#### FCC 47 CFR PART 15 SUBPART C

Report No.: T130823D03-RP

#### **TEST REPORT**

For

**Tablet** 

**Model: INP-110Q** 

**Trade Name: InFocus** 

Issued to

## Foxconn International Inc NO 2 ZIYOU ST TUCHENG DISTRICT, NEW TAIPEI, TAIWAN

Issued by

Compliance Certification Services Inc.
No.11, Wugong 6th Rd., Wugu Dist.,
New Taipei City 24891, Taiwan. (R.O.C.)
http://www.ccsrf.com
service@ccsrf.com
Issued Date: December 19, 2013



**Note:** This report shall not be reproduced except in full, without the written approval of Compliance Certification Services Inc. This document may be altered or revised by Compliance Certification Services Inc. personnel only, and shall be noted in the revision section of the document.

Page 1 / 29 Rev.00

## **Revision History**

Report No.: T130823D03-RP

	Issue		Effect	
Rev.	Date	Revisions	Page	Revised By
00	December 19, 2013	Initial Issue	ALL	Kelly Cheng

Page 2 Rev.00

# TABLE OF CONTENTS

1. TE	ST RESULT CERTIFICATION	4
2. EU	T DESCRIPTION	5
3. TE	ST METHODOLOGY	6
3.1	EUT CONFIGURATION	6
3.2	EUT EXERCISE	
3.3	GENERAL TEST PROCEDURES	
3.4	FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS	
3.5	DESCRIPTION OF TEST MODES	8
4. IN	STRUMENT CALIBRATION	9
4.1	MEASURING INSTRUMENT CALIBRATION	9
4.2	MEASUREMENT EQUIPMENT USED	
4.3	MEASUREMENT UNCERTAINTY	
5. FA	CILITIES AND ACCREDITATIONS	11
5.1	FACILITIES	11
5.2	EQUIPMENT	11
5.3	TABLE OF ACCREDITATIONS AND LISTINGS	12
6. SE	TUP OF EQUIPMENT UNDER TEST	13
6.1	SETUP CONFIGURATION OF EUT	
6.2	SUPPORT EQUIPMENT	
7. FC	CC PART 15.225 REQUIREMENTS	14
7.1	20 DB BANDWIDTH	14
7.2	RADIATED EMISSIONS	
7.3	FREQUENCY STABILITY	21
7.4	POWERLINE CONDUCTED EMISSIONS	23
APPEN	NDIX I PHOTOGRAPHS OF TEST SETUP	26
APPEN	NDIX 1 - PHOTOGRAPHS OF FUT	

## 1. TEST RESULT CERTIFICATION

**Applicant:** Foxconn International Inc

NO 2 ZIYOU ST TUCHENG DISTRICT, NEW TAIPEI, TAIWAN

Report No.: T130823D03-RP

**Equipment Under Test:** Tablet

Trade Name: InFocus

Model: INP-110Q

**Date of Test:** November 19 ~ December 9, 2013

APPLICABLE STANDARDS					
STANDARD TEST RESULT					
FCC 47 CFR Part 15 Subpart C	No non-compliance noted				

## We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2009 and the energy emitted by the sample tested as described in this report is in compliance with the requirements of FCC Rules Part 15.225.

The test results of this report relate only to the tested sample identified in this report.

Approved by:

*Reviewed by:* 

Miller Lee Section Manager

Compliance Certification Services Inc.

Villa Lee

Angel Cheng Section Manager

Compliance Certification Services Inc.

noted Charl

Page 4 Rev.00



## 2. EUT DESCRIPTION

Product	Tablet
Trade Name	InFocus
Model Number	INP-110Q
<b>Model Difference</b>	N/A
Received Date	August 23, 2013
Power Supply	1. VDC from Power Adapter PHIPONG / PSAC24A-120 I/P: 100-240V, 0.3A, 50-60Hz, 0.6A O/P: 12V, 2.0A 2. Power from Battery A) Simplo / TMX-S23W38V25A Rating:3.8V 6200mAh B) Simplo / TMX-S28W38V25A Rating:3.8V 7500mAh
Frequency Range	13.56MHz
Modulation Technique	ASK
Number of Channels	1 Channel

#### Remark:

- 1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.
- This submittal(s) (test report) is intended for FCC ID: <u>SIBINFWTB-INP1100</u> filing 2. to comply with Section 15.225 of the FCC Part 15, Subpart C Rules.

