



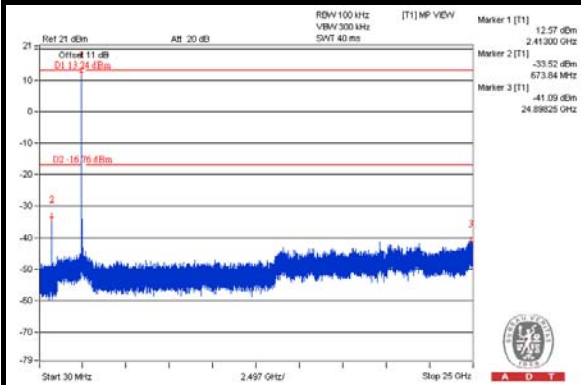
A D T

# TEST MODE A 802.11b / CHAIN 0

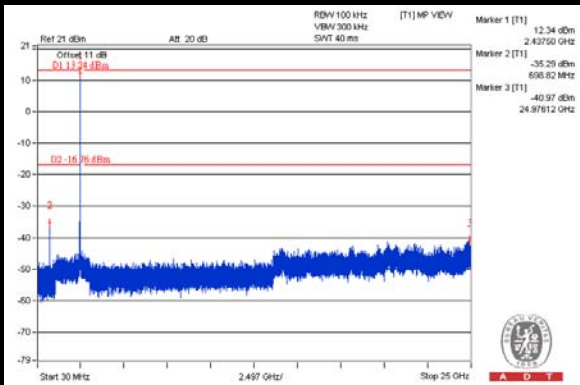
## Reference Level



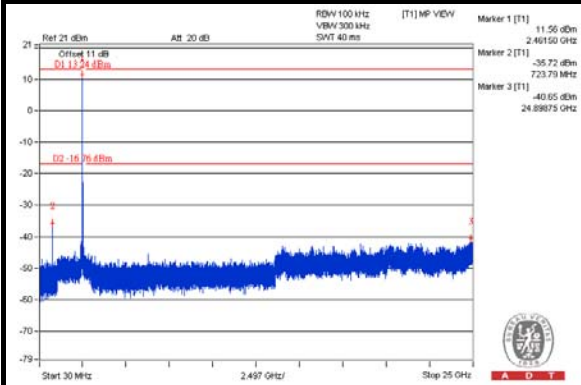
## CH 1



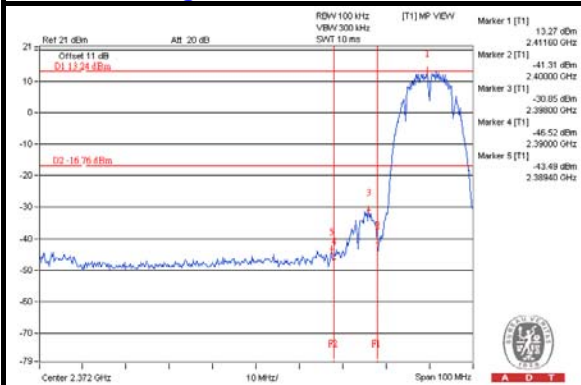
## CH 6



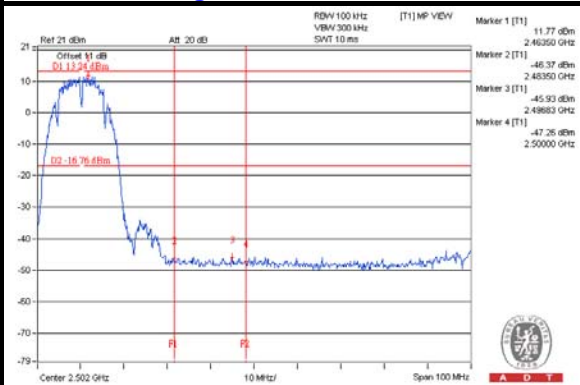
## CH 11



## CH 1 Band edge



## CH 11 Band edge

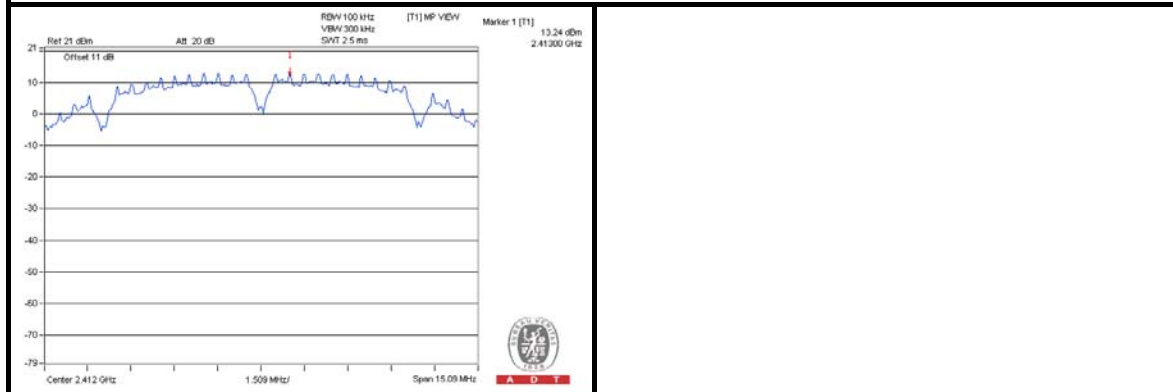




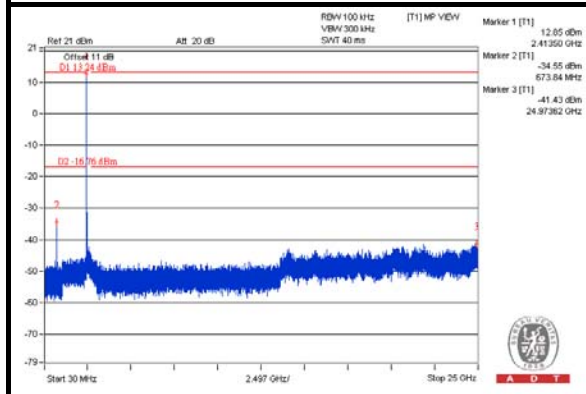
A D T

### CHAIN 1

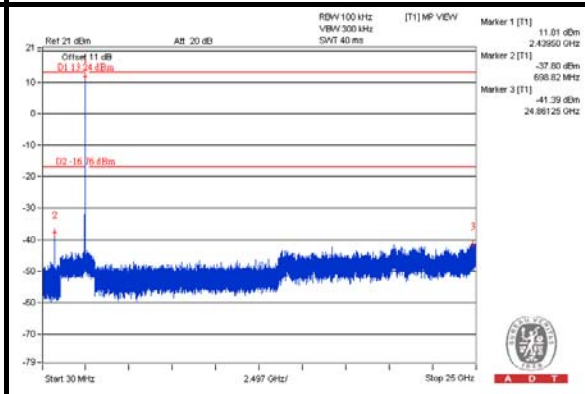
#### Reference Level



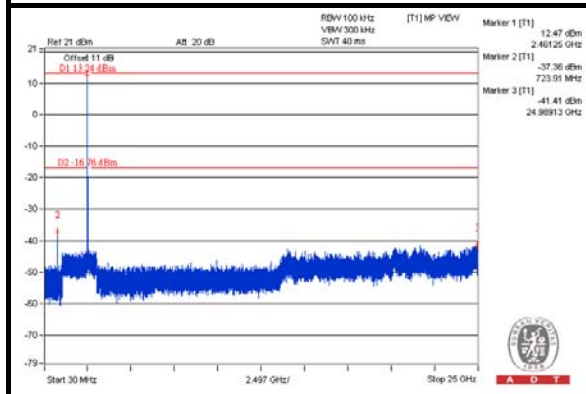
#### CH 1



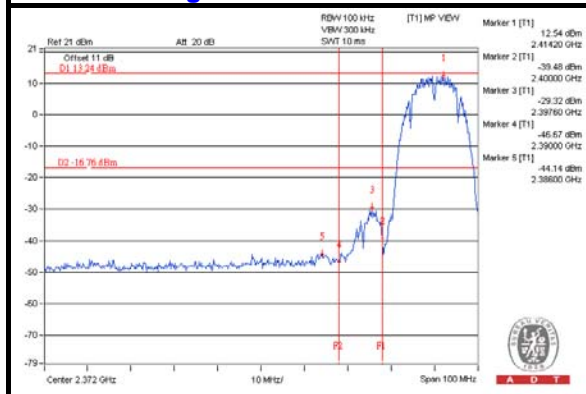
#### CH 6



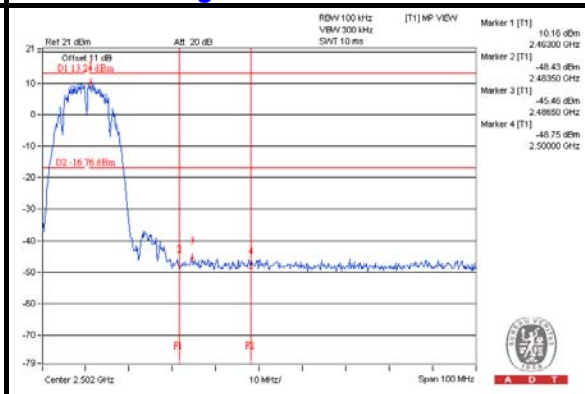
#### CH 11



#### CH 1 Band edge

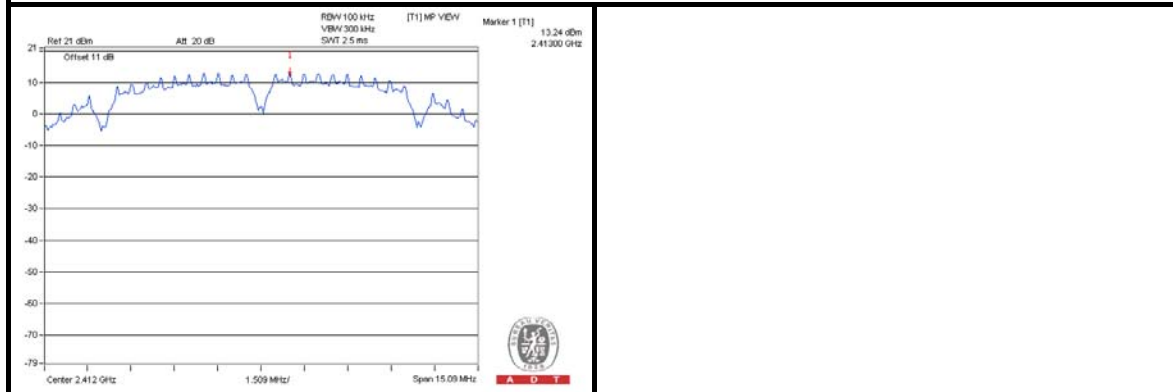


#### CH 11 Band edge

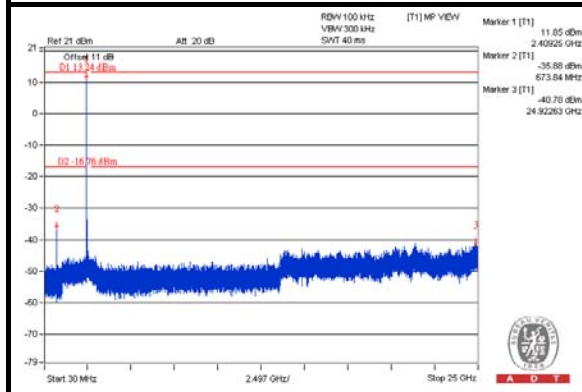


CHAIN 2

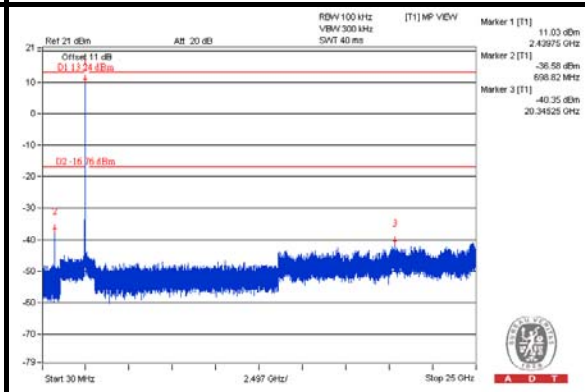
Reference Level



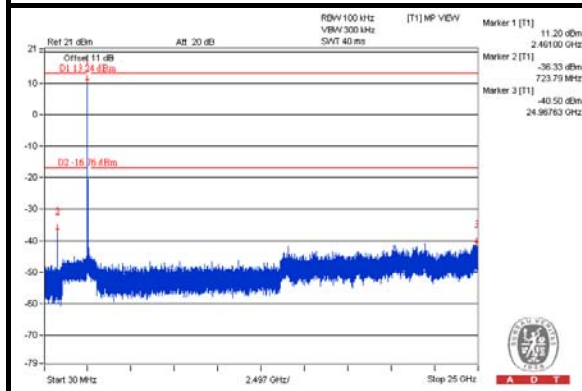
CH 1



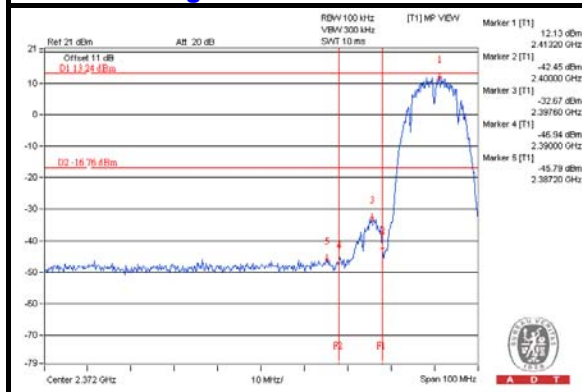
CH 6



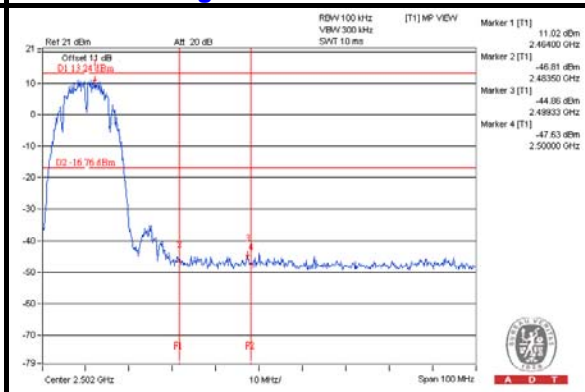
CH 11



CH 1 Band edge



CH 11 Band edge

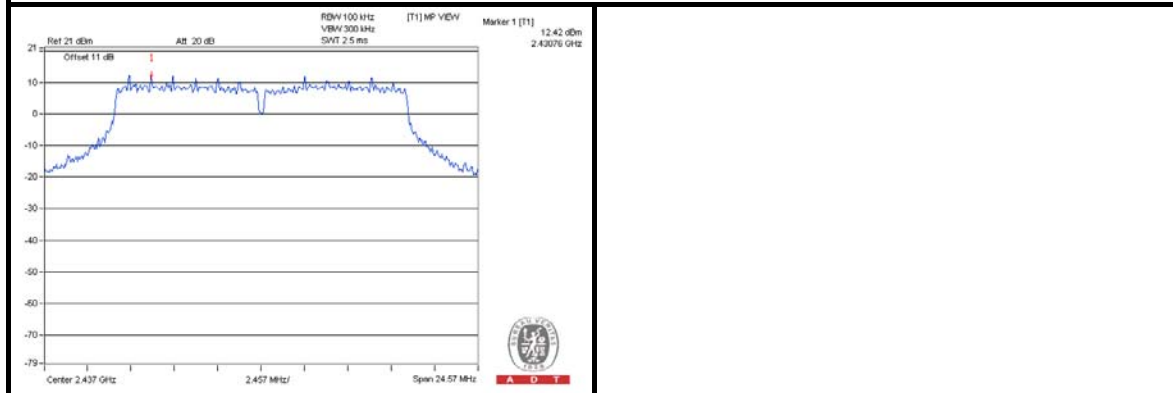




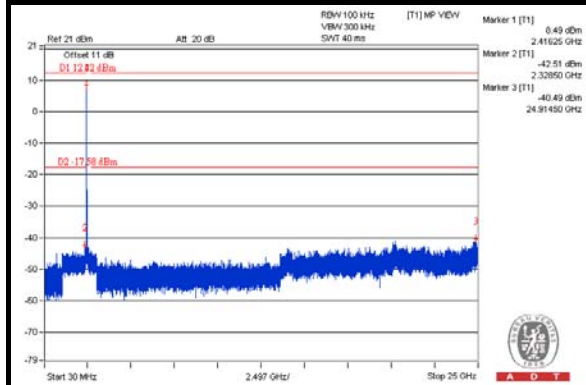
A D T

# 802.11g CHAIN 0

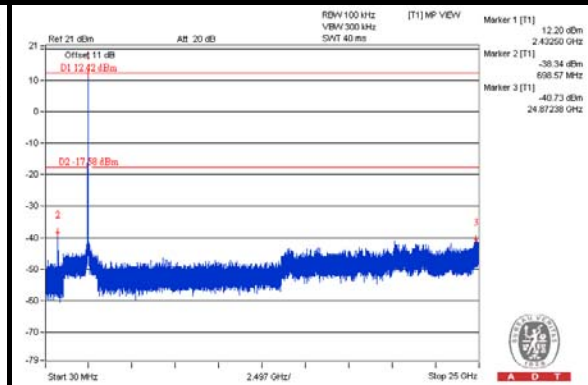
## Reference Level



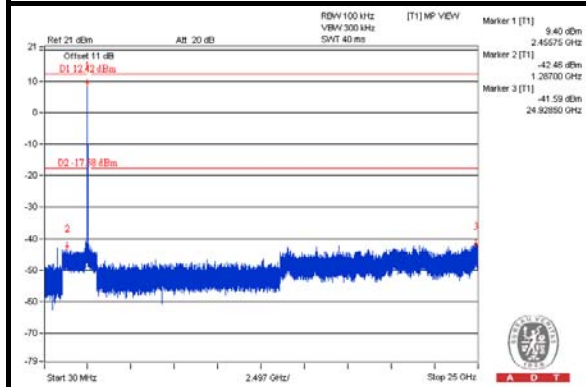
## CH 1



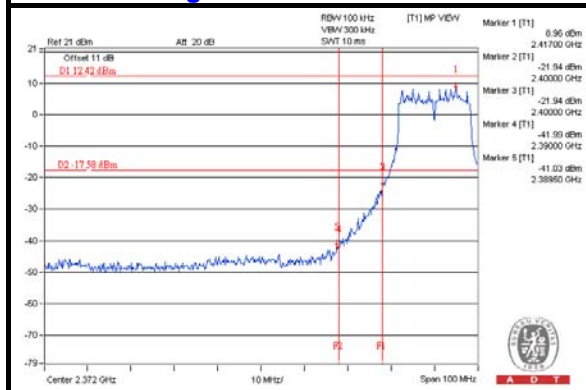
## CH 6



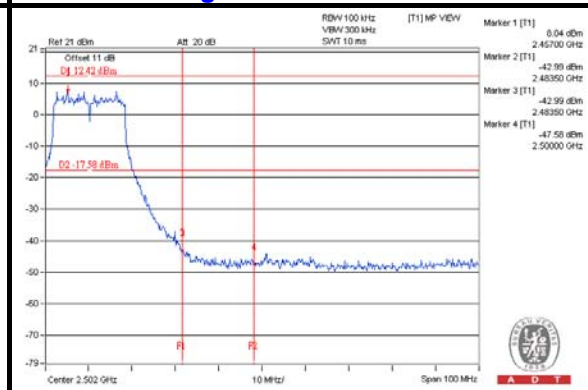
## CH 11



## CH 1 Band edge

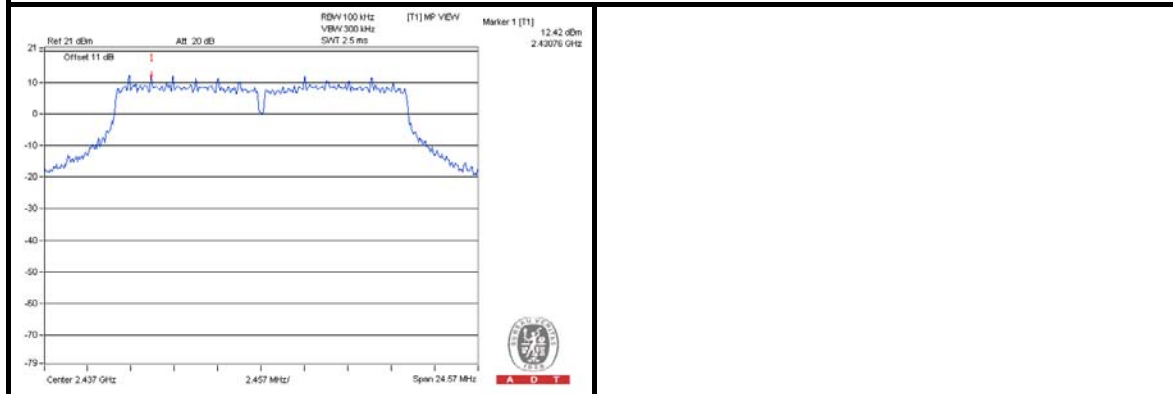


## CH 11 Band edge

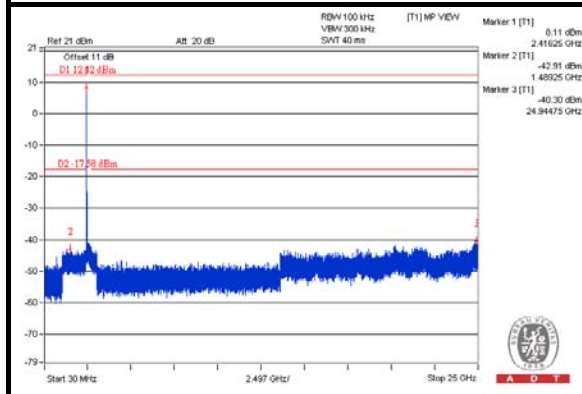


