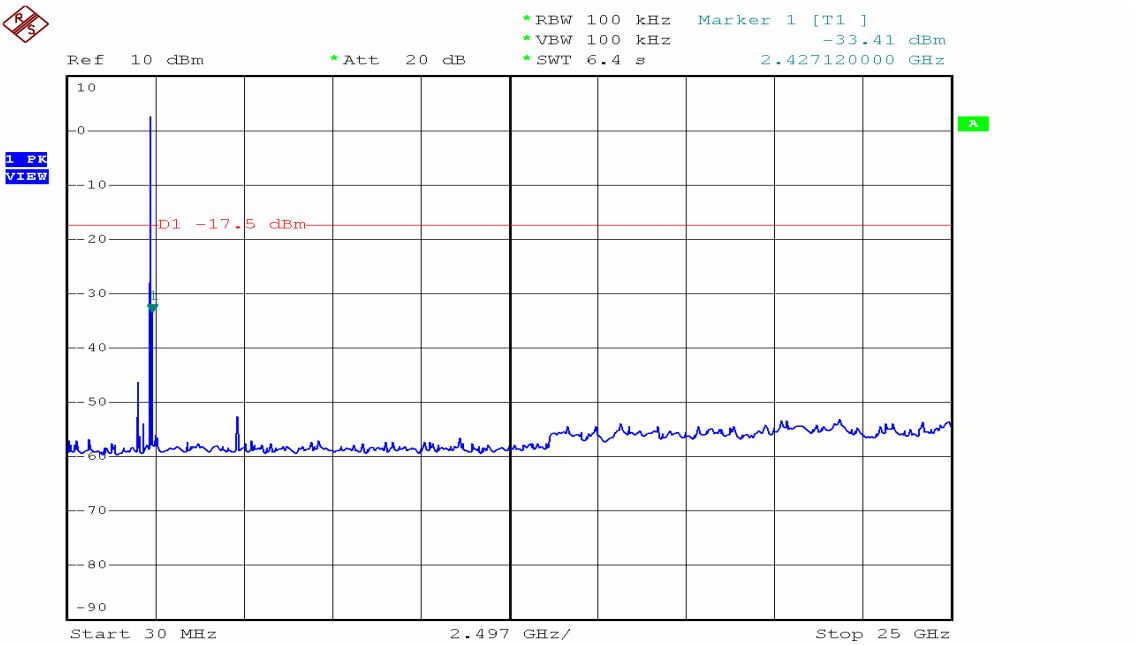
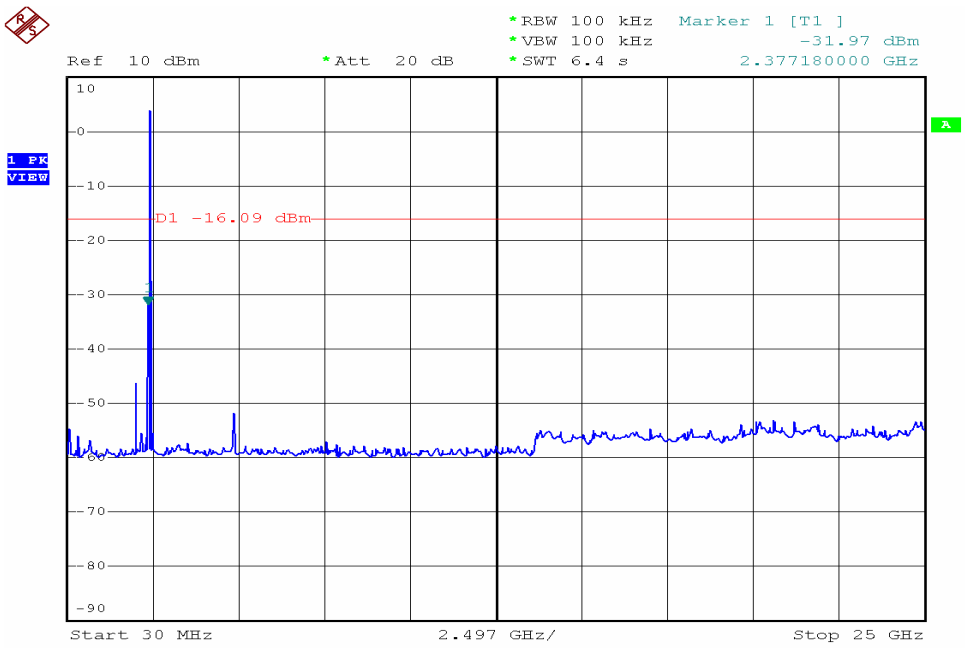
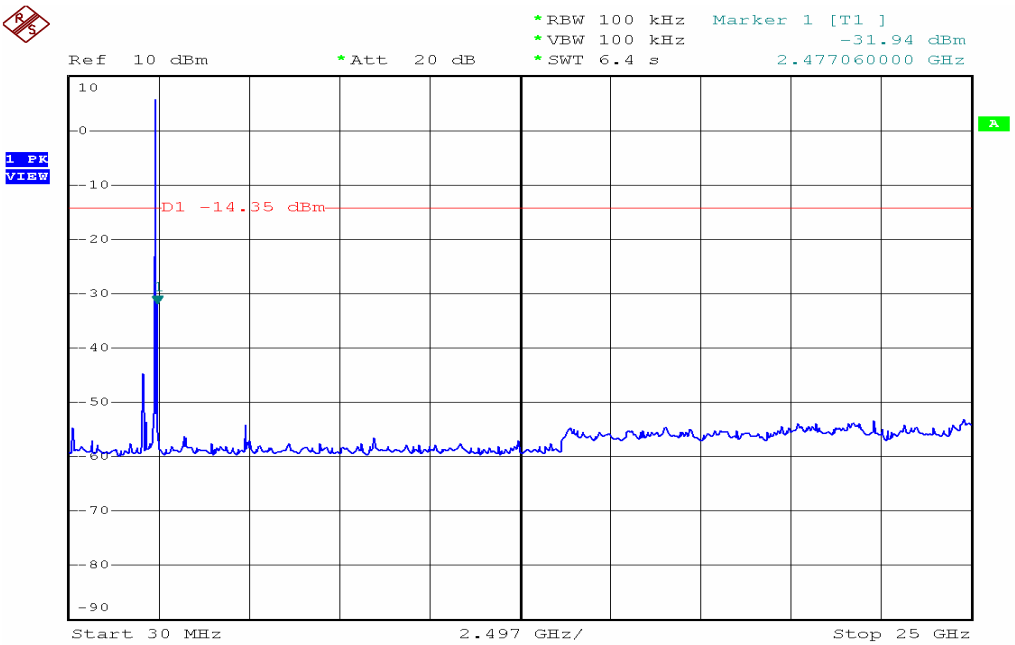
4.3. RF Portion

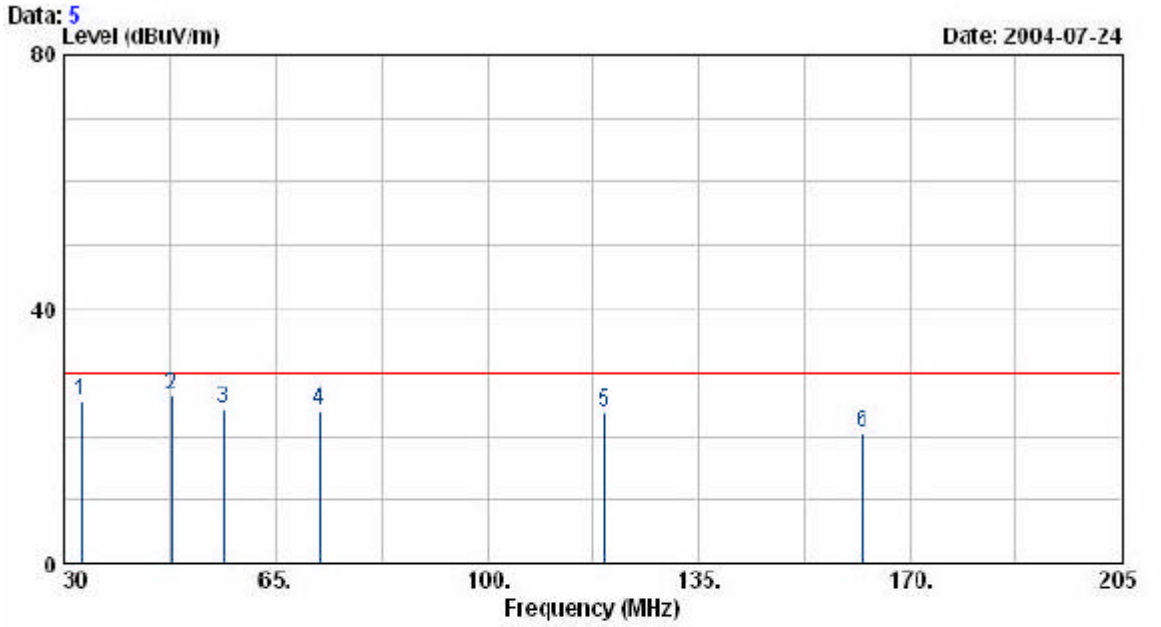
4.3.1. Test Result of Conducted Emission





