

NORTHWEST EMC

Precor, Inc.

Precor NFC / RFID module 303750

FCC 15.207:2015

FCC 15.225:2015

13.56 MHz Radio

Report # PRCR0230.7



NVLAP Lab Code: 200629-0

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America. This Report may only be duplicated in its entirety

CERTIFICATE OF TEST

Last Date of Test: October 26, 2015
Precor, Inc.
Model: Precor NFC / RFID module 303750

Radio Equipment Testing

Standards

Specification	Method
FCC 15.207:2015	ANSI C63.10:2013
FCC 15.225:2015	ANSI C63.10:2013

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	Yes	Pass	
6.4	Field Strength of Fundamental	Yes	Pass	
6.4	Field Strength of Spurious Emissions Less Than 30 MHz	Yes	Pass	
6.5	Field Strength of Spurious Emissions Greater Than 30 MHz	Yes	Pass	
6.8	Frequency Stability	Yes	Pass	

Deviations From Test Standards

None

Approved By:



Rod Munro, Operations Manager

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information.

REVISION HISTORY

Revision Number		Description	Date	Page Number
00		None		

ACCREDITATIONS AND AUTHORIZATIONS

United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Accredited by A2LA to ISO / IEC 17065 as a product certifier. This allows Northwest EMC to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

IC - Recognized by Industry Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with IC.

European Union

European Commission – Validated by the European Commission as a Conformity Assessment Body (CAB) under the EMC directive and as a Notified Body under the R&TTE Directive.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

MSIP / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Israel

MOC – Recognized by MOC as a CAB for the acceptance of test data.

Hong Kong

OFCA – Recognized by OFCA as a CAB for the acceptance of test data.

Vietnam

MIC – Recognized by MIC as a CAB for the acceptance of test data.

SCOPE

For details on the Scopes of our Accreditations, please visit:

<http://www.nwemc.com/accreditations/>
<http://gsi.nist.gov/global/docs/cabs/designations.html>

MEASUREMENT UNCERTAINTY

Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) for each test is on each data sheet. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable), and are available upon request.

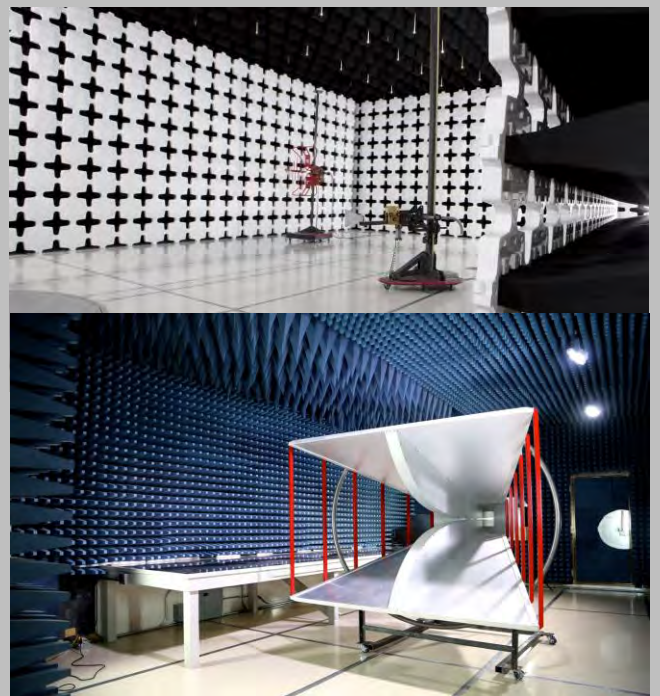
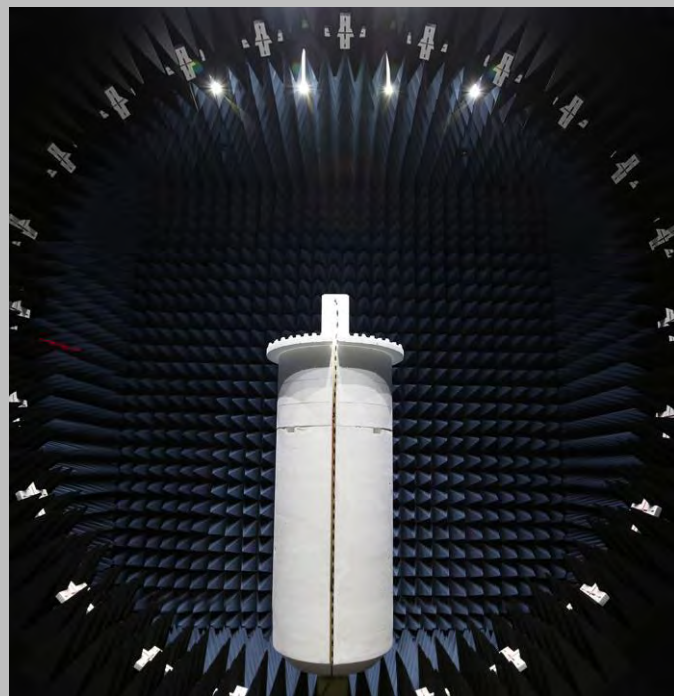
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.0 dB	-5.0 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

FACILITIES



California Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	Minnesota Labs MN01-08, MN10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	New York Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Oregon Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	Texas Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Washington Labs NC01-05 19201 120 th Ave NE Bothell, WA 9801 (425)984-6600
NVLAP					
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Industry Canada					
2834B-1, 2834B-3	2834E-1	N/A	2834D-1, 2834D-2	2834G-1	2834F-1
BSMI					
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110
Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRR, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157



PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Precor, Inc.
Address:	PO Box 7202
City, State, Zip:	Woodinville, WA 98072-4002
Test Requested By:	James Minahan
Model:	Precor NFC / RFID module 303750
First Date of Test:	October 08, 2015
Last Date of Test:	October 26, 2015
Receipt Date of Samples:	September 14, 2015
Equipment Design Stage:	Preproduction
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
Precor NFC/RFID Module 303750 which operates at 13.56 MHz.
Testing Objective:
To demonstrate compliance to FCC Part 15.225 specifications.

CONFIGURATIONS

Configuration PRCR0230- 2

Software/Firmware Running during test	
Description	Version
Stollmann NFC Player	1.0.153.5

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Precor NFC / RFID module	Precor, Inc.	303750	None

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Remote Laptop	HP	Hp elite book 850W	CND01922W8
AC Adapter	HP	519330-002	F1-100041653570B

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
USB Cable	Yes	1.2m	No	Precor NFC / RFID module 303750	USB Cable
USB Cable	Yes	3m	No	USB Cable	Remote Laptop PC

Configuration PRCR0230- 4

Software/Firmware Running during test	
Description	Version
Stollmann NFC Player	1.0.153.5

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Precor NFC / RFID module	Precor, Inc.	303750	None

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Remote Laptop	HP	Hp elite book 850W	CND01922W8
DC Power Supply	MPJA	HY5003	None

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
USB Splitter	Yes	0.3m	No	USB Cable (3)	USB Cable (1 & 2)
DC Power	No	1.2m	No	DC Power Supply	USB Splitter
USB Cable (1)	Yes	3m	No	Isolated USB Hub	USB Splitter
USB Cable (2)	Yes	0.3m	Yes	AC-USB Power Adapter	USB Splitter

CONFIGURATIONS

Configuration PRCR0230- 5

Software/Firmware Running during test	
Description	Version
Stollmann NFC Player	1.0.153.5

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Precor NFC / RFID module	Precor, Inc.	303750	None

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
AC-USB Power Adapter	Intertek	PS10A050K2000UU	None

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Remote Laptop	HP	Hp elite book 850W	CND01922W8
Isolated USB Hub	B&B Electronics	UHR304	0274006003

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
USB Splitter	Yes	0.3m	No	USB Cable (3)	USB Cable (1 & 2)
USB Cable (1)	Yes	3m	No	Isolated USB Hub	USB Splitter
USB Cable (2)	Yes	0.3m	Yes	AC-USB Power Adapter	USB Splitter
USB Cable (3)	Yes	0.9m	No	Precor NFC / RFID module 303750	USB Splitter
USB Cable (4)	Yes	3m	No	Isolated USB Hub	Remote Laptop

CONFIGURATIONS

Configuration PRCR0230- 7

Software/Firmware Running during test					
Description				Version	
Stollmann NFC Player				1.0.153.5	

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Precor NFC / RFID module (w/Dummy Load)	Precor, Inc.	303750	None

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
AC-USB Power Adapter	Intertek	PS10A050K2000UU	None

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Remote Laptop	HP	Hp elite book 850W	CND01922W8
Isolated USB Hub	B&B Electronics	UHR304	0274006003

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
USB Splitter	Yes	0.3m	No	USB Cable (3)	USB Cable (1 & 2)
USB Cable (1)	Yes	3m	No	Isolated USB Hub	USB Splitter
USB Cable (2)	Yes	0.3m	Yes	AC-USB Power Adapter	USB Splitter
USB Cable (3)	Yes	0.9m	No	Precor NFC / RFID module 303750	USB Splitter
USB Cable (4)	Yes	3m	No	Isolated USB Hub	Remote Laptop

CONFIGURATIONS

Configuration PRCR0230- 8

Software/Firmware Running during test	
Description	Version
Stollmann NFC Player	1.0.153.5

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Precor NFC / RFID module	Precor, Inc.	303750	None

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Remote Laptop	HP	Hp elite book 850W	CND01922W8
AC Adapter	HP	519330-002	F1-100041653570B

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
USB Cable	Yes	3m	No	USB Cable	Remote Laptop PC
USB Cable	Yes	0.3m	No	Precor NFC / RFID module 303750	USB Cable

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	10/8/2015	Field Strength of Fundamental	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	10/8/2015	Field Strength of Spurious Emissions < 30 MHz	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	10/12/2015	Frequency Stability	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	10/23/2015	Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
5	10/26/2015	Field Strength of Spurious Emissions > 30 MHz	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

POWERLINE CONDUCTED EMISSIONS

TEST DESCRIPTION

The EUT will be powered either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the AC input of the EUT, or on the AC input of the device used to power the EUT.

The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.10-2009.

In the event that the operating frequency of 13.56 MHz is causing the product to fail the FCC 15.207 limits, the following guidance can be used:

Per the FCC Guidance, the FCC will accept measurements on a 13.56 MHz transmitter done with a dummy load under the following conditions. (1) First, perform the AC line conducted tests with the antenna attached to make sure the device complies with the 15.207 limits outside the transmitter's fundamental emission band, and then retest with a dummy load to make sure the device complies with the 15.207 limits inside the transmitter's fundamental emission band. (2) For the second portion of these tests, only the fundamental emission band of the transmitter needs to be retested.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Cable - Conducted Cable Assembly	Northwest EMC	NC4, HHF, RKD	NC4A	2/11/2015	2/11/2016
Receiver	Rohde & Schwarz	ESCI	ARE	8/5/2015	8/5/2016
LISN	Solar Electronics	9252-50-R-24-BNC	LIM	12/9/2014	12/9/2015

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

PRCR0230-5
PRCR0230-7

MODES INVESTIGATED

Transmitting 13.56 MHz, continuously reading tag.
Transmitting 13.56 MHz, continuously searching for tag.

POWERLINE CONDUCTED EMISSIONS

EUT:	Precor NFC / RFID module 303750	Work Order:	PRCR0230
Serial Number:	None	Date:	10/23/2015
Customer:	Precor, Inc.	Temperature:	23°C
Attendees:	Rich Whitbeck	Relative Humidity:	40%
Customer Project:	None	Bar. Pressure:	1025 mb
Tested By:	Richard Mellroth	Job Site:	NC05
Power:	110VAC/60Hz	Configuration:	PRCR0230-5

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	51	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

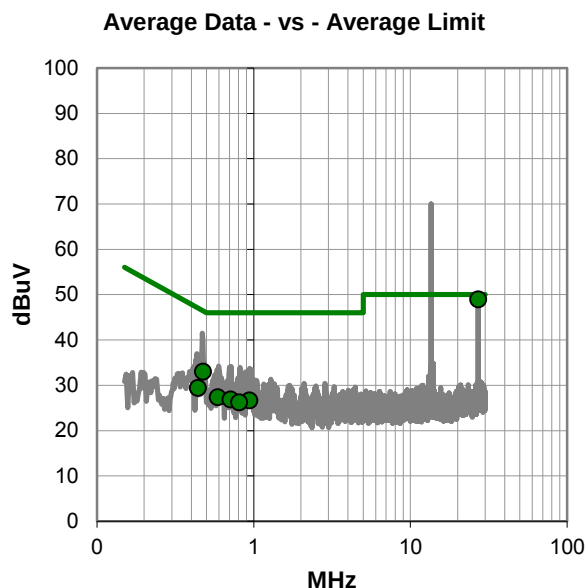
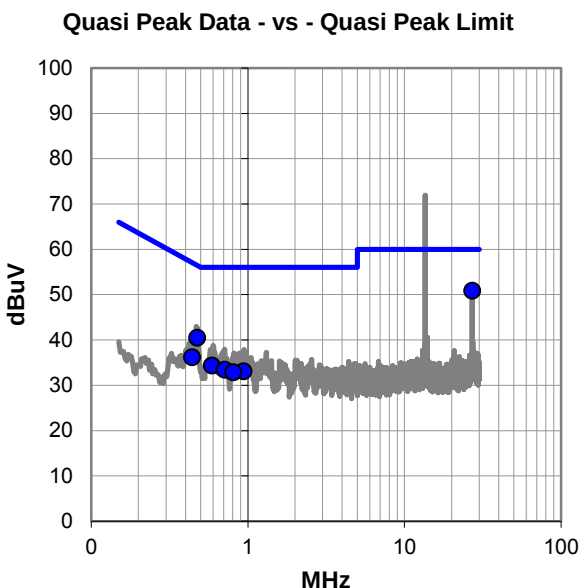
EUT with antenna connected, showing failing emission at 13.56 MHz.

EUT OPERATING MODES

Transmitting 13.56 MHz, continuously reading tag.

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #51

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
27.121	27.4	23.4	50.8	60.0	-9.2
0.475	20.2	20.3	40.5	56.4	-15.9
0.442	15.9	20.3	36.2	57.0	-20.8
0.591	14.0	20.3	34.3	56.0	-21.7
0.713	13.1	20.3	33.4	56.0	-22.6
0.940	12.7	20.3	33.0	56.0	-23.0
0.809	12.5	20.3	32.8	56.0	-23.2

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
27.121	25.5	23.4	48.9	50.0	-1.1
0.475	12.7	20.3	33.0	46.4	-13.4
0.442	9.1	20.3	29.4	47.0	-17.6
0.591	7.0	20.3	27.3	46.0	-18.7
0.713	6.5	20.3	26.8	46.0	-19.2
0.940	6.3	20.3	26.6	46.0	-19.4
0.809	5.9	20.3	26.2	46.0	-19.8

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Precor NFC / RFID module 303750	Work Order:	PRCR0230
Serial Number:	None	Date:	10/23/2015
Customer:	Precor, Inc.	Temperature:	23°C
Attendees:	Rich Whitbeck	Relative Humidity:	40%
Customer Project:	None	Bar. Pressure:	1025 mb
Tested By:	Richard Mellroth	Job Site:	NC05
Power:	110VAC/60Hz	Configuration:	PRCR0230-5

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	52	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

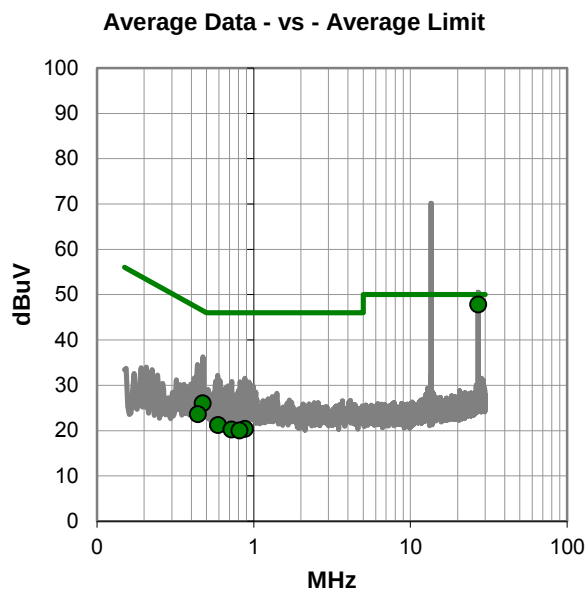
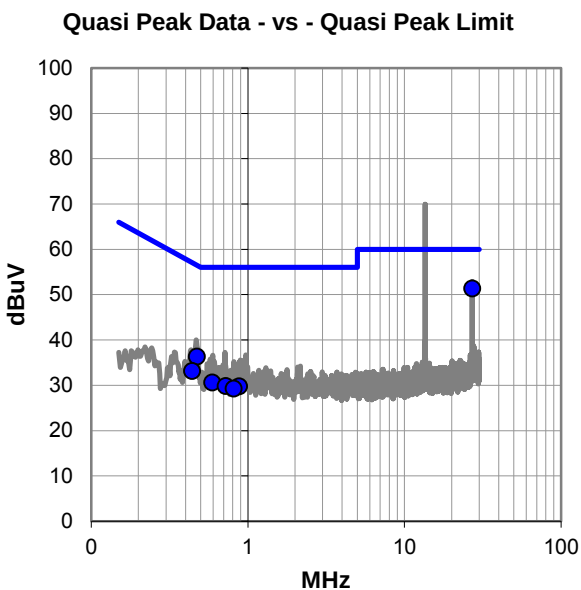
EUT with antenna connected, showing failing emission at 13.56 MHz.

