

# FCC PART 15.109

## MEASUREMENT AND TEST REPORT

### FOR

**Matsunichi Communication Holdings R&D (Shenzhen) Co., Ltd**  
**43B/F, Internal Chamber Of Commerce Tower, Fuhua RD3 CBD, Futian**  
**District, Shenzhen, China**

**FCC ID: XAJT706**

<b>Report Concerns:</b> Original Report	<b>Equipment Type:</b> PDA-PC
<b>Model:</b>	<u>T706</u>
<b>Report No.:</b>	<u>STR09058108E-3</u>
<b>Test/Witness Engineer:</b>	
<b>Test Date:</b>	<u>2009-05-26 to 2009-06-10</u>
<b>Issue Date:</b>	<u>2009-06-12</u>
<b>Prepared By:</b>	<b>SEM.Test Compliance Service Co., Ltd.</b> 3/F, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an District, Shenzhen, P.R.C. (518101)
<b>Approved &amp; Authorized By:</b>	 _____ Jandy So / PSQ Manager

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by SEM.Test Compliance Service Co., Ltd.

**TABLE OF CONTENTS**

<b>1. GENERAL INFORMATION.....</b>	<b>3</b>
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	3
1.2 TEST STANDARDS.....	3
1.3 RELATED SUBMITTAL(S)/GRANT(S) .....	3
1.4 TEST METHODOLOGY .....	3
1.5 TEST FACILITY .....	4
1.6 EUT EXERCISE SOFTWARE .....	4
1.7 ACCESSORIES EQUIPMENT LIST AND DETAILS .....	4
1.8 EUT CABLE LIST AND DETAILS .....	4
<b>2. SUMMARY OF TEST RESULTS .....</b>	<b>5</b>
<b>3. §15.107 (A)- CONDUCTED EMISSION .....</b>	<b>6</b>
3.1 MEASUREMENT UNCERTAINTY .....	6
3.2 TEST EQUIPMENT LIST AND DETAILS .....	6
3.3 TEST PROCEDURE.....	6
3.4 BASIC TEST SETUP BLOCK DIAGRAM.....	6
3.5 ENVIRONMENTAL CONDITIONS .....	7
3.6 TEST RECEIVER SETUP .....	7
3.7 SUMMARY OF TEST RESULTS/PLOTS .....	7
3.8 CONDUCTED EMISSIONS TEST DATA.....	7
<b>4. §15.109(A)- RADIATED EMISSION .....</b>	<b>11</b>
4.1 MEASUREMENT UNCERTAINTY .....	11
4.2 TEST EQUIPMENT LIST AND DETAILS .....	11
4.3 TEST PROCEDURE.....	11
4.4 TEST RECEIVER SETUP .....	12
4.5 CORRECTED AMPLITUDE & MARGIN CALCULATION.....	12
4.6 ENVIRONMENTAL CONDITIONS .....	12
4.7 SUMMARY OF TEST RESULTS/PLOTS .....	12

## 1. GENERAL INFORMATION

### 1.1 Product Description for Equipment Under Test (EUT)

#### Client Information

Applicant: Matsunichi Communication Holdings R&D (Shenzhen) Co., Ltd.

Address of applicant: 43B/F, Internal Chamber Of Commerce Tower, Fuhua RD3 CBD, Futian District, Shenzhen, China

Manufacturer: Guangzhou Singulargold Electronics Co., Ltd.

Address of manufacturer: No.6, Lianhua Yan Road, Science City, Guangzhou Hi-Tech Industrial Development Zone, Guangzhou, China

#### General Description of E.U.T

Items	Description
EUT Description:	PDA-PC
Trade Name:	O-Digital
Model No.:	T706, PC706
Rated Voltage:	DC 7.4V Battery with 9V adapter
Size:	21.6x15.0x2.7 cm
For more information refer to the circuit diagram form and the user's manual.	

*The test data is gathered from a production sample, provided by the manufacturer. The other model listed in the report has different appearance only of T706 without circuit and electronic construction changed, declared by the manufacturer*

### 1.2 Test Standards

The following report is prepared on behalf of the Matsunichi Communication Holdings R&D (Shenzhen) Co., Ltd. in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15.107, and 15.109 rules.

**Maintenance of compliance** is the responsibility of the manufacturer. Any modification of the product, which results in lowering the emission/immunity, should be checked to ensure compliance has been maintained.

