

# FCC CFR47 PART 15 SUBPART C CLASS II PERMISSIVE CHANGE CERTIFICATION TEST REPORT

# FOR

PCI Express 802.11 b/g Transceiver

# MODEL NUMBER: PA3501U-1MPC

FCC ID: CJ6UPA3501WL

REPORT NUMBER: 06U10445-1

**ISSUE DATE: AUGUST 17, 2006** 

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

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## Revision History

Rev.	Issue Date	Revisions	Revised By
	8/17/06	Initial Issue	A. Ilarina

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# **1. ATTESTATION OF TEST RESULTS**

COMPANY NAME:	TOSHIBA CORPORATION DIGITAL MEDIA NETWORK COMPANY 2-9 SUEHIRO-CHO, OME TOKYO, 198-8710, JAPAN				
EUT DESCRIPTION:	PCI Express 802.11 b/g Transceiver				
MODEL:	PA3501U-1MPC				
SERIAL NUMBER:	6159Y032479				
DATE TESTED:	AUGUST 06 - 08, 2006				
	APPLICABLE STANDARDS				
STANDARD	TEST RESULTS				
FCC PART 15 SUB	PART 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**: 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.

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Tested By:

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# 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%.

# 5. EQUIPMENT UNDER TEST

## 5.1. DESCRIPTION OF EUT

The EUT is an 802.11b/g transceiver.

# 5.2. CLASS II CHANGE DESCRIPTION

Change #1 The subject approved module is being used in a different host.

Change #2 Collocation with CDMA CELL-PCS module.

Change #3 Collocation with Bluetooth Module.

## 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes PIFA antenna model number HFT40 manufactured by Hitachi Cable, Ltd with a peak gain of 0.32 dBi in the 2400-2500MHz band and 3.06 dBi in the 5725-5850MHz band.

# 5.4. SOFTWARE AND FIRMWARE

The EUT driver software installed in the host support equipment during testing was Atheros Radio Test, Revision 5.3 Build #11.

The test utility software used during testing was ART-V53\_build 13.

# 5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emissions tests above 1 GHz were performed on each applicable L/M/H channel.

The worst-case channel is determined as the channel with the highest output power. The highest measured output power was at 2437 MHz in 11g mode. The worst-case data rate for this channel is determined to be 6 Mb/s, based on previous experience with Atheros WLAN product design architectures.

Thus worst-case radiated emissions below 1 GHz and power line conducted emissions tests were made at 2437 MHz in the 802.11g mode, at 6 Mb/s.

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# 5.6. DESCRIPTION OF TEST SETUP

## SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST						
Description Manufacturer Model Serial Number FCC ID						
Laptop	Toshiba	PSR20U-AAAA4	46026672J	DoC		
AC/DC Adapter	Toshiba	PA3283U-3ACA	G71000043310	DoC		

### I/O CABLES

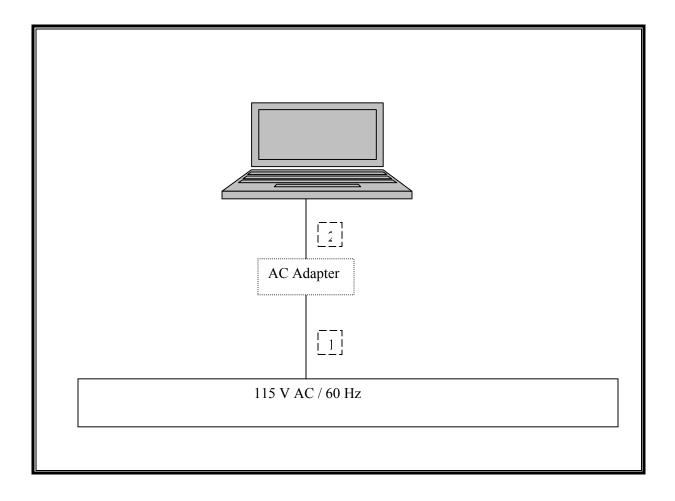
	I/O CABLE LIST							
Cable	Port	# of	Connector	Cable	Cable	Remarks		
No.		Identical	Туре	Туре	Length			
		Ports						
1	AC	1	AC	Unshielded	2m	N/A		
2	DC	1	DC	Unshielded	2m	N/A		

## TEST SETUP

The EUT is installed in a host laptop computer. Test software exercised the radio card.

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## SETUP DIAGRAM FOR TESTS



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# 6. 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	
EMI Receiver, 9 kHz ~ 2.9 GHz	Agilent / HP	8542E	3942A00286	2/4/2007	
RF Filter Section	Agilent / HP	85420E	3705A00256	2/4/2007	
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	JB1	A121003	9/3/2006	
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	8379443	8/30/2006	
EMI Test Receiver	R & S	ESHS 20	827129/006	6/3/2007	
Antenna, Horn 1 ~ 18 GHz	ETS	3117	29301	4/22/2007	
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	4/22/2007	
Preamplifier, 1 ~ 26 GHz	Agilent / HP	8449B	3008A00931	6/24/2007	
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent / HP	E4446A	US42510266	10/19/2006	
4.0 GHz High Pass Filter	Micro-Tronics	HPM13351	002	C.N.R.	
7.6 GHz High Pass Filter	Micro-Tronics	HPM13195	001	C.N.R.	
Preamplifier, 26 ~ 40 GHz	Miteq	NSP4000-SP2	924343	8/18/2006	
Antenna, Horn 26 ~ 40 GHz	ARA	MWH-2640/B	1029	12/29/2006	

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# 7. LIMITS AND RESULTS

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

## 7.1.1. AVERAGE POWER

## AVERAGE POWER LIMIT

None: for reporting purposes only. The average power for each channel was set to the average power specified in the original filing.

## TEST PROCEDURE

The transmitter output is connected to a power meter.

## <u>RESULTS</u>

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

802.11b Mode

Channel	Frequency (MHz)	Power (dBm)
Low	2412	20.50
Middle	2437	19.90
High	2462	20.10

Channel	Frequency (MHz)	Power (dBm)
Low	2412	19.30
Middle	2437	19.00
High	2462	18.40

802.11g Turbo Mode

Channel	Frequency (MHz)	Power (dBm)	
Mid	2437	19.10	

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## 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			

<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.

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\$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.

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## 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.

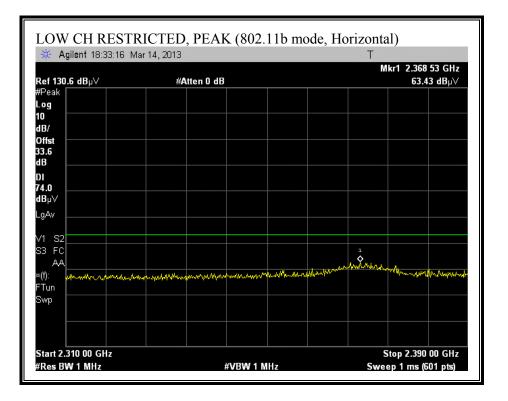
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each 5 GHz band.

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.

