FCC DoC TEST REPORT

REPORT NO.: FD980615L04B

MODEL NO.: TS-210 (refer to item 3.1 for more details)

RECEIVED: Jul. 02, 2009

TESTED: Aug. 06 ~ Aug. 12, 2009

ISSUED: Dec. 23, 2010

APPLICANT: QNAP Systems, Inc.

ADDRESS: 21 F, No. 77, Sec. 1, Xintai 5th Rd., Xizhi City, Taipei County, 221, Taiwan

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

LAB ADDRESS: No. 19, Hwa Ya 2nd Rd., Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan

Table of Contents

RELEASE CONTROL RECORD 3
1 CERTIFICATION 4
2 SUMMARY OF TEST RESULTS 5
2.1 MEASUREMENT UNCERTAINTY 5
3 GENERAL INFORMATION 6
3.1 GENERAL DESCRIPTION OF EUT 6
3.2 DESCRIPTION OF TEST MODES 8
3.3 DESCRIPTION OF SUPPORT UNITS 9
3.4 CONFIGURATION OF SYSTEM UNDER TEST 10
4 TEST TYPES AND RESULTS 11
4.1 CONDUCTED EMISSION MEASUREMENT 11
4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT 11
4.1.2 TEST INSTRUMENTS 11
4.1.3 TEST PROCEDURES 12
4.1.4 DEVIATION FROM TEST STANDARD 12
4.1.5 TEST SETUP 13
4.1.6 EUT OPERATING CONDITIONS 13
4.1.7 TEST RESULTS 14
4.2 RADIATED EMISSION MEASUREMENT 16
4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT 16
4.2.2 TEST INSTRUMENTS 17
4.2.3 TEST PROCEDURES 19
4.2.4 DEVIATION FROM TEST STANDARD 19
4.2.5 TEST SETUP 20
4.2.6 EUT OPERATING CONDITIONS 20
4.2.7 TEST RESULTS 21
5 PHOTOGRAPHS OF THE TEST CONFIGURATION 25
6 PHOTOGRAPHS OF THE EQUIPMENT UNDER TEST 28
7 INFORMATION ON THE TESTING LABORATORIES 39
8 APPENDIX A – MODIFICATION RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB 40

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
Original release	N/A	Dec. 23, 2010

1 CERTIFICATION

PRODUCT:	Network Attached Storage
BRAND:	QNAP
MODEL NO.:	TS-210 (refer to item 3.1 for more details)
APPLICANT:	QNAP Systems, Inc.
TESTED:	Aug. 06 ~ Aug. 12, 2009
TEST SAMPLE:	ENGINEERING SAMPLE
STANDARD:	**FCC Part 15, Subpart B, Class B**
	CISPR 22: 1997, Class B
	ICES-003: 2004, Class B
	ANSI C63.4: 2003

The above equipment (Model: TS-210) 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 : _____ **, DATE :** Dec. 23, 2010
Suntee Liu / Specialist

APPROVED BY : _____ **, DATE :** Dec. 23, 2010
David Liu / Senior Engineer

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications.

EMISSION			
Standard	**Test Type**	**Result**	**Remarks**
FCC Part 15, Subpart B, Class B CISPR 22: 1997, Class B ICES-003: 2004, Class B	Conducted emission test	PASS	Meet the requirement of limit. Minimum passing margin is -19.68dB at 0.197MHz.
	Radiated emission test	PASS	Meet the requirement of limit. Minimum passing margin is -4.15dB at 195.23MHz.

Note: The limit for radiated test for 30-1000 MHz was performed according to CISPR 22: 1997, which was specified in FCC PART 15 Subpart B 15.109(g). Also the limit of CISPR 22: 1997 is same.

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:

Measurement	Frequency	Uncertainty
Conducted emission	150kHz ~ 30MHz	2.44dB
Radiated emissions	30MHz ~ 200MHz	3.69dB
	200MHz ~1000MHz	3.84dB
	1GHz ~ 18GHz	2.26dB

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

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Network Attached Storage
MODEL NO.	TS-210 (refer to NOTE 2 for more details)
POWER SUPPLY	12Vdc from adapter
DATA CABLE	NA
ACCESSORY DEVICE	Adapter

NOTE:

1. This is a duplicate report of FD980615L04A. The only difference compared with original report is adding model designation.
2. The EUT uses following models. (New models are marked in boldface.)

MODEL	DESCRIPTION
Q700	Original models
TS-209 V	
TS-210 Pro	
TS-210	
TS-210 Pro II	
TS-210 II	
TS-210 Pro-G	
TS-210-G	
TS-210 Pro II-G	
TS-210 II-G	
TS-210 Pro-M	
TS-210 M	
TS-219 V	
VS-2204	
VS-2208	
VS-2212	
VS-2216	
NVR-2204	
NVR-2208	
NVR-2212	
NVR-2216	
NV-2204	
NV-2208	
NV-2212	
NV-2216	

MODEL	DESCRIPTION
TS-212	New models have only half memory from original models.
TS-212P II	
TS-212P II+	
TS-212j	
TS-212j+	
TS-212J II	
TS-212j II+	
TS-212 Pro	
TS-212 Pro+	
TS-212G	
TS-212G+	
TS-212G Pro	
TS-212G Pro+	
TS-212G Pro II	

3. The EUT uses following adapter.

BRAND	FSP GROUP INC.
MODEL	FSP060-DBAB1
INPUT POWER	100-240Vac, 1.5A, 50-60Hz
OUTPUT POWER	12Vdc, 5A
POWER LINE	AC 1.8 m shielded cable without core DC 1.5 m non-shielded cable with 1 core

4. The EUT's highest operating frequency is 1.2 GHz.
5. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

The EUT is designed with AC power supply of 100-240Vac, 50/60Hz. For EMI evaluation, 230Vac/50Hz (for EN 55022) & 120Vac/60Hz (for FCC Part 15) had been covered during the pre-test. The worst radiated emission data was found at **230Vac/50Hz** and recorded in the applied test report.

2 samples were pre-tested, and sample 2 was the worst case for final test.

The EUT was pre-tested under following modes, and test mode 1 was the worst case for final test.

Test Mode	Test Condition
1	LAN 1 Gbps, 230 Vac / 50 Hz
2	LAN 100 Mbps, 230 Vac / 50 Hz
3	LAN 10 Mbps, 230 Vac / 50 Hz
4	LAN 1 Gbps, EUT horizontal, 230 Vac / 50 Hz
5	LAN 1 Gbps, 120 Vac / 60 Hz

3.3 DESCRIPTION OF SUPPORT UNITS

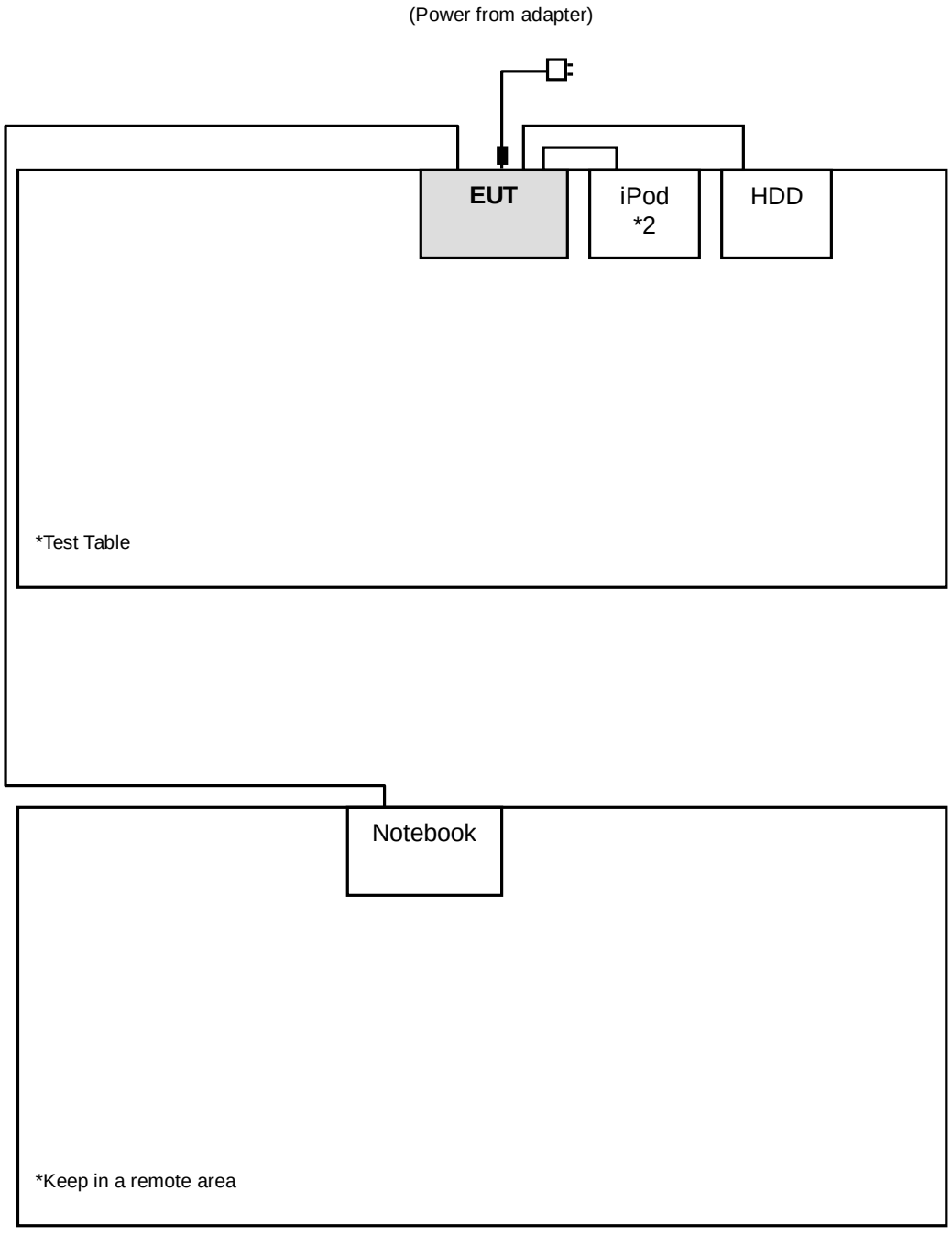
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	IPOD MINI	apple	A1051	YM5270HGS41	NA
2	IPOD MINI	apple	A1051	YM5270HGS41	NA
3	EXTERNAL HARD DISK	Terasys	F12-UF	A0100222-4990026	FCC DoC Approved
4	NOTEBOOK	DELL	PP18L	D1T5W1S 28407620224	QDS-BRCM1019

