

Application for FCC Certification
On behalf of

Crem International (shanghai) Co., Ltd.

Product Name: Coffee Dispenser

Model No.: EC/UScUL120V-I, EC/UScUL120V-S

FCC ID: 2ADTTESB1234

Prepared For: Crem International (shanghai) Co., Ltd.
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Report No. : ACI-F16064
Date of Test : Mar. 17 – 21, 2016
Date of Report : Mar. 22, 2016

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TEST REPORT FOR FCC CERTIFICATE

Applicant : Crem International (shanghai) Co., Ltd.
Manufacturer : Crem International (shanghai) Co., Ltd.
EUT Description : Coffee Dispenser
(A) Model No. : EC/UScUL120V-I, EC/UScUL120V-S
(B) Power Supply : 100~120V, 200~240V/50-60Hz
(C) Test Voltage : 120V/60Hz

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART C OCTOBER 2015
AND ANSI C63.10-2013*

The device described above is tested by Audix Technology (Shanghai) 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.

The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. This report also shows that the EUT (M/N: Refer to Sec2.1), which was tested on Mar. 17 – 21, 2016 is technically compliance with the FCC limits.

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

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Date of Test : Mar. 17 – 21, 2016 Date of Report : Mar. 22, 2016

Producer : Alan He
ALAN HE / Assistant

Review : Sammy Chen
SAMMY CHEN/ Manager

 For and on behalf of
Audix Technology (Shanghai) Co., Ltd.

Signatory : Byron Kwo
Authorized Signature(s) BYRON KWO/Assistant General 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:

Description / Test Item	Test Standard	Results	Meets Limit
EMISSION			
Conducted Emission	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2015 AND ANSI C63.10-2013	Pass	15.207(a)
Radiated Emission	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2015 AND ANSI C63.10-2013	Pass	15.209(a) 15.225(d)
Occupied Bandwidth	FCC RULES AND REGULATIONS PART 2 AND ANSI C63.10-2013	Pass	2.1049
In-band Emissions	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2015 AND ANSI C63.10-2013	Pass	15.225(a)(b)(c)
Frequency Tolerance	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2015 AND ANSI C63.10-2013	Pass	15.225(e)
N/A is an abbreviation for Not Applicable.			

2 GENERAL INFORMATION

2.1 Description of Equipment Under Test

Description : Coffee Dispenser

Type of EUT ☒ Production ☐ Pre-product ☐ Pro-type

Model Number : EC/UScUL120V-I, EC/UScUL120V-S

Note : The difference between above models are all the same, except for the EC/UScUL120V-I has one more powder box and valve than EC/UScUL120V-S

Test Model : EC/UScUL120V-I

Serial Number : 12151020107754

Radio Tech : RF ID

Frequency : 13.56MHz

Test Mode : The EUT was set at continuous TX with duty cycle 100% during all the test in the report

Applicant : Crem International (shanghai) Co., Ltd.
Building 5, No.521-551, Kangyi Road, Pudong New Area, Shanghai 201315, China

Manufacturer : Same as Applicant

Factory : Same as Applicant

Remark:

The EUT is a Coffee Dispenser which input/output ports as follows:

Side Port:

(1) One USB Port

: Do not open to customer

2.2 Peripherals

2.2.1 Bottled Water Dispenser

Manufacturer : FLOJET

Model Number : BW4004-000A

Serial Number : 12H10829

Certificate : CE

2.3 Description of Test Facility

Site Description (Semi-Anechoic Chamber) : Sept. 17, 1998 file on
Jan. 15, 2015 Renewed
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046, USA

Name of Firm : Audix Technology (Shanghai) Co., Ltd.

