



FCC TEST REPORT (RFID)

REPORT NO.: RF981005A05-4
MODEL NO.: T7Mxxxxxx
– multiple listing see item 3.1
RECEIVED: Oct. 5, 2009
TESTED: Nov. 16 ~ Dec. 4, 2009
ISSUED: March 30, 2010

APPLICANT: TWINHEAD INTERNATIONAL CORP.

ADDRESS: 10F, No. 550, Rueiguang Rd., Neihu Chiu,
Taipei, Taiwan 114, R.O.C.

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

LAB ADDRESS: No. 47, 14th Ling, Chia Pau Tsuen, Lin Kou
Hsiang, Taipei Hsien 244, Taiwan

This test report consists of 31 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product endorsement by TAF or any government agencies. The test results in the report only apply to the tested sample.





Table of Contents

1	CERTIFICATION	3
2	SUMMARY OF TEST RESULTS.....	4
2.1	MEASUREMENT UNCERTAINTY	4
3	GENERAL INFORMATION	5
3.1	GENERAL DESCRIPTION OF EUT.....	5
3.1	DESCRIPTION OF TEST MODES.....	7
3.1.1	CONFIGURATION OF SYSTEM UNDER TEST.....	7
3.1.2	TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL	8
3.2	GENERAL DESCRIPTION OF APPLIED STANDARDS	10
3.3	DESCRIPTION OF SUPPORT UNITS.....	10
4	TEST PROCEDURE AND RESULT	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 INSTRUMENT	17
4.2.3	TEST PROCEDURE	18
4.2.4	DEVIATION FROM TEST STANDARD	18
4.2.5	TEST SETUP	19
4.2.6	EUT OPERATING CONDITION	19
4.2.7	TEST RESULT	20
4.3	FREQUENCY STABILITY	26
4.3.1	LIMITS OF FREQUENCY STABILITY MEASUREMENT	26
4.3.2	TEST INSTRUMENTS	26
4.3.3	TEST PROCEDURE	26
4.3.4	DEVIATION FROM TEST STANDARD	26
4.3.5	TEST SETUP	27
4.3.6	EUT OPERATING CONDITION	27
4.3.7	TEST RESULTS.....	28
5	PHOTOGRAPHS OF THE TEST CONFIGURATION.....	29
6	INFORMATION ON THE TESTING LABORATORIES	30
7	APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB.....	31



1 CERTIFICATION

PRODUCT: Tablet PC
BRAND NAME: DURABOOK, TabletKiosk, MobileDemand™, PaceBlade, LOGIC INSTRUMENT
MODEL NO: T7Mxxxxxx – multiple listing see item 3.1
APPLICANT: TWINHEAD INTERNATIONAL CORP.
TESTED: Nov. 16 ~ Dec. 4, 2009
TEST SAMPLE: R&D SAMPLE
STANDARDS: FCC Part 15, Subpart C (Section 15.225)
ANSI C63.4-2003

The above equipment (Model: T7MD1) 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 : Annie Chang , **DATE:** March 30, 2010
(Annie Chang / Senior Specialist)

TECHNICAL ACCEPTANCE : Jamison Chan , **DATE:** March 30, 2010
Responsible for RF (Jamison Chan / Supervisor)

APPROVED BY : Ken Liu , **DATE:** March 30, 2010
(Ken Liu / Assistant Manager)

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.225)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -11.48dB at 13.560MHz
15.225(a)	Field Strength	PASS	Meet the requirement of limit.
15.225(d)	Radiated Emission	PASS	Meet the requirement of limit. Minimum passing margin is -1.6dB at 67.31MHz
15.225(e)	Frequency Stability	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 16-4-2:

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

Measurement	Uncertainty
Conducted emissions	2.44 dB
Radiated emissions	3.86 dB



3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Tablet PC
MODEL NO.	T7Mxxxxxx – multiple listing see below
FCC ID	FKGT7M
POWER SUPPLY	19Vdc from AC adapter or 7.4Vdc from Battery
MODULATION TYPE	ASK
OPERATING FREQUENCY	13.56MHz
NUMBER OF CHANNEL	1
ANTENNA TYPE	Loop antenna
ANTENNA CONNECTOR	N/A
DATA CABLE	N/A
I/O PORTS	N/A
ASSOCIATED DEVICES	Refer to note below

NOTE:

- The EUT is a Tablet PC, the functions of EUT listed as below:

Function	Test Standard	Reference Report
WLAN IEEE802.11abgn Mini-PCI Card (Brand: Intel, Model: 512AN)	WLAN 802.11bgn	FCC Part 15, Subpart C (Section 15.247) RF981005A05
	WLAN 802.11an (5745~5825 MHz)	
	WLAN 802.11an (5180~5320MHz, 5500~5700MHz)	FCC Part 15, Subpart E (Section 15.407) RF981005A05-1
	WLAN 802.11a (For DFS report) (Model: T7MD1) (5260~5320MHz, 5500~5700MHz)	FCC Part 15, Subpart E (Section 15.407) RF981005A05-2
	WLAN 802.11a (For DFS report) (Model: T7MK1) (5260~5320MHz, 5500~5700MHz)	FCC Part 15, Subpart E (Section 15.407) RF981005A05-5
	WLAN 802.11a (For DFS report) (Model: T7ML1) (5260~5320MHz, 5500~5700MHz)	FCC Part 15, Subpart E (Section 15.407) RF981005A05-6
Bluetooth module (Brand: Billionton, Model: GUBTCR42M)	FCC Part 15, Subpart C (Section 15.247)	RF981005A05-3
RFID (Brand: Microprogram, Model: R-07050S1S8)	FCC Part 15, Subpart C (Section 15.225)	RF981005A05-4

