FCC TEST REPORT

REPORT NO.: RF971017H05

MODEL NO.: C-U0002

RECEIVED: Oct. 17, 2008

TESTED: Oct. 17 to Dec. 02, 2008

ISSUED: Dec. 04, 2008

APPLICANT: LOGITECH FAR EAST LTD.

ADDRESS: #2 Creation Rd. 4, Science-Based Ind. Park Hsinchu Taiwan, R.O.C.

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

LAB LOCATION: No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan

Table of Contents

1 CERTIFICATION

PRODUCT :	Cordless Vantage™ Microphone_Receiver
BRAND NAME :	Logitech
MODEL NO. :	C-U0002
TESTED :	Oct. 17 to Dec. 02, 2008
TEST SAMPLE :	ENGINEERING SAMPLE
APPLICANT :	LOGITECH FAR EAST LTD.
STANDARDS :	47 CFR Part 15, Subpart C (Section 15.249), ANSI C63.4-2003

The above equipment (Model: C-U0002) 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 : Carol Liao , **DATE:** *Dec. 04, 2008*
(Carol Liao, Specialist)

TECHNICAL ACCEPTANCE : , **DATE:** *Dec. 04, 2008*
Responsible for RF
(Hank Chung, Deputy Manager)

APPROVED BY : , **DATE:** *Dec. 04, 2008*
(May Chen, Deputy Manager)

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: 47 CFR Part 15, Subpart C			
Standard Paragraph	**Test Type**	**Result**	**Remark**
15.207	Conducted Emission Test	PASS	Minimum passing margin is –14.97dB at 12.25MHz
15.249	Radiated Emission Test	PASS	Minimum passing margin is –10.02dB at 443.21MHz
15.249	Band Edge Measurement	PASS	Meet the requirement of limit

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:

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

Measurement	**Value**
Conducted Emission	2.44 dB
Radiated emissions (30MHz-1GHz)	3.94 dB
Radiated emissions (1GHz -18GHz)	2.49 dB
Radiated emissions (18GHz -40GHz)	2.70 dB

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Cordless Vantage™ Microphone_Receiver
MODEL NO.	C-U0002
FCC ID	JNZCU0002
POWER SUPPLY	DC 5.0V from host equipment
MODULATION TYPE	DQPSK π /4
CARRIER FREQUENCY OF EACH CHANNEL	2405MHz ~ 2477MHz
NUMBER OF CHANNEL	37
ANTENNA TYPE	Sheet metal inverted-F antenna with -0.84dBi antenna gain
DATA CABLE	USB cable (shielded, 1m)
I/O PORTS	USB port x 1
ASSOCIATED DEVICES	Cordless Vantage™ Microphone (Brand: Logitech, Model: A-R0001)

NOTE:

1. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

Thirty-seven channels are provided in this EUT.

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	**2405**	10	2425	20	2445	30	2465
1	2407	11	2427	21	2447	31	2467
2	2409	12	2429	22	2449	32	2469
3	2411	13	2431	23	2451	33	2471
4	2413	14	2433	24	2453	34	2473
5	2415	15	2435	25	2455	35	2475
6	2417	16	2437	26	2457	**36**	**2477**
7	2419	17	2439	27	2459		
8	2421	**18**	**2441**	28	2461		
9	2423	19	2443	29	2463		

NOTE:

1. Below 1 GHz, the channel 0, 18, and 36 were pre-tested in chamber. The channel 0, worst case one, was chosen for final test.
2. Above 1 GHz, the channel 0, 18, and 36 were tested individually.

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Cordless Vantage™ Microphone_Receiver. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

47 CFR Part 15, Subpart C (Section 15.249)
ANSI C63.4: 2003

All tests have been performed and recorded as per the above standards.

