EMC TEST REPORT

for

Personal Computer

Model No.: DEX715X (X=0~9,A~Z,a~z or blank)

of

Applicant: AOPEN Incorporated
Address: No.68,Ruiguang Rd., Neihu District, Taipei, 114, Taiwan, R.O.C.

Tested and Prepared

by

Worldwide Testing Services (Taiwan) Co., Ltd.

FCC Registration No.: 930600

Industry Canada filed test laboratory Reg. No. IC 5679A-1

A2LA Accredited No.: 2732.01

Report No.: W6M21306-13310-E-11

6F, NO. 58, LANE 188, RUEY-KUANG RD., NEIHU TAIPEI 114, TAIWAN, R.O.C.
TEL: 886-2-66068877 FAX: 886-2-66068879 E-mail: wts@wts-lab.com

Details of applicant

Name	: AOPEN Incorporated
Street	: No.68,Ruiguang Rd., Neihu District,
Town	: Taipei, 114,
Country	: Taiwan, R.O.C.
Telephone	: 02-7710-1195
Fax	: 02-7710-1191

Description of tested equipment

Type of product	: Personal Computer
Type identification	: DEX715X (X=0~9,A~Z,a~z or blank)
Brand name	: AOPEN
Multi-listing model no.	: ./.
Power supply	: Adaptor: (I/P: 100-240Vac / 50-60Hz / 1.5A; O/P: 19Vdc / 4.74A)

Date of testing processing

Date of receipt of test item	: July 08, 2013
Date of test	: from July 08, 2013 to July 18, 2013
Other Information	: None

Manufacturer (if different from applicant)

Name	: ./.
Street	: ./.
Town	: ./.
Country	: ./.

Test Standards

EN 55022 Class B (2010), AS/NZS CISPR 22:2009 /A1:2010
IEC/EN 61000-3-2 (2006+A2:2009), IEC/EN 61000-3-3 (2013)
EN 55024 (2010), (IEC/EN61000-4-2(2009)/-3(2006+A2:2010)/-4(2012)/-5(2006)/
-6(2009)/-8(2010)/-11(2004))

Technical responsibility for area of testing: Danny Sung

Issue Date： July 18, 2013

Tester: Sora

July 18, 2013

Note:

1. This test report is valid in connection to the model has been tested, any modification to the product which is different from the test model will avoid the certification of the test report.
2. This test report shall always be duplicated in full pages unless the written approval of the testing laboratory is obtained.
3. The X in model number is representing different colors.

Testing laboratory

Location

Worldwide Testing Services (Taiwan) Co., Ltd.
OATS
No.5-1, Lishui, Shuang Sing Village,
Wanli Dist., New Taipei City 207,
Taiwan (R.O.C.)
3 meter semi-anechoic chamber
No.35, Aly. 21, Ln. 228, Ankang Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)
TEL:886-2-6613-0228
FAX:886-2-2791-5046
Company
Worldwide Testing Services (Taiwan) Co., Ltd.
6F, NO. 58, LANE 188, RUEY-KUANG RD.
NEIHU, TAIPEI 114, TAIWAN R.O.C.
Tel : 886-2-66068877
Fax : 886-2-66068879

Details of accreditation status

Accredited testing laboratory
A2LA accredited number: 2732.01
FCC filed test laboratory Reg. No. 930600
Industry Canada filed test laboratory Reg. No. IC5679A-1

Test location, where different from Worldwide Testing Services (Taiwan) Co., Ltd.

Name : ./.
Accredited number: ./.
Street : ./.
Town : ./.
Country : ./.
Telephone : ./.
Fax : ./.

Modification Information

No modification was made during the all test items been performed.

Electro - Magnetic Compatibility

Test – Result

☒ 1st test ☐ test after modification ☐ production test

Test Emission / Immunity			Done	Test passed	Test failed
Emission	Radiated Emission	EN 55022 Class B (2010)	☒	☒	☐
Emission	Conducted Emission	EN 55022 Class B (2010)	☒	☒	☐
Harmonics	Current Harmonics	IEC/EN 61000-3-2 (2006+A2:2009)	☒	☒	☐
Flicker	Voltage Fluctuations	IEC/EN 61000-3-3 (2013)	☒	☒	☐
ESD	Electrostatic Discharge	IEC/EN 61000-4-2 (2009)	☒	☒	☐
RF - Field	Radiated Immunity	IEC/EN 61000-4-3 (2006+A2:2010)	☒	☒	☐
Burst	Electrical Fast Transients	IEC/EN 61000-4-4 (2012)	☒	☒	☐
Surge	Transients comm.& diff.mode	IEC/EN 61000-4-5 (2006)	☒	☒	☐
RF-common mode	RF continues conducted	IEC/EN 61000-4-6 (2009)	☒	☒	☐
Magn-Field	Magnetic field immunity	IEC/EN 61000-4-8 (2010)	☒	☒	☐
V-dips	Voltage dips and Interruption	IEC/EN 61000-4-11 (2004)	☒	☒	☐

Test equipment utilized

No.	Test equipment	Type	Serial No.	Manufacturer	Cal. Date	Next Cal. Date
ETSTW-CE 001	EMI TEST RECEIVER	ESHS10	842121/013	R&S	2012/9/5	2013/9/4
ETSTW-CE 003	AC POWER SOURCE	APS-9102	D161137	GW	Function Test	
ETSTW-CE 004	ZWEILEITER-V-NETZNACHBILDUNG TWO-LINE V-NETWORK	ESH3-Z5	840731/011	R&S	2012/12/21	2013/12/20
ETSTW-CE 005	Line-Impedance Stabilisation Network	NNBM 8126D	137	Schwarzbeck	2012/9/26	2013/9/25
ETSTW-CE 006	IMPULSBEGRENZER PULSE LIMITER	ESH3-Z2	100226	R&S	2013/3/4	2014/3/3
ETSTW-CE 007	SPECTRUM ANALYZER 5GHz	FSB	849670/001	R&S	Pre-test Use	
ETSTW-CE 008	HF-EICHLEITUNG RF STEP ATTENUATOR 139dB DPSP	334.6010.02	844581/024	R&S	Function Test	
ETSTW-CE 009	TEMP.&HUMIDITY CHAMBER	GTH-225-40-1P-U	MAA0305-009	GIANT FORCE	2013/7/10	2014/7/9
ETSTW-CE 013	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T4-02	20242	FCC	2012/9/6	2013/9/5
ETSTW-CE 024	IMPEDANCE STABILIZATION NETWORK	ISN T800	29454	TESEQ	2013/1/7	2014/1/6
ETSTW-CS 004	COUPLING AND DECOUPLING NETWORK	CDN M016	20053	SCHAFFNER	2012/8/10	2013/8/09
ETSTW-CS 005	RF Power Amplifier	100A250A	306547	AR	Function Test	
ETSTW-CS 010	6 dB Attenuator	SA3N1007-06	None	AISI	Function test	
ETSTW-RE 003	EMI TEST RECEIVER	ESI 26	831438/001	R&S	2012/8/10	2013/8/09
ETSTW-RE 004	EMI TEST RECEIVER	ESI 40	832427/004	R&S	2012/9/5	2013/9/4
ETSTW-RE 005	EMI TEST RECEIVER	ESVS10	843207/020	R&S	2012/9/5	2013/9/4
ETSTW-RE 010	ABSORBING CLAMP	MDS 21	3469	Schwarzbeck	2012/9/5	2013/9/4
ETSTW-RE 012	TUNABLE BANDREJECT FILTER	D.C 0309	146	K&L	Function Test	
ETSTW-RE 013	TUNABLE BANDREJECT FILTER	D.C 0336	397	K&L	Function Test	
ETSTW-RE 019	MICROWAVE HORN ANTENNA	22240-25	121074	FM	2013/4/1	2014/3/31
ETSTW-RE 020	MICROWAVE HORN ANTENNA	AT4002A	306915	AR	Function Test	
ETSTW-RE 027	Passive Loop Antenna	6512	00034563	ETS-Lindgren	2013/7/3	2014/7/2
ETSTW-RE 028	Log-Periodic Dipole Array Antenna	3148	34429	EMCO	Function Test	
ETSTW-RE 029	Biconical Antenna	3109	33524	EMCO	Function Test	
ETSTW-RE 030	Double-Ridged Guide Horn Antenna	3117	00035224	EMCO	2013/3/4	2014/3/3
ETSTW-RE 032	Millivoltmeter	URV 55	849086/013	R&S	2012/10/5	2013/10/4
ETSTW-RE 033	WaveRunner 6000A Serise Oscilloscope	WAVERUNNER 6100A	LCRY0604P14508	LeCroy	Function Test	
ETSTW-RE 034	Power Sensor	URV5-Z4	839313/006	R&S	2012/10/5	2013/10/4
ETSTW-RE 042	Biconical Antenna	HK116	100172	R&S	2013/1/21	2014/1/20
ETSTW-RE 043	Log-Periodic Dipole	HL223	100166	R&S	2013/4/11	2014/4/10

	Antenna					
ETSTW-RE 044	Log-Periodic Antenna	HL050	100094	R&S	2013/4/18	2014/4/17
ETSTW-RE 045	ESA-E SERIES SPECTRUM ANALYZER	E4404B	MY45111242	Agilent	Pre-test Use	
ETSTW-RE 048	Triple Loop Antenna	HXYZ 9170	HXYZ 9170-134	Schwarzbeck	2012/8/28	2013/8/27
ETSTW-RE 049	TRILOG Super Broadband test Antenna	VULB 9160	9160-3185	Schwarzbeck	2013/3/21	2014/3/20
ETSTW-RE 050	Attenuator 10dB	50HF-010-1	None	JFW	2013/3/4	2014/3/3
ETSTW-RE 051	Attenuator 6dB	50HF-006-1	None	JFW	2013/3/4	2014/3/3
ETSTW-RE 053	Attenuator 3dB	50HF-003-1	None	JFW	2013/3/4	2014/3/3
ETSTW-RE 055	SPECTRUM ANALYZER	FSU 26	200074	R&S	2013/5/31	2014/5/30
ETSTW-RE 060	Attenuator 30dB	5015-30	F651012z-01	ATM	2013/3/4	2014/3/3
ETSTW-RE 061	Amplifier Module	CHC 1	None	ETS	2013/5/16	2014/5/15
ETSTW-RE 062	Amplifier Module	CHC 2	None	KMIC	2012/11/28	2013/11/27
ETSTW-RE 064	Bluetooth Test Set	MT8852B-042	6K00005709	Anritsu	Function Test	
ETSTW-RE 065	Amplifier	AMF-6F-18002650-25-10P	941608	MITEQ	2013/4/8	2014/4/7
ETSTW-RE 069	Double-Ridged Guide Horn Antenna	3117	00069377	EMCO	Function Test	
ETSTW-RE 072	CELL SITE TEST SET	8921A	3339A00375	HP	2012/10/5	2013/10/4
ETSTW-RE 073	Power Meter	N1911A	MY45100769	Agilent	2013/1/7	2014/1/6
ETSTW-RE 074	Power Sensor	N1921A	MY45241198	Agilent	2013/1/7	2014/1/6
ETSTW-RE 099	DC Block	50DB-007-1	None	JFW	2013/3/4	2014/3/3
ETSTW-RE 105	2.4GHz Notch Filter	NO124411	39555	MICROWAVE CIRCUITS, INC.	2013/3/4	2014/3/3
ETSTW-RE 106	Humidity Temperature Meter	TES-1366	091011113	TES	2012/12/4	2013/12/3
ETSTW-RE 111	TRILOG Super Broadband test Antenna	VULB 9160	9160-3309	Schwarz beck	2012/12/13	2013/12/12
ETSTW-RE 112	AC POWER SOURCE	TFC-1005	None	T-Power	Function test	
ETSTW-RE 115	2.4GHz Notch Filter	N0124411	473874	MICROWAVE CIRCUITS	2013/1/11	2014/1/10
ETSTW-RE 120	RF Player	MP9200	MP9210-111022	ADIVIC	Function test	
ETSTW-RE 122	SIGNAL GENERATOR	SMF100A	102149	R&S	2013/6/28	2014/6/27
ETSTW-RE 125	5GHz Notch filter	5NSL11-5200/E221.3-O/O	1	K&L Microwave	2012/8/18	2013/8/17
ETSTW-RE 126	5GHz Notch filter	5NSL11-5800/E221.3-O/O	1	K&L Microwave	2012/8/18	2013/8/17
ETSTW-RE 127	RF Switch Box	RFS-01	None	WTS	2013/3/4	2014/3/3
ETSTW-EMI 001	HARMONICS 1000	HAR1000-1P	093	EMC-PARTNER	2012/8/10	2013/8/09
ETSTW-EMS 001	BASELSTRASSE 160 CH-4242 LAUFEN	CN-EFT1000	354	EMC-PARTNER	Function Test	
ETSTW-EMS 002	Frequency Converter	YF-6020	0308014	None	Function Test	
ETSTW-EMS 003	EMC Immunity Test System	TRA2000IN6	579	EMC-PARTNER	2012/11/6	2013/11/5
ETSTW-EMS 009	Magnetic Field Antenna	MF1000-1	104	EMC-PARTNER	Function Test	
ETSTW-EMS 010	Coupling De-coupling Network	CDN-UTP8	014	EMC-PARTNER	Function Test	

ETSTW-EMS 012	EM Injection Clamp	F-203I-23MM	476	FCC	2013/6/01	2014/5/31
ETSTW-EMS 016	EMF Tester	1390	071208732	TES	2012/10/5	2013/10/4
ETSTW-EMS 017	Multimeter	DM-1220	518614	HOLA	2012/8/10	2013/8/09
ETSTW-EMS 019	Electrostatic Discharge Simulator	ESS-2002	ESS06Y6300	NoiseKen	2012/10/5	2013/10/4
ETSTW-EMS 020	Humidity Temperature Meter	TES-1366	091011116	TES	2012/12/24	2013/12/23
ETSTW-RS 003	RF Power Amplifier	30S1G3	306933	AR	Function Test	
ETSTW-RS 004	RF Power Amplifier	150W1000	307009	AR	Function Test	
ETSTW-RS 006	SIGNAL GENERATOR	SML03	101551	R&S	2013/2/26	2014/2/25
ETSTW-RS 007	14" COLOR VIDEO MONITOR	HS-CM145A	0512011548	None	Function Test	
ETSTW-RS 009	SIGNAL GENERATOR	8648C	3642U01656	HP	2013/2/01	2014/1/31
ETSTW-RS 010	Broadband Field Meter	NBM-520	C-0195	Narda	2012/9/24	2013/9/23
ETSTW-GSM 002	Universal Radio Communication Tester	CMU 200	109439	R&S	2012/10/5	2013/10/4
ETSTW-GSM 019	Band Reject Filter	WRCTF824/849-822/851-40 /12+9SS	3	WI	2013/1/11	2014/1/10
ETSTW-GSM 020	Band Reject Filter	WRCD1747/1748-1743/1752-32/5SS	1	WI	2013/1/11	2014/1/10
ETSTW-GSM 021	Band Reject Filter	WRCD1879.5/1880.5-1875.5/1884.5-32/5SS	3	WI	2013/1/11	2014/1/10
ETSTW-GSM 022	Band Reject Filter	WRCT901.9/903.1-904.25-50/8SS	1	WI	2013/1/11	2014/1/10
ETSTW-GSM 023	Power Divider	4901.19.A	None	SUHNER	2012/9/18	2013/9/17
ETSTW-Cable 002	Microwave Cable	SUCOFLEX 104 (S_Cable 7)	238093	HUBER+SUHNER	2013/5/16	2014/5/15
ETSTW-Cable 003	Microwave Cable	SUCOFLEX 104 (S_Cable 11)	209953	HUBER+SUHNER	2013/5/16	2014/5/15
ETSTW-Cable 010	BNC Cable	5 M BNC Cable	None	JYE BAO CO.,LTD.	2013/3/4	2014/3/3
ETSTW-Cable 011	BNC Cable	BNC Cable 1	None	JYE BAO CO.,LTD.	Pre-test Use NCR	
ETSTW-Cable 012	N TYPE To SMA Cable	Cable 012	None	JYE BAO CO.,LTD.	2013/3/4	2014/3/3
ETSTW-Cable 013	Microwave Cable	SUCOFLEX 104 (S_Cable 5)	232345	HUBER+SUHNER	Function Test	
ETSTW-Cable 016	BNC Cable	Switch Box	B Cable 1	Schwarz beck	2013/3/4	2014/3/3
ETSTW-Cable 017	BNC Cable	X Cable	B Cable 2	Schwarz beck	2013/3/4	2014/3/3
ETSTW-Cable 018	BNC Cable	Y Cable	B Cable 3	Schwarz beck	2013/3/4	2014/3/3
ETSTW-Cable 019	BNC Cable	Z Cable	B Cable 4	Schwarz beck	2013/3/4	2014/3/3
ETSTW-Cable 022	N TYPE Cable	5006	0002	JYE BAO CO.,LTD.	2013/3/26	2014/3/25
ETSTW-Cable 026	Microwave Cable	SUCOFLEX 104	279075	HUBER+SUHNER	2013/3/4	2014/3/3
ETSTW-Cable 027	Microwave Cable	SUCOFLEX 104	279083	HUBER+SUHNER	2013/3/4	2014/3/3
ETSTW-Cable 030	Microwave Cable	SUCOFLEX 104 (S_Cable 9)	279067	HUBER+SUHNER	2013/3/4	2014/3/3
ETSTW-Cable 031	Microwave Cable	SUCOFLEX 104 (S_Cable 10)	238092	HUBER+SUHNER	2012/11/28	2013/11/27
ETSTW-Cable 032	Microwave Cable	SUCOFLEX 104 (S_Cable 12)	237301	HUBER+SUHNER	Function Test	
ETSTW-Cable 039	Microwave Cable	SUCOFLEX 104 (S_Cable 19)	316739	HUBER+SUHNER	2013/5/16	2014/5/15
ETSTW-Cable 040	Microwave Cable	SUCOFLEX 104 (S_Cable 20)	316738	HUBER+SUHNER	Function Test	

ETSTW-Cable 043	Microwave Cable	SUCOFLEX 104	317576	HUBER+SUHNER	2012/11/28	2013/11/27
ETSTW-Cable 047	Microwave Cable	SUCOFLEX 104	325518	HUBER+SUHNER	2012/11/28	2013/11/27
ETSTW-Cable 051	BNC Cable	BNC Cable 6	None	JYE BAO CO.,LTD.	2013/3/29	2014/3/28
ETSTW-Cable 052	BNC Cable	Clamp Cable	None	Schwarz beck	2013/3/29	2014/3/28
ETSTW-Cable 053	N TYPE To SMA Cable	RG142	None	JYE BAO CO.,LTD.	2013/3/26	2014/3/25
ETSTW-Cable 055	NTYPE Cable	N30N30-JBY240-80CM	20110621-1.1	JYE BAO CO.,LTD.	Function Test	
ETSTW-Cable 056	N TYPE Cable	N30N30-JBY240-80CM	20110621-1.0	JYE BAO CO.,LTD.	Function Test	
ETSTW-Cable 057	N TYPE Cable	N30N30-JBY240-80CM	20110621-1.1	JYE BAO CO.,LTD.	Function Test	
ETSTW-Cable 058	Microwave Cable	SUCOFLEX 104	none	HUBER+SUHNER	2013/6/20	2014/6/19
WTSTW-SW 001	EMI TEST SOFTWARE	Harmonics-1000	None	EMC PARTNER	HARCS Version 4.16 Firmware Version 2.18	
WTSTW-SW 002	EMI TEST SOFTWARE	EZ_EMC	None	Farad	Version ETS-03A1	
WTSTW-SW 003	EMS TEST SOFTWARE	i2	None	AUDIX	Version 3.2007-8-17b	

Spurious Emission (EN 55022)

Test Equipment

a) TRILOG Super Broadband test Antenna (VULB 9160)
For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-RE 049
b) EMI TEST RECEIVER (ESI 40)
For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-RE 004
c) EMI TEST RECEIVER (ESVS 10)
For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-RE 005
d) Double-Ridged Guide Horn Antenna (3117)
For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-RE 030
e) Amplifier Module (CHC 2)
For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-RE 062

Test Procedures

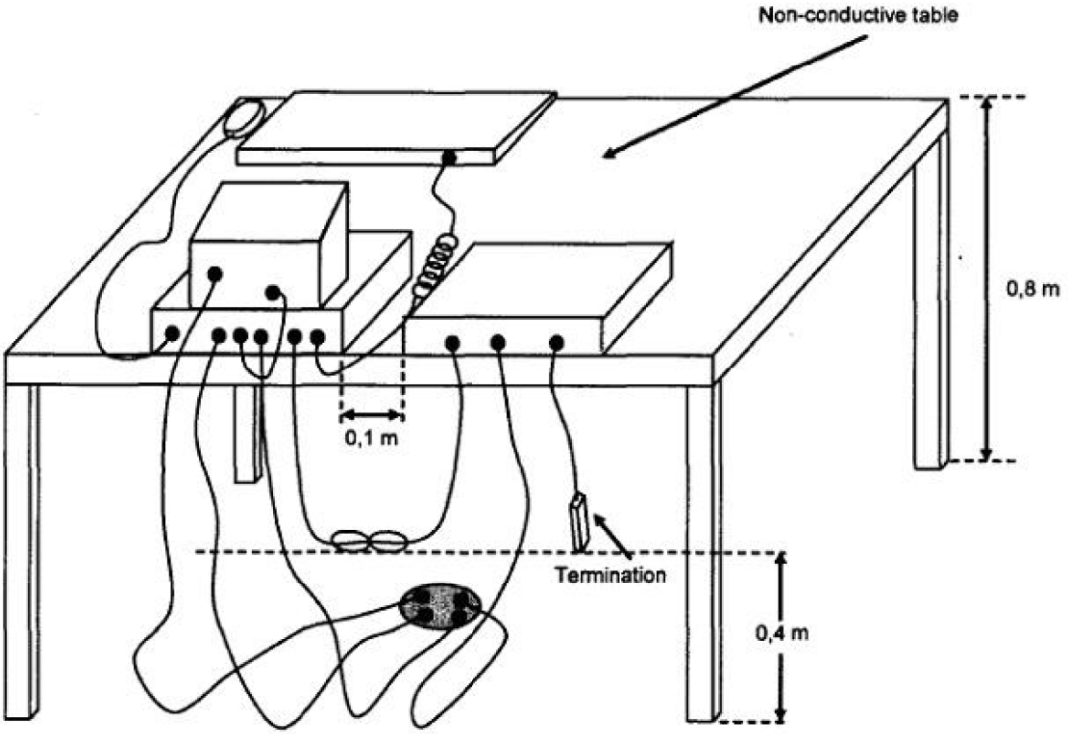
- Test configuration

The test configuration corresponds to the standard EN 55022. The equipment under test is placed on a non metallic table with 0.8m height. The power supply and the RF connection points are close to the equipment under test at the floor inside a connection box. The cables to this connection box are shielded and below the double floor. The receiving antenna is placed in a height at 1.0m to 4.0m, in a distance of 10m (below 1GHz) and 3m (above 1GHz). The measurement receiver is placed in a special room. (see picture 1) The observation of the equipment under test is realized by 3 video cameras and by a microphone.

