Test Report

Product Name ： Digitizer PEN
Model No. ： W3A-030 PEN
FCC ID. ： UBBW3APEN

Applicant ： WALTOP International Corp.
Address ： 6F,No.19-1 Industry E.Rd.IV,Hsinchu Science Park,Hsin-Chu 30077,Taiwan,R.O.C.

Date of Receipt ： 2008/11/14
Issued Date ： 2008/12/12
Report No. ： 08B214R-RFUSP02V01
Version ： V1.0

Test Report Certification

Issued Date : 2008/12/12
Report No. : 08B214R-RFUSP02V01

Product Name	: Digitizer PEN
Applicant	: WALTOP International Corp.
Address	: 6F,No.19-1 Industry E.Rd.IV,Hsinchu Science Park,Hsin-Chu 30077,Taiwan,R.O.C.
Manufacturer	: Shanghai Hank wireless Co., Ltd
Model No.	: W3A-030 PEN
FCC ID.	: UBBW3APEN
Rated Voltage	: AC 120V / 60Hz
Trade Name	: WALTOP
Applicable Standard	: FCC CFR Title 47 Part 15 Subpart C 15.209: 2007
Test Result	: Complied

The test results relate only to the samples tested.
The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

Documented By : Sandy Chuang
(Sandy Chuang / Engineering Adm. Assistant)

Reviewed By : Halu Chung
(Halu Chung / Engineer)

Approved By : Roy Wang
(Roy Wang / Manager)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Digitizer PEN
Trade Name	WALTOP
Model No.	W3A-030 PEN
FCC ID	UBBW3APEN
EUT Voltage	DC 1.5V
Frequency Range	130~169kHz
Channel Number	1

Frequency of Each Channel:

Channel	Frequency
Channel 1:	135kHz

Channel	Frequency
Channel 2:	168kHz

Note:

1. This device is a 130~169kHz device included a 168KHz transmitting function.
2. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.209.

1.3. Test Mode

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

Pre-Test Mode	
TX	Mode1: Transmit
Final Test Mode	
TX	Mode1: Transmit

Emission	
Performed Item	Test
Conducted Emission	Yes
Radiated Emission	Yes

1.4. Tested System Details

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

N/A

1.5. Configuration of tested System

Test Mode	Mode1: Transmit
Connection Diagram	

1.6. EUT Exercise Software

Test Mode		Mode 1: Transmit
1	Setup the EUT and simulators as shown on 1.5.	
2	Enable RF signal and confirm EUT active.	
3	Modulate output capacity of EUT up to specification.	

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	ANSI.C63.4 CE	15 - 35	25
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	ANSI.C63.4 RE	15 -35	25
Humidity (%RH)		25 - 75	45
Barometric pressure (mbar)		860 - 1060	950-1000

Site Description:

August 30, 2007 File on
Federal Communications Commission
Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 365520

Accredited by TAF
Accreditation Number: 1313
Effective through: December 27, 2010

Testing Laboratory
0914

Accredited by NVLAP
NVLAP Lab Code: 200347-0
Effective through: September 30, 2009

NVLAP Lab Code : 200347-0

Site Name: Quietek Corporation

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

2. Conducted Emission

2.1. Test Equipment

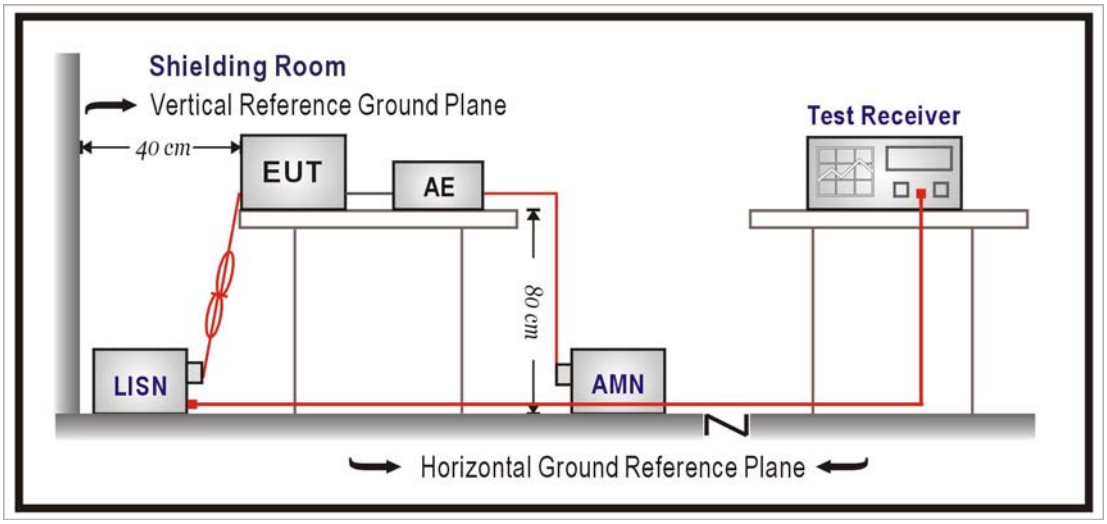
The following test equipment are used during the test:

Conducted Emission / SR2

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
4-Wire ISN	R & S	ENY 41	837032/001	2008/04/15
Artificial Mains Network	R & S	ENV4200	848411/010	2008/03/13
Double 2-Wire ISN	R & S	ENY 22	835354/008	2008/04/15
LISN	R & S	ESH3-Z5	825562/002	2008/03/31
Pulse Limiter	R & S	ZSH3Z2	357.8810.54	2008/07/19
Test Receiver	R & S	ESCS 30	100122	2008/02/21

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 Limits (dBuV)		
Frequency MHz	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

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

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

2.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.207: 2007

2.6. Test Result

The power of the EUT is supplied by battery. This test is not performed.

3. Radiated Emission

3.1. Test Equipment

The following test equipment are used during the test:

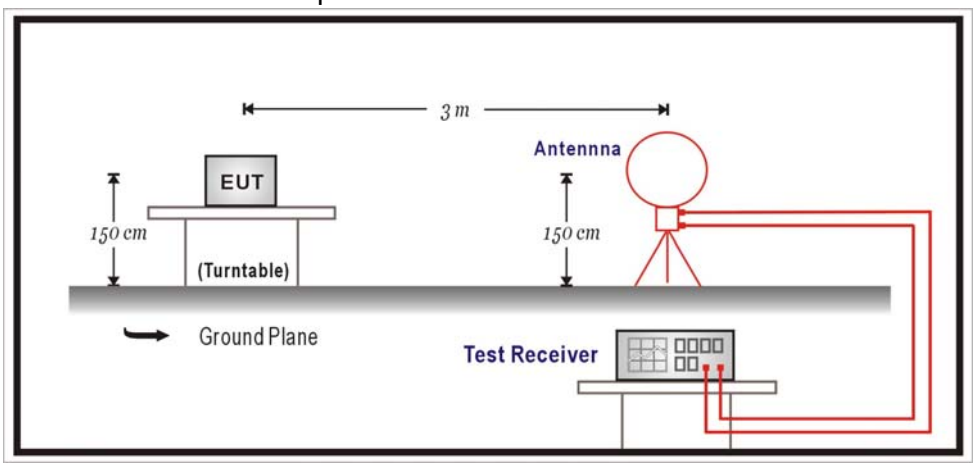
Radiated Emission / Site1

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Bilog Antenna	Schaffner Chase	CBL6112B	2895	2008/09/03
Horn Antenna	Electro Metrics	EM-6961	103325	2008/03/15
Pre-Amplifier	HP	8449B	3008A01123	2008/11/15
Pre-Amplifier	Quietek	AP-025C	N/A	N/A
Spectrum Analyzer	R & S	FSP40	100005	2008/08/25
Spectrum Analyzer	Advantest	R3162	120300649	2008/11/24
Test Receiver	R & S	ESCS 30	825442/017	2008/02/13

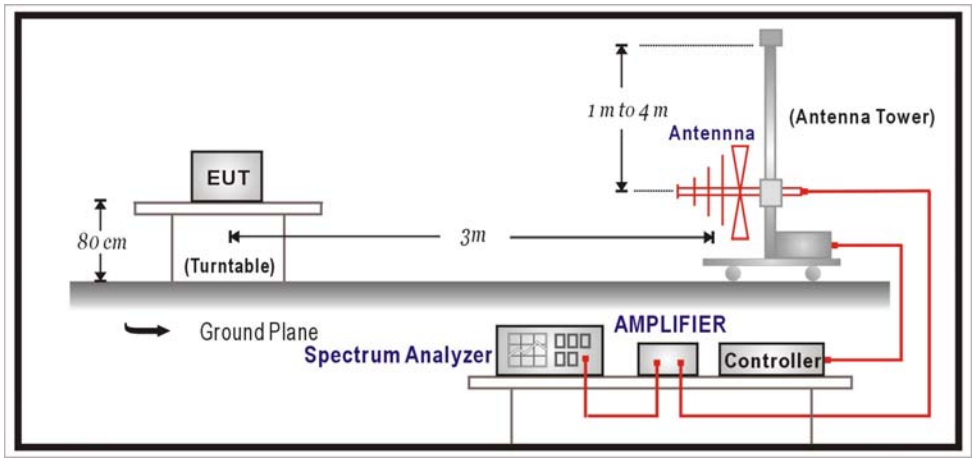
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.
2. Mark “X” test instruments are used to measure the final test results.

3.2. Test Setup

Under 30MHz Test Setup:



Under 1GHz Test Setup:



3.3. Limits

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	29.54	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.
4. When the very low emission of EUT, the 3m measurement distance was performed. Regards to an inverse linear extrapolation 40dB/dec is adopted.

3.4. Test Procedure

Under 30MHz Test:
The EUT and its simulators are placed on a turn table which is 1.0 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 1.0 meter above ground. All X-axis, Y-axis and Z-axis polarization of the antenna are set on measurement.
The emission limit shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000MHz. Radiated emission limit in these three bands are based on measurements employing an average detector.

Under 1GHz Test:

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 C63.4:2003 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. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.209: 2007

3.6. Test Result

Product	Digitizer PEN		
Test Item	Radiated Emission		
Test Mode	Mode 1: Transmit		
Date of Test	2008/11/17	Test Site	No.1 OATS

Horizontal

W3A-030				
Frequency	Cable Loss	Reading Level	Emission Level	QP Limit
MHz	dB	dBuV	dBuV/m	dBuV/m
X-axis				
0.168	0.29	49.10	49.39	103.10
Y-axis				
0.168	0.29	48.95	49.24	103.10
Z-axis				
0.168	0.29	41.30	41.59	103.10

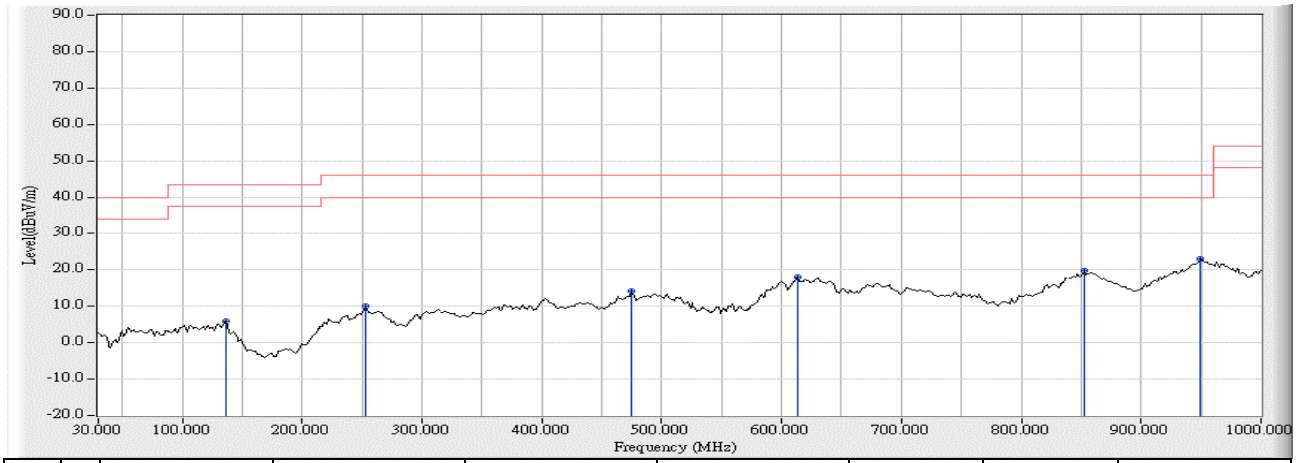
W3A-030 (X-axis)				
Frequency	Cable Loss	Reading Level	Emission Level	QP Limit
MHz	dB	dBuV	dBuV/m	dBuV/m
0.504	0.29	26.75	27.04	83.10
5.714	0.29	26.28	26.57	69.54
9.743	0.29	25.37	25.66	69.54
18.146	0.29	26.30	26.59	69.54
20.496	0.29	25.26	25.55	69.54
25.367	0.29	25.08	25.37	69.54

Vertical

W3A-030				
Frequency	Cable Loss	Reading Level	Emission Level	QP Limit
MHz	dB	dBuV	dBuV/m	dBuV/m
X-axis				
0.168	0.29	49.30	49.59	103.10
Y-axis				
0.168	0.29	49.20	49.49	103.10
Z-axis				
0.168	0.29	41.60	41.89	103.10

W3A-030 (X-axis)				
Frequency	Cable Loss	Reading Level	Emission Level	QP Limit
MHz	dB	dBuV	dBuV/m	dBuV/m
0.504	0.29	26.8	27.09	83.10
5.712	0.29	26.3	26.59	69.54
9.744	0.29	25.4	25.69	69.54
18.144	0.29	26.3	26.59	69.54
20.496	0.29	25.3	25.59	69.54
25.368	0.29	25.1	25.39	69.54

Site : Site 1	Time : 2008/12/12 14:57
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB3_FCC_30-1G(2008-9) - HORIZONTAL	Power : DC 1.5V
EUT : Digitizer PEN	Note : 135kHz

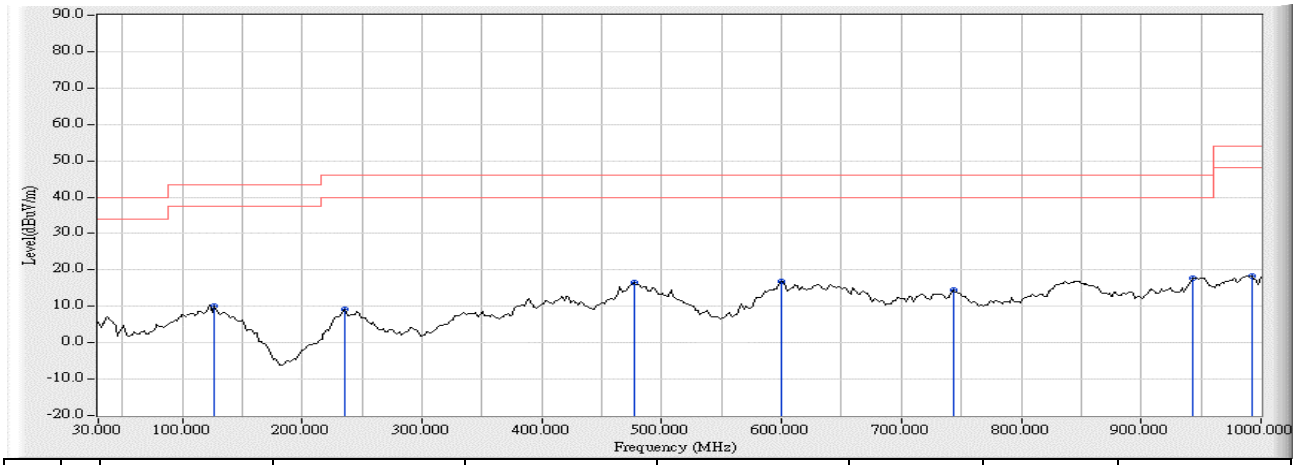


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		136.914	-44.451	50.314236	5.863	-37.637	43.500	PEAK
2		253.547	-40.894	50.743848	9.850	-36.150	46.000	PEAK
3		475.150	-35.233	49.398113	14.165	-31.835	46.000	PEAK
4		613.166	-31.675	49.849395	18.174	-27.826	46.000	PEAK
5		852.265	-30.437	50.231871	19.795	-26.205	46.000	PEAK
6	*	949.459	-26.640	49.739811	23.100	-22.900	46.000	PEAK

Note:

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

Site : Site 1	Time : 2008/12/12 15:13
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB3_FCC_30-1G(2008-9) - VERTICAL	Power : DC 1.5V
EUT : Digitizer PEN	Note : 135kHz

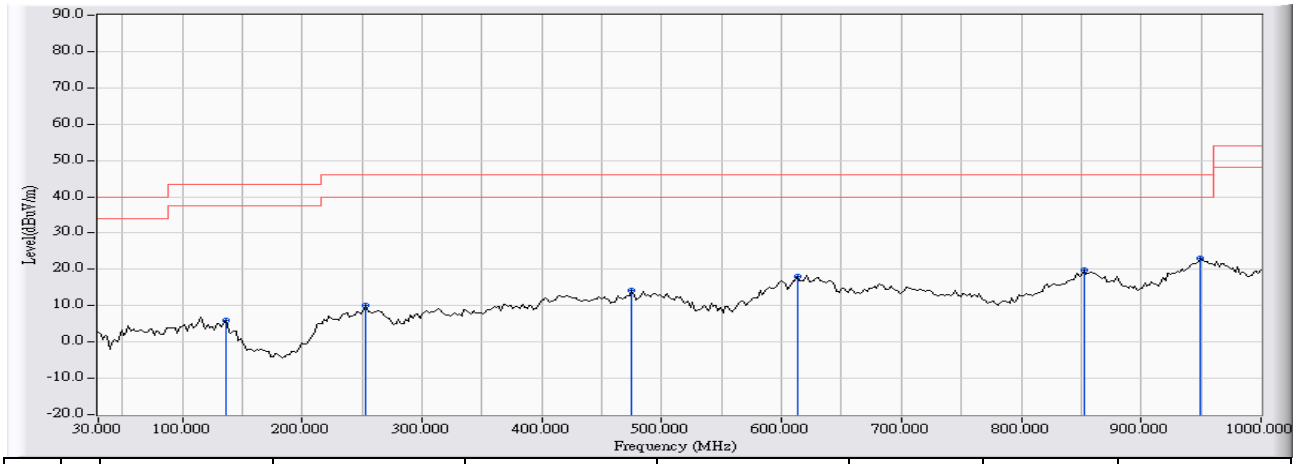


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		127.194	-39.720	49.759	10.039	-33.461	43.500	PEAK
2		236.052	-40.429	49.424	8.995	-37.005	46.000	PEAK
3		477.094	-32.476	48.531	16.055	-29.945	46.000	PEAK
4		599.559	-31.510	48.169	16.659	-29.341	46.000	PEAK
5		743.407	-35.200	49.680	14.480	-31.520	46.000	PEAK
6		943.627	-31.919	49.715	17.796	-28.204	46.000	PEAK
7	*	992.224	-30.678	49.164	18.486	-35.514	54.000	PEAK

Note:

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

Site : Site 1	Time : 2008/11/17 - 09:29
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB3_FCC_30-1G(2008-9) - HORIZONTAL	Power : DC 1.5V
EUT : Digitizer PEN	Note : 168kHz

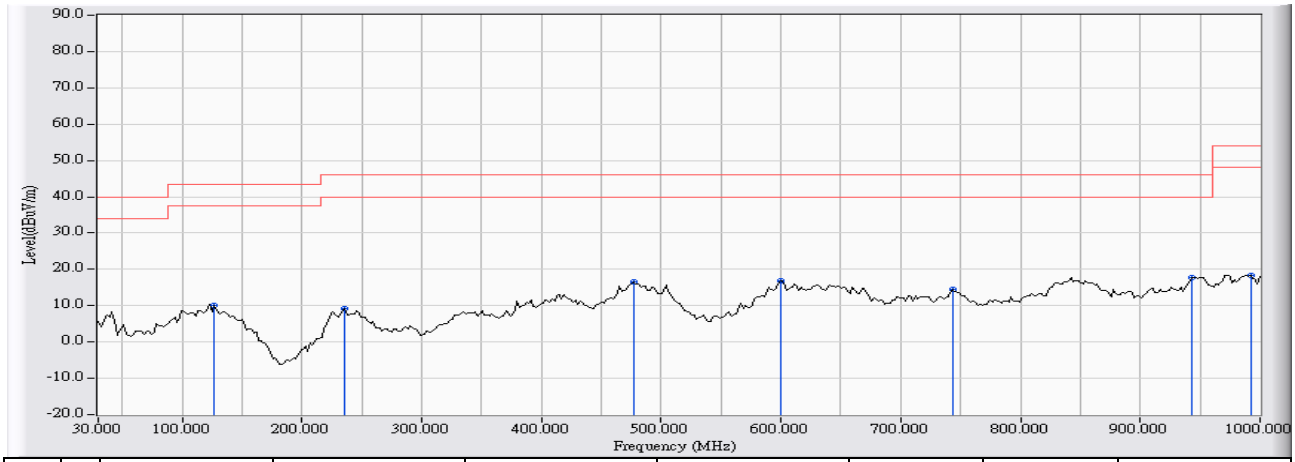


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		136.914	-44.451	50.411	5.960	-37.540	43.500	PEAK
2		253.547	-40.894	50.836	9.941	-36.059	46.000	PEAK
3		475.150	-35.233	49.553	14.319	-31.681	46.000	PEAK
4		613.166	-31.675	49.741	18.066	-27.934	46.000	PEAK
5		852.265	-30.437	50.374	19.937	-26.063	46.000	PEAK
6	*	949.459	-26.640	49.742	23.102	-22.898	46.000	PEAK

Note:

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

Site : Site 1	Time : 2008/11/17 - 09:33
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB3_FCC_30-1G(2008-9) - VERTICAL	Power : DC 1.5V
EUT : Digitizer PEN	Note : 168kHz



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		127.194	-39.720	49.856	10.135	-33.365	43.500	PEAK
2		236.052	-40.429	49.490	9.061	-36.939	46.000	PEAK
3		477.094	-32.476	48.940	16.465	-29.535	46.000	PEAK
4		599.559	-31.510	48.426	16.917	-29.083	46.000	PEAK
5		743.407	-35.200	49.563	14.363	-31.637	46.000	PEAK
6	*	943.627	-31.919	49.780	17.861	-28.139	46.000	PEAK
7		992.224	-30.678	49.154	18.476	-35.524	54.000	PEAK

Note:

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