

FCC Part 15B Measurement and Test Report

For

China Greatwall Computer Shenzhen Co., Ltd.

Greatwall Computer Bldg, Kefa Road, Nanshan District, Shenzhen,

Guangdong, PRC.

FCC ID:P3S711

Test Standards: FCC Part 15 Subpart B

Product Description: tablet pc

Tested Model: D2-711

Report No.: STR12098266I-2

Tested Date: 2012-09-26 to 2012-10-09

Issued Date: 2012-10-10

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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

TABLE OF CONTENTS

1. GENERAL INFORMATION.....	3
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	3
1.2 TEST STANDARDS.....	4
1.3 TEST METHODOLOGY	4
1.4 TEST FACILITY	4
1.5 EUT SETUP AND OPERATION MODE	5
2. SUMMARY OF TEST RESULTS	6
3. §15.107 (A) CONDUCTED EMISSIONS	7
3.1 MEASUREMENT UNCERTAINTY	7
3.2 TEST EQUIPMENT LIST AND DETAILS	7
3.3 TEST PROCEDURE.....	7
3.4 BASIC TEST SETUP BLOCK DIAGRAM.....	7
3.5 ENVIRONMENTAL CONDITIONS	8
3.6 SUMMARY OF TEST RESULTS/PLOTS	8
3.7 CONDUCTED EMISSIONS TEST DATA.....	8
4. §15.109(A)- RADIATED EMISSION	11
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: China Greatwall Computer Shenzhen Co., Ltd.
Address of applicant: Greatwall Computer Bldg, Kefa Road, Nanshan District, Shenzhen, Guangdong, PRC.

Manufacturer: China Greatwall Computer Shenzhen Co., Ltd.
Address of manufacturer: Greatwall Computer Bldg, Kefa Road, Nanshan District, Shenzhen, Guangdong, PRC.

General Description of EUT	
Product Name:	tablet pc
Trade Name:	
Model No.:	D2-711
Adding Model(s):	D2-711_BK, D2-711_WH, D2-711_PK, D2-711_PL, D2-711_BL, D2-711_XXX, 711 XXX
Rated Voltage:	Battery: DC 3.7V, Adapter: DC 5V
Power Adapter Model:	CPS012A050150U (Input: AC 100-240V 50/60Hz, Output: DC 5V 1500mA)
<i>Note: 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 D2-711 without circuit and electronic construction changed, declared by the manufacturer.</i>	

Technical Characteristics of EUT	
Rated Voltage:	Battery: DC 3.7V, Adapter: DC 5V
Rated Current:	/
Power Adapter Model:	CPS012A050150U (Input: AC 100-240V 50/60Hz, Output: DC 5V 1500mA)
Highest Internal Frequency:	1 GHz
Classification of ITE:	B
Support Interface:	Earphone Port, DC Power Port, Micro USB Port

1.2 Test Standards

The following report is prepared on behalf of the China Greatwall Computer 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, 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.: 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 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	Charging & Color Bar with 1kHz Video
TM2	Downloading	Reading & writing

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
DC Power Cable	1.0	Unshielded	Unshielded
USB Cable (to USB device)	0.15	Shielded	Without Ferrite
USB Cable (to PC)	0.60	Shielded	Without Ferrite

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Notebook	SAMSUNG	NP-R20	124V93FP30082V

Special Cable List and Details

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

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. §15.107 (a) 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

