



# FCC TEST REPORT

**REPORT NO.:** RF960822L15

**MODEL NO.:** ST4i

**RECEIVED:** Aug. 22, 2007

**TESTED:** Sep. 03 ~ Sep. 04, 2007

**ISSUED:** Nov. 02, 2007

**APPLICANT:** IRIS CORPORATION BERHAD

**ADDRESS:** TECHNOLOGY PARK MALAYSIA 57000 BUKIT JALIL KUALA LUMPUR MALAYSIA

**ISSUED BY:** Advance Data Technology Corporation

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**TEST LOCATION:** No. 19, Hwa Ya 2<sup>nd</sup> Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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## 1. CERTIFICATION

**PRODUCT:** Industrial PDA

**MODEL:** ST4i

**BRAND:** IRIS

**APPLICANT:** IRIS CORPORATION BERHAD

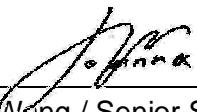
**TEST SAMPLE:** ENGINEERING SAMPLE

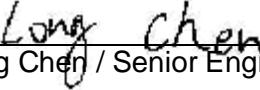
**TESTED:** Sep. 03 ~ Sep. 04, 2007

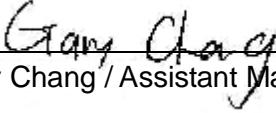
**STANDARDS:** FCC Part 15, Subpart C (Section 15.225)

ANSI C63.4-2003

The above equipment (Model: ST4i) has been tested by **Advance Data Technology Corporation**, 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:** Nov. 02, 2007  
Joanna Wang / Senior Specialist

**TECHNICAL  
ACCEPTANCE** :  , **DATE:** Nov. 02, 2007  
Responsible for RF Long Chen / Senior Engineer

**APPROVED BY** :  , **DATE:** Nov. 02, 2007  
Gary Chang / 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 -2.26dB 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 -1.02dB at 32.230MHz
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:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz ~ 30MHz	2.44dB
Radiated emissions	30MHz ~ 200MHz	3.34 dB
	200MHz ~1000MHz	3.35 dB

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



### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>EUT</b>	Industrial PDA
<b>MODEL NO.</b>	ST4i
<b>FCC ID</b>	UY9ST4XX
<b>POWER SUPPLY</b>	9Vdc from adapter 7.4Vdc from battery
<b>MODULATION TYPE</b>	ASK
<b>FREQUENCY RANGE</b>	13.56MHz
<b>NUMBER OF CHANNEL</b>	1
<b>ANTENNA TYPE</b>	Inductive Coupled Loop antenna
<b>DATA CABLE</b>	2m shielded USB cable with one core
<b>I/O PORTS</b>	Refer to user's manual
<b>ASSOCIATED DEVICES</b>	Adapter, battery

**NOTE:**

1. The EUT is powered by the following adapter and battery.

ADAPTER	
<b>BRAND</b>	IRIS
<b>MODEL</b>	MKU30B-3
<b>INPUT POWER</b>	100~240Vac, 50/60Hz, 0.8A
<b>OUTPUT POWER</b>	9Vdc, 3.0A Max
<b>POWER LINE</b>	AC 2m non-shielded cable without core DC 2m non-shielded cable with three cores

BATTERY	
<b>BRAND</b>	IRIS
<b>MODEL</b>	2040-0014
<b>OUTPUT POWER</b>	7.4Vdc, 1200mAh

