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EMC TEST REPORT For FCC

Test Report No.	:	CTK-2013-01619
Date of Issue	:	2013-10-21
Kind of Product	:	Tablet
Basic Model/Type No.	:	LPT-100SB
Variant Model/Type No.	:	-
Applicant	:	LG CNS CO., LTD.
Applicant Address	:	Prime Tower, #10-1, Hoehyun-dong, 2-ga, Jung-gu, Seoul, South Korea
Manufacturer	:	ARTVIEW
Manufacturer Address	:	1027-8, Hogye-dong, Dongan-gu, Anyag-si, Gyeonggi-do, South Korea
Contact Person	:	Jeong Tae-Young
Telephone	:	+82-2-6363-5797
Received Date	:	2013-10-04
Test Data	:	2013-10-04
Test Results	:	☒ **In Compliance** ☐ **Not in Compliance**

The test results presented in this report relate only to the object tested.

Tested by

Lee Eun-Won
EMC Test Engineer
Date: 2013-10-21

Reviewed by

Park Young-Joon
EMC Technical Manager
Date: 2013-10-21

REPORT REVISION HISTORY

Date	Revision	Page No
2013-10-21	Issued (CTK-2013-01619)	All

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1.0 General Product Description

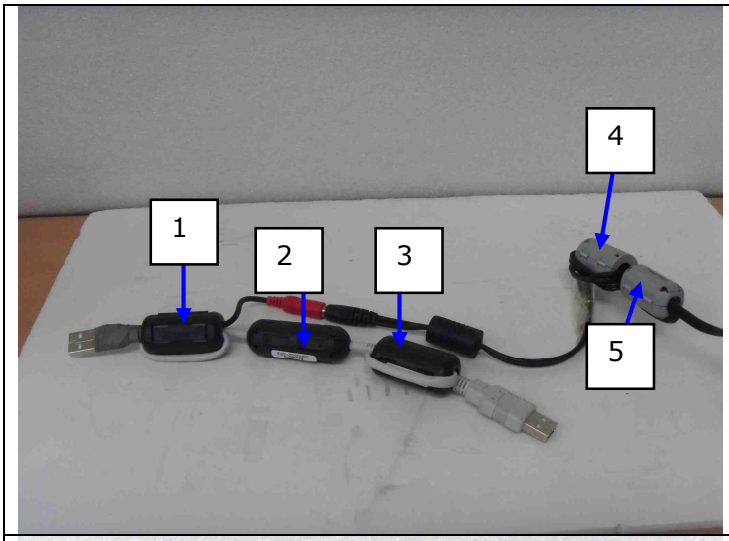
No.	ITEM	APPLICATION	
1	Kind of Product	Tablet	
2	Basic Model/Type No.	LPT-100SB	
3	Variant Model/Type No.	-	
4	Dimensions (㎜)	248 (W) x 175 (H) x 19.5 (T)	
5	Mobility	☒ Table-top ☐ Floor-standing ☐ Built-in ☐ Portable	
6	Maximum Clock Frequency	1000 ㎒	
7	Electrical Ratings	Input:	5 Vdc, 3 A
		Output:	-
8	Test Voltage / Frequency	Voltage:	5 Vdc, 3 A
		Frequency:	-

1.1 Model Differences

Not applicable

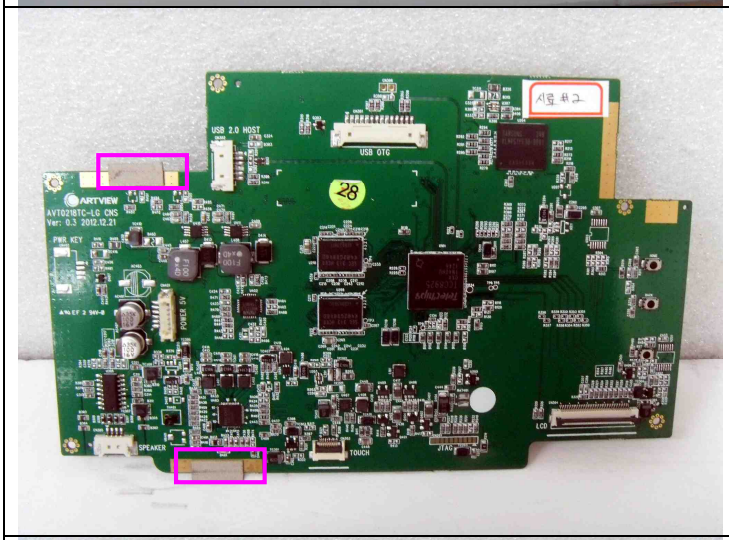
1.2 Device Modifications

The following modifications were necessary for compliance:



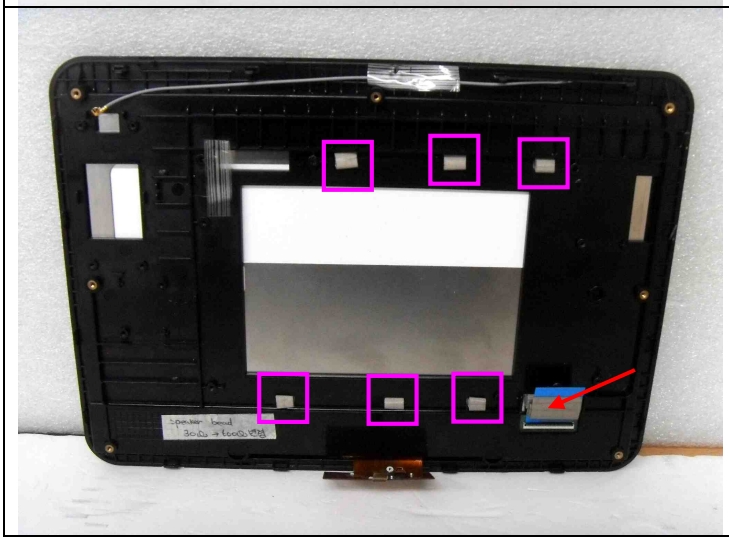
Ferrite Core

No.	Manufacturer	Part No	Tune(s)
1	Steward	HFA163090-0A2	1
2	Steward	28A0592-0A2	0
3	Steward	HFA163090-0A2	1
4	TDK	ZCAT2132-1130	2
5	TDK	ZCAT2132-1130	2



Gasket

Conductive Tape



1.3 EUT Configuration(s)

See Appendix A for individual test set-up configuration(s). The following peripheral devices and/or interface cables were connected during the measurement:

☒ Peripheral Devices

Device	Model No.	Serial No.	Manufacturer
Switching Adapter	DSA-0151AD-05	-	Dae Van Electronics(Shen Zhen) Co., Ltd.
Notebook	NT-RC530	HPFG91BC100406B	Samsung Co., Ltd.
AC/DC Adapter	A10-090P1A	-	Chicony Power Technology Co., Ltd.

☒ Cable Description

No.	From		To		Type of Cable		
	Device	I/O Port	Device	I/O Port	Length (m)	Shielded or Unshielded	Ferrite Core [Y/N]
1	EUT	USB 1	Cable	-	0.15	S	Y
2	Notebook	USB 2	Cable	-	0.2	S	Y
3		DC IN	AC/DC Adapter	DC OUT	1.8	S	Y
4	Switching Adapter	DC OUT	Cable	-	0.3	S	Y
5		AC POWER	AC MAIN	-	1.8	U	N
6	AC/DC Adapter	AC POWER	AC MAIN	-	1.8	U	N

* Shielded or Unshielded : Unshielded=U, Shielded=S

1.4 Test Software

☐ EMC Test V 1.0
☐ Display Test Patterns – V1.5
☐ Ping.exe
☒ Not applicable

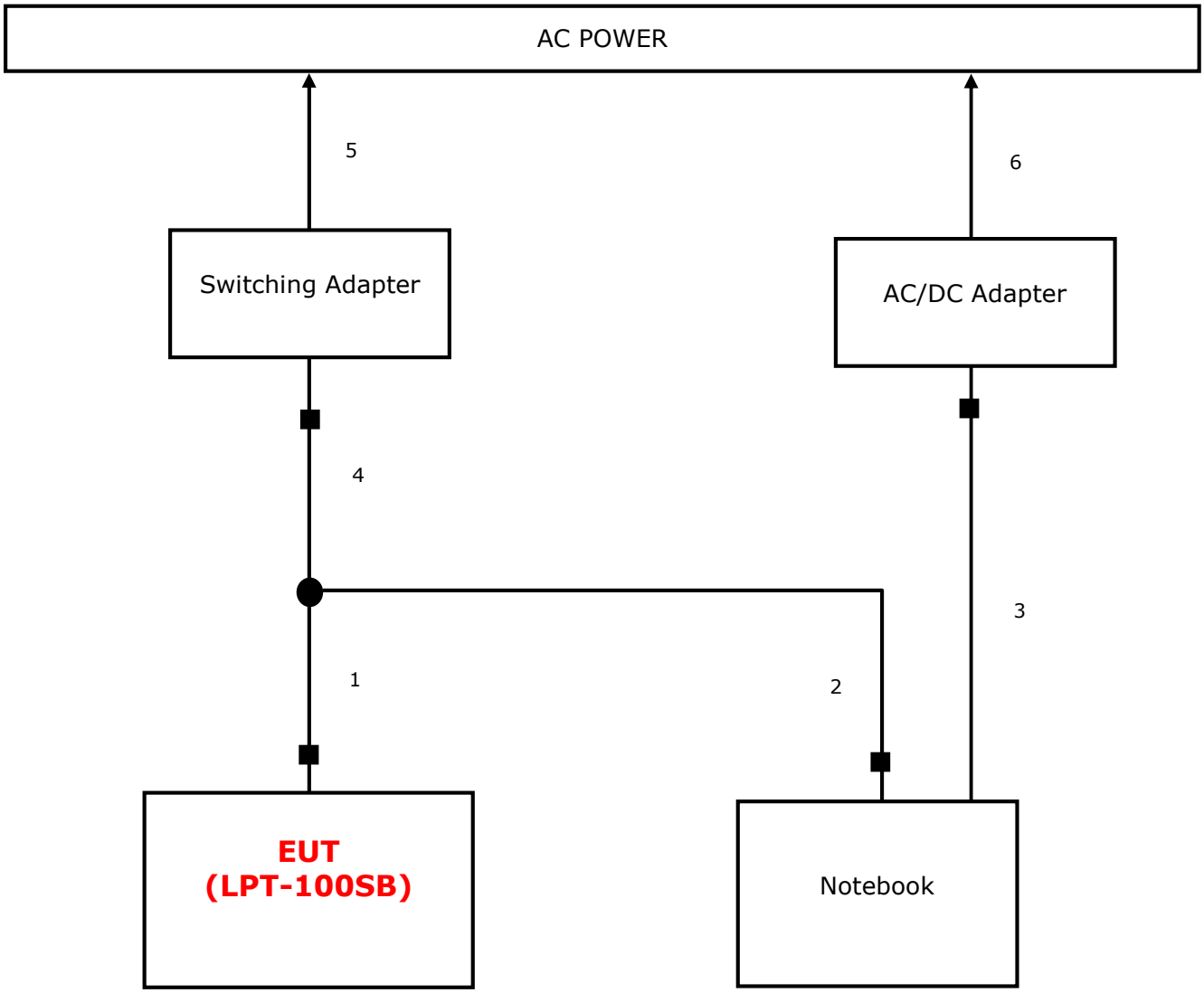
1.5 EUT Operating Mode(s)

