



## Test Report

Product Name	Mobile Clinical Assistant C5
Model No	CFT-001
FCC ID	MSQCFT01
Transmitter Module.	Intel / WM3945ABG

Applicant	ASUSTeK COMPUTER INC.
Address	4FL., No. 150, Li-Te Rd., Peitou, Taipei, Taiwan, R.O.C.

Date of Receipt	Apr. 17, 2007
Issued Date	May 17, 2007
Report No.	074L109-RFUSP09V01

The test results relate only to the samples tested.

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

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

# Test Report Certification

Issued Date: May 17, 2007

Rport No.: 074L109-RFUSP09V01



Product Name	Mobile Clinical Assistant C5
Applicant	ASUSTeK COMPUTER INC.
Address	4FL., No. 150, Li-Te Rd., Peitou, Taipei, Taiwan, R.O.C.
Manufacturer	ASUSTeK COMPUTER INC.
Model No.	CFT-001
FCC ID.	MSQCFT01
Rated Voltage	AC 120V/60Hz
Working Voltage	AC 120V/60Hz
Trade Name	Motion Computing Incorporated
Applicable Standard	FCC CFR Title 47 Part 15 Subpart E: 2005 ANSI C63.4: 2003
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.

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

Documented By : Rita Huang  
( Engineering Adm. Specialist / Rita Huang )



Tested By : Tim Sung  
( Engineer / Tim Sung )



Approved By : Gene Chang  
( President / Gene Chang )

0914

# TABLE OF CONTENTS

Description	Page
<b>1. GENERAL INFORMATION .....</b>	<b>5</b>
1.1. EUT Description.....	5
1.2. Operational Description .....	6
1.3. Tested System Details.....	7
1.4. Configuration of tested System .....	7
1.5. EUT Exercise Software .....	7
1.6. Test Facility .....	8
<b>2. Conducted Emission.....</b>	<b>9</b>
2.1. Test Equipment.....	9
2.2. Test Setup .....	9
2.3. Limits .....	9
2.4. Test Procedure .....	10
2.5. Uncertainty .....	10
2.6. Test Result of Conducted Emission.....	11
<b>3. Peak Transmit Power .....</b>	<b>13</b>
3.1. Test Equipment.....	13
3.2. Test Setup .....	13
3.3. Limits .....	13
3.4. Limits .....	13
3.5. Uncertainty .....	13
3.6. Test Result of Peak Transmit Power.....	14
<b>4. Peak Power Spectral Density.....</b>	<b>20</b>
4.1. Test Equipment.....	20
4.2. Test Setup .....	20
4.3. Limits .....	20
4.4. Uncertainty .....	20
4.5. Test Result of Peak Power Spectral Density .....	21
<b>5. Peak Excursion .....</b>	<b>23</b>
5.1. Test Equipment.....	23
5.2. Test Setup .....	23
5.3. Limits .....	23
5.4. Uncertainty .....	23
5.5. Test Result of Peak Excursion.....	24
<b>6. Undesirable Emission.....</b>	<b>26</b>
6.1. Test Equipment.....	26
6.2. Test Setup .....	26
6.3. Limits .....	27
6.4. Test Procedure .....	28
6.5. Uncertainty .....	28
6.6. Test Result of Undesirable Emission.....	29
<b>7. Band Edge .....</b>	<b>33</b>
7.1. Test Equipment.....	33
7.2. Test Setup .....	33

---

7.3.	Limits .....	34
7.4.	Test Procedure .....	34
7.5.	Uncertainty .....	34
7.6.	Test Result of Band Edge .....	35
<b>8.</b>	<b>Frequency Stability.....</b>	<b>40</b>
8.1.	Test Equipment.....	40
8.2.	Test Setup .....	40
8.3.	Limits .....	40
8.4.	Uncertainty.....	40
8.5.	Test Result of Frequency Stability.....	41
<b>9.</b>	<b>EMI Reduction Method During Compliance Testing .....</b>	<b>42</b>

Attachment : Test data of verify  
Attachment 1: EUT Test Photographs  
Attachment 2: EUT Detailed Photographs

## 1. GENERAL INFORMATION

### 1.1. EUT Description

Product Name	Mobile Clinical Assistant C5
Trade Name	Motion Computing Incorporated
FCC ID.	MSQCFT01
Model No.	CFT-001
Frequency Range	2412MHz - 2462MHz, 5150-5250MHz, 5745-5825MHz
Number of Channels	11 in 2.4GHz band, 4 in 5GHz band
Channel Separation	5MHz in 2.4GHz band, 20MHz in 5GHz band
Channel Control	Auto
Data Rate	802.11b – 1, 2, 5.5, 11Mbps
	802.11a/g – 6, 9, 12, 18, 24, 36, 48, 54Mbps
Type of Modulation	DSSS/ OFDM
Antenna type	Connector
Antenna Gain	Refer to the table “Antenna List”
Power Adapter	MFR: DELTA, M/N: ADP-50HH REV.B Cable Out: Non-Shielded, 1.8m with one ferrite core bonded. Power Cord: Shielded, 1.8m

#### Antenna List

No.	Manufacturer	Part No.	Peak Gain
1	Yageo	CAN4313580012501B (Main) CAN4313580022501B (Aux)	1.72 dBi for 2.4 GHz 2.91 dBi for 5.15-5.35 GHz 1.14 dBi for 5.725-5.850 GHz

Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 1:	5180 MHz	Channel 2:	5200 MHz	Channel 3:	5220 MHz	Channel 4:	5240 MHz

Note:

1. This device is a Mobile Clinical Assistant C5 with a built-in 2.4GHz and 5GHz transceiver.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11b is 1Mbps, 802.11g and 802.11a are 6Mbps)
3. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart E for Unlicensed National Information Infrastructure devices.

## 1.2. Operational Description

EUT is a Mobile Clinical Assistant C5 with a built-in 2.4GHz and 5GHz transceiver. There are 4 channels in 5150 – 5250MHz. The channels are separated by 20MHz. This device supports the data rates of 1, 2, 5.5, 11Mbps in 802.11b mode and 6, 9, 12, 18, 24, 36, 48, 54Mbps in 802.11a/g mode. The signals are modulated by DSSS in 802.11b mode and OFDM in 802.11a/g mode. The antennas are Connector and use diversity to improve the receiving sensitivity.

This Mobile Clinical Assistant C5, complied with IEEE 802.11b, IEEE 802.11g, and IEEE 802.11a, is a high-efficiency Wireless LAN adapter. It allows your computer to connect to a wireless network and to share resources, such as files or printers without network wires. Wired Equivalent Protection (WEP) algorithm is used. In addition, its standard compliance ensures that it can communicate with any IEEE 802.11b, IEEE 802.11g, and IEEE 802.11a network.

Test Mode	Mode 1: Transmitter 802.11a-Intel:WM3945ABG
-----------	---

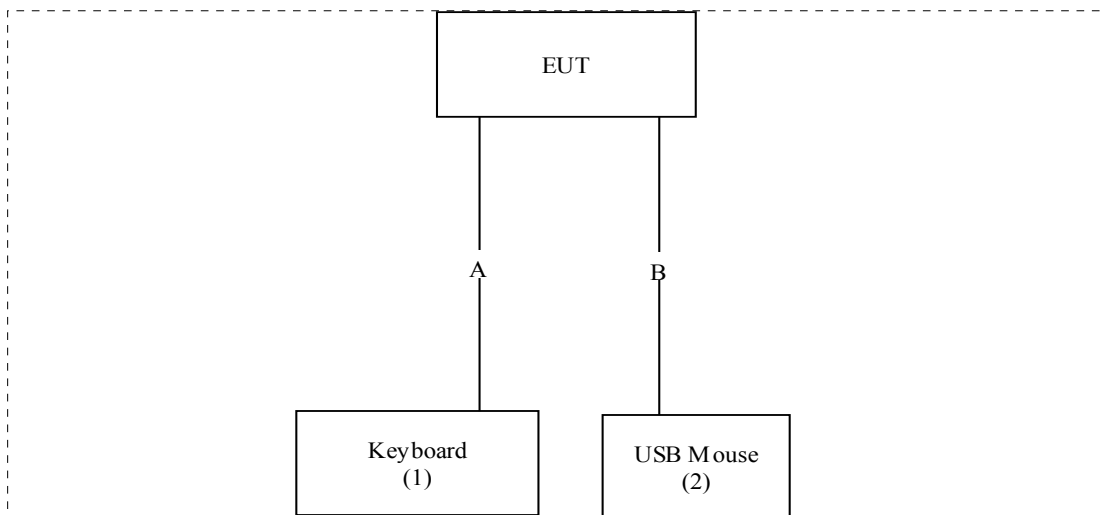
### 1.3. Tested System Details

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

Product	Manufacturer	Model No.	Serial No.	Power Cord
(1) Keyboard	BTC	5200U	N/A	N/A
(2) USB Mouse	Logitech	M-BE58	HCA30103100	N/A

Signal Cable Type	Signal cable Description
A. Keyboard Cable	Shielded, 1.8m
B. Mouse Cable	Shielded, 1.8m

### 1.4. Configuration of tested System



### 1.5. EUT Exercise Software

- (1) Setup the EUT as shown in Section 1.4
- (2) Execute CRTU Version 4.0.18.0000 on the notebook.
- (3) Configure the test mode, the test channel, and the data rate.
- (4) Press “OK” to start the continuous transmission.
- (5) Verify that the EUT works properly.

