Test Report

Product Name ： HI-FI CARD READER

Model No. ： MP3200, MP3200B

FCC ID. ： UG32006073101-01

Applicant ： SolarMedi Limited

Address ： 2F, N0. 3, Lane 91, Dongmei Rd., Hsin-Chu , 300 , Taiwan

Date of Receipt ： 2006/07/24

Issued Date ： 2006/07/27

Report No. ： 067H024-RF-US-P06V01

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.

Test Report Certification

Issued Date : 2006/07/27
Report No. : 067H024-RF-US-P06V01

QuieTek

Product Name	:	HI-FI CARD READER
Applicant	:	SolarMedi Limited
Address	:	2F, N0. 3, Lane 91, Dongmei Rd., Hsin-Chu , 300 , Taiwan
Manufacturer	:	SUNVALLEY INFO. CO.
Model No.	:	MP3200, MP3200B
FCC ID.	:	UG32006073101-01
Rated Voltage	:	AC 120 V / 60 Hz
EUT Voltage	:	AC 120 V / 60 Hz
Trade Name	:	SOLARMEDI
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart C Section 15.247
Test Result	:	Complied

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.

Documented By : Sandy Chuang

(Sandy Chuang)

Reviewed By : Sheena Huang

(Sheena Huang)

Approved By : Gene Chang

(Gene Chang)

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1. General Information

1.1. EUT Description

Product Name	HI-FI CARD READER
Trade Name	SOLARMEDI
Model No.	MP3200, MP3200B
Frequency Range	2402~2480MHz
Channel Number	79
Type of Modulation	Frequency Hopping Spread Spectrum
Antenna Gain	Auto
Channel Control	Printed
Antenna Type	3 dBi

Component	
Remote Controller	1 Set
USB Cable	Shielded, 0.4m
Audio Cable	Non-Shielded, 0.4m
Power Adapter	XIXING, XKD-C1000NH59.0-12 Cable Out: Non-Shielded, 1.8m

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 00	2402 MHz	Channel 20	2422 MHz	Channel 40	2442 MHz	Channel 60	2462 MHz
Channel 01	2403 MHz	Channel 21	2423 MHz	Channel 41	2443 MHz	Channel 61	2463 MHz
Channel 02	2404 MHz	Channel 22	2424 MHz	Channel 42	2444 MHz	Channel 62	2464 MHz
Channel 03	2405 MHz	Channel 23	2425 MHz	Channel 43	2445 MHz	Channel 63	2465 MHz
Channel 04	2406 MHz	Channel 24	2426 MHz	Channel 44	2446 MHz	Channel 64	2466 MHz
Channel 05	2407 MHz	Channel 25	2427 MHz	Channel 45	2447 MHz	Channel 65	2467 MHz
Channel 06	2408 MHz	Channel 26	2428 MHz	Channel 46	2448 MHz	Channel 66	2468 MHz
Channel 07	2409 MHz	Channel 27	2429 MHz	Channel 47	2449 MHz	Channel 67	2469 MHz
Channel 08	2410 MHz	Channel 28	2430 MHz	Channel 48	2450 MHz	Channel 68	2470 MHz
Channel 09	2411 MHz	Channel 29	2431 MHz	Channel 49	2451 MHz	Channel 69	2471 MHz
Channel 10	2412 MHz	Channel 30	2432 MHz	Channel 50	2452 MHz	Channel 70	2472 MHz
Channel 11	2413 MHz	Channel 31	2433 MHz	Channel 51	2453 MHz	Channel 71	2473 MHz
Channel 12	2414 MHz	Channel 32	2434 MHz	Channel 52	2454 MHz	Channel 72	2474 MHz
Channel 13	2415 MHz	Channel 33	2435 MHz	Channel 53	2455 MHz	Channel 73	2475 MHz
Channel 14	2416 MHz	Channel 34	2436 MHz	Channel 54	2456 MHz	Channel 74	2476 MHz
Channel 15	2417 MHz	Channel 35	2437 MHz	Channel 55	2457 MHz	Channel 75	2477 MHz
Channel 16	2418 MHz	Channel 36	2438 MHz	Channel 56	2458 MHz	Channel 76	2478 MHz
Channel 17	2419 MHz	Channel 37	2439 MHz	Channel 57	2459 MHz	Channel 77	2479 MHz
Channel 18	2420 MHz	Channel 38	2440 MHz	Channel 58	2460 MHz	Channel 78	2480 MHz
Channel 19	2421 MHz	Channel 39	2441 MHz	Channel 59	2461 MHz		

The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. The transmitter is presented with a continuous data stream. In addition, a system employing short transmission bursts must comply with the definition of a frequency hopping system and must distribute its 79 channels and over the minimum number of hopping channels (75 channels).

The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hopsets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

Note:

1. This device is a HI-FI CARD READER included a 2.4GHz receiving function, and 2.4GHz transmitting function.
2. The different of the each model is shown as below:

Model No	Function
MP3200	normal
MP3200B	with Bluetooth

3. These tests were 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.
4. Regards to the frequency band operation; the lowest、middle and highest frequency of channel were selected to perform the test, and then shown on this report.
5. This device is a composite device in accordance with Part 15 regulations. The function receiving was measured and made a test report that the report number is 067H024-IT-US-P02V02 under Declaration of Conformity.

1.3. Test Mode

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

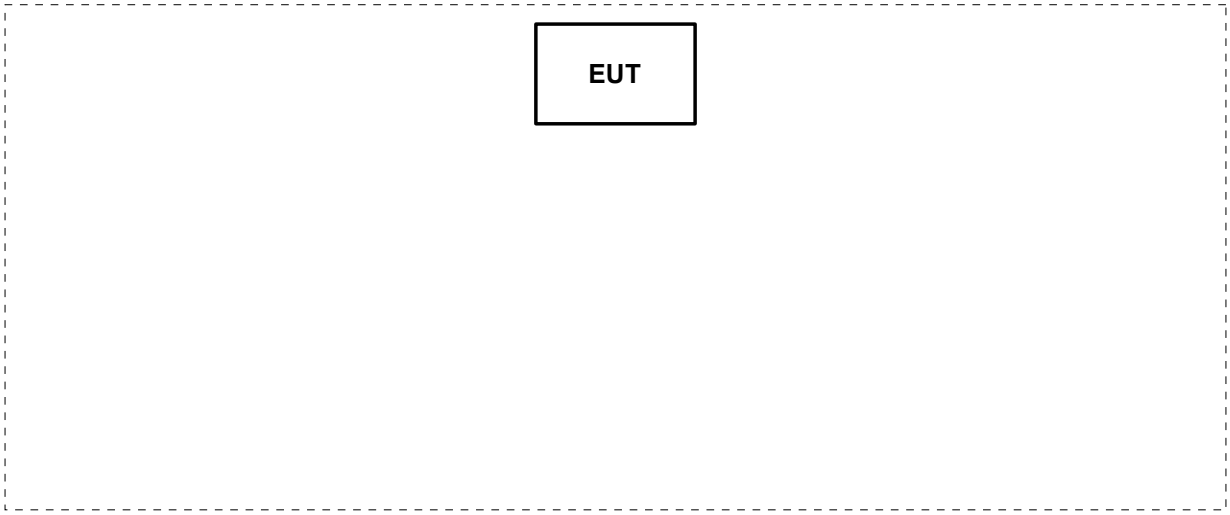
Pre-Test Mode	
EMI	Mode 1: Transmit
Final Test Mode	
EMI	Mode 1: Transmit

1.4. Tested System Details

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

N/A

1.5. Configuration of tested System

Connection Diagram


1.6. EUT Exercise Software

(1)	Setup the EUT and simulators as shown on 1.4.
(2)	Enable signal and confirm EUT active.
(3)	Verify the model operation.
(3)	Repeat the above procedure (2) to (3).

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	FCC PART 15 C 15.247 Band Edge (FHSS)	15 - 35	20
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Channel Of Number (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	53
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Channel Separation (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	53
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Dwell Time (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	53
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Occupied Bandwidth (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	53
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Peak Power Output (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	53
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Radiated Emission (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	53
Barometric pressure (mbar)		860 - 1060	950-1000

Site Description:

January 24, 2005 File on
Federal Communications Commission
Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 365520

Accredited by CNLA
Accreditation Number: 1313
Effective through: September 27, 2007

1313
ILAC MRA

Accredited by NVLAP
NVLAP Lab Code: 200347-0
Effective through: September 30, 2006

NVLAP Lab Code : 200347-0

Site Name: Quietek Corporation

Site Address: No.75-1, Wang-Yeh Valley, Yung-Hsing,
Chiung-Lin, Hsin-Chu County,
Taiwan, R.O.C.
TEL : 886-3-592-8858 / FAX : 886-3-592-8859
E-Mail : service@quietek.com

2. Peak Power Output

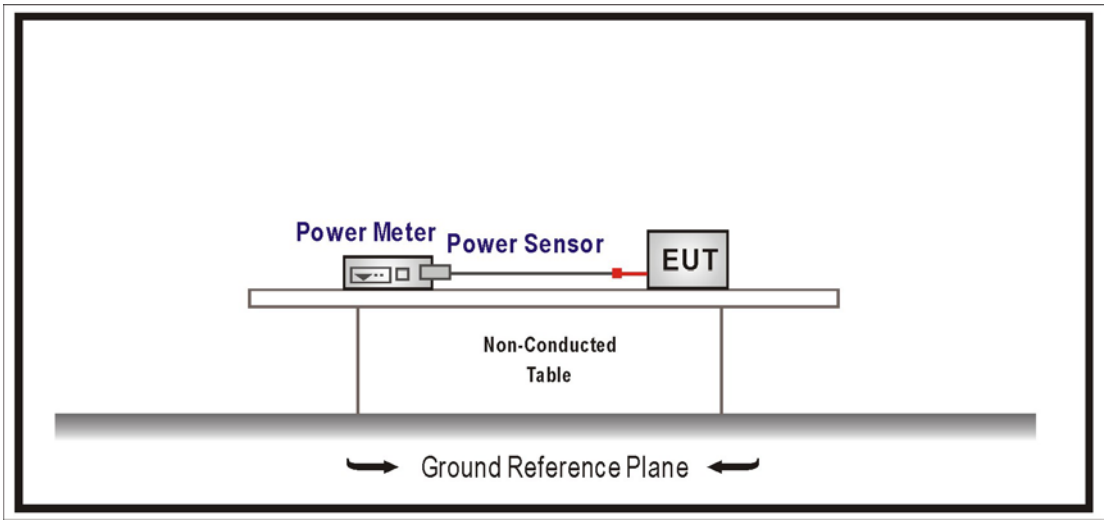
2.1. Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Power Meter	Agilent	E4416A / GB41291630	May, 2006
2	Power Sensor	Agilent	E9323A / US40411166	Apr., 2006
3	No.1 OATS			Sep., 2005

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

2.2. Test Setup



2.3. Limits

For frequency hopping systems operating in the 902-928 MHz band: 1 Watt for systems employing at least 50 hopping channels; and, 0.25 Watts for systems employing less than 50 hopping channels.

For frequency hopping systems in the 2400-2483.5 MHz band employing at least 75 hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1Watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 Watt.

2.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2004

2.5. Test Result

Product	HI-FI CARD READER		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2006/07/12	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
00	2402.00	16.63	1Watt = 30 dBm	Pass
39	2441.00	15.38	1Watt= 30 dBm	Pass
78	2480.00	13.39	1Watt= 30 dBm	Pass

3. Conducted Emission

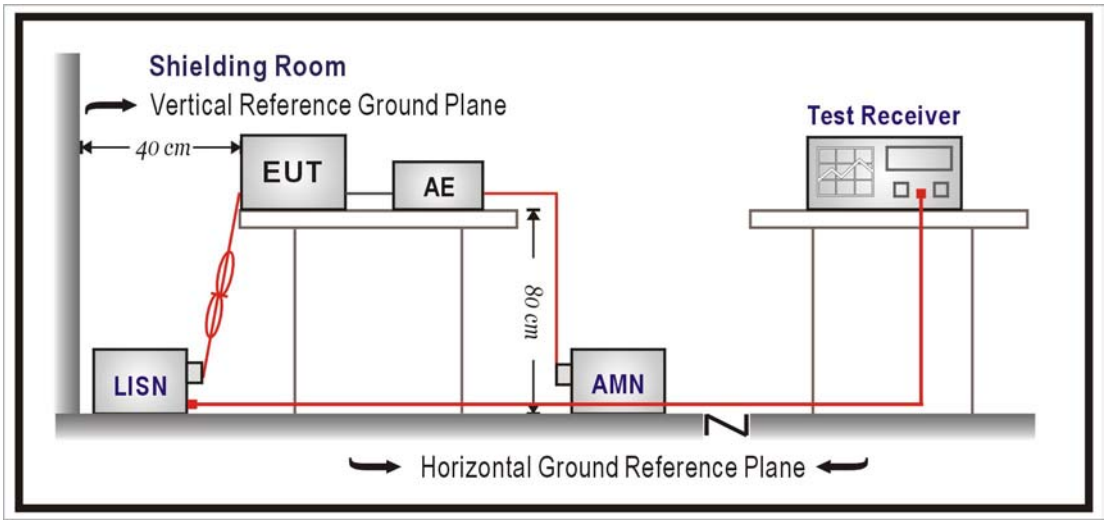
3.1. Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark
1	Test Receiver	R & S	ESCS 30/825442/018	Sep., 2005	
2	Artificial Mains Network	R & S	ENV4200/848411/10	Feb., 2006	Peripherals
3	LISN	R & S	ESH3-Z5/825562/002	Feb., 2006	EUT
4	Pulse Limiter	R & S	ESH3-Z2/357.8810.52	Feb., 2006	
5	No.2 Shielded Room			N/A	

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

3.2. Test Setup



3.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 Limits (dBuV)		
Frequency MHz	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks : In the above table, the tighter limit applies at the band edges.