Equipment under test was operated during the measurement under the following conditions:

☐ Standby
☐ Color Bar Display
☐ USB PLAY
☒ USB Data Communication
☐ Scrolling 'H'
☐ Data Read/Write
☐ DVD Play
☒ Video Play

⇨ Because switching adapter is not included with the EUT, the test is applicable only to Radiated Electric Field Emissions.

1.6 Configuration



1.7 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

1.8 Test Facility

The measurement facility is located at 386-1, Ho-dong, Cheoin-gu, Yongin-si, Gyeonggi-do, 449-100, Korea. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

1.9 Measurement Procedure

Preliminary AC power line conducted emissions tests were performed shielded room.
To find worst mode, several typical mode and typical cable position were tested.
Final AC power line conducted emissions test was performed shielded room. (location is same as Preliminary test)
Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

Preliminary radiated emissions test were performed Semi-Anechoic Chamber or anechoic chamber (Distance of antenna and EUT was 3 m). To find worst mode, several typical mode and typical cable position were tested and peak level and frequency were recorded.

Final radiated emissions test was performed Semi-Anechoic Chamber.
Based on the preliminary tests of the EUT, final test was proceeded worst case test mode and cable configuration.

* Measurement procedures was In accordance with ANSI C63.4-2009 7.3.3, 7.3.4, 8.3.1.1, 8.3.1.2, 8.3.2.1, 8.3.2.2

1.10 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Registration Number	Logo
USA	FCC	FCC Part 15 & 18 EMI (Electromagnetic Interference / Emission)	805871	
JAPAN	VCCI	VCCI V-3 EMI (Electromagnetic Interference / Emission)	C-986 T-1843 R-3627 G-387	
KOREA	MSIP	EMI (Electromagnetic Interference / Emission) EMS (Electromagnetic Susceptibility / Immunity)	KR0025	

1.11 Measurement Uncertainty

Compliance of the product is based on the measured value.
However, the measurement uncertainty is included for information purposes.
The measurement uncertainties given below are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

Measurement Type	Frequency Range	Expanded Uncertainty
Conducted Emission	150 ㎑ to 30 ㎒	± 2.66 ㏈ (C.L.: Approx. 95 %, k=2)
Radiated Emission	30 ㎒ to 1000 ㎒	± 3.66 ㏈ (C.L.: Approx. 95 %, k=2)
Radiated Emission	1 ㎓ Above	± 4.16 ㏈ (C.L.: Approx. 95 %, k=2)

2.0 EMC Test Regulations/Standards

The tests were performed according to following regulations:

Applied standard	Title	Applied	Test Result
FCC Part 15 Subpart B ☐ Class A ☒ Class B	Conducted Voltage Emissions	☐	☐ MET ☐ NOT MET
	Radiated Electric Field Emissions	☒	☒ MET ☐ NOT MET