CHAIN 1

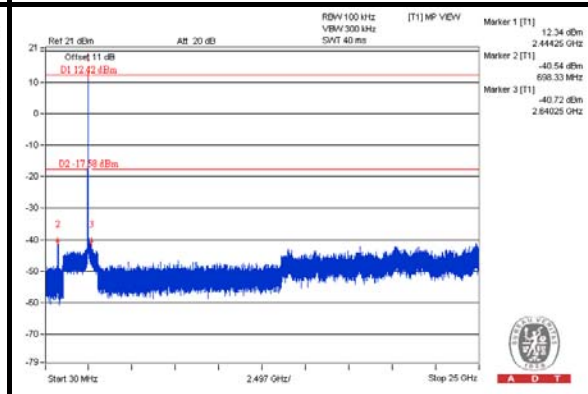
Reference Level



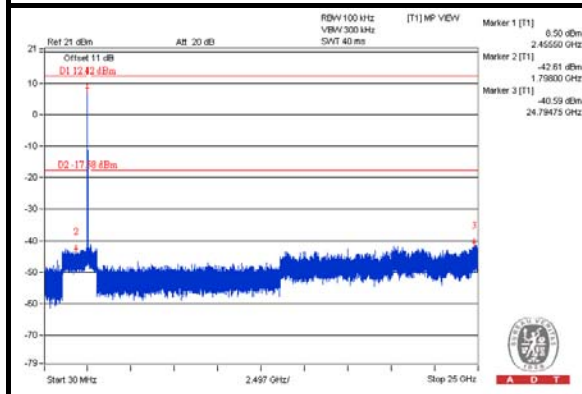
CH 1



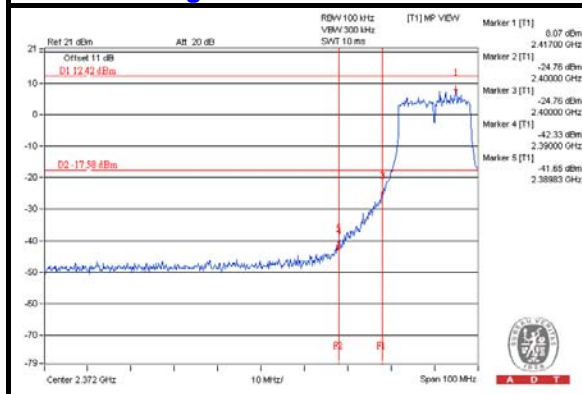
CH 6



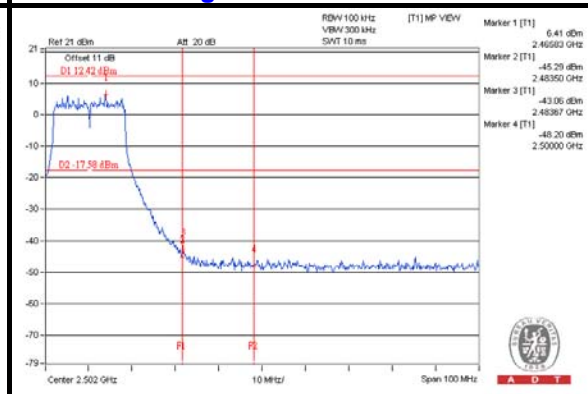
CH 11



CH 1 Band edge



CH 11 Band edge

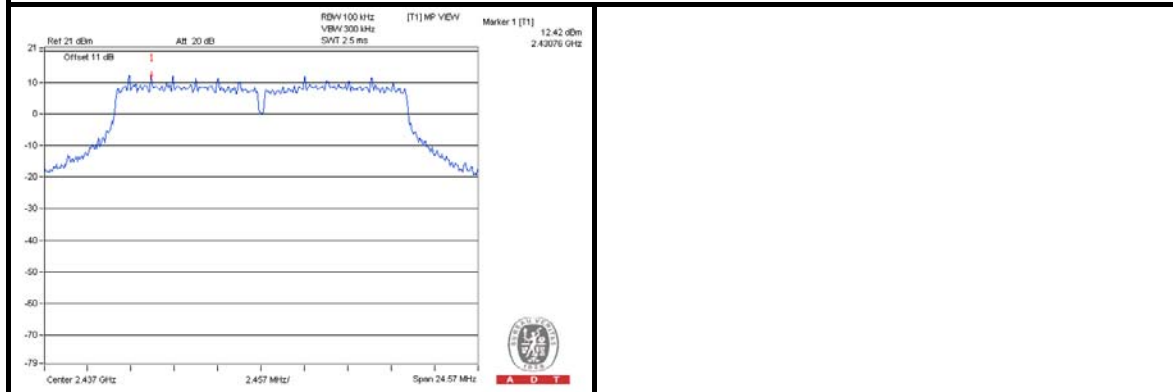




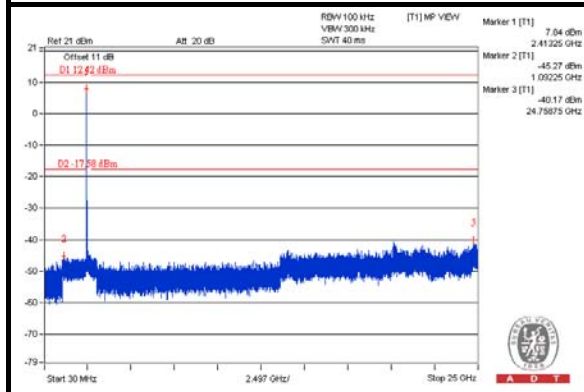
A D T

## CHAIN 2

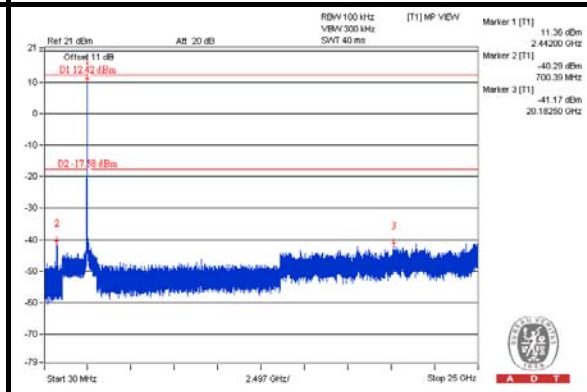
### Reference Level



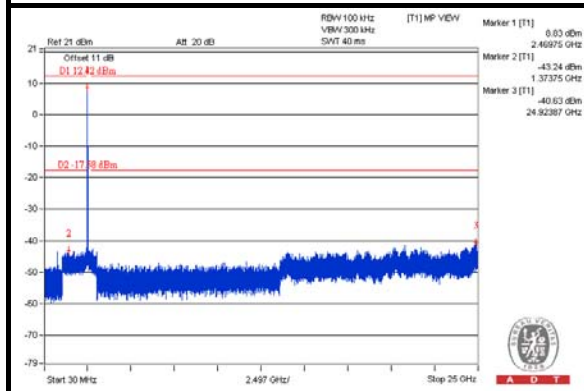
### CH 1



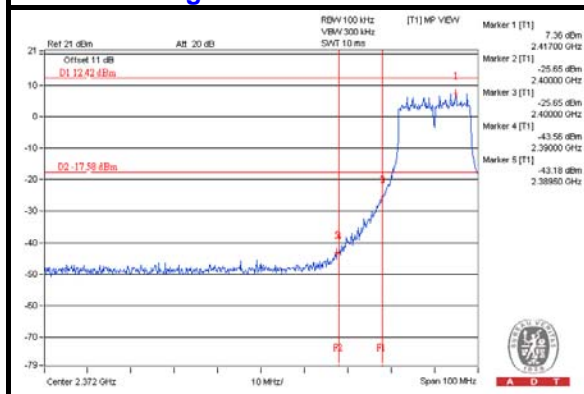
### CH 6



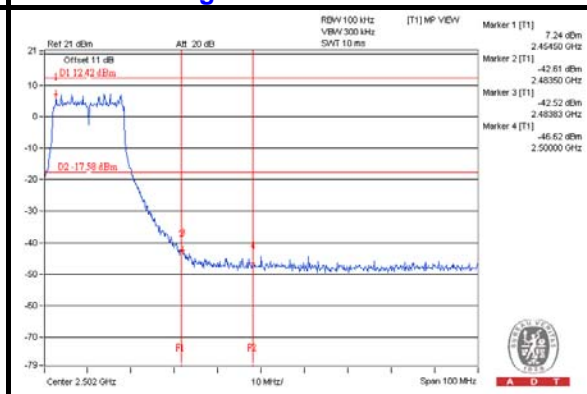
### CH 11



### CH 1 Band edge

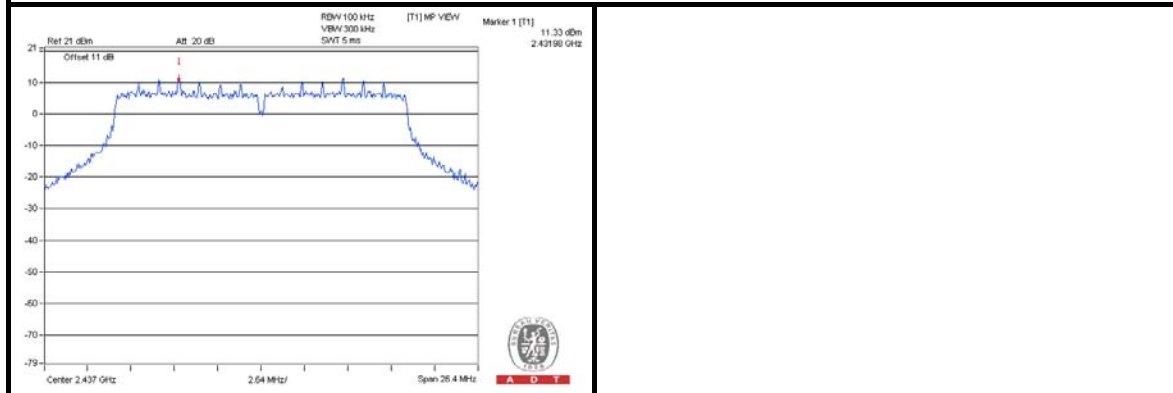


### CH 11 Band edge

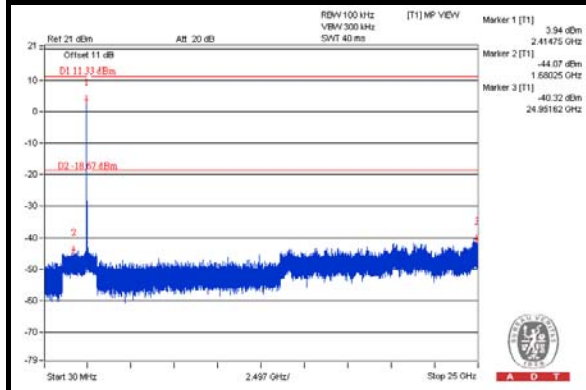


802.11n (20MHz)  
CHAIN 0

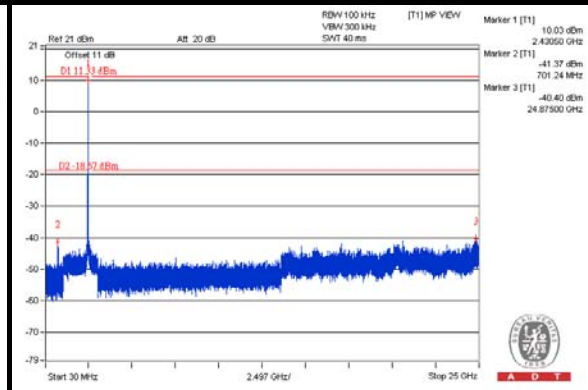
Reference Level



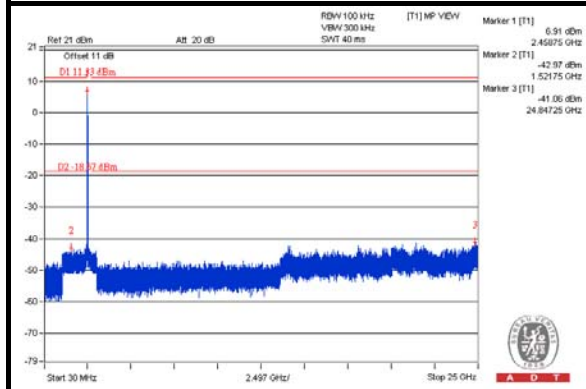
CH 1



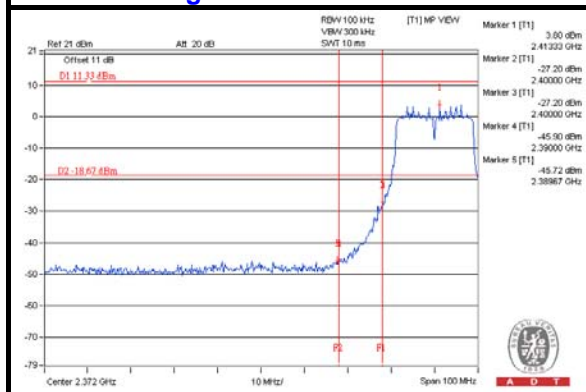
CH 6



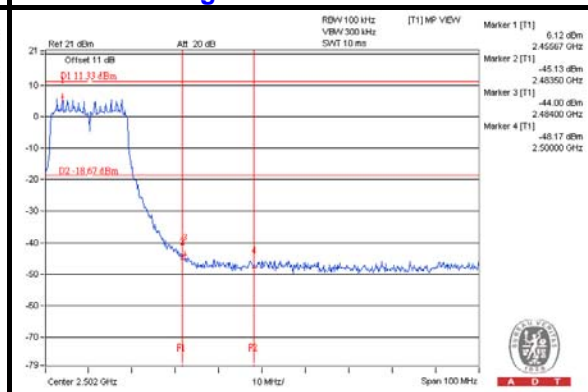
CH 11



CH 1 Band edge



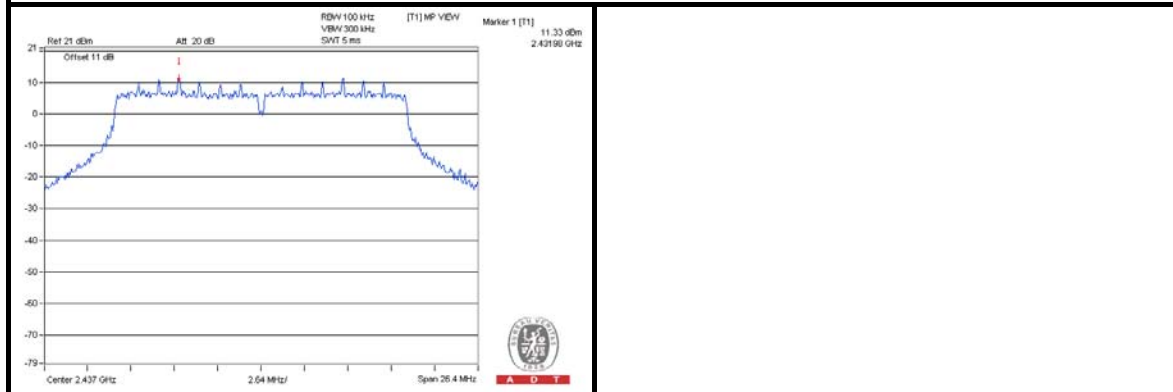
CH 11 Band edge



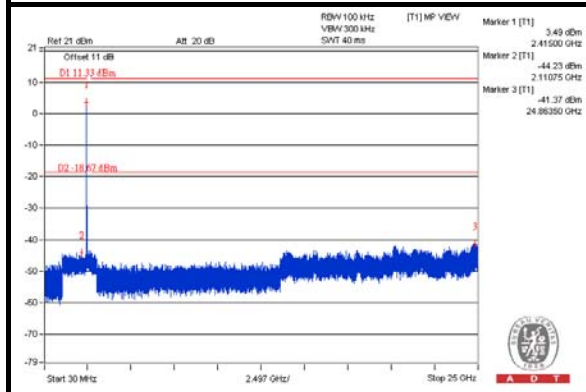


CHAIN 1

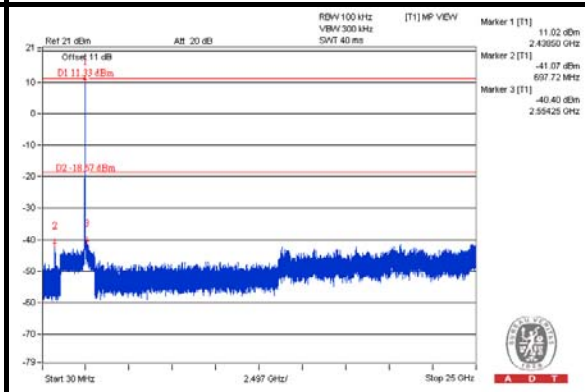
Reference Level



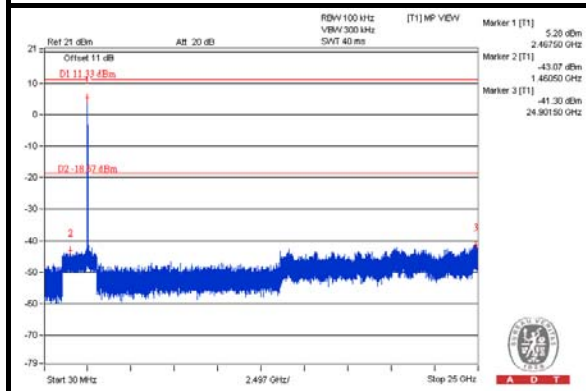
CH 1



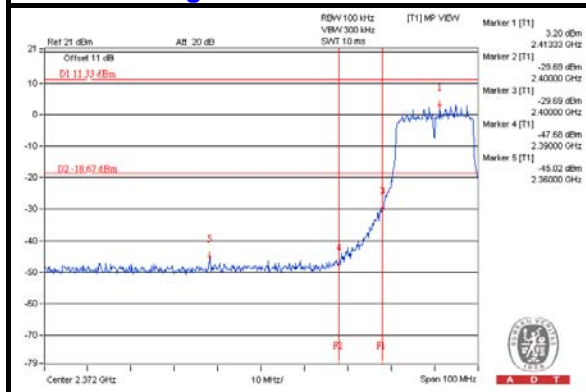
CH 6



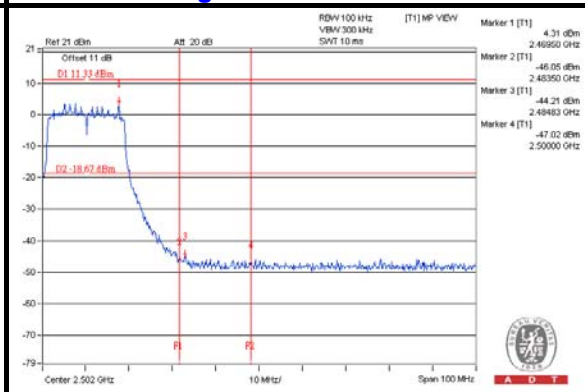
CH 11



CH 1 Band edge

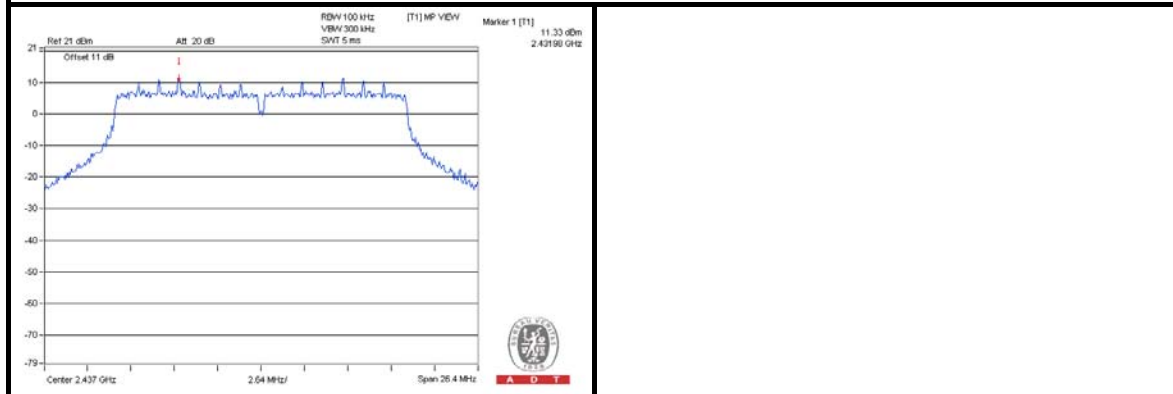


CH 11 Band edge

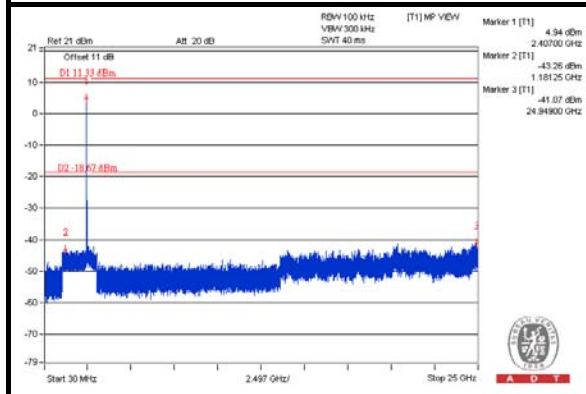


CHAIN 2

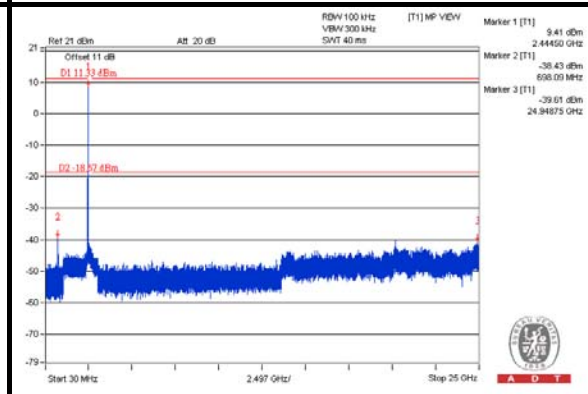
Reference Level



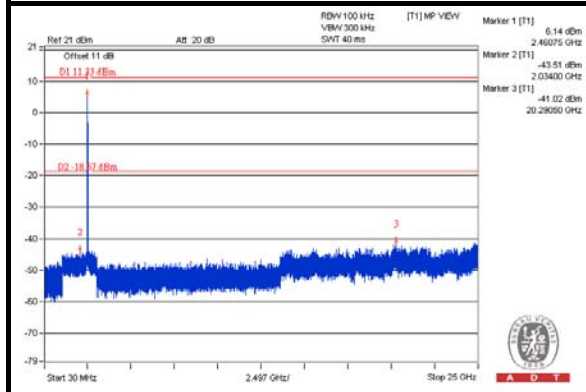
