

## FCC CFR47 PART 15 SUBPART C CERTIFICATION TEST REPORT

## 802.11b/g HALF SIZE MINI-PCI WLAN MODULE

## **MODEL NUMBER: PA3426U-1MPC**

## FCC ID: CJ6UPA3426WL

# **REPORT NUMBER: 04U3194-1 REV B**

# **ISSUE DATE: FEBRUARY 25, 2005**

Prepared for TOSHIBA CORPORATION DIGITAL MEDIA NETWORK COMPANY 2-9 SUEHIRO-CHO, OME TOKYO, 198-8710, JAPAN

> Prepared by COMPLIANCE ENGINEERING SERVICES, INC. d.b.a. COMPLIANCE CERTIFICATION SERVICES 561F MONTEREY ROAD, MORGAN HILL, CA 95037, USA TEL: (408) 463-0885 FAX: (408) 463-0888



### Revision History

Rev.	Revisions	Revised By
В	Revise antenna type and description under Section 5.3	Danielle Z.

Page 2 of 248

# TABLE OF CONTENTS

1.	AT	FESTATION OF TEST RESULTS	5
2.	TES	ST METHODOLOGY	6
3.	FAC	CILITIES AND ACCREDITATION	6
		LIBRATION AND UNCERTAINTY	
4.			
4	4.1.	MEASURING INSTRUMENT CALIBRATION	
4	4.2.	MEASUREMENT UNCERTAINTY	6
5.	EQ	UIPMENT UNDER TEST	7
5	5.1.	DESCRIPTION OF EUT	7
5	5.2.	MAXIMUM OUTPUT POWER	7
5	5.3.	DESCRIPTION OF AVAILABLE ANTENNAS	7
5	5.4.	SOFTWARE AND FIRMWARE	8
5	5.5.	WORST-CASE CONFIGURATION AND MODE	8
5	5.6.	DESCRIPTION OF TEST SETUP	8
6	тгс	ST AND MEASUREMENT EQUIPMENT	11
6.			
7.	LIN	IITS AND RESULTS	.12
7	7.1.	CHANNEL TESTS FOR THE 2400 TO 2483.5 MHz BAND	
	7.1.		
	7.1.2		
	7.1.1 7.1.4		
	7.1.		
	7.1.0		
7	7.2.	RADIATED EMISSIONS	. 61
	7.2.		
	7.2.2		
	7.2.2		
	7.2.2		
	7.2.		
	7.2.		
	7.2.		121
		FENNA HTL017 IN FIREBOLT	140
	7.2.4		
	7.2.4		
	7.2.4		
	7.2.4		
	7.2.4	4.5 MOBILE CONFIGURATION, WITH BLUETOOTH BC02	160

Page 3 of 248

8

7.2.4.6	PORTABLE CONFIGURATION, WITH BLUETOOTH BC02	
7.2.5	CO-LOCATED TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHz, V	
ANTEN	NA HTL004 IN FIREBOLT	
7.2.5.1	STAND-ALONE CONFIGURATION, WITH BLUETOOTH BC04	
7.2.5.2	MOBILE CONFIGURATION, WITH BLUETOOTH BC04	
7.2.5.3	PORTABLE CONFIGURATION, WITH BLUETOOTH BC04	
7.2.5.4	STAND-ALONE CONFIGURATION, WITH BLUETOOTH BC02	
7.2.5.5	MOBILE CONFIGURATION, WITH BLUETOOTH BC02	
7.2.5.6	PORTABLE CONFIGURATION, WITH BLUETOOTH BC02	
7.2.6	WORST-CASE RADIATED EMISSIONS BELOW 1 GHz, WITH ANTENNA	HTL017
IN FIRE	BOLT	
7.2.6.1	STAND-ALONE CONFIGURATION	
7.2.6.2	PORTABLE CONFIGURATION	
7.2.7	WORST-CASE RADIATED EMISSIONS BELOW 1 GHz, WITH ANTENNA	.HTL004
IN FIRE	BOLT	
7.2.7.1	STAND-ALONE CONFIGURATION	
7.2.7.2	PORTABLE CONFIGURATION	
7.3 PO	WERLINE CONDUCTED EMISSIONS	
SETUP	РНОТОЅ	

Page 4 of 248

## **1. ATTESTATION OF TEST RESULTS**

STANDARE FCC PART 15 SUBI						
	APPLICABLE STANDARDS					
DATE TESTED:	JANUARY 03 Thru FEBRUARY 04, 2005					
SERIAL NUMBER:	0011F5-32AFOF					
MODEL:	PA3426U-1MPC					
EUT DESCRIPTION:	802.11 b/g HALF SIZE MINI-PCI WLAN MODULE					
COMPANY NAME:	TOSHIBA CORPORATION DIGITAL MEDIA NETWORK COMPANY 2-9 SUEHIRO-CHO, OME TOKYO, 198-8710, JAPAN					

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**: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. 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. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:

Tested By:

THU CHAN EMC SUPERVISOR COMPLIANCE CERTIFICATION SERVICES

Chin Pany

CHIN PANG EMC TECHNICIAN COMPLIANCE CERTIFICATION SERVICES

# 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

# 3. 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 <u>http://www.ccsemc.com</u>.

# 4. CALIBRATION AND UNCERTAINTY

## 4.1. 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.

## 4.2. 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%.

Page 6 of 248

# 5. EQUIPMENT UNDER TEST

## 5.1. DESCRIPTION OF EUT

The EUT is an 802.11b/g transceiver WLAN.

The radio module is manufactured by Atheros.

Optionally the WLAN may be collocated with two Bluetooth transceivers BC04 (FCC ID: CJ6UPA3418BT) or BC02 (FCC ID: CJ6UPA3232BT).

## 5.2. MAXIMUM OUTPUT POWER

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

Frequency Range	Mode	Output Power	Output Power
(MHz)		(dBm)	(mW)
2412 - 2462	802.11b	19.44	87.90
2412 - 2462	802.11g	22.97	198.15
2412 - 2462	802.11g Turbo	21.53	142.23

2400 to 2483.5 MHz Authorized Band

# 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes four PIFA Film type antennas, each has a maximum gain as follows:

PIFA type antennas:

- 1. HTL017 4.24 dBi at 2.4GHz without cable loss;
- 2. HTL004 4.18 dBi at 2.4GHz without cable loss;
- 3. HTL008 2.89 dBi at 2.4GHz without cable loss;
- 4. TIAN01 4.02 dBi at 2.4GHz without cable loss.

The HTL017 antenna, which has the highest gain, represents the worst-case scenario, however the tests were also conducted with HTL004 antenna too just to verify the worst-case.

Page 7 of 248

## 5.4. SOFTWARE AND FIRMWARE

The test firmware was installed in the EUT during testing.

The test utility software used during testing was "art program" rev. V5\_2\_b14.

## 5.5. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power. The highest measured output power was at 2412 MHz for both b and g modes.

The worst-case data rate for this channel is determined to be 1 Mb/s for b mode and 6 Mb/s for g mode, based on previous experience with 802.11b/g WLAN product design architectures.

## 5.6. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST						
Description	Manufacturer	Model	Serial Number	FCC ID		
Laptop	TOSHIBA	PPM20U-AAAA8	Z3044588JU	DOC		
AC/DC Adapter	TOSHIBA	PA3282-1ACA	148662	N/A		

### I/O CABLES

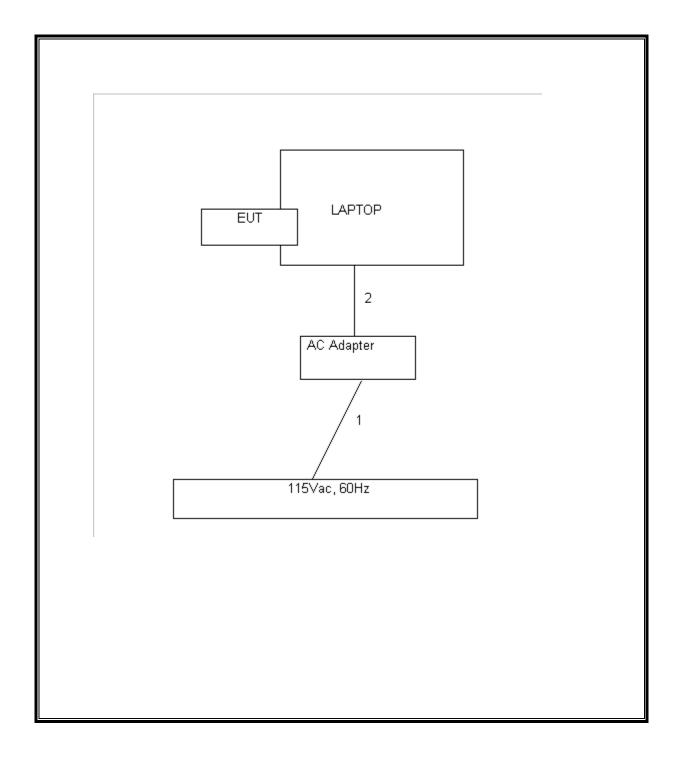
	I/O CABLE LIST								
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks			
1	AC	1	115VAC	Unshielded	2m	No			
2	DC	1	DC	Unshielded	1.5m	No			

### TEST SETUP

Stand-alone and Portable configurations were used during testing: Mobile configuration was used for colocation testing only. Test software exercised the radio card.

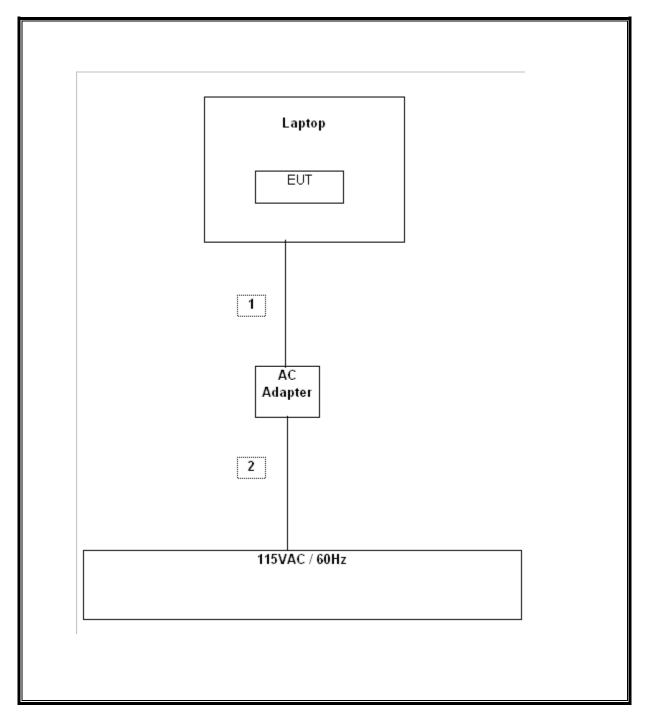
Page 8 of 248

### SETUP DIAGRAM FOR TESTS – FOR STAND-ALONE POSITION



Page 9 of 248

### **SETUP DIAGRAM FOR TESTS – FOR PORTABLE**



Page 10 of 248

# 6. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST					
Manufacturer	Model No.	Serial No.	Due Date		
R & S	ESHS 20	827129/006	10/22/2005		
Tripplite	LC-1800a	A0051681	CNR		
FCC	LISN-50/250-25-2	2023	8/30/2005		
MITEQ	NSP2600-SP	924342	8/17/2005		
Sunol Sciences	JB1 Antenna	A121003	9/21/2005		
HP	8593EM	3710A00205	1/6/2006		
HP	8447D	2944A06550	8/26/2005		
Agilent	E4440A	US42511954	6/16/2005		
Agilent	E4416A	GB41291160	2/.9/06		
Agilent	E9327A	US40440755	2/10/2006		
MicroTronic	HPM13194	2	CNR		
	Manufacturer R & S Tripplite FCC MITEQ Sunol Sciences HP HP Agilent Agilent Agilent	ManufacturerModel No.R & SESHS 20TrippliteLC-1800aFCCLISN-50/250-25-2MITEQNSP2600-SPSunol SciencesJB1 AntennaHP8593EMHP8447DAgilentE4440AAgilentE44416AAgilentE9327A	Manufacturer         Model No.         Serial No.           R & S         ESHS 20         827129/006           Tripplite         LC-1800a         A0051681           FCC         LISN-50/250-25-2         2023           MITEQ         NSP2600-SP         924342           Sunol Sciences         JB1 Antenna         A121003           HP         8593EM         3710A00205           HP         8447D         2944A06550           Agilent         E4440A         US42511954           Agilent         E4416A         GB41291160           Agilent         E9327A         US40440755		

