



**Nemko Test Report:** 5L0221RUS1Rev1

**Applicant:** Sychip, Inc.

**Equipment Under Test:** WLAN6100  
**(E.U.T.)**

**In Accordance With:** **FCC Part 15, Subpart C, 15.247**  
Digital Transmission System Transmitter

**Tested By:** Nemko Dallas Inc.  
802 N. Kealy  
Lewisville, Texas 75057-3136

A handwritten signature in blue ink that appears to read "Tom Tidwell".

**Authorized By:** Tom Tidwell, Frontline Manager

**Date:** 8 March, 2006

**NVLAP**  
NVLAP LAB CODE: 100426-0

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*EQUIPMENT:* WLAN6100

FCC PART 15, SUBPART C  
Digital Transmission Systems  
Test Report No.: 5L0221RUS1Rev1

## **Section 1. Summary of Test Results**

Manufacturer: Sychip, Inc.

Model No.: WLAN6100

Serial No.: 00.0B.6C.FF.81.1C

General: **All measurements are traceable to national standards.**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15, Subpart C, Paragraph 15.247 for Digital Transmission Systems. Radiated tests were conducted in accordance with ANSI C63.4-2003. Radiated emissions are made on an open area test site. A description of the test facility is on file with the FCC.



New Submission



Production Unit



Class II Permissive Change



Pre-Production Unit

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE. NONE



**NVLAP LAB CODE: 100426-0**

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*EQUIPMENT:* WLAN6100

FCC PART 15, SUBPART C  
Digital Transmission Systems  
Test Report No.: 5L0221RUS1Rev1

**Summary Of Test Data**

NAME OF TEST	PARA. NO.	RESULT
Powerline Conducted Emissions	15.207(a)	Complies
Minimum 6 dB Bandwidth	15.247(a)(2)	Complies
Maximum Peak Power Output	15.247(b)(1)	Complies
Spurious Emissions (Antenna Conducted)	15.247(c)	Complies
Spurious Emissions (Restricted Bands)	15.247(c)	Complies
Peak Power Spectral Density	15.247(d)	Complies

**Footnotes:**

**Section 2. Equipment Under Test (E.U.T.)****General Equipment Information****Frequency Band:** 2412 to 2462 MHz

Channel 1 - 11

**Channel Spacing:** 5 MHz**User Frequency Adjustment:** Software controlled

**Description of EUT**

WLAN6100 EVK from SyChip Inc provides a platform for testing SyChip WLAN embedded modules

**System Diagram**

Refer to separate exhibit.

**EQUIPMENT CONFIGURATION LIST (HARDWARE/PERIPHERALS):**

Place an "\*" next to EUT and any item that is part of the EUT.

Item	*	Generic Description	Manufacturer	Model No.	Serial #	Rev.	FCC ID Status <sup>1</sup>
(A)		WLAN CARD	SYCHIP	WLAN6100	00.0B.6C.FF.81.1C	-	3
(B)		LABTOP	DELL	unknown	unknown	-	-
(C)		POWER SUPPLY	DELL	unknown	unknown	-	-
(D)							
(E)							
(F)							
(G)							
(H)							
(I)							
(J)							
(K)							

**<sup>1</sup> FCC ID STATUS**

1. FCC DOC
2. FCC A/B Verification
3. None - (If performing FCC testing, contact lab manager)
4. Certification (include FCC ID in parenthesis)

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*EQUIPMENT:* WLAN6100

FCC PART 15, SUBPART C  
Digital Transmission Systems  
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### **Section 3. Powerline Conducted Emissions**

NAME OF TEST: Powerline Conducted Emissions	PARA. NO.: 15.207(a)
TESTED BY: Kevin Rose	DATE: 5/18/05

**Test Results:** Complies.

**Measurement Data:** See attached data.

**Measurement Uncertainty:** +/- 1.7 dB

## Test Data – Powerline Conducted Emissions

**Photos – Powerline Conducted Emissions**

Front



Side



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*EQUIPMENT:* WLAN6100

FCC PART 15, SUBPART C  
Digital Transmission Systems  
Test Report No.: 5L0221RUS1Rev1

## **Section 4. Occupied Bandwidth**

NAME OF TEST: Occupied Bandwidth	PARA. NO.: 15.247(a)(2)
TESTED BY: David Light	DATE: 5/17/05

**Test Results:** Complies.

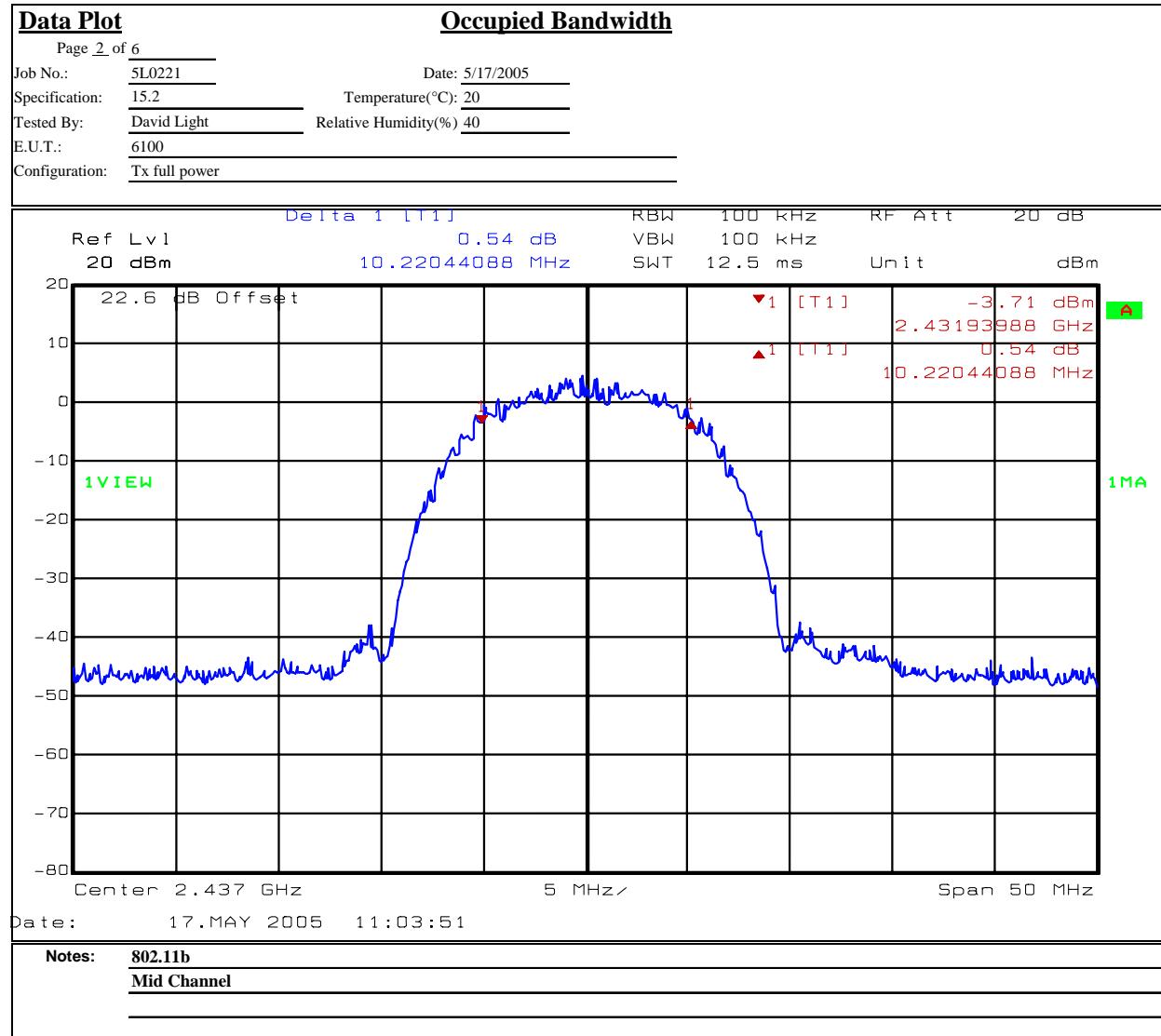
**Measurement Data:** See 6 dB BW plot

Measured 6 dB bandwidth: 10.2 MHz (802.11b)  
16.6 MHz (802.11g)  
Channel Separation: 5 MHz