3.0 Results of Individual Test

3.1 Conducted Voltage Emissions of Mains ports

Test Date
Not Applicable

Test Location
Shielded Room

Test Equipment

Name of Equipment	Model No.	Manufacturer	Serial No.	Due Date	Applied
EMI Test Receiver	ESCI7	Rohde & Schwarz	100816	2013-12-14	☐
LISN	ENV216	Rohde & Schwarz	101235	2014-08-02	☐
LISN	ENV216	Rohde & Schwarz	101236	2014-08-02	☐
EMI Test Receiver	ESR7	Rohde & Schwarz	101088	2014-08-02	☐
LISN	ENV216	Rohde & Schwarz	101151	2013-11-09	☐
LISN	ESH3-Z5	Rohde & Schwarz	100207	2013-11-09	☐
EMI Test Receiver	ESCI3	Rohde & Schwarz	100032	2014-02-04	☐
LISN	ENV216	Rohde & Schwarz	101150	2014-02-04	☐
LISN	3825/2	EMCO	9607-2575	2014-07-12	☐

Test Software
ESCI7 : EMC32 Ver. 8.50.0
ESR7, ESCI3 : EMC32 Ver. 8.53.0

Frequency Range of Measurement
150 ㎑ to 30 ㎒

Instrument Setting
IF Band Width: 9 ㎑

Climate Condition
Temperature:
Relative Humidity:
Atmospheric Pressure:

Test Result
The requirements are: ☐ MET ☐ NOT MET

Frequency (㎒)	Measured Data (㏈㎶)	Margin (㏈)	Remark

The Result is calculated by using the following formula;

* Result = Limit – Margin (Result included the correction factor)

* Correction factor = Cable Loss + Insertion loss of LISN

Test Data

Not Applicable

3.2 Radiated Electric Field Emissions (Below 1 ㎓)

Test Date
2013-10-04

Test Location
10 m SAC (test distance : ☐ 10 m, ☒ 3 m)

Test Equipment

Name of Equipment	Model No.	Manufacturer	Serial No.	Due Date	Applied
EMI Test Receiver	ESCI7	Rohde & Schwarz	100814	2013-12-14	☒
Trilog Broadband Antenna	VULB 9161 SE	SCHWARZBECK	9161-4133	2014-06-11	☒
6dB Attenuator	DNF	Rohde & Schwarz	272.4110.50	2013-11-09	☒
Amplifier	310	Sonoma Instrument Co.	291721	2014-03-21	☒

Test Software
TOYO EMI software Ver. 5.1.0

Frequency Range of Measurement
30 ㎒ to 1 ㎓

Instrument Setting
IF Band Width: 120 ㎑

Climate Condition
Temperature: (21 ± 1) ℃
Relative Humidity: (42 ± 1) %
Atmospheric Pressure: 99 ㎪

Test Result
The requirements are: ☒ MET ☐ NOT MET

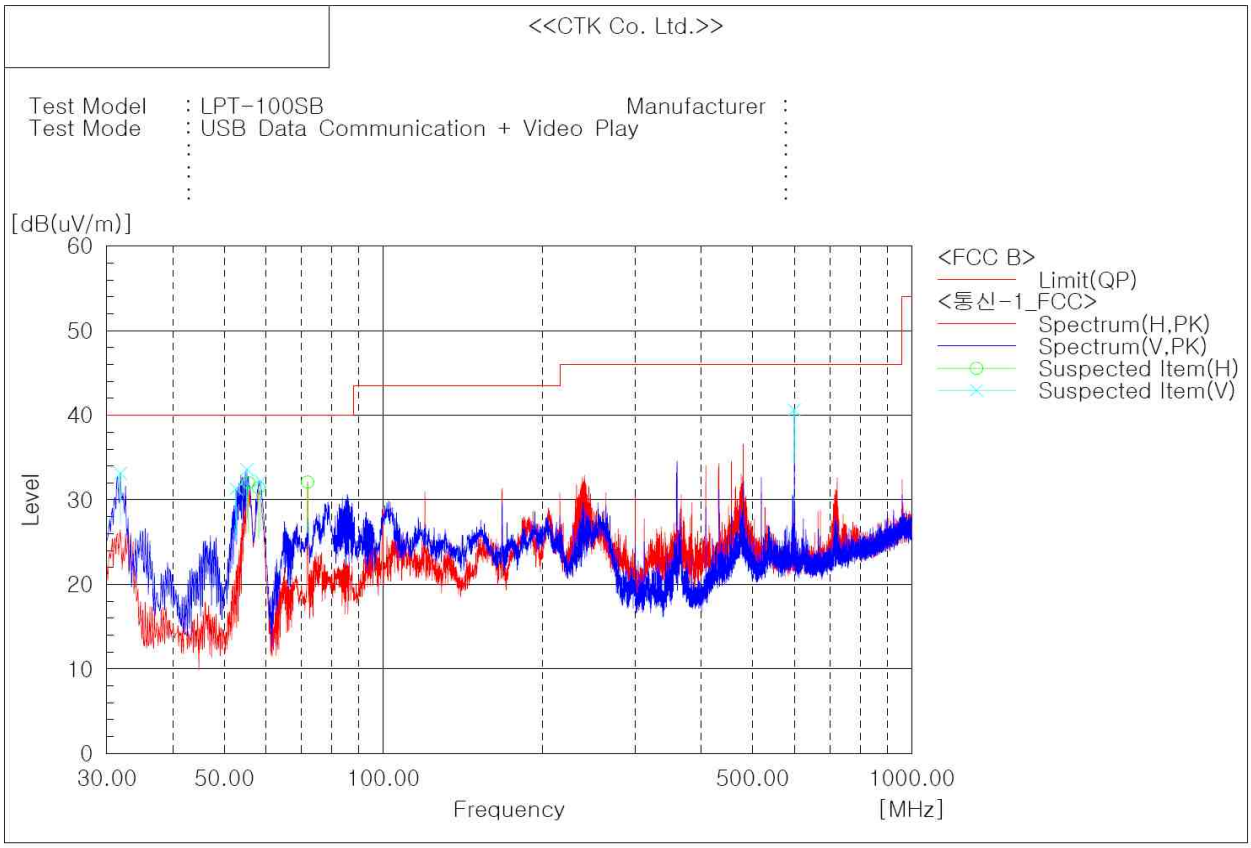
Frequency (㎒)	Measured Data (dBμV/m)	Margin (dB)	Remark
599.996	40.6	5.4	Quasi-peak