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## 7.2.2. TRANSMITTER ABOVE 1 GHz FOR 2400 TO 2483.5 MHz BAND

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

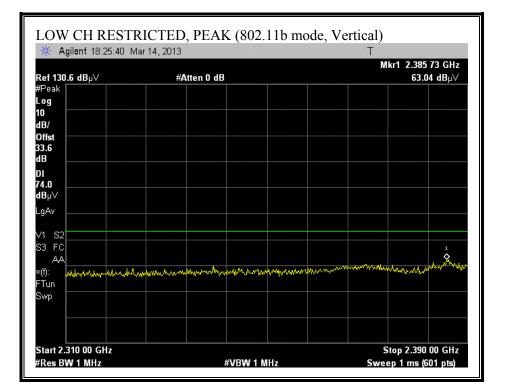


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Image: Height Heigh	· · · · ·	Mkr	1 2.367 07 GHz
Ref 130.6 dBµ∨	#Atten 0 dB		53.99 dBµ∀
Peak			
-og 10			
iB/			
Offst			
3.6			
1B			
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i4.0			
iBµ∨			
_gAv			
/1 S2			
53 FC			
AA			
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Tun		2mg	
Swp		 	~~~~

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

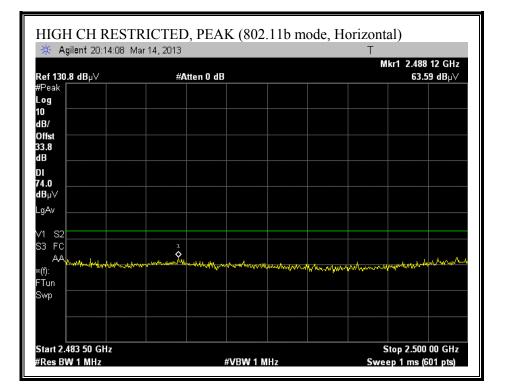


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🔆 Agilent 18:23:52 M	ai 14,2010	Mkr1 2.386 27 GHz
Ref 130.6 dBµ∀	#Atten 0 dB	53.63 dBµ∨
#Peak		<u> </u>
Log		
10		
dB/		
Offst		
33.6		
dB		
DI		
dBµ∀		
LgAv		
v1 S2		
\$3 FC		
AA		
×(f):		
FŤun		
Swp		

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

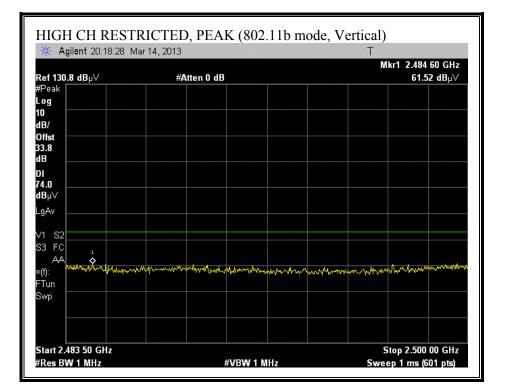


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🔆 Agilent 20:13:37 M		Mkr1 2.499 59 GH
Ref 130.8 dBµ∨	#Atten 0 dB	53.81 dBµ∖
#Peak		
og		
10		
iB/		
Offst		
33.8 1B		
DI I		
54.0		
iBµ∨		
_gAv		
/1 S2		
S3 FC		
AA		
*(f): =Tun		
Swp		

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



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🔆 Agilent 20:18:01 M		Mkr1 2.499 26 GHz
Ref 130.8 dBµ∀	#Atten 0 dB	51.34 dBµ∀
#Peak		
og		
10		
B/		
Offst		
33.8 1B		
DI		
iBµ∨		
_gAv		
-9,		
/1 S2		
53 FC		
AA		
×(f):		
Tun		
Swp		

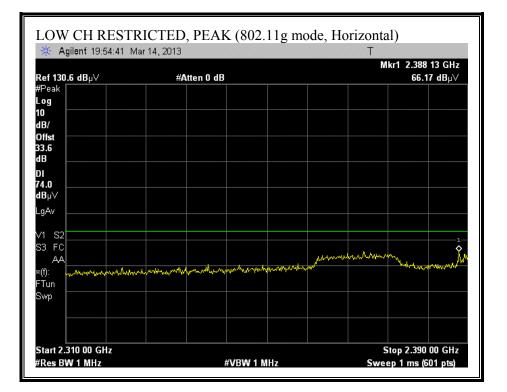
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## HARMONICS AND SPURIOUS EMISSIONS (b MODE)