EUT OPERATING MODES

Transmitting 13.56 MHz, continuously reading tag.

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #52

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
27.121	27.9	23.4	51.3	60.0	-8.7
0.474	16.0	20.3	36.3	56.4	-20.2
0.440	12.8	20.3	33.1	57.1	-24.0
0.594	10.3	20.3	30.6	56.0	-25.4
0.721	9.5	20.3	29.8	56.0	-26.2
0.880	9.4	20.3	29.7	56.0	-26.3
0.812	8.9	20.3	29.2	56.0	-26.8

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
27.121	24.4	23.4	47.8	50.0	-2.2
0.474	5.7	20.3	26.0	46.4	-20.5
0.440	3.3	20.3	23.6	47.1	-23.5
0.594	0.9	20.3	21.2	46.0	-24.8
0.880	0.0	20.3	20.3	46.0	-25.7
0.721	-0.1	20.3	20.2	46.0	-25.8
0.812	-0.3	20.3	20.0	46.0	-26.0

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Precor NFC / RFID module 303750	Work Order:	PRCR0230
Serial Number:	None	Date:	10/23/2015
Customer:	Precor, Inc.	Temperature:	23°C
Attendees:	Rich Whitbeck	Relative Humidity:	40%
Customer Project:	None	Bar. Pressure:	1025 mb
Tested By:	Richard Mellroth	Job Site:	NC05
Power:	110VAC/60Hz	Configuration:	PRCR0230-7

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	53	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

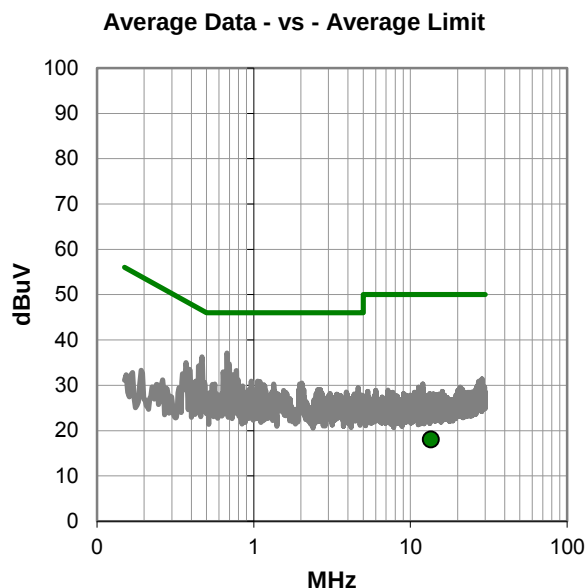
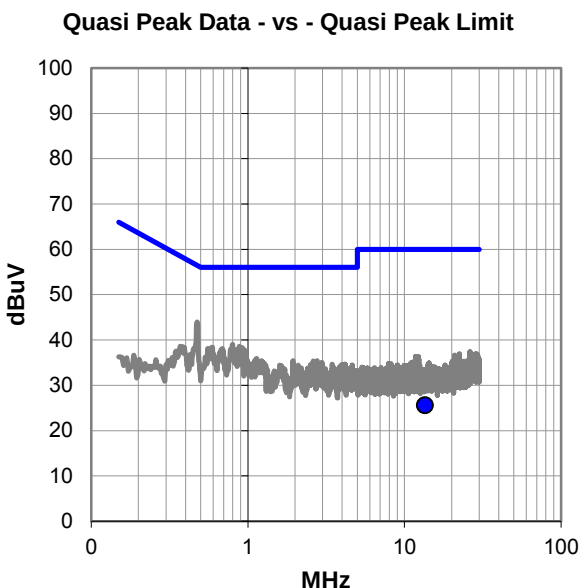
EUT antenna terminated with dummy load.

EUT OPERATING MODES

Transmitting 13.56 MHz, continuously searching for tag.

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #53

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.563	4.1	21.5	25.6	60.0	-34.4

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.563	-3.5	21.5	18.0	50.0	-32.0

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Precor NFC / RFID module 303750	Work Order:	PRCR0230
Serial Number:	None	Date:	10/23/2015
Customer:	Precor, Inc.	Temperature:	23°C
Attendees:	Rich Whitbeck	Relative Humidity:	40%
Customer Project:	None	Bar. Pressure:	1025 mb
Tested By:	Richard Mellroth	Job Site:	NC05
Power:	110VAC/60Hz	Configuration:	PRCR0230-7

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	54	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

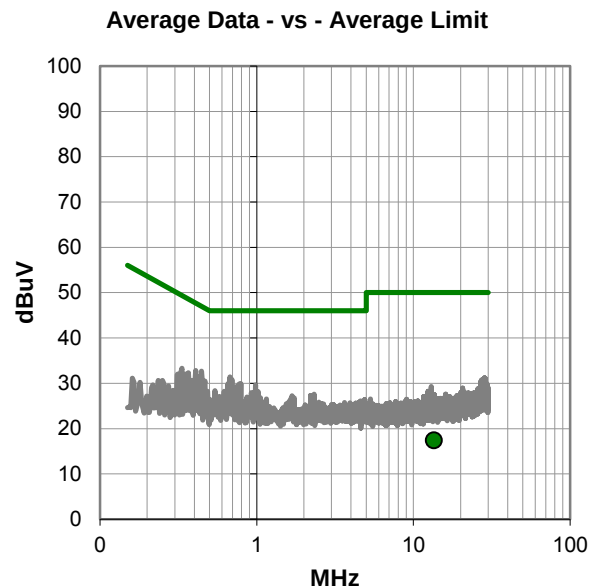
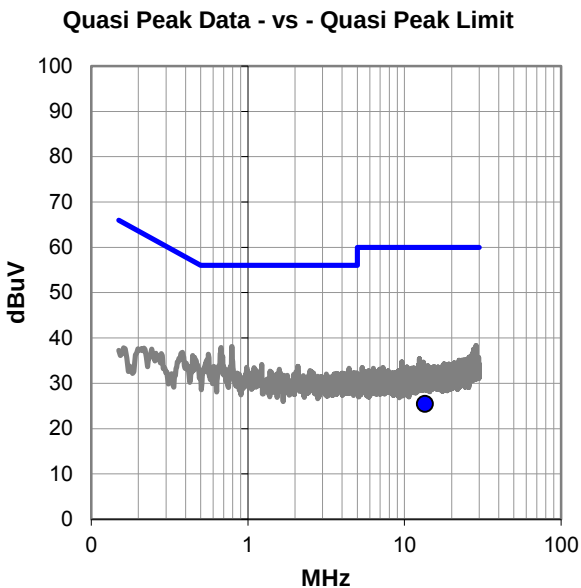
EUT antenna terminated with dummy load.

EUT OPERATING MODES

Transmitting 13.56 MHz, continuously searching for tag.

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #54

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.558	3.9	21.5	25.4	60.0	-34.6

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.558	-4.1	21.5	17.4	50.0	-32.6

CONCLUSION

Pass



Tested By

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Tx to tag Continuously, NFC 13.56 MHz

POWER SETTINGS INVESTIGATED

5VDC

CONFIGURATIONS INVESTIGATED

PRCR0230 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	12.75 MHz	Stop Frequency	14.4 MHz
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SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Analyzer - Spectrum Analyzer	Agilent	E4443A	AFB	3/17/2015	12 mo
Cable	None	10m Test Distance Cable	EVL	5/11/2015	12 mo
Antenna, Loop	EMCO	6502	AOA	6/24/2014	24 mo

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was continuously transmitting while set to the channel specified.

While scanning, fundamental carrier from the EUT was maximized by rotating the EUT, adjusting the measurement antenna height and orientation in 3 orthogonal planes, the EUT and/or associated antenna is positioned in 3 orthogonal planes (per ANSI C63.10). An active loop antenna was used for this test in order to provide sufficient measurement sensitivity.

As outlined in 15.209(e) and 15.31(f)(2), measurements may be performed at a distance closer than what is specified with the limit. The limit at the specified distance is shown on the data sheet. Measurements are made at a closer distance and the data is adjusted using a distance correction factor of 40dB/decade for comparison to the limit.



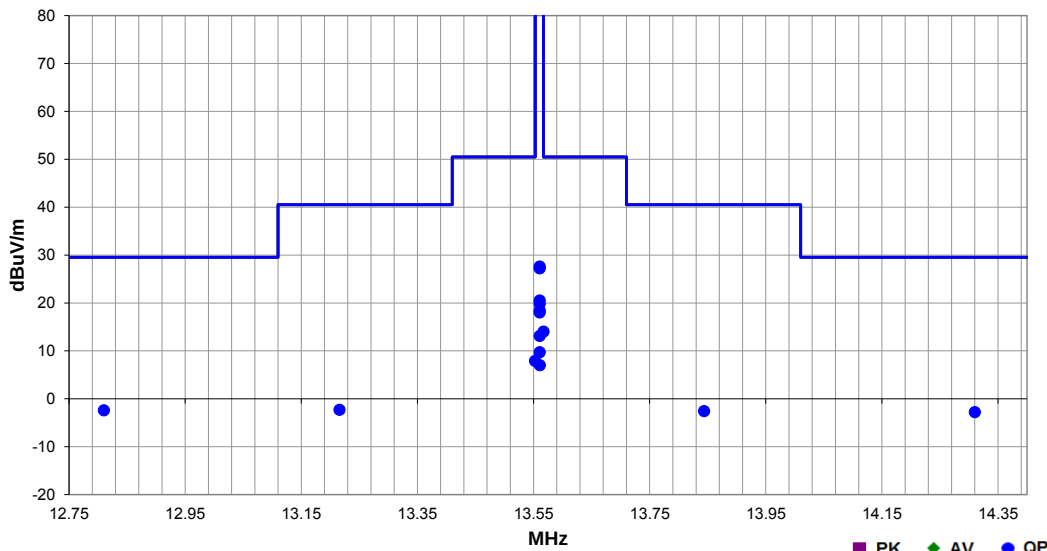
FIELD STRENGTH OF FUNDAMENTAL

PSA-ESCI 2015.07.01
EmiR5 2015.08.28

Work Order:	PRCR0230	Date:	10/08/15	
Project:	None	Temperature:	22.4 °C	
Job Site:	EV11	Humidity:	47.3% RH	
Serial Number:	None	Barometric Pres.:	1020 mbar	
EUT: Precor Radio Module				Tested by: Brandon Hobbs
Configuration: 2				
Customer: Precor, Inc.				
Attendees: Rich Whitbeck, James Minihan				
EUT Power: 5VDC				
Operating Mode: Tx to tag Continuously, NFC 13.56 MHz				
Deviations: None				
Comments: Please reference the data comments for EUT orientation and antenna position.				

Test Specifications	Test Method
FCC 15.225:2015	ANSI C63.10:2013

Run #	1	Test Distance (m)	10	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
12.810	5.9	10.8	1.0	12.0	10.0	0.0	See Comments	QP	-19.1	-2.4	29.5	-31.9	Ant Perp to GND/ Ant Perp to EUT, EUT Vertical
14.310	5.5	10.8	1.0	230.0	10.0	0.0	See Comments	QP	-19.1	-2.8	29.5	-32.3	Ant Perp to GND/ Ant Perp to EUT, EUT Vertical
13.567	22.3	10.8	1.0	283.0	10.0	0.0	See Comments	QP	-19.1	14.0	50.5	-36.5	Ant Perp to GND/ Ant Perp to EUT, EUT Vertical
13.553	16.2	10.8	1.0	280.0	10.0	0.0	See Comments	QP	-19.1	7.9	50.5	-42.6	Ant Perp to GND/ Ant Perp to EUT, EUT Vertical
13.216	6.0	10.8	1.0	179.0	10.0	0.0	See Comments	QP	-19.1	-2.3	40.5	-42.8	Ant Perp to GND/ Ant Perp to EUT, EUT Vertical
13.844	5.7	10.8	1.0	84.0	10.0	0.0	See Comments	QP	-19.1	-2.6	40.5	-43.1	Ant Perp to GND/ Ant Perp to EUT, EUT Vertical
13.561	35.9	10.8	1.0	288.0	10.0	0.0	See Comments	QP	-19.1	27.6	84.0	-56.4	Ant Perp to GND/ Ant Perp to EUT, EUT Vertical
13.561	35.5	10.8	1.0	280.0	10.0	0.0	See Comments	QP	-19.1	27.2	84.0	-56.8	Ant Perp to GND/ Ant Perp to EUT, EUT On Side
13.561	28.8	10.8	1.0	229.0	10.0	0.0	See Comments	QP	-19.1	20.5	84.0	-63.5	Ant Perp to GND/ Ant Para to EUT, EUT On Side
13.561	28.1	10.8	1.0	239.0	10.0	0.0	See Comments	QP	-19.1	19.8	84.0	-64.2	Ant Perp to GND/ Ant Para to EUT, EUT Vertical
13.561	26.7	10.8	1.0	283.0	10.0	0.0	See Comments	QP	-19.1	18.4	84.0	-65.6	Ant Para to GND/ Ant Perp to EUT, EUT Vertical
13.561	26.3	10.8	1.0	285.0	10.0	0.0	See Comments	QP	-19.1	18.0	84.0	-66.0	Ant Para to GND/ Ant Perp to EUT, EUT On Side
13.561	21.4	10.8	1.0	94.0	10.0	0.0	See Comments	QP	-19.1	13.1	84.0	-70.9	Ant Perp to GND/ Ant Perp to EUT, EUT Horz
13.561	18.0	10.8	1.0	295.0	10.0	0.0	See Comments	QP	-19.1	9.7	84.0	-74.3	Ant Perp to GND/ Ant Para to EUT, EUT Horz
13.561	15.3	10.8	1.0	291.0	10.0	0.0	See Comments	QP	-19.1	7.0	84.0	-77.0	Ant Para to GND/ Ant Perp to EUT, EUT Horz

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Tx to tag Continuous, NFC 13.56 MHz

POWER SETTINGS INVESTIGATED

5VDC

CONFIGURATIONS INVESTIGATED

PRCR0230 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency 10 kHz

Stop Frequency 30 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Analyzer - Spectrum Analyzer	Agilent	E4443A	AFB	3/17/2015	12 mo
Cable	None	10m Test Distance Cable	EVL	5/11/2015	12 mo
Antenna, Loop	EMCO	6502	AOA	6/24/2014	24 mo

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was continuously transmitting while set to the channel specified.

