

FCC Part 15B

Measurement and Test Report

For

Shenzhen Zenithink Technologies Co., Ltd

**2nd Floor, Building M-3, Maqueling Industrial zone, Nanshan District,
Shenzhen, P.R. China**

FCC ID: ZAXZT1807A

Report Concerns: Original Report	Equipment Type: MID
Model:	<u>ZT-180 7A</u>
Report No.:	<u>STR11038025I-2</u>
Test Date:	<u>2011-03-02 to 2011-03-28</u>
Issue Date:	<u>2011-03-29</u>
Tested By:	<u>Jason chen/ Engineer</u> <i>Jason chen</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: Shenzhen Zenithink Technologies Co., Ltd
Address of applicant: 2nd Floor, Building M-3, Maqueling Industrial zone, Nanshan District, Shenzhen, P.R. China

Manufacturer: Shenzhen Zenithink Technologies Co., Ltd
Address of manufacturer: 2nd Floor, Building M-3, Maqueling Industrial zone, Nanshan District, Shenzhen, P.R. China

General Description of E.U.T

Items	Description
EUT Description:	MID
Trade Name:	ZENITHINK
Model No.:	ZT-180 7A
Rated Voltage:	DC 9V
Rated Current:	2A
Size:	20.0x12.8x1.4cm

The test data is gathered from a production sample, provided by the manufacturer.

1.2 Test Standards

The following report is prepared on behalf of the Shenzhen Zenithink Technologies 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.

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 the testing was designed to exercise the system components.

1.6 Accessories Equipment List and Details

Description	Manufacturer	Model	Serial Number
Notebook	ASUS	XR55	/
LCD TV	BenQ	UP2212	QLD2900124032

1.7 EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB Cable	1.15	Unshielded	Without Core
HDMI Cable	1	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 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

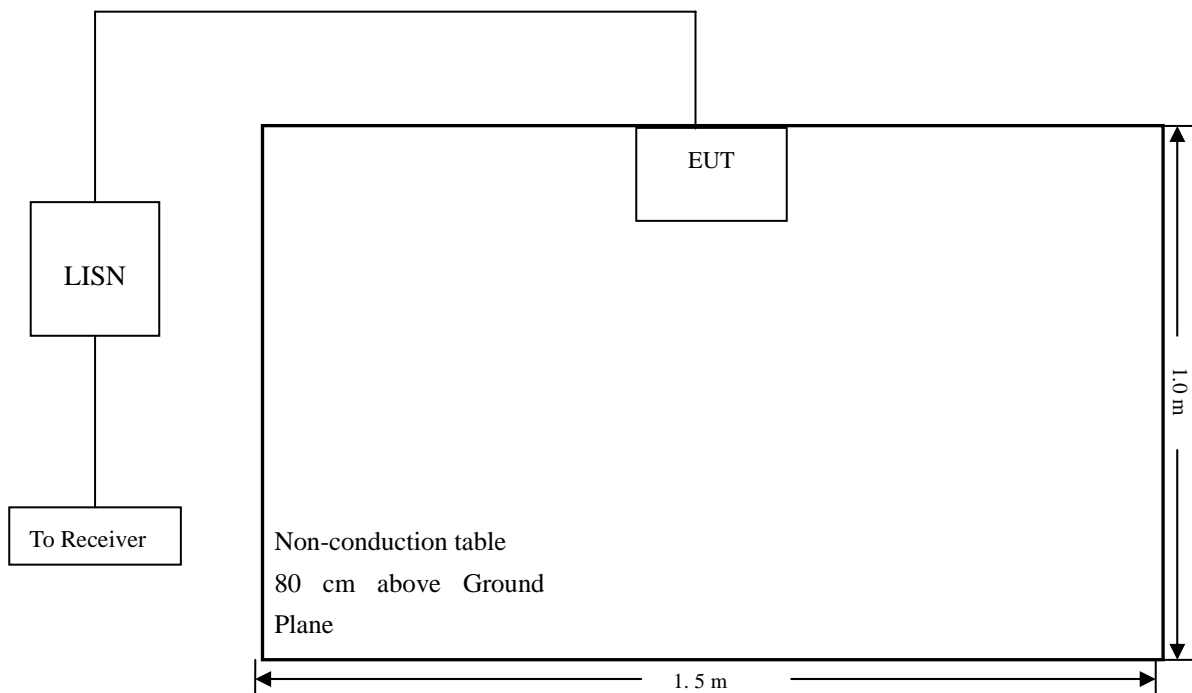
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2010-12-20	2011-12-19
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2010-12-20	2011-12-19
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2010-12-20	2011-12-19