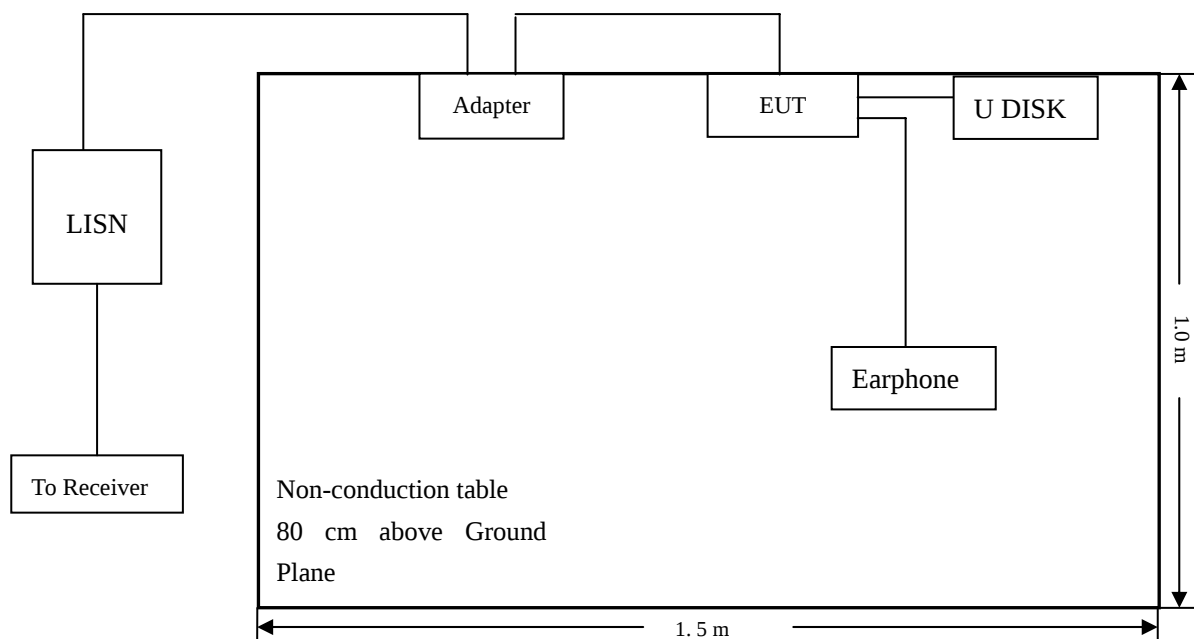
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2012-03-28	2013-03-27
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2012-03-28	2013-03-27
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2012-03-28	2013-03-27

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

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:

-11.72 dB μ V at 0.394 MHz in the Neutral, Peak detector, 0.15-30MHz

3.7 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

EUT:

tablet pc

Tested Model:

D2-711

Operating Condition:

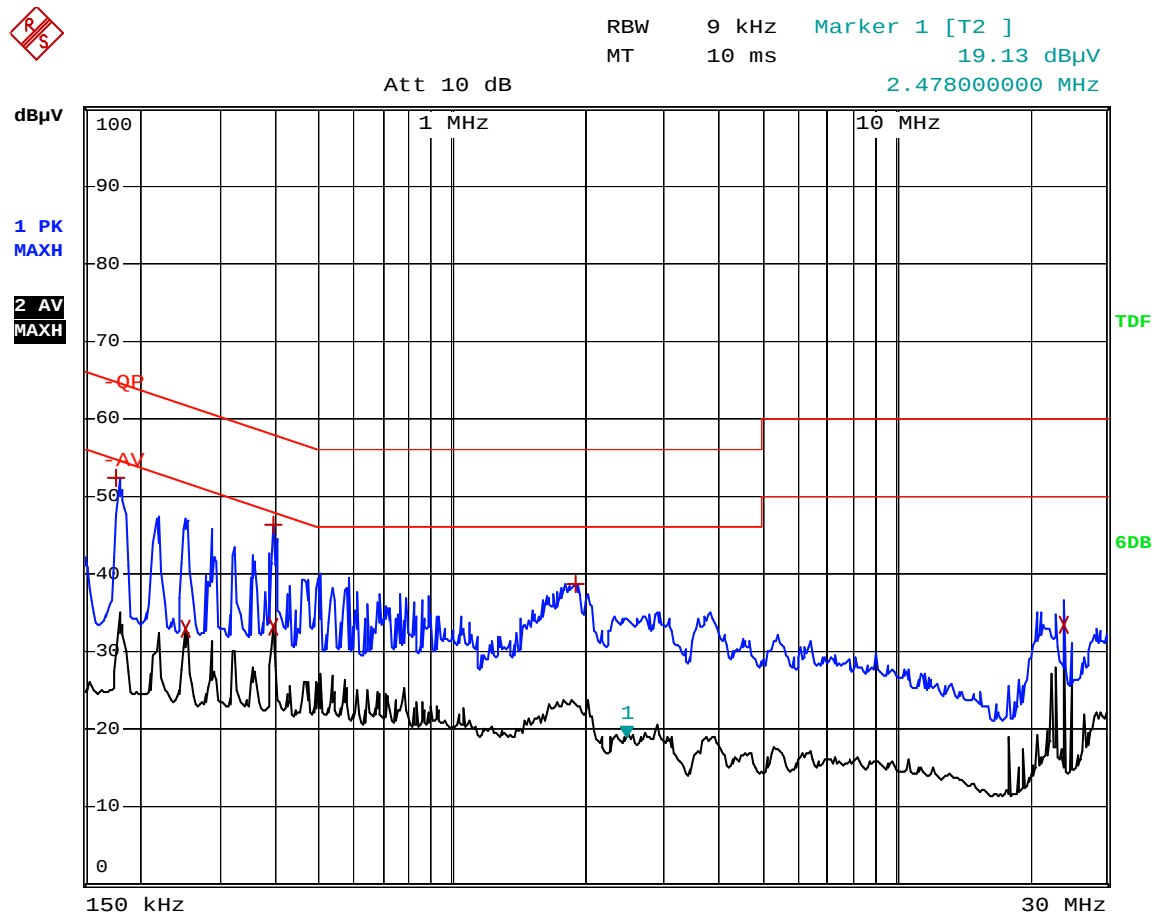
Charging & Color Bar with 1kHz Video

Comment:

AC 120V/60Hz

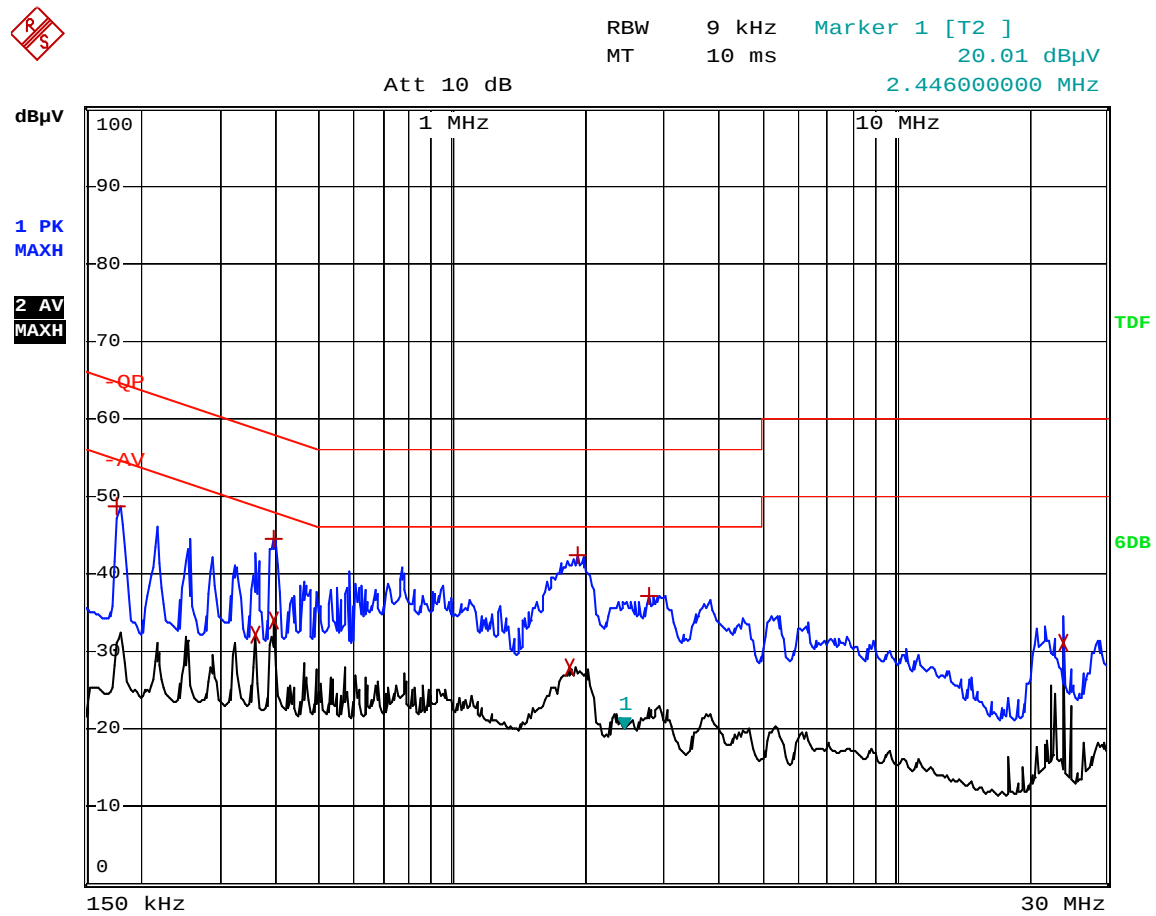
Test Specification:

Neutral



EDIT PEAK LIST (Prescan Results)			
Trace1:	-QP		
Trace2:	-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
1 Max Peak	178 kHz	52.35	-12.22
2 Average	250 kHz	32.87	-18.87
1 Max Peak	394 kHz	46.25	-11.72
2 Average	394 kHz	33.17	-14.80
1 Max Peak	1.91 MHz	38.80	-17.19
2 Average	23.982 MHz	33.55	-16.44

Test Specification: Line



EDIT PEAK LIST (Prescan Results)			
Trace1:	-QP		
Trace2:	-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
1 Max Peak	178 kHz	48.69	-15.88
2 Average	358 kHz	32.12	-16.65
1 Max Peak	394 kHz	44.40	-13.57
2 Average	394 kHz	33.89	-14.08
2 Average	1.846 MHz	27.91	-18.08
1 Max Peak	1.918 MHz	42.31	-13.68
1 Max Peak	2.802 MHz	37.13	-18.86
2 Average	23.982 MHz	31.02	-18.97

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 ± 5.10 dB.

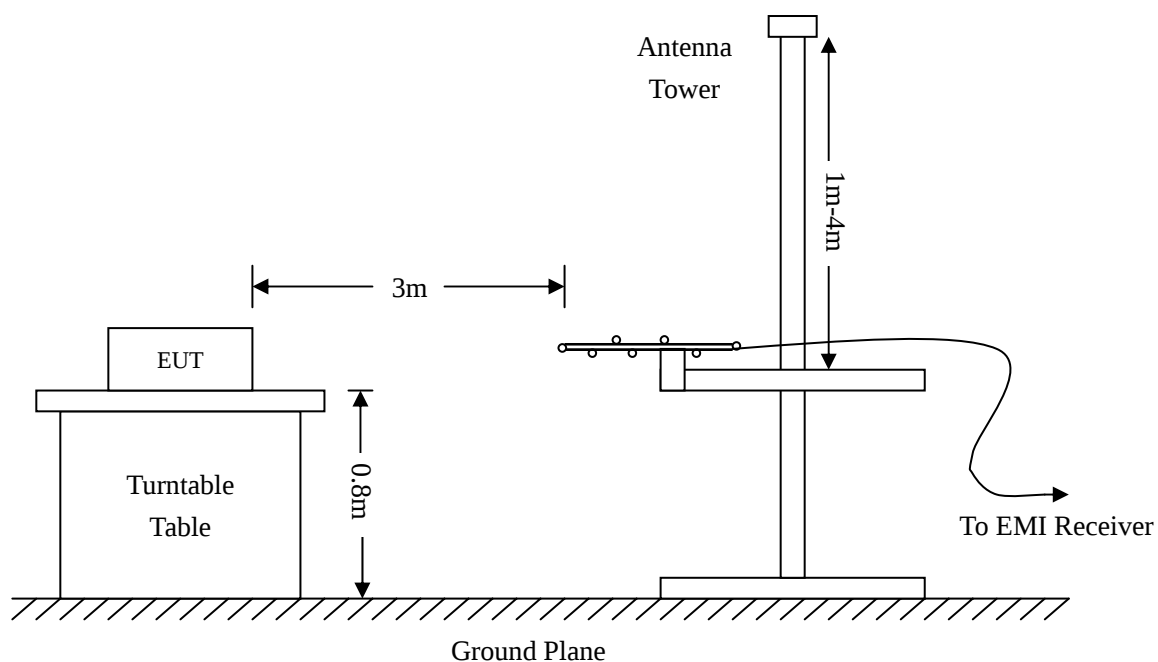
4.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2012-03-28	2013-03-27
EMI Test Receiver	R&S	ESVB	825471/005	2012-03-28	2013-03-27
Pre-amplifier	Agilent	8447F	3113A06717	2012-03-28	2013-03-27
Pre-amplifier	Compliance Direction	PAP-0118	24002	2012-03-28	2013-03-27
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2012-02-25	2013-02-24
Horn Antenna	ETS	3117	00086197	2012-02-25	2013-02-24

