

APPLICATION FOR CERTIFICATION
On Behalf of

Enernet Corporation

wireless thermostat controller

Model Number: TGD12400

Prepared for : Enernet Corporation
307 Dewittshir Road., Deuitt., NY13214 U.S.A

Prepared By : Audix Technology (Shenzhen) Co., Ltd.
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Report Number : ACS-F07095
Date of Test : Feb.10~Mar.01, 2007
Date of Report : Mar.23, 2007

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TEST REPORT CERTIFICATION

Applicant : Enernet Corporation
 Manufacturer : Honortone Ltd.
 EUT Description : wireless thermostat controller
 (A) MODEL NO. : TGD12400
 (B) SERIAL NO. : N/A
 (C) POWER SUPPLY : Battery 3.3V

Test Procedure Used:

FCC Rules and Regulations Part 15 Subpart C 2006

The device described above is tested by Audix Technology (Shenzhen) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits for radiated and conducted emissions. The test results are contained in this test report and Audix Technology (Shenzhen) Co., Ltd. is assumed full responsibility for the accuracy and completeness of tests. Also, this report shows that EUT is technically compliant with FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shenzhen) Co., Ltd.

Date of Test :

Feb.10~Mar.01, 2007

Prepared by :

YoYo Wang / Assistant

Reviewer :

Iceman Hu / Senior Engineer

Approved & Authorized Signer :

	信華科技(深圳)有限公司
	Audix Technology (Shenzhen) Co., Ltd.
	EMC 部門報告專用章
	Stamp only for EMC Dept. Report
Signature: <u>Ken Lu 1/23/07</u>	

Ken Lu / Deputy Manager

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION		
Description of Test Item	Standard	Results
Power Line Conducted Emission Test	FCC Part 15C: 15.249 ANSI C63.4-2003	N/A
Radiated Emission Test	FCC Part 15C: 15.249 ANSI C63.4-2003	PASS
N/A is an abbreviation for Not Applicable.		

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

Product name	:	wireless thermostat controller
Model Number	:	TGD12400
Operation frequency	:	916.5MHz
Modulation	:	ACK
Power	:	Battery 3.3V
Applicant	:	Enernet Corporation 307 Dewittshir Road., Deuitt., NY13214 U.S.A
Manufacturer	:	Honortone Ltd. Tung Mun Industrial Zone, Dan Shui, Guangdong Province, P.R.C. Honor Tone Ltd.
Date of Test	:	Feb.10~Mar.01, 2007

Note: This EUT can transmit control signal with ACK modulation, and each signal continue 20 ms for test, we set the EUT in continuances transmitting mode.

2.2. Test Facility

Site Description

- 3m Anechoic Chamber : Jun. 13, 2006 File on Federal Communication Commission
Registration Number: 90454
- 3m & 10m Anechoic Chamber : Jan.31, 2007 File on Federal Communication Commission
Registration Number: 794232
- EMC Lab. : Accredited by DATech, German
Registration Number: DAT-P-091/99-01
Feb. 02, 2004
- Accredited by NVLAP, USA
NVLAP Code: 200372-0
Apr.01, 2006

2.3. Measurement Uncertainty

No.	Item	Uncertainty	Remark
1.	Uncertainty for Conducted Emission Test	1.22dB	
2.	Uncertainty for Radiated Emission Test	3.14dB	3m Chamber
3.	Uncertainty for Radiated Emission Test	3.18dB	10m Chamber
4.	Uncertainty for Power Clamp Test	1.38dB	

3. POWER LINE CONDUCTED EMISSION TEST

According to Paragraph (f) of FCC Part 15 section 15.249, Tests to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines.