The Result is calculated by using the following formula;

* Result = Reading + Correction factor

* Correction factor = Antenna Factor + Cable Loss + 6 ㏈ attenuator – Amp Gain

Test Data



Spectrum Selection

No.	Frequency [MHz]	(P)	Reading [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
1	31.819	V	45.9	-12.8	33.1	40.0	6.9	205.0	0.0
2	52.674	V	44.7	-13.4	31.3	40.0	8.7	100.0	7.0
3	55.220	V	47.3	-13.7	33.6	40.0	6.4	308.0	0.0
4	55.584	H	45.8	-13.8	32.0	40.0	8.0	295.0	331.0
5	58.130	H	45.8	-14.4	31.4	40.0	8.6	295.0	331.0
6	58.615	V	46.7	-14.5	32.2	40.0	7.8	400.0	70.0
7	71.953	H	47.8	-15.7	32.1	40.0	7.9	295.0	182.0
8	599.996	V	43.2	-2.6	40.6	46.0	5.4	100.0	267.0

3.3 Radiated Electric Field Emissions (Above 1 ㎓)

Test Date
2013-10-04

Test Location
3 m SAC

Test Equipment

Name of Equipment	Model No.	Manufacturer	Serial No.	Due Date	Applied
EMI Test Receiver	ESU40	Rohde & Schwarz	100336	2014-06-27	☒
Double Ridged Guide Antenna	3115	ETS-Lindgren	78895	2015-02-28	☒
Preamplifier	8449B	Agilent Technologies	3008A02307	2013-11-09	☒

Test Software
TOYO EMI software Ver. 5.1.0

Frequency Range of Measurement
1 ㎓ to 6 ㎓

Instrument Setting
IF Band Width: 1 ㎒

Climate Condition
Temperature: (22 ± 1) ℃
Relative Humidity: (48 ± 1) %
Atmospheric Pressure: 99 ㎪

