FCC 47 CFR PART 15 SUBPART B UPDATE TEST REPORT

for

32" LCD TV, LCD Monitor; **32" LCD TV

MODEL: E322VL; **32LD40; **32LD400-UA; **32LD4XX-XX (The "X" in the model designation may be any alphanumeric character or blank.)

FCC ID: MDZ32LD400-UA

Test Report Number: T100726102-D

Issued for

Amtran Technology Co., Ltd.

17F, No. 268, Lien Chen Rd., Chung Ho City, Taipei County, Taiwan, 235 R.O.C.

Issued By:

Compliance Certification Services Inc.

Linkuo Laboratory

No. 81-1, Lane 210, Pa-De 2nd Rd., Luchu Hsiang, Taoyuan Shien, (338), Taiwan, R.O.C.

TEL: 886-3-324-0332

FAX: 886-3-324-5235

E-Mail: service@ccsrf.com Issued Date: August 18, 2010







Reference No: T100415102-D Report No: T100726102-D

Note: This report shall not be reproduced except in full, without the written approval of Compliance Certification Services Inc. This document may be altered or revised by Compliance Certification Services Inc. personnel only, and shall be noted in the revision section of the document. The client should not use it to claim product endorsement by TAF, A2LA, NIST or any government agencies. The test results in the report only apply to the tested sample.

Revision History

Reference No: T100415102-D Report No: T100726102-D

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	April 30, 2010	Initial Issue	All	Angel Hu
01	August 18, 2010	See following note Rev.(01)	All	Angel Hu

Note:

Rev.(01):

- 1. Applicant three model numbers and one trade name, one product name just for marketing purpose.
- 2. Applicant adds new appearance of Type 2 (for new model number), the difference of type 1, delete one LAN Port and one HDMI and adds one set of audio in port (the detail please see description of IO Port. (Please refer to have ** mark items on this report and external photographs of Type 2)
- 3. Applicant adds one IP Board for two types to re-test (Please refer to have ** mark items on this report.)
- 4 Other information, please refer to the T100415102 and this test report.

TABLE OF CONTENTS

1	TEST RESULT CERTIFICATION	4
2	EUT DESCRIPTION	5
3	TEST METHODOLOGY	
3.1.	DECISION OF FINAL TEST MODE	7
3.2.	EUT SYSTEM OPERATION	
4	SETUP OF EQUIPMENT UNDER TEST	8
4.1.	DESCRIPTION OF SUPPORT UNITS	
4.2.	CONFIGURATION OF SYSTEM UNDER TEST	10
5	FACILITIES AND ACCREDITATIONS	11
5.1.	FACILITIES	
5.2.	ACCREDITATIONS	
5.3.	MEASUREMENT UNCERTAINTY	
6	CONDUCTED EMISSION MEASUREMENT	
6.1.	LIMITS OF CONDUCTED EMISSION MEASUREMENT	13
6.2.	TEST INSTRUMENTS	
6.3.	TEST PROCEDURES	14
6.4.	TEST SETUP	15
6.5.	DATA SAMPLE:	
6.6.	TEST RESULTS	
7	RADIATED EMISSION MEASUREMENT	
7.1.	LIMITS OF RADIATED EMISSION MEASUREMENT	
7.2.	TEST INSTRUMENTS	
7.3.	TEST PROCEDURES	
7.4.	TEST SETUP	
7.5.	DATA SAMPLE:	
7.6.	TEST RESULTS	
8	PHOTOGRAPHS OF THE TEST CONFIGURATION	33

1 TEST RESULT CERTIFICATION

Product:	32" LCD TV, LCD Monitor; **32" LCD TV
Model:	E322VL; **32LD40; **32LD400-UA; **32LD4XX-XX (The " X " in the model designation may be any alphanumeric character or blank.)
Brand:	AmTRAN; VIZIO; **LG
Applicant:	Amtran Technology Co., Ltd. 17F, No. 268, Lien Chen Rd., Chung Ho City, Taipei County, Taiwan, 235 R.O.C.
Manufacturer:	 (1) Amtran Electronic Co., Ltd. No. 225, Jinfeng Road, Suzhou New District, Suzhou, Jiangsu PRC. (2) SuZhou Raken Technology Co., Ltd. No. 278, Mayun Rd., New District Su Zhou, China
Tested:	August 3 ~12, 2010
Test Voltage:	120VAC, 60Hz

Reference No: T100415102-D Report No: T100726102-D

EMISSION						
Standard	ltem	Result	Remarks			
FCC 47 CFR Part 15 Subpart B (July 10, 2008),	Conducted (Main Port)	PASS	Meet Class B limit			
ICES-003 Issue 4 ANSI C63.4-2003	Radiated	PASS	Meet Class B limit			

Note: 1. The statements of test result on the above are decided by the request of test standard only; the measurement uncertainties are not factored into this compliance determination.

2. The information of measurement uncertainty is available upon the customer's request.

Deviation from Applicable Standard	
None	

The above equipment has been tested by Compliance Certification Services Inc., and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved by:	Reviewed by:
I fame turned	Stan Lin
Ethan Huang Section Manager	Stan Lin Supervisor

2 EUT DESCRIPTION

Product	32" LCD TV, LCD Monitor; **32" LCD TV			
Model	E322VL; **32LD40; **32LD400-UA; **32LD4XX-XX (The " X " in the model designation may be any alphanumeric character or blank.)			
Brand	AmTRAN; VIZIO; **LG			
Applicant	Amtran Techr	Amtran Technology Co., Ltd.		
Serial Number	T100726102			
Received Date	July 26, 2010			
EUT Power Rating	100-240VAC, 50/60Hz			
AC Power Cord Type	Unshielded, 1.8m (Detachable)			
LCD Panel Manufacturer	LG Display	Model	LC320WUG	
IP Board Manufacturer	Delta	Model	DPS-172FP XX (X = 0-9, A-Z or blank)	
**	FSP	Model	FSP161-2MS01XX (X = 0-9, A-Z or blank)	

