FCC Part 15B
Measurement and Test Report

For

ELECTRONICS TECHNOLOGY(DONG GUAN) COMPANY LIMITED

No.161, Xin Min Road, Tong Luo Wei Industrial Zone, Dong Guan City,

China

FCC ID: ZL9-CKT3

Test Rule(s):	FCC Part 15 Subpart B
Product Description:	Tablet
Tested Model:	M77GX2-SP1
Report No.:	STR15068087I-3
Tested Date:	2015-06-09 to 2015-06-30
Issued Date:	2015-06-30
Tested By:	Lebron Wang / Engineer
Reviewed By:	Lahm Peng / EMC Manager
Approved & Authorized By:	Jandy So / PSQ Manager

Prepared By:

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	ELECTRONICS TECHNOLOGY(DONG GUAN) COMPANY LIMITED
Address of applicant:	No.161, Xin Min Road, Tong Luo Wei Industrial Zone, Dong Guan City, China
Manufacturer:	ELECTRONICS TECHNOLOGY(DONG GUAN) COMPANY LIMITED
Address of manufacturer:	No.161, Xin Min Road, Tong Luo Wei Industrial Zone, Dong Guan City, China

General Description of EUT	
Product Name:	Tablet
Trade Name:	/
Model No.:	M77GX2-SP1
Adding Model(s):	CKT3, ClickN_Kids
Note: The test data is gathered from a production sample provided by the manufacturer. The appearance of others models listed in the report is different from main-test model M77GX2-SP1, but the circuit and the electronic construction do not change, declared by the manufacturer.	

Technical Characteristics of EUT	
Rated Voltage:	5.0V
Rated Current:	2A
Rated Power:	/
Power Adapter Model:	/
Lowest Internal Frequency:	32.768KHz
Highest Internal Frequency:	1.83GHz
Classification of ITE:	Class B

1.2 Test Standards

The following report is prepared on behalf of the ELECTRONICS TECHNOLOGY(DONG GUAN) COMPANY LIMITED 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 C63.4-2009, 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 2nd Road, Bao'an District, Shenzhen, P.R.C (518101)

- **CNAS Registration No.: L1659**
  CCIC Southern Electronic Product Testing (Shenzhen) 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 L1659. Some measurement facilities used to collect the measurement data are located at Building 28/29, Shigudong, Xili Industrial Area, Xili Street, Nanshan District, Shenzhen, Guangdong, China

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	Connect to PC
TM2	Downloading	Connect to PC

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB Cable	1.5	Shielded	Without Core

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Notebook	Lenovo	E10	LR-63C8R

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
Earphone Cable	1.2	Unshielded	Without Core

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 ± 2.88 dB.

3.2 Test Equipment List and Details

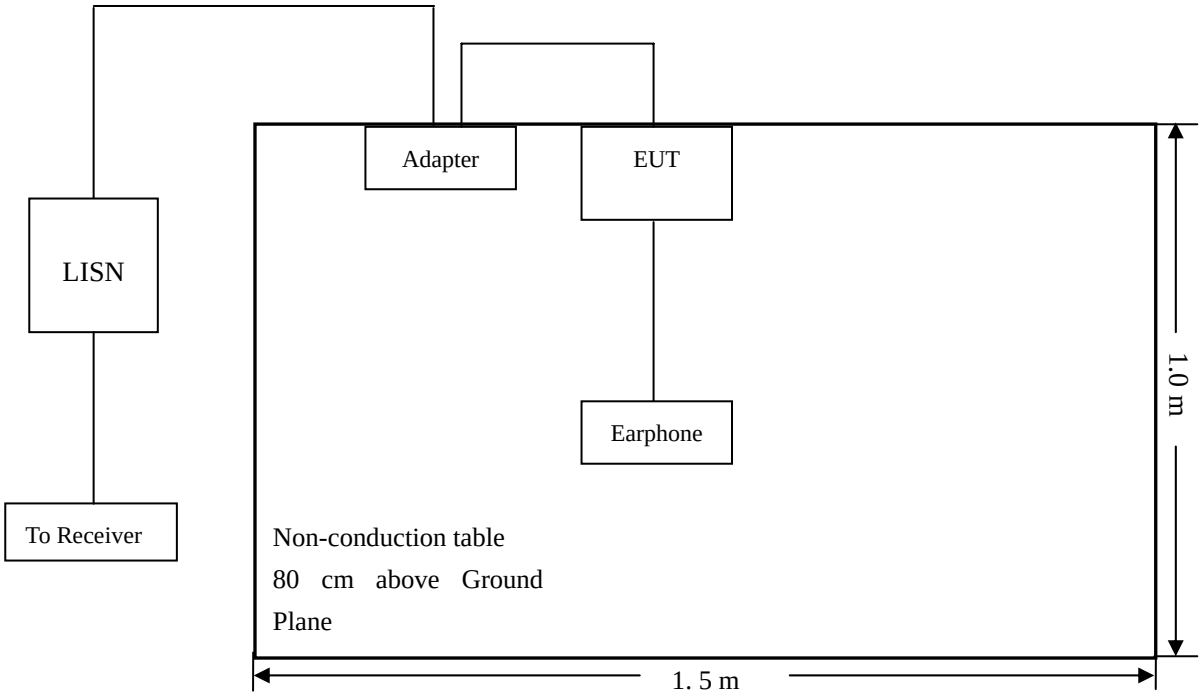
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2015-05-28	2016-05-27
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2015-05-28	2016-05-27
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2015-05-28	2016-05-27

