FCC Part 15B
Measurement and Test Report

For

Spheris Digital Ltd.

Flat Room A21, BLK a, 4/F, Sheung Shui Plaza, 3ka fu close, Sheung Shui

Hong Kong

FCC ID: YHO-PXT51514

Test Rule(s):	FCC Part 15 Subpart B
Product Description:	Wireless Digital Display
Tested Model:	PXT515WR04E
Report No.:	STR14068273I-2
Tested Date:	2014-06-18 to 2014-07-30
Issued Date:	2014-07-30
Tested By:	Jason Su / 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:	Spheris Digital Ltd.
Address of applicant:	Flat Room A21, BLK a, 4/F, Sheung Shui Plaza, 3ka fu close, Sheung Shui, Hong Kong
Manufacturer:	Spheris Digital Ltd.
Address of manufacturer:	Flat Room A21, BLK a, 4/F, Sheung Shui Plaza, 3ka fu close, Sheung Shui, Hong Kong

General Description of EUT	
Product Name:	Wireless Digital Display
Trade Name:	Pix-Star
Model No.:	PXT515WR04E
Adding Model(s):	PXT515VR02E, PXT515GR02E, PXT515WR02E
	PXT515VR04E, PXT515GR04E
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 PXT515WR04E, but the circuit and the electronic construction do not change, declared by the manufacturer.	

Technical Characteristics of EUT	
Rated Voltage:	AC120V 60Hz Adapter:DV12V
Rated Current:	2A
Power Adapter Model:	/
Lowest Internal Frequency:	32.768KHz
Highest Internal Frequency:	24Mhz
Classification of ITE:	Class B

1.2 Test Standards

The following report is prepared on behalf of the Spheris Digital 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 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	U-disk Playing	/
TM2	SD card Playing	/

EUT Cable List and Details

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

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
USB flash disk	SONY	8G	/
SD Card	Kingston	4G	
Adapter	/	GFP241-1220BX-1	/
Headset	HUAWEI	/	/

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
DC Cable	1.80	Unshielded	With 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.

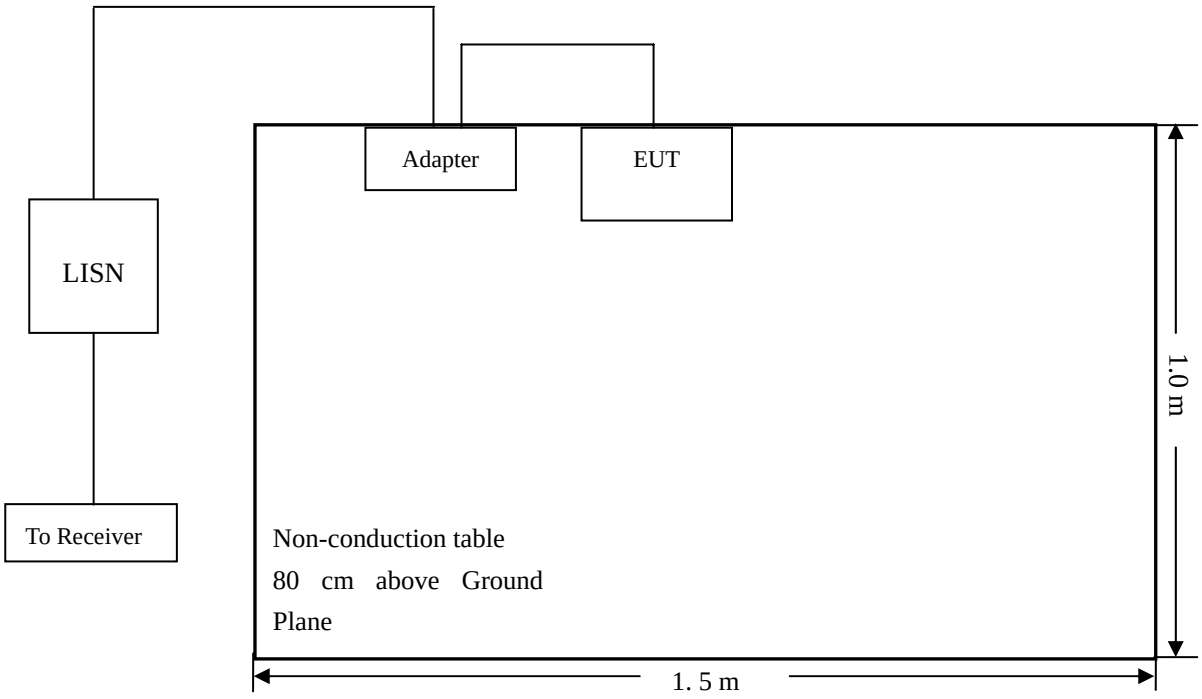
3.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	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:

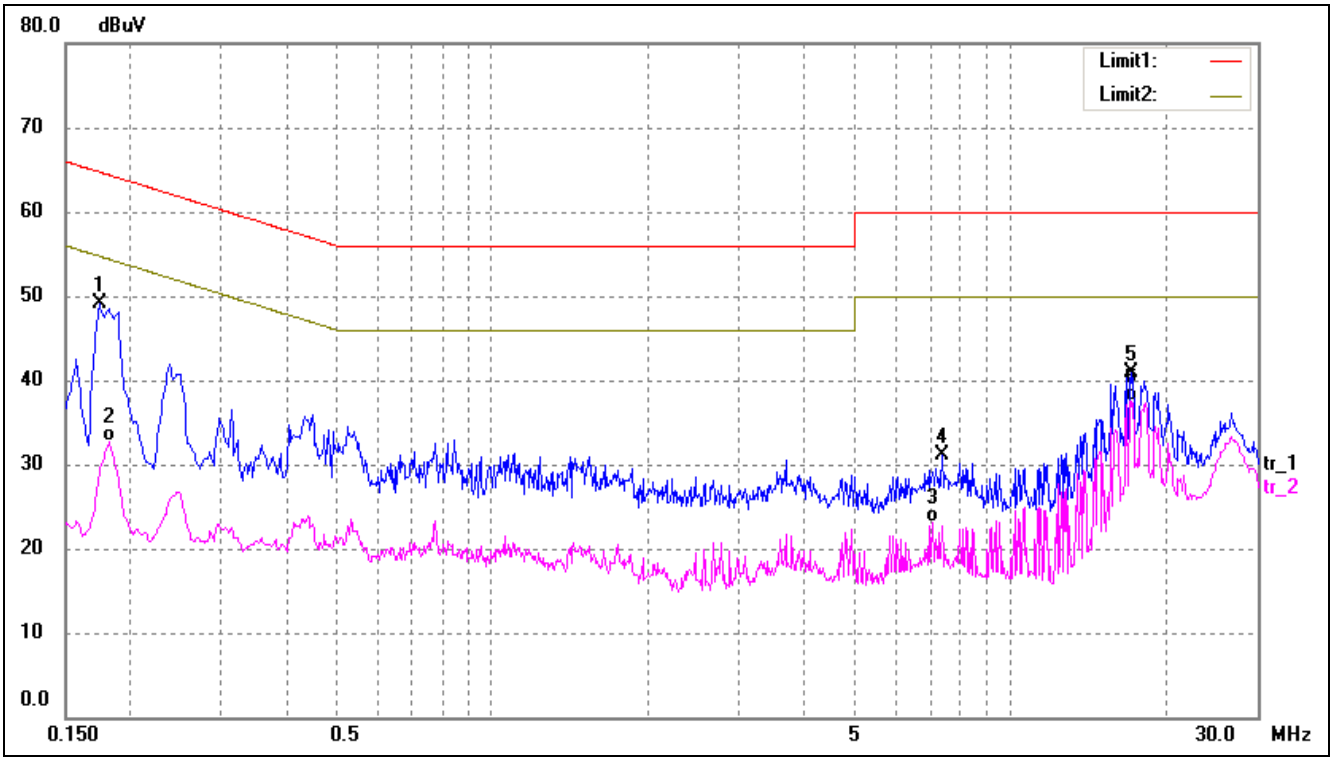
-10.39 dB at **18.1660 MHz** in the **Line**, **Average** detector, 0.15-30MHz

