LABORATORY MEASUREMENTS

Pursuant To
ICES-003: 2016
And
ANSI C63.4: 2014

Applicant / Company:	Kenxen Electronic (SZ) Limited building A13, Zone D, MinZhu, Western Industrial Area, ShaJing Town, Baoan District, ShenZhen, Guang Dong Province, China.
Equipment Under Test (EUT):	
Product Description:	Scanner
Model:	W4R Additional Models: IRIScan™ Book 5 WIFI, T4R, IRIScan™ Book 5
Brand Name:	DIRECTSCAN, IRIScan™ Book
Equipment Type:	Class B Device
Sample Receipt Date:	July 28, 2016
Test Conducted Date:	July 28, 2016 to October 17, 2016
Issue Date:	December 27, 2016
Test Site and Location:	EST Technology Co., Ltd. Santun Management Zone (Guantai Road), Houjie District,Dongguan,Guangdong, P. R. China
Conclusion:	The sample as received complied with the ICES-003 requirement.

Note: The highest internal frequency is 120MHz which was declared by Applicant.

Prepared and Checked by:

Sign on File
Powell Bao
Engineer

Approved by:

Digitally signed by Jenner Liu
Location: Intertek Testing Services

Jenner Liu
Engineer

Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch
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Table of Contents

1. General Information

1.1 Client Information

Applicant:	Kenxen Electronic (SZ) Limited

1.2 General Description of EUT

Product Description:	Scanner
Model No.:	W4R
Serial No.:	Not Labelled

1.3 Details of EUT

Rated Voltage:	Supplied by AC/DC adapter: AC 120V/60 Hz
Battery Voltage:	DC 3.7V, 5W, 800mAh
Support Equipment:	iPad (Apple A1566) (Provided by EST)
Cables:	USB Cable(Detachable, Shielded with two ferrite cores, 100cm) (Provided by Customer)
Adaptor: (provided by EST)	Apple Adaptor Model: A1357 Input: 100-240Vac 50/60Hz Output: 5Vdc 2.1A

For more detail features, please refer to user's Manual.

2. Test Summary

Test	Standard	Class	Result
Conducted Emission	ICES-003: 2016 Clause 6.1	Class B	Pass
Radiated Emission	ICES-003: 2016 Clause 6.2	Class B	Pass

Remark:

The Models: IRIScan™ Book 5 WIFI, T4R, IRIScan™ Book 5 are the same as the Model: W4R in hardware aspect and electrical aspect except the model T4R, IRIScan™ Book 5 without WiFi module. The difference in model number, appearance and brand name serves as marketing strategy.

This report is based on the previous report with report number 161028017SZN-001 dated 21 November 2016 (original signature Powell Bao, Jenner Liu on file), due to it has been changed the standards.

Enclosed please find the Canadian Emissions Requirements and Labelling Requirements.

3. Test Specifications

3.1 Standards

Both conducted and radiated emission tests were performed according to the procedures in ANSI C63.4: 2014. Test results are in compliance with the requirements of ICES-003: 2016. (AC)

The EUT setup configuration please refers to the photo of test configuration in item.

3.2 Definition of Device Classification

Unintentional radiator:
A device which is not intended to emit RF energy by radiation or induction.

Class A Digital Device:
A digital device which is marketed for use in commercial or business environment.

Class B Digital Device:
A digital device which is marketed for use by the general public or in a residential environment.

Note:
A manufacturer may also qualify a device intended to be marketed in a commercial, business or industrial environment as a Class B digital device, and in fact is encouraged to do so, provided the device complies with the technical specifications for a Class B Digital Device. In the event that a particular type of device has been found to repeatedly cause harmful interference to radio communications, the Commission may classify such a digital device as a Class B Digital Device, Regardless of its intended use.

3.3 EUT Operation Condition

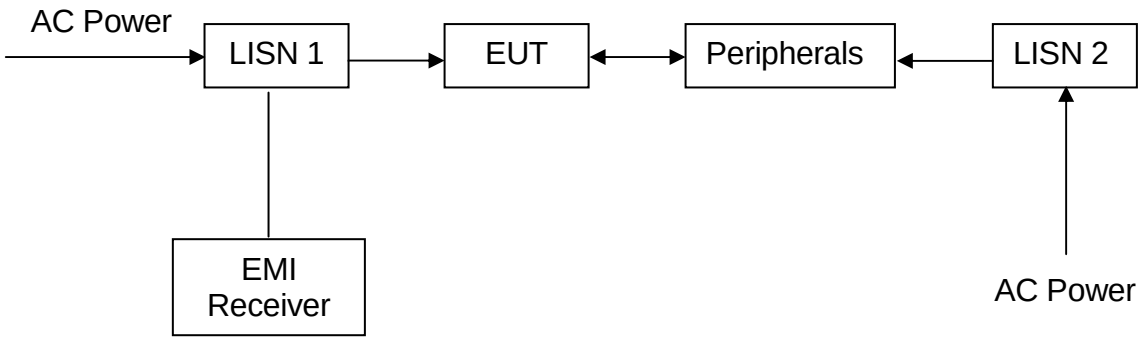
The EUT was powered by Powered by DC 3.7V internal rechargerable battery and can be chargered via USB port with adaptor and was running in accordance with the manufacturer's operation manual.

4. Conducted Emission Measurements (ICES-003: 2016 Clause 6.1)

4.1 Operating Environment

Temperature: 25°C ± 10°C Test Voltage: 120 VAC, 60 Hz

4.2 Test Setup and Procedure



For tabletop equipment, the EUT along with its peripherals were placed on a 1.0m(W)×1.5m(L) and 0.8m in height wooden table. For floor-standing equipment, the EUT and all cables were insulated, if required, from the ground plane by up to 12 mm of insulating material. The EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane. The EUT was connected to power mains through a line impedance stabilization network (LISN), which provided 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room. The excess power cable between the EUT and the LISN was bundled.

All connecting cables of EUT and peripherals were moved to find the maximum emission.

The EUT setup configuration please refers to the photo of test configuration in Appendix B1.

4.3 Test Equipment

Equip No.	Description	Manufacturer	Model No.	Cal. Date	Due Date
832354	EMI Test Receiver	R & S	ESHS30	25 June 16	25 June 17
101260	Artificial Mains Network	R & S	ENV216	25 June 16	25 June 17
101100	Pulse Limiter	R & S	ESH3-Z2	25 June 16	25 June 17

Note: This test was witnessed in Dongguan EST Technology Co., Ltd.

4.4 Conducted Emission Limits

Freq. (MHz)	Maximum RF Line Voltage			
	Class A (dB μV)		Class B (dB μV)	
	Q.P.	Ave.	Q.P.	Ave.
0.15~0.50	79	66	66~56	56~46
0.50~5.00	73	60	56	46
5.00~30.0	73	60	60	50

4.5 Uncertainty of Conducted Emission

When determining the test conclusion, the Measurement Uncertainty of test has been considered. The measurement uncertainty is 3.6dB at a level of confidence of 95%.

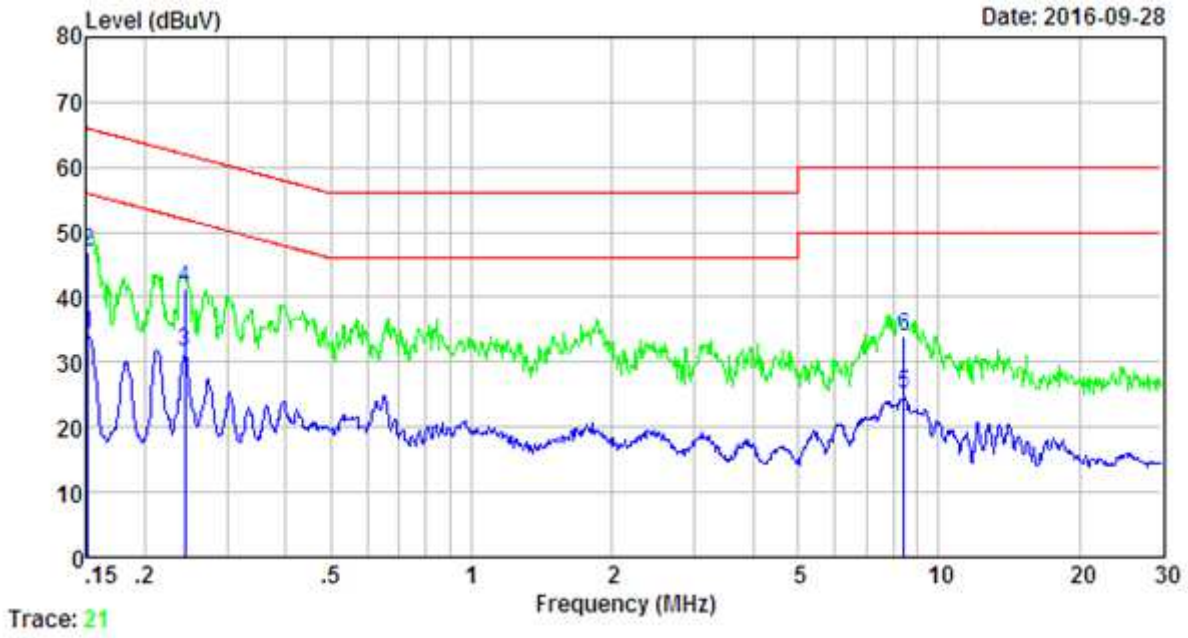
4.6 Conducted Emission Data

The graphic and data table consisting of the worst-case testing result were attached in the following pages.