**1.6. Test Facility**

Ambient conditions in the laboratory:

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

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



Accreditation on NVLAP  
 NVLAP Lab Code: 200533-0



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



**0914**



## 2. Conducted Emission

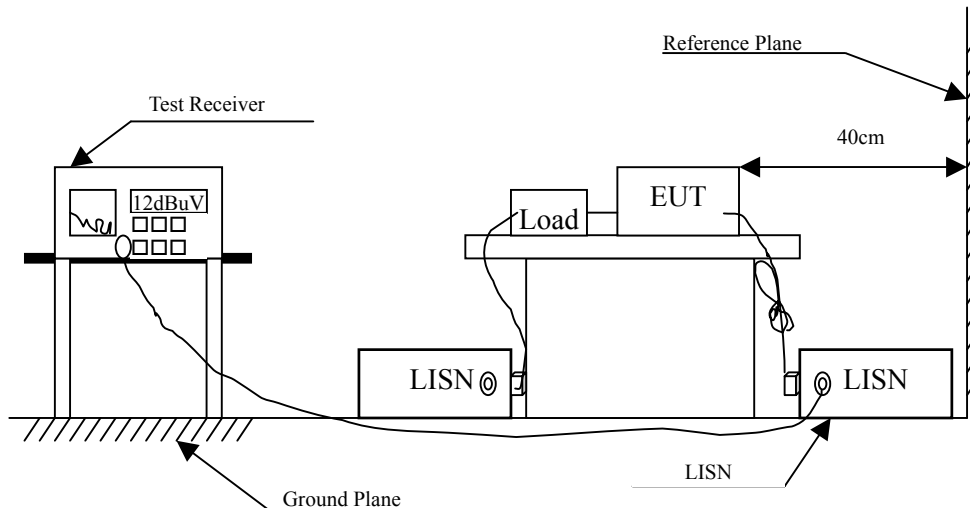
### 2.1. Test Equipment

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, 2007	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 2007	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 2007	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	May, 2007	
5	No.1 Shielded Room			N/A	

Note: All equipments are calibrated every one year.

### 2.2. Test Setup



### 2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit		
Frequency MHz	Limits	
	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.

## 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: 2003 on conducted measurement.

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

## 2.5. Uncertainty

± 2.26 dB

## 2.6. Test Result of Conducted Emission

Product : Mobile Clinical Assistant C5  
 Test Item : Conducted Emission Test  
 Power Line : Line 1  
 Test Mode : Mode 1: Transmitter 802.11a-Intel:WM3945ABG (5220MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
<b>LINE 1</b>					
<b>Quasi-Peak</b>					
0.205	0.202	53.760	53.962	-10.467	64.429
0.275	0.211	47.240	47.452	-14.977	62.429
0.345	0.214	37.610	37.824	-22.605	60.429
0.405	0.215	31.820	32.035	-26.679	58.714
0.475	0.216	29.470	29.686	-27.028	56.714
0.545	0.217	35.340	35.557	-20.443	56.000
<b>Average</b>					
0.205	0.202	34.940	35.142	-19.287	54.429
0.275	0.211	29.900	30.112	-22.317	52.429
0.345	0.214	23.290	23.504	-26.925	50.429
0.405	0.215	18.240	18.455	-30.259	48.714
0.475	0.216	18.910	19.126	-27.588	46.714
0.545	0.217	22.630	22.847	-23.153	46.000

Note:

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

Product : Mobile Clinical Assistant C5  
 Test Item : Conducted Emission Test  
 Power Line : Line 2  
 Test Mode : Mode 1: Transmitter 802.11a-Intel:WM3945ABG (5220MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
<b>LINE 2</b>					
<b>Quasi-Peak</b>					
0.205	0.202	53.630	53.832	-10.597	64.429
0.275	0.203	47.080	47.283	-15.146	62.429
0.345	0.214	37.530	37.744	-22.685	60.429
0.405	0.215	31.240	31.455	-27.259	58.714
0.475	0.216	29.070	29.286	-27.428	56.714
0.545	0.217	35.720	35.937	-20.063	56.000
<b>Average</b>					
0.205	0.202	34.940	35.142	-19.287	54.429
0.275	0.203	30.050	30.253	-22.176	52.429
0.345	0.214	23.290	23.504	-26.925	50.429
0.405	0.215	17.890	18.105	-30.609	48.714
0.475	0.216	18.590	18.806	-27.908	46.714
0.545	0.217	22.240	22.457	-23.543	46.000

Note:

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

### 3. Peak Transmit Power

#### 3.1. Test Equipment

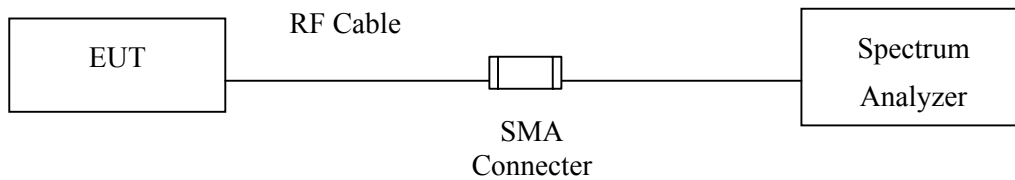
The following test equipments are used during the radiated emission tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2007

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

#### 3.2. Test Setup

##### Conduction Power Measurement



#### 3.3. Limits

- (1) For the band 5.15-5.25 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 50 mW or  $4 \text{ dBm} + 10\log B$ , where B is the 26-dB emission bandwidth in MHz. If transmitting antenna of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
- (2) For the band 5.25-5.35 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 250 mW or  $11 \text{ dBm} + 10\log B$ , where B is the 26-dB emission bandwidth in MHz. If transmitting antenna of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
- (3) For the band 5.725-5.825 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 1W or  $17 \text{ dBm} + 10\log B$ , where B is the 26-dB emission bandwidth in MHz. If transmitting antenna of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.

#### 3.4. Limits

The maximum peak power shall be less 1 Watt.

#### 3.5. Uncertainty

$\pm 1.27 \text{ dB}$

### 3.6. Test Result of Peak Transmit Power

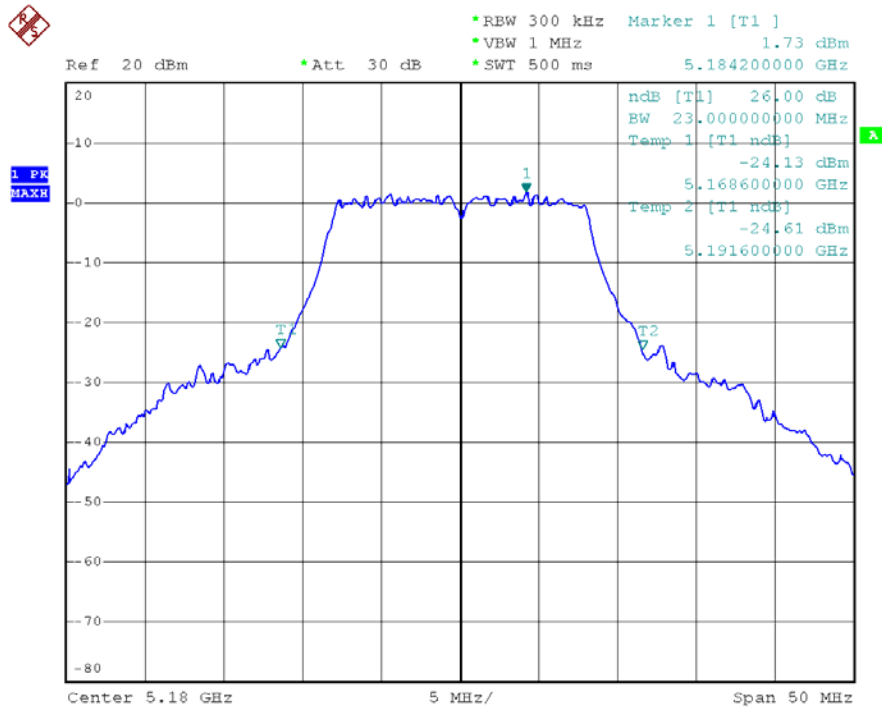
Product : Mobile Clinical Assistant C5  
 Test Item : Peak Transmit Power  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11a-Intel:WM3945ABG (5180MHz)

#### Peak Transmit Power Measurement:

Channel No.	Frequency (MHz)	26dBc Occupied Bandwidth (MHz)	Measurement Level (dBm)
1	5180	23	16.47

Limits (dBm)	Result
50mW (17dBm) or $4\text{dBm} + 10 \log(B = 23\text{MHz}) = 17.62\text{dBm}$	Pass

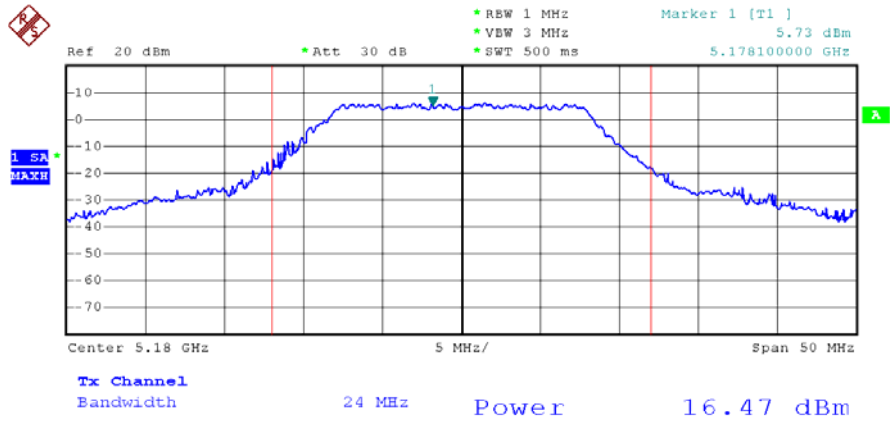
#### 26dBc Occupied Bandwidth: Channel 1



