



Test Report

Product Name	Tablet PC
Model No.	T10Y
FCC ID	FKGMPCT0168

Applicant	Twinhead International Corp.
Address	10F, 550 Rueiguang Road Neihu, Taipei, Taiwan 114, R.O.C.

Date of Receipt	May. 27, 2008
Issued Date	July. 21, 2008
Report No.	086028R-RFUSP10V01
Version	V1.0

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: July. 21, 2008

Report No.: 086028R-RFUSP10V01



Product Name	Tablet PC
Applicant	Twinhead International Corp.
Address	10F, 550 Rueiguang Road Neihu, Taipei, Taiwan 114, R.O.C.
Manufacturer	Twinhead International Corp.
Model No.	T10Y
FCC ID.	FKGMPCT0168
Rated Voltage	AC 120V/60Hz
Working Voltage	DC 5V
Trade Name	DigiHeal
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2007 ANSI C63.4: 2003
Test Result	Complied



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Documented By : Genie Chang
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Tested By : Molin Huang
(Engineer / Molin Huang)



Approved By : Vincent Lin
(Manager / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Tablet PC
Trade Name	DigiHeal
Model No.	T10Y
FCC ID	FKGMPCT0168
Frequency Range	13.56MHz
Channel Control	N/A
Antenna Type	Loop
Power Adapter	MFR: LI SHIN, M/N: 0335A2065 Cable out: Non-Shielded, 1.8m with one ferrite core bonded. Power Cord: Shielded, 1.5m

Frequency of Each Channel:

Channel	Frequency
Channel 1:	13.56 MHz

Note:

1. This device is a Tablet PC with a built-in 13.56MHz transmitter.
2. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.225 for spread spectrum devices.
3. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

1.2. Operational Description

EUT is a Tablet PC with a built-in 13.56MHz transceiver with ASK modulation. The signal will be transmitted through 13.56 MHz ASK RF signal from the Connector antenna from EUT to receiver.

Test Mode	Mode 1: Transmitter
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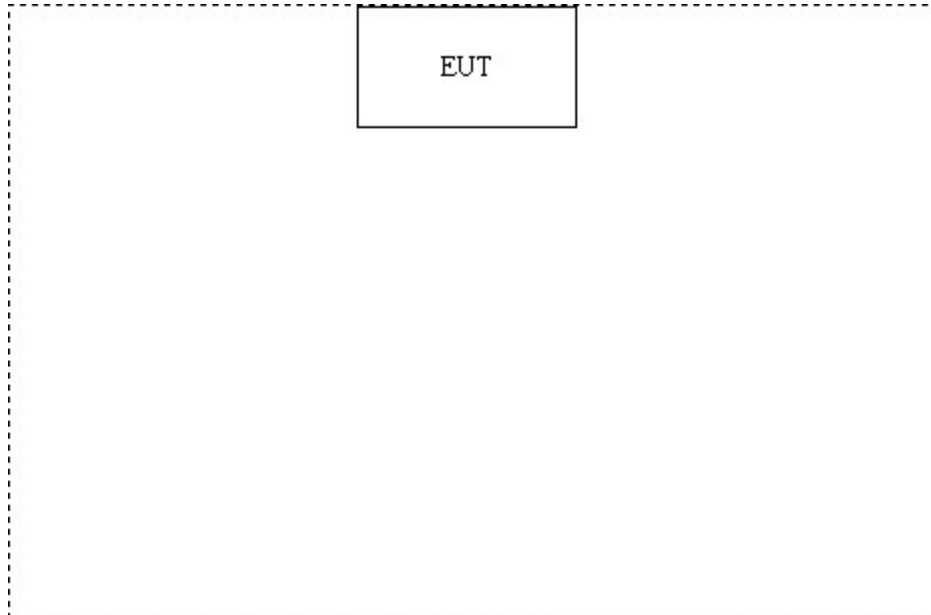
1.3. Tested System Details

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) N/A	N/A	N/A	N/A	N/A

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

1.4. Configuration of tested System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown in Section 1.4
- (2) Execute RF ID Software on the EUT.
- (3) Configure the test mode, the test channel, and the data rate.
- (4) Press “OK” to start the continuous transmitter.
- (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
 Registration Number: 92195



