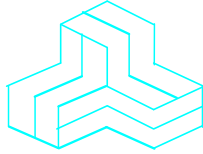


ENGINEERING TEST REPORT



NOIRE 710
Model: NOIRE710U
FCC ID: COL-NOIRE710U

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.: MIS-096Q_F15C225

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

Date: February 26, 2013

Report Prepared by: Dharmajit Solanki

Tested by: Wei Wu

Issued Date: February 26, 2013

Test Dates: Jan 25 to Feb 25, 2013

- *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.*

UltraTech

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Website: www.ultratech-labs.com, Email: vic@ultratech-labs.com, Email: tri@ultratech-labs.com

FCC

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NVLAP LAB CODE 200093-0



SL2-IN-E-1119R



Korea KCC-RRL
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:	American National Standards Institute ANSI C63.4 - 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
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	2012	Code of Federal Regulations (CFR), Title 47 – Telecommunication
ANSI C63.4	2009	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	2009	American National Standard for Testing 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

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File #: MIS-096Q_F15C225
June 7, 2011

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

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. Dragoslav Jovanovic Phone #: 416-621-7410 x359 Fax #: 416-621-2450 Email Address: djovanovic@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:	NOIRE 710
Model Name or Number:	NOIRE710U
Serial Number:	TR000212
Type of Equipment:	Low Power Communication Device Transmitter
Input Power Supply Type:	AC adapter 9 VDC, 0.8A(Max)
Primary User Functions of EUT:	Point of Sale credit/debit financial transactions

2.3. EUT’S TECHNICAL SPECIFICATIONS

Transmitter	
Equipment Type:	Portable
Intended Operating Environment:	Commercial, light industry & heavy industry
Power Supply Requirement:	USB Input or AC adapter 9 VDC, 0.8A(Max)
Field Strength:	42.03 dBµV/m at 10 m
Operating Frequency Range:	13.56 MHz
RF Output Impedance:	50 Ω
20 dB Bandwidth:	289.3 kHz
Modulation Type:	ASK
Oscillator Frequencies:	32.768 kHz, 24.00 & 27.12 MHz
Antenna Connector Type:	Integral

Antenna Description (if more than one antenna, provide a list of all the antennas to be used with the device):	
Manufacturer:	NBS Payment Solutions Inc.
Type:	Internal, Permanently attached.
Model:	0450-0414-000-001-00-PS1
Frequency Range:	13.56 MHz

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	USB slave	1	RJ45	Shielded

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:	5V AC/DC Power Adapter with USB slave o/p*
Brand name:	Apple Inc.
Model Name or Number:	A1265
Connected to EUT’s Port:	RJ45

***Note: The power cable running from USB o/p to EUT’s input (RJ45) has two ferrites terminated at both ends of cable.**

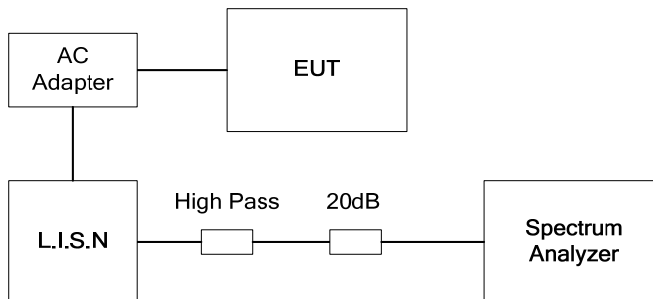
Ancillary Equipment # 2	
Description:	9V AC/DC Power Adapter with USB o/p
Brand name:	FSP Group Inc.
Model Name or Number:	FSP040-DGAA2, S/N H 1281004293
Connected to EUT's Port:	RJ45

Ancillary Equipment # 3	
Description:	Laptop Computer
Brand name:	Acer Inc
Model Name or Number:	Aspire One 725-6826
Connected to EUT's Port:	USB to RJ45 of EUT

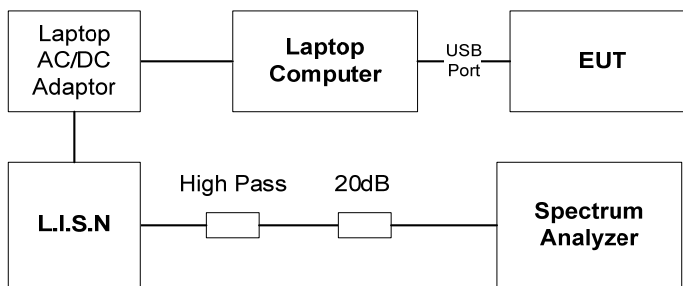
Ancillary Equipment # 4	
Description:	Mouse
Brand name:	Dell Inc
Model Name or Number:	ADP-40HA
Connected to EUT's Port:	RJ45

2.6. TEST SETUP

Power Line Conducted Emission (AC Adaptor)



Power Line Conducted Emission (Computer with USB Input)



Radiated Intentional Emission

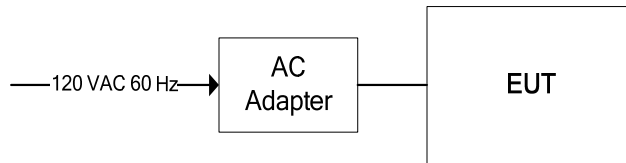


EXHIBIT 3. EUT OPERATING CONDITIONS AND CONFIGURATIONS DURING TESTS

3.1. CLIMATE TEST CONDITIONS

The climate conditions of the test environment are as follows:

Temperature:	21 to 23 °C
Humidity:	40 to 51%
Pressure:	101 to 102 kPa
Power Input Source:	USB Input or AC adapter 9 VDC, 0.8A(Max)

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:	
<ul style="list-style-type: none"> ▪ RF Power Output (measured maximum output power): ▪ Normal Test Modulation: ▪ Modulating signal source: 	<p>42.03 dBµV/m at 10 m</p> <p>ASK (WUPA & WUPB modes)</p> <p>Internal</p>

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: 2014-04-04.

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
15.107 & 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 20dB bandwidth of the emission shall be contained within the band 13.110–14.010 MHz.

