



FCC TEST REPORT

REPORT NO.: RF970130H02D

MODEL NO.: RU-861-000

FCC ID: MAD-RU-859

RECEIVED: Aug. 19, 2011

TESTED: Sep. 02 to 07, 2011

TESTED: Sep. 15, 2011

APPLICANT: Microelectronics Technology Inc.

ADDRESS: 1, Innovation Road II, Hsinchu Science-based
Industrial Park, Hsinchu, Taiwan, R.O.C.

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

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

This test report consists of 25 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 any government agencies. The test results in the report only apply to the tested sample.



A D T

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	7
3.3 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:	8
3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS	9
3.5 DESCRIPTION OF SUPPORT UNITS.....	10
3.6 CONFIGURATION OF SYSTEM UNDER TEST	10
4 TEST PROCEDURES AND RESULTS	11
4.1 MAXIMUM PEAK OUTPUT POWER.....	11
4.1.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT	11
4.1.2 INSTRUMENTS.....	11
4.1.3 TEST PROCEDURES	11
4.1.4 DEVIATION FROM TEST STANDARD	11
4.1.5 TEST SETUP	12
4.1.6 EUT OPERATING CONDITION.....	12
4.1.7 TEST RESULTS	12
4.2 RADIATED EMISSION MEASUREMENT	13
4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT	13
4.2.2 TEST INSTRUMENTS.....	14
4.2.3 TEST PROCEDURES	15
4.2.4 DEVIATION FROM TEST STANDARD	15
4.2.5 TEST SETUP	16
4.2.6 EUT OPERATING CONDITION.....	16
4.2.7 TEST RESULTS	17
5 INFORMATION ON THE TESTING LABORATORIES	24
6 APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	25



A D T

RELEASE CONTROL RECORD

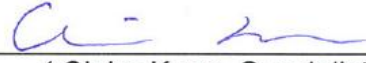
ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF970130H02D	Original release	Sep. 15, 2011



1 CERTIFICATION

PRODUCT : MTI RFID RF Module
BRAND NAME : MTI
MODEL NO. : RU-861-000
APPLICANT : Microelectronics Technology Inc.
TESTED DATE: Sep. 02 to 07, 2011
TEST SAMPLE : ENGINEERING SAMPLE
STANDARDS : 47 CFR Part 15, Subpart C (Section 15.247)
ANSI C63.4: 2003
ANSI C63.10-2009

The above equipment (Model: RU-861-000) 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:** Sep. 15, 2011
(Claire Kuan, Specialist)

APPROVED BY :  , **DATE:** Sep. 15, 2011
(May Chen, Deputy Manager)



A D T

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
15.247(b)(2)	Maximum Peak Output Power Spec.: max. 30dBm	PASS	Meet the requirement of limit
15.247(d)	Transmitter Radiated Emissions Spec.: Table 15.209	PASS	Meet the requirement of limit Minimum passing margin is -8.1dB at 68.29MHz

NOTE:

1. This report is prepared for FCC class II change. Only radiated emission and maximum peak output power were presented in this test report.

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	Value
Radiated emissions (30MHz-1GHz)	4 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	MTI RFID RF Module
MODEL NO.	RU-861-000
FCC ID	MAD-RU-859
POWER SUPPLY	DC 5V from DC power supply
MODULATION TYPE	ASK
MODULATION TECHNOLOGY	FHSS
FREQUENCY RANGE	902.75MHz ~ 927.25MHz
NUMBER OF CHANNEL	50
OUTPUT POWER	871.0mW
ANTENNA TYPE	Please see note
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. This report is prepared for FCC class II change. The difference compared with the Report No.: RF970130H02B design is as the following information:

- u Replace 16dB coupler to 10dB coupler to improve RX sensitivity.
- u Remove RX DC control circuit and implement RX IF filter circuit to improve adjacent channel rejection.
- u Add one new model name as following table:

Brand	Model No.
MTI	RU-861-000

2. There is one antenna provided to this EUT:

Antenna Type	Connector Type	Gain (dBi)	Cable loss (dB)	Net Gain (dBi)
Patch Antenna	SMA Female	6	0.75	5.25

3. 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.



A D T

3.2 DESCRIPTION OF TEST MODES

Fifty channels are provided to this EUT.

