



# FCC TEST REPORT

**REPORT NO.:** RF930105R03

**MODEL NO.:** AHP289R1T

**RECEIVED:** Jan. 02, 2004

**TESTED:** Jan. 07, 2004

**APPLICANT:** AVANTI HEARTH PRODUCTS

**ADDRESS:** 204 South Avon Street Suite 200,  
Gastonia, NC 28054, United States

**ISSUED BY:** Advance Data Technology Corporation

**LAB LOCATION:** 47 14th Lin, Chiapau Tsun, Linko, Taipei,  
Taiwan, R.O.C.

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ILAC MRA

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## 1 CERTIFICATION

**PRODUCT :** BUILT-IN ELECTRIC FIREPLACE ON/OFF  
REMOTE CONTROL ( Transmitter Part )

**MODEL NO.:** AHP289R1T

**BRAND:** AVANTI

**APPLICANT :** AVANTI HEARTH PRODUCTS

**TEST ITEM:** ENGINEERING SAMPLE

**STANDARDS :** FCC Part 15, Subpart C (Section 15.231),  
ANSI C63.4-1992

We, **Advance Data Technology Corporation**, hereby certify that one sample of the designation has been tested in our facility on Jan. 07, 2004. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions herein specified.

**PREPARED BY:** Windy Chou, **DATE:** Jan. 09, 2004

Windy Chou

**APPROVED BY:** Ellis Wu, **DATE:** Jan. 09, 2004

Ellis Wu, Manager

## 2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C			
STANDARD PARAGRAPH	TEST TYPE	RESULT	REMARK
15.207	Conducted Emission Test	NA	12Vdc from batteries
15.209 15.231	Radiated Emission Test	PASS	Minimum passing margin is -0.99dB at 867.99MHz
15.231	20dB Occupied Bandwidth Measurement	PASS	Meet the requirement of limit

**NOTE:**

The information of measurement uncertainty is available upon the customer's request.

### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	BUILT-IN ELECTRIC FIREPLACE ON/OFF REMOTE CONTROL ( TRANSMITTER PART )
<b>MODEL NO.</b>	AHP289R1T
<b>BRAND</b>	AVANTI
<b>POWER SUPPLY</b>	12Vdc from batteries
<b>MODULATION TYPE</b>	ASK
<b>CARRIER FREQUENCY OF EACH CHANNEL</b>	433.92MHz
<b>NUMBER OF CHANNEL</b>	1
<b>ANTENNA TYPE</b>	Building PCB Trace antenna
<b>DATA CABLE</b>	NA
<b>I/O PORTS</b>	NA

#### NOTE:

1. The EUT include Transmitter part and Receiver part. The model no.: AHP289R1T includes Tx of 433.92MHz application used for control signal transmitting. Receiver part which model no.: AHP289R1R has been presented in DoC report.
2. For more detailed features description, please refer to the manufacturer's specifications or User's Manual.

### 3.2 DESCRIPTION OF TEST MODES

One channel is provided in the EUT :

Channel	Frequency
1	433.92 MHz

### 3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a BUILT-IN ELECTRIC FIREPLACE ON/OFF REMOTE CONTROL ( TRANSMITTER PART ). According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC Part 15, Subpart C. (15.231)**

**ANSI C63.4: 1992**

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

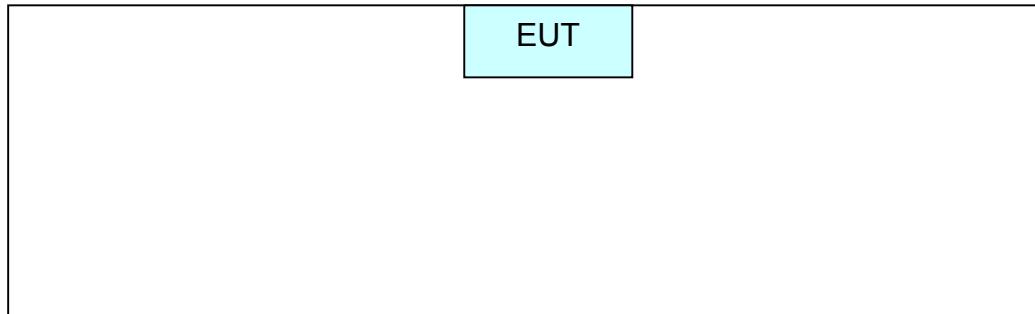
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NA				