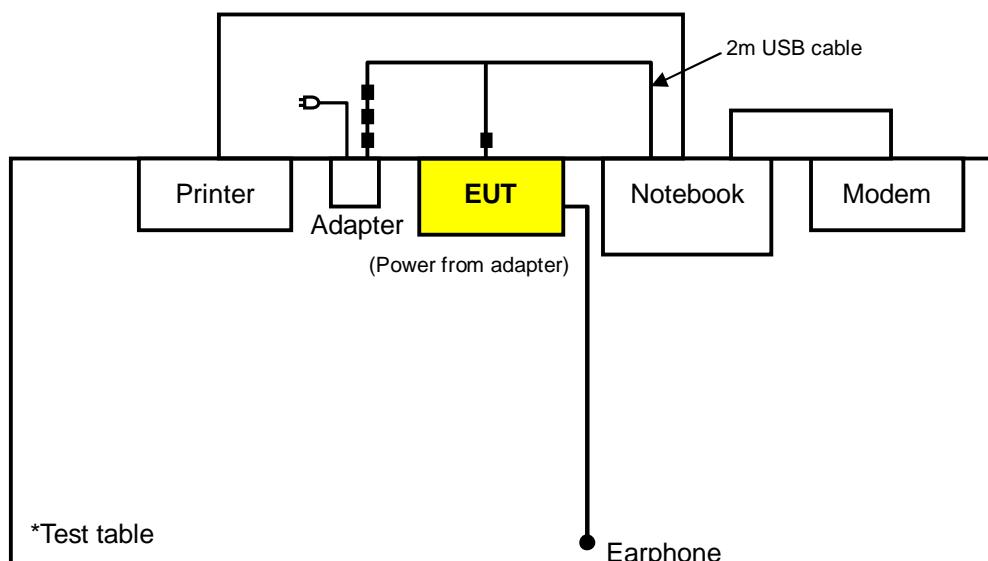
2. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

### 3.2 DESCRIPTION OF TEST MODES

The EUT only has one channel.

TRANSMITTER	
CHANNEL	FREQUENCY (MHz)
1	13.56

#### 3.2.1 CONFIGURATION OF SYSTEM UNDER TEST





### 3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO			DESCRIPTION
	PLC	RE	FS	
-	√	√	√	-

Where      **PLC:** Power Line Conducted Emission

**RE:** Radiated Emission

**FS:** Frequency Stability

#### 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.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE
1	1	ASK

#### 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.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE	AXIS
1	1	ASK	Y

#### 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.

AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE
1	1	ASK



### 3.3 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.

### 3.4 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	PP05L	16484462992	E2K24CLNS
2	PRINTER	EPSON	LQ-300+	DCGY054147	FCC DoC Approved
3	MODEM	ACEEX	1414V/3	0401008269	IFAXDM1414
4	EARPHONE	NA	NA	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	1.8m braid shielded wire, DB25 connector, w/o core.
3	1.2m braid shielded wire, DB25 & DB9 connector, w/o core.
4	1.6m non-shielded cable.

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



## 4. TEST TYPES AND RESULTS

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ V)	
	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 0.50MHz.
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 UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Dec. 08, 2007
RF signal cable Woken	5D-FB	Cable-HYCO3-01	Jan. 06, 2008
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Jan. 08, 2008
LISN ROHDE & SCHWARZ	ESH3-Z5	100311	Jan. 16, 2008
Software ADT	ADT_Cond_V3	NA	NA

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.  
2. The test was performed in HwaYa Shielded Room 2.  
3. The VCCI Site Registration No. is C-2047.