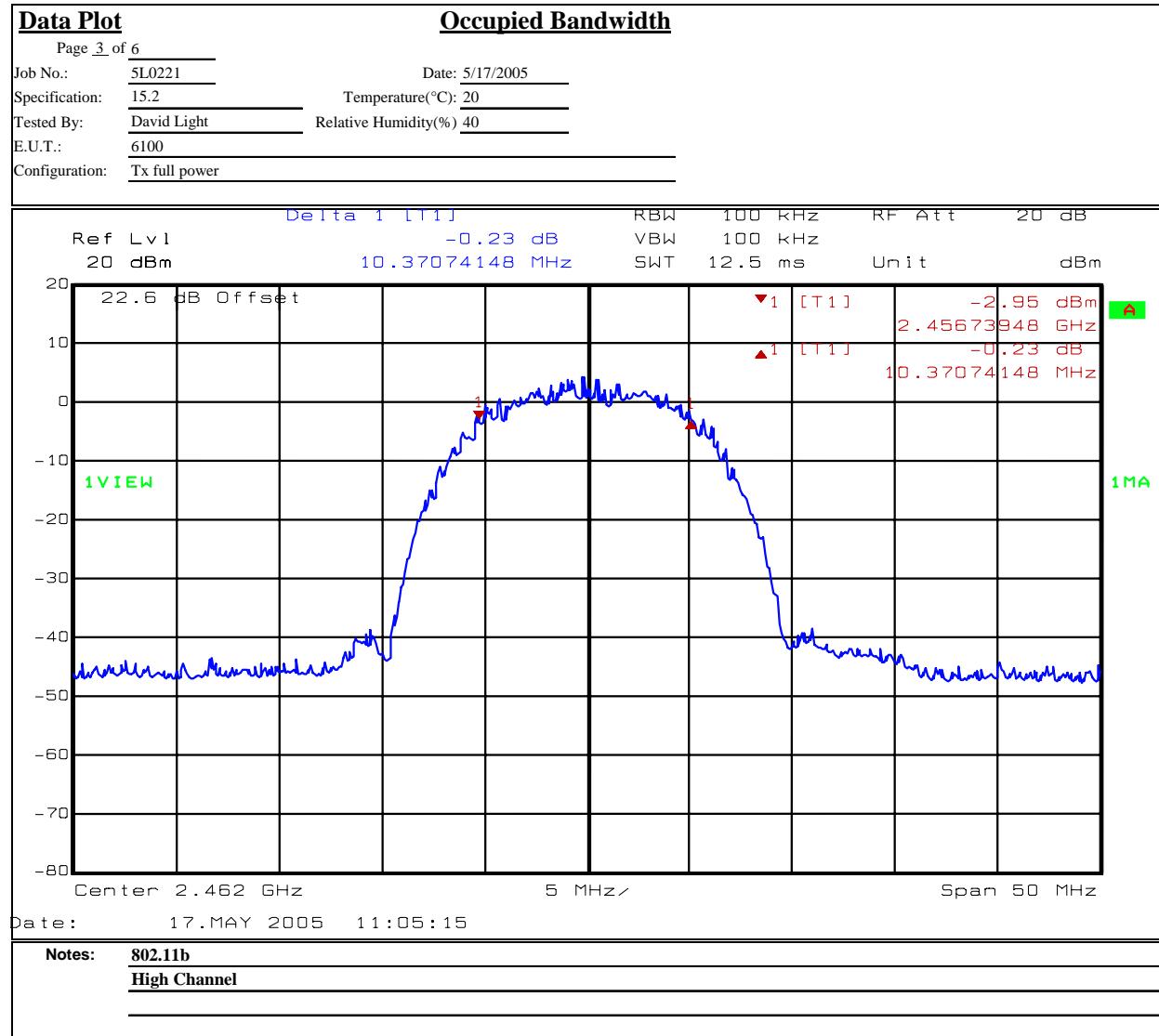
## Test Data – Occupied Bandwidth

Data Plot		Occupied Bandwidth																					
Page 1 of 6																							
Job No.:	5L0221	Date:	5/17/2005	Complete	<input checked="" type="checkbox"/>																		
Specification:	15.247	Temperature(°C):	20	Preliminary:	<input type="checkbox"/>																		
Tested By:	David Light	Relative Humidity(%):	40																				
E.U.T.:	6100																						
Configuration:	Tx full power																						
Sample Number:	1																						
Location:	Lab 1	RBW:	100 kHz																				
Detector Type:	Peak	VBW:	100 kHz																				
<b>Test Equipment Used</b>																							
Antenna:	Directional Coupler:																						
Pre-Amp:	Cable #1: 1973																						
Filter:	Cable #2:																						
Receiver:	Cable #3:																						
Attenuator #1	Cable #4:																						
Attenuator #2:	Mixer:																						
Additional equipment used:																							
Measurement Uncertainty: +/-1.7 dB																							
<table border="1"> <tr> <td>Ref Lvl</td> <td>Marker 1 [T1]</td> <td>RBW</td> <td>100 kHz</td> <td>RF Att</td> <td>20 dB</td> </tr> <tr> <td>20 dBm</td> <td>-3.83 dBm</td> <td>VBW</td> <td>100 kHz</td> <td></td> <td></td> </tr> <tr> <td></td> <td>2.41816232 GHz</td> <td>SWT</td> <td>12.5 ms</td> <td>Unit</td> <td></td> </tr> </table>						Ref Lvl	Marker 1 [T1]	RBW	100 kHz	RF Att	20 dB	20 dBm	-3.83 dBm	VBW	100 kHz				2.41816232 GHz	SWT	12.5 ms	Unit	
Ref Lvl	Marker 1 [T1]	RBW	100 kHz	RF Att	20 dB																		
20 dBm	-3.83 dBm	VBW	100 kHz																				
	2.41816232 GHz	SWT	12.5 ms	Unit																			
<table border="1"> <tr> <td>22.6 dB Offset</td> <td>▼1 [T1]</td> <td>-3.83 dBm</td> </tr> <tr> <td></td> <td>△1 [T1]</td> <td>0.81 dB</td> </tr> <tr> <td></td> <td></td> <td>-11.22244489 MHz</td> </tr> </table>						22.6 dB Offset	▼1 [T1]	-3.83 dBm		△1 [T1]	0.81 dB			-11.22244489 MHz									
22.6 dB Offset	▼1 [T1]	-3.83 dBm																					
	△1 [T1]	0.81 dB																					
		-11.22244489 MHz																					
<table border="1"> <tr> <td>Center 2.412 GHz</td> <td>5 MHz/</td> <td>Span 50 MHz</td> </tr> </table>						Center 2.412 GHz	5 MHz/	Span 50 MHz															
Center 2.412 GHz	5 MHz/	Span 50 MHz																					
Date: 17.MAY 2005 11:02:08																							
Notes: 802.11b																							
Low channel																							