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

BRAND	MODEL NO.	DESCRIPTION
DURABOOK	T7Mxxxxxx ("x" = 0~9, A~Z or blank)	For marketing different
TabletKiosk	a72xxxx ("x" = 0~9, A~Z or blank)	
MobileDemand™	xTablet® T7000XXXX ("x" = 0~9, A~Z or blank)	
PaceBlade	Pacebook RD7 series	
LOGIC INSTRUMENT	FIELDBOOK	

During the test, the **model no.: T7MD1** was selected as the representative model and only its test data was recorded in this report.

The Model: T7Mxxxxxx has three samples, which are identical to each other except for their interface differences only, as the below:

MODEL NO.	T7MD1	T7MK1	T7ML1
INTERFACE DESCRIPTION	USB x2 DB9 Card Reader (Express card & SD Card)	Audio x2 (Microphone & headphone) USB x2 RJ-45 Card Reader (Express card & SD Card)	Audio x2 (Microphone & headphone) USB x2 RJ-45 Card Reader (PCMCIA & SD Card)

The above three samples were tested, during the test, the **model no.: T7MD1** was the worst case and only its test data was recorded in this report.

3. The EUT consumes power from an AC adapter or battery, as follows:

BRAND	MODEL NO.	SPEC.
FSP	FSP065-RAB	AC I/P: 100-240V, 1.5A, 50-60Hz DC O/P: 19V, 3.42A Non-shielded AC 3-pin (1.8m) Non-shielded DC (1.8m) with one ferrite core
FSP	T7M	7.4Vdc 2580mAh

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

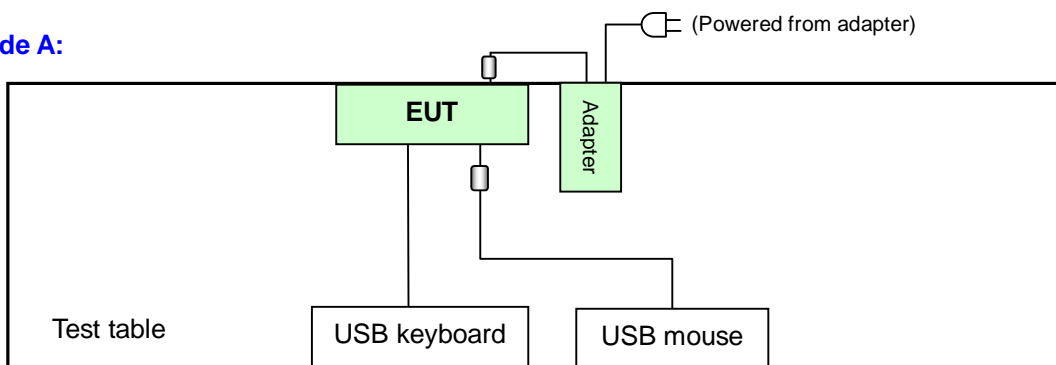
3.1 DESCRIPTION OF TEST MODES

1 channel was provided to this EUT.

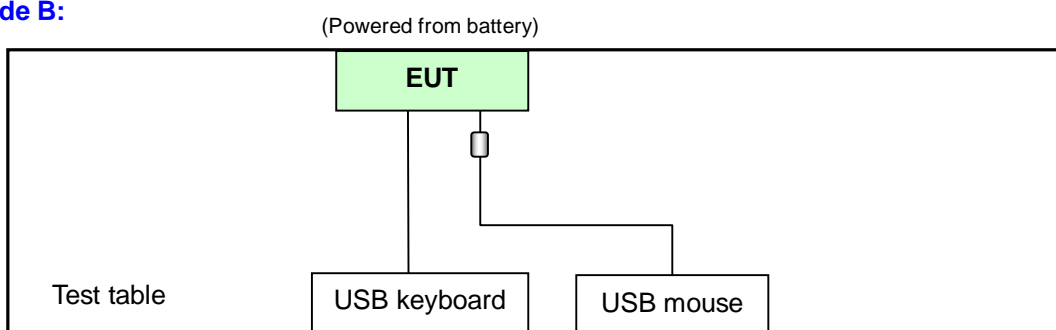
Channel	FREQUENCY (MHz)
1	13.56

3.1.1 CONFIGURATION OF SYSTEM UNDER TEST

Mode A:



Mode B:



3.1.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:

EUT CONFIGURE MODE	APPLICABLE TO			DESCRIPTION
	PLC	RE	FS	
A	√	√	√	EUT w. AC adapter
B	Note	√	√	EUT w. Battery

Where **PLC**: Power Line Conducted Emission
RE: Radiated Emission
FS: Frequency Stability

Note: No need to concern of Conducted Emission due to the EUT is powered by batteries.

