

Supplemental “Dual Xmit” Test Report

REPORT NO.: RF950206H07-01

MODEL NO.: WA8011A-A

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TESTED: Feb. 20 to March 3, 2006

ISSUED: March 3, 2006

APPLICANT: Microelectronics Technology Inc.

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No. 2177-01

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1. CERTIFICATION

PRODUCT : A8 802.11ab/g AP BS/Bridge AC
BRAND NAME : MTI, ALTAI, ASTRI
MODEL NO. : WA8011A-A
TESTED: Feb. 20 to March 3, 2006
APPLICANT : Microelectronics Technology Inc.
TEST ITEM: ENGINEERING SAMPLE
STANDARDS : 47 CFR FCC Part 15, Subpart C
ANSI C63.4-2003

PREPARED BY : Carol Liao , **DATE:** March 3, 2006
(Carol Liao)

TECHNICAL
ACCEPTANCE : Hank Chung , **DATE:** March 3, 2006
Responsible for RF (Hank Chung)

APPROVED BY : May Chen , **DATE:** March 3, 2006
(May Chen, Deputy Manager)

Note:

Per a request of the FCC, the access point radio was tested for radiated emissions in restricted bands while transmitting on both 2.4 GHz and 5 GHz at simultaneously.

2. DUAL XMIT, RADIATED EMISSION MEASUREMENT

2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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.

2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ADVANTEST Spectrum Analyzer	R3271A	85060311	July 07, 2006
HP Pre_Amplifier	8449B	3008A01922	Oct. 02, 2006
ROHDE & SCHWARZ Test Receiver	ESCS30	100287	Dec. 08, 2006
CHASE Broadband Antenna	VULB9168	138	Dec. 21, 2006
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 11, 2006
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 05, 2007
SCHWARZBECK Biconical Antenna	VHBA9123	459	Jun. 26, 2006
SCHWARZBECK Periodic Antenna	UPA6108	1148	Jun. 26, 2006
RF Switches (ARNITSU)	CS-201	1565157	NA
RF CABLE (Chaintek) 1GHz-20GHz	SF102	22054-2	Nov. 16, 2006
RF Cable(RICHTEC)	9913-30M	STCCAB-30M-1GHz-021	Jul. 16, 2006
Software	ADT_Radiated_V 5.14	NA	NA
CHANCE MOST Antenna Tower	AT-100	0203	NA
CHANCE MOST Turn Table	TT-100	0203	NA

Note: 1. The calibration interval of the above test instruments is 12 months (36 months for Periodic Antenna) 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 ADT 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 4824-3.
7. The following table is for the measurement uncertainty, which is calculated as per the document 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
Radiated emissions (30MHz-1GHz)	2.98 dB
Radiated emissions (1GHz ~18GHz)	2.21 dB
Radiated emissions (18GHz ~20GHz)	1.88 dB

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 the quasi-peak method or average method as specified and then reported in Data sheet peak mode and QP mode.
- g. The emissions up to 40 GHz were examined. Those emission falling within a restricted band were evaluated against the "restricted band emission limit" (54 dB μ V / 74 dB μ V).