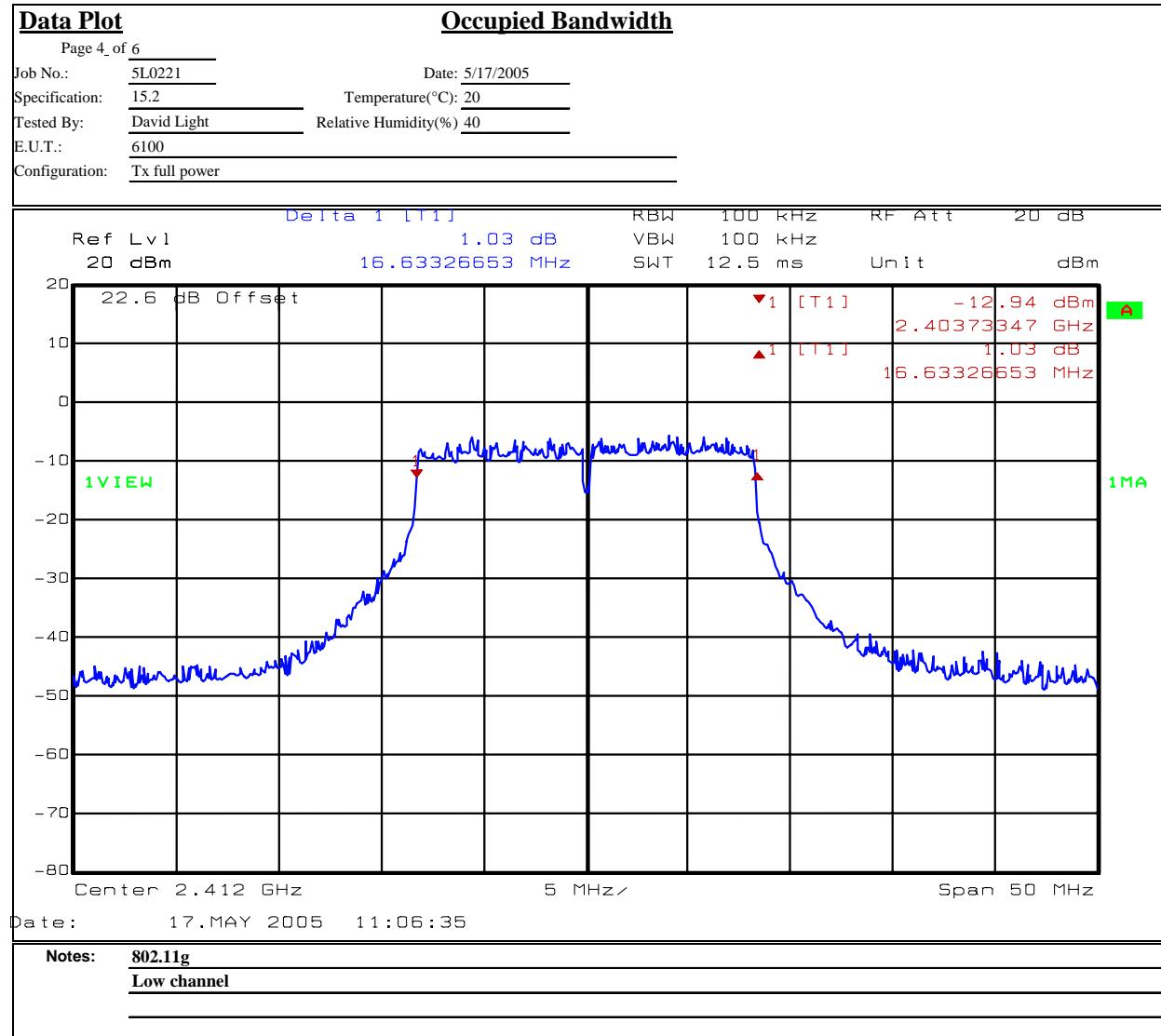
## Test Data – Occupied Bandwidth



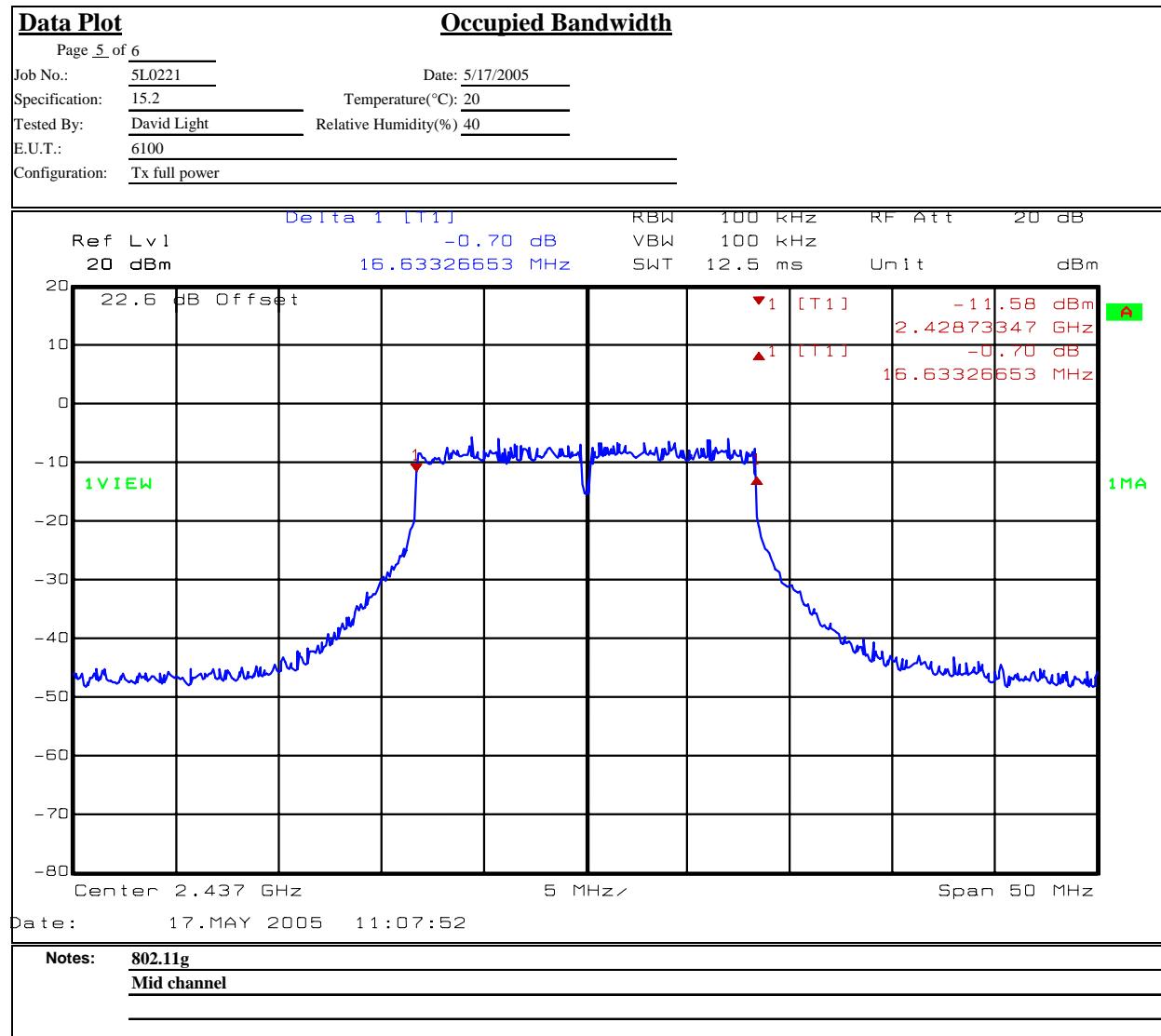
## Test Data – Occupied Bandwidth



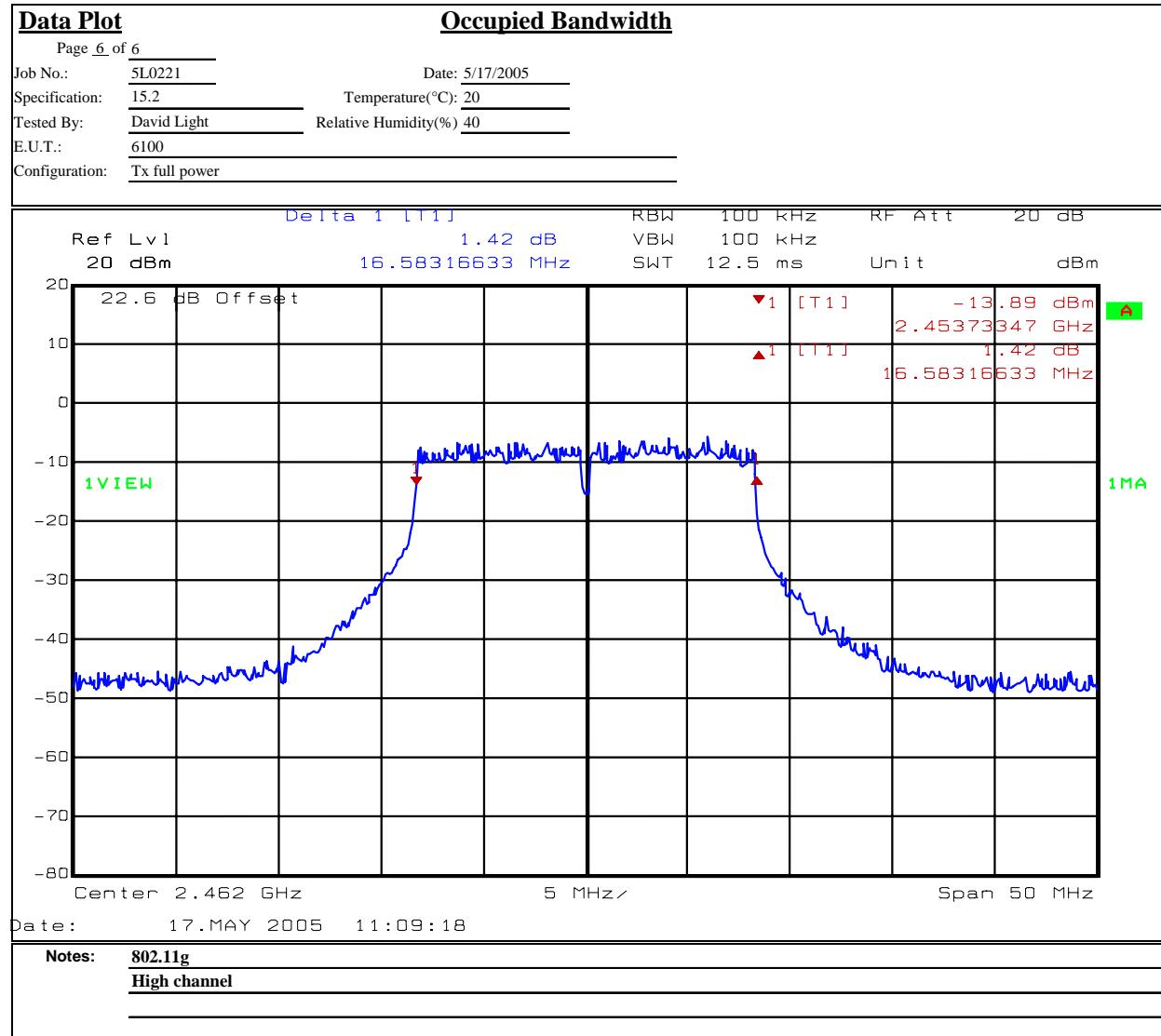
## Test Data – Occupied Bandwidth



## Test Data – Occupied Bandwidth



## Test Data – Occupied Bandwidth



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## **Section 5. Maximum Peak Output Power**

NAME OF TEST: Maximum Peak Output power	PARA. NO.: 15.247(b)(1)
TESTED BY: David Light	5/17/05

**Test Results:** Complies.

**Measurement Data:** Refer to attached data

The measurement was repeated at +/- 15% of nominal supply voltage with no variation noted in rf power output.

802.11b  
2412 MHz – 16.67 dBm  
2437 MHz – 16.52 dBm  
2462 MHz – 16.52 dBm

802.11g  
2412 MHz – 14.91dBm  
2437 MHz – 14.69 dBm  
2462 MHz – 14.69 dBm

Test Equipment Used: 1973-1472-1029-1030

Test Conditions:

Temp.: 20<sup>0</sup>C  
RH: 40%

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FCC PART 15, SUBPART C  
Digital Transmission Systems  
Test Report No.: 5L0221RUS1Rev1

## **Section 6        Spurious Emissions at Antenna Terminals**

NAME OF TEST: Spurious Emissions at Antenna Terminals PARA. NO.: 15.247 (c)

TESTED BY: David Light

DATE: 5/17/05

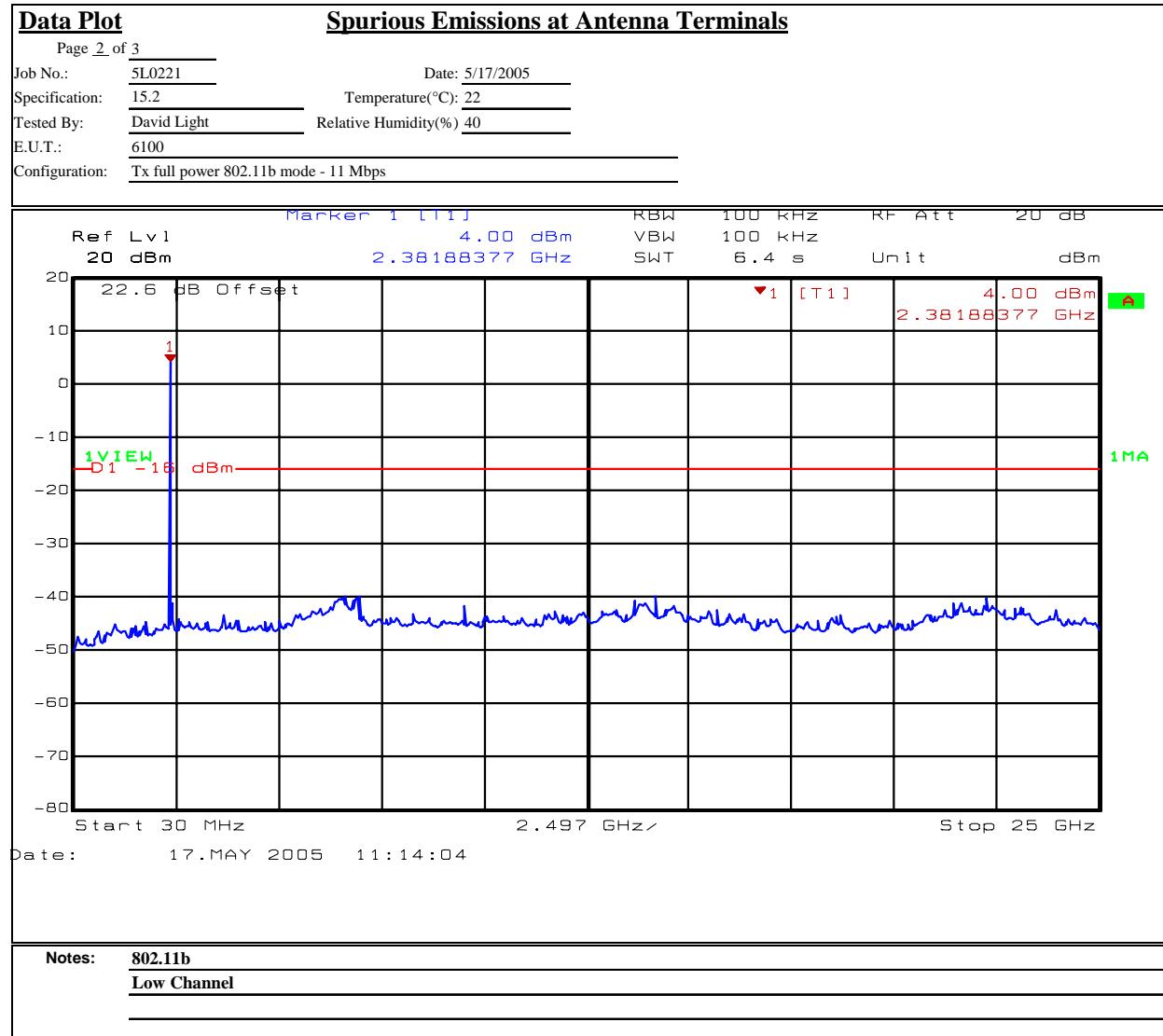
**Test Results:** Complies.

**Measurement Data:** See attached plots.

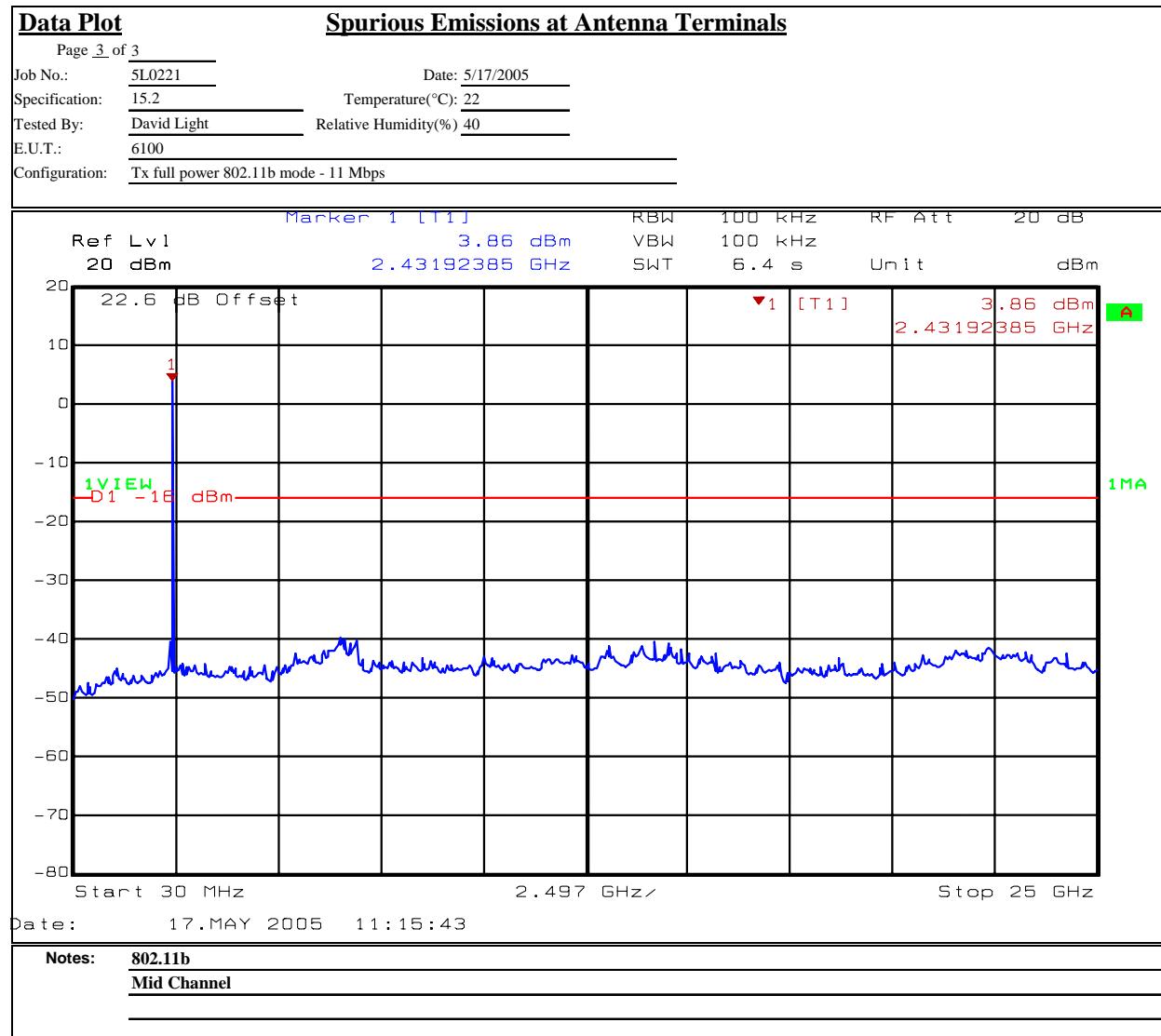
## Test Data – Spurious Emissions at Antenna Terminals