Page 11 of 248

# 7. LIMITS AND RESULTS

## 7.1. CHANNEL TESTS FOR THE 2400 TO 2483.5 MHz BAND

### 7.1.1. 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.

### <u>RESULTS</u>

No non-compliance noted:

### 802.11b Mode

Channel	Frequency	6 dB Bandwidth	Minimum Limit	Margin
	(MHz)	(kHz)	(kHz)	(kHz)
Low	2412	12030	500	11530
Middle	2437	12000	500	11500
High	2462	12030	500	11530

### 802.11g Mode

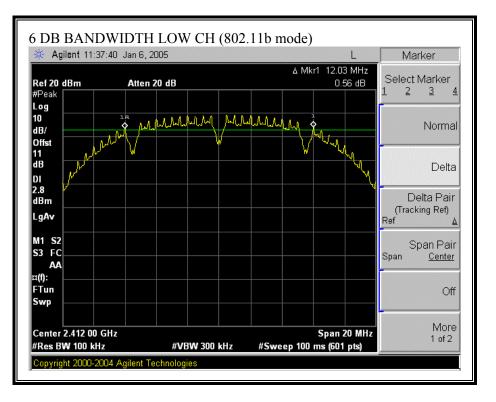
Channel	Frequency	6 dB Bandwidth	Minimum Limit	Margin
	(MHz)	(kHz)	(kHz)	(kHz)
Low	2412	16400	500	15900
Middle	2437	16300	500	15800
High	2462	16400	500	15900

### 802.11g Turbo Mode

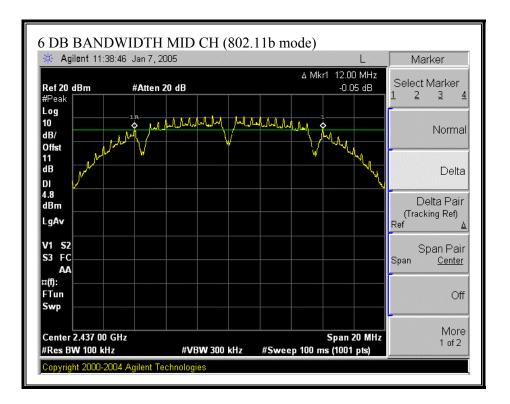
Channel	Frequency	6 dB Bandwidth	Minimum Limit	Margin
	(MHz)	(kHz)	(kHz)	(kHz)
Middle	2437	32500	500	32000

Page 12 of 248

#### 6 DB BANDWIDTH (802.11b MODE)



Page 13 of 248

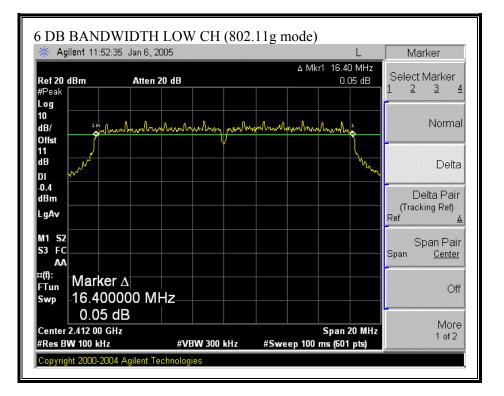


Page 14 of 248

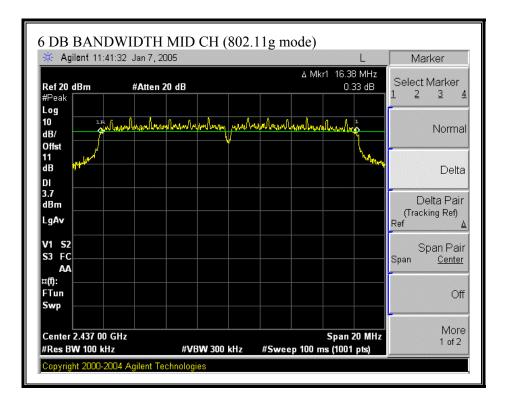


Page 15 of 248

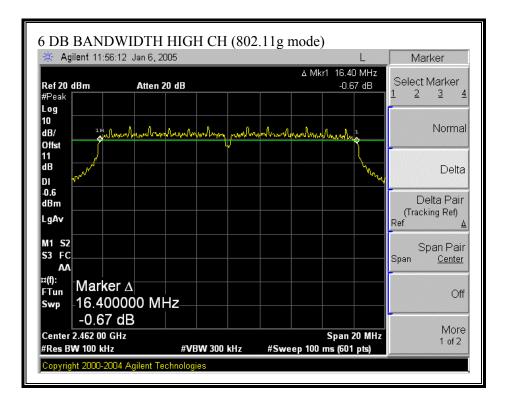
### 6 DB BANDWIDTH (802.11g MODE)



Page 16 of 248

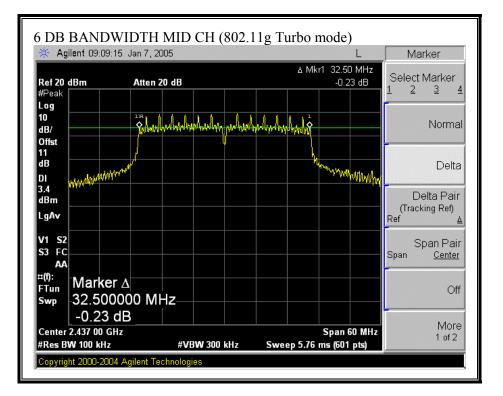


Page 17 of 248



Page 18 of 248

### 6 DB BANDWIDTH (802.11g TURBO MODE)



Page 19 of 248

### 7.1.2. 99% BANDWIDTH

### <u>LIMIT</u>

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:

802.11b Mode				
Channel	Frequency	99% Bandwidth		
	(MHz)	(MHz)		
Low	2412	15.8089		
Middle	2437	15.8007		
High	2462	15.8009		

802.11g Mode

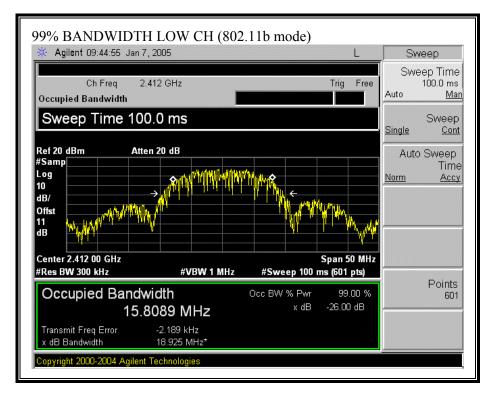
Channel	Frequency	99% Bandwidth	
	(MHz)	(MHz)	
Low	2412	16.6204	
Middle	2437	16.6343	
High	2462	16.6233	

802.11g Turbo Mode

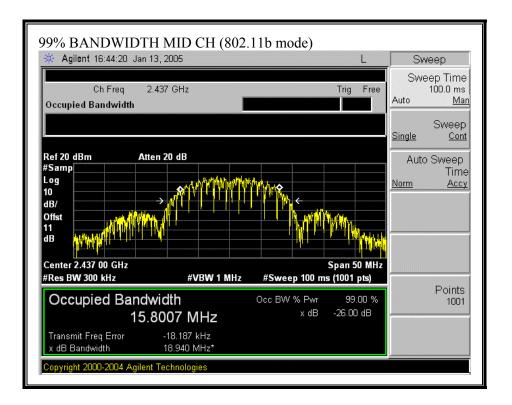
Channel	Frequency	99% Bandwidth	
	(MHz)	(MHz)	
Middle	2437	32.8648	

Page 20 of 248

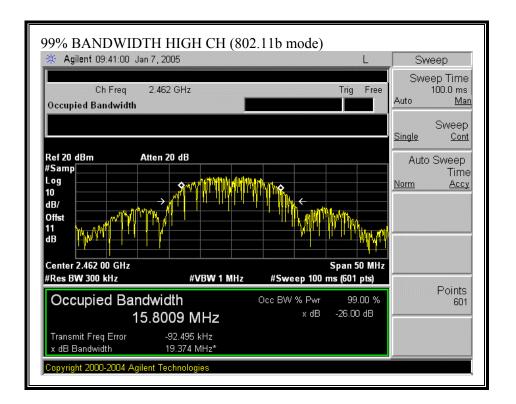
#### 99% BANDWIDTH (802.11b MODE)



Page 21 of 248

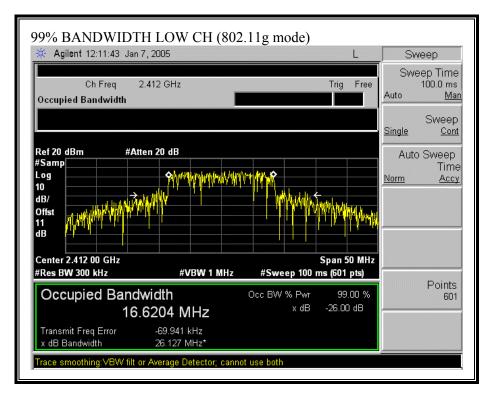


Page 22 of 248

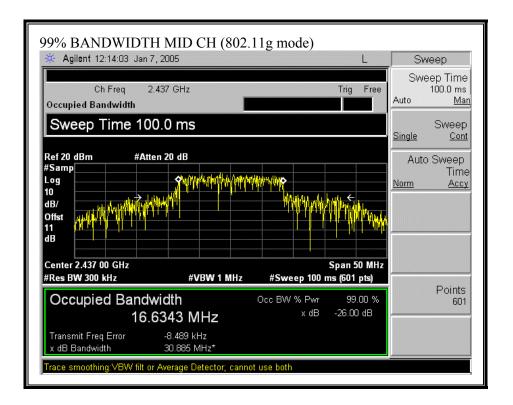


Page 23 of 248

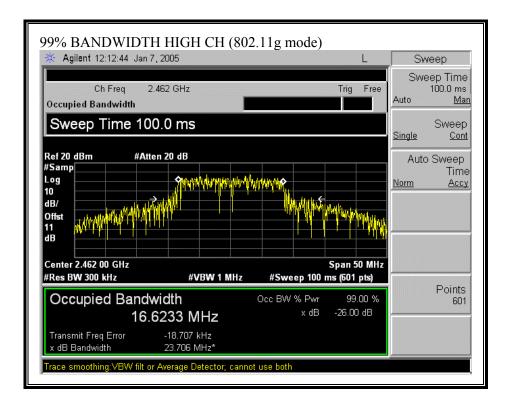
#### 99% BANDWIDTH (802.11g MODE)



Page 24 of 248

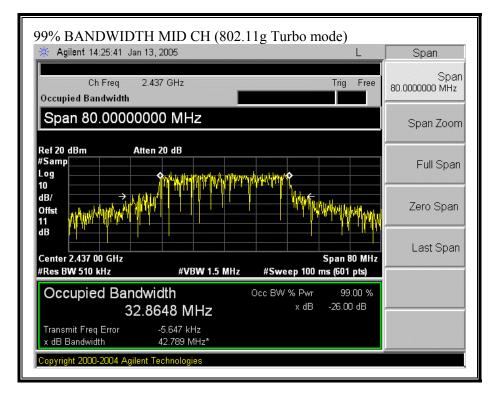


Page 25 of 248



Page 26 of 248

### 99% BANDWIDTH (802.11g TURBO MODE)



Page 27 of 248

### 7.1.3. 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)(4) (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.