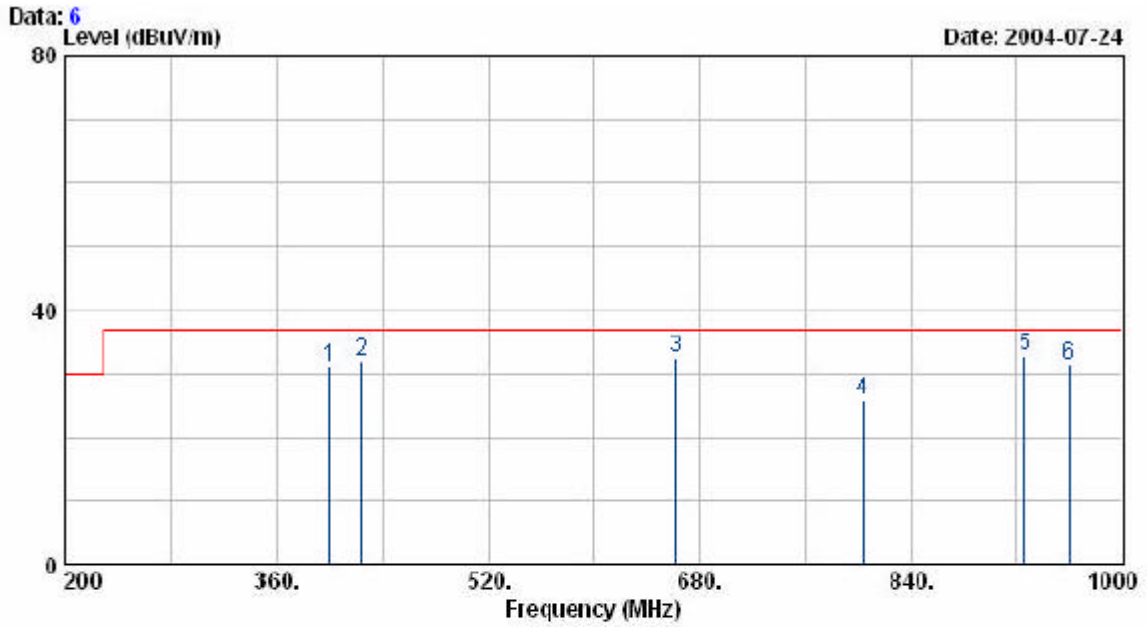

*RBW 100 kHz
*VBW 100 kHz
*SWT 6.4 s
Marker 1 [T1]
-31.94 dBm
2.477060000 GHz
Ref 10 dBm
*Att 20 dB
1 PK
VIEW
D1 -14.35 dBm
A
Start 30 MHz
2.497 GHz/
Stop 25 GHz

4.3.2. Test Result of Radiated Emission



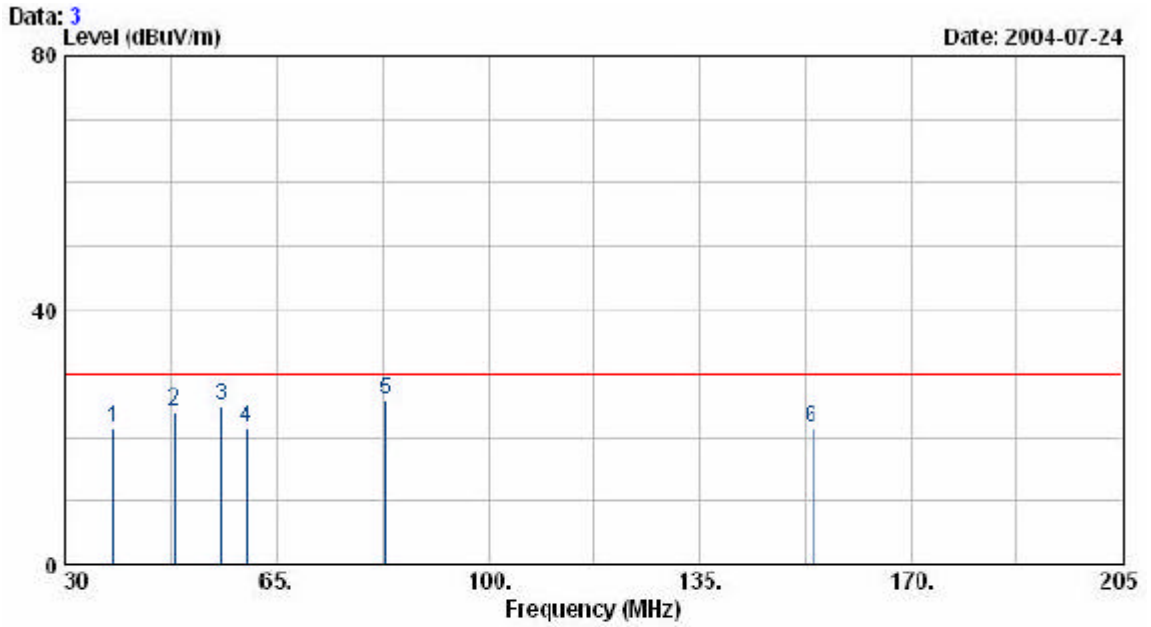
Condition :
Eut :MR814V3new
Power :110V 60Hz
Test mode :link mode
Temperature:32
Humidiy :58
Memo :

	Freq	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark	Ant Pos	Table Pos
	MHz	dBuV	dBuV/m	dBuV/m	dB			cm	deg
1	32.98	35.69	25.52	30.00	-4.48	HORIZONTAL	Peak	400	360
2 @	47.85	44.57	26.27	30.00	-3.73	HORIZONTAL	Peak	400	360
3	56.43	45.67	24.28	30.00	-5.72	HORIZONTAL	Peak	400	360
4	72.18	45.11	23.98	30.00	-6.02	HORIZONTAL	Peak	400	360
5	119.43	39.39	23.87	30.00	-6.13	HORIZONTAL	Peak	400	360
6	162.13	36.80	20.53	30.00	-9.47	HORIZONTAL	Peak	400	360



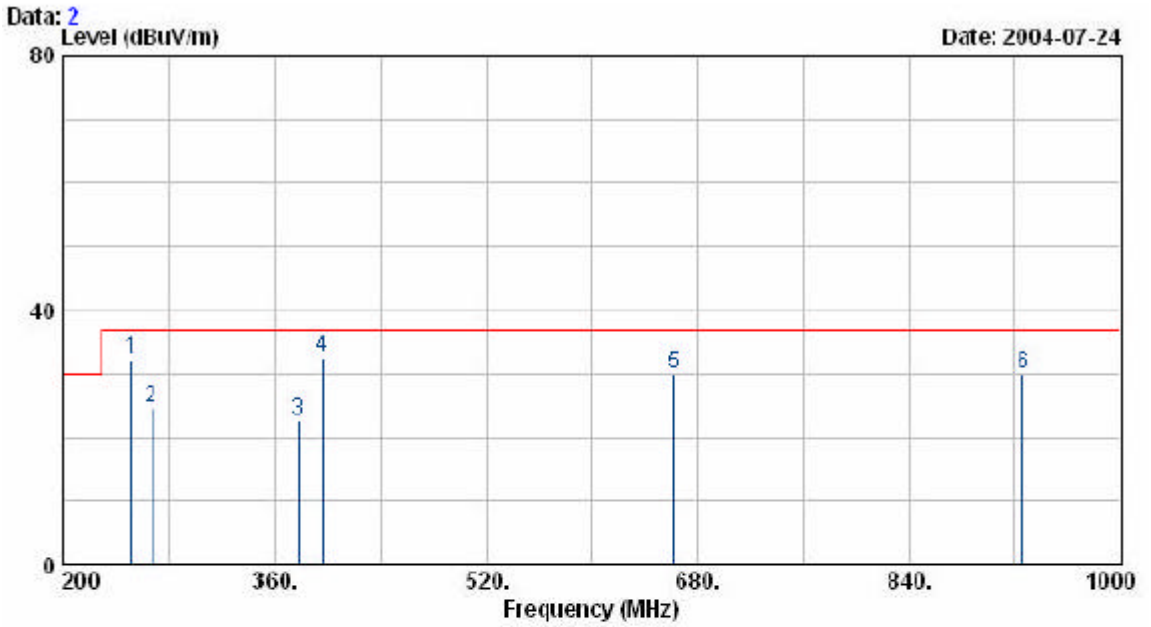
Condition :
Eut :MR814V3new
Power :110V 60Hz
Test mode :link mode
Temperature:32
Humidiy :58
Memo :

	Freq	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark	Ant Pos	Table Pos
	MHz	dBuV	dBuV/m	dBuV/m	dB			cm	deg
1	399.20	40.27	31.07	37.00	-5.93	HORIZONTAL	Peak	200	0
2	423.20	40.38	31.98	37.00	-5.02	HORIZONTAL	Peak	200	0
3	661.60	37.06	32.44	37.00	-4.56	HORIZONTAL	Peak	200	0
4	803.20	26.24	25.76	37.00	-11.24	HORIZONTAL	Peak	200	0
5 @	927.20	30.16	32.80	37.00	-4.20	HORIZONTAL	Peak	200	0
6	960.00	28.16	31.21	37.00	-5.79	HORIZONTAL	Peak	200	0



Condition :
Eut :MR814V3new
Power :110V 60Hz
Test mode :link mode
Temperature:32
Humidiy :50
Memo :

	Freq	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark	Ant Pos	Table Pos
	MHz	dBuV	dBuV/m	dBuV/m	dB			cm	deg
1	38.13	34.19	21.42	30.00	-8.58	VERTICAL	Peak	100	0
2	48.15	42.36	23.94	30.00	-6.06	VERTICAL	Peak	100	0
3	55.97	46.08	24.78	30.00	-5.22	VERTICAL	Peak	100	0
4	60.15	43.23	21.32	30.00	-8.68	VERTICAL	Peak	100	0
5 @	82.90	45.63	25.82	30.00	-4.18	VERTICAL	Peak	100	0
6	153.73	36.95	21.35	30.00	-8.65	VERTICAL	Peak	100	0



