FCC DoC TEST REPORT

REPORT NO.: FD121224D05

MODEL NO.: 215LM*****, *2269****

RECEIVED: Dec. 24, 2012

TESTED: Dec. 25 ~ 27, 2012

ISSUED: Jan. 2, 2013

APPLICANT: TOP VICTORY ELECTRONICS (TAIWAN) CO., LTD.

ADDRESS: 10F.,No.230,Liancheng Rd.,Zhonghe City, Taipei County 23553,Taiwan

ISSUED BY: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

LAB LOCATION: No. 47, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

This report should not be used by the client to claim product certification, approval, or endorsement by TAF, NVLAP, NIST or any government agencies.

LAB CODE: 200836-0

Testing Laboratory 2021

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FD121224D05	Original release	Jan. 2, 2013

1 CERTIFICATION

PRODUCT:	LCD Monitor
MODEL NO:	215LM*****, *2269**** (The "*" can be any alphanumeric character including blank, for marketing differences)
APPLICANT:	TOP VICTORY ELECTRONICS (TAIWAN) CO., LTD.
TEST ITEM:	ENGINEERING SAMPLE
TESTED:	Dec. 25 ~ 27 2012
STANDARDS:	FCC Part 15, Subpart B, Class B ICES-003:2012 Issue 5, Class B ANSI C63.4-2009

The above equipment (Model No.: I2269V_{WM}) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Albee Chu , DATE: Jan. 2, 2013
(Albee Chu / Specialist)

APPROVED BY : Kenny Meng , DATE: Jan. 2, 2013
(Kenny Meng / Assistant Manager)

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

Standard	Test Type	Result	Remarks
FCC Part 15, Subpart B, Class B	Conducted Test	PASS	Meets Class B Limit Minimum passing margin is –10.51 dB at 14.10156 MHz
ICES-003:2012 Issue 5, Class B	Radiated Test (30MHz ~ 10GHz)	PASS	Meets Class B Limit Minimum passing margin is –4.15 dB at 741.76 MHz

2.1 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:

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	150kHz ~ 30MHz	+/- 3.43 dB
Radiated emissions	30MHz ~ 1GHz	+/- 3.64 dB
	Above 1GHz	+/- 3.36 dB

The listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	LCD Monitor
MODEL NO.	215LM*****, *2269****
POWER SUPPLY	Internal Switching Power Supply Rating: 100-240V, 50/60Hz Power Cord: Non-shielded AC 3-pin (1.5m).
DATA CABLE SUPPLIED	Shielded D-Sub cable (1.5m) with two ferrite cores Shielded HDMI (MHL) cable (1.5m) Shielded HDMI cable (1.5m) Shielded Display cable (1.8m) Shielded Audio cable (1.5m)

NOTE:

1. The EUT is a LCD Monitor and the resolution is up to 1920 x 1080 (60Hz).

2. The EUT has several models, which are identical to each other except for their marketing differences only, as the following:

Model No.	Interfaces	Difference
215LM*****	♦ D-Sub in ♦ Display in ♦ HDMI in ♦ HDMI in (MHL) ♦ Audio in ♦ Earphone	For marketing differences
*2269****		
(The "*" can be any alphanumeric character including blank for marketing differences.)		

During the test, **model no.: I2269V$_{WM}$** was selected as the representative one and therefore only its test data was recorded in this report.

3. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

3.2 DESCRIPTION OF TEST MODES

1. The EUT is designed with AC power supply of 100-240Vac, 50/60Hz.
   For radiated emission evaluation, 230Vac/ 50Hz (for EN 55022 & AS/NZS CISPR 22), 120Vac/ 60Hz (for FCC Part 15), 110Vac/ 60Hz (for BSMI CNS 13438), 100V/50Hz (for VCCI) had been covered during the pre-test. The worst radiated emission data was founded at **110Vac/ 60Hz** and recorded in the applied test report.

2. The EUT was pre-tested resolution 1920 x 1080 (60Hz) of the D-Sub, Display & HDMI interfaces. The worst emission level was found under the **D-Sub** interface. Therefore the EUT was pre-testing under the following resolution & refresh rate modes:

Interface	Resolution
D-Sub	1920 x 1080 (60Hz)
	1280 x 1024 (75Hz)
	640 x 480 (60Hz)
HDMI to DVD	1080p
HDMI (MHL) to phone	1080p

   The worst radiated emission level was found when EUT tested under **D-Sub 1920 x 1080 (60Hz)**.

3. According to pretested result and client's requirement, the EUT was tested under the following modes:

Test Mode	Interface	Resolution
Mode 1	D-Sub	1920 x 1080 (60Hz)
Mode 2	HDMI to DVD	1080p

   All above test modes were recorded in this report.

3.3 DESCRIPTION OF SUPPORT UNITS

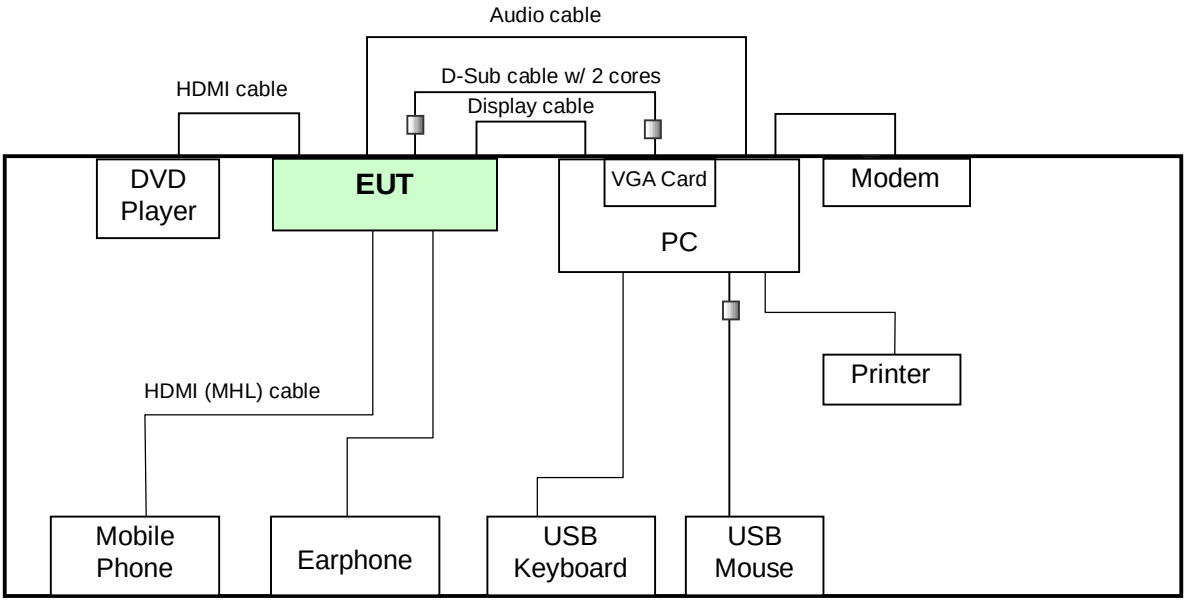
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	PERSONAL COMPUTER	HP	6000ProMT	SGH110SGNJ	FCC DoC Approved
2	PRINTER	LEXMARK	Z33	03331652572	FCC DoC Approved
3	MODEM	ACEEX	1414	980020506	IFAXDM1414
4	DVD PLAYER	SONY	BDP-S470	3205076	Verification
5	Mobile Phone	HTC	PJ46100	HT261W101910	NM8PJ46100
6	EARPHONE	PHILIPS	SBC HL145	N/A	N/A
7	USB KEYBOARD	BTC	5200U	G09302046623	E5XKB5122U
8	USB MOUSE	MICROSOFT	X800898	9241991-30608	FCC DoC Approved
9	VGA CARD	ASUS	ENGT440/DI/1GD3	BACVCM038802	FCC DoC Approved