3.7 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

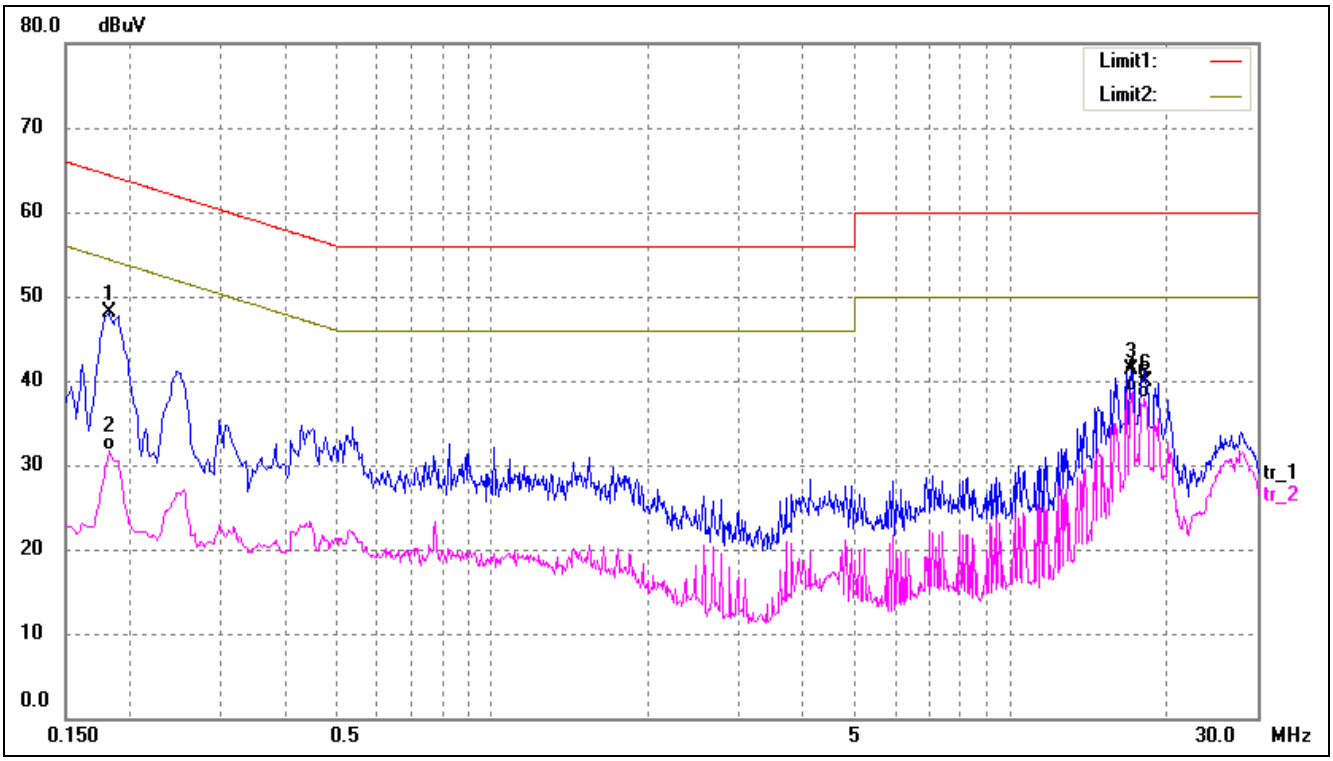
EUT: *Wireless Digital Display*
Tested Model: *PXT515WR04E*
Operating Condition: *U-dist Playing*
Comment: *Adapter:DC12V*

Test Specification: *Neutral*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1740	39.67	9.50	49.17	64.77	-15.60	peak
2	0.1820	23.23	9.50	32.73	54.39	-21.66	AVG
3	7.0820	13.02	10.00	23.02	50.00	-26.98	AVG
4	7.3900	21.01	10.00	31.01	60.00	-28.99	peak
5	17.1380	29.38	11.43	40.81	60.00	-19.19	peak
6	17.1380	26.16	11.43	37.59	50.00	-12.41	AVG

