



Test Report

Product Name	ErgoMedia 823 Laser
Model No.	GK-070007/T
FCC ID	FSUGMZI2

Applicant	KYE SYSTEMS CORP. (Genius)
Address	No. 492, Sec. 5, Chung Hsin Rd., San Chung, Taipei Hsien, 24160, Taiwan, R. O. C.

Date of Receipt	July 18, 2007
Issued Date	Aug. 07, 2007
Report No.	077259R-RFUSP07V01

The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

Test Report Certification

Issued Date: Aug. 07, 2007

Report No.: 077259R-RFUSP07V01



Product Name	ErgoMedia 823 Laser
Applicant	KYE SYSTEMS CORP. (Genius)
Address	No. 492, Sec. 5, Chung Hsin Rd., San Chung, Taipei Hsien, 24160, Taiwan, R. O. C.
Manufacturer	KYE SYSTEMS CORP. (Genius)
Model No.	GK-070007/T
Rated Voltage	AC 120V/60Hz
Working Voltage	DC 3V(Power by battery)
Trade Name	Genius
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2006 ANSI C63.4: 2003
Test Result	Complied



Test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of Quietek Corporation.

This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

Documented By

:

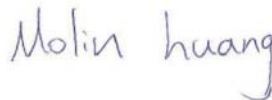


(Engineering Adm. Specialist /
Gene Chang)



Tested By

:



(Engineer /Molin Huang)



0914

Approved By

:



(President / Gene Chang)

TABLE OF CONTENTS

Description	Page
1. GENERAL INFORMATION	4
1.1. EUT Description.....	4
1.2. Operational Description	5
1.3. Tested System Details.....	6
1.4. Configuration of Test System.....	6
1.5. EUT Exercise Software	6
1.6. Test Facility	7
2. Radiated Emission.....	8
2.1. Test Equipment.....	8
2.2. Test Setup	9
2.3. Limits	9
2.4. Test Procedure	10
2.5. Uncertainty	10
2.6. Test Result of Radiated Emission.....	11
3. Band Edge	18
3.1. Test Equipment.....	18
3.2. Test Setup	18
3.3. Limits	19
3.4. Test Procedure	19
3.5. Uncertainty	19
3.6. Test Result of Band Edge	20
4. EMI Reduction Method During Compliance Testing	24
Attachment 1: EUT Test Photographs	
Attachment 2: EUT Detailed Photographs	

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	ErgoMedia 823 Laser
Trade Name	Genius
Model No.	GK-070007/T
FCC ID	FSUGMZI2
Frequency Range	2402~2480MHz
Channel Control	Manual
Channel Separation	3MHz
Antenna Gain	-3dBi
Channel Number	16
Type of Modulation	GFSK
Antenna Type	Soldered on PCB

Frequency of Each Channel

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 00	2402MHz	Channel 01	2405MHz	Channel 02	2408MHz	Channel 03	2411MHz
Channel 04	2425MHz	Channel 05	2428MHz	Channel 06	2431MHz	Channel 07	2434MHz
Channel 08	2448MHz	Channel 09	2451MHz	Channel 10	2454MHz	Channel 11	2457MHz
Channel 12	2471MHz	Channel 13	2474MHz	Channel 14	2477MHz	Channel 15	2480MHz

Note:

1. The EUT is a ErgoMedia 823 Laser with a built-in 2.4GHz transceiver.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report.
4. These tests are conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
5. Part 15 Subpart B compliance for spread spectrum devices is shown on the report no. 077259R-RFUSP01V02.
6. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

1.2. Operational Description

The EUT is 2.4GHz Wireless Mouse built-in 2.4GHz transceiver. The operation frequency is from 2402 MHz to 2480MHz with GFSK modulation. The signal will be transmitted through 2.4 GHz RF signal from the Printed on PCB antenna from EUT to receiver. DC 3V shall be provided for EUT operation.