PN1

Date: 10.MAY.2007 07:00:12

### Peak Transmit Power: Channel 1



PN1

Date: 4.MAY.2007 14:39:23

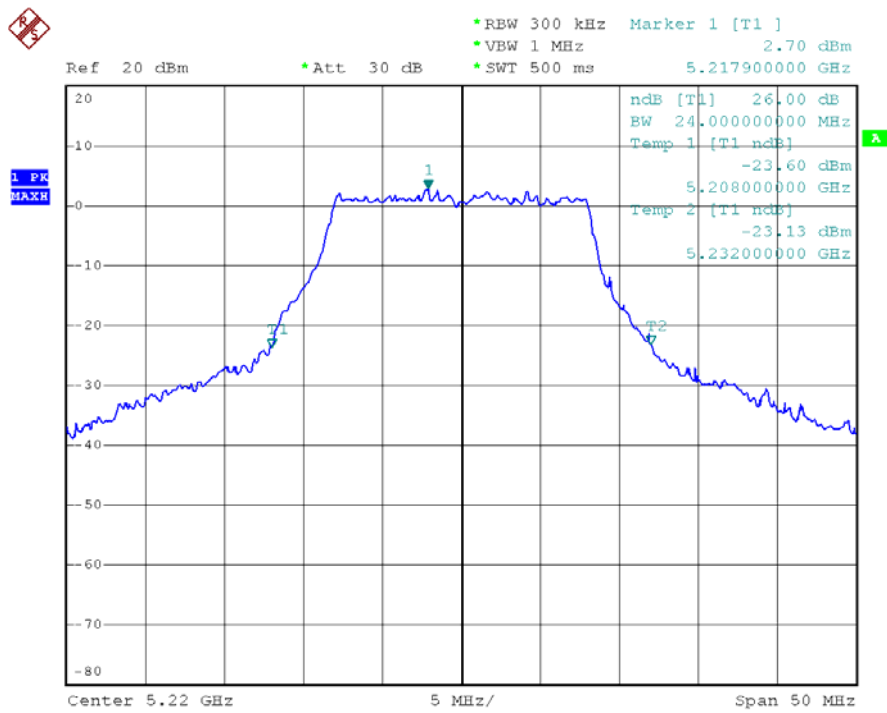
Product : Mobile Clinical Assistant C5  
 Test Item : Peak Transmit Power  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11a-Intel:WM3945ABG (5220MHz)

**Peak Transmit Power Measurement:**

Channel No.	Frequency (MHz)	26dBc Occupied Bandwidth (MHz)	Measurement Level (dBm)
3	5220	24	16.41

Limits (dBm)	Result
50mW (17dBm) or 4dBm+10 log (B= 24MHz)=17.80dBm	Pass

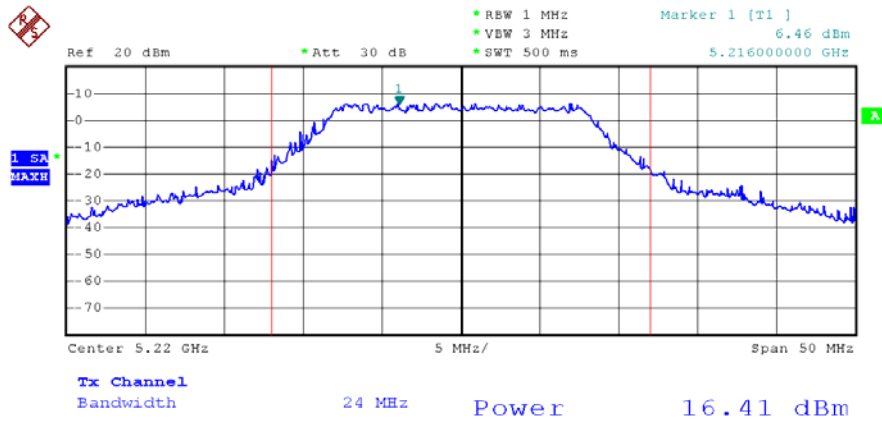
**26dBc Occupied Bandwidth:  
Channel 3**



PN1  
 Date: 4.MAY.2007 14:25:26



### Peak Transmit Power: Channel 3



FN1

Date: 4.MAY.2007 14:41:24

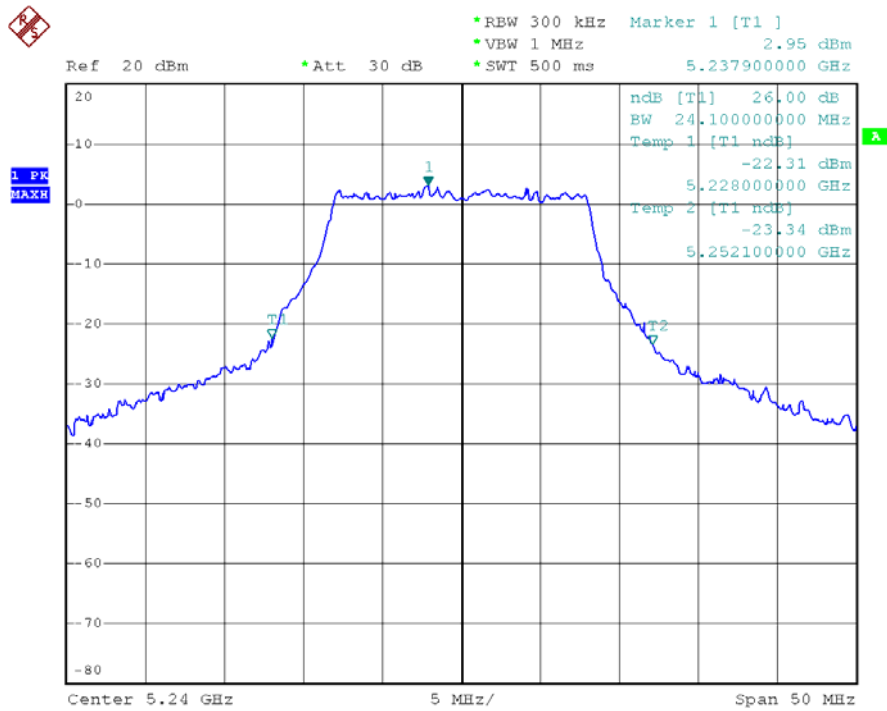
Product : Mobile Clinical Assistant C5  
 Test Item : Peak Transmit Power  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11a-Intel:WM3945ABG (5240MHz)

**Peak Transmit Power Measurement:**

Channel No.	Frequency (MHz)	26dBc Occupied Bandwidth (MHz)	Measurement Level (dBm)
4	5240	24.10	16.67

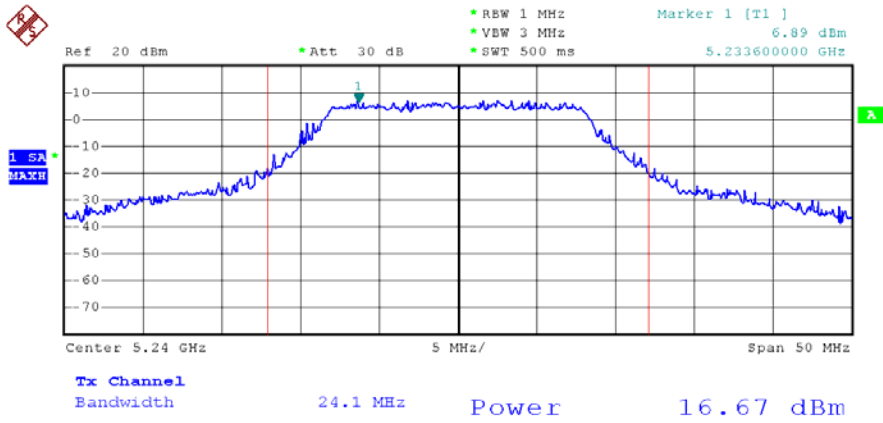
Limits (dBm)	Result
50mW (17dBm) or 4dBm+10 log (B=24.10MHz)=17.82dBm	Pass

**26dBc Occupied Bandwidth:  
Channel 4**



PN1  
 Date: 4.MAY.2007 14:26:41

### Peak Transmit Power: Channel 4



PN1

Date: 4.MAY.2007 14:43:02

## 4. Peak Power Spectral Density

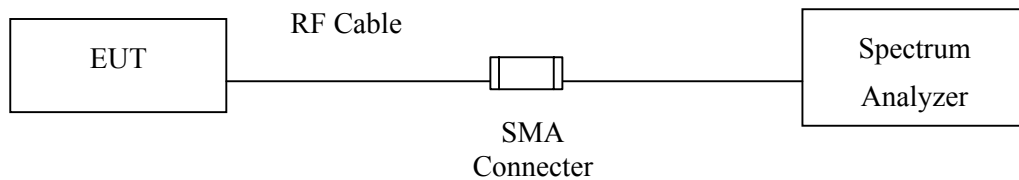
### 4.1. Test Equipment

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

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2007

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

### 4.2. Test Setup



### 4.3. Limits

- (4) For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
- (5) For the band 5.25-5.35 GHz, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.
- (6) For the band 5.725-5.825 GHz, the peak power spectral density shall not exceed 17 dBm in any 1-MHz band. If transmitting antenna of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.

