

# FCC Part 15B

## Measurement and Test Report

For

**Dongguan Winn Technology Co., Ltd**

**Xianghe Rd, Xinmin Area, Chang'an, Dongguan, Guangdong,**

**China**

**FCC ID: 2AA5TWINNPAD7TABLET**

**Test Rule(s):** FCC Part 15 Subpart B

**Product Description:** Tablet PC

**Tested Model:** Winnpad 7 Tablet

**Report No.:** STR14128016I-2

**Tested Date:** 2014-12-03 to 2014-12-29

**Issued Date:** 2014-12-29

**Tested By:** Jong Wang / Engineer

*Jong Wang*

**Reviewed By:** Lahm Peng / EMC Manager

*Lahm Peng*

**Approved & Authorized By:** Jandy so / PSQ Manager

*Jandyso*

**Prepared By:**

**Shenzhen SEM.Test Technology Co., Ltd.**

1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road,  
Bao'an District, Shenzhen, P.R.C. (518101)

Tel.: +86-755-33663308 Fax.: +86-755-33663309 Website: www.semtest.com.cn

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 Shenzhen SEM.Test Technology Co., Ltd.

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## 1. GENERAL INFORMATION

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

#### Client Information

Applicant: Dongguan Winn Technology Co., Ltd  
Address of applicant: Xianghe Rd, Xinmin Area, Chang'an, Dongguan, Guangdong, China  
Manufacturer: Dongguan Winn Technology Co., Ltd  
Address of manufacturer: Xianghe Rd, Xinmin Area, Chang'an, Dongguan, Guangdong, China

General Description of EUT	
Product Name:	Tablet PC
Trade Name:	/
Model No.:	Winnpad 7 Tablet
Adding Model(s):	/
<i>Note: The test data is gathered from a production sample, provided by the manufacturer.</i>	

Technical Characteristics of EUT	
Rated Voltage:	DC 3.7V Battery; Adapter DC 5V charging
Rated Current:	3000mA
Rated Power:	/
Power Adapter Model:	K-E30502000U1
Lowest Internal Frequency:	32.768MHz
Highest Internal Frequency:	1.0GHz
Classification of ITE:	Class B

## 1.2 Test Standards

The following report is prepared on behalf of the Dongguan Winn Technology 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, Subpart B, and section 15.205, 15.107, and 15.109 rules.

**Maintenance of compliance** is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, 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.

## 1.4 Test Facility

### **FCC – Registration No.: 934118**

Shenzhen SEM.Test Technology 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 934118.

### **Industry Canada (IC) Registration No.: 11464A**

The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

### **CNAS Registration No.: L4062**

Shenzhen SEM.Test Technology 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 1/F, Building A, Hongwei Industrial Park, Liuxian 2<sup>nd</sup> Road, Bao'an District, Shenzhen, P.R.C (518101).

## 1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

Test Mode	Description	Remark
TM1	Charging & Playing	Connected to Adapter, Earphone
TM2	Downloading	Connected To PC
TM3	Camera on	Connected to Adapter

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB Cable	1.0	Unshielded	Without Ferrite

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Earphone Cable	1.0	Unshielded	Without Ferrite

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
Notebook	Lenovo	E10	LR-63C8R

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§ 15.107 (a)	Conducted Emissions	Compliant
§ 15.109 (a)	Radiated Emissions	Compliant

N/A: not applicable

### 3. Conducted Emissions

#### 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.

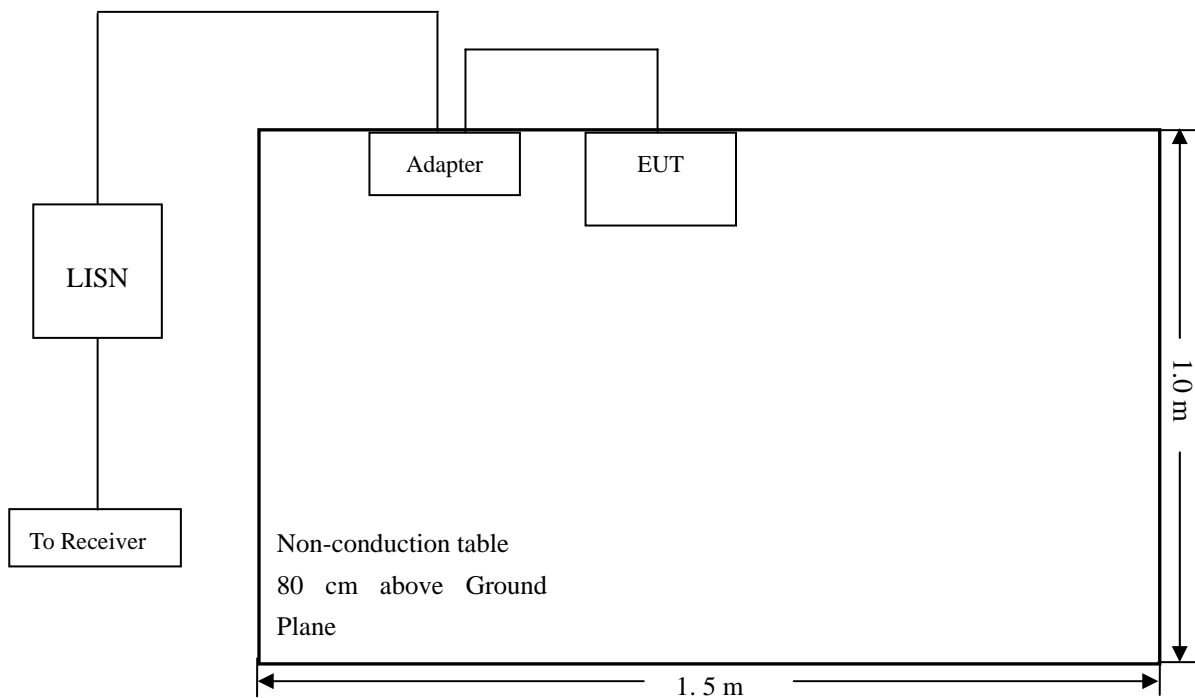
#### 3.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2014-05-28	2015-05-27
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2014-05-28	2015-05-27
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2014-05-28	2015-05-27

#### 3.3 Test Procedure

Test is conducting under the description of 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.