Test Mode	Mode 1: Transmitter
-----------	---------------------

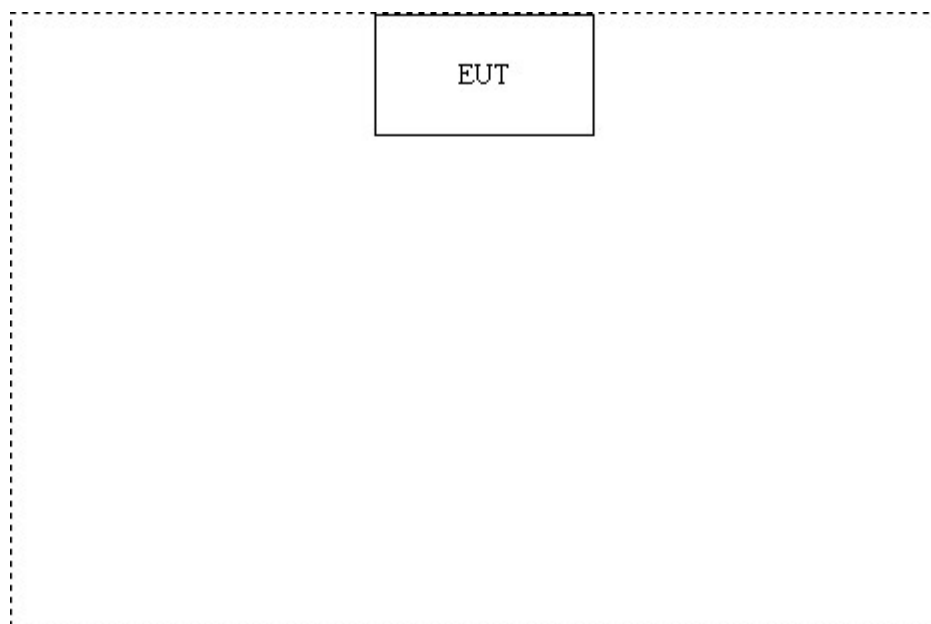
1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	Power Cord
1	N/A	N/A	N/A	N/A

Signal Cable Type	Signal cable Description
A	N/A

1.4. Configuration of Test System



1.5. EUT Exercise Software

1	Setup the EUT and display as shown on 1.5.
2	Turn on the power of all equipment.
3	The EUT will start to operate.
4	The EUT will continuously transmit the radio signal.
5	Repeat the above procedure (3) to (4)

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

Site Description: File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Reference 31040/SIT1300F2



Accreditation on NVLAP
NVLAP Lab Code: 200533-0



Site Name: Quietek Corporation
Site Address: No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,
Lin-Kou Shiang, Taipei,
Taiwan, R.O.C.
TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : service@quietek.com



