



EMC Test Report

Report Number: UCSET-1806-0010

MultimediaLink Inc.

812, 19, Ojeongongeop-gil, Uiwang-si, Gyeonggi-do 16072 Republic of Korea

Manufacturer

MultimediaLink Inc.

812, 19, Ojeongongeop-gil, Uiwang-si, Gyeonggi-do 16072 Republic of Korea

Test information

Test product: **HDMI to USB Capture**

Test model name: **HCP-1080**

Received number: **UCS-R-2018-0692**

Test date: **2018.06.22**

Issued date: **2018.06.22**

Test standards

ICES-001 Issue 4

ICES-003 Issue 6

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

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Tested by: J.W. Im

Approved by: I.Y. Jeong

Product information

Product Name	HDMI to USB Capture
Model Name	HCP-1080
Input/ Output Connector	Input: HDMI Connector(Standard type) Output: USB3.0 Connector(Type –A)
Key	Reset Button
LEDs	POWER(Green), STATUS(Blue)
Interface	USB3.0(Max. 5Gbit/s) USB2.0 (Max. 480Mbit/s) HDMI 1.4 (Video : 1080p/60fps, Audio: Support)
HDCP Copy Protection	HCP-1080 will not decrypt BD/DVD movies, satellite/cable receivers or other encrypted sources.
OS Support	Windows 7, 8, 10 Mac OS X Linux
Power Consumption	Max 2.5W(5VDC/ 0.5A @1080p)
Operating Temperature	0°C ~ 40°C
Operating Humidity	0 ~ 80%
Storage Temperature	-20°C ~ 60°C
Storage Humidity	0 ~ 90%
Dimension	112mm(W) x 41mm(D) x 19.6mm(H)
Accessories	USB 3.0 Cable(Length 16cm) : Type A to Type A

Specifications: Refer to the manual

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Revision History

Issued Report No.	Issued Date	Revisions	Effect Section
UCSET-1806-0010	22-Jun-2018	Initial Issue	All

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1. Testing laboratory

1.1 Location

UCS Co., Ltd.

Office: #702, 268, Hagui-ro, Dongan-gu, Anyang-si, Gyeonggi-do, 14056, KOREA.

Tel : +82-1833-5681

Fax : +82-31-420-5685


EMC Center: 161-8, Ansandong-gil, Hwaseong-si, Gyeonggi-do, Korea

EMC Test Site: 35-13, Hwalcho-gil, 109beon-gil, Hwaseong-si, Gyeonggi-do, 18278, Korea

Tel : +82-1833-5681

Fax : +82-31-355-5848

Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Registration Number	Logo
USA	FCC	FCC Part 15 & 18 EMI (Electromagnetic Interference / Emission)	803225	

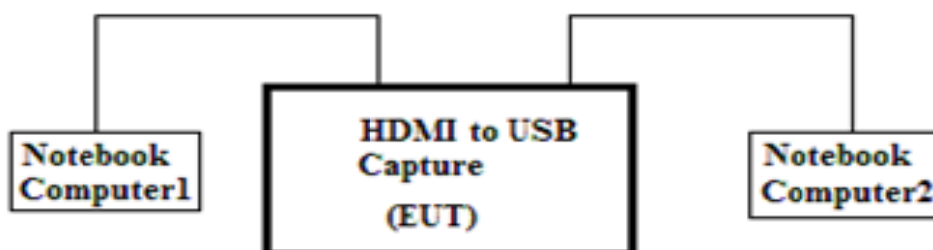
The EMC test site was complied with the requirements in CISPR 16 1 4:2007 referenced in CAN/CSA-CISPR 22-10 or with ANSI C63.4-2014 depending on which test method was followed.

2. Test Configuration and Condition

2.1 EUT operating condition

- The EUT is Connect to Notebook Computer1 and Notebook Computer2, Video Output was testd.
- Input power condition during the measurements was DC 5 V

2.2 EUT test configuration diagram



2.3 Peripheral equipments list for test

Equipment Name	Model	Serial Number	Manufacturer
HDMI to USB Capture (EUT)	HCP-1080	-	MultimediaLink Inc.
Notebook Computer1	NT371B5L		SAMSUNG
Notebook Computer2	NT910S3Q		SAMSUNG

2.4 Cable connections

Start		End		Cable	
Name	I/O Port	Name	I/O Port	Length (m)	Spec.
HDMI to USB Capture (EUT)	HDMI out	Notebook Computer1	HDMI in	1.6	Shielded
	USB	Notebook Computer2	USB	0.2	Shielded

2.5 EUT modifications

- None

3. Summary of Test Results and Measurement Procedures

3.1 Summary of test results

Standard	Test Item	Results
ICES-003 Issue 6	Conducted Emission	Met Class B / None
ICES-003 Issue 6	Radiated Emission	Met Class B / Pass

3.2 Preliminary testing

It is often valuable to performing preliminary radiated measurements at a closer distance than specified for compliance to determine the emission characteristics of the EUT. At close-in distance, it is easier to determine the spectrum signature of EUT, and if applicable, the EUT configuration that emanate the maximum level of emissions. The data may not be precisely correlatable results.