Condition :
Eut :MR814V3new
Power :110V 60Hz
Test mode :link mode
Temperature:32
Humidiy :58
Memo :

	Freq	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark	Ant Pos	Table Pos
	MHz	dBuV	dBuV/m	dBuV/m	dB			cm	deg
1	252.80	44.67	32.14	37.00	-4.86	VERTICAL	Peak	100	360
2	267.20	37.07	24.76	37.00	-12.24	VERTICAL	Peak	100	360
3	377.60	32.17	22.44	37.00	-14.56	VERTICAL	Peak	100	360
4 @	395.97	41.91	32.67	37.00	-4.33	VERTICAL	Peak	100	360
5	661.60	34.51	29.89	37.00	-7.11	VERTICAL	Peak	100	360
6	927.20	27.16	29.80	37.00	-7.20	VERTICAL	Peak	100	360

Test by: Tony

Modulation Standard: IEEE 802.11b Channel 1

a) Emission frequencies below 1 GHz

Test Date: Jul. 21, 2004 Temperature: 25 ℃ Humidity: 61%

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result@3m (dBuV/m)	Limit@3m (dBuV/m)	Margin (dB)	Table Deg.	Ant High (m)
397.63	H	49.98	-9.16	40.82	46	-5.18	270	1.5
924.34	H	37.22	3.66	40.88	46	-5.12	200	1.0
252.13	V	54.60	-13.40	41.20	46	-4.80	180	1.5
924.34	V	39.02	3.66	42.68	46	-3.32	200	1.4

Notes:

1. Result = Meter Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss – Amplifier

b) Emission frequencies above 1 GHz

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result@3m (dBuV/m)	Limit@3m (dBuV/m)	Margin (dB)	Remark	Table Deg.	Ant High (m)
1736.40	H	53.98	-3.52	50.46	74	-23.54	Peak	210	1.5
1736.40	H	41.65	-3.52	38.13	54	-15.87	Ave	190	1.5
1722.40	V	65.68	-4.20	61.48	74	-12.52	Peak	200	1.5
1722.40	V	50.23	-4.20	46.03	54	-7.97	Ave	210	1.5
1786.80	V	65.98	-3.83	62.18	74	-11.82	Peak	190	1.0
1786.80	V	50.79	-3.83	46.96	54	-7.04	Ave	200	1.0
1952.00	V	63.87	-2.89	60.98	74	-13.02	Peak	180	1.5
1952.00	V	49.02	-2.89	46.13	54	-7.87	Ave	190	1.5
2896.00	V	57.55	0.53	58.08	74	-15.92	Peak	190	1.5
2896.00	V	42.13	0.53	42.66	54	-11.34	Ave	180	1.5
4805.00	V	57.31	6.82	64.13	74	-9.87	Peak	280	1.5
4805.00	V	40.35	6.82	47.17	54	-6.83	Ave	270	1.5

Modulation Standard: IEEE 802.11b Channel 6

a) Emission frequencies below 1 GHz

Test Date: Jul. 21, 2004 Temperature: 25 ℃ Humidity: 61%

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result@3m (dBuV/m)	Limit@3m (dBuV/m)	Margin (dB)	Table Deg.	Ant High (m)
397.63	H	50.13	-9.16	40.97	46	-5.03	270	1.5
924.34	H	37.12	3.66	40.78	46	-5.22	210	1.0
252.13	V	54.58	-13.40	41.18	46	-4.82	180	1.5
924.34	V	39.08	3.66	42.74	46	-3.26	190	1.4

Notes:

1. Result = Meter Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss – Amplifier

b) Emission frequencies above 1 GHz

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result@3m (dBuV/m)	Limit@3m (dBuV/m)	Margin (dB)	Remark	Table Deg.	Ant High (m)
1736.40	H	54.99	-3.52	51.47	74	-22.53	Peak	200	1.5
1736.40	H	42.85	-3.52	39.33	54	-14.67	Ave	190	1.5
1722.40	V	66.47	-4.20	62.27	74	-11.73	Peak	190	1.5
1722.40	V	51.08	-4.20	46.88	54	-7.12	Ave	200	1.5
1786.80	V	67.23	-3.83	63.40	74	-10.60	Peak	190	1.0
1786.80	V	51.66	-3.83	47.83	54	-6.17	Ave	200	1.0
1952.00	V	64.87	-2.89	61.98	74	-12.02	Peak	190	1.5
1952.00	V	50.76	-2.89	47.87	54	-6.13	Ave	190	1.5
2896.00	V	58.46	0.53	58.99	74	-15.01	Peak	200	1.5
2896.00	V	43.13	0.53	43.66	54	-10.34	Ave	180	1.5
4855.00	V	58.27	6.82	65.09	74	-8.91	Peak	300	1.5
4855.00	V	41.38	6.82	48.20	54	-5.80	Ave	280	1.5

Modulation Standard: IEEE 802.11b Channel 11

a) Emission frequencies below 1 GHz

Test Date: Jul. 21, 2004 Temperature: 25 ℃ Humidity: 61%

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result@3m (dBuV/m)	Limit@3m (dBuV/m)	Margin (dB)	Table Deg.	Ant High (m)
397.63	H	50.30	-9.16	41.14	46	-4.86	270	1.5
924.34	H	37.37	3.66	41.03	46	-4.97	200	1.0
252.13	V	54.64	-13.40	41.24	46	-4.76	180	1.5
924.34	V	39.08	3.66	42.74	46	-3.26	190	1.4

Notes:

1. Result = Meter Reading + Corrected Factor
2. Corrected Factor = Antenna Factor + Cable Loss – Amplifier

b) Emission frequencies above 1 GHz

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result@3m (dBuV/m)	Limit@3m (dBuV/m)	Margin (dB)	Remark	Table Deg.	Ant High (m)
1733.60	H	54.49	-3.52	50.97	74	-23.03	Peak	180	1.5
1733.60	H	42.60	-3.52	39.08	54	-14.92	Ave	190	1.5
1736.40	H	56.02	-3.52	52.50	74	-21.50	Peak	200	1.5
1736.40	H	43.98	-3.52	40.46	54	-13.54	Ave	190	1.5
1722.40	V	67.71	-4.20	63.51	74	-10.49	Peak	200	1.5
1722.40	V	52.13	-4.20	47.93	54	-6.07	Ave	210	1.5
1786.80	V	68.60	-3.83	64.77	74	-9.23	Peak	190	1.0
1786.80	V	52.87	-3.83	49.04	54	-4.96	Ave	200	1.0
1952.00	V	66.06	-2.89	63.17	74	-10.83	Peak	180	1.5
1952.00	V	51.10	-2.89	48.21	54	-5.79	Ave	180	1.5
2896.00	V	59.73	0.53	60.26	74	-13.74	Peak	200	1.5
2896.00	V	44.25	0.53	44.78	54	-9.22	Ave	180	1.5
4924.00	V	59.48	6.82	66.30	74	-7.7	Peak	300	1.5
4924.00	V	42.52	6.82	49.34	54	-4.66	Ave	280	1.5