$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Horn         1-18GHz T119; S/N: 29301 @3m         Pre-amplifer 1-26GHz T45 Agilent 3008A005f         Pre-amplifer 26-40GHz T45 Agilent 3008A005f         Horn > 18GHz T89; ARA 16-26GHz; S/N:1049           H         Frequency Cables         3 foot cable         12 foot Cable         Pre-amplifer 26-40GHz         T89; ARA 16-26GHz; S/N:1049           I         Frequency Cables         3 foot cable         12 foot Cable         Pre-amplifer 26-40GHz         Pre-amplifer 26-40GHz         T89; ARA 16-26GHz; S/N:1049           I         Frequency Cables         12 foot Cable         Pre-amplifer 26-40GHz	Horn         1-18GHz T119; S/N: 29301 @3m         Pre-amplifer 1-26GHz T45 Agilent 3008A005f         Pre-amplifer 26-40GHz T45 Agilent 3008A005f         Horn > 18GHz T89; ARA 18-26GHz; S/N:1049           H         Frequency Cables         3 foot cable         12 foot Cable         Pre-amplifer 26-40GHz         T89; ARA 18-26GHz; S/N:1049           I         Frequency Cables         3 foot cable         12 foot Cable         Pre-amplifer 26-40GHz         Pre-amplifer 26-40GHz; S/N:1049           I         Frequency Cables         12 foot Cable         Pre-amplifer 26-40GHz; S/N:1049         Pre-amplifer 26-40GHz; S/N:1049           I         Frequency Cables         12 foot Cable         Pre-amplifer 26-40GHz; S/N:1049         Pre-amplifer 26-40GHz; S/N:1049           I         Frequency Cables         Frank 177080001         Pre-amplifer 26-40GHz; S/N:1049         Pre-amplifer 26-40GHz; S/N:1049           I         I         Frank 177080001         Pre-amplifer 26-40GHz; S/N:1049         Pre-amplifer 26-40GHz; S/N:1049           I         I         I         I         Pre-amplifer 26-40GHz; S/N:1049         Pre-amplifer 26-40GHz; S/N:1049           I         I         I         I         I         Pre-amplifer 26-40GHz; N:1049         Pre-amplifer 26-40GHz; S/N:1049           I         I         I         I         I         I         I	Horn         1-18GHz T119; S/N: 29301 @3m         Pre-amplifer 1-26GHz T45 Agilent 3008A005f         Pre-amplifer 26-40GHz T45 Agilent 3008A005f         Horn > 18GHz T89; ARA 18-26GHz; S/N:1049           H         Frequency Cables         3 foot cable         12 foot Cable         Pre-amplifer 26-40GHz         T89; ARA 18-26GHz; S/N:1049           I         Frequency Cables         3 foot cable         12 foot Cable         Pre-amplifer 26-40GHz         Pre-amplifer 26-40GHz; S/N:1049           I         Frequency Cables         12 foot Cable         Pre-amplifer 26-40GHz; S/N:1049         Pre-amplifer 26-40GHz; S/N:1049           I         Frequency Cables         12 foot Cable         Pre-amplifer 26-40GHz; S/N:1049         Pre-amplifer 26-40GHz; S/N:1049           I         Frequency Cables         Frank 177080001         Pre-amplifer 26-40GHz; S/N:1049         Pre-amplifer 26-40GHz; S/N:1049           I         I         Frank 177080001         Pre-amplifer 26-40GHz; S/N:1049         Pre-amplifer 26-40GHz; S/N:1049           I         I         I         I         Pre-amplifer 26-40GHz; S/N:1049         Pre-amplifer 26-40GHz; S/N:1049           I         I         I         I         I         Pre-amplifer 26-40GHz; N:1049         Pre-amplifer 26-40GHz; S/N:1049           I         I         I         I         I         I         I	Horn         1-18GHz         Pre-amplifer         1-26GHz         Pre-amplifer         26-40GHz         Horn         > 18GHz           T119;         S/N: 23301 @3m         T145 Agilent         3008A005f         T						top PC		Toshiba 06U10445 08/08/06 Frank Ibrahim EUT installed i 6159Y032479 TX ON in 11b		neer: ntion:	ompany roject #: ate: est Engi onfigura N: lode: est Equi
Hi Frequency Cables         It Is frequency Cables	It Frequency Cables         It Frequency Cables         It Frequency Cables         It Frank 177080001       It 2 foot cable         Frank 187209001       It PF_4.0GHz       Reject Filter       Peak Measurements RBW=1MHz; VBW=10Hz         CHz (m) dBuV dB/m dB dB dB dB dB dB dB dB dB uV/m dBuV/m dBuV/m dBuV/m dBuV/m dBuV/m dBuV/m dB uV/m dB uV/	It Frequency Cables         2 foot cable       3 foot cable       It 2 foot cable         It Frank 177080001       It 2 foot cable       It PF_4.0GHz       Reject Filter       Peak Measurements         CHz (m)       Reject Filter       Reject Filter       Peak Measurements         CHz (m)       Reject Filter       Reject Filter       Peak Measurements         CHz (m)       Reject Filter       Reject Filter       Peak Measurements         CHz (m)       Reget Filter       Peak Measurements         CHz (m)       Reject Filter       Reject Filter       Peak Measurements         CHz (m)       Measurements         Mage Mage Mage Mage Model         Mage Mage Mage Mage Mage Mage Mage Mage	It Frequency Cables         2 foot cable       3 foot cable       It 2 foot cable         It Frank 177080001       It 2 foot cable       It PF_4.0GHz       Reject Filter       Peak Measurements         CHz (m)       Reject Filter       Reject Filter       Peak Measurements         CHz (m)       Reject Filter       Reject Filter       Peak Measurements         CHz (m)       Reject Filter       Reject Filter       Peak Measurements         CHz (m)       Reget Filter       Peak Measurements         CHz (m)       Reject Filter       Reject Filter       Peak Measurements         CHz (m)       Measurements         Mage Mage Mage Mage Model         Mage Mage Mage Mage Mage Mage Mage Mage	Hi Frequency Cables         It is		26-40GHz	olifer 2	Pre-amp			· · · ·				
2 foot cable         3 foot cable         12 foot cable         HPF         Reject Filter         Peak Measurements RBW=VBW=1MHz           1	2 foot cable         3 foot cable         12 foot cable         HPF         Reject Filter         Peak Measurements RBW=VBW=1MHz           1	2 foot cable         3 foot cable         12 foot cable         HPF         Reject Filter         Peak Measurements RBW=VBW=1MHz           1	2 foot cable         3 foot cable         12 foot cable         HPF         Reject Filter         Peak Measurements RBW=VBW=1MHz           1	2 foot cable         3 foot cable         12 foot cable         HPF         Reject Filter         Peak Measure RBW=VBW= Average Measure RBW=1MHz; VE           f         Dist         Read Pk         Read Avg. dBuV         AF         CL         Amp         D Corr         Fltr         Peak         Avg         dBuV/m         dBuV/m <th>▼ T89; ARA 18-26GHz; S/N:1049 ▼</th> <th>-</th> <th></th> <th></th> <th>D56 🚽</th> <th>008A00</th> <th>gilent 3</th> <th>T145 A</th> <th></th> <th></th> <th></th>	▼ T89; ARA 18-26GHz; S/N:1049 ▼	-			D56 🚽	008A00	gilent 3	T145 A			
Image: Construct of the second seco	Í         Dist         Read Pk         Read Avg.         AF         CL         Amp         D Corr         Fltr         Peak         Avg         Pk Lim         Avg Lim         Pk Mar         Avg Mar         Otes           GHz         (m)         dBuV         dBuV         dB/dB         dB         dB         dB         dB         dB         V(H)           over Channel (2412 MHz)         0         0         64.0         33.7         4.0         -34.8         0.0         0.6         49.6         43.0         74         54         -24.4         -11.0         V, ART=13.5           824         3.0         46.2         39.5         33.7         4.0         -34.8         0.0         0.6         49.6         43.0         74         54         -24.4         -11.0         V, ART=13.5           824         3.0         46.2         39.5         33.7         4.0         -34.8         0.0         0.6         56.6         53.0         74         54         -14.4         -1.0         H, ART=13.5           874         3.0         52.6         49.9         33.7         4.0         -34.9         0.0         0.6         55.3         74         54         -18.7	Í         Dist         Read Pk         Read Avg.         AF         CL         Amp         D Corr         Fltr         Peak         Avg         Pk Lim         Avg Lim         Pk Mar         Avg Mar         Otes           GHz         (m)         dBuV         dBuV         dB/dB         dB         dB         dB         dB         dB         V(H)           over Channel (2412 MHz)         0         0         64.0         33.7         4.0         -34.8         0.0         0.6         49.6         43.0         74         54         -24.4         -11.0         V, ART=13.5           824         3.0         46.2         39.5         33.7         4.0         -34.8         0.0         0.6         49.6         43.0         74         54         -24.4         -11.0         V, ART=13.5           824         3.0         46.2         39.5         33.7         4.0         -34.8         0.0         0.6         56.6         53.0         74         54         -14.4         -1.0         H, ART=13.5           874         3.0         52.6         49.9         33.7         4.0         -34.9         0.0         0.6         55.3         74         54         -18.7	Í         Dist         Read Pk         Read Avg.         AF         CL         Amp         D Corr         Fltr         Peak         Avg         Pk Lim         Avg Lim         Pk Mar         Avg Mar         Otes           GHz         (m)         dBuV         dBuV         dB/dB         dB         dB         dB         dB         dB         V(H)           over Channel (2412 MHz)         0         0         64.0         33.7         4.0         -34.8         0.0         0.6         49.6         43.0         74         54         -24.4         -11.0         V, ART=13.5           824         3.0         46.2         39.5         33.7         4.0         -34.8         0.0         0.6         49.6         43.0         74         54         -24.4         -11.0         V, ART=13.5           824         3.0         46.2         39.5         33.7         4.0         -34.8         0.0         0.6         56.6         53.0         74         54         -14.4         -1.0         H, ART=13.5           874         3.0         52.6         49.9         33.7         4.0         -34.9         0.0         0.6         55.3         74         54         -18.7	Image: Second		able	oot ca	12 f		able	foot c	3			