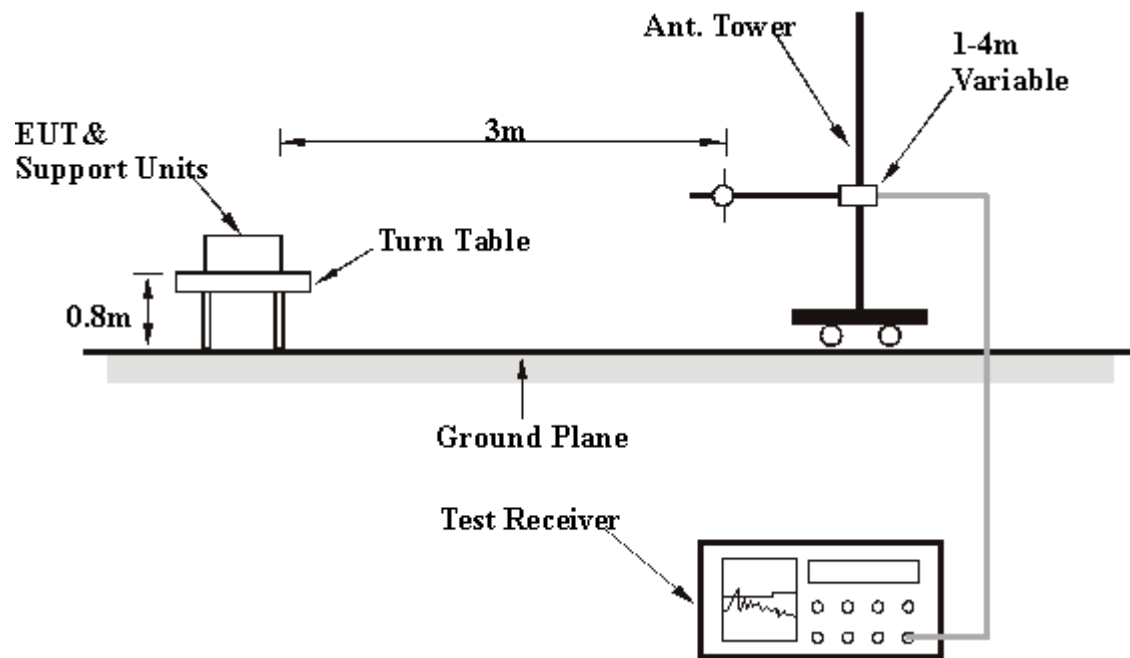
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 300 Hz for Average detection (AV) at frequency above 1GHz.

2.4 DEVIATION FROM TEST STANDARD

No deviation

2.5 TEST SETUP



2.6 EUT OPERATING CONDITIONS

- a. Placed the EUT on the testing table. (The configuration and photo, please refer to RF930929H03 test report)
- b. Prepared another computer system to act as a communication partner and placed it outside of testing area.
- c. The communication partner run test program “ART_V48_build 13_Alpha” to enable EUT under transmission/receiving condition continuously at specific channel frequency via UTP cable.

Note:

The access point was tested for out of band radiated emissions with the unit transmitting on 802.11b, 2462 MHz and 802.11a on 5260 MHz. These frequencies and power levels were chosen because these frequencies produced the worst case radiated emissions during the radiated emissions in restricted bands test performed previously. The unit was set to transmit at the same power level as was used in the initial radiated emissions tests and was transmitting at the maximum data rate. (Please refer to RF950206H07 test report)

2.7 TEST RESULTS

TEST MODE	Dual transmission 11b, 2437MHz 11a, 5825MHz	FREQUENCY RANGE	1000MHz~40000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION & BANDWIDTH	Peak (PK) Average (AV) 1 MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 68%RH, 973 hPa	TESTED BY	Rex 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	2688.00	59.00 PK	79.40	-20.40	1.53 H	29	28.10	30.90
1	2688.00	57.60 AV	71.40	-13.80	1.53 H	29	26.70	30.90
2	4874.00	43.20 PK	74.00	-30.80	1.64 H	328	7.90	35.30
2	4874.00	31.80 AV	54.00	-22.20	1.64 H	328	-3.50	35.30
3	7311.00	48.20 PK	74.00	-25.80	1.47 H	18	7.50	40.70
3	7311.00	36.60 AV	54.00	-17.40	1.47 H	18	-4.10	40.70
4	11650.00	61.70 PK	74.00	-12.30	1.62 H	71	11.10	50.60
4	11650.00	48.90 AV	54.00	-5.10	1.62 H	71	-1.70	50.60

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	2688.00	59.40 PK	98.40	-39.00	1.44 V	359	28.50	30.90
1	2688.00	57.80 AV	89.60	-31.80	1.44 V	359	26.90	30.90
2	4874.00	44.50 PK	74.00	-29.50	1.57 V	341	9.20	35.30
2	4874.00	32.60 AV	54.00	-21.40	1.57 V	341	-2.70	35.30
3	7311.00	49.20 PK	74.00	-24.80	1.64 V	337	8.50	40.70
3	7311.00	37.40 AV	54.00	-16.60	1.64 V	337	-3.30	40.70
4	11650.00	66.70 PK	74.00	-7.30	1.50 V	24	16.10	50.60
4	11650.00	53.30 AV	54.00	-0.70	1.50 V	24	2.70	50.60

NOTE:

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

3. INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA	FCC, UL, A2LA
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA , CSA
R.O.C.	CNLA, BSMI, DGT
Netherlands	Telefication
Singapore	PSB , 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:

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