Test Result
The requirements are: ☒ MET ☐ NOT MET

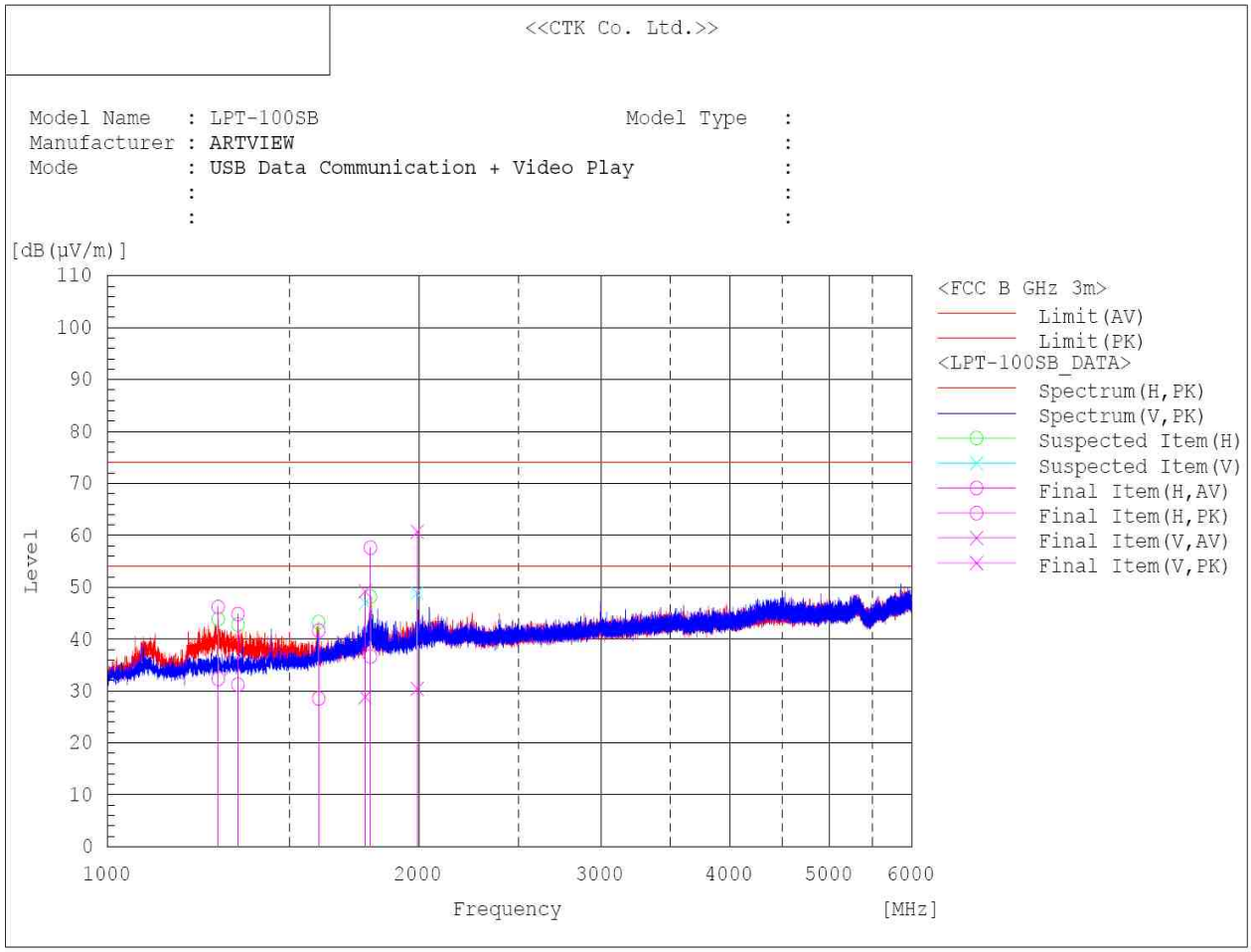
Frequency (㎒)	Measured Data (dBμV/m)	Margin (dB)	Remark
1 992.052	60.7	13.3	Peak

The Result is calculated by using the following formula;

* Result = Reading + Correction factor

* Correction factor = Antenna Factor + Cable Loss– Amp Gain

Test Data



Final Result

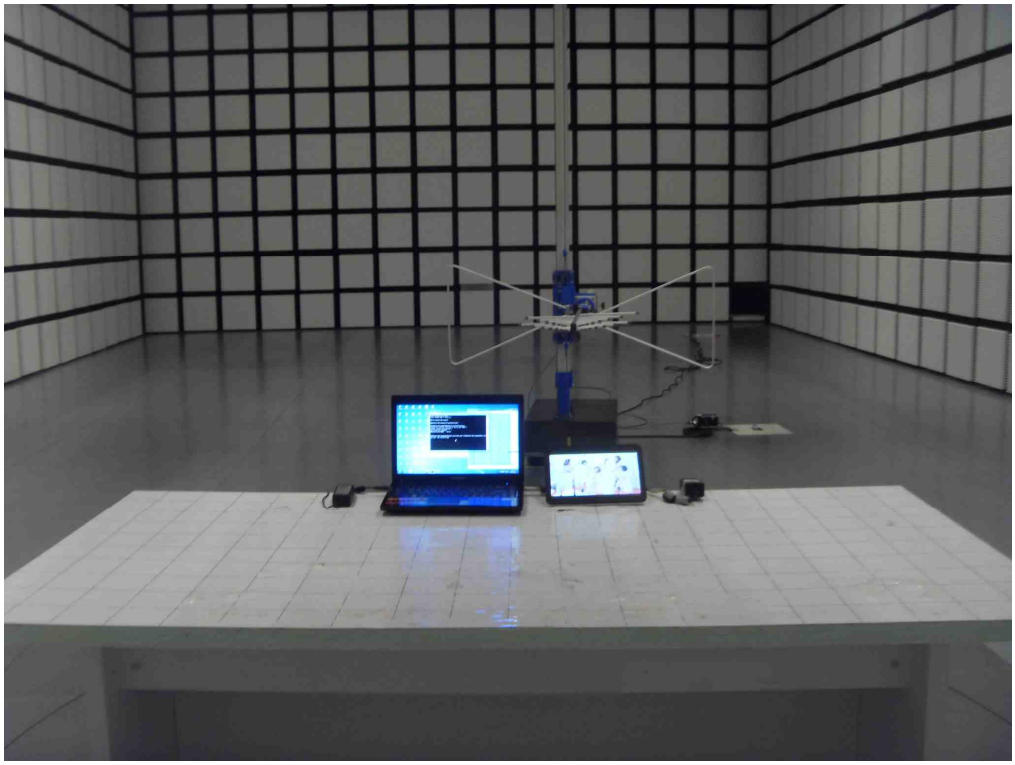
No.	Frequency [MHz]	(P)	Reading AV [dB(μV)]	Reading PK [dB(μV)]	c.f [dB(1/m)]	Result AV [dB(μV/m)]	Result PK [dB(μV/m)]	Limit AV [dB(μV/m)]	Limit PK [dB(μV/m)]	Margin AV [dB]	Margin PK [dB]	Height [cm]	Angle [°]
1	1279.016	H	34.4	48.3	-2.1	32.3	46.2	54.0	74.0	21.7	27.8	100.0	135.0
2	1336.574	H	32.9	46.5	-1.7	31.2	44.8	54.0	74.0	22.8	29.2	100.0	129.0
3	1600.084	H	28.2	41.2	0.4	28.6	41.6	54.0	74.0	25.4	32.4	100.0	124.0
4	1774.702	V	26.8	47.2	2.0	28.8	49.2	54.0	74.0	25.2	24.8	100.0	176.0
5	1796.058	H	34.6	55.5	2.1	36.7	57.6	54.0	74.0	17.3	16.4	100.0	153.0
6	1992.052	V	26.9	57.2	3.5	30.4	60.7	54.0	74.0	23.6	13.3	100.0	79.0