- Test parameters and marginal conditions

The test is carried out with horizontal and vertical polarisation of the antenna in a frequency range of 30 MHz to 6000 MHz. Further information please find in the test protocol.

Radiated Emission according to EN 55022



Picture 1

Conducted Emission (EN 55022)

Test Equipment

a) ZWEILEITER-V-NETZNACHBILDUNG TWO-LINE V-NETWORK (ESH3-Z5)
For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-CE 004
b) IMPULS-BEGRENZER PULSE LIMITER (ESH3-Z2)
For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-CE 006
c) EMI TEST RECEIVER (ESHS10)
For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-CE 001
d) CISPR 22 Two Balanced Telecom Pairs Impedance Stabilization Network (FCC-TLISN-T4-02)
For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-CE 013
e) IMPEDANCE STABILIZATION NETWORK (ISN T800)
For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-CE 024

Test Procedures

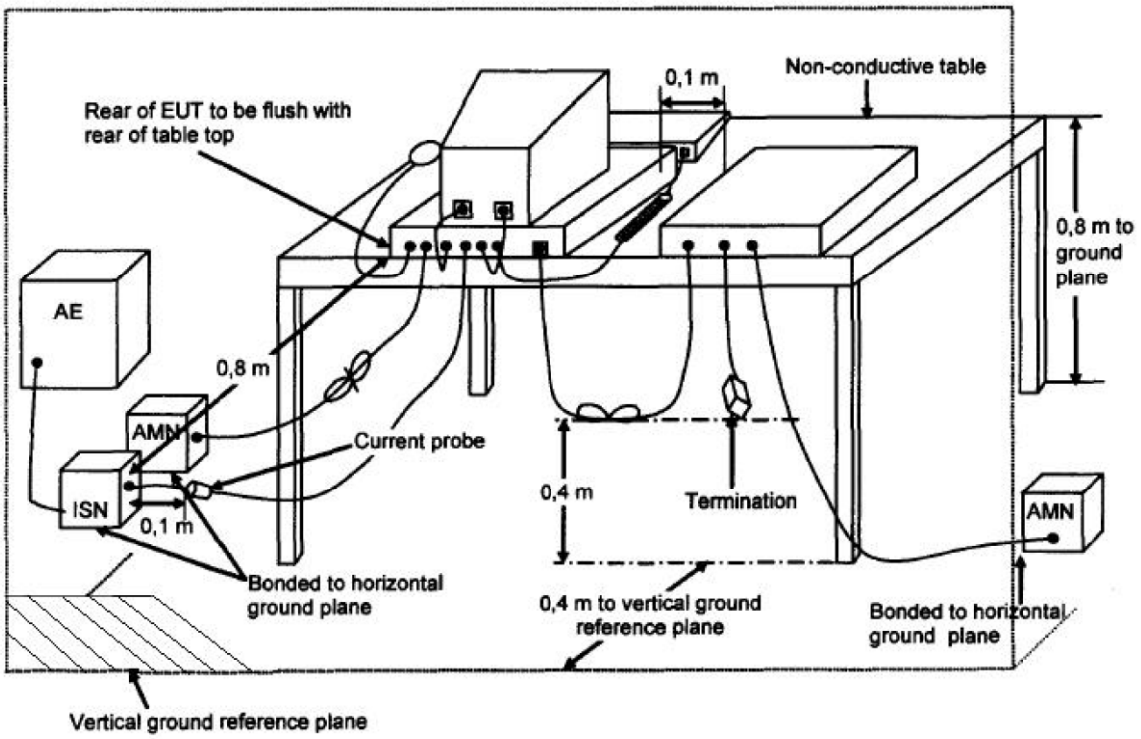
- Test configuration

The test configuration is contained inside of a shielded chamber and corresponds to the standard EN 55022. The equipment under test is placed in the facility on a wooden table 0.8m height. The equipment under test is connected with the artificial mains network (AMN) in a distance of 0.8m and also 0.8m from other subassembly and metallic area. (see picture 2) The observation of the equipment under test is realized by 3 video cameras and by a microphone.

- Test parameters and marginal conditions

The test is carried out with nominal impedance by 50Ω / 50μH of the AMN in a frequency range 150 kHz to 30 MHz. Further information please find in test report.

Conducted Emission according to EN 55022



Picture 2

Harmonic Current Emission /Voltage Fluctuations and Flicker (IEC/EN 61000-3-2/-3)

Test Equipment

a) HARMONICS 1000 (HAR 1000-1P)
For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-EMI 001
b) Frequency Converter (YF-6020)
For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-EMS 002

Test Procedures

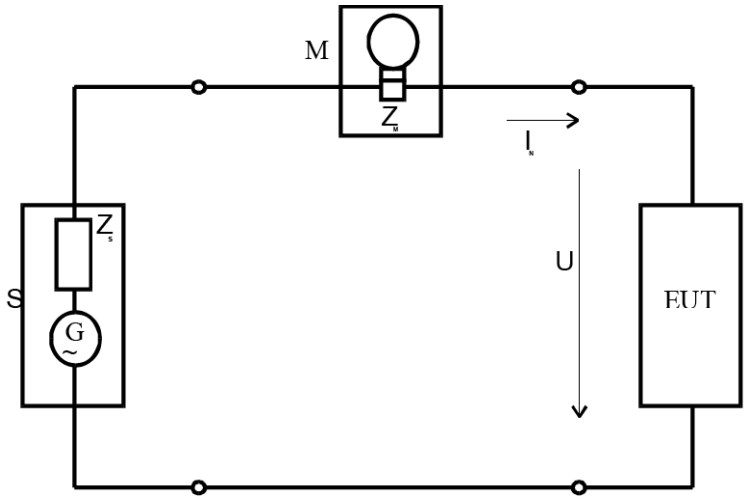
- Test configuration

The test configuration is correspondence to the standard IEC/EN 61000-3-2/-3. The equipment under test is placed on a wooden table with a height of 0.8m in the EMC lab.

• Test parameters and marginal conditions

The harmonic test is carried out in according the classification A,B,C,D of the standard IEC/EN 61000-3-2. The flicker test is carried out in according the time interval of the standard IEC/EN 61000-3-3. Both tests are carried out with above mentioned equipment with 230V and 50 Hz. (see picture 3) Further information please find in test protocol.

Current Harmonics and Flicker according to EN 61000 - 3 - 2, EN 61000 - 3 - 3



S	supply source
M	measuring equipment
EUT	equipment under test
U	test voltage
Z_{M}	input impedance of the measuring equipment
Z_{S}	internal impedance of the supply source
I_{S}	upper shrinkage portion of the conduction current order
G	open-circuit voltage of the supply source

Picture 3

Electrostatic Discharge

Test Equipment

a) Electrostatic Discharge Simulator (ESS-2002)
For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-EMS 019
b) Frequency Converter (YF-6020)
For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-EMS 002
c) EMC Immunity Test System (TRA2000IN6)
For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-EMS 003

Test Procedures

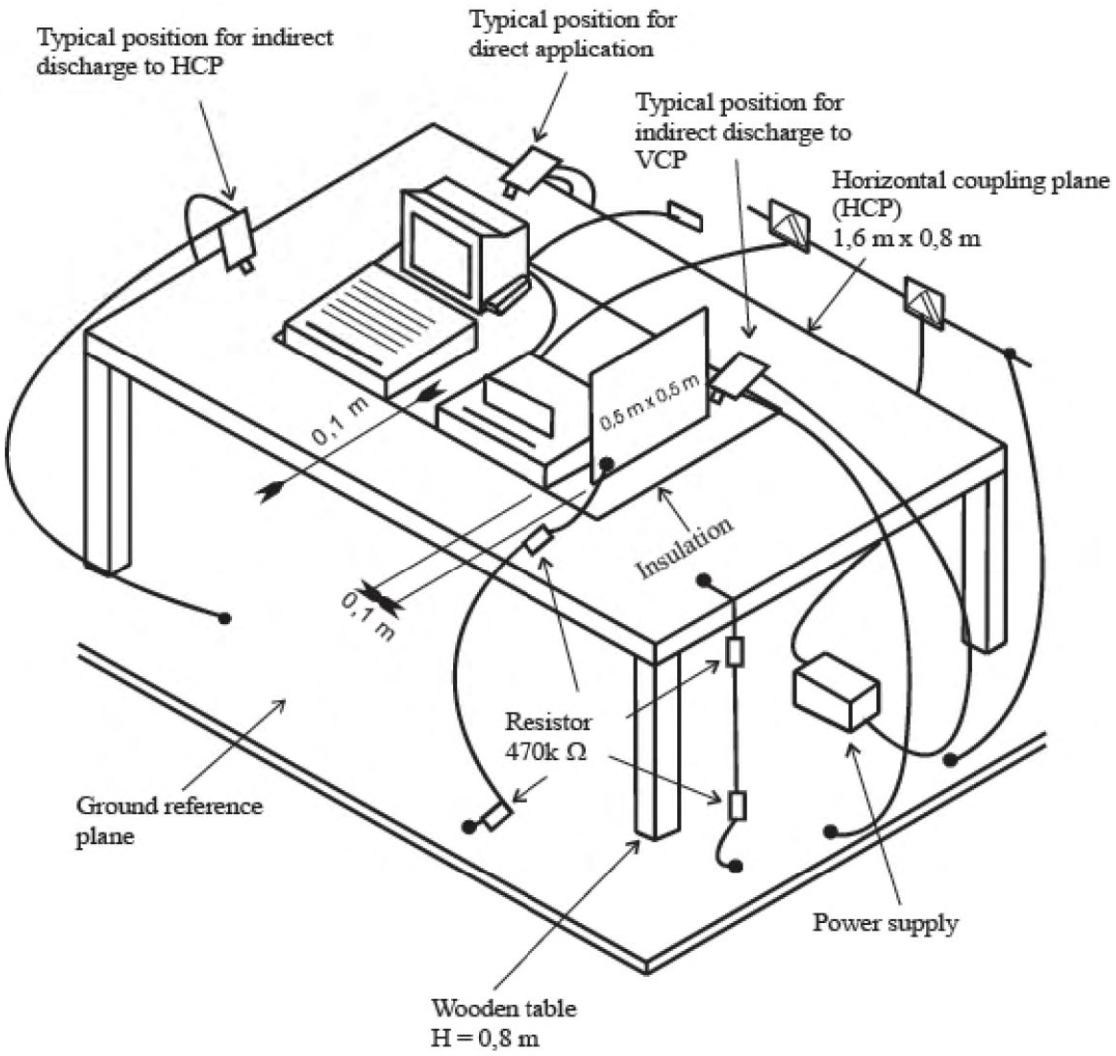
- Test configuration

The test configuration is in correspondence to the standard IEC/EN 61000-4-2. The equipment under test is placed on a wooden table with one metal plate on its top and one metal plate under the table, which is grounded. Both plates are connected with two 470 kΩ resistor in series. (see picture 4)

- Test parameters and marginal conditions

The test is carried out with ±2kV, ±4kV contact discharge and ±2kV, ±4kV and ±8kV air discharge.
Time between two discharges ≥ 1 second
Ten discharges for every point every voltage and polarity
The tested points please find in the test protocol.

Electrostatic Discharge according to EN 61000 - 4 - 2



Picture 4

RF Electromagnetic Field (80-1000 MHz)

Test Equipment

a) Biconical Antenna (3109)
For your reference please find it in our test equipment list at page 4 to 7 as number: ETSTW-RE 029
b) Log-Periodic Dipole Array Antenna (3148)
For your reference please find it in our test equipment list at page 4 to 7 as number: ETSTW-RE 028
c) MICROWAVE HORN ANTENNA (AT4002A)
For your reference please find it in our test equipment list at page 4 to 7 as number: ETSTW-RE 020
d) RF Power Amplifier (30S1G3)
For your reference please find it in our test equipment list at page 4 to 7 as number: ETSTW-RS 003
e) SIGNAL GENERATOR (8648C)
For your reference please find it in our test equipment list at page 4 to 7 as number: ETSTW-RS 009
f) RF Power Amplifier (150W1000)
For your reference please find it in our test equipment list at page 4 to 7 as number: ETSTW-RS 004
g) Broadband Field Meter (NBM-520)
For your reference please find it in our test equipment list at page 4 to 7 as number: ETSTW-RS 010
h) Millivoltmeter (URV 55)
For your reference please find it in our test equipment list at page 4 to 7 as number: ETSTW-RE 032
i) Power Sensor (URV5-Z4)
For your reference please find it in our test equipment list at page 4 to 7 as number: ETSTW-RE 034

Test Procedures

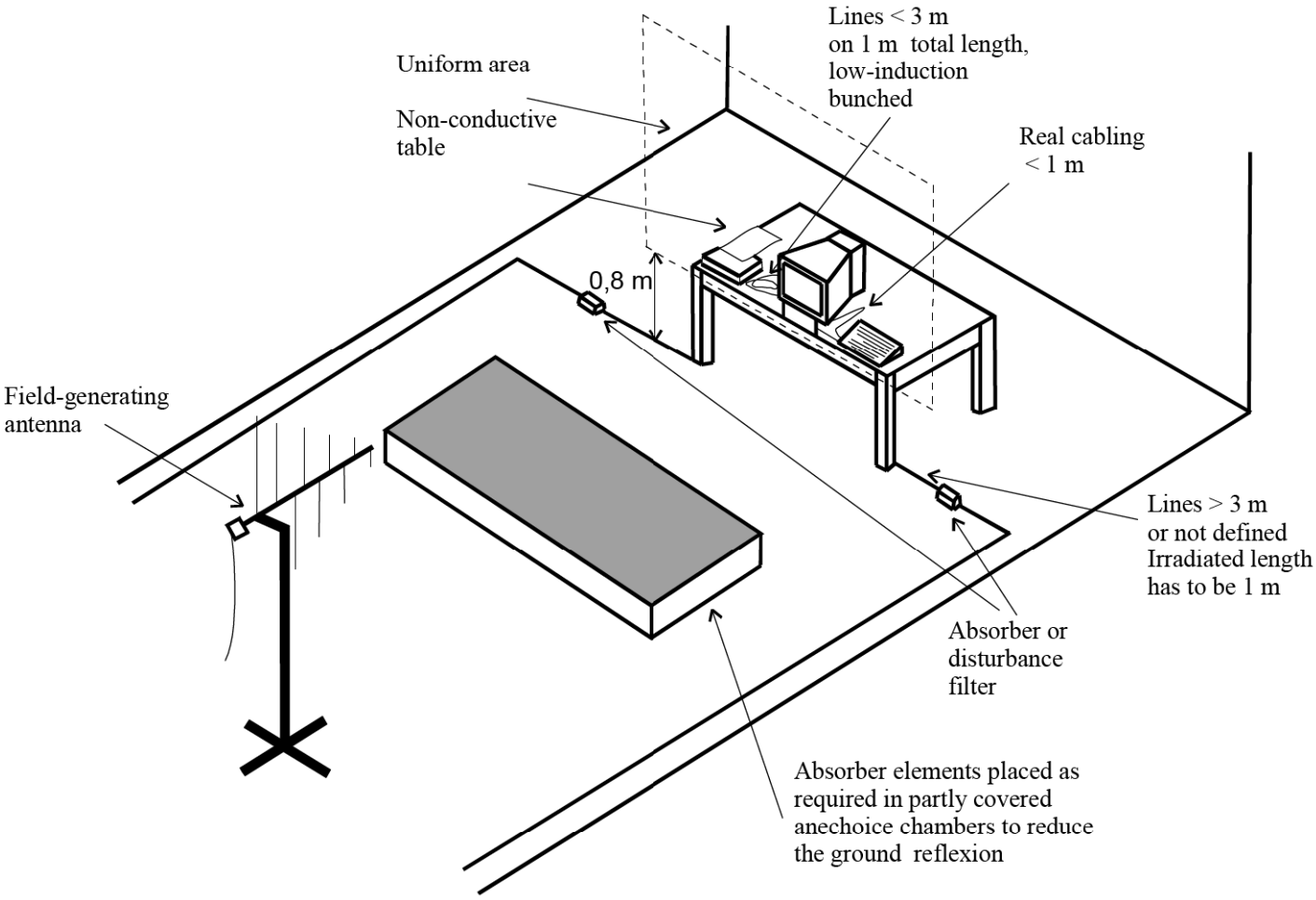
- Test configuration

The test configuration is contained inside of a shielded chamber and corresponds to the standard IEC/EN 61000-4-3. The equipment under test is placed in the facility on a wooden table 0.8m height on the centre axis of the chamber. The power supply and the RF connection points are close to the equipment under test at the floor of the chamber inside a connection box. The cables to this connection box are shielded and below the double floor. The transmitting antenna is placed in a height of 1.5m, in a distance of 3.0m. The RF-generators are placed in a special room adjacent to the chamber. (see picture 5) The observation of the equipment under test is realized by 3 video cameras and by a microphone. In order to establish the severity of the test for EUT an wires which must be tested close to the earth reference plane or which have larger sides than 1.5m x 1.5 m, the intensity of the field is also recorded at 0.4 m height, and for the full width and height of the EUT.

- Test parameters and marginal conditions

The tests are carried out with a field strength by 3 V/m (measured in the unmodulated field) with amplitude modulated signal by a depth of 80 % by a sinusoidal audio signal of 1 kHz. The logarithmic step was 1% and the dwell time was 1s dependent of the EUT cycle time. Further information please find in test protocol.

RF - Field according to EN 61000 - 4 - 3



Picture 5

Transients common mode

Test Equipment

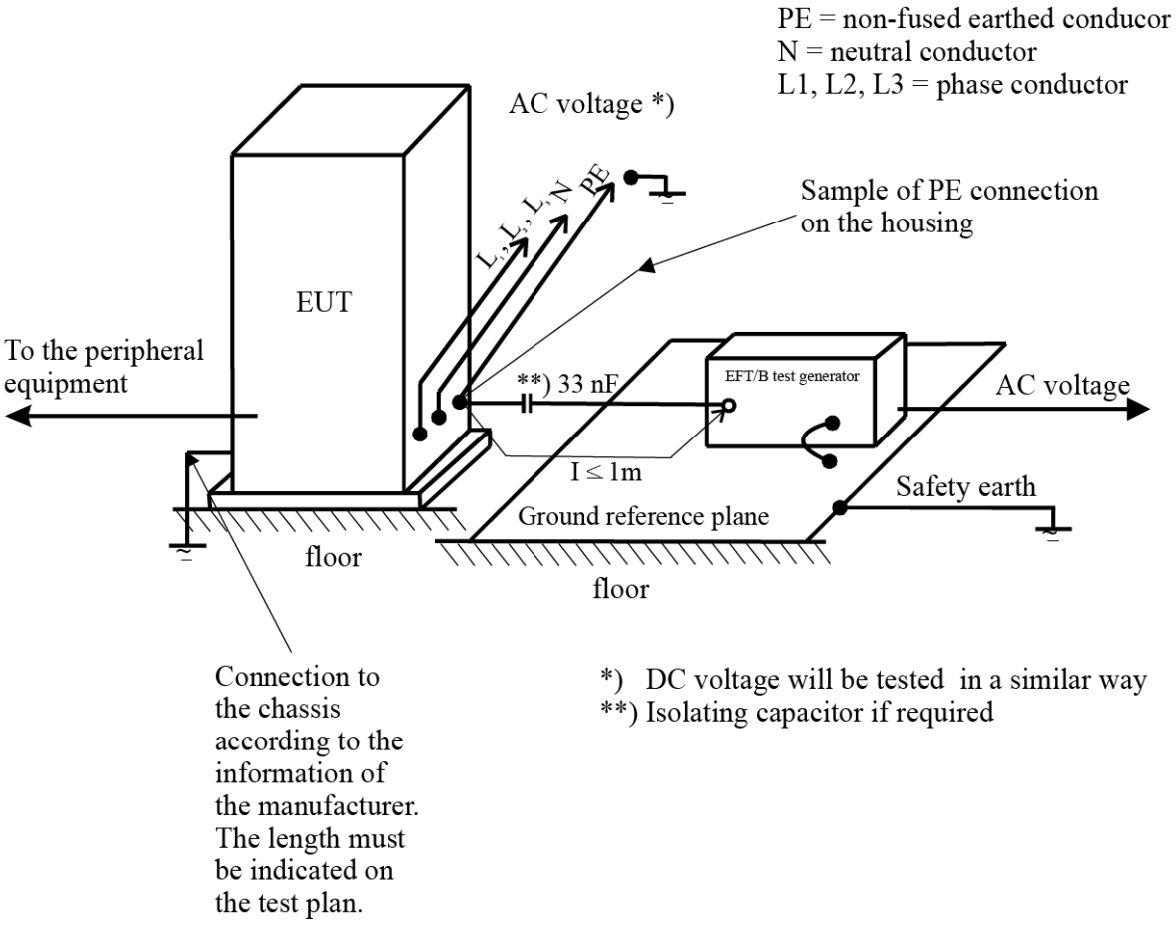
a) EMC Immunity Test System (TRA2000IN6)
   For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-EMS 003
b) Frequency Converter (YF-6020)
   For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-EMS 002
c) BASELSTRASSE 160 CH-4242 LAUFEN (CN-EFT1000)
   For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-EMS 001

Test Procedures

• Test configuration
The test configuration is in correspondence to the standard IEC/EN 61000-4-4. The equipment under test is placed on a wooden table with a height of 0.8m ±0.08m. The table stands on metal plate which is grounded. (see picture 6)

• Test parameters and marginal conditions
The tests are carried out with 0.5 kV open circuit voltage on signal, control ports and DC power ports and with 1 kV open circuit voltage on AC mains power input. The applied voltage please find in the test protocol.