### 4.4. Uncertainty

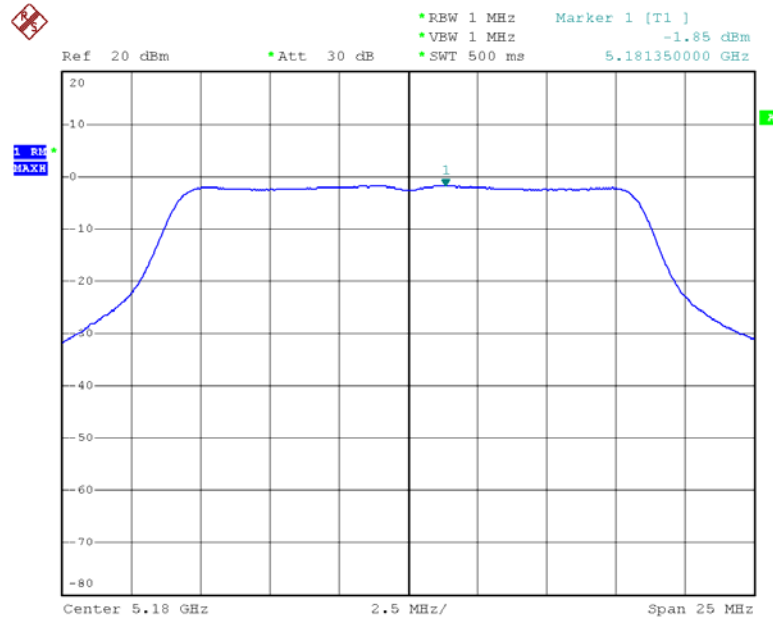
± 1.27 dB

**4.5. Test Result of Peak Power Spectral Density**

Product : Mobile Clinical Assistant C5  
 Test Item : Peak Power Spectral Density  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11a-Intel:WM3945ABG

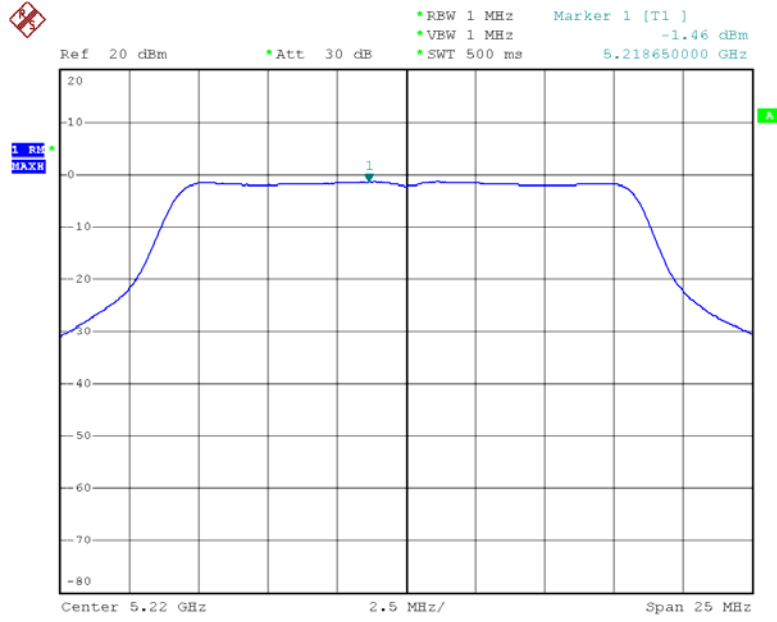
Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
1	5180.00	-1.86	< 4	Pass
3	5220.00	-1.46	< 4	Pass
4	5240.00	-1.17	< 4	Pass

**Channel 1:**



PN1  
 Date: 4.MAY.2007 14:50:12

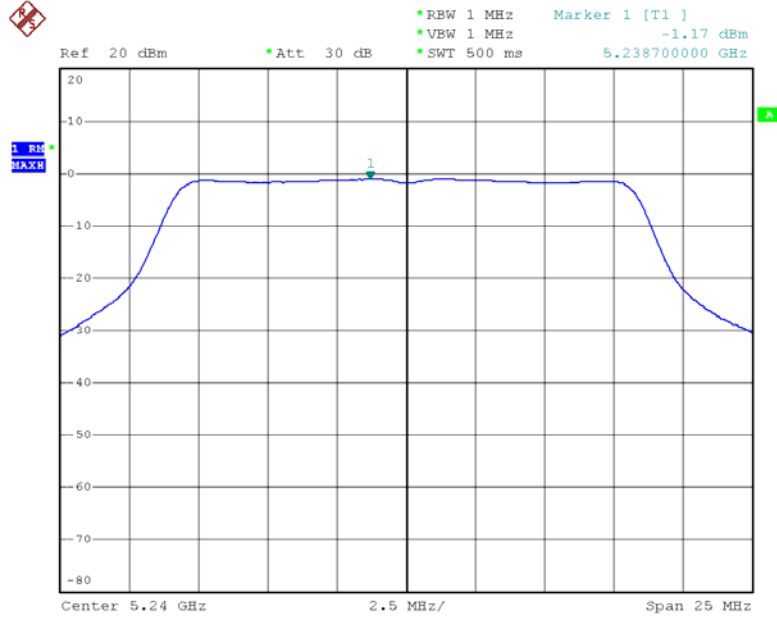
### Channel 3:



PN1

Date: 4.MAY.2007 14:50:53

### Channel 4:



PN1

Date: 4.MAY.2007 14:51:20

**5. Peak Excursion**

**5.1. Test Equipment**

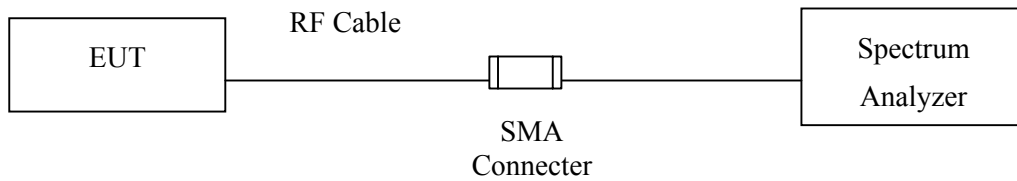
The following test equipments are used during the radiated emission tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2007

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

**5.2. Test Setup**

**Conduction Power Measurement**



**5.3. Limits**

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

**5.4. Uncertainty**

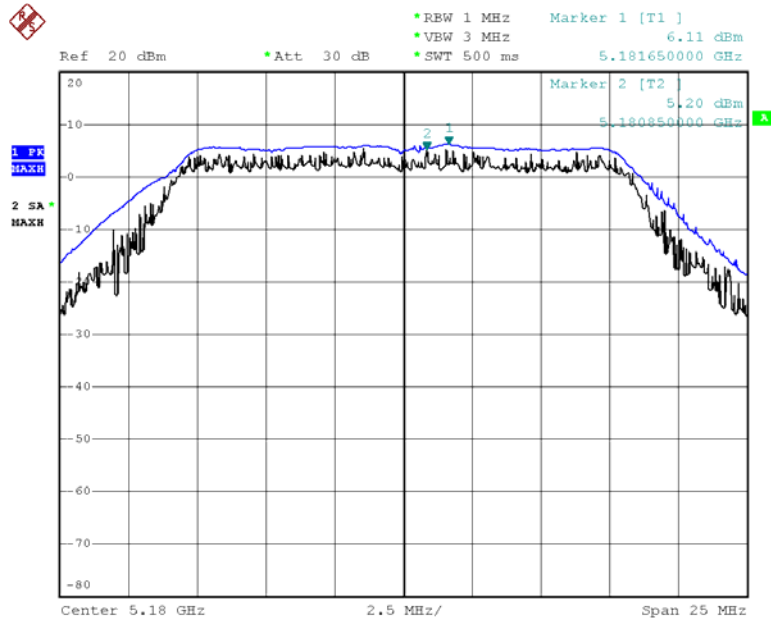
± 1.27 dB

**5.5. Test Result of Peak Excursion**

Product : Mobile Clinical Assistant C5  
 Test Item : Peak Excursion  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11a-Intel:WM3945ABG

Channel No.	Frequency (MHz)	Measurement Level (dB)	Required Limit (dB)	Result
1	5180.00	0.91	≤ 13	Pass
3	5220.00	0.78	≤ 13	Pass
4	5240.00	0.85	≤ 13	Pass