3.3 Test Procedure

Test is conducting under the description of ANSI C63.4-2009, 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.

Note: Base on the calibrated result, for the impedance characteristic and insertion loss, the effect shall be ignored from the placed multiple outlet power strip between the device and LISN.

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:

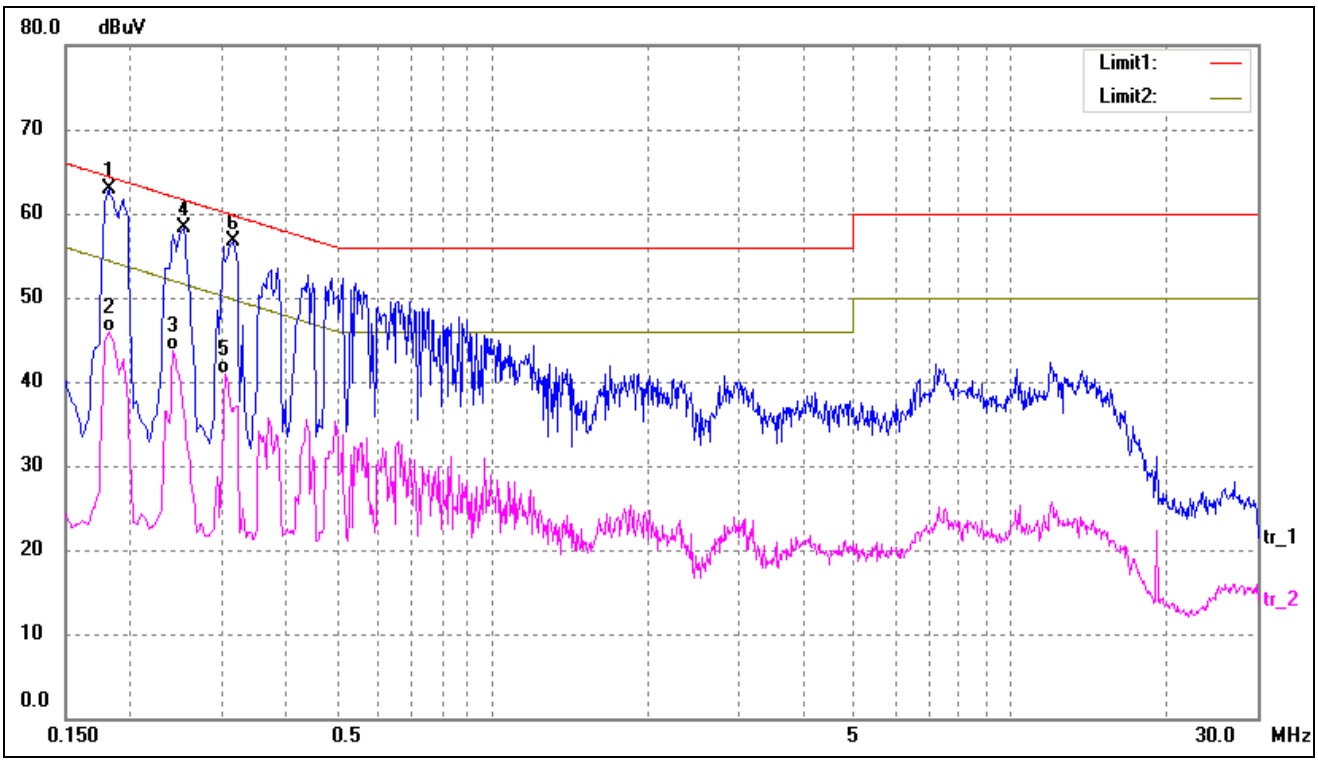
-1.42 dB at **0.1820 MHz** in the **Neutral, QP** detector, **0.15-30MHz**