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	902.75	21	913.25	42	923.75
1	903.25	22	913.75	43	924.25
2	903.75	23	914.25	44	924.75
3	904.25	24	914.75	45	925.25
4	904.75	25	915.25	46	925.75
5	905.25	26	915.75	47	926.25
6	905.75	27	916.25	48	926.75
7	906.25	28	916.75	49	927.25
8	906.75	29	917.25		
9	907.25	30	917.75		
10	907.75	31	918.25		
11	908.25	32	918.75		
12	908.75	33	919.25		
13	909.25	34	919.75		
14	909.75	35	920.25		
15	910.25	36	920.75		
16	910.75	37	921.25		
17	911.25	38	921.75		
18	911.75	39	922.25		
19	912.25	40	922.75		
20	912.75	41	923.25		



A D T

3.3 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:

EUT configure mode	Applicable to				Description
	PLC	RE<1G	RE [≥] 1G	APCM	
-	-	√	√	√	-

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

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.

Available Channel	Tested Channel	Modulation Technology	Modulation Type
0 to 49	0, 24, 49	FHSS	ASK

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.

Available Channel	Tested Channel	Modulation Technology	Modulation Type
0 to 49	0, 24, 49	FHSS	ASK

Antenna Port Conducted Measurement:

- 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.

Available Channel	Tested Channel	Modulation Technology	Modulation Type
0 to 49	0, 24, 49	FHSS	ASK

※ TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE [≥] 1G	20deg. C, 60%RH	120Vac, 60Hz	Evan Huang
RE<1G	20deg. C, 60%RH	120Vac, 60Hz	Evan Huang
APCM	20deg. C, 60%RH	120Vac, 60Hz	Wen Yu



A D T

3.4 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:

47 CFR Part 15, Subpart C. (15.247)
ANSI C63.4 : 2003
ANSI C63.10-2009

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



A D T

3.5 DESCRIPTION OF SUPPORT UNITS

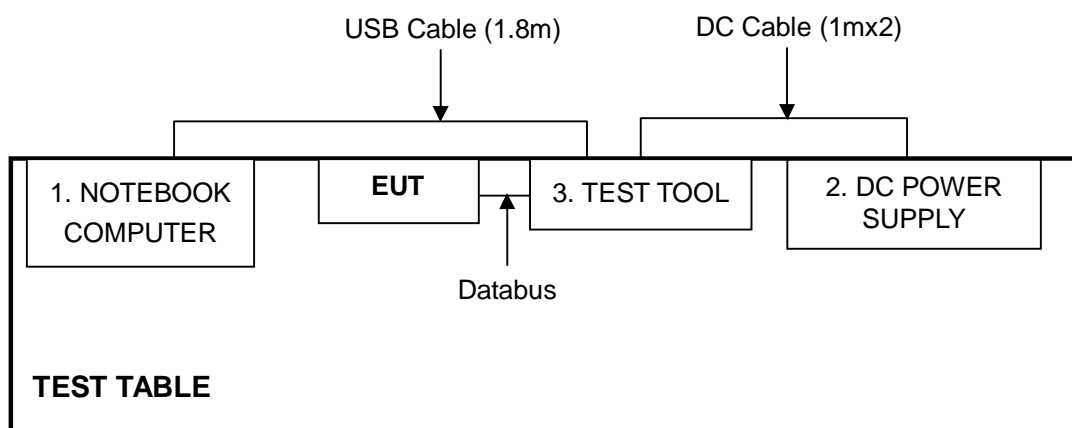
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP19L	CN-OHC416-7016 6-5CA-0448	PIW632500516610
2	DC POWER SUPPLY	GOOD WILL INSTRUMENT CO., LTD.	GPC-3030D	7700087	NA
3	TEST TOOL	MTI	NA	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	USB Cable (1.8m)
2	DC Cable (1m)
3	Databus

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

3.6 CONFIGURATION OF SYSTEM UNDER TEST



4 TEST PROCEDURES AND RESULTS

4.1 MAXIMUM PEAK OUTPUT POWER

4.1.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

4.1.2 INSTRUMENTS

Test date: Sep. 07, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Dec. 08, 2010	Dec. 07, 2011