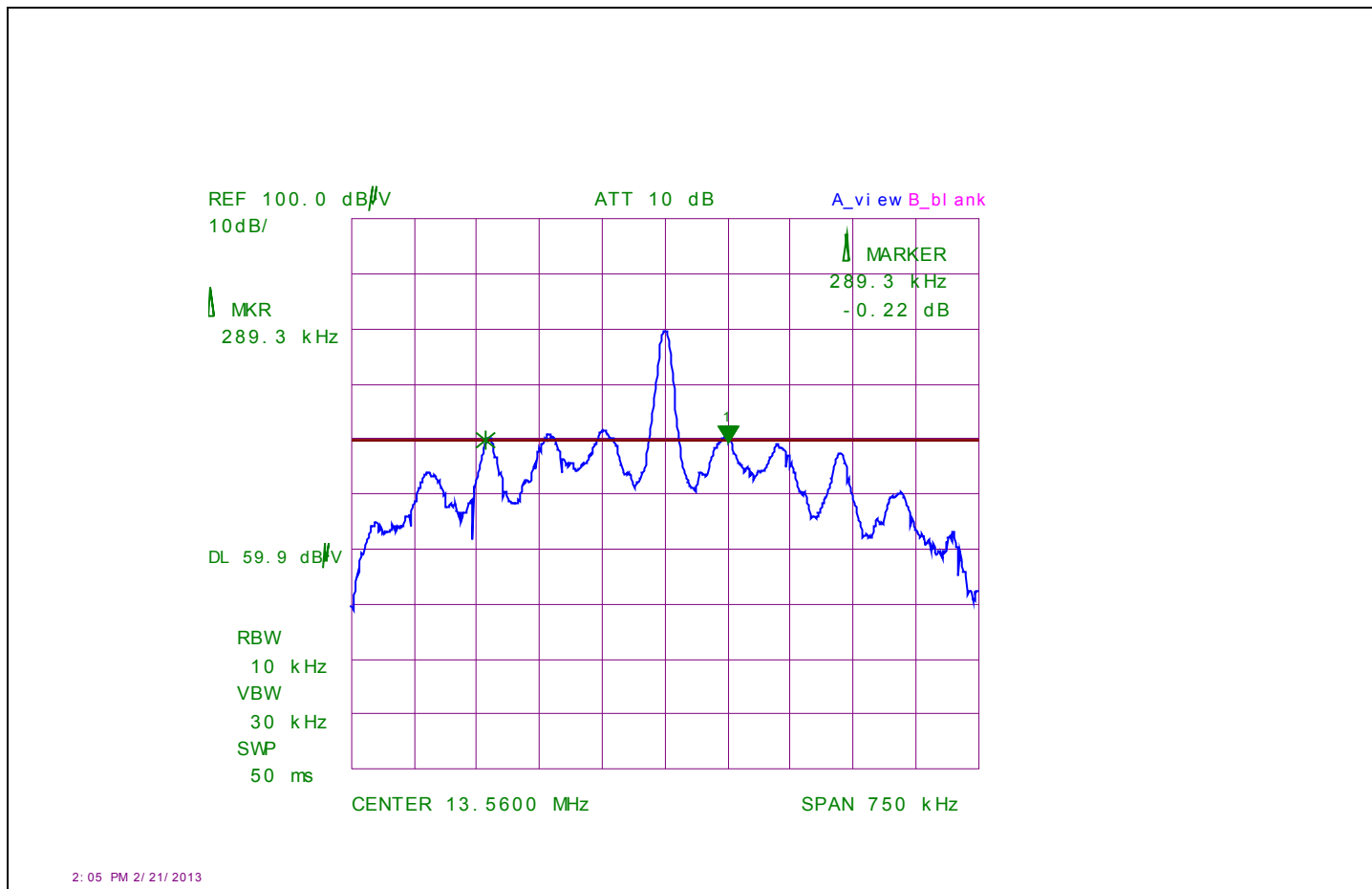
5.1.2. Method of Measurements

Refer to Ultratech Test Procedures, File # ULTR P001 and ANSI C63.4 for measurement methods

5.1.3. Test Data

Test Mode	Test Frequency @ 13.56 MHz	
	Occupied Bandwidth (kHz)	
	20 dB BW	99 % BW
WUPA	289.3	485.4
WUPB	46.1	150.0