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

During the radiated emission test for above 1GHz, the test receiver was set with the following configurations:

For peak detector:

RBW = 1000kHz, VBW = 3000kHz, Sweep Time = Auto

For average detector:

RBW = 1000kHz, VBW = 10Hz, Sweep Time = Auto

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 μ V means the emission is 6dB μ 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

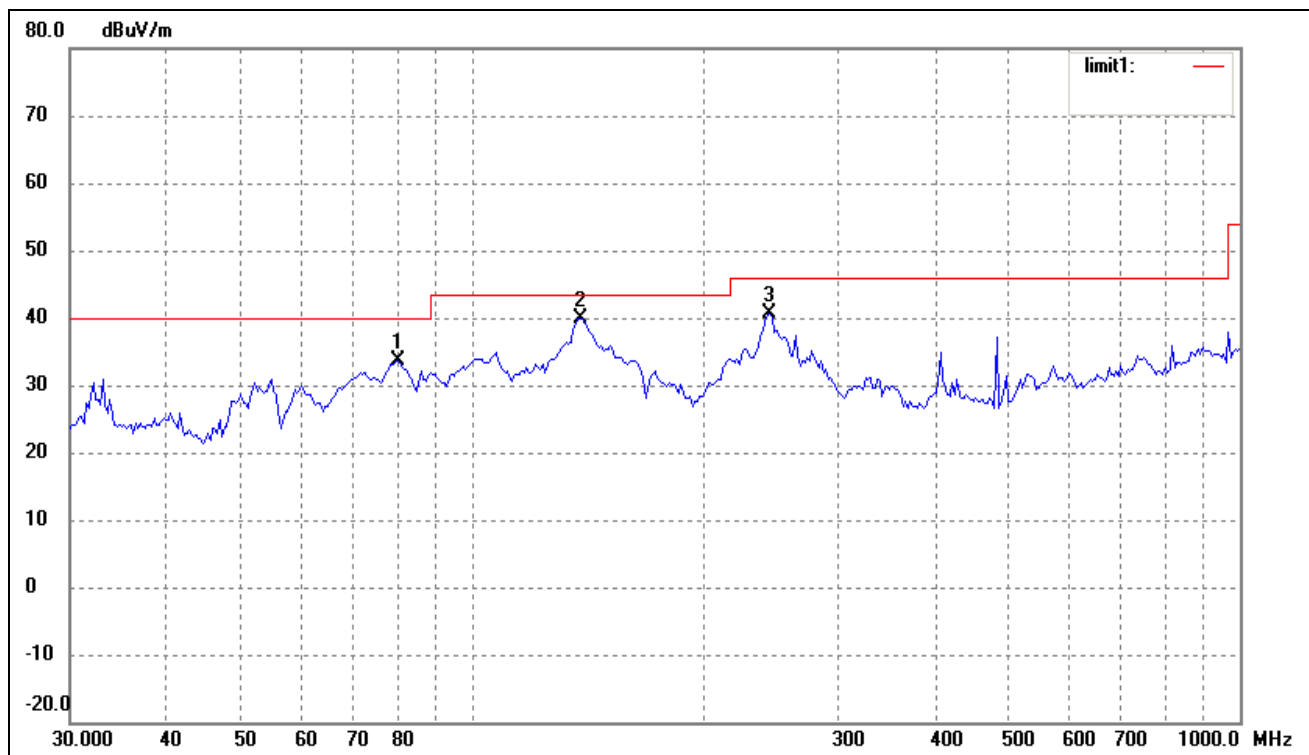
Temperature:	23 °C
Relative Humidity:	55 %
ATM Pressure:	1011 mbar