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	1.5 m shielded D-Sub cable with two cores. (provided by client) 1.8 m shielded Display cable. (provided by client) 1.5 m shielded Audio cable; (provided by client)
2	2.0 m foil shielded wire, terminated with USB connector via metallic frame, w/o core.
3	1.2 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.
4	1.5 m HDMI cable (provided by client)
5	1.5 m HDMI (MHL) cable (provided by client)
6	1.2 m wrapped shielded wire, terminated with 3.5mm phone plug via drain wire, w/o core.
7	1.5 m braid shielded wire, terminated with USB connector via drain wire, w/o core.
8	1.8 m foil shielded wire, terminated with USB connector via drain wire, with 1 core.
9	N/A

NOTE: (1) All power cords of the above support units are non-shielded (1.8 m).
(2) The support unit 9 was installed in support unit 1.

TEST CONFIGURATION



4 EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

TEST STANDARD:

FCC Part 15, Subpart B (Section: 15.107)

ICES-003:2012 Issue 5 (section: 6.1)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	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

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 of 0.15 to 0.50 MHz.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100290	Dec. 24, 2012	Dec. 23, 2013
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH3-Z5	839135/006	Sep. 24, 2012	Sep. 23, 2013
LISN With Adapter (for EUT)	AD10	C00Ada-001	Sep. 24, 2012	Sep. 23, 2013
EMCO-L.I.S.N. (for peripheral)	3825/2	9204-1964	May 28, 2012	May 27, 2013
Software	ADT_Cond_V7.3.7	NA	NA	NA
Software	ADT_ISN_V7.3.7	NA	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C02.01	Jan. 08, 2012	Jan. 07, 2013
LYNICS Terminator (For EMCO LISN)	0900510	E1-01-284	Sep. 24, 2012	Sep. 23, 2013
LYNICS Terminator (For EMCO LISN)	0900510	E1-01-285	Sep. 24, 2012	Sep. 23, 2013

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. The test was performed in Shielded Room No. 2.
3. The VCCI Site Registration No. C-240.
4. Tested Date: Dec. 27, 2012.

4.1.3 TEST PROCEDURE

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

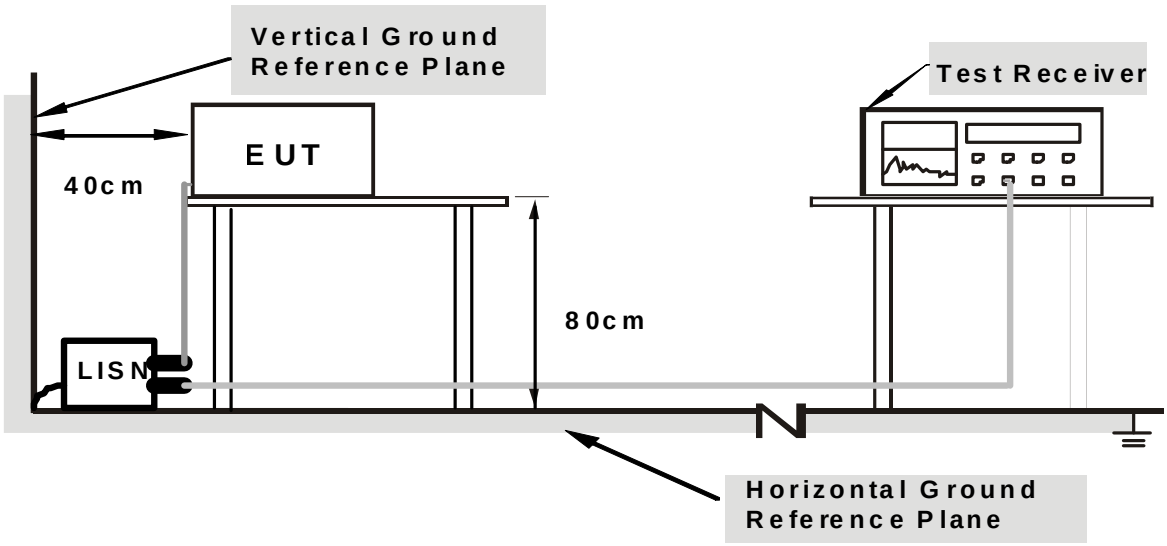
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



Note: Support units were connected to second LISN.

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

4.1.6 EUT OPERATING CONDITIONS

a. Turned on the power of all equipment.
b. PC ran a test program (WinFCC) to enable all functions.
c. PC read and wrote messages from HDD.
d. PC sent “H” messages to EUT, and then EUT displayed them on its screen. **<For Mode 1>**
e. DVD player sent color bars to EUT, and then EUT displayed them on its screen. **<For Mode 2>**
f. PC sent messages to printer and printer printed them out.
g. PC sent messages to modem.
h. PC sent “1kHz audio signal” to earphone via EUT.
i. Steps c-i were repeated.

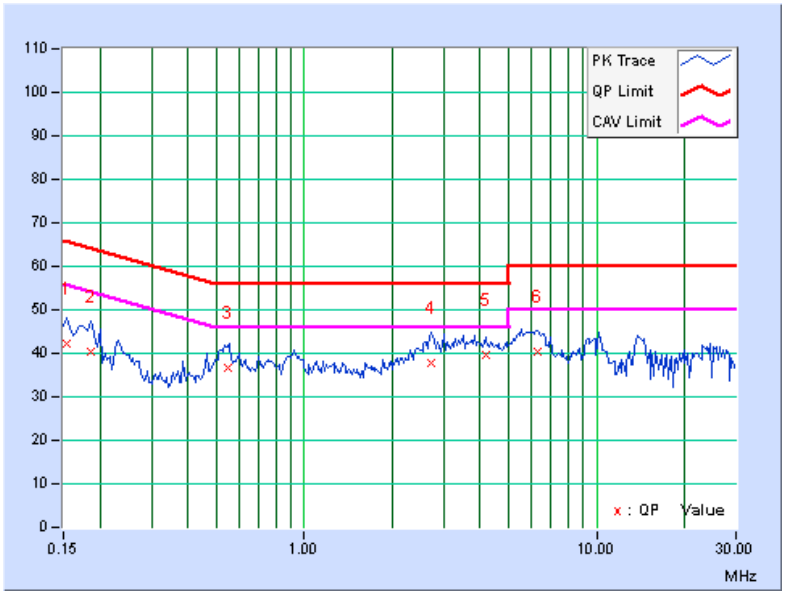
4.1.7 TEST RESULTS (1)

TEST MODE	Mode 1	**6DB BANDWIDTH**	9 kHz
INPUT POWER	120Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	22deg. C, 82% RH	**TESTED BY**: Paul Chen	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.30	42.10	35.20	42.40	35.50	65.79	55.79	-23.39	-20.29
2	0.18516	0.33	40.19	33.81	40.52	34.14	64.25	54.25	-23.73	-20.11
3	0.54844	0.55	36.13	32.90	36.68	33.45	56.00	46.00	-19.32	-12.55
4	2.70313	0.92	36.85	30.77	37.77	31.69	56.00	46.00	-18.23	-14.31
5	4.16016	1.07	38.67	34.28	39.74	35.35	56.00	46.00	-16.26	-10.65
6	6.25000	1.25	39.01	33.85	40.26	35.10	60.00	50.00	-19.74	-14.90

