FCC Part 15B
Measurement and Test Report

For

SZZT ELECTRONICS CO.,LTD

SZZT Industrial Park,NO.3TongguanRoad,Guangming New

District, Shenzhen, Guangdong, China

FCC ID: 2AL7RKS8223

Test Rule(s):	FCC Part 15 Subpart B
Product Description:	Smart wireless pos
Tested Model:	KS8223
Report No.:	STR17048102I-7
Tested Date:	2017-04-12 to 2017-05-31
Issued Date:	2017-06-01
Tested By:	Leo Lee / Engineer
Reviewed By:	Silin Chen / 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:	SZZT ELECTRONICS CO.,LTD
Address of applicant:	SZZT Industrial Park,NO.3TongguanRoad,Guangming New District, Shenzhen, Guangdong, China
Manufacturer:	SZZT ELECTRONICS CO.,LTD
Address of manufacturer:	SZZT Industrial Park,NO.3TongguanRoad,Guangming New District, Shenzhen, Guangdong, China

General Description of EUT	
Product Name:	Smart wireless pos
Trade Name:	SZZT
Model No.:	KS8223
Adding Model(s):	/
Note: The test data is gathered from a production sample, provided by the manufacturer.	

Technical Characteristics of EUT	
Rated Voltage:	DC 3.7V by battery
Rated Current:	/
Rated Power:	/
Power Adapter Model:	RJ-AS050200C010 Input: 100`240V, 50/60Hz; Output: DC 5V, 2A
Highest Internal Frequency:	1.1GHz
Classification of ITE:	Class B

1.2 Test Standards

The following report is prepared on behalf of the SZZT ELECTRONICS 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 C63.4-2014, 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	Charge and camera scan	/
TM2	Charge and play	/
TM3	Download mode	/

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB cable	0.97	Shielded	Without Core

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Adapter	Shenzhen ruijin	RJ-AS050200C010	/
Notebook	Lenovo	E445	/

Special Cable List and Details

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

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
Conducted Emissions	Conducted	±2.88dB
Transmitter Spurious Emissions	Radiated	±5.1dB

1.7 Test Equipment List and Details

No.	Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
SEMT-1072	Spectrum Analyzer	Agilent	E4407B	MY41440400	2016-06-04	2017-06-03
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2016-06-04	2017-06-03
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2016-06-04	2017-06-03
SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2016-06-04	2017-06-03
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2016-06-04	2017-06-03
SEMT-1011	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2016-06-04	2017-06-03
SEMT-1042	Horn Antenna	ETS	3117	00086197	2016-06-04	2017-06-03
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2016-06-04	2017-06-03
SEMT-1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2016-06-04	2017-06-03
SEMT-1003	L.I.S.N	Schwarz beck	NSLK8126	8126-224	2016-06-04	2017-06-03
SEMT-1002	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2016-06-04	2017-06-03

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§ 15.107 (a)	Conducted Emissions	Compliant
§ 15.109 (a)	Radiated Emissions	Compliant

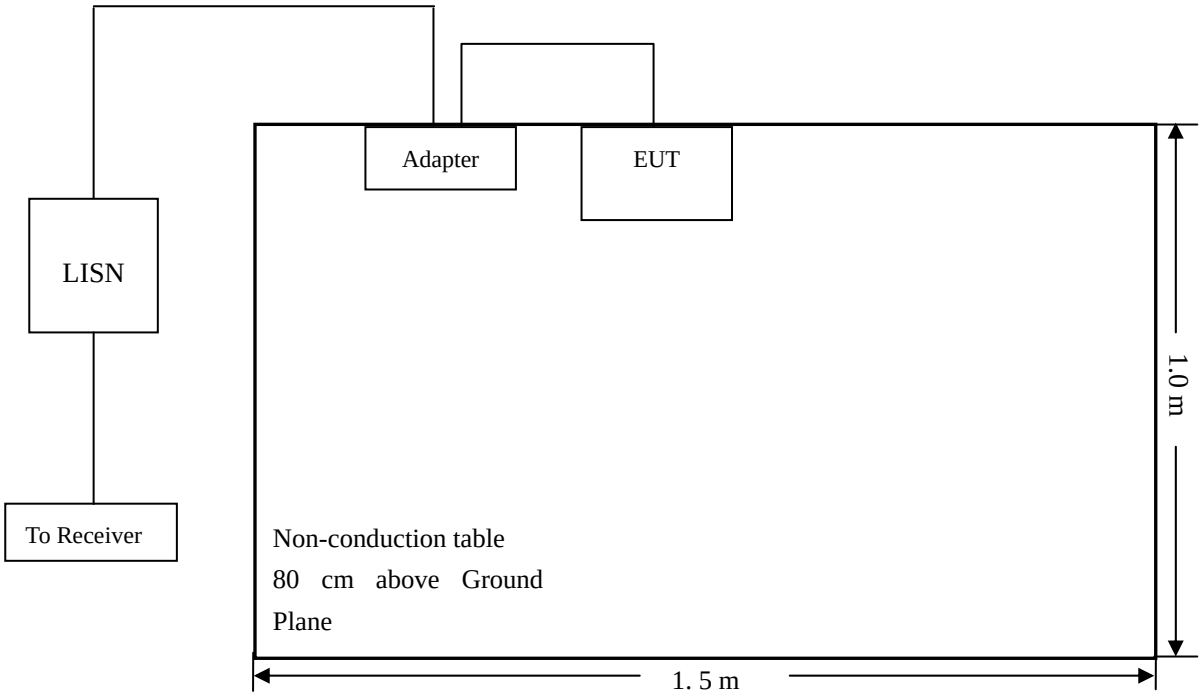
N/A: not applicable

3. Conducted Emissions

3.1 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.

3.2 Basic Test Setup Block Diagram



3.3 Environmental Conditions

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

3.4 Summary of Test Results/Plots

According to the data in section 3.5, the EUT complied with the FCC Part 15.107(a) Conducted margin for a Class B device, with the *worst* margin reading of:

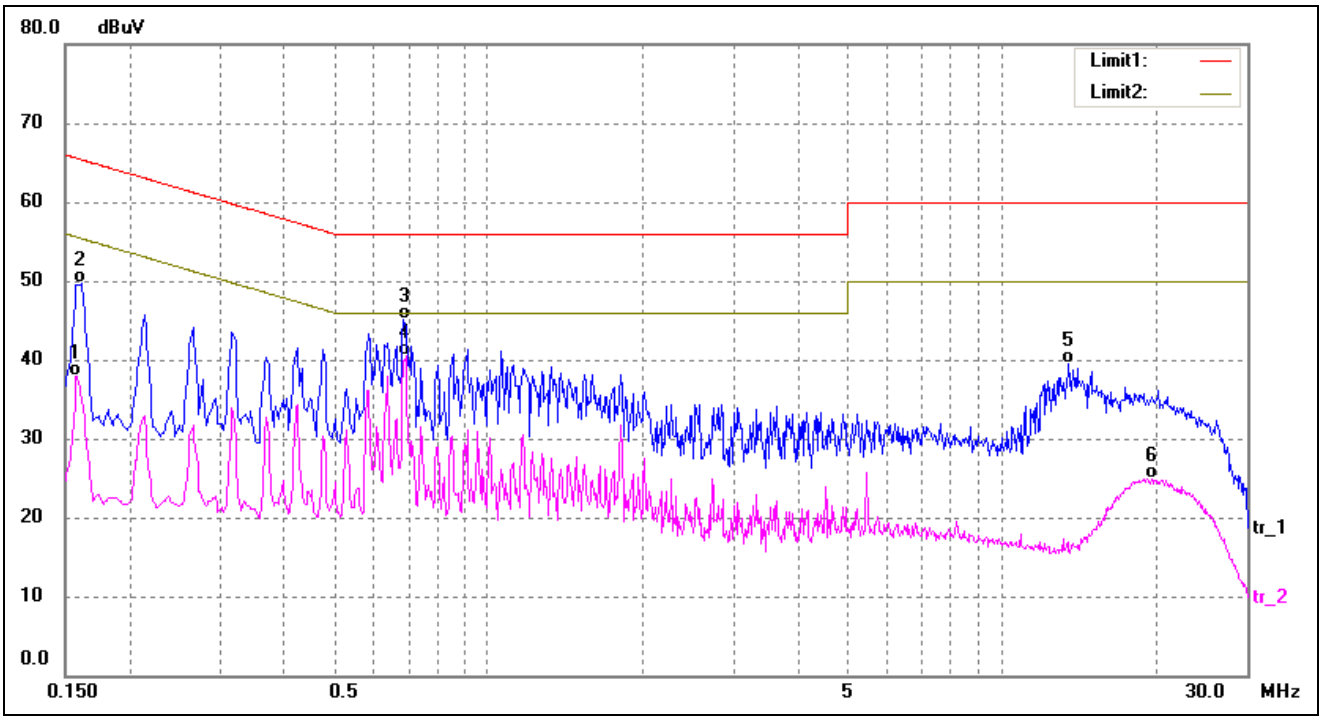
-4.12 dB at **0.7419 MHz** in the **Neutral**, **TM2** Mode, **Average** detector, 0.15-30MHz

3.5 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

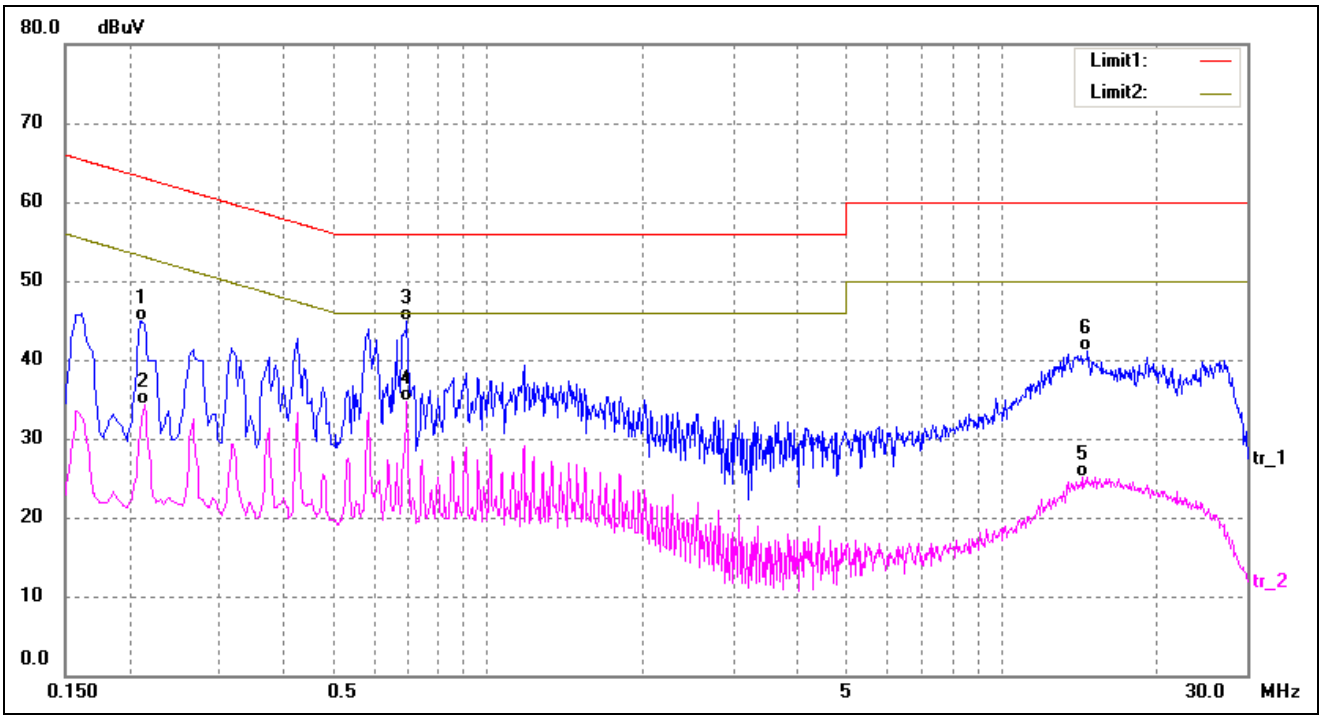
EUT: *Smart wireless pos*
Tested Model: *KS8223*
Operating Condition: *TM1*
Comment: *AC 120V/60Hz; Adapter DC 5V*

Test Specification: *Neutral*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1580	28.11	9.84	37.95	55.57	-17.62	AVG
2	0.1620	39.77	9.84	49.61	65.36	-15.75	QP
3	0.6860	35.41	9.79	45.20	56.00	-10.80	QP
4*	0.6900	30.69	9.78	40.47	46.00	-5.53	AVG
5	13.5260	29.86	9.58	39.44	60.00	-20.56	QP
6	19.5820	15.32	9.67	24.99	50.00	-25.01	AVG

Test Specification: *Line*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.2100	35.17	9.80	44.97	63.21	-18.24	QP
2	0.2140	24.48	9.80	34.28	53.05	-18.77	AVG
3*	0.6940	35.07	9.78	44.85	56.00	-11.15	QP
4	0.6940	24.87	9.78	34.65	46.00	-11.35	AVG
5	14.3940	15.55	9.60	25.15	50.00	-24.85	AVG
6	14.7020	31.45	9.60	41.05	60.00	-18.95	QP