FCC Accreditation Number: TW1014

2. Radiated Emission

2.1. Test Equipment

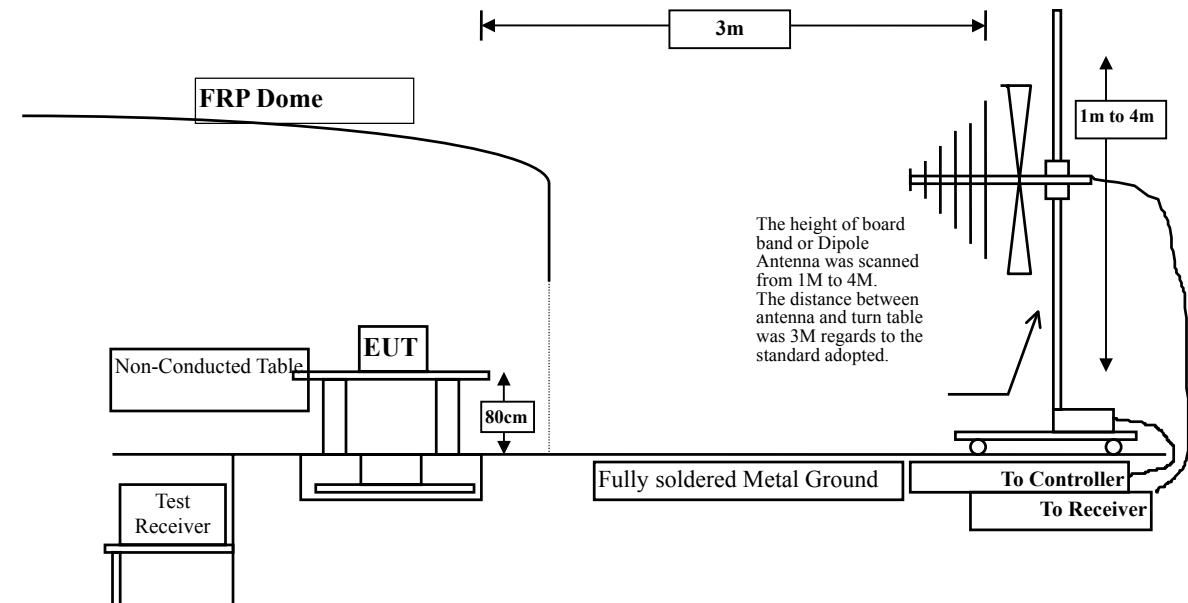
The following test equipment are used during the radiated emission test:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
<input type="checkbox"/> Site # 1		Test Receiver	R & S	ESVS 10 / 834468/003	May, 2007
		Spectrum Analyzer	Advantest	R3162/ 00803480	May, 2007
		Pre-Amplifier	Advantest	BB525C/ 3307A01812	May, 2007
		Bilog Antenna	SCHAFFNER	CBL6112B / 2697	Sep., 2006
<input type="checkbox"/> Site # 2		Test Receiver	R & S	ESCS 30 / 836858 / 022	May, 2007
		Spectrum Analyzer	Advantest	R3162 / 100803466	May, 2007
		Pre-Amplifier	Advantest	BB525C/3307A01814	May, 2007
		Bilog Antenna	SCHAFFNER	CBL6112B / 2705	May, 2007
		Horn Antenna	ETS	3115 / 0005-6160	Sep., 2006
		Pre-Amplifier	QTK	QTK-AMP-01/ 0001	May, 2007
<input checked="" type="checkbox"/> Site # 3	X	Test Receiver	R & S	ESI 26 / 838786/004	May, 2007
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2007
	X	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2007
	X	Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2007
	X	Horn Antenna	Schwarzbeck	BBHA9170 / 208, 209	July, 2007
	X	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2007
	X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2007
	X	Pre-Amplifier	HP	8449B / 3008A01123	July, 2007

Note: 1. All equipments are calibrated every one year.

2. Test equipments marked by "X" are used to measure the final test results.

2.2. Test Setup



2.3. Limits

➤ General Radiated Emission Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209(a) Limits		
Frequency MHz	uV/m @3m	dBuV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

- Remarks :
1. RF Voltage (dBuV) = $20 \log$ RF Voltage (uV)
 2. In the Above Table, the tighter limit applies at the band edges.
 3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

2.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated measurement.

The additional latch filter below 1GHz was used to measure the level of harmonics radiated emission during field strength of harmonics measurement.

The bandwidth below 1GHz setting on the field strength meter is 120 kHz, above 1GHz are 1 MHz. The frequency range from 30MHz to 10th harmonics is checked.

2.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

2.6. Test Result of Radiated Emission

Product : ErgoMedia 823 Laser
 Test Item : Fundamental Radiated Emission
 Test Site : No.3OATS
 Test Mode : Mode 1: Transmitter (2402MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

Channel 00

2402.000	-2.318	90.234	87.916	-26.084	114.000
----------	--------	--------	--------	---------	---------

Average Detector

Vertical

Peak Detector:

Channel 00

2402.000	-2.318	92.957	90.639	-23.361	114.000
----------	--------	--------	--------	---------	---------

Average Detector

Note:

1. Measurement Level = Reading Level + Correct Factor.
2. Correct Factor = Antenna Factor + Cable Loss – PreAMP.

Product : ErgoMedia 823 Laser
 Test Item : Fundamental Radiated Emission
 Test Site : No.3OATS
 Test Mode : Mode 1: Transmitter (2448MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
Channel 02					
2448.125	-2.096	81.565	79.469	-34.531	114.000
Average Detector					
Vertical					
Peak Detector:					
Channel 02					
2448.125	-2.096	91.537	89.441	-24.559	114.000
Average Detector					

Note:

1. Measurement Level = Reading Level + Correct Factor.
2. Correct Factor = Antenna Factor + Cable Loss – PreAMP.

Product : ErgoMedia 823 Laser
 Test Item : Fundamental Radiated Emission
 Test Site : No.3OATS
 Test Mode : Mode 1: Transmitter (2480MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
Channel 15					
2480.000	-1.952	84.277	82.325	-31.675	114.000
Average Detector					
Vertical					
Peak Detector:					
Channel 15					
2480.000	-1.952	87.189	85.237	-28.763	114.000
Average Detector					

