

FCC Part 15B Measurement and Test Report

For

Rafisa Holdings Pte. Ltd

38 Shelford Road, #01-10 Watten Estate Condominium, Singapore,

288431

FCC ID: 2AI2ZPROJECTOR

Test Rule(s): FCC Part 15 Subpart B

Product Description: Projector
POCKETPICO MOBILE ANDROID

Tested Model: PROJECTOR

Report No.: STR16068256I-4

Tested Date: 2016-06-18 to 2016-06-30

Issued Date: 2016-07-05

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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: Rafisa Holdings Pte. Ltd
Address of applicant: 38 Shelford Road, #01-10 Watten Estate Condominium,
Singapore, 288431
Manufacturer: QINTEX-TECH CO., LTD
Address of manufacturer: 12/F, Tongfang Center Building, Shajing Center Street,
Baoan District, Shenzhen, China

General Description of EUT	
Product Name:	Projector
Trade Name:	POCKETPICO
Model No.:	POCKETPICO MOBILE ANDROID PROJECTOR
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/5000mAh
Rated Current:	2.5A
Rated Power:	/
Power Adapter Model:	HP-5V/2.5A I/P: AC100-240V 50/60Hz 0.5A; O/P: DC 5V/2.5A
Lowest Internal Frequency:	1.3GHz
Classification of ITE:	CLASS B

1.2 Test Standards

The following report is prepared on behalf of the Rafisa Holdings Pte. 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	Charging& playing	Connected to display
TM2	Download	Connected to PC
TM3		
TM4		

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
Adapter cable	1.8	Unshielded	Without Core
HDMI cable	1.0	Unshielded	Without Core

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Display	DELL	U2410f	50642P246601H(B) ZL
earphone	Apple	/	/
U disk	/	/	/
PC	Dell	OPTIPLEX 380	JY29GT03
Notebook	Lenovo	E10	LR-63C8R

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
AC cable	1.2	Unshielded	Without Core

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
Conducted Emissions	Conducted	$\pm 2.88\text{dB}$
Transmitter Spurious Emissions	Radiated	$\pm 5.1\text{dB}$

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-1121	Horn Antenna	ETS	3116B	00088203	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

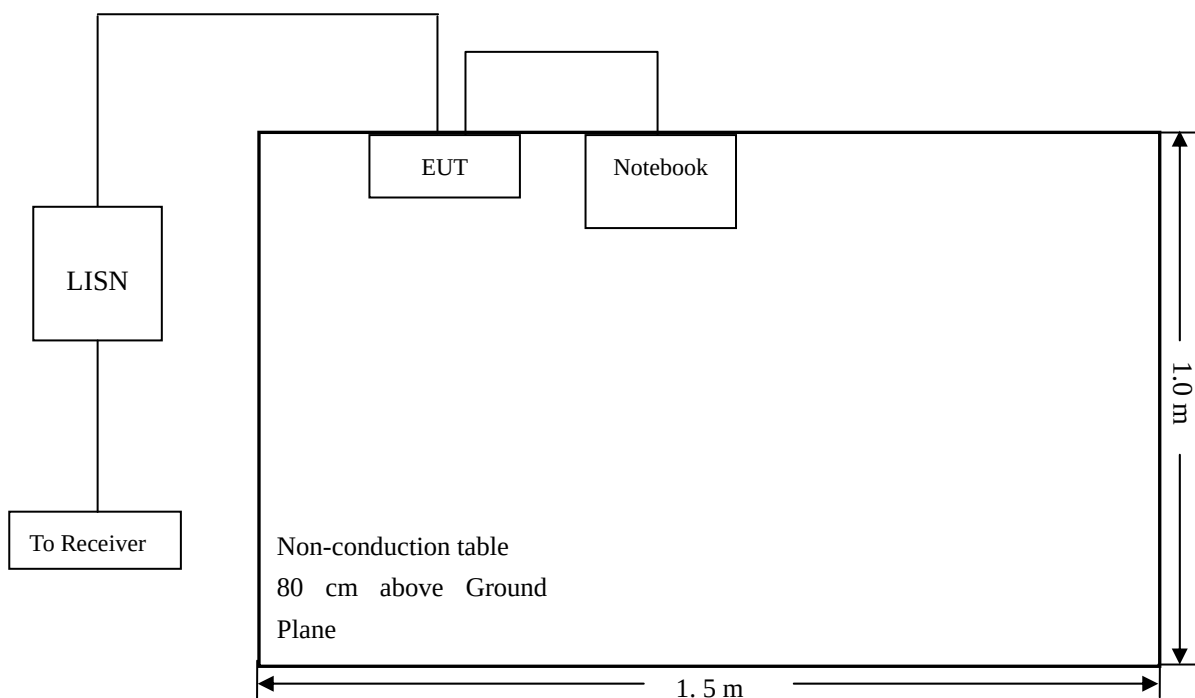
N/A: not applicable

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:

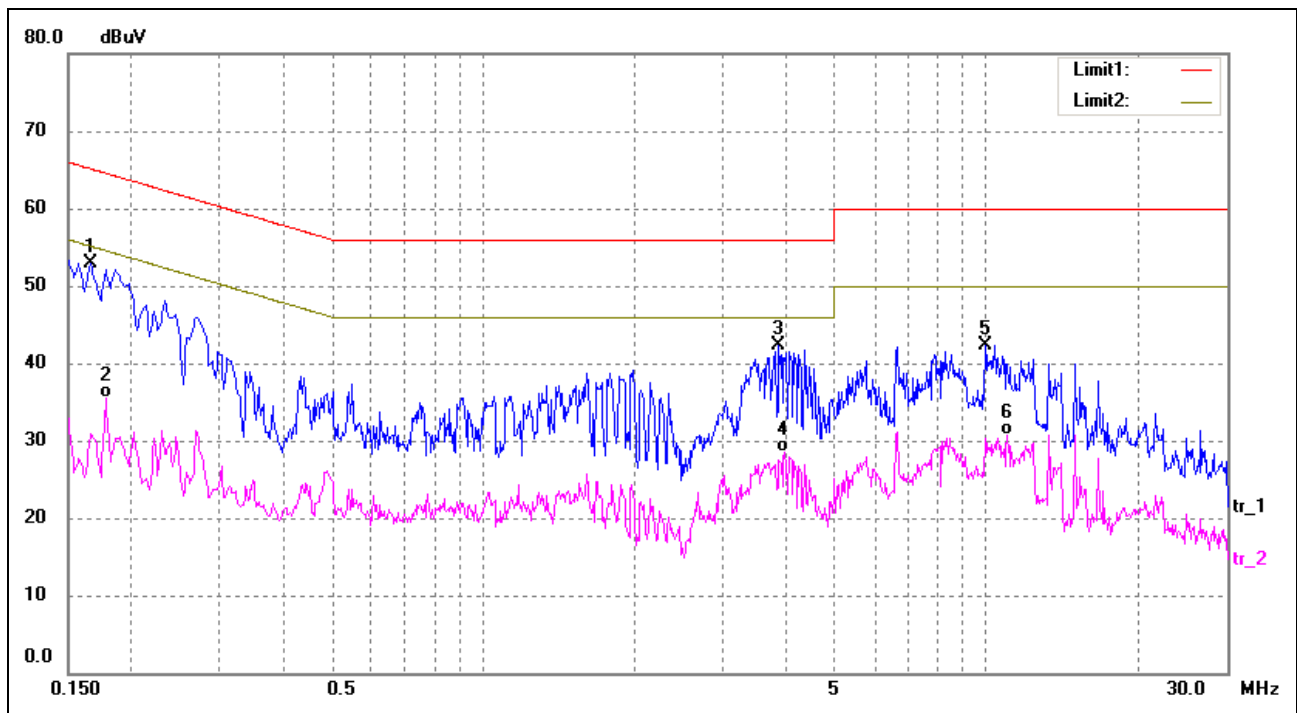
-8.82 dB at 0.2060 MHz in the Line, Peak detector, 0.15-30MHz

3.5 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

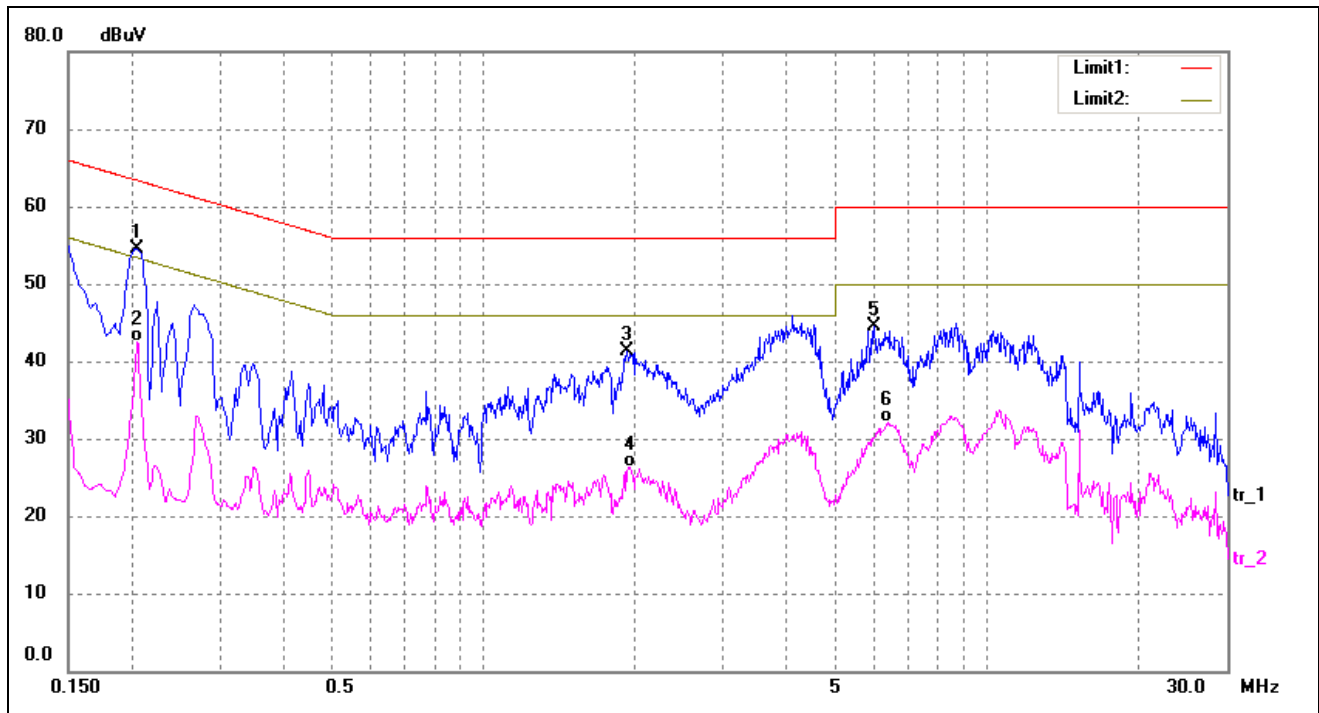
EUT: *Projector*
Tested Model: *POCKETPICO MOBILE AND ROID PROJECTOR*
Operating Condition: *TM1*
Comment: *AC120V/60Hz; Adapter DC 5V*

