Test Report

For

Intel PRO/wireless LAN 2100 3B Mini PCI Adapter
Model Number: PA3272U-1MPC

MEASUREMENTS PERFORMED IN ACCORDANCE WITH THE FOLLOWING EMISSIONS STANDARD

47 CFR Part 15, Subpart C (Section 15.247)

Class II Permissive Change

Test Method:

ANSI C63.4: 1992 American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

ACCREDITED

CERTIFICATE NUMBER: 1111.01

To view a copy of the Scope of Accreditation visit www.A2LA2.net

PREPARED FOR:

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Agent(s): Mr. Steve Kuiper
Mr. Rick Candelas

Test Report #: **INTEL-021205F**
Test Date: December 5-13, 2002

	REPORT BODY	APPENDICES	TOTAL
		I	
PAGES	24	163	**187**

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1.0 CERTIFICATION OF TEST DATA

Aegis Labs, Inc. operates as both a Nevada and California Corporation with no organizational or financial relationship with any company, institution, or private individual.

Testing and engineering functions provided by Aegis Labs are furnished through the use of part-time, full-time or consulting engineers with the appropriate qualifications to carry out their duties. The intended purpose of this test report is to describe the measurement procedure and to determine whether the equipment under test "EUT" complies with both the conducted and radiated limits. Limits for emissions testing are described under 47 CFR Part 15, Subpart C (Section 15.247).

The data, data evaluation and equipment configuration represented herein are a true and accurate representation of the Equipment Under Test (EUT) under the requirements specified in the emissions standard as described below. The test results contained in this report are only representative of the test sample tested as described in Section 2.0 of this report.

The test results provided within this report, indicate that the information technology equipment has been found to be in **COMPLIANCE** with the test specifications based upon the following RF compliance standards:

Pass/Fail determination is based upon the nominal values of the test data.

1.0 CERTIFICATION OF TEST DATA (Continued)

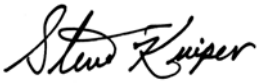
EMISSIONS STANDARDS	DESCRIPTION	TEST RESULTS
FCC 47 CFR, Part 15.207	Conducted Emissions At AC Mains Port	PASSED
CISPR22 Class B Limits	Radiated Emissions (30-1000 MHz)	PASSED
FCC 47 CFR, Part 15.247(c), 15.209	Radiated Emissions (1-26.5 GHz)	PASSED
FCC 47 CFR, Part 15.247(a)(2)	Occupied Bandwidth Measurement	PASSED
FCC 47 CFR, Part 15.247(b)	Maximum Peak Output Power Measurement	PASSED
FCC 47 CFR, Part 15.247(d)	Spectral Power Density Measurement	PASSED
FCC 47 CFR, Part 15.247(c)	Spurious Emissions Measurement At The Antenna Terminal	PASSED
FCC 47 CFR, Part 15.247(c)	Band Edge Measurement At The Antenna Terminal	PASSED
FCC 47 CFR, Part 15.247(a)(1)(ii)	20dB Bandwidth Measurement	PASSED
FCC 47 CFR, Part 15.247(a)(1)	Carrier Frequency Separation Measurement	PASSED
FCC 47 CFR, Part 15.247(a)(1)(ii)	Number on Hopping Frequencies Measurement	PASSED
FCC 47 CFR, Part 15.247(a)(1)(ii)	Average Time of Occupancy Measurement	PASSED

Prepared By:

12/26/02

Rick Candelas **Date:**
Staff Engineer
Aegis Labs, Inc.

Report Approved By:



12/26/02

Steve J. Kuiper **Date:**
President
Aegis Labs, Inc.

2.0 ADMINISTRATIVE DATA AND TEST DESCRIPTION

DEVICE TESTED:	Trade Name: Intel PRO/wireless LAN 2100 3B Mini PCI Adapter Model Number: PA3272U-1MPC Serial Number: See Data Sheets FCC ID: CJ6UPA3272WL
TEST DATE(S):	December 5-13, 2002
DATE EUT RECEIVED:	November 26, 2002
ORIGIN OF TEST SAMPLE(S):	Production
RESPONSIBLE PARTY:	Toshiba Corporation 1-1-1, Shibaura Minato-Ku, Tokyo 105-8001, Japan
CLIENT CONTACT:	Mr. Hideo Abe
MANUFACTURER:	Toshiba Corporation
TEST LOCATION:	Aegis Labs, Inc. 32231 Trabuco Creek Road Trabuco Canyon, CA 92678 Conducted Site #2 Radiated Site #2
A2LA CERTIFICATE:	1111.01, Valid until February 28, 2004
PURPOSE OF TEST:	To demonstrate compliance with the relevant standards described in Section 1.0 of this report.
TEST(S) PERFORMED:	Refer to Table in Section 1 of this report.

All calibration vendors were responsible for certifying Aegis Labs, Inc. test equipment as per the manufacturer's specifications and that the equipment is calibrated using instruments and standards where the accuracy is traceable to the National Institute of Standards and Technology (NIST). Calibration of all test equipment conforms to ANSI/NCSL Z540-1 and ISO 10012-1 and/or ISO/IEC Guide 17025 compliance (Additionally, other pertinent test equipment will carry MIL-STD-45662A). All calibration documents are on file with Aegis Labs, Inc., with copies provided upon request.

3.0 DESCRIPTION OF EUT

3.1 EUT Description

Equipment Under Test (EUT)	
Trade Name:	Intel PRO/wireless LAN 2100 3B Mini PCI Adapter
Model Number:	PA3272U-1MPC
Frequency Range:	2.412 – 2.462 GHz
Type of Transmission:	Direct Sequence Spread Spectrum
Transfer Rate:	1/2/5.5/11 Mbps
Number of Channels:	11
Modulation Type:	DBPSK, DQPSK, CCK
Antenna Type:	Hirose U.FL-R-SMT mates with cable connector U.FL-LP-066
Antenna Gain (See Note 2):	Toshiba Dual Band Film Antenna = 0.6dBi with cable loss Toshiba Wide Dual Band Film Antenna = 2.0dBi with cable loss
Transmit Output Power:	16 dBm (Typical) Please see Appendix I (Data Sheets) for actual output power.
Power Supply:	3.3VDC from computer MPCI slot.
Number of External Test Ports Exercised:	2 Antenna Ports (1 Main & 1 Auxiliary)

The Intel PRO/wireless LAN 2100 3B Mini PCI Adapter is an embedded 2.4 GHz Wireless Local Area Network Mini-PCI adapter. The Mini-PCI Type 3B form factor is designed for notebook computer systems where overall thickness must be kept to an absolute minimum. It is capable of a data rate of up to 11 Mbps at 2.4 GHz. Please refer to Section 3.2 of this report for a further description of the configuration tested.

NOTE 1: For a more detailed description, please refer to the manufacture's specifications or User's Manual.

NOTE 2: The EUT was tested separately with two different sets of antennas (Toshiba Dual Band Film antennas, and Toshiba Wide Dual Band Film Antennas). Refer to each antenna specifications.

3.1.1 Channel Number and Frequencies

Eleven channels are provided for the EUT.

Channel	Frequency (MHz)
1	2412
2	2417
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457
11	2462

3.2 EUT Configuration

The EUT was set-up according to the ANSI C63.4: 1992 guidelines for emissions testing. For emissions testing the EUT (Intel PRO/wireless LAN 2100 3B Mini PCI Adapter, Model Number: PA3272U-1MPC) had a loaded antenna connected to both its main and auxiliary ports. All the appropriate test ports were exercised during both the pre-qualification and final evaluation scans.

This report documents the emissions of the co-located radio modules. The Bluetooth transmitter module has been certified with respect to FCC Part 15 Subpart C requirements (FCC ID: CJ6UPA3232BT).

The EUT was tested in two different configurations.

1) With Wide Dual Band Film Antennas
2) With Dual Band Film Antennas.

For both configurations the EUT was tested installed in the Mini-PCI slot of the Toshiba host computer. The EUT was then connected to a set of antennas via its main and auxiliary Hirose U.FL-R-SMT ports. Data for both sets of antennas can be found in Appendix I.

For conducted emissions at the antenna port the Toshiba host computer was connected to an NEC monitor and IBM mouse via its video and USB ports respectively.

For conducted emissions at the AC mains port and radiated emissions, the Toshiba host computer was connected to a Hayes modem, Canon printer, NEC monitor, and IBM mouse via its serial, parallel, video, and mouse ports respectively.

The low (channel 1), middle (channel 6), and high (channel 11) were tested. The EUT was transmitting and receiving on a continuous basis.

After preliminary scans, it was found that when the EUT was configured with the Dual Band Film Antennas, the EUT was operating in the worst-case configuration. The remainder of the test was completed with the Dual Band Film Antennas. In this configuration, WLAN and Bluetooth transmitters were operated individually in a continuously transmitting mode and tested separately. Also, the transmitters were tested transmitting simultaneously. The final conducted as well as radiated data was taken in this mode of operation. Refer to Appendix I for the results of the final testing.

3.3 EUT and Sub-Assemblies List

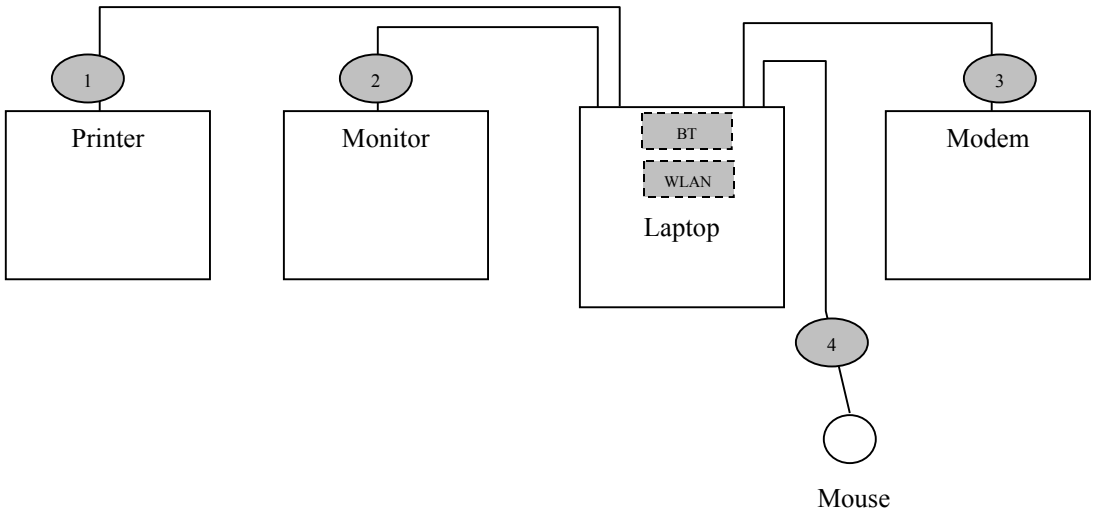
EUT and Sub-Assemblies List			
Manufacturer	**Equipment Name**	**Model Number**	**Serial Number**
Toshiba Corporation	Intel PRO/wireless LAN 2100 3B Mini PCI Adapter	PA3272U-1MPC	See Data Sheets
Sub-Assemblies			
Toshiba	Dual Band Film Antenna	HTL008-P***	None
Toshiba	Wide Dual Band Film Antenna	HTL012-P***	None

3.4 Accessory / Host Equipment List

Accessory / Host Equipment List			
Manufacturer	**Equipment Name**	**Model Number**	**Serial Number**
Tecra 9100 Laptop (with Wide Dual Band Film Antennas)	Toshiba	PT910U-AAAA7	12040506JU
AC Adapter	Toshiba	PA3083U-1ACA	0108 A 0000068G
Tecra 9100 Laptop (with Dual Band Film Antennas)	Toshiba	PT910U-AAAA7	12050065JU
AC Adapter	Toshiba	PA3083U-1ACA	0108 A 0000774G
Monitor	NEC	JC-1575VMA	2Y785821
Mouse	IBM	MU295	23-161493
Modem	Hayes	5362US	A02153623145
Printer	Canon	BJC-4200	0048

NOTE: All the power cords of the above support equipment are standard non-shielded, 1.8 meters long.

3.5 Cabling Diagram and Description



Cable 1: This is a 6-foot braid and foil shielded round cable connecting the Toshiba host computer to the Canon printer. It has a metallic DB-25 type connector at the computer end and a metallic 36-pin centronics type connector at the printer end. The cable is bundled to a length of one meter and the shield of the cable is grounded to the chassis of both devices via the connector shells.

Cable 2: This is a 6-foot braid and foil shielded round cable connecting the host Toshiba laptop computer with the NEC monitor. It has metallic DB-15 type connector at the computer end and is hardwired to the monitor. The cable is bundled to a length of one meter and the shield of the cable is grounded to the chassis of both devices via the connector shells.

Cable 3: This is a 6-foot braid and foil shielded round cable connecting the Toshiba host computer to the Hayes modem. It has a metallic DB-9 type connector at the computer end and a metallic DB-25 type connector at the modem end. The cable is bundled to a length of one meter and the shield of the cable is grounded to the chassis of both devices via the connector shells.

Cable 4: This is a 1-meter foil shielded round cable connecting the Toshiba laptop computer to the IBM mouse. It has a metallic 6 pin Mini DIN type connector at the computer end and is hardwired at the mouse end. The shield of the cable is grounded to the chassis via the connector shell.

4.0 TEST EQUIPMENT AND TEST SETUPS

The test equipment settings and functions are selected using the guidance of ANSI C63.4-1992. All test equipment setups and operations during conducted and radiated emissions testing are in accordance with this reference document.

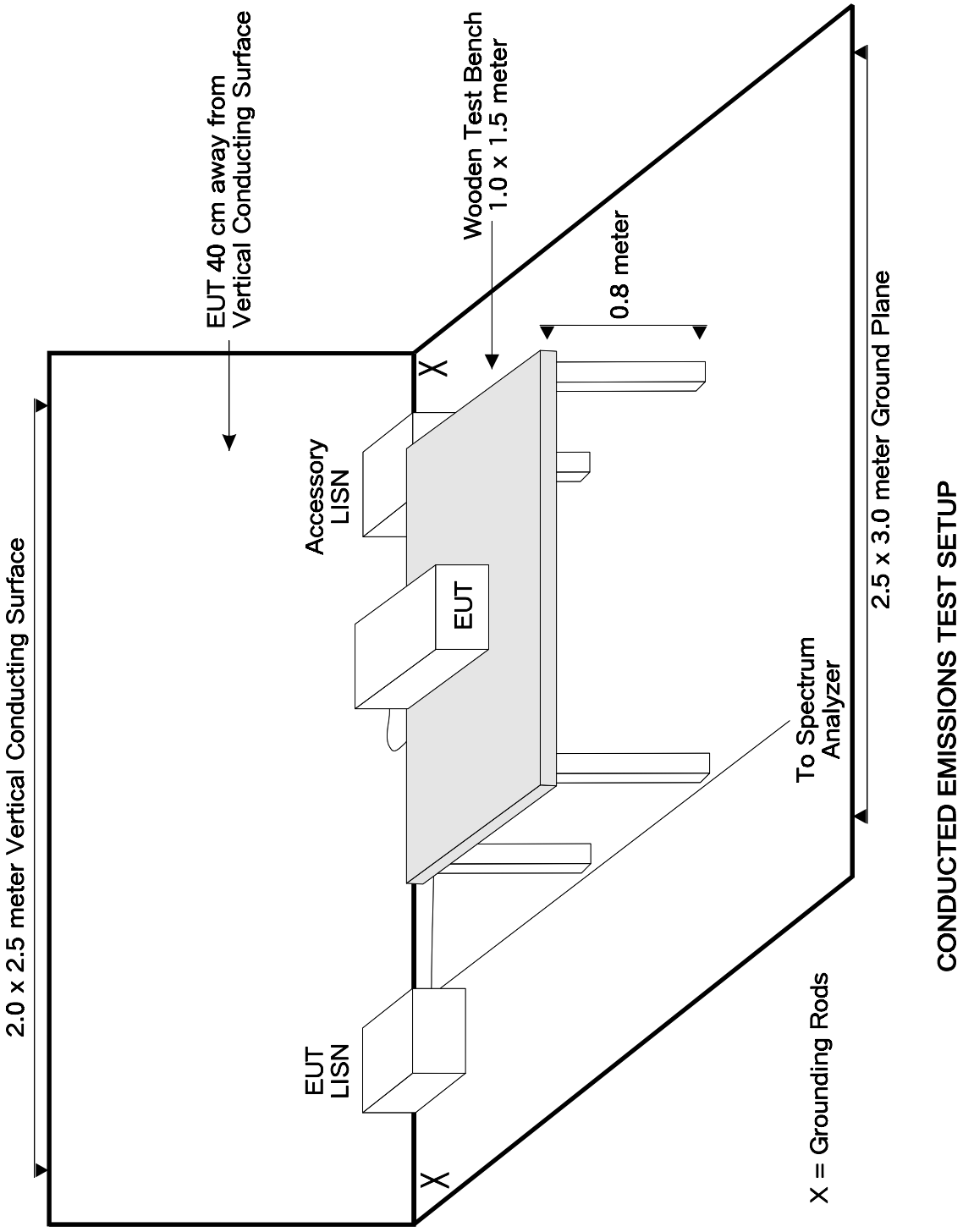
4.1 Conducted Emissions At AC Mains Port

During conducted emissions measurements, a spectrum analyzer was used as the measuring instrument along with a preselector and quasi-peak detector. A 10 dB attenuation pad was used for the protection of the spectrum analyzer input stage. The conducted emissions from the EUT in the frequency range from 150 kHz to 30 MHz were captured for graphical display through the use of automated LABVIEW EMI measurement software. All graphical readings were measured in the "Peak" mode only to reduce testing time. Upon completion of the graphical scan, the test lab personnel performed the conducted measurement scan manually using the spectrum analyzer front panel keys. All peak measurements coming within 3 dB of the limit line were "Averaged" and/or "Quasi-Peaked" and denoted appropriately in the EXCEL spreadsheet.

The Equipment Under Test (EUT) was configured as a system with peripherals connected, so that at least one interface port of each type is connected to one external peripheral when tested for conducted emissions according to ANSI C63.4: 1992. The EUT was tested in a tabletop configuration.

The six highest emission readings for Line 1 and Line 2 are highlighted on the data sheets in Appendix I. The graphical scans only reflects peak readings while the tabulated data sheets reflect peak, average, and/or quasi-peak readings which ever applies.

4.1.1 Conducted Emissions At AC Mains Port – Test Setup



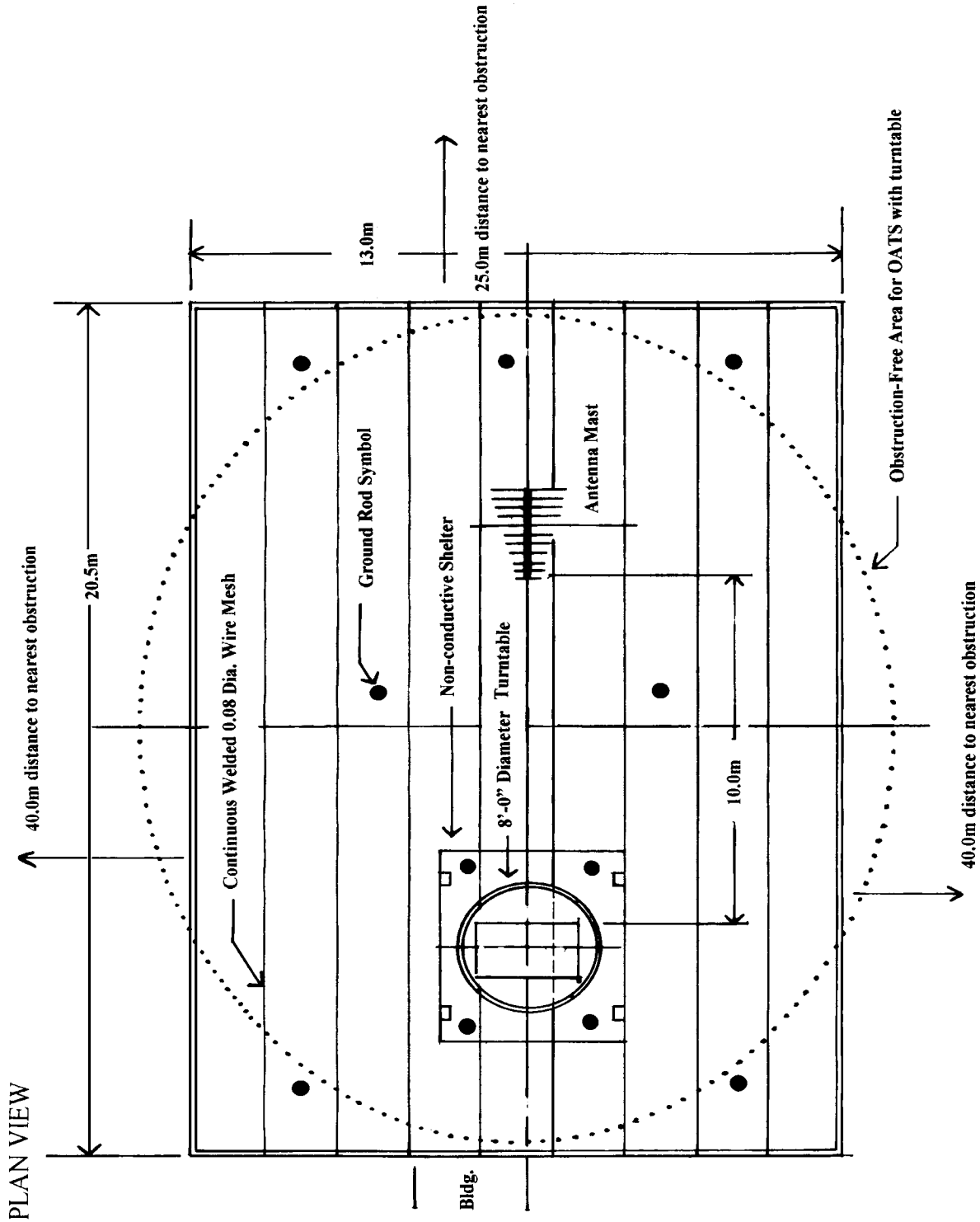
4.2 Radiated Emissions

A spectrum analyzer was used as the measuring instrumentation along with a preselector and quasi-peak-detector. The pre-amplifiers were used to increase the sensitivity of the instrument. The spectrum analyzer was used in the peak detector mode with the "max-hold" feature activated and in Positive Peak mode. In this mode, the spectrum analyzer records the highest measured reading over all the sweeps. The quasi-peak detector was used only for those readings, which are marked accordingly in the data sheet. The effective measurement bandwidth used for the radiated emissions test was 120 kHz for (30 MHz- 1000 MHz). The spectrum analyzer operated such that the modulation of the signal was filtered out to set the analyzer in linear mode. For testing beyond 1000 MHz a spectrum analyzer capable of taking reading above 1000 MHz was connected to the high frequency amplifier, where these measurement readings were taken with the transducer placed at a 3-meter test distance from the EUT.

The Open Area Test Sites (OATS) was used for radiated emission testing. These test sites are designed according to ANSI C63.4: 1992 and ANSI C63.7: 1992 guidelines. The Measurements were conducted in accordance with ANSI C63.4: 1992 and ANSI C63.7: 1992 requirements.

Broadband biconical, log periodic, and horn antennas were used as transducers during the measurement reading phase. The frequency spans were wide (30 MHz-88 MHz, 88 MHz-216 MHz, 216 MHz- 300 MHz, and 300 MHz- 1000 MHz). After 1000 MHz the horn antenna was used to measure emissions. The six highest emission readings in both horizontal and vertical polarities are highlighted on the data sheets in Appendix I.

4.2.1 Radiated Emissions – Test Setup

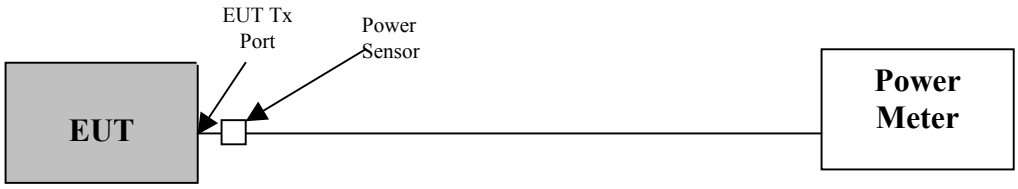


4.3 Maximum Peak Output Power Measurement

A power meter along with a power sensor was used to measure the maximum peak output power. The low (channel 1), middle (channel 6), and high (channel 11) were measured as well as data rates 1, 5.5, and 11 Mbps.

The EUT maximum peak output power is less than 1 Watt. Please refer to Appendix I for the data sheets.

4.3.1 Maximum Peak Output Power Measurement – Test Setup

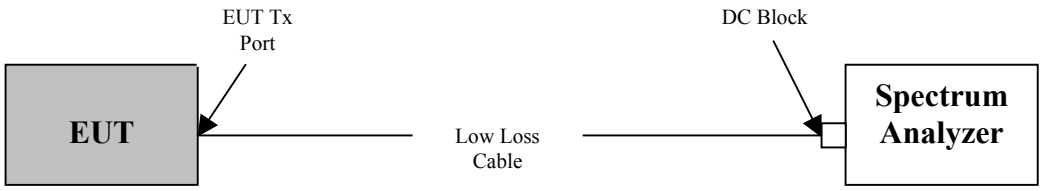


4.4 Occupied Bandwidth Measurement

A spectrum analyzer was used to measure the occupied bandwidth. The bandwidth was measured using a direct connection from the RF output port of the EUT to the spectrum analyzer using a low loss cable and a DC block. The resolution bandwidth was 100 kHz and the video bandwidth was 300 kHz.

The EUT bandwidth is at least 500 kHz. Please refer to Appendix I for graphical plots.

4.4.1 Occupied Bandwidth Measurement – Test Setup

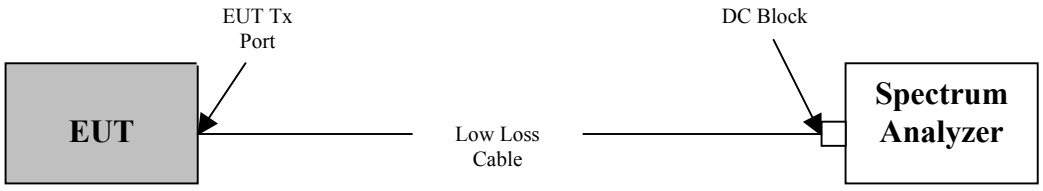


4.5 Spectral Power Density Measurement

A spectrum analyzer was used to measure the spectral power density. It was measured using a direct connection from the RF output port of the EUT to the spectrum analyzer using a low loss cable and a DC block. The resolution bandwidth was 3 kHz and the video bandwidth was 10 kHz. The highest 4.5 MHz of the signal was used as the frequency span with the sweep rate being 1 second for every 3 kHz of span.

The EUT spectral power density does not exceed 8 dBm in any 3 kHz band. Please refer to Appendix I for graphical plots.

4.5.1 Spectral Power Density Measurement – Test Setup

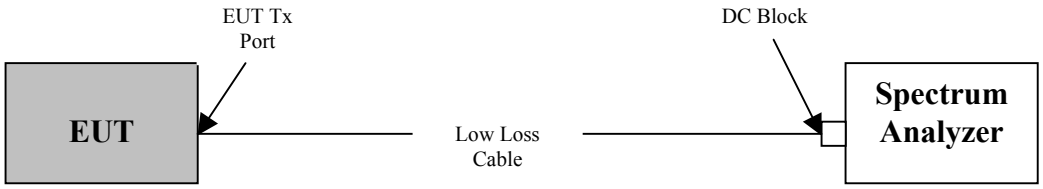


4.6 Spurious Emissions Measurement At The Antenna Terminal

A spectrum analyzer was used to measure the spurious emissions at the antenna terminal. It was measured using a direct connection from the RF output port of the EUT to the spectrum analyzer using a low loss cable and a DC block. The resolution bandwidth was 100 kHz and the video bandwidth was 300 kHz. The spans were wide enough to include all the harmonics and emissions that were produced by the intentional radiator.

The EUT RF power that is produced 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 is at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. Please refer to Appendix I for graphical plots.

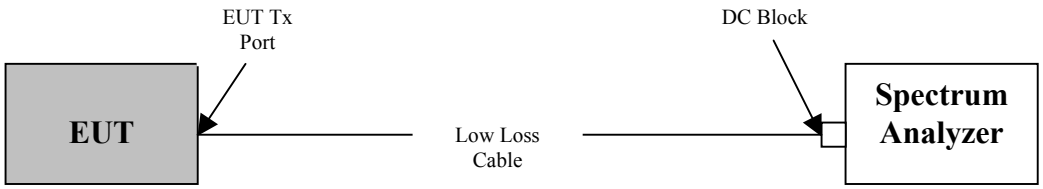
4.6.1 Spurious Emissions Measurement At The Antenna Terminal – Test Setup



4.7 Band Edge Measurement At The Antenna Terminal

A spectrum analyzer was used to measure the band edge measurements at the antenna terminal with the EUT transmitting at 2412 MHz (channel 1) and 2462 MHz (channel 11). It was measured using a direct connection from the RF output port of the EUT to the spectrum analyzer using a low loss cable and a DC block. The resolution bandwidth was 1 MHz and the video bandwidth was 1 MHz. It was verified that the band edge measurements were not above the limit in the restricted bands below 2390 MHz and above 2483.5 MHz. Please refer to Appendix I for graphical plots.

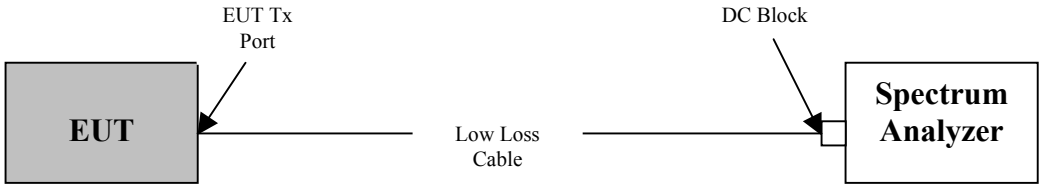
4.7.1 Band Edge Measurement At The Antenna Terminal – Test Setup



4.8 20dB Bandwidth Measurement

A spectrum analyzer was used to measure the 20dB Bandwidth measurements at the antenna terminal with the EUT transmitting at the low, middle and high channel. It was measured using a direct connection from the RF output port of the EUT to the spectrum analyzer using a low loss cable and a DC block. The resolution bandwidth was 30kHz and the video bandwidth was 30kHz. It was verified that the bandwidth is less than 1 MHz. Please refer to Appendix I for graphical plots.

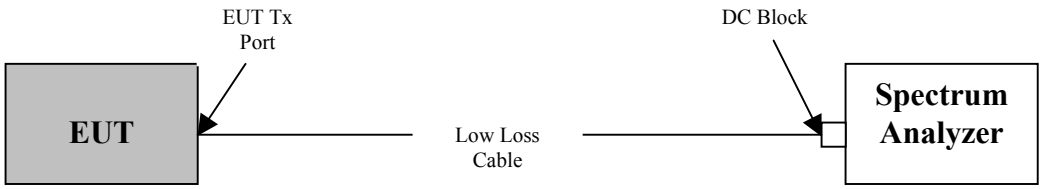
4.8.1 20dB Bandwidth Measurement – Test Setup



4.9 Carrier Frequency Separation Measurement

A spectrum analyzer was used to measure the Carrier Frequency Separation measurements at the antenna terminal with the EUT operating in its normal operating mode. It was measured using a direct connection from the RF output port of the EUT to the spectrum analyzer using a low loss cable and a DC block. The resolution bandwidth was 100kHz and the video bandwidth was 100kHz. The frequency span was wide enough to include two peaks of adjacent channels. It was verified that the carrier frequency separation was greater than the 20dB bandwidth. Please refer to Appendix I for graphical plots.

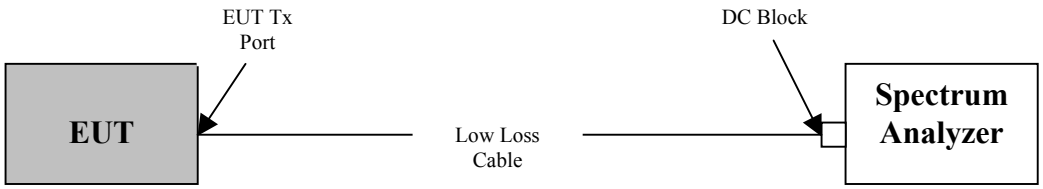
4.9.1 Carrier Frequency Separation Measurement – Test Setup



4.10 Number of Hopping Frequencies Measurement

A spectrum analyzer was used to measure the Number of Hopping Frequencies measurements at the antenna terminal with the EUT operating in its normal operating mode. It was measured using a direct connection from the RF output port of the EUT to the spectrum analyzer using a low loss cable and a DC block. The resolution bandwidth was 1MHz and the video bandwidth was 1MHz. The frequency span was wide enough to include all of the peaks in the frequency band of operation. It was verified that there were 79 hopping frequencies. Please refer to Appendix I for graphical plots.

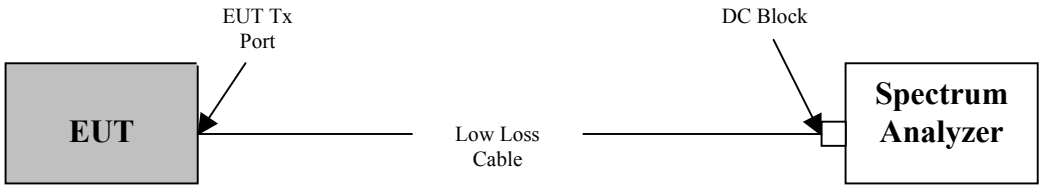
4.10.1 Number of Hopping Frequencies Measurement – Test Setup



4.11 Average Time of Occupancy Measurement

A spectrum analyzer was used to measure the Average Time of Occupancy measurements at the antenna terminal with the EUT operating in its normal operating mode. It was measured using a direct connection from the RF output port of the EUT to the spectrum analyzer using a low loss cable and a DC block. The resolution bandwidth was 1MHz and the video bandwidth was 1MHz. The frequency span was set to 0Hz with a sweep time of 60 msec to determine the time for each transmission. Once the sweep time for each transmission was determined, it was calculated that the EUT was not transmitting more than 400msec during a 30 second period on any frequency. Please refer to Appendix I for graphical plots.

4.11.1 Average Time of Occupancy Measurement – Test Setup



5.0 MODIFICATIONS AND RECOMMENDATIONS

There were no modifications done to the EUT.

APPENDIX I

DATA SHEETS

WLAN = ON, BT = OFF

With Wide Dual Band Film Antennas
EUT installed in Toshiba Tecra 9100 SN: 12040506JU

MAXIMUM PEAK OUTPUT POWER MEASUREMENT

CLIENT:	Toshiba Corporation	**DATE:**	12/05/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205-01
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	N/A	**SITE #:**	2
CONFIGUARTION: *Measurements taken @ WLAN Port*		**TEMPERATURE:**	22 C
		HUMIDITY:	37% RH
		TIME:	8:00 AM

Standard:	FCC CFR 47, Part 15, 15.247(b)
Description:	Peak Output Power – Conducted
Results:	See Data Sheets

Frequency (MHz)	Rate (Mbps)	Power (dBm)	Cable Factor (dB)	Power Corrected (dBm)	Power (mW)
2412.00	1	16.75	0.15	16.90	48.98
2412.00	5.5	16.42	0.15	16.57	45.39
2412.00	11	16.41	0.15	16.56	45.29
2437.00	1	16.75	0.15	16.90	48.98
2437.00	5.5	16.43	0.15	16.58	45.50
2437.00	11	16.40	0.15	16.55	45.19
2462.00	1	16.63	0.15	16.78	47.64
2462.00	5.5	16.39	0.15	16.54	45.08
2462.00	11	16.37	0.15	16.52	44.87

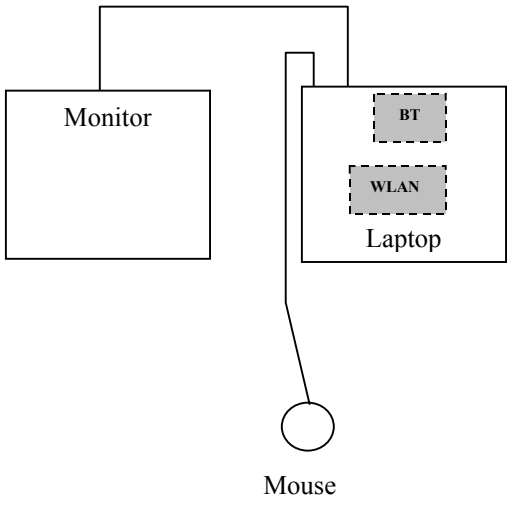
NOTE: Using CRTU Ver. 1.1.3 software provided by Intel Corporation to set power limits.

MAXIMUM PEAK OUTPUT POWER MEASUREMENT (Continued)

TEST EQUIPMENT USED					
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**	**Calibration Due Date**	**Calibration Cycle**
Spectrum Analyzer	Agilent	8564EC	4046A00387	02/28/04	2 Years
DC Block	Inmet	8039	N/A	N/A	N/A
Power Meter	Rohde & Schwarz	NRVS	DE30863	11/24/03	1 Year
Power Sensor	Leistungsmesskoph	NRV-Z5	844855/012	11/24/03	1 Year
Temperature / Humidity Monitor	Dickson	TH550	7255185	01/08/03	1 Year

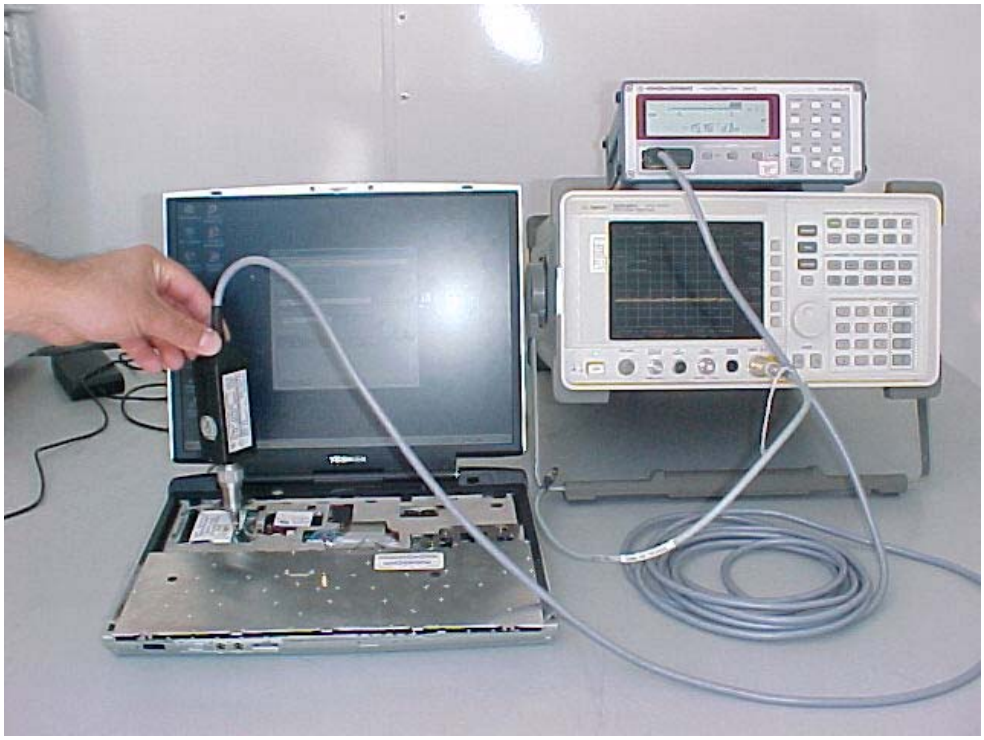
EUT ACCESSORIES			
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**
Tecra 9100 Laptop (with Wide Dual Band Film Antennas)	Toshiba	PT910U-AAAA7	12040506JU
AC Adapter	Toshiba	PA3083U-1ACA	0108 A 0000068G
Tecra 9100 Laptop (with Dual Band Film Antennas)	Toshiba	PT910U-AAAA7	12050065JU
AC Adapter	Toshiba	PA3083U-1ACA	0108 A 0000774G
Monitor	NEC	JC-1575VMA	2Y785821
Mouse	Logitech	M-BJ58	830513-1000

BLOCK DIAGRAM



MAXIMUM PEAK OUTPUT POWER MEASUREMENT (Continued)

PHOTOGRAPHS



SPURIOUS RADIATED EMISSIONS

CLIENT:	Toshiba Corporation	**DATE:**	12/06/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: WLAN ON, BT OFF		**TEMPERATURE:**	17 C
		HUMIDITY:	35% RH
		TIME:	8:00 AM

Standard:	FCC CFR 47, Part 15, 15.247(c), 15.209
Description:	Spurious Emissions Measurements - Radiated
Results:	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 is 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.