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	1.5 m shielded cable, terminated with USB connector, w/o core
2	1.5 m shielded cable, terminated with USB connector, w/o core
3	1.5 m shielded cable, terminated with USB connector, w/o core
4	10 m shielded RJ45 cable

NOTE:
1. All power cords of the above support units are non-shielded (1.8 m).
2. Item 4 acted as a communication partner to transfer data.

3.4 CONFIGURATION OF SYSTEM UNDER TEST



4 TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

TEST STANDARD:
FCC Part 15, Subpart B (section: 15.107)
CISPR 22: 1997 (section 5)
ICES-003: 2004 (Class A: section 5.2)
(Class B: section 5.3)

Frequency (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15-0.5	79	66	66-56	56-46
0.5-5	73	60	56	46
5-30	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.
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.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100291	Nov. 19, 2008	Nov. 18, 2009
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 31, 2008	Dec. 30, 2009
LISN SCHWARZBECK	NNBL 8226-2	8226-142	Jun. 03, 2009	Jun. 02, 2010
LISN ROHDE & SCHWARZ	ESH2-Z5	100104	Dec. 04, 2008	Dec. 03, 2009
Software ADT	ADT_Cond_ V7.3.7	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 HwaYa Shielded Room 1.
3. The VCCI Site Registration No. is C-2040.

4.1.3 TEST PROCEDURES

The basic test procedure was in accordance with ANSI C63.4: 2003 (section 7) and CISPR 22 (section 9).

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.

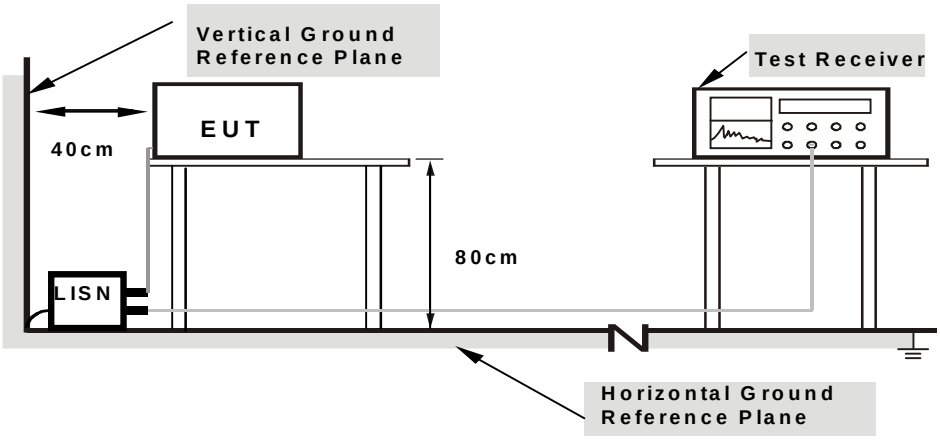
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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

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

4.1.6 EUT OPERATING CONDITIONS

a. The notebook ran a test program to enable all functions.

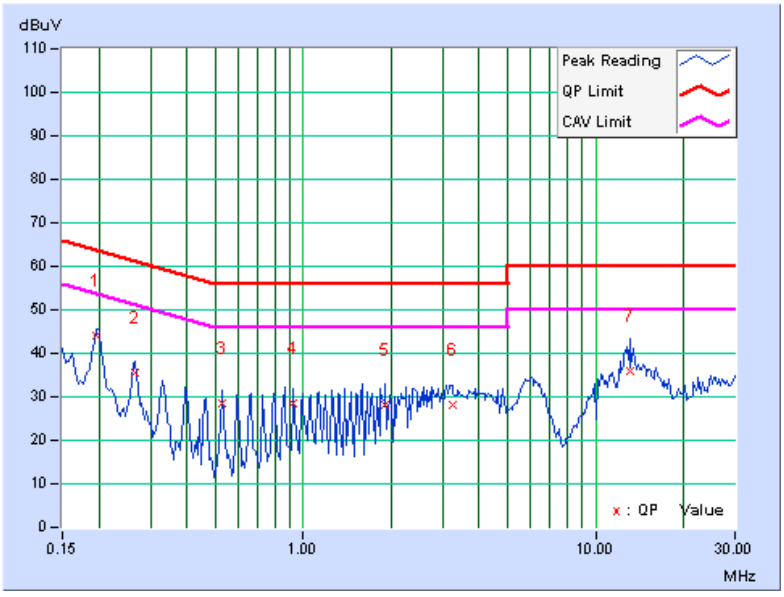
b. The notebook communicated data with the EUT, iPods and external HDD.

4.1.7 TEST RESULTS

INPUT POWER	120 Vac, 60 Hz	**6dB BANDWIDTH**	9 kHz
ENVIRONMENTAL CONDITIONS	22 deg. C, 66% RH, 980 hPa	**PHASE**	Line 1
TESTED BY	Kevin Chen		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.197**	**0.13**	**43.93**	**-**	**44.06**	**-**	**63.74**	**53.74**	**-19.68**	**-**
2	0.266	0.13	35.34	-	35.47	-	61.24	51.24	-25.77	-
3	0.529	0.14	28.50	-	28.64	-	56.00	46.00	-27.36	-
4	0.925	0.15	28.23	-	28.38	-	56.00	46.00	-27.62	-
5	1.914	0.19	27.94	-	28.13	-	56.00	46.00	-27.87	-
6	3.238	0.28	27.92	-	28.20	-	56.00	46.00	-27.80	-
7	13.150	0.95	35.07	-	36.02	-	60.00	50.00	-23.98	-

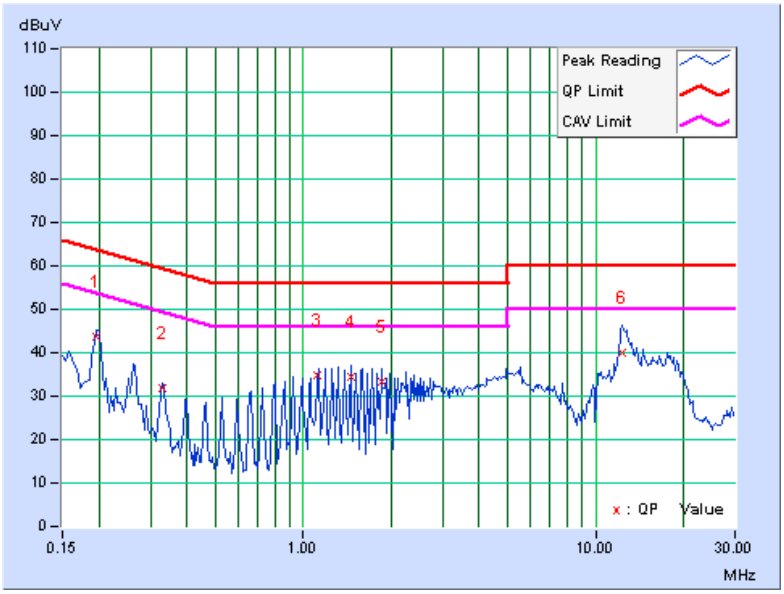
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



INPUT POWER	120 Vac, 60 Hz	**6dB BANDWIDTH**	9 kHz
ENVIRONMENTAL CONDITIONS	22 deg. C, 66% RH, 980 hPa	**PHASE**	Line 2
TESTED BY	Kevin Chen		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.197	0.09	43.57	-	43.66	-	63.74	53.74	-20.08	-
2	0.330	0.10	31.77	-	31.87	-	59.46	49.46	-27.59	-
3	1.123	0.11	34.59	-	34.70	-	56.00	46.00	-21.30	-
4	1.453	0.12	34.42	-	34.54	-	56.00	46.00	-21.46	-
5	1.848	0.14	33.01	-	33.15	-	56.00	46.00	-22.85	-
6	12.352	0.65	39.41	-	40.06	-	60.00	50.00	-19.94	-

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

TEST STANDARD:
FCC Part 15, Subpart B (section: 15.109)
CISPR 22: 1997 (section 6)
ICES-003: 2004 (Class A: section 5.4)
(Class B: section 5.5)

Frequency (MHz)	Class A (at 10m)	Class B (at 10m)
	Quasi-peak (dBuV/m)	Quasi-peak (dBuV/m)
30-230	40	30
230-1000	47	37

NOTE: The limit for radiated test was performed according to CISPR 22:1997, which was specified in FCC PART 15B 15.109(g). Also the limits of CISPR 22:1997 is same.