Page 5 Rev.00

#### 3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4: 2009 and FCC CFR 47 Part 15.207, 15.209 and 15.225.

Report No.: T130823D03-RP

#### 3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

#### 3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

#### 3.3 GENERAL TEST PROCEDURES

#### **Conducted Emissions**

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4: 2009. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

#### **Radiated Emissions**

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4: 2009.

Page 6 Rev.00

#### 3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
<sup>1</sup> 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	$\binom{2}{}$
13.36 - 13.41	322 - 335.4		

<sup>&</sup>lt;sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

Page 7 Rev.00

<sup>&</sup>lt;sup>2</sup> Above 38.6

<sup>(</sup>b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

### 3.5 DESCRIPTION OF TEST MODES

The EUT (model: INP-110Q) had been tested under operating condition.

Software used to control the EUT for staying in continuous transmitting and receiving mode was programmed.

Report No.: T130823D03-RP

After verification, all tests carried out were with the worst-case test modes as shown below except radiated spurious emission worst case was in normal link mode.

RF ID: Channel 13.56MHz was chosen for full testing.

Page 8 Rev.00

# 4. INSTRUMENT CALIBRATION

### 4.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

Report No.: T130823D03-RP

## 4.2 MEASUREMENT EQUIPMENT USED

#### **Equipment Used for Emissions Measurement**

**Remark:** Each piece of equipment is scheduled for calibration once a year and Loop Antenna is scheduled for calibration once three years.

Conducted Emissions Test Site							
Name of Equipment	Serial Number	Calibration Due					
Spectrum Analyzer	Agilent	E4446A	US42510268	11/13/2014			
Power Meter	Anritsu	ML2495A	1012009	04/25/2014			
Power Sensor	Anritsu	MA2411A	0917072	04/25/2014			

Wugu 966 Chamber A					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due	
Spectrum Analyzer	Agilent	E4446A	US42510268	11/05/2014	
EMI Test Receiver	R&S	ESCI	100064	02/28/2014	
Pre-Amplifier	Mini-Circults	ZFL-1000LN	SF350700823	01/12/2014	
Pre-Amplifier	MITEQ	AFS44-00102650- 42-10P-44	1415367	11/18/2014	
Bilog Antenna	Sunol Sciences	JB3	A030105	10/01/2014	
Horn Antenna	EMCO	3117	00055165	02/13/2014	
Loop Antenna	EMCO	6502	8905/2356	06/12/2014	
Turn Table	CCS	CC-T-1F	N/A	N.C.R	
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	
Controller	CCS	CC-C-1F	N/A	N.C.R	
Site NSA	CCS	N/A	N/A	12/22/2013	
Test S/W	Test S/W EZ-EMC (CCS-3A1RE)				

Conducted Emission room # A					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due	
TEST RECEIVER	R&S	ESCI	100234	06/10/2014	
LISN (EUT)	SCHWARZBECK	NSLK 8127	8127527	12/10/2014	
LISN	SCHWARZBECK	NSLK 8127	8127526	12/10/2014	
BNC CABLE	EMCI	5Dr	BNC A6	12/10/2014	
Pulse Limiter	R&S	ESH3-Z2	C3010026-2	09/05/2014	
THERMO- HYGRO METER	WISEWIND	201A	No. 02	05/14/2014	
Test S/W	EZ-EMC				

Page 9 Rev.00

## 4.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
Powerline Conducted Emission	+/- 1.56
3M Semi Anechoic Chamber / 30M~200M	+/- 4.0138
3M Semi Anechoic Chamber / 200M~1000M	+/- 3.9483
3M Semi Anechoic Chamber / 1G~8G	+/- 2.5975
3M Semi Anechoic Chamber / 8G~18G	+/- 2.6112
3M Semi Anechoic Chamber / 18G~26G	+/- 2.7389
3M Semi Anechoic Chamber / 26G~40G	+/- 2.9683

**Remark**: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Page 10 Rev.00

Report No.: T130823D03-RP

### 5. FACILITIES AND ACCREDITATIONS

#### **5.1 FACILITIES**

All measurement facilities used to collect the measurement data are located at

No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C. Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

**Remark**: The radiated emissions test items was tested at Compliance Certification Services Inc. (Sindian Lab.) The test equipments were listed in page 10 and the test data, please refer page 25-26.