Site Location : 3F 34 Bldg 680 Guiping Rd.,
Caohejing Hi-Tech Park,
Shanghai 200233, China

FCC registration Number : 91789

Accredited by NVLAP, Lab Code : 200371-0

2.4 Measurement Uncertainty

Conducted Emission Expanded Uncertainty: U = 3.4 dB

Radiated Emission Expanded Uncertainty (30-200MHz):
U = 4.3dB (Horizontal)
U = 4.6dB (Vertical)

Radiated Emission Expanded Uncertainty (200M-1GHz):
U = 4.5dB (Horizontal)
U = 5.4dB (Vertical)

20 dB Bandwidth Expanded Uncertainty : U = $\pm 1 \times 10^{-8}$ MHz

Frequency Tolerance : U = $\pm 1 \times 10^{-8}$ MHz

3 CONDUCTED EMISSION TEST

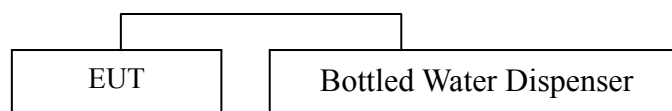
3.1 Test Equipment

The following test equipments are used during the conducted emission test in a shielded room:

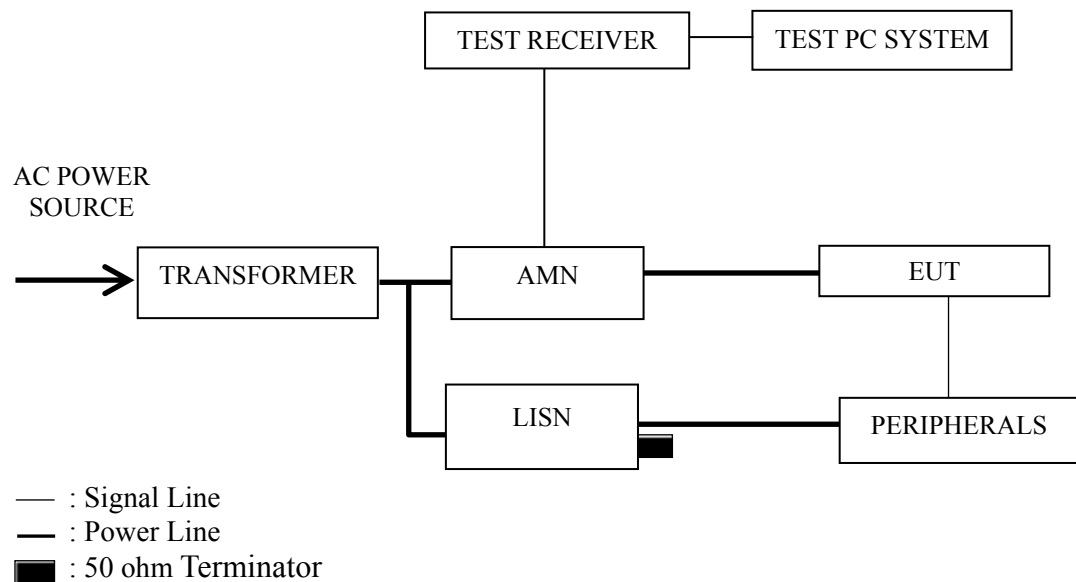
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Apr 27, 2015	Apr 26, 2016
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	Jun 25, 2015	Jun 24, 2016
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-5	Mar 20, 2015	Mar 19, 2016
4.	50Ω Terminator	Anritsu	BNC	001	Mar 20, 2015	Mar 19, 2016
5.	Software	Audix	e3	6.111206	--	--

3.2 Block Diagram of Test Setup

3.2.1 EUT & Peripherals



3.2.1 Conducted Disturbance Test Setup



3.3 Conducted Emission Limits [FCC Part 15 Subpart C 15.207]

Frequency Range (MHz)	Limits dB(μ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66~56	56~46
0.5 ~ 5	56	46
5 ~ 30	60	50
NOTE 1 – The lower limit shall apply at the transition frequencies. NOTE 2 – The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz~0.50 MHz		

3.4 Test Configuration

The EUT (listed in Sec.2.1) was installed as shown on Sec.3.2 to meet FCC requirement and operating in a manner which tends to maximize its emission level in a normal application.

3.5 Operating Condition of EUT

3.5.1 Setup the EUT as shown in Sec.3.2.

3.5.2 Turn on the power of the EUT and then test.

3.6 Test Procedures

The EUT was placed upon a non-metallic table, which is 0.8 m above the horizontal conducting ground plane and 0.4 m from a vertical reference plane. The EUT was connected to the power mains through an Artificial Mains Network (AMN) to provide a 50 Ω coupling impedance for the measuring equipment. Both sides of AC line (Line & Neutral) were checked to find out the maximum conducted emission according to FCC Part 15 (CLASS B) regulations during conducted disturbance test.