Test Specification: *Neutral*



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1660	43.35	9.50	52.85	65.16	-12.31	peak
2	0.1780	25.91	9.50	35.41	54.58	-19.17	AVG
3	3.8700	32.20	10.08	42.28	56.00	-13.72	peak
4	3.9700	18.48	10.10	28.58	46.00	-17.42	AVG
5	9.9460	31.93	10.36	42.29	60.00	-17.71	peak
6	11.0140	20.30	10.37	30.67	50.00	-19.33	AVG

Test Specification: Line

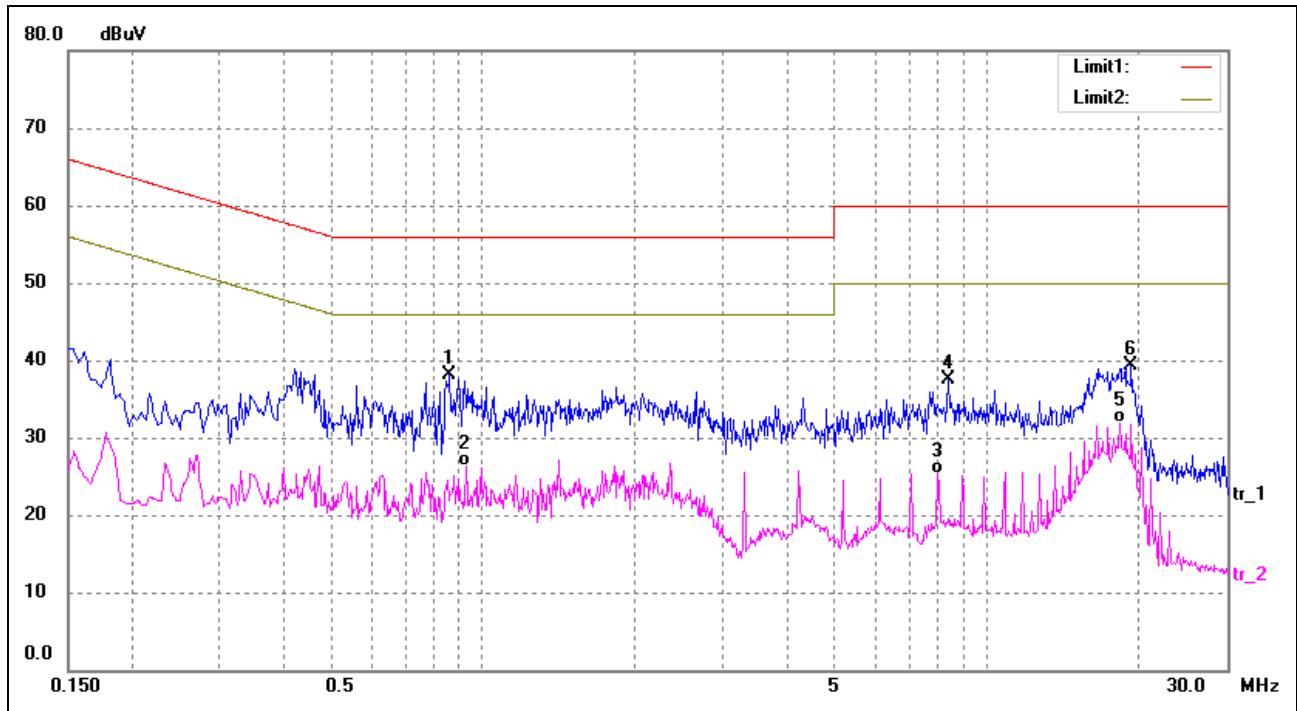


No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.2060	45.05	9.50	54.55	63.37	-8.82	peak
2	0.2060	32.99	9.50	42.49	53.37	-10.88	AVG
3	1.9380	31.56	9.81	41.37	56.00	-14.63	peak
4	1.9620	16.43	9.81	26.24	46.00	-19.76	AVG
5	5.9660	34.19	10.26	44.45	60.00	-15.55	peak
6	6.3740	21.85	10.27	32.12	50.00	-17.88	AVG

Plot of Conducted Emissions Test Data

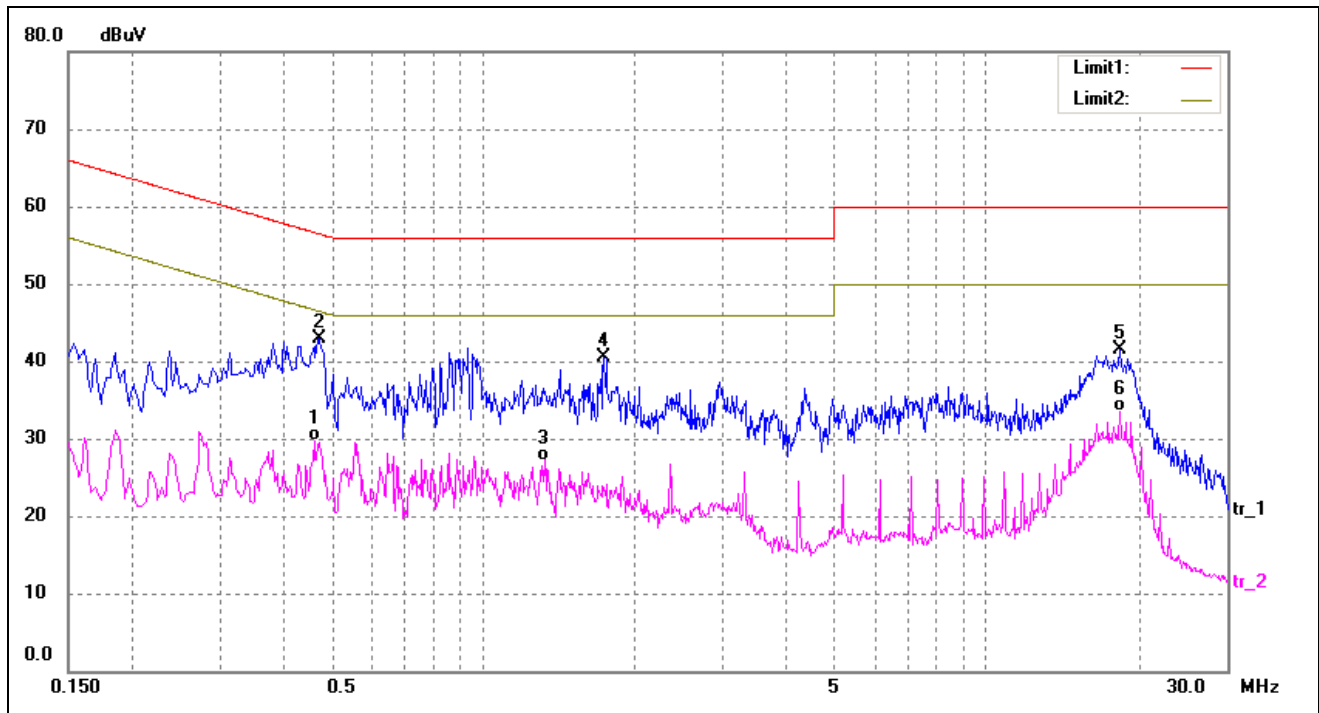
EUT: Projector
Tested Model: POCKETPICO MOBILE AND ROID PROJECTOR
Operating Condition: TM2
Comment: AC120V/60Hz; Adapter DC 5V

Test Specification: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.8580	28.48	9.65	38.13	56.00	-17.87	peak
2	0.9260	16.69	9.66	26.35	46.00	-19.65	AVG
3	8.0180	15.05	10.31	25.36	50.00	-24.64	AVG
4	8.3780	27.17	10.32	37.49	60.00	-22.51	peak
5	18.3940	21.50	10.45	31.95	50.00	-18.05	AVG
6	19.3420	28.90	10.45	39.35	60.00	-20.65	peak

Test Specification: Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.4620	20.13	9.54	29.67	46.66	-16.99	AVG
2*	0.4740	33.30	9.54	42.84	56.44	-13.60	peak
3	1.3300	17.47	9.73	27.20	46.00	-18.80	AVG
4	1.7420	30.72	9.78	40.50	56.00	-15.50	peak
5	18.3900	30.98	10.45	41.43	60.00	-18.57	peak
6	18.3900	22.96	10.45	33.41	50.00	-16.59	AVG

