

FCC Test Report

According to

47 CFR Part 15 Subpart C

Equipment	802.11 b/g Wireless LAN CF card
Trade Name	PSION TEKLOGIX
Model No.	RA2040-G1
FCC ID	GM3RA80211G
IC ID	2739D-RA80211G
Filing Type	PC II Change
Applicant	Psion Teklogix Inc.
	2100 Meadowvale Blvd, Mississauga, Ontario, L5N 7J9, Canada

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- Certificate or Test Report must not be used by the applicant to claim the product in this test report endorsement by NVLAP or any agency of U.S. government.
- The data shown in this test report were carried out on Jan. 27, 2008 at Sporton International Inc. LAB.
- · Report No.: FR812518, Report Version: Rev.01

Roy Wu Manager

SPORTON International Inc.

6F, No.106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

SPORTON International Inc. TEL : 886-2-2696-2468 FAX : 886-2-2696-2255 Report Version: Rev.01

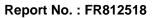




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Appendix A. External Photographs of EUT Appendix B. Internal Photographs of EUT Appendix C. Setup Photographs



History of this test report

Report Issue Date: Feb. 05, 2008

Report No.	Description
FR812518	All tests refer to ADT Report No. RF950503L07. Updated ADT Report No. : RF950503L07 by retest radiation emission for LCD panel.



1. General Description of Equipment under Test

1.1 Applicant

Psion Teklogix Inc.

2100 Meadowvale Blvd, Mississauga, Ontario, L5N 7J9, Canada

1.2 Manufacturer

ASKEY COMPUTER CORP.

10F, No. 119, Chienkang Rd., Chung-Ho, Taipei, Taiwan, R.O.C.

1.3 Basic Description of Equipment under Test

Equipment	802.11 b/g Wireless LAN CF card					
Trade Name	PSION TEKLOGIX					
Model Name	RA2040-G1					
FCC ID	GM3RA80211G					
IC ID	2739D-RA80211G					
	Brand Name	LI SHIN				
	Model Name	LSE9912B0515				
AC Adapter 1	Power Rating	I/P:100-240Vac, 50-60Hz, 0.6A; O/P: 5Vdc, 3.0A				
	AC Power Cord Type	1.8 meter non-shielded cable with ferrite core				
	Brand Name	Phihong				
	Model Name	PSA15R-050P				
AC Adapter 2	Power Rating	I/P:100-240Vac, 50-60Hz, 0.5A; O/P: 5.0Vdc, 3.0A				
	AC Power Cord Type	1.8 meter shielded cable with ferrite core				
	Brand Name	PSION TEKLOGIX				
Dotton	Model Name	WA3006				
Battery	Power Rating	3.7Vdc, 3000mAh				
	Туре	Li-ion				
	Brand Name	PSION TEKLOGIX				
Car Charger	Model Name	WA3112-G1				
our onurger	Power Rating	I/P:10-30Vac, 1.3A;				
	•	O/P: 5Vdc, 2A				
	Brand Name	PSION TEKLOGIX				
Docking Station	Model Name	WA4003-G2				
	Power Rating	5Vdc, 3A				

Remark: Above EUT's information was declared by manufacturer. Please refer to the specifications of manufacturer or User's Manual for more detailed features description.



1.4 Feature of Equipment under Test

Product Feature & Specification							
DUT Type	802.11 b/g Wireless	LAN CF card					
Trade Name	PSION TEKLOGIX						
Model Name	RA2040-G1						
FCC ID	GM3RA80211G						
IC ID	2739D-RA80211G						
Tx Frequency	WLAN : 2400 MHz ~	- 2483.5 MHz					
Rx Frequency	WLAN : 2400 MHz ~	- 2483.5 MHz					
Number of Channels	WLAN : 11						
Carrier Frequency of Each Channel	WLAN : 2412+(n-1)*	5 MHz; n=1~11					
Channel Spacing	WLAN : 5 MHz						
Type of Antenna Connector	N/A						
Antenna Type	WLAN : Fixed Anten	ina					
Type of Modulation	WLAN : DSSS / OFDM						
Function Type	Transmitter		Transceiver	V			
DUT Stage	Production Unit						



2. Test Configuration of Equipment under Test

2.1 Test Manner

- a. The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.
- b. The EUT is programmed to transmit signal continuously for all testings.
- c. Frequency range investigated: conduction 150 kHz to 30 MHz, radiation 30 MHz to 25000MHz.

2.2 Test Mode

Application		
	802.11b	802.11g
Radiated Emission / RF	Mode 1: CH01_2412 MHz for 7525 C	Mode 4: CH01_2412 MHz for 7525 C
	Mode 2: CH06_2437 MHz for 7525 C	Mode 5: CH06_2437 MHz for 7525 C
	Mode 3: CH11_2462 MHz for 7525 C	Mode 6: CH11_2462 MHz for 7525 C
		Mode 7: CH011_2462 MHz for 7525 S

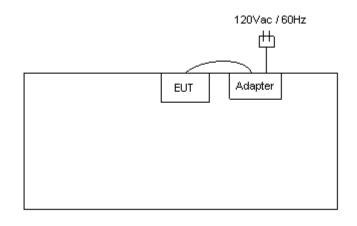


2.3 Ancillary Equipment List

N/A

2.4 Connection Diagram of Test System

<Radiated Emission >





3. RF Utility

The programmed RF Utility is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testings.



4. General Information of Test

Test Site Location	:	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park,
		Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
		TEL : 886-3-327-3456
		FAX : 886-3-328-4978
Test Site No	:	03CH06-HY

4.1 Test Voltage

AC 120V / 60Hz

4.2 Standard for Methods of Measurement

ANSI C63.4-2003

4.3 Test Compliance

47 CFR Part 15 Subpart C

4.4 Frequency Range

a. Radiation: from 30 MHz to 25000 MHz

4.5 Test Distance

The test distance of radiated emission from antenna to EUT is 3 m.