Reference No: T100415102-D Report No: T100726102-D

I/O Port For Type 1

I/O PORT TYPES	Q'TY	TESTED WITH
1. D-SUB Port	1	1
2. LAN Port	1	1
3. HDMI Port	3	3
4. Component Port (Y/Pb/Pr)	1 Set	1 Set
5. AV Terminal Port (V/R/L)	1 Set	1 Set
6. Audio out Port	1	1
7. Audio In Port	2 Set	2 Set
8. Optical Port	1	1
9. Antenna Port	1	1
10. USB Port	1	1



I/O Port For **Type 2

I/O PORT TYPES	Q'TY	TESTED WITH
1. D-SUB Port	1	1
2. HDMI Port	2	2
3. Component Port (Y/Pb/Pr)	1 Set	1 Set
4. AV Terminal Port (V/R/L)	1 Set	1 Set
5. Audio out Port	1	1
6. Audio In Port	3 Set	3 Set
7. Optical Port	1	1
8. Antenna Port	1	1
9. USB Port	1	1

Reference No: T100415102-D Report No: T100726102-D

Note: 1. The EUT include one Remote Control for sale only.

^{2.} The all model numbers (list on this report) are identical, just for marketing purpose only.

^{3.} The means of "X" (The " X " in the model designation may be any alphanumeric character or blank.) on model number is just for marketing purpose only.

3 TEST METHODOLOGY

3.1. DECISION OF FINAL TEST MODE

1. The following test mode(s) were scanned during the preliminary test:

Mode	D-SUB	HDMI 1	HDMI 2	HDMI 3	Component	AV Terminal	LCD Panel	IP Board	Type
1	1920 x 1080 / 60Hz								
2	1280 x 1024 / 75Hz								
3	800 x 600 / 60Hz								
4		1080P							Type 1
5			1080P						Type 1
6				1080P					
7					Component				
8						AV Terminal	LG Display LC320WUG	FSP FSP161-2MS01	
9	1920 x 1080 / 60Hz								
10	1280 x 1024 / 75Hz								
11	800 x 600 / 60Hz								
12		1080P							Type 2
13			1080P						
14					Component				
15						AV Terminal			

Reference No: T100415102-D Report No: T100726102-D

2. After the preliminary scan, the following test mode was found to produce the highest emission level.

Final Test M	Final Test Mode		
Emission	Conducted Emission	Mode 1, 9	
EIIISSIOII	Radiated Emission	Mode 1, 9	

Then, the above highest emission mode of the configuration of the EUT and cable was chosen for all final test items.

3.2. EUT SYSTEM OPERATION

1	EMI test program was loaded and executed in "Windows XP" mode.
2	Data was sent to EUT filling the screen with upper case of "H" patterns.
3	Test program sequentially exercised all related I/O's of Host PC and sent "H" patterns to all applicable output ports of Host PC.
	patterns to all applicable output ports of Host PC.
4	Repeat 2 to 3.

Note: Test program is self-repeating throughout the test.

4 SETUP OF EQUIPMENT UNDER TEST

4.1. DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Reference No: T100415102-D Report No: T100726102-D

Mode	Mode 1									
No.	Equipment	Model No.	Serial No.	FCC ID	Trade Name	Data Cable	Power Cord			
1	PC	DX-6120	SGH5330GK7	FCC DoC	HP	D-SUB Cable: Shielded, 1.8m with two cores Audio Cable: Unshielded, 1.8m HDMI Cable: Unshielded, 1.8m	Unshielded, 1.8m			
2	Modem	DM-1414	304012264	IFAXDM1414	ACEEX	Unshielded, 1.8m	Unshielded, 1.8m			
3	Printer	STYLUS C60	DR3K039425	FCC DoC	EPSON	Shielded, 1.8m	Unshielded, 1.8m			
4	PS/2 Keyboard	Y-SJ17	SY528UK	FCC DoC	Logitech	Unshielded, 1.8m	N/A			
5	PS/2 Mouse	M-CAA43	LZE03257395	FCC DoC	Logitech	Unshielded, 1.8m	N/A			
6	Flash drive	U172	N/A	FCC DoC	PQI	Unshielded, 1.0m	N/A			
7	5.1 Amplifier	Z-5400	S-0180B	FCC DoC	Logitech	Optical Cable: Unshielded, 1.0m	Unshielded, 1.8m			
8	DVD Player	DVD-S53	VC7KA001763 R	FCC DoC	Panasonic	HDMI Cable: Unshielded, 1.8m Audio Cable: Unshielded, 1.8m x 2	Unshielded, 1.8m			
9	DVD Player	DVR-310-S	DDTT004672TA	FCC DoC	PIONEER	HDMI Cable: Unshielded, 1.8m AV Terminal Cable: Unshielded, 1.8m x 3 Component Cable: Unshielded, 1.8m x 3 Audio Cable: Unshielded, 1.8m x 2	Unshielded, 1.8m			
10	Notebook PC (Remote)	S7110	DU4A00EG0944P 010	FCC DOC	Fujitsu	LAN Cable: Unshielded, 10m	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with two cores			

