FCC TEST REPORT
for
COLDMAX CORPORATION

HJ-Wireless Freezer Temperature Arrangement System-Centralized Controller
Model No.: CMAC-WTRC-receiver

Prepared for	:	COLDMAX CORPORATION
Address	:	623 South Service Rd., Units 4&5, Grimsby, Canada
Prepared By	:	Anbotek Compliance Laboratory Limited
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Report Number	:	201210817F
Date of Test	:	Oct. 30~Nov. 26, 2012
Date of Report	:	Nov. 26, 2012

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TEST REPORT

Applicant	:	COLDMAX CORPORATION
Manufacturer	:	COLDMAX CORPORATION
EUT	:	HJ-Wireless Freezer Temperature Arrangement System-Centralized Controller
Model No.	:	CMAC-WTRC-receiver
Rating	:	AC 120V/60Hz
Trade Mark	:	N.A.

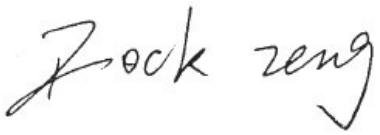
Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart B 2011 & FCC / ANSI C63.4-2009

The device described above is tested by Anbotek Compliance Laboratory Limited To determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart B Class B limits both radiated and conducted emissions. The measurement results are contained in this test report and Anbotek Compliance Laboratory Limited Is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Anbotek Compliance Laboratory Limited

Date of Test : Oct. 30~Nov. 26, 2012

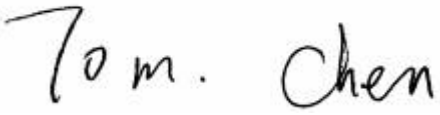


Prepared by : _____

(Tested Engineer / Rock Zeng)

Reviewer : _____

(Project Manager / Andy Chen)



Approved & Authorized Signer : _____

(Manager / Tom Chen)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	:	HJ-Wireless Freezer Temperature Arrangement System-Centralized Controller
Model Number	:	CMAC-WTRC-receiver
Test Power Supply	:	AC 120V/60Hz
Applicant	:	COLDMAX CORPORATION
Address	:	623 South Service Rd., Units 4&5, Grimsby, Canada
Manufacturer	:	COLDMAX CORPORATION
Address	:	623 South Service Rd., Units 4&5, Grimsby, Canada
Date of Sample received	:	Oct. 30, 2012
Date of Test	:	Oct. 30~Nov. 26, 2012

2. POWER LINE CONDUCTED MEASUREMENT

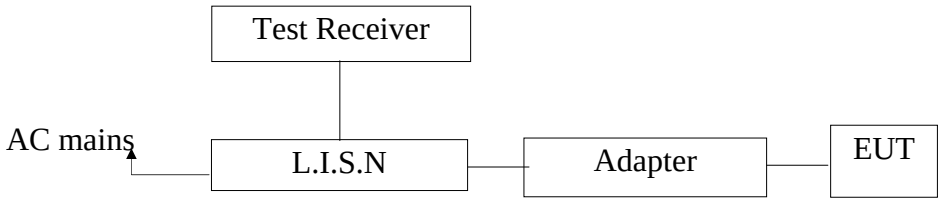
2.1. Test Equipment

The following test equipments are used during the power line conducted measurement:

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Apr.25, 2012	1 Year
2.	Two-Line V-network	Rohde & Schwarz	ENV216	10055	Apr.25, 2012	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Apr.25, 2012	1 Year
4.	EMI Test Software	ES-K1	N/A	N/A	N/A	N/A

2.2. Block Diagram of Test Setup

2.2.1. Block diagram of connection between the EUT and simulators



(EUT: HJ-Wireless Freezer Temperature Arrangement System-Centralized Controller)

2.3. Power Line Conducted Emission Measurement Limits (FCC Part 15 Class B)

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

2.4. Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

EUT	:	HJ-Wireless Freezer Temperature Arrangement System-Centralized Controller
Model Number	:	CMAC-WTRC-receiver
Applicant	**:**	COLDMAX CORPORATION

2.5. Operating Condition of EUT

2.5.1. Setup the EUT and simulator as shown as Section 2.2.
2.5.2. Turn on the power of all equipment.
2.5.3. Let the EUT work measure it.