Data Plot		Spurious Emissions at Antenna Terminals					
Page 1 of 3		Date: 5/17/2005			Complete <input checked="" type="checkbox"/> Preliminary: _____		
Job No.:	5L0221	Temperature(°C):	22				
Specification:	15.247	Relative Humidity(%):	40				
Tested By:	David Light						
E.U.T.:	6100						
Configuration:	Tx full power 802.11b mode - 11 Mbps						
Sample Number:	1	RBW:	Refer to plots				
Location:	Lab 1	VBW:	Refer to plots				
Detector Type:	Peak						
<b>Test Equipment Used</b>							
Antenna:	Directional Coupler: _____						
Pre-Amp:	Cable #1: 1973						
Filter:	Cable #2: _____						
Receiver:	Cable #3: _____						
Attenuator #1	Cable #4: _____						
Attenuator #2:	Mixer: _____						
Additional equipment used:							
Measurement Uncertainty:	+/-.7 dB						
Date: 17.MAY 2005 11:12:50							
Notes:	802.11b Low channel						

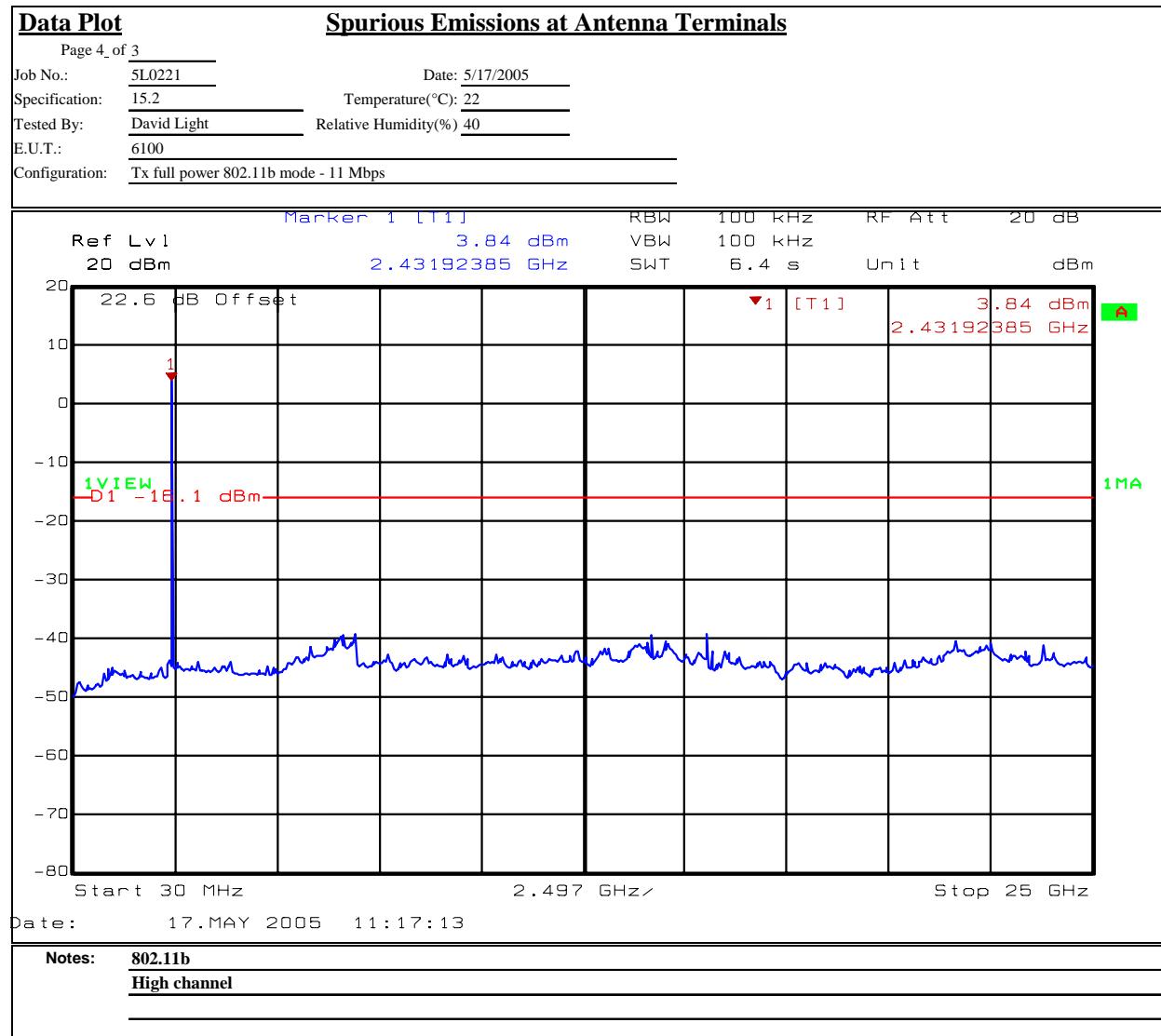
## Test Data – Spurious Emissions at Antenna Terminals



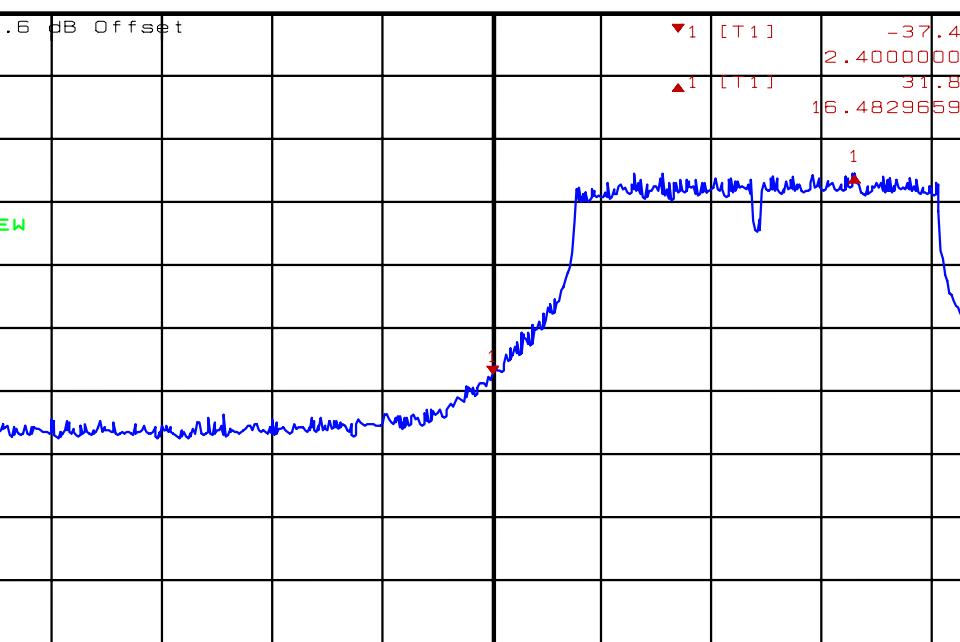
## Test Data – Spurious Emissions at Antenna Terminals



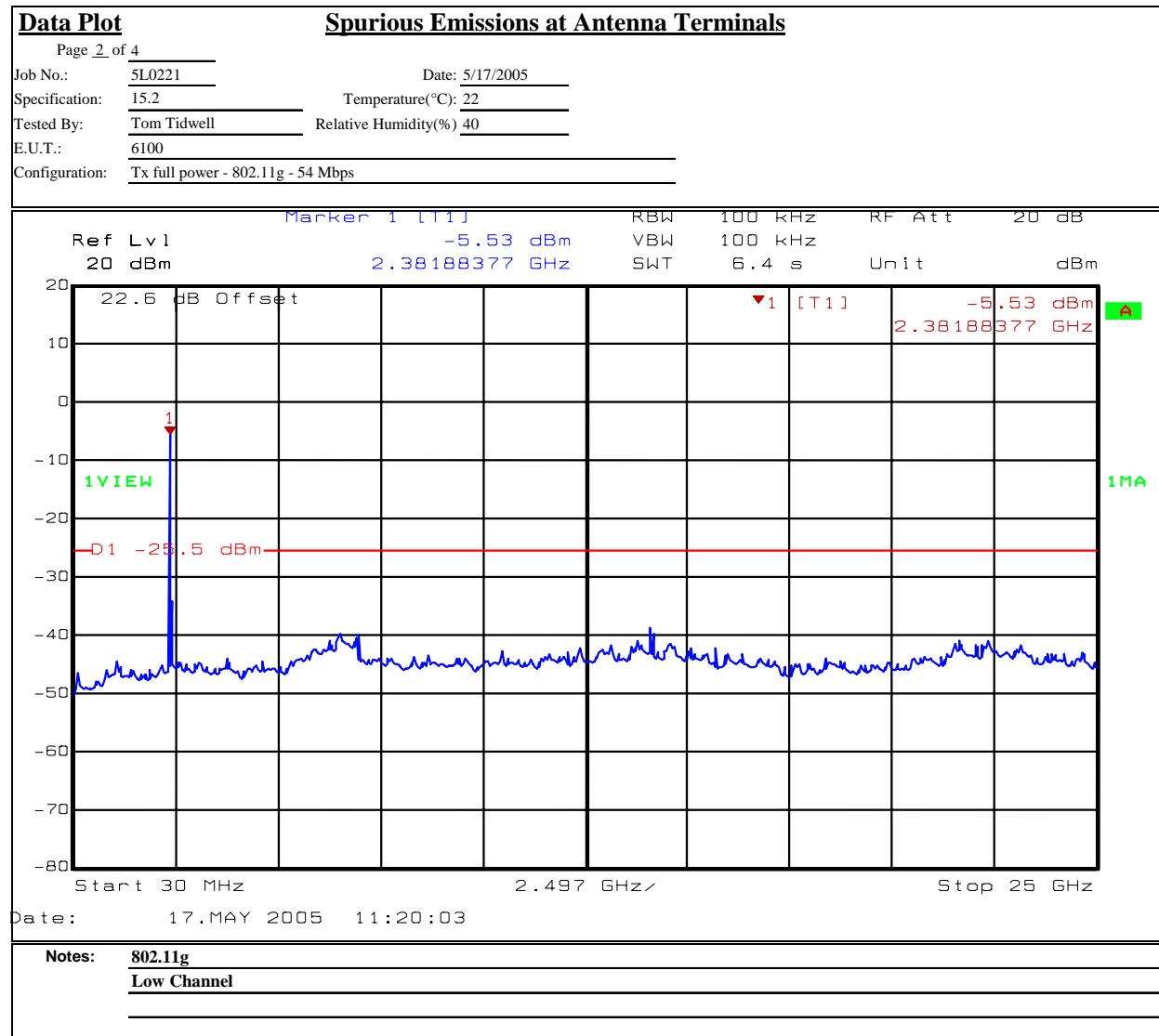
## Test Data – Spurious Emissions at Antenna Terminals



