

# FCC PART 15B

## MEASUREMENT AND TEST REPORT

### FOR

**Matsunichi Digital Development (Shenzhen) Co., Ltd**  
**F/22, Matsunichi Building, No.9996, Shennan Boulevard, Nanshan District,**  
**Shenzhen, China**

**FCC ID: ZDRTC979**

<b>Report Concerns:</b> Original Report	<b>Equipment Type:</b> Tablet PC
<b>Model:</b>	<u>TC979</u>
<b>Report No.:</b>	<u>STR11108122I-3</u>
<b>Test Date:</b>	<u>2011-10-19 to 2011-11-12</u>
<b>Issue Date:</b>	<u>2011-11-18</u>
<b>Tested By:</b>	<u>Silin Chen / Engineer</u> <i>Silin chen</i>
<b>Reviewed By:</b>	<u>Lahm Peng / EMC Manager</u> <i>Lahm peng</i>
<b>Approved &amp; Authorized By:</b>	<u>Jandy so / PSQ Manager</u> <i>Jandyso</i>
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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.

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## 1. GENERAL INFORMATION

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

#### Client Information

Applicant: Matsunichi Digital Development (Shenzhen) Co., Ltd  
Address of applicant: F/22, Matsunichi Building, No.9996, Shennan Boulevard,  
Nanshan District, Shenzhen, China

Manufacturer: Matsunichi Digital Development (Shenzhen) Co., Ltd  
Address of manufacturer: No.5, KeJi Road, PingShan Industrial Estate, PingShan New  
District, Shenzhen, China

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

Items	Description
EUT Description:	Tablet PC
Trade Name:	Le Pan
Model No.:	TC979
Add Model:	Le Pan II
Power Supply:	Input 100-240V/50/60Hz Output 5V DC Adaptor DC 3.7V Battery
Rated Voltage:	Battery 3.7V
Battery Capacity:	6800mAh
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 others models listed in the report have different appearance only of TC979 without circuit and electronic construction changed, declared by the manufacturer.*

### 1.2 Test Standards

The following report is prepared on behalf of the Matsunichi Digital Development (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 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.

## 1.4 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.

- **CNAS Registration No.: L4062**

Shenzhen SEM.Test Electronics Service Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 3/F, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an District, Shenzhen, P.R.C (518101)

## 1.5 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.

## 1.6 Accessories Equipment List and Details

Description	Manufacturer	Model	Serial Number
Notebook	ASUS	X50R	74N0AS297138

## 1.7 EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB Cable	1.2	Shielded	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  $\pm 2.88$  dB.

#### 3.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2010-12-20	2011-12-19
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2010-12-20	2011-12-19
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2010-12-20	2011-12-19

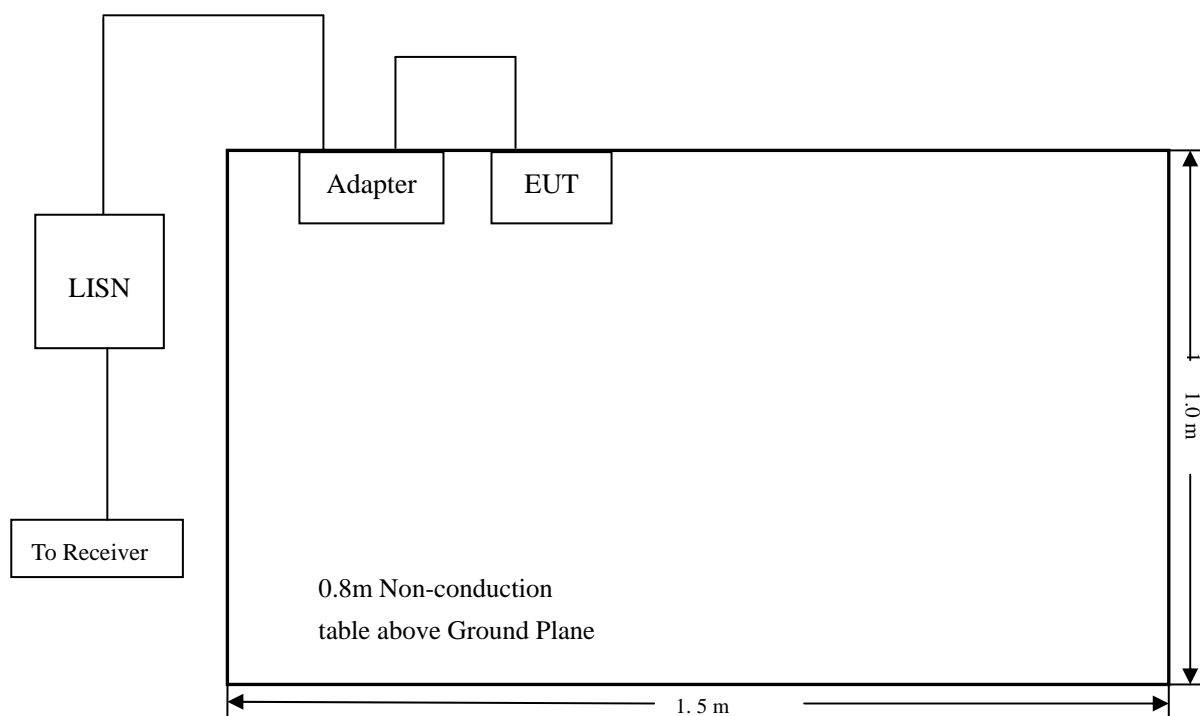
#### 3.3 Test Procedure

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 Part 15B Conducted margin for a Class B device, with the *worst* margin reading of:

**-10.14 dBμV at 0.198 MHz in the Line, QP Detector, 0.15-30MHz**

3.8 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

Conducted Disturbance

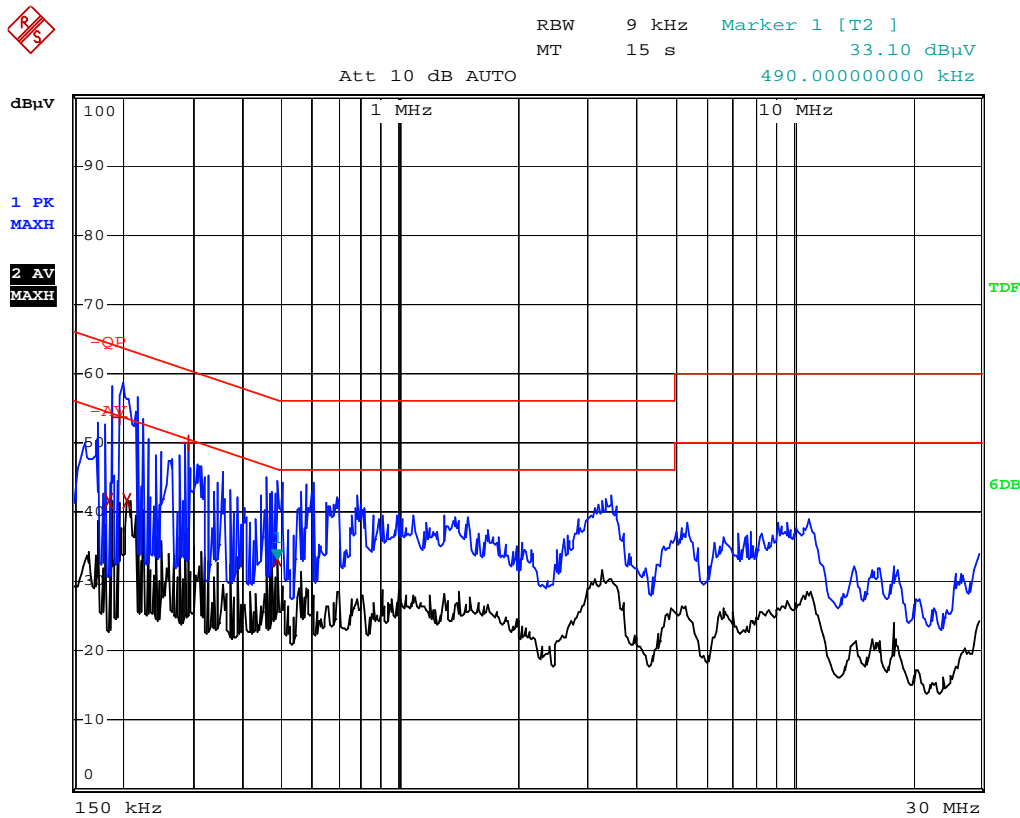
EUT: Tablet PC

M/N: TC979

Operating Condition: Charging & Playing

Test Specification: L

Comment: AC 120V/60Hz/Adapter 5V



EDIT PEAK LIST (Prescan Results)			
Trace1:	-QP		
Trace2:	-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
2 Average	186 kHz	41.57	-12.63
1 Quasi Peak	198 kHz	53.55	-10.14
2 Average	206 kHz	41.65	-11.70
1 Max Peak	290 kHz	49.92	-10.59
2 Average	490 kHz	33.10	-13.06



