4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (Peak RBW=VBW=100kHz ; Average RBW=1MHz, VBW=10Hz) are attached on the following pages.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6

4.6.6 TEST RESULTS

The spectrum plots are attached on the following 18 images. D2 line indicates the highest level, and D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(d).

802.11b DSSS modulation

NOTE 1: The band edge emission plot on page 97 shows 52.86dBc between carrier maximum power and local maximum emission in restrict band (2.3886GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 112.63dBuV/m (Peak), so the maximum field strength in restrict band is 112.63-52.86=59.77dBuV/m which is under 74dBuV/m limit..

The band edge emission plot of on page 97 shows 61.88dBc between carrier maximum power and local maximum emission in restrict band (2.3710GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 104.83dBuV/m (Average), so the maximum field strength in restrict band is 104.83-61.88=42.95dBuV/m which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot on page 98 shows 54.70dBc between carrier maximum power and local maximum emission in restrict band (2.4866GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 112.52dBuV/m (Peak), so the maximum field strength in restrict band is 112.52-54.70=57.82dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on page 99 shows 62.15dBc between carrier maximum power and local maximum emission in restrict band (2.5000GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 105.13dBuV/m (Average), so the maximum field strength in restrict band is 105.13-62.15=42.98dBuV/m which is under 54dBuV/m limit.

802.11g OFDM modulation

NOTE 1: The band edge emission plot on page 100 shows 46.58dBc between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 109.84dBuV/m (Peak), so the maximum field strength in restrict band is 109.84-46.58=63.26dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of on page 100 shows 50.13dBc between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 99.93dBuV/m (Average), so the maximum field strength in restrict band is 99.93-50.13=49.80dBuV/m which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot on page 101 shows 46.02dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 109.97dBuV/m (Peak), so the maximum field strength in restrict band is 109.97-46.02=63.95dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on page 102 shows 49.91dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 99.49dBuV/m (Average), so the maximum field strength in restrict band is 99.49-49.91=49.58dBuV/m which is under 54dBuV/m limit.

802.11g Turbo OFDM modulation

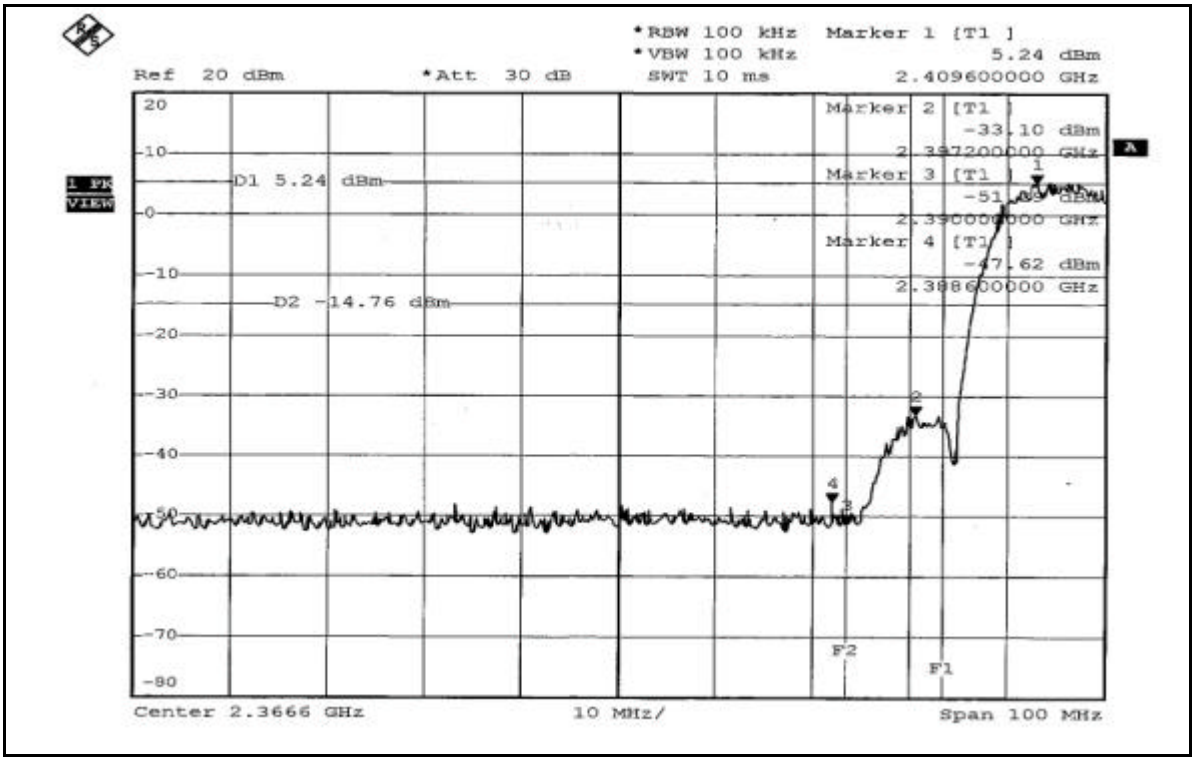
NOTE 1: The band edge emission plot on page 103 shows 48.65dBc between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 6 at the item 4.2.7 is 107.46dBuV/m (Peak), so the maximum field strength in restrict band is 107.46-48.65=58.81dBuV/m which is under 74dBuV/m limit.

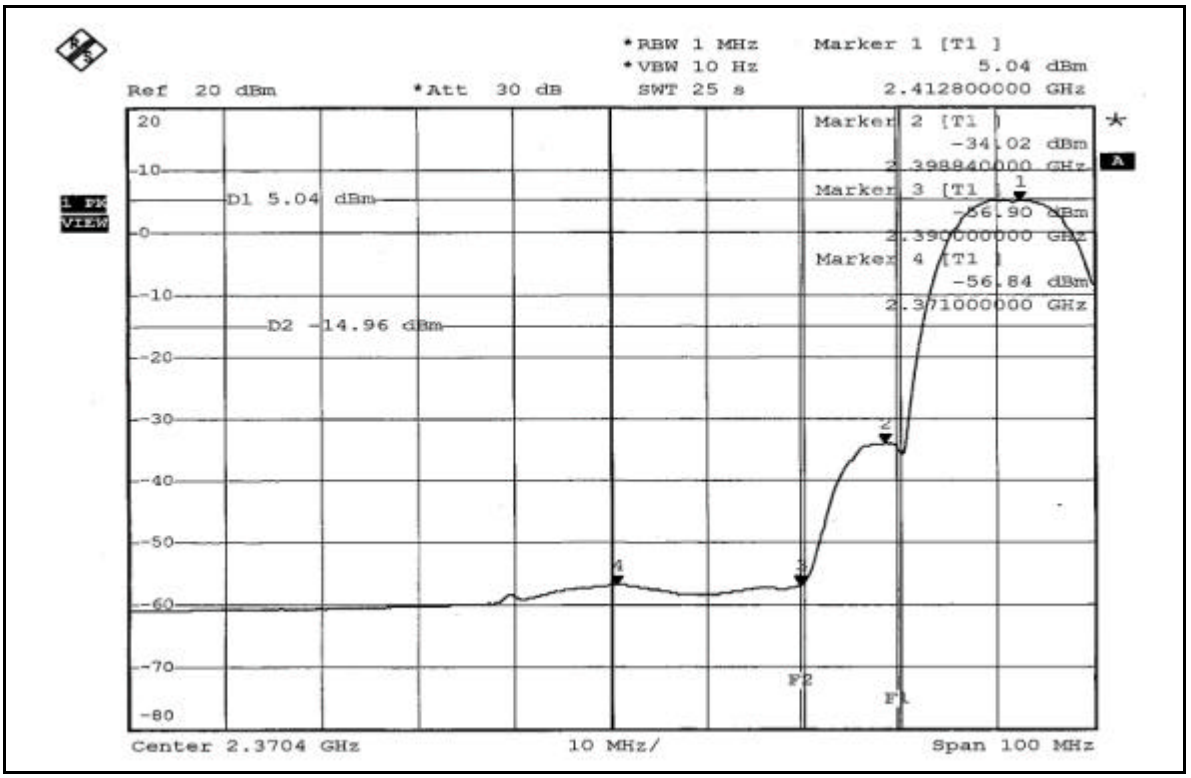
The band edge emission plot of on page 103 shows 47.07dBc between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 6 at the item 4.2.7 is 98.45dBuV/m (Average), so the maximum field strength in restrict band is 98.45-47.07=51.38dBuV/m which is under 54dBuV/m limit.

