



FCC TEST REPORT

REPORT NO.: 071114FIA01

MODEL NO.: RG01-1T

RECEIVED: Nov. 13, 2007

TESTED: Nov. 13 ~ Nov. 16, 2007

ISSUED: Nov. 20, 2007

APPLICANT: ProCom Electric Appliances (Shanghai) Co., Ltd.

ADDRESS: #1118 Huicheng Road, Nanhui Industrial Park,
Nanhui 201300, Shanghai

ISSUED BY: ADT (Shanghai) Corporation

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Shanghai, China

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ADT (Shanghai) Corporation.



No. 2343.01

V 2.1.0

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1 CERTIFICATION

PRODUCT: Fireplace Transmitter

MODEL NO.: RG01-1T

APPLICANT: ProCom Electric Appliances (Shanghai) Co., Ltd.

TESTED: Nov. 13 ~ Nov. 16, 2007

TEST ITEM: ENGINEERING SAMPLE

STANDARDS: FCC Part 15:2007,
Subpart C (Section 15.209 and 15.231),
ANSI C63.4-2003

We, **ADT (Shanghai) Corporation**, declare that the equipment above has been tested in our facility and found compliance with the requirement limits of applicable standards. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate under the standards herein specified.

**TECHNICAL
ACCEPTANCE :** Joy Zhu, **DATE:** NOV. 20, 2007
Joy Zhu
Engineering Supervisor

APPROVED BY : Wallace Pan, **DATE:** NOV. 20, 2007
Wallace Pan
Director of Operations

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	Remarks
15.207	Conducted Emission Test	N/A	Please refer to 4.1.2.
15.231(a)	De-activation Time	PASS	Meet the requirement of limit
15.209 15.231(b)	Radiated Emission Test	PASS	Minimum passing margin is -18.04 dB at 1301.76 MHz
15.231(c)	20dB Occupied Bandwidth Measurement	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	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz ~ 30MHz	3.04 dB
Radiated emissions	30MHz ~ 200MHz (Horizontal)	4.42 dB
	30MHz ~ 200MHz (Vertical)	4.62 dB
	200MHz ~ 1000MHz (Horizontal)	4.06 dB
	200MHz ~ 1000MHz (Vertical)	4.16 dB

Note: The measurement uncertainty is factored into the compliance determination. The additional information is listed on APPENDIX B of this report.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Fireplace Transmitter
MODEL NO.	RG01-1T
POWER SUPPLY	4.5Vdc from batteries
MODULATION TYPE	ASK
CARRIER FREQUENCY OF EACH CHANNEL	434.032 MHz
NUMBER OF CHANNEL	1
ANTENNA TYPE	Printed antenna
DATA CABLE SUPPLIED	N/A
I/O PORTS	N/A

NOTE: 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.

3.2 DESCRIPTION OF TEST MODES

One channel is provided to this EUT:

Channel	Frequency
1	434.032 MHz

Two buttons with remote controller are provided to this EUT:

No.	Button
1	Switch button
2	Background light control button

TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:

EUT configure mode	Applicable to				Description
	PLC	De-a T	RE	20dB OBM	
A	-	√	√	√	Continuously transmitting

Where PLC: Power Line Conducted Emission

De-a T: De-activation Time

RE: Radiated Emission

20dB OBM: 20dB Occupied Bandwidth Measurement

Radiated Emission Test:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, and X.Y.Z. axis.
- Following channel(s) was (were) selected for the final test as listed below.

Available Channel	Tested Channel	Modulation Type	Axis
1	1	ASK	X



3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

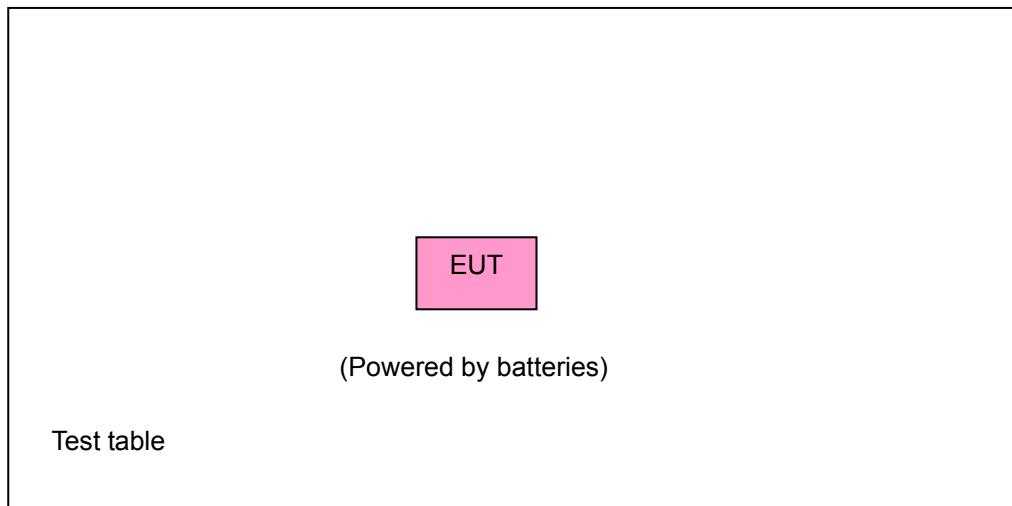
FCC Part 15, Subpart C. (15.231)

ANSI C63.4- 2003

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

3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit.



Note: When doing the test, fresh batteries were used.

4 EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY (MHz)	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

NOTES: 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.

4.1.2 TEST RESULTS

Since the EUT does not have AC power port, the test item is not applicable.

