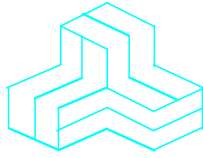


ENGINEERING TEST REPORT



Luxe 8500i
Model: Luxe 8500i
FCC ID: COL-LUXE8500I

Applicant:

NBS Payment Solutions Inc.
703 Evans Ave., Suite 400
Toronto, Ontario
Canada M9C 5E9

In Accordance With

Federal Communications Commission (FCC)
Part 15, Subpart C
Unlicensed Low Power Transmitter Operating in the Band 13.110-14.010 MHz

UltraTech's File No.: 16MIS118_FCC15C225

This Test report is Issued under the Authority of
Tri M. Luu
Vice President of Engineering
UltraTech Group of Labs

Date: December 15, 2016

Report Prepared by: Dan Huynh

Tested by: Wei Wu

Issued Date: December 15, 2016

Test Dates: May 7 - June 20, 2016
December 13-14, 2016

- *The results in this Test Report apply only to the sample(s) tested, and the sample tested is randomly selected.*
- *This report must not be used by the client to claim product endorsement by NVLAP or any agency of the US Government.*
- *This test report shall not be reproduced, except in full, without a written approval from UltraTech*

UltraTech

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91038



1309



46390-2049



AT-1945



SL2-IN-E-1119R



Korea
KCC-RRR
CA2049

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EXHIBIT 1. INTRODUCTION

1.1. SCOPE

Reference:	FCC Part 15, Subpart C, Section 15.225 - Operation within the band 13.110 - 14.010 MHz.
Title:	Code of Federal Regulations (CFR), Title 47 Telecommunication, Part 15, Subpart C - Intentional Radiators
Purpose of Test:	Equipment Certification for Devices in Section 15.225 - Operation within the Band 13.110 - 14.010 MHz.
Test Procedures:	ANSI C63.4 and ANSI C63.10
Environmental Classification:	Commercial, industrial or business environment

1.2. RELATED SUBMITTAL(S)/GRANT(S)

None.

1.3. NORMATIVE REFERENCES

Publication	Year	Title
47 CFR Parts 0-19	2015	Code of Federal Regulations (CFR), Title 47 – Telecommunication
ANSI C63.4	2014	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 KHz to 40 GHz
ANSI C63.10	2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
CISPR 22 & EN 55022	2008-09, Edition 6.0 2006	Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement
CISPR 16-1-1 +A1 +A2	2006 2006 2007	Specification for radio disturbance and immunity measuring apparatus and methods. Part 1-1: Measuring Apparatus
CISPR 16-1-2 +A1 +A2	2003 2004 2006	Specification for radio disturbance and immunity measuring apparatus and methods. Part 1-2: Conducted disturbances

EXHIBIT 2. PERFORMANCE ASSESSMENT

2.1. CLIENT INFORMATION

APPLICANT	
Name:	NBS Payment Solutions Inc.
Address:	703 Evans Ave., Suite 400 Toronto, ON Canada M9C 5E9
Contact Person:	Mr. Eric Babbitt Phone #: 416-621-7410 x567 Fax #: 416-621-2450 Email Address: ebabbitt@nbsps.com

MANUFACTURER	
Name:	NBS Payment Solutions Inc.
Address:	703 Evans Ave., Suite 400 Toronto, ON Canada M9C 5E9
Contact Person:	Mr. Eric Babbitt Phone #: 416-621-7410 x567 Fax #: 416-621-2450 Email Address: ebabbitt@nbsps.com

2.2. EQUIPMENT UNDER TEST (EUT) INFORMATION

The following information (with the exception of the Date of Receipt) has been supplied by the applicant.

Brand Name:	NBS Payment Solutions Inc.
Product Name:	Luxe 8500i
Model Name or Number:	Luxe 8500i
Serial Number:	Test sample
Type of Equipment:	Low Power Communication Device Transmitter
Input Power Supply Type:	9 VDC/12 VDC via AC adapter
Primary User Functions of EUT:	Point of Sale credit/debit financial transactions

2.3. EUT'S TECHNICAL SPECIFICATIONS

Transmitter	
Equipment Type:	Mobile
Intended Operating Environment:	Commercial, light industry & heavy industry
Power Supply Requirement:	9 VDC/12 VDC via AC adapter
Field Strength:	56.61 dB μ V/m at 10 m
Operating Frequency Range:	13.56 MHz
20 dB Bandwidth:	219.6 kHz
Modulation Type:	ASK
Antenna Connector Type:	Integral

2.4. LIST OF EUT'S PORTS

Port Number	EUT's Port Description	Number of Identical Ports	Connector Type	Cable Type (Shielded/Non-shielded)
1	Main Connector	1	Samtec: SIBF-15-F-S-AD	1m, non-shielded
2	Earphone Jack	1	Oupiin: 8965-3505ADT	1m, non-shielded
3	*USB	1	USB	Shielded
4	Communication Module port (Optional)	1	PCB Pads	N/A
5	Printer Module port (Optional)	1	PCB Pads	N/A

* Service port

2.5. ANCILLARY EQUIPMENT

The EUT was tested while connected to the following representative configuration of ancillary equipment necessary to exercise the ports during tests:

Ancillary Equipment # 1	
Description:	ITE Power Supply AC Adapter
Brand name:	ENG
Model Name or Number:	6A-161WU09
Connected to EUT's Port:	DC Port

Ancillary Equipment # 2	
Description:	Headphone
Brand name:	Generic
Model Name or Number:	N/A
Connected to EUT's Port:	Earphone Jack

Ancillary Equipment # 3	
Description:	ITE Power Supply AC Adapter
Brand name:	Equinox
Model Name or Number:	NU40-E120250-I3
Connected to EUT's Port:	PUSB Adapter

Ancillary Equipment # 4	
Description:	Stereo Headphone
Brand name:	Nextech
Model Name or Number:	N/A
Connected to EUT's Port:	Earphone Jack

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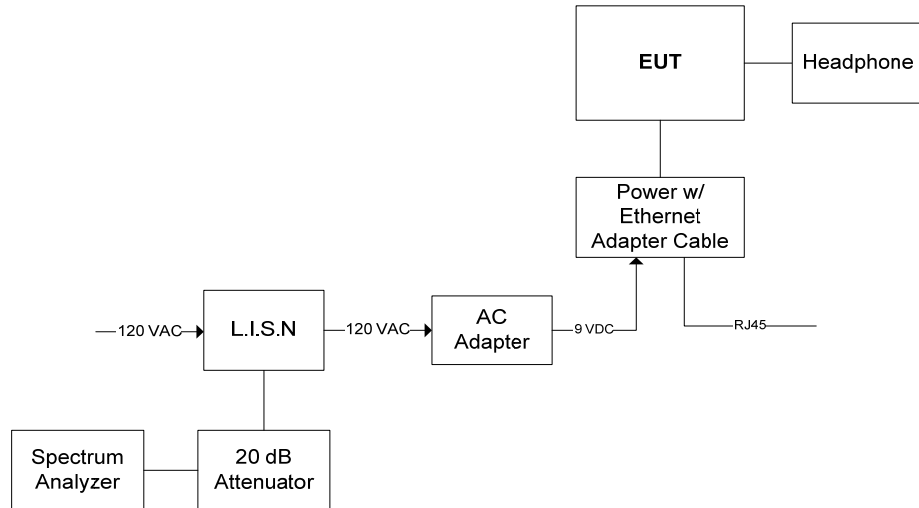
3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4
Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: vic@ultratech-labs.com, Website: <http://www.ultratech-labs.com>