CH 1



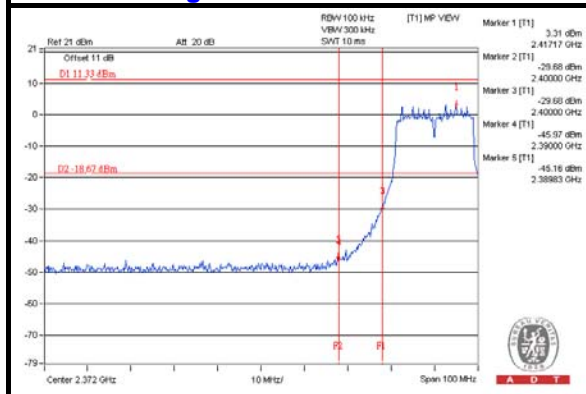
CH 6



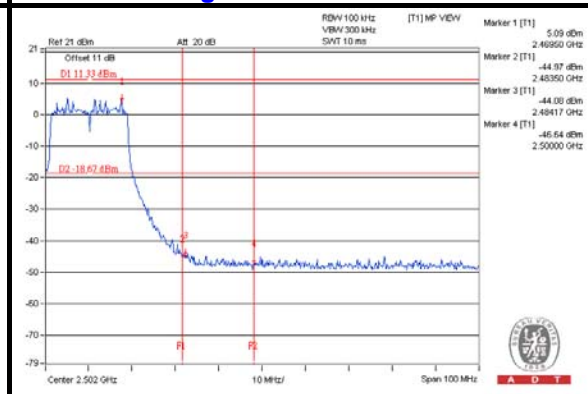
CH 11



CH 1 Band edge

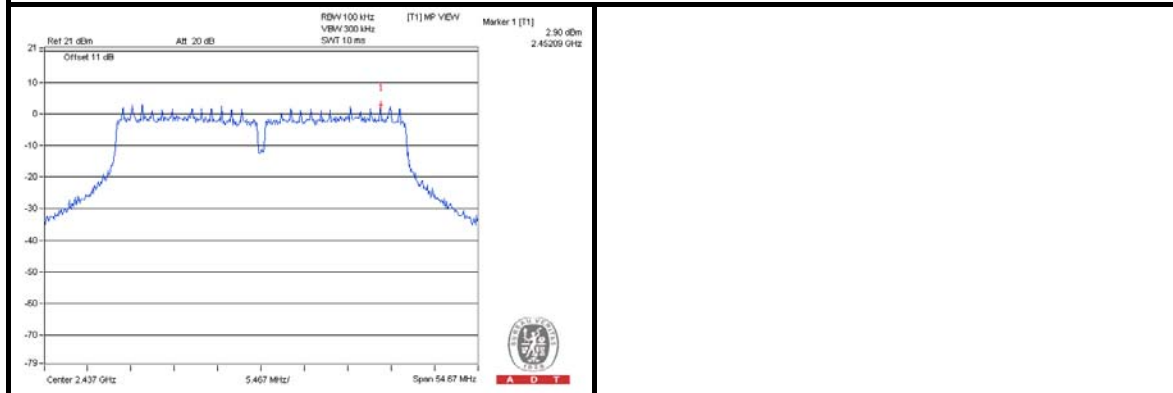


CH 11 Band edge

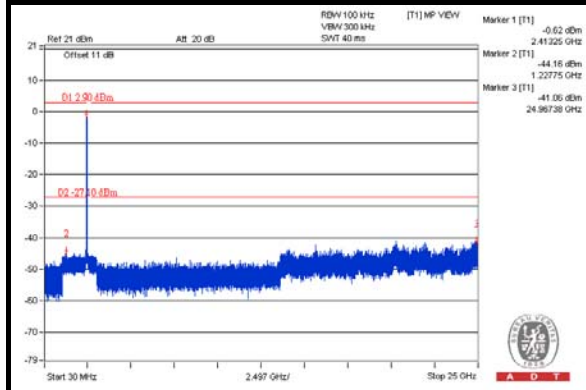


802.11n (40MHz)  
CHAIN 0

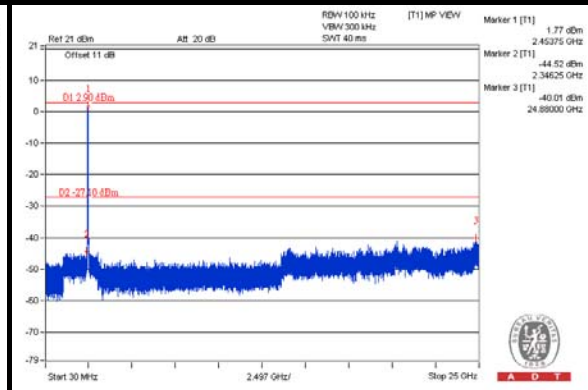
Reference Level



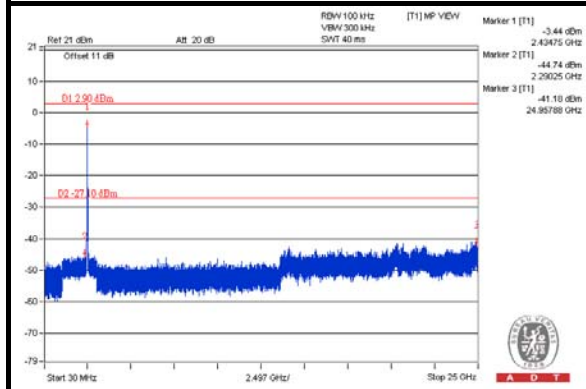
CH 3



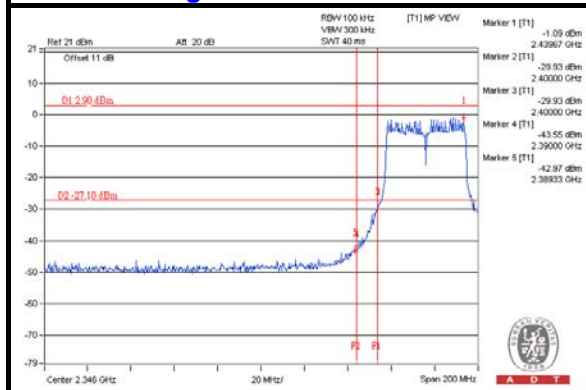
CH 6



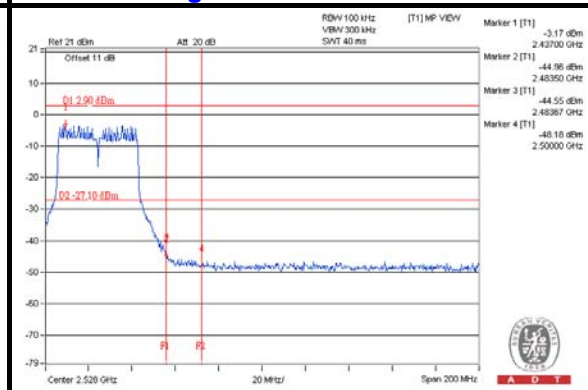
CH 9



CH 3 Band edge

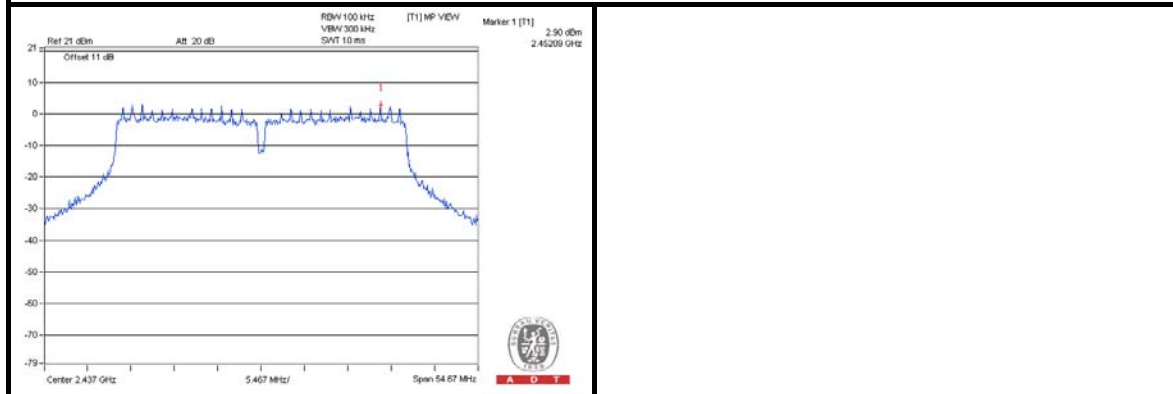


CH 9 Band edge

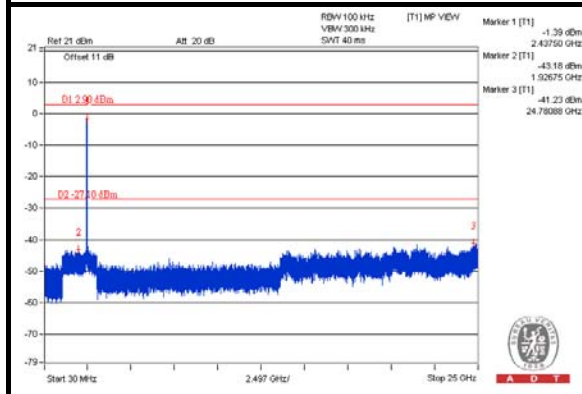


CHAIN 1

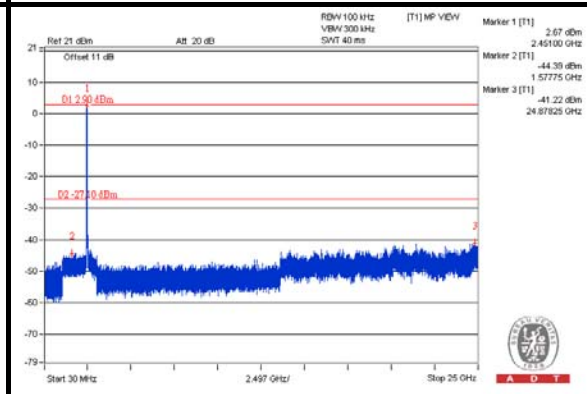
Reference Level



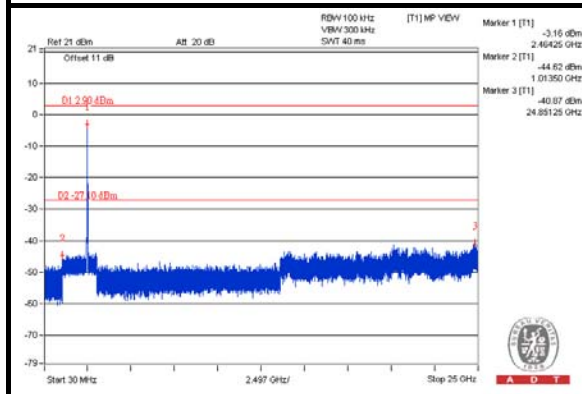
CH 3



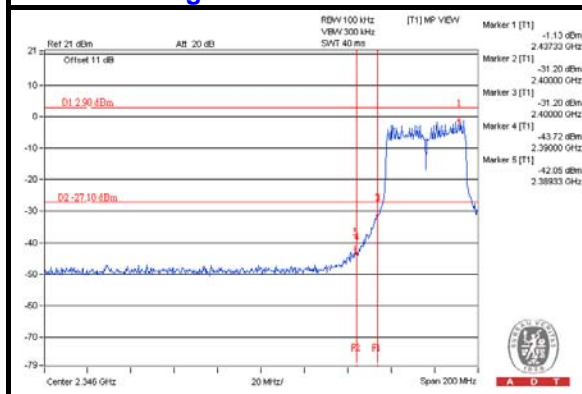
CH 6



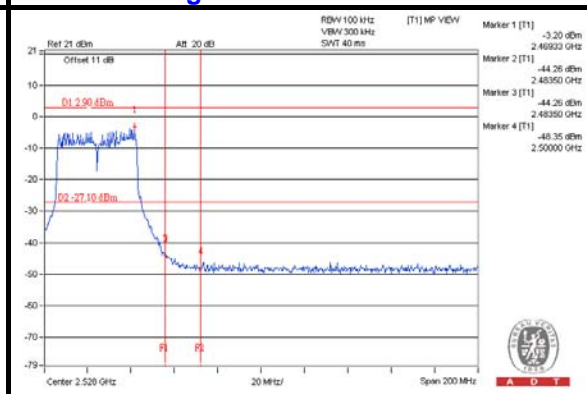
CH 9



CH 3 Band edge

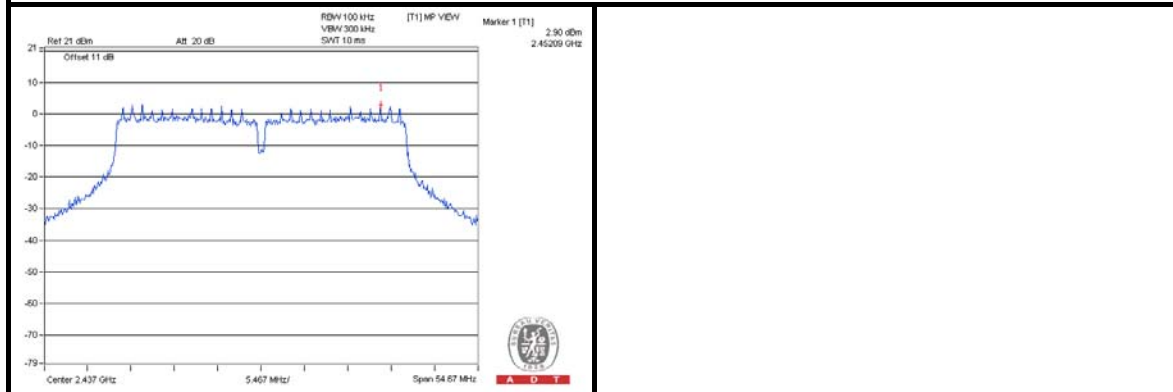


CH 9 Band edge

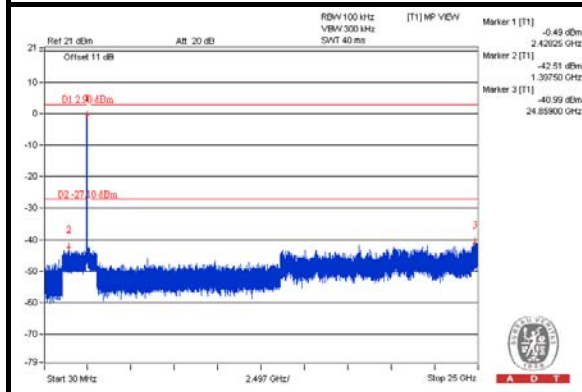


CHAIN 2

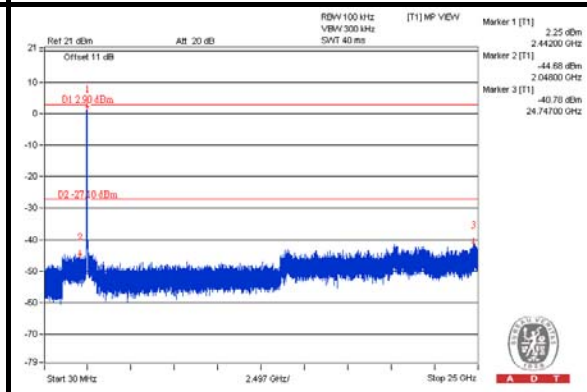
Reference Level



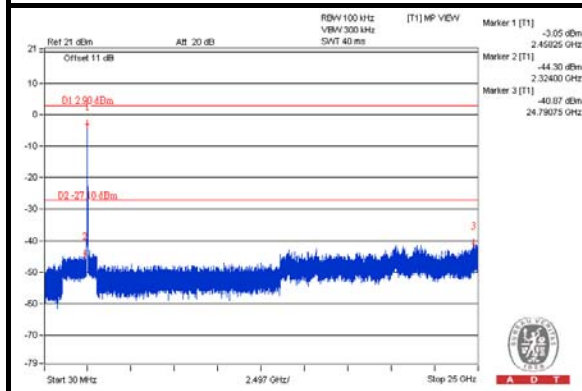
CH 3



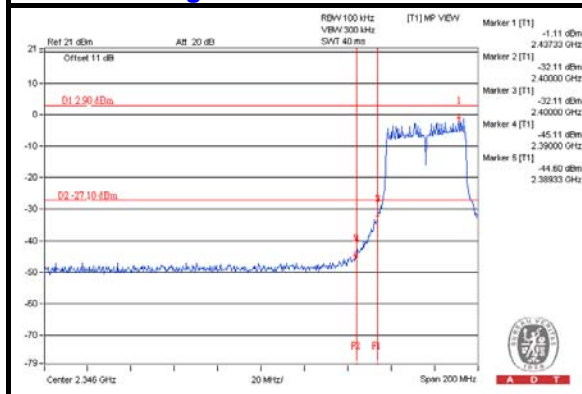
CH 6



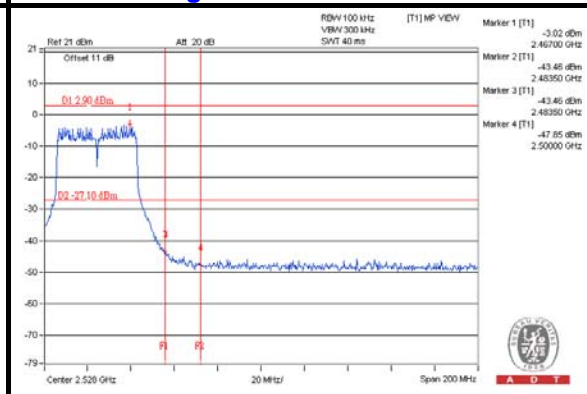
CH 9



CH 3 Band edge



CH 9 Band edge

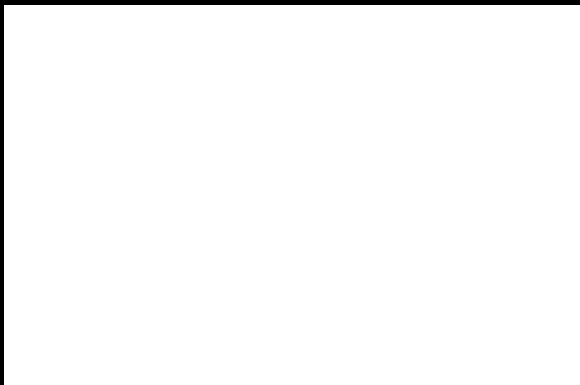
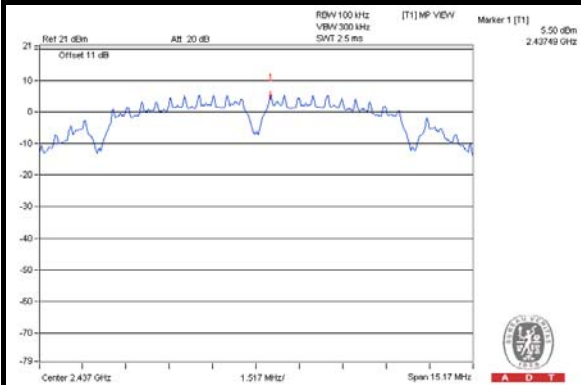




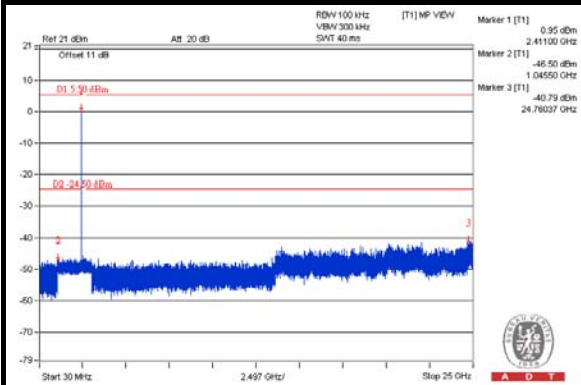
A D T

**TEST MODE B**  
**802.11b / CHAIN 0**

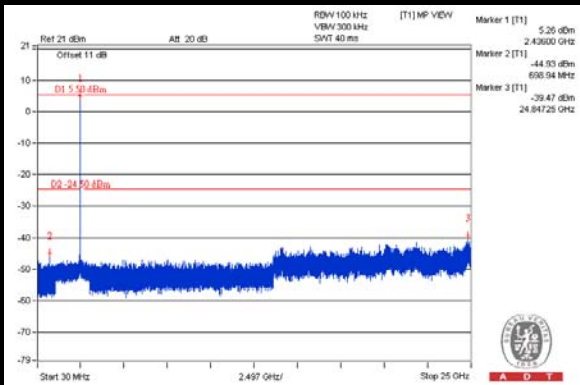
**Reference Level**



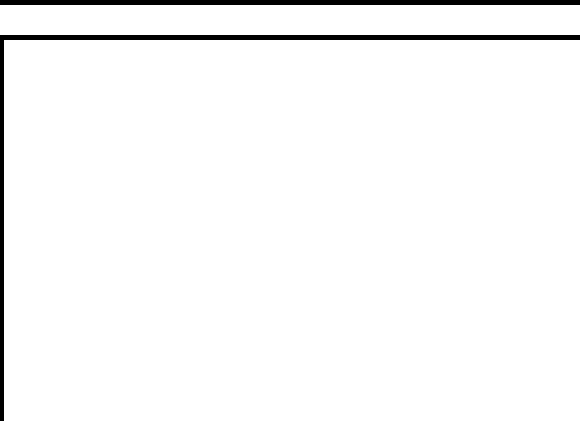
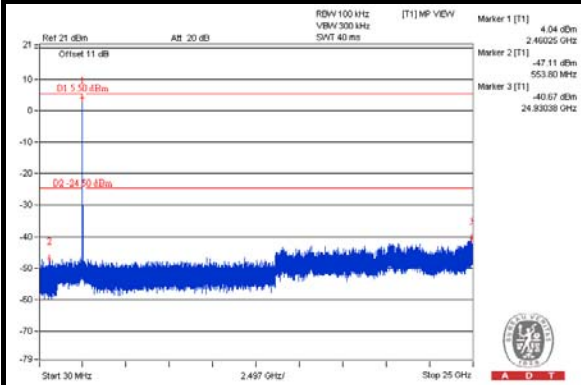
**CH 1**