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

4.1.3 TEST PROCEDURES

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. The center frequency of the spectrum analyzer is set to the fundamental frequency and using 3 MHz RBW and 10 MHz VBW.
4. Measure the captured power within the band and recording the plot.
5. Repeat above procedures until all frequencies measured were complete.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



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

4.1.6 EUT OPERATING CONDITION

The software (MTI RFID Explorer v0.0.22) provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.1.7 TEST RESULTS

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER OUTPUT (mW)	PEAK POWER LIMIT (dBm)	PASS/FAIL
0	902.75	29.4	871.0	30	PASS
24	914.75	29.3	851.1	30	PASS
49	927.25	29.2	831.8	30	PASS

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

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.



A D T

4.2.2 TEST INSTRUMENTS

Test date: Sep. 02, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100036	Dec. 08, 2010	Dec. 07, 2011
Agilent PSA Spectrum Analyzer	E4446A	MY48250113	Nov. 30 , 2010	Nov. 29 , 2011
HP Pre_Amplifier	8449B	300801923	Nov. 01, 2010	Oct. 31, 2011
ROHDE & SCHWARZ Test Receiver	ESCS30	847124/029	Sep. 03, 2010	Sep. 02, 2011
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	Apr. 14, 2011	Apr. 13, 2012
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 17, 2010	Dec. 16, 2011
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 17, 2011	Jan. 16, 2012
RF Switches	EMH-011	1001	NA	NA
RF CABLE (Chaintek)	Sucoflex 106	RF106-102	Jan. 27, 2011	Jan. 26, 2012
RF Cable	8DFB	STCCAB-30M-1GHz	NA	NA
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, preamplifier (model: 8449B) and Spectrum Analyzer (model: FSP40) 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 meters open field site. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

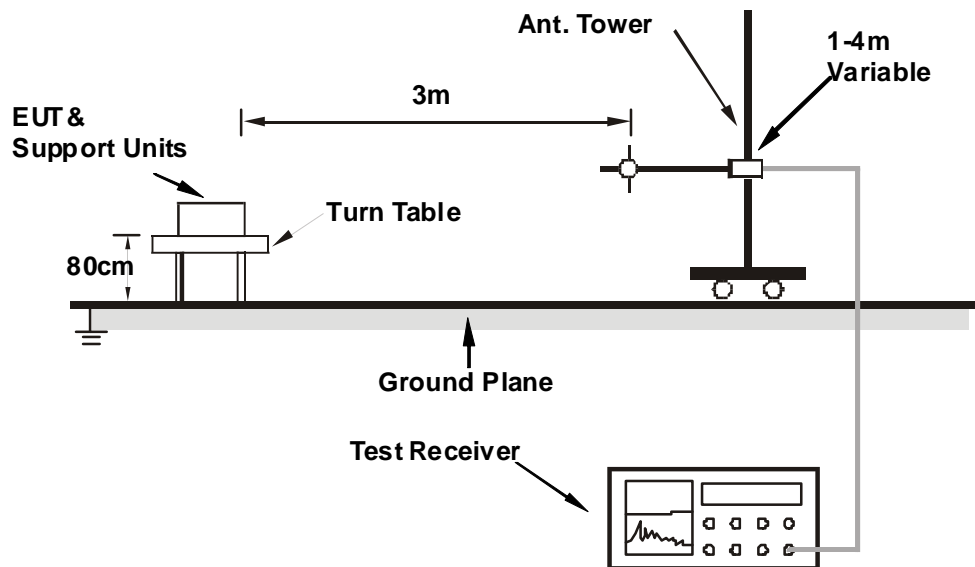
NOTE:

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

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



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

4.2.6 EUT OPERATING CONDITION

Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.