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December 15, 2016

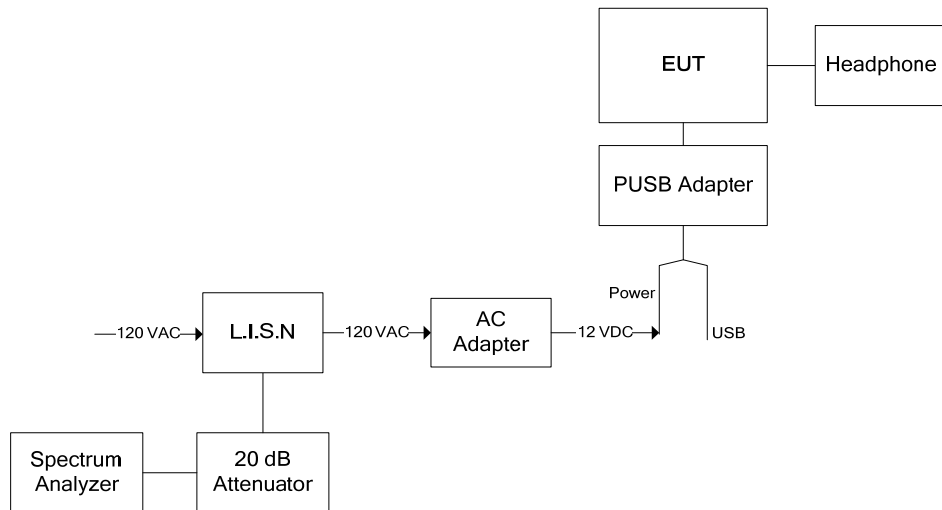
All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

2.6. TEST SETUP

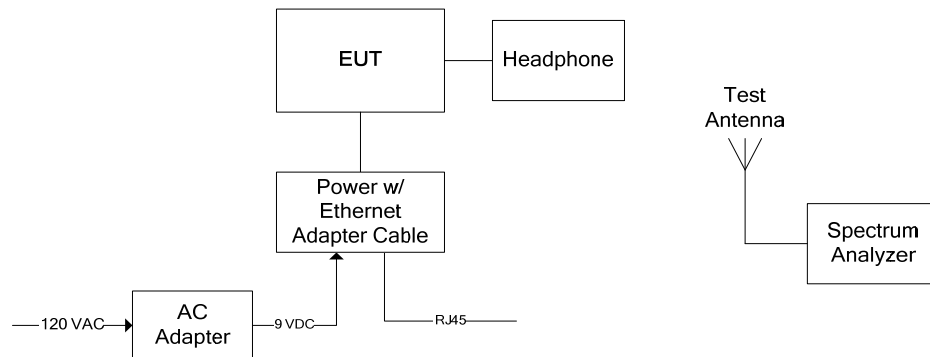
Power Line Conducted Emission (Power via Power w/ Ethernet Adapter Cable)



Power Line Conducted Emission (Power via PUSB Adapter)



Radiated Emission



Frequency Stability

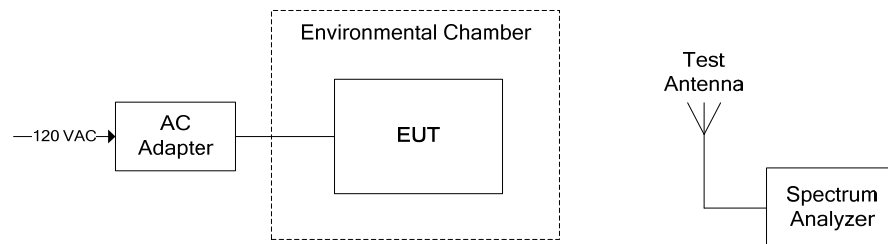


EXHIBIT 3. EUT OPERATING CONDITIONS AND CONFIGURATIONS DURING TESTS

3.1. CLIMATE TEST CONDITIONS

The climate conditions of the test environment are as follows:

Temperature:	21 to 23 °C
Humidity:	45 to 58%
Pressure:	102 kPa
Power Input Source:	9 VDC/12 VDC via AC adapter

3.2. OPEPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TESTS

Operating Modes:	The EUT was configured for continuous transmission for the duration of testing.
Special Test Software:	N/A
Special Hardware Used:	N/A
Transmitter Test Antenna:	The EUT was tested with the antenna fitted in a manner typical of normal intended use as integral antenna equipment.

Transmitter Test Signals:	
Frequency:	13.56 MHz
Transmitter Wanted Output Test Signals:	
▪ RF Power Output (measured maximum output power):	56.61 dBµV/m at 10 m
▪ Normal Test Modulation:	ASK
▪ Modulating signal source:	Internal

EXHIBIT 4. SUMMARY OF TEST RESULTS

4.1. LOCATION OF TESTS

All of the measurements described in this report were performed at Ultratech Group of Labs located in the city of Oakville, Province of Ontario, Canada.

- AC Power Line Conducted Emissions were performed in UltraTech's shielded room, 24'(L) by 16'(W) by 8'(H).
- Radiated Emissions were performed at the Ultratech's 3-10 TDK Semi-Anechoic Chamber situated in the Town of Oakville, province of Ontario. This test site been calibrated in accordance with ANSI C63.4, and found to be in compliance with the requirements of Sec. 2.948 of the FCC Rules. The descriptions and site measurement data of the Oakville 3-10 TDK Semi-Anechoic Chamber has been filed with FCC office (FCC File No.: 91038) and Industry Canada office (Industry Canada File No.: 2049A-3). Expiry Date: 2017-04-02.

4.2. APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS

FCC Regulations	Test Requirements	Compliance (Yes/No)
15.203 & 15.204	The transmitter shall use a transmitting antenna that is an integral part of the device	Yes
15.215(c)	Emission Bandwidth	Yes
15.225(a) – (d)	Field Strength of Emissions Inside and Outside the Permitted Band 13.110 - 14.010 MHz	Yes
15.225(e)	Frequency Stability	Yes
15.207	Class B - Power Line Conducted Emissions	Yes

4.3. MODIFICATIONS INCORPORATED IN THE EUT FOR COMPLIANCE PURPOSES

None.

EXHIBIT 5. TEST DATA

5.1. EMISSION BANDWIDTH [§15.215(c)]

5.1.1. Limits

The 20 dB bandwidth of the emission shall be contained within the band 13.110–14.010 MHz.

