

## CE TEST REPORT

for

### Electromagnetic compatibility of multimedia equipment

Report Number : ETLE180604.0533 Report Issue Date: June 29, 2018

Model / Serial No. : HCP-1080 / NONE

Multiple Model Name : HCP-1080-A, HCP-1080-B, HCP-1080-C, HCP-1080-D,  
HCP-1080-E, HCP-1080-F, HCP-1080-G

Product Type : HDMI to USB Capture

Brand Name : 

Applicant : MultimediaLink Inc.

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

Manufacturer : MultimediaLink Inc.

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

Test Standard(s) : EN 55032: 2015 (Class B)  
EN 55024: 2010

Test Result :  **Positive**

Total pages including Attachments : 60

Prepared by:

Jung Woo, Noh  
(Test Engineer)



June 29, 2018

Reviewed by:

Hyung Min, Choi  
(Chief Engineer)



June 29, 2018

**ETL Inc.**

**114, Gasan digital 2-ro, Geumcheon-gu, Seoul, 08506, Korea**  
**Tel : 82-2-858-0786 Fax : 82-2-858-0788**

The test report merely corresponds to the test sample(s).  
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Report no. ETLE180604.0533 / Page 1 of 31

## DIRECTORY

	Pages
A) Documentation	
Directory	2
Test Standards	3
Address of the test laboratory, Environmental of test, Power Utilized, Description of the EUT & Symbol Definitions	4
Equipment Under Test	21
General Remark & Summary	22
Test Setups (Photographs)	23 – 31
B) Test Data	
Conducted Emissions (AC mains power ports)      150 kHz - 30 MHz	5
Conducted Emissions (asymmetric mode)      150 kHz - 30 MHz	6
Conducted Emissions (differential voltage)      30 MHz - 2 150 MHz	7
Radiated Emissions (Electric Field)      30 MHz - 6 000 MHz	8 – 9
Harmonic Current Emissions and Flicker	10
Electrostatic Discharge (ESD)	11 – 14
Radiated Electromagnetic Fields	15
EFT / Burst	16
Surge	17
Conducted Disturbance	18
RF Frequency Magnetic Fields	19
Voltage Dips, Interruptions & Variations	20
C) Attachment	
A. Test Data and Test Setup Drawing(s)	A1 – A14
B. List of Test Equipments	B1 – B3
C. Constructional Photographs of Equipment Under Test (EUT)	C1 – C10
D. Technical description of the test sample (e.g.CDF, Declaration)	D1 – D2

## EMC TEST STANDARD(S)

The emc tests were performed according to the following standards:

- 
- EN 55032: 2015
  - - Class A
  - - Class B
  - EN 55024: 2010
    - IEC 61000-4-2: 2008
    - IEC 61000-4-3/ A2: 2010
    - IEC 61000-4-4: 2012
    - IEC 61000-4-5: 2005
    - IEC 61000-4-6: 2008
    - IEC 61000-4-8: 2009
    - IEC 61000-4-11: 2004
  - EN 61000-3-2: 2014
  - EN 61000-3-3: 2013

Note: For undated references, the latest edition of the publication at the time of testing (including amendments) was applied.

## ADDRESS OF THE TEST LABORATORY

### ■ Seoul EMC Laboratory

114, Gasan digital 2-ro, Geumcheon-gu, Seoul, 08506, Korea

### ■ Hwaseong Open Area Test Site

97-4, Gureomae-gil, Seosin-myeon, Hwaseong-si, Gyeonggi-do, 18556, Korea

## ENVIRONMENTAL OF TEST

During the measurement the environmental conditions were within the listed ranges:

Temperature	:	(22.8 ± 0.5) °C
Humidity	:	(58 ± 14) % R.H.
Atmospheric Pressure	:	(100.7 ± 0.2) kPa

## POWER SUPPLY SYSTEM UTILIZED

Power supply system                      ■ DC 5 V from USB port of host computer

## SHORT DESCRIPTION OF THE EQUIPMENT UNDER TEST (EUT)

Number of received / tested samples:                      1 / 1

Serial Number:    none

## DEFINITIONS FOR SYMBOLS USED IN THIS TEST REPORT

■ The black square indicates that the listed condition, standard or equipment is applicable for this report.

□ Blank box indicates that the listed condition, standard or equipment was not applicable for this report.

## Conducted Emission (AC mains power ports) Test

Conducted emissions (AC mains power ports) were measured from 150 kHz to 30 MHz with a bandwidth of 9 kHz on the 230 V AC power and return leads of the EUT according to the methods defined in EN 55032.

The EUT was placed upon a non-metallic table 0.8 m above the horizontal metal reference plane and placed 40 cm from a vertical ground plane which is connected to the horizontal metal ground plane.

☐ Test not applicable

■ Test area - mesh room

☐ Anechoic chamber

☐ Full compact chamber

Environmental of test: (23.1 ± 0.0) °C, (49 ± 0) % R.H., (100.5 ± 0.0) kPa

Used test instruments and test accessories please see Attachment B.

Equipment type	Frequency Range [MHz]	Quasi-Peak limit [dB(μV)]	Average limit [dB(μV)]
<input type="checkbox"/> Class A	0.15 to 0.5	79	66
	0.5 to 30	73	60
■ Class B	0.15 to 0.5	66 to 56	56 to 46
	0.5 to 5	56	46
	5 to 30	60	50

Note. 1) The lower limit shall apply at the transition frequency.

2) The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

## Uncertainty of Measurement (LISN)

Test Item	Frequency [MHz]	Uncertainty of Measurement	Remark
Conducted Emission (AC mains power ports)	0.15 to 30	1.64 dB	The reported expanded uncertainty is based on standard uncertainty multiplied by a coverage factor of $k = 2$ . Providing a level of confidence of approximately 95 %.

■ Pass

☐ Fail

Minimum limit margin 5.77 dB at 0.581 MHz

Maximum limit exceeding dB at MHz

Remarks: Please refer to the test data and graph in Attachment A.

\* This test was tested at main host computer (EUT was connected USB port of the host computer).

## Conducted Emission (asymmetric mode) Test

Conducted common mode (asymmetric mode) disturbance at telecommunication ports were measured from 150 kHz to 30 MHz with a bandwidth of 9 kHz of the EUT according to the methods defined in EN 55032.

The EUT was placed upon a non-metallic table 0.8 m above the horizontal metal reference plane and placed 40 cm from a vertical ground metal plane which is connected to the horizontal ground metal plane.

### ■ Test not applicable

- ☐ Test area - mesh room
- ☐ Anechoic chamber
- ☐ Full compact chamber

Environmental of test: -

Used test instruments and test accessories please see Attachment B.

Equipment type	Frequency Range [MHz]	Quasi-Peak limit [dB(μV)]	Average limit [dB(μV)]
<input type="checkbox"/> Class A	0.15 to 0.5	97 to 87	84 to 74
	0.5 to 30	87	74
<input type="checkbox"/> Class B	0.15 to 0.5	84 to 74	74 to 64
	0.5 to 30	74	64

Note. 1) The limits decrease linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

## Uncertainty of Measurement

Test Item	Frequency [MHz]	Uncertainty of Measurement	Remark
Conducted Emission (asymmetric mode)	0.15 to 30	ISN: 4.02 dB (Cat. 5)	The reported expanded uncertainty is based on standard uncertainty multiplied by a coverage factor of $k = 2$ . Providing a level of confidence of approximately 95 %.
		ISN: 4.20 dB (Cat. 6)	
		CDN: 3.90 dB	

☐ Pass

☐ Fail

Minimum limit margin dB at MHz

Maximum limit exceeding dB at MHz

Remarks: The EUT does not have a telecommunication ports.

Therefore this test was not applied.

## Conducted Emission (differential voltage) Test

Interference voltage at the antenna terminal of receivers was performed in frequency range 30 MHz to 2 150 MHz with a bandwidth of 120 kHz (1 MHz for measurement above 1 GHz) and return leads of the EUT according to the methods defined in EN 55032.

### ■ Test not applicable

- ☐ Test area - mesh room
- ☐ Anechoic chamber
- ☐ Full compact chamber

Environmental of test: -

Used test instruments and test accessories please see Attachment B.

Equipment type	Source	Frequency Range [MHz]	Quasi-Peak limit [dB(μV)] 75 Ω
<input type="checkbox"/> Television receivers (analogue or digital), video recorders and PC TV broadcast receiver tuner cards working in channels between 30 MHz and 1 GHz, and digital audio receivers	Local oscillator	30 to 950	Fundamental 46
		950 to 2 150	Fundamental 54
	Other	30 to 950	Harmonics 46
		950 to 2 150	Harmonics 54
		30 to 2 150	46
<input type="checkbox"/> Tuner units (not the LNB) for satellite signal reception	Local oscillator	950 to 2 150	Fundamental 54
	Other	950 to 2 150	Harmonics 54
		950 to 2 150	46
<input type="checkbox"/> Frequency modulation audio receivers and PC tuner cards	Local oscillator	30 to 1 000	Fundamental 54
		30 to 300	Harmonics 50
		300 to 1 000	Harmonics 52
	Other	30 to 1 000	46
<input type="checkbox"/> Frequency modulation car radios	Local oscillator	30 to 1 000	Fundamental 66
		30 to 300	Harmonics 59
		300 to 1 000	Harmonics 52
	Other	30 to 1 000	46
<input type="checkbox"/> EUTs with RF modulator output ports (for example DVD equipment, video recorders, camcorders and decoders etc.) designed to connect to TV broadcast receiver tuner ports	Wanted signal		Carrier frequencies and sidebands 76
		30 to 950	Harmonics 46
	Other	950 to 2 150	Harmonics 54
		30 to 2 150	46

### Uncertainty of Measurement (ANT)

Test Item	Frequency [MHz]	Uncertainty of Measurement	Remark
Conducted Emission (differential voltage)	30 to 2 150	1.28 dB	The reported expanded uncertainty is based on standard uncertainty multiplied by a coverage factor of $k = 2$ . Providing a level of confidence of approximately 95 %.

☐ Pass

☐ Fail

Minimum limit margin dB at MHz

Maximum limit exceeding dB at MHz

Remarks:

## Radiated Emission (Electric Field) Test (Below 1 GHz)

Radiated emissions from 30 MHz to 1 000 MHz were measured with a bandwidth of 120 kHz according to the methods defined in EN 55032. The EUT was placed on a non-metallic stand in the open-field site, 0.8 m above the ground plane. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions.

☐ Test not applicable

■ Test area - open site.

Testing was performed at a test distance of:

☐ 3 m

■ 10 m

Environmental of test: (22.8 ± 0.5) °C, (70 ± 2) % R.H., (100.7 ± 0.0) kPa

Used test instruments and test accessories please see Attachment B.

Equipment type	Frequency Range [MHz]	Quasi-Peak limit [dB(μV/m)]
<input type="checkbox"/> Class A	30 to 230	40
	230 to 1 000	47
■ Class B	30 to 230	30
	230 to 1 000	37

### Uncertainty of Measurement

Test Item	Frequency [MHz]	Polarization	@ m	Uncertainty of Measurement	Remark
Radiated Emission (Below 1 GHz)	30 to 200	H	10	4.94 dB	The reported expanded uncertainty is based on standard uncertainty multiplied by a coverage factor of $k = 2$ . Providing a level of confidence of approximately 95 %.
	30 to 200	V	10	5.06 dB	
	200 to 1 000	H	10	4.54 dB	
	200 to 1 000	V	10	5.06 dB	

■ Pass

☐ Fail

Minimum limit margin 4.58 dB at 167.58 MHz

Maximum limit exceeding dB at MHz

Remarks: Please refer to the test data and graph in Attachment A.



## Radiated Emission (Electric Field) Test (Above 1 GHz)

Radiated emissions from 1 000 MHz to 6 000 MHz were measured with a bandwidth of 1 MHz according to the methods defines in EN 55032. The EUT was placed on a non-metallic stand in the ETL SVSWR Chamber, 0.8 m above the ground plane. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions.

☐ Test not applicable

■ Test area - ETL SVSWR Chamber

Testing was performed at a test distance of:

■ 3 m

Environmental of test: (22.8 ± 0.1) °C, (46 ± 0) % R.H., (100.6 ± 0.0) kPa

Used test instruments and test accessories please see Attachment B.

Equipment type	Frequency Range [MHz]	Peak limit [dB(μV/m)]	Average limit [dB(μV/m)]
<input type="checkbox"/> Class A	1 000 to 3 000	76	56
	3 000 to 6 000	80	60
■ Class B	1 000 to 3 000	70	50
	3 000 to 6 000	74	54

NOTE: The lower limit applies at the transition frequency.

## Uncertainty of Measurement

Test Item	Frequency [MHz]	@ m	Uncertainty of Measurement	Remark
Radiated Emission (Above 1 GHz)	1 000 to 6 000	3	5.94 dB	The reported expanded uncertainty is based on standard uncertainty multiplied by a coverage factor of $k = 2$ . Providing a level of confidence of approximately 95 %.