4. RADIATED EMISSION TEST

4.1. Test Equipment

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

4.1.1. For Anechoic Chamber

Frequency rang: 30~1000MHz

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Spectrum	HP	85422E	3625A00181	May 15, 06	1 Year
2.	Test Receiver	Rohde & Schwarz	ESVS20	830350/005	May 15, 06	1 Year
3.	Amplifier	HP	8447D	2944A07794	Sep. 12,06	1/2 Year
4.	Bilog Antenna	Schaffner	CBL6111C	2598	Jan. 11, 07	1 Year
5.	RF Cable	MIYAZAKI	5D-2W	3# Chamber No.1	Jan. 30, 07	1/2 Year
6.	RF Cable	MIYAZAKI	5D-2W	3# Chamber No.2	Jan. 30, 07	1/2 Year
7.	RF Cable	FUJIKURA	RG-55/U	3# Chamber No.3	Jan. 30, 07	1/2 Year
8.	RF Cable	FUJIKURA	RG-55/U	3# Chamber No.4	Jan. 30, 07	1/2 Year
9.	Coaxial Switch	Anritsu	MP59B	M73989	Jan. 30, 07	1/2 Year

Frequency rang: above 1000MHz

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	E4407B	MY41440292	May 15, 06	1 Year
2.	Amp	HP	8449B	3008A00863	May 15, 06	1 Year
3.	Antenna	EMCO	3115	9607-4877	Jan. 23, 07	1.5 Year
4.	HF Cable	Hubersuhne	Sucoflex104	-	May 15, 06	1 Year

4.2. Block Diagram of Test Setup

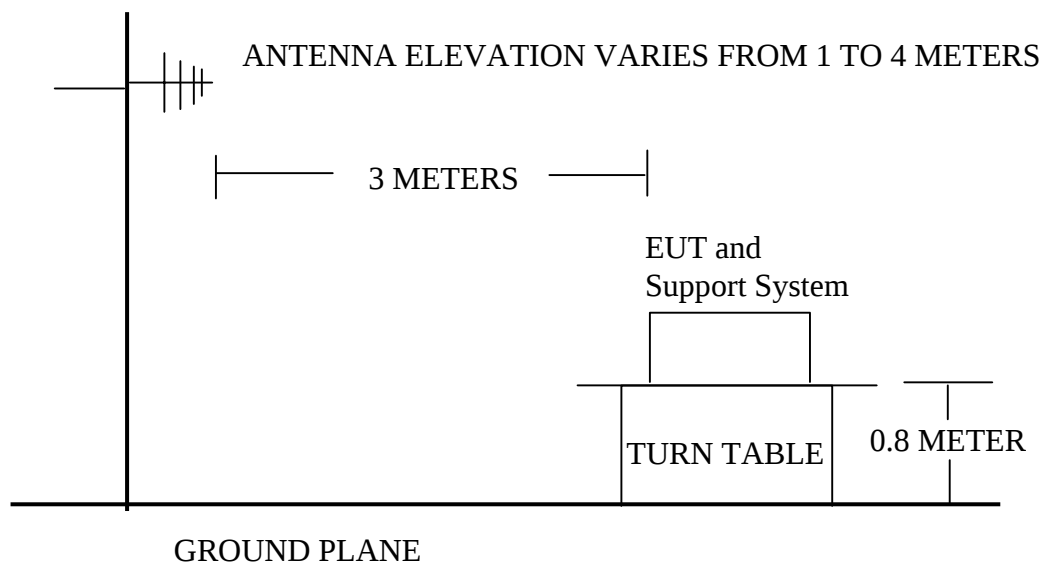
4.2.1. Block Diagram of connection between EUT and simulators



(EUT: wireless thermostat controller)

4.2.2. Anechoic Chamber Setup Diagram

ANTENNA TOWER



4.3. Radiated Emission Limit Standard: FCC 15.249

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V}/\text{m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Local Oscillator:	3	114.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 94.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	
Above 1000	3	Other: 74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	

- Remark :
- (1) Emission level $\text{dB}\mu\text{V} = 20 \log$ Emission level $\mu\text{V}/\text{m}$
 - (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.

4.4. EUT Configuration on Test

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

4.4.1. wireless thermostat controller (EUT)

Model Number : TGD12400
Serial Number : N/A
Manufacturer : Honortone Ltd.

4.5. Operating Condition of EUT

4.5.1. Setup the EUT as shown in Section 4.2..

4.5.2. Let the EUT work in test modes (TX Mode) and test it.

4.6. Test Procedure

The 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. The EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on Test. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2003 on radiated emission Test.

