Test Report

Product Name	LuxeMate T810
Model No.	GK-070023/K
FCC ID	FSUGKZHA

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 23, 2008
Issued Date	Aug. 18, 2008
Report No.	087388R-RFUSP07V01
Version	V1.0

Test Report Certification

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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-070023/K
Rated Voltage	DC 3V(Power by battery)
Working Voltage	DC 3V(Power by battery)
Trade Name	Genius
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2007 ANSI C63.4: 2003 NVLAP Lab Code: 200533-0
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 : (Senior Engineering Adm. Specialist / Anita Chou)

Tested By : (Engineer / Molin Huang)

Approved By : (Manager / Vincent Lin)

Testing Laboratory 0914

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	LuxeMate T810
Trade Name	Genius
Model No.	GK-070023/K
FCC ID	FSUGKZHA
Frequency Range	2402~2480MHz
Channel Control	Auto
Channel Separation	1MHz
Antenna Gain	-3dBi
Channel Number	79
Type of Modulation	DSSS
Antenna Type	Printed on PCB

Frequency of Each Channel

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01:	2402 MHz	Channel 21:	2422 MHz	Channel 41:	2442 MHz	Channel 61:	2462 MHz
Channel 02:	2403 MHz	Channel 22:	2423 MHz	Channel 42:	2443 MHz	Channel 62:	2463 MHz
Channel 03:	2404 MHz	Channel 23:	2424 MHz	Channel 43:	2444 MHz	Channel 63:	2464 MHz
Channel 04:	2405 MHz	Channel 24:	2425 MHz	Channel 44:	2445 MHz	Channel 64:	2465 MHz
Channel 05:	2406 MHz	Channel 25:	2426 MHz	Channel 45:	2446 MHz	Channel 65:	2466 MHz
Channel 06:	2407 MHz	Channel 26:	2427 MHz	Channel 46:	2447 MHz	Channel 66:	2467 MHz
Channel 07:	2408 MHz	Channel 27:	2428 MHz	Channel 47:	2448 MHz	Channel 67:	2468 MHz
Channel 08:	2409 MHz	Channel 28:	2429 MHz	Channel 48:	2449 MHz	Channel 68:	2469 MHz
Channel 09:	2410 MHz	Channel 29:	2430 MHz	Channel 49:	2450 MHz	Channel 69:	2470 MHz
Channel 10:	2411 MHz	Channel 30:	2431 MHz	Channel 50:	2451 MHz	Channel 70:	2471 MHz
Channel 11:	2412 MHz	Channel 31:	2432 MHz	Channel 51:	2452 MHz	Channel 71:	2472 MHz
Channel 12:	2413 MHz	Channel 32:	2433 MHz	Channel 52:	2453 MHz	Channel 72:	2473 MHz
Channel 13:	2414 MHz	Channel 33:	2434 MHz	Channel 53:	2454 MHz	Channel 73:	2474 MHz
Channel 14:	2415 MHz	Channel 34:	2435 MHz	Channel 54:	2455 MHz	Channel 74:	2475 MHz
Channel 15:	2416 MHz	Channel 35:	2436 MHz	Channel 55:	2456 MHz	Channel 75:	2476 MHz
Channel 16:	2417 MHz	Channel 36:	2437 MHz	Channel 56:	2457 MHz	Channel 76:	2477 MHz
Channel 17:	2418 MHz	Channel 37:	2438 MHz	Channel 57:	2458 MHz	Channel 77:	2478 MHz
Channel 18:	2419 MHz	Channel 38:	2439 MHz	Channel 58:	2459 MHz	Channel 78:	2479 MHz
Channel 19:	2420 MHz	Channel 39:	2440 MHz	Channel 59:	2460 MHz	Channel 79:	2480 MHz
Channel 20:	2421 MHz	Channel 40:	2441 MHz	Channel 60:	2461 MHz		

Note:

1. The EUT is a LuxeMate T810 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. These tests are conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.249 for spread spectrum devices.
4. 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 LuxeMate T810 built-in 2.4GHz transceiver. The operation frequency is from 2402 MHz to 2480MHz with DSSS modulation. The signal will be transmitted through 2.4 GHz RF signal from the Printed on PCB antenna. DC 3V shall be provided for EUT operation.