3.3 Shielded enclosure

To search the Radiated frequency outline of an EUT a shielded screen room may be used. If the shielded room is used for radiated data, the data page will state that the EUT was in a shielded enclosure. All data collected in a screen room for emission data, radiated emissions is for frequency outline only. If an EUT is placed in screen room for AC Powerline Conducted the data page will show that a screen room was used and data frequencies and levels will be correct and used for test data.

3.4 Data reporting format

The measurement results expressed in accordance with C63.4 and specified limits where applicable are presented in tabular or graphical form, or alternatively as recorder charts or photographs of a spectrum analyzer display, showing the level vs. frequency.

3.5 AC powerline conducted emission test

The EUT was connected to LISN. All supporting equipments were connected to another LISN. Preliminary Power line Conducted Emission test was performed by using the procedure in ANSI C63.4:2014 7.3.3 to determine the worse operating conditions.

3.6 Radiated emission test

Preliminary radiated emission test was conducted using the procedure in ANSI C63.4:2014 8.3.1.1 to determine the worse operating conditions. Final radiated emission test was conducted at open area test site.

4. Test Results

4.1 Conducted Emission

Test Standard	ICES-003 Issue 6		
Test venue	-		
Tested Date	-		
Input Ratings	-		
21.4	°C	Humidity	% R.H.
Test result	Met Class B / None		

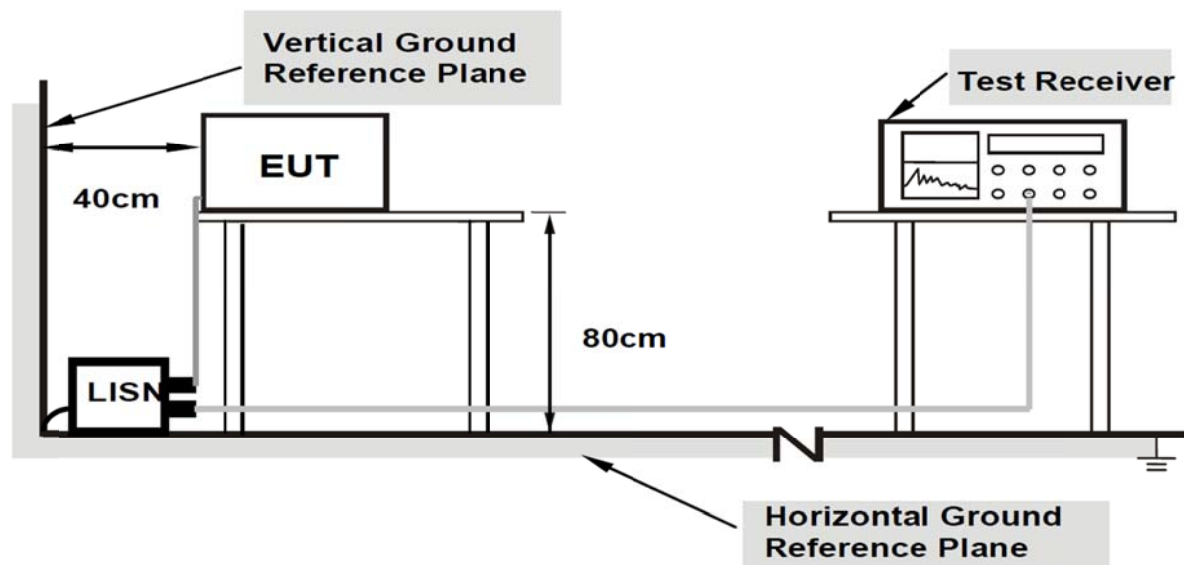
4.1.1 Limit

Frequency [MHz]	Class B [dBμV]		Class A [dBμV]	
	Quasi-Peak	Quasi-Peak	Quasi-Peak	Average
0.15 ~ 0.5	66 ~ 56*	56 ~ 46*	79	66
0.5 ~ 5	56	46	73	60
5 ~ 30	60	50	73	60

*Decreases with the logarithm of the frequency.

4.1.2 Test set-up and procedure

The mains terminal disturbance voltage was measured with the equipment under test (EUT) in a shield room.
The EUT was connected to an artificial mains network (LISN) placed on the floor.
The EUT was placed on non-metallic table 0.8 m above the metallic, grounded floor.
Amplitude measurements were performed with a quasi-peak detector and an average detector.