A D T

4.2.7 TEST RESULTS

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak Peak(PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH	TESTED BY	Evan Huang

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	32.90	20.7 QP	40.0	-19.3	1.97 H	342	7.72	12.96
2	72.08	21.4 QP	40.0	-18.6	2.00 H	0	9.18	12.25
3	120.00	25.4 QP	43.5	-18.1	1.32 H	0	12.96	12.47
4	375.01	30.6 QP	46.0	-15.4	1.00 H	177	12.33	18.26
5	480.00	27.8 QP	46.0	-18.2	1.45 H	0	6.77	21.01
6	500.00	32.3 QP	46.0	-13.7	1.00 H	354	10.81	21.52
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	32.90	28.1 QP	40.0	-11.9	2.00 V	249	15.14	12.96
2	68.07	30.1 QP	40.0	-9.9	1.00 V	292	17.03	13.06
3	120.00	28.5 QP	43.5	-15.0	1.00 V	19	16.00	12.47
4	375.01	31.1 QP	46.0	-14.9	1.00 V	19	12.87	18.26
5	480.01	29.3 QP	46.0	-16.7	1.24 V	200	8.30	21.01
6	500.00	31.1 QP	46.0	-15.0	1.64 V	206	9.53	21.52

- 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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 24	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak Peak(PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH	TESTED BY	Evan Huang

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	32.90	21.4 QP	40.0	-18.6	1.97 H	342	8.46	12.96
2	72.08	21.4 QP	40.0	-18.6	2.00 H	0	9.14	12.24
3	120.08	25.4 QP	43.5	-18.1	1.32 H	0	12.95	12.48
4	374.95	31.2 QP	46.0	-14.8	1.00 H	177	12.91	18.26
5	479.81	27.8 QP	46.0	-18.2	1.45 H	0	6.75	21.01
6	500.08	32.4 QP	46.0	-13.7	1.00 H	354	10.83	21.52

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	32.90	28.3 QP	40.0	-11.7	2.00 V	249	15.30	12.96
2	68.07	30.3 QP	40.0	-9.7	1.00 V	292	17.21	13.06
3	120.01	28.7 QP	43.5	-14.8	1.00 V	19	16.25	12.47
4	375.01	31.3 QP	46.0	-14.7	1.00 V	19	13.06	18.26
5	480.01	29.5 QP	46.0	-16.5	1.24 V	200	8.48	21.01
6	500.00	31.3 QP	46.0	-14.7	1.64 V	206	9.80	21.52

- 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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 49	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak Peak(PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH	TESTED BY	Evan Huang

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	32.90	21.2 QP	40.0	-18.8	1.97 H	342	8.24	12.96
2	72.08	21.6 QP	40.0	-18.4	2.00 H	0	9.33	12.24
3	120.08	25.7 QP	43.5	-17.8	1.32 H	0	13.24	12.48
4	375.10	31.8 QP	46.0	-14.2	1.00 H	177	13.54	18.27
5	480.00	28.0 QP	46.0	-18.0	1.45 H	0	7.01	21.01
6	500.08	32.8 QP	46.0	-13.2	1.00 H	354	11.25	21.52

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	32.80	29.2 QP	40.0	-10.8	1.98 V	244	16.30	12.94
2	68.29	31.9 QP	40.0	-8.1	1.00 V	292	18.87	13.03
3	120.24	31.7 QP	43.5	-11.8	1.00 V	19	19.20	12.49
4	375.39	32.5 QP	46.0	-13.5	1.00 V	19	14.24	18.27
5	480.00	30.9 QP	46.0	-15.1	1.23 V	65	9.87	21.01
6	499.81	31.5 QP	46.0	-14.5	1.64 V	206	9.98	21.52

- 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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0, 24, 49	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak Peak(PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH	TESTED BY	Evan Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

channel	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)
0	1	902.00	70.6 PK	110.7	-40.1	1.81 H	343	41.81	28.79
	2	902.00	52.6 AV	109.6	-57.0	1.81 H	343	23.81	28.79
	3	*902.75	130.7 PK	-	-	1.77 H	343	101.9	28.80
	4	*902.75	129.6 AV	-	-	1.77 H	343	100.8	28.80
24	1	*914.75	131.0 PK	-	-	1.81 H	341	102.05	28.95
	2	*914.75	129.7 AV	-	-	1.81 H	341	100.75	28.95
49	1	*927.25	130.8 PK	-	-	1.79 H	341	101.68	29.12
	2	*927.25	129.1 AV	-	-	1.79 H	341	99.98	29.12
	3	928.00	75.2 PK	110.8	-35.6	1.79 H	341	46.07	29.13
	4	928.00	52.4 AV	109.1	-56.7	1.79 H	341	23.27	29.13