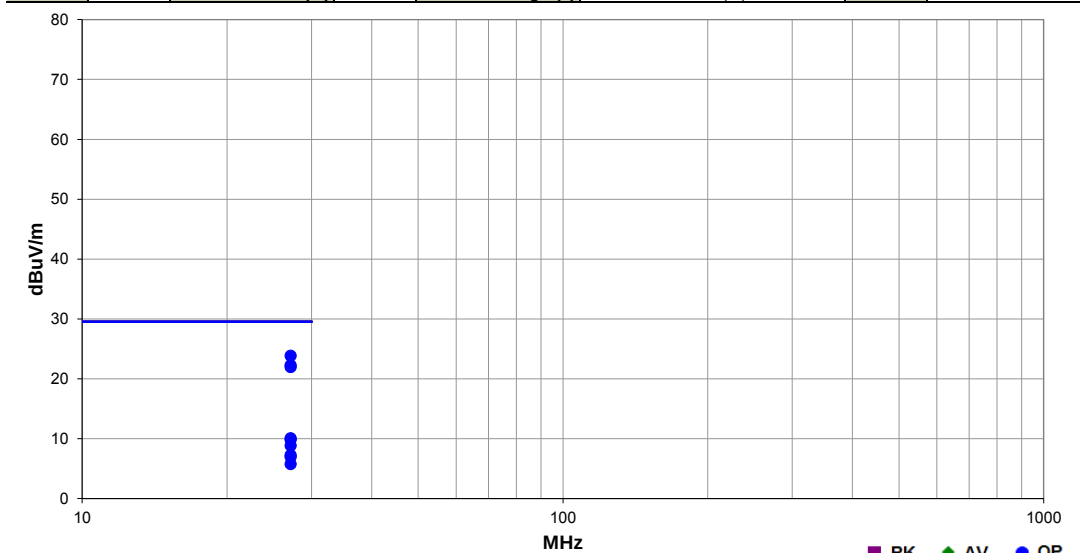
While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and orientation in 3 orthogonal planes, the EUT and/or associated antenna is positioned in 3 orthogonal planes (per ANSI C63.10). An active loop antenna was used for this test in order to provide sufficient measurement sensitivity.

As outlined in 15.209(e) and 15.31(f)(2), measurements may be performed at a distance closer than what is specified with the limit. The limit at the specified distance is shown on the data sheet. Measurements are made at a closer distance and the data is adjusted using a distance correction factor of 40dB/decade for comparison to the limit.

Work Order:	PRCR0230	Date:	10/08/15	
Project:	None	Temperature:	22.4 °C	
Job Site:	EV11	Humidity:	47.3% RH	
Serial Number:	None	Barometric Pres.:	1020 mbar	
EUT:	Precor Radio Module			
Configuration:	2			
Customer:	Precor, Inc.			
Attendees:	Rich Whitbeck, James Minihan			
EUT Power:	5VDC			
Operating Mode:	Tx to tag Continuously, NFC 13.56 MHz			
Deviations:	None			
Comments:	Please Reference the data comments for EUT orientation and antenna position.			

Test Specifications	Test Method
FCC 15.225:2015	ANSI C63.10:2013

Run #	3	Test Distance (m)	10	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
27.121	34.0	8.9	1.0	0.0	10.0	0.0	See Comments	QP	-19.1	23.9	29.5	-5.7	Ant Perp to GND/ Ant Perp to EUT, EUT On Side
27.122	32.4	8.9	1.0	131.0	10.0	0.0	See Comments	QP	-19.1	22.3	29.5	-7.3	Ant Perp to GND/ Ant Perp to EUT, EUT Horizontal
27.121	32.1	8.9	1.0	80.0	10.0	0.0	See Comments	QP	-19.1	22.0	29.5	-7.6	Ant Perp to GND/ Ant Perp to EUT, EUT Vertical
27.121	20.2	8.9	1.0	130.0	10.0	0.0	See Comments	QP	-19.1	10.1	29.5	-19.5	Ant Para to GND/ Ant Perp to EUT, EUT On Side
27.121	20.0	8.9	1.0	48.0	10.0	0.0	See Comments	QP	-19.1	9.9	29.5	-19.7	Ant Para to GND/ Ant Perp to EUT, EUT Horizontal
27.121	19.0	8.9	1.0	127.0	10.0	0.0	See Comments	QP	-19.1	8.9	29.5	-20.7	Ant Para to GND/ Ant Perp to EUT, EUT Vertical
27.121	17.4	8.9	1.0	238.0	10.0	0.0	See Comments	QP	-19.1	7.3	29.5	-22.3	Ant Perp to GND/ Ant Para to EUT, EUT On Side
27.121	17.1	8.9	1.0	252.0	10.0	0.0	See Comments	QP	-19.1	7.0	29.5	-22.6	Ant Perp to GND/ Ant Para to EUT, EUT Vertical
27.121	15.9	8.9	1.0	251.0	10.0	0.0	See Comments	QP	-19.1	5.8	29.5	-23.8	Ant Para to GND/ Ant Para to EUT, EUT Horizontal

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Continuously transmitting 13.56 MHz.

POWER SETTINGS INVESTIGATED

5 VDC

CONFIGURATIONS INVESTIGATED

PRCR0230 - 8

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	140 MHz
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SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	6/23/2015	12 mo
Cable	Northwest EMC	Bilog Cables	NC1	8/27/2015	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFF	3/6/2015	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	PAB	7/31/2015	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYL	7/30/2015	24 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

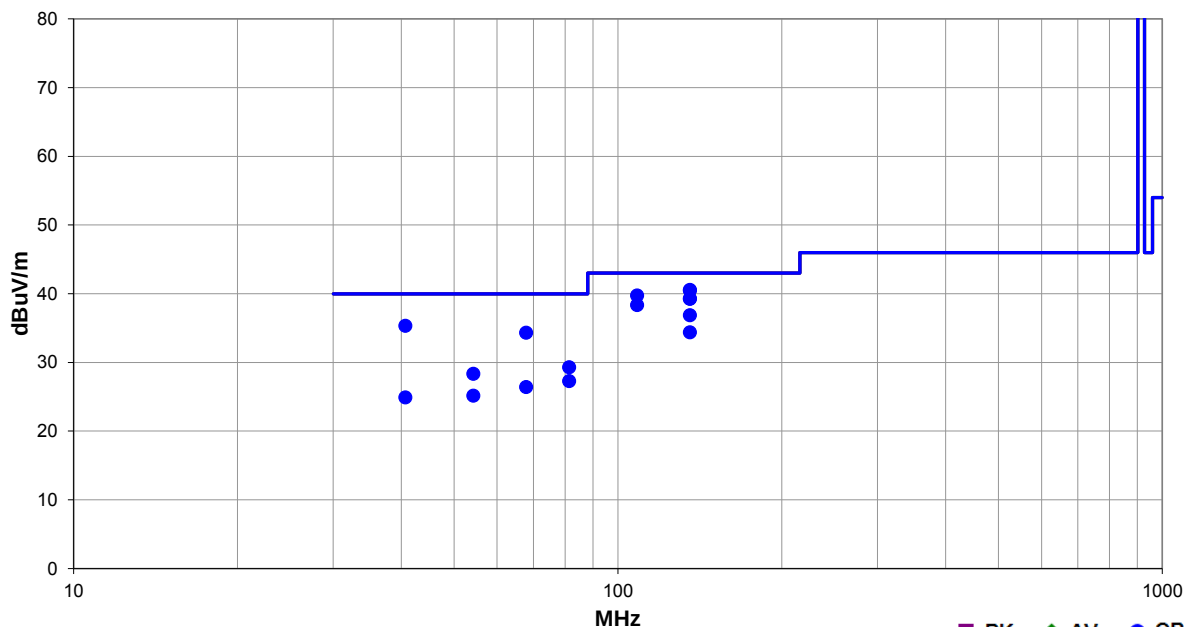
The antennas to be used with the EUT were tested. The EUT was transmitting while set at the operating channel.

While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.10:2013).

Work Order:	PRCR0230	Date:	10/26/15	
Project:	None	Temperature:	23 °C	
Job Site:	NC01	Humidity:	49% RH	
Serial Number:	None	Barometric Pres.:	1015 mbar	
EUT:	Precor NFC / RFID module 303750			
Configuration:	8			
Customer:	Precor, Inc.			
Attendees:	Rich Whitbeck			
EUT Power:	5 VDC			
Operating Mode:	Continuously transmitting 13.56 MHz.			
Deviations:	None			
Comments:	Laptop located beneath ground plane, initiated continuous tag read command, laptop put into hibernation mode.			

Test Specifications	Test Method
FCC 15.225:2015	ANSI C63.10:2013

Run #	172	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
135.620	43.1	-2.5	2.8	109.0	3.0	0.0	Horz	QP	0.0	40.6	43.0	-2.4	EUT Flat
135.620	43.0	-2.5	2.7	116.0	3.0	0.0	Horz	QP	0.0	40.5	43.0	-2.5	EUT on Side
108.498	43.6	-3.8	1.0	344.0	3.0	0.0	Vert	QP	0.0	39.8	43.0	-3.2	EUT Flat
135.618	41.8	-2.5	1.0	9.0	3.0	0.0	Vert	QP	0.0	39.3	43.0	-3.7	EUT Flat
135.618	41.8	-2.5	1.0	0.0	3.0	0.0	Vert	QP	0.0	39.3	43.0	-3.7	EUT on Side
108.498	42.2	-3.8	2.8	282.0	3.0	0.0	Horz	QP	0.0	38.4	43.0	-4.6	EUT Flat
40.694	33.1	2.2	1.0	138.0	3.0	0.0	Vert	QP	0.0	35.3	40.0	-4.7	EUT Flat
67.815	42.0	-7.7	1.0	2.0	3.0	0.0	Vert	QP	0.0	34.3	40.0	-5.7	EUT Flat
135.618	39.4	-2.5	3.0	295.0	3.0	0.0	Horz	QP	0.0	36.9	43.0	-6.1	EUT Vert
135.618	36.9	-2.5	1.0	288.0	3.0	0.0	Vert	QP	0.0	34.4	43.0	-8.6	EUT Vert
81.377	36.8	-7.5	1.0	66.0	3.0	0.0	Vert	QP	0.0	29.3	40.0	-10.7	EUT Flat
54.253	32.1	-3.7	1.0	0.0	3.0	0.0	Vert	QP	0.0	28.4	40.0	-11.6	EUT Flat
81.375	34.8	-7.5	2.5	116.0	3.0	0.0	Horz	QP	0.0	27.3	40.0	-12.7	EUT Flat
67.814	34.1	-7.7	1.9	292.0	3.0	0.0	Horz	QP	0.0	26.4	40.0	-13.6	EUT Flat
54.253	28.9	-3.7	4.0	288.0	3.0	0.0	Horz	QP	0.0	25.2	40.0	-14.8	EUT Flat
40.694	22.7	2.2	1.0	134.0	3.0	0.0	Horz	QP	0.0	24.9	40.0	-15.1	EUT Flat

FREQUENCY STABILITY

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval (mos)
Probe - Near Field Set	Com-Power	PS-400	IPE	NCR	0
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAT	9/29/2015	12
Block - DC	Fairview Microwave	SD3379	AMJ	6/6/2015	12
Attenuator	Fairview Microwave	SA4014-20	TKE	1/16/2015	12
Cable	ESM Cable Corp.	TTBJ-141 KMKM-72	NC5	6/6/2015	12
Meter - Multimeter	Fluke	111	MMM	3/20/2013	36
Thermometer	Omega Engineering, Inc.	HH311	DUH	4/3/2015	36
Chamber - Temperature/Humidity	Tenney	T6S	TBG	NCR	0

TEST DESCRIPTION

Variation of Supply Voltage

The primary supply voltage was varied from 85% to 115% of the nominal voltage. A DC lab supply was used to vary the supply voltage.

Variation of Ambient Temperature

Using a temperature chamber, the transmit frequency was recorded at the extremes of the specified temperature range (-20° to +50° C) and at 10°C intervals.

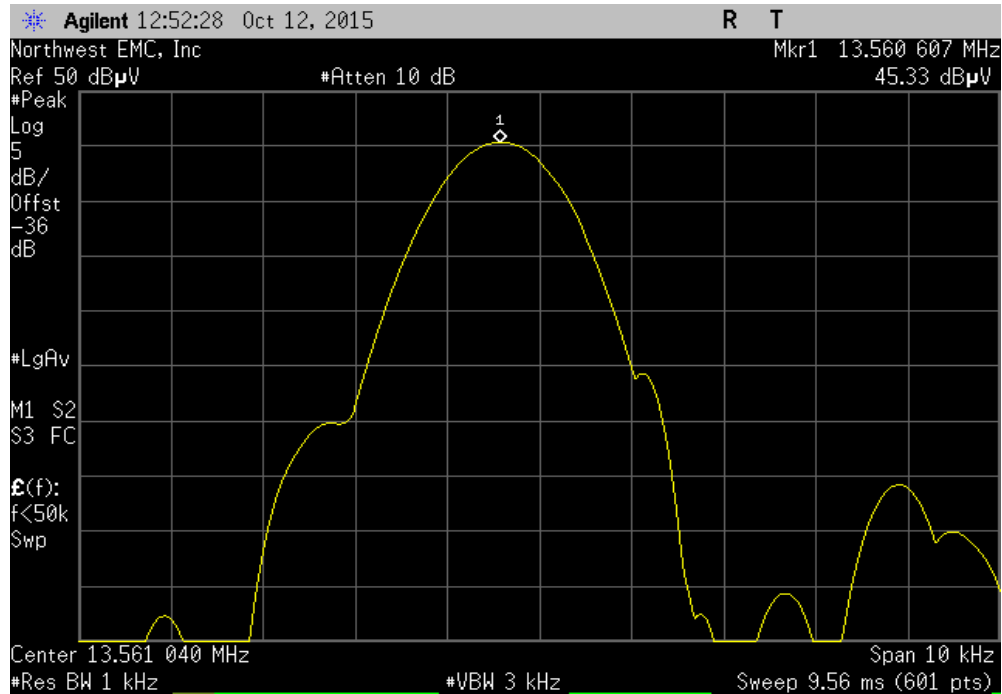
The EUT has an integral antenna. Measurements were made with a near field probe centered above the EUT antenna port. A reference level offset was applied to match the peak power reading on the analyzer to the Field Strength of the Fundamental. The spectrum analyzer is equipped with a precision frequency reference that exceeds the stability requirement of the EUT.