SPURIOUS RADIATED EMISSIONS (Continued)

Fundamental and Band Edge Measurements at Channels 1, 6, & 11
Aegis Labs, Inc. File #: INTEL-021205-06

Horizontal Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
2412.87	77.45	100	135			111.08		
2390.00	33.40	100	135			66.96	74.00	-7.04
2390.00				17.54	A	51.10	54.00	-2.90
2436.04	78.00	100	135			111.70		
2461.03	77.00	100	135			110.78		
2483.50	31.64	100	135			65.49	74.00	-8.51
2483.50				18.14	A	51.99	54.00	-2.01

Vertical Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
2412.88	74.50	200	135			108.13		
2390.00	30.10	200	135			63.66	74.00	-10.34
2390.00				18.01	A	51.57	54.00	-2.43
2436.66	73.41	200	90			107.11		
2461.03	72.87	200	90			106.65		
2483.50	31.54	200	90			65.39	74.00	-8.61
2483.50				18.45	A	52.30	54.00	-1.70

SPURIOUS RADIATED EMISSIONS (Continued)

Harmonic Measurements at Channels 1, 6, & 11@ 1Mbps Data Rate
Aegis Labs, Inc. File #: INTEL-021205-07

Horizontal Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
4823.68	46.45	100	180			50.70	74.00	-23.30
4823.68				35.12	A	39.37	54.00	-14.63
7236.48	43.12	100	135			51.34	74.00	-22.66
7236.48				33.10	A	41.32	54.00	-12.68
9648.29	43.58	100	135			52.75	91.08	-38.33
4874.06	41.54	100	180			45.91	74.00	-28.09
4874.06				33.54	A	37.91	54.00	-16.09
7311.09	41.02	100	135			49.34	74.00	-24.66
7311.09				32.50	A	40.82	54.00	-13.18
9747.68	47.01	100	180			56.30	91.70	-35.40
4924.02	48.21	150	180			52.69	74.00	-21.31
4924.02				37.45	A	41.93	54.00	-12.07
7386.27	46.52	100	135			54.95	74.00	-19.05
7386.27				34.60	A	43.03	54.00	-10.97
9847.76	48.21	100	225			57.62	90.78	-33.16
Vertical Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
4824.00	45.00	100	135			49.25	74.00	-24.75
4824.00				34.69	A	38.94	54.00	-15.06
7235.87	44.30	100	180			52.51	74.00	-21.49
7235.87				31.54	A	39.75	54.00	-14.25
9647.84	48.12	100	135			57.29	88.13	-30.84
4874.28	43.50	100	135			47.87	74.00	-26.13
4874.28				33.60	A	37.97	54.00	-16.03
7310.50	44.00	100	180			52.32	74.00	-21.68
7310.50				32.50	A	40.82	54.00	-13.18
9748.30	42.56	100	138			51.85	87.11	-35.26
4924.04	44.29	100	135			48.77	74.00	-25.23
4924.04				37.00	A	41.48	54.00	-12.52
7381.68	47.00	100	225			55.43	74.00	-18.57
7381.68				33.00	A	41.43	54.00	-12.57
9847.96	46.23	100	225			55.64	86.65	-31.01

SPURIOUS RADIATED EMISSIONS (Continued)

Spurious Emissions Measurements on Ch. 1 @ 1Mbps Data Rate
Aegis Labs, Inc. File #: INTEL-021205-08

Horizontal Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
1065.66	52.10	100	90			43.55	74.00	-30.45
1065.66				35.68	A	27.13	54.00	-26.87
1200.02	62.10	100	315			54.15	74.00	-19.85
1200.02				39.00	A	31.05	54.00	-22.95
1495.01	52.31	100	135			45.57	74.00	-28.43
1495.01				43.78	A	37.04	54.00	-16.96
1592.48	56.98	100	135			50.40	74.00	-23.60
1592.48				49.54	A	42.96	54.00	-11.04

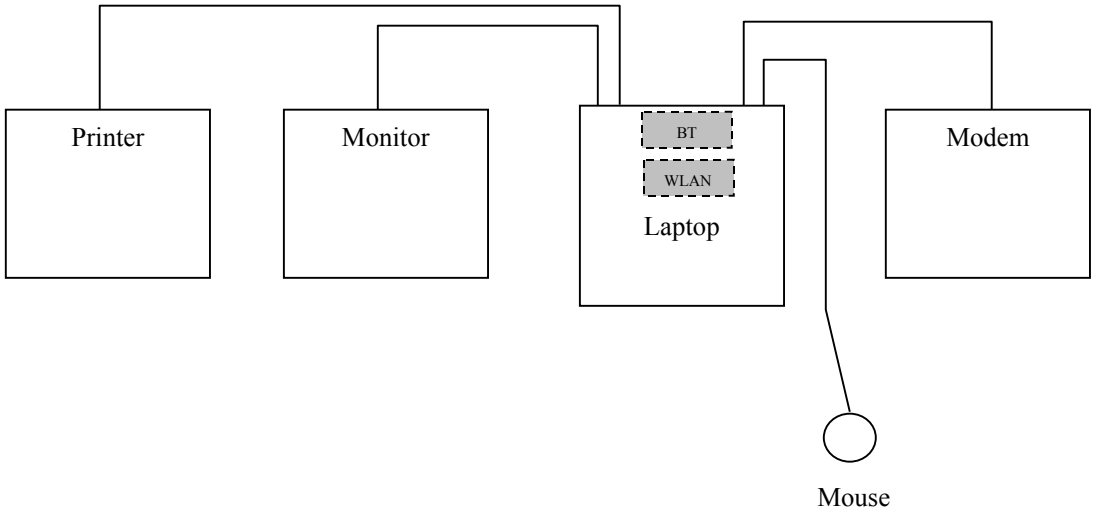
Vertical Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
1064.65	55.21	100	225			46.66	74.00	-27.34
1064.65				39.12	A	30.57	54.00	-23.43
1162.36	59.87	100	225			51.92	74.00	-22.08
1162.36				55.00	A	47.05	54.00	-6.95
1200.00	52.68	100	225			44.73	74.00	-29.27
1200.00				39.10	A	31.15	54.00	-22.85
1328.48	54.87	100	45			47.26	74.00	-26.74
1328.48				42.45	A	34.84	54.00	-19.16
1494.71	56.64	100	0			49.90	74.00	-24.10
1494.71				54.87	A	48.13	54.00	-5.87

SPURIOUS RADIATED EMISSIONS (Continued)

TEST EQUIPMENT USED					
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**	**Calibration Due Date**	**Calibration Cycle**
Spectrum Analyzer	Agilent	8564EC	4046A00387	02/28/04	2 Years
Preamplifier	Agilent	8449B	3008A01573	04/29/03	1 Year
Antenna - Horn	EMCO	3115	2230	09/14/03	1 Year
Temperature/Humidity Monitor	Dickson	TH550	7255185	01/08/03	1 Year

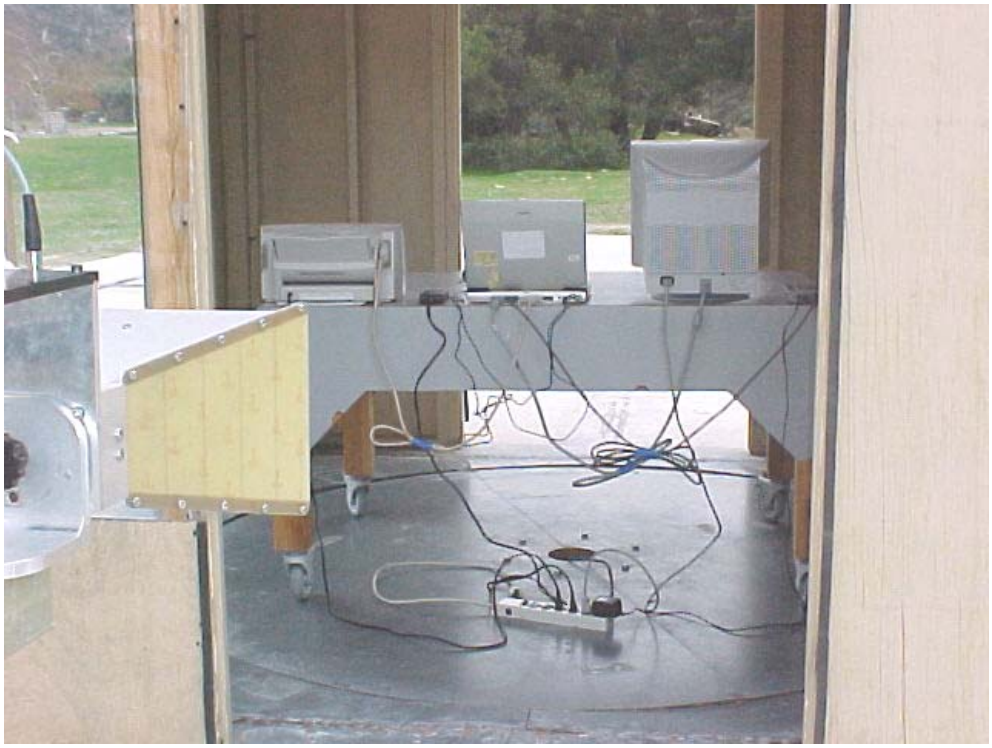
EUT ACCESSORIES			
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**
Tecra 9100 Laptop (with Dual Band Film Antennas)	Toshiba	PT910U-AAAA7	12050065JU
AC Adapter	Toshiba	PA3083U-1ACA	0108 A 0000774G
Monitor	NEC	JC-1575VMA	2Y785821
Mouse	Logitech	M-BJ58	830513-1000
Printer	Canon	BJC-4200	MT1-18
Modem	Hayes	5362US	A02153623145

BLOCK DIAGRAM



SPURIOUS RADIATED EMISSIONS (Continued)

PHOTOGRAPHS



WLAN = ON, BT = OFF

With Dual Band Film Antennas
EUT installed in Toshiba Tecra 9100 SN: 12050065JU

MAXIMUM PEAK OUTPUT POWER MEASUREMENT

CLIENT:	Toshiba Corporation	**DATE:**	12/05/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205-02
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	N/A	**SITE #:**	2
CONFIGUARTION: *Measurements taken @ WLAN Port*		**TEMPERATURE:**	22 C
		HUMIDITY:	38% RH
		TIME:	10:00 AM

Standard:	FCC CFR 47, Part 15, 15.247(b)
Description:	Peak Output Power – Conducted
Results:	See Data Sheets

Frequency (MHz)	Rate (Mbps)	Power (dBm)	Cable Factor (dB)	Power Corrected (dBm)	Power (mW)
2412.00	1	16.68	0.15	16.83	48.19
2412.00	5.5	16.36	0.15	16.51	44.77
2412.00	11	16.29	0.15	16.44	44.06
2437.00	1	16.66	0.15	16.81	47.97
2437.00	5.5	16.30	0.15	16.45	44.16
2437.00	11	16.22	0.15	16.37	43.35
2462.00	1	16.45	0.15	16.60	45.71
2462.00	5.5	16.21	0.15	16.36	43.25
2462.00	11	16.17	0.15	16.32	42.85

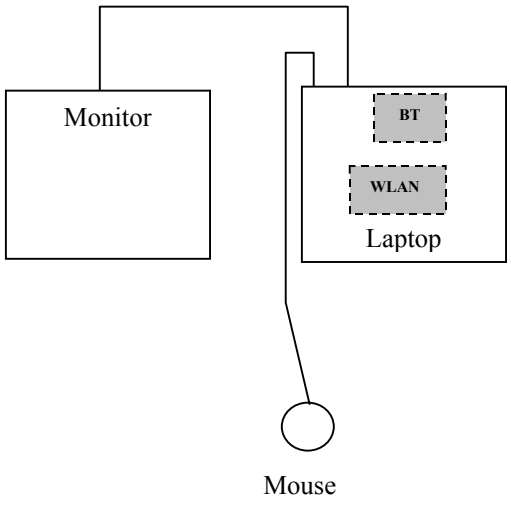
NOTE: Using CRTU Ver. 1.1.3 software provided by Intel Corporation to set power limits.

MAXIMUM PEAK OUTPUT POWER MEASUREMENT (Continued)

TEST EQUIPMENT USED					
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**	**Calibration Due Date**	**Calibration Cycle**
Spectrum Analyzer	Agilent	8564EC	4046A00387	02/28/04	2 Years
DC Block	Inmet	8039	N/A	N/A	N/A
Power Meter	Rohde & Schwarz	NRVS	DE30863	11/24/03	1 Year
Power Sensor	Leistungsmesskoph	NRV-Z5	844855/012	11/24/03	1 Year
Temperature / Humidity Monitor	Dickson	TH550	7255185	01/08/03	1 Year

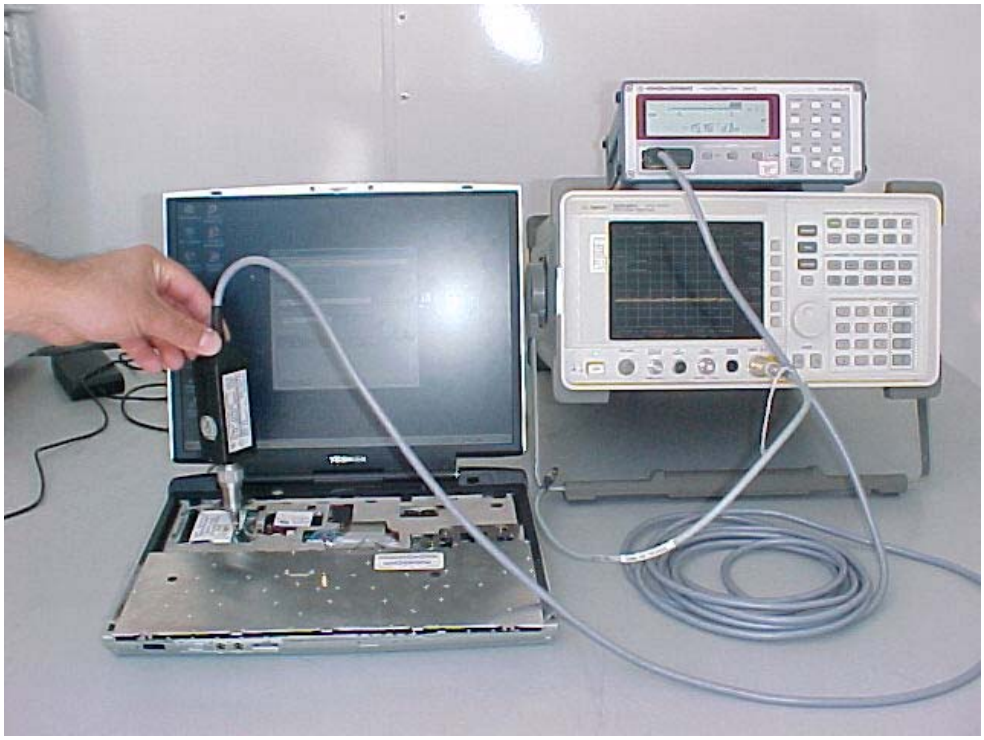
EUT ACCESSORIES			
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**
Tecra 9100 Laptop (with Wide Dual Band Film Antennas)	Toshiba	PT910U-AAAA7	12040506JU
AC Adapter	Toshiba	PA3083U-1ACA	0108 A 0000068G
Tecra 9100 Laptop (with Dual Band Film Antennas)	Toshiba	PT910U-AAAA7	12050065JU
AC Adapter	Toshiba	PA3083U-1ACA	0108 A 0000774G
Monitor	NEC	JC-1575VMA	2Y785821
Mouse	Logitech	M-BJ58	830513-1000

BLOCK DIAGRAM



MAXIMUM PEAK OUTPUT POWER MEASUREMENT (Continued)

PHOTOGRAPHS



SPURIOUS RADIATED EMISSIONS

CLIENT:	Toshiba Corporation	**DATE:**	12/06/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: WLAN ON, BT OFF		**TEMPERATURE:**	17 C
		HUMIDITY:	35% RH
		TIME:	8:00 AM

Standard:	FCC CFR 47, Part 15, 15.247(c), 15.209
Description:	Spurious Emissions Measurements - Radiated
Results:	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 is 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.

SPURIOUS RADIATED EMISSIONS (Continued)

Fundamental and Band Edge Measurements at Channels 1, 6, & 11
Aegis Labs, Inc. File #: INTEL-021205-09

Horizontal Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
2412.87	77.00	100	135			110.63		
2390.00	32.17	100	135			65.73	74.00	-8.27
2390.00				18.83	A	52.39	54.00	-1.61
2436.04	77.33	100	135			111.03		
2461.03	76.50	100	135			110.28		
2483.50	32.67	100	135			66.52	74.00	-7.48
2483.50				19.17	A	53.02	54.00	-0.98

Vertical Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
2412.88	73.50	200	135			107.13		
2390.00	29.33	200	135			62.89	74.00	-11.11
2390.00				18.17	A	51.73	54.00	-2.27
2436.66	74.00	200	90			107.70		
2461.03	73.83	200	90			107.61		
2483.50	30.50	200	90			64.35	74.00	-9.65
2483.50				19.00	A	52.85	54.00	-1.15

SPURIOUS RADIATED EMISSIONS (Continued)

Harmonic Measurements at Channels 1, 6, & 11@ 1Mbps Data Rate
Aegis Labs, Inc. File #: INTEL-021205-10

Horizontal Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
4823.68	44.67	100	180			48.92	74.00	-25.08
4823.68				34.71	A	38.96	54.00	-15.04
7236.48	44.50	100	135			52.72	74.00	-21.28
7236.48				32.46	A	40.68	54.00	-13.32
9648.29	44.88	100	135			54.05	90.63	-36.58
4874.06	42.50	100	180			46.87	74.00	-27.13
4874.06				31.51	A	35.88	54.00	-18.12
7311.09	43.50	100	135			51.82	74.00	-22.18
7311.09				30.59	A	38.91	54.00	-15.09
9747.68	46.33	100	180			55.62	91.03	-35.41
4924.02	45.67	150	180			50.15	74.00	-23.85
4924.02				38.56	A	43.04	54.00	-10.96
7386.27	45.83	100	135			54.26	74.00	-19.74
7386.27				33.50	A	41.93	54.00	-12.07
9847.76	45.67	100	225			55.08	90.28	-35.20
Vertical Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
4824.00	44.67	100	135			48.92	74.00	-25.08
4824.00				35.27	A	39.52	54.00	-14.48
7235.87	43.50	100	180			51.71	74.00	-22.29
7235.87				30.32	A	38.53	54.00	-15.47
9647.84	45.83	100	135			55.00	87.13	-32.13
4874.28	42.50	100	135			46.87	74.00	-27.13
4874.28				31.48	A	35.85	54.00	-18.15
7310.50	43.33	100	180			51.65	74.00	-22.35
7310.50				30.41	A	38.73	54.00	-15.27
9748.30	45.67	100	138			54.96	87.70	-32.74
4924.04	45.00	100	135			49.48	74.00	-24.52
4924.04				36.81	A	41.29	54.00	-12.71
7381.68	45.33	100	225			53.76	74.00	-20.24
7381.68				32.87	A	41.30	54.00	-12.70
9847.96	45.17	100	225			54.58	87.61	-33.03

SPURIOUS RADIATED EMISSIONS (Continued)

Spurious Emissions Measurements on Ch. 1 @ 1Mbps Data Rate
Aegis Labs, Inc. File #: INTEL-021205-11

Horizontal Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
1065.66	53.33	100	90			44.78	74.00	-29.22
1065.66				36.15	A	27.60	54.00	-26.40
1200.02	65.17	100	315			57.22	74.00	-16.78
1200.02				40.35	A	32.40	54.00	-21.60
1495.01	55.17	100	135			48.43	74.00	-25.57
1495.01				46.43	A	39.69	54.00	-14.31
1592.48	59.67	100	135			53.09	74.00	-20.91
1592.48				50.77	A	44.19	54.00	-9.81

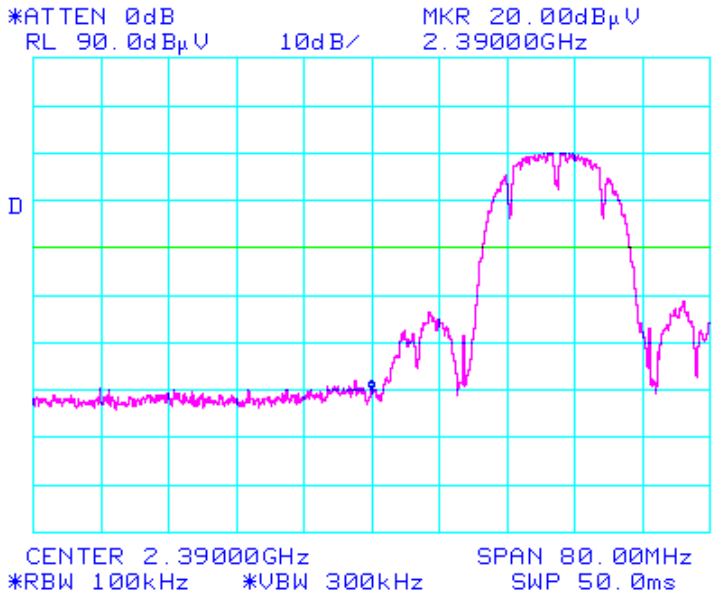
Vertical Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
1064.65	53.83	100	225			45.28	74.00	-28.72
1064.65				40.03	A	31.48	54.00	-22.52
1162.36	60.50	100	225			52.55	74.00	-21.45
1162.36				55.10	A	47.15	54.00	-6.85
1200.00	55.50	100	225			47.55	74.00	-26.45
1200.00				39.18	A	31.23	54.00	-22.77
1328.48	56.00	100	45			48.39	74.00	-25.61
1328.48				43.54	A	35.93	54.00	-18.07
1494.71	59.83	100	0			53.09	74.00	-20.91
1494.71				55.79	A	49.05	54.00	-4.95

SPURIOUS RADIATED EMISSIONS (Continued)

Band Edge Measurements at Channels 1 & 11
Aegis Labs, Inc. File #: INTEL-021205-09

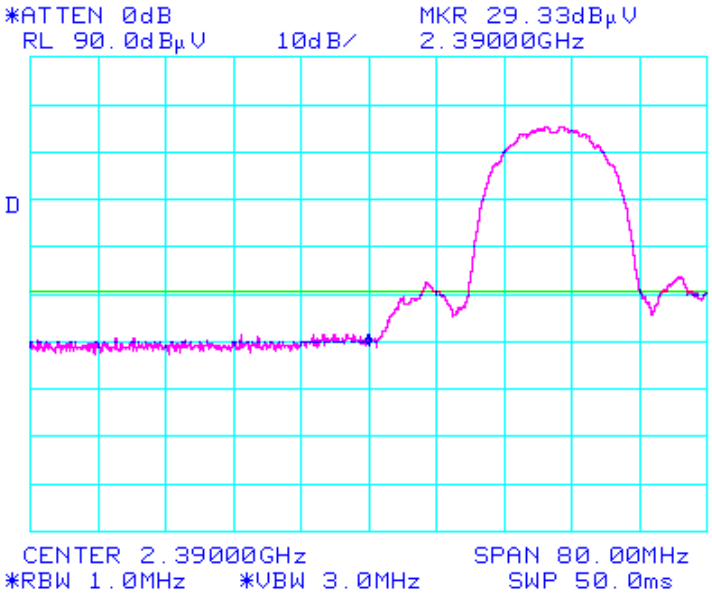
Vertical Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
2390.00	29.33	200	135			62.89	74.00	-11.11
2390.00				18.17	A	51.73	54.00	-2.27
2483.50	30.50	200	90			64.35	74.00	-9.65
2483.50				19.00	A	52.85	54.00	-1.15

Test Date	*Data*	*Test Eng.*
12/06/02	Band Edge Emissions Measurements – Radiated Vertical > -20 dBc @ 2390 MHz	Rick Candelas

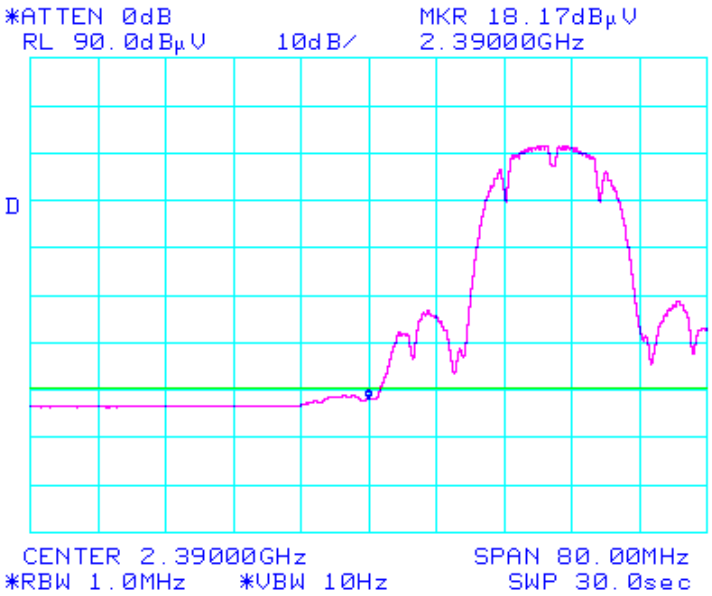


SPURIOUS RADIATED EMISSIONS (Continued)

Test Date	*Data*	*Test Eng.*
12/06/02	Band Edge Emissions Measurements – Radiated Vertical Peak Measurement @ 2390 MHz	Rick Candelas

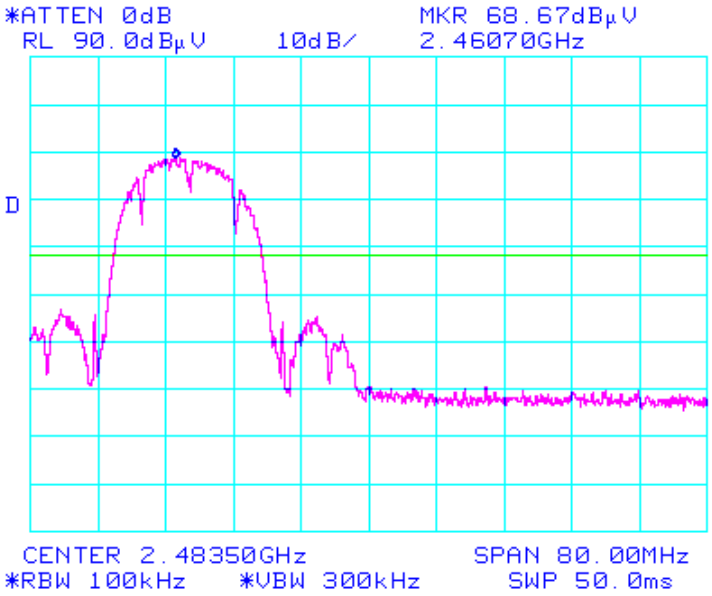


Test Date	*Data*	*Test Eng.*
12/06/02	Band Edge Emissions Measurements – Radiated Vertical Average Measurement @ 2390 MHz	Rick Candelas

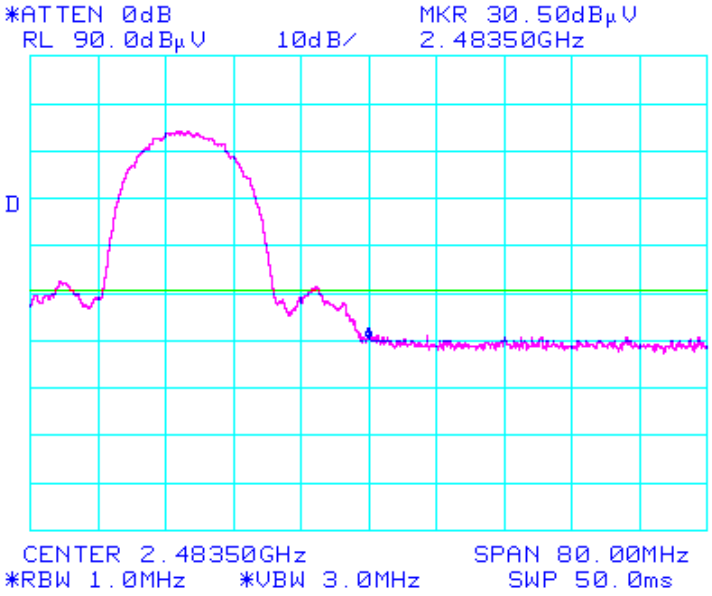


SPURIOUS RADIATED EMISSIONS (Continued)

Test Date	*Data*	*Test Eng.*
12/06/02	Band Edge Emissions Measurements – Radiated Vertical > -20 dBc @ 2483.5 MHz	Rick Candelas

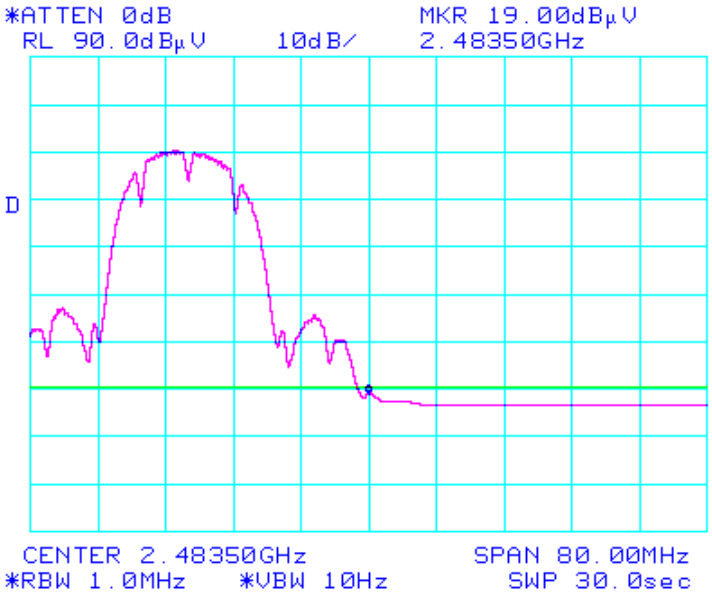


Test Date	*Data*	*Test Eng.*
12/06/02	Band Edge Emissions Measurements – Radiated Vertical Peak Measurement @ 2483.5 MHz	Rick Candelas



SPURIOUS RADIATED EMISSIONS (Continued)

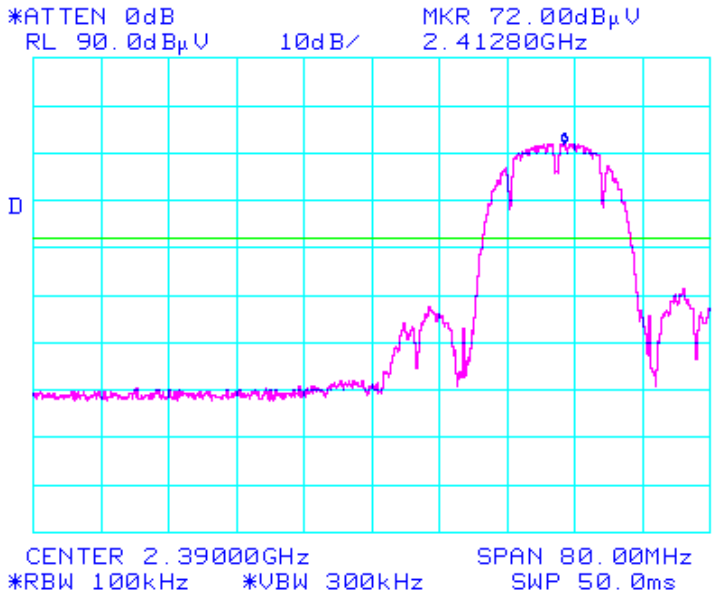
Test Date	*Data*	*Test Eng.*
12/06/02	Band Edge Emissions Measurements – Radiated Vertical Average Measurement @ 2483.5 MHz	Rick Candelas



SPURIOUS RADIATED EMISSIONS (Continued)

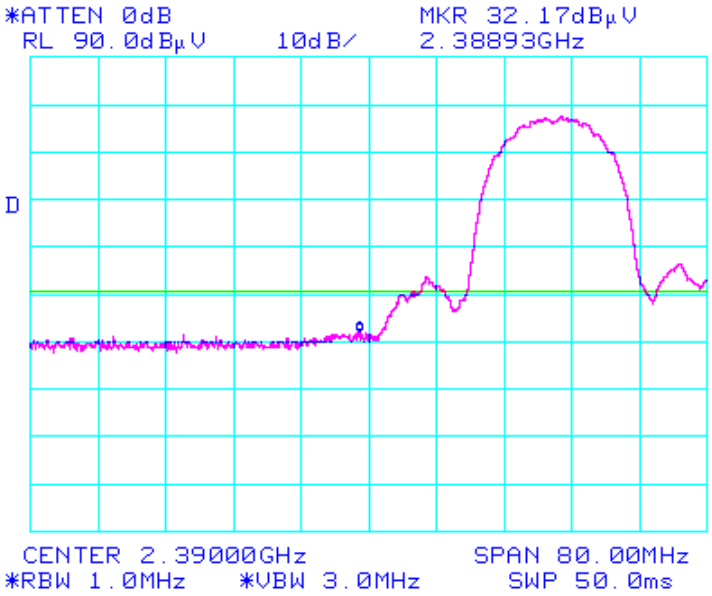
Horizontal Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
2390.00	32.17	100	135			65.73	74.00	-8.27
2390.00				18.83	A	52.39	54.00	-1.61
2483.50	32.67	100	135			66.52	74.00	-7.48
2483.50				19.17	A	53.02	54.00	-0.98

Test Date	*Data*	*Test Eng.*
12/06/02	Band Edge Emissions Measurements – Radiated Horizontal > -20 dBc @ 2390 MHz	Rick Candelas

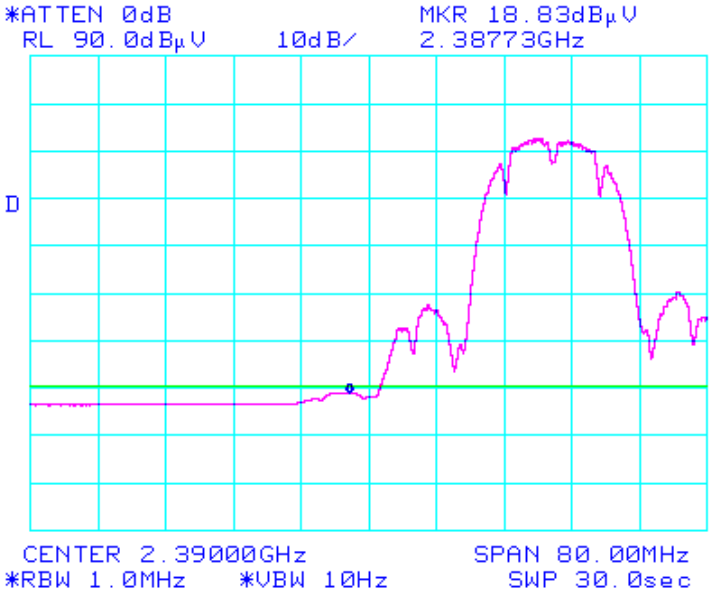


SPURIOUS RADIATED EMISSIONS (Continued)

Test Date	*Data*	*Test Eng.*
12/06/02	Band Edge Emissions Measurements – Radiated Horizontal Peak Measurement @ 2390 MHz	Rick Candelas

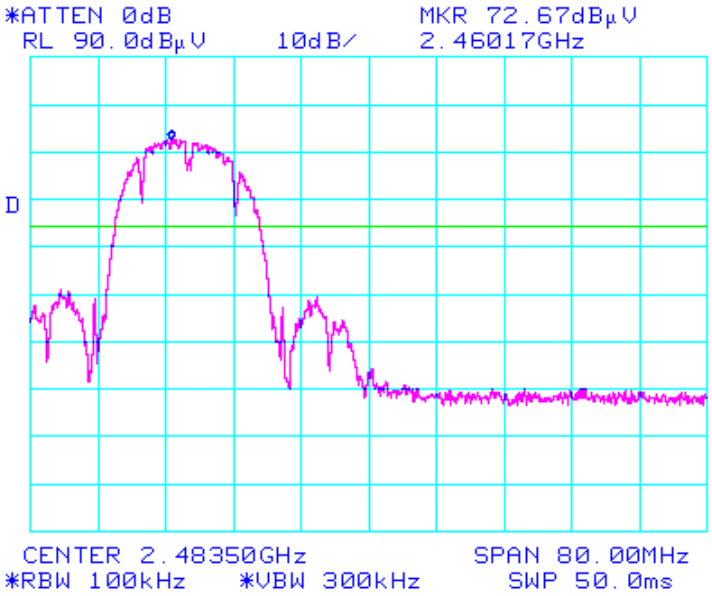


Test Date	*Data*	*Test Eng.*
12/06/02	Band Edge Emissions Measurements – Radiated Horizontal Average Measurement @ 2390 MHz	Rick Candelas

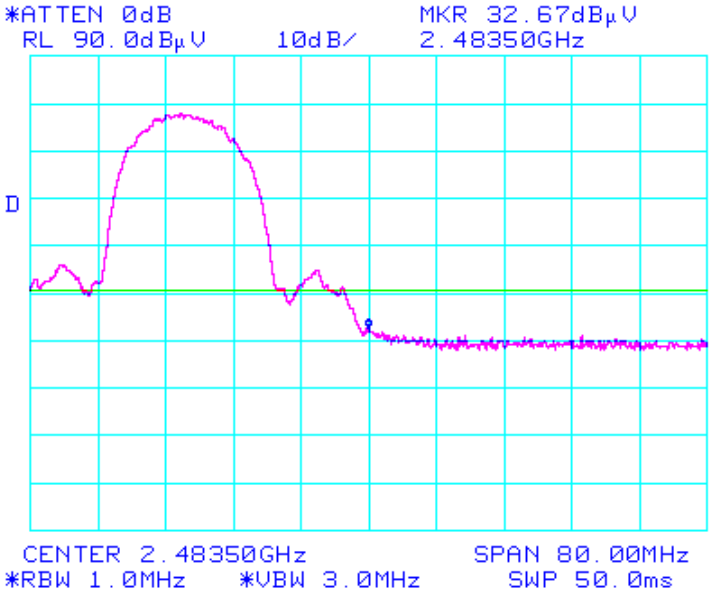


SPURIOUS RADIATED EMISSIONS (Continued)

Test Date	*Data*	*Test Eng.*
12/06/02	Band Edge Emissions Measurements – Radiated Horizontal > -20 dBc @ 2483.5 MHz	Rick Candelas

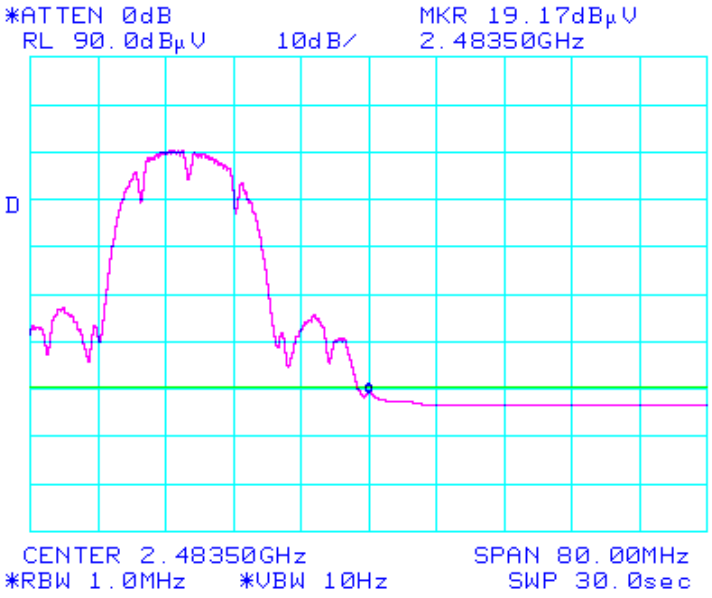


Test Date	*Data*	*Test Eng.*
12/06/02	Band Edge Emissions Measurements – Radiated Horizontal Peak Measurement @ 2483.5 MHz	Rick Candelas



SPURIOUS RADIATED EMISSIONS (Continued)

Test Date	*Data*	*Test Eng.*
12/06/02	Band Edge Emissions Measurements – Radiated Horizontal Average Measurement @ 2483.5 MHz	Rick Candelas

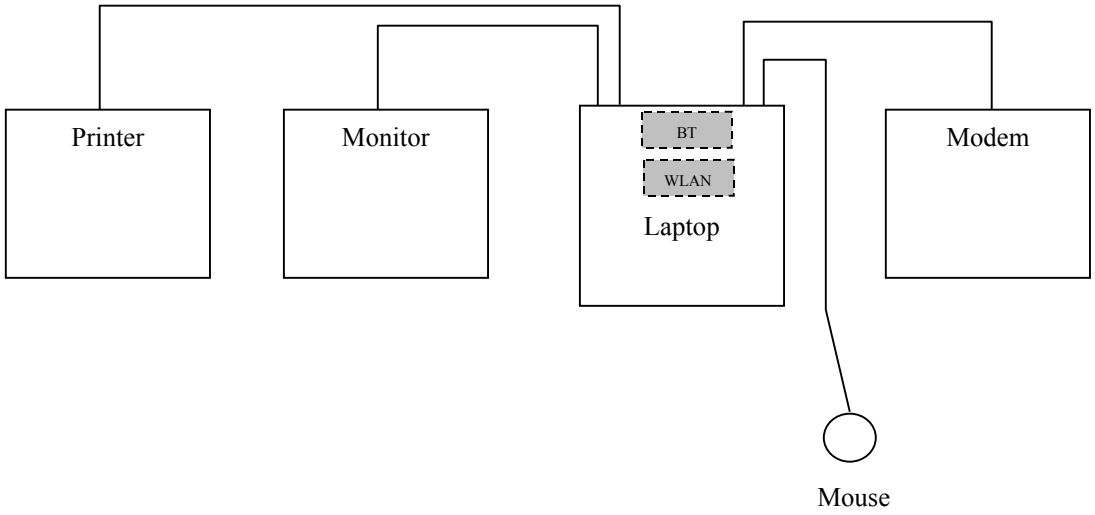


SPURIOUS RADIATED EMISSIONS (Continued)

TEST EQUIPMENT USED					
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**	**Calibration Due Date**	**Calibration Cycle**
Spectrum Analyzer	Agilent	8564EC	4046A00387	02/28/04	2 Years
Preamplifier	Agilent	8449B	3008A01573	04/29/03	1 Year
Antenna - Horn	EMCO	3115	2230	09/14/03	1 Year
Temperature/Humidity Monitor	Dickson	TH550	7255185	01/08/03	1 Year

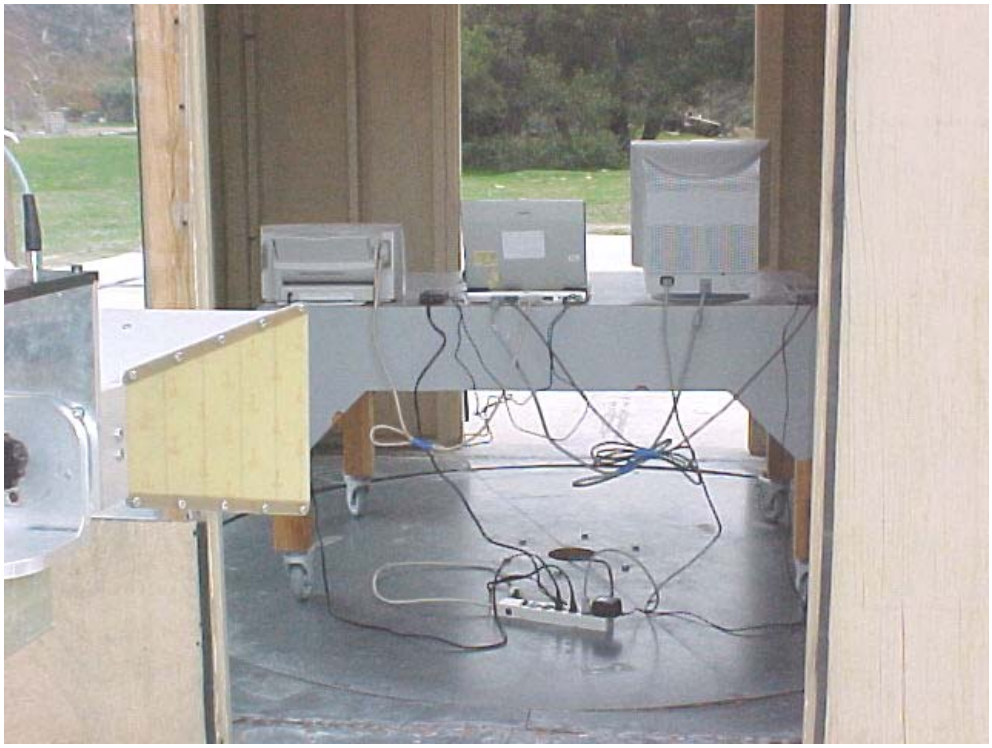
EUT ACCESSORIES			
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**
Tecra 9100 Laptop (with Dual Band Film Antennas)	Toshiba	PT910U-AAAA7	12050065JU
AC Adapter	Toshiba	PA3083U-1ACA	0108 A 0000774G
Monitor	NEC	JC-1575VMA	2Y785821
Mouse	Logitech	M-BJ58	830513-1000
Printer	Canon	BJC-4200	MT1-18
Modem	Hayes	5362US	A02153623145

BLOCK DIAGRAM



SPURIOUS RADIATED EMISSIONS (Continued)

PHOTOGRAPHS



SPURIOUS RADIATED EMISSIONS (Continued)

