

Technical Compliance Statement



For the following information

Ref. File No.: C1M1301012

Product : Motherboard
Model Number : E2KM1I-DELUXE
Brand : ASUS
Applicant : ASUSTEK Computer Inc.
Manufacturer #1 : MainTek Computer (Suzhou) Co., Ltd.
Manufacturer #2 : Danriver Technology (GZ) Inc.
Manufacturer #3 : Global Brands Manufacture Ltd
Manufacturer #4 : First International Computer (Suzhou) Inc
Manufacturer #5 : BOATEK ELECTRONIC CO., LTD.
Manufacturer #6 : Cal-Comp Electronics and Communications (suzhou) Co.,
Ltd
Manufacturer #7 : NBM Production (Dongguan) Co., Ltd
Standards : FCC CFR 47 Part 15 Subpart B/Oct. 2012 and
CISPR 22/1997 (Class B Limit) and ICES-003

We hereby certify that the above product has been tested by us and complied with the FCC and IC official limits. These products might be marketed at the US accordance to FCC Rule based on the standard CFR 47 Part 2 and Part 15 Class B Equipment Regulations. The test was performed accordance to the procedures from ANSI C63.4-2009. The test data & results are issued on the test report no. EM-F1020042.

Signature

A handwritten signature in blue ink that reads "Leon Liu".

Leon Liu/Deputy General Manager

Date: Jan. 09, 2013

Test Laboratory:
AUDIX Technology Corporation, EMC Department
NVLAP Lab. Code: 200077-0
FCC OET Designation: TW1004
Web Site: www.audixtech.com



NVLAP Lab Code 200077-0

The statement is based on a single evaluation of one sample of the above-mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab logo.

TEST REPORT FOR FCC DoC and INDUSTRY CANADA
ASUSTEK Computer Inc.

Motherboard

Model No.: E2KM1I-DELUXE

Brand: ASUS

Prepared for : ASUSTEK Computer Inc.
No.150, Li-Te Rd., Peitou, Taipei,
Taiwan

Prepared By : AUDIX Technology Corporation
EMC Department
No. 53-11, Dingfu, Linkou Dist.,
New Taipei City 244, Taiwan

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File Number : C1M1301012
(ACW Ref. No. ACWE-G1212023)
Report Number : EM-F1020042
Date of Test : Jan. 07 ~ 09, 2013
Date of Report : Jan. 09, 2013

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TEST REPORT FOR COMPLIANCE DECLARATION

Applicant : ASUSTEK Computer Inc.
 Manufacturer #1 : MainTek Computer (Suzhou) Co., Ltd.
 Manufacturer #2 : Danriver Technology (GZ) Inc.
 Manufacturer #3 : Global Brands Manufacture Ltd
 Manufacturer #4 : First International Computer (Suzhou) Inc
 Manufacturer #5 : BOATEK ELECTRONIC CO., LTD.
 Manufacturer #6 : Cal-Comp Electronics and Communications (suzhou) Co., Ltd
 Manufacturer #7 : NBM Production (Dongguan) Co., Ltd
 EUT Description : Motherboard
 (A) Model No. : E2KM1I-DELUXE
 (B) Serial No. : N/A
 (C) Brand : ASUS
 (D) Power Supply : Power by PC System
 (E) Test Voltage : AC 120V/60Hz (via PC System)

Measurement Standard Used:

FCC CFR 47 Part 15 Subpart B/Oct. 2012 and CISPR 22/1997
 ANSI C63.4-2009
 ICES-003 Issue 5 Aug. 2012

The device described above was tested by AUDIX Technology Corporation, to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15 subpart B with the provisions of sections 15.107 and 15.109 and ICES-003 Class B limits both conducted and radiated emissions.

The measurement results are contained in this test report and AUDIX Technology Corporation is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the FCC and IC official limits.

This report applies to above tested sample only and which shall not be reproduced in part without written approval of AUDIX Technology Corporation.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Date of Test : Jan. 07 ~ 09, 2013 Date of Report : Jan. 09, 2013

Producer : 
 (Cherry Wang/ Deputy Manager)

Signatory : 
 (Leon Liu/Deputy General Manager)

Name of the Representative of the Responsible Party : _____

Signature : _____

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	:	Motherboard (Build-In a WLAN+BT Module: Broadcom, BCM943228HMB FCC ID: QDS-BRCM1058)
Model Number	:	E2KM1I-DELUXE
Brand	:	ASUS
Applicant	:	ASUSTEK Computer Inc. No.15, Li-Te Rd., Peitou, Taipei, Taiwan
Manufacturer #1	:	MainTek Computer (Suzhou) Co., Ltd. No. 233, Jinfeng Road, Suzhou City New District, Jiangsu, P.R. China
Manufacturer #2	:	Danriver Technology (GZ) Inc. No.16, Baoying Dadao, Guangzhou Free Trade Zone, Guangdong, P.R. China
Manufacturer #3	:	Global Brands Manufacture Ltd EMS Business unit Global Brands Manufacture Limited Yuyuan Industrial Estate, Huangjiang Town, Dongguan City, Guangdong, P.R. China
Manufacturer #4	:	First International Computer (Suzhou) Inc Export Processing Zone, No. 200 Central Suhong Road, SuZhou Industrial Park, Jiangsu, P.R. China
Manufacturer #5	:	BOATEK ELECTRONIC CO., LTD. N0.124 bubugao road, wu sha kong bavillage, chang an, dong guan, guang dong
Manufacturer #6	:	Cal-Comp Electronics and Communications (suzhou) Co., Ltd Wujiang Export Processing Zone,No688, Pangjin Road, Wujiang Economic Development Zone, Jiangsu Province, China.
Manufacturer #7	:	NBM Production (Dongguan) Co., Ltd NO. 51 Xinju Rd., Shangjiao community, Changan Town, Dongguan City, Guangdong, P.R. China

Date of Receipt of Sample : Jan. 03, 2013

Date of Test : Jan. 07 ~ 09, 2013

****EUT Description**

CPU : AMD E2-2000 APU With Rodeon (tm) HD Graphics 1.75GHz

Chipset : South Bridge/PCH: Hudson M1 Rev.A14

Network : IC: RTL8111F PCIE
1Gbps
Wireless LAN Wireless LAN IC: AW-NB111
Interface PCIE
USB
Support type 802.11b/g
802.11n

WLAN+BT PCI Mini Card : Broadcom, BCM943228HMB
(802.11 a/b/g/n) FCC ID: QDS-BRCM1058

Expansion Slots : Slots PCIEX16: 1
Discrete Graphics PCI Express x16
3.3v
With latch

Memory Size : Max: 8*1024 MB

System Memory : Single channel pure DIMM configuration Slots
DIMM1
DIMM2
Type: DDR3-800/1066/1333

Graphics : Integrated Gfx in North bridge: HD7340
Max. UMA Memory Size: 2G

DVI Max. resolution : 1920*1200@60 Hz

HDMI Max. resolution : 1920*1200@60 Hz

Storage : Chipset built-in: Standard SATA6G
Function AHCI Mode
Connector SATA 6G:5 (Gray)
ESATA 6G:1

USB	:	Standard: USB1.1&USB2.0 Number of port: 8 ports mid-board: 4 ports back panel: 4 ports USB3.0 IC: ASM1042 Number of ports: 4 ports mid-board: 2 prts back panel: 2 ports
Audio	:	IC: ALC898 3 jack 8Channels: Multi-streaming (VIA only); Support Vista Premium; Anti-pop Function (Power On/Off; Resume S3/S4); Front Panel Retasking (HD only)
Back I/O Ports	:	PS2 port *1 USB 2.0 ports *4 USB 3.0 ports *2 Optical port *1 HDMI port *1 DVI port *1 RJ45 port *1 Audio ports *3 e-SATA port *1 Antenna port *2
Highest Working Frequency	:	1.75 GHz

Remark:

This EUT (Motherboard, within PC system) with the following test modes was pre-scanned. Finally, this report was selected the worst test mode to issue report.

The details of pre-scanned modes are as follows :

Mode	Operating of EUT	VGA Interface, Resolutions and Frequencies
1.	Full System	DVI + HDMI, 1920*1200/60Hz
2.		DVI + HDMI, 1920*1080/60Hz
3.		DVI + HDMI, 1600*1200/60Hz
4.		DVI + HDMI, 1280*1024/75Hz
5.		DVI + HDMI, 640*480/60Hz

The worst test mode of finally reported are as follows :

Test Item	Operating of EUT	VGA Interface, Resolutions and Frequencies
Powerline Conducted Emission Measurement	Full System	DVI + HDMI, 1920*1200/60Hz
Radiated Emission Measurement		DVI + HDMI, 1920*1200/60Hz

1.2. Tested Supporting System Details

1.2.1. PC SYSTEM

PC Case : J POWER
Motherboard(EUT) : ASUS, M/N: E2KM1I-DELUXE
 CPU : AMD E2-2000 APU With Rodeon (tm) HD
 Graphics 1.75GHz
 Hard Disk Drive (160G) : WD, M/N WD1600AAJS
 Switching Power Supply : Seventeam, M/N ST-300WAP, FCC by DoC
 Memory Card : Kingston, 2GB
 Power Cord : Non-Shielded, Detachable, 1.8m

1.2.2. LCD Monitor #1(LINK TO EUT)

Model Number : U3011T
 Serial Number : CN-0C34G2-74445-29I-030L
 FCC ID : By DoC
 BSMI ID : R43004
 Brand : DELL
 DVI Cable : Shielded, Detachable, 1.8m
 Bonded two ferrite cores
 Power Cord : Non-Shielded, Detachable, 1.8m

1.2.3. LCD Monitor #2 (LINK TO EUT)

Model Number : U3011T
 Serial Number : CN-0C34G2-74445-29I-025L
 FCC ID : By DoC
 BSMI ID : R43004
 Brand : DELL
 HDMI Cable : Shielded, Detachable, 1.5m
 Power Cord : Non-Shielded, Detachable, 1.8m