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:

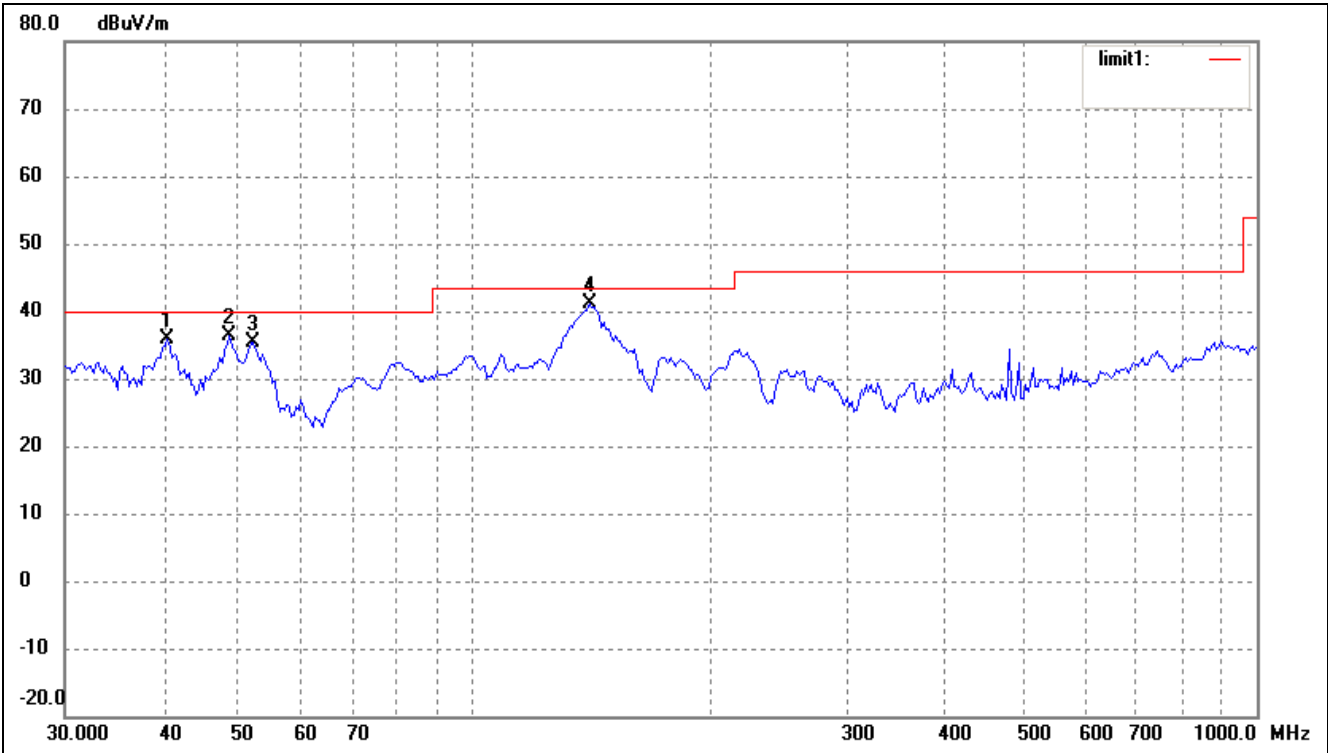
-2.36 dB μ V at 140.3420MHz in the Vertical polarization, Charging &Playing Mode, 30 MHz to 5 GHz, 3Meters

-3.35 dB μ V at 224.5192 MHz in the Horizontal polarization, Downloading Mode, 30 MHz to 5 GHz, 3Meters