■ Pass

☐ Fail

Minimum limit margin 4.30 dB at 1 484.80 MHz

Maximum limit exceeding dB at MHz

Remarks: Please refer to the test data and graph in Attachment A.

## Harmonic Current Emissions and Flicker

Power Frequency Harmonics Tests: The measured values of the harmonics components of the input current, including line current and neutral current, shall be compared with the limits given in EN 61000-3-2.

Flicker Emission Tests: The total impedance of the test circuit, excluding the appliance under test, but including the internal impedance of the supply source, shall be equal to the reference impedance.

☒ **Test not applicable**

- ☐ Test area - ETL Harmonics test room
- ☐ Anechoic chamber
- ☐ Full compact chamber

Environmental of test: -

**Used test instruments and test accessories please see Attachment B.**

☐ **Pass**

☐ **Fail**

Remarks: This test was not applied. Because, EUT power supplies from a DC 5 V of host computer  
USB port.

## Electrostatic Discharge (ESD) Immunity Test

Tests were conducted in accordance with IEC 61000-4-2.

The test programs and software shall be chosen so as to exercise all normal modes of operation of the EUT. The use of special exercising software is encouraged, but permitted only where it can be shown that the EUT is being comprehensively exercised.

☐ Test not applicable

■ ETL test room

Environmental of test: (23.0 ± 0.0) °C, (48 ± 0) % R.H., (100.8 ± 0.0) kPa

Used test instruments and test accessories please see Attachment B.

### Test specifications:

<u>Discharge Voltage (Air):</u>	■ 2.0 kV	■ 4.0 kV
	■ 6.0 kV	■ 8.0 kV
<u>Discharge Voltage (Contact):</u>	■ 2.0 kV	■ 4.0 kV
<u>Discharge Impedance:</u>	■ 330 Ω/150 pF	
<u>Discharge Repetition Rate:</u>	■ 1 s	
<u>Number of Discharges:</u>	■ 10 at Air discharge	■ 25 at Contact discharge
<u>Kind of Discharges:</u>	■ Air discharge	
	■ Contact discharge	
<u>Polarity:</u>	■ Positive	■ Negative
<u>Location of Discharge:</u>	■ See Photograph (ESD Point map)	
	■ Each location on the surface touchable by hand	
	■ HCP, VCP	

Required performance criterion: B

Test results: PASS (Met criterion A)

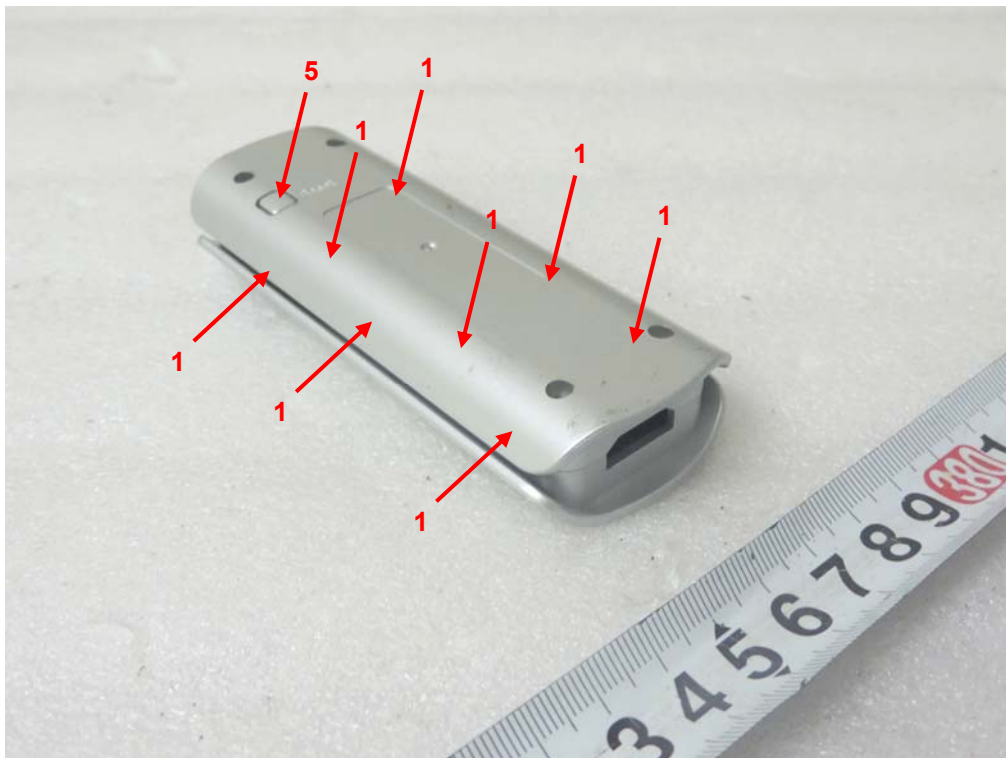
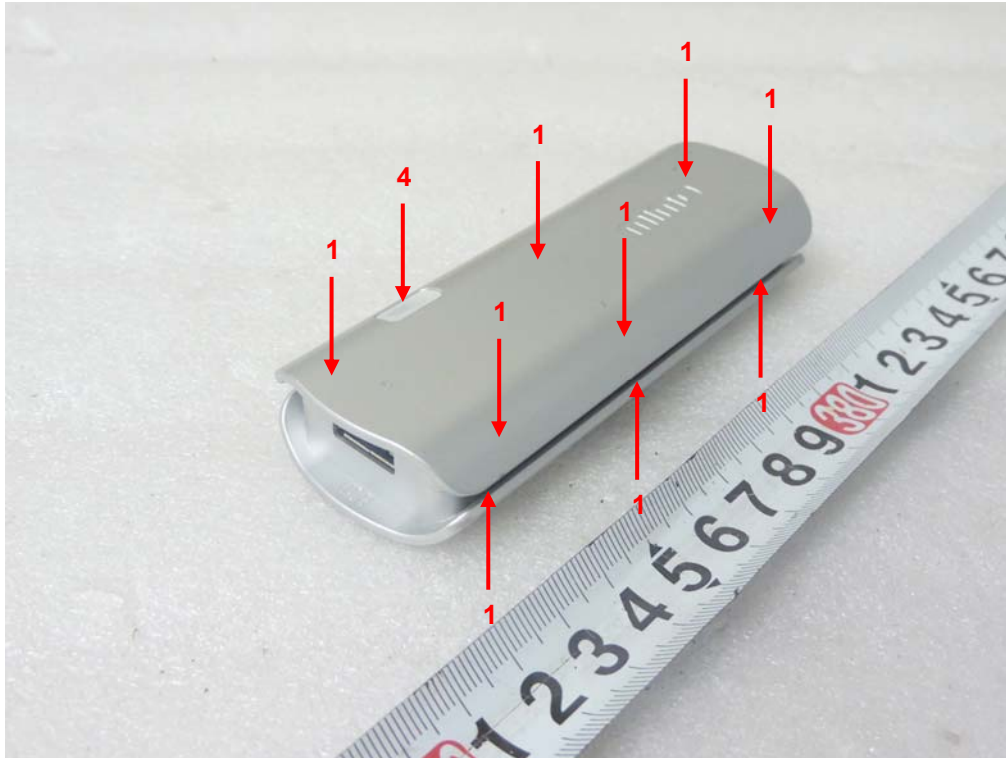
Remarks: No false or other malfunctions were observed during and after the test.

Please refer to the test point map in next page.

## Test data

Test Point	Discharge Type	Discharge voltage [± kV]	Result
HCP, VCP	Indirect	2 / 4	Met criterion A
1. Non-metal case	Air	2 / 4 / 6 / 8	Met criterion A
2. USB port	Contact	2 / 4	Met criterion A
3. Around HDMI port	Air	2 / 4 / 6 / 8	Met criterion A
4. LED indicator	Air	2 / 4 / 6 / 8	Met criterion A
5. Button	Air	2 / 4 / 6 / 8	Met criterion A

CONTACT  AIR 



CONTACT  AIR 



## Radiated Electromagnetic Fields Immunity Test

Tests were conducted in accordance with IEC 61000-4-3 over the frequency range of 80 MHz to 1 000 MHz. The transmitting antenna was located 3 m from the EUT at a height of 0.8 m above the floor. Front, sides and back of the EUT were exposed to a uniform field of 3 V/m using both horizontal and vertical antenna polarizations.

☐ Test not applicable

- ☒ ETL immunity chamber  
☐ Full compact chamber

Environmental of test: (22.9 ± 0.2) °C, (47 ± 1) % R.H., (100.8 ± 0.0) kPa

Used test instruments and test accessories please see Attachment B.

### Test specifications:

<u>Frequency Range:</u>	■ 80 MHz - 1 000 MHz	
<u>Field Strength:</u>	■ 3 V/m	
<u>Distance Antenna - EUT:</u>	■ 3 m	
<u>Modulation:</u>	■ AM 1 kHz 80 %	
<u>Step / Dwell Time:</u>	■ 1 %/1 s	
<u>Polarization of Antenna:</u>	■ Horizontal	■ Vertical
<u>Position of EUT:</u>	■ 0°	■ 90°
	■ 180°	■ 270°

Required performance criterion: A

Test result: PASS (Met criterion A)

### Test data

Frequency Range [MHz]	Antenna Polarity	Position [Angle]	Result
80 - 1 000	Vertical	Front / Rear / Right / Left	Met criterion A
80 - 1 000	Horizontal	Front / Rear / Right / Left	Met criterion A

Remarks: No false or other malfunctions were observed during and after the test.

## EFT/Burst Immunity Test

Tests were conducted in accordance with IEC 61000-4-4.

☐ Test not applicable

■ ETL test room

Environmental of test: (22.8 ± 0.0) °C, (46 ± 0) % R.H., (100.5 ± 0.0) kPa

Used test instruments and test accessories please see Attachment B.

### Test specifications:

Pulse Amplitude - AC Power Port: ■ 1.0 kV  
Pulse Amplitude - DC Power Port: □ 0.5 kV  
Signal and Telecommunication Ports: □ 0.5 kV  
Burst Frequency: ■ 5.0 kHz  
Time of Coupling: ■ 60 s  
Polarity: ■ Positive ■ Negative

### Location of Coupling

	Name of lines	Type	Length	Remarks
■	AC Power line	3-pins	0.5 m	

Required performance criterion: B

Test result: PASS (Met criterion A)

### Test data

Line	Line for test	Test level [± kV]	Coupling Method	Result
AC-mains	L + N + PE	1.0	CDN	Met criterion A

Remarks: No false or other malfunctions were observed during and after the test.

\* This test was tested at main host computer (EUT was connected USB port of the host computer).



## Surge Immunity Test

Tests were conducted in accordance with IEC 61000-4-5.

☐ **Test not applicable**

- ETL test room

Environmental of test:  $(22.9 \pm 0.1) ^\circ\text{C}$ ,  $(45 \pm 1) \% \text{ R.H.}$ ,  $(100.5 \pm 0.0) \text{ kPa}$

**Used test instruments and test accessories please see Attachment B.**

**Test specifications:**

Pulse Amplitude - AC Power Port: ■ 1.0 kV ■ 2.0 kV

Pulse Amplitude - DC Power Port: ☐ 0.5 kV

Signal and Telecommunication Ports: ☐ 1.0 kV ☐ 4.0 kV

Coupling Impedance: ☒  $2\ \Omega + 18\ \mu\text{F}$  ☐  $12\ \Omega + 9\ \mu\text{F}$

Number of Surges: ■ 5 surges/angle

Angle: ☐ 0° ☐ 90°

■ 180°                      ■ 270°

Repetition Rate: ■ 30 s

Polarity: ■ Positive ■ Negative

### Location of Coupling

	Name of lines	Type	Length	Remarks
■	AC Power line	3-pins	0.5 m	

**Required performance criterion: B**

**Test result:** **PASS (Met criterion A)**

## Test data

Line	Line for test	Test level [± kV]	Coupling Method	Result
AC-mains	L - N	1.0	CDN	Met criterion A
AC-mains	L - PE/N - PE	2.0	CDN	Met criterion A

Remarks: No false or other malfunctions were observed during and after the test.

\* This test was tested at main host computer (EUT was connected USB port of the host computer).

## Conducted Disturbance Immunity Test

Tests were conducted in accordance with IEC 61000-4-6 over the frequency range of 150 kHz to 80 MHz.

☐ Test not applicable

■ ETL test room

Environmental of test: (23.0 ± 0.1) °C, (47 ± 0) % R.H., (100.8 ± 0.0) kPa

**Used test instruments and test accessories please see Attachment B.**

### Test specifications:

Frequency Range: ■ 0.15 MHz - 80 MHz

Voltage Level (EMF): ■ 3 V

Modulation: ■ AM 1 kHz 80 %

☐ Pulse 1 Hz

Step / Dwell Time: ■ 1 %/1 s

### Location of Coupling

	Name of lines	Type	Length	Remarks
■	AC Power line	3-pins	0.3 m	

Required performance criterion: A

Test result: **PASS (Met criterion A)**

### Test data

Frequency Range [MHz]	Line for test	Test level [V]	Coupling Method	Result
0.15 - 80	AC-mains	3	CDN	Met criterion A

Remarks: No false or other malfunctions were observed during and after the test.