3.7 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

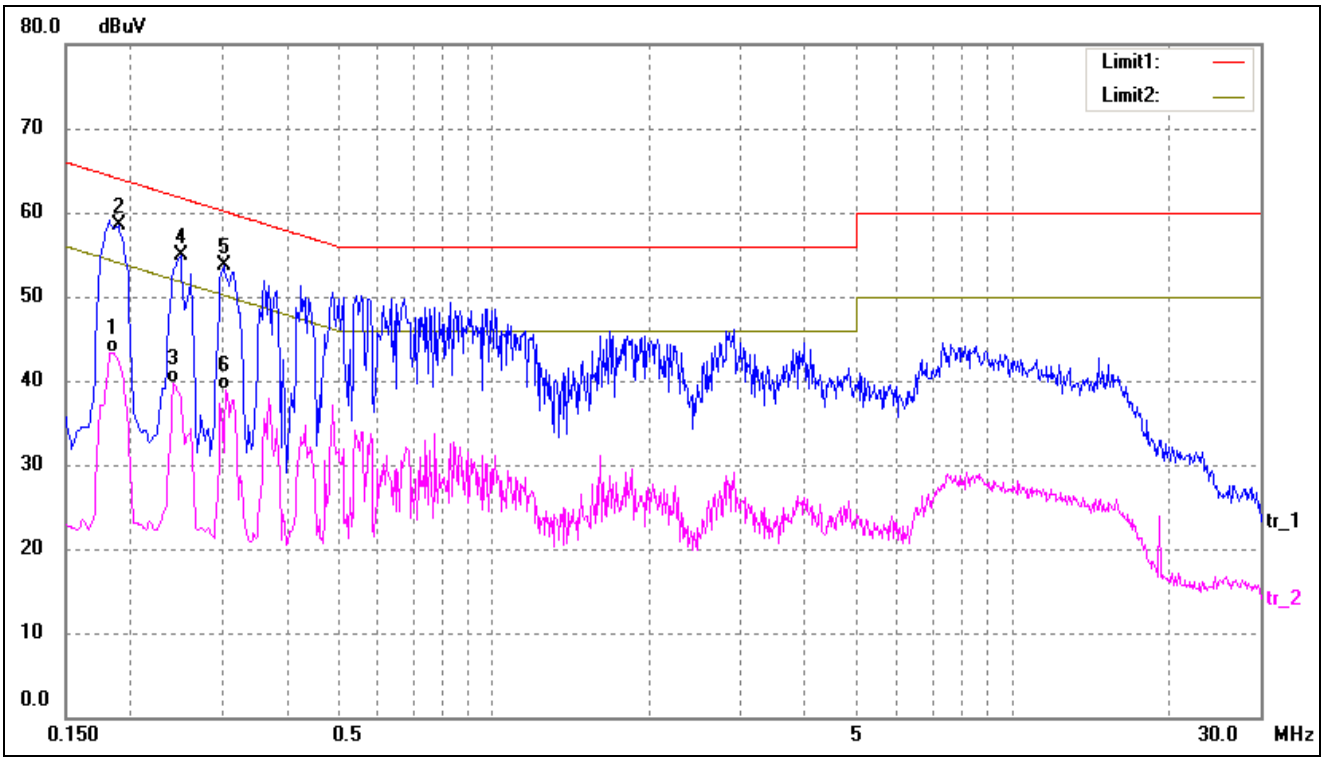
EUT: *Tablet*
Tested Model: *M77GX2-SP1*
Operating Condiation: *TM1*
Comment: *AC 120V/60Hz, Adapter DC 5V/2A*