4.3.3. Photographs of Radiated Emission Test

FRONT VIEW

REAR VIEW

4.4. 6dB Bandwidth Measurement Data

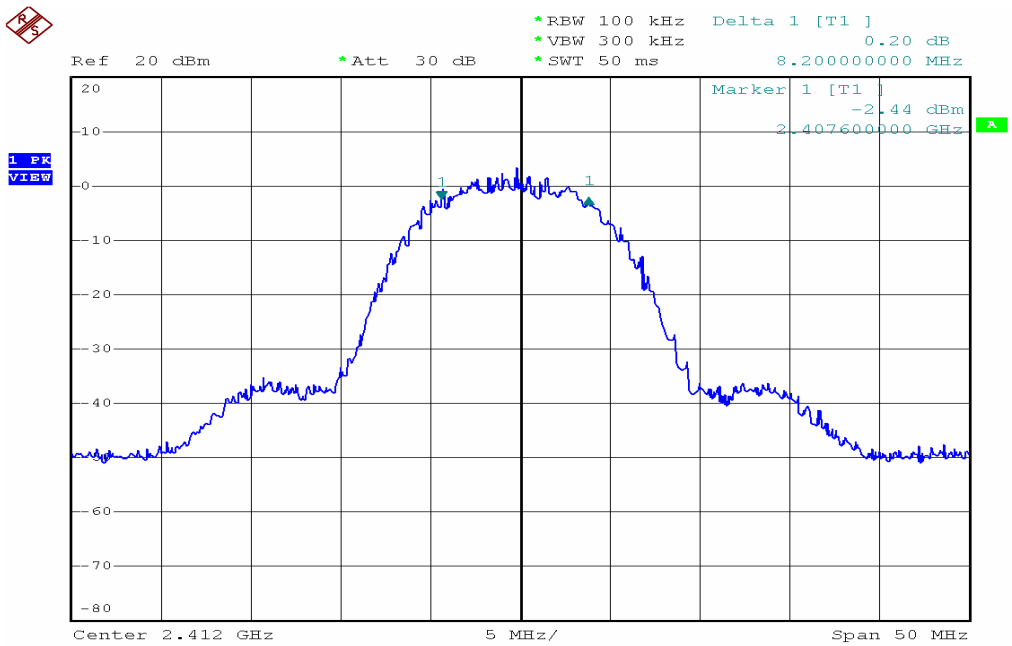
(1) Modulation Standard: IEEE 802.11b

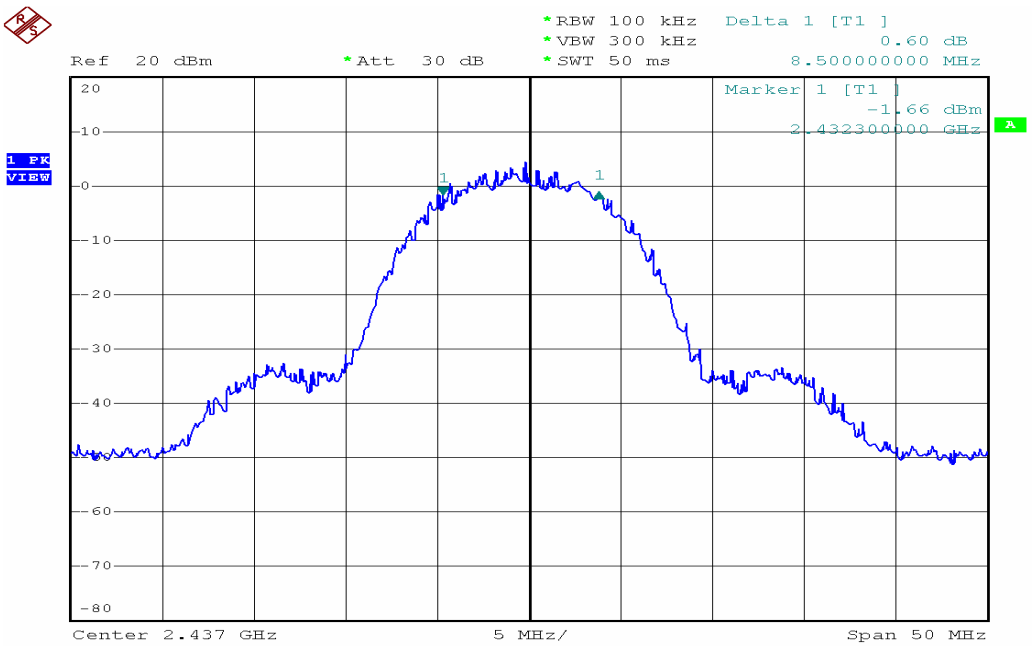
Test Date: Jul. 21, 2004 Temperature: 25 ℃ Humidity: 61%

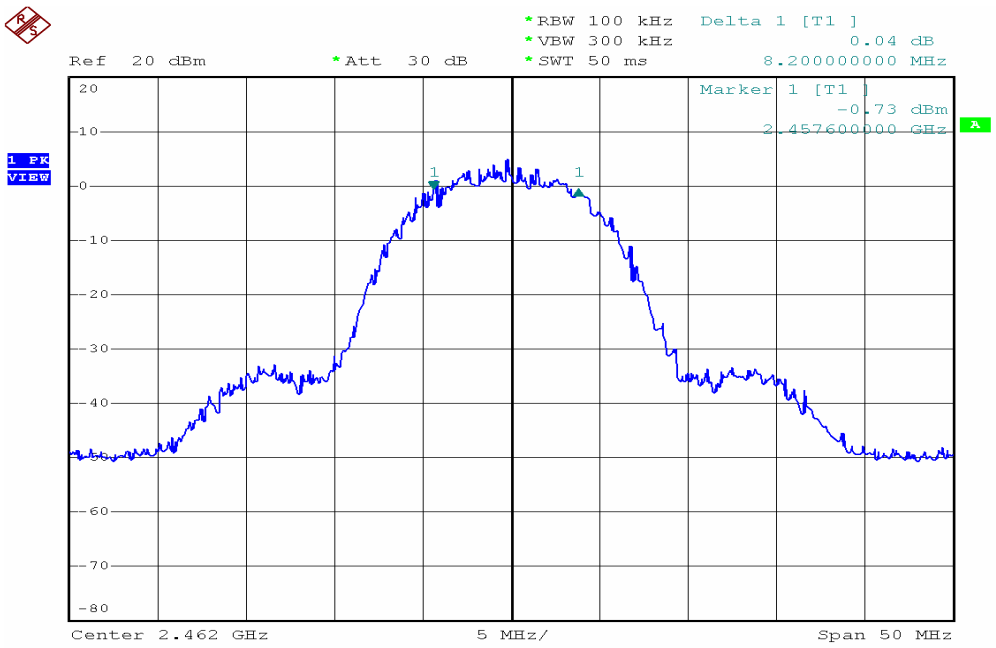
a) Channel 01: 6dB Emission Bandwidth is 8.2 MHz

b) Channel 06: 6dB Emission Bandwidth is 8.5 MHz

c) Channel 11: 6dB Emission Bandwidth is 8.2 MHz


*RBW 100 kHz
*VBW 300 kHz
*SWT 50 ms
Delta 1 [T1]
0.20 dB
8.200000000 MHz
Ref 20 dBm
*Att 30 dB
Marker 1 [T1]
-2.44 dBm
2.407600000 GHz
1 PK VIEW
Center 2.412 GHz
5 MHz/
Span 50 MHz


*RBW 100 kHz
*VBW 300 kHz
*SWT 50 ms
Delta 1 [T1]
0.60 dB
8.500000000 MHz
Ref 20 dBm
*Att 30 dB
Marker 1 [T1]
-1.66 dBm
2.432300000 GHz
1 PK VIEW
Center 2.437 GHz
5 MHz/
Span 50 MHz


RBW 100 kHz
VBW 300 kHz
SWT 50 ms
Delta 1 [T1]
0.04 dB
8.200000000 MHz
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-0.73 dBm
2.457600000 GHz
1 PK VIEW
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.462 GHz
5 MHz/
Span 50 MHz

4.5. Peak Output Power Measurement Data

(1) Modulation Standard: IEEE 802.11b

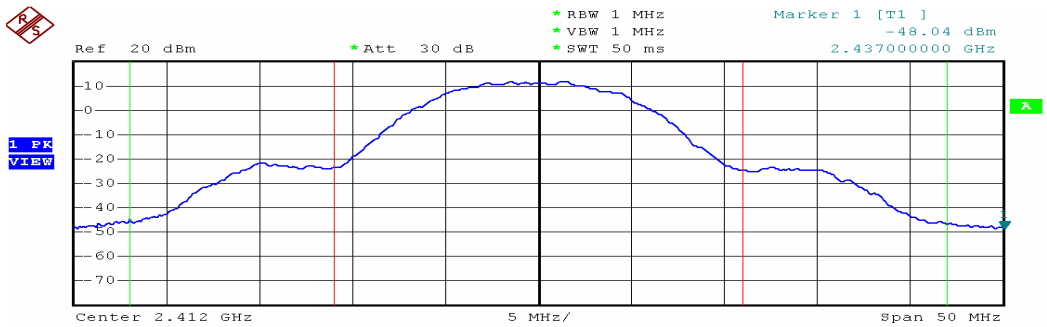
Test Date: Jul. 21, 2004 Temperature: 25 ℃ Humidity: 61%

a) Channel 01: Output Peak Power is 19.57 dBm or 90.57 mW

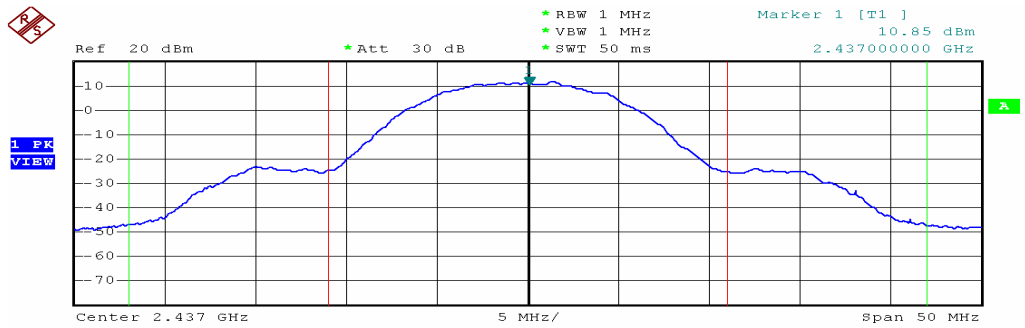
b) Channel 06: Output Peak Power is 19.27 dBm or 84.53 mW

c) Channel 11: Output Peak Power is 18.92 dBm or 77.98 mW

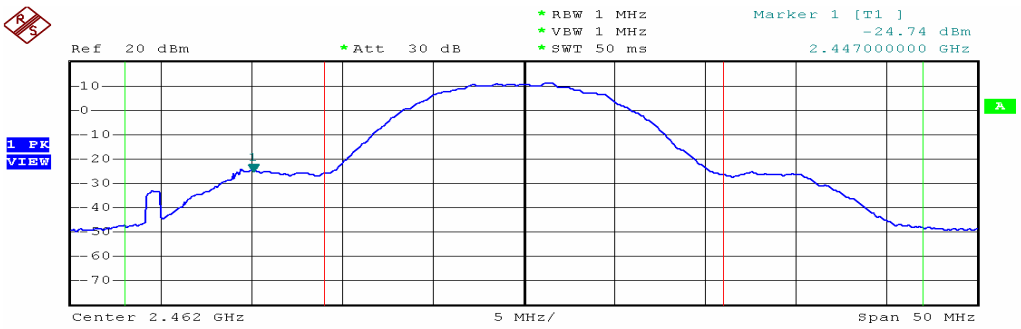
Note: Conducted Power = Reading Value + Cable Loss



Tx Channel		**WLAN 802.11B**	
Bandwidth	22 MHz	Power	19.57 dBm
Adjacent Channel			
Bandwidth	11 MHz	Lower	-35.70 dB
Spacing	16.5 MHz	Upper	-37.25 dB
Alternate Channel			
Bandwidth	11 MHz	Lower	-----
Spacing	27.5 MHz	Upper	-----