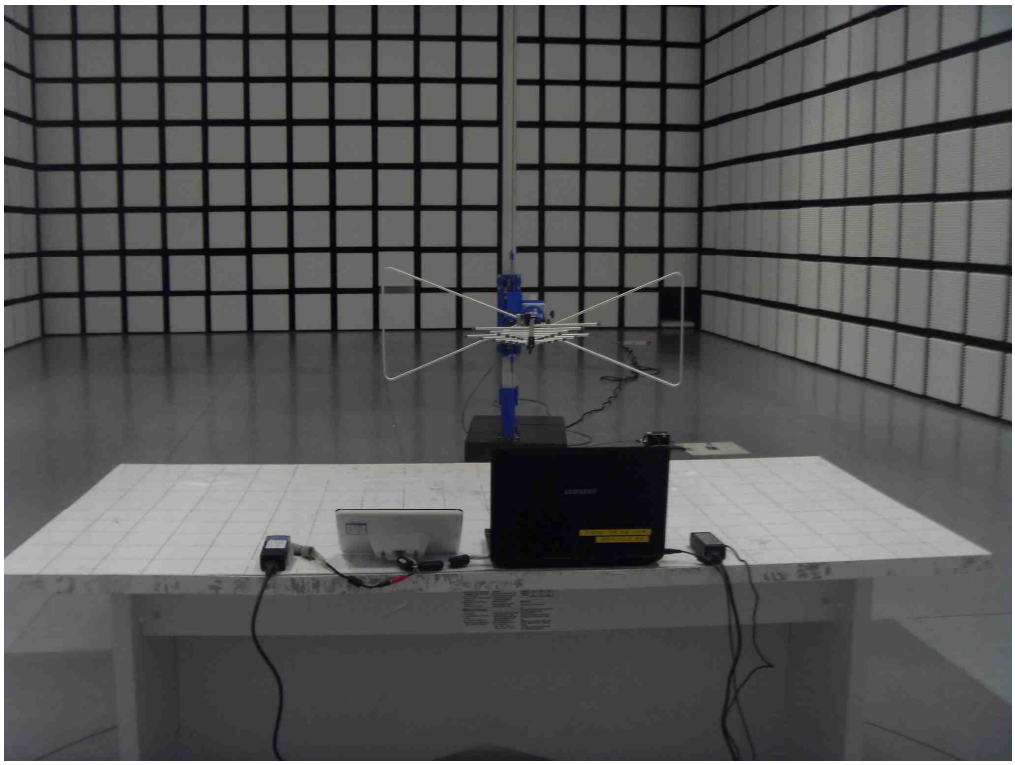
APPENDIX A - Test Setup Photos and Configuration