§15.247 (b) (4) (i) Systems operating in the 2400–2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

### 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.

Page 28 of 248

### **RESULTS**

The maximum antenna gain is 4.24 dBi for other than fixed, point-to-point operations, therefore the limit is 30 dBm.

No non-compliance noted:

### 802.11b Mode

Channel	Frequency	Peak Power	Limit	Margin
	(MHz)	(dBm)	(dBm)	(dB)
Low	2412	19.44	30	-10.56
Middle	2437	19.39	30	-10.61
High	2462	19.40	30	-10.60

802.11g Mode

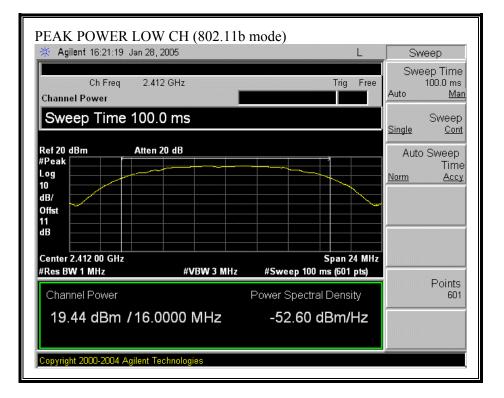
Channel	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
Low	2412	22.97	30	-7.03
Middle	2437	22.74	30	-7.26
High	2462	22.78	30	-7.22

802.11g Turbo Mode

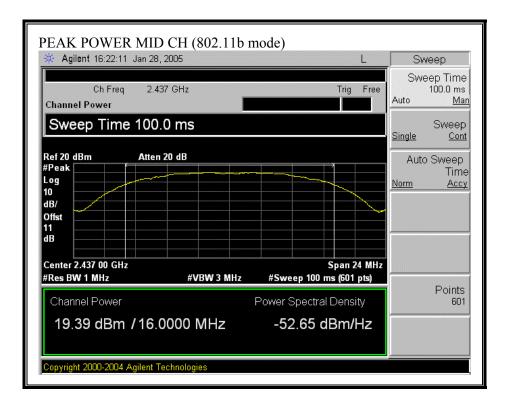
Channel	Frequency	Peak Power	Limit	Margin
	(MHz)	(dBm)	(dBm)	(dB)
Middle	2437	21.53	30	-8.47

Page 29 of 248

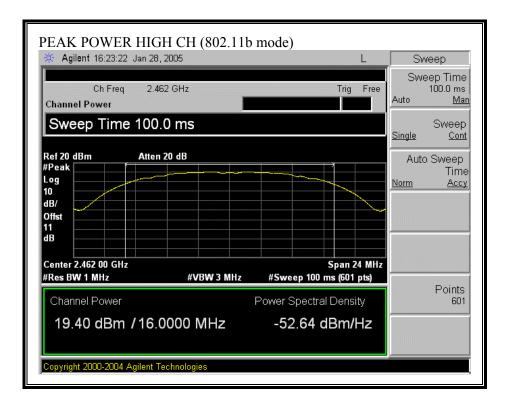
### OUTPUT POWER (802.11b MODE)



Page 30 of 248

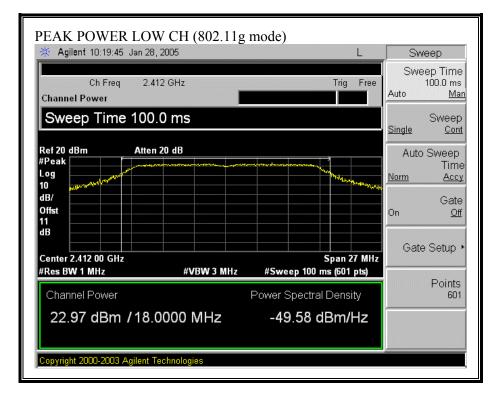


Page 31 of 248

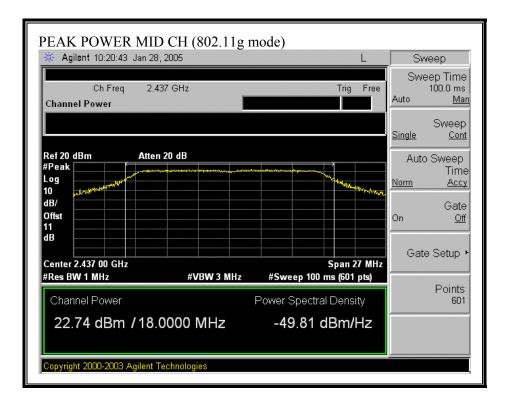


Page 32 of 248

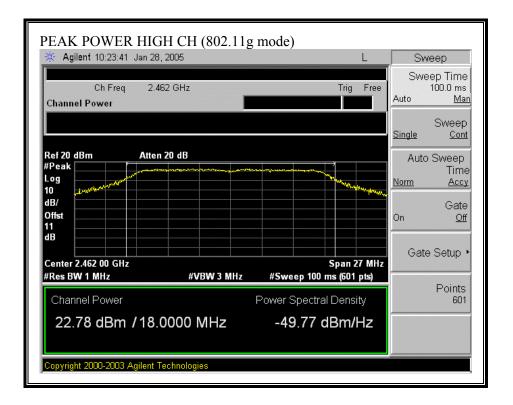
### OUTPUT POWER (802.11g MODE)



Page 33 of 248

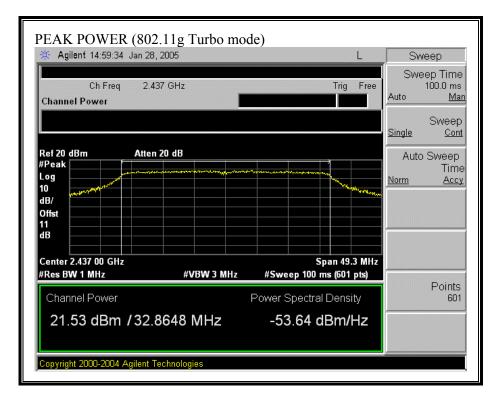


Page 34 of 248



Page 35 of 248

#### OUTPUT POWER (802.11g TURBO MODE)



Page 36 of 248

## 7.1.4. 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 11 dB (including 10 dB pad and 1dB cable) was entered as an offset in the power meter to allow for direct reading of power.

802.11b Mode

Channel	Frequency	Average Power
	(MHz)	(dBm)
Low	2412	16.56
Middle	2437	16.39
High	2462	16.45

802.11g Mode

Channel	Frequency	Average Power
	(MHz)	(dBm)
Low	2412	15.21
Middle	2437	15.05
High	2462	15.12

802.11g Turbo Mode

Channel	Frequency	Average Power
	(MHz)	(dBm)
Middle	2437	15.00

Page 37 of 248

# 7.1.5. PEAK POWER SPECTRAL DENSITY

## <u>LIMIT</u>

§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:

#### 802.11b Mode

Channel	Frequency	PPSD	Limit	Margin
	(MHz)	(dBm)	(dBm)	(dB)
Low	2412	-8.39	8	-16.39
Middle	2437	-7.81	8	-15.81
High	2462	-8.34	8	-16.34

802.11g Mode

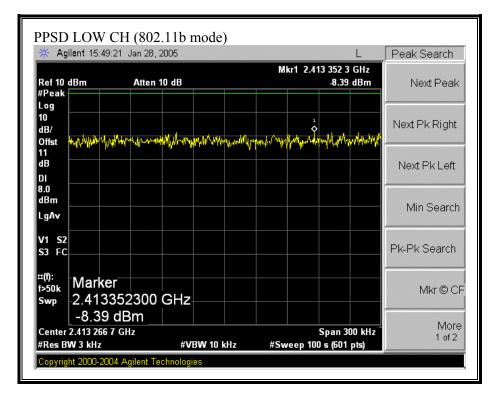
Channel	Frequency	PPSD	Limit	Margin
	(MHz)	(dBm)	(dBm)	(dB)
Low	2412	-8.96	8	-16.96
Middle	2437	-8.18	8	-16.18
High	2462	-8.78	8	-16.78

802.11g Turbo Mode

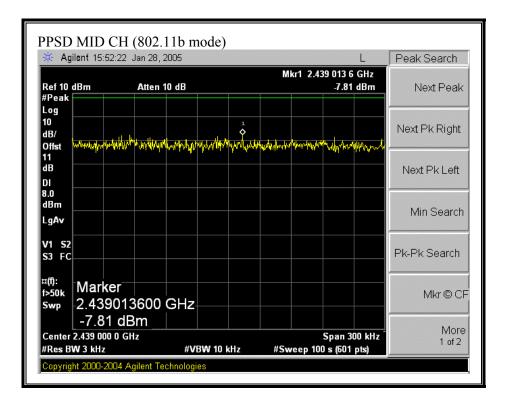
Channel	Frequency	PPSD	Limit	Margin
	(MHz)	(dBm)	(dBm)	(dB)
Middle	2437	-9.61	8	-17.61

Page 38 of 248

#### PEAK POWER SPECTRAL DENSITY (802.11b MODE)



Page 39 of 248

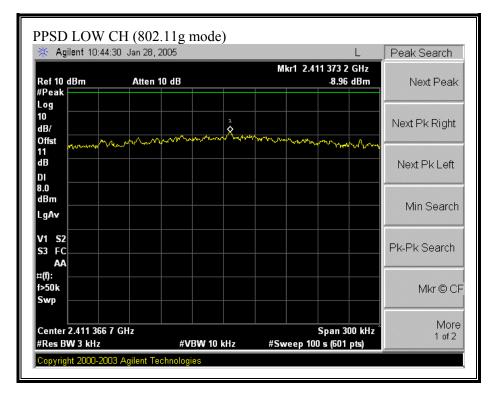


Page 40 of 248

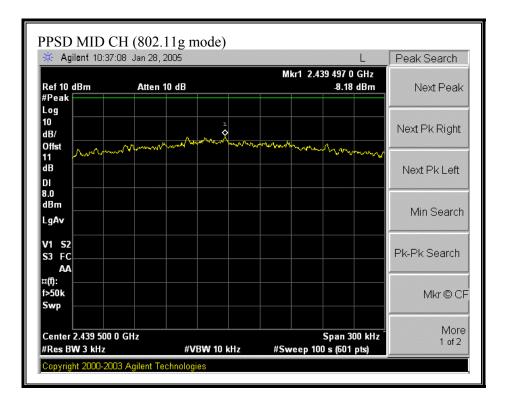
🔆 Ag	ilent 15:55:30	Jan 28, 2005						L	Peak Search
Ref10 #Peak	dBm	Atten 10 dB			Mk	(r1 2.46	2 683 0 -8.34		Next Peak
Log 10 dB/ Offst	NuthAlterations	Ny wy man	homonorthely	*pm//utur	nhillindiprod	hatwyrma	Mutur	rwim?	Next Pk Right
11 dB						· ·			Next Pk Left
DI 8.0 dBm LgAv									Min Search
V1 S2 S3 FC									Pk-Pk Search
		3000 GHz	2						Mkr © Cl
	-8.34 df 2.462 533 3 G w 3 kHz	Hz	VBW 10 k	:Hz	#Sw		Span 30 Is (601		More 1 of 2

Page 41 of 248

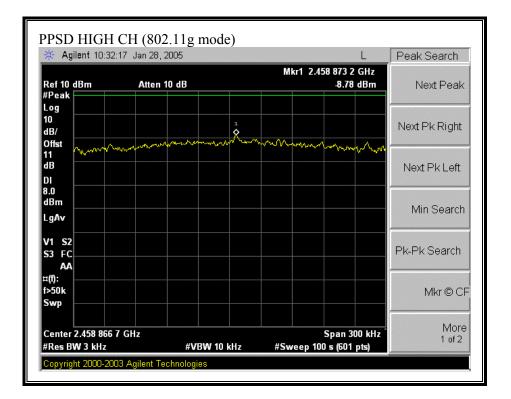
#### PEAK POWER SPECTRAL DENSITY (802.11g MODE)