Frequency (MHz)	Class A (at 3m)		Class B (at 3m)	
	Peak (dBuV/m)	Average (dBuV/m)	Peak (dBuV/m)	Average (dBuV/m)
Above 1000	80	60	74	54

NOTE: 1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
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.

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	5th harmonic of the highest frequency or 40 GHz, whichever is lower

4.2.2 TEST INSTRUMENTS

For frequency below 1 GHz

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESIB7	100186	Dec. 05, 2008	Dec. 04, 2009
Test Receiver ROHDE & SCHWARZ	ESIB7	100187	Sep. 22, 2008	Sep. 21, 2009
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100025	Oct. 22, 2008	Oct. 21, 2009
BILOG Antenna SCHWARZBECK	VULB9168	9168-148	Apr. 28, 2009	Apr. 27, 2010
BILOG Antenna SCHWARZBECK	VULB9168	9168-149	Apr. 28, 2009	Apr. 27, 2010
Preamplifier Agilent	8447D	2944A10637	Dec. 04, 2008	Dec. 03, 2009
Preamplifier Agilent	8447D	2944A10636	Dec. 04, 2008	Dec. 03, 2009
RF signal cable Woken	8D-FB	Cable-Hych1-01	Oct. 28, 2008	Oct. 27, 2009
RF signal cable Woken	8D-FB	Cable-Hych1-02	Oct. 28, 2008	Oct. 27, 2009
Software ADT	ADT_Radiated_ V 7.7.03.6	NA	NA	NA
Antenna Tower(V)	MFA-440	9707	NA	NA
Antenna Tower(H)	MFA-440	970705	NA	NA
Turn Table	DS430	50303	NA	NA
Controller	MF7802	074	NA	NA
Controller	MF7802	08093	NA	NA
RF signal cable EAST COST Microwave	HP 160S-29	NA	Feb. 17, 2009	Feb. 16, 2010

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 HwaYa Chamber 1.
3. The FCC Site Registration No. is 477732.
4. The IC Site Registration No. is IC 7450F-1.
5. The VCCI Site Registration No. is R-1893.

For frequency above 1 GHz

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESIB7	100188	Dec. 22, 2008	Dec. 21, 2009
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100025	Oct. 22, 2008	Oct. 21, 2009
BILOG Antenna SCHWARZBECK	VULB9168	9168-157	Apr. 28, 2009	Apr. 27, 2010
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-405	Jan. 12, 2009	Jan. 11, 2010
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170148	Jul. 06, 2009	Jul. 05, 2010
Preamplifier Agilent	8449B	3008A01961	Oct. 03, 2008	Oct. 02, 2009
Preamplifier Agilent	8447D	2944A10629	Oct. 23, 2008	Oct. 22, 2009
RF signal cable HUBER+SUHNER	SUCOFLEX 104	23636/6	Aug. 21, 2008	Aug. 20, 2009
RF signal cable HUBER+SUHNER	SUCOFLEX 104	283402/4	Aug. 21, 2008	Aug. 20, 2009
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower ADT.	AT100	AT93021702	NA	NA
Turn Table ADT.	TT100.	TT93021702	NA	NA
Controller ADT.	SC100.	SC93021702	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 HwaYa Chamber 2.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 686814.
5. The IC Site Registration No. is IC 7450F-2.
6. The VCCI Site Registration No. is G-18.

4.2.3 TEST PROCEDURES

The basic test procedure was in accordance with ANSI C63.4: 2003 (section 8) and CISPR 22 (section 10).

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter semi-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation. The EUT was set 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. **<Frequency Range below 1GHz>**

b. 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. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. **<Frequency Range above 1GHz>**

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 rotatable 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.

f. 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:

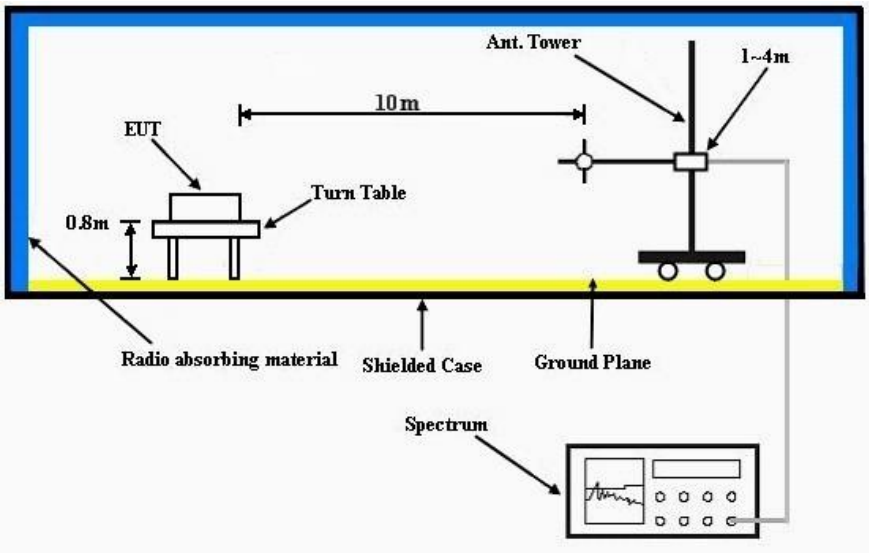
1. The resolution bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3 MHz for Peak (PK) detection at frequency above 1 GHz. The resolution bandwidth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

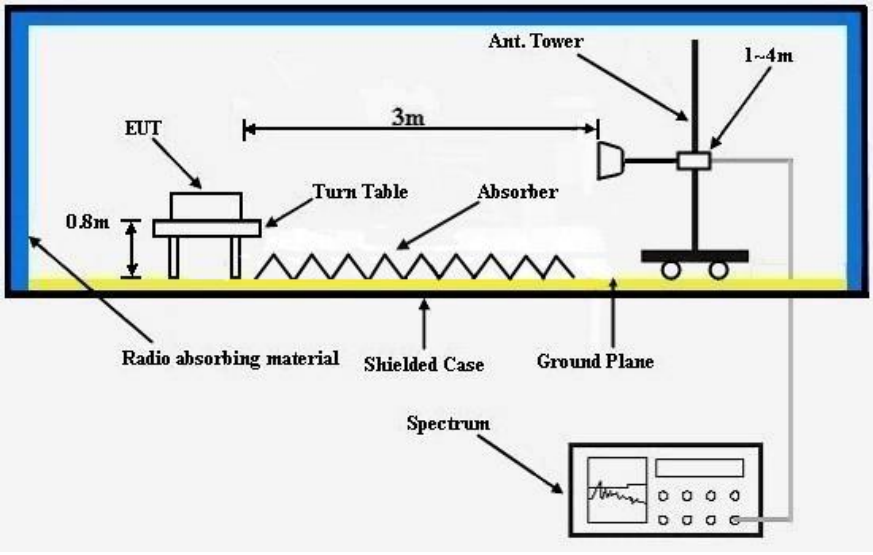
No deviation.

4.2.5 TEST SETUP

For frequency below 1 GHz



For frequency above 1 GHz



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

4.2.6 EUT OPERATING CONDITIONS

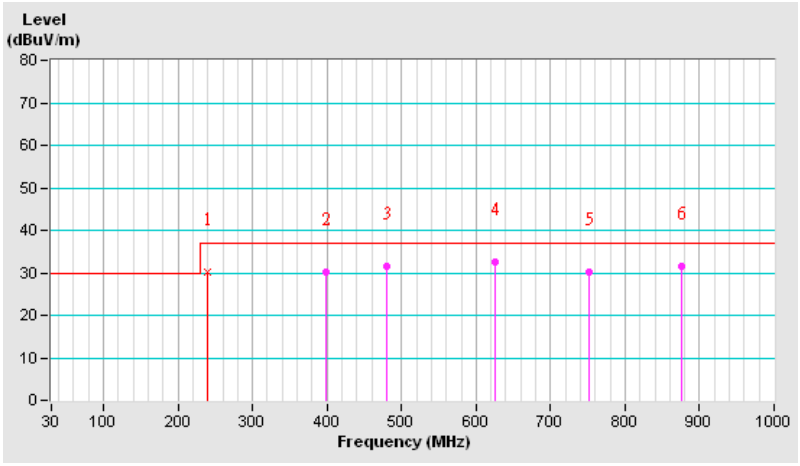
Same as item 4.1.6.