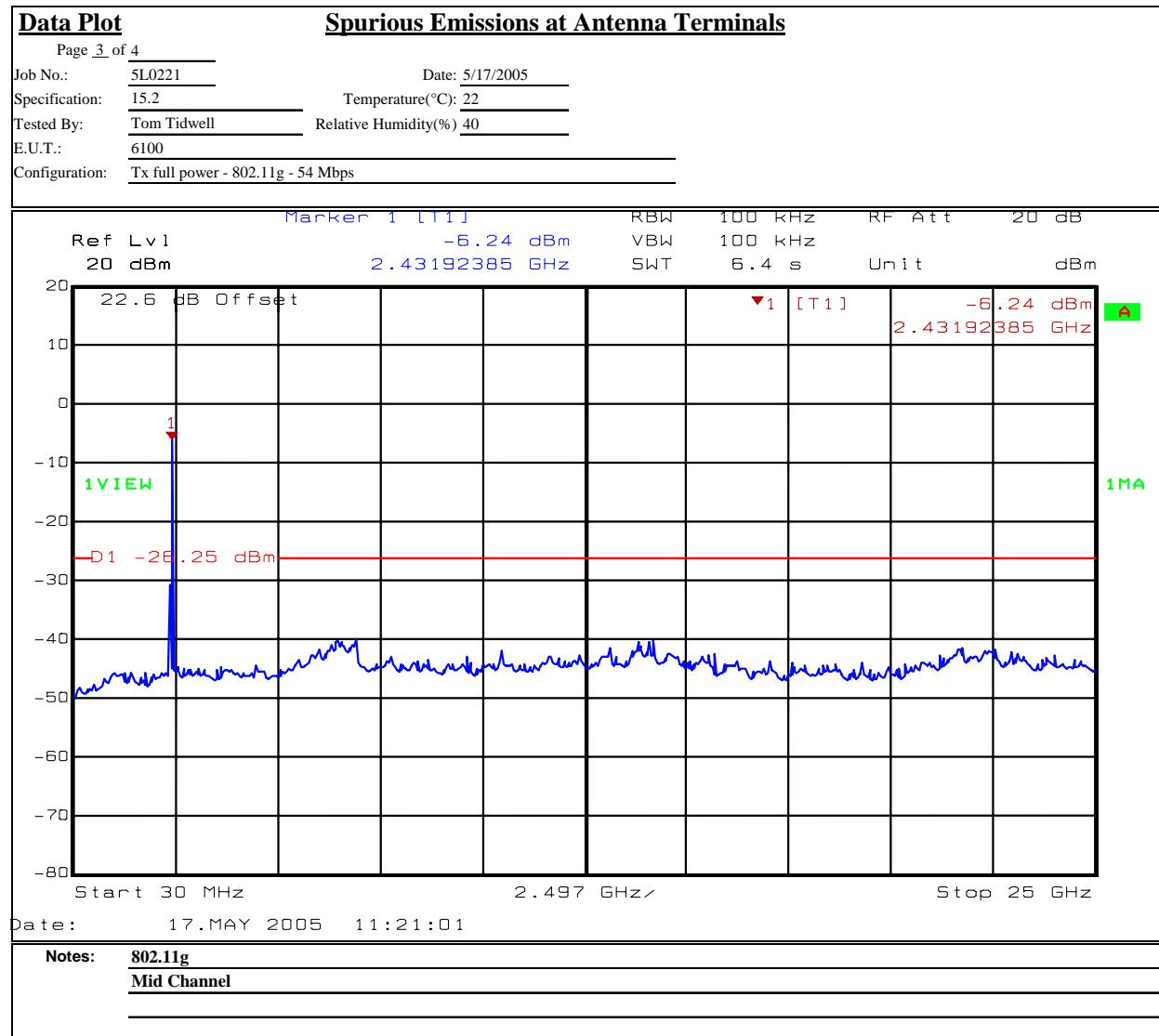
## Test Data – Spurious Emissions at Antenna Terminals

<b>Data Plot</b>		<b>Spurious Emissions at Antenna Terminals</b>						
Page 1 of 4		Date: 5/17/2005			Complete <input checked="" type="checkbox"/> X			
Job No.:	5L0221	Specification:	15.247	Temperature(°C):	22	Preliminary: _____		
Tested By:	Tom Tidwell	Relative Humidity(%)	40					
E.U.T.:	6100							
Configuration:	Tx full power - 802.11g - 54 Mbps							
Sample Number:	1							
Location:	Lab 1	RBW: 100 kHz						
Detector Type:	Peak	VBW: 100 kHz						
<b>Test Equipment Used</b>								
Antenna:								
Pre-Amp:	Directional Coupler: _____							
Filter:	Cable #1: 1973							
Receiver:	Cable #2: _____							
Attenuator #1	Cable #3: _____							
Attenuator #2:	Cable #4: _____							
Additional equipment used: _____								
Measurement Uncertainty: +/-1.7 dB								
Ref Lvl 20 dBm Delta 1 [T1] 31.89 dB 20 dBm 16.48296593 MHz		RBW VBW SWT	100 kHz 100 kHz 12.5 ms	RF Att	Unit	20 dB	dBm	
								
Center 2.4 GHz Span 50 MHz								
Date: 17.MAY 2005 11:18:53								
Notes:	802.11g Low channel							

## Test Data – Spurious Emissions at Antenna Terminals



## Test Data – Spurious Emissions at Antenna Terminals

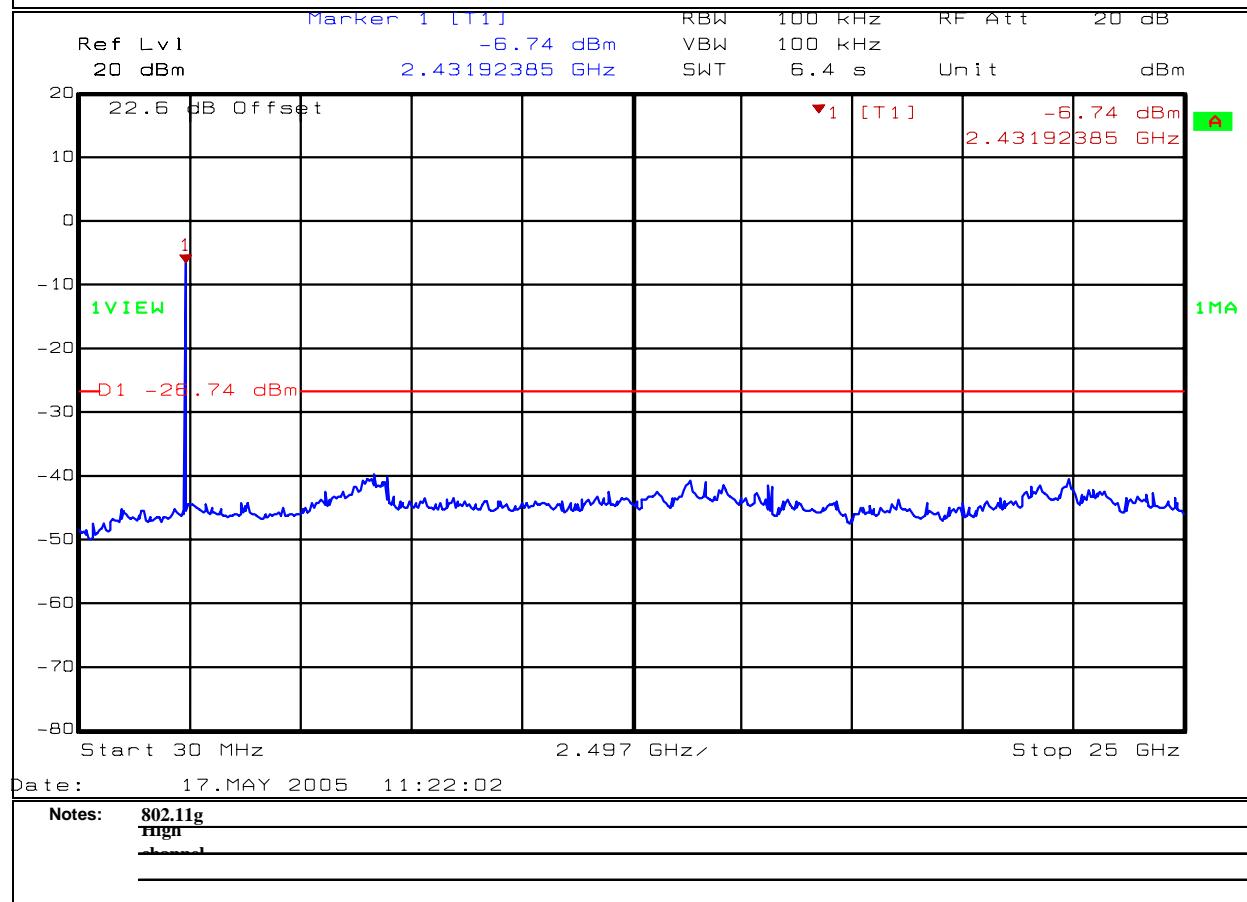


## Test Data – Spurious Emissions at Antenna Terminals

Data Plot ms at Antenna Terminals

Page 4 of 4

Job No.: 5L0221 Date: 5/17/2005  
 Specification: 15.2 Temperature(°C): 22  
 Tested By: Tom Tidwell Relative Humidity(%) 40  
 E.U.T.: 6100  
 Configuration: Tx full power - 802.11g - 54 Mbps



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*EQUIPMENT:* WLAN6100

FCC PART 15, SUBPART C  
Digital Transmission Systems  
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## **Section 7. Radiated Emissions**

NAME OF TEST: Radiated Emissions	PARA. NO.: 15.247 (c)
TESTED BY: Kevin Rose	DATE: 5/18/05

**Test Results:** Complies.

**Measurement Data:** See attached table.

Measurement was made from 30 MHz to 25 GHz.

**Radiated Emissions****Nemko Dallas, Inc.****Dallas Headquarters:**

802 N. Kealy  
 Lewisville, TX 75057  
 Tel: (972) 436-9600  
 Fax: (972) 436-2667

<b>Radiated Emissions</b>									
Page <u>1</u> of <u>1</u>									
Job No.:	5L0221R				Date: 5/18/2005				
Specification:	15.247/15.205				Temperature(°C): 21				
Tested By:	Kevin Rose				Relative Humidity(%) 46				
E.U.T.:	802.11b/g Transmitter								
Configuration:	Tx in host PC								
Sample Number:	1								
Location:	AC 3				RBW: 1 MHz				
Detector Type:	Peak				VBW: 1 MHz				
<b>Test Equipment Used</b>									
Antenna:	1304				Directional Coupler: #N/A				
Pre-Amp:	1016				Cable #1: 1484				
Filter:	#N/A				Cable #2: 1485				
Receiver:	1464				Cable #3: #N/A				
Attenuator #1	#N/A				Cable #4: #N/A				
Attenuator #2:	#N/A				Mixer: #N/A				
Measurement Uncertainty: +/- 3.6 dB									
Frequency (GHz)	Meter Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Pre-Amp Gain (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector / Polarity	
								802.11b/Channel 11	
2.484	49.3	28.0	3.1	32.8	47.6	74	54	Peak/Horizontal	
2.484	48.3	28.0	3.1	32.8	46.6	74	54	Peak/Vertical	
								802.11g/Channel 11	
2.484	53.2	28.0	3.1	32.8	51.5	74	54	Peak/Horizontal	
2.484	53.5	28.0	3.1	32.8	51.8	74	54	Peak/Vertical	

**Radiated Photographs**



**Nemko Dallas**

*EQUIPMENT:* WLAN6100

FCC PART 15, SUBPART C  
Digital Transmission Systems  
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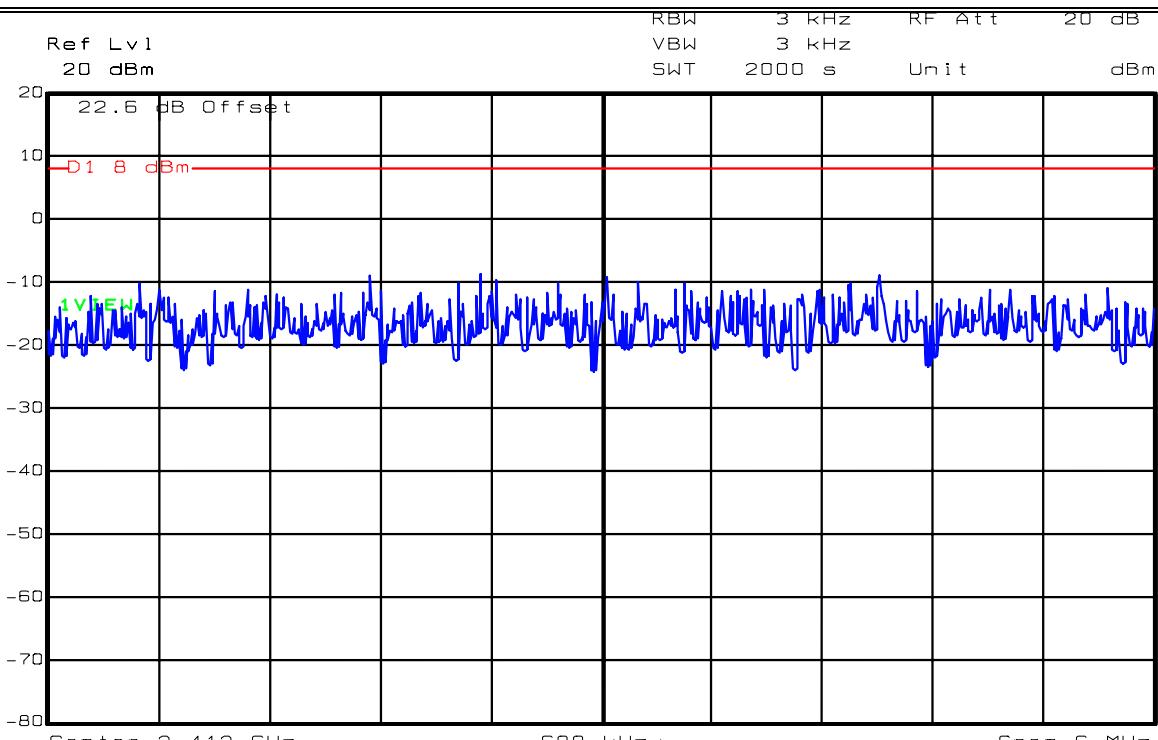
## **Section 8. Peak Power Spectral Density**