The I.F. bandwidth of Test Receiver ESCI was set at 9 kHz.

The frequency range from 150 kHz to 30 MHz was checked.

Test with a dummy load in lieu of the antenna to determine compliance with Section 15.207 limits within the transmitter's fundamental emission band. (According to KDB 174176 D01 Line Conducted FAQ)

The test modes were done on conducted disturbance test and all the test results are listed in Sec. 3.7.

3.7 Test Results

< PASS >

The frequency and amplitude of the highest conducted emission relative to the limit is reported. All emissions not reported below are too low against the prescribed limits.

NOTE 1 – “QP” means “Quasi-Peak” values, “AV” means “Average” values.

NOTE 2 – The worst emission is detected at 13.56 MHz (Average Value), with corrected signal level of 41.53 dB(μV) (limit is 50.00 dB(μV)), when the Neutral of the EUT is connected to AMN.

EUT : Coffee Dispenser Temperature : 22

Model No. : EC/UScUL110V-I Humidity : 48%RH

Test Mode : Transmitting Date of Test : Mar 17, 2016

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Neutral	0.249	34.68	10.47	45.15	61.78	16.63	QP
	0.484	23.73	10.37	34.10	56.27	22.17	
	1.400	30.99	10.39	41.38	56.00	14.62	
	3.346	26.52	10.45	36.97	56.00	19.03	
	8.729	35.83	10.54	46.37	60.00	13.63	
	13.560	30.87	10.64	41.54	60.00	18.46	
	0.249	25.90	10.47	36.37	51.78	15.41	AV
	0.484	15.70	10.37	26.07	46.27	20.20	
	1.400	28.60	10.39	38.99	46.00	7.01	
	3.346	18.09	10.45	28.54	46.00	17.46	
	8.729	28.00	10.54	38.54	50.00	11.46	
	13.560	30.89	10.64	41.53	50.00	8.47	
Line	0.252	31.23	10.48	41.71	61.69	19.98	QP
	0.484	23.50	10.39	33.89	56.27	22.38	
	1.249	33.42	10.39	43.81	56.00	12.19	
	2.854	26.35	10.44	36.79	56.00	19.21	
	9.059	35.53	10.48	46.01	60.00	13.99	
	13.560	30.82	10.54	41.46	60.00	18.54	
	0.252	23.61	10.48	34.09	51.69	17.60	AV
	0.484	15.90	10.39	26.29	46.27	19.98	
	1.249	24.60	10.39	34.99	46.00	11.01	
	2.854	17.80	10.44	28.24	46.00	17.76	
	9.059	16.40	10.48	26.88	50.00	23.12	
	13.560	30.89	10.54	41.43	50.00	8.57	