Tx Channel		**WLAN 802.11B**	
Bandwidth	22 MHz	Power	19.27 dBm
Adjacent Channel			
Bandwidth	11 MHz	Lower	-36.75 dB
Spacing	16.5 MHz	Upper	-37.68 dB
Alternate Channel			
Bandwidth	11 MHz	Lower	-----
Spacing	27.5 MHz	Upper	-----



Tx Channel		**WLAN 802.11B**	
Bandwidth	22 MHz	Power	18.92 dBm
Adjacent Channel			
Bandwidth	11 MHz	Lower	-37.54 dB
Spacing	16.5 MHz	Upper	-38.53 dB
Alternate Channel			
Bandwidth	11 MHz	Lower	-----
Spacing	27.5 MHz	Upper	-----

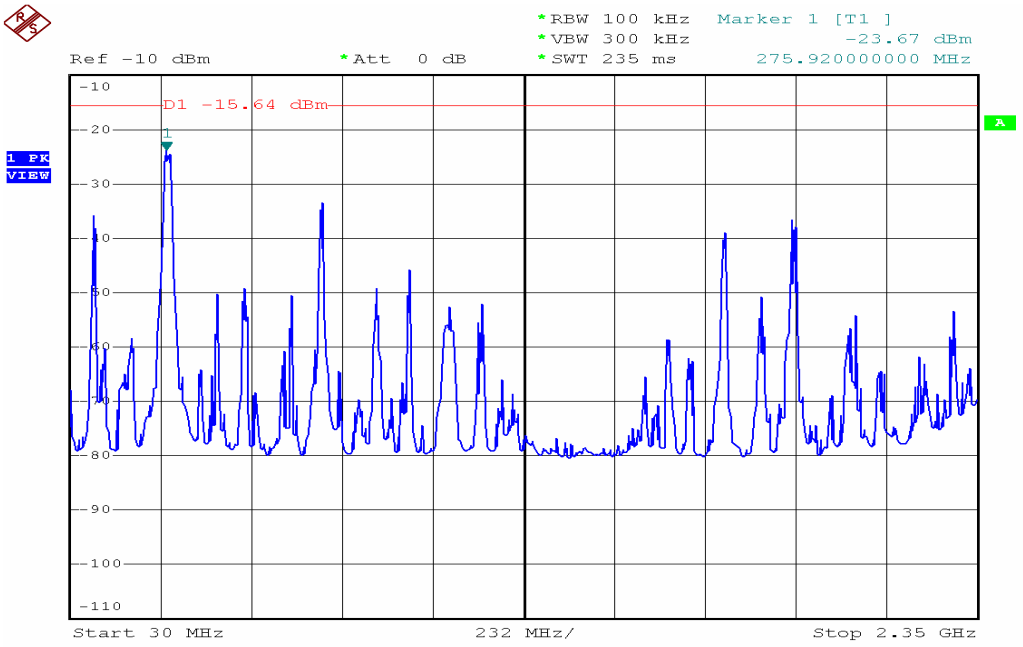
4.6. Band Edges Measurement Data

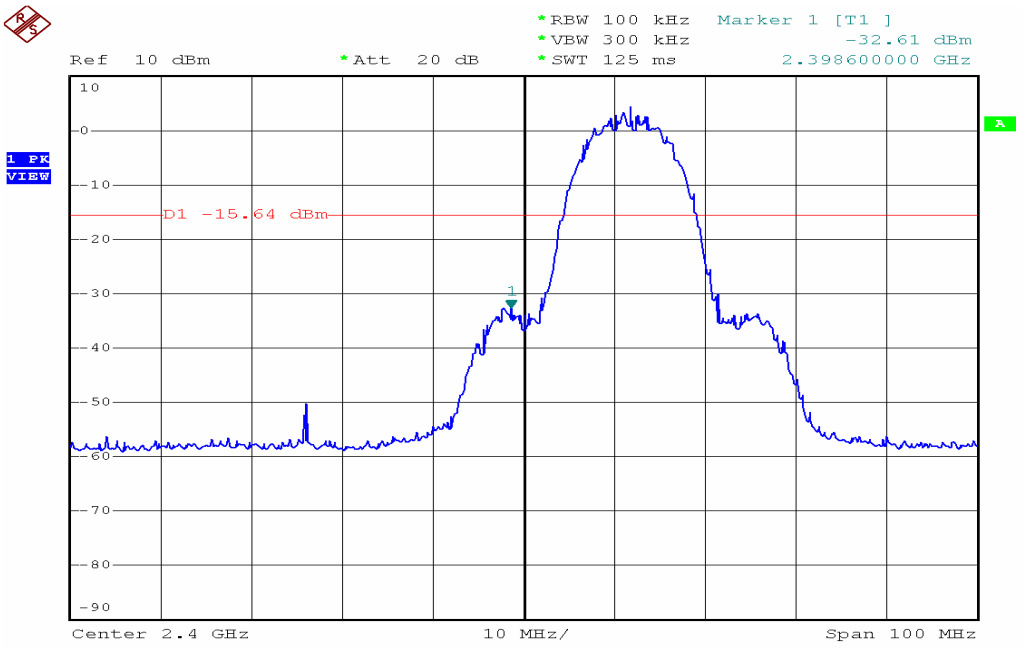
(1) Modulation Standard: IEEE 802.11b

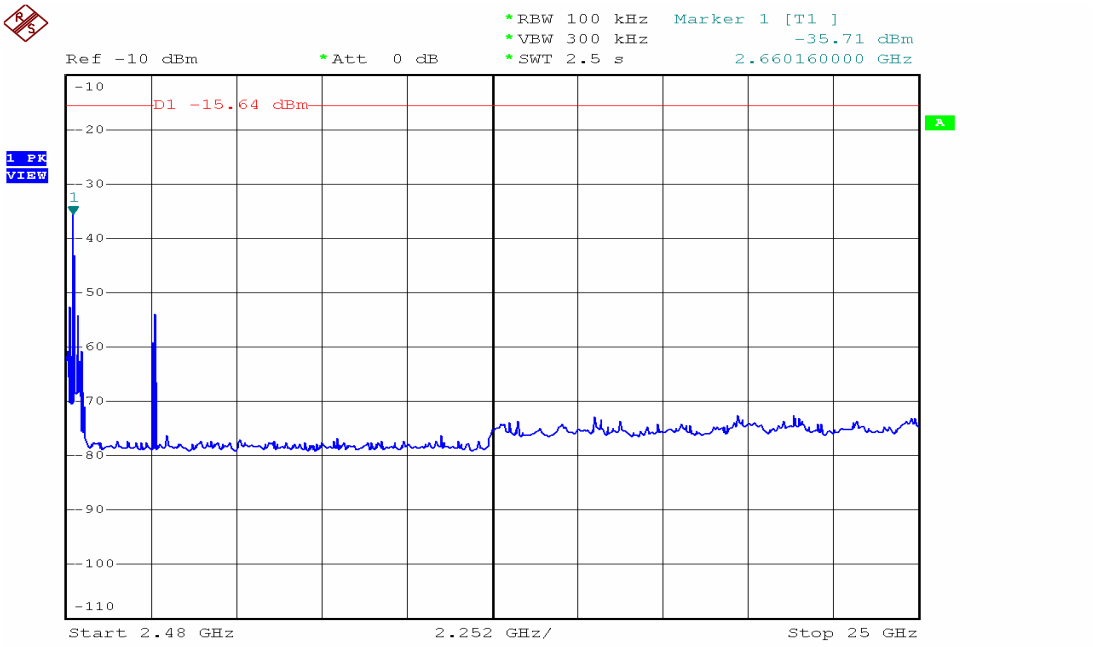
Test Date: Jul. 21, 2004 Temperature: 25 ℃ Humidity: 61%

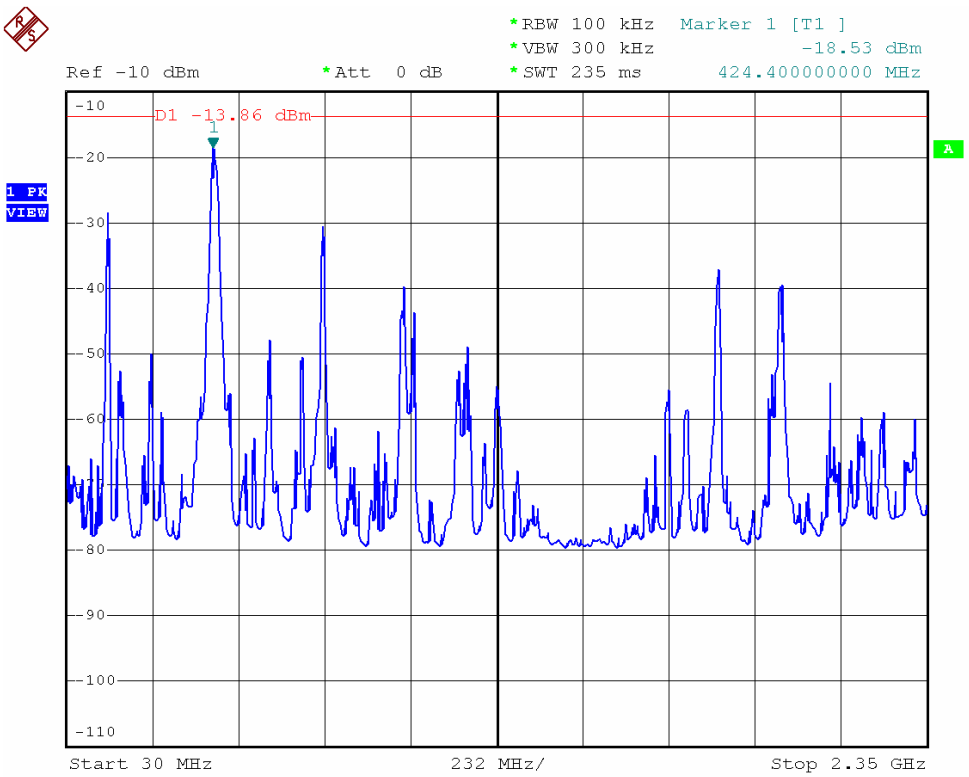
a) Lower Band Edge: maximum value is -23.67 dBm that is attenuated more than 20dB