2.6. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.4-2009 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9KHz.

The frequency range from 150KHz to 30MHz is checked.

The test result are reported on Section 2.7.

2.7. Power Line Conducted Emission Measurement Results

PASS.

The frequency range from 150KHz to 30 MHz is investigated.

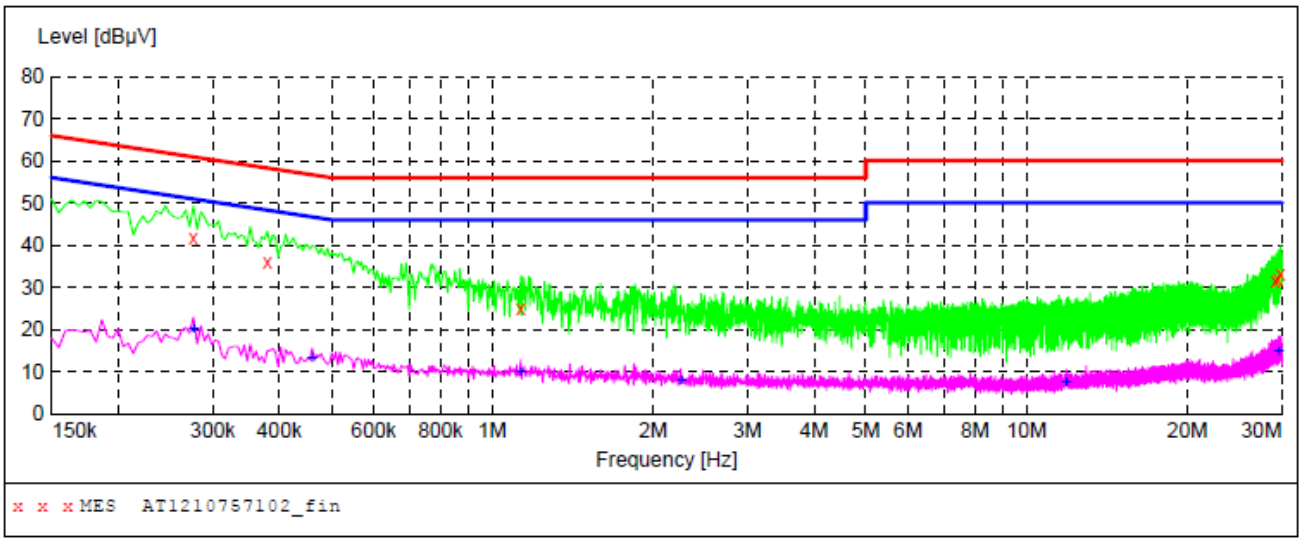
The test curves are shown in the following pages.

CONDUCTED EMISSION TEST DATA

EUT:	HJ-Wireless Freezer Temperature Arrangement System-Centralized Controller	M/N: CMAC-WTRC-receiver
Operating Condition:	Charging Via adapter	
Test Site:	1# Shielded Room	
Operator:	Rock Zeng	
Test Specification:	AC 120V/60Hz	
Comment:	L	
	Tem:25℃ Hum:50%	

SCAN TABLE: "Voltage(150K~30M)FIN"

Short Description: 150K-30M Disturbance Voltages



MEASUREMENT RESULT: "AT1210757102_fin"

11/6/2012 4:23PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.276000	41.90	20.1	61	19.0	QP	L1	GND
0.379500	36.10	20.1	58	22.2	QP	L1	GND
1.130500	24.90	20.2	56	31.1	QP	L1	GND
29.242000	31.50	20.9	60	28.5	QP	L1	GND
29.530000	31.80	20.9	60	28.2	QP	L1	GND
29.840500	33.10	20.9	60	26.9	QP	L1	GND

MEASUREMENT RESULT: "AT1210757102_fin2"