Plot 5.1.3.1. 20 dB Emission Bandwidth, 13.56 MHz, WUPA Mode



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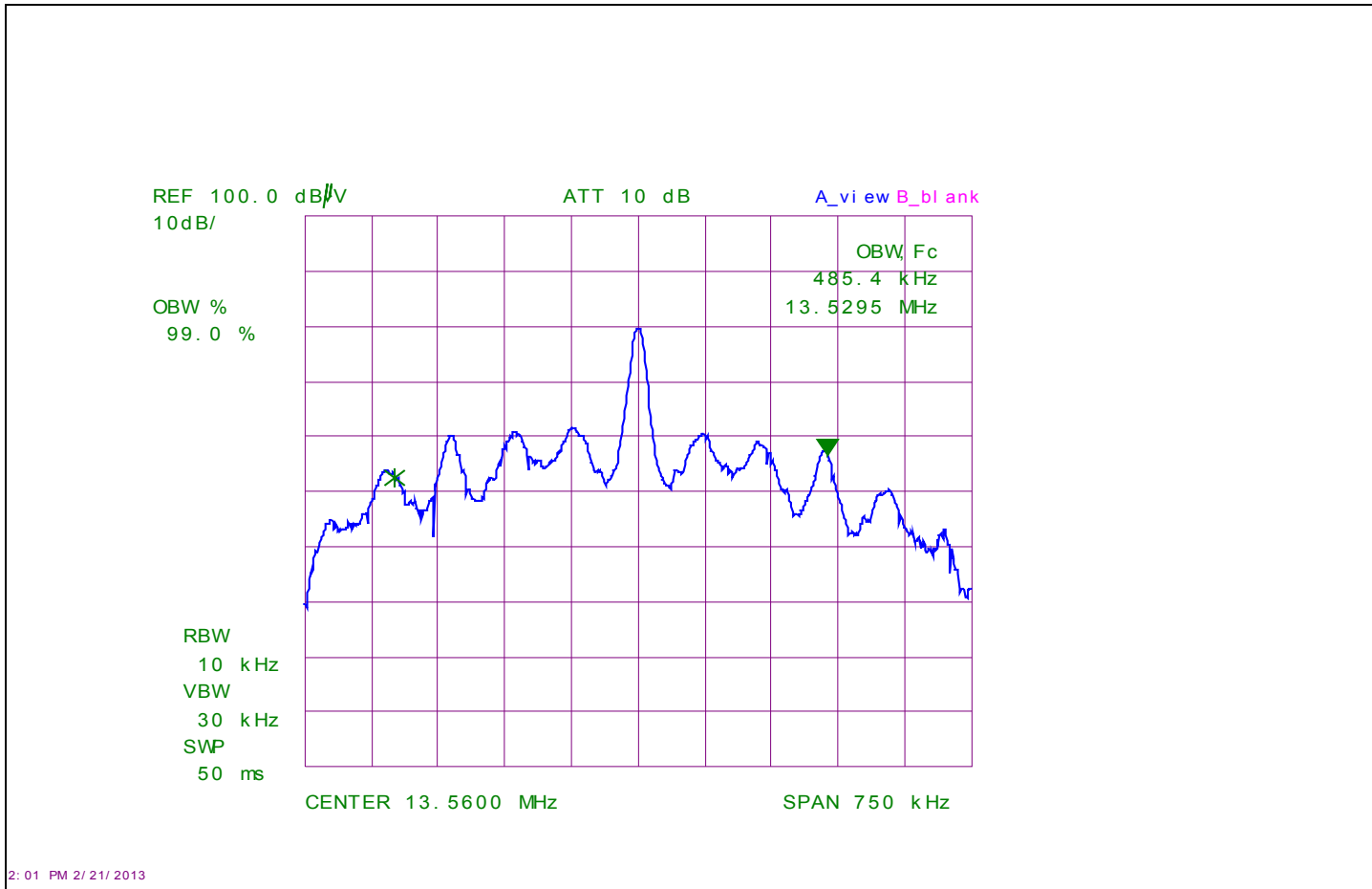
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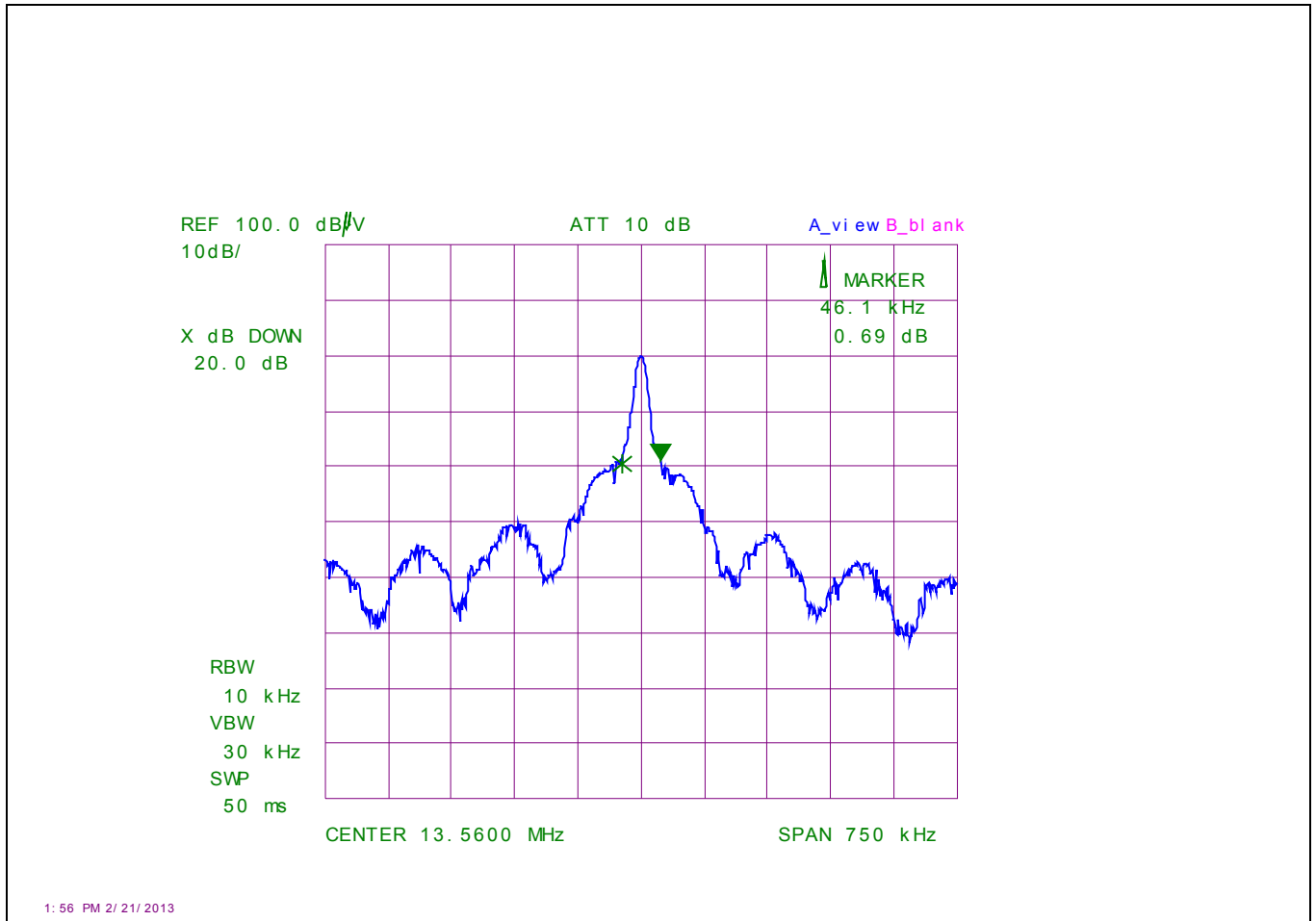
File #: MIS-096Q_F15C225
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All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