Electrical Fast Transients according to EN 61000 - 4 - 4



Picture 6

Transients surge common and differential mode

Test Equipment

a) EMC Immunity Test System (TRA2000IN6)
   For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-EMS 003
b) Frequency Converter (YF-6020)
   For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-EMS 002

Test Procedures

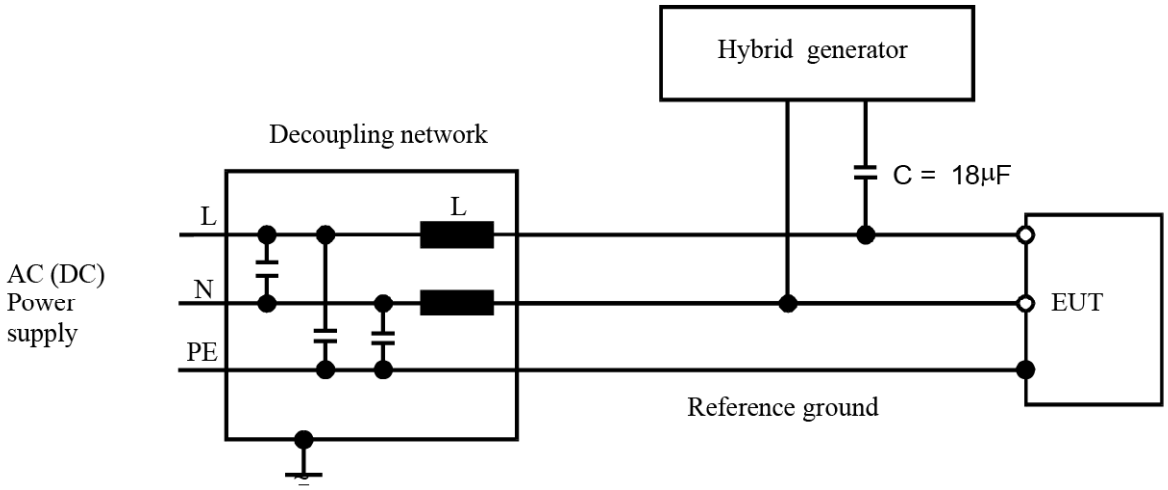
• Test configuration

The test configuration is in correspondence to the standard IEC/EN 61000-4-5. The equipment under test is placed on a wooden table with a height of 0.8m. The table stands on metal plate which is grounded.

• Test parameters and marginal conditions

The tests are carried out with 0.5, 1, 2 kV open circuit voltage for common mode and with 0.5, 1 kV open circuit voltage for differential mode. (see picture 7) Further information please find in the test protocol.

Transients common & differential mode according to EN 61000 - 4 - 5



Picture 7

Radio frequency common mode

Test Equipment

a) SIGNAL GENERATOR (SML 03)
For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-RS 006
b) RF Power Amplifier (100A250A)
For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-CS 005
c) COUPLING AND DECOUPLING NETWORK (CDN M016)
For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-CS 004
d) Power Sensor (URV5-Z4)
For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-RE 034
e) Millivoltmeter (URV 55)
For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-RE 032
f) 6 dB Attenuator (HFP-5100-3/06 N M/F)
For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-CS 010
g) Frequency Converter (YF-6020)
For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-EMS 002
h) EM Injection Clamp (F-203I-23MM)
For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-EMS 012

Test Procedures

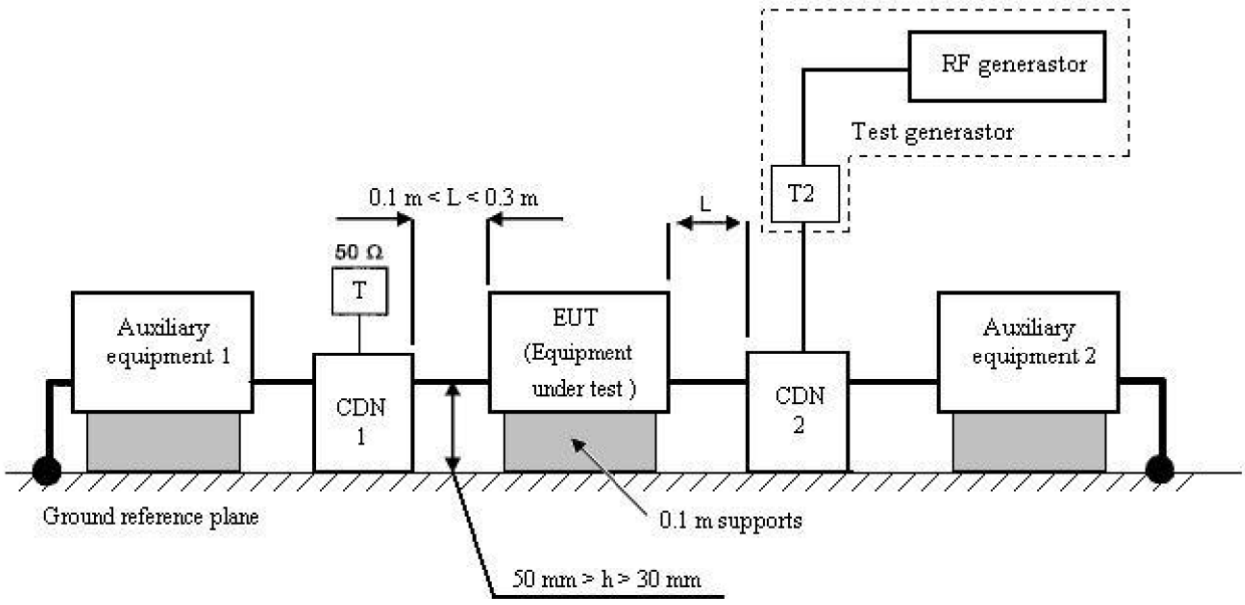
• Test configuration

The test configuration is in correspondence to the standard IEC/EN 61000-4-6. The test was carried out on a wooden table with a grounded metal plate on its top. The equipment under test was placed on an insulating support of 0.1m height above this metal plate ,and all cables exiting the EUT was supported at a height of between 30mm and 50mm.Where coupling and/or decoupling devices are required, they was located between 0.1m and 0.3m from the EUT. (see picture 8)

• Test parameters and marginal conditions

The tests were carried out with a Voltage of 3V RMS (measured unmodulated) with amplitude modulated signal by a depth of 80 % by a sinusoidal signal of 1 kHz. The frequency steps in the frequency range 150 kHz - 80 MHz increments with 1 % of the preceding frequency value. The dwell time was in case no less than 0.5s dependent on the EUT operating time. The tested ports please find in the test protocol.

RF- continues conducted according to EN 61000 - 4 - 6



T : Termination 50 Ω
T2: Power attenuator (6 dB)
CDN: Coupling and decoupling network

Picture 8

Power frequency magnetic field

Test Equipment

a) Magnetic Field Antenna (MF1000-1)
   For your reference please find it in our test equipment list at page 4 to 7 as number: ETSTW-EMS 009
b) Frequency Converter (YF-6020)
   For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-EMS 002
c) EMF Tester (1390)
   For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-EMS 016

Test Procedures

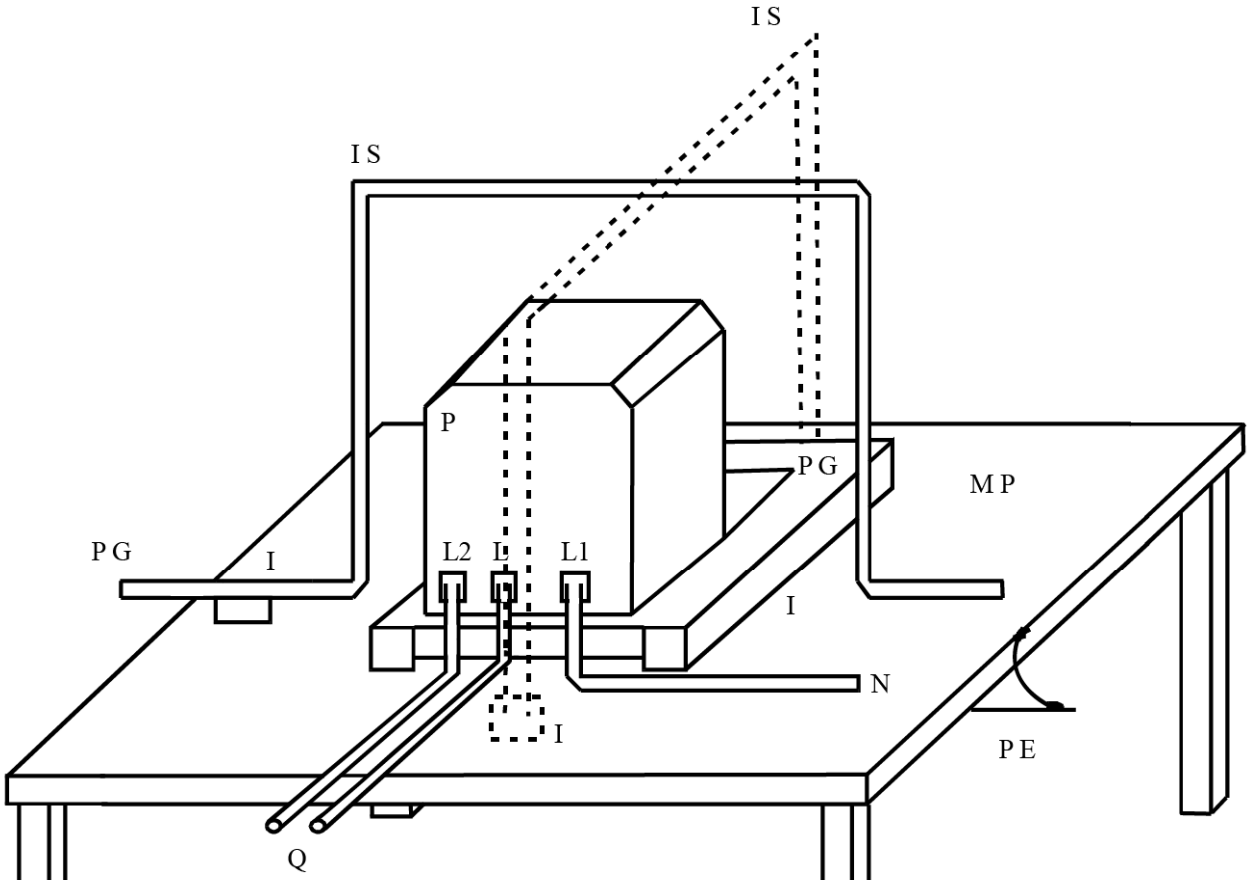
• Test configuration

The test configuration is in correspondence to the standard IEC/EN 61000-4-8. The equipment under test shall be arranged and connected to satisfy its functional requirements, and shall be placed at the center of the coil system. (see picture 9)
The cables supplied by the equipment manufacturer shall be used or, in their absence, suitable alternative cables of the type appropriate to the signals involved shall be used.

• Test parameters and marginal conditions

The tests are carried out with a frequency of 50 Hz and a magnetic field of 1 A/m (r.m.s.). Additional information please find in the test protocol.

Example for set-up for immunity test to magnetic field according to EN 61000-4-8



M P	pasted plate
P E	safety earth
I	isolation
P	EUT
I S	induction spark coil
E	mass connection
L1	power line
L2	signal line
L	communication line
N	nct
Q	to the signal source, to the simulator
P G	to the test generator

Picture 9

Voltage dips and interruptions

Test Equipment

a) EMC Immunity Test System (TRA2000IN6)
   For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-EMS 003
b) Frequency Converter (YF-6020)
   For your reference please find it in our test equipment list at page 4 to 7 as number : ETSTW-EMS 002

Test Procedures

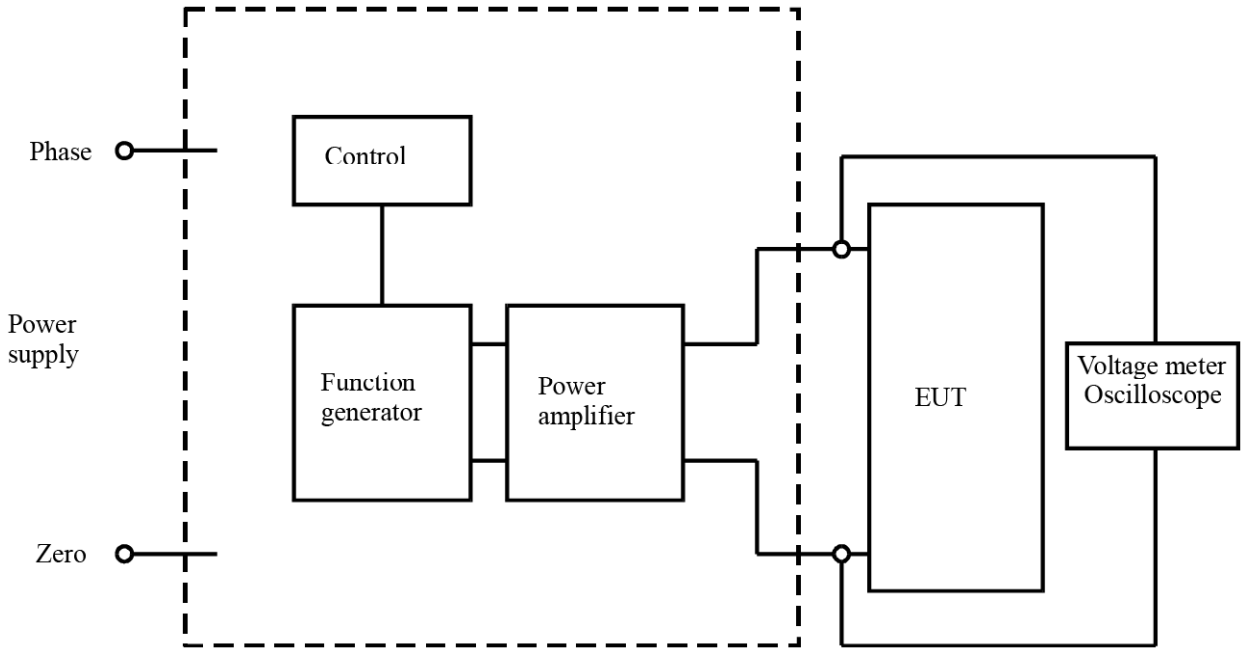
• Test configuration

The test configuration is in correspondence to the standard IEC/EN 61000-4-11. The equipment under test is placed on a wooden table with a height of 0.8 metre. (see picture 10)

• Test parameters and marginal conditions

The test levels corresponding to a reduction of the supply voltage of 30 % (for 500ms) > 95 % (for 10ms) and interruption > 95 % (5s). The applied voltage please find in the test protocol.

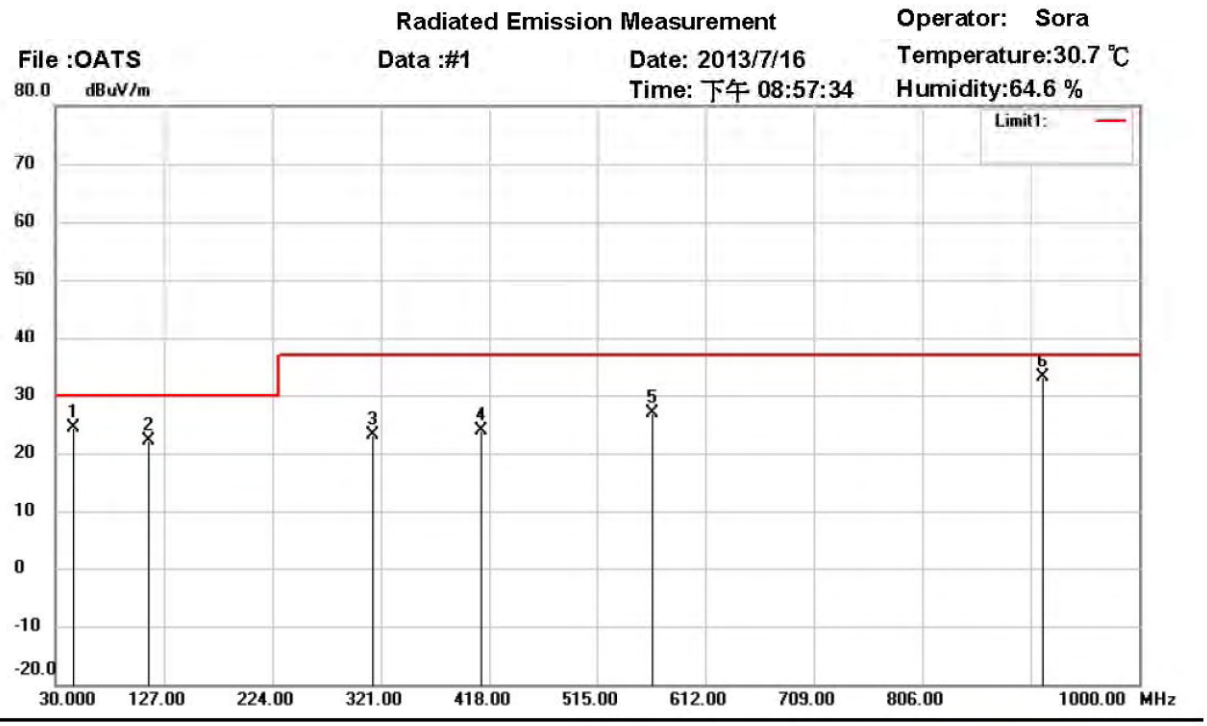
Voltage dips and interruption accordiing to EN 61000 - 4 - 11



Picture 10

Radio Noise Field Strength

Emission



Site : Open Area Test Site
Condition : CISPR22 RE-Class B 10M
EUT : W6M21306-13310
M/N: DEX715X (X=0~9,A~Z,a~z or blank)
Test Mode :
Note :

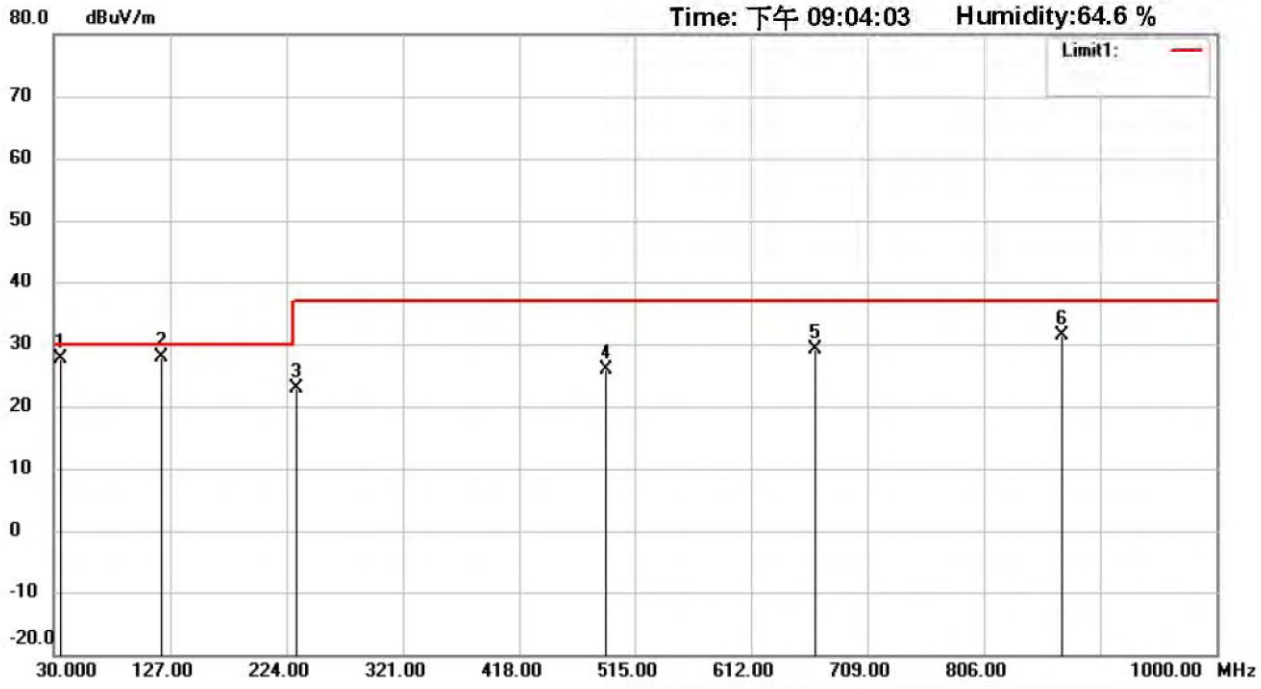
Polarization: *Horizontal*
Power : 230VAC
Distance: 10m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	43.6684	10.90	QP	13.49	24.39	30.00	340	50	-5.61	
	113.5002	9.70	QP	12.32	22.02	30.00	310	120	-7.98	
	311.9244	7.00	QP	16.20	23.20	37.00	100	100	-13.80	
	409.1357	5.10	QP	18.74	23.84	37.00	100	5	-13.16	
	564.4422	4.50	QP	22.33	26.83	37.00	115	290	-10.17	
*	914.3355	4.30	QP	28.78	33.08	37.00	135	255	-3.92	

Radiated Emission Measurement

Operator: Sora

File :OATS Data :#2 Date: 2013/7/16 Time: 下午 09:04:03 Temperature:30.7 ℃ Humidity:64.6 %



Site : Open Area Test Site

Condition : CISPR22 RE-Class B 10M

EUT : W6M21306-13310

M/N: DEX715X (X=0~9,A~Z,a~z or blank)

Test Mode :

Note :