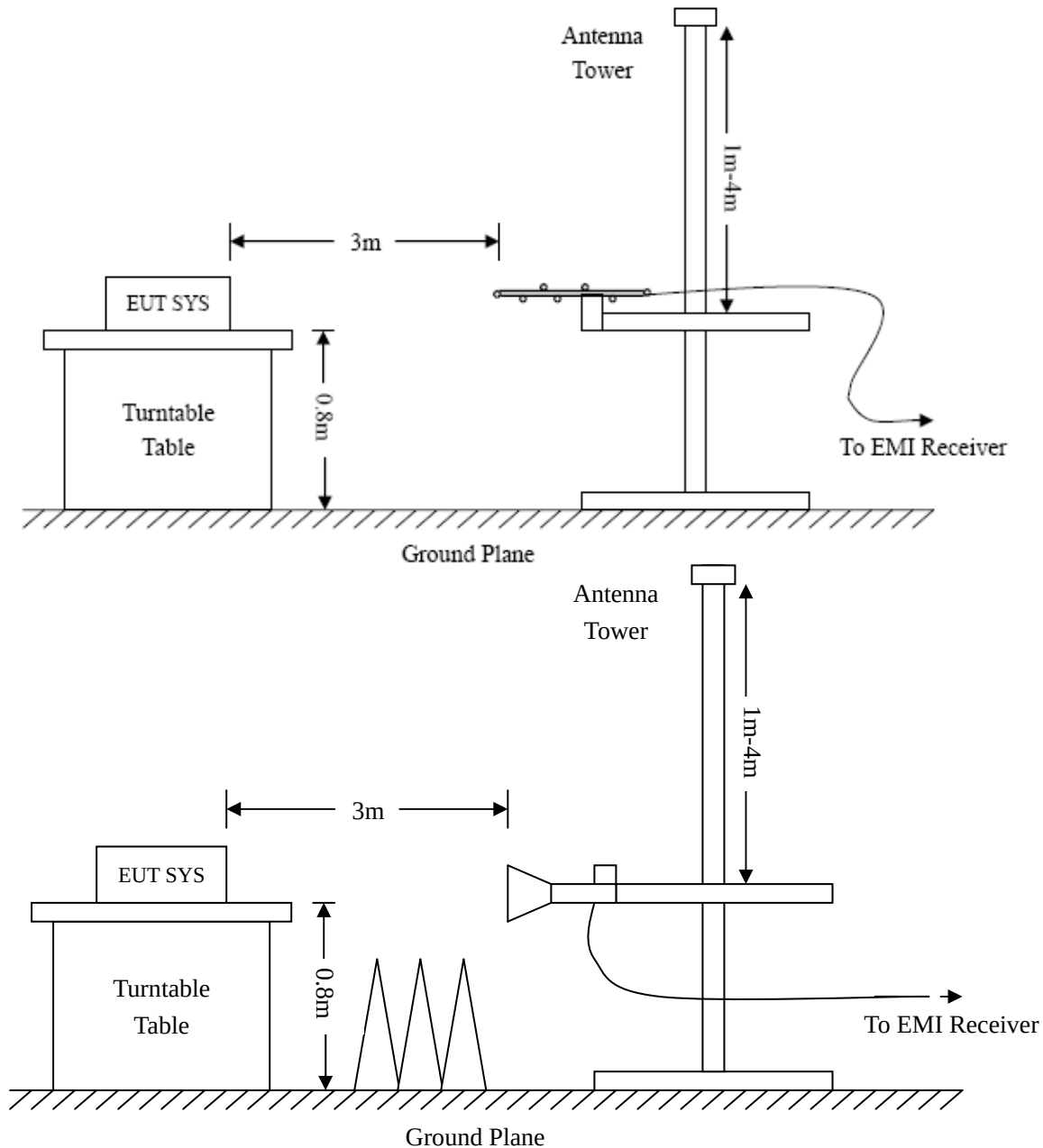
4. Radiated Emissions

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:

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for a Class B device. The equation for margin calculation is as follows:

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

4.4 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:

-3.37 dB at 785.0934 MHz in the Horizontal polarization, 30 MHz to 6.5GHz, 3Meters, TM1