Applicant: Kenxen Electronic (SZ) Limited
Model: W4R
Worst Case Operating Mode: Charging Mode
Phase: Live

Graphic Table

Conducted Emissions
Pursuant to ICES-003: 2016 Clause 6.1: Emissions Requirement



Data Table

Conducted Emissions
Pursuant to ICES-003: 2016 Clause 6.1: Emissions Requirement

Live

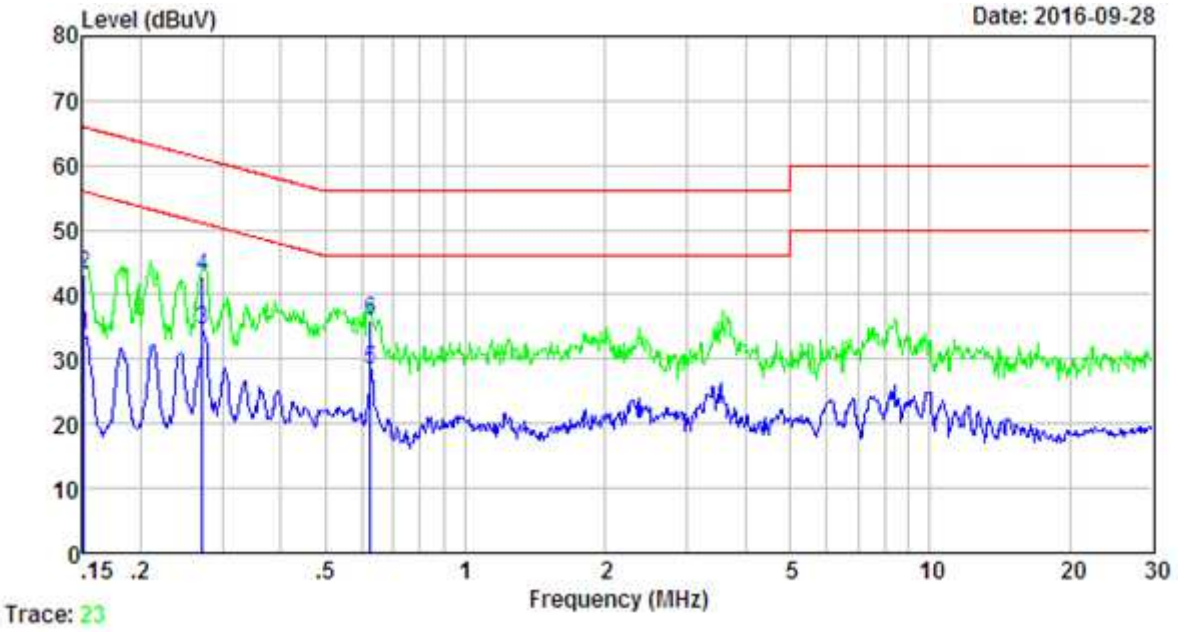
Frequency	Quasi-Peak		Average	
[MHz]	Disturbance level dB(µV)	Permitted limit dB(µV)	Disturbance level dB(µV)	Permitted limit dB(µV)
0.150	47.1	66.0	34.1	56.0
0.240	41.3	62.1	31.7	52.1
8.410	34.0	60.0	25.0	50.0

☐ No emissions significantly above equipment noise floor.

Applicant: Kenxen Electronic (SZ) Limited
Model: W4R
Worst Case Operating Mode: Charging Mode
Phase: Neutral

Graphic Table

Conducted Emissions
Pursuant to ICES-003: 2016 Clause 6.1: Emissions Requirement



Data Table

Conducted Emissions
Pursuant to ICES-003: 2016 Clause 6.1: Emissions Requirement

Neutral

Frequency	Quasi-Peak		Average	
[MHz]	Disturbance level dB(µV)	Permitted limit dB(µV)	Disturbance level dB(µV)	Permitted limit dB(µV)
0.150	43.0	66.0	33.6	56.0
0.270	42.8	61.1	34.5	51.1
0.620	36.1	56.0	28.4	46.0

☐ No emissions significantly above equipment noise floor.

5. Radiated Emission Measurements (ICES-003: 2016 Clause 6.2)

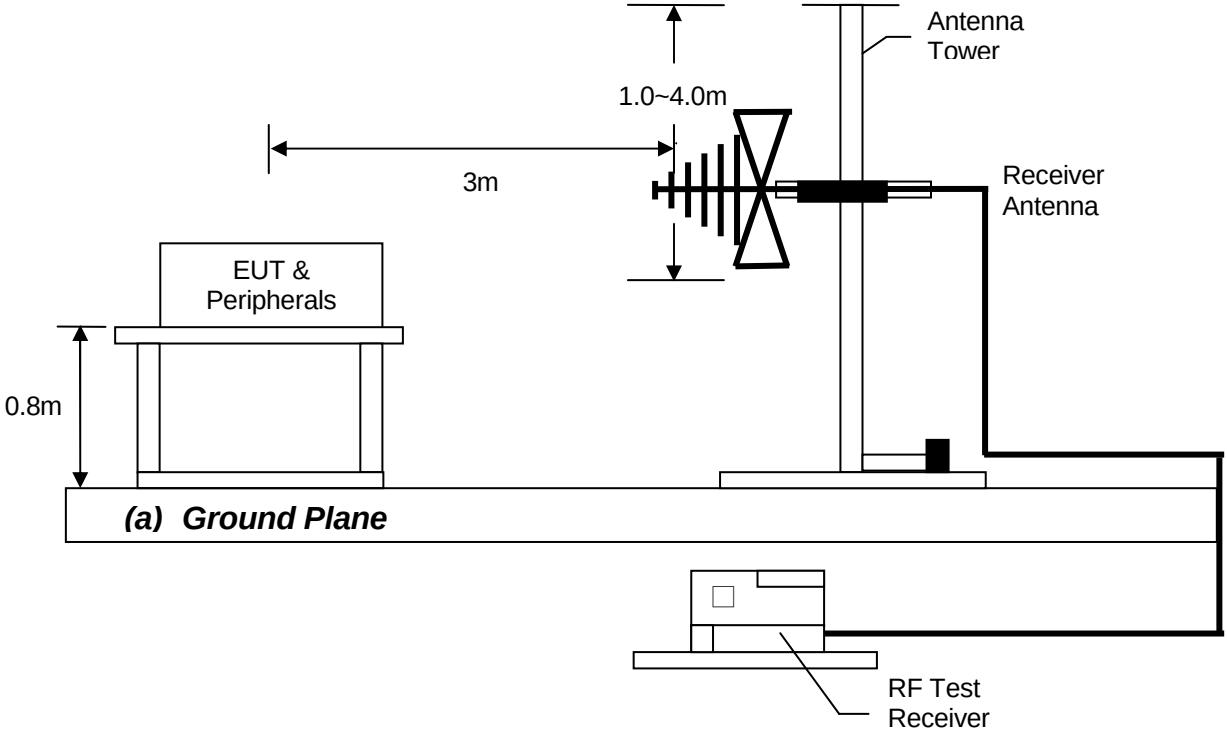
5.1 Operating Environment

Temperature: 25°C ± 10°C Test Voltage: 120 VAC, 60 Hz

5.2 Test Setup and Procedure

The figure below shows the test setup, which is utilized to make these measurements.

The frequency spectrum from 30MHz to 2000MHz was investigated.



For tabletop equipment, the equipment under test was placed on the top of rotation table 0.8 meter above ground plane. For floor-standing equipment, the EUT and all cables were insulated, if required, from the ground plane by up to 12 mm of insulating material.

The table was 360 degrees to determine the position of the highest radiation.

EUT is set 3 meters from the EMI receiving antenna, which is mounted on a variable height mast. The antenna height is varied between one meter and four meters above ground to find the maximum value of the field strength. Both horizontal polarization and vertical polarization of the antenna are set to make the measurement. The bandwidth was setting on the EMI meter 120 kHz.

The levels are quasi peak value readings. The frequency spectrum from 30MHz to 2000MHz was investigated.
The EUT setup configuration please refers to the photo of test configuration in Appendix B2.

5.3 Test Equipment

Equip No.	Description	Manufacturer	Model No.	Cal. Date	Due Date
100004	EMI Test Receiver	R & S	ESVS10	25 June 16	25 June 17
MY50140697	Spectrum Analyzer	Agilent	E4411B	25 June 16	25 June 17
25872	Bilog Antenna	Teseq	CBL 6111D	25 June 16	25 June 17
187037	Signal Amplifier	Agilent	310N	25 June 16	25 June 17
MY44211139	Spectrum Analyzer	Agilent	E4408B	25 June 16	25 June 17
BBHA9120D1002	Horn Antenna	SCHWARZBECK	BBHA 9120D	25 June 16	25 June 17
9718-212	Signal Amplifier	SCHWARZBECK	9718-212	25 June 16	25 June 17
MY44211139	Spectrum Analyzer	Agilent	E4408B	25 June 16	25 June 17

Note: This test was witnessed in Dongguan EST Technology Co., Ltd.

5.4 Radiated Emission Limits

According to ICES-003: 2016 Clause 6.2, except for Class A digital device, the field strength of radiated emission from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Class B Radiated Emission Limits:

Frequency MHz	Field Strength dBμV/m
30-88	40.0
88-216	43.5
216-960	46.0
Above 960	54.0

5.5 Uncertainty of Radiated Emission

When determining the test conclusion, the Measurement Uncertainty of test has been considered. The measurement uncertainty is 4.8dB at a level of confidence of 95%.