Polarization: *Vertical*

Power : 230VAC

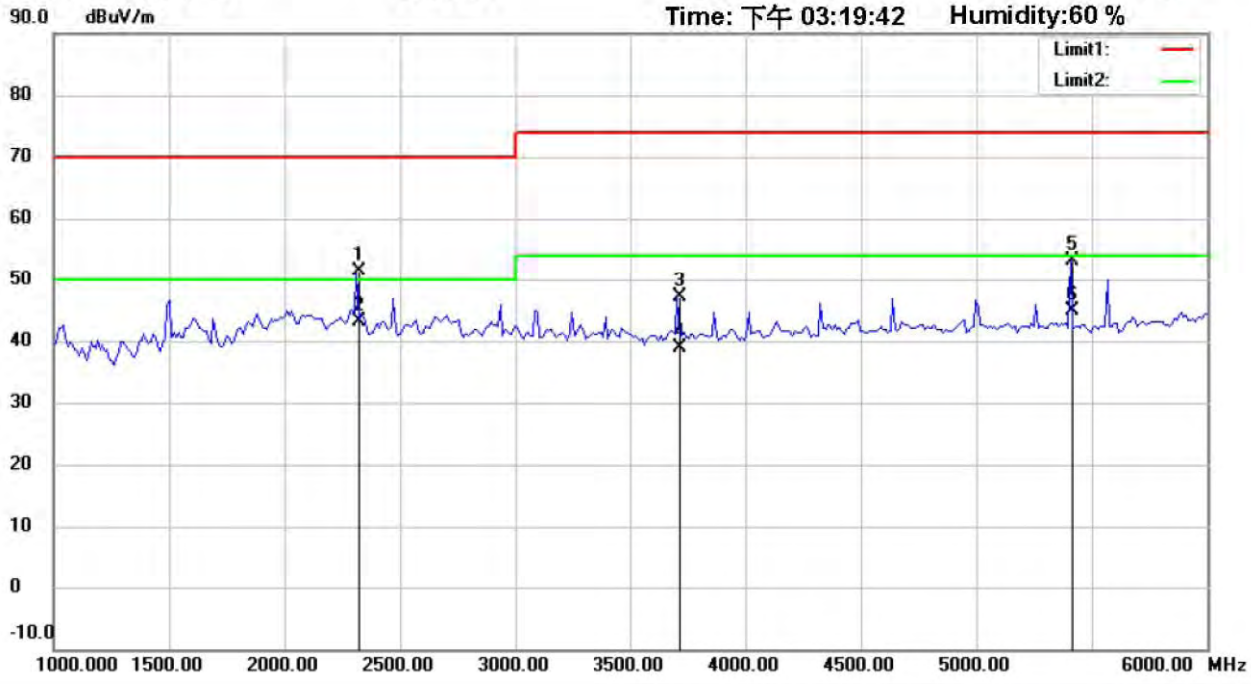
Distance: 10m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	35.7715	15.30	QP	12.23	27.53	30.00	100	35	-2.47	
*	118.6381	15.10	QP	12.81	27.91	30.00	110	350	-2.09	
	232.1135	9.70	QP	13.12	22.82	37.00	105	105	-14.18	
	488.7997	5.00	QP	20.91	25.91	37.00	340	70	-11.09	
	665.5873	4.80	QP	24.44	29.24	37.00	300	265	-7.76	
	869.8314	3.40	QP	28.08	31.48	37.00	315	275	-5.52	

Radiated Emission Measurement

Operator: Roy

File :RE-Above 1G Data :#1 Date: 2013/7/8 Time: 下午 03:19:42 Temperature:24 ℃ Humidity:60 %



Site : 966 Chamber

Condition : CISPR22 RE-Class B Above 1G PK

EUT : W6M21306-13310

M/N: DEX715X (X=0~9,A~Z,a~z or blank)

Test Mode :

Note :

Polarization: *Horizontal*

Power : 230VAC

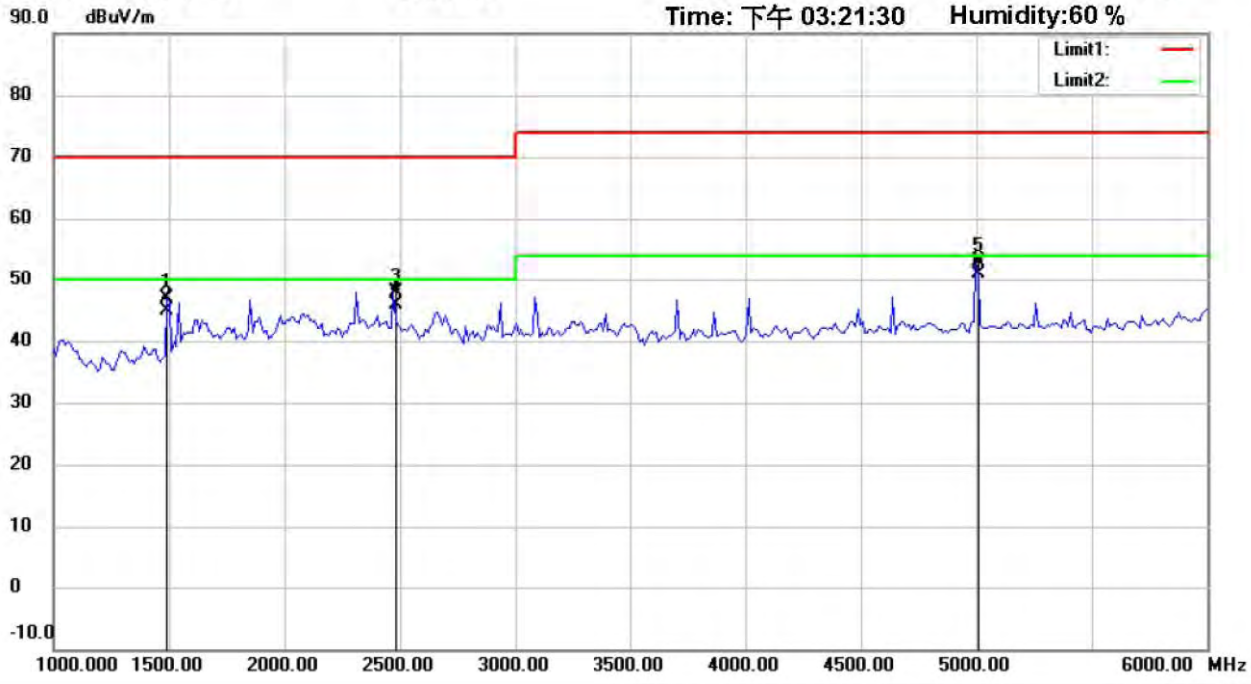
Distance: 3m

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	2317.613	55.55	peak	-4.14	51.41	70.00	100	130	-18.59	
*	2317.613	47.33	AVG	-4.14	43.19	50.00	100	130	-6.81	
	3705.411	48.42	peak	-1.27	47.15	74.00	100	320	-26.85	
	3705.411	40.17	AVG	-1.27	38.90	54.00	100	320	-15.10	
	5408.818	50.93	peak	2.10	53.03	74.00	100	240	-20.97	
	5408.818	42.70	AVG	2.10	44.80	54.00	100	240	-9.20	

Radiated Emission Measurement

Operator: Roy

File :RE-Above 1G Data :#2 Date: 2013/7/8 Time: 下午 03:21:30 Temperature:24 ℃ Humidity:60 %



Site : 966 Chamber

Condition : CISPR22 RE-Class B Above 1G PK

EUT : W6M21306-13310

M/N: DEX715X (X=0~9,A~Z,a~z or blank)

Test Mode :

Note :

Polarization: *Vertical*

Power : 230VAC

Distance: 3m

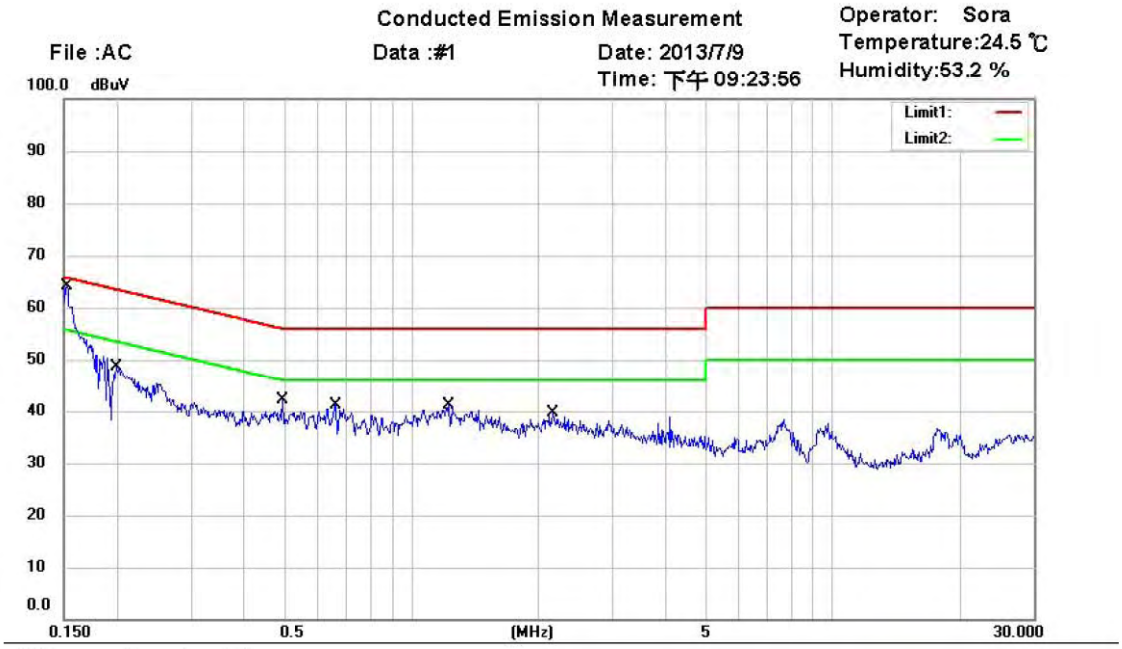
Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	1490.982	55.02	peak	-8.07	46.95	70.00	100	260	-23.05	
	1490.982	52.83	AVG	-8.07	44.76	50.00	100	260	-5.24	
	2472.946	51.76	peak	-3.76	48.00	70.00	100	35	-22.00	
	2472.946	49.67	AVG	-3.76	45.91	50.00	100	35	-4.09	
	4999.758	51.50	peak	1.39	52.89	74.00	100	170	-21.11	
*	4999.758	49.42	AVG	1.39	50.81	54.00	100	170	-3.19	

Note:

1. **Correction Factor = Antenna factor + Cable loss - Preamplifier**
2. **The formula of measured value as: Test Result = Reading + Correction Factor**
3. **Detector function in the form: PK = Peak, QP = Quasi Peak, AV = Average**
4. **All not in the table noted test results are more than 20 dB below the relevant limits.**
5. **Measurement uncertainty below 1GHz: 30-1000 MHz = ± 4.38 dB ;**
   Measurement uncertainty above 1GHz: 1-18 GHz = ± 5.33 dB, 18-40 GHz = ± 3.43 dB ; Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.
6. **Up Line: PK Limit Line, Down Line: Ave Limit Line.**

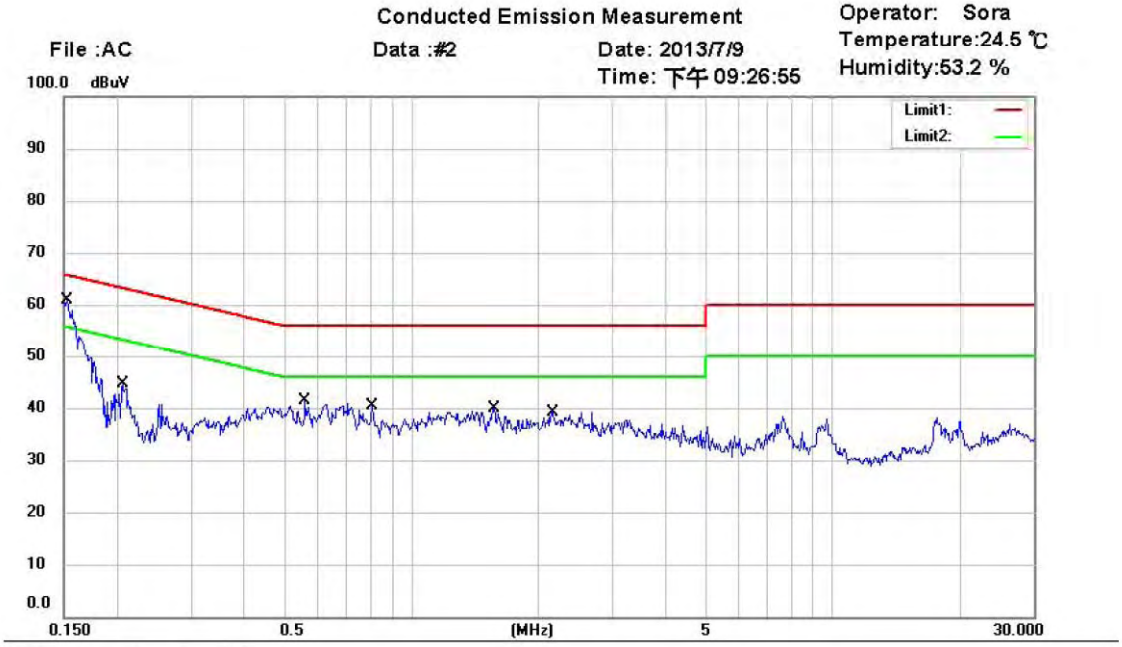
Conducted Emission

Emission



Site : Chamber_03
Condition : EN55022 Class B Conduction(QP)
Phase: N
EUT : W6M21306-13310
Power : 230VAC
M/N: DEX715X (X=0~9,A~Z,a~z or blank)
Test Mode :
Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Comment
*	0.1520	42.35	QP	10.12	52.47	65.89	-13.42	
	0.1520	21.08	AVG	10.12	31.20	55.89	-24.69	
	0.1988	26.14	QP	10.10	36.24	63.66	-27.42	
	0.1988	8.20	AVG	10.10	18.30	53.66	-35.36	
	0.4968	23.17	QP	10.12	33.29	56.05	-22.76	
	0.4968	5.85	AVG	10.12	15.97	46.05	-30.08	
	0.6597	25.18	QP	10.13	35.31	56.00	-20.69	
	0.6597	12.87	AVG	10.13	23.00	46.00	-23.00	
	1.2290	24.98	QP	10.15	35.13	56.00	-20.87	
	1.2290	12.45	AVG	10.15	22.60	46.00	-23.40	
	2.1673	21.51	QP	10.19	31.70	56.00	-24.30	
	2.1673	9.03	AVG	10.19	19.22	46.00	-26.78	



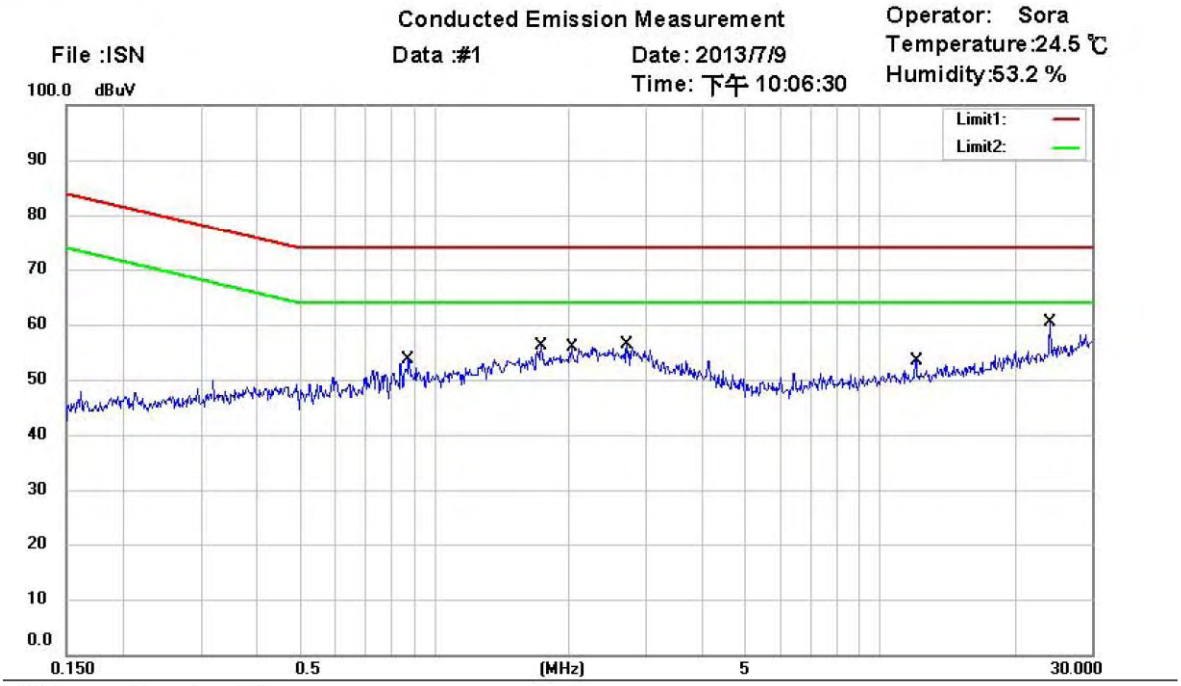
Site : Chamber_03
Condition : EN55022 Class B Conduction(QP)
Phase: L1
EUT : W6M21306-13310
Power : 230VAC
M/N: DEX715X (X=0~9,A~Z,a~z or blank)
Test Mode :
Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Comment
*	0.1520	39.24	QP	10.12	49.36	65.89	-16.53	
	0.1520	19.71	AVG	10.12	29.83	55.89	-26.06	
	0.2055	25.66	QP	10.09	35.75	63.39	-27.64	
	0.2055	10.12	AVG	10.09	20.21	53.39	-33.18	
	0.5607	24.88	QP	10.12	35.00	56.00	-21.00	
	0.5607	10.33	AVG	10.12	20.45	46.00	-25.55	
	0.8082	21.85	QP	10.13	31.98	56.00	-24.02	
	0.8082	8.21	AVG	10.13	18.34	46.00	-27.66	
	1.5620	21.41	QP	10.17	31.58	56.00	-24.42	
	1.5620	8.11	AVG	10.17	18.28	46.00	-27.72	
	2.1560	21.02	QP	10.20	31.22	56.00	-24.78	
	2.1560	9.03	AVG	10.20	19.23	46.00	-26.77	

Note 1. The formula of measured value as: Test Result = Reading + Correction Factor
2. The Correction Factor = Cable Loss + LISN Insertion Loss + Pulse Limit Loss
3. Detector function in the form : PK = Peak, QP = Quasi Peak, AV = Average
4. All not in the table noted test results are more than 20 dB below the relevant limits.
5. Measurement uncertainty = ±1.60 dB; Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.
6. Up Line: QP Limit Line, Down Line: Ave Limit Line.