11/6/2012 4:23PM

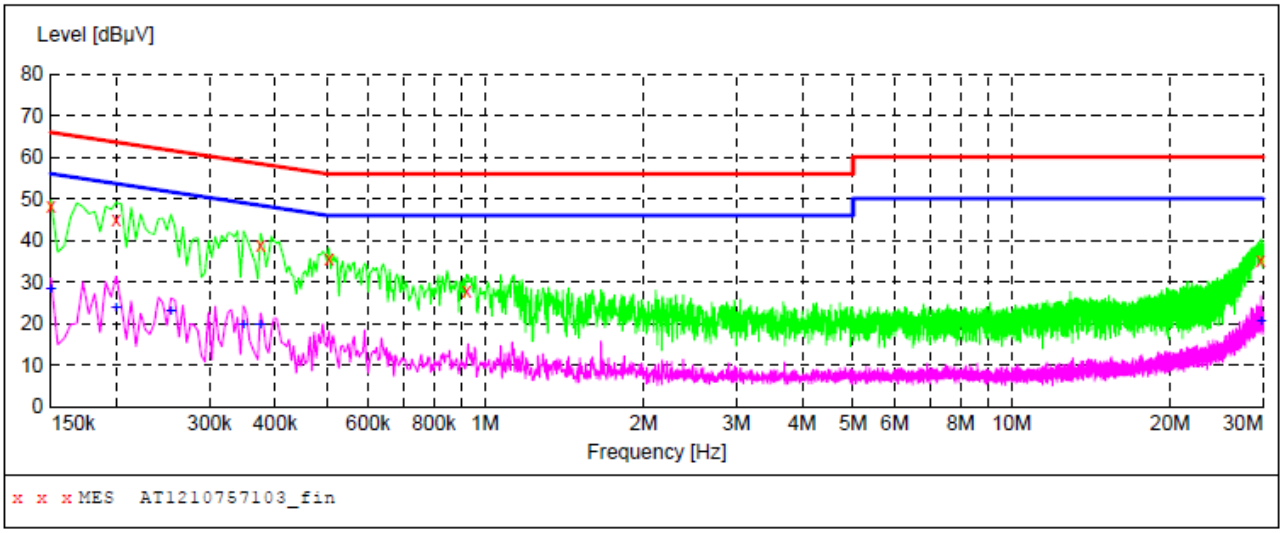
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.276000	20.20	20.1	51	30.7	AV	L1	GND
0.460500	13.20	20.1	47	33.5	AV	L1	GND
1.130500	9.90	20.2	46	36.1	AV	L1	GND
2.251000	7.90	20.3	46	38.1	AV	L1	GND
11.854000	7.50	20.6	50	42.5	AV	L1	GND
29.629000	14.70	20.9	50	35.3	AV	L1	GND

CONDUCTED EMISSION TEST DATA

EUT:	HJ-Wireless Freezer Temperature Arrangement System-Centralized Controller	M/N:CMAC-WTRC-receiver
Operating Condition:	Charging Via adapter	
Test Site:	1# Shielded Room	
Operator:	Rock Zeng	
Test Specification:	AC 120V/60Hz	
Comment:	N	
	Tem:25℃ Hum:50%	

SCAN TABLE: "Voltage(150K~30M)FIN"

Short Description: 150K-30M Disturbance Voltages



MEASUREMENT RESULT: "AT1210757103_fin"

11/6/2012 4:27PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	48.10	20.1	66	17.9	QP	N	GND
0.199500	45.10	20.1	64	18.5	QP	N	GND
0.375000	38.70	20.1	58	19.7	QP	N	GND
0.505500	35.80	20.1	56	20.2	QP	N	GND
0.924000	27.90	20.1	56	28.1	QP	N	GND
29.732500	35.00	20.9	60	25.0	QP	N	GND

MEASUREMENT RESULT: "AT1210757103_fin2"

11/6/2012 4:27PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	28.40	20.1	56	27.6	AV	N	GND
0.199500	23.90	20.1	54	29.7	AV	N	GND
0.253500	23.00	20.1	52	28.6	AV	N	GND
0.348000	19.70	20.1	49	29.3	AV	N	GND
0.375000	19.60	20.1	48	28.8	AV	N	GND
29.732500	20.60	20.9	50	29.4	AV	N	GND