#### 3.4 Basic Test Setup Block Diagram



### 3.5 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

### 3.6 Summary of Test Results/Plots

According to the data in section 3.7, the EUT complied with the FCC Part 15.107(a) Conducted margin for a Class B device, with the *worst* margin reading of:

**-13.10 dB at 0.5819 MHz in the TM3 Line, Peak detector, 0.15-30MHz**

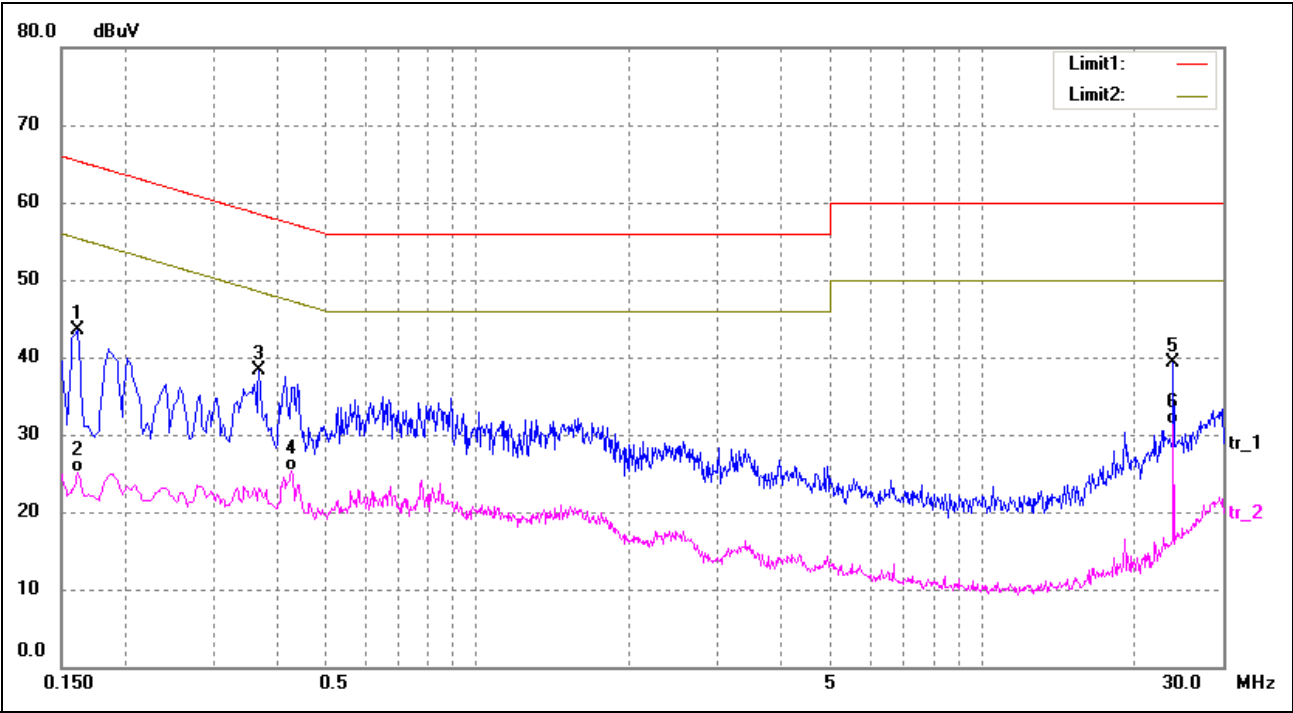
### 3.7 Conducted Emissions Test Data



Plot of Conducted Emissions Test Data

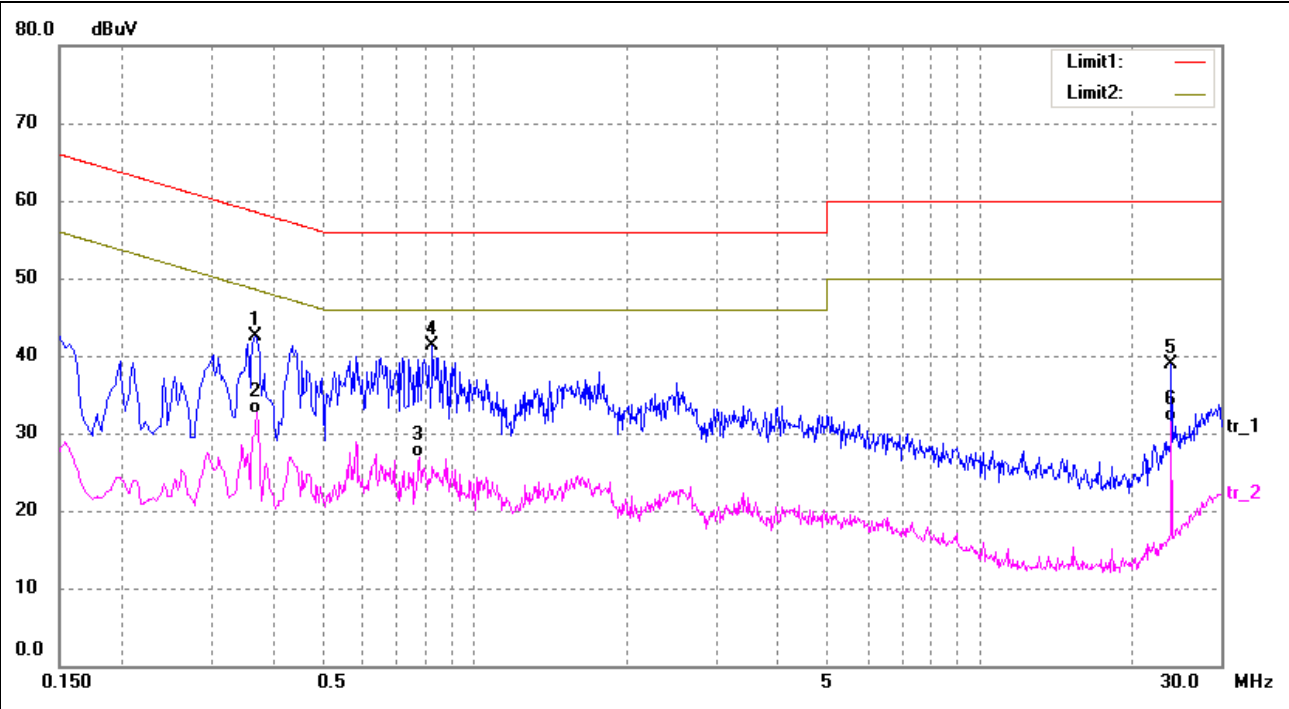
EUT: Tablet PC  
Tested Model: Winnpad 7 Tablet  
Operating Condition: TM1  
Comment: 120V/60Hz; Adapter DC 5V