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

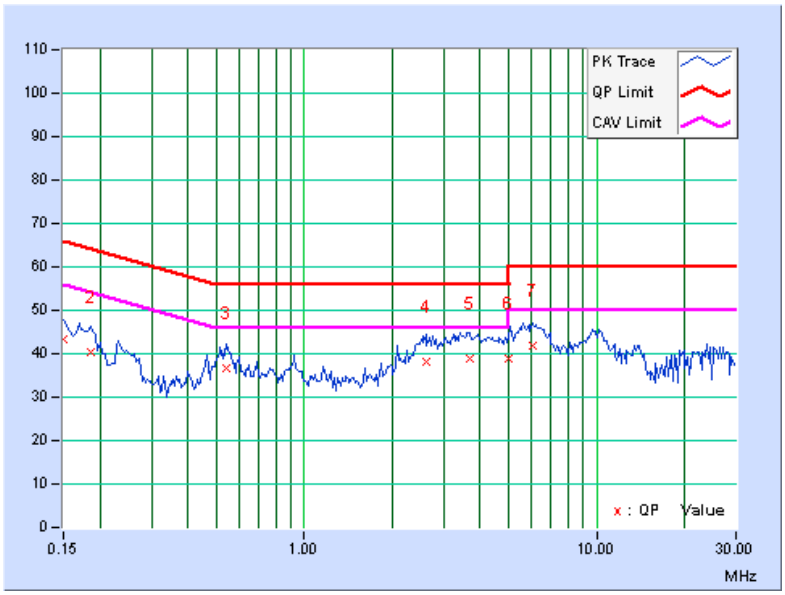


TEST MODE	Mode 1	**6dB BANDWIDTH**	9 kHz
INPUT POWER	120Vac, 60 Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	22deg. C, 82% RH	**TESTED BY**: Paul Chen	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.20	43.15	36.51	43.35	36.71	66.00	56.00	-22.65	-19.29
2	0.18516	0.20	40.25	34.33	40.45	34.53	64.25	54.25	-23.80	-19.72
3	0.54453	0.30	36.43	33.93	36.73	34.23	56.00	46.00	-19.27	-11.77
4	2.62109	0.63	37.51	31.57	38.14	32.20	56.00	46.00	-17.86	-13.80
5	3.68750	0.78	38.27	32.93	39.05	33.71	56.00	46.00	-16.95	-12.29
6	4.99872	0.93	37.82	32.76	38.75	33.69	56.00	46.00	-17.25	-12.31
7	6.01563	1.03	40.65	35.57	41.68	36.60	60.00	50.00	-18.32	-13.40

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.



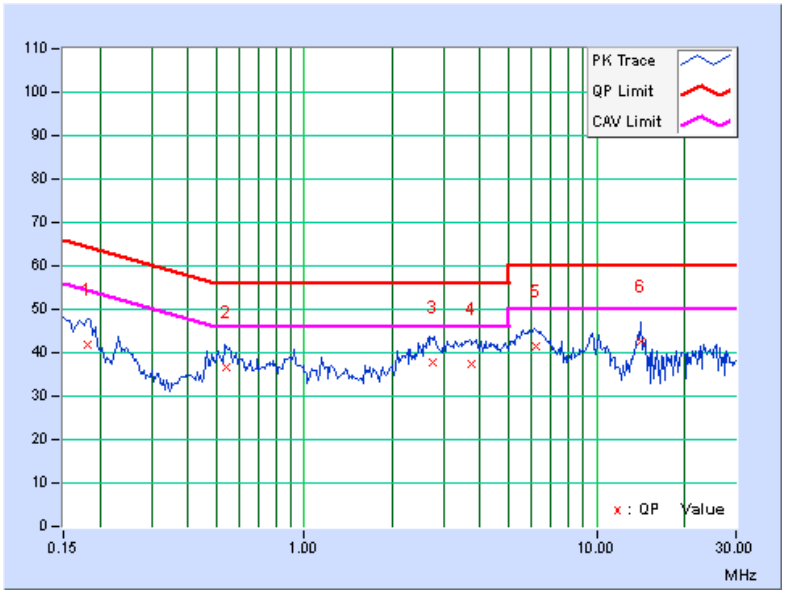
4.1.1 TEST RESULTS (2)

TEST MODE	Mode 2	6DB BANDWIDTH	9 kHz
INPUT POWER	120Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	22deg. C, 82% RH	TESTED BY: Paul Chen	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18125	0.32	41.59	34.96	41.91	35.28	64.43	54.43	-22.52	-19.15
2	0.53917	0.54	36.19	33.10	36.73	33.64	56.00	46.00	-19.27	-12.36
3	2.74609	0.93	36.98	30.46	37.91	31.39	56.00	46.00	-18.09	-14.61
4	3.73438	1.03	36.48	31.24	37.51	32.27	56.00	46.00	-18.49	-13.73
5	6.24219	1.25	40.28	35.59	41.53	36.84	60.00	50.00	-18.47	-13.16
6	**14.10156**	**1.79**	**40.75**	**37.70**	**42.54**	**39.49**	**60.00**	**50.00**	**-17.46**	**-10.51**

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

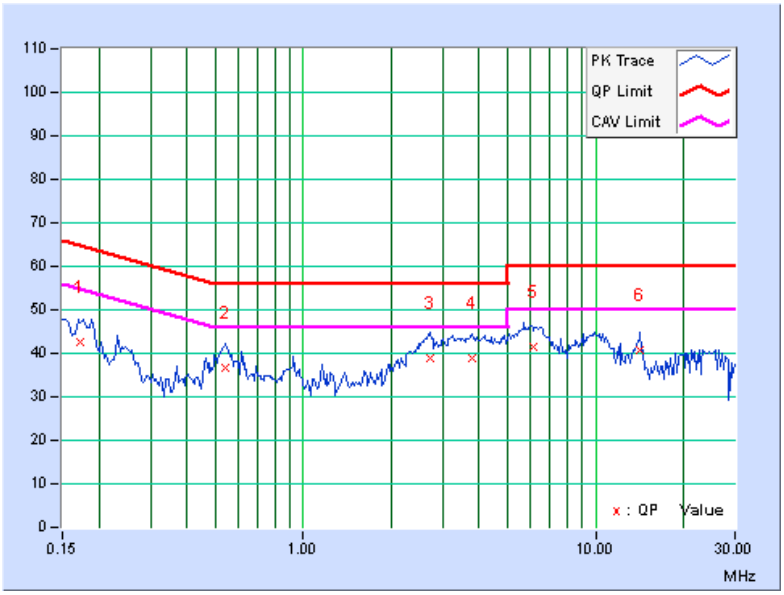


TEST MODE	Mode 2	**6dB BANDWIDTH**	9 kHz
INPUT POWER	120Vac, 60 Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	22deg. C, 82% RH	**TESTED BY**: Paul Chen	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17344	0.20	42.29	35.15	42.49	35.35	64.79	54.79	-22.31	-19.45
2	0.54063	0.30	36.37	33.55	36.67	33.85	56.00	46.00	-19.33	-12.15
3	2.72266	0.64	38.09	31.89	38.73	32.53	56.00	46.00	-17.27	-13.47
4	3.78516	0.80	37.95	32.91	38.75	33.71	56.00	46.00	-17.25	-12.29
5	6.09375	1.04	40.28	35.25	41.32	36.29	60.00	50.00	-18.68	-13.71
6	14.10020	1.62	39.02	35.57	40.64	37.19	60.00	50.00	-19.36	-12.81