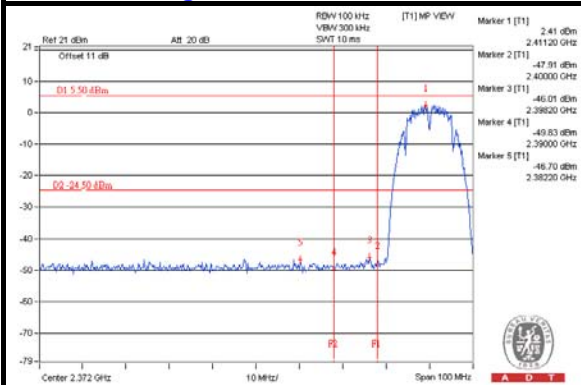
**CH 6**



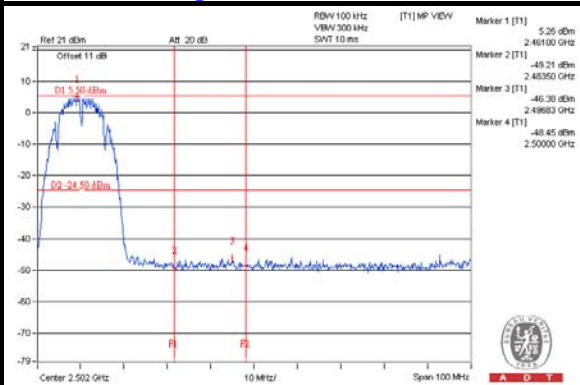
**CH 11**



**CH 1 Band edge**

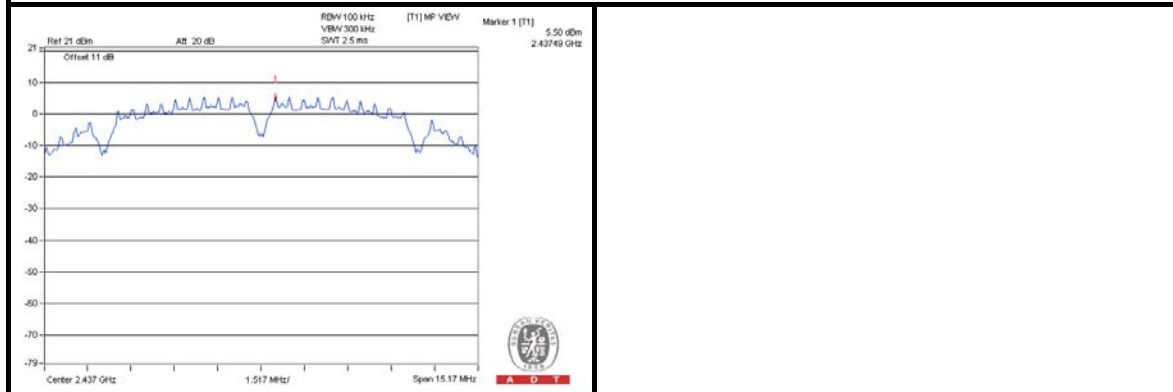


**CH 11 Band edge**

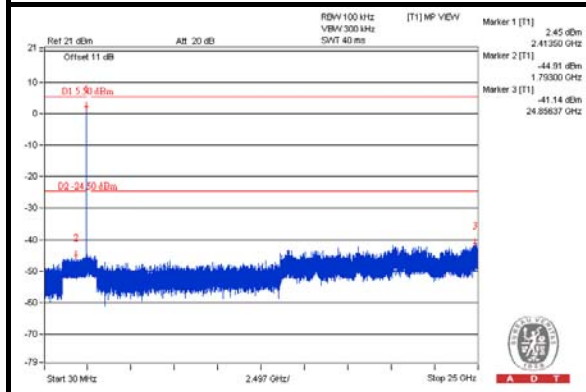


CHAIN 1

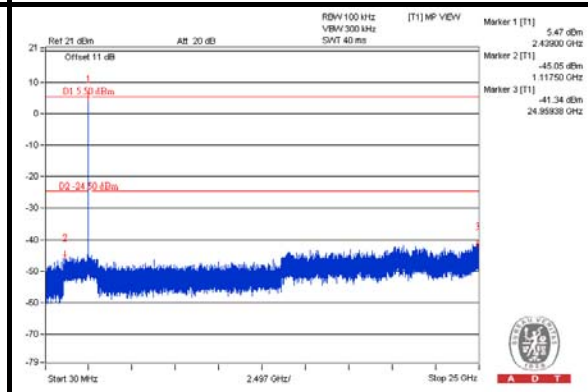
Reference Level



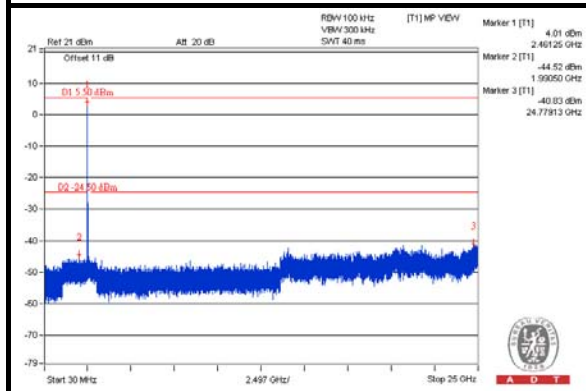
CH 1



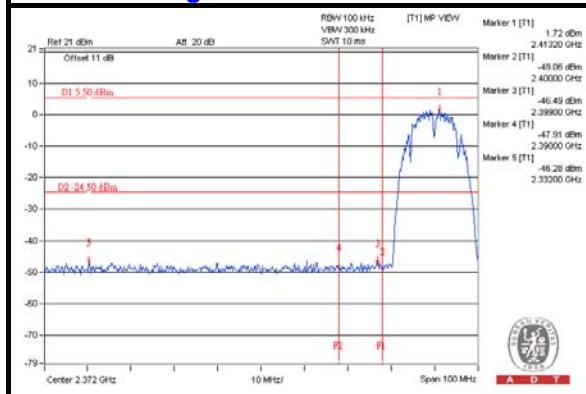
CH 6



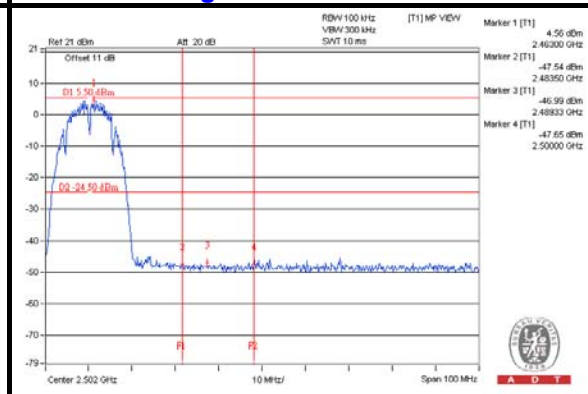
CH 11



CH 1 Band edge

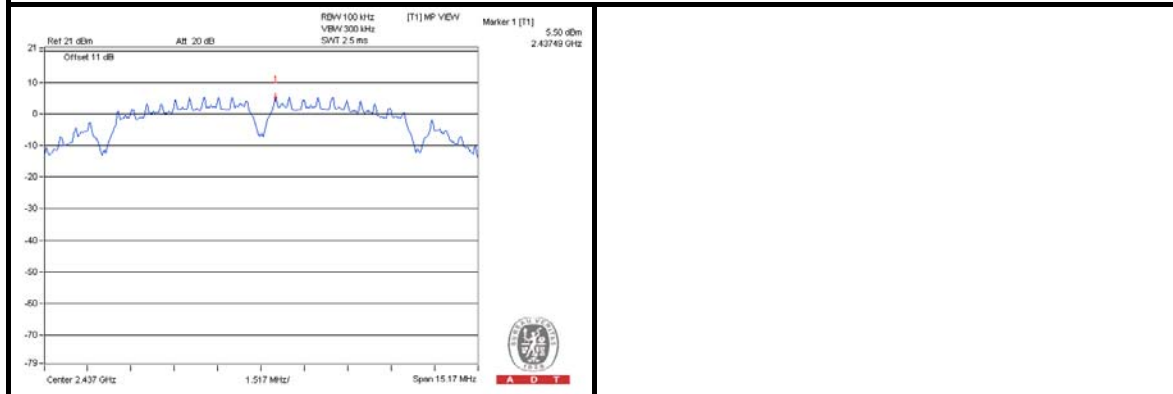


CH 11 Band edge

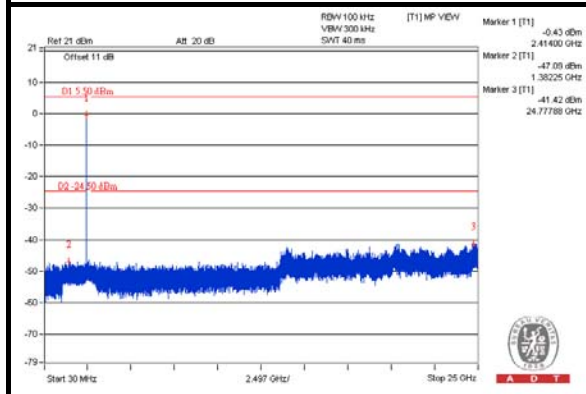


CHAIN 2

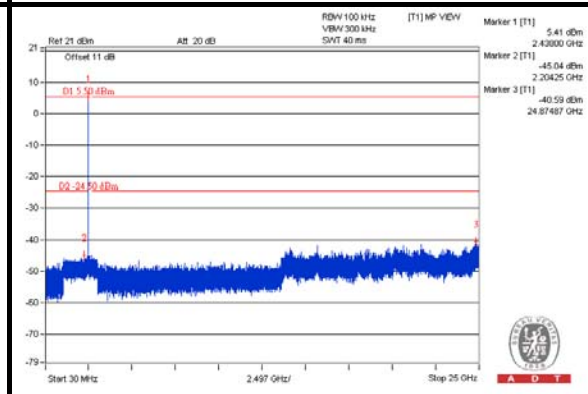
Reference Level



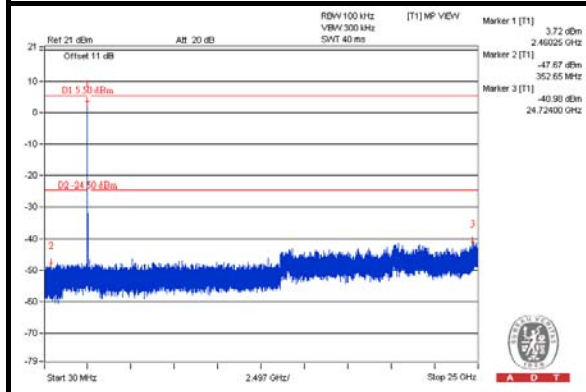
CH 1



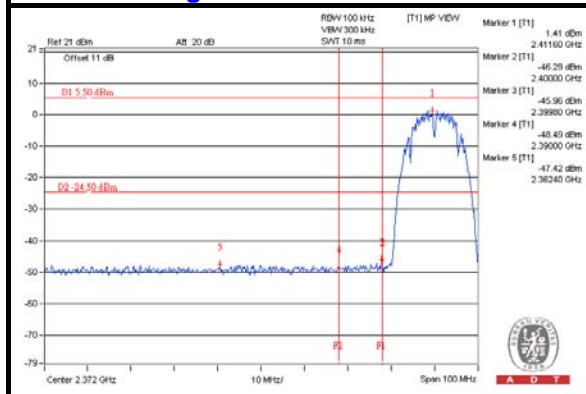
CH 6



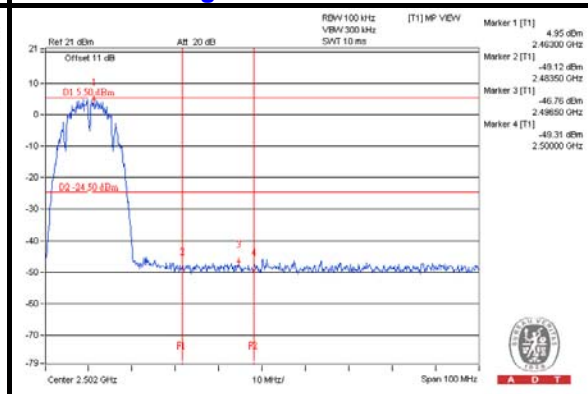
CH 11



CH 1 Band edge



CH 11 Band edge



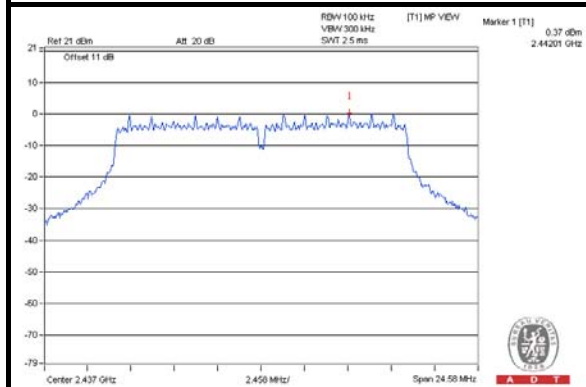




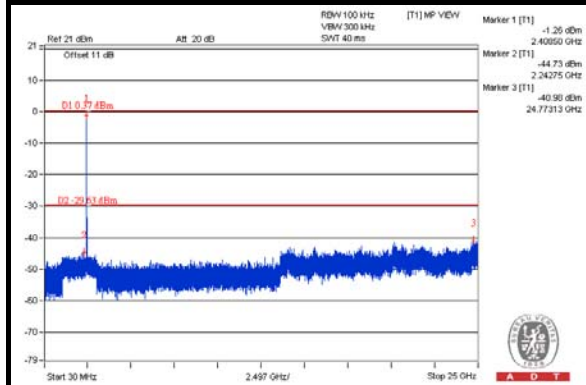
A D T

# 802.11g CHAIN 0

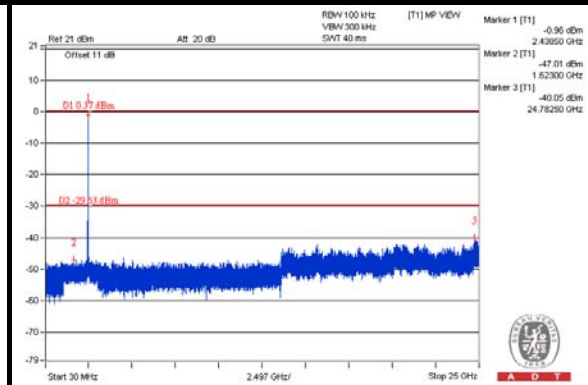
## Reference Level



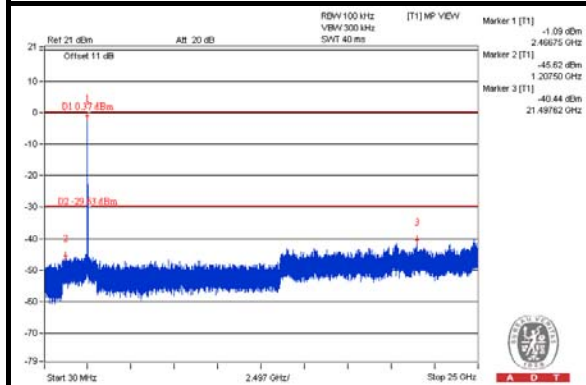
## CH 1



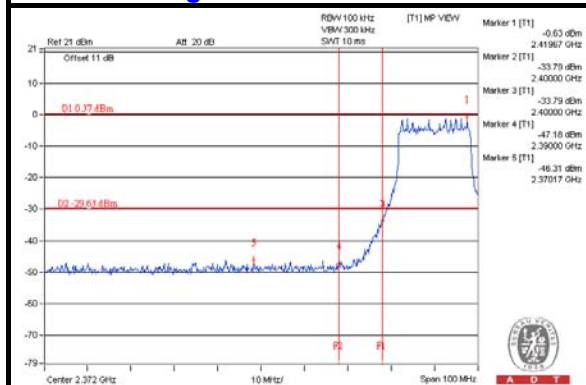
## CH 6



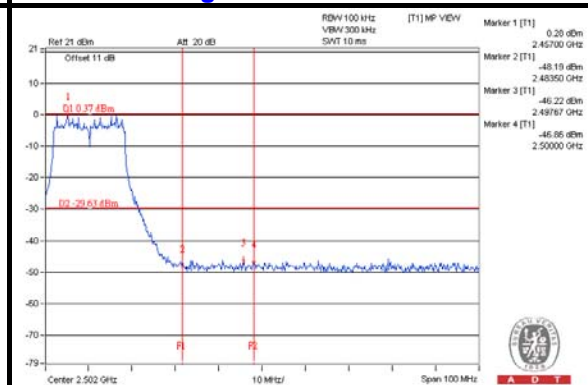
## CH 11



## CH 1 Band edge

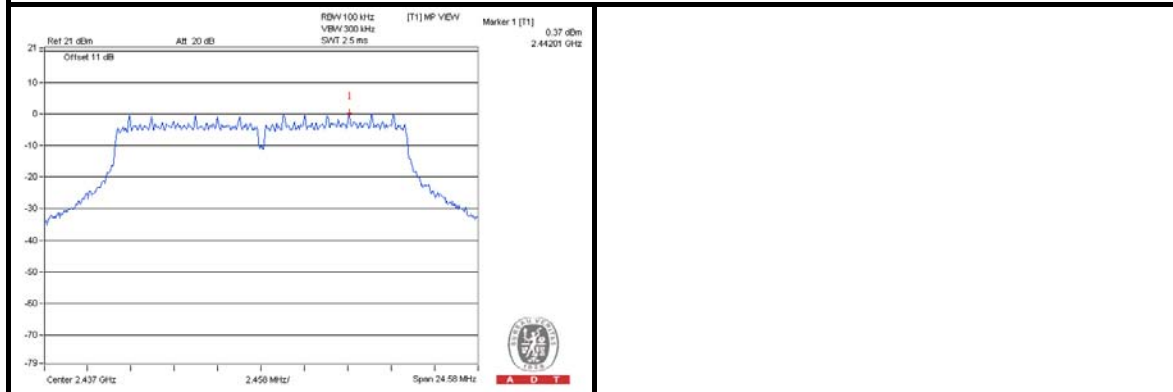


## CH 11 Band edge

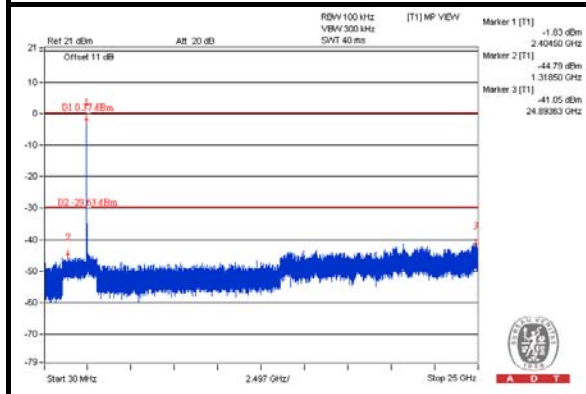


CHAIN 1

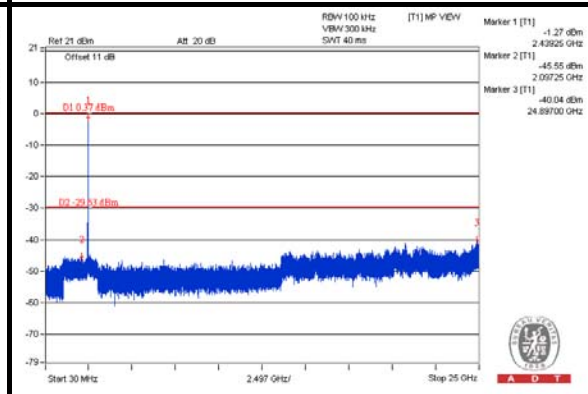
Reference Level



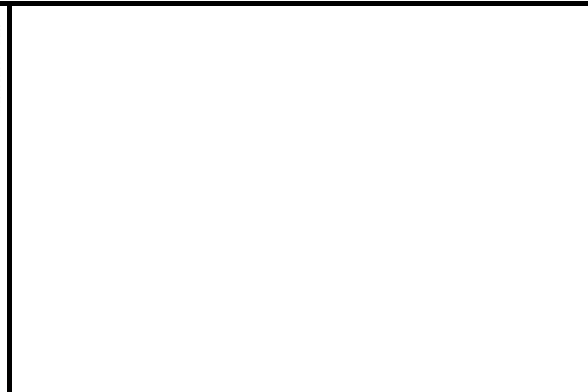
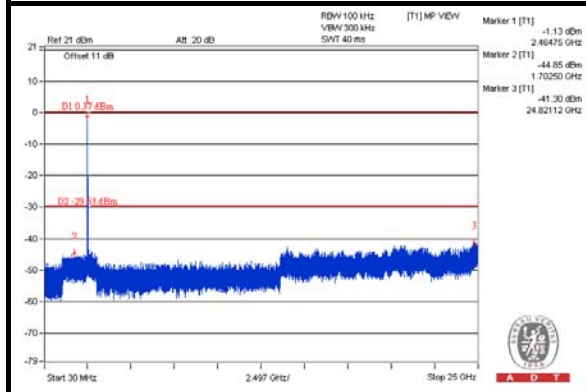
CH 1