TEST ENGINEER: WENCY YANG

4 RADIATED EMISSION TEST

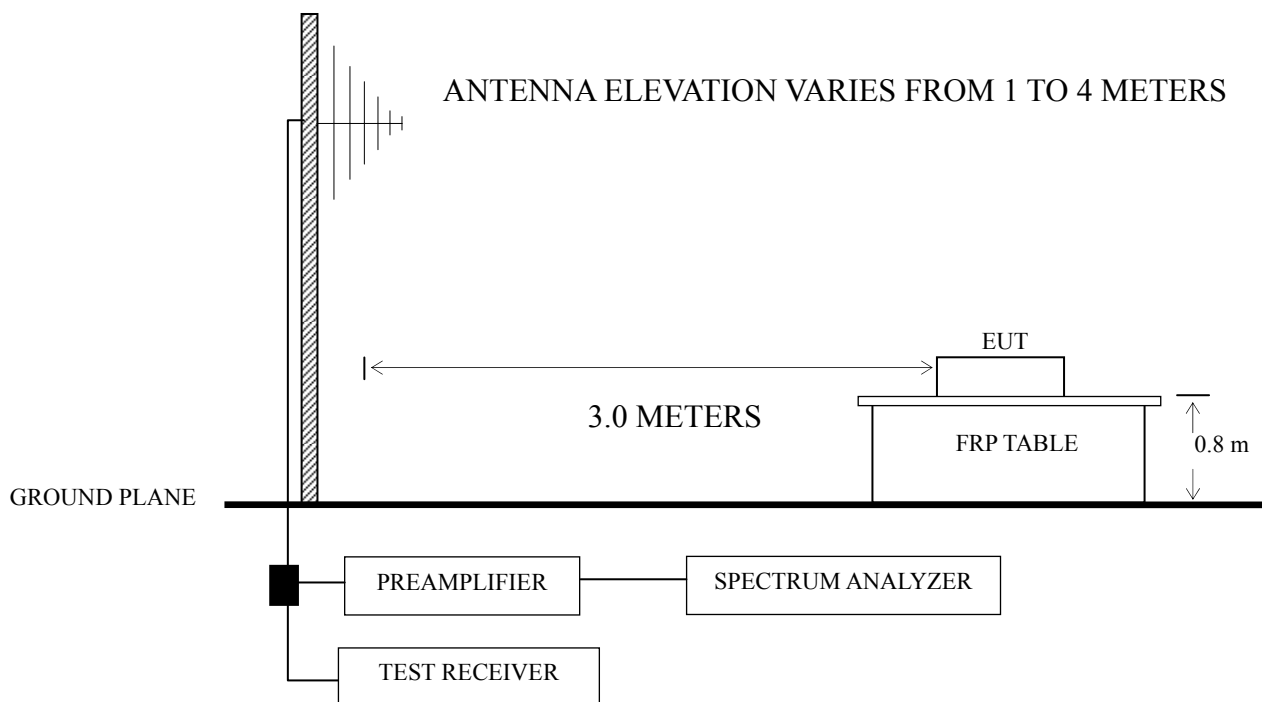
4.1 Test Equipment

The following test equipment are used during the radiated emission test in a semi-anechoic chamber:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Pre-Amplifier	Agilent	8447D	2944A10548	Mar 18, 2016	Sep 17, 2016
2.	Test Receiver	R&S	ESCI	101302	Apr 27, 2015	Apr 26, 2016
3.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 15, 2015	May 14, 2016
4.	Loop Antenna	Schaffner	HLA6120	1193	Apr 25, 2015	Apr 24, 2016
5.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426390	Mar 18, 2016	Sep 17, 2016
6.	Software	Audix	E3	SET00200 9912M295-2	--	--

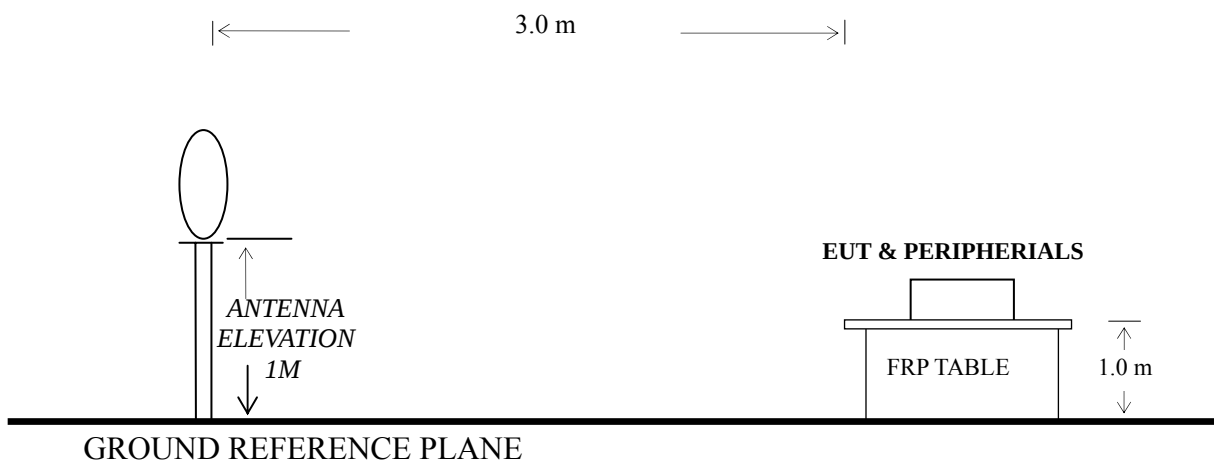
4.2 Block Diagram of Test Setup

4.2.1 Above 30MHz



■ : 50 ohm Coaxial Switch

4.2.2 Below 30MHz



4.3 Radiated Emission Limit [FCC Part 15 Subpart C 15.209]

Frequency (MHz)	Distance (m)	Field strength limits (μV/m)	
		(μV/m)	dB(μV/m)
0.009 ~ 0.490	300	2400/F(kHz)	67.6-20*log(F)
0.490 ~ 1.705	30	24000/F(kHz)	87.6-20*log(F)
1.705 ~ 30	30	30	29.5
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0