Accreditation on NVLAP
 NVLAP Lab Code: 200533-0



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

FCC Accreditation Number: TW1014



2. Conducted Emission

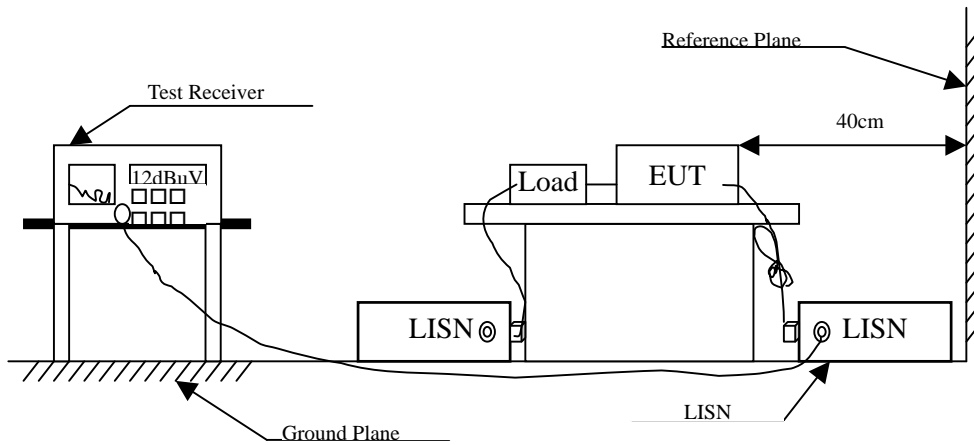
2.1. Test Equipment

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, 2008	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 2008	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 2008	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	May, 2008	
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 _(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: 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 : Tablet PC
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 1: Transmitter

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
LINE 1					
Quasi-Peak					
0.193	9.821	28.800	38.621	-26.150	64.771
0.287	9.830	19.540	29.370	-32.716	62.086
0.517	9.820	27.590	37.410	-18.590	56.000
0.752	9.830	15.570	25.400	-30.600	56.000
1.080	9.830	14.590	24.420	-31.580	56.000
16.298	10.190	16.960	27.150	-32.850	60.000
Average					
0.193	9.821	18.990	28.811	-25.960	54.771
0.287	9.830	11.720	21.550	-30.536	52.086
0.517	9.820	25.690	35.510	-10.490	46.000
0.752	9.830	12.030	21.860	-24.140	46.000
1.080	9.830	9.710	19.540	-26.460	46.000
16.298	10.190	11.250	21.440	-28.560	50.000

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 : Tablet PC
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 1: Transmitter

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level	dB	dBuV
	dB	dBuV	dBuV		
LINE 2					
Quasi-Peak					
0.185	9.861	31.410	41.271	-23.729	65.000
0.330	9.850	21.670	31.520	-29.337	60.857
0.513	9.830	27.750	37.580	-18.420	56.000
0.658	9.830	16.790	26.620	-29.380	56.000
0.986	9.830	12.950	22.780	-33.220	56.000
17.314	10.220	15.860	26.080	-33.920	60.000
Average					
0.185	9.861	23.120	32.981	-22.019	55.000
0.330	9.850	18.590	28.440	-22.417	50.857
0.513	9.830	22.020	31.850	-14.150	46.000
0.658	9.830	13.710	23.540	-22.460	46.000
0.986	9.830	7.830	17.660	-28.340	46.000
17.314	10.220	10.330	20.550	-29.450	50.000