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

TEST STANDARD:
FCC Part 15, Subpart B (Section: 15.109)
ICES-003:2012 Issue 5 (section: 6.2)

Emissions radiated outside of the specified bands, shall be according to the general radiated limits as following:

Radiated Emissions Limits at 10 meters (dBμV/m)				
Frequencies (MHz)	***FCC 15B/ ICES-003,* Class A**	***FCC 15B / ICES-003,* Class B**	***CISPR 22,* Class A**	***CISPR 22,* Class B**
30-88	39	29.5	40	30
88-216	43.5	33.1		
216-230	46.4	35.6		
230-960			47	37
960-1000	49.5	43.5		
1000-3000	Avg: 49.5 Peak: 69.5	Avg: 43.5 Peak: 63.5	Not defined	Not defined
Above 3000			Not defined	Not defined

Radiated Emissions Limits at 3 meters (dBμV/m)				
Frequencies (MHz)	***FCC 15B / ICES-003,* Class A**	***FCC 15B / ICES-003,* Class B**	***CISPR 22,* Class A**	***CISPR 22,* Class B**
30-88	49.5	40	50.5	40.5
88-216	54	43.5		
216-230	56.9	46		
230-960			57.5	47.5
960-1000	60	54		
1000-3000	Avg: 60 Peak: 80	Avg: 54 Peak: 74	Avg: 56 Peak: 76	Avg: 50 Peak: 70
Above 3000			Avg: 60 Peak: 80	Avg: 54 Peak: 74

NOTE: 1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.
4. QP detector shall be applied if not specified.

FREQUENCY RANGE OF RADIATED MEASUREMENT
(For unintentional radiators)

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement Range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5^{th} harmonic of the highest frequency or 40 GHz, whichever is lower

4.2.2 TEST INSTRUMENTS

Frequency Range 30MHz~1GHz

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Receiver	ESCI	100612	Sep. 20, 2012	Sep. 19, 2013
CHASE BILOG Antenna	CBL6112B	2640	Apr. 06, 2012	Apr. 05, 2013
ADT Turn Table	TT100	0204	NA	NA
ADT Tower	AT100	0204	NA	NA
Software	ADT_Radiated _V7.6.15.9.2	NA	NA	NA
ADT RF Switches BOX	EM-H-01-1	1005	Jul. 05, 2012	Jul. 04, 2013
WOKEN RF cable	8D	CABLE-ST1-01	Jul. 05, 2012	Jul. 04, 2013

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. The test was performed in Open Site No. 1.
3. The VCCI Site Registration No. R-236.
4. The FCC Site Registration No. 90423.
5. Tested Date: Dec. 25, 2012.

Frequency Range above 1GHz

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum	E4446A	MY51100009	Jun. 26, 2012	Jun. 25, 2013
EMCI Preamplifier	EMC0126545	980076	Mar. 01, 2012	Feb. 28, 2013
MITEQ Preamplifier	AMF-6F-260400-33-8P	892164	Mar. 02, 2012	Mar. 01, 2013
Schwarzbeck Horn Antenna	BBHA-9170	BBHA9170190	Oct. 04, 2012	Oct. 03, 2013
EMCO Horn Antenna	3115	6714	Oct. 25, 2012	Oct. 24, 2013
Max Full. Turn Table	MF7802	MF780208216	NA	NA
Software	ADT_Radiated_V 8.7.05	NA	NA	NA
SUHNER RF cable	SF106-18	Cable-CH10	Aug. 19, 2012	Aug. 18, 2013

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 The test was performed in Chamber No. 10.
3. The Industry Canada Reference No. IC 7450E-11.
4. The VCCI Site Registration No. G427
5. The FCC Site Registration No. 367016
6. Tested Date: Dec. 27, 2012

4.2.3 TEST PROCEDURE

<Frequency Range 30MHz ~ 1GHz>

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the turn table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

NOTE: The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.

<Frequency Range above 1GHz>

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter Semi-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna can be varied from one meter-to four meters, the height of adjustment depends on the EUT height and the antenna 3dB beamwidth both, to detect the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.

NOTE:

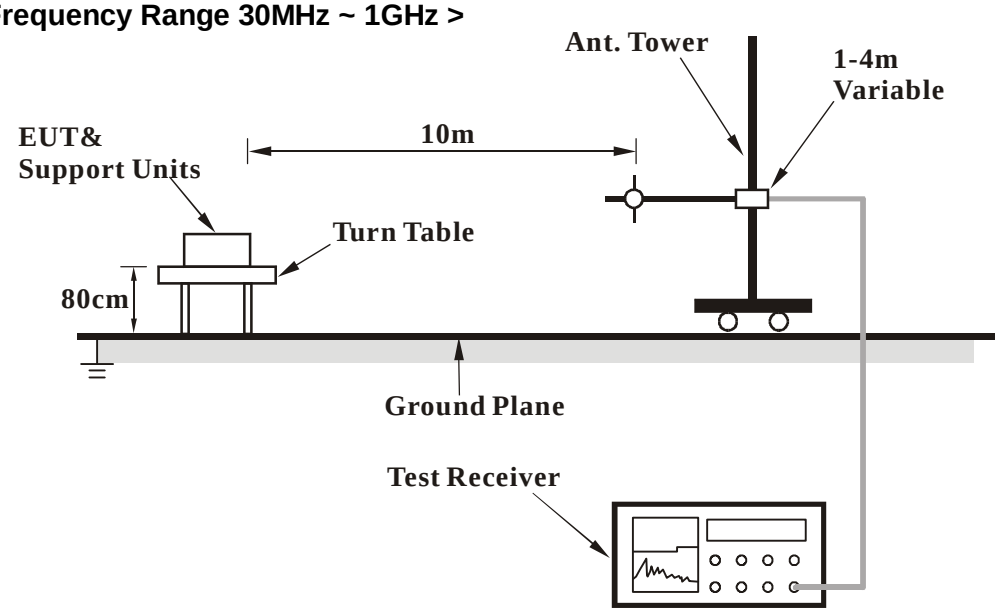
1. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz for Average detection (AV) at frequency above 1GHz.
2. For measurement of frequency above 1000 MHz, the EUT was set 3 meters away from the receiver antenna.

4.2.4 DEVIATION FROM TEST STANDARD

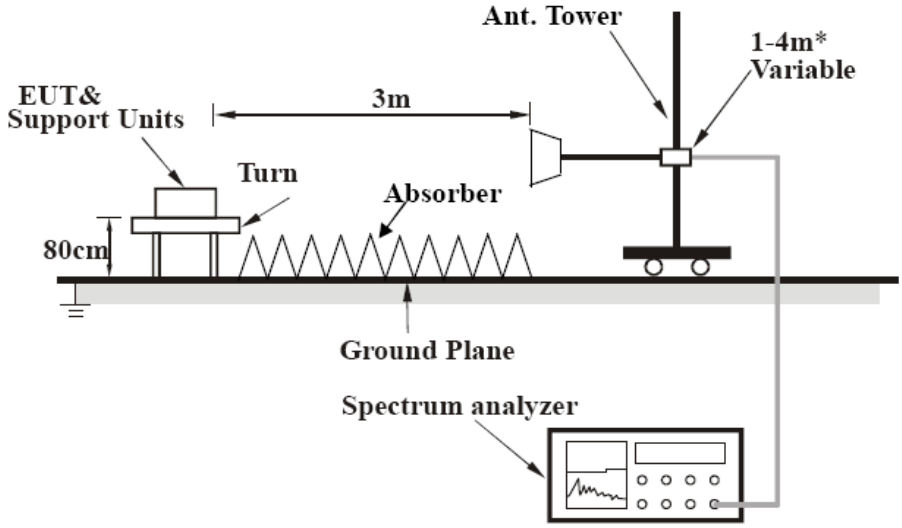
No deviation

4.2.5 TEST SETUP

<Frequency Range 30MHz ~ 1GHz >



<Frequency Range above 1GHz>



* : depends on the EUT height and the antenna 3dB beamwidth both.