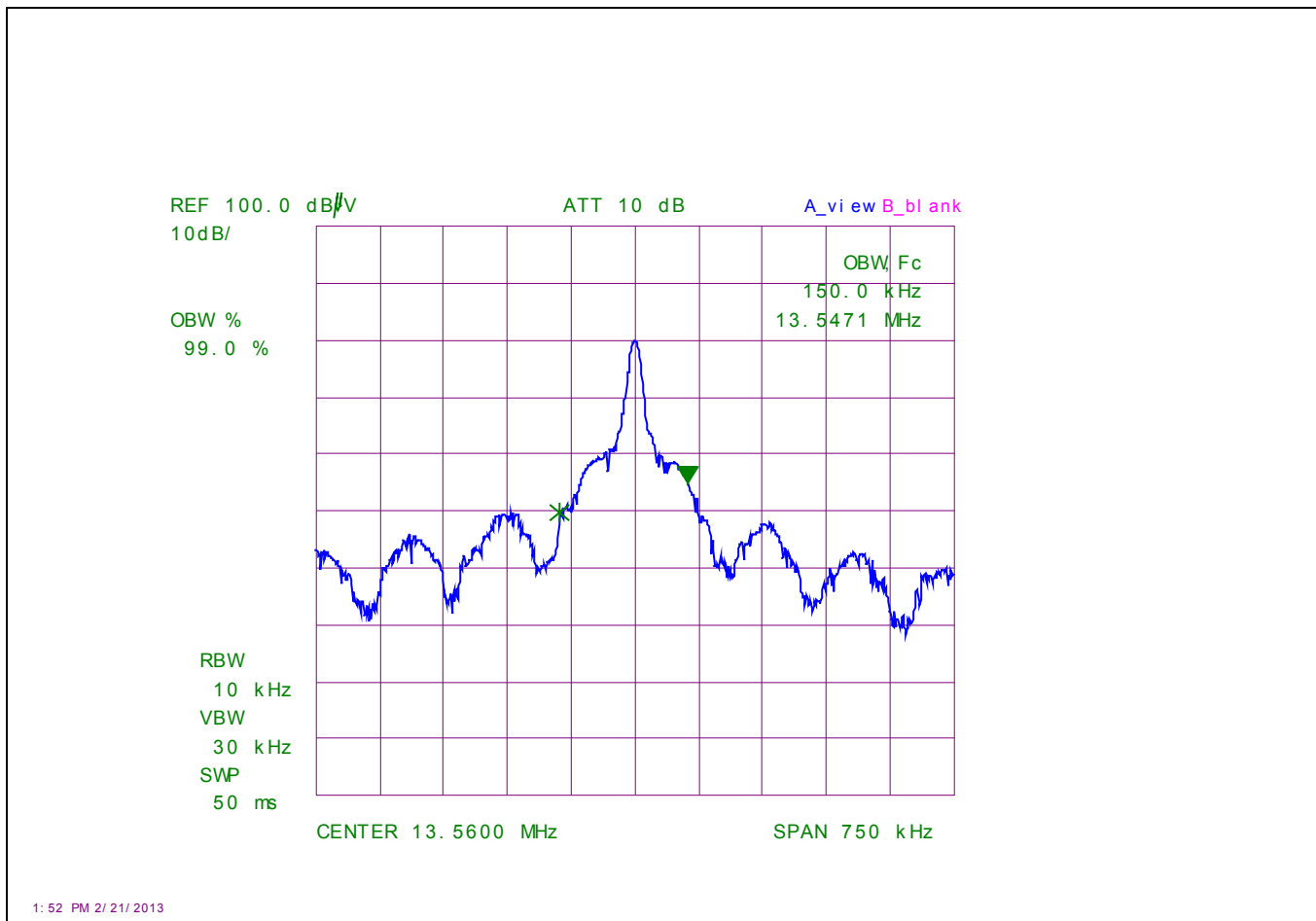
Plot 5.1.3.2. 99% Occupied Bandwidth, 13.56 MHz, WUPA Mode



Plot 5.1.3.3. 20 dB Emission Bandwidth, 13.56 MHz, WUPB Mode



Plot 5.1.3.4. 99% Occupied Bandwidth, 13.56 MHz, WUPB Mode



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

Refer to Ultratech Test Procedures, File # ULTR P001 and ANSI C63.4 for measurement methods

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 40dB/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	Field Strength Extrapolated Value (dBµV/m)	§ 15.225 Field Strength Limits (dBµV/m)	Margin (dB)
13.56	37.47	Peak	0°	18.4	84.0	-65.6
13.56	42.03	Peak	90°	23.0	84.0	-61.0

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)
81.36	36.7	QP	V	40.0	-3.3
81.36	25.1	Peak	H	40.0	-14.9
84.40	36.6	Peak	V	40.0	-3.4
84.40	33.5	Peak	H	40.0	-6.5
123.26	30.7	Peak	V	43.5	-12.8
132.59	33.8	Peak	V	43.5	-9.7
132.59	30.1	Peak	H	43.5	-13.4
135.60	35.4	Peak	V	43.5	-16.2
135.60	29.0	Peak	H	43.5	-14.2
162.13	35.5	Peak	V	43.5	-18.0
162.13	31.9	Peak	H	43.5	-11.6
271.21	40.4	Peak	V	46.0	-5.6
271.21	36.7	Peak	H	46.0	-9.3
379.75	42.0	Peak	V	46.0	-4.0
379.75	37.9	Peak	H	46.0	-8.1