Test Specification: Neutral

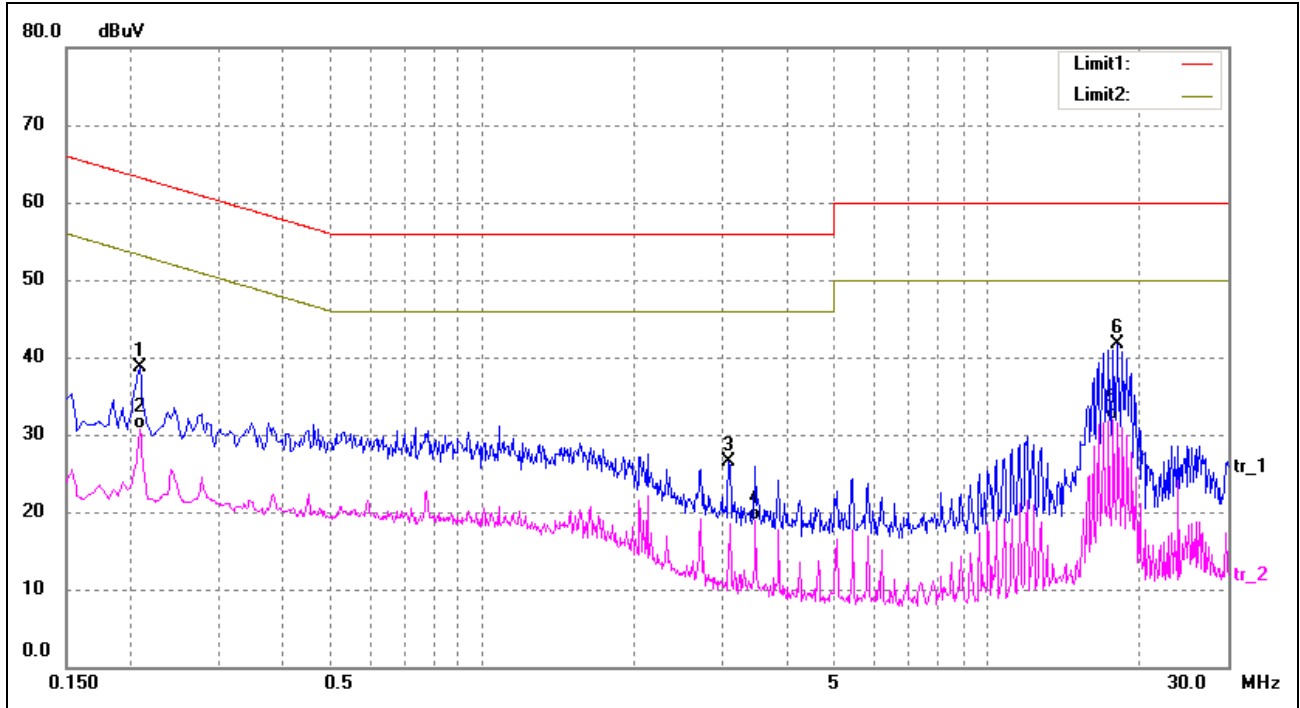


No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1620	33.92	9.50	43.42	65.36	-21.94	peak
2	0.1620	15.59	9.50	25.09	55.36	-30.27	AVG
3	0.3700	28.82	9.50	38.32	58.50	-20.18	peak
4	0.4300	15.80	9.50	25.30	47.25	-21.95	AVG
5	24.0020	26.67	12.67	39.34	60.00	-20.66	peak
6	24.0020	18.61	12.67	31.28	50.00	-18.72	AVG

Test Specification: Line

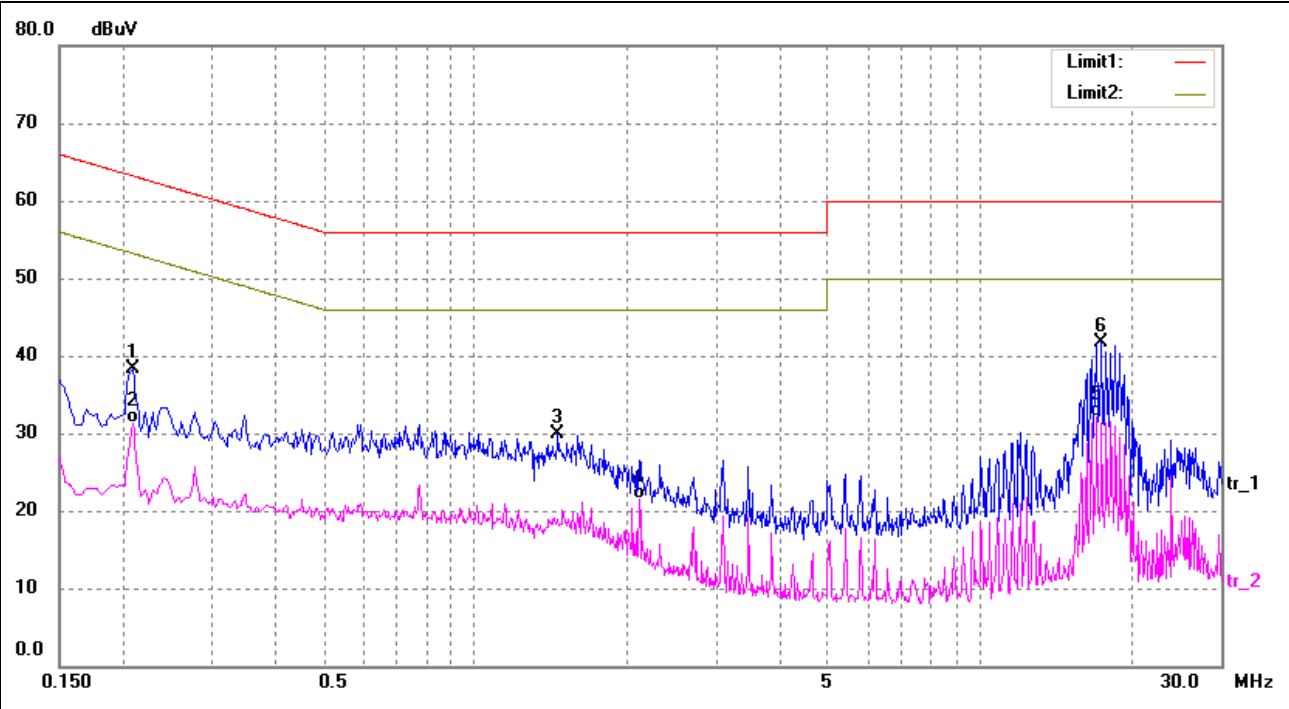


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.3660	33.03	9.50	42.53	58.59	-16.06	peak
2	0.3700	23.10	9.50	32.60	48.50	-15.90	AVG
3	0.7780	17.10	9.78	26.88	46.00	-19.12	AVG
4	0.8260	31.43	9.83	41.26	56.00	-14.74	peak
5	23.9980	26.15	12.67	38.82	60.00	-21.18	peak
6	23.9980	18.79	12.67	31.46	50.00	-18.54	AVG