4.2 DEACTIVATION TIME

4.2.1 LIMITS OF DEACTIVATION TIME MEASUREMENT

TEST STANDARD:

FCC Part 15: 2005, Subpart C (Section: 15.231(a))

A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

4.2.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SIGNAL ANALYZER Rohde & Schwarz	FSP	E1S1002	Mar. 16, 2008
Logarithmic Periodic Antenna Sunol Sciences	LP1	E1A1008	Oct. 20, 2008

NOTE: The calibration interval of the above test instruments is 12 months.

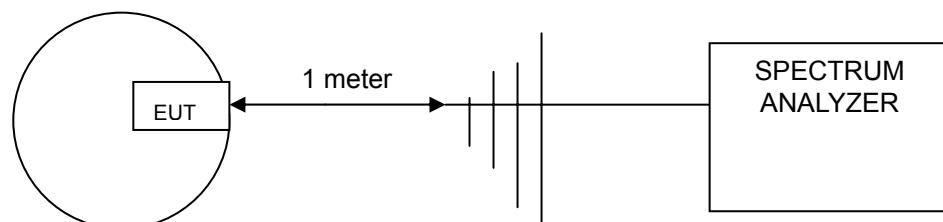
4.2.3 TEST PROCEDURES

- 1 The EUT was placed on the turning table.
- 2 The signal was coupled to the spectrum analyzer through an antenna.
- 3 The transmission duration was measured and recorded.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

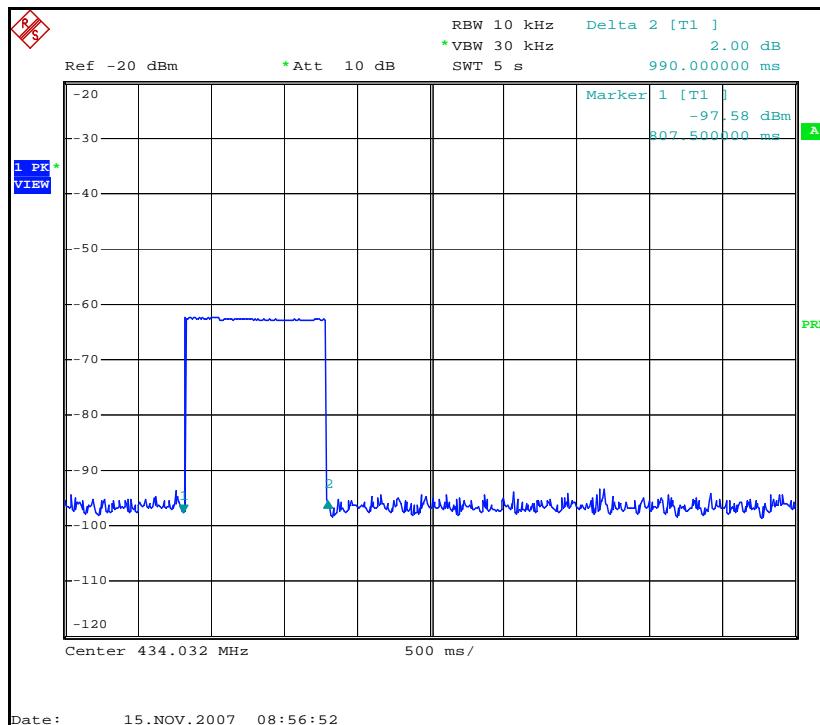
4.2.5 TEST SETUP



4.2.6 TEST RESULTS

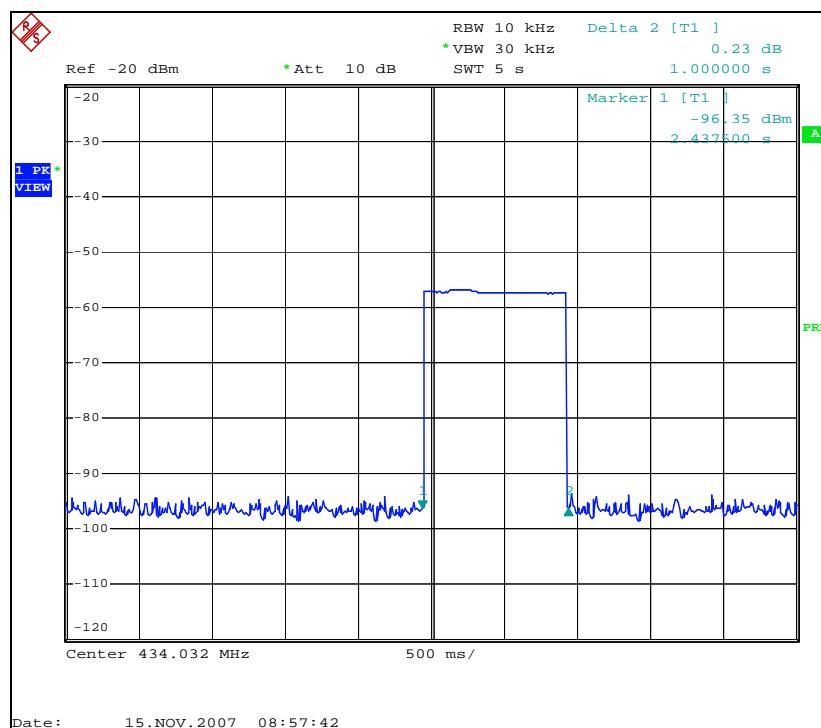
Push button	Frequency (MHz)	Transmission duration (sec)	Maximum limit (sec)	Pass / Fail
1	434.032	0.99	5	PASS
2	434.032	1	5	PASS

Button 1



Button 2

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4.3 RADIATED EMISSION MEASUREMENT

4.3.1 LIMITS OF RADIATED EMISSION MEASUREMENT

TEST STANDARD:

FCC Part 15: 2005, Subpart C (Section: 15.205)

FCC Part 15: 2005, Subpart C (Section: 15.209)

FCC Part 15: 2005, Subpart C (Section: 15.231(b))

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.