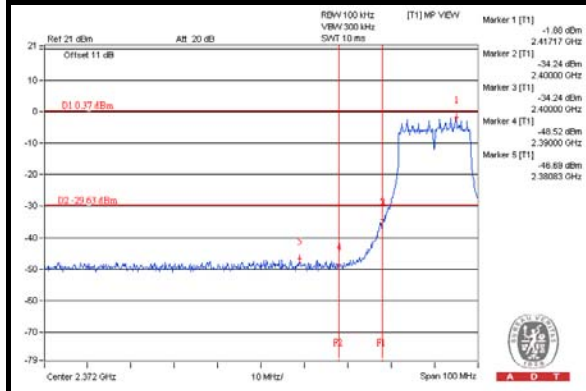
CH 6



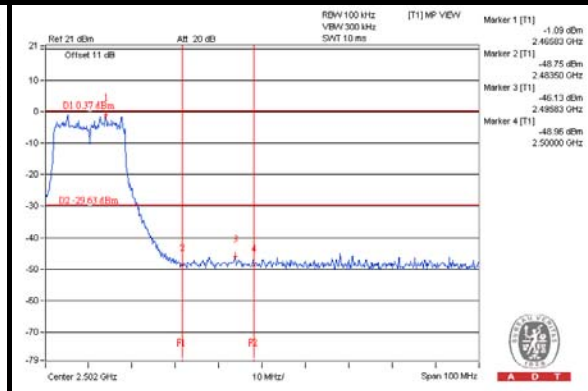
CH 11



CH 1 Band edge

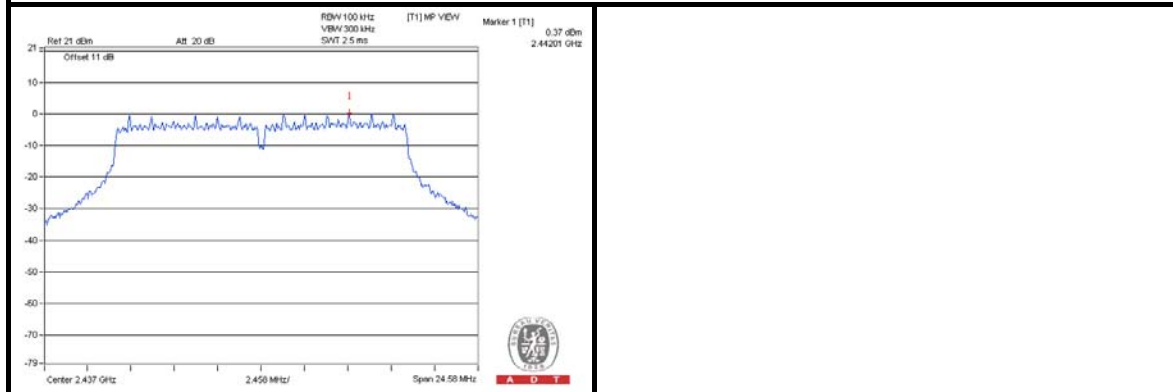


CH 11 Band edge

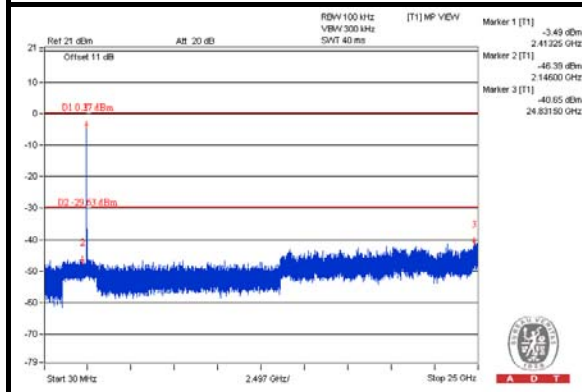


CHAIN 2

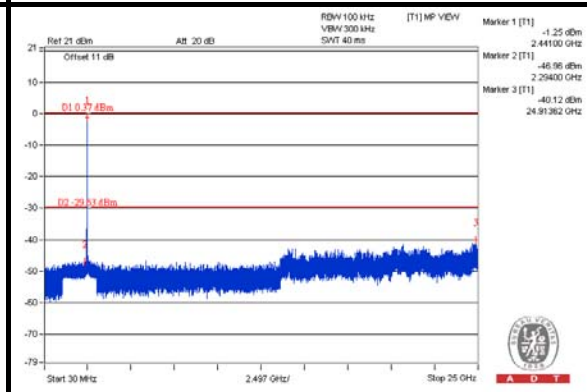
Reference Level



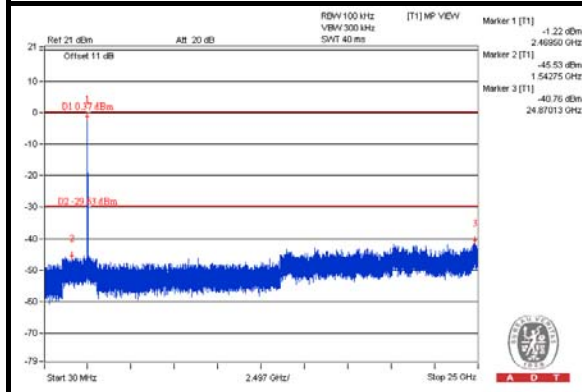
CH 1



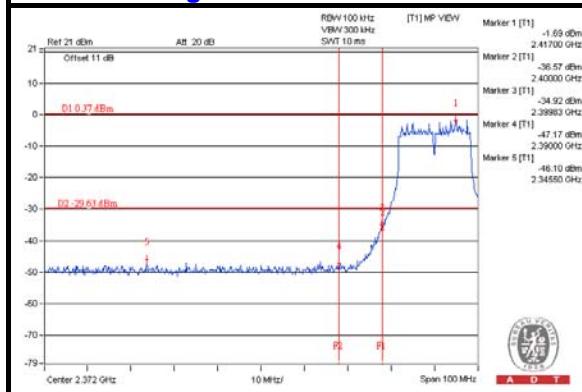
CH 6



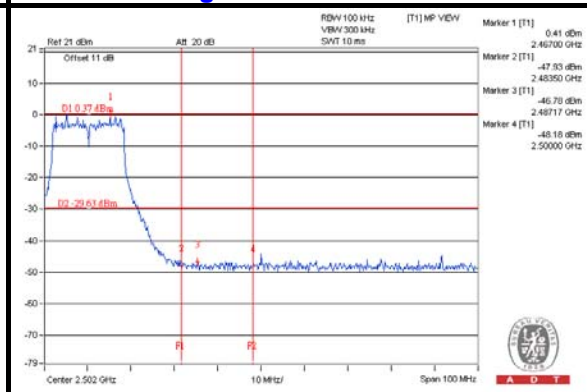
CH 11



CH 1 Band edge



CH 11 Band edge

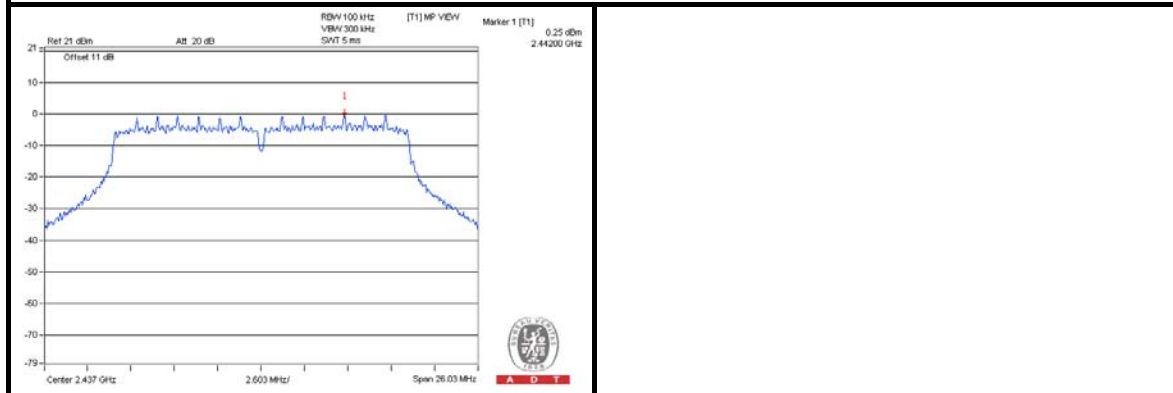




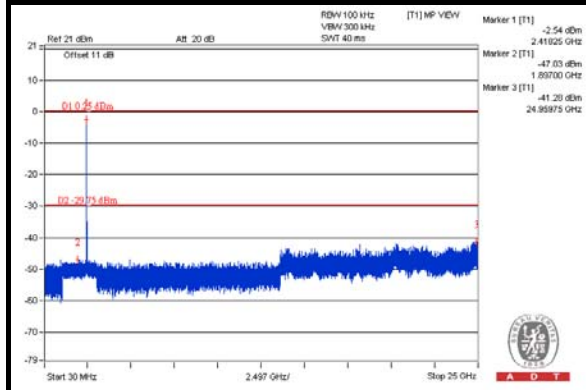
A D T

# 802.11n (20MHz) CHAIN 0

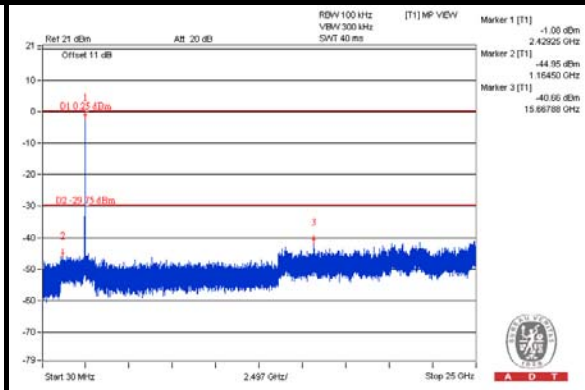
## Reference Level



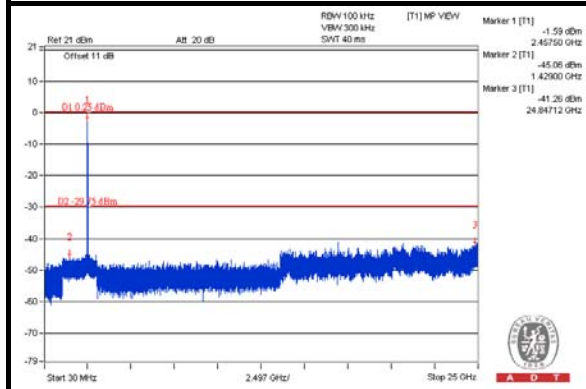
## CH 1



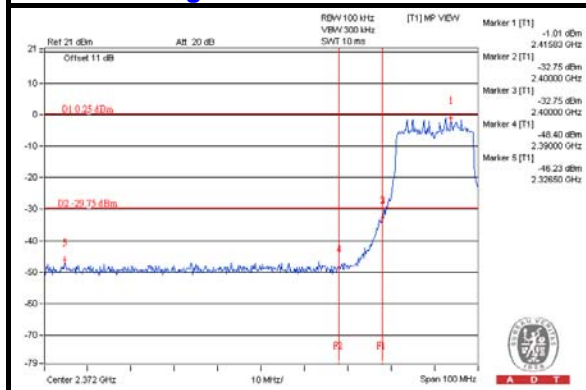
## CH 6



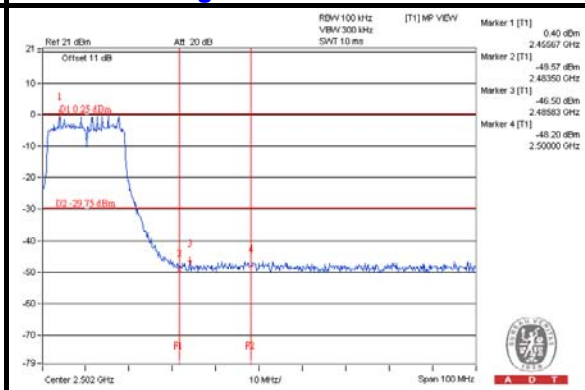
## CH 11



## CH 1 Band edge

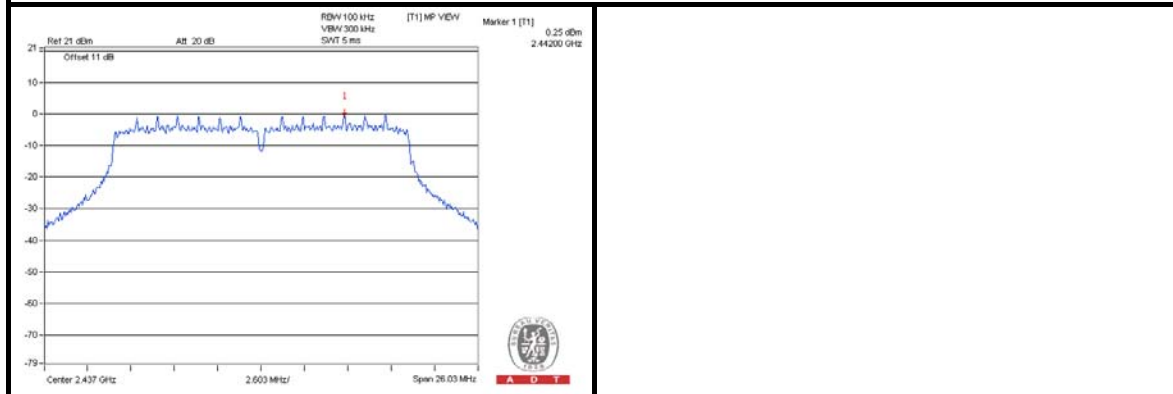


## CH 11 Band edge

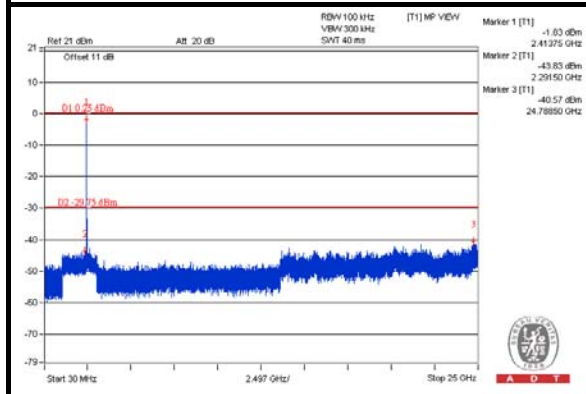


CHAIN 1

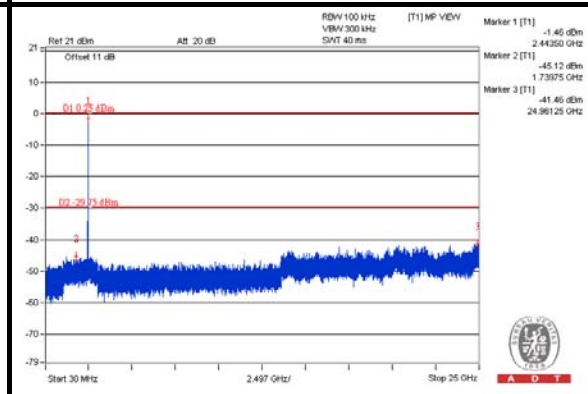
Reference Level



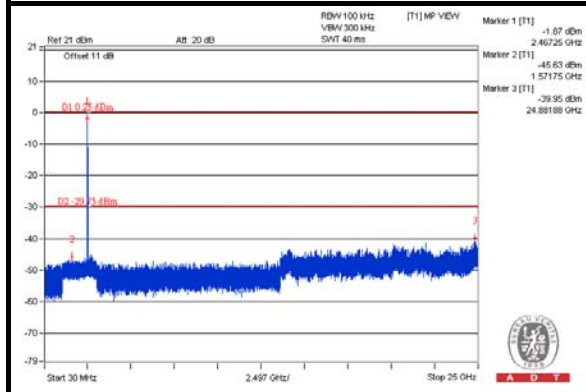
CH 1



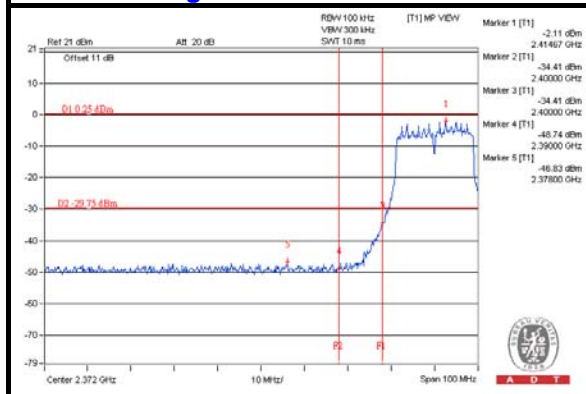
CH 6



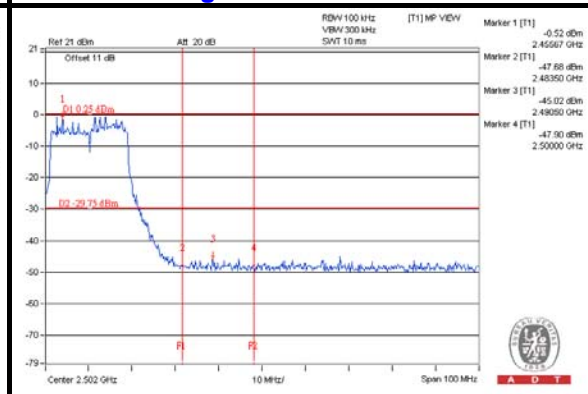
CH 11



CH 1 Band edge

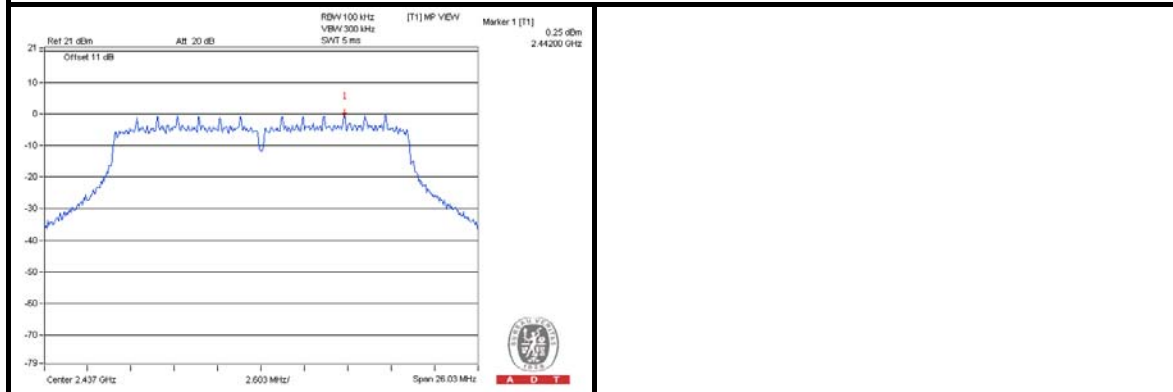


CH 11 Band edge

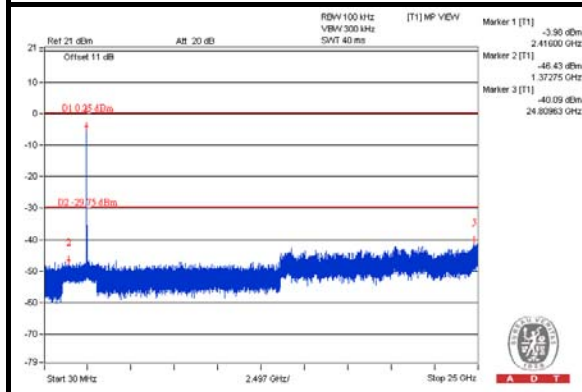


CHAIN 2

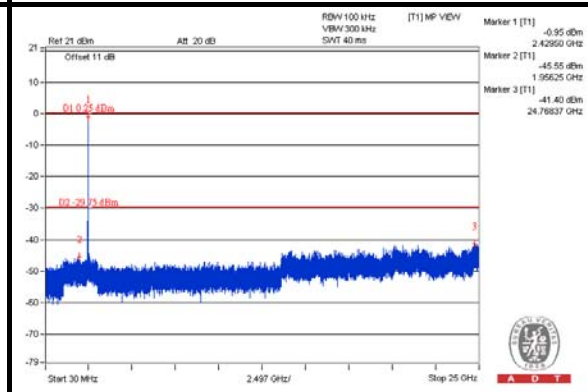
Reference Level



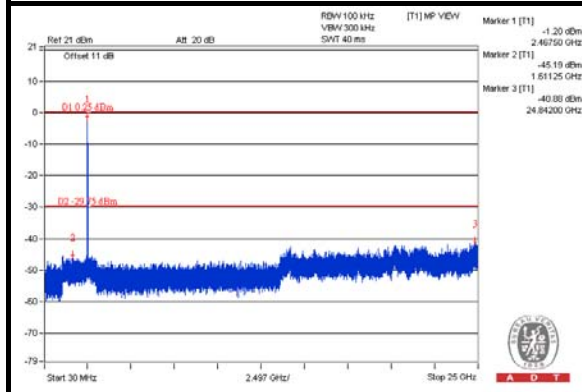
CH 1



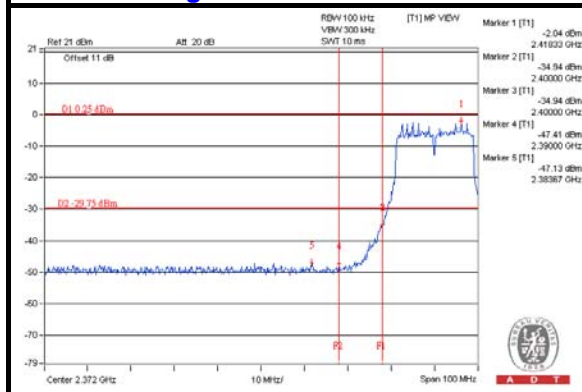
CH 6



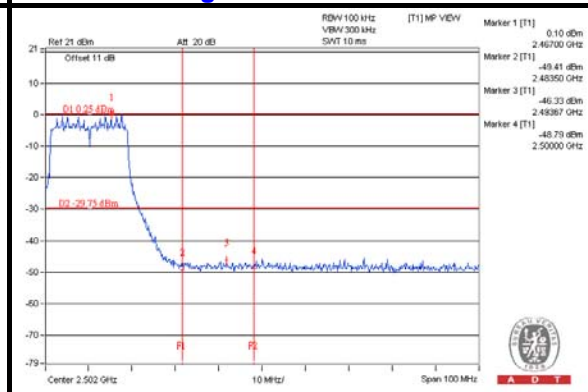
CH 11



CH 1 Band edge

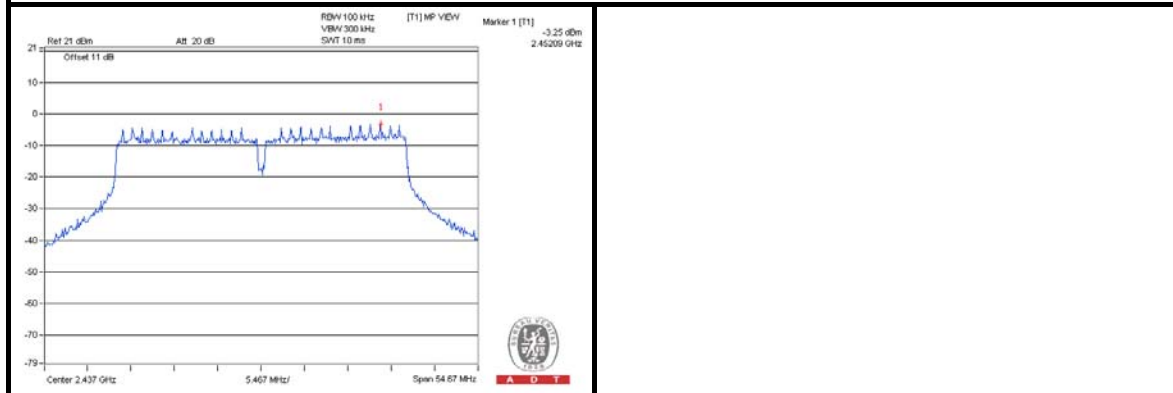


CH 11 Band edge

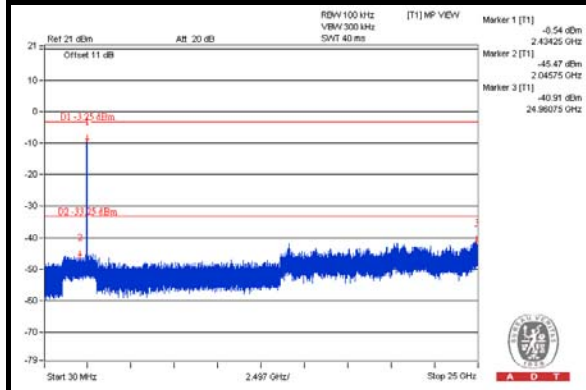


802.11n (40MHz)  
CHAIN 0

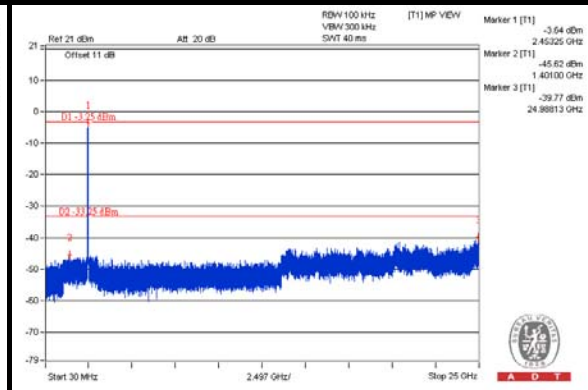
Reference Level



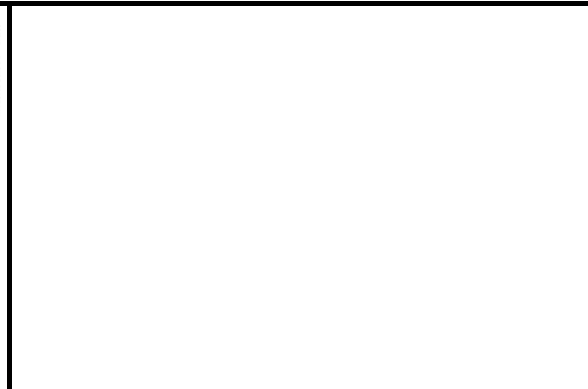
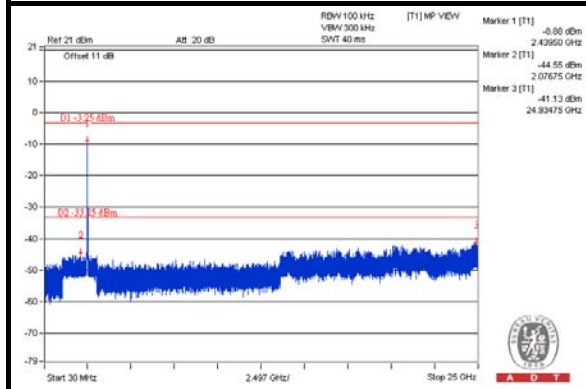
CH 3