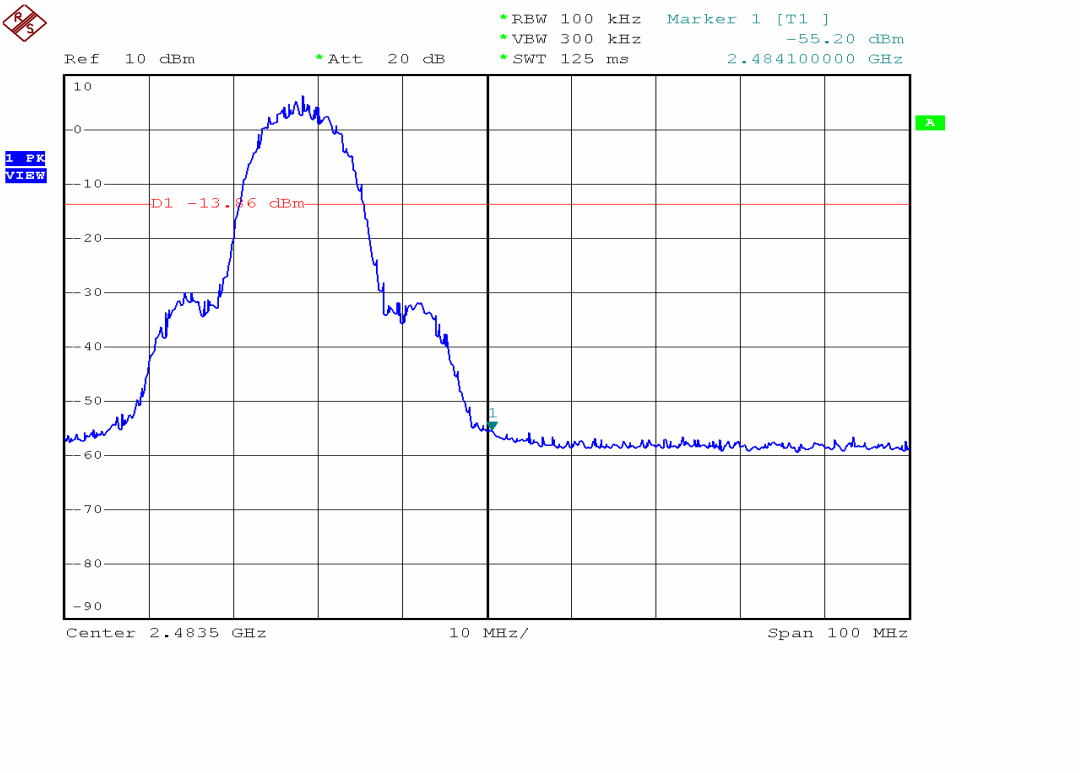
b) Upper Band Edge: maximum value is -18.53 dBm that is attenuated more than 20dB

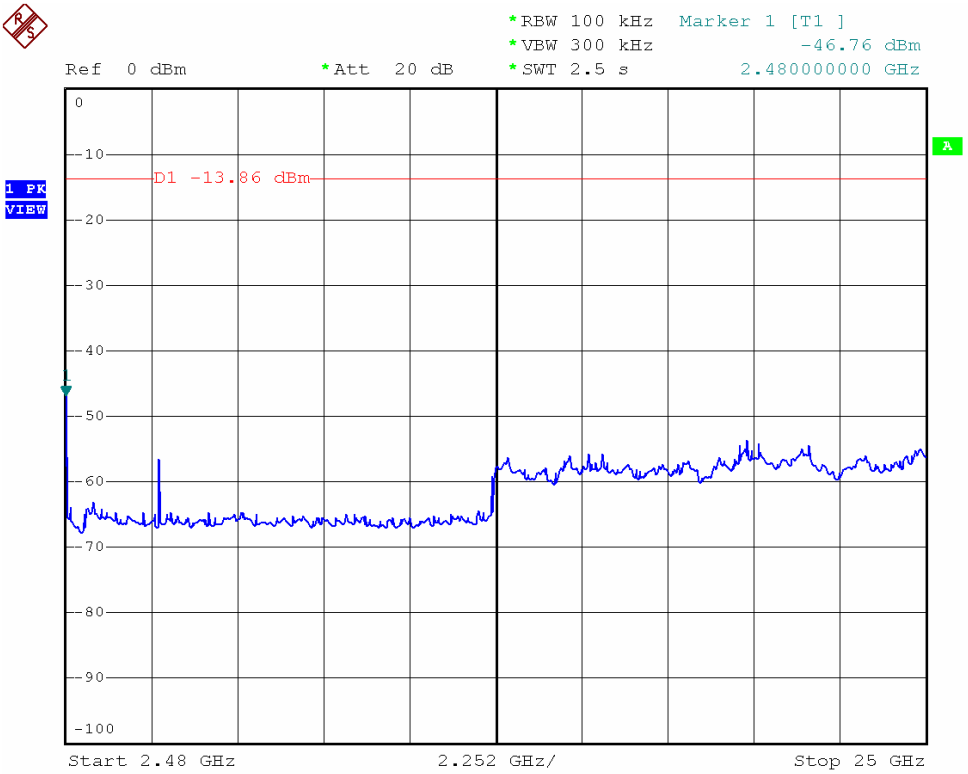

RBW 100 kHz
VBW 300 kHz
SWT 235 ms
Marker 1 [T1]
-23.67 dBm
275.920000000 MHz
Ref -10 dBm
Att 0 dB
D1 -15.64 dBm
1 PK VIEW
A
Start 30 MHz
232 MHz/
Stop 2.35 GHz


RBW 100 kHz
VBW 300 kHz
SWT 125 ms
Marker 1 [T1]
-32.61 dBm
2.398600000 GHz
Ref 10 dBm
Att 20 dB
D1 -15.64 dBm
1 PK VIEW
A
Center 2.4 GHz
10 MHz/
Span 100 MHz


*RBW 100 kHz
Marker 1 [T1]
*VBW 300 kHz
-35.71 dBm
Ref -10 dBm
*Att 0 dB
*SWT 2.5 s
2.660160000 GHz
D1 -15.64 dBm
1 PK
VIEW
A
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
Start 2.48 GHz
2.252 GHz/
Stop 25 GHz


*RBW 100 kHz
Marker 1 [T1]
*VBW 300 kHz
-18.53 dBm
Ref -10 dBm
*Att 0 dB
*SWT 235 ms
424.400000000 MHz
D1 -13.86 dBm
1 PK
VIEW
A
-10
-20
-30
-40
-50
-60
-80
-90
-100
-110
Start 30 MHz
232 MHz/
Stop 2.35 GHz


*RBW 100 kHz
Marker 1 [T1]
*VBW 300 kHz
-55.20 dBm
Ref 10 dBm
*Att 20 dB
*SWT 125 ms
2.484100000 GHz
1 PK
VIEW
D1 -13.86 dBm
A
Center 2.4835 GHz
10 MHz/
Span 100 MHz


*RBW 100 kHz
Marker 1 [T1]
*VBW 300 kHz
-46.76 dBm
Ref 0 dBm
*Att 20 dB
*SWT 2.5 s
2.480000000 GHz
1 PK
VIEW
D1 -13.86 dBm
A
Start 2.48 GHz
2.252 GHz/
Stop 25 GHz

4.6.1. Note on Band edge Emission

Modulation Standard: IEEE 802.11b

Test Date: Jul. 21, 2004 Temperature: 25 ℃ Humidity: 61%

a) Channel 1

Fundamental Frequency: 2412 MHz

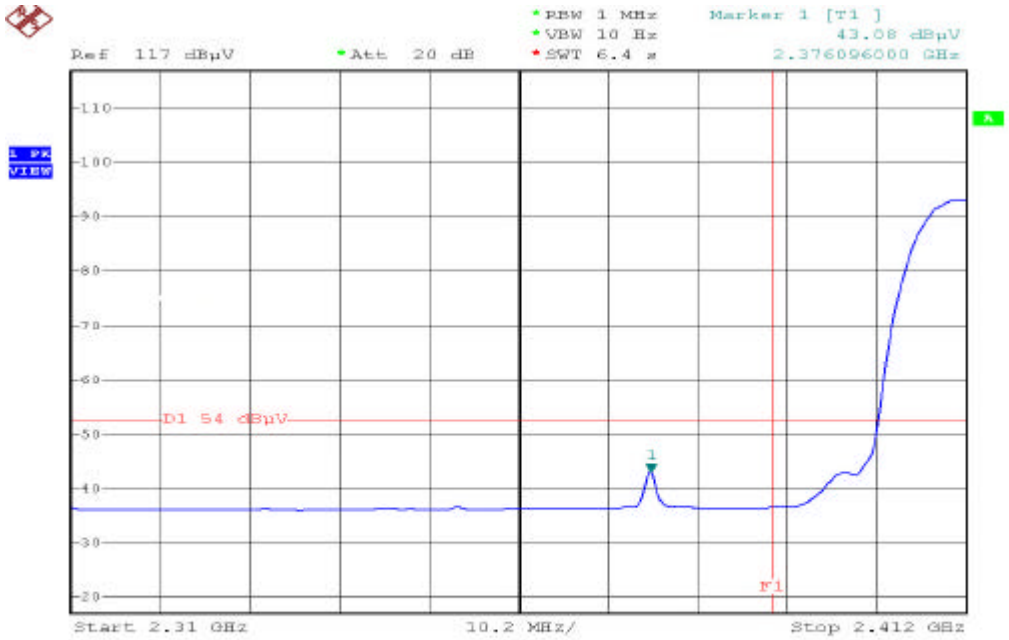
Frequency (MHz)	Level (dBuV)	Polarization	Remark	Limit@3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant High (m)
				Peak	Ave.			
2376.096	---	H	Peak	74	54	---	---	---
2376.096	43.08	H	Ave	74	54	-10.92	270	1.5
2376.096	---	V	Peak	74	54	---	---	---
2376.096	46.37	V	Ave	74	54	-7.63	160	1.4

