



Test Report

Product Name : Digitizer PEN
Model No. : M3A-010 PEN
FCC ID. : UBBM3APEN

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 : 2008/11/18
Issued Date : 2008/12/17
Report No. : 08B289R-RFUSP02V01
Version : V1.0

The test results relate only to the samples tested.

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Test Report Certification

Issued Date : 2008/12/17

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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. : M3A-010 PEN

FCC ID. : UBBM3APEN

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.

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Documented By

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TABLE OF CONTENTS

Description	Page
1. GENERAL INFORMATION.....	4
1.1. EUT Description	4
1.2. Operational Description	5
1.3. Test Mode	6
1.4. Summary of Test Results.....	7
1.5. Tested System Details	7
1.6. Configuration of tested System	8
1.7. EUT Exercise Software.....	8
1.8. Test Facility	9
2. Radiated Emission	10
2.1. Test Equipment	10
2.2. Test Setup	10
2.3. Limits	11
2.4. Test Procedure	11
2.5. Test Specification	12
2.6. Test Result	13
2.7. Test Photo	21
Attachement.....	23
EUT Photograph	23

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Digitizer PEN
Trade Name	WALTOP
Model No.	M3A-010 PEN
FCC ID	UBBM3APEN
EUT Voltage	DC 1.5V
Frequency Range	130~169kHz
Channel Number	2

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 135KHz and 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
Radiated Emission	Yes

1.4. Summary of Test Results

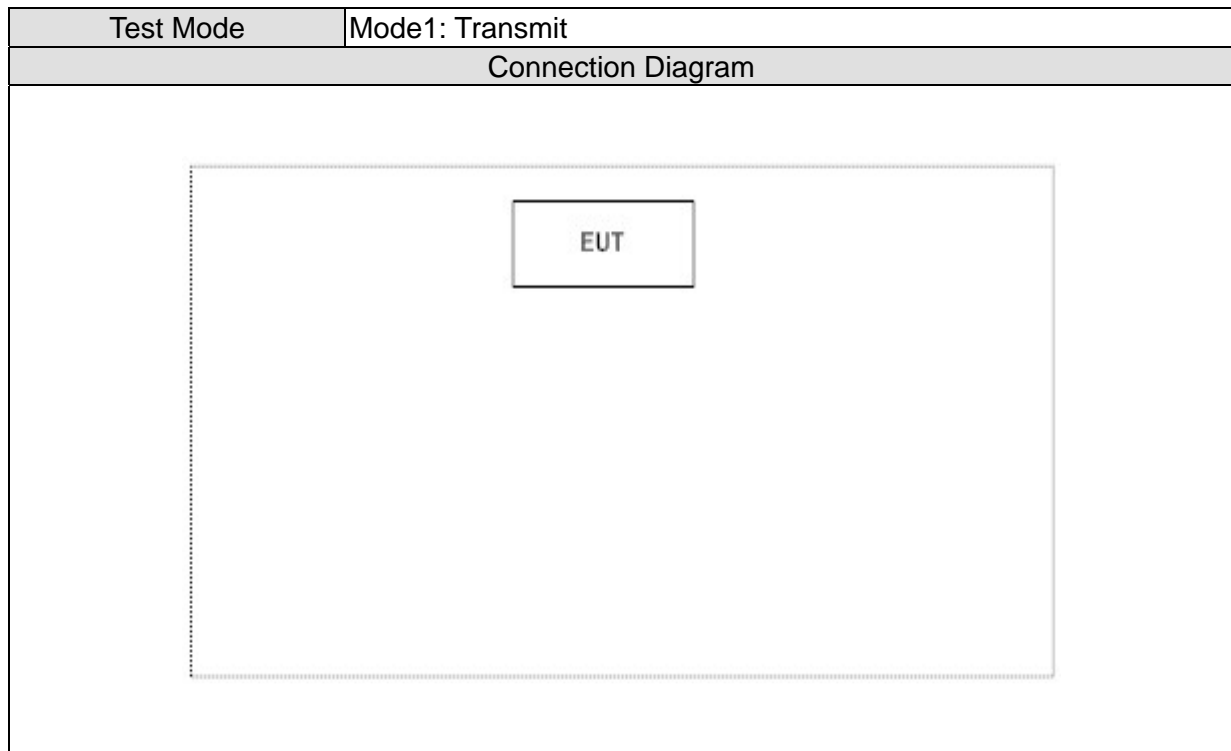
The EUT has been tested according to the following specifications:		
APPLIED STANDARD: FCC Part 15, Subpart C: 2007		
STANDARD SECTION	TEST ITEM AND LIMIT	RESULT
15.209(a)	Transmitter Radiated Emissions Limit: Table 15.209 (a)	PASS