4.2.7 TEST RESULTS

ENVIRONMENTAL CONDITIONS	25 deg. C, 66% RH, 980 hPa	FREQUENCY RANGE	30-1000 MHz
DETECTOR FUNCTION & BANDWIDTH	Quasi-Peak, 120 kHz	TESTED BY	Sam Chang

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	240.04	30.31 QP	37.00	-6.69	3.50 H	185	17.74	12.57
2	399.34	30.18 QP	37.00	-6.82	2.00 H	73	12.70	17.48
3	480.98	31.52 QP	37.00	-5.48	2.50 H	134	12.36	19.16
4	624.83	32.47 QP	37.00	-4.53	1.50 H	336	10.10	22.37
5	751.18	30.31 QP	37.00	-6.69	3.50 H	286	6.03	24.28
6	875.59	31.53 QP	37.00	-5.47	1.00 H	15	5.49	26.04

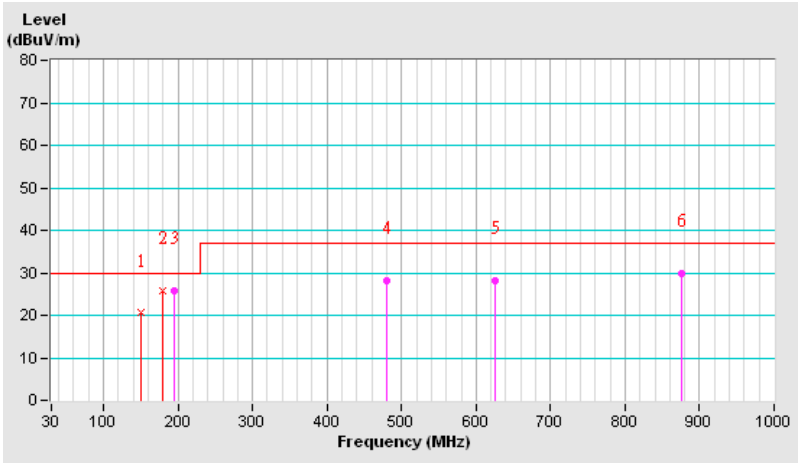
REMARKS: 1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



ENVIRONMENTAL CONDITIONS	25 deg. C, 66% RH, 980 hPa	**FREQUENCY RANGE**	30-1000 MHz
DETECTOR FUNCTION & BANDWIDTH	Quasi-Peak, 120 kHz	**TESTED BY**	Sam Chang

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	149.96	20.52 QP	30.00	-9.48	1.50 V	321	6.40	14.12
2	180.32	25.75 QP	30.00	-4.25	1.00 V	68	13.19	12.56
3	**195.23**	**25.85 QP**	**30.00**	**-4.15**	**1.00 V**	**119**	**14.20**	**11.65**
4	480.98	28.06 QP	37.00	-8.94	1.50 V	304	8.19	19.87
5	624.83	28.28 QP	37.00	-8.72	1.50 V	100	5.28	23.00
6	875.59	29.84 QP	37.00	-7.16	4.00 V	134	2.64	27.20

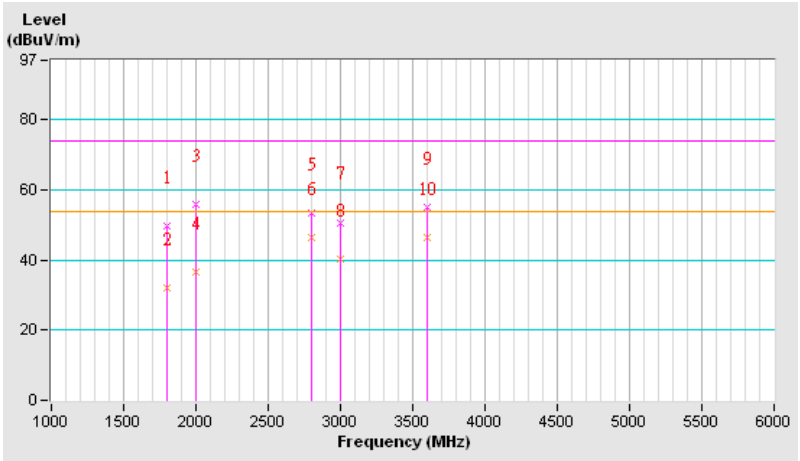
REMARKS:
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



INPUT POWER	120 Vac, 50 Hz	**FREQUENCY RANGE**	1-6 GHz
ENVIRONMENTAL CONDITIONS	24 deg. C, 62% RH, 980 hPa	**DETECTOR FUNCTION & BANDWIDTH**	Peak/Average, 1 MHz
TESTED BY	Peter Lin		

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	1800.01	49.55 PK	74.00	-24.45	1.25 H	109	20.94	28.61
2	1800.01	32.03 AV	54.00	-21.97	1.25 H	109	3.42	28.61
3	2000.00	56.02 PK	74.00	-17.98	2.00 H	344	27.02	29.00
4	2000.00	36.45 AV	54.00	-17.55	2.00 H	344	7.45	29.00
5	2800.00	53.56 PK	74.00	-20.44	1.25 H	115	22.00	31.56
6	2800.00	46.44 AV	54.00	-7.56	1.25 H	115	14.88	31.56
7	3000.00	50.74 PK	74.00	-23.26	1.00 H	225	18.66	32.08
8	3000.00	40.22 AV	54.00	-13.78	1.00 H	225	8.14	32.08
9	3599.96	54.88 PK	74.00	-19.12	1.00 H	179	21.83	33.05
10	3599.96	46.55 AV	54.00	-7.45	1.00 H	179	13.50	33.05

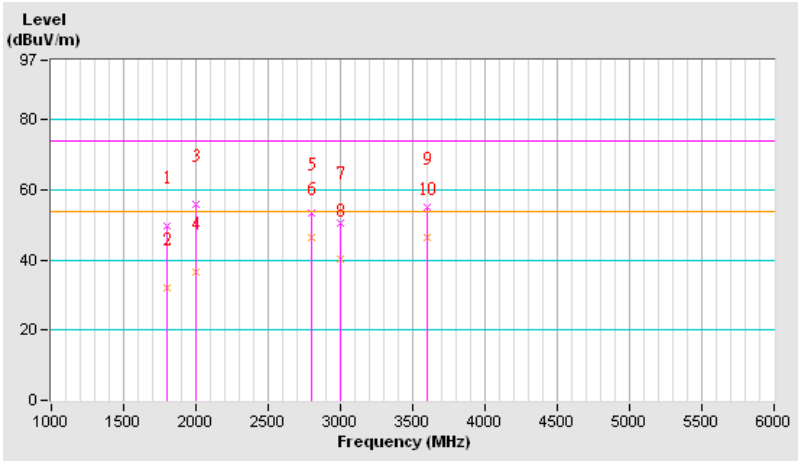
REMARKS: 1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



INPUT POWER	120 Vac, 50 Hz	**FREQUENCY RANGE**	1-6 GHz
ENVIRONMENTAL CONDITIONS	24 deg. C, 62% RH, 980 hPa	**DETECTOR FUNCTION & BANDWIDTH**	Peak/Average, 1 MHz
TESTED BY	Peter Lin		