\* This test was tested at main host computer (EUT was connected USB port of the host computer).

## RF Frequency Magnetic field Immunity Test

Tests were conducted in accordance with IEC 61000-4-8.

☒ **Test not applicable**

☐ ETL test room

Environmental of test: -

**Used test instruments and test accessories please see Attachment B.**

**Test specifications:**

<u>Frequency Range:</u>	<input type="checkbox"/> 50 Hz
<u>Field level (EMF):</u>	<input type="checkbox"/> 1 A/m
	<input type="checkbox"/> 10 A/m
<u>Short Field (1 s - 3 s):</u>	<input type="checkbox"/> 300 A/m
<u>Duration:</u>	<input type="checkbox"/> 60 s
<u>Axis of Orientation:</u>	<input type="checkbox"/> X-axis <input type="checkbox"/> Y-axis <input type="checkbox"/> Z-axis

**Required performance criterion:** A

**Test result:** N/A

Remarks: The EUT has no any Hall elements, magnetic field sensor, electro-dynamic microphone, etc. Therefore, the Magnetic field not applicable.

## Voltage Dips, Interruptions & Variations Immunity Test

Voltage variations tests were conducted in accordance with IEC 61000-4-11.

☐ Test not applicable

■ ETL test room

Environmental of test: (22.7 ± 0.0) °C, (46 ± 0) % R.H., (100.5 ± 0.0) kPa

Used test instruments and test accessories please see Attachment B.

### Test specifications:

Nominal Mains Voltage ( $V_{NOM}$ ):

■ 230 Vac

Level of Reduction (dip):

■ 0.5 Period at > 95 % of  $V_{NOM}$

■ 25 Period at 30 % of  $V_{NOM}$

Duration of Interruption:

■ 250 Period at > 95 % of  $V_{NOM}$

Voltage Fluctuation:

☐  $V_{NOM} + 10\%$

☐  $V_{NOM} - 10\%$

**Required performance criterion:**

0.5 Period at > 95 % of  $V_{NOM}$

**B**(Voltage dips)

25 Period at 30 % of  $V_{NOM}$

**C**(Voltage dips)

250 Period at > 95 % of  $V_{NOM}$

**C**(Voltage interruptions)

**Test result:**

**PASS (Met criterion A and C)**

### Test data

Test	Test Level [% of $V_{NOM}$ ]	Period	Result
Voltage dips	> 95	0.5	Met criterion A
Voltage dips	30	25	Met criterion A
Voltage Interruptions	> 95	250	Met criterion C

Remarks: Dips: No false or other malfunctions were observed during and after the test.

During the interruption (> 95 %) test, power off of host computer.

But the EUT normally operated after the host computer power reset and connection.

\* This test put in operation after remove a Notebook computer's battery.

\*\* This test was tested at main host computer (EUT was connected USB port of the host computer).

## Equipment Under Test (EUT) Test Operation Mode:

The equipment under test was operated under the following conditions during testing:

- A vertical moving color bar pattern capture mode and recording mode

## Configuration of the equipment under test:

- See constructional data form in Attachment D - Page D2
- See product information form(s) in Attachment D - Page D3

The following devices and interface cables were connected during the testing:

### Peripheral devices

	Type	Model	Serial No.	Manufacturer
■	Notebook Computer #1	NT500R5W	0ULT91IJB00525E	Samsung Electronics Co., Ltd.
■	Adapter #1 (for Notebook Computer #1)	PA-1400-96	CN60BA4400313A D2VHJAPE553	Liteon Technology Corporation
■	Notebook Computer #2	LGS53	303QCSF568270	LG Electronics Co., Ltd.
■	Adapter #2 (for Notebook Computer #2)	PA-1900-14	L9130B10000916	Lite On Technology (Changzhou) Co., Ltd.

### Type of Cables Used

Device from	Device to	Type of Cable(Port)	Length[m]	Type of shield
EUT	Notebook Computer #1	HDMI	1.50	Shielded
EUT	Notebook Computer #2	USB 3.0	0.16	Shielded
Notebook Computer #1	Adapter #1	DC Input	1.20	Shielded
Notebook Computer #2	Adapter #2	DC Input	1.20	Shielded

## GENERAL REMARKS:

The Equipment Under Test (EUT) is HDMI to USB Capture (model: HCP-1080).

The model HCP-1080 is basic model that tested.

The multiple models HCP-1080-A, HCP-1080-B, HCP-1080-C, HCP-1080-D, HCP-1080-E, HCP-1080-F and HCP-1080-G are identical to basic model, except for model designation.

## SUMMARY:

**All tests according to the regulations cited on page 3 were**

☒ Performed

☐ Not Performed

### Criterion description

Criterion A: No loss of performance or function

Criterion B: The apparatus shall continue operate as intended after test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

Criterion C: Temporary loss of function or performance, which is provided the function, is self-recoverable or can be restored by the operation of the controls.

### The Equipment Under Test

☒ - **Fulfills** the general approval requirements cited on page 3.

☐ - **Does not** fulfill the general approval requirements cited on page 3.

Date of receipt of test sample: June 04, 2018

Test start date: June 14, 2018

Test end date: June 20, 2018

Photograph of test setup: Conducted Emissions (AC mains power ports) 150 kHz - 30 MHz



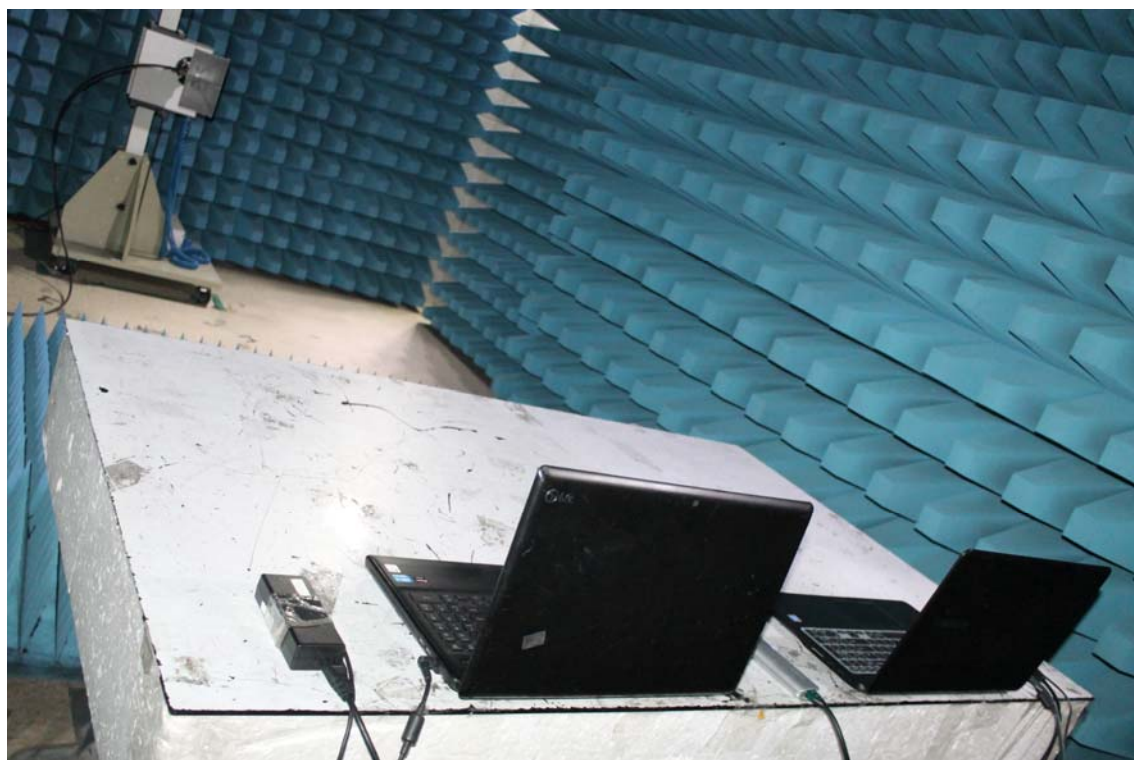
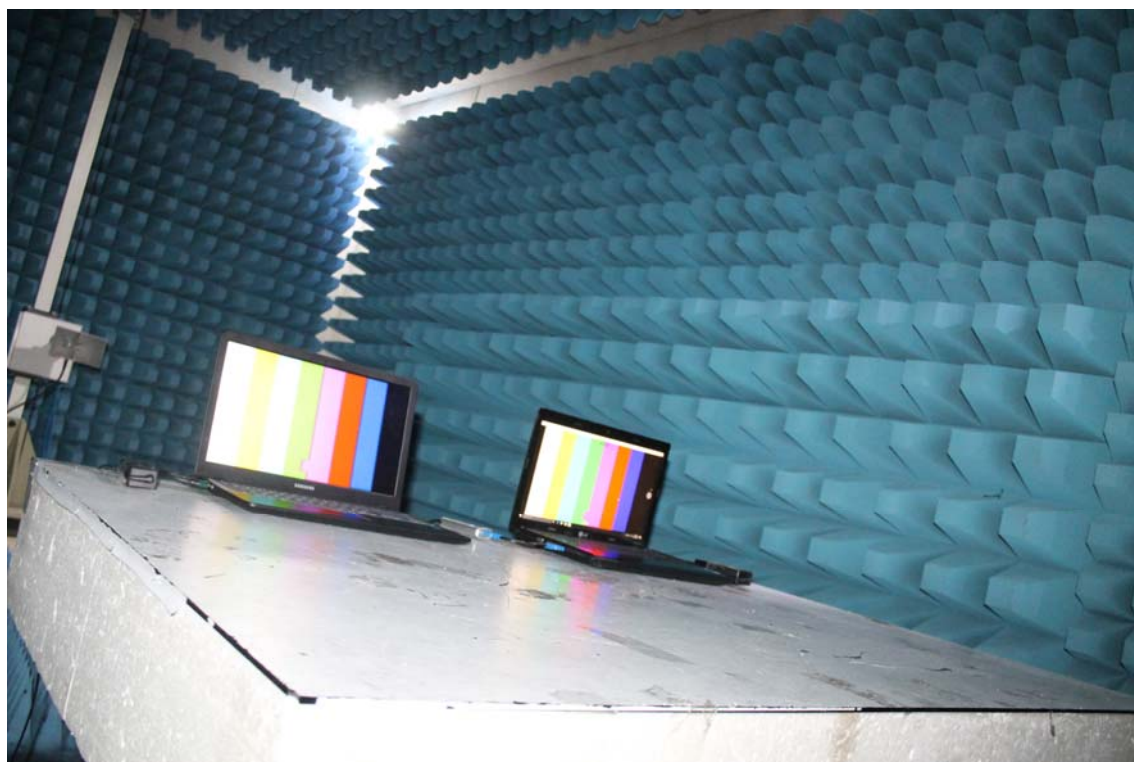


Photograph of test setup: Radiated Emissions 30 MHz - 1 000 MHz





Photograph of test setup: Radiated Emissions 1 000 MHz - 6 000 MHz



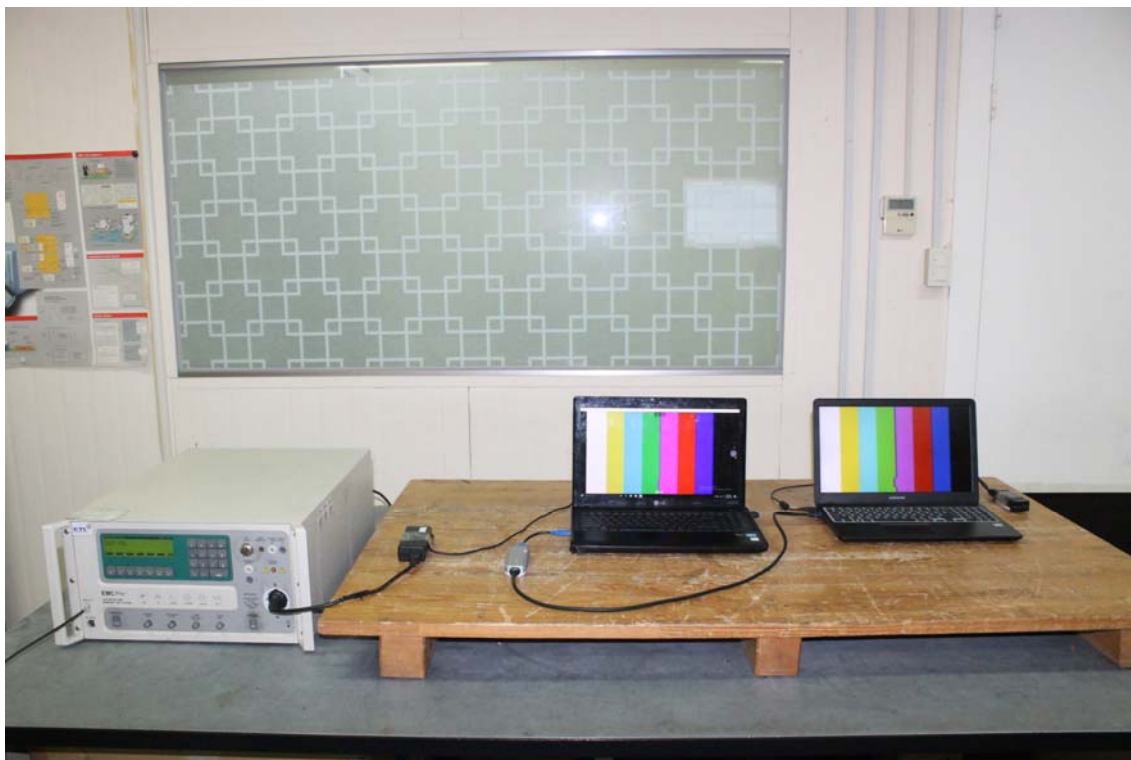
Photograph of test setup: Electrostatic discharge (ESD)