Mode 9 Equipment Model No. FCC ID **Trade Name Data Cable** No. Serial No. **Power Cord** D-SUB Cable: Shielded, 1.8m with two cores 1 PC DX-6120 SGH5330GK7 FCC DoC ΗP Audio Cable: Unshielded, 1.8m Unshielded, 1.8m HDMI Cable: Unshielded, 1.8m 2 Modem DM-1414 304012264 IFAXDM1414 **ACEEX** Unshielded, 1.8m Unshielded, 1.8m 3 Printer STYLUS C60 DR3K039425 FCC DoC **EPSON** Shielded, 1.8m Unshielded, 1.8m PS/2 4 Y-SJ17 SY528UK FCC DoC Logitech Unshielded, 1.8m N/A Keyboard 5 PS/2 Mouse M-CAA43 LZE03257395 FCC DoC Logitech Unshielded, 1.8m N/A 6 Flash drive U172 FCC DoC PQI Unshielded, 1.0m N/A Optical Cable: 7 5.1 Amplifier Z-5400 S-0180B FCC DoC Logitech Unshielded, 1.8m Unshielded, 1.0m HDMI Cable: Unshielded, 1.8m AV Terminal Cable: Unshielded, 1.8m x 3 8 **DVD Player** DVR-310-S DDTT004672TA FCC DoC **PIONEER** Unshielded, 1.8m Component Cable: Unshielded, 1.8m x 3

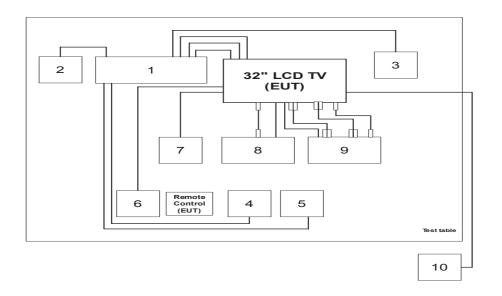
Reference No: T100415102-D Report No: T100726102-D

Audio Cable: Unshielded, 1.8m x 6

Note: Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.2. CONFIGURATION OF SYSTEM UNDER TEST

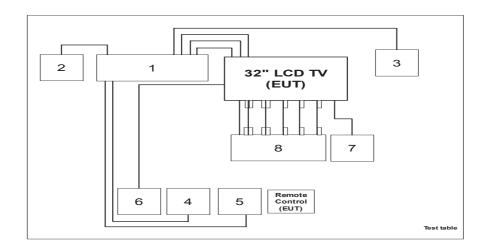
Mode 1							
1. PC	2. Modem	3. Printer					
4. PS/2 Keyboard	5. PS/2 Mouse	6. Flash drive					
7. 5.1 Amplifier	8. DVD Player	9. DVD Player					
10. Notebook PC							



(Remote)

Reference No: T100415102-D Report No: T100726102-D

Mode 9			
1. PC	2. Modem	3. Printer	
4. PS/2 Keyboard	5. PS/2 Mouse	6. Flash drive	
7. 5.1 Amplifier	8. DVD Player		



5 FACILITIES AND ACCREDITATIONS

5.1. FACILITIES

All measurement facilities used to collect the measurement data are located at No. 81-1, Lane 210, Pa-De 2nd Rd., Luchu Hsiang, Taoyuan Shien, Taiwan.

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. All receiving equipment conforms to CISPR 16-1-1, CISPR 16-1-2, CISPR 16-1-3, CISPR 16-1-4, CISPR 16-1-5 and CISPR 16-2-3.

Reference No: T100415102-D Report No: T100726102-D

5.2. ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

Taiwan TAF USA A2LA

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada Industry Canada
Norway Nemko
VCCI
Taiwan BSMI
USA FCC

Copies of granted accreditation certificates are available for downloading from our web site, http:///www.ccsrf.com

5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Reference No: T100415102-D Report No: T100726102-D

Measurement	Frequency	Uncertainty				
Conducted emissions	9kHz~30MHz	±1.7806				
	10M					
	30~200MHz	±3.8856				
Dadiated emissions	200~1000MHz	±3.8721				
Radiated emissions	3М					
	30~200MHz	N/A				
	200~1000MHz	N/A				

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Consistent with industry standard (e.g. CISPR 22: 2006, clause 11, Measurement Uncertainty) determining compliance with the limits shall be base on the results of the compliance measurement. Consequently the measure emissions being less than the maximum allowed emission result in this be a compliant test or passing test.

The acceptable measurement uncertainty value without requiring revision of the compliance statement is base on conducted and radiated emissions being less than U_{CISPR} which is 3.6dB and 5.2dB respectively. CCS values (called U_{Lab} in CISPR 16-4-2) is less than U_{CISPR} as shown in the table above. Therefore, MU need not be considered for compliance.

6 CONDUCTED EMISSION MEASUREMENT

6.1. LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY (MHz)	Class A	(dBuV)	Class B (dBuV)		
FREQUENCY (MHZ)	Quasi-peak	Average	Quasi-peak	Average	
0.15 - 0.5	79	66	66 - 56	56 - 46	
0.50 - 5.0	73	60	56	46	
5.0 - 30.0	73	60	60	50	

Reference No: T100415102-D Report No: T100726102-D

NOTE:

- (1) The lower limit shall apply at the transition frequencies.
- (2) The limit decreases in line with the logarithm of the frequency in the range 0.15 to 0.50 MHz.
- (3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

6.2. TEST INSTRUMENTS

	Conducted Emission Room # 3									
Name of Equipment Manufacturer Model Serial Number Calibration										
EMI Test Receiver	R&S	ESCS30	845552/030	05/27/2011						
LISN	R&S	ENV216	100069	01/27/2011						
LISN	FCC FCC-LISN-50/250 06013 10/13/2010									
Test S/W	CCS-3A1-CE									

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. N.C.R = No Calibration Request.

6.3. TEST PROCEDURES (please refer to measurement standard or CCS SOP PA-031)

Procedure of Preliminary Test

• The EUT and support equipment, if needed, were set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor standing equipment, it is placed on the ground plane, which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.