3.4. Test Procedure

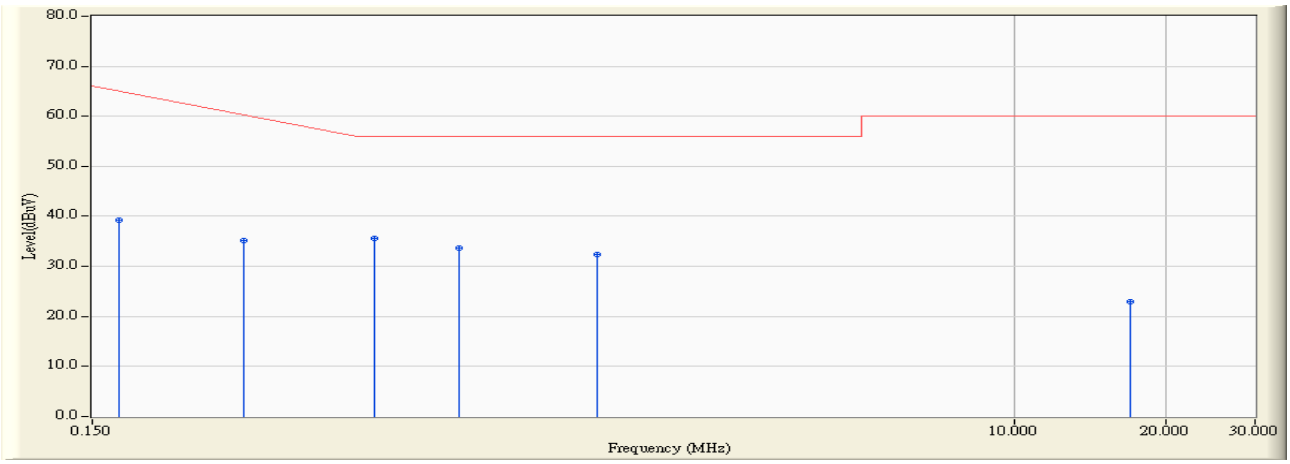
The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.) Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement. Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

3.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.207: 2005

3.6. Test Result

Site : QuieTek Shielding Room 3	Time : 2006/07/07 - 10:59
Limit : CISPR_B_00M_QP	Margin : 0
EUT : HI-FI CARD READER	Probe : SR3_LISN(16A) - Line1
Power : AC 120V/60Hz	

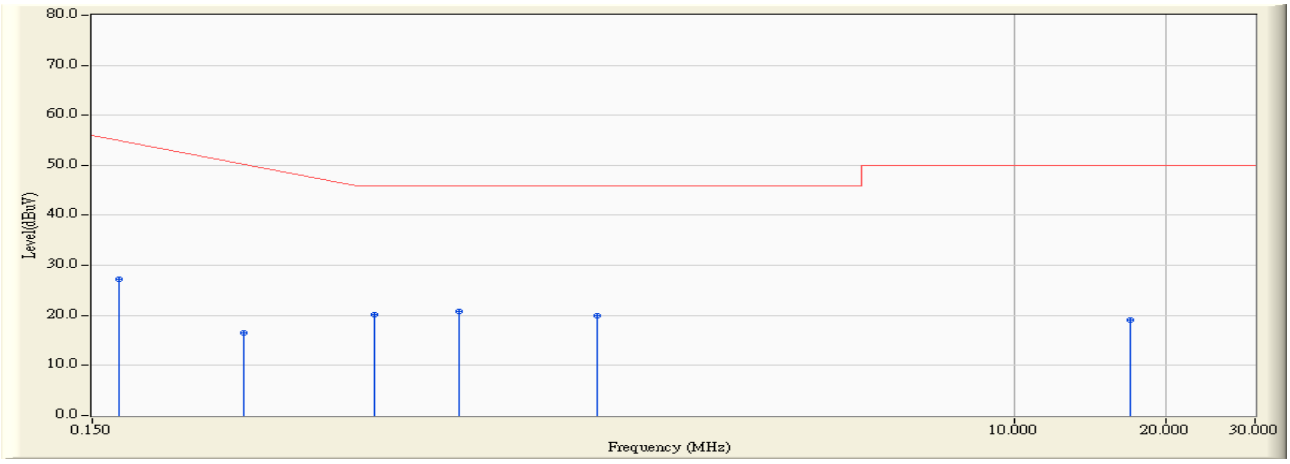


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.170	0.144	39.190	39.334	-26.095	65.429	QUASIPEAK
2		0.299	0.177	34.900	35.077	-26.666	61.743	QUASIPEAK
3	*	0.541	0.210	35.490	35.700	-20.300	56.000	QUASIPEAK
4		0.799	0.220	33.420	33.640	-22.360	56.000	QUASIPEAK
5		1.498	0.260	32.020	32.280	-23.720	56.000	QUASIPEAK
6		16.939	0.980	21.930	22.910	-37.090	60.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : QuieTek Shielding Room 3	Time : 2006/07/07 - 10:59
Limit : CISPR_B_00M_AV	Margin : 0
EUT : HI-FI CARD READER	Probe : SR3_LISN(16A) - Line1
Power : AC 120V/60Hz	

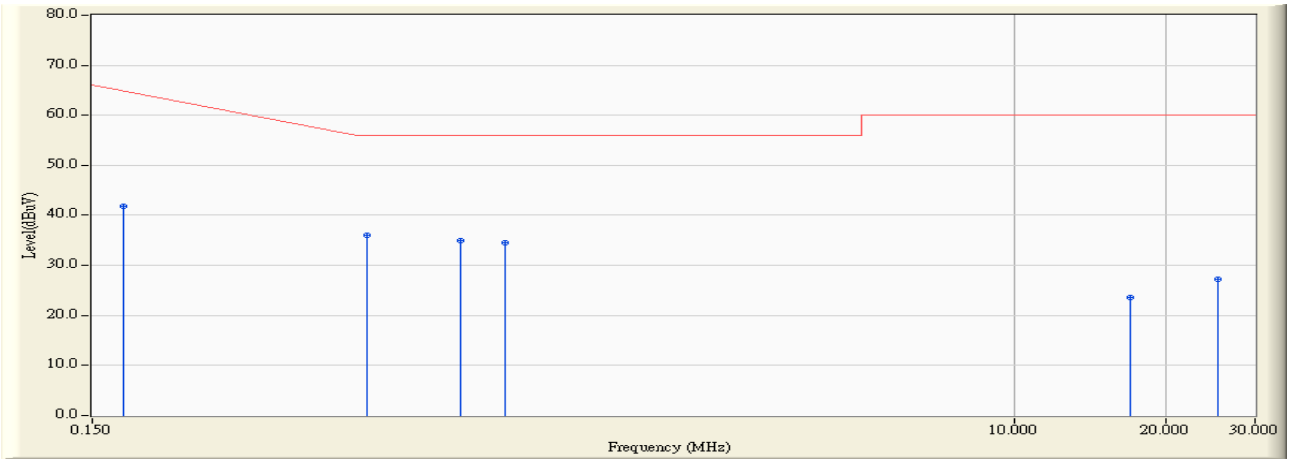


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.170	0.144	27.100	27.244	-28.185	55.429	AVERAGE
2		0.299	0.177	16.370	16.547	-35.196	51.743	AVERAGE
3		0.541	0.210	19.860	20.070	-25.930	46.000	AVERAGE
4	*	0.799	0.220	20.560	20.780	-25.220	46.000	AVERAGE
5		1.498	0.260	19.710	19.970	-26.030	46.000	AVERAGE
6		16.939	0.980	18.060	19.040	-30.960	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : QuieTek Shielding Room 3	Time : 2006/07/07 - 11:13
Limit : CISPR_B_00M_QP	Margin : 0
EUT : HI-FI CARD READER	Probe : SR3_LISN(16A) - Line2
Power : AC 120V/60Hz	

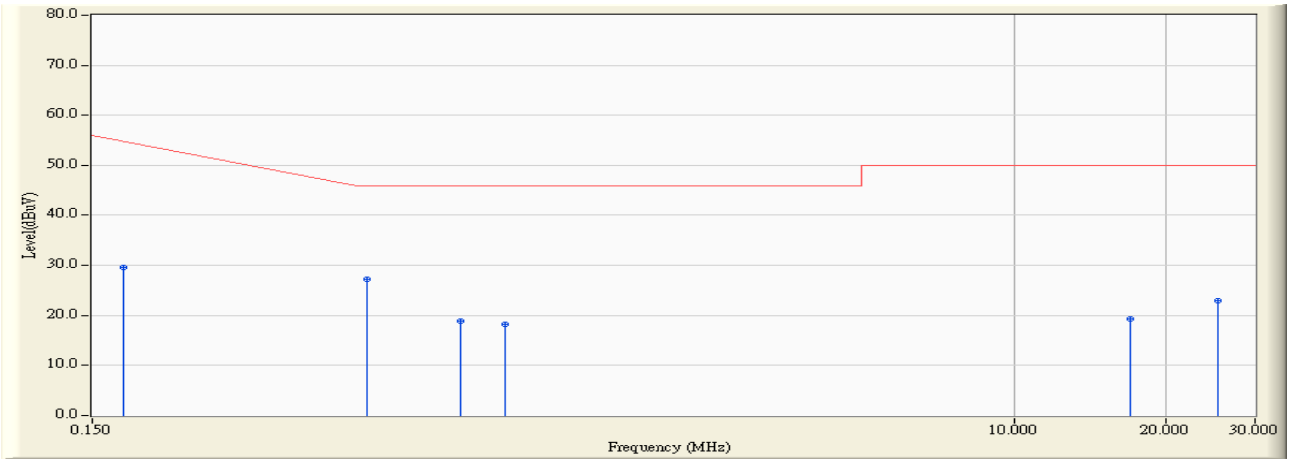


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.173	0.145	41.720	41.865	-23.478	65.343	QUASIPEAK
2	*	0.525	0.210	35.900	36.110	-19.890	56.000	QUASIPEAK
3		0.802	0.220	34.640	34.860	-21.140	56.000	QUASIPEAK
4		0.982	0.230	34.240	34.470	-21.530	56.000	QUASIPEAK
5		16.943	0.880	22.770	23.650	-36.350	60.000	QUASIPEAK
6		25.412	0.890	26.370	27.260	-32.740	60.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : QuieTek Shielding Room 3	Time : 2006/07/07 - 11:13
Limit : CISPR_B_00M_AV	Margin : 0
EUT : HI-FI CARD READER	Probe : SR3_LISN(16A) - Line2
Power : AC 120V/60Hz	



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.173	0.145	29.470	29.615	-25.728	55.343	AVERAGE
2	*	0.525	0.210	27.110	27.320	-18.680	46.000	AVERAGE
3		0.802	0.220	18.570	18.790	-27.210	46.000	AVERAGE
4		0.982	0.230	18.050	18.280	-27.720	46.000	AVERAGE
5		16.943	0.880	18.460	19.340	-30.660	50.000	AVERAGE
6		25.412	0.890	22.060	22.950	-27.050	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

4. Radiated Emission

4.1. Test Equipment

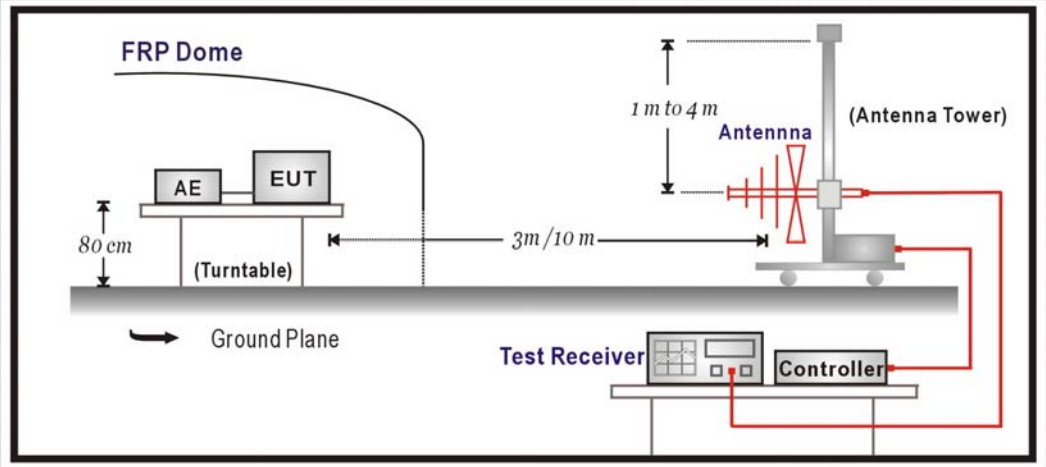
The following test equipment are used during the test:

Item	Equipment		Manufacturer	Model No. / Serial No.	Last Cal.
1	X	Test Receiver	R & S	ESCS 30 / 825442/014	Jun., 2006
2	X	Spectrum Analyzer	Advantest	R3162 / 91700283	N/A
3	X	Pre-Amplifier	Advantest	BB525C / N/A	N/A
4	X	Bilog Antenna	Schaffner	CBL6112B / 2673	Sep., 2005
5	X	Spectrum Analyzer	R & S	FSP40 / 100005	Aug., 2005
6	X	Pre-Amplifier	HP	8449B / 3008A01123	Feb., 2006
7	X	Horn Antenna	Schwarzbeck	BBHA 9120D / BBHA9120D312	Jul., 2006
8	X	Horn Antenna (15-40 GHz)	Schwarzbeck	BBHA 9170 / BBNA9170202	Aug., 2006
9	No.3 OATS				Sep., 2005

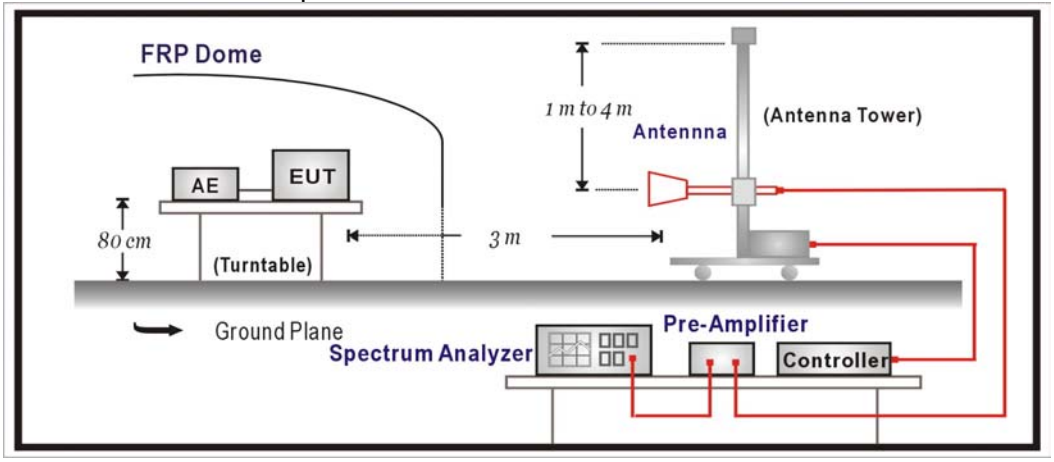
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.
2. Mark “X” test instruments are used to measure the final test results.

4.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. 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 Limits		
Frequency MHz	uV/m	dBuV/m
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.

4.4. 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 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.

On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit. The bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

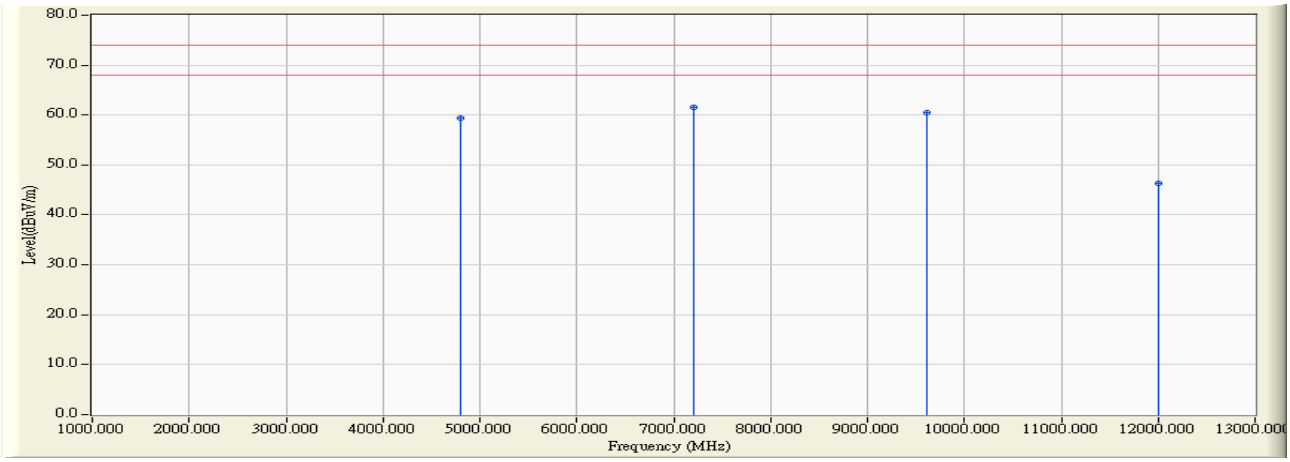
4.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2004

4.6. Test Result

Harmonic & Spurious:

Site : Site 1	Time : 2006/07/06 - 13:17
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
EUT : HI-FI CARD READER	Probe : RF_1G-18G(2005-3) - HORIZONTAL
Power : AC 120V/60Hz	Note : TX-CH00

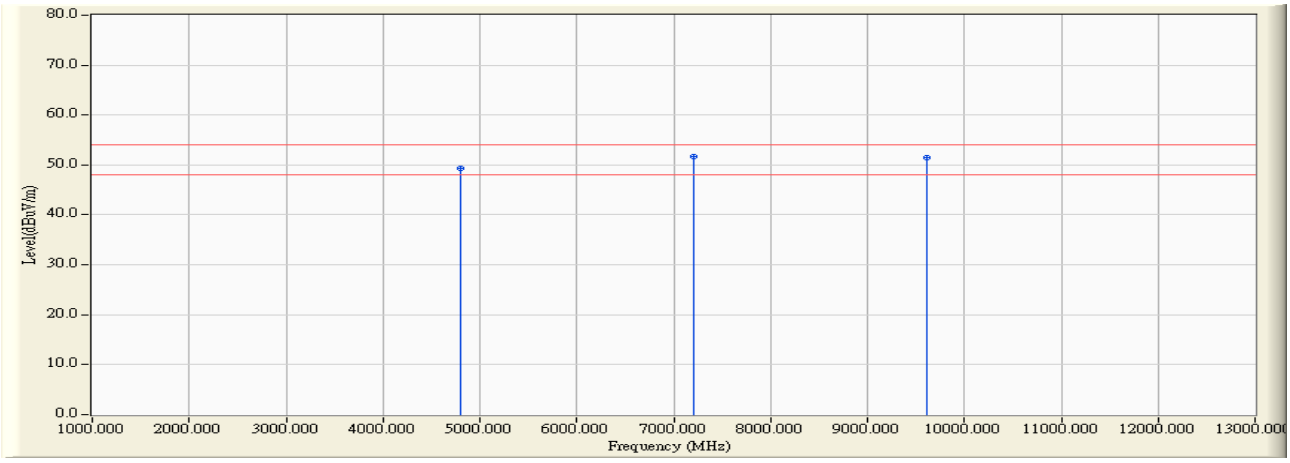


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		4804.200	2.687	56.700	59.387	-14.613	74.000	PEAK	0.000	0.000
2	*	7206.020	7.760	53.780	61.540	-12.460	74.000	PEAK	0.000	0.000
3		9608.000	11.498	49.060	60.558	-13.442	74.000	PEAK	0.000	0.000
4		12010.000	9.058	37.290	46.348	-27.652	74.000	PEAK	0.000	0.000
5		12500-25000	--	--	--	--	--	--	--	--

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The peak level of signal whose frequency range is from 12.5 GHz to 25 GHz is lower than noise floor and under limit.