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, XYZ Axis and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE	AXIS
A	1	1	ASK	X

RADIATED EMISSION TEST:

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

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE	AXIS
A & B	1	1	ASK	X

FREQUENCY STABILITY:

- 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.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE
A & B	1	1	ASK

TEST CONDITION:

APPLICABLE TO	EUT CONFIGURE MODE	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
PLC	A	20deg. C, 85% RH, 1017hPa	120Vac, 60Hz	Nick Chen
RE	A	20deg. C, 76% RH, 1013hPa	120Vac, 60Hz	Nick Chen
	B	20deg. C, 76% RH, 1013hPa	7.4Vdc	Nick Chen
FS	A	20deg. C, 85% RH, 1017hPa	120Vac, 60Hz	Nick Chen
	B	20deg. C, 85% RH, 1017hPa	7.4Vdc	Nick Chen

3.2 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.225)
ANSI C63.4-2003

All test items 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.

3.3 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	USB KEYBOARD	BTC	5200U	G09302046659	E5XKB5122U
2	USB MOUSE	MICROSOFT	X800898	9241804-30608	FCC DoC Approved

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	1.5 m braid shielded wire, terminated with USB connector via drain wire, w/o core.
2	1.8 m foil shielded wire, terminated with USB connector via drain wire, with 1 core.

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

4 TEST PROCEDURE AND RESULT

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. 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.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	838251/021	Mar. 05, 2009	Mar. 04, 2010
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH3-Z5	100218	Nov. 24, 2008	Nov. 23, 2009
LISN With Adapter (for EUT)	AD10	C10Ada-001	Nov. 24, 2008	Nov. 23, 2009
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	100219	Nov. 23, 2009	Nov. 22, 2010
Software	ADT_Cond_V7.3.7	NA	NA	NA
Software	ADT_ISN_V7.3.7	NA	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C10.01	Feb. 26, 2009	Feb. 25, 2010
SUHNER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-010773	Feb. 27, 2009	Feb. 26, 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 Shielded Room No. 10.
 3. The VCCI Site Registration No. C-1852.

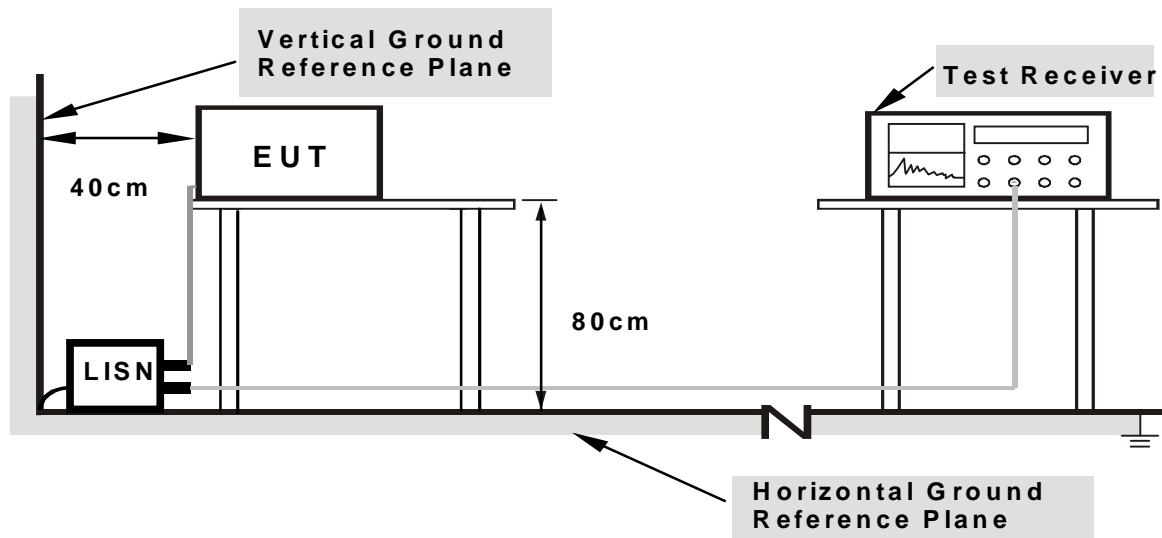
4.1.3 TEST PROCEDURES

- 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 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were 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 80cm from EUT and at least 80cm 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.

4.1.6 EUT OPERATING CONDITIONS

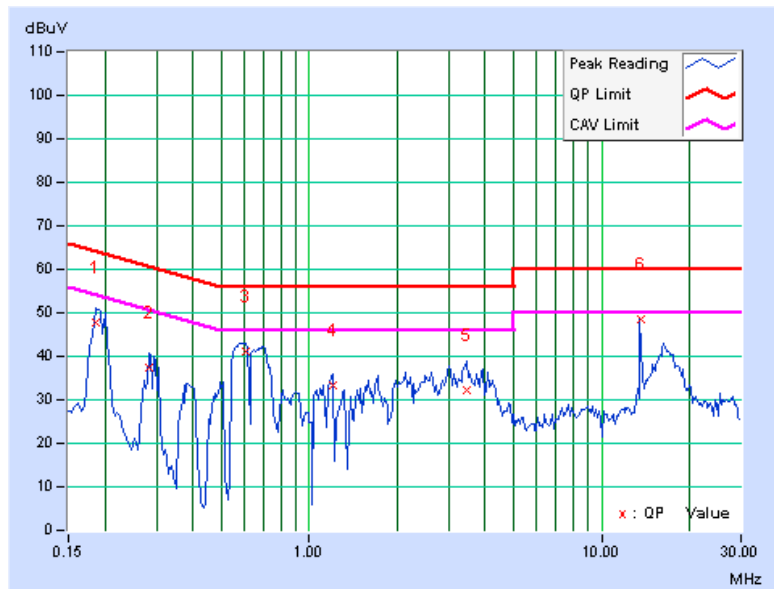
- Turn on the power of all equipment.
- The Tablet PC (EUT) ran a test program (provided by manufacture) to enable it under transmitting condition at specific channel continuously.
- The Tablet PC (EUT) sent messages to LCD panel and displayed on its screen.
- Repeated c ~ d.