Plot of Conducted Emissions Test Data

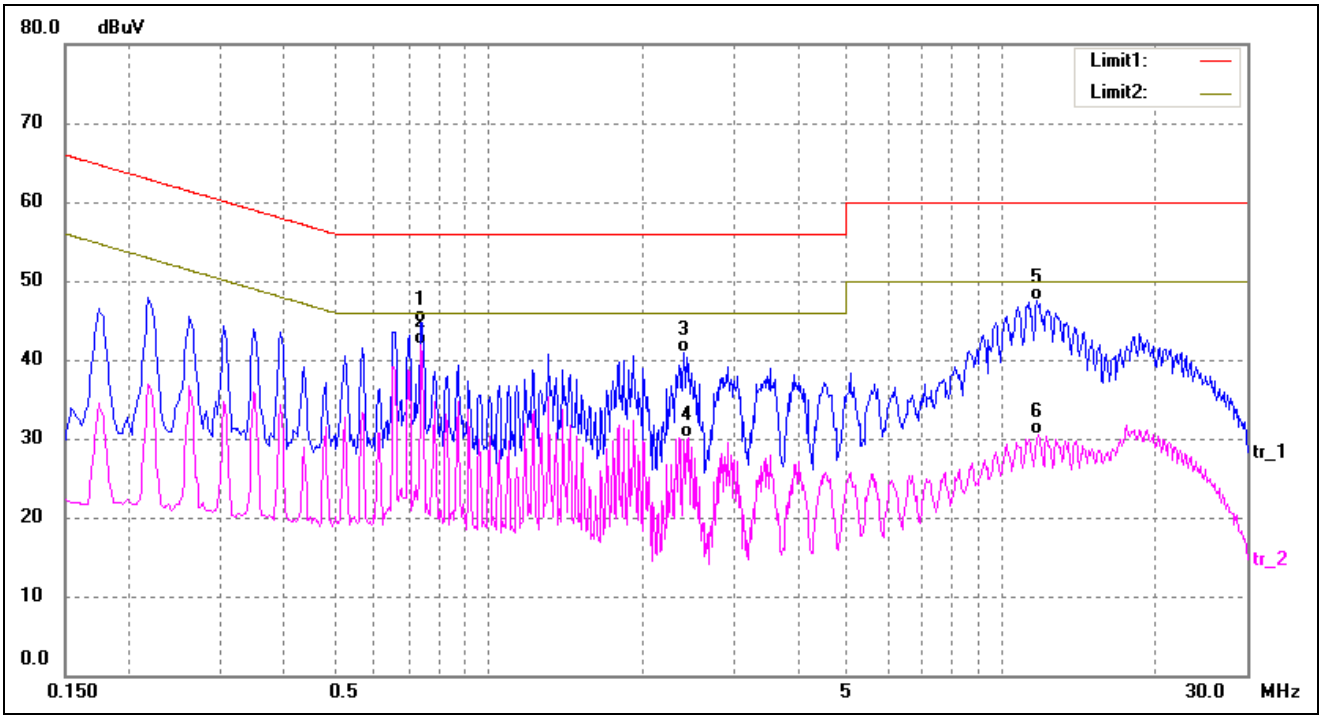
EUT: *Smart wireless pos*

Tested Model: *KS8223*

Operating Condition: *TM2*

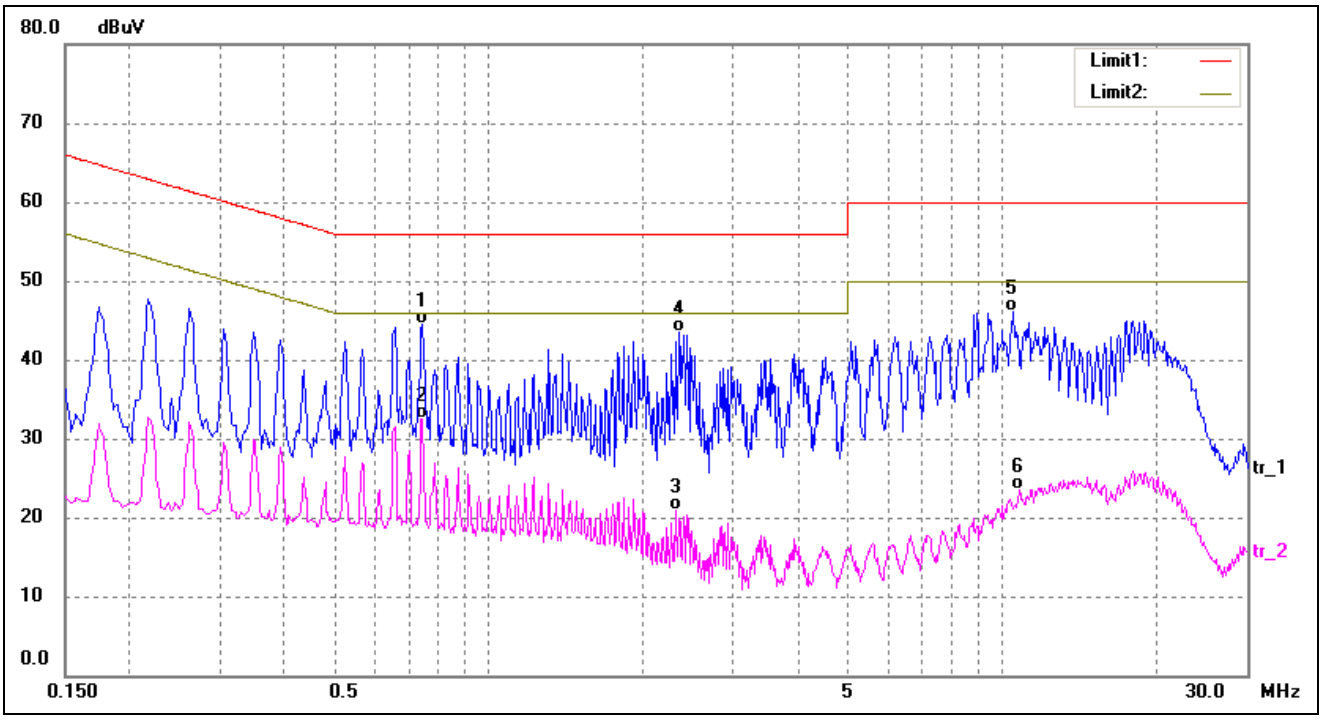
Comment: *AC 120V/60Hz; Adapter DC 5V*

Test Specification: *Neutral*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.7419	34.98	9.78	44.76	56.00	-11.24	QP
2*	0.7419	32.10	9.78	41.88	46.00	-4.12	AVG
3	2.4020	31.16	9.72	40.88	56.00	-15.12	QP
4	2.4500	20.42	9.72	30.14	46.00	-15.86	AVG
5	11.7139	37.88	9.55	47.43	60.00	-12.57	QP
6	11.7659	20.94	9.55	30.49	50.00	-19.51	AVG

