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FCC TEST REPORT

REPORT NO.: RF960830H04A-1

MODEL NO.: SMCWBR14-3GN, MR3306A

RECEIVED: July 18, 2008

TESTED: Nov. 24 to Dec. 22, 2008

ISSUED: Dec. 26, 2008

APPLICANT: Accton Technology Corporation

ADDRESS: No.1, Creation Rd. III, Science-based Industrial 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

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1 CERTIFICATION

PRODUCT : 802.11b/g/n wireless AP/Router
BRAND NAME : SMC, Accton
MODEL NO. : SMCWBR14-3GN, MR3306A
TESTED : Nov. 24 to Dec. 22, 2008
APPLICANT : Accton Technology Corporation
TEST SAMPLE : R&D SAMPLE
STANDARDS : 47 CFR Part 15, Subpart C (Section 15.247)
ANSI C63.4-2003

The above equipment (Model: SMCWBR14-3GN) 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. 26, 2008
(Carol Liao, Specialist)

TECHNICAL ACCEPTANCE : Hank Chung , **DATE:** Dec. 26, 2008
Responsible for RF (Hank Chung, Deputy Manager)

APPROVED BY : May Chen , **DATE:** Dec. 26, 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 Section	Test Type and Limit	Result	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is -5.48 dB at 2.322 MHz
15.247(d)	Transmitter Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit Minimum passing margin is -3.62 dB at 3249.00

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 emissions	2.45 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	802.11b/g/n wireless AP/Router
MODEL NO.	SMCWBR14-3GN, MR3306A
FCC ID	HEDWBR143GN
POWER SUPPLY	DC 12V from switching adapter
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: 11 / 5.5 / 2 / 1Mbps 802.11g: 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6Mbps HT20 MCS0~7 (400ns GI): 72.2 / 65 / 57.8 / 43.3 / 28.9 / 21.7 / 14.4 / 7.2Mbps. HT20 MCS8~15 (400ns GI): 144.444 / 130 / 115.556 / 86.667 / 57.778 / 43.333 / 28.889 / 14.444Mbps. HT40 MCS0~7 (400ns GI): 150 / 135 / 120 / 90 / 60 / 45 / 30 / 15Mbps. HT40 MCS8~15 (400ns GI): 300 / 270 / 240 / 180 / 120 / 90 / 60 / 30Mbps.
FREQUENCY RANGE	802.11b & 802.11g: 2412 ~ 2462MHz
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, draft 802.11n (20MHz) 7 for draft 802.11n (40MHz)
MAXIMUM OUTPUT POWER	802.11b: 125.603mW 802.11g: 268.534mW draft 802.11n (20MHz): 384.288mW draft 802.11n (40MHz): 411.822mW
ANTENNA TYPE	Please see note 2 (on next page)
DATA CABLE	RJ45 cable (Unshielded, 1.5m)
I/O PORT	LAN Port x 4, WAN Port x 1, USB Port x 1



NOTE:

1. The EUT has two model names which are identical to each other in all aspects except for the followings:

Brand	Model Name	Description
SMC	SMCWBR14-3GN	For marketing requirement
Accton	MR3306A	

From the above models, model: **SMCWBR14-3GN** was selected as representative model for the test and its data was recorded in this report.

2. There are three antennas provided to this EUT, please refer to the following table:

Transmitter Circuit	Antenna Type	Gain (dBi)	Antenna Connector
Chain(0)	monopole	1.7	MHF 20351-1X1R-37
Chain(1)	monopole	1.7	MHF 20351-1X1R-37
Chain(2)	monopole	1.7	MHF 20351-1X1R-37

3. The EUT could be applied with one 3G GSM/UMTS Card and following three different models could be chosen; therefore emission tests are added for simultaneously transmit between wireless LAN and 3G GSM/UMTS function. The emission tests have been performed at the worst channel of both WLAN and 3G GSM/UMTS, and recorded in other report.

Modulation Technology	Interface	Brand name	Model name	FCC ID
GSM	HSDPA USB MODEM (3G Card)	HUAWEI	E220	QISE220
GSM/UMTS	3G Card	Sony Ericsson	MD300	PY7F3232021
GSM	3G Card	Band Luxe	C100S	UZI-C100

For conducted emissions, the EUT was pre-tested in chamber with above 3G GSM/UMTS Cards, the worst case was found in model: E220. For radiated emissions, all of above cards were performed and their test data were recorded in this report individually.