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. Radiated Emission

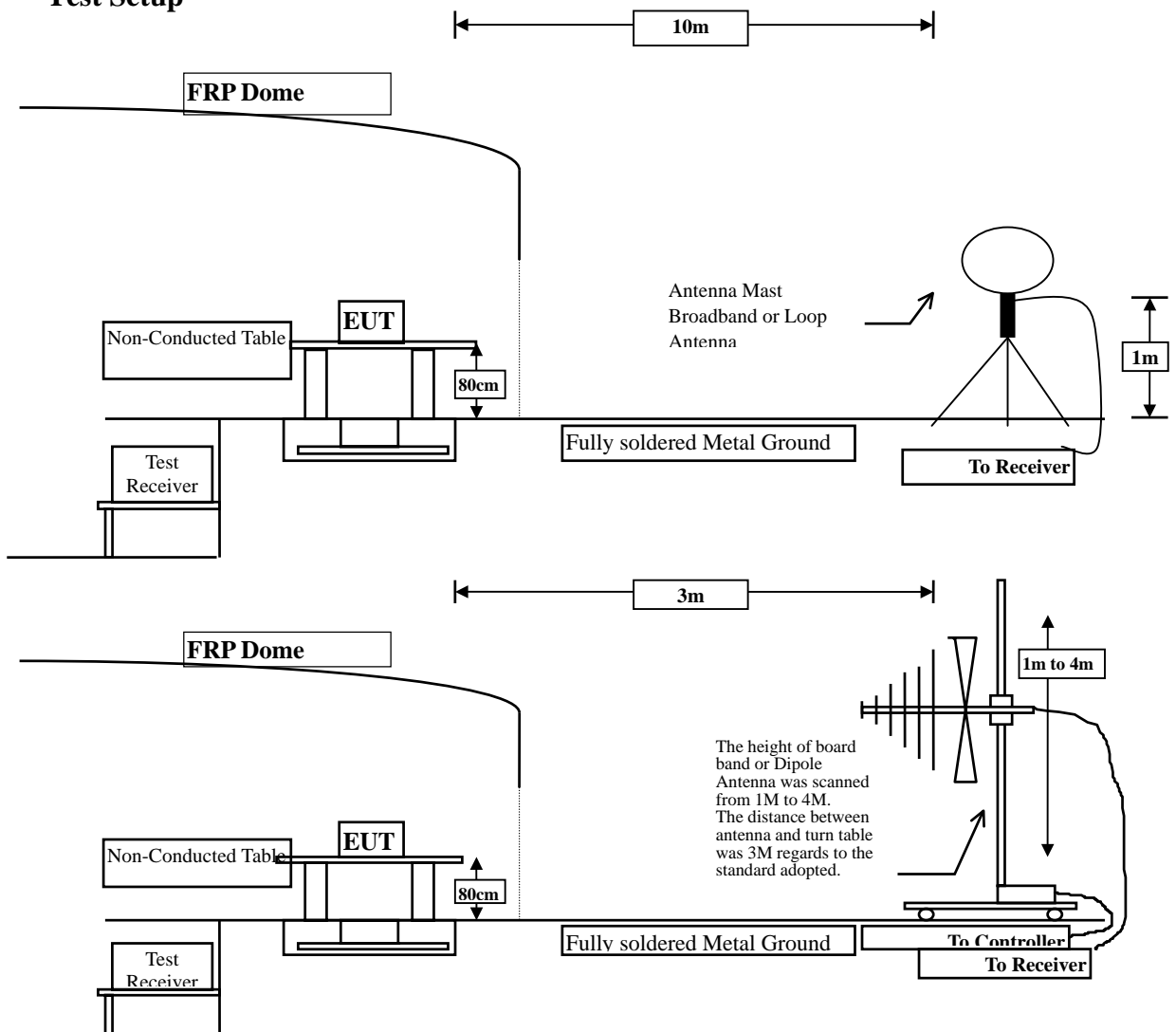
3.1. Test Equipment

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, 2008
	X Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
	X Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2008
	X Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2008
	X Horn Antenna	ETS	3115 / 0005-6160	July, 2008
	X Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2008
	X Loop Antenna	R & S	HFH2-Z2/833799/004	July, 2008

- 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



3.3. Limits

➤ Fundamental electric field strength Limit

FCC Part 15 Subpart C Paragraph 15.225 Limits				
Fundamental Frequency MHz	Field strength of fundamental			
	uV/m	Distance (meter)	dBuV/m	Distance (meter)
13.553 – 13.567	15848	30	103.08	10
13.410 – 13.553 and 13.567 – 13.710	334	30	79.55	10
13.110 – 13.410 and 13.710 – 14.010	106	30	59.58	10
Outside of the 13.110 – 14.010	See 15.209 Limits			

- Remarks :
1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
 2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
 3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

➤ Spurious electric field strength Limit

FCC Part 15 Subpart C Paragraph 15.209 Limits			
Frequency MHz	uV/m	dBuV/m	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	See Remark ¹	300
0.490-1.705	24000/F(kHz)	See Remark ¹	30
1.705-30	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

- 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.

3.4. Test Procedure

Fundamental electric field strength:

The EUT and its simulators are placed on a turn table which is 1 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum electric field strength.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna which is 1 meter above ground. All X-axis, Y-axis and Z-axis polarization of the antenna are set on measurement.