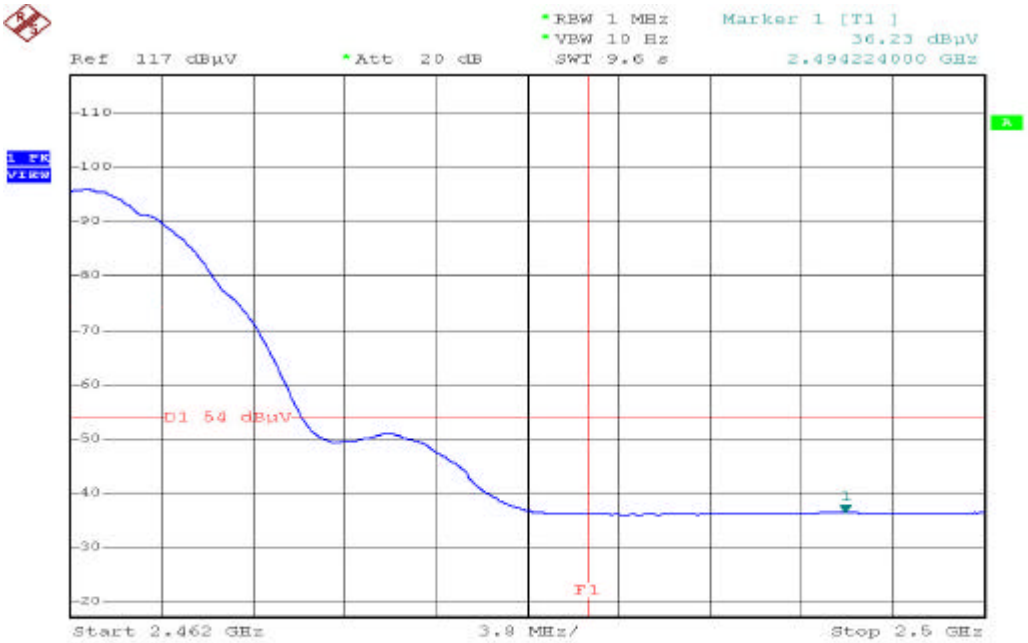
b) Channel 11

Fundamental Frequency: 2462 MHz

Frequency (MHz)	Level (dBuV)	Polarization	Remark	Limit@3m (dBuV/m)		Margin (dB)	Table Deg. (Deg.)	Ant High (m)
				Peak	Ave.			
2494.224	---	H	Peak	74	54	---	---	---
2494.224	36.23	H	Ave	74	54	-17.77	270	1.5
2484.724	---	V	Peak	74	54	---	---	---
2484.724	39.69	V	Ave	74	54	-14.31	180	1.4

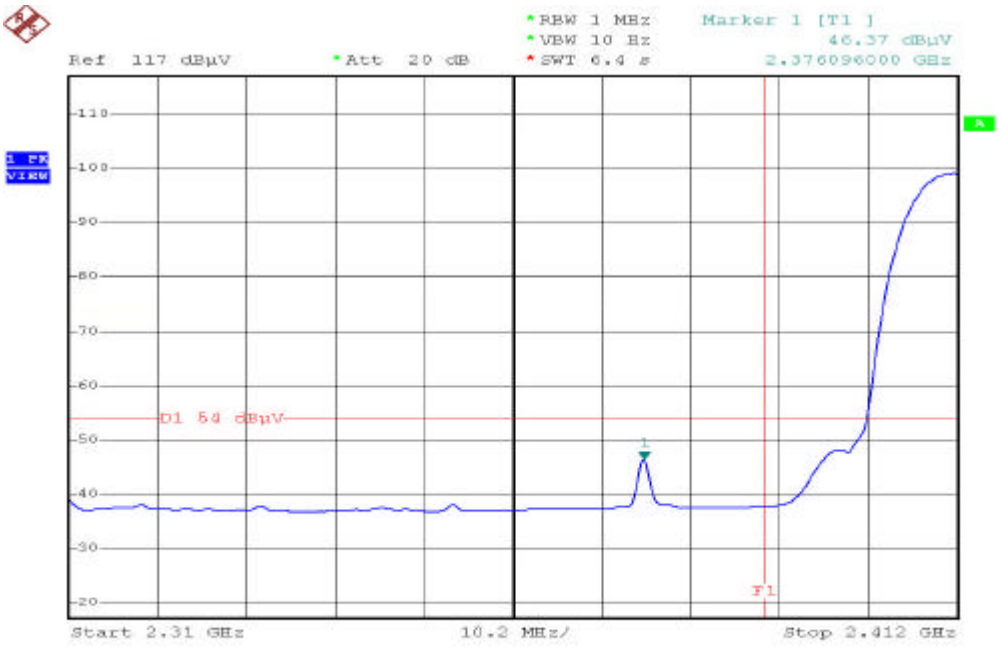
Modulation Standard: IEEE 802.11b
Pol/Phase: Horizontal