5. Test Data and Test Result

5.1 List of Measurements and Examinations

The Emission Mode: Wireless LAN

FCC Rule	Description of Test	Result
15.209(a) 15.247(d)	Radiated Emission	Pass
15.203 15.247(b)(4)	Antenna Requirement	Pass



5.2 Radiated Emission Measurement

5.2.1 Measuring Instruments

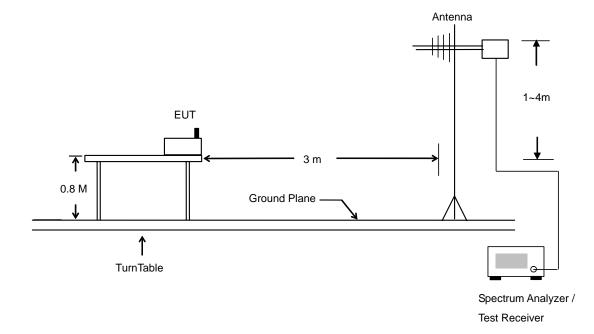
As described in chapter 6 of this Report.

5.2.2 Test Procedures

- a. The EUT was placed on a rotatable table top 0.8 meter above ground.
- b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
- e. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
- f. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
- g. For testing below 1GHz, If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the quasi-peak method and reported.
- h. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.



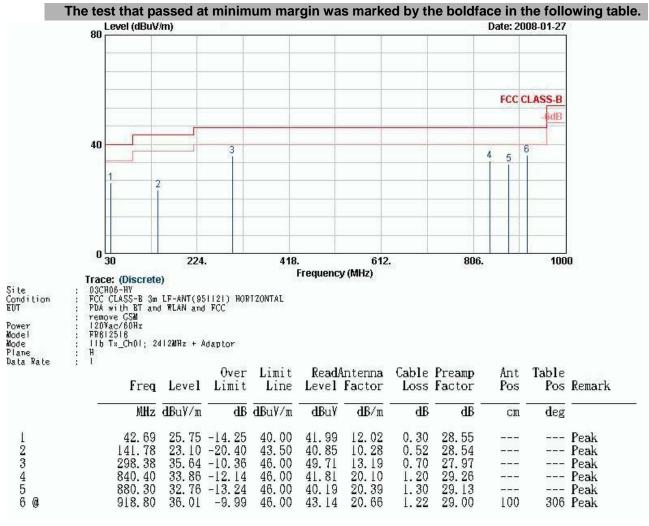
5.2.3 Typical Test Setup Layout of Radiated Emission



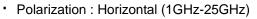


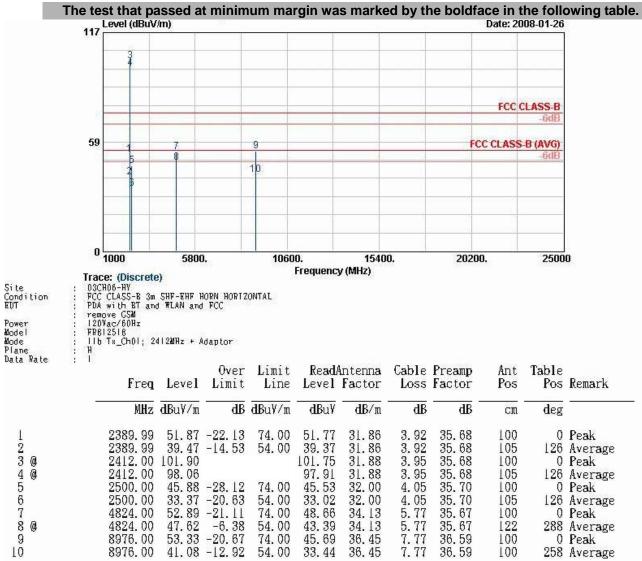
5.2.4 Test Data

- Temperature : 23~24°C
- Relating Humidity : 53~54%
- Test Enginner : <u>Andrew</u>
- Test Mode : Mode 1
- Polarization : Horizontal (30MHz-1GHz)