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

-3.10 dB μ V at 0.506 MHz in the Neutral, Average detector, 0.15-30MHz

3.7 Conducted Emissions Test Data

LINE CONDUCTED EMISSIONS				FCC 15.107	
Frequency	Amplitude	Detector	Phase	Limit	Margin
MHz	dB μ V	QP/Ave/Pk	Line/Neutral	dB μ V	dB
0.506	42.89	Ave	Neutral	46.00	-3.10
1.51	40.93	Ave	Line	46.00	-5.06
0.650	40.49	Ave	Line	46.00	-5.51
1.002	40.17	Ave	Neutral	46.00	-5.82
0.178	48.68	Ave	Neutral	44.57	-5.89
0.514	49.87	Pk	Neutral	56.00	-6.12
3.086	39.72	Ave	Neutral	46.00	-6.27
2.186	38.68	Ave	Line	46.00	-7.31
0.490	48.01	Pk	Line	56.16	-8.15
0.330	40.98	Ave	Line	49.44	-8.46
1.25	47.39	Pk	Line	56.00	-8.60
1.110	46.99	Pk	Neutral	56.00	-9.00
4.910	46.14	Pk	Neutral	56.00	-9.85
2.142	46.03	Pk	Line	56.00	-9.96

Emission attenuated more than 20dB of the limit is not reported.