NOTE 1 - Emission Level dB (μV/m) = 20 log Emission Level (μV/m)
 NOTE 2 - The tighter limit applies at the band edges.
 NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
 NOTE 4 - The limits shown are based on Quasi-peak value detector
 NOTE 5 - Below 30 MHz, the results shall be extrapolated to the specified distance by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

4.4 Test Configuration

The EUT (listed in Sec.2.1) and the simulators (listed in Sec.2.2) were installed as shown on Sec.4.2 to meet FCC requirements and operating in a manner that tends to maximize its emission level in a normal application.

4.5 Operating Condition of EUT

4.5.1 Setup the EUT as shown in Sec. 4.2.

4.5.2 Turn on the power of all equipment.

4.5.3 Turn the EUT on the test mode, and then test.

4.6 Test Procedures

Radiated emission test applies to harmonics/spurs that fall in the restricted bands listed in Section 15.205. The maximum permitted average field strength is listed in Section 15.209. A pre-amp is necessary for this measurement.

The EUT was placed on a turntable. Below 1 GHz, the table height is 80 cm above the reference ground plane. Above 1 GHz, the table height is 1.5 m. The turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (Calibrated Bilog Antenna) or loop antenna was used as receiving antenna. Both horizontal and vertical polarizations of the antenna were set on measurement. In order to find the maximum emission, all of the interference cables were manipulated according to ANSI C63.10: 2013 requirements during radiated emission test.

The bandwidth of Test Receiver R&S ESCI was set at 120 kHz from 30MHz to 1000MHz.

The frequency range from 0.009 MHz to 1 GHz was checked.

All the test results are listed in Sec.4.7.

4.7 Test Results

<PASS>

The frequency and amplitude of the highest radiated emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

NOTE 1 – Level = Read Level + Antenna Factor + Cable Loss (<1GHz)

NOTE 2 – All reading are Quasi-Peak values below or equal to 1GHz.

Radiated Emission < 30MHz

EUT : Coffee Dispenser Temperature : 25

Model No. : EC/UScUL120V-I Humidity : 45%RH

Test Mode : Transmitting Date of Test : Mar. 18, 2016

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	1.094	13.91	20.14	0.05	34.10	66.86	32.72	QP
	7.329	13.64	20.48	0.24	34.36	69.50	35.14	
	14.672	13.50	20.30	0.45	34.25	69.50	35.25	
Vertical	2.500	13.39	20.60	0.06	34.05	69.50	35.45	
	4.315	13.93	20.47	0.06	34.46	69.50	35.04	
	18.039	13.11	20.43	0.51	34.05	69.50	35.45	

TEST ENGINEER: BILL WU

Radiated Emission > 30MHz

EUT : Coffee Dispenser Temperature : 25

Model No. : EC/UScUL120V-I Humidity : 45%RH

Test Mode : Transmitting Date of Test : Mar. 18, 2016

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	44.55	22.35	11.20	0.77	34.32	40.00	5.68	QP
	97.90	21.87	12.07	1.30	35.24	43.50	8.26	
	217.00	24.00	10.32	2.03	36.35	46.00	9.65	
	274.44	24.63	13.22	2.39	40.24	46.00	5.76	
	316.15	21.97	14.35	2.61	38.93	46.00	7.07	
	451.95	20.47	16.86	2.84	40.17	46.00	5.83	
Vertical	78.50	29.77	9.12	1.05	39.94	40.00	0.06	QP
	204.60	25.97	9.78	1.98	37.73	43.50	5.77	
	217.00	32.20	10.32	2.03	44.55	46.00	1.45	
	233.70	28.42	11.36	2.10	41.88	46.00	4.12	
	260.86	25.54	13.12	2.25	40.91	46.00	5.09	
	422.85	23.13	16.80	2.76	42.69	46.00	3.31	