Test Specification: *Line*

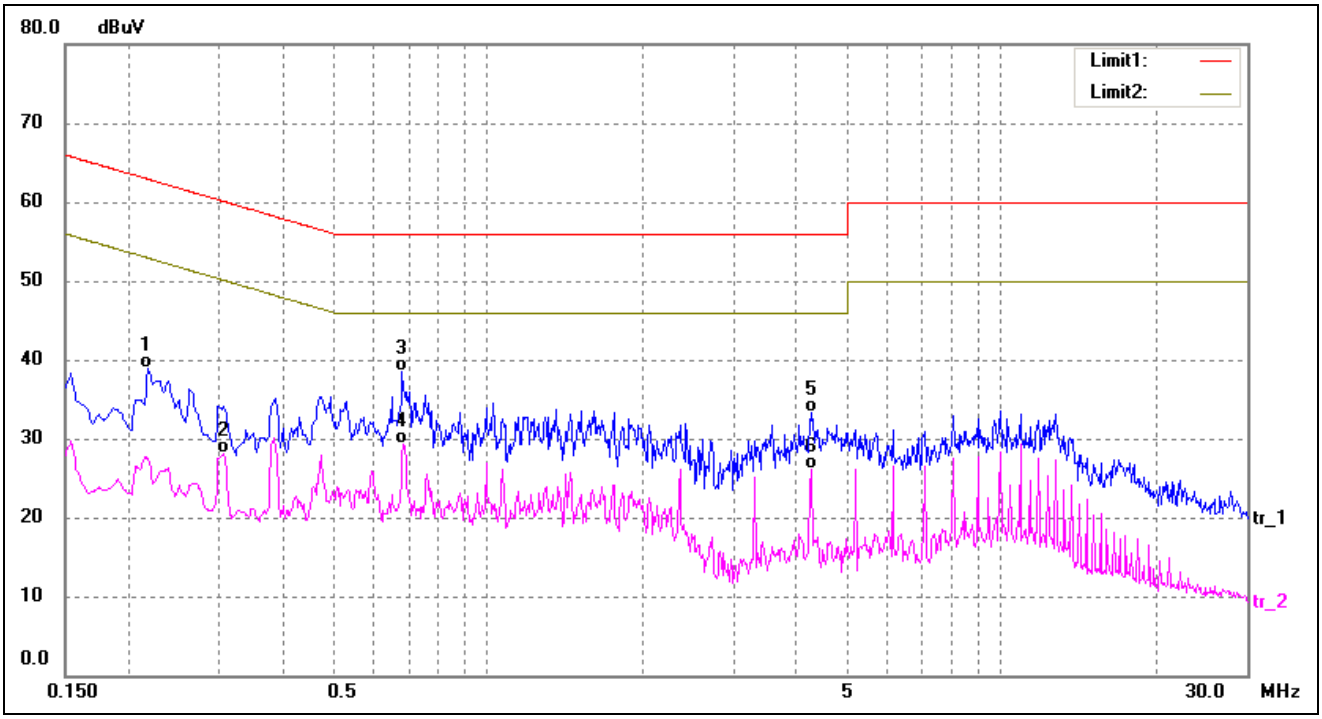


No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.7459	34.81	9.78	44.59	56.00	-11.41	QP
2	0.7459	22.75	9.78	32.53	46.00	-13.47	AVG
3	2.3180	11.08	9.73	20.81	46.00	-25.19	AVG
4	2.3580	33.78	9.73	43.51	56.00	-12.49	QP
5	10.5298	36.53	9.53	46.06	60.00	-13.94	QP
6	10.8299	14.02	9.53	23.55	50.00	-26.45	AVG

Plot of Conducted Emissions Test Data

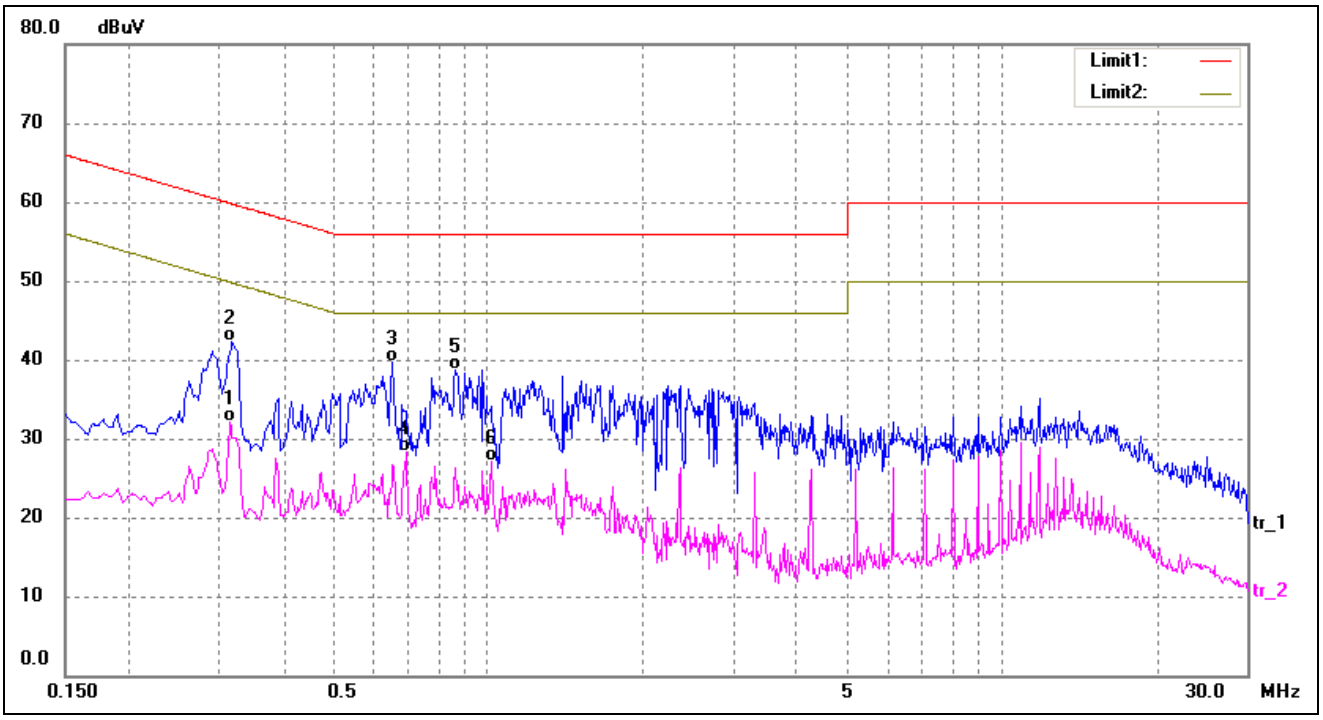
EUT: *Smart wireless pos*
Tested Model: *KS8223*
Operating Condition: *TM3*
Comment: *AC 120V/60Hz; USB 5V*