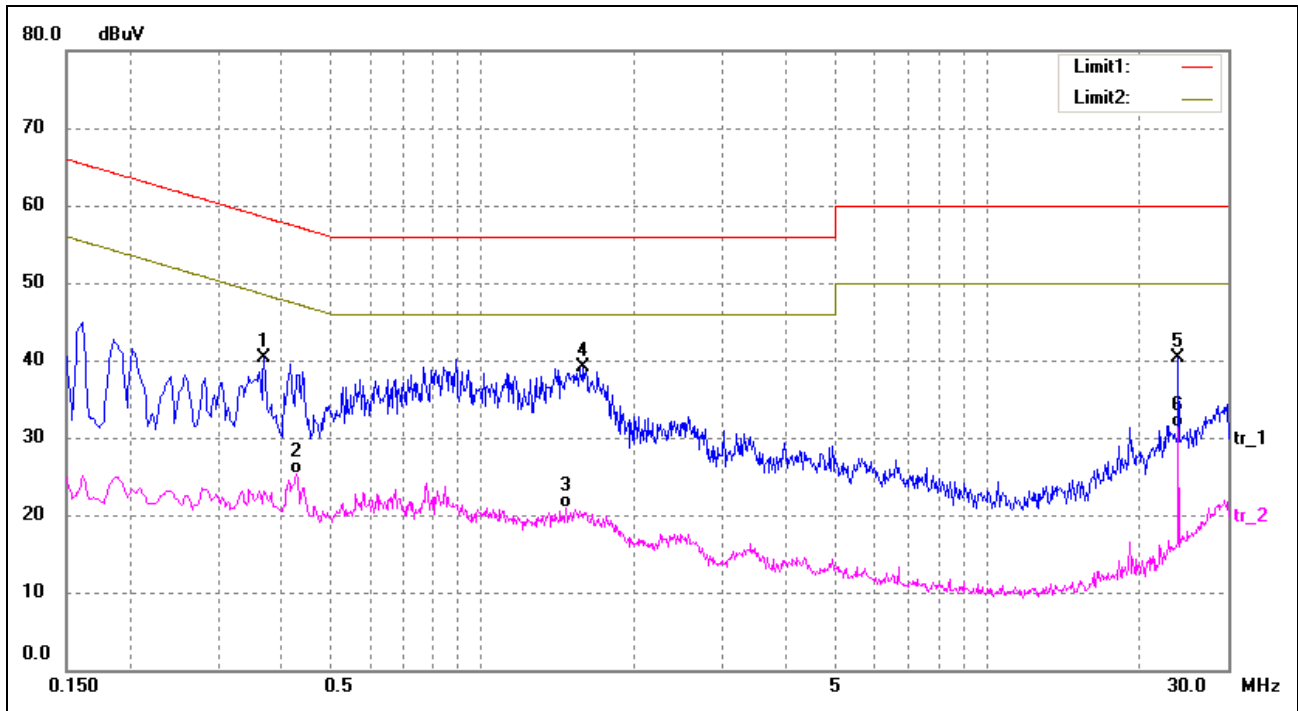
**Plot of Conducted Emissions Test Data***EUT: Tablet PC**Tested Model: Winnpad 7 Tablet**Operating Condition: TM2**Comment: 120V/60Hz; Adapter DC 5V**Test Specification: Neutral*

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2100	29.19	9.50	38.69	63.21	-24.52	peak
2	0.2100	21.15	9.50	30.65	53.21	-22.56	AVG
3	3.0820	16.44	10.00	26.44	56.00	-29.56	peak
4	3.4860	8.81	10.00	18.81	46.00	-27.19	AVG
5	17.8220	20.26	11.56	31.82	50.00	-18.18	AVG
6	18.0780	30.13	11.62	41.75	60.00	-18.25	peak

Test Specification: Line

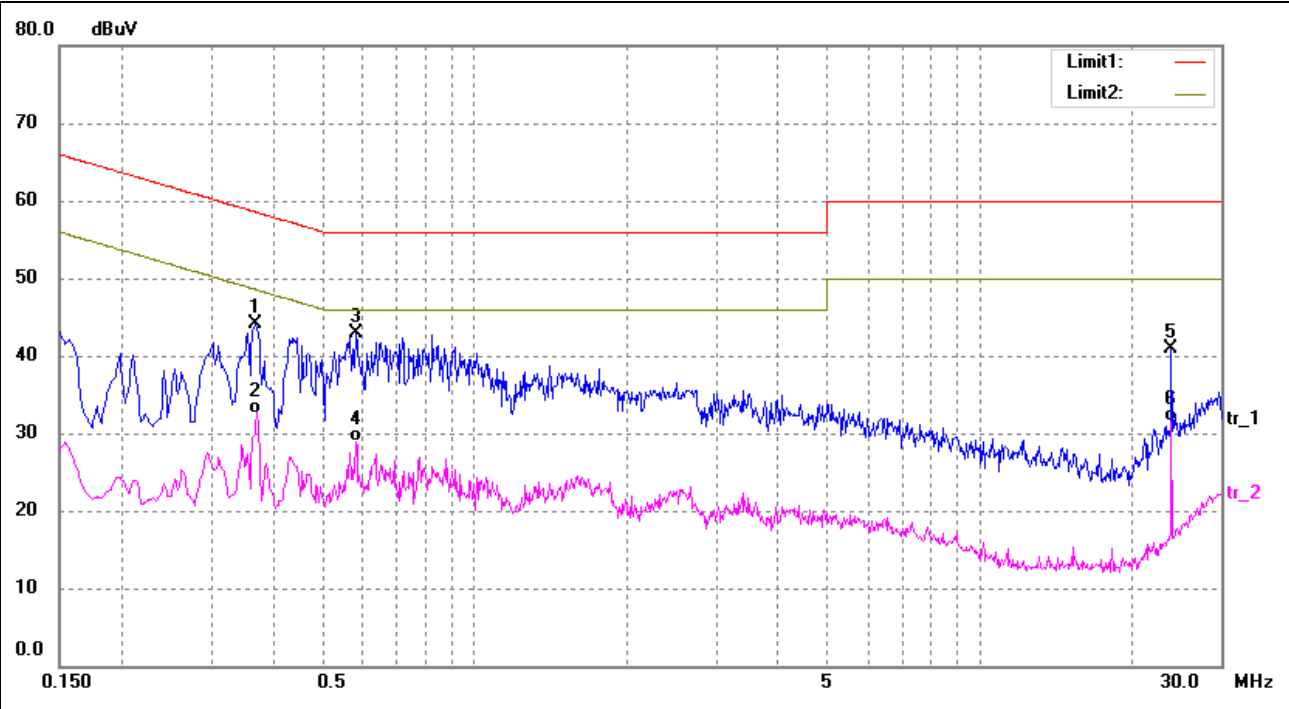


No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.2100	28.82	9.50	38.32	63.21	-24.89	peak
2	0.2100	21.89	9.50	31.39	53.21	-21.82	AVG
3	1.4580	19.91	10.00	29.91	56.00	-26.09	peak
4	2.1180	11.43	10.00	21.43	46.00	-24.57	AVG
5	17.0460	20.65	11.41	32.06	50.00	-17.94	AVG
6	17.4220	30.29	11.48	41.77	60.00	-18.23	peak