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)
406.18	41.6	Peak	V	46.0	-4.4
406.18	36.6	Peak	H	46.0	-9.4
434.16	43.0	Peak	V	46.0	-3.0
434.16	38.7	Peak	H	46.0	-7.3
488.57	42.1	Peak	V	46.0	-3.9
488.57	41.6	Peak	H	46.0	-4.4
515.00	42.3	Peak	V	46.0	-3.7
515.00	42.9	QP	H	46.0	-3.1
597.38	43.1	Peak	V	46.0	-2.9
597.38	42.8	QP	H	46.0	-3.2
623.78	42.6	QP	V	46.0	-3.4
623.78	43.0	Peak	H	46.0	-3.0
651.79	42.9	Peak	V	46.0	-3.1
651.79	44.1	QP	H	46.0	-1.9
665.78	41.9	Peak	V	46.0	-4.1
665.78	41.6	Peak	H	46.0	-4.4
678.00	42.9	QP	V	46.0	-3.1
678.00	43.2	QP	H	46.0	-2.8
705.14	38.5	Peak	V	46.0	-7.5
705.14	41.9	Peak	H	46.0	-4.1
922.11	40.9	Peak	V	46.0	-5.1
922.11	42.1	Peak	H	46.0	-3.9
949.23	40.1	Peak	V	46.0	-5.9
949.23	42.1	Peak	H	46.0	-3.9
961.13	39.0	Peak	V	54.0	-15.0
961.13	37.1	Peak	H	54.0	-16.9
1586.00	48.1	Peak	V	54.0	-5.9
1586.00	49.5	Peak	H	54.0	-4.5
1594.00	49.2	Peak	V	54.0	-4.8
1594.00	48.9	Peak	H	54.0	-5.1
1596.00	48.9	Peak	V	54.0	-5.1
1596.00	49.9	Peak	H	54.0	-4.1
1613.00	46.1	Peak	V	54.0	-7.9
1613.00	48.2	Peak	H	54.0	-5.8
1729.00	35.0	Avg	V	54.0	-19.0
1729.00	47.4	Peak	H	54.0	-6.6

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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 C63.4

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:	± 160.3 Hz
Input Voltage Rating:	9 & 5 V DC using two adaptors

Ambient Temperature (°C)	Frequency Drift (Hz)			
	Supply Voltage (Nominal) 5.0 VDC	Supply Voltage (85% of Nominal) 4.5 VDC	Supply Voltage (Nominal) 9.0 VDC	Supply Voltage (115% of Nominal) 9.9 VDC
-20	160.3	120.2	40	80.2
0	0.0	40	120	120
55	40.1	40.1	160	40.1

5.4. POWER LINE CONDUCTED EMISSIONS [47 CFR 15.107(a) & 15.207]

5.4.1. Limits

The equipment shall meet the limits of the following table:

Frequency of emission (MHz)	Class B Conducted Limits (dBµV)	
	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

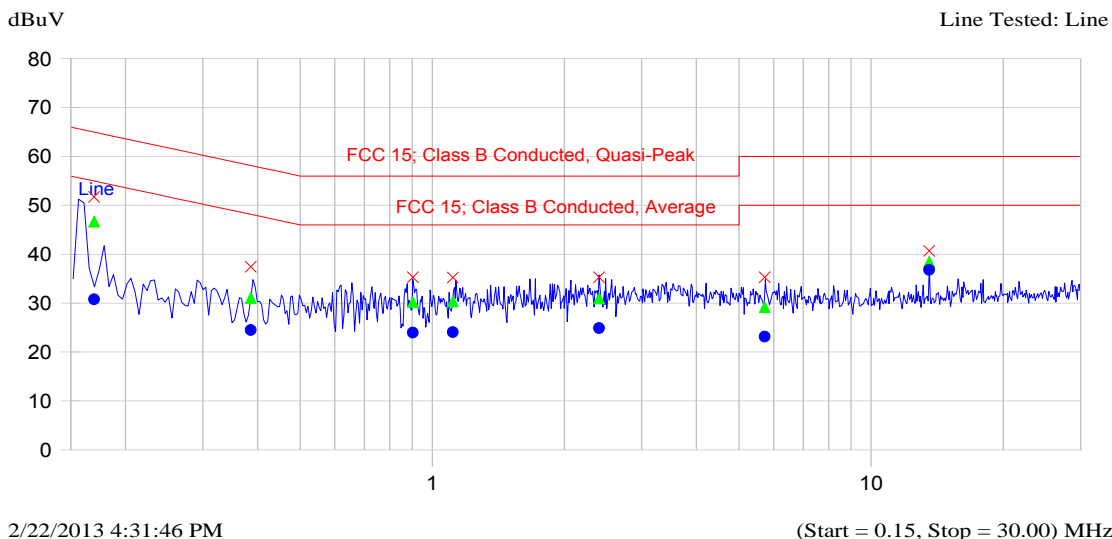
Refer to Ultratech Test Procedures, File # ULTR P001 and ANSI C63.4 for measurement methods

5.4.3. Test Data

Plot 5.4.3.1. Power Line Conducted Emissions, Voltage: 120 VAC, Line Tested: Hot
 Configuration: EUT powered from USB output of Computer

Description: AC 120V Computer Side
 Setup Name: FCC 15 Class B
 Customer Name: NBS
 Project Number: MIS-096Q
 Operator Name: Wei
 EUT Name: PIN Pad NOIRE710
 Date Created: 2/22/2013 4:29:51 PM
 Date Modified: 2/22/2013 4:29:51 PM