5.6 Radiated Emission Test Data

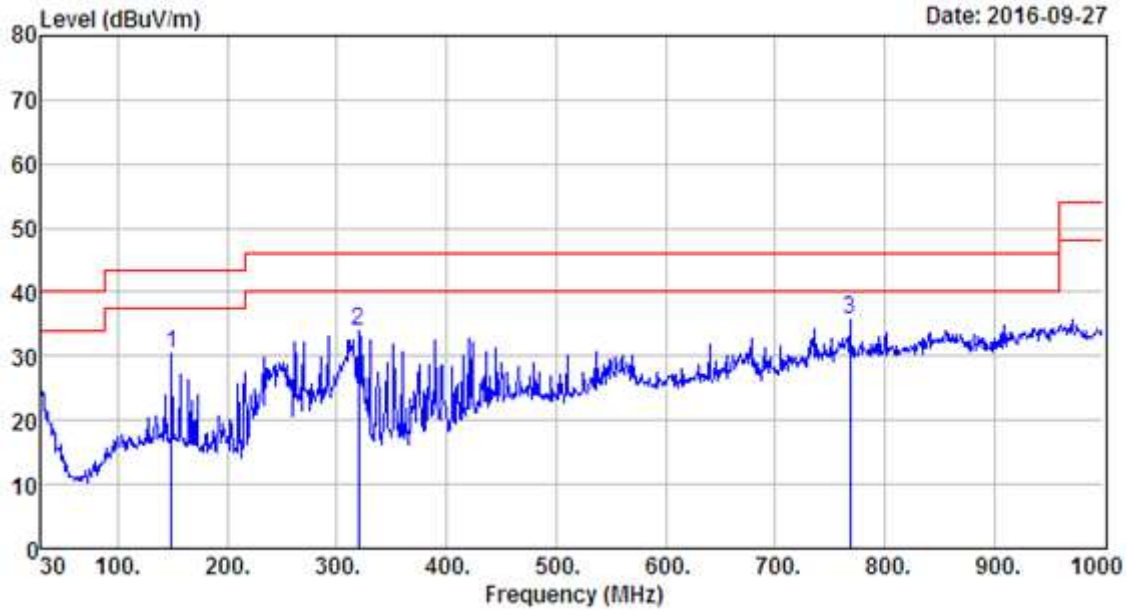
The graphic and data table consisting of the worst-case testing result were attached in the following pages.

Applicant: Kenxen Electronic (SZ) Limited
Model: W4R
Worst Case Operating Mode: Scanning to SD Card

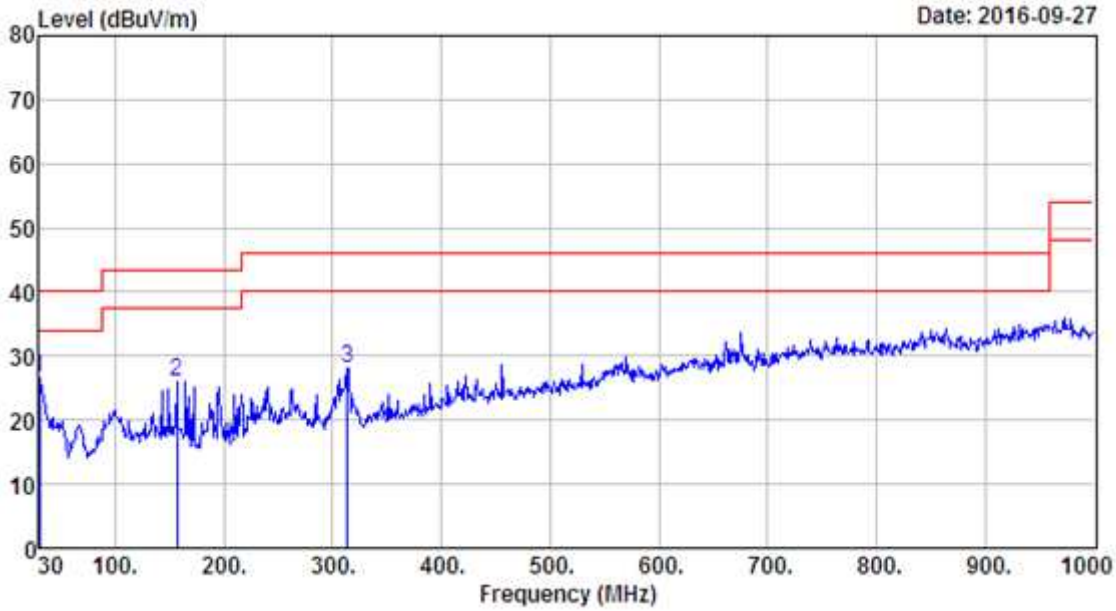
Graphic Table

Radiated Scan
Pursuant to ICES-003: 2016 Clause 6.2: Emissions Requirement (30MHz-1GHz)

Horizontal



Vertical



Data Table

Radiated Scan
Pursuant to ICES-003: 2016 Clause 6.2: Emissions Requirement (30MHz-1GHz)

Frequency (MHz)	Polarization	Readings (dBµV/m)	Limits (dBµV/m)	Margin (dB)
149.310	Horizontal	30.4	43.5	-13.1
320.030	Horizontal	34.1	46.0	-12.0
769.170	Horizontal	35.7	46.0	-10.3
30.000	Vertical	26.6	40.0	-13.4
157.070	Vertical	25.9	43.5	-17.6
313.240	Vertical	28.0	46.0	-18.0

☐ No emissions significantly above equipment noise floor.

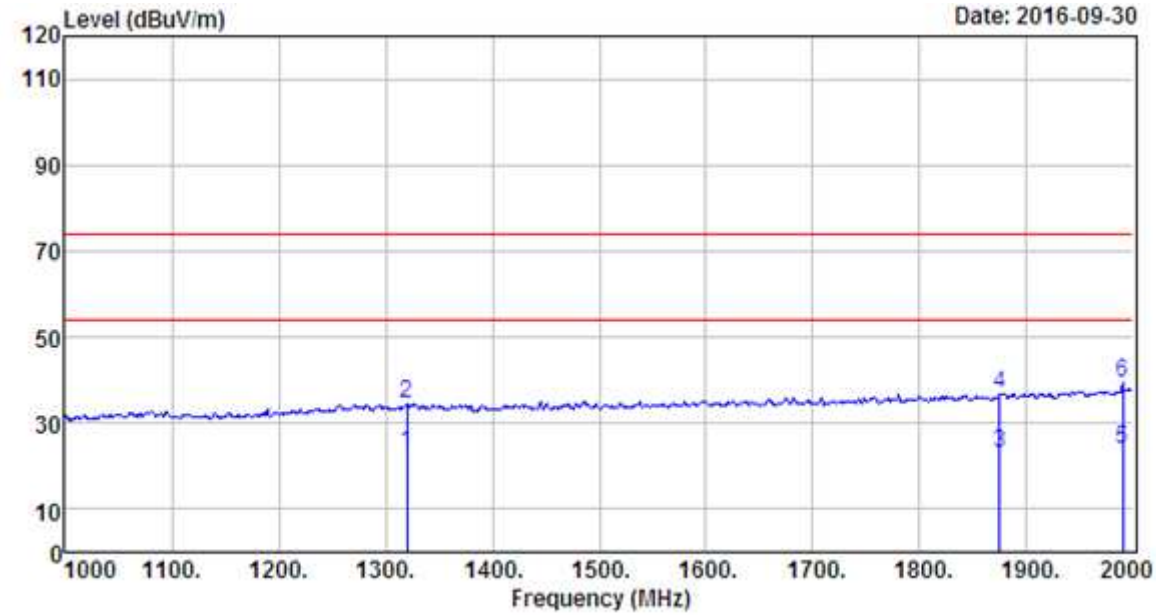
Notes: Negative signs (-) in the margin column signify levels below the limit.

Applicant: Kenxen Electronic (SZ) Limited
Model: W4R
Worst Case Operating Mode: Scanning to SD Card

Graphic Table

Radiated Scan
Pursuant to ICES-003: 2016 Clause 6.2: Emissions Requirement (1GHz-2GHz)

Horizontal



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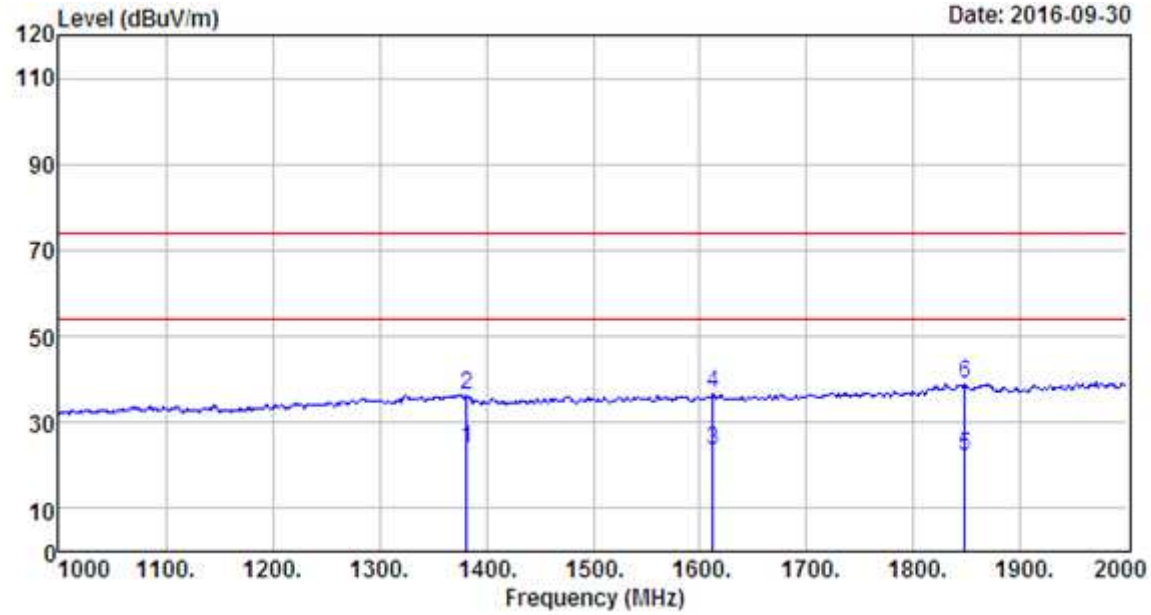


Data Table

Radiated Scan
Pursuant to ICES-003: 2016 Clause 6.2: Emissions Requirement (1GHz-2GHz)

Horizontal

Frequency	Peak		Average	
[MHz]	Disturbance level dB(µV)	Permitted limit dB(µV)	Disturbance level dB(µV)	Permitted limit dB(µV)
/	/	/	/	/

☒ No emissions significantly above equipment noise floor.