The bandwidth of the EMI test receiver (R&S ESVS20) is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the VBW is set at 3MHz and RBW is set at 1MHz for measurement below 1GHz.

The frequency range from 30MHz to 1000MHz and above 1GHz. are checked.

The test modes (TX Mode) is tested in Anechoic Chamber and all the scanning waveforms are reported on Section 4.7.

4.7. Radiated Emission Test Results

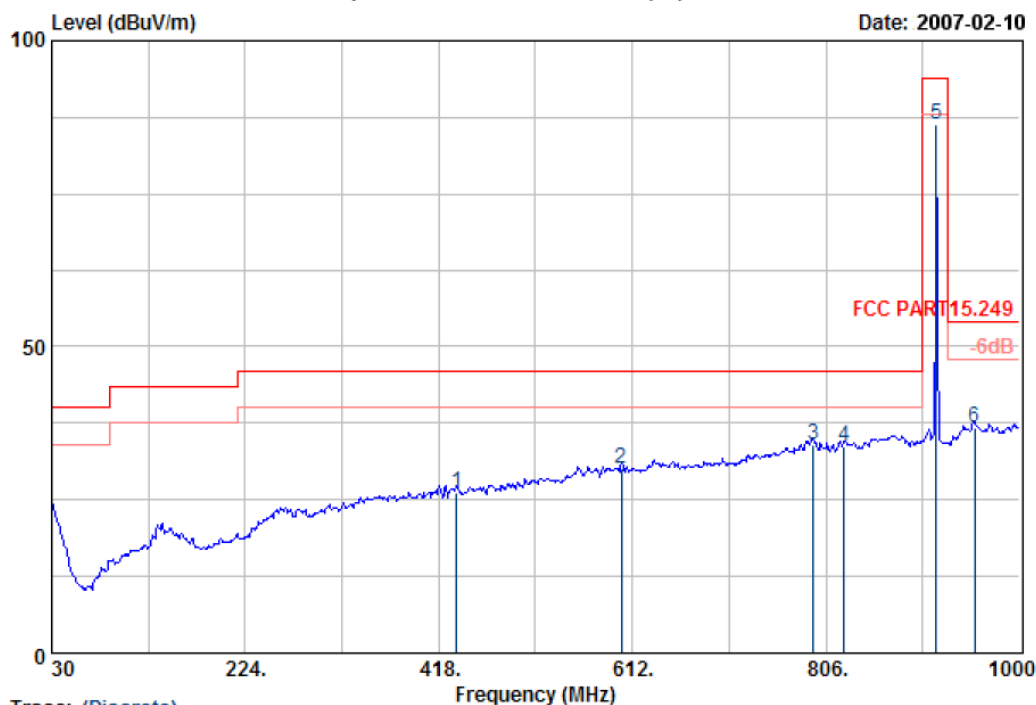
PASS.

The frequency range from 30MHz to 1000MHz and above 1GHz. is investigated. Please see the following pages.



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Data: 1 File: D:\2007 Report\E\Enernet\ACS7Q051.EMI (11)



Trace: (Discrete)

Site no. : Audix 3# Chamber Data no. : 1
Dis. / Ant. : 3m 2769FACTOR3M Ant. pol. : HORIZONTAL
Limit : FCC PART15.249
Env. / Ins. : 25°C/55% ESVS20 Engineer : Jamy
EUT : Wireless thermostat controller
Power Rating : Battery 3.3V
Test Mode : Tx mode
M/N : TGD12400

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	435.46	17.00	5.12	4.07	26.19	46.00	19.81	QP
2	601.33	19.60	6.11	4.38	30.09	46.00	15.91	QP
3	793.39	21.90	7.11	4.91	33.92	46.00	12.08	QP
4	824.43	22.20	7.42	4.03	33.65	46.00	12.35	QP
5	916.58	23.17	7.70	55.55	86.42	94.00	7.58	Peak
6	955.38	24.30	8.10	4.37	36.77	54.00	17.23	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

