



**FCC CFR47 PART 15 SUBPART C  
CERTIFICATION**

**TEST REPORT**

**FOR**

**NINTENDO DS**

**MODEL NUMBER: NTR-001**

**FCC ID: BKENTR001**

**REPORT NUMBER: 04I2873-1**

**ISSUE DATE: JULY 28, 2004**

*Prepared for*  
**NINTENDO CO., LTD.  
11-1 KAMITOBA-HOKOTATE-CHO  
MINAMI-KU, KYOTO  
JAPAN**

*Prepared by*  
**COMPLIANCE CERTIFICATION SERVICES  
561F MONTEREY ROAD,  
MORGAN HILL, CA 95037, USA  
TEL: (408) 463-0885  
FAX: (408) 463-0888**



## TABLE OF CONTENTS

<b>1. TEST RESULT CERTIFICATION</b> .....	<b>3</b>
<b>2. EUT DESCRIPTION</b> .....	<b>4</b>
<b>3. TEST METHODOLOGY</b> .....	<b>5</b>
<b>4. FACILITIES AND ACCREDITATION</b> .....	<b>5</b>
<b>5. CALIBRATION AND UNCERTAINTY</b> .....	<b>6</b>
5.1. <i>MEASURING INSTRUMENT CALIBRATION</i> .....	6
5.2. <i>MEASUREMENT UNCERTAINTY</i> .....	6
5.3. <i>TEST AND MEASUREMENT EQUIPMENT</i> .....	7
<b>6. SETUP OF EQUIPMENT UNDER TEST</b> .....	<b>8</b>
<b>7. APPLICABLE LIMITS AND TEST RESULTS</b> .....	<b>10</b>
7.1. <i>6 dB BANDWIDTH</i> .....	10
7.2. <i>99% BANDWIDTH</i> .....	14
7.3. <i>PEAK OUTPUT POWER</i> .....	18
7.4. <i>MAXIMUM PERMISSIBLE EXPOSURE</i> .....	23
7.5. <i>AVERAGE POWER</i> .....	26
7.6. <i>PEAK POWER SPECTRAL DENSITY</i> .....	27
7.7. <i>CONDUCTED SPURIOUS EMISSIONS</i> .....	31
7.8. <i>RADIATED EMISSIONS</i> .....	38
7.8.1. <i>TRANSMITTER RADIATED SPURIOUS EMISSIONS</i> .....	38
7.8.2. <i>TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHZ</i> .....	41
7.8.3. <i>WORST-CASE RADIATED EMISSIONS BELOW 1 GHz</i> .....	50
7.9. <i>POWERLINE CONDUCTED EMISSIONS</i> .....	54
<b>8. SETUP PHOTOS</b> .....	<b>58</b>

# 1. TEST RESULT CERTIFICATION

**COMPANY NAME:** NINTENDO CO., LTD.  
11-1 KAMITOBA-HOKOTATE-CHO  
MINAMI-KU, KYOTO  
JAPAN

**EUT DESCRIPTION:** NINTENDO DS

**MODEL:** NTR-001

**DATE TESTED:** JULY 26 – 28, 2004

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	NO NON-COMPLIANCE NOTED

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** This document reports conditions under which testing was conducted and results of tests performed. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document.

Approved & Released For CCS By:

Tested By:



THU CHAN  
EMC SUPERVISOR  
COMPLIANCE CERTIFICATION SERVICES

NEELESH RAJ  
EMC TECHNICIAN  
COMPLIANCE CERTIFICATION SERVICES

## 2. EUT DESCRIPTION

The EUT is a portable game machine with a Wireless 802.11 transceiver operating in the 2400-2483.5 MHz band with 13 channels.

The transmitter has a maximum peak conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2412 - 2472	802.11	1.77	1.50

The radio utilizes a Dipole Antenna, with a maximum gain of  $-1.34$  dBi, used for point to multipoint operation.

### 3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4/2001, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

### 4. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.



No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government.

## 5. CALIBRATION AND UNCERTAINTY

### 5.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### 5.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Power Line Conducted Emission	+/- 2.9 dB

Uncertainty figures are valid to a confidence level of 95%.

### 5.3. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	Cal Due
Peak Power Meter	Agilent	E4416A	GB41291160	11/7/04
Peak / Average Power Sensor	Agilent	E9327A	US40440755	11/7/04
Spectrum Analyzer	Agilent	E4446A	MY43360112	1/13/05
Preamplifier, 1 ~ 26 GHz	Miteq	NSP10023988	646456	6/10/05
Antenna, Horn 1 ~ 18 GHz	EMCO	3117	29301	12/26/04
Site A Line Stabilizer / Conditioner	Tripplite	LC-1800a	A0051681	CNR
LISN, 10 kHz ~ 30 MHz	FCC	50/250-25-2	114	10/13/04
EMI Test Receiver	R & S	ESHS 20	827129/006	10/22/05
EMI Receiver, 9 kHz ~ 2.9 GHz	HP	8542E	3942A00286	11/21/04
RF Filter Section	HP	85420E	3705A00256	11/21/04
30MHz---- 2Ghz	Sunol Sciences	JB1 Antenna	A121003	12/22/04
Antenna, Horn, 18 ~ 26 GHz	ARA	MWH-1826/B	1013	2/4/05
2.4-2.5 GHz Reject Filter	Micro-Tronics	BRM50702	1	CNR

## 6. SETUP OF EQUIPMENT UNDER TEST

### SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
AC ADAPTER	TABUCHI	AGS-002	N/A	N/A
DS CARD	NINTENDO	NTR-005	N/A	N/A

### I/O CABLES

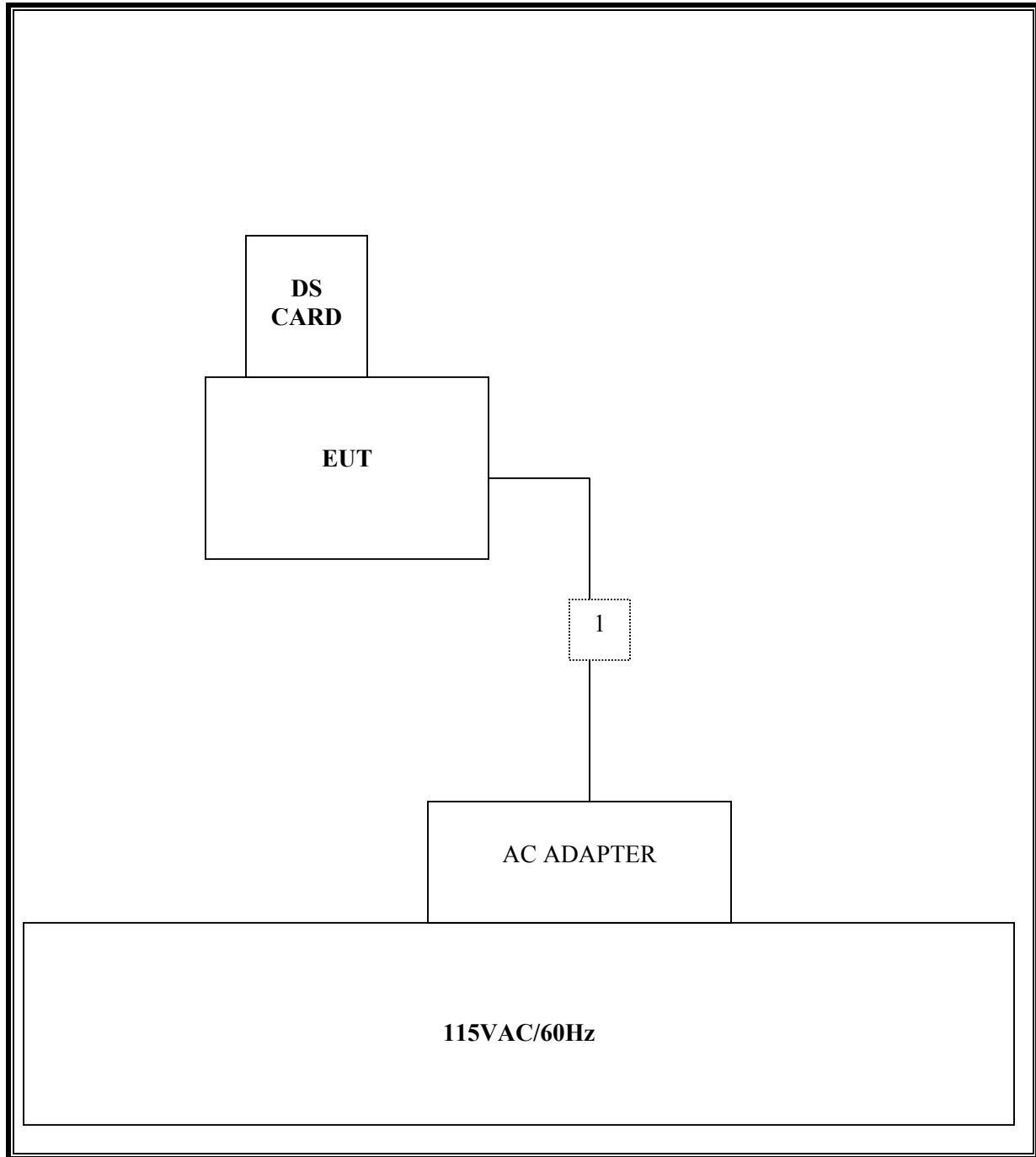
I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	DC	1	DC	SHIELDED	2.17M	N/A

### TEST SETUP

The EUT was set in continuous transmit mode. X, Y, and Z positions were investigated; "Z" position was deemed worst case. High channel was deemed worst case due to the highest output power.



**SETUP DIAGRAM FOR TESTS**



## 7. APPLICABLE LIMITS AND TEST RESULTS

### 7.1. 6 dB BANDWIDTH

#### LIMIT

§15.247 (a) (2) For direct sequence systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

#### TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

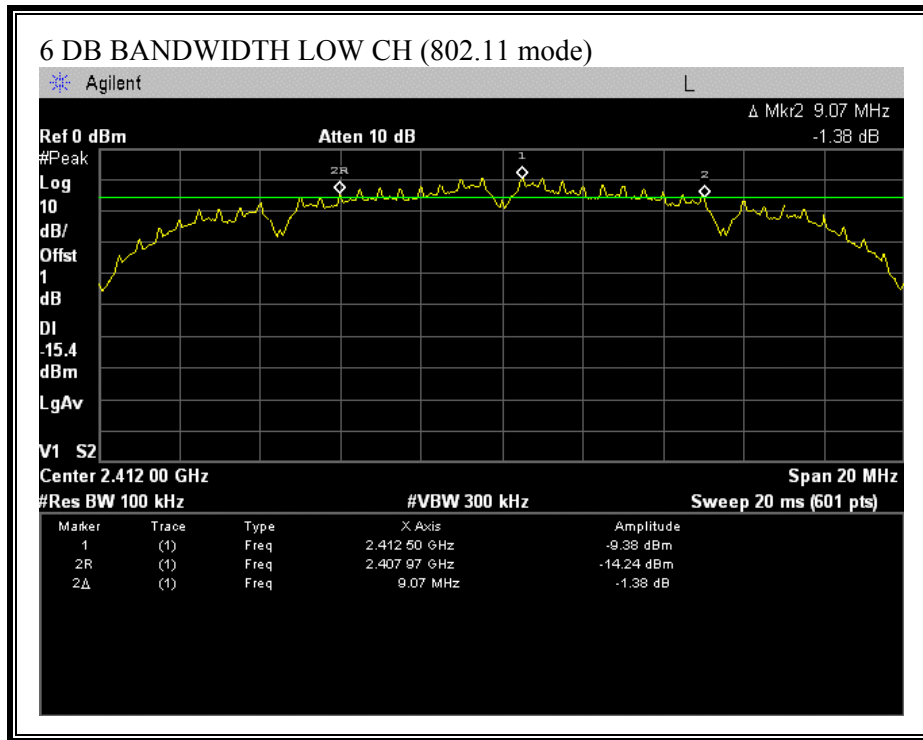
#### RESULTS

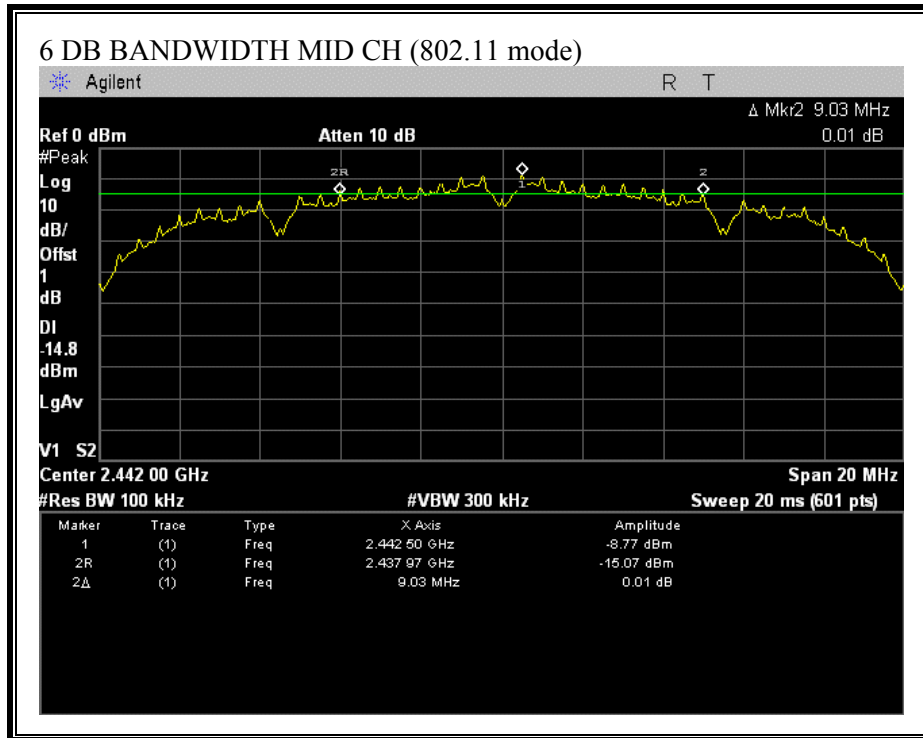
No non-compliance noted:

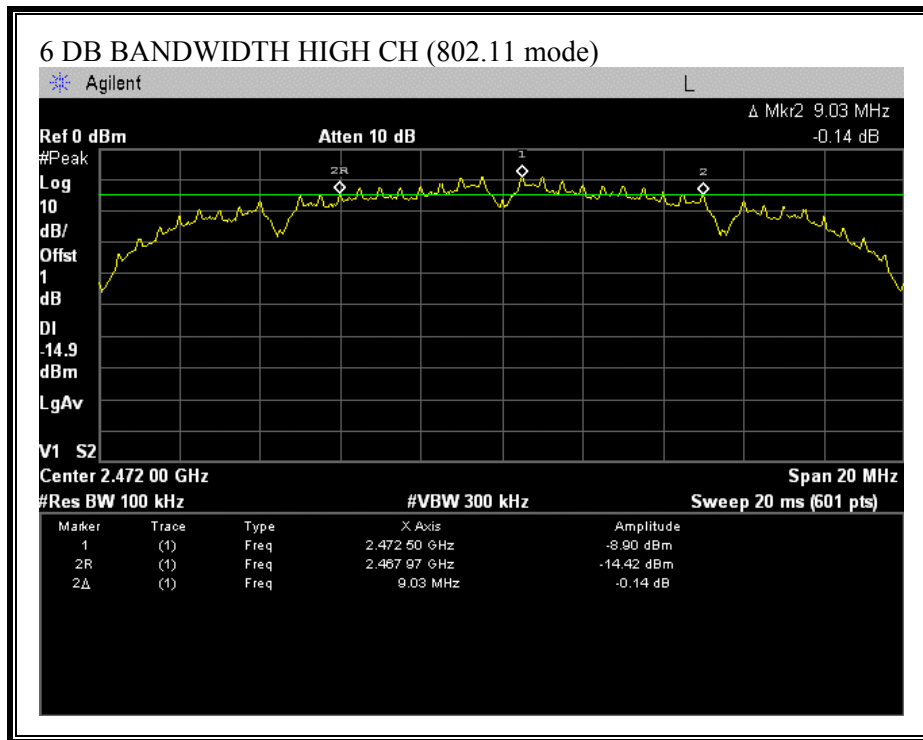
802.11 Mode

Channel	Frequency (MHz)	6 dB Bandwidth (kHz)	Minimum Limit (kHz)	Margin (kHz)
Low	2412	9070	500	8570
Middle	2442	9030	500	8530
High	2472	9030	500	8530

**6 DB BANDWIDTH (802.11 MODE)**







## 7.2. 99% BANDWIDTH

### LIMIT

None; for reporting purposes only.

### TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

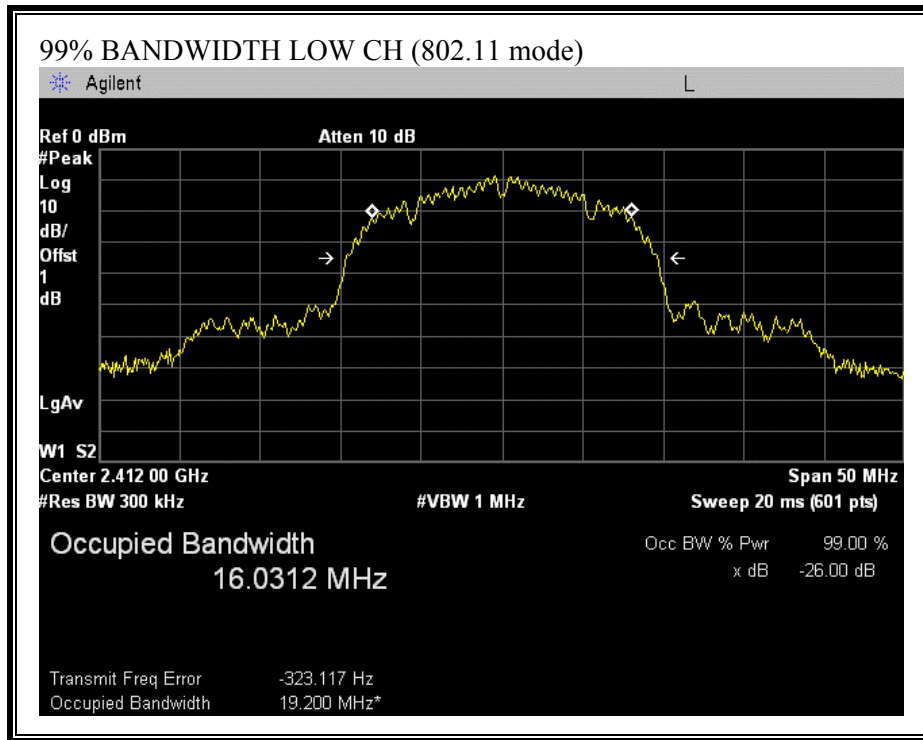
### RESULTS

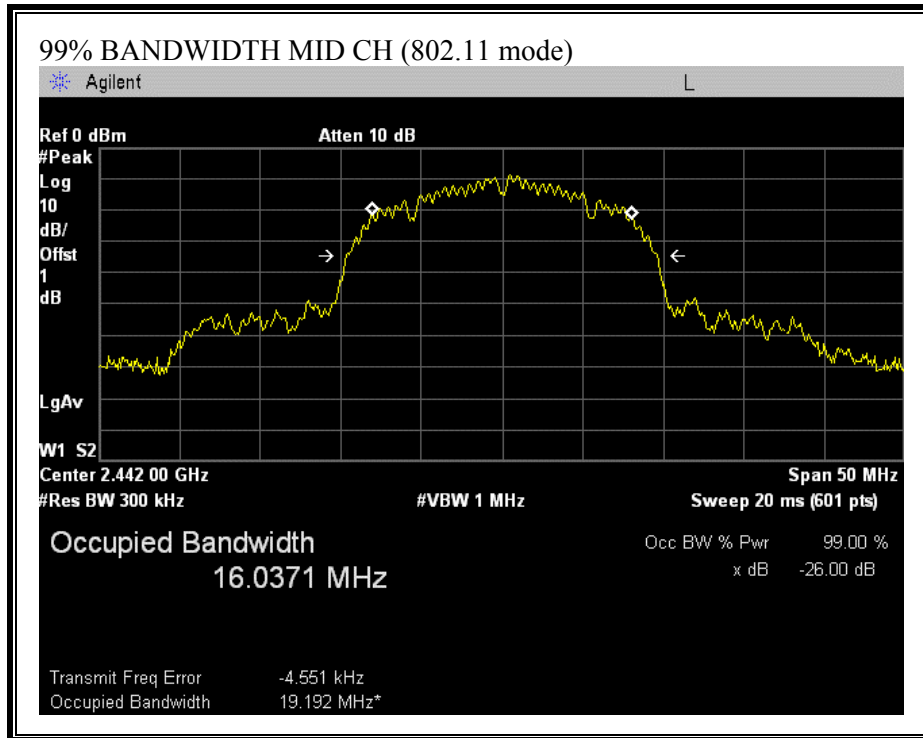
No non-compliance noted:

802.11 Mode

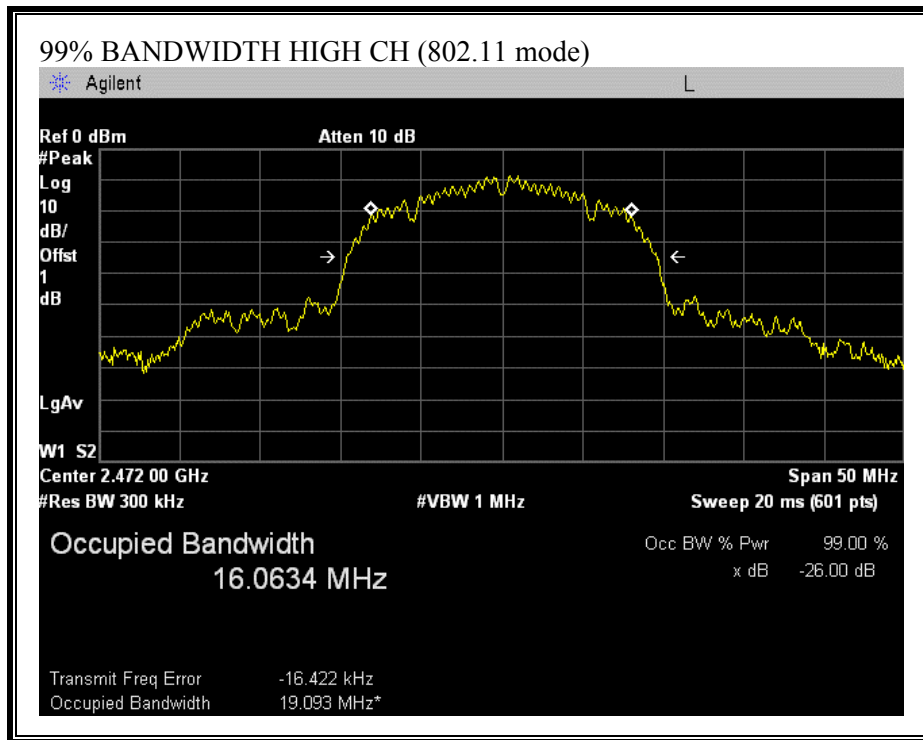
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.0312
Middle	2442	16.0371
High	2472	16.0634

**99% BANDWIDTH (802.11 MODE)**









### **7.3. PEAK OUTPUT POWER**

#### **PEAK POWER LIMIT**

§15.247 (b) The maximum peak output power of the intentional radiator shall not exceed the following:

§15.247 (b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz , and 5725-5850 MHz bands: 1 watt.