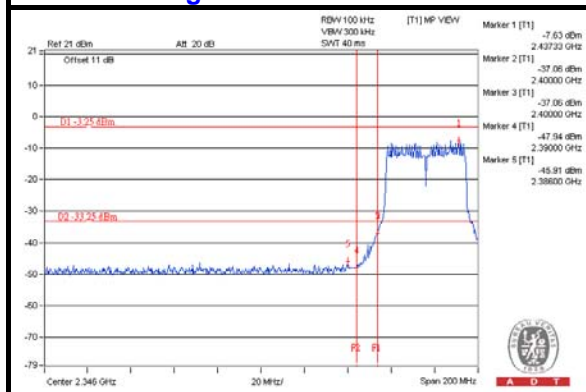
CH 6



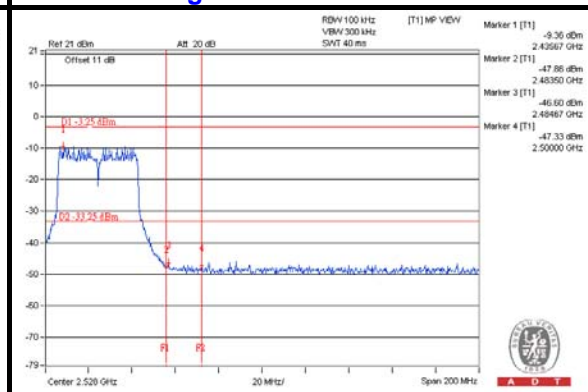
CH 9



CH 3 Band edge

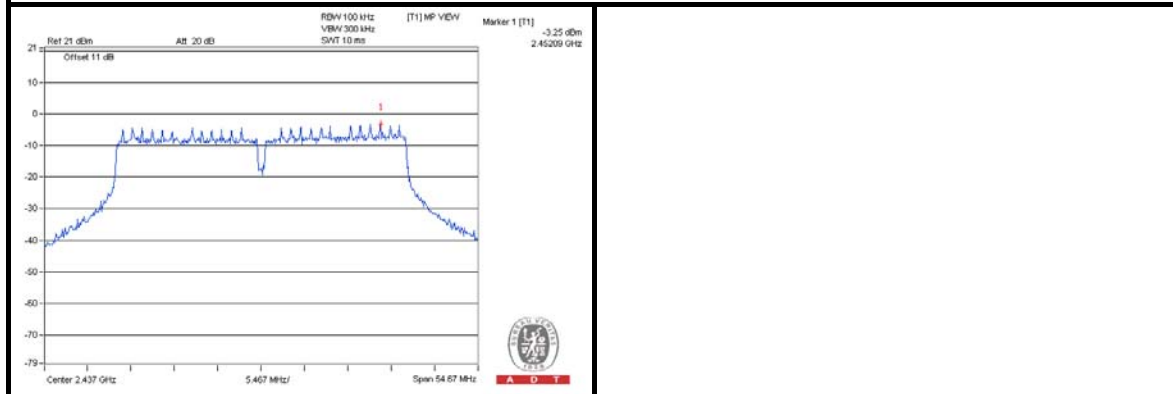


CH 9 Band edge

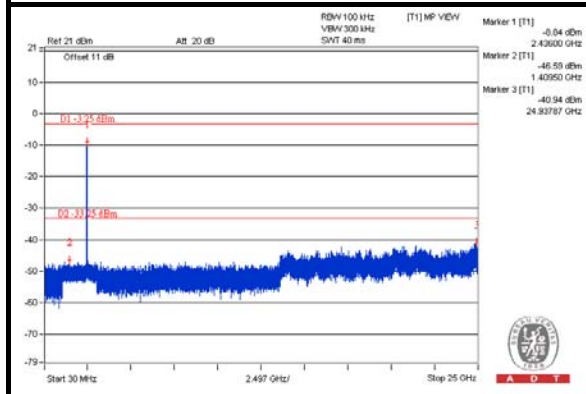


CHAIN 1

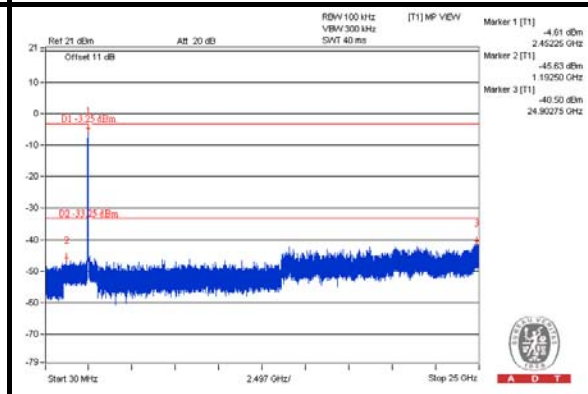
Reference Level



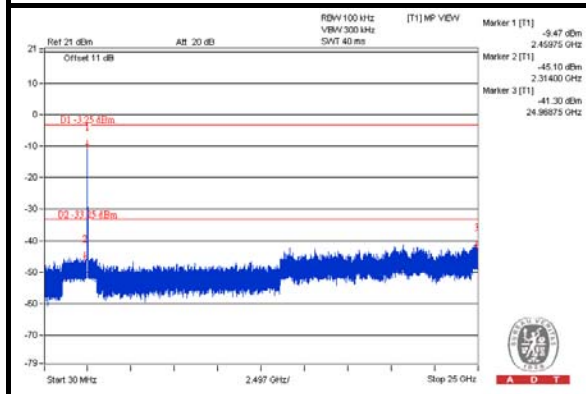
CH 3



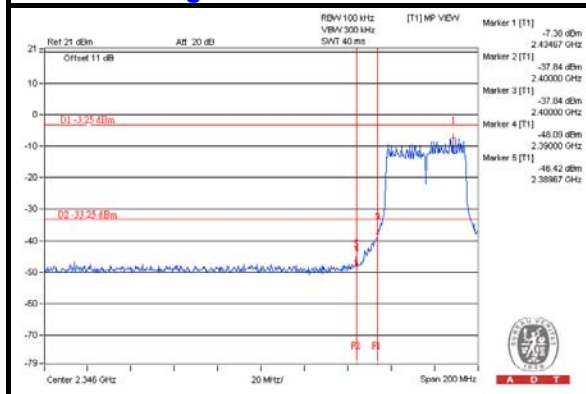
CH 6



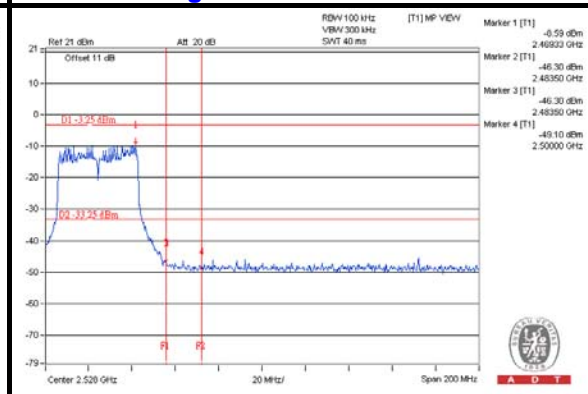
CH 9



CH 3 Band edge



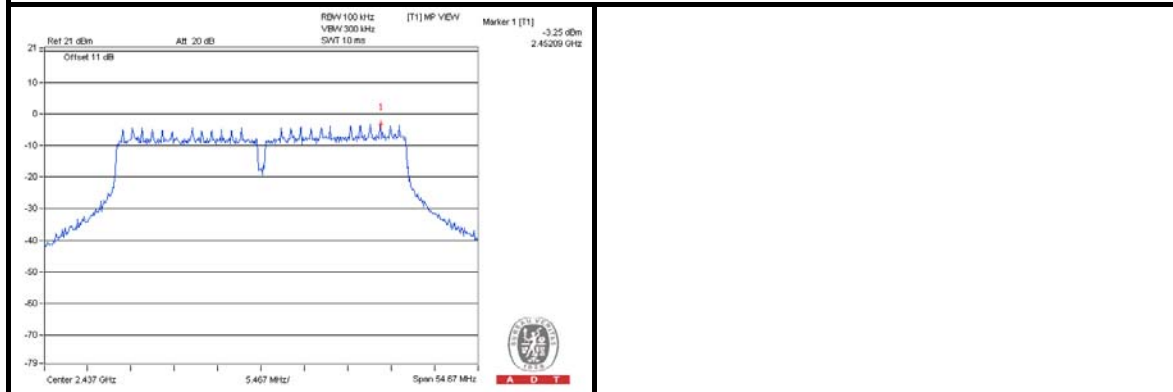
CH 9 Band edge



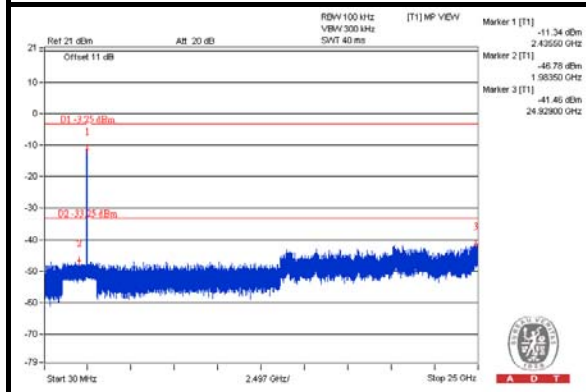


CHAIN 2

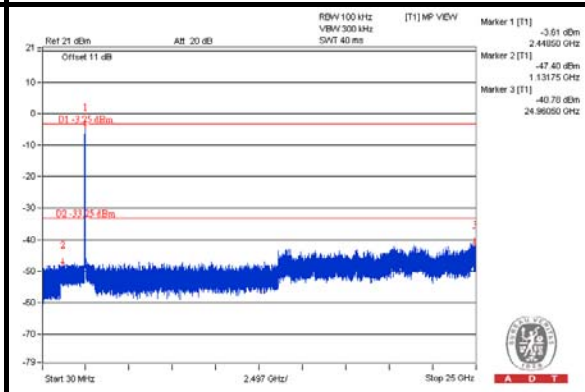
Reference Level



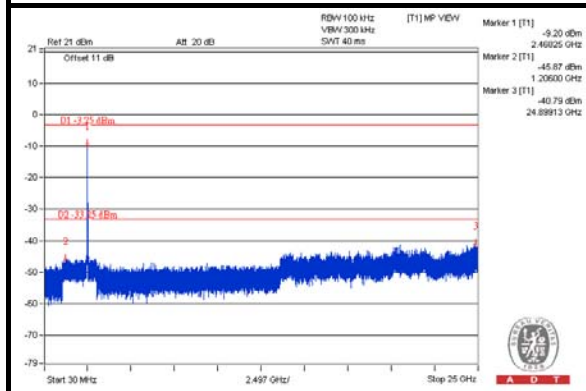
CH 3



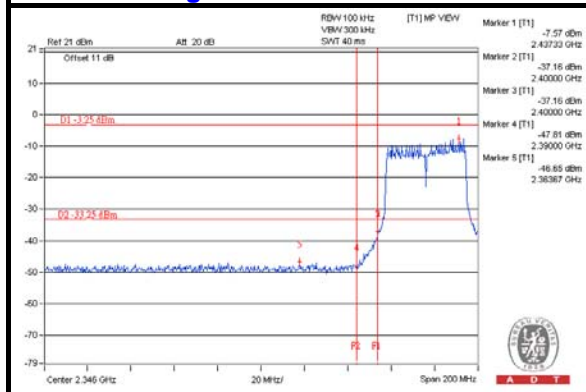
CH 6



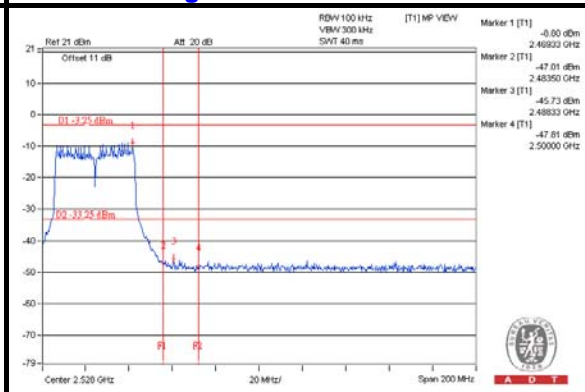
CH 9



CH 3 Band edge



CH 9 Band edge

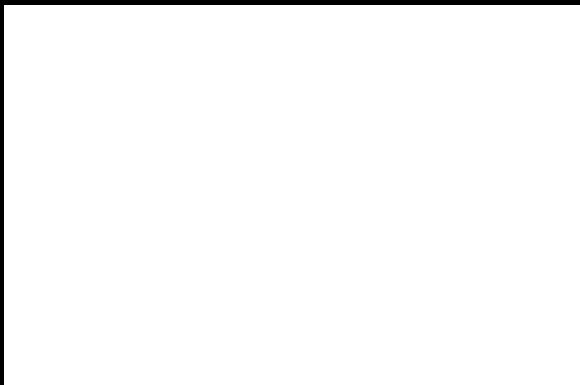
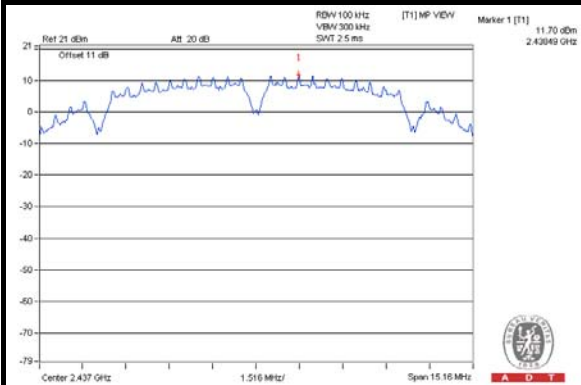