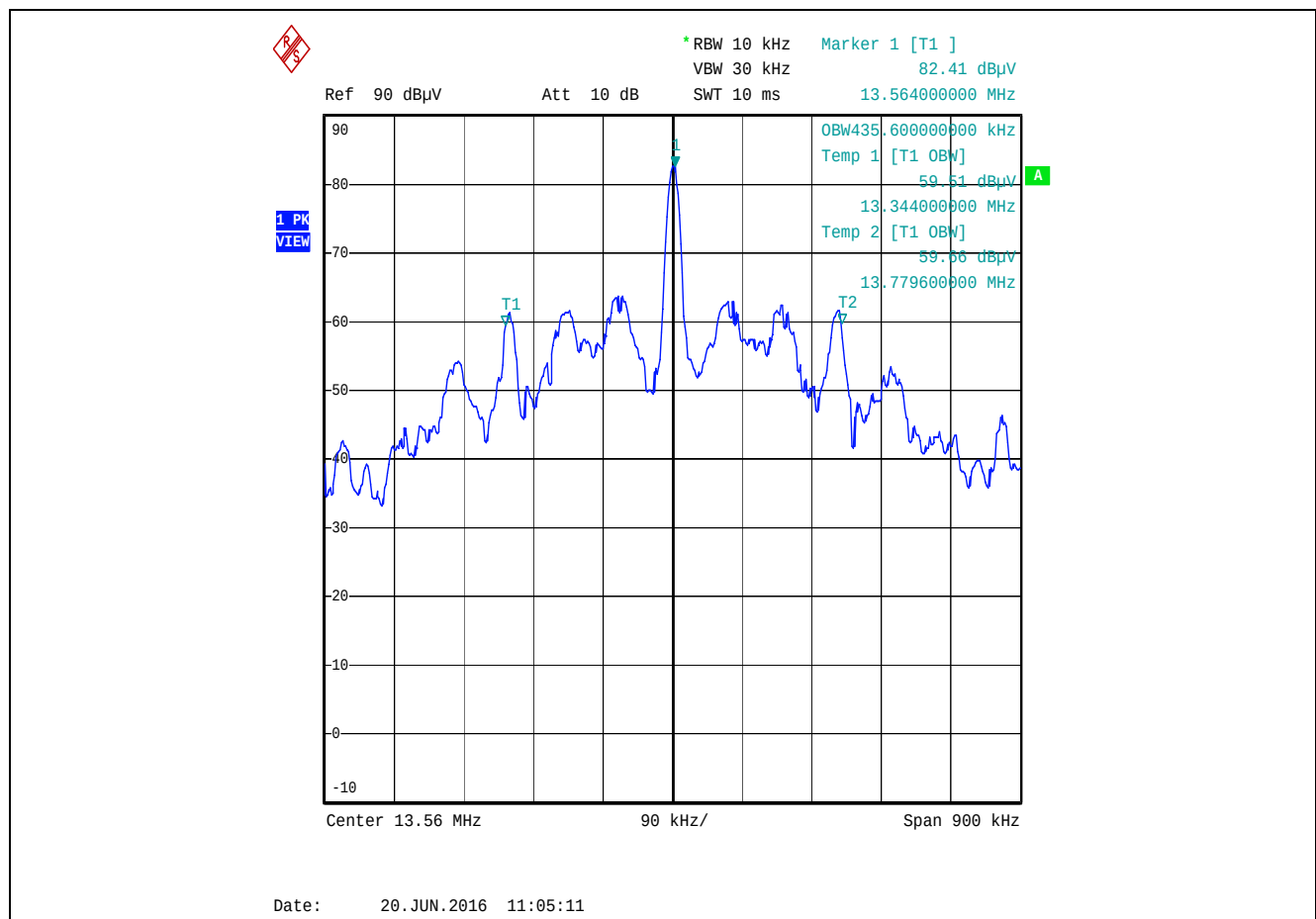
5.1.2. Method of Measurements

ANSI C63.10-2013, Clause 6.9

5.1.3. Test Data

Test Frequency (MHz)	Modulation	Occupied Bandwidth (kHz)	
		20 dB BW	99 % BW
13.56	WUP-A	219.6	435.6
	WUP-B	27.20	39.20

Plot 5.1.3.1. 99% Occupied Bandwidth, 13.56 MHz, Modulation: WUP-A



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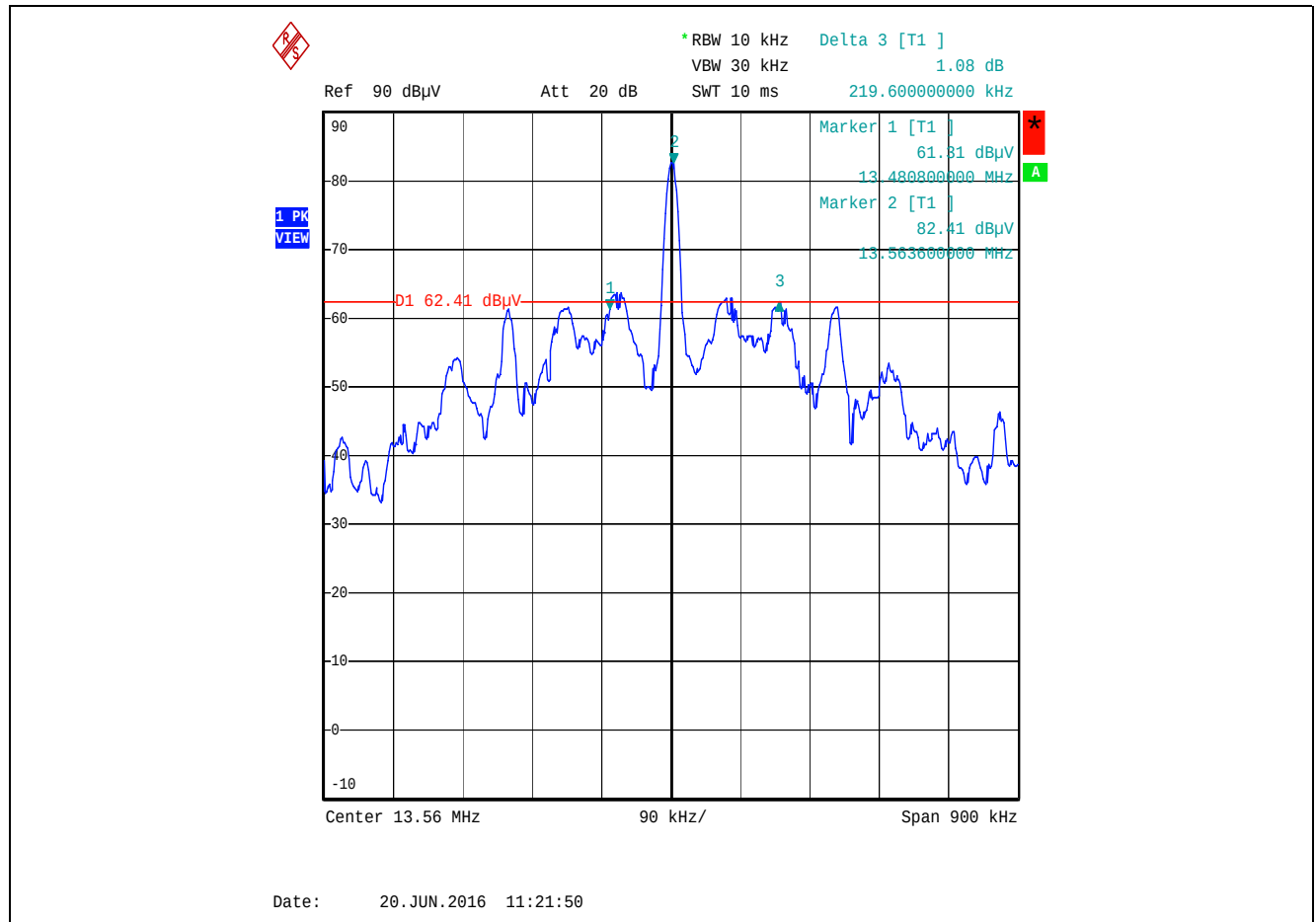
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Plot 5.1.3.2. 20 dB Emission Bandwidth, 13.56 MHz, Modulation: WUP-A,