Spurious Emissions Measurements
Aegis Labs, Inc. File #: INTEL-021205-12

Horizontal Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
120.13	44.80	400	135			25.72	30.00	-4.28
133.74	39.90	400	90			21.93	30.00	-8.07
192.05	36.40	400	225			21.25	30.00	-8.75
259.96	41.80	250	90			28.57	37.00	-8.43
264.04	45.40	250	135			32.37	37.00	-4.63
286.04	38.30	250	135			26.44	37.00	-10.56
307.22	41.10	250	180			24.27	37.00	-12.73
320.05	39.40	200	270			23.12	37.00	-13.88
336.10	40.20	200	90			24.22	37.00	-12.78
352.06	41.10	200	0			25.25	37.00	-11.75
368.06	39.40	200	45			23.83	37.00	-13.17
374.05	40.10	200	135			24.64	37.00	-12.36
390.00	51.30	200	90	49.52	Q	34.57	37.00	-2.43
390.05	41.70	200	45			26.75	37.00	-10.25
418.05	43.30	250	45			28.93	37.00	-8.07
432.03	37.00	200	0			23.08	37.00	-13.92
498.26	47.80	200	45	46.76	Q	35.44	37.00	-1.56

SPURIOUS RADIATED EMISSIONS (Continued)

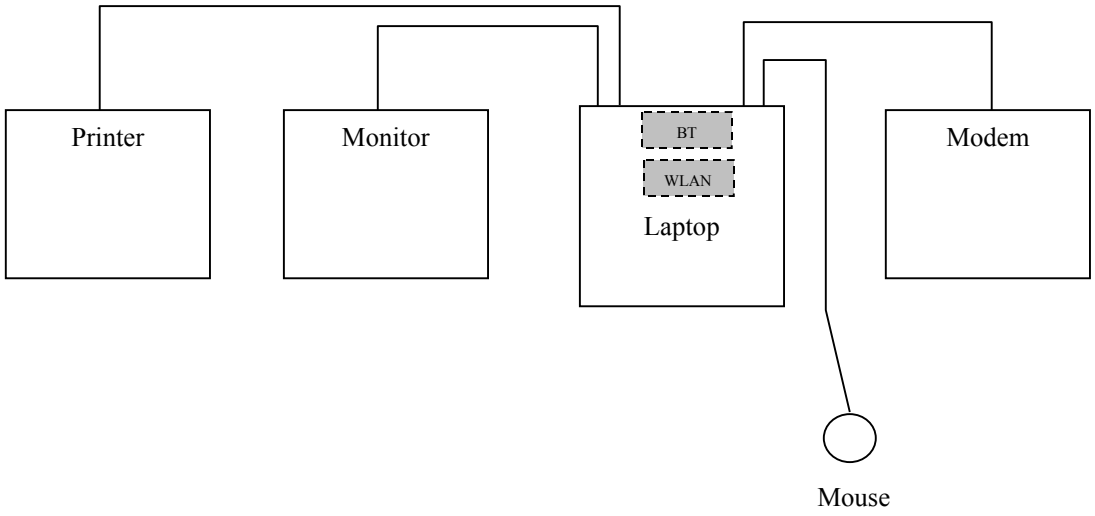
Vertical Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
50.08	42.70	100	180			21.07	30.00	-8.93
53.40	45.10	100	270			22.51	30.00	-7.49
96.02	59.70	100	0	59.55	Q	36.40	30.00	6.40
113.45	48.00	100	270	45.28	Q	25.29	30.00	-4.71
133.27	44.20	100	45			26.21	30.00	-3.79
192.03	39.00	100	270			23.85	30.00	-6.15
259.92	41.70	100	180			28.46	37.00	-8.54
264.01	46.00	100	180			32.96	37.00	-4.04
286.03	40.20	100	180			28.34	37.00	-8.66
304.09	42.20	100	0			25.23	37.00	-11.77
320.09	43.40	100	0			27.13	37.00	-9.87
325.00	43.90	100	45			27.84	37.00	-9.16
336.05	45.50	100	0			29.52	37.00	-7.48
352.06	44.40	100	45			28.55	37.00	-8.45
368.09	44.60	100	45			29.03	37.00	-7.97
389.88	48.30	100	90			33.34	37.00	-3.66
396.05	42.10	100	90			27.35	37.00	-9.65
418.02	44.40	100	225			30.03	37.00	-6.97
432.88	39.90	100	225			26.02	37.00	-10.98
498.30	46.50	100	315	45.11	Q	33.79	37.00	-3.21

SPURIOUS RADIATED EMISSIONS (Continued)

TEST EQUIPMENT USED					
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**	**Calibration Due Date**	**Calibration Cycle**
Spectrum Analyzer - RF Section	Hewlett Packard	8568B	2634A03093	11/30/03	1 Year
Spectrum Analyzer - Display Section	Hewlett Packard	85662A	1833A00389	11/30/03	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650A	2043A00220	11/30/03	1 Year
RF Preselector	Hewlett Packard	85685A	2620A00281	05/10/03	1 Year
Preamplifier	Com-Power	PA-102	1438	04/29/03	1 Year
Cable - 10m underground	Andrew	N/A	N/A	11/03/03	1 Year
Antenna - Biconical	EMCO	3110	9108-1421	10/02/03	1 Year
Antenna - Log Periodic	EMC Test Systems	3148	4947	10/12/03	1 Year
Temperature/Humidity Monitor	Dickson	TH550	7255185	01/08/03	1 Year

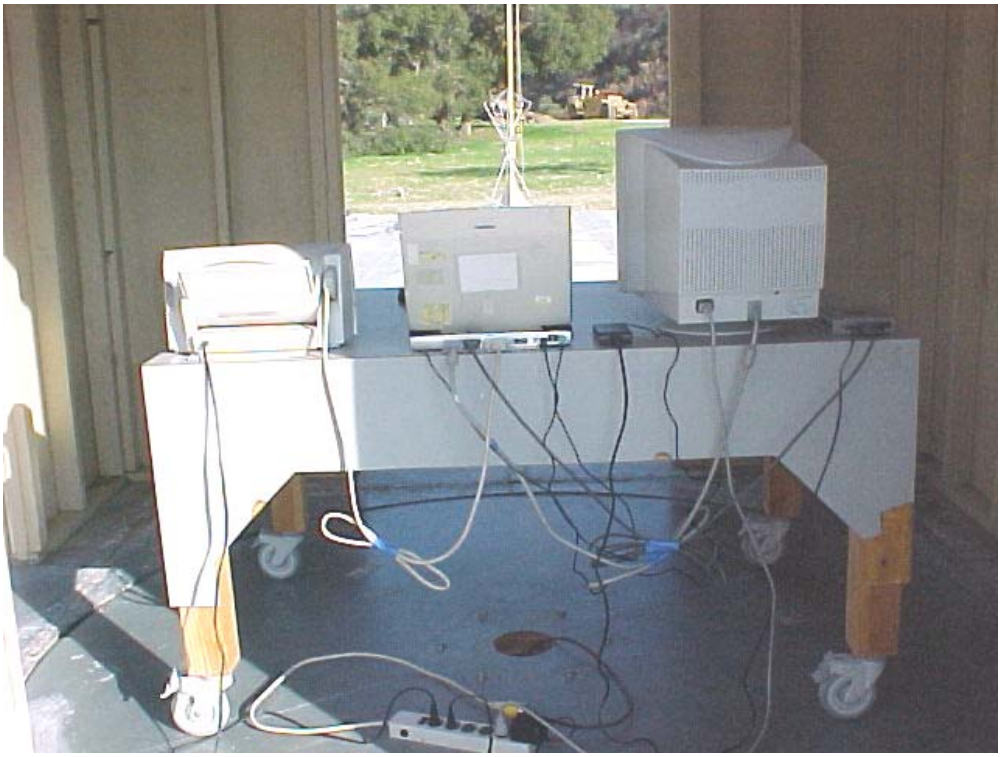
EUT ACCESSORIES			
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**
Tecra 9100 Laptop (with Dual Band Film Antennas)	Toshiba	PT910U-AAAA7	12050065JU
AC Adapter	Toshiba	PA3083U-1ACA	0108 A 0000774G
Monitor	NEC	JC-1575VMA	2Y785821
Mouse	Logitech	M-BJ58	830513-1000
Printer	Canon	BJC-4200	MT1-18
Modem	Hayes	5362US	A02153623145

BLOCK DIAGRAM



SPURIOUS RADIATED EMISSIONS (Continued)

PHOTOGRAPHS



CONDUCTED EMISSIONS AT AC MAINS PORT

CLIENT:	Toshiba Corporation	**DATE:**	12/09/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: WLAN ON, BT OFF		**TEMPERATURE:**	25 C
		HUMIDITY:	38% RH
		TIME:	8:00 AM

Standard:	FCC CFR 47, Part 15.207
Description:	AC Power Conducted Emissions
Results:	Passes FCC Limits

NOTE: During preliminary scans, there wasn't any difference which channel, data rate, or which set of antennas were used with the EUT, therefore only Channel 1 at a data rate of 1 Mbps with the Dual Band Film antennas were used for final testing.

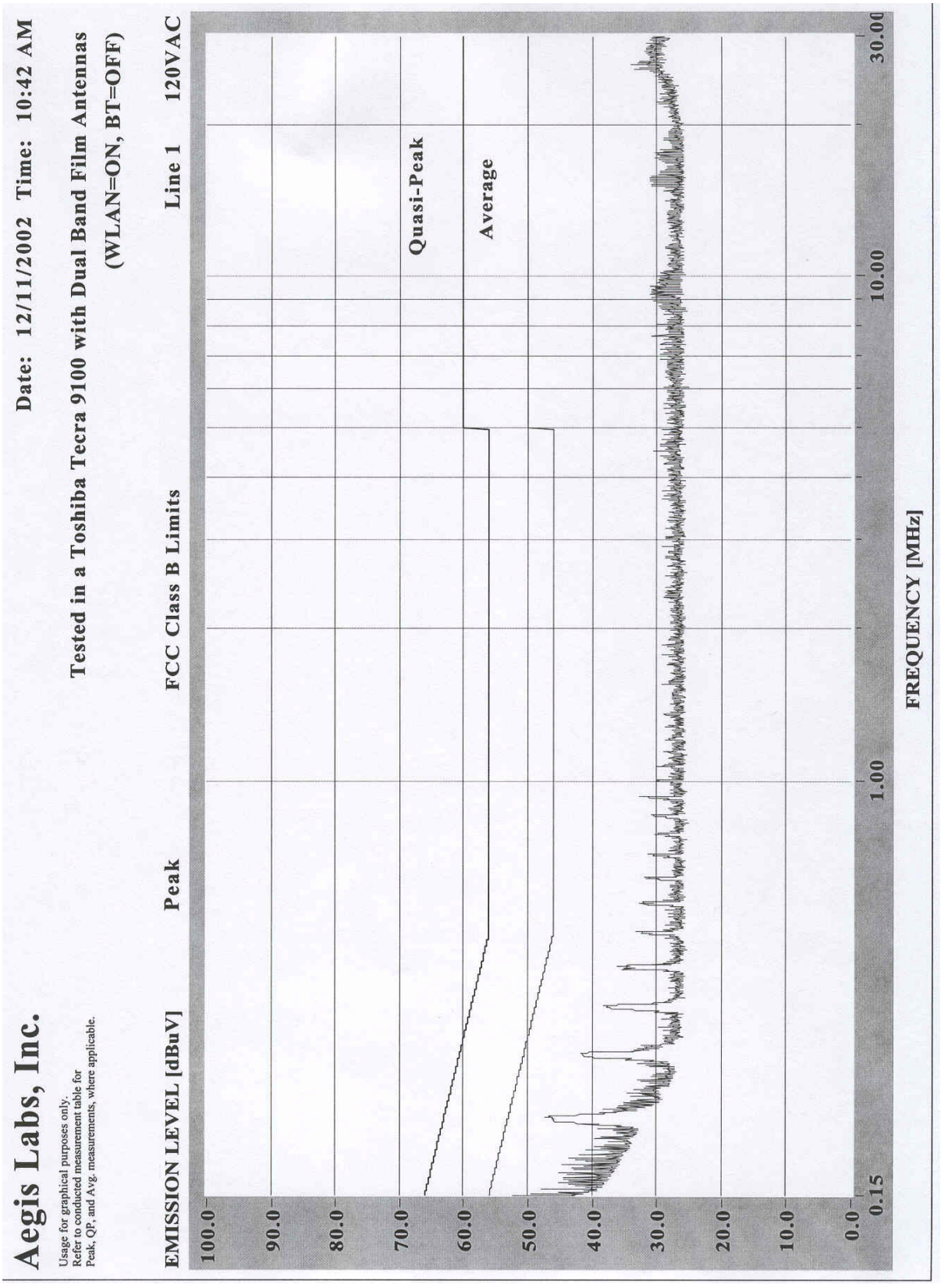
CONDUCTED EMISSIONS AT AC MAINS PORT (Continued)

Conducted Emissions Measurements @ AC Mains Port
Aegis Labs, Inc. File #: INTEL-021205-12

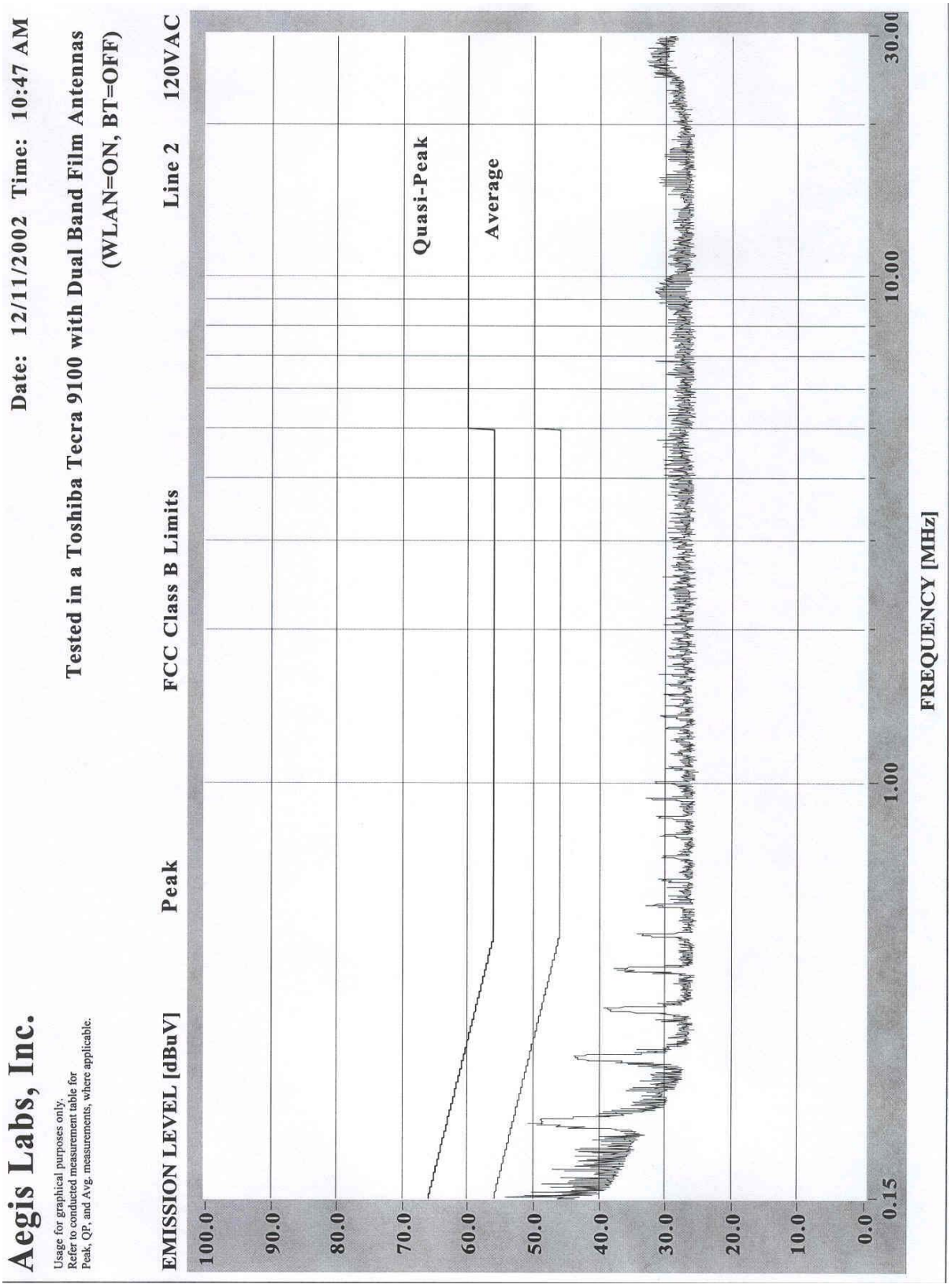
FCC CLASS B CONDUCTED EMISSIONS – LINE 1						
Freq. (MHz)	*Meter Reading (dBuV)*	*Detector (PK/QP/AV)*	*Average Limit (dBuV)*	*Average Delta(dB)*	*Quasi-Peak Limit (dBuV)*	*Quasi-Peak Delta(dB)*
0.1662	**46.90**	**PK**	**55.54**	**-8.64**	**65.54**	**-18.64**
0.2145	**46.50**	**PK**	**54.16**	**-7.66**	**64.16**	**-17.66**
0.2826	**41.70**	**PK**	**52.21**	**-10.51**	**62.21**	**-20.51**
0.3561	**40.60**	**PK**	**50.11**	**-9.51**	**60.11**	**-19.51**
0.4311	**40.50**	**PK**	**47.97**	**-7.47**	**57.97**	**-17.47**
0.6366	**36.70**	**PK**	**46.00**	**-9.30**	**56.00**	**-19.30**

FCC CLASS B CONDUCTED EMISSIONS – LINE 2						
Freq. (MHz)	*Meter Reading (dBuV)*	*Detector (PK/QP/AV)*	*Average Limit (dBuV)*	*Average Delta(dB)*	*Quasi-Peak Limit (dBuV)*	*Quasi-Peak Delta(dB)*
0.2148	**50.20**	**PK**	**54.15**	**-3.95**	**64.15**	**-13.95**
0.2865	**41.10**	**PK**	**52.10**	**-11.00**	**62.10**	**-21.00**
0.3555	**40.50**	**PK**	**50.13**	**-9.63**	**60.13**	**-19.63**
0.4317	**39.60**	**PK**	**47.95**	**-8.35**	**57.95**	**-18.35**
0.5007	**36.40**	**PK**	**46.00**	**-9.60**	**56.00**	**-19.60**
0.5715	**37.00**	**PK**	**46.00**	**-9.00**	**56.00**	**-19.00**

CONDUCTED EMISSIONS AT AC MAINS PORT (Continued)



CONDUCTED EMISSIONS AT AC MAINS PORT (Continued)

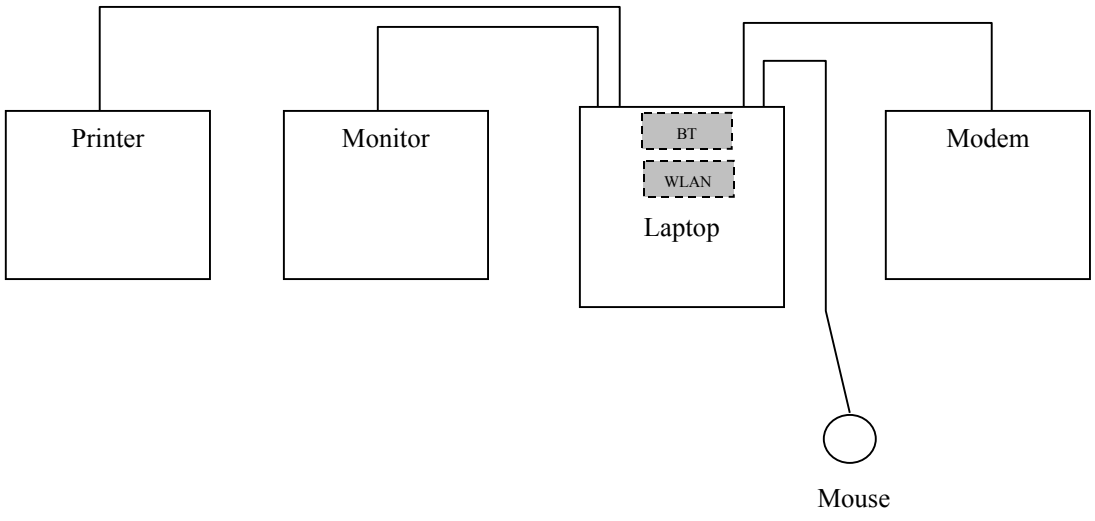


CONDUCTED EMISSIONS AT AC MAINS PORT (Continued)

TEST EQUIPMENT USED					
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**	**Calibration Due Date**	**Calibration Cycle**
Spectrum Analyzer - RF Section	Hewlett Packard	8568B	2634A03093	11/30/03	1 Year
Spectrum Analyzer - Display Section	Hewlett Packard	85662A	1833A00389	11/30/03	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650A	2043A00220	11/30/03	1 Year
RF Preselector	Hewlett Packard	85685A	2620A00281	05/10/03	1 Year
Attenuator - 5W-10dB	Pasternack	PE7014-10	N/A	11/03/02	1 Year
LISN (EUT)	FCC	FCC-LISN-50-25-2	9931	12/12/02	1 Year
LISN (Access)	Com-Power	LI-200	12019	01/25/03	1 Year
LISN (Access)	Com-Power	LI-200	12018	01/25/03	1 Year
Temperature/Humidity Monitor	Dickson	TH550	7255185	01/08/03	1 Year

EUT ACCESSORIES			
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**
Tecra 9100 Laptop (with Dual Band Film Antennas)	Toshiba	PT910U-AAAA7	12050065JU
AC Adapter	Toshiba	PA3083U-1ACA	0108 A 0000774G
Monitor	NEC	JC-1575VMA	2Y785821
Mouse	Logitech	M-BJ58	830513-1000
Printer	Canon	BJC-4200	MT1-18
Modem	Hayes	5362US	A02153623145

BLOCK DIAGRAM



CONDUCTED EMISSIONS AT AC MAINS PORT (Continued)

PHOTOGRAPHS

OCCUPIED BANDWIDTH MEASUREMENT

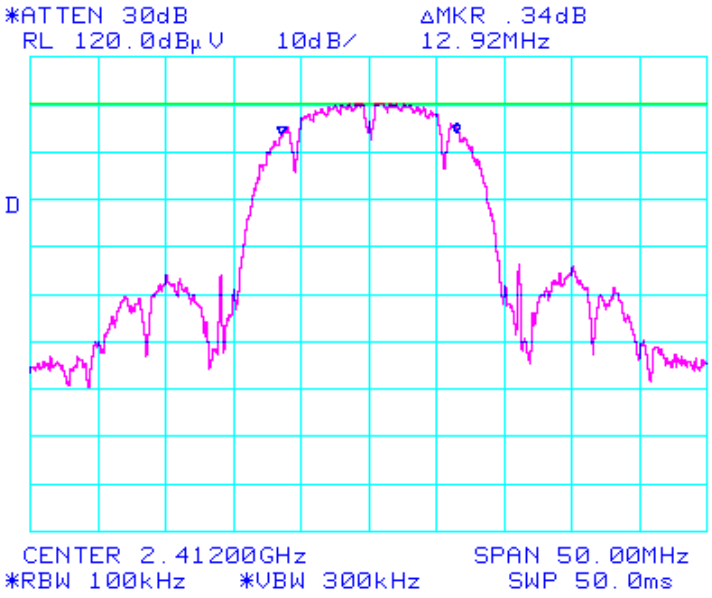
CLIENT:	Toshiba Corporation	**DATE:**	12/13/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: *Conducted Measurement @ WLAN Port*		**TEMPERATURE:**	25 C
		HUMIDITY:	38% RH
		TIME:	8:00 AM

Standard:	FCC CFR 47, Part 15, 15.247(a)(2)
Description:	Occupied Bandwidth Measurement
Results:	6dB bandwidth is at least 500 kHz.

TEST RESULTS SUMMARY	
Data	**Result**
Channel 1 Occupied Bandwidth	12.92 MHz 6 dB Bandwidth
Channel 6 Occupied Bandwidth	12.75 MHz 6 dB Bandwidth
Channel 11 Occupied Bandwidth	12.50 MHz 6dB Bandwidth

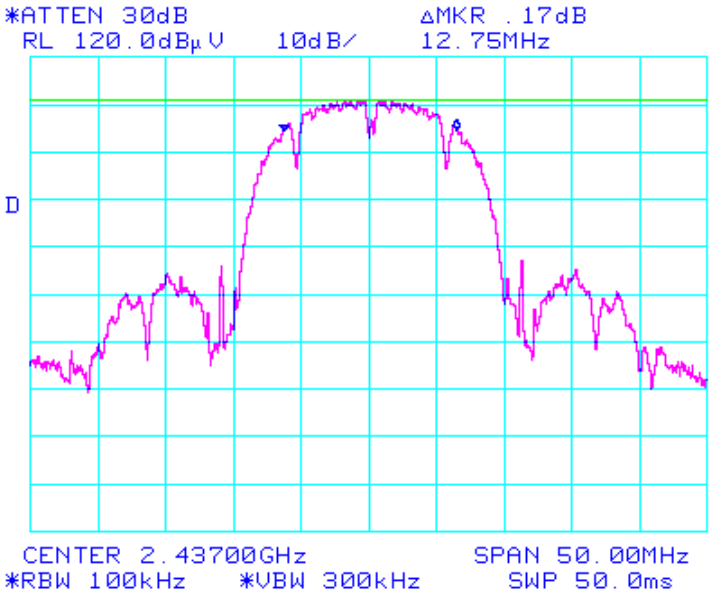
OCCUPIED BANDWIDTH MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 1 Occupied Bandwidth	Rick Candelas *(INTEL-021205-23)*



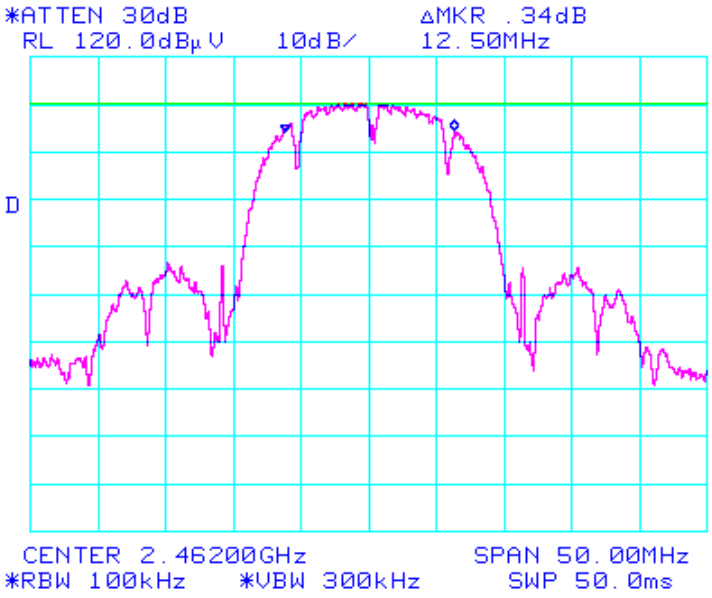
OCCUPIED BANDWIDTH MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 6 Occupied Bandwidth	Rick Candelas *(INTEL-021205-24)*



OCCUPIED BANDWIDTH MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 11 Occupied Bandwidth	Rick Candelas *(INTEL-021205-25)*



SPECTRAL POWER DENSITY MEASUREMENT

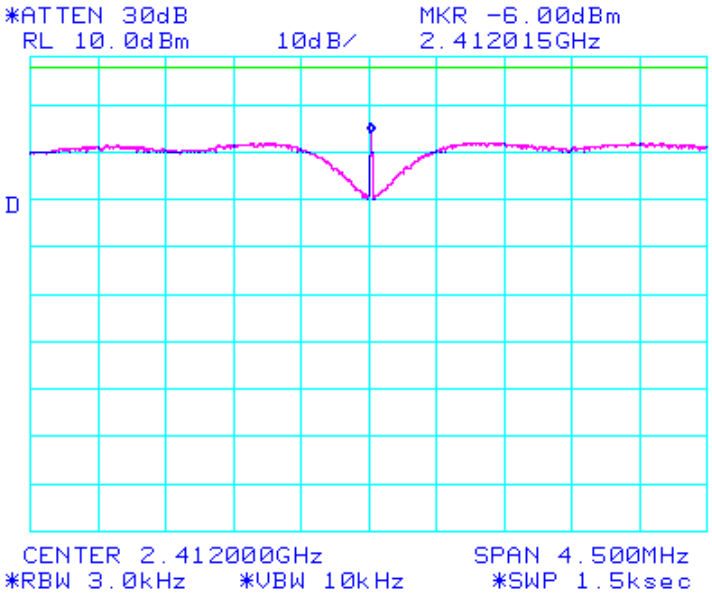
CLIENT:	Toshiba Corporation	**DATE:**	12/13/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: *Conducted Measurement @ WLAN Port*		**TEMPERATURE:**	25 C
		HUMIDITY:	38% RH
		TIME:	9:00 AM

Standard:	FCC CFR 47, Part 15, 15.247(D)
Description:	Power Spectral Density Measurement
Results:	Transmitted power density averaged over any 1 second interval is not greater than 8 dBm in any 3 kHz bandwidth within these bands

TEST RESULTS SUMMARY	
Data	**Result**
Channel 1 Power Spectral Density	-6.00 dBm – Pass
Channel 6 Power Spectral Density	-4.33 dBm – Pass
Channel 11 Power Spectral Density	-6.17 dBm - Pass

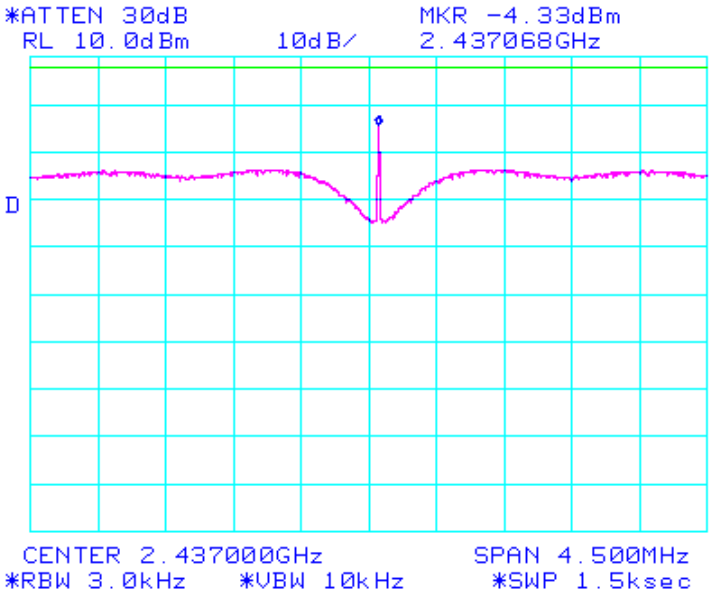
SPECTRAL POWER DENSITY MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 1 Power Spectral Density	Rick Candelas *(INTEL-021205-26)*



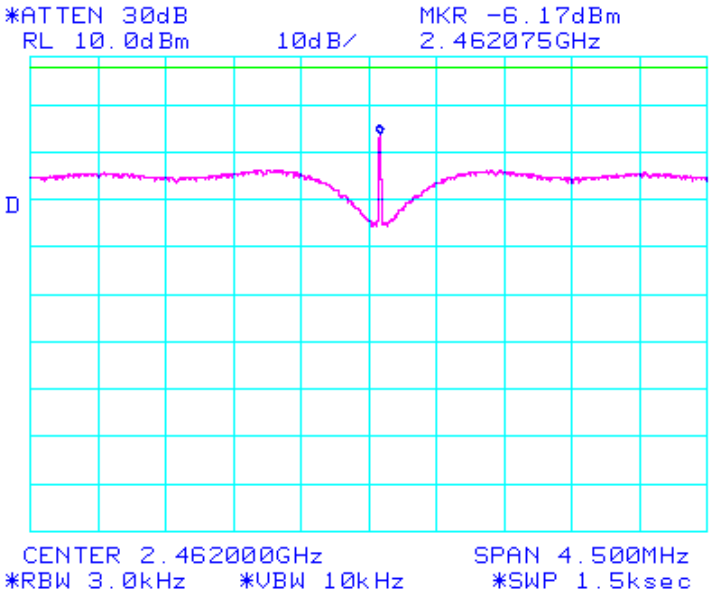
SPECTRAL POWER DENSITY MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 6 Power Spectral Density	Rick Candelas *(INTEL-021205-27)*



SPECTRAL POWER DENSITY MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 11 Power Spectral Density	Rick Candelas *(INTEL-021205-28)*



SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL

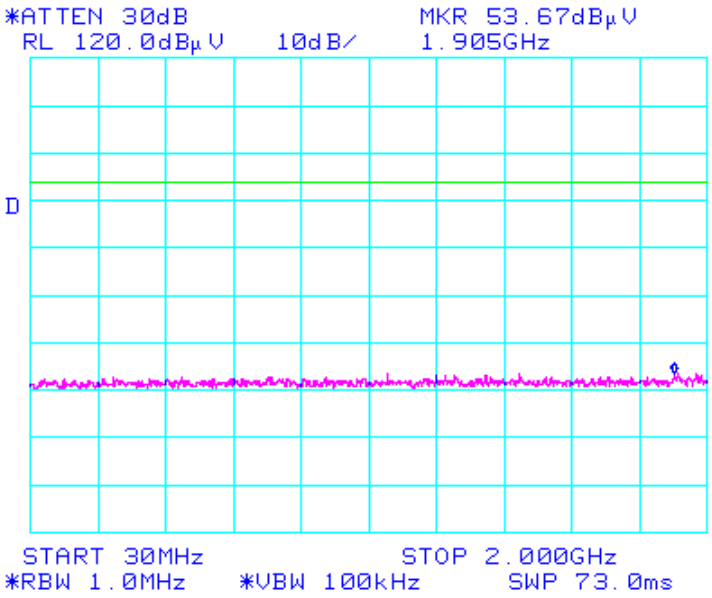
CLIENT:	Toshiba Corporation	**DATE:**	12/13/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: *Conducted Measurement @ WLAN Port*		**TEMPERATURE:**	25 C
		HUMIDITY:	38% RH
		TIME:	10:00 AM

Standard:	FCC CFR 47, Part 15, 15.247(c)
Description:	Conducted Spurious Emissions
Results:	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.

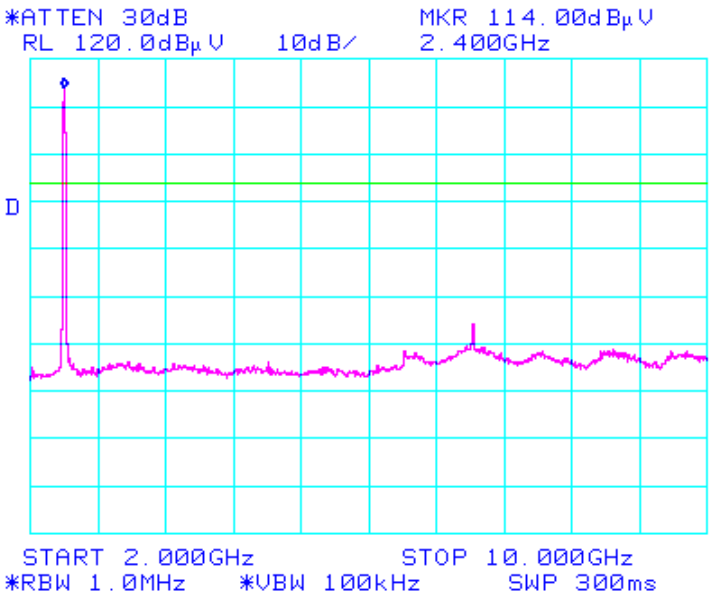
TEST RESULTS SUMMARY	
Data	**Result**
Channel 1 Spurious Emissions – Antenna Terminal - 30MHz – 2GHz	Max Spur Signal @ 53.67dBuV – Pass
Channel 1 Spurious Emissions – Antenna Terminal - 2GHz – 10GHz	Max Spur Signal @ 64.00dBuV – Pass
Channel 1 Spurious Emissions – Antenna Terminal - 10GHz – 20GHz	Max Spur Signal @ 61.33dBuV – Pass
Channel 1 Spurious Emissions – Antenna Terminal - 20GHz – 26.5GHz	Max Spur Signal @ 64.00dBuV – Pass
Channel 6 Spurious Emissions – Antenna Terminal - 30MHz – 2GHz	Max Spur Signal @ 54.33dBuV – Pass
Channel 6 Spurious Emissions – Antenna Terminal - 2GHz – 10GHz	Max Spur Signal @ 59.00dBuV – Pass
Channel 6 Spurious Emissions – Antenna Terminal - 10GHz – 20GHz	Max Spur Signal @ 61.33dBuV – Pass
Channel 6 Spurious Emissions – Antenna Terminal - 20GHz – 26.5GHz	Max Spur Signal @ 64.33dBuV – Pass
Channel 11 Spurious Emissions – Antenna Terminal - 30MHz – 2GHz	Max Spur Signal @ 54.17dBuV – Pass
Channel 11 Spurious Emissions – Antenna Terminal - 2GHz – 10GHz	Max Spur Signal @ 59.90dBuV – Pass
Channel 11 Spurious Emissions – Antenna Terminal - 10GHz – 20GHz	Max Spur Signal @ 60.33dBuV – Pass
Channel 11 Spurious Emissions – Antenna Terminal - 20GHz – 26.5GHz	Max Spur Signal @ 64.17dBuV – Pass

SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 1 Spurious Emissions – Antenna Terminal 30 MHz – 2 GHz	Rick Candelas *(INTEL-021205-29)*

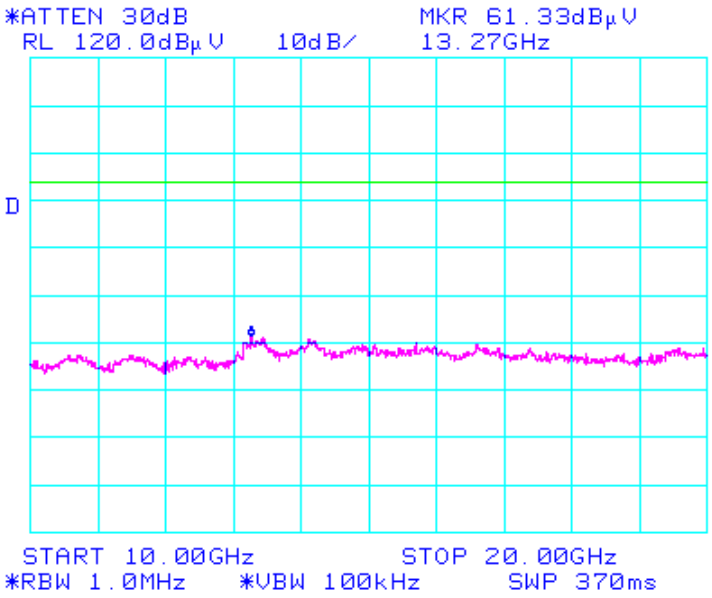


Test Date	*Data*	*Test Eng.*
12/13/02	Channel 1 Spurious Emissions – Antenna Terminal 2 GHz – 10 GHz	Rick Candelas *(INTEL-021205-30)*

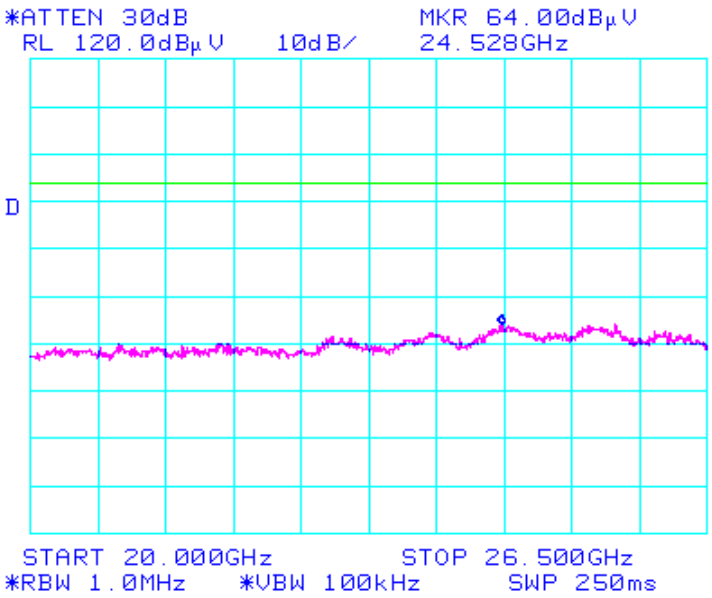


SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 1 Spurious Emissions – Antenna Terminal 10 GHz - 20 GHz	Rick Candelas *(INTEL-021205-31)*

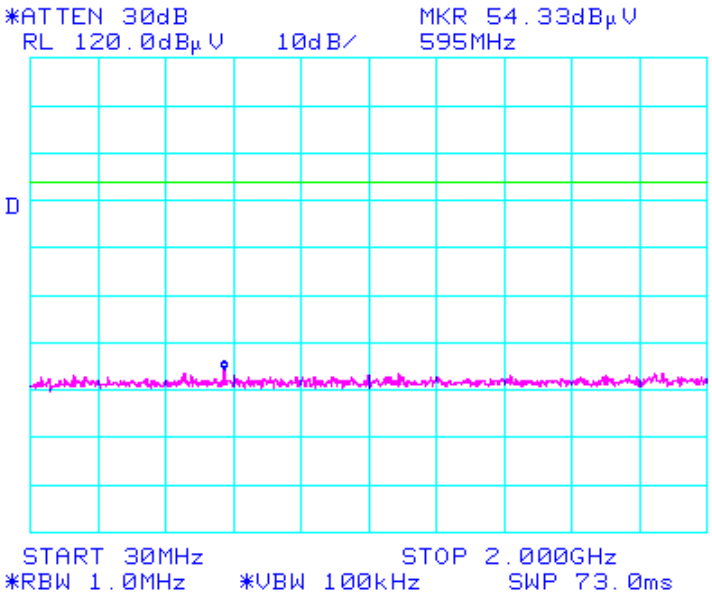


Test Date	*Data*	*Test Eng.*
12/13/02	Channel 1 Spurious Emissions – Antenna Terminal 20 GHz – 26.5 GHz	Rick Candelas *(INTEL-021205-32)*