Site : Site 1	Time : 2006/07/06 - 13:30
Limit : FCC_SpartC_15.247_H_03M_AV	Margin : 6
EUT : HI-FI CARD READER	Probe : RF_1G-18G(2005-3) - HORIZONTAL
Power : AC 120V/60Hz	Note : TX-CH00

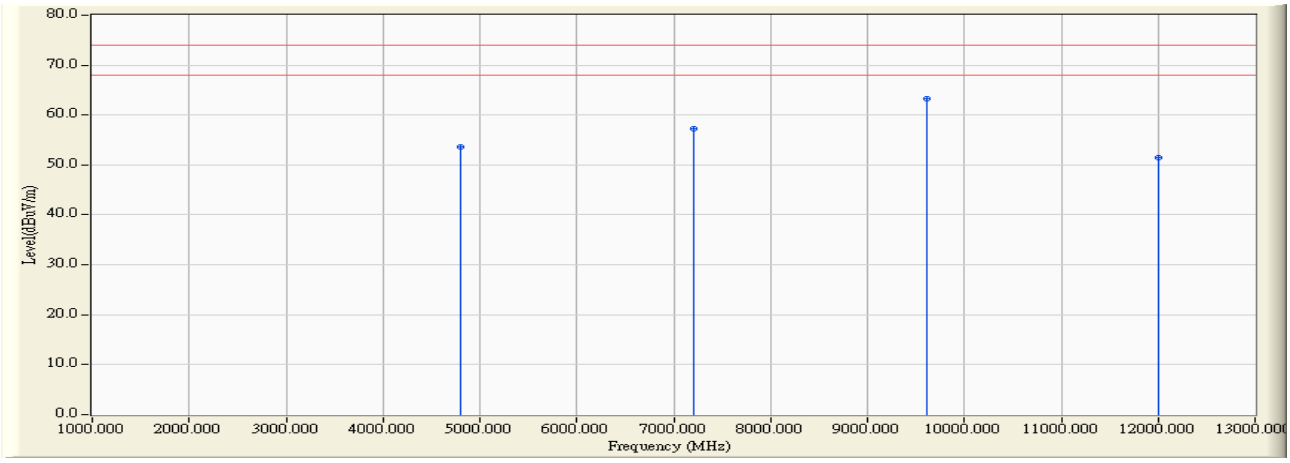


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		4804.200	2.687	46.590	49.277	-4.723	54.000	AVERAGE	0.000	0.000
2	*	7206.020	7.760	44.000	51.760	-2.240	54.000	AVERAGE	0.000	0.000
3		9608.080	11.498	39.920	51.418	-2.582	54.000	AVERAGE	0.000	0.000
4		12500-25000	--	--	--	--	--	--	--	--

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The peak level of signal whose frequency range is from 12.5 GHz to 25 GHz is lower than noise floor and under limit.

Site : Site 1	Time : 2006/07/06 - 14:08
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
EUT : HI-FI CARD READER	Probe : RF_1G-18G(2005-3) - VERTICAL
Power : AC 120V/60Hz	Note : TX-CH00

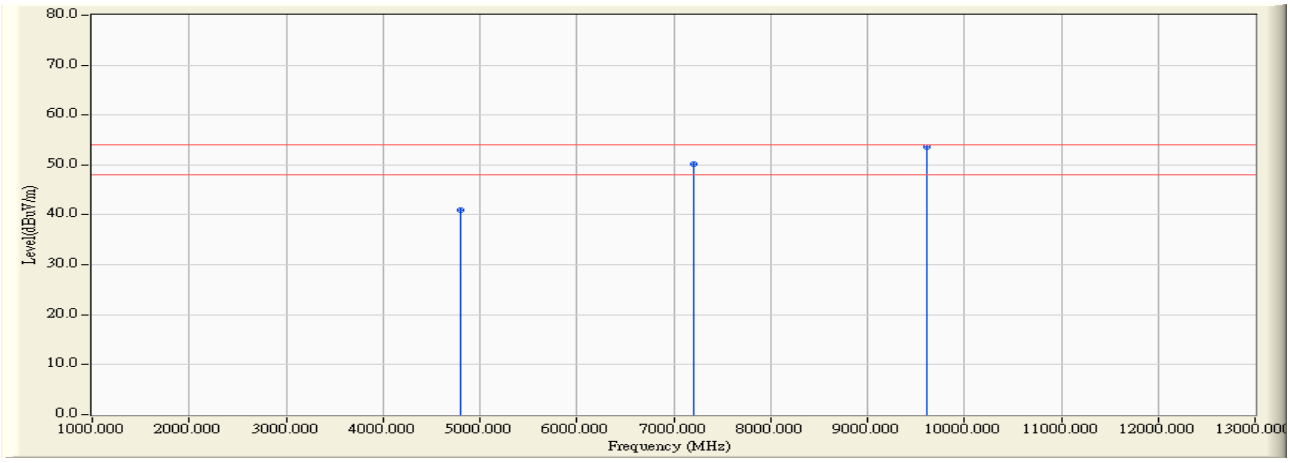


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		4804.020	0.901	52.660	53.562	-20.438	74.000	PEAK	0.000	0.000
2		7206.000	7.694	49.510	57.204	-16.796	74.000	PEAK	0.000	0.000
3	*	9608.080	13.498	49.690	63.188	-10.812	74.000	PEAK	0.000	0.000
4		12010.000	14.791	36.760	51.551	-22.449	74.000	PEAK	0.000	0.000
5		12500-25000	--	--	--	--	--	--	--	--

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The peak level of signal whose frequency range is from 12.5 GHz to 25 GHz is lower than noise floor and under limit.

Site : Site 1	Time : 2006/07/06 - 14:10
Limit : FCC_SpartC_15.247_H_03M_AV	Margin : 6
EUT : HI-FI CARD READER	Probe : RF_1G-18G(2005-3) - VERTICAL
Power : AC 120V/60Hz	Note : TX-CH00

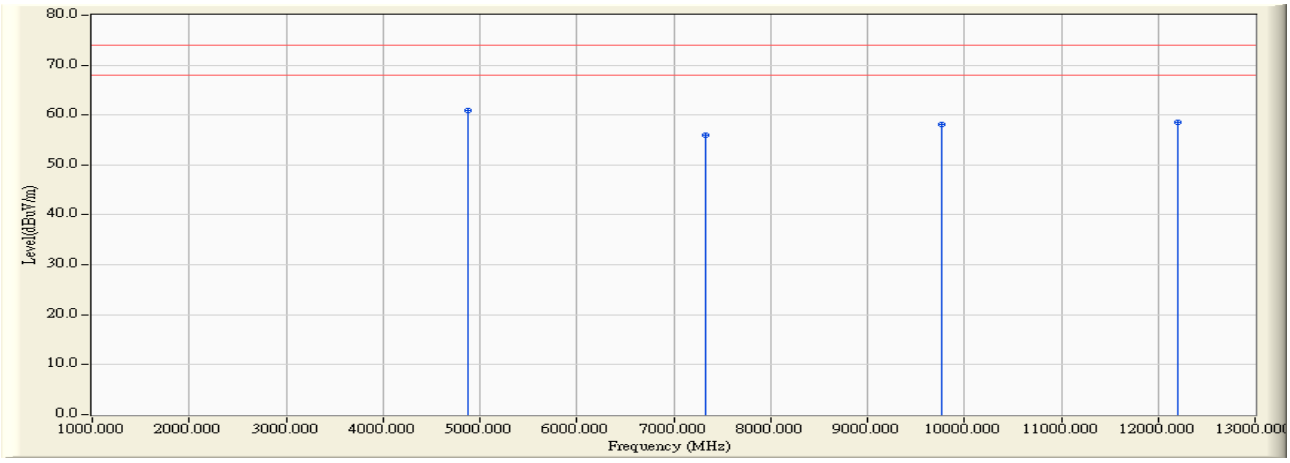


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		4804.000	0.901	40.150	41.052	-12.948	54.000	AVERAGE	0.000	0.000
2		7206.020	7.694	42.590	50.284	-3.716	54.000	AVERAGE	0.000	0.000
3	*	9608.080	13.498	40.050	53.548	-0.452	54.000	AVERAGE	0.000	0.000
4		12500-25000	--	--	--	--	--	--	--	--

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The peak level of signal whose frequency range is from 12.5 GHz to 25 GHz is lower than noise floor and under limit.

Site : Site 1	Time : 2006/07/06 - 14:20
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
EUT : HI-FI CARD READER	Probe : RF_1G-18G(2005-3) - HORIZONTAL
Power : AC 120V/60Hz	Note : TX-CH39

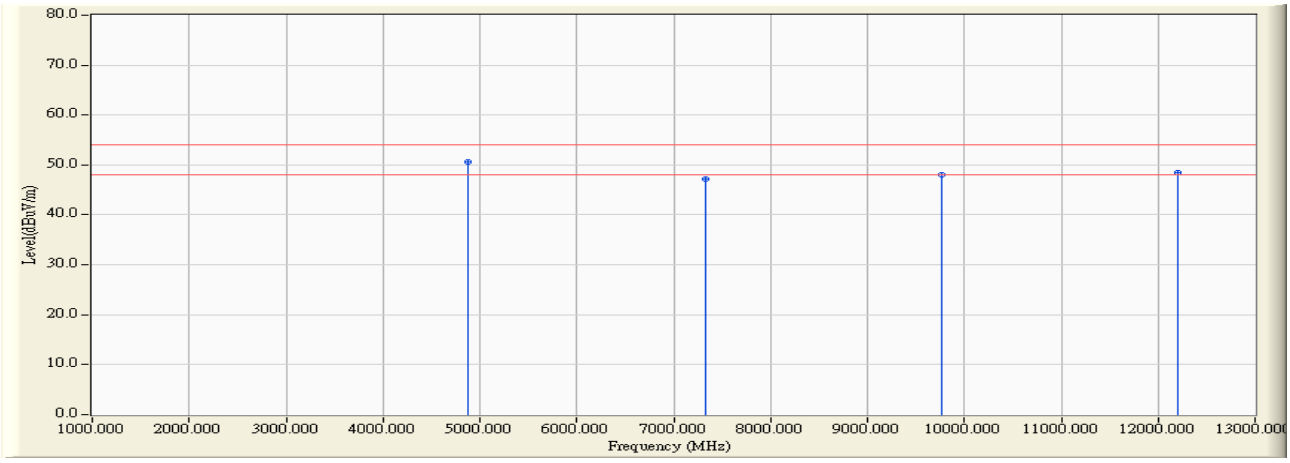


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1	*	4882.040	3.042	57.810	60.851	-13.149	74.000	PEAK	0.000	0.000
2		7323.040	8.653	47.390	56.043	-17.957	74.000	PEAK	0.000	0.000
3		9763.960	11.619	46.480	58.099	-15.901	74.000	PEAK	0.000	0.000
4		12205.040	16.716	41.850	58.566	-15.434	74.000	PEAK	0.000	0.000
5		12500-25000	--	--	--	--	--	--	--	--

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The peak level of signal whose frequency range is from 12.5 GHz to 25 GHz is lower than noise floor and under limit.

Site : Site 1	Time : 2006/07/06 - 14:21
Limit : FCC_SpartC_15.247_H_03M_AV	Margin : 6
EUT : HI-FI CARD READER	Probe : RF_1G-18G(2005-3) - HORIZONTAL
Power : AC 120V/60Hz	Note : TX-CH39

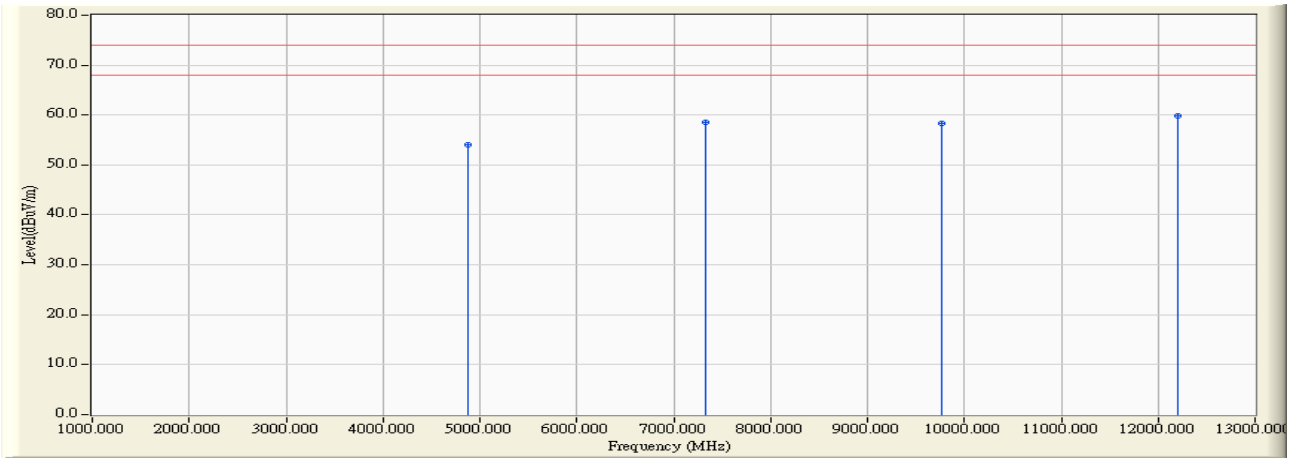


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1	*	4882.000	3.042	47.600	50.641	-3.359	54.000	AVERAGE	0.000	0.000
2		7323.080	8.653	38.620	47.273	-6.727	54.000	AVERAGE	0.000	0.000
3		9764.000	11.619	36.440	48.059	-5.941	54.000	AVERAGE	0.000	0.000
4		12205.000	16.722	31.680	48.402	-5.598	54.000	AVERAGE	0.000	0.000
5		12500-25000	--	--	--	--	--	--	--	--

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The peak level of signal whose frequency range is from 12.5 GHz to 25 GHz is lower than noise floor and under limit.