Plot of Conducted Emissions Test Data

Conducted Disturbance

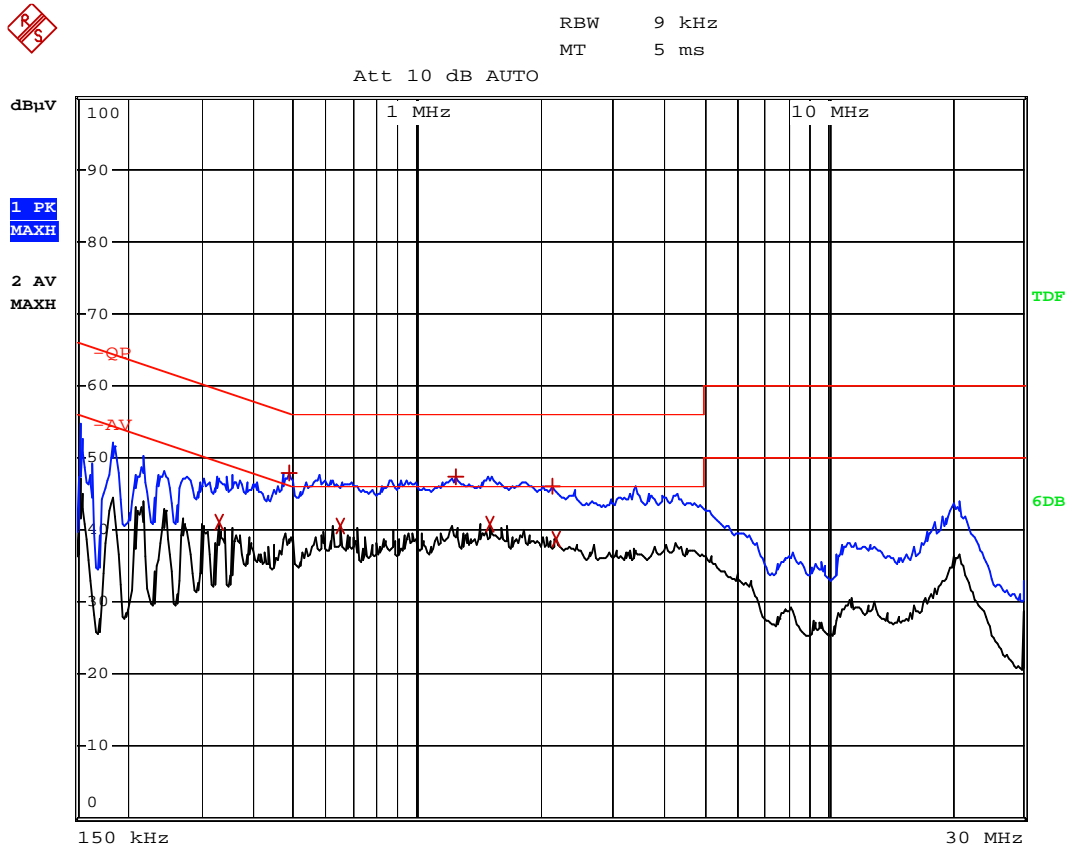
EUT: MID

M/N: ZT-180 7A

Operating Condition: Wireless Transmitting&Charging

Test Specification: L

Comment: 120V/60Hz; DC 9V



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

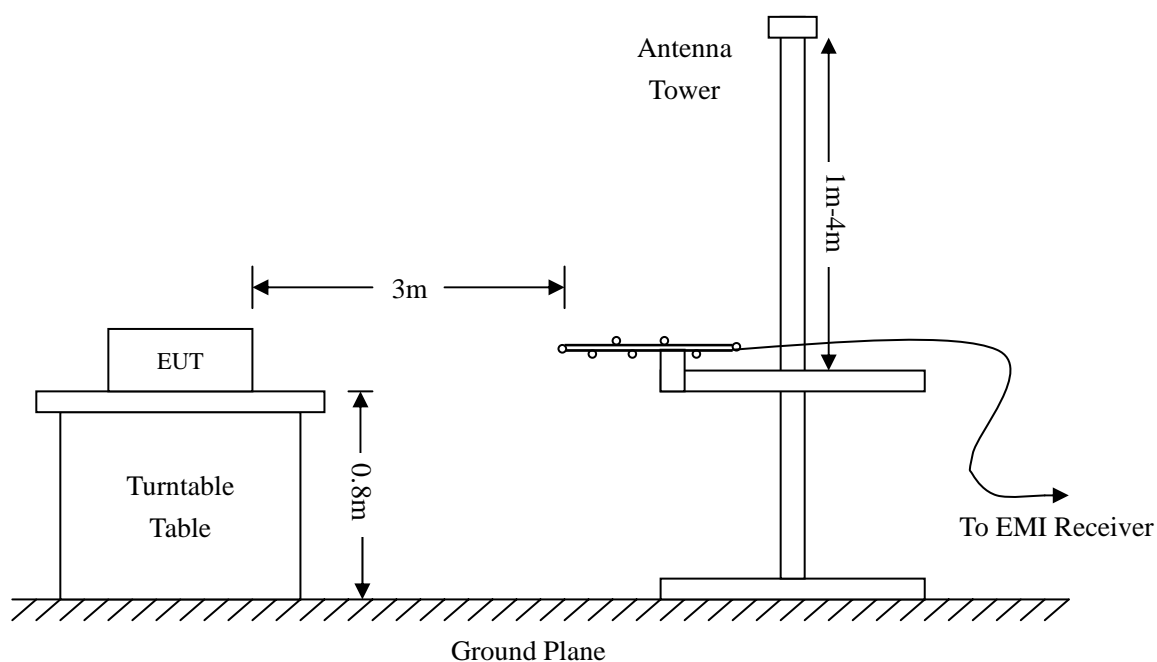
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2010-12-20	2011-12-19
EMI Test Receiver	R&S	ESVB	825471/005	2010-12-20	2011-12-19
Positioning Controller	C&C	CC-C-1F	N/A	2010-12-20	2011-12-19
RF Switch	EM	EMSW18	SW060023	2010-12-20	2011-12-19
Pre-amplifier	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 15.109 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 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:	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 15B Class B standards, and had the worst margin of:

- 2.42 dB μ V at 625.0780 MHz in the **Horizontal** polarization, **Playing** mode, **30 MHz to 1 GHz**, **3Meters**
- 1.70dB μ V at 40.2757 MHz in the **Vertical** polarization, **Downloading** mode, **30 MHz to 1 GHz**, **3Meters**
- 1.58 dB μ V at 651.9417 MHz in the **Horizontal** polarization, **HDMI OUT** mode, **30 MHz to 1 GHz**, **3Meters**