1.2.4. PRINTER (LINK TO EUT)

Model Number : ML-1630
 Serial Number : 4561B1CP600023X
 FCC ID : By DoC
 BSMI ID : R33475
 Manufacturer : SAMSUNG
 USB Cable : Shielded, Detachable, 1.8m
 Power Cord : Non-Shielded, Detachable, 1.8m

1.2.5. USB KEYBOARD (LINK TO EUT)

Model Number : SK-8115
 Serial Number : CN-ONM433-71616-7C5-0A4S
 FCC ID : By DoC
 BSMI ID : T3A002
 Manufacturer : DELL (Brand: DELL)
 Data Cable : Shielded, Undetachable, 2.0m
 Bonded a ferrite core

1.2.6. USB MOUSE (LINK TO EUT)

Model Number : M056U0A
 Serial Number : G0D041KR
 FCC ID : By DoC
 BSMI ID : R41108
 Manufacturer : DELL (Brand: DELL)
 Data Cable : Shielded, Undetachable, 1.8m
 (USB PS2 Cable)

1.2.7. MULTIMEDIA SPEAKER (LINK TO EUT)

Model Number : S330D
 Serial Number : N/A
 BSMI ID : R32696
 Brand : Edifiep
 Optical Cable : Non-Shielded, Detachable, 1.5m
 Power Cord : Non-Shielded, Detachable, 1.8m

1.2.8. WALKMAN (LINK TO EUT)

Model Number : RQ-P35LT-K
 Serial Number : HA08623
 Manufacturer : Panasonic
 Data Cable : Non-Shielded, Detachable, 1.8m

1.2.9. USB 3.0 DRIVESTATION USB 3.0 HARD DRIVE #1
(LINK TO EUT)

Model Number : HD-HX1.0TU3-AP
 Serial Number : 15564891205972
 FCC ID : By DoC
 BSMI ID : D33093
 Brand : BUFFALO
 USB Cable : Shielded, Detachable, 1.0m
 AC Adapter : M/N WA-24E12, S/N 9A9026199
 Cord: Non-Shielded, Undetachable, 1.5m

1.2.10. USB 3.0 DRIVESTATION USB 3.0 HARD DRIVE #2
(LINK TO EUT)

Model Number : HD-HX1.0TU3-AP
 Serial Number : 15564800203099
 FCC ID : By DoC
 BSMI ID : D33093
 Brand : BUFFALO
 USB Cable : Shielded, Detachable, 1.0m
 AC Adapter : M/N WA-24E12, S/N 9A9026199
 Cord: Non-Shielded, Undetachable, 1.5m

1.2.11. eSATA DISK EXTERNAL DATA STORAGE (LINK TO EUT)

Model Number : 328 S-U2eS
 Serial Number : N/A
 Brand : Linger
 eSATA Data Cable : Shielded, Detachable, 1.0m
 USB Data Cable : Shielded, Detachable, 1.5m
 ADP : M/N:WLXSPP34-12.0/5.0-2000
 INPUT 100V~250VAC 50/60Hz 2A
 OUTPUT:5V 2A / 12V 2A
 Power Cord: Non-Shield, Undetachable, 0.7m

1.2.12. USB 2.0 STORAGE MEDIA #1

Model Number : U172P
 Serial Number : 95110870047038
 FCC ID : By DoC
 BSMI ID : D33311
 Manufacturer : pqi
 Data Cable : Shielded, Detachable, 1.5m

1.2.13. USB 2.0 STORAGE MEDIA #2

Model Number : U172P
 Serial Number : 95110880023210
 FCC ID : By DoC
 BSMI ID : D33311
 Manufacturer : pqi
 Data Cable : Shielded, Detachable, 1.5m

1.2.14. USB 2.0 STORAGE MEDIA #3 (LINK TO EUT)

Model Number : U172P
 Serial Number : 95110880023240
 FCC ID : By DoC
 BSMI ID : D33311
 Manufacturer : pqi
 Data Cable : Shielded, Detachable, 1.5m

1.2.15. USB 2.0 STORAGE MEDIA #4 (LINK TO EUT)

Model Number : U172P
 Serial Number : 95110880023240
 FCC ID : By DoC
 BSMI ID : D33311
 Manufacturer : pqi
 Data Cable : Shielded, Detachable, 1.5m

1.2.16. EARPHONE WITH MIC. & IN-LINE VOLUME CONTROL #1

Model Number : HS10101
 Serial Number : N/A
 FCC ID : By DoC
 BSMI ID : R34896
 Manufacturer : UIO
 Data Cable : Non-Shielded, Detachable, 1.5m (2Pin)

1.2.17. EARPHONE WITH MIC. & IN-LINE VOLUME CONTROL #2
(LINK TO EUT)

Model Number : HS10101
 Serial Number : N/A
 FCC ID : By DoC
 BSMI ID : R34896
 Manufacturer : UIO
 Data Cable : Non-Shielded, Detachable, 1.5m (2Pin)

1.2.18. ANTENNA CABLE #1 (LINK TO EUT)

Model Number : DTMB11123-0549
 Data Cable : Non-Shielded, Detachable, 0.8m

1.2.19. ANTENNA CABLE #2 (LINK TO EUT)

Model Number : DTMB11123-0551
 Data Cable : Non-Shielded, Detachable, 0.8m

1.2.25. WIRELESS AP SERVER

Model Number : Di-624
 Serial Number : F34U177001194
 FCC ID : KA2DI624D2
 Manufacturer : D-Link
 ADAPTER : M/N : AM-91000A
 INPUT : 120VAC 60Hz 15W
 OUTPUT : 9VAC 1000mA ,1.8m

1.3. Description of Test Facility

Name of Firm : **AUDIX Technology Corporation**
EMC Department
 No. 53-11, Dingfu, Linkou Dist.,
 New Taipei City 244, Taiwan

Test Site : **No. 3 Shielded Room**
 (C3/R5/Semi-AC2) No. 67-4, Dingfu, Linkou Dist.,
 New Taipei City 244, Taiwan

No. 5 Open Area Test Site
 No. 67-4, Dingfu, Linkou Dist.,
 New Taipei City 244, Taiwan
 Federal Communication Commission
 Registration Number: 98448
 Filing on June 14, 2012

No. 2 Semi-Anechoic Chamber
 No. 67-4, Dingfu, Linkou Dist.,
 New Taipei City 244, Taiwan
 Federal Communication Commission
 Registration Number: 370172
 Filing on July 20, 2010

NVLAP Lab. Code : 200077-0

TAF Accreditation No : 1724

1.4. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)
Conduction Test	150kHz~30MHz	±1.73dB
Radiation Test (Distance: 10m)	30MHz~300MHz	±2.99dB
	300MHz~1000MHz	±2.73dB
Radiation Test (Distance: 3m)	1GHz~18GHz	± 3.73dB

Remark : Uncertainty = $ku_c(y)$

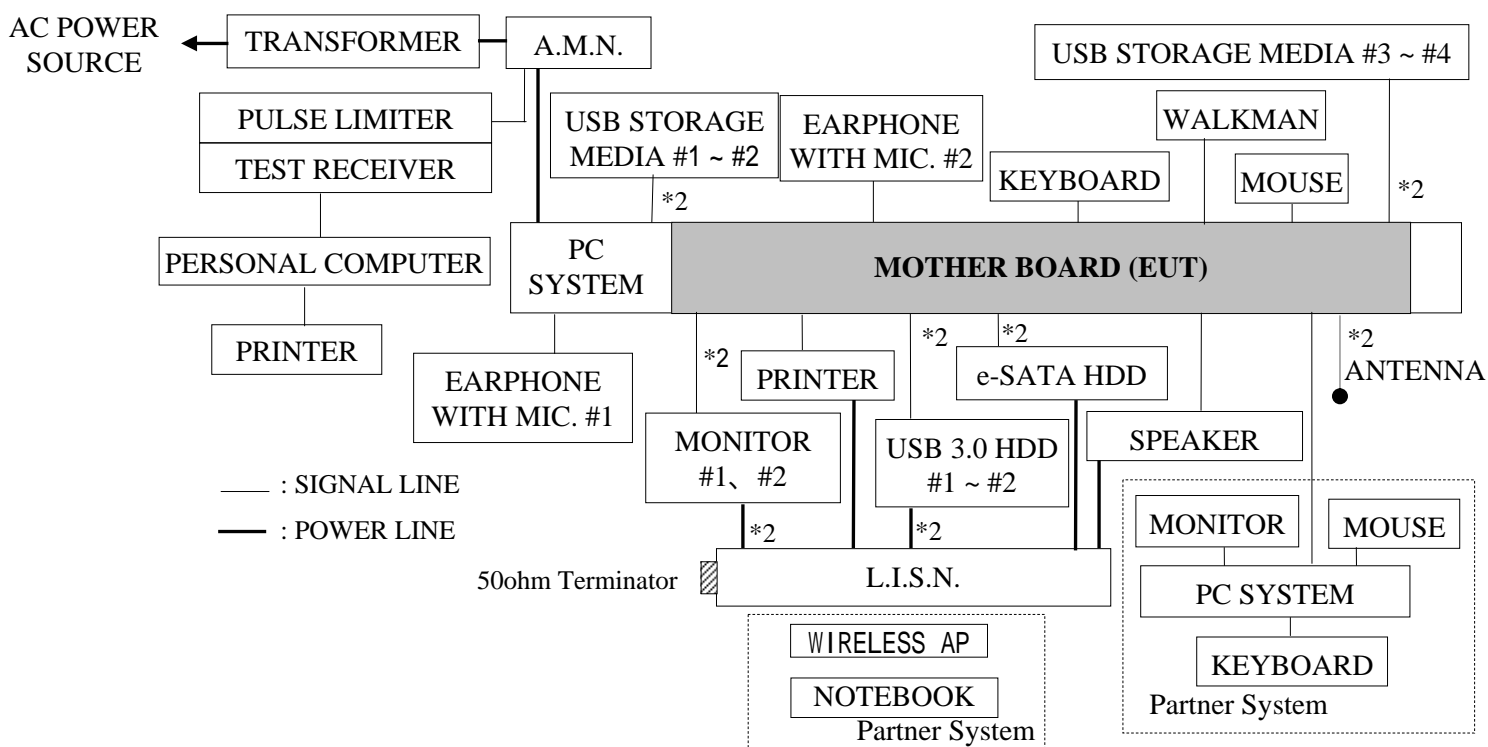
2. POWERLINE CONDUCTED EMISSION MEASUREMENT

2.1. Test Equipment

The following test equipment was used during the powerline conducted emission measurement : (No. 3 Shielded Room)