Test Specification: *Line*

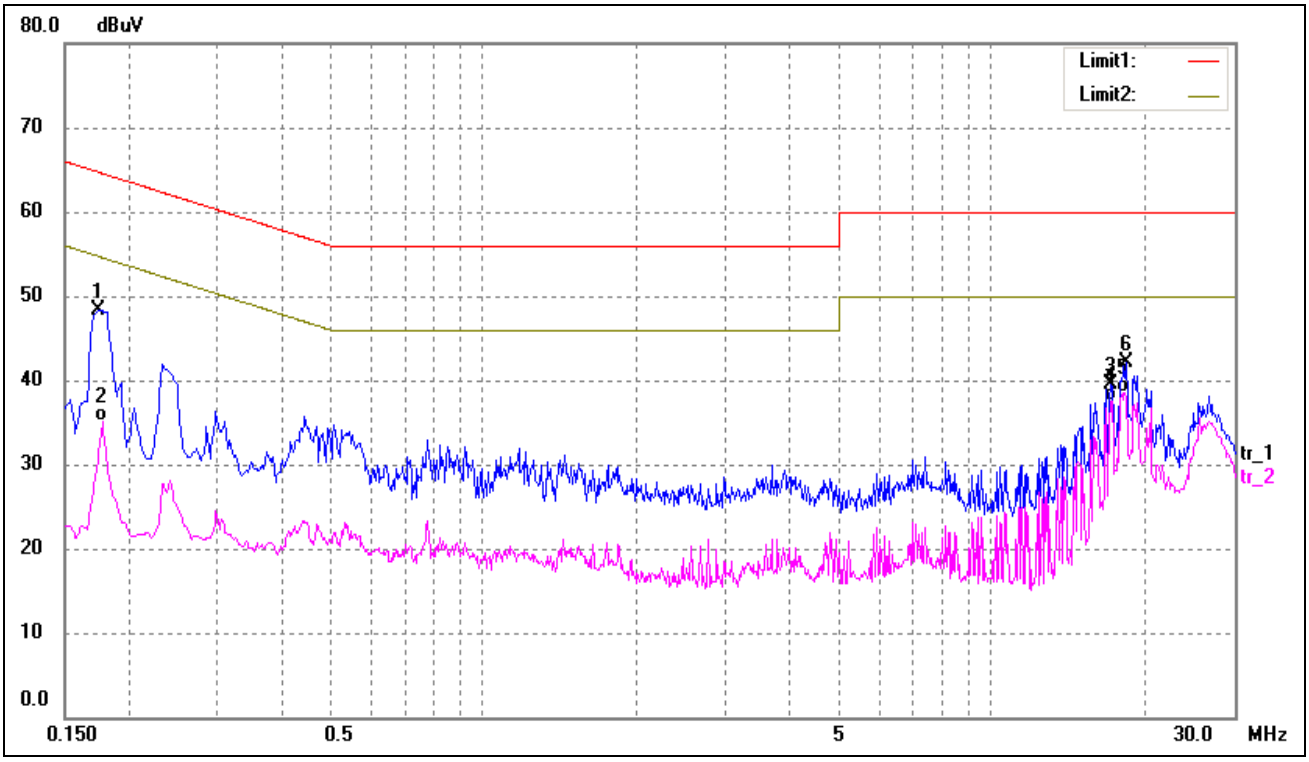


No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1820	38.62	9.50	48.12	64.39	-16.27	peak
2	0.1820	22.26	9.50	31.76	54.39	-22.63	AVG
3	17.1380	29.90	11.43	41.33	60.00	-18.67	peak
4	17.2420	27.21	11.45	38.66	50.00	-11.34	AVG
5	18.1660	26.25	11.63	37.88	50.00	-12.12	AVG
6	18.2700	28.24	11.65	39.89	60.00	-20.11	peak

Plot of Conducted Emissions Test Data

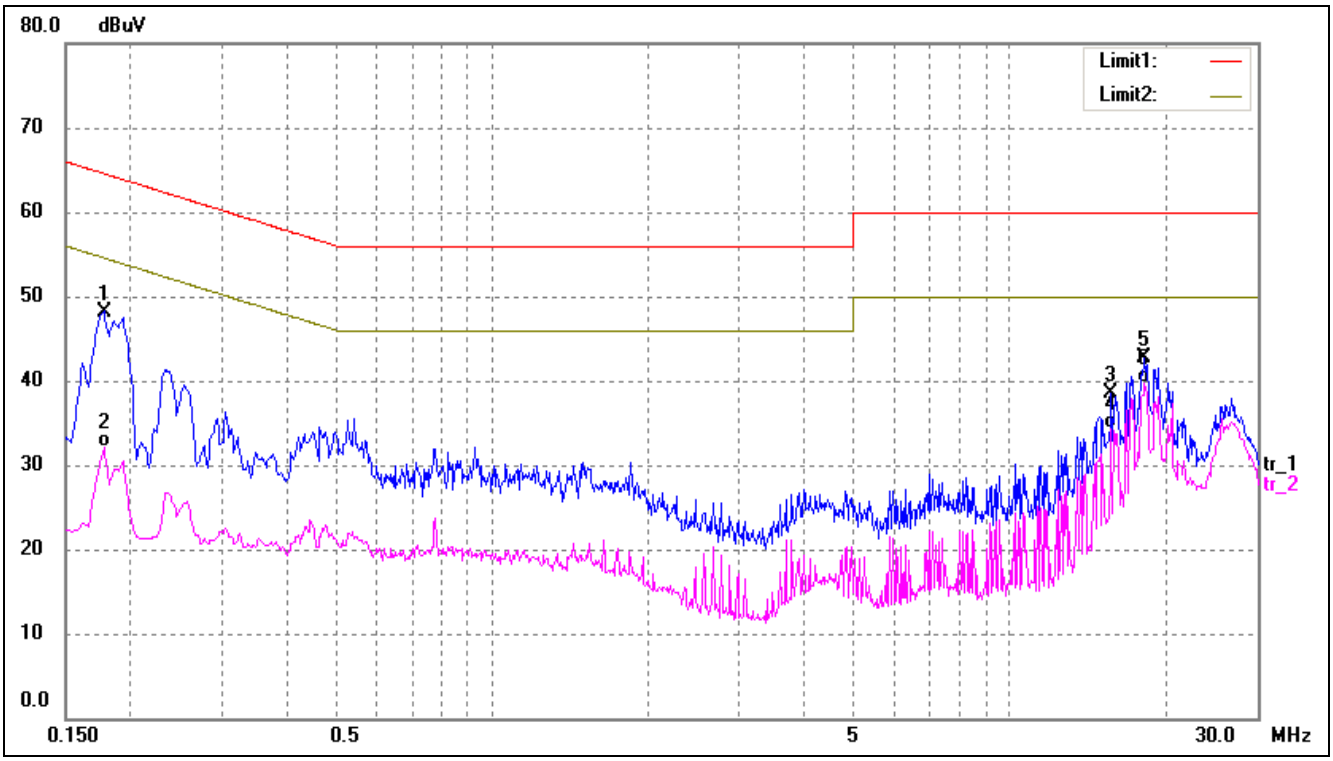
EUT: *Wireless Digital Display*
Tested Model: *PXT515WR04E*
Operating Condition: *SD card Playing*
Comment: *Adapter:DC12V*