Report No.: T130823D03-RP

No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)

Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

No.81-1, Lane 210, Bade 2nd Rd., Lujhu Township, Taoyuan County 33841,

TAIWAN, R.O.C.

Tel: 886-3-324-0332 / Fax: 886-3-324-5235

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

### 5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

Page 11 Rev.00

## 5.3 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
		3M Semi Anechoic Chamber (FCC MRA: TW1039) to perform FCC Part 15 measurements	FCC MRA: TW1039
Taiwan	TAF	LP0002, RTTE01, FCC Method-47 CFR Part 15 Subpart C, D, E, RSS-210, RSS-310  IDA TS SRD, AS/NZS 4268, AS/NZS 4771, TS 12.1 & 12.2, ETSI EN 300 440-1, ETSI EN 300 440-2, ETSI EN 300 328, ETSI EN 300 220-1, ETSI EN 300 220-2, ETSI EN 301 893, ETSI EN 301 489-1/3/7/17  FCC OET Bulletin 65 + Supplement C, EN 50360, EN 50361, EN 50371, RSS 102, EN 50383, EN 50385, EN 50392, IEC 62209, CNS 14958-1, CNS 14959  FCC Method -47 CFR Part 15 Subpart B  IEC / EN 61000-3-2, IEC / EN 61000-3-3, IEC / EN 61000-4-2/3/4/5/6/8/11	Testing Laboratory 1309
Canada	Industry Canada	3M Semi Anechoic Chamber (IC 2324G-1 / IC 2324G-2) to perform	<b>Canada</b> IC 2324G-1 IC 2324G-2

Report No.: T130823D03-RP

Page 12 Rev.00

<sup>\*</sup> No part of this report may be used to claim or imply product endorsement by A2LA or any agency of the US Government.

# 6. SETUP OF EQUIPMENT UNDER TEST

### **6.1 SETUP CONFIGURATION OF EUT**

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

Report No.: T130823D03-RP

## **6.2 SUPPORT EQUIPMENT**

No.	Equipment	Model No.	Serial No.	FCC ID / BSMI ID	Brand Name	Data Cable	Power Cord
1.	Earphone	MSB301	N/A	N/A	e-Sense	Unshielded 1.8m	N/A
2.	USB HDD	HD-EG5	N/A	DOC BSMI: D33021	SONY	Shielded, 0.5m	N/A
3.	SD Card	N/A	N/A	N/A	PQI	N/A	N/A

#### Remark:

- 1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
- 2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

Page 13 Rev.00

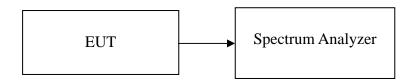
# 7. FCC PART 15.225 REQUIREMENTS

## 7.1 20 DB BANDWIDTH

### **LIMIT**

None; for reporting purposes only.

#### **Test Configuration**



### **TEST PROCEDURE**

- 1. Place the EUT on the table and set it in the transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 3. Set the spectrum analyzer as RBW= 3kHz, VBW = 10kHz, Span = 500kHz, Sweep = auto.
- 4. Mark the peak frequency and 20dB (upper and lower) frequency.
- 5. Repeat until all the rest channels are investigated.

### **TEST RESULTS**

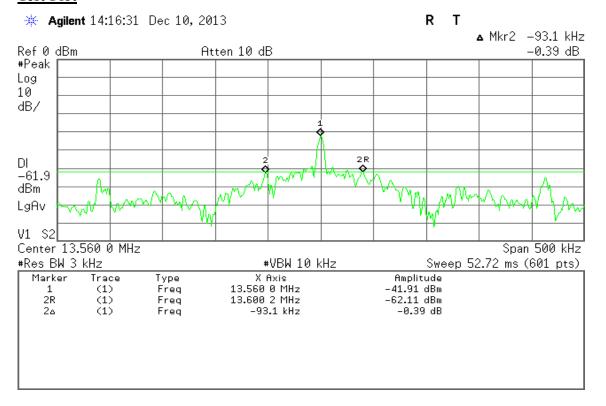
No non-compliance noted.

Page 14 Rev.00

Report No.: T130823D03-RP



#### **Test Plot**



Page 15 Rev.00

#### 7.2 RADIATED EMISSIONS

### **LIMIT**

According to §15.225,

(a) The field strength of any emissions within the band 13.553 – 13.567 MHz shall not exceed 15,848 microvolts / meter at 30 meters.