Test Specification: *Neutral*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.2180	29.09	9.80	38.89	62.89	-24.00	QP
2	0.3060	18.33	9.80	28.13	50.08	-21.95	AVG
3	0.6820	28.71	9.79	38.50	56.00	-17.50	QP
4*	0.6860	19.54	9.79	29.33	46.00	-16.67	AVG
5	4.2500	23.71	9.68	33.39	56.00	-22.61	QP
6	4.2500	16.43	9.68	26.11	46.00	-19.89	AVG

Test Specification: *Line*

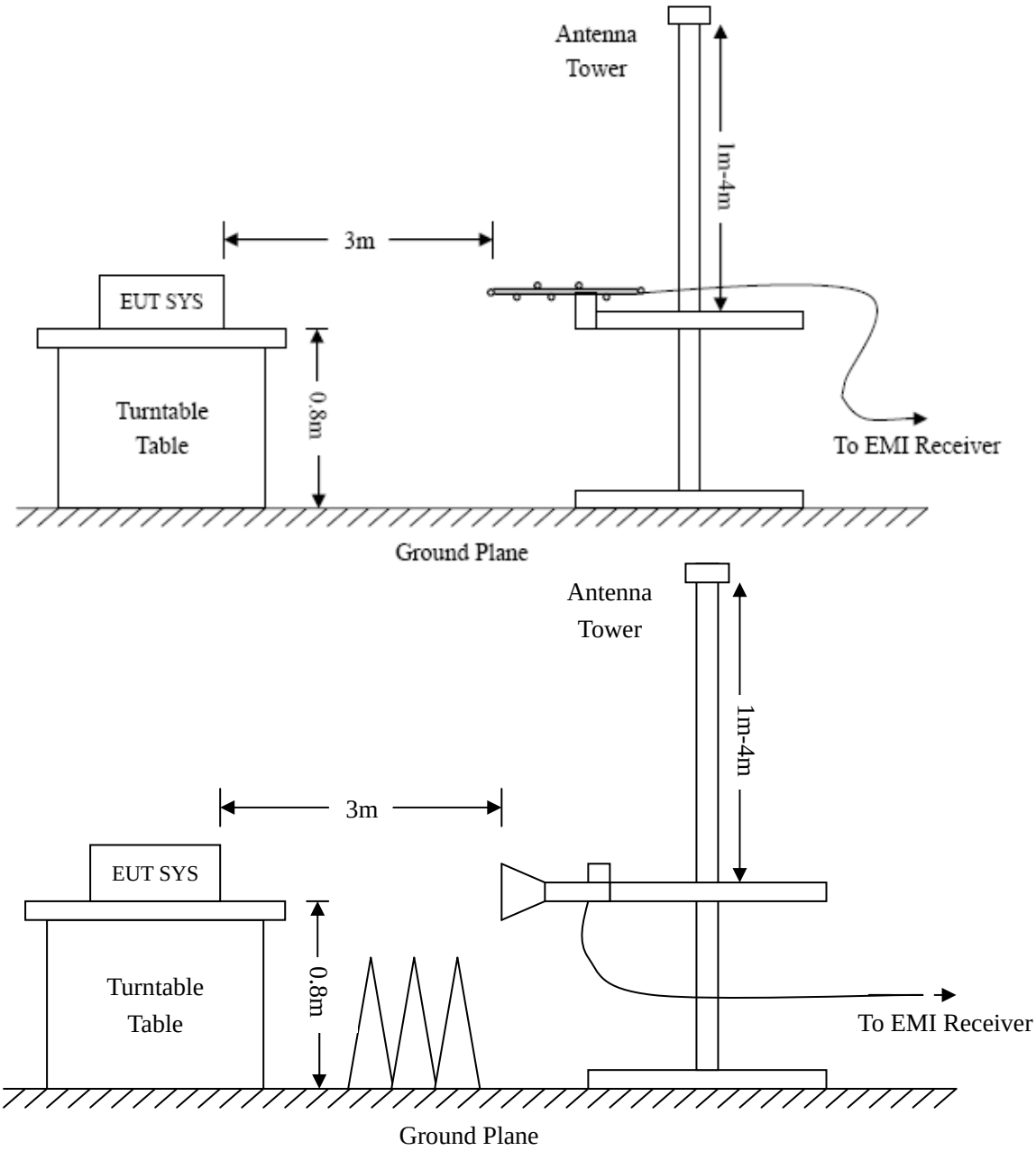


No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.3140	22.22	9.80	32.02	49.86	-17.84	AVG
2	0.3180	32.53	9.80	42.33	59.76	-17.43	QP
3*	0.6540	29.88	9.79	39.67	56.00	-16.33	QP
4	0.6900	18.60	9.78	28.38	46.00	-17.62	AVG
5	0.8660	28.99	9.77	38.76	56.00	-17.24	QP
6	1.0180	17.32	9.76	27.08	46.00	-18.92	AVG

4. Radiated Emissions

4.1 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.



4.2 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

4.3 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

4.4 Environmental Conditions

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

4.5 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:

-2.55 dB at **263.8190 MHz** in the **Horizontal** polarization, **TM1** Mode, **30MHz** to **12.75 GHz**, **3Meters**