4.1.3 Test equipment used

Equipment	Model	Serial No.	Vendor	Next Cal. Date	Use
Test Receiver	ESPI3	101171	ROHDE & SCHWARZ	2018.08.03	<input type="checkbox"/>
Test Receiver	ESR7	101120	ROHDE & SCHWARZ	2018.08.03	<input type="checkbox"/>
LISN	NSLK 8127	8127518	SCHWARZBECK	2018.08.04	<input type="checkbox"/>
Two-Line V-Network	ENV216	3560.6550.12-101874-Rq	ROHDE & SCHWARZ	2018.08.03	<input type="checkbox"/>
Two-Line V-Network	ENV216	3560.6550.12-102073-Ax	ROHDE & SCHWARZ	2018.12.06	<input type="checkbox"/>
Four-Line V-Network	ENV432	101284	ROHDE & SCHWARZ	2018.08.04	<input type="checkbox"/>
ISN	ISN T800	30813	TESEQ	2019.02.06	<input type="checkbox"/>
ISN	ISN T8-Cat6	29709	TESEQ	2019.02.06	<input type="checkbox"/>
PULSE LIMITER	ESH3-Z2	100059	ROHDE & SCHWARZ	2019.02.01	<input type="checkbox"/>
ARTIFICIAL MAINS NETWORK	L3-32	1220X20311	PMM	-	<input type="checkbox"/>

4.1.4 Test data

- Frequency range : 150 kHz ~ 30 MHz
- Bandwidth : 9 kHz

[Quasi-Peak]

Frequency [MHz]	LISN [dB]	Cable Loss [dB]	Line [H/N]	Limit [dBμV]	Reading [dBμV]	Results [dBμV]	Margin [dB]
	None						

[Average]

Frequency [MHz]	LISN [dB]	Cable Loss [dB]	Line [H/N]	Limit [dBμV]	Reading [dBμV]	Results [dBμV]	Margin [dB]
	None						

* Remark: "H" Hot Line, "N" Neutral Line

* **Results [dBμV]** = Reading [dBμV] + LISN [dB] + Cable Loss [dB]

* **Margin [dB]** = Results [dBμV] – Limit [dBμV]

Measurement uncertainty

Conducted emission, quasi-peak detection: 2.2 dB

Conducted emission, average detection: 2.2 dB

The measurement uncertainty is given with a confidence of 95 % with the coverage factor, $k = 2$.

4.1.5 Test graph

[Hot Line]

None

* — : Quasi-Peak, — : Average

[Neutral Line]

None

* — : Quasi-Peak, — : Average

4.2 Radiated emission

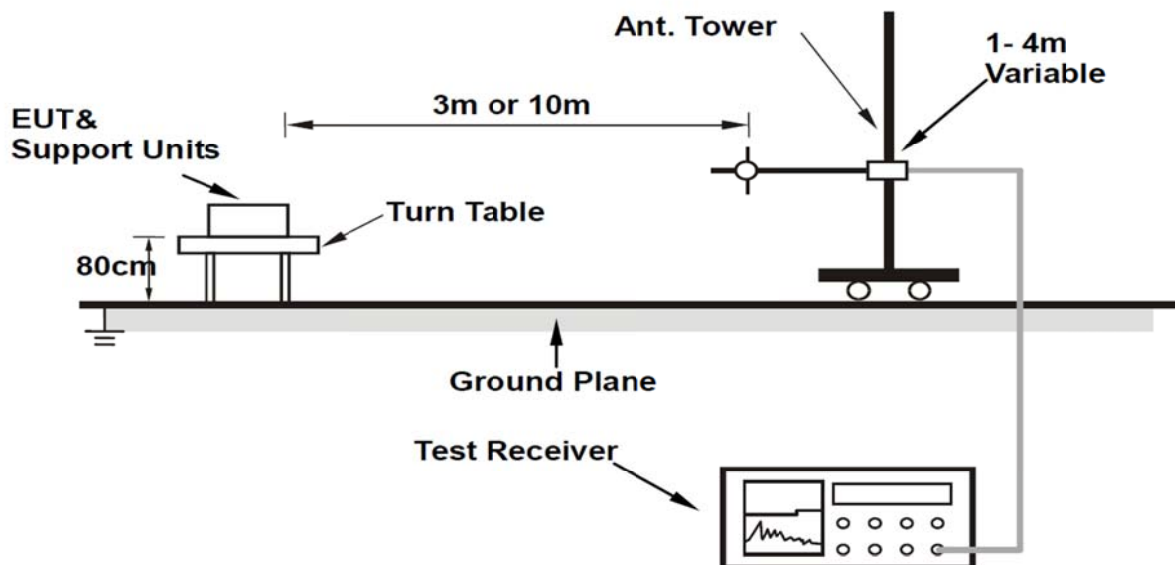
Test Standard	ICES-003 Issue 6		
Test venue	10 m chamber		
Tested Date	2018.06.22		
Input Ratings	DC 5 V		
Temperature	(23.6 ± 0.1) °C	Humidity	(45.1 ± 0.1) % R.H.
Test result	Met Class B / Pass		

4.2.1 Limit

Frequency [MHz]	Class B @ 3 m	Class A @ 10 m
30 ~ 88	100 µV/m (40.00 dBµV/m)	90 µV/m (39.00 dBµV/m)
88 ~ 216	150 µV/m (43.50 dBµV/m)	150 µV/m (43.50 dBµV/m)
216 ~ 960	200 µV/m (46.00 dBµV/m)	210 µV/m (46.40 dBµV/m)
Above 960	500 µV/m (54.00 dBµV/m)	300 µV/m (49.50 dBµV/m)

4.2.2 Test set-up and procedure

A pretest was performed at 3 m distance in a semi-anechoic chamber for searching correct frequency. The final test was done at a 3 m and 10 m open area test site with a quasi-peak detector. EUT was placed on a non-metallic table height of 0.8 m above the reference ground plane. Cables were folded back and forth forming a bundle 0.3 m to 0.4 m long and were hanged at a 0.4 m height to the ground plane. Cables connected to EUT were fixed to cause maximum emission. Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.