Current Graph



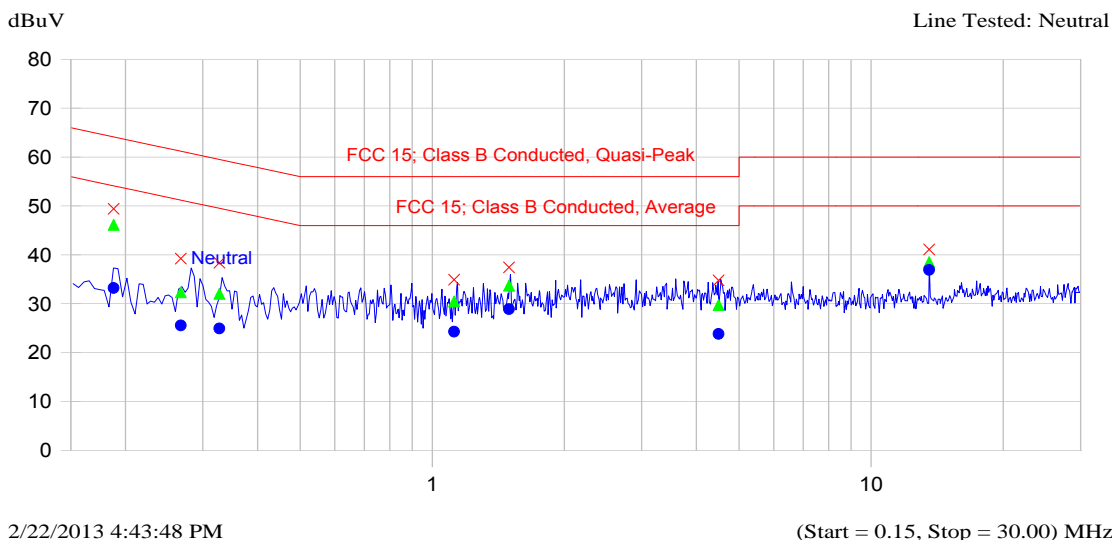
Current List

Frequency MHz	Peak dBuV	QP dBuV	Delta QP-QP Limit dB	Avg dBuV	Delta Avg-Avg Limit dB	Trace Name
0.170	51.7	46.7	-18.7	30.8	-24.6	Line
0.386	37.5	31.1	-28.1	24.5	-24.7	Line
0.903	35.3	30.2	-25.8	24.0	-22.0	Line
1.114	35.2	30.4	-25.6	24.1	-21.9	Line
2.399	35.3	31.0	-25.0	24.9	-21.1	Line
5.720	35.3	29.2	-30.8	23.2	-26.8	Line
13.561	40.7	38.4	-21.6	36.8	-13.2	Line

Plot 5.4.3.2. Power Line Conducted Emissions, Voltage: 120 VAC, Line Tested: Neutral
 Configuration: EUT powered from USB output of Computer

Description: AC 120V Computer Side
 Setup Name: FCC 15 Class B
 Customer Name: NBS
 Project Number: MIS-096Q
 Operator Name: Wei
 EUT Name: PIN Pad NOIRE710
 Date Created: 2/22/2013 4:29:51 PM
 Date Modified: 2/22/2013 4:41:11 PM

Current Graph



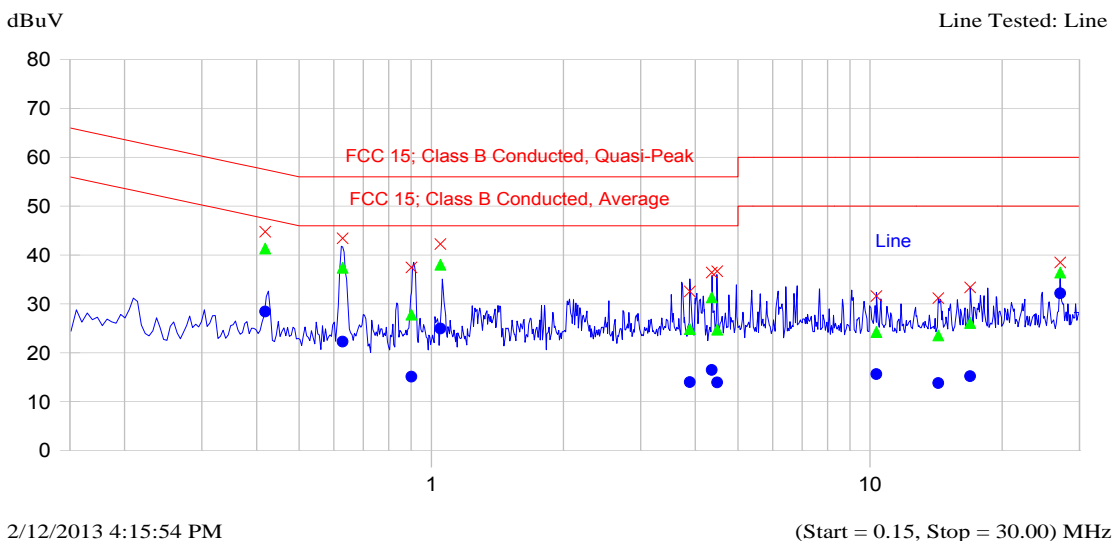
Current List

Frequency MHz	Peak dBuV	QP dBuV	Delta QP-QP Limit dB	Avg dBuV	Delta Avg-Avg Limit dB	Trace Name
0.188	49.4	46.1	-18.7	33.2	-21.7	Neutral
0.267	39.2	32.3	-30.2	25.6	-27.0	Neutral
0.327	38.4	32.0	-28.8	24.9	-25.9	Neutral
1.121	34.9	30.5	-25.5	24.3	-21.7	Neutral
1.497	37.4	33.7	-22.3	28.9	-17.1	Neutral
4.490	34.8	29.8	-26.2	23.8	-22.2	Neutral
13.561	41.1	38.5	-21.5	36.9	-13.1	Neutral

Plot 5.4.3.3. Power Line Conducted Emissions, Voltage: 120 VAC, Line Tested: Hot
 Configuration: EUT powered from AC Adaptor with 5V DC USB output

Description: 120V AC, Antenna terminated 50ohm.
 Setup Name: FCC 15 Class B
 Customer Name: NBS
 Project Number: MIS-096Q
 Operator Name: Wei
 EUT Name: NOIRE710
 Date Created: 2/12/2013 3:53:12 PM
 Date Modified: 2/12/2013 4:25:28 PM