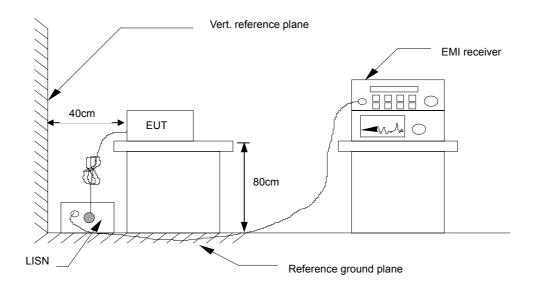
Reference No: T100415102-D Report No: T100726102-D

- All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- The test equipment EUT installed by AC 120VAC/60Hz main power, through a Line Impedance Stabilization Network (LISN), which was supplied power source and was grounded to the ground plane.
- All support equipment power by from a second LISN.
- The test program of the EUT was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.
- The Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.
- During the above scans, the emissions were maximized by cable manipulation.
- The test mode(s) described in Item 3.1 were scanned during the preliminary test.
- After the preliminary scan, we found the test mode described in Item 3.1 producing the highest emission level.
- The worst configuration of EUT and cable of the above highest emission level were recorded for reference of the final test.

Procedure of Final Test

- EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.
- A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.
- The test data of the worst-case condition(s) was recorded.

6.4. TEST SETUP



Reference No: T100415102-D Report No: T100726102-D

 For the actual test configuration, please refer to the related item - Photographs of the Test Configuration.

6.5. DATA SAMPLE:

Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correctrion factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak. limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
x.xx	43.95	33.00	10.00	53.95	43.00	56.00	46.00	-2.05	-3.00	Pass

Frequency (MHz) = Emission frequency in MHz

Reading (dBuV) = Uncorrected Analyzer/Receiver reading + Insertion loss of LISN, if it > 0.5 dB

Correction Factor (dB) = LISN Factor + Cable Loss

Result (dBuV) = Raw reading converted to dBuV and CF added

Limit (dBuV) = Limit stated in standard
Margin (dB) = Result (dBuV) – Limit (dBuV)

6.6. TEST RESULTS

CCS Conduction Test 3

Reference No: T100415102-D Report No: T100726102-D

Model No.	E322VL	6dB Bandwidth	9 kHz
Environmental Conditions	25°C, 57% RH	Test Mode	Mode 1
Tested by	Juicheng Su	Line	L1

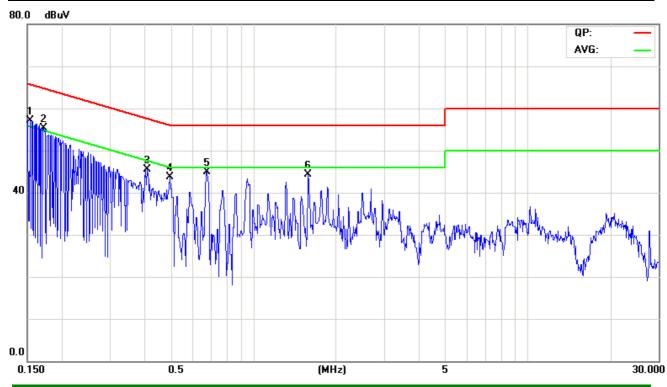


NO	Fraguanay		Average	Correction	QuasiPeak	Average	QuasiPeak	Average	QuasiPeak	Average	Remark
NO.	Frequency	reading	reading	factor	result	result	limit	limit	margin	margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	(Pass/Fail)
1	0.1640	36.90	12.68	9.65	46.55	22.33	65.26	55.26	-18.71	-32.93	Pass
2	0.1882	34.42	14.54	9.65	44.07	24.19	64.12	54.12	-20.05	-29.93	Pass
3	0.2267	32.45	28.15	9.65	42.10	37.80	62.57	52.57	-20.47	-14.77	Pass
4	0.4088	31.33	28.67	9.64	40.97	38.31	57.67	47.67	-16.70	-9.36	Pass
5*	0.4994	30.67	28.29	9.55	40.22	37.84	56.01	46.01	-15.79	-8.17	Pass
6	0.5990	24.93	11.21	9.55	34.48	20.76	56.00	46.00	-21.52	-25.24	Pass

REMARKS: L1 = Line One (Live Line)

CCS Conduction Test 3

Model No.	E322VL	6dB Bandwidth	9 kHz
Environmental Conditions	25°C, 57% RH	Test Mode	Mode 1
Tested by	Juicheng Su	Line	L2

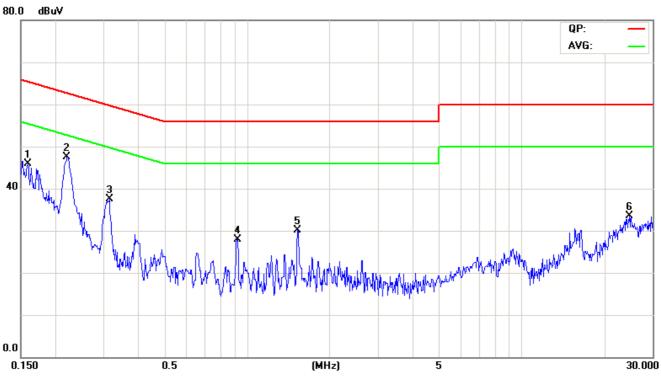


NO	Eroguopov	QuasiPeak	Average	Correction	QuasiPeak	Average	QuasiPeak	Average	QuasiPeak	Average	Remark
NO.	Frequency	reading	reading	factor	result	result	limit	limit	margin	margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	(Pass/Fail)
1	0.1531	38.34	12.12	9.66	48.00	21.78	65.82	55.83	-17.82	-34.05	Pass
2	0.1713	36.04	10.90	9.66	45.70	20.56	64.89	54.90	-19.19	-34.34	Pass
3	0.4087	31.13	27.99	9.65	40.78	37.64	57.67	47.67	-16.89	-10.03	Pass
4	0.4982	30.88	28.54	9.56	40.44	38.10	56.03	46.03	-15.59	-7.93	Pass
5	0.6795	32.75	30.96	9.56	42.31	40.52	56.00	46.00	-13.69	-5.48	Pass
6*	1.5865	33.14	31.09	9.64	42.78	40.73	56.00	46.00	-13.22	-5.27	Pass