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA

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

### 3.5 CONFIGURATION OF SYSTEM UNDER TEST



## 4. TEST TYPES AND RESULTS

### 4.1 CONDUCTED EMISSION MEASUREMENT

NA

### 4.2 RADIATED EMISSION MEASUREMENT

#### 4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

According to 15.231 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		Field Strength of Spurious	
	uV/meter	dBuV/meter	uV/meter	dBuV/meter
40.66 – 40.70	2250	67.04	225	48.04
70 – 130	1250	61.94	125	41.94
130 – 174	1250 to 3750	61.94 to 71.48	125 to 375	41.94 to 51.48
174 – 260	3750	71.48	75	37.50
260 – 470	3750 to 12500	71.48 to 81.94	375 to 1250	51.48 to 61.94
Above 470	12500	81.94	1250	61.94

**NOTE:**

- (1) Where F is the frequency in MHz, the formula for calculating the maximum permitted fundamental field strengths are as follows: for the band 130-174 MHz, uV/m at 3 meters =  $56.81818(F)-6136.3636$ ; for the band 260-470 MHz, uV/m at 3 meters =  $41.6667(F)-7083.3333$ . The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.
- (2) The above field strength limits are specified at a distance of 3meters. The tighter limits apply at the band edges.

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.

#### 4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
*HP Spectrum Analyzer	8593E	3911A07465	Jul. 07, 2004
*HP Preamplifier	8447D	2944A10386	Aug. 12, 2004
* HP Preamplifier	8449B	3008A01201	Nov. 11, 2004
SCHAFFNER Tunable Dipole Antenna	VHBA 9123	459	
SCHWARZBECK Tunable Dipole Antenna	UHA 9105	977	Jun. 26, 2004
*SCHAFFNER TEST RECEIVER	SCR 3501	409	Jan. 26, 2004
* SCHAFFNER BILOG Antenna	CBL6111C	2727	Jul. 15, 2004
SCHWARZBECK Horn Antenna	BBHA9120-D1	D130	Jun 30, 2004
ADT. Turn Table	TT100	0201	NA
* ADT. Tower	AT100	0201	NA
* Software	ADT_Radiated_V 5.14	NA	NA
* ANRITSU RF Switches	MP59B	6100237246	Oct. 17, 2004
* TIMES RF cable	LMR-600	CABLE-ST10-01	Oct. 17, 2004

**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. “\*” = These equipment are used for the final measurement.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The test was performed in ADT Open Site No. 10.
5. The VCCI Site Registration No. is R-1625.

#### 4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using the quasi-peak method or average method as specified and then reported in Data sheet peak mode and QP mode.