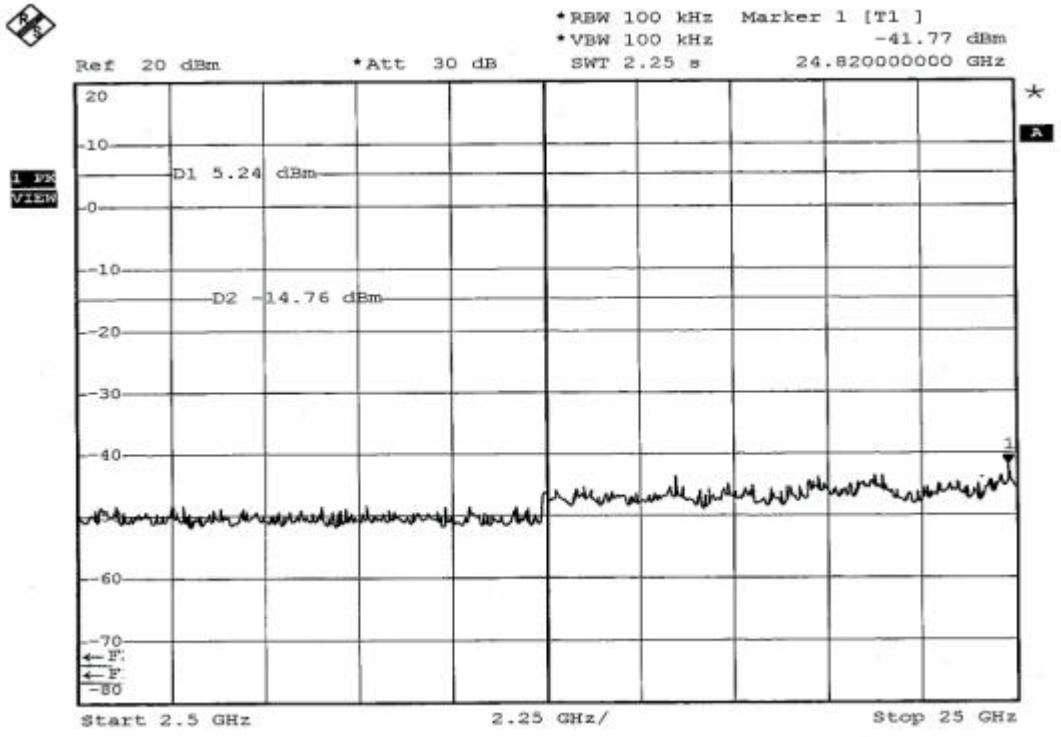
NOTE 2: The band edge emission plot on page 104 shows 48.83dBc between carrier maximum power and local maximum emission in restrict band (2.4838GHz). The emission of carrier strength list in the test result of channel 6 at the item 4.2.7 is 107.46dBuV/m (Peak), so the maximum field strength in restrict band is 107.46-48.83=58.63dBuV/m which is under 74dBuV/m limit.

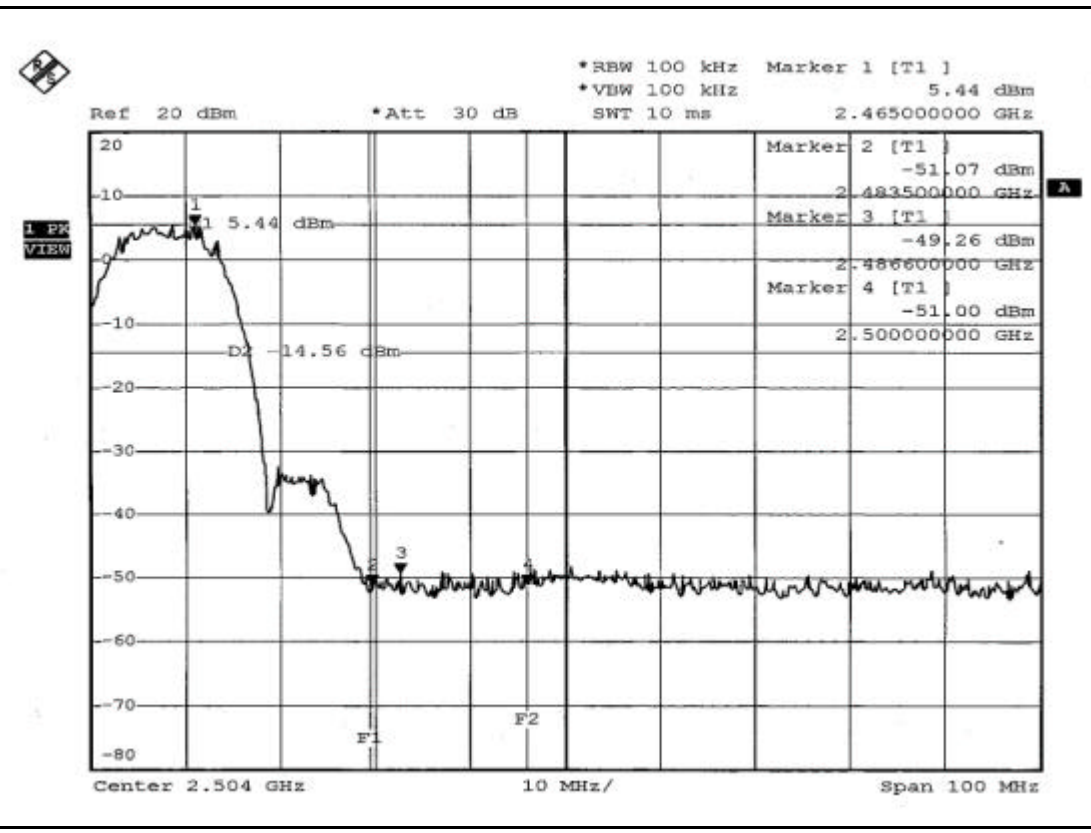
The band edge emission plot on page 105 shows 48.02dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 6 at the item 4.2.7 is 98.45dBuV/m (Average), so the maximum field strength in restrict band is 98.45-48.02=50.43dBuV/m which is under 54dBuV/m limit.