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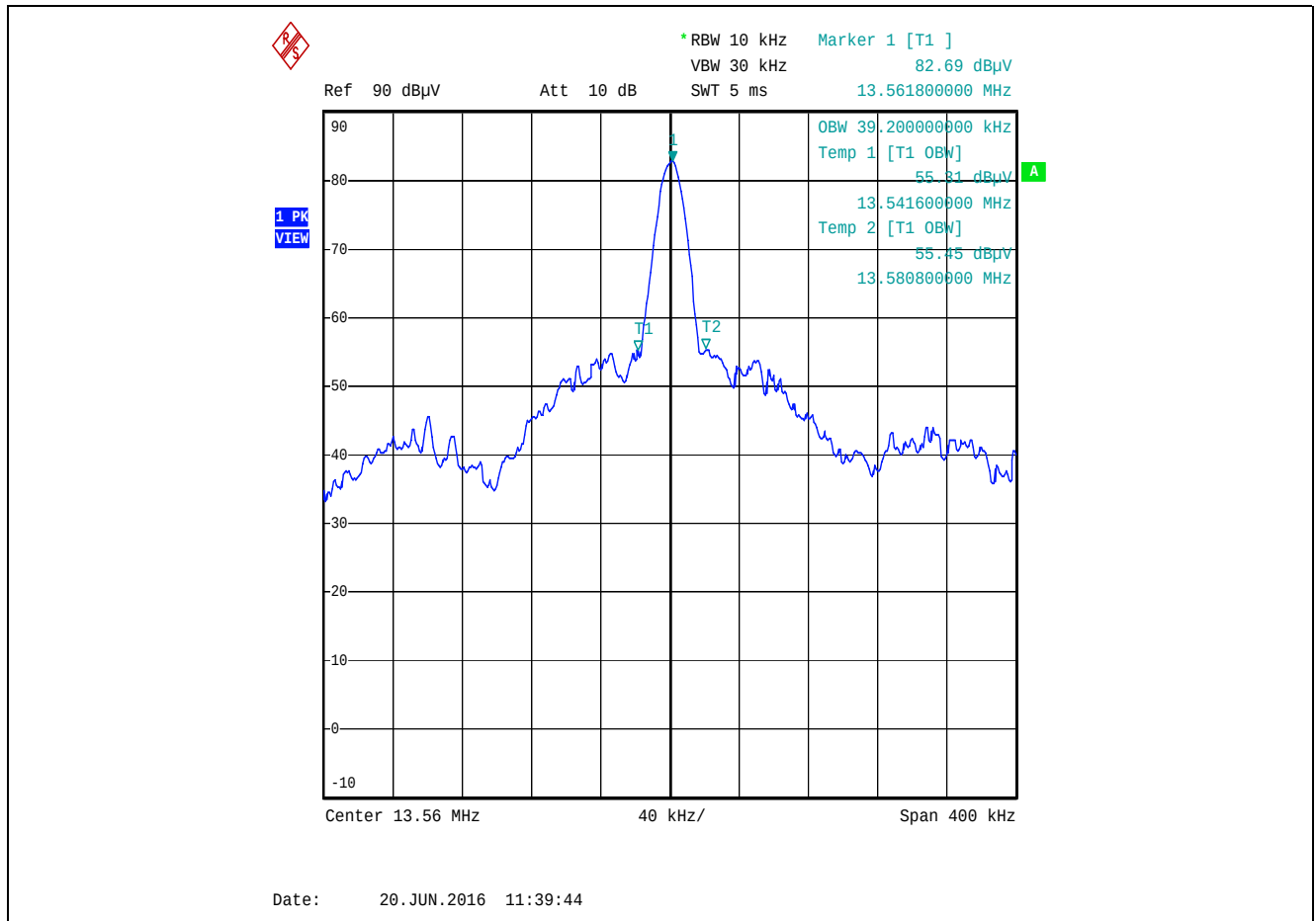
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Plot 5.1.3.3. 99% Occupied Bandwidth, 13.56 MHz, Modulation: WUP-B



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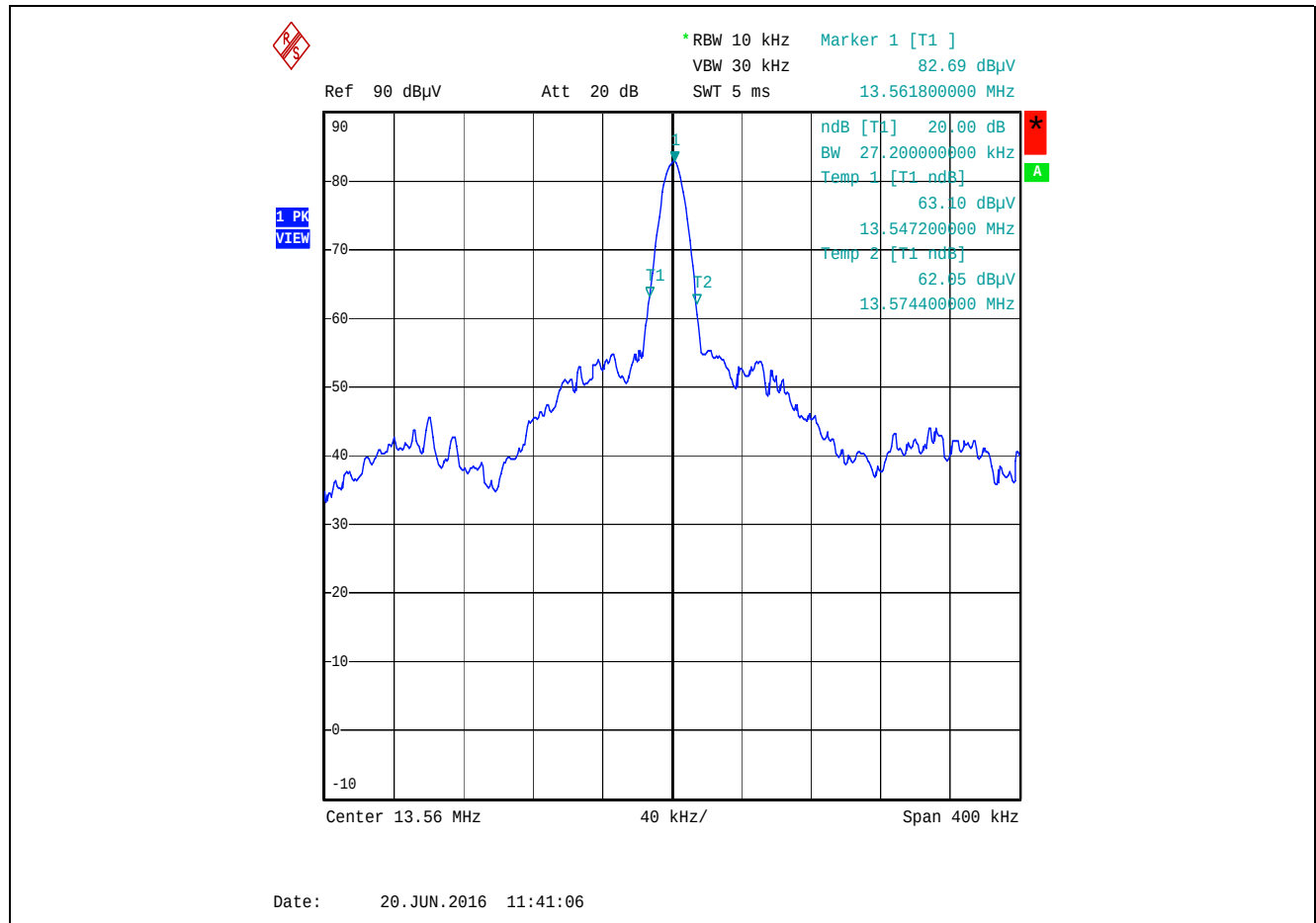
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File #: 16MIS118_FCC15C225

December 15, 2016

All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

Plot 5.1.3.4. 20 dB Emission Bandwidth, 13.56 MHz, Modulation: WUP-B



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File #: 16MIS118_FCC15C225

December 15, 2016

All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

5.2. FIELD STRENGTH OF EMISSIONS WITHIN & OUTSIDE THE PERMITTED BAND 13.110-14.010 MHz [47 CFR 15.225 (a) to (d)]

5.2.1. Limits

- (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.
- (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 band shall not exceed the general radiated emission limits in § 15.209.