FREQUENCY STABILITY

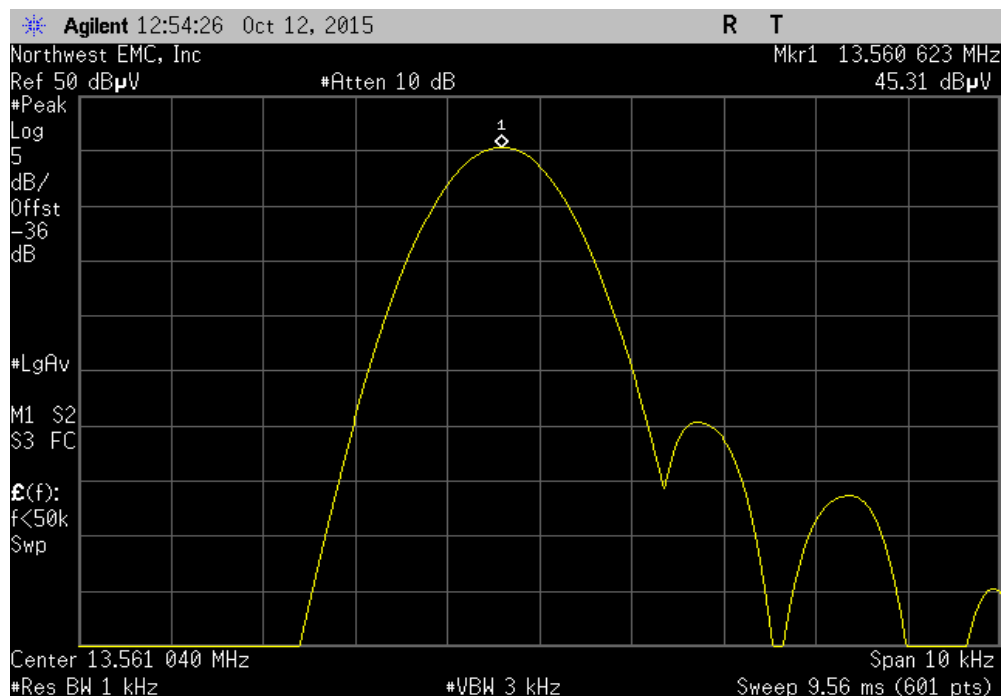
EUT: Precor NFC / RFID module 303750		Work Order: PRCR0230	
Serial Number: None		Date: 10/12/15	
Customer: Precor, Inc.		Temperature: 23°C	
Attendees: Rich Whitbeck		Humidity: 51%	
Project: None		Barometric Pres.: 1019mb	
Tested by: Richard Mellroth		Power: 5 VDC	
Job Site: NC04			
TEST SPECIFICATIONS		Test Method	
FCC 15.225:2015		ANSI C63.10:2013	
COMMENTS			
Power settings at Maximum.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	4	Signature 	
		Measured Value (MHz)	Assigned Value (MHz)
		Error (%)	Limit (%)
			Results
NFC, 13.56 MHz			
Extreme Temperature -20°C			
	Start Up	13.560607	13.56
	After 2 Minutes	13.560623	13.56
	After 5 Minutes	13.560623	13.56
	After 10 Minutes	13.560623	13.56
Extreme Temperature -10°C			
	Start Up	13.56064	13.56
	After 2 Minutes	13.56064	13.56
	After 5 Minutes	13.56064	13.56
	After 10 Minutes	13.56064	13.56
Extreme Temperature 0°C			
	Start Up	13.56064	13.56
	After 2 Minutes	13.560657	13.56
	After 5 Minutes	13.560657	13.56
	After 10 Minutes	13.560657	13.56
Extreme Temperature +10°C			
	Start Up	13.56064	13.56
	After 2 Minutes	13.560623	13.56
	After 5 Minutes	13.560623	13.56
	After 10 Minutes	13.560623	13.56
Extreme Temperature +20°C			
	Start Up	13.56059	13.56
	After 2 Minutes	13.56059	13.56
	After 5 Minutes	13.56059	13.56
	After 10 Minutes	13.56059	13.56
Extreme Temperature +30°C			
	Start Up	13.560573	13.56
	After 2 Minutes	13.560558	13.56
	After 5 Minutes	13.560556	13.56
	After 10 Minutes	13.560556	13.56
Extreme Temperature +40°C			
	Start Up	13.56054	13.56
	After 2 Minutes	13.560523	13.56
	After 5 Minutes	13.560523	13.56
	After 10 Minutes	13.560523	13.56
Extreme Temperature +50°C			
	Start Up	13.560506	13.56
	After 2 Minutes	13.560506	13.56
	After 5 Minutes	13.560506	13.56
	After 10 Minutes	13.560506	13.56
Extreme Voltage +15%			
	Start Up	13.56059	13.56
Normal Voltage			
	Start Up	13.56059	13.56
Extreme Voltage -15%			
	Start Up	13.560573	13.56

FREQUENCY STABILITY

NFC, 13.56 MHz, Extreme Temperature -20°C, Start Up						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.560607	13.56	0.004	±0.01	Pass	

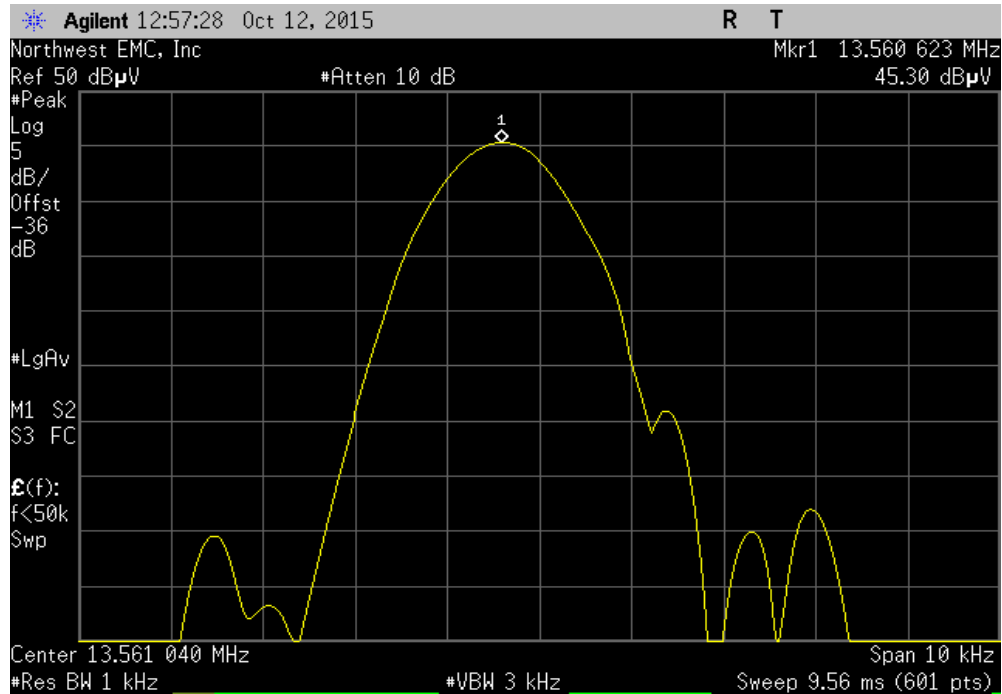


NFC, 13.56 MHz, Extreme Temperature -20°C, After 2 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.560623	13.56	0.005	±0.01	Pass	

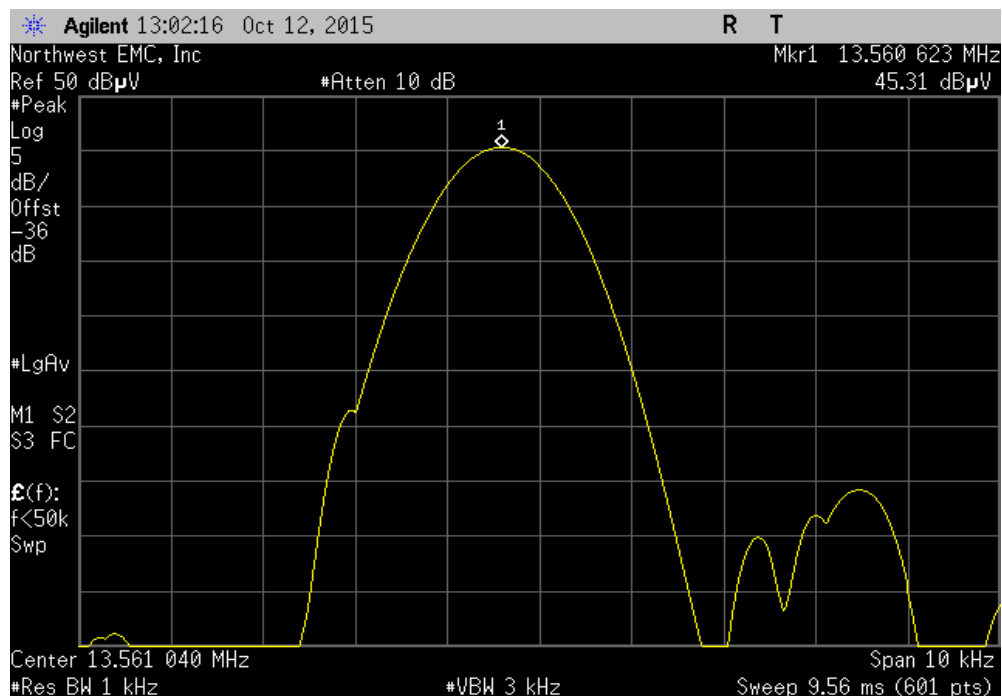


FREQUENCY STABILITY

NFC, 13.56 MHz, Extreme Temperature -20°C, After 5 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.560623	13.56	0.005	±0.01	Pass	

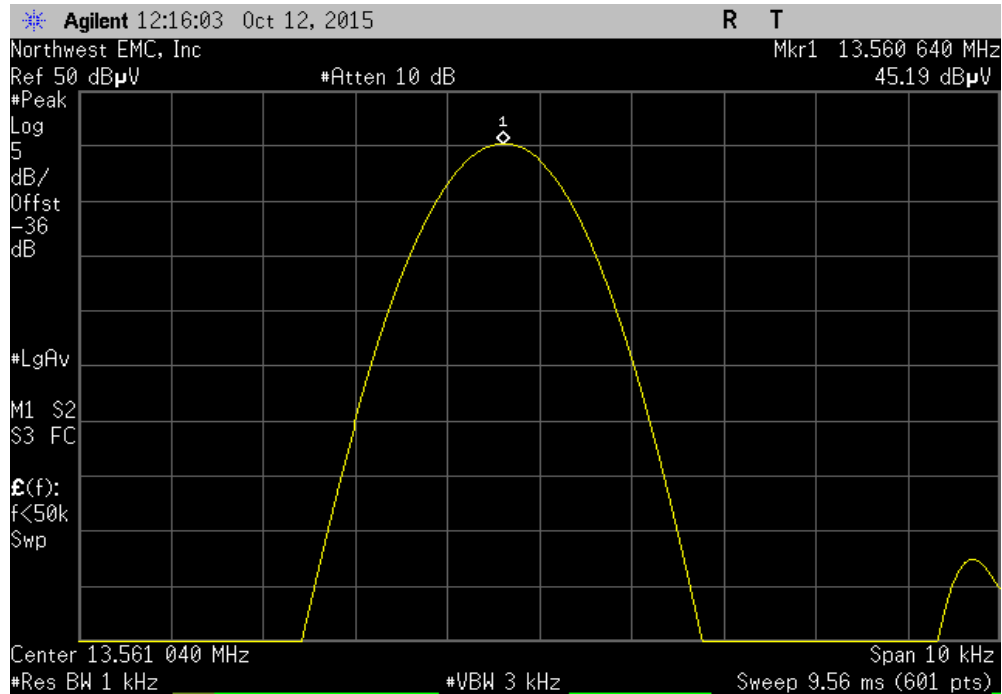


NFC, 13.56 MHz, Extreme Temperature -20°C, After 10 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.560623	13.56	0.005	±0.01	Pass	

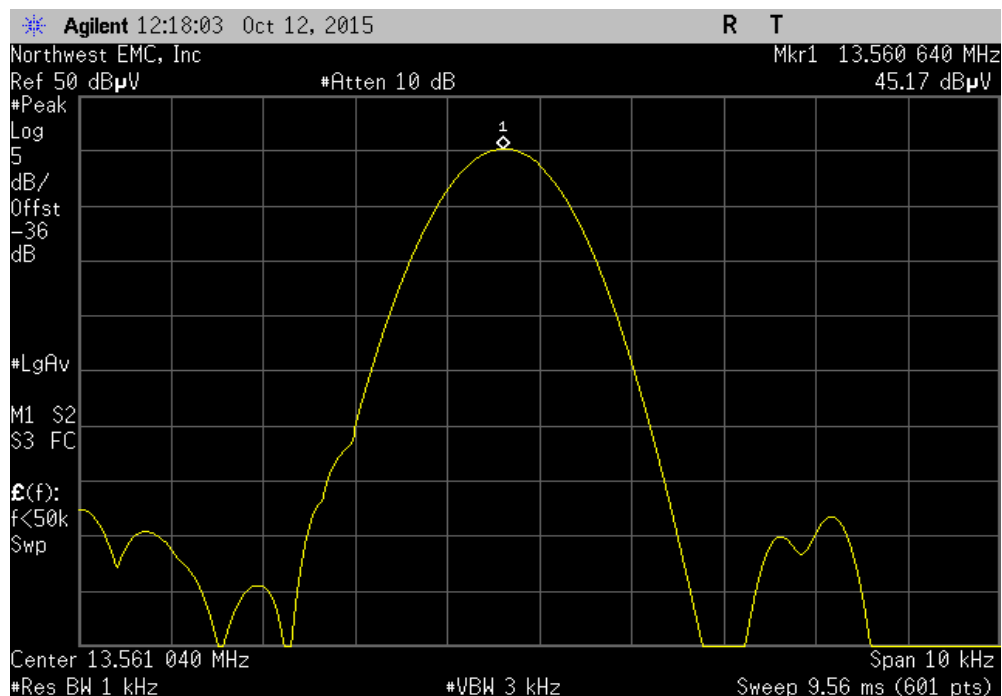


FREQUENCY STABILITY

NFC, 13.56 MHz, Extreme Temperature -10°C, Start Up						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.56064	13.56	0.005	±0.01	Pass	

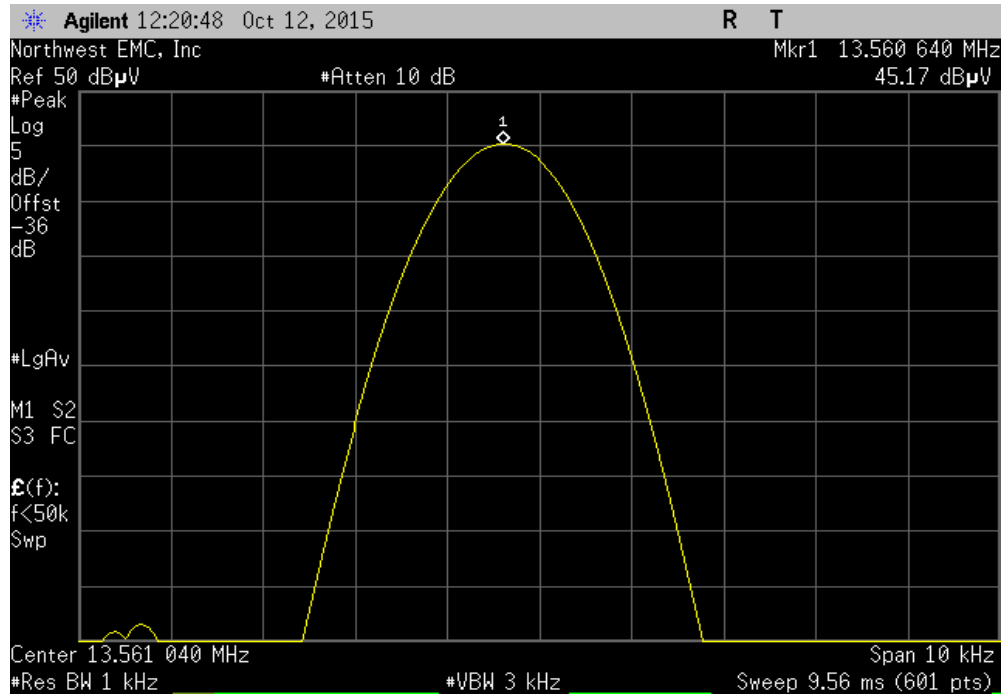


NFC, 13.56 MHz, Extreme Temperature -10°C, After 2 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.56064	13.56	0.005	±0.01	Pass	