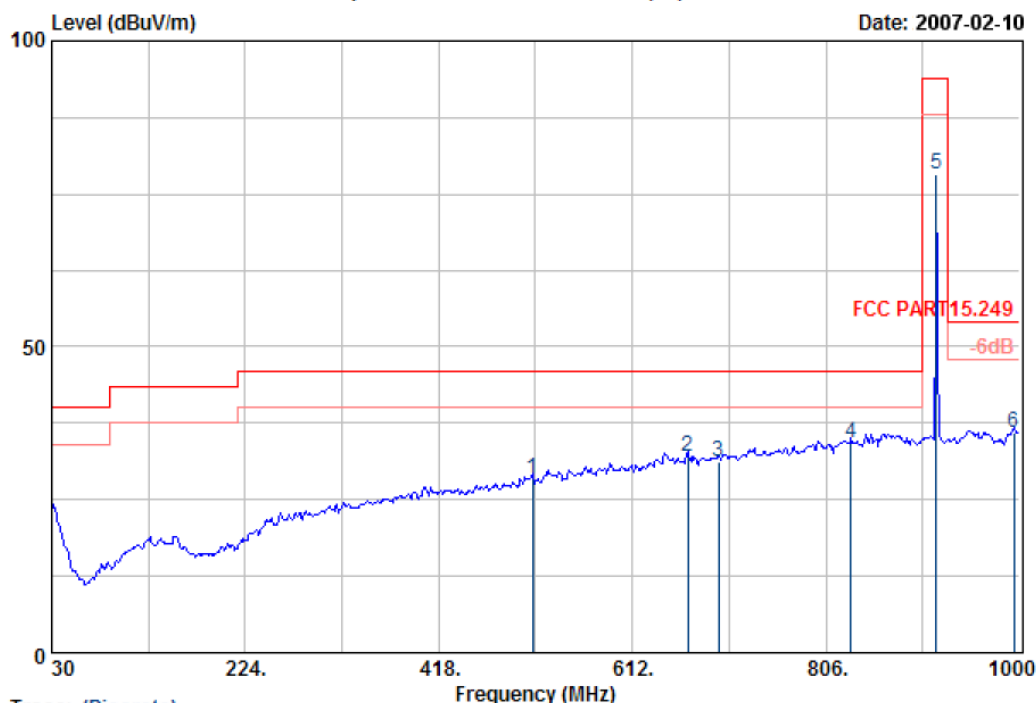


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Data: 2

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Date: 2007-02-10



Trace: (Discrete)

Site no. : Audix 3# Chamber Data no. : 2
Dis. / Ant. : 3m 2769FACTOR3M Ant. pol. : VERTICAL
Limit : FCC PART15.249
Env. / Ins. : 25°C/55% ESVS20 Engineer : Jamy
EUT : Wireless thermostat controller
Power Rating : Battery 3.3V
Test Mode : Tx mode
M/N : TGD12400

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	512.09	18.20	5.45	4.66	28.31	46.00	17.69	QP
2	667.29	20.34	6.47	5.19	32.00	46.00	14.00	QP
3	698.33	20.54	6.69	3.99	31.22	46.00	14.78	QP
4	831.22	22.22	7.33	4.58	34.13	46.00	11.87	QP
5	916.58	23.17	7.70	47.35	78.22	94.00	15.78	Peak
6	994.18	24.20	7.96	3.70	35.86	54.00	18.14	QP