Plot of Radiated Emissions Test Data

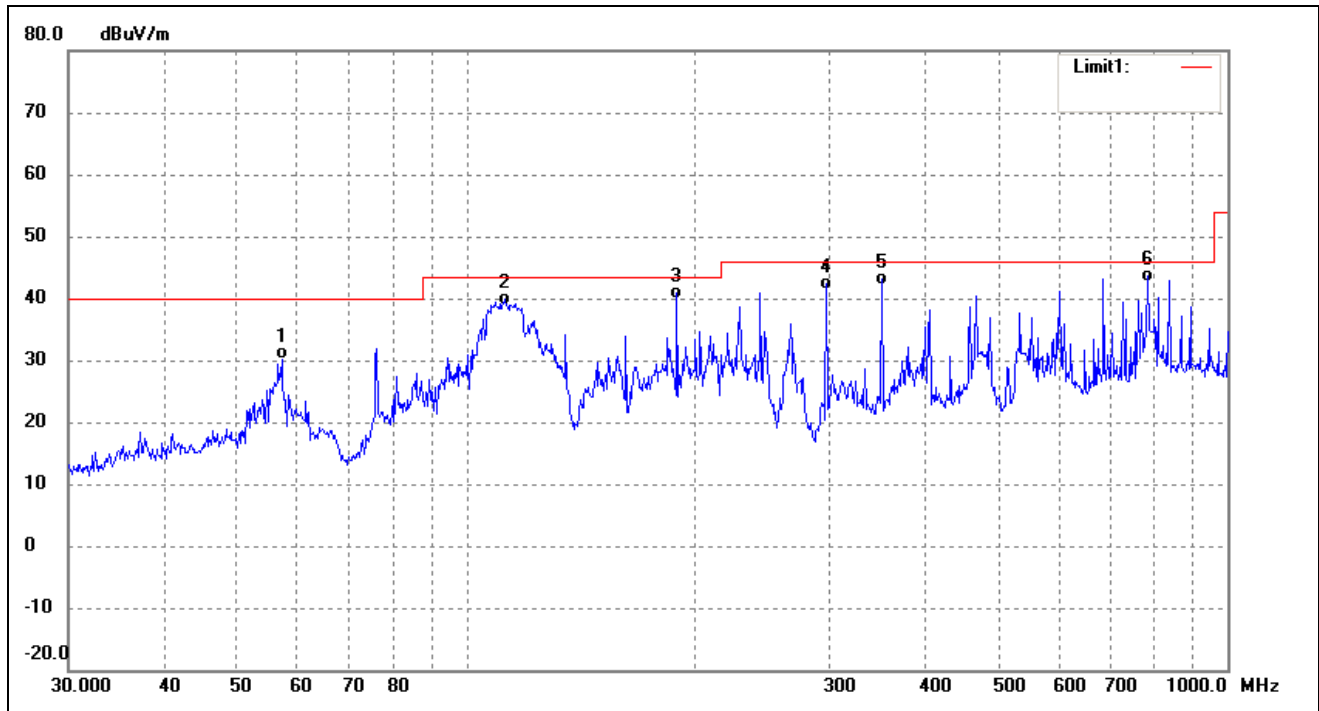
EUT: Projector

Tested Model: POCKETPICO MOBILE AND ROID PROJECTOR

Operating Condition: TM1

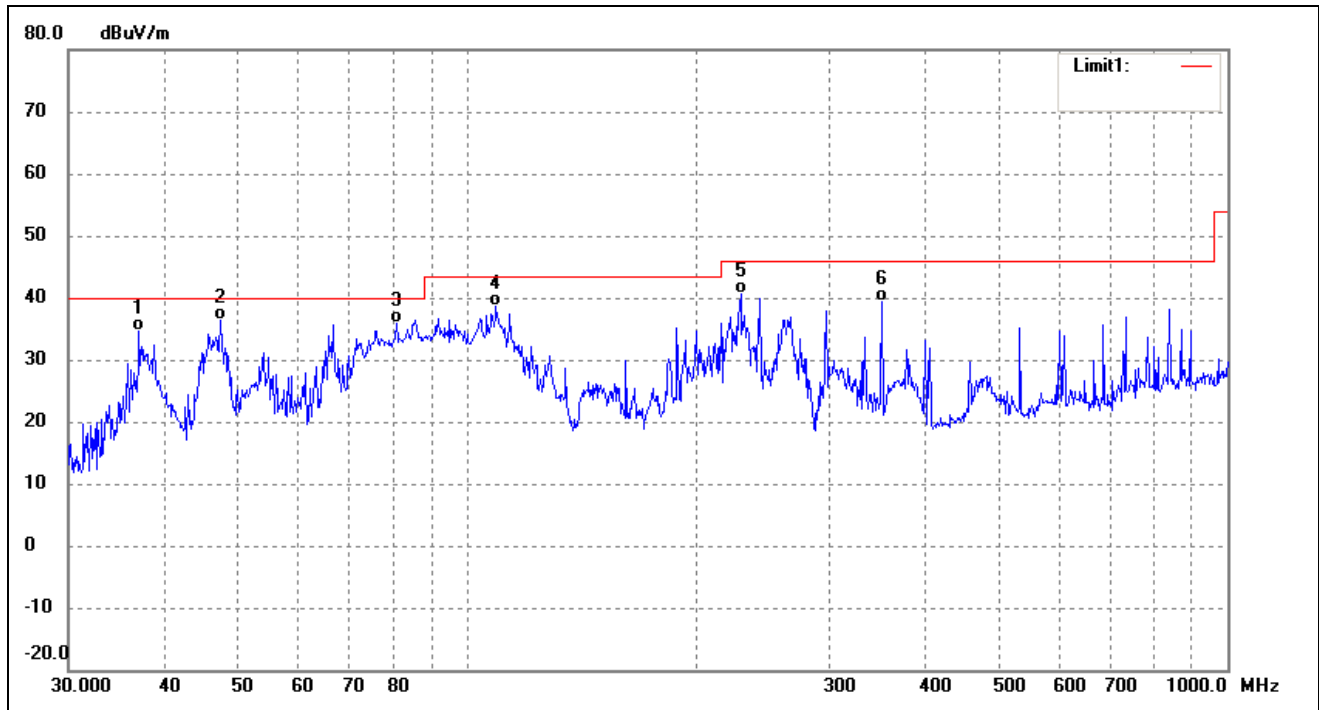
Comment: AC120V/60Hz; Adapter DC 5V

Test Specification: Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	57.1914	39.28	-9.22	30.06	40.00	-9.94	310	100	QP
2	112.5243	50.08	-11.24	38.84	43.50	-4.66	270	100	QP
3	189.0742	50.05	-10.12	39.93	43.50	-3.57	210	100	QP
4	297.2241	47.08	-5.71	41.37	46.00	-4.63	59	100	QP