Current Graph



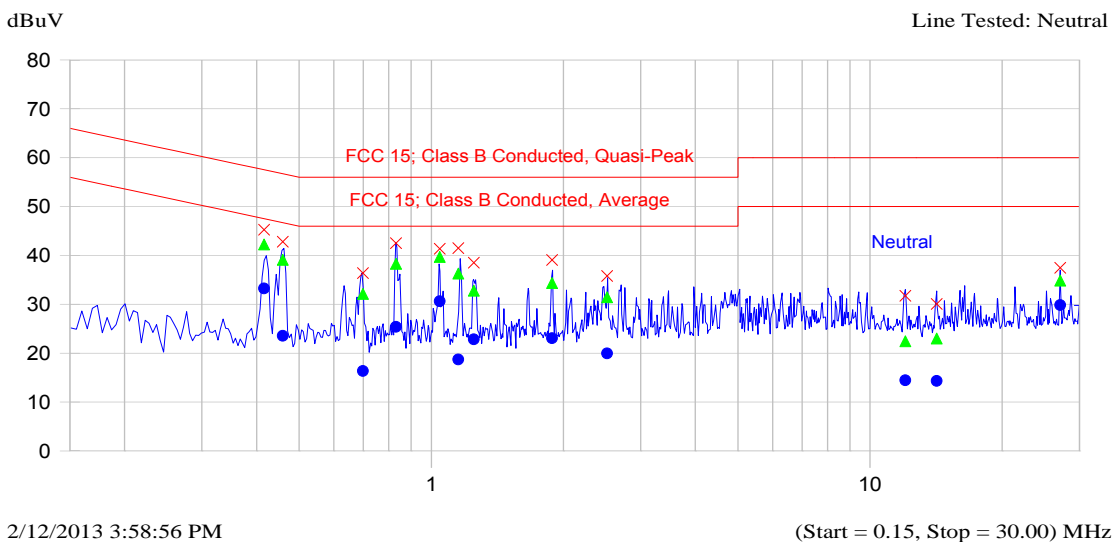
Current List

Frequency MHz	Peak dBuV	QP dBuV	Delta dB	QP-QP Limit	Avg dBuV	Delta Avg-Avg Limit	Trace Name
0.418	44.8	41.3	-16.9		28.4	-19.8	Line
0.628	43.4	37.4	-18.6		22.3	-23.7	Line
0.901	37.5	27.8	-28.2		15.1	-30.9	Line
1.050	42.3	38.0	-18.0		25.0	-21.0	Line
3.885	32.6	24.9	-31.1		14.0	-32.0	Line
4.358	36.4	31.4	-24.6		16.5	-29.5	Line
4.482	36.7	24.8	-31.2		13.9	-32.1	Line
10.334	31.6	24.3	-35.7		15.6	-34.4	Line
14.303	31.2	23.6	-36.4		13.8	-36.2	Line
16.916	33.4	26.1	-33.9		15.2	-34.8	Line
27.120	38.5	36.4	-23.6		32.2	-17.8	Line

Plot 5.4.3.4. Power Line Conducted Emissions, Voltage: 120 VAC, Line Tested: Neutral
 Configuration: EUT powered from AC Adaptor with 5V DC USB output

Description: 120V AC, Antenna terminated 50ohm.
 Setup Name: FCC 15 Class B
 Customer Name: NBS
 Project Number: MIS-096Q
 Operator Name: Wei
 EUT Name: NOIRE710
 Date Created: 2/12/2013 3:53:12 PM
 Date Modified: 2/12/2013 3:53:12 PM

Current Graph



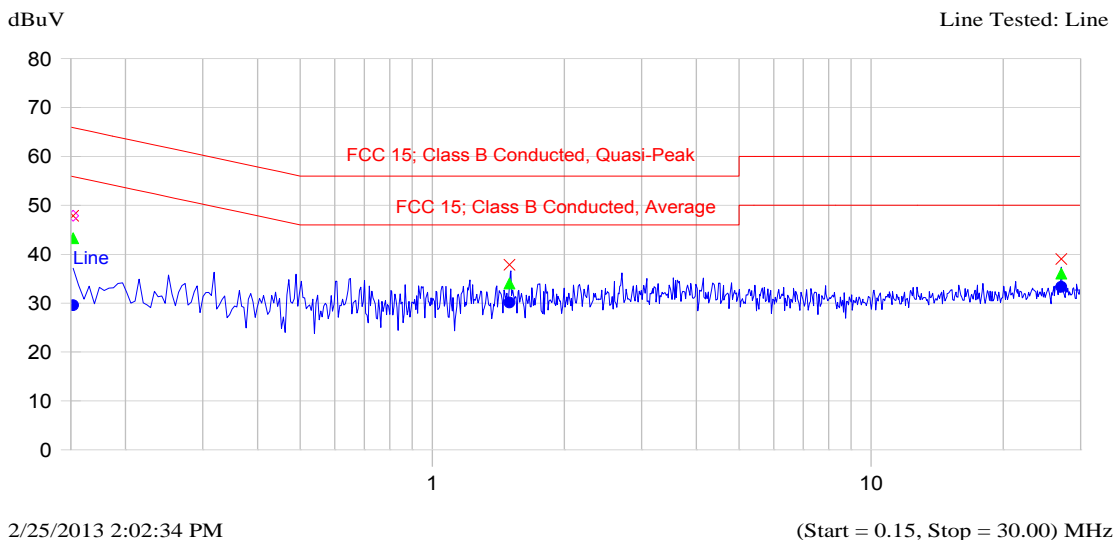
Current List

Frequency MHz	Peak dBuV	QP dBuV	Delta QP-QP Limit dB	Avg dBuV	Delta Avg-Avg Limit dB	Trace Name
0.416	45.3	42.2	-16.1	33.2	-15.1	Neutral
0.459	42.8	39.1	-18.0	23.6	-23.6	Neutral
0.698	36.4	32.1	-23.9	16.4	-29.6	Neutral
0.831	42.5	38.3	-17.7	25.4	-20.6	Neutral
1.046	41.4	39.7	-16.3	30.6	-15.4	Neutral
1.153	41.5	36.3	-19.7	18.7	-27.3	Neutral
1.250	38.5	32.8	-23.2	22.8	-23.2	Neutral
1.885	39.1	34.4	-21.6	23.1	-22.9	Neutral
2.518	35.8	31.5	-24.5	20.0	-26.0	Neutral
12.034	31.8	22.5	-37.5	14.5	-35.5	Neutral
14.183	30.1	23.0	-37.0	14.3	-35.7	Neutral
27.123	37.5	34.8	-25.2	29.8	-20.2	Neutral

Plot 5.4.3.5. Power Line Conducted Emissions, Voltage: 120 VAC, Line Tested: Hot
 Configuration: EUT powered from AC Adaptor with 9V DC USB output

Description: AC 120V 9V DC
 Setup Name: FCC 15 Class B
 Customer Name: NBS
 Project Number: MIS-096Q
 Operator Name: Wei
 EUT Name: NOIRE710
 Date Created: 2/25/2013 2:01:31 PM
 Date Modified: 2/25/2013 2:01:31 PM