FREQUENCY RANGE OF RADIATED MEASUREMENT

(For intentional radiators)

If the intentional radiator operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	E1R1001	Apr. 19, 2008
BILOG Antenna SCHWARZBECK	VULB9168	E1A1001	Sept. 26, 2008
Preamplifier Agilent	8447D	E1A2001	Jan. 27, 2008
Preamplifier Agilent	8449B	E1A2002	Jan. 27, 2008
Double Ridged Broadband Horn Antenna Schwarzbeck	BBHA 9120D	E1A1002	Feb. 15, 2008
*Spectrum Analyzer Agilent	E4403B	E1S1001	Jan. 13, 2008
*Spectrum Analyzer ROHDE & SCHWARZ	FSP	E1S1002	May. 15, 2008
RF signal cable Woken	RG-402	E1CBH01	May. 30, 2008
RF signal cable Woken	RG-402	E1CBH16	May. 30, 2008
RF signal cable Woken	RG-402	E1CBH20	May. 30, 2008
RF signal cable Woken	RG-412	E1CBL02	May. 30, 2008
RF signal cable Woken	RG-412	E1CBL03	May. 30, 2008
RF signal cable Woken	RG-412	E1CBL04	May. 30, 2008
Software ADT	ADT_Radiated_V7.5	N/A	N/A

NOTE:

1. The calibration interval of the above test instruments is 12 months.
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 Spectrum Analyzer (model: FSP) and RF signal cable (SERIAL: E1CBH05&E1CBH07) are used only for the measurement of emission frequency above 1GHz if tested.



4.3.3 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 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.

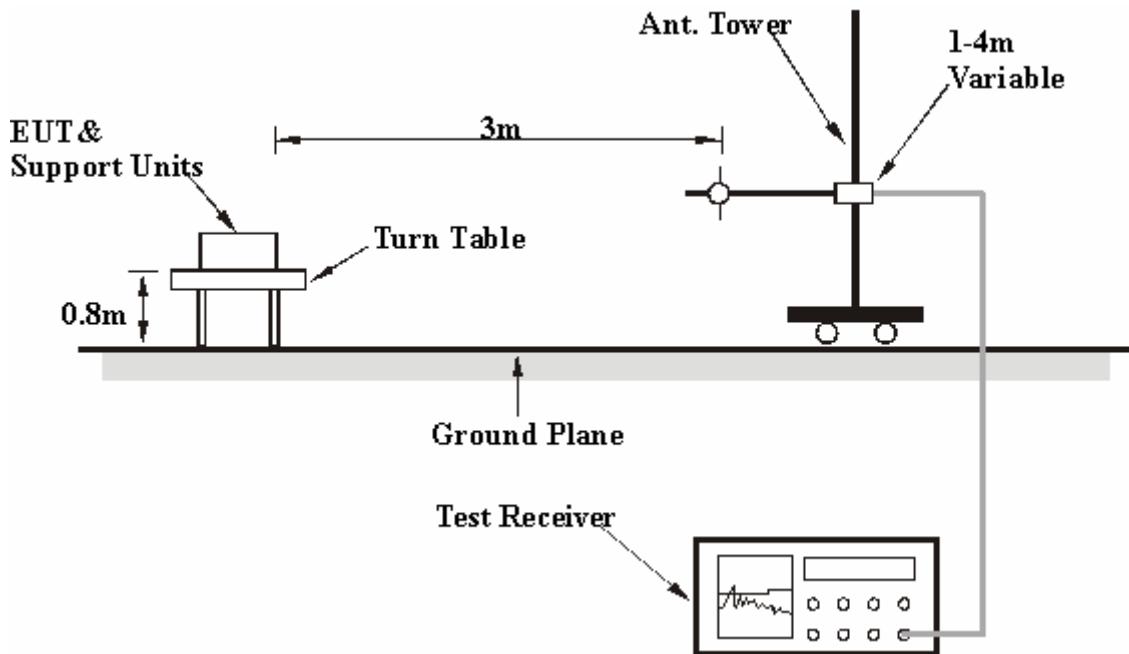
NOTE:

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

4.3.4 DEVIATION FROM TEST STANDARD

No deviation.

4.3.5 TEST SETUP



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

4.3.6 EUT OPERATING CONDITIONS

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

4.3.7 TEST RESULTS

Below 1GHz Worst-Case Data

EUT	Remote controller	MODEL NO.	RG01-1T
CHANNEL	Channel 1	FREQUENCY RANGE	30 ~ 1000 MHz
MODULATION TYPE	ASK	INPUT POWER (SYSTEM)	4.5 Vdc from batteries
ENVIRONMENTAL CONDITIONS	20 deg. C, 50% RH, 1000 hPa	DETECTOR FUNCTION	Quasi-Peak / Peak/ Average
TESTED BY	REBECCA		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	233.7QP	14.61	-8.82	5.79	46	-40.21	99	7
2	350.1QP	17.47	-8.48	8.99	46	-37.01	99	19
3*	434.03PK	19.71	34.02	53.73	100.83	-47.1	99	0
3*	434.98AV	19.74	19.45	39.16	80.83	-41.67	99	0
4	602.3QP	23.17	-8.23	14.94	46	-31.06	99	59
5	740.52QP	25.24	-8.97	16.27	46	-29.73	99	208
6	813.27QP	26.11	-8.19	17.91	46	-28.09	99	0
7	868.07PK	26.43	21.37	47.8	80.83	-33.03	99	0
7	868.09AV	26.43	6.8	33.23	60.83	-27.6	99	0
8	941.8QP	27.77	-7.59	20.18	46	-25.82	99	19