Plot of Conducted Emissions Test Data

Conducted Disturbance

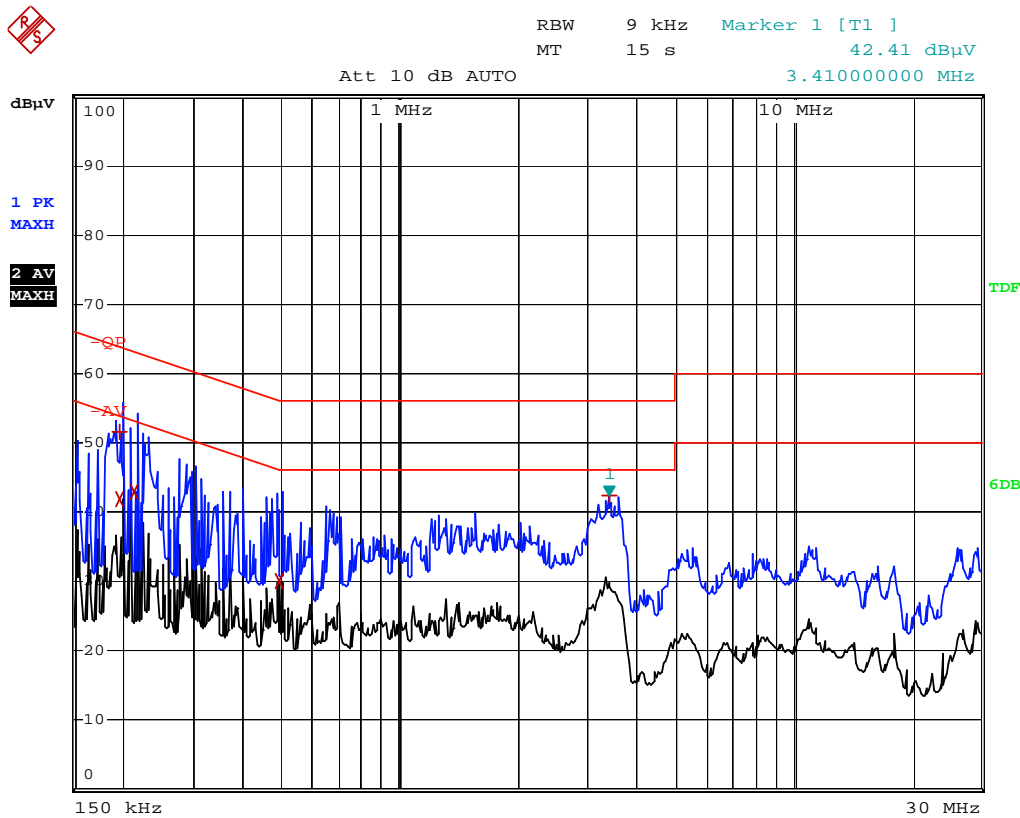
EUT: Tablet PC

M/N: TC979

Operating Condition: Charging & Playing

Test Specification: N

Comment: AC 120V/60Hz/Adapter 5V



EDIT PEAK LIST (Prescan Results)			
Trace1:	-QP		
Trace2:	-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
2 Average	198 kHz	41.84	-11.84
1 Quasi Peak	198 kHz	51.53	-12.16
2 Average	214 kHz	42.85	-10.19
2 Average	494 kHz	29.93	-16.17
1 Max Peak	3.41 MHz	42.41	-13.58

## 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  $\pm 5.10$  dB.

### 4.2 Test Equipment List and Details

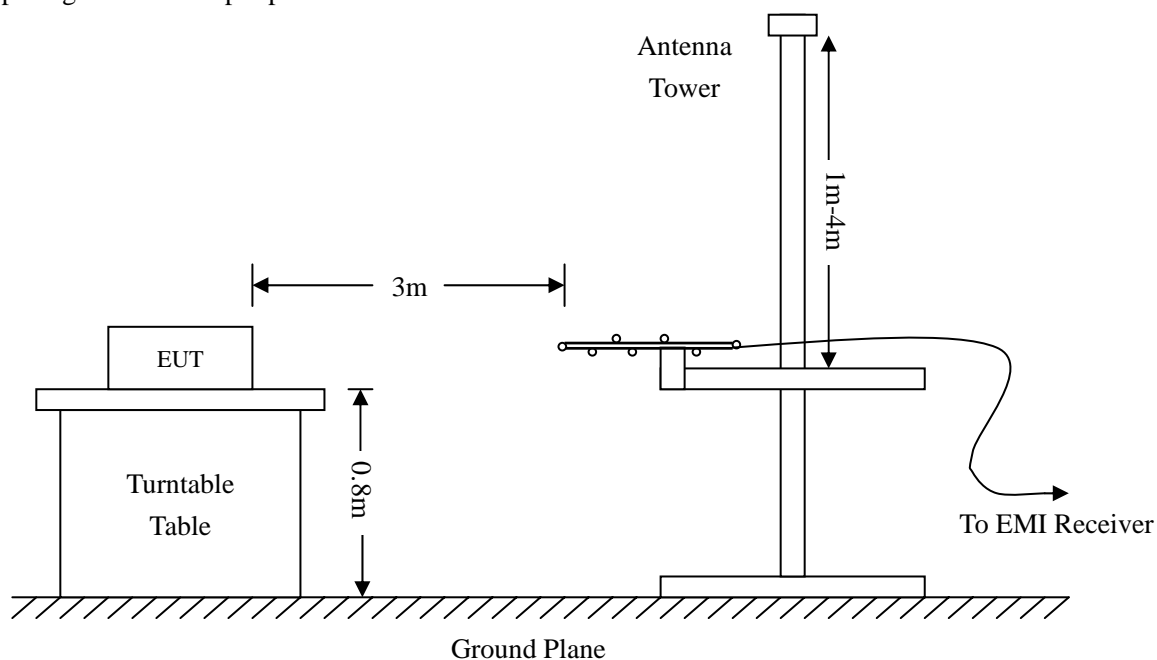
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2010-12-20	2011-12-19
EMI Test Receiver	R&S	ESVB	825471/005	2010-12-20	2011-12-19
Positioning Controller	C&C	CC-C-1F	N/A	2010-12-20	2011-12-19
RF Switch	EM	EMSW18	SW060023	2010-12-20	2011-12-19
Pre-amplifier	Agilent	8447F	3113A06717	2010-12-20	2011-12-19
Pre-amplifier	Compliance Direction	PAP-0118	24002	2010-12-20	2011-12-19
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2011-01-09	2012-01-08
Horn Antenna	ETS	3117	00086197	2011-01-09	2012-01-08