Plot of Radiated Emissions Test Data

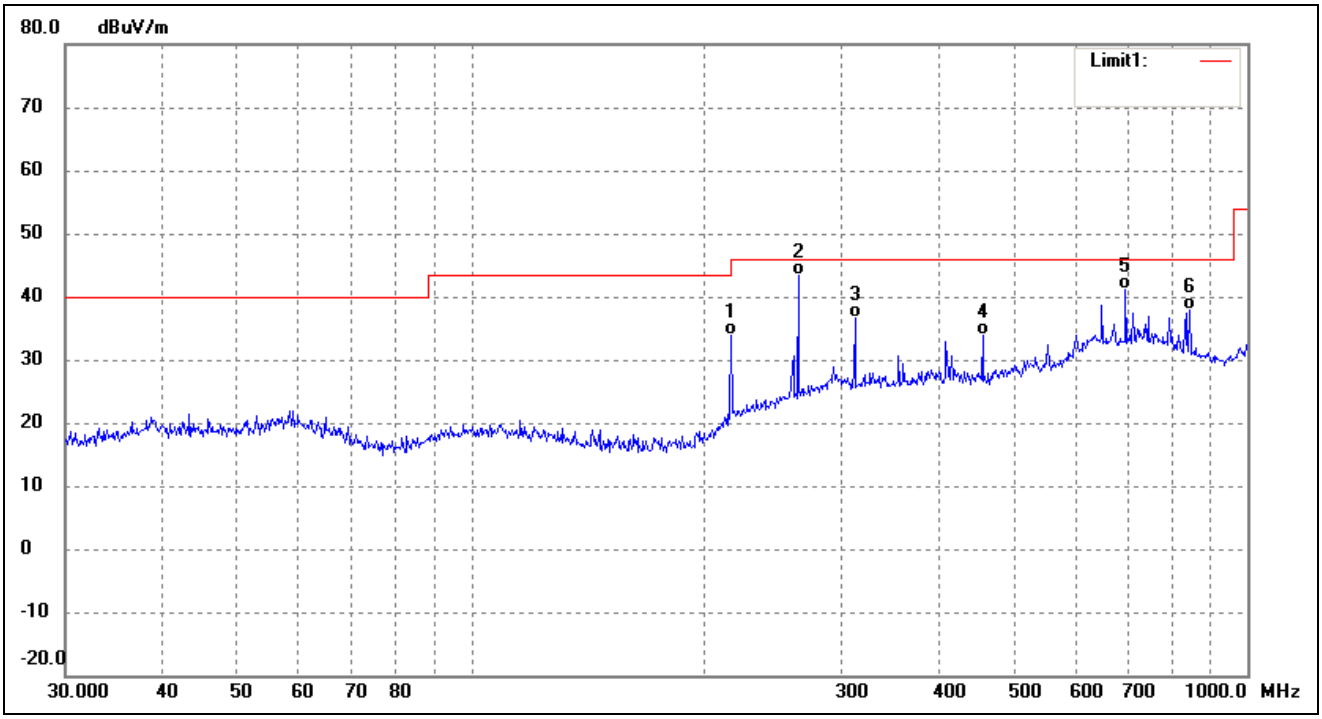
EUT: *Smart wireless pos*

Tested Model: *KS8223*

Operating Condition: *TM1*

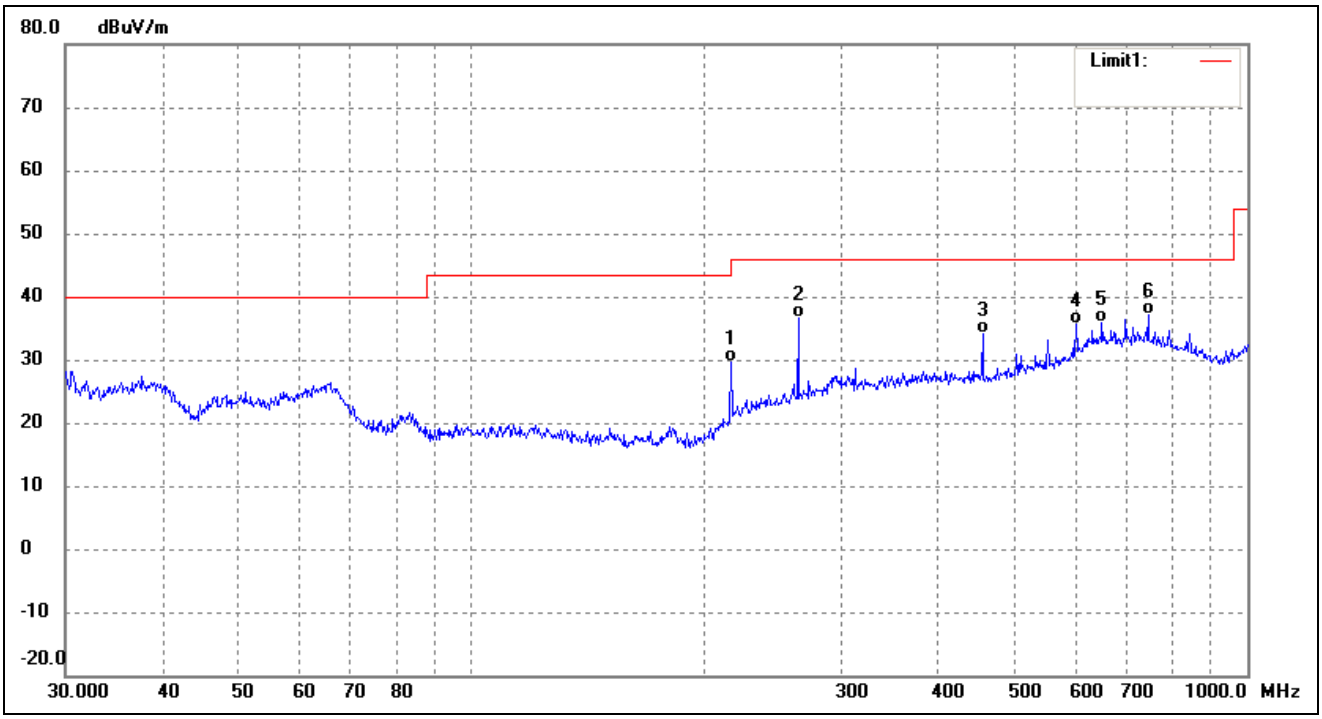
Comment: *AC 120V/60Hz; Adapter DC 5V*

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	216.0240	26.95	6.82	33.77	46.00	-12.23	202	100	QP
2	263.8190	33.49	9.96	43.45	46.00	-2.55	133	100	QP
3	312.1794	24.60	11.95	36.55	46.00	-9.45	84	100	QP
4	455.9058	20.88	12.92	33.80	46.00	-12.20	265	100	QP
5	696.8567	23.70	17.43	41.13	46.00	-4.87	207	100	QP
6	842.1296	21.98	15.97	37.95	46.00	-8.05	346	100	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	216.0240	22.76	6.82	29.58	46.00	-16.42	172	100	QP
2	263.8190	26.62	9.96	36.58	46.00	-9.42	143	100	QP
3	455.9058	21.22	12.92	34.14	46.00	-11.86	67	100	QP
4	601.4265	17.05	18.66	35.71	46.00	-10.29	156	100	QP
5	649.6597	18.01	17.84	35.85	46.00	-10.15	191	100	QP
6	744.8661	18.34	18.81	37.15	46.00	-8.85	192	100	QP