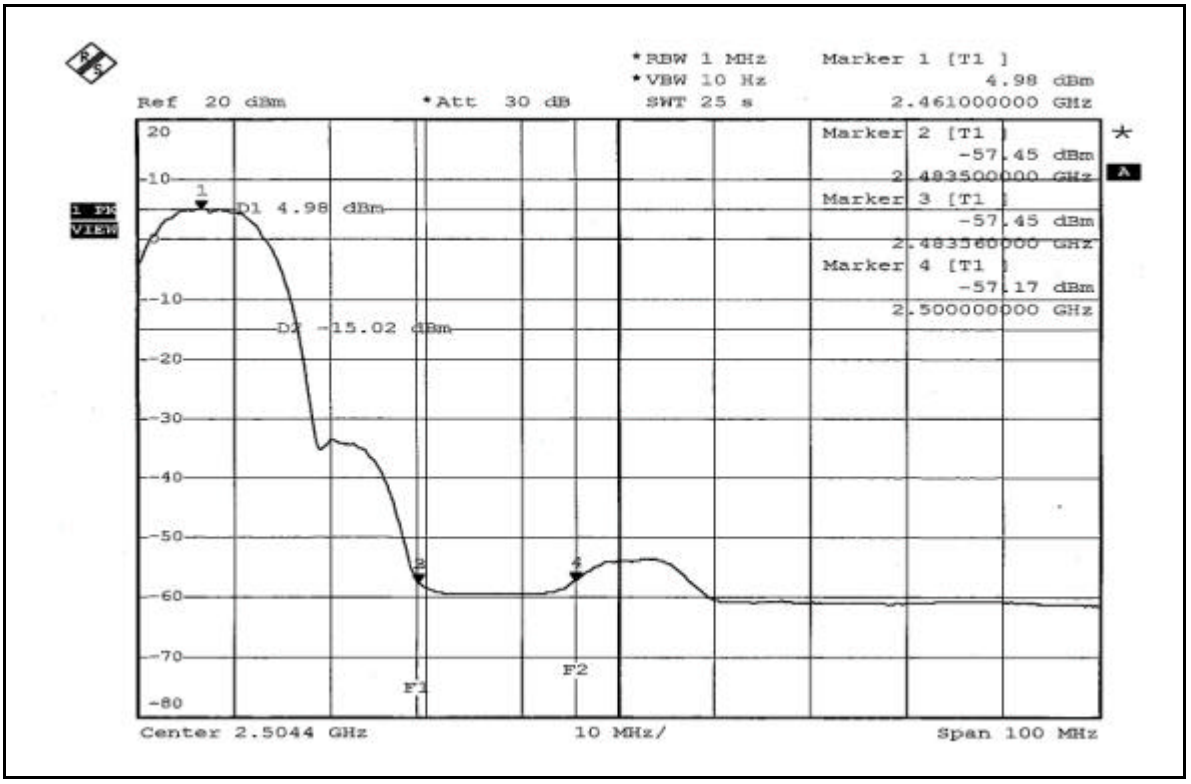
802.11b DSSS modulation

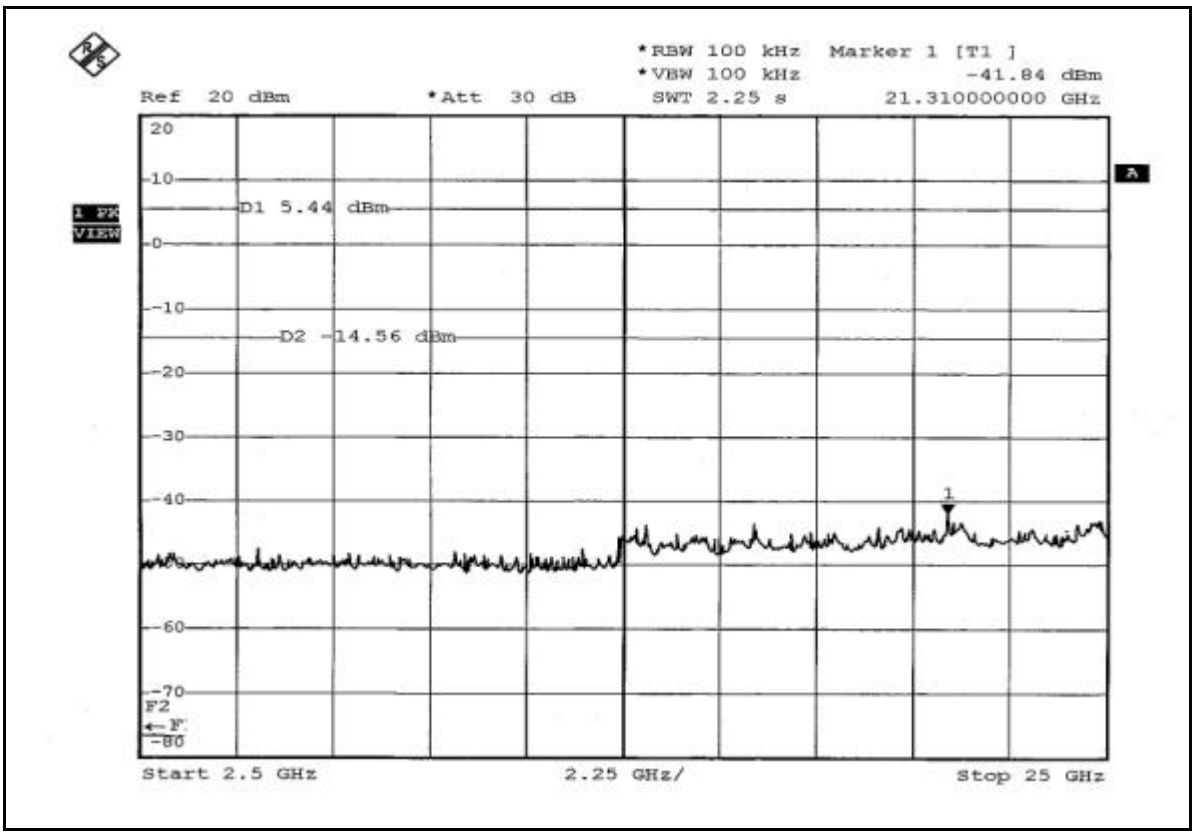




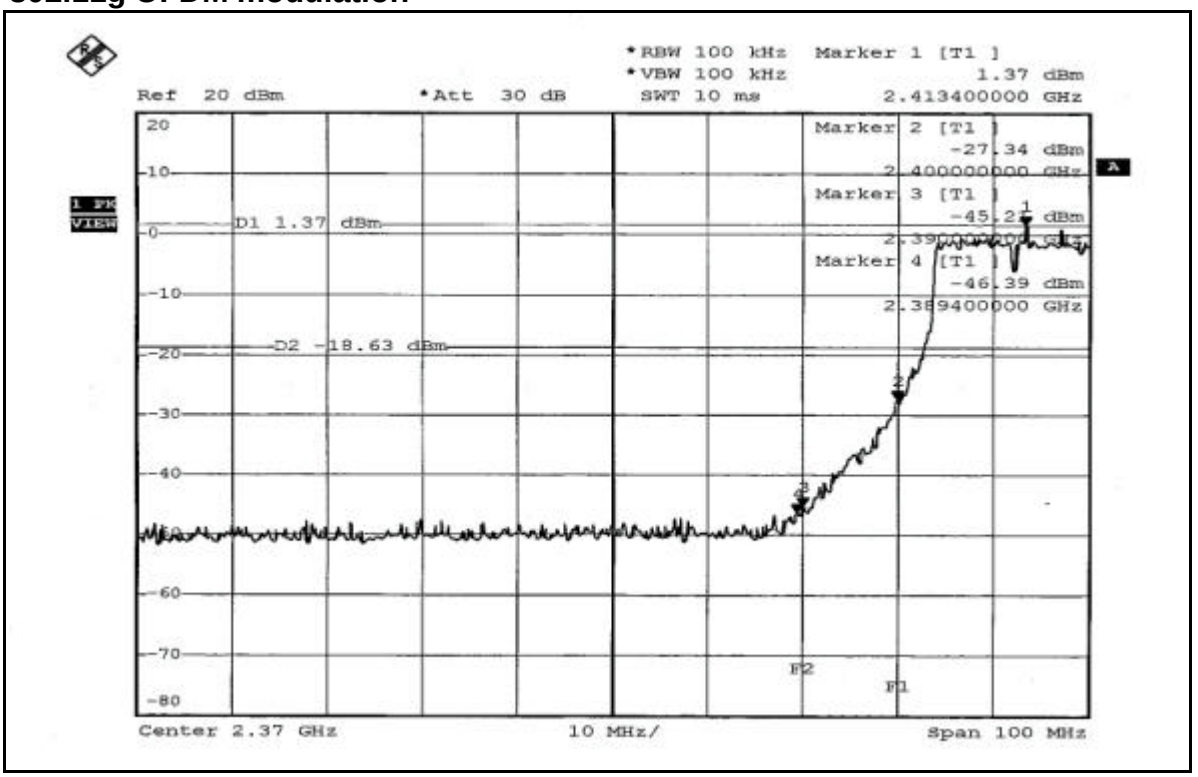

*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1]
-41.77 dBm
24.820000000 GHz
Ref 20 dBm
*Att 30 dB
D1 5.24 dBm
D2 -14.76 dBm
1 PK VIEW
A
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz

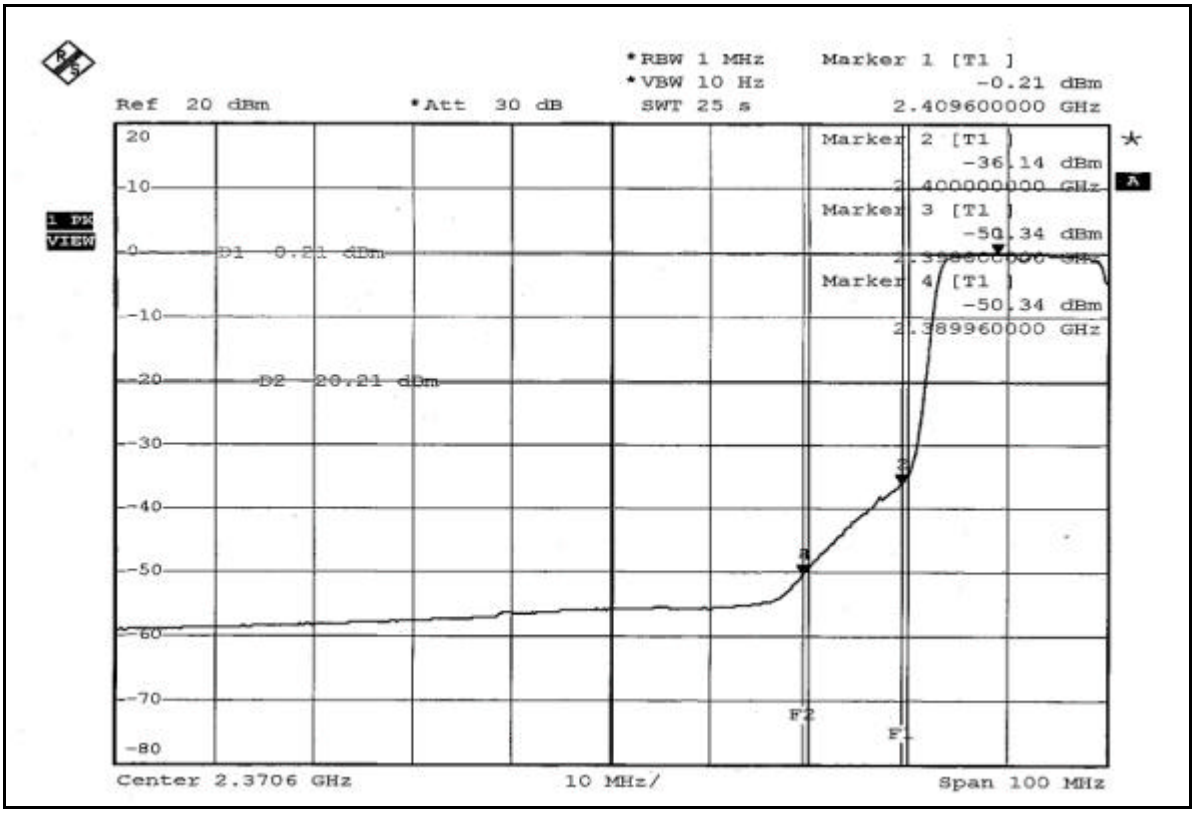

*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Marker 1 [T1]
5.44 dBm
2.465000000 GHz
Ref 20 dBm
*Att 30 dB
D1 5.44 dBm
D2 -14.56 dBm
Marker 2 [T1]
-51.07 dBm
2.483500000 GHz
Marker 3 [T1]
-49.26 dBm
2.486600000 GHz
Marker 4 [T1]
-51.00 dBm
2.500000000 GHz
1 PK VIEW
A
F1
F2
Center 2.504 GHz
10 MHz/
Span 100 MHz

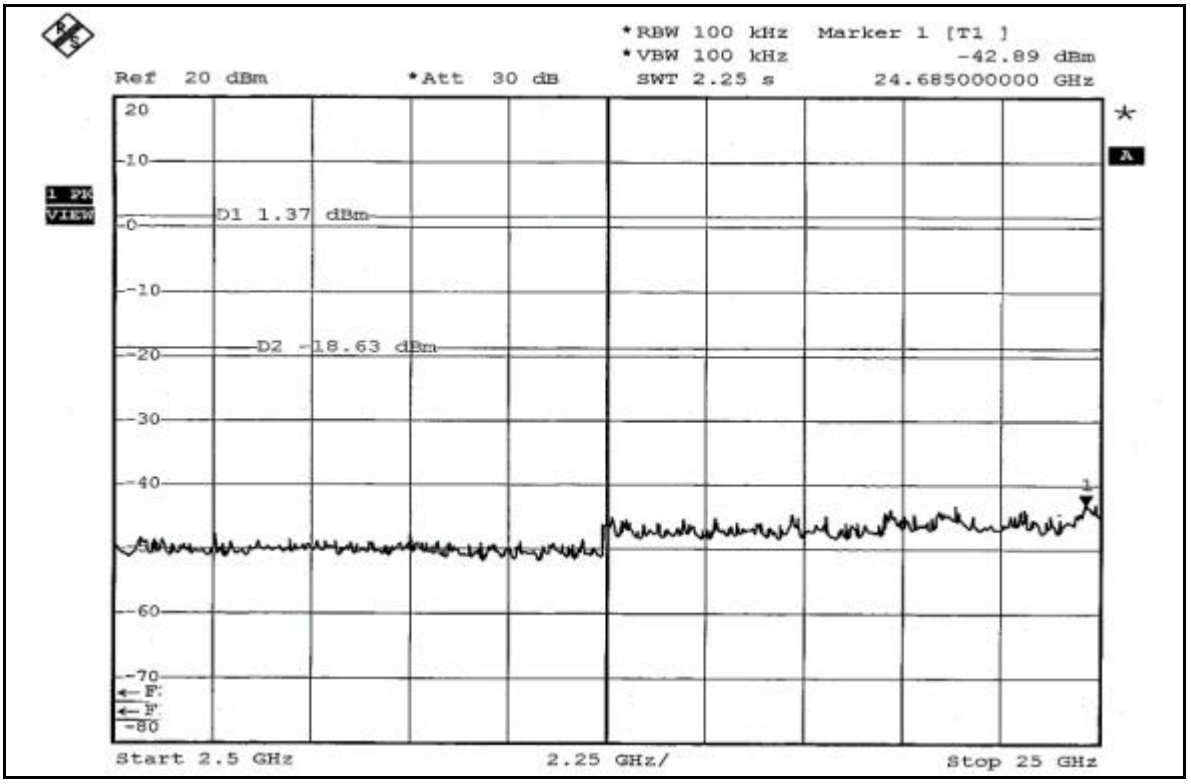

*RBW 1 MHz
*VBW 10 Hz
Ref 20 dBm
*Att 30 dB
SWT 25 s
Marker 1 [T1]
4.98 dBm
2.461000000 GHz
Marker 2 [T1]
-57.45 dBm
2.483500000 GHz
Marker 3 [T1]
-57.45 dBm
2.483560000 GHz
Marker 4 [T1]
-57.17 dBm
2.500000000 GHz
1 PK VIEW
D1 4.98 dBm
D2 -15.02 dBm
F1
F2
Center 2.5044 GHz
10 MHz/
Span 100 MHz