1.5. Tested System Details

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

N/A

1.6. Configuration of tested System



1.7. EUT Exercise Software

Test Mode	Mode 1: Transmit
1	Setup the EUT and simulators as shown on 1.6.
2	Enable RF signal and confirm EUT active.
3	Modulate output capacity of EUT up to specification.

1.8. 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



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



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. Radiated Emission

2.1. Test Equipment

The following test equipment are used during the test:

Radiated Emission / Site1

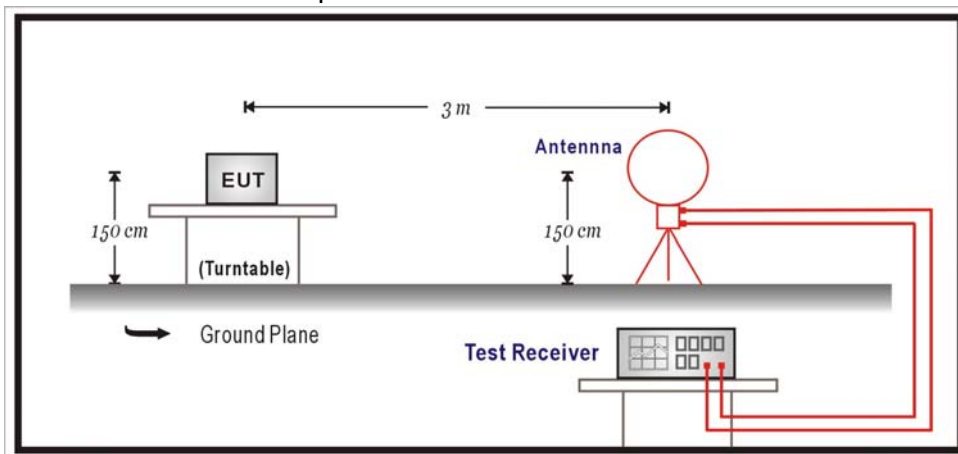
Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Bilog Antenna	Schaffner Chase	CBL6112B	2895	2008/09/03
Horn Antenna	Electro Metrics	EM-6961	103325	2008/03/15
Pre-Amplifier	HP	8449B	3008A01123	2008/11/15
Pre-Amplifier	Quietek	AP-025C	N/A	N/A
Spectrum Analyzer	R & S	FSP40	100005	2008/08/25
Spectrum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

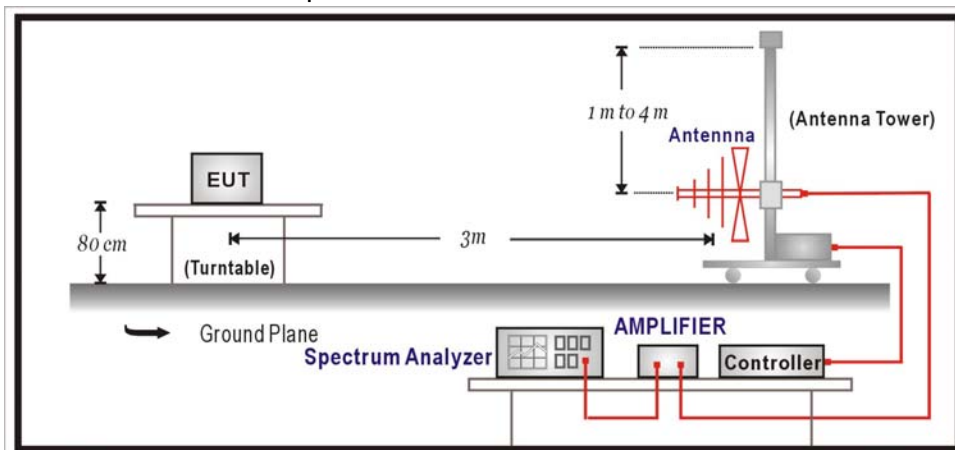
2. Mark "X" test instruments are used to measure the final test results.