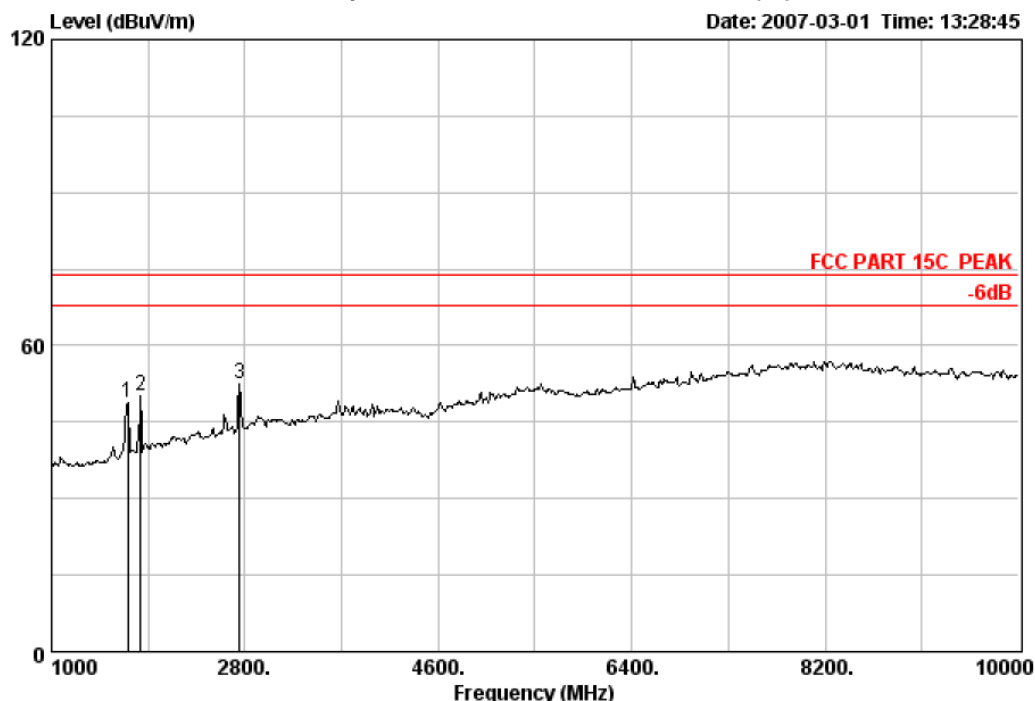
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



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Data: 3

File: D:\2007 Report\E\Enernet\ACS7Q051\ACS7Q051.EMI (12)



Site no. : Audix No.1 Chamber Data no. : 3
Dis. / Ant. : 3m 3115 FACTOR Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Jamy
EUT : wireless thermostat controller
Power Rating : Battery 3.3V
Test Mode : Tx Mode
M/N : TGD12400

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	1711.00	26.54	5.07	35.57	52.80	48.84	74.00	25.16	Peak
2	1832.00	27.16	5.27	35.46	53.05	50.02	74.00	23.98	Peak
3	2749.00	30.11	6.77	35.08	50.80	52.60	74.00	21.40	Peak

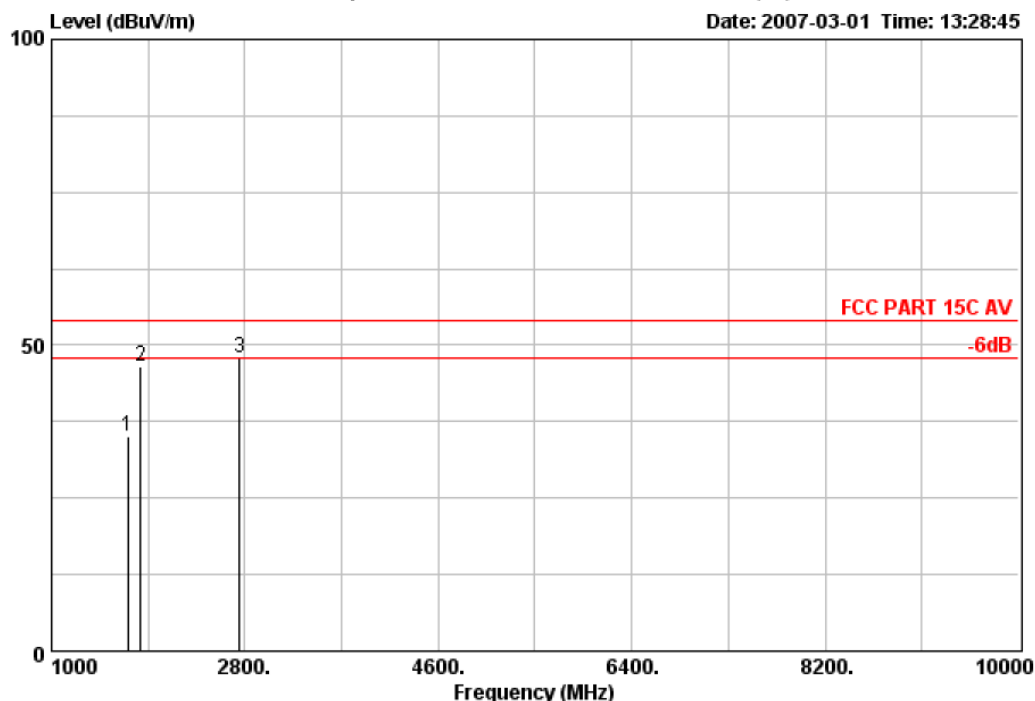
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.
3. The bandwidth of the VBW is set at 1MHz and RBW is set at 1MHz for measurement above 1GHz.