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	190.05QP	13.44	-9	4.44	43.5	-39.06	100	162
2	323.43QP	17.1	-8.99	8.12	46	-37.88	100	210
3*	434.02PK	19.71	33.46	53.17	100.83	-47.66	101	19
3*	434.04AV	19.71	18.89	38.6	80.83	-42.23	100	19
4	478.62QP	20.56	-8.2	12.36	46	-33.64	100	111
5	583QP	22.78	-8.72	14.07	46	-31.93	100	58
6	711.25QP	24.81	-0.84	23.97	46	-22.03	100	313
7	806QP	25.95	-7.99	17.96	46	-28.04	100	301
8	868.06PK	26.43	13.55	39.98	80.83	-40.85	100	0
8	868.07AV	26.43	-1.02	25.41	60.83	-35.42	100	19

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 and spurious emission is: Average = Peak value + 20log(Duty cycle)

Where the duty factor is calculated from following formula:

$$20\log(\text{Duty cycle}) = 20\log \frac{40*0.43+1.49\text{ms}}{100\text{ms}} = -14.56\text{dB}$$

please see page 21~22 for plotted duty

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About 1GHz Worst-Case Data

EUT	Remote controller	MODEL NO.	RG01-1T
CHANNEL	Channel 1	FREQUENCY RANGE	1 GHz ~ 5 GHz
MODULATION TYPE	ASK	INPUT POWER (SYSTEM)	4.5 Vdc from batteries
ENVIRONMENTAL CONDITIONS	20 deg. C, 50% RH, 1000 hPa	DETECTOR FUNCTION	Peak/ Average
TESTED BY	REBECCA		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	1301.76PK	29.69	20.84	50.53	74	-23.47	100	67
1	1301.76AV	29.69	6.27	35.96	54	-18.04	100	45
2	1735.68PK	29.33	19.69	49.02	80.83	-31.81	100	345
2	1735.68AV	29.33	5.12	34.45	60.83	-26.38	100	54
3	2169.6PK	32.62	16.41	49.03	80.83	-31.8	100	157
3	2169.6AV	32.62	1.84	34.46	60.83	-26.37	100	129
4	2603.52PK	32.89	16.55	49.43	80.83	-31.4	100	48
4	2603.52AV	32.89	1.98	34.86	60.83	-25.97	100	74
5	3037.44PK	33.65	16.4	50.05	80.83	-30.78	100	38
5	3037.44AV	33.65	1.83	35.48	60.83	-25.35	100	84
6	3471.36PK	33.22	16.1	49.32	80.83	-31.51	100	181
6	3471.36AV	33.22	1.53	34.75	60.83	-26.08	100	25
7	3905.28PK	35.64	14.18	49.82	74	-24.18	100	67
7	3905.28AV	35.64	-0.39	35.25	54	-18.75	100	175
8	4339.2PK	37.37	13.67	51.05	74	-22.95	100	142
8	4339.2AV	37.37	-0.9	36.48	54	-17.52	100	101

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Factor (dB/M)	Reading (dBuV/M)	Emission (dBuV/M)	Limit (dBuV/M)	Margin (dB)	Ant. Height (cm)	Table Angle (Deg.)
1	1301.76PK	29.69	19.52	49.22	74	-24.78	100	52
1	1301.76AV	29.69	4.95	34.65	54	-19.35	100	124
2	1735.68PK	29.33	18.37	47.71	80.83	-33.12	100	37
2	1735.68AV	29.33	3.8	33.14	60.83	-27.69	100	65
3	2169.6PK	32.62	17.09	49.71	80.83	-31.12	100	171
3	2169.6AV	32.62	2.52	35.14	60.83	-25.69	100	92
4	2603.52PK	32.89	16.02	48.9	80.83	-31.93	100	146
4	2603.52AV	32.89	1.45	34.33	60.83	-26.5	100	275
5	3037.44PK	33.65	15.4	49.06	80.83	-31.77	100	103
5	3037.44AV	33.65	0.83	34.49	60.83	-26.34	100	31
6	3471.36PK	33.22	16.53	49.75	80.83	-31.08	100	228
6	3471.36AV	33.22	1.96	35.18	60.83	-25.65	100	378
7	3905.28PK	35.64	12.63	48.27	74	-25.73	100	310
7	3905.28AV	35.64	-1.94	33.7	54	-20.3	100	154
8	4339.2PK	37.37	13.94	51.31	74	-22.69	100	99
8	4339.2AV	37.37	-0.63	36.74	54	-17.26	100	21