Note: Cable on the RGP must be insulated.

4.2.3 Test equipment used

Equipment	Model	Serial No.	Vendor	Next Cal. Date	Use
Test Receiver	ESR7	101969	ROHDE & SCHWARZ	2018.12.28	■
Test Receiver	ESR7	101120	ROHDE & SCHWARZ	2018.08.03	□
BI-LOG ANT	VULB 9163	691	SCHWARZBECK	2020.01.03	■
Antenna Mast	MA4000-EP	-	Innco systems GmbH	-	■
Turntable	DT3000-t2	-	Innco systems GmbH	-	■
Controller	CO3000	CO3000/969/394 21016/L	Innco systems GmbH	-	■
HORN ANTENNA	BBHA 9120D	769	Schwarzbeck	2019.09.25	■
Antenna Master	MA4640/800-XP-ET	-	Innco systems GmbH	-	□
Antenna Master	act-a400	20090812002	AudixCoperation	-	□
Turn Table	act-t450	2009814072	AudixCoperation	-	□
AMPLIFIER	310N	291723	SONOMA	2018.08.03	□
Controller	act	CT-0131	AudixCoperation	-	□
Microwave Preamplifier	8449B	3008A02014	Agilent	2019.02.06	■

4.2.4 Test data (below 1 GHz)

- Frequency range : 30 MHz ~ 1 000 MHz
- Bandwidth : 120 kHz
- Distance : 3 m

Frequency [MHz]	Reading [dBμV]	Antenna Polarity [H/V]	Height [m]	Antenna Factor [dB/m]	Cable Loss [dB]	Amp. Gain [dB]	Results [dBμV/m]	Limit [dBμV/m]	Margin [dB]
95.87	23.90	H	4.00	10.76	2.24	-	36.90	43.50	-6.60
105.92	18.90	H	4.00	10.77	2.36	-	32.03	43.50	-11.47
441.00	2.07	V	1.00	16.62	5.23	-	23.92	46.00	-22.12

* Radiated emissions tabulated data

* Remark: "H" Horizontal, "V" Vertical

* Field strength calculation

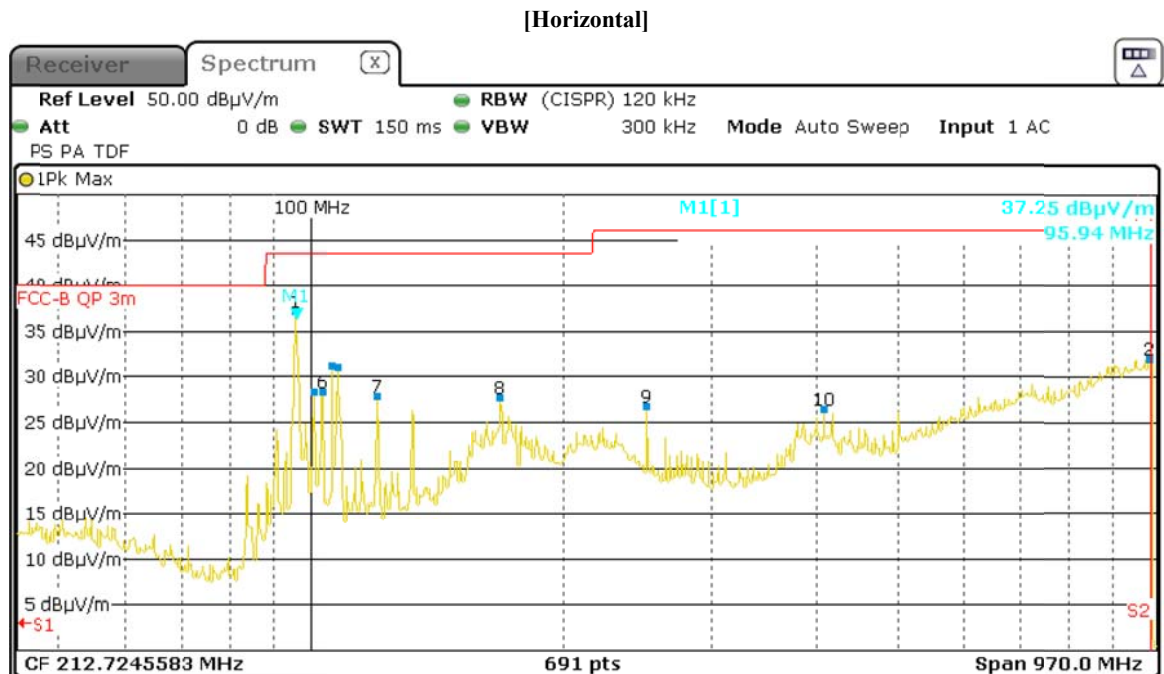
Results [dBμV/m] = Reading [dBμV] + Antenna Factor [dB/m] + Cable Loss [dB] – Amp. Gain [dB]