GHz         (m)         dBuV         dBvV         dB/dB         dB         dB         dB         dB         dB         dB/m         dB         dB         dB         dV/m         dBuV/m         dBuV/m         dBuV/m         dBuV/m         dB         dB         dB         (V/H)           000         3.0         4.0         3.0, 3.7         4.0         -34.8         0.0         0.6         49.6         43.0         74         54         -24.4         -11.0         V, ART=13.5           161 Channel (247 MHz)                64.9.6         43.0         74         54         -24.6         -13.1         H, ART=13.5           161 Channel (247 MHz)  <	GHz         (m)         dBuV         dB/m         dB         (V/H)           wor Channel (2112 MHz)         v	GHz         (m)         dBuV         dB/m         dB         (V/H)           wor Channel (2112 MHz)         v	GHz         (m)         dBuV         dB/m         dB         (V/H)           wor Channel (2112 MHz)         v	GHz         (m)         dBuV         dB/m         dB         dB         dB         dB         dB         dB         dB         dB/m         dB         dB         dB         dB/m         dB         dB         dB         dB/m         dB         dB         dB         dB/m         dB		001 _	8720900	Frank 1	-	001	177080	Frank	•		
ow Channel (2412 MHz)         ow Channel (2417 MHz)	ow Channel (2412 MHz)         o	ow Channel (2412 MHz)         o	ow Channel (2412 MHz)         o	ow Channel (2412 MHz)         o											
Iid Channel (2437 MHz)         v	Iid Channel (2437 MHz)       Image: Channel (2452 MHz)       Image: Channel (2462 MHz)       Image: Ch	Iid Channel (2437 MHz)       Image: Channel (2452 MHz)       Image: Channel (2462 MHz)       Image: Ch	Iid Channel (2437 MHz)       v <td>Hid Channel (2437 MHz)         Image: Channel (2452 MHz)         Image: Channel (2462 MHz)         Image</td> <td>0 0.6 49.6 43.0 74 54 -24.4 -11.0 V. ART=13.5</td> <td>49.6</td> <td>0.6</td> <td>0.0</td> <td>-34.8</td> <td>4.0</td> <td>33.7</td> <td>39.5</td> <td>2 MHz) 46.2</td> <td>nel (241) 3.0</td> <td>ow Chan 824</td>	Hid Channel (2437 MHz)         Image: Channel (2452 MHz)         Image: Channel (2462 MHz)         Image	0 0.6 49.6 43.0 74 54 -24.4 -11.0 V. ART=13.5	49.6	0.6	0.0	-34.8	4.0	33.7	39.5	2 MHz) 46.2	nel (241) 3.0	ow Chan 824
f         Measurement Frequency         Amp         Preamp Gain         Average Field Strength Limit         Average Field Strength Limit         Preamp Gain         Average Limit           Read         Analyzer Reading         Average Field Strength         Average Field Strength         Brength Limit         Pack Field Strength Limit           Read         Analyzer Reading         Average Field Strength         Preamp Gain         Average Field Strength         Pack Field Strength Limit           AF         Antenna Factor         Peak         Calculated Peak Field Strength         Preamp Ain         Pack Field Strength         Pack Limit	figh Channel (2462 MHz)         v	figh Channel (2462 MHz)         v	f         Measurement Frequency         Amp         Preamp Gain         Average Field Strength         Average Field Strength         Limit           f         Measurement Frequency         Amp         Preamp Gain         Average Field Strength         Average Field Strength         Limit           AF         Antenna Factor         Peak         Calculated Peak Field Strength         Pild         Pild         Pild         Nargin vs. Peak Limit           CL         Cable Loss         HPF         High Pass Filter         Filter         Pild         Pi	Iigh Channel (2462 MHz)         v	.0 0.6 56.1 53.4 74 54 -17.9 -0.6 V, ART=20.5	56.1	0.6		-34.9	4.0	33.7	49.9	7 MHz) 52.6	nel (2437 3.0	id Chanı 874
924         3.0         50.1         45.7         33.8         4.0         -34.9         0.0         0.6         53.6         49.2         74         54         -20.4         -4.8         H, ART=18.5           386         3.0         45.4         33.2         35.2         4.6         -34.6         0.0         0.6         53.6         49.2         74         54         -20.4         -4.8         H, ART=18.5           f         Measurement Frequency Dist         Map         Preamp Gain         Areg Lim         Average Field Strength Limit         Pack Field Strength Limit           Read         Analyzer Reading         Average Field Strength Qi and         Average Field Strength Qi and         Average Field Strength Qi and         Pack Field Strength Limit           AF         Antenna Factor         Peak         Calculated Peak Field Strength         Pk Mar         Margin vs. Peak Limit	924         3.0         50.1         45.7         33.8         4.0         -34.9         0.0         0.6         53.6         49.2         74         54         -20.4         -4.8         H, ART=18.5           386         3.0         45.4         33.2         35.2         4.6         -34.6         0.0         0.6         51.2         39.0         74         54         -20.4         -4.8         H, ART=18.5           f         Measurement Frequency Dist Distance to Antenna Read         Amp         Preamp Gain D Corr         Preamp Gain Over age Field Strength Q         Avg Lim         Average Field Strength Limit Pak Field Strength Limit           AF         Analyzer Reading AF         Average Field Strength Q         Average Field Strength Q         3 m         Average Field Strength Q         Margin vs. Average Limit           CL         Cable Loss         HPF         High Pass Filter         HPF         High Pass Filter         Pk Mar         Margin vs. Peak Limit	924         3.0         50.1         45.7         33.8         4.0         -34.9         0.0         0.6         53.6         49.2         74         54         -20.4         -4.8         H, ART=R5.5           386         3.0         45.4         33.2         35.2         4.6         -34.6         0.0         0.6         51.2         39.0         74         54         -20.4         -4.8         H, ART=R5.5           f         Measurement Frequency Dist ance to Antenna         Amp         Preamp Gain         Avg Lim         Average Field Strength Limit           Read         Analyzer Reading         Average Field Strength @ 3 m         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         Pk Mar         Margin vs. Peak Limit	924         3.0         50.1         45.7         33.8         4.0         -34.9         0.0         0.6         53.6         49.2         74         54         -20.4         -4.8         H, ART=R5.5           386         3.0         45.4         33.2         35.2         4.6         -34.6         0.0         0.6         51.2         39.0         74         54         -20.4         -4.8         H, ART=R5.5           f         Measurement Frequency Dist ance to Antenna         Amp         Preamp Gain         Avg Lim         Average Field Strength Limit           Read         Analyzer Reading         Average Field Strength @ 3 m         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         Pk Mar         Margin vs. Peak Limit	924     3.0     50.1     45.7     33.8     4.0     -34.9     0.0     0.6     53.6     49.2     74     54     -20.4     -4.8     H, A       386     3.0     45.4     33.2     35.2     4.6     -34.6     0.0     0.6     51.2     39.0     74     54     -20.4     -4.8     H, A       386     3.0     45.4     33.2     35.2     4.6     -34.6     0.0     0.6     51.2     39.0     74     54     -22.8     -15.0     H, A       f     Measurement Frequency     Amp     Preamp Gain     Avg     Average Field Strength Limit     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     Pk Mar     Margin vs. Peak Limit	.0 0.6 55.3 52.8 74 54 -18.7 -1.2 V, ART=18.5	55.3	0.6	0.0	-34.9	4.0	33.8	49.2	62 MHz) 51.8	nel (246 3.0	igh Chan 924
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	fMeasurement Frequency DistAmpPreamp Gain D CorrAvg LimAverage Field Strength LimitDistDistance to AntennaD CorrDistance Correct to 3 meters Avg Average Field Strength (2 m)Pk LimPeak Field Strength LimitReadAnalyzer Reading AFAvgAverage Field Strength (2 m)Avg MarMargin vs. Average LimitAFAntenna FactorPeak Calculated Peak Field StrengthPk MarMargin vs. Peak LimitCLCable LossHPFHigh Pass FilterPk MarMargin vs. Peak Limit	fMeasurement Frequency DistAmpPreamp Gain D CorrAvg LimAverage Field Strength LimitDistDistance to AntennaD CorrDistance Correct to 3 meters Avg Average Field Strength (2 m)Pk LimPeak Field Strength LimitReadAnalyzer Reading AFAvgAverage Field Strength (2 m)Avg MarMargin vs. Average LimitAFAntenna FactorPeak Calculated Peak Field StrengthPk MarMargin vs. Peak LimitCLCable LossHPFHigh Pass FilterPk MarMargin vs. Peak Limit	fMeasurement Frequency DistAmpPreamp Gain D CorrAvg LimAverage Field Strength LimitDistDistance to AntennaD CorrDistance Correct to 3 meters Avg Average Field Strength (2 m)Pk LimPeak Field Strength LimitReadAnalyzer Reading AFAvgAverage Field Strength (2 m)Avg MarMargin vs. Average LimitAFAntenna FactorPeak Calculated Peak Field StrengthPk MarMargin vs. Peak LimitCLCable LossHPFHigh Pass FilterPk MarMargin vs. Peak Limit	fMeasurement Frequency DistAmp D CorrPreamp GainAvg Lim Average Field Strength LimitDistDistance to Antenna ReadD CorrDistance Correct to 3 meters Average Field Strength @ 3 mPeak Field Strength LimitReadAnalyzer Reading AFAvg Average Field Strength @ 3 mAvg Mar Peak Calculated Peak Field Strength Pik MarMargin vs. Average LimitCLCable LossHPFHigh Pass FilterPk MarMargin vs. Peak Limit	.0 0.6 53.6 49.2 74 54 -20.4 -4.8 H, ART=18.5	53.6	0.6	0.0	-34.9	4.0	33.8	45.7	50.1	3.0	924
	UT was scanned from 1 GHz to 25 GHz, no other emissions from EUT were detected.	UT was scanned from 1 GHz to 25 GHz, no other emissions from EUT were detected.	UT was scanned from 1 GHz to 25 GHz, no other emissions from EUT were detected.	2UT was scanned from 1 GHz to 25 GHz, no other emissions from EUT were detected.	ance Correct to 3 meters     Pk Lim     Peak Field Strength Limit       rage Field Strength @ 3 m     Avg Mar     Margin vs. Average Limit       valated Peak Field Strength     Pk Mar     Margin vs. Peak Limit	Strength @ 3 i k Field Streng	Correct Field St d Peak	Distance Average Calculate	D Corr Avg Peak		7	Antenna Leading actor	Distance to Analyzer R Antenna Fa	Dist Read AF	