Site : Site 1	Time : 2006/07/06 - 14:30
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
EUT : HI-FI CARD READER	Probe : RF_1G-18G(2005-3) - VERTICAL
Power : AC 120V/60Hz	Note : TX-CH39

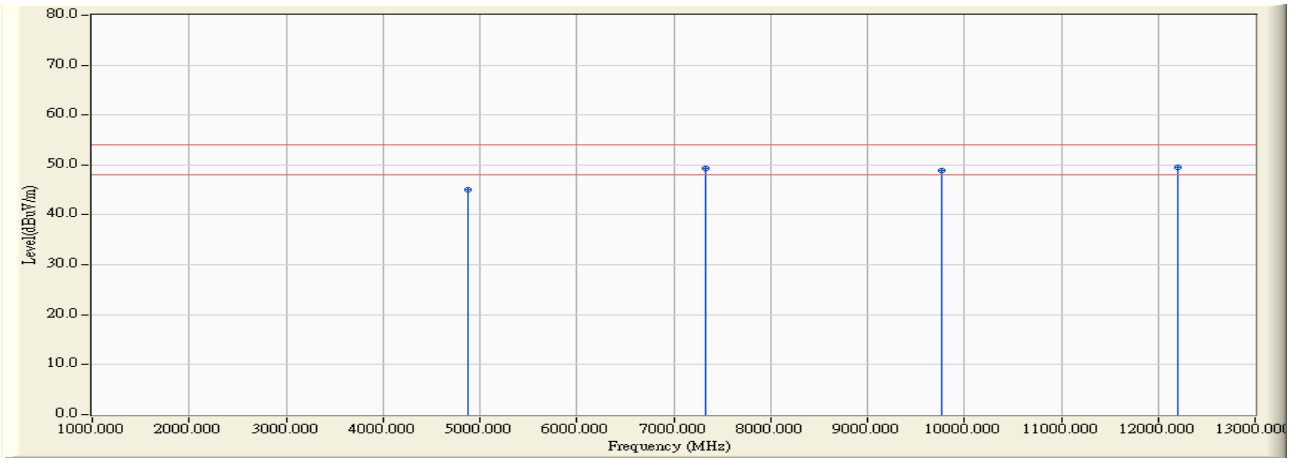


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		4882.080	1.403	52.750	54.152	-19.848	74.000	PEAK	0.000	0.000
2		7323.000	8.653	50.000	58.652	-15.348	74.000	PEAK	0.000	0.000
3		9764.000	13.619	44.760	58.379	-15.621	74.000	PEAK	0.000	0.000
4	*	12205.000	17.915	42.000	59.915	-14.085	74.000	PEAK	0.000	0.000
5		12500-25000	--	--	--	--	--	--	--	--

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The peak level of signal whose frequency range is from 12.5 GHz to 25 GHz is lower than noise floor and under limit.

Site : Site 1	Time : 2006/07/06 - 14:31
Limit : FCC_SpartC_15.247_H_03M_AV	Margin : 6
EUT : HI-FI CARD READER	Probe : RF_1G-18G(2005-3) - VERTICAL
Power : AC 120V/60Hz	Note : TX-CH39

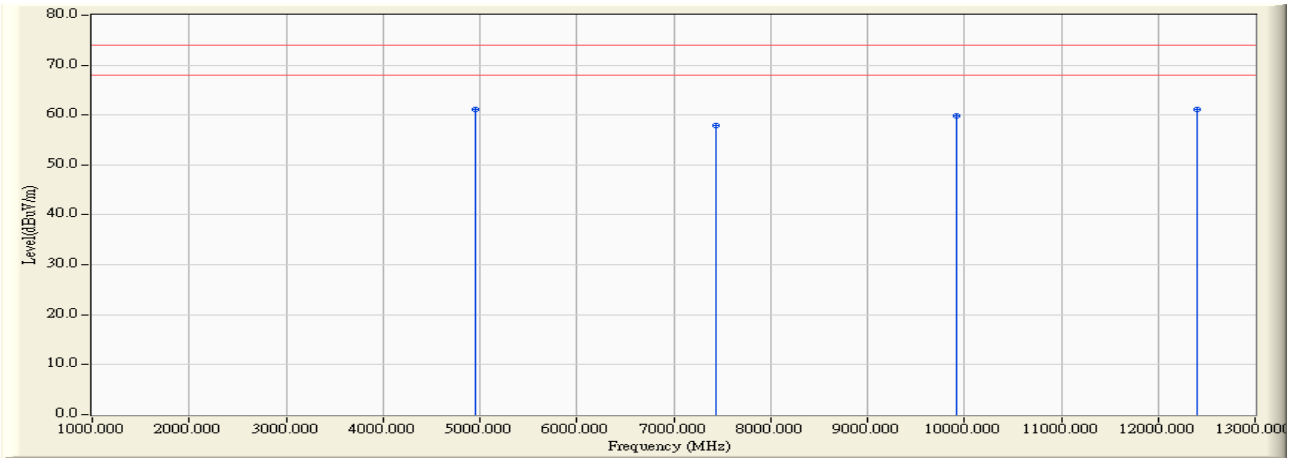


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		4882.040	1.402	43.540	44.942	-9.058	54.000	AVERAGE	0.000	0.000
2		7323.040	8.653	40.630	49.283	-4.717	54.000	AVERAGE	0.000	0.000
3		9764.080	13.620	35.290	48.909	-5.091	54.000	AVERAGE	0.000	0.000
4	*	12205.200	17.911	31.570	49.481	-4.519	54.000	AVERAGE	0.000	0.000
5		12500-25000	--	--	--	--	--	--	--	--

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The peak level of signal whose frequency range is from 12.5 GHz to 25 GHz is lower than noise floor and under limit.

Site : Site 1	Time : 2006/07/06 - 16:20
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
EUT : HI-FI CARD READER	Probe : RF_1G-18G(2005-3) - HORIZONTAL
Power : AC 120V/60Hz	Note : TX-CH78

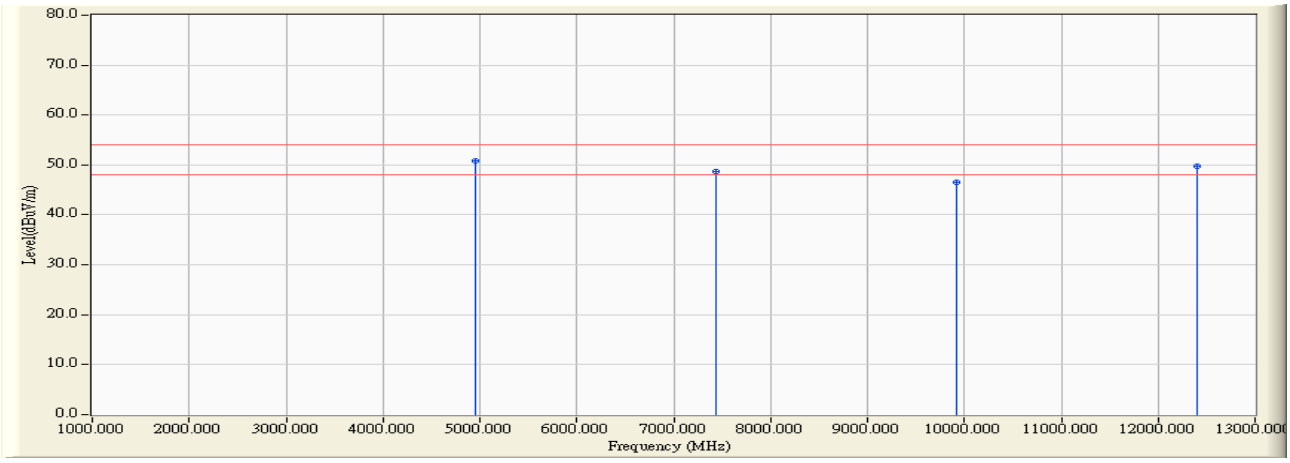


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1	*	4960.120	3.387	57.680	61.067	-12.933	74.000	PEAK	0.000	0.000
2		7440.160	9.209	48.680	57.889	-16.111	74.000	PEAK	0.000	0.000
3		9920.120	12.666	47.270	59.936	-14.064	74.000	PEAK	0.000	0.000
4		12400.000	18.625	42.410	61.035	-12.965	74.000	PEAK	0.000	0.000
5		12500-25000	--	--	--	--	--	--	--	--

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The peak level of signal whose frequency range is from 12.5 GHz to 25 GHz is lower than noise floor and under limit.

Site : Site 1	Time : 2006/07/06 - 16:22
Limit : FCC_SpartC_15.247_H_03M_AV	Margin : 6
EUT : HI-FI CARD READER	Probe : RF_1G-18G(2005-3) - HORIZONTAL
Power : AC 120V/60Hz	Note : TX-CH78

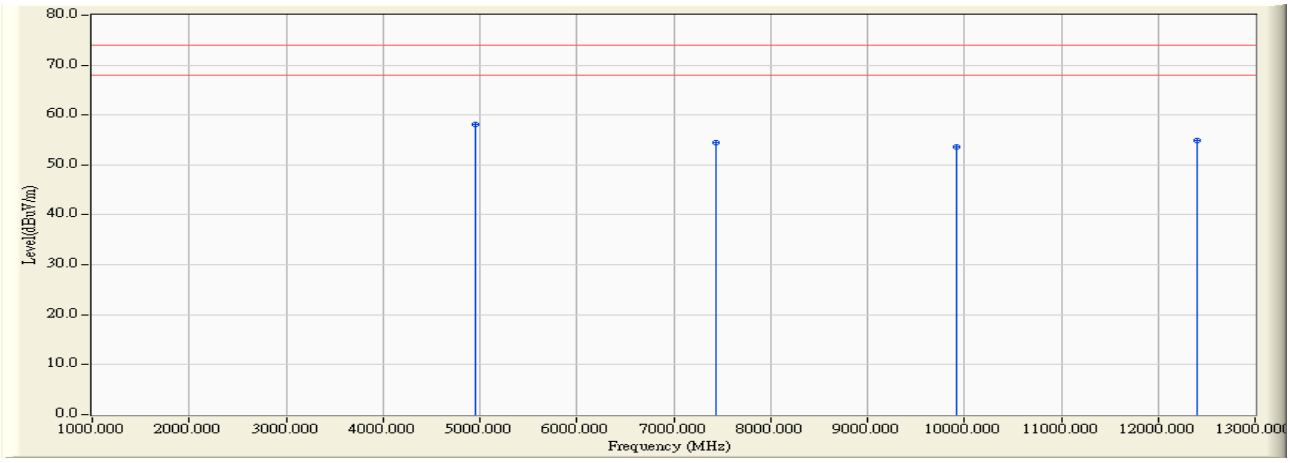


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1	*	4960.040	3.386	47.500	50.887	-3.113	54.000	AVERAGE	0.000	0.000
2		7440.080	9.209	39.470	48.679	-5.321	54.000	AVERAGE	0.000	0.000
3		9920.040	12.665	33.980	46.645	-7.355	54.000	AVERAGE	0.000	0.000
4		12399.920	18.618	31.170	49.788	-4.212	54.000	AVERAGE	0.000	0.000
5		12500-25000	--	--	--	--	--	--	--	--

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The peak level of signal whose frequency range is from 12.5 GHz to 25 GHz is lower than noise floor and under limit.

Site : Site 1	Time : 2006/07/06 - 17:20
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
EUT : HI-FI CARD READER	Probe : RF_1G-18G(2005-3) - VERTICAL
Power : AC 120V/60Hz	Note : TX-CH78

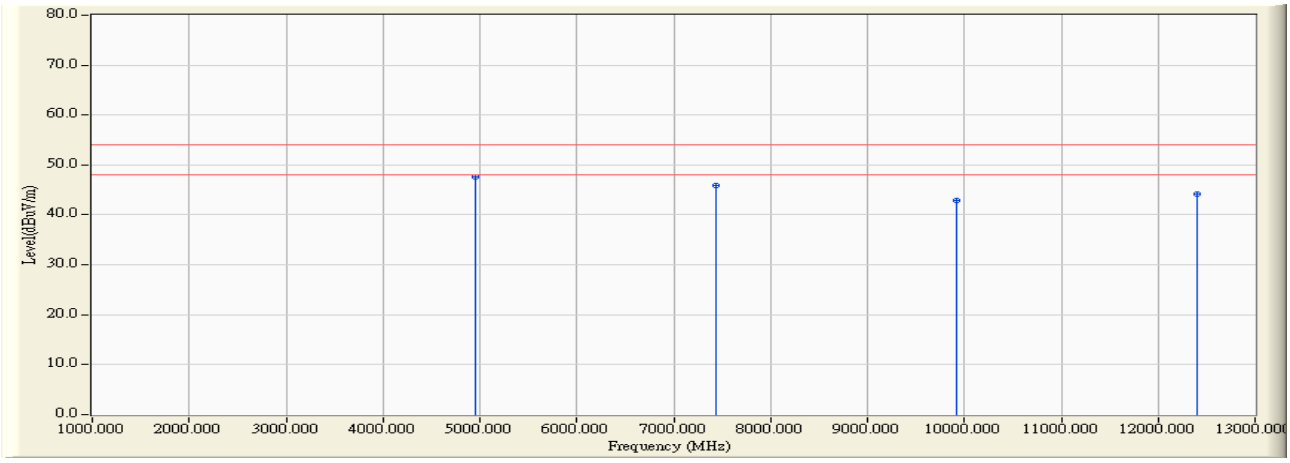


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1	*	4959.520	1.902	56.180	58.082	-15.918	74.000	PEAK	0.000	0.000
2		7439.800	9.209	45.260	54.469	-19.531	74.000	PEAK	0.000	0.000
3		9920.400	13.464	40.070	53.534	-20.466	74.000	PEAK	0.000	0.000
4		12399.120	13.944	41.050	54.994	-19.006	74.000	PEAK	0.000	0.000
5		12500-25000	--	--	--	--	--	--	--	--

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The peak level of signal whose frequency range is from 12.5 GHz to 25 GHz is lower than noise floor and under limit.

Site : Site 1	Time : 2006/07/06 - 17:21
Limit : FCC_SpartC_15.247_H_03M_AV	Margin : 6
EUT : HI-FI CARD READER	Probe : RF_1G-18G(2005-3) - VERTICAL
Power : AC 120V/60Hz	Note : TX-CH78



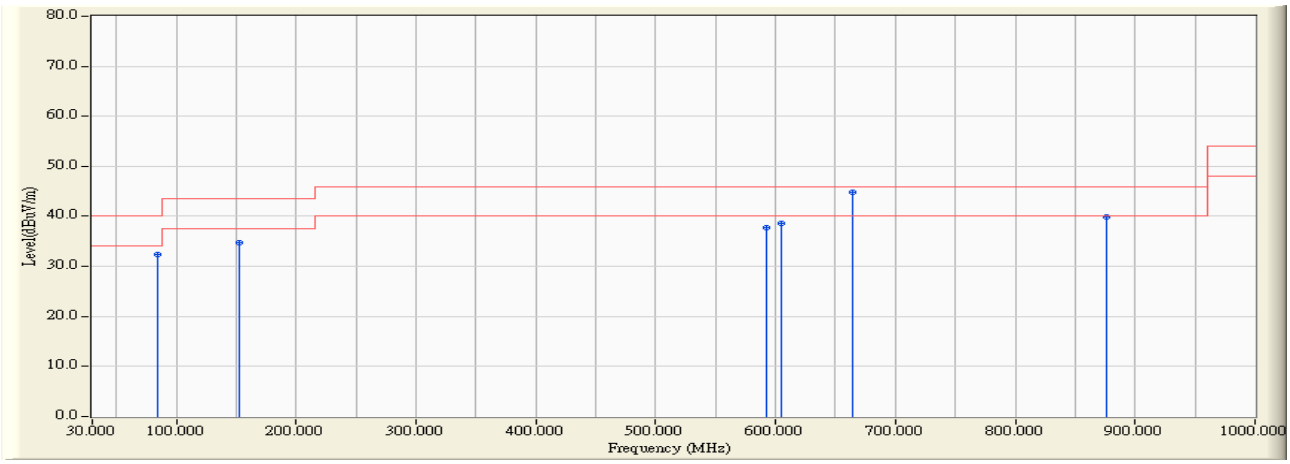
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1	*	4960.000	1.904	45.800	47.705	-6.295	54.000	AVERAGE	0.000	0.000
2		7440.040	9.209	36.730	45.939	-8.061	54.000	AVERAGE	0.000	0.000
3		9920.120	13.464	29.410	42.875	-11.125	54.000	AVERAGE	0.000	0.000
4		12399.960	13.936	30.340	44.276	-9.724	54.000	AVERAGE	0.000	0.000
5		12500-25000	--	--	--	--	--	--	--	--

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The peak level of signal whose frequency range is from 12.5 GHz to 25 GHz is lower than noise floor and under limit.

