

FCC Part 15B Measurement and Test Report

For

High Quality Electronics Corp

2665 south park lane, Pembroke park FL 33009, United States

FCC ID: 2AFYQ-HQNEPTUNE70

Test Rule(s): FCC Part 15 Subpart B

Product Description: TABLET PC

Tested Model: HQ Neptune 7.0

Report No.: STR15118128I-5

Tested Date: 2015-11-10 to 2015-12-04

Issued Date: 2015-12-05

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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 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: High Quality Electronics Corp
Address of applicant: 2665 south park lane, Pembroke park FL 33009, United States

Manufacturer: SHENZHEN HONESTY ELECTRONIC TECHNOLOGY CO., LTD
Address of manufacturer: Room 2802, Dyamic World Buiding, ZhongHang Road, Futian District, Shenzhen City, China

General Description of EUT	
Product Name:	TABLET PC
Brand Name:	HQ
Model No.:	HQ Neptune 7.0
Adding Model(s):	F733
Rated Voltage:	DC 3.7V Li-ion Battery
Battery:	2500mAh
Device Category:	Portable Device
<i>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 HQ Neptune 7.0, but the circuit and the electronic construction do not change, declared by the manufacturer.</i>	

Technical Characteristics of EUT	
Rated Voltage:	DC 3.7V
Battery Capacity:	2500mAh
Rated Power:	/
Lowest Internal Frequency:	32.768kHz
Highest Internal Frequency:	1.3GHz
Classification of ITE:	Class B

1.2 Test Standards

The following report is prepared on behalf of the High Quality Electronics Corp 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 C63.4-2014, 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)

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	With Earphone
TM2	Downloading	Connected to PC
TM3	Camera on	Front Camera
TM4	Camera on	Rear Camera

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB Cable	1.0	Shielded	Without Ferrite
Earphone	1.1	Unshielded	Without Ferrite
USB OTG	0.1	Unshielded	Without Ferrite

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
/	/	/	/

1.6 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Spectrum Analyzer	Agilent	E4407B	MY41440400	2015-06-17	2016-06-16
Spectrum Analyzer	Rohde & Schwarz	FSP	836079/035	2015-06-17	2016-06-16
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2015-06-17	2016-06-16
Amplifier	Agilent	8447F	3113A06717	2015-06-17	2016-06-16
Amplifier	C&D	PAP-1G18	2002	2015-06-17	2016-06-16
Broadband Antenna	Schwarz beck	VULB9163	9163-333	2015-06-17	2016-06-16
Horn Antenna	ETS	3117	00086197	2015-06-17	2016-06-16
Loop Antenna	Schwarz beck	FMZB 1516	9773	2015-06-17	2016-06-16
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2015-06-17	2016-06-16
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2015-06-17	2016-06-16
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2015-06-17	2016-06-16

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

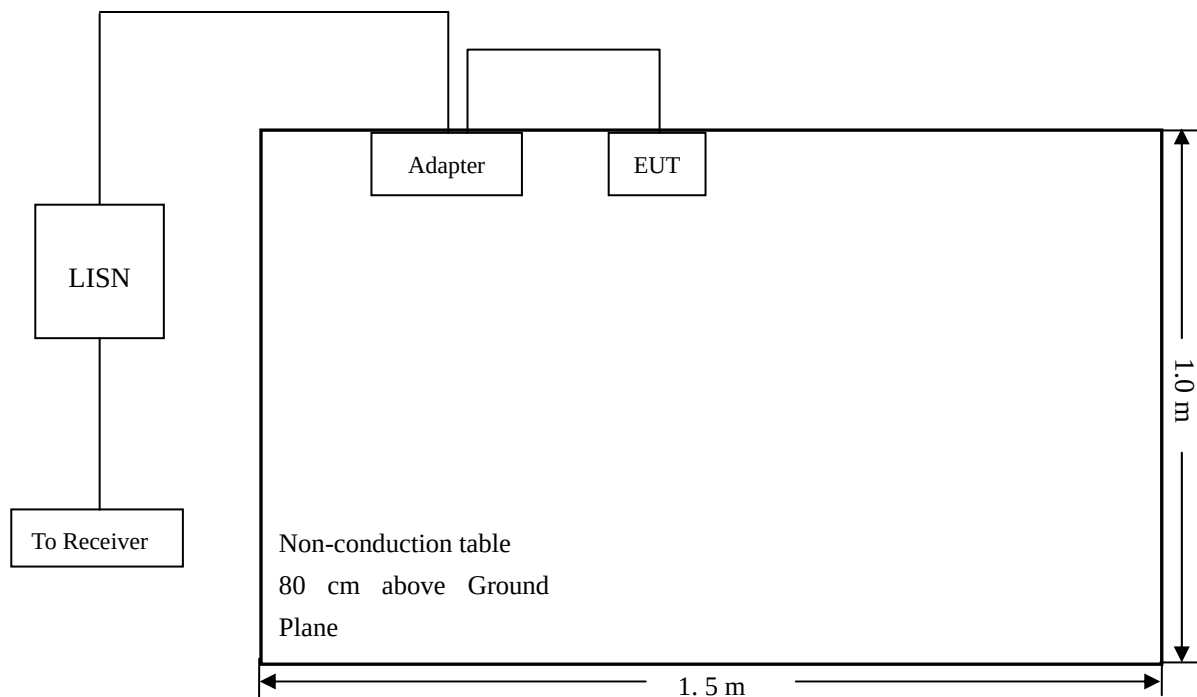
3.1 Measurement Uncertainty

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 Procedure

Test is conducting under the description of ANSI C63.4-2014, 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.

3.3 Basic Test Setup Block Diagram



3.4 Environmental Conditions

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

3.5 Summary of Test Results/Plots

According to the data in section 3.6, the EUT complied with the FCC Part 15.107(a) Conducted margin for a Class B device, with the *worst* margin reading of:

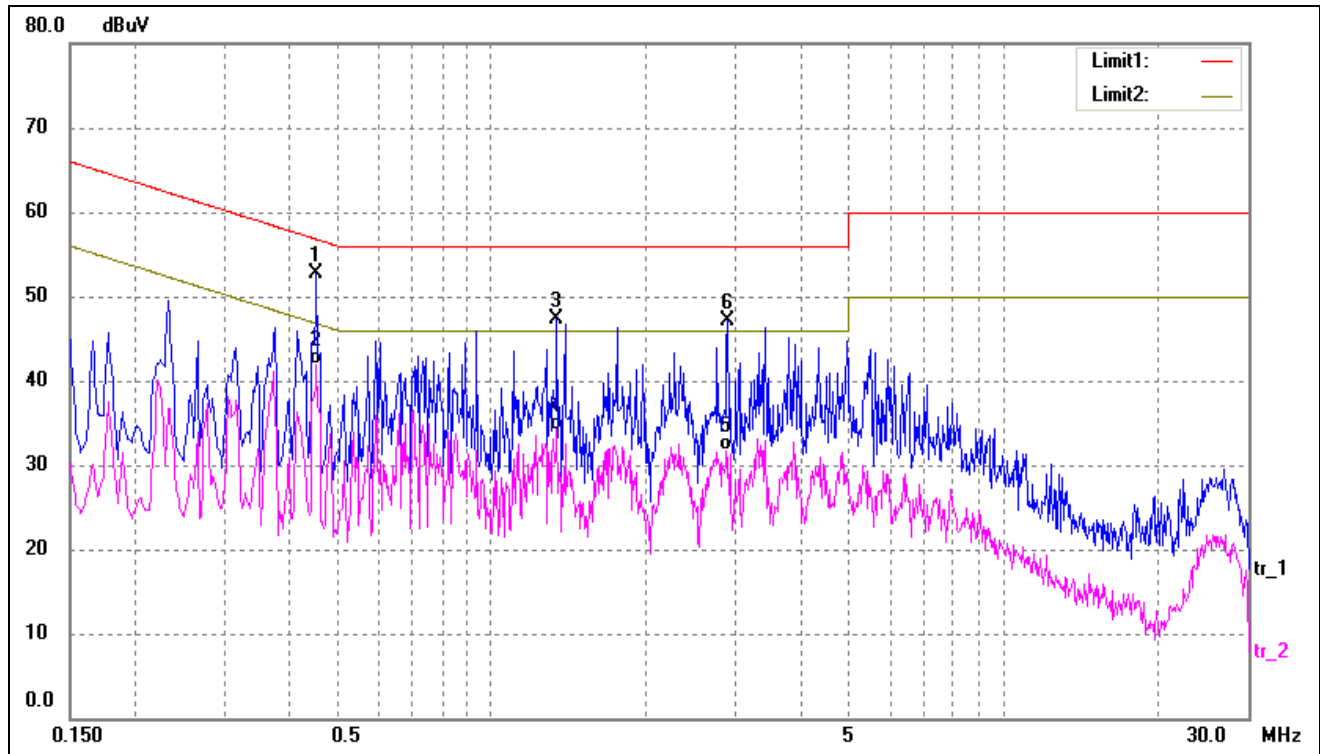
-4.06 dB at 0.4540 MHz in the **Neutral, TM1, Peak** detector, TM1, 0.15-30MHz

3.6 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

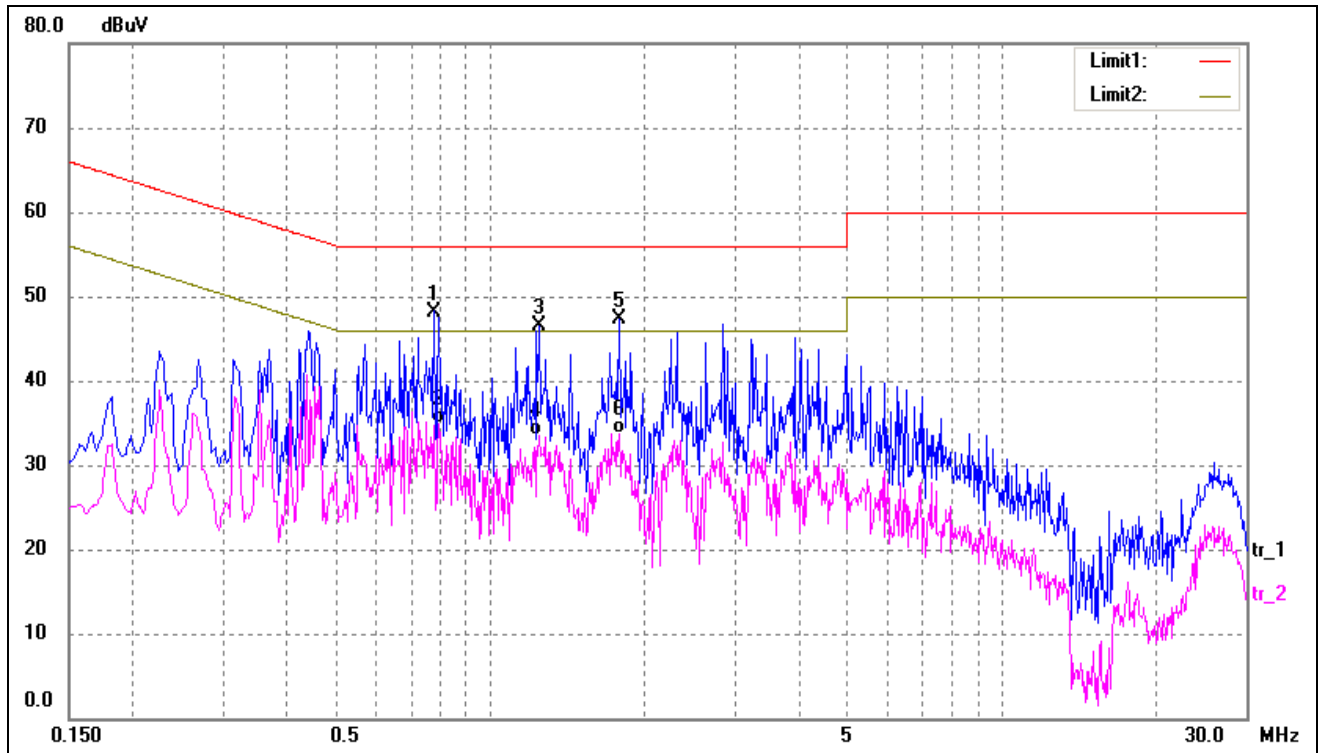
EUT: *TABLET PC*
 Tested Model: *HQ Neptune 7.0*
 Operating Condition: *TM1*
 Comment: *AC 120V/60Hz; USB 5V*

Test Specification: *Neutral*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.4540	40.24	12.50	52.74	56.80	-4.06	peak
2	0.4540	29.44	12.50	41.94	46.80	-4.86	AVG
3	1.3380	34.35	13.00	47.35	56.00	-8.65	peak
4	1.3380	21.20	13.00	34.20	46.00	-11.80	AVG
5	2.8780	18.70	13.00	31.70	46.00	-14.30	AVG
6	2.8860	34.17	13.00	47.17	56.00	-8.83	peak