Conducted Voltage Emissions of Mains Ports

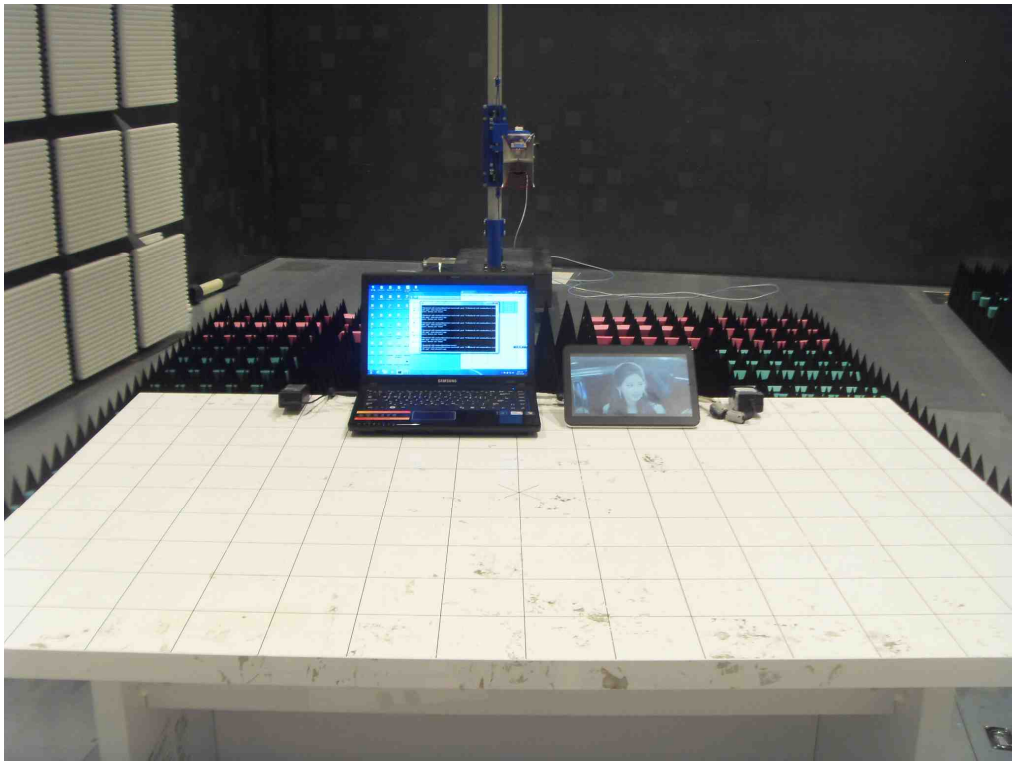
Not Applicable

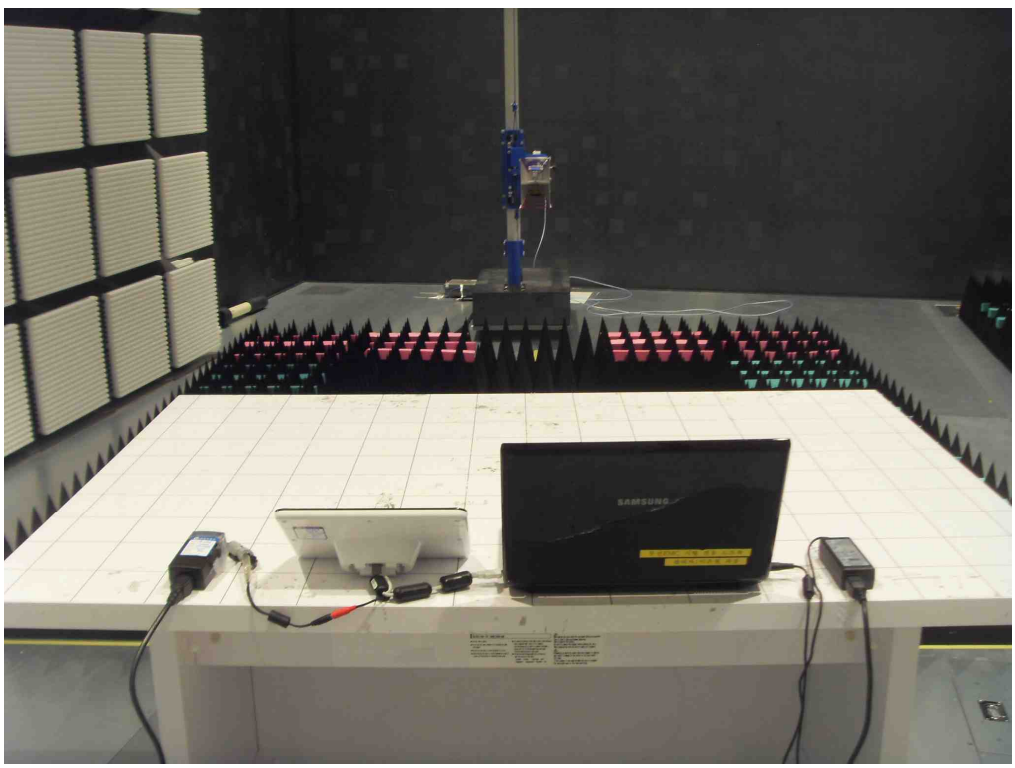
Radiated Electric Field Emissions (Below 1 ㎓)





Radiated Electric Field Emissions (Above 1 ㎓)





APPENDIX B – EUT Photographs

EUT External Photographs

EUT Internal Photographs

PCB