4. The EUT incorporates a MIMO function with draft 802.11n. Physically, the EUT provides two completed transmitter and three completed receivers.
5. The EUT is 2 * 3 spatial MIMO without beam forming function. The antenna configurations are two transmitter antennas and three receiver antennas, as there are 3 monopole antennas. Spatial multiplexing modes for simultaneous transmission using 2 antennas, and for simultaneous receiver using 3 antennas. The 11b/g legacy mode is limited to single transmitter only.



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6. When the EUT operating in draft 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 15.
7. The EUT complies with draft 802.11n standards and backwards compatible with 802.11b, 802.11g products.
8. The EUT operates in the 2.4GHz frequency spectrum with data rate up to 300Mbps.
9. The EUT must be supplied with a power adapter as following:

Brand:	UMEC
Model No.:	UP0181A-12PA
Input power :	AC100-240V, 50-60Hz, 0.4A
Output power :	DC 12V, 1.5A Cable:1.8m/unshielded/without core

10. The EUT, operates in the 2.4GHz frequency range, lets you connect IEEE 802.11g or IEEE 802.11b and draft 802.11n technique devices to the network.
11. 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

Eleven channels are provided for 802.11b, 802.11g, draft 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		

Seven channels are provided for draft 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2422MHz	5	2442MHz
2	2427MHz	6	2447MHz
3	2432MHz	7	2452MHz
4	2437MHz		

3.3 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:

EUT configure mode	Applicable to			Description
	PLC	RE<1G	RE≥1G	
A	√	√	√	Co-located (*Note 1)

Where PLC: Power Line Conducted Emission RE<1G RE: Radiated Emission below 1GHz
RE≥1G: Radiated Emission above 1GHz

Note1: Pre-Scan has been conducted to determine the worst case mode from antenna power.

Power Line Conducted Emission Test:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11g	1 to 11	11	OFDM	BPSK	6

Radiated Emission Test (Below 1 GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11g	1 to 11	11	OFDM	BPSK	6

- For spurious emissions, the EUT was tested as the following test modes:

Test Mode	Description
Mode 1	With 3G Card: E220
Mode 2	With 3G Card: MD300
Mode 3	With 3G Card: C100S

Radiated Emission Test (Above 1 GHz):

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below.

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11g	1 to 11	11	OFDM	BPSK	6

For spurious emissions, the EUT was tested as the following test modes:

Test Mode	Description
Mode 1	With 3G Card: E220
Mode 2	With 3G Card: MD300
Mode 3	With 3G Card: C100S

3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is an 802.11b/g/n wireless AP/Router. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

47 CFR Part 15, Subpart C. (15.247)
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 47 CFR Part 15, Subpart B, Class B (DoC). The test report has been issued separately.