4.1.7 TEST RESULTS

PHASE	Line 1	6dB BANDWIDTH	9 kHz
TEST MODE	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.186	0.13	47.81	-	47.94	-	64.19	54.19	-16.26	-
2	0.283	0.17	37.32	-	37.49	-	60.73	50.73	-23.24	-
3	0.607	0.25	40.73	-	40.98	-	56.00	46.00	-15.02	-
4	1.211	0.30	32.85	-	33.15	-	56.00	46.00	-22.85	-
5	3.444	0.48	31.92	-	32.40	-	56.00	46.00	-23.60	-
6	13.560	1.05	47.47	-	48.52	-	60.00	50.00	-11.48	-

- 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.



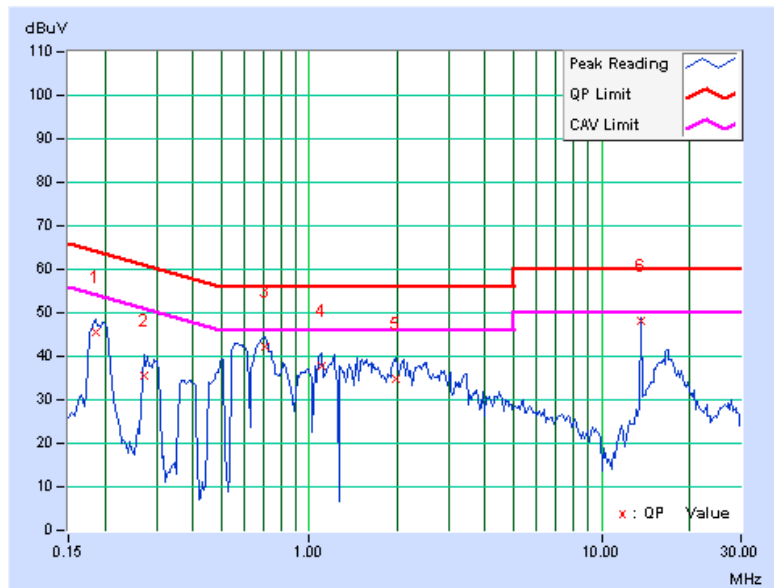


A D T

PHASE	Line 2	6dB BANDWIDTH	9 kHz
TEST MODE	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.185	0.13	45.55	-	45.68	-	64.25	54.25	-18.57	-
2	0.271	0.17	35.45	-	35.62	-	61.08	51.08	-25.47	-
3	0.705	0.30	41.89	-	42.19	-	56.00	46.00	-13.81	-
4	1.105	0.38	37.45	-	37.83	-	56.00	46.00	-18.17	-
5	1.984	0.45	34.47	-	34.92	-	56.00	46.00	-21.08	-
6	13.561	0.93	47.31	-	48.24	-	60.00	50.00	-11.76	-

- 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 15.225 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)
13.553 – 13.567	Quasi-Peak
	124

Field strength limits are at the distance of 3 meters, 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.



4.2.2 TEST INSTRUMENT

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
HP Preamplifier	8447D	2432A03504	May 04, 2009	May 03, 2010
HP Preamplifier	8449B	3008A01924	Aug. 31, 2009	Aug. 30, 2010
HP Preamplifier	8449B	3008A01292	Aug. 10, 2009	Aug. 09, 2010
ROHDE & SCHWARZ TEST RECEIVER	ESU26	100005	Jun. 06, 2009	Jun. 05, 2010
Schwarzbeck Antenna	VULB 9168	137	Apr. 29, 2009	Apr. 28, 2010
Schwarzbeck Antenna	VHBA 9123	480	Apr. 21, 2009	Apr. 20, 2010
ADT. Turn Table	TT100	0306	NA	NA
ADT. Tower	AT100	0306	NA	NA
Software	ADT_Radiated_V 7.6.15.9.2	NA	NA	NA
SUHNER RF cable	SF104-26.5	CABLE-CH6-17m -01	Aug. 20, 2009	Aug. 19, 2010
ROHDE & SCHWARZ Spectrum Analyzer	FSP 40	100036	Apr. 03, 2009	Apr. 02, 2010
Loop Antenna R & S	HFH2-Z2	100070	Jan. 14, 2008	Jan. 13, 2010

- NOTE:**
1. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to NML/ROC and NIST/USA.
 2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 3. The test was performed in Chamber No. 6.
 4. The Industry Canada Reference No. IC 7450E-6.
 5. The FCC Site Registration No. is 447212.