REMARKS: L2 = Line Two (Neutral Line)

CCS Conduction Test 3

Model No.	32LD40	6dB Bandwidth	9 kHz
Environmental Conditions	25°C, 57% RH	Test Mode	Mode 9
Tested by	Juicheng Su	Line	L1



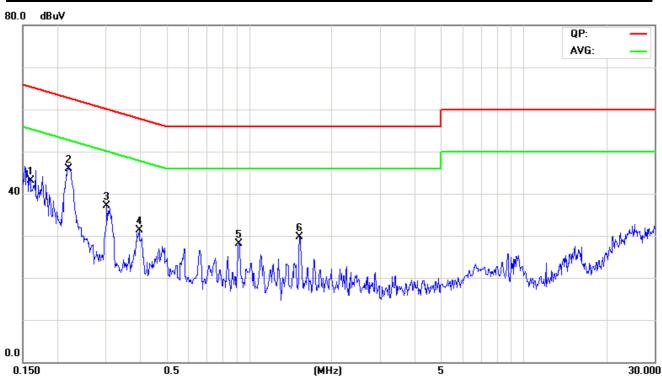
NO	Frequency	QuasiPeak	Average	Correction	QuasiPeak	Average	QuasiPeak	Average	QuasiPeak	Average	Remark
NO.	ricquericy	reading	reading	factor	result	result	limit	limit	margin	margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	(Pass/Fail)
1	0.1597	30.49	24.77	9.65	40.14	34.42	65.47	55.48	-25.33	-21.06	Pass
2*	0.2195	35.67	29.51	9.65	45.32	39.16	62.83	52.84	-17.51	-13.68	Pass
3	0.3127	21.87	14.42	9.65	31.52	24.07	59.90	49.90	-28.38	-25.83	Pass
4	0.9201	15.13	14.75	9.56	24.69	24.31	56.00	46.00	-31.31	-21.69	Pass
5	1.5308	18.52	18.42	9.62	28.14	28.04	56.00	46.00	-27.86	-17.96	Pass
6	24.5654	17.27	12.52	10.56	27.83	23.08	60.00	50.00	-32.17	-26.92	Pass

REMARKS: L1 = Line One (Live Line)

CCS Conduction Test 3

Reference No: T100415102-D Report No: T100726102-D

Model No.	32LD40	6dB Bandwidth	9 kHz
Environmental Conditions	25°C, 57% RH	Test Mode	Mode 9
Tested by	Juicheng Su	Line	L2



NO	Frequency	QuasiPeak	Average	Correction	QuasiPeak	Average	QuasiPeak	Average	QuasiPeak	Average	Remark
NO.	Frequency	reading	reading	factor	result	result	limit	limit	margin	margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	(Pass/Fail)
1	0.1615	29.60	23.44	9.66	39.26	33.10	65.38	55.39	-26.12	-22.29	Pass
2*	0.2221	34.61	28.44	9.66	44.27	38.10	62.74	52.74	-18.47	-14.64	Pass
3	0.3055	21.70	15.09	9.66	31.36	24.75	60.09	50.09	-28.73	-25.34	Pass
4	0.3954	15.43	10.22	9.66	25.09	19.88	57.95	47.95	-32.86	-28.07	Pass
5	0.9179	16.55	16.03	9.57	26.12	25.60	56.00	46.00	-29.88	-20.40	Pass
6	1.5296	19.10	18.76	9.63	28.73	28.39	56.00	46.00	-27.27	-17.61	Pass

REMARKS: L2 = Line Two (Neutral Line)

7 RADIATED EMISSION MEASUREMENT

7.1. LIMITS OF RADIATED EMISSION MEASUREMENT

FREQUENCY (MHz)	dBuV/m (At 10m)		
	Class A	Class B	
30 ~ 230	40	30	
230 ~ 1000	47	37	

Reference No: T100415102-D Report No: T100726102-D

Frequency	Class A (dBu	V/m) (At 3m)	Class B (dBuV/m) (At 3m)		
(MHZ)	Average	Peak	Average	Peak	
Above 960	60	80	54	74	

NOTE: (1) The lower limit shall apply at the transition frequencies.

According to FCC Part 15.33 (b), for an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device	Upper frequency of measurement range
or in which the device operated or tunes (MHz)	(MHz)
Below 1.75	30
1.75-108	1000
108-500	2000
500-1000	5000
Above 1000	5 th harmonic of the highest frequency or 40GHz, whichever is lower

⁽²⁾ Emission level (dBuV/m) = 20 log Emission level (uV/m).