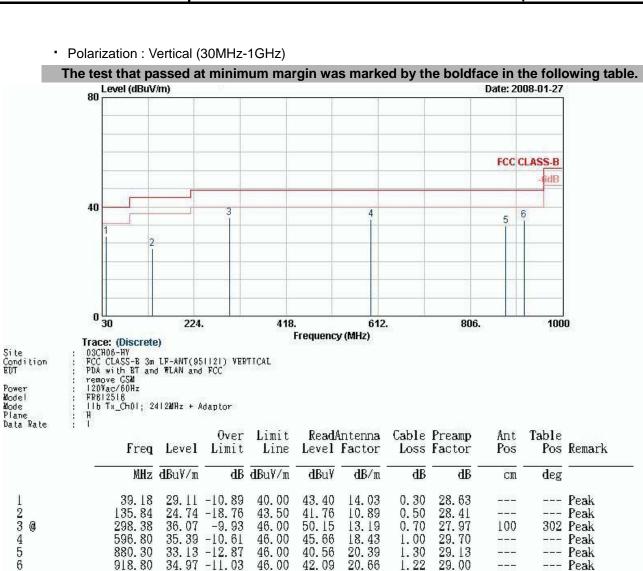












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302 Peak

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--- Peak

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1.30

1.22



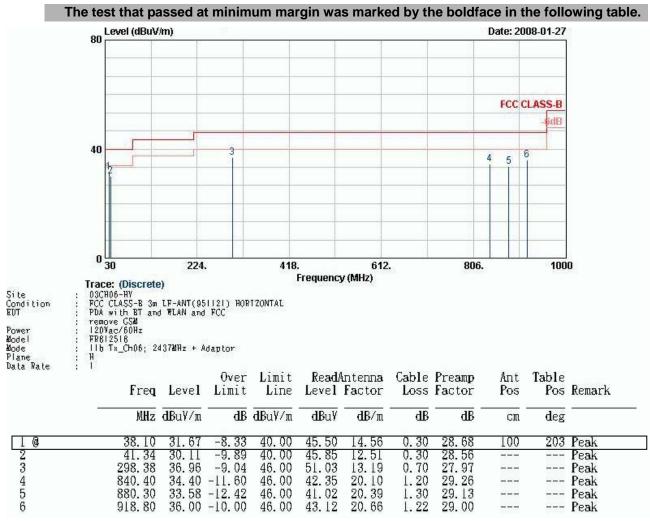
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Polarization : Vertical (1GHz-25GHz)

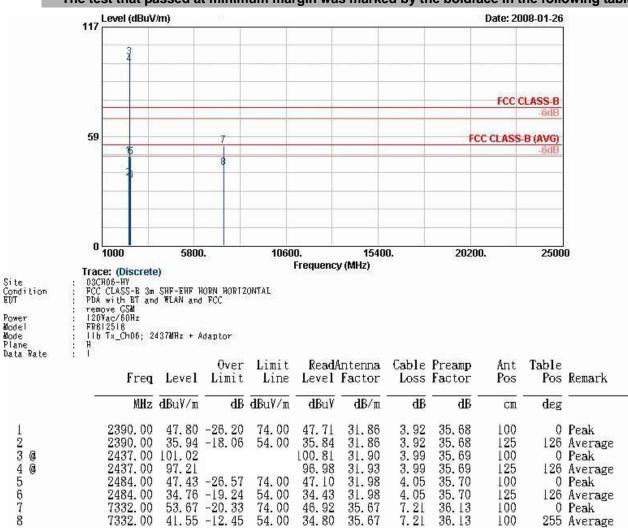
The test that passed at minimum margin was marked by the boldface in the following table.



- Test Mode : Mode 2
- Polarization : Horizontal (30MHz-1GHz)





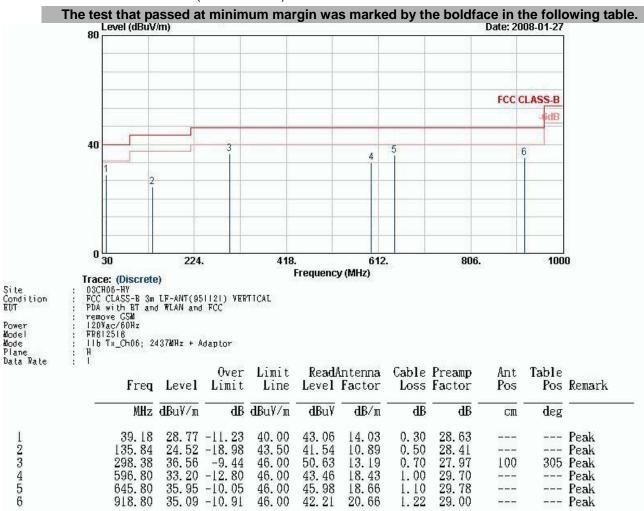


Polarization : Horizontal (1GHz-25GHz)

The test that passed at minimum margin was marked by the boldface in the following table.







TEL : 886-2-2696-2468 FAX : 886-2-2696-2255 FCC ID : GM3RA80211G IC ID : 2739D-RA80211G

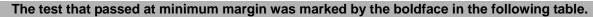


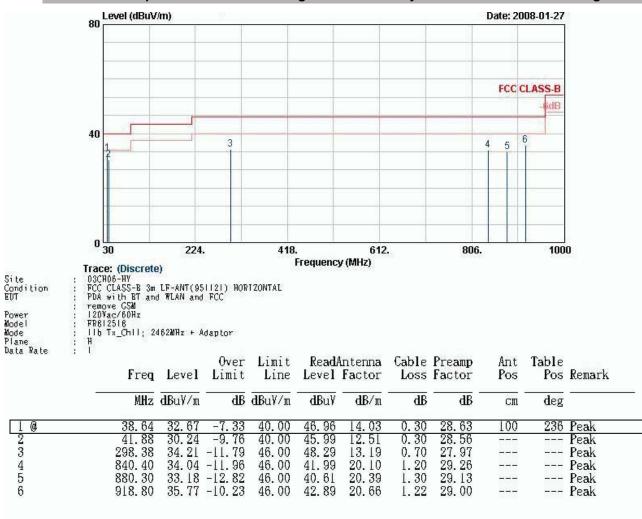
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7731.00 53.52 -20.48 74.00 46.74 35.65 7.38 36.25 100 0 Pe 7731.00 41.98 -12.02 54.00 35.20 35.65 7.38 36.25 100 330 Av	ion 	- 1000 race: (Discre 03CH06-HY PCC CLASS-B : PCC CLASS-B : PCA with BT a remove GSM 120Vac/60Hz FR612516 11b T*_Ch06; H Fre MH 2390.0 2390.0 2437.0	te) m SHF-EHF 1 nd RLAN and 2437MHz + J 1 Level z dBuV/m) 50.15) 38.78) 104.38	HORN VERTI FCC Adaptor Over Limit -23.85	CAL Limit Line dBuV/m 74.00	Frequenc Read Level dBu¥ 50.05 38.68 104.15	y (MHz) Antenna Factor dB/m 31.86 31.86 31.93	Cable Loss dB 3.92 3.92 3.99	Preamp Factor dB 35.68 35.68 35.69	Ant Pos 	Table Pos deg 270 0	Remar Peak Avera Peak

Polarization : Vertical (1GHz-25GHz) The test that passed at minimum margin was marked by the boldface in the following table.