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R & S	ESCS 30	100337	Apr. 09, 12'	Apr. 08, 13'
2.	A.M.N.	Kyoritsu	KNW-244C	8-1373-5	Mar. 27, 12'	Mar. 26, 13'
3.	L.I.S.N.	Kyoritsu	KNW-407	8-1370-9	Mar. 08, 12'	Mar. 07, 13'
4.	Pulse Limiter	R & S	ESH3-Z2	100041	Feb. 01, 12'	Jan. 31, 13'

2.2. Block Diagram of Test Setup



2.3. Powerline Conducted Emission Limit (FCC§15.107/ICES-003, Class B)

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level	Average Level
150kHz ~ 500kHz	66 ~ 56 dB μ V	56 ~ 46 dB μ V
500kHz ~ 5MHz	56 dB μ V	46 dB μ V
5MHz ~ 30MHz	60 dB μ V	50 dB μ V

- Remark :
- If the average limit is met when using a Quasi-Peak detector, the EUT shall be deemed to meet both limits and measurement with the average detector is unnecessary.
 - The lower limit applies at the band edges.

2.4. Operating Condition of EUT

PC system (EUT inside) Exercise Program and Condition	
Operating System	Windows 7
Test Program	Burnin Test
Graphic Controller	Both two LCD monitors display scrolling “H” (Arial 11) pattern with respective resolution at the same time.
Interface Controller	Read/Write operation to hard disk
LAN Controller	Data transfer to client
Serial Ports	1. Read/Write operation to USB Storage Media or e-SATA HDD & USB HDD. 2. Sent “H” (Arial 11) to printer.
Audio Controller	Run the program “Windows Media Player” and send 1kHz sound to speaker.
The other peripheral devices were driven and operated in turn during all testing.	

2.5. Test Procedure

The EUT (within PC system) was placed on table which was above the ground by 80cm and PC System’s power cord was connected to the power mains through an Artificial Mains Network (A.M.N.). The other peripheral devices power cords were connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provided a 50 ohm coupling impedance for the measuring equipment. (Please refer to the block diagram of the test setup and photographs.) Both sides of A.C. line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed according to ANSI C63.4-2009 during conducted measurement.

The bandwidth of the R&S Test Receiver ESCS30 was set at 9kHz.

The frequency range from 0.15MHz to 30MHz was pre-scanned with a peak detector.

All the final readings from Test Receiver were measured with the Quasi-Peak detector and Average detector. (Remark: If the Average limit is met when using a Quasi-Peak detector, the Average detector is unnecessary)

2.6. Powerline Conducted Emission Measurement Results

PASSED. (All emissions not reported below are too low against the prescribed limits.)

The EUT (within PC system) with the following **worst test mode (DVI + HDMI, 1920*1200/60Hz)** was performed during this section testing and to read Q.P. value, the test data are listed in next pages.

EUT : Motherboard M/N : E2KM1I-DELUXE

Test Date : Jan. 07, 2013 Temperature : 22 Humidity : 52%

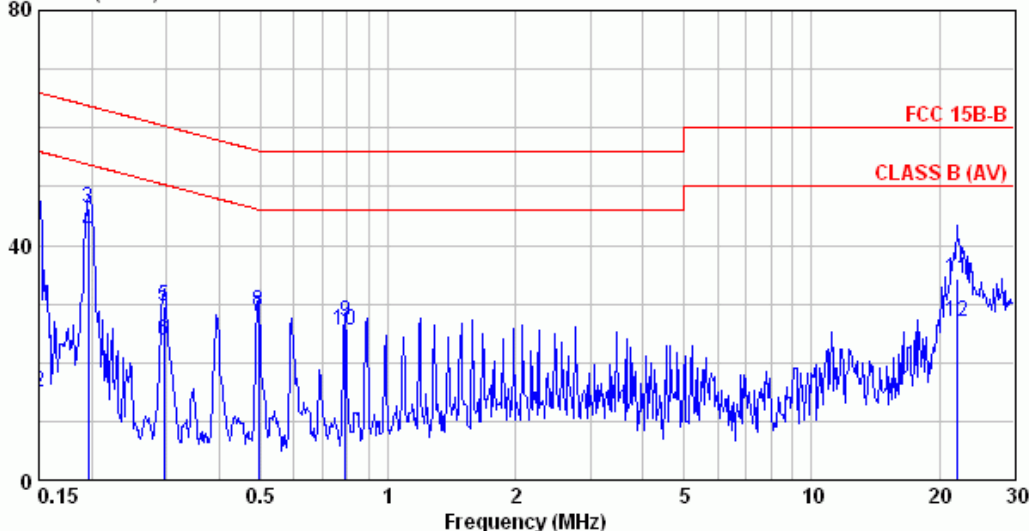
The details are as follows :

Mode	Operating of EUT	VGA Interface, Resolutions and Frequencies	Reference Test Data No.	
			Neutral	Line
1.	Full System	DVI + HDMI, 1920*1200/60Hz	# 12	# 11



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 Email:ttemc@ttemc.com.tw

Data: 12 File: \\Newsite-nas\TEST_PHOTO\2013year\C1M1301xxx\C1M1301012\C1M1301012-C-D
 Level (dBuV) Date: 2013-01-07



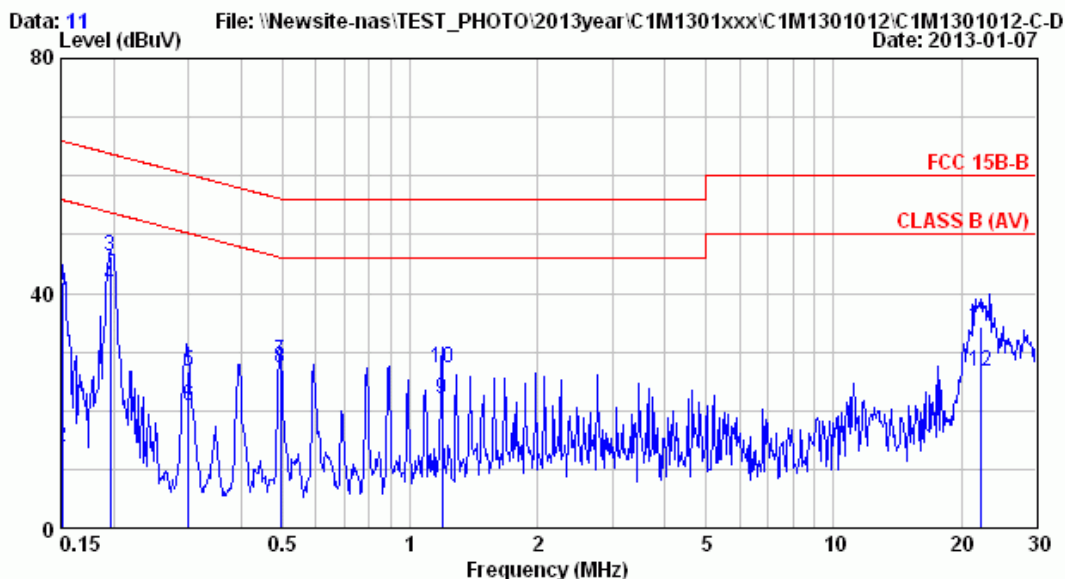
Site : NO.3 Shielded Room Data : 12
 Condition : KNW-244C Phase : NEUTRAL
 Limit : FCC 15B-B
 Env. / Ins. : 22°C / 52% ESCS 30 (337) Engineer: Edward
 EUT : E2KM1I-DELUXE
 Power Rating : 120Vac / 60Hz
 Test Mode : FULL SYSTEM1920*1200/60Hz DVI+HDMI

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.150	0.14	0.20	42.73	43.07	66.00	22.93	QP
2	0.150	0.14	0.20	14.52	14.86	56.00	41.14	AVERAGE
3	0.197	0.10	0.20	46.03	46.33	63.76	17.42	QP
4	0.197	0.10	0.20	41.95	42.25	53.76	11.50	AVERAGE
5	0.296	0.10	0.20	29.38	29.68	60.37	30.69	QP
6	0.296	0.10	0.20	23.51	23.81	50.37	26.56	AVERAGE
7	0.494	0.10	0.20	27.51	27.81	46.10	18.29	AVERAGE
8	0.494	0.10	0.20	28.54	28.84	56.10	27.26	QP
9	0.792	0.10	0.20	26.61	26.91	56.00	29.09	QP
10	0.792	0.10	0.20	25.17	25.47	46.00	20.53	AVERAGE
11	21.946	0.32	0.70	33.29	34.31	60.00	25.69	QP
12	21.946	0.32	0.70	25.97	26.99	50.00	23.01	AVERAGE

Remarks: 1.Emission Level= LISN Factor + Cable Loss + Reading.
 2.If the average limit is met when using a quasi-peak detector ,the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.