7.2. TEST INSTRUMENTS

	Open	Area Test Site #	1	
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	ADVANTEST	R3261C	81720301	N.C.R
EMI Test Receiver	R&S	ESVS20	838804/004	03/28/2011
Pre-Amplifier	HP	8447D	2944A09173	04/13/2011
Bilog Antenna	TESEQ	CBL 6112D	23189	06/18/2011
Turn Table	CCS	CC-T-1F	N/A	N.C.R
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R
Controller	ccs	CC-C-1F	N/A	N.C.R
RF Switch	Anritsu	MP59B	M54367	N.C.R
Site NSA	CCS	N/A	N/A	01/16/2011
Test S/W	L	abVIEW 6.1 (CCS C	DATS EMI SW V2.	7)

	3 1	Meter Chamber		
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY48250064	11/05/2010
Pre-Amplifier	HP	8449B	3008A00965	04/17/2011
Pre-Amplifier	MITEQ	AMF-6F-260400-4 0-8P	985646	05/24/2011
Horn Antenna	EMCO	3115	9602-4659	05/09/2011
Horn Antenna	EMCO	3116	00026370	10/13/2010
Low Loss Cable	Huber+Suhner	104PEA	24815/4PEA	08/14/2011
Low Loss Cable	Huber+Suhner	104PEA	30956/4PEA	04/17/2011
Site VSWR	SIDT EUROPE	9x6x6	N/A	02/26/2011
Turn Table	CCS	CC-T-1F	N/A	N.C.R
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R
Test S/W		CCS-3	BA1RE	

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

^{2.} N.C.R = No Calibration Request.

7.3. TEST PROCEDURES (please refer to measurement standard or CCS SOP PA-031)

Procedure of Preliminary Test

 The equipment was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane. When the EUT is a floor standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.

Reference No: T100415102-D Report No: T100726102-D

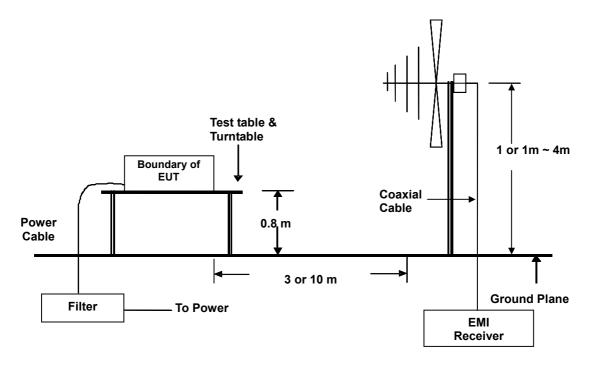
- Support equipment, if needed, was placed as per ANSI C63.4.
- All I/O cables were positioned to simulate typical usage as per ANSI C63.4.
- The EUT received AC 120VAC/60Hz power source from the outlet socket under the turntable. All support equipment power received from another socket under the turntable.
- The antenna was placed at 3 or 10 meter away from the EUT as stated in ANSI C63.4. The antenna connected to the Spectrum Analyzer via a cable and at times a pre-amplifier would be used.
- The Analyzer / Receiver quickly scanned from 30MHz to 40GHz. The EUT test
 program was started. Emissions were scanned and measured rotating the EUT to
 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in
 both the vertical and the horizontal polarization, to maximize the emission reading
 level.
- The test mode(s) described in Item 3.1 were scanned during the preliminary test:
- After the preliminary scan, we found the test mode described in Item 3.1 producing the highest emission level.
- The worst configuration of EUT and cable of the above highest emission level were recorded for reference of the final test.

Procedure of Final Test

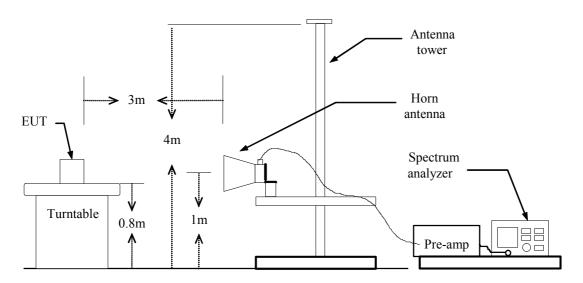
- EUT and support equipment were set up on the turntable as per the configuration with highest emission level in the preliminary test.
- The Analyzer / Receiver scanned from 30MHz to 40GHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 or 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- Recording at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and only Q.P. reading is presented.
- The test data of the worst-case condition(s) was recorded.

7.4. TEST SETUP

Below 1GHz



Above 1GHz



• For the actual test configuration, please refer to the related item - Photographs of the Test Configuration.

tion Services Inc.

Reference No: T100415102-D
Report No: T100726102-D

7.5. DATA SAMPLE:

Below 1GHz

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (·)	Height (cm)	Remark
XX.XX	16.49	9.86	26.35	30.00	-3.65	116.00	101.00	QP

Above 1GHz

Frequency	Corr. Factor	Read	ding	Res	sult	Lir	nit	Mar	gin
MHz	(dR/m)	Average (dBuV/m)	Peak (dBuV/m)	Average (dBuV/m)	Peak (dBuV/m)	Average (dBuV/m)	Peak (dBuV/m)	Average (dB)	Peak (dB)
XXX.XXX	-4.35	49.81	58.74	45.46	54.39	54.00	74.00	-8.54	-19.61

Frequency (MHz) = Emission frequency in MHz

Reading (dBuV) = Uncorrected Analyzer / Receiver reading Correction Factor (dB/m) = Antenna factor + Cable loss – Amplifier gain Result (dBuV/m) = Reading (dBuV) + Corr. Factor (dB/m)

Limit (dBuV/m) = Limit stated in standard

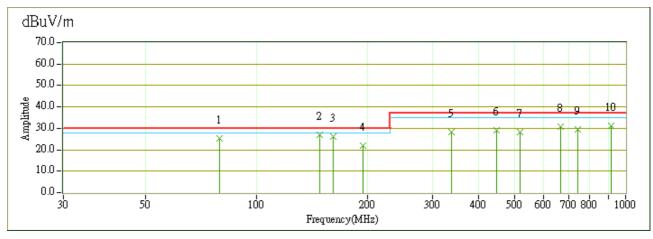
Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)