Test Specification: *Neutral*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1820	53.47	9.50	62.97	64.39	-1.42	QP
2	0.1820	36.45	9.50	45.95	54.39	-8.44	AVG
3	0.2420	34.14	9.50	43.64	52.03	-8.39	AVG
4	0.2540	48.87	9.50	58.37	61.63	-3.26	QP
5	0.3060	31.34	9.50	40.84	50.08	-9.24	AVG
6	0.3180	47.16	9.50	56.66	59.76	-3.10	QP

Test Specification: *Line*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1860	33.80	9.50	43.30	54.21	-10.91	AVG
2	0.1900	48.96	9.50	58.46	64.04	-5.58	QP
3	0.2420	30.20	9.50	39.70	52.03	-12.33	AVG
4	0.2500	45.48	9.50	54.98	61.76	-6.78	QP
5	0.3020	44.21	9.50	53.71	60.19	-6.48	QP
6	0.3060	29.40	9.50	38.90	50.08	-11.18	AVG

4. Radiated Emissions

4.1 Measurement Uncertainty

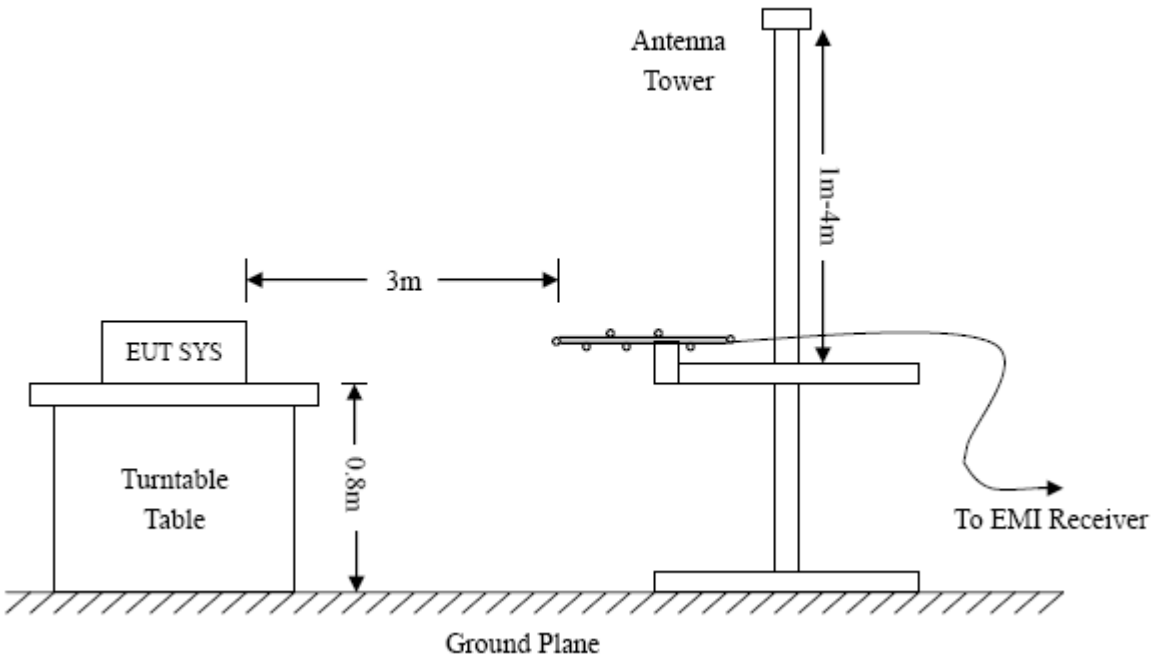
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

4.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2015-05-28	2016-05-27
EMI Test Receiver	R&S	ESVB	825471/005	2015-05-28	2016-05-27
Pre-amplifier	Agilent	8447F	3113A06717	2015-05-28	2016-05-27
Pre-amplifier	Compliance Direction	PAP-0118	24002	2015-05-28	2016-05-27
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2015-05-24	2016-05-23
Horn Antenna	ETS	3117	00086197	2015-05-24	2016-05-23
Loop Antenna	SCHWARZECK	HFRA 5165	9365	2015-05-28	2016-05-27