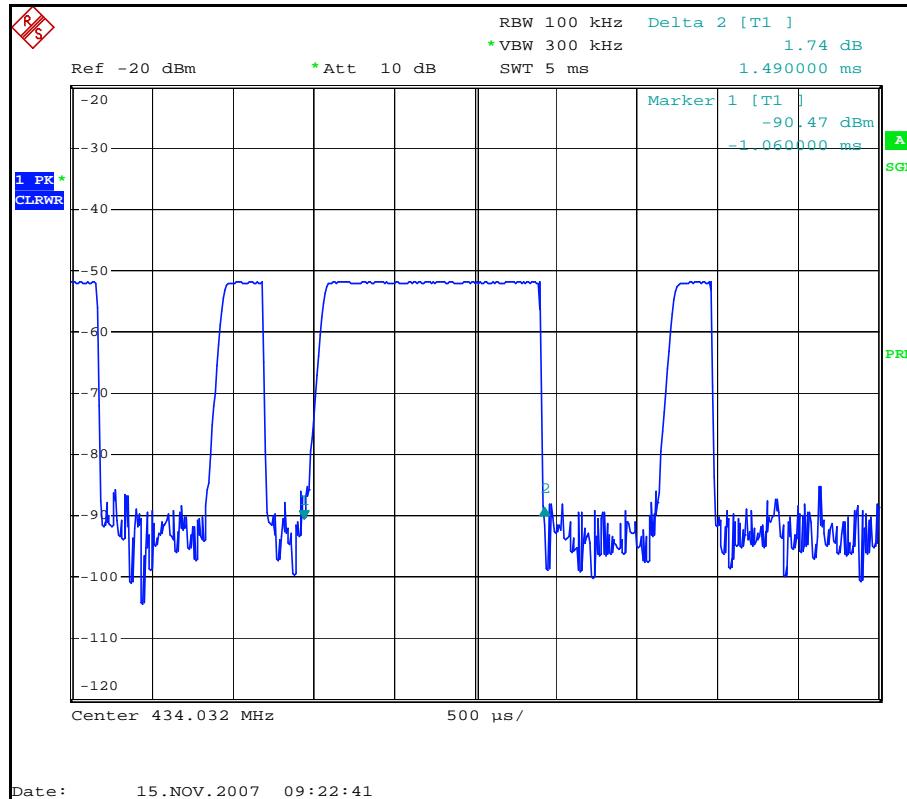
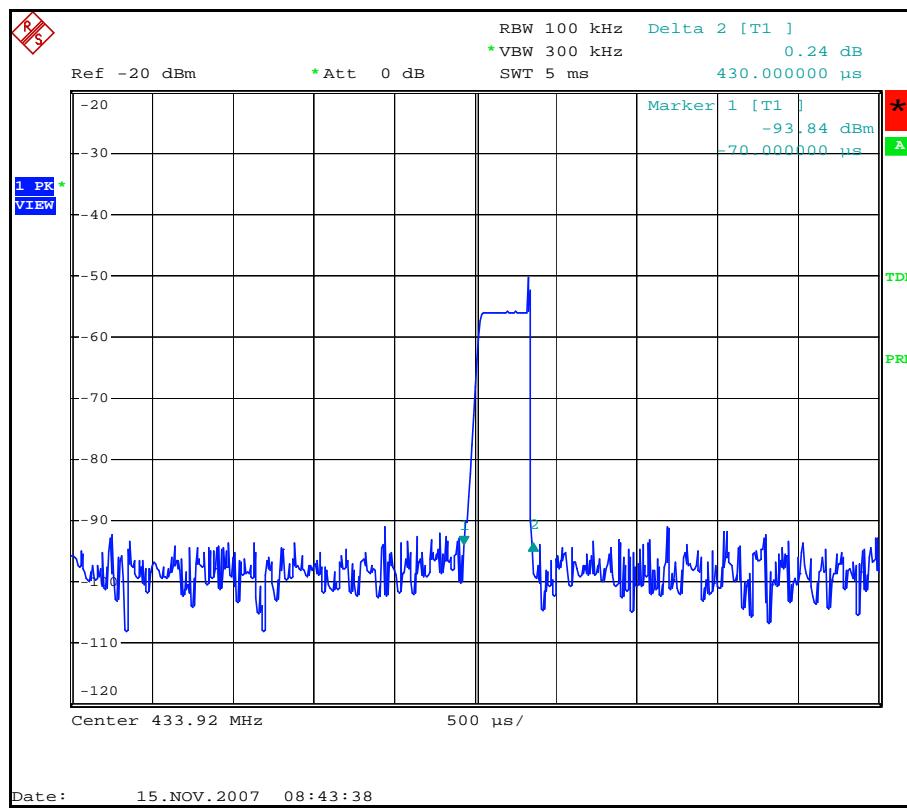
REMARKS:

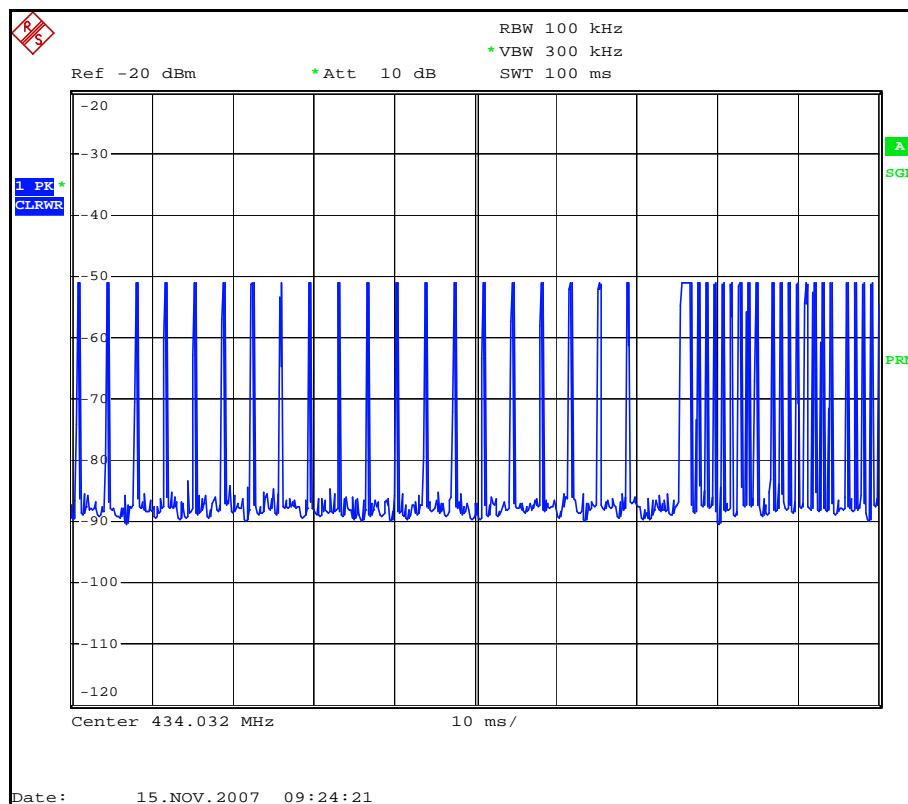
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The average value of fundamental frequency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