Q.P. = Quasi-Peak

7.6. TEST RESULTS

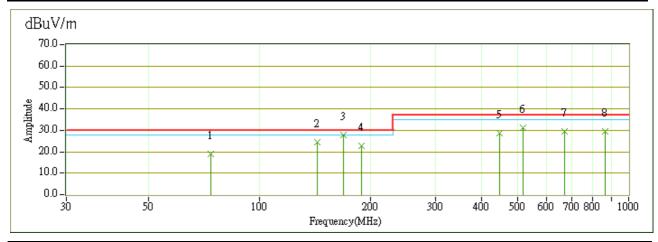
Below 1GHz

Model No.	E322VL	Test Mode	Mode 1
Environmental Conditions	25°C, 56% RH	6dB Bandwidth	120 kHz
Antenna Pole	Vertical	Antenna Distance	10m
Detector Function	Quasi-peak.	Tested by	Ming Wu



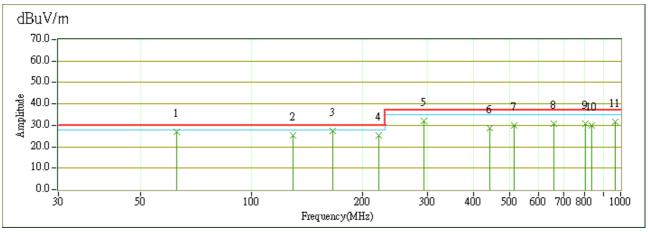
No.	Frequency	Reading	Correction	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	79.28	41.79	-16.54	25.25	30.00	-4.75	325.50	100.00	QP
2	148.13	39.31	-12.31	27.00	30.00	-3.00	88.50	100.00	QP
3	161.50	39.48	-13.53	25.95	30.00	-4.05	0.00	100.00	QP
4	193.94	35.08	-13.18	21.90	30.00	-8.10	209.80	100.00	QP
5	337.50	34.72	-6.52	28.20	37.00	-8.80	101.90	302.00	QP
6	447.97	32.08	-3.01	29.07	37.00	-7.93	1.50	160.00	QP
7	517.10	30.74	-2.34	28.40	37.00	-8.60	203.70	134.10	QP
8	666.90	29.99	0.61	30.60	37.00	-6.40	64.60	121.00	QP
9	744.00	27.55	2.05	29.60	37.00	-7.40	164.90	100.00	QP
10	912.30	27.10	4.17	31.27	37.00	-5.73	312.00	100.00	QP

Model No.	E322VL	Test Mode	Mode 1
Environmental Conditions	25°C, 56% RH	6dB Bandwidth	120 kHz
Antenna Pole	Horizontal	Antenna Distance	10m
Detector Function	Quasi-peak.	Tested by	Ming Wu



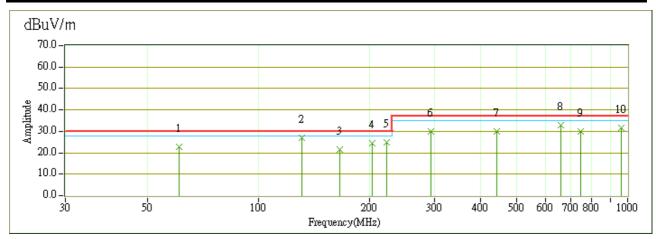
No.	Frequency	Reading	Correction	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	74.00	36.42	-17.42	19.00	30.00	-11.00	139.60	400.00	QP
2	143.46	36.29	-11.84	24.45	30.00	-5.55	250.40	400.00	QP
3	168.64	41.60	-13.65	27.95	30.00	-2.05	143.50	400.00	QP
4	188.64	36.08	-13.43	22.65	30.00	-7.35	0.00	400.00	QP
5	447.30	31.63	-3.03	28.60	37.00	-8.40	137.40	182.00	QP
6	517.00	33.69	-2.34	31.35	37.00	-5.65	9.50	134.80	QP
7	671.40	28.94	0.66	29.60	37.00	-7.40	184.80	123.40	QP
8	864.60	26.60	2.90	29.50	37.00	-7.50	329.80	100.00	QP

Model No.	32LD40	Test Mode	Mode 9
Environmental Conditions	25°C, 56% RH	6dB Bandwidth	120 kHz
Antenna Pole	Vertical	Antenna Distance	10m
Detector Function	Quasi-peak.	Tested by	Ming Wu



No.	Frequency	Reading	Correction	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	62.64	45.52	-18.52	27.00	30.00	-3.00	105.40	100.00	QP
2	129.36	36.46	-11.26	25.20	30.00	-4.80	239.50	100.00	QP
3	166.24	40.93	-13.61	27.32	30.00	-2.68	103.40	100.00	QP
4	221.81	37.68	-12.26	25.42	30.00	-4.58	337.30	100.00	QP
5	293.73	39.15	-7.15	32.00	37.00	-5.00	286.70	400.00	QP
6	443.34	31.66	-3.15	28.50	37.00	-8.50	248.60	165.90	QP
7	516.07	32.22	-2.37	29.85	37.00	-7.15	288.50	127.90	QP
8	659.60	30.28	0.52	30.80	37.00	-6.20	1.00	126.30	QP
9	800.90	27.97	3.00	30.97	37.00	-6.03	98.60	100.00	QP
10	836.00	27.30	2.70	30.00	37.00	-7.00	306.10	100.00	QP
11	966.10	25.94	5.58	31.52	37.00	-5.48	207.70	100.00	QP

Model No.	32LD40	Test Mode	Mode 9
Environmental Conditions	25°C, 56% RH	6dB Bandwidth	120 kHz
Antenna Pole	Horizontal	Antenna Distance	10m
Detector Function	Quasi-peak.	Tested by	Ming Wu