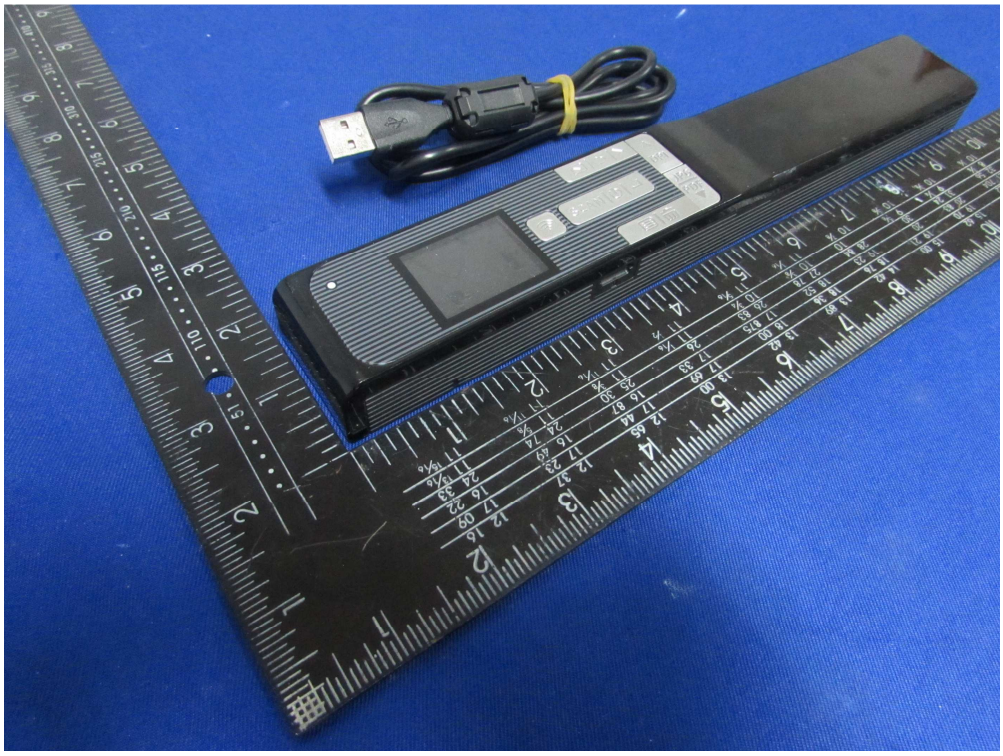
Vertical

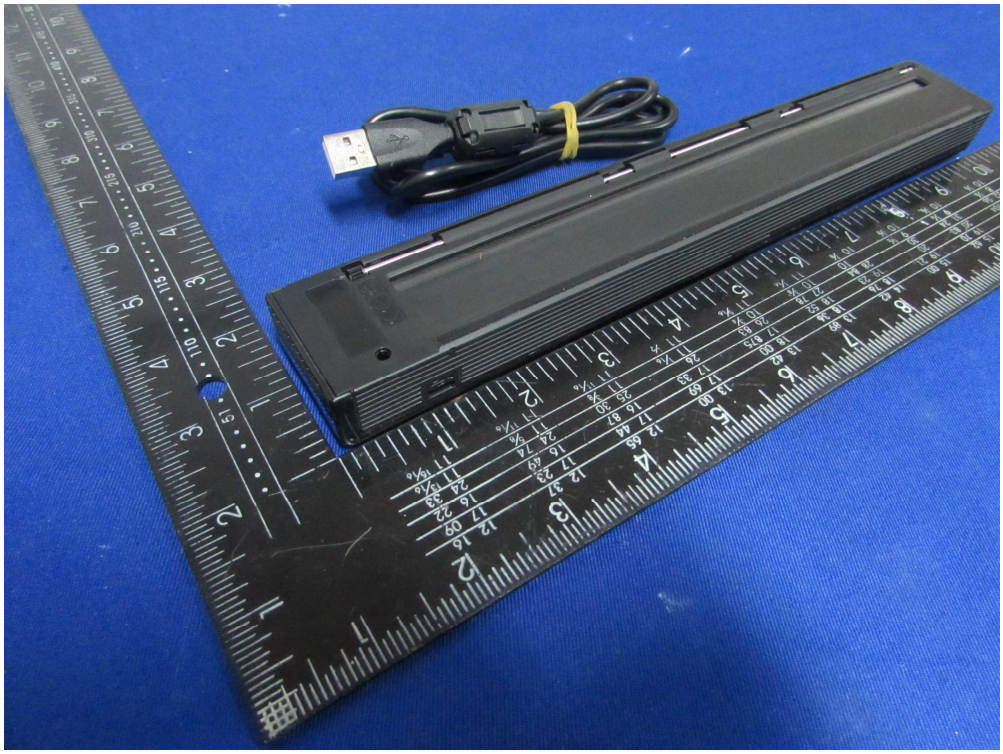
Frequency	Peak		Average	
[MHz]	Disturbance level dB(µV)	Permitted limit dB(µV)	Disturbance level dB(µV)	Permitted limit dB(µV)
/	/	/	/	/

☒ No emissions significantly above equipment noise floor.

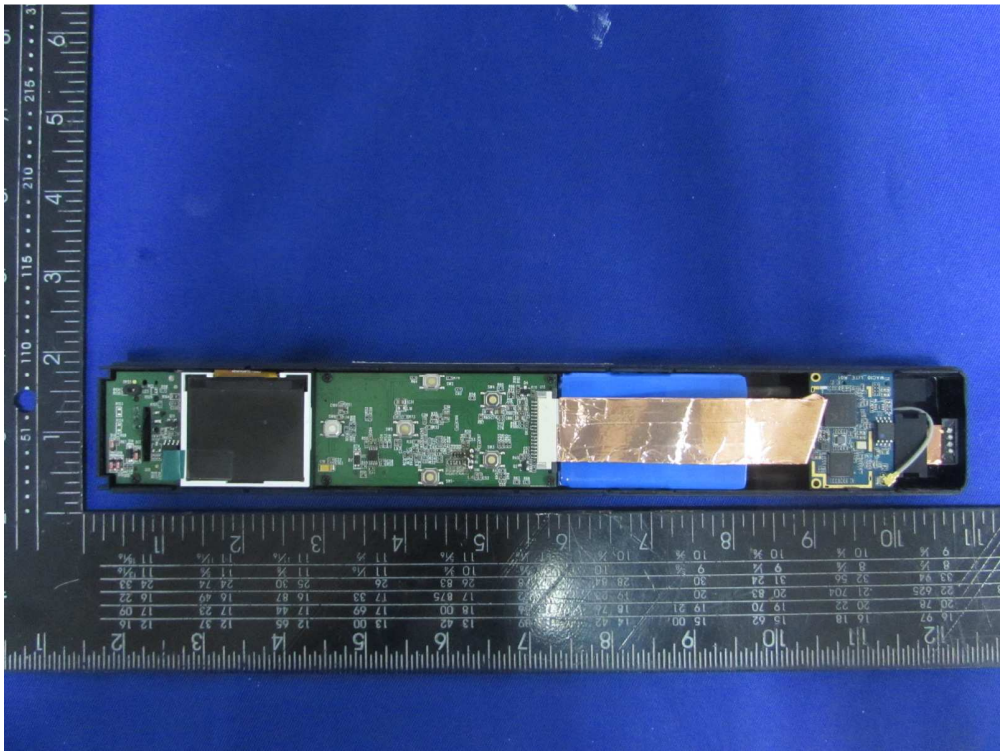
Notes: Negative signs (-) in the margin column signify levels below the limit.