Test Mode	Mode 1: Transmitter

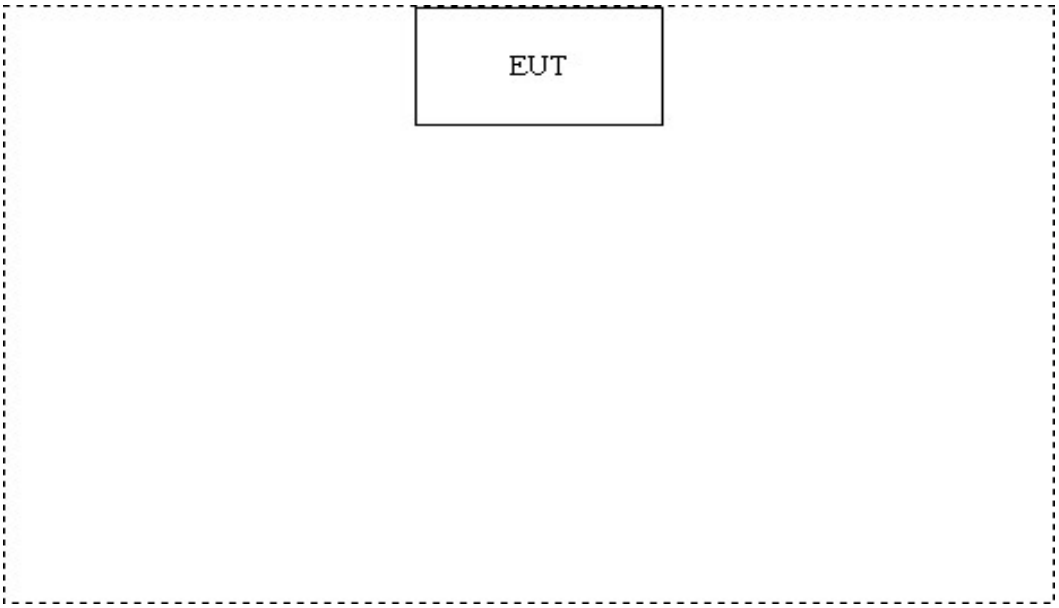
1.3. Tested System Datails

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	N/A

Signal Cable Type		Signal cable Description
A	N/A	N/A

1.4. Configuration of Test System



1.5. EUT Exercise Software

1	Setup the EUT as shown on 1.4.
2	Turn on the power for EUT.
3	The EUT to enter RF test mode.
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
Registration Number: 92195