Report No.: T130823D03-RP

- (b) Within the bands 13.410 13.553 MHz and 13.567 -13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts / meter at 30 meters.
- (c) Within the bands 13.110 13.410 MHz and 13.710 14.010 MHz the field strength of any emissions shall not exceed 106 microvolts / meter at 30 meters.
- (d) The field strength of any emissions appearing outside of the 13.110 14.010 MHz and shall not exceed the general radiated emission limits in §15.209.

According to §15.225(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

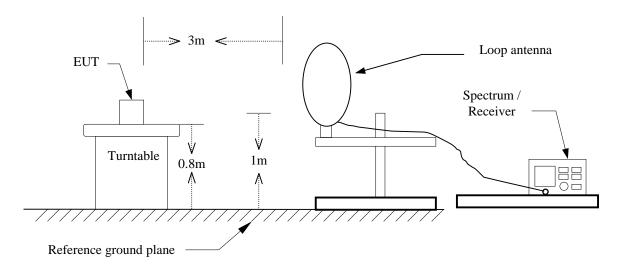
	C	O
Frequency (MHz)	Field Strength (μV/m at meter)	Measurement Distance (meter)
0.009 - 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30	30
30 - 88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

<sup>\*\*</sup> Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

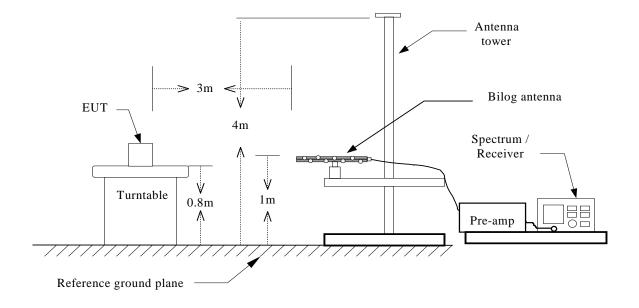
Page 16 Rev.00

## **Test Configuration**

### $9kHz \sim 30MHz$



#### $30MHz \sim 1GHz$



Page 17 Rev.00

## **TEST PROCEDURE**

#### For 9kHz ~ 30MHz

- 1. The EUT is placed on a turntable, which is 0.8m above ground plane.
- 2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 3m away from the receiving antenna, The center of the loop shall be 1 m above the ground then to find out the highest emissions.

Report No.: T130823D03-RP

- 4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 5. And also, each emission was to be maximized by rotated of receiving antenna axis
- 6. Set the spectrum analyzer in the following setting as: RBW=10kHz / VBW=30kHz / Sweep=AUTO
- 7. Repeat above procedures until the measurements for all frequencies are complete.

#### For 30MHz ~ 1GHz

- 1. The EUT is placed on a turntable, which is 0.8m above ground plane.
- 2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 3m away from the receiving antenna, which is varied from 1m to find out the highest emissions.
- 4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 6. Set the spectrum analyzer in the following setting as: RBW=100kHz / VBW=300kHz / Sweep=AUTO
- 7. Repeat above procedures until the measurements for all frequencies are complete.

Page 18 Rev.00

9kHz ~ 30MHz

**Operation Mode:** TX mode **Test Date:** December 9, 2013

Report No.: T130823D03-RP

**Temperature:** 27°C **Tested by:** Rex Huang

**Humidity:** 53 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)	Detector Mode (PK/QP/AVG)
13.5612	26.37	5.73	32.10	124.00	-91.90	peak
6.9822	15.47	6.89	22.36	69.50	-47.14	peak
9.9332	8.53	6.21	14.74	69.50	-54.76	peak
13.0809	8.70	5.80	14.50	69.50	-55.00	peak
14.3597	9.16	5.63	14.79	69.50	-54.71	peak
24.9341	4.52	5.48	10.00	69.50	-59.50	peak
27.1474	5.04	5.93	10.97	69.50	-58.53	peak

#### Remark:

- 1. Measuring frequencies from 9kHz to the 1GHz.
- 2. Radiated emissions measured were made with an instrument using peak/quasi-peak/average detector mode.
- 3. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "N/A" remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 4. Margin(dB) = Result(dBuV/m) Limit(dBuV/m).