Photograph of test setup: Radiated electromagnetic field

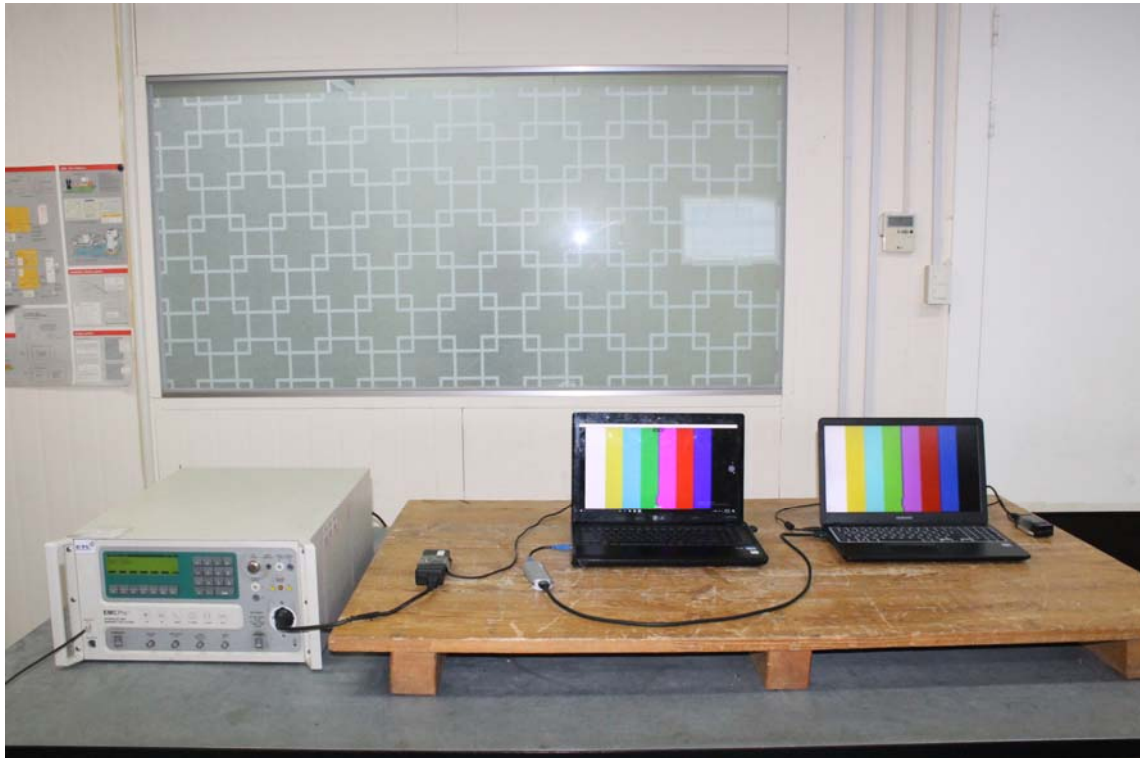


Photograph of test setup: EFT/Burst

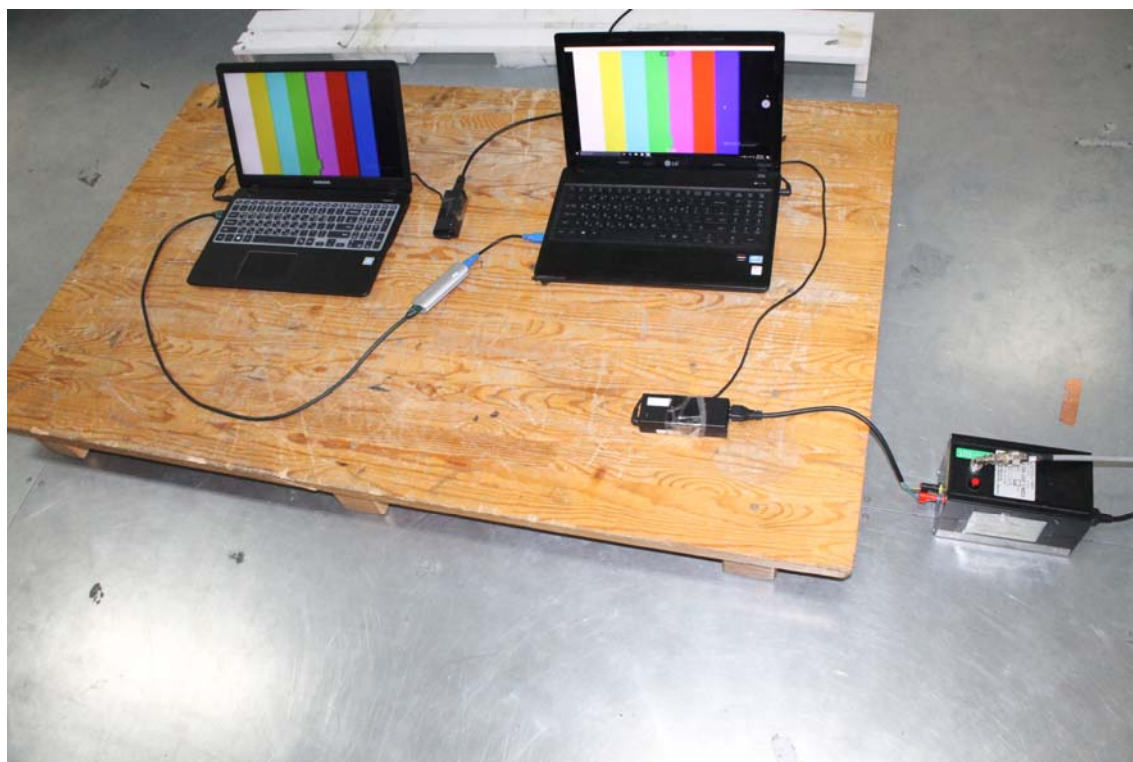




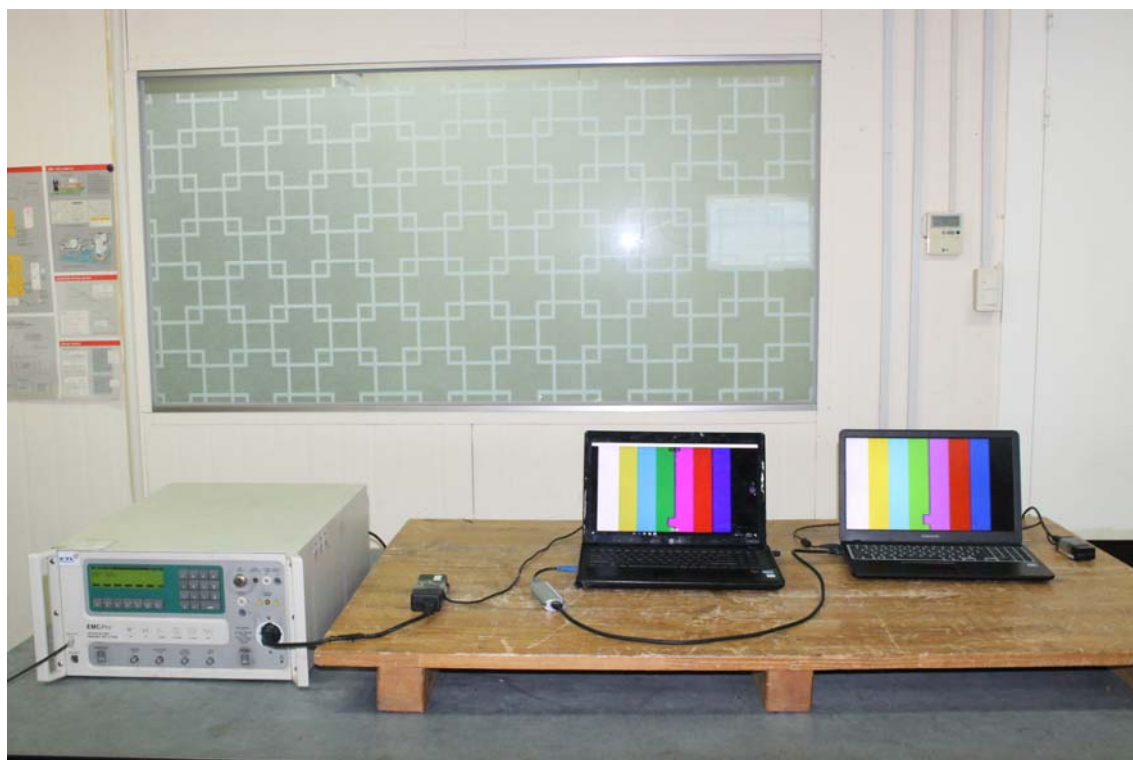
Photograph of test setup: Surge



Photograph of test setup: Conducted disturbance



Photograph of test setup: Voltage dips & interruptions



## Attachment A

Test Data  
and  
Test Setup Drawing(s)



## Conducted Emissions (AC mains power ports) Measurement

EUT	HDMI to USB Capture / HCP-1080 (S/N: N/A)
Limit apply to	EN 55032 Class B
Test Date	June 20, 2018
Environmental of test	(23.1 ± 0.0) °C, (49 ± 0) % R.H., (100.5 ± 0.0) kPa
Operating Condition	A vertical moving color bar pattern capture mode and recording mode
Result	Passed by 5.77 dB

### **Conducted Emission (AC mains power ports) Test Data**

The following data and graph shows the highest levels of conducted emissions on both polarizations of hot and neutral line.

Detector mode: CISPR Quasi-Peak mode (6 dB Bandwidth: 9 kHz)

#### NOTES:

1. Please see the measured data and graph in next page.
2. The Level (Result) value was included the reading, LISN factor and cable loss.
3. Delta (Margin) value = Limit - Level (Result)
4. All conditions were investigated and the worst-case emissions are reported.
5. If the Quasi-Peak limit is met when using a Peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the Quasi-Peak detector receiver is unnecessary.
6. If the average limit is met when using a Quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

## Line Polarity : Hot

ETL EMC Laboratory

### Conducted Emission Test Result

EUT: ETLE180604.0533

Manuf:

Op Cond:

Operator:

Test Spec:

Comment: HOT

Prescan Measurement:

Detectors:

X PK / + AV

Meas Time:

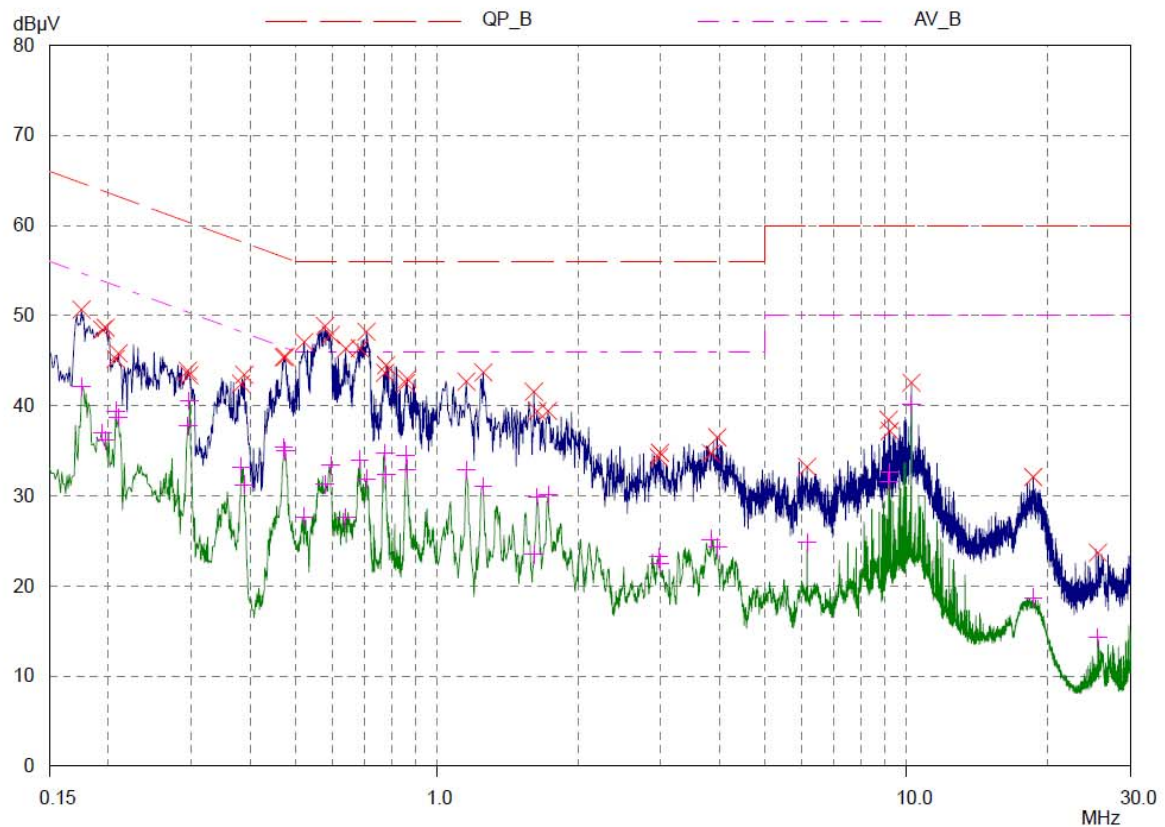
see scan settings

Peaks:

16

Acc Margin:

10 dB



## ETL EMC Laboratory

### Conducted Emission Test Result

EUT: ETLE180604.0533

Manuf:

Op Cond:

Operator:

Test Spec:

Comment: HOT

Prescan Measurement:	Detectors:	X PK / + AV
	Meas Time:	see scan settings
	Peaks:	16
	Acc Margin:	10 dB

#### Peak Search Results

Frequency MHz	PK Level dBμV	PK Limit dBμV	PK Delta dB
0.175	50.66	64.72	14.06
0.194	48.42	63.86	15.44
0.197	48.65	63.74	15.09
0.207	45.19	63.32	18.13
0.21	45.79	63.21	17.42
0.295	43.85	60.38	16.53
0.297	43.36	60.33	16.97
0.383	42.41	58.21	15.80
0.389	43.43	58.09	14.66
0.472	45.36	56.48	11.12
0.476	45.40	56.41	11.01
0.522	47.06	56.00	8.94
0.578	48.83	56.00	7.17
0.594	47.84	56.00	8.16
0.64	46.33	56.00	9.67
0.685	46.37	56.00	9.63
0.708	48.20	56.00	7.80
0.776	43.65	56.00	12.35
0.78	44.49	56.00	11.51
0.859	42.48	56.00	13.52
0.864	42.98	56.00	13.02
1.155	42.68	56.00	13.32
1.255	43.67	56.00	12.33
1.61	41.54	56.00	14.46
1.635	39.38	56.00	16.62
1.725	39.41	56.00	16.59
2.97	34.27	56.00	21.73
2.985	34.77	56.00	21.23
3.835	34.72	56.00	21.28
3.955	36.49	56.00	19.51
6.145	33.20	60.00	26.80
9.165	38.43	60.00	21.57
9.22	37.19	60.00	22.81

\* limit exceeded

Peak Search Results (continued)

Frequency MHz	PK Level dBμV	PK Limit dBμV	PK Delta dB
10.24	42.55	60.00	17.45
18.62	32.06	60.00	27.94
25.55	23.67	60.00	36.33

Frequency MHz	AV Level dBμV	AV Limit dBμV	AV Delta dB
0.175	42.08	54.72	12.64
0.194	36.98	53.86	16.88
0.197	36.15	53.74	17.59
0.207	39.38	53.32	13.94
0.21	38.71	53.21	14.50
0.295	37.75	50.38	12.63
0.297	40.55	50.33	9.78
0.383	33.22	48.21	14.99
0.389	31.22	48.09	16.87
0.472	35.35	46.48	11.13
0.476	34.96	46.41	11.45
0.522	27.67	46.00	18.33
0.578	31.31	46.00	14.69
0.594	33.41	46.00	12.59
0.64	27.56	46.00	18.44
0.685	33.97	46.00	12.03
0.708	31.86	46.00	14.14
0.776	34.75	46.00	11.25
0.78	32.35	46.00	13.65
0.859	34.50	46.00	11.50
0.864	32.96	46.00	13.04
1.155	32.85	46.00	13.15
1.255	31.01	46.00	14.99
1.61	23.49	46.00	22.51
1.635	29.85	46.00	16.15
1.725	30.07	46.00	15.93
2.97	23.26	46.00	22.74
2.985	22.51	46.00	23.49
3.835	25.17	46.00	20.83
3.955	24.31	46.00	21.69
6.145	24.78	50.00	25.22
9.165	31.58	50.00	18.42
9.22	32.60	50.00	17.40
10.24	40.15	50.00	9.85
18.62	18.68	50.00	31.32
25.55	14.27	50.00	35.73

\* limit exceeded

## Line Polarity : Neutral

ETL EMC Laboratory

### Conducted Emission Test Result

EUT: ETLE180604.0533

Manuf:

Op Cond:

Operator:

Test Spec:

Comment: N

Prescan Measurement:

Detectors:

X PK / + AV

Meas Time:

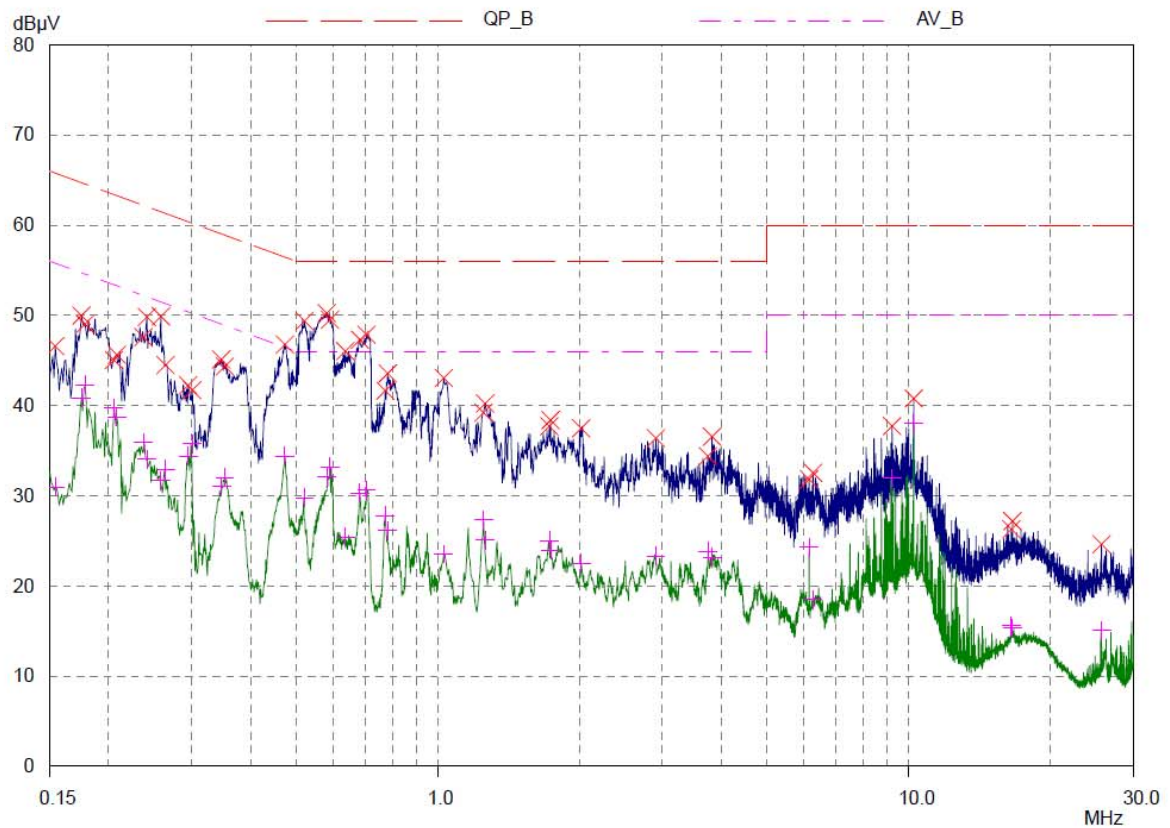
see scan settings

Peaks:

16

Acc Margin:

10 dB



## ETL EMC Laboratory

### Conducted Emission Test Result

EUT: ETLE180604.0533  
 Manuf:  
 Op Cond:  
 Operator:  
 Test Spec:  
 Comment: N

Prescan Measurement: Detectors: X PK / + AV  
 Meas Time: see scan settings  
 Peaks: 16  
 Acc Margin: 10 dB

#### Peak Search Results

Frequency MHz	PK Level dBμV	PK Limit dBμV	PK Delta dB
0.154	46.57	65.78	19.21
0.175	49.97	64.72	14.75
0.178	49.03	64.58	15.55
0.205	45.03	63.41	18.38
0.208	45.62	63.28	17.66
0.237	47.58	62.20	14.62
0.241	49.82	62.06	12.24
0.258	49.89	61.50	11.61
0.264	44.49	61.30	16.81
0.295	42.24	60.38	18.14
0.301	41.70	60.22	18.52
0.347	45.11	59.03	13.92
0.353	44.34	58.89	14.55
0.473	46.77	56.46	9.69
0.521	49.37	56.00	6.63
0.581	50.23	56.00	5.77
0.59	49.52	56.00	6.48
0.636	46.02	56.00	9.98
0.683	47.31	56.00	8.69
0.705	47.86	56.00	8.14
0.773	41.64	56.00	14.36
0.782	43.55	56.00	12.45
1.03	43.05	56.00	12.95
1.25	39.21	56.00	16.79
1.26	40.24	56.00	15.76
1.725	37.68	56.00	18.32
1.735	38.38	56.00	17.62
2.015	37.47	56.00	18.53
2.905	36.36	56.00	19.64
3.745	34.38	56.00	21.62
3.82	36.55	56.00	19.45
6.145	31.82	60.00	28.18
6.26	32.54	60.00	27.46

\* limit exceeded



Peak Search Results (continued)

Frequency MHz	PK Level dBμV	PK Limit dBμV	PK Delta dB
9.22	37.73	60.00	22.27
10.24	40.79	60.00	19.21
16.51	26.29	60.00	33.71
16.61	27.17	60.00	32.83
25.66	24.63	60.00	35.37

Frequency MHz	AV Level dBμV	AV Limit dBμV	AV Delta dB
0.154	30.96	55.78	24.82
0.175	40.82	54.72	13.90
0.178	42.29	54.58	12.29
0.205	39.76	53.41	13.65
0.208	38.72	53.28	14.56
0.237	35.94	52.20	16.26
0.241	34.04	52.06	18.02
0.258	31.70	51.50	19.80
0.264	32.95	51.30	18.35
0.295	34.39	50.38	15.99
0.301	35.77	50.22	14.45
0.347	31.03	49.03	18.00
0.353	32.01	48.89	16.88
0.473	34.38	46.46	12.08
0.521	29.75	46.00	16.25
0.581	32.09	46.00	13.91
0.59	33.21	46.00	12.79
0.636	25.41	46.00	20.59
0.683	30.29	46.00	15.71
0.705	30.61	46.00	15.39
0.773	27.82	46.00	18.18
0.782	26.16	46.00	19.84
1.03	23.54	46.00	22.46
1.25	27.33	46.00	18.67
1.26	25.05	46.00	20.95
1.725	25.01	46.00	20.99
1.735	23.94	46.00	22.06
2.015	22.48	46.00	23.52
2.905	23.32	46.00	22.68
3.745	23.81	46.00	22.19
3.82	23.18	46.00	22.82
6.145	24.29	50.00	25.71
6.26	18.50	50.00	31.50
9.22	31.97	50.00	18.03
10.24	38.07	50.00	11.93
16.51	15.58	50.00	34.42
16.61	15.30	50.00	34.70
25.66	15.03	50.00	34.97

\* limit exceeded

## Radiated Emissions Measurement

- Below 1 GHz

EUT	HDMI to USB Capture / HCP-1080 (S/N: N/A)
Limit apply to	EN 55032 Class B
Test Date	June 17, 2018
Environmental of test	(22.8 ± 0.5) °C, (70 ± 2) % R.H., (100.7 ± 0.0) kPa
Operating Condition	A vertical moving color bar pattern capture mode and recording mode
Result	Passed by 4.58 dB