NAME OF TEST: Peak Power Spectral Density	PARA. NO.: 15.247(d)
TESTED BY: David Light	DATE: 5/17/05

**Test Results:** Complies.

**Measurement Data:** See attached data.

## Peak Power Spectral Density

Data Plot		Peak Power Spectral Density			
Page 1 of 6					
Job No.:	5L0221	Date:	5/17/2005	Complete	<input checked="" type="checkbox"/>
Specification:	15.247	Temperature(°C):	22	Preliminary:	<input type="checkbox"/>
Tested By:	Tom Tidwell	Relative Humidity(%):	40		
E.U.T.:	6100				
Configuration:	Tx full power - full data rate				
Sample Number:	1	RBW:	3 kHz		
Location:	Lab 1	VBW:	3 kHz		
Detector Type:	Peak				
<b>Test Equipment Used</b>					
Antenna:	Directional Coupler:				
Pre-Amp:	Cable #1: 1973				
Filter:	Cable #2:				
Receiver:	Cable #3:				
Attenuator #1	Cable #4:				
Attenuator #2:	Mixer:				
Additional equipment used:					
Measurement Uncertainty:	+/-1.7 dB				
Ref Lvl 1 20 dBm <span style="float: right;">* A</span>					
RBW 3 kHz RF Att 20 dB VBW 3 kHz SWT 2000 s Unit dBm					
					