T-LISN

LAN 1



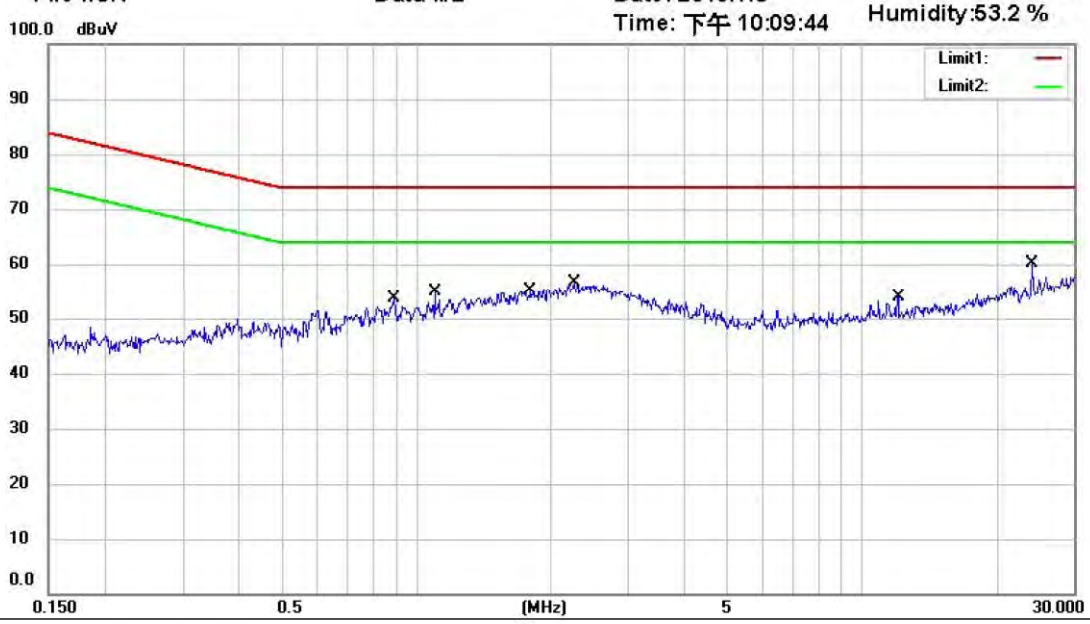
Site : Chamber_03
Condition : EN55022 T-LISN CLASS B (QP)
Phase:
EUT : W6M21306-13310
Power : 230VAC
M/N: DEX715X (X=0~9,A~Z,a~z or blank)
Test Mode : LAN1 - Traffic
Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Comment
	0.8757	27.71	QP	19.78	47.49	74.00	-26.51	
	0.8757	19.79	AVG	19.78	39.57	64.00	-24.43	
	1.7285	28.61	QP	19.73	48.34	74.00	-25.66	
	1.7285	20.23	AVG	19.73	39.96	64.00	-24.04	
	2.0278	29.51	QP	19.72	49.23	74.00	-24.77	
	2.0278	21.41	AVG	19.72	41.13	64.00	-22.87	
	2.7005	30.19	QP	19.73	49.92	74.00	-24.08	
	2.7005	22.33	AVG	19.73	42.06	64.00	-21.94	
	12.0011	30.56	QP	19.91	50.47	74.00	-23.53	
	12.0011	27.35	AVG	19.91	47.26	64.00	-16.74	
	24.0057	38.11	QP	20.17	58.28	74.00	-15.72	
*	24.0057	36.26	AVG	20.17	56.43	64.00	-7.57	

Conducted Emission Measurement

File :ISN
Data :#2
Date: 2013/7/9
Time: 下午 10:09:44

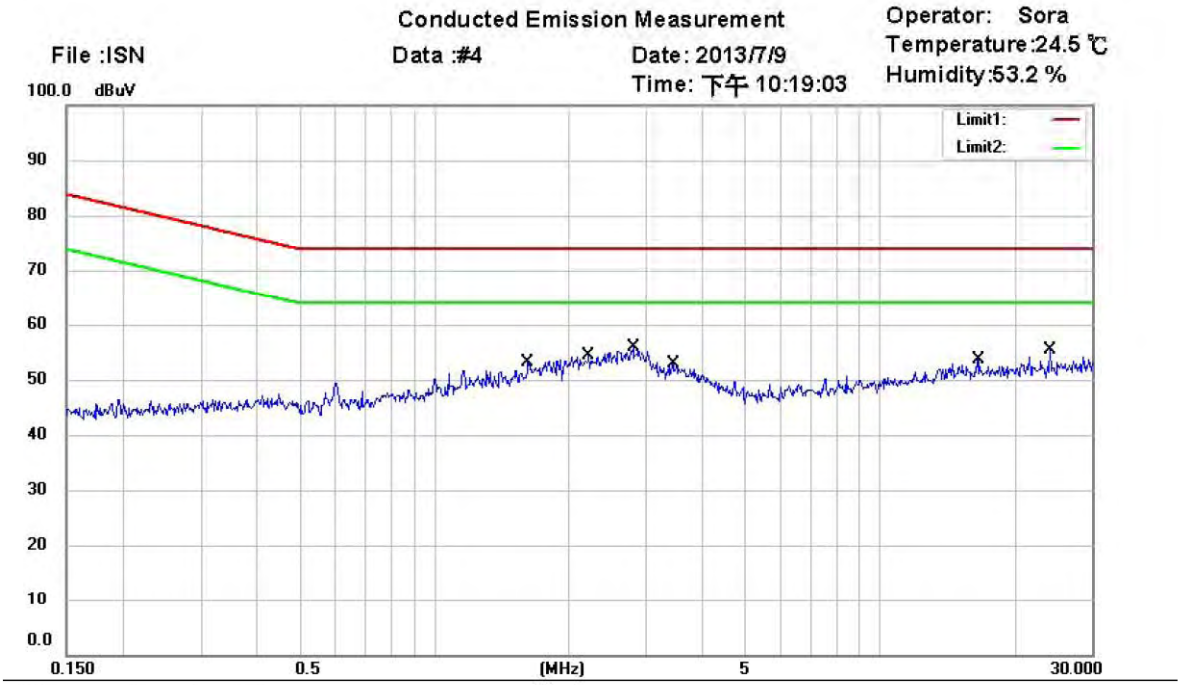
Operator: Sora
Temperature:24.5 ℃
Humidity:53.2 %



Site : Chamber_03
Condition : EN55022 T-LISN CLASS B (QP)
Phase:
EUT : W6M21306-13310
Power : 230VAC
M/N: DEX715X (X=0~9,A~Z,a~z or blank)
Test Mode : LAN1 - Idle
Note :

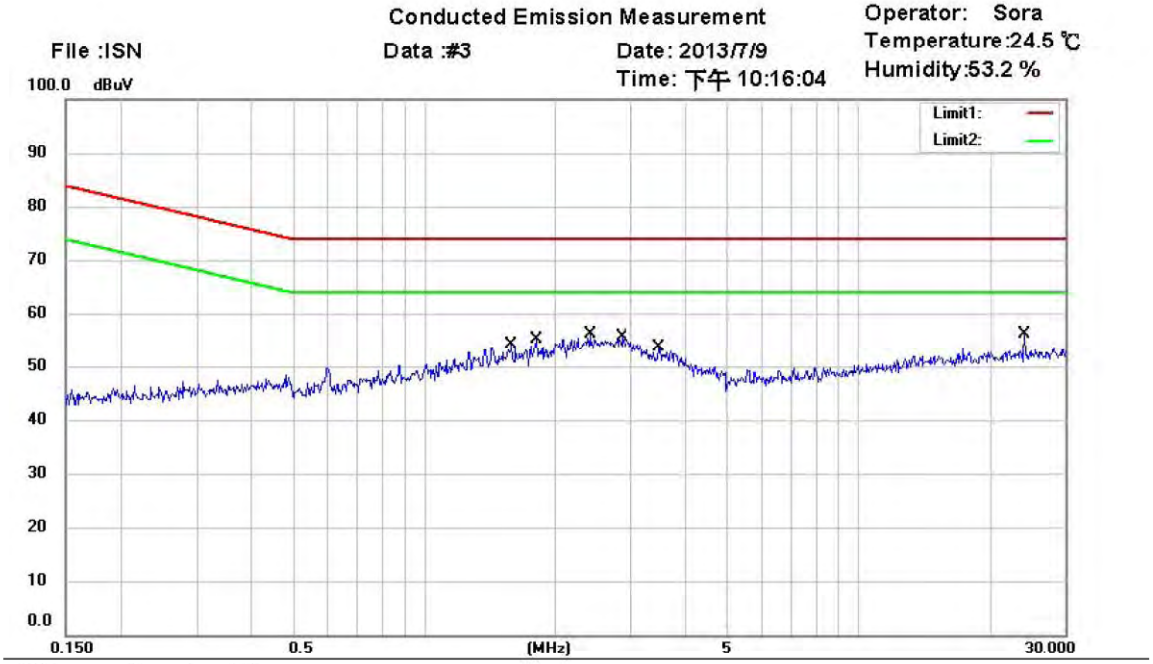
Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Comment
	0.8915	26.80	QP	19.78	46.58	74.00	-27.42	
	0.8915	17.63	AVG	19.78	37.41	64.00	-26.59	
	1.0985	25.28	QP	19.76	45.04	74.00	-28.96	
	1.0985	17.35	AVG	19.76	37.11	64.00	-26.89	
	1.7960	29.35	QP	19.73	49.08	74.00	-24.92	
	1.7960	21.69	AVG	19.73	41.42	64.00	-22.58	
	2.2573	31.25	QP	19.73	50.98	74.00	-23.02	
	2.2573	23.31	AVG	19.73	43.04	64.00	-20.96	
	12.0017	30.83	QP	19.91	50.74	74.00	-23.26	
	12.0017	27.65	AVG	19.91	47.56	64.00	-16.44	
	24.0051	38.25	QP	20.17	58.42	74.00	-15.58	
*	24.0051	36.40	AVG	20.17	56.57	64.00	-7.43	

LAN 2



Site : Chamber_03
Condition : EN55022 T-LISN CLASS B (QP)
Phase:
EUT : W6M21306-13310
Power : 230VAC
M/N: DEX715X (X=0~9,A~Z,a~z or blank)
Test Mode : LAN2 - Traffic
Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Comment
	1.6205	25.92	QP	19.74	45.66	74.00	-28.34	
	1.6205	18.51	AVG	19.74	38.25	64.00	-25.75	
	2.2235	28.60	QP	19.72	48.32	74.00	-25.68	
	2.2235	20.12	AVG	19.72	39.84	64.00	-24.16	
	2.7860	29.55	QP	19.74	49.29	74.00	-24.71	
	2.7860	20.23	AVG	19.74	39.97	64.00	-24.03	
	3.4363	25.46	QP	19.76	45.22	74.00	-28.78	
	3.4363	17.86	AVG	19.76	37.62	64.00	-26.38	
	16.6125	24.79	QP	19.96	44.75	74.00	-29.25	
	16.6125	18.87	AVG	19.96	38.83	64.00	-25.17	
	24.0057	34.22	QP	20.17	54.39	74.00	-19.61	
*	24.0057	32.06	AVG	20.17	52.23	64.00	-11.77	



Site : Chamber_03
Condition : EN55022 T-LISN CLASS B (QP)
Phase:
EUT : W6M21306-13310
Power : 230VAC
M/N: DEX715X (X=0~9,A~Z,a~z or blank)
Test Mode : LAN2 - Idle
Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Comment
	1.5800	25.94	QP	19.74	45.68	74.00	-28.32	
	1.5800	19.20	AVG	19.74	38.94	64.00	-25.06	
	1.8073	28.38	QP	19.73	48.11	74.00	-25.89	
	1.8073	23.05	AVG	19.73	42.78	64.00	-21.22	
	2.4080	29.27	QP	19.73	49.00	74.00	-25.00	
	2.4080	22.15	AVG	19.73	41.88	64.00	-22.12	
	2.8625	28.82	QP	19.74	48.56	74.00	-25.44	
	2.8625	20.52	AVG	19.74	40.26	64.00	-23.74	
	3.4745	25.91	QP	19.76	45.67	74.00	-28.33	
	3.4745	18.78	AVG	19.76	38.54	64.00	-25.46	
	24.0047	34.44	QP	20.17	54.61	74.00	-19.39	
*	24.0047	32.24	AVG	20.17	52.41	64.00	-11.59	

Note:

1. The formula of measured value as: Test Result = Reading + Correction Factor
2. The Correction Factor = Cable Loss + TLISN Factor + Pulse Limit Loss
3. Detector function in the form: PK = Peak, QP = Quasi Peak, AV = Average
4. All not in the table noted test results are more than 20 dB below the relevant limits.
5. Measurement uncertainty = ±1.95dB; Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.
6. Up Line: QP Limit Line, Down Line: Ave Limit Line.

Electrostatic Discharge

ESD

Standard : IEC/EN 61000 - 4 - 2

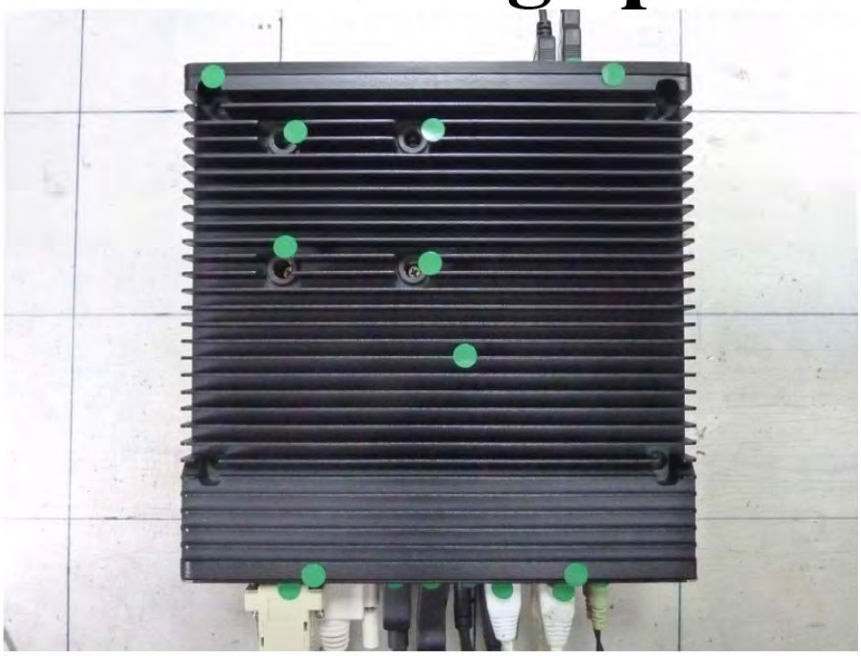
Device : DEX715X (X=0~9,A~Z,a~z or blank)

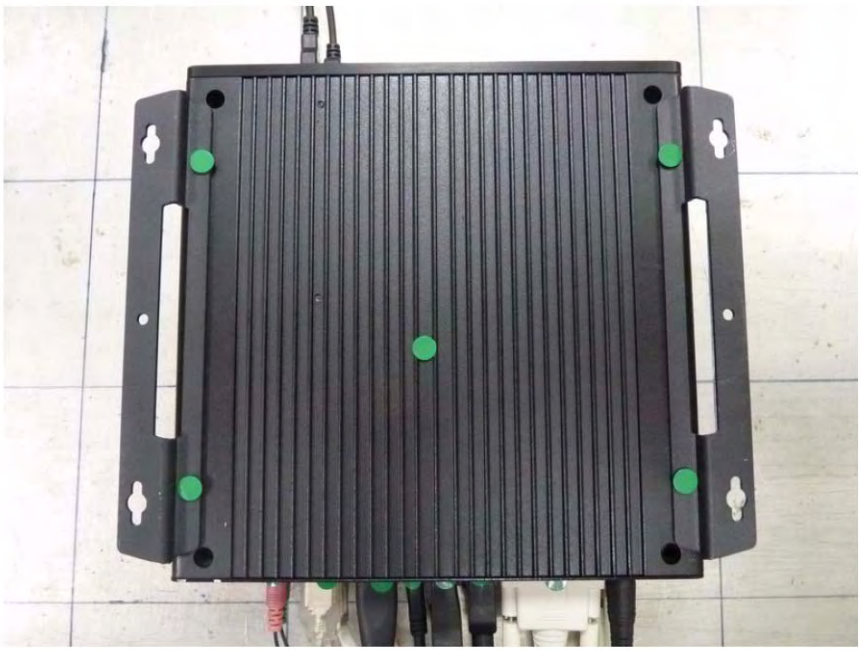
Date : July 15, 2013

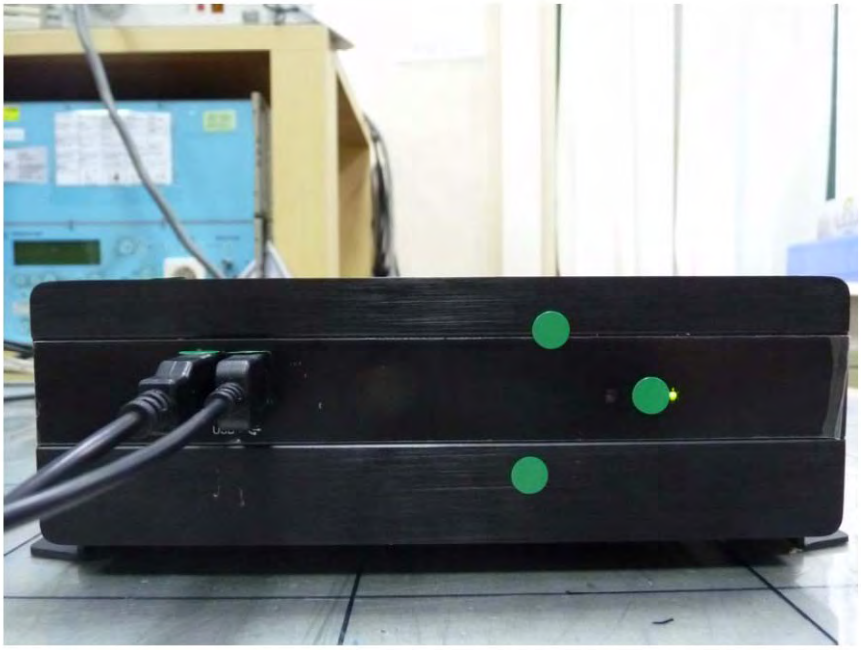
Temperature	:	23.3 °C
Pressure	:	990 hPa
Rel. humidity	:	46.4 %

Test point	Table (T) Floor (F)	Contact (C) Air (A)	Voltage (kV)	Polarity (+ / -)	Performance criteria
Housing	T	A	2, 4, 8	+ / -	A
Housing	T	C	2, 4	+ / -	A
Indirect	T	C	2, 4	+ / -	A

ESD discharge points







Performance criteria :

- A: Normal performance within the specification.
- B: Temporary degradation or less of function or performance which is self recoverable
- C: Temporary degradation or loss of function or perform. which requires. operate intervention or system reset
- D: Degradation or loss of function which is not recoverable due to damage of equipment (components) or software, or loss of data.

NA: Not Applicable
Explanation: ./.

Interference Immunity Against Electromagnetic Irradiation

RF Field

Standard : IEC/EN 61000 – 4 – 3

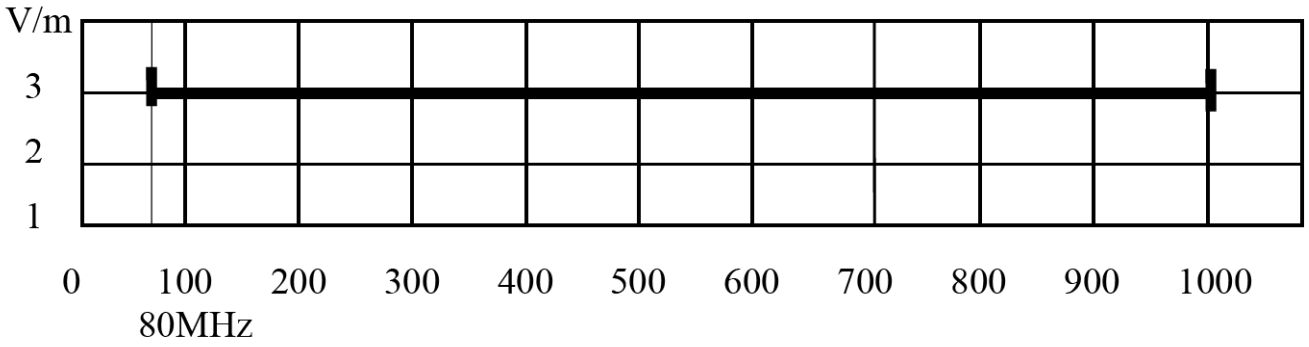
Device : DEX715X (X=0~9,A~Z,a~z or blank)

Date : July 15, 2013

Temperature	:	23.3 °C
Pressure	:	990 hPa
Rel. humidity	:	46.4 %

Test equipment : Anechoic Chamber, Generator SMG (R&S), Monitoring System, Amplifier 10W1000/150L (ar), Antenna SAS-200/521 (AHS)

Severity Level : 2 (3V/m) Modulation Frequency : 1kHz (80%AM)



Performance criteria :

☒ A : No loss of performance or function

☐ B : Temporary loss of function or performance which is self recoverable

☐ C : Temporary loss of function or perform. which req. operator intervention or system reset

☐ D : Loss of function which is not recoverable

Electrical Fast Transients

Burst

Standard : IEC/EN 61000 – 4 – 4

Device : DEX715X (X=0~9,A~Z,a~z or blank)

Date : July 15, 2013

Temperature	:	23.3 °C
Pressure	:	990 hPa
Rel. humidity	:	46.4 %

Testport	Voltage (kV)	Polarity (+ / -)	Waveform T_r / T_h	Repetiton Frequency (kHz)	Performance criteria
AC-Power line	1	+ / -	5/50 ns	5	A
AC power line to ground	1	+ / -	5/50 ns	5	A
Signal line	0,5	+ / -	5/50 ns	5	A

Performance criteria :

A : No loss of performance or function

B : Temporary loss of function or performance which is self recoverable

C : Temporary loss of function or perform. which req. operate. intervention or system reset

D : Loss of function which is not recoverable

Transients common & diff. mode

Surge

Standard : IEC/EN 61000 - 4 - 5

Device : DEX715X (X=0~9,A~Z,a~z or blank)

Date : July 15, 2013

Temperature	:	23.3 °C
Pressure	:	990 hPa
Rel. humidity	:	46.4 %

Test mode	Voltage (kV)	Waveform T_r / T_h	Performance criteria
AC-line to line	1	1.2/50 μs	A
AC- line to ground	2	1.2/50 μs	A

Performance criteria :

A : No loss of performance or function

B : Temporary loss of function or performance which is self recoverable

C : Temporary loss of function or perform. which req. operate. intervention or system reset

D : Loss of function which is not recoverable

continues conducted

RF - common mode

Standard : IEC/EN 61000 - 4 - 6

Device : DEX715X (X=0~9,A~Z,a~z or blank)

Date : July 15, 2013

Temperature	:	23.3 °C
Pressure	:	990 hPa
Rel. humidity	:	46.4 %

Test port	Voltage (Vrms)	Modulation Frequency	Frequency Range	Performance criteria
AC-Power line	3	1 kHz	150 kHz - 80 MHz	A
Signal line	3	1 kHz	150 kHz - 80 MHz	A

Performance criteria :

A : No loss of performance or function

B : Temporary loss of function or performance which is self recoverable

C : Temporary loss of function or perform. which req. operate. intervention or system reset

D : Loss of function which is not recoverable

Magnetic field frequency

Magn-Field

Standard : IEC/EN 61000 - 4 - 8

Device : DEX715X (X=0~9,A~Z,a~z or blank)

Date : July 15, 2013

Temperature	:	23.3 °C
Pressure	:	990 hPa
Rel. humidity	:	46.4 %

Magnetic field direction	Passed	Failed	Performance criteria
X-Axis	☒	☐	A
Y-Axis	☒	☐	A
Z-Axis	☒	☐	A

Explanation: The Magnetic field frequency tests in 50 Hz.

The Continuous magnetic field strength is 1 A/m.