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

4.2.6 EUT OPERATING CONDITIONS

Same as item 4.1.6

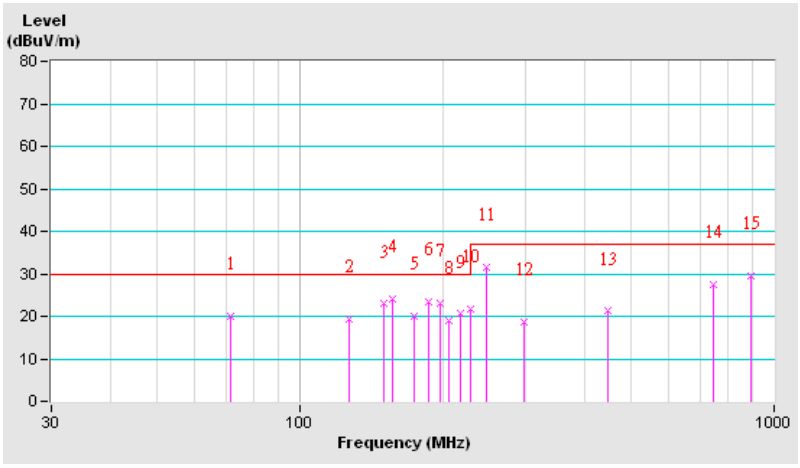
4.2.7 TEST RESULTS (1)

TEST MODE	Mode 1		
FREQUENCY RANGE	30-1000 MHz	DETECTOR FUNCTION & RESOLUTION BANDWIDTH	Quasi-Peak, 120 kHz
ENVIRONMENTAL CONDITIONS	18deg. C, 75% RH,	**TESTED BY**: Hermes Lin	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 10 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	71.47	20.11 QP	30.00	-9.89	4.00 H	124	7.55	12.56
2	127.04	19.43 QP	30.00	-10.57	4.00 H	123	6.37	13.06
3	150.33	22.96 QP	30.00	-7.04	4.00 H	281	7.58	15.38
4	156.46	23.99 QP	30.00	-6.01	4.00 H	257	8.85	15.14
5	174.89	20.11 QP	30.00	-9.89	4.00 H	173	6.03	14.08
6	187.14	23.52 QP	30.00	-6.48	4.00 H	167	10.44	13.08
7	198.00	23.13 QP	30.00	-6.87	4.00 H	207	10.97	12.16
8	205.70	18.98 QP	30.00	-11.02	4.00 H	55	6.72	12.26
9	218.19	20.54 QP	30.00	-9.46	4.00 H	117	7.71	12.83
10	229.46	21.82 QP	30.00	-8.18	4.00 H	251	8.47	13.35
11	248.27	31.60 QP	37.00	-5.40	4.00 H	97	17.38	14.22
12	297.18	18.74 QP	37.00	-18.26	4.00 H	217	2.08	16.66
13	445.99	21.19 QP	37.00	-15.81	1.00 H	8	0.35	20.84
14	742.50	27.63 QP	37.00	-9.37	1.00 H	214	0.57	27.06
15	891.03	29.52 QP	37.00	-7.48	1.50 H	196	0.21	29.31

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

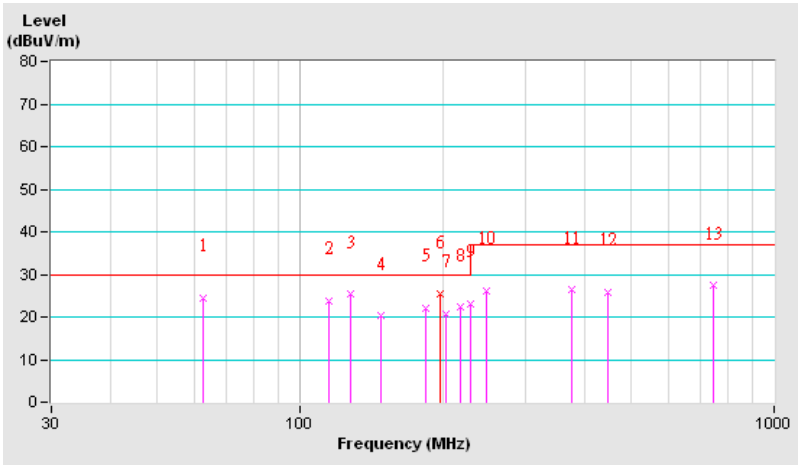


TEST MODE	Mode 1		
FREQUENCY RANGE	30-1000 MHz	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	Quasi-Peak, 120 kHz
ENVIRONMENTAL CONDITIONS	18deg. C, 75% RH,	**TESTED BY**: Hermes Lin	

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 10 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	62.77	24.38 QP	30.00	-5.62	1.00 V	19	10.70	13.68
2	115.25	23.80 QP	30.00	-6.20	1.00 V	26	11.92	11.88
3	128.01	25.32 QP	30.00	-4.68	1.00 V	26	12.18	13.14
4	148.50	20.20 QP	30.00	-9.80	1.00 V	42	5.00	15.20
5	184.74	22.05 QP	30.00	-7.95	1.00 V	313	8.77	13.28
6	198.01	25.33 QP	30.00	-4.67	1.00 V	0	13.17	12.16
7	203.14	20.72 QP	30.00	-9.28	1.00 V	196	8.58	12.14
8	218.18	22.27 QP	30.00	-7.73	1.00 V	51	9.44	12.83
9	229.52	23.20 QP	30.00	-6.80	1.00 V	159	9.85	13.35
10	248.27	26.27 QP	37.00	-10.73	1.50 V	304	12.05	14.22
11	375.75	26.34 QP	37.00	-10.66	1.02 V	18	7.44	18.90
12	446.00	25.83 QP	37.00	-11.17	1.00 V	68	4.99	20.84
13	742.50	27.35 QP	37.00	-9.65	3.54 V	210	0.29	27.06