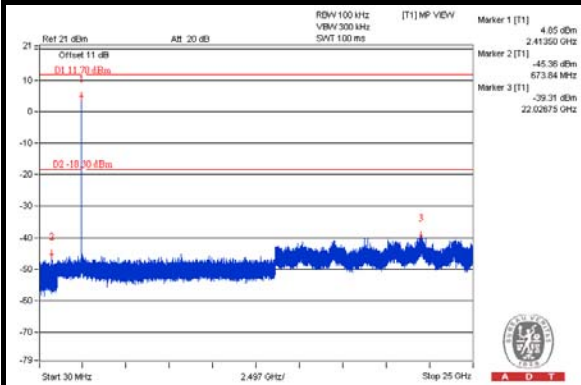
A D T

# TEST MODE C 802.11b / CHAIN 0

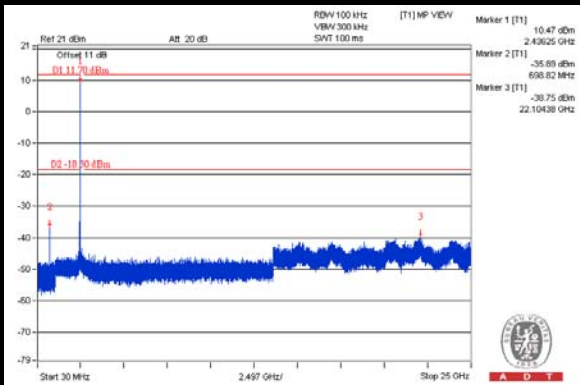
## Reference Level



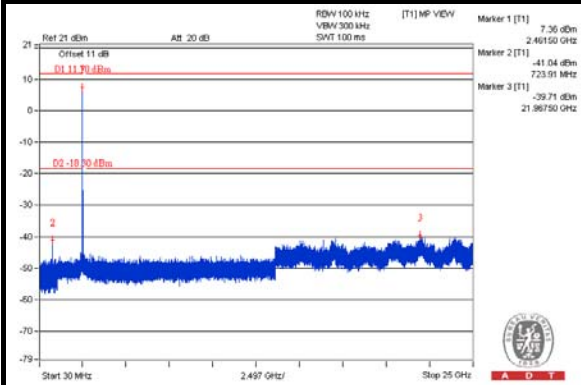
## CH 1



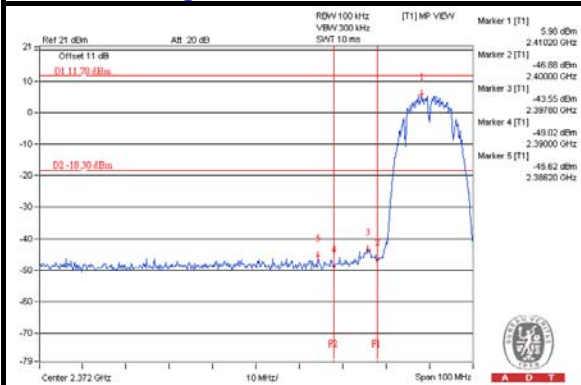
## CH 6



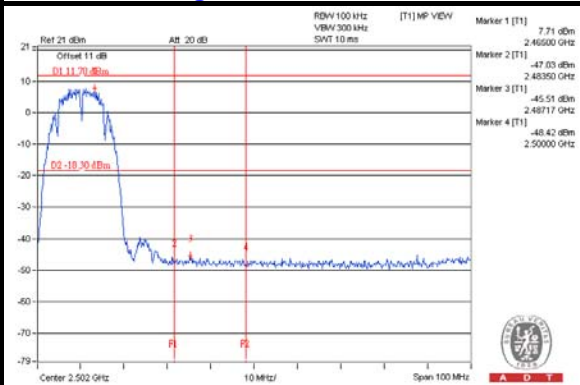
## CH 11



## CH 1 Band edge



## CH 11 Band edge

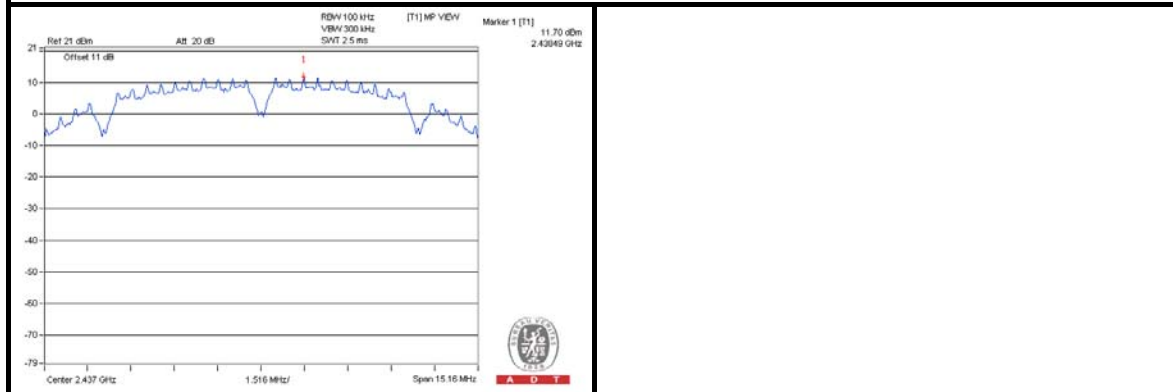




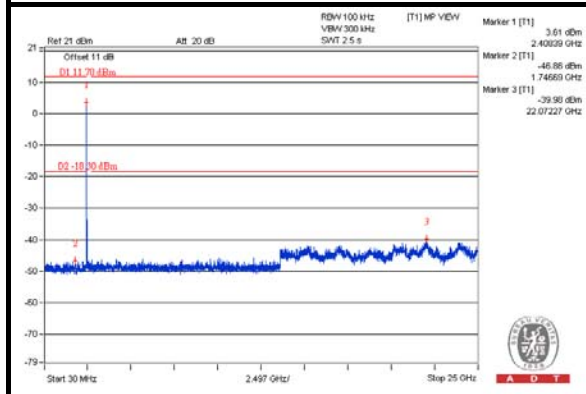
A D T

### CHAIN 1

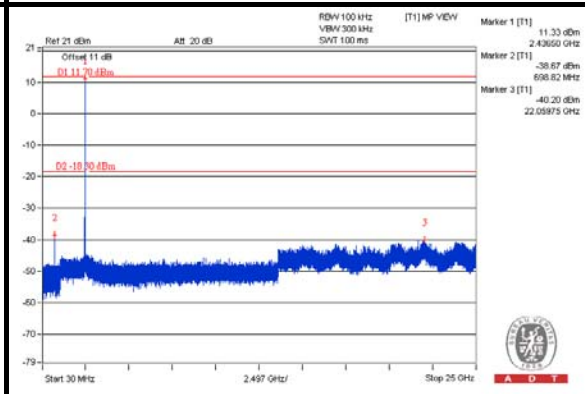
#### Reference Level



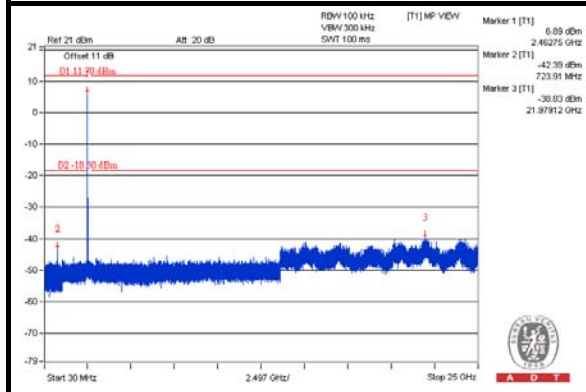
#### CH 1



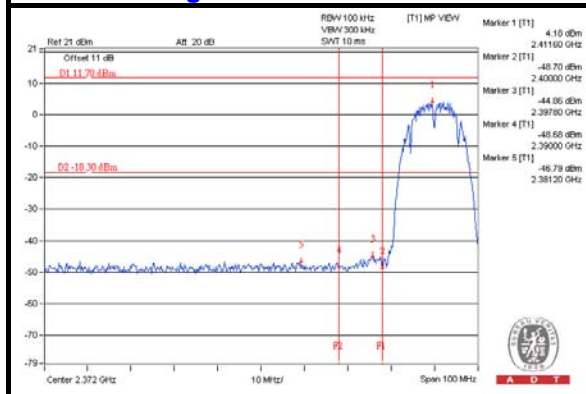
#### CH 6



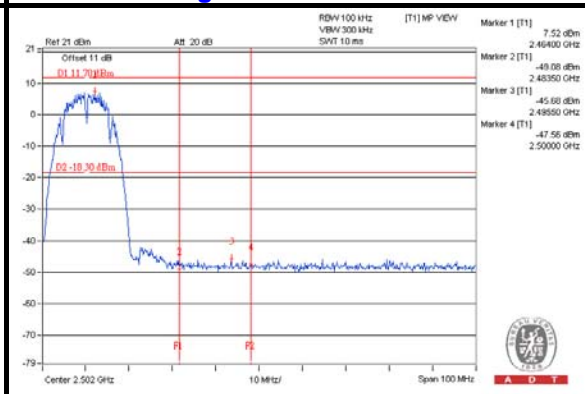
#### CH 11



#### CH 1 Band edge



#### CH 11 Band edge

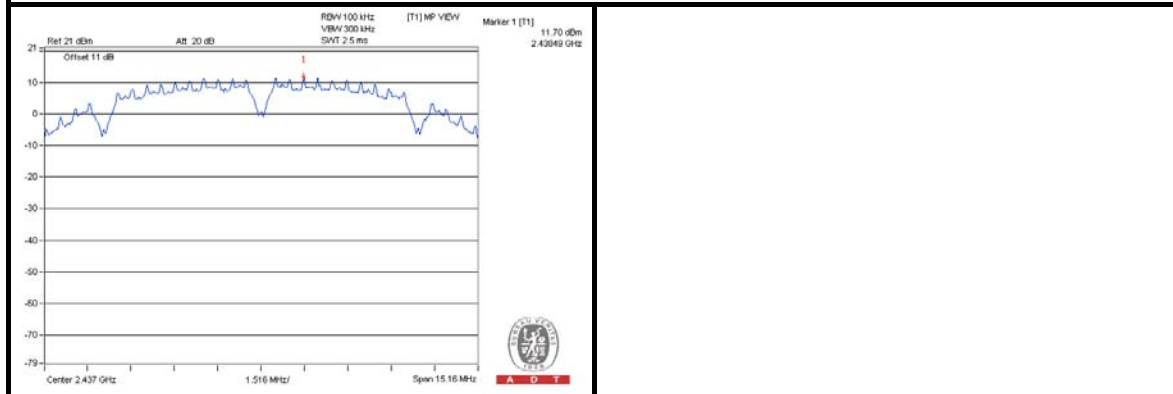




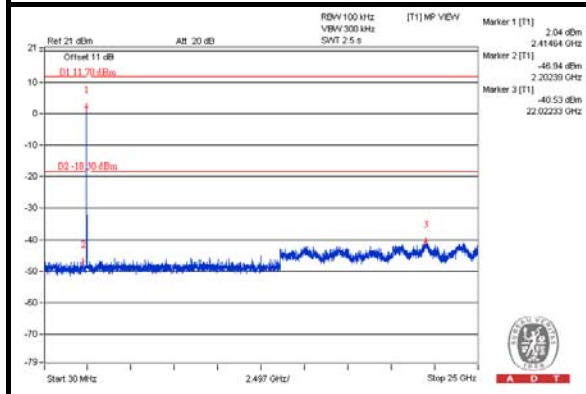
A D T

### CHAIN 2

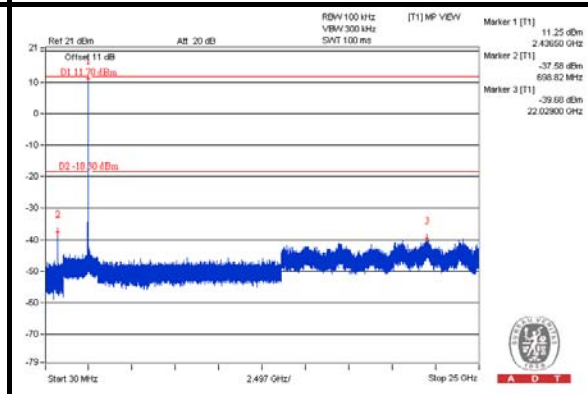
#### Reference Level



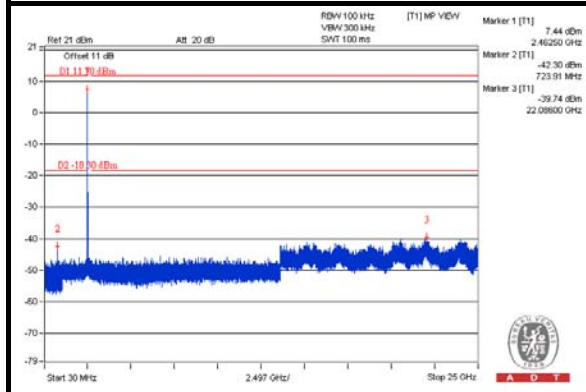
#### CH 1



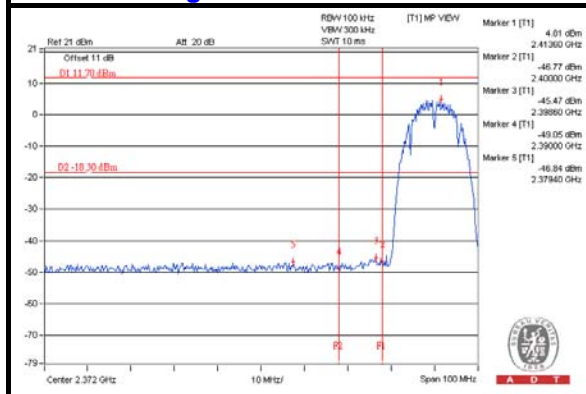
#### CH 6



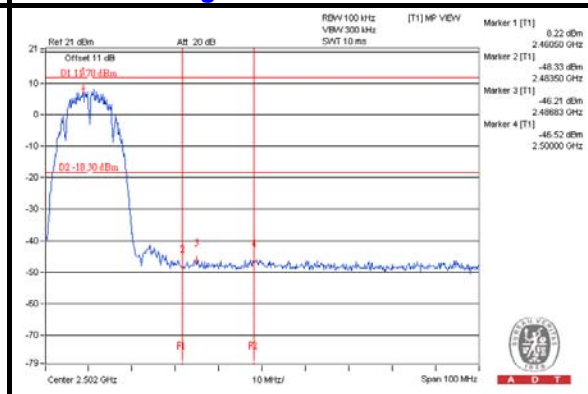
#### CH 11



#### CH 1 Band edge



#### CH 11 Band edge

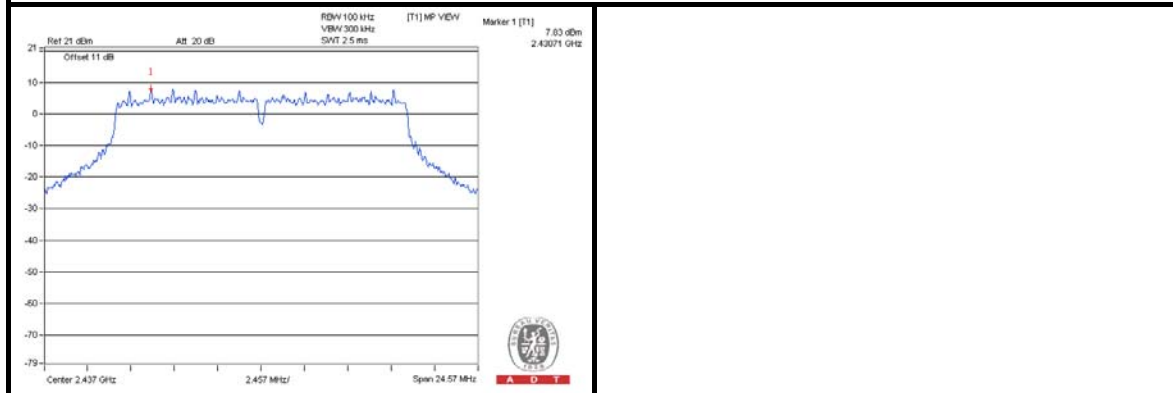




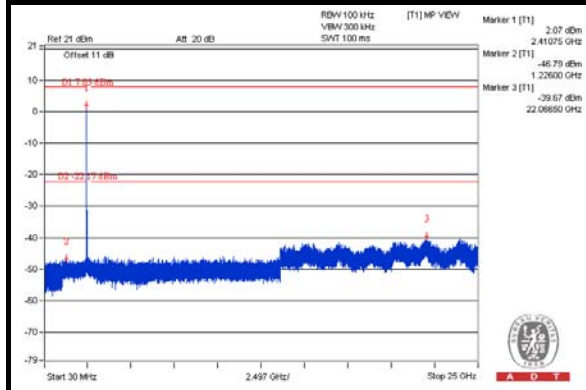
A D T

# 802.11g CHAIN 0

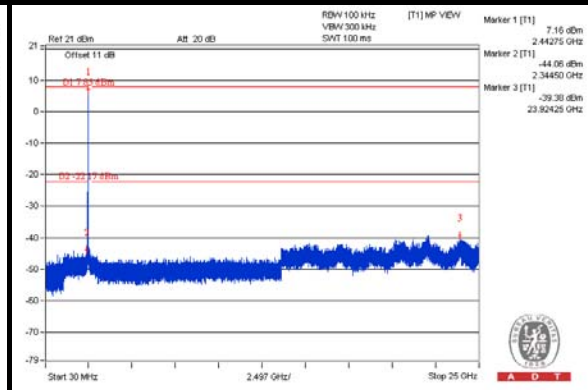
## Reference Level



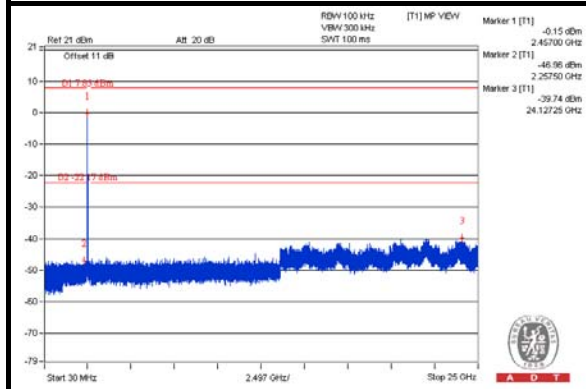
## CH 1



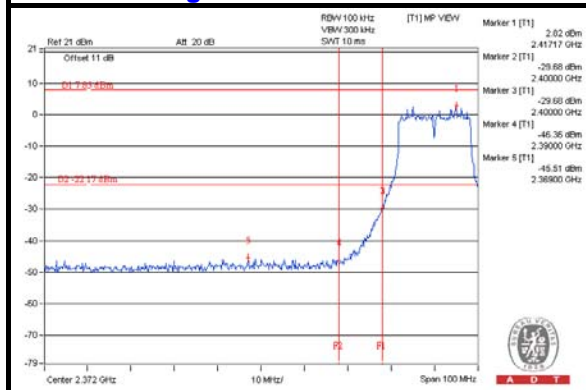
## CH 6



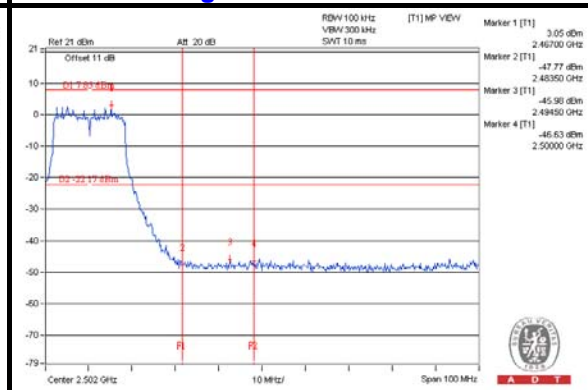
## CH 11



## CH 1 Band edge

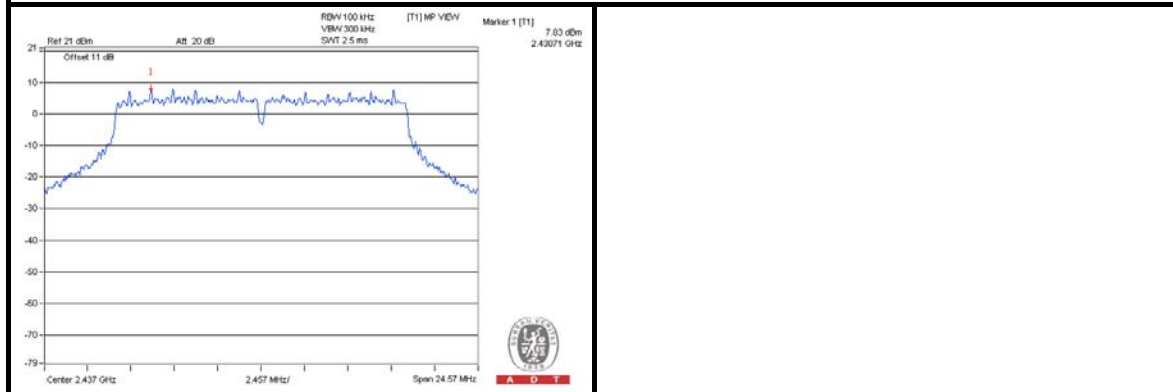


## CH 11 Band edge

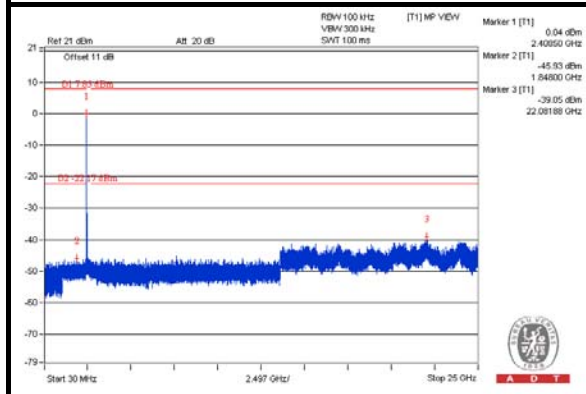


CHAIN 1

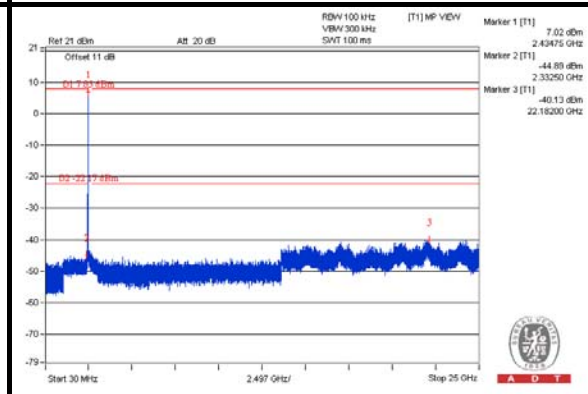
Reference Level



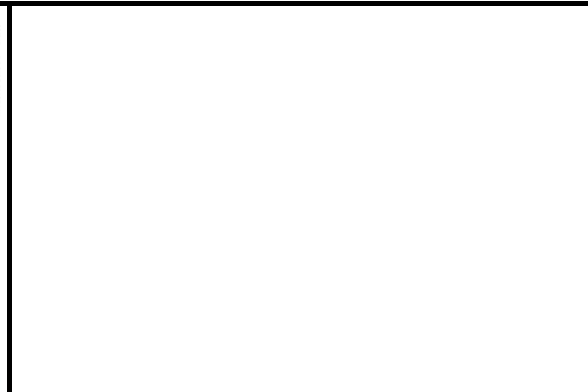
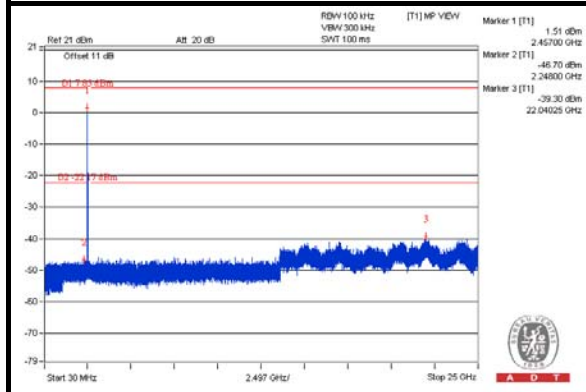
CH 1



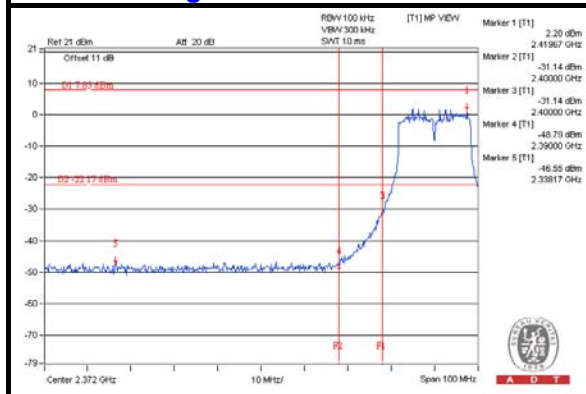
CH 6



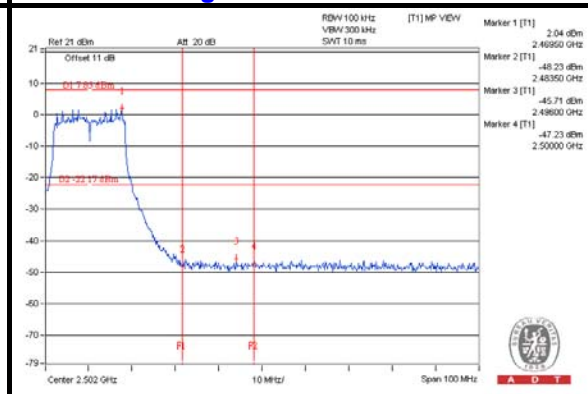
CH 11



CH 1 Band edge

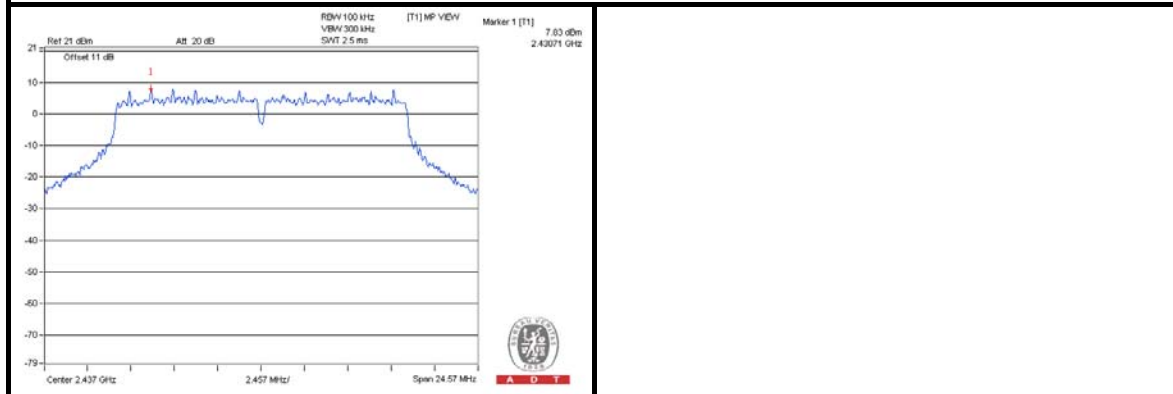


CH 11 Band edge

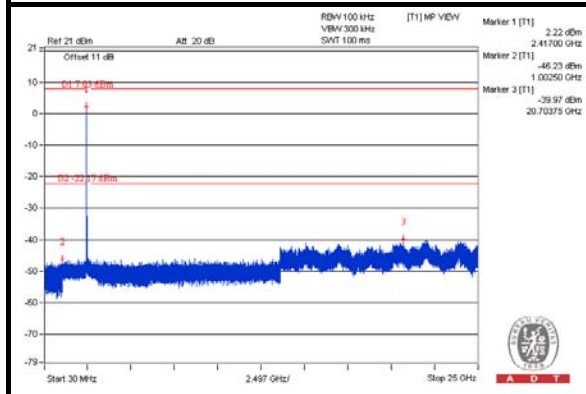


CHAIN 2

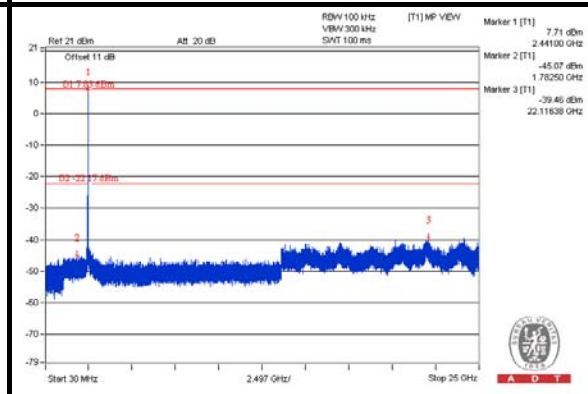
Reference Level



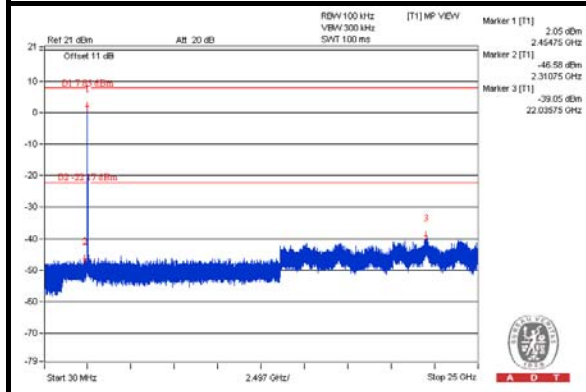
CH 1



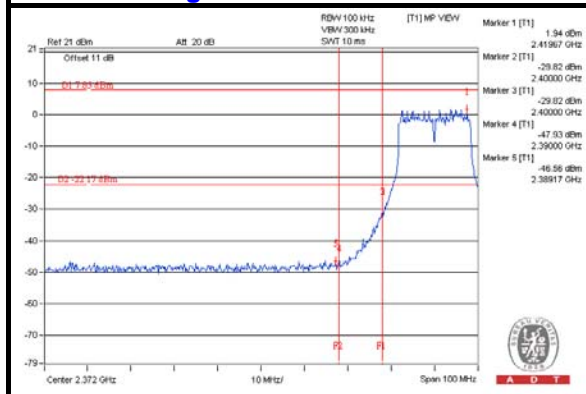
CH 6



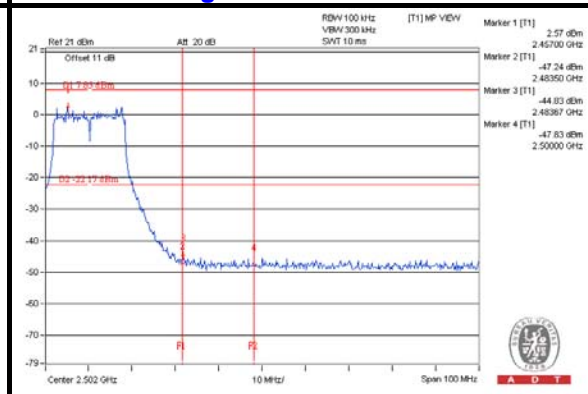
CH 11



CH 1 Band edge



CH 11 Band edge

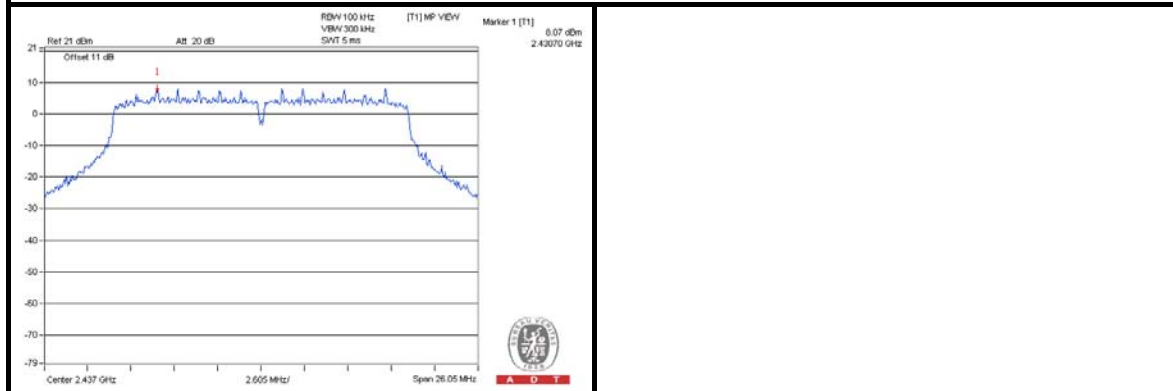




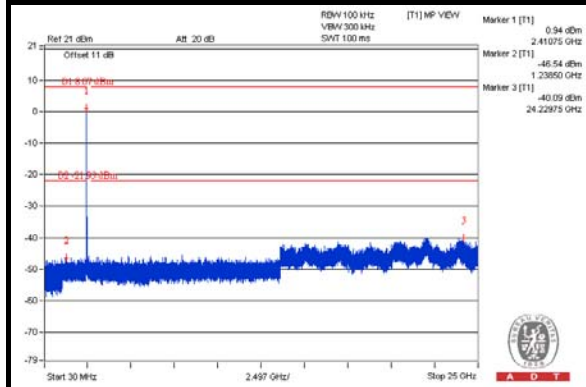
A D T

# 802.11n (20MHz) CHAIN 0

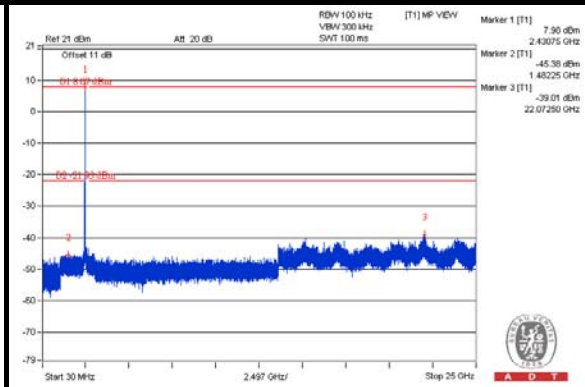
## Reference Level



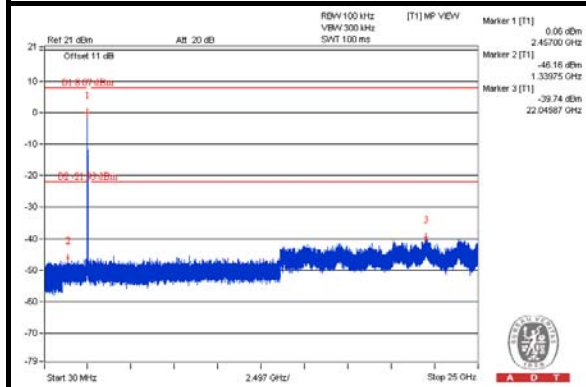
## CH 1



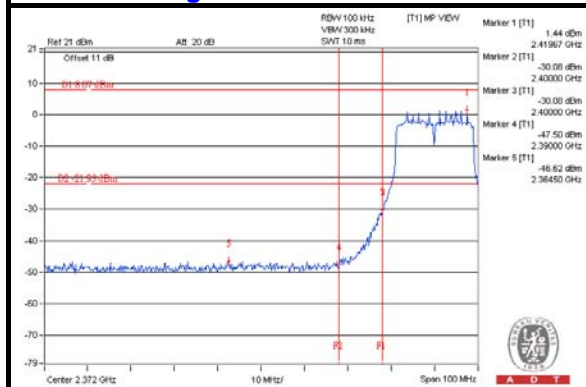
## CH 6



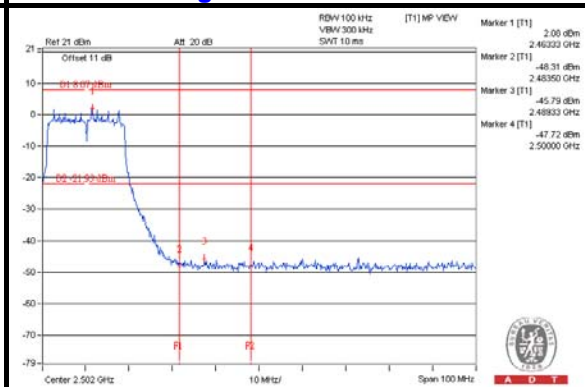
## CH 11



## CH 1 Band edge



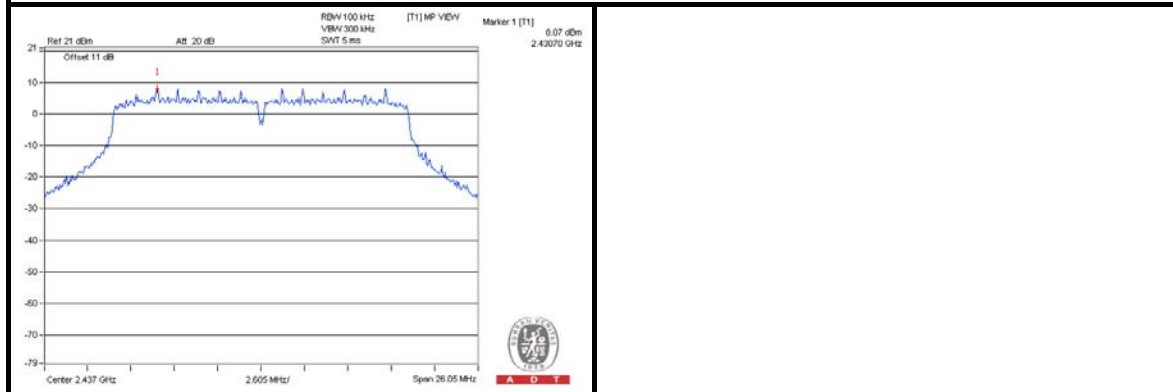
## CH 11 Band edge



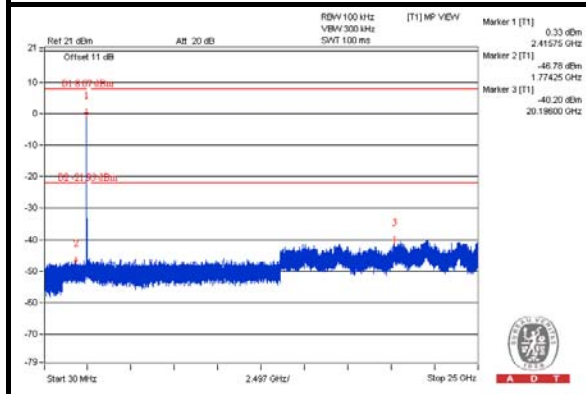


CHAIN 1

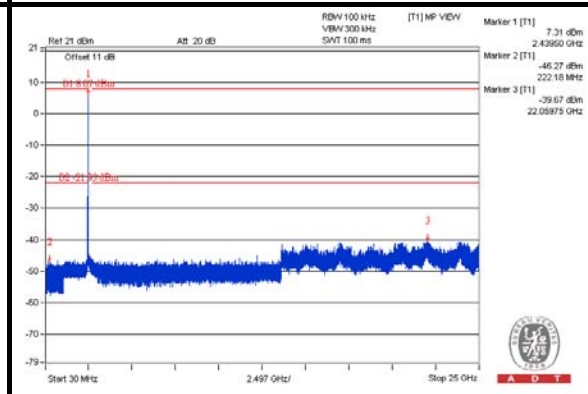
Reference Level



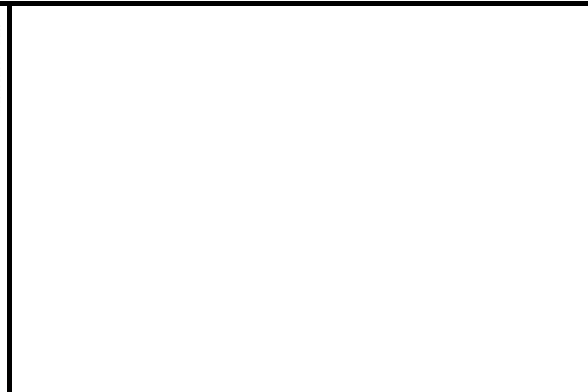
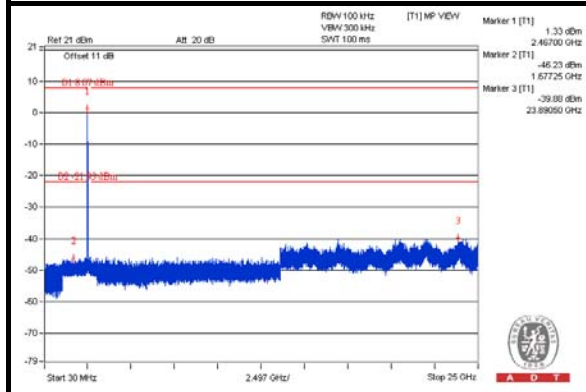
CH 1