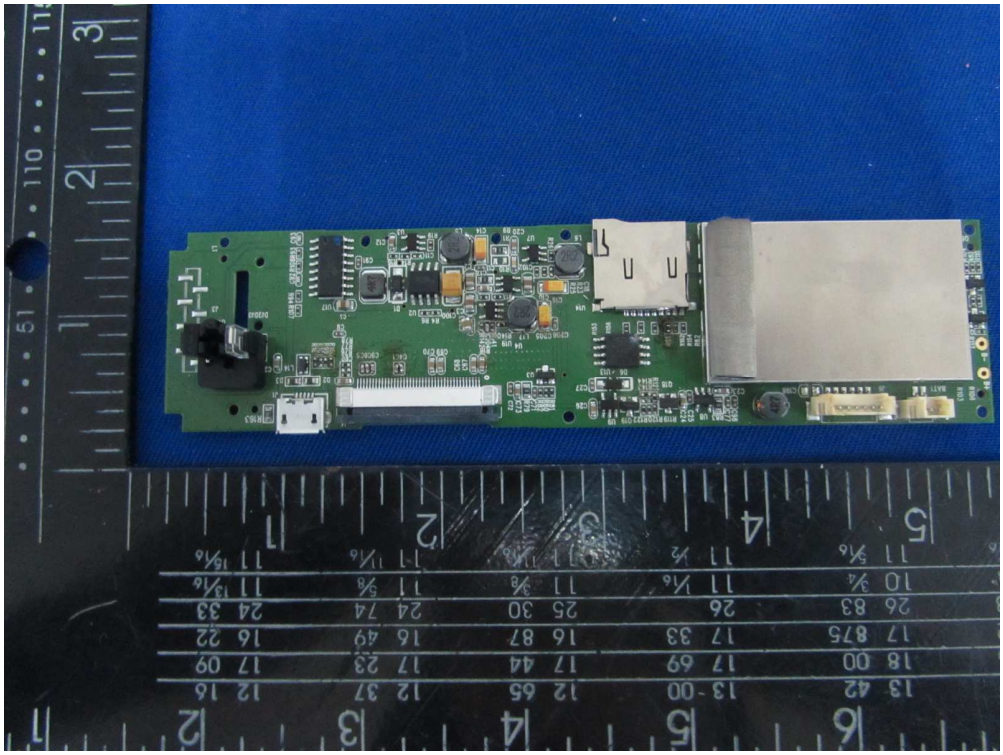
Appendix A1: External Photo of EUT



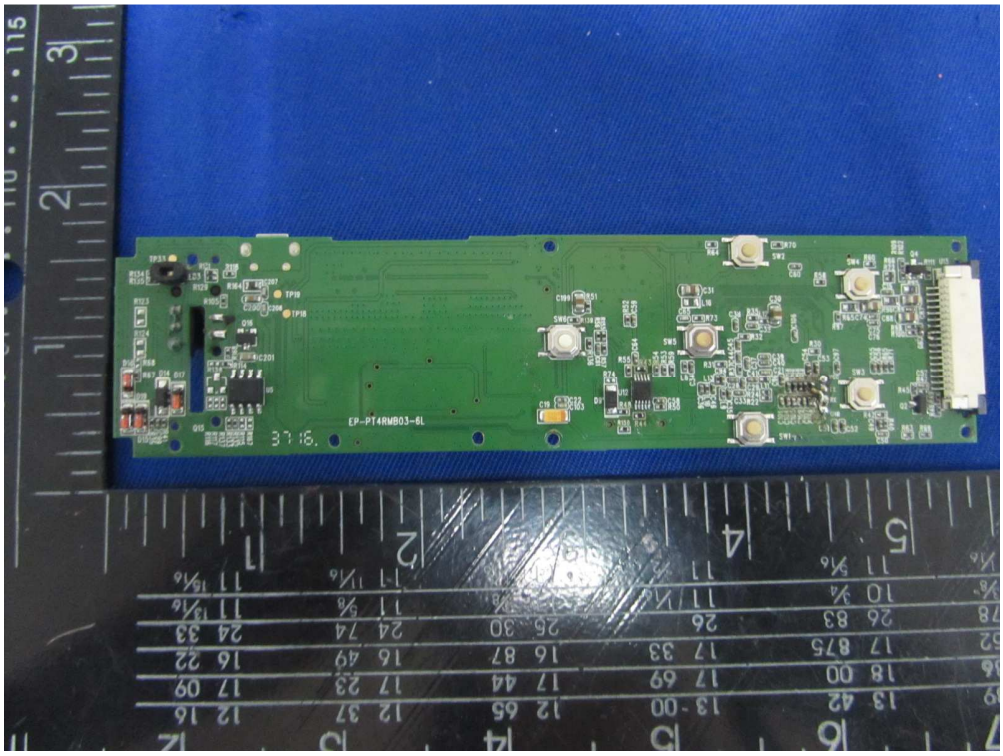


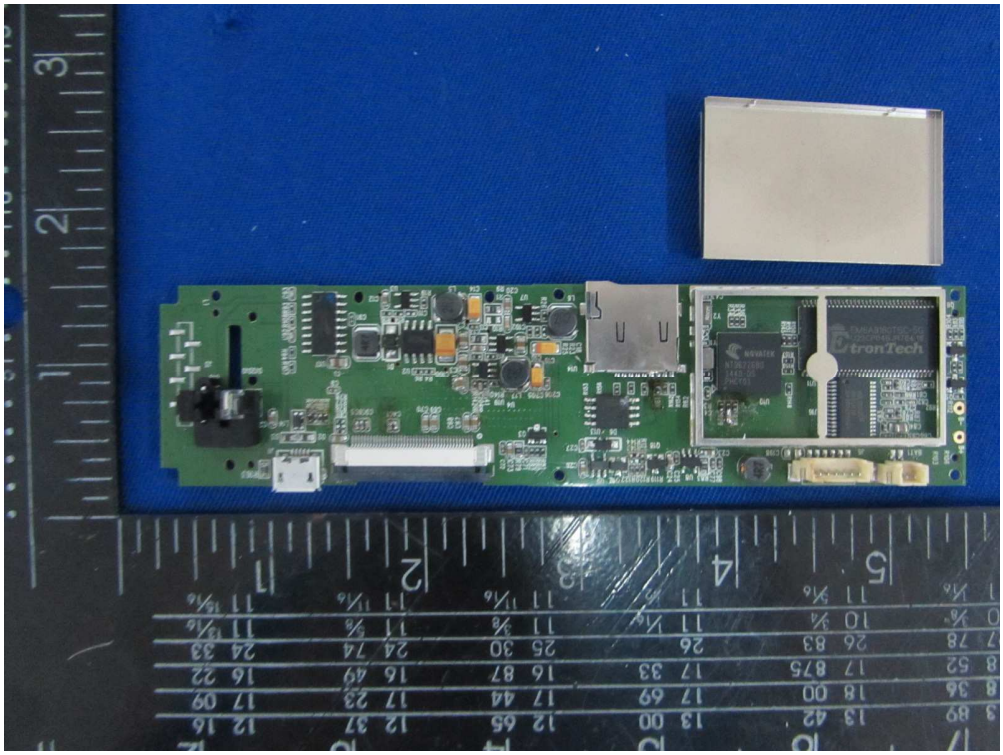
Appendix A2: Internal Photo of EUT



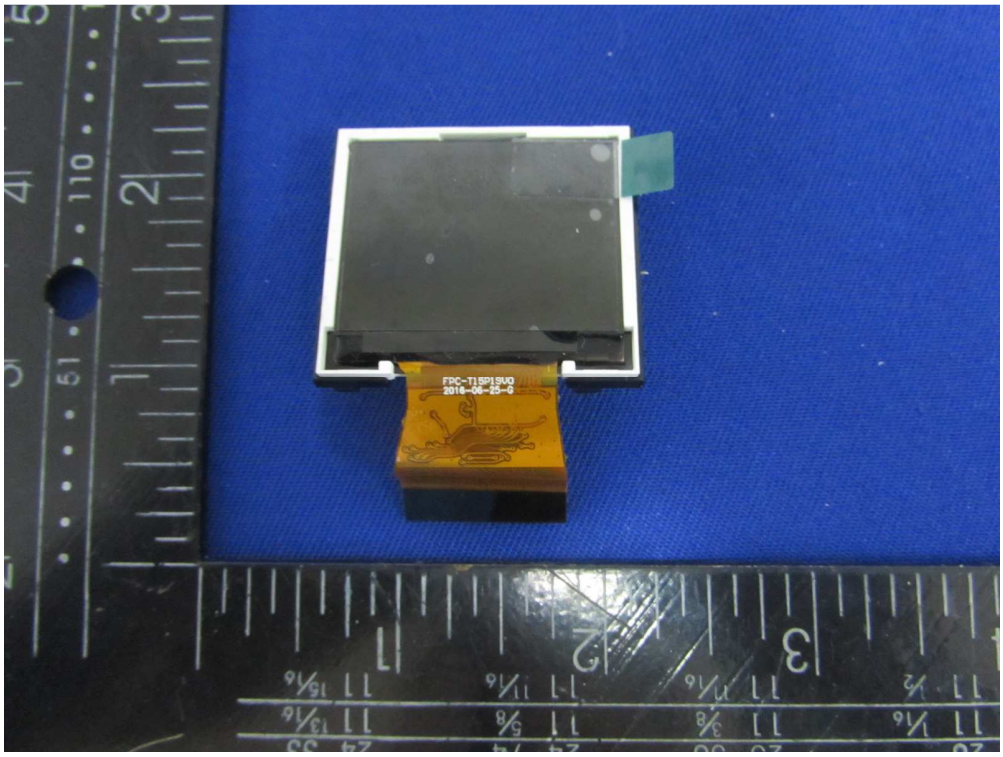


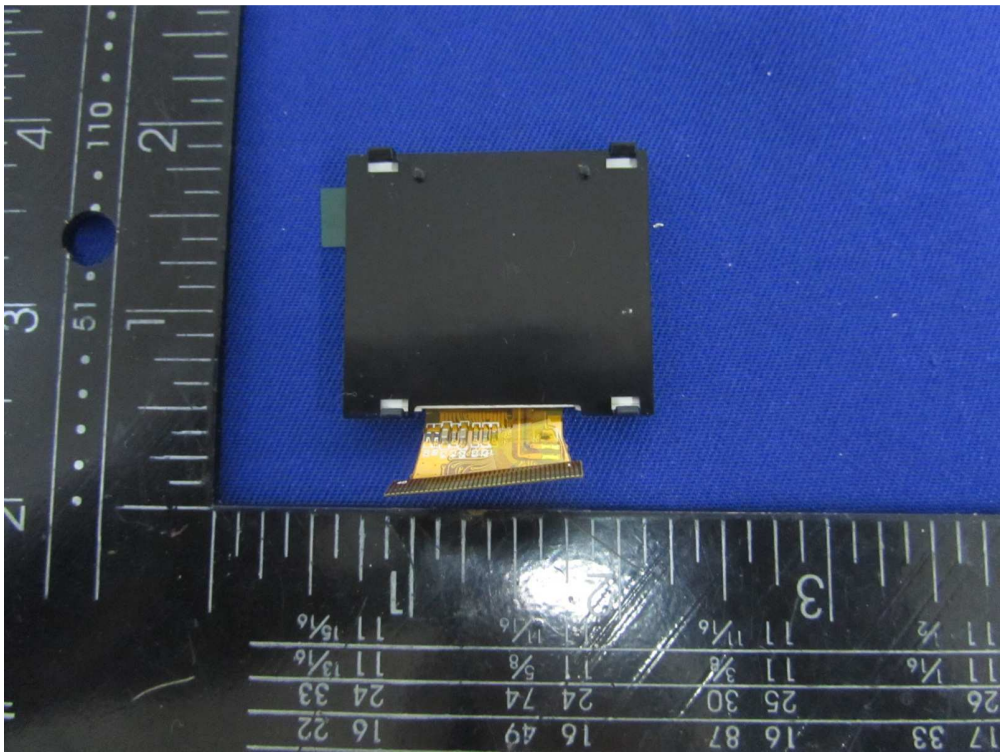
Appendix A2: Internal Photo of EUT



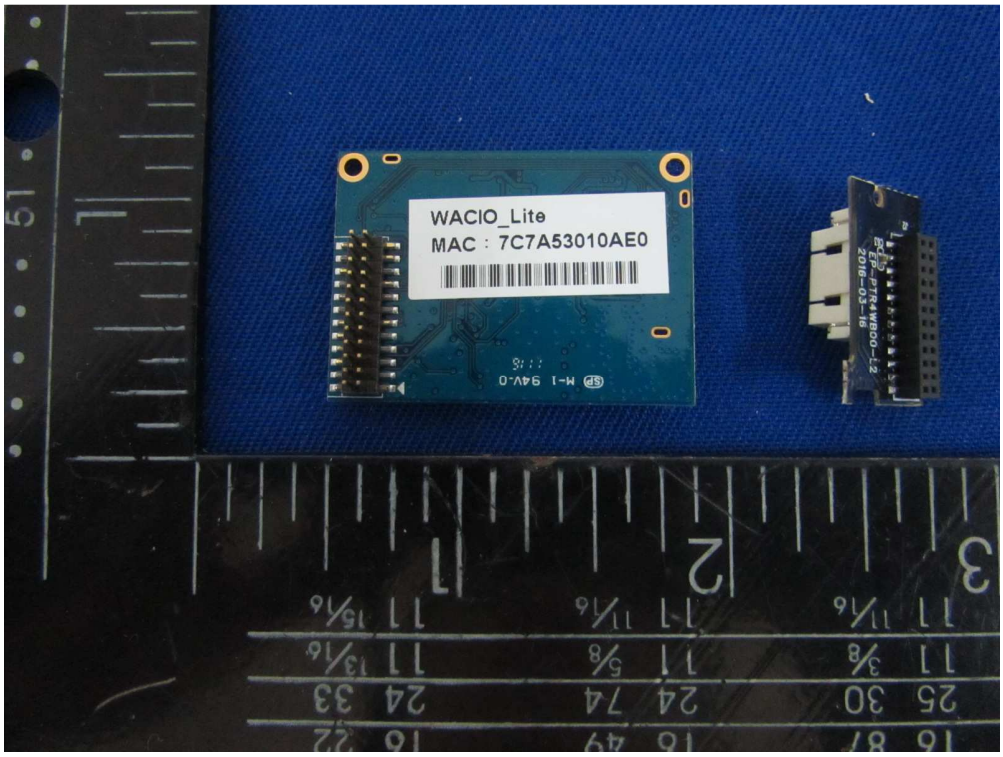


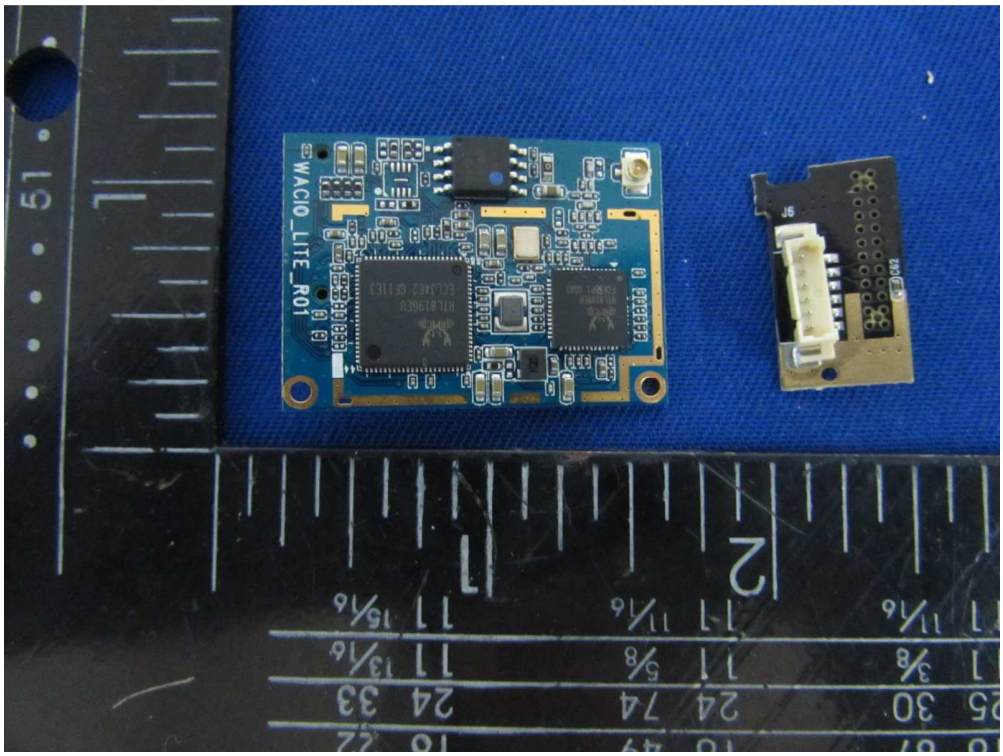
Appendix A2: Internal Photo of EUT



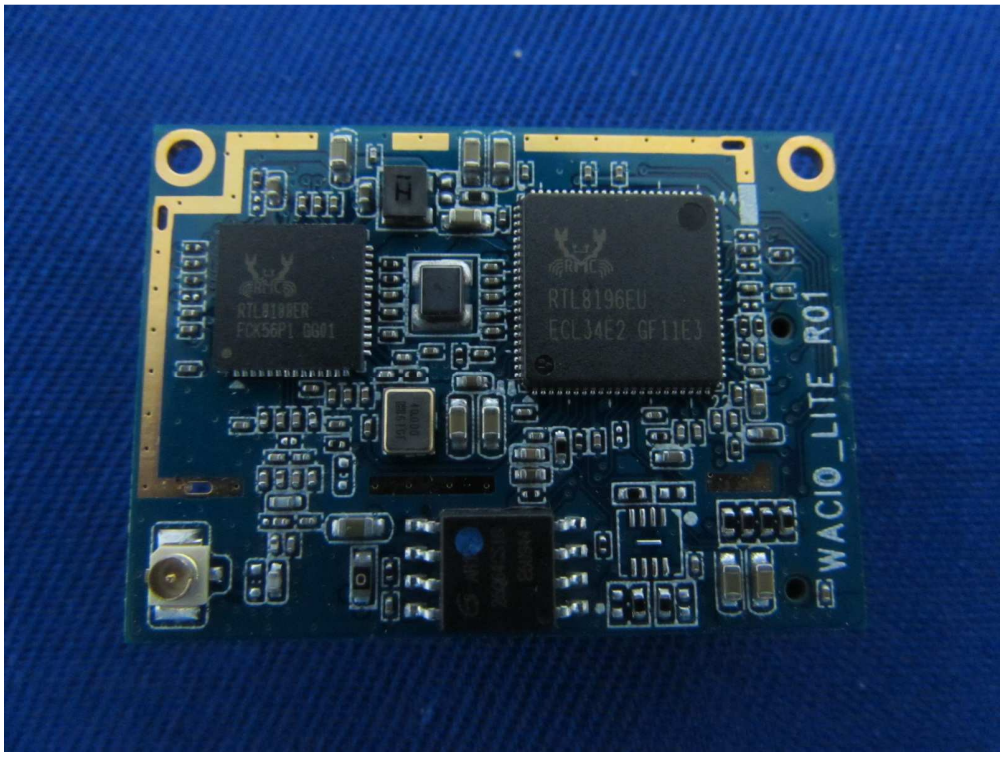


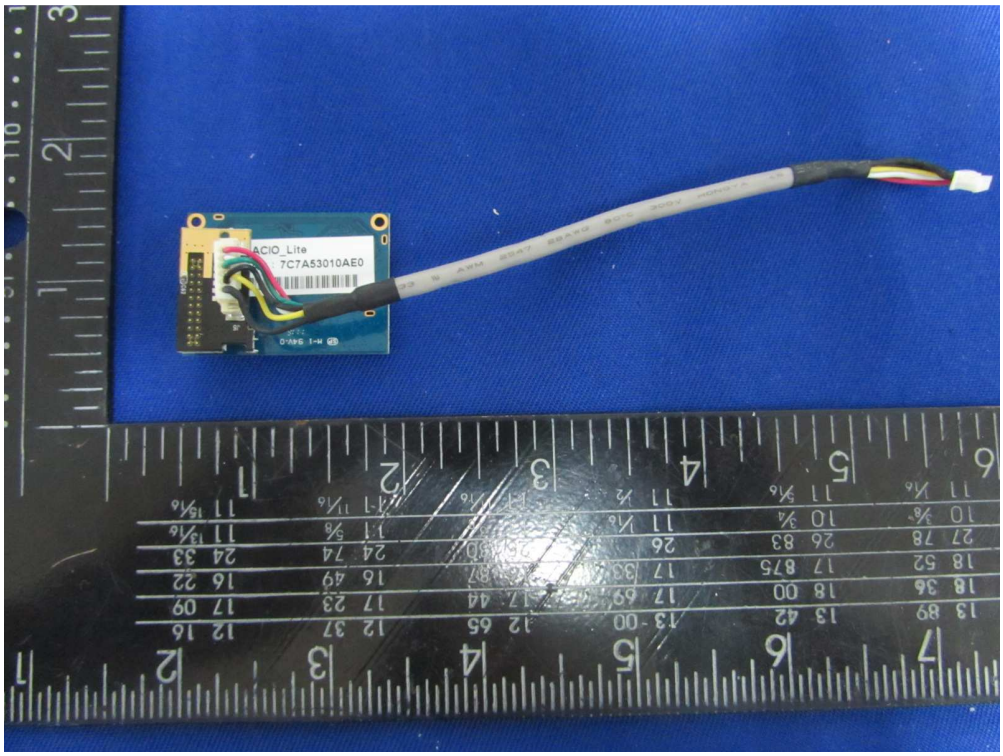
Appendix A2: Internal Photo of EUT



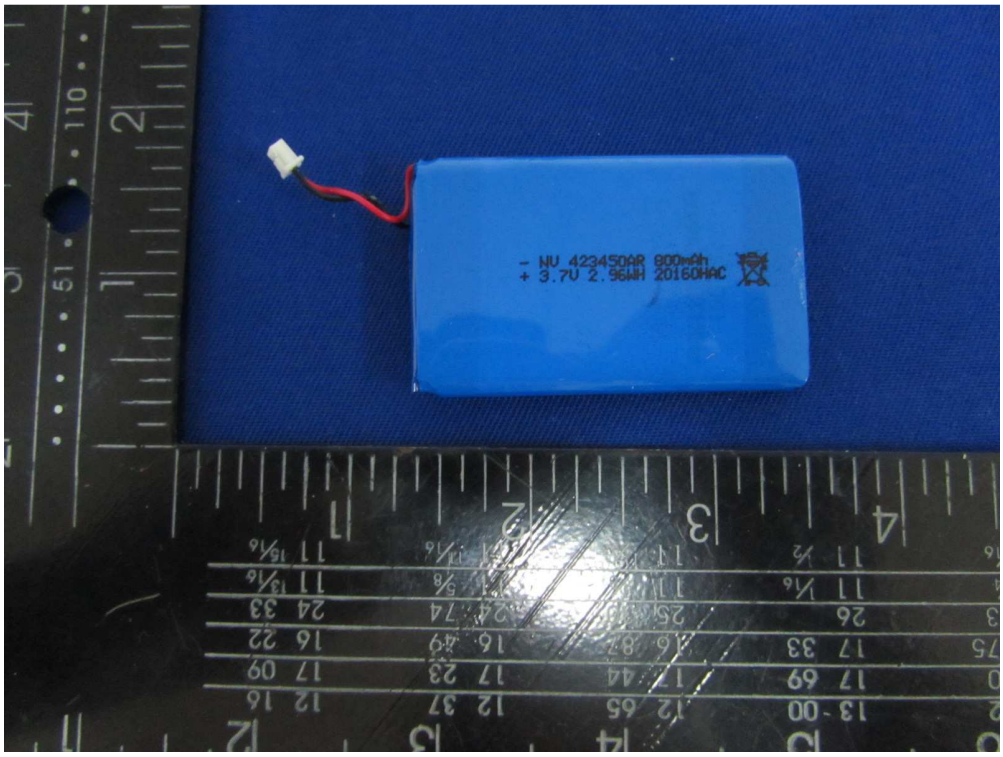


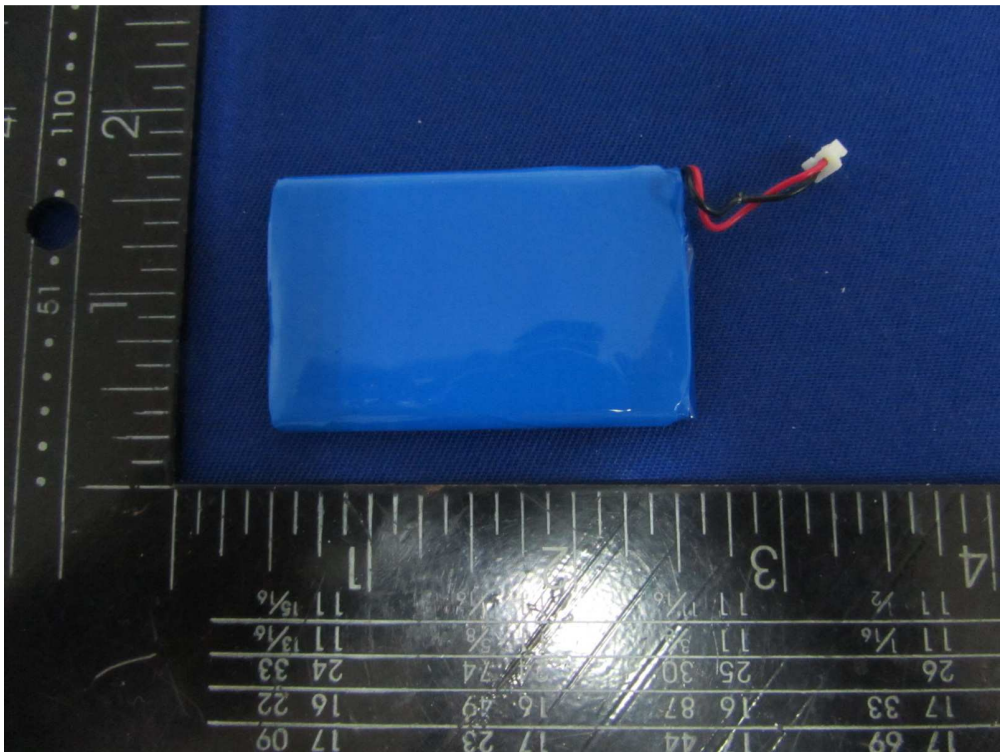
Appendix A2: Internal Photo of EUT





Appendix A2: Internal Photo of EUT