Spurious electric field strength:

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

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 on radiated measurement.

On any frequency the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

The bandwidth below 30MHz setting on the field strength meter is 9kHz and above 30MHz is 120kHz.

3.5. Uncertainty

± 2.6 dB below 30MHz

± 3.8 dB above 30MHz

3.6. Test Result of Radiated Emission

Product : Tablet PC
 Test Item : Fundamental Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
X-LINE					
Quasi-Peak					
13.560	20.520	44.430	64.950	-38.13	103.08
Y-LINE					
Quasi-Peak					
13.560	20.520	43.640	64.160	-38.92	103.08
Z-LINE					
Quasi-Peak					
13.560	20.520	19.080	39.600	-63.48	103.08

Note:

1. All Readings below 1GHz are Quasi-Peak, above are average value.
2. Measurement Level = Reading Level + Correct Factor.
3. 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.

CH 1-Fundamental-X

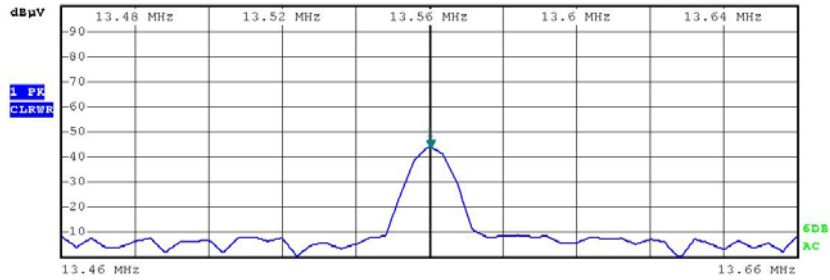


Att 10 dB RBW 9 kHz
MT 100 ms
PREAMP OFF

FREQUENCY	13.5600000 MHz		
LEVEL	PK+	44.53	dBµV
	QPK	44.43	dBµV
	AV	44.38	dBµV



Marker 1 [T1]
44.33 dBµV
13.56000000 MHz



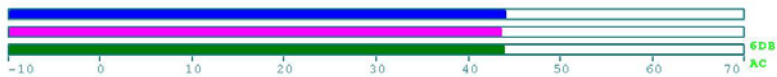
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CH 1-Fundamental-Y