3. RADIATED EMISSION MEASUREMENT

3.1. Test Equipment

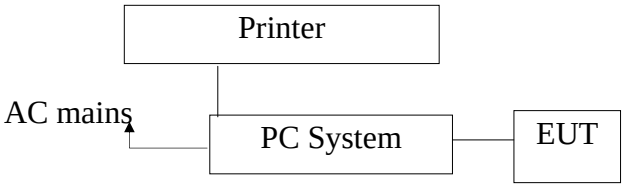
The following test equipments are used during the radiated emission measurement:

3.1.1. For Anechoic Chamber

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	Rohde & Schwarz	ESCI	101604	Apr.25, 2012	1 Year
2.	Bilog Antenna	Schwarzbeck	VULB9163	100015	Apr.25, 2012	1 Year
3.	Pre-amplifier	Compliance Direction	PAP-0203	22008	Apr.25, 2012	1 Year
4.	EMI Test Software	SHURPLE	N/A	N/A	N/A	N/A
5.	Coaxial cable	ANBOTEK	N/A	N/A	N/A	N/A

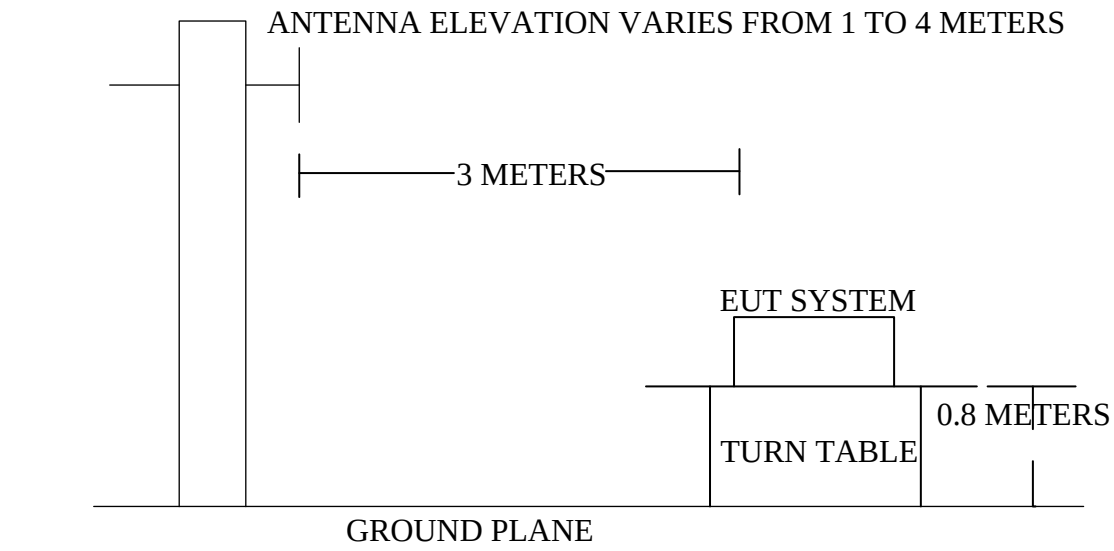
3.2. Block Diagram of Test Setup

3.2.1. Block diagram of connection between the EUT and simulators



(EUT: HJ-Wireless Freezer Temperature Arrangement System-Centralized Controller)

3.2.2. Anechoic Chamber Test Setup Diagram



(EUT: HJ-Wireless Freezer Temperature Arrangement System-Centralized Controller)

3.3. Radiated Emission Limit (Subpart B Class B)

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
30~88	3	100	40.0
88~216	3	150	43.5
216~960	3	200	46.0
960~1000	3	500	54.0

Remark： (1) Emission level (dB)μV = 20 log Emission level μV/m

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

3.4. EUT Configuration on Measurement

The following equipments are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

EUT	**:**	HJ-Wireless Freezer Temperature Arrangement System-Centralized Controller
Model Number	**:**	CMAC-WTRC-receiver
Applicant	**:**	COLDMAX CORPORATION

3.5. Operating Condition of EUT

3.5.1. Setup the EUT as shown in Section 3.2.

3.5.2. Let the EUT work measure it.

3.6. Test Procedure

EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (Trilog Broadband Antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2009 on radiated emission measurement.