5	351.7078	46.16	-3.98	42.18	46.00	-3.82	154	100	QP
6	785.0934	39.98	2.65	42.63	46.00	-3.37	125	100	QP

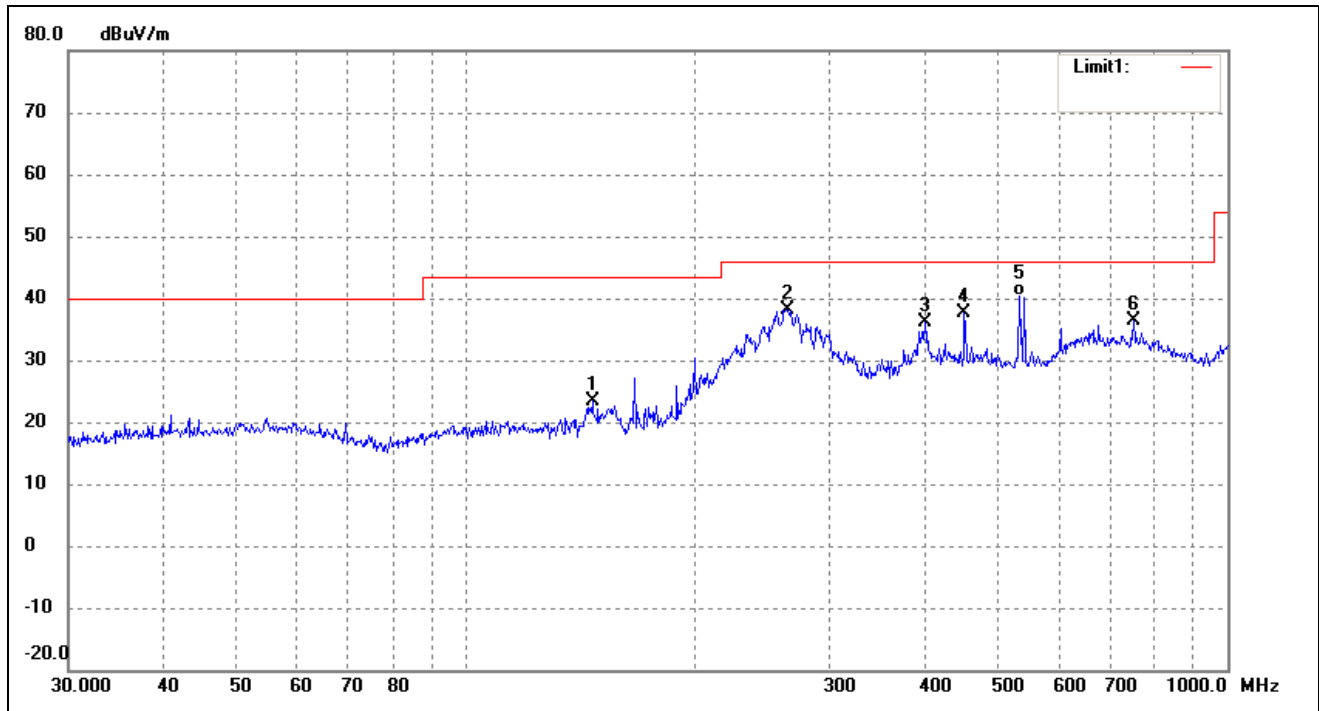
Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	37.1550	43.13	-8.45	34.68	40.00	-5.32	120	100	QP
2	47.4917	44.42	-8.16	36.26	40.00	-3.74	140	100	QP
3	80.9274	48.05	-12.07	35.98	40.00	-4.02	183	100	QP
4	109.4116	49.77	-11.15	38.62	43.50	-4.88	201	100	QP
5	229.2931	49.23	-8.60	40.63	46.00	-5.37	257	100	QP
6	351.7078	43.32	-3.98	39.34	46.00	-6.66	310	100	QP