Test Specification: Line

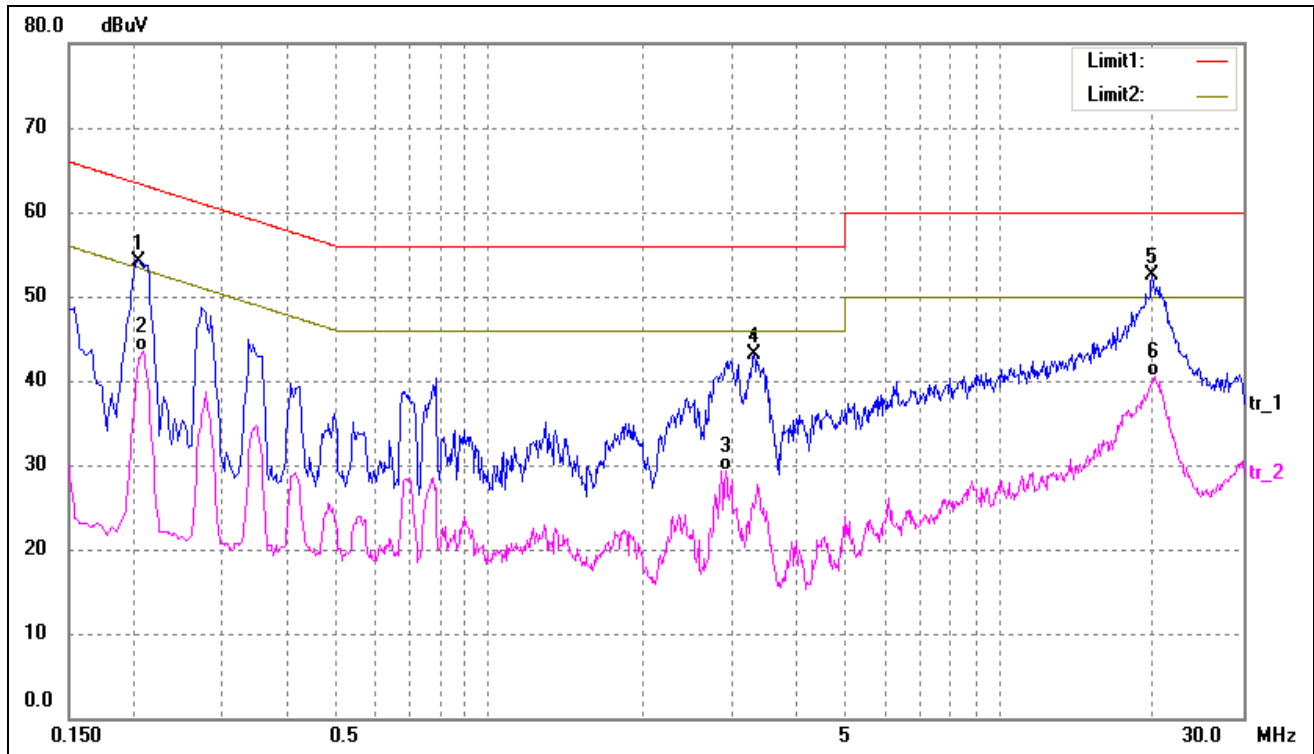


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.7780	35.42	12.78	48.20	56.00	-7.80	peak
2	0.7940	22.16	12.79	34.95	46.00	-11.05	AVG
3	1.2460	33.57	13.00	46.57	56.00	-9.43	peak
4	1.2460	20.58	13.00	33.58	46.00	-12.42	AVG
5	1.7820	34.35	13.00	47.35	56.00	-8.65	peak
6	1.7820	20.80	13.00	33.80	46.00	-12.20	AVG

Plot of Conducted Emissions Test Data

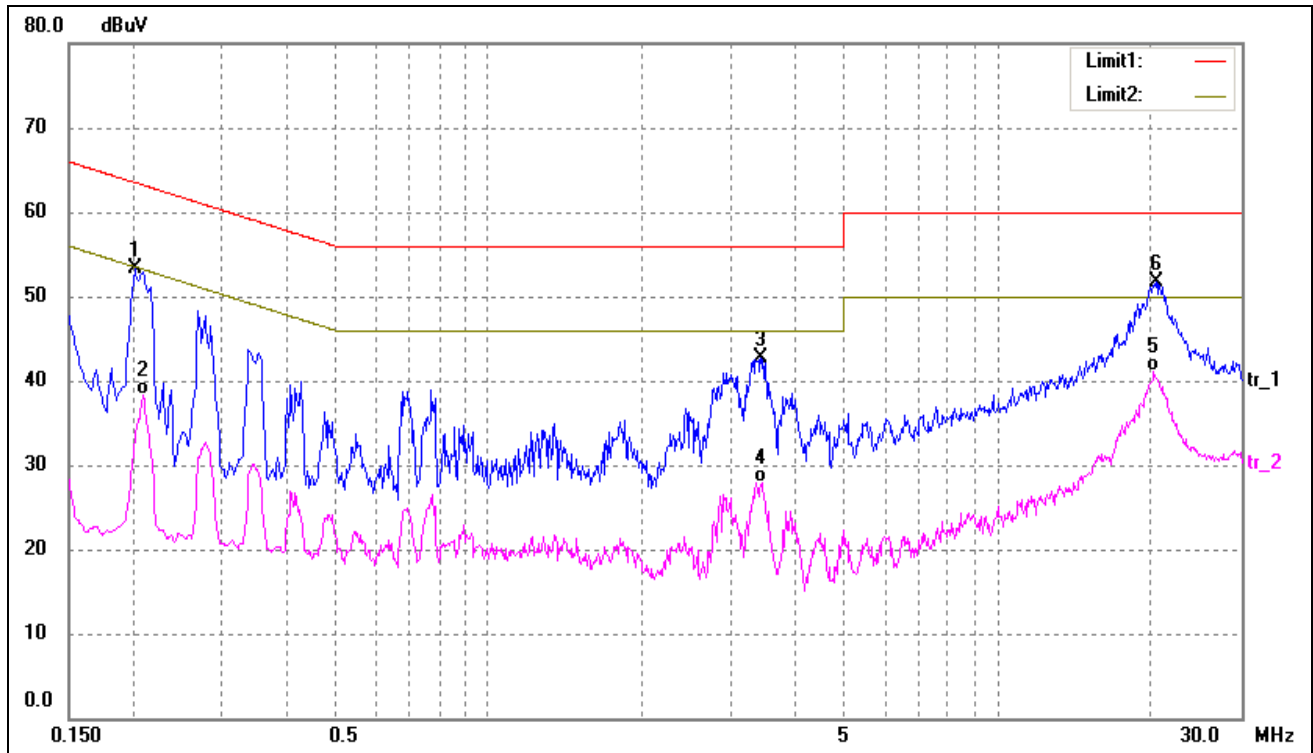
EUT: Mobile phone
 Tested Model: HQ Neptune 7.0
 Operating Condition: TM2
 Comment: AC 120V/60Hz; Adapter DC 5V

Test Specification: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2060	44.70	9.50	54.20	63.37	-9.17	peak
2	0.2100	34.09	9.50	43.59	53.21	-9.62	AVG
3	2.9140	19.24	10.00	29.24	46.00	-16.76	AVG
4	3.3020	33.02	10.00	43.02	56.00	-12.98	peak
5*	19.8740	40.46	11.97	52.43	60.00	-7.57	peak
6	20.1500	28.58	12.00	40.58	50.00	-9.42	AVG