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Data: 4

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Site no. : Audix No.1 Chamber Data no. : 4
Dis. / Ant. : 3m 3115 FACTOR Ant. pol. : HORIZONTAL
Limit : FCC PART 15C AV
Env. / Ins. : 23°C/54% Engineer : Jamy
EUT : wireless thermostat controller
Power Rating : Battery 3.3V
Test Mode : Tx Mode
M/N : TGD12400

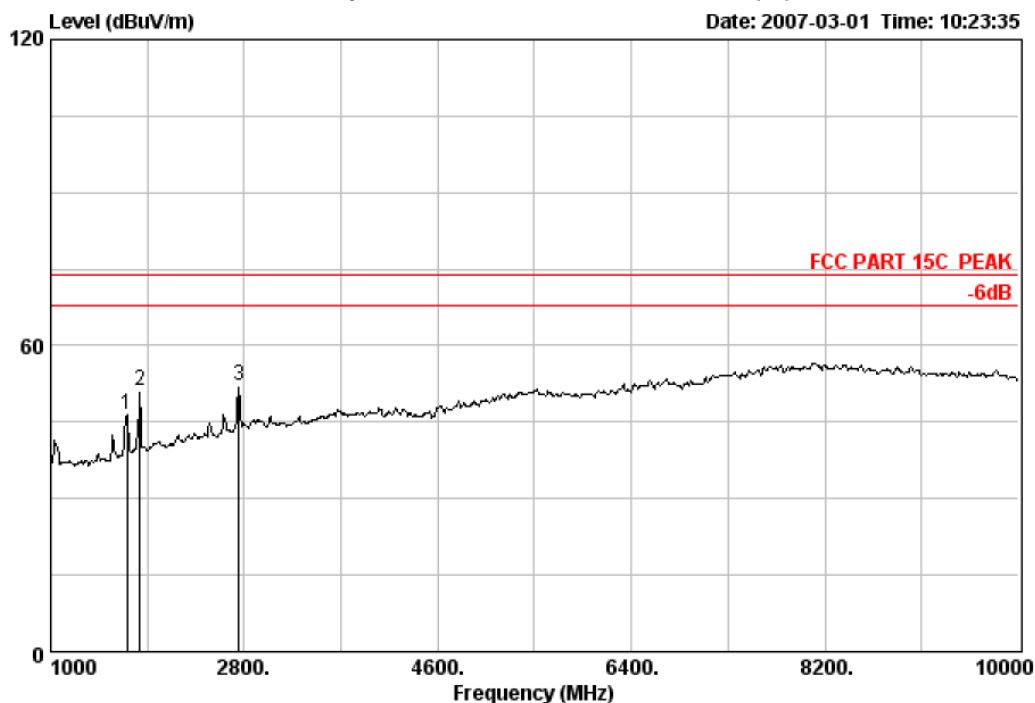
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	1711.00	26.54	5.07	35.57	39.18	35.22	54.00	18.78	Average
2	1832.00	27.16	5.27	35.46	49.58	46.55	54.00	7.45	Average
3	2749.00	30.11	6.77	35.08	45.98	47.78	54.00	6.22	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.
3. The bandwidth of the VBW is set at 10Hz and RBW is set at 1MHz for measurement above 1GHz.