### 1.3 Related Submittal(s)/Grant(s)

No Related Submittal(s).

### 1.4 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard

for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

The equipment under test (EUT) was configured to measure its highest possible susceptibility against the tested phenomena. The test modes were adapted accordingly in reference to the Operating Instructions.

## 1.5 Test Facility

FCC – Registration No.: **994117**

SEM.Test Compliance Services Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 994117.

Industry Canada (IC) Registration No.: **7673A**

The 3m Semi-anechoic chamber of SEM.Test Compliance Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 7673A.

## 1.6 EUT Exercise Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the system components. The test software, provided by the customer, is started while the EUT is on to simulate the normal work. under the Windows XP terminal.

## 1.7 Accessories Equipment List and Details

Manufacturer	Description	Model	Serial Number
ASUS	Mouse	M-UAG120	810-000404
/	/	/	/

## 1.8 EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
DC Power Cable	1.7	Unshielded	Without Core
/	/	/	/

2. SUMMARY OF TEST RESULTS

Description of Test	Result
§15.107 (a) Conducted Emission	Compliant
§15.109(a) Radiated Emission	Compliant

### 3. §15.107 (a)- CONDUCTED EMISSION

#### 3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is  $\pm 1.5$  dB.

#### 3.2 Test Equipment List and Details

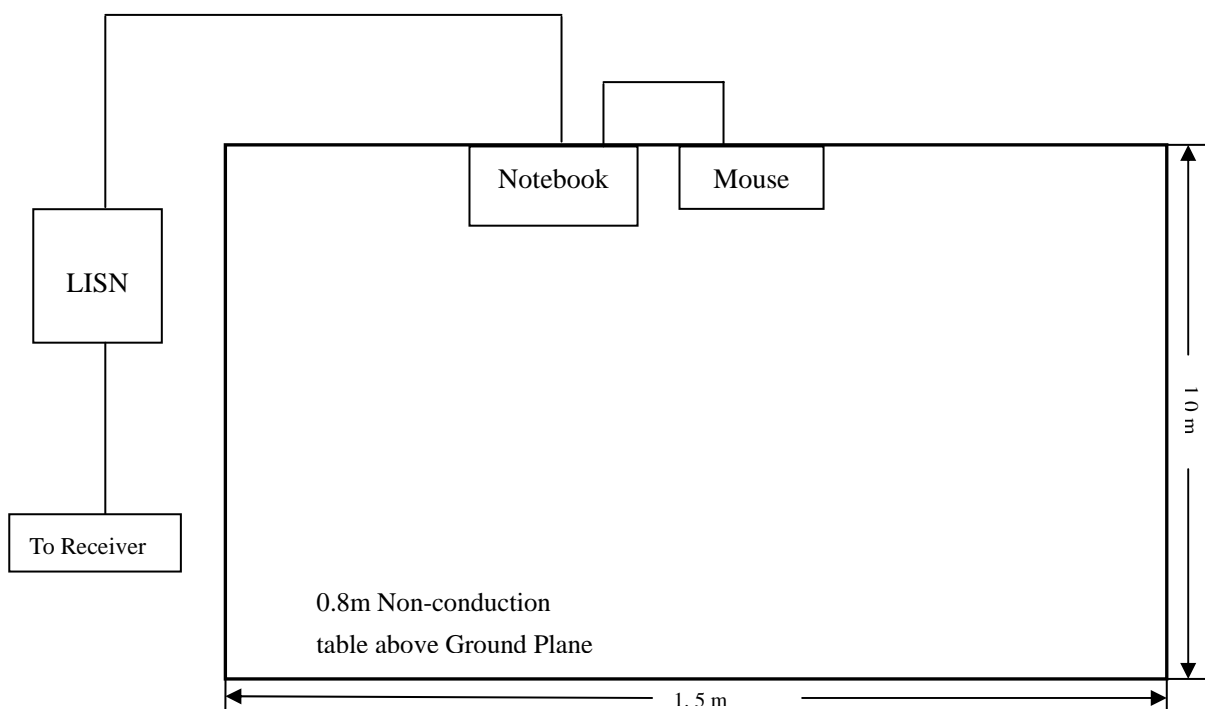
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2008-07-08	2009-07-07
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2008-07-08	2009-07-07
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2008-07-08	2009-07-07
AMN	Rohde & Schwarz	ESH3-Z5	828304/014	2008-07-08	2009-07-07