$$20\log(\text{Duty cycle}) = 20\log \frac{40*0.43+1.49\text{ms}}{100\text{ms}} = -14.56\text{dB}$$

please see page 21~22 for plotted duty

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Note: According to the repeated test several times, the graph shows that the 100ms window is the worst 100ms transmission that the device is capable of by calculating.



20DB OCCUPIED BANDWIDTH MEASUREMENT

4.3.8 LIMITS OF BAND EDGES MEASUREMENT

TEST STANDARD:

FCC Part 15: 2005, Subpart C (Section: 15.231(C))

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)
434.032	1085.08

4.3.9 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SIGNAL ANALYZER Rohde & Schwarz	FSP	E1S1002	Mar. 16, 2008
Logarithmic Periodic Antenna Sunol Sciences	LP1	E1A1008	Oct. 20, 2008

NOTE: The calibration interval of the above test instruments is 12 months.

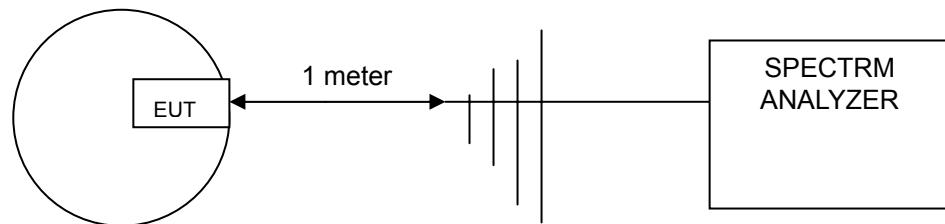
4.3.10 TEST PROCEDURES

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 300 kHz then select Peak function to scan the channel frequency.
4. The 20dB bandwidth was measured and recorded.

4.3.11 DEVIATION FROM TEST STANDARD

No deviation.