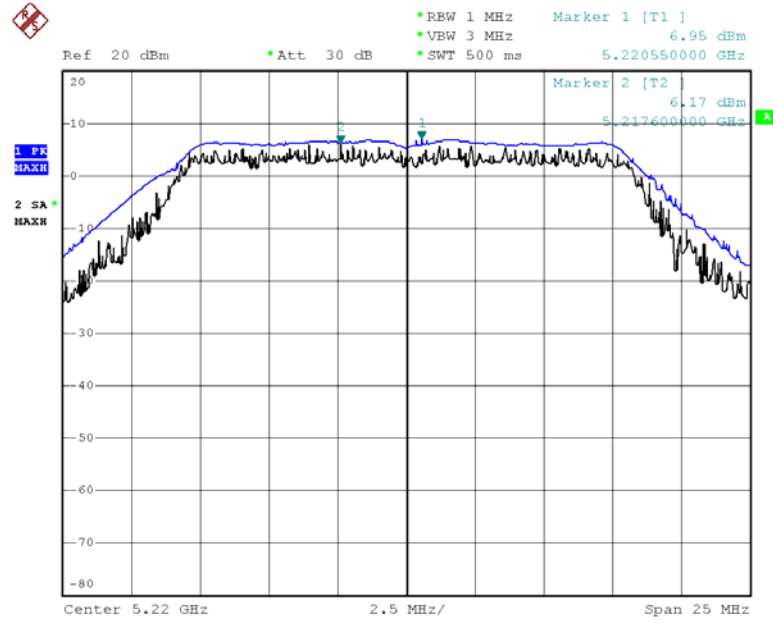
**Channel 1:**



PN1  
 Date: 4.MAY.2007 14:55:30



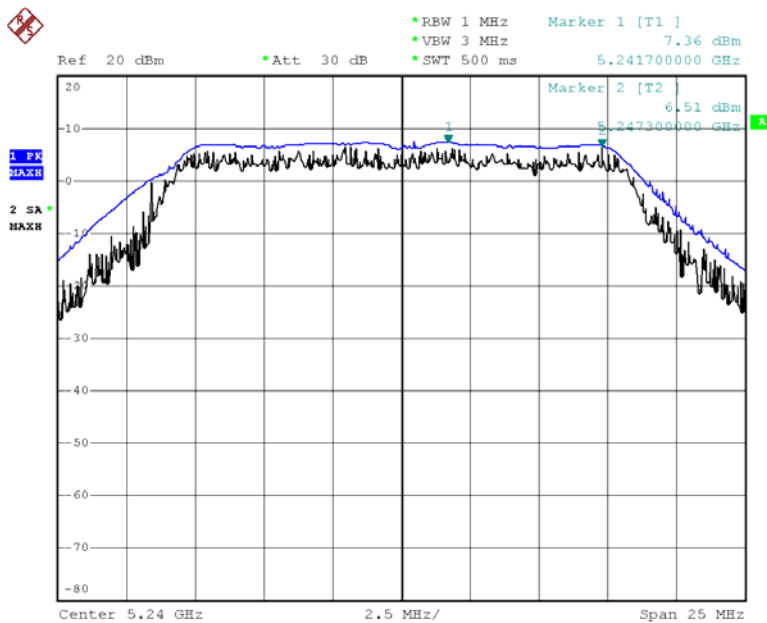
**Channel 3:**



PN1

Date: 4.MAY.2007 14:56:19

**Channel 4:**



PN1

Date: 4.MAY.2007 14:56:56

## 6. Undesirable Emission

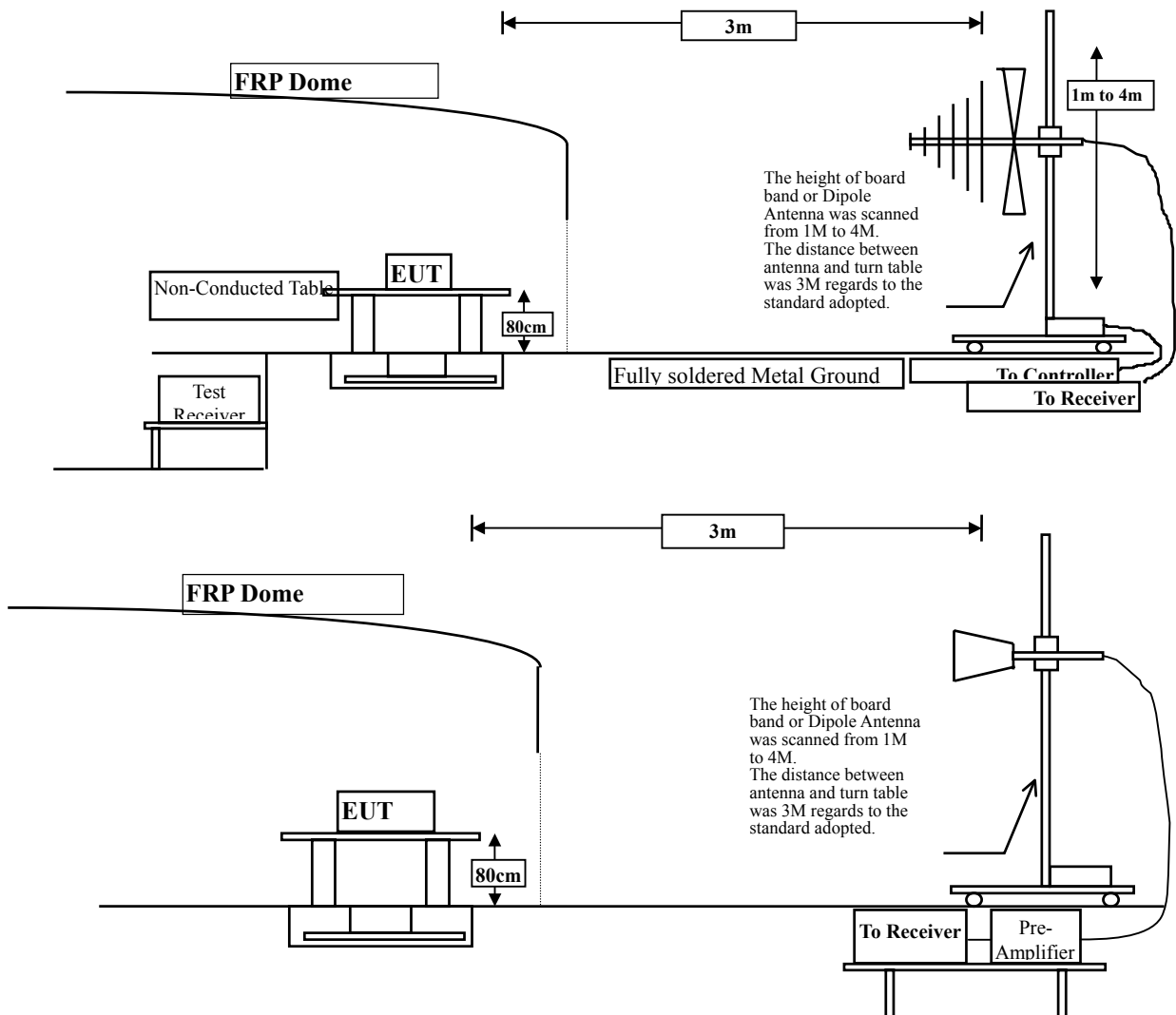
### 6.1. Test Equipment

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

Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Site # 3	X Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2007
	X Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2007
	X Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2007
	X Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2007
	X Horn Antenna	ETS	3115 / 0005-6160	July, 2006
	X Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2006

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

### 6.2. Test Setup



### 6.3. Limits

- (1) For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of  $-27$  dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of  $-27$  dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of  $-27$  dBm/MHz in the 5.15-5.25 GHz band.
- (3) For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of  $-17$  dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of  $-27$  dBm/MHz.
- (4) The field strength of emissions appearing within restricted bands of operation shall not exceed the limits in the Section 15.209.
- (5) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in Section 15.209:

<b>FCC Part 15 Subpart C Paragraph 15.209 Limits</b>		
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.

#### 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 C63.4:2001 on radiated measurement.

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

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

#### 6.5. Uncertainty

± 3.8 dB below 1GHz

± 3.9 dB above 1GHz

## 6.6. Test Result of Undesirable Emission

Product : Mobile Clinical Assistant C5  
 Test Item : Undesirable Emission  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11a-Intel:WM3945ABG (5180MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector</b>					
10360.000	12.977	42.247	55.223	-18.777	74.000
15540.000	15.276	36.168	51.443	-22.557	74.000
<b>Average Detector</b>					
10360.000	12.977	32.580	45.557	-8.443	54.000
<b>Vertical</b>					
<b>Peak Detector</b>					
10360.000	12.977	43.486	56.462	-17.538	74.000
15540.000	15.276	35.893	51.168	-22.832	74.000
<b>Average Detector</b>					
10360.000	12.977	34.230	47.207	-6.793	54.000

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. Measurement Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : Mobile Clinical Assistant C5  
 Test Item : Undesirable Emission  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11a-Intel:WM3945ABG (5220MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector</b>					
10440.000	13.218	44.735	57.952	-16.048	74.000
15660.000	14.994	36.435	51.429	-22.571	74.000
<b>Average Detector</b>					
10440.000	13.218	34.490	47.708	-6.292	54.000
<b>Vertical</b>					
<b>Peak Detector</b>					
10440.000	13.218	43.624	56.841	-17.159	74.000
15660.000	14.994	35.755	50.749	-23.251	74.000
<b>Average Detector</b>					
10440.000	13.218	34.780	47.998	-6.002	54.000

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. Measurement Level = Reading Level + Correct Factor..
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : Mobile Clinical Assistant C5  
 Test Item : Undesirable Emission  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11a-Intel:WM3945ABG (5240MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector</b>					
10480.000	13.343	44.145	57.487	-16.513	74.000
15720.000	14.730	36.149	50.878	-23.122	74.000
<b>Average Detector</b>					
10480.000	13.343	35.060	48.403	-5.597	54.000
<b>Vertical</b>					
<b>Peak Detector</b>					
10480.000	13.343	44.544	57.886	-16.114	74.000
15720.000	14.730	36.293	51.022	-22.978	74.000
<b>Average Detector</b>					
10480.000	13.343	34.780	48.123	-5.877	54.000

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. Measurement Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : Mobile Clinical Assistant C5  
 Test Item : Undesirable Emission  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11a-Intel:WM3945ABG (5220MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector</b>					
240.975	12.077	29.746	41.823	-4.177	46.000
260.375	14.513	23.844	38.357	-7.643	46.000
432.550	17.666	20.040	37.706	-8.294	46.000
456.800	18.477	23.149	41.626	-4.374	46.000
527.125	18.485	22.236	40.721	-5.279	46.000
599.875	19.999	18.769	38.768	-7.232	46.000
<b>Vertical</b>					
<b>Peak Detector</b>					
228.850	11.151	29.781	40.932	-5.068	46.000
240.975	12.463	30.453	42.916	-3.084	46.000
265.225	14.417	23.135	37.552	-8.448	46.000
335.550	14.360	27.973	42.333	-3.667	46.000
432.550	19.299	20.904	40.203	-5.797	46.000
527.125	18.888	23.519	42.407	-3.593	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. "█" means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. The radiated emissions below 1GHz of the lowest, middle, highest frequency are pretested. Only the worst case is shown on the report.