2.2. Test Setup

Under 30MHz Test Setup:



Under 1GHz Test Setup:



2.3. 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.

2.4. 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.

2.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.209: 2007

2.6. Test Result

Product	Digitizer PEN			
Test Item	Radiated Emission			
Test Mode	Mode 1: Transmit			
Date of Test	2008/11/18	Test Site	No.1 OATS	

(135kHz)

M3A-010-HORIZONTAL				
Frequency	Cable Loss	Reading Level	Emission Level	QP Limit
MHz	dB	dBuV	dBuV/m	dBuV/m
X-axis				
0.135	0.29	48.3	48.59	103.10
Y-axis				
0.135	0.29	47.8	48.09	103.10
Z-axis				
0.135	0.29	39.1	39.39	103.10

M3A-010 (X-axis)-HORIZONTAL				
Frequency	Cable Loss	Reading Level	Emission Level	QP Limit
MHz	dB	dBuV	dBuV/m	dBuV/m
0.945	0.29	23.9	24.19	83.10
5.712	0.29	23.0	23.29	69.54
9.855	0.29	24.2	24.49	69.54
13.635	0.29	25.0	25.29	69.54
23.895	0.29	23.7	23.99	69.54
29.835	0.29	23.8	24.09	69.54

M3A-010-VERTICAL				
Frequency	Cable Loss	Reading Level	Emission Level	QP Limit
MHz	dB	dBuV	dBuV/m	dBuV/m
X-axis				
0.135	0.29	48.7	48.99	103.10
Y-axis				
0.135	0.29	48.2	48.49	103.10
Z-axis				
0.135	0.29	39.6	39.89	103.10

M3A-010 (X-axis)-VERTICAL				
Frequency	Cable Loss	Reading Level	Emission Level	QP Limit
MHz	dB	dBuV	dBuV/m	dBuV/m
0.945	0.29	25.2	25.49	83.10
5.712	0.29	25.9	26.19	69.54
9.855	0.29	24.6	24.89	69.54
13.635	0.29	26.3	26.59	69.54
23.895	0.29	26.3	26.59	69.54
29.835	0.29	24.1	24.39	69.54

Product	Digitizer PEN			
Test Item	Radiated Emission			
Test Mode	Mode 1: Transmit			
Date of Test	2008/11/18	Test Site	No.1 OATS	

(168kHz)