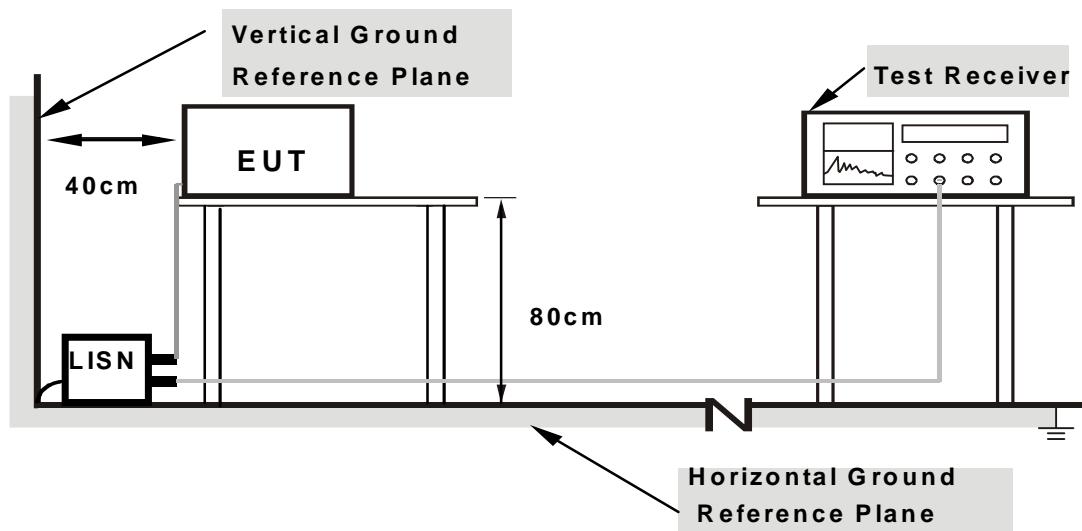
#### 4.1.3 TEST PROCEDURES

- 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) was not recorded.

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.1.5 TEST SETUP



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

For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.1.6 EUT OPERATING CONDITIONS

- Connected the EUT to notebook via USB cable and placed on a testing table.
- The notebook ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
- The necessary accessories enable the system in full functions.

#### 4.1.7 TEST RESULTS

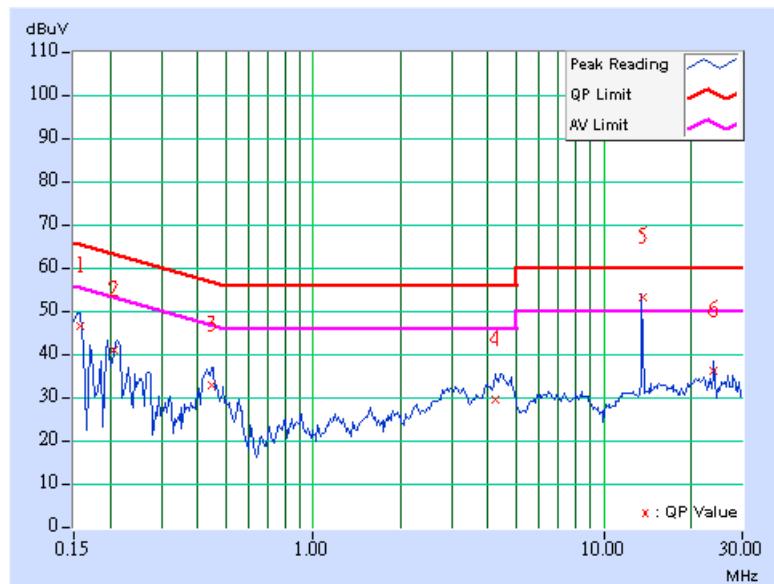
##### CONDUCTED WORST-CASE DATA

INPUT POWER	120Vac, 60Hz	PHASE	Line 1
MODULATION TYPE	ASK	ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 1006hPa
TESTED BY	Whisky Chang		

No	Freq. [MHz]	Corr. (dB)	Reading Value		Emission Level		Limit		Margin	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.158	0.10	46.03	-	46.13	-	65.58	55.58	-19.45	-
2	0.206	0.10	40.32	-	40.42	-	63.36	53.36	-22.94	-
3	0.447	0.10	32.01	-	32.11	-	56.93	46.93	-24.82	-
4	4.254	0.28	28.95	-	29.23	-	56.00	46.00	-26.77	-
<b>5</b>	<b>13.560</b>	<b>0.44</b>	<b>52.47</b>	<b>47.30</b>	<b>52.91</b>	<b>47.74</b>	<b>60.00</b>	<b>50.00</b>	<b>-7.09</b>	<b>-2.26</b>
6	24.003	0.77	35.47	-	36.24	-	60.00	50.00	-23.76	-

**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.



<b>INPUT POWER</b>	120Vac, 60Hz	<b>PHASE</b>	Line 2
<b>MODULATION TYPE</b>	ASK	<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 65%RH, 1006hPa
<b>TESTED BY</b>	Whisky Chang		

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
			Factor [MHz]	(dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]	
					Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.159	0.10	46.68	-	46.78	-	65.50	55.50	-18.72	-
2	0.207	0.10	39.51	-	39.61	-	63.31	53.31	-23.70	-
3	0.429	0.11	35.68	-	35.79	-	57.28	47.28	-21.49	-
4	0.767	0.17	25.50	-	25.67	-	56.00	46.00	-30.33	-
5	13.561	0.47	49.46	-	49.93	-	60.00	50.00	-10.07	-
6	24.003	0.69	33.68	-	34.37	-	60.00	50.00	-25.63	-