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

Testing Laboratory
0914

2. Radiated Emission

2.1. Test Equipment

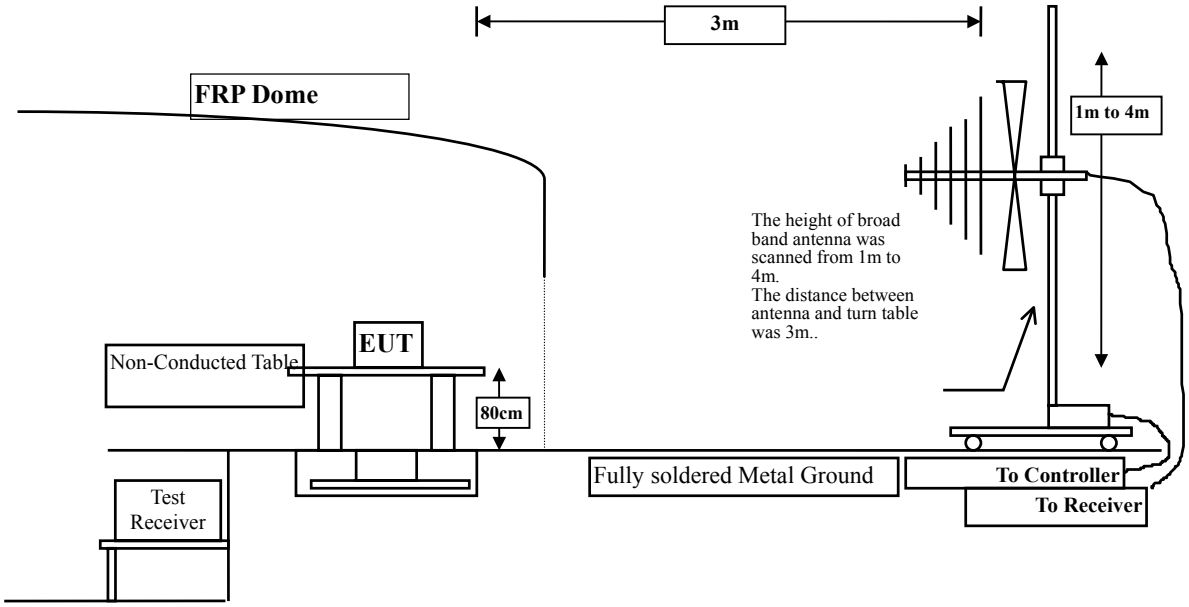
The following test equipment are used during the radiated emission test:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☐Site # 1		Test Receiver	R & S	ESVS 10 / 834468/003	May, 2008
		Spectrum Analyzer	Advantest	R3162/ 00803480	May, 2008
		Pre-Amplifier	Advantest	BB525C/ 3307A01812	May, 2008
		Bilog Antenna	SCHAFFNER	CBL6112B / 2697	Sep., 2007
☐Site # 2		Test Receiver	R & S	ESCS 30 / 836858 / 022	May, 2008
		Spectrum Analyzer	Advantest	R3162 / 100803466	May, 2008
		Pre-Amplifier	Advantest	BB525C/3307A01814	May, 2008
		Bilog Antenna	SCHAFFNER	CBL6112B / 2705	May, 2008
		Horn Antenna	ETS	3115 / 0005-6160	Sep., 2007
		Pre-Amplifier	QTK	QTK-AMP-01/ 0001	May, 2008
☒Site # 3	X	Test Receiver	R & S	ESI 26 / 838786/004	May, 2008
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
	X	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2008
	X	Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2008
	X	Horn Antenna	Schwarzbeck	BBHA9170 / 208, 209	July, 2008
	X	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2008
	X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2008
	X	Pre-Amplifier	HP	8449B / 3008A01123	July, 2008

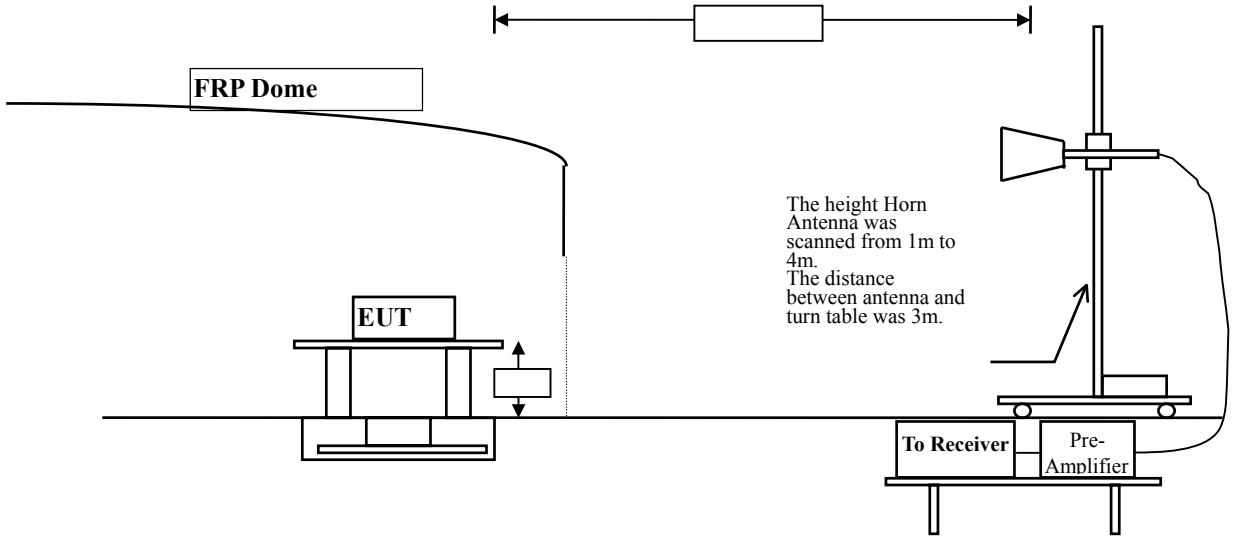
Note: 1. All equipments are calibrated every one year.
2. Test equipments marked by “X” are used to measure the final test results.