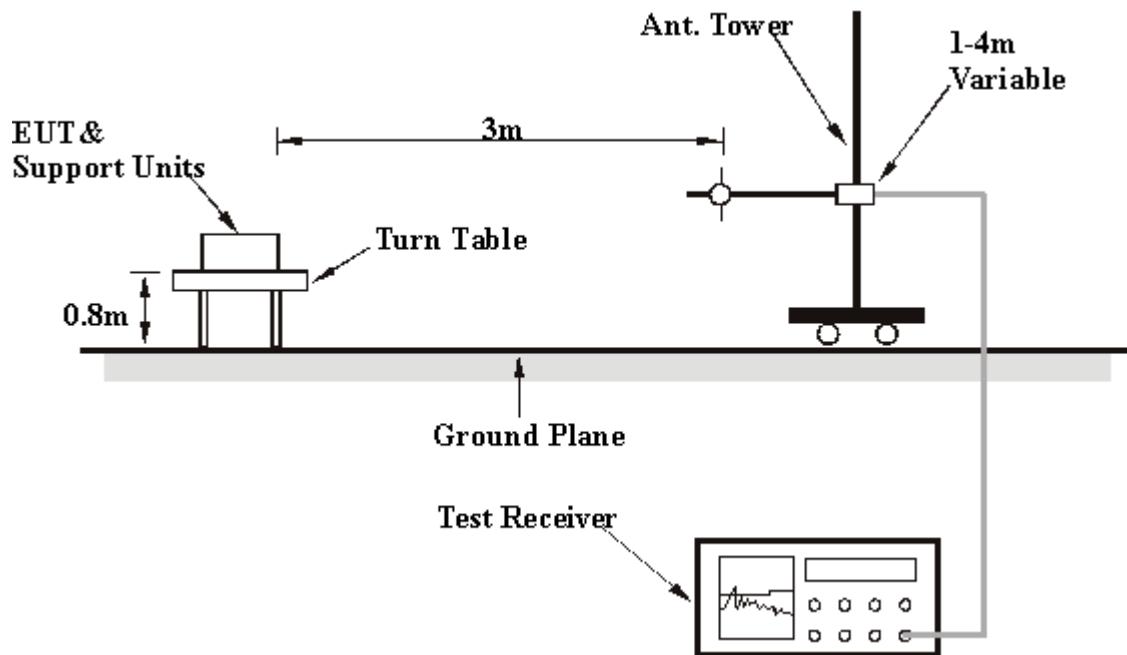
**NOTE:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

#### 4.2.4 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 CONDITIONS

Same as item 4.1.6

#### 4.2.7 TEST RESULTS

<b>EUT</b>	BUILT-IN ELECTRIC FIREPLACE ON/OFF REMOTE CONTROL ( TRANSMITTER PART )	<b>MODEL</b>	AHP289R1T
<b>FREQUENCY RANGE</b>	Below 1000MHz	<b>MODE</b>	X axis
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 70%RH, 991hPa		<b>TESTED BY:</b> Martin Lee

#### 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	*433.98	76.99 PK	100.00	-23.01	1.98 H	158	56.92	20.07
1	*433.98	65.82 AV	80.00	-14.18	1.98 H	158	45.75	20.07
2	<b>867.95</b>	<b>45.01 QP</b>	<b>46.00</b>	<b>-0.99</b>	<b>1.00 H</b>	<b>0</b>	<b>15.81</b>	<b>29.20</b>

#### 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	*433.98	56.22 PK	100.00	-43.78	1.25 V	78	36.15	20.07
1	*433.98	45.05 AV	80.00	-34.95	1.25 V	78	24.98	20.07
2	867.97	33.37 QP	46.00	-12.63	2.40 V	245	4.17	29.20

**NOTE:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB) = Antenna Factor (dB) + 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. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle)  
Where the duty factor is calculated from following formula:

$$20\log(\text{Duty cycle}) = 20\log \frac{0.42}{1.52\text{ms}} = -11.17\text{dB}$$

please see page 18,19 for plotted duty

<b>EUT</b>	BUILT-IN ELECTRIC FIREPLACE ON/OFF REMOTE CONTROL ( TRANSMITTER PART )	<b>MODEL</b>	AHP289R1T
<b>FREQUENCY RANGE</b>	Above 1000MHz	<b>MODE</b>	X axis
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Quasi-Peak
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 70%RH, 991hPa		<b>TESTED BY:</b> Martin Lee

**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	1302.00	56.81 PK	74.00	-17.19	1.00 H	250	27.94	28.88
1	1302.00	45.64 AV	54.00	-8.36	1.00 H	250	16.76	28.88
2	1736.00	45.21 PK	74.00	-28.79	1.00 H	253	15.54	29.67
3	2170.00	43.12 PK	74.00	-30.88	1.52 H	36	11.90	31.22