**Plot of Conducted Emissions Test Data***EUT: Tablet PC**Tested Model: Winnpad 7 Tablet**Operating Condition: TM3**Comment: 120V/60Hz; Adapter DC 5V**Test Specification: Neutral*

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.3699	30.82	9.50	40.32	58.50	-18.18	peak
2	0.4299	15.80	9.50	25.30	47.25	-21.95	AVG
3	1.4699	10.86	10.00	20.86	46.00	-25.14	AVG
4	1.5860	29.10	10.00	39.10	56.00	-16.90	peak
5	24.0019	27.67	12.67	40.34	60.00	-19.66	peak
6	24.0019	18.61	12.67	31.28	50.00	-18.72	AVG

Test Specification: Line



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.3659	34.53	9.50	44.03	58.59	-14.56	peak
2	0.3699	23.10	9.50	32.60	48.50	-15.90	AVG
3	0.5819	33.32	9.58	42.90	56.00	-13.10	peak
4	0.5819	19.29	9.58	28.87	46.00	-17.13	AVG
5	23.9980	28.15	12.67	40.82	60.00	-19.18	peak
6	23.9980	18.79	12.67	31.46	50.00	-18.54	AVG

## 4. Radiated Emissions

### 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

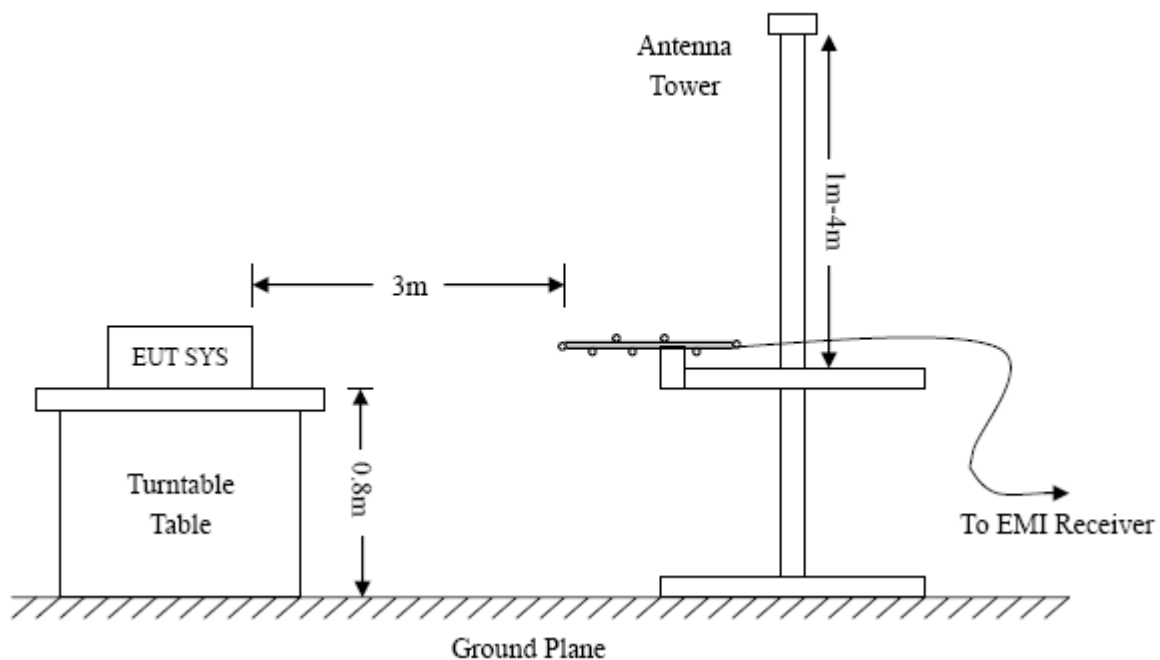
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2014-05-28	2015-05-27
EMI Test Receiver	R&S	ESVB	825471/005	2014-05-28	2015-05-27
Pre-amplifier	Agilent	8447F	3113A06717	2014-05-28	2015-05-27
Pre-amplifier	Compliance Direction	PAP-0118	24002	2014-05-28	2015-05-27
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2014-05-24	2015-05-23
Horn Antenna	ETS	3117	00086197	2014-05-24	2015-05-23
Loop Antenna	SCHWARZECK	HFRA 5165	9365	2014-05-24	2015-05-23

### 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 15.109 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

Frequency :9kHz-30MHz

RBW=10KHz,

VBW =30KHz

Sweep time= Auto

Trace = max hold

Detector function = peak

Frequency :30MHz-1GHz

RBW=120KHz,

VBW=300KHz

Sweep time= Auto

Trace = max hold

Detector function = peak, QP

Frequency :Above 1GHz

RBW=1MHz,

VBW=3MHz(Peak), 10Hz(AV)

Sweep time= Auto

Trace = max hold

Detector function = peak, AV

#### 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 a Class B device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15.109(a) Limit}$$