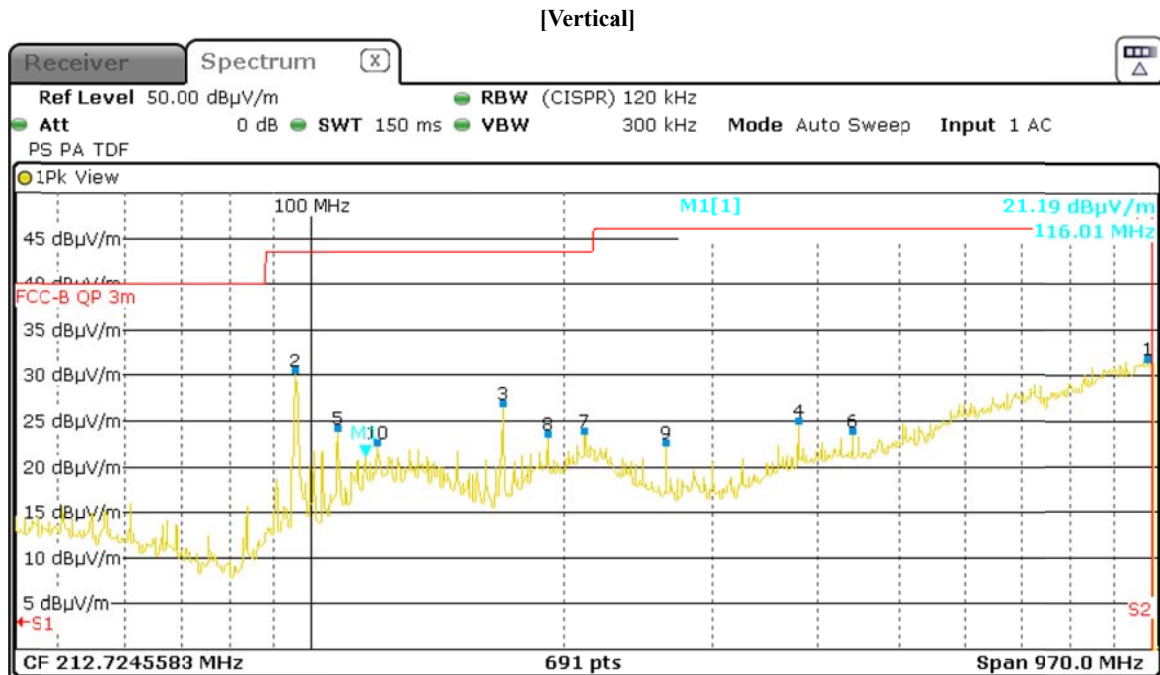
Margin [dB] = Results [dBμV/m] – Limit [dBμV/m]

Measurement uncertainty

Radiated emission electric field intensity, 30 MHz ~ 1 000 MHz: 3.3 dB

4.2.5 Test graph (below 1 GHz)





4.2.6 Test data (above 1 GHz)

- Frequency range : 1 000 MHz ~ 6 000 MHz
- Bandwidth : 1 MHz
- Distance : 3 m

[Horizontal]

[Peak]

Frequency [MHz]	Reading [dBμV]	Height [m]	Antenna Factor [dB/m]	Cable Loss [dB]	Amp. Gain [dB]	Results [dBμV/m]	Limit [dBμV/m]	Margin [dB]
1 066	48.90	1.00	24.52	6.01	37.71	41.72	74.00	-32.28
1 402	50.74	1.00	24.60	7.02	37.18	45.18	74.00	-28.82
1 626	51.15	1.00	25.05	7.68	36.98	46.90	74.00	-27.10
1 740	54.13	1.00	25.23	8.00	36.93	50.43	74.00	-23.57
1 781	54.84	1.00	25.31	8.12	36.91	51.36	74.00	-22.64
1 960	53.92	1.00	25.50	8.63	36.83	51.22	74.00	-22.78

[Average]

Frequency [MHz]	Reading [dBμV]	Height [m]	Antenna Factor [dB/m]	Cable Loss [dB]	Amp. Gain [dB]	Results [dBμV/m]	Limit [dBμV/m]	Margin [dB]
1 066	32.79	1.00	24.52	6.01	37.71	25.61	54.00	-28.39
1 402	32.44	1.00	24.60	7.02	37.18	26.88	54.00	-27.12
1 626	32.59	1.00	25.05	7.68	36.98	28.34	54.00	-25.66
1 740	35.27	1.00	25.23	8.00	36.93	31.57	54.00	-22.43
1 781	33.73	1.00	25.31	8.12	36.91	30.25	54.00	-23.75
1 960	31.43	1.00	25.50	8.63	36.83	28.73	54.00	-25.27

* **Results [dBμV/m]** = Reading [dBμV] + Antenna Factor [dB/m] + Cable Loss [dB] – Amp. Gain [dB]

* **Margin [dB]** = Results [dBμV/m] – Limit [dBμV/m]