NOTE: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

3.4 DESCRIPTION OF SUPPORT UNITS

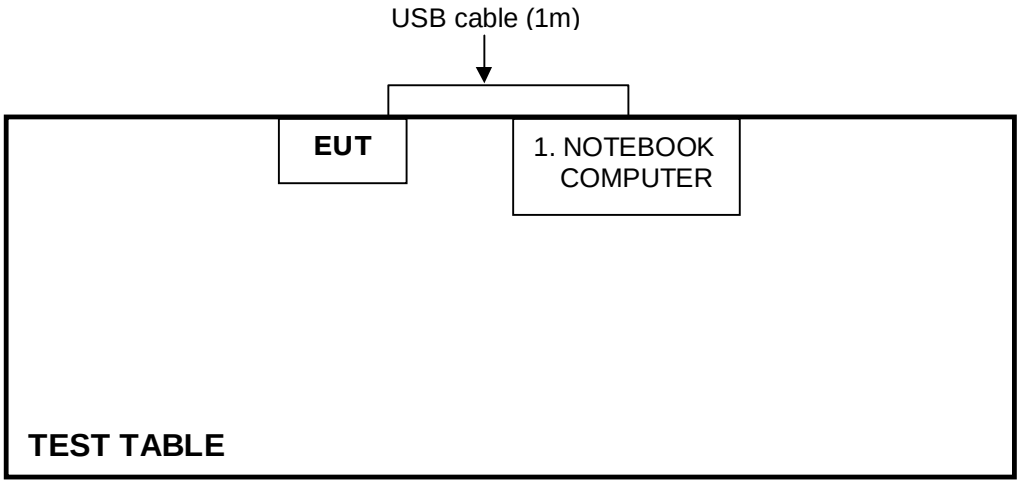
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP19L	CN-OHC416-70166-5CA-0448	PIW632500516610

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA

NOTE: All power cords of the above support units are non-shielded (1.8m).

3.5 CONFIGURATION OF SYSTEM UNDER TEST



4 TEST PROCEDURES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5 0.5-5 5-30	66 to 56 56 60	56 to 46 46 50

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. All emanations from a class B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100287	March 11, 2008	March 10, 2009
Line-Impedance Stabilization Network(for EUT)	KNW-407	8-1395-12	May 07, 2008	May 06, 2009
Line-Impedance Stabilization Network(for Peripheral)	ENV-216	100072	June 13, 2008	June 12, 2009
RF Cable (JYEBAO)	5DFB	COACAB-001	July 24, 2008	July 23, 2009
50 ohms Terminator	50	3	Nov. 15, 2008	Nov. 14, 2009
Software	BV ADT_Cond_V7.3.6	NA	NA	NA

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. A.
3. The VCCI Con A Registration No. is C-817.