47 CFR 15.209(a) – Radiated Emission Limits; general requirements

Frequency (MHz)	Field Strength Limits (microvolts/m)	Distance (Meters)
0.009 - 0.490	2,400 / F (KHz)	300
0.490 - 1.705	24,000 / 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

5.2.2. Method of Measurements

ANSI C63.10-2013, Clauses 6.3, 6.4 & 6.5.

5.2.3. Test Data

Remarks:

- Radiated spurious emissions measurements were performed at a measuring distance of 10 m (for frequencies below 30 MHz) and 3 m (for frequencies at or above 30 MHz), from 10 kHz – 10th harmonic of the fundamental or the range applicable to the digital device, whichever is the higher frequency range and all spurious emissions that are in excess of 20 dB below the specified limit shall be recorded.
- For frequencies below 30 MHz, the results measured at 10 m distance shall be extrapolated to the specified distance using an extrapolation factor of 40 dB/decade for determining compliance.

5.2.3.1. Field Strength of Emissions Within the Permitted Band at 10 m

Frequency (MHz)	Measured Field Strength @ 10 m (dBµV/m)	Detector Used (Peak/QP)	Antenna Plane (H/V)	Field Strength Extrapolated Value (dBµV/m)	§ 15.225 Field Strength Limits (dBµV/m)	Margin (dB)
13.56	56.61	Peak	V	37.5	84.0	-46.5
13.56	49.34	Peak	H	30.3	84.0	-53.7

5.2.3.2. Field Strength of Emissions Outside the Permitted Band Below 30 MHz at 10 m

Frequency (MHz)	Measured Field Strength @ 10 m (dBµV/m)	Detector Used (Peak/QP)	Antenna Plane (H/V)	Field Strength Extrapolated Value (dBµV/m)	§ 15.209 Field Strength Limits (dBµV/m)	Margin (dB)
All spurious emissions are more than 20 dB below the specified limit.						

5.2.3.3. Field Strength of Emissions Outside the Permitted Band at or Above 30 MHz at 3 m

Frequency (MHz)	Measured Field Strength @ 3 m (dBµV/m)	Detector Used (Peak/QP)	Antenna Plane (H/V)	§ 15.209 Field Strength Limits (dBµV/m)	Margin (dB)
40.68	27.06	Peak	V	40.0	-12.9
40.68	24.01	Peak	H	40.0	-16.0
122.04	27.58	Peak	V	43.5	-15.9
122.04	24.39	Peak	H	43.5	-19.1
135.60	30.35	Peak	V	43.5	-13.2

5.3. FREQUENCY STABILITY [47 CFR 15.225(e)]

5.3.1. Limits

The frequency tolerance of the carrier signal shall be maintained within +/- 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. For battery operated equipment, the equipment tests shall be performed using a new battery.

5.3.2. Method of Measurements

ANSI C63.10-2013, Clause 6.8.

5.3.3. Test Data

Frequency Band:	13.56 MHz
Center Frequency:	13.56 MHz
Frequency Tolerance Limit:	$\pm 0.01\%$ (± 1356 Hz)
Max. Frequency Tolerance Measured:	+96 Hz
Input Voltage Rating:	100 - 240 VAC (AC adapter specification)

Ambient Temperature (°C)	Frequency Drift (Hz)		
	Supply Voltage 120 VAC	Supply Voltage 100 VAC	Supply Voltage 240VAC
-30	+64	N/A	N/A
-20	+96	N/A	N/A
-10	+96	N/A	N/A
0	+64	N/A	N/A
10	+32	N/A	N/A
20	0	0	0
30	-32	N/A	N/A
40	-64	N/A	N/A
50	-64	N/A	N/A

5.4. POWER LINE CONDUCTED EMISSIONS [47 CFR 15.207]

5.4.1. Limits

The equipment shall meet the limits of the following table:

Frequency of emission MHz)	Conducted Limits (dB μ V)	
	Quasi-peak	Average
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

* Decreases linearly with logarithm of the frequency

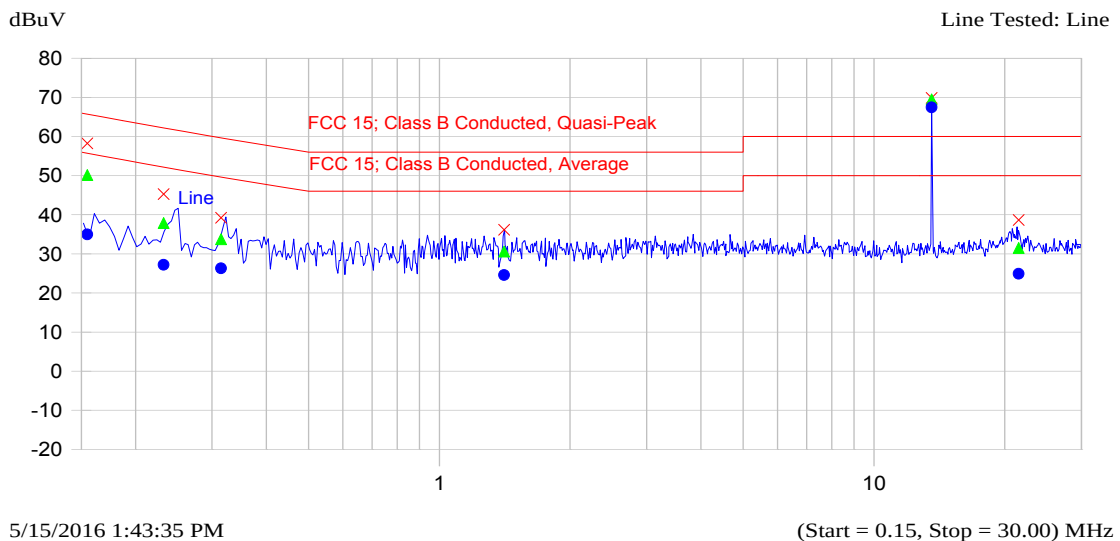
5.4.2. Method of Measurements

ANSI C63.10-2013, Clause 6.2.

5.4.3. Test Data

Plot 5.4.3.1. Power Line Conducted Emissions (Power via Power w/ Ethernet Adapter Cable)
Test Configuration 1: EUT with Antenna
Voltage: 120 VAC, Line Tested: Line