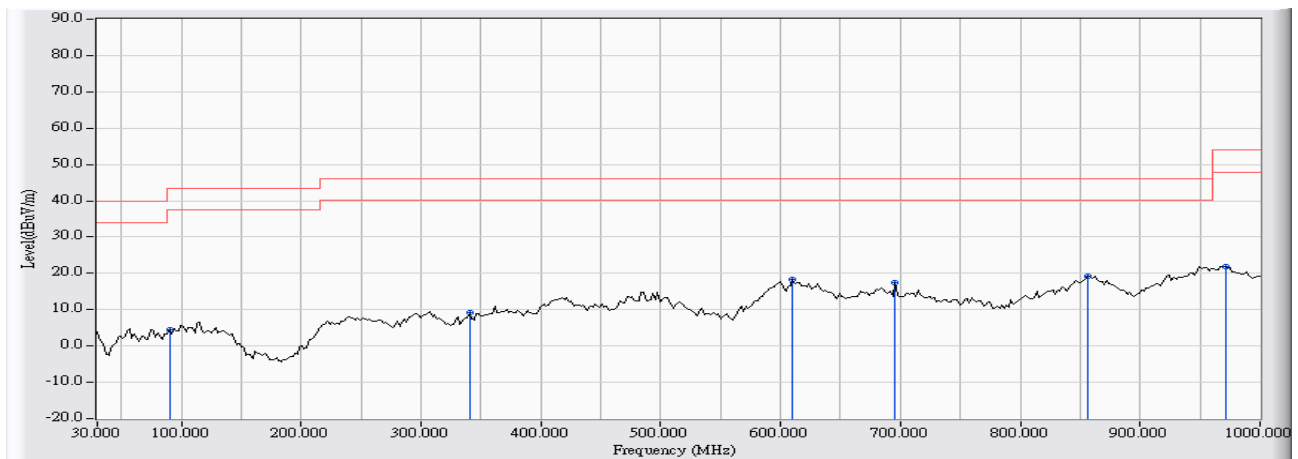
M3A-010-HORIZONTAL				
Frequency	Cable Loss	Reading Level	Emission Level	QP Limit
MHz	dB	dBuV	dBuV/m	dBuV/m
X-axis				
0.168	0.29	48.1	48.39	103.10
Y-axis				
0.168	0.29	47.6	47.89	103.10
Z-axis				
0.168	0.29	39.2	39.49	103.10

M3A-010 (X-axis)-HORIZONTAL				
Frequency	Cable Loss	Reading Level	Emission Level	QP Limit
MHz	dB	dBuV	dBuV/m	dBuV/m
0.504	0.29	24.3	24.59	83.10
5.712	0.29	24.9	25.19	69.54
9.744	0.29	25.3	25.59	69.54
18.144	0.29	23.8	24.09	69.54
20.496	0.29	24.7	24.99	69.54
25.368	0.29	25.0	25.29	69.54

M3A-010-VERTICAL				
Frequency	Cable Loss	Reading Level	Emission Level	QP Limit
MHz	dB	dBuV	dBuV/m	dBuV/m
X-axis				
0.168	0.29	48.3	48.59	103.10
Y-axis				
0.168	0.29	48.2	48.49	103.10
Z-axis				
0.168	0.29	39.2	39.49	103.10

M3A-010 (X-axis)-VERTICAL				
Frequency	Cable Loss	Reading Level	Emission Level	QP Limit
MHz	dB	dBuV	dBuV/m	dBuV/m
0.504	0.29	27.4	27.69	83.10
5.712	0.29	26.2	26.49	69.54
9.744	0.29	25.6	25.89	69.54
18.144	0.29	25.7	25.99	69.54
20.496	0.29	25.4	25.69	69.54
25.368	0.29	25.4	25.69	69.54

Site : Site 1	Time : 2008/11/18 - 14:20
Limit : FCC_SpartC_15.209_03M_QP	Margin : 6
Probe : CB3_FCC_30-1G(2008-9) - HORIZONTAL	Power : DC 1.5V
EUT : Digitizer PEN	Note : 135kHz