Plot of Radiation Emissions Test

Radiated Disturbance

EUT: MID

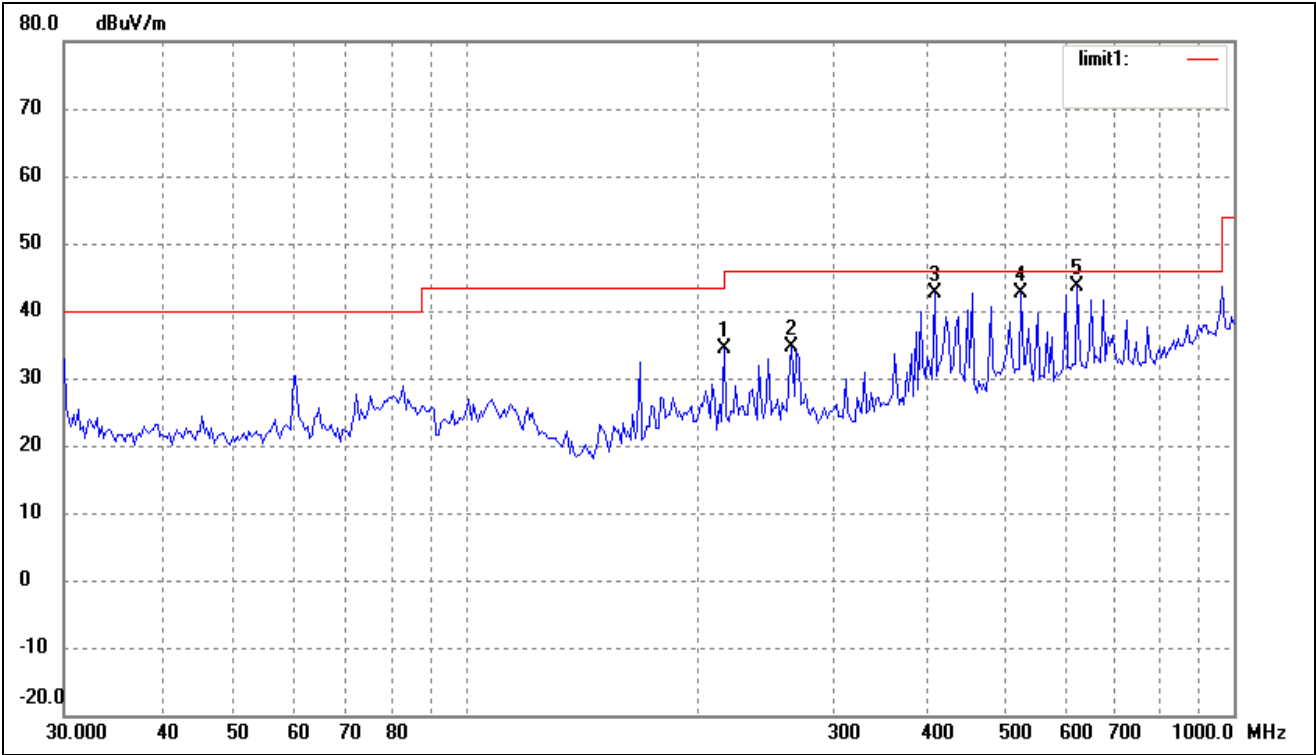
M/N: ZT-180 7A

Operating Condition: Playing

Test Specification: Horizontal & Vertical

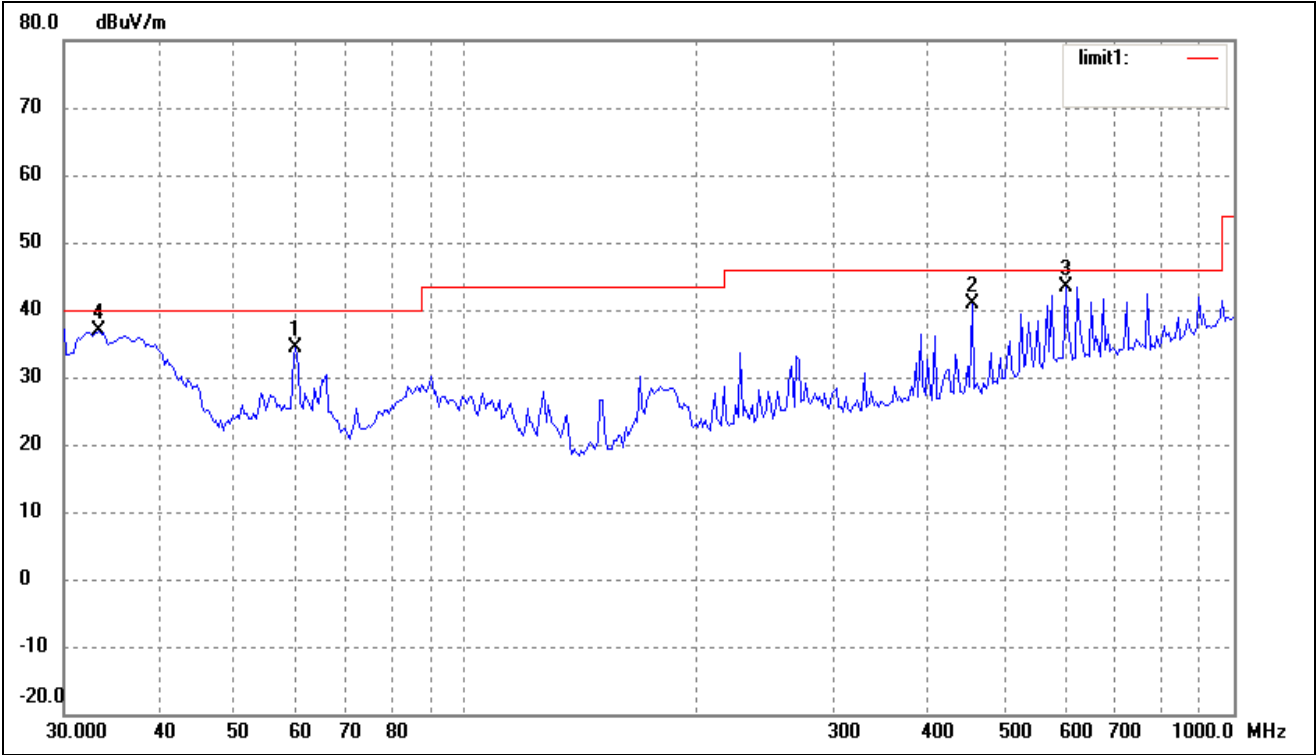
Comment: AC 120V/60Hz DC 9V

Horizontal

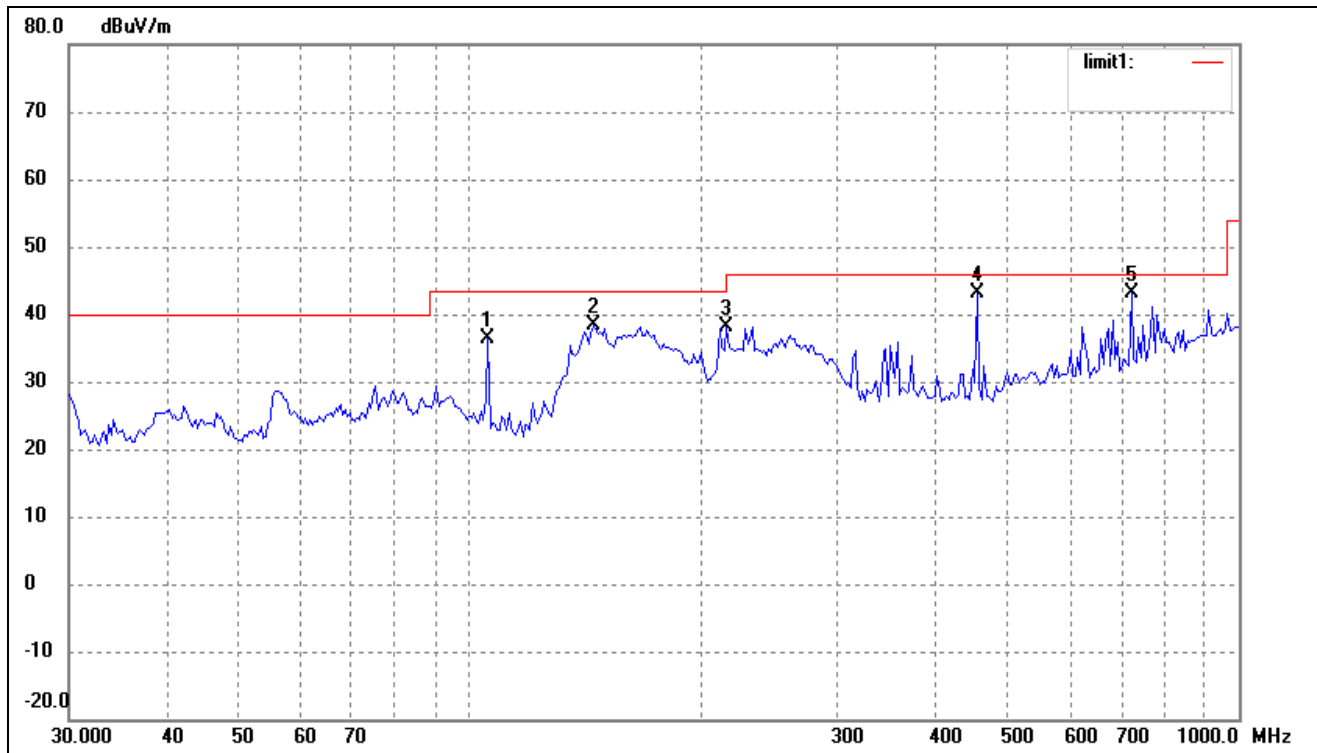