§15.247 (b) (4) Except as shown in paragraphs (b)(3) (i), (ii) and (iii) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The maximum antenna gain is -1.34 dBi, therefore the limit is 30 dBm.

#### **TEST PROCEDURE**

The transmitter output is connected to a spectrum analyzer and the analyzer's internal channel power integration function is used to integrate the power over a bandwidth greater than or equal to the 99% bandwidth.

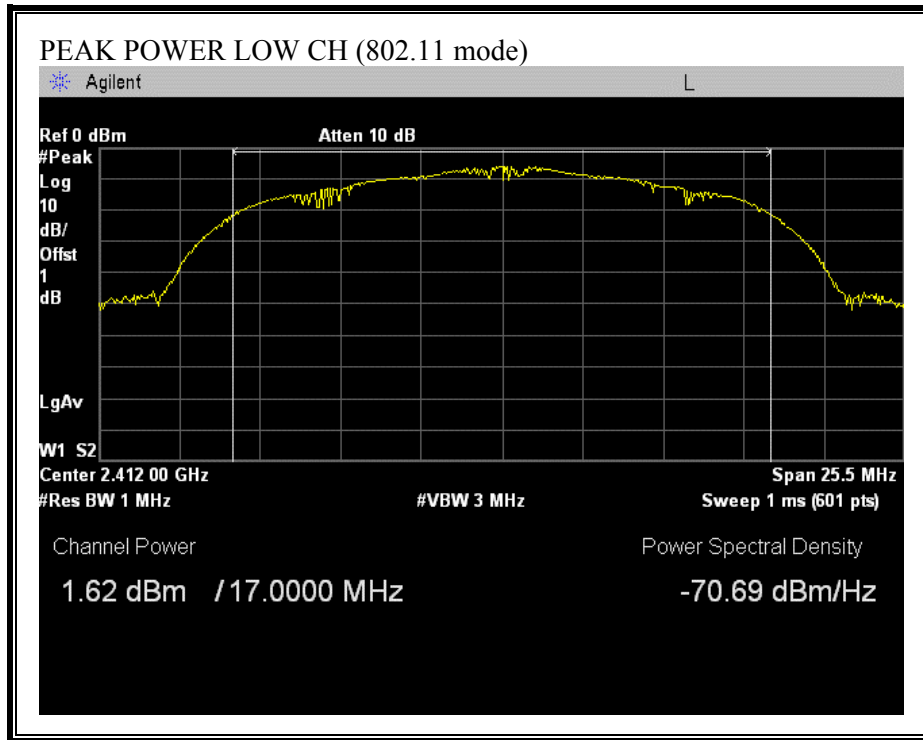
**RESULTS**

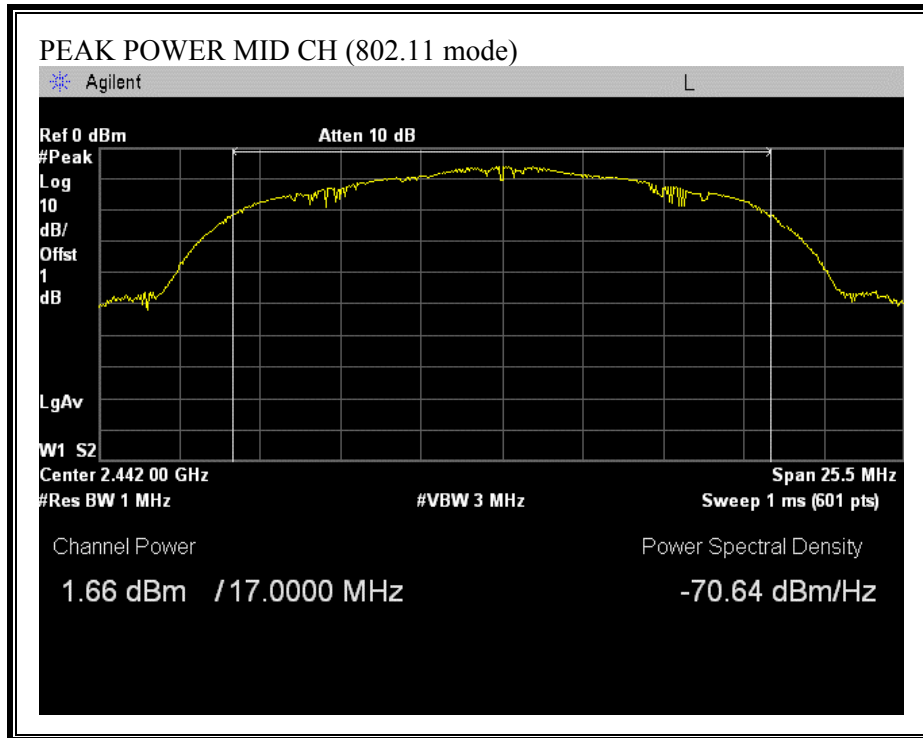
No non-compliance noted:

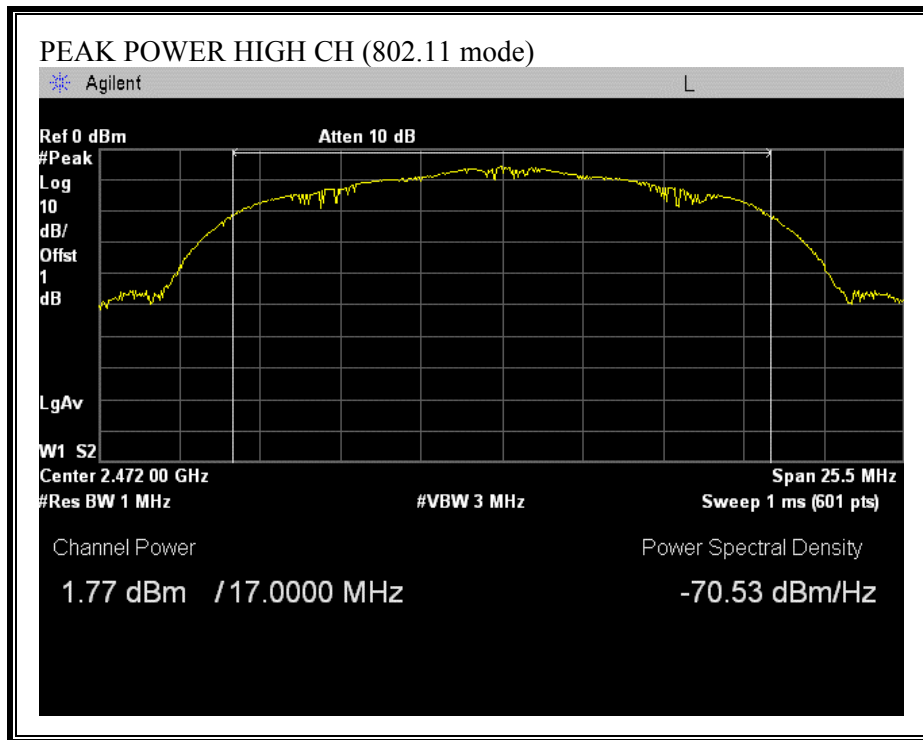
802.11 Mode

<b>Channel</b>	<b>Frequency (MHz)</b>	<b>Peak Power (dBm)</b>	<b>Limit (dBm)</b>	<b>Margin (dB)</b>
Low	2412	1.62	30	-28.38
Middle	2442	1.66	30	-28.34
High	2472	1.77	30	-28.23

**OUTPUT POWER (802.11 MODE)**







## 7.4. MAXIMUM PERMISSIBLE EXPOSURE

### LIMITS

§1.1310 The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0 .....	614	1.63	*(100)	6
3.0–30 .....	1842/f	4.89/f	*(900/f <sup>2</sup> )	6
30–300 .....	61.4	0.163	1.0	6
300–1500 .....	.....	.....	f/300	6
1500–100,000 .....	.....	.....	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34 .....	614	1.63	*(100)	30
1.34–30 .....	824/f	2.19/f	*(180/f <sup>2</sup> )	30

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)—Continued

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
30–300 .....	27.5	0.073	0.2	30
300–1500 .....	.....	.....	f/1500	30
1500–100,000 .....	.....	.....	1.0	30

f = frequency in MHz

\* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

## CALCULATIONS

Given

$$E = \sqrt{(30 * P * G) / d}$$

and

$$S = E^2 / 3770$$

where

E = Field Strength in Volts/meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power Density in milliwatts/square centimeter

Combining equations and rearranging the terms to express the distance as a function of the remaining variables yields:

$$d = \sqrt{((30 * P * G) / (3770 * S))}$$

Changing to units of Power to mW and Distance to cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = 100 * d \text{ (m)}$$

yields

$$d = 100 * \sqrt{((30 * (P / 1000) * G) / (3770 * S))}$$

$$d = 0.282 * \sqrt{(P * G / S)}$$

where

d = distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power Density in mW/cm<sup>2</sup>

Substituting the logarithmic form of power and gain using:

$$P \text{ (mW)} = 10^{(P \text{ (dBm)} / 10)} \text{ and}$$

$$G \text{ (numeric)} = 10^{(G \text{ (dBi)} / 10)}$$

yields

$$d = 0.282 * 10^{((P + G) / 20)} / \sqrt{S} \quad \text{Equation (1)}$$

where

d = MPE distance in cm

P = Power in dBm

G = Antenna Gain in dBi

S = Power Density Limit in mW/cm<sup>2</sup>

Equation (1) and the measured peak power is used to calculate the MPE distance.



**LIMITS**

From §1.1310 Table 1 (B),  $S = 1.0 \text{ mW/cm}^2$

**RESULTS**

No non-compliance noted:

<b>Mode</b>	<b>Power Density Limit (mW/cm<sup>2</sup>)</b>	<b>Output Power (dBm)</b>	<b>Antenna Gain (dBi)</b>	<b>MPE Distance (cm)</b>
802.11	1.0	1.77	-1.34	0.30

NOTE: For mobile or fixed location transmitters, the minimum separation distance is 20 cm, even if calculations indicate that the MPE distance would be less.

## 7.5. AVERAGE POWER

### AVERAGE POWER LIMIT

None; for reporting purposes only.

### TEST PROCEDURE

The transmitter output is connected to a power meter.

### RESULTS

No non-compliance noted:

The cable assembly insertion loss of 1.0 dB was entered as an offset in the power meter to allow for direct reading of power.

#### 802.11 Mode

Channel	Frequency (MHz)	Average Power (dBm)
Low	2412	-0.98
Middle	2442	-0.89
High	2472	-0.86

## 7.6. PEAK POWER SPECTRAL DENSITY

### LIMIT

§15.247 (d) For direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

### TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer, the maximum level in a 3 kHz bandwidth is measured with the spectrum analyzer using RBW = 3 kHz and VBW > 3 kHz, sweep time = span / 3 kHz, and video averaging is turned off. The PPSD is the highest level found across the emission in any 3 kHz band.