#### 4.6 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	55 %
ATM Pressure:	1011 mbar

#### 4.7 Summary of Test Results/Plots

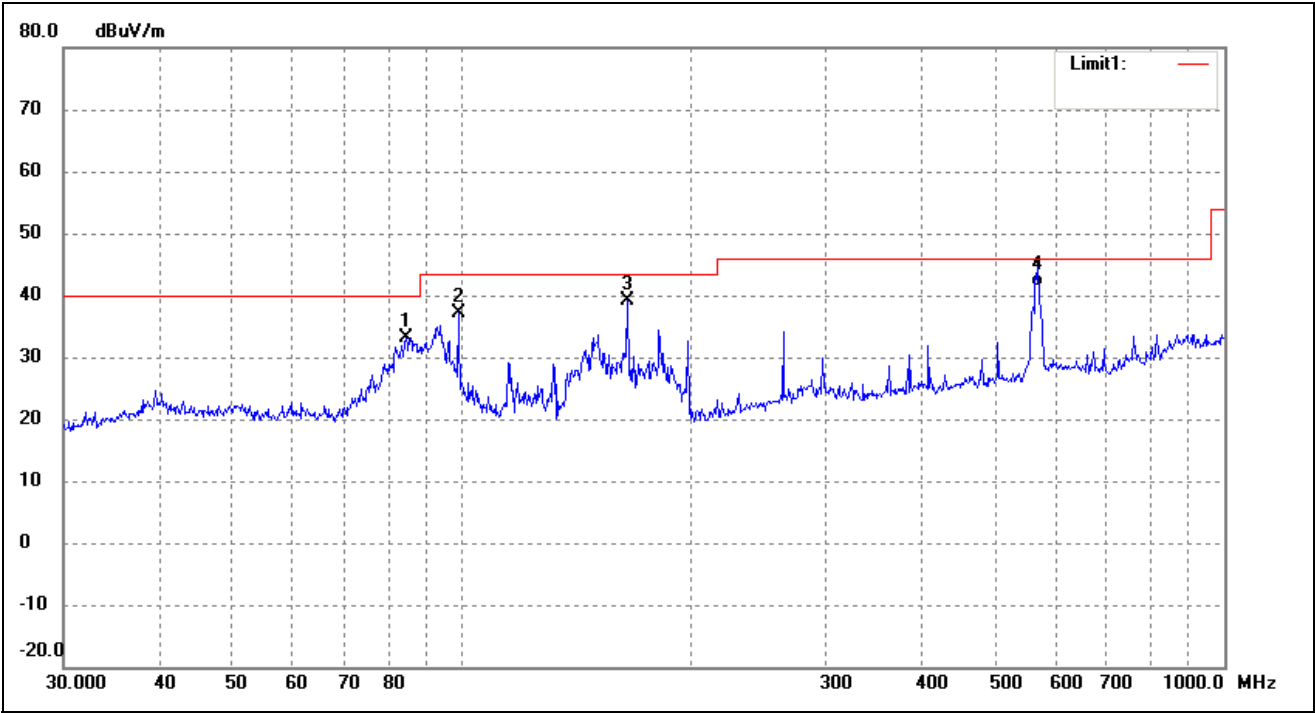
According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

**-1.08 dB at 323.3204 MHz in the Horizontal polarization, 9 kHz to 5 GHz, 3Meters**



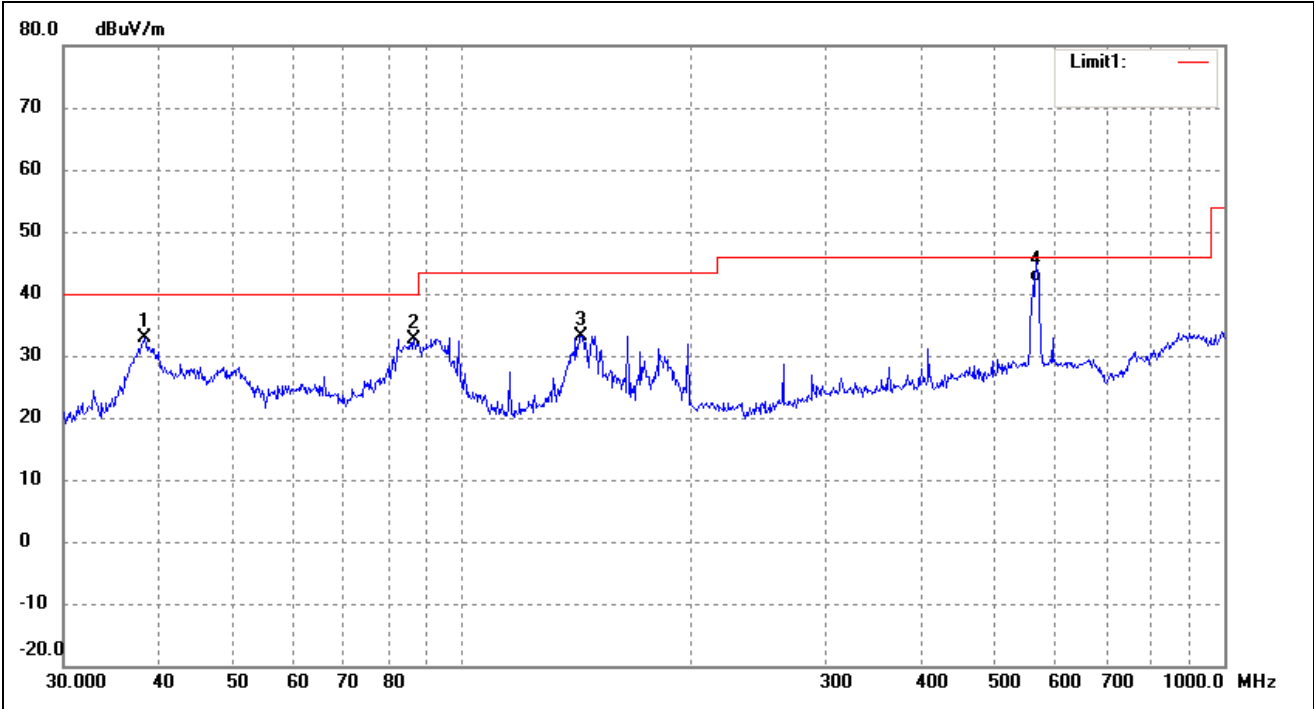
Plot of Radiated Emissions Test Data

EUT: Tablet PC  
Tested Model: Winnpad 7 Tablet  
Operating Condition: TM1  
Comment: 120V/60Hz; Adapter DC 5V  
  