4.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2009 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	Frequency :30MHz-1GHz	Frequency :Above 1GHz
RBW=10KHz,	RBW=120KHz,	RBW=1MHz,
VBW =30KHz	VBW=300KHz	VBW=3MHz(Peak), 10Hz(AV)
Sweep time= Auto	Sweep time= Auto	Sweep time= Auto
Trace = max hold	Trace = max hold	Trace = max hold
Detector function = peak	Detector function = peak, QP	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:

Corr. Ampl. = Indicated Reading – Corr. Factor

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for a Class B device. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – 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

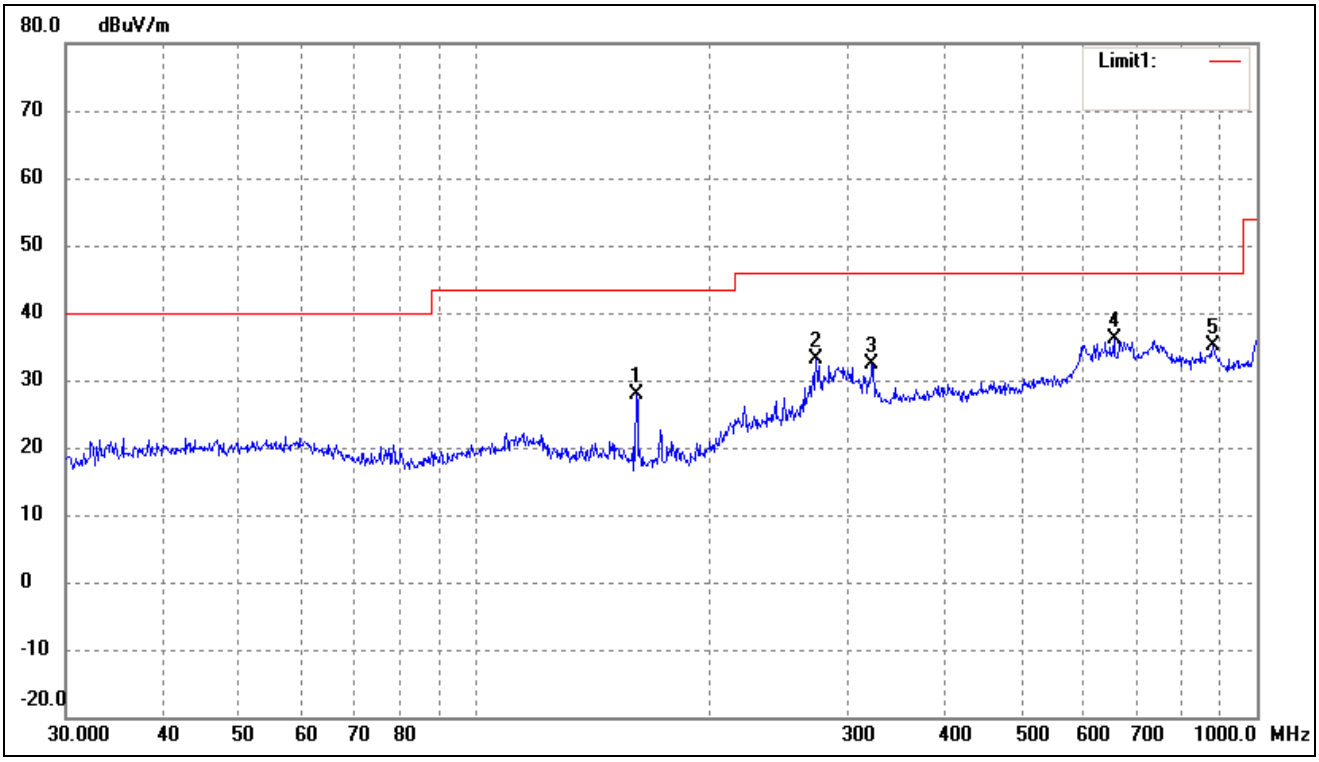
According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