[Vertical]
[Peak]

Frequency [MHz]	Reading [dBμV]	Height [m]	Antenna Factor [dB/m]	Cable Loss [dB]	Amp. Gain [dB]	Results [dBμV/m]	Limit [dBμV/m]	Margin [dB]
1 232	49.43	1.00	24.97	6.51	37.45	43.46	74.00	-30.54
1 418	54.25	1.00	25.08	7.07	37.16	49.24	74.00	-24.76
1 570	62.35	1.00	25.17	7.52	37.01	58.03	74.00	-15.97
1 619	59.40	1.00	25.21	7.66	36.99	55.28	74.00	-18.72
1 778	54.04	1.00	25.33	8.11	36.91	50.57	74.00	-23.43
1 960	56.09	1.00	25.46	8.63	36.83	53.35	74.00	-20.65

[Average]

Freq. [MHz]	Reading [dBμV]	Height [m]	Antenna Factor [dB/m]	Cable Loss [dB]	Amp. Gain [dB]	Results [dBμV/m]	Limit [dBμV/m]	Margin [dB]
1 232	32.93	1.00	24.97	6.51	37.45	26.96	54.00	-27.04
1 418	35.96	1.00	25.08	7.07	37.16	30.95	54.00	-23.05
1 570	40.85	1.00	25.17	7.52	37.01	36.53	54.00	-17.47
1 619	35.10	1.00	25.21	7.66	36.99	30.98	54.00	-23.02
1 778	33.19	1.00	25.33	8.11	36.91	29.72	54.00	-24.28
1 960	32.57	1.00	25.46	8.63	36.83	29.83	54.00	-24.17

* **Results [dBμV/m]** = Reading [dBμV] + Antenna Factor [dB/m] + Cable Loss [dB] – Amp. Gain [dB]

* **Margin [dB]** = Results [dBμV/m] – Limit [dBμV/m]