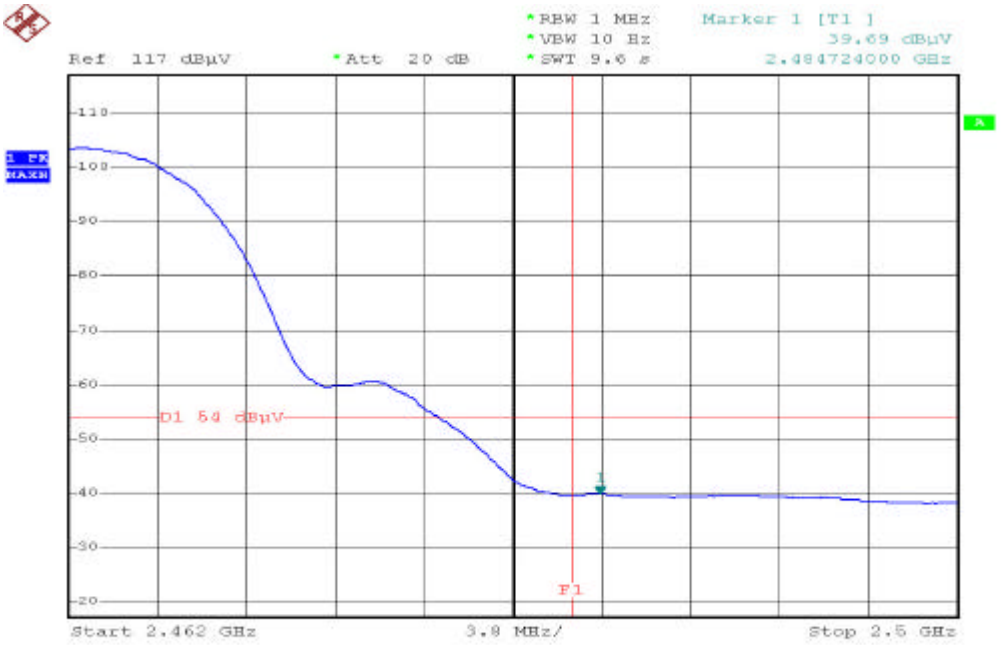




Modulation Standard: IEEE 802.11b

Pol/Phase: Vertical





4.7. Power Spectral Density Measurement Data

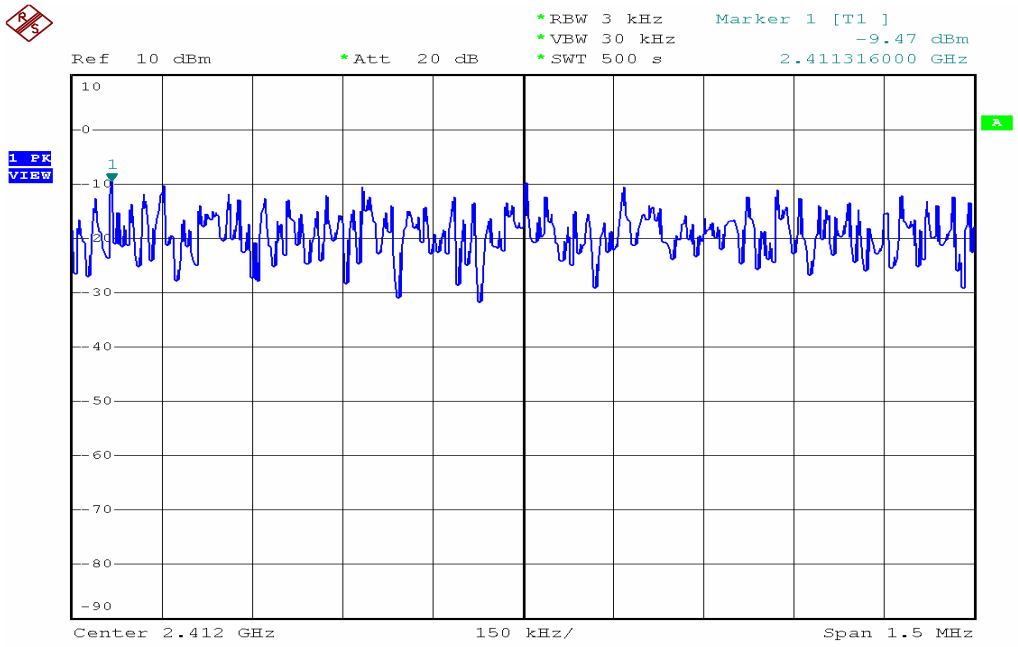
(1) Modulation Standard: IEEE 802.11b

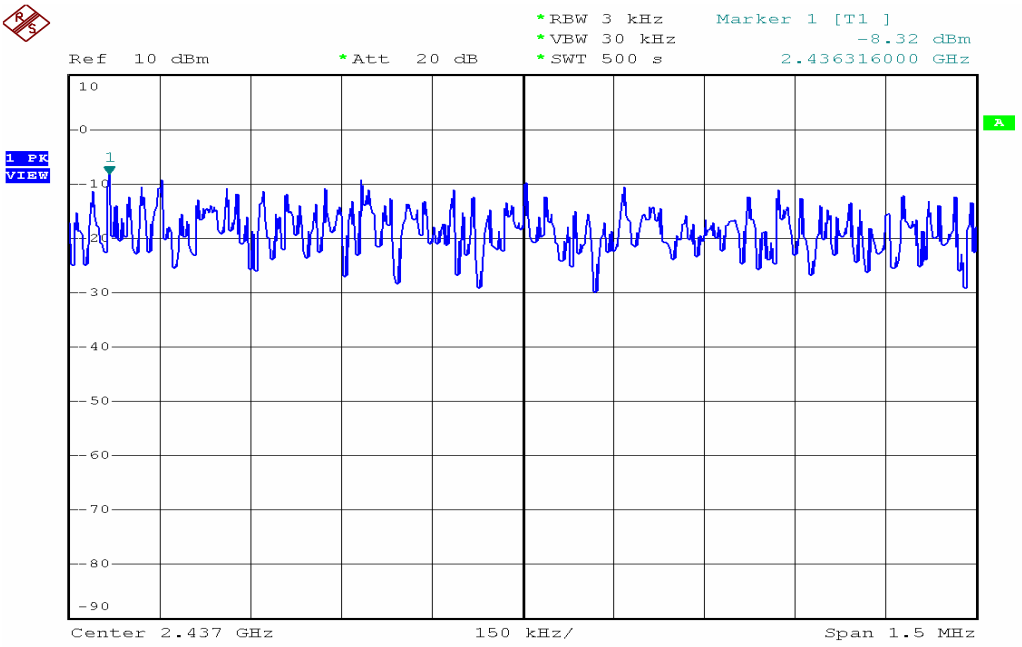
Test Date: Jul. 21, 2004 Temperature: 25 ℃ Humidity: 61%

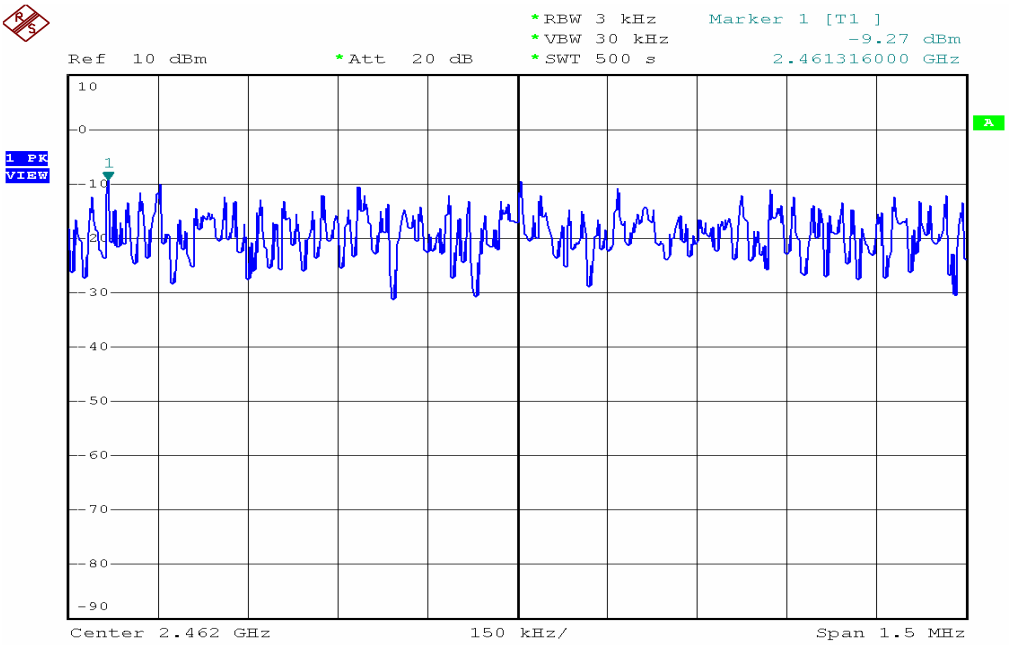
a) Channel 01: Maximum Power Density of 3 kHz Bandwidth is -9.47 dBm

b) Channel 06: Maximum Power Density of 3 kHz Bandwidth is -8.32 dBm

c) Channel 11: Maximum Power Density of 3 kHz Bandwidth is -9.27 dBm


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-9.47 dBm
2.411316000 GHz
Ref 10 dBm
*Att 20 dB
1 PK VIEW
A
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Center 2.412 GHz
150 kHz/
Span 1.5 MHz


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-8.32 dBm
2.436316000 GHz
Ref 10 dBm
*Att 20 dB
1 PK VIEW
A
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Center 2.437 GHz
150 kHz/
Span 1.5 MHz


RBW 3 kHz
VBW 30 kHz
SWT 500 s
Marker 1 [T1]
-9.27 dBm
2.461316000 GHz
Ref 10 dBm
Att 20 dB
1 PK
VIEW
A
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Center 2.462 GHz
150 kHz/
Span 1.5 MHz

4.8. Test Result of RF Exposure Evaluation

Product : Wireless Router
Test Item : RF Exposure Evaluation data
Test site : OATSI-SD
Test Mode : 802.11b

4.8.1. Antenna Gain

The maximum Gain is 1.8 dBi.

4.8.2. EUT Operation condition

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

4.8.3. Output Power into Antenna & RF Exposure Evaluation Distance

Modulation Standard: IEEE 802.11b
Test Date: Jul. 21, 2004 Temperature: 25 ℃ Humidity: 61%

Channel	Channel Frequency (MHz)	Output Power to Antenna (dBm)	Minimum allowable Distance ®From Skin (cm)
01	2412	19.57	3.602
06	2437	19.27	3.480
11	2462	18.92	3.342

The distance r (4th column) calculated from the Friis transmission formula is far shorter than 20 cm separation requirement. So, RF exposure limit warning or SAR test are not required.

5. List of Measuring Equipment Used

No	Instrument/Ancillary	Type	Manufacturer	Serial No.	Valid Date.
1	Bilog Antenna	CBL6111C	Schaffner	2762	2004/11/03
2	Preamplifier	RFP4002	Schaffner	010	2004/11/03
3	Receiver	SCR3501	Schaffner	437	2004/11/03
4	Signal Generator	8648B	HP	3629U00612	2006/02/09
5	Spectrum Analyzer	8594E	HP	3520A01913	2005/01/15
6	Amplifier	8447D	Agilent	2944A10593	2004/10/09
7	Amplifier	8447D	Agilent	2944A10531	2005/06/30
8	Series Power Meter	E4416A	Agilent	GB41292146	2004/11/05
9	Power Sensor	E9327A	Agilent	US40441392	2004/10/06
10	Dipole Antenna	AD-100	COM-Power	721011	2004/12/02
11	Dipole Antenna	AD-100	COM-Power	721010	2004/12/02
12	Spectrum Analyzer	R3131A	Advantest	131000021	2004/11/24
13	Spectrum Analyzer	FSP40	R&S	100047	2004/12/16
14	Preamplifier	8449B	Agilent	3008A01954	2005/01/04
15	Horn Antenna	3115	EMCO	31601	2005/01/13
16	Horn Antenna	3115	EMCO	31589	2005/01/13
17	Horn Antenna	3116	EMCO	31970	2005/01/29
18	Horn Antenna	3116	EMCO	31974	2005/01/29
19	EMI Receiver	8546A	HP	3807A00454	2005/02/12
20	RF Filter Section	85460A	HP	3704A00386	2005/02/12
21	Signal Generator	83640A	HP	2927A00107	2006/04/02
22	Attenuator	8491B	Agilent	50703	2004/12/16
23	Attenuator	8491B	Agilent	50705	2004/12/16
24	Temperature Chamber	TMJ-9712	T Machine	T-12-040111	2005/02/05
25	High Pass Filter	84300-80038	HP	002	N/A
26	High Pass Filter	84300-80038	HP	006	N/A
27	DC Power Supply	GPD-3030	GM	7020936	N/A
28	AC Power Converter	AFC-11005	APC	F103120008	N/A