Note:

1. Measurement Level = Reading Level + Correct Factor.
2. Correct Factor = Antenna Factor + Cable Loss – PreAMP.

Product : ErgoMedia 823 Laser
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter (2402MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4804.000	3.663	40.149	43.811	-30.159	74.000
7206.000	9.357	37.581	46.937	-27.033	74.000
9608.000	11.842	33.256	45.098	-28.872	74.000

Average

Detector:

--

Vertical

Peak Detector:

4804.000	3.663	43.261	46.923	-27.047	74.000
7206.000	9.357	38.469	47.825	-26.145	74.000
9608.000	11.842	32.778	44.620	-29.350	74.000

Average

Detector:

--

Note:

1. The reading levels below 1GHz and above 1GHz are quasi-peak values and peak/average values, respectively.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz °
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:3KHz; Span:20MHz °
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : ErgoMedia 823 Laser
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter (2448 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level	dB	dBuV/m
	dB	dBuV	dBuV/m		

Horizontal

Peak Detector:

4896.000	3.972	43.899	47.871	-26.099	74.000
7344.000	9.715	37.844	47.558	-26.412	74.000
9792.000	11.795	32.785	44.579	-29.391	74.000

Average

Detector:

--

Vertical

Peak Detector:

4896.000	3.972	43.737	47.709	-26.261	74.000
7344.000	9.715	37.554	47.268	-26.702	74.000
9792.000	11.795	33.092	44.886	-29.084	74.000

Average

Detector:

--

Note:

1. The reading levels below 1GHz and above 1GHz are quasi-peak values and peak/average values, respectively.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz °
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:3KHz; Span:20MHz °
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : ErgoMedia 823 Laser
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter (2480 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4960.000	4.197	41.747	45.943	-28.027	74.000
7440.000	9.951	34.477	44.428	-29.542	74.000
9920.000	11.856	33.017	44.873	-29.097	74.000

Average

Detector:

--

Vertical

Peak Detector:

4960.000	4.197	40.862	45.058	-28.912	74.000
7440.000	9.951	35.570	45.521	-28.449	74.000
9920.000	11.856	32.375	44.231	-29.739	74.000

Average

Detector:

--

Note:

1. The reading levels below 1GHz and above 1GHz are quasi-peak values and peak/average values, respectively.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz °
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:3KHz; Span:20MHz °
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : ErgoMedia 823 Laser
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter (2448 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
357.375	15.206	9.866	25.072	-20.928	46.000
425.275	17.766	6.595	24.361	-21.639	46.000
493.175	18.351	8.413	26.764	-19.236	46.000
563.500	19.112	7.786	26.898	-19.102	46.000
670.200	20.634	6.090	26.724	-19.276	46.000
745.375	20.853	9.807	30.660	-15.340	46.000
Vertical					
204.600	9.887	10.162	20.049	-23.451	43.500
287.050	13.637	9.171	22.808	-23.192	46.000
456.800	18.502	2.976	21.478	-24.522	46.000
667.775	19.949	3.622	23.571	-22.429	46.000
750.225	23.184	4.150	27.334	-18.666	46.000
876.325	22.616	2.483	25.099	-20.901	46.000

Note:

1. The reading levels below 1GHz are quasi-peak values.
2. "■" means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The radiated emissions below 1GHz of the lowest, middle, highest frequency are pretested. Only the worst case is shown on the report.

3. Band Edge

3.1. Test Equipment

The following test equipments are used during the band edge tests:

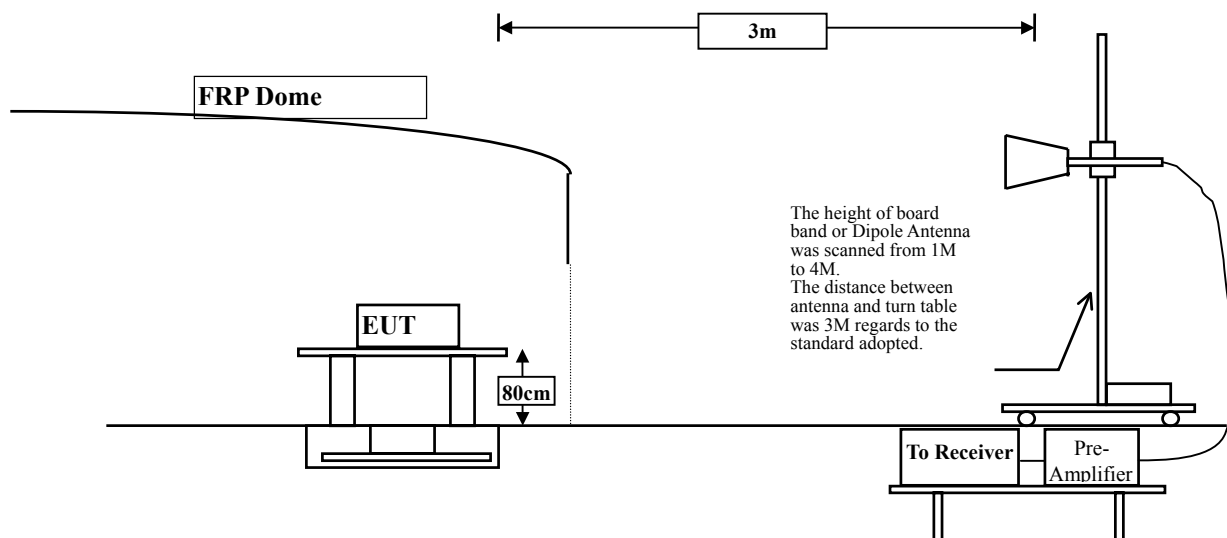
Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X Test Receiver	R & S	ESI 26 / 838786/004	May, 2007
X Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2007
X Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2007
X Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2007
X Horn Antenna	Schwarzbeck	BBHA9170 / 208, 209	July, 2007
X Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2007
X Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2007
X Pre-Amplifier	HP	8449B / 3008A01123	July, 2007

Test Site: Site3

- Note:
1. All equipments are calibrated every one year.
 2. The test equipments marked by "X" are used to measure the final test results.

3.2. Test Setup

RF Radiated Measurement:



3.3. Limits

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

3.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated measurement.

The bandwidth setting below 1GHz and above 1GHz on the field strength meter is 120 kHz and 1MHz, respectively.

3.5. Uncertainty

Conducted is ± 1.27 dB

Radiated is ± 3.9 dB

3.6. Test Result of Band Edge

Product : ErgoMedia 823 Laser
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter

RF Radiated Measurement:

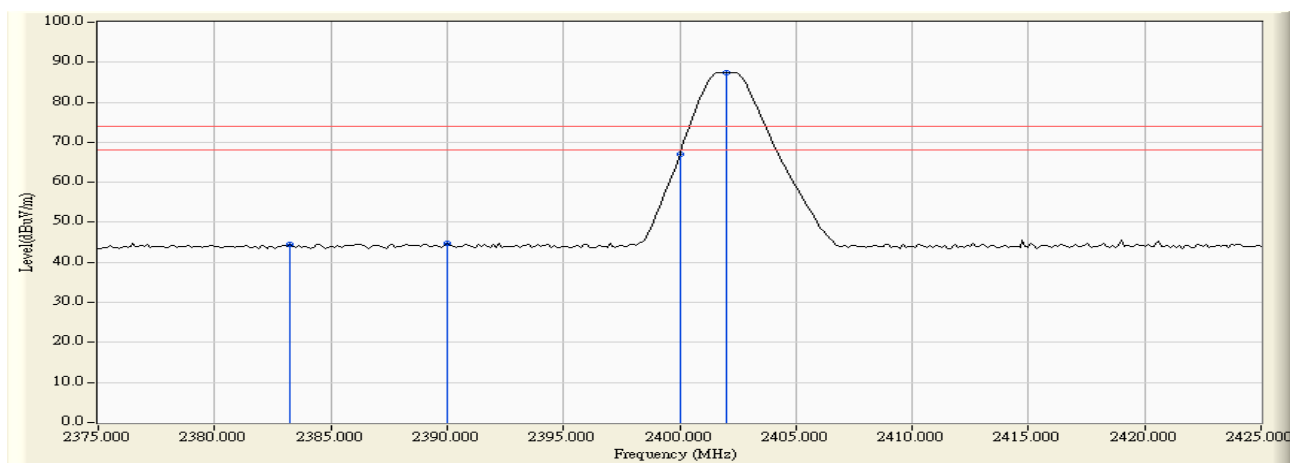
Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
00 (Horizontal)	<2400	>20	Pass