-1.02 dB at **665.8035 MHz** in the **Vertical** polarization, **TM2** mode, **9 kHz** to **6 GHz**, **3Meters**

Plot of Radiated Emissions Test Data

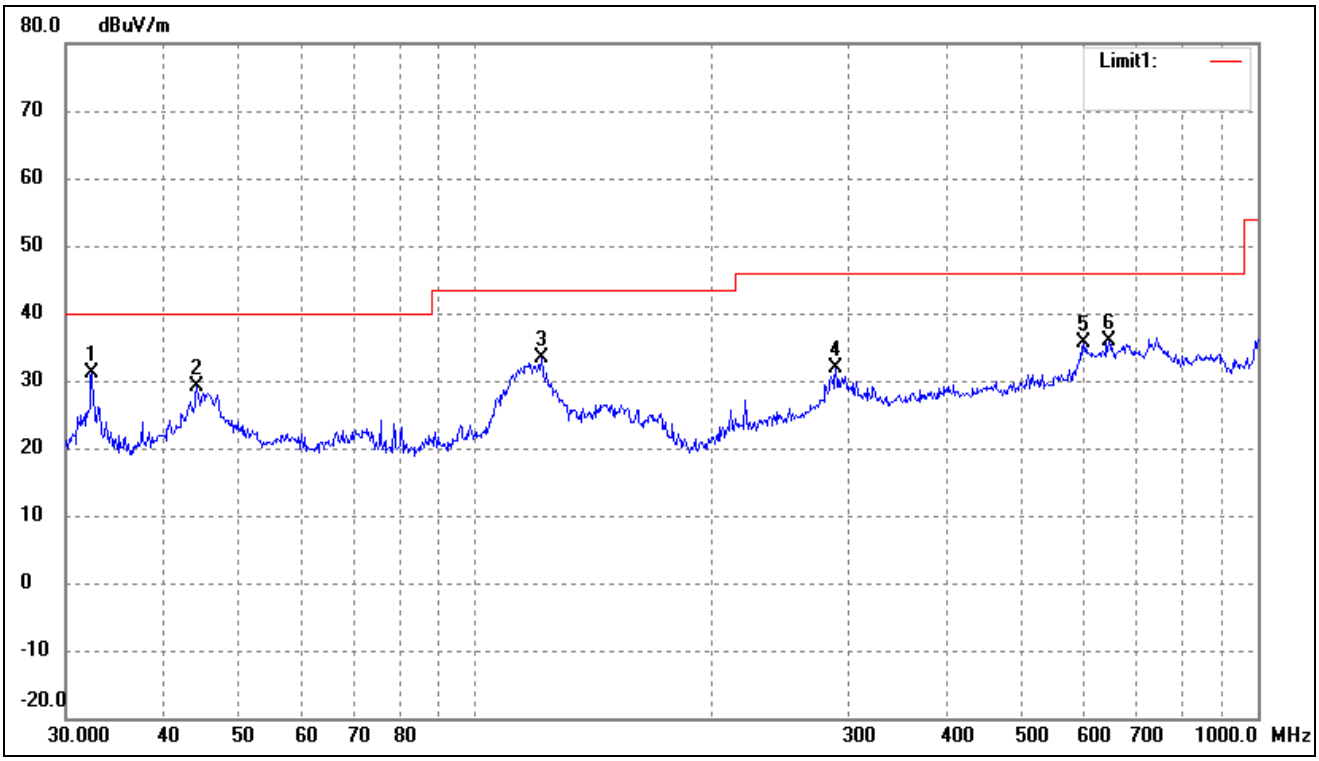
EUT: *Tablet*
Tested Model: *M77GX2-SP1*
Operating Condition: *TM1*
Comment: *AC 120V/60Hz,Adapter DC 5V/2A*

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	160.9089	25.27	2.62	27.89	43.50	-15.61	108	100	QP
2	273.2341	22.22	10.93	33.15	46.00	-12.85	130	100	QP
3	322.1886	20.23	12.23	32.46	46.00	-13.54	229	100	QP
4	656.5300	17.88	18.22	36.10	46.00	-9.90	168	100	QP
5	878.3214	17.33	17.78	35.11	46.00	-10.89	198	100	QP