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

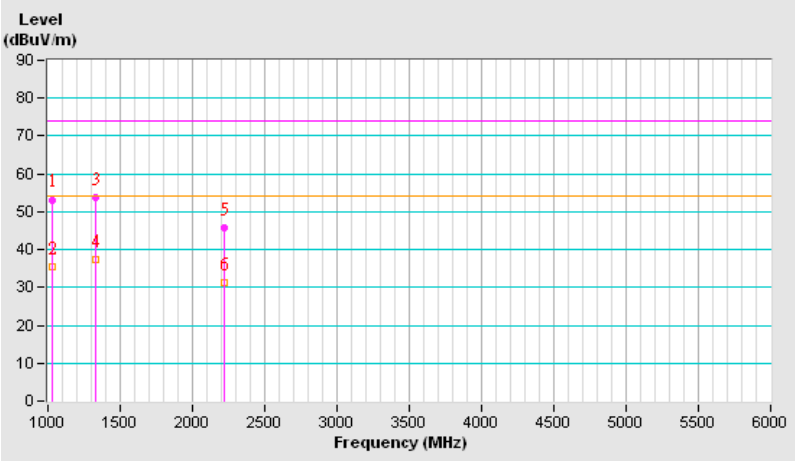


TEST MODE	Mode 1		
FREQUENCY RANGE	1-10 GHz	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	Peak/Average, 1MHz
ENVIRONMENTAL CONDITIONS	19deg. C, 83% RH,	**TESTED BY**: Vincent Chen	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1026.07	53.19 PK	74.00	-20.81	1.56 H	144	26.91	26.28
2	1026.07	35.57 AV	54.00	-18.43	1.56 H	144	9.29	26.28
3	1329.03	53.76 PK	74.00	-20.24	1.25 H	215	26.31	27.45
4	1329.03	37.52 AV	54.00	-16.48	1.25 H	215	10.07	27.45
5	2224.96	45.60 PK	74.00	-28.40	1.11 H	221	14.37	31.23
6	2224.96	31.38 AV	54.00	-22.62	1.11 H	221	0.15	31.23

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

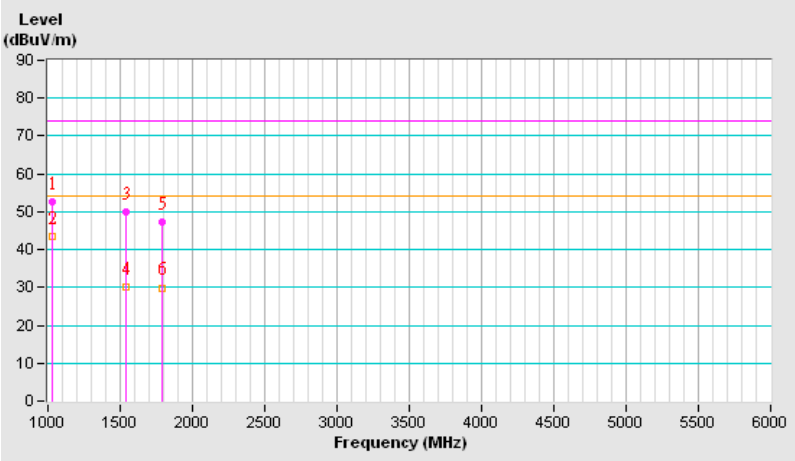


TEST MODE	Mode 1		
FREQUENCY RANGE	1-10 GHz	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	Peak/Average, 1MHz
ENVIRONMENTAL CONDITIONS	19deg. C, 83% RH,	**TESTED BY**: Vincent Chen	

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1026.25	52.58 PK	74.00	-21.42	1.23 V	345	26.29	26.29
2	1026.25	43.31 AV	54.00	-10.69	1.23 V	345	17.02	26.29
3	1539.07	49.86 PK	74.00	-24.14	1.00 V	327	21.56	28.30
4	1539.07	30.15 AV	54.00	-23.85	1.00 V	327	1.85	28.30
5	1787.83	47.11 PK	74.00	-26.89	1.58 V	125	17.50	29.61
6	1787.83	29.91 AV	54.00	-24.09	1.58 V	125	0.30	29.61

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



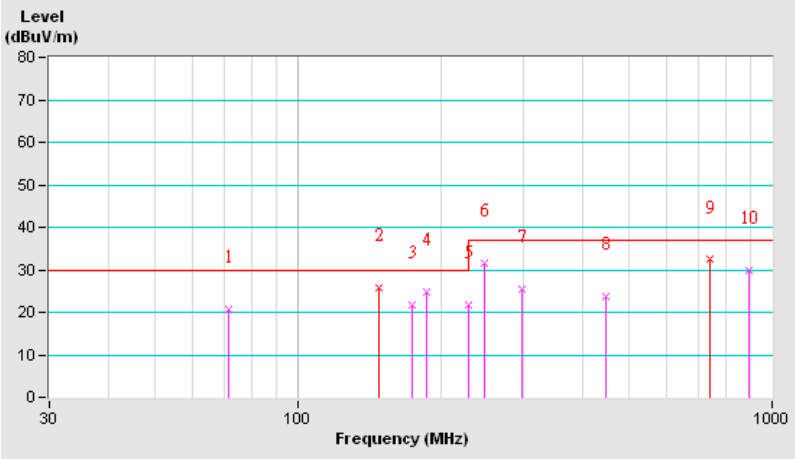
4.2.8 TEST RESULTS (2)

TEST MODE	Mode 2		
FREQUENCY RANGE	30-1000 MHz	DETECTOR FUNCTION & RESOLUTION BANDWIDTH	Quasi-Peak, 120 kHz
ENVIRONMENTAL CONDITIONS	22deg. C, 75% RH,	**TESTED BY**: Hermes Lin	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 10 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	71.76	20.80 QP	30.00	-9.20	4.00 H	142	8.32	12.48
2	148.36	25.78 QP	30.00	-4.22	4.00 H	210	10.59	15.19
3	174.81	21.78 QP	30.00	-8.22	4.00 H	127	7.70	14.08
4	187.07	24.74 QP	30.00	-5.26	4.00 H	231	11.65	13.09
5	229.47	21.84 QP	30.00	-8.16	4.00 H	152	8.49	13.35
6	248.27	31.62 QP	37.00	-5.38	4.00 H	253	17.40	14.22
7	296.71	25.50 QP	37.00	-11.50	4.00 H	113	8.86	16.64
8	445.06	23.66 QP	37.00	-13.34	1.50 H	232	2.84	20.82
9	741.75	32.40 QP	37.00	-4.60	1.15 H	205	5.35	27.05
10	891.00	29.94 QP	37.00	-7.06	1.50 H	211	0.63	29.31

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

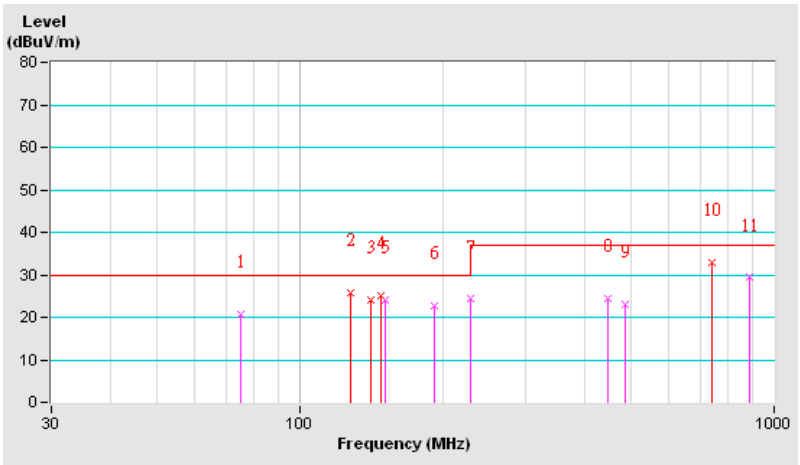


TEST MODE	Mode 2		
FREQUENCY RANGE	30-1000 MHz	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	Quasi-Peak, 120 kHz
ENVIRONMENTAL CONDITIONS	22deg. C, 75% RH,	**TESTED BY**: Hermes Lin	