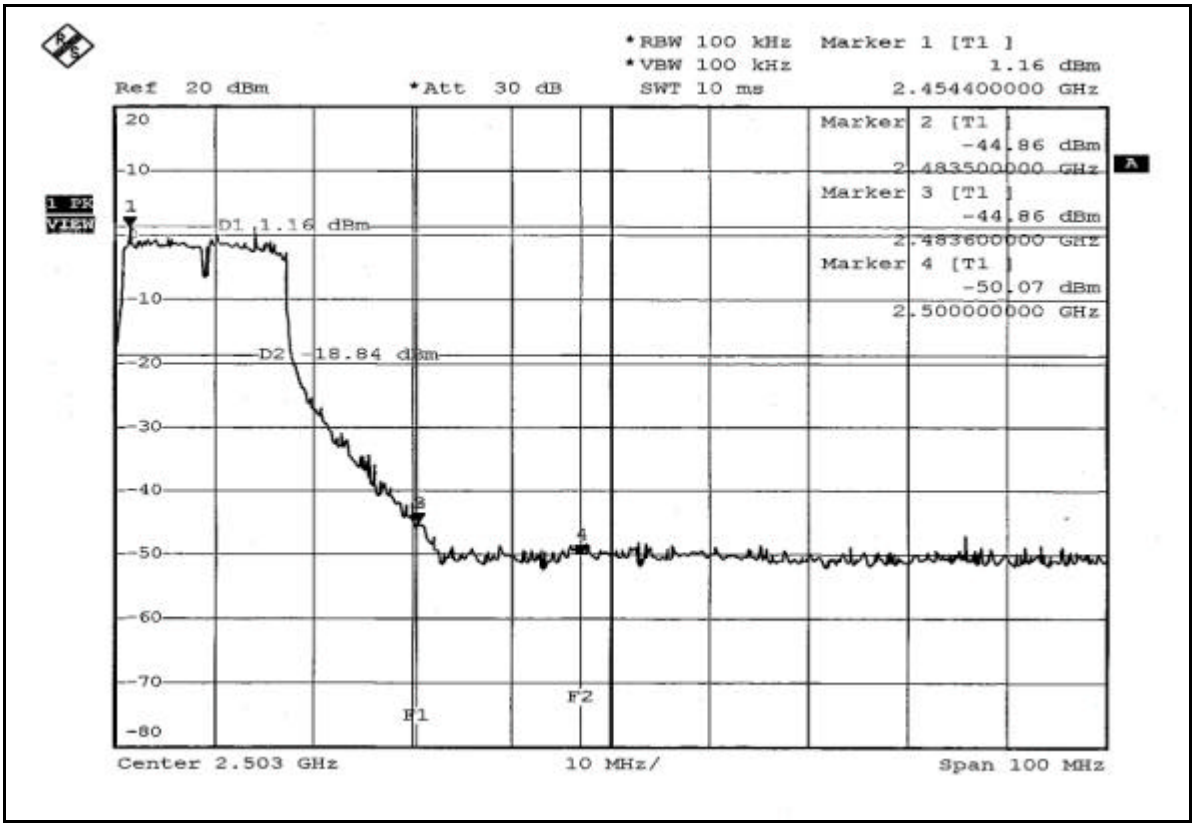

*RBW 100 kHz
*VBW 100 kHz
Ref 20 dBm
*Att 30 dB
SWT 2.25 s
Marker 1 [T1]
-41.84 dBm
21.310000000 GHz
1 PK VIEW
D1 5.44 dBm
D2 -14.56 dBm
F2
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz

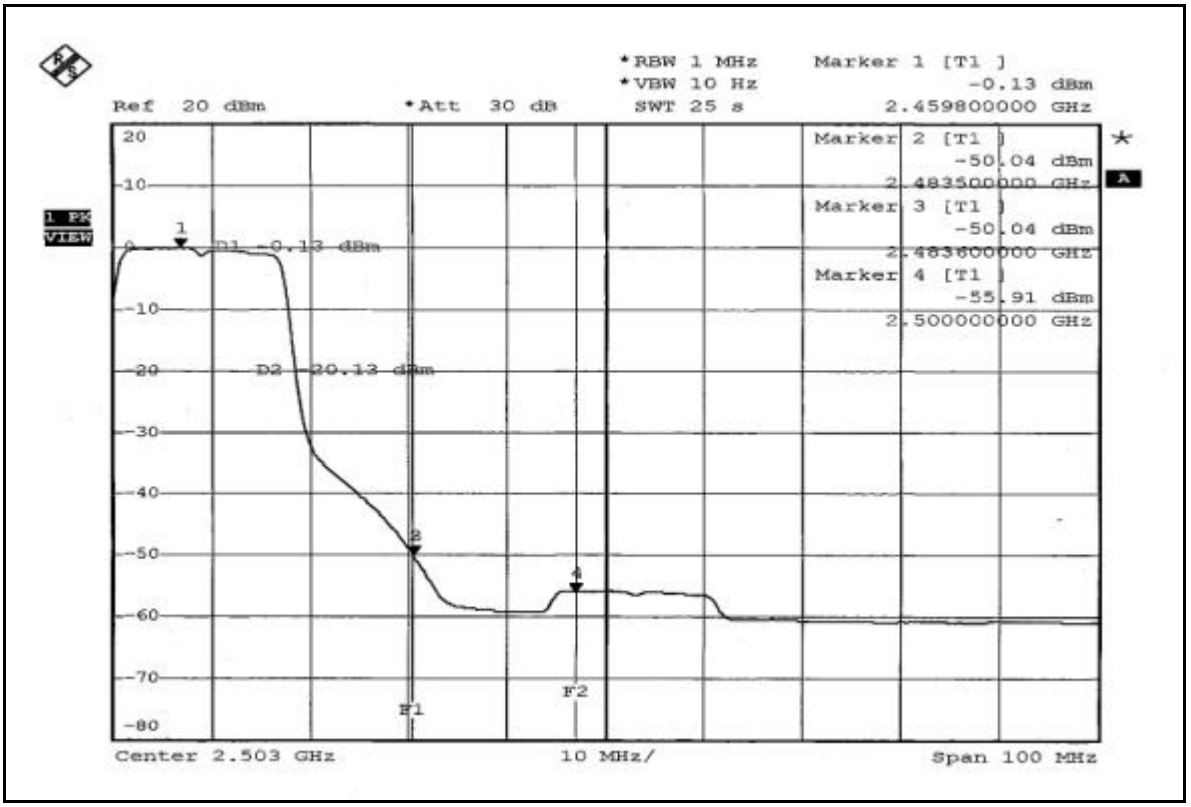
802.11g OFDM modulation

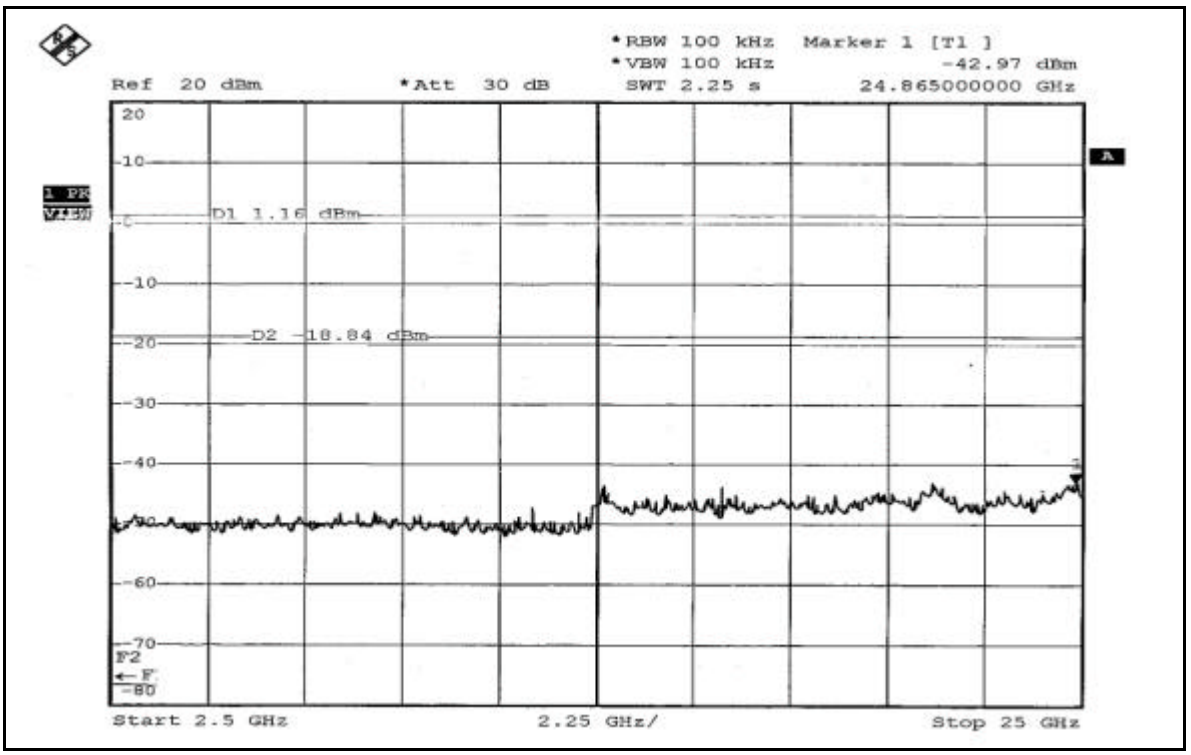




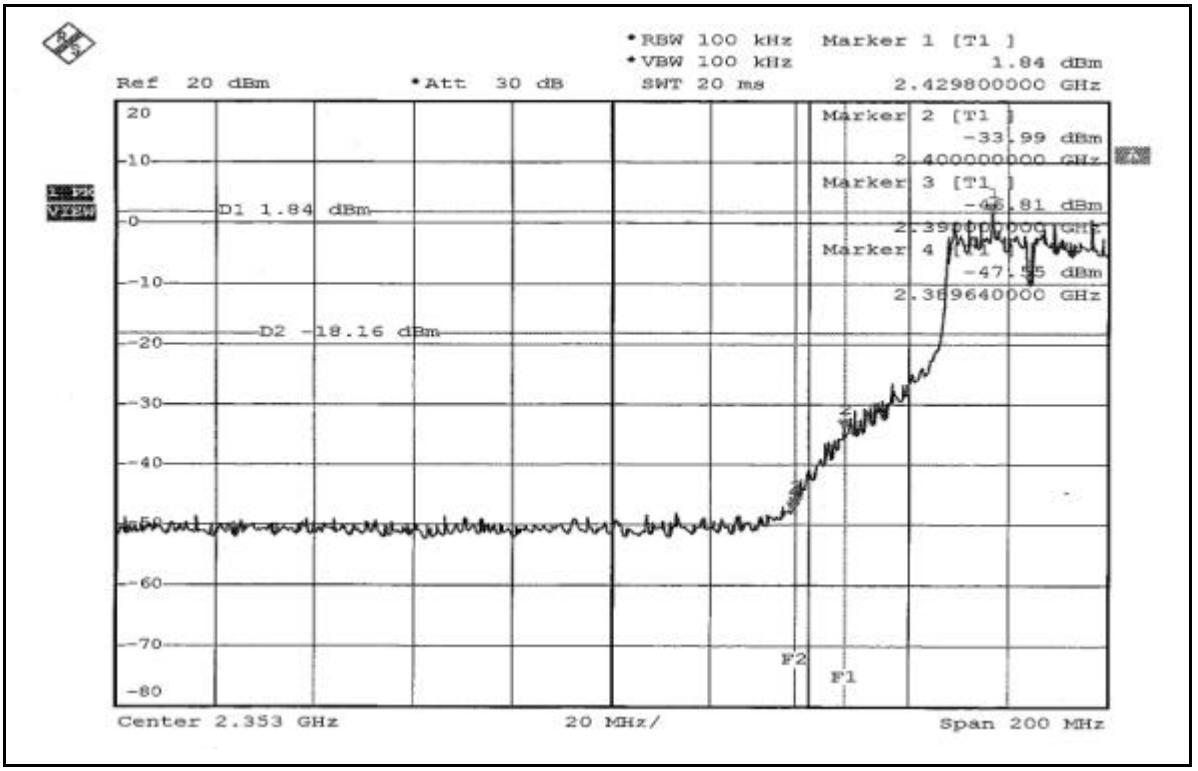

*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1]
-42.89 dBm
24.685000000 GHz
Ref 20 dBm
*Att 30 dB
1 PK VIEW
D1 1.37 dBm
D2 -18.63 dBm
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz

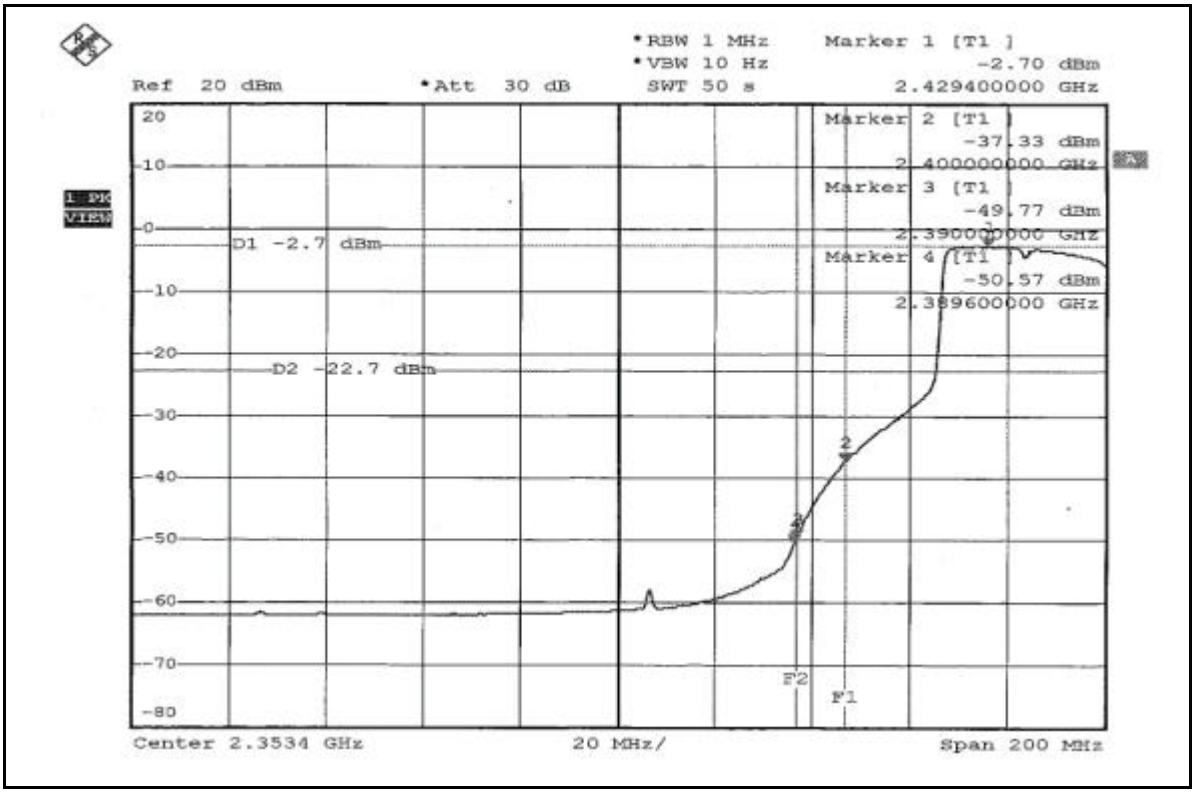

*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Marker 1 [T1]
1.16 dBm
2.454400000 GHz
Ref 20 dBm
*Att 30 dB
1 PK VIEW
D1 1.16 dBm
D2 -18.84 dBm
Marker 2 [T1]
-44.86 dBm
2.483500000 GHz
Marker 3 [T1]
-44.86 dBm
2.483600000 GHz
Marker 4 [T1]
-50.07 dBm
2.500000000 GHz
F1
F2
Center 2.503 GHz
10 MHz/
Span 100 MHz