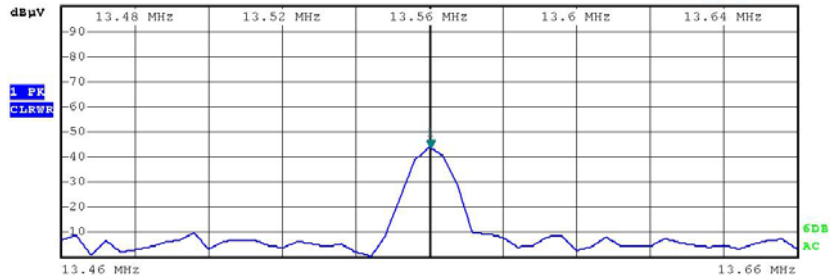


Att 10 dB RBW 9 kHz
MT 100 ms
PREAMP OFF

FREQUENCY	13.5600000 MHz		
LEVEL	PK+	44.09	dBµV
	QPK	43.64	dBµV
	AV	43.30	dBµV



Marker 1 [T1]
43.91 dBµV
13.56000000 MHz



Date: 2.JUL.2008 17:45:06

CH 1-Fundamental-Z



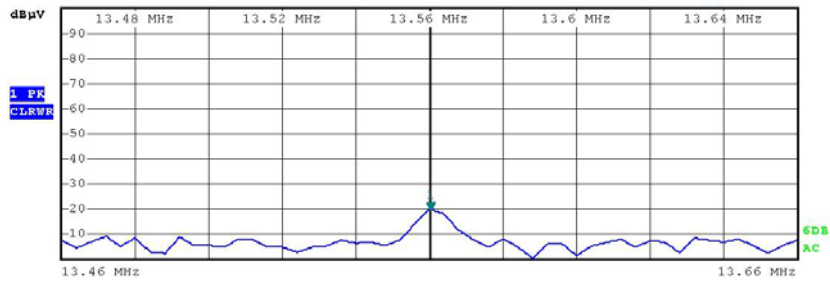
Att 10 dB

RBW 9 kHz
MT 100 ms
PREAMP OFF

FREQUENCY	13.5600000 MHz		
LEVEL PK+	20.96	dB μ V	
QPK	19.08	dB μ V	
AV	18.49	dB μ V	



Marker 1 [T1]
20.01 dB μ V
13.56000000 MHz



Date: 2.JUL.2008 17:44:09

Product : Tablet PC
 Test Item : General Radiated Emission Data (below 30MHz)
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level	dB	dBuV/m
	dB	dBuV	dBuV/m		
5.336	20.720	10.154	30.874	-17.748	48.622
6.789	20.690	7.464	28.154	-20.468	48.622
10.574	20.598	15.640	36.238	-12.384	48.622
14.320	20.500	7.390	27.890	-20.732	48.622

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.

Product : Tablet PC
 Test Item : General Radiated Emission Data (above 30MHz)
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
QP Detector					
39.700	15.043	14.037	29.080	-10.920	40.000
94.020	12.699	17.038	29.737	-13.763	43.500
229.820	12.823	20.760	33.583	-12.417	46.000
338.460	17.114	23.380	40.494	-5.506	46.000
460.680	21.565	19.587	41.152	-4.848	46.000
800.180	26.196	10.762	36.958	-9.042	46.000
Vertical					
QP Detector					
39.700	13.928	19.981	33.909	-6.091	40.000
121.180	13.069	21.441	34.510	-8.990	43.500
400.540	21.053	14.189	35.242	-10.758	46.000
901.040	28.415	6.993	35.408	-10.592	46.000
926.280	28.946	8.148	37.094	-8.906	46.000
951.500	28.377	7.341	35.718	-10.282	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. Band Edge

4.1. Test Equipment

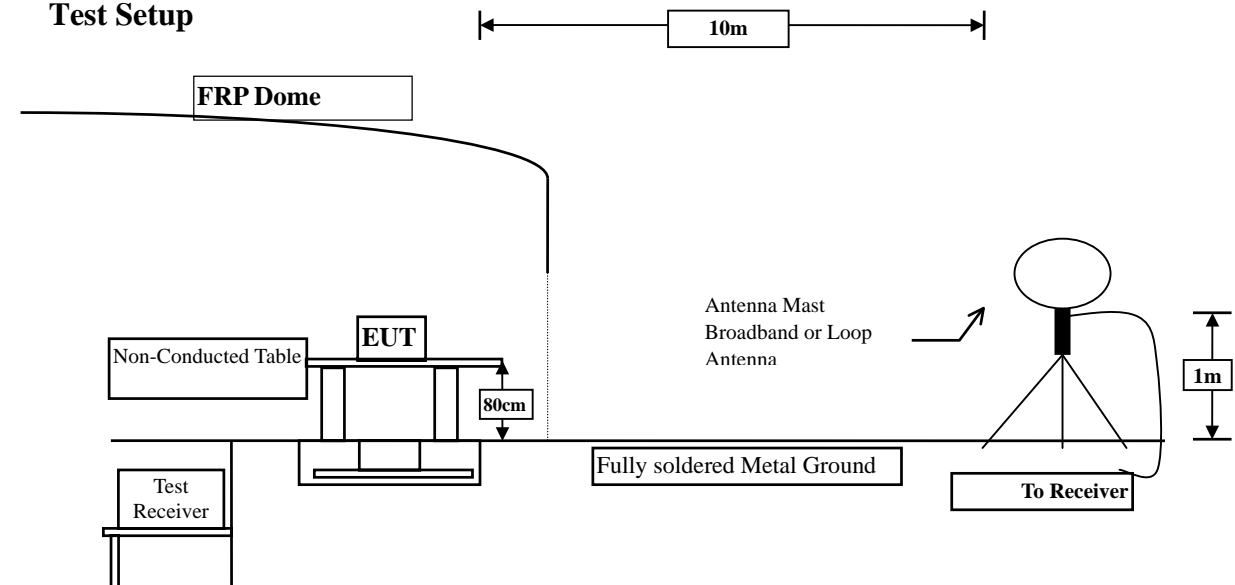
The following test equipments are used during the band edge tests:

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2008
X Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
X Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2008
X Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2008
X Horn Antenna	ETS	3115 / 0005-6160	July, 2008
X Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2008
X Loop Antenna	R & S	HFH2-Z2/833799/004	July, 2006

Test Site: Site 3

- 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

In any 9 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 50 dB below that in the 9 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)).