Plot of Radiated Emissions Test Data

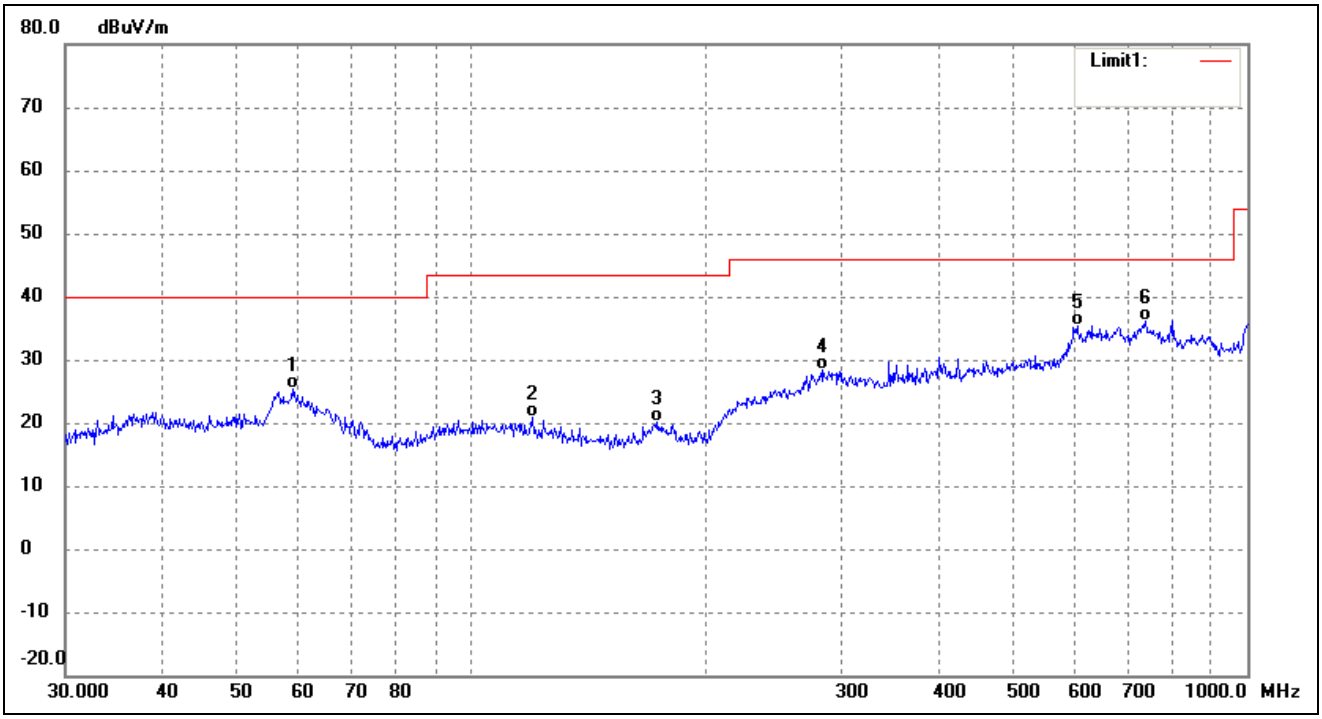
EUT: *Smart wireless pos*

Tested Model: *KS8223*

Operating Condition: *TM2*

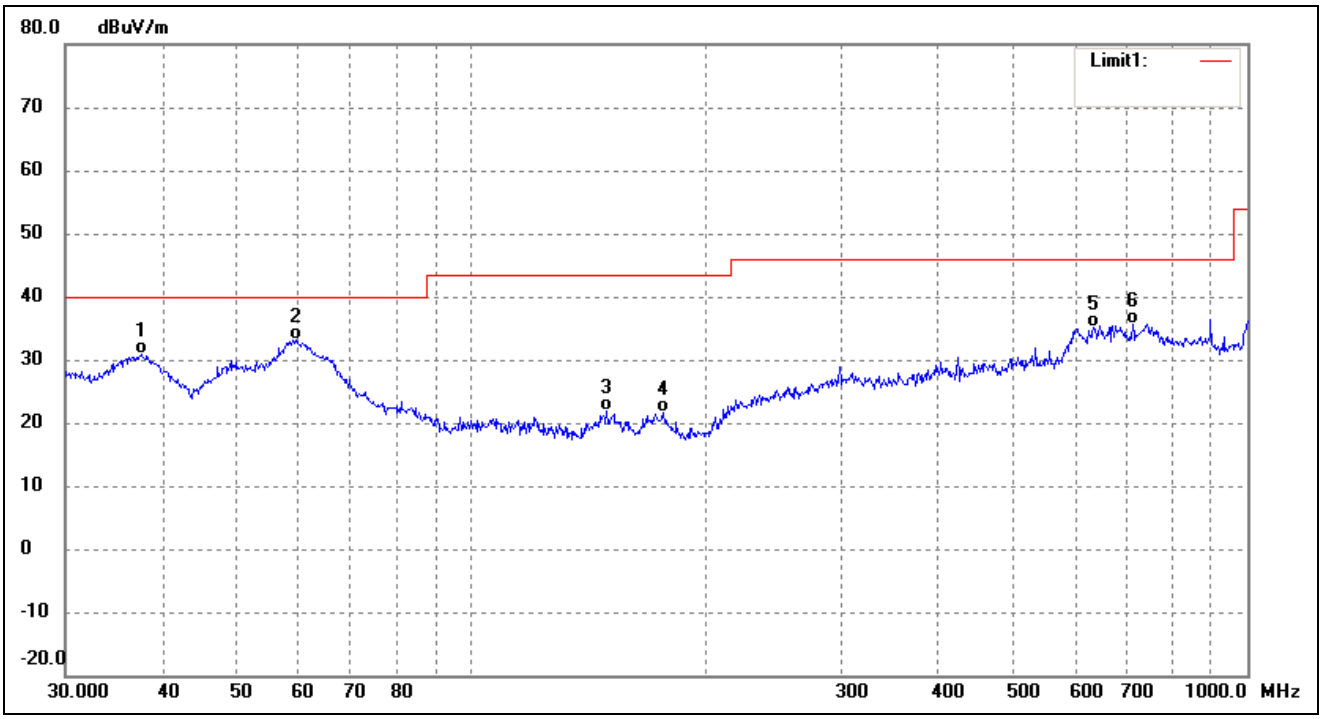
Comment: *AC 120V/60Hz; Adapter DC 5V*

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	58.8185	19.95	5.37	25.32	40.00	-14.68	91	100	QP
2	119.8556	15.84	5.02	20.86	43.50	-22.64	151	100	QP
3	173.8135	17.35	2.71	20.06	43.50	-23.44	126	100	QP
4	283.9792	16.76	11.55	28.31	46.00	-17.69	136	100	QP
5	603.5392	16.21	19.06	35.27	46.00	-10.73	174	100	QP
6	739.6605	16.59	19.53	36.12	46.00	-9.88	332	100	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	37.5479	26.02	4.83	30.85	40.00	-9.15	105	100	QP
2	59.4405	27.67	5.37	33.04	40.00	-6.96	197	100	QP
3	149.4857	18.94	3.02	21.96	43.50	-21.54	111	100	QP
4	176.8878	18.89	2.73	21.62	43.50	-21.88	123	100	QP
5	633.9073	16.67	18.41	35.08	46.00	-10.92	116	100	QP
6	711.6734	17.42	18.12	35.54	46.00	-10.46	325	100	QP