3.5 DESCRIPTION OF SUPPORT UNITS

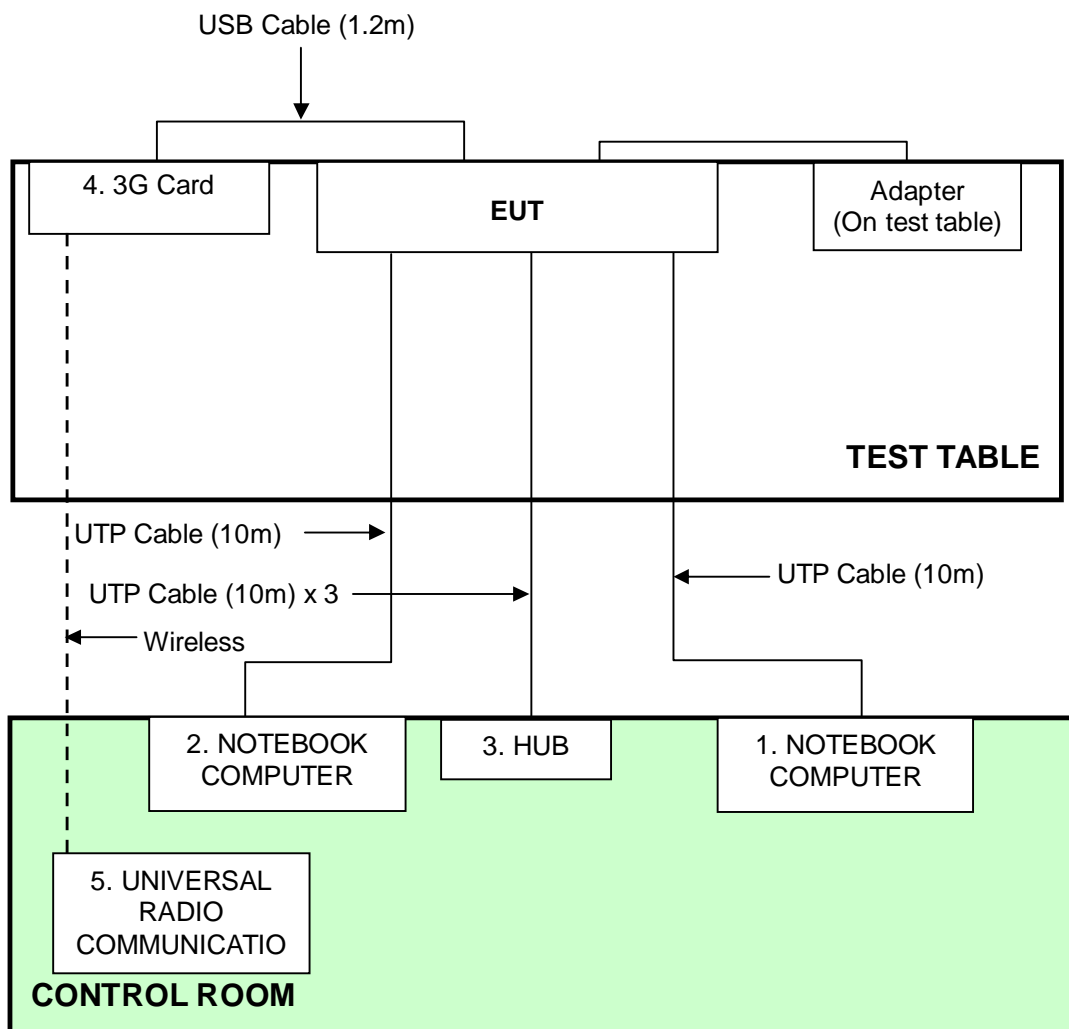
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP18L	6976685584	FCC DoC
2	NOTEBOOK COMPUTER	DELL	PP19L	CN-OHC416-70166-5C A-0448	PIW632500516610
3	HUB	AVSYS	110H8	01-20E-000002	DoC
4	3G Card	HUAWEI	E220	E01AA107C1700326	QISE220
		Sony Ericsson	MD300	NA	PY7F3232021
		Band Luxe	C100S	NA	UZI-C100
5	UNIVERSAL RADIO COMMUNICATION TESTER	R&S	CMU200	101095	NA

No.	Signal cable description
1	NA
2	NA
3	NA
4	1.2 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.
5	NA

Note: 1. All power cords of the above support units are unshielded (1.8m).

3.6 CONFIGURATION OF SYSTEM UNDER TEST



NOTE: 1. Support units 1-3 were kept in the control room during the test.



4 TEST TYPES 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	66 to 56	56 to 46
0.5-5	56	46
5-30	60	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