#### 3.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.107 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.

#### 3.4 Basic Test Setup Block Diagram



3.5 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

3.6 Test Receiver Setup

During the conducted emission test, the test receiver was set with the following configurations:

Start Frequency ..... 150 kHz  
Stop Frequency..... 30 MHz  
Sweep Speed ..... Auto  
IF Bandwidth..... 10 kHz  
Quasi-Peak Adapter Bandwidth ..... 9 kHz  
Quasi-Peak Adapter Mode ..... Normal

3.7 Summary of Test Results/Plots

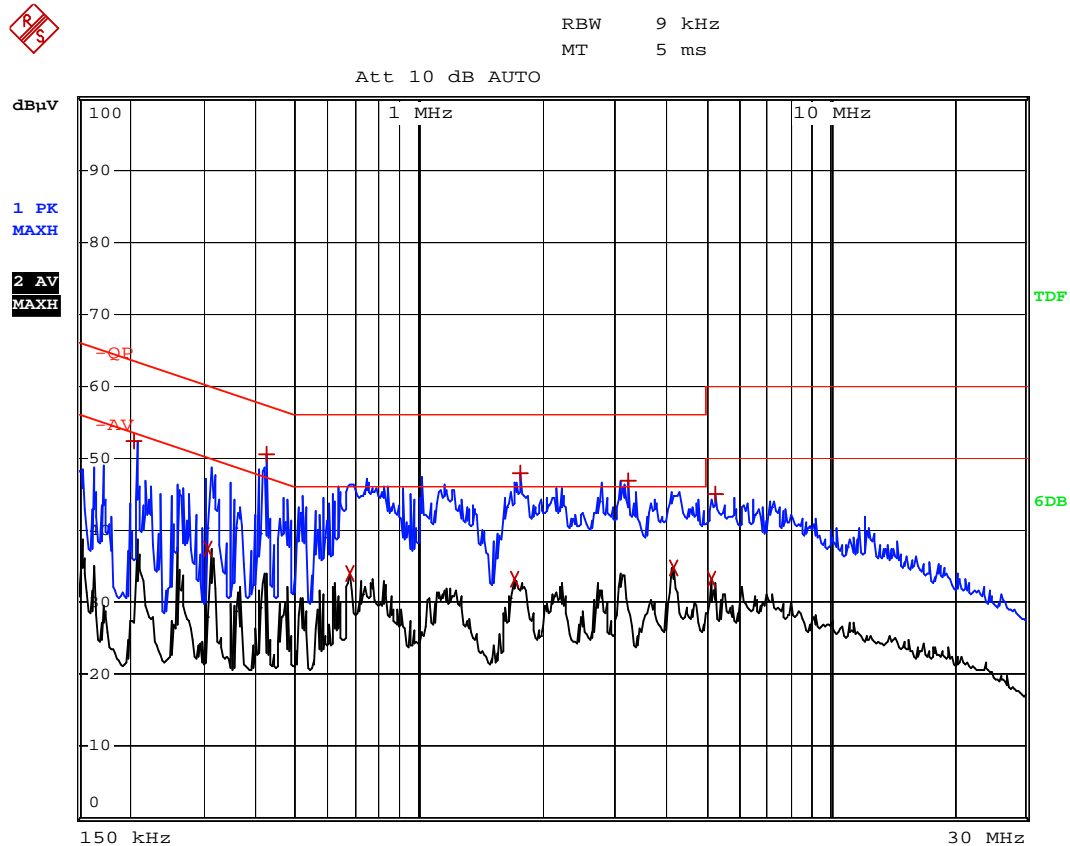
According to the data in section 3.8, the EUT complied with the FCC 15B Conducted margin for a Class B device, with the *worst* margin reading of:

**-5.4 dBµV at 0.422 MHz in the Line mode, Average detector, 0.15-30MHz**

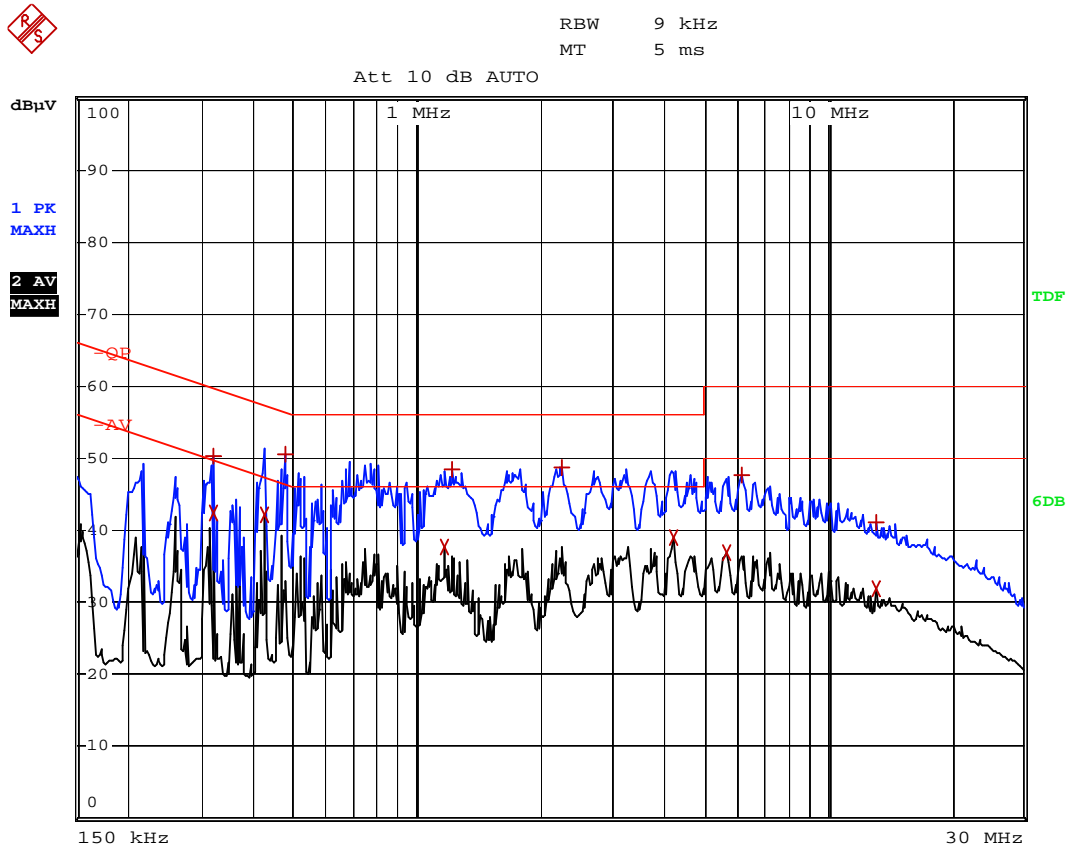
3.8 Conducted Emissions Test Data

LINE CONDUCTED EMISSIONS				FCC 15 CLASS B	
Frequency	Amplitude	Detector	Phase	Limit	Margin
MHz	dB $\mu$ V	QP/Ave/Pk	Line/Neutral	dB $\mu$ V	dB
0.422	42.00	Ave	Line	47.41	-5.4
0.478	50.53	Pk	Line	56.37	-5.8
0.426	50.61	Pk	Neutral	57.33	-6.7
4.226	38.95	Ave	Line	46	-7.1
2.250	48.81	Pk	Line	56	-7.2
0.318	42.49	Ave	Line	49.76	-7.3
1.218	48.45	Pk	Line	56	-7.6
1.774	47.83	Pk	Neutral	56	-8.2
1.174	37.62	Ave	Line	46	-8.4
3.254	46.94	Pk	Neutral	56	-9.1
0.318	50.19	Pk	Line	59.76	-9.6
0.206	52.46	Pk	Neutral	63.37	-10.9
4.194	34.81	Ave	Neutral	46	-11.2
0.678	34.04	Ave	Neutral	46	-12.0
6.174	47.69	Pk	Line	60	-12.3
0.310	37.48	Ave	Neutral	49.97	-12.5
1.710	33.08	Ave	Neutral	46	-12.9
5.662	36.84	Ave	Line	50	-13.2
5.250	44.89	Pk	Neutral	60	-15.1
5.154	33.19	Ave	Neutral	50	-16.8
13.126	31.98	Ave	Line	50	-18.0
13.126	40.95	Pk	Line	60	-19.1