Test Specification: Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2020	43.77	9.50	53.27	63.53	-10.26	peak
2	0.2100	28.71	9.50	38.21	53.21	-15.00	AVG
3	3.4340	32.67	10.00	42.67	56.00	-13.33	peak
4	3.4500	17.95	10.00	27.95	46.00	-18.05	AVG
5	20.2260	29.06	12.00	41.06	50.00	-8.94	AVG
6*	20.4380	39.65	12.00	51.65	60.00	-8.35	peak

4. Radiated Emissions

4.1 Measurement Uncertainty

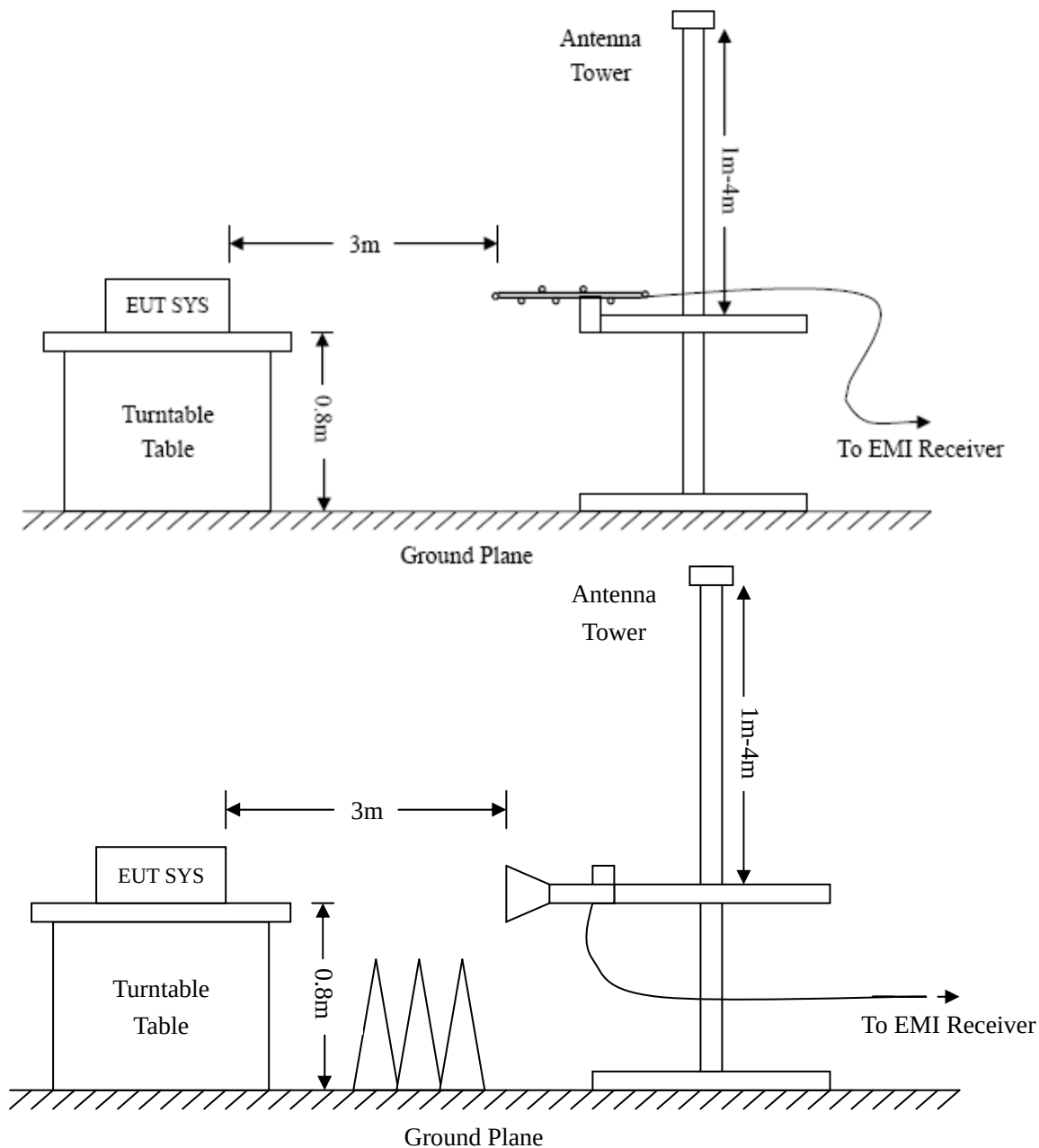
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

4.2 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 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.



4.3 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

4.4 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:

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

4.5 Environmental Conditions

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

4.6 Summary of Test Results/Plots

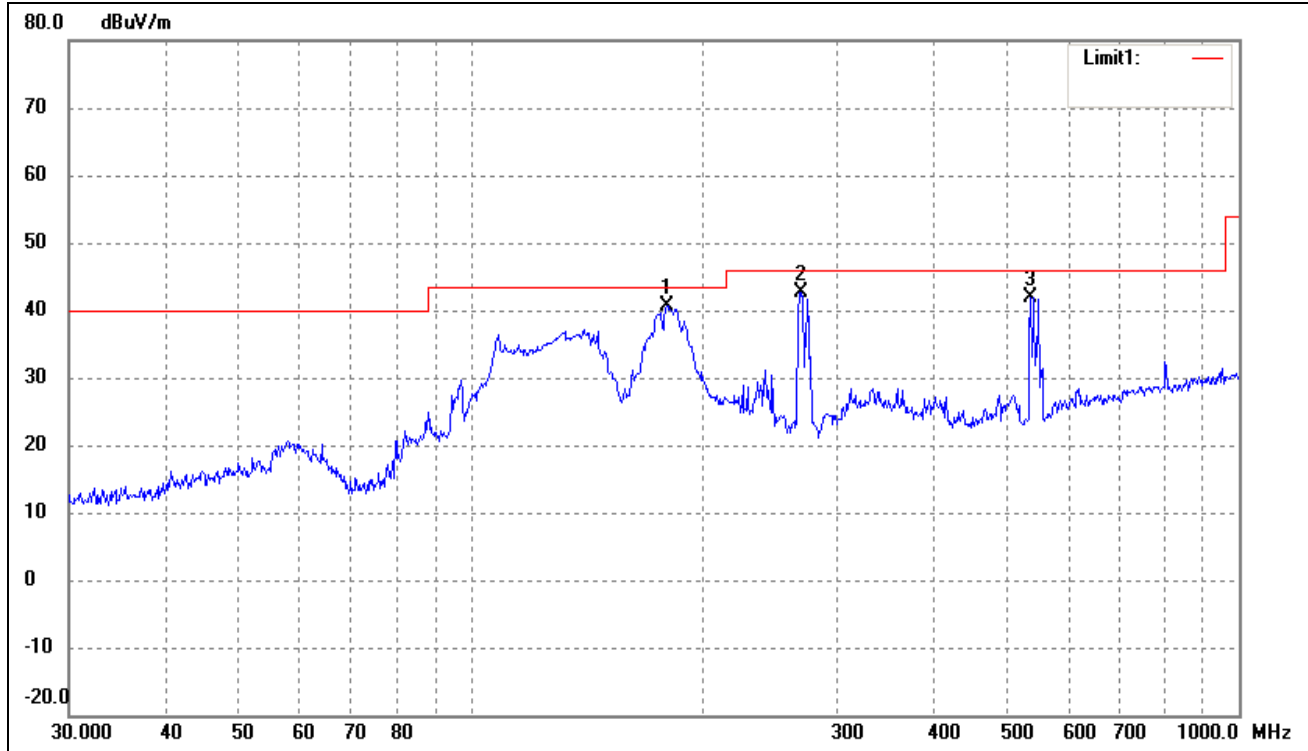
According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