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	216.7828	27.23	7.17	34.40	46.00	-11.60	360	200	peak
2	265.6757	25.46	9.11	34.57	46.00	-11.43	0	100	peak
3	407.5145	31.23	11.39	42.62	46.00	-3.38	227	103	QP
4	528.2458	27.67	15.06	42.73	46.00	-3.27	209	115	QP
5	625.0780	26.70	16.88	43.58	46.00	-2.42	118	124	QP

Vertical

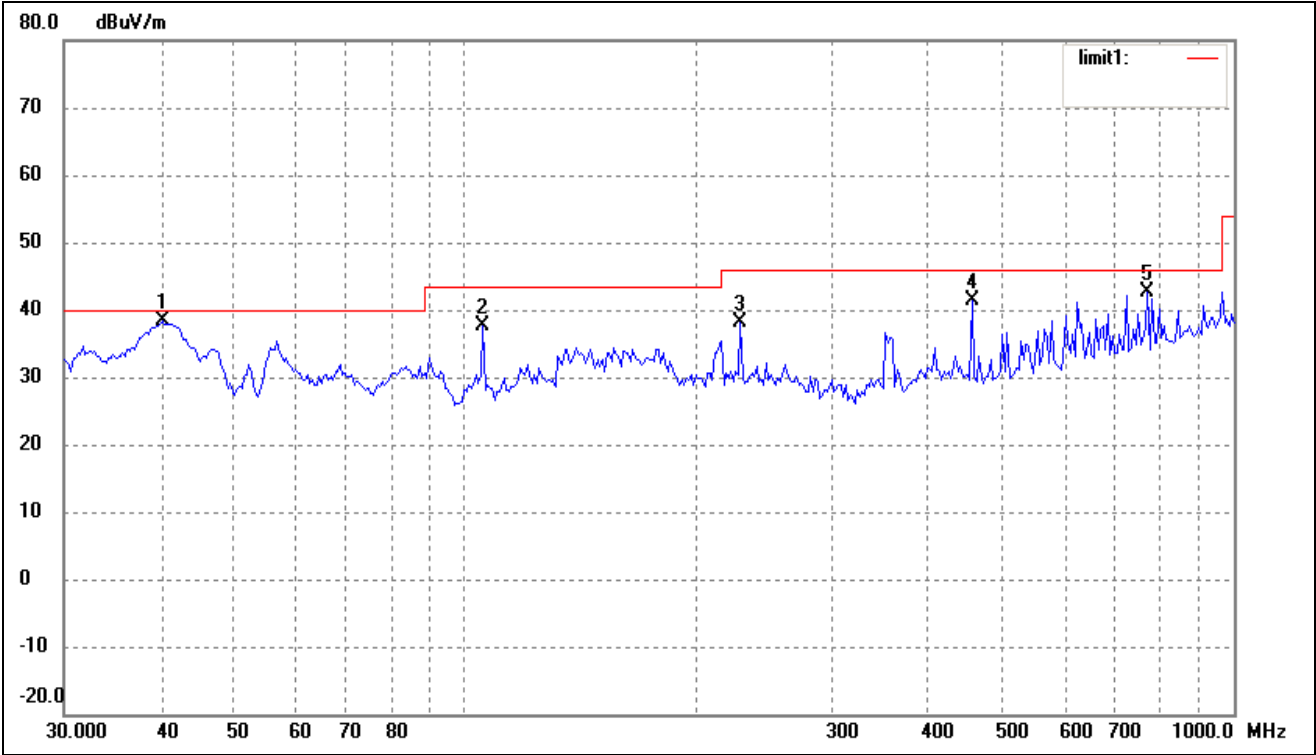


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	60.0691	26.94	7.50	34.44	40.00	-5.56	209	120	QP
2	455.9058	29.14	11.84	40.98	46.00	-5.02	223	100	QP
3	603.5392	26.78	16.70	43.48	46.00	-2.52	115	100	QP
4	33.3279	30.00	6.77	36.77	40.00	-3.23	106	200	QP