Page 42 of 248

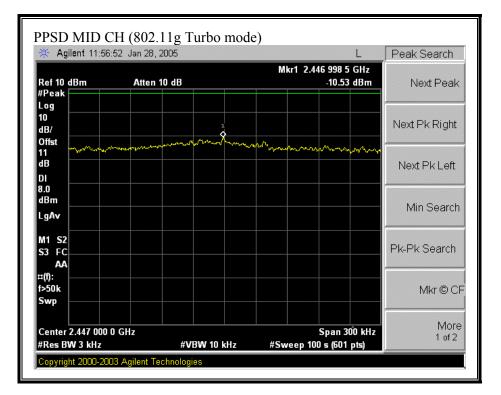


Page 43 of 248



Page 44 of 248

#### PEAK POWER SPECTRAL DENSITY (802.11g TURBO MODE)



Page 45 of 248

# 7.1.6. 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 §15.205(a).

## 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.

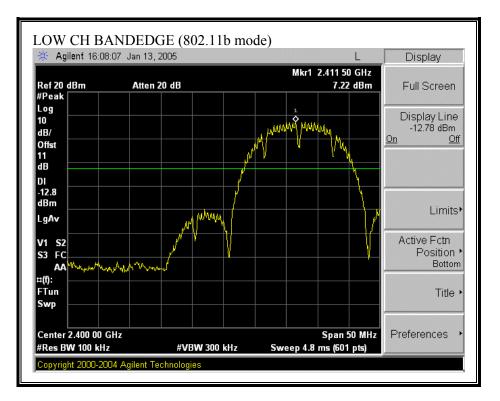
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

## **RESULTS**

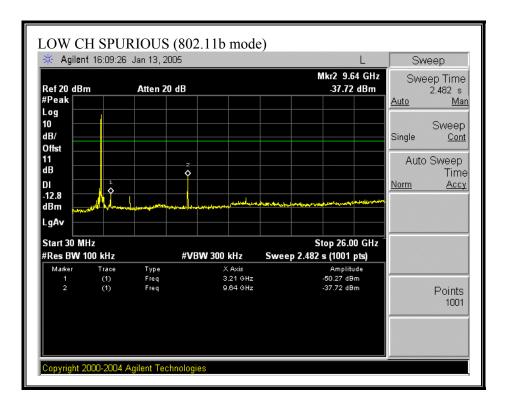
No non-compliance noted:

Page 46 of 248

#### SPURIOUS EMISSIONS, LOW CHANNEL (802.11b MODE)

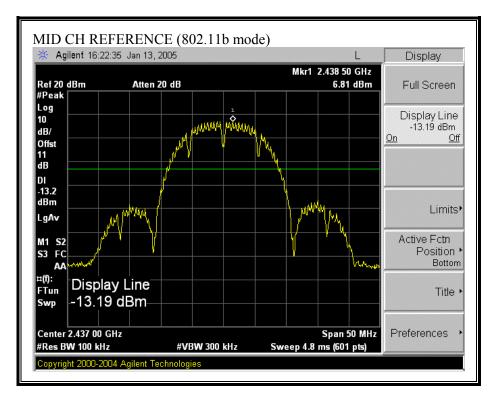


Page 47 of 248

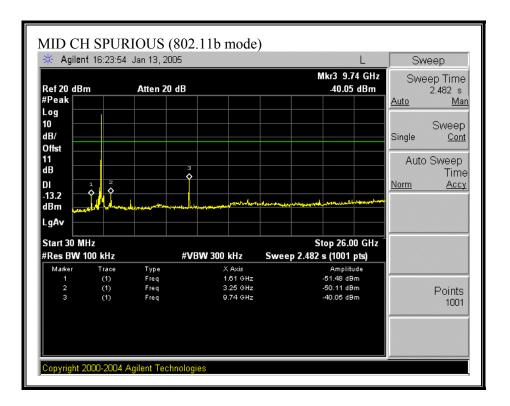


Page 48 of 248

#### SPURIOUS EMISSIONS, MID CHANNEL (802.11b MODE)

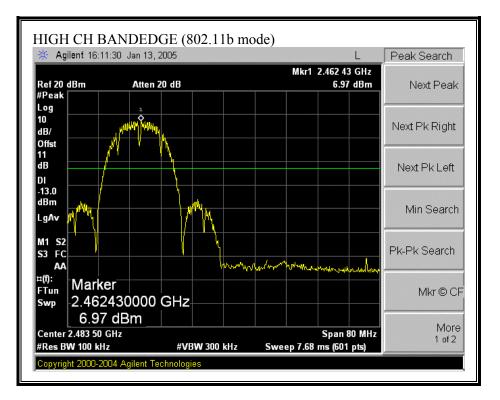


Page 49 of 248

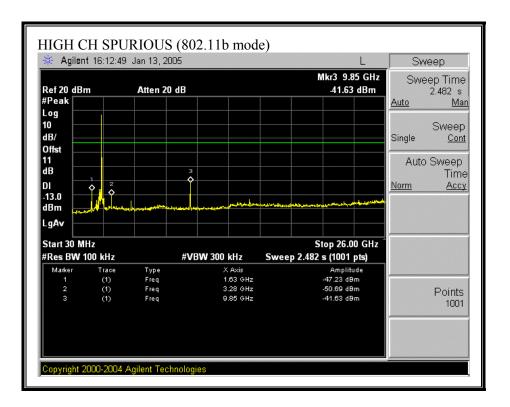


Page 50 of 248

#### SPURIOUS EMISSIONS, HIGH CHANNEL (802.11b MODE)

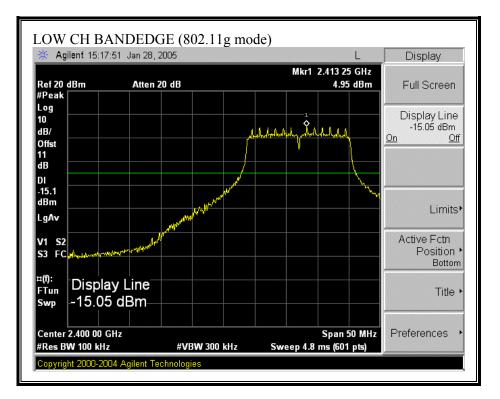


Page 51 of 248

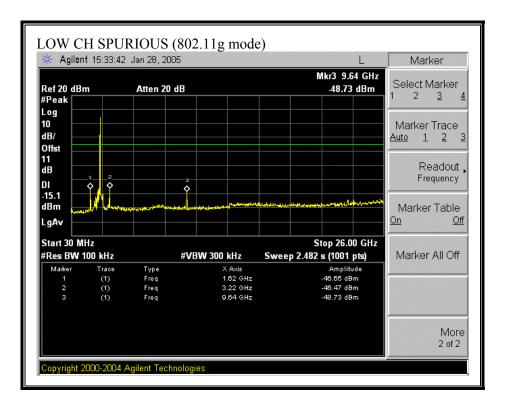


Page 52 of 248

#### SPURIOUS EMISSIONS, LOW CHANNEL (802.11g MODE)

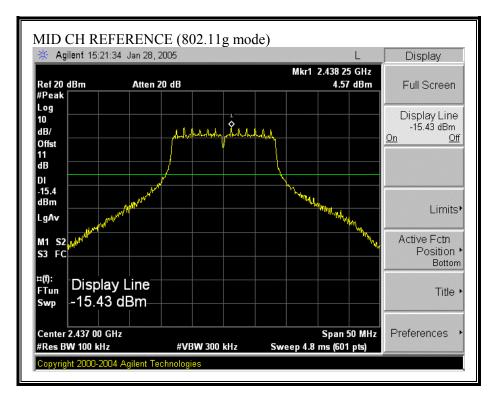


Page 53 of 248

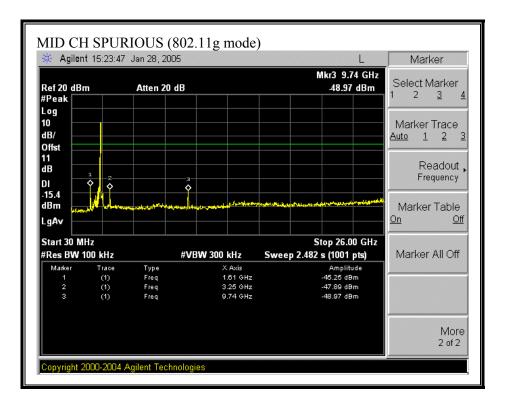


Page 54 of 248

#### SPURIOUS EMISSIONS, MID CHANNEL (802.11g MODE)

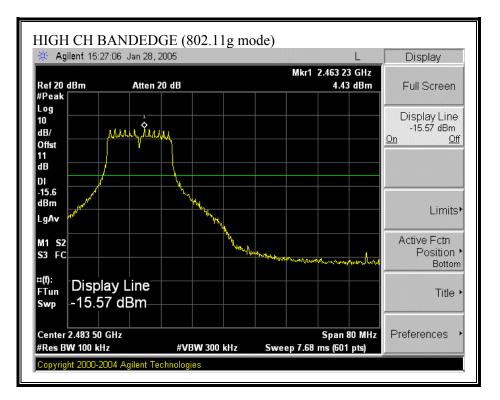


Page 55 of 248

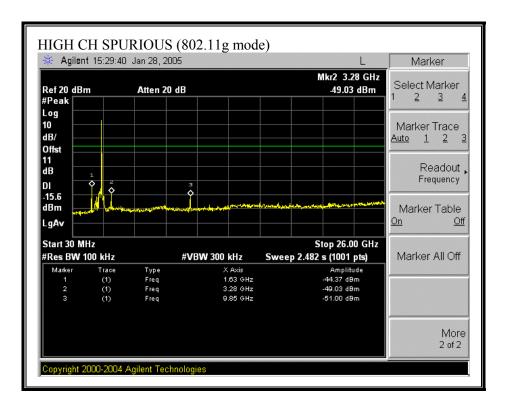


Page 56 of 248

#### SPURIOUS EMISSIONS, HIGH CHANNEL (802.11g MODE)

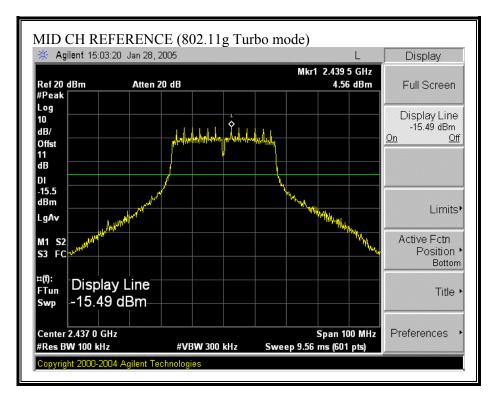


Page 57 of 248

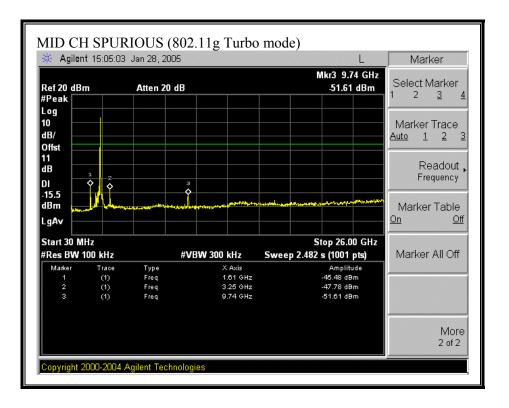


Page 58 of 248

#### SPURIOUS EMISSIONS, MID CHANNEL (802.11g TURBO MODE)



Page 59 of 248



Page 60 of 248

# 7.2. RADIATED EMISSIONS

# 7.2.1. 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	$(^{2})$
13.36 - 13.41			

\*: 4.5 – 5.25 per Standard LP0002.