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

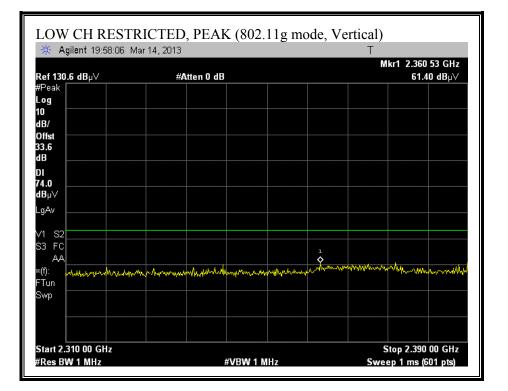


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* Agilent 19:54:07 M			N	lkr1 2.370	53 GHz
Ref 130.6 dBµ∀	#Atten 0 dB				59 dBµ∨
#Peak					
og					
0					
IB/					
Offst					
83.6 1B					
DI					
18μ∨					
_gAv					
-9~v					
/1 52					
S3 FC					
AA					
×(f):			1		
Tun			<u> </u>	<u> </u>	
Swp					

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

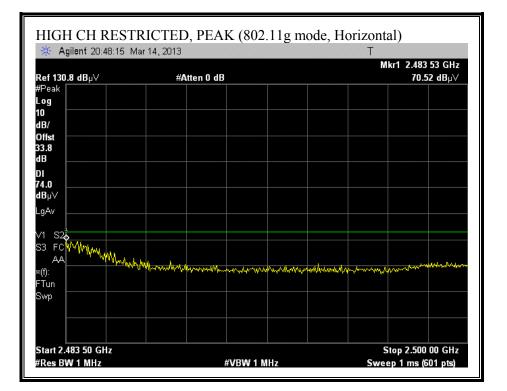


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		Mkr1 2.370 67 GHz
Ref 130.6 dBµ∀	#Atten 0 dB	<b>49.34 dB</b> µ∀
#Peak		
og		
10		
iB/		
Offst 33.6		
1B		
DI		
54.0		
Bβμ∨		
_gAv		
-9,		
/1 S2		
S3 FC		
AA		
×(f):		
Tun		
Swp		 +

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

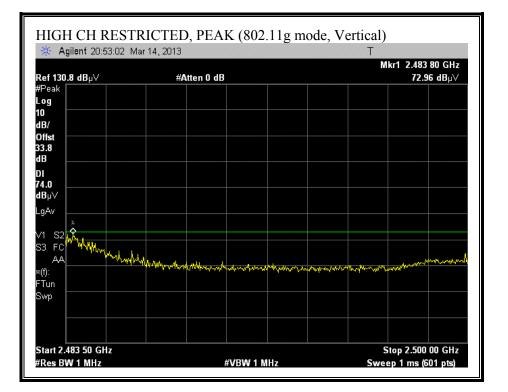


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		Mkr1 2.483 50 GHz
Ref 130.8 dBµ∨	#Atten 0 dB	52.79 dBµ∀
Peak		
.og 0		
IB/		
Offst		
3.8 IB		
)   4.0		
IBμV		
.gAv		
-90°		
/1 S2		
33 FC		
AA		
(f):		
Tun 🔄		
Swp		

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



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		Mkr1 2	2.483 50 GHz
Ref 130.8 dBµ∨ ⊄Peak	#Atten 0 dB		53.54 dBµ∨
.og			
0			
IB/			
Offst			
3.8			
IB			
N			
i4.0 IBµ∨			
.gAv			
/1 S2			
33 FC			
AA			
(f):			
Tun 👇 🔤			
Swp			

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## HARMONICS AND SPURIOUS EMISSIONS (g MODE)