Current Graph



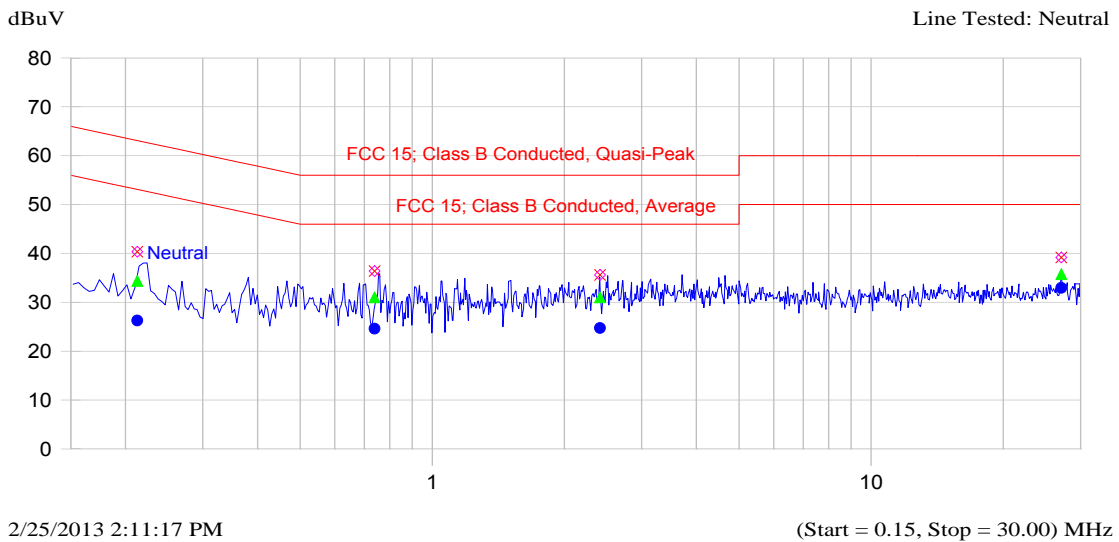
Current List

Frequency MHz	Peak dBuV	QP dBuV	Delta QP-QP Limit dB	Avg dBuV	Delta Avg-Avg Limit dB	Trace Name
0.152	47.9	43.3	-22.7	29.6	-26.4	Line
1.500	37.9	34.0	-22.0	30.1	-15.9	Line
27.122	39.0	36.1	-23.9	33.3	-16.7	Line

Plot 5.4.3.6. Power Line Conducted Emissions, Voltage: 120 VAC, Line Tested: Neutral
 Configuration: EUT powered from AC Adaptor with 9V DC USB output

Description: AC 120V 9V DC
 Setup Name: FCC 15 Class B
 Customer Name: NBS
 Project Number: MIS-096Q
 Operator Name: Wei
 EUT Name: NOIRE710
 Date Created: 2/25/2013 2:01:31 PM
 Date Modified: 2/25/2013 2:09:16 PM

Current Graph



Current List

Frequency MHz	Peak dBuV	QP dBuV	Delta QP-QP Limit dB	Avg dBuV	Delta Avg-Avg Limit dB	Trace Name
0.213	40.3	34.4	-29.8	26.3	-27.9	Neutral
0.739	36.4	31.0	-25.0	24.6	-21.4	Neutral
2.410	35.6	31.0	-25.0	24.7	-21.3	Neutral
27.120	39.2	35.8	-24.2	32.9	-17.1	Neutral

EXHIBIT 6. TEST EQUIPMENT LIST

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range	Cal Due Date
Spectrum Analyzer	Advantest	R3271	15050203	100Hz--26.5GHz	10 Jul-13
High Pass Filter	Mini Circuit	SHP 25	--	Cut off 25 MHz	Cal. on use.
RF Synthesized Signal Generator	HP	8648C	3343U00391	100K-3200M Hz AM/ FM/ PM	03 Jan-14
Power supply	Tenma	72-7295	490300297	1-40V DC 5A	Cal. on use.
Preamplifier	Hewlett Packard	8447D	2944A07673	0.1 – 1300 MHz	09 May-13
Biconical Antenna	EMCO	3110B	3379	30-300MHz	15-May-13
Loop Antenna	EMCO	6502	9104-2611	10KHz-30MHz	26-Aug-13
Spectrum Analyzer	Rohde & Schwarz	FSEK20/B4/B21	834157/005	9KHz-40GHz	30 Jul-13
Envirment Chamber	Envirotronics	SSH32C	11994847-S-11059	-60 to 177 degree C	16-Aug-13
Spectrum Analyzer	HP	8593EM	3412A00103	9KHz-26.5GHz	20-Jun-13
Attenuater	Pasternack	PE7010-20		DC-2GHz	20-Jan-14
LISN	Schwarzbeck	NSLK 8127	8127276	10KHz-30MHz	24-Apr-13
EMI Receiver	R/S	ESU40	100037	20Hz-40GHz	19-Mar-13
Biconilog Antenna	EMCO	3142B	1575	26-3000MHz	4-May-13
Preamplifier	AH System	Pam-0118	225	20MHz-18GHz	16-Mar-13
Horn Antenna	EMCO	3115	9701-5061	1-18GHz	18-Feb-14

ULTRATECH GROUP OF LABS

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File #: MIS-096Q_F15C225
 February 26, 2013

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 (150 kHz – 30 MHz):	Measured	Limit
u_c	Combined standard uncertainty: $u_c(y) = \sqrt{\sum_{i=1}^m u_i^2(y)}$	± 1.57	± 1.8
U	Expanded uncertainty U: $U = 2u_c(y)$	± 3.14	± 3.6

7.2. RADIATED EMISSION MEASUREMENT UNCERTAINTY

	Radiated Emission Measurement Uncertainty @ 3m, Horizontal (30-1000 MHz):	Measured	Limit
u_c	Combined standard uncertainty: $u_c(y) = \sqrt{\sum_{i=1}^m u_i^2(y)}$	± 2.15	± 2.6
U	Expanded uncertainty U: $U = 2u_c(y)$	± 4.30	± 5.2

	Radiated Emission Measurement Uncertainty @ 3m, Vertical (30-1000 MHz):	Measured	Limit
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	Limit
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