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Site : NO.3 Shielded Room Data : 11
 Condition : KNW-244C Phase : LINE
 Limit : FCC 15B-B
 Env. / Ins. : 22°C / 52% ESCS 30 (337) Engineer: Edward
 EUT : E2KM1I-DELUXE
 Power Rating : 120Vac / 60Hz
 Test Mode : FULL SYSTEM1920*1200/60Hz DVI+HDMI

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV)	Limits (dBµV)	Margin (dB)	Remark
1	0.151	0.14	0.20	41.67	42.01	65.95	23.94	QP
2	0.151	0.14	0.20	13.52	13.86	55.95	42.09	AVERAGE
3	0.197	0.10	0.20	46.01	46.31	63.76	17.44	QP
4	0.197	0.10	0.20	41.14	41.44	53.76	12.31	AVERAGE
5	0.301	0.10	0.20	26.36	26.66	60.23	33.57	QP
6	0.301	0.10	0.20	20.49	20.79	50.23	29.44	AVERAGE
7	0.496	0.10	0.20	28.16	28.46	56.07	27.61	QP
8	0.496	0.10	0.20	26.89	27.19	46.07	18.88	AVERAGE
9	1.191	0.10	0.40	21.44	21.94	46.00	24.06	AVERAGE
10	1.191	0.10	0.40	26.62	27.12	56.00	28.88	QP
11	22.307	0.35	0.70	33.13	34.18	60.00	25.82	QP
12	22.307	0.35	0.70	25.75	26.80	50.00	23.20	AVERAGE

Remarks: 1.Emission Level= LISN Factor + Cable Loss + Reading.
 2.If the average limit is met when using a quasi-peak detector ,the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

3. RADIATED EMISSION MEASUREMENT

3.1. Test Equipment

The following test equipment was used during the radiated emission measurement :

3.1.1. For 30MHz~1000MHz Frequency (At No. 5 Open Area Test Site)

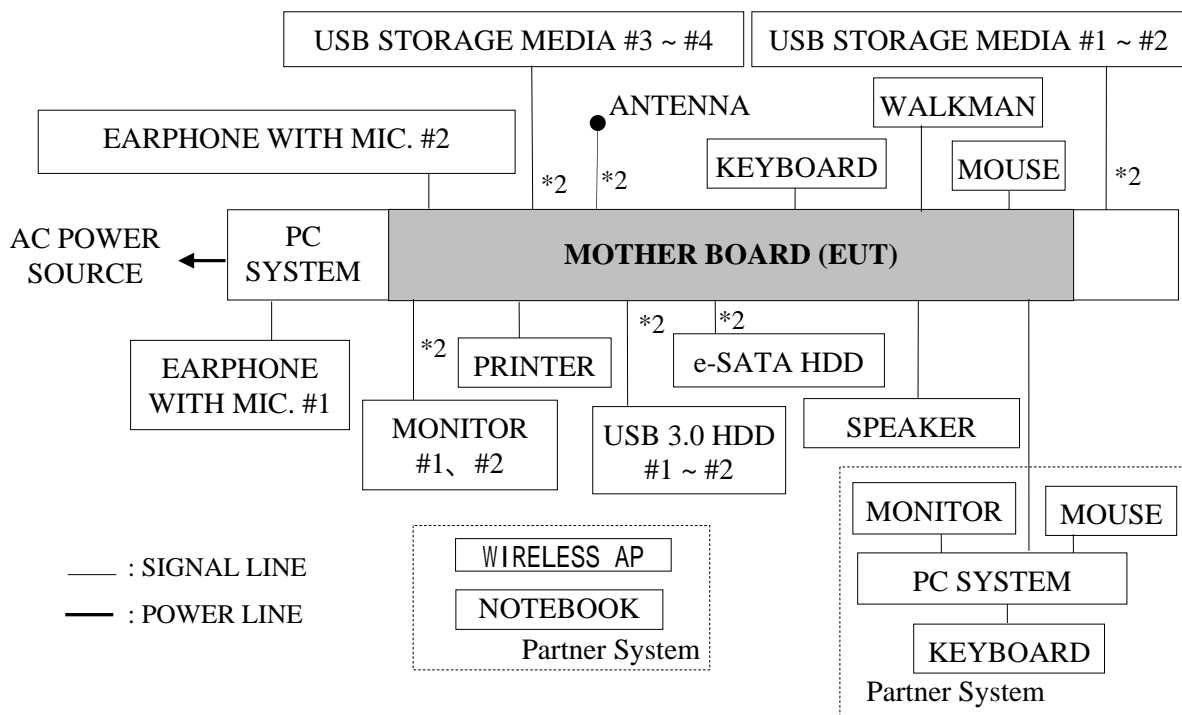
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E7405A	MY42000134	Aug. 23, 12'	Aug. 22, 13'
2.	Test Receiver	R&S	ESCI	100555	May 10, 12'	May 09, 13'
3.	Amplifier	HP	8447D	2727A06154	NCR	NCR
4.	Log Periodic Antenna	CHASE	UPA6109	1064	Mar. 03, 12'	Mar. 02, 13'
5.	Biconical Antenna	CHASE	VBA6106A	1258	Mar. 03, 12'	Mar. 02, 13'

3.1.2. For Above 1GHz Frequency (At No. 2 Semi-Anechoic Chamber)

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9010A-526	MY48031076	Oct. 11, 12'	Oct. 10, 13'
2.	Amplifier	HP	8449B	3008A02596	Jan. 09, 12'	Jan. 08, 13'
3.	Horn Antenna	EMCO	3115	9609-4927	Jul. 05, 12'	Jul. 04, 13'

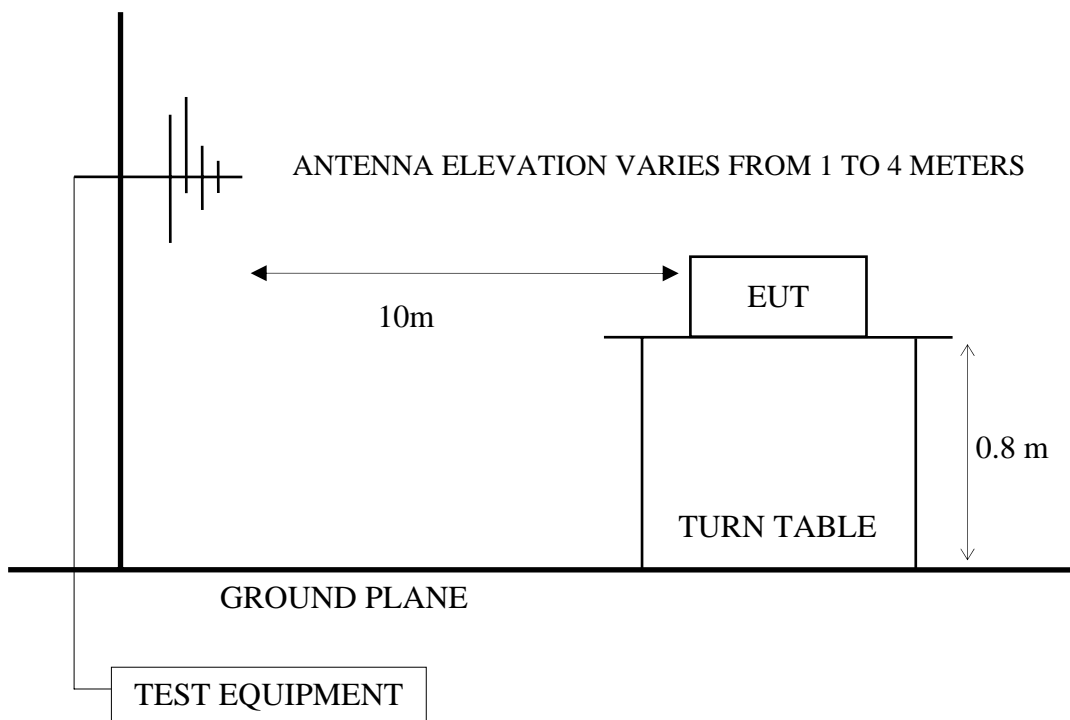
3.2. Block Diagram of Test Setup

3.2.1. Block Diagram of connection between EUT and simulators



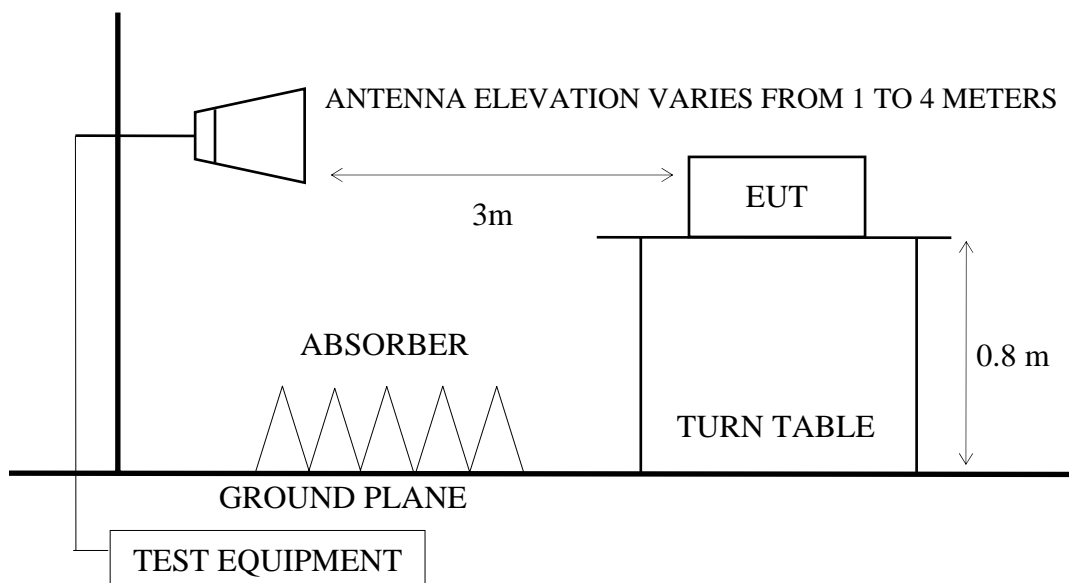
3.2.2. Open Area Test Site Setup Diagram (10m) for 30-1000MHz

ANTENNA TOWER



3.2.3. No. 2 Semi-Anechoic Chamber (3m) Setup Diagram for Above 1GHz

ANTENNA TOWER



3.3. Radiation Emission Limit (FCC § 15.109/CISPR 22/ICES-003, Class B)

All emanations from a class B computing devices or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (dB μ V/m)
30 ~ 230	10	30
230 ~ 1000	10	37
Above 1000	3	74.0 (Peak)
Above 1000	3	54.0 (Average)

- Note :
- (1) The tighter limit applies at the edge between two frequency bands.
 - (2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the E.U.T.
 - (3) There is no over 1GHz limits in CISPR 22/1997 standard. Therefore, a FCC limit is used based on CFR 47 Part 15.35 (b) and Part 15.109 (a)(g). The 3m limit apply relation: $L2 = L1(d1/d2)$
 - (4) The system under test shall not exceed the radiated emission limits specified in Section 15.109 of this part by more than 6 dB.