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2383.250	-2.410	46.788	44.378	74.00	54.00	Pass
00 (Peak)	2390.000	-2.378	47.034	44.657	74.00	54.00	Pass
00 (Peak)	2400.000	-2.328	69.371	67.043	74.00	54.00	Pass
00 (Peak)	2402.000	-2.318	89.768	87.450	74.00	54.00	Pass
00(Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 00:

Horizontal (Peak)



Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

Product : ErgoMedia 823 Laser
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter

RF Radiated Measurement:

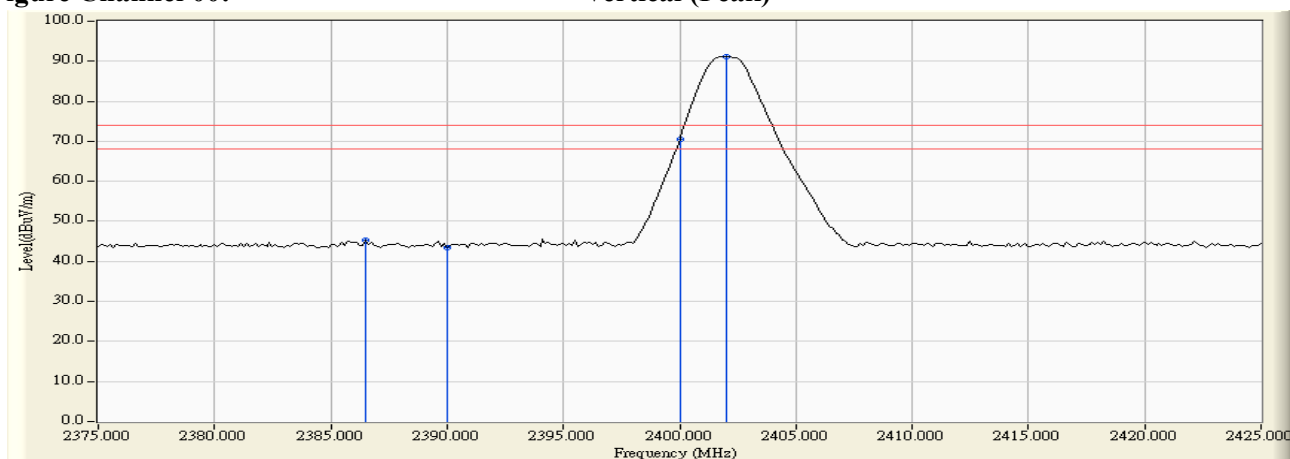
Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
00 (Vertical)	<2400	>20	Pass

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2386.500	-2.394	47.634	45.240	74.00	54.00	Pass
00 (Peak)	2390.000	-2.378	45.737	43.360	74.00	54.00	Pass
00 (Peak)	2400.000	-2.328	72.839	70.511	74.00	54.00	Pass
00 (Peak)	2402.000	-2.318	93.344	91.026	74.00	54.00	Pass
00 (Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 00:

Vertical (Peak)



Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

Product : ErgoMedia 823 Laser
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter

RF Radiated Measurement:

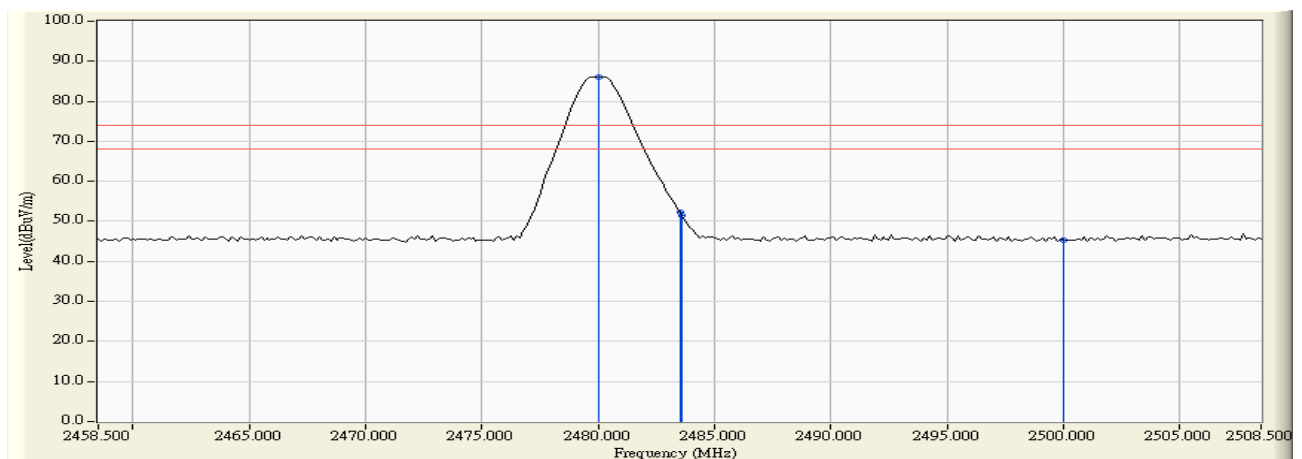
Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
15 (Horizontal)	>2483.5	>20	Pass

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
15(Peak)	2480.000	-1.952	88.064	86.113	74.00	54.00	Pass
15(Peak)	2483.500	-1.937	54.257	52.320	74.00	54.00	Pass
15(Peak)	2483.625	-1.936	53.321	51.384	74.00	54.00	Pass
15(Peak)	2500.000	-1.886	47.114	45.228	74.00	54.00	Pass
15(Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 15:

Horizontal (Peak)



Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

Product : ErgoMedia 823 Laser
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter

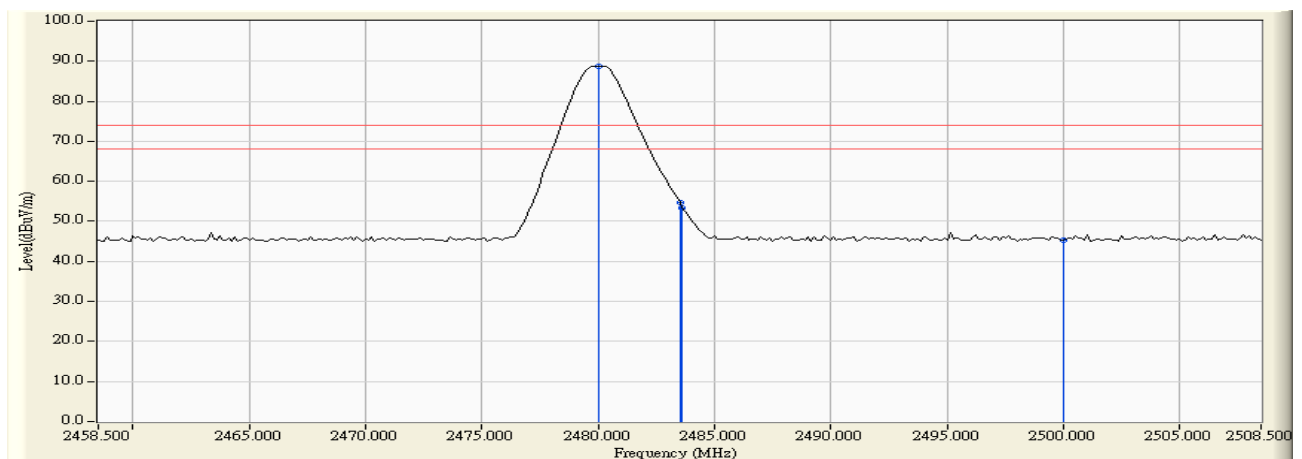
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
15 (Vertical)	>2483.5	>20	Pass

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
15(Peak)	2480.000	-1.952	90.632	88.681	74.00	54.00	Pass
15(Peak)	2483.500	-1.937	56.706	54.769	74.00	54.00	Pass
15(Peak)	2483.625	-1.936	55.295	53.358	74.00	54.00	Pass
15(Peak)	2500.000	-1.886	47.111	45.225	74.00	54.00	Pass
15(Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 15: Vertical (Peak)



Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

4. EMI Reduction Method During Compliance Testing

No modification was made during testing.

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs