



Test Report

Product Name : Tablet PC System

Model No.: TTAB-510

FCC ID.: BJM-TTAB510

Applicant : Tatung Company

Address : 22, Chungshan N. Rd., 3rd Sec.Taipei, Taiwan, 104, R.O.C.

Date of Receipt : Mar. 18, 2003

Date of Test : Mar. 26, 2003

Report No. : 033L206FI

The test results relate only to the samples tested.

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

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

Test Report Certification

Test Date : Mar. 26, 2003

Report No. : 033L206FI



Accredited by NIST (NVLAP)

NVLAP Lab Code: 200533-0

Product Name : Tablet PC System

Applicant : Tatung Company

Address : 22, Chungshan N. Rd., 3rd Sec. Taipei, Taiwan, 104, R.O.C.

Manufacturer : Tatung Company

Model No. : TTAB-510

FCC ID. : BJM-TTAB510

Rated Voltage : AC 120V/60Hz

Trade Name : TATUNG

Measurement Standard : FCC Part 15 Subpart C Paragraph 15.247

Measurement Procedure : ANSI C63.4: 1992

Test Result : Complied



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Documented By : Grace Lin
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Tested By : Tony Hsieh
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Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	: Tablet PC System
Trade Name	: TATUNG
FCC ID.	: BJM-TTAB510
Model No.	: TTAB-510
Frequency Range	: 2412MHz to 2462MHz
Channel Number	: 11
Chip Rate	: 1Mbps, 2Mbps, 5.5Mbps, 11Mbps
Type of Modulation	: Direct Sequence Spread Spectrum
Antenna type	: Connector
Antenna Gain	: 3dBi
Operator Selection of Operating Frequency	: By software
	: MFR: HIPRO M/N: HP-OD042D03
Adapter	Cable out : Non-Shielded, 1.8m, one ferrite core bonded Power Cord : Non-Shielded, 1.8m
VGA Cable	: Shielded, 0.15m

EUT Configuration:

Description	Vendor	Model No	Comment
Mother Board	TATUNG	TT510-R00C	
SO-DIMM PC133	Micron	MT4LSDT1664HG-133	Micron 128MB
	Samsung	M464S1724DTS-L7A	Samsung 128MB
	Infineon	HYS64V16220GDL-7.5-C2	Infineon 128MB
	Micron	MT8LSDT3264HG-133	Micron 256MB
	Samsung	M464S3254DTS-L7V	Samsung 256MB
	Infineon	HYS64V32220GDL-7.5-C2	Infineon 256MB
	Micron	MT16LSDF6464HG-133	Micron 512MB
	Samsung	M464S6453DN0-C7A	Samsung 512MB
	Infineon	HYS64V64220GBDL-7-D	Infineon 512MB
SO-DIMM DDR PC2100 (200Pin)	Samsung	M470L3224DT0-CB0	Samsung 256MB
	Tracent	TS32MSD64V6F5	Tracent 256MB
	Tracent	TS64MSD64V6F5	Tracent 512MB
4200 RPM HDD (SLIM)	IBM	IC25N020ATCS04(5V)	IBM 20GB 2.5"x9.5mm
	Toshiba	MK2018GAP(5V)	Toshiba 20GB 2.5"x9.5mm
	Fujitsu	MHS2020AT(5V)	Fujitsu 20GB 2.5"x9.5mm
MDC Modem	Well	FM-56MDC-SL-WW	Well smartlink MDC modem
	Castlenet	MM320	Castlenet smartlink MDC modem
Mine-PCI Modem	Askey	1456VQL-R1(INT)	Askey PCTel
Wireless card	Wistron	VM4-3B	Mini-PCI(Wireless LAN a+b)
	Wistron	KM8	Mini-PCI(Wireless LAN b)
CPU	Transmeta	Cmsoe5800 800MHz	
	Transmeta	Cmsoe5800 866MHz	
	Transmeta	Cmsoe5800 933MHz	
	Transmeta	Cmsoe5800 1000MHz	
VGA Card	On Board		
Sound Card	On Board		
LAN Card	On Board		
Power Adapter	Manufacturer: HIPRO Model Number: HPOD042D03 Cable In: AC 100-240/50-60Hz, 1.2A, Non-shielded, 1.8m Cable Out: DC 12V, 3.5A, with core*1, Non-shielded, 1.8m		

✧ The above description goods marked gray are picked out and final tested for this report.

Frequency of Each Channel:

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

Note:

1. This device is a 2.4GHz Tablet PC System included a 2.4GHz receiving function, a 2.4GHz transmitting function.
2. Regards to the frequency band operation; included the lowest、 middle and highest frequency of channel were selected to perform the test, then shown on this report.
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. 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 033L206F under Declaration of Conformity.

1.2. Operational Description

EUT is a Tablet PC System with wireless LAN adapter. This device provided 11 channels and four kind of transmitting speed 1,2,5.5 and 11Mbps. The device of RF carrier is DQPSK, DB PSK and CCK.

The device adapts direct sequence spread spectrum modulation. The Connector antenna was provides diversity function to improve the receiving function.

This Tablet PC System is an IEEE 802.11b Wireless LAN adapter. It allows your computer to connect to a wireless network and to share resources, such as files or printers without being bound to the network wires. Operation in 2.4GHz Direst Sequence Spread Spectrum (DSSS) radio transmission, the Tablet PC System transfers data at speeds up to 64/128-bit Wired Equivalent Protection (WEP) algorithm is used. In addition, its standard compliance ensures that it can communicate with any 802.11b network.

1.3. Tested System Details

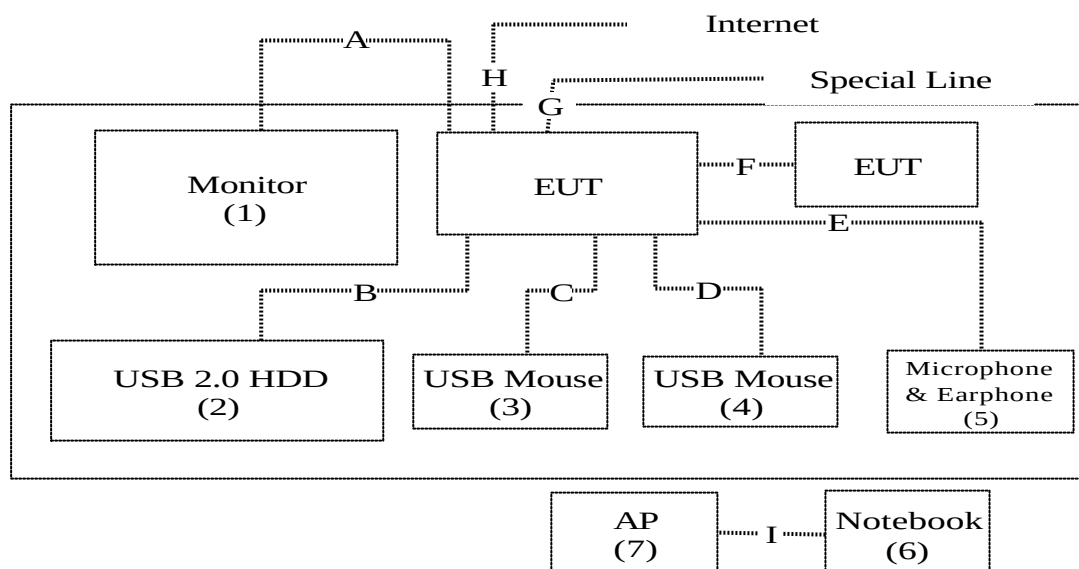
The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

	Product	Manufacturer	Model No.	Serial No.	FCC ID.	Power Cord
(1)	Monitor	ADI	CM703	038054T10203875A	DoC	Non-shielded, 1.8m
(2)	USB 2.0 HDD	NEW MOTION	USB/FIRE WIRE	102212	DoC	Power by PC
(3)	USB Mouse	Logitech	M-BE58	HCA24311378	DoC	N/A
(4)	USB Mouse	Logitech	M-BE58	LZE20852308	DoC	N/A
(5)	Microphone & Earphone	TOKTO	SX-MI	N/A	N/A	N/A
(6)	Notebook PC	DELL	PP01L	N/A	DoC	Non-Shielded 1.8m
(7)	AP	ASUS	AC300	N/A	DoC	MFR:PHIHONG M/N:PSC10A-050 Cable out: Non-Shielded 1.8m

Signal Cable Type	Signal cable Description
A. Monitor Cable	Shielded, 1.8m, one ferrite core bonded
B. 1394 Cable	Shielded, 1.2m
C. USB Mouse Cable	Shielded, 1.5m
D. USB Mouse Cable	Shielded, 1.5m
E. MIC/EAR	Non-Shielded, 1.8m
F. DC Power Cable	Non-Shielded, 1.8m, one ferrite core bonded
G. Telecom Cable	Non-Shielded, 5m
H. LAN Cable	Non-Shielded, 5m
I. LAN Cable	Non-Shielded, 1m

1.4. Configuration of tested System

Tx & Rx



1.5. EUT Exercise Software

- (1) Setup the EUT and simulators as shown on 1.4
- (2) Turn on the power of all equipment.
- (3) Notebook PC reads data from disk.
- (4) Data will be transmitting and receiving through EUT.
- (5) The transmitted and receive status will be shown on the monitor.
- (6) Repeat the above procedure (3) to (5)

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: June 22, 2001 File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Reference 31040/SIT1300F2



July 03, 2001 Accreditation on NVLAP
NVLAP Lab Code: 200533-0

Site Name: Quietek Corporation

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2. Conducted Emission

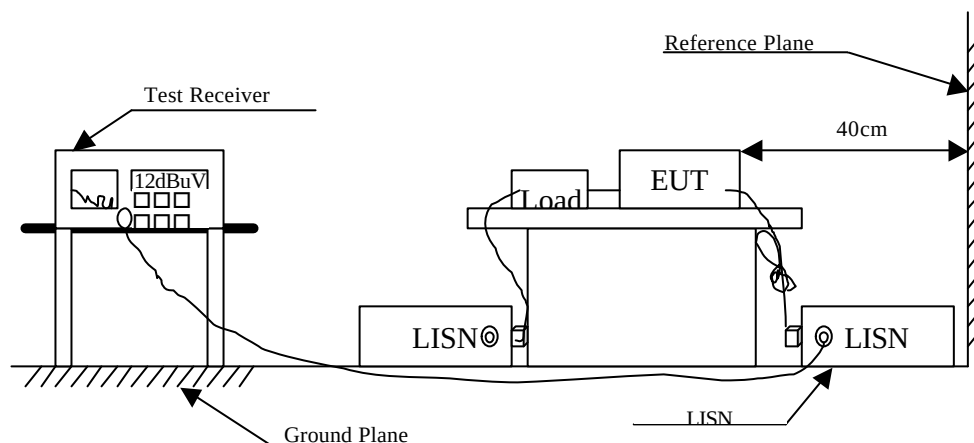
2.1. Test Equipment

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

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal.	Remark
1	Test Receiver	R & S	ESCS 30/825442/17	May, 2002	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 2002	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 2002	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	N/A	
5	No.4 Shielded Room			N/A	

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

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit		
Frequency MHz	Limits	
	uV	dBuV
0.15 - 0.50	66-56 _(註)	56-46 _(註)
0.50-5.0	56	46
5.0 - 30	60	50

2.4. 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 C63.4:1992 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.5. Test Result of Conducted Emission

Product : Tablet PC System
 Test Item : Conducted Emission Test
 Test Mode : Normal Operation

Frequency	Cable	LISN	Reading	Emission	Limits
	Loss	Factor	Level	Level	
MHz	dB	dB	dBuV	dBuV	dBuV
=====					
Line 1					
Quasi-Peak:					
* 0.158	0.21	0.10	38.58	38.89	65.58
0.236	0.21	0.10	29.28	29.59	62.24
0.388	0.21	0.10	27.71	28.02	58.10
2.412	0.09	0.14	21.12	21.34	56.00
4.129	0.17	0.16	22.54	22.87	56.00
7.478	0.33	0.19	22.83	23.35	60.00
Average:					
0.158	0.21	0.10	26.90	27.21	55.58
0.236	0.21	0.10	21.80	22.11	52.24
0.388	0.21	0.10	23.10	23.41	48.10
2.412	0.09	0.14	19.20	19.42	46.00
4.129	0.17	0.16	20.40	20.73	46.00
7.478	0.33	0.19	15.00	15.52	50.00

Remarks:

1. All Readings below 1GHz are Quasi-Peak value.
2. “*” means that this data is the worst emission level.
3. Emission Level = Reading Level + LISN Factor + Cable Loss.

Product : Tablet PC System
Test Item : Conducted Emission Test
Test Mode : Normal Operation

Frequency	Cable	LISN	Reading	Emission	Limits
	Loss	Factor	Level	Level	
MHz	dB	dB	dBuV	dBuV	dBuV
=====					
Line 2					
Quasi-Peak:					
* 0.158	0.21	0.10	38.64	38.95	65.58
0.233	0.21	0.10	28.39	28.70	62.33
0.388	0.21	0.10	26.72	27.03	58.10
2.572	0.09	0.14	22.46	22.69	56.00
5.377	0.29	0.17	21.89	22.35	60.00
7.405	0.33	0.19	22.83	23.35	60.00
Average:					
0.158	0.21	0.10	27.50	27.81	55.58
0.233	0.21	0.10	21.10	21.41	52.33
0.388	0.21	0.10	23.40	23.71	48.10
2.572	0.09	0.14	21.20	21.43	46.00
5.377	0.29	0.17	16.40	16.86	50.00
7.405	0.33	0.19	16.90	17.42	50.00

Remarks:

1. All Readings below 1GHz are Quasi-Peak value.
2. “ * ” means that this data is the worst emission level.
3. Emission Level = Reading Level + LISN Factor + Cable Loss.

3. Peak Power Output

3.1. Test Equipment

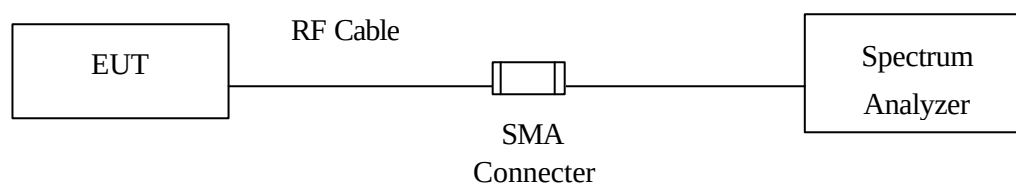
The following test equipments are used during the radiated emission tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	Advantest	R3272 / 72421194	May, 2002

Note: 1. All equipment upon which need to calibrated are with calibration period of 1 year.
2. Mark "X" test instruments are used to measure the final test results.

3.2. Test Setup

Conduction Power Measurement



3.3. Limits

The maximum peak power shall be less 1 Watt.

3.4. Test Result of Peak Power Output

Product : Tablet PC System
Test Item : Peak Power Output Data
Test Site : No.2 OATS
Test Mode : Normal Operation

Data Speed: 11Mbps

Channel No.	Frequency (MHz)	Measurement	Required Limit	Result
1	2411.6	9.64 dBm	1Watt= 30 dBm	Pass
6	2436.6	10.07 dBm	1Watt= 30 dBm	Pass
11	2461.6	9.34 dBm	1Watt= 30 dBm	Pass

4. RF Exposure Evaluation

4.1. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

4.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18°C and 78% RH.

4.3. Test Result of RF Exposure Evaluation

Product : Tablet PC System
 Test Item : RF Exposure Evaluation Data
 Test Site : No.2 OATS
 Test Mode : Normal Operation

Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 3dBi or 2 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Minimum Allowable Distance @From Skin(cm)
1 (11Mbps)	2411.6	9.204496	1.208913567
6 (11Mbps)	2436.6	10.16249	1.270267689
11 (11Mbps)	2461.6	8.590135	1.167872014

The distance r (4th column) calculated from the Fries transmission formula is far shorter than 20 cm separation requirement. So, RF exposure limit warning or SAR test are not required.

5. Radiated Emission

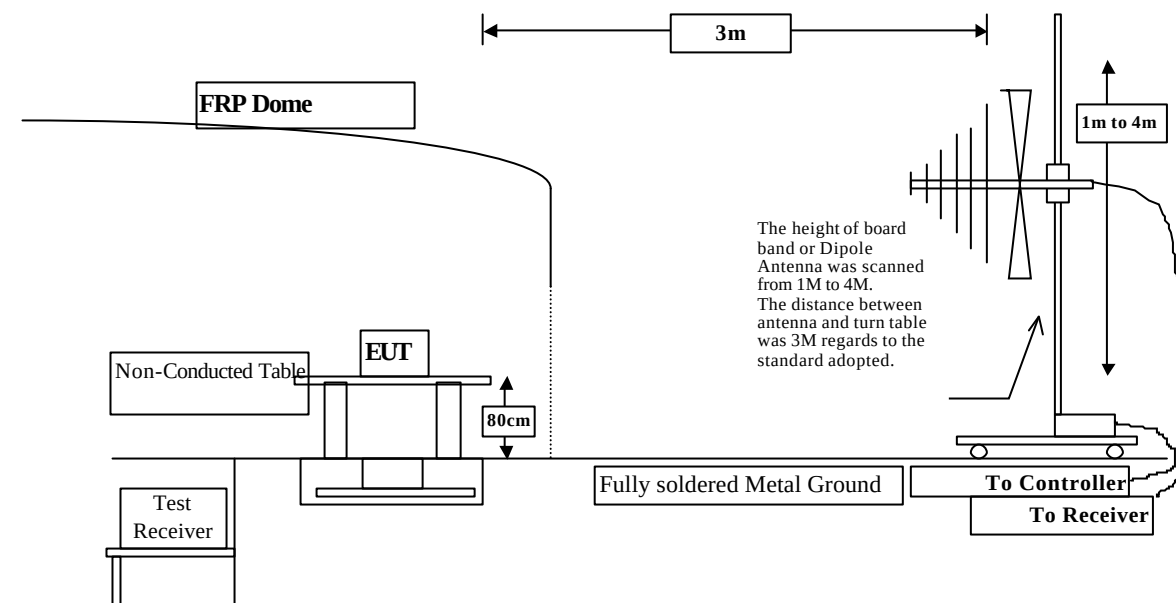
5.1. Test Equipment

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	ESCS 30 / 825442/14	May, 2002
		Spectrum Analyzer	Advantest	R3261C / 71720140	May, 2002
		Pre-Amplifier	HP	8447D/3307A01812	May, 2002
		Bilog Antenna	Chase	CBL6112B / 12452	Sep., 2002
		Horn Antenna	EM	EM6917 / 103325	May, 2002
Site # 2	X	Test Receiver	R & S	ESCS 30 / 825442/17	May, 2002
	X	Spectrum Analyzer	Advantest	R3261C / 71720609	May, 2002
	X	Pre-Amplifier	HP	8447D/3307A01814	May, 2002
	X	Bilog Antenna	Chase	CBL6112B / 2455	Sep., 2002
	X	Horn Antenna	EM	EM6917 / 103325	May, 2002
Site # 3		Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2002
		Spectrum Analyzer	Advantest	3162 / 100803480	May, 2002
		Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2002
		Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2002
		Horn Antenna	ETS	3115 / 0005-6160	Jul., 2002
		Pre-Amplifier	QTK	QTK-AMP-01 / 0001	Jul., 2002

- 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



5.3. Limits

➤ General Radiated Emission Limits

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

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

Remarks :

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

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 C63.4:1992 on radiated measurement.

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

The bandwidth below 1GHz setting on the field strength meter (R&S Test Receiver ESCS 30)is 120 kHz, above 1GHz are 1 MHz.

The frequency range from 30MHz to 10th harmonics is checked.

5.5. Test Result of Radiated Emission

Product : Tablet PC System
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.2 OATS
 Test Mode : Channel 1 (11Mbps)

Frequency	Cable	Probe	PreAMP	Reading	Emission	Margin	Peak	Average
	Loss	Factor		Level	Level		Limit	Limit
MHz	dB	dB/m	dB	dBuV	dBuV/m	dB	dBuV/m	dBuV/m

Horizontal

Peak Detector:

4825.024	6.17	33.64	18.88	27.74	48.67	25.33	74.00	54.00
7236.145	7.33	36.77	18.08	24.12	50.14	23.86	74.00	54.00
9647.958	8.73	38.25	15.83	19.89	51.04	22.96	74.00	54.00

Vertical

Peak Detector:

4826.224	6.17	33.64	18.88	28.25	49.18	24.82	74.00	54.00
7235.886	7.33	36.77	18.08	24.82	50.84	23.16	74.00	54.00
9648.664	8.73	38.25	15.83	20.48	51.63	22.37	74.00	54.00

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz.
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz.
4. Emission Level = Reading Level + Probe Factor + Cable Loss- PreAMP.
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 : Tablet PC System
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.2 OATS
 Test Mode : Channel 6 (11Mbps)

Frequency	Cable	Probe	PreAMP	Reading	Emission	Margin	Peak	Average
	Loss	Factor		Level	Level		Limit	Limit
MHz	dB	dB/m	dB	dBuV	dBuV/m	dB	dBuV/m	dBuV/m

Horizontal

Peak Detector:

4876.245	6.21	33.77	18.88	27.16	48.26	25.74	74.00	54.00
7312.102	7.37	36.98	17.95	24.31	50.71	23.29	74.00	54.00
9751.085	8.87	38.35	15.73	19.78	51.27	22.73	74.00	54.00

Vertical

Peak Detector:

4875.230	6.21	33.77	18.88	27.11	48.21	25.79	74.00	54.00
7313.285	7.37	36.98	17.95	24.63	51.03	22.97	74.00	54.00
9750.105	8.87	38.35	15.73	20.37	51.86	22.14	74.00	54.00

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz.
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz.
4. Emission Level = Reading Level + Probe Factor + Cable Loss- PreAMP.
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 : Tablet PC System
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.2 OATS
 Test Mode : Channel 11 (11Mbps)

Frequency	Cable	Probe	PreAMP	Reading	Emission	Margin	Peak	Average
MHz	Loss	Factor		Level	Level		Limit	Limit
	dB	dB/m	dB	dBuV	dBuV/m	dB	dBuV/m	dBuV/m

Horizontal

Peak Detector:

4925.311	6.23	33.90	18.89	27.83	49.08	24.92	74.00	54.00
7385.269	7.42	37.14	17.78	24.12	50.89	23.11	74.00	54.00
9847.557	8.97	38.44	15.57	19.39	51.23	22.77	74.00	54.00

Vertical

Peak Detector:

4926.283	6.23	33.90	18.89	28.92	50.17	23.83	74.00	54.00
7386.995	7.42	37.14	17.78	24.20	50.97	23.03	74.00	54.00
9849.682	8.97	38.44	15.57	19.87	51.71	22.29	74.00	54.00

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz.
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz.
4. Emission Level = Reading Level + Probe Factor + Cable Loss- PreAMP.
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 : Tablet PC System
 Test Item : General Radiated Emission Data
 Test Site : No.2 OATS
 Test Mode : Channel 1 (11Mbps)

Frequency	Cable Loss	Probe Factor	PreAMP	Reading Level	Emission Level	Margin	Limit
MHz	dB	dB/m	dB	dBuV	dBuV/m	dB	dBuV/m
=====							
Horizontal:							
143.492	1.45	10.87	0.00	15.24	27.57	15.93	43.50
194.921	1.72	8.05	0.00	18.32	28.09	15.41	43.50
260.864	2.06	13.05	0.00	17.93	33.04	12.96	46.00
335.554	2.45	12.68	0.00	16.34	31.47	14.53	46.00
431.587	2.93	15.81	0.00	14.27	33.01	12.99	46.00
* 555.741	3.57	17.77	0.00	13.67	35.01	10.99	46.00
Vertical:							
* 80.162	1.13	7.22	0.00	21.34	29.69	10.31	40.00
152.674	1.50	9.18	0.00	20.17	30.85	12.65	43.50
239.521	1.95	10.82	0.00	20.14	32.91	13.09	46.00
299.662	2.26	12.14	0.00	19.34	33.74	12.26	46.00
464.532	3.10	16.37	0.00	14.20	33.67	12.33	46.00
633.314	3.98	18.48	0.00	11.05	33.51	12.49	46.00

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. " * ", means this data is the worst emission level.
3. Emission Level = Reading Level + Probe Factor + Cable Loss.

Product : Tablet PC System
Test Item : General Radiated Emission Data
Test Site : No.2 OATS
Test Mode : Channel 6 (11Mbps)

Frequency	Cable	Probe	PreAMP	Reading	Emission	Margin	Limit
	Loss	Factor		Level	Level		
MHz	dB	dB/m	dB	dBuV	dBuV/m	dB	dBuV/m
=====							
Horizontal:							
112.054	1.29	12.01	0.00	17.46	30.76	12.74	43.50
165.824	1.57	9.12	0.00	19.38	30.07	13.43	43.50
250.042	2.00	11.81	0.00	19.67	33.48	12.52	46.00
325.851	2.39	12.26	0.00	17.52	32.18	13.82	46.00
* 599.352	3.80	17.65	0.00	13.02	34.47	11.53	46.00
729.730	4.47	19.08	0.00	10.25	33.80	12.20	46.00
Vertical:							
166.295	1.57	8.42	0.00	21.03	31.02	12.48	43.50
239.196	1.95	10.82	0.00	19.35	32.12	13.88	46.00
288.647	2.20	12.29	0.00	18.59	33.09	12.91	46.00
392.547	2.73	15.57	0.00	14.33	32.63	13.37	46.00
532.528	3.45	17.17	0.00	14.10	34.72	11.28	46.00
* 781.754	4.75	19.71	0.00	11.08	35.54	10.46	46.00

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. “ * ”, means this data is the worst emission level.
3. Emission Level = Reading Level + Probe Factor + Cable Loss.

Product : Tablet PC System
 Test Item : General Radiated Emission Data
 Test Site : No.2 OATS
 Test Mode : Channel 11 (11Mbps)

Frequency	Cable	Probe	PreAMP	Reading	Emission	Margin	Limit
	Loss	Factor		Level	Level		
MHz	dB	dB/m	dB	dBuV	dBuV/m	dB	dBuV/m
=====							
Horizontal:							
76.254	1.11	7.32	0.00	18.99	27.42	12.58	40.00
132.551	1.40	11.49	0.00	18.24	31.13	12.37	43.50
239.527	1.95	10.42	0.00	20.11	32.48	13.52	46.00
364.661	2.59	13.96	0.00	15.21	31.77	14.23	46.00
412.031	2.84	15.64	0.00	15.86	34.34	11.66	46.00
* 651.764	4.07	18.46	0.00	13.08	35.62	10.38	46.00
Vertical:							
144.265	1.46	9.86	0.00	19.66	30.97	12.53	43.50
184.227	1.66	8.31	0.00	21.54	31.51	11.99	43.50
218.227	1.84	8.96	0.00	19.35	30.15	15.85	46.00
310.492	2.31	12.20	0.00	16.32	30.83	15.17	46.00
399.572	2.77	16.13	0.00	15.82	34.72	11.28	46.00
* 554.771	3.57	18.99	0.00	14.29	36.85	9.15	46.00

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. " * ", means this data is the worst emission level.
3. Emission Level = Reading Level + Probe Factor + Cable Loss.

6. Band Edge

6.1. Test Equipment

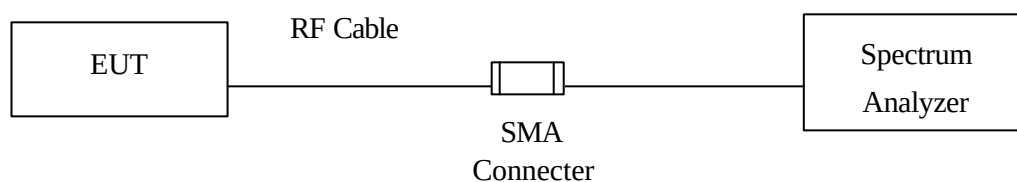
The following test equipments are used during the band edge tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	Advantest	R3272 / 72421194	May, 2002
X	Test Receiver	R & S	ESCS 30 / 825442/14	May, 2002
X	Spectrum Analyzer	Advantest	R3261C / 71720140	May, 2002
X	Pre-Amplifier	HP	8447D/3307A01812	May, 2002
X	Bilog Antenna	Chase	CBL6112B / 12452	Sep., 2002
X	Horn Antenna	EM	EM6917 / 103325	May, 2002

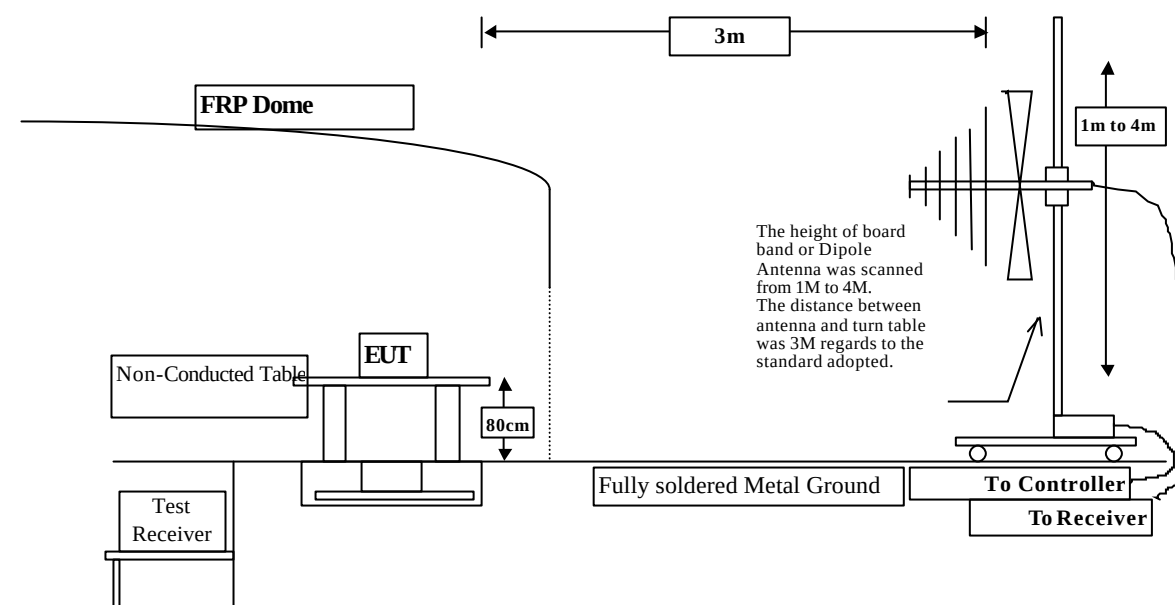
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.
2. Mark "X" test instruments are used to measure the final test results.

6.2. Test Setup

RF Conducted Measurement:



RF Radiated Measurement:



6.3. 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)).

6.4. 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 C63.4:1992 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter (R&S Test Receiver ESCS 30)is 120 kHz, above 1GHz are 1 MHz.

6.5. Test Result of Band Edge

Product : Tablet PC System
 Test Item : Band Edge Data
 Test Site : No.2 OATS
 Test Mode : Channel 1 (11Mbps)

RF Radiated Measurement:

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

Figure Channel 1: (Horizontal)

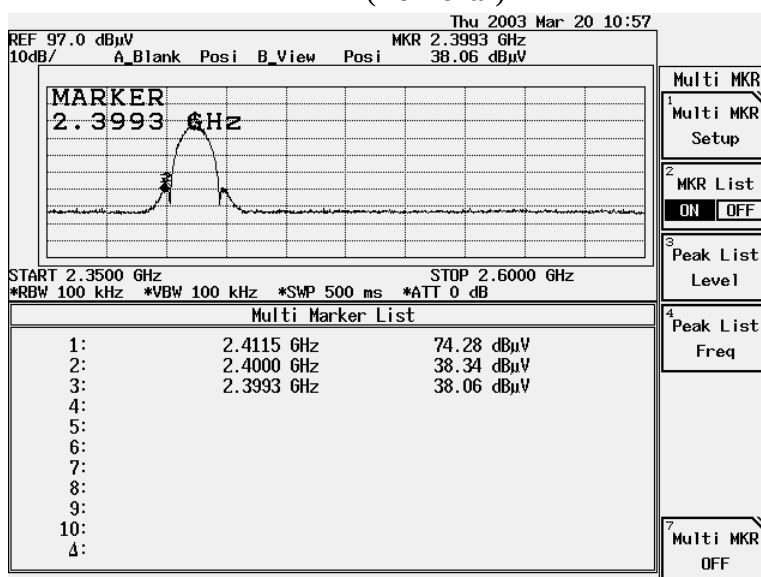
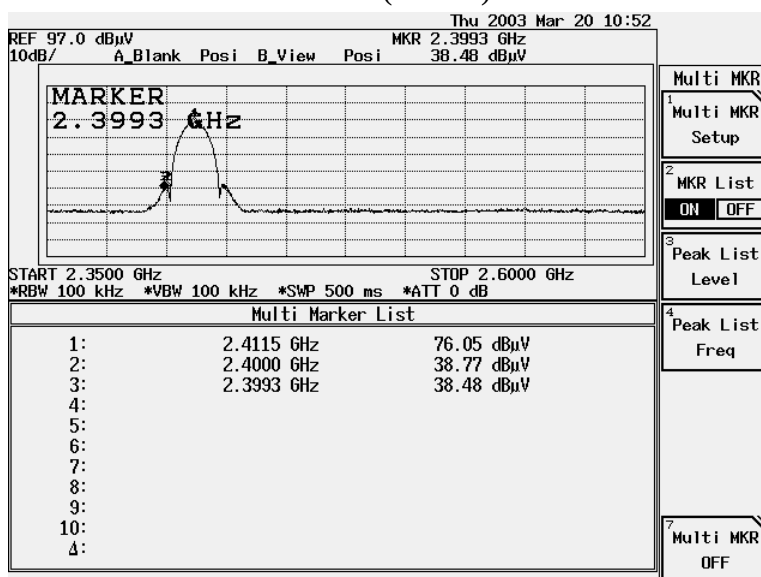


Figure Channel 1: (Vertical)



Product : Tablet PC System
 Test Item : Band Edge Data
 Test Site : No.2 OATS
 Test Mode : Channel 11 (11Mbps)

RF Radiated Measurement:

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11(Horizontal)	2496.3	35.05	50.64	74	54	Pass
11(Vertical)	2492.8	34.16	49.64	74	54	Pass

Figure Channel 11:

(Horizontal)

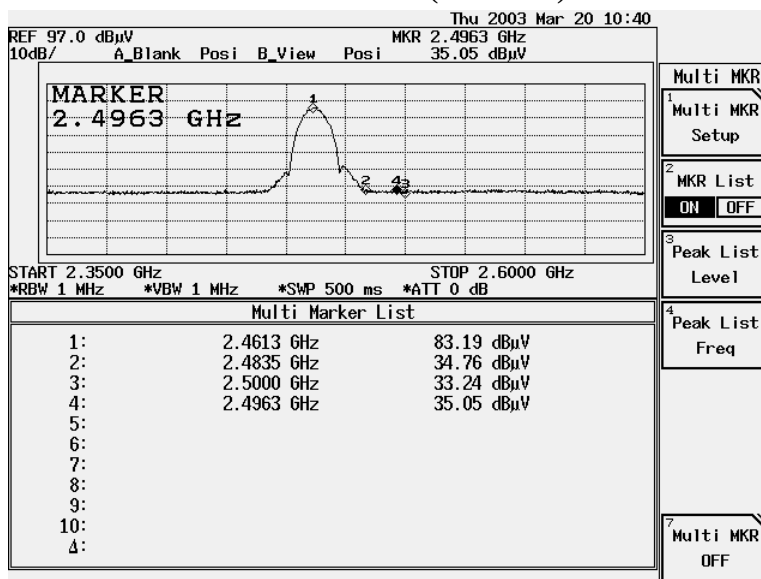
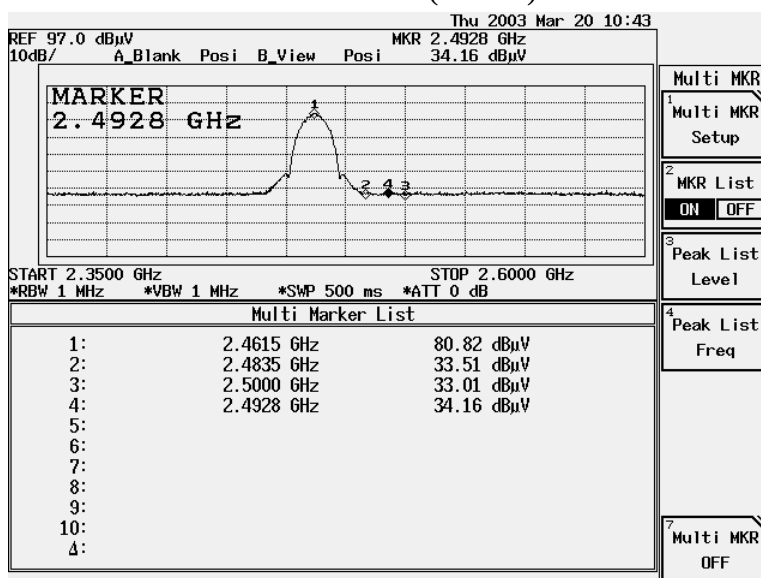


Figure Channel 11:

(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.

7. Occupied Bandwidth

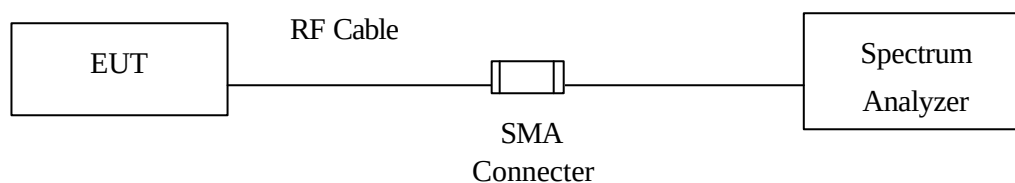
7.1. Test Equipment

The following test equipments are used during the radiated emission tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	Advantest	R3272 / 72421194	May, 2002

Note: 1. All equipment upon which need to calibrated are with calibration period of 1 year.
2. Mark "X" test instruments are used to measure the final test results.

7.2. Test Setup



7.3. Limits

The minimum bandwidth shall be at least 500kHz.

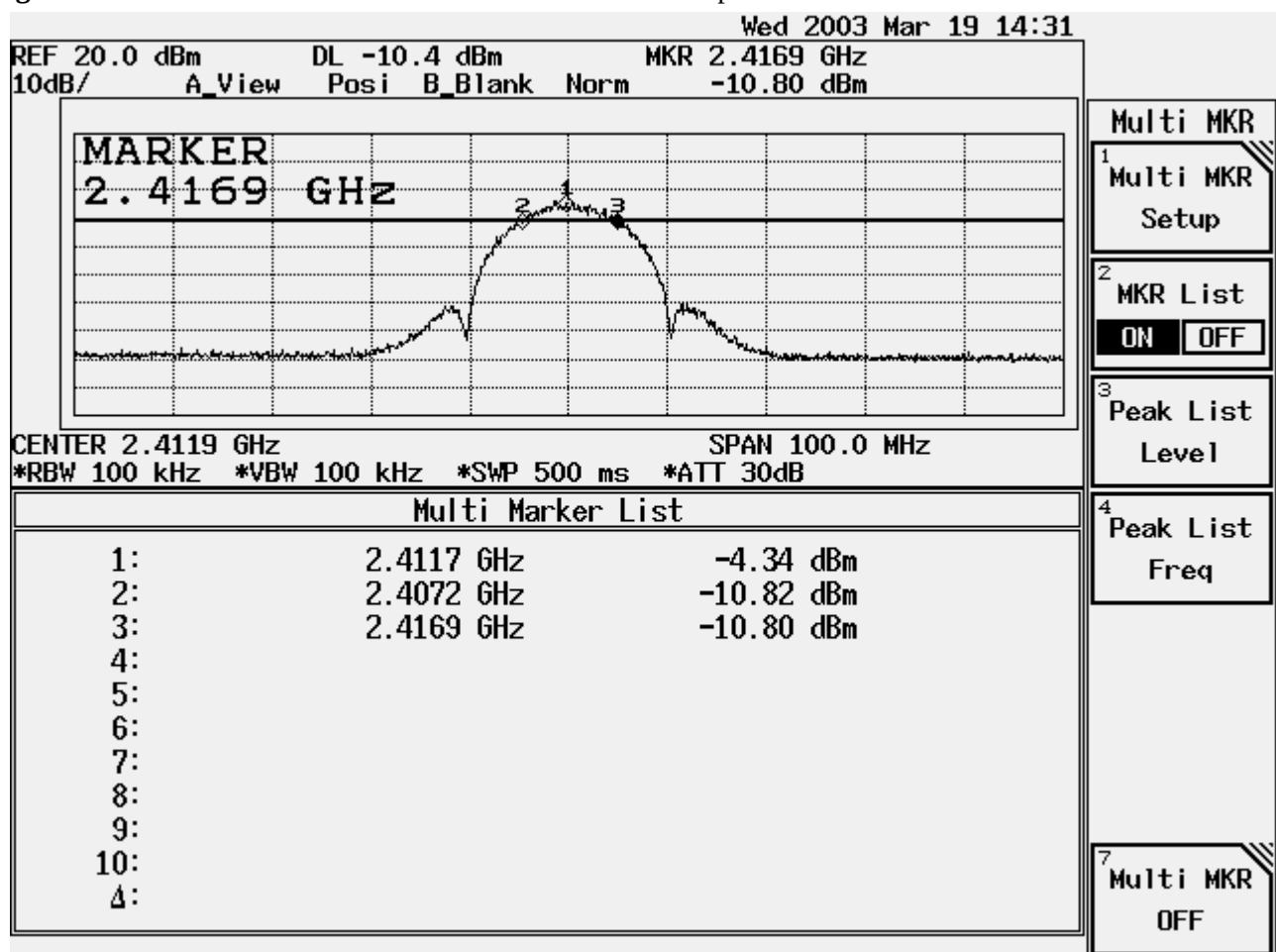
7.4. Test Result of Occupied Bandwidth

Product : Tablet PC System
 Test Item : Occupied Bandwidth Data
 Test Site : No.2 OATS
 Test Mode : Channel 1

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1 (11Mbps)	2411.7	9700	>500	Pass

Figure Channel 1:

11Mbps

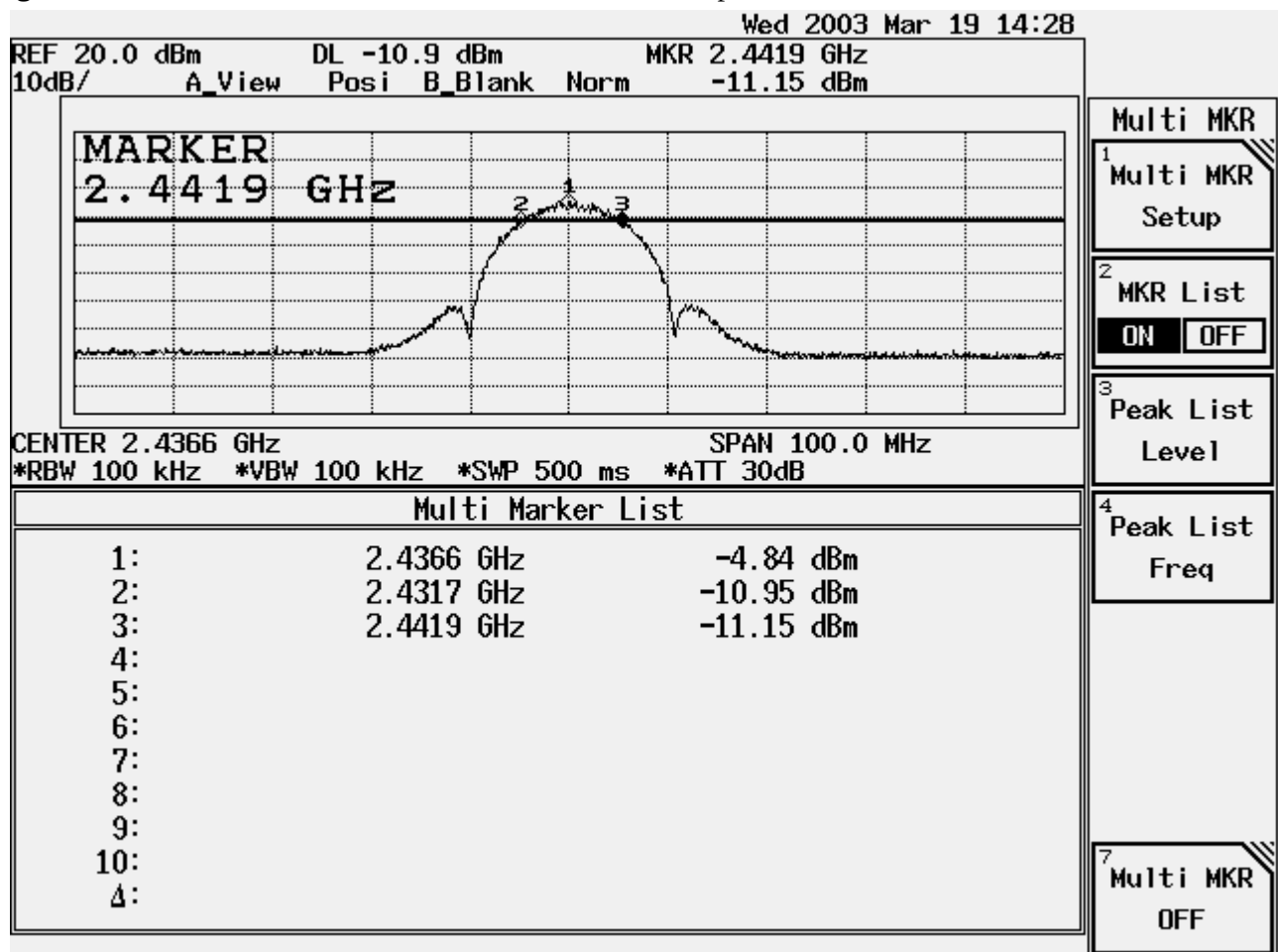


Product : Tablet PC System
 Test Item : Occupied Bandwidth Data
 Test Site : No.2 OATS
 Test Mode : Channel 6

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6 (11Mbps)	2436.6	10200	>500	Pass

Figure Channel 6:

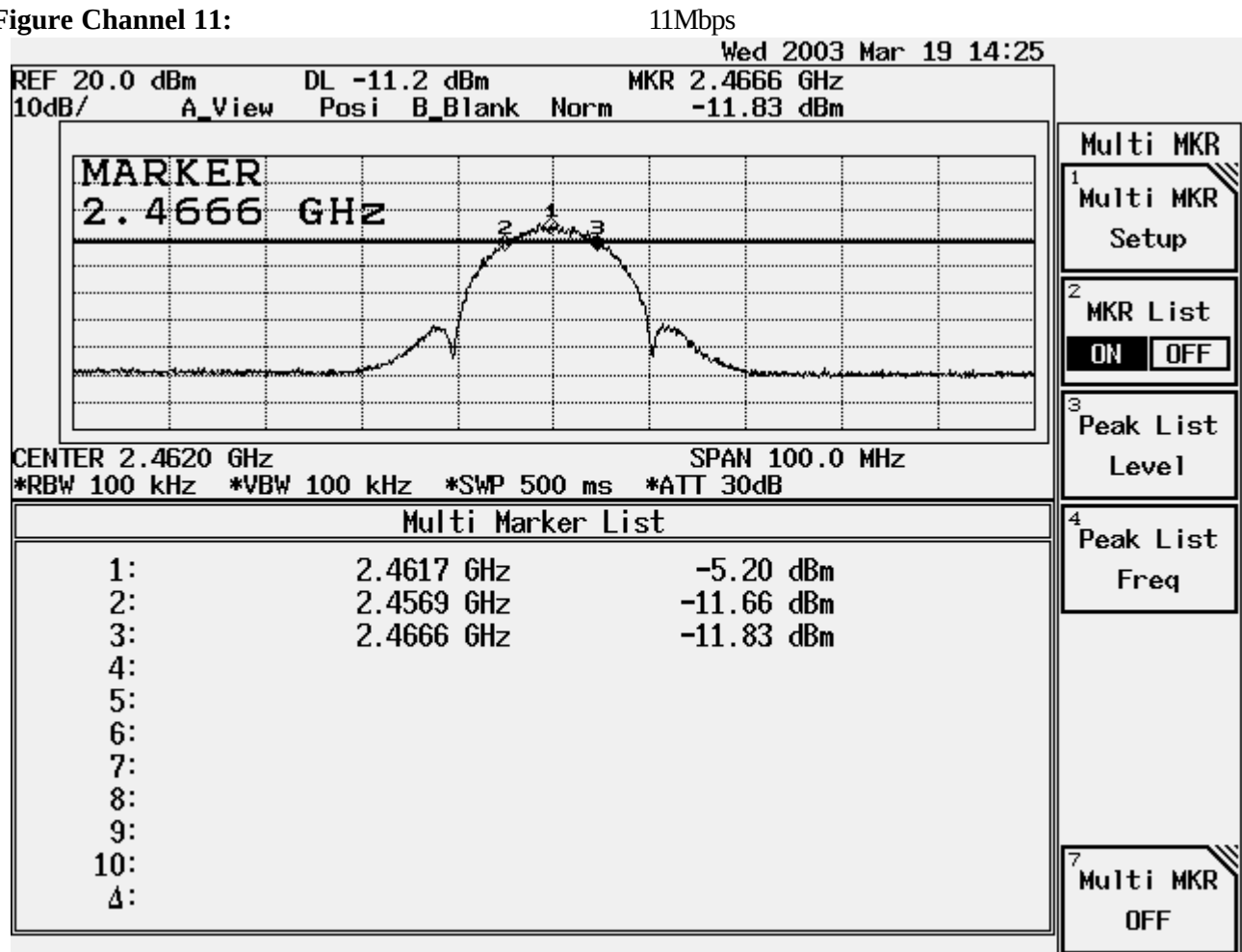
11Mbps



Product : Tablet PC System
 Test Item : Occupied Bandwidth Data
 Test Site : No.2 OATS
 Test Mode : Channel 11

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
11 (11Mbps)	2461.7	9700	>500	Pass

Figure Channel 11:



8. Power Density

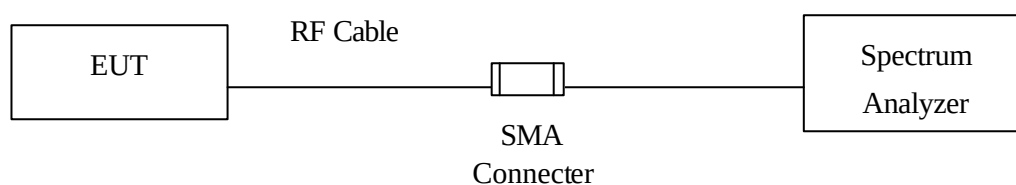
8.1. Test Equipment

The following test equipments are used during the radiated emission tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	Advantest	R3272 / 72421194	May, 2002

Note: 1. All equipment upon which need to calibrated are with calibration period of 1 year.
2. Mark "X" test instruments are used to measure the final test results.

8.2. Test Setup



8.3. Limits

The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3kHz bandwidth.

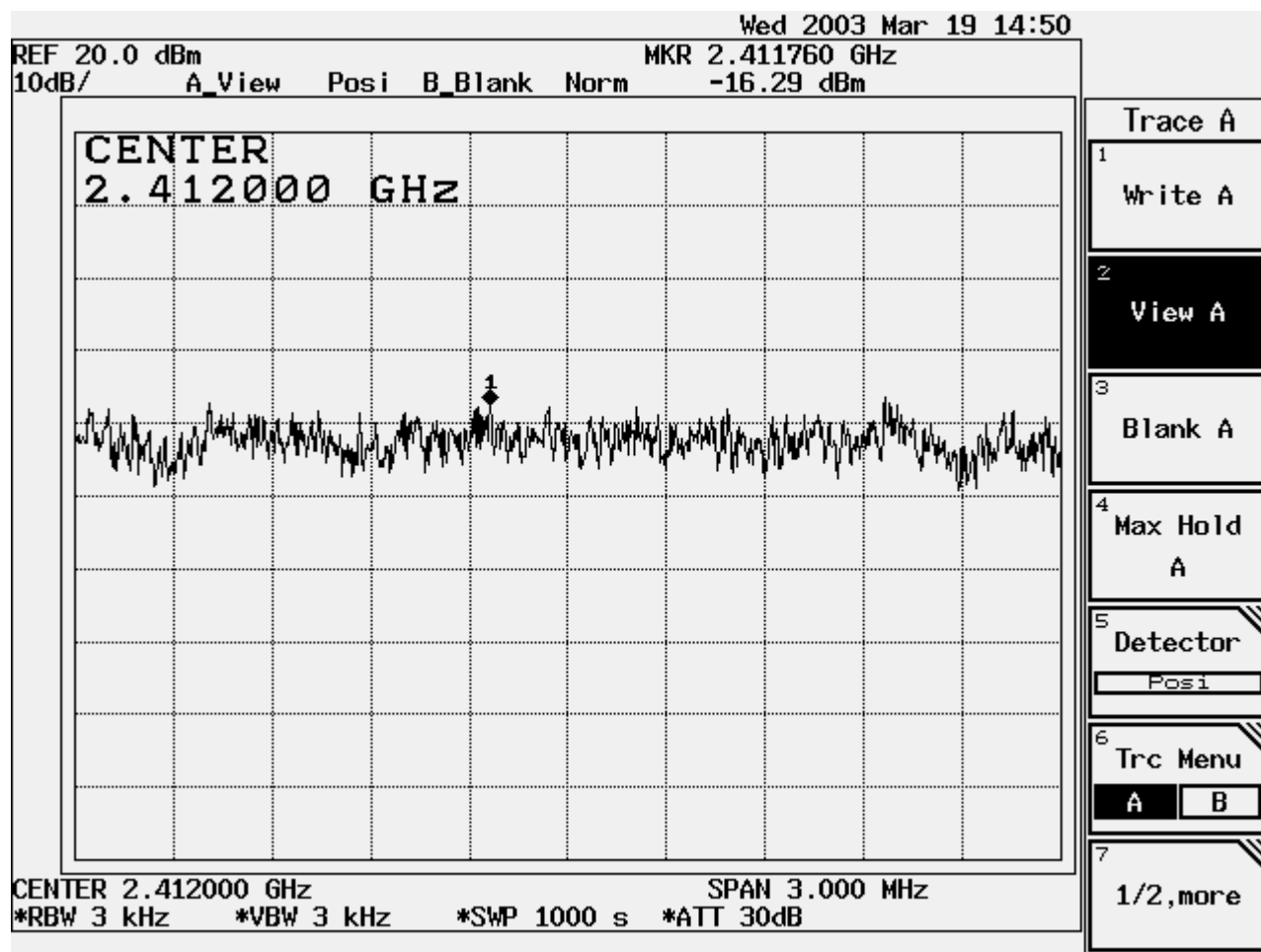
8.4. Test Result of Power Density

Product : Tablet PC System
 Test Item : Power Density Data
 Test Site : No.2 OATS
 Test Mode : Channel 1

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1 (11Mbps)	2411.76	-16.29	< 8dBm	Pass

Figure Channel 1:

11Mbps

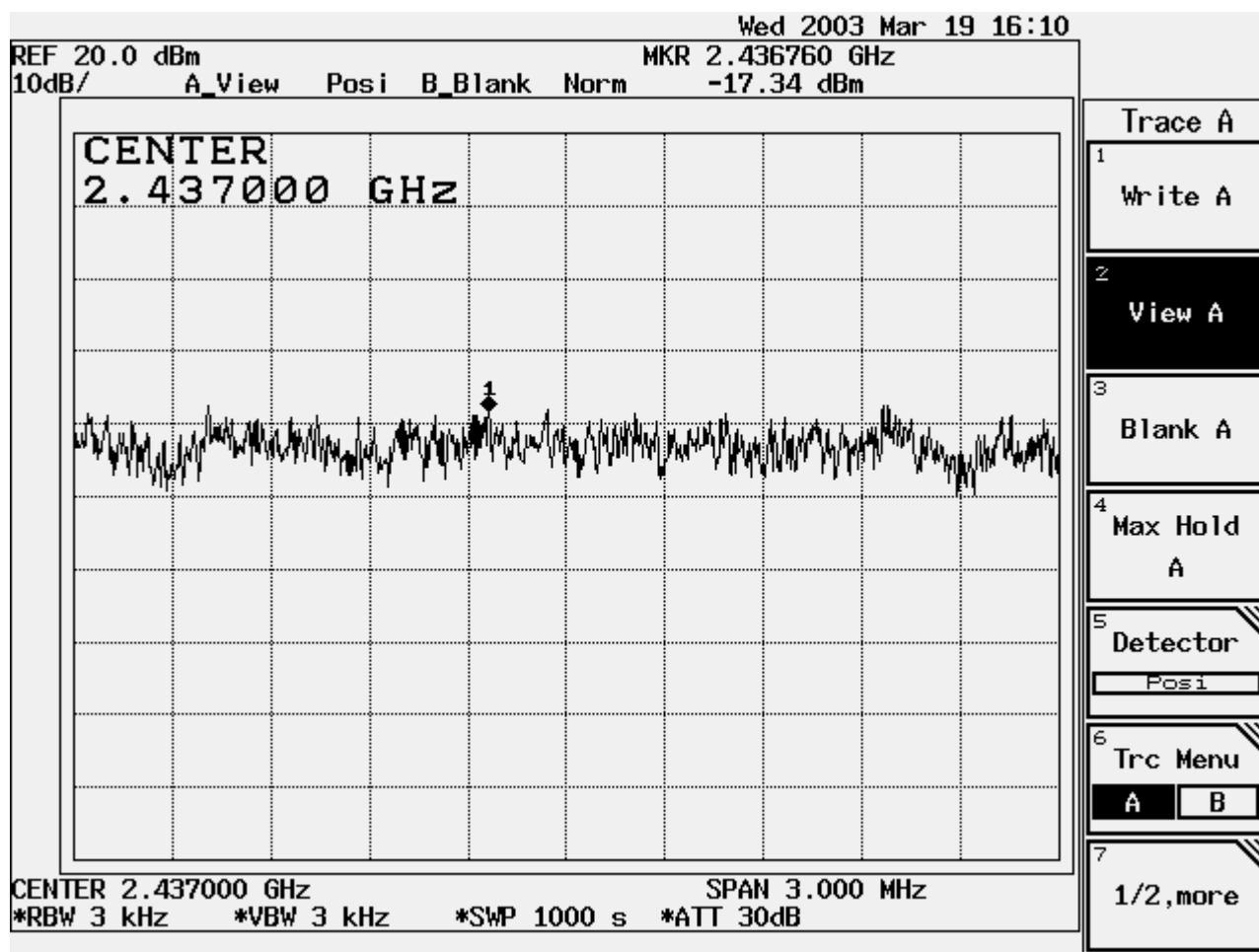


Product : Tablet PC System
 Test Item : Power Density Data
 Test Site : No.2 OATS
 Test Mode : Channel 6

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
6 (11Mbps)	2436.76	-17.34	< 8dBm	Pass

Figure Channel 6:

11Mbps

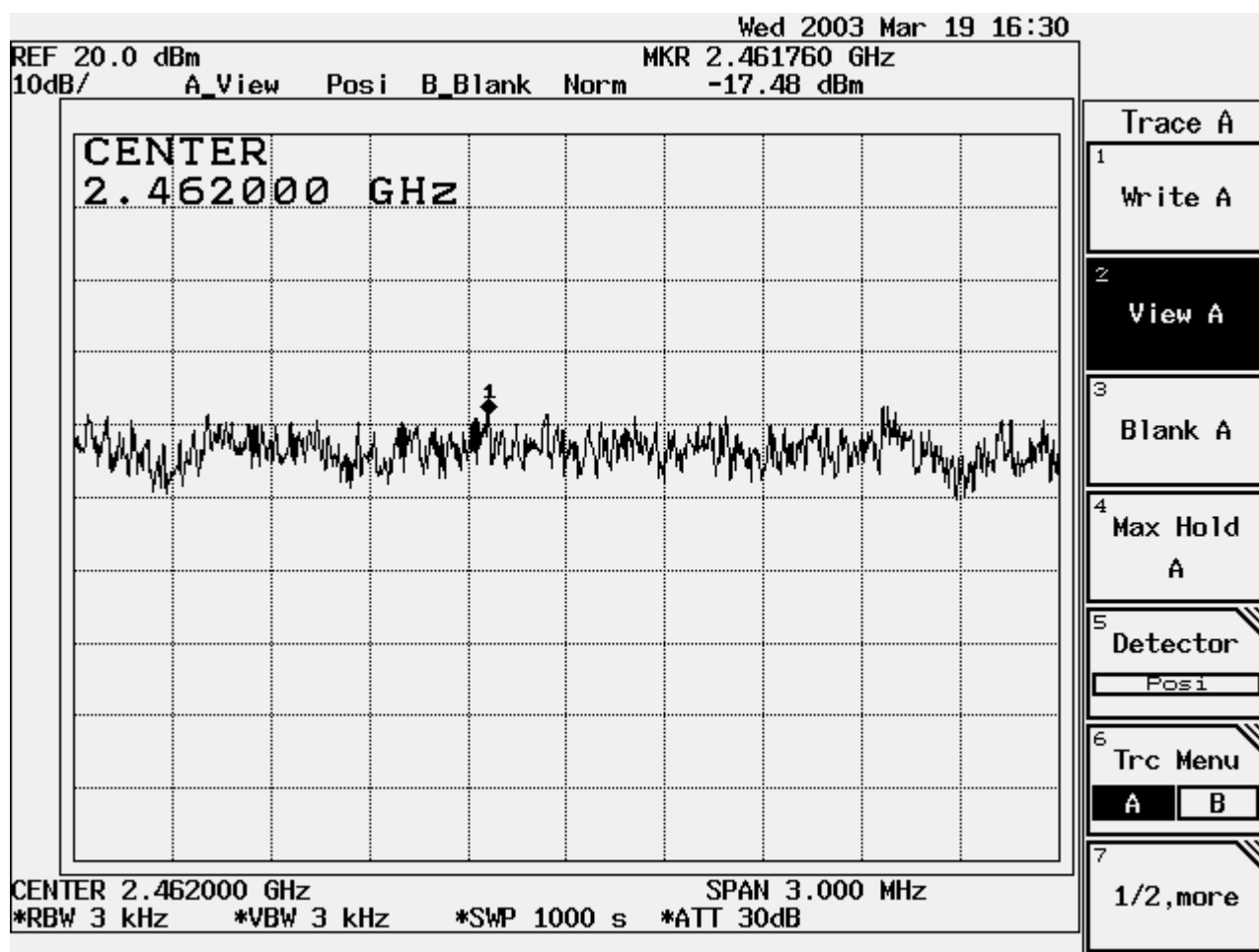


Product : Tablet PC System
 Test Item : Density Data
 Test Site : No.2 OATS
 Test Mode : Channel 11

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
11 (11Mbps)	2461.76	-17.48	< 8dBm	Pass

Figure Channel 11:

11Mbps



9. EMI Reduction Method During Compliance Testing

No modification was made during testing.

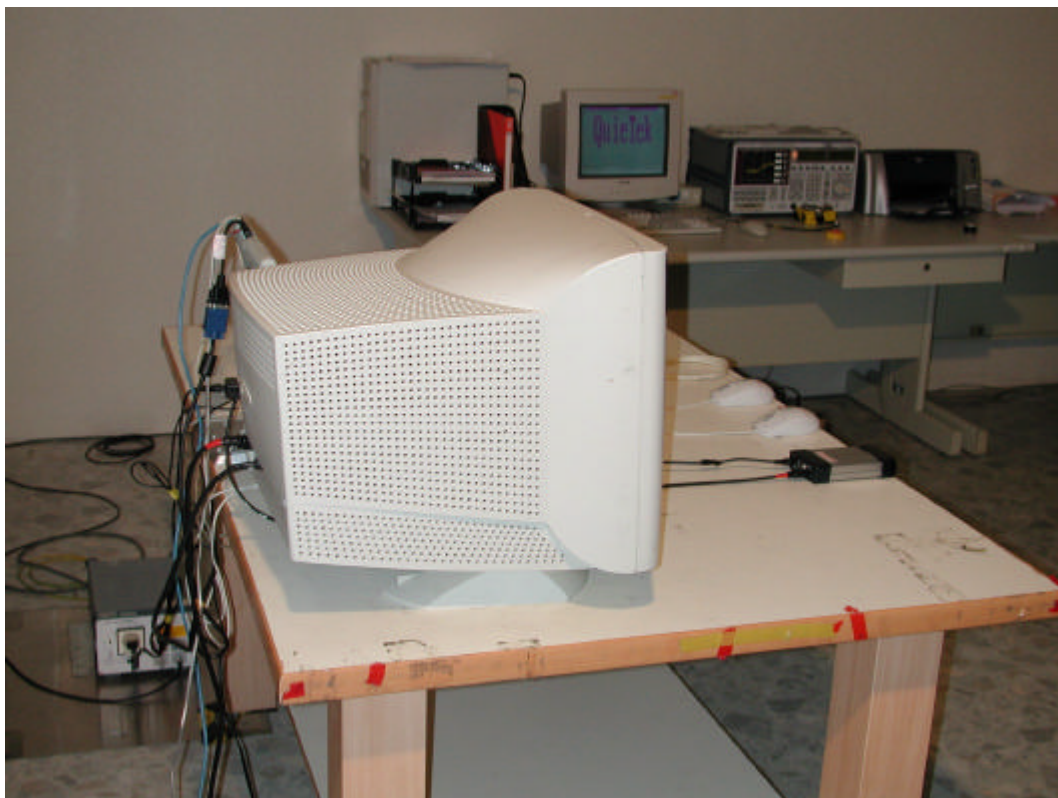
Attachment 1: EUT Test Photographs

Attachment 1: EUT Test Setup Photographs

Front View of Conducted Test (Mode 1)



Back View of Conducted Test (Mode 1)



Front View of Radiated Test



Back View of Radiated Test



Front View of Radiated Test (Horn)