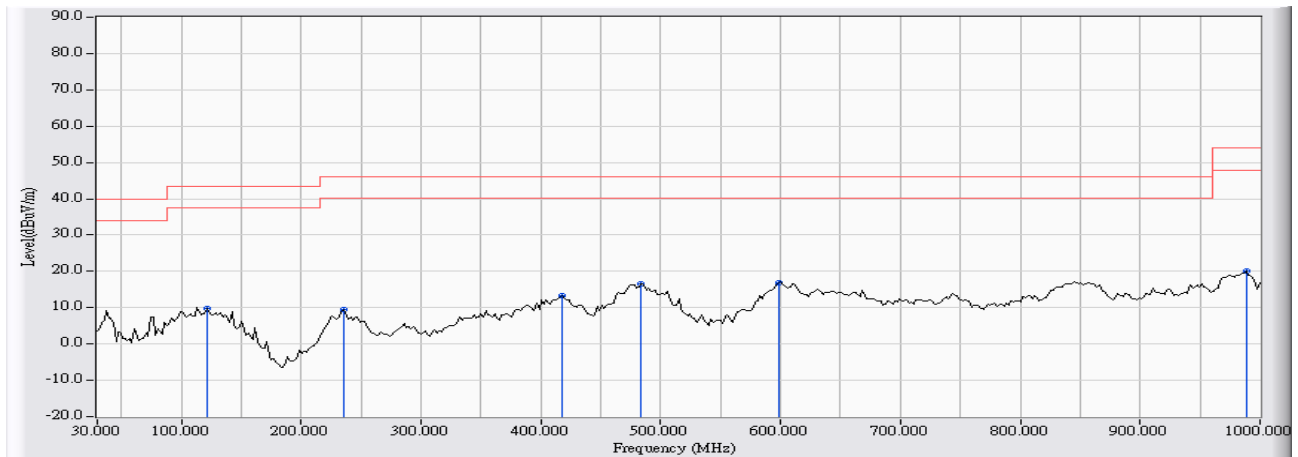


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		90.140	-45.008	49.639	4.631	-38.889	43.520	PEAK
2		340.400	-40.869	50.470	9.601	-36.419	46.020	PEAK
3		610.060	-31.361	49.718	18.357	-27.663	46.020	PEAK
4		695.420	-34.330	51.367	17.037	-28.983	46.020	PEAK
5	*	856.440	-29.803	49.359	19.556	-26.464	46.020	PEAK
6		970.900	-27.422	49.784	22.362	-31.608	53.970	PEAK

Note:

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

Site : Site 1	Time : 2008/11/18 - 14:45
Limit : FCC_SpartC_15.209_03M_QP	Margin : 6
Probe : CB3_FCC_30-1G(2008-9) - VERTICAL	Power : DC 1.5V
EUT : Digitizer PEN	Note : 135kHz

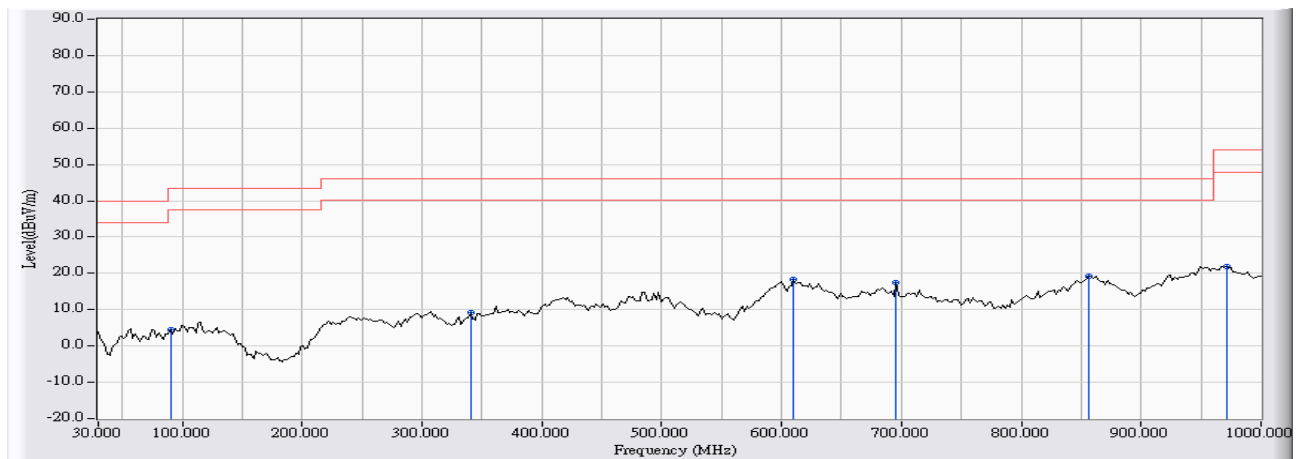


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		121.180	-39.156	48.875	9.719	-33.801	43.520	PEAK
2		235.640	-40.284	49.547	9.263	-36.757	46.020	PEAK
3		418.000	-36.198	49.994	13.796	-32.224	46.020	PEAK
4		483.960	-32.693	49.696	17.003	-29.017	46.020	PEAK
5	*	598.420	-31.922	48.523	17.774	-28.246	46.020	PEAK
6		988.360	-30.306	50.677	20.371	-33.599	53.970	PEAK