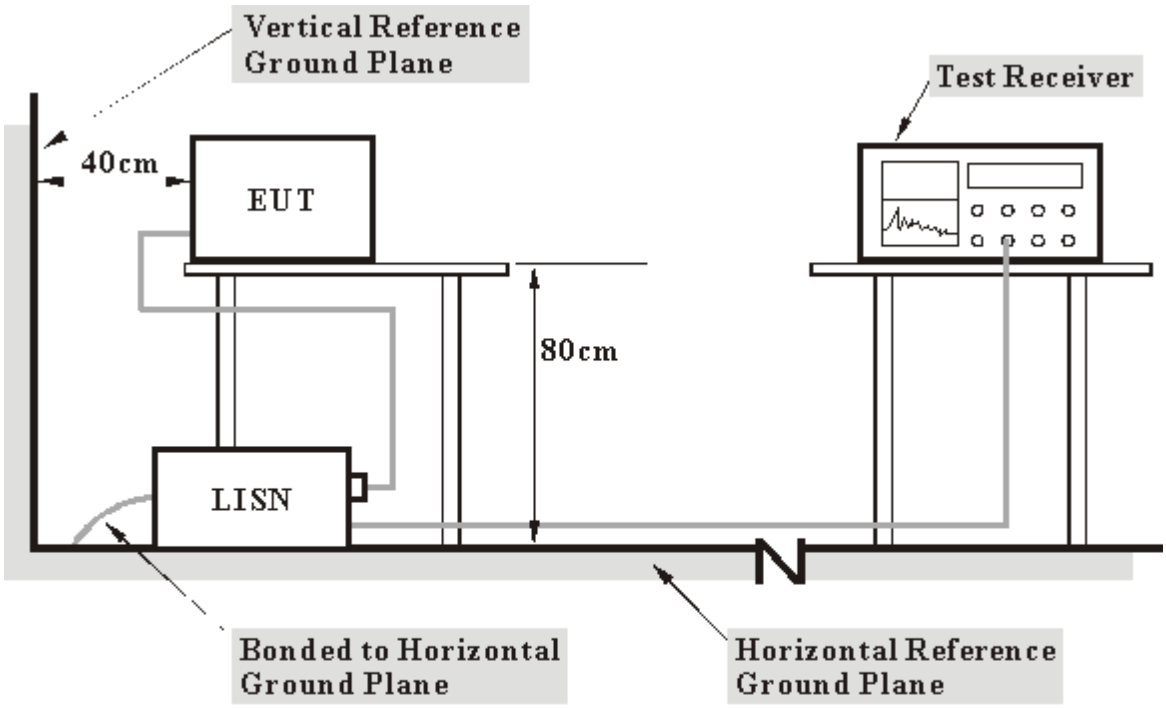
4.1.3 TEST PROCEDURES

a. The EUT/HOST was placed 0.4 meters from the conducting wall of the shielded room with EUT/HOST 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/HOST were checked for maximum conducted interference.

c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels over 10dB under the prescribed limits could not be reported

4.1.4 TEST SETUP



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

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

4.1.5 EUT OPERATING CONDITIONS

a. The EUT link to support unit 1 (Notebook computer) via USB cable and which placed on a testing table.

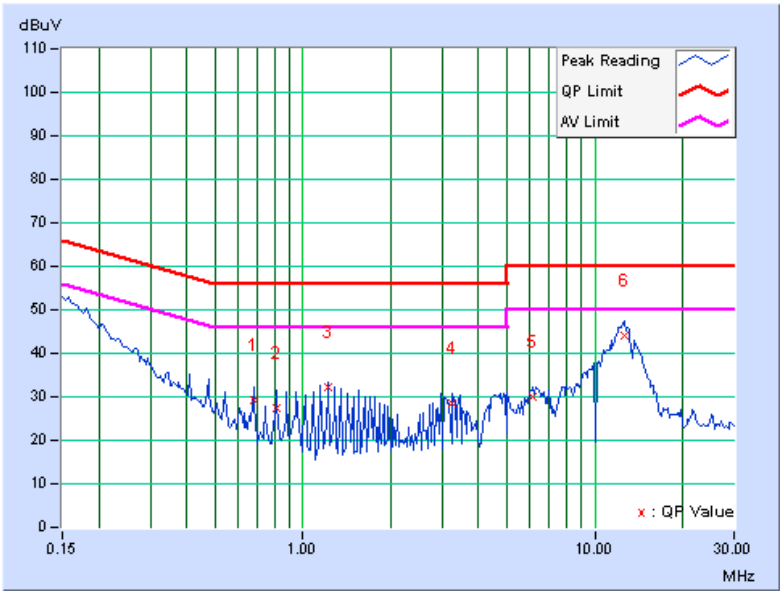
b. The support unit 1 (Notebook computer) ran a test program “AMD2flash.exe” to enable EUT under transmission condition continuously at specific channel frequency.

4.1.6 TEST RESULTS

INPUT POWER (SYSTEM)	120Vac, 60 Hz	**6DB BANDWIDTH**	9 kHz
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 965 hPa	**PHASE**	Line (L)
TESTED BY	Eric Lee		

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	0.677	9.82	19.28	-	29.10	-	56.00	46.00	-26.90	-
2	0.810	9.76	17.50	-	27.26	-	56.00	46.00	-28.74	-
3	1.219	9.68	22.72	-	32.40	-	56.00	46.00	-23.60	-
4	3.250	9.74	18.69	-	28.43	-	56.00	46.00	-27.57	-
5	6.160	9.79	20.12	-	29.91	-	60.00	50.00	-30.09	-
6	12.660	9.88	34.09	-	43.97	-	60.00	50.00	-16.03	-