Plot of Radiated Emissions Test Data*EUT:* tablet pc*Tested Model:* D2-711*Operating Condition:* Charging & playing*Comment:* Playing Color Bar with 1kHz Video from TF card and U DISK*Test Specification:* Horizontal

No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	80.0806	31.85	1.69	33.54	40.00	-6.46	265	100	peak
2	138.3873	36.47	3.51	39.98	43.50	-3.52	270	100	QP
3	244.2321	33.47	7.12	40.59	46.00	-5.41	176	200	QP

Test Specification: Vertical

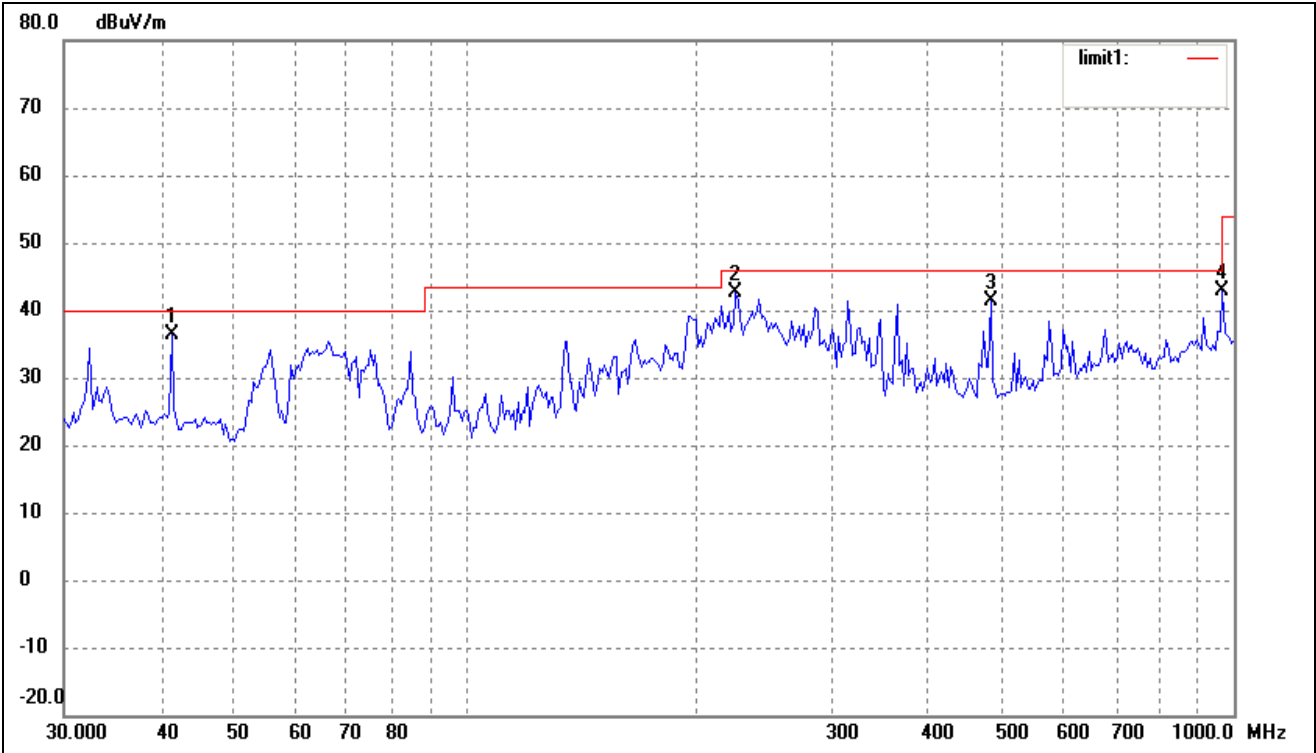


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	40.5591	26.30	9.51	35.81	40.00	-4.19	180	100	QP
2	48.6719	29.46	7.02	36.48	40.00	-3.52	267	100	QP
3	52.2079	29.02	6.42	35.44	40.00	-4.56	116	100	QP
4	140.3420	37.74	3.40	41.14	43.50	-2.36	235	100	QP