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Site no. : Audix No.1 Chamber Data no. : 1
Dis. / Ant. : 3m 3115 FACTOR Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Jamy
EUT : wireless thermostat controller
Power Rating : Battery 3.3V
Test Mode : Tx Mode
M/N : TGD12400

	Freq.	Ant.	Cable	Amp		Emission			
	(MHz)	Factor	Loss	Factor	Reading	Level	Limits	Margin	Remark
		(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	1711.00	26.54	5.07	35.57	50.58	46.62	74.00	27.38	Peak
2	1832.00	27.16	5.27	35.46	54.10	51.07	74.00	22.93	Peak
3	2749.00	30.11	6.77	35.08	50.35	52.15	74.00	21.85	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.

2. The emission levels that are 20dB below the official limit are not reported.

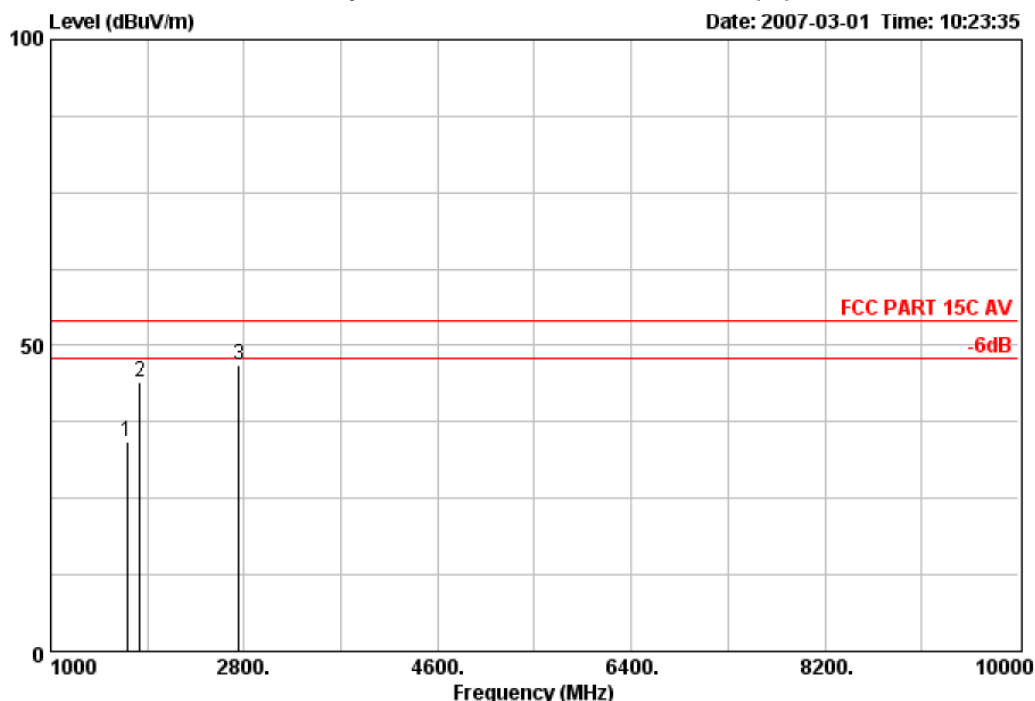
3. The bandwidth of the VBW is set at 1MHz and RBW is set at 1MHz for measurement above 1GHz.