Page 19 Rev.00

### $30MHz \sim 1GHz$

**Operation Mode:** TX mode **Test Date:** November 19, 2013

Report No.: T130823D03-RP

**Temperature:** 27°C **Tested by:** Rex Huang

**Humidity:** 53 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)	Ant.Pol. (H/V)	Detector Mode (PK/QP/AVG)
52.6333	53.72	-23.17	30.55	40.00	-9.45	V	QP
354.9500	41.29	-15.07	26.22	46.00	-19.78	V	peak
426.0833	40.10	-13.31	26.79	46.00	-19.21	V	peak
497.2167	44.23	-11.88	32.35	46.00	-13.65	V	peak
639.4833	43.49	-9.56	33.93	46.00	-12.07	V	peak
710.6167	37.55	-8.60	28.95	46.00	-17.05	V	peak
52.6333	58.00	-23.17	34.83	40.00	-5.17	Н	QP
212.6833	44.44	-18.46	25.98	43.50	-17.52	Н	Peak
354.9500	51.11	-15.07	36.04	46.00	-9.96	Н	Peak
710.6167	37.72	-8.60	29.12	46.00	-16.88	Н	Peak
780.1332	37.72	-7.58	30.14	46.00	-15.86	Н	Peak
914.3167	36.27	-5.97	30.30	46.00	-15.70	Н	Peak

#### Remark:

- 1. Measuring frequencies from 9kHz to the 1GHz.
- 2. Radiated emissions measured were made with an instrument using peak/quasi-peak/average detector mode.
- 3. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "N/A" remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 4. Margin(dB) = Result(dBuV/m) Limit(dBuV/m).

Page 20 Rev.00



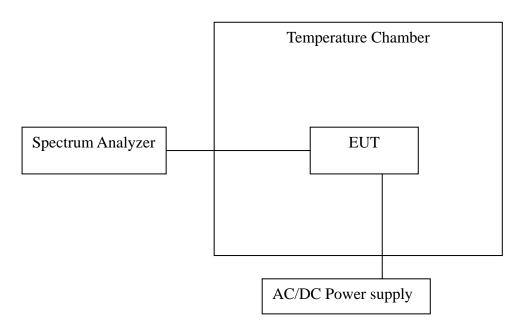
## 7.3 FREQUENCY STABILITY

#### **LIMIT**

According to §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  $\pm$  0.020 degrees to  $\pm$  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. For battery operated equipment, the equipment tests shall be performed using a new battery.

#### **Test Configuration**

Temperature and Voltage Measurement (under normal and extreme test conditions)



#### **TEST PROCEDURE**

- 1. Place the EUT on the table and set it in the transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 3. Set the environment into appropriate environment.
- 4. Set the spectrum analyzer as RBW=1kHz, VBW = RBW, Span = 200kHz, Sweep = auto.
- 5. Mark the peak frequency and measure the frequency tolerance using frequency counter function.
- Repeat until all the results are investigated. 6.

Page 21 Rev.00

# **TEST RESULTS**

No non-compliance noted.

**Temperature Variations** 

Temp.	Voltage (V)	Measured Frequency (MHz)	Delta Frequency (Hz)	Tolerance (%)	Limit (±%)	Margin (%)	Result (Pass/Fail)
-20		13.56120	1200	0.00885	0.01	-0.00100	Pass
-10		13.56123	1231	0.00908	0.01	-0.00092	Pass
0	110	13.56121	1210	0.00892	0.01	-0.00108	Pass
10		13.56120	1200	0.00885	0.01	-0.00159	Pass
20		13.56122	1220	0.00900	0.01	-0.00115	Pass
30		13.56125	1250	0.00922	0.01	-0.00078	Pass
40		13.56126	1260	0.00929	0.01	-0.00064	Pass
50		13.56125	1250	0.00922	0.01	-0.00078	Pass

**Voltage Variations** 

voltage variations									
Temp.	Voltage (V)	Measured Frequency (MHz)	Delta Frequency (Hz)	Tolerance (%)	Limit (±%)	Margin (%)	Result (Pass/Fail)		
	99	13.56124	1240	0.00914	0.01	-0.00086	Pass		
20	110	13.56125	1250	0.00922	0.01	-0.00086	Pass		
	121	13.56125	1250	0.00922	0.01	-0.00078	Pass		

Page 22 Rev.00

Report No.: T130823D03-RP

#### 7.4 POWERLINE CONDUCTED EMISSIONS

### **LIMIT**

According to  $\S15.207(a)$ , except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Report No.: T130823D03-RP

Frequency Range	Limits (dBµV)				
(MHz)	Quasi-peak	Average			
0.15 to 0.50	66 to 56*	56 to 46*			
0.50 to 5	56	46			
5 to 30	60	50			

<sup>\*</sup> Decreases with the logarithm of the frequency.