Vid Channel (2437 MHz)	Horn 1-18GHz T119; S/N: 29301 @3m       Pre-amplifer 1-26GHz T45 Agilent 3008A005i       Pre-amplifer 25-40GHz T45 Agilent 3008A005i       Horn > 18 GHz T9; ARA 18-26GHz; S/N:1049         H       Frequency Cables       3 foot cable       12 foot cable       Pre-amplifer 25-40GHz       Pre-amplifer 25-40GHz       Pre-amplifer 25-40GHz       Pre-amplifer 25-40GHz       Pre-amplifer 25-40GHz       Pre-amplifer 25-40GHz       T9; ARA 18-26GHz; S/N:1049         H       Frequency Cables       3 foot cable       12 foot cable       Pre-amplifer 25-40GHz       HPF       Reject Filter       Peak Measurements RBW=10Hz; VBW=10Hz         Marca Cable       Frank 177080001       Pre-amplifer 25-40GHz       Pre-amplifer 26-40GHz	Company Project #: Date: Fest Engi Configur: S/N: Mode:	neer: ation:		Toshiba 06U10445 08/08/06 Frank Ibrahim EUT installed i 6159Y032479 TX ON in 11g	nside Lap		en Field	Sile								
If Frequency Cables         2 foot cable       3 foot cable       12 foot cable         Image: Frank 177080001       Image: Frank 187209001       Image: Frank 187209001       Image: Frank 187209001       Image: Frank 187209001       Image: Frank 177080001       Frank 187209001       Image: Frank 187209001       Imag	If Frequency Cables       Preduction of the second				Pre-an	nplifer	1-260	GHz	Pre-am	plifer 2	26-40GHz		Н	orn >180	GHz		
2 foot cable         3 foot cable         12 foot cable         HPF         Reject Filter         Peak Measurements RBW=VBW=1MHz           1	2 foot cable         3 foot cable         12 foot cable         HPF         Reject Filter         Peak Measurements RBW=VBW=1MHz           draw         draw         AF         CL         Amp         D Corr         Firank 187209001         Imp         Firank 187209001         Firank 1880	T119; S	/N: 293	01 @3m	T145 A	gilent 3	008A0	05( 🚽			-	Т89	; ARA 18-26	GHz; S/N:	049	•	
f         Dist         Read Pk         Read Avg.         AF         CL         Amp         D Corr         Fltr         Peak         Avg         Pk Lim         Avg Lim         Pk Mar         Avg Mar         Notes           GHz         (m)         dBuV         dBuV         dB         dB         dB         dB         dB         dBuV/m         dBuV/m         dBuV/m         dBuV/m         dB         dB         (V/H)           .ow         Channel (2412 MHz)	f         Dist         Read Pk         Read Avg. dBuV         AF         CL         Amp         D Corr         Fitr         Peak dB         Avg dBuV/m         Mar         Avg Mar         Avg Mar         Notes (V/H)											НР		Re	ject Filte	1	RBW=VBW=1MHz
GHz         (m)         dBuV         dBvV         dB         dB         dB         dB         dB         dB         dB         dB         dV/m         dBuV/m         dBuV/m         dB         dB         (V/H)           .ow Channel (2412 MHz)	GHz         (m)         dBuV         dBuV         dBuV         dB         dCV(H)           .ow         Channel (2412 MHz)																
Jow Channel (2412 MHz)         Image: Constraint of the second secon	ow Channel (2412 MHz)         3         4         5         6         7																
131       3.0       44.7       30.9       33.7       4.0       -34.8       0.0       0.6       48.1       34.3       74       54       -25.9       -19.7       H, ART=14         Hid Channel (2437 MHz)	3.0       44.7       30.9       33.7       4.0       -34.8       0.0       0.6       48.1       34.3       74       54       -25.9       -19.7       H, ART=14         Hid Channel (2437 MHz)	Low Chan	nel (241	2 MHz)													· · /
1874       3.0       48.5       35.6       33.7       4.0       -34.9       0.0       0.6       52.0       39.1       74       54       -22.0       -14.9       V, ART=19         1311       3.0       46.7       33.4       35.2       4.6       -34.7       0.0       0.6       52.5       39.2       74       54       -21.5       -14.8       V, ART=19         1874       3.0       47.9       35.7       33.7       4.0       -34.9       0.0       0.6       51.4       39.2       74       54       -21.5       -14.8       W, ART=19         1311       3.0       44.8       30.8       35.2       4.6       -34.7       0.0       0.6       51.4       39.2       74       54       -22.6       -14.8       H, ART=19         1311       3.0       44.8       30.8       35.2       4.6       -34.7       0.0       0.6       50.5       36.6       74       54       -22.6       -14.8       H, ART=19         1311       3.0       45.8       33.7       33.8       4.0       -34.9       0.0       0.6       50.5       37.3       74       54       -23.5       -16.7       V, ART=15.5 <td>874       3.0       48.5       35.6       33.7       4.0       -34.9       0.0       0.6       52.0       39.1       74       54       -22.0       -14.9       V,ART=19         3311       3.0       46.7       33.4       35.2       4.6       -34.7       0.0       0.6       52.0       39.1       74       54       -22.0       -14.9       V,ART=19         3311       3.0       46.7       33.4       35.2       4.6       -34.7       0.0       0.6       51.4       39.2       74       54       -21.5       -14.8       W,ART=19         311       3.0       44.8       30.8       35.2       4.6       -34.7       0.0       0.6       51.4       39.2       74       54       -22.6       -14.8       H,ART=19         311       3.0       44.8       30.8       35.2       4.6       -34.7       0.0       0.6       50.5       36.6       74       54       -22.6       -14.8       H,ART=19         301       45.8       33.7       33.8       4.0       -34.9       0.0       0.6       50.5       37.3       74       54       -23.5       -16.7       V,ART=15.5         924</td> <td>4.824</td> <td>3.0</td> <td>44.7</td> <td></td> <td>33.7</td> <td></td> <td>-34.8 -34.8</td> <td></td> <td></td> <td></td> <td>34.8 34.3</td> <td></td> <td>54 54</td> <td>-25.0 -25.9</td> <td></td> <td></td>	874       3.0       48.5       35.6       33.7       4.0       -34.9       0.0       0.6       52.0       39.1       74       54       -22.0       -14.9       V,ART=19         3311       3.0       46.7       33.4       35.2       4.6       -34.7       0.0       0.6       52.0       39.1       74       54       -22.0       -14.9       V,ART=19         3311       3.0       46.7       33.4       35.2       4.6       -34.7       0.0       0.6       51.4       39.2       74       54       -21.5       -14.8       W,ART=19         311       3.0       44.8       30.8       35.2       4.6       -34.7       0.0       0.6       51.4       39.2       74       54       -22.6       -14.8       H,ART=19         311       3.0       44.8       30.8       35.2       4.6       -34.7       0.0       0.6       50.5       36.6       74       54       -22.6       -14.8       H,ART=19         301       45.8       33.7       33.8       4.0       -34.9       0.0       0.6       50.5       37.3       74       54       -23.5       -16.7       V,ART=15.5         924	4.824	3.0	44.7		33.7		-34.8 -34.8				34.8 34.3		54 54	-25.0 -25.9		
1874       3.0       47.9       35.7       33.7       4.0       34.9       0.0       0.6       51.4       39.2       74       54       -22.6       -14.8       H, ART=19         1/311       3.0       44.8       30.8       35.2       4.6       -34.7       0.0       0.6       50.5       36.6       74       54       -22.5       -17.4       H, ART=19         1/311       3.0       44.8       30.8       35.2       4.6       -34.7       0.0       0.6       50.5       36.6       74       54       -22.5       -17.4       H, ART=19         1/324       3.0       47.0       33.7       33.8       4.0       -34.9       0.0       0.6       50.5       37.3       74       54       -23.5       -16.7       V, ART=15.5         1/324       3.0       45.8       33.8       33.8       4.0       -34.9       0.0       0.6       49.3       37.4       74       54       -23.5       -16.7       V, ART=15.5         1/324       3.0       45.8       33.8       33.8       4.0       -34.9       0.0       0.6       49.3       37.4       74       54       -24.7       -16.6       H, ART=15.5	874         3.0         47.9         35.7         35.7         34.9         0.0         0.6         51.4         39.2         74         54         -22.6         -14.8         H, ART=19           3.11         3.0         44.8         30.8         35.2         4.6         -34.7         0.0         0.6         50.5         36.6         74         54         -22.6         -14.8         H, ART=19           1311         3.0         44.8         30.8         35.2         4.6         -34.7         0.0         0.6         50.5         36.6         74         54         -22.6         -14.8         H, ART=19           1924         3.0         47.0         33.7         33.8         4.0         -34.9         0.0         0.6         50.5         37.3         74         54         -23.5         -16.7         V, ART=15.5           924         3.0         45.8         33.8         33.8         4.0         -34.9         0.0         0.6         50.5         37.3         74         54         -23.5         -16.7         V, ART=15.5           924         3.0         45.8         33.8         33.8         4.0         -34.9         0.0         0.6	4.874	3.0	48.5													
1311       3.0       44.8       30.8       35.2       4.6       -34.7       0.0       0.6       50.5       36.6       74       54       -23.5       -17.4       H, ART=19         ligh Channel (2462 MHz)	311       3.0       44.8       30.8       35.2       4.6       -34.7       0.0       0.6       50.5       36.6       74       54       -23.5       -17.4       H, ART=19         ligh Channel (2462 MHz)																V, ART=19 H. ART=19
1924         3.0         47.0         33.7         33.8         4.0         -34.9         0.0         0.6         50.5         37.3         74         54         -23.5         -16.7         V, ART=15.5           1.924         3.0         45.8         33.8         33.8         4.0         -34.9         0.0         0.6         50.5         37.3         74         54         -23.5         -16.7         V, ART=15.5           1.924         3.0         45.8         33.8         33.8         4.0         -34.9         0.0         0.6         49.3         37.4         74         54         -23.7         -16.6         H, ART=15.5           f         Measurement Frequency Dist Distance to Antenna Read         Analyzer Reading Analyzer Reading         Arg         Average Field Strength @3 m         Avg Lim         Average Field Strength Limit         Pack Field Strength Limit           AF         Antenna Factor         Peak         Calculated Peak Field Strength         @3 m         Avg Mar Margin vs. Peak Limit           CL         Cable Loss         HPF         High Pass Filter         Pk Mar         Margin vs. Peak Limit	924     3.0     47.0     33.7     33.8     4.0     -34.9     0.0     0.6     50.5     37.3     74     54     -23.5     -16.7     V, ART=15.5       1.924     3.0     45.8     33.8     33.8     4.0     -34.9     0.0     0.6     50.5     37.3     74     54     -23.5     -16.7     V, ART=15.5       1.924     3.0     45.8     33.8     33.8     4.0     -34.9     0.0     0.6     49.3     37.4     74     54     -23.5     -16.6     H, ART=15.5       f     Measurement Frequency Dist Distance to Antenna Read     Analyzer Reading AF     Arenage Field Strength Calculated Correct to 3 meters AF     Average Field Strength (2) a m     Avg Mar Margin vs. Average Limit Calculated Peak Field Strength     Pk Mar     Margin vs. Peak Limit       CL     Cable Loss     HPF     High Pass Filter     Fild     Pk Mar     Margin vs. Peak Limit	.311	3.0	44.8													H, ART=19
1.924     3.0     45.8     33.8     33.8     4.0     -34.9     0.0     0.6     49.3     37.4     74     54     -24.7     -16.6     H, ART=15.5       f     Measurement Frequency Dist     Map     Preamp Gain     Avg Lim     Average Field Strength Limit       Read     Analyzer Reading     Avg     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     Filter     Pk Mar     Margin vs. Peak Limit	1.924     3.0     45.8     33.8     33.8     4.0     -34.9     0.0     0.6     49.3     37.4     74     54     -24.7     -16.6     H, ART=15.5       f     Measurement Frequency Dist     Mage     Preamp Gain     Avg Lim     Average Field Strength Limit       Read     Analyzer Reading     Avg     Average Field Strength @ 3 m     Avg 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     HPF     High Pass Filter     Heid Strength				33.7	33.8	4.0	-34.9	0.0	0.6	50.5	37.3	74	54	-23.5	-16.7	V. ART=15.5
DistDistance to AntennaD CorrDistance Correct to 3 metersPk LimPeak Field Strength LimitReadAnalyzer ReadingAvgAverage Field Strength @ 3 mAvg MarMargin vs. Average LimitAFAntenna FactorPeakCalculated Peak Field StrengthPk MarMargin vs. Peak LimitCLCable LossHPFHigh Pass FilterHigh Pass Filter	DistDistance to AntennaD CorrDistance Correct to 3 metersPk LimPeak Field Strength LimitReadAnalyzer ReadingAvgAverage Field Strength @ 3 mAvg MarMargin vs. Average LimitAFAntenna FactorPeakCalculated Peak Field StrengthPk MarMargin vs. Peak LimitCLCable LossHPFHigh Pass FilterMargin vs. Peak Limit													54	-24.7		
EUT was scanned from 1 GHz to 25 GHz, no other emissions from EUT were detected.	EUT was scanned from 1 GHz to 25 GHz, no other emissions from EUT were detected.		Dist Read AF	Distance to Analyzer R Antenna Fa	Antenna leading actor	, ,		D Corr Avg Peak	Distance Average Calculate	Correc Field S ed Peak	Strength @ Field Stre	3 m		Pk Lim Avg Mar	Peak Field Margin vs	Strength L Average L	imit imit
		UT was s	canned fi	rom 1 GHz to	25 GHz, no oth	er emissi	ons fron	n EUT wer	re detected.								