4.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The 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 on radiated measurement.

The bandwidth below 30MHz setting on the field strength meter is 9kHz and above 30MHz is 120kHz.

4.5. Uncertainty

Radiated is ± 2.6 dB

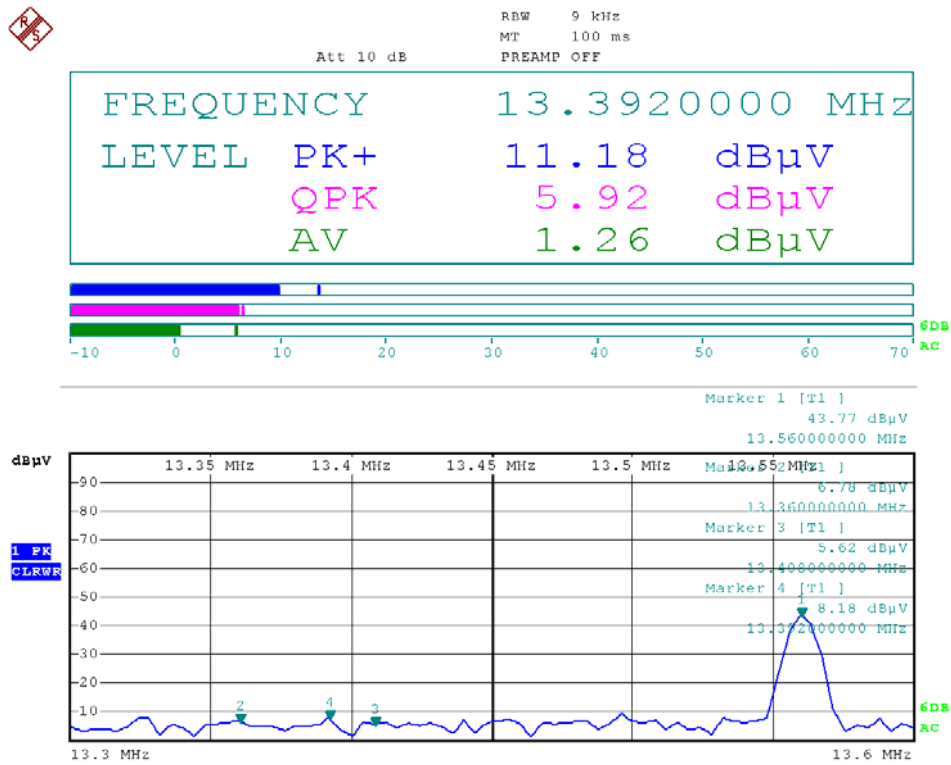
4.6. Test Result of Band Edge

Product : Tablet PC
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter

RF Radiated Measurement :

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	QP Limit (dBuV/m)	Result
1 (Quasi-Peak)	13.392	20.530	5.920	26.450	48.622	Pass

Figure Channel 1: (Band Edge Data see mark 4)



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5. Occupied Bandwidth

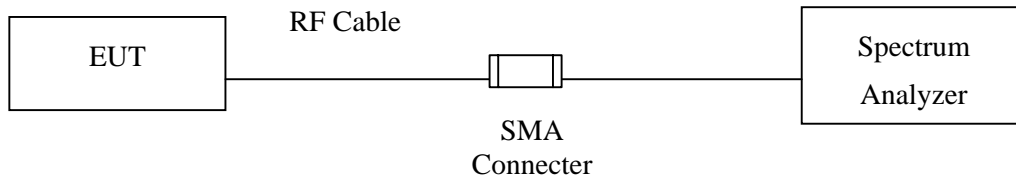
5.1. Test Equipment

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

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
X Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2008

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



5.3. Limits

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section under which the equipment is operated.