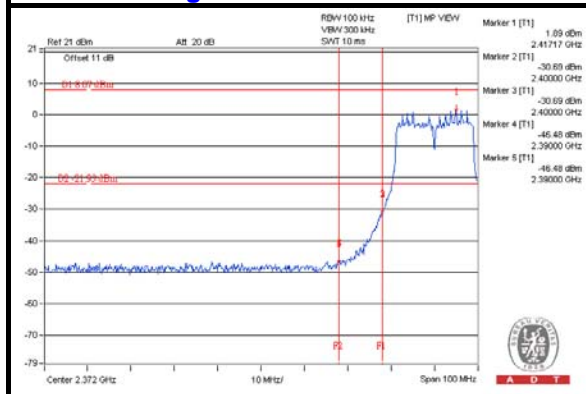
CH 6



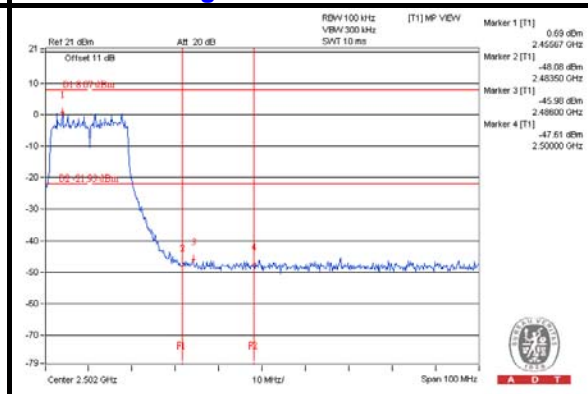
CH 11



CH 1 Band edge

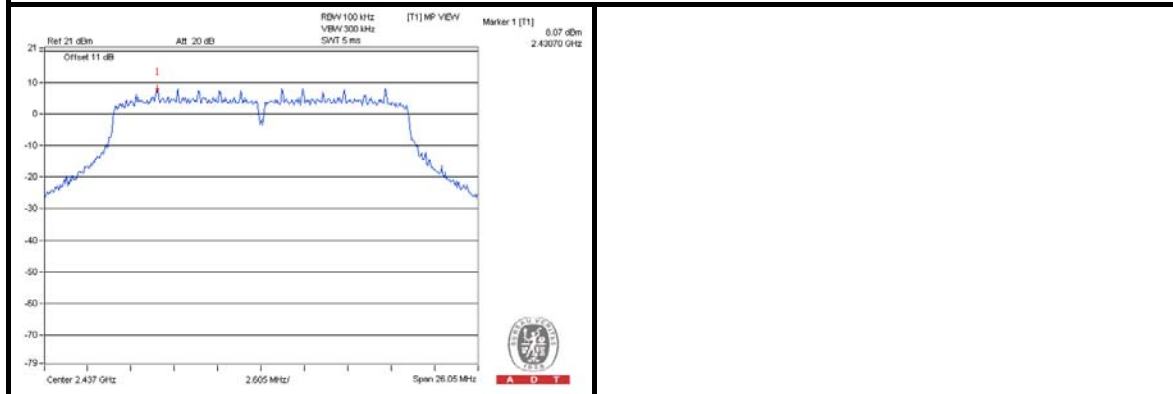


CH 11 Band edge

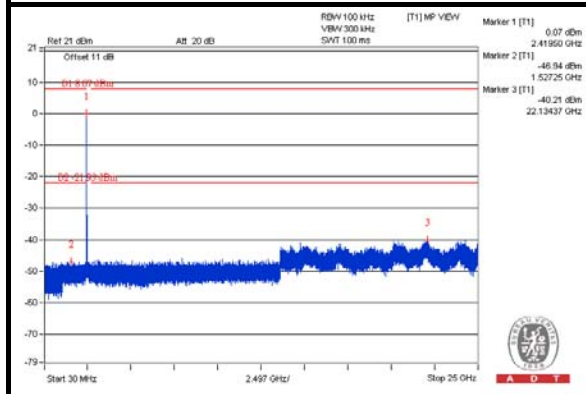


CHAIN 2

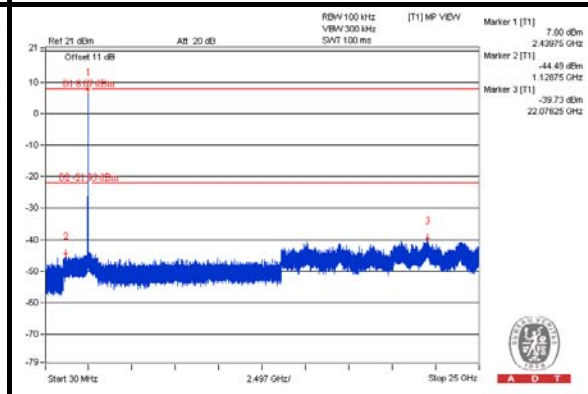
Reference Level



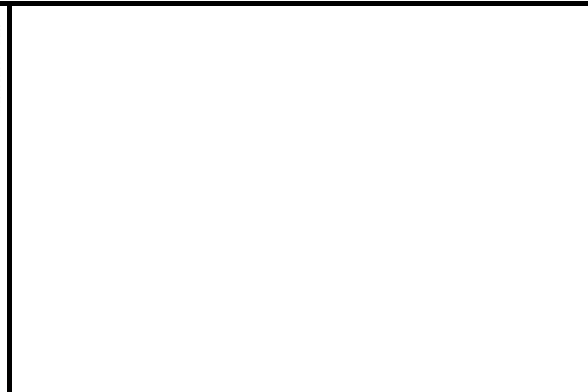
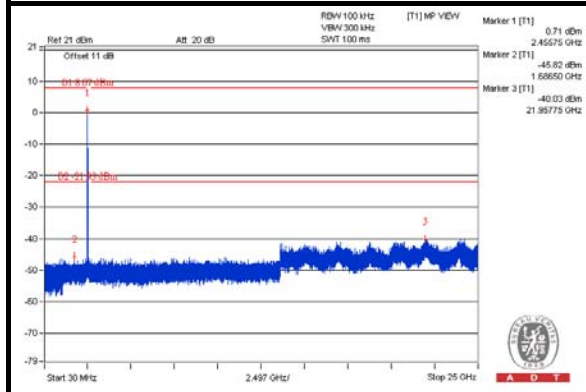
CH 1



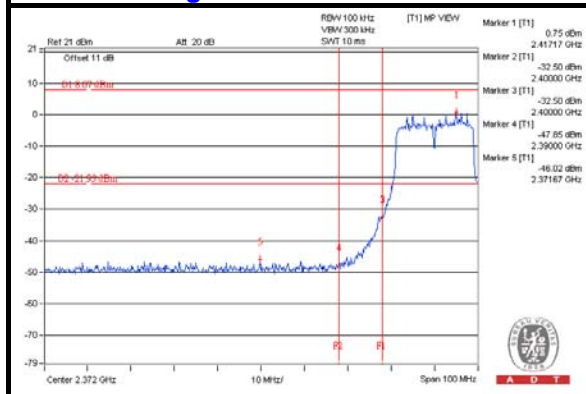
CH 6



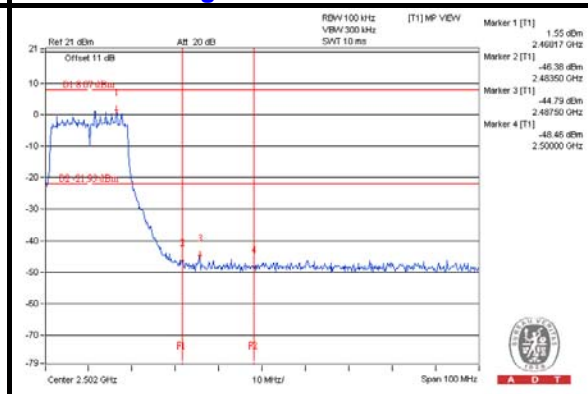
CH 11



CH 1 Band edge

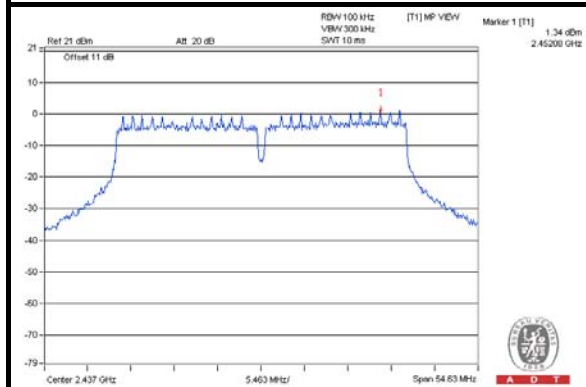


CH 11 Band edge

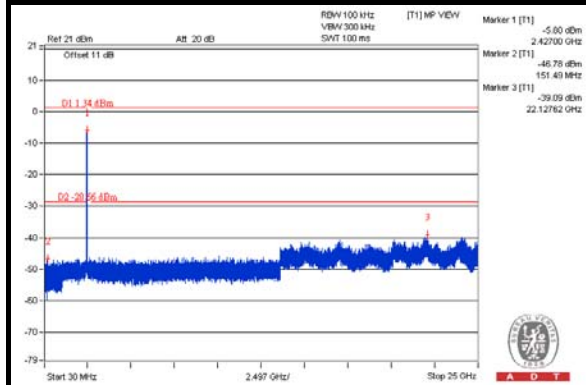


802.11n (40MHz)  
CHAIN 0

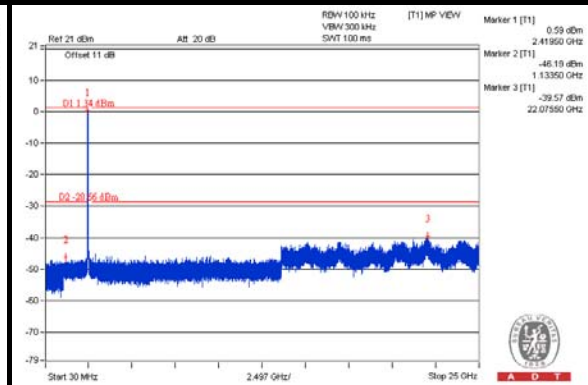
Reference Level



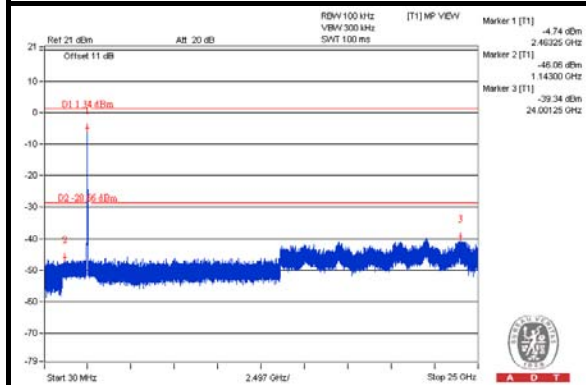
CH 3



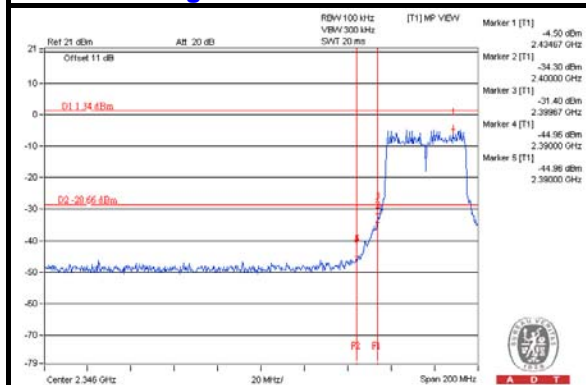
CH 6



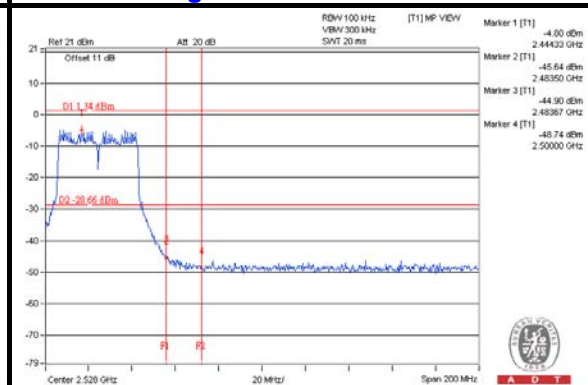
CH 9



CH 3 Band edge

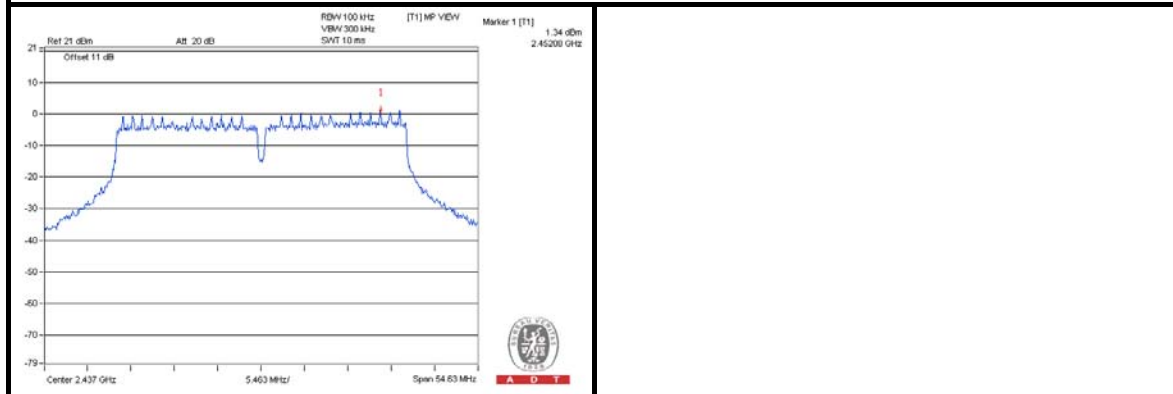


CH 9 Band edge

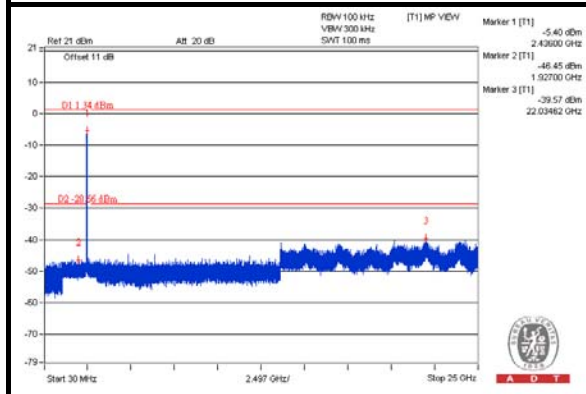


CHAIN 1

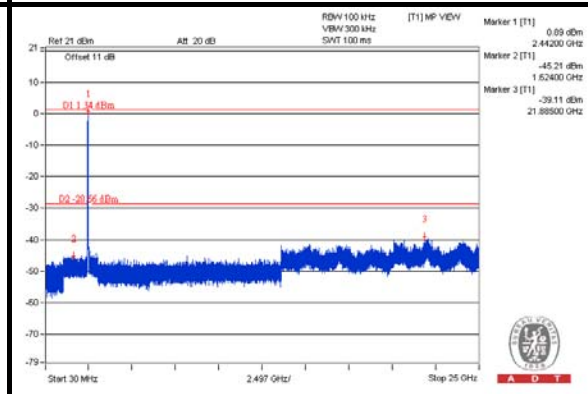
Reference Level



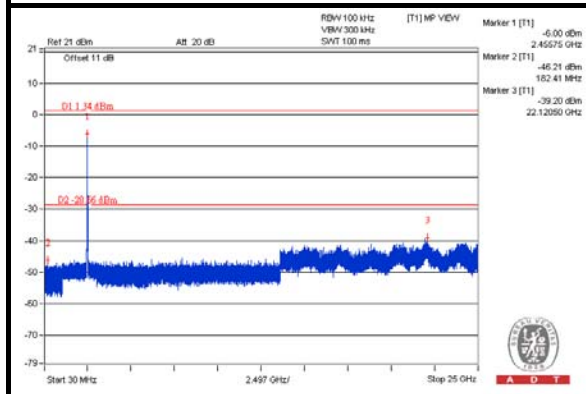
CH 3



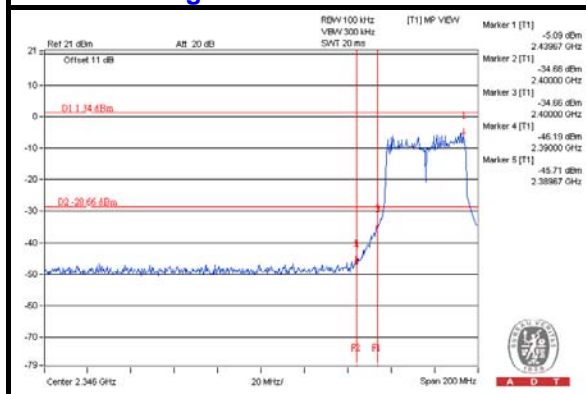
CH 6



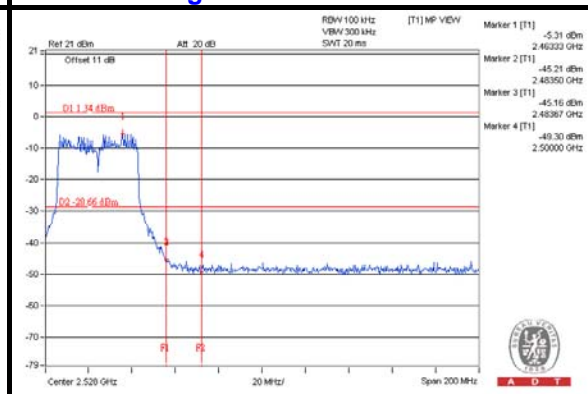
CH 9



CH 3 Band edge

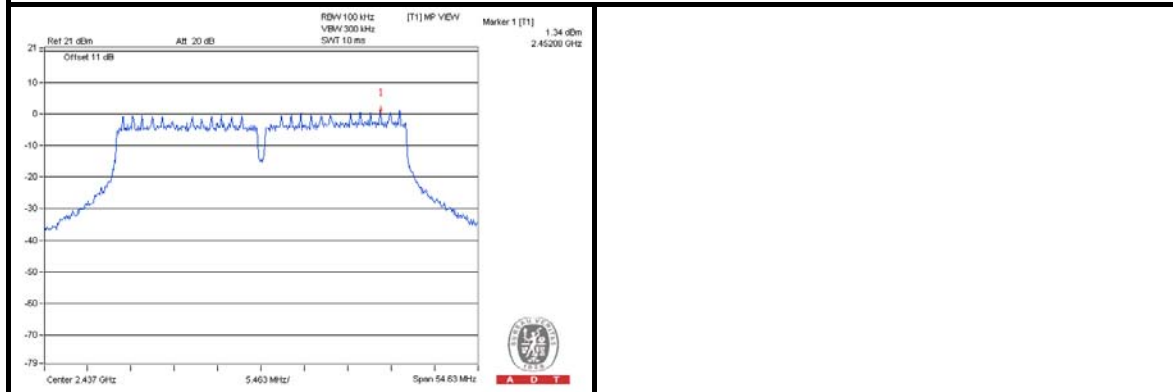


CH 9 Band edge

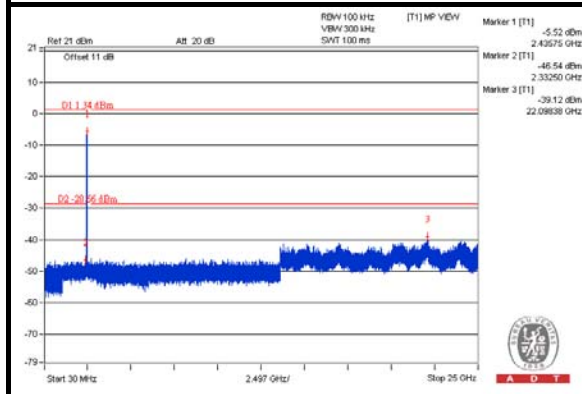


CHAIN 2

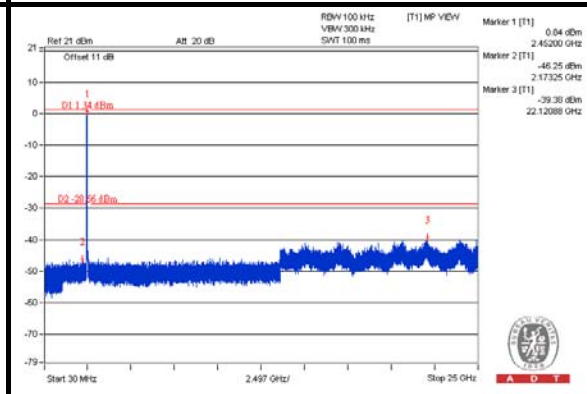
Reference Level



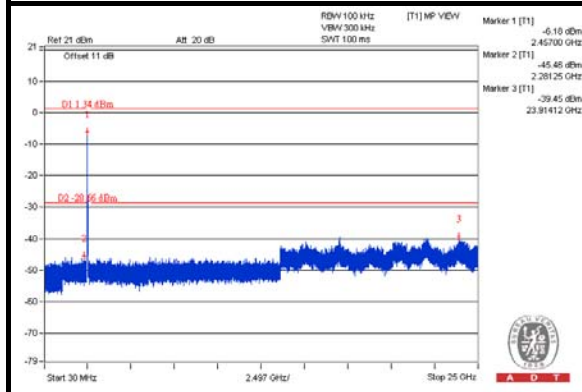
CH 3



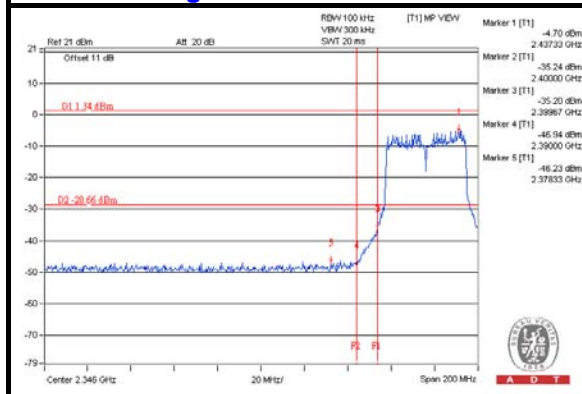
CH 6



CH 9



CH 3 Band edge



CH 9 Band edge