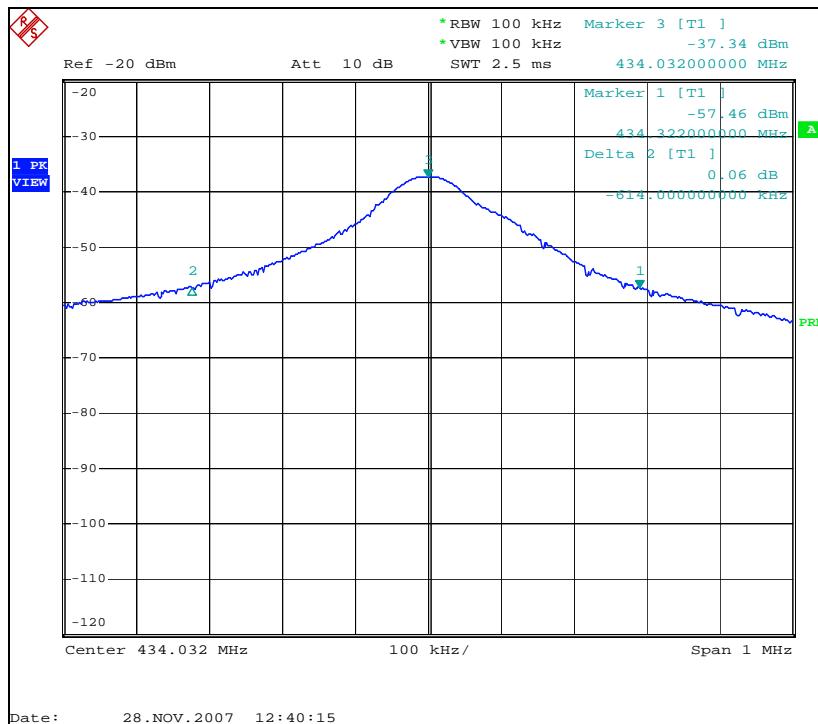
4.3.12 TEST SETUP



4.3.13 TEST RESULTS

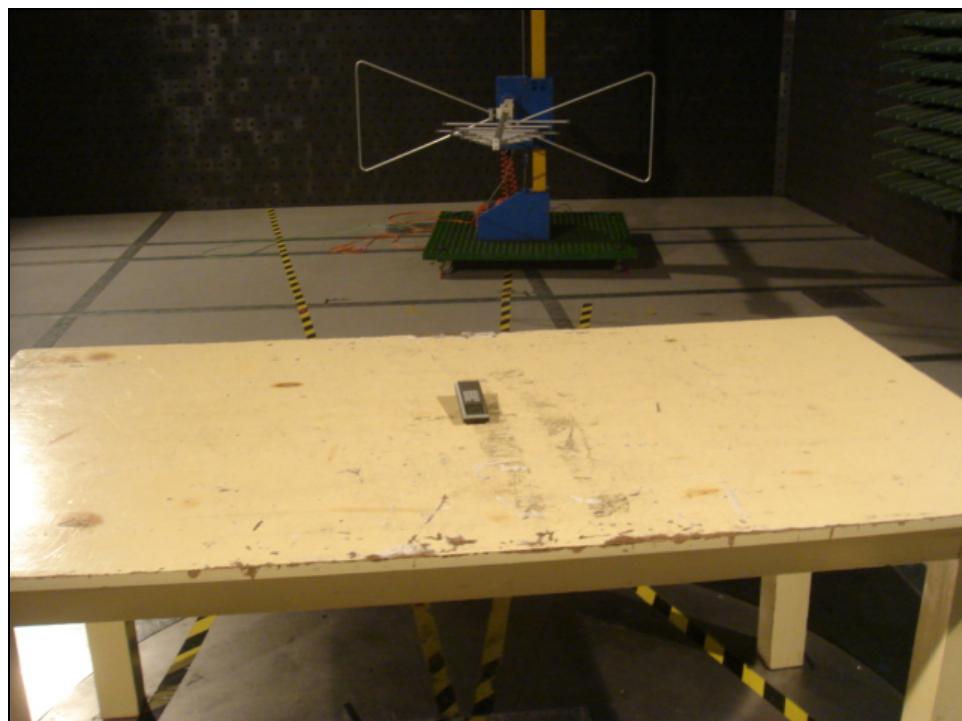
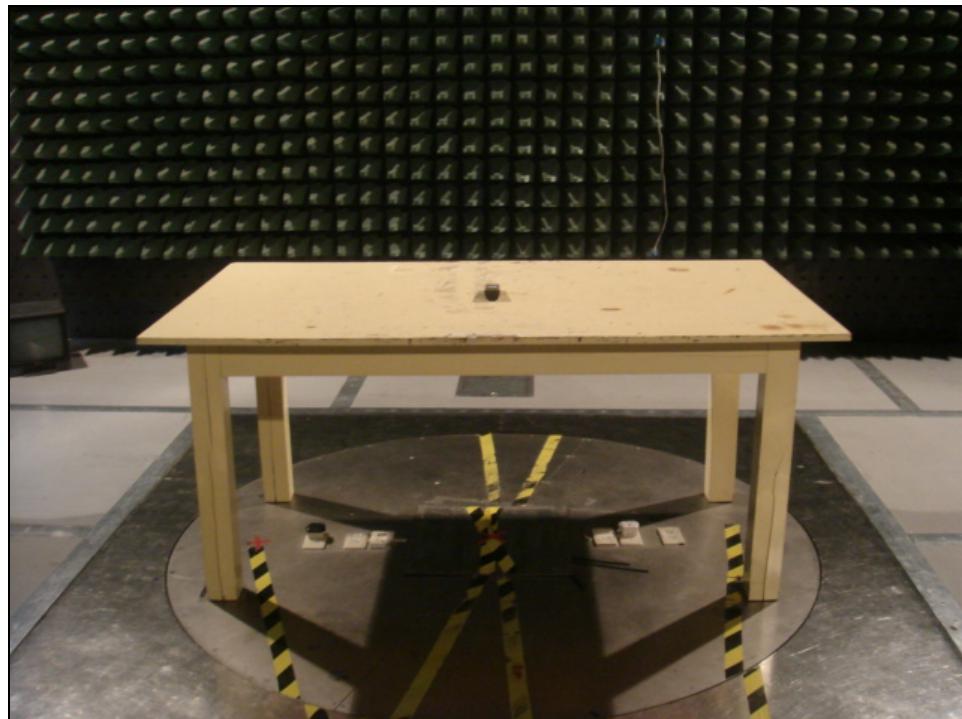
Frequency (MHz)	20 dB bandwidth (kHz)	Maximum limit (kHz)	Pass / Fail
434.032	614	1085.08	PASS

The plot of test result is attached as below.