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

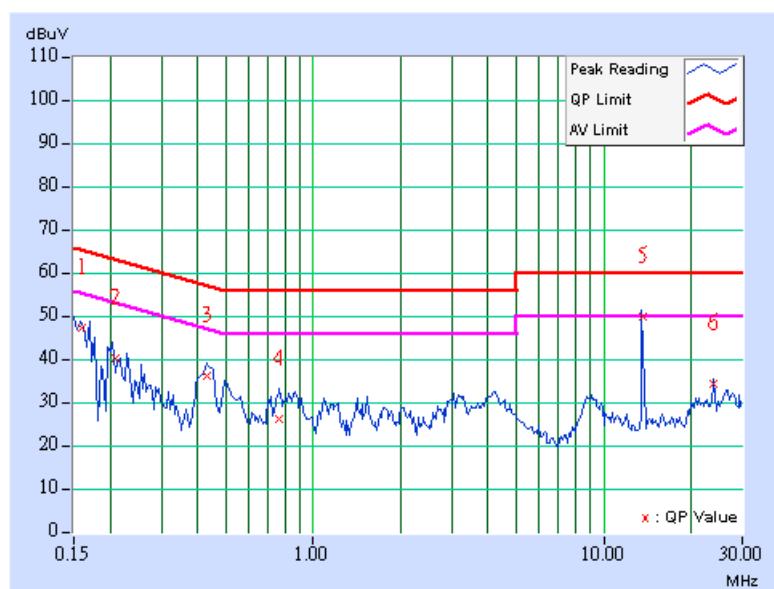
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

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)
13.110 – 14.010	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 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Jul. 27, 2008
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Feb. 26, 2008
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	May 31, 2008
HORN Antenna SCHWARZBECK	9120D	9120D-209	Jun. 28, 2008
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 28, 2007
Preamplifier Agilent	8447D	2944A10633	Oct. 28, 2008
Preamplifier Agilent	8449B	3008A01964	Oct. 23, 2008
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	238137/4	Dec. 11, 2007
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	233233/4	Nov. 14, 2007
Software ADT.	ADT_Radiated_V7.6	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA
Turn Table ADT.	TT100.	TT93021703	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA

**NOTE:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 3.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The VCCI Site Registration No. is R-237.
5. The IC Site Registration No. is IC3789B-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 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 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 10dB 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 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