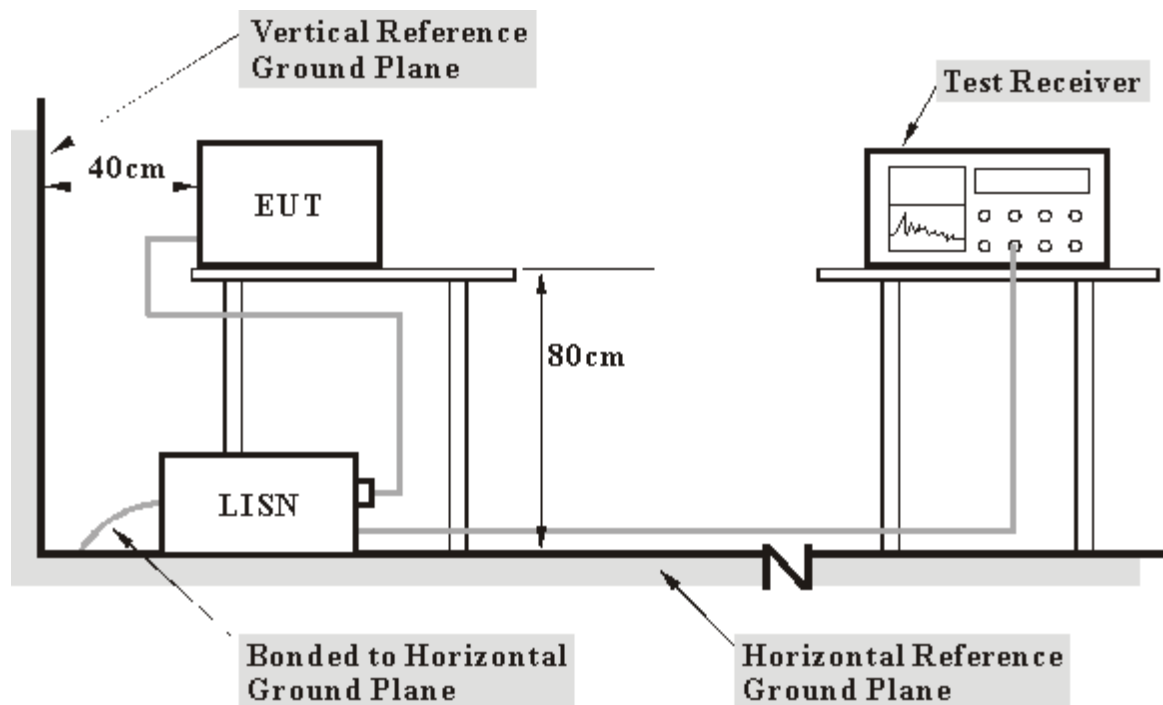
DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100287	Mar. 11, 2008	Mar. 10, 2009
Line-Impedance Stabilization Network(for EUT)	KNW-407	8-1395-12	May 07, 2008	May 06, 2009
Line-Impedance Stabilization Network(for Peripheral)	ENV-216	100072	June 13, 2008	June 12, 2009
RF Cable (JYEBAO)	5DFB	COACAB-0 01	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

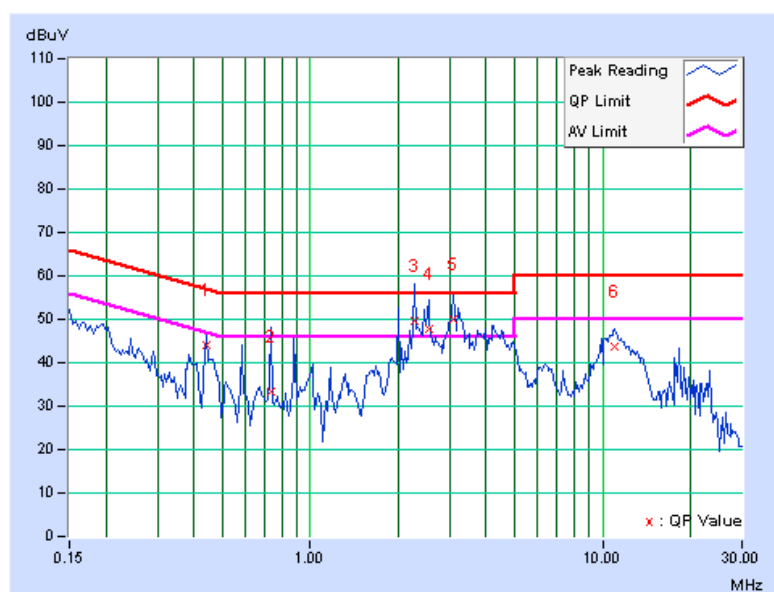
1. Placed the EUT on testing table.
2. The 3G card link support unit 5 (UNIVERSAL RADIO COMMUNICATION TESTER) via wireless.
3. Prepared other computer systems (support units 1 ~ 3) to act as communication partners and placed them outside of testing area.
4. The communication partners run test program “RT2880QA” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.1.6 TEST RESULTS

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 661	PHASE	Line (L)
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH, 970hPa	TESTED BY	Andy Ho

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	0.439	0.40	43.77	-	44.17	-	57.08
2	0.732	0.44	32.74	-	33.18	-	56.00	46.00	-22.82	-
3	2.274	0.47	48.97	38.41	49.45	38.88	56.00	46.00	-6.55	-7.12
4	2.535	0.47	47.18	39.07	47.65	39.54	56.00	46.00	-8.35	-6.46
5	3.094	0.48	49.57	39.44	50.05	39.92	56.00	46.00	-5.95	-6.08
6	10.996	0.64	43.03	-	43.67	-	60.00	50.00	-16.33	-

- 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.



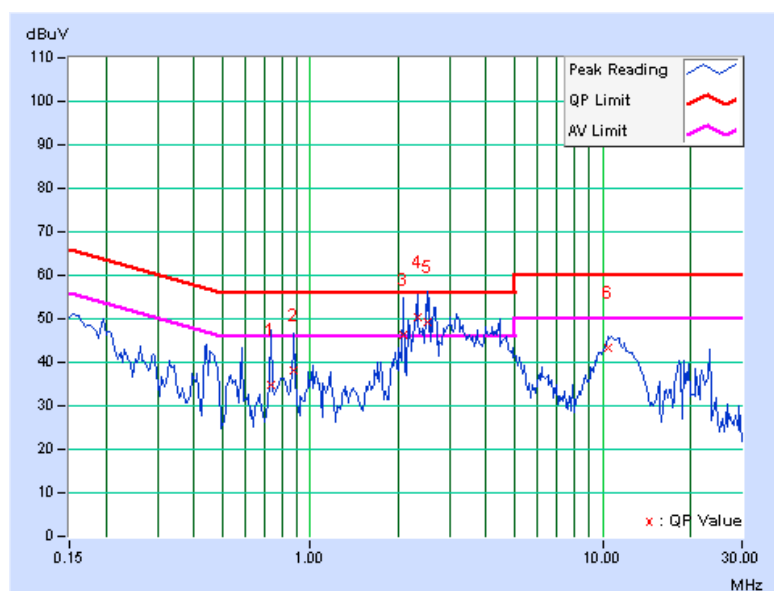


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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 661	PHASE	Neutral (N)
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	25deg. C, 70%RH, 970hPa	TESTED BY	Andy Ho

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	0.732	0.20	34.71	-	34.91	-	56.00
2	0.877	0.22	38.01	-	38.23	-	56.00	46.00	-17.77	-
3	2.078	0.25	45.91	33.88	46.16	34.13	56.00	46.00	-9.84	-11.87
4	2.322	0.25	50.27	39.56	50.52	39.81	56.00	46.00	-5.48	-6.19
5	2.504	0.25	49.04	39.52	49.29	39.77	56.00	46.00	-6.71	-6.23
6	10.472	0.43	42.78	-	43.21	-	60.00	50.00	-16.79	-

- 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

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

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.



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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	3008A0192 2	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. 09, 2008	Dec. 08, 2009
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA91701 53	Jan. 28, 2008	Jan. 27, 2009
RF Switches	EMH-011	08009	Oct. 07, 2008	Oct. 06, 2009
RF CABLE (Chaintek)	SF102	22054-2	Dec. 06, 2008	Dec. 05, 2009
RF Cable	8DFB	STCCAB-30 M-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.

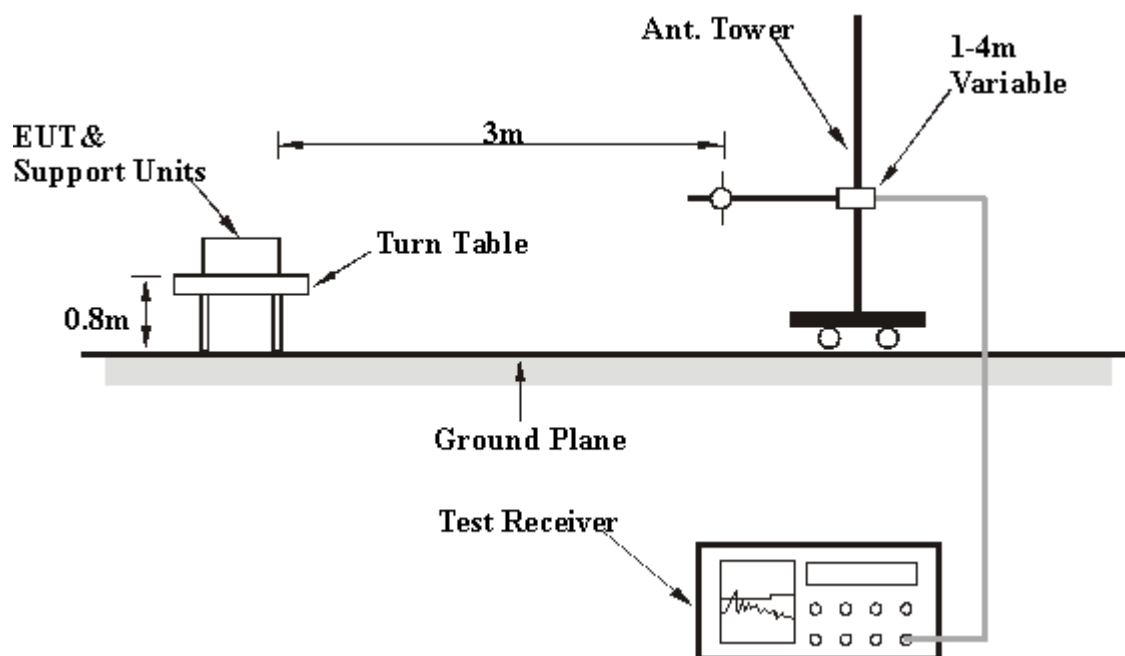
4.2.3 TEST PROCEDURES

- 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 and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection 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 TEST SETUP



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

4.2.5 EUT OPERATING CONDITIONS

Same as 4.1.5



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4.2.6 TEST RESULTS

Below 1GHz WORST-CASE DATA :

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 661	FREQUENCY RANGE	30-1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 965hPa	TESTED BY	Eric Lee
TEST MODE	Mode 1		

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	125.00	29.24 QP	43.50	-14.26	1.64 H	253	15.78	13.46
2	240.01	38.44 QP	46.00	-7.56	1.00 H	73	24.41	14.03
3	300.02	36.46 QP	46.00	-9.54	1.11 H	159	20.28	16.18
4	333.33	38.46 QP	46.00	-7.54	1.00 H	186	20.94	17.52
5	375.02	36.54 QP	46.00	-9.46	1.00 H	145	17.38	19.16
6	446.05	35.30 QP	46.00	-10.70	1.00 H	154	14.64	20.66
7	660.04	30.64 QP	46.00	-15.36	1.06 H	65	5.89	24.75
8	780.05	35.67 QP	46.00	-10.33	1.00 H	126	7.80	27.87
9	800.00	36.32 QP	46.00	-9.68	1.15 H	123	7.87	28.45
10	900.06	36.32 QP	46.00	-9.68	1.00 H	78	6.76	29.56

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	72.00	36.24 QP	40.00	-3.76	1.00 V	346	23.50	12.74
2	125.00	28.31 QP	43.50	-15.19	1.00 V	212	14.19	14.12
3	250.00	32.43 QP	46.00	-13.57	1.00 V	79	17.01	15.42
4	400.00	31.60 QP	46.00	-14.40	1.18 V	124	10.46	21.14
5	446.05	36.77 QP	46.00	-9.23	1.09 V	149	14.93	21.84
6	500.01	31.60 QP	46.00	-14.40	1.32 V	145	8.94	22.66
7	766.66	30.37 QP	46.00	-15.63	1.13 V	257	1.42	28.95
8	780.05	30.65 QP	46.00	-15.35	1.22 V	276	1.30	29.35
9	900.06	33.33 QP	46.00	-12.67	1.76 V	301	2.32	31.01

- 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.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 512	FREQUENCY RANGE	30-1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 965hPa	TESTED BY	Eric Lee
TEST MODE	Mode 2		

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	125.01	28.64 QP	43.50	-14.86	1.52 H	58	14.52	14.12
2	240.00	41.83 QP	46.00	-4.17	1.01 H	67	26.90	14.93
3	300.01	39.37 QP	46.00	-6.63	1.68 H	95	22.35	17.02
4	333.33	40.70 QP	46.00	-5.30	1.36 H	276	22.32	18.38
5	375.01	41.66 QP	46.00	-4.34	1.47 H	21	21.56	20.10
6	446.04	38.82 QP	46.00	-7.18	1.78 H	95	16.98	21.84
7	660.04	33.98 QP	46.00	-12.02	1.11 H	208	7.84	26.14
8	780.06	38.44 QP	46.00	-7.56	1.50 H	9	9.09	29.35
9	800.00	37.58 QP	46.00	-8.42	1.52 H	42	7.64	29.94
10	900.05	39.99 QP	46.00	-6.01	1.24 H	353	8.98	31.01
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	72.00	26.33 QP	40.00	-13.67	1.30 V	103	13.59	12.74
2	125.01	28.35 QP	43.50	-15.15	1.00 V	260	14.23	14.12
3	200.00	25.22 QP	43.50	-18.28	1.01 V	23	12.24	12.98
4	250.00	29.95 QP	46.00	-16.05	1.32 V	6	14.53	15.42
5	400.00	34.82 QP	46.00	-11.18	1.02 V	87	13.68	21.14
6	446.05	35.61 QP	46.00	-10.39	1.22 V	284	13.77	21.84
7	500.00	32.34 QP	46.00	-13.66	1.65 V	263	9.68	22.66
8	766.66	30.85 QP	46.00	-15.15	1.32 V	63	1.90	28.95
9	780.06	32.94 QP	46.00	-13.06	1.00 V	348	3.59	29.35
10	900.07	34.85 QP	46.00	-11.15	1.00 V	21	3.84	31.01