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 10 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	75.24	20.71 QP	30.00	-9.29	1.00 V	53	9.20	11.51
2	128.00	25.76 QP	30.00	-4.24	1.00 V	211	12.62	13.14
3	141.63	24.00 QP	30.00	-6.00	1.14 V	360	9.68	14.32
4	148.36	25.24 QP	30.00	-4.76	1.00 V	108	10.05	15.19
5	151.39	24.15 QP	30.00	-5.85	1.00 V	120	8.81	15.34
6	192.01	22.81 QP	30.00	-7.19	1.00 V	0	10.14	12.67
7	229.47	24.30 QP	30.00	-5.70	1.00 V	37	10.95	13.35
8	445.05	24.33 QP	37.00	-12.67	4.00 V	176	3.51	20.82
9	485.10	23.21 QP	37.00	-13.79	3.49 V	19	1.24	21.97
10	**741.76**	**32.85 QP**	**37.00**	**-4.15**	**3.99 V**	**140**	**5.80**	**27.05**
11	890.12	29.34 QP	37.00	-7.66	1.00 V	265	0.04	29.30

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

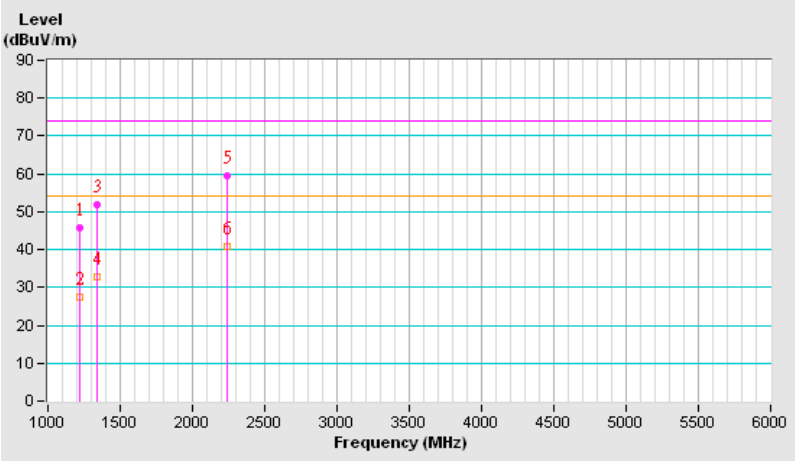


TEST MODE	Mode 2		
FREQUENCY RANGE	1-10 GHz	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	Peak/Average, 1MHz
ENVIRONMENTAL CONDITIONS	19deg. C, 83% RH,	**TESTED BY**: Vincent Chen	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1221.55	45.64 PK	74.00	-28.36	1.68 H	62	18.61	27.03
2	1221.55	27.57 AV	54.00	-26.43	1.68 H	62	0.54	27.03
3	1344.28	51.73 PK	74.00	-22.27	1.22 H	144	24.22	27.51
4	1344.28	32.76 AV	54.00	-21.24	1.22 H	144	5.25	27.51
5	2239.99	59.34 PK	74.00	-14.66	1.01 H	133	28.07	31.27
6	2239.99	40.66 AV	54.00	-13.34	1.01 H	133	9.39	31.27

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

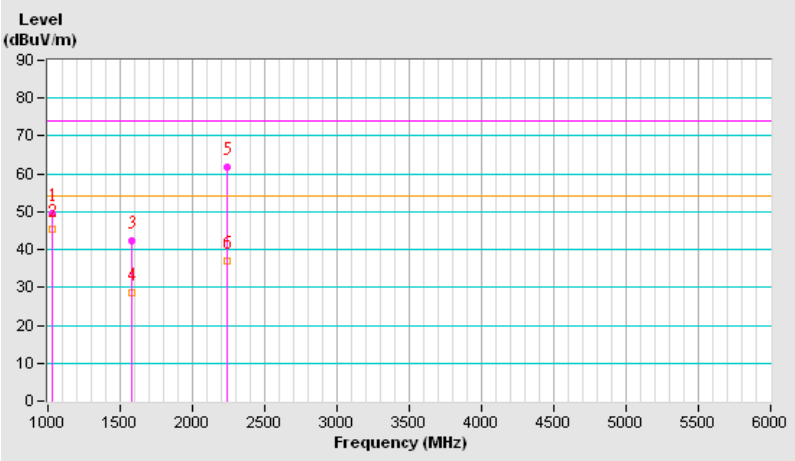


TEST MODE	Mode 2		
FREQUENCY RANGE	1-10 GHz	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	Peak/Average, 1MHz
ENVIRONMENTAL CONDITIONS	19deg. C, 83% RH,	**TESTED BY**: Vincent Chen	

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1026.00	49.66 PK	74.00	-24.34	1.21 V	9	23.38	26.28
2	1026.00	45.46 AV	54.00	-8.54	1.21 V	9	19.18	26.28
3	1575.25	42.30 PK	74.00	-31.70	1.11 V	221	13.82	28.48
4	1575.25	28.55 AV	54.00	-25.45	1.11 V	221	0.07	28.48
5	2239.95	61.74 PK	74.00	-12.26	1.42 V	180	30.47	31.27
6	2239.95	37.04 AV	54.00	-16.96	1.42 V	180	5.77	31.27

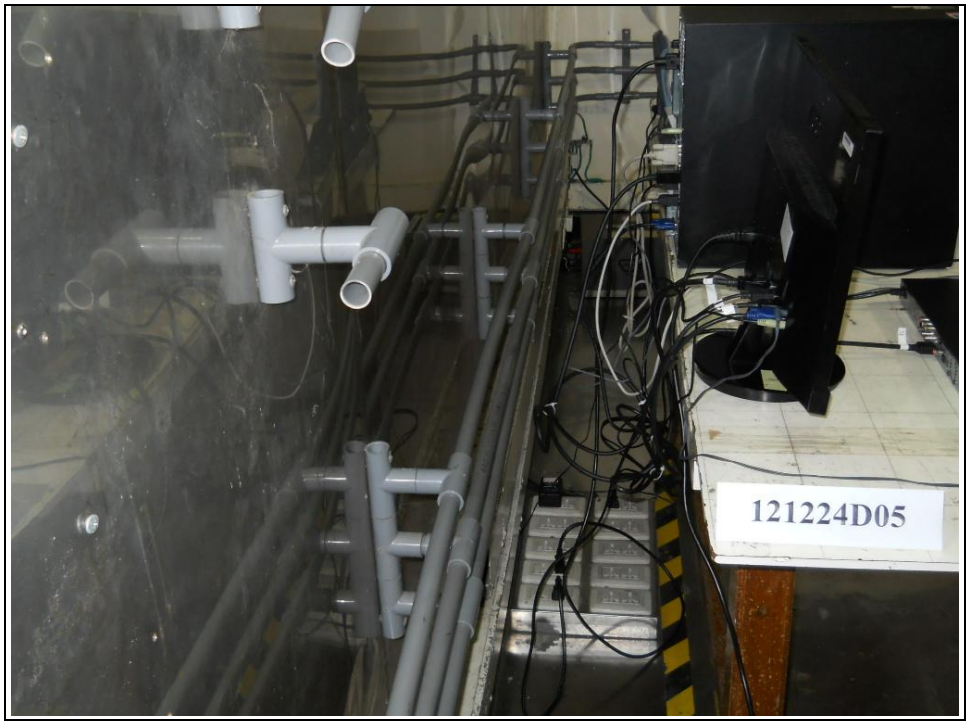
REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