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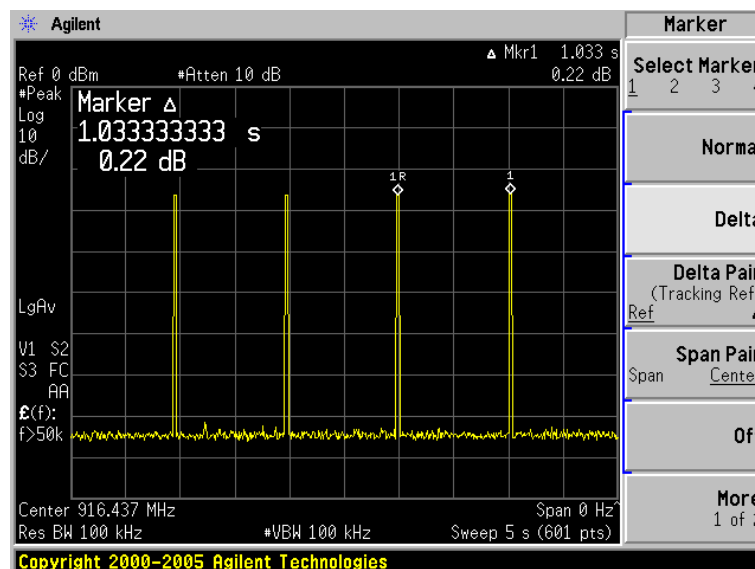
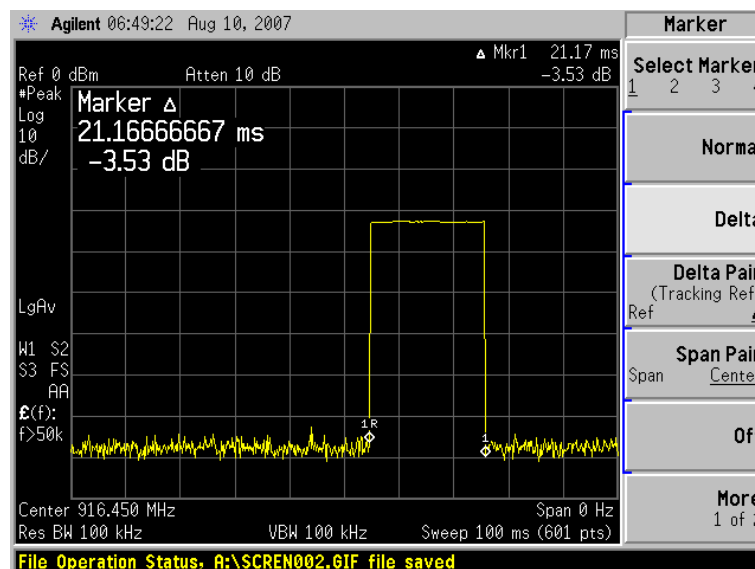
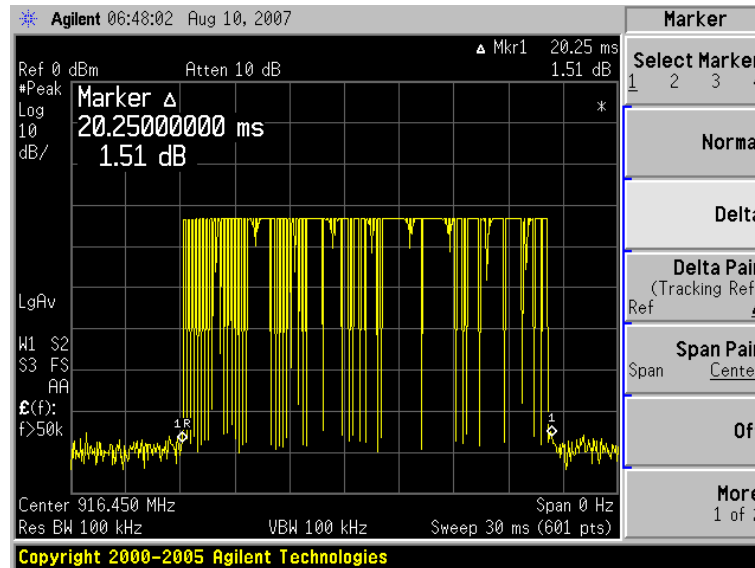


Site no. : Audix No.1 Chamber Data no. : 2
Dis. / Ant. : 3m 3115 FACTOR Ant. pol. : VERTICAL
Limit : FCC PART 15C AV
Env. / Ins. : 23°C/54% Engineer : Jamy
EUT : wireless thermostat controller
Power Rating : Battery 3.3V
Test Mode : Tx Mode
M/N : TGD12400

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	1711.00	26.54	5.07	35.57	38.11	34.15	54.00	19.85	Average
2	1832.00	27.16	5.27	35.46	47.10	44.07	54.00	9.93	Average
3	2749.00	30.11	6.77	35.08	45.11	46.91	54.00	7.09	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.
3. The bandwidth of the VBW is set at 10Hz and RBW is set at 1MHz for measurement above 1GHz.

5. MODULATION INFORMATION



6. DEVIATION TO TEST SPECIFICATIONS

[NONE]