**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	1301.90	51.48 PK	74.00	-22.52	1.00 V	233	22.61	28.88
1	1301.90	40.31 AV	54.00	-13.69	1.00 V	233	11.43	28.88
2	1735.67	45.04 PK	74.00	-28.96	1.29 V	136	15.37	29.67
3	2170.00	44.12 PK	74.00	-29.88	1.00 V	202	12.90	31.22

**NOTE:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB) = Antenna Factor (dB) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle)  
Where the duty factor is calculated from following formula:

$$20\log(\text{Duty cycle}) = 20\log \frac{0.42}{1.52\text{ms}} = -11.17\text{dB}$$

please see page 18,19 for plotted duty

<b>EUT</b>	BUILT-IN ELECTRIC FIREPLACE ON/OFF REMOTE CONTROL ( TRANSMITTER PART )	<b>MODEL</b>	AHP289R1T
<b>FREQUENCY RANGE</b>	Below 1000MHz	<b>MODE</b>	Y axis
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 70%RH, 991hPa		<b>TESTED BY:</b> Martin Lee

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	*433.98	75.81 PK	100.00	-24.19	1.58 H	47	55.74	20.07
1	*433.98	64.64 AV	80.00	-15.36	1.58 H	47	44.57	20.07
2	867.95	42.82 QP	46.00	-3.18	1.97 H	260	13.62	29.20

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	*433.98	70.30 PK	100.00	-29.70	1.78 V	69	50.23	20.07
1	*433.98	59.13 AV	80.00	-20.87	1.78 V	69	39.06	20.07
2	867.95	41.32 QP	46.00	-4.68	1.64 V	118	12.12	29.20

**NOTE:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB) = Antenna Factor (dB) + 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. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle)  
Where the duty factor is calculated from following formula:

$$20\log(\text{Duty cycle}) = 20\log \frac{0.42}{1.52\text{ms}} = -11.17\text{dB}$$

please see page 18,19 for plotted duty

<b>EUT</b>	BUILT-IN ELECTRIC FIREPLACE ON/OFF REMOTE CONTROL ( TRANSMITTER PART )	<b>MODEL</b>	AHP289R1T
<b>FREQUENCY RANGE</b>	Above 1000MHz	<b>MODE</b>	Y axis
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Quasi-Peak
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 70%RH, 991hPa		<b>TESTED BY:</b> Martin Lee

**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	1302.00	54.31 PK	74.00	-19.69	1.00 H	249	25.44	28.88
1	1302.00	43.14 AV	54.00	10.86	1.00 H	249	14.26	28.88
2	1735.90	45.71 PK	74.00	-28.29	1.00 H	104	16.04	29.67
3	2169.00	43.12 PK	74.00	-30.88	1.20 H	36	11.90	31.22

**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	1301.80	54.81 PK	74.00	-19.19	1.00 V	3	25.94	28.88
1	1301.80	43.64 AV	54.00	-10.36	1.00 V	3	14.76	28.88
2	1736.00	45.88 PK	74.00	-28.12	1.00 V	197	16.21	29.67
3	2169.00	42.72 PK	74.00	-31.28	1.32 V	84	11.50	31.22

**NOTE:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB) = Antenna Factor (dB) + 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. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle)  
Where the duty factor is calculated from following formula:

$$20\log(\text{Duty cycle}) = 20\log \frac{0.42}{1.52\text{ms}} = -11.17\text{dB}$$

please see page 18,19 for plotted duty

<b>EUT</b>	BUILT-IN ELECTRIC FIREPLACE ON/OFF REMOTE CONTROL ( TRANSMITTER PART )	<b>MODEL</b>	AHP289R1T
<b>FREQUENCY RANGE</b>	Below 1000MHz	<b>MODE</b>	Z axis
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 70%RH, 991hPa		<b>TESTED BY:</b> Martin Lee

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	*433.98	64.95 PK	100.00	-35.05	1.45 H	187	44.88	20.07
1	*433.98	53.78 AV	80.00	-26.22	1.45 H	187	33.71	20.07
2	867.96	38.73 QP	46.00	-7.27	1.42 H	351	9.53	29.20