The bandwidth of the EMI test receiver (ESPI) is set at 120kHz.

The frequency range from 30MHz to 1000MHz is checked.

The test mode (Charging Via adapter) is tested in chamber and all the test results are listed in Section 3.7.

3.7. Radiated Emission Measurement Results

PASS.

The test curves are shown in the following pages.

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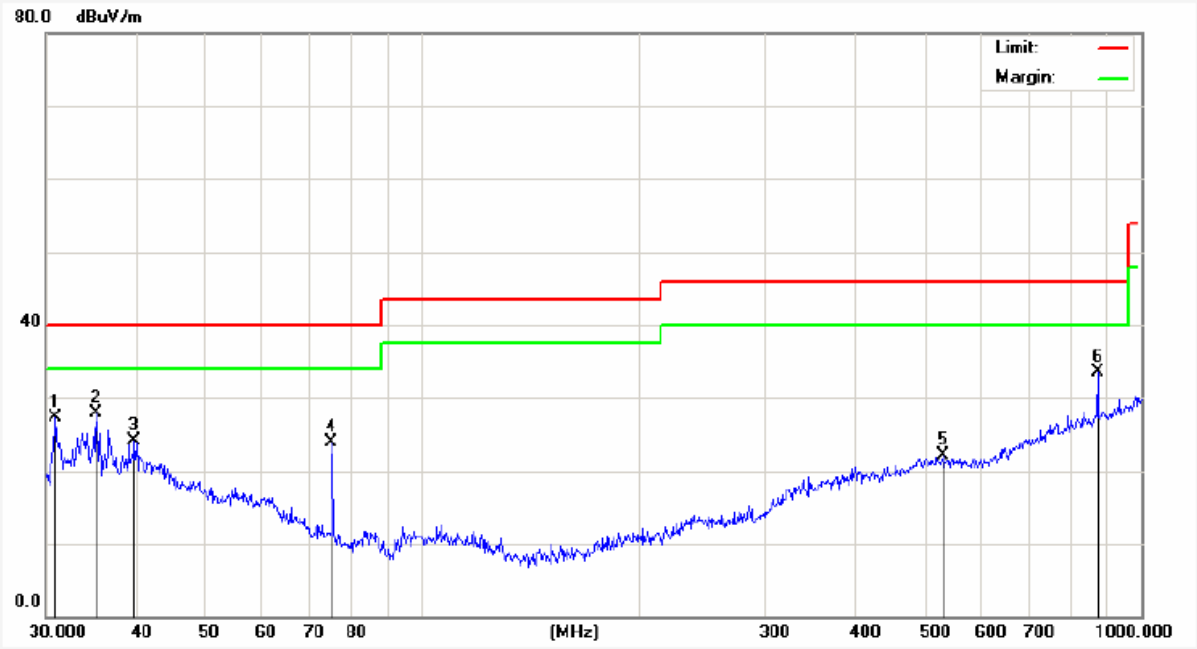
Job No.:	AT1210757(I)	**Polarziation:**	Horizontal
Standard:	(RE)FCC PART15 B _3m	**Power Source:**	AC 120V/60Hz
Test item:	Radiation Test	**Date:**	2012/11/26
Temp.(C)/Hum.(%RH):	24.3(C)/55%RH	**Time:**	11:06:24
EUT:	HJ-Wireless Freezer Temperature Arrangement System-Centralized Controller	**Test By:**	Rock Zeng
Model:	CMAC-WTRC-receiver	**Distance:**	3m
Note:	Charging Via adapter		



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	30.9619	43.75	-16.44	27.31	40.00	-12.69	peak			
2	35.2512	42.06	-14.10	27.96	40.00	-12.04	peak			
3	39.8542	34.50	-10.49	24.01	40.00	-15.99	peak			
4	74.9191	44.52	-20.59	23.93	40.00	-16.07	peak			
5	530.1014	33.14	-11.04	22.10	46.00	-23.90	peak			
6	869.1302	38.87	-5.28	33.59	46.00	-12.41	peak			