3.4. Operating Condition of EUT

Same as conducted measurement which is listed in 2.4., except the test set up replaced by section 3.2.

3.5. Test Procedure

- 3.5.1. For Frequency Range was 30MHz-1000MHz which measurement distance was 10m at Open Area Test Site:

The EUT and its simulators were placed on a turn table which was 0.8 meter above ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. EUT was set to 10 meters away from the receiving antenna which was mounted on an antenna tower. The antenna could be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Bilog Antenna was used as receiving antenna. Both horizontal and vertical polarizations of the antenna were set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4-2009 on radiated measurement.

The bandwidth of the R&S Test Receiver ESCI was set at 120kHz.

The frequency range from 30MHz to 1000MHz was pre-scanned with Peak detector and all the final readings of measurement were with Quasi-Peak detector.

3.5.2. For Frequency Range was Above 1GHz which measurement distance was 3m at No.2 Semi-Anechoic Chamber:

The EUT and its simulators were placed on a turn table which was 0.8 meter above ground. The portion of the test volume that was obstructed by absorber placed on the floor (30cm maximum). The turn table rotated 360 degrees to determine the position of the maximum emission level. EUT was set to 3 meters away from the receiving antenna which was mounted on an antenna tower. The antenna could be moved up and down between 1 meter and 4 meters to find out the maximum emission level. A calibrated Horn Antenna was used as a receiving antenna. Both horizontal and vertical polarization of the antenna were set on measurement, and both average and peak emission level were recorded from spectrum analyzer. In order to find the maximum emission level, all the interface cables were manipulated according to ANSI C63.4-2009 on radiated measurement.

The resolution bandwidth of Agilent Spectrum Analyzer N9010A-526 was set at 1MHz

The frequency range from Above 1GHz was checked with peak and average detector.

3.6. Radiated Emission Measurement Results

PASSED. (All the emissions not reported below are too low against the prescribed limits.)

For 30MHz-1000MHz frequency range:

The EUT (within PC system) selected the **worst test mode (DVI + HDMI, 1920*1200/60Hz)** was performed during this section testing and the test data are listed in 3.6.1.

EUT : Motherboard M/N : E2KM1I-DELUXE

Test Date : Jan. 07, 2013 Temperature : 20 Humidity : 55%

The details are as follows :

Mode	Operating of EUT	VGA Interface, Resolutions and Frequencies	Reference Test Data No.	
			Horizontal	Vertical
1.	Full System (Open Case)	DVI + HDMI, 1920*1200/60Hz	# 17	# 18
2.	Full System (Close Case)	DVI + HDMI, 1920*1200/60Hz	# 16	# 15

The system under test shall not exceed the radiated emission limits specified in Section 15.109 of this part by more than 6 dB.

For frequency range above 1GHz:

Finally, The EUT (within PC system) selected the **worst test mode (DVI + HDMI, 1920*1200/60Hz)** was performed during this section testing and the test data are listed in section 3.6.2.

EUT : Motherboard M/N : E2KM1I-DELUXE

Test Date : Jan. 09, 2013 Temperature : 21 Humidity : 49%

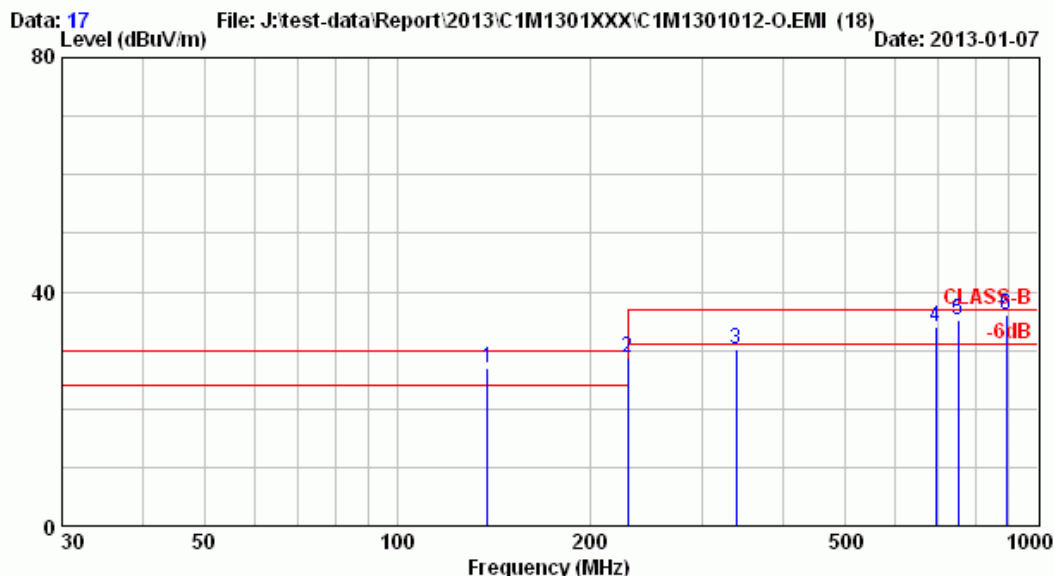
The details are as follows :

Mode	Operating of EUT	VGA Interface, Resolutions and Frequencies	Reference Test Data No.	
			Horizontal	Vertical
1.	Full System (Open Case)	DVI + HDMI, 1920*1200/60Hz	# 15	# 16
2.	Full System (Close Case)	DVI + HDMI, 1920*1200/60Hz	# 13	# 14

3.6.1. Radiated Emission Measurement Results at open area test site
(Frequency Range 30-1000MHz)



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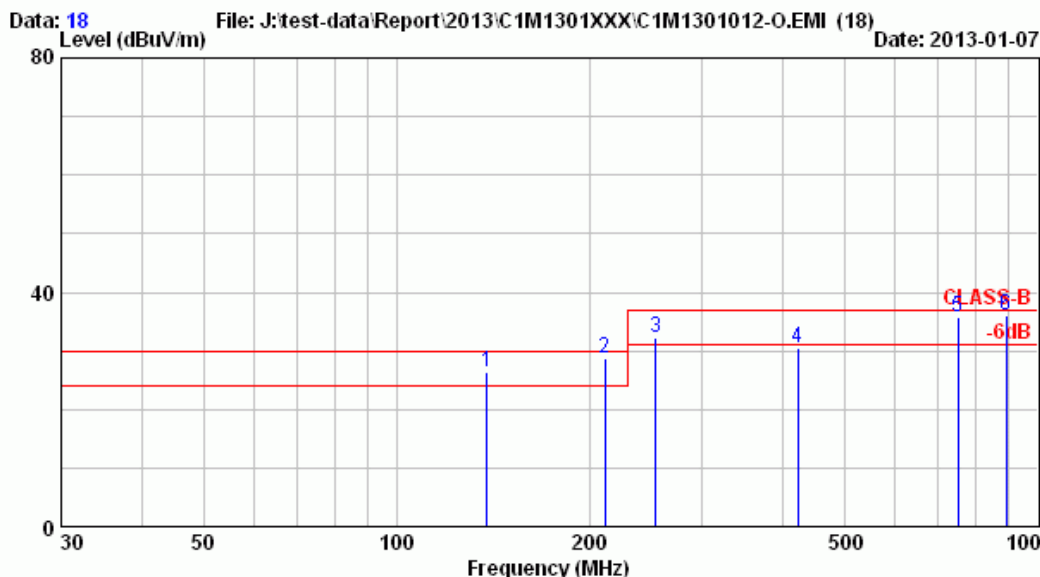
Site no. : No.5 open site Data no. : 17
Dis. / Ant. : 10m VBA6106A/UPA6109 Ant. pol. : HORIZONTAL
Limit : CLASS-B
Env. / Ins. : 20°C / 55% ES CI (555) Engineer : George yang
EUT M/N : E2KMLI-DELUXE
Power Rating : 120Vac / 60Hz
Test Mode : FULL SYSTEM 1920*1200/60Hz DVI + HDMI
OPEN CASE

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	138.413	19.67	1.67	5.67	27.01	30.00	2.99	
2	229.412	22.08	2.22	4.32	28.62	30.00	1.38	
3	338.425	14.74	2.76	12.55	30.04	37.00	6.96	
4	694.125	21.11	4.25	8.70	34.05	37.00	2.95	
5	751.425	21.56	4.46	9.15	35.17	37.00	1.83	
6	893.412	23.05	4.96	8.12	36.13	37.00	0.87 *	

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.
3. The worst emission was detected at 893.412MHz with corrected signal level of 37.20dBµV/m (limit is 37.0dBµV/m) when the antenna was at horizontal polarization and was at 4m high and the turn table was at 135°.
4. 0°was the table front facing the antenna. Degree is calculated from 0°clockwise facing the antenna.
5. The EUT with open case was measured, the limit not exceed the radiated emission limits specified in Section 15.109 of this part by more than 6 dB.