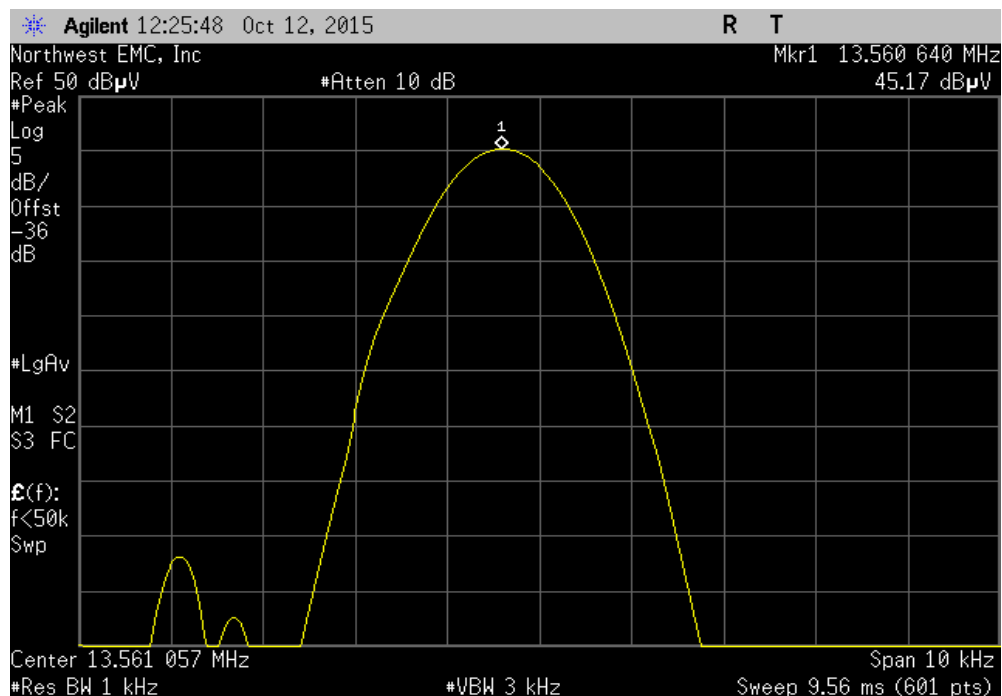


FREQUENCY STABILITY

NFC, 13.56 MHz, Extreme Temperature -10°C, After 5 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.56064	13.56	0.005	±0.01	Pass	

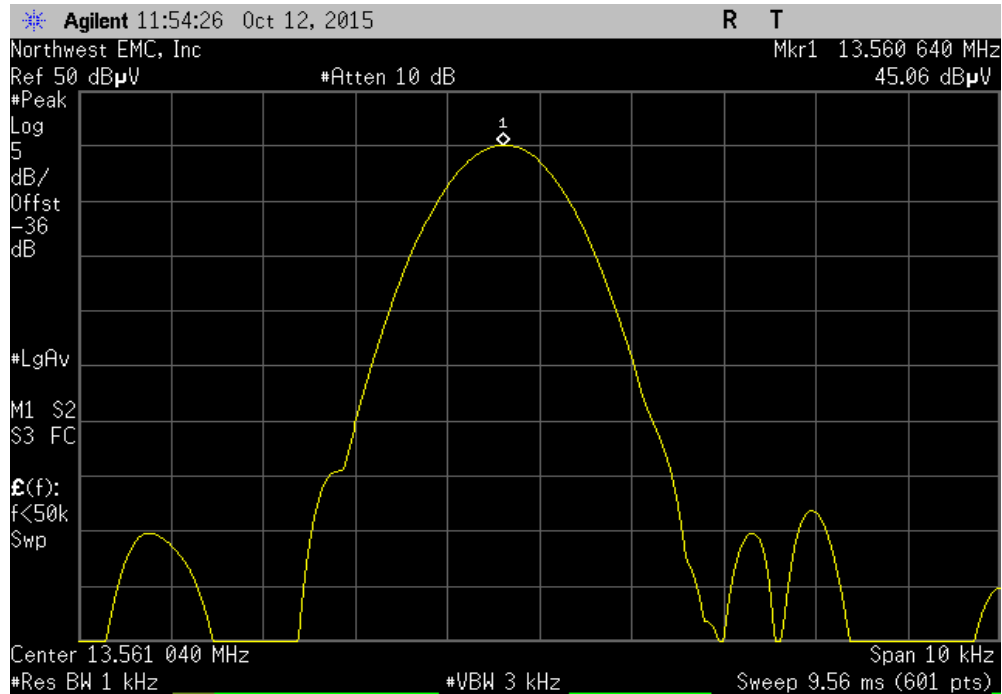


NFC, 13.56 MHz, Extreme Temperature -10°C, After 10 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.56064	13.56	0.005	±0.01	Pass	

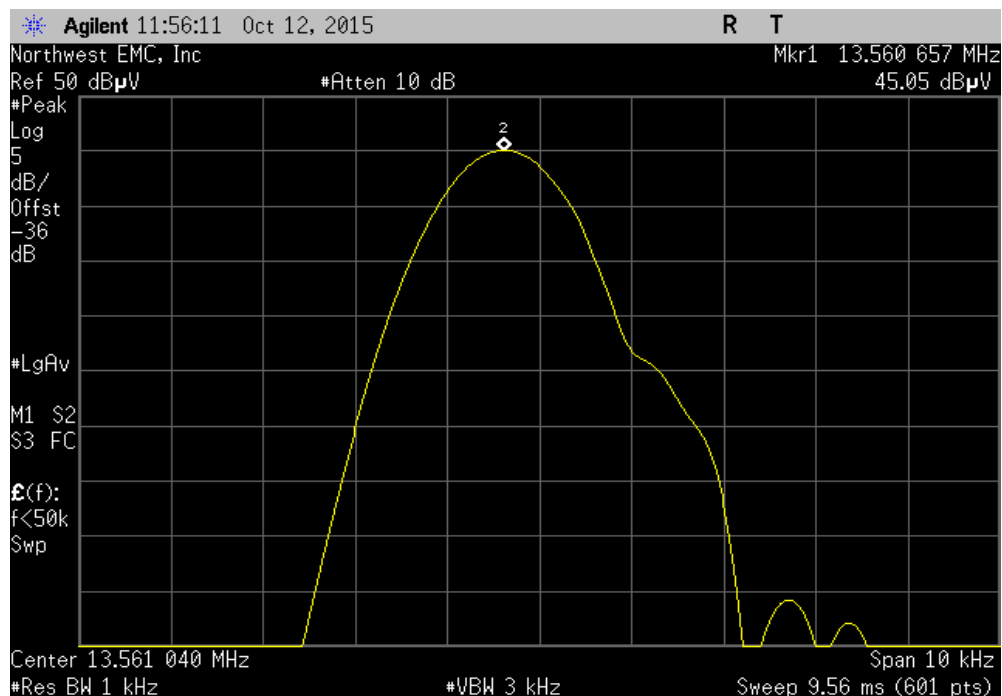


FREQUENCY STABILITY

NFC, 13.56 MHz, Extreme Temperature 0°C, Start Up						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.56064	13.56	0.005	±0.01	Pass	

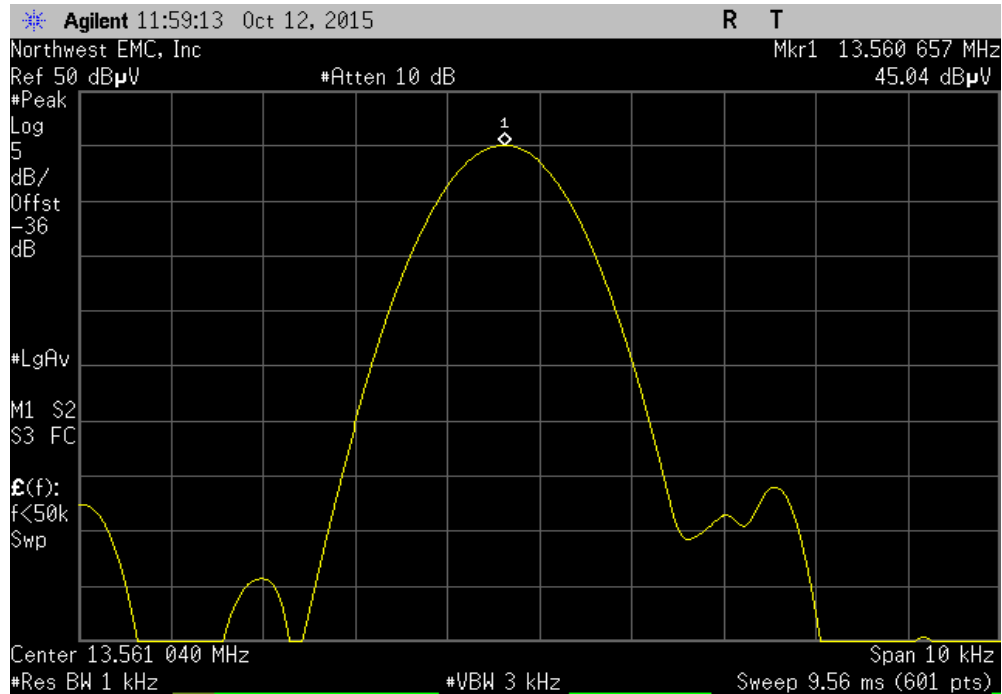


NFC, 13.56 MHz, Extreme Temperature 0°C, After 2 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.560657	13.56	0.005	±0.01	Pass	

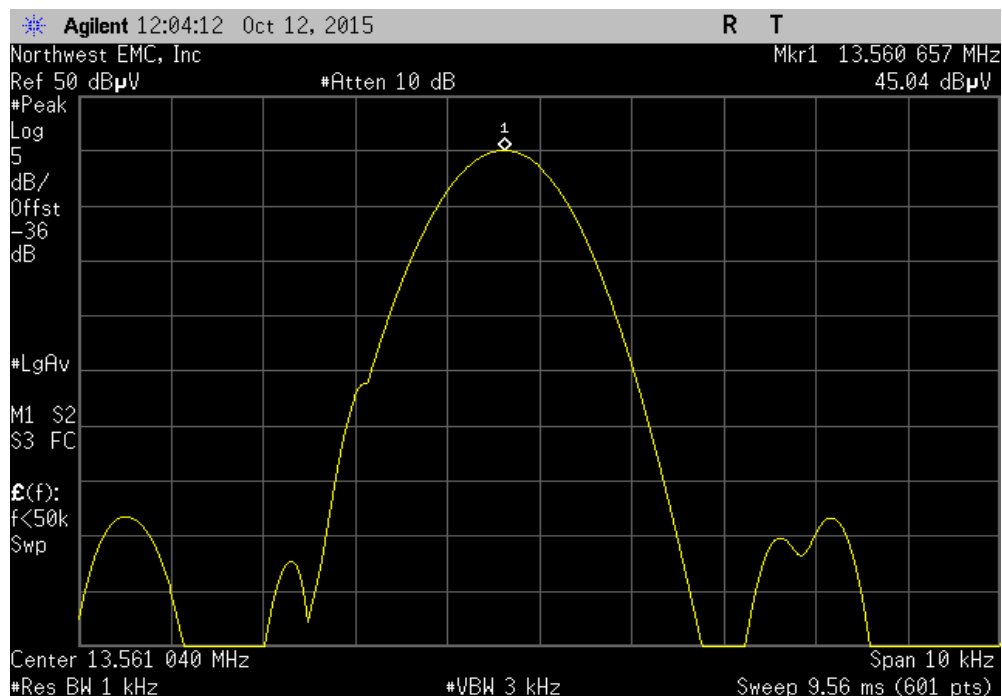


FREQUENCY STABILITY

NFC, 13.56 MHz, Extreme Temperature 0°C, After 5 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.560657	13.56	0.005	±0.01	Pass	

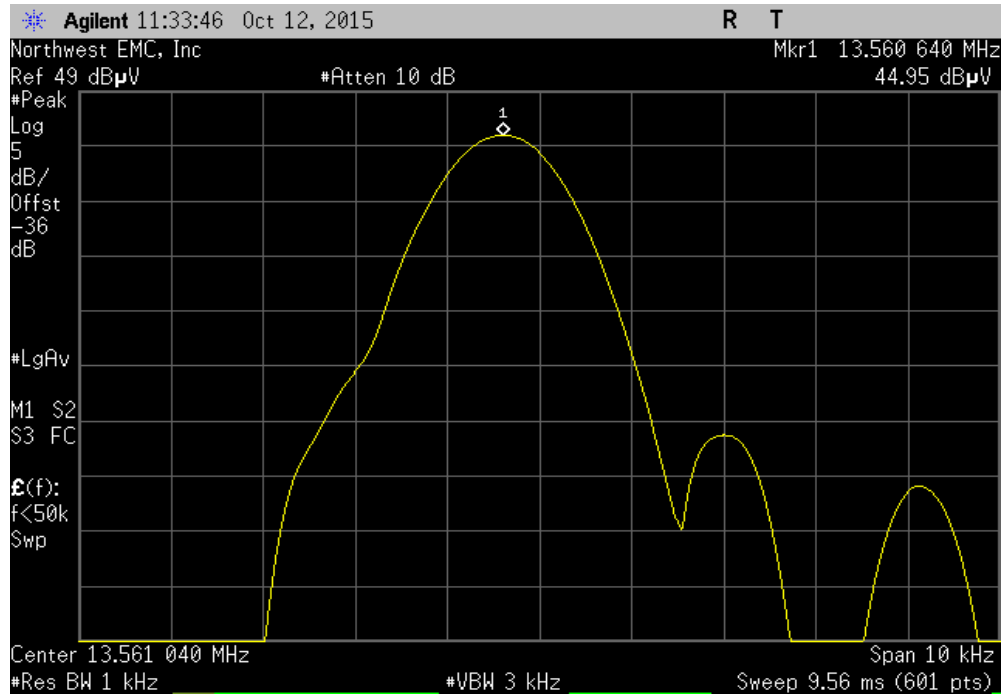


NFC, 13.56 MHz, Extreme Temperature 0°C, After 10 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.560657	13.56	0.005	±0.01	Pass	

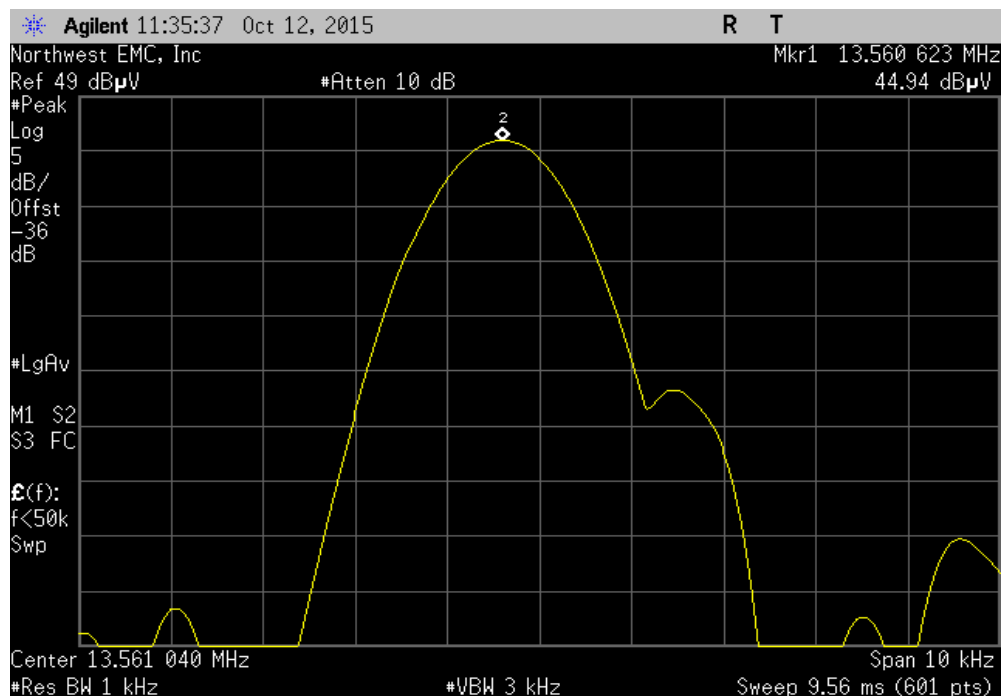


FREQUENCY STABILITY

NFC, 13.56 MHz, Extreme Temperature +10°C, Start Up						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.56064	13.56	0.005	±0.01	Pass	