-2.06 dB at 535.7073 MHz in the Horizontal polarization, TM3 Mode 9 kHz to 6.5 GHz, 3Meters

Plot of Radiated Emissions Test Data

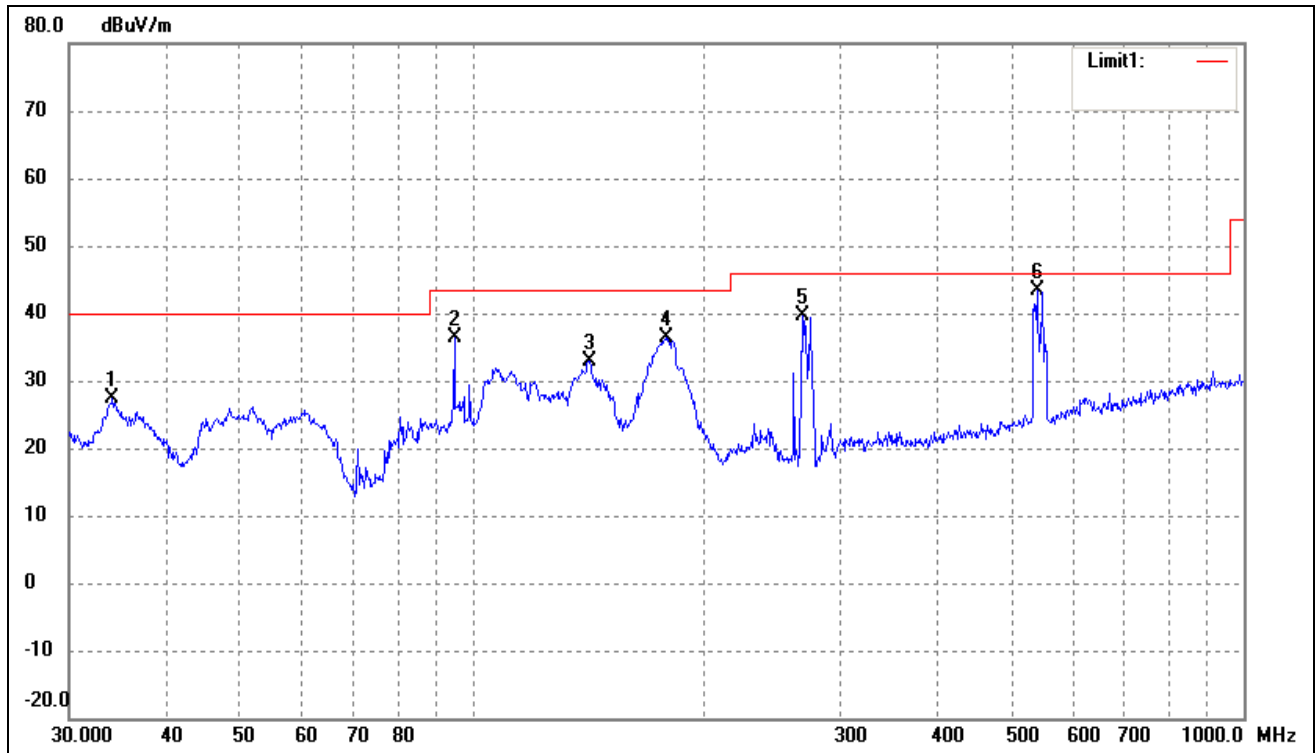
EUT: TABLET PC
 Tested Model: HQ Neptune 7.0
 Operating Condition: TM1
 Comment: AC 120V/60Hz; Adapter DC 5V

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	180.0165	50.34	-9.69	40.65	43.50	-2.85	142	100	peak
2	269.4284	49.14	-6.44	42.70	46.00	-3.30	225	100	peak
3	535.7073	42.26	-0.35	41.91	46.00	-4.09	270	100	peak