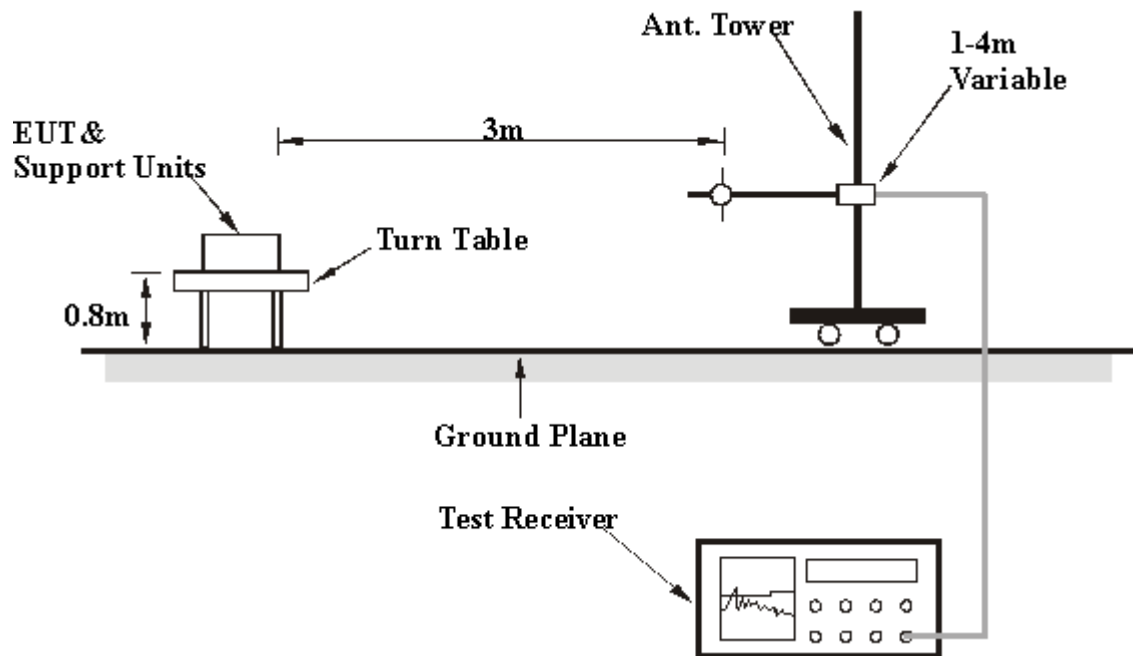
4.2.3 TEST PROCEDURE

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna 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. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak method or average method as specified and then reported in data sheet.
- g. For measurement of frequency above 1000 MHz, the EUT was set 3 meters away from the interference antenna and the detect function was set to Peak or Average.

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 in this test report - Photographs of the Test Configuration.

4.2.6 EUT OPERATING CONDITION

Same as item 4.1.6.