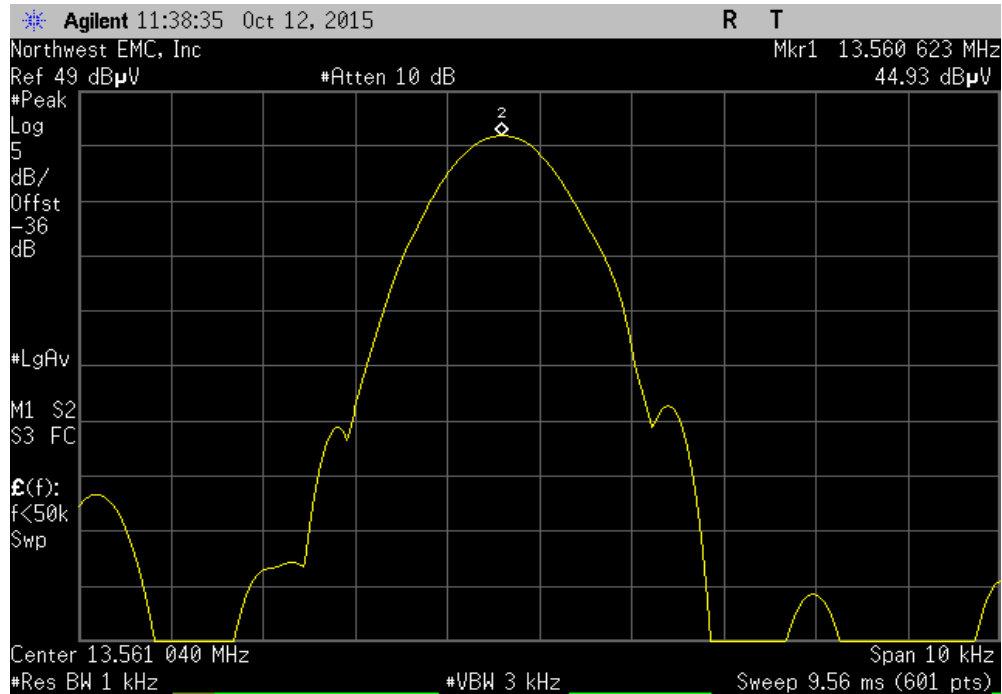


NFC, 13.56 MHz, Extreme Temperature +10°C, After 2 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.560623	13.56	0.005	±0.01	Pass	

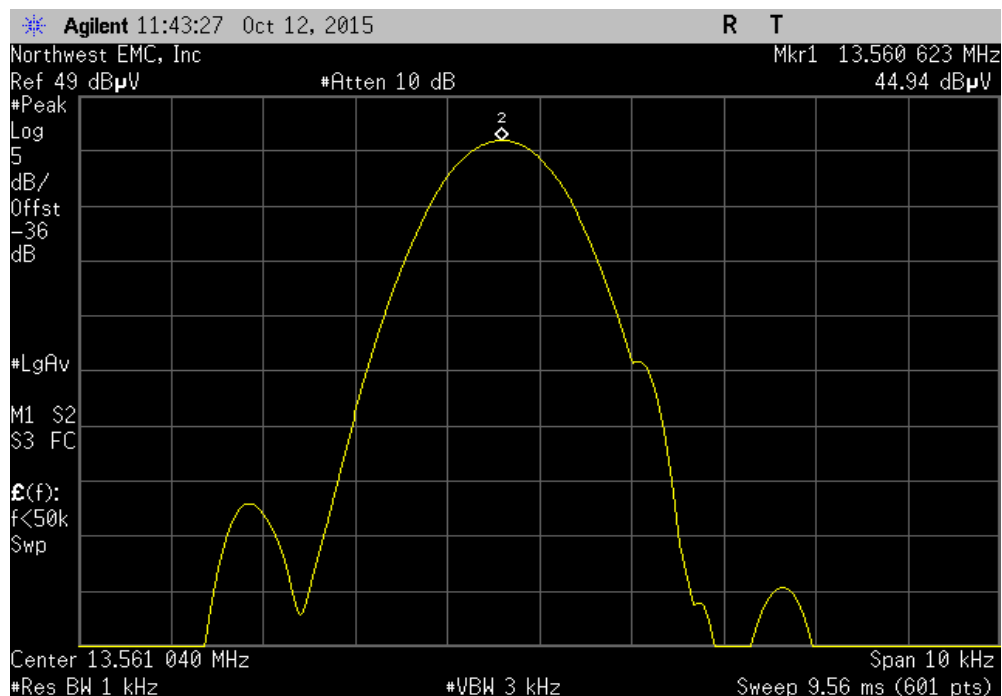


FREQUENCY STABILITY

NFC, 13.56 MHz, Extreme Temperature +10°C, After 5 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.560623	13.56	0.005	±0.01	Pass	

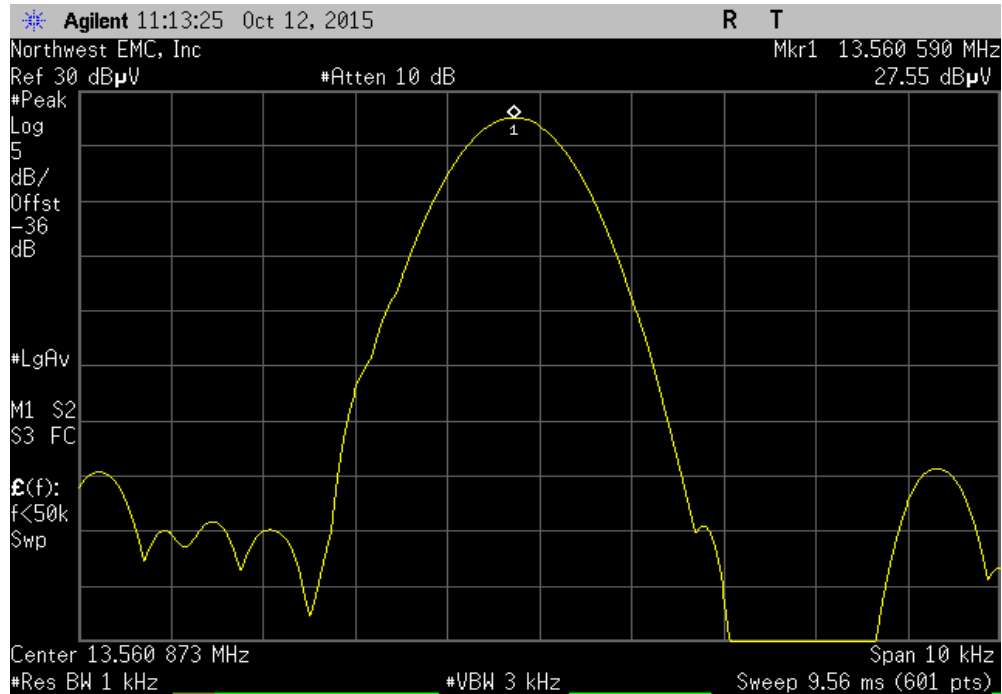


NFC, 13.56 MHz, Extreme Temperature +10°C, After 10 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.560623	13.56	0.005	±0.01	Pass	

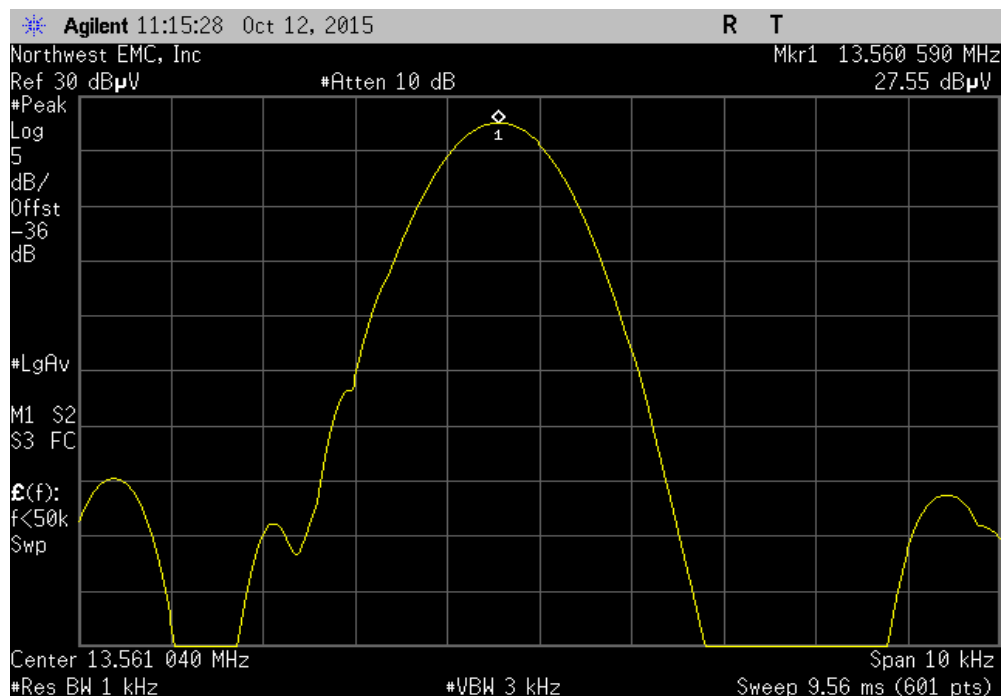


FREQUENCY STABILITY

NFC, 13.56 MHz, Extreme Temperature +20°C, Start Up						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.56059	13.56	0.004	±0.01	Pass	

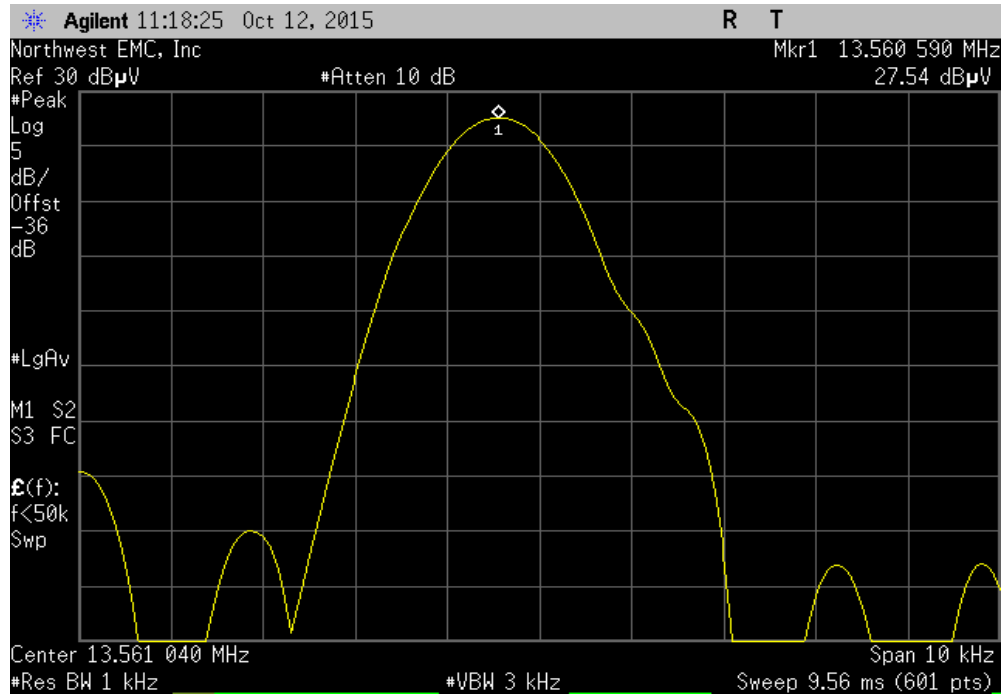


NFC, 13.56 MHz, Extreme Temperature +20°C, After 2 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.56059	13.56	0.004	±0.01	Pass	

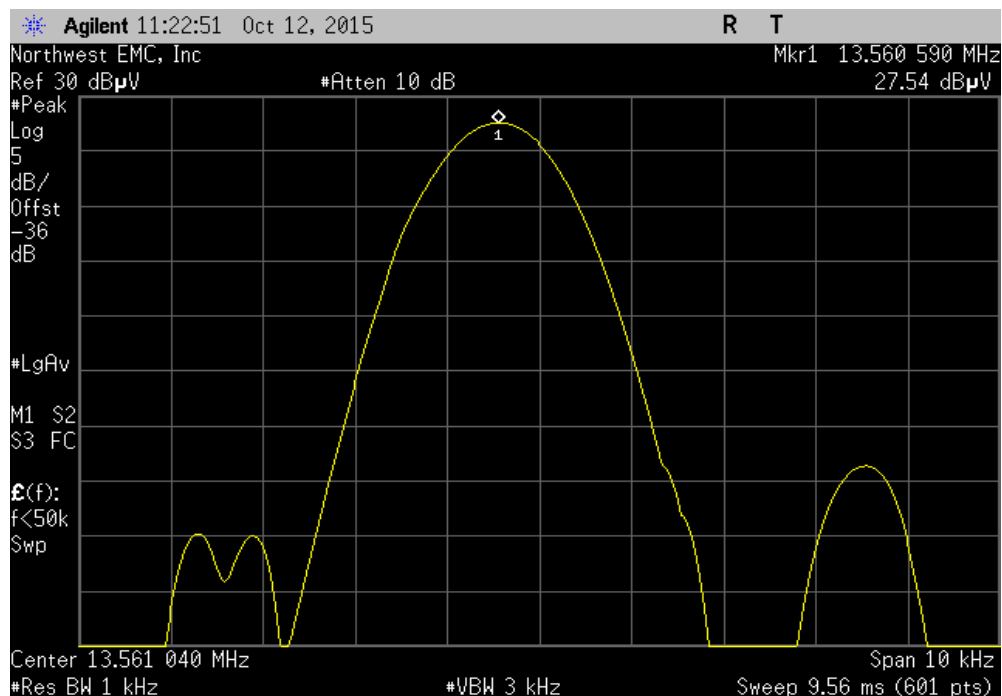


FREQUENCY STABILITY

NFC, 13.56 MHz, Extreme Temperature +20°C, After 5 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.56059	13.56	0.004	±0.01	Pass	

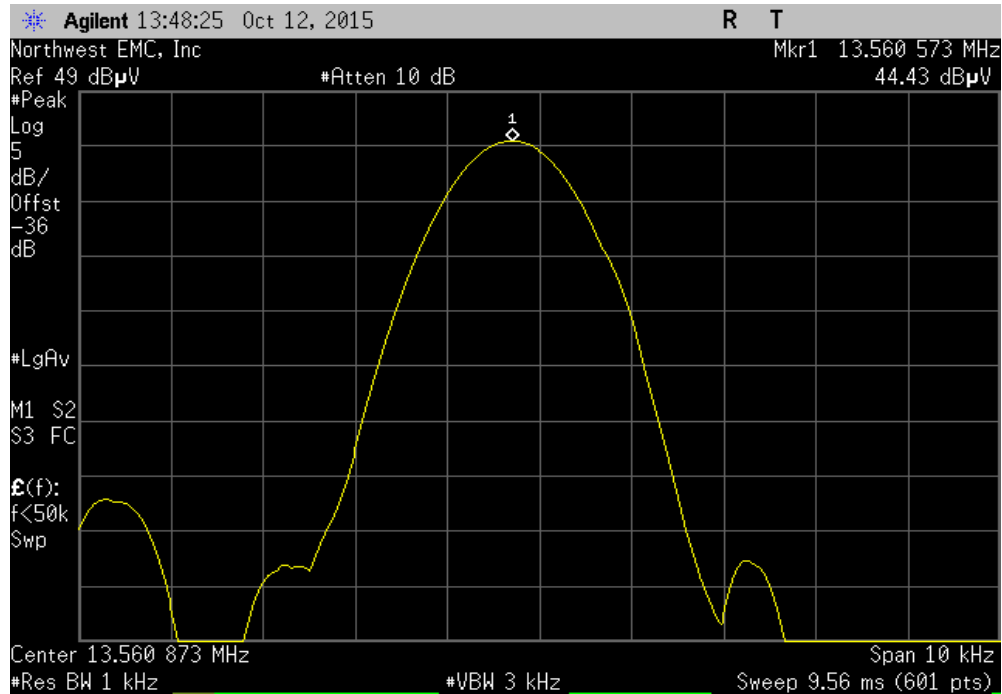


NFC, 13.56 MHz, Extreme Temperature +20°C, After 10 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.56059	13.56	0.004	±0.01	Pass	