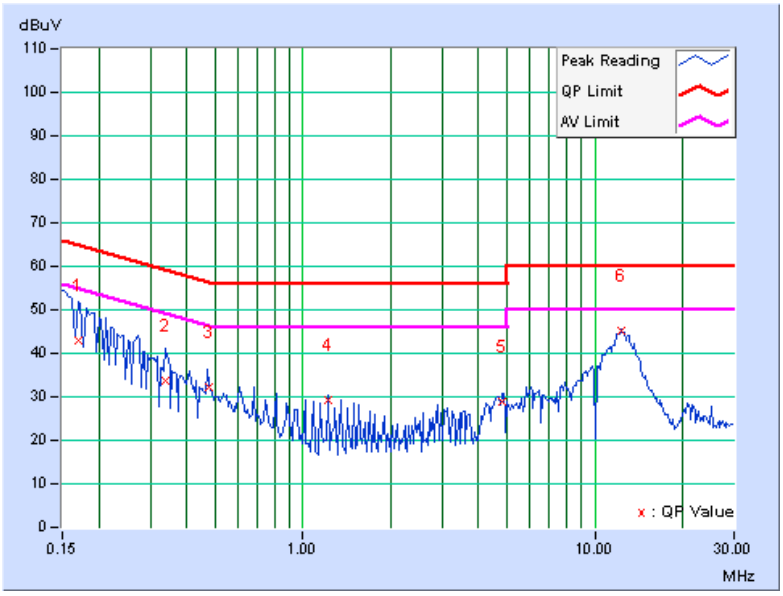
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



INPUT POWER (SYSTEM)	120Vac, 60 Hz	**6dB BANDWIDTH**	9 kHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 66%RH, 965 hPa	**PHASE**	Neutral (N)
TESTED BY	Phoenix Huang		

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	0.170	9.68	33.36	-	43.04	-	64.98	54.98	-21.94	-
2	0.338	9.87	23.84	-	33.71	-	59.26	49.26	-25.56	-
3	0.474	9.91	22.18	-	32.09	-	56.44	46.44	-24.35	-
4	1.219	9.68	19.74	-	29.42	-	56.00	46.00	-26.58	-
5	4.804	9.78	19.16	-	28.94	-	56.00	46.00	-27.06	-
6	**12.250**	**9.92**	**35.11**	**-**	**45.03**	**-**	**60.00**	**50.00**	**-14.97**	**-**

REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

According to 15.249 the field strength of emissions from intentional radiators operated under these frequencies bands shall not exceed the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental (dBuV/m)	
	Peak	Average
2400 ~ 2483.5	114	94
	Field Strength of Harmonics (dBuV/m)	
	74	54

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	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.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ADVANTEST Spectrum Analyzer	R3271A	85060311	July 16, 2008	July 15, 2009
HP Pre_Amplifier	8449B	3008A01922	Sep. 25, 2008	Sep. 24, 2009
ROHDE & SCHWARZ Test Receiver	ESCS30	100375	April 01, 2008	Mar. 31, 2009
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	April 30, 2008	April 29, 2009
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 17, 2007	Dec. 16, 2008
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 28, 2008	Jan. 27, 2009
RF Switches	EMH-011	08009	Oct. 07, 2008	Oct. 06, 2009
RF CABLE (Chaintek)	SF102	22054-2	Dec. 07, 2007	Dec. 06, 2008
RF Cable	8DFB	STCCAB-30M-1GHz	Oct. 07, 2008	Oct. 06, 2009
Software	ADT_Radiated_V7.6.15.9.2	NA	NA	NA
CT Antenna Tower & Turn Table	NA	NA	NA	NA

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 horn antenna, HP preamplifier (model: 8449B) and Spectrum Analyzer (model: R3271A) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in Open Site No. C.
4. The FCC Site Registration No. is 656396.
5. The VCCI Site Registration No. is R-1626.
6. The CANADA Site Registration No. is IC 7450G-3.

4.2.3 TEST PROCEDURES

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

c. The antenna is a broadband antenna, and its height 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 rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