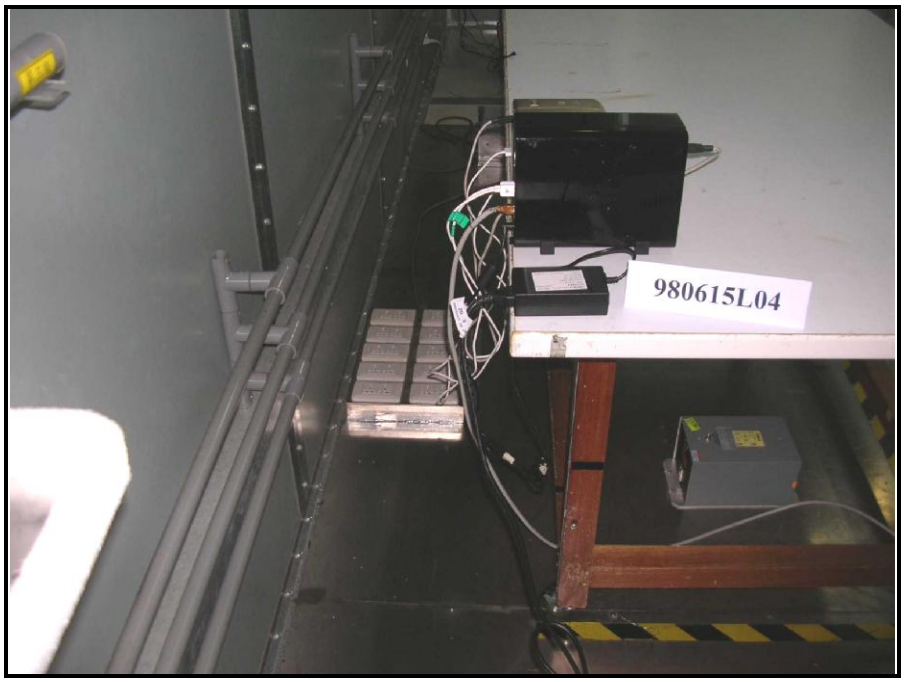
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 m								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1800.01	49.55 PK	74.00	-24.45	1.25 H	109	20.94	28.61
2	1800.01	32.03 AV	54.00	-21.97	1.25 H	109	3.42	28.61
3	2000.00	56.02 PK	74.00	-17.98	2.00 H	344	27.02	29.00
4	2000.00	36.45 AV	54.00	-17.55	2.00 H	344	7.45	29.00
5	2800.00	53.56 PK	74.00	-20.44	1.25 H	115	22.00	31.56
6	2800.00	46.44 AV	54.00	-7.56	1.25 H	115	14.88	31.56
7	3000.00	50.74 PK	74.00	-23.26	1.00 H	225	18.66	32.08
8	3000.00	40.22 AV	54.00	-13.78	1.00 H	225	8.14	32.08
9	3599.96	54.88 PK	74.00	-19.12	1.00 H	179	21.83	33.05
10	3599.96	46.55 AV	54.00	-7.45	1.00 H	179	13.50	33.05

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.

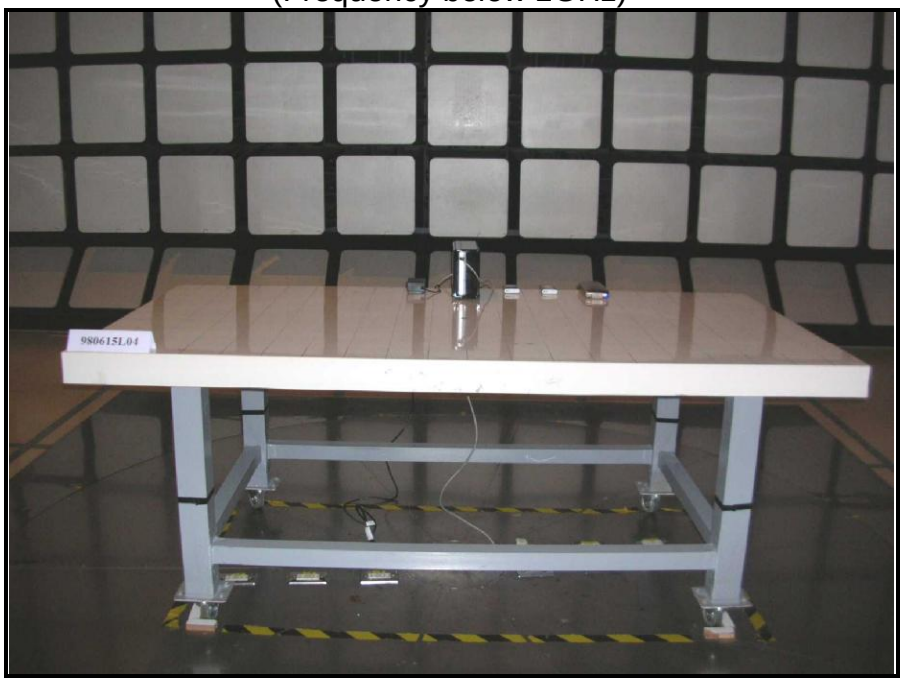


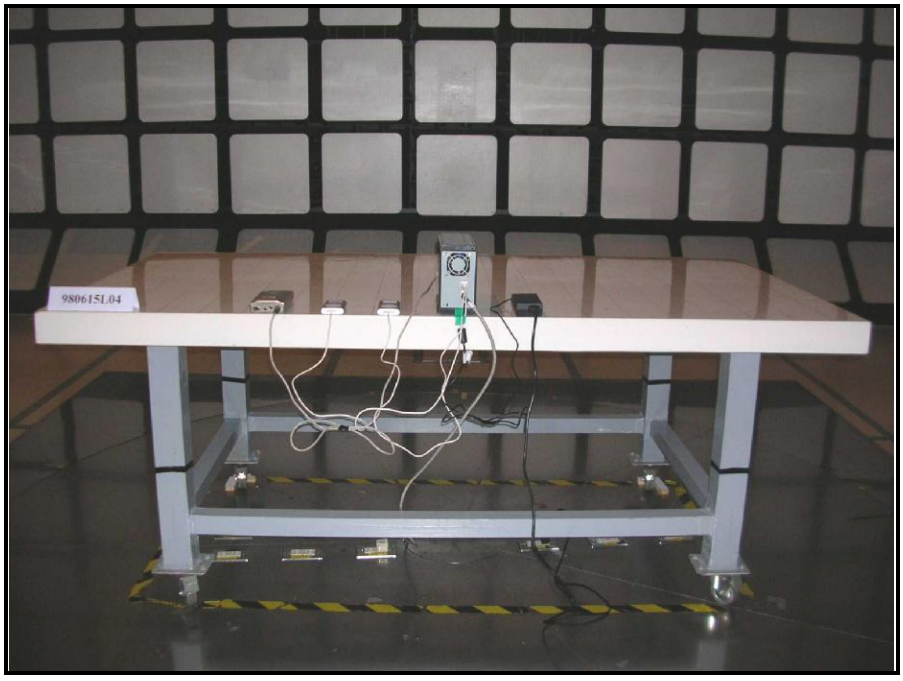
5 PHOTOGRAPHS OF THE TEST CONFIGURATION

Conducted Emission Test

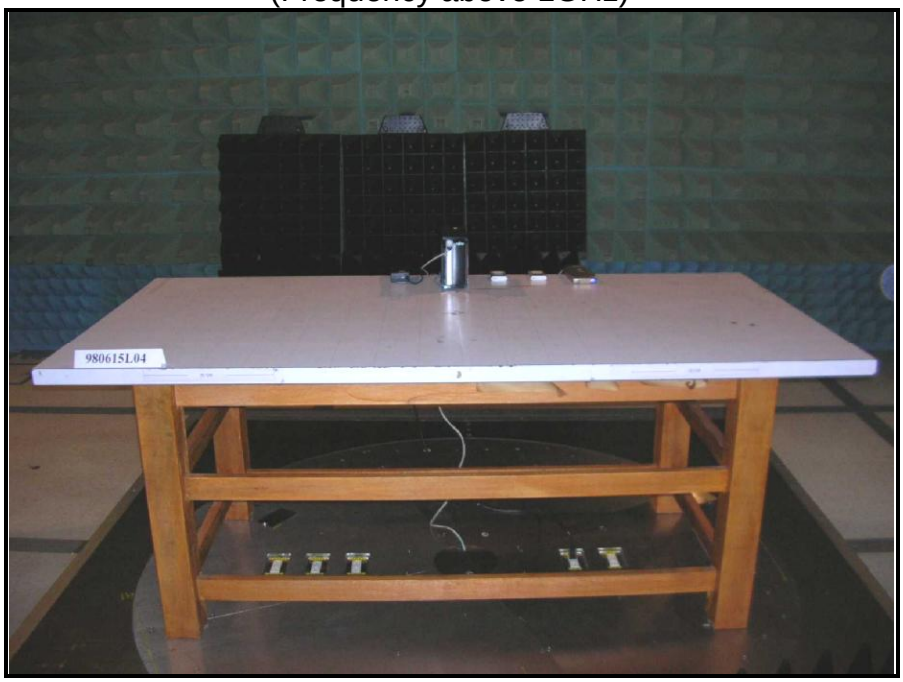


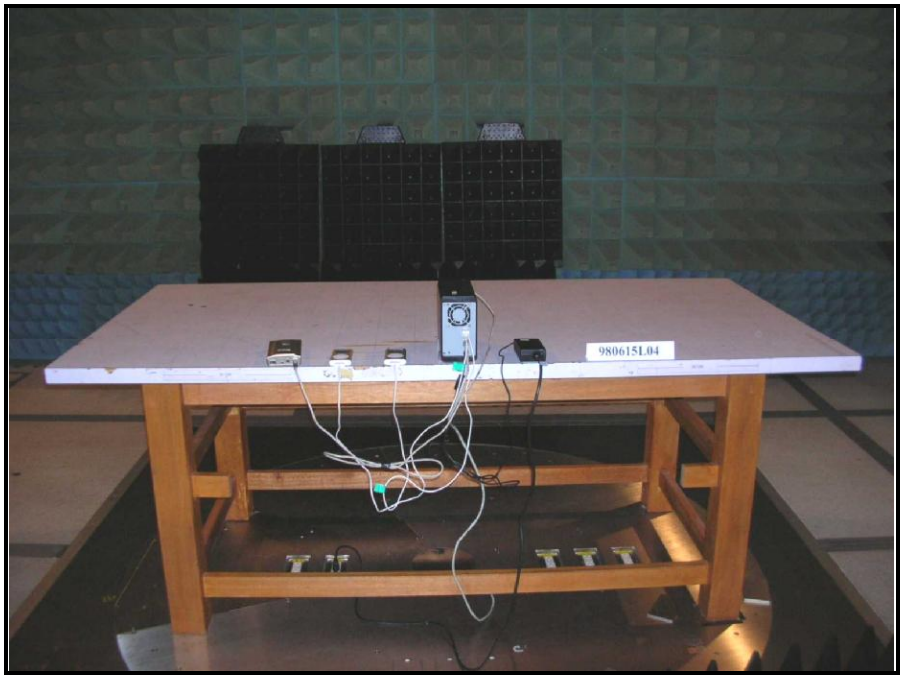
Radiated Emission Test
(Frequency below 1GHz)