Test Specification: *Vertical*

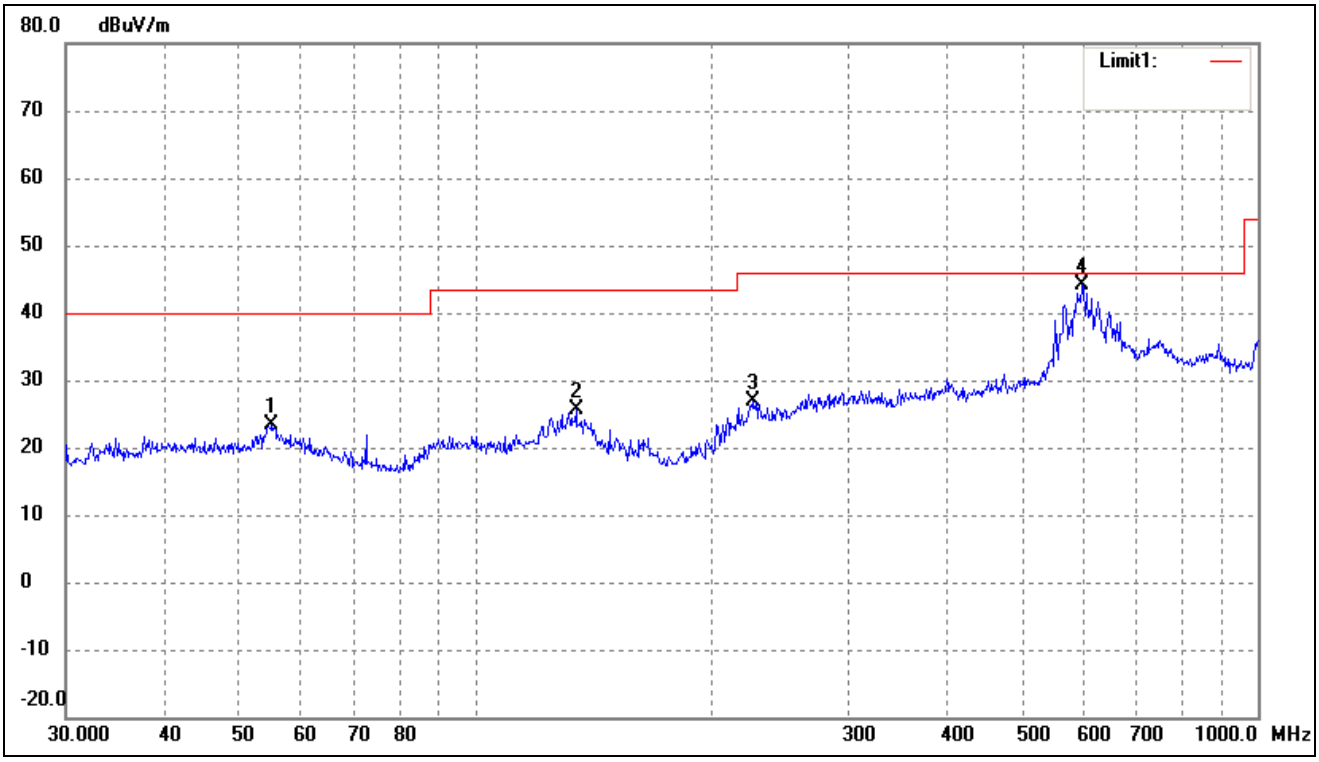


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	32.4059	27.20	4.00	31.20	40.00	-8.80	251	100	QP
2	44.1202	23.92	5.26	29.18	40.00	-10.82	308	100	QP
3	121.5486	28.53	4.89	33.42	43.50	-10.08	120	100	QP
4	289.0021	20.06	11.75	31.81	46.00	-14.19	359	100	QP
5	599.3213	16.44	19.19	35.63	46.00	-10.37	135	100	QP
6	645.1195	17.28	18.50	35.78	46.00	-10.22	198	100	QP