Test Specification: *Neutral*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1740	38.88	9.50	48.38	64.77	-16.39	peak
2	0.1780	25.66	9.50	35.16	54.58	-19.42	AVG
3	17.1380	28.06	11.43	39.49	60.00	-20.51	peak
4	17.2420	26.00	11.45	37.45	50.00	-12.55	AVG
	18.1660	26.96	11.63	38.59	50.00	-11.41	AVG
6	18.3700	30.34	11.67	42.01	60.00	-17.99	peak

Test Specification: *Line*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1780	38.70	9.50	48.20	64.58	-16.38	peak
2	0.1780	22.63	9.50	32.13	54.58	-22.45	AVG
3	15.7020	27.38	11.14	38.52	60.00	-21.48	peak
4	15.7020	23.25	11.14	34.39	50.00	-15.61	AVG
5	18.1660	31.05	11.63	42.68	60.00	-17.32	peak
6	18.1660	27.98	11.63	39.61	50.00	-10.39	AVG

4. Radiated Emissions

4.1 Measurement Uncertainty

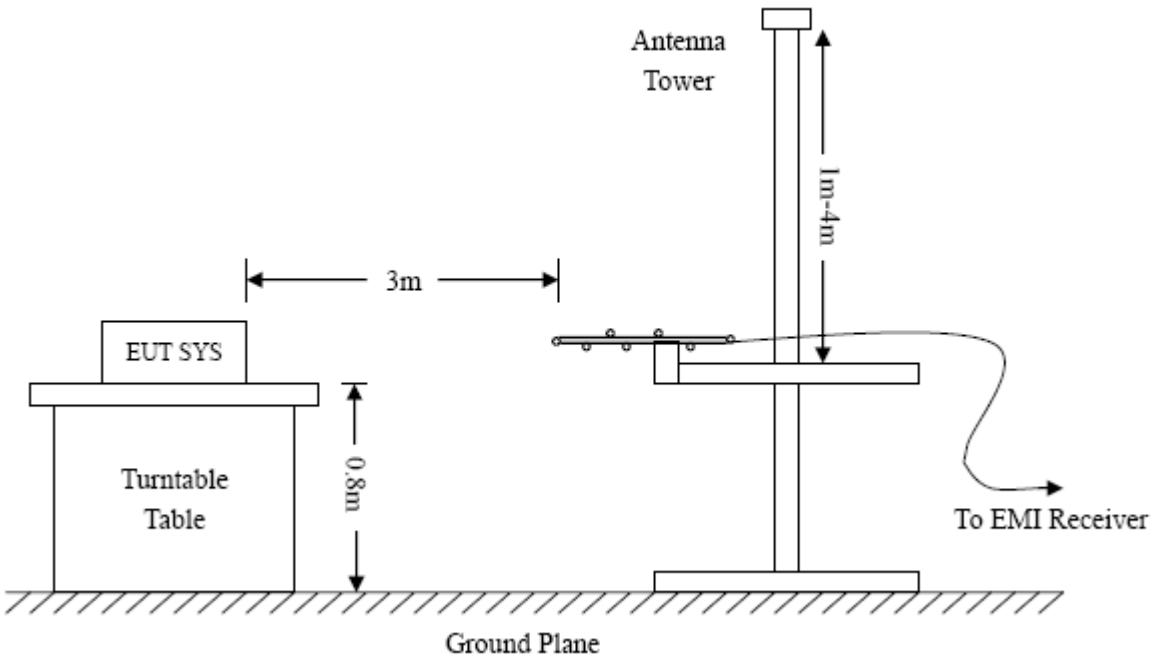
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

4.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	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	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