5 PHOTOGRAPHS OF THE TEST CONFIGURATION

Radiated Emission



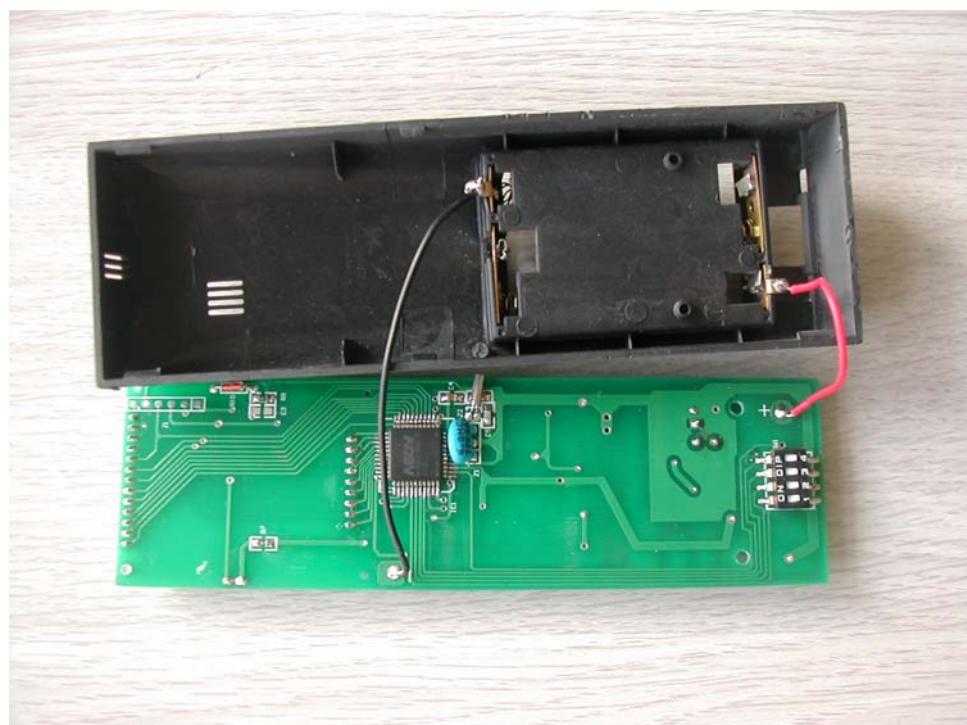
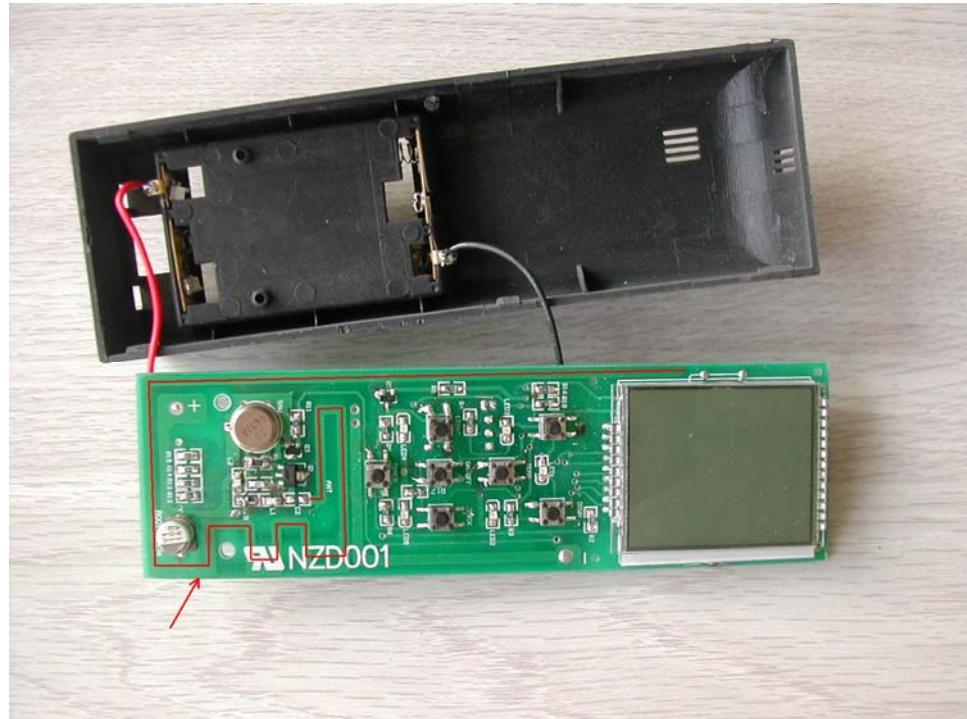
FCC ID: VTO0711RG01-1T



6 PHOTOGRAPHS OF THE EUT



FCC ID: VTO0711RG01-1T



FCC ID: VTO0711RG01-1T



7 APPENDIX A - INFORMATION ON THE TESTING LABORATORY

We, ADT (Shanghai) Corp., was founded in 2003 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratory is accredited and approved by the following approval agencies according to ISO / IEC 17025 (2005).

The client should not use it to claim product endorsement by CNAS, A2LA, or any government agency.

Japan	VCCI
USA	FCC, A2LA
Norway	DNV
China	CNAS



Copies of accreditation certificates of our laboratory obtained from approval agencies can be downloaded from our web site: www.cnadt.com

If you have any comments, please feel free to contact us at the following:

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Web Site: www.cnadt.com

8 APPENDIX B – UNCERTAINTY IN EMC MEASUREMENT

As specified in CISPR 16-4-2, measurement instrumentation uncertainty shall be taken into account when determining compliance or non-compliance with a disturbance limit. A disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cisp} in table 1, then:

- ※ Compliance is deemed to occur if no measured disturbance exceeds the disturbance limit;
- ※ Non-compliance is deemed to occur if any measured disturbance exceeds the disturbance limit.

If U_{lab} is greater than or equal to U_{cisp} in table 1, then:

- ※ Compliance is deemed to occur if no measured disturbance, increased by $(U_{\text{lab}} - U_{\text{cisp}})$, exceeds the disturbance limit;
- ※ Non-compliance is deemed to occur if any measured disturbance, increased by $(U_{\text{lab}} - U_{\text{cisp}})$, exceeds the disturbance limit.

Table 1 – Values of U_{cisp}

Measurement	U_{cisp}
Conducted disturbance (mains port) (9kHz – 150kHz) (150kHz – 30MHz)	4,0 dB 3,6 dB
Disturbance power (30MHz – 300MHz)	4,5 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site) (30MHz – 1000MHz)	5,2 dB
Other	Under consideration

ADT Shanghai hereby declare the U lab value are as the following:

Conducted test performed at SR1 shielded room with U_{lab} values: +/- 3.04 dB

Radiated test performed at SAC Chamber with U_{lab} values: +/- 4.62 dB

Based on the above specification, the U_{lab} values of our sites are less than U_{cisp} in table 1 and compliance is deemed to occur if no measured disturbance exceeds the disturbance limit.