<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.

Page 61 of 248

\$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.

Page 62 of 248

## 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 in the 2.4 GHz band.

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.

#### SUPPLEMENTAL TEST PROCEDURE FOR CO-LOCATED TRANSMITTERS

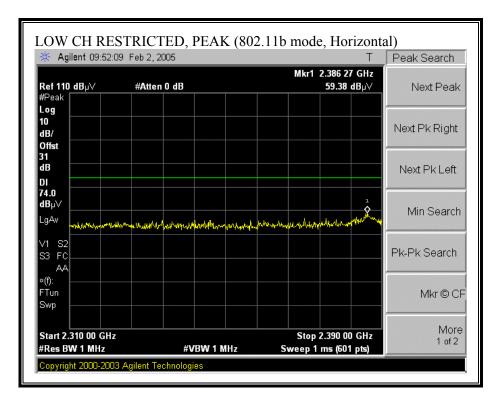
The dominant transmitter is set to the worst case channel. The spurious emissions performance of the dominant transmitter is investigated as the settings of the non-dominant transmitter are varied. The spectrum is searched for intermodulation products. Worst-case results are reported.

Page 63 of 248

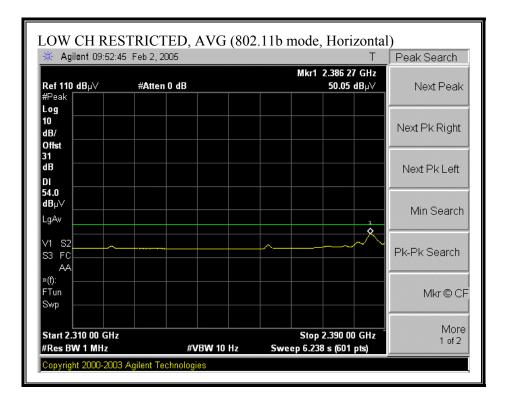
## 7.2.2. TRANSMITTER ABOVE 1 GHz WITH ANTENNA HTL017 IN FIREBOLT

## 7.2.2.1 STAND-ALONE CONFIGURATION

## RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, HORIZONTAL)

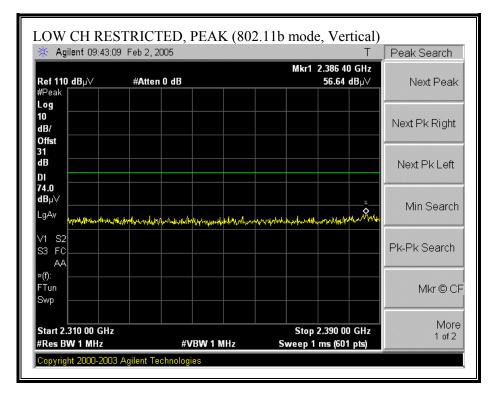


Page 64 of 248

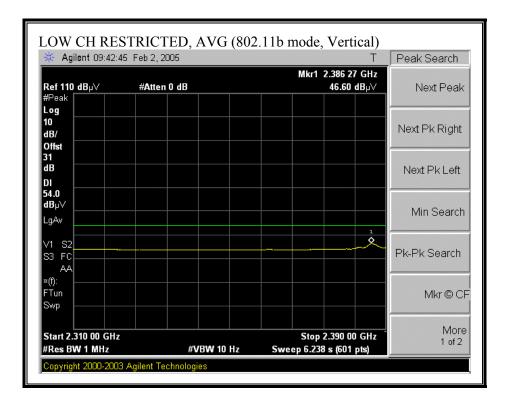


Page 65 of 248

#### RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, VERTICAL)

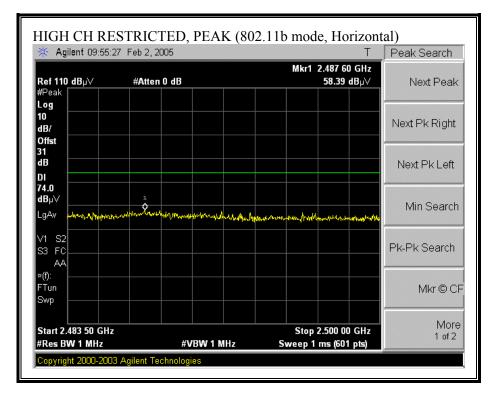


Page 66 of 248

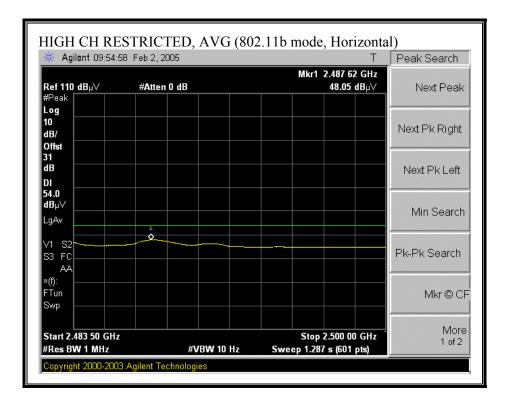


Page 67 of 248

#### RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, HORIZONTAL)

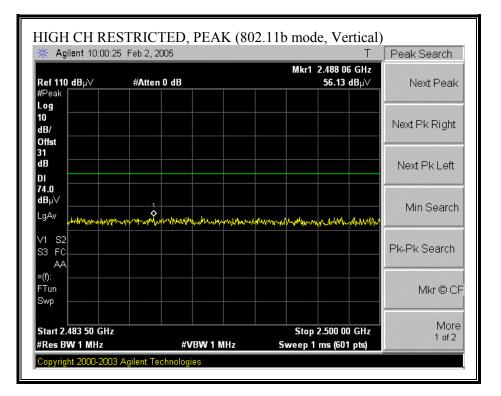


Page 68 of 248

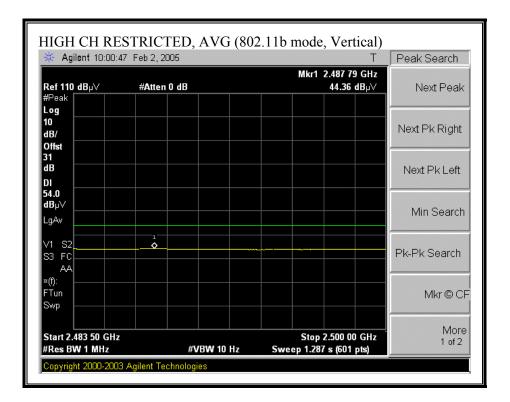


Page 69 of 248

### RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, VERTICAL)



Page 70 of 248



Page 71 of 248

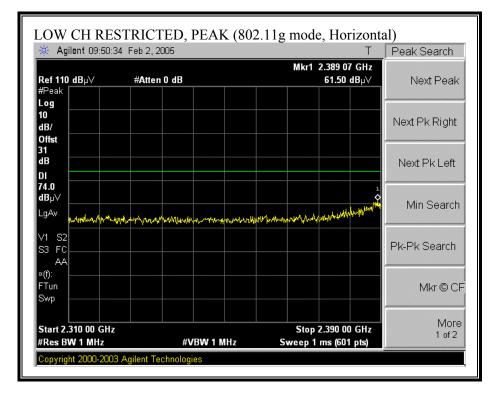
#### HARMONICS AND SPURIOUS EMISSIONS (b MODE)

ANTENNA HTL017

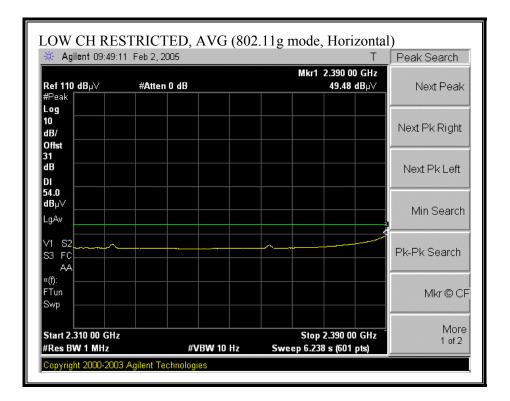
	-	CC 15.247 X_b mode_	antenna HT	L017, S	tand-a	lone									
	uipmer	_	-				Pre-amplife	- 26.45			Ноги >	18GHz			Limit
EMCO Horn 1-18GHz         Pre-amplifer 1-26GHz           T73; S/N: 6717 @3m         T87 Miteq 924342				г ге-атрине	r 20-40	-				-	, FC	C 15.205			
- Hi Freq	uency Ca	bles	ot cable	-	_					HPF	Dete	- Files	_	Peak Mea RBW=VB	weither
	or cante	▼ 3_CI		4 foot	cable -		2 foot cable _Neelesh	•		4.0GHz -	keje	ct Filter •		<u>Average l</u>	Measurements Hz ; VBW=10Hz
f GHz	Dist	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg	Pk Lim	-	Pk Mar dB	Avg Mar dB	
ow Ch	(m)										dBuV/m				
.824 .824	3.0 3.0	50.0 52.8	42.7 44.0	32.9 32.9	3.8 3.8	-39.6 -39.6	0.0 0.0	0.6 0.6	47.7 50.5	40.4 41.7	74 74	54 54	-26.3 -23.5	-13.6 -12.3	V H
lid ch															
874	3.0	49.3	42.3	32.9	3.8	-39.6	0.0	6.0	47.0	40.0	74	54	-27.0	-14.0	v
311	3.0	51.2	43.8	35.8	49	-40.3	Q.O	0.6	52.2	44.8	74 74	54 54	-21.8 -23.0	-9.2 -10.8	V H
874 311	3.0 3.0	53.3 54.0	45.5 45.0	32.9 35.8	3.8 4.9	-39.6 -40.3	0.0 0.0	6.0 6.0	51.0 55.0	43.2 46.0	74 74	54 54	-23.0	-10.8 -8,0	H H
igh Ch 335	3.0	49.6	42.5	30.8	3.0	-38.4	0.0	0.2	45.3	38.2	74	54	-28.7	-15.8	v
924	3.0	50.0	41.4	33.0	3.8	-39.7	0.0	0.6	47.7	39.1	74	54	-26.3	-14.9	v
386 335	3.0 3.0	48.6	39.5 39.8	36.0	4.9	-40.3	0.0	0.6 0.2	49.8 49.1	40.7 35.5	74 74	54	-24.2 -24.9	-13.3 -18.5	V H
335 924	3.0	53.4 55.3	39.8 47.2	30.8 33.0	3.0 3.8	-38.4 -39.7	0.0 0.0	0.2	49.1 53.0	35.5 44.9	74	54 54	-24.9	-18.5	H
386	3.0	54.6	45.5	36.0	49	-40.3	Q.O	6.0	55.8	46.7	74	54	-18.2	-73	H
ote: No c		issions were	detected above	the syste	m noise	floor.									
	ļ														
	f Dist Read AF CL	Measurem Distance to Analyzer F Antenna F Cable Los	Reading actor	y		Amp D Corr Avg Peak HPF	Average	Corre Field S d Peal	t to 3 met Strength @ c Field Stre	3 m		Pk Lim Avg Mar	Peak Fiel Margin vs	Field Streng d Strength I Average I Peak Limi	Limit Limit