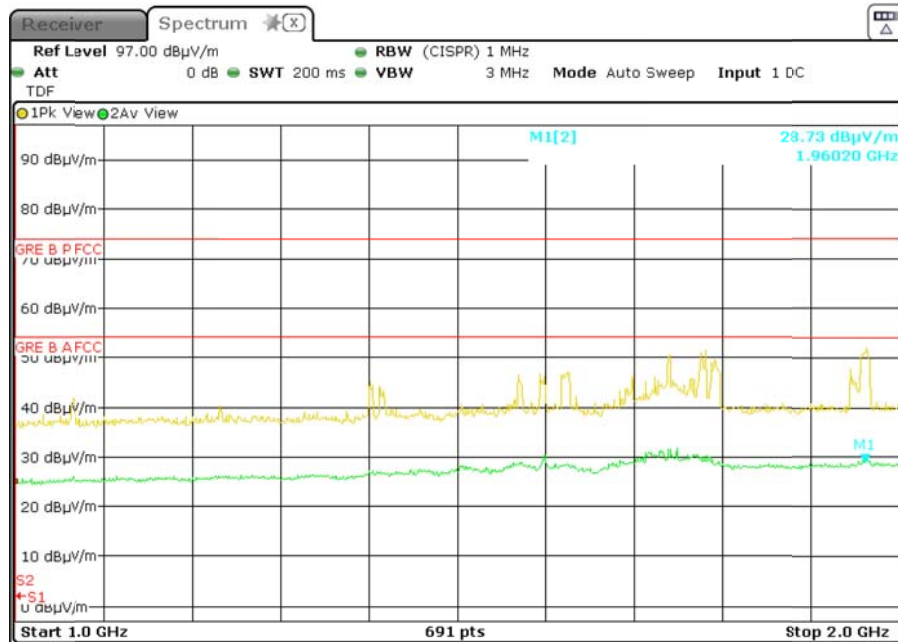
Measurement uncertainty

Radiated emission electric field intensity, above 1 GHz: 4.8 dB

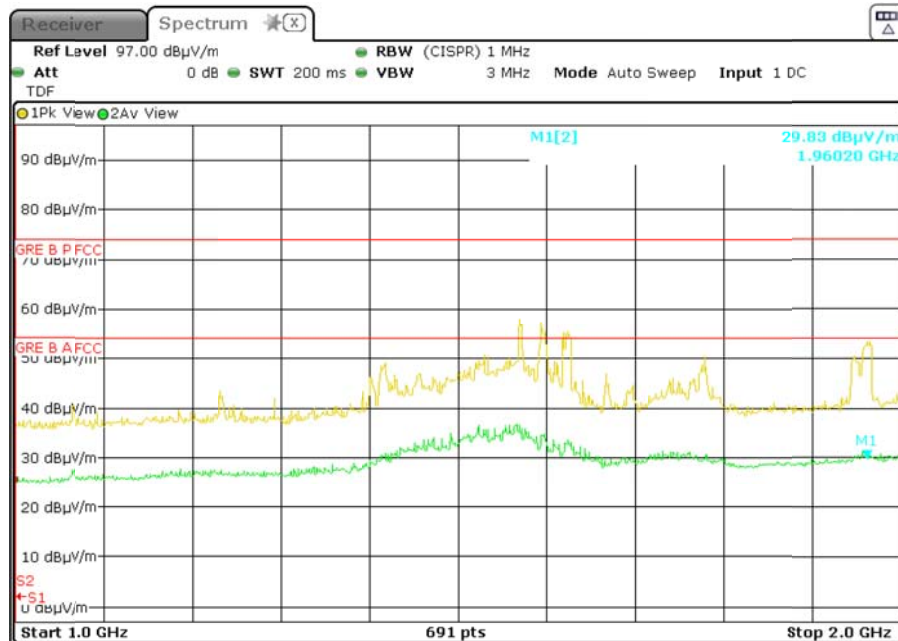


4.2.7 Test graph (above 1 GHz)

[Horizontal]



[Vertical]



5. Appendix-A: Test Setup Photographs

5.1 Test Setup Photographs

5.1.1 Conducted emission

[Front view]

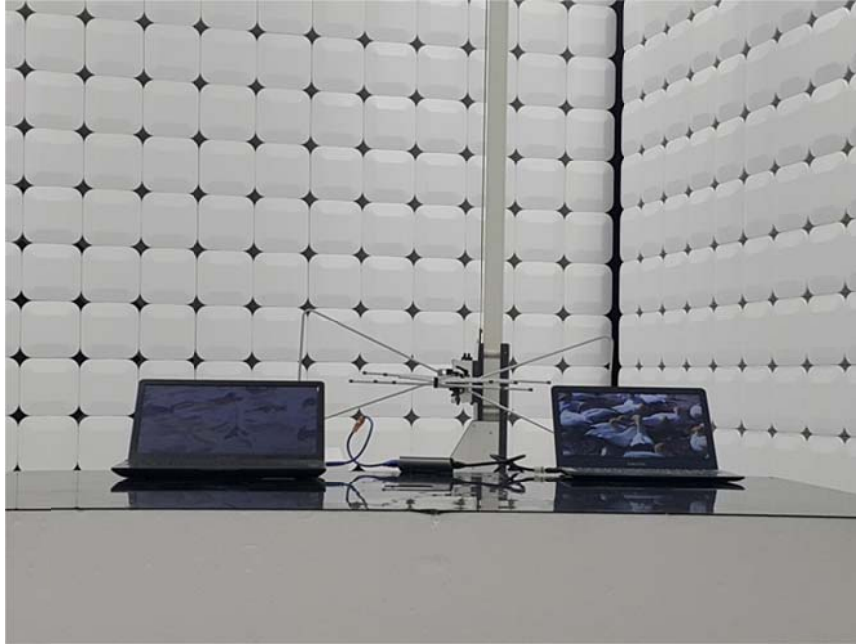
None

[Rear view]

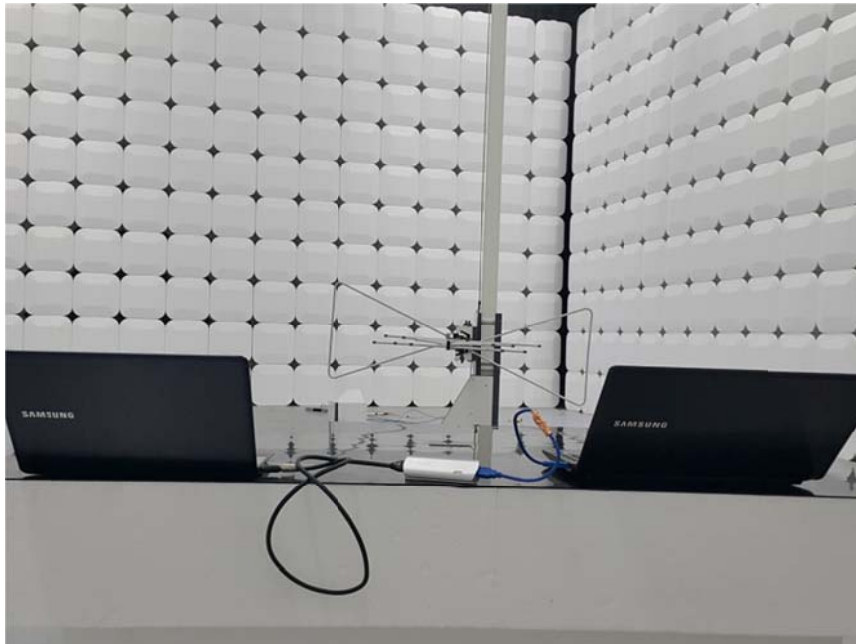
None

5.1.2 Radiated emission (below 1 GHz)

[Front view]



[Rear view]



5.1.2 Radiated emission (above 1 GHz)

[Front view]



[Rear view]



5.2. Appendix-B: External Photographs of EUT

[Front view]