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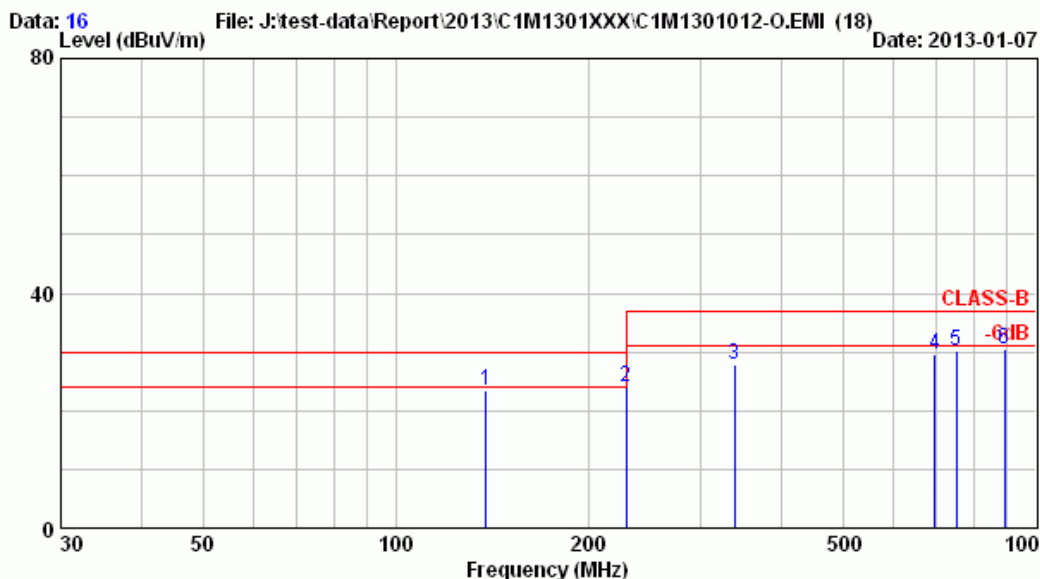
Site no. : No.5 open site Data no. : 18
 Dis. / Ant. : 10m VBA6106A/UPA6109 Ant. pol. : VERTICAL
 Limit : CLASS-B
 Env. / Ins. : 20°C / 55% ESCI (555) Engineer : George yang
 EUT M/N : E2KM1I-DELUXE
 Power Rating : 120Vac / 60Hz
 Test Mode : FULL SYSTEM 1920*1200/60Hz DVI + HDMI
 OPEN CASE

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	138.541	19.67	1.67	5.13	26.47	30.00	3.53	
2	211.412	21.72	2.11	4.92	28.76	30.00	1.24	
3	253.420	22.54	2.35	7.32	32.22	37.00	4.78	
4	422.425	16.02	3.15	11.27	30.44	37.00	6.56	
5	751.425	21.56	4.46	9.59	35.61	37.00	1.39	
6	894.412	23.05	4.96	8.15	36.17	37.00	0.83	*

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.
 3. The worst emission was detected at 894.412MHz with corrected signal level of 36.17dBμV/m (limit is 37.0dBμV/m) when the antenna was at vertical polarization and was at 1m high and the turn table was at 260°.
 4. 0°was the table front facing the antenna. Degree is calculated from 0°clockwise facing the antenna.
 5. The EUT with open case was measured, the limit not exceed the radiated emission limits specified in Section 15.109 of this part by more than 6 dB.



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Site no. : No.5 open site Data no. : 16
 Dis. / Ant. : 10m VBA6106A/UPA6109 Ant. pol. : HORIZONTAL
 Limit : CLASS-B
 Env. / Ins. : 20°C / 55% ESCI (555) Engineer : George yang
 EUT M/N : E2KM1I-DELUXE
 Power Rating : 120Vac / 60Hz
 Test Mode : FULL SYSTEM 1920*1200/60Hz DVI + HDMI

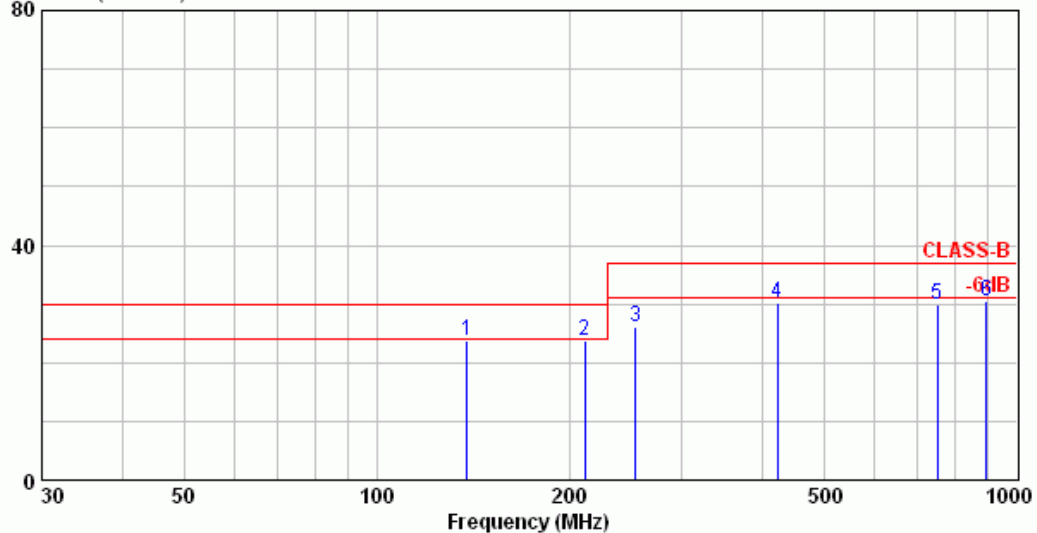
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	138.545	19.67	1.67	1.99	23.33	30.00	6.67	
2	229.412	22.08	2.22	-0.34	23.95	30.00	6.05	
3	338.415	14.74	2.76	10.45	27.95	37.00	9.05	
4	694.428	21.11	4.25	4.37	29.72	37.00	7.28	
5	751.418	21.56	4.46	4.16	30.18	37.00	6.82	
6	893.236	23.05	4.96	2.43	30.44	37.00	6.56	

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.



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Data: 15 File: J:\test-data\Report\2013\C1M1301XXX\C1M1301012-O.EMI (18) Date: 2013-01-07



Site no. : No.5 open site Data no. : 15
 Dis. / Ant. : 10m VBA6106A/UPA6109 Ant. pol. : VERTICAL
 Limit : CLASS-B
 Env. / Ins. : 20°C / 55% ESCI (555) Engineer : George yang
 EUT M/N : E2KM1I-DELUXE
 Power Rating : 120Vac / 60Hz
 Test Mode : FULL SYSTEM 1920*1200/60Hz DVI + HDMI

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	138.454	19.67	1.67	2.42	23.76	30.00	6.24	
2	211.422	21.72	2.11	0.00	23.84	30.00	6.16	
3	253.411	22.54	2.35	1.32	26.22	37.00	10.78	
4	422.458	16.02	3.15	11.03	30.20	37.00	6.80	
5	751.452	21.56	4.46	4.02	30.04	37.00	6.96	
6	894.899	23.06	4.96	2.42	30.44	37.00	6.56	

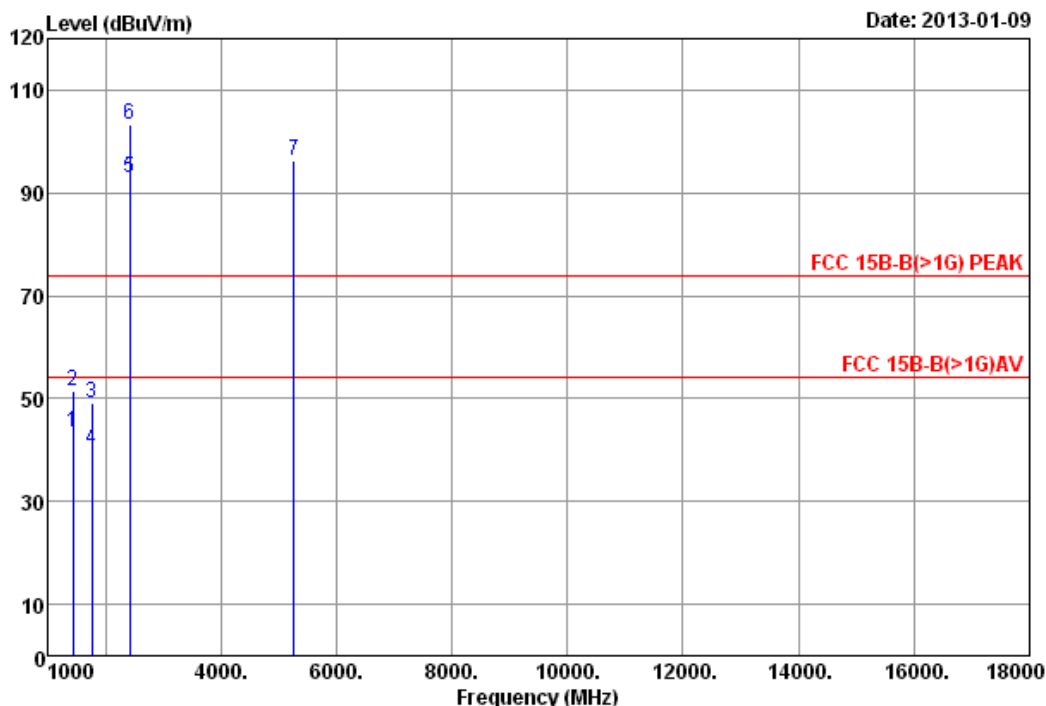
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

3.6.2. Radiated Emission Measurement Results at Semi-Anechoic Chamber (Frequency Range Above 1GHz)



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Data: 15 File: D:\Test data\REPORT\2013\1M1301XXX\1M1301012-CHABMER.EM6 (16)



Site no. : Audix No.2 Chamber Data no. : 15
 Dis. / Ant. : 3m 3115 4927 Ant. pol. : HORIZONTAL
 Limit : FCC 15B-B(>1G) PEAK
 Env. / Ins. : 21°C / 49% H9010A (076) Engineer : Ken Yang
 EUT M/H : E2KMII-DELUXE
 Power Rating : 120Vac/60Hz
 Test Mode : Full System
 1920*1200/60Hz DVI+HDMI
 OPEN CASE