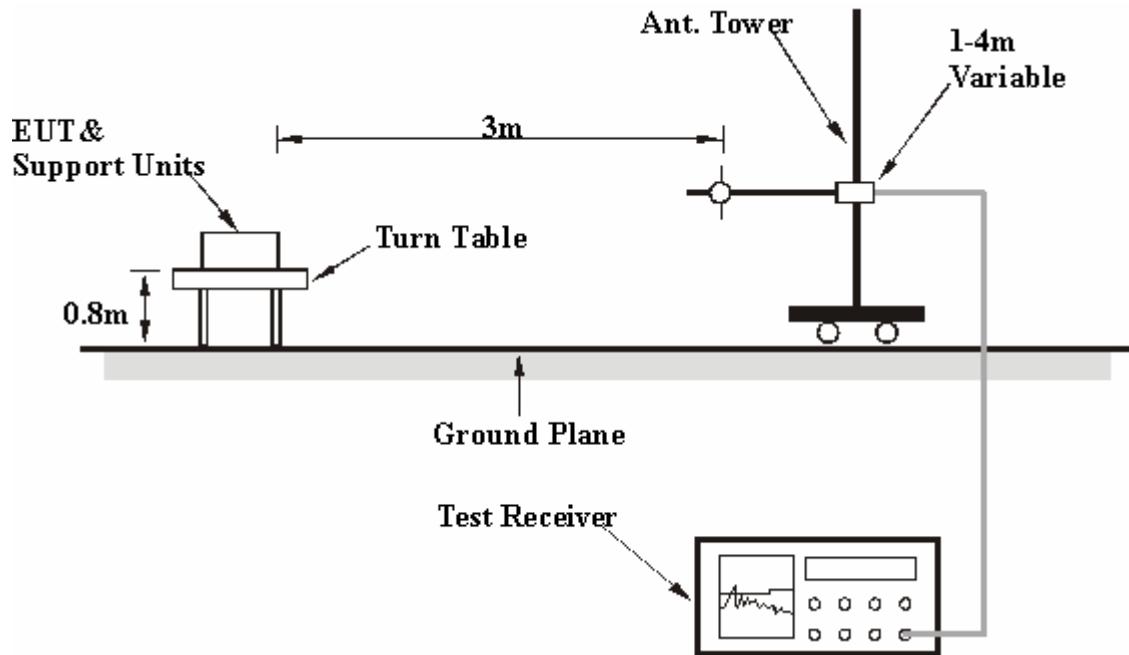
**NOTE:**

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.

#### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.2.5 TEST SETUP



For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.2.6 EUT OPERATING CONDITION

Same as 4.1.6.



#### 4.2.7 TEST RESULTS

##### RADIATED WORST-CASE DATA

INPUT POWER	120Vac, 60 Hz	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	26deg. C, 68%RH, 1006hPa	DETECTOR FUNCTION	Quasi-Peak
TESTED BY	Morgan Chen		

##### TEST DISTANCE: 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	63.02 QP	124.00	-60.98	1.00	293	44.58	18.44

**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.



<b>INPUT POWER</b>	120Vac, 60Hz	<b>FREQUENCY RANGE</b>	9kHz – 30MHz
<b>ENVIRONMENTAL CONDITIONS</b>	26deg. C, 68%RH, 1006hPa	<b>DETECTOR FUNCTION</b>	Quasi-Peak
<b>TESTED BY</b>	Morgan Chen		

<b>ANTENNA POLARITY &amp; TEST DISTANCE: LOOP ANTENNA OPEN AT 3 M</b>								
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	8.12	36.29 QP	69.54	-33.25	1.00 V	64	17.59	18.70
2	25.07	36.14 QP	69.54	-33.40	1.00 V	42	17.13	19.01

<b>ANTENNA POLARITY &amp; TEST DISTANCE: LOOP ANTENNA CLOSE AT 3 M</b>								
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	7.52	35.33 QP	69.54	-34.21	1.00 V	324	16.58	18.75
2	25.07	36.23 QP	69.54	-33.31	1.00 V	46	17.22	19.01

**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.
5. Loop Antenna was used for all frequency below 30MHz.



<b>INPUT POWER</b>	120Vac, 60Hz	<b>FREQUENCY RANGE</b>	30 – 1000MHz
<b>ENVIRONMENTAL CONDITIONS</b>	26deg. C, 68%RH, 1006hPa	<b>DETECTOR FUNCTION</b>	Quasi-Peak
<b>TESTED BY</b>	Morgan Chen		

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	162.73	42.01 QP	43.50	-1.49	2.00 H	66	27.71	14.30
2	175.72	42.43 QP	43.50	-1.07	2.00 H	76	29.11	13.32
3	202.94	38.49 QP	43.50	-5.01	1.50 H	97	27.10	11.39
4	257.38	39.31 QP	46.00	-6.69	1.50 H	94	25.77	13.54
5	346.82	35.56 QP	46.00	-10.44	1.25 H	166	19.17	16.39
6	624.85	42.31 QP	46.00	-3.69	1.25 H	43	19.29	23.02

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	<b>32.23</b>	<b>38.98 QP</b>	<b>40.00</b>	<b>-1.02</b>	<b>1.00 V</b>	<b>129</b>	<b>25.40</b>	<b>13.58</b>
2	66.84	37.93 QP	40.00	-2.07	1.25 V	28	24.83	13.10
3	162.73	42.11 QP	43.50	-1.39	1.25 V	165	27.81	14.30
4	175.72	42.35 QP	43.50	-1.15	1.25 V	169	29.03	13.32
5	420.70	25.07 QP	46.00	-20.93	1.50 V	112	6.70	18.37
6	624.85	35.97 QP	46.00	-10.03	1.25 V	127	12.95	23.02