2.2. Test Setup

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



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: E field strength (dBuV/m) = 20 log E field strength (uV/m)

➢Fundamental and Harmonics Emission Limits

FCC Part 15 Subpart C Paragraph 15.249(a) Limits				
Frequency MHz	Field Strength of Fundamental		Field Strength of Harmonics	
	(mV/m @3m)	(dBuV/m @3m)	(uV/m @3m)	(dBuV/m @3m)
902-928	50	94	500	54
2400-2483.5	50	94	500	54
5725-5875	50	94	500	54
24000-24250	250	108	2500	68

Remarks : 1. RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)

2. 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 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 is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4: 2003 on radiated measurement.
The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.
Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.
The measurement is divided into the Preliminary Measurement and the Final Measurement.
The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB beamwidth of the antenna.
The worst radiated emission is measured on the Final Measurement.
The frequency range from is checked.

2.5. Uncertainty

± 3.9 dB above 1GHz
± 3.8 dB below 1GHz

2.6. Test Result of Radiated Emission

Product : LuxeMate T810
Test Item : Fundamental Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
Channel 01					
2402.000	-6.725	87.210	80.485	-33.515	114.000
Average Detector					
--					
Vertical					
Peak Detector:					
Channel 01					
2402.000	-6.725	88.680	81.955	-32.045	114.000
Average Detector					
--					

Note:

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

Product : LuxeMate T810
Test Item : Fundamental Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
Channel 47					
2443.000	-6.574	85.500	78.926	-35.074	114.000
Average Detector					
--					
Vertical					
Peak Detector:					
Channel 47					
2443.000	-6.574	85.390	78.816	-35.184	114.000
Average Detector					
--					

Note:

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

Product : LuxeMate T810
Test Item : Fundamental Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
Channel 79					
2480.000	-6.475	82.830	76.356	-37.644	114.000
Average Detector					
--					
Vertical					
Peak Detector:					
Channel 79					
2480.000	-6.475	83.450	76.976	-37.024	114.000
Average Detector					
--					

Note:

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

Product : LuxeMate T810
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (2402MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4804.000	-0.205	45.060	44.855	-29.115	74.000
7206.000	3.294	41.820	45.114	-28.856	74.000
9608.000	5.696	40.670	46.366	-27.604	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4804.000	-0.205	42.630	42.425	-31.545	74.000
7206.000	3.294	40.410	43.704	-30.266	74.000
9608.000	5.696	41.250	46.946	-27.024	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:3MHz; Span:100MHz。
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:10Hz; 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 : LuxeMate T810
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (2443 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4886.000	-0.281	43.520	43.240	-30.730	74.000
7329.000	3.354	42.330	45.684	-28.286	74.000
9772.000	6.296	39.250	45.546	-28.424	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4886.000	-0.281	43.520	43.240	-30.730	74.000
7329.000	3.354	41.530	44.884	-29.086	74.000
9772.000	6.296	39.820	46.116	-27.854	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:3MHz; Span:100MHz。
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:10Hz; 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 : LuxeMate T810
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (2480 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4960.000	0.591	45.240	45.831	-28.139	74.000
7440.000	3.924	39.520	43.444	-30.526	74.000
9920.000	6.468	40.500	46.968	-27.002	74.000
Average Detector:					
Vertical					
Peak Detector:					
4960.000	0.591	44.490	45.081	-28.889	74.000
7440.000	3.924	40.250	44.174	-29.796	74.000
9920.000	6.468	40.350	46.818	-27.152	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:3MHz; Span:100MHz。
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:10Hz; 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 : LuxeMate T810
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (2443 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
256.980	14.097	18.103	32.200	-13.800	46.000
405.540	17.139	8.961	26.100	-19.900	46.000
459.300	18.557	6.133	24.690	-21.310	46.000
654.560	20.888	2.070	22.958	-23.042	46.000
834.560	21.837	6.663	28.500	-17.500	46.000
951.260	22.761	1.897	24.658	-21.342	46.000
Vertical					
374.320	16.707	11.883	28.590	-17.410	46.000
529.580	19.013	5.577	24.590	-21.410	46.000
606.240	21.816	1.091	22.907	-23.093	46.000
712.566	21.466	10.834	32.300	-13.700	46.000
826.340	21.421	2.835	24.256	-21.744	46.000
964.960	22.940	0.649	23.589	-30.411	54.000