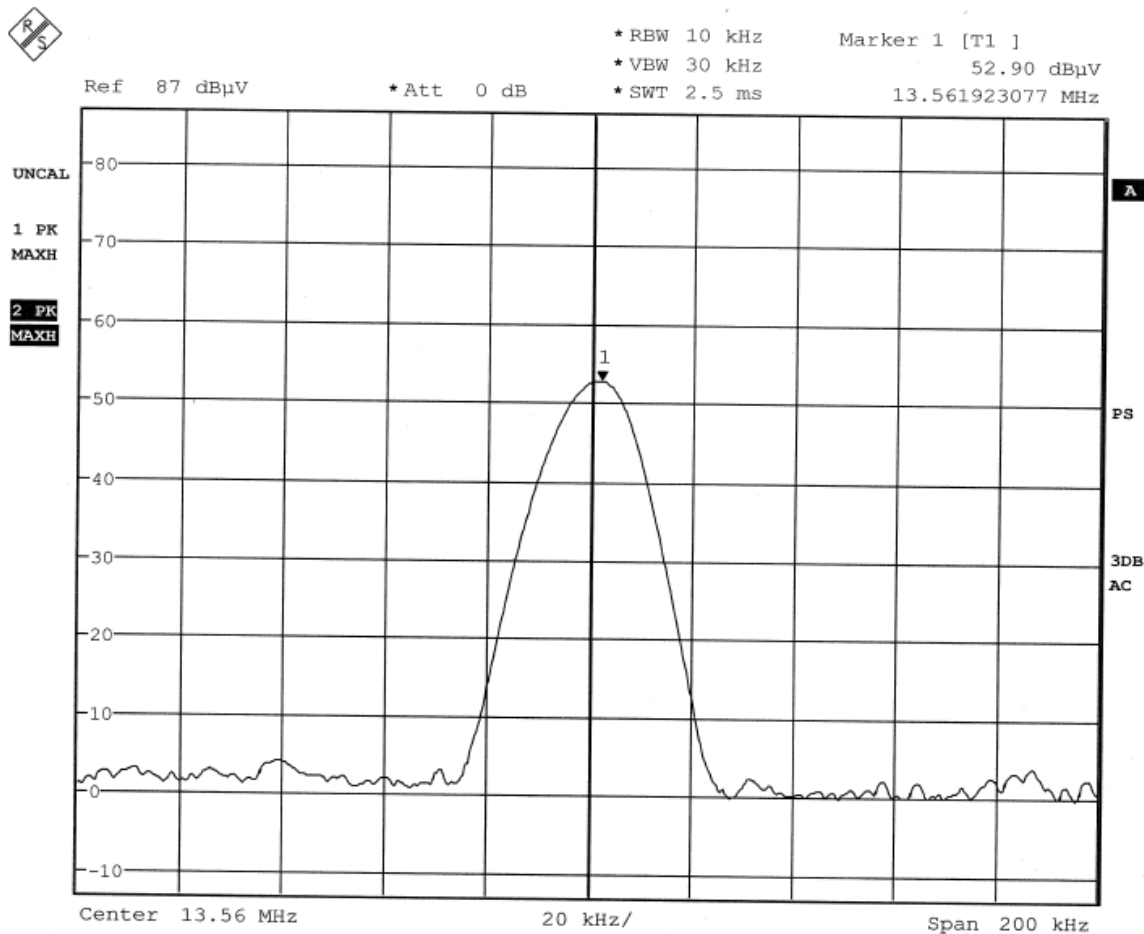
A D T

4.2.7 TEST RESULT

TEST MODE	A	FREQUENCY RANGE	13.56MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	20deg. C, 76% RH, 1013hPa	TESTED BY	Nick Chen

TEST DISTANCE: LOOP ANTENNA OPEN 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	13.56	52.9 QP	124.0	-71.1	1.00	261	33.06	19.84

- 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. "*" = Fundamental frequency.
 6. Loop Antenna was used for all frequency below 30MHz.



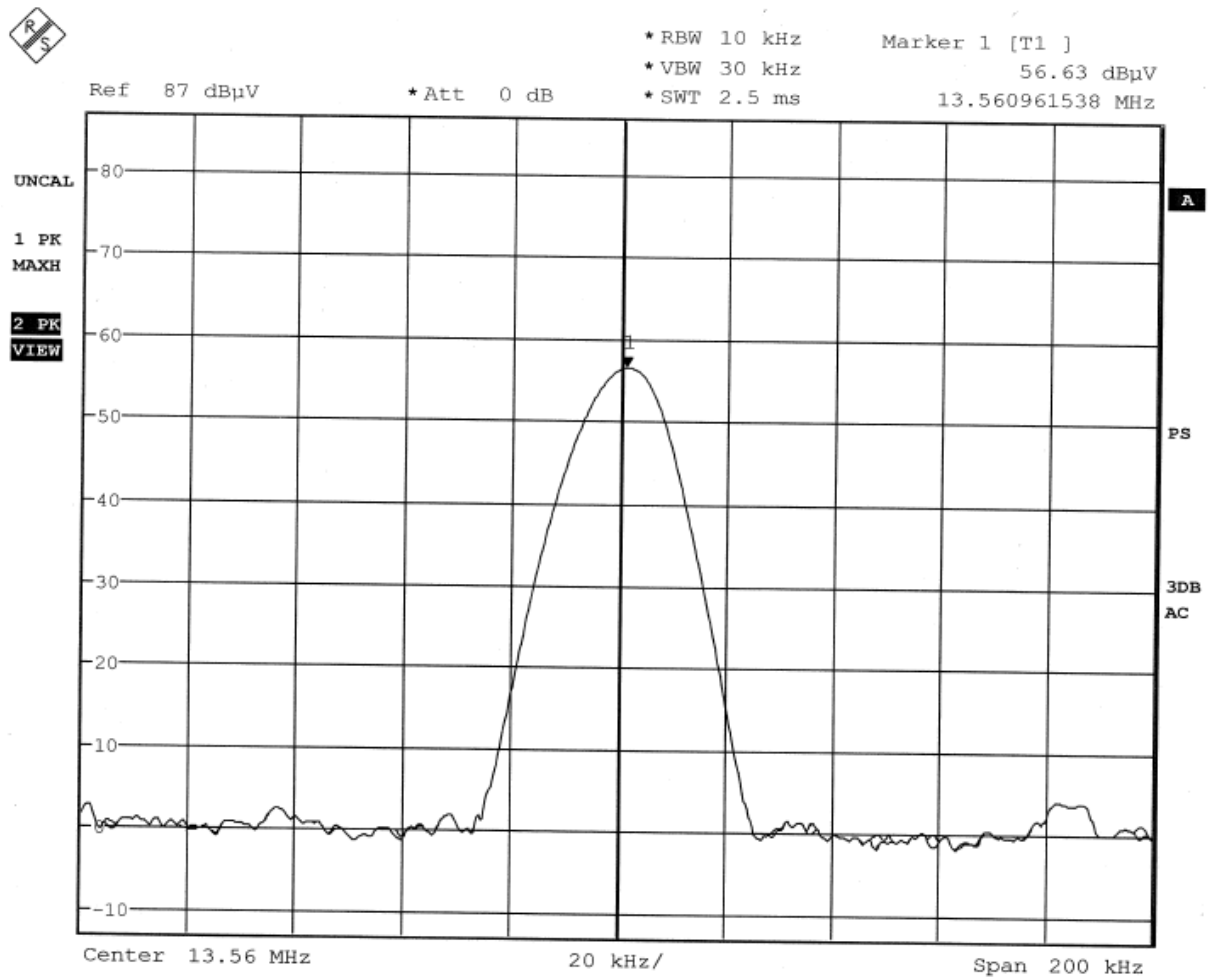


A D T

TEST MODE	A	FREQUENCY RANGE	13.56MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	20deg. C, 76% RH, 1013hPa	TESTED BY	Nick Chen