*Radiated Disturbance**EUT: MID**M/N: ZT-180 7A**Operating Condition: Downloading**Test Specification: Horizontal & Vertical**Comment: AC120V/60Hz; Connect to PC, DC 9V**Horizontal*

No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	105.2718	28.43	7.99	36.42	43.50	-7.08	360	100	peak
2	144.3348	34.36	4.01	38.37	43.50	-5.13	203	117	QP
3	215.2678	30.96	7.12	38.08	43.50	-5.42	226	105	QP
4	455.9057	31.39	11.84	43.23	46.00	-2.77	109	224	QP
5	724.2611	25.20	17.86	43.06	46.00	-2.94	155	208	QP

Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	40.2757	30.15	8.15	38.30	40.00	-1.70	209	213	QP
2	105.2718	29.67	7.99	37.66	43.50	-5.84	223	106	peak
3	227.6906	30.34	7.74	38.08	46.00	-7.92	360	100	QP
4	455.9058	29.44	11.84	41.28	46.00	-4.72	108	125	QP
5	771.4486	24.17	18.57	42.74	46.00	-3.26	117	206	QP

Radiated Disturbance

EUT: MID

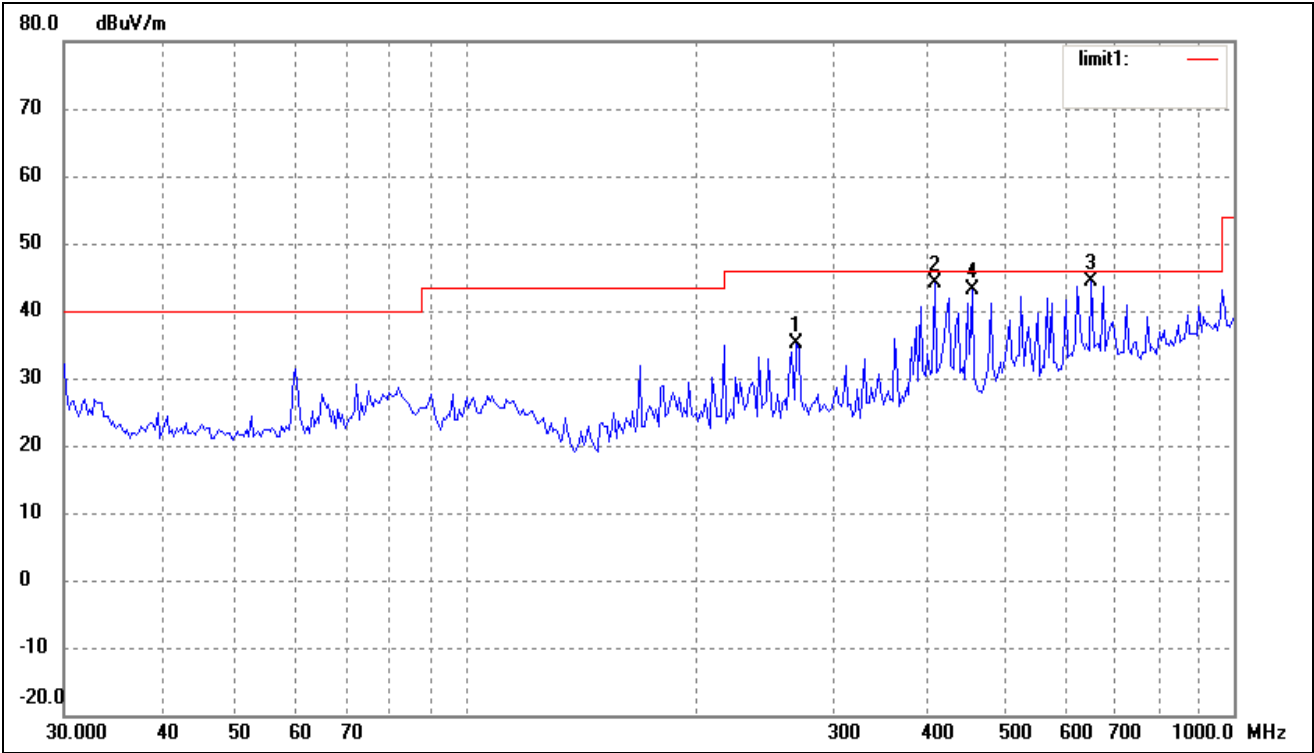
M/N: ZT-180 7A

Operating Condition: HDMI OUT

Test Specification: Horizontal & Vertical

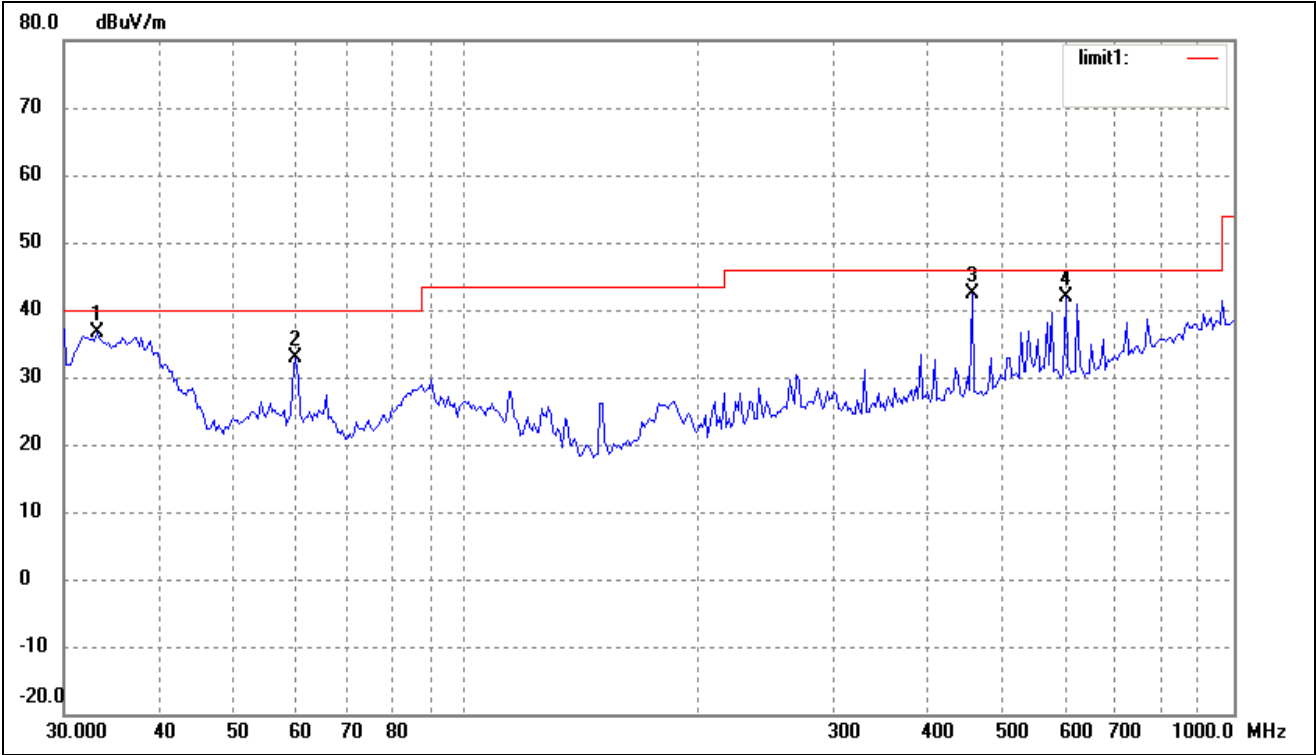
Comment: AC120V/60Hz; Connect to TV DC 9V

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	269.4284	26.02	9.22	35.24	46.00	-10.76	360	100	peak
2	407.5145	32.66	11.39	44.05	46.00	-1.95	206	118	QP
3	651.9417	27.31	17.11	44.42	46.00	-1.58	226	124	QP
4	455.9058	31.28	11.84	43.12	46.00	-2.88	108	206	QP

Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	33.0950	29.75	6.77	36.52	40.00	-3.48	229	125	QP
2	60.0691	25.46	7.50	32.96	40.00	-7.04	360	200	peak
3	455.9058	30.45	11.84	42.29	46.00	-3.71	122	130	QP
4	603.5392	25.23	16.70	41.93	46.00	-4.07	0	201	QP

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