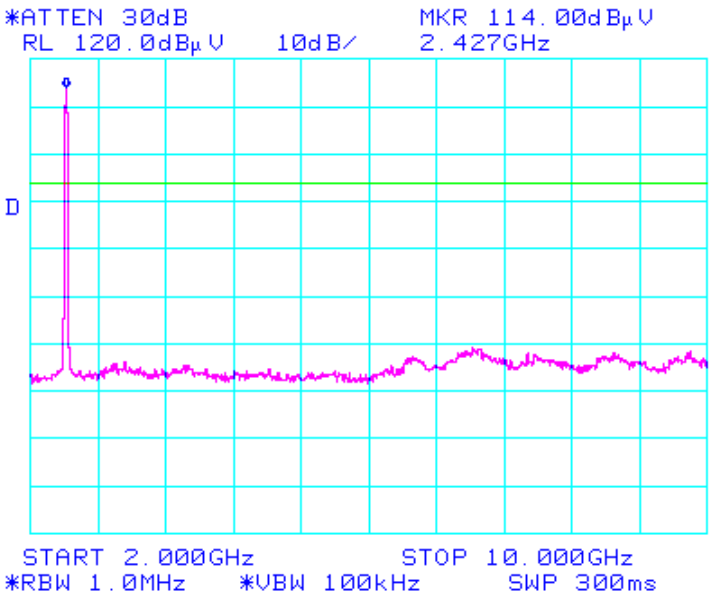


SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 6 Spurious Emissions – Antenna Terminal 30 MHz – 2 GHz	Rick Candelas *(INTEL-021205-33)*

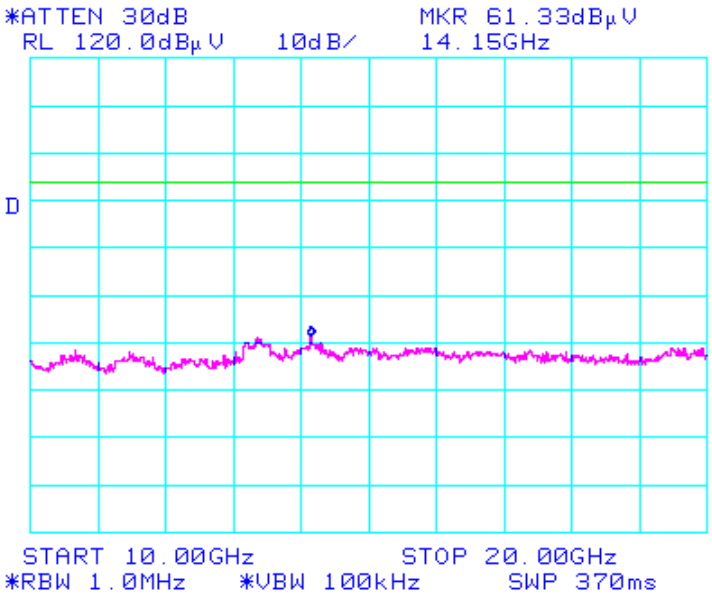


Test Date	*Data*	*Test Eng.*
12/13/02	Channel 6 Spurious Emissions – Antenna Terminal 2 GHz – 10 GHz	Rick Candelas *(INTEL-021205-34)*

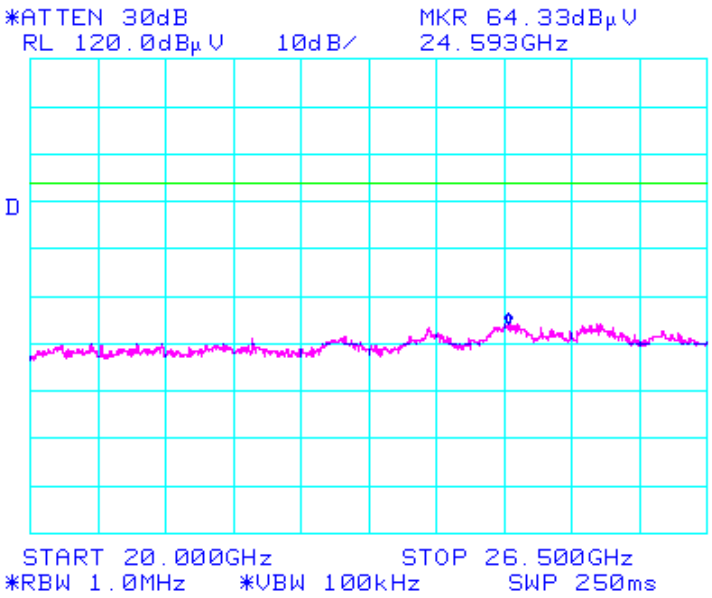


SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 6 Spurious Emissions – Antenna Terminal 10 GHz - 20 GHz	Rick Candelas *(INTEL-021205-35)*

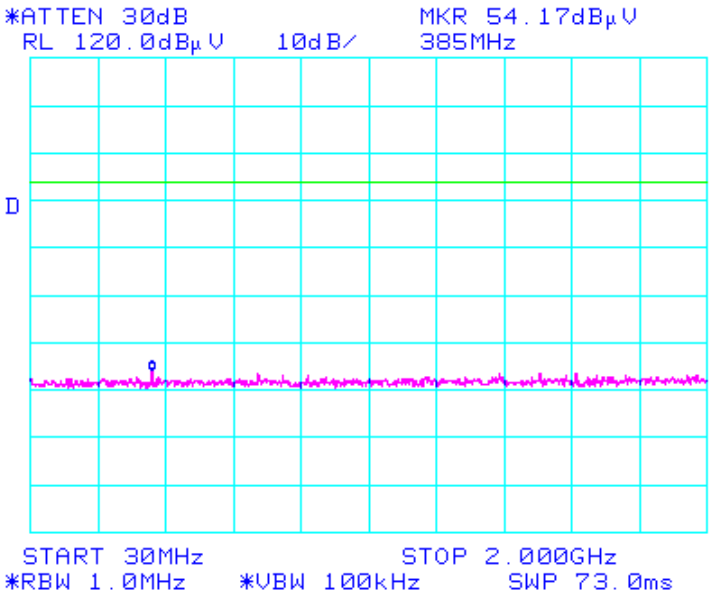


Test Date	*Data*	*Test Eng.*
12/13/02	Channel 6 Spurious Emissions – Antenna Terminal 20 GHz – 26.5 GHz	Rick Candelas *(INTEL-021205-36)*

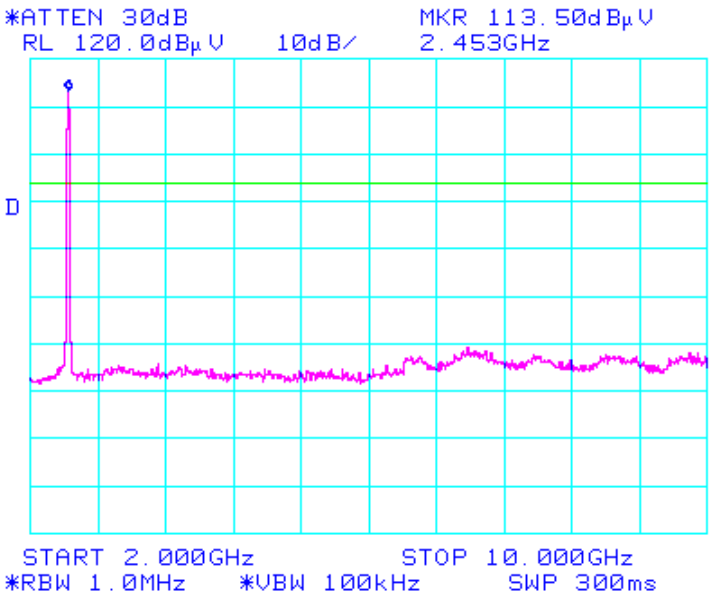


SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 11 Spurious Emissions – Antenna Terminal 30 MHz – 2 GHz	Rick Candelas *(INTEL-021205-37)*

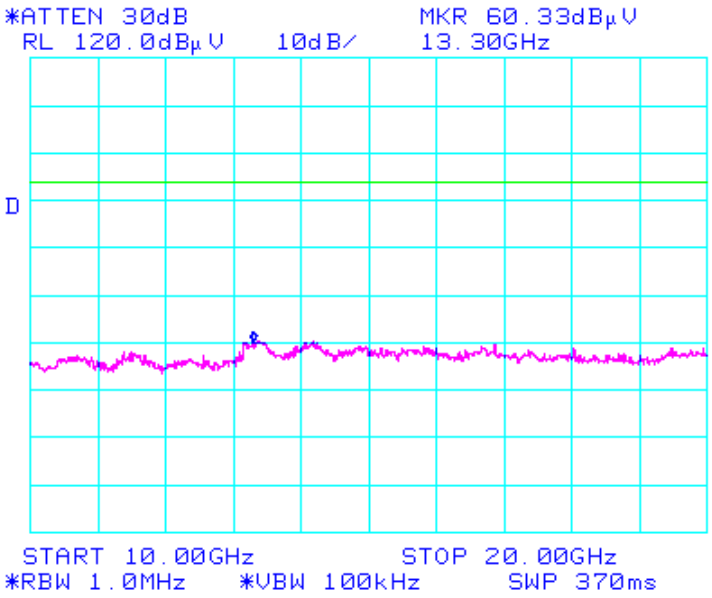


Test Date	*Data*	*Test Eng.*
12/13/02	Channel 11 Spurious Emissions – Antenna Terminal 2 GHz – 10 GHz	Rick Candelas *(INTEL-021205-38)*

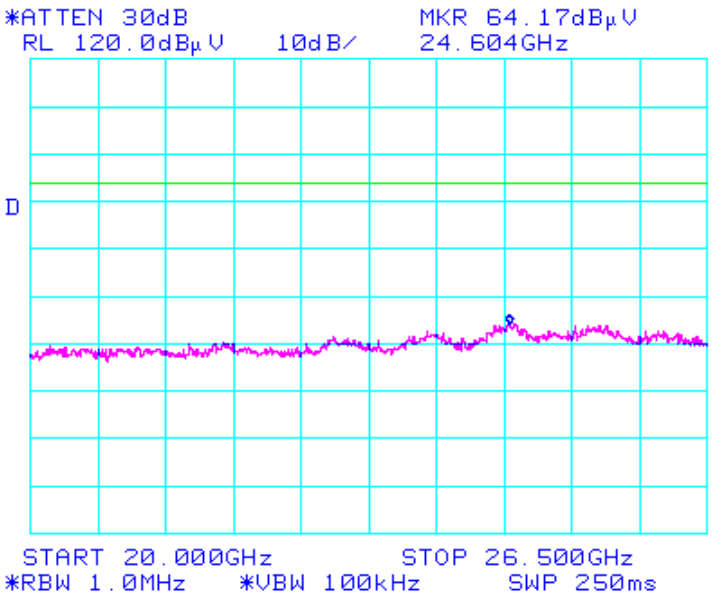


SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 11 Spurious Emissions – Antenna Terminal 10 GHz - 20 GHz	Rick Candelas *(INTEL-021205-39)*



Test Date	*Data*	*Test Eng.*
12/13/02	Channel 11 Spurious Emissions – Antenna Terminal 20 GHz – 26.5 G	Rick Candelas *(INTEL-021205-40)*



BAND EDGE EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL

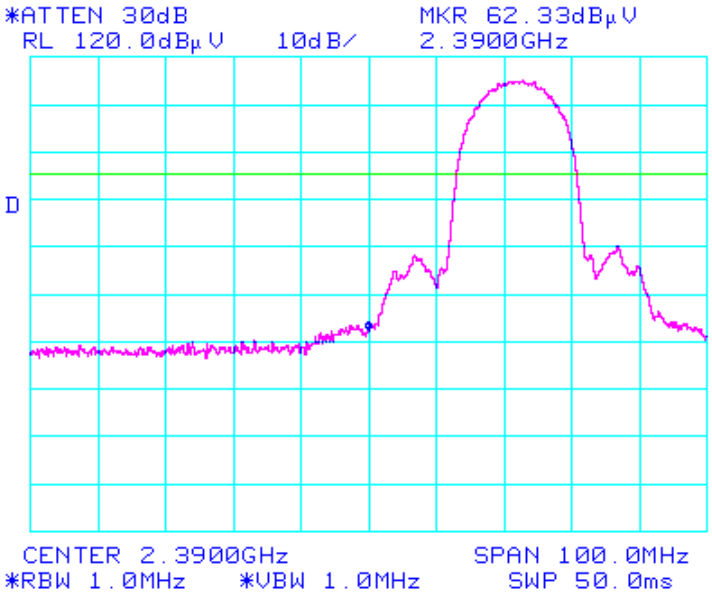
CLIENT:	Toshiba Corporation	**DATE:**	12/13/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: *Conducted Measurement @ WLAN Port*		**TEMPERATURE:**	25 C
		HUMIDITY:	38% RH
		TIME:	11:00 AM

Standard:	FCC CFR 47, Part 15, 15.247(c)
Description:	Conducted Band Edge Emissions
Results:	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.

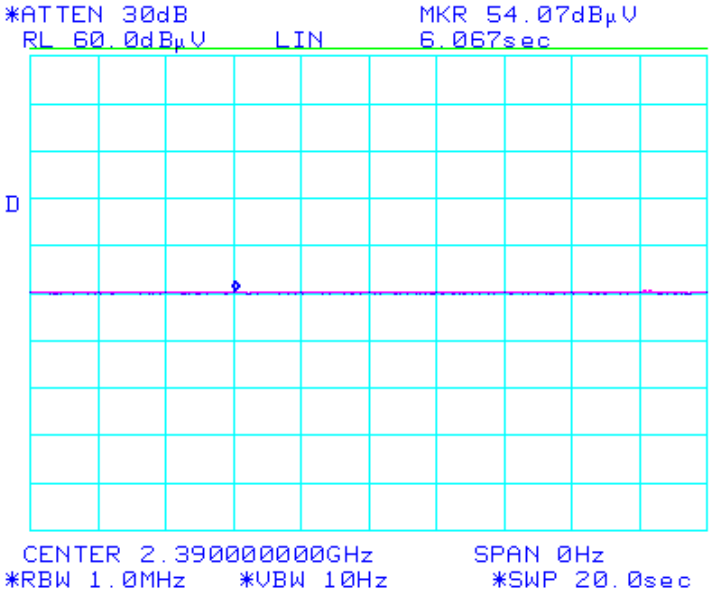
TEST RESULTS SUMMARY	
Data	**Result**
Channel 1 Band Edge Measurement Peak Measurement @ 2390 MHz	>20 dBc – Pass
Channel 1 Band Edge Measurement Average Measurement @ 2390 MHz	54.07 dBuV - Pass
Channel 11 Band Edge Measurement Peak Measurement @ 2483.5 MHz	>20 dBc – Pass
Channel 11 Band Edge Measurement Average Measurement @ 2483.5 MHz	57.04 dBuV - Pass

CONDUCTED BAND EDGE EMISSIONS MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 1 Band Edge Measurement Peak Measurement @ 2390 MHz	Rick Candelas *(INTEL-021205-41)*

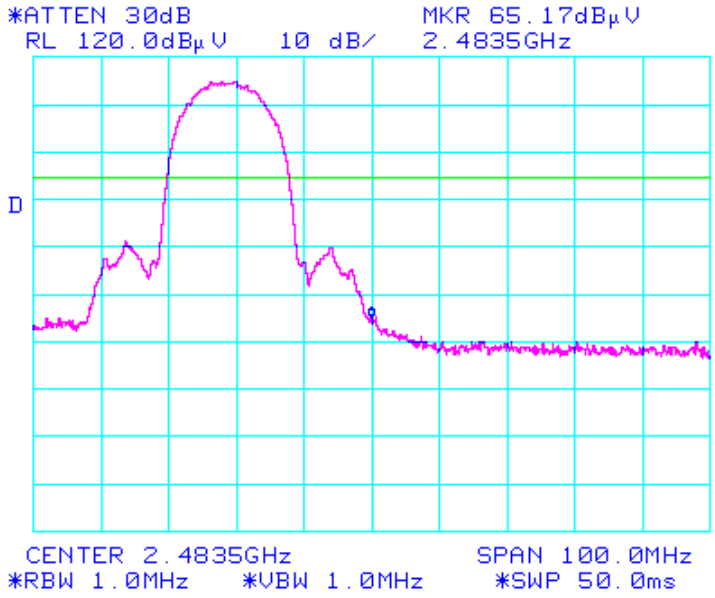


Test Date	*Data*	*Test Eng.*
12/13/02	Channel 1 Band Edge Measurement Average Measurement @ 2390 MHz	Rick Candelas *(INTEL-021205-42)*

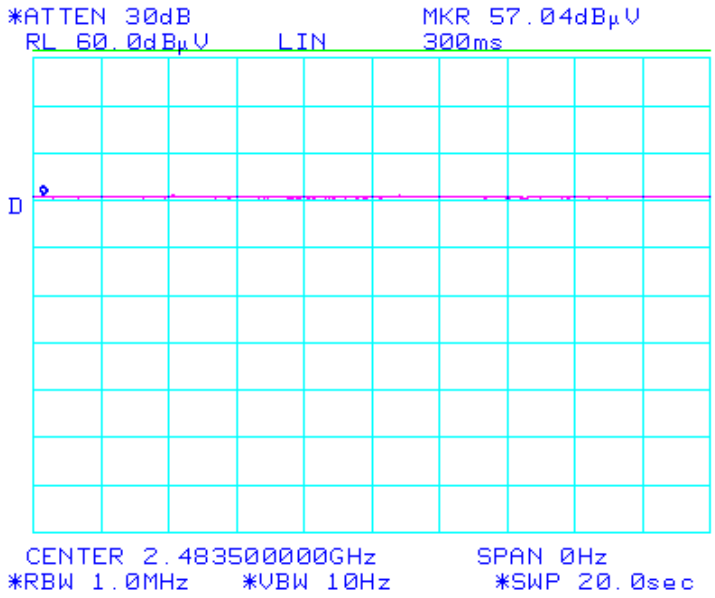


CONDUCTED BAND EDGE EMISSIONS MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 11 Band Edge Measurement Peak Measurement @ 2483.5 MHz	Rick Candelas *(INTEL-021205-43)*



Test Date	*Data*	*Test Eng.*
12/13/02	Channel 11 Band Edge Measurement Average Measurement @ 2483.5 MHz	Rick Candelas *(INTEL-021205-44)*

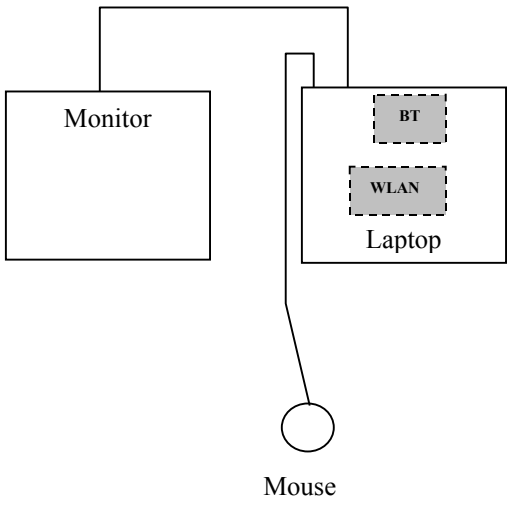


CONDUCTED MEASUREMENTS SETUP

TEST EQUIPMENT USED					
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**	**Calibration Due Date**	**Calibration Cycle**
Spectrum Analyzer	Agilent	8564EC	4046A00387	02/28/04	2 Years
DC Block	Inmet	8039	N/A	N/A	N/A
Power Meter	Rohde & Schwarz	NRVS	DE30863	11/24/03	1 Year
Power Sensor	Leistungsmesskoph	NRV-Z5	844855/012	11/24/03	1 Year
Temperature / Humidity Monitor	Dickson	TH550	7255185	01/08/03	1 Year

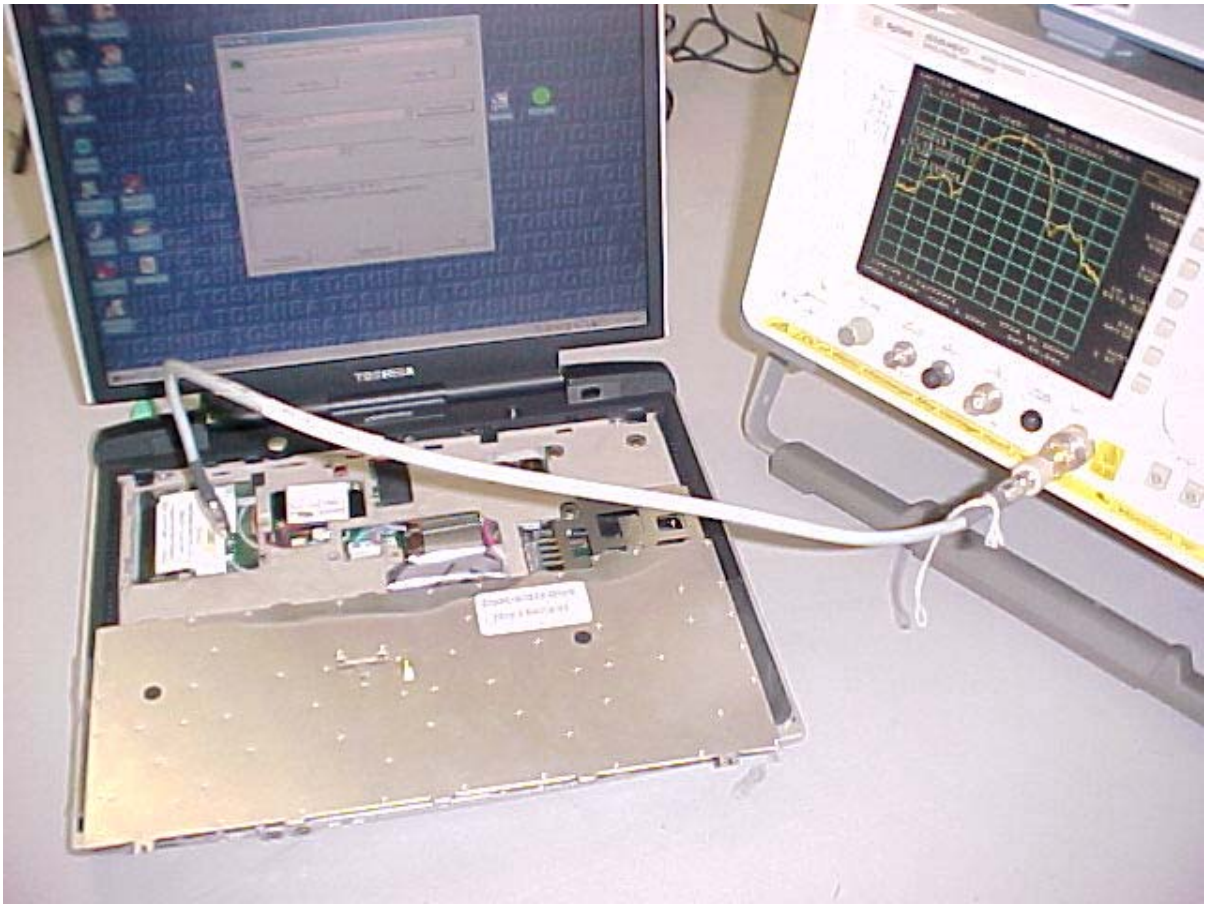
EUT ACCESSORIES			
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**
Tecra 9100 Laptop (with Dual Band Film Antennas)	Toshiba	PT910U-AAAA7	12050065JU
AC Adapter	Toshiba	PA3083U-1ACA	0108 A 0000774G
Monitor	NEC	JC-1575VMA	2Y785821
Mouse	Logitech	M-BJ58	830513-1000

BLOCK DIAGRAM



CONDUCTED MEASUREMENTS SETUP (Continued)

PHOTOGRAPHS



WLAN = ON, BT = ON

With Dual Band Film Antennas
EUT installed in Toshiba Tecra 9100 SN: 12050065JU

MAXIMUM PEAK OUTPUT POWER MEASUREMENT

CLIENT:	Toshiba Corporation	**DATE:**	12/10/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205-04
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	N/A	**SITE #:**	2
CONFIGUARTION: *Measurements taken @ WLAN Port*		**TEMPERATURE:**	22 C
		HUMIDITY:	38% RH
		TIME:	12:00 PM

Standard:	FCC CFR 47, Part 15, 15.247(b)
Description:	Peak Output Power – Conducted
Results:	See Data Sheets

Frequency (MHz)	Rate (Mbps)	Power (dBm)	Cable Factor (dB)	Power Corrected (dBm)	Power (mW)
2412.00	1	16.65	0.15	16.80	47.86
2412.00	5.5	16.40	0.15	16.55	45.19
2412.00	11	16.32	0.15	16.47	44.36
2437.00	1	16.58	0.15	16.73	47.10
2437.00	5.5	16.49	0.15	16.64	46.13
2437.00	11	16.20	0.15	16.35	43.15
2462.00	1	16.50	0.15	16.65	46.24
2462.00	5.5	16.35	0.15	16.50	44.67
2462.00	11	16.24	0.15	16.39	43.55

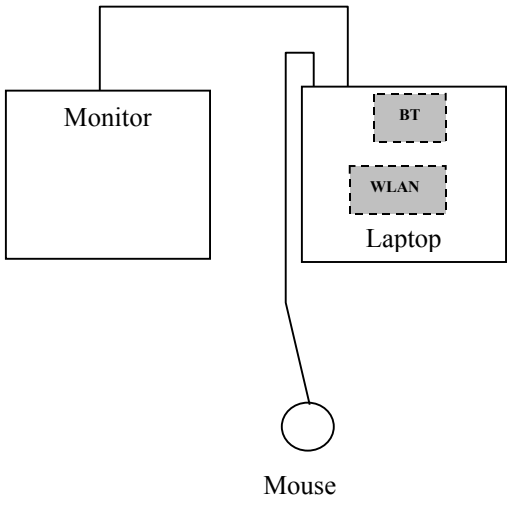
NOTE: Using CRTU Ver. 1.1.3 software provided by Intel Corporation to set power limits.

MAXIMUM PEAK OUTPUT POWER MEASUREMENT (Continued)

TEST EQUIPMENT USED					
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**	**Calibration Due Date**	**Calibration Cycle**
Spectrum Analyzer	Agilent	8564EC	4046A00387	02/28/04	2 Years
DC Block	Inmet	8039	N/A	N/A	N/A
Power Meter	Rohde & Schwarz	NRVS	DE30863	11/24/03	1 Year
Power Sensor	Leistungsmesskoph	NRV-Z5	844855/012	11/24/03	1 Year
Temperature / Humidity Monitor	Dickson	TH550	7255185	01/08/03	1 Year

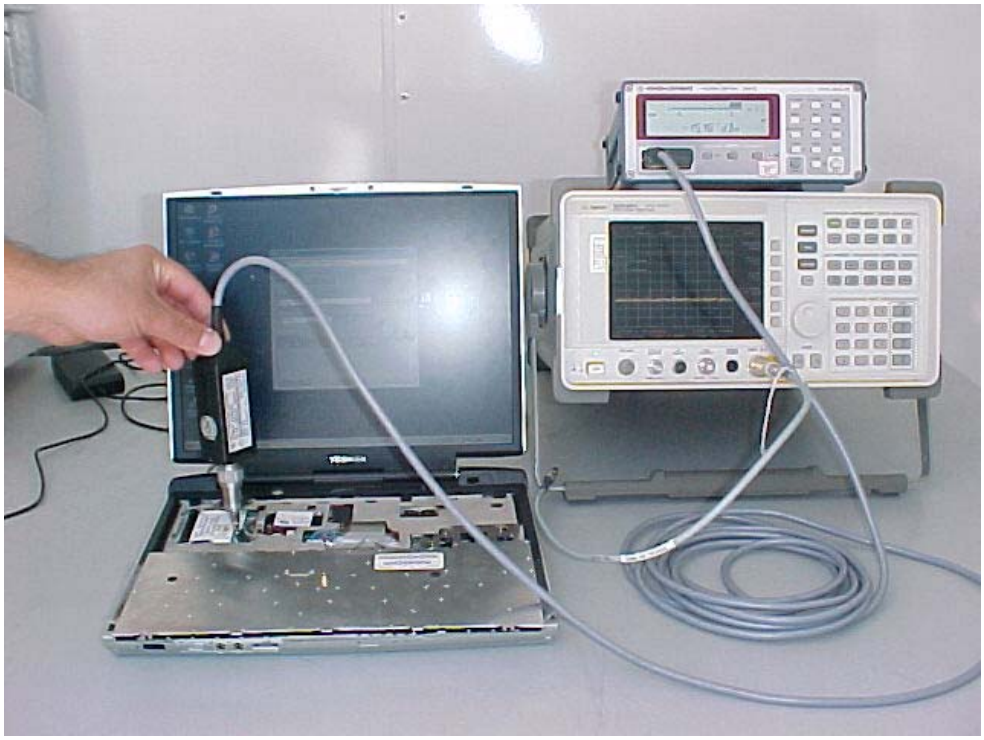
EUT ACCESSORIES			
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**
Tecra 9100 Laptop (with Wide Dual Band Film Antennas)	Toshiba	PT910U-AAAA7	12040506JU
AC Adapter	Toshiba	PA3083U-1ACA	0108 A 0000068G
Tecra 9100 Laptop (with Dual Band Film Antennas)	Toshiba	PT910U-AAAA7	12050065JU
AC Adapter	Toshiba	PA3083U-1ACA	0108 A 0000774G
Monitor	NEC	JC-1575VMA	2Y785821
Mouse	Logitech	M-BJ58	830513-1000

BLOCK DIAGRAM



MAXIMUM PEAK OUTPUT POWER MEASUREMENT (Continued)

PHOTOGRAPHS



SPURIOUS RADIATED EMISSIONS

CLIENT:	Toshiba Corporation	**DATE:**	12/11/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: WLAN ON, BT ON		**TEMPERATURE:**	17 C
		HUMIDITY:	35% RH
		TIME:	8:00 AM

Standard:	FCC CFR 47, Part 15, 15.247(c), 15.209
Description:	Spurious Emissions Measurements - Radiated
Results:	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 is 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.

SPURIOUS RADIATED EMISSIONS (Continued)

Fundamental and Band Edge Measurements at Channels 1, 6, & 11
Aegis Labs, Inc. File #: INTEL-021205-17

Horizontal Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
2412.87	76.00	100	135			109.63		
2390.00	33.45	100	135			67.01	74.00	-6.99
2390.00				17.95	A	51.51	54.00	-2.49
2436.04	76.38	100	135			110.08		
2461.03	77.50	100	135			111.28		
2483.50	32.10	100	135			65.95	74.00	-8.05
2483.50				18.45	A	52.30	54.00	-1.70

Vertical Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
2412.88	74.26	200	135			107.89		
2390.00	30.45	200	135			64.01	74.00	-9.99
2390.00				18.01	A	51.57	54.00	-2.43
2436.66	73.40	200	90			107.10		
2461.03	73.65	200	90			107.43		
2483.50	31.87	200	90			65.72	74.00	-8.28
2483.50				18.03	A	51.88	54.00	-2.12

SPURIOUS RADIATED EMISSIONS (Continued)

Harmonic Measurements at Channels 1, 6, & 11@ 1Mbps Data Rate
Aegis Labs, Inc. File #: INTEL-021205-18

Horizontal Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
4823.68	43.54	100	180			47.79	74.00	-26.21
4823.68				33.12	A	37.37	54.00	-16.63
7236.48	43.65	100	135			51.87	74.00	-22.13
7236.48				30.40	A	38.62	54.00	-15.38
9648.29	44.51	100	135			53.68	89.63	-35.95
4874.06	40.80	100	180			45.17	74.00	-28.83
4874.06				30.87	A	35.24	54.00	-18.76
7311.09	41.98	100	135			50.30	74.00	-23.70
7311.09				29.45	A	37.77	54.00	-16.23
9747.68	44.98	100	180			54.27	90.08	-35.81
4924.02	42.50	150	180			46.98	74.00	-27.02
4924.02				34.98	A	39.46	54.00	-14.54
7386.27	45.00	100	135			53.43	74.00	-20.57
7386.27				30.12	A	38.55	54.00	-15.45
9847.76	43.82	100	225			53.23	91.28	-38.05
Vertical Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
4824.00	45.00	100	135			49.25	74.00	-24.75
4824.00				34.65	A	38.90	54.00	-15.10
7235.87	41.87	100	180			50.08	74.00	-23.92
7235.87				28.54	A	36.75	54.00	-17.25
9647.84	44.56	100	135			53.73	87.89	-34.16
4874.28	43.87	100	135			48.24	74.00	-25.76
4874.28				32.00	A	36.37	54.00	-17.63
7310.50	40.87	100	180			49.19	74.00	-24.81
7310.50				29.65	A	37.97	54.00	-16.03
9748.30	42.65	100	138			51.94	87.10	-35.16
4924.04	42.50	100	135			46.98	74.00	-27.02
4924.04				36.00	A	40.48	54.00	-13.52
7381.68	43.00	100	225			51.43	74.00	-22.57
7381.68				30.51	A	38.94	54.00	-15.06
9847.96	44.30	100	225			53.71	87.43	-33.72

SPURIOUS RADIATED EMISSIONS (Continued)

Spurious Emissions Measurements on Ch. 1 @ 1Mbps Data Rate
Aegis Labs, Inc. File #: INTEL-021205-19

Horizontal Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
1065.66	54.12	100	90			45.57	74.00	-28.43
1065.66				37.54	A	28.99	54.00	-25.01
1200.02	64.50	100	315			56.55	74.00	-17.45
1200.02				40.00	A	32.05	54.00	-21.95
1495.01	54.60	100	135			47.86	74.00	-26.14
1495.01				45.68	A	38.94	54.00	-15.06
1592.48	59.01	100	135			52.43	74.00	-21.57
1592.48				49.87	A	43.29	54.00	-10.71

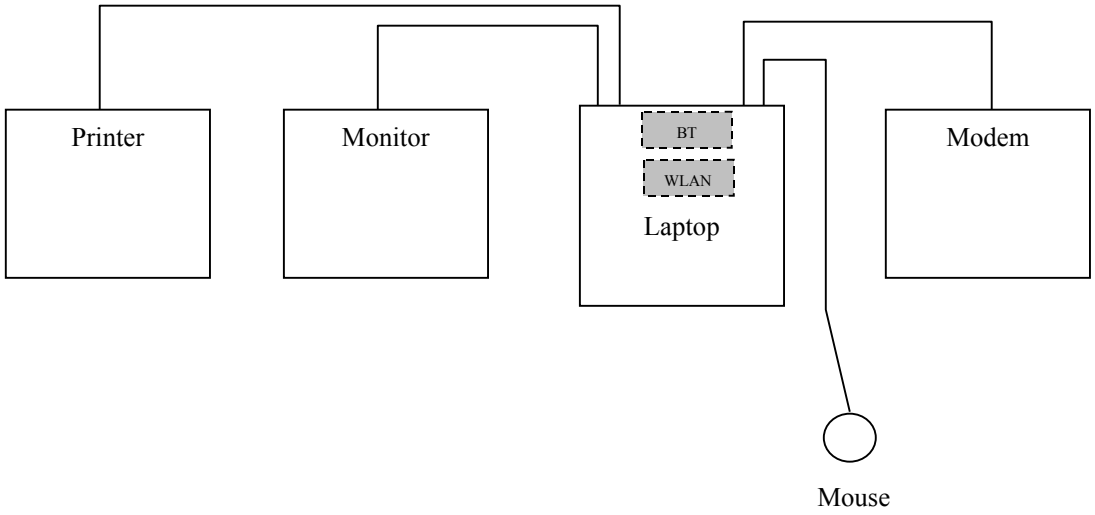
Vertical Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
1064.65	54.86	100	225			46.31	74.00	-27.69
1064.65				37.56	A	29.01	54.00	-24.99
1162.36	59.00	100	225			51.05	74.00	-22.95
1162.36				57.54	A	49.59	54.00	-4.41
1200.00	52.64	100	225			44.69	74.00	-29.31
1200.00				40.80	A	32.85	54.00	-21.15
1328.48	55.12	100	45			47.51	74.00	-26.49
1328.48				42.98	A	35.37	54.00	-18.63
1494.71	58.00	100	0			51.26	74.00	-22.74
1494.71				54.32	A	47.58	54.00	-6.42

SPURIOUS RADIATED EMISSIONS (Continued)

TEST EQUIPMENT USED					
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**	**Calibration Due Date**	**Calibration Cycle**
Spectrum Analyzer	Agilent	8564EC	4046A00387	02/28/04	2 Years
Preamplifier	Agilent	8449B	3008A01573	04/29/03	1 Year
Antenna - Horn	EMCO	3115	2230	09/14/03	1 Year
Temperature/Humidity Monitor	Dickson	TH550	7255185	01/08/03	1 Year

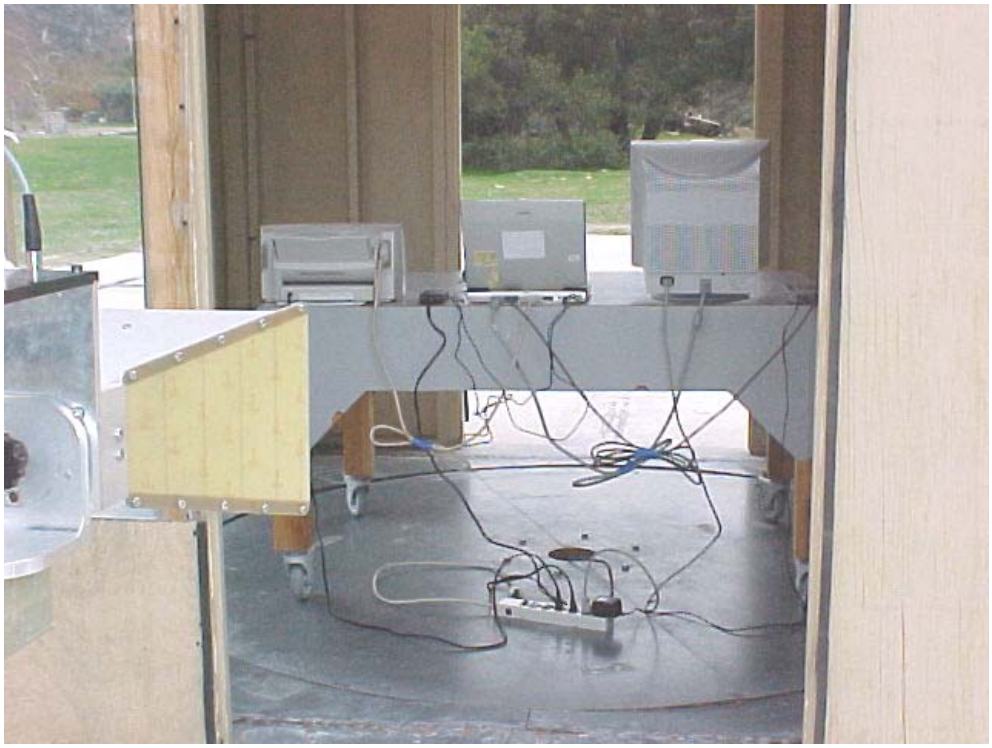
EUT ACCESSORIES			
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**
Tecra 9100 Laptop (with Dual Band Film Antennas)	Toshiba	PT910U-AAAA7	12050065JU
AC Adapter	Toshiba	PA3083U-1ACA	0108 A 0000774G
Monitor	NEC	JC-1575VMA	2Y785821
Mouse	Logitech	M-BJ58	830513-1000
Printer	Canon	BJC-4200	MT1-18
Modem	Hayes	5362US	A02153623145

BLOCK DIAGRAM



SPURIOUS RADIATED EMISSIONS (Continued)

PHOTOGRAPHS



OCCUPIED BANDWIDTH MEASUREMENT

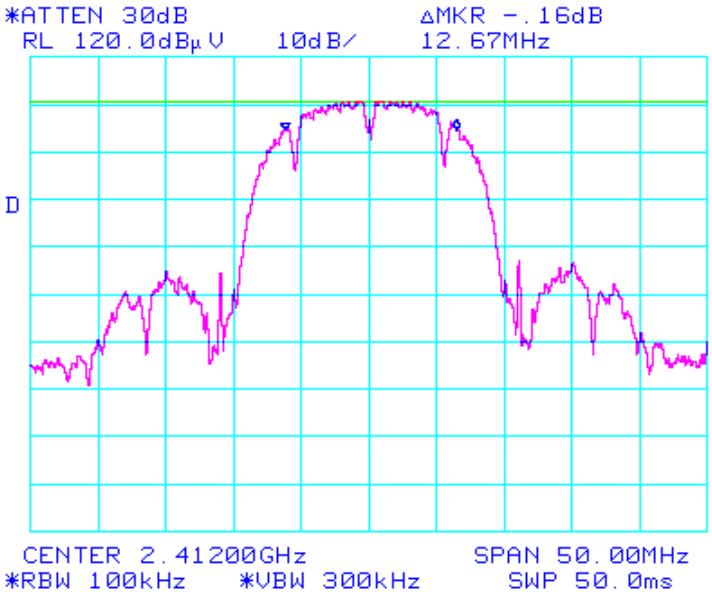
CLIENT:	Toshiba Corporation	**DATE:**	12/13/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: *Conducted Measurement @ WLAN Port*		**TEMPERATURE:**	25 C
		HUMIDITY:	38% RH
		TIME:	1:00 PM

Standard:	FCC CFR 47, Part 15, 15.247(a)(2)
Description:	Occupied Bandwidth Measurement
Results:	6dB bandwidth is at least 500 kHz.