TEST DISTANCE: LOOP ANTENNA CLOSE 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	13.56	56.6 QP	124.0	-67.4	1.00	157	36.76	19.84

- 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. "*" = Fundamental frequency.
 6. Loop Antenna was used for all frequency below 30MHz.



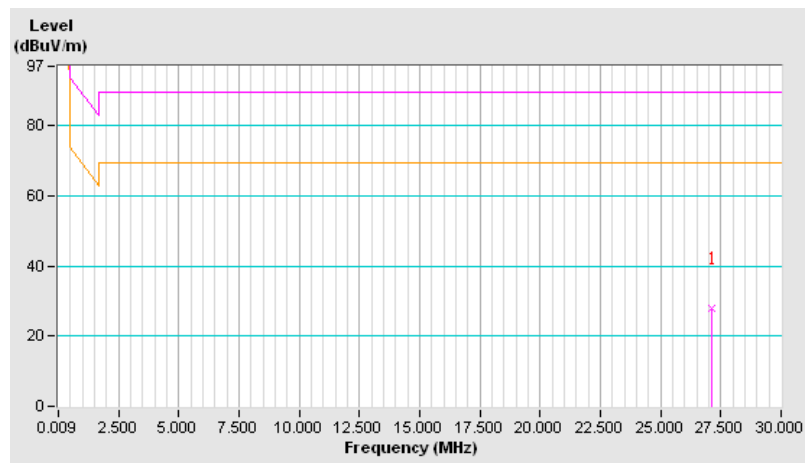


A D T

TEST MODE	A	FREQUENCY RANGE	9kHz – 30MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	20deg. C, 76% RH, 1013hPa	TESTED BY	Nick Chen

TEST DISTANCE: LOOP ANTENNA OPEN 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	27.12	28.1 QP	69.5	-41.40	1.00	63	6.77	21.33

- 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. Loop Antenna was used for all frequency below 30MHz.



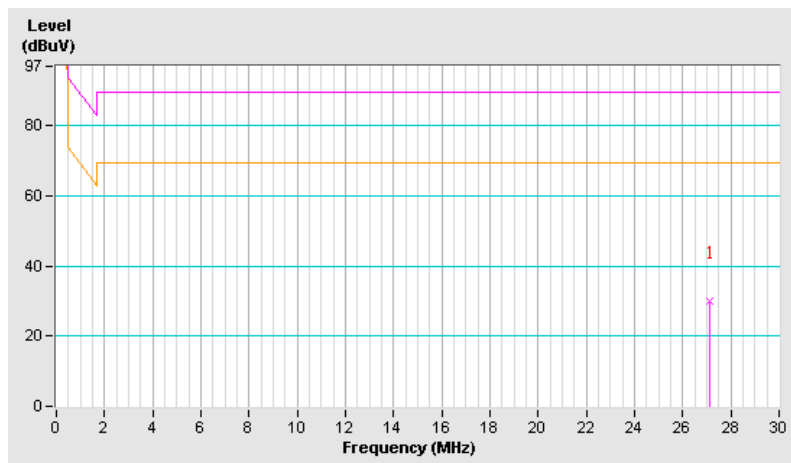


A D T

TEST MODE	A	FREQUENCY RANGE	9kHz – 30MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	20deg. C, 76% RH, 1013hPa	TESTED BY	Nick Chen

TEST DISTANCE: LOOP ANTENNA CLOSE 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	27.12	29.8 QP	69.5	-39.7	1.00	264	8.47	21.33

- 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. Loop Antenna was used for all frequency below 30MHz.





A D T

TEST MODE	A	FREQUENCY RANGE	30-1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	20deg. C, 76% RH, 1013hPa	TESTED BY	Nick Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	67.31	30.4 QP	40.0	-9.6	1.02 H	10	18.04	12.35
2	166.79	36.6 QP	43.5	-6.9	1.13 H	127	22.74	13.89
3	208.77	32.9 QP	43.5	-10.6	1.27 H	208	21.32	11.54
4	275.61	34.0 QP	46.0	-12.0	1.28 H	301	19.77	14.23
5	350.22	34.1 QP	46.0	-11.9	1.03 H	328	17.36	16.72
6	496.35	34.7 QP	46.0	-11.3	1.01 H	70	13.72	20.97
7	796.36	41.9 QP	46.0	-4.1	1.00 H	304	15.30	26.55

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	56.43	35.0 QP	40.0	-5.0	1.02 V	241	22.25	12.75
2	67.31	38.4 QP	40.0	-1.6	1.35 V	31	26.07	12.35
3	174.57	33.5 QP	43.5	-10.0	1.03 V	124	19.75	13.76
4	651.79	35.1 QP	46.0	-10.9	1.12 V	322	11.04	24.07
5	796.36	36.3 QP	46.0	-9.7	1.38 V	241	9.77	26.55
6	900.51	34.5 QP	46.0	-11.5	1.11 V	301	6.47	28.05

- 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.