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, 2008
X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
X	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2008
X	Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2008
X	Horn Antenna	Schwarzbeck	BBHA9170 / 208, 209	July, 2008
X	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2008
X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2008
X	Pre-Amplifier	HP	8449B / 3008A01123	July, 2008

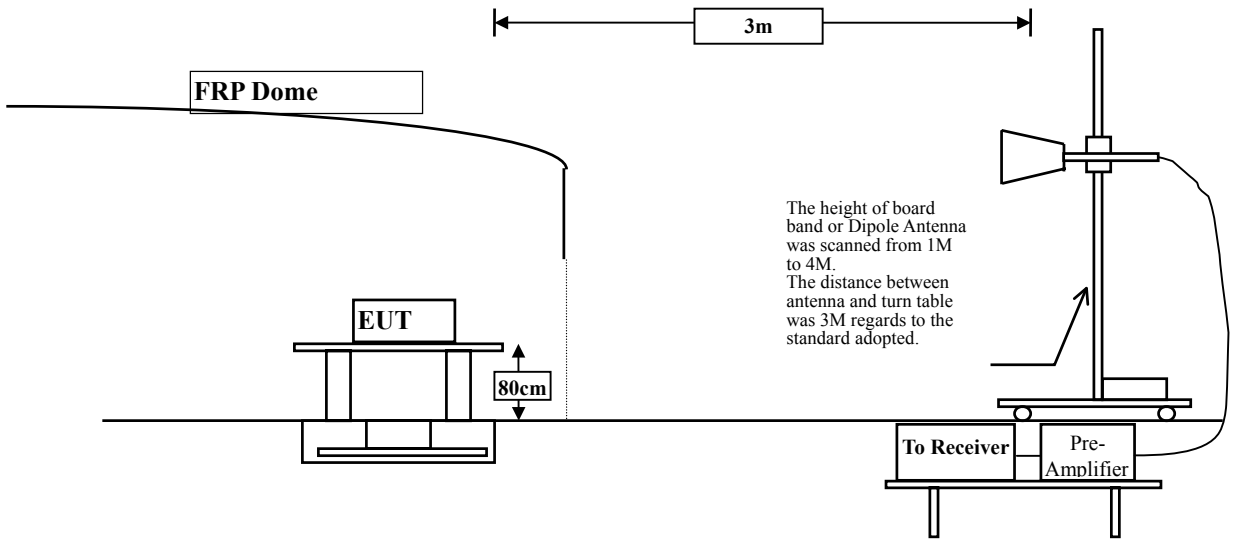
Test Site: Site3

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

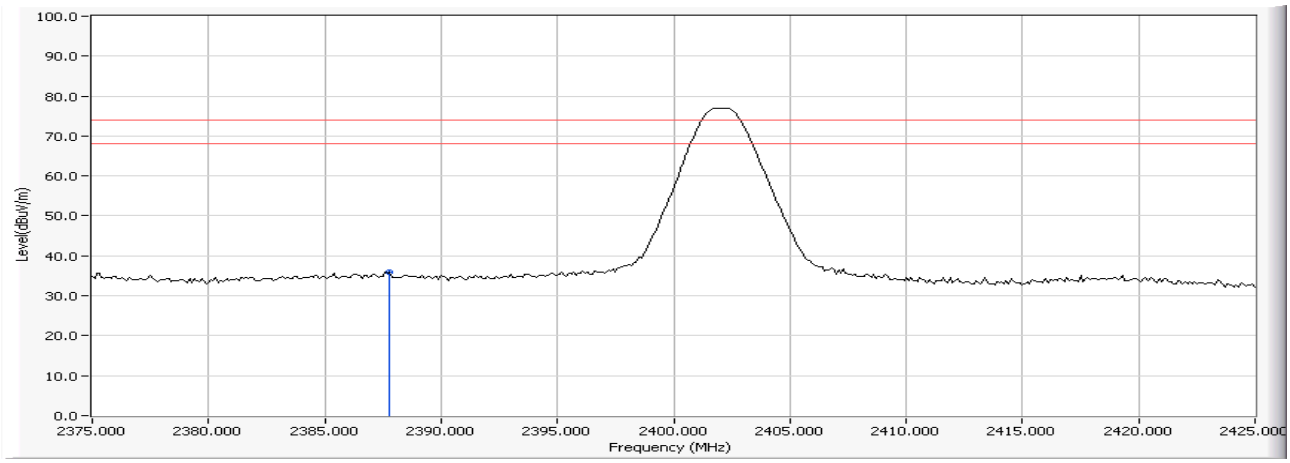
3.6. Test Result of Band Edge