**Plot of Conducted Emissions Test Data***Conducted Disturbance**EUT: PDA-PC**M/N: T706**Operating Condition: Running with Program**Test Specification: N**Comment: AC 120V/60Hz,*

Date: 8.JUN.2009 11:17:06

**Plot of Conducted Emissions Test Data***Conducted Disturbance**EUT: PDA-PC**M/N: T706**Operating Condition: Running with Program**Test Specification: L**Comment: AC 120V/60Hz*

Date: 8.JUN.2009 11:18:21

## 4. §15.109(a)- RADIATED EMISSION

### 4.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is  $\pm 3.0$  dB.

### 4.2 Test Equipment List and Details

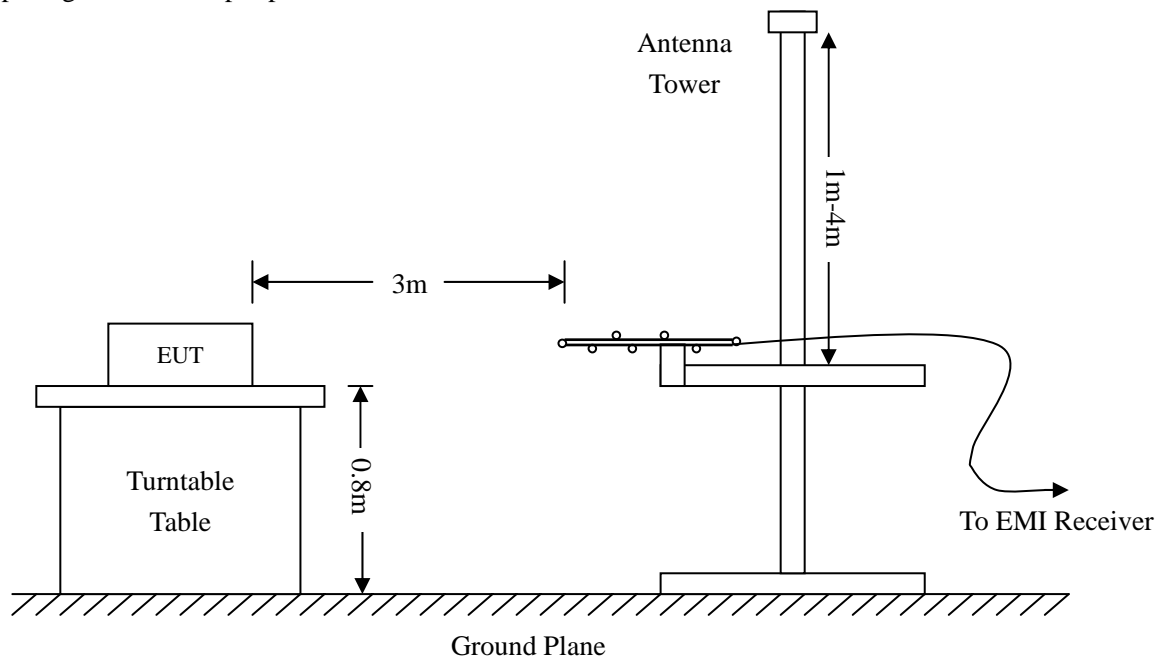
Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	ROHDE&SCHWARZ	FSEA20	DE25181	2008-07-08	2009-07-07
Positioning Controller	C&C	CC-C-1F	N/A	2008-07-08	2009-07-07
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2008-07-08	2009-07-07
Horn Antenna	SCHWARZBECK	BBHX 9120	9120-426	2008-07-08	2009-07-07
RF Switch	EM	EMSW18	SW060023	2008-07-08	2009-07-07
Amplifier	Agilent	8447F	3113A06717	2008-07-08	2009-07-07
Coaxial Cable	SCHWARZBECK	AK9513	9513-10	2008-07-08	2009-07-07
EMI Test Receiver	ROHDE&SCHWARZ	ESPI	25498514	2008-07-08	2009-07-07

### 4.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.205 and FCC Part 15.109 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.