TEST RESULTS SUMMARY	
Data	**Result**
Channel 1 Occupied Bandwidth	12.67 MHz 6 dB Bandwidth
Channel 6 Occupied Bandwidth	12.75 MHz 6 dB Bandwidth
Channel 11 Occupied Bandwidth	12.42 MHz 6dB Bandwidth

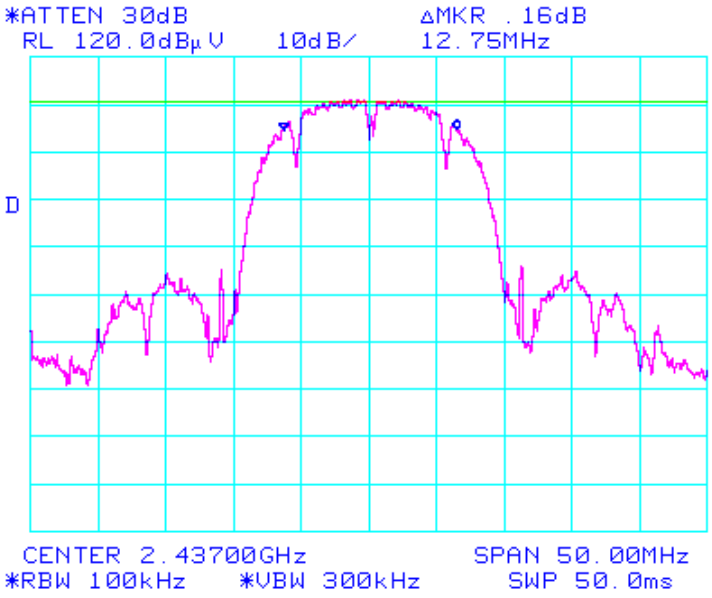
OCCUPIED BANDWIDTH MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 1 Occupied Bandwidth	Rick Candelas *(INTEL-021205-45)*



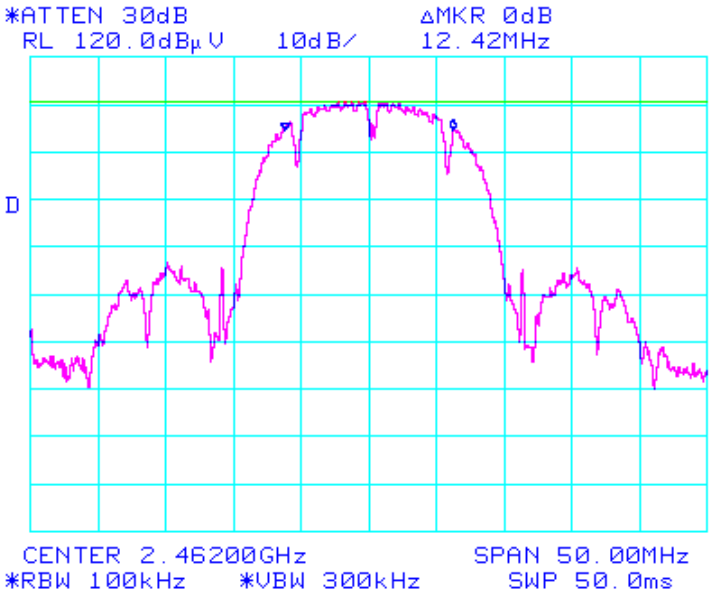
OCCUPIED BANDWIDTH MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 6 Occupied Bandwidth	Rick Candelas *(INTEL-021205-46)*



OCCUPIED BANDWIDTH MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 11 Occupied Bandwidth	Rick Candelas *(INTEL-021205-47)*



SPECTRAL POWER DENSITY MEASUREMENT

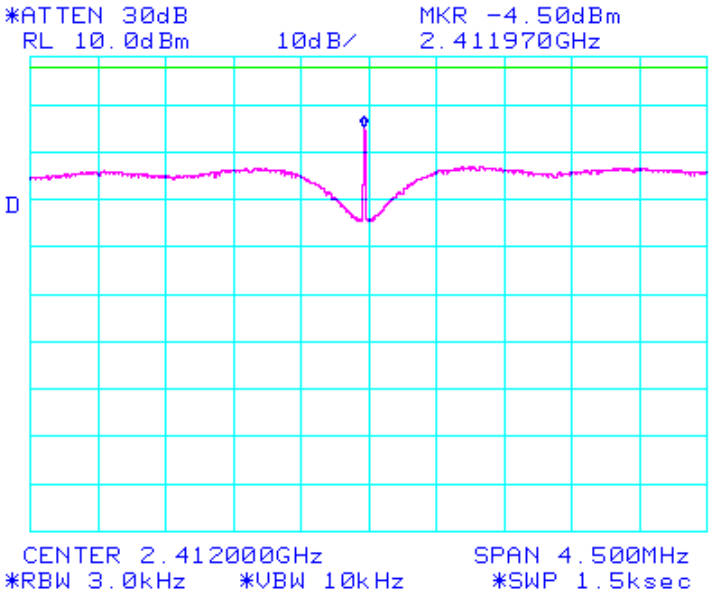
CLIENT:	Toshiba Corporation	**DATE:**	12/13/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: *Conducted Measurement @ WLAN Port*		**TEMPERATURE:**	25 C
		HUMIDITY:	38% RH
		TIME:	2:00 PM

Standard:	FCC CFR 47, Part 15, 15.247(D)
Description:	Power Spectral Density Measurement
Results:	Transmitted power density averaged over any 1 second interval is not greater than 8 dBm in any 3 kHz bandwidth within these bands

TEST RESULTS SUMMARY	
Data	**Result**
Channel 1 Power Spectral Density	-4.50 dBm – Pass
Channel 6 Power Spectral Density	-4.00 dBm – Pass
Channel 11 Power Spectral Density	-5.67 dBm - Pass

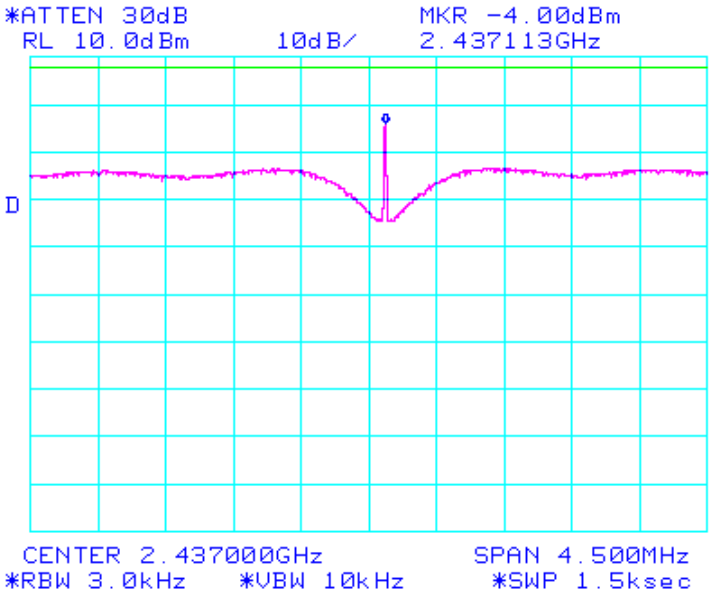
SPECTRAL POWER DENSITY MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 1 Power Spectral Density	Rick Candelas *(INTEL-021205-48)*



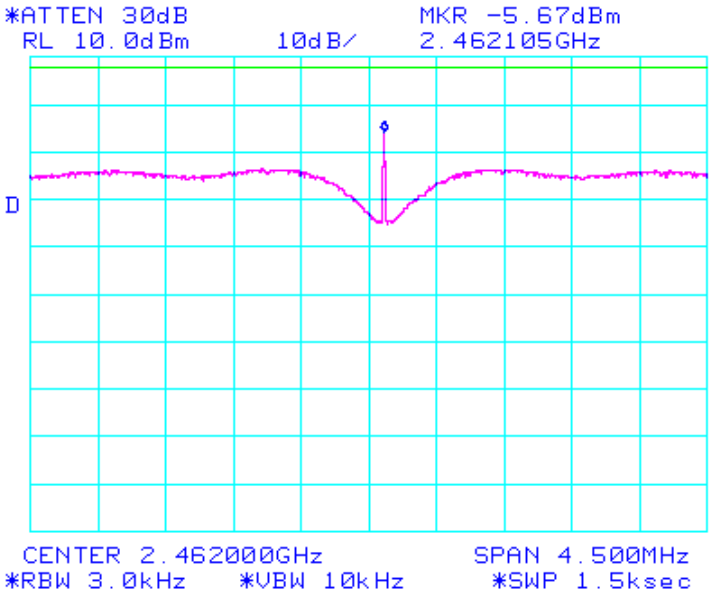
SPECTRAL POWER DENSITY MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 6 Power Spectral Density	Rick Candelas *(INTEL-021205-49)*



SPECTRAL POWER DENSITY MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 11 Power Spectral Density	Rick Candelas *(INTEL-021205-50)*



SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL

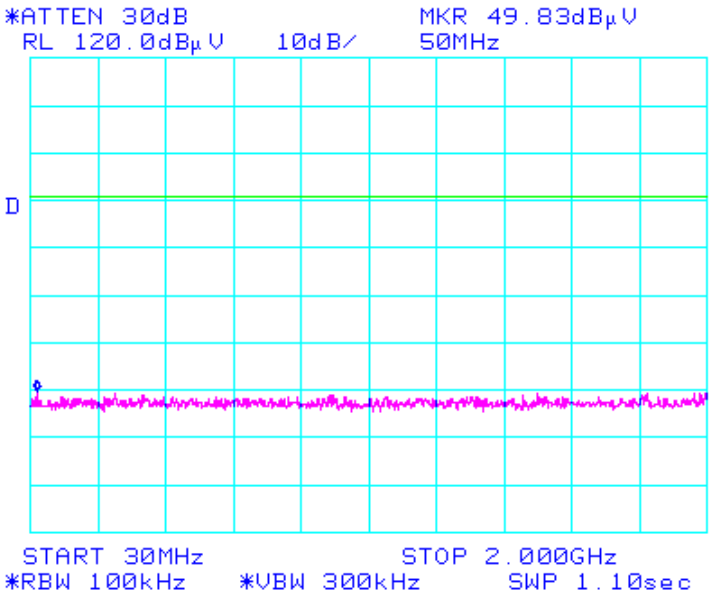
CLIENT:	Toshiba Corporation	**DATE:**	12/13/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: *Conducted Measurement @ WLAN Port*		**TEMPERATURE:**	25 C
		HUMIDITY:	38% RH
		TIME:	2:00 PM

Standard:	FCC CFR 47, Part 15, 15.247(c)
Description:	Conducted Spurious Emissions
Results:	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.

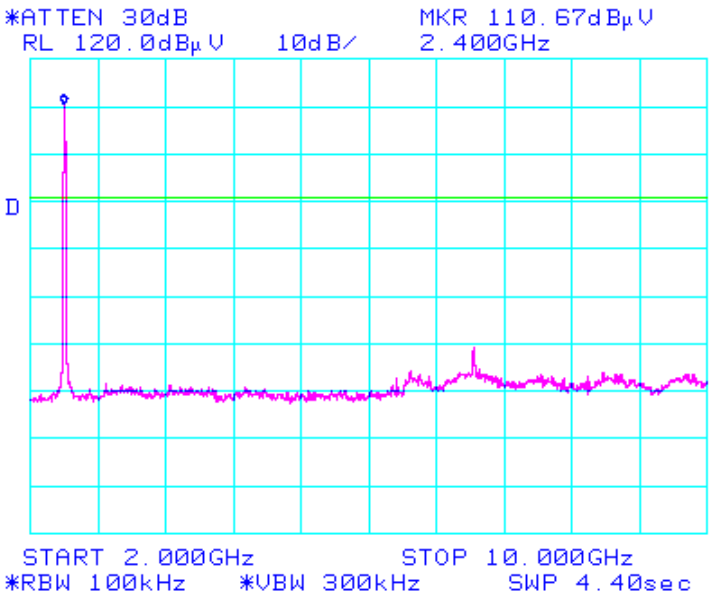
TEST RESULTS SUMMARY	
Data	**Result**
Channel 1 Spurious Emissions – Antenna Terminal - 30MHz – 2GHz	Max Spur Signal @ 49.83dBuV – Pass
Channel 1 Spurious Emissions – Antenna Terminal - 2GHz – 10GHz	Max Spur Signal @ 59.00dBuV – Pass
Channel 1 Spurious Emissions – Antenna Terminal - 10GHz – 20GHz	Max Spur Signal @ 56.50dBuV – Pass
Channel 1 Spurious Emissions – Antenna Terminal - 20GHz – 26.5GHz	Max Spur Signal @ 60.00dBuV – Pass
Channel 6 Spurious Emissions – Antenna Terminal - 30MHz – 2GHz	Max Spur Signal @ 50.17dBuV – Pass
Channel 6 Spurious Emissions – Antenna Terminal - 2GHz – 10GHz	Max Spur Signal @ 55.00dBuV – Pass
Channel 6 Spurious Emissions – Antenna Terminal - 10GHz – 20GHz	Max Spur Signal @ 56.50dBuV – Pass
Channel 6 Spurious Emissions – Antenna Terminal - 20GHz – 26.5GHz	Max Spur Signal @ 60.33dBuV – Pass
Channel 11 Spurious Emissions – Antenna Terminal - 30MHz – 2GHz	Max Spur Signal @ 49.00dBuV – Pass
Channel 11 Spurious Emissions – Antenna Terminal - 2GHz – 10GHz	Max Spur Signal @ 54.00dBuV – Pass
Channel 11 Spurious Emissions – Antenna Terminal - 10GHz – 20GHz	Max Spur Signal @ 56.83dBuV – Pass
Channel 11 Spurious Emissions – Antenna Terminal - 20GHz – 26.5GHz	Max Spur Signal @ 60.17dBuV – Pass

SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 1 Spurious Emissions – Antenna Terminal 30 MHz – 2 GHz	Rick Candelas *(INTEL-021205-51)*

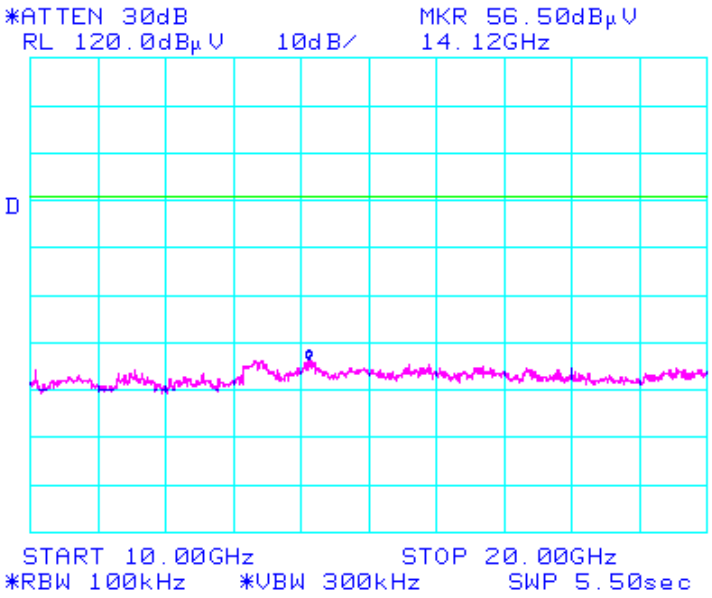


Test Date	*Data*	*Test Eng.*
12/13/02	Channel 1 Spurious Emissions – Antenna Terminal 2 GHz – 10 GHz	Rick Candelas *(INTEL-021205-52)*

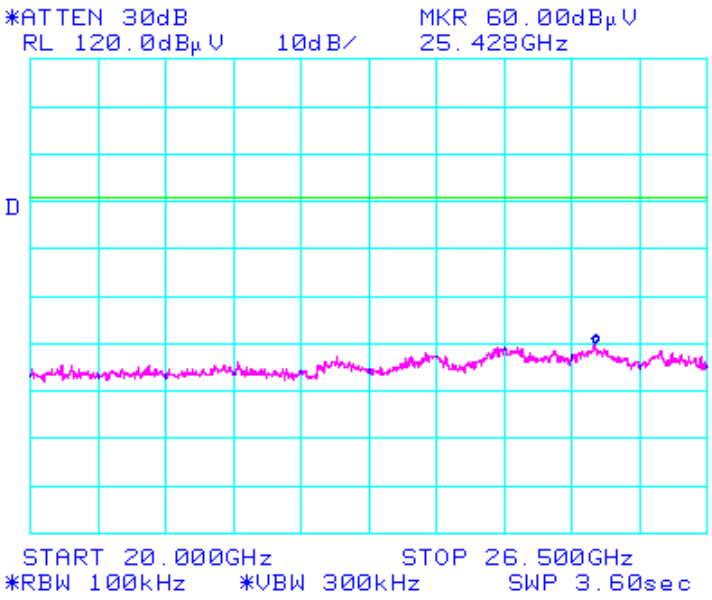


SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 1 Spurious Emissions – Antenna Terminal 10 GHz - 20 GHz	Rick Candelas *(INTEL-021205-53)*

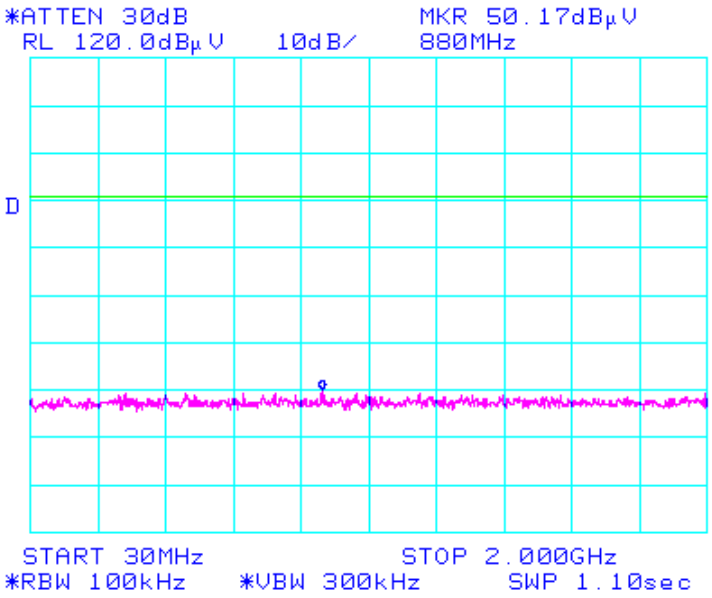


Test Date	*Data*	*Test Eng.*
12/13/02	Channel 1 Spurious Emissions – Antenna Terminal 20 GHz – 26.5 GHz	Rick Candelas *(INTEL-021205-54)*

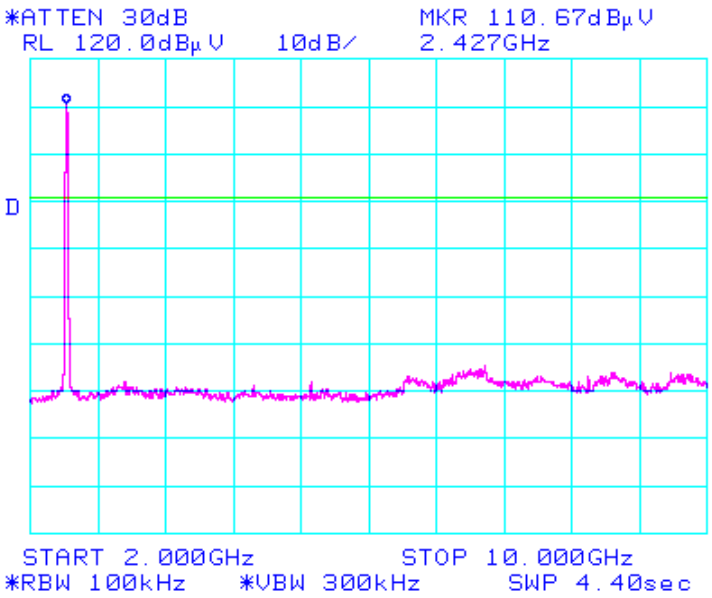


SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 6 Spurious Emissions – Antenna Terminal 30 MHz – 2 GHz	Rick Candelas *(INTEL-021205-55)*

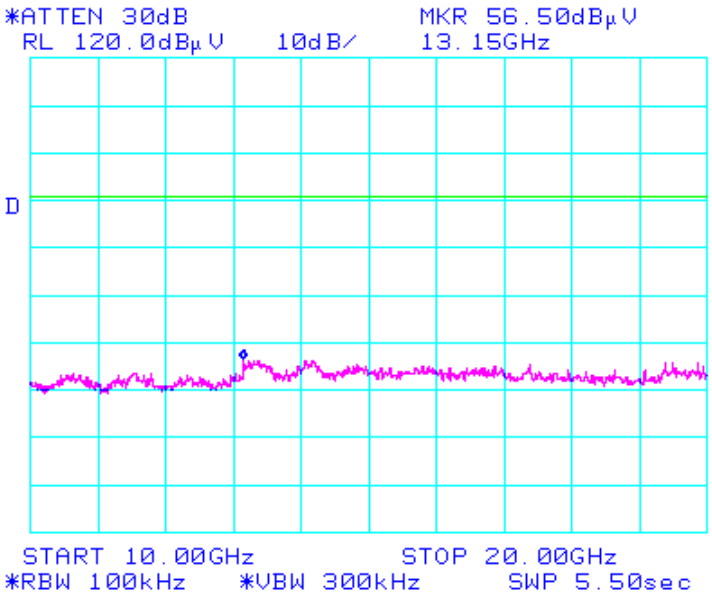


Test Date	*Data*	*Test Eng.*
12/13/02	Channel 6 Spurious Emissions – Antenna Terminal 2 GHz – 10 GHz	Rick Candelas *(INTEL-021205-56)*

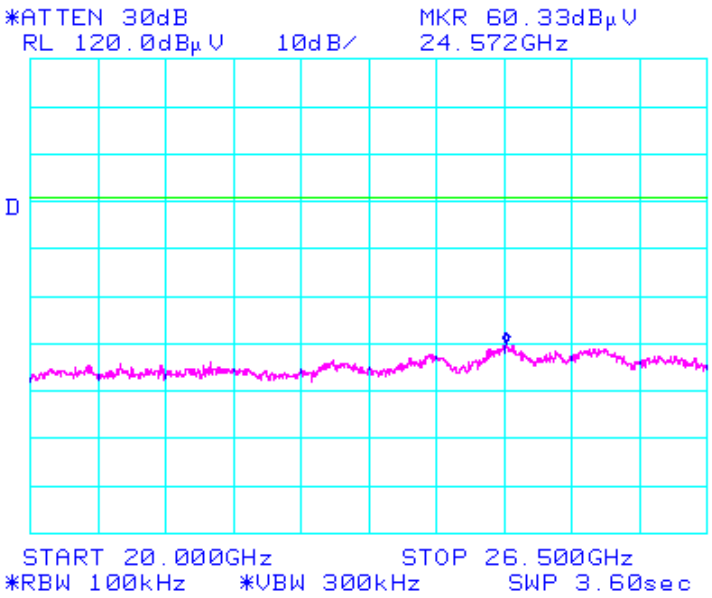


SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 6 Spurious Emissions – Antenna Terminal 10 GHz - 20 GHz	Rick Candelas *(INTEL-021205-57)*

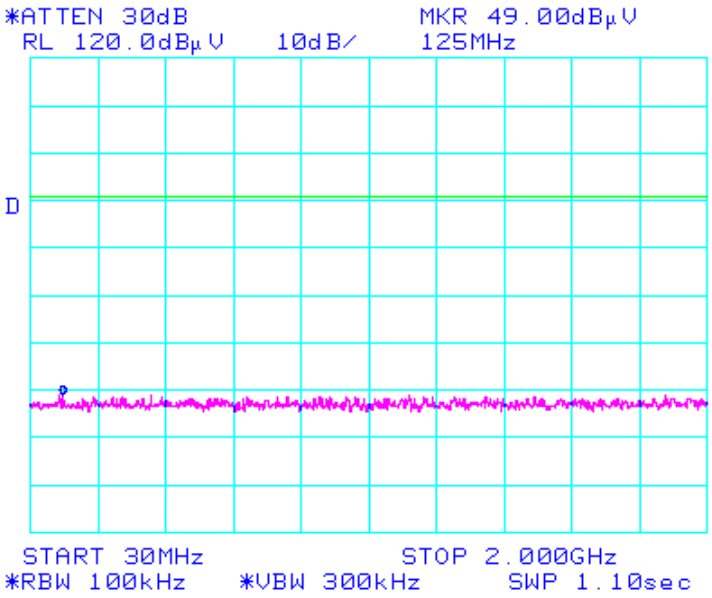


Test Date	*Data*	*Test Eng.*
12/13/02	Channel 6 Spurious Emissions – Antenna Terminal 20 GHz – 26.5 GHz	Rick Candelas *(INTEL-021205-58)*

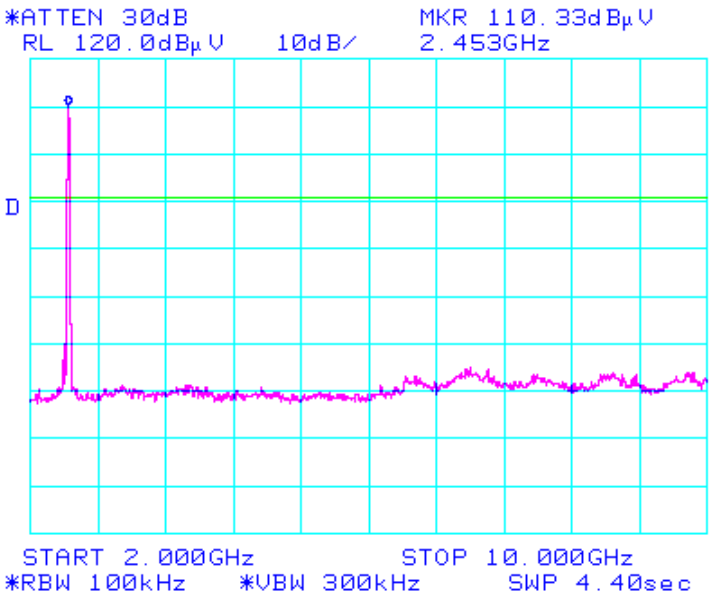


SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 11 Spurious Emissions – Antenna Terminal 30 MHz – 2 GHz	Rick Candelas *(INTEL-021205-59)*

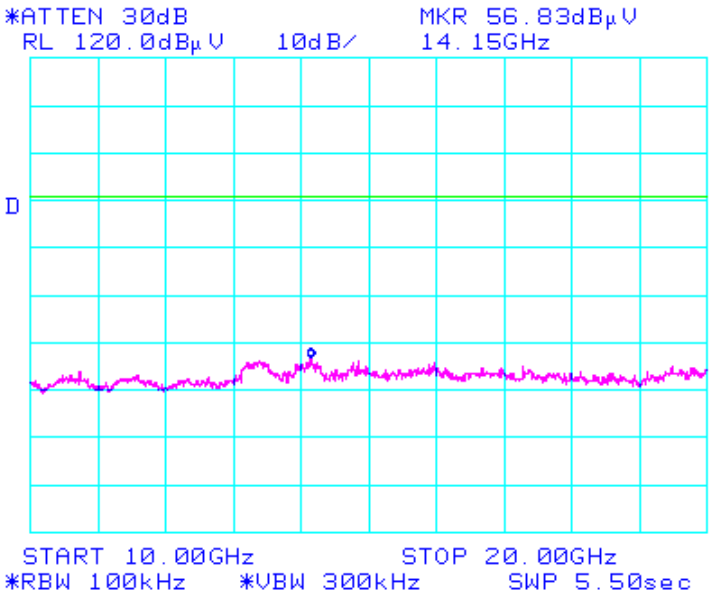


Test Date	*Data*	*Test Eng.*
12/13/02	Channel 11 Spurious Emissions – Antenna Terminal 2 GHz – 10 GHz	Rick Candelas *(INTEL-021205-60)*

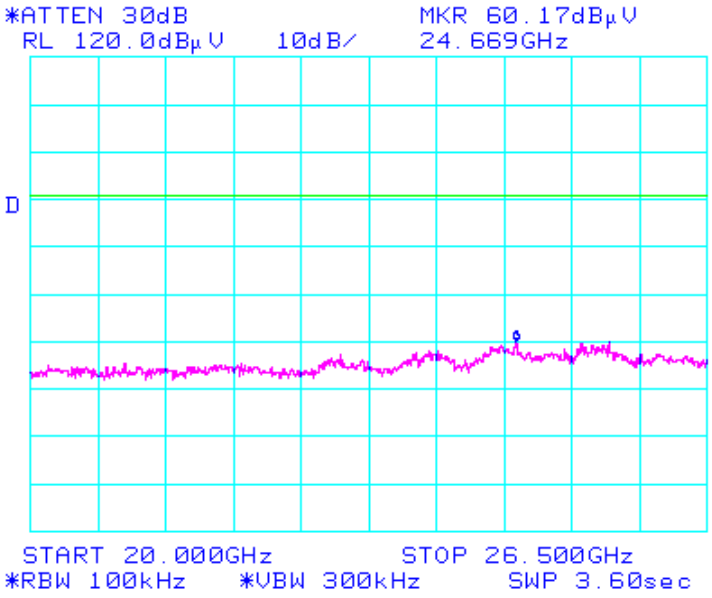


SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 11 Spurious Emissions – Antenna Terminal 10 GHz - 20 GHz	Rick Candelas *(INTEL-021205-61)*



Test Date	*Data*	*Test Eng.*
12/13/02	Channel 11 Spurious Emissions – Antenna Terminal 20 GHz – 26.5 G	Rick Candelas *(INTEL-021205-62)*



BAND EDGE EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL

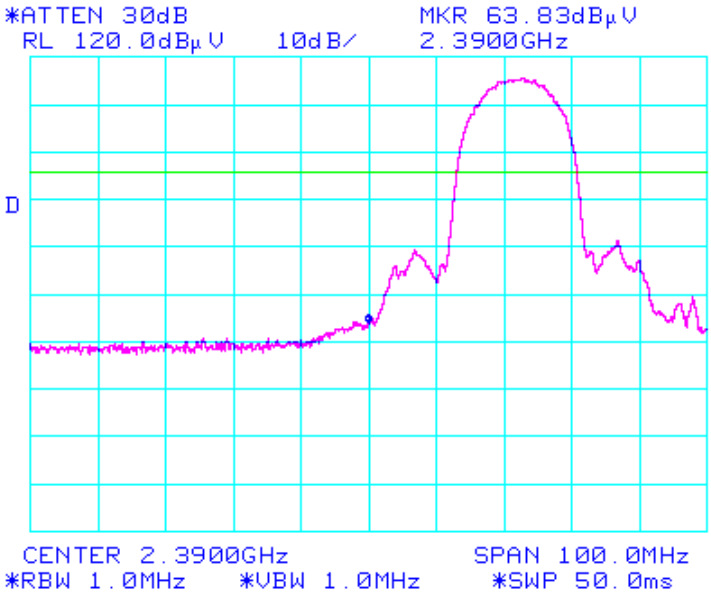
CLIENT:	Toshiba Corporation	**DATE:**	12/13/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: *Conducted Measurement @ WLAN Port*		**TEMPERATURE:**	25 C
		HUMIDITY:	38% RH
		TIME:	3:00 PM

Standard:	FCC CFR 47, Part 15, 15.247(c)
Description:	Conducted Band Edge Emissions
Results:	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.

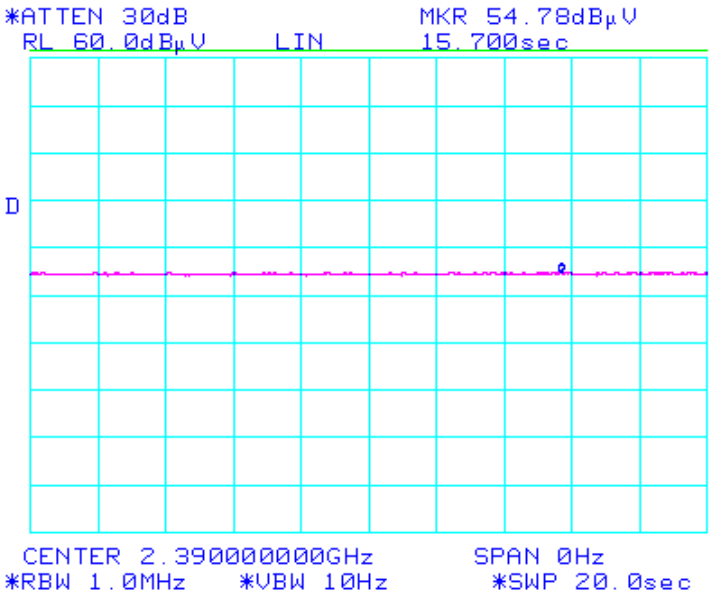
TEST RESULTS SUMMARY	
Data	**Result**
Channel 1 Band Edge Measurement Peak Measurement @ 2390 MHz	>20 dBc – Pass
Channel 1 Band Edge Measurement Average Measurement @ 2390 MHz	54.78 dBuV - Pass
Channel 11 Band Edge Measurement Peak Measurement @ 2483.5 MHz	>20 dBc – Pass
Channel 11 Band Edge Measurement Average Measurement @ 2483.5 MHz	59.08 dBuV - Pass

CONDUCTED BAND EDGE EMISSIONS MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 1 Band Edge Measurement Peak Measurement @ 2390 MHz	Rick Candelas *(INTEL-021205-63)*

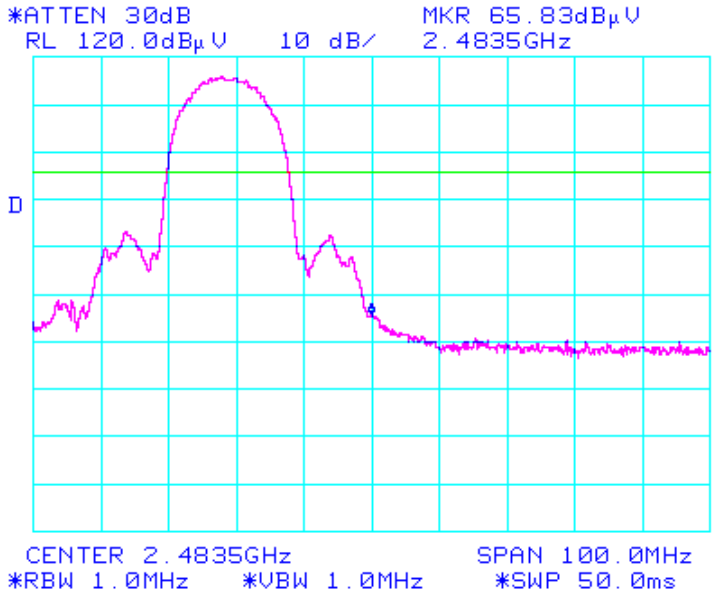


Test Date	*Data*	*Test Eng.*
12/13/02	Channel 1 Band Edge Measurement Average Measurement @ 2390 MHz	Rick Candelas *(INTEL-021205-64)*

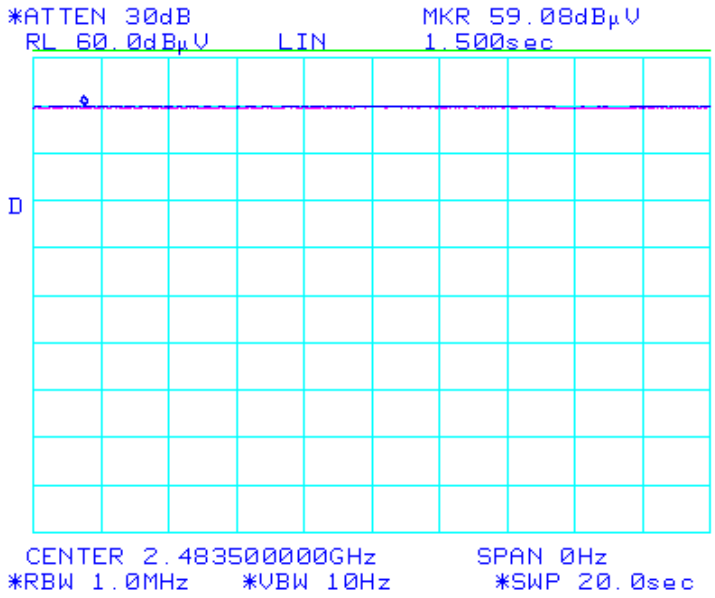


CONDUCTED BAND EDGE EMISSIONS MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Channel 11 Band Edge Measurement Peak Measurement @ 2483.5 MHz	Rick Candelas *(INTEL-021205-65)*



Test Date	*Data*	*Test Eng.*
12/13/02	Channel 11 Band Edge Measurement Average Measurement @ 2483.5 MHz	Rick Candelas *(INTEL-021205-66)*

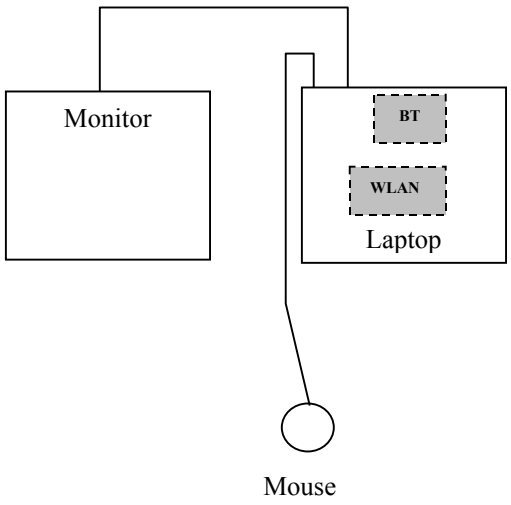


CONDUCTED MEASUREMENTS SETUP

TEST EQUIPMENT USED					
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**	**Calibration Due Date**	**Calibration Cycle**
Spectrum Analyzer	Agilent	8564EC	4046A00387	02/28/04	2 Years
DC Block	Inmet	8039	N/A	N/A	N/A
Power Meter	Rohde & Schwarz	NRVS	DE30863	11/24/03	1 Year
Power Sensor	Leistungsmesskoph	NRV-Z5	844855/012	11/24/03	1 Year
Temperature / Humidity Monitor	Dickson	TH550	7255185	01/08/03	1 Year

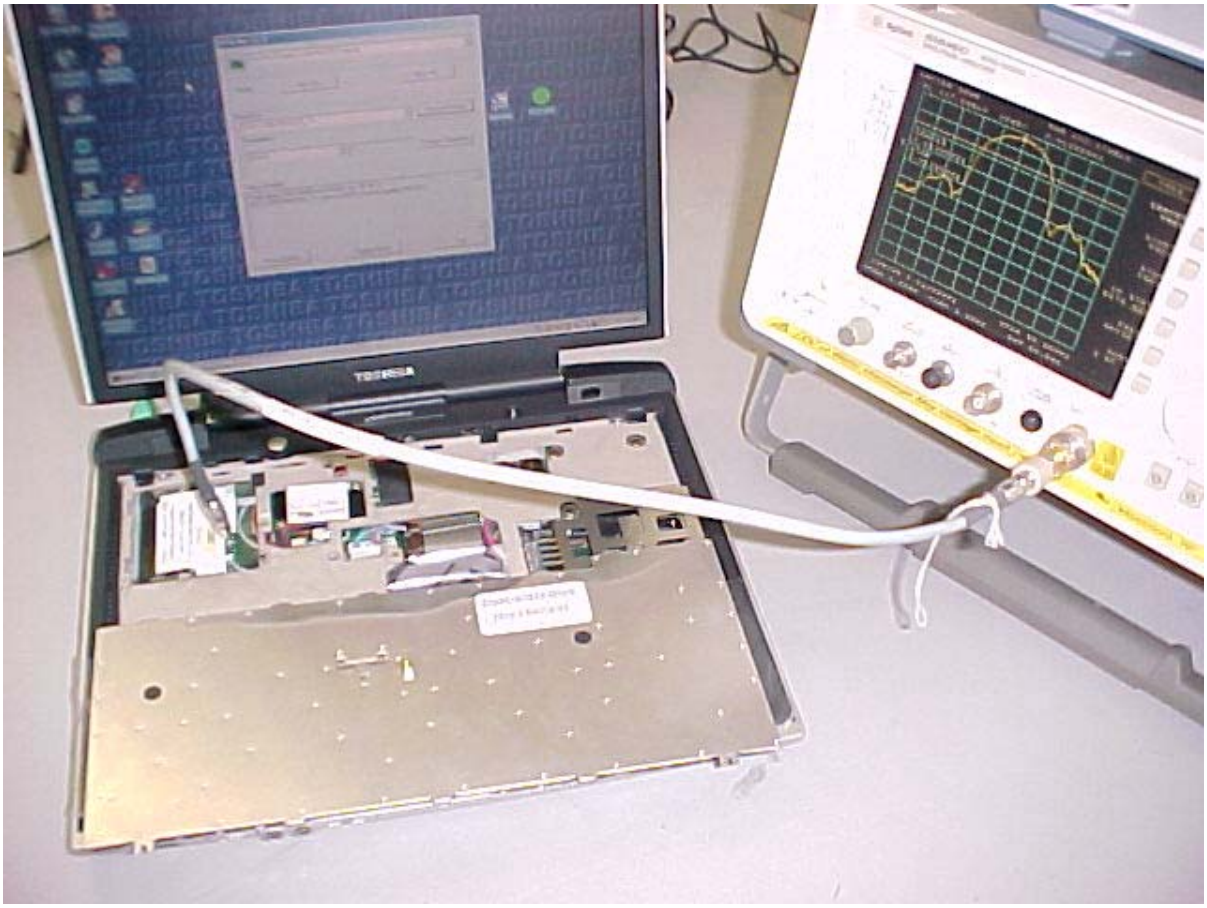
EUT ACCESSORIES			
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**
Tecra 9100 Laptop (with Dual Band Film Antennas)	Toshiba	PT910U-AAAA7	12050065JU
AC Adapter	Toshiba	PA3083U-1ACA	0108 A 0000774G
Monitor	NEC	JC-1575VMA	2Y785821
Mouse	Logitech	M-BJ58	830513-1000

BLOCK DIAGRAM



CONDUCTED MEASUREMENTS SETUP (Continued)

PHOTOGRAPHS



WLAN = OFF, BT = ON

With Dual Band Film Antennas
EUT installed in Toshiba Tecra 9100 SN: 12050065JU

MAXIMUM PEAK OUTPUT POWER MEASUREMENT

CLIENT:	Toshiba Corporation	**DATE:**	12/10/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205-03
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	N/A	**SITE #:**	2
CONFIGUARTION: *Measurements taken @ BT Port*		**TEMPERATURE:**	20 C
		HUMIDITY:	37% RH
		TIME:	11:00 AM

Standard:	FCC CFR 47, Part 15, 15.247(b)
Description:	Peak Output Power – Conducted
Results:	See Data Sheets

Frequency (MHz)	Power (dBm)	Cable Factor (dB)	Power Corrected (dBm)	Power (mW)
2402.00	-0.09	0.15	0.06	1.01
2441.00	-0.05	0.15	0.10	1.02
2480.00	0.54	0.15	0.69	1.17

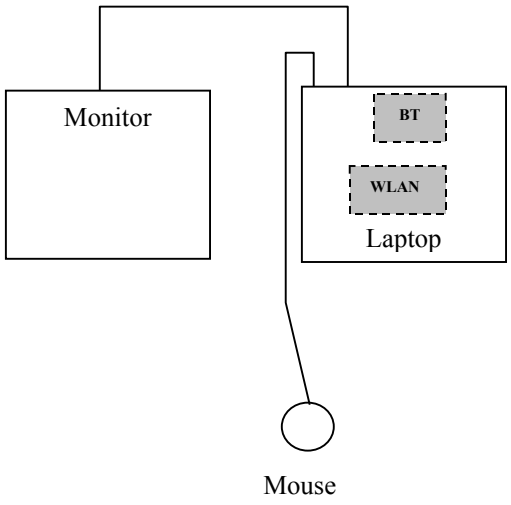
NOTE: Using BlueTest software provided by Toshiba Corporation to set power limits.

MAXIMUM PEAK OUTPUT POWER MEASUREMENT (Continued)

TEST EQUIPMENT USED					
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**	**Calibration Due Date**	**Calibration Cycle**
Spectrum Analyzer	Agilent	8564EC	4046A00387	02/28/04	2 Years
DC Block	Inmet	8039	N/A	N/A	N/A
Power Meter	Rohde & Schwarz	NRVS	DE30863	11/24/03	1 Year
Power Sensor	Leistungsmesskoph	NRV-Z5	844855/012	11/24/03	1 Year
Temperature / Humidity Monitor	Dickson	TH550	7255185	01/08/03	1 Year

EUT ACCESSORIES			
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**
Tecra 9100 Laptop (with Wide Dual Band Film Antennas)	Toshiba	PT910U-AAAA7	12040506JU
AC Adapter	Toshiba	PA3083U-1ACA	0108 A 0000068G
Tecra 9100 Laptop (with Dual Band Film Antennas)	Toshiba	PT910U-AAAA7	12050065JU
AC Adapter	Toshiba	PA3083U-1ACA	0108 A 0000774G
Monitor	NEC	JC-1575VMA	2Y785821
Mouse	Logitech	M-BJ58	830513-1000

BLOCK DIAGRAM



MAXIMUM PEAK OUTPUT POWER MEASUREMENT (Continued)

PHOTOGRAPHS

SPURIOUS RADIATED EMISSIONS

CLIENT:	Toshiba Corporation	**DATE:**	12/12/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: WLAN OFF, BT ON		**TEMPERATURE:**	21 C
		HUMIDITY:	36% RH
		TIME:	9:00 AM

Standard:	FCC CFR 47, Part 15, 15.247(c), 15.209
Description:	Spurious Emissions Measurements - Radiated
Results:	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 is 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.