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	*433.98	76.28 PK	100.00	-23.72	1.52 V	303	56.21	20.07
1	*433.98	65.11 AV	80.00	-14.89	1.52 V	303	45.04	20.07
2	867.96	37.18 QP	46.00	-8.82	2.19 V	51	7.98	29.20

**NOTE:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB) = Antenna Factor (dB) + 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. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle)  
Where the duty factor is calculated from following formula:

$$20\log(\text{Duty cycle}) = 20\log \frac{0.42}{1.52\text{ms}} = -11.17\text{dB}$$

please see page 18,19 for plotted duty

<b>EUT</b>	BUILT-IN ELECTRIC FIREPLACE ON/OFF REMOTE CONTROL ( TRANSMITTER PART )	<b>MODEL</b>	AHP289R1T
<b>FREQUENCY RANGE</b>	Above 1000MHz	<b>MODE</b>	Z axis
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Quasi-Peak
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 70%RH, 991hPa		<b>TESTED BY:</b> Martin Lee

**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	1302.00	48.65 PK	74.00	-25.35	1.00 H	4	19.78	28.88
2	1735.90	43.38 PK	74.00	-30.62	1.21 H	45	13.71	29.67
3	2169.00	43.12 PK	74.00	-30.88	1.32 H	58	11.90	31.22

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

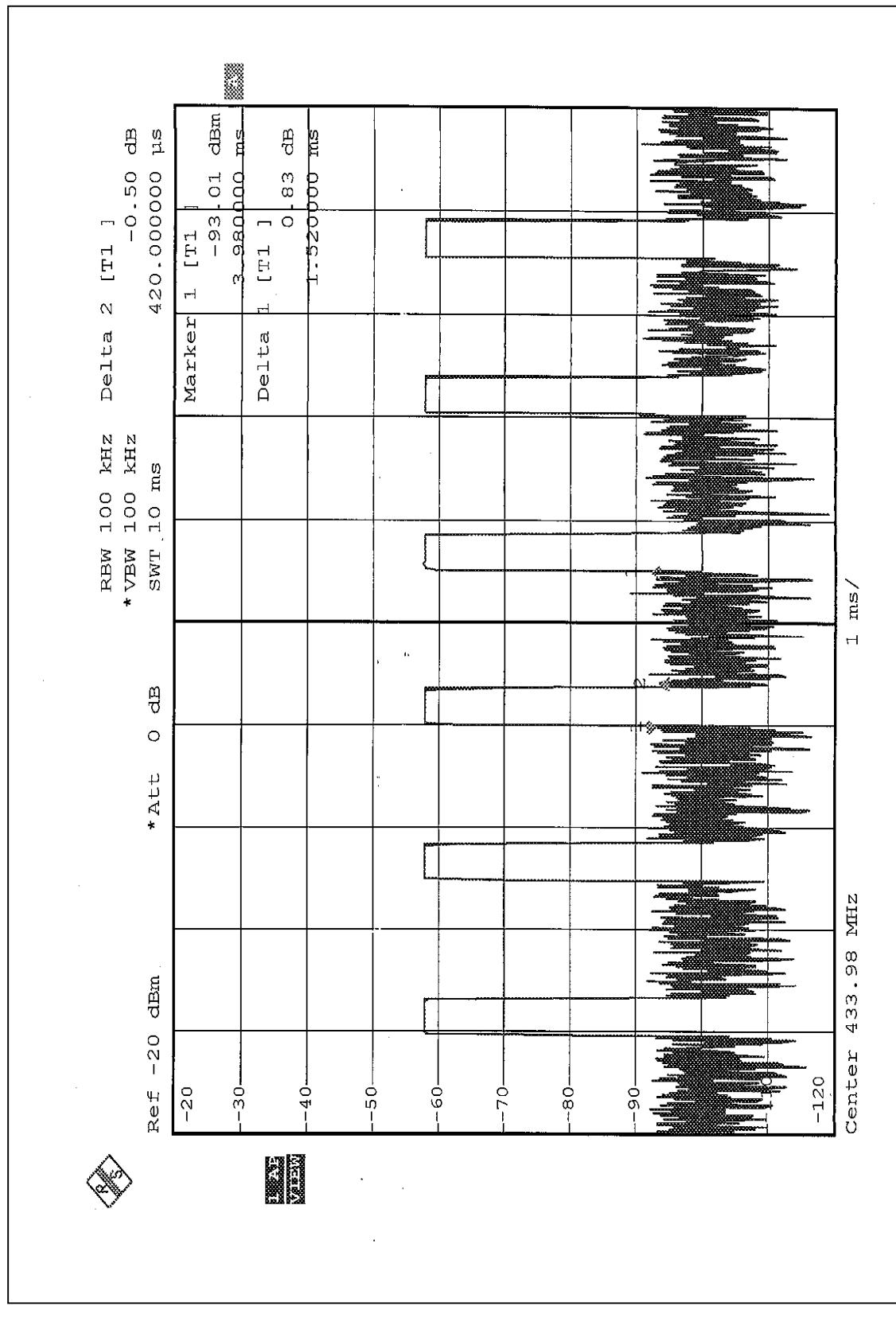
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1302.00	54.48 PK	74.00	-19.52	1.00 V	0	25.61	28.88
1	1302.00	43.31 AV	54.00	-10.69	1.00 V	0	14.43	28.88
2	1736.00	48.38 PK	74.00	-25.62	1.00 V	346	18.71	29.67
3	2169.00	44.12 PK	74.00	-29.88	1.12 V	14	12.90	31.22