#### 4.4 Test Receiver Setup

During the conducted emission test, the test receiver was set with the following configurations:

Start Frequency ..... 30 MHz  
 Stop Frequency..... 1000 MHz  
 Sweep Speed ..... Auto  
 IF Bandwidth..... 10 kHz  
 Quasi-Peak Adapter Bandwidth ..... 120 kHz  
 Quasi-Peak Adapter Mode ..... Normal

#### 4.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB $\mu$ V means the emission is 6dB $\mu$ V below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15B Limit}$$

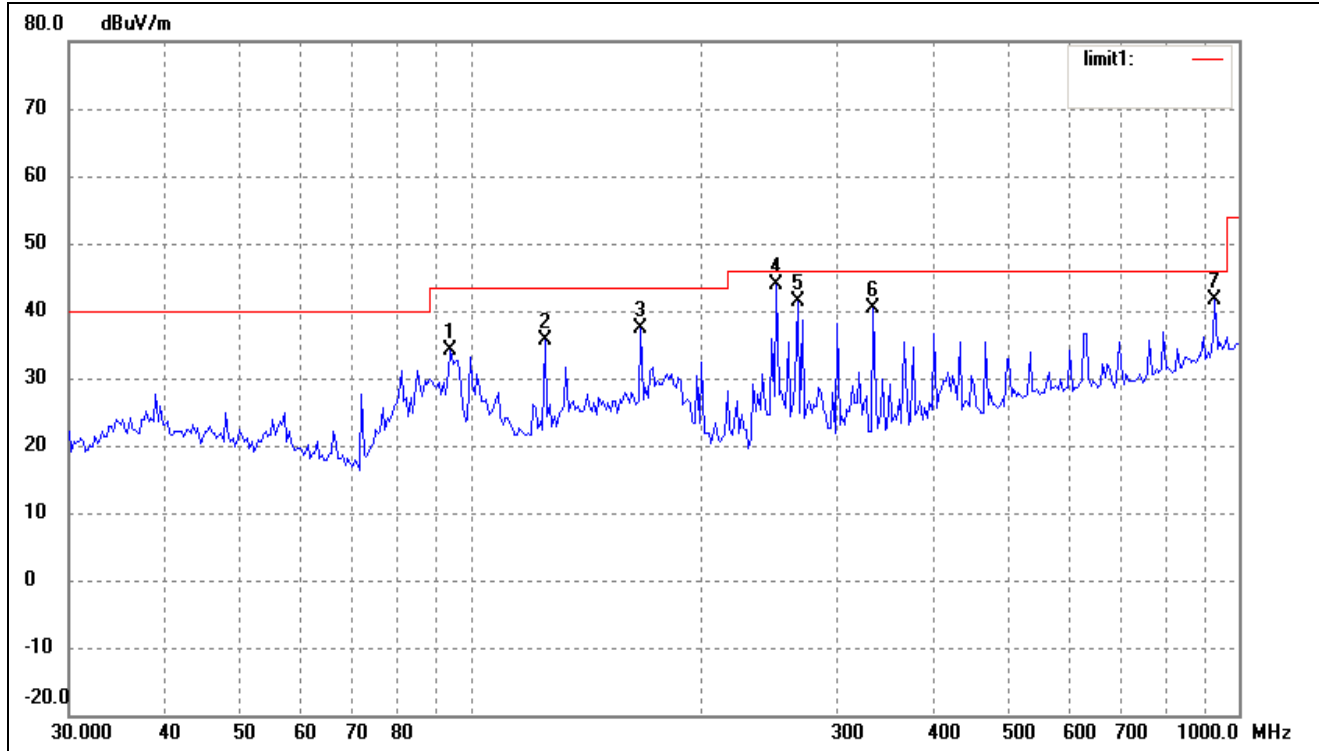
#### 4.6 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

#### 4.7 Summary of Test Results/Plots

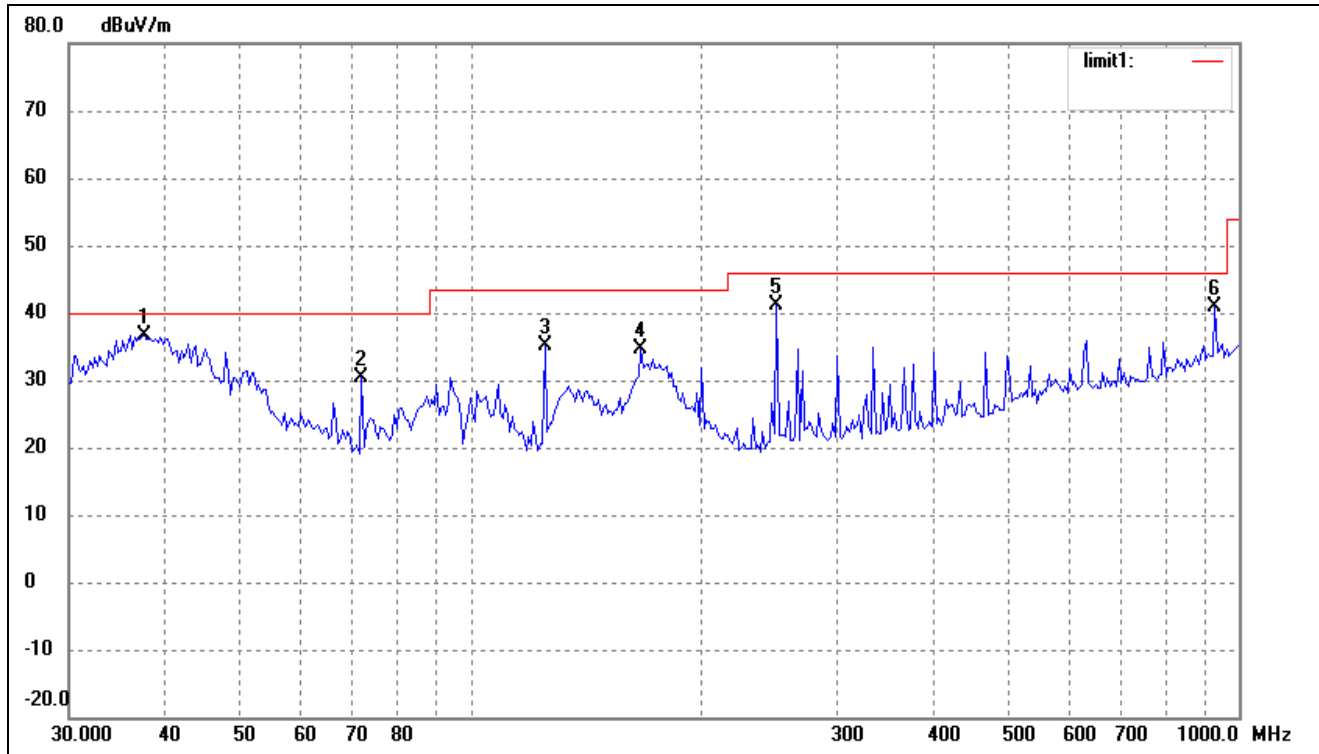
According to the data, the EUT complied with the FCC 15B Class B standards, and had the worst margin of:

**-2.21 dB $\mu$ V at 250.4859MHz in the Horizontal polarization, 30 MHz to 1 GHz, 3Meters**

**Plot of Radiation Emissions Test Data***Radiated Disturbance**EUT: PDA-PC**M/N: T706**Operating Condition: Running with Program**Test Specification: Horizontal & Vertical**Comment: AC 120V/60Hz***Horizontal**

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (° )	Height (cm)	Remark
1	94.3137	26.74	7.34	34.08	43.50	-9.42	360	100	peak
2	124.9249	30.98	4.57	35.55	43.50	-7.95	360	100	peak
3	166.6385	33.35	3.95	37.30	43.50	-6.20	360	100	peak
4	250.4859	36.10	7.69	43.79	46.00	-2.21	163	100	QP
5	266.8395	33.29	8.11	41.40	46.00	-4.60	235	100	QP
6	334.1255	31.18	9.12	40.30	46.00	-5.70	60	100	QP
7	932.1405	22.25	19.35	41.60	46.00	-4.40	355	100	QP

Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (° )	Height (cm)	Remark
1	37.5648	29.37	7.29	36.66	40.00	-3.34	351	100	QP
2	72.2111	27.64	2.84	30.48	40.00	-9.52	360	100	peak
3	124.9249	30.53	4.57	35.10	43.50	-8.40	360	100	peak
4	166.6385	30.67	3.95	34.62	43.50	-8.88	360	100	peak
5	250.4859	33.44	7.69	41.13	46.00	-4.87	45	100	QP
6	932.1405	21.53	19.35	40.88	46.00	-5.12	120	100	QP

\*\*\*\*\* END OF REPORT \*\*\*\*\*