## 7. Band Edge

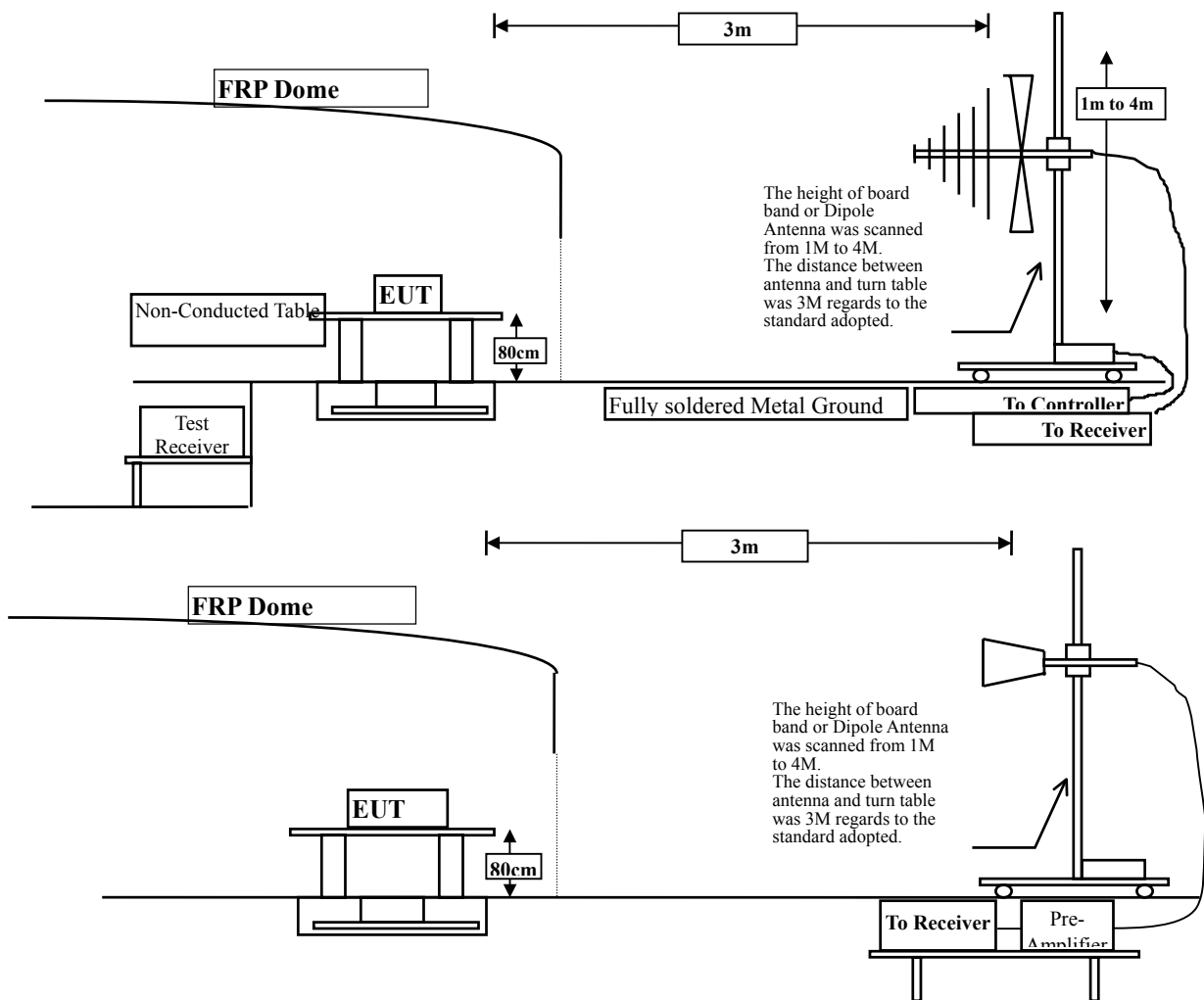
### 7.1. Test Equipment

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

Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Site # 3	X Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2007
	X Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2007
	X Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2007
	X Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2007
	X Horn Antenna	ETS	3115 / 0005-6160	July, 2006
	X Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2006

### 7.2. Test Setup

#### RF Radiated Measurement:



### 7.3. Limits

The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.

Radiated emissions which fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209:

<b>FCC Part 15 Subpart C Paragraph 15.209 Limits</b>		
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.

### 7.4. 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.

### 7.5. Uncertainty

± 3.8 dB below 1GHz

± 3.9 dB above 1GHz

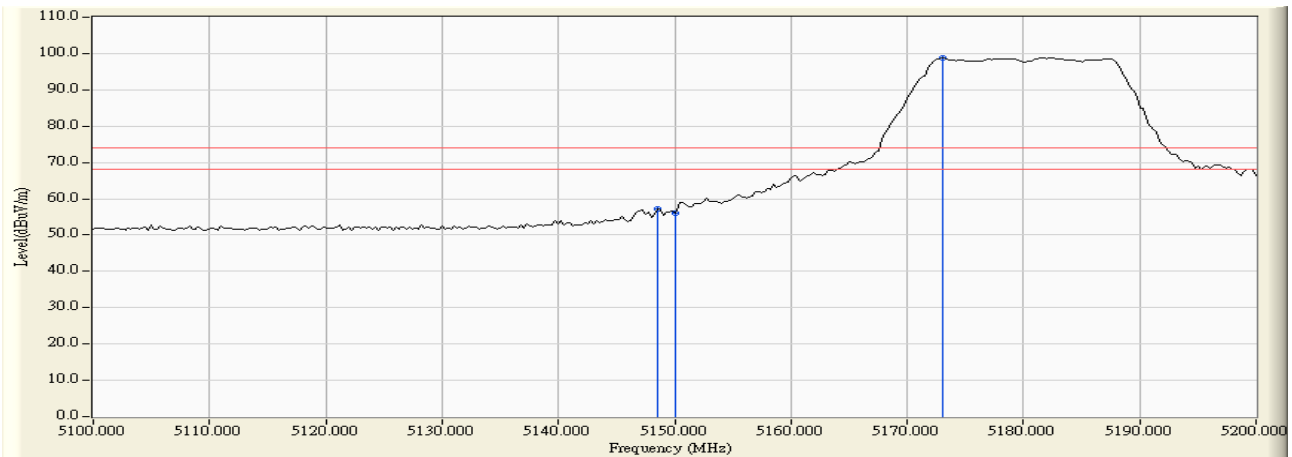
### 7.6. Test Result of Band Edge

Product : Mobile Clinical Assistant C5  
 Test Item : Band Edge  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11a-Intel:WM3945ABG (5180MHz)

#### RF Radiated Measurement (Horizontal):

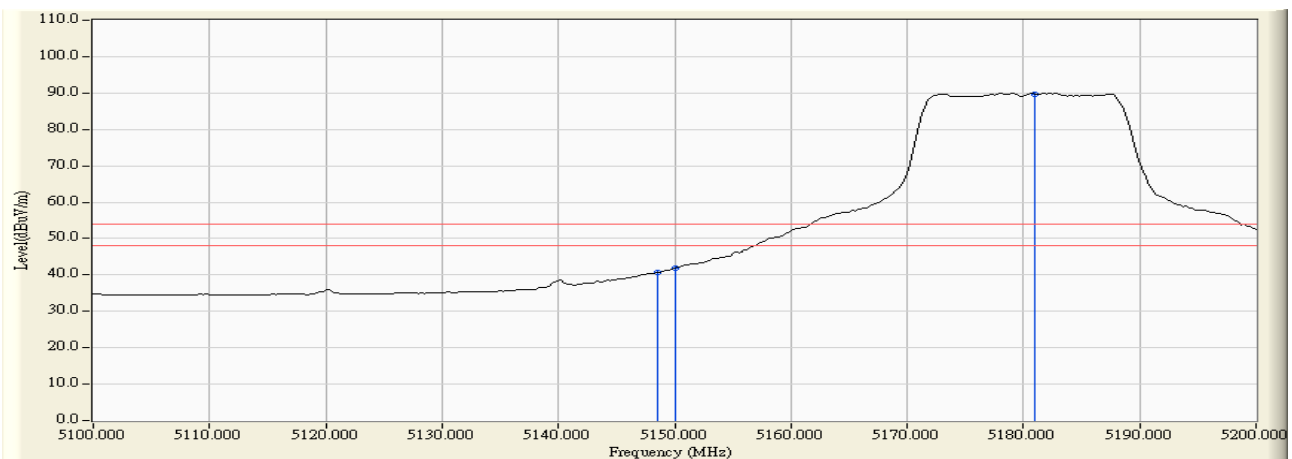
Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
1 (Peak)	5148.500	4.305	52.902	57.207	74.00	54.00	Pass
1 (Average)	5148.500	4.305	36.349	40.654	74.00	54.00	Pass

**Figure Channel 1: Horizontal (Peak)**



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

**Figure Channel 1: Horizontal (Average)**



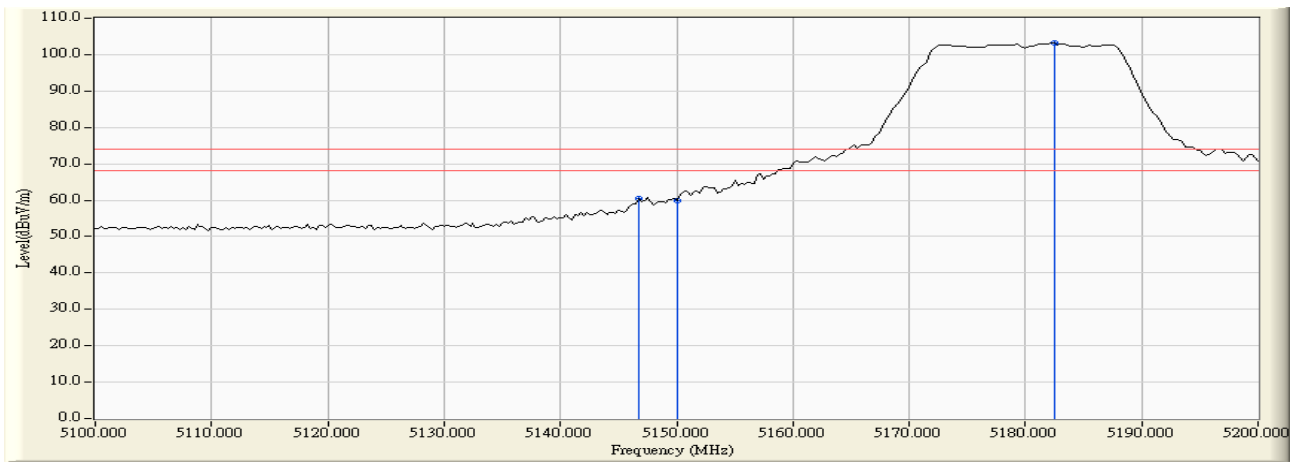
Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