Current Graph

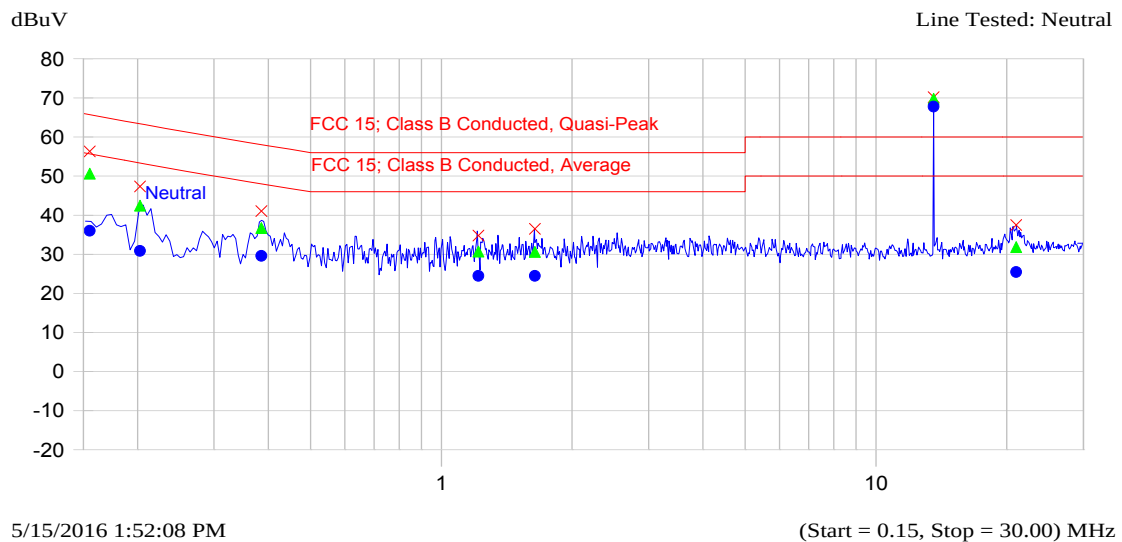


Current List

Frequency MHz	Peak dBuV	QP dBuV	Delta QP-QP dB	Limit	Avg dBuV	Delta Avg-Avg dB	Limit	Trace Name
0.155	58.2	50.1	-15.6		34.9	-20.8		Line
0.232	45.3	37.9	-24.5		27.2	-25.2		Line
0.314	39.2	33.7	-26.1		26.3	-23.6		Line
1.410	36.1	30.6	-25.4		24.6	-21.4		Line
13.561	69.9	69.5	9.5		67.4	17.4		Line
21.517	38.7	31.5	-28.5		24.9	-25.1		Line

Plot 5.4.3.2. Power Line Conducted Emissions (Power via Power w/ Ethernet Adapter Cable)
Test Configuration 1: EUT with Antenna
Voltage: 120 VAC, Line Tested: Neutral

Current Graph

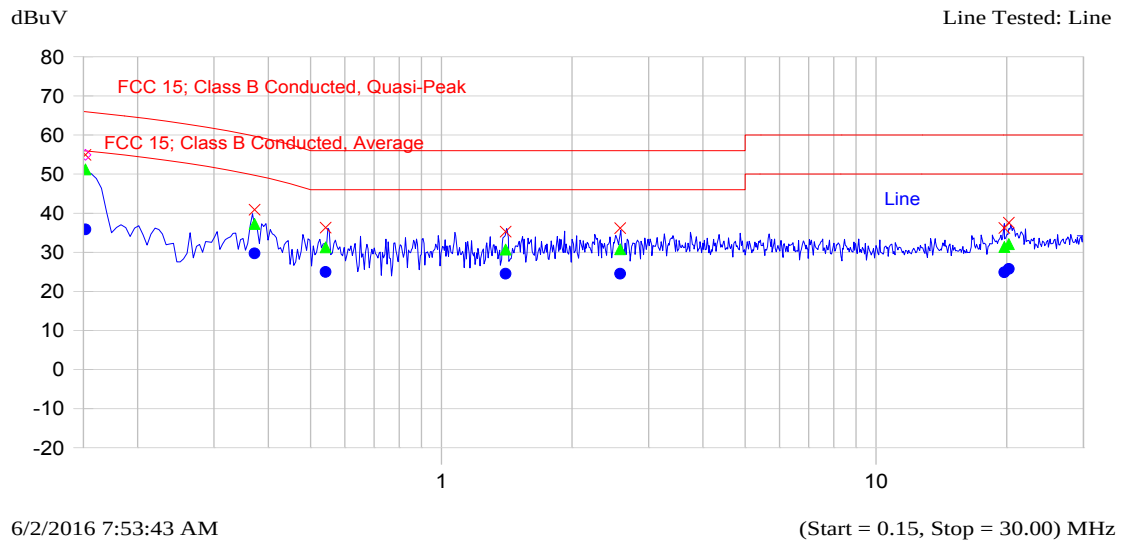


Current List

Frequency MHz	Peak dBuV	QP dBuV	Delta QP-QP dB	Limit	Avg dBuV	Delta Avg-Avg dB	Limit	Trace Name
0.155	56.3	50.6	-15.1		36.0	-19.7		Neutral
0.203	47.3	42.4	-21.1		30.8	-22.7		Neutral
0.385	41.0	36.7	-21.4		29.6	-18.6		Neutral
1.217	34.8	30.7	-25.3		24.5	-21.5		Neutral
1.642	36.5	30.6	-25.4		24.5	-21.5		Neutral
13.561	70.2	69.8	9.8		67.7	17.7		Neutral
21.016	37.5	31.9	-28.1		25.5	-24.5		Neutral

Plot 5.4.3.3. Power Line Conducted Emissions (Power via Power w/ Ethernet Adapter Cable)
Test Configuration 2: EUT with Antenna Terminated to 50 Ω Load (Dummy Load)
Voltage: 120 VAC, Line Tested: Line

Current Graph

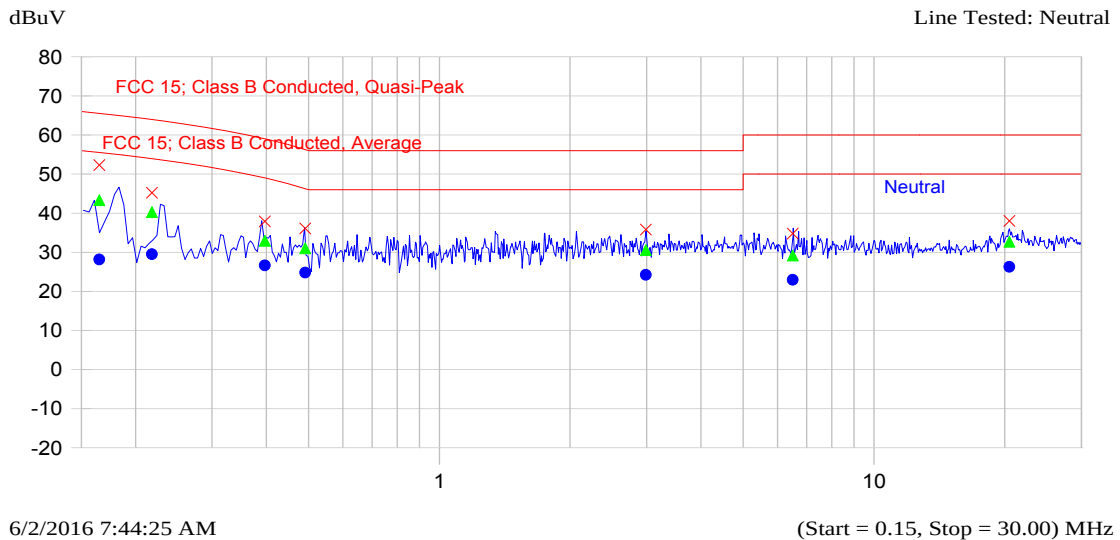


Current List

Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.152	54.9	51.2	-14.8	35.8	-20.1	Line
0.372	40.9	37.2	-22.5	29.7	-20.0	Line
0.542	36.3	31.3	-24.7	25.0	-21.0	Line
1.406	35.3	30.7	-25.3	24.5	-21.5	Line
2.578	36.2	30.8	-25.2	24.5	-21.5	Line
19.741	36.2	31.3	-28.7	24.9	-25.1	Line
20.209	37.6	32.1	-27.9	25.8	-24.2	Line

Plot 5.4.3.4. Power Line Conducted Emissions (Power via Power w/ Ethernet Adapter Cable)
Test Configuration 2: EUT with Antenna Terminated to 50 Ω Load (Dummy Load)
Voltage: 120 VAC, Line Tested: Neutral