### Radiated Emission Test Data

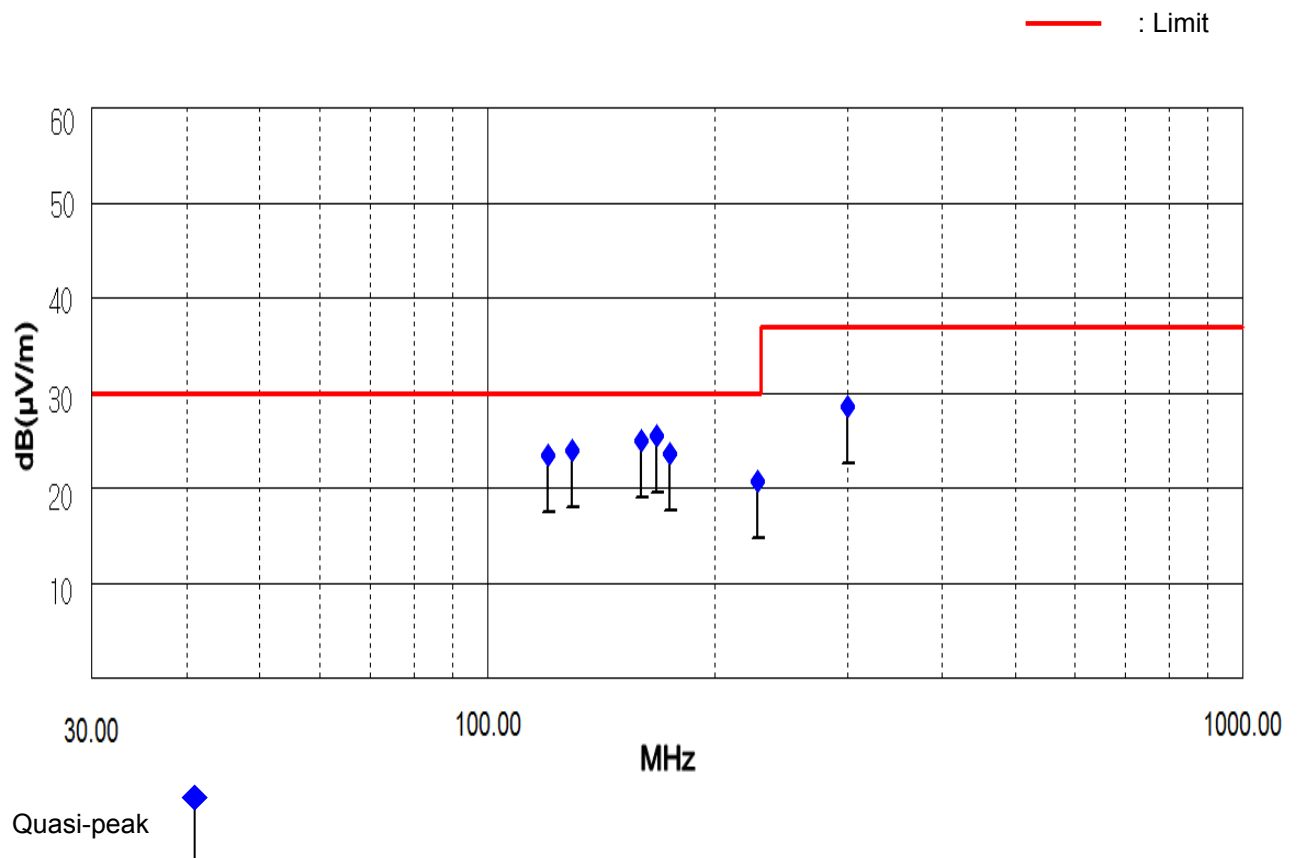
The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.  
Detector mode: CISPR Quasi-Peak mode (6 dB Bandwidth: 120 kHz)

Frequency [MHz]	Reading [dB(μV)]	Polarization (*H/**V)	Ant. Factor [dB/m]	Cable Loss [dB]	Height [cm]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
120.30	45.66	V	9.95	-32.11	111	23.50	30.00	6.50
129.67	47.43	V	8.45	-31.94	124	23.94	30.00	6.06
160.05	48.16	V	8.50	-31.74	116	24.92	30.00	5.08
167.58	48.57	V	8.75	-31.90	121	25.42	30.00	4.58
174.64	46.54	V	8.99	-31.95	135	23.58	30.00	6.42
227.88	40.88	V	11.52	-31.71	128	20.69	30.00	9.31
300.07	47.00	H	13.20	-31.68	254	28.52	37.00	8.48

#### NOTES:

1. \* H : Horizontal polarization , \*\* V : Vertical polarization
2. The cable loss value was included the Amp. Gain.
3. Result Level = Reading + Antenna factor + Cable loss
4. Margin value = Limit - Result
5. The measurement was performed for the frequency range 30 MHz ~ 1 000 MHz according to the EN 55032 Class B





## Radiated Emissions Measurement

- Above 1 GHz

EUT	HDMI to USB Capture / HCP-1080 (S/N: N/A)
Limit apply to	EN 55032 Class B
Test Date	June 14, 2018
Environmental of test	(22.8 ± 0.1) °C, (46 ± 0) % R.H., (100.6 ± 0.0) kPa
Operating Condition	A vertical moving color bar pattern capture mode and recording mode
Result	Passed by 4.30 dB

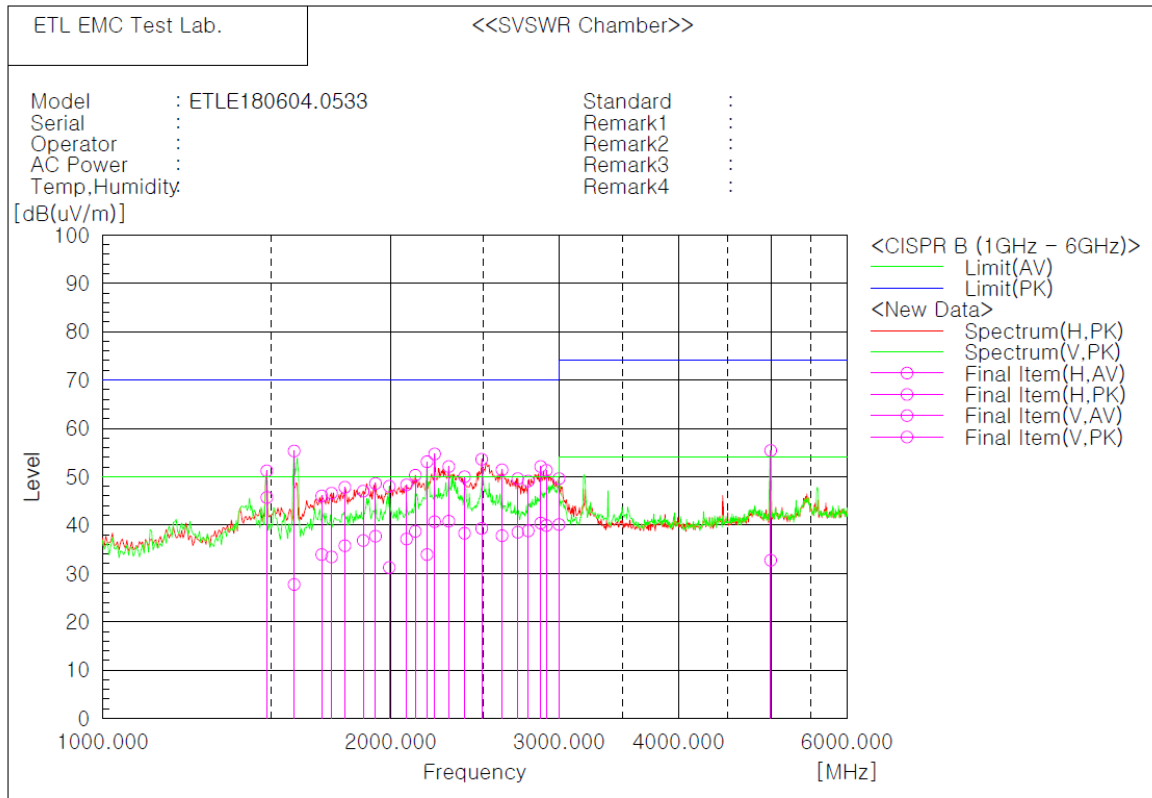
### Radiated Emission Test Data

The following data and graph shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.

Detector mode: CISPR Peak mode, Average mode

#### NOTES:

1. The carrier frequency is excluded from the measurement.
2. Please see the measured data and graph in next page.
3. H : Horizontal polarization , V : Vertical polarization
4. The c.f value was included the antenna factor, cable loss and Amp. Gain.
5. Result value = Reading + c.f
6. Margin value = Limit - Result
7. The measurement was performed for the frequency range 1 GHz ~ 6 GHz according to the EN 55032 Class B



## Final Result

--- Horizontal Polarization (AV) ---						
No.	Frequency [MHz]	Reading [dB(uV)]	c.f. [dB(1/m)]	Result [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	1484.800	61.0	-15.3	45.7	50.0	4.3
2	1694.880	49.5	-15.6	33.9	50.0	16.1
3	1735.280	48.9	-15.5	33.4	50.0	16.6
4	1791.840	50.8	-15.1	35.7	50.0	14.3
5	1872.640	51.2	-14.4	36.8	50.0	13.2
6	1929.200	51.6	-13.9	37.7	50.0	12.3
7	2078.680	48.7	-11.6	37.1	50.0	12.9
8	2123.120	49.3	-10.6	38.7	50.0	11.3
9	2224.120	49.0	-8.3	40.7	50.0	9.3
10	2300.880	48.7	-7.9	40.8	50.0	9.2
11	2389.760	48.1	-9.8	38.3	50.0	11.7
12	2490.760	50.9	-11.6	39.3	50.0	10.7
13	2616.000	49.6	-11.8	37.8	50.0	12.2
14	2717.000	50.1	-11.6	38.5	50.0	11.5
15	2785.680	49.5	-10.7	38.8	50.0	11.2
16	2870.520	51.1	-10.7	40.4	50.0	9.6
17	2910.920	50.8	-10.9	39.9	50.0	10.1
18	2999.800	50.4	-10.3	40.1	50.0	9.9

--- Horizontal Polarization (PK) ---						
No.	Frequency [MHz]	Reading [dB(uV)]	c.f. [dB(1/m)]	Result [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
1	1484.800	66.5	-15.3	51.2	70.0	18.8
2	1694.880	61.6	-15.6	46.0	70.0	24.0
3	1735.280	62.1	-15.5	46.6	70.0	23.4
4	1791.840	62.9	-15.1	47.8	70.0	22.2
5	1872.640	61.4	-14.4	47.0	70.0	23.0
6	1929.200	62.5	-13.9	48.6	70.0	21.4
7	2078.680	59.9	-11.6	48.3	70.0	21.7
8	2123.120	60.9	-10.6	50.3	70.0	19.7

## Final Result

### --- Horizontal Polarization (PK)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
9	2224.120	63.0	-8.3	54.7	70.0	15.3
10	2300.880	60.0	-7.9	52.1	70.0	17.9
11	2389.760	59.8	-9.8	50.0	70.0	20.0
12	2490.760	65.2	-11.6	53.6	70.0	16.4
13	2616.000	63.2	-11.8	51.4	70.0	18.6
14	2717.000	61.2	-11.6	49.6	70.0	20.4
15	2785.680	59.8	-10.7	49.1	70.0	20.9
16	2870.520	62.8	-10.7	52.1	70.0	17.9
17	2910.920	62.2	-10.9	51.3	70.0	18.7
18	2999.800	59.9	-10.3	49.6	70.0	20.4

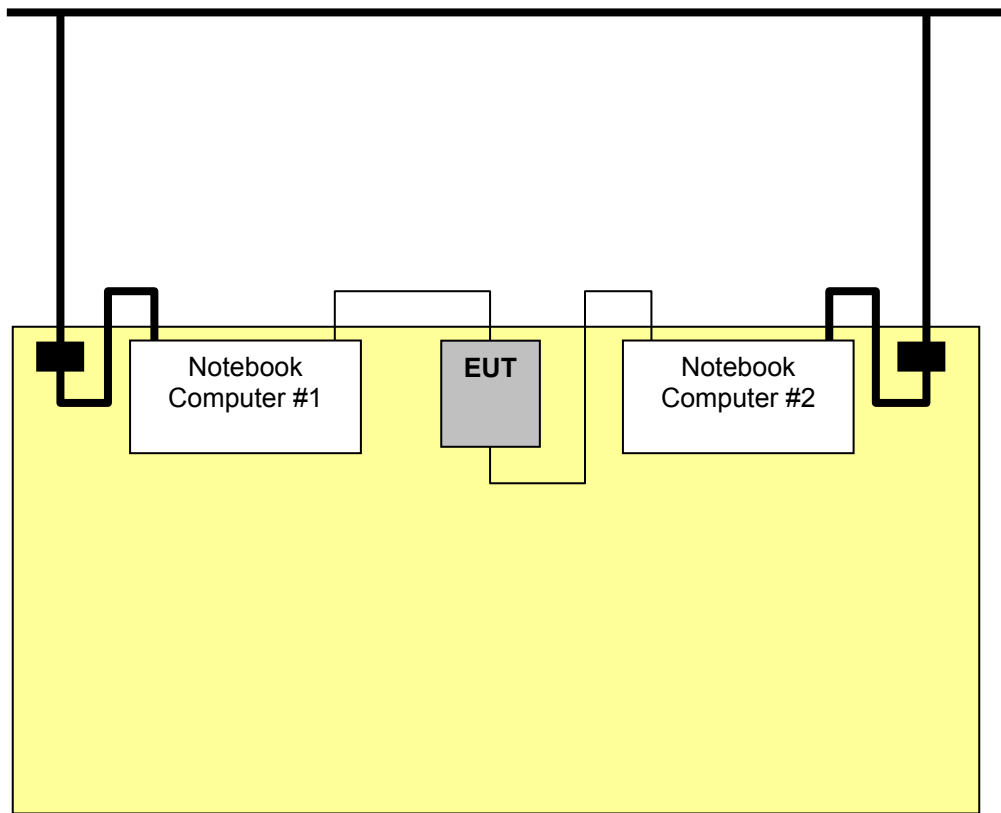
### --- Vertical Polarization (AV)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
1	1585.800	43.1	-15.4	27.7	50.0	22.3
2	1993.840	44.0	-12.8	31.2	50.0	18.8
3	2183.720	43.2	-9.3	33.9	50.0	16.1
4	4993.740	38.4	-5.7	32.7	54.0	21.3