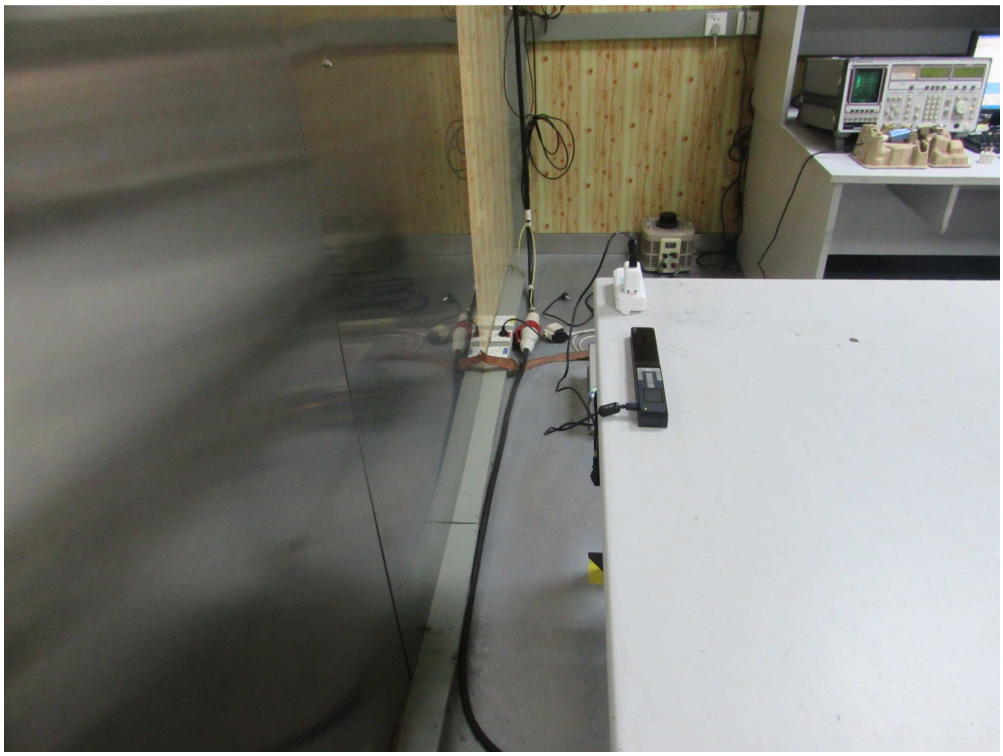




Appendix B1: Conducted Emission Test Set-up

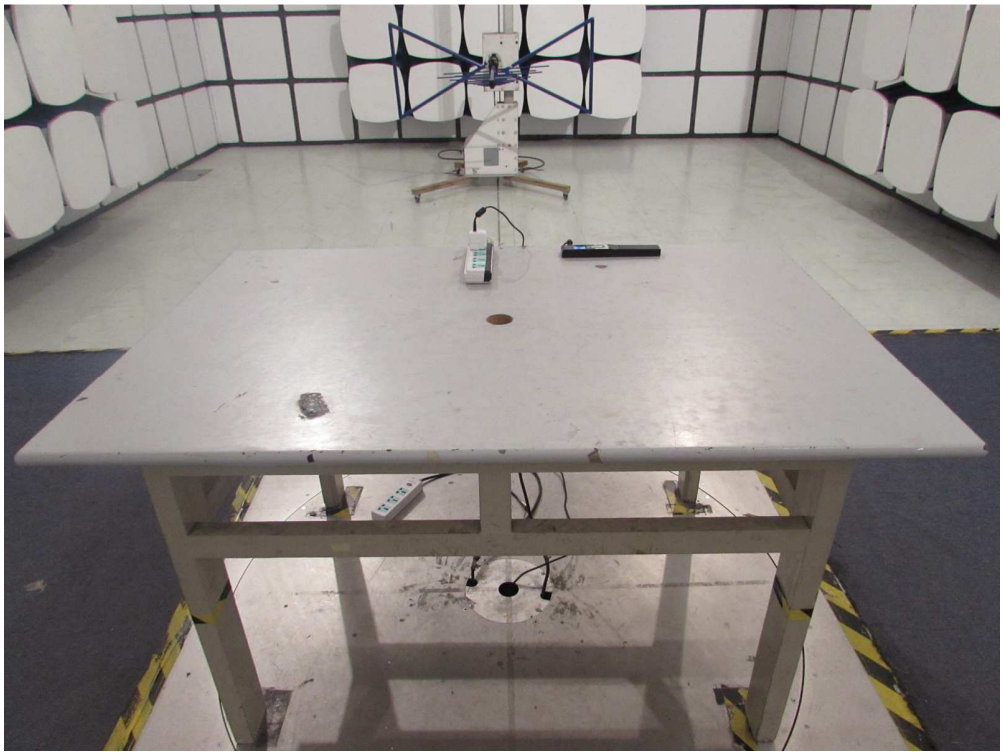
Front View

Side View

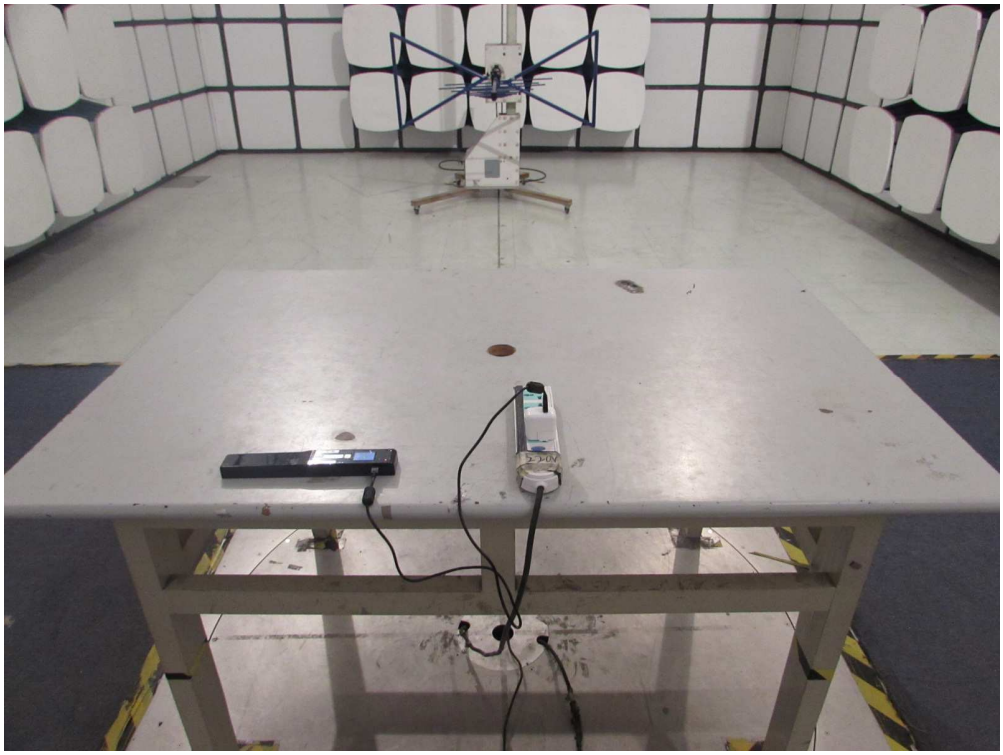


Appendix B2: 30-1000MHZ Radiated Emission Test Set-up

Front View

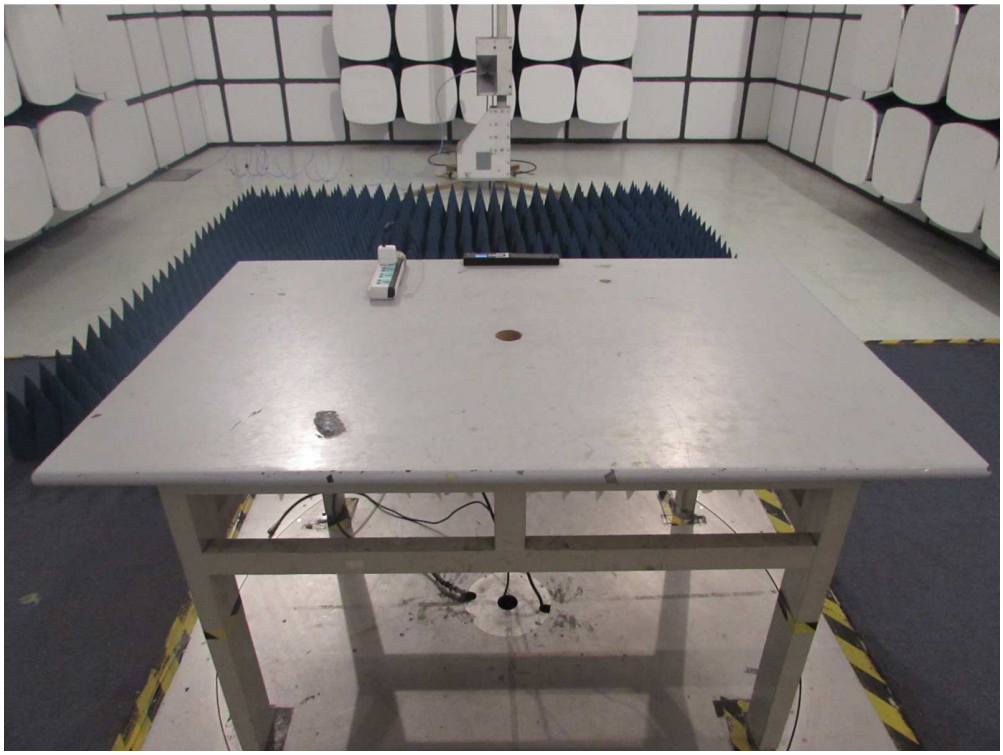


Back View

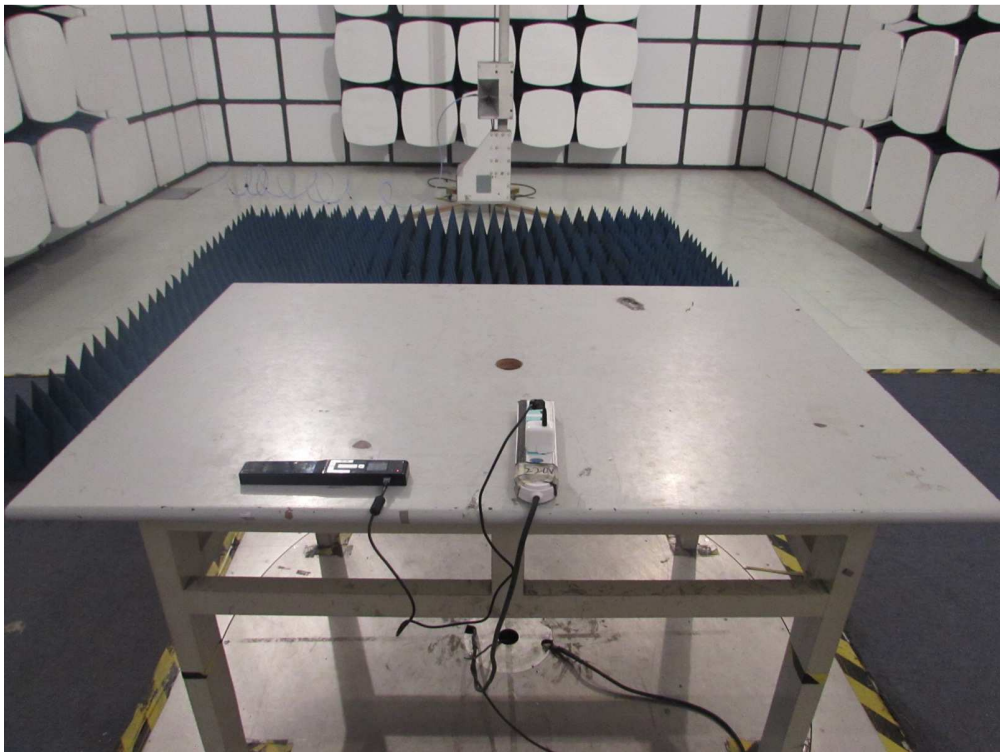


Appendix B2: 1-2GHz Radiated Emission Test Set-up

Front View



Back View



CANADIAN EMISSIONS REQUIREMENTS

The Canadian Government has announced an amendment of the radio act which will require computing equipment to comply with EMI specifications in Canada. The effective date for products imported into Canada is January 31, 1989.

The intent of the amendment is to establish Canadian Regulations which are harmonized with the existing FCC Regulations. As such, no retesting is required and devices which have been tested and comply with the FCC Specifications (Class B) also comply with the Canadian Specification (Class B).

LABELLING REQUIREMENTS

The manufacturer, importer or supplier shall meet the labelling requirements set out in this section and in Notice 2014-DRS1003 for electronic labelling for every unit:

(i) prior to marketing in Canada, for ITE manufactured in Canada and
(ii) prior to importation into Canada, for imported ITE.

Each unit of an ITE model shall bear a label (see below) that represents the manufacturer's or the importer's SDoC with Innovation, Science and Economic Development Canada's ICES-003. This label shall be permanently affixed to the ITE or displayed electronically and its text must be clearly legible. If the dimensions of the device are too small or if it is not practical to place the label on the ITE and electronic labelling has not been implemented, the label shall be, upon agreement with Innovation, Science and Economic Development Canada, placed in a prominent location in the user manual supplied with the ITE. The user manual may be in an electronic format and must be readily available.

Innovation, Science and Economic Development Canada ICES-003 Compliance Label: *CAN ICES-3 (*)/NMB-3(*)*
* Insert either "A" or "B" but not both to identify the applicable Class of ITE.