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

channel	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)
0	1	902.00	70.2 PK	110.3	-40.1	1.63 V	352	41.41	28.79
	2	902.00	52.2 AV	108.8	-56.6	1.63 V	352	23.41	28.79
	3	*902.75	130.3 PK	-	-	1.38 V	351	101.50	28.80
	4	*902.75	128.8 AV	-	-	1.38 V	351	-100.00	28.80
24	1	*914.75	130.3 PK	-	-	1.38 V	352	101.35	28.95
	2	*914.75	128.8 AV	-	-	1.38 V	352	99.85	28.95
49	1	*927.25	130.2 PK	-	-	1.35 V	350	101.08	29.12
	2	*927.25	128.6 AV	-	-	1.35 V	350	99.48	29.12
	3	928.00	74.6 PK	110.2	-35.6	1.35 V	350	45.47	29.13
	4	928.00	52.1 AV	108.6	-56.50	1.35 V	350	22.97	29.13

- 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.
 5. “ * “: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	Above 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak Peak(PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH	TESTED BY	Evan Huang

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	2708.25	43.0 PK	74.0	-31.0	1.58 H	269	10.76	32.24
2	2708.25	34.1 AV	54.0	-19.9	1.58 H	269	1.86	32.24
3	3611.00	40.1 PK	74.0	-33.9	1.05 H	30	6.88	33.22
4	3611.00	31.5 AV	54.0	-22.5	1.05 H	30	-1.72	33.22
5	4513.75	42.1 PK	74.0	-31.9	1.35 H	12	6.67	35.43
6	4513.75	29.5 AV	54.0	-24.5	1.35 H	12	-5.93	35.43
7	5416.50	43.8 PK	74.0	-30.2	1.42 H	120	6.75	37.05
8	5416.50	39.6 AV	54.0	-14.4	1.42 H	120	2.55	37.05
9	7222.00	48.7 PK	74.0	-25.3	1.00 H	31	6.66	42.04
10	7222.00	36.3 AV	54.0	-17.7	1.00 H	31	-5.74	42.04
11	8124.75	49.1 PK	74.0	-24.9	1.23 H	0	5.58	43.52
12	8124.75	36.9 AV	54.0	-17.1	1.23 H	0	-6.62	43.52
13	9027.50	50.7 PK	74.0	-23.3	1.32 H	6	6.17	44.53
14	9027.50	39.0 AV	54.0	-15.0	1.32 H	6	-5.53	44.53

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	2708.25	44.4 PK	74.0	-29.6	1.00 V	0	12.16	32.24
2	2708.25	37.2 AV	54.0	-16.8	1.00 V	0	4.96	32.24
3	3611.00	40.4 PK	74.0	-33.6	1.02 V	360	7.18	33.22
4	3611.00	28.8 AV	54.0	-25.2	1.02 V	360	-4.42	33.22
5	4513.75	42.5 PK	74.0	-31.5	1.46 V	0	7.07	35.43
6	4513.75	30.6 AV	54.0	-23.4	1.46 V	0	-4.83	35.43
7	5416.50	43.2 PK	74.0	-30.8	1.23 V	0	6.15	37.05
8	5416.50	40.1 AV	54.0	-13.9	1.23 V	0	3.05	37.05
9	7222.00	48.8 PK	74.0	-25.2	1.00 V	18	6.76	42.04
10	7222.00	36.2 AV	54.0	-17.8	1.00 V	18	-5.84	42.04
11	8124.75	49.1 PK	74.0	-24.9	1.23 V	0	5.58	43.52
12	8124.75	37.1 AV	54.0	-16.9	1.23 V	0	-6.42	43.52
13	9027.50	52.6 PK	74.0	-21.4	1.16 V	45	8.07	44.53
14	9027.50	40.0 AV	54.0	-14.0	1.16 V	45	-4.53	44.53

- 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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 24	FREQUENCY RANGE	Above 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak Peak(PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH	TESTED BY	Evan Huang