Note:

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

Site : Site 1	Time : 2008/11/18 - 14:41
Limit : FCC_SpartC_15.209_03M_QP	Margin : 6
Probe : CB3_FCC_30-1G(2008-9) - HORIZONTAL	Power : DC 1.5V
EUT : Digitizer PEN	Note : 168kHz

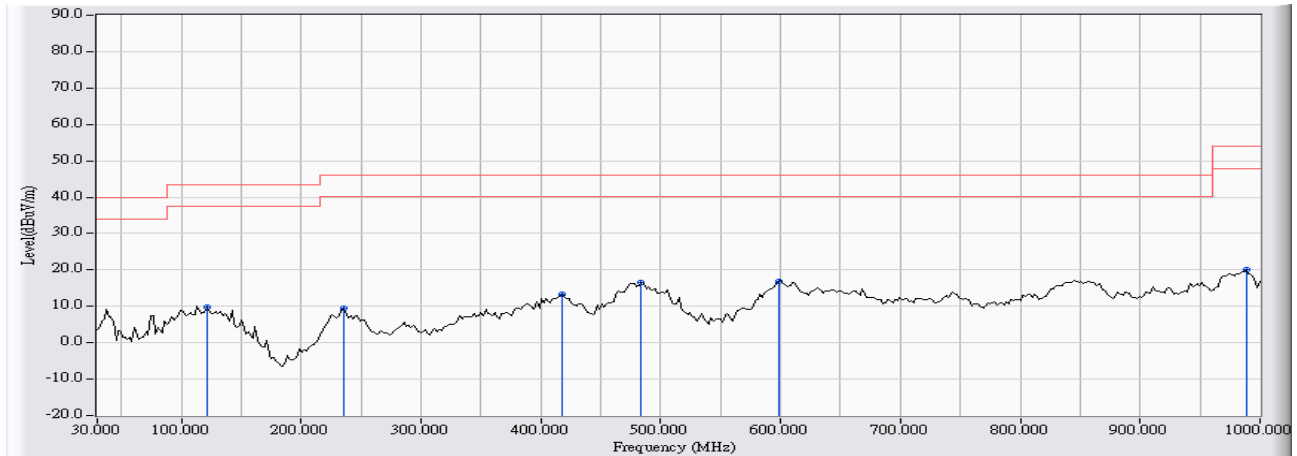


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		90.140	-45.008	49.412	4.404	-39.116	43.520	PEAK
2		340.400	-40.869	50.154	9.285	-36.735	46.020	PEAK
3		610.060	-31.361	49.842	18.481	-27.539	46.020	PEAK
4		695.420	-34.330	51.681	17.351	-28.669	46.020	PEAK
5	*	856.440	-29.803	49.125	19.322	-26.698	46.020	PEAK
6		970.900	-27.422	49.381	21.959	-32.011	53.970	PEAK

Note:

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

Site : Site 1	Time : 2008/11/18 - 14:45
Limit : FCC_SpartC_15.209_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		121.180	-39.156	48.996	9.839	-33.681	43.520	PEAK
2		235.640	-40.284	49.901	9.617	-36.403	46.020	PEAK
3		418.000	-36.198	49.555	13.356	-32.664	46.020	PEAK
4		483.960	-32.693	49.257	16.564	-29.456	46.020	PEAK
5	*	598.420	-31.922	48.671	16.749	-29.271	46.020	PEAK
6		988.360	-30.306	50.405	20.098	-33.872	53.970	PEAK

Note:

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