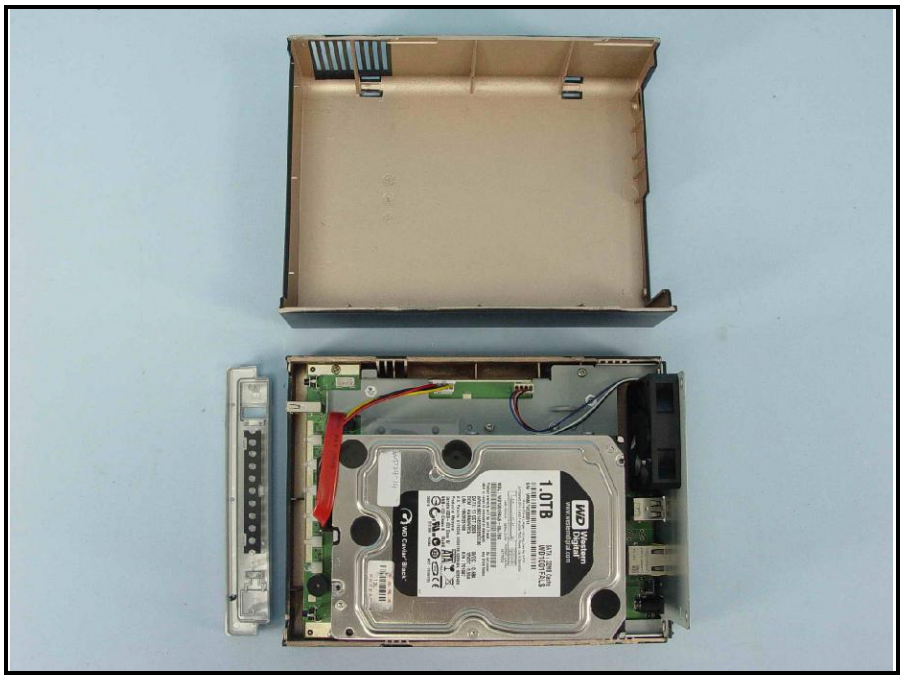
Radiated Emission Test
(Frequency above 1GHz)