Current Graph

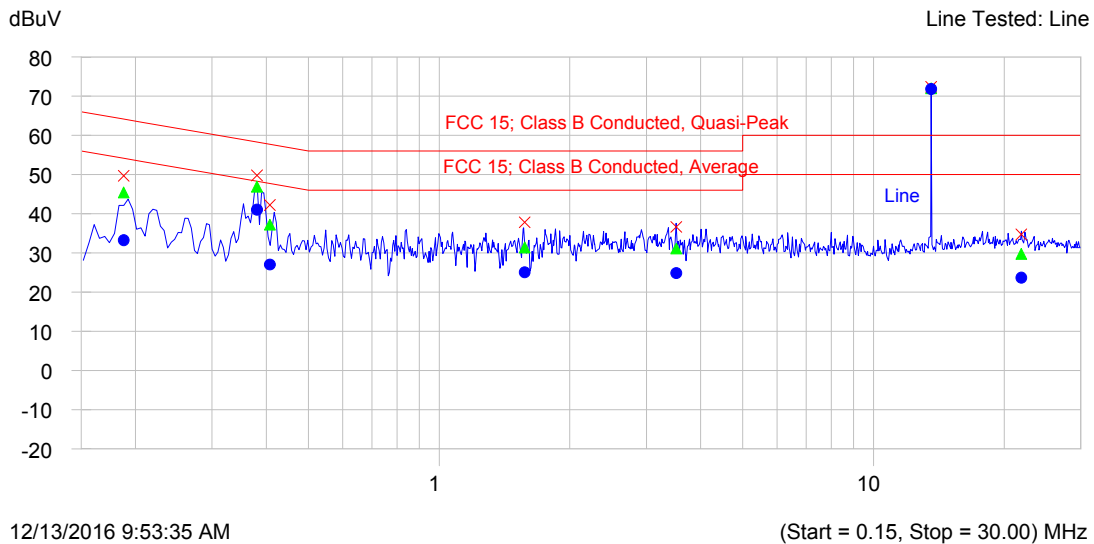


Current List

Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.165	52.3	43.3	-22.2	28.1	-27.4	Neutral
0.218	45.2	40.3	-23.6	29.5	-24.4	Neutral
0.397	37.9	32.9	-26.1	26.6	-22.4	Neutral
0.491	36.1	31.0	-25.2	24.8	-21.5	Neutral
2.987	35.8	30.6	-25.4	24.2	-21.8	Neutral
6.505	34.8	29.2	-30.8	23.0	-27.0	Neutral
20.484	38.0	32.7	-27.3	26.3	-23.7	Neutral

Plot 5.4.3.5. Power Line Conducted Emission (Power via PUSB Adapter)
Test Configuration 1: EUT with Antenna
Voltage: 120 VAC, Line Tested: Line

Current Graph

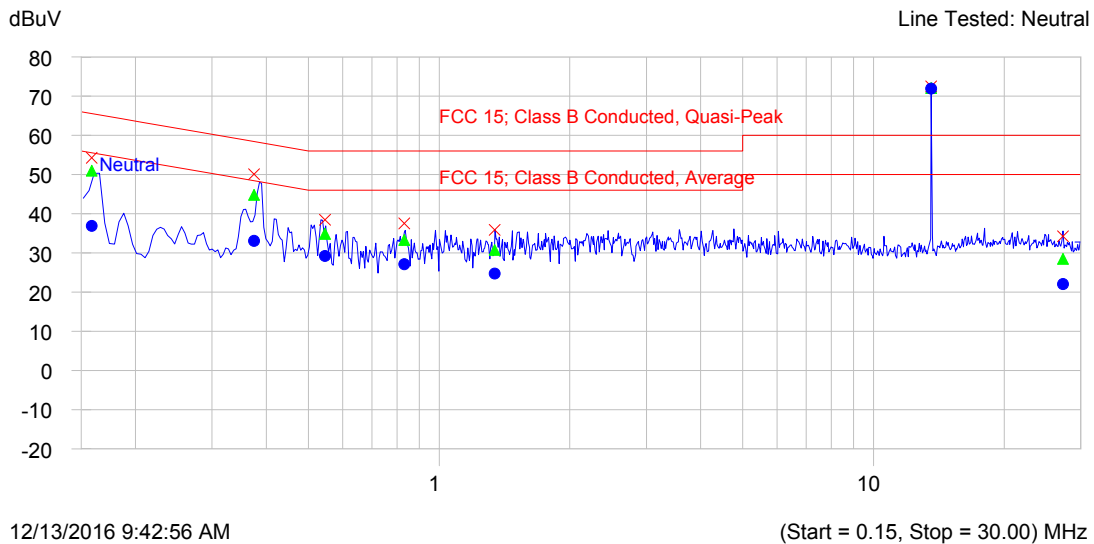


Current List

Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.188	49.7	45.4	-18.7	33.2	-20.9	Line
0.381	49.8	46.9	-11.4	41.0	-7.2	Line
0.408	42.2	37.2	-20.5	27.0	-20.7	Line
1.574	37.8	31.4	-24.6	25.0	-21.0	Line
3.518	36.6	31.1	-24.9	24.9	-21.1	Line
13.561	72.3	72.0	12.0	71.8	21.8	Line
21.880	34.7	29.8	-30.2	23.7	-26.3	Line

Plot 5.4.3.6. Power Line Conducted Emission (Power via PUSB Adapter)
Test Configuration 1: EUT with Antenna
Voltage: 120 VAC, Line Tested: Neutral

Current Graph

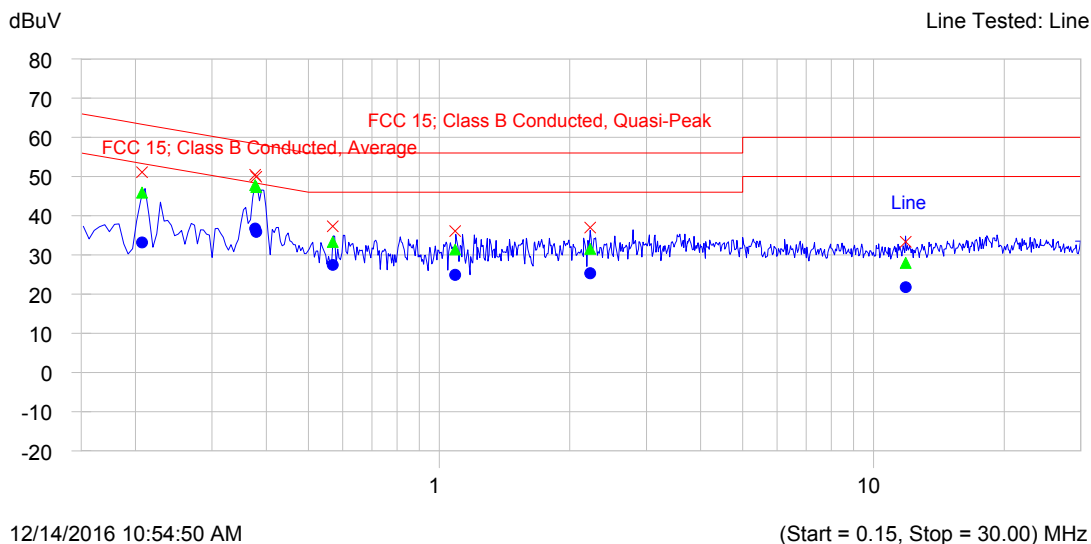


Current List

Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.159	54.3	51.0	-14.6	36.9	-18.6	Neutral
0.375	50.1	44.8	-13.6	33.1	-15.3	Neutral
0.546	38.5	34.9	-21.1	29.2	-16.8	Neutral
0.831	37.5	33.3	-22.7	27.1	-18.9	Neutral
1.342	35.9	30.7	-25.3	24.7	-21.3	Neutral
13.561	72.5	72.1	12.1	71.9	21.9	Neutral
27.291	34.2	28.5	-31.5	22.0	-28.0	Neutral