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	2744.25	41.2 PK	74.0	-32.8	1.36 H	59	8.86	32.34
2	2744.25	36.6 AV	54.0	-17.4	1.36 H	59	4.26	32.34
3	3659.00	39.1 PK	74.0	-34.9	1.05 H	41	5.74	33.36
4	3659.00	27.8 AV	54.0	-26.2	1.05 H	41	-5.56	33.36
5	4573.75	41.3 PK	74.0	-32.7	1.36 H	20	5.68	35.62
6	4573.75	30.2 AV	54.0	-23.8	1.36 H	20	-5.42	35.62
7	7318.00	48.9 PK	74.0	-25.1	1.01 H	35	6.64	42.26
8	7318.00	35.5 AV	54.0	-18.5	1.01 H	35	-6.76	42.26
9	8232.75	49.3 PK	74.0	-24.7	1.22 H	1	5.83	43.47
10	8232.75	37.2 AV	54.0	-16.8	1.22 H	1	-6.27	43.47
11	9147.50	51.0 PK	74.0	-23.0	1.32 H	6	6.33	44.67
12	9147.50	39.1 AV	54.0	-14.9	1.32 H	6	-5.57	44.67

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	2744.25	43.0 PK	74.0	-31.0	1.00 V	22	10.66	32.34
2	2744.25	34.9 AV	54.0	-19.1	1.00 V	22	2.56	32.34
3	3659.00	40.6 PK	74.0	-33.4	1.00 V	8	7.24	33.36
4	3659.00	29.7 AV	54.0	-24.3	1.00 V	8	-3.66	33.36
5	4573.75	42.6 PK	74.0	-31.4	1.45 V	5	6.98	35.62
6	4573.75	33.9 AV	54.0	-20.1	1.45 V	5	-1.72	35.62
7	7318.00	49.2 PK	74.0	-24.8	1.01 V	20	6.94	42.26
8	7318.00	36.3 AV	54.0	-17.7	1.01 V	20	-5.96	42.26
9	8232.75	48.8 PK	74.0	-25.2	1.23 V	21	5.33	43.47
10	8232.75	37.3 AV	54.0	-16.7	1.23 V	21	-6.17	43.47
11	9147.50	51.6 PK	74.0	-22.4	1.18 V	52	6.93	44.67
12	9147.50	41.5 AV	54.0	-12.5	1.18 V	52	-3.17	44.67

- 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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 49	FREQUENCY RANGE	Above 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak Peak(PK)
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH	TESTED BY	Evan Huang

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	2781.75	40.8 PK	74.0	-33.2	1.19 H	221	8.37	32.43
2	2781.75	30.7 AV	54.0	-23.3	1.19 H	221	-1.73	32.43
3	3709.00	40.7 PK	74.0	-33.3	1.88 H	303	7.20	33.50
4	3709.00	30.4 AV	54.0	-23.6	1.88 H	303	-3.10	33.50
5	4636.25	42.4 PK	74.0	-31.6	1.20 H	241	6.65	35.75
6	4636.25	32.4 AV	54.0	-21.6	1.20 H	241	-3.35	35.75
7	7418.00	48.5 PK	74.0	-25.5	1.00 H	125	5.90	42.60
8	7418.00	36.5 AV	54.0	-17.5	1.00 H	125	-6.10	42.60
9	8345.25	48.6 PK	74.0	-25.4	1.23 H	115	5.26	43.34
10	8345.25	36.7 AV	54.0	-17.3	1.23 H	115	-6.64	43.34

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	2781.75	42.5 PK	74.0	-31.5	1.00 V	353	10.07	32.43
2	2781.75	34.3 AV	54.0	-19.7	1.00 V	353	1.87	32.43
3	3709.00	41.6 PK	74.0	-32.4	1.15 V	236	8.10	33.50
4	3709.00	32.3 AV	54.0	-21.7	1.15 V	236	-1.20	33.50
5	4636.25	43.1 PK	74.0	-30.9	1.33 V	192	7.35	35.75
6	4636.25	33.9 AV	54.0	-20.1	1.33 V	192	-1.85	35.75
7	7418.00	49.3 PK	74.0	-24.7	1.37 V	210	6.70	42.60
8	7418.00	36.4 AV	54.0	-17.6	1.37 V	210	-6.20	42.60
9	8345.25	49.2 PK	74.0	-24.8	1.54 V	0	5.86	43.34
10	8345.25	37.1 AV	54.0	-16.9	1.54 V	0	-6.24	43.34

- 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 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@tw.bureauveritas.com

Web Site: www.adt.com.tw

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

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

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

--- END ---