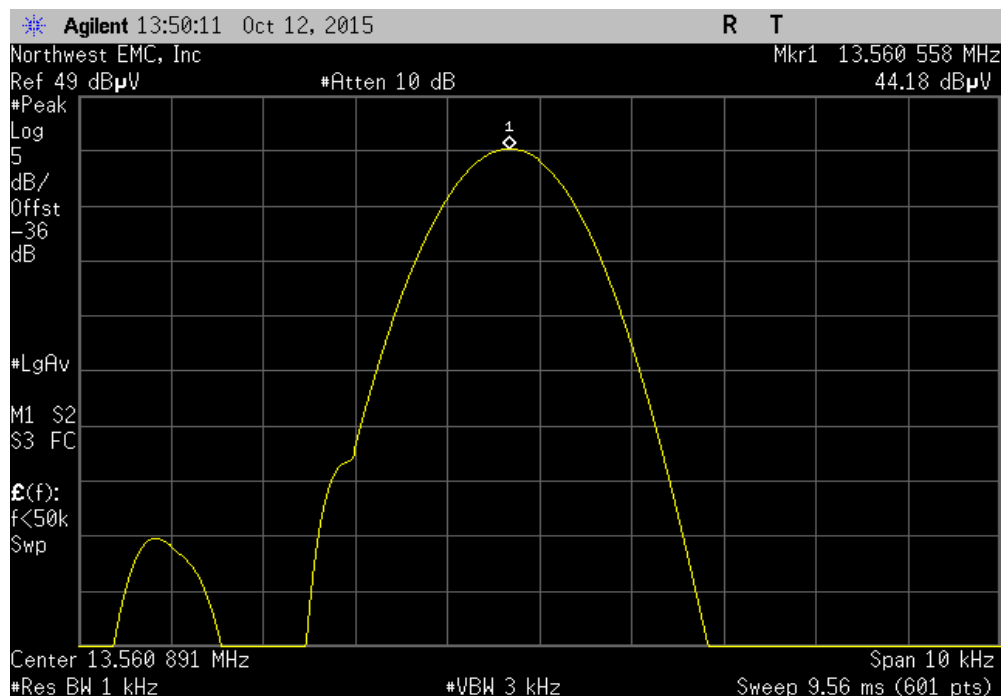


FREQUENCY STABILITY

NFC, 13.56 MHz, Extreme Temperature +30°C, Start Up						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.560573	13.56	0.004	±0.01	Pass	

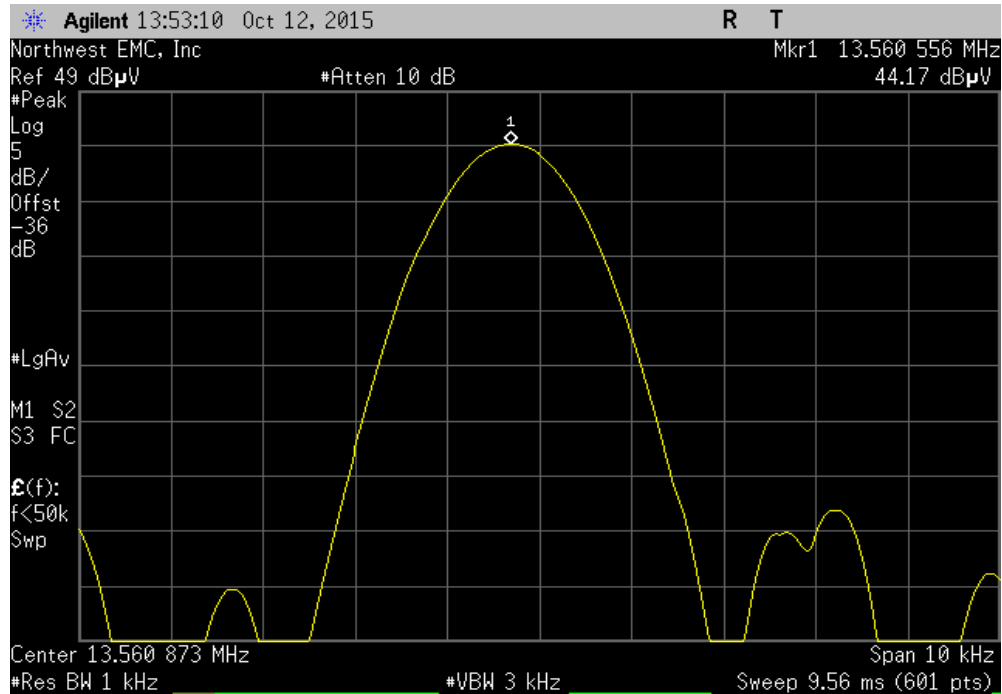


NFC, 13.56 MHz, Extreme Temperature +30°C, After 2 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.560558	13.56	0.004	±0.01	Pass	

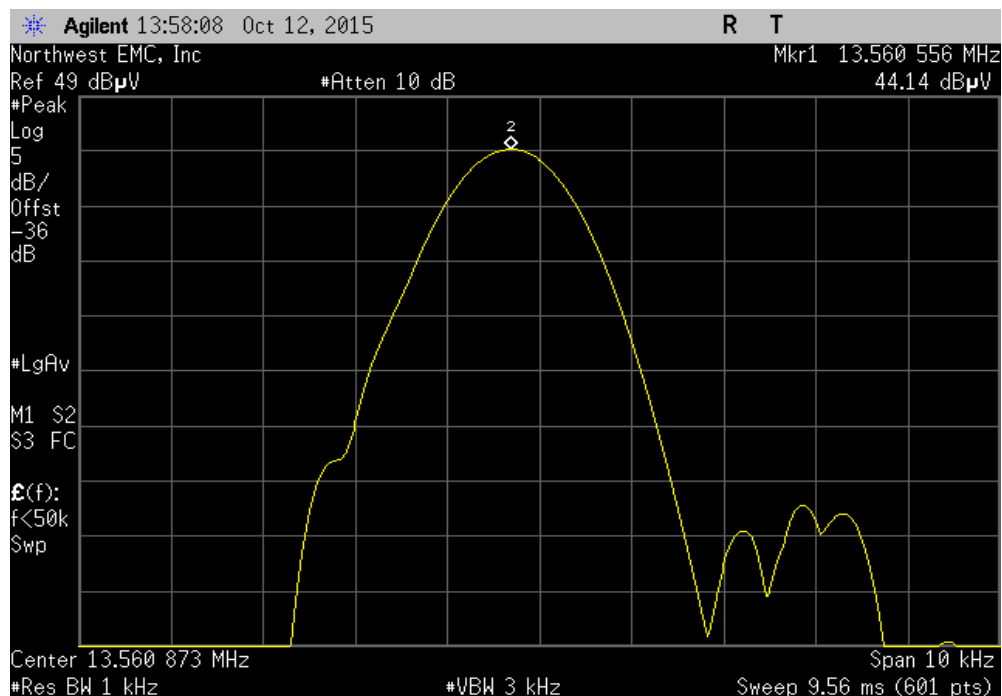


FREQUENCY STABILITY

NFC, 13.56 MHz, Extreme Temperature +30°C, After 5 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.560556	13.56	0.004	±0.01	Pass	

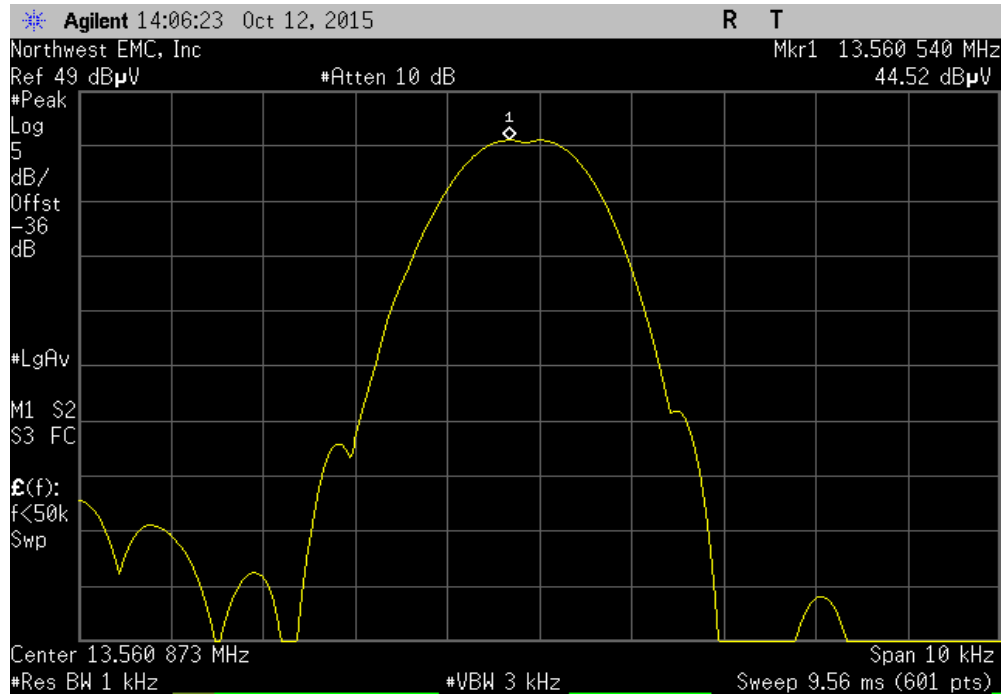


NFC, 13.56 MHz, Extreme Temperature +30°C, After 10 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.560556	13.56	0.004	±0.01	Pass	

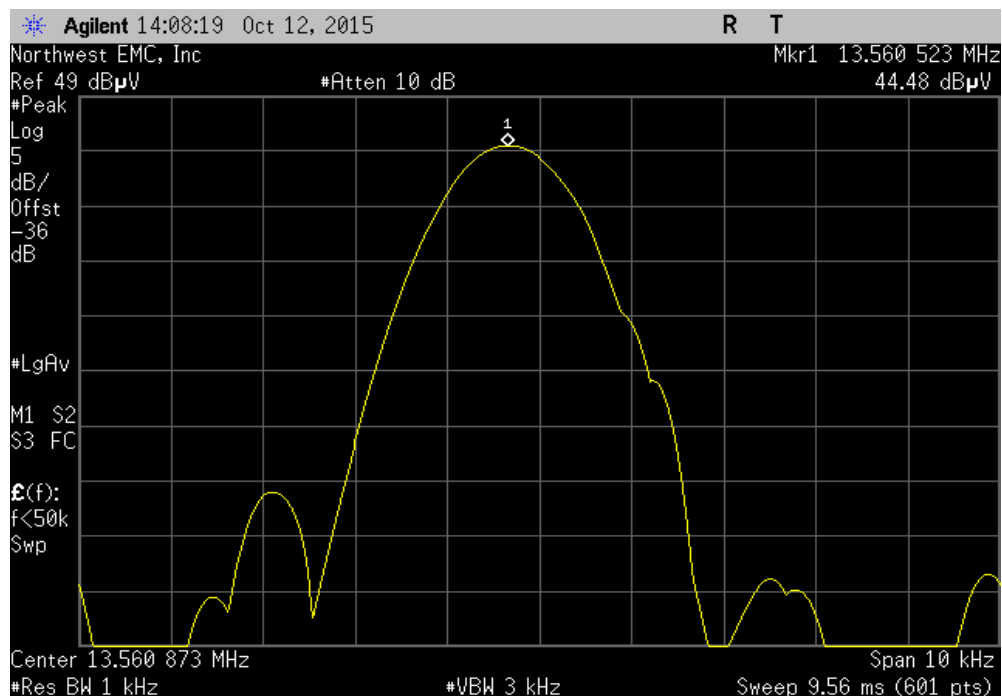


FREQUENCY STABILITY

NFC, 13.56 MHz, Extreme Temperature +40°C, Start Up						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.56054	13.56	0.004	±0.01	Pass	

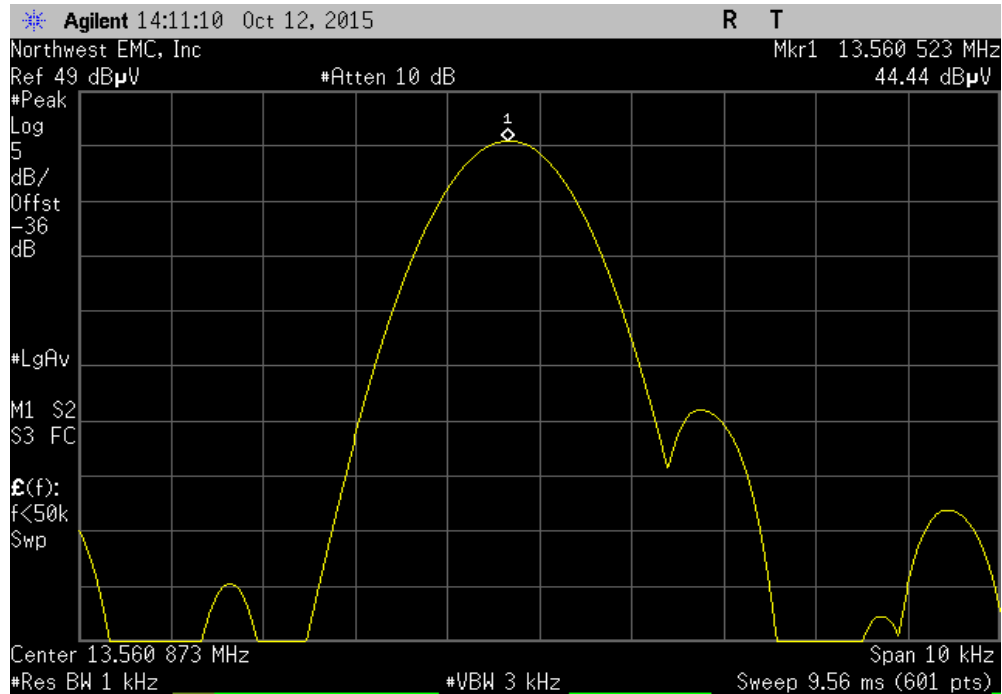


NFC, 13.56 MHz, Extreme Temperature +40°C, After 2 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.560523	13.56	0.004	±0.01	Pass	