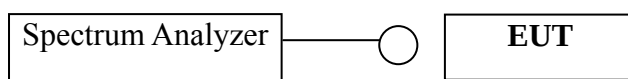
5 OCCUPIED BANDWIDTH MEASUREMENT

5.1 Test Equipment

The following test equipment was used during the Emission Bandwidth measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9010A	MY52221182	Jun 12, 2015	Jun 11, 2016

5.2 Block Diagram of Test Setup



5.3 Operating Condition of EUT

The EUT is transmitting continuously while the power is on.

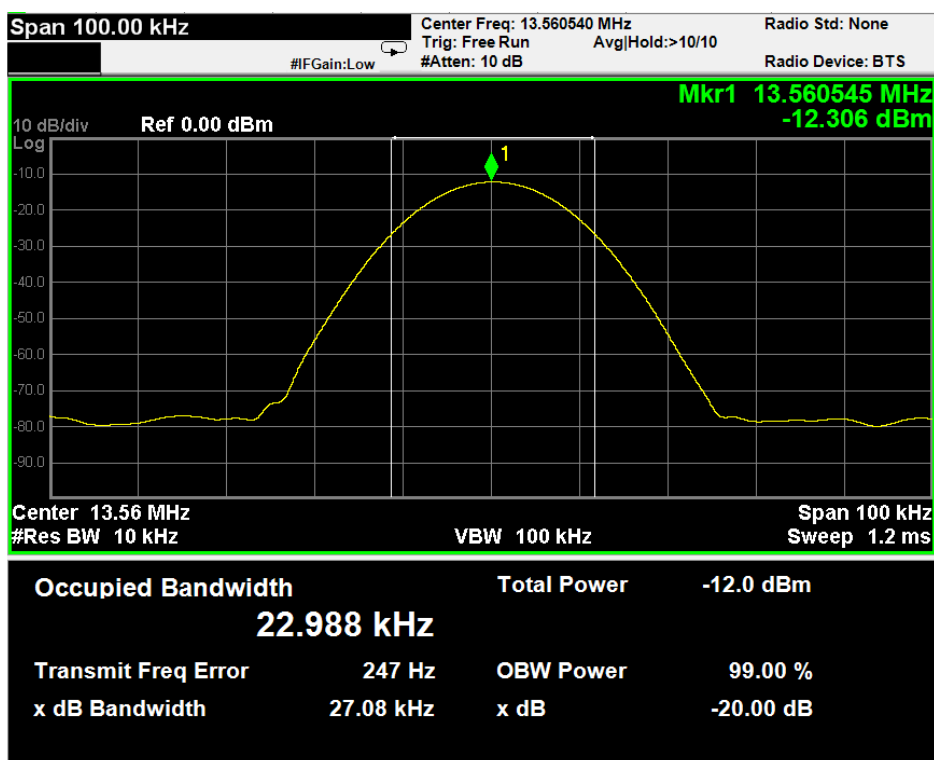
5.4 Test Procedure

The test procedure is defined in ANSI C63.10-2013 Sec 6.9.2 Occupied bandwidth—relative measurement procedure

5.5 Test Results

(Test Date: Mar. 21, 2016 Temperature: 20 Humidity: 44 %)

Frequency	20dB Bandwidth
13.56 MHz	27.08 kHz



6 IN-BAND EMISSIONS MEASUREMENT

6.1 Test Equipment

The following test equipment are used during the radiated emission test in a semi-anechoic chamber:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	101302	Apr 27, 2015	Apr 26, 2016
2.	Loop Antenna	Schaffner	HLA6120	1193	Apr 25, 2015	Apr 24, 2016
3.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426390	Mar 18, 2016	Sep 17, 2016
4.	Software	Audix	E3	SET00200 9912M295-2	--	--