### 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.



#### 4.5 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 Part 15B Class B standards, and had the worst margin of:

**-3.73 dB $\mu$ V at 63.1857MHz in the Vertical polarization, 9 kHz to 5 GHz, 3Meters**

Plot of Radiation Emissions Test Data

Radiated Disturbance

EUT: Tablet PC

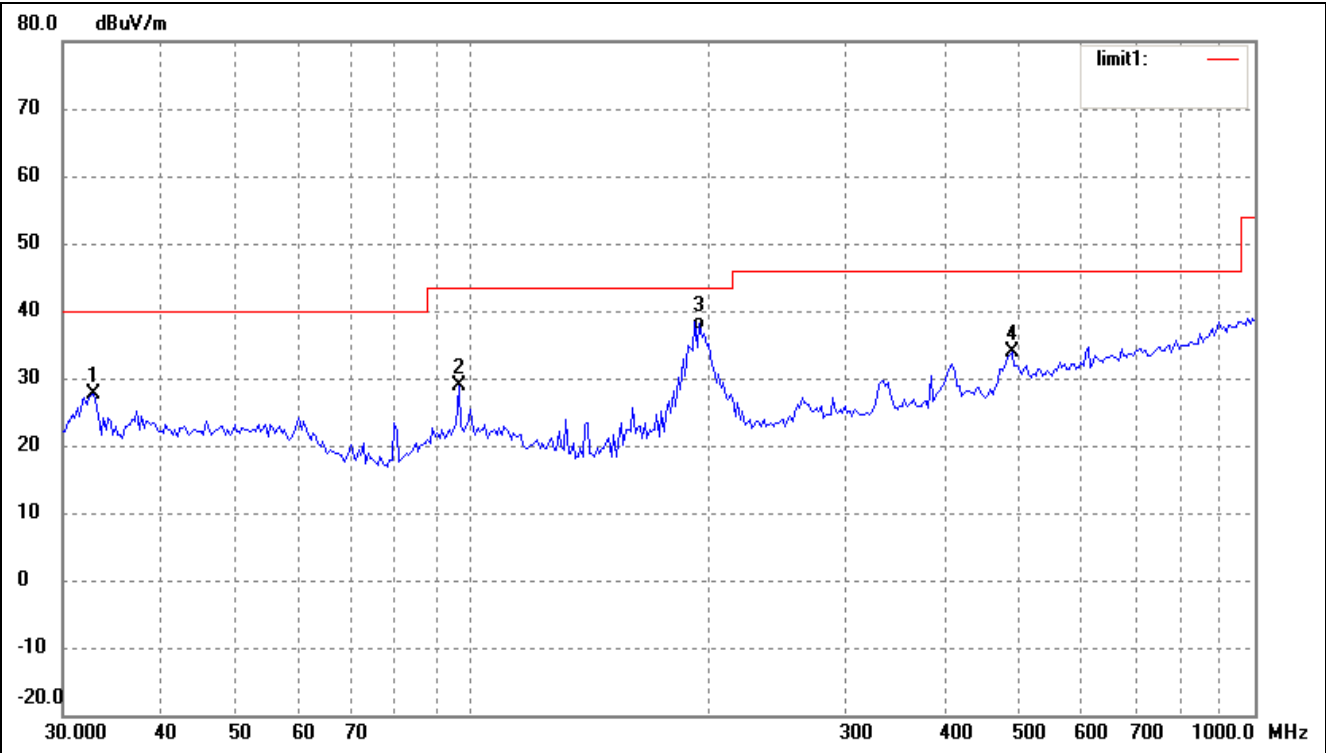
M/N: TC979

Operating Condition: Charging and Playing

Test Specification: Horizontal & Vertical

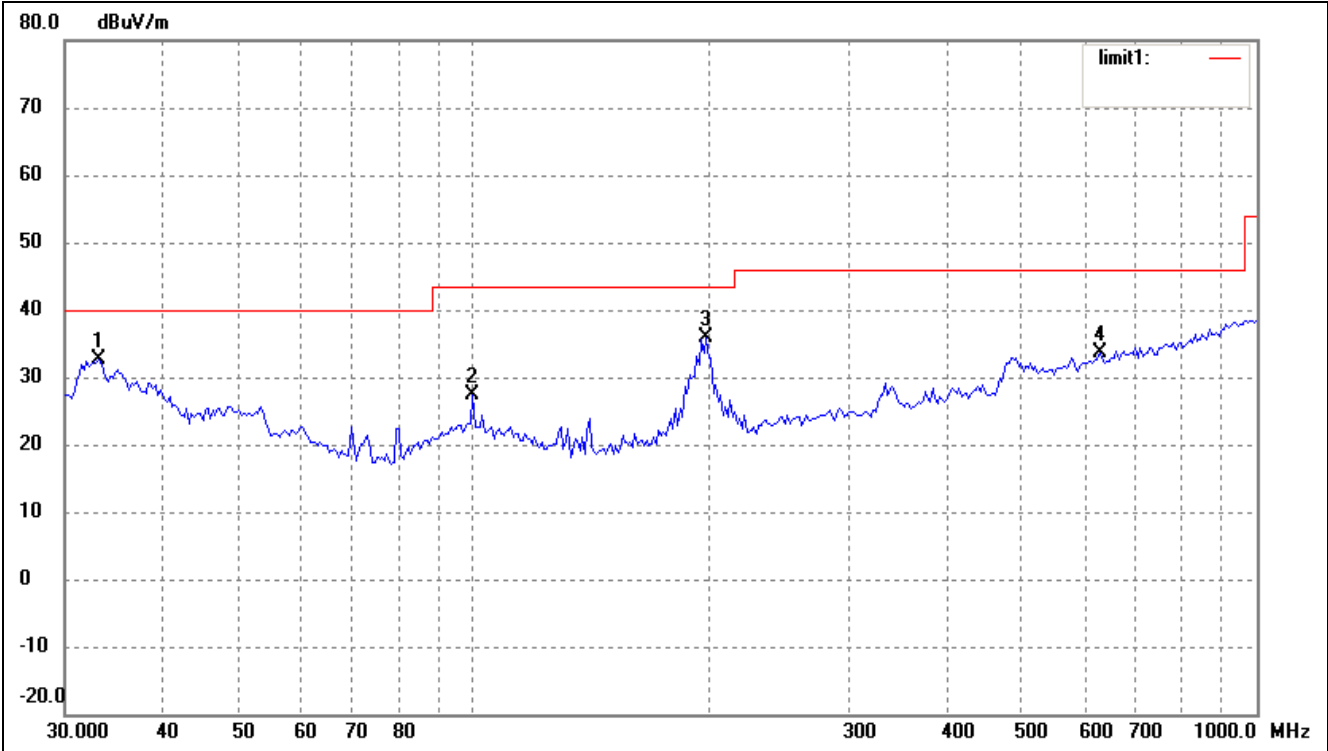
Comment: AC 120V/60Hz DC 5V Adapter

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	32.8637	20.89	6.77	27.66	40.00	-12.34	360	100	peak
2	96.0986	20.78	8.14	28.92	43.50	-14.58	360	100	peak
3	195.0386	30.64	6.56	37.20	43.50	-6.30	348	100	QP
4	489.0269	20.46	13.34	33.80	46.00	-12.20	360	100	peak

Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	33.0950	25.91	6.77	32.68	40.00	-7.32	360	100	peak
2	99.5281	18.93	8.40	27.33	43.50	-16.17	360	100	peak
3	197.8928	29.38	6.58	35.96	43.50	-7.54	360	100	peak
4	629.4772	16.62	16.91	33.53	46.00	-12.47	360	100	peak