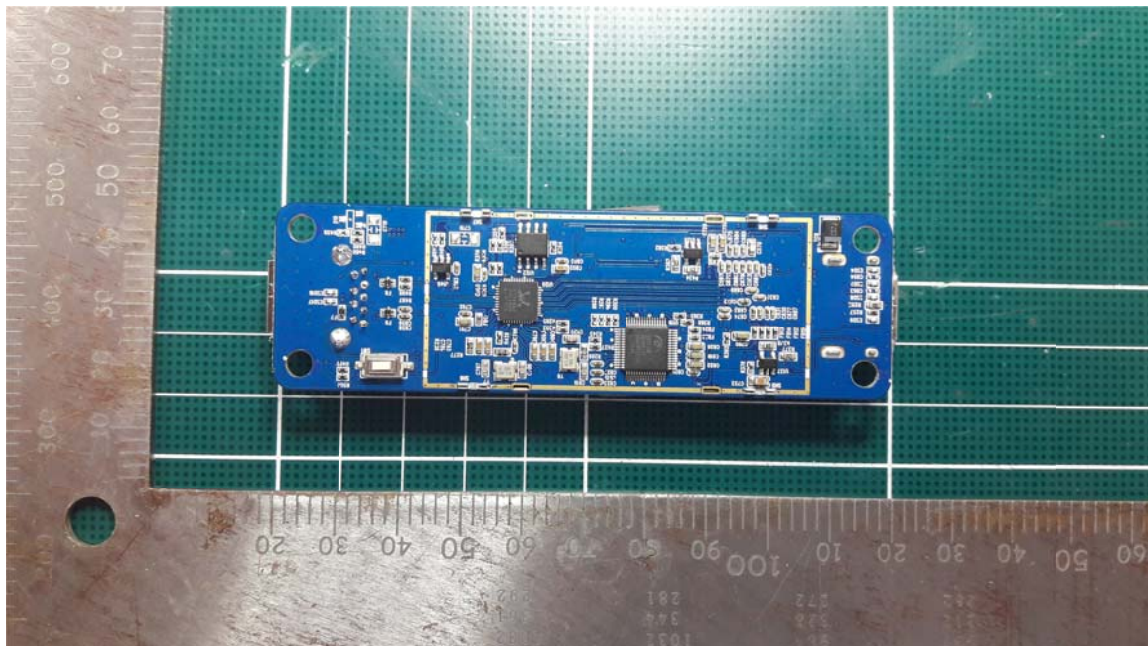
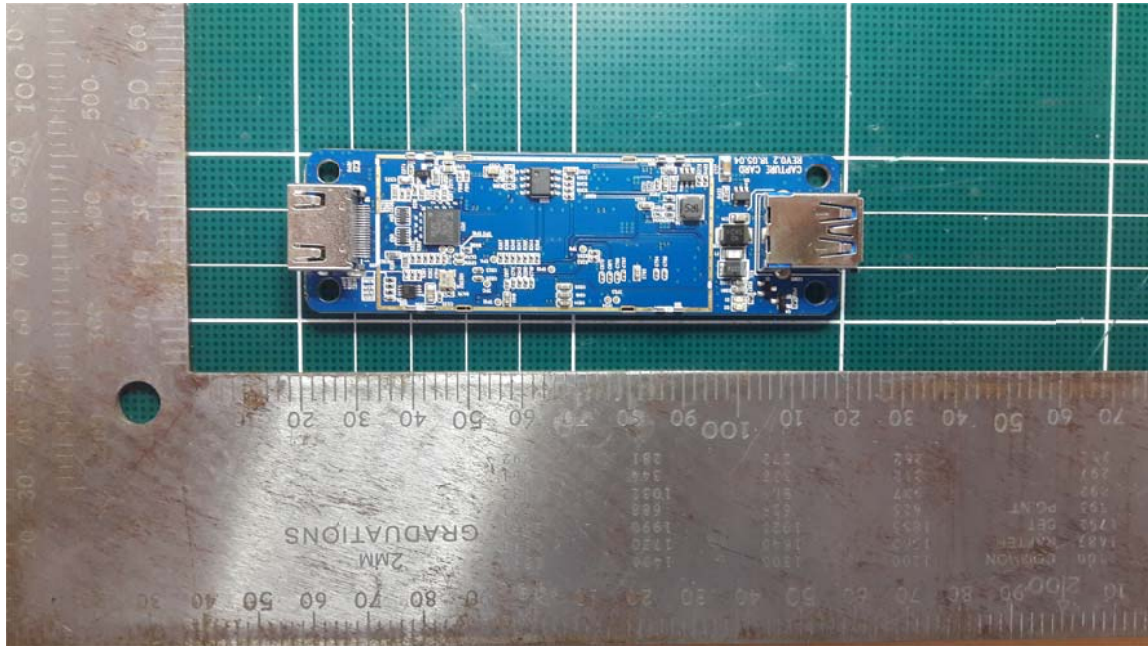


[Rear view]



5.2. Appendix-B: Internal Photographs of EUT

5.2.1 Internal view



6. Appendix-C: Label and Manual information

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.

7. Appendix-D Modeling of EUT

Manufacturer / Approval Declaration

**The following identical model(s): HCP-1080-A, HCP-1080-B, HCP-1080-C, HCP-1080-D, HCP-1080-E, HCP-1080-F,
HCP-1080-G
(buyer Models)**