Test Specification: Vertical

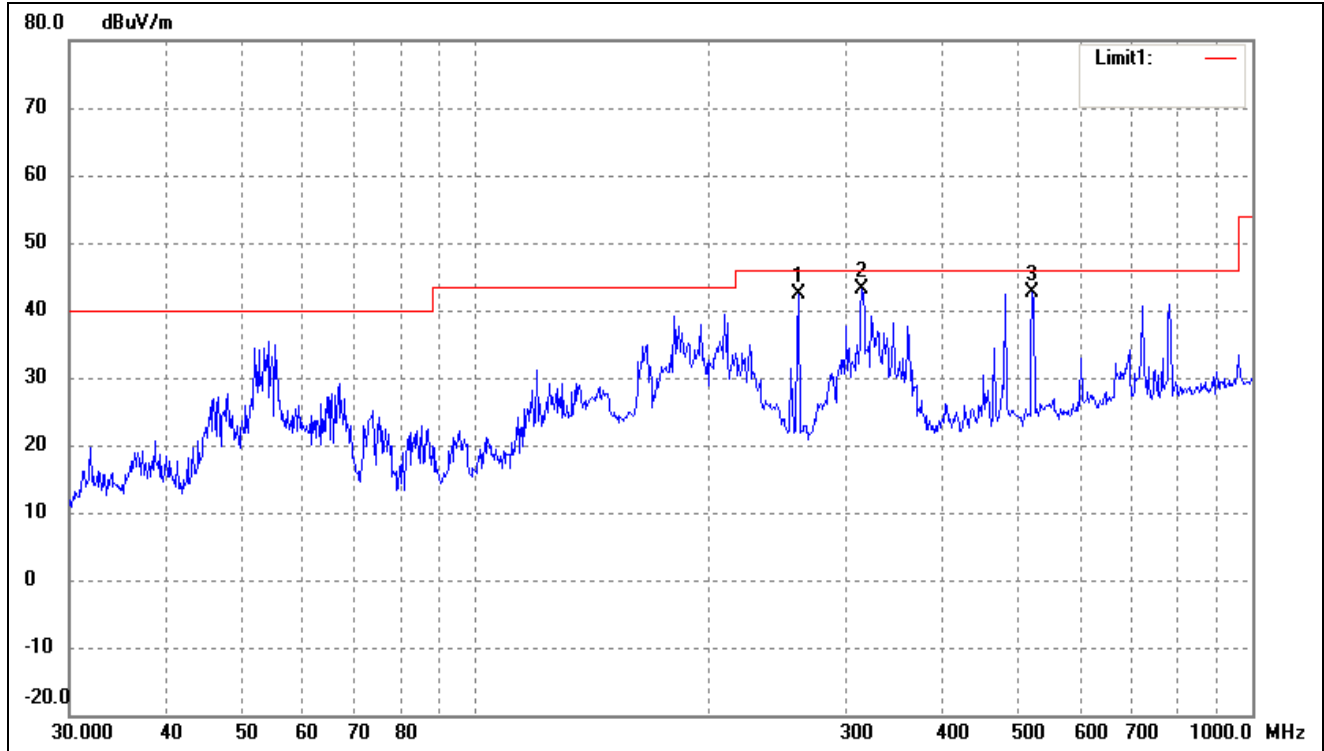


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	34.1561	38.66	-11.25	27.41	40.00	-12.59	360	100	peak
2	94.7601	48.56	-12.30	36.26	43.50	-7.24	276	100	peak
3	141.8262	44.45	-11.46	32.99	43.50	-10.51	229	100	peak
4	178.7584	46.10	-9.80	36.30	43.50	-7.20	109	100	peak
5	267.5455	46.12	-6.45	39.67	46.00	-6.33	360	100	peak
6	539.4775	43.70	-0.28	43.42	46.00	-2.58	360	100	peak

Plot of Radiated Emissions Test Data

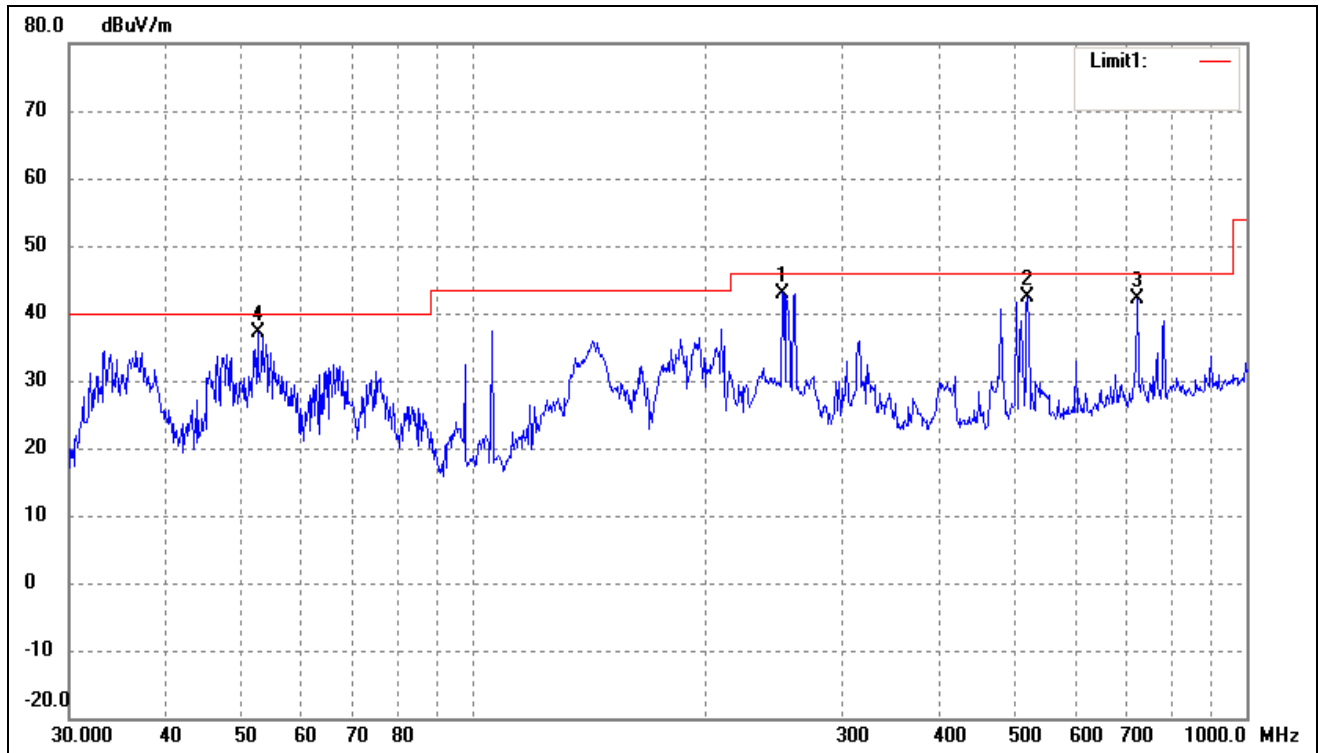
EUT: *TABLET PC*
 Tested Model: *HQ Neptune 7.0*
 Operating Condition: *TM2*
 Comment: *USB: DC5V*

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	261.0581	48.76	-6.48	42.28	46.00	-3.72	251	100	peak
2	314.3765	48.14	-5.01	43.13	46.00	-2.87	322	100	peak
3	520.8881	43.12	-0.60	42.52	46.00	-3.48	360	100	peak