Plot of Radiation Emissions Test Data

Radiated Disturbance

EUT: Tablet PC

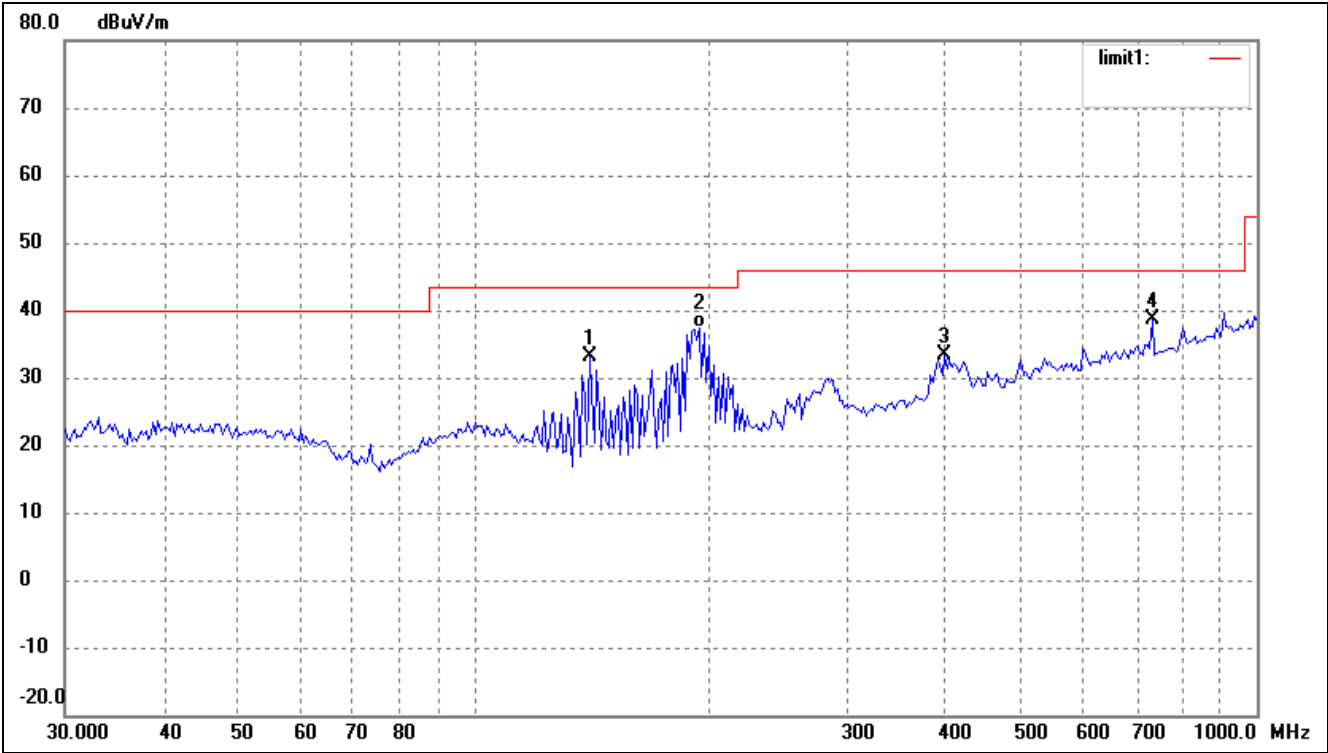
M/N: TC979

Operating Condition: Downloading

Test Specification: Horizontal & Vertical

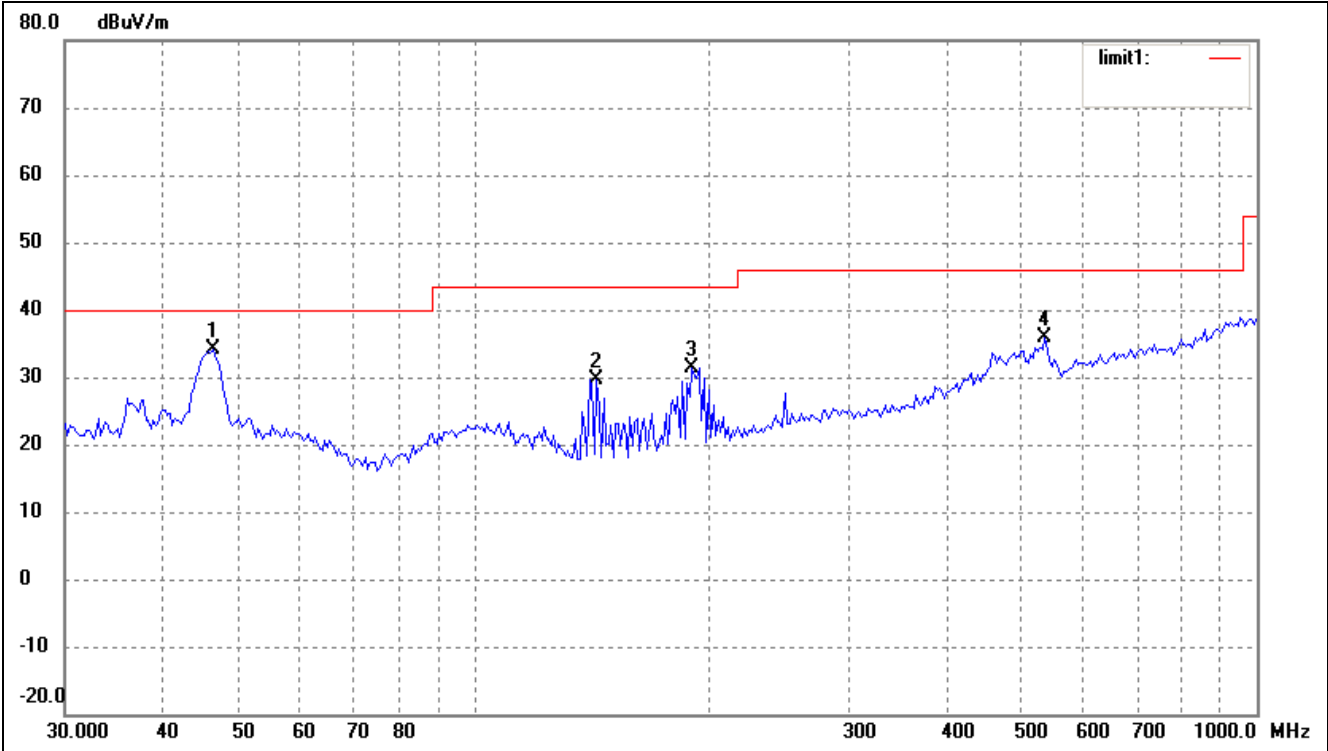
Comment: AC 120V/60Hz

Horizontal