**NOTE:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB) = Antenna Factor (dB) + 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. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle)  
Where the duty factor is calculated from following formula:

$$20\log(\text{Duty cycle}) = 20\log \frac{0.42}{1.52\text{ms}} = -11.17\text{dB}$$

please see page 18,19 for plotted duty



### 4.3 20dB OCCUPIED BANDWIDTH MEASUREMENT

#### 4.3.1 LIMITS OF BAND EDGES MEASUREMENT

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for device operating above 70 MHz and below 900 MHz.

Fundamental Frequency (MHz)	Limit of 20 dB Bandwidth(kHz)
433.92	1084.8

#### 4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2004

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

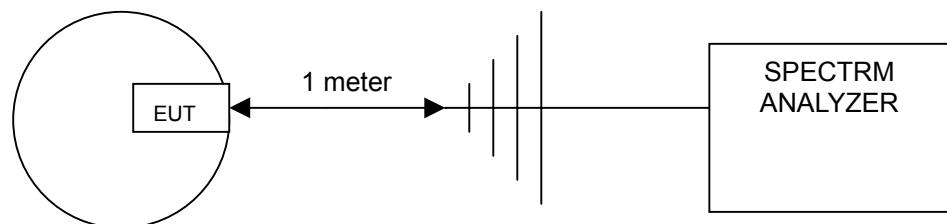
#### 4.3.3 TEST PROCEDURES

- 1 The EUT was placed on the turning table.
- 2 The signal was coupled to the spectrum analyzer through an antenna.
- 3 Set the resolution bandwidth to 100kHz and video bandwidth to 100kHz then select Peak function to scan the channel frequency.
- 4 The 20dB bandwidth was measured and recorded.

#### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation

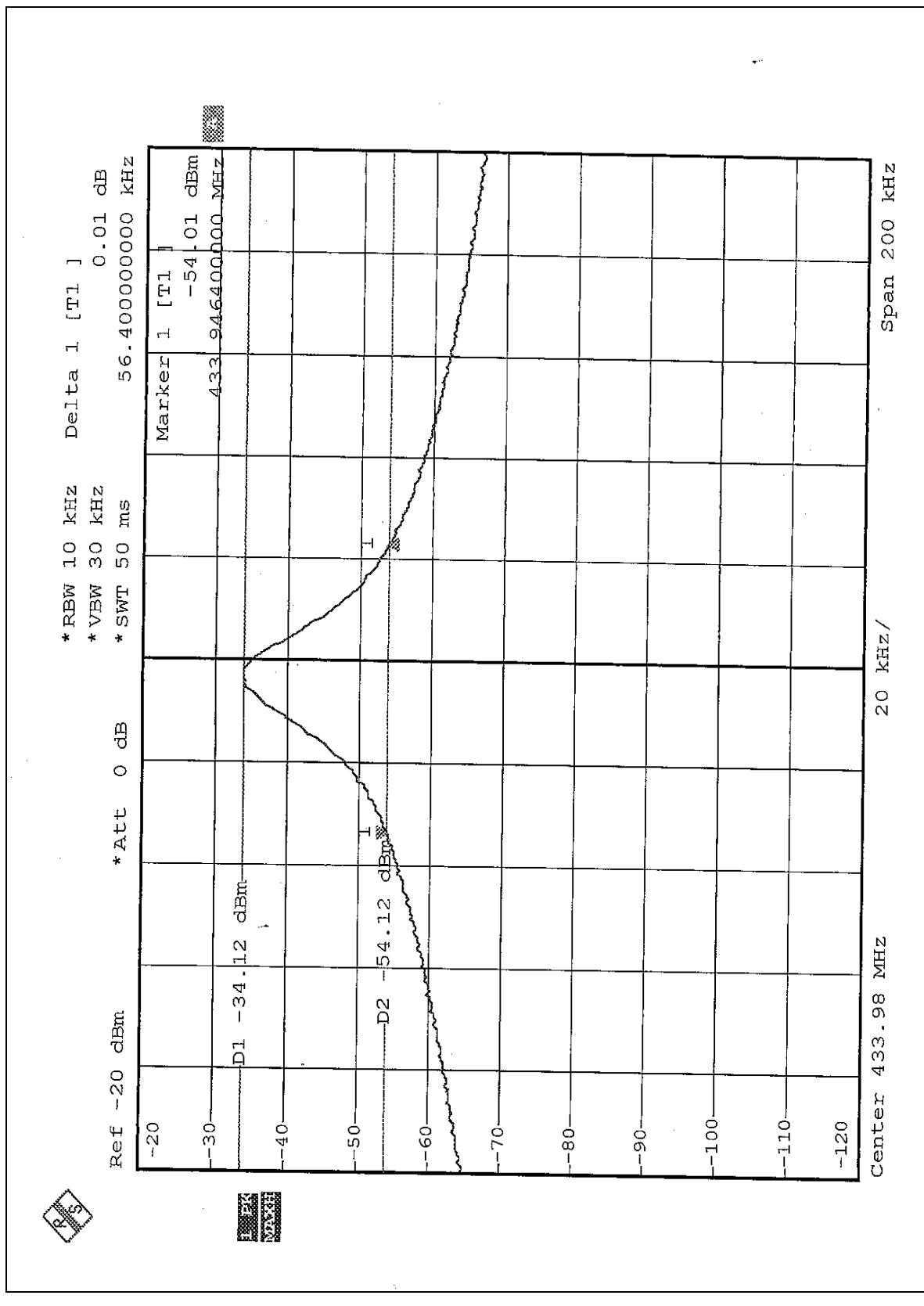
#### 4.3.5 TEST SETUP



#### 4.3.6 TEST RESULTS

Frequency (MHz)	20 dB bandwidth (kHz)	Maximum limit (kHz)	PASS/FAIL
433.92	56.40	1084.80	PASS

The plot of test result is attached as below.



## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

RADIATED EMISSION TEST  
(For X axis)



(For Y axis)



(For Z axis)



## 6. INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025, Guide 25 or EN 45001:

<b>USA</b>	FCC, NVLAP
<b>Germany</b>	TUV Rheinland
<b>Japan</b>	VCCI
<b>New Zealand</b>	MoC
<b>Norway</b>	NEMKO
<b>R.O.C.</b>	BSMI, DGT, CNLA

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).

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**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.