30MHz-1GHz Spurious:

Site : Site 1	Time : 2006/07/11 - 09:40
Limit : FCC_CLASS_B_03M_QP	Margin : 6
EUT : HI-FI CARD READER	Probe : RF_30-1G(06.5.12)0.8M - HORIZONTAL
Power : AC 120V/60Hz	Note : TX-CH00

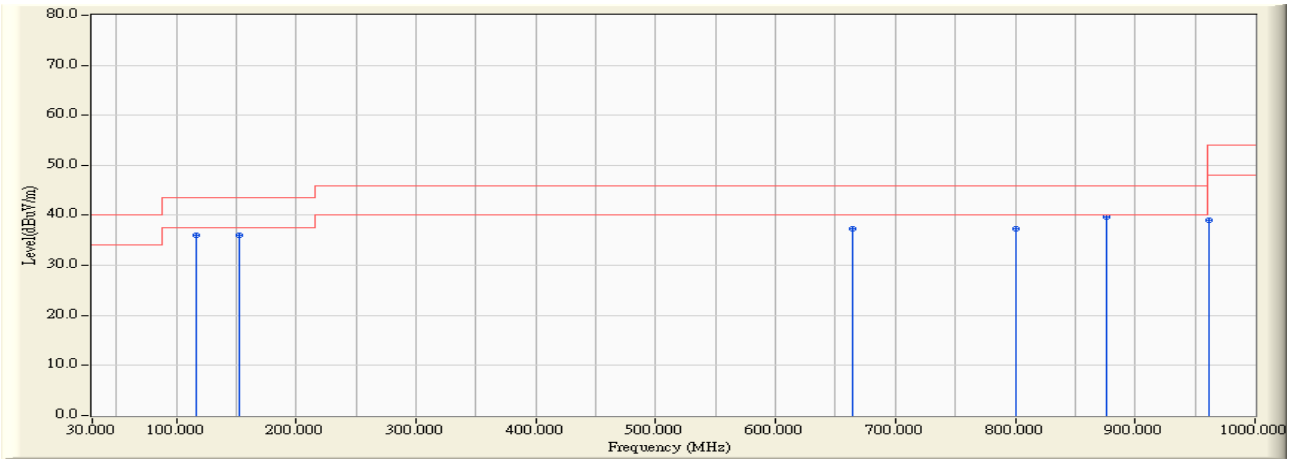


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		84.320	-14.302	46.720	32.418	-7.582	40.000	PEAK	0.000	0.000
2		152.220	-13.874	48.669	34.795	-8.705	43.500	PEAK	0.000	0.000
3		592.600	2.503	35.150	37.653	-8.347	46.000	PEAK	0.000	0.000
4		604.240	3.164	35.489	38.653	-7.347	46.000	PEAK	0.000	0.000
5	*	664.380	1.560	43.186	44.746	-1.254	46.000	PEAK	0.000	0.000
6		875.840	5.107	34.707	39.814	-6.186	46.000	PEAK	0.000	0.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : Site 1	Time : 2006/07/11 - 09:42
Limit : FCC_CLASS_B_03M_QP	Margin : 6
EUT : HI-FI CARD READER	Probe : RF_30-1G(06.5.12)0.8M - VERTICAL
Power : AC 120V/60Hz	Note : TX-CH00

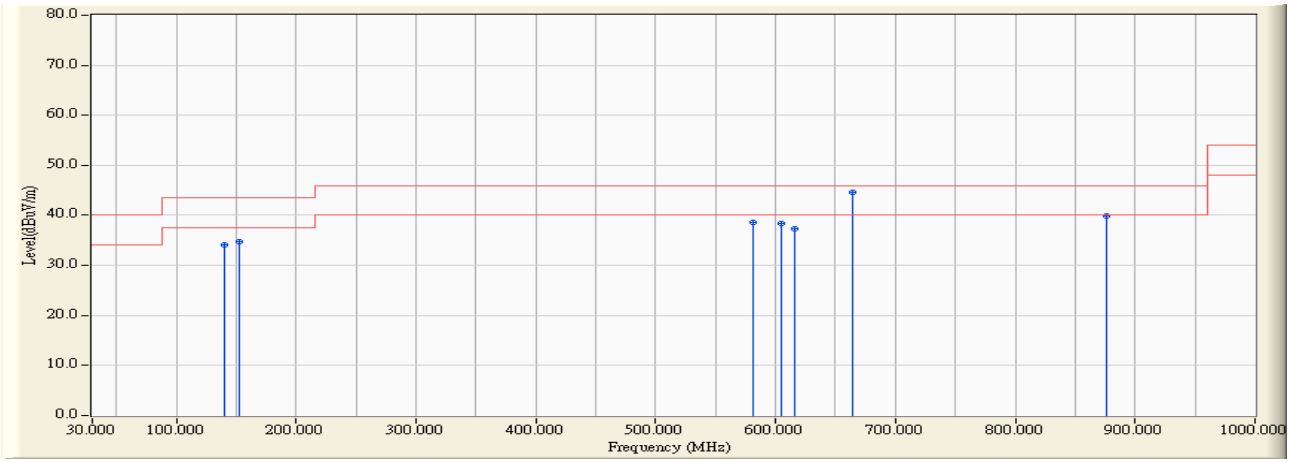


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		117.300	-3.294	39.260	35.966	-7.534	43.500	PEAK	0.000	0.000
2		152.220	-4.444	40.547	36.103	-7.397	43.500	PEAK	0.000	0.000
3		664.380	-3.210	40.426	37.216	-8.784	46.000	PEAK	0.000	0.000
4		800.180	4.863	32.546	37.409	-8.591	46.000	PEAK	0.000	0.000
5	*	875.840	3.887	35.896	39.783	-6.217	46.000	PEAK	0.000	0.000
6		961.200	6.557	32.416	38.973	-15.027	54.000	PEAK	0.000	0.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : Site 1	Time : 2006/07/11 - 09:47
Limit : FCC_CLASS_B_03M_QP	Margin : 6
EUT : HI-FI CARD READER	Probe : RF_30-1G(06.5.12)0.8M - HORIZONTAL
Power : AC 120V/60Hz	Note : TX-CH39

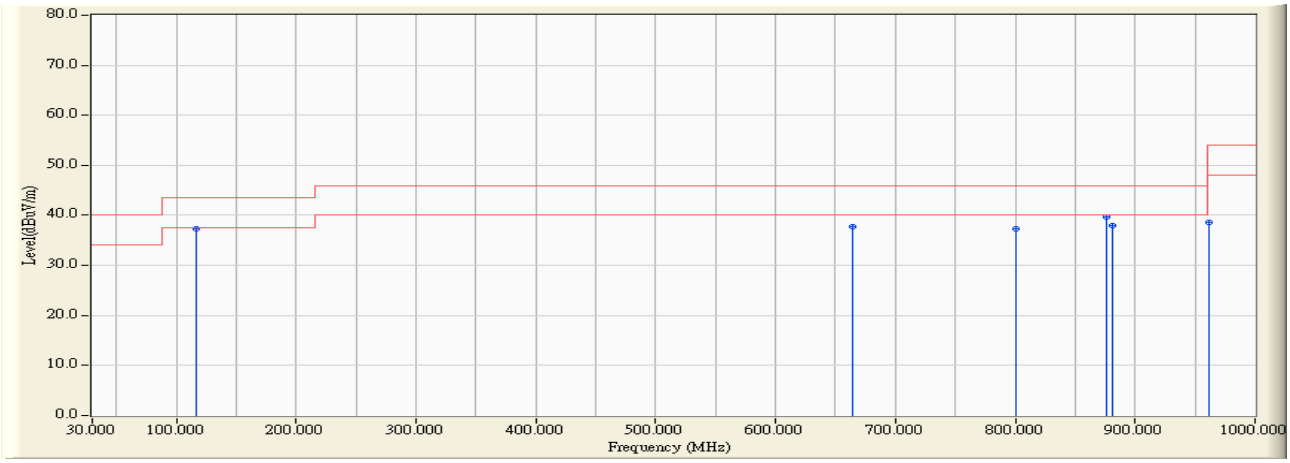


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		140.580	-14.087	48.176	34.089	-9.411	43.500	PEAK	0.000	0.000
2		152.220	-13.874	48.663	34.789	-8.711	43.500	PEAK	0.000	0.000
3		580.960	5.200	33.314	38.514	-7.486	46.000	PEAK	0.000	0.000
4		604.240	3.164	35.254	38.418	-7.582	46.000	PEAK	0.000	0.000
5		615.880	1.454	35.885	37.339	-8.661	46.000	PEAK	0.000	0.000
6	*	664.380	1.560	43.100	44.660	-1.340	46.000	PEAK	0.000	0.000
7		875.840	5.107	34.805	39.912	-6.088	46.000	PEAK	0.000	0.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : Site 1	Time : 2006/07/11 - 09:48
Limit : FCC_CLASS_B_03M_QP	Margin : 6
EUT : HI-FI CARD READER	Probe : RF_30-1G(06.5.12)0.8M - VERTICAL
Power : AC 120V/60Hz	Note : TX-CH39

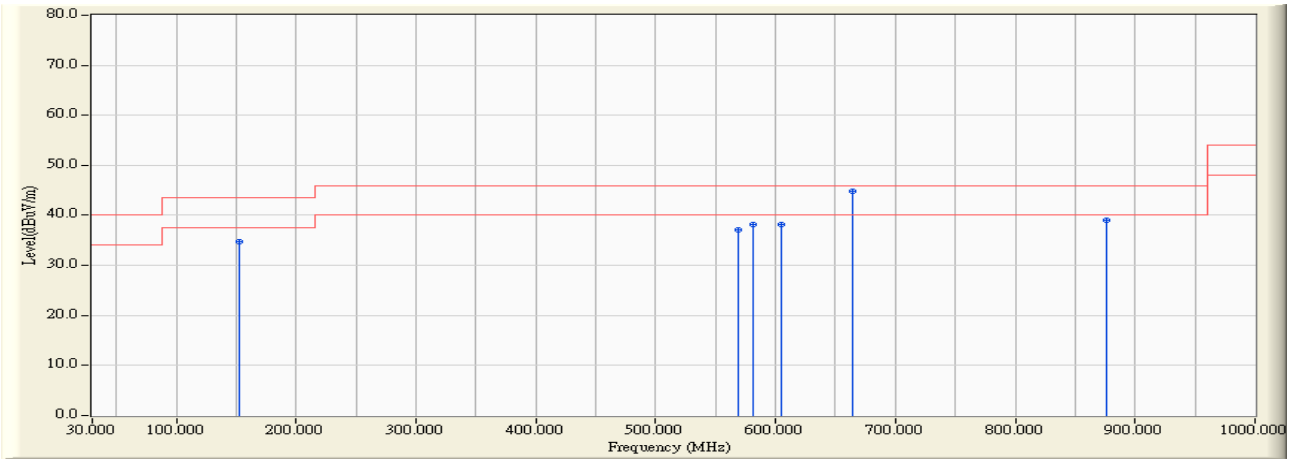


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1	*	117.300	-3.294	40.719	37.425	-6.075	43.500	PEAK	0.000	0.000
2		664.380	-3.210	40.854	37.644	-8.356	46.000	PEAK	0.000	0.000
3		800.180	4.863	32.521	37.384	-8.616	46.000	PEAK	0.000	0.000
4		875.840	3.887	35.791	39.678	-6.322	46.000	PEAK	0.000	0.000
5		881.660	2.974	34.932	37.906	-8.094	46.000	PEAK	0.000	0.000
6		961.200	6.557	32.130	38.687	-15.313	54.000	PEAK	0.000	0.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : Site 1	Time : 2006/07/11 - 09:50
Limit : FCC_CLASS_B_03M_QP	Margin : 6
EUT : HI-FI CARD READER	Probe : RF_30-1G(06.5.12)0.8M - HORIZONTAL
Power : AC 120V/60Hz	Note : TX-CH78

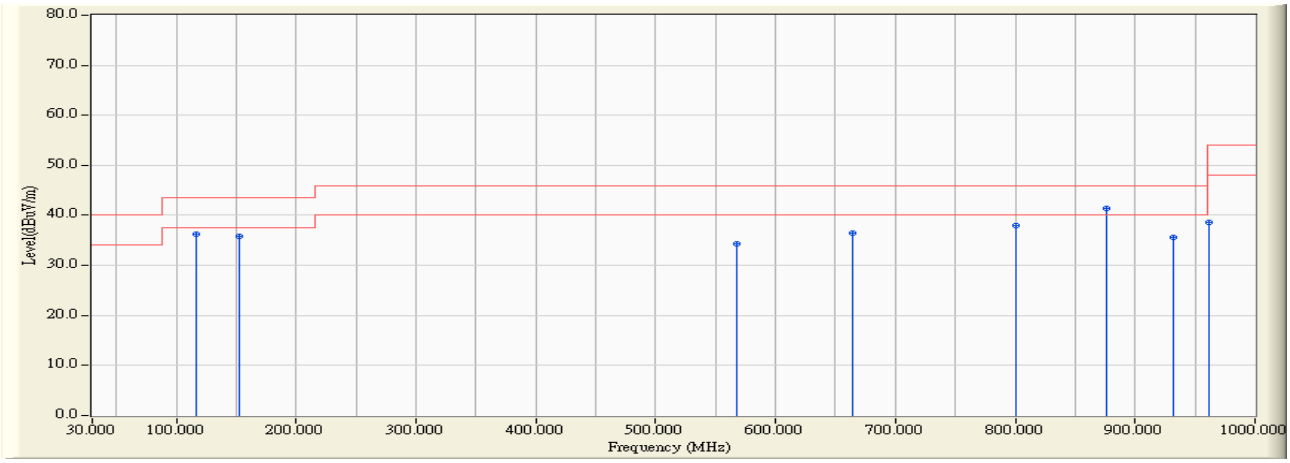


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		152.220	-13.874	48.575	34.701	-8.799	43.500	PEAK	0.000	0.000
2		569.320	4.579	32.473	37.052	-8.948	46.000	PEAK	0.000	0.000
3		580.960	5.200	33.000	38.200	-7.800	46.000	PEAK	0.000	0.000
4		604.240	3.164	34.958	38.122	-7.878	46.000	PEAK	0.000	0.000
5	*	664.380	1.560	43.303	44.863	-1.137	46.000	PEAK	0.000	0.000
6		875.840	5.107	33.846	38.953	-7.047	46.000	PEAK	0.000	0.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : Site 1	Time : 2006/07/11 - 09:51
Limit : FCC_CLASS_B_03M_QP	Margin : 6
EUT : HI-FI CARD READER	Probe : RF_30-1G(06.5.12)0.8M - VERTICAL
Power : AC 120V/60Hz	Note : TX-CH78



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		117.300	-3.294	39.485	36.191	-7.309	43.500	PEAK	0.000	0.000
2		152.220	-4.444	40.187	35.743	-7.757	43.500	PEAK	0.000	0.000
3		567.380	3.708	30.537	34.245	-11.755	46.000	PEAK	0.000	0.000
4		664.380	-3.210	39.638	36.428	-9.572	46.000	PEAK	0.000	0.000
5		800.180	4.863	33.060	37.923	-8.077	46.000	PEAK	0.000	0.000
6	*	875.840	3.887	37.401	41.288	-4.712	46.000	PEAK	0.000	0.000
7		932.100	6.630	28.884	35.514	-10.486	46.000	PEAK	0.000	0.000
8		961.200	6.557	31.987	38.544	-15.456	54.000	PEAK	0.000	0.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

5. Band Edge

5.1. Test Equipment

The following test equipment are used during the test:

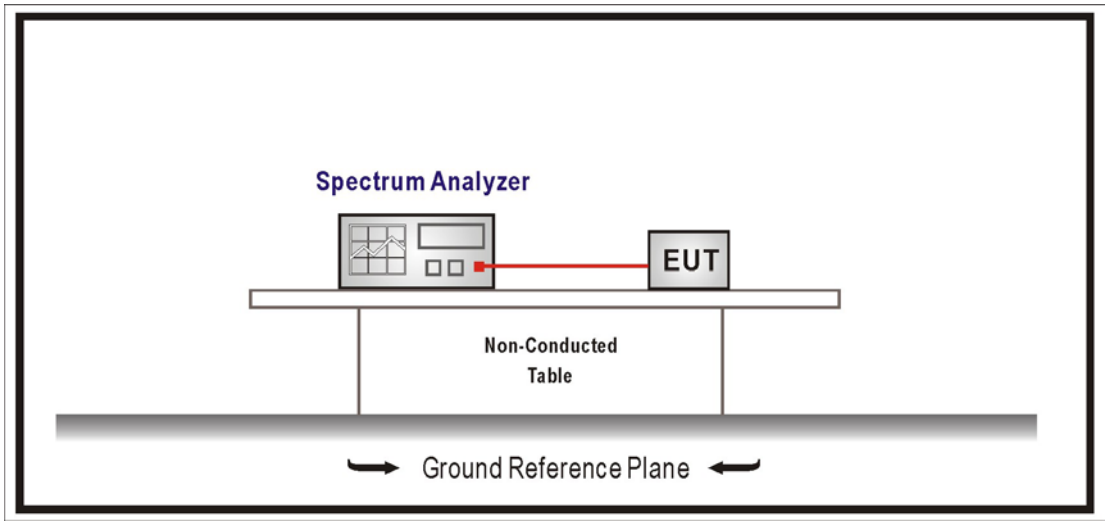
RF Conducted Measurement:					
Item	Equipment		Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer		R & S	FSP / 100561	Mar., 2006
2	No.1 OATS				Sep., 2005
RF Radiated Measurement:					
Item	Equipment		Manufacturer	Model No. / Serial No.	Last Cal.
1	X	Spectrum Analyzer	R & S	FSP40 / 100005	Aug., 2005
2	X	Pre-Amplifier	HP	8449B / 3008A01123	Feb., 2006
3		Loop Antenna	R & S	HFH2-Z2 / 833799/004	Sep., 2005
4		BiconiLog Antenna	Schwarzbeck	VULB 9166 / 1061	Sep., 2005
5		Bilog Antenna	Chase	CBL6112B / 2455	Sep., 2005
6	X	Horn Antenna	Schwarzbeck	BBHA 9120D / BBHA9120D312	Sep., 2005
7	No.1 OATS				Sep., 2005

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

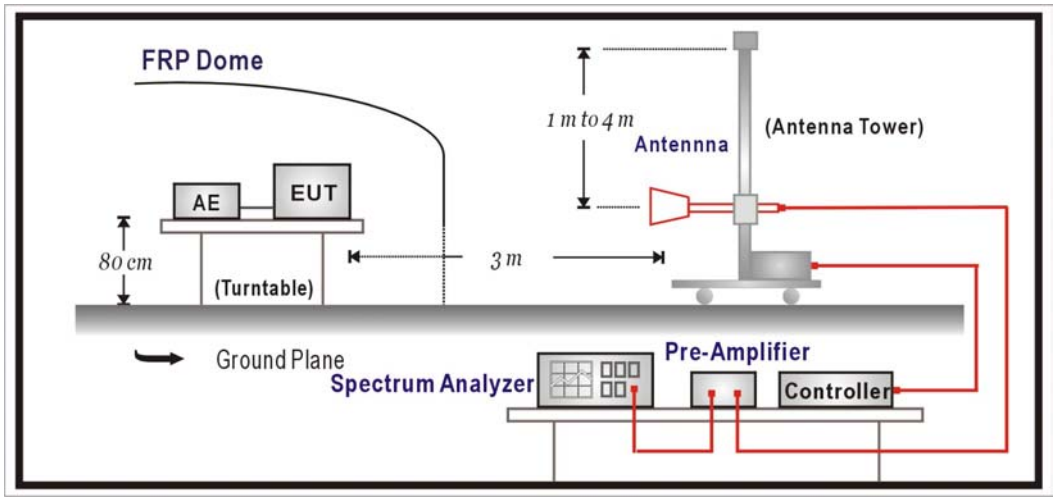
2. Mark “X” test instruments are used to measure the final test results.

5.2. Test Setup

RF Conducted Measurement:



RF Radiated Measurement:



5.3. 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)).

5.4. 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 below 1GHz setting on the field strength meter is 120 kHz, above 1GHz are 1 MHz.

5.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2004

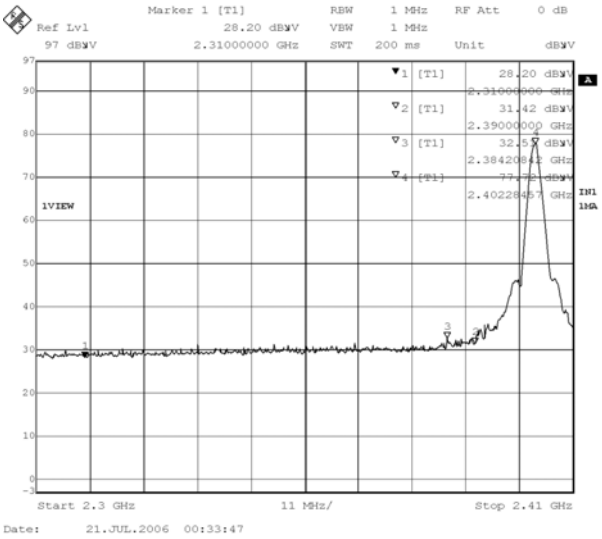
5.6. Test Result

Product	HI-FI CARD READER		
Test Item	Band Edge		
Test Mode	Mode 1: Transmit		
Date of Test	2006/07/20	Test Site	No.1 OATS

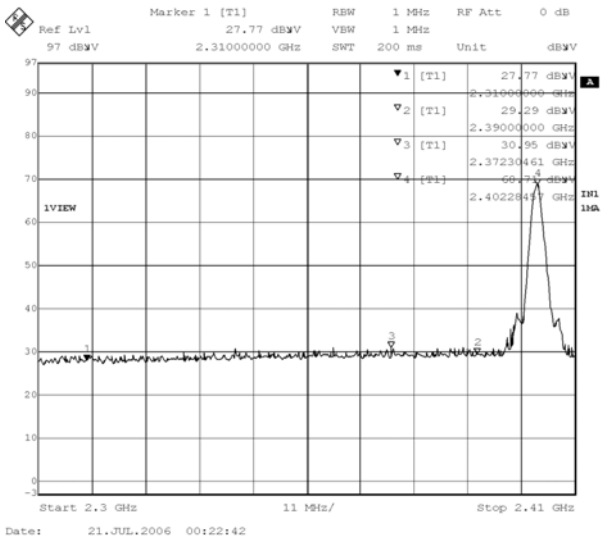
RF Radiated Measurement: (Peak Detector)

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	PreAMP (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Result
00(Horizontal)	2384.200	32.510	28.375	00.00	60.885	74.000	Pass
00(Vertical)	2372.300	30.950	26.729	00.00	57.680	74.000	Pass

Horizontal



Vertical



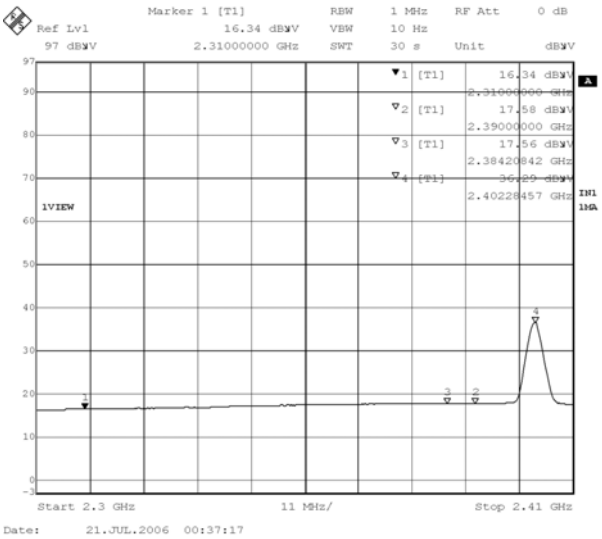
Note: The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product	HI-FI CARD READER		
Test Item	Band Edge		
Test Mode	Mode 1: Transmit		
Date of Test	2006/07/20	Test Site	No.1 OATS

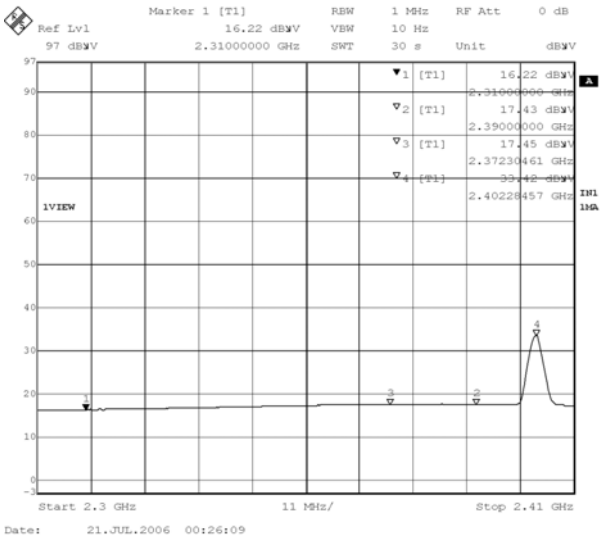
RF Radiated Measurement: (Average Detector)

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	PreAMP (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Result
00(Horizontal)	2384.200	17.560	28.375	00.00	45.935	54.00	Pass
00(Vertical)	2372.300	17.430	26.729	00.00	44.160	54.00	Pass

Horizontal



Vertical



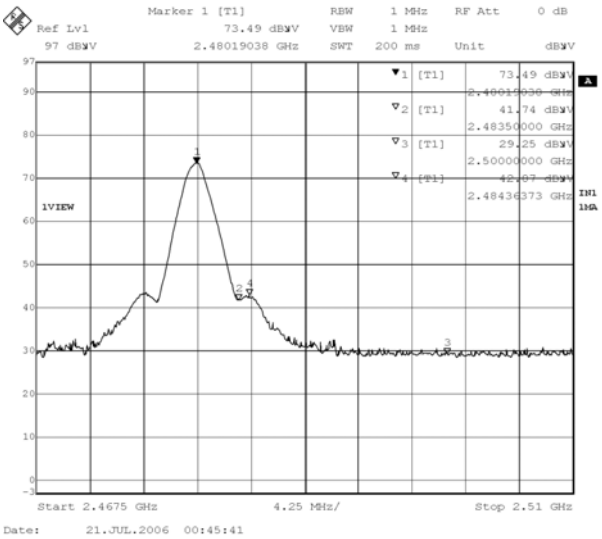
Note: The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product	HI-FI CARD READER		
Test Item	Band Edge		
Test Mode	Mode 1: Transmit		
Date of Test	2006/07/20	Test Site	No.1 OATS

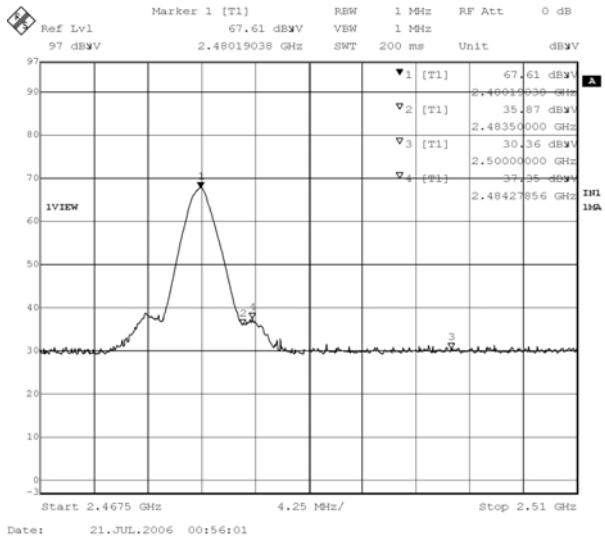
RF Radiated Measurement: (Peak Detector)

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	PreAMP (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Result
78(Horizontal)	2484.360	42.870	28.715	00.00	71.584	74.000	Pass
78(Vertical)	2484.270	37.350	27.114	00.00	64.464	74.000	Pass

Horizontal



Vertical



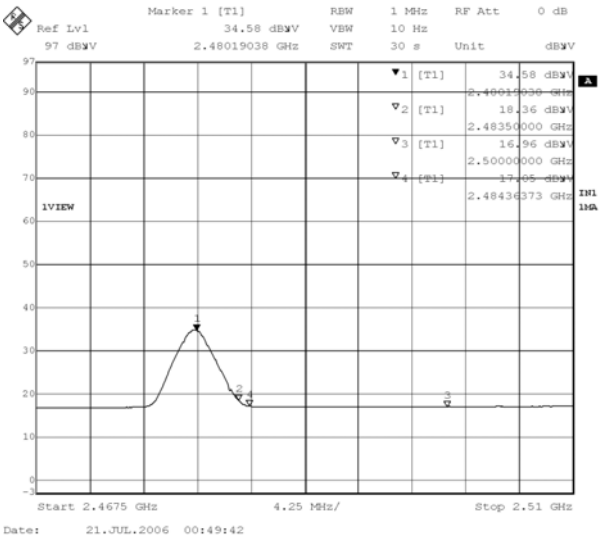
Note: The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product	HI-FI CARD READER		
Test Item	Band Edge		
Test Mode	Mode 1: Transmit		
Date of Test	2006/07/20	Test Site	No.1 OATS

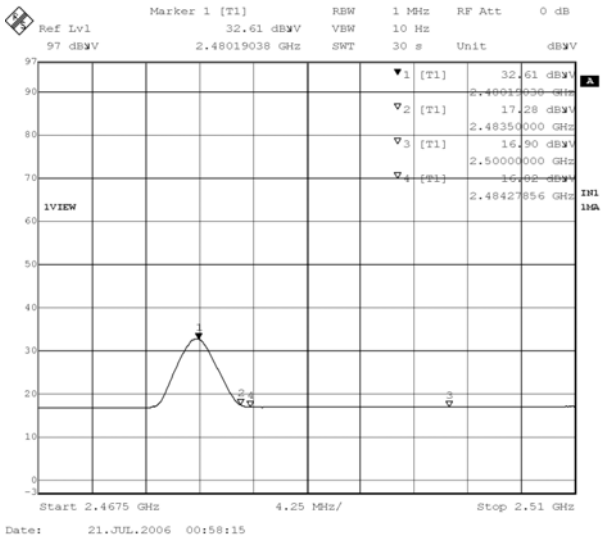
RF Radiated Measurement: (Average Detector)

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	PreAMP (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Result
78(Horizontal)	2484.360	17.050	28.715	00.00	45.764	54.000	Pass
78(Vertical)	2484.270	16.820	27.114	00.00	43.934	54.000	Pass

Horizontal



Vertical



Note: 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.

6. Channel of Number

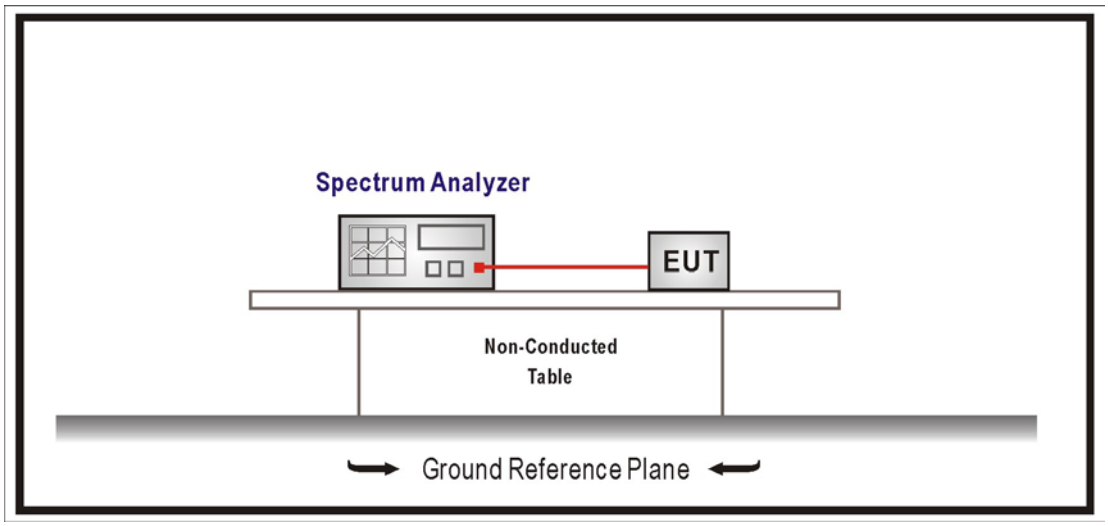
6.1. Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Mar., 2006
2	No.1 OATS			Sep., 2005

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

6.2. Test Setup



6.3. Limits

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

For frequency hopping systems operating in the 2400-2483.5 MHz bands, which use fewer than 75 hopping frequencies, may employ intelligent hopping techniques to avoid interference to other transmissions. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 non-overlapping channels are used.

For frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies.

6.4. Test Specification

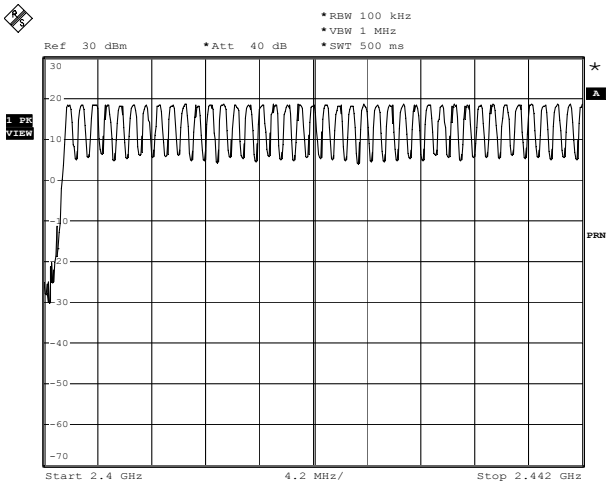
According to FCC Part 15 Subpart C Paragraph 15.247: 2004

6.5. Test Result

Product	HI-FI CARD READER		
Test Item	Channel of Number		
Test Mode	Mode 1: Transmit		
Date of Test	2006/07/20	Test Site	No.1 OATS

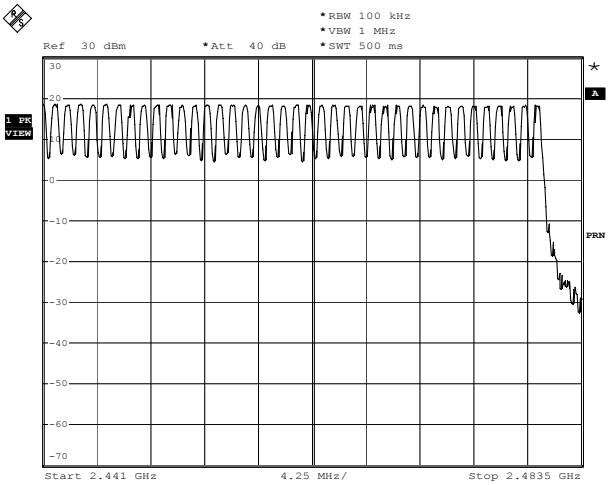
Frequency Range (MHz)	Measure Level (Hopping Channel)	Limit (Hopping Channel)	Result
2402 ~ 2480	79	>75	Pass

2402-2439MHz



Date: 7.JUL.2006 18:39:51

2440-2480MHz



Date: 7.JUL.2006 18:33:18

7. Channel Separation

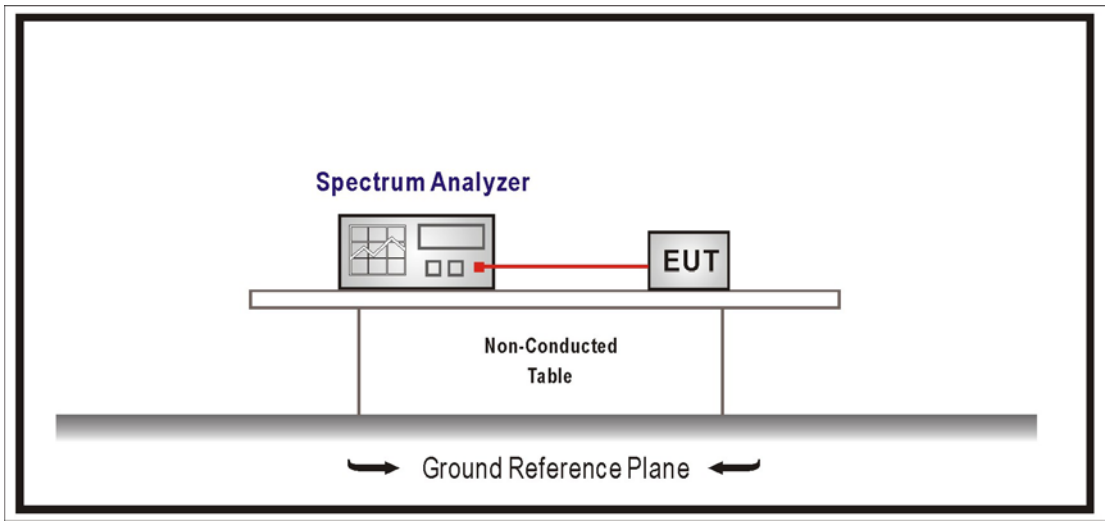
7.1. Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Mar., 2006
2	No.1 OATS			Sep., 2005

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

7.2. Test Setup



7.3. Limits

For frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

7.4. Test Specification

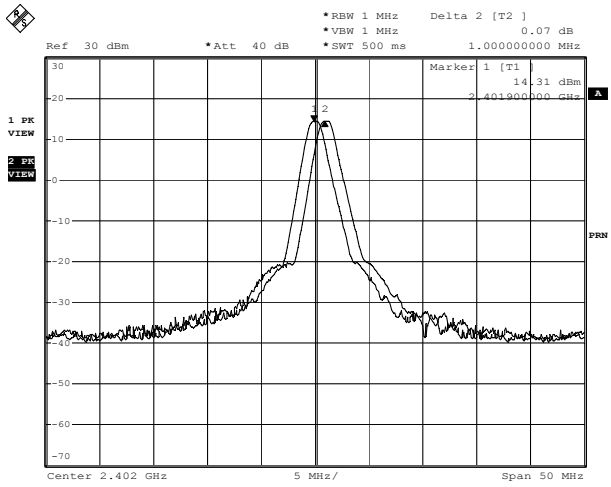
According to FCC Part 15 Subpart C Paragraph 15.247: 2004

7.5. Test Result

Product	HI-FI CARD READER		
Test Item	Channel Separation		
Test Mode	Mode 1: Transmit		
Date of Test	2006/07/12	Test Site	No.1 OATS

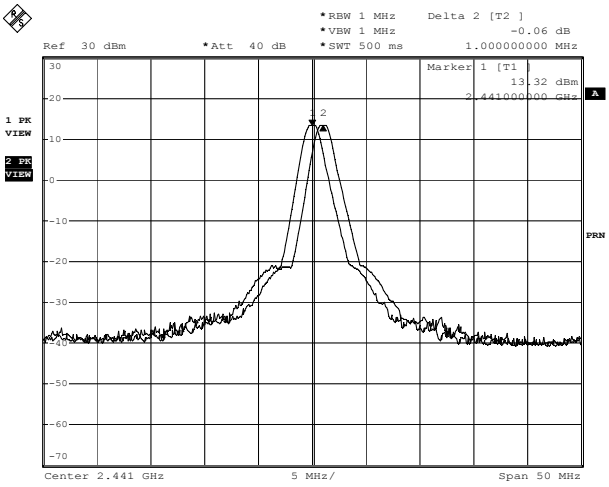
Channel No.	Frequency (MHz)	Measure Level (kHz)	Limit (kHz)	Result
00	2402.00	1000	25	Pass
39	2441.00	1000	25	Pass
78	2480.00	1000	25	Pass

Channel 00



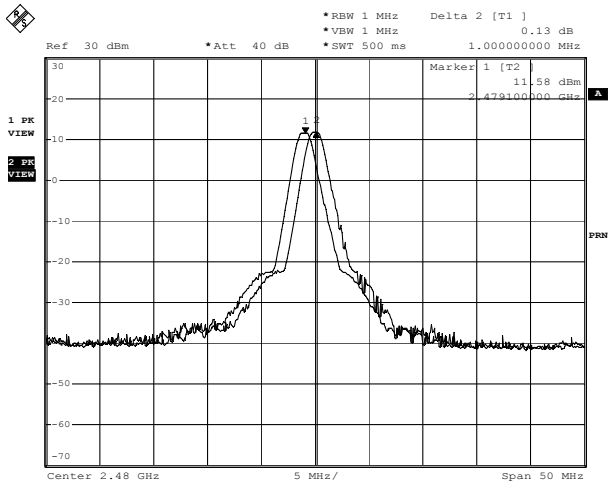
Date: 12.JUL.2006 15:39:13

Channel 39



Date: 12.JUL.2006 15:46:31

Channel 78



Date: 12.JUL.2006 15:51:09

8. Occupied Bandwidth

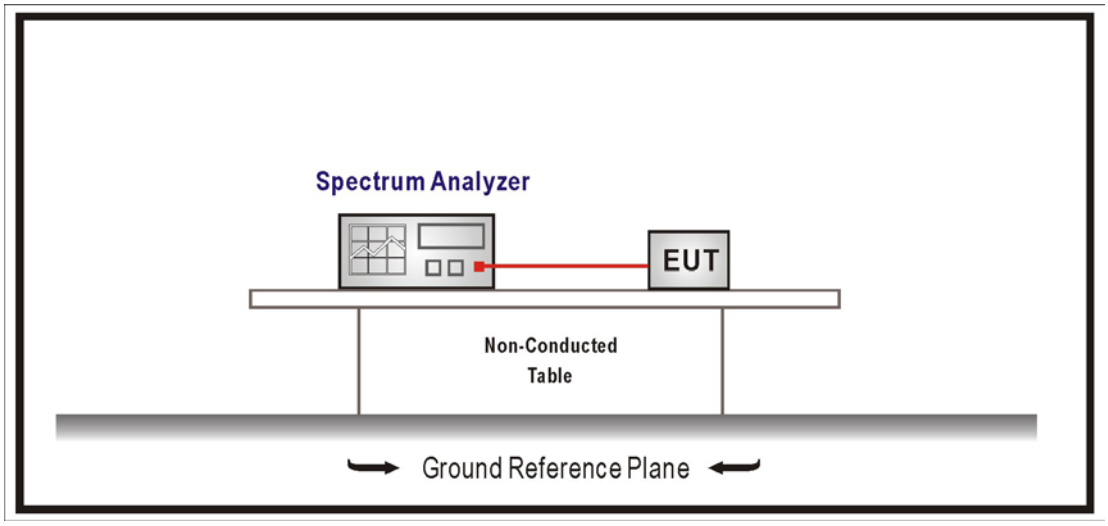
8.1. Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Mar., 2006
2	No.1 OATS			Sep., 2005

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

8.2. Test Setup



8.3. Limits

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

For frequency hopping systems operating in the 5725-5850 MHz bands. The maximum 20 dB bandwidth of the hopping channel is 1 MHz.

For frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

8.4. Test Specification

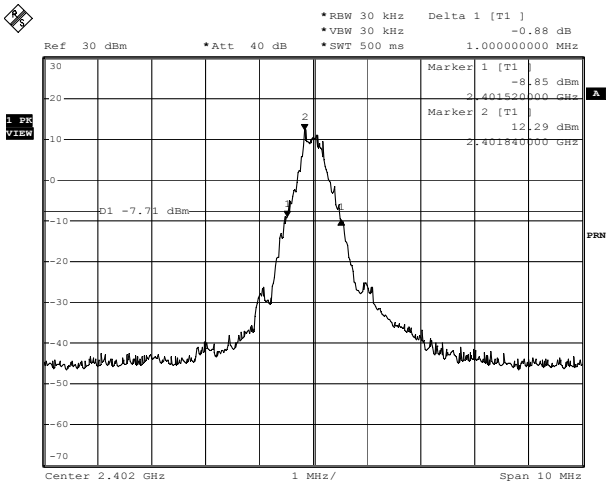
According to FCC Part 15 Subpart C Paragraph 15.247: 2004

8.5. Test Result

Product	HI-FI CARD READER		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2006/07/20	Test Site	No.1 OATS

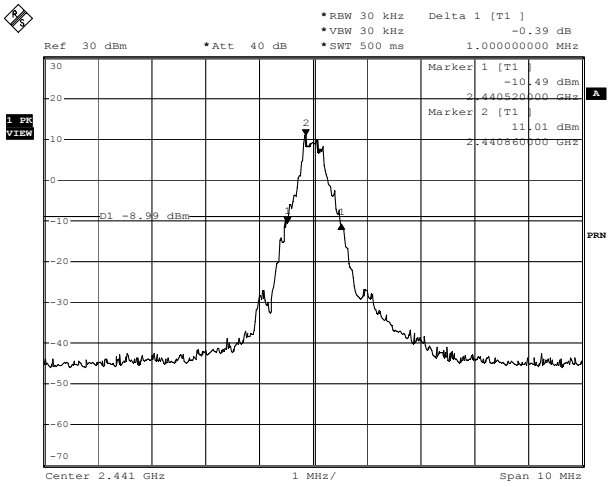
Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
00	2402.00	1	<1	Pass
39	2441.00	1	<1	Pass
78	2480.00	1	<1	Pass

Channel 00



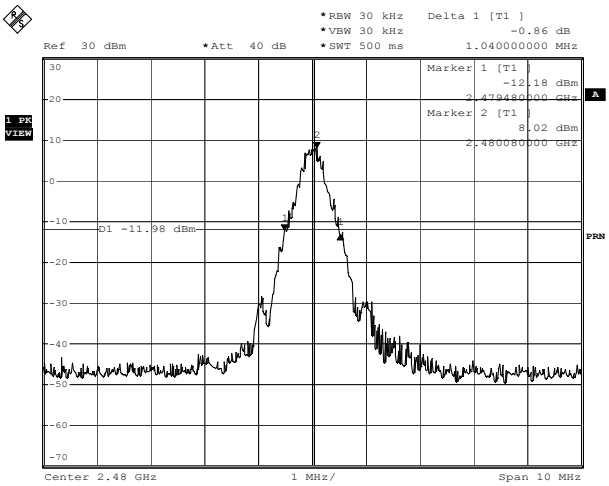
Date: 12.JUL.2006 13:58:23

Channel 39



Date: 12.JUL.2006 13:44:38

Channel 78



Date: 12.JUL.2006 14:20:43

9. Dwell Time

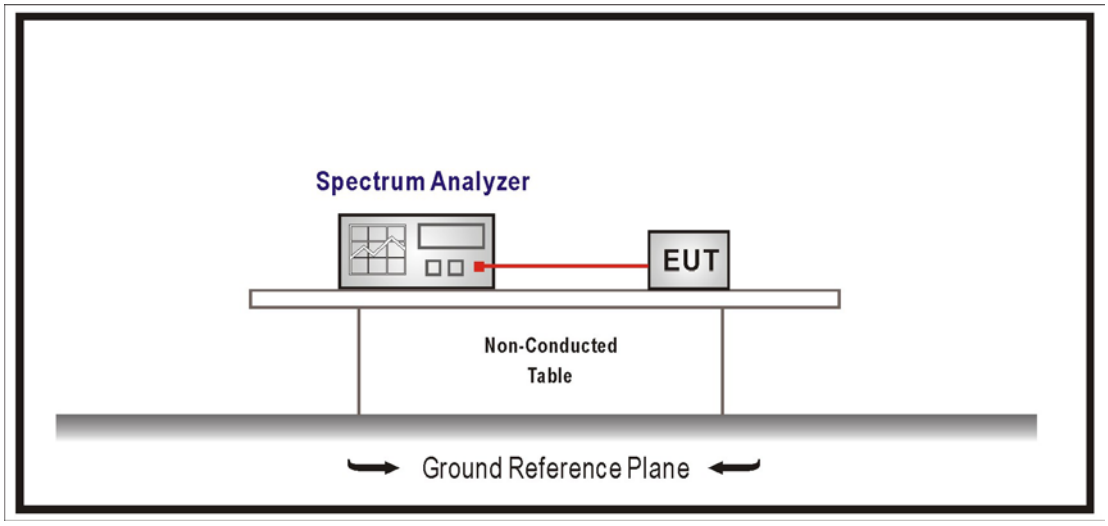
9.1. Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Mar., 2006
2	No.1 OATS			Sep., 2005