The requirement to contain the 20 dB bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

5.4. Uncertainty

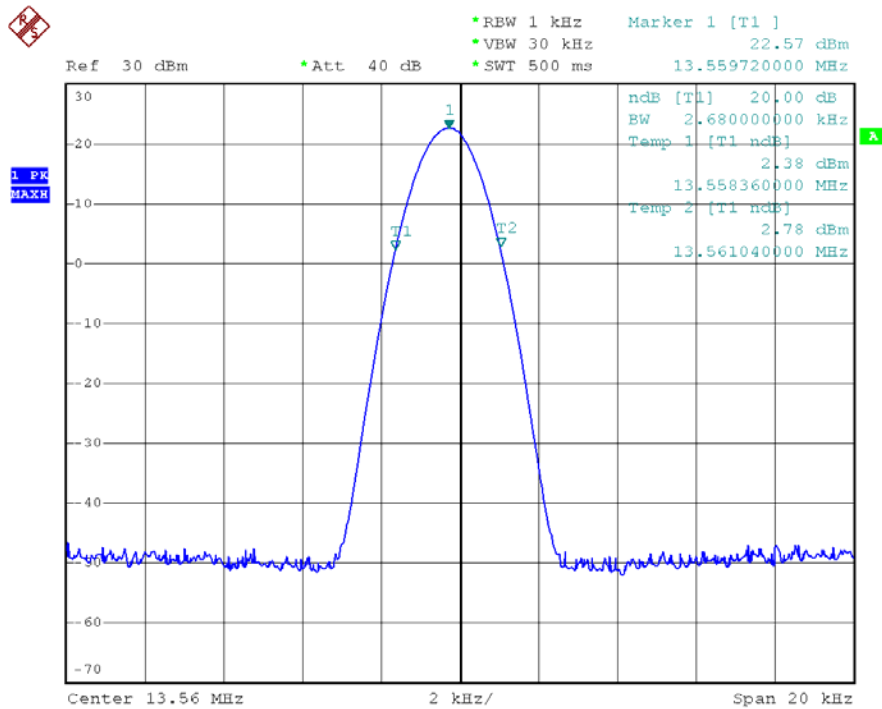
± 150Hz

5.5. Test Result of Occupied Bandwidth

Product : Tablet PC
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1	13.56	2.68	--	Pass

Figure Channel 1:



FN1
 Date: 15.MAY.2007 08:30:57

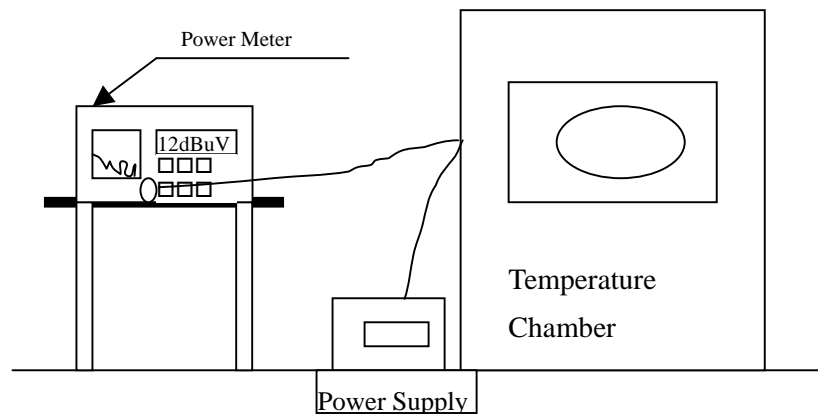
6. Frequency Tolerance

6.1. Test Equipment

Equipment	Manufacturer	Model No./Serial No.	Last Cal.	Remark
Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008	
Temperature Chamber	WIT GROUP	TH-1S-B / WIT-02121901	June, 2008	

Note: All equipments are calibrated every one year.

6.2. Test Setup



6.3. Limits

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency.

6.4. Test Procedure

The over operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

6.5. Uncertainty

± 150 Hz

6.6. Test Result of Frequency Stability

Product : Tablet PC
 Test Item : Frequency Tolerance
 Test Site : Temperature Chamber
 Test Mode : Mode 1: Transmitter

Test Conditions		Channel	Frequency (MHz)	Reading Frequency (MHz)	Limit
Tnom (20) °C	Vnom (120)V	01	13.56	13.5605	13.4244~13.6956MHz
Tmax (50) °C	Vnax (136.5)V	01	13.56	13.5605	13.4244~13.6956MHz
Tmax (50) °C	Vmin (103.5)V	01	13.56	13.5605	13.4244~13.6956MHz
Tmin (-20) °C	Vnax (136.5)V	01	13.56	13.5605	13.4244~13.6956MHz
Tmin (-20) °C	Vmin (103.5)V	01	13.56	13.5605	13.4244~13.6956MHz

Note: Limit=15.56 * (±) 0.01% = 13.4244~13.6956MHz

7. EMI Reduction Method During Compliance Testing

No modification was made during testing.