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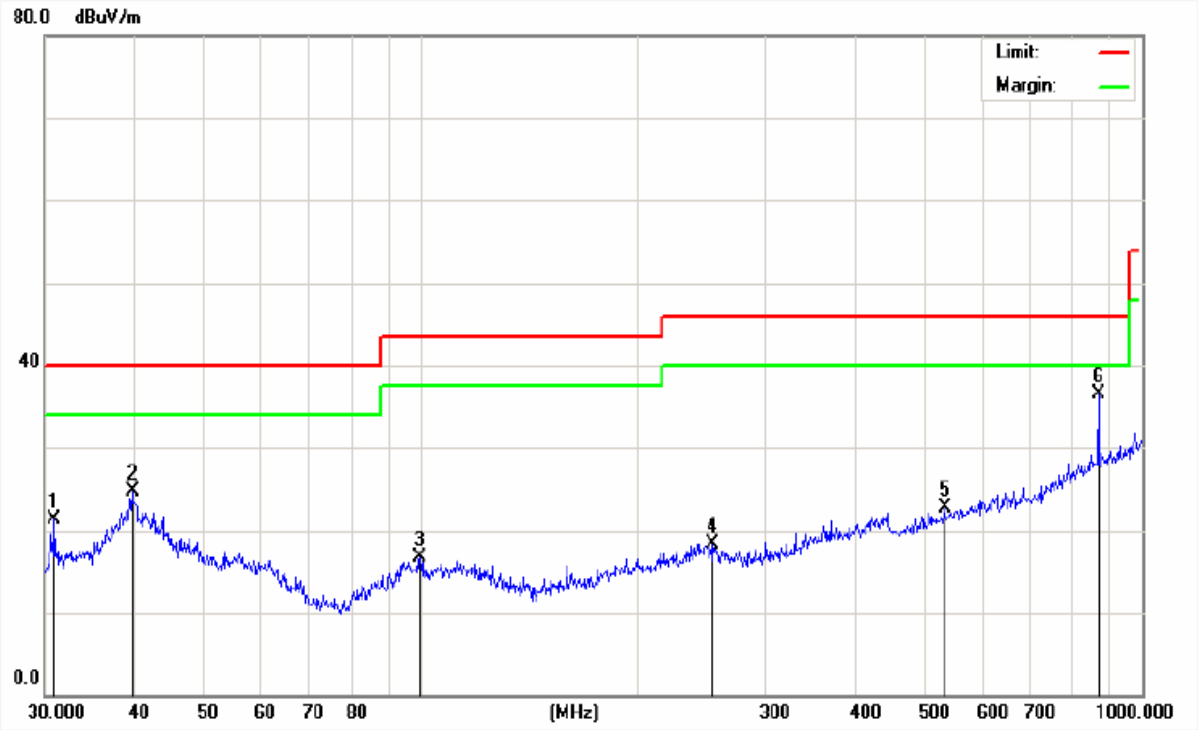
Job No.:	AT1210757(I)	**Polarziation:**	Vertical
Standard:	(RE)FCC PART15 B _3m	**Power Source:**	AC 120V/60Hz
Test item:	Radiation Test	**Date:**	2012/11/26
Temp.(C)/Hum.(%RH):	24.3(C)/55%RH	**Time:**	11:11:28
EUT:	HJ-Wireless Freezer Temperature Arrangement System-Centralized Controller	**Test By:**	Rock Zeng
Model:	CMAC-WTRC-receiver	**Distance:**	3m
Note:	Charging Via adapter		



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	30.9619	37.77	-16.44	21.33	40.00	-18.67	peak			
2	39.7146	35.26	-10.59	24.67	40.00	-15.33	peak			
3	99.5281	32.43	-15.79	16.64	43.50	-26.86	peak			
4	252.9482	32.43	-14.03	18.40	46.00	-27.60	peak			
5	531.9633	33.18	-10.40	22.78	46.00	-23.22	peak			
6	869.1302	40.85	-4.28	36.57	46.00	-9.43	peak			