Plot of Radiated Emissions Test Data

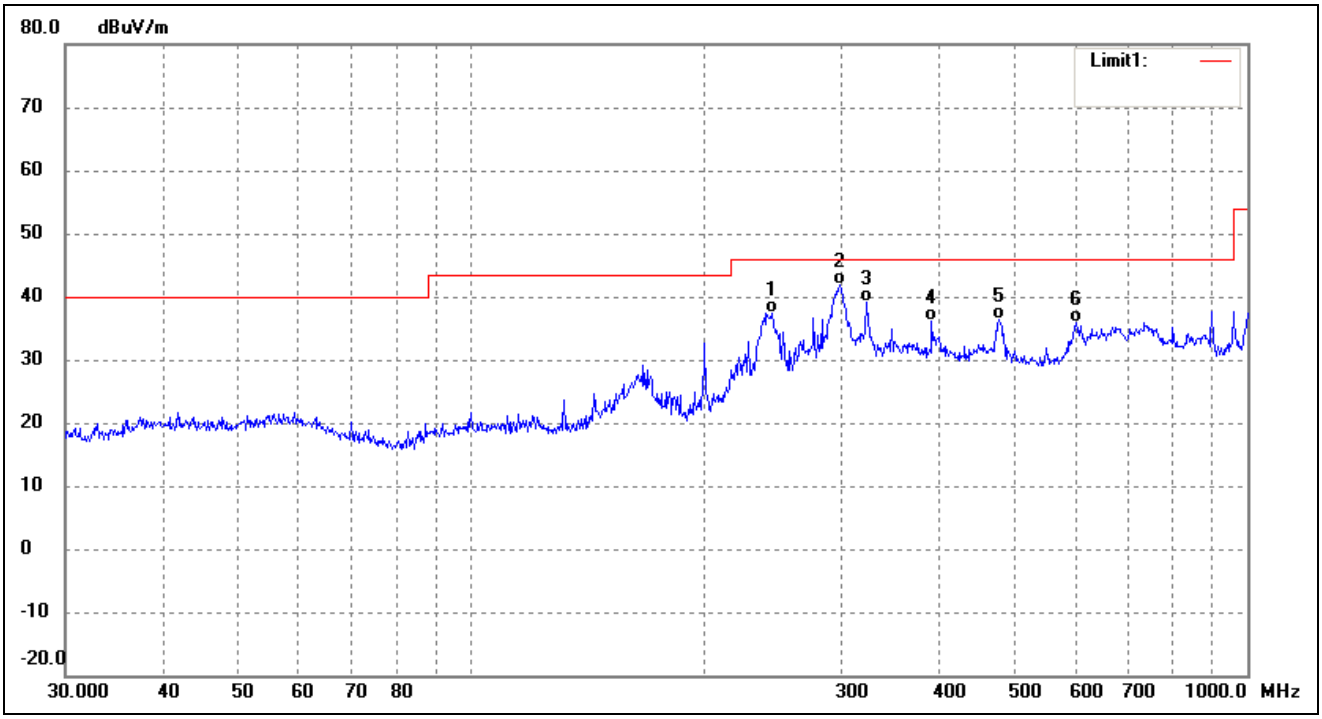
EUT: *Smart wireless pos*

Tested Model: *KS8223*

Operating Condition: *TM3*

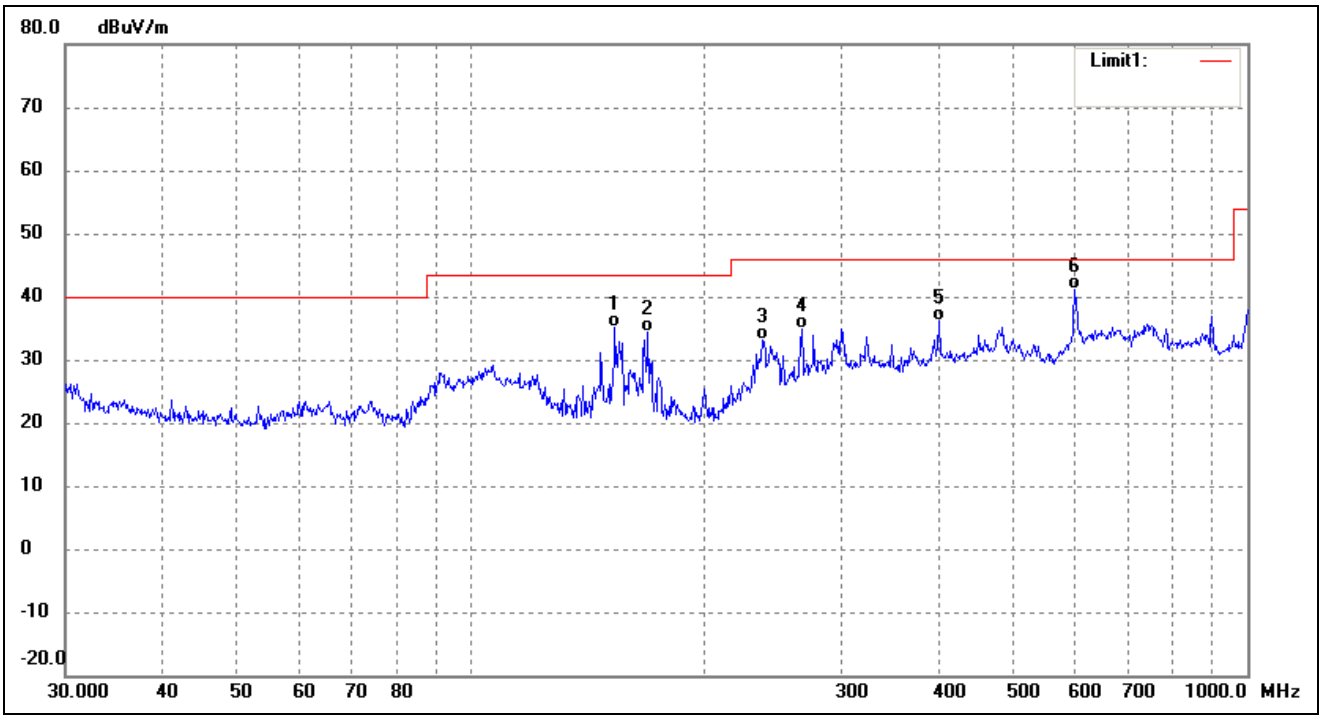
Comment: *AC 120V/60Hz; USB 5V*

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	244.2321	27.96	9.49	37.45	46.00	-8.55	154	100	QP
2	298.2681	29.68	12.11	41.79	46.00	-4.21	216	100	QP
3	323.3204	26.90	12.19	39.09	46.00	-6.91	100	100	QP
4	392.0951	23.41	12.76	36.17	46.00	-9.83	322	100	QP
5	478.8456	23.16	13.14	36.30	46.00	-9.70	61	100	QP
6	601.4265	16.61	19.22	35.83	46.00	-10.17	318	100	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	153.2004	32.18	2.88	35.06	43.50	-8.44	324	100	QP
2	169.0054	31.64	2.68	34.32	43.50	-9.18	269	100	QP
3	237.4760	23.89	9.18	33.07	46.00	-12.93	73	100	QP
4	266.6089	24.39	10.49	34.88	46.00	-11.12	345	100	QP
5	400.4319	23.01	13.12	36.13	46.00	-9.87	165	100	QP
6	599.3212	22.03	19.19	41.22	46.00	-4.78	275	100	QP

Note: Testing is carried out with frequency rang 30MHz to the 12.75GHz, which above 1GHz are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

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