### --- Vertical Polarization (PK)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]
1	1585.800	70.7	-15.4	55.3	70.0	14.7
2	1993.840	60.8	-12.8	48.0	70.0	22.0
3	2183.720	62.4	-9.3	53.1	70.0	16.9
4	4993.740	61.1	-5.7	55.4	74.0	18.6

The setup drawing(s)



— : Data Line  
— : Power Line  
■ : Adapter

## Attachment B

### List of Test Equipment

## Emission Test Equipments

	Description	Model Number	Manufacturer	Serial Number	Cal. Date	Cal. Due Date
■	EMI Test Receiver	ESPI3	R&S	100478	17.08.31	18.08.31
■	EMI Test Receiver	ESCS30	R&S	100087	18.03.12	19.03.12
■	EMI Test Receiver	ESCI7	R&S	100851	17.08.31	18.08.31
■	Two-Line V-Network	ENV216	R&S	102055	18.03.12	19.03.12
■	Two-Line V-Network	ENV216	R&S	101715	18.03.12	19.03.12
■	Amplifier	BLWA 0310-1	BONN Elektronik	045672	18.01.31	19.01.31
■	Horn Antenna	BBHA 9120D	Schwarzbeck	826	18.01.30	19.01.30
■	Amplifier	TK-PA18	TESTEK.	120020	17.09.01	18.09.01
■	Bi-Log Antenna	VULB9163	Schwarzbeck	01069	17.03.10	19.03.10
■	Turn-Table	TT 1.35 SI	SES	-	N/A	N/A
■	Antenna Master	AM 4.5	SES	-	N/A	N/A
■	Turn-Table	DS1200-S	Innco Systems GmbH	2740311	N/A	N/A
■	Antenna Master	MA4000	AUDIX	-	N/A	N/A



## Immunity Test Equipments

	Description	Model Number	Manufacturer	Serial Number	Cal. Date	Cal. Due Date
■	Electrostatic Discharge Simulator & ESD Gun	ESS-2002 & TC-815R	NOISEKEN	ESS0827924 & ESS0827983	17.09.06	18.09.06
■	Hybrid Log Periodic Antenna	HLP-2603	EMC Automation	030004	N/A	N/A
■	Signal Generator	SMT 03	R&S	836170/029	17.08.31	18.08.31
■	Signal Generator	SMT 03	R&S	836170/030	17.08.31	18.08.31
■	Amplifier	250W1000BM3	Amplifier Research	0347785	N/A	N/A
■	Field Monitoring Controller	SI-300	EMC Automation	20700	N/A	N/A
■	Power Meter	437B	H.P.	3125U24502	17.09.01	18.09.01
■	RF Power Meter	4232A	Boonton	42001	18.03.13	19.03.13
■	Power Sensor	8482A	H.P.	2652A17488	17.09.01	18.09.01
■	Power Sensor	51011	Boonton	31620	18.03.12	19.03.12
■	Dual Directional Coupler	DC6180A	Amplifier Research	0347436	17.08.31	18.08.31
■	Dual Directional Coupler	C3653	Werlatone	7825	18.03.13	19.03.13
■	Switch Module	RSM-02	EMC Automation	20002	N/A	N/A
■	EMC Generator	EMC Pro	KeyTek	0208259	18.03.12	19.03.12
■	Amplifier	AR75A250	Amplifier Research	27568	N/A	N/A
■	CDN	L-801 M2/M3	LE-F AG	2963	17.08.31	18.08.31
■	Attenuator 10 dB	40-10-33	Weinschel	PY709	18.03.12	19.03.12

## Attachment C

Constructional Photographs  
of  
Equipment Under Test (EUT)

## View of front



## View of rear



## View of USB port



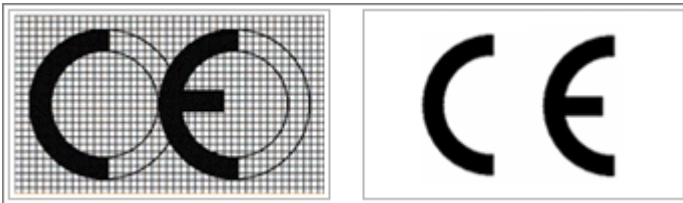
## View of HDMI port



## View of reset button



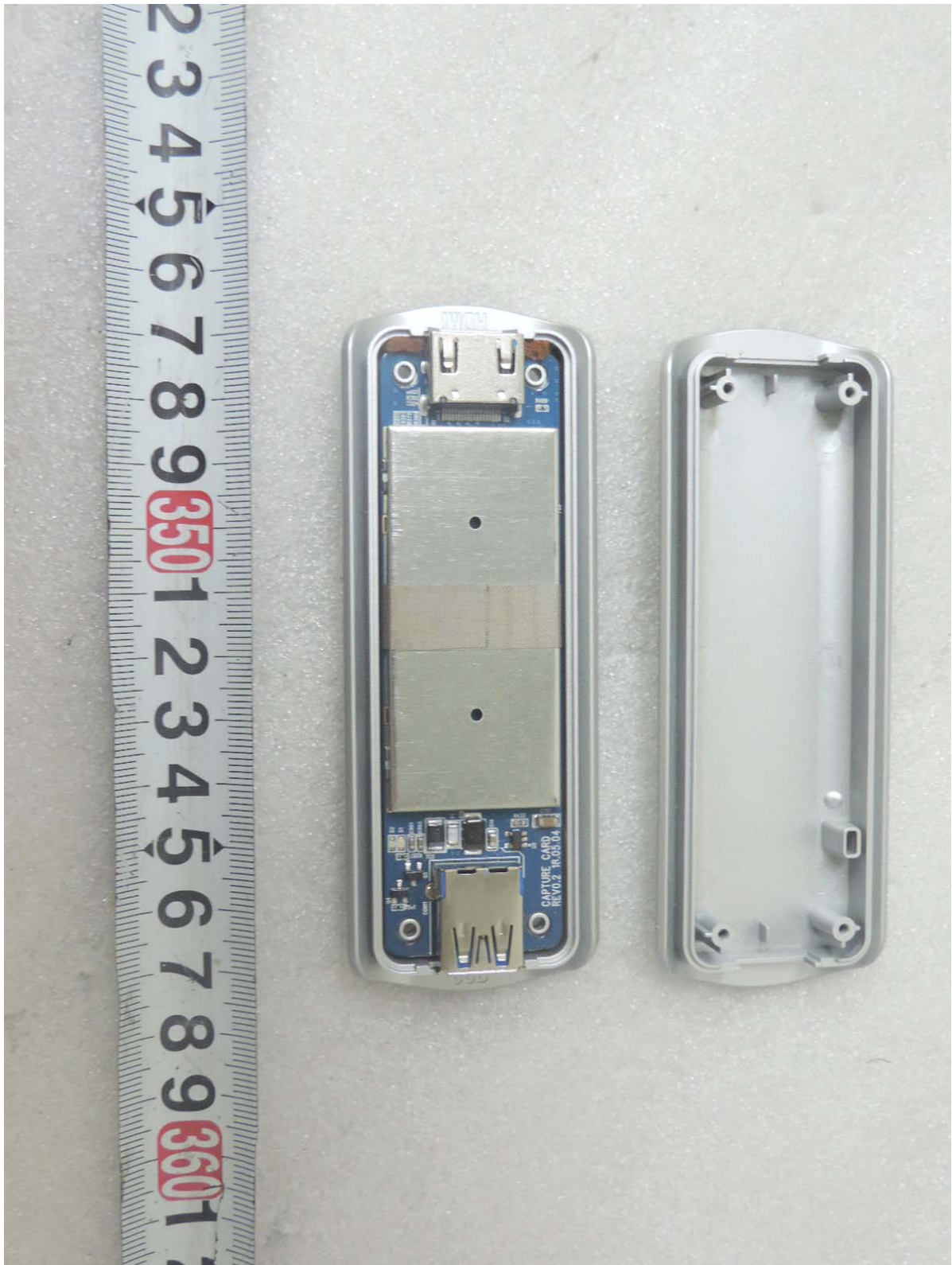
## CE Marking Information



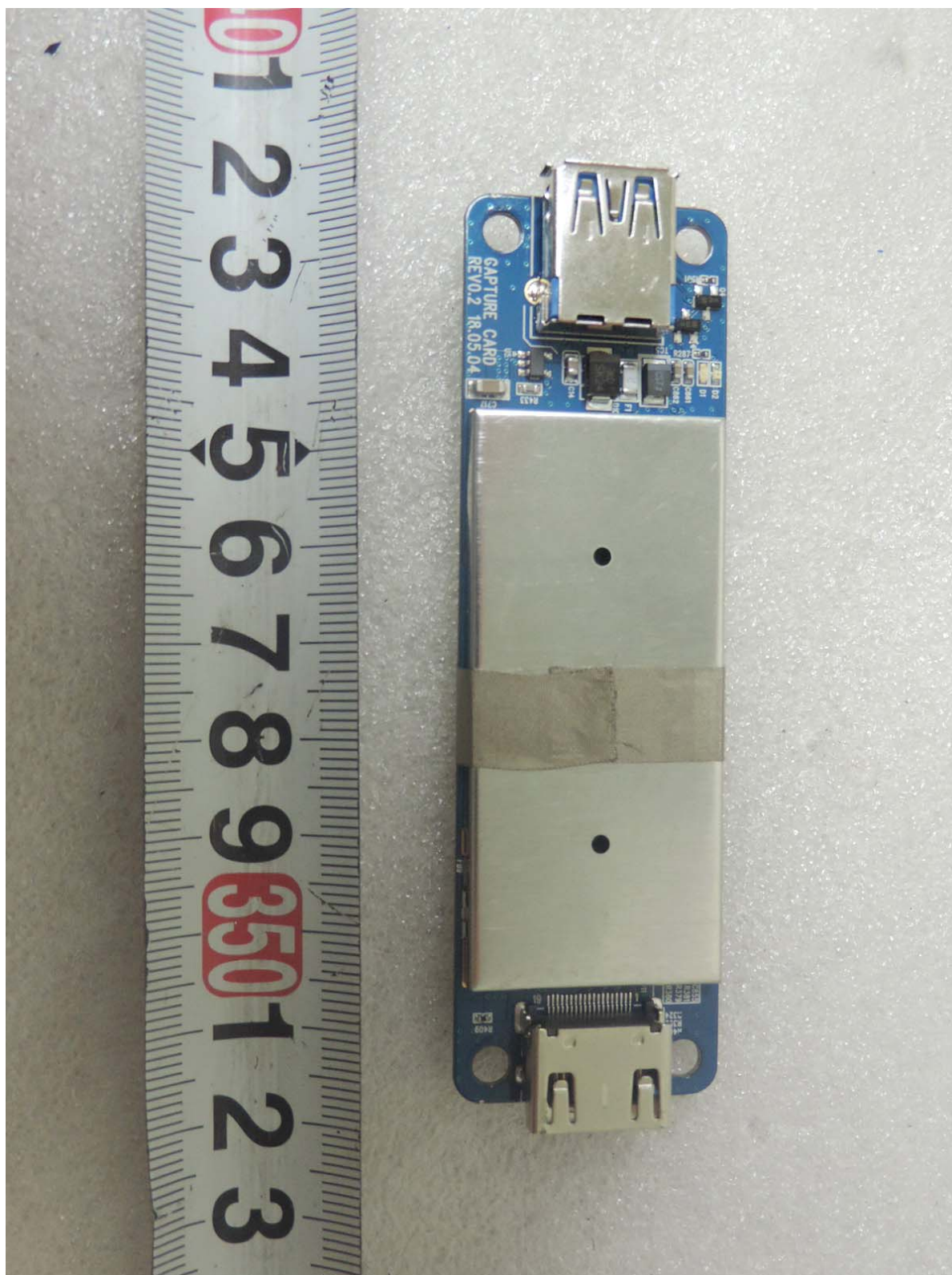
Note. If the 'CE' marking is reduced or enlarged the proportions given in the above graduated drawing must be respected.