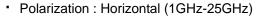


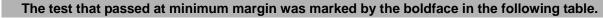
- Test Mode : Mode 3
- Polarization : Horizontal (30MHz-1GHz)

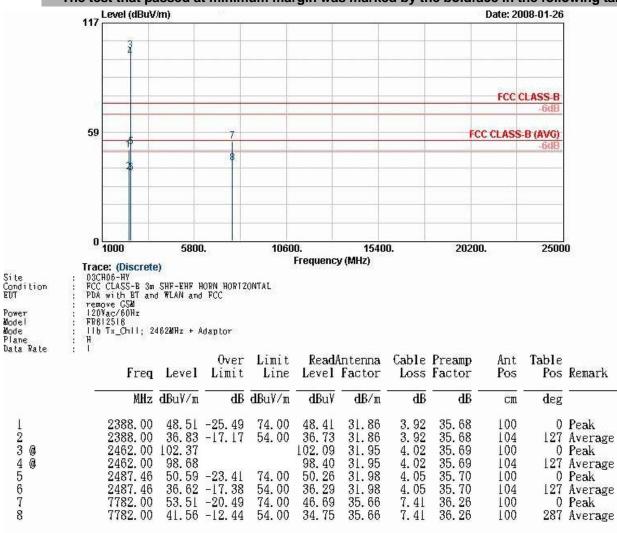








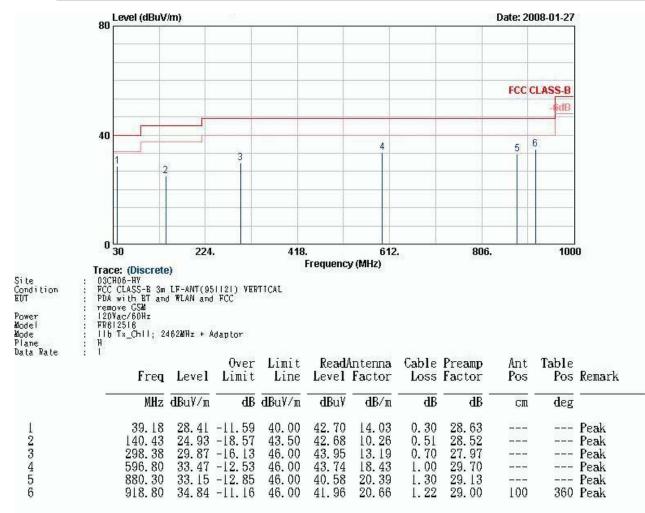






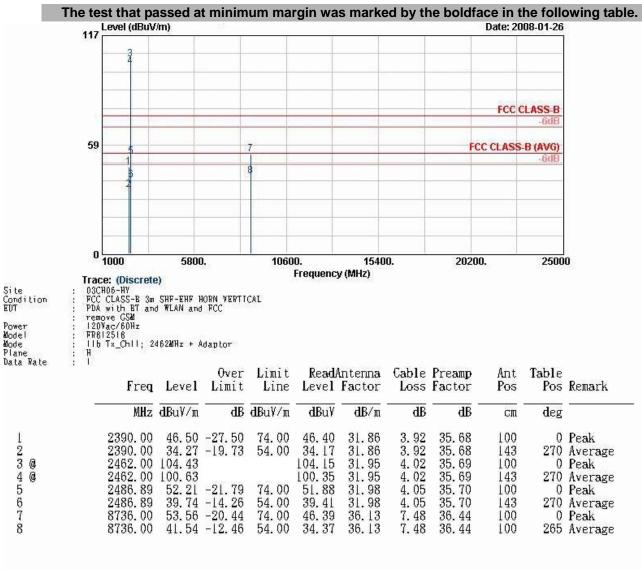
Polarization : Vertical (30MHz-1GHz)

The test that passed at minimum margin was marked by the boldface in the following table.