No.	Frequency	Reading	Correction	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	61.04	41.41	-18.61	22.80	30.00	-7.20	66.00	400.00	QP
2	131.22	38.10	-11.30	26.80	30.00	-3.20	213.30	400.00	QP
3	166.46	34.98	-13.61	21.37	30.00	-8.63	49.70	400.00	QP
4	202.82	37.42	-12.82	24.60	30.00	-5.40	268.60	400.00	QP
5	222.46	37.16	-12.24	24.92	30.00	-5.08	88.10	400.00	QP
6	292.90	36.97	-7.17	29.80	37.00	-7.20	206.70	400.00	QP
7	442.40	32.98	-3.18	29.80	37.00	-7.20	156.00	158.00	QP
8	659.60	32.28	0.52	32.80	37.00	-4.20	122.70	118.50	QP
9	744.40	27.74	2.06	29.80	37.00	-7.20	7.10	100.00	QP
10	963.10	25.95	5.60	31.55	37.00	-5.45	37.90	100.00	QP

Above 1GHz

Model No.	E322VL	Test Mode	Mode 1
Environmental Conditions	HAT. NUM RH	Test Frequency Range	1000MHz ~ 3000MHz
Antenna Pole	Vertical	Antenna Distance	3m
Detector Function:	Peak/Average	Tested By	Han Chaic

Frequency	Corr.	Reading		Re	Result		Limit		Margin		Height
	Factor	Average	Peak	Average	Peak	Average	Peak	Average	Peak		
MHz	(dBuV/m)	(dB)	(dB)	(°)	(cm)						
1230.000	-10.22		61.32	-	51.10	1	74.00	I	-22.90	65	100
1500.000	-8.85		60.29	-	51.44	1	74.00	I	-22.56	178	100
1530.000	-8.69		58.30		49.61	1	74.00		-24.39	125	100
1660.000	-7.97		54.86		46.89		74.00		-27.11	360	100
2000.000	-6.13		52.26		46.13	-	74.00	1	-27.87	225	100
2560.000	-4.55		52.52		47.97	1	74.00	1	-26.03	112	100

- 1. The other emission levels were very low against the limit.
- 2. "--", means the average measurement was not performed when the measured peak data under the limit of average detection.

Model No.	E322VL	Test Mode	Mode 1
Environmental Conditions	1181. hU% RH	Test Frequency Range	1000MHz ~ 3000MHz
Antenna Pole	Horizontal	Antenna Distance	3m
Detector Function:	Peak/Average	Tested By	Han Chaic

Frequency	Corr.	Reading		Re	Result		Limit		Margin		Height
	Factor	Average	Peak	Average	Peak	Average	Peak	Average	Peak		
MHz	(dBuV/m)	(dB)	(dB)	(°)	(cm)						
1260.000	-10.07		57.16		47.09		74.00		-26.91	48	100
1550.000	-8.85		58.28		49.43		74.00		-24.57	169	100
15830.000	-8.69		57.60		48.91		74.00		-25.09	258	100
1750.000	-7.49		56.59		49.10		74.00		-24.90	360	100
2050.000	-5.99		52.77		46.78		74.00		-27.22	224	100
2510.000	-4.75		54.45		49.70		74.00		-24.30	115	100

- 1. The other emission levels were very low against the limit.
- 2. "--", means the average measurement was not performed when the measured peak data under the limit of average detection.

Model No.	32LD40	Test Mode	Mode 9
Environmental Conditions	1181. NU% RH	Test Frequency Range	1000MHz ~ 3000MHz
Antenna Pole	Vertical	Antenna Distance	3m
Detector Function:	Peak/Average	Tested By	Han Chaic

Frequency	Corr.	Reading		Re	Result		Limit		Margin		Height
	Factor	Average	Peak	Average	Peak	Average	Peak	Average	Peak		
MHz	(dBuV/m)	(dB)	(dB)	(°)	(cm)						
1270.000	-10.02		60.54	-	50.52		74.00	I	-23.48	350	100
1470.000	-9.00		59.70		50.70		74.00	-	-23.30	178	100
1560.000	-8.52		59.97		51.45		74.00		-22.55	360	100
1651.514	-8.02		57.77		49.75		74.00		-24.25	155	100
1860.000	-6.89		56.19		49.30		74.00	1	-24.70	236	100
2440.000	-4.96		56.73		51.77		74.00		-22.23	225	100

- 1. The other emission levels were very low against the limit.
- 2. "--", means the average measurement was not performed when the measured peak data under the limit of average detection.

Model No.	32LD40	Test Mode	Mode 9
Environmental Conditions	1181. hU% RH	Test Frequency Range	1000MHz ~ 3000MHz
Antenna Pole	Horizontal	Antenna Distance	3m
Detector Function:	Peak/Average	Tested By	Han Chaic

Frequency	Corr.	Reading		Result		Limit		Margin		Degree	Height
	Factor	Average	Peak	Average	Peak	Average	Peak	Average	Peak		
MHz	(dBuV/m)	(dB)	(dB)	(°)	(cm)						
1262.292	-10.06		59.81		49.75		74.00		-24.25	312	100
1470.000	-9.00		59.26		50.26		74.00		-23.74	126	100
1660.000	-7.97		58.29		50.32		74.00		-23.68	45	100
1940.000	-6.46		56.54		50.08		74.00		-23.92	355	100
2150.000	-5.72		57.09		51.37		74.00	-	-22.63	236	100
2450.000	-4.92		56.00		51.08		74.00		-22.92	144	100

- 1. The other emission levels were very low against the limit.
- 2. "--", means the average measurement was not performed when the measured peak data under the limit of average detection.

CONDUCTED EMISSION TEST

PHOTOGRAPHS OF THE TEST CONFIGURATION

Mode 1













RADIATED EMISSION TEST

Mode 1