Plot 5.4.3.7. Power Line Conducted Emission (Power via PUSB Adapter)
Test Configuration 2: EUT with Antenna Terminated to 50 Ω Load (Dummy Load)
Voltage: 120 VAC, Line Tested: Line

Current Graph

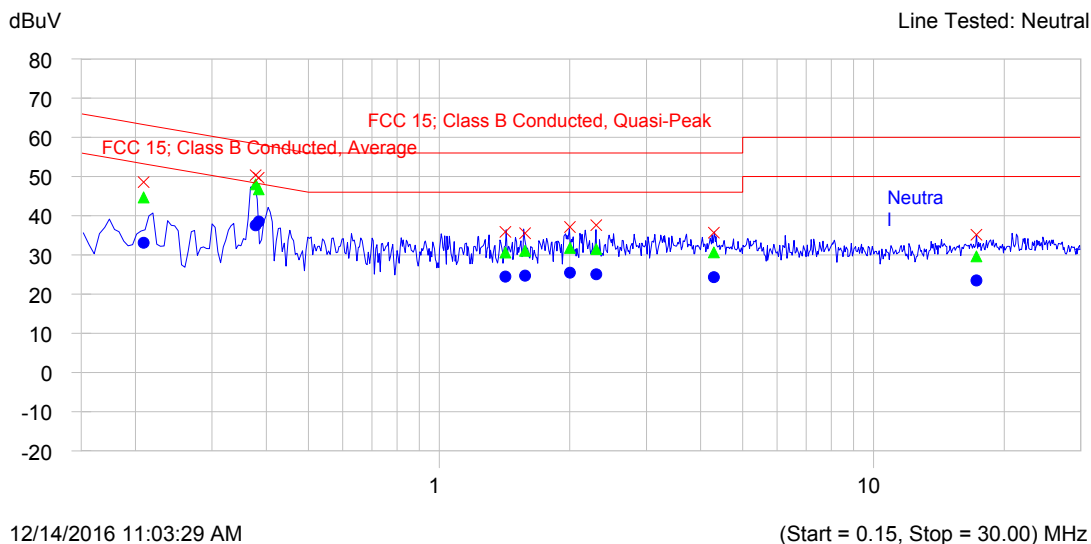


Current List

Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.207	51.1	45.9	-17.4	33.2	-20.2	Line
0.379	49.9	47.3	-11.0	35.9	-12.4	Line
0.377	50.4	47.8	-10.6	36.7	-11.6	Line
0.569	37.3	33.3	-22.7	27.4	-18.6	Line
1.088	36.1	31.3	-24.7	24.9	-21.1	Line
2.226	37.0	31.5	-24.5	25.3	-20.7	Line
11.852	33.3	28.0	-32.0	21.8	-28.2	Line

Plot 5.4.3.8. Power Line Conducted Emission (Power via PUSB Adapter)
Test Configuration 2: EUT with Antenna Terminated to 50 Ω Load (Dummy Load)
Voltage: 120 VAC, Line Tested: Neutral

Current Graph



Current List

Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.209	48.6	44.7	-18.6	33.1	-20.1	Neutral
0.378	50.3	48.0	-10.3	37.6	-10.8	Neutral
0.385	49.7	46.7	-11.4	38.5	-9.7	Neutral
1.421	35.9	30.6	-25.4	24.4	-21.6	Neutral
1.578	35.5	31.1	-24.9	24.7	-21.3	Neutral
2.001	37.1	31.8	-24.2	25.4	-20.6	Neutral
2.301	37.6	31.5	-24.5	25.0	-21.0	Neutral
4.290	35.7	30.7	-25.3	24.3	-21.7	Neutral
17.251	35.1	29.6	-30.4	23.5	-26.5	Neutral

EXHIBIT 6. TEST EQUIPMENT LIST

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range	Cal. Due Date
Spectrum Analyzer	Rhode & Schwarz	FSU	1100398	20Hz-26.5GHz	14 Sep 2017
*Biconical Antenna	ETS	3110B	3379	20-200MHz	11 Sep 2016
*Loop Antenna	EMCO	6502	9104-2611	10KHz-30MHz	05 Nov 2016
*Preamplifier	Com-power	PA-103A	161243	10-1000MHz	21 Jul 2016
Environmental Chamber	Envirotronics	SSH32C	11994847-S-11059	-60 to 177 °C	02 Jun 2017
Spectrum Analyzer	Rhode & Schwarz	FSU	1100398	20Hz-26.5GHz	14 Sep 2017
Spectrum Analyzer	HP	8593EM	3412A00103	9HHz-26.5GHz	09 Apr 2017
*LISN	EMCO	3825/2R	1165	10KHz-30MHz	29 Sep 2016
Attenuator	Pasternack	PE7010-20	7	DC-2GHz	26 Mar 2017
EMI Receiver	R/S	ESU40	100037	20Hz-40GHz	08 May 2017
Biconical Antenna	EMCO	3142	9601-1005	26-20000MHz	12 May 2017
*Loop Antenna	EMCO	6502	9104-2611	10KHz-30MHz	05 Nov 2016
LISN	Shcwarzbeck	NSLK 8127	812276	10 kHz - 30 MHz	24 Jun 2017

*Used before cal. due date.

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File #: 16MIS118_FCC15C225
December 15, 2016

All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

EXHIBIT 7. MEASUREMENT UNCERTAINTY

The measurement uncertainties stated were calculated in accordance with the requirements of CISPR 16-4-2 @ IEC:2003 and JCGM 100:2008 (GUM 1995) – Guide to the Expression of Uncertainty in Measurement.

7.1. LINE CONDUCTED EMISSION MEASUREMENT UNCERTAINTY

	Line Conducted Emission Measurement Uncertainty (9 kHz – 30 MHz):	Measured	Limit
u_c	Combined standard uncertainty: $u_c(y) = \sqrt{\sum_{i=1}^m u_i^2(y)}$	± 1.44	± 1.8
U	Expanded uncertainty U: $U = 2u_c(y)$	± 2.89	± 3.6

7.2. RADIATED EMISSION MEASUREMENT UNCERTAINTY

	Radiated Emission Measurement Uncertainty @ 3m, Horizontal (30-1000 MHz):	Measured (dB)	Limit (dB)
u_c	Combined standard uncertainty: $u_c(y) = \sqrt{\sum_{i=1}^m u_i^2(y)}$	± 2.39	± 2.6
U	Expanded uncertainty U: $U = 2u_c(y)$	± 4.79	± 5.2

	Radiated Emission Measurement Uncertainty @ 3m, Vertical (30-1000 MHz):	Measured (dB)	Limit (dB)
u_c	Combined standard uncertainty: $u_c(y) = \sqrt{\sum_{i=1}^m u_i^2(y)}$	± 2.39	± 2.6
U	Expanded uncertainty U: $U = 2u_c(y)$	± 4.78	± 5.2

	Radiated Emission Measurement Uncertainty @ 3 m, Horizontal & Vertical (1 – 18 GHz):	Measured (dB)	Limit (dB)
u_c	Combined standard uncertainty: $u_c(y) = \sqrt{\sum_{i=1}^m u_i^2(y)}$	± 1.87	Under consideration
U	Expanded uncertainty U: $U = 2u_c(y)$	± 3.75	Under consideration

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