- 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.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 251	FREQUENCY RANGE	30-1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 965hPa	TESTED BY	Eric Lee
TEST MODE	Mode 3		

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	125.01	30.35 QP	43.50	-13.15	1.45 H	279	16.23	14.12
2	240.00	41.80 QP	46.00	-4.20	1.02 H	324	26.87	14.93
3	300.01	39.56 QP	46.00	-6.44	1.47 H	54	22.54	17.02
4	333.33	41.06 QP	46.00	-4.94	1.02 H	324	22.68	18.38
5	375.01	39.99 QP	46.00	-6.01	1.47 H	258	19.89	20.10
6	446.06	38.64 QP	46.00	-7.36	1.00 H	96	16.80	21.84
7	660.03	35.61 QP	46.00	-10.39	1.00 H	320	9.47	26.14
8	780.06	38.89 QP	46.00	-7.11	1.16 H	90	9.54	29.35
9	800.00	35.39 QP	46.00	-10.61	1.02 H	24	5.45	29.94
10	900.05	39.25 QP	46.00	-6.75	1.01 H	102	8.24	31.01
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	72.01	34.53 QP	40.00	-5.47	1.01 V	8	21.79	12.74
2	125.01	30.11 QP	43.50	-13.39	1.20 V	9	15.99	14.12
3	250.01	30.66 QP	46.00	-15.34	1.01 V	246	15.24	15.42
4	400.00	35.04 QP	46.00	-10.96	1.47 V	247	13.90	21.14
5	446.05	34.37 QP	46.00	-11.63	1.00 V	295	12.53	21.84
6	500.02	32.56 QP	46.00	-13.44	1.86 V	63	9.90	22.66
7	766.65	32.63 QP	46.00	-13.37	1.00 V	212	3.68	28.95
8	780.06	33.96 QP	46.00	-12.04	1.56 V	326	4.61	29.35
9	900.05	35.88 QP	46.00	-10.12	1.74 V	312	4.87	31.01

- 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.



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Above 1GHz WORST-CASE DATA :

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 661	FREQUENCY RANGE	1 ~ 17.5GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 965hPa	TESTED BY	Eric Lee
TEST MODE	Mode 1		

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	3249.00	47.12 PK	74.00	-26.88	1.04 H	110	15.01	32.11
2	3249.00	37.23 AV	54.00	-16.77	1.04 H	89	5.12	32.11
3	3840.00	46.32 PK	74.00	-27.68	1.73 H	73	13.12	33.20
4	3840.00	38.24 AV	54.00	-15.76	1.64 H	98	5.04	33.20
5	4874.00	46.23 PK	74.00	-27.77	1.74 H	121	10.68	35.55
6	4874.00	34.21 AV	54.00	-19.79	1.75 H	109	-1.34	35.55
7	7311.00	52.33 PK	74.00	-21.67	1.67 H	267	10.29	42.04
8	7311.00	37.34 AV	54.00	-16.66	1.69 H	246	-4.70	42.04

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	3249.00	51.03 PK	74.00	-22.97	1.00 V	287	18.82	32.21
2	3249.00	50.38 AV	54.00	-3.62	1.00 V	218	18.17	32.21
3	3840.00	49.33 PK	74.00	-24.67	1.01 V	312	16.20	33.13
4	3840.00	45.23 AV	54.00	-8.77	1.01 V	326	12.10	33.13
5	4874.00	48.31 PK	74.00	-25.69	1.00 V	245	12.69	35.62
6	4874.00	34.31 AV	54.00	-19.69	1.00 V	212	-1.31	35.62
7	7311.00	53.12 PK	74.00	-20.88	1.03 V	152	11.85	41.27
8	7311.00	37.45 AV	54.00	-16.55	1.03 V	102	-3.82	41.27