Performance criteria:

A : No loss of performance or function

B : Temporary loss of function or performance which is self recoverable

C : Temporary loss of function or perform. which req. operate. intervention or system reset

D : Loss of function which is not recover

Voltage dips and interruption

V - Dips

Standard : IEC/EN 61000 - 4 - 11

Device : DEX715X (X=0~9,A~Z,a~z or blank)

Date : July 15, 2013

Temperature	:	23.3 °C
Pressure	:	990 hPa
Rel. humidity	:	46.4 %

Reduction of supply voltage of	Voltage in % (in V)	Duration in ms	Performance criteria
Interruption (> 95 %)	0% (0 V)	250 (5 s)	B
Dips (>95 %)	5% (12 V)	0.5 (10ms)	A
Dips (30 %)	70% (161 V)	25 (500 ms)	A

Performance criteria :

A : No loss of performance or function

B : Temporary loss of function or performance which is self recoverable

C : Temporary loss of function or perform. which req. operate. intervention or system reset

D : Loss of function which is not recoverable

Current Harmonics

Harmonics

Standard : IEC/EN 61000 - 3 - 2

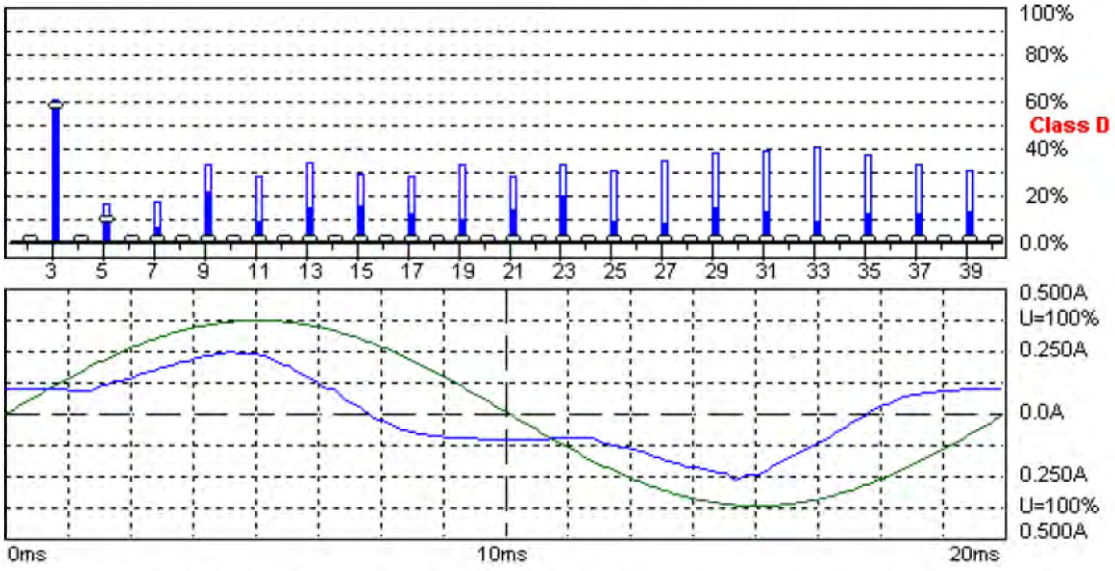
Device : DEX715X (X=0~9,A~Z,a~z or blank)

Date : July 10, 2013

Class : D

Temperature	:	23.3 °C
Pressure	:	990 hPa
Rel. humidity	:	46.4 %

Operator : Sora
Unit : Personal Computer
Serialnumber : DEX715X (X=0~9,A~Z,a~z or blank)
Remarks



Harmonic Emission - IEC 61000-3-2 , EN 61000-3-2 , (EN60555-2) 7/10/2013 5:34:31 PM

Urms =	229.5 V	P =	26.10 W	THC =	0.052 A	Range:	0.5 A
Irms =	0.147 A	pf =	0.774	Pmax =	27.12 W	V-nom:	230 V
						TestTime:	5 min (100%)

Personal Computer **Test completed, Result: PASSED**

Voltage Fluctuation

Flicker

Standard : IEC/EN 61000 - 3 - 3

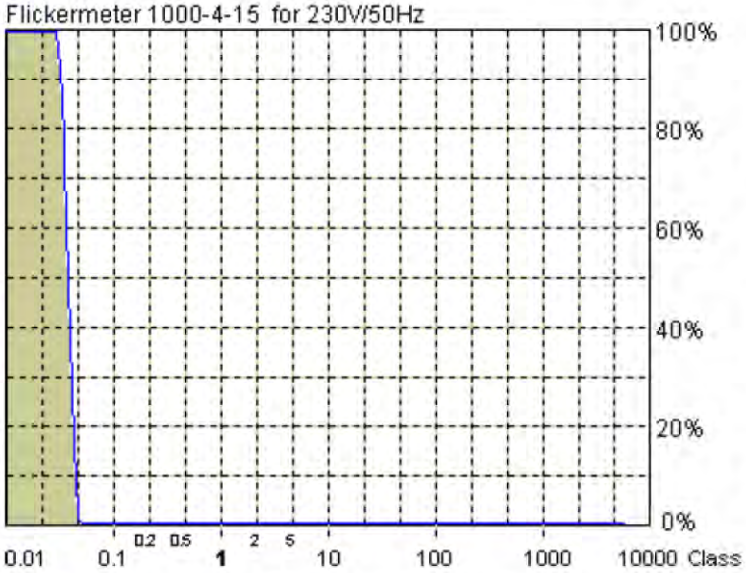
Device : DEX715X (X=0~9,A~Z,a~z or blank)

Date : July 10, 2013

Temperature	:	23.3 °C
Pressure	:	990 hPa
Rel. humidity	:	46.4 %

Operator : Sora
Unit : Personal Computer
Serialnumber : DEX715X (X=0~9,A~Z,a~z or blank)
Remarks

Flickermeter 1000-4-15 for 230V/50Hz



Actual Flicker (Fli):	**0.04**
Short-term Flicker (Pst):	**0.15**
Limit (Pst):	1.00
Long-term Flicker (Plt):	**0.12**
Limit (Plt):	0.65
Maximum Relative Volt. Change (dmax):	**0.00%**
Limit (dmax):	4.00%
Relative Steady-state Voltage Change (dc):	**0.04%**
Limit (dc):	3.30%
Maximum Interval exceeding 3.30% (dt):	**0.00ms**
Limit (dt>Lim):	500ms

Flicker Emission - IEC 61000-3-3 , EN 61000-3-3 , (EN60555-3)

7/10/2013 5:49:29 PM

Urms =	230.9	V	P =	26.36	W
Irms =	0.148	A	pf =	0.772	

Range:	0.5 A
V-nom:	230 V
TestTime:	120 min (902%)

Personal Computer

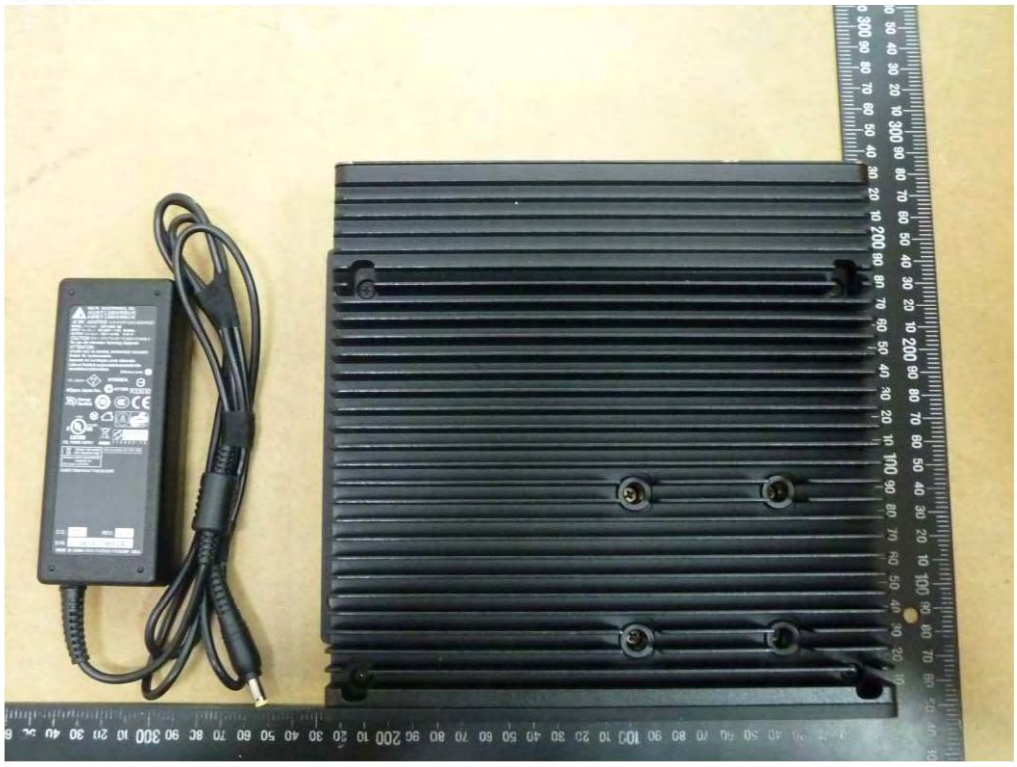
Test aborted, Result: PASSED

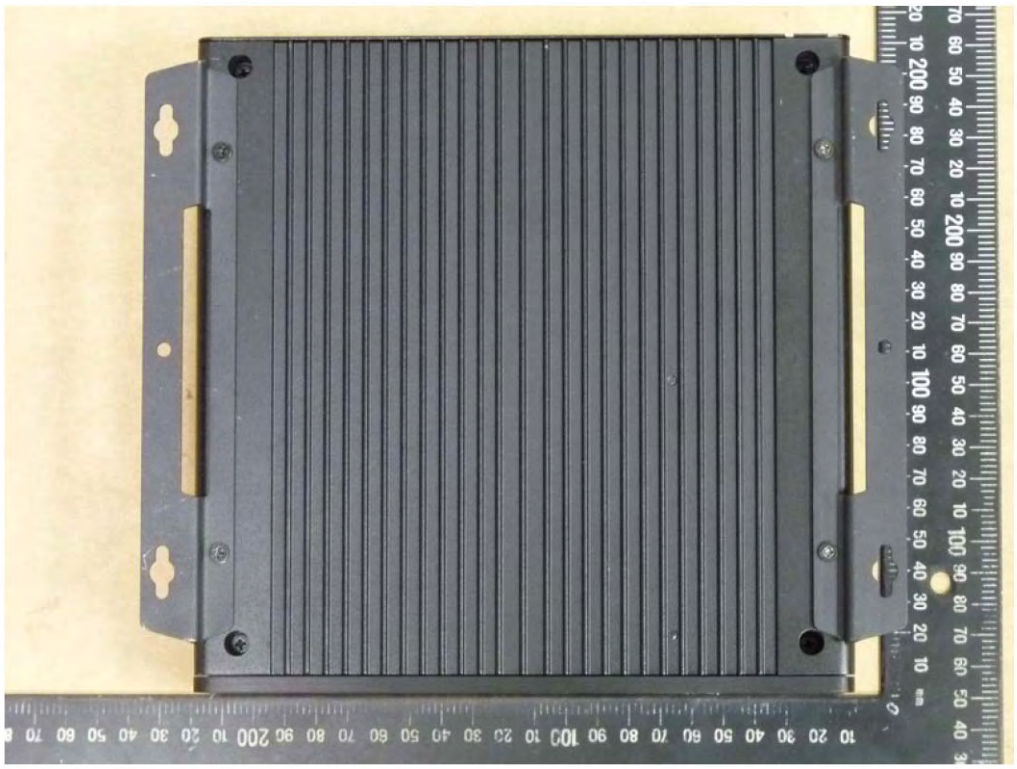
Appendix

Photos

1. External Photos
2. Internal Photos
3. Set Up Photo of Radiated Emission
4. Set Up Photo of Conducted Emission
5. Set Up Photo of Current Harmonics& Voltage Fluctuations
6. Set Up Photo of ESD
7. Set Up Photo of RF-Field
8. Set Up Photo of EFT
9. Set Up Photo of Surge & V-DIPS
10. Set Up Photo of CS
11. Set Up Photo of Magn-Field

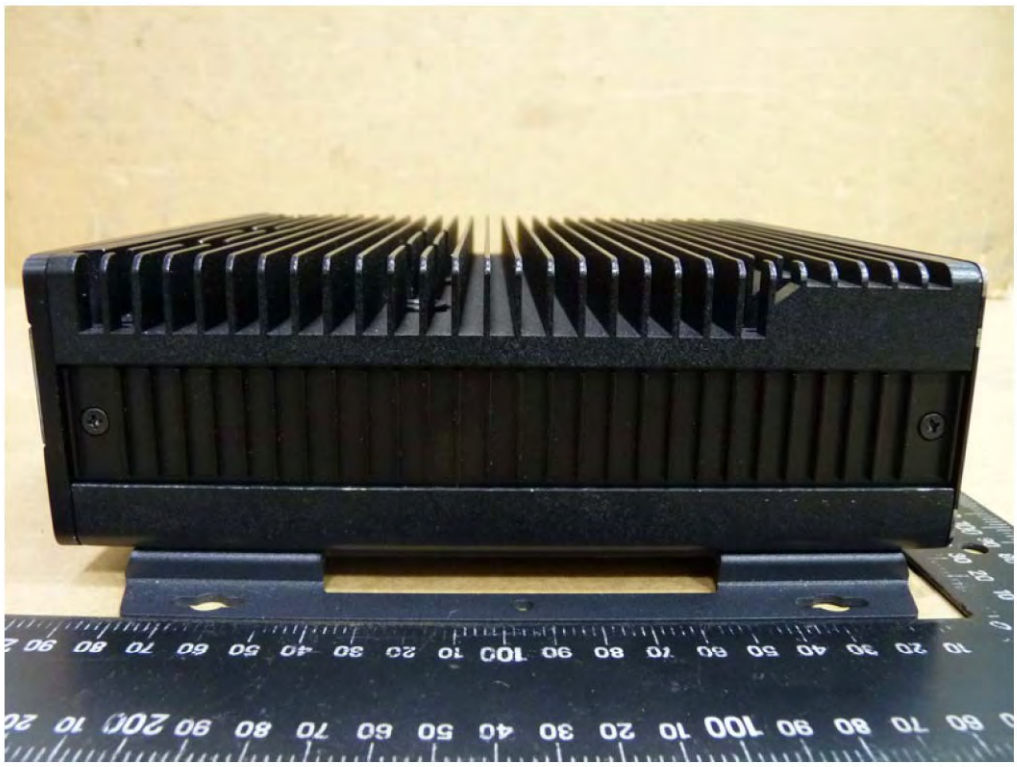
External Photos





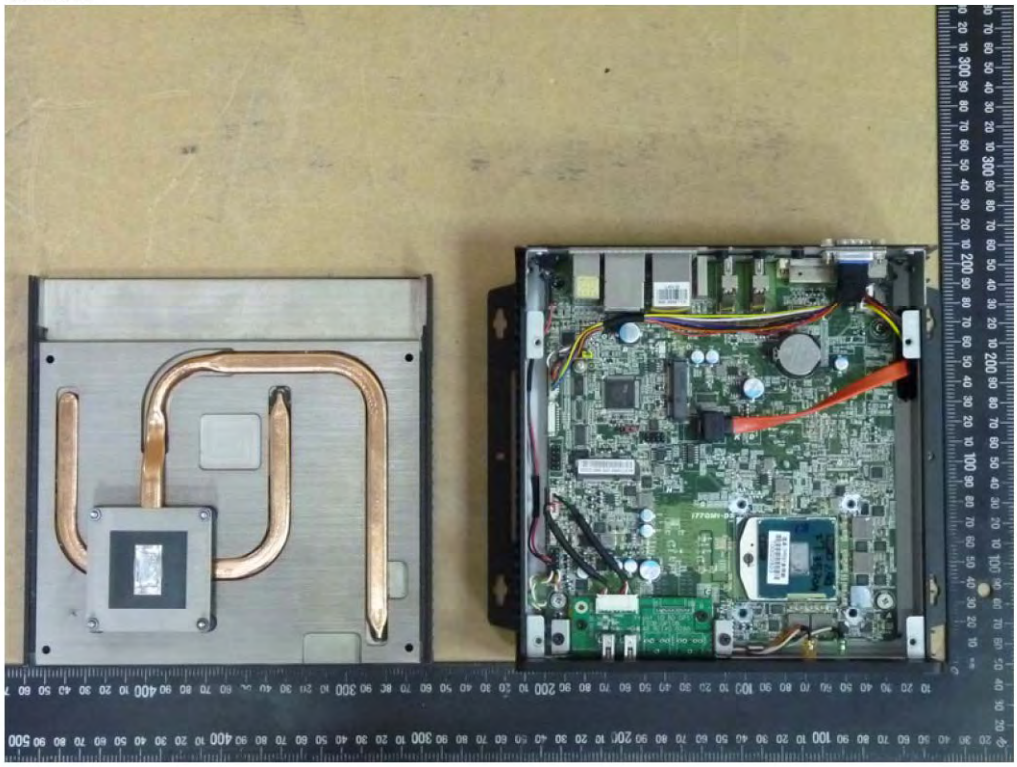

USB

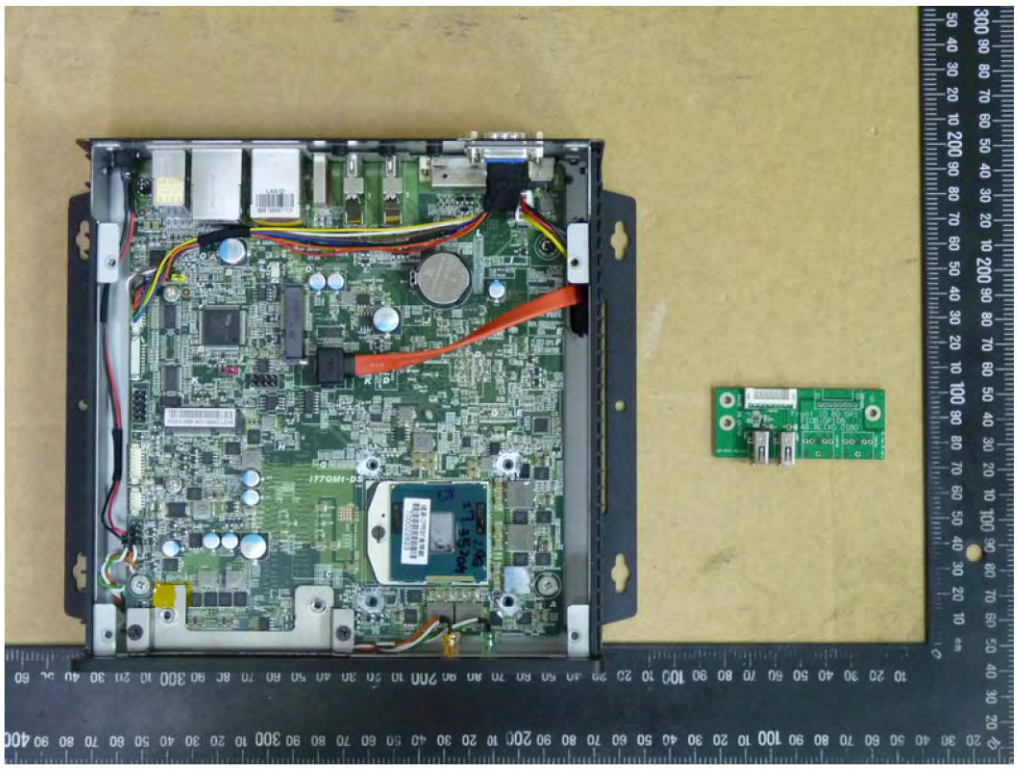

COM
DVI
DP2
DP1
e-SATA

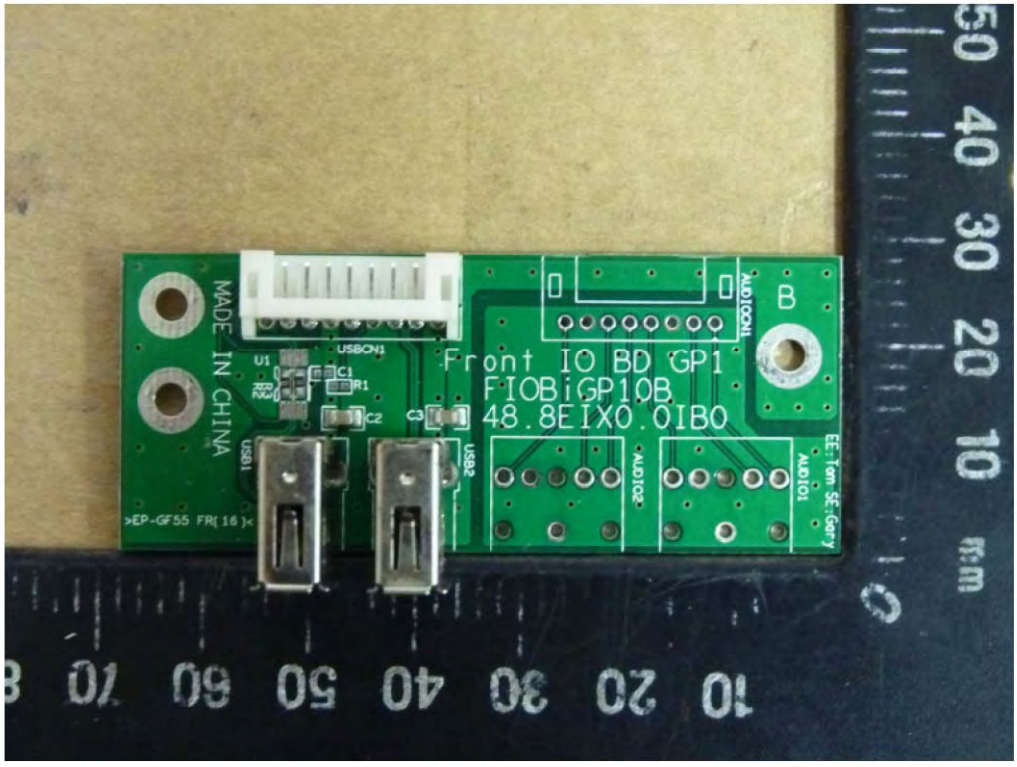


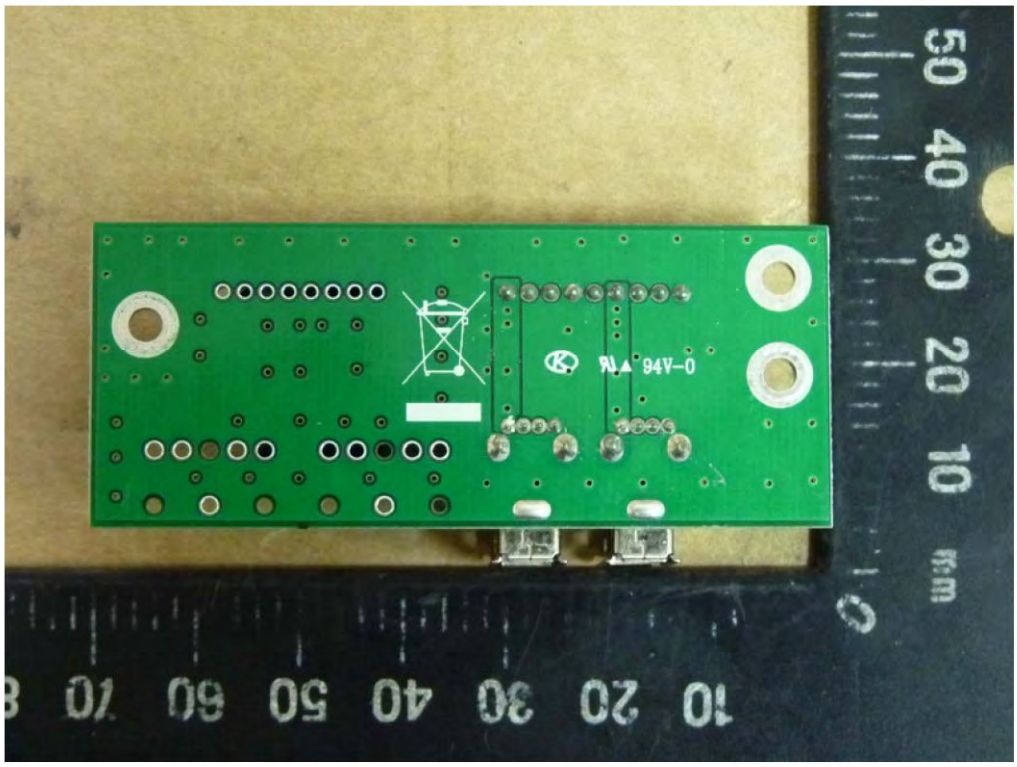

DELTA ELECTRONICS, INC.
台达电子工业股份有限公司
台達電子工業股份有限公司
AC/DC ADAPTER
MODEL: ADP-90MD BB
INPUT: 100-240V ~ 1.5A 50-60Hz
OUTPUT: 19V 4.74A
CAUTION:
For use with Information Technology Equipment.
ATTENTION :
UTILISER AVEC DU MATERIEL INFORMATIQUE SEULEMENT.
Endast för kontorsmaskin.
Apparatet må kun tilkoples jordet stikkontakt.
Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan.
Efficiency Level: V
UL Japan
U1000EA
AOpen Japan Inc.
N17908
R33030
Energy Verified
4T18
E131881
LISTED
I.T.E. POWER SUPPLY
SAFETY MARK
110002-15
KTC HU10104-11287
Mfr.Name : DELTA ELECTRONICS (JIANGSU) LTD.
A/S Center : 2-515-5303
仅适用于海拔2000m以下地区安全使用