Product : LuxeMate T810
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

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
01 (Peak)	2387.800	-6.774	42.582	35.808	74.00	54.00	Pass
01(Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 01: Horizontal (Peak)



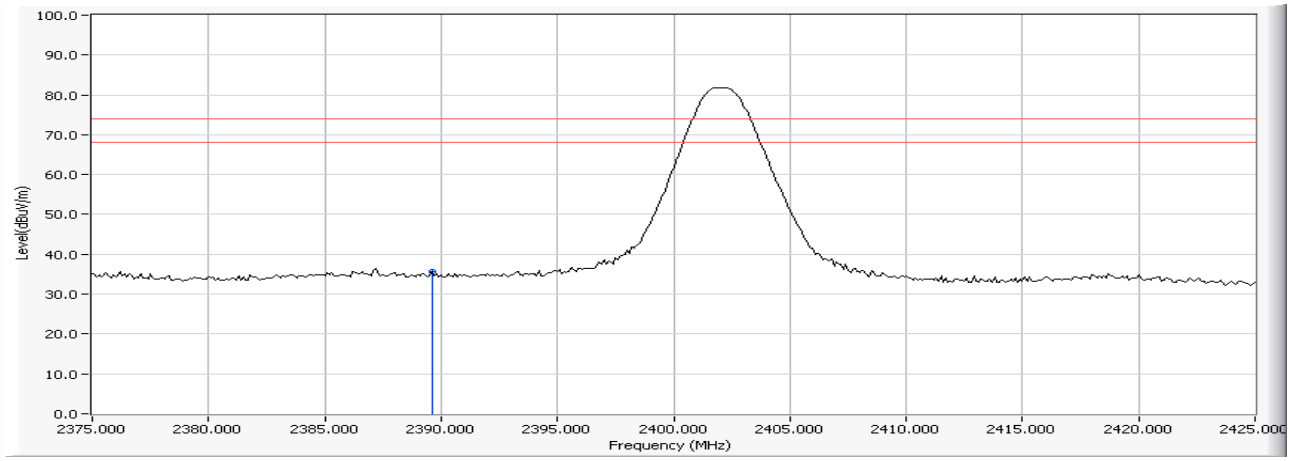
Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

Product : LuxeMate T810
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

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
01 (Peak)	2389.600	-6.769	42.530	35.761	74.00	54.00	Pass
01(Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 01: Vertical (Peak)