A D T

TEST MODE	B	FREQUENCY RANGE	30-1000MHz
INPUT POWER	7.4Vdc	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	20deg. C, 76% RH, 1013hPa	TESTED BY	Nick Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	34.66	34.5 QP	40.0	-5.5	1.06 H	10	22.19	12.31
2	135.71	31.6 QP	43.5	-11.9	1.11 H	190	18.55	13.07
3	182.34	32.2 QP	43.5	-11.3	1.08 H	202	19.82	12.35
4	275.61	34.1 QP	46.0	-11.9	1.16 H	310	19.88	14.23
5	448.16	35.7 QP	46.0	-10.3	1.07 H	310	16.15	19.57
6	460.59	34.4 QP	46.0	-11.6	1.22 H	316	14.47	19.93
7	496.35	34.7 QP	46.0	-11.3	1.29 H	61	13.77	20.97
8	773.04	34.3 QP	46.0	-11.7	1.00 H	238	8.17	26.17
9	796.36	44.1 QP	46.0	-1.9	1.00 H	307	17.54	26.55

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	56.43	25.6 QP	40.0	-14.4	1.34 V	289	12.82	12.75
2	67.31	30.1 QP	40.0	-9.9	1.27 V	322	17.74	12.35
3	177.68	31.9 QP	43.5	-11.6	1.28 V	277	18.86	13.08
4	530.54	33.8 QP	46.0	-12.2	1.03 V	253	12.01	21.77
5	799.47	36.3 QP	46.0	-9.7	1.27 V	247	9.71	26.60
6	895.85	34.0 QP	46.0	-12.0	1.25 V	337	5.96	27.99

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



4.3 FREQUENCY STABILITY

4.3.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of -20 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER	FSP 40	100036	Apr. 03, 2009	Apr. 02, 2010

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

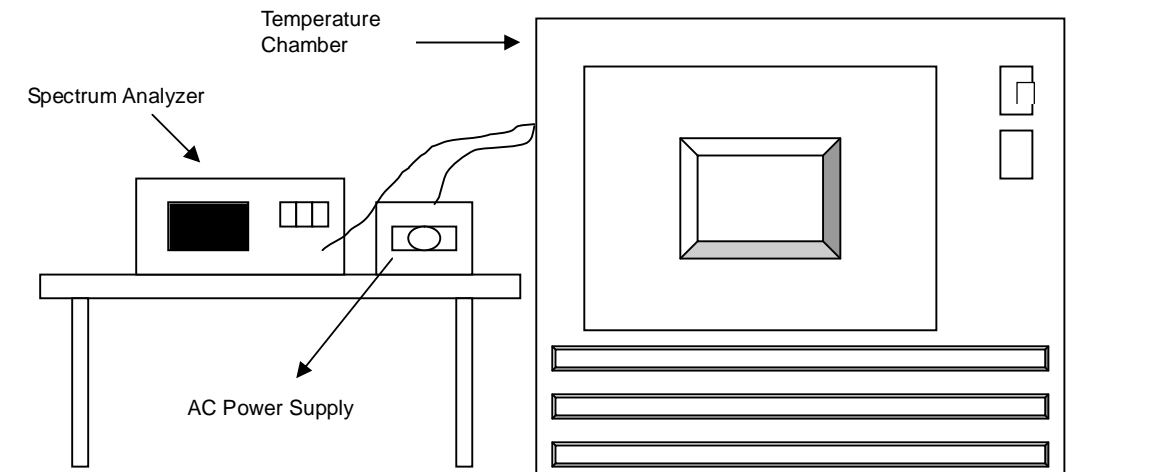
4.3.3 TEST PROCEDURE

- a. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
- b. Turn the EUT on and couple its output to a spectrum analyzer.
- c. Turn the EUT off and set the chamber to the highest temperature specified.
- d. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- e. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation.

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITION

Same as Item 4.1.6.

4.3.7 TEST RESULTS

Mode A:

OPERATING FREQUENCY: 13.56MHz		LIMIT: $\pm 0.01\%$	
TEMP. (°C)	POWER SUPPLY (V)	(MHz)	(%)
20	120	13.5614	-0.00442
	138	13.5612	-0.00589
	102	13.5615	-0.00368
50	120	13.5618	-0.00147
-20	120	13.5612	-0.00589

Note: Operating temperature of EUT is -20 degrees C to 50 degrees C.

Mode B:

OPERATING FREQUENCY: 13.56MHz		LIMIT: $\pm 0.01\%$	
TEMP. (°C)	POWER SUPPLY (V)	(MHz)	(%)
20	7.40	13.5613	-0.00515
	8.51	13.5611	-0.00663
	6.29	13.5614	-0.00442
50	7.40	13.5616	-0.00294
-20	7.40	13.5610	-0.00737

Note: Operating temperature of EUT is -20 degrees C to 50 degrees C.



A D T

5 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



6 INFORMATION ON THE TESTING LABORATORIES

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

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

Web Site: www.adt.com.tw

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



A D T

7 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 ---