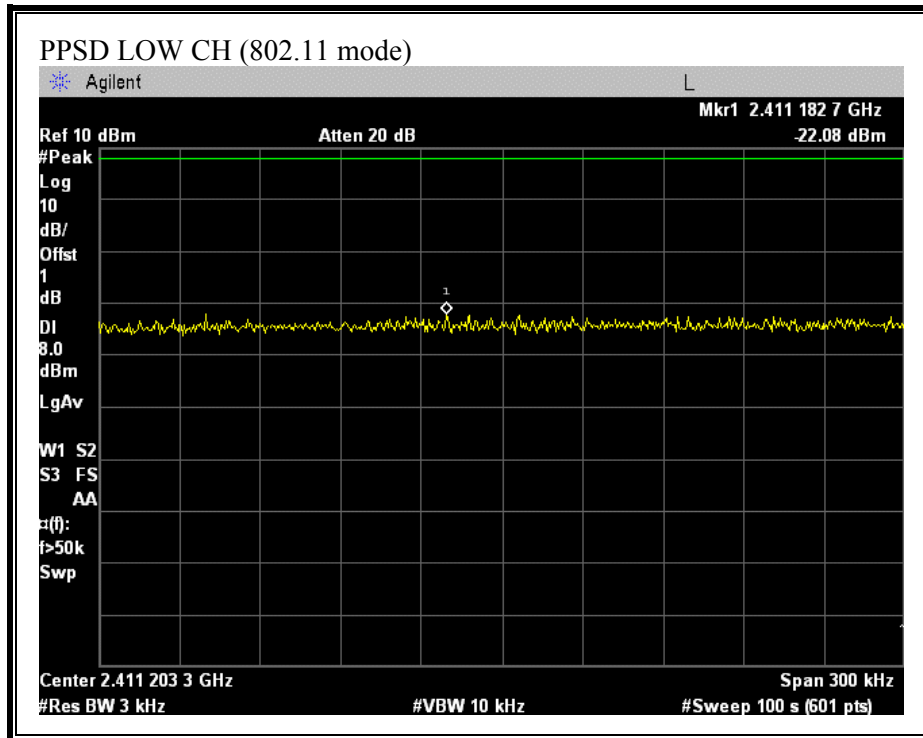
### RESULTS

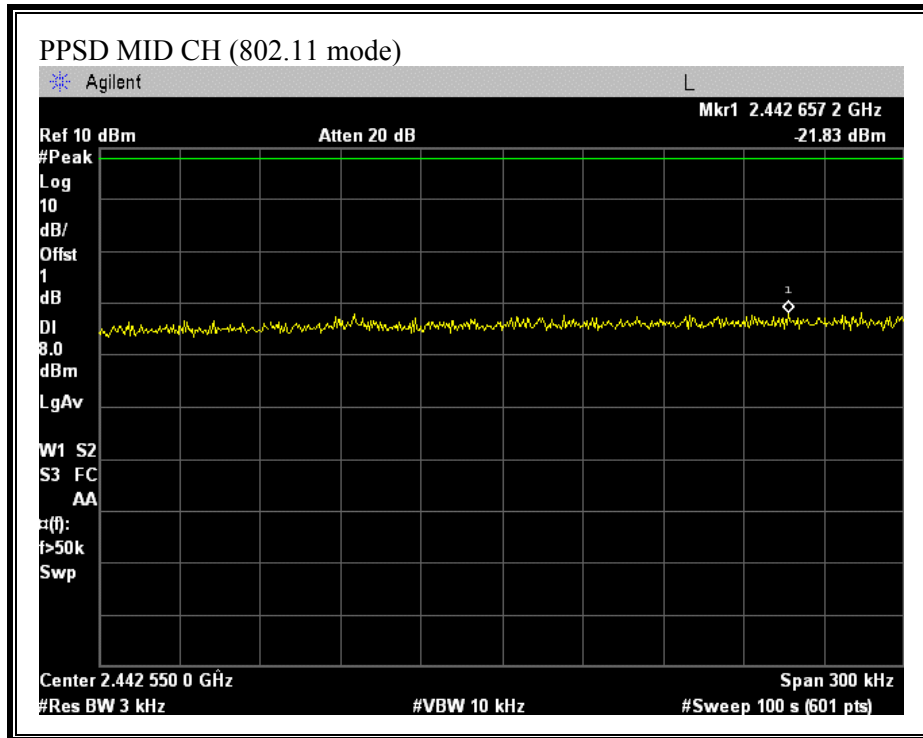
No non-compliance noted:

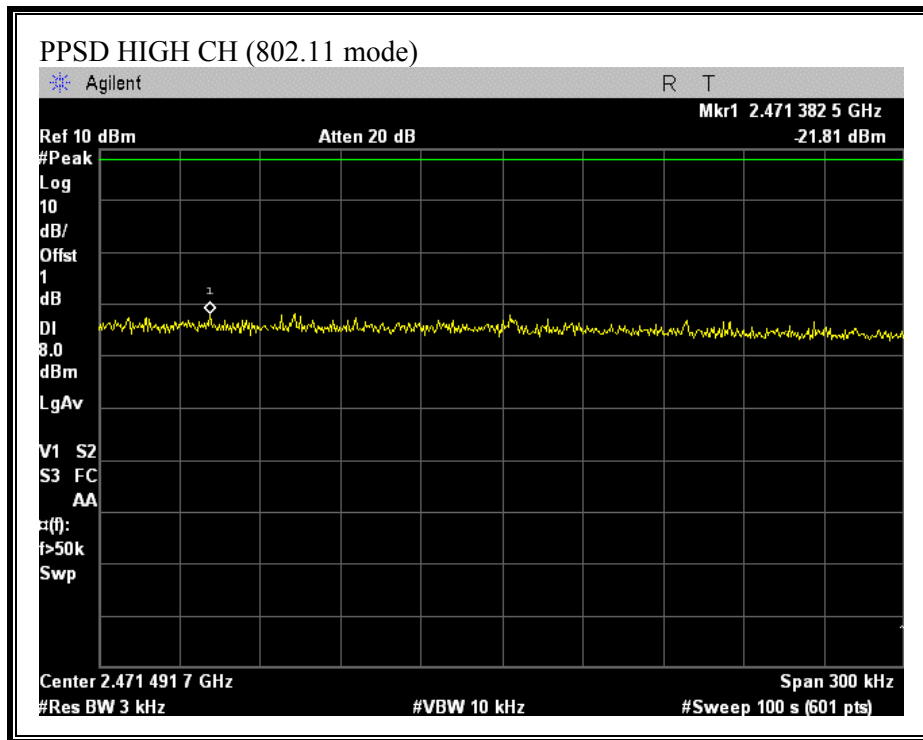
802.11 Mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-22.08	8	-30.08
Middle	2442	-21.83	8	-29.83
High	2472	-21.81	8	-29.81

**PEAK POWER SPECTRAL DENSITY (802.11 MODE)**







## 7.7. CONDUCTED SPURIOUS EMISSIONS

### LIMITS

§15.247 (c) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

### TEST PROCEDURE

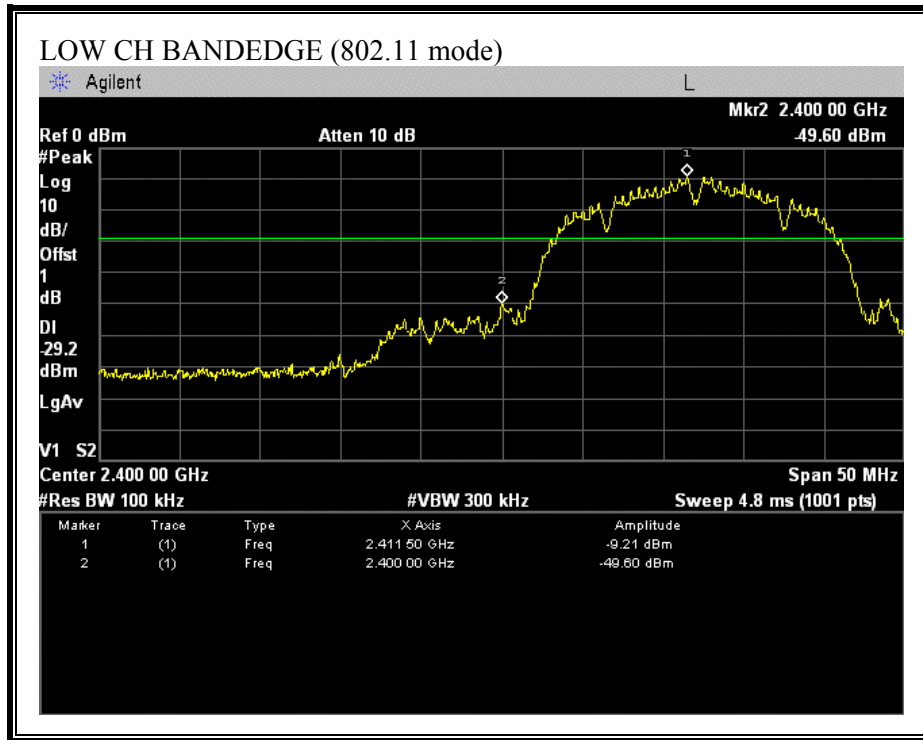
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

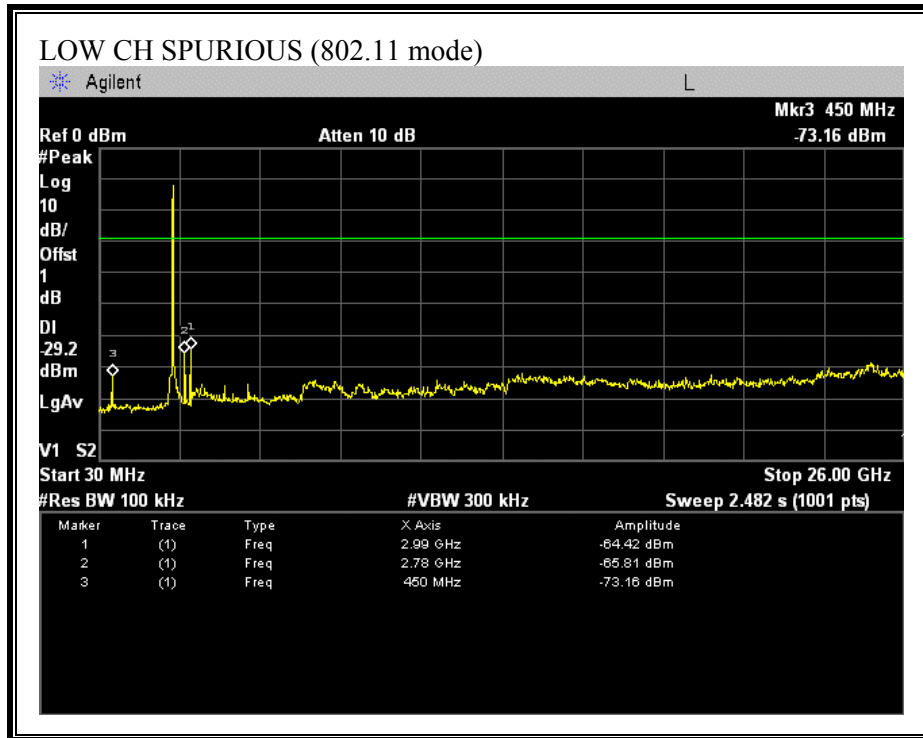
### RESULTS

No non-compliance noted:

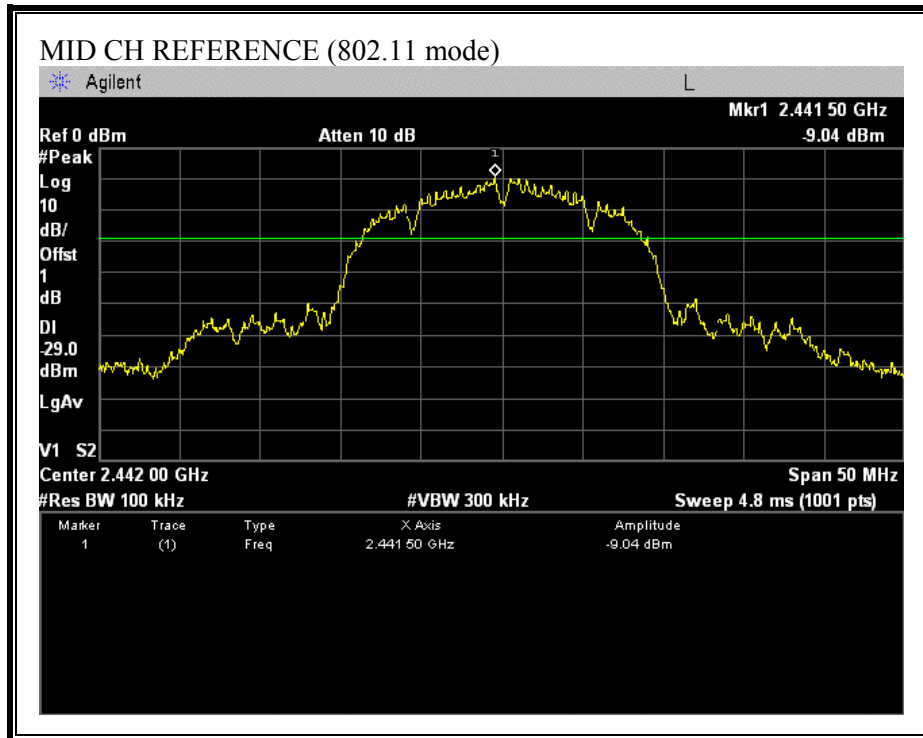
**SPURIOUS EMISSIONS, LOW CHANNEL (802.11 MODE)**

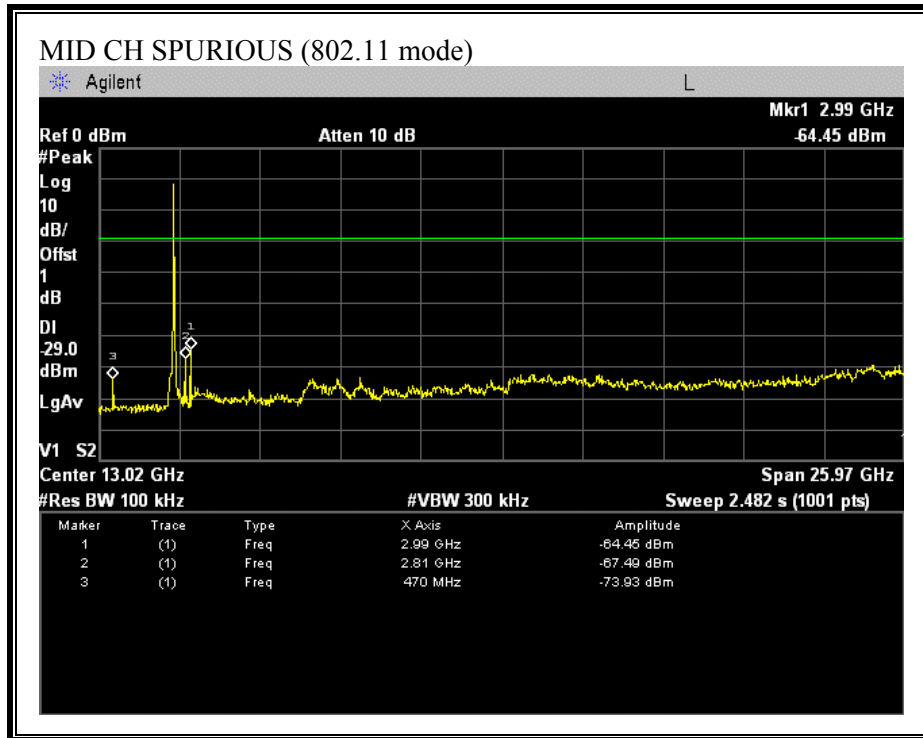




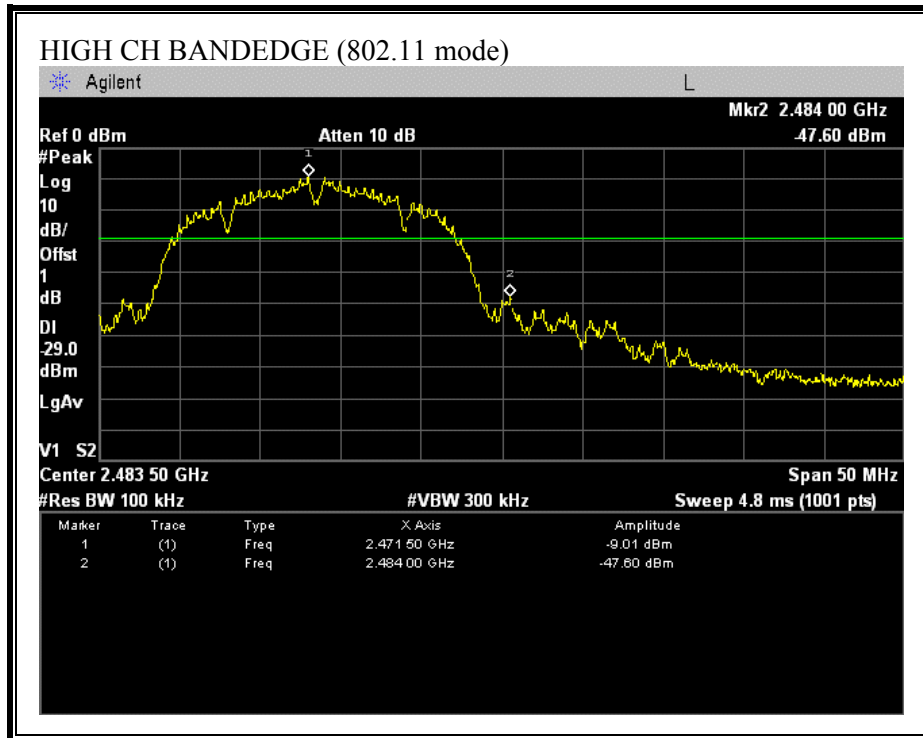


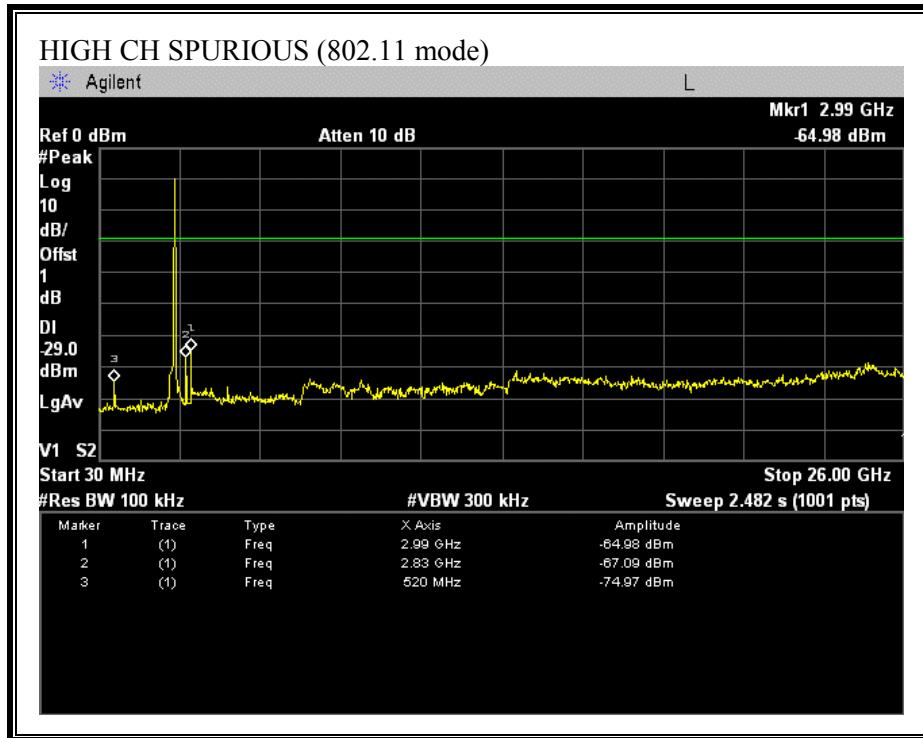
**SPURIOUS EMISSIONS, MID CHANNEL (802.11 MODE)**





**SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 MODE)**





## 7.8. RADIATED EMISSIONS

### 7.8.1. TRANSMITTER RADIATED SPURIOUS EMISSIONS

#### LIMITS

§15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
<sup>1</sup> 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
6.215 - 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	( <sup>2</sup> )
13.36 - 13.41			