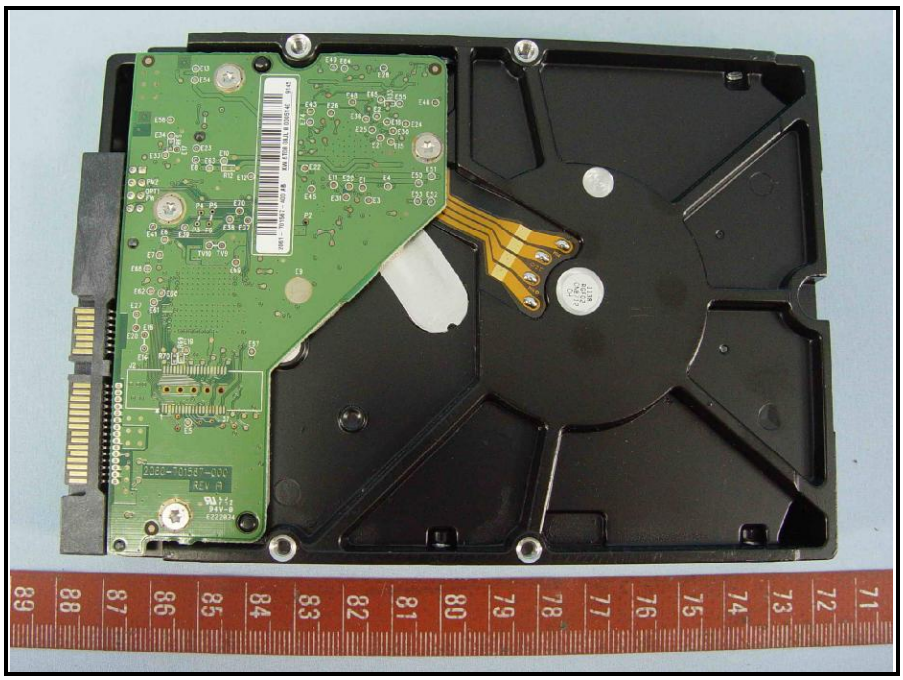
6 PHOTOGRAPHS OF THE EQUIPMENT UNDER TEST


FUJITSU

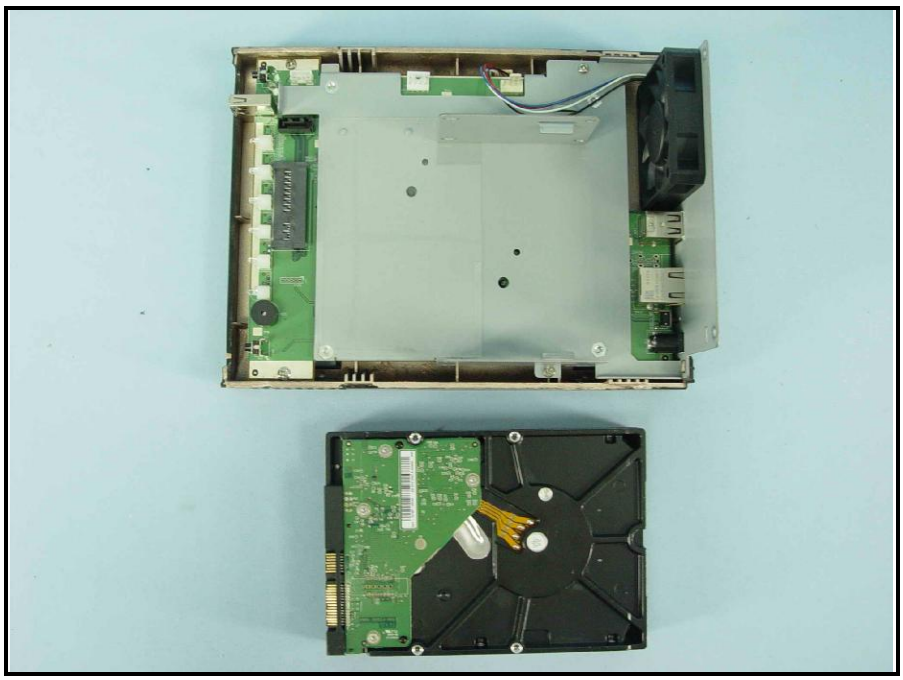

1.0TB
WD
Western Digital

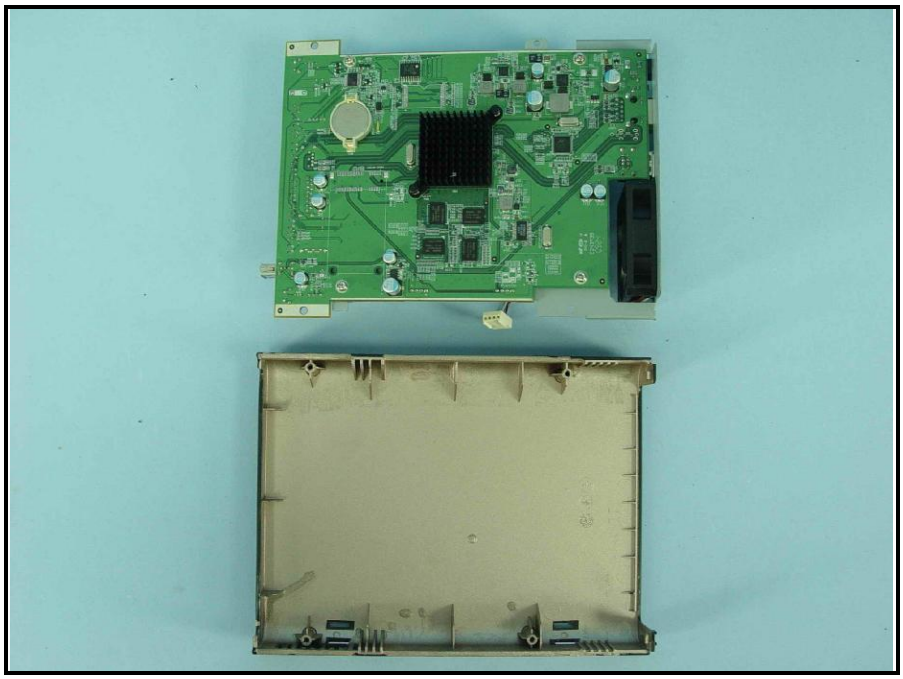

1.0TB
WD
Western Digital
WD Caviar Black

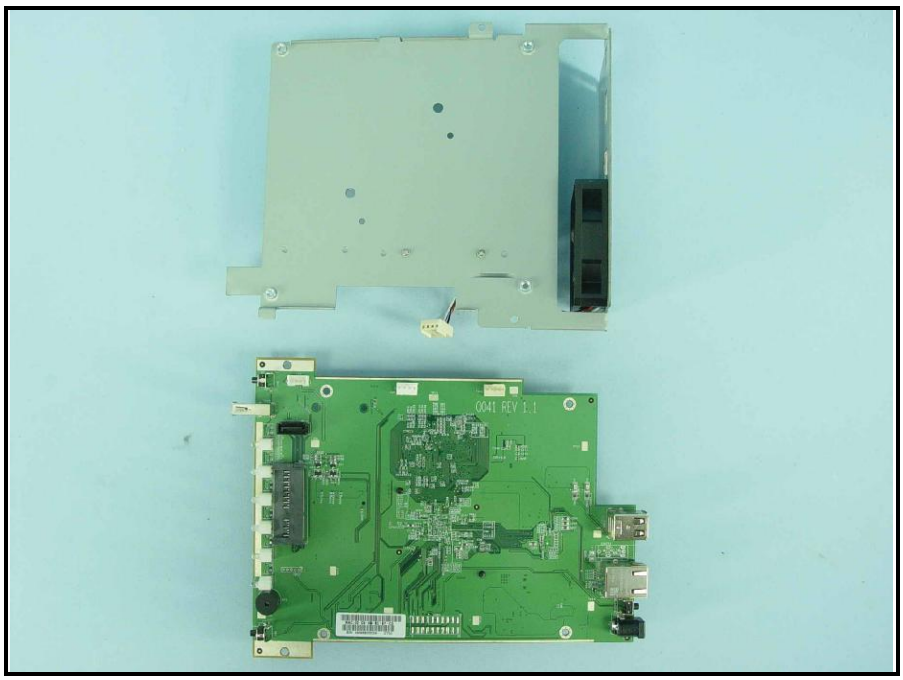

1.0TB
SATA / 32MB Cache
WD1001FALS
www.westerndigital.com
Western Digital
WD Caviar Black™

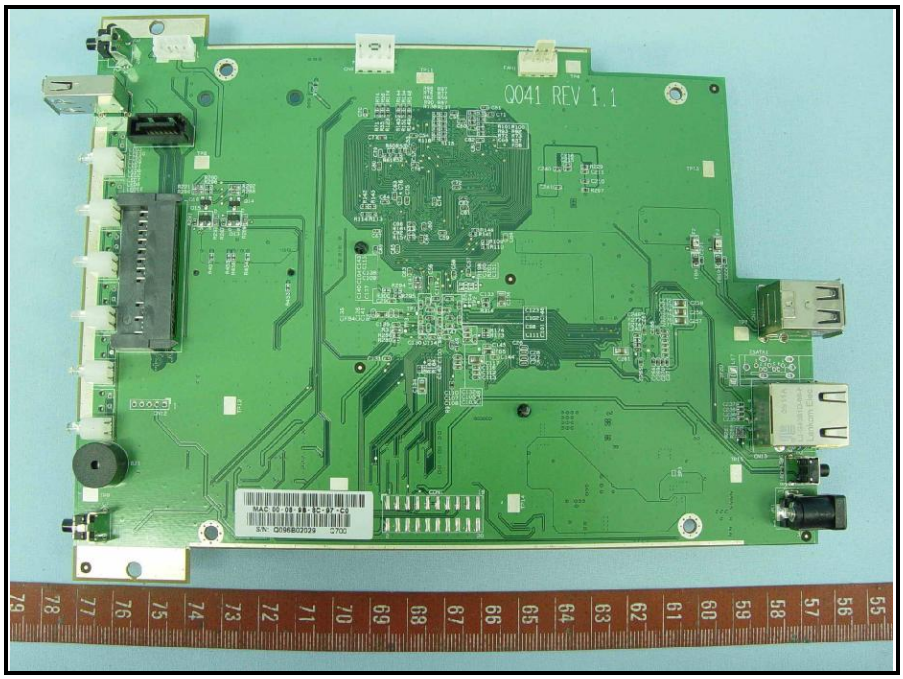


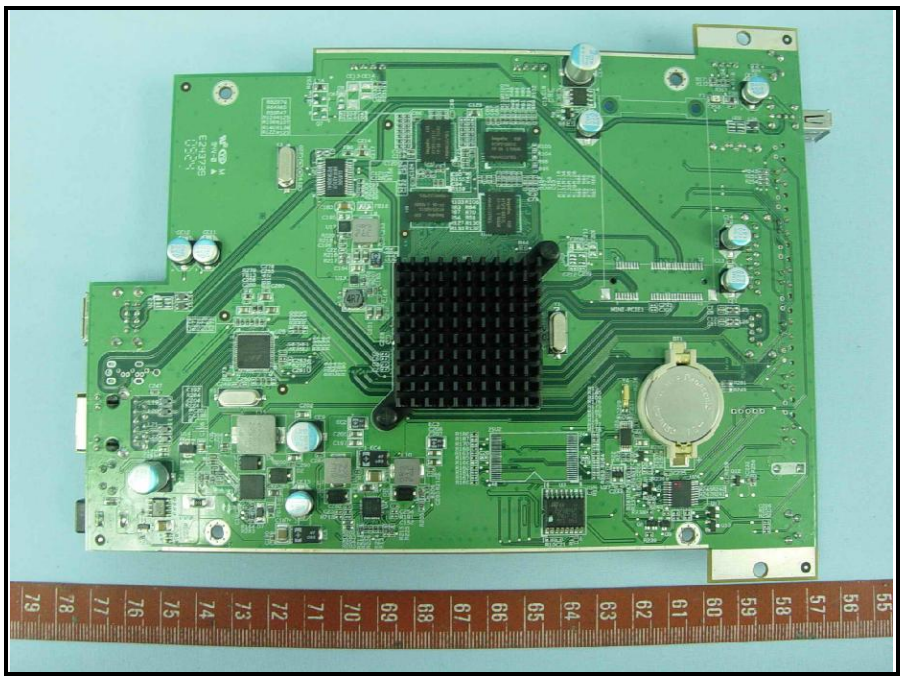

Western Digital
www.westerndigital.com
1.0TB
SATA / 32MB Cache
WD1001FALS
S/N : WMATV0333014
Master/Slave jumper not required for SATA
Jumpered pins 3 and 4 enable PUIS (Power Up In Standby)
SATA POWER
SERIAL DATA
FACTORY JUMPER SETTINGS
MDL : WD1001FALS-00J7B0
Product warranty will be void if seal, label or cover is removed or damaged.
Do not cover any drive holes.
WWN:50014EE000E5CC90
DATE: 17 OCT 2008
5VDC : 0.68A
DCM : HARNNV2CA
12VDC : 0.55A
LBA : 1953525168
R/N : 701567
U.S. Patents: 6178056, 5956196,6289484, 6263459
Product of Malaysia
Canada ICES-003 Class B/
NMB-003 Classe B
RoHS
FRAGILE
D33016
E101559
N3565
WDT-701567(B)
WD Caviar® Black™