Test Specification: Horizontal

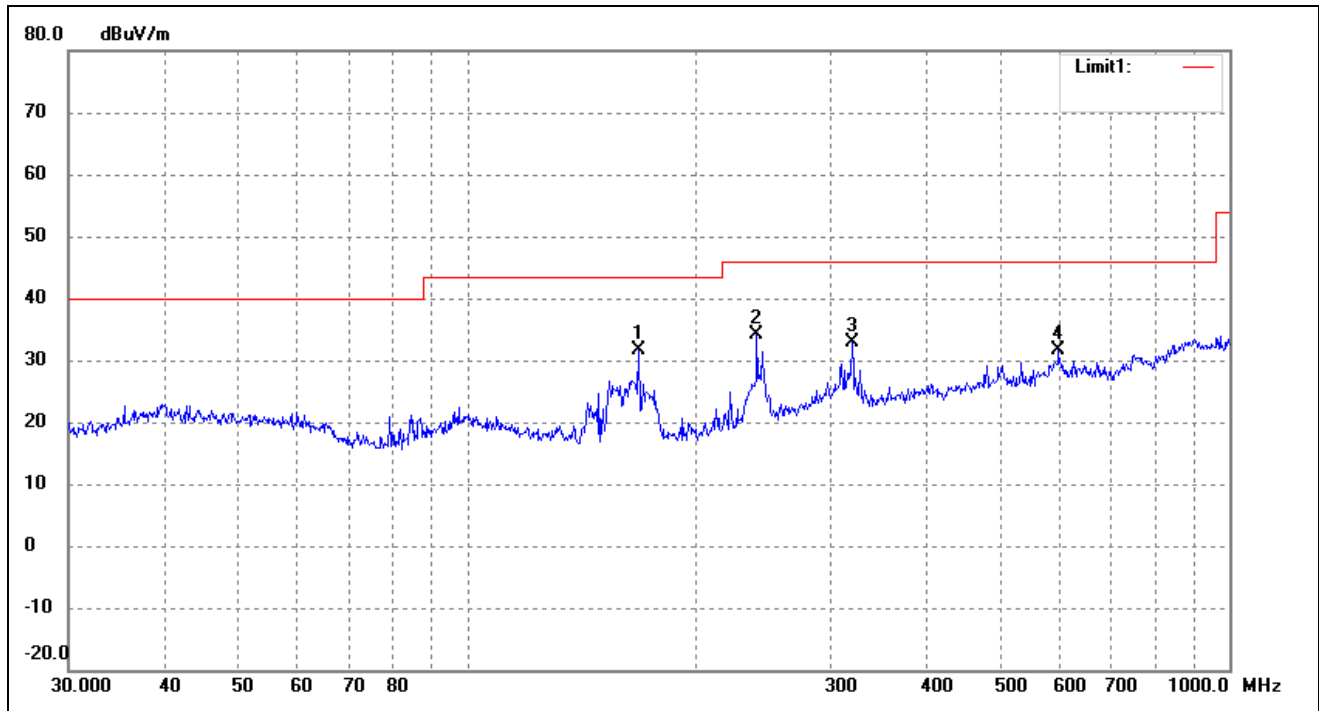


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	84.4054	30.88	2.16	33.04	40.00	-6.96	56	200	peak
2	98.8325	31.17	5.84	37.01	43.50	-6.49	89	100	peak
3	164.9074	36.37	2.65	39.02	43.50	-4.48	135	100	peak
4	568.6127	29.50	11.98	41.48	46.00	-4.52	168	100	QP

Test Specification: Vertical

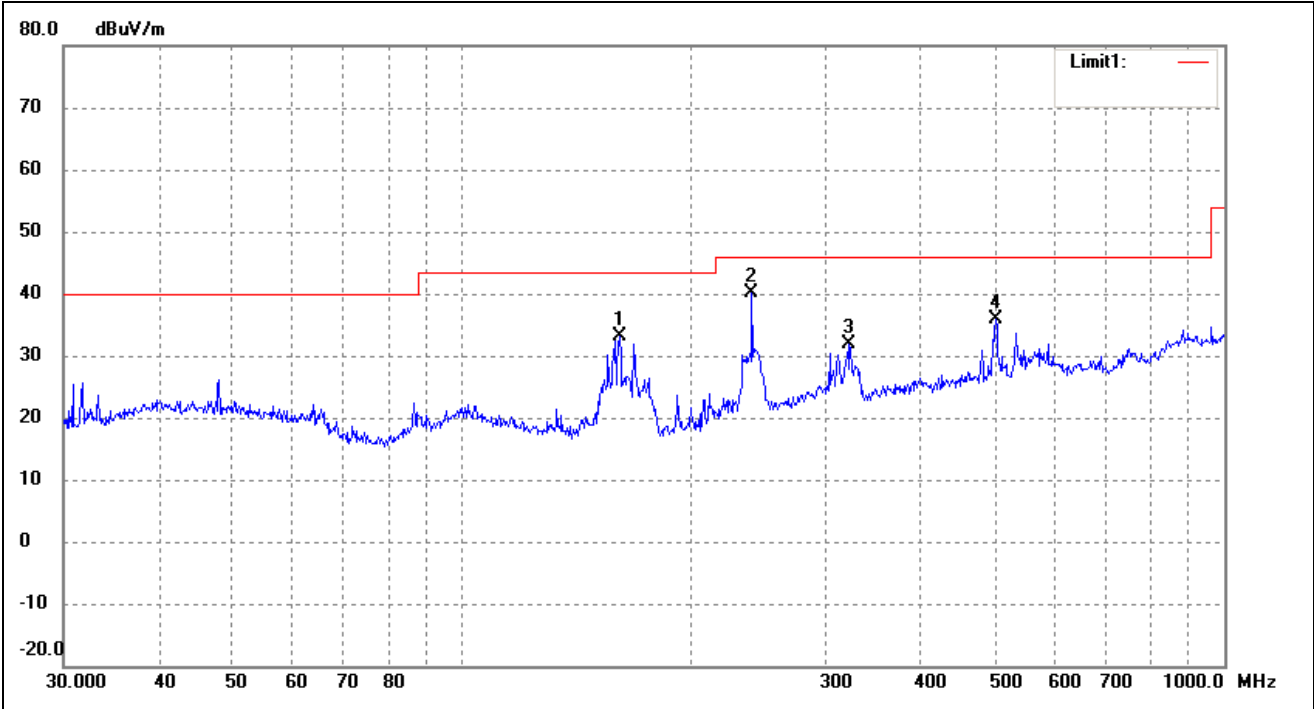


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	38.3462	26.19	6.81	33.00	40.00	-7.00	34	100	peak
2	86.5029	29.94	2.70	32.64	40.00	-7.36	73	100	peak
3	143.3261	30.72	2.45	33.17	43.50	-10.33	146	100	peak
4	566.6223	30.10	11.87	41.97	46.00	-4.03	213	100	QP

**Plot of Radiated Emissions Test Data***EUT:* Tablet PC*Tested Model:* Winnpad 7 Tablet*Operating Condition:* TM2*Comment:* 120V/60Hz; Adapter DC 5V*Test Specification:* Horizontal

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( ° )	Height (cm)	Remark
1	167.8243	28.84	2.67	31.51	43.50	-11.99	76	100	peak
2	239.9874	27.69	6.33	34.02	46.00	-11.98	139	100	peak
3	319.9370	23.52	9.29	32.81	46.00	-13.19	176	100	peak
4	597.2234	18.50	13.21	31.71	46.00	-14.29	233	100	peak