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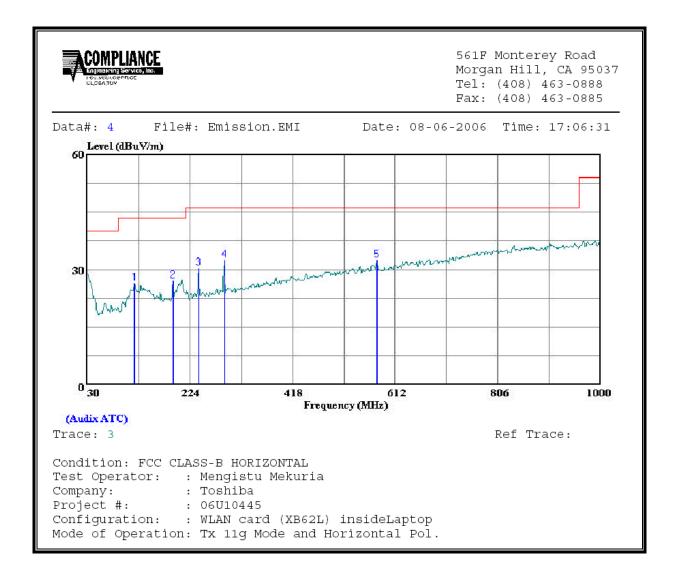
### HARMONICS AND SPURIOUS EMISSIONS (g Turbo MODE)

Complia			Measureme Services, Mo		ill Op	en Field	Site								
Compan Project # Date: Fest Eng Configui 5/N:	#: gineer:		Toshiba 06U10445 08/08/06 Frank Ibrahim EUT installed i 6159Y032479	nside Lap	ptop PC	!									
Iode:			TX ON in 11g	Turbo mo	ode										
fest Equ	upment:														
Н	orn 1-1	8GHz	Pre-an	nplifer	1-260	GHz	Pre-am	plifer 2	26-40GHz		н	orn > 18	GHz		
T119;	S/N: 2930	01 @3m 📮	T145 A	gilent 3	008A0	056 🖵			-	TE T	39; ARA 18-26	GHz; S/N	:1049	•	
	uency Cable		3	foot c	able		12	foot c	able	]	HPF	R	eject Filte	ər	<u>Peak Measurements</u> RBW=VBW=1MHz
		-	Frank	177080	001	-	Frank 1	872090	)01 <del>-</del>	Н	PF_4.0GHz	-			werage Measurements 3W=1MHz ; VBW=10Hz
f CII-	Dist		Read Avg.	AF	CL	Amp	D Corr		Peak	Avg	Pk Lim			Avg Mar	
	(m) nnel (2437		dBuV	dB/m	dB	dB	dB	dB		dBuV/ı		dBuV/n		dB	(V/H)
.874 .311	3.0	49.3 47.2	36.1 32.8	33.7 35.2	4.0 4.6	-34.9 -34.7	0.0	0.6 0.6	52.8 53.0	39.6 38.6	74 74	54 54	-21.2 -21.0	-14.4 -15.4	V, ART=19 V, ART=19
.874	3.0	46.8 45.2	35.9 31.2	33.7 35.2	4.0	-34.9 -34.7	0.0	0.6	50.3 51.0	<u>39.4</u> 37.0	74 74	54 54	-23.7 -23.0	-14.6 -17.0	H, ART=19 H, ART=19
	Read AF	Distance to Analyzer Re Antenna Fac	eading ctor			Avg Peak	Average Calculate	Field S ed Peak	et to 3 meter Strength @ 3 c Field Stren	3 m		Pk Lim Avg Mar Pk Mar	Margin v	d Strength I s. Average I s. Peak Lim	Limit
IT was	Read AF CL	Analyzer Re Antenna Fa Cable Loss	eading ctor	er emiccie	one fror	Avg Peak HPF	Average Calculate High Pas	Field S ed Peak	Strength @ 3 Field Stren	3 m		Avg Mar	Margin v	s. Average l	Limit
UT was :	Read AF CL	Analyzer Re Antenna Fa Cable Loss	eading ctor	er emissio	ons fron	Avg Peak HPF	Average Calculate High Pas	Field S ed Peak	Strength @ 3 Field Stren	3 m		Avg Mar	Margin v	s. Average l	Limit
UT was :	Read AF CL	Analyzer Re Antenna Fa Cable Loss	eading ctor	er emissio	ons fror	Avg Peak HPF	Average Calculate High Pas	Field S ed Peak	Strength @ 3 Field Stren	3 m		Avg Mar	Margin v	s. Average l	Limit
UT was :	Read AF CL	Analyzer Re Antenna Fa Cable Loss	eading ctor	er emissio	ons fror	Avg Peak HPF	Average Calculate High Pas	Field S ed Peak	Strength @ 3 Field Stren	3 m		Avg Mar	Margin v	s. Average l	Limit
UT was :	Read AF CL	Analyzer Re Antenna Fa Cable Loss	eading ctor	er emissio	ons fror	Avg Peak HPF	Average Calculate High Pas	Field S ed Peak	Strength @ 3 Field Stren	3 m		Avg Mar	Margin v	s. Average l	Limit
<u>UT was :</u>	Read AF CL	Analyzer Re Antenna Fa Cable Loss	eading ctor	er emissio	ons fror	Avg Peak HPF	Average Calculate High Pas	Field S ed Peak	Strength @ 3 Field Stren	3 m		Avg Mar	Margin v	s. Average l	Limit
UT was :	Read AF CL	Analyzer Re Antenna Fa Cable Loss	eading ctor	er emissie	ons fror	Avg Peak HPF	Average Calculate High Pas	Field S ed Peak	Strength @ 3 Field Stren	3 m		Avg Mar	Margin v	s. Average l	Limit
<u>UT was :</u>	Read AF CL	Analyzer Re Antenna Fa Cable Loss	eading ctor	er emissio	ons from	Avg Peak HPF	Average Calculate High Pas	Field S ed Peak	Strength @ 3 Field Stren	3 m		Avg Mar	Margin v	s. Average l	Limit
UT was :	Read AF CL	Analyzer Re Antenna Fa Cable Loss	eading ctor	er emissic	ons fror	Avg Peak HPF	Average Calculate High Pas	Field S ed Peak	Strength @ 3 Field Stren	3 m		Avg Mar	Margin v	s. Average l	Limit
UT was	Read AF CL	Analyzer Re Antenna Fa Cable Loss	eading ctor	er emissie	ons fror	Avg Peak HPF	Average Calculate High Pas	Field S ed Peak	Strength @ 3 Field Stren	3 m		Avg Mar	Margin v	s. Average l	Limit
UT was:	Read AF CL	Analyzer Re Antenna Fa Cable Loss	eading ctor	er emissic	oons from	Avg Peak HPF	Average Calculate High Pas	Field S ed Peak	Strength @ 3 Field Stren	3 m		Avg Mar	Margin v	s. Average l	Limit
UT was	Read AF CL	Analyzer Re Antenna Fa Cable Loss	eading ctor	er emissie	ons from	Avg Peak HPF	Average Calculate High Pas	Field S ed Peak	Strength @ 3 Field Stren	3 m		Avg Mar	Margin v	s. Average l	Limit
UT was a	Read AF CL	Analyzer Re Antenna Fa Cable Loss	eading ctor	er emissie	ons fror	Avg Peak HPF	Average Calculate High Pas	Field S ed Peak	Strength @ 3 Field Stren	3 m		Avg Mar	Margin v	s. Average l	Limit
EUT was a	Read AF CL	Analyzer Re Antenna Fa Cable Loss	eading ctor	er emissie	ions from	Avg Peak HPF	Average Calculate High Pas	Field S ed Peak	Strength @ 3 Field Stren	3 m		Avg Mar	Margin v	s. Average l	Limit
<u>UT</u> was a	Read AF CL	Analyzer Re Antenna Fa Cable Loss	eading ctor	er emissie	ons from	Avg Peak HPF	Average Calculate High Pas	Field S ed Peak	Strength @ 3 Field Stren	3 m		Avg Mar	Margin v	s. Average l	Limit