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.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 512	FREQUENCY RANGE	1 ~ 17.5GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 965hPa	TESTED BY	Eric Lee
TEST MODE	Mode 2		

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	1920.00	41.24 PK	74.00	-32.76	1.58 H	2	12.78	28.46
2	1920.00	29.42 AV	54.00	-24.58	1.58 H	2	0.96	28.46
3	3282.00	45.37 PK	74.00	-28.63	1.33 H	132	13.23	32.14
4	3282.00	38.91 AV	54.00	-15.09	1.33 H	132	6.77	32.14
5	3840.00	45.18 PK	74.00	-28.82	1.03 H	283	11.98	33.20
6	3840.00	36.11 AV	54.00	-17.89	1.03 H	283	2.91	33.20
7	4924.00	45.73 PK	74.00	-28.27	1.70 H	183	10.10	35.63
8	4924.00	32.80 AV	54.00	-21.20	1.70 H	183	-2.83	35.63
9	7386.00	51.50 PK	74.00	-22.50	1.43 H	46	9.27	42.23
10	7386.00	37.04 AV	54.00	-16.96	1.43 H	46	-5.19	42.23

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	3282.00	52.89 PK	74.00	-21.11	1.01 V	359	20.75	32.14
2	3282.00	49.97 AV	54.00	-4.03	1.01 V	359	17.83	32.14
3	3840.00	50.02 PK	74.00	-23.98	1.00 V	288	16.82	33.20
4	3840.00	45.32 AV	54.00	-8.68	1.00 V	288	12.12	33.20
5	4924.00	46.03 PK	74.00	-27.97	1.50 V	69	10.40	35.63
6	4924.00	33.50 AV	54.00	-20.50	1.50 V	69	-2.13	35.63
7	7386.00	52.93 PK	74.00	-21.07	1.04 V	319	10.70	42.23
8	7386.00	39.04 AV	54.00	-14.96	1.04 V	319	-3.19	42.23

- 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.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 251	FREQUENCY RANGE	1 ~ 17.5GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 965hPa	TESTED BY	Eric Lee
TEST MODE	Mode 3		

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	1920.00	41.24 PK	74.00	-32.76	1.30 H	227	12.78	28.46
2	1920.00	30.54 AV	54.00	-23.46	1.30 H	227	2.08	28.46
3	3282.00	46.37 PK	74.00	-27.63	1.03 H	196	14.23	32.14
4	3282.00	37.91 AV	54.00	-16.09	1.03 H	196	5.77	32.14
5	3840.00	45.18 PK	74.00	-28.82	1.03 H	283	11.98	33.20
6	3840.00	36.11 AV	54.00	-17.89	1.03 H	283	2.91	33.20
7	4924.00	45.73 PK	74.00	-28.27	1.70 H	183	10.10	35.63
8	4924.00	32.80 AV	54.00	-21.20	1.70 H	183	-2.83	35.63
9	7386.00	51.50 PK	74.00	-22.50	1.43 H	46	9.27	42.23
10	7386.00	37.04 AV	54.00	-16.96	1.43 H	46	-5.19	42.23

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	1920.00	42.32 PK	74.00	-31.68	1.54 V	24	13.56	28.76
2	1920.00	27.54 AV	54.00	-26.46	1.54 V	24	-1.22	28.76
3	3282.00	51.99 PK	74.00	-22.01	1.00 V	360	19.30	32.69
4	3282.00	49.16 AV	54.00	-4.84	1.00 V	360	16.47	32.69
5	3840.00	49.45 PK	74.00	-24.55	1.00 V	288	15.51	33.94
6	3840.00	44.57 AV	54.00	-9.43	1.00 V	288	10.63	33.94
7	4924.00	46.03 PK	74.00	-27.97	1.50 V	69	8.97	37.06
8	4924.00	33.50 AV	54.00	-20.50	1.50 V	69	-3.56	37.06
9	7386.00	52.93 PK	74.00	-21.07	1.04 V	319	9.80	43.13
10	7386.00	39.04 AV	54.00	-14.96	1.04 V	319	-4.09	43.13

- 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.



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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, 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:

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Fax: 886-2-26051924

Hsin Chu EMC/RF Lab:

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Web Site: www.adt.com.tw

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



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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.

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