Page 72 of 248

#### RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, HORIZONTAL)

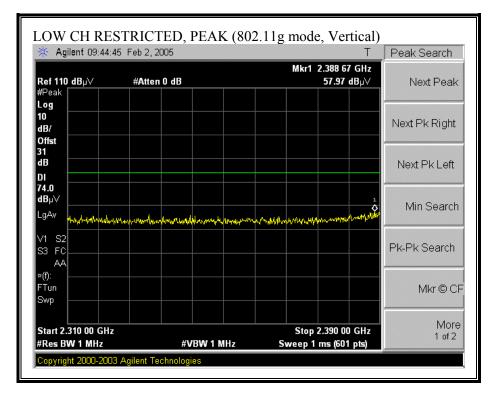


Page 73 of 248



Page 74 of 248

#### RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, VERTICAL)

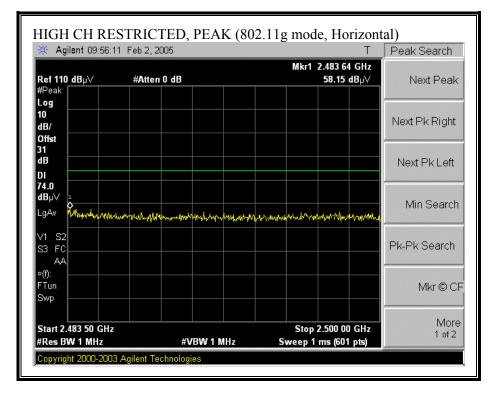


Page 75 of 248

🔆 Agilent 09:48	5:14 Feb 2, 2005			T Peak Search
<b>Ref 110 dB</b> µ∨ #Peak	#Atten 0 dB		Mkr1 2.390 00 46.12 d	
Log 10 dB/				Next Pk Right
Offst 31 dB DI				Next Pk Left
54.0 dBµ∨ LgAv				Min Search
V1 S2				Pk-Pk Search
AA ≪(f): FTun Swp				Mkr © Cl
Start 2.310 00 GH #Res BW 1 MHz		#VBW 10 Hz	Stop 2.390 00 Sweep 6.238 s (601 p	

Page 76 of 248

#### RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, HORIZONTAL)

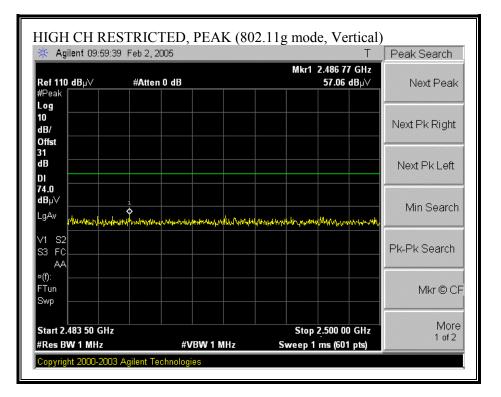


Page 77 of 248

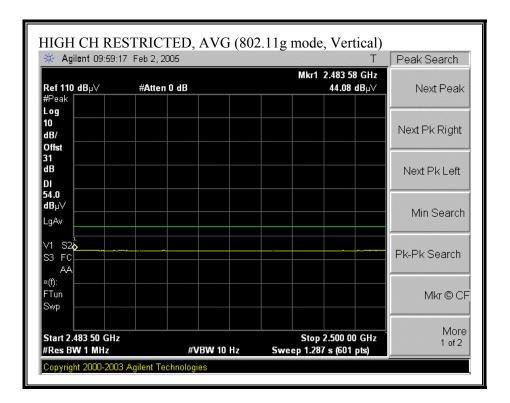
🔆 Agilent 09:56:	40 Feb 2, 2005	-	T Peak Search
<b>Ref 110 dB</b> µ∨ #Peak	#Atten 0 dB	Mkr1 2.483 50 GH 45.66 dBµ∖	
Log 10 dB/ Offst			Next Pk Right
31 dB DI			Next Pk Left
54.0 dBµ∨ LgAv			Min Search
V1 S2 S3 FC			Pk-Pk Search
≈(f): FTun Swp			Mkr © C
Start 2.483 50 GH #Res BW 1 MHz	z #VBW 10 F	Stop 2.500 00 GH Hz Sweep 1.287 s (601 pts)	z More 1 of 2