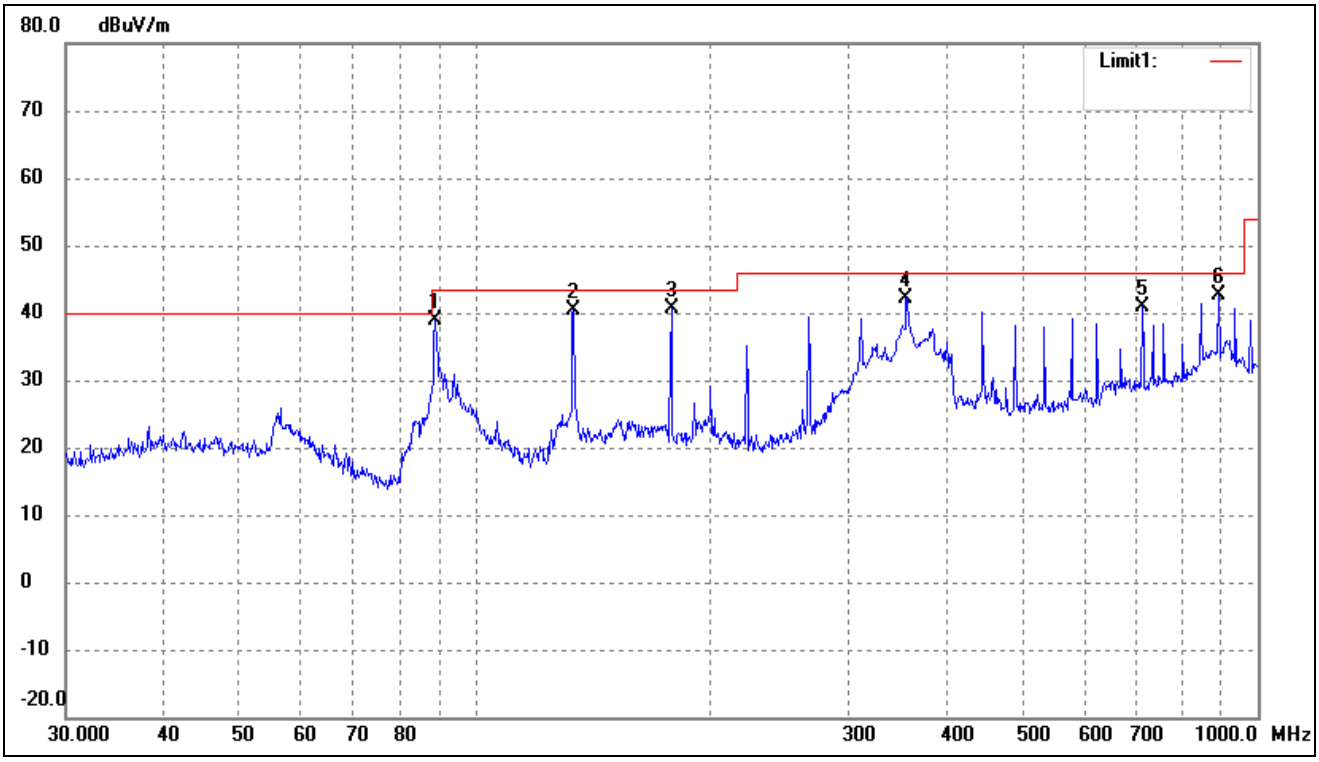
According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

-1.08 dB at **323.3204 MHz** in the **Horizontal** polarization, **9 kHz** to **1 GHz**, **3Meters**

Plot of Radiated Emissions Test Data

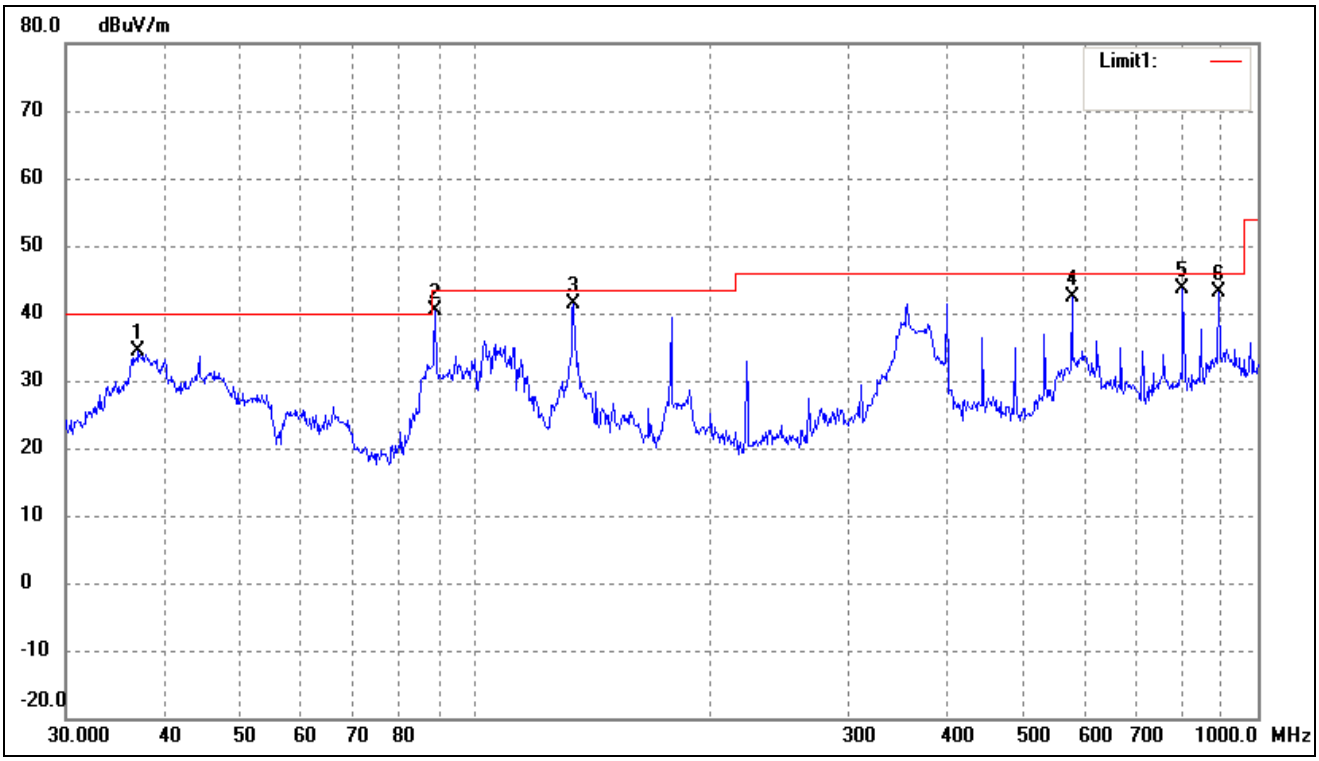
EUT: *Wireless Digital Display*
Tested Model: *PXT515WR04E*
Operating Condition: *U-dist Playing*
Comment: *Adapter:DC12V*