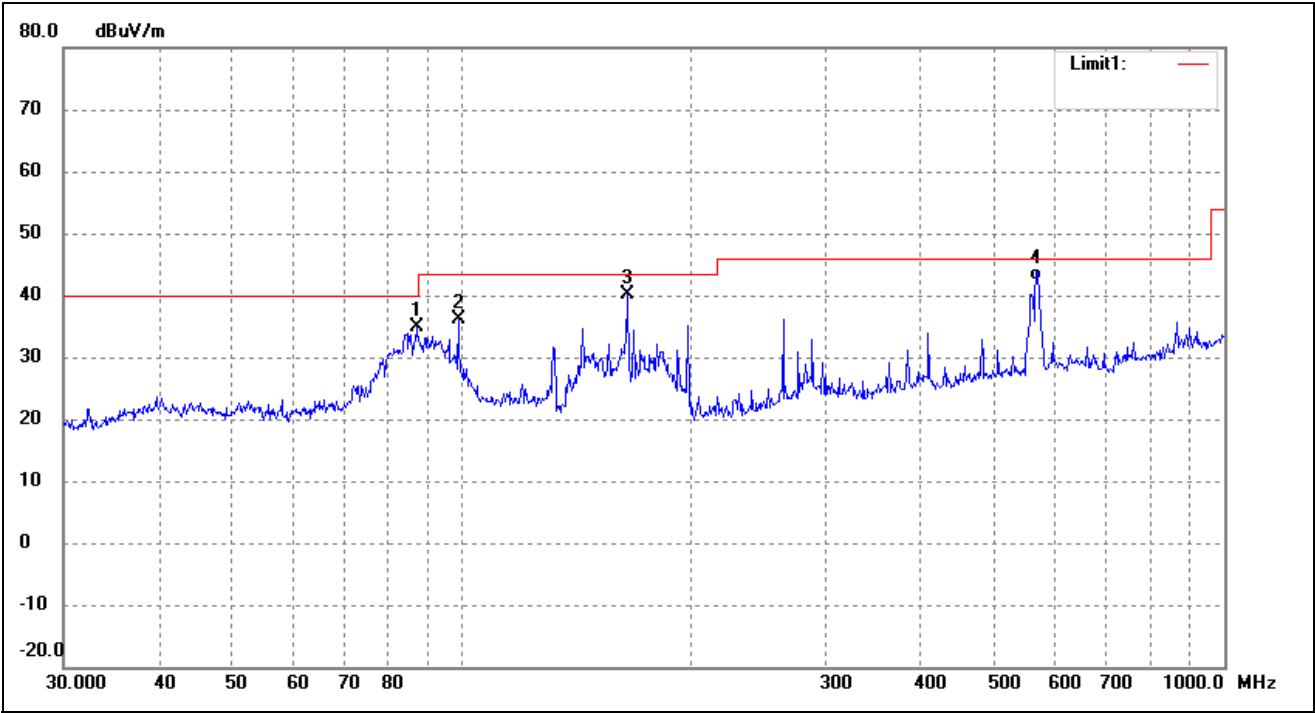
Test Specification: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	160.9089	30.48	2.62	33.10	43.50	-10.40	81	100	peak
2	239.9874	33.80	6.33	40.13	46.00	-5.87	143	100	peak
3	321.0608	22.65	9.26	31.91	46.00	-14.09	205	100	peak
4	501.1790	24.89	10.88	35.77	46.00	-10.23	279	100	peak

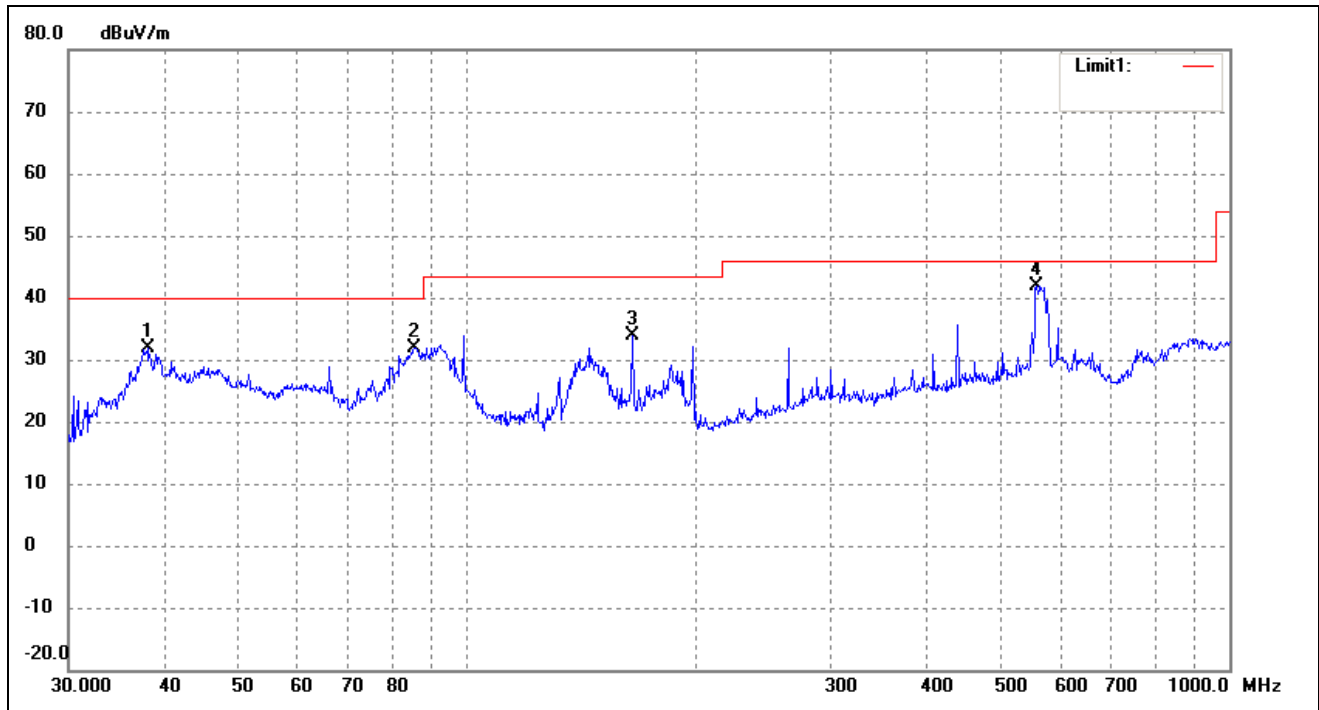
Plot of Radiated Emissions Test Data

EUT: Tablet PC  
Tested Model: Winnpad 7 Tablet  
Operating Condition: TM3  
Comment: 120V/60Hz; Adapter DC 5V  
  
Test Specification: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	87.1117	32.05	2.86	34.91	40.00	-5.09	69	200	peak
2	98.8326	30.37	5.84	36.21	43.50	-7.29	101	100	peak
3	164.9075	37.57	2.65	40.22	43.50	-3.28	183	100	peak
4	566.6223	30.40	11.87	42.27	46.00	-3.73	246	100	QP

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ( ° )	Height (cm)	Remark
1	38.0783	25.15	6.73	31.88	40.00	-8.12	46	100	peak
2	85.2981	29.50	2.39	31.89	40.00	-8.11	83	100	peak
3	164.9075	31.21	2.65	33.86	43.50	-9.64	167	100	peak
4	558.7302	30.36	11.52	41.88	46.00	-4.12	238	100	peak

Note: Testing is carried out with frequency rang 9kHz to the 5GHz, 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 and test data are not provided.

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