Plot of Radiated Emissions Test Data

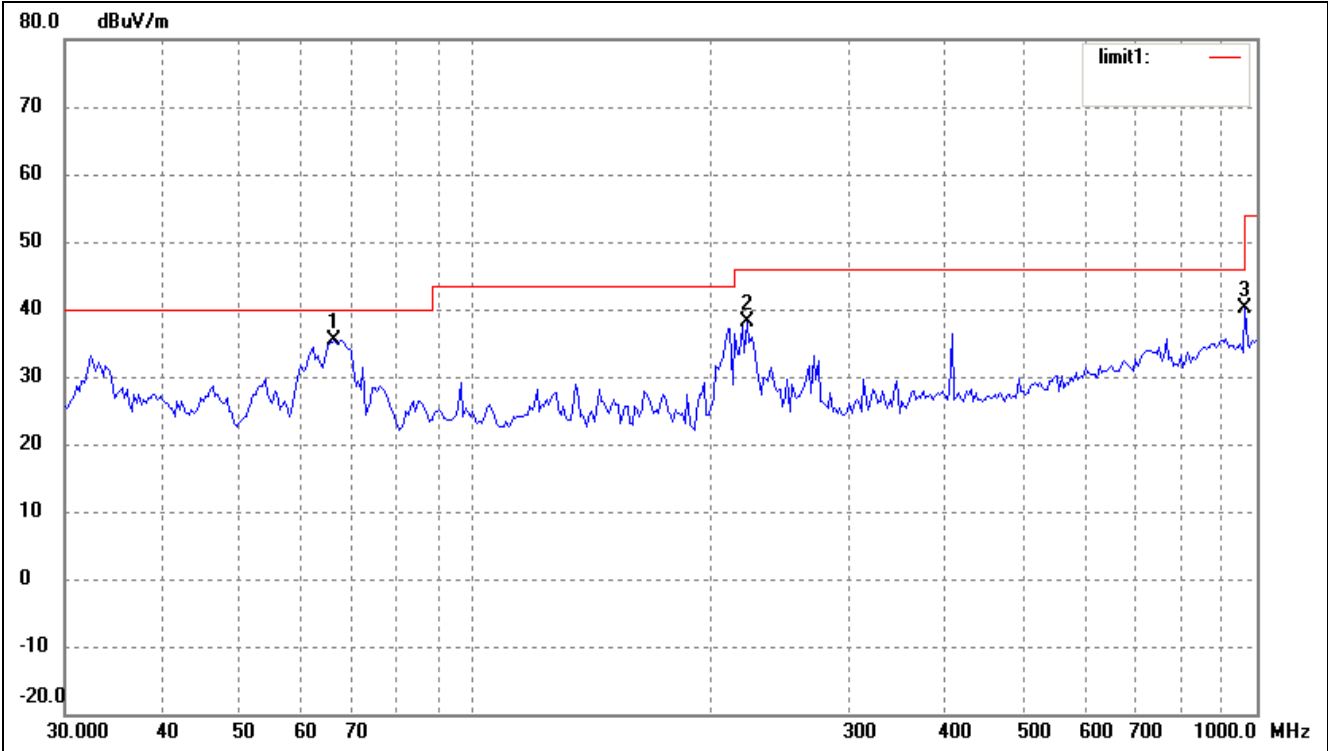
EUT: tablet pc
Tested Model: D2-711
Operating Condition: Downloading
Comment: Connect to PC

Test Specification: Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	41.4215	27.10	9.24	36.34	40.00	-3.66	272	100	QP
2	224.5192	36.48	6.17	42.65	46.00	-3.35	179	100	QP
3	482.2155	29.78	11.49	41.27	46.00	-4.73	275	200	QP
4	965.5421	24.62	18.37	42.99	54.00	-11.01	113	200	peak

Test Specification: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	66.2661	31.68	3.71	35.39	40.00	-4.61	134	100	QP
2	222.9501	32.06	6.08	38.14	46.00	-7.86	228	100	peak
3	965.5421	21.72	18.37	40.09	54.00	-13.91	162	100	peak

Note: Testing is carried out with frequency rang 9kHz to 6GHz, which above 1G and 9kHz to 30MHz are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.