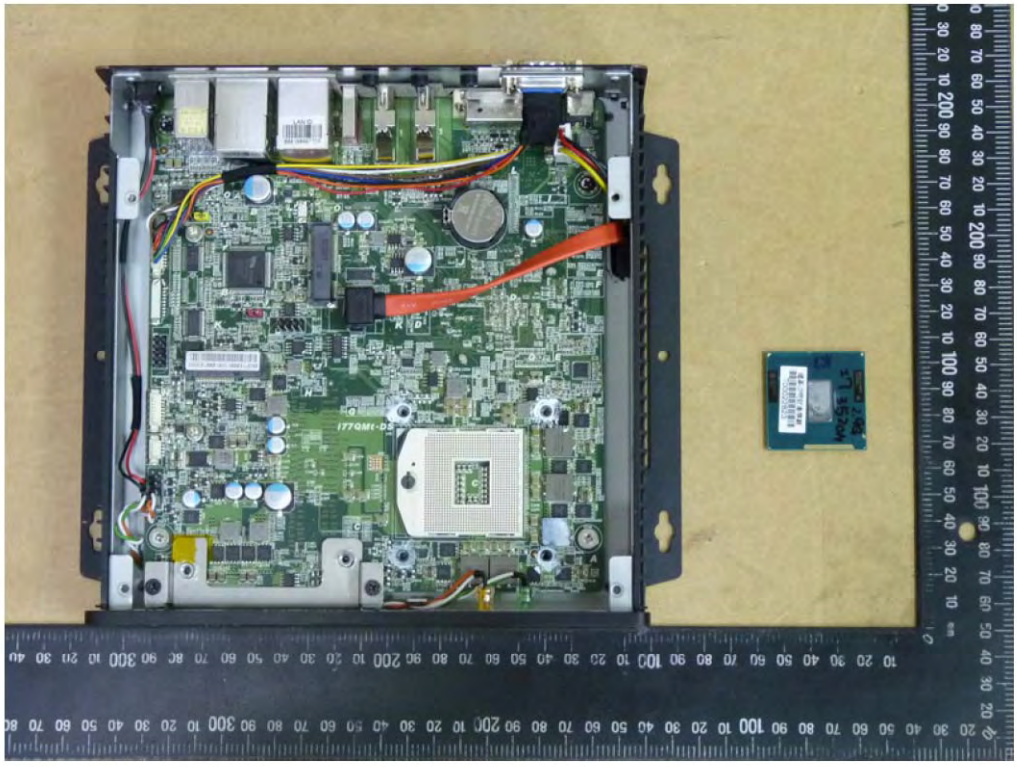
Internal Photos



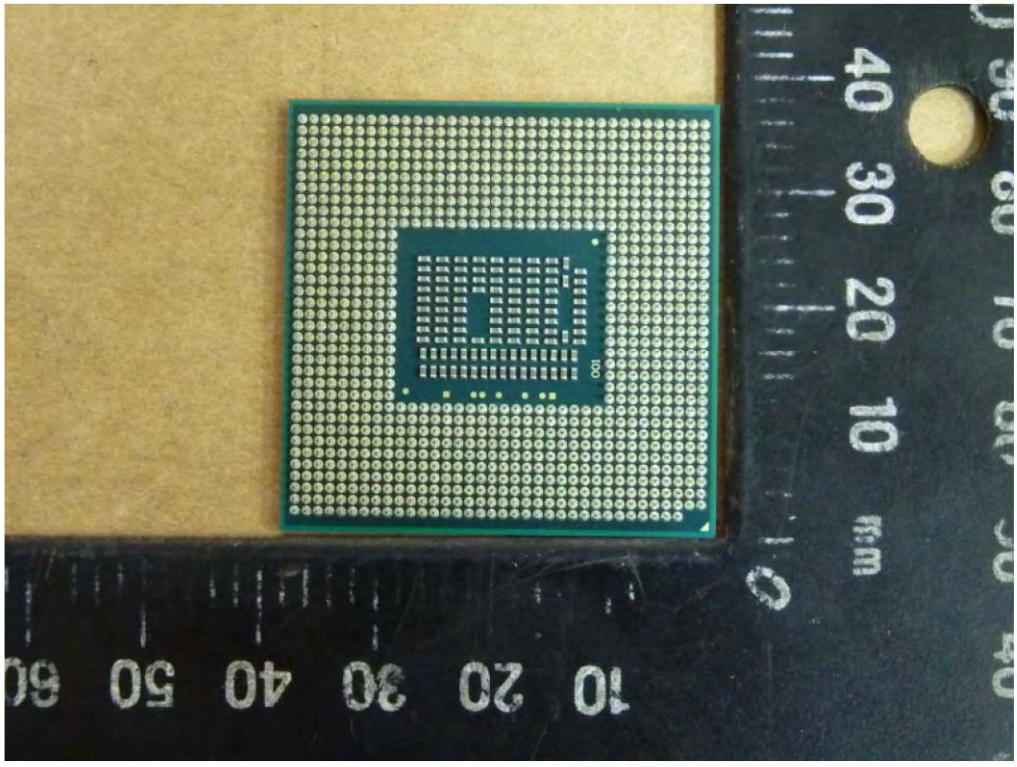


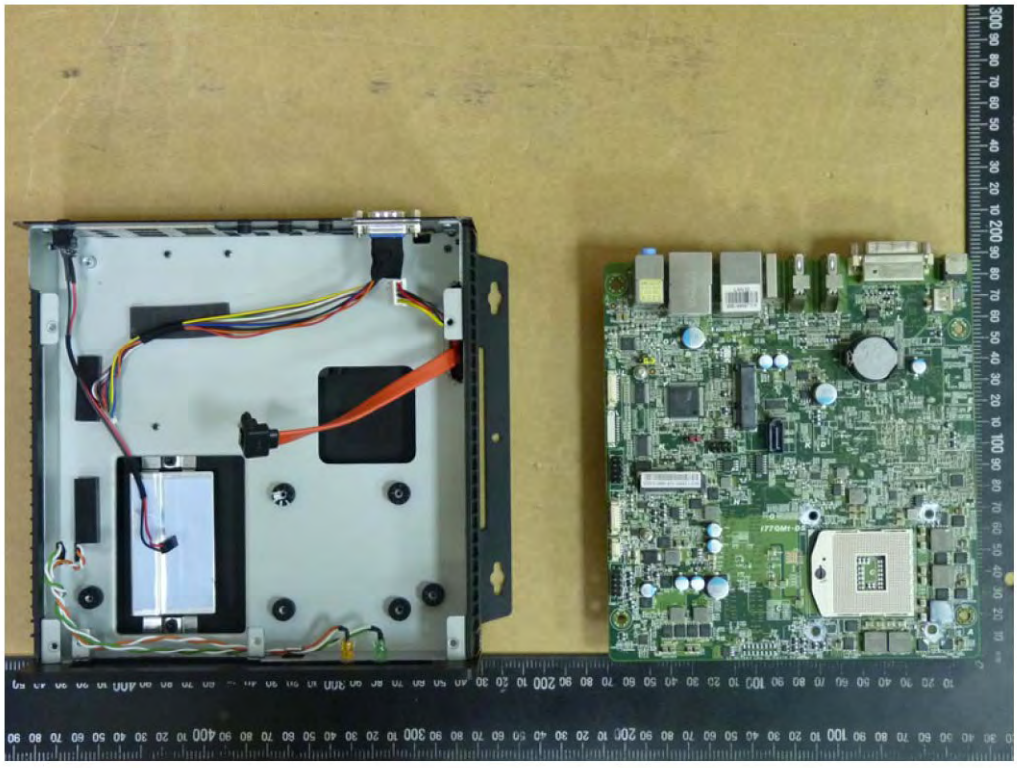

MADE IN CHINA
Front IO BD GP1
FIOBiGP10B
48.8EIX0.0IB0
AUDIO1
AUDIO2
USB1
USB2
USBON1


94V-0

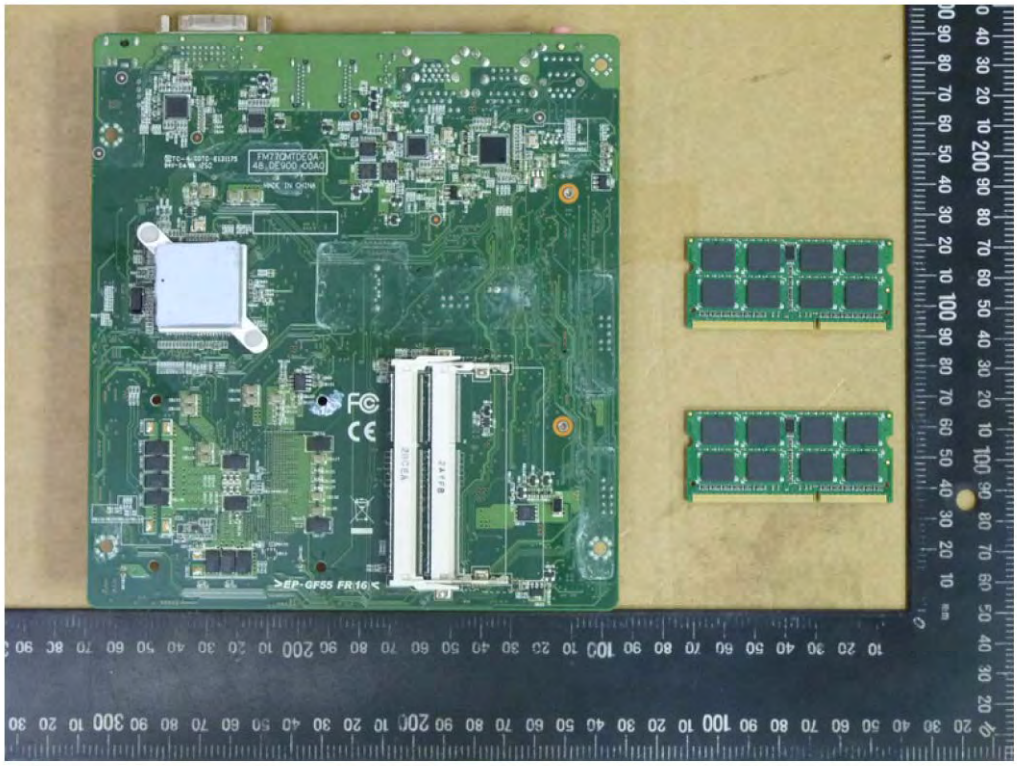


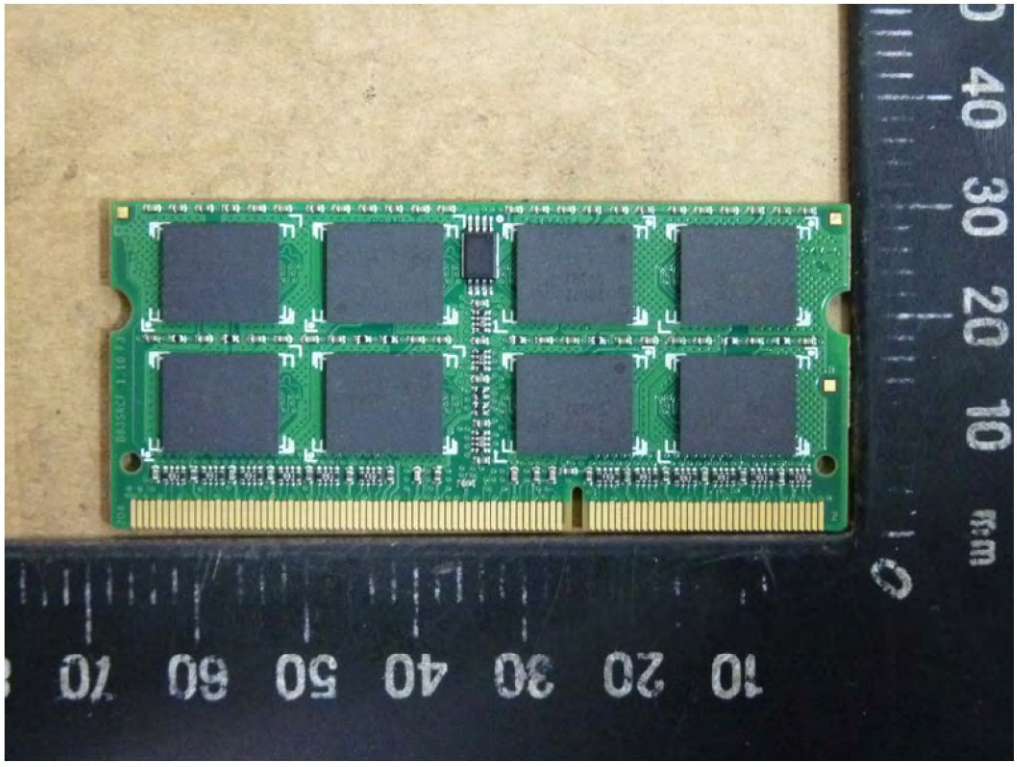

2.9G
17 3520M

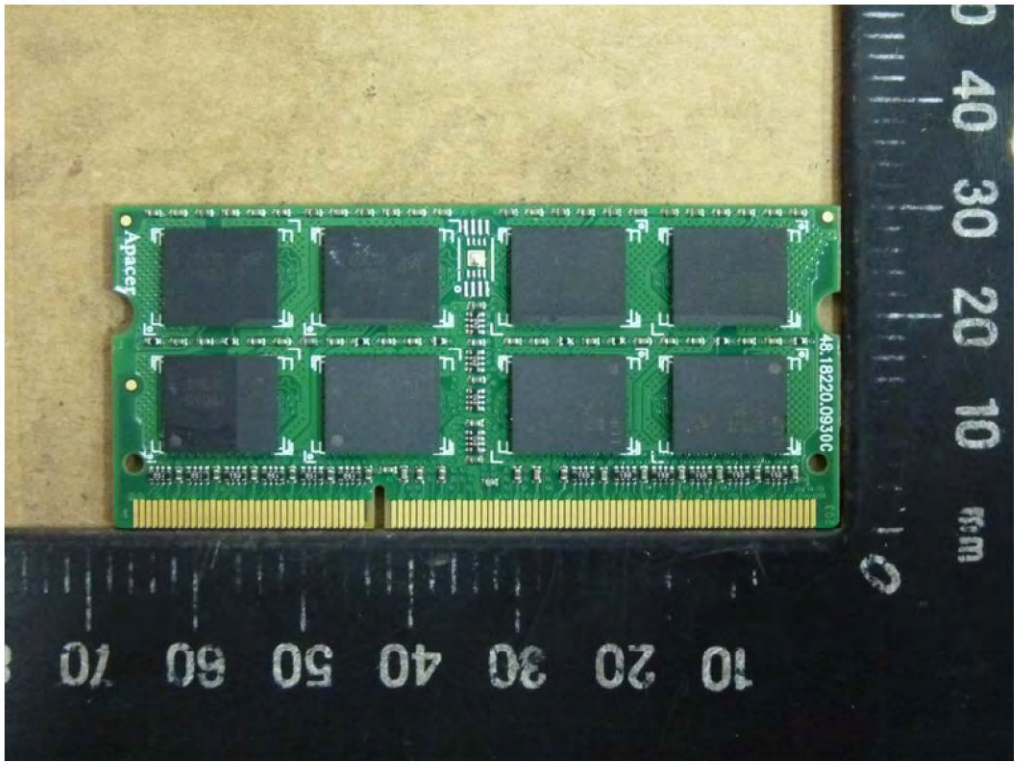





i77QMt-DS



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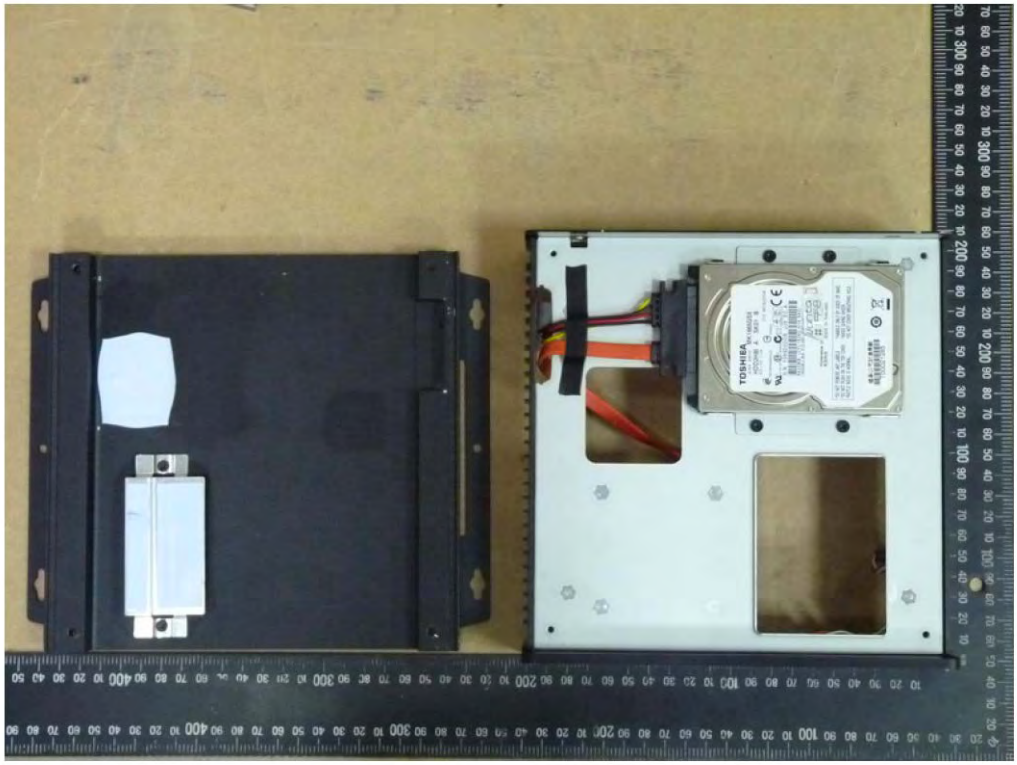


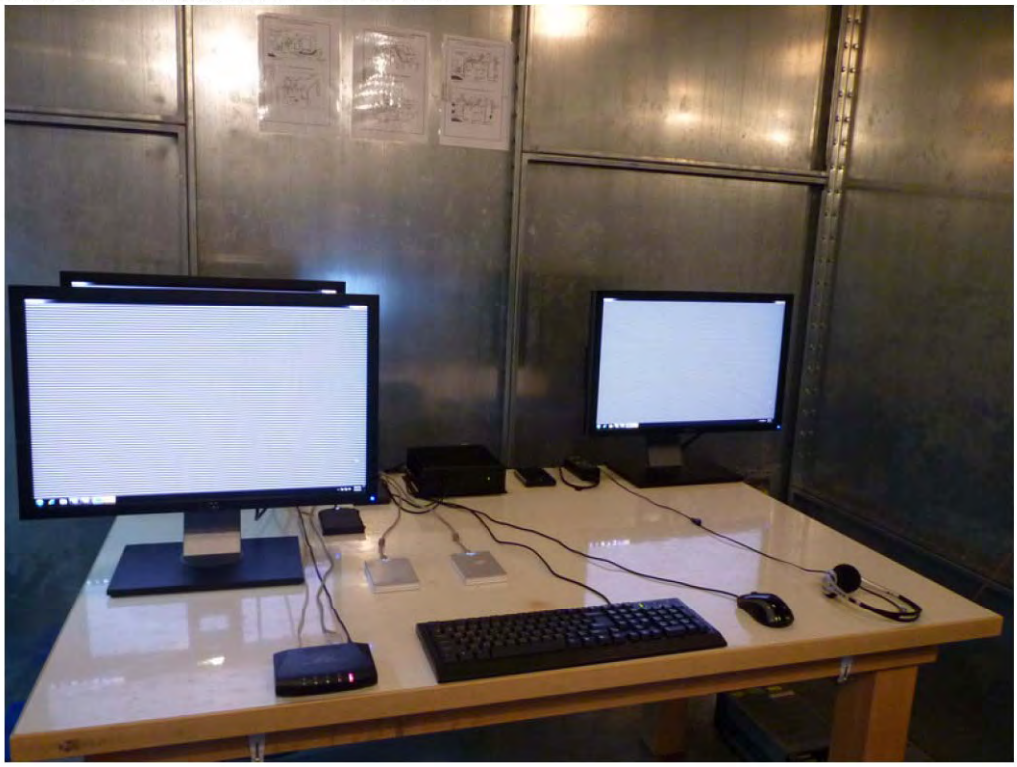

TOSHIBA
DISK DRIVE MK1665GSX
HDD2H85 A SK01 B
DC+5V 1.0A
S/N Y06SD0D0B JJ9 EC.A
160GB(LBA 312,581,808Sectors)
Janta
#1558
MADE IN THAILAND
*DO NOT REMOVE ANY LABELS.
*DO NOT PUSH ON THE TOP COVER.
*RATTLE NOISE IS NORMAL.
*HANDLE ONLY BY SIDES OF BASE.
*AVOID GIVING SHOCK.
*DO NOT COVER BREATHING HOLE.
T00021285