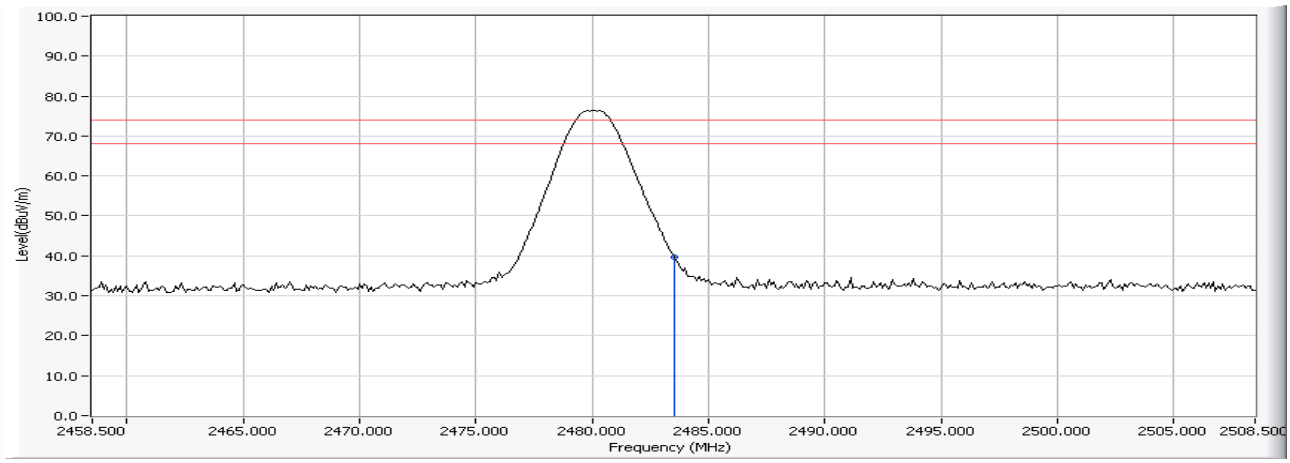
Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

Product : LuxeMate T810
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

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
79(Peak)	2483.500	-6.469	46.225	39.757	74.00	54.00	Pass
79(Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 79: Horizontal (Peak)



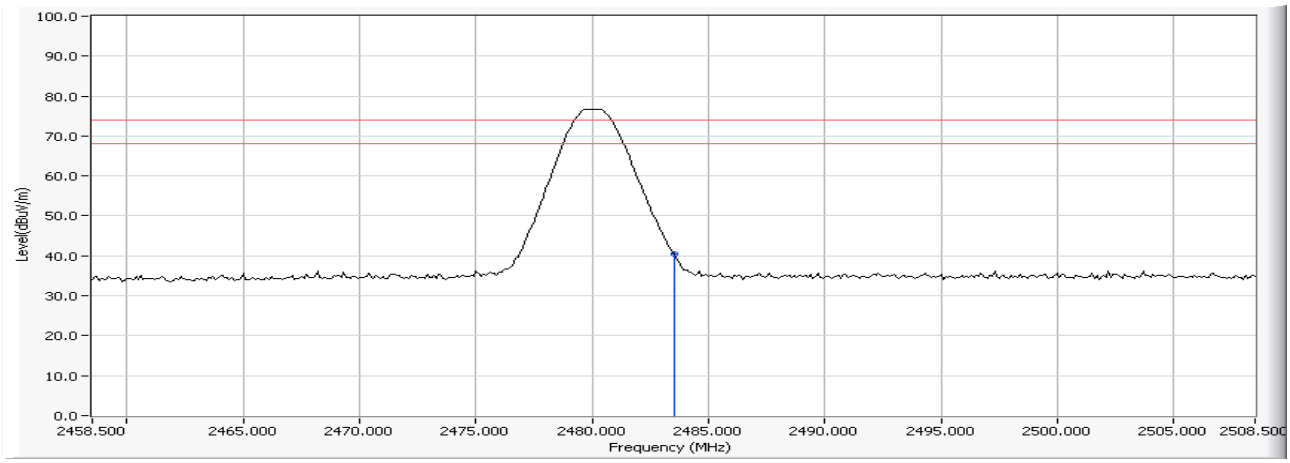
Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

Product : LuxeMate T810
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

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
79(Peak)	2483.500	-6.469	46.963	40.495	74.00	54.00	Pass
79(Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 79: Vertical (Peak)



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

4. EMI Reduction Method During Compliance Testing

No modification was made during testing.