Plot of Radiated Emissions Test Data

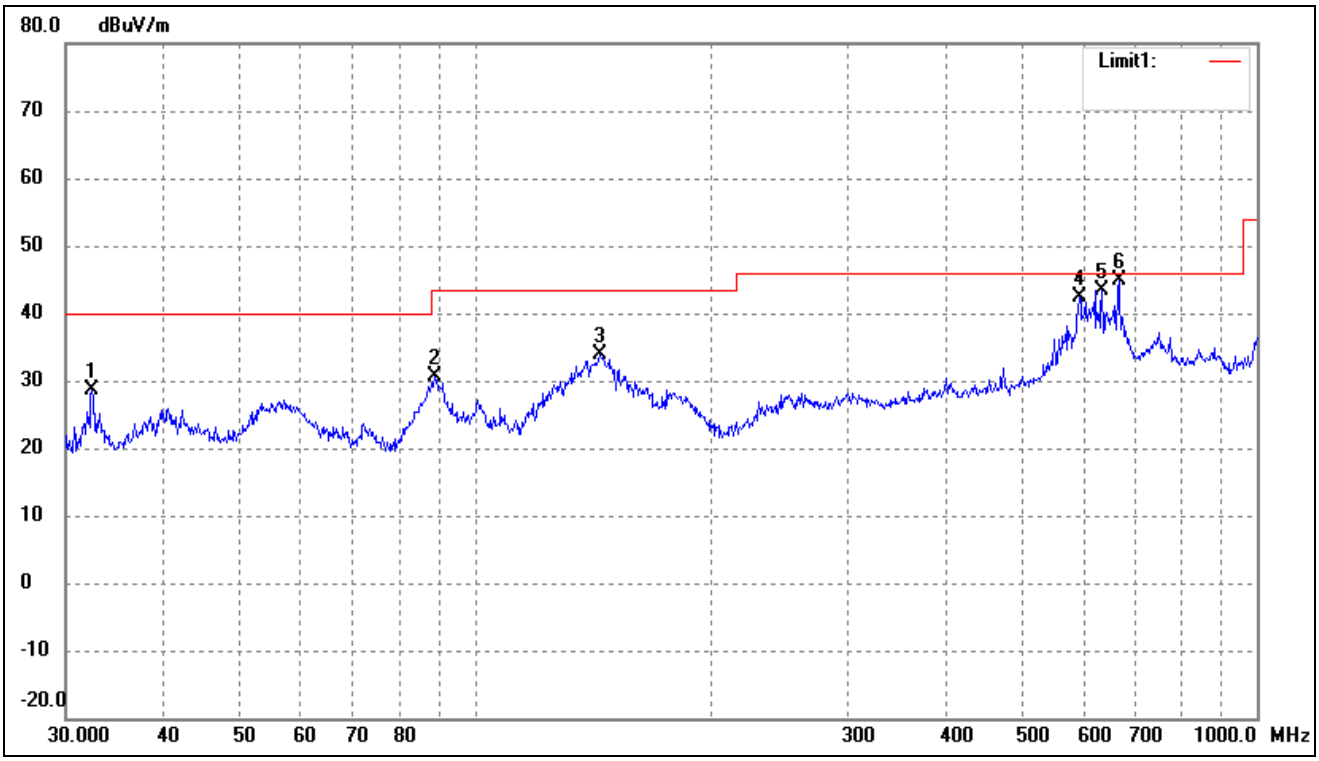
EUT: *Tablet*
Tested Model: *M77GX2-SP1*
Operating Condition: *TM2*
Comment: *AC 120V/60Hz,USB DC 5V*

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	55.0274	17.97	5.32	23.29	40.00	-16.71	158	100	QP
2	134.5592	21.75	3.84	25.59	43.50	-17.91	226	100	QP
3	226.0994	18.33	8.48	26.81	46.00	-19.19	129	100	QP
4	597.2234	25.30	18.80	44.10	46.00	-1.90	109	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	32.4059	24.65	4.00	28.65	40.00	-11.35	51	100	QP
2	88.9639	27.10	3.45	30.55	43.50	-12.95	308	100	QP
3	144.3348	30.75	3.23	33.98	43.50	-9.52	120	100	QP
4	593.0497	24.39	18.01	42.40	46.00	-3.60	359	100	QP
5	633.9073	25.06	18.41	43.47	46.00	-2.53	125	100	QP
6	665.8035	26.52	18.46	44.98	46.00	-1.02	168	100	QP

Note: Testing is carried out with frequency rang 9kHz to the 6GHz, 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 *******