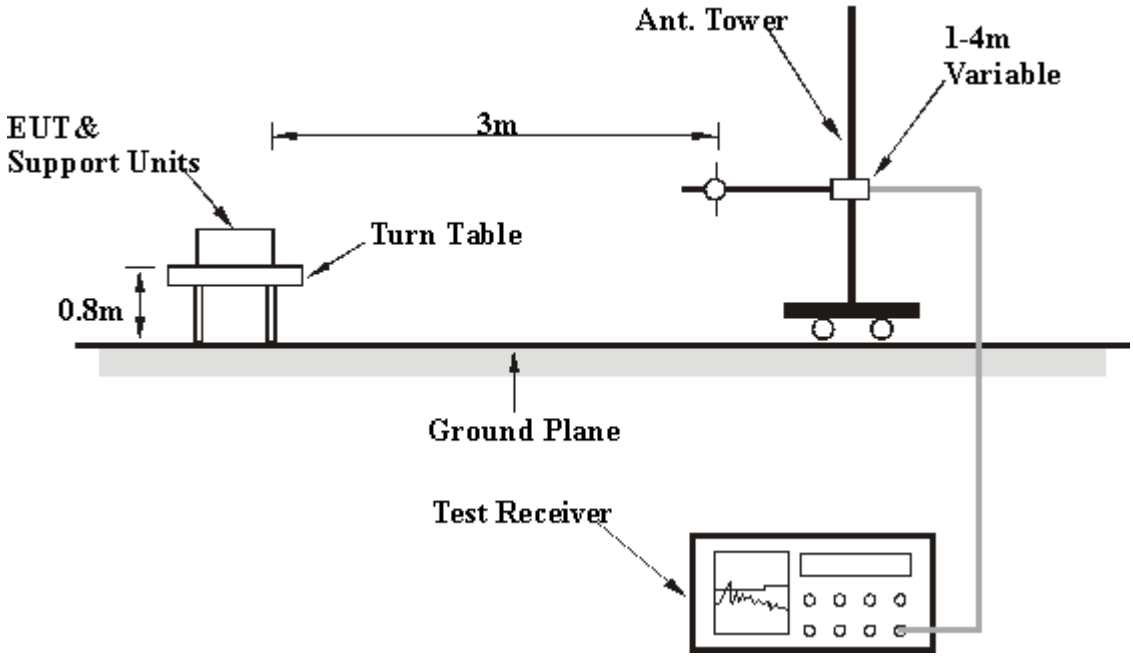
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. 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.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.5

4.2.7 TEST RESULTS

MODE	Channel 0	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
FREQUENCY RANGE	30-1000 MHz	**DETECTOR FUNCTION & BANDWIDTH**	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 65%RH, 965 hPa	**TESTED BY**	Eric Lee

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	192.61	25.16 QP	43.50	-18.34	1.08 H	354	11.61	13.55
2	197.40	27.48 QP	43.50	-16.02	1.52 H	220	14.30	13.18
3	320.00	31.98 QP	46.00	-14.02	1.52 H	111	14.14	17.84
4	482.11	25.13 QP	46.00	-20.87	1.84 H	95	2.74	22.39
5	579.50	33.33 QP	46.00	-12.67	1.65 H	235	8.94	24.39
6	675.00	32.46 QP	46.00	-13.54	1.14 H	208	5.99	26.47
7	866.71	26.57 QP	46.00	-19.43	1.08 H	54	-4.06	30.63

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	175.50	26.35 QP	43.50	-17.15	1.11 V	25	11.80	14.55
2	326.40	33.02 QP	46.00	-12.98	2.10 V	232	14.92	18.10
3	336.00	34.02 QP	46.00	-11.98	1.32 V	62	15.53	18.49
4	**443.21**	**35.98 QP**	**46.00**	**-10.02**	**1.25 V**	**24**	**14.19**	**21.79**
5	480.01	32.01 QP	46.00	-13.99	1.62 V	213	9.66	22.35
6	580.01	32.68 QP	46.00	-13.32	1.02 V	9	8.28	24.40
7	674.52	30.24 QP	46.00	-15.76	1.84 V	46	3.78	26.46
8	820.30	26.15 QP	46.00	-19.85	1.00 V	2	-3.99	30.14

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.

MODE	Channel 0	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
FREQUENCY RANGE	1000~25000MHz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
ENVIRONMENTAL CONDITIONS	25 deg. C, 65%RH, 965 hPa	**TESTED BY**	Eric Lee

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	2400.00	57.03 PK	74.00	-16.97	1.63 H	180	26.59	30.44
2	2400.00	37.03 AV	54.00	-16.97	1.63 H	180	6.59	30.44
3	*2405.00	91.38 PK	114.00	-22.62	1.59 H	164	60.92	30.46
4	*2405.00	71.38 AV	94.00	-22.62	1.59 H	164	40.92	30.46
5	4810.00	47.48 PK	74.00	-26.52	1.24 H	24	11.82	35.66
6	4810.00	27.49 AV	54.00	-26.51	1.24 H	24	-8.18	35.66
7	7215.00	57.11 PK	74.00	-16.89	1.80 H	200	14.95	42.16
8	7215.00	31.77 AV	54.00	-22.23	1.80 H	200	-10.39	42.16