Page 78 of 248

# RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, VERTICAL)



Page 79 of 248



Page 80 of 248

# HARMONICS AND SPURIOUS EMISSIONS (g MODE)

	iipment	<u>.</u>													
EMCO	) Horn 1	-18GHz	Pre-am	plifer 1-2	6 GHz	L 1	Pre-amplife	r 26-40	GHz		Horn >	18GHz		FOOL	Limit
	'N: 6717	- <u> </u>	<b>T87 Mi</b>	teq 9243	<sup>12</sup> -				•				•		•
	iency Cabl ot cable		ot cable	4 foot	cable	12	2 foot cable		:	HPF	Reje	ct Filter		<u>Peak Measu</u> RBW=VBW=	
	·	3_Ch	in 🗸		•	12	_Neelesh	•	HPF_	4.0GHz 🗸		•		<u>Average Me</u> RBW=1MHz	asurements ; VBW=10Hz
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m		Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
ow ch															
.824 .824	3.0 3.0	46.0 47.0	33.0 35.0	32.9 32.9	3.8 3.8	-39.6 -39.6	0.0 0.0	6.0 6.0	43.7 44.7	30.7 32.7	74 74	54 54	-30.3 -29.3	-23.3 -21.3	V H
.23 .1.													•		
uid ch .874	3.0	50.4	38.4	32.9	3.8	-39.6	0.0	6.0	48.1	36.1	74	54	-25.9	- <b>17.9</b>	v
311	3.0	53.7	41.6	35.8	49	-40.3	0.0	6.0	54.7	42.6	74	54	-19.3	-11.4	v
.874 .311	3.0 3.0	54.7 55.5	45.8 42.4	32.9 35.8	3.8 4.9	-39.6 -40.3	0.0 0.0	6.0 6.0	52.4 56.5	43.5 43.4	74 74	54 54	-21.6 -17.5	-10 <i>5</i> -10.6	H H
		~~~	74.7		- <b>T</b> -2	702	0.0						-1/~	-100	**
ligh Ch		48.0		20.0		<b>26</b> 4	0.0	0.5	40.5	20.7			20.5		
.335 .924	3.0 3.0	47.8 49.0	35.0 37.5	30.8 33.0	3.0 3.8	-38.4	0.0 0.0	0.2 0.6	43.5 46.7	30.7 35.2	74 74	54 54	-30.5 -27.3	-23.3 -18.8	v
386	3.0 3.0	53.9	36.D	36.D	49	-40.3	0.0	0.0 0.0	55.1	37.2	74	54 54	-18.9	-16.8	v
924	3.0	54.0	42.0	33.0	3.8	-39.7	0.0	0.0	51.7	39.7	74	54	-22.3	-14.3	H
.386 .335	3.0 3.0	56.5 52.7	43.0 38.6	36.0 30.8	4.9 3.0	-40.3 -38.4	0.0 0.0	0.6 0.2	57.7 48.4	44.2 34.3	74 74	54 54	-16.3 -25.6	-9.8 -19.7	H H
	30	34.1	2020	50.0	30	-30.4	0.0	<u> </u>	40.4	343	/4	-24	-40.0	-17./	**
Teter N-			latantad -1			f									
IUTG: 140 0	uler emus	SIONS WEI'E	detected above	ule syste	m noise :	H001,'									
													Ì		
	f	Masswor	ent Frequenc <sup>,</sup>			Amp	Preamp (	Jain				Ang Tim	Aueroca	Field Strength	Timit
		Distance to		,			-		ct to 3 mete	ers.		Pk Lim		d Strength Lim	
		Analyzer R				Avg			Strength @					. Average Lin	
		Antenna Fa				Peak			k Field Stre					. Peak Limit	
		Cable Loss				HPF	High Pas			9			3		

Page 81 of 248

#### HARMONICS AND SPURIOUS EMISSIONS (g TURBO MODE)

EMCO Horn 1		Pre-am	plifer 1-2	ACTL.										1
T73; S/N: 6717	_			oonz		Pre-amplife	r 26-40	GHz		Horn >	18GHz			Limit
	-	T87 Mi	teq 92434	42 .				-					, FC	C 15.205 ▼
<ul> <li>Hi Frequency Cab</li> <li>2 foot cable</li> </ul>	3 for	ot cable	4 foot	cable	12	2 foot cable			HPF	Reje	ct Filter		RBW=VB	
	• 3_Ch	in 🗸		•	12	Neelesh	•	HPF_	4.0GHz -		•			<u>Measurements</u> Hz ; VBW=10Hz
f Dist GHz (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
id ch 874 3.0	53.6	39.4	32.9	3.8	-39.6	0.0	0.6	51.3	37.1	74	54	-22.7	-16.9	v
311 3.0	54.8	41.6	35.8	4.9	-40.3	0.0	0.0	55.8	42.6	74	54	-18.2	-11.4	v
874 3.0 311 3.0	58.6 60.4	46.7 45.8	32.9 35.8	3.8 4.9	-39.6 -40.3	0.0 0.0	0.6 0.6	56.3 61.4	44.4 46.8	74 74	54 54	-17.7 -12.6	-9.6 -7.2	H H
										•				
ote: No other emi	issions were	detected above	the syste	m noise	floor.									
Dist	Measurem Distance to Analyzer R Antenna Fa Cable Loss	eading actor	y		Amp D Corr Avg Peak HPF	Average	Corre Field S d Peal	t to 3 meta Strength @ c Field Stre	3 m		Pk Lim Avg Mar	Peak Fiel Margin vs	Field Streng d Strength I : Average I : Peak Limi	Limit Limit

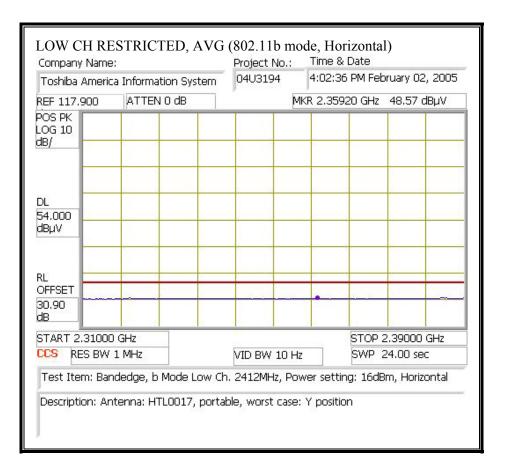
Page 82 of 248

# 7.2.2.2 PORTABLE CONFIGURATION

## RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, HORIZONTAL

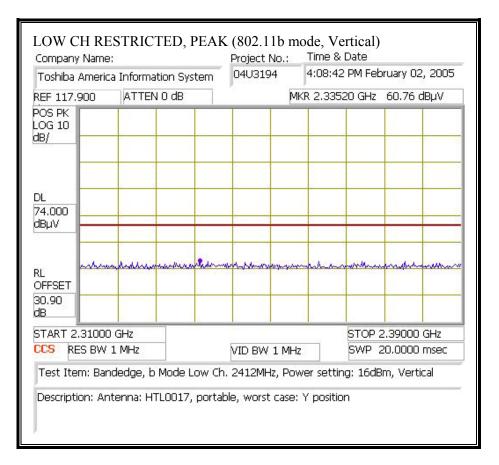
l oshiba Ame			04U3194		) PM Feb		
	ATTEN	NOdB		MKR 2.388	00 GHz	60.91 (	dBµV
Company Name: Toshiba America Inf REF 117.900 A' POS PK LOG 10 dB/							
							2 2
74.000 dBµV							
	ng n	an a	Marina and	man	human	- Maria	much
30.90 dB							,
START 2.310	)00 GHz				STOP 2	2.39000	GHz
CCS RES B	W 1 MHz		VID BW 1	4Hz	SWP 2	20,0000	msec
Test Item <sup>,</sup> I	Bandedae, b	Mode Low Ch	n. 2412MHz, I	Power settir	ng: 16dB	m, Horiz	ontal

Page 83 of 248

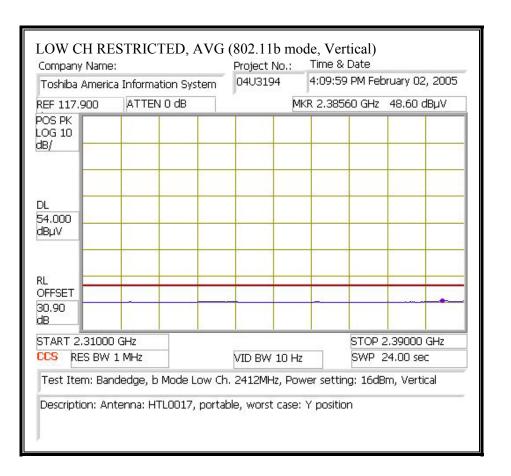


Page 84 of 248

# RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, VERTICAL)

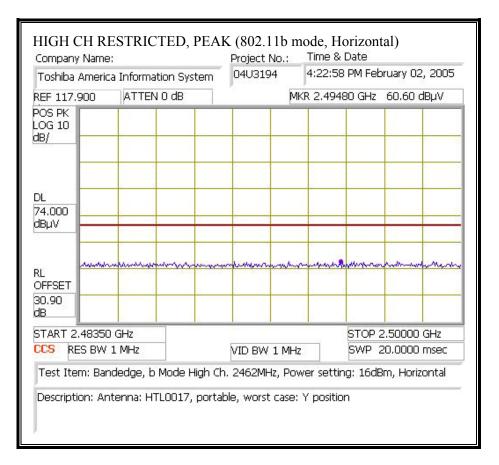


Page 85 of 248

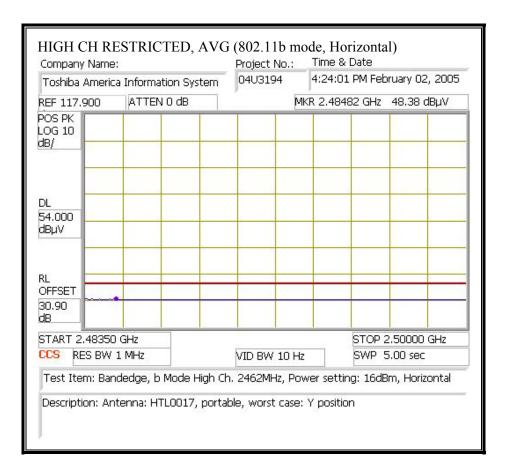


Page 86 of 248

# RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, HORIZONTAL)

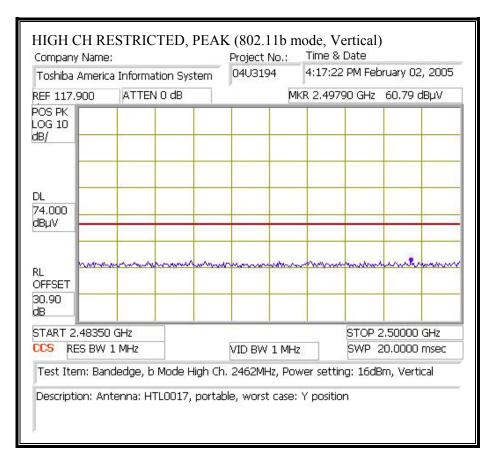


Page 87 of 248

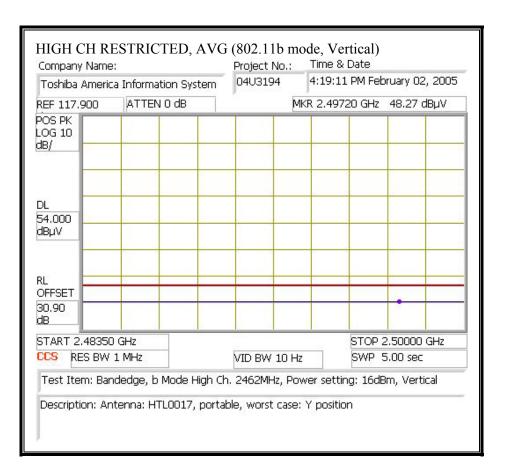


Page 88 of 248

# RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, VERTICAL)



Page 89 of 248



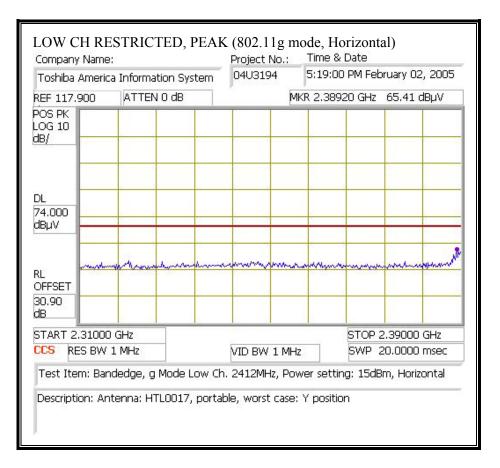
Page 90 of 248

# HARMONICS AND SPURIOUS EMISSIONS (b MODE)

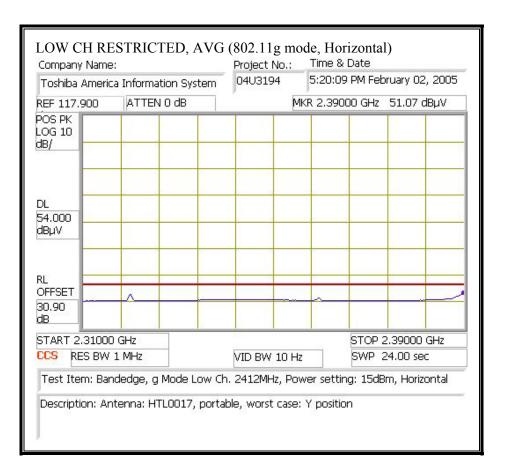
roject Compan CUT De CUT M/	N:PA3	194-1 iba	Half Size Mii C	ni-PCI 1	WLAN	í Modul	e									
	)per: T) uipmen		antenna HT	L017, P	ortable	e										
		-18GHz	Pre-am	plifer 1-2	6 GHz	,	Pre-amplife	r 26-40	GHz		Horn >	18GHz			Limit	
T73; S	/N: 6717	@3m 🗸	T87 Mi	teq 92434	12 ,				-					· [	FCC 15.205	•
	uency Cal oot cable	3 foo	ot cable	4 foot o	cable	12	2 foot cable			HPF	Reje	ct Filter		RBW=V	leasurements /BW=1MHz	
		• 3_Ch	in 🗸		-	12	_Neelesh	•	HPF_4	4.0GHz		•			<u>e Measurements</u> MHz ; VBW=10Hz	
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg M dB	ar Notes (V/H)	
ow ch 1.824	3.0	53.4	48.5	32.9	3.8	-39.6	0.0	0.6	51.1	46.2	74	54	-22.9	-7.8	v	
2.060	3.0	43.0	34.0	38.8	65	-39.2	0.0	0.9	50.1	41.1	74	54	-23.9	-12.9		
.824 2.060	3.0 3.0	54.0 44.2	48.7 35.8	32.9 38.8	3.8 6.5	-39.6 -39.2	0.0 0.0	0.6 0.9	51.7 51.3	46.4 42.9	74 74	54 54	-22.3 -22.7	-7.6 -11.1	V H	
nid ch																
1.874	3.0	51.8	47.8	32.9	3.8	-39.6	0.0	0.0	49.5	45.5	74	54	-24.5	-8.5	V.	
2.180	3.0 3.0	50.5 43.5	44.5 33.2	35.8 38.8	4.9 6.6	-40.3 -39.3	0.0 0.0	0.6 0.9	51.5 50.5	45.5 40.2	74 74	54 54	-22.5 -23.5	-8.5 -13.8	v	
1.874	3.0	53 <i>.</i> 3	48.2	32.9	3.8	-39.6	0.0	0.6	51.0	45.9	74	54	-23.0	-8.1	H	
311	3.0	52.0	46.7	35.8	4.9	-40.3	0.0	0.0	53.0	47.7	74	54	-21.0	-6.3	H	
2.180	3.0	44.6	34.0	38.8	6.6	-39.3	0.0	0.9	51.6	41.0	74	54	-22.4	-13.0	H	
High Ch																
924 386	3.0 3.0	51.9 53.6	47.4 46.8	33.0 36.0	3.8 4.9	-39.7 -40.3	0.0	0.6 0.6	49.6 54.8	45.1 48.0	74 74	54 54	-24.4 -19.2	-8.9 -6.0	v	
2.310	3.0	42.4	33.0	38.8	4.9 6.6	-40.5	0.0	0.0	49.3	39.9	74	54 54	-19.2	-14.1	v	
924	3.0	52 <i>.</i> 3	45.8	33.0	3.8	-39.7	0.0	0.6	50.0	43.5	74	54	-24.0	-10.5		
386	3.0	52.8	46.2	36.0	4.9	-40.3	0.0	0.6	54.0	47.4	74	54	-20.0	-6.6	H	
12.310	3.0	44.6	34.7	38.8	6.6	-39.4	0.0	0.9	51.5	41.6	74	54	-22.5	-12.4	H	
Note: No c	other emi	ssions were	detected above	the system	m noise	floor.										
						·	1									
			L													
	f Dist Read AF CL	Measurem Distance to Analyzer R Antenna Fa Cable Loss	leading actor	у		Amp D Corr Avg Peak HPF	Average	Corre Field S d Peal	ct to 3 mete Strength @ c Field Stre	3 m		Avg Lim Pk Lim Avg Mar Pk Mar	Peak Fiel Margin vs	d Strengt Averag	h Limit e Limit	

Page 91 of 248

# RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, HORIZONTAL)

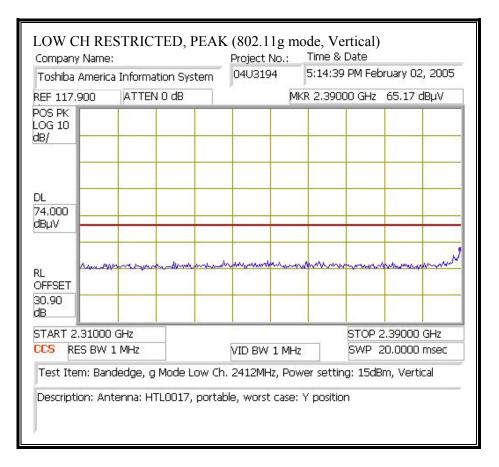


Page 92 of 248

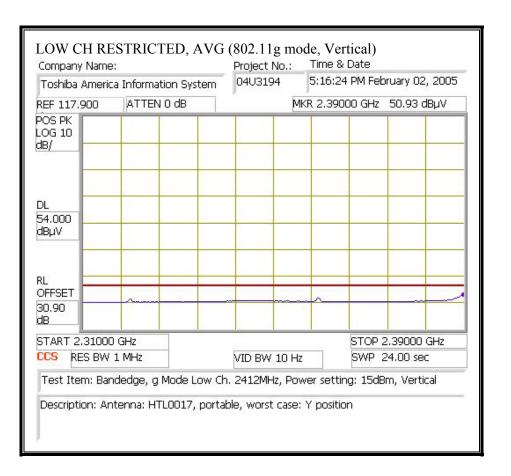


Page 93 of 248

# RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, VERTICAL)

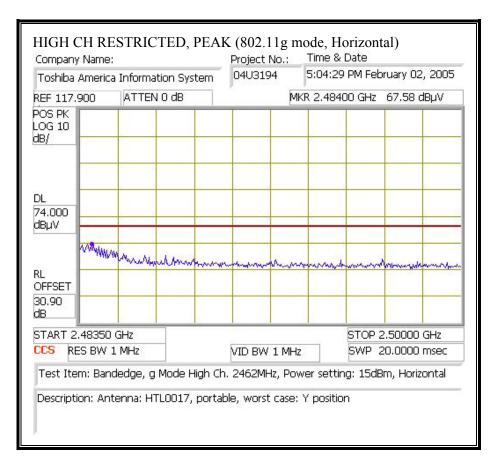


Page 94 of 248

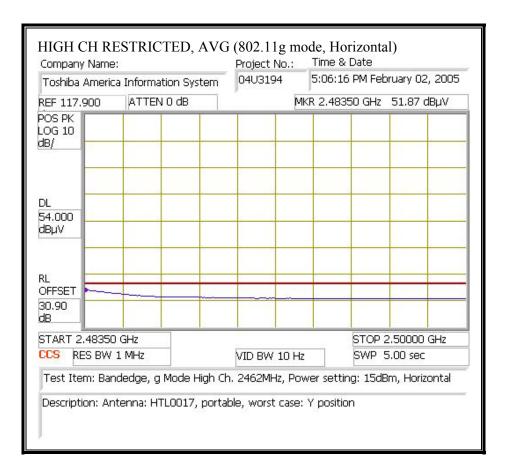


Page 95 of 248

# RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, HORIZONTAL)

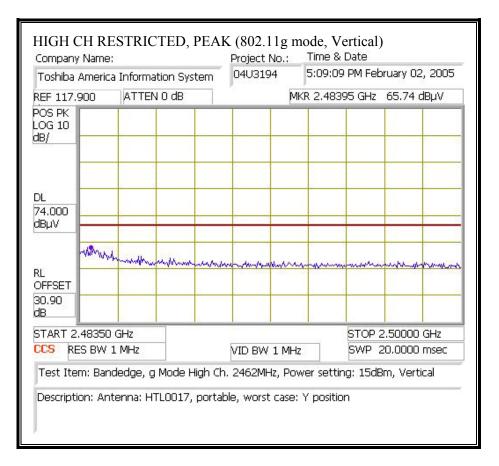


Page 96 of 248

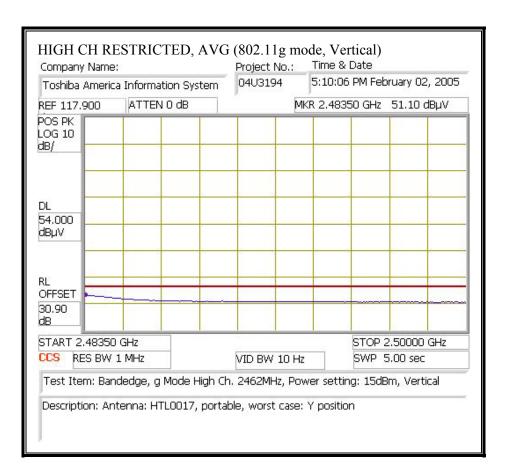


Page 97 of 248

# RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, VERTICAL)



Page 98 of 248



Page 99 of 248

# HARMONICS AND SPURIOUS EMISSIONS (g MODE)

#### PORTABLE CONFIGURATION

$ \begin{array}{c} \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	ements 1MHz surements						
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	2.205 ements IMHz IMHz VBW=10Hz Notes (V/H)						
Inde Oper: TX_g mode_antenua HTL017, Portable         EntCo Horn 1-18GHz       Pre-amplifer 1-26GHz       Pre-amplifer 26-40GHz       Horn > 18GHz       L         T73; S/N: 6717 @3m       Pre-amplifer 1-26GHz       Pre-amplifer 26-40GHz       Horn > 18GHz       L         The Frequency Cables       Pre-amplifer 1-26 GHz       Pre-amplifer 26-40 GHz       FCC 15.2         Pre-amplifer 1-26 GHz       Pre-amplifer 26-40 GHz       Pre-amplifer 26-40 GHz       FCC 15.2         Pre-amplifer 1-26 GHz       Pre-amplifer 26-40 GHz       Peak Measurer         Peak Measurer         Reject Filter       Peak Measurer         RBW=VBW=1N         Average Measurer         GHz       Mar Avg Mar dBB         dBuV       dBuV       BuV/m       Peak Avg       NC h         Average Measurer         RBW=10 MD       Corr       Fltr       Peak       Avg       Pk Lim       Average Measurer         RB	2.205 ements IMHz IMHz VBW=10Hz Notes (V/H)						