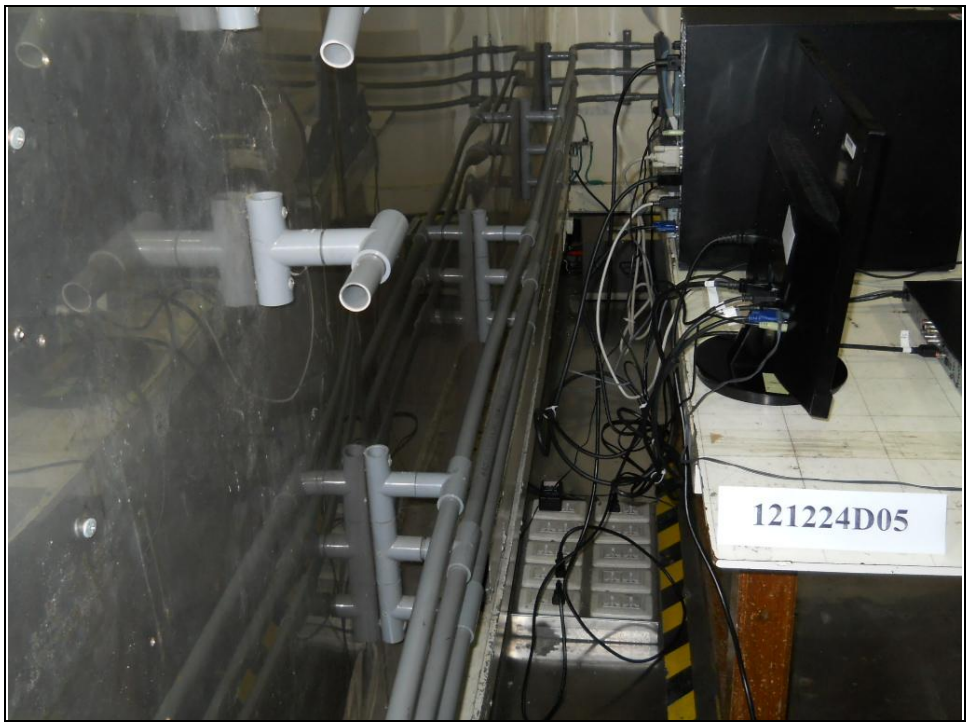


5 PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST – For Mode 1

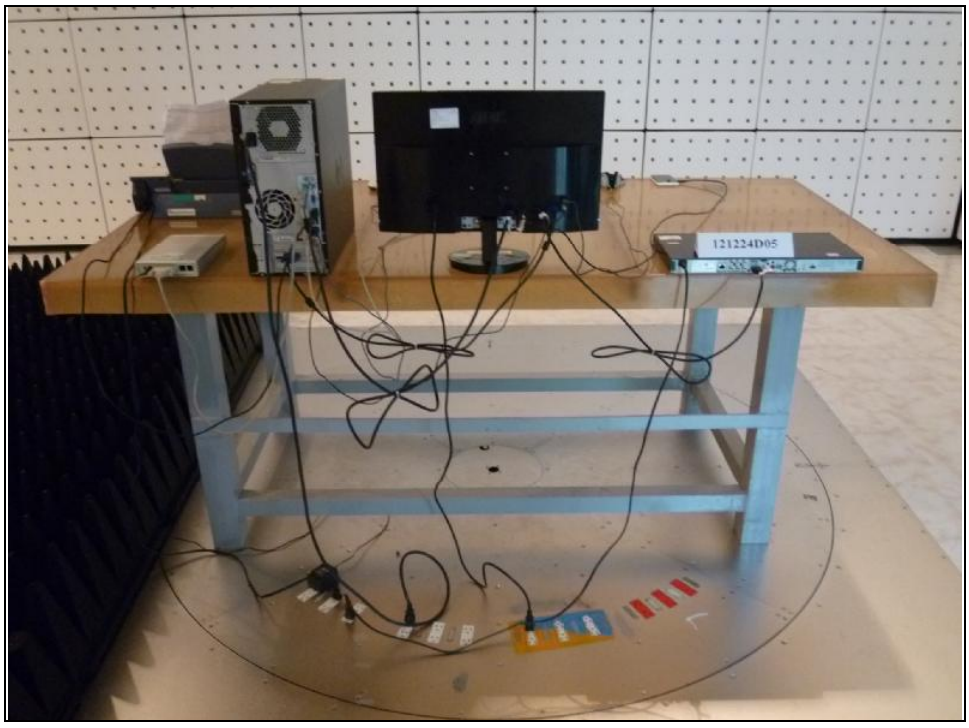


CONDUCTED EMISSION TEST – For Mode 2

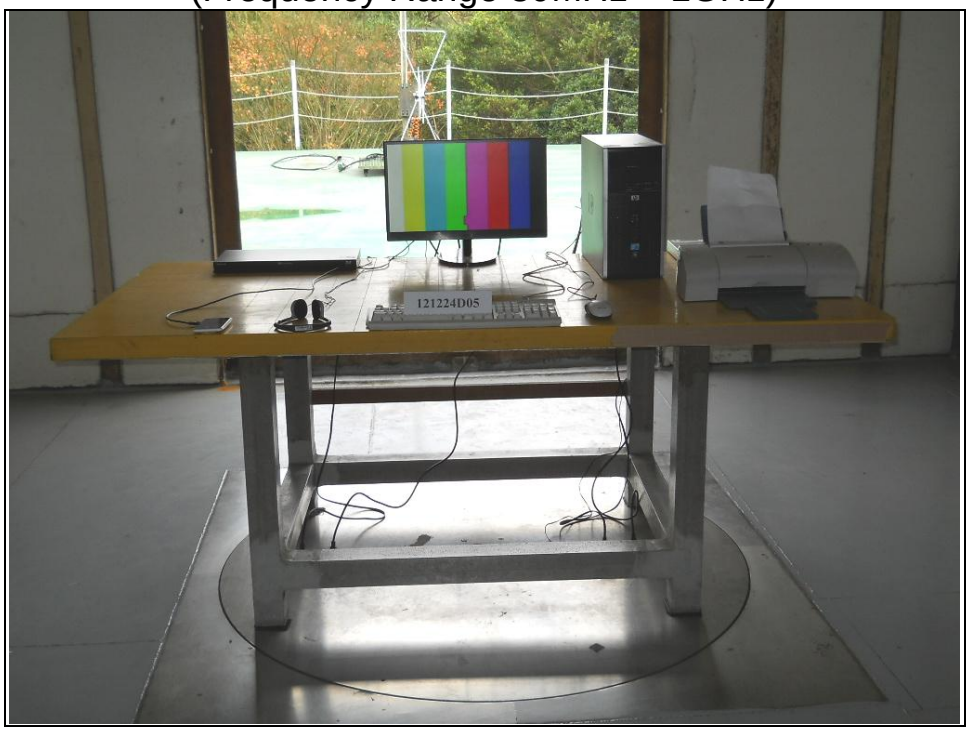


RADIATED EMISSION TEST – For Mode 1
(Frequency Range 30MHz ~ 1GHz)

RADIATED EMISSION TEST – For Mode 1
(Frequency Range above 1GHz)



RADIATED EMISSION TEST – For Mode 2
(Frequency Range 30MHz ~ 1GHz)



RADIATED EMISSION TEST – For Mode 2
(Frequency Range above 1GHz)

6 INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

7 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

---END---