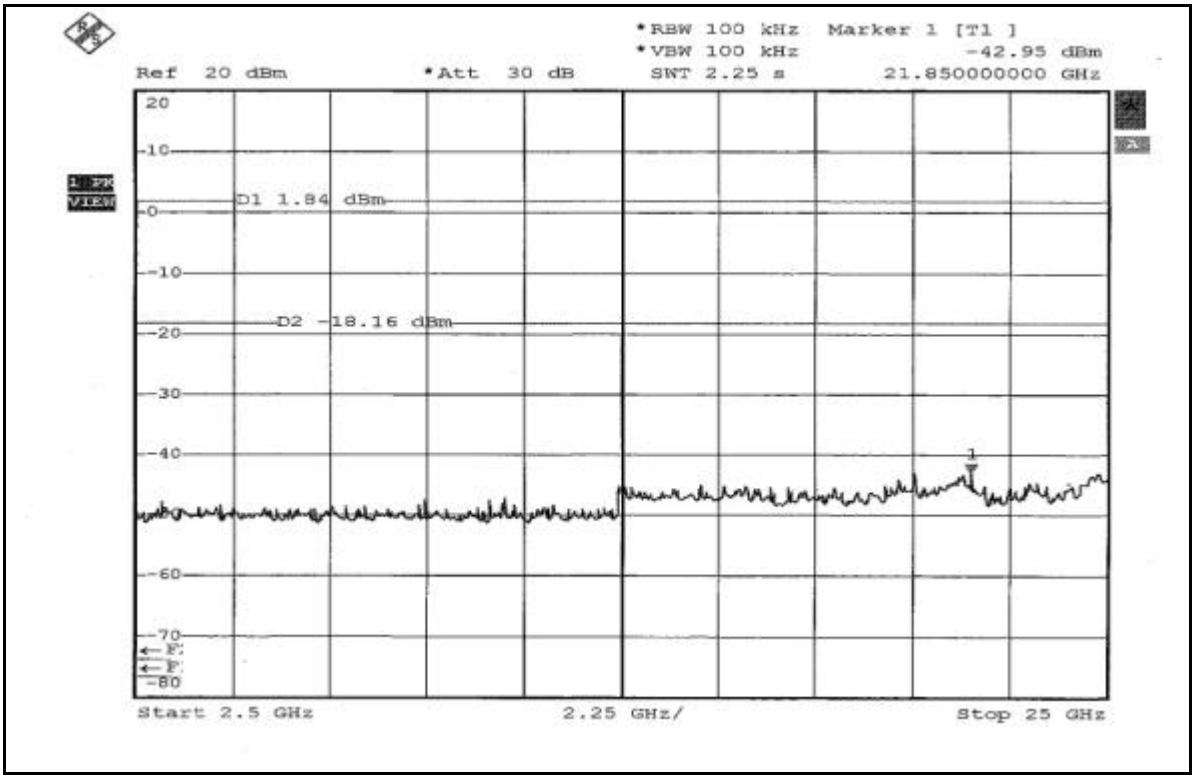

*RBW 1 MHz
*VBW 10 Hz
Ref 20 dBm
*Att 30 dB
SWT 25 s
Marker 1 [T1]
-0.13 dBm
2.459800000 GHz
Marker 2 [T1]
-50.04 dBm
2.483500000 GHz
Marker 3 [T1]
-50.04 dBm
2.483600000 GHz
Marker 4 [T1]
-55.91 dBm
2.500000000 GHz
D1 -0.13 dBm
D2 -20.13 dBm
F1
F2
Center 2.503 GHz
10 MHz/
Span 100 MHz

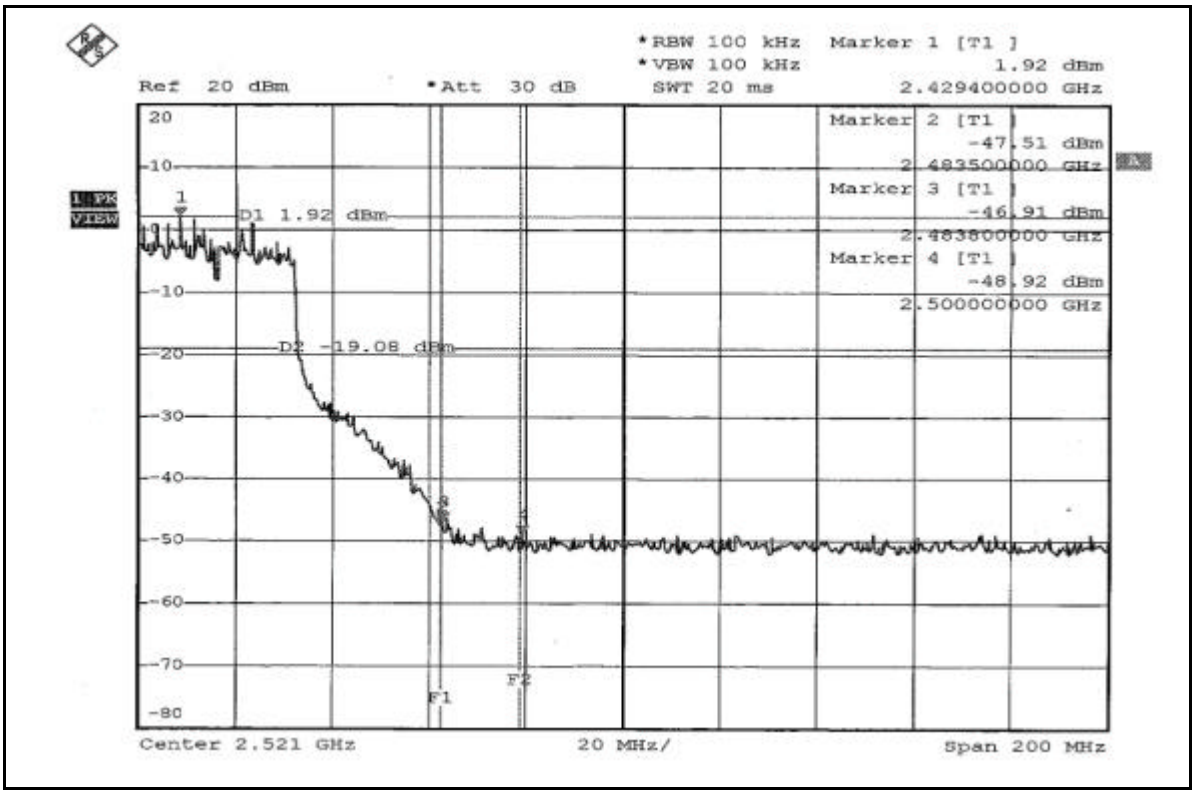

*RBW 100 kHz
*VBW 100 kHz
Ref 20 dBm
*Att 30 dB
SWT 2.25 s
Marker 1 [T1]
-42.97 dBm
24.865000000 GHz
D1 1.16 dBm
D2 -18.84 dBm
F2
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz

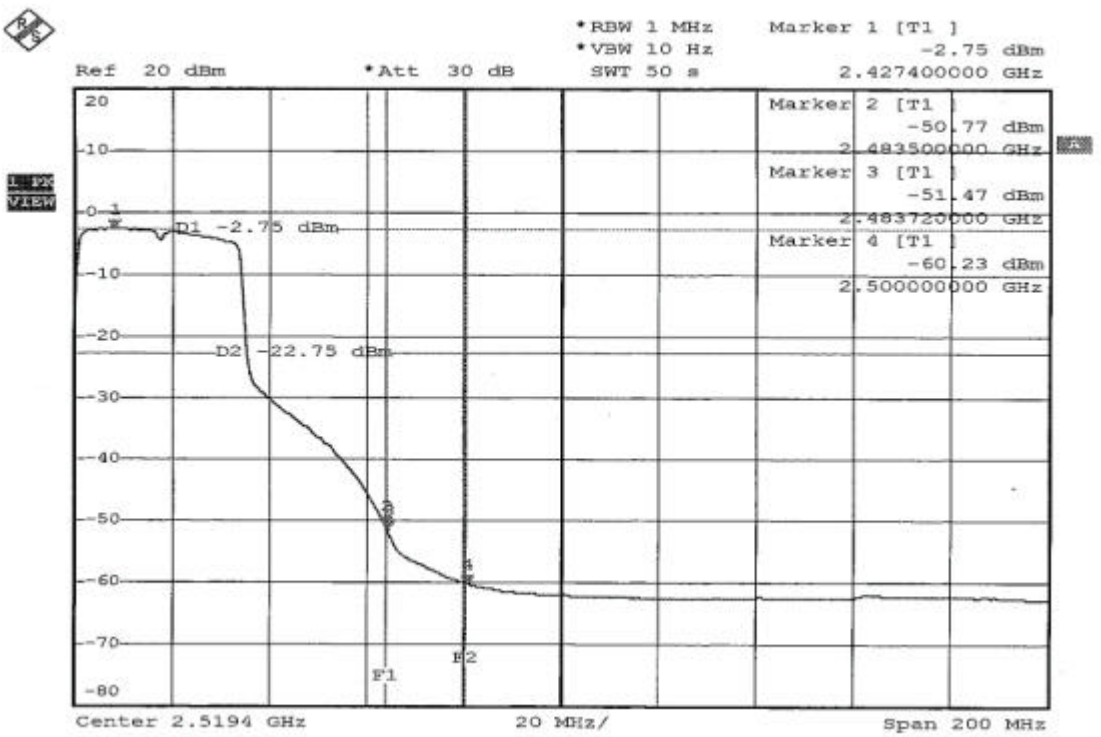
802.11g Turbo OFDM modulation

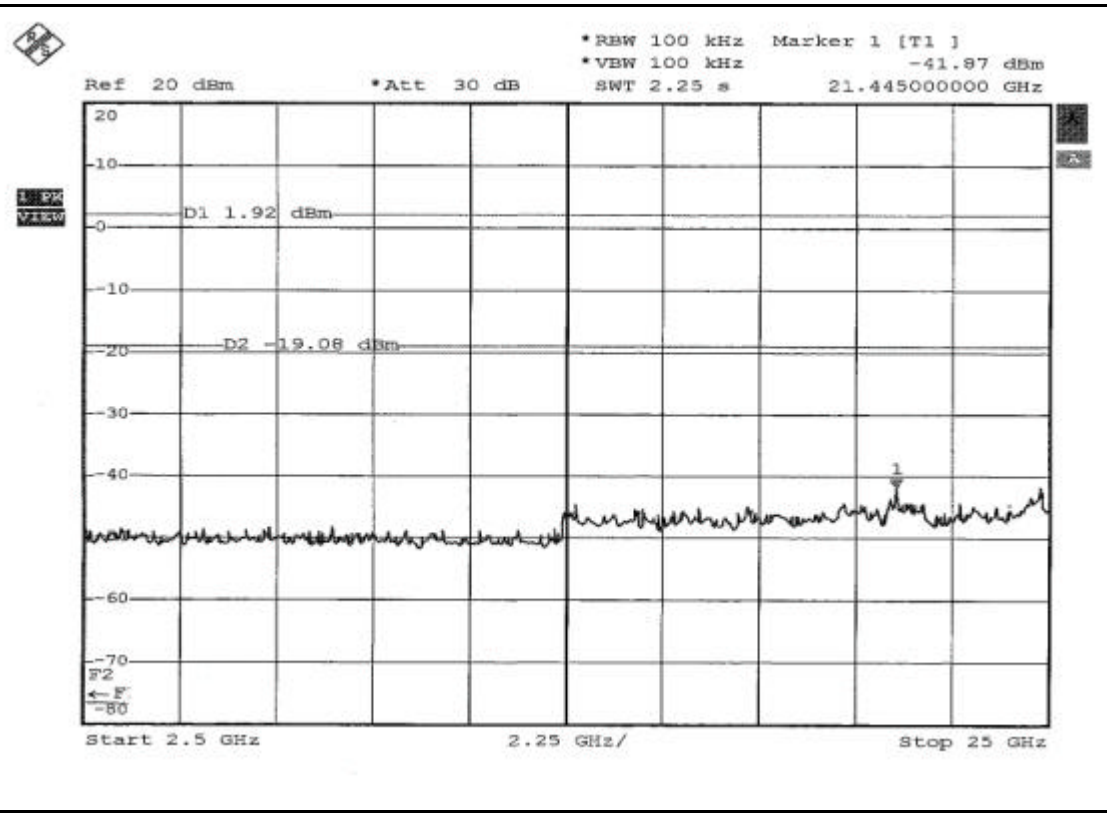





*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1]
-42.95 dBm
21.850000000 GHz
Ref 20 dBm
*Att 30 dB
1 PK VIEW
D1 1.84 dBm
D2 -18.16 dBm
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz


*RBW 100 kHz
*VBW 100 kHz
SWT 20 ms
Marker 1 [T1]
1.92 dBm
2.429400000 GHz
Marker 2 [T1]
-47.51 dBm
2.483500000 GHz
Marker 3 [T1]
-46.91 dBm
2.483800000 GHz
Marker 4 [T1]
-48.92 dBm
2.500000000 GHz
Ref 20 dBm
*Att 30 dB
1 PK VIEW
D1 1.92 dBm
D2 -19.08 dBm
F1
F2
Center 2.521 GHz
20 MHz/
Span 200 MHz


*RBW 1 MHz
*VBW 10 Hz
Ref 20 dBm
*Att 30 dB
SWT 50 s
Marker 1 [T1]
-2.75 dBm
2.427400000 GHz
Marker 2 [T1]
-50.77 dBm
2.483500000 GHz
Marker 3 [T1]
-51.47 dBm
2.483720000 GHz
Marker 4 [T1]
-60.23 dBm
2.500000000 GHz
D1 -2.75 dBm
D2 -22.75 dBm
F1
F2
Center 2.5194 GHz
20 MHz/
Span 200 MHz


*RBW 100 kHz
*VBW 100 kHz
Ref 20 dBm
*Att 30 dB
SWT 2.25 s
Marker 1 [T1]
-41.97 dBm
21.445000000 GHz
D1 1.92 dBm
D2 -19.08 dBm
F2
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz

4.7 ANTENNA REQUIREMENT

4.7.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.7.2 ANTENNA CONNECTED CONSTRUCTION

The antennas used in this product are Inverted F and Monopole antenna with UFL connector. The maximum Gain of the antenna is 2.85dBi.