6.2 Block Diagram of Test Setup

The same as Section. 4.2.2

6.3 In-band Emissions Limit [FCC Part 15 Subpart C 15.225(a)(b)(c)]

Frequency (MHz)	Distance (m)	Field strength limits		Field strength limits @ 3m
		(μ V/m)	dB(μ V/m)	dB(μ V/m)
13.110 ~ 13.410	30	106	40.5	80.5
13.410 ~ 13.553	30	334	50.5	90.5
13.553 ~ 13.567	30	15848	84	124
13.567 ~ 13.710	30	334	50.5	90.5
13.710 ~ 14.010	30	106	40.5	80.5
NOTE 1 - Emission Level dB (μ V/m) = 20 log Emission Level (μ V/m) NOTE 2 - The tighter limit applies at the band edges. NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system. NOTE 4 - The limits shown are based on Quasi-peak value detector. NOTE 5 - Below 30 MHz, the results shall be extrapolated to the specified distance by using the square of an inverse linear distance extrapolation factor (40 dB/decade).				

6.4 Operating Condition of EUT

The EUT is transmitting continuously while the power is on.

6.5 Test Procedure

The same as Section. 4.6

6.6 Test Results

PASSED. All the test results are listed below.

EUT : Coffee Dispenser Temperature : 25

Model No. : EC/UScUL120V-I Humidity : 45%RH

Test Mode : Transmitting Date of Test : Mar. 18, 2016

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	13.238	37.47	20.30	0.43	58.20	80.50	22.30	QP
	13.407	36.78	20.30	0.44	57.52	80.50	22.98	
	13.553	51.58	20.30	0.44	72.32	90.50	18.18	
	13.560	65.09	20.30	0.44	85.83	124.00	38.17	
	13.567	38.67	20.30	0.44	59.41	90.50	31.09	
	13.785	40.08	20.30	0.44	60.82	80.50	19.68	
	13.956	37.77	20.30	0.44	58.51	80.50	21.99	
Vertical	13.243	37.86	20.30	0.43	58.59	80.50	21.91	QP
	13.396	38.37	20.30	0.44	59.11	80.50	21.39	
	13.553	36.67	20.30	0.44	57.41	90.50	33.09	
	13.560	64.87	20.30	0.44	85.61	124.00	38.39	
	13.567	39.85	20.30	0.44	60.59	90.50	29.91	
	13.763	37.39	20.30	0.44	58.13	80.50	22.37	
	13.958	38.81	20.30	0.44	59.55	80.50	20.95	

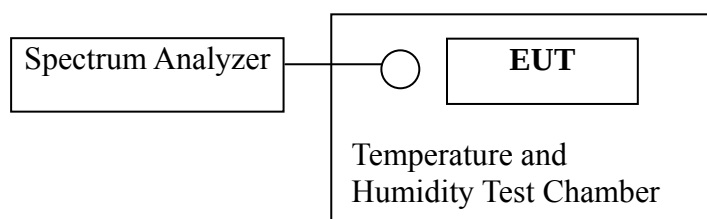
7 FREQUENCY TOLERANCE MEASUREMENT

7.1 Test Equipment

The following test equipment was used during the emission limitations test :

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9010A	MY52221182	Jun 12, 2015	Jun 11, 2016
2.	Temperature and Humidity Test Chamber	TECRCHY	MHU-800L	850801	Mar. 11, 2016	Mar. 10, 2017

7.2 Block Diagram of Test Setup



7.3 Specification Limits (§15.225(e))

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ 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. (The manufacturer declares that the operating temperature of the EUT is 5 to 32 .)

7.4 Operating Condition of EUT

The EUT is transmitting continuously while the power is on.

7.5 Test Procedure

The test procedure is defined in ANSI C63.10-2013 (6.8.1 Frequency stability with respect to ambient temperature).

7.6 Test Results

PASSED.

(Test Date: Mar. 21, 2016 Temperature: 20 Humidity: 44 %)

Voltage (V)	Temp. ()	Freq. (Hz)	Freq. dev. (Hz)	Freq. dev. (%)
120	50	13,560,347	347	0.002559%
120	40	13,560,375	375	0.002765%
120	30	13,560,404	404	0.002979%
120	20	13,560,422	422	0.003112%
120	10	13,560,432	432	0.003186%
120	0	13,560,417	417	0.003075%
120	-10	13,560,401	401	0.002957%
120	-20	13,560,368	368	0.002714%
138	20	13,560,406	406	0.002994%
102	20	13,560,401	401	0.002957%

8 DEVIATION TO TEST SPECIFICATIONS

None.