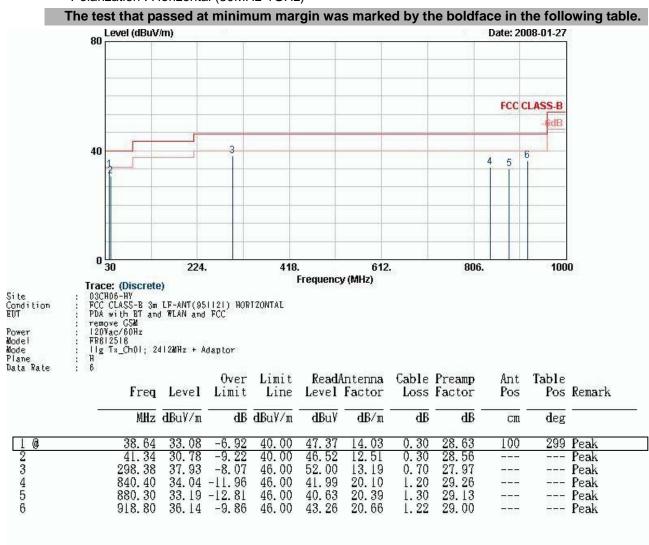




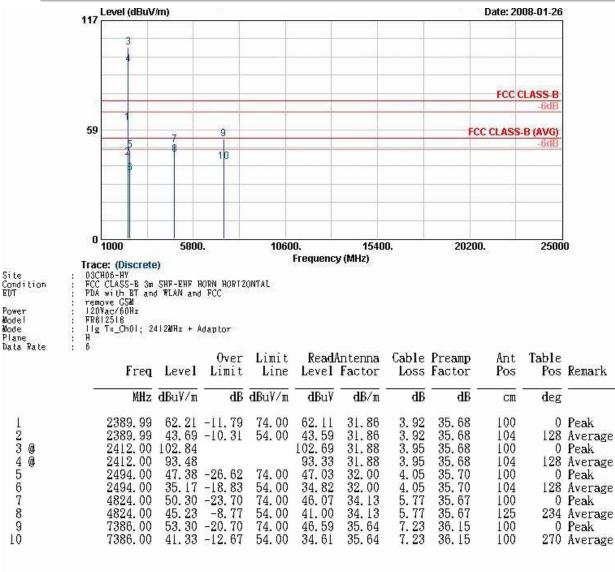




- Test Mode : Mode 4
- Polarization : Horizontal (30MHz-1GHz)





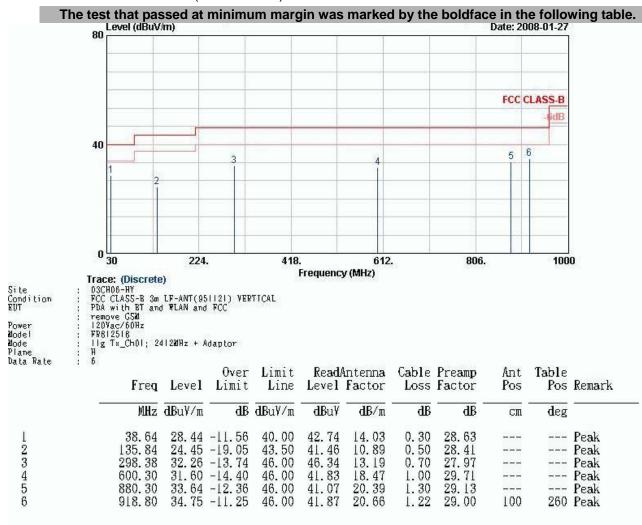


• Polarization : Horizontal (1GHz-25GHz)

The test that passed at minimum margin was marked by the boldface in the following table.

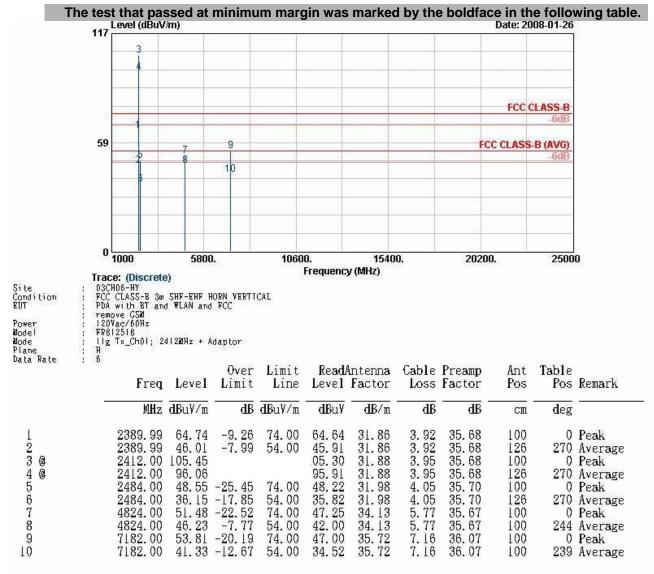


Polarization : Vertical (30MHz-1GHz)



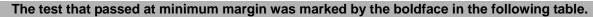


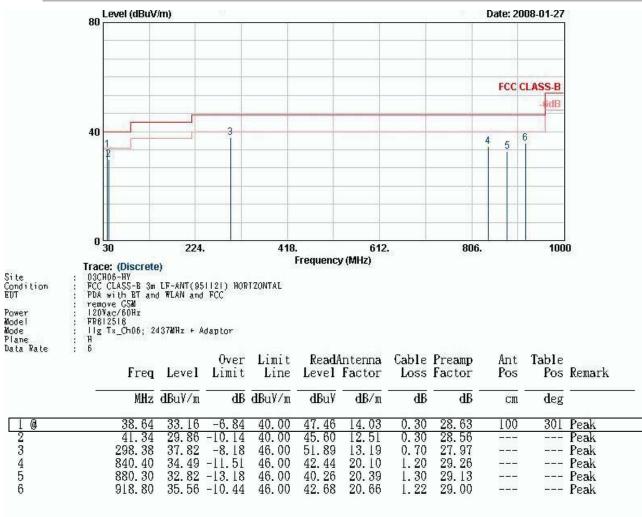
Polarization :Vertical (1GHz-25GHz)





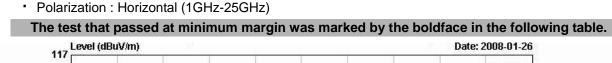
- Test Mode : Mode 5
- Polarization : Horizontal (30MHz-1GHz)