**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 UNTIL
ANRITSU SPECTRUM ANALYZER	MS2667C	M10281	Mar. 07, 2008
WIT STANDARD TEMPERATURE AND HUMIDITY CHAMBER	TH-4S-C	W981030	Jun. 28, 2008

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

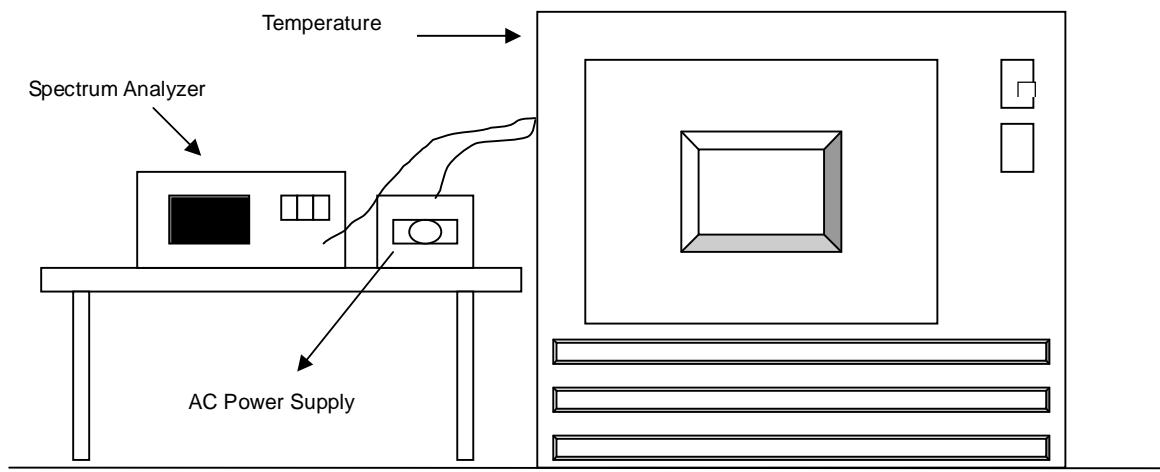
### 4.3.3 TEST PROCEDURE

- 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. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- f. 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

OPERATING FREQUENCY: 13.56MHz						LIMIT: ± 0.01%			
TEMP. (°C)	POWER SUPPLY (Vdc)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	7.4	13.561003	0.0073968	13.561002	0.0073894	13.561000	0.0073746	13.561001	0.0073820
40	7.4	13.561003	0.0073968	13.561003	0.0073968	13.561002	0.0073894	13.561001	0.0073820
30	7.4	13.561004	0.0074041	13.561005	0.0074115	13.561005	0.0074115	13.561006	0.0074189
20	7.4	13.561003	0.0073968	13.561006	0.0074189	13.561006	0.0074189	13.561005	0.0074115
10	7.4	13.561006	0.0074189	13.561005	0.0074115	13.561005	0.0074115	13.561004	0.0074041
0	7.4	13.561004	0.0074041	13.561004	0.0074041	13.561005	0.0074115	13.561005	0.0074115
-10	7.4	13.561006	0.0074189	13.561007	0.0074263	13.561005	0.0074115	13.561006	0.0074189
-20	7.4	13.561005	0.0074115	13.561006	0.0074189	13.561008	0.0074336	13.561008	0.0074336

TEMP. (°C)	POWER SUPPLY (Vdc)	0 MINUTE	
		(MHz)	(%)
20	8.4	13.561002	0.0073894
20	7.4	13.561003	0.0073968
20	6.8	13.561004	0.0074041



## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



## 6. 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.

<b>USA</b>	FCC, UL, A2LA
<b>Germany</b>	TUV Rheinland
<b>Japan</b>	VCCI
<b>Norway</b>	NEMKO
<b>Canada</b>	INDUSTRY CANADA , CSA
<b>R.O.C.</b>	TAF, BSMI, NCC
<b>Netherlands</b>	Telefication
<b>Singapore</b>	GOST-ASIA(MOU)
<b>Russia</b>	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](http://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](http://www.adt.com.tw)

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



## 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.