Attachment 2: EUT Detailed Photographs

Attachment 2 : EUT Detailed Photographs

(1) EUT Photo



(2) EUT Photo



(3) EUT Photo



(4) EUT Photo



(5) EUT Photo



(6) EUT Photo



(7) EUT Photo



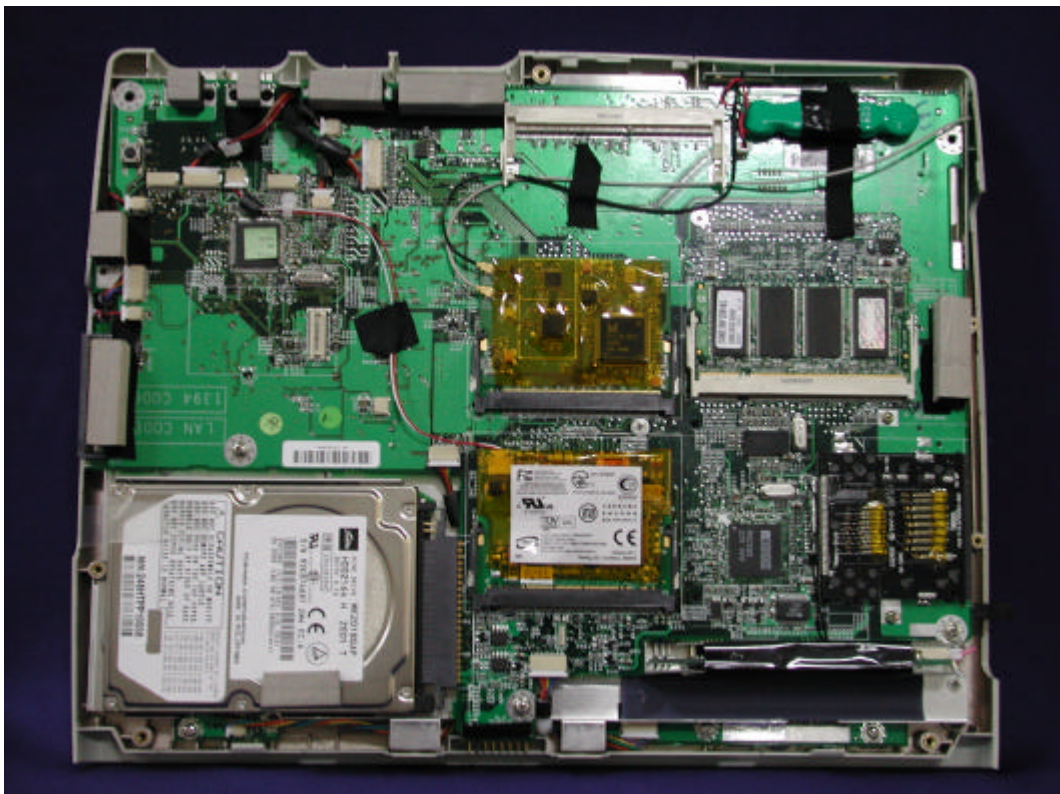
(8) EUT Photo



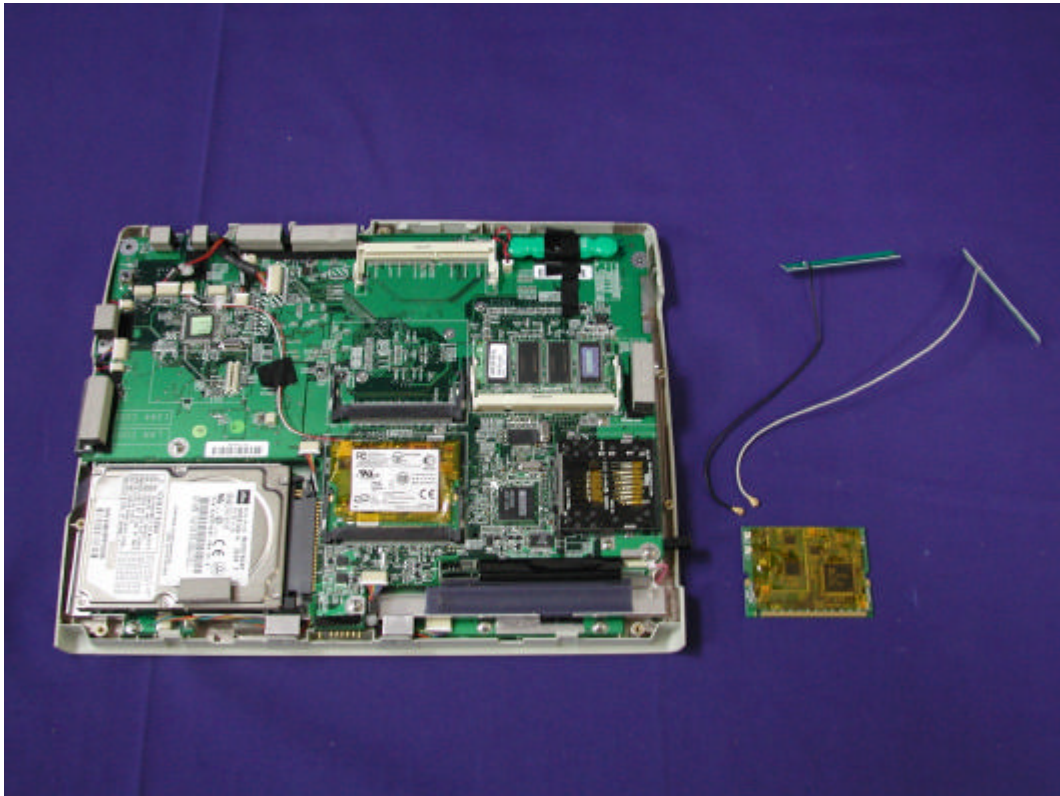
(9) EUT Photo



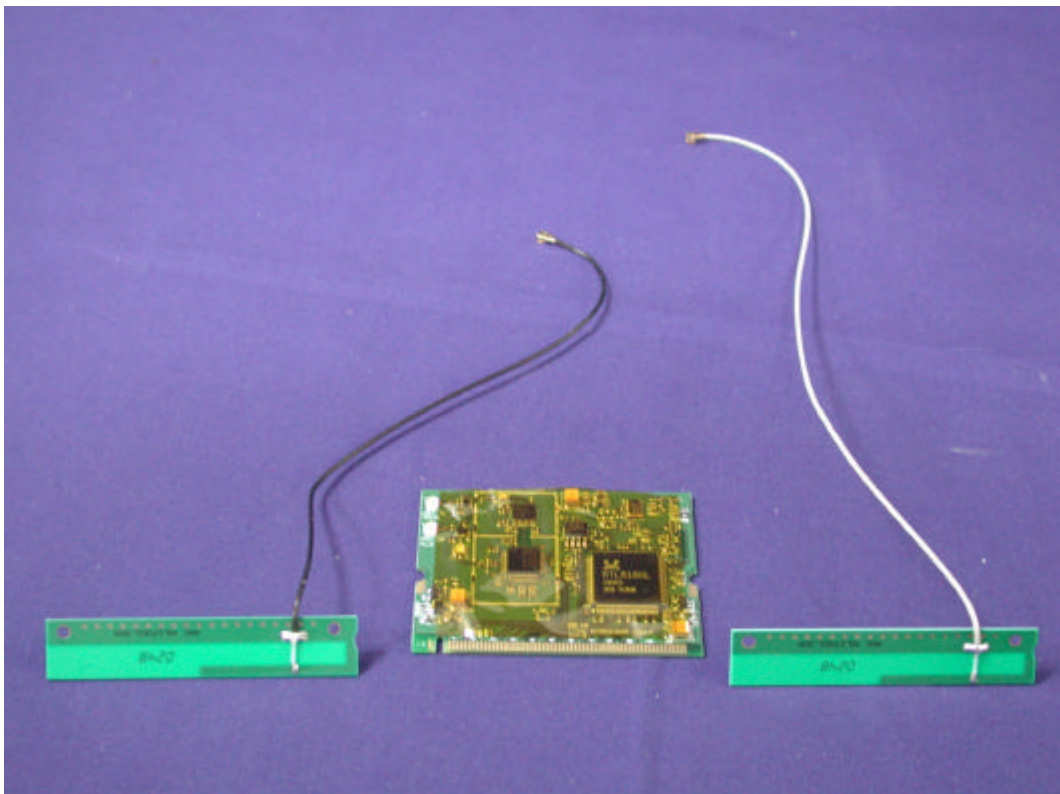
(10) EUT Photo



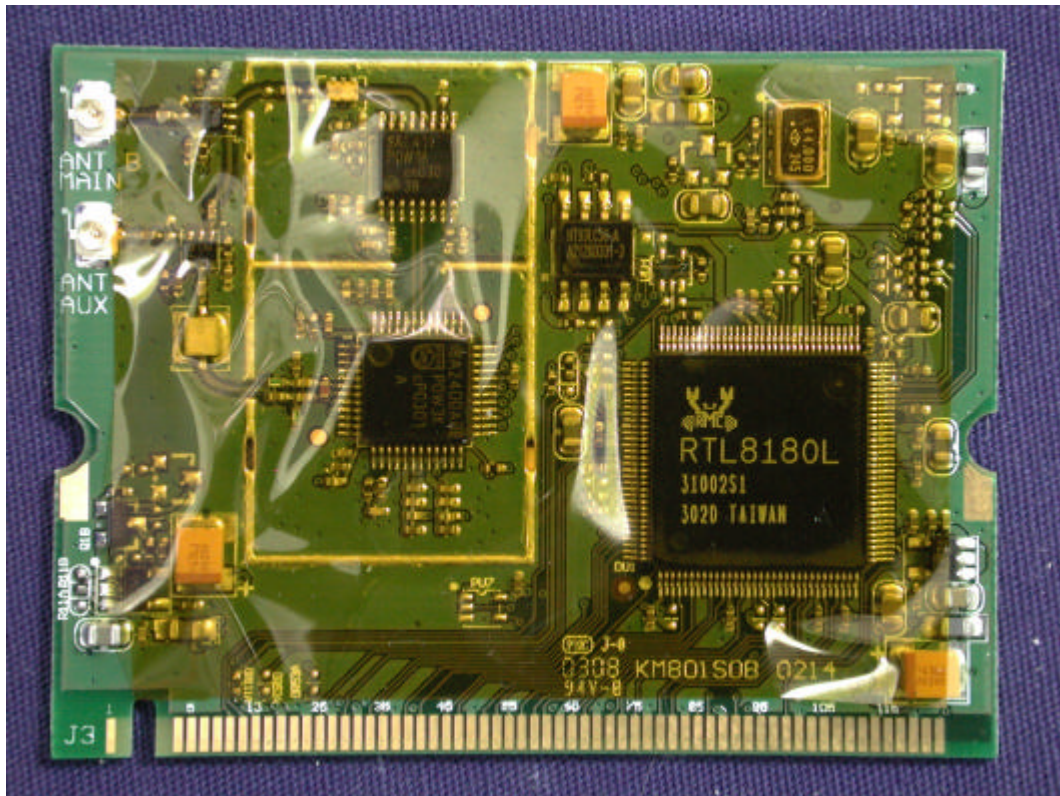
(11) EUT Photo



(12) EUT Photo



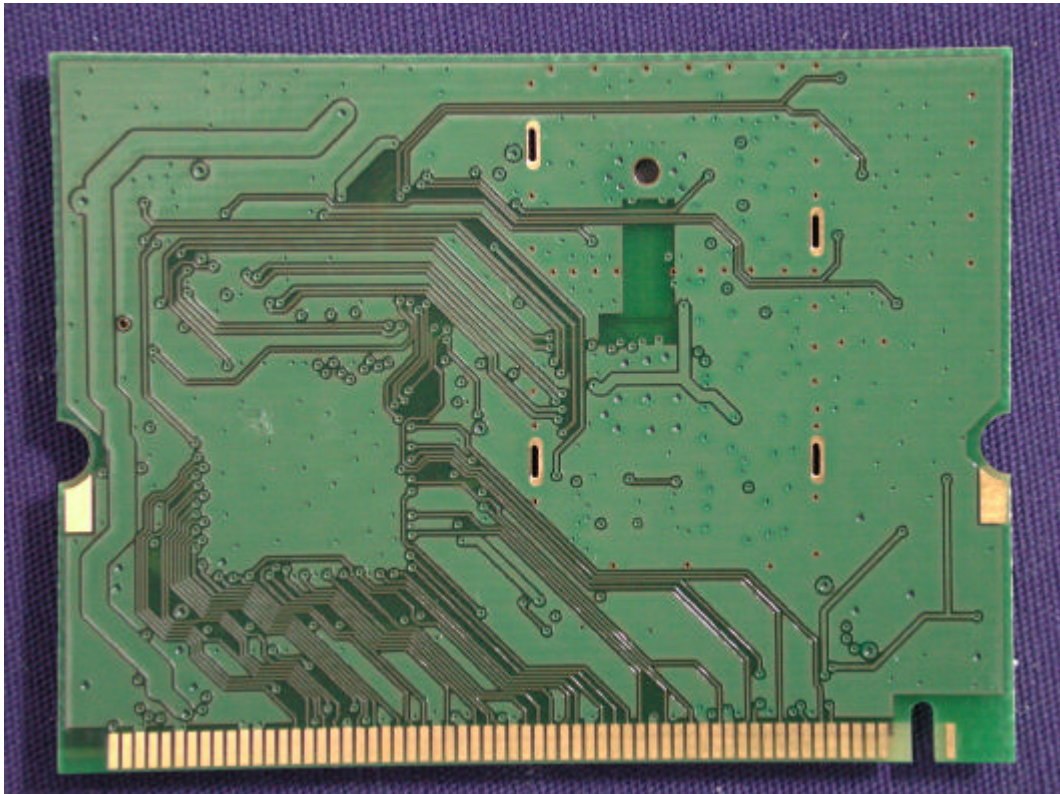
(13) EUT Photo



(14) EUT Photo



(15) EUT Photo



(16) EUT Photo



(17) EUT Photo