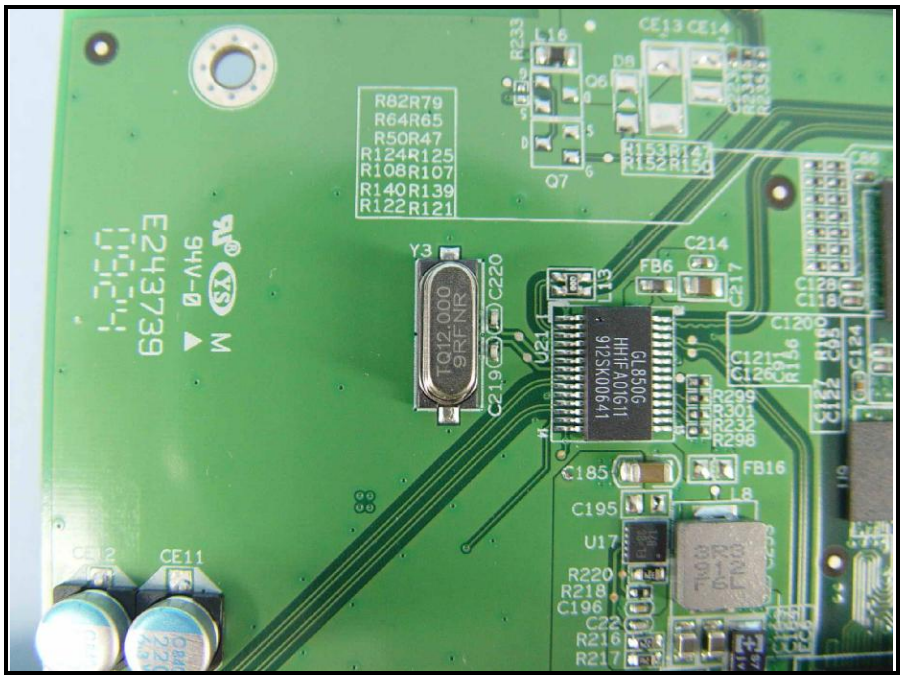


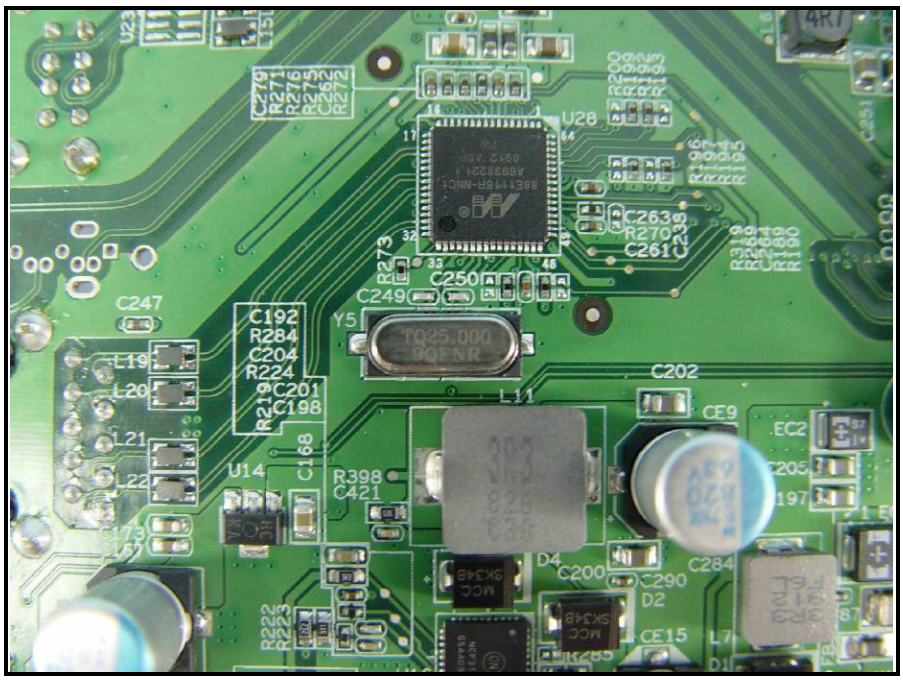


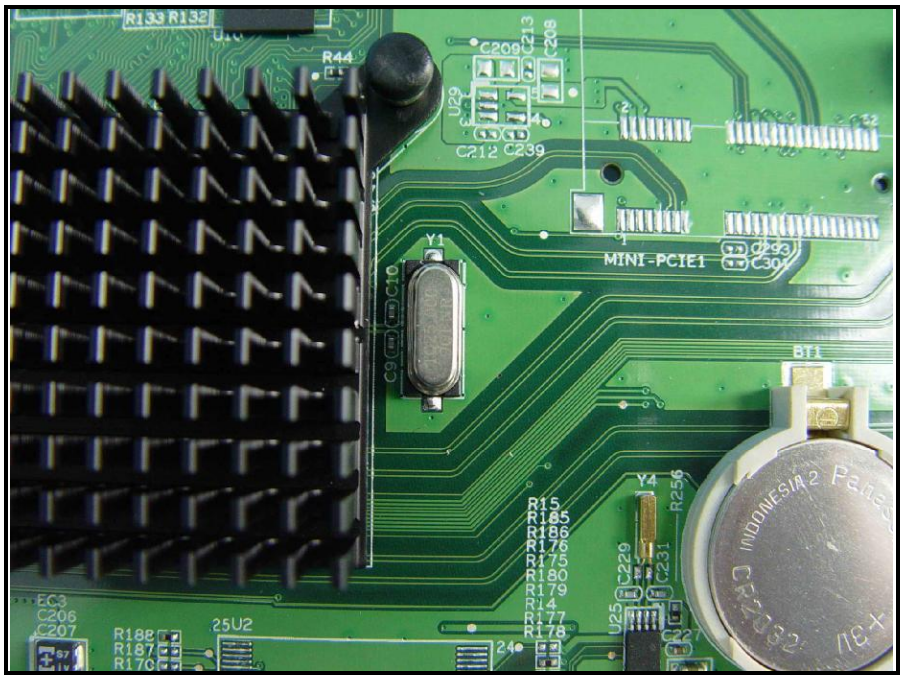

Q041 REV 1.1

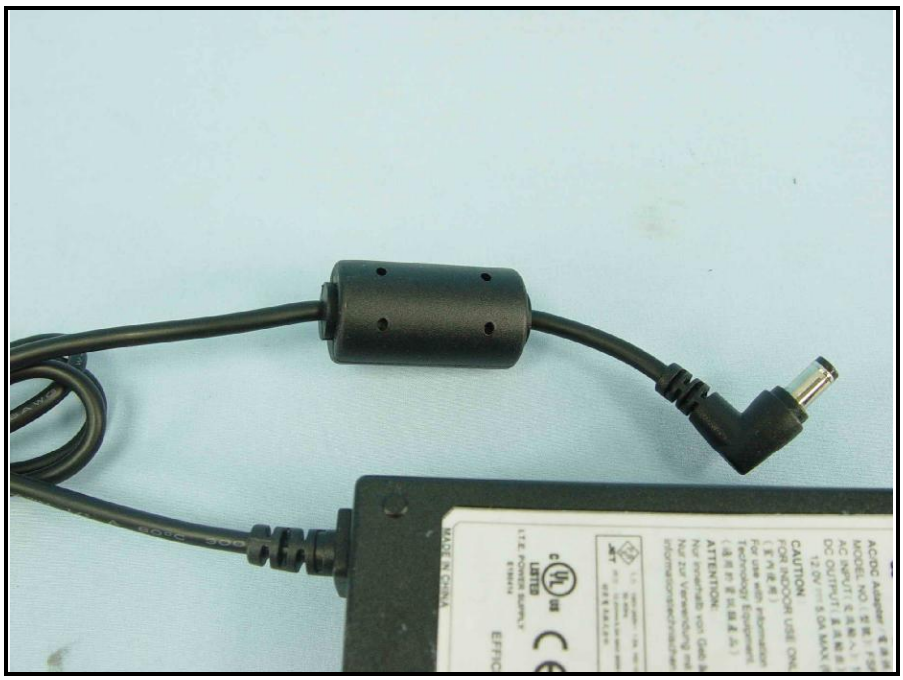

Q041 REV 1.1




R82R79
R64R65
R50R47
R124R125
R108R107
R140R139
R122R121
R233
L16
CE13 CE14
D8
Q6
Q7
R151R147
R152R150
Y3
C220
C219
U21
C214
FB6
C217
C122
C118
C120
C121
C126
R299
R301
R232
R298
C185
FB16
C195
U17
R220
R218
C196
C22
R216
R217
CE12
CE11
E243739
94V-0


U28
C263
R270
C261
C250
C249
Y5
C247
C192
R284
C204
R224
C201
C198
L19
L20
L21
L22
C168
U14
R398
C421
L11
C202
CE9
EC2
C205
C197
D4
C200
C290
D2
C284
CE15
R222
R223


R133 R132
R44
C209
C213
C208
U29
C212
C239
Y1
MINI-PCIE1
C293
C304
C10
C9
BT1
Y4
R256
R15
R185
R186
R176
R175
R180
R179
R14
R177
R178
C229
C231
U25
C227
EC3
C206
C207
R188
R187
R170
25U2
24




FSP GROUP INC.
全漢企業股份有限公司
AC/DC Adapter / 電源供應器
MODEL NO.(型號): FSP060-DBAB1
AC INPUT(交流輸入): 100-240V~, 1.5A,50-60Hz
DC OUTPUT(直流輸出):
12.0V ⎓ 5.0A MAX (60W MAX)
CAUTION :
FOR INDOOR USE ONLY.
(室內使用)
For use with information
Technology Equipment.
(適用於資訊類產品)
RoHS
ATTENTION:
Nur innerhalb von Geb äuden benutzen.
Nur zur Verwendung mit
informationstechnischen Einrichtungen.
R43001
JET
Tested to Comply
With FCC Standards
FOR HOME OR OFFICE USE
c UL us
LISTED
I.T.E. POWER SUPPLY
E190414
CE
EFFICIENCY LEVEL: V
MADE IN CHINA
6LL053980XGP XX

Rating Label

Rating Label Location

7 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.

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.

8 APPENDIX A – MODIFICATION 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 ---