## View of inside

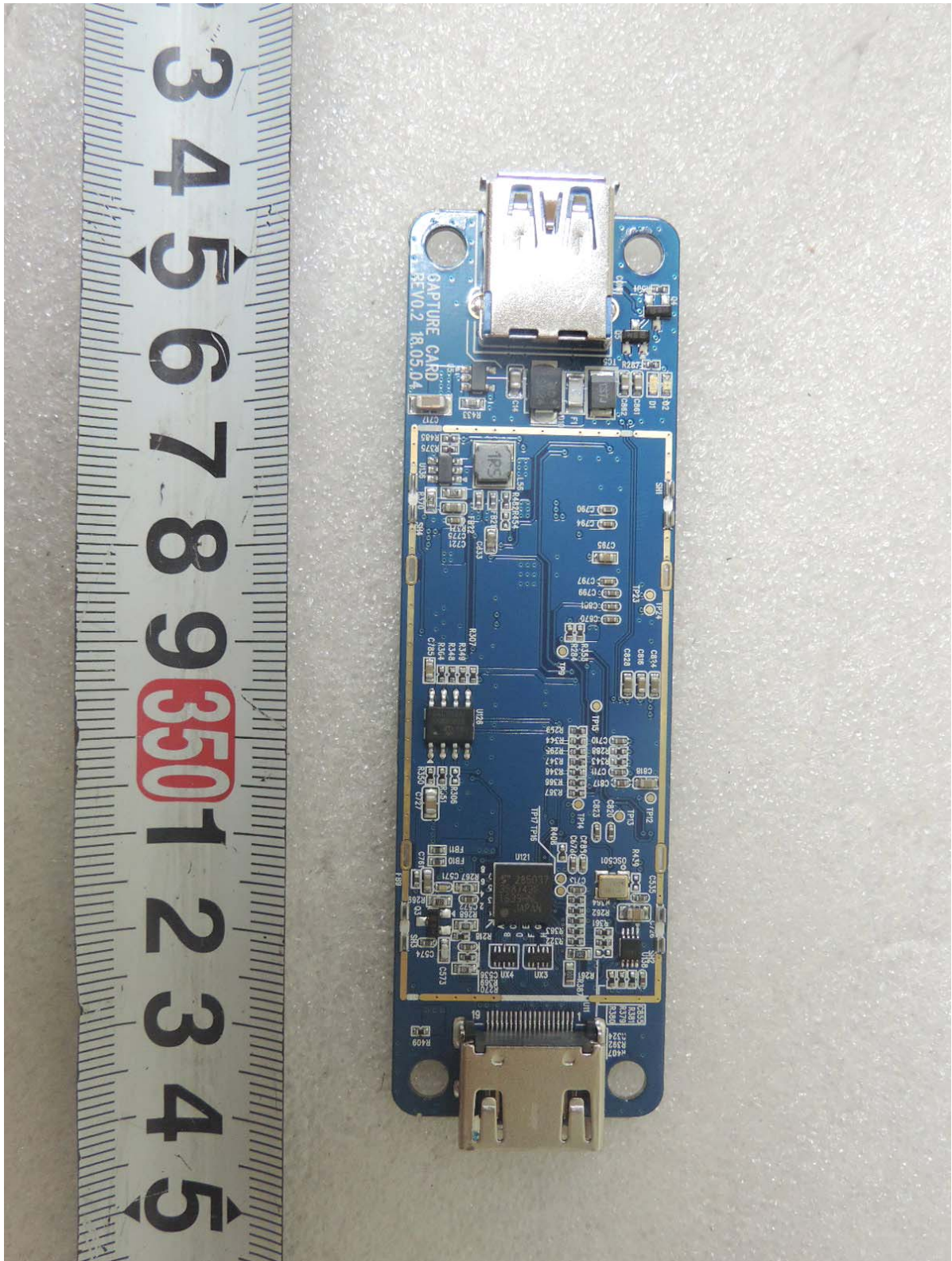


## Top side view of main board



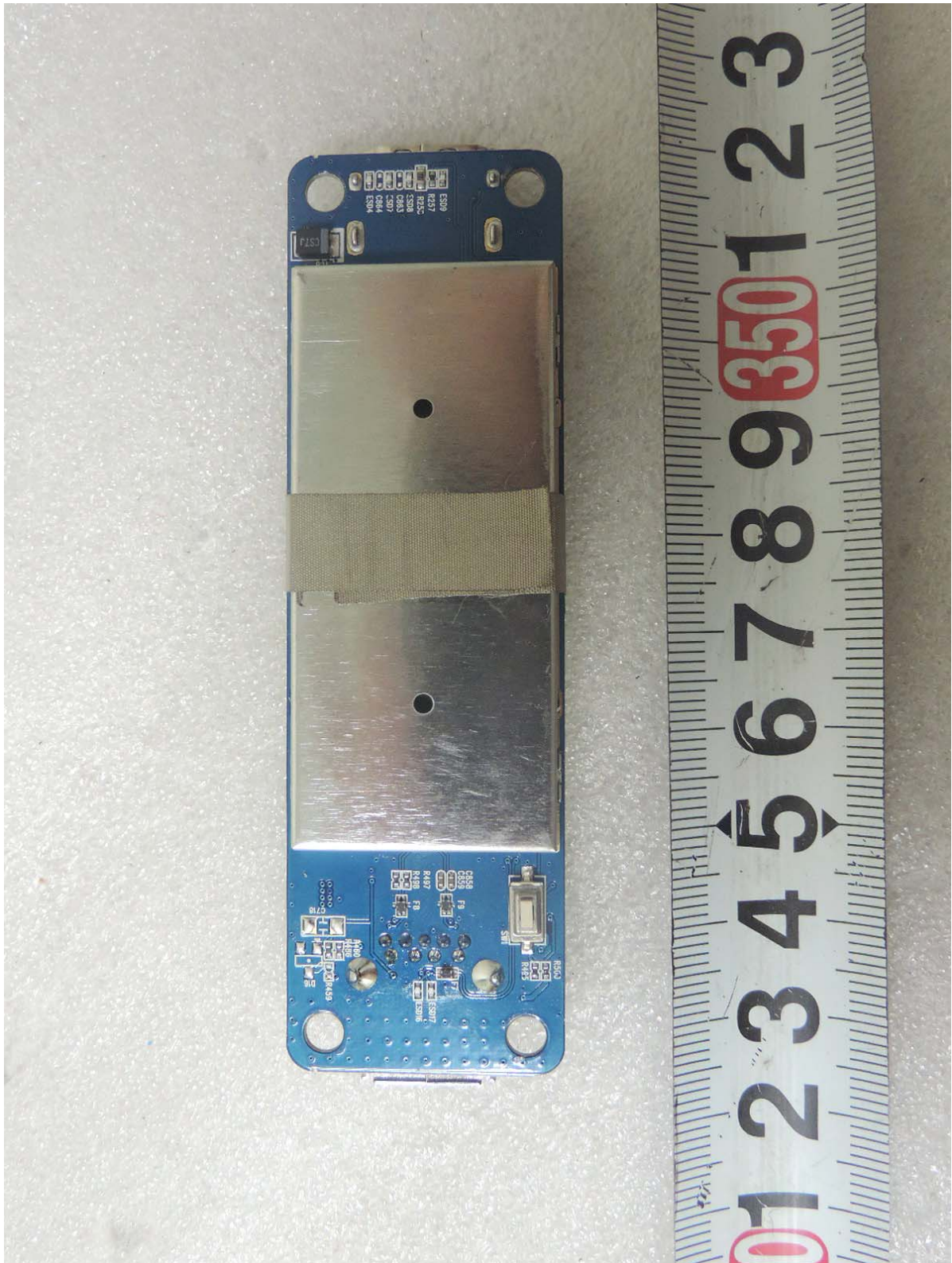


**Top side view of main board (shield can open)**



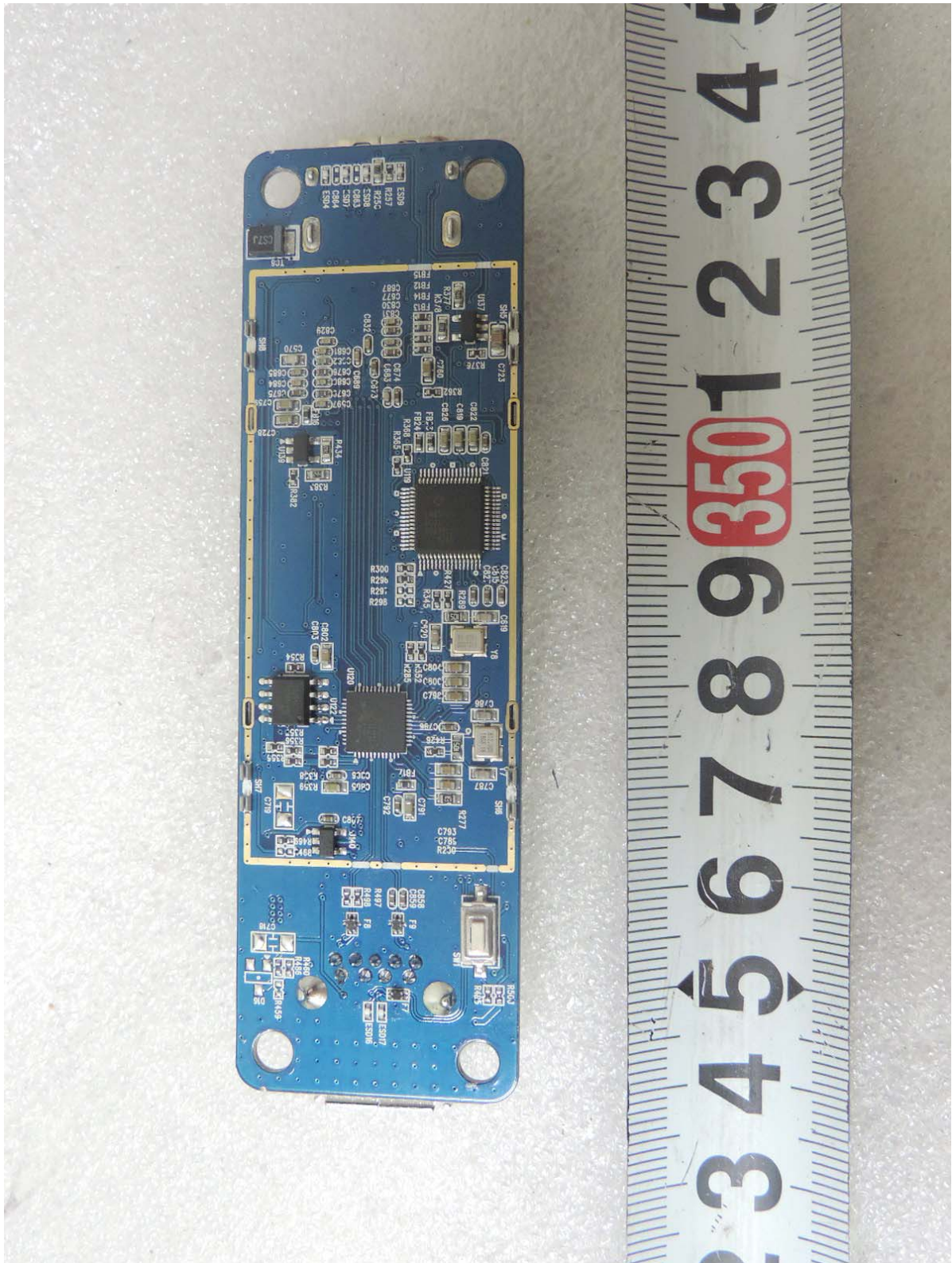


### Bottom side view of main board





**Bottom side view of main board (shield can open)**



## View of USB cable



## Attachment D

Constructional Data Form

and

Product Information Form(s)

## CONSTRUCTION DATAFORM FOR EMC – TESTING

Applicant : MultimediaLink Inc.

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

Factory : MultimediaLink Inc.

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

Product Type	: HDMI to USB Capture	Rated voltage input	: DC 5 V from USB port of
Model	: HCP-1080		host computer
Serial No.	: NONE	Rated input power	:
Protection type	:	Protection class	:

Configuration of equipment:

	Rev.	:
	Rev.	:
	Rev.	:

Source of interference :

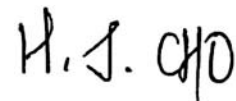
Internal frequency :

Noise suppression components :

Measures for electromagnetic shielding :

MultimediaLink Inc.

2018. 06. 29



Place of issue

date

Seal and signature of applicant

If applicable, if necessary complete overleaf

End of test report