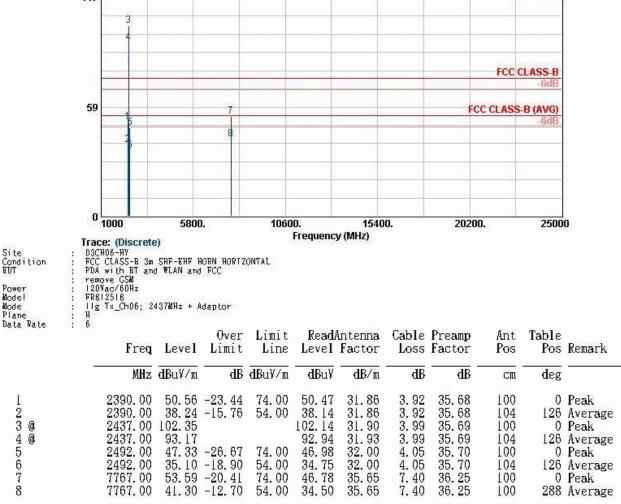




Date: 2008-01-26



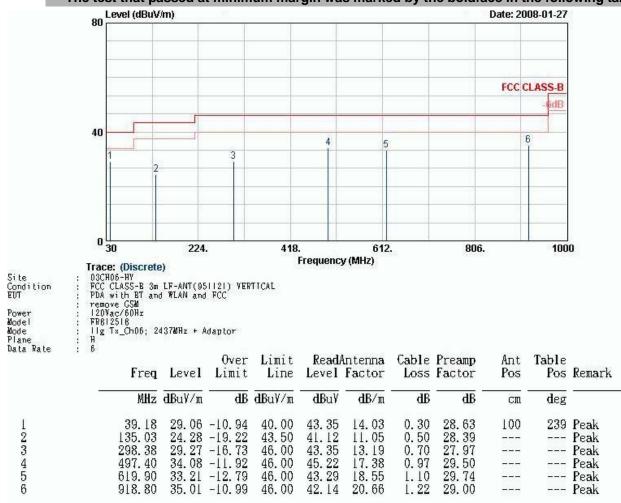




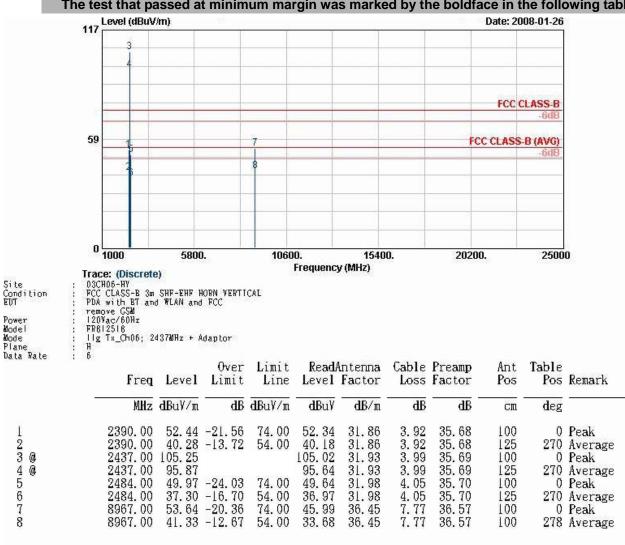


Polarization : Vertivcal (30MHz-1GHz)

The test that passed at minimum margin was marked by the boldface in the following table.







Polarization : Vertical (1GHz-25GHz)

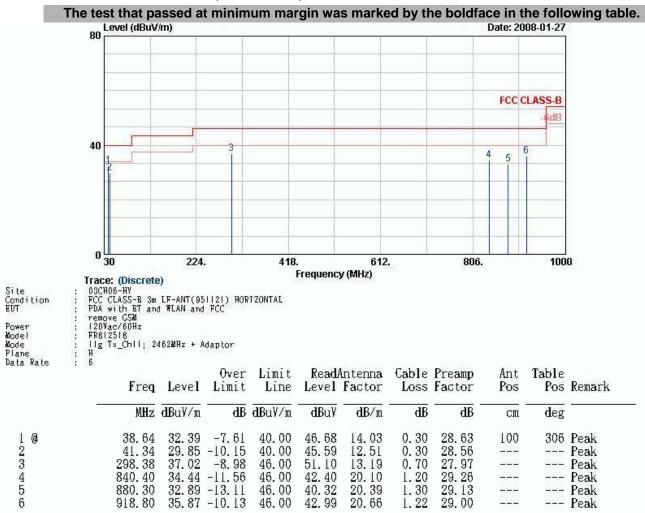
The test that passed at minimum margin was marked by the boldface in the following table.



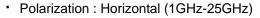


Test Mode : Mode 6

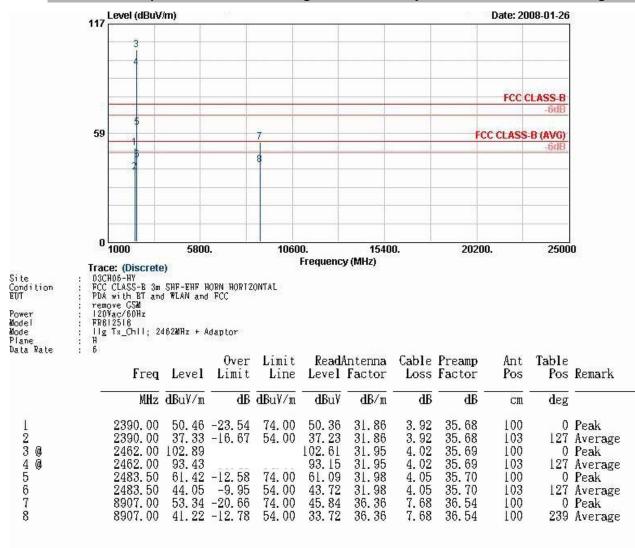
Polarization : Horizontal (30MHz-1GHz)







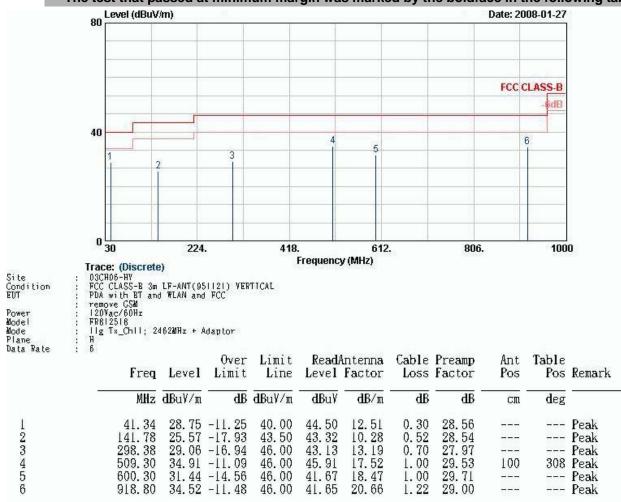
The test that passed at minimum margin was marked by the boldface in the following table.