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

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

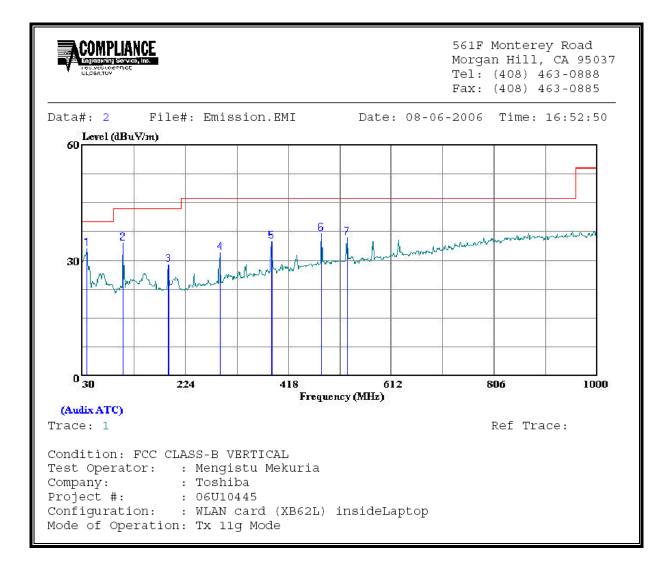


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	Freq	Read Level	Factor	Level	Limit Over Line Limit		
	MHz	dBuV	dB	$\overline{\mathrm{dBuV}/\mathrm{m}}$	$\overline{\mathrm{dBuV}/\mathrm{m}}$	dB	
1 2 3 4 5	119.240 191.990 240.490 288.990 577.080	13.78 16.87 17.13	13.25 13.54 15.26	27.03 30.41 32.39	46.00	-16.47 -15.59 -13.61	Peak Peak Peak

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



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	Freq	Factor	Level	Limit Line	Over Limit Remark		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	38.730	16.93	16.12	33.05	40.00	-6.95	Peak
2	106.630	21.61	12.87	34.48	43.50	-9.02	Peak
3	191.990	15.70	13.25	28.95	43.50	-14.55	Peak
4	288.990	16.71	15.26	31.97	46.00	-14.03	Peak
5	385.990	17.12	17.73	34.85	46.00	-11.15	Peak
6	480.080	17.20	19.82	37.02	46.00	-8.98	Peak
7	528.580	15.21	20.63	35.84	46.00	-10.16	Peak

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# 7.3. 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 I	.imit (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:

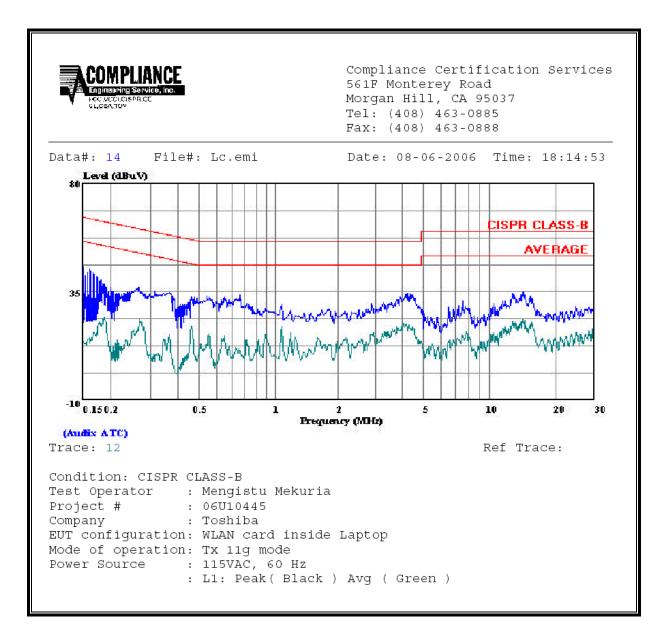
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### **<u>6 WORST EMISSIONS</u>**

Freq.	Reading			Closs	Limit	EN_B	Margin		Remark
(MHz)	PK(dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.15	45.30			0.00	65.94	55.94	-20.64	-10.64	L1
0.27	36.82			0.00	61.15	51.15	-24.33	-14.33	L1
14.44	34.92			0.00	60.00	50.00	-25.08	-15.08	L1
0.15	48.04			0.00	66.00	56.00	-17.96	-7.96	L2
0.73	36.32			0.00	56.00	46.00	-19.68	-9.68	L2
13.06	35.46			0.00	60.00	50.00	-24.54	-14.54	L2

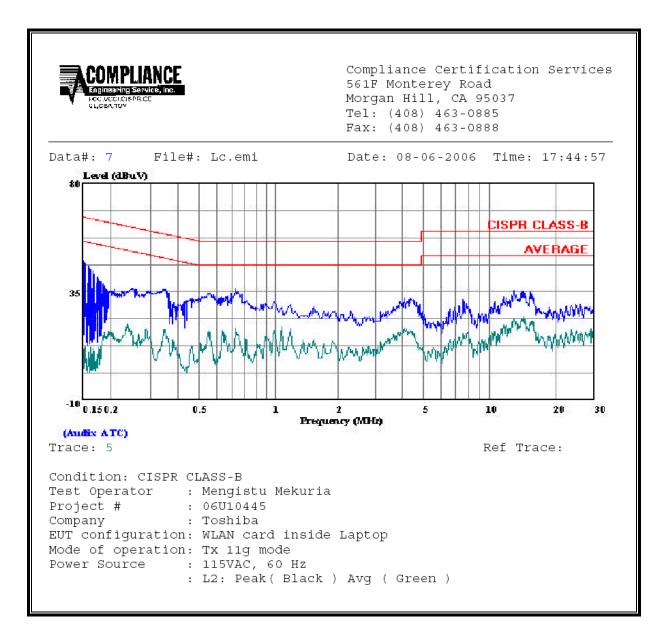
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### LINE 1 RESULTS



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### LINE 2 RESULTS



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