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	88.9638	35.62	3.35	38.97	43.50	-4.53	58	100	peak
2	133.6187	37.45	2.92	40.37	43.50	-3.13	326	100	peak
3	178.1326	37.95	2.73	40.68	43.50	-2.82	29	100	peak
4	355.4273	33.13	9.12	42.25	46.00	-3.75	209	100	peak
5	711.6734	28.74	12.12	40.86	46.00	-5.14	359	200	peak
6	890.7278	25.73	16.84	42.57	46.00	-3.43	58	100	peak

Test Specification: *Vertical*

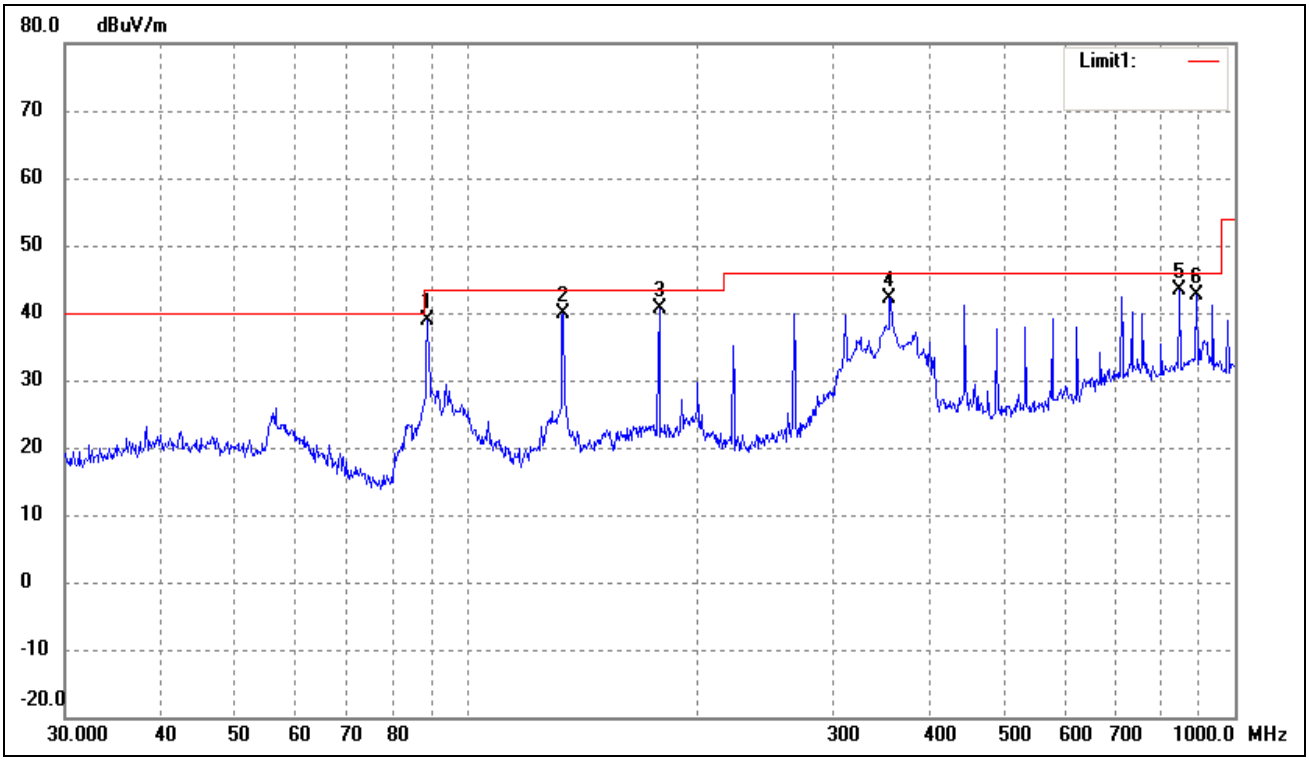


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(•)	(cm)	
1	37.1550	25.52	8.76	34.28	40.00	-5.72	51	100	peak
2	88.9638	36.99	3.35	40.34	43.50	-3.16	308	100	peak
3	133.6187	38.45	2.92	41.37	43.50	-2.13	120	100	peak
4	578.6698	29.92	12.50	42.42	46.00	-3.58	359	100	peak
5	801.7862	29.28	14.35	43.63	46.00	-2.37	31	100	peak
6	890.7278	26.31	16.84	43.15	46.00	-2.85	98	200	peak