Date: 17.MAY 2005 12:11:38					
Notes:	802.11a Low channel				

## Peak Power Spectral Density

**Data Plot** **Peak Power Spectral Density**

Page 2 of 6

Job No.: 5L0221 Date: 5/17/2005

Specification: 15.2 Temperature(°C): 22

Tested By: Tom Tidwell Relative Humidity(%) 40

E.U.T.: 6100

Configuration: Tx full power - full data rate

Ref Lvl 1  
20 dBm

RBW 3 kHz RF Att 20 dB  
VBW 3 kHz  
SWT 2000 s Unit dBm

22.6 dB Offset

-80 -70 -60 -50 -40 -30 -20 -10 0 10 20

D1 8 dBm

1VPEK

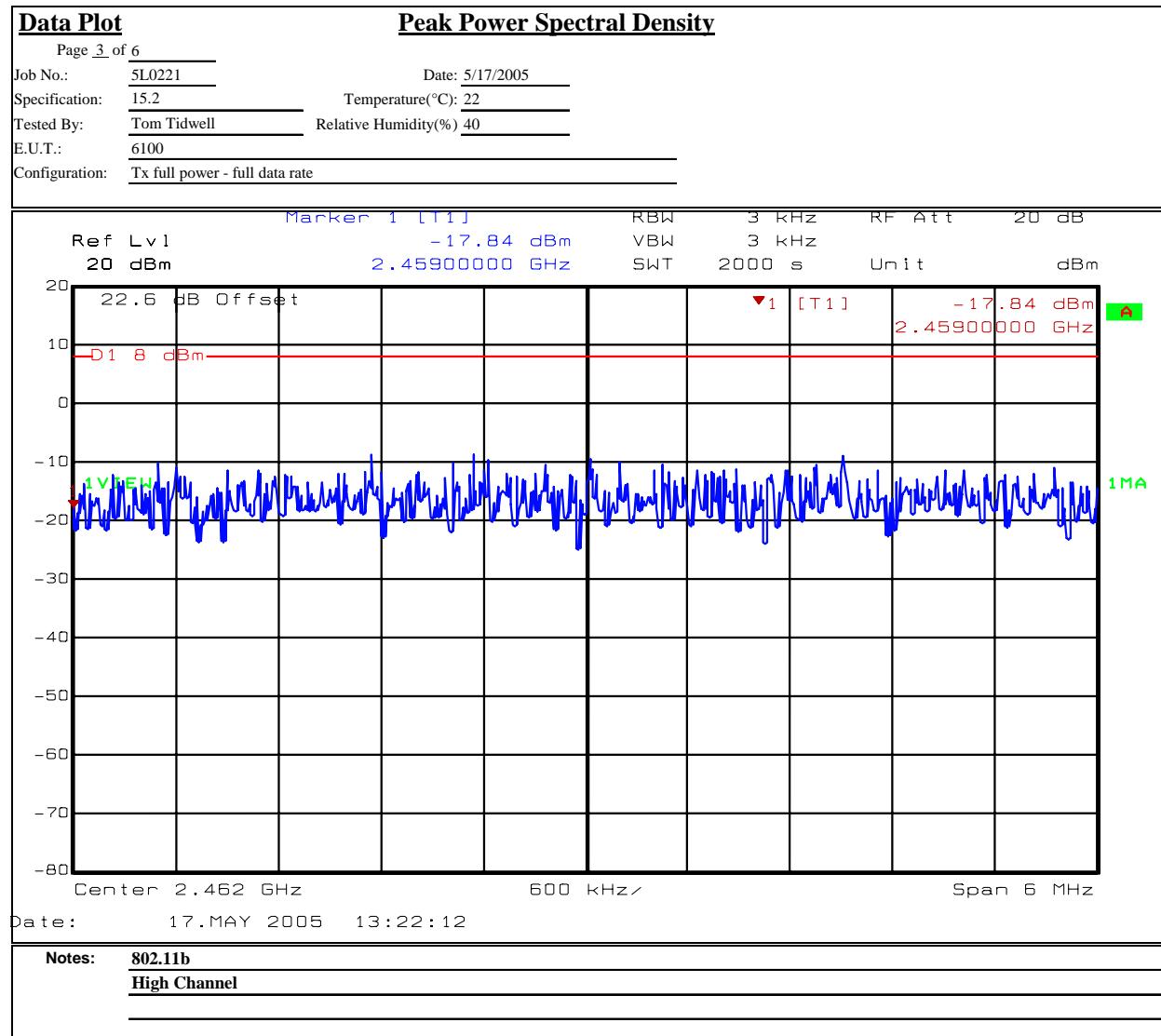
1MA

Center 2.437 GHz 600 kHz/ Span 6 MHz

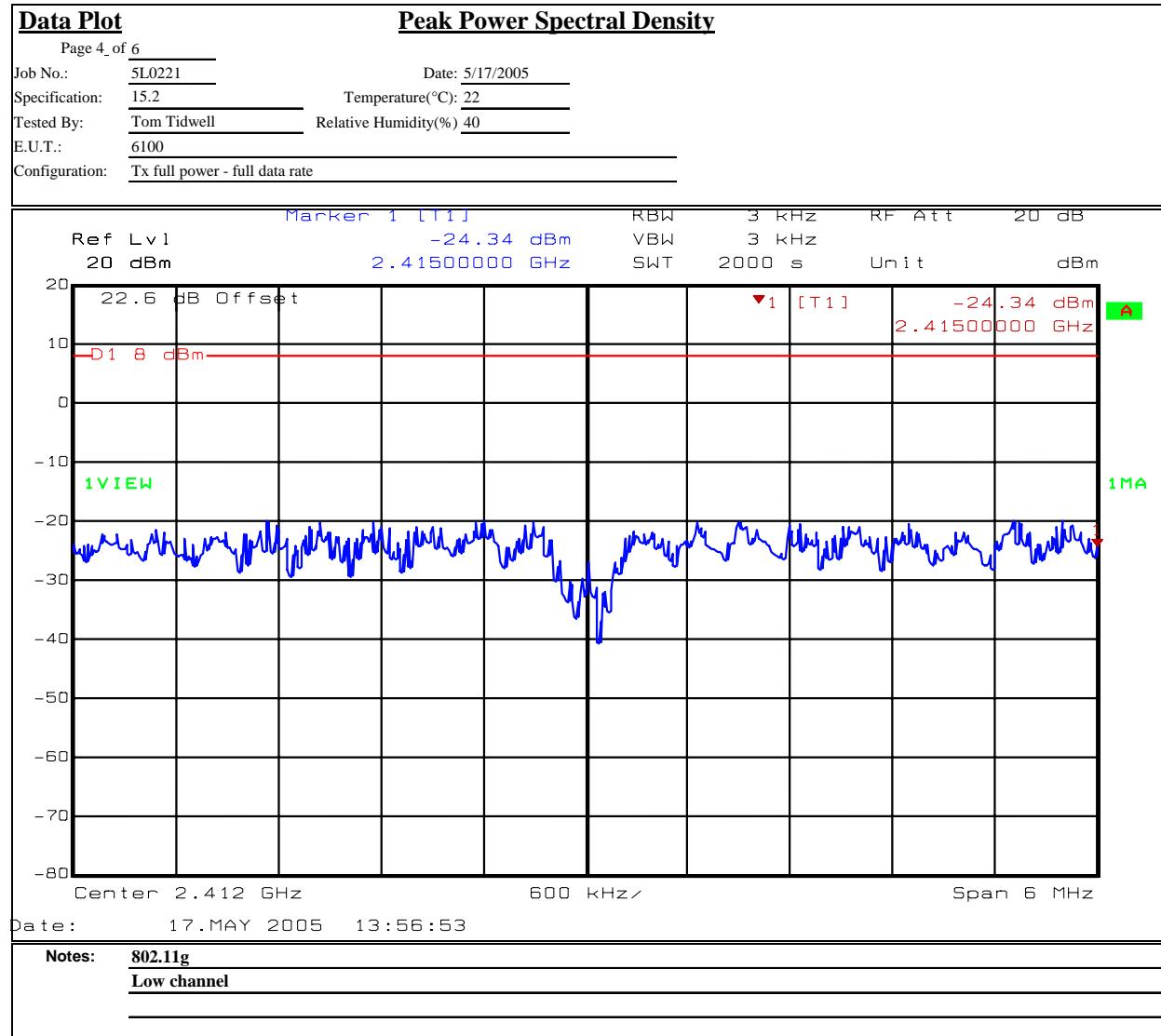
Date: 17. MAY 2005 12:46:02

Notes: 802.11b  
Mid channel

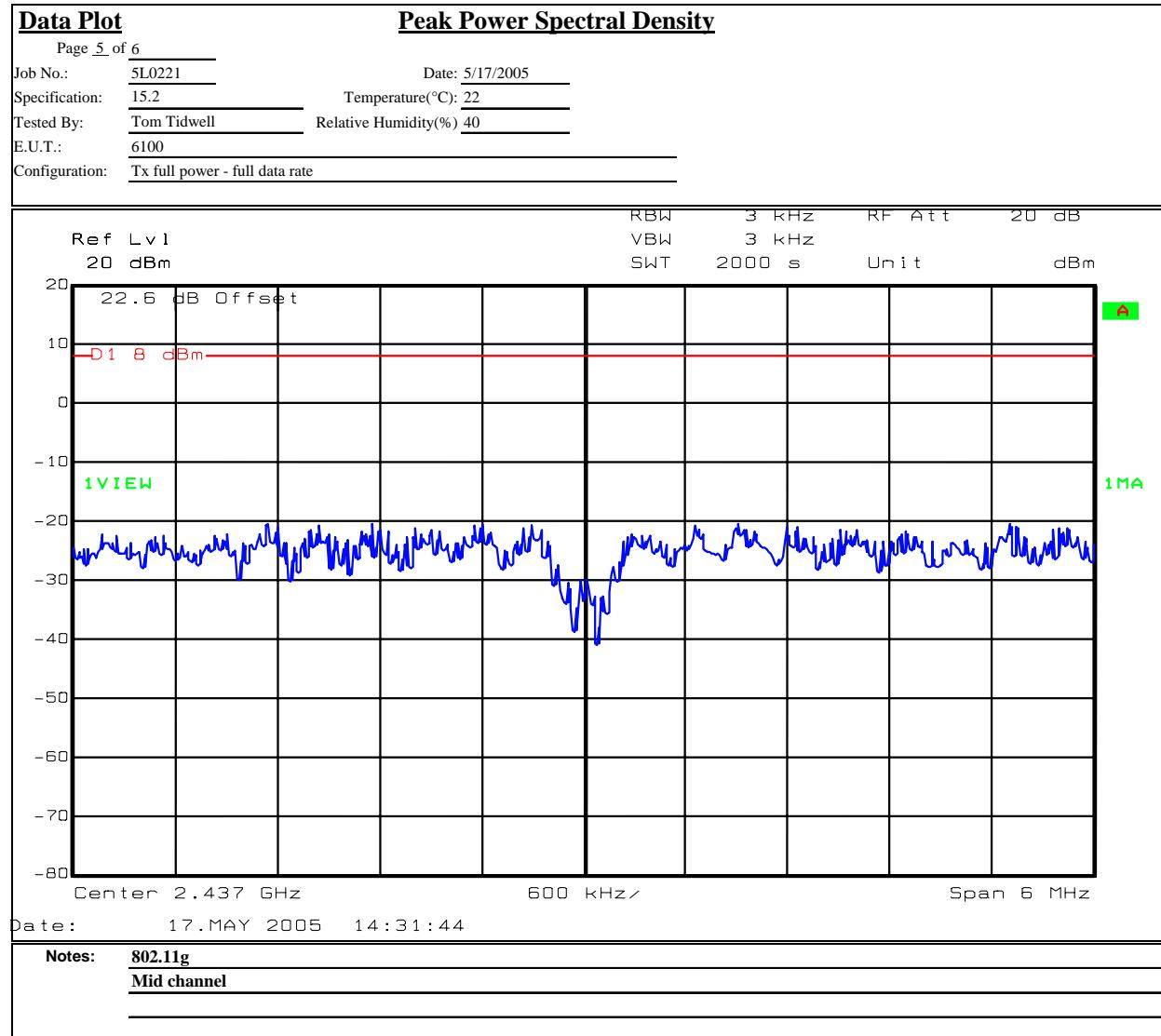
## Peak Power Spectral Density



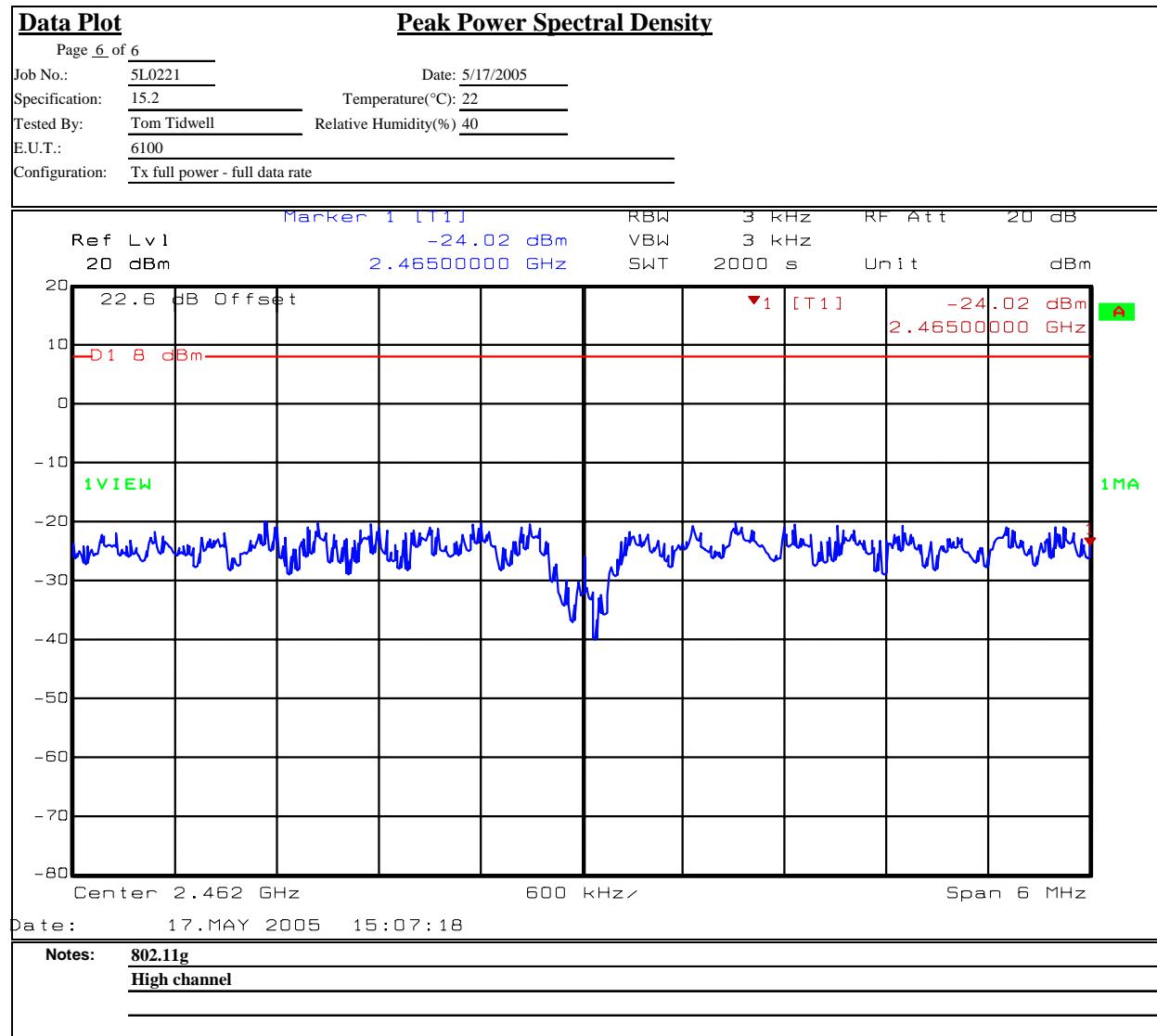
## Peak Power Spectral Density



## Peak Power Spectral Density



## Peak Power Spectral Density



**Section 9. Test Equipment List**

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date	Calibration Due
545	LISN	Schwarz Beck 8120	8120350	09/17/04	09/17/05
1555	Filter high pass 5KHz	Solar Electronics 7930-5.0	933125	04/20/05	04/20/06
1998	CABLE, 1m	KTL RG223	N/A	06/09/04	06/09/05
1019	CABLE, 9.5m	KTL RG223	N/A	07/27/04	07/27/05
1659	Spectrum Analyzer	Rhode & Schwarz FSP	973353	10/02/03	10/02/05
1036	SPECTRUM ANALYZER	ROHDE & SCHWARZ FSEK30	830844/006	03/22/04	03/23/06
1472	20db Attenuator DC 18 Ghz	Omni Spectra 20600-20db	NONE	CBU	N/A
1973	CABLE, 1m	KTL 0	N/A	08/02/04	08/02/05
1304	HORN ANTENNA	ELECTRO METRICS RGA-60	6151	09/22/03	09/22/05
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	11/12/04	11/12/05
1464	Spectrum analyzer	Hewlett Packard 8563E	3551A04428	01/14/05	01/15/07
1484	Cable 2.0-18.0 Ghz	Storm PR90-010-072	N/A	08/26/04	08/26/05
1485	Cable 2.0-18.0 Ghz	Storm PR90-010-216	N/A	08/02/04	08/02/05
1029	PEAK POWER METER	HP	3303U0012	09/14/05	09/14/06
		8900D			
1030	PEAK POWER SENSOR	HP	2539A03573	09/15/05	09/15/06
		84811A			

**Nemko Dallas**

*EQUIPMENT:* WLAN6100

FCC PART 15, SUBPART C  
Digital Transmission Systems  
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## **ANNEX A - TEST DETAILS**

NAME OF TEST: Powerline Conducted Emissions	PARA. NO.: 15.207(a)
---	----------------------

**Minimum Standard:** §15.207 Conducted limits.

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 mH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of Conducted Emission (MHz)	Limit (dBmV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\* Decreases with the logarithm of the frequency.

(b) The limit shown in paragraph (a) of this section shall not apply to carrier current systems operating as intentional radiators on frequencies below 30 MHz. In lieu thereof, these carrier current systems shall be subject to the following standards:

(1) For carrier current systems containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

(2) For all other carrier current systems: 1000 mV within the frequency band 535-1705 kHz, as measured using a 50 mH/50 ohms LISN.

(3) Carrier current systems operating below 30 MHz are also subject to the radiated emission limits as provided in §15.205 and §§15.209, 15.221, 15.223, 15.225 or 15.227, as appropriate.

(c) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provision for, the use of battery chargers which permit operating while charging, AC adaptors or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

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FCC PART 15, SUBPART C  
Digital Transmission Systems  
Test Report No.: 5L0221RUS1Rev1

NAME OF TEST: Occupied Bandwidth

PARA. NO.: 15.247(a)(2)

**Minimum Standard:** The minimum 6 dB bandwidth shall be at least 500 kHz

**NAME OF TEST:** Maximum Peak Output Power**PARA. NO.:** 15.247(b)(1)**Minimum Standard:** The maximum peak output power shall not exceed 1 watt.

If transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Systems operating in the 2400-2483.5 MHz band that are used exclusively for fixed, point to point operation may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceed 6 dBi.

Systems operating in the 5725 – 5850 MHz band that are used exclusively for fixed, point-to-point operation may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter peak output power.

**Direct Measurement Method For Detachable Antennas:**

If the antenna is detachable, a peak power meter is used to measure the power output with the transmitter operating into a 50 ohm load. The dBi gain of the antenna(s) employed shall be reported.

**Substitution Antenna Method for Integral Antennas:**

The peak field strength of the carrier is measured in a worst-case configuration with a RBW > 5 times the occupied bandwidth of the transmitted waveform. For cases where the RBW of the test instrument is not sufficient, the power is measured using a peak power meter instead of the spectrum analyzer.

The RBW of the spectrum analyzer shall be set to a value greater than the measured 6 dB occupied bandwidth of the E.U.T.

**Number of channels tested:**

Tuning range	Number of channels tested	Channel location in band
1 MHz or less	1	middle
1 to 10 MHz	2	top and bottom
more than 10 MHz	3	top, middle, bottom

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NAME OF TEST: Channel Separation

PARA. NO.: 15.247(a)(1)

**Minimum Standard:** Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

NAME OF TEST: Pseudorandom Hopping Algorithm      PARA. NO.: 15.247(a)(1)

**Minimum Standard:** The system shall hop to channel frequencies that are selected from a pseudo-randomly ordered list of hopping frequencies. Each frequency must be used equally on average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their transmitters and shall shift frequencies in synchronization with the transmitted signals.

**NAME OF TEST:** Time of Occupancy**PARA. NO.:** 15.247(a)(1)(ii)**Minimum Standard:**

Frequency Band (MHz)	20 dB Bandwidth	No. of Hopping Channels	Average Time of Occupancy
902 - 928	<250 kHz	50	=<0.4 sec. in 20 sec.
902 – 928	=>250 kHz	25	=<0.4 sec. in 10 sec.
2400 – 2483.5	-----	75	=<0.4 sec. in 30 sec.
5725 – 5850	-----	75	=<0.4 sec. in 30 sec.

**Method Of Measurement:**

The spectrum analyzer is set as follows:

RBW: 1 MHz

VBW: = RBW

Span: 0 Hz

LOG dB/div.: 10 dB

Sweep: Sufficient to see one hop time sequence.