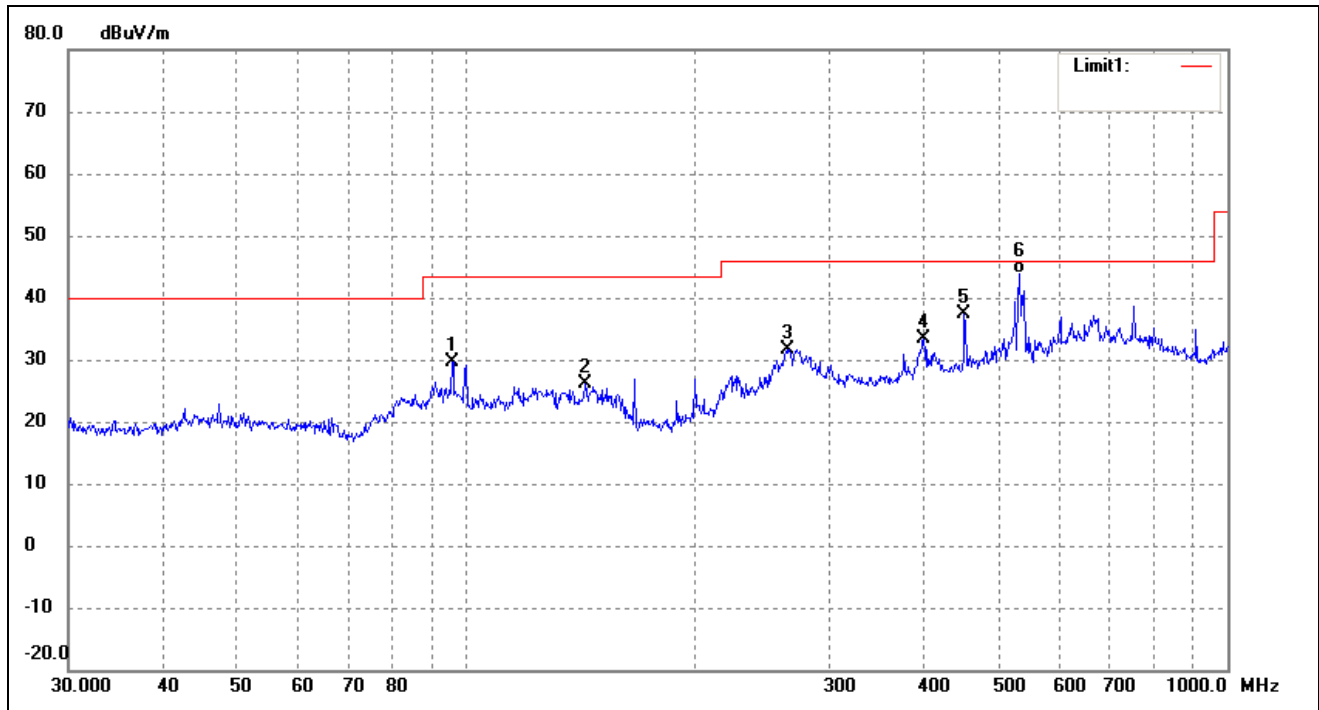
Plot of Radiated Emissions Test Data

EUT: Projector
Tested Model: POCKETPICO MOBILE AND ROID PROJECTOR
Operating Condition: TM2
Comment: AC120V/60Hz; Adapter DC 5V
Test Specification: Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	146.3735	20.40	2.89	23.29	43.50	-20.21	124	100	peak
2	264.7457	28.20	10.03	38.23	46.00	-7.77	120	100	peak
3	400.4319	23.48	12.67	36.15	46.00	-9.85	114	100	peak
4	451.1350	24.78	12.79	37.57	46.00	-8.43	205	100	peak
5	531.9635	26.64	13.84	40.48	46.00	-5.52	310	100	QP
6	752.7432	17.89	18.47	36.36	46.00	-9.64	330	100	peak

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	95.7622	25.32	4.29	29.61	43.50	-13.89	140	100	peak
2	143.3261	23.03	3.03	26.06	43.50	-17.44	178	100	peak
3	263.8190	21.76	9.96	31.72	46.00	-14.28	203	100	peak
4	399.0302	20.79	12.64	33.43	46.00	-12.57	354	100	peak
5	451.1350	24.56	12.79	37.35	46.00	-8.65	301	100	peak
6	533.8321	30.12	13.83	43.95	46.00	-2.05	341	100	QP

Note: Testing is carried out with frequency rang 30MHz 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.

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