CR2032
Newsun
3V LITHIUM BATTERY

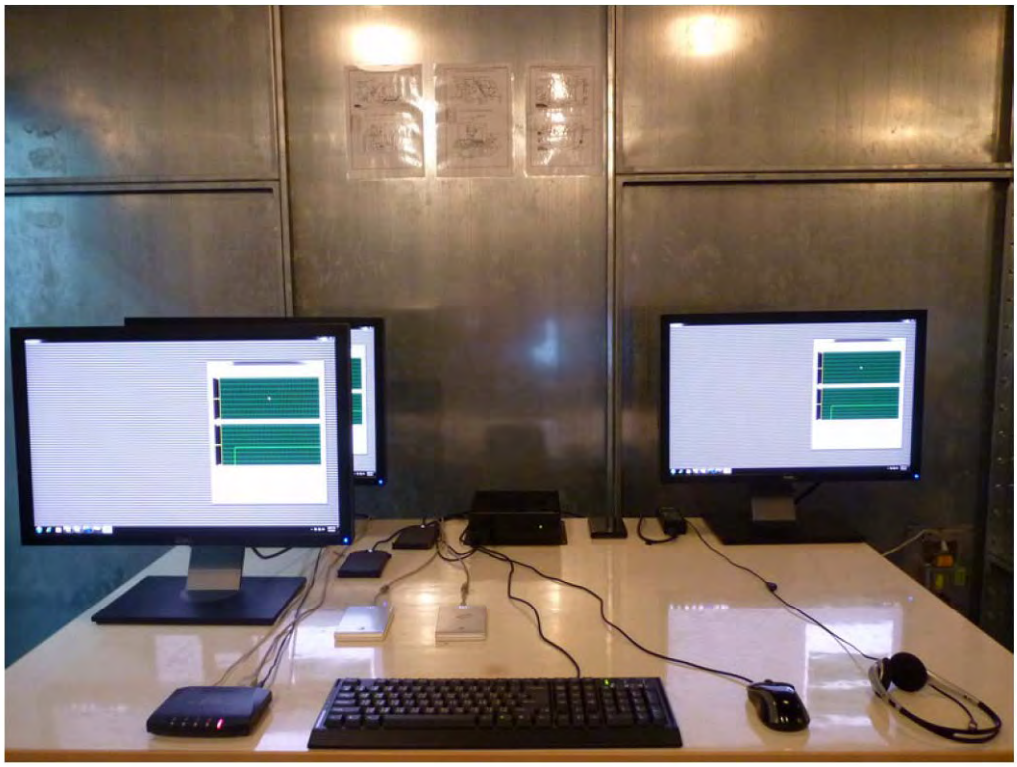
Set Up Photo of Radiated Emission
Below 1GHz

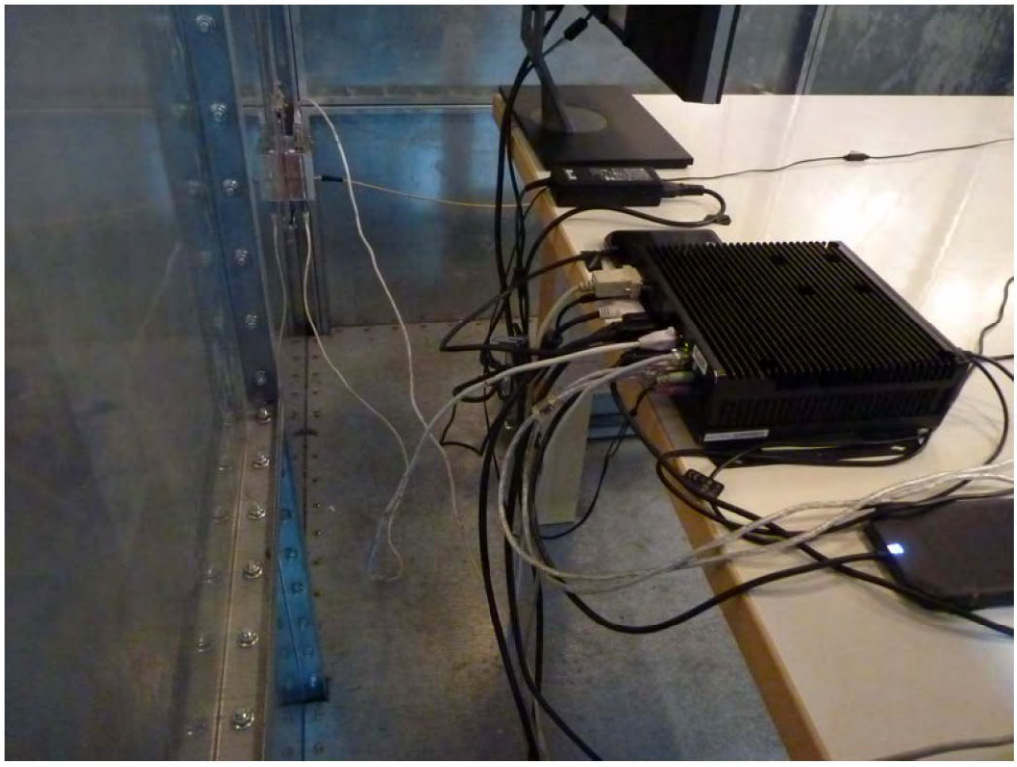
Above 1GHz

Set Up Photo of Conducted Emission

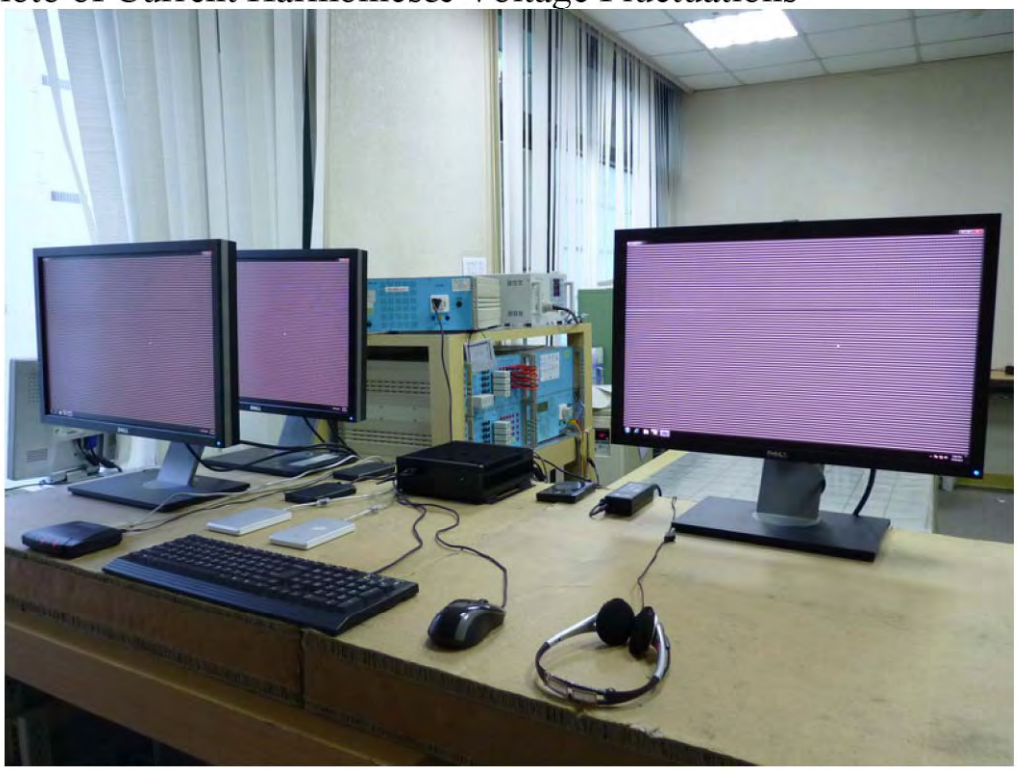


T-LISN

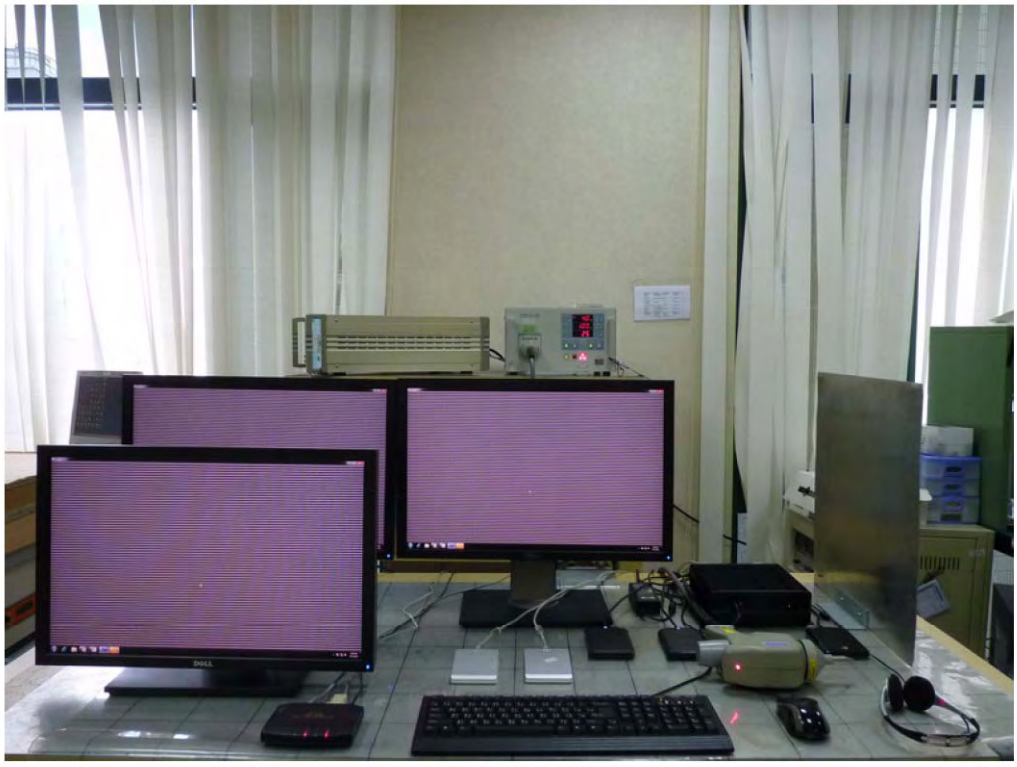




Set Up Photo of Current Harmonics& Voltage Fluctuations

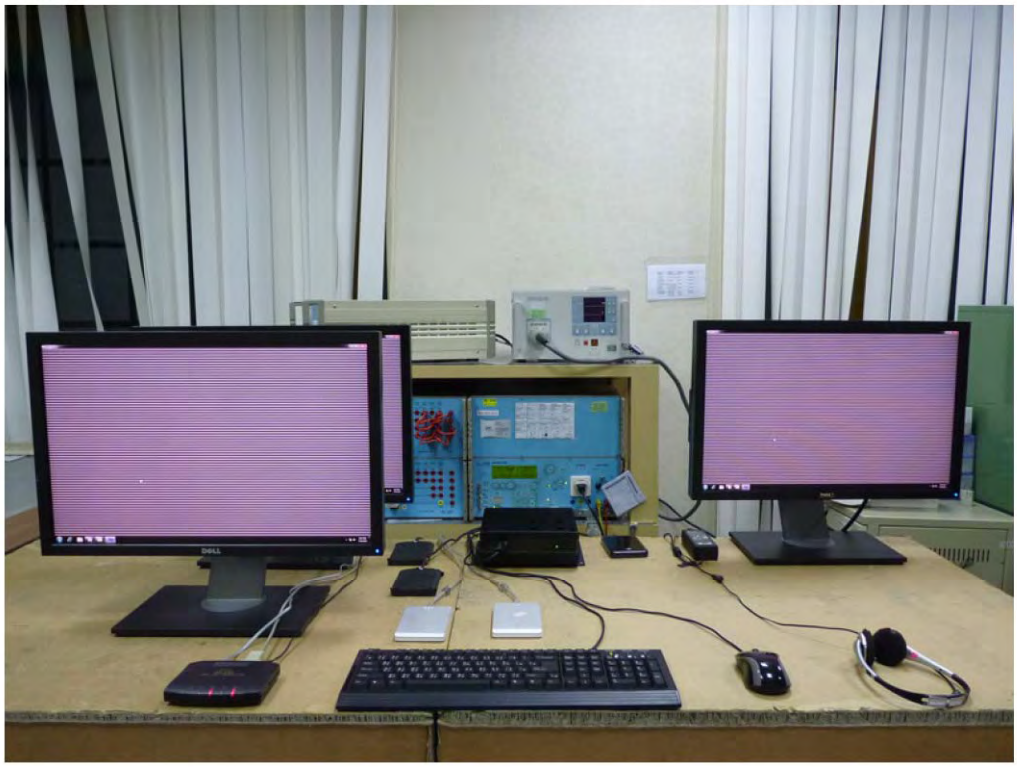


Set Up Photo of ESD



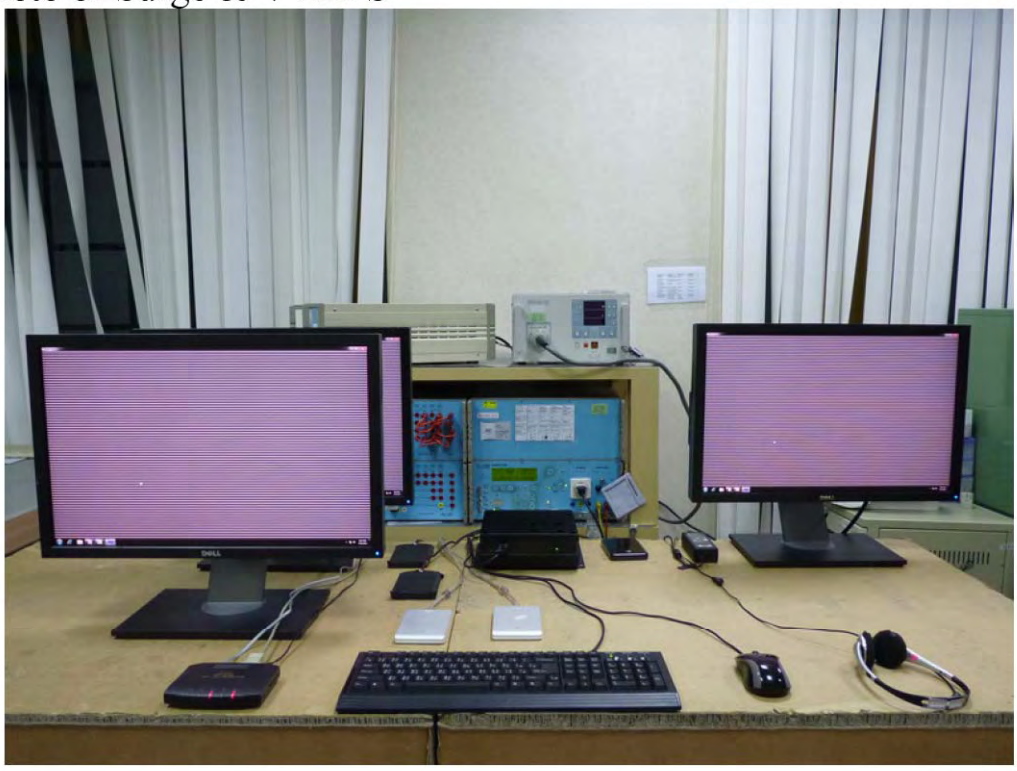
Set Up Photo of RF-Field

Set Up Photo of EFT
AC power line

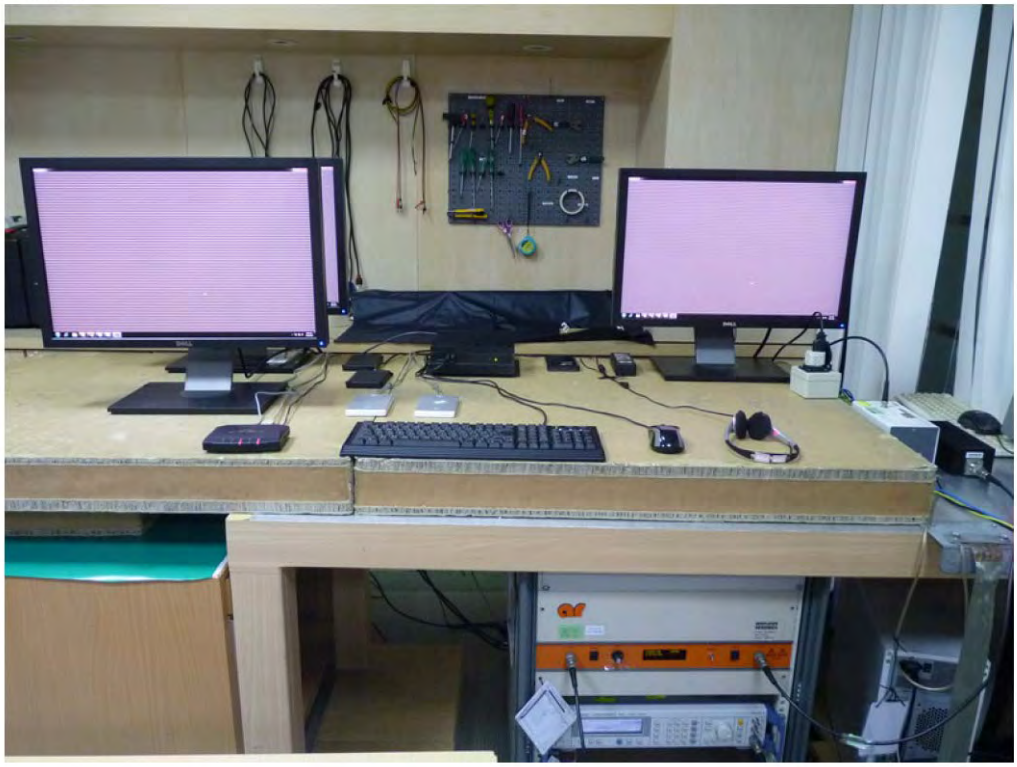


Signal line

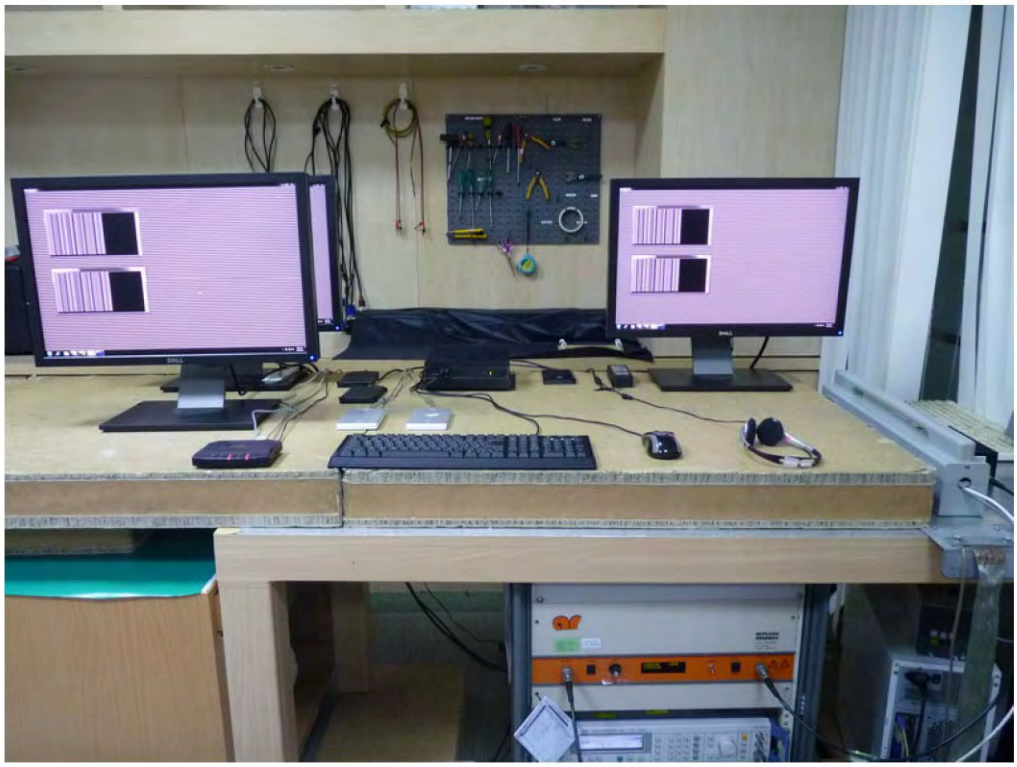
Set Up Photo of Surge & V-DIPS



Set Up Photo of CS
AC power line



Signal line



Set Up Photo of Magn-Field