Product : Mobile Clinical Assistant C5  
 Test Item : Band Edge  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11a-Intel:WM3945ABG (5180MHz)

**RF Radiated Measurement (Vertical):**

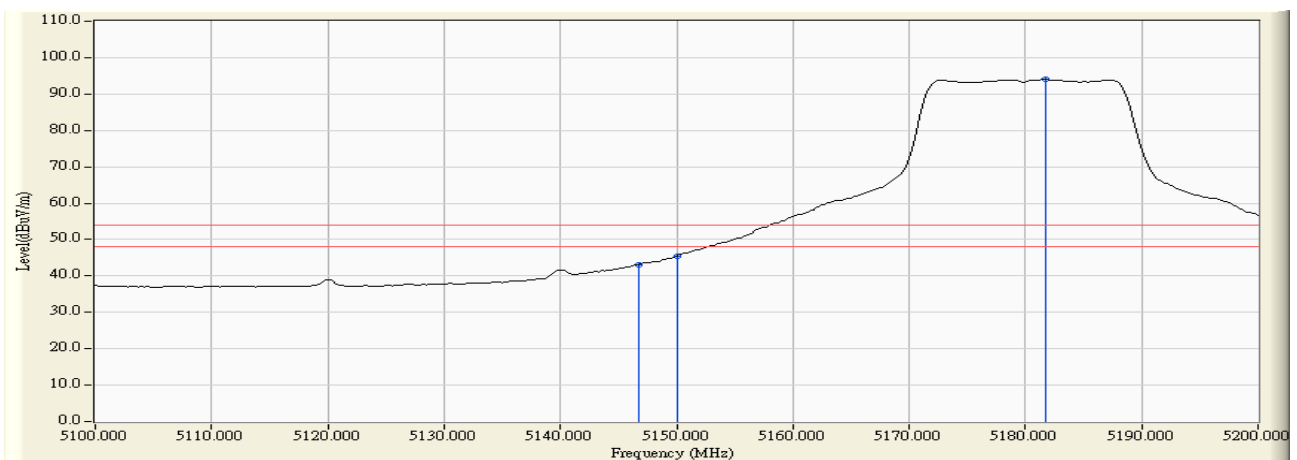
Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
1 (Peak)	5146.750	4.305	56.057	60.361	74.00	54.00	Pass
1 (Average)	5146.750	4.305	38.743	43.047	74.00	54.00	Pass

**Figure Channel 1: Vertical (Peak)**



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

**Figure Channel 1: Vertical (Average)**



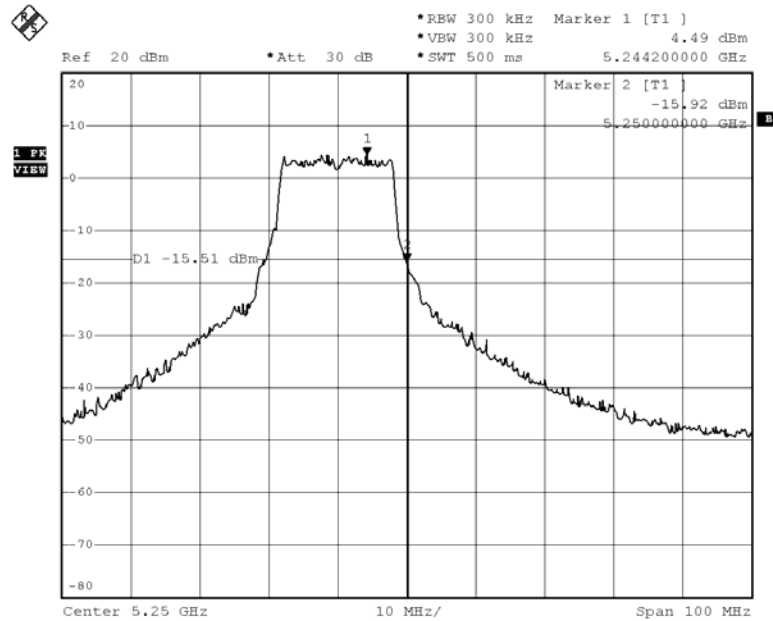
Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

Product : Mobile Clinical Assistant C5  
 Test Item : Band Edge (20dB Emission)  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11a-Intel:WM3945ABG (5240MHz)

**RF Conduction Measurement:**

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
4	< 5250	>20	Pass

**Figure Channel 4:**



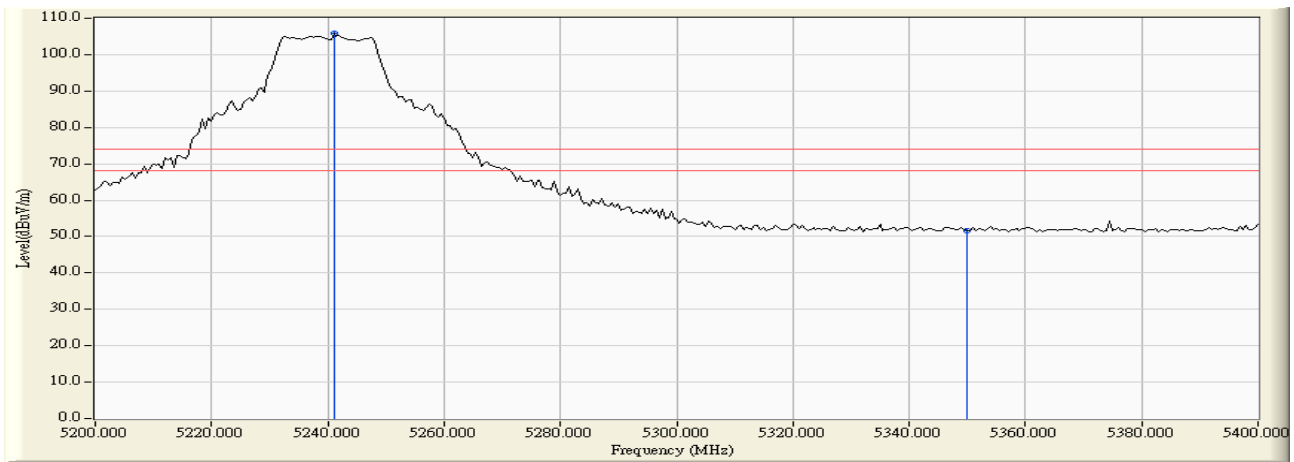
PN1  
 Date: 21.JUN.2007 17:11:01

Product : Mobile Clinical Assistant C5  
 Test Item : Band Edge  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11a-Intel:WM3945ABG (5240MHz)

**RF Radiated Measurement (Horizontal):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
4 (Peak)	5350.000	4.446	47.255	51.701	74.00	54.00	Pass
4 (Average)	--	--	--	--	74.00	54.00	Pass

**Figure Channel 4: Horizontal (Peak)**



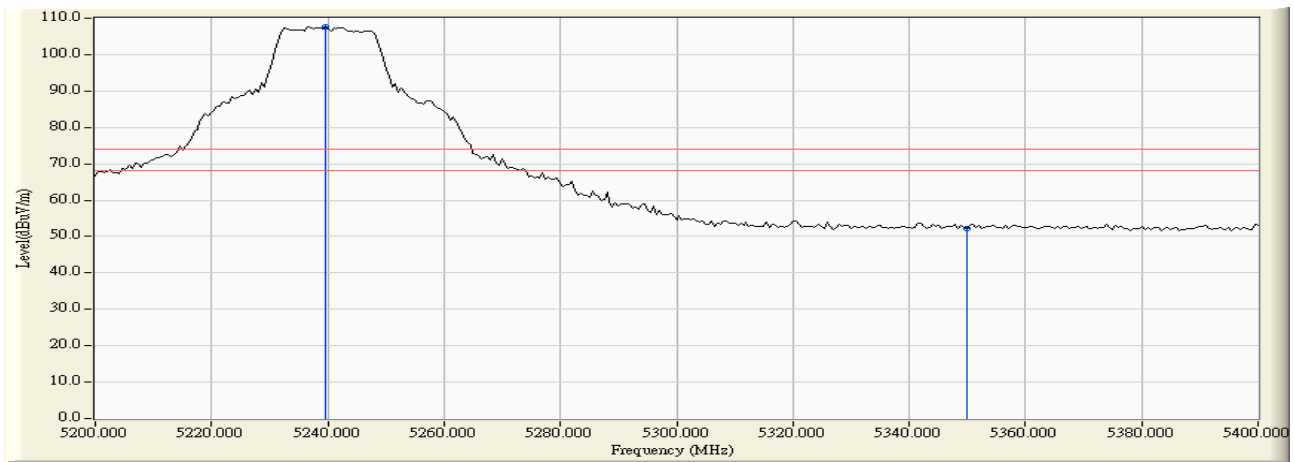
Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

Product : Mobile Clinical Assistant C5  
 Test Item : Band Edge  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11a-Intel:WM3945ABG (5240MHz)

**RF Radiated Measurement (Vertical):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
4 (Peak)	5350.000	4.446	47.849	52.295	74.00	54.00	Pass
4 (Average)	--	--	--	--	74.00	54.00	Pass

**Figure Channel 4: Vertical (Peak)**



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

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.