Test Specification: Vertical

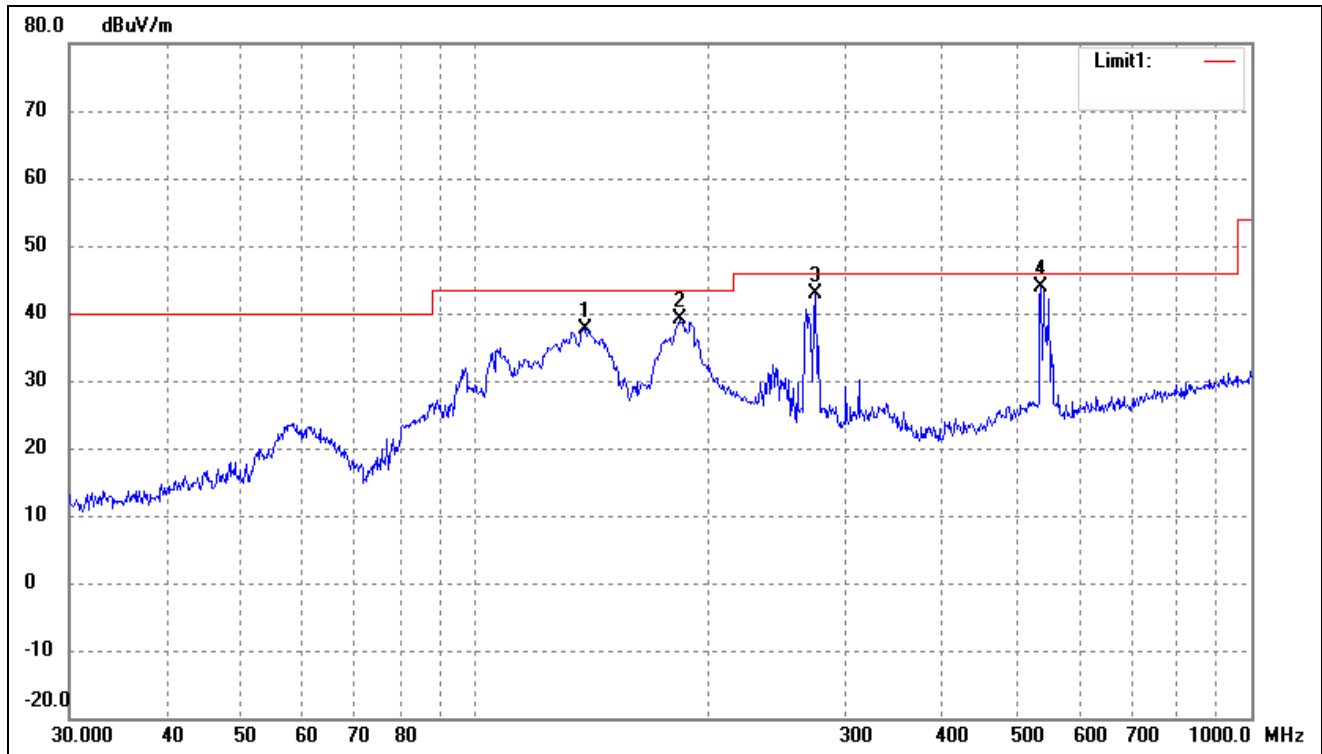


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	251.1803	49.53	-6.53	43.00	46.00	-3.00	223	100	peak
2	520.8881	43.09	-0.60	42.49	46.00	-3.51	213	100	peak
3	721.7259	39.49	2.65	42.14	46.00	-3.86	341	100	peak
4	52.5752	46.54	-9.51	37.03	40.00	-2.97	223	100	peak

Plot of Radiated Emissions Test Data

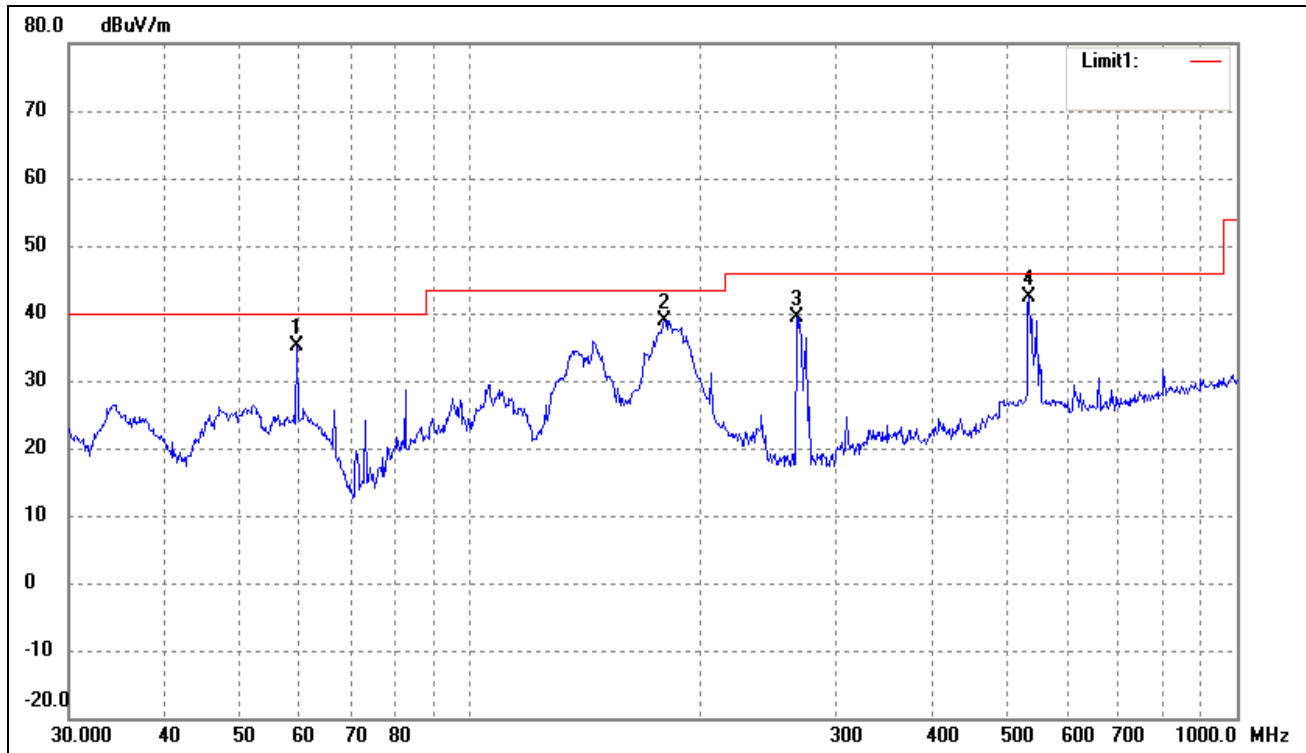
EUT: TABLET PC
 Tested Model: HQ Neptune 7.0
 Operating Condition: TM3
 Comment: DC 3.7V

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	138.8735	49.02	-11.43	37.59	43.50	-5.91	158	100	peak
2	183.2005	48.51	-9.42	39.09	43.50	-4.41	0	100	peak
3	274.1938	49.22	-6.25	42.97	46.00	-3.03	147	100	peak
4	535.7073	44.29	-0.35	43.94	46.00	-2.06	352	100	peak