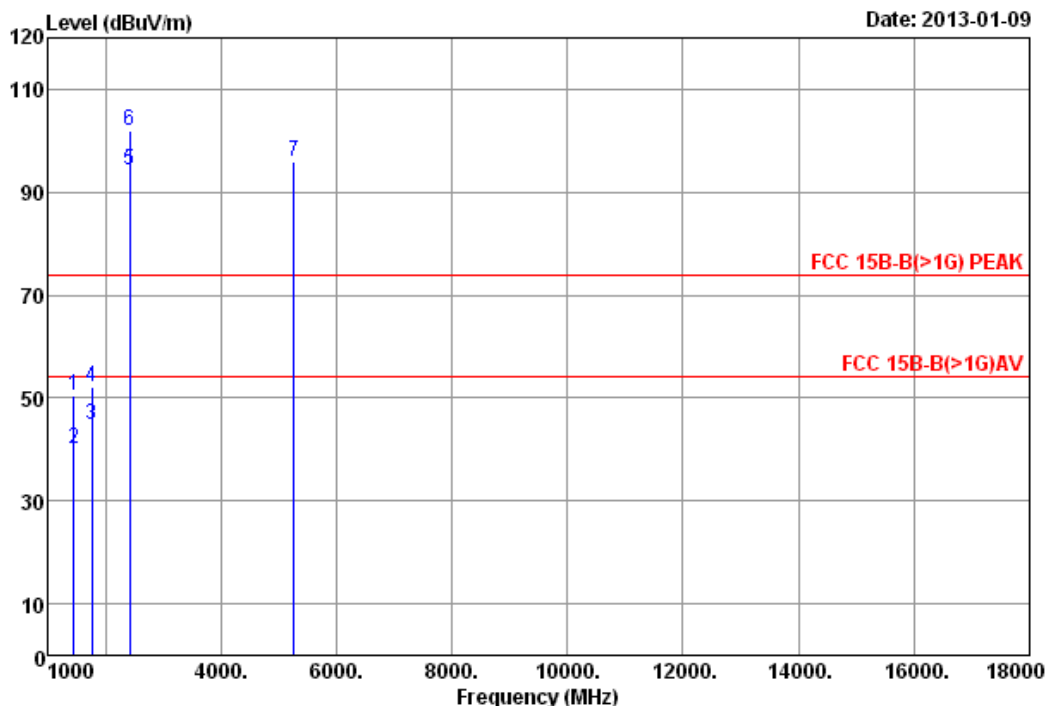
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	PREAMP Gain (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	1445.52	25.67	3.11	35.66	50.50	43.62	54.00	10.38	Average
2	1445.87	25.68	3.11	35.66	58.22	51.35	74.00	22.65	Peak
3	1773.42	26.90	3.56	35.28	54.07	49.25	74.00	24.75	Peak
4	1773.49	26.90	3.56	35.28	45.05	40.23	54.00	13.77	Average
@ 5	2426.49	28.57	4.09	34.92	95.12	92.86			
@ 6	2426.75	28.57	4.09	34.92	105.52	103.26			
@ 7	5260.00	34.51	6.31	34.08	89.61	96.35			

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Preamp Gain + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.
 3. "@" means the radiated emission from the transmitter/transceiver, it is ignored in this report.



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Data: 16 File: D:\Test data\REPORT\2013\C1M1301XXX\C1M1301012-CHABMER.EM6 (16)



Site no. : Audix No.2 Chamber Data no. : 16
 Dis. / Ant. : 3m 3115 4927 Ant. pol. : VERTICAL
 Limit : FCC 15B-B(>1G) PEAK
 Env. / Ins. : 21°C / 49% H9010A (076) Engineer : Ken Yang
 EUT M/N : E2KM11-DELUXE
 Power Rating : 120Vac/60Hz
 Test Mode : Full System
 1920*1200/60Hz DVI+HDMI
 OPEN CASE

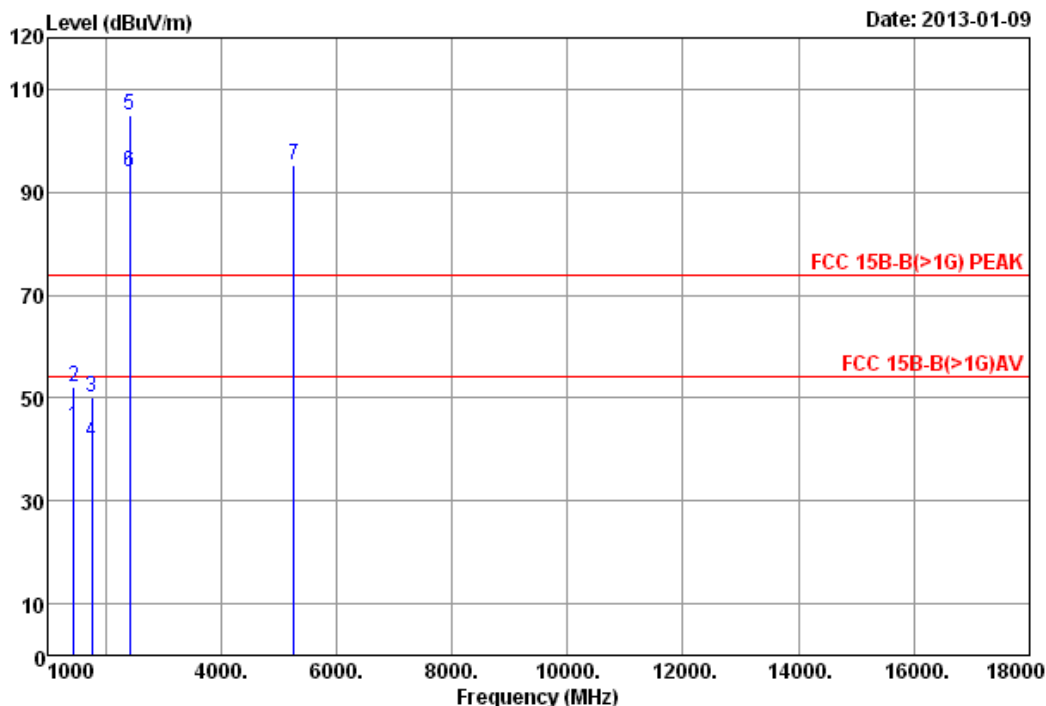
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	PREAMP Gain (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark
1	1448.19	25.68	3.12	35.65	57.19	50.34	74.00	23.66	Peak
2	1448.85	25.68	3.12	35.65	47.08	40.23	54.00	13.77	Average
3	1772.54	26.90	3.56	35.28	49.65	44.83	54.00	9.17	Average
4	1772.82	26.90	3.56	35.28	57.07	52.25	74.00	21.75	Peak
@ 5	2423.72	28.56	4.09	34.92	96.50	94.23			
@ 6	2423.96	28.56	4.09	34.92	104.39	102.12			
@ 7	5260.00	34.51	6.31	34.08	89.30	96.04			

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Preamp Gain + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.
 3. "@" means the radiated emission from the transmitter/transceiver, it is ignored in this report.



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Data: 13 File: D:\Test data\REPORT\2013\C1M1301XXX\C1M1301012-CHABMER.EM6 (16)



Site no. : Audix No.2 Chamber Data no. : 13
 Dis. / Ant. : 3m 3115 4927 Ant. pol. : HORIZONTAL
 Limit : FCC 15B-B(>1G) PEAK
 Env. / Ins. : 21°C / 49% H9010A (076) Engineer : Ken Yang
 EUT M/N : E2KM11-DELUXE
 Power Rating : 120Vac/60Hz
 Test Mode : Full System
 1920*1200/60Hz DVI+HDMI

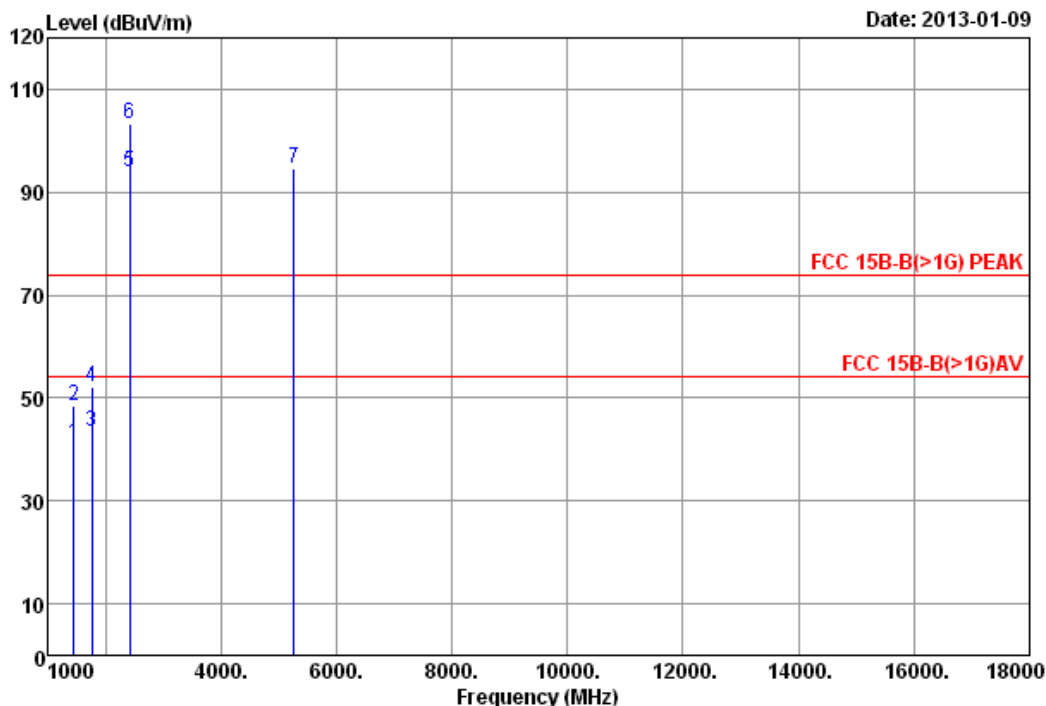
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	PREAMP Gain (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark	
	1	1447.21	25.68	3.11	35.66	51.41	44.54	54.00	9.46	Average
	2	1447.24	25.68	3.11	35.66	59.08	52.21	74.00	21.79	Peak
	3	1770.24	26.90	3.56	35.29	54.95	50.12	74.00	23.88	Peak
	4	1770.54	26.90	3.56	35.29	46.42	41.59	54.00	12.41	Average
@	5	2425.25	28.57	4.09	34.92	107.19	104.93			
@	6	2425.42	28.57	4.09	34.92	96.12	93.86			
@	7	5260.00	34.51	6.31	34.08	88.59	95.33			

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Preamp Gain + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.
 3. "@" means the radiated emission from the transmitter/transceiver, it is ignored in this report.