SPURIOUS RADIATED EMISSIONS (Continued)

Fundamental and Band Edge Measurements at Low, Mid, & High Channels
Aegis Labs, Inc. File #: INTEL-021205-14

Horizontal Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
2412.87	76.00	100	135			109.63		
2390.00	33.45	100	135			67.01	74.00	-6.99
2390.00				17.95	A	51.51	54.00	-2.49
2436.04	76.38	100	135			110.08		
2461.03	77.50	100	135			111.28		
2483.50	32.10	100	135			65.95	74.00	-8.05
2483.50				18.45	A	52.30	54.00	-1.70

Vertical Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
2412.88	74.26	200	135			107.89		
2390.00	30.45	200	135			64.01	74.00	-9.99
2390.00				18.01	A	51.57	54.00	-2.43
2436.66	73.40	200	90			107.10		
2461.03	73.65	200	90			107.43		
2483.50	31.87	200	90			65.72	74.00	-8.28
2483.50				18.03	A	51.88	54.00	-2.12

SPURIOUS RADIATED EMISSIONS (Continued)

Harmonic Measurements at Low, Mid, & High Channels @ 1Mbps Data Rate
Aegis Labs, Inc. File #: INTEL-021205-15

Horizontal Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
4804.25	42.00	100	90			46.21	74.00	-27.79
4804.25				29.25	A	33.46	54.00	-20.54
7206.40	43.17	100	90			51.34	74.00	-22.66
7206.40				30.68	A	38.85	54.00	-15.15
9608.41	44.67	100	90			53.79	80.10	-26.31
4881.71	41.50	100	180			45.89	74.00	-28.11
4881.71				30.45	A	34.84	54.00	-19.16
7323.06	43.00	100	180			51.34	74.00	-22.66
7323.06				29.53	A	37.87	54.00	-16.13
9763.68	44.83	100	135			54.14	79.05	-24.91
4959.75	41.67	100	45			46.24	74.00	-27.76
4959.75				37.56	A	42.13	54.00	-11.87
7440.13	42.17	100	90			50.68	74.00	-23.32
7440.13				35.60	A	44.11	54.00	-9.89
9920.28	44.50	100	135			53.99	78.67	-24.68
Vertical Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
4803.92	42.00	100	135			46.21	74.00	-27.79
4803.92				29.29	A	33.50	54.00	-20.50
7206.00	43.00	100	135			51.17	74.00	-22.83
7206.00				30.56	A	38.73	54.00	-15.27
9608.41	45.00	100	135			54.12	78.10	-23.98
4881.75	42.00	100	180			46.39	74.00	-27.61
4881.75				30.14	A	34.53	54.00	-19.47
7322.58	42.67	100	135			51.01	74.00	-22.99
7322.58				29.56	A	37.90	54.00	-16.10
9764.19	45.17	100	180			54.48	76.72	-22.24
4960.17	42.00	100	135			46.57	74.00	-27.43
4960.17				35.24	A	39.81	54.00	-14.19
7439.75	43.50	100	180			52.01	74.00	-21.99
7439.75				35.60	A	44.11	54.00	-9.89
9919.67	44.00	100	180			53.49	76.51	-23.02

SPURIOUS RADIATED EMISSIONS (Continued)

Spurious Emissions Measurements on Low Channel @ 1Mbps Data Rate
Aegis Labs, Inc. File #: INTEL-021205-16

Horizontal Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
1064.18	56.67	100	135			48.11	74.00	-25.89
1064.18				41.62	A	33.06	54.00	-20.94
1196.91	55.17	100	180			47.22	74.00	-26.78
1196.91				38.65	A	30.70	54.00	-23.30
1494.93	50.83	100	135			44.09	74.00	-29.91
1494.93				42.13	A	35.39	54.00	-18.61

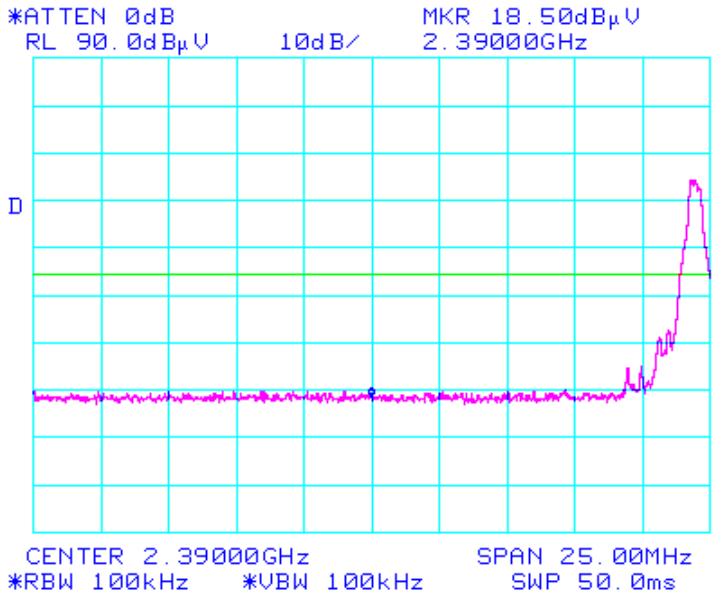
Vertical Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
1062.71	60.17	100	135			51.60	74.00	-22.40
1062.71				41.40	A	32.83	54.00	-21.17
1162.37	59.83	100	0			51.88	74.00	-22.12
1162.37				56.21	A	48.26	54.00	-5.74
1199.48	51.83	100	45			43.88	74.00	-30.12
1199.48				36.50	A	28.55	54.00	-25.45
1328.77	58.83	100	45			51.22	74.00	-22.78
1328.77				44.89	A	37.28	54.00	-16.72
1494.96	52.50	100	45			45.76	74.00	-28.24
1494.96				49.58	A	42.84	54.00	-11.16

SPURIOUS RADIATED EMISSIONS (Continued)

Band Edge Measurements at Low & High Channels
Aegis Labs, Inc. File #: INTEL-021205-14

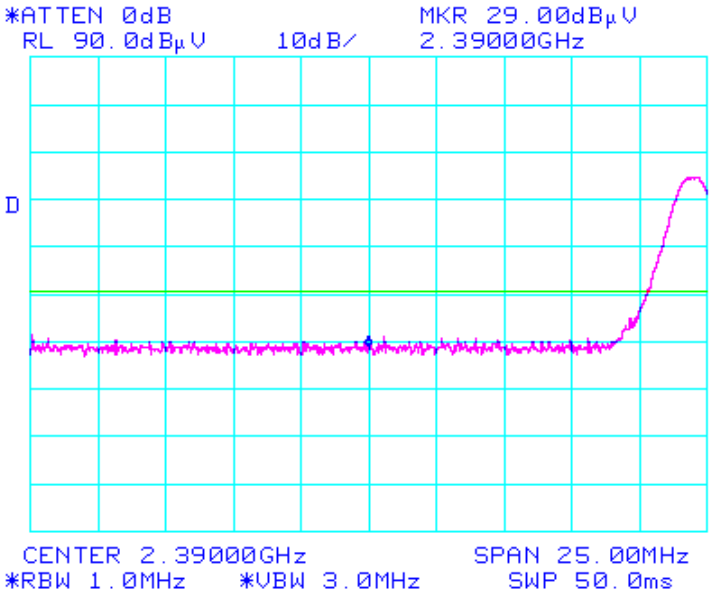
Vertical Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
2390.00	29.00	200	90			62.56	74.00	-11.44
2390.00				16.33	A	49.89	54.00	-4.11
2483.50	28.00	200	90			61.85	74.00	-12.15
2483.50				16.67	A	50.52	54.00	-3.48

Test Date	*Data*	*Test Eng.*
12/12/02	Band Edge Emissions Measurements – Radiated Vertical > -20 dBc @ 2390 MHz	Rick Candelas

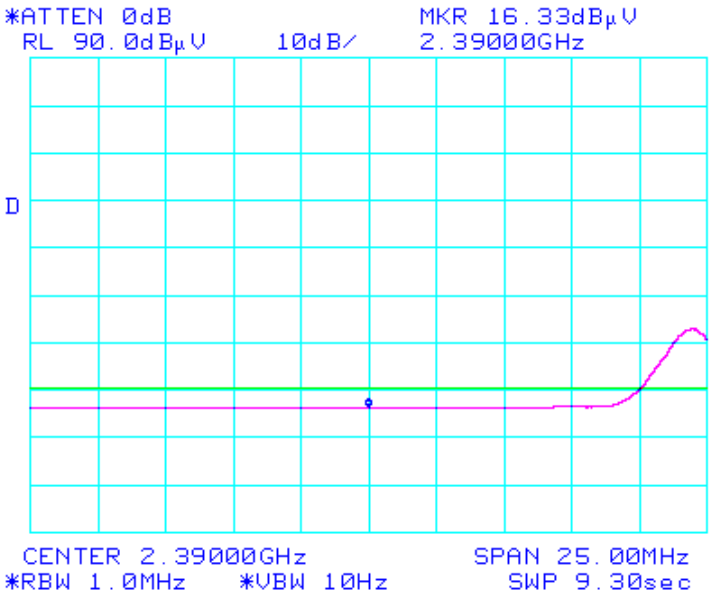


SPURIOUS RADIATED EMISSIONS (Continued)

Test Date	*Data*	*Test Eng.*
12/12/02	Band Edge Emissions Measurements – Radiated Vertical Peak Measurement @ 2390 MHz	Rick Candelas

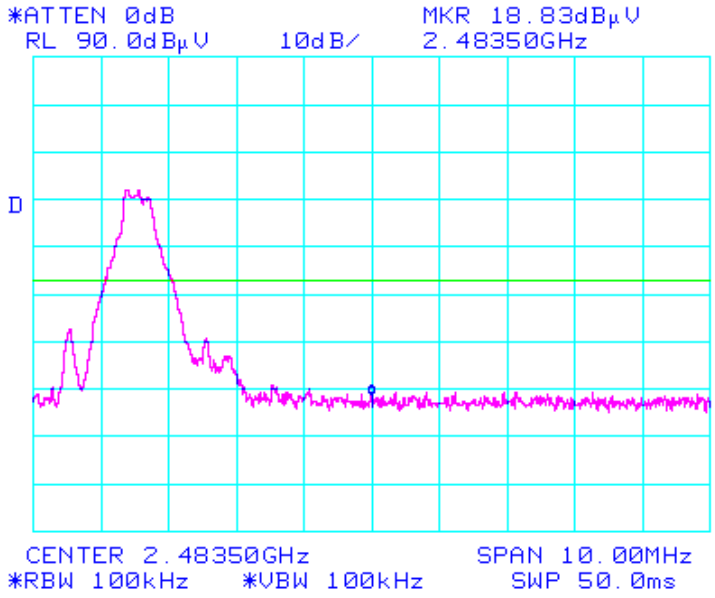


Test Date	*Data*	*Test Eng.*
12/12/02	Band Edge Emissions Measurements – Radiated Vertical Average Measurement @ 2390 MHz	Rick Candelas

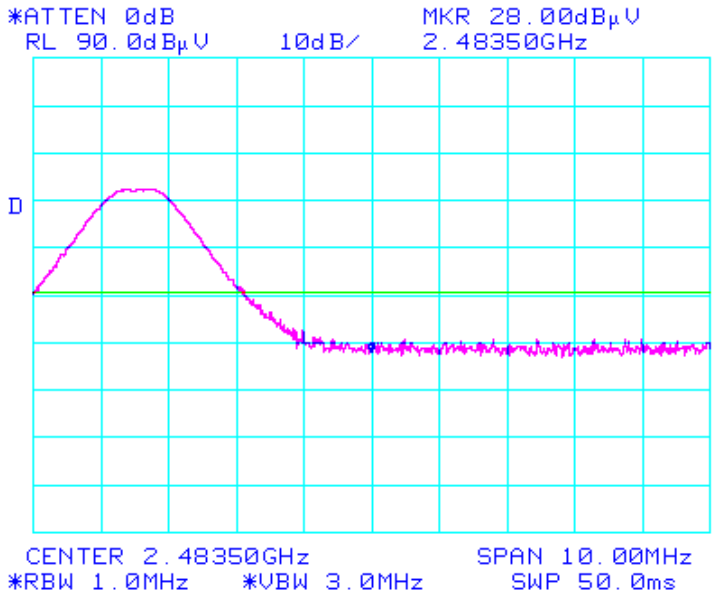


SPURIOUS RADIATED EMISSIONS (Continued)

Test Date	*Data*	*Test Eng.*
12/12/02	Band Edge Emissions Measurements – Radiated Vertical > -20 dBc @ 2483.5 MHz	Rick Candelas

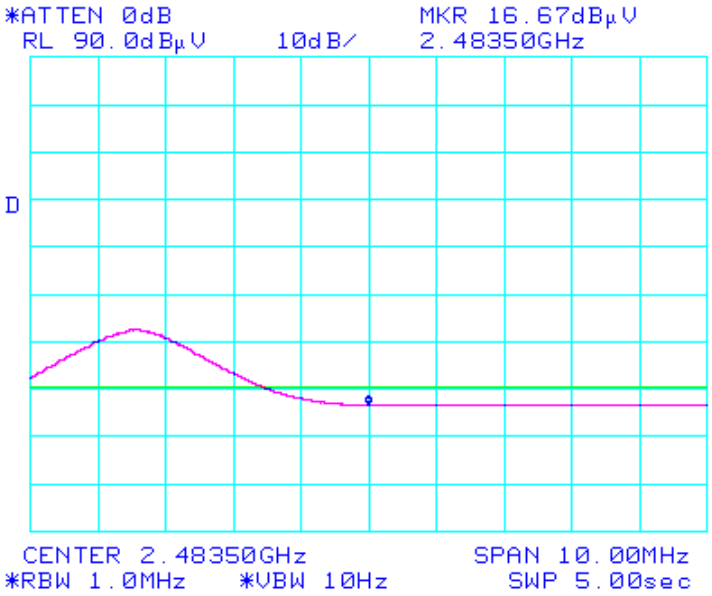


Test Date	*Data*	*Test Eng.*
12/12/02	Band Edge Emissions Measurements – Radiated Vertical Peak Measurement @ 2483.5 MHz	Rick Candelas



SPURIOUS RADIATED EMISSIONS (Continued)

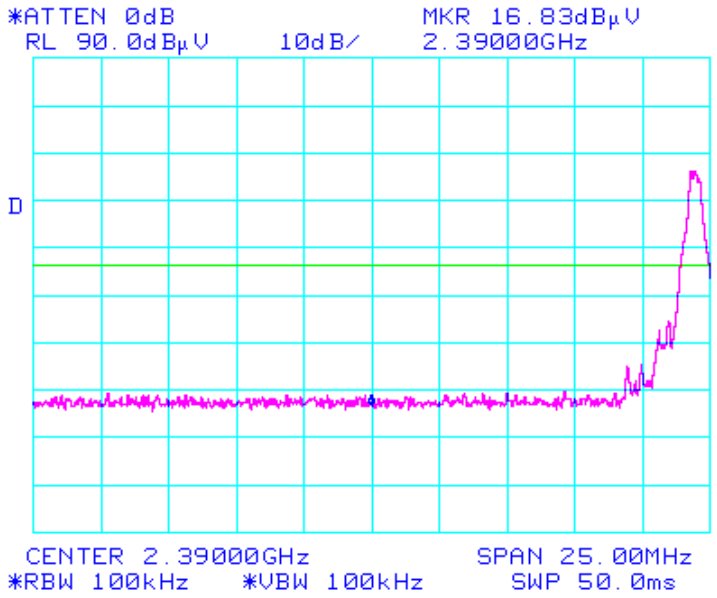
Test Date	*Data*	*Test Eng.*
12/12/02	Band Edge Emissions Measurements – Radiated Vertical Average Measurement @ 2483.5 MHz	Rick Candelas



SPURIOUS RADIATED EMISSIONS (Continued)

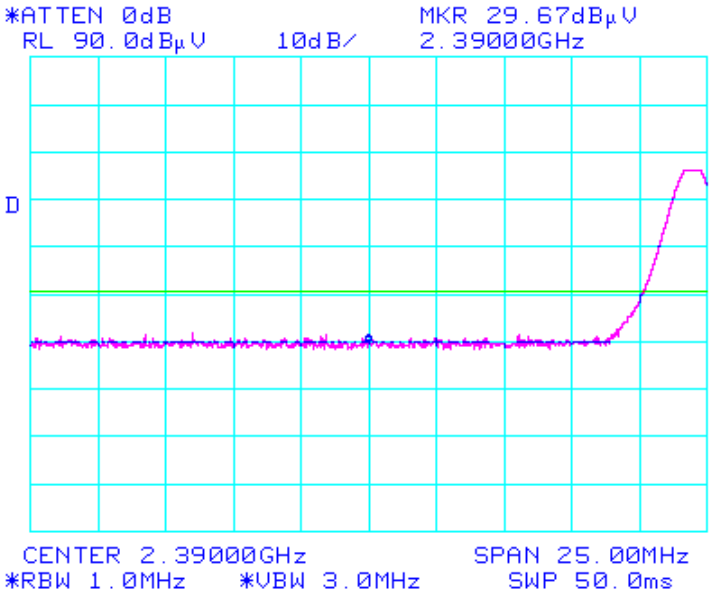
Horizontal Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
2390.00	29.67	100	135			63.23	74.00	-10.77
2390.00				16.33	A	49.89	54.00	-4.11
2483.50	30.00	100	135			63.85	74.00	-10.15
2483.50				17.00	A	50.85	54.00	-3.15

Test Date	*Data*	*Test Eng.*
12/12/02	Band Edge Emissions Measurements – Radiated Horizontal > -20 dBc @ 2390 MHz	Rick Candelas

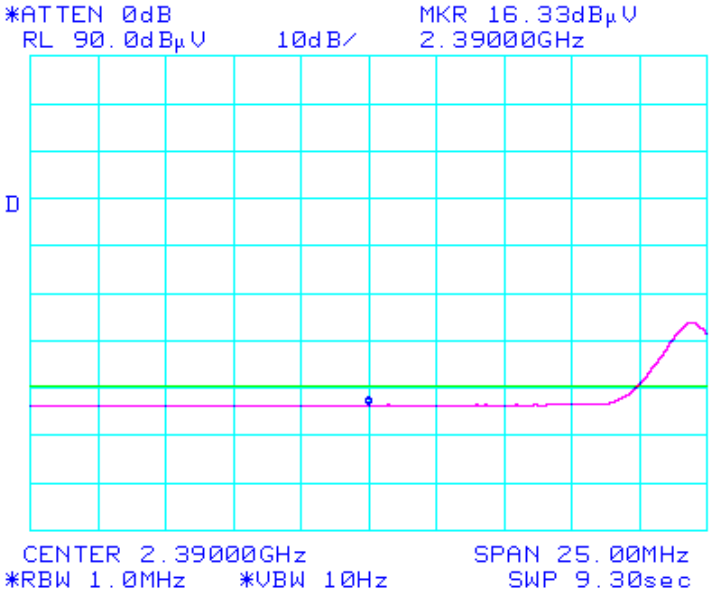


SPURIOUS RADIATED EMISSIONS (Continued)

Test Date	*Data*	*Test Eng.*
12/12/02	Band Edge Emissions Measurements – Radiated Horizontal Peak Measurement @ 2390 MHz	Rick Candelas

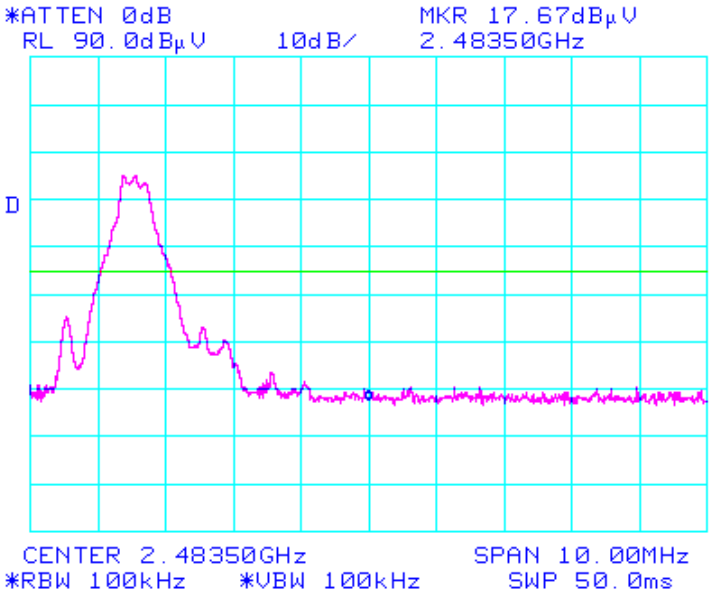


Test Date	*Data*	*Test Eng.*
12/12/02	Band Edge Emissions Measurements – Radiated Horizontal Average Measurement @ 2390 MHz	Rick Candelas

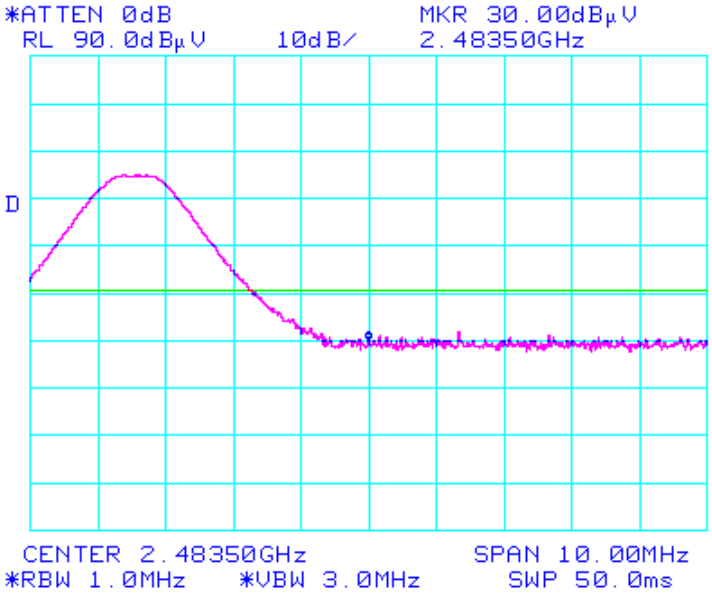


SPURIOUS RADIATED EMISSIONS (Continued)

Test Date	*Data*	*Test Eng.*
12/12/02	Band Edge Emissions Measurements – Radiated Horizontal > -20 dBc @ 2483.5 MHz	Rick Candelas

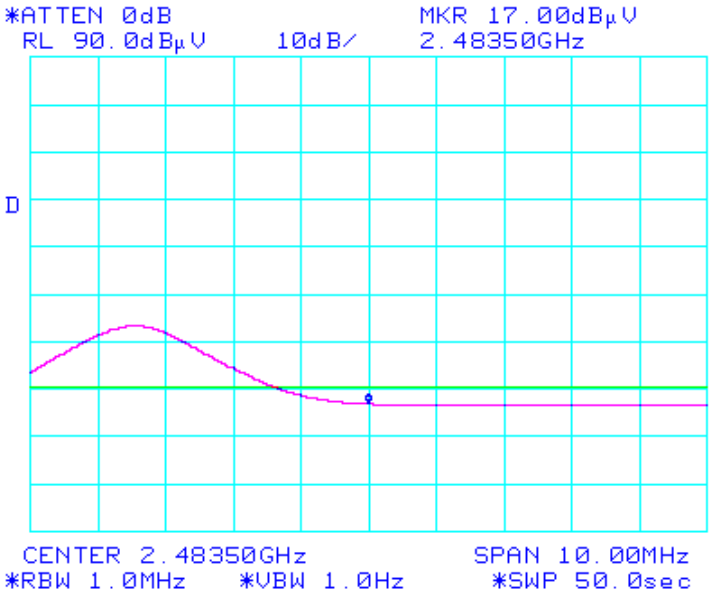


Test Date	*Data*	*Test Eng.*
12/12/02	Band Edge Emissions Measurements – Radiated Horizontal Peak Measurement @ 2483.5 MHz	Rick Candelas



SPURIOUS RADIATED EMISSIONS (Continued)

Test Date	*Data*	*Test Eng.*
12/12/02	Band Edge Emissions Measurements – Radiated Horizontal Average Measurement @ 2483.5 MHz	Rick Candelas

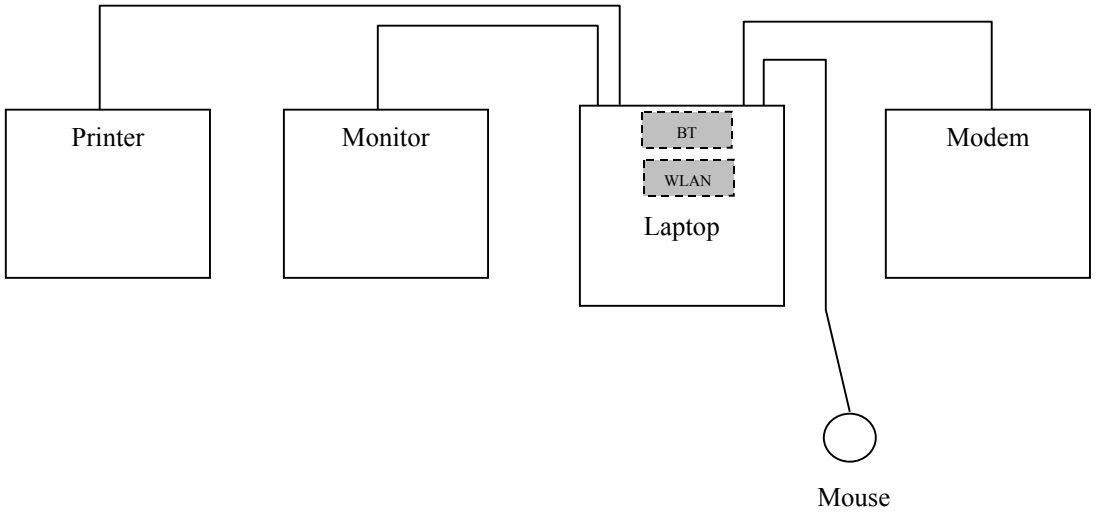


SPURIOUS RADIATED EMISSIONS (Continued)

TEST EQUIPMENT USED					
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**	**Calibration Due Date**	**Calibration Cycle**
Spectrum Analyzer	Agilent	8564EC	4046A00387	02/28/04	2 Years
Preamplifier	Agilent	8449B	3008A01573	04/29/03	1 Year
Antenna - Horn	EMCO	3115	2230	09/14/03	1 Year
Temperature/Humidity Monitor	Dickson	TH550	7255185	01/08/03	1 Year

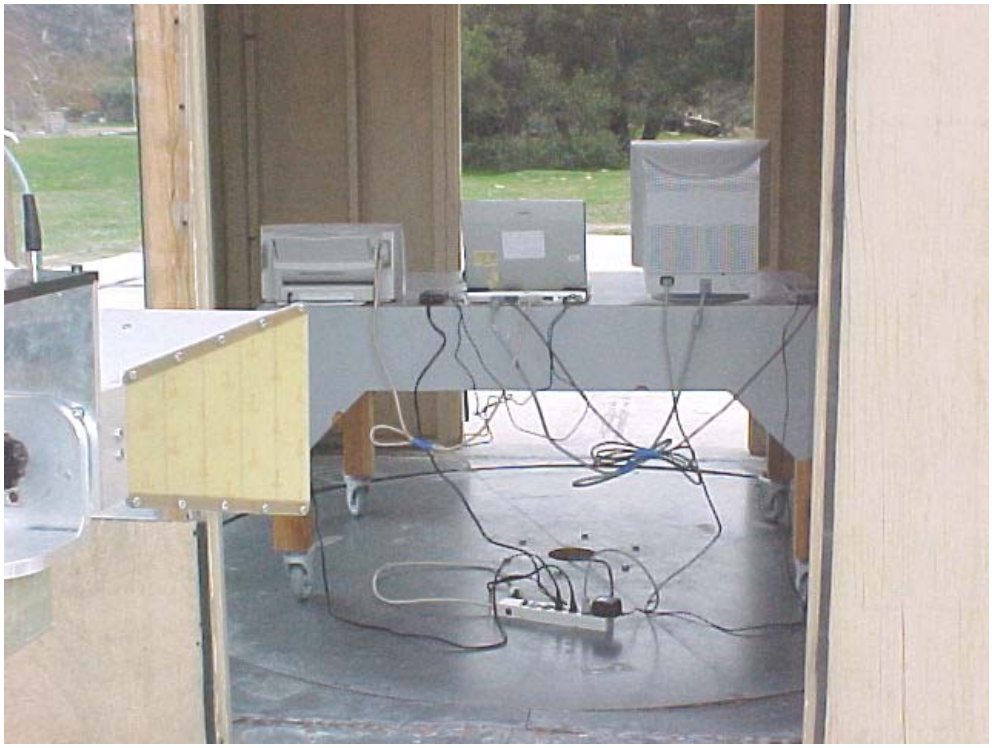
EUT ACCESSORIES			
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**
Tecra 9100 Laptop (with Dual Band Film Antennas)	Toshiba	PT910U-AAAA7	12050065JU
AC Adapter	Toshiba	PA3083U-1ACA	0108 A 0000774G
Monitor	NEC	JC-1575VMA	2Y785821
Mouse	Logitech	M-BJ58	830513-1000
Printer	Canon	BJC-4200	MT1-18
Modem	Hayes	5362US	A02153623145

BLOCK DIAGRAM



SPURIOUS RADIATED EMISSIONS (Continued)

PHOTOGRAPHS



SPECTRAL POWER DENSITY MEASUREMENT

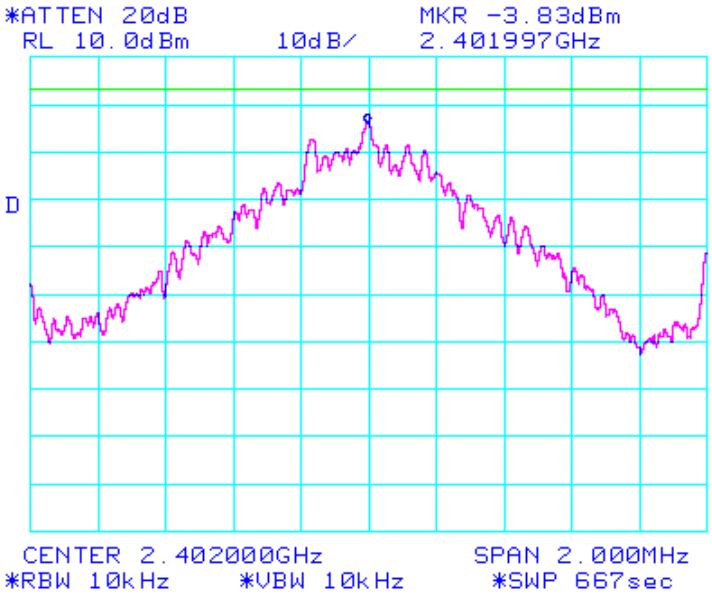
CLIENT:	Toshiba Corporation	**DATE:**	12/13/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: *Conducted Measurement @ BT Port*		**TEMPERATURE:**	25 C
		HUMIDITY:	38% RH
		TIME:	4:00 PM

Standard:	FCC CFR 47, Part 15, 15.247(D)
Description:	Power Spectral Density Measurement
Results:	Transmitted power density averaged over any 1 second interval is not greater than 8 dBm in any 3 kHz bandwidth within these bands

TEST RESULTS SUMMARY	
Data	**Result**
Low Channel Power Spectral Density	-3.83 dBm – Pass
Mid Channel Power Spectral Density	-3.67 dBm – Pass
High Channel Power Spectral Density	-4.00 dBm - Pass

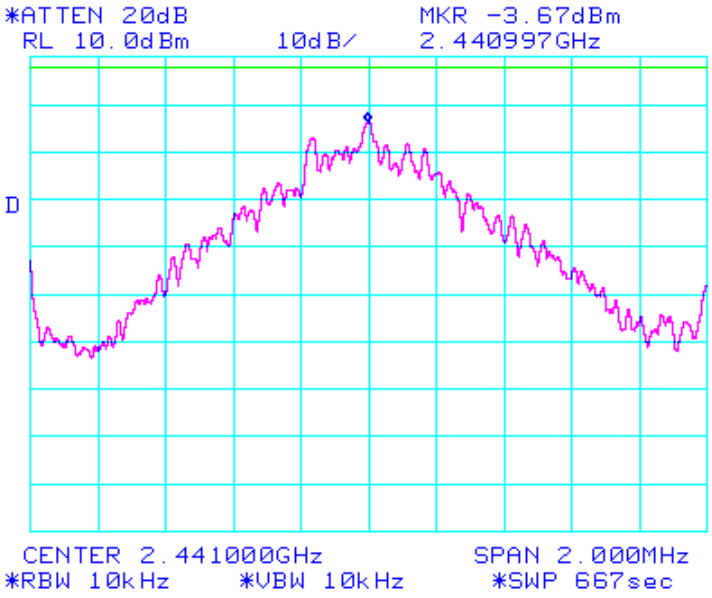
SPECTRAL POWER DENSITY MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Low Channel Power Spectral Density	Rick Candelas *(INTEL-021205-67)*



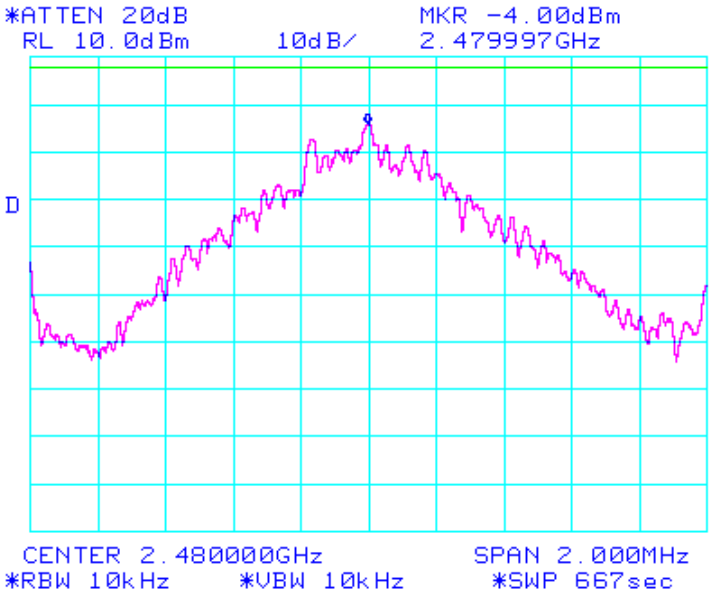
SPECTRAL POWER DENSITY MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Mid Channel Power Spectral Density	Rick Candelas *(INTEL-021205-68)*



SPECTRAL POWER DENSITY MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	High Channel Power Spectral Density	Rick Candelas *(INTEL-021205-69)*



SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL

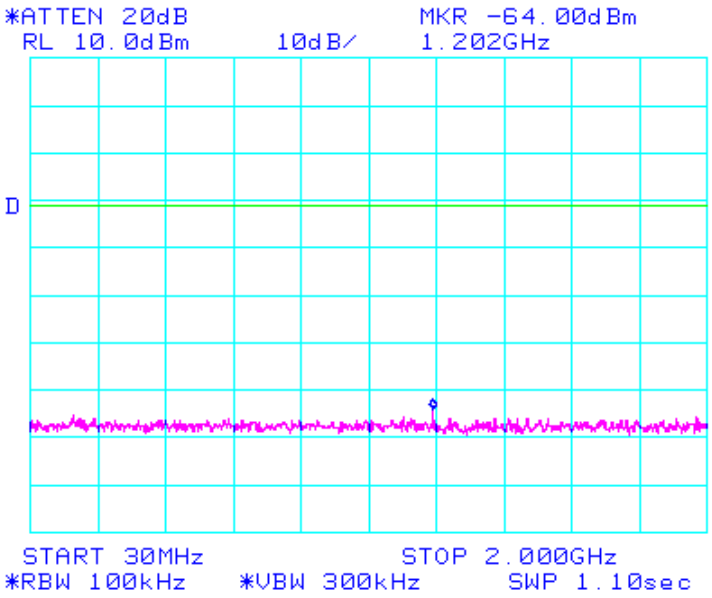
CLIENT:	Toshiba Corporation	**DATE:**	12/13/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: *Conducted Measurement @ BT Port*		**TEMPERATURE:**	25 C
		HUMIDITY:	38% RH
		TIME:	5:00 PM

Standard:	FCC CFR 47, Part 15, 15.247(c)
Description:	Conducted Spurious Emissions
Results:	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.

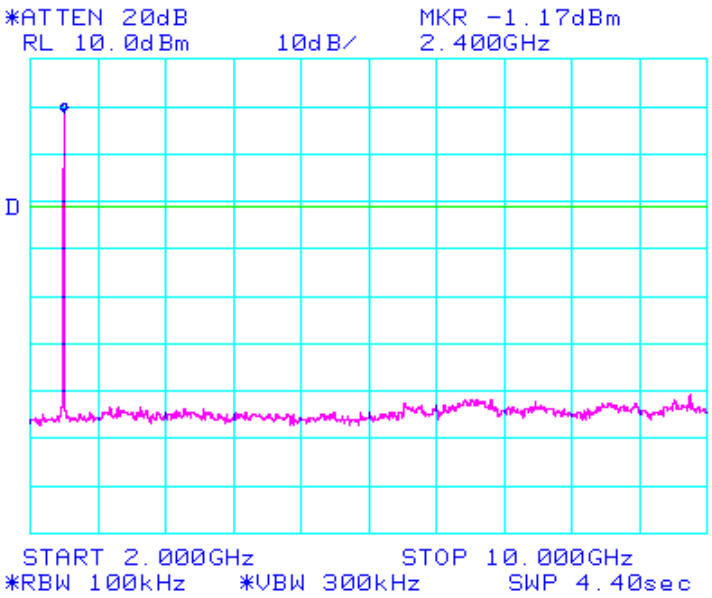
TEST RESULTS SUMMARY	
Data	**Result**
Low Channel Spurious Emissions – Antenna Terminal - 30MHz – 2GHz	Max Spur Signal @ -64.00dBm – Pass
Low Channel Spurious Emissions – Antenna Terminal - 2GHz – 10GHz	Max Spur Signal @ -67.90dBm – Pass
Low Channel Spurious Emissions – Antenna Terminal - 10GHz – 20GHz	Max Spur Signal @ -59.50dBm – Pass
Low Channel Spurious Emissions – Antenna Terminal - 20GHz – 26.5GHz	Max Spur Signal @ -56.67dBm – Pass
Mid Channel Spurious Emissions – Antenna Terminal - 30MHz – 2GHz	Max Spur Signal @ -64.33dBm – Pass
Mid Channel Spurious Emissions – Antenna Terminal - 2GHz – 10GHz	Max Spur Signal @ -69.00dBm – Pass
Mid Channel Spurious Emissions – Antenna Terminal - 10GHz – 20GHz	Max Spur Signal @ -59.67dBm – Pass
Mid Channel Spurious Emissions – Antenna Terminal - 20GHz – 26.5GHz	Max Spur Signal @ -56.50dBm – Pass
High Channel Spurious Emissions – Antenna Terminal - 30MHz – 2GHz	Max Spur Signal @ -64.33dBm – Pass
High Channel Spurious Emissions – Antenna Terminal - 2GHz – 10GHz	Max Spur Signal @ -68.00dBm – Pass
High Channel Spurious Emissions – Antenna Terminal - 10GHz – 20GHz	Max Spur Signal @ -59.50dBm – Pass
High Channel Spurious Emissions – Antenna Terminal - 20GHz – 26.5GHz	Max Spur Signal @ -56.50dBm – Pass

SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Low Channel Spurious Emissions – Antenna Terminal 30 MHz – 2 GHz	Rick Candelas *(INTEL-021205-70)*

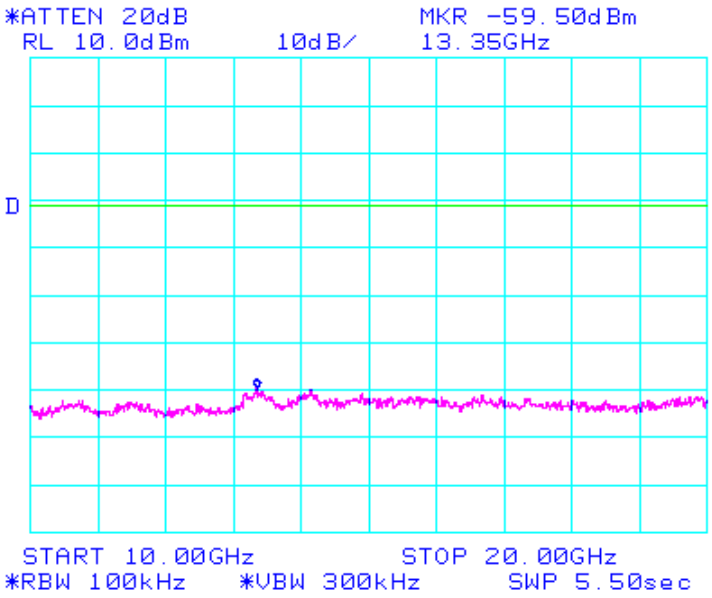


Test Date	*Data*	*Test Eng.*
12/13/02	Low Channel Spurious Emissions – Antenna Terminal 2 GHz – 10 GHz	Rick Candelas *(INTEL-021205-71)*

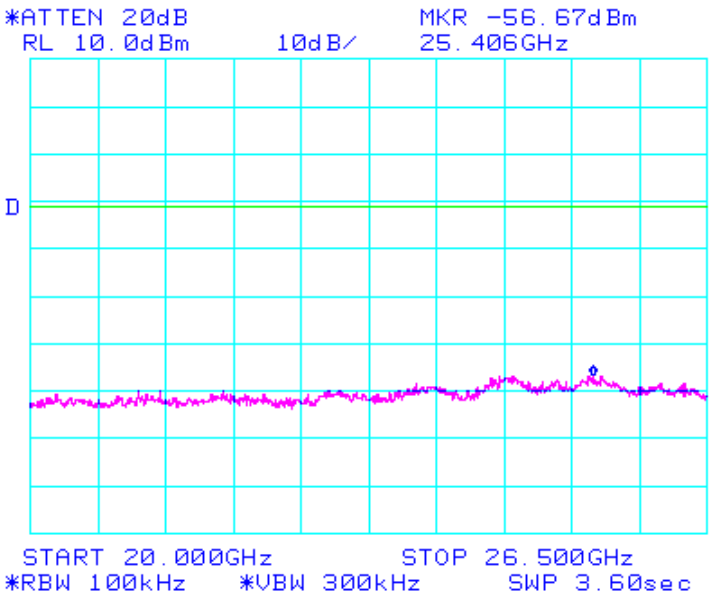


SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Low Channel Spurious Emissions – Antenna Terminal 10 GHz - 20 GHz	Rick Candelas *(INTEL-021205-72)*