Test Specification: Vertical

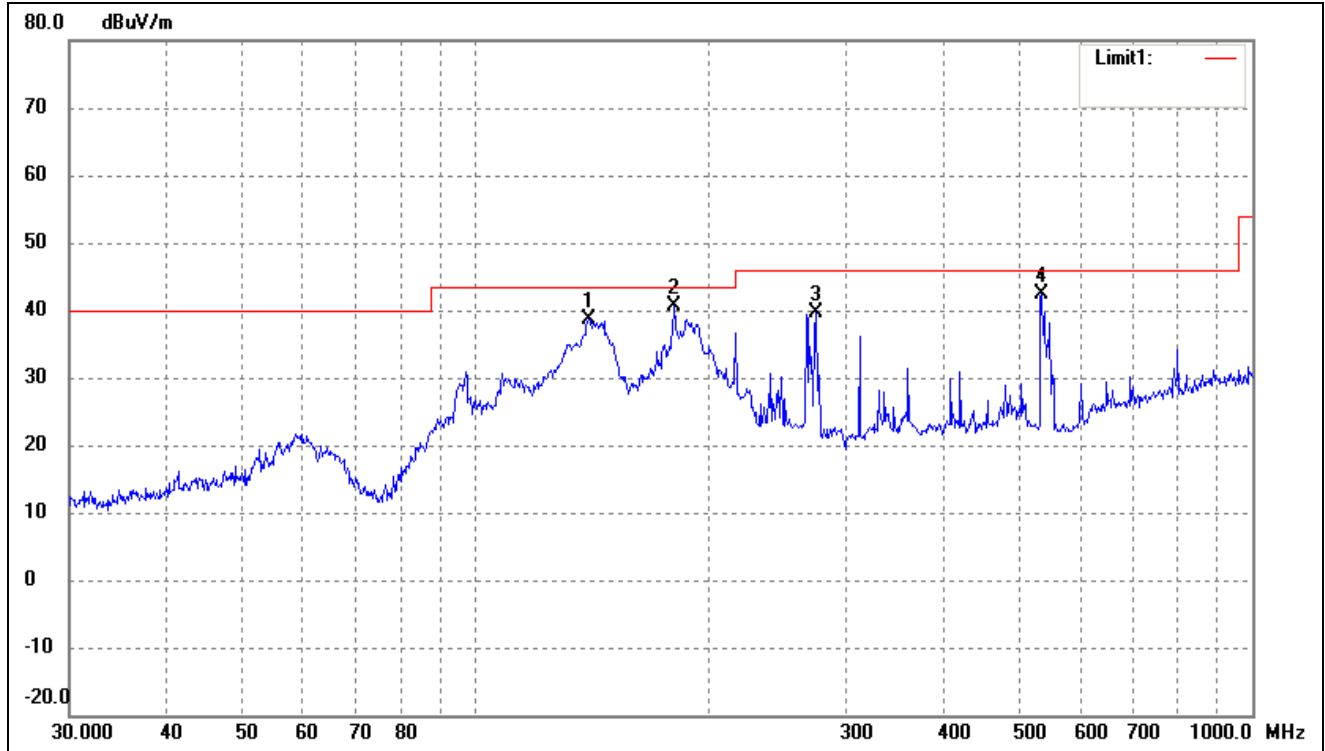


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	59.4405	46.01	-10.96	35.05	40.00	-4.95	352	100	peak
2	179.3864	48.65	-9.75	38.90	43.50	-4.60	221	100	peak
3	266.6089	45.92	-6.46	39.46	46.00	-6.54	76	100	peak
4	535.7073	42.75	-0.35	42.40	46.00	-3.60	129	100	peak

Plot of Radiated Emissions Test Data

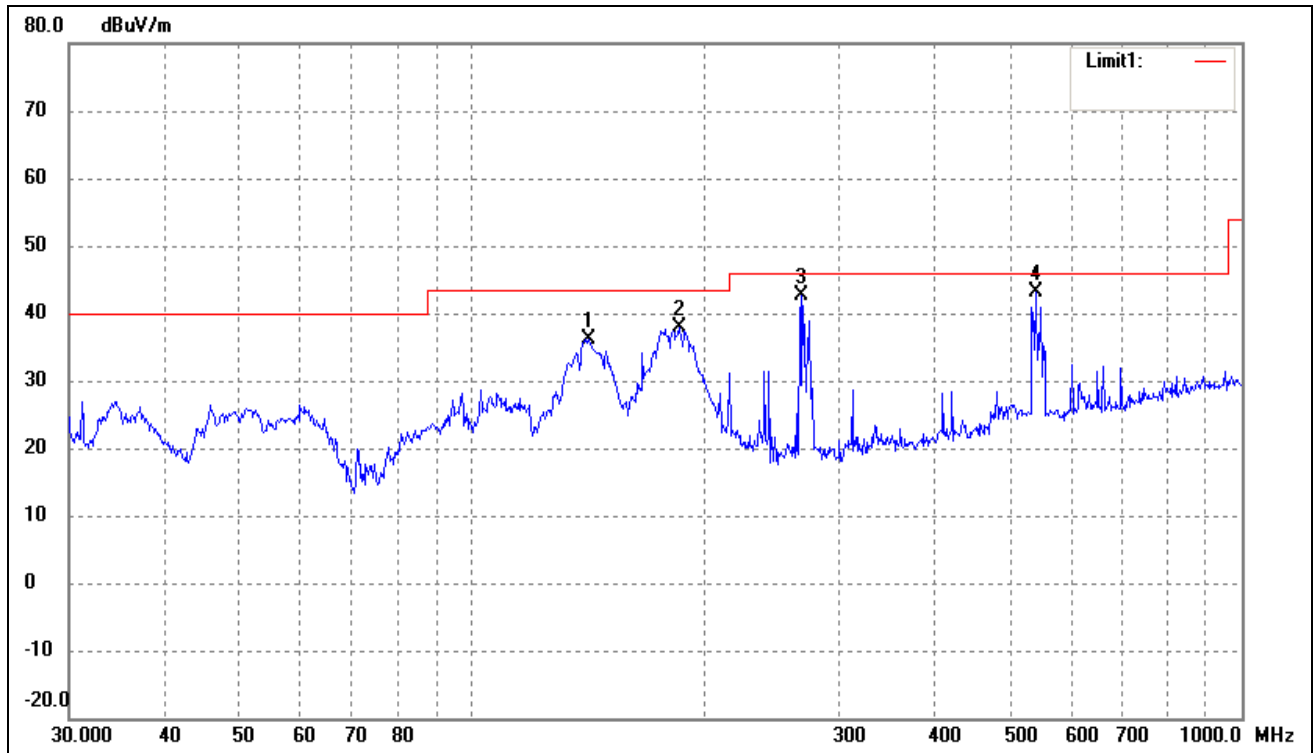
EUT: TABLET PC
 Tested Model: HQ Neptune 7.0
 Operating Condition: TM4
 Comment: DC 3.7V

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	139.8507	49.96	-11.44	38.52	43.50	-4.98	214	100	peak
2	180.0165	50.25	-9.69	40.56	43.50	-2.94	330	100	peak
3	274.1938	45.89	-6.25	39.64	46.00	-6.36	224	100	peak
4	535.7073	42.64	-0.35	42.29	46.00	-3.71	117	100	peak

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	141.8262	47.70	-11.46	36.24	43.50	-7.26	118	100	peak
2	185.7881	47.16	-9.21	37.95	43.50	-5.55	278	100	peak
3	267.5455	48.98	-6.45	42.53	46.00	-3.47	230	100	peak
4	539.4774	43.34	-0.28	43.06	46.00	-2.94	332	100	peak

Note: Testing is carried out with frequency rang 9kHz to the 6.5GHz, 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 *****