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Data: 14 File: D:\Test data\REPORT\2013\C1M1301XXX\C1M1301012-CHABMER.EM6 (16)



Site no. : Audix No.2 Chamber Data no. : 14
 Dis. / Ant. : 3m 3115 4927 Ant. pol. : VERTICAL
 Limit : FCC 15B-B(>1G) PEAK
 Env. / Ins. : 21°C / 49% H9010A (076) Engineer : Ken Yang
 EUT M/N : E2KM11-DELUXE
 Power Rating : 120Vac/60Hz
 Test Mode : Full System
 1920*1200/60Hz DVI+HDMI

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	PREAMP Gain (dB)	Reading (dBµV)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Remark	
	1	1448.26	25.68	3.12	35.65	47.97	41.12	54.00	12.88	Average
	2	1448.51	25.68	3.12	35.65	55.40	48.55	74.00	25.45	Peak
	3	1772.16	26.90	3.56	35.28	48.15	43.33	54.00	10.67	Average
	4	1772.72	26.90	3.56	35.28	57.07	52.25	74.00	21.75	Peak
@	5	2424.42	28.56	4.09	34.92	96.15	93.88			
@	6	2424.82	28.56	4.09	34.92	105.57	103.30			
@	7	5260.00	34.51	6.31	34.08	87.94	94.68			

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Preamp Gain + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.
 3. "@" means the radiated emission from the transmitter/transceiver, it is ignored in this report.

4. DEVIATION TO TEST SPECIFICATIONS

【NONE】

5. PHOTOGRAPHS

5.1. Photos of Powerline Conducted Emission Measurement



FRONT VIEW OF CONDUCTED MEASUREMENT



BACK VIEW OF CONDUCTED MEASUREMENT

5.2. Photos of Radiated Emission Measurement at Open Area Test Site (30-1000MHz)

Test Mode: Open Case



FRONT VIEW OF RADIATED MEASUREMENT

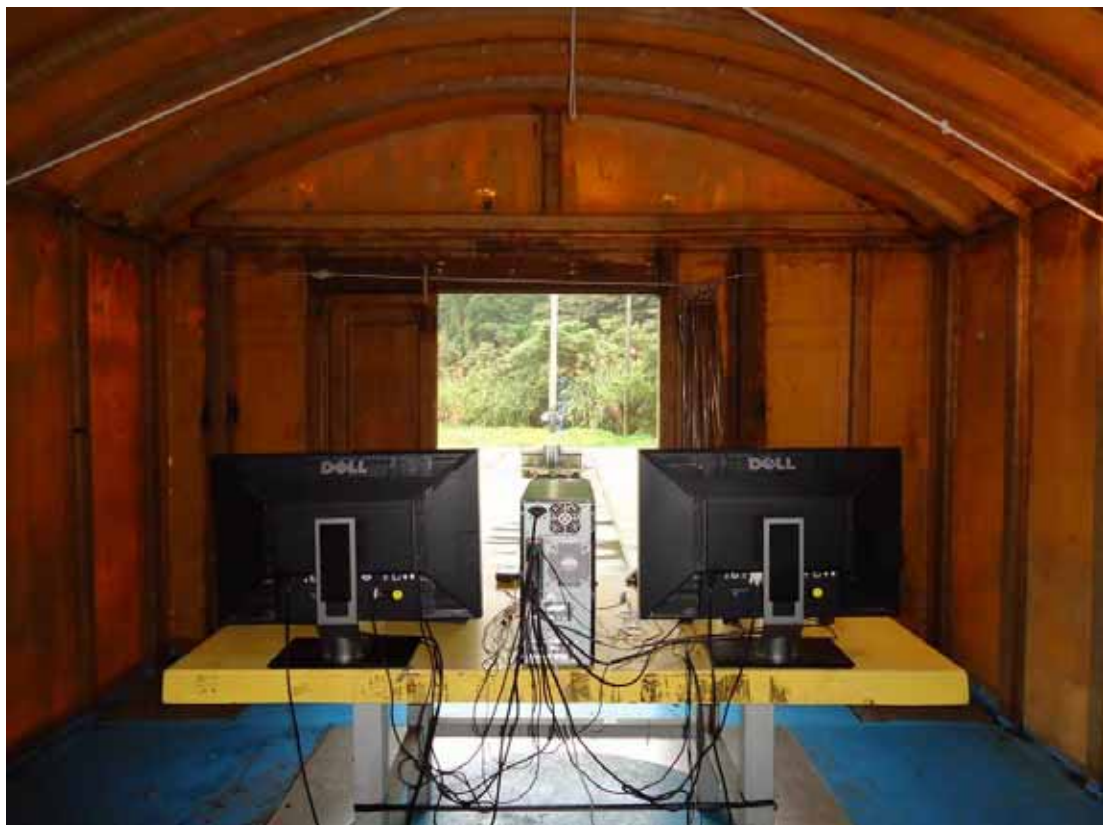


BACK VIEW OF RADIATED MEASUREMENT

Test Mode: Close Case



FRONT VIEW OF RADIATED MEASUREMENT



BACK VIEW OF RADIATED MEASUREMENT

5.3. Photos of Radiated Emission Measurement at Semi-Anechoic Chamber (Above 1GHz)

Test Mode: Open Case



FRONT VIEW OF RADIATED MEASUREMENT



BACK VIEW OF RADIATED MEASUREMENT

Test Mode: Close Case



FRONT VIEW OF RADIATED MEASUREMENT

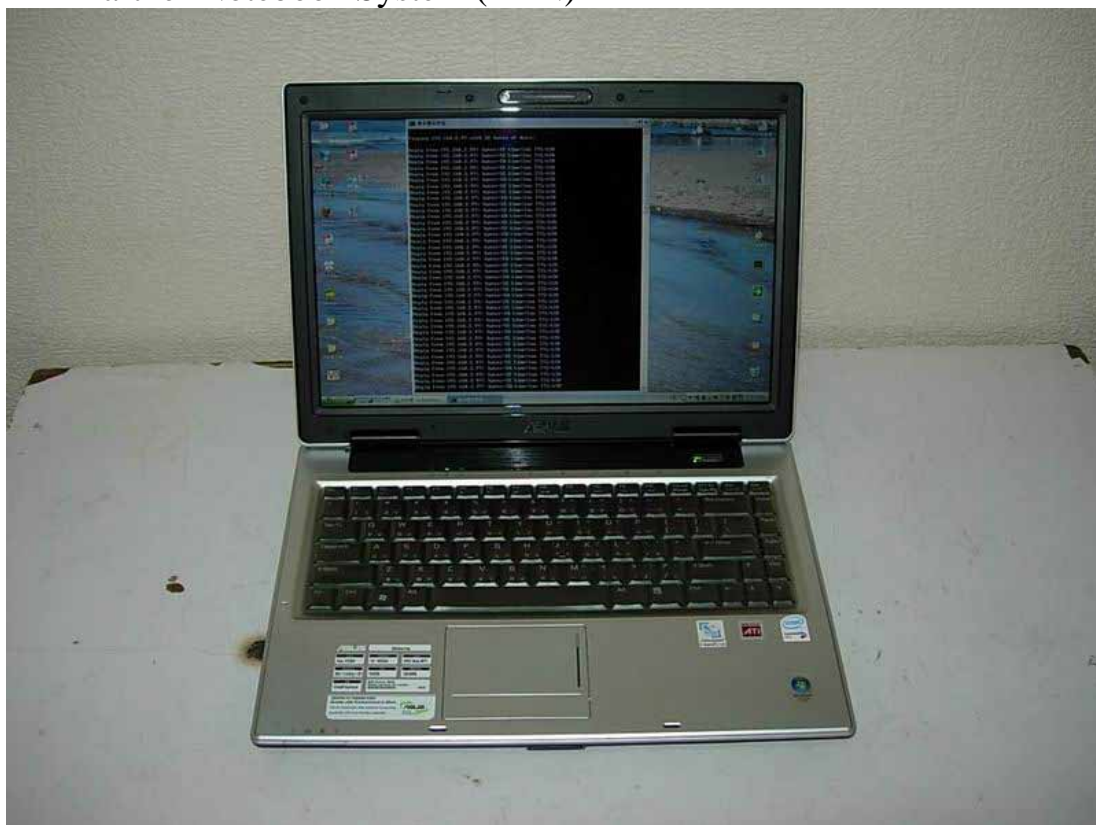


BACK VIEW OF RADIATED MEASUREMENT

Partner PC System



Partner Notebook System (LAN)



Partner AP System (Wireless)



APPENDIX I

(Photos of EUT)

(Total Page: 3 Pages)

Figure 1
Motherboard (Front View)



Figure 2
Motherboard (Front View)



Figure 3
Motherboard (Back View)



Figure 4
Motherboard (Side View, I/O Ports)



Figure 5
WLAN+BT Module (Front View)



Figure 6
WLAN+BT Module (Back View)