Trigger: Video

The occupancy time of one hop is measured as above. The average time of occupancy is calculated over the appropriate period of time from above table (10, 20, or 30 seconds).

Avg. time of occupancy = (period from table/duration of one hop)/no. of channels multiplied by the duration of one hop.

For instance:

If a 2.4 GHz system has a measured hop duration time of 1 msec. and uses 75 channels, then the average time of occupancy would be:

$(30 \text{ sec.}/.001 \text{ sec.})/75 \text{ chan.} = 400 \times 1 \text{ msec.} = 400 \text{ msec. or } 0.4 \text{ sec. in 30 sec.}$

**Nemko Dallas****EQUIPMENT:** WLAN6100**FCC PART 15, SUBPART C**  
**Digital Transmission Systems**  
**Test Report No.: 5L0221RUS1Rev1****NAME OF TEST:** Occupied Bandwidth**PARA. NO.:** 15.247(a)(2)**Minimum Standard:**

Frequency Band (MHz)	Maximum 20 dB Bandwidth
902 - 928	500 kHz
2400 – 2483.5	1 MHz
5725 – 5850	1 MHz

**Method Of Measurement:**

The spectrum analyzer is set as follows:

RBW: At least 1% of span/div.

VBW: >RBW

Span: Sufficient to display 20 dB bandwidth

LOG dB/div.: 10 dB

Sweep: Auto

**Number of channels tested:**

Tuning range	Number of channels tested	Channel location in band
1 MHz or less	1	middle
1 to 10 MHz	2	top and bottom
more than 10 MHz	3	top, middle, bottom

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FCC PART 15, SUBPART C  
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NAME OF TEST: RF Exposure

PARA. NO.: 15.247(b)(4)

**Minimum Standard:** Systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines stipulated in 1.1307(b)(1) of CFR 47.

NAME OF TEST: Spurious Emissions(conducted)	PARA. NO.: 15.247(c)
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**Minimum Standard:** In any 100kHz bandwidth outside the frequency band in which the transmitter is operating, emissions shall be at least 20 dB below the fundamental emission or shall not exceed the following field strength limits. Emissions falling in the restricted bands of 15.205 shall not exceed the following field strength limits:

Frequency (MHz)	Field Strength ( $\mu$ V/m @ 3m)	Field Strength (dB @ 3m)
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.0
Above 960	500	54.0

**THE SPECTRUM IS SEARCHED TO THE 10th HARMONIC OF THE HIGHEST FREQUENCY GENERATED IN THE EUT.**

**Method Of Measurement:**30 MHz - 10th harmonic plot

RBW: 100 kHz

VBW: 300 kHz

Sweep: Auto

Display line: -20 dBc

Lower Band Edge

RBW: At least 1% of span/div.

VBW: &gt;RBW

Span: As necessary to display any spurious at band edge.

Sweep: Auto

Center Frequency: 902 MHz, 2400 MHz, or 5725 MHz

Marker: Peak of fundamental emission

Marker Δ: Peak of highest spurious level below center frequency.

Upper Band Edge

RBW: At least 1% of span/div.

VBW: &gt;RBW

Span: As necessary to display any spurious at band edge.

Sweep: Auto

Center Frequency: 928 MHz, 2483.5 MHz, or 5850 MHz

Marker: Peak of fundamental emission

Marker Δ: Peak of highest spurious level above center frequency.

Number of channels tested:

Tuning range	Number of channels tested	Channel location in band
1 MHz or less	1	middle
1 to 10 MHz	2	top and bottom
more than 10 MHz	3	top, middle, bottom

**NAME OF TEST:** Radiated Spurious Emissions**PARA. NO.:** 15.247(c)

**Minimum Standard:** In any 100kHz bandwidth outside the frequency band in which the transmitter is operating, emissions shall be at least 20 dB below the fundamental emission or shall not exceed the following field strength limits:

**Emissions falling in the restricted bands of 15.205 shall not exceed the following field strength limits:**

Frequency (MHz)	Field Strength ( $\mu$ V/m @ 3m)	Field Strength (dB @ 3m)
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.0
Above 960	500	54.0

**THE SPECTRUM WAS SEARCHED TO THE 10th HARMONIC**

### 15.205 Restricted Bands

MHz	MHz	MHz	GHz
0.09-0.11	16.42-16.423	399.9-410	4.5-5.25
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.125-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2655-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41	1718		

Number of channels tested:

Tuning range	Number of channels tested	Channel location in band
1 MHz or less	1	middle
1 to 10 MHz	2	top and bottom
more than 10 MHz	3	top, middle, bottom

**NAME OF TEST:** Transmitter Power Density**PARA. NO.:** 15.247(d)

**Minimum Standard:** The transmitted power density averaged over any 1 second interval shall not be greater than +8 dBm in any 3 kHz bandwidth.

**Method Of Measurement:** The spectrum analyzer is set as follows:

RBW: 3 kHz

VBW: &gt;3 kHz

Span: =&gt; measured 6 dB bandwidth

Sweep: Span(kHz)/3 (i.e. for a span of 1.5 MHz the sweep rate is  $1500/3 = 500$  sec.

LOG dB/div.: 2 dB

**Note:** For devices with spectrum line spacing =< 3 kHz, the RBW of the analyzer is reduced until the spectral lines are resolved. The measurement data is normalized to 3 kHz by summing the power of all the individual spectral lines within a 3 kHz band in linear power units.

**For Devices With Integral Antenna:**

For devices with non-detachable antennas, the received field strength is peaked and the spectrum analyzer is set as above. The peak emission level is then measured and converted to a field strength by adding the appropriate antenna factor and cable loss. This field strength is then converted to an equivalent isotropic radiated power using the same method as described for Peak Power output.

Number of channels tested:

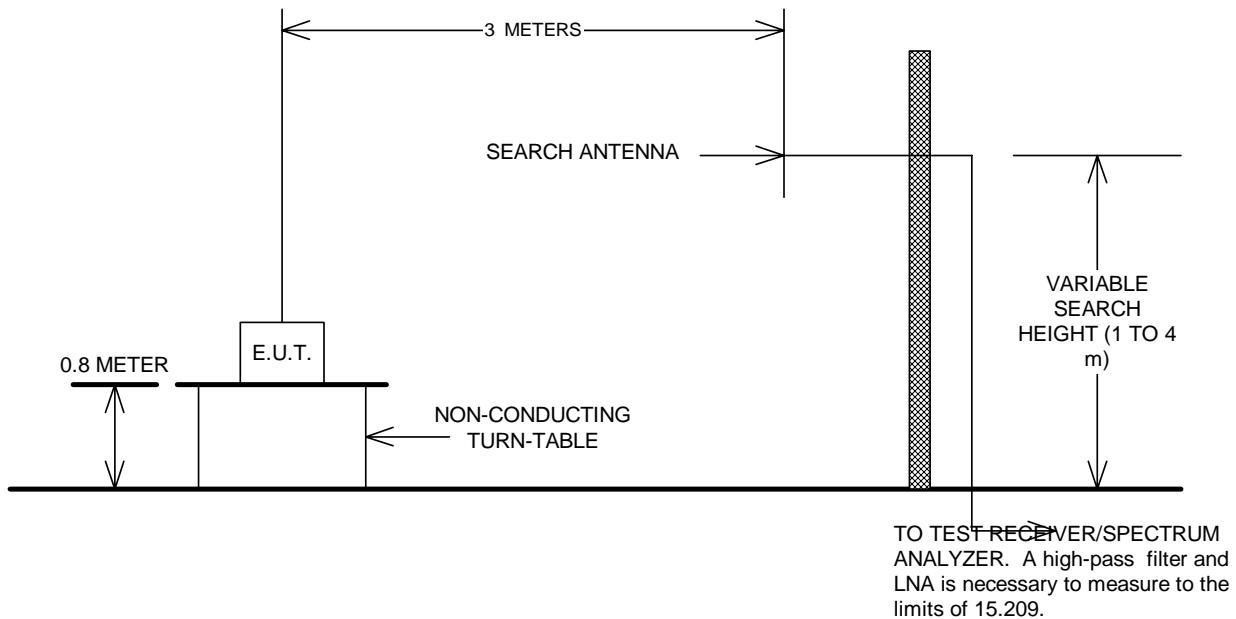
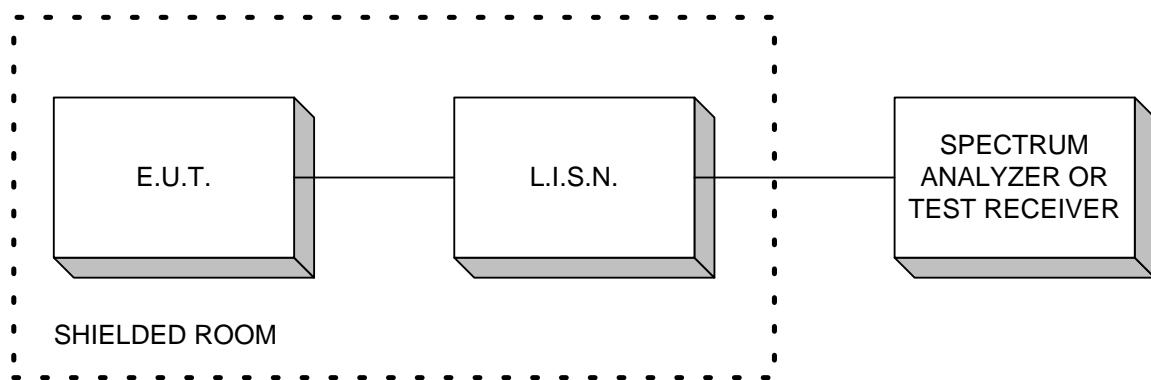
<b>Tuning Range</b>	<b>Number Of Channels Tested</b>	<b>Channel Location In Band</b>
1 MHz or Less	1	Middle
1 to 10 MHz	2	Top And Bottom
More Than 10 MHz	3	Top, Middle, Bottom

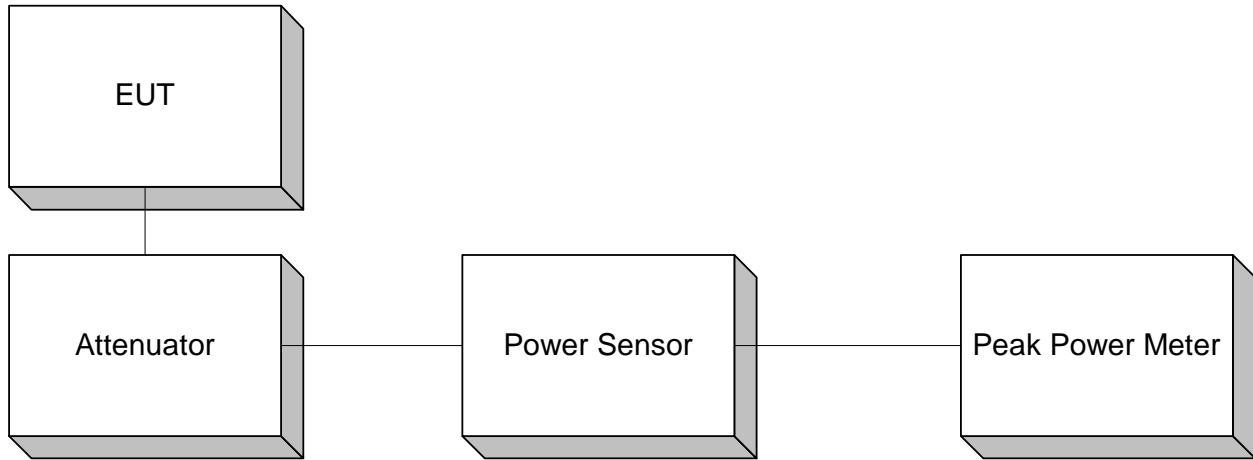
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**ANNEX B - TEST DIAGRAMS**

**Test Site For Radiated Emissions****Conducted Emissions**

**Peak Power At Antenna Terminals**

**Minimum 6 dB Bandwidth**  
**Peak Power Spectral Density**  
**Spurious Emissions (conducted)**