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

9.2. Test Setup



9.3. Limits

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.
For frequency hopping systems operating in the 2400-2483.5 MHz bands. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.
For frequency hopping systems operating in the 5725-5850 MHz bands. The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

9.4. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2004

9.5. Test Result

Product	HI-FI CARD READER		
Test Item	Dwell Time		
Test Mode	Mode 1: Transmit		
Date of Test	2006/07/12	Test Site	No.1 OATS

Occupancy Time of Frequency Hopping System-DH 1

Test Time Period: 0.4*79=31.6sec，Hopping Times Within 1sec: 39/50msec=780 /sec

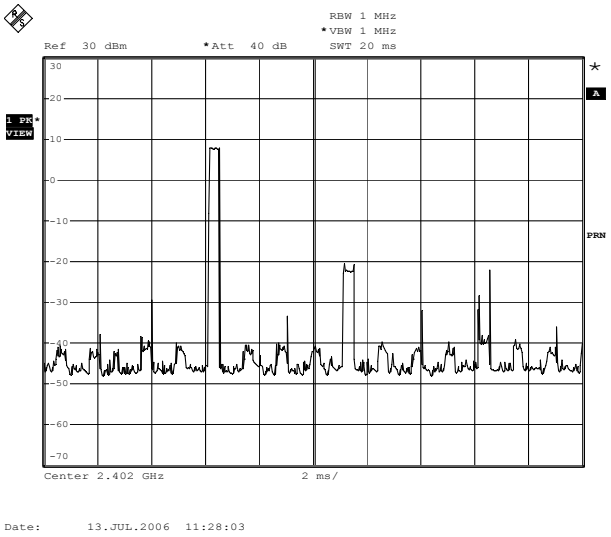
A) 2402MHz The Maximum Occupancy Time Within 31.6sec: 410 μs*(800/79)*31.6=0.131sec。

B) 2441MHz The Maximum Occupancy Time Within 31.6sec: 420 μs*(800/79)*31.6=0.134sec。

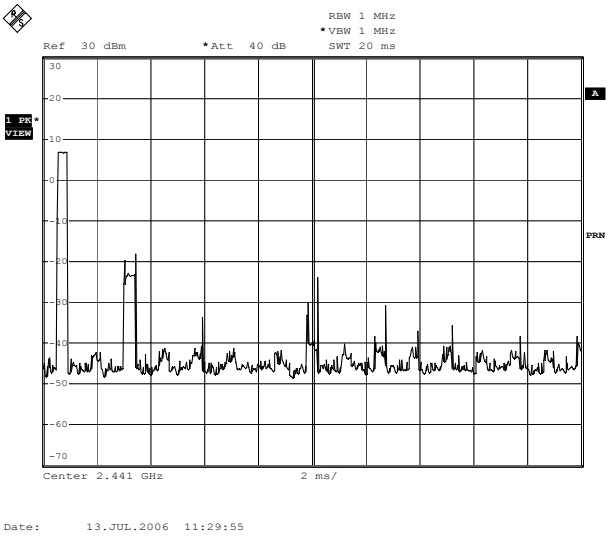
C) 2480MHz The Maximum Occupancy Time Within 31.6sec: 420 μs*(800/79)*31.6=0.134sec。

Test Result: The Average Occupancy Time of Each Highest，Middle and Lowest Channel Is Less Than 0.4sec，And Corresponds to The Standard。

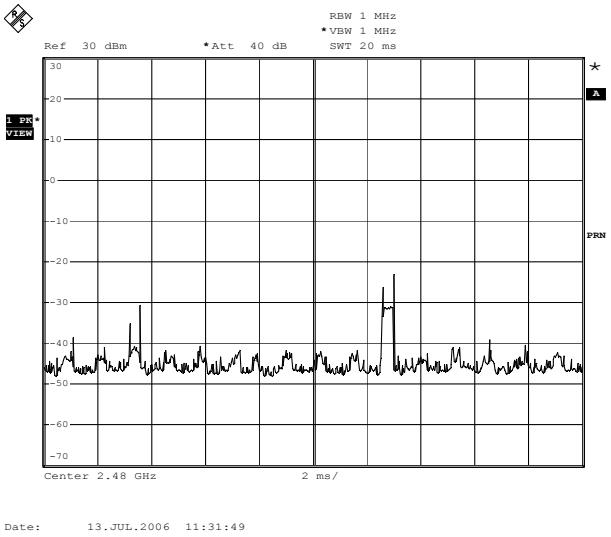
Hop rate-2402MHz



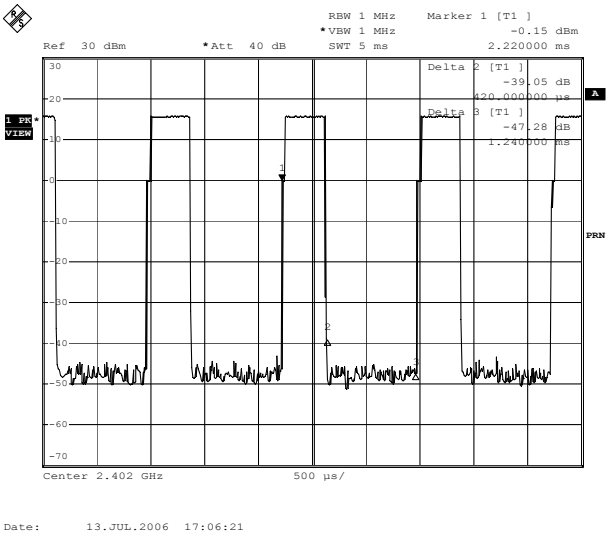
Hop rate-2441MHz



Hop rate-2480MHz



Time slot length



Note: Dwell time＝time slot length * hop rate / number of hopping channels * period

Product	HI-FI CARD READER		
Test Item	Dwell Time		
Test Mode	Mode 1: Transmit		
Date of Test	2006/07/12	Test Site	No.1 OATS

Occupancy Time of Frequency Hopping System-DH 3

Test Time Period: 0.4*79=31.6sec，Hopping Times Within 1sec: 20/50msec=400 /sec

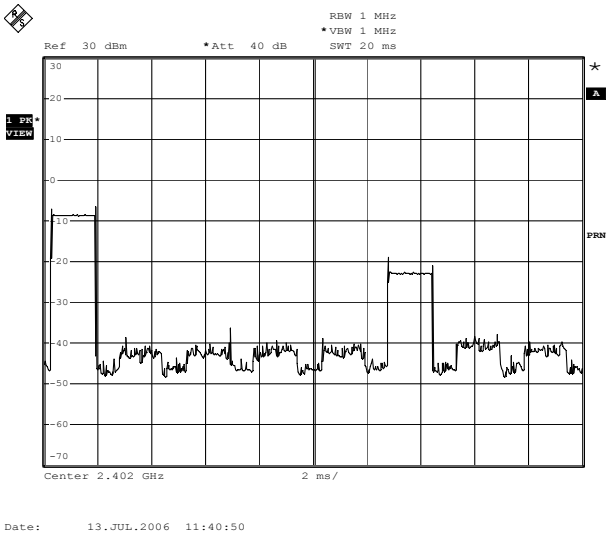
A) 2402MHz The Maximum Occupancy Time Within 31.6sec: 1640 μs*(400/79)*31.6= 0.0262sec。

B) 2441MHz The Maximum Occupancy Time Within 31.6sec: 1640 μs*(350/79)*31.6= 0.233sec。

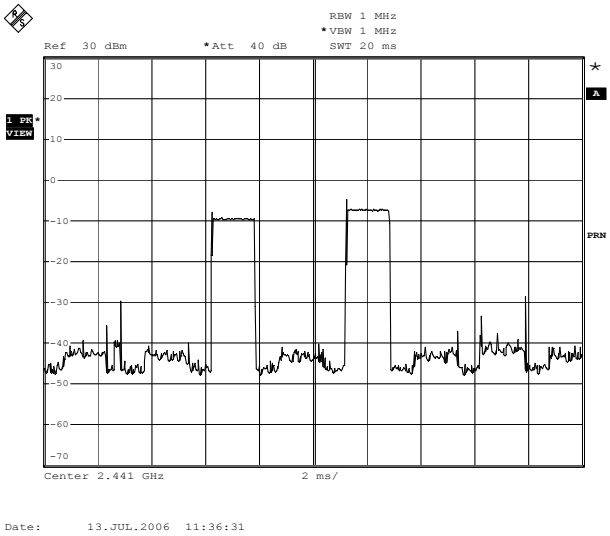
C) 2480MHz The Maximum Occupancy Time Within 31.6sec: 1640 μs*(400/79)*31.6= 0.262sec。

Test Result: The Average Occupancy Time of Each Highest，Middle and Lowest Channel Is Less Than 0.4sec，And Corresponds to The Standard。

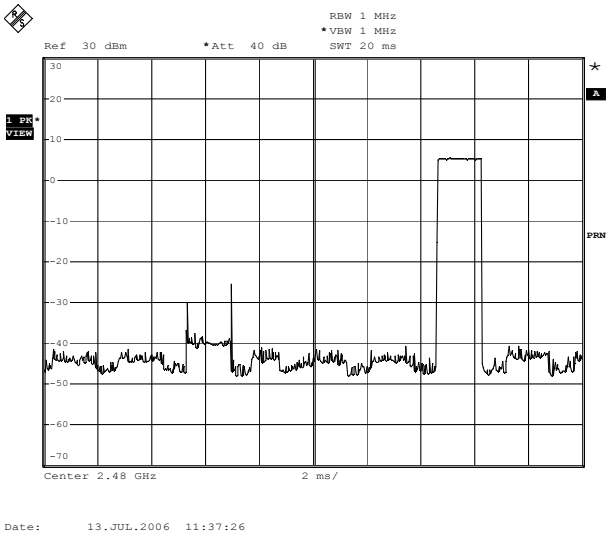
Hop rate-2402MHz



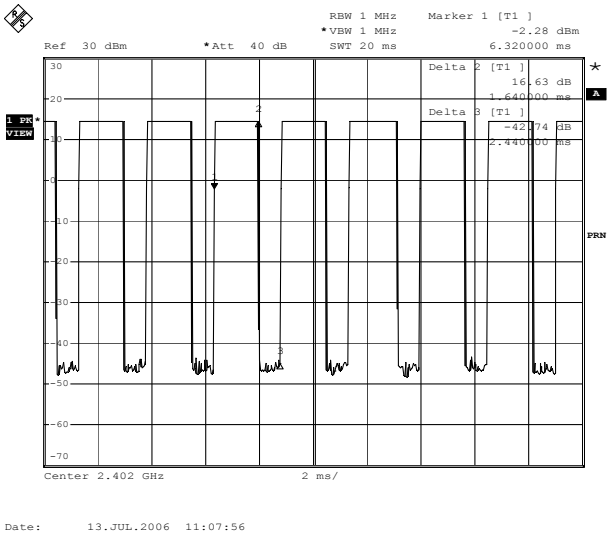
Hop rate-2441MHz



Hop rate-2480MHz



Time slot length



Note: Dwell time＝time slot length * hop rate / number of hopping channels * period

Product	HI-FI CARD READER		
Test Item	Dwell Time		
Test Mode	Mode 1: Transmit		
Date of Test	2006/07/12	Test Site	No.1 OATS

Occupancy Time of Frequency Hopping System-DH 5

Test Time Period: 0.4*79=31.6sec，Hopping Times Within 1sec: 13/50msec=260 /sec

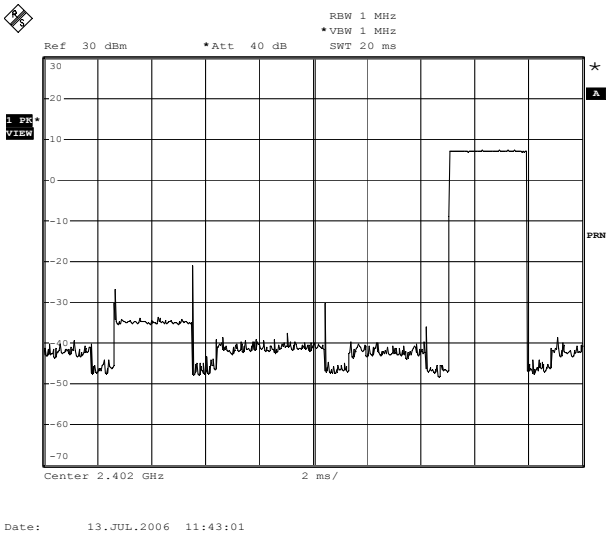
A) 2402MHz The Maximum Occupancy Time Within 31.6sec: 2920 μs*(200/79)*31.6= 0.233sec。

B) 2441MHz The Maximum Occupancy Time Within 31.6sec: 2880 μs*(250/79)*31.6= 0.287sec。

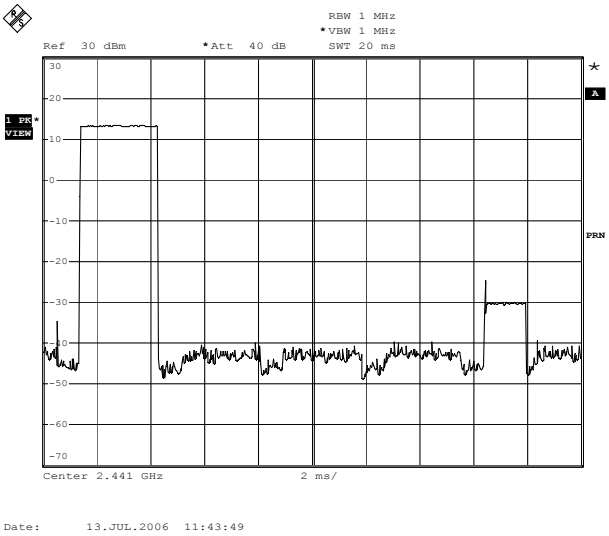
C) 2480MHz The Maximum Occupancy Time Within 31.6sec: 2840 μs*(250/79)*31.6= 0.279sec。

Test Result: The Average Occupancy Time of Each Highest，Middle and Lowest Channel Is Less Than 0.4sec，And Corresponds to The Standard。

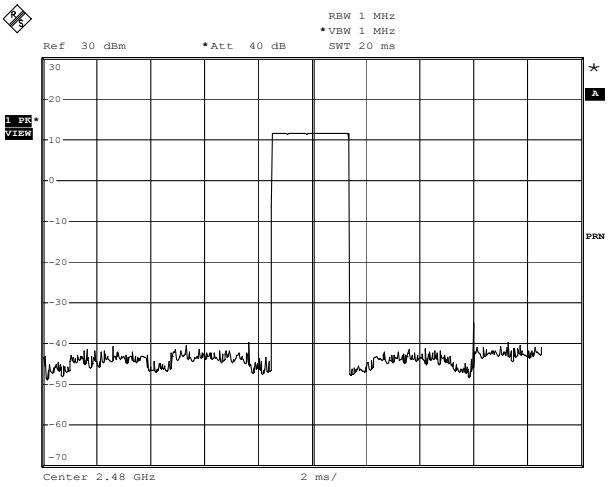
Hop rate-2402MHz



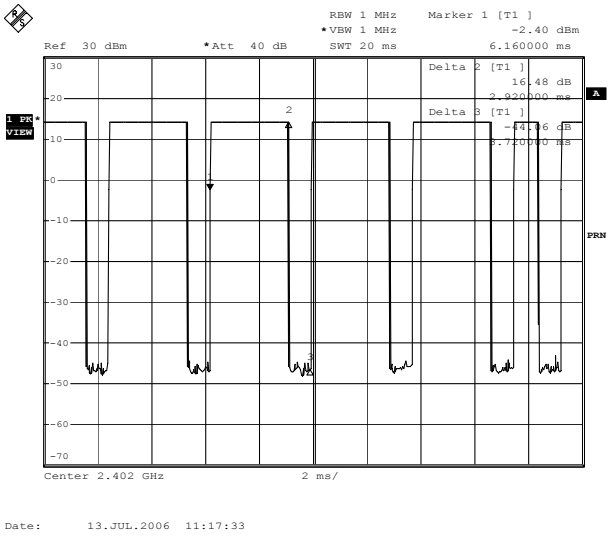
Hop rate-2441MHz



Hop rate-2480MHz



Time slot length



Note: Dwell time＝time slot length * hop rate / number of hopping channels * period