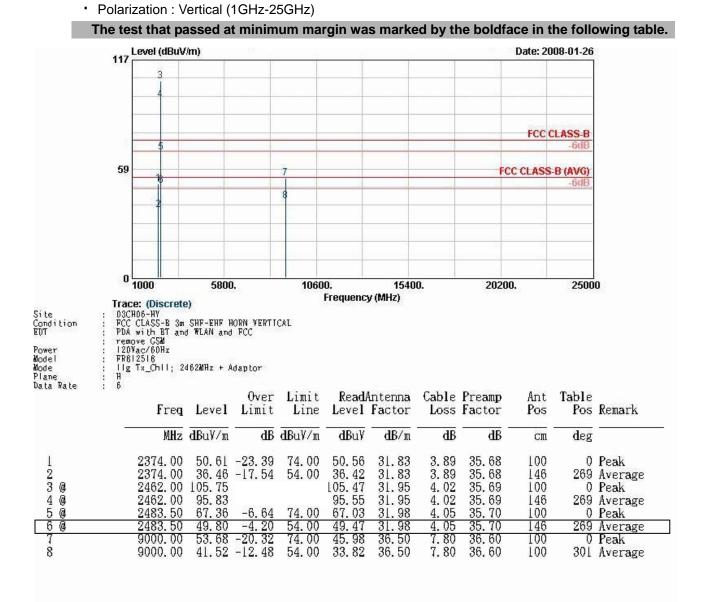


Polarization : Vertical (30MHz-1GHz)

The test that passed at minimum margin was marked by the boldface in the following table.



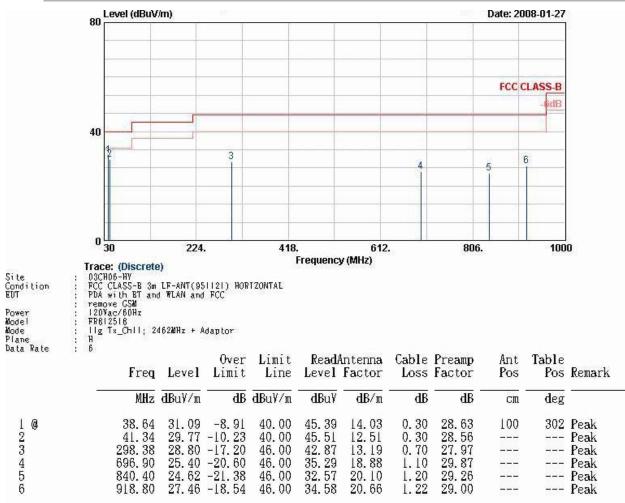




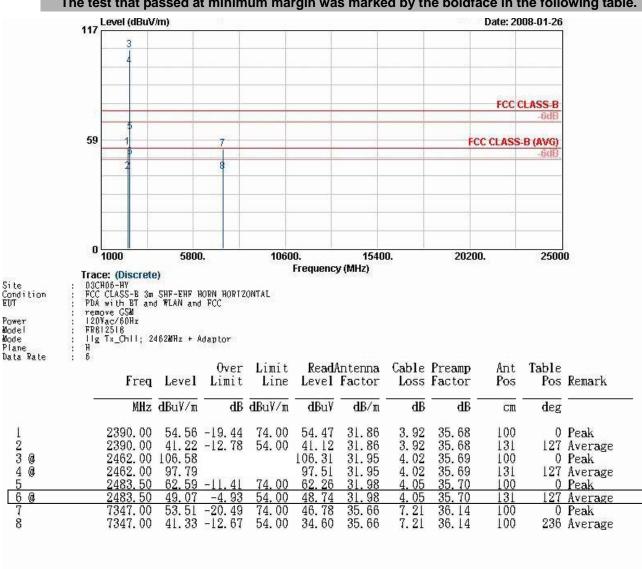


- Test Mode : Mode 7
- Polarization : Horizontal (30MHz-1GHz)

The test that passed at minimum margin was marked by the boldface in the following table.







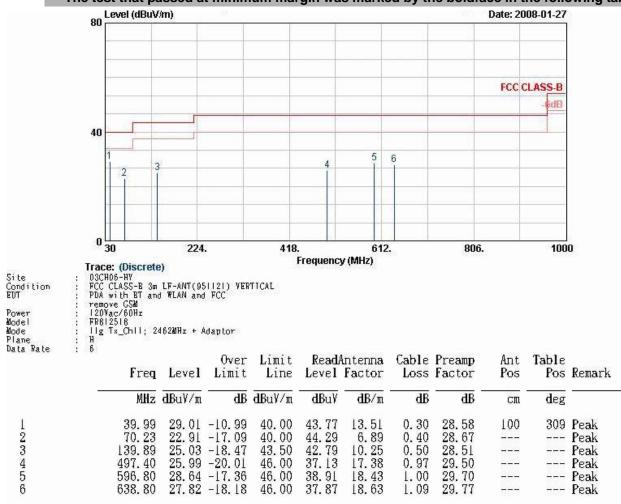
Polarization : Horizontal (1GHz-25GHz)

The test that passed at minimum margin was marked by the boldface in the following table.