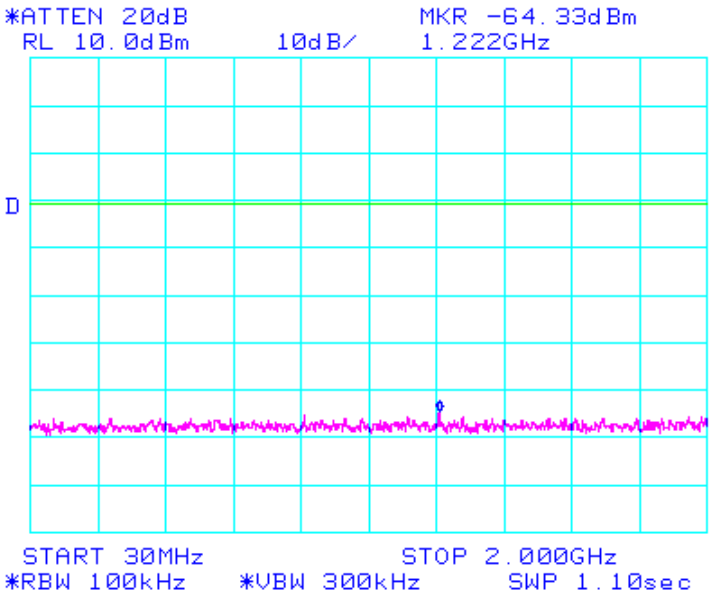


Test Date	*Data*	*Test Eng.*
12/13/02	Low Channel Spurious Emissions – Antenna Terminal 20 GHz – 26.5 GHz	Rick Candelas *(INTEL-021205-73)*

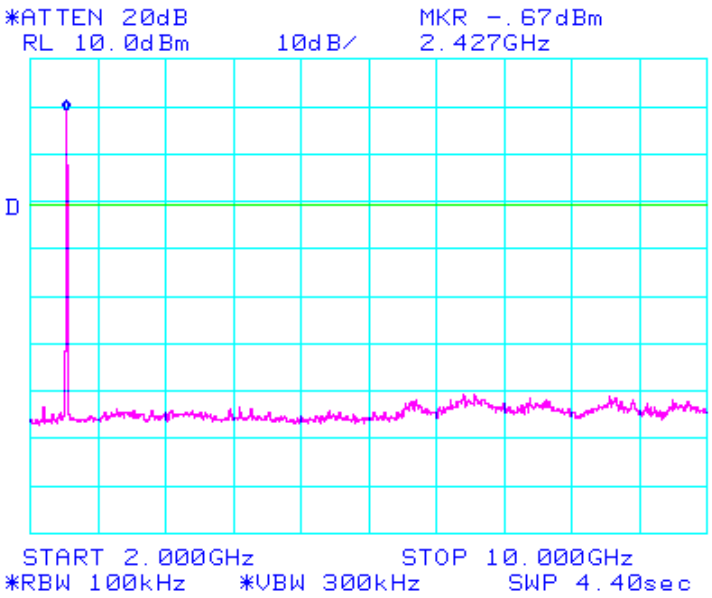


SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Mid Channel Spurious Emissions – Antenna Terminal 30 MHz – 2 GHz	Rick Candelas *(INTEL-021205-74)*

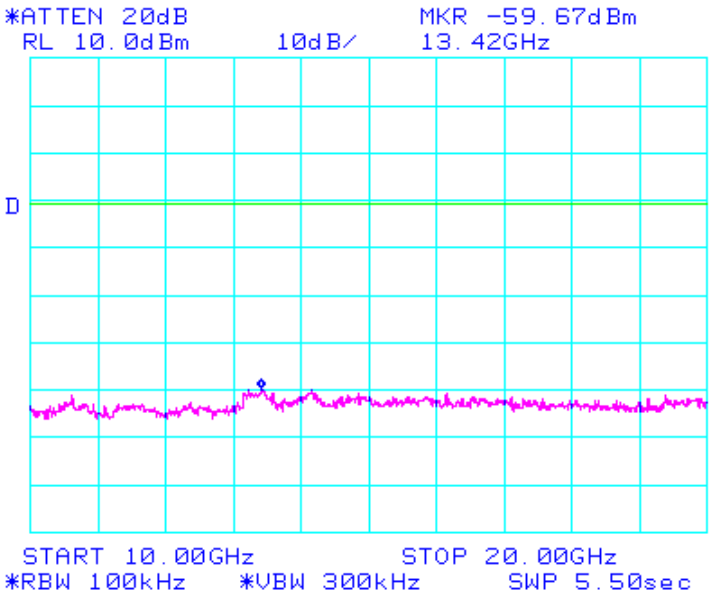


Test Date	*Data*	*Test Eng.*
12/13/02	Mid Channel Spurious Emissions – Antenna Terminal 2 GHz – 10 GHz	Rick Candelas *(INTEL-021205-75)*

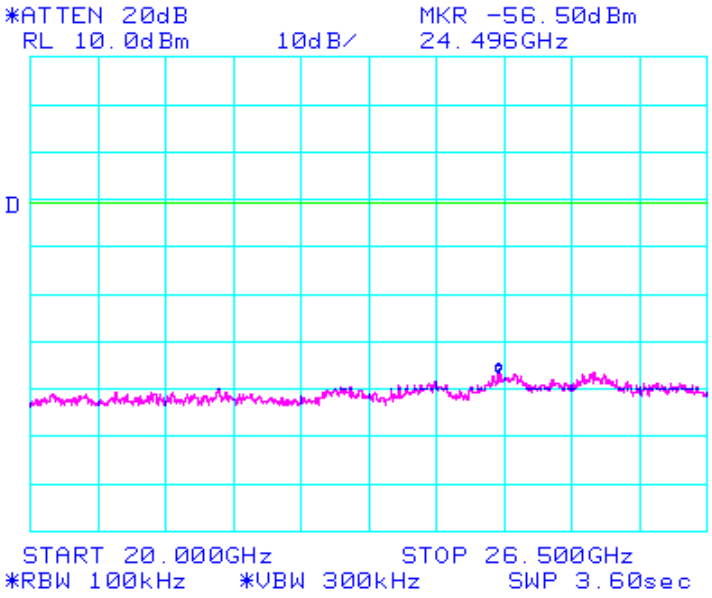


SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Mid Channel Spurious Emissions – Antenna Terminal 10 GHz - 20 GHz	Rick Candelas *(INTEL-021205-76)*

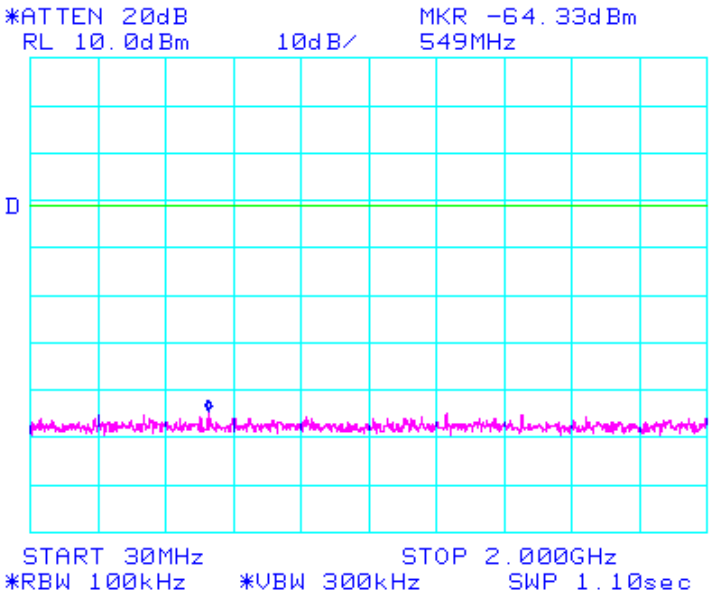


Test Date	*Data*	*Test Eng.*
12/13/02	Mid Channel Spurious Emissions – Antenna Terminal 20 GHz – 26.5 GHz	Rick Candelas *(INTEL-021205-77)*

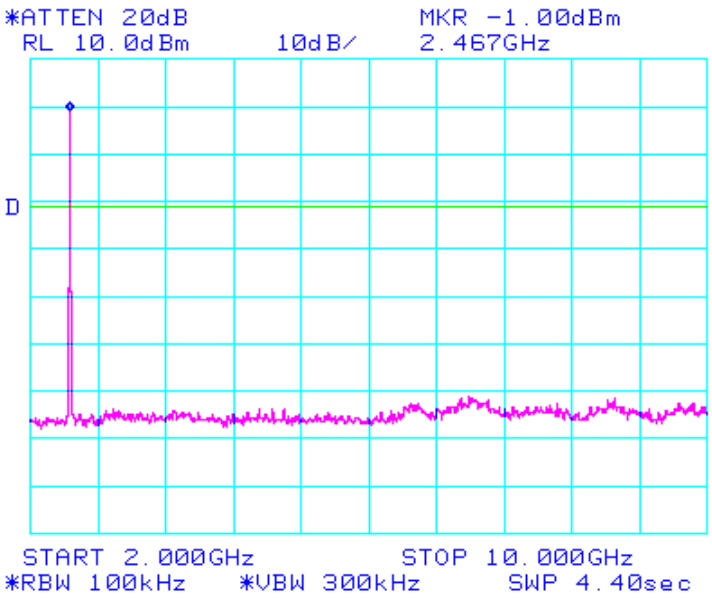


SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	High Channel Spurious Emissions – Antenna Terminal 30 MHz – 2 GHz	Rick Candelas *(INTEL-021205-78)*

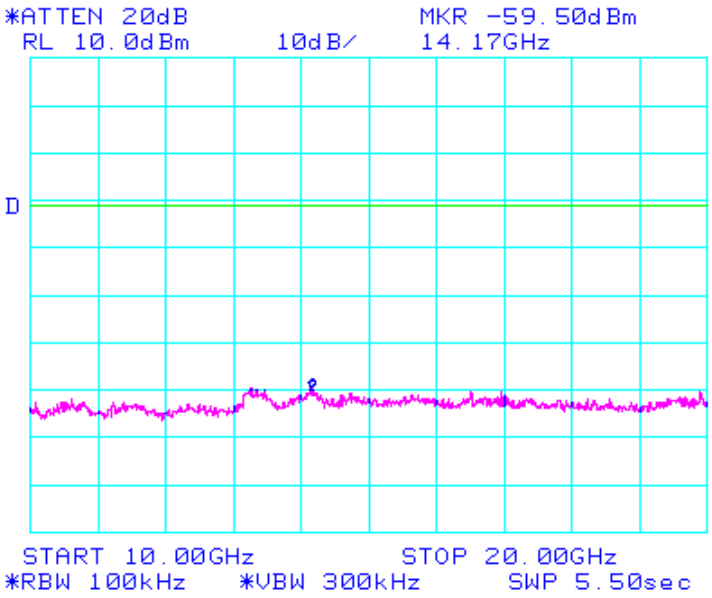


Test Date	*Data*	*Test Eng.*
12/13/02	High Channel Spurious Emissions – Antenna Terminal 2 GHz – 10 GHz	Rick Candelas *(INTEL-021205-79)*

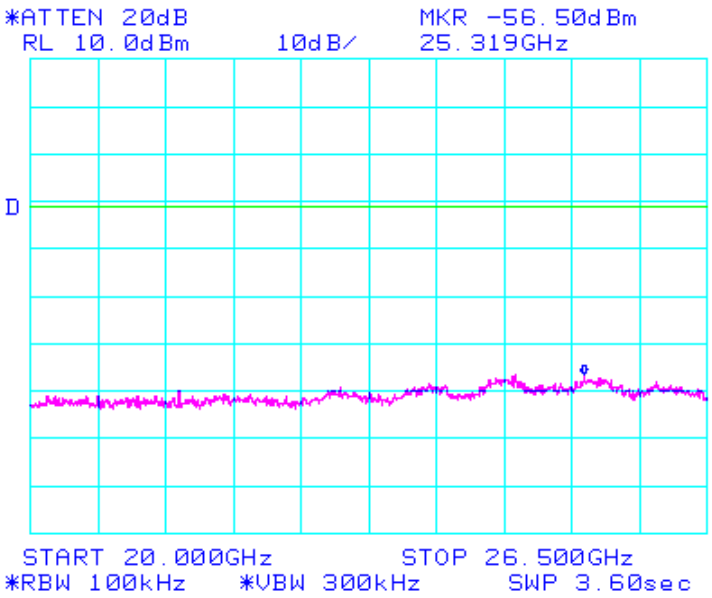


SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	High Channel Spurious Emissions – Antenna Terminal 10 GHz - 20 GHz	Rick Candelas *(INTEL-021205-80)*



Test Date	*Data*	*Test Eng.*
12/13/02	High Channel Spurious Emissions – Antenna Terminal 20 GHz – 26.5 G	Rick Candelas *(INTEL-021205-81)*



20dB BANDWIDTH MEASUREMENT

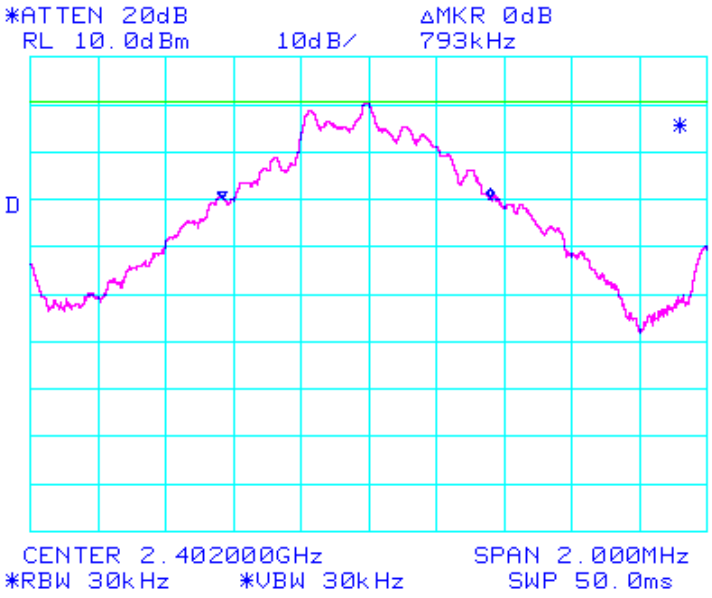
CLIENT:	Toshiba Corporation	**DATE:**	12/13/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: *Conducted Measurement @ BT Port*		**TEMPERATURE:**	25 C
		HUMIDITY:	38% RH
		TIME:	6:00 PM

Standard:	FCC CFR 47, Part 15.247(a)(1)(ii)
Description:	20dB Bandwidth
Results:	The bandwidth is less than 1 MHz.

TEST RESULTS SUMMARY	
Data	**Result**
Low Channel 20dB Bandwidth	793 kHz – Pass
Mid Channel 20dB Bandwidth	777 kHz – Pass
High Channel 20dB Bandwidth	753 kHz - Pass

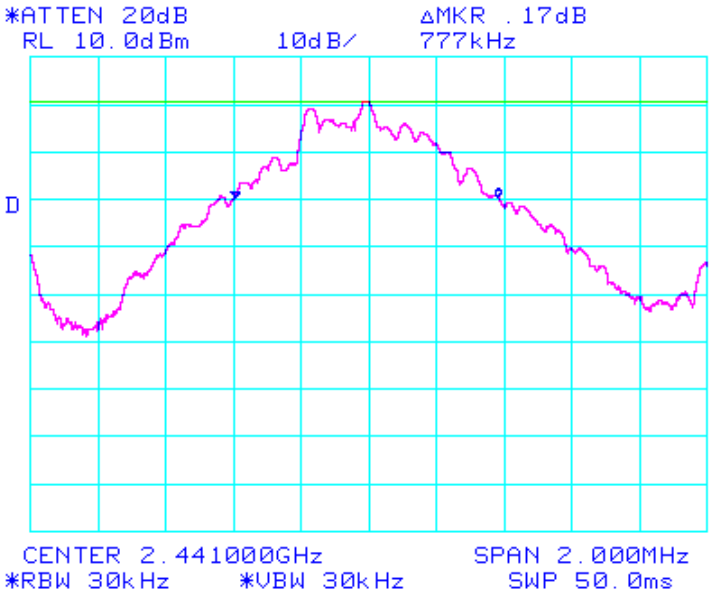
20dB BANDWIDTH MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Low Channel 20dB Bandwidth Measurement	Rick Candelas *(INTEL-021205-82)*



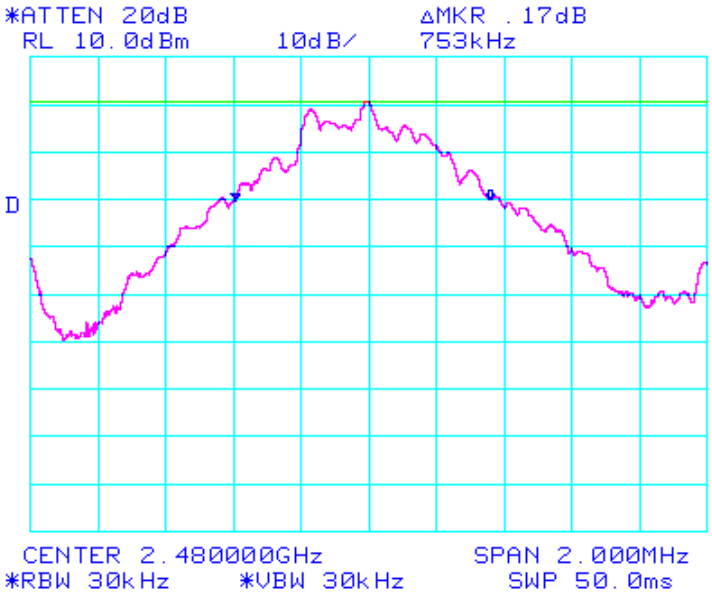
20dB BANDWIDTH MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Mid Channel 20dB Bandwidth Measurement	Rick Candelas *(INTEL-021205-83)*



20dB BANDWIDTH MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	High Channel 20dB Bandwidth Measurement	Rick Candelas *(INTEL-021205-84)*



CARRIER FREQUENCY SEPARATION MEASUREMENT

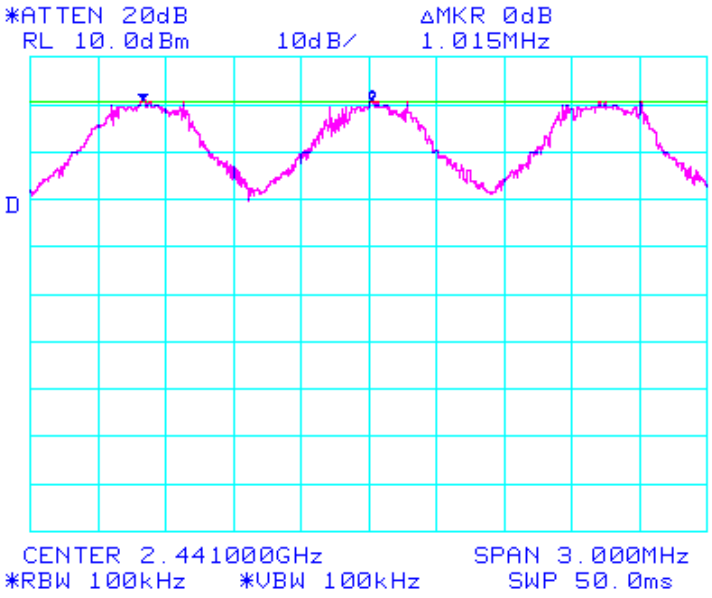
CLIENT:	Toshiba Corporation	**DATE:**	12/13/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: *Conducted Measurement @ BT Port*		**TEMPERATURE:**	25 C
		HUMIDITY:	38% RH
		TIME:	7:00 PM

Standard:	FCC CFR 47, Part 15.247(a)(1)(ii)
Description:	Carrier Frequency Separation
Results:	The channel hopping separation is greater than the 20 dB bandwidth.

TEST RESULTS SUMMARY	
Data	**Result**
Carrier Frequency Separation	1.015 MHz – Pass

CARRIER FREQUENCY SEPARATION MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Carrier Frequency Separation Measurement	Rick Candelas *(INTEL-021205-85)*



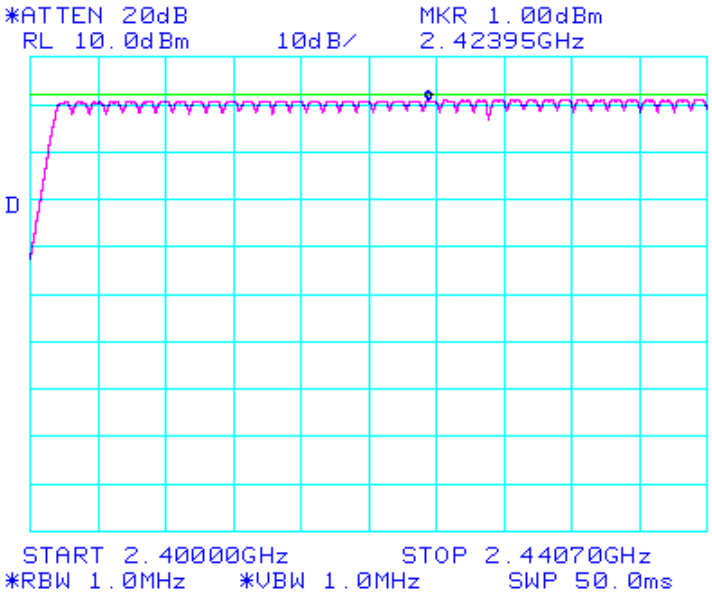
NUMBER OF HOPPING FREQUENCIES MEASUREMENT

CLIENT:	Toshiba Corporation	**DATE:**	12/13/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: *Conducted Measurement @ BT Port*		**TEMPERATURE:**	25 C
		HUMIDITY:	38% RH
		TIME:	7:30 PM

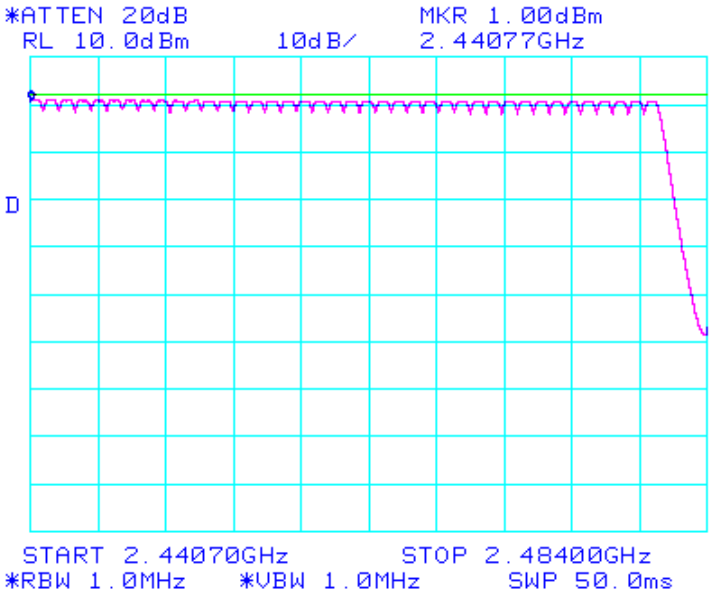
Standard:	FCC CFR 47, Part 15.247(a)(1)(ii)
Description:	Number of Hopping Frequencies
Results:	The number of hopping frequencies is 79. (See Plots)

NUMBER OF HOPPING FREQUENCIES MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Number of Hopping Frequencies	Rick Candelas *(INTEL-021205-86)*



Test Date	*Data*	*Test Eng.*
12/13/02	Number of Hopping Frequencies	Rick Candelas *(INTEL-021205-86)*



AVERAGE TIME OF OCCUPANCY MEASUREMENT

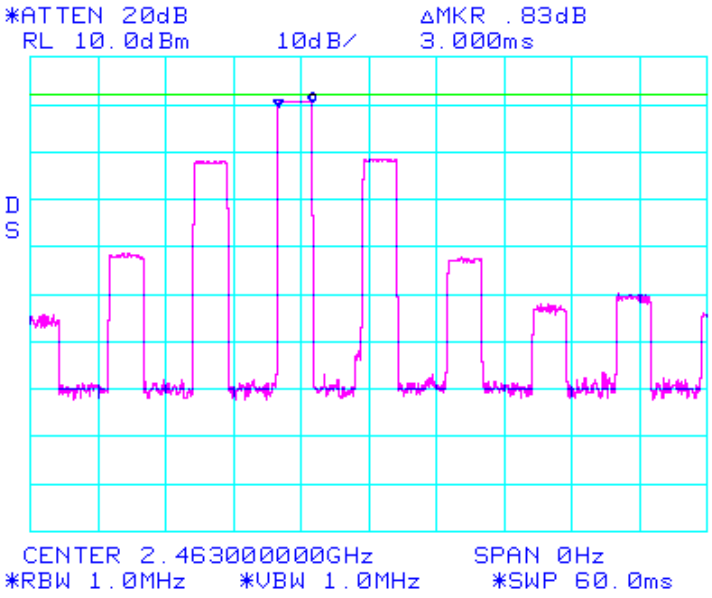
CLIENT:	Toshiba Corporation	**DATE:**	12/13/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: *Conducted Measurement @ BT Port*		**TEMPERATURE:**	25 C
		HUMIDITY:	38% RH
		TIME:	8:00 PM

Standard:	FCC CFR 47, Part 15.247(a)(1)(ii)
Description:	Average Time of Occupancy
Results:	The EUT does not transmit for more than 400msec during a 30 second period on any frequency. (See Plot)

TEST RESULTS SUMMARY
The average time of occupancy is 3.00msec for every 60msec period. Therefore: 60msec = 1sec and the EUT average time of occupancy is 3.00msec for every 1sec period then the EUT Average Time of Occupancy is, 3.00msec x 30sec = 90msec per 30sec period

AVERAGE TIME OF OCCUPANCY MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/13/02	Average Time of Occupancy	Rick Candelas *(INTEL-021205-88)*

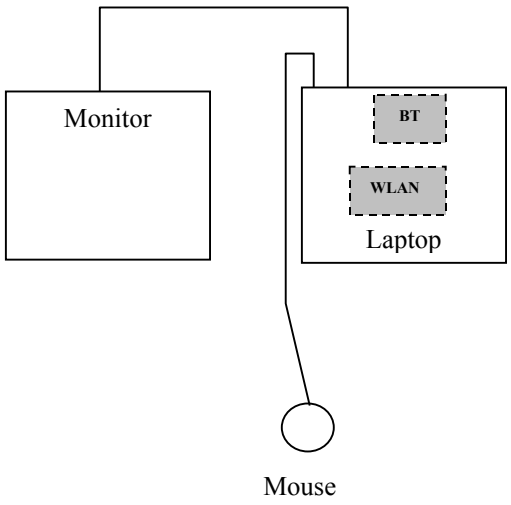


CONDUCTED MEASUREMENTS SETUP

TEST EQUIPMENT USED					
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**	**Calibration Due Date**	**Calibration Cycle**
Spectrum Analyzer	Agilent	8564EC	4046A00387	02/28/04	2 Years
DC Block	Inmet	8039	N/A	N/A	N/A
Power Meter	Rohde & Schwarz	NRVS	DE30863	11/24/03	1 Year
Power Sensor	Leistungsmesskoph	NRV-Z5	844855/012	11/24/03	1 Year
Temperature / Humidity Monitor	Dickson	TH550	7255185	01/08/03	1 Year

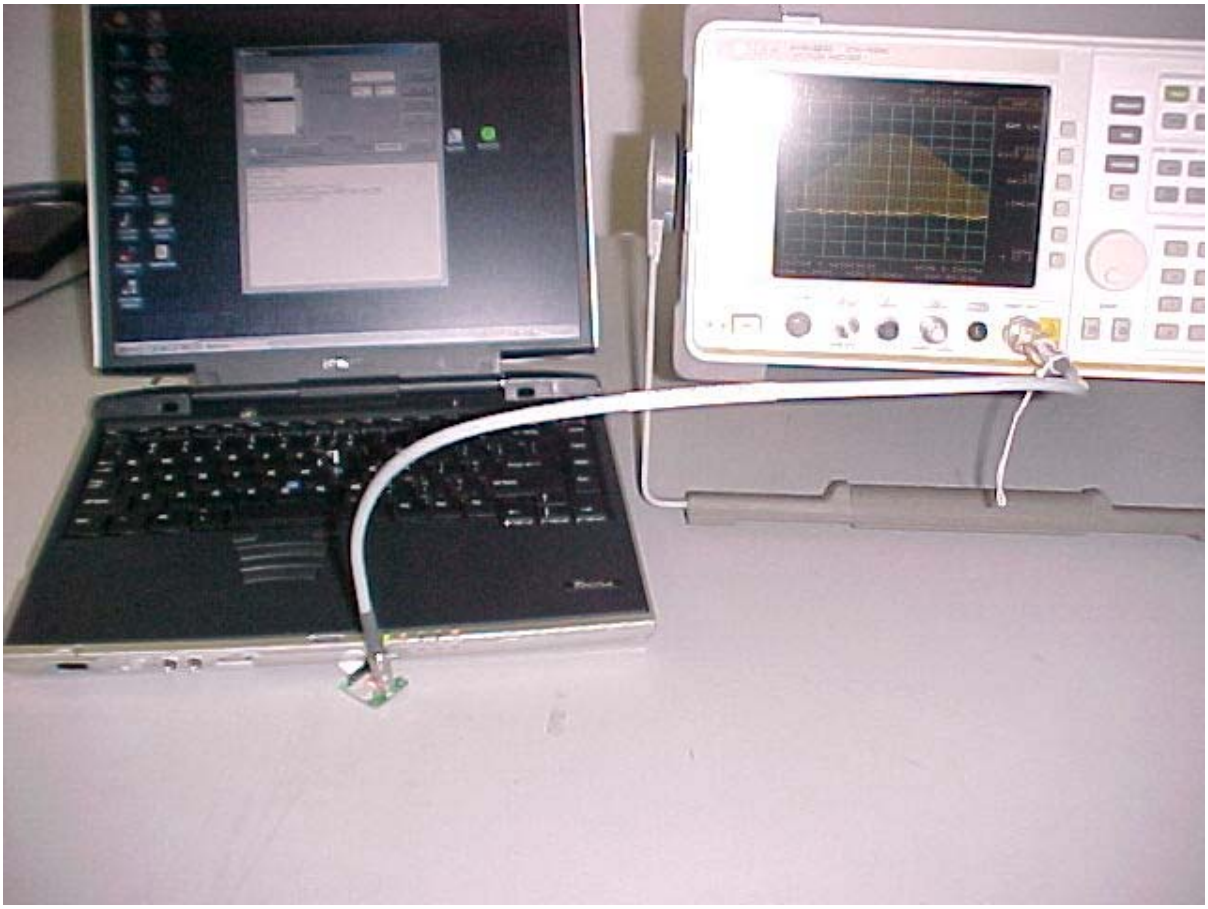
EUT ACCESSORIES			
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**
Tecra 9100 Laptop (with Dual Band Film Antennas)	Toshiba	PT910U-AAAA7	12050065JU
AC Adapter	Toshiba	PA3083U-1ACA	0108 A 0000774G
Monitor	NEC	JC-1575VMA	2Y785821
Mouse	Logitech	M-BJ58	830513-1000

BLOCK DIAGRAM



CONDUCTED MEASUREMENTS SETUP (Continued)

PHOTOGRAPHS



WLAN = ON, BT = ON

With Dual Band Film Antennas
EUT installed in Toshiba Tecra 9100 SN: 12050065JU

MAXIMUM PEAK OUTPUT POWER MEASUREMENT

CLIENT:	Toshiba Corporation	**DATE:**	12/10/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205-05
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	N/A	**SITE #:**	2
CONFIGUARTION: *Measurements taken @ BT Port*		**TEMPERATURE:**	20 C
		HUMIDITY:	37% RH
		TIME:	1:00 PM

Standard:	FCC CFR 47, Part 15, 15.247(b)
Description:	Peak Output Power – Conducted
Results:	See Data Sheets

Frequency (MHz)	Power (dBm)	Cable Factor (dB)	Power Corrected (dBm)	Power (mW)
2402.00	-0.10	0.15	0.05	1.01
2441.00	-0.12	0.15	0.03	1.01
2480.00	0.62	0.15	0.77	1.19

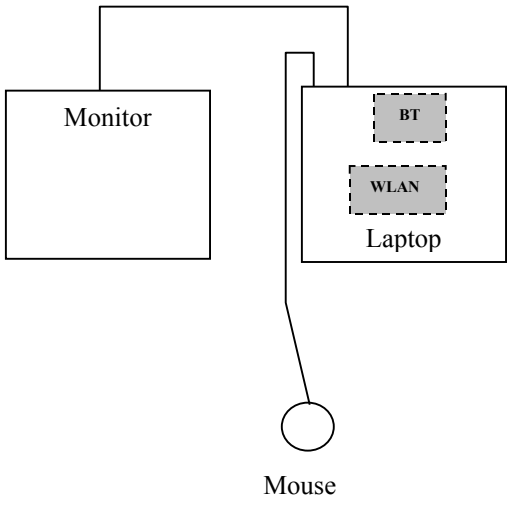
NOTE: Using BlueTest software provided by Toshiba Corporation to set power limits.

MAXIMUM PEAK OUTPUT POWER MEASUREMENT (Continued)

TEST EQUIPMENT USED					
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**	**Calibration Due Date**	**Calibration Cycle**
Spectrum Analyzer	Agilent	8564EC	4046A00387	02/28/04	2 Years
DC Block	Inmet	8039	N/A	N/A	N/A
Power Meter	Rohde & Schwarz	NRVS	DE30863	11/24/03	1 Year
Power Sensor	Leistungsmesskoph	NRV-Z5	844855/012	11/24/03	1 Year
Temperature / Humidity Monitor	Dickson	TH550	7255185	01/08/03	1 Year

EUT ACCESSORIES			
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**
Tecra 9100 Laptop (with Wide Dual Band Film Antennas)	Toshiba	PT910U-AAAA7	12040506JU
AC Adapter	Toshiba	PA3083U-1ACA	0108 A 0000068G
Tecra 9100 Laptop (with Dual Band Film Antennas)	Toshiba	PT910U-AAAA7	12050065JU
AC Adapter	Toshiba	PA3083U-1ACA	0108 A 0000774G
Monitor	NEC	JC-1575VMA	2Y785821
Mouse	Logitech	M-BJ58	830513-1000

BLOCK DIAGRAM



MAXIMUM PEAK OUTPUT POWER MEASUREMENT (Continued)

PHOTOGRAPHS

SPURIOUS RADIATED EMISSIONS

CLIENT:	Toshiba Corporation	**DATE:**	12/14/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: WLAN ON, BT ON		**TEMPERATURE:**	21 C
		HUMIDITY:	36% RH
		TIME:	9:00 AM

Standard:	FCC CFR 47, Part 15, 15.247(c), 15.209
Description:	Spurious Emissions Measurements - Radiated
Results:	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 is 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.

SPURIOUS RADIATED EMISSIONS (Continued)

Fundamental and Band Edge Measurements at Low, Mid, & High Channels
Aegis Labs, Inc. File #: INTEL-021205-20

Horizontal Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
2401.82	67.00	100	135			100.60		
2390.00	29.80	100	135			63.36	74.00	-10.64
2390.00				15.40	A	48.96	54.00	-5.04
2440.77	66.00	100	135			99.72		
2479.82	65.23	100	135			99.07		
2483.50	29.45	100	135			63.30	74.00	-10.70
2483.50				16.54	A	50.39	54.00	-3.61

Vertical Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
2401.98	62.45	200	90			96.05		
2390.00	28.54	200	90			62.10	74.00	-11.90
2390.00				16.21	A	49.77	54.00	-4.23
2440.81	64.00	200	90			97.72		
2478.92	63.65	200	90			97.49		
2483.50	26.12	200	90			59.97	74.00	-14.03
2483.50				15.54	A	49.39	54.00	-4.61

SPURIOUS RADIATED EMISSIONS (Continued)

Harmonic Measurements at Low, Mid, & High Channels @ 1Mbps Data Rate
Aegis Labs, Inc. File #: INTEL-021205-21

Horizontal Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
4804.25	43.87	100	90			48.08	74.00	-25.92
4804.25				29.54	A	33.75	54.00	-20.25
7206.40	42.80	100	90			50.97	74.00	-23.03
7206.40				29.32	A	37.49	54.00	-16.51
9608.41	42.65	100	90			51.77	80.60	-28.83
4881.71	41.87	100	180			46.26	74.00	-27.74
4881.71				28.41	A	32.80	54.00	-21.20
7323.06	42.50	100	180			50.84	74.00	-23.16
7323.06				28.01	A	36.35	54.00	-17.65
9763.68	42.65	100	135			51.96	79.72	-27.76
4959.75	40.62	100	45			45.19	74.00	-28.81
4959.75				37.40	A	41.97	54.00	-12.03
7440.13	40.45	100	90			48.96	74.00	-25.04
7440.13				33.00	A	41.51	54.00	-12.49
9920.28	42.30	100	135			51.79	79.07	-27.28
Vertical Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
4803.92	43.20	100	135			47.41	74.00	-26.59
4803.92				29.56	A	33.77	54.00	-20.23
7206.00	43.65	100	135			51.82	74.00	-22.18
7206.00				29.12	A	37.29	54.00	-16.71
9608.41	44.21	100	135			53.33	76.05	-22.72
4881.75	43.65	100	180			48.04	74.00	-25.96
4881.75				30.00	A	34.39	54.00	-19.61
7322.58	40.58	100	135			48.92	74.00	-25.08
7322.58				28.50	A	36.84	54.00	-17.16
9764.19	43.69	100	180			53.00	77.72	-24.72
4960.17	40.32	100	135			44.89	74.00	-29.11
4960.17				34.58	A	39.15	54.00	-14.85
7439.75	43.50	100	180			52.01	74.00	-21.99
7439.75				33.21	A	41.72	54.00	-12.28
9919.67	43.54	100	180			53.03	77.49	-24.46

SPURIOUS RADIATED EMISSIONS (Continued)

Spurious Emissions Measurements on Low Channel @ 1Mbps Data Rate
Aegis Labs, Inc. File #: INTEL-021205-22

Horizontal Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
1064.18	55.00	100	135			46.44	74.00	-27.56
1064.18				40.56	A	32.00	54.00	-22.00
1196.91	54.23	100	180			46.28	74.00	-27.72
1196.91				38.00	A	30.05	54.00	-23.95
1494.93	49.36	100	135			42.62	74.00	-31.38
1494.93				40.30	A	33.56	54.00	-20.44

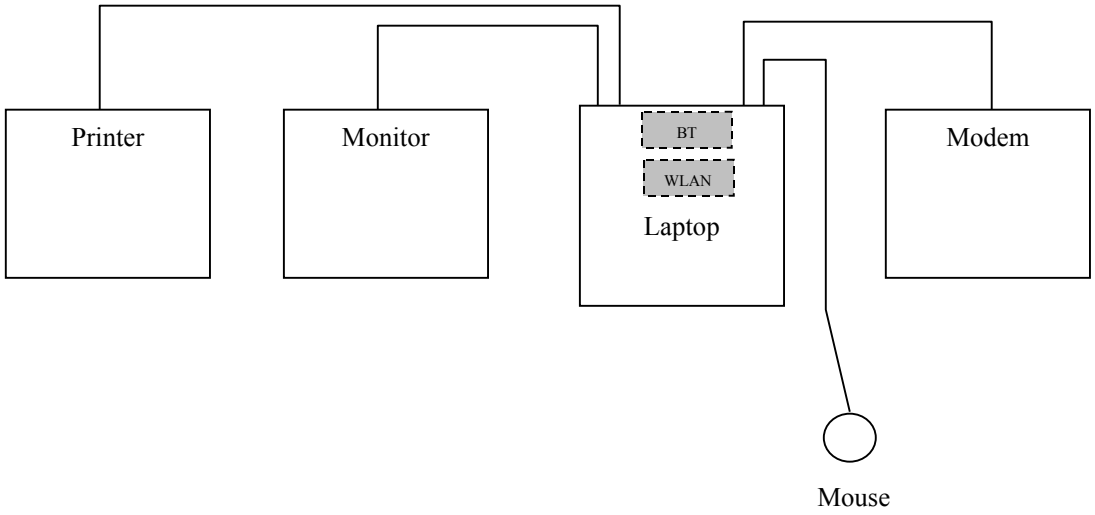
Vertical Open Field Maximized Data								
Freq. (MHz)	*Meter Reading (dBuV)*	*Antenna Height (cm)*	*Azimuth (degrees)*	*Quasi pk or AVG (dBuV)*		*Corrected Reading (dBuV)*	*Limits (dBuV)*	*Diff (dB) +=FAIL*
1062.71	58.50	100	135			49.93	74.00	-24.07
1062.71				40.31	A	31.74	54.00	-22.26
1162.37	58.26	100	0			50.31	74.00	-23.69
1162.37				54.75	A	46.80	54.00	-7.20
1199.48	50.69	100	45			42.74	74.00	-31.26
1199.48				35.87	A	27.92	54.00	-26.08
1328.77	59.60	100	45			51.99	74.00	-22.01
1328.77				41.98	A	34.37	54.00	-19.63
1494.96	52.50	100	45			45.76	74.00	-28.24
1494.96				50.00	A	43.26	54.00	-10.74

SPURIOUS RADIATED EMISSIONS (Continued)

TEST EQUIPMENT USED					
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**	**Calibration Due Date**	**Calibration Cycle**
Spectrum Analyzer	Agilent	8564EC	4046A00387	02/28/04	2 Years
Preamplifier	Agilent	8449B	3008A01573	04/29/03	1 Year
Antenna - Horn	EMCO	3115	2230	09/14/03	1 Year
Temperature/Humidity Monitor	Dickson	TH550	7255185	01/08/03	1 Year

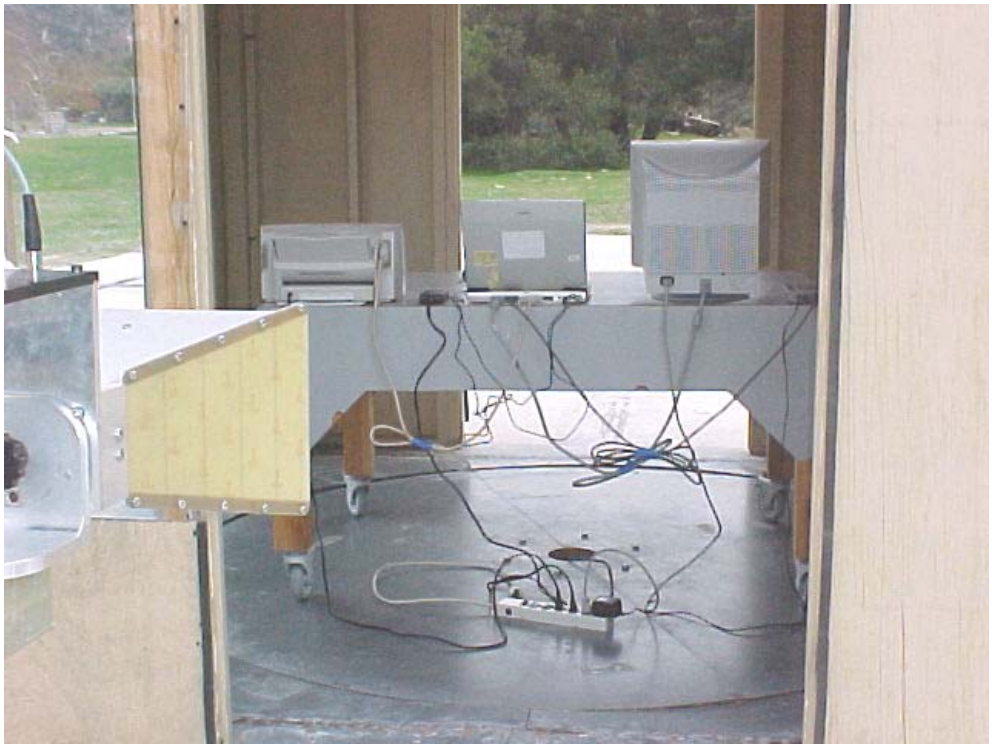
EUT ACCESSORIES			
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**
Tecra 9100 Laptop (with Dual Band Film Antennas)	Toshiba	PT910U-AAAA7	12050065JU
AC Adapter	Toshiba	PA3083U-1ACA	0108 A 0000774G
Monitor	NEC	JC-1575VMA	2Y785821
Mouse	Logitech	M-BJ58	830513-1000
Printer	Canon	BJC-4200	MT1-18
Modem	Hayes	5362US	A02153623145