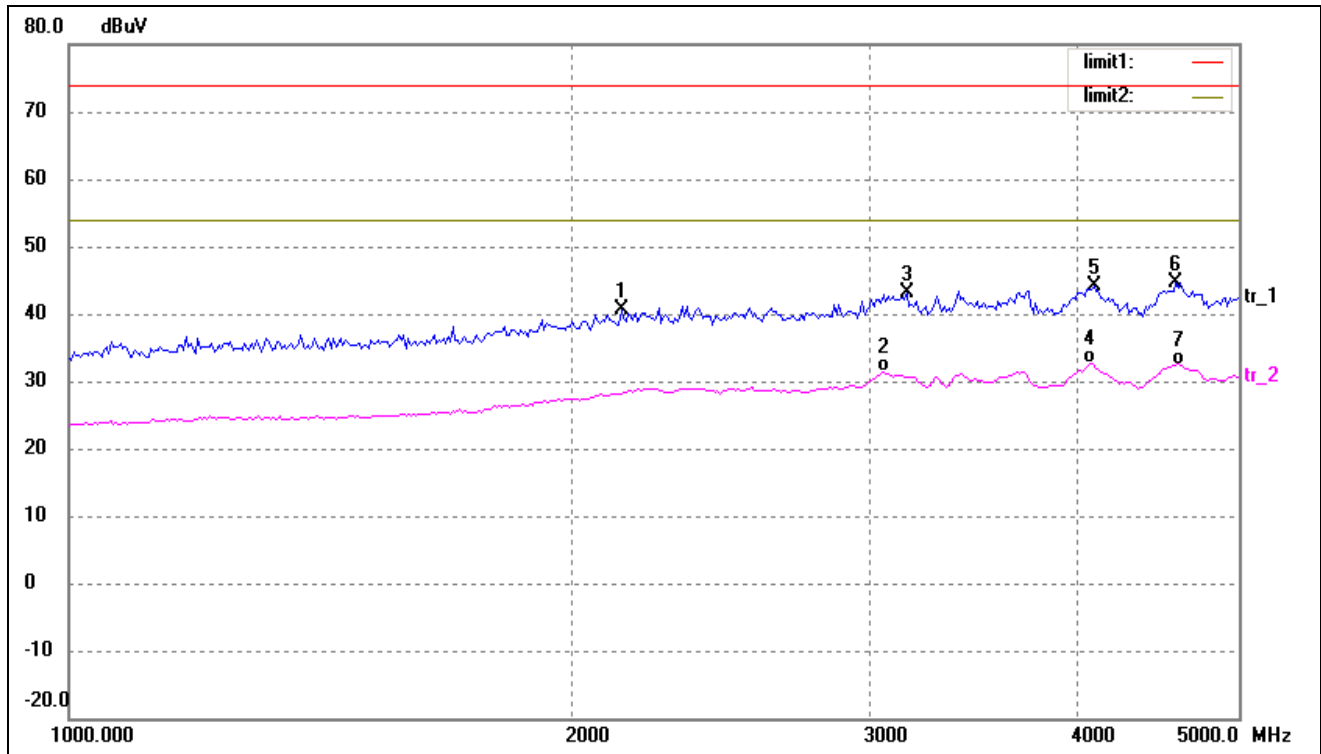


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	140.3421	29.07	3.96	33.03	43.50	-10.47	360	100	peak
2	193.7728	30.89	6.56	37.45	43.50	-6.05	125	100	QP
3	399.0302	22.08	11.40	33.48	46.00	-12.52	360	100	peak
4	734.4913	20.71	18.02	38.73	46.00	-7.27	360	100	peak