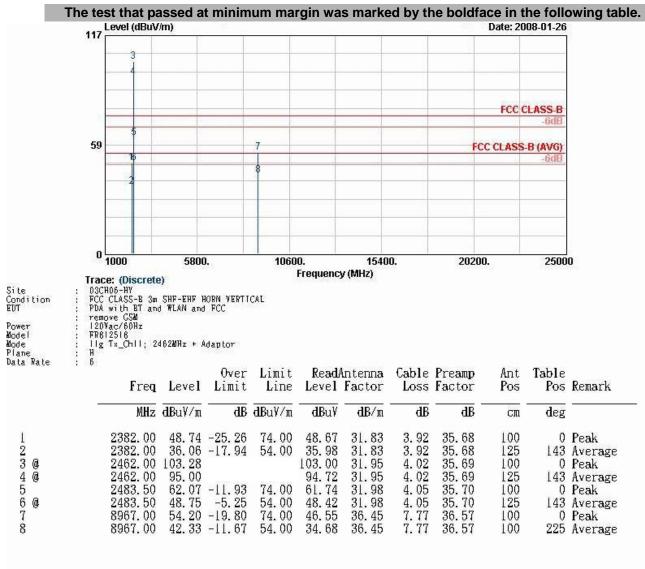
Polarization : Vertical (30MHz-1GHz)

The test that passed at minimum margin was marked by the boldface in the following table.





Polarization : Vertical (1GHz-25GHz)





5.3 Antenna Requirements

5.3.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no other antenna except assembled by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi.

5.3.2 Antenna Connected Construction

The antennas used in this product are Fixed Antenna for both WLAN without connector and it is considered to meet antenna requirement of FCC.

5.3.3 Antenna Gain

The antenna gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output powen limit.



6. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Spectrum Analyzer	Agilent	E4408B	MY44211028	9KHz-26.5GHz	Oct. 17, 2007	Oct. 16, 2008	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESCS30	100356	9KHz-2.75GHz	Jul. 26, 2007	Jul. 25, 2008	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Dec. 01, 2007	Nov. 30, 2008	Radiation (03CH06-HY)
Double Ridge Horn Antenna	Com-Power	AH118	071025	1G~18G	Jun. 04, 2007	Jun. 03, 2008	Radiation (03CH06-HY)
SHF-EHF Horn	SCHWARZBECK	BBHA 9170	9170-251	14G - 40G	Oct. 17, 2007	Oct. 16, 2008	Radiation (03CH06-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1G - 26.5G	Nov. 22, 2007	Nov. 21, 2008	Radiation (03CH06-HY)
PreAmplifier	EMEC	PA303	PA303-SMA-0	100K~3GHz	Nov. 26, 2007	Nov. 25, 2008	Radiation (03CH06-HY)
Base Station Simulator	R & S	CMU200	103937	Third-Band	Oct. 19, 2007	Oct. 18, 2008	Radiation (03CH06-HY)



7. Uncertainty Evaluation

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Contribution	Uncerta	$u(x_i)$	
Contribution	dB	Probability Distribution	$u(x_i)$
Receiver reading	0.10	Normal(k=2)	0.05
Cable loss	0.10	Normal(k=2)	0.05
AMN insertion loss	2.50	Rectangular	0.63
Receiver Spec	1.50	Rectangular	0.43
Site imperfection	1.39	Rectangular	0.80
Mismatch	+0.34/-0.35	U-shape	0.24
combined standard uncertainty Uc(y)		1.13	
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)		2.26	

Uncertainty of Radiated Emission Measurement (30MHz ~ 1000MHz)

Contribution	Uncertainty of X_i				
	dB	Probability	$u(x_i)$		
		Distribution			
Receiver reading	0.41	Normal(k=2)	0.21		
Antenna factor calibration	0.83	Normal(k=2)	0.42		
Cable loss calibration	0.25	Normal(k=2)	0.13		
Pre Amplifier Gain calibration	0.27	Normal(k=2)	0.14		
RCV/SPA specification	2.50	Rectangular	0.72		
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29		
Site imperfection	1.43	Rectangular	0.83		
Mismatch	+0.39/-0.41	U-shaped	0.28		
combined standard uncertainty Uc(y)	1.27		·		
Measuring uncertainty for a level of confidence	0.54				
of 95% U=2Uc(y)	2.54				



Uncertainty of Radiated Emission Measurement (1GHz ~ 40GHz)

Contribution	Uncertainty of x_i			Ci	$Ci * u(x_i)$	
	dB	Probability Distribution	$u(x_i)$	Cl	$Ci u(x_i)$	
Receiver reading	±0.10	Normal(k=1)	0.10	1	0.10	
Antenna factor calibration	±1.70	Normal(k=2)	0.85	1	0.85	
Cable loss calibration	±0.50	Normal(k=2)	0.25	1	0.25	
Receiver Correction	±2.00	Rectangular	1.15	1	1.15	
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87	
Site imperfection	±2.80	Triangular	1.14	1	1.14	
Mismatch Receiver VSWR Γ1= 0.197 Antenna VSWR Γ2= 0.194 Uncertainty=20log(1-Γ1*Γ2*Γ3)	+0.34/-0.35	U-shaped	0.244	1	0.244	
Combined standard uncertainty Uc(y)	2.36					
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	4.72					

The measured result is : y dBuV ± U dB

for a level of confidence of approximately 95% , (k= 2)