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup> Above 38.6

§15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

§15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

\*\* Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

## **TEST PROCEDURE**

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

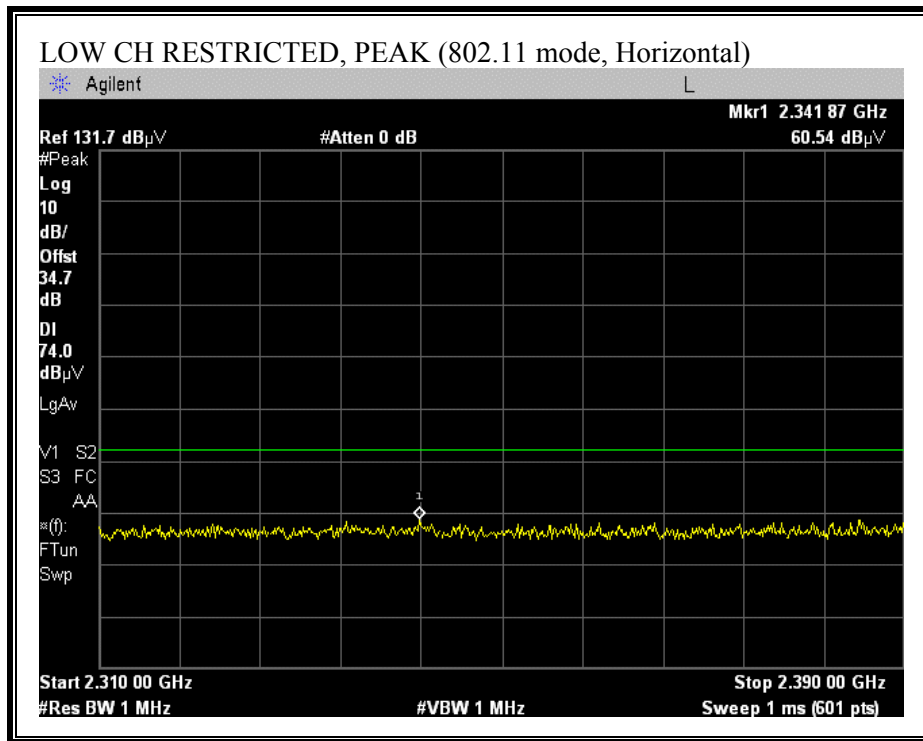
## **RESULTS**

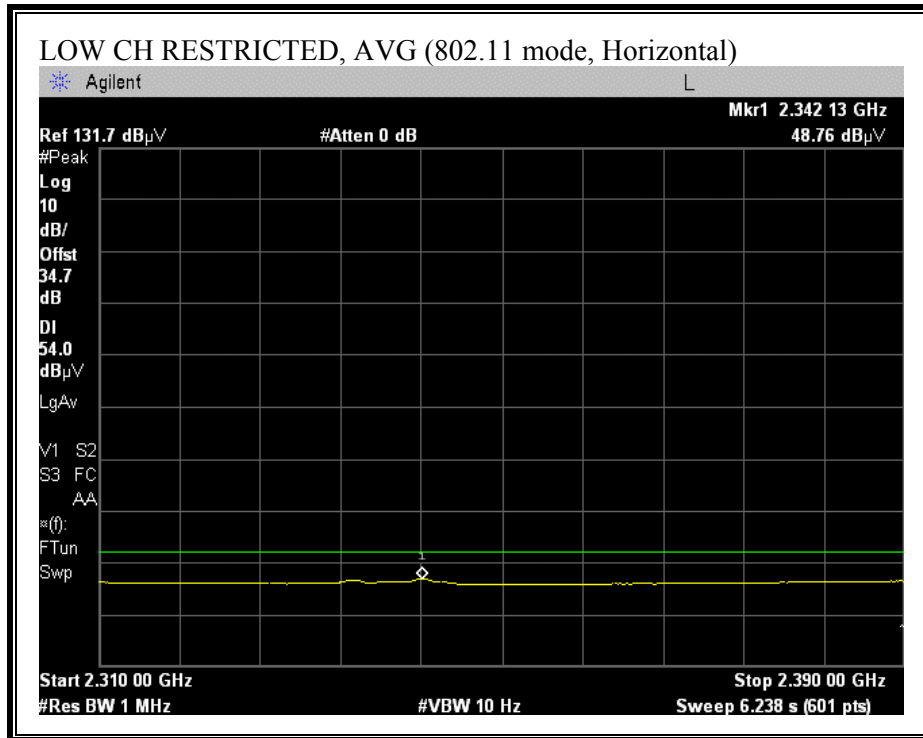
No non-compliance noted:



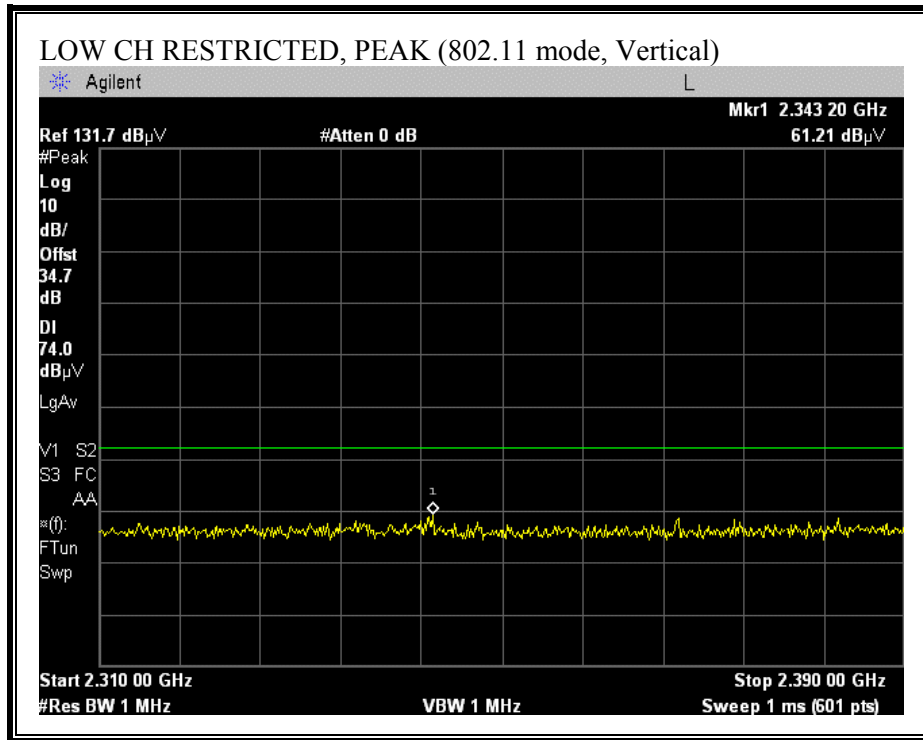
## 7.8.2. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHZ

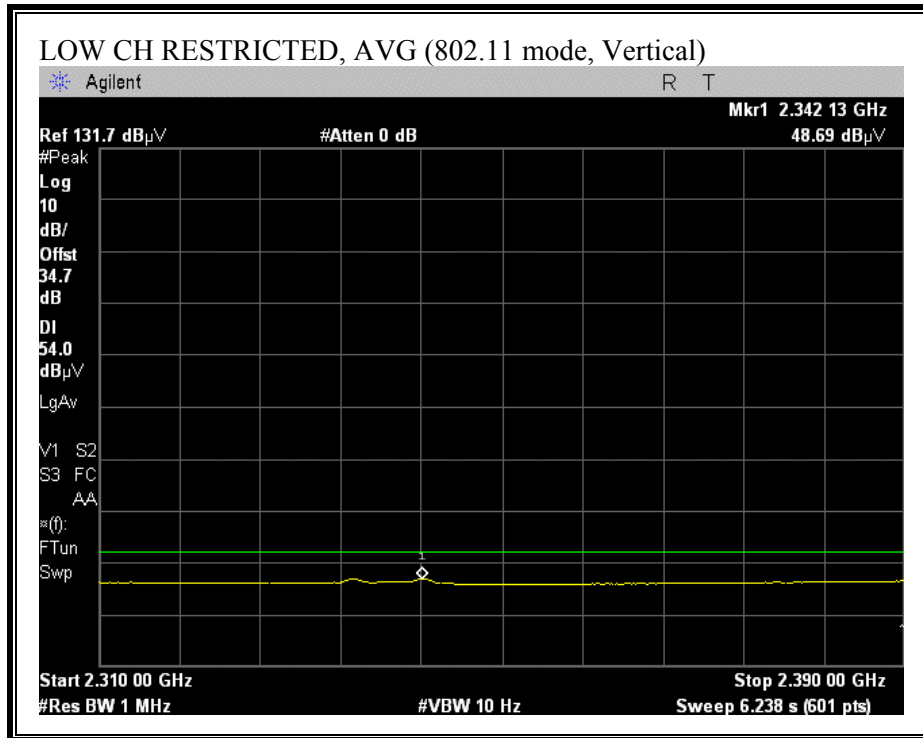
### RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



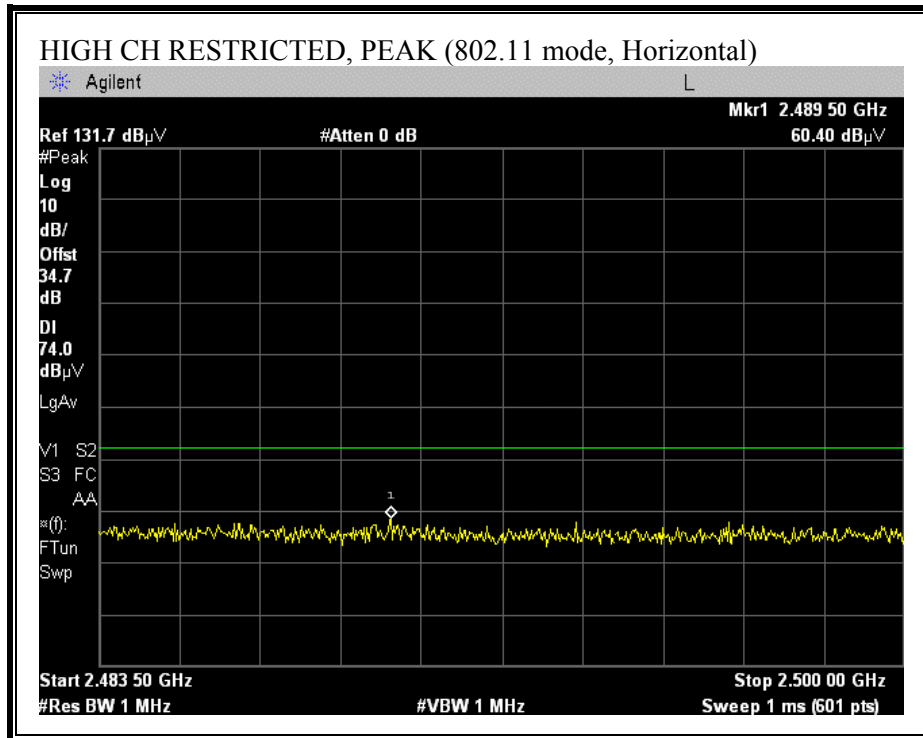


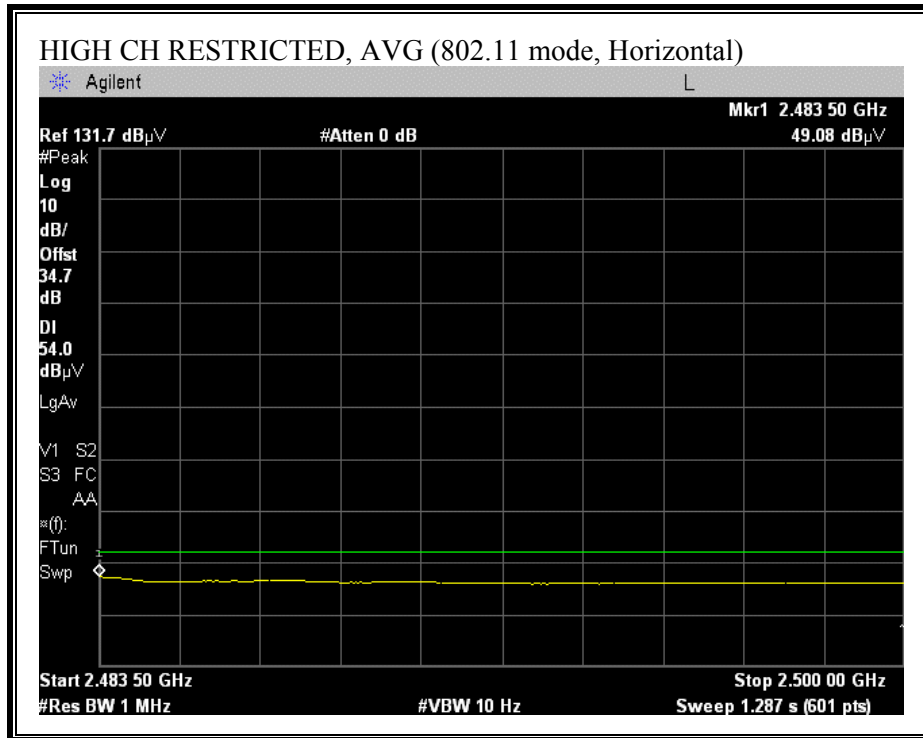
**RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**