### **TEST PROCEDURE**

- 1. The EUT was placed on a table, which is 0.8m above ground plane.
- 2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 3. Repeat above procedures until all frequency measured were complete.

Page 23 Rev.00

## **TEST RESULTS**

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Report No.: T130823D03-RP

**Operation Mode:** Normal Link **Test Date:** November 19, 2013

**Temperature:** 22°C **Tested by:** Julon Liu

**Humidity:** 55% RH

	Conducted Emission Readings									
]	Frequency Rang	ge Investigated	l	150 kHz to 30 MHz						
Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector (P/Q/A)	Line (L1/L2)			
0.3060	38.41	10.00	48.41	60.08	-11.67	P	L1			
0.9700	34.94	10.09	45.03	56.00	-10.97	P	L1			
17.0820	40.95	10.67	51.62	60.00	-8.38	P	L1			
17.0820	39.30	10.67	49.97	50.00	-0.03	A	L1			
19.9300	38.90	10.74	49.64	60.00	-10.36	P	L1			
19.9300	37.33	10.74	48.07	50.00	-1.93	A	L1			
21.3540	43.90	10.78	54.68	60.00	-5.32	P	L1			
21.3540	39.20	10.78	49.98	50.00	-0.02	A	L1			
24.2020	36.25	10.86	47.11	60.00	-12.89	P	L1			
0.1860	42.93	10.01	52.94	64.21	-11.27	P	L2			
0.3060	39.04	9.98	49.02	60.08	-11.06	P	L2			
12.8139	36.93	10.55	47.48	60.00	-12.52	P	L2			
17.0860	42.12	10.66	52.78	60.00	-7.22	P	L2			
17.0860	39.30	10.66	49.96	50.00	-0.04	A	L2			
21.3580	42.14	10.78	52.92	60.00	-7.08	P	L2			
21.3580	39.10	10.78	49.88	50.00	-0.12	A	L2			
24.2020	34.63	10.86	45.49	60.00	-14.51	P	L2			

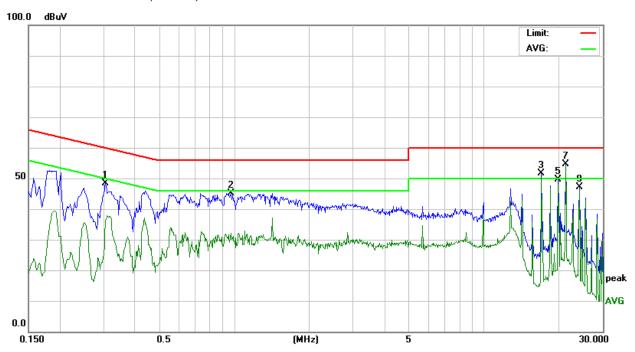
#### Remark:

- 1. The measuring frequencies range between 0.15 MHz and 30 MHz.
- 2. The emissions measured in the frequency range between 0.15 MHz and 30MHz were made with an instrument using Quasi-peak detector and Average detector.
- 3. The IF bandwidth of SPA between 0.15MHz and 30MHz was 10kHz. The IF bandwidth of Test Receiver between 0.15MHz and 30MHz was 9kHz.
- 4.  $L1 = Line\ One\ (Live\ Line)/L2 = Line\ Two\ (Neutral\ Line)$
- 5. "-" means Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

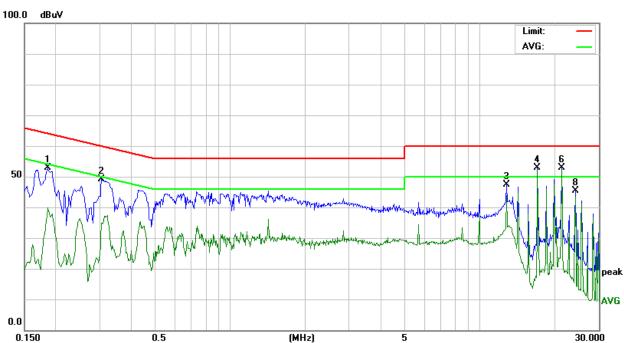
Page 24 Rev.00

## **Test Plots**

## Conducted emissions (Line 1)



## Conducted emissions (Line 2)



Page 25 Rev.00