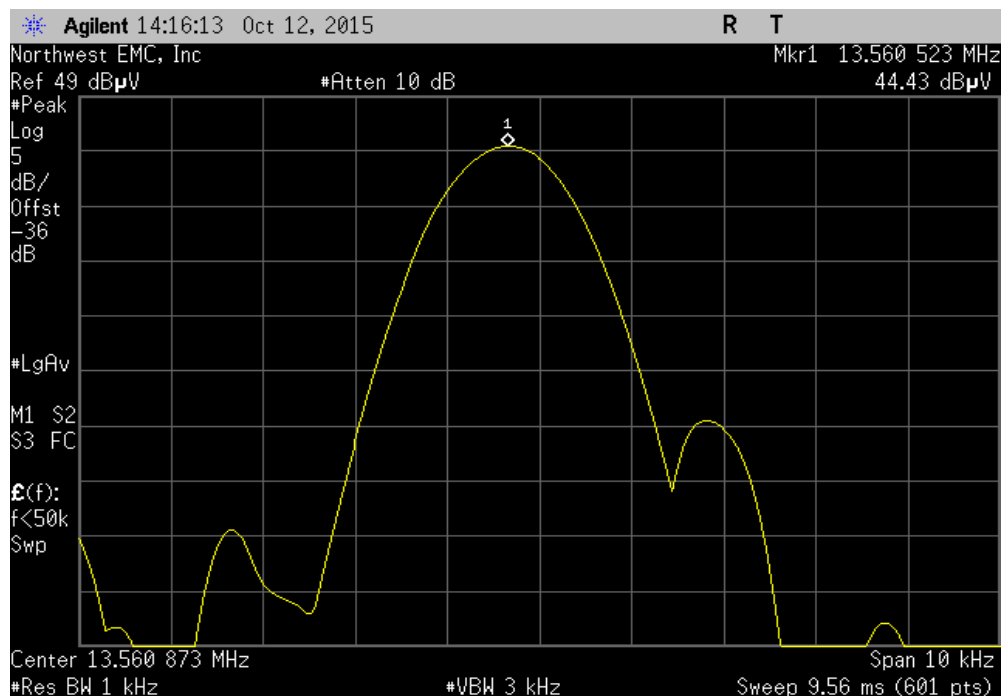


FREQUENCY STABILITY

NFC, 13.56 MHz, Extreme Temperature +40°C, After 5 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.560523	13.56	0.004	±0.01	Pass	

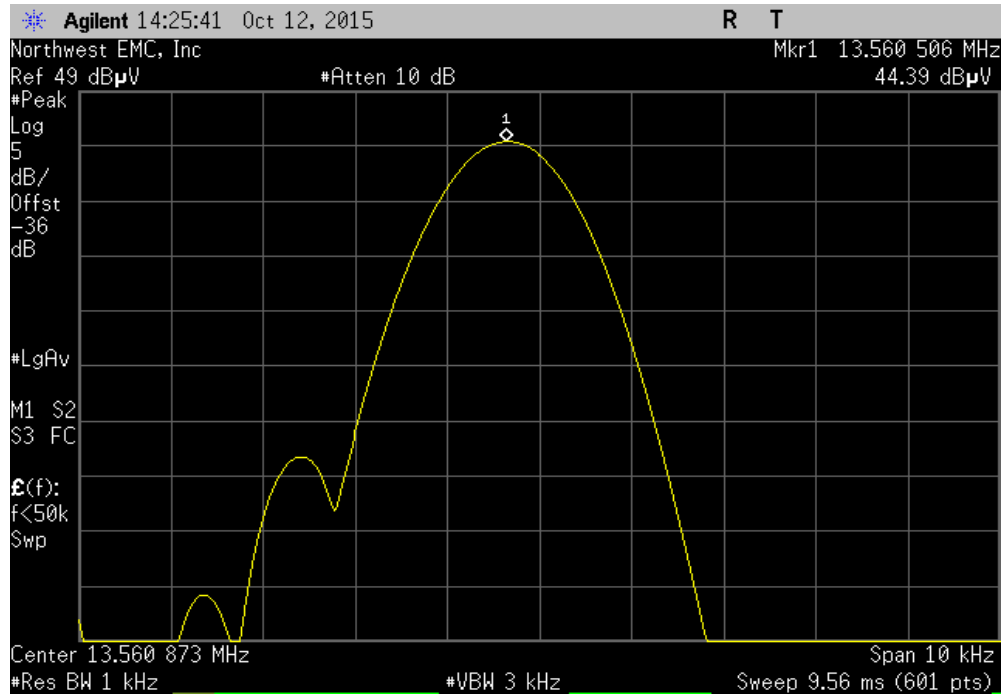


NFC, 13.56 MHz, Extreme Temperature +40°C, After 10 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.560523	13.56	0.004	±0.01	Pass	

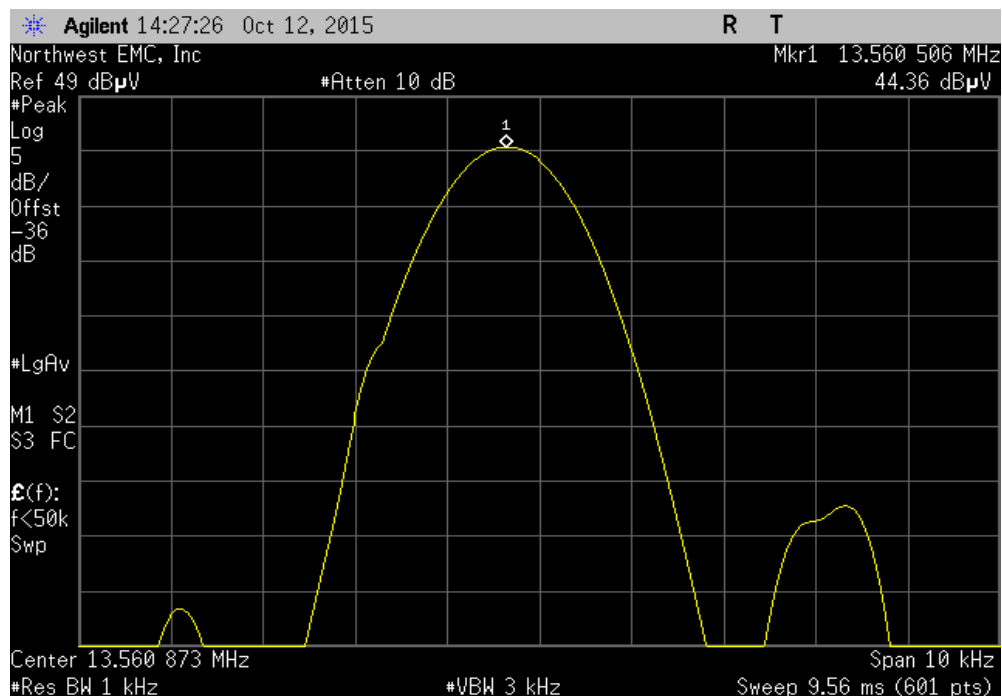


FREQUENCY STABILITY

NFC, 13.56 MHz, Extreme Temperature +50°C, Start Up						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.560506	13.56	0.004	±0.01	Pass	

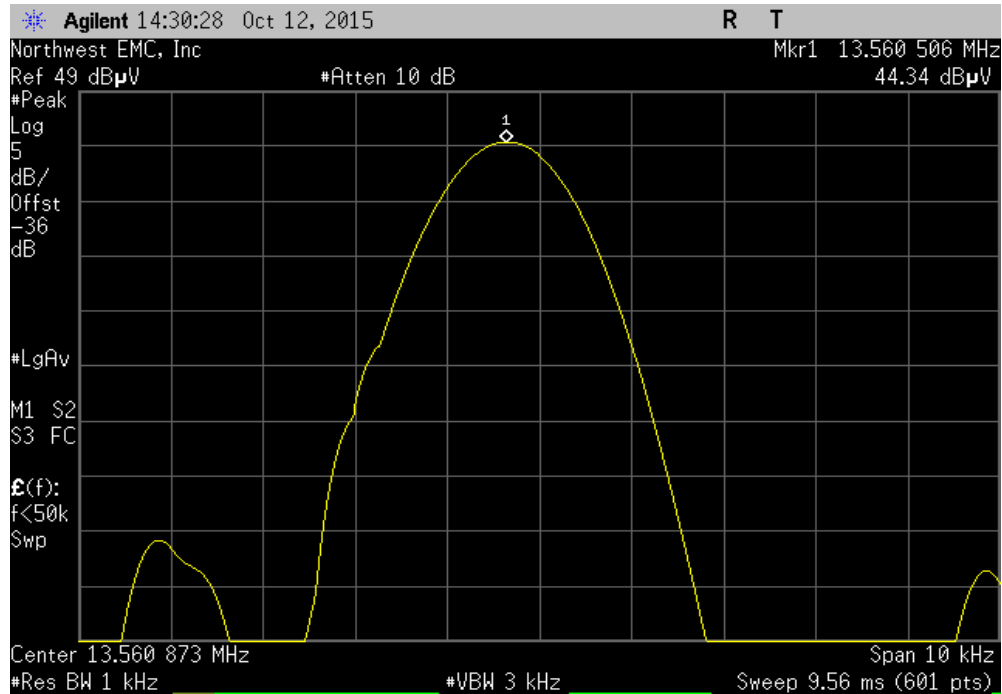


NFC, 13.56 MHz, Extreme Temperature +50°C, After 2 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.560506	13.56	0.004	±0.01	Pass	

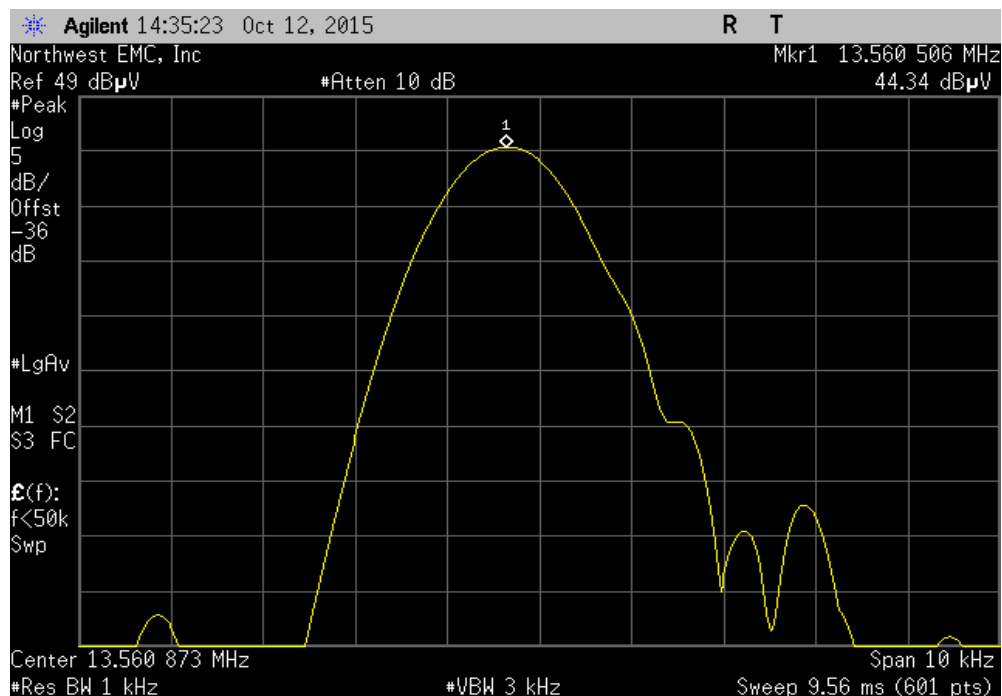


FREQUENCY STABILITY

NFC, 13.56 MHz, Extreme Temperature +50°C, After 5 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.560506	13.56	0.004	±0.01	Pass	

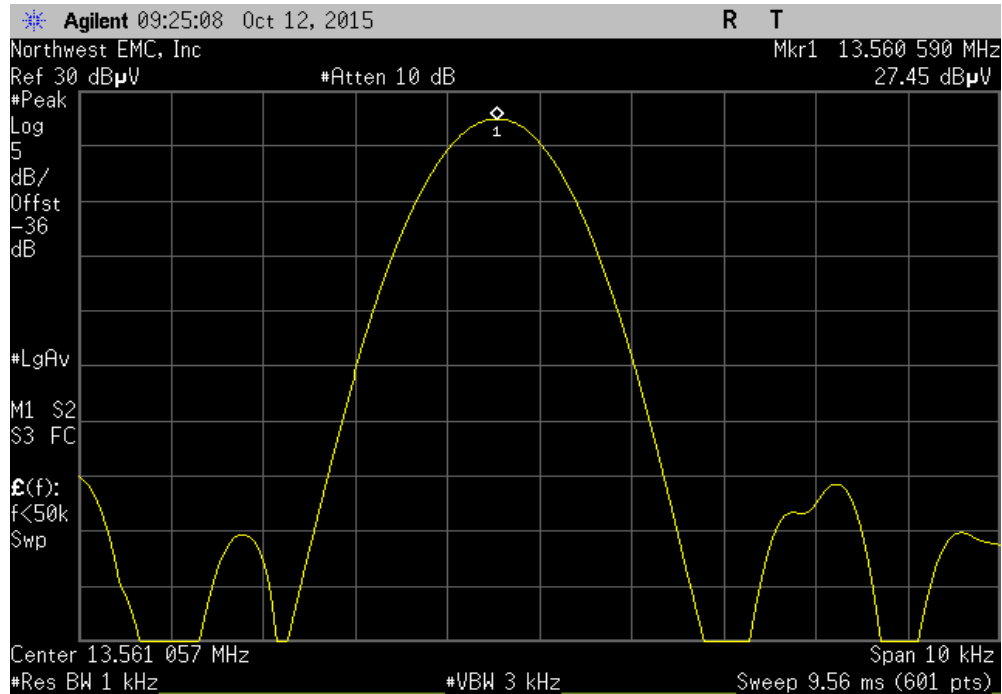


NFC, 13.56 MHz, Extreme Temperature +50°C, After 10 Minutes						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.560506	13.56	0.004	±0.01	Pass	

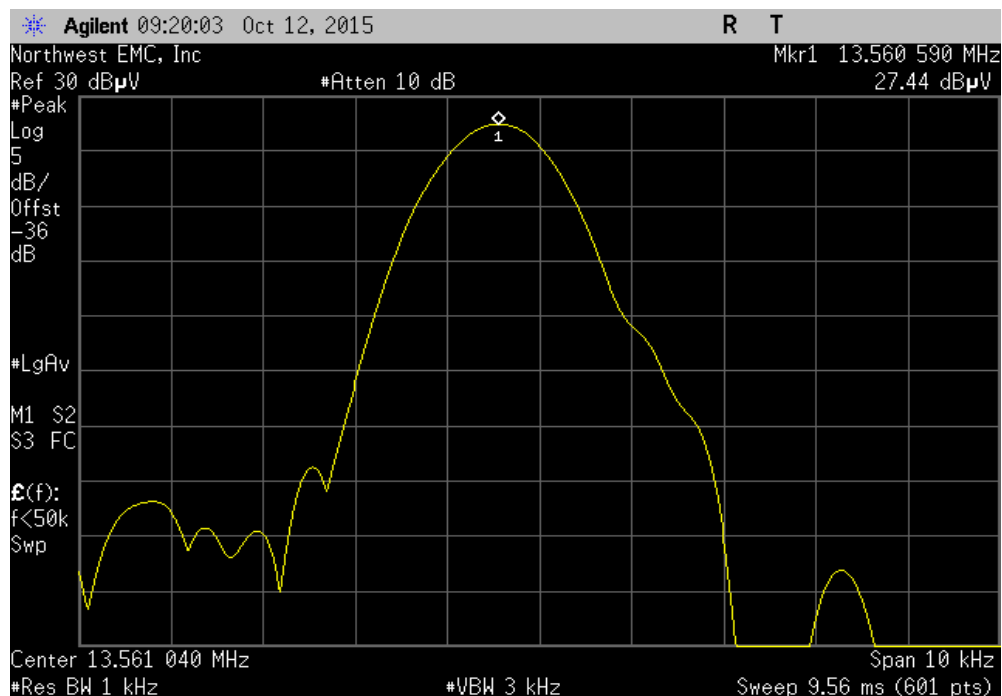


FREQUENCY STABILITY

NFC, 13.56 MHz, Extreme Voltage +15%, Start Up						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.56059	13.56	0.004	±0.01	Pass	



NFC, 13.56 MHz, Normal Voltage, Start Up						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.56059	13.56	0.004	±0.01	Pass	



FREQUENCY STABILITY

NFC, 13.56 MHz, Extreme Voltage -15%, Start Up						
	Measured Value (MHz)	Assigned Value (MHz)	Error (%)	Limit (%)	Results	
	13.560573	13.56	0.004	±0.01	Pass	