BLOCK DIAGRAM



SPURIOUS RADIATED EMISSIONS (Continued)

PHOTOGRAPHS



SPECTRAL POWER DENSITY MEASUREMENT

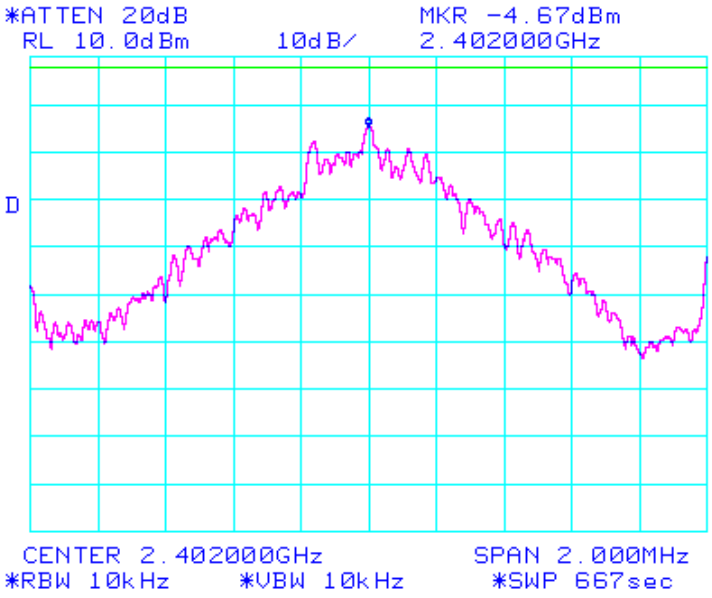
CLIENT:	Toshiba Corporation	**DATE:**	12/14/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: *Conducted Measurement @ BT Port*		**TEMPERATURE:**	25 C
		HUMIDITY:	38% RH
		TIME:	8:00 AM

Standard:	FCC CFR 47, Part 15, 15.247(D)
Description:	Power Spectral Density Measurement
Results:	Transmitted power density averaged over any 1 second interval is not greater than 8 dBm in any 3 kHz bandwidth within these bands

TEST RESULTS SUMMARY	
Data	**Result**
Low Channel Power Spectral Density	-4.67 dBm – Pass
Mid Channel Power Spectral Density	-3.67 dBm – Pass
High Channel Power Spectral Density	-4.00 dBm - Pass

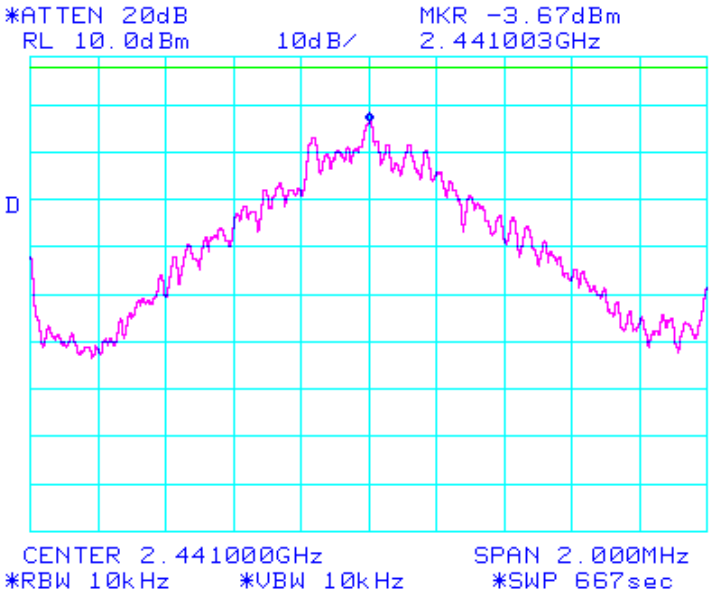
SPECTRAL POWER DENSITY MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/14/02	Low Channel Power Spectral Density	Rick Candelas *(INTEL-021205-89)*



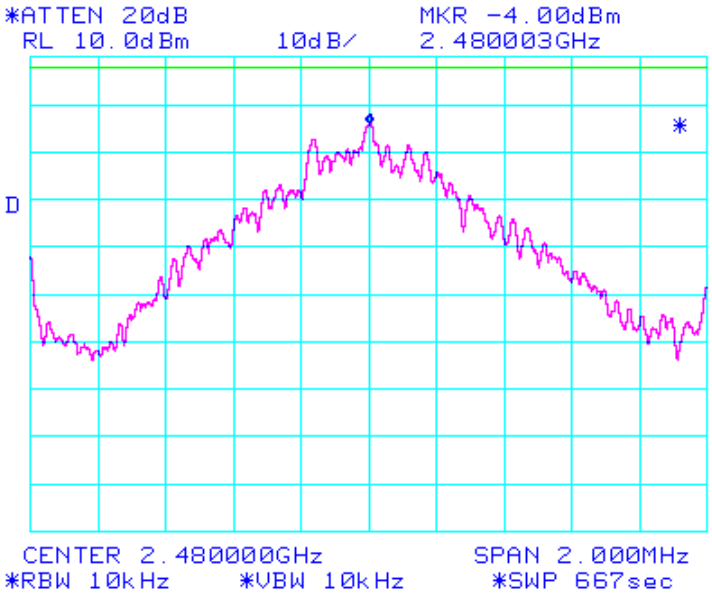
SPECTRAL POWER DENSITY MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/14/02	Mid Channel Power Spectral Density	Rick Candelas *(INTEL-021205-90)*



SPECTRAL POWER DENSITY MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/14/02	High Channel Power Spectral Density	Rick Candelas *(INTEL-021205-91)*



SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL

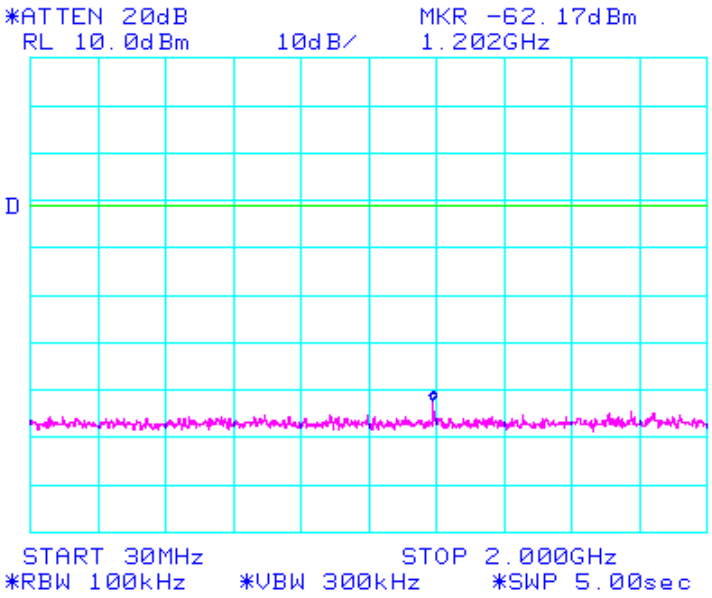
CLIENT:	Toshiba Corporation	**DATE:**	12/14/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: *Conducted Measurement @ BT Port*		**TEMPERATURE:**	25 C
		HUMIDITY:	38% RH
		TIME:	9:00 AM

Standard:	FCC CFR 47, Part 15, 15.247(c)
Description:	Conducted Spurious Emissions
Results:	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.

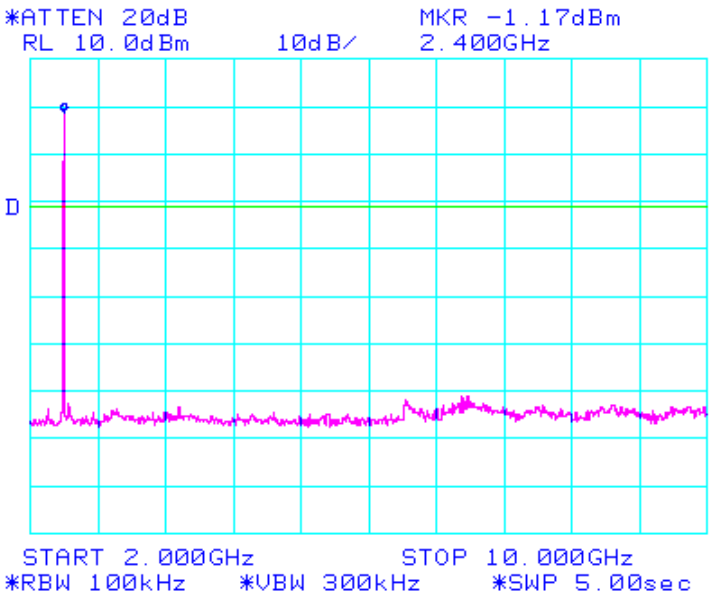
TEST RESULTS SUMMARY	
Data	**Result**
Low Channel Spurious Emissions – Antenna Terminal - 30MHz – 2GHz	Max Spur Signal @ -62.17dBm – Pass
Low Channel Spurious Emissions – Antenna Terminal - 2GHz – 10GHz	Max Spur Signal @ -61.00dBm – Pass
Low Channel Spurious Emissions – Antenna Terminal - 10GHz – 20GHz	Max Spur Signal @ -59.83dBm – Pass
Low Channel Spurious Emissions – Antenna Terminal - 20GHz – 26.5GHz	Max Spur Signal @ -56.83dBm – Pass
Mid Channel Spurious Emissions – Antenna Terminal - 30MHz – 2GHz	Max Spur Signal @ -64.33dBm – Pass
Mid Channel Spurious Emissions – Antenna Terminal - 2GHz – 10GHz	Max Spur Signal @ -63.00dBm – Pass
Mid Channel Spurious Emissions – Antenna Terminal - 10GHz – 20GHz	Max Spur Signal @ -59.17dBm – Pass
Mid Channel Spurious Emissions – Antenna Terminal - 20GHz – 26.5GHz	Max Spur Signal @ -57.33dBm – Pass
High Channel Spurious Emissions – Antenna Terminal - 30MHz – 2GHz	Max Spur Signal @ -63.67dBm – Pass
High Channel Spurious Emissions – Antenna Terminal - 2GHz – 10GHz	Max Spur Signal @ -60.00dBm – Pass
High Channel Spurious Emissions – Antenna Terminal - 10GHz – 20GHz	Max Spur Signal @ -59.83dBm – Pass
High Channel Spurious Emissions – Antenna Terminal - 20GHz – 26.5GHz	Max Spur Signal @ -57.17dBm – Pass

SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/14/02	Low Channel Spurious Emissions – Antenna Terminal 30 MHz – 2 GHz	Rick Candelas *(INTEL-021205-92a)*

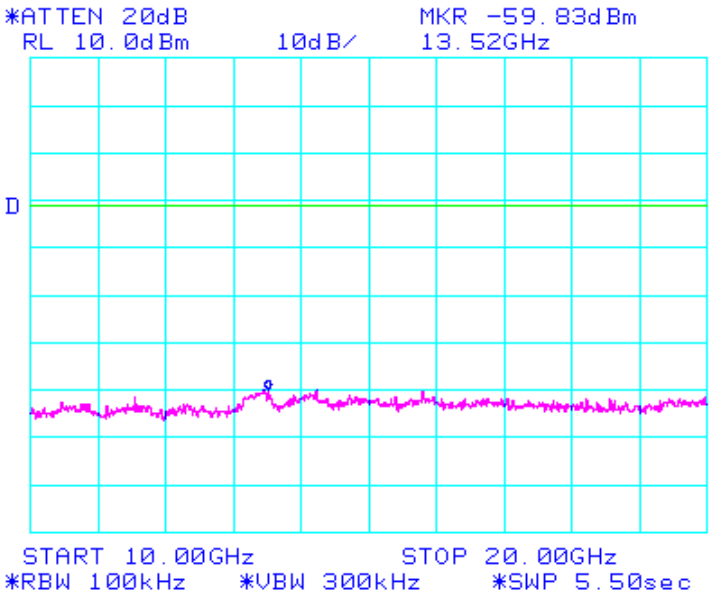


Test Date	*Data*	*Test Eng.*
12/14/02	Low Channel Spurious Emissions – Antenna Terminal 2 GHz – 10 GHz	Rick Candelas *(INTEL-021205-92b)*

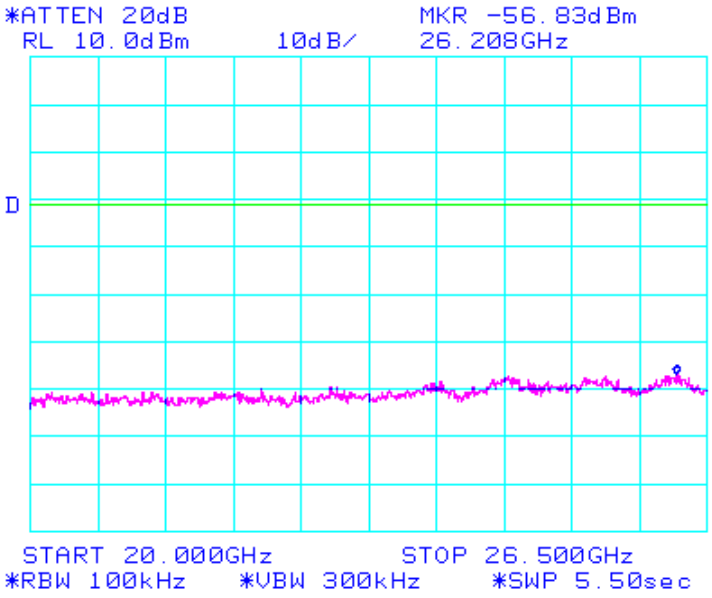


SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/144/02	Low Channel Spurious Emissions – Antenna Terminal 10 GHz - 20 GHz	Rick Candelas *(INTEL-021205-92c)*

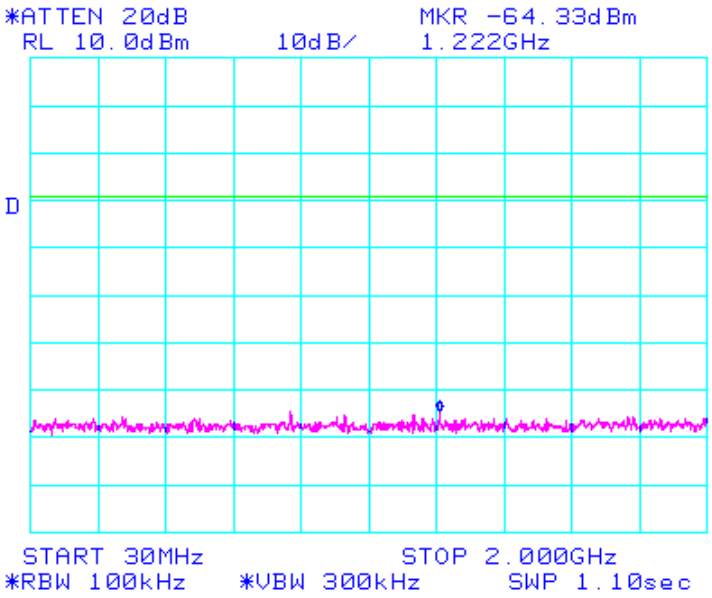


Test Date	*Data*	*Test Eng.*
12/14/02	Low Channel Spurious Emissions – Antenna Terminal 20 GHz – 26.5 GHz	Rick Candelas *(INTEL-021205-92d)*

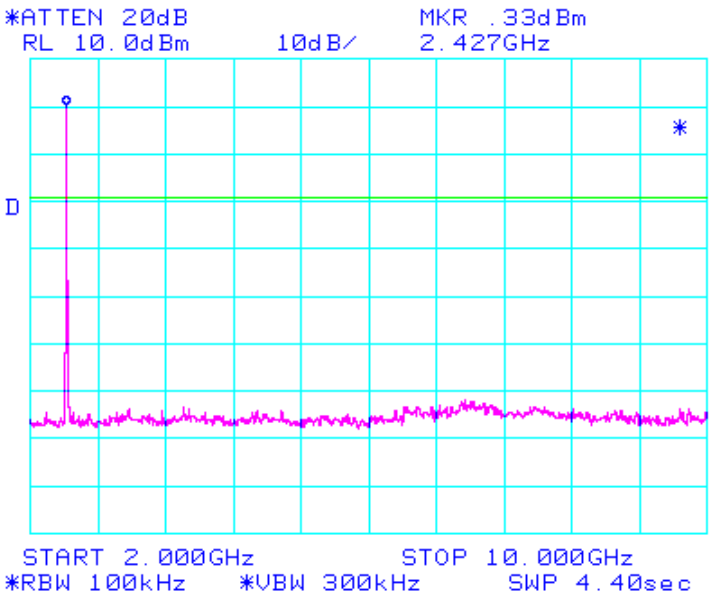


SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/14/02	Mid Channel Spurious Emissions – Antenna Terminal 30 MHz – 2 GHz	Rick Candelas *(INTEL-021205-92e)*

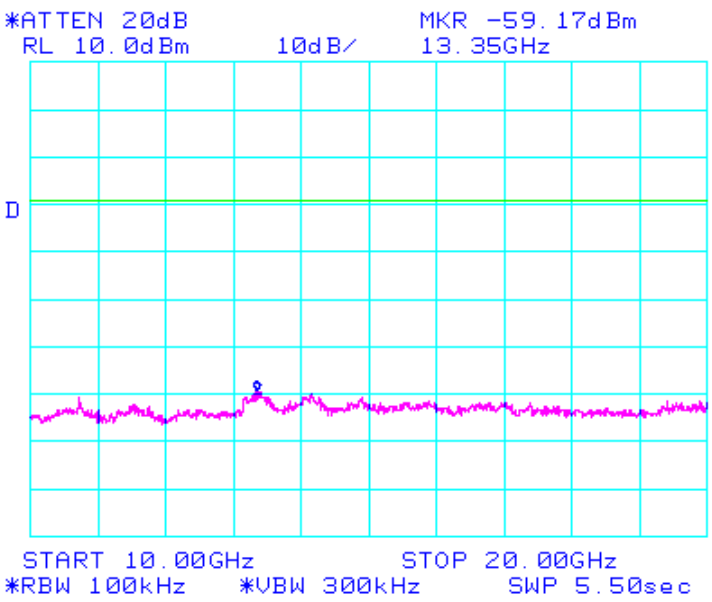


Test Date	*Data*	*Test Eng.*
12/14/02	Mid Channel Spurious Emissions – Antenna Terminal 2 GHz – 10 GHz	Rick Candelas *(INTEL-021205-92f)*

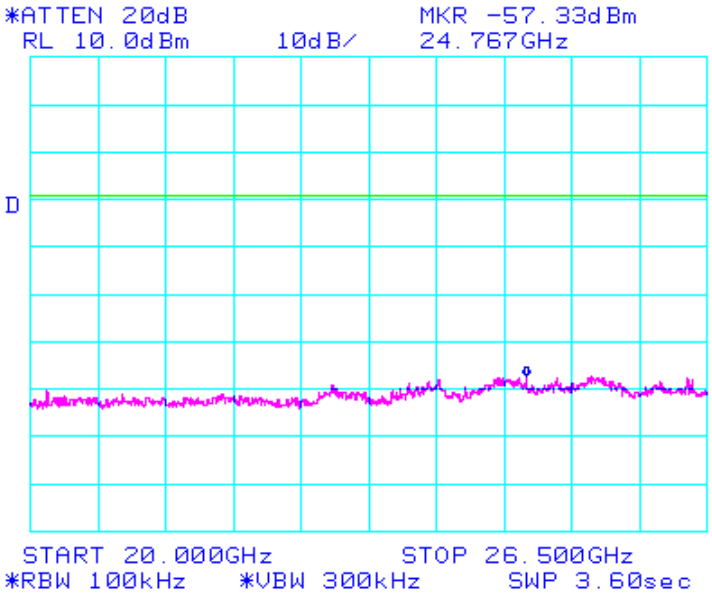


SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/14/02	Mid Channel Spurious Emissions – Antenna Terminal 10 GHz - 20 GHz	Rick Candelas *(INTEL-021205-92g)*

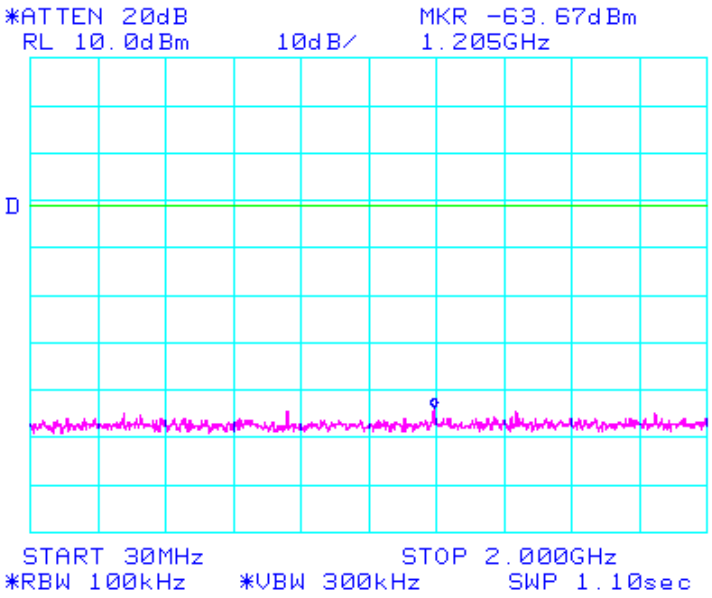


Test Date	*Data*	*Test Eng.*
12/14/02	Mid Channel Spurious Emissions – Antenna Terminal 20 GHz – 26.5 GHz	Rick Candelas *(INTEL-021205-92h)*

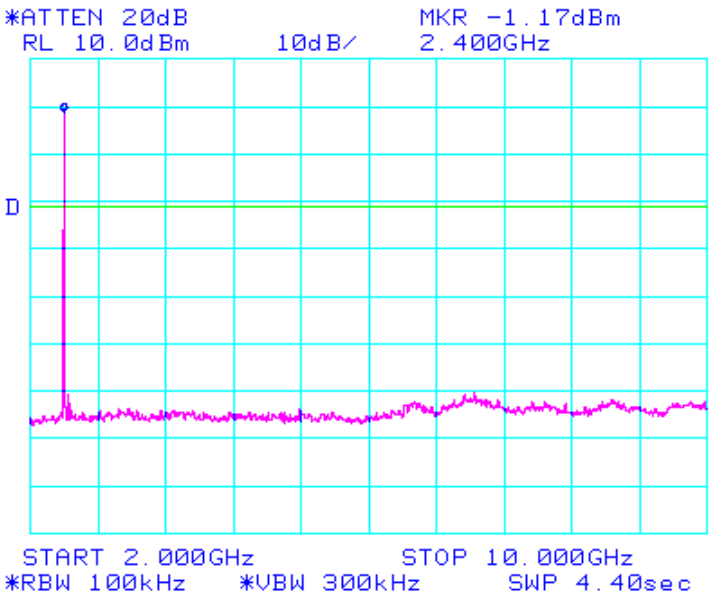


SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/14/02	High Channel Spurious Emissions – Antenna Terminal 30 MHz – 2 GHz	Rick Candelas *(INTEL-021205-92i)*

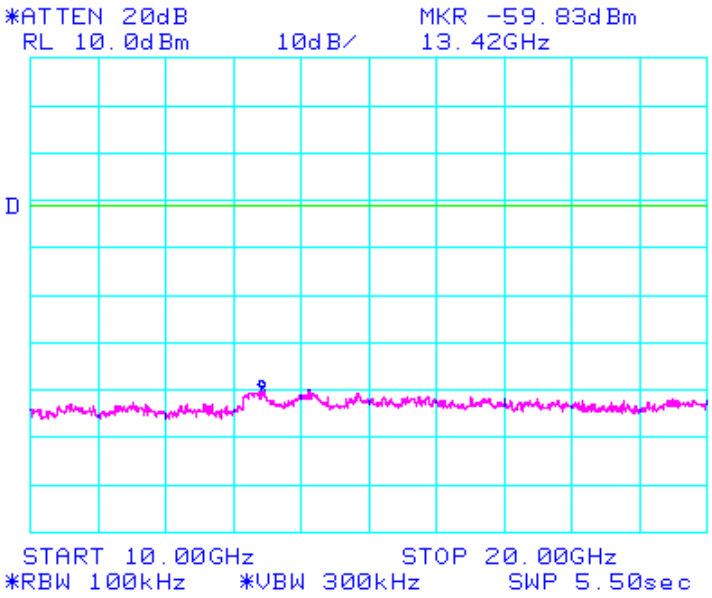


Test Date	*Data*	*Test Eng.*
12/14/02	High Channel Spurious Emissions – Antenna Terminal 2 GHz – 10 GHz	Rick Candelas *(INTEL-021205-92j)*

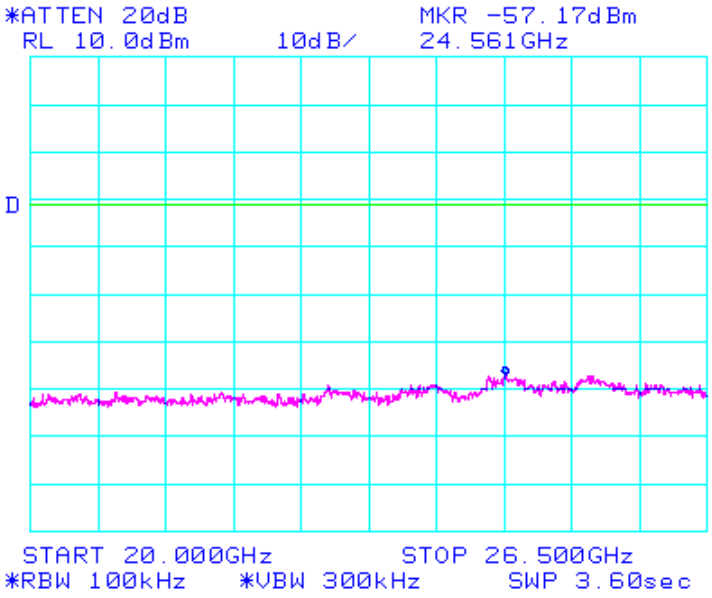


SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)

Test Date	*Data*	*Test Eng.*
12/14/02	High Channel Spurious Emissions – Antenna Terminal 10 GHz - 20 GHz	Rick Candelas *(INTEL-021205-92k)*



Test Date	*Data*	*Test Eng.*
12/14/02	High Channel Spurious Emissions – Antenna Terminal 20 GHz – 26.5 G	Rick Candelas *(INTEL-021205-92l)*



20dB BANDWIDTH MEASUREMENT

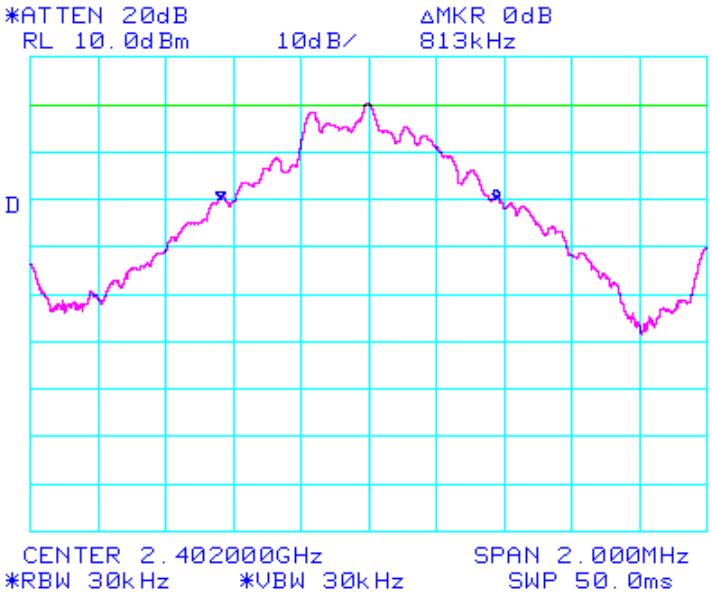
CLIENT:	Toshiba Corporation	**DATE:**	12/14/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: *Conducted Measurement @ BT Port*		**TEMPERATURE:**	25 C
		HUMIDITY:	38% RH
		TIME:	10:00 AM

Standard:	FCC CFR 47, Part 15.247(a)(1)(ii)
Description:	20dB Bandwidth
Results:	The bandwidth is less than 1 MHz.

TEST RESULTS SUMMARY	
Data	**Result**
Low Channel 20dB Bandwidth	813 kHz – Pass
Mid Channel 20dB Bandwidth	763 kHz – Pass
High Channel 20dB Bandwidth	737 kHz - Pass

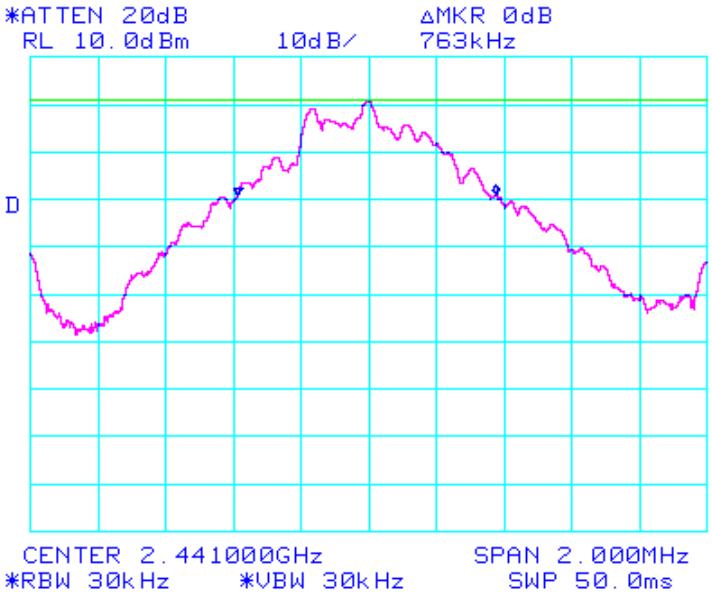
20dB BANDWIDTH MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/14/02	Low Channel 20dB Bandwidth Measurement	Rick Candelas *(INTEL-021205-93a)*



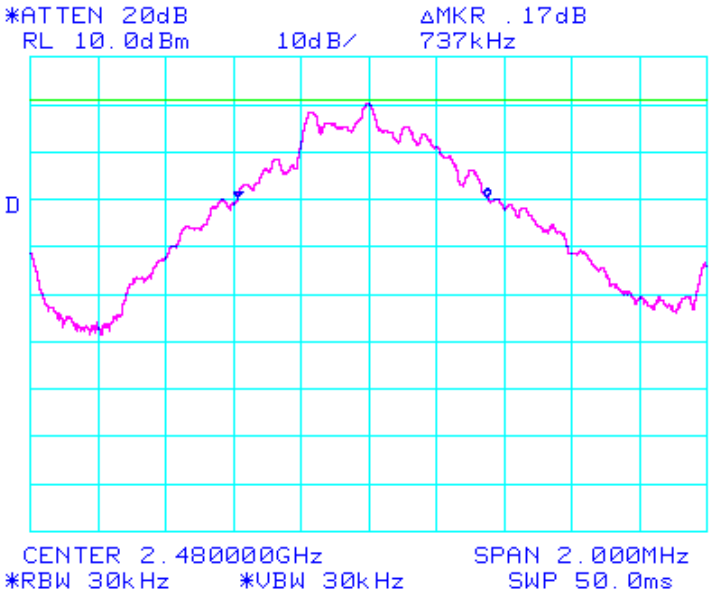
20dB BANDWIDTH MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/14/02	Mid Channel 20dB Bandwidth Measurement	Rick Candelas *(INTEL-021205-93b)*



20dB BANDWIDTH MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/14/02	High Channel 20dB Bandwidth Measurement	Rick Candelas *(INTEL-021205-93c)*



CARRIER FREQUENCY SEPARATION MEASUREMENT

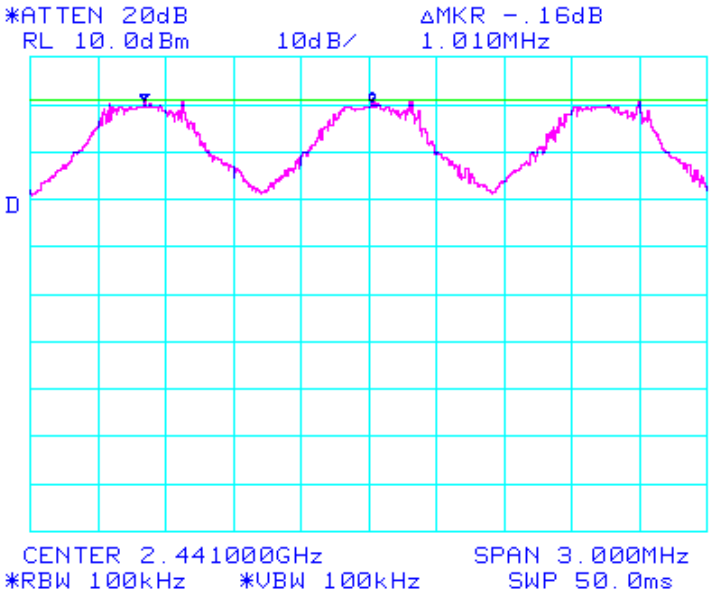
CLIENT:	Toshiba Corporation	**DATE:**	12/14/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: *Conducted Measurement @ BT Port*		**TEMPERATURE:**	25 C
		HUMIDITY:	38% RH
		TIME:	11:00 AM

Standard:	FCC CFR 47, Part 15.247(a)(1)(ii)
Description:	Carrier Frequency Separation
Results:	The channel hopping separation is greater than the 20 dB bandwidth.

TEST RESULTS SUMMARY	
Data	**Result**
Carrier Frequency Separation	1.01 MHz – Pass

CARRIER FREQUENCY SEPARATION MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/14/02	Carrier Frequency Separation Measurement	Rick Candelas *(INTEL-021205-94)*



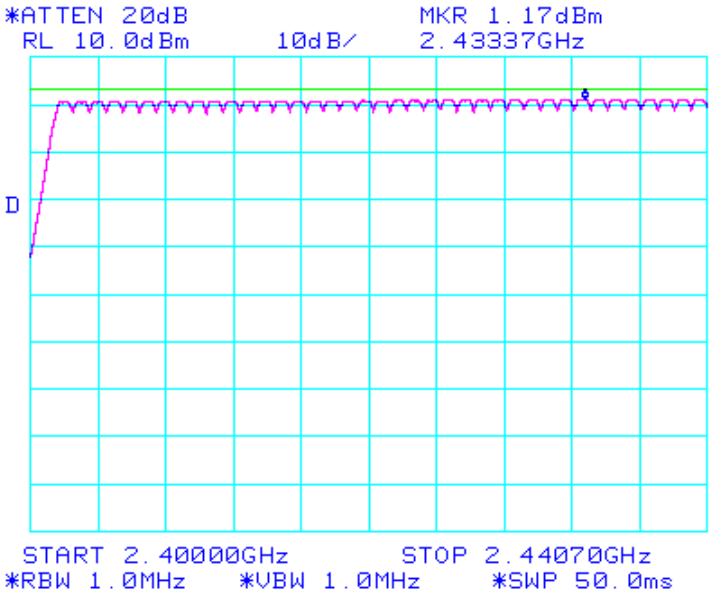
NUMBER OF HOPPING FREQUENCIES MEASUREMENT

CLIENT:	Toshiba Corporation	**DATE:**	12/14/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: *Conducted Measurement @ BT Port*		**TEMPERATURE:**	25 C
		HUMIDITY:	38% RH
		TIME:	12:00 PM

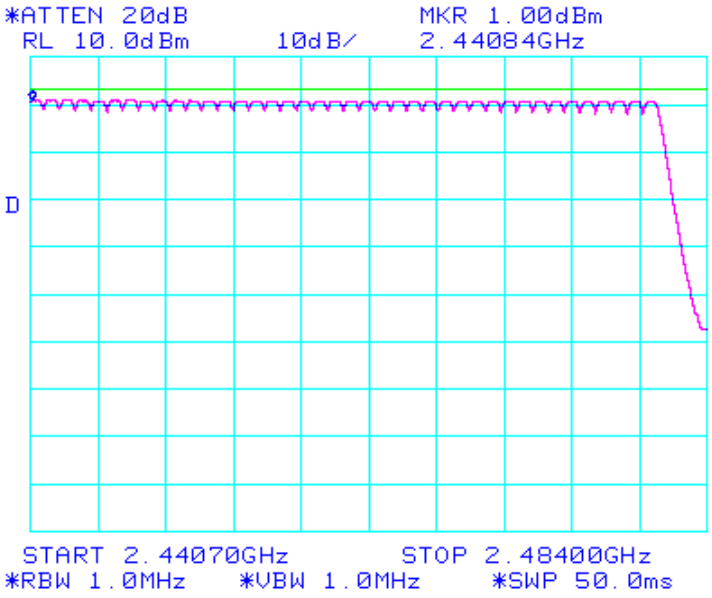
Standard:	FCC CFR 47, Part 15.247(a)(1)(ii)
Description:	Number of Hopping Frequencies
Results:	The number of hopping frequencies is 79. (See Plots)

NUMBER OF HOPPING FREQUENCIES MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/14/02	Number of Hopping Frequencies	Rick Candelas *(INTEL-021205-95a)*



Test Date	*Data*	*Test Eng.*
12/14/02	Number of Hopping Frequencies	Rick Candelas *(INTEL-021205-95b)*



AVERAGE TIME OF OCCUPANCY MEASUREMENT

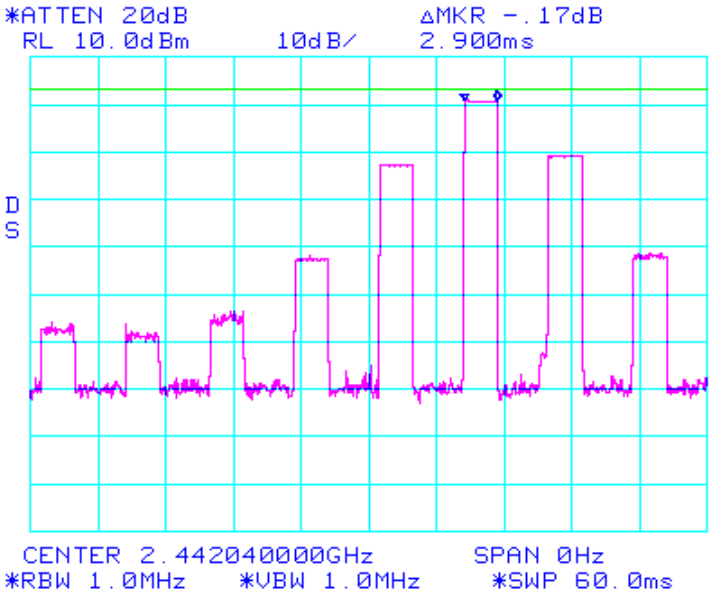
CLIENT:	Toshiba Corporation	**DATE:**	12/14/02
EUT:	WLAN & Bluetooth Modules	**PROJECT NUMBER:**	INTEL-021205
MODEL NUMBER:	PA3171WL & PA3232BT	**TEST ENGINEER:**	Rick Candelas
SERIAL NUMBER:	000423001A77 & 00037A02E888	**SITE #:**	2
CONFIGUARTION: *Conducted Measurement @ BT Port*		**TEMPERATURE:**	25 C
		HUMIDITY:	38% RH
		TIME:	1:00 PM

Standard:	FCC CFR 47, Part 15.247(a)(1)(ii)
Description:	Average Time of Occupancy
Results:	The EUT does not transmit for more than 400msec during a 30 second period on any frequency. (See Plot)

TEST RESULTS SUMMARY
The average time of occupancy is 2.90msec for every 60msec period. Therefore: 60msec = 1sec and the EUT average time of occupancy is 2.90msec for every 1sec period then the EUT Average Time of Occupancy is, 2.90msec x 30sec = 87msec per 30sec period

AVERAGE TIME OF OCCUPANCY MEASUREMENT (Continued)

Test Date	*Data*	*Test Eng.*
12/14/02	Average Time of Occupancy	Rick Candelas *(INTEL-021205-96)*

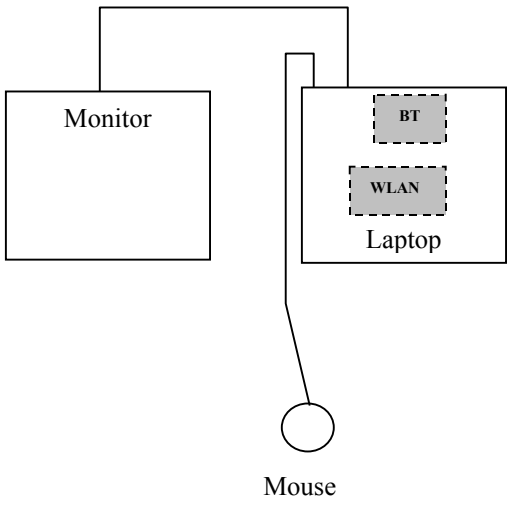


CONDUCTED MEASUREMENTS SETUP

TEST EQUIPMENT USED					
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**	**Calibration Due Date**	**Calibration Cycle**
Spectrum Analyzer	Agilent	8564EC	4046A00387	02/28/04	2 Years
DC Block	Inmet	8039	N/A	N/A	N/A
Power Meter	Rohde & Schwarz	NRVS	DE30863	11/24/03	1 Year
Power Sensor	Leistungsmesskoph	NRV-Z5	844855/012	11/24/03	1 Year
Temperature / Humidity Monitor	Dickson	TH550	7255185	01/08/03	1 Year

EUT ACCESSORIES			
Equipment Name	**Manufacturer**	**Model Number**	**Serial Number**
Tecra 9100 Laptop (with Dual Band Film Antennas)	Toshiba	PT910U-AAAA7	12050065JU
AC Adapter	Toshiba	PA3083U-1ACA	0108 A 0000774G
Monitor	NEC	JC-1575VMA	2Y785821
Mouse	Logitech	M-BJ58	830513-1000

BLOCK DIAGRAM



CONDUCTED MEASUREMENTS SETUP (Continued)

PHOTOGRAPHS