est Equipment:           EMCO Horn 1-18GHz         Pre-amplifer 1-26GHz         Horn > 18GHz         I         IC 15.2           T73; S/N: 6717 @3m         TB7 Mireq 924342         Pre-amplifer 26-40GHz         Horn > 18GHz         I         Pre-amplifer 26-40GHz         IC 15.2           T IF 7 Mireq 924342         Pre-amplifer 26-40GHz         Image: Colspan="2">Image: Colspan="2">Peak Measurer           Pre-amplifer 12 foot cable         12 foot cable         Image: Colspan="2">Peak Measurer           Peak Measurer           Reject Filter         Peak Measurer           RBW=VBW=1N           Average Measurer           RBW=100           MET         Peak Measurer           RBW=10           Mereau         Peak Avg         Net         Peak Measurer           MET         Peak Measurer           RBW=10           Mereau         Peak Measurer           RBW=10           Mereau         Peak Measurer	2.205 ements IMHz IMHz VBW=10Hz Notes (V/H)						
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	2.205 ements IMHz IMHz VBW=10Hz Notes (V/H)						
EMCO Horn 1-18GHz       Pre-amplifer 1-26GHz       For any lifer 1-26GHz         T3; S/N: 6717 @3m       For any lifer 1-26GHz       For any lifer 1-26GHz       For any lifer 1-26GHz       For any lifer 1-26GHz         2 foot cable       3 foot cable       4 foot cable       12 foot cable       Pre-amplifer 1-26GHz       Peak Measurer         2 foot cable       3 foot cable       4 foot cable       12 foot cable       HPF       Reject Filter       Peak Measurer         Chin       CL       Amplifer 1-26GHz       Peak Measurer         TBY Miteq 924342       Peak Measurer         Stort cable       12 foot cable         IPF - JOGHz       Peak Measurer         RBW=UBW=1N         Average Measurer         GHz       (m)       BuV       Mar Average Measurer         CL       Amplifer 1-26GHz       Peak Measurer         RBW=UM       Measurer         GHZ       (m) <th< td=""><td>2.205 ements IMHz IMHz VBW=10Hz Notes (V/H)</td></th<>	2.205 ements IMHz IMHz VBW=10Hz Notes (V/H)						
T73; S/N: 6717 @3m       FCC 15.2         T87 Mileq 924342       FCC 15.2         I B7 Mileq 924342       Peak Measurer         Peak Measurer         Reject Filter       Reject Filter         Average Measurer         RBW=10MIZ ; V         Mileq 924342         I D1 for cable       II Predesh       Peak Avg       Average Measurer         Average Measurer         GHz       Mileq 0 D Corr       Fltr       Peak Avg       Average Measurer         GHz       Mileq 0 D Corr       Fltr       Peak Avg       Average Measurer         GHz       Mileq 0 D Corr       Fltr <th colspan="6" p<="" td=""><td>ements IMHz IMHz VBW=10Hz Notes (V/H)</td></th>	<td>ements IMHz IMHz VBW=10Hz Notes (V/H)</td>						ements IMHz IMHz VBW=10Hz Notes (V/H)
Hi Frequency Cables       Peak Measurer         2 foot cable       3 foot cable       4 foot cable       12 foot cable       HPF       Reject Filter       Peak Measurer       RBW=VBW=1M         12_Neelesh       12_Neelesh       12_Neelesh       12_Neelesh       Peak       Avg       Pk Lim       Avg Lim       Pk Mar       Avg Mar         GHz       (m)       dBuV       dBuV       dBu       dB	IMHz VBW=10Hz Notes (V/H)						
2 foot cable         3 foot cable         4 foot cable         12 foot cable         HPF         Reject Filter         Reserver Filter         Re	IMHz VBW=10Hz Notes (V/H)						
Image: Second and product of the second	Notes (V/H)						
f         Dist         Read Pk         Read Avg. dBuV         AF         CL         Amp         D Corr         Fltr         Peak dB         Avg dBuV/m         Pk Lin dBuV/m         Avg Lin dBuV/m         Pk Mar         Avg Mar           GHz         (m)         dBuV         dBuV         dB         dB         dB         dB         dB         dBuV/m         dBuV/m         dBuV/m         dBuV/m         dBuV/m         dB	VBW=10Hz Notes (V/H)						
f         Dist         Read Pk         Read Avg. dBuV         AF         CL         Amp         D Corr         Fltr         Peak dB         Avg dBuV/m         Pk Lin dBuV/m         Avg Lin dBuV/m         Pk Mar         Avg Mar           GHz         (m)         dBuV         dBuV         dB         dB         dB         dB         dB         dBuV/m         dBuV/m         dBuV/m         dBuV/m         dBuV/m         dB	VBW=10Hz Notes (V/H)						
GHz         (m)         dBuV         dBvV         dBmV         dmV         dmV         dmV         dmV         dmV         dmV         dmV <th>(V/H)</th>	(V/H)						
GHz         (m)         dBuV         dBvV         dBmV         dB	(V/H)						
ow Ch         state         state <th< td=""><td></td></th<>							
20.60         3.0         42.5         33.2         38.8         6.5         .39.2         0.0         0.9         49.6         40.3         74         54         -24.4         -13.7           824         3.0         51.6         41.2         32.9         3.8         .39.6         0.0         0.6         49.3         38.9         74         54         -24.4         -13.7           824         3.0         51.6         41.2         32.9         3.8         .39.6         0.0         0.6         49.3         38.9         74         54         -24.7         -15.1           2.060         3.0         43.0         34.2         38.8         6.5         .39.2         0.0         0.9         50.1         41.3         74         54         -24.7         -15.1           2.060         3.0         34.30         34.2         38.8         6.5         .39.2         0.0         0.9         50.1         41.3         74         54         -23.9         -12.7           64.01 </td <td>v</td>	v						
824       3.0       51.6       41.2       32.9       3.8       -39.6       0.0       0.6       49.3       38.9       74       54       -24.7       -15.1         2.060       3.0       43.0       34.2       38.8       6.5       -39.2       0.0       0.9       50.1       41.3       74       54       -24.7       -15.1         id Ch	H						
Lid Ch         Image: Ch         I	v						
874         3.0         55.6         42.7         32.9         3.8         -39.6         0.0         0.6         53.3         40.4         74         54         -20.7         -13.6           311         3.0         56.2         42.4         35.8         4.9         -40.3         0.0         0.6         57.2         43.4         74         54         -16.8         -10.6	H						
311 3.0 56.2 42.4 35.8 4.9 -40.3 0.0 0.6 57.2 43.4 7.4 5.4 -16.8 -10.6							
	v v						
	v						
874 3.0 52.5 40.4 32.9 3.8 -39.6 0.0 0.6 50.2 38.1 74 54 -23.8 -15.9	H						
311         3.0         55.3         42.3         35.8         4.9         -40.3         0.0         0.6         56.3         43.3         74         54         -17.7         -10.7           2.180         3.0         43.1         33.6         38.8         6.6         -39.3         0.0         0.9         50.1         40.6         74         54         -17.7         -10.7	H H						
igh Ch 924 3.0 52.4 40.0 33.0 3.8 -39.7 0.0 0.6 50.1 37.7 74 54 -23.9 -16.3	v						
924         330         52.4         400         330         38         -39.7         00         0.6         50.1         37.7         74         54         -23.9         -10.3           386         3.0         53.6         41.2         36.0         4.9         -40.3         0.0         0.6         54.8         42.4         74         54         -19.2         -11.6	v						
2310 30 43.5 34.0 38.8 66 -39.4 0.0 0.9 50.4 40.9 74 54 -23.6 -13.1	<u>v</u>						
924         3.0         47.9         37.3         33.0         3.8         -39.7         0.0         0.6         45.6         35.0         74         54         -28.4         -19.0           386         3.0         49.5         38.0         36.0         4.9         -40.3         0.0         0.6         50.7         39.2         74         54         -28.4         -19.0	H						
3.10         3.10         3.3.1         3.3.6         3.8.8         6.6         -3.9.4         0.0         0.9         49.9         40.5         74         54         -2.4.1         -1.3.5							
	H H						
ore: I vo other emussions were detected above the system noise thor.							
Note: No other emissions were detected above the system noise floor.							

Page 100 of 248