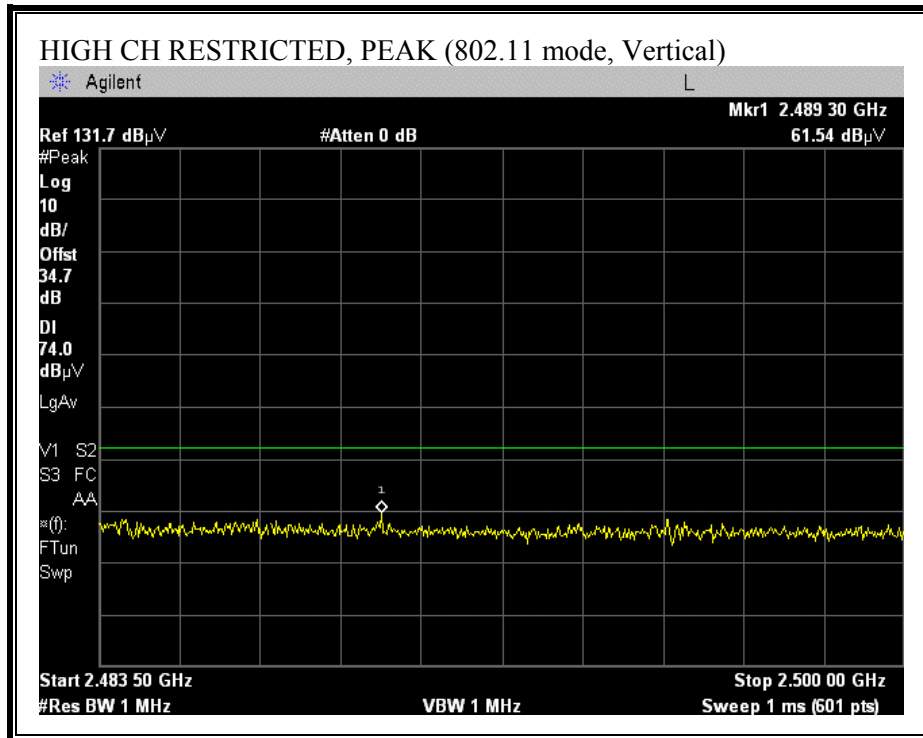


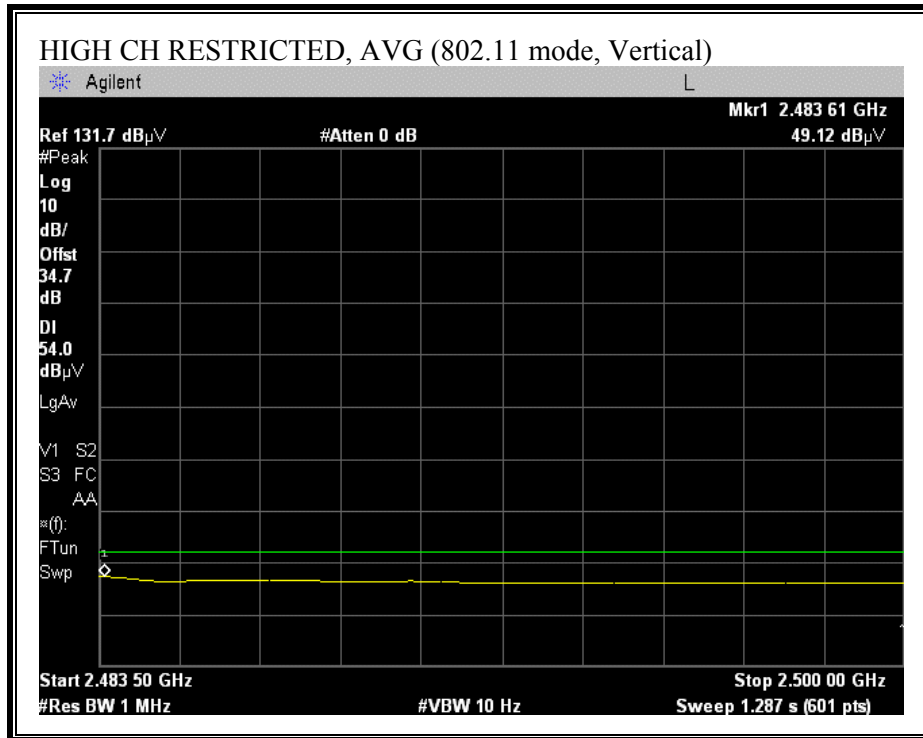
**RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)**





**RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)**







**HARMONICS AND SPURIOUS EMISSIONS**

07/26/04 High Frequency Measurement  
 Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: NEELESH RAJ  
 Project #: 04I2873  
 Company: NINTENDO  
 EUT Descrip.: NINTENDO DS  
 EUT M/N: NTR-001  
 Test Target: FCC 15.247  
 Mode Oper: TX

Test Equipment:

EMCO Horn 1-18GHz: T119; S/N: 29301 @3m  
 Spectrum Analyzer: Agilent E4446A Analyzer  
 Pre-amplifier 1-26GHz: T63 Miteq 646456  
 Pre-amplifier 26-40GHz:   
 Horn > 18GHz: T87; ARA 18-26GHz; S/N:1049

Hi Frequency Cables:  (2 ft)  (2 ~ 3 ft)  (4 ~ 6 ft)  (12 ft)

Limit: FCC 15.205

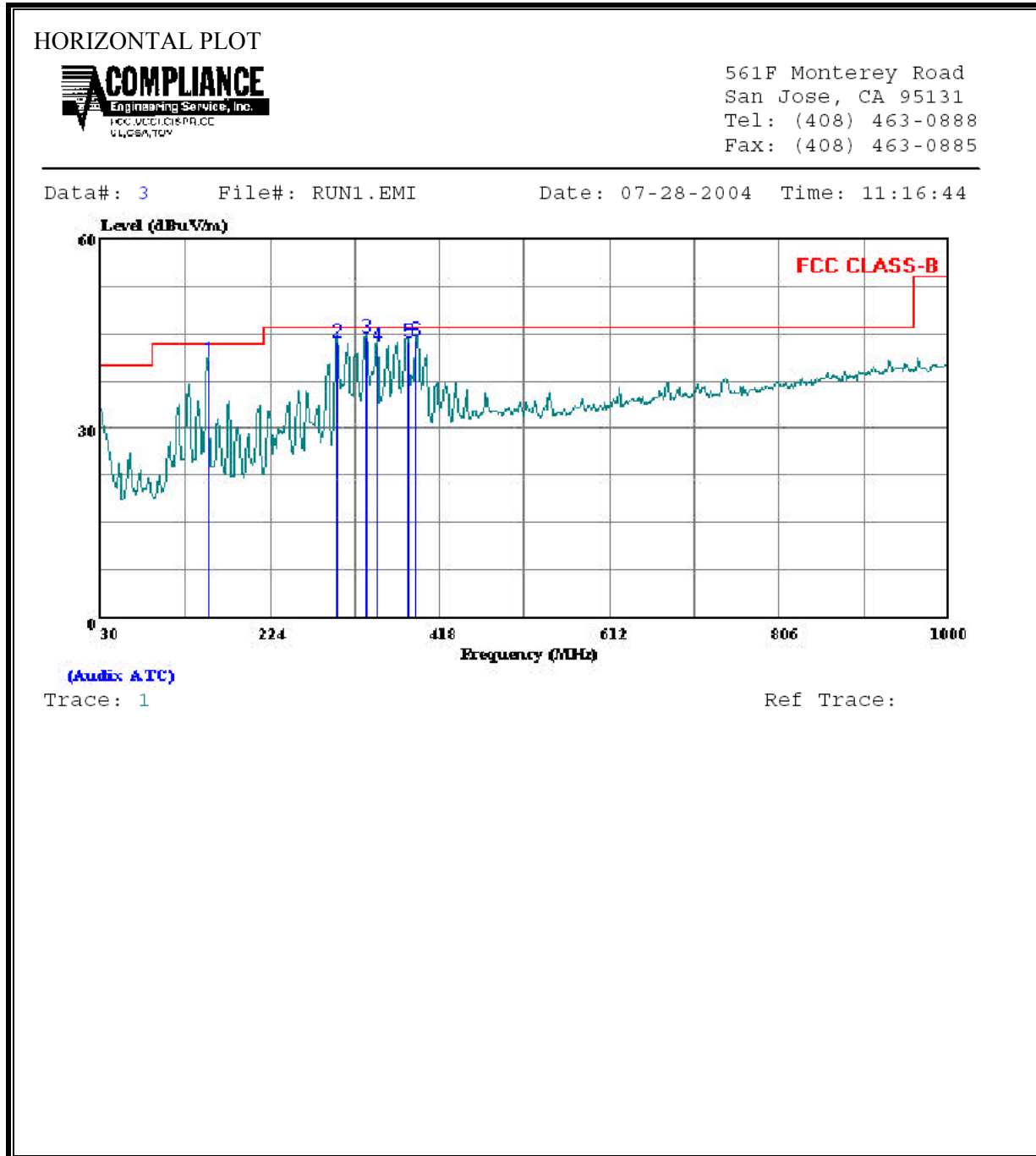
Peak Measurements: 1 MHz Resolution Bandwidth, 1MHz Video Bandwidth  
 Average Measurements: 1 MHz Resolution Bandwidth, 10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
<b>LOW CHANNEL SPURIOUS</b>															
4.824	9.8	42.5	31.0	35.0	3.2	-35.3	0.0	1.0	46.3	34.8	74.0	54.0	-27.7	-19.2	V; NOISE FLOOR
12.060	9.8	40.8	29.3	39.6	5.9	-34.9	0.0	1.0	52.4	40.9	74.0	54.0	-21.6	-13.1	V; NOISE FLOOR
4.824	9.8	41.3	31.1	35.0	3.2	-35.3	0.0	1.0	45.1	34.9	74.0	54.0	-28.9	-19.1	H; NOISE FLOOR
12.060	9.8	41.1	29.4	39.6	5.9	-34.9	0.0	1.0	52.7	41.0	74.0	54.0	-21.3	-13.0	H; NOISE FLOOR
<b>MIDDLE CHANNEL SPURIOUS</b>															
4.884	9.8	41.3	30.9	35.0	3.3	-35.3	0.0	1.0	45.2	34.8	74.0	54.0	-28.8	-19.2	V; NOISE FLOOR
7.326	9.8	41.7	30.0	36.7	4.3	-34.6	0.0	1.0	49.1	37.4	74.0	54.0	-24.9	-16.6	V; NOISE FLOOR
12.210	9.8	41.0	29.3	39.6	6.0	-35.1	0.0	1.0	52.4	40.7	74.0	54.0	-21.6	-13.3	V; NOISE FLOOR
4.884	9.8	41.2	31.0	35.0	3.3	-35.3	0.0	1.0	45.1	34.9	74.0	54.0	-28.9	-19.1	H; NOISE FLOOR
7.326	9.8	41.5	30.9	36.7	4.3	-34.6	0.0	1.0	48.9	38.3	74.0	54.0	-25.1	-15.7	H; NOISE FLOOR
12.210	9.8	42.0	29.9	39.6	6.0	-35.1	0.0	1.0	53.4	41.2	74.0	54.0	-20.6	-12.8	H; NOISE FLOOR
<b>HIGH CHANNEL SPURIOUS</b>															
4.944	9.8	41.9	31.3	35.1	3.3	-35.3	0.0	1.0	45.9	35.3	74.0	54.0	-28.1	-18.7	V; NOISE FLOOR
7.416	9.8	42.5	31.1	36.7	4.3	-34.5	0.0	1.0	50.0	38.6	74.0	54.0	-24.0	-15.4	V; NOISE FLOOR
12.360	9.8	41.7	30.0	39.6	6.0	-35.3	0.0	1.0	52.9	41.2	74.0	54.0	-21.1	-12.8	V; NOISE FLOOR
4.944	9.8	42.3	31.2	35.1	3.3	-35.3	0.0	1.0	46.3	35.2	74.0	54.0	-27.7	-18.8	H; NOISE FLOOR
7.416	9.8	41.3	31.5	36.7	4.3	-34.5	0.0	1.0	48.8	39.0	74.0	54.0	-25.2	-15.0	H; NOISE FLOOR
12.360	9.8	42.9	32.0	39.6	6.0	-35.3	0.0	1.0	54.1	43.2	74.0	54.0	-19.9	-10.8	H; NOISE FLOOR
NO OTHER SPURIOUS EMISSIONS DETECTED ABOVE THE SYSTEM NOISE FLOOR -20dB TO THE LIMIT IN THE RESTRICTED BANDS															

f Measurement Frequency      Amp Preamp Gain      Avg Lim Average Field Strength Limit  
 Dist Distance to Antenna      D Corr Distance Correct to 3 meters      Pk Lim Peak Field Strength Limit  
 Read Analyzer Reading      Avg Average Field Strength @ 3 m      Avg Mar Margin vs. Average Limit  
 AF Antenna Factor      Peak Calculated Peak Field Strength      Pk Mar Margin vs. Peak Limit  
 CL Cable Loss      HPF High Pass Filter