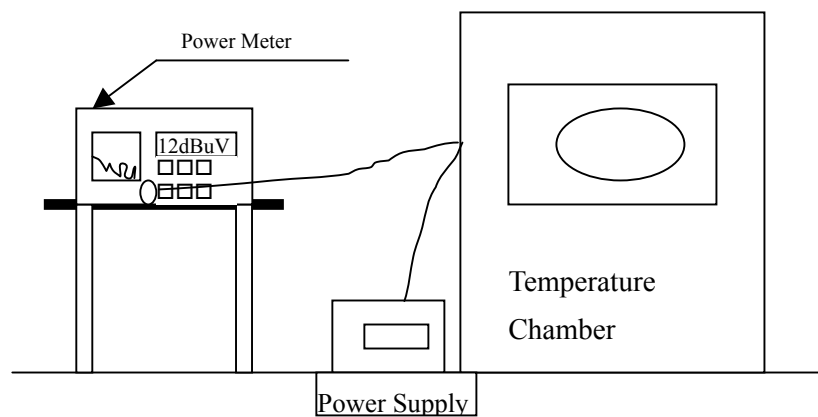
## 8. Frequency Stability

### 8.1. Test Equipment

Equipment	Manufacturer	Model No./Serial No.	Last Cal.	Remark
Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2007	
Temperature Chamber	WIT GROUP	TH-1S-B / WIT-02121901	June, 2006	

Note: All equipments are calibrated every one year.

### 8.2. Test Setup



### 8.3. Limits

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified

### 8.4. Uncertainty

± 150 Hz



### 8.5. Test Result of Frequency Stability

Product : Mobile Clinical Assistant C5  
 Test Item : Frequency Stability  
 Test Site : Temperature Chamber  
 Test Mode : Mode 1: Transmitter 802.11a-Intel:WM3945ABG

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	$\Delta F$ (MHz)
Tnom (20) °C	Vnom (120)V	1	5180.00	5179.995	0.01
		3	5220.00	5219.995	0.01
		4	5240.00	5239.995	0.01
Tnom (50) °C	Vnom (102)V	1	5180.00	5179.995	0.01
		3	5220.00	5219.995	0.01
		4	5240.00	5239.995	0.01
Tnom (50) °C	Vnom (138)V	1	5180.00	5179.995	0.01
		3	5220.00	5219.995	0.01
		4	5240.00	5239.995	0.01
Tnom (0) °C	Vnom (102)V	1	5180.00	5179.995	0.01
		3	5220.00	5219.995	0.01
		4	5240.00	5239.995	0.01
Tnom (0) °C	Vnom (138)V	1	5180.00	5179.995	0.01
		3	5220.00	5219.995	0.01
		4	5240.00	5239.995	0.01

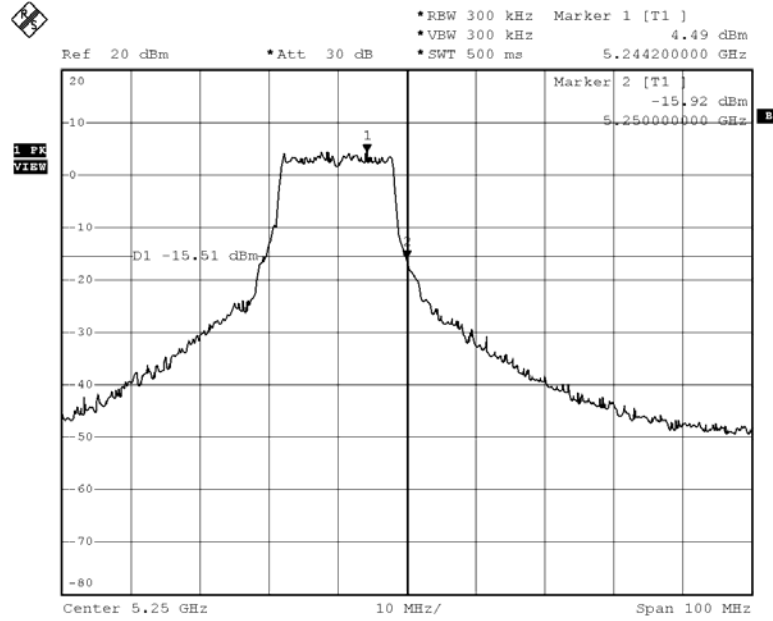
## 9. EMI Reduction Method During Compliance Testing

No modification was made during testing.

Attachment : Test data of verify

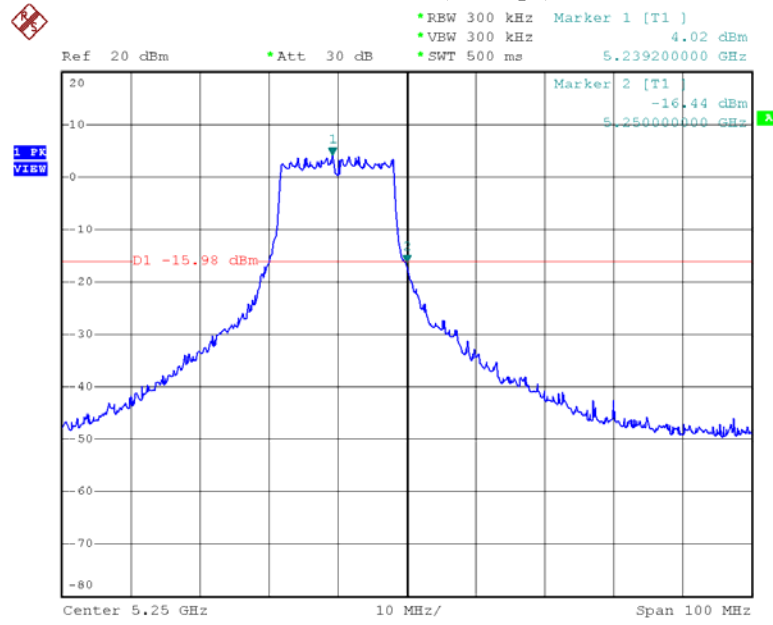
QTK verify all data rates. To append down, middle, high data rates picture. pls see below photo for reference.

Down (6Mbps) Report data



PN1  
Date: 21.JUN.2007 17:11:01

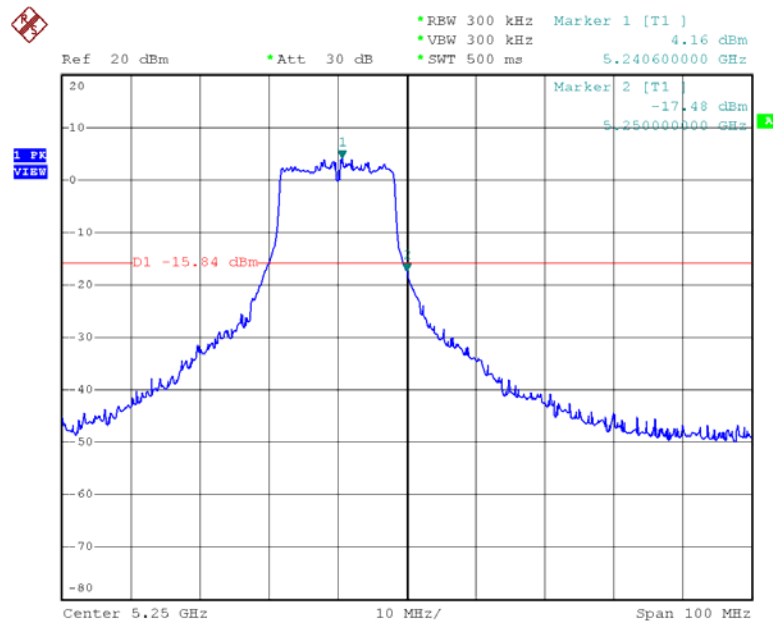
### Middle (24Mbps)



PN1

Date: 22.JUN.2007 13:30:32

### High (54Mbps)

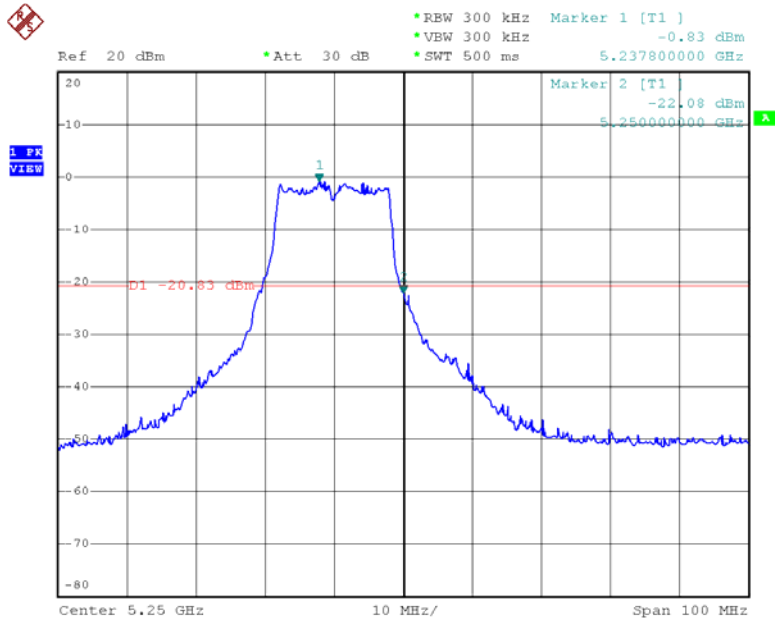


PN1

Date: 22.JUN.2007 13:28:26

We don't change the power, even we change the power to perform test, the result is still the same. Reducing power won't influence test data.

### Power down 5dB



PN1

Date: 22.JUN.2007 13:34:32