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	2400.00	56.76 PK	74.00	-17.24	1.50 V	11	26.32	30.44
2	2400.00	36.76 AV	54.00	-17.24	1.50 V	11	6.32	30.44
3	*2405.00	93.13 PK	114.00	-20.87	1.48 V	29	62.67	30.46
4	*2405.00	73.13 AV	94.00	-20.87	1.48 V	29	42.67	30.46
5	4810.00	49.72 PK	74.00	-24.28	1.40 V	62	14.06	35.66
6	4810.00	29.72 AV	54.00	-24.28	1.40 V	62	-5.94	35.66
7	7215.00	48.84 PK	74.00	-25.16	1.58 V	111	6.68	42.16
8	7215.00	28.84 AV	54.00	-25.16	1.58 V	111	-13.32	42.16

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. Margin value = Emission level - Limit value
4. " * " : Fundamental frequency
5. The other emission levels were very low against the limit.

MODE	Channel 18	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
FREQUENCY RANGE	1000~25000MHz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
ENVIRONMENTAL CONDITIONS	25 deg. C, 65%RH, 965 hPa	**TESTED BY**	Eric Lee

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	*2441.00	89.62 PK	114.00	-24.38	1.63 H	64	59.00	30.62
2	*2441.00	69.62 AV	94.00	-24.38	1.63 H	64	39.00	30.62
3	4882.00	48.99 PK	74.00	-25.01	1.24 H	54	13.18	35.81
4	4882.00	28.99 AV	54.00	-25.01	1.24 H	54	-6.82	35.81
5	7323.00	51.23 PK	74.00	-22.77	1.58 H	54	8.67	42.56
6	7323.00	31.23 AV	54.00	-22.77	1.58 H	54	-11.33	42.56

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	*2441.00	91.33 PK	114.00	-22.67	1.40 V	38	60.54	30.79
2	*2441.00	71.33 AV	94.00	-22.67	1.40 V	38	40.54	30.79
3	4882.00	48.69 PK	74.00	-25.31	1.47 V	54	12.88	35.81
4	4882.00	28.69 AV	54.00	-25.31	1.47 V	54	-7.12	35.81
5	7323.00	47.11 PK	74.00	-26.89	1.42 V	324	4.55	42.56
6	7323.00	27.11 AV	54.00	-26.89	1.42 V	324	-15.45	42.56

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. Margin value = Emission level - Limit value
4. " * " : Fundamental frequency
5. The other emission levels were very low against the limit.

MODE	Channel 36	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
FREQUENCY RANGE	1000~25000MHz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
ENVIRONMENTAL CONDITIONS	25 deg. C, 65%RH, 965 hPa	**TESTED BY**	Eric Lee

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	*2477.00	87.48 PK	114.00	-26.52	1.62 H	170	56.69	30.79
2	*2477.00	67.48 AV	94.00	-26.52	1.62 H	170	36.69	30.79
3	2483.50	54.75 PK	74.00	-19.25	1.99 H	60	23.93	30.82
4	2483.50	34.75 AV	54.00	-19.25	1.99 H	60	3.93	30.82
5	4954.00	49.23 PK	74.00	-24.77	1.14 H	300	13.27	35.96
6	4954.00	29.23 AV	54.00	-24.77	1.14 H	300	-6.73	35.96
7	7431.00	50.98 PK	74.00	-23.02	1.98 H	63	8.02	42.96
8	7431.00	30.98 AV	54.00	-23.02	1.98 H	63	-11.98	42.96

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	*2477.00	90.50 PK	114.00	-23.50	1.40 V	38	59.71	30.79
2	*2477.00	70.50 AV	94.00	-23.50	1.40 V	38	39.71	30.79
3	2483.50	55.48 PK	74.00	-18.52	1.68 V	73	24.66	30.82
4	2483.50	35.48 AV	54.00	-18.52	1.68 V	73	4.66	30.82
5	4954.00	49.40 PK	74.00	-24.60	1.80 V	180	13.44	35.96
6	4954.00	29.40 AV	54.00	-24.60	1.80 V	180	-6.56	35.96
7	7431.00	47.83 PK	74.00	-26.17	1.64 V	59	4.87	42.96
8	7431.00	27.83 AV	54.00	-26.17	1.64 V	59	-15.13	42.96

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. Margin value = Emission level - Limit value
4. " * " : Fundamental frequency
5. The other emission levels were very low against the limit.

4.3 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.3.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 09, 2008	Aug. 08, 2009

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100 kHz with suitable frequency span including 300 MHz bandwidth from band edge. The band edges was measured and recorded.

4.3.4 DEVIATION FROM TEST STANDARD

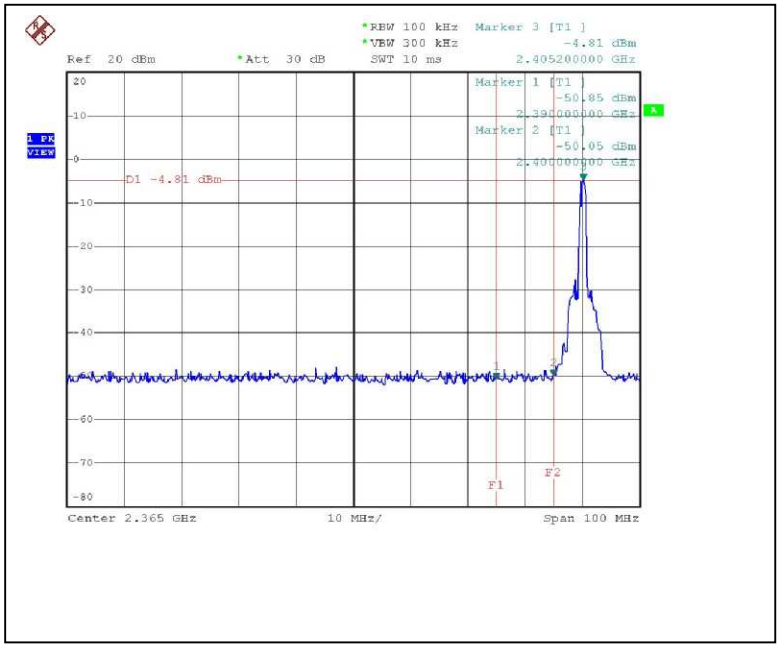
No deviation

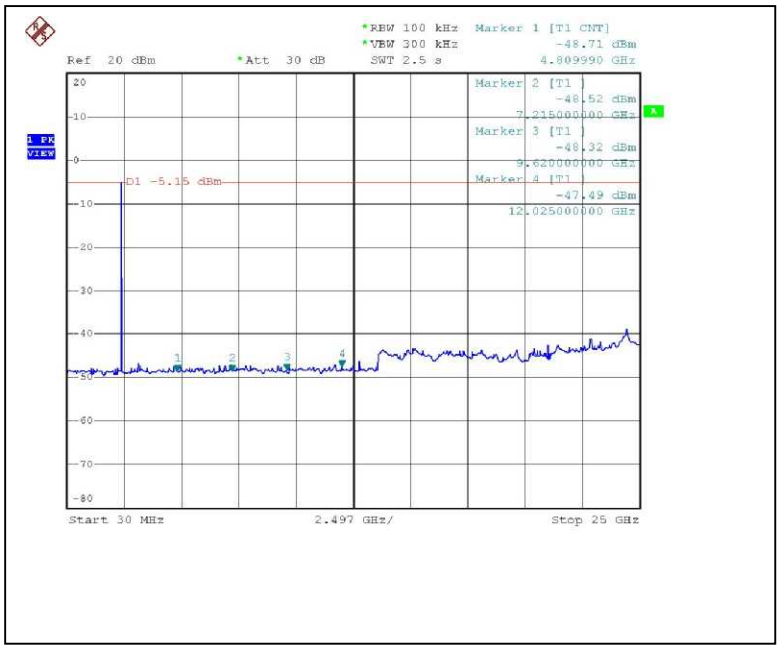
4.3.5 EUT OPERATING CONDITION

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

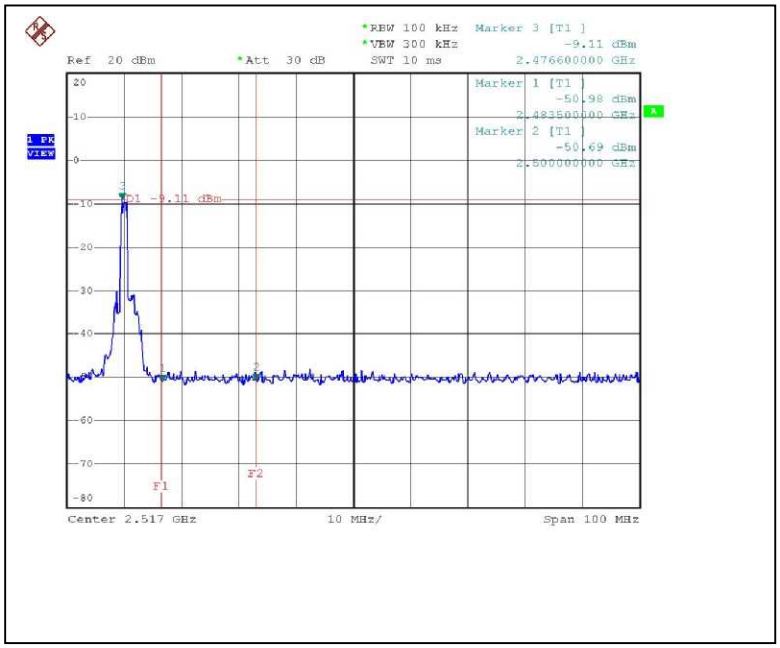
4.3.6 TEST RESULTS

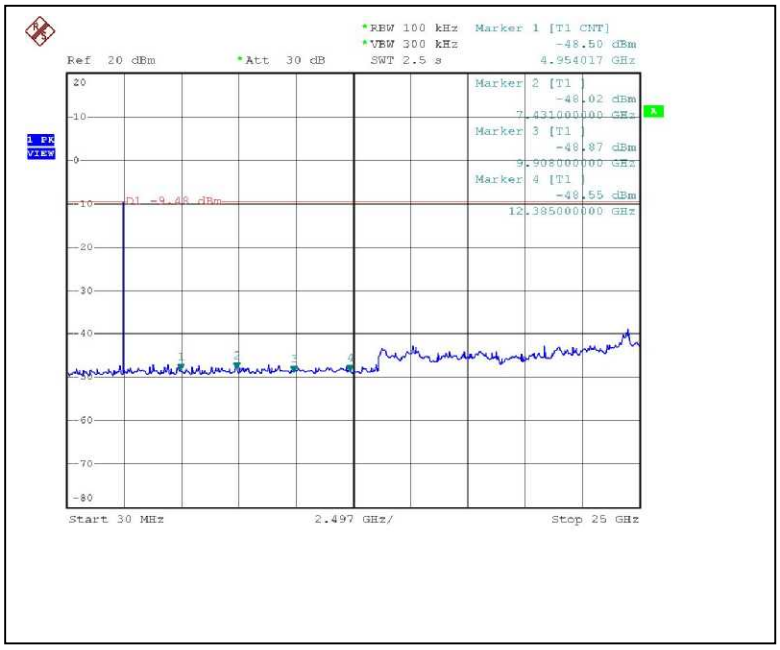
Emissions radiated outside of the specified frequency bands, please refer pages form 18 to 21 for met the requirement of the general radiated emission limits in § 15.209.
CH0





CH36


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
Marker 3 [T1]
-9.11 dBm
2.476600000 GHz
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-50.98 dBm
2.483500000 GHz
Marker 2 [T1]
-50.69 dBm
2.500000000 GHz
1 PK
VIEW
D1 -9.11 dBm
F1
F2
Center 2.517 GHz
10 MHz/
Span 100 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
Marker 1 [T1 CNT]
-48.50 dBm
4.954017 GHz
Ref 20 dBm
Att 30 dB
Marker 2 [T1]
-48.02 dBm
7.431000000 GHz
Marker 3 [T1]
-48.87 dBm
9.908000000 GHz
Marker 4 [T1]
-48.55 dBm
12.385000000 GHz
1 PK
VIEW
D1 -9.48 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz

5 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 by the following approval agencies according to ISO/IEC 17025.

USA	FCC, UL, NVLAP
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA, CSA
R.O.C.	TAF, BSMI, NCC
Netherlands	Telefication
Singapore	GOST-ASIA (MOU)
Russia	CERTIS (MOU)

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml.
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: 886-3-3185050

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

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

6 APPENDIX-A- MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

--- END ---