Plot of Radiated Emissions Test Data

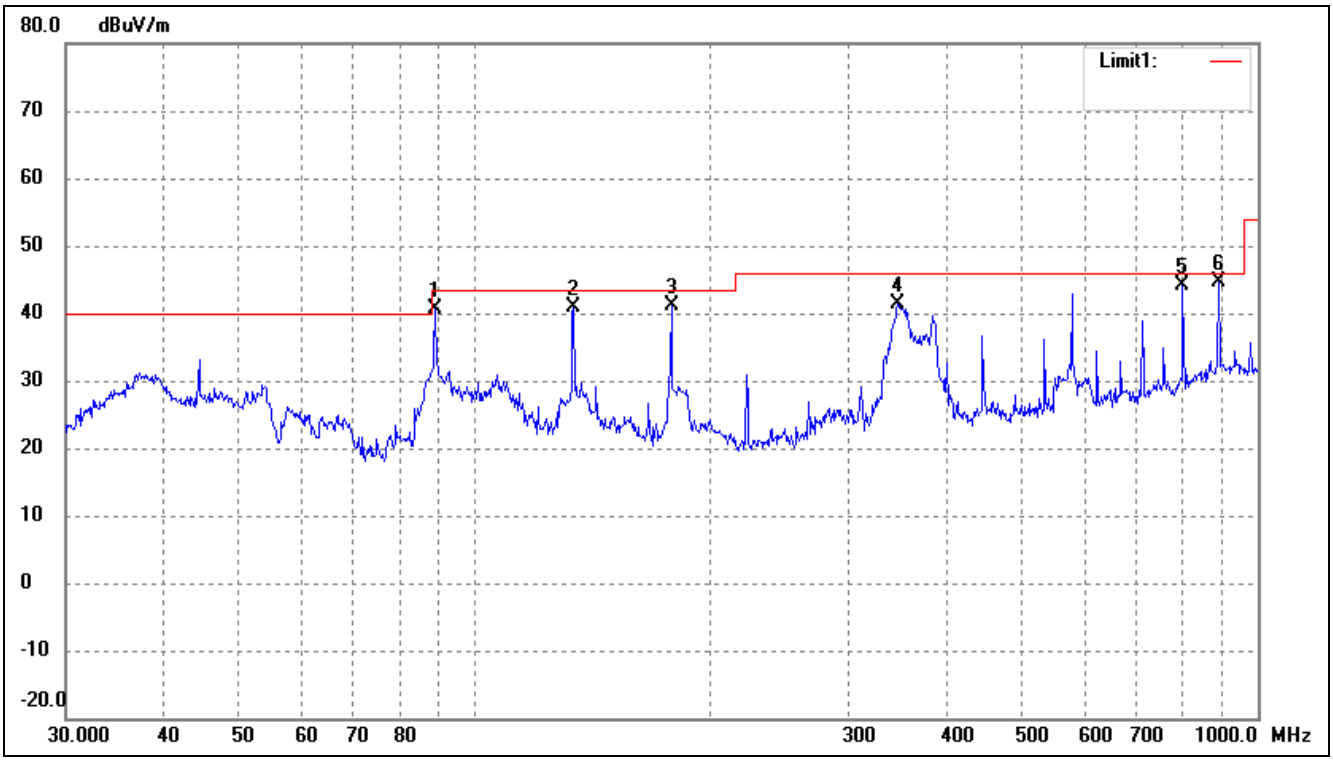
EUT: *Wireless Digital Display*
Tested Model: *PXT515WR04E*
Operating Condition: *SD card Playing*
Comment: *Adapter:DC12V*

Test Specification: *Horizontal*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	88.9638	35.62	3.35	38.97	43.50	-4.53	321	200	peak
2	133.6187	36.95	2.92	39.87	43.50	-3.63	59	100	peak
3	178.1326	37.95	2.73	40.68	43.50	-2.82	52	100	peak
4	355.4273	33.13	9.12	42.25	46.00	-3.75	135	200	peak
5	848.0562	27.47	15.86	43.33	46.00	-2.67	23	100	peak
6	890.7278	25.73	16.84	42.57	46.00	-3.43	103	100	peak

Test Specification: *Vertical*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	88.9638	37.18	3.35	40.53	43.50	-2.97	36	100	peak
2	133.6187	37.97	2.92	40.89	43.50	-2.61	210	100	peak
3	178.1326	38.37	2.73	41.10	43.50	-2.40	23	200	peak
4	346.8091	32.38	8.90	41.28	46.00	-4.72	98	100	peak
5	801.7862	29.70	14.35	44.05	46.00	-1.95	201	200	peak
6	890.7278	27.84	16.84	44.68	46.00	-1.32	230	100	peak

Note: The measurements greater than 20dB below the limit from 9kHz to 30MHz and test data are not provided.

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