Vertical



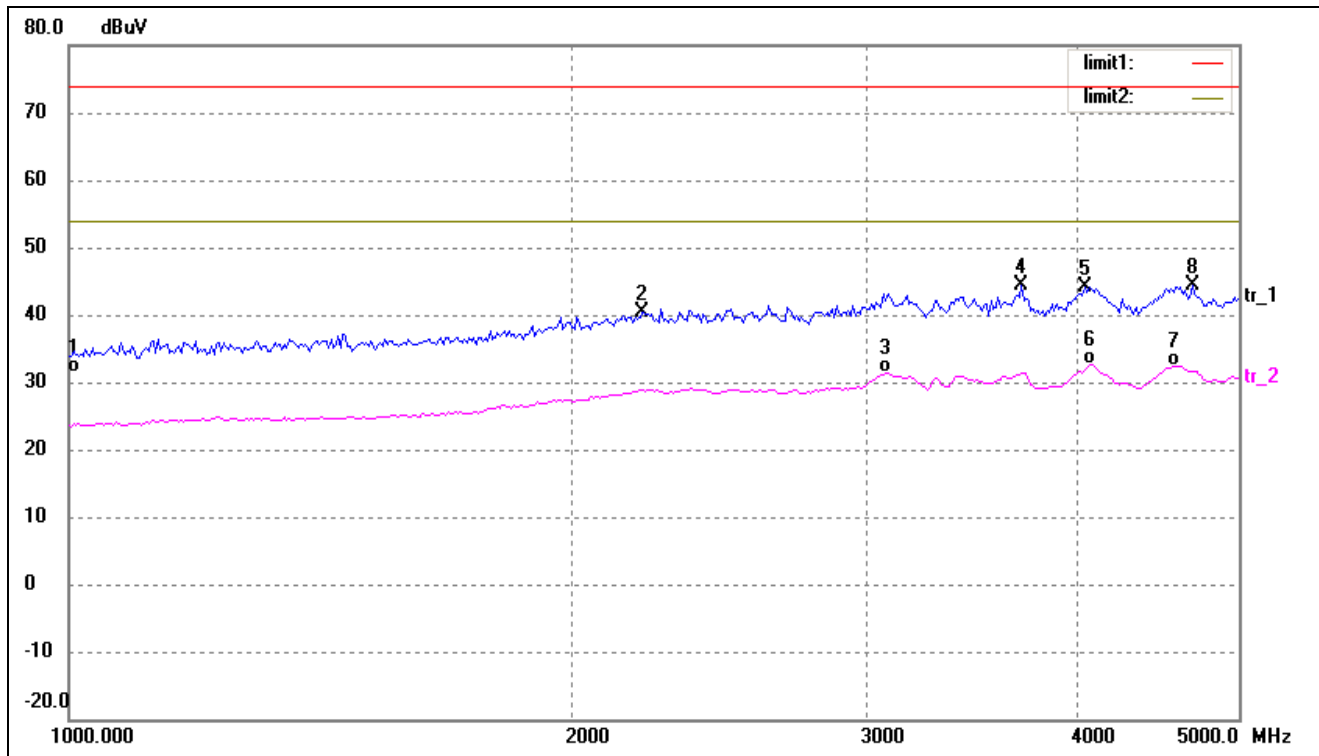
No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( ° )	Height (cm)	Remark
1	46.3402	25.92	8.16	34.08	40.00	-5.92	360	100	peak
2	143.3261	25.73	4.00	29.73	43.50	-13.77	360	100	peak
3	189.7385	24.96	6.52	31.48	43.50	-12.02	360	100	peak
4	535.7073	20.66	15.21	35.87	46.00	-10.13	360	100	peak

**Plot of Radiation Emissions Test Data (Above 1GHz)***Radiated Disturbance**EUT: Tablet PC**M/N: TC979**Operating Condition: Charging and Playing**Test Specification: Horizontal & Vertical**Comment: AC 120V/60Hz**Horizontal:*

No.	Frequency (MHz)	Reading (dBuV)	Correct dB	Result (dBuV)	Limit (dBuV)	Margin (dB)	Degree ( ° )	Height (cm)	Remark
1	2137.538	48.45	-7.91	40.54	74.00	-33.46	360	100	peak
2	3065.372	37.45	-6.19	31.26	54.00	-22.74	360	100	AVG
3	3165.647	49.24	-6.13	43.11	74.00	-30.89	360	100	peak
4	4069.133	37.88	-5.29	32.59	54.00	-21.41	360	100	AVG
5	4095.413	49.40	-5.27	44.13	74.00	-29.87	360	100	peak
6	4583.800	49.44	-4.84	44.60	74.00	-29.40	360	100	peak
7	4598.578	37.33	-4.83	32.50	54.00	-21.50	360	100	AVG



Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Correct dB	Result (dBuV)	Limit (dBuV)	Margin (dB)	Degree ( ° )	Height (cm)	Remark
1	1000.0000	43.35	-12.00	31.35	74.00	-42.65	360	100	QP
2	2200.368	48.20	-7.77	40.43	74.00	-33.57	360	100	peak
3	3075.255	37.64	-6.18	31.46	54.00	-22.54	360	100	AVG
4	3706.479	50.15	-5.68	44.47	74.00	-29.53	360	100	peak
5	4043.021	49.57	-5.33	44.24	74.00	-29.76	360	100	peak
6	4069.133	38.00	-5.29	32.71	54.00	-21.29	360	100	AVG
7	4569.069	37.30	-4.85	32.45	54.00	-21.55	360	100	AVG
8	4688.255	49.13	-4.75	44.38	74.00	-29.62	360	100	peak

Note: Testing is carried out with frequency rang 9kHz to the 2GHz, which above 1GHz is close to the noise base even antenna close up to 1meter distance according the measurement of ANSI C63.4.

The measurements greater than 20dB below the limit from 9kHz to 30MHz.

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