### 7.8.3. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz

#### SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)



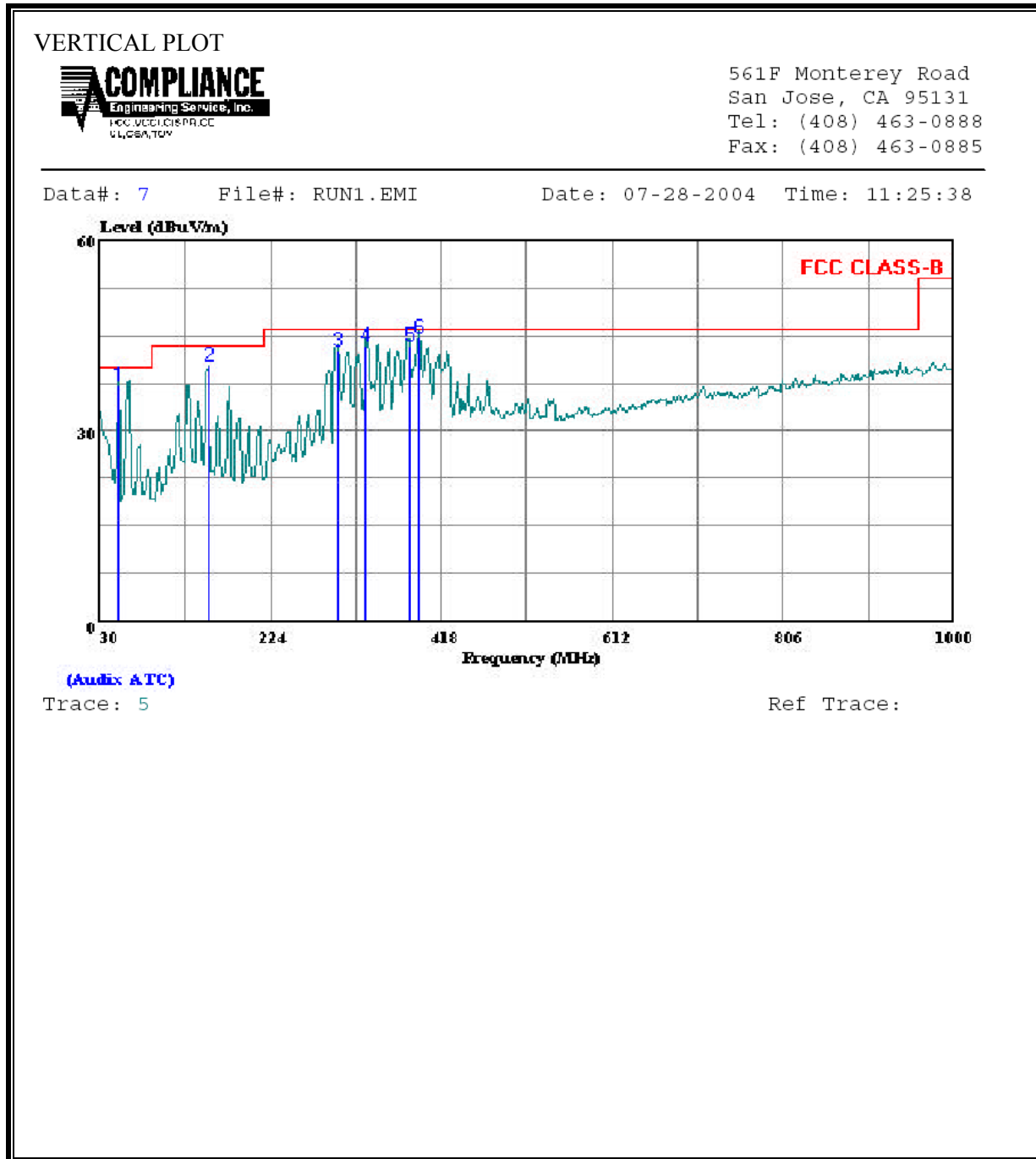
HORIZONTAL DATA

Condition: FCC CLASS-B 3m SUNOL BILOG 12/22/04 HORIZONTAL  
 Test Operator: : NEELESH RAJ  
 Project #: : 04I2873  
 Company: : NINTENDO  
 EUT: : NINTENDO DS  
 Model No: : NTR-001  
 Configuration: : EUT  
 Target of Test: : CLASS B  
 Mode of Operation: TX (WORST CASE)

Page: 1

	Freq	Remark	Read Level	Factor	Level	Limit Line	Over Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	153.190	QP	26.74	14.11	40.85	43.50	-2.65
2	300.630	QP	27.78	15.93	43.71	46.00	-2.29
3	334.580	QP	27.75	16.55	44.30	46.00	-1.70
4	347.190	QP	26.28	16.79	43.07	46.00	-2.93
5	381.140	QP	25.80	17.73	43.53	46.00	-2.47
6	390.840	QP	25.96	18.00	43.96	46.00	-2.04

**SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)**



VERTICAL DATA

Condition: FCC CLASS-B 3m SUNOL BILOG 12/22/04 VERTICAL  
 Test Operator: : NEELESH RAJ  
 Project #: : 04I2873  
 Company: : NINTENDO  
 EUT: : NINTENDO DS  
 Model No: : NTR-001  
 Configuration: : EUT  
 Target of Test: : CLASS B  
 Mode of Operation: TX (WORST CASE)

Page: 1

	Freq	Remark	Read Level	Factor	Level	Limit Line	Over Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	51.340	QP	28.01	9.20	37.21	40.00	-2.79
2	153.190	Peak	26.02	14.11	40.13	43.50	-3.37
3	300.630	QP	26.79	15.93	42.72	46.00	-3.28
4	332.640	QP	26.91	16.54	43.45	46.00	-2.55
5	381.140	QP	25.66	17.73	43.39	46.00	-2.61
6	392.780	QP	26.63	18.02	44.65	46.00	-1.35

## 7.9. POWERLINE CONDUCTED EMISSIONS

### LIMIT

§15.207 (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  $\mu$ H/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 Emission (MHz)	Conducted Limit (dBuV)	
	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.

### TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The resolution bandwidth is set to 9 kHz for both peak detection and quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

Line conducted data is recorded for both NEUTRAL and HOT lines.

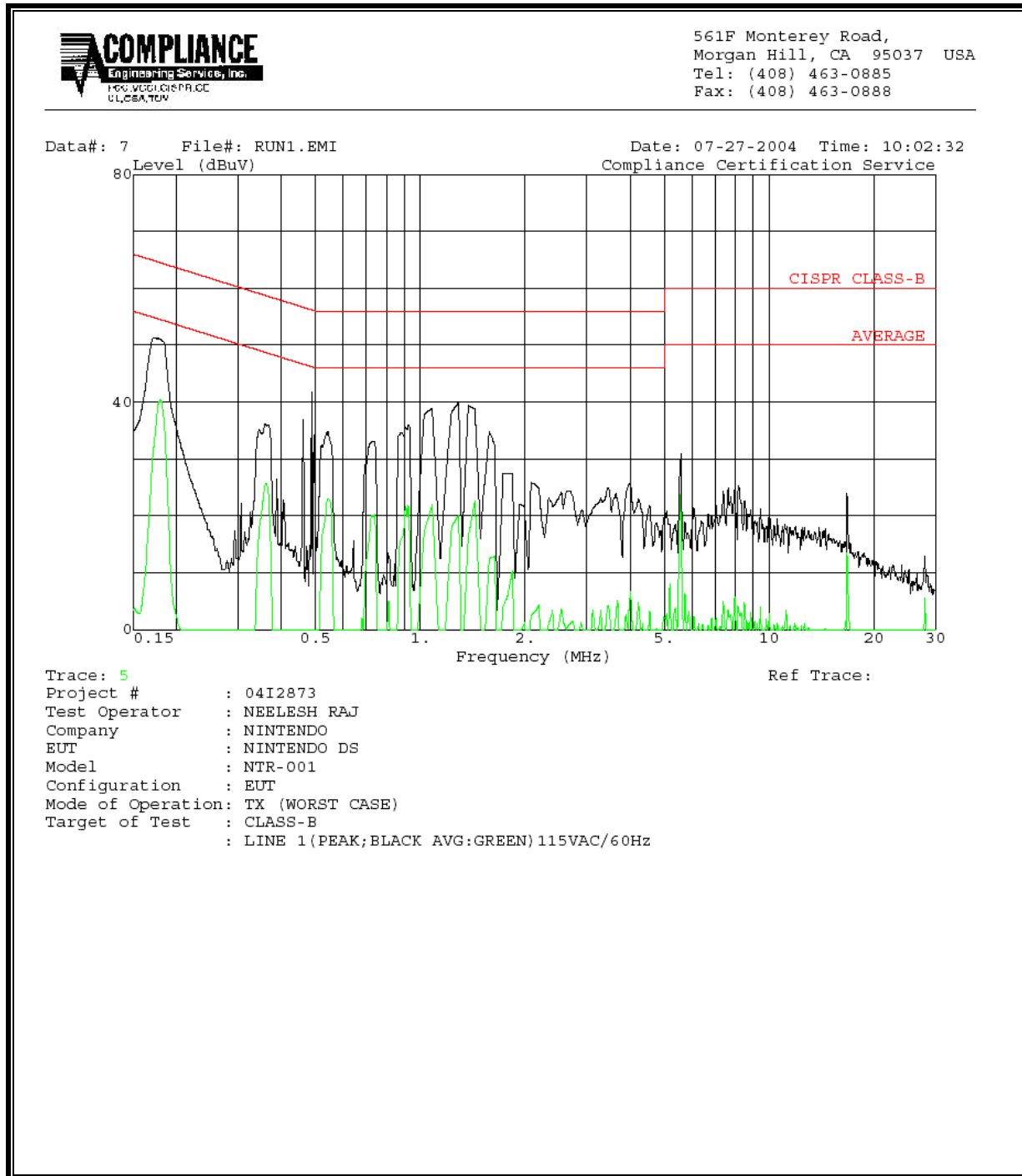
### RESULTS

No non-compliance noted:

**6 WORST EMISSIONS**

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Class	Limit	EN B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.17	51.28	--	40.41	0.00	65.31	55.31	-14.03	-14.90	L1
0.49	41.72	--	1.00	0.00	56.31	46.31	-14.59	-45.31	L1
1.29	39.86	--	39.86	0.00	56.00	46.00	-16.14	-6.14	L1
0.17	48.58	--	48.58	0.00	65.31	55.31	-16.73	-6.73	L2
1.23	38.30	--	38.30	0.00	56.00	46.00	-17.70	-7.70	L2
1.08	35.94	--	35.94	0.00	56.00	46.00	-20.06	-10.06	L2
6 Worst Data									

**LINE 1 RESULTS**





**LINE 2 RESULTS**

