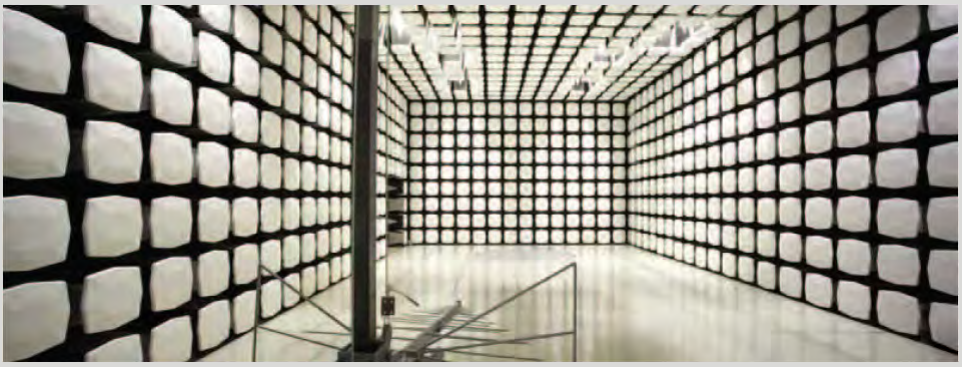
TE Connectivitiy / ADC Telecommunications

Prism HDM 1900 MHz / 2100 MHz SISO RF Module

FCC 24E:2014

Report #: TECO0017



Report Prepared By Northwest EMC Inc.

NORTHWEST EMC – (888) 364-2378 – www.nwemc.com

California – Minnesota – Oregon – New York – Washington

CERTIFICATE OF TEST

WTD 12.5.23

Last Date of Test: July 18, 2014
TE Connectivitiy / ADC Telecommunications
Models: Prism HDM 1900 MHz / 2100 MHz SISO RF Module

Emissions

Test Description	Specification	Test Method	Pass/Fail
Output Power	FCC 24E:2014, FCC 2.1046	ANSI/TIA/EIA-603-C-2004	Pass
Band Edge Compliance	FCC 24E:2014, FCC 2.1051	ANSI/TIA/EIA-603-C-2004	Pass
Out of Band Emissions - Conducted	FCC 24E:2014, FCC 2.1051	ANSI/TIA/EIA-603-C-2004	Pass
Intermodulation	FCC 24E:2014, FCC 2.1051	ANSI/TIA/EIA-603-C-2004	Pass
Frequency Stability	FCC 24E:2014, FCC 2.1055	ANSI/TIA/EIA-603-C-2004	Pass
Conducted Output Power	FCC 24E:2014, FCC 2.1046	ANSI/TIA/EIA-603-C-2004	Pass
Occupied Bandwidth	FCC 24E:2014, FCC 2.1049	ANSI/TIA/EIA-603-C-2004	Pass
Spurious Radiated Emissions	FCC 24E:2014, FCC 2.1053	ANSI/TIA/EIA-603-C-2004	Pass
Peak to Average Ratio	FCC 24E:2014, FCC 2.1053	ANSI/TIA/EIA-603-C-2004	Pass

Deviations From Test Standards

None

Approved By:

Tim O'Shea, Operations Manager

NVLAP Lab Code: 200881-0

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.

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. This Report may only be duplicated in its entirety. 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.

NORTHWEST EMC
REV 2012.08.02

REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.

NORTHWEST EMC

REV 2012.05.24

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 Guide 65 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

KCC / 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.

Hong Kong

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

Vietnam

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

Russia

GOST – Accredited by Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC to perform EMC and Hygienic testing for Information Technology products to GOST standards.

SCOPE

For details on the Scopes of our Accreditations, please visit:
http://www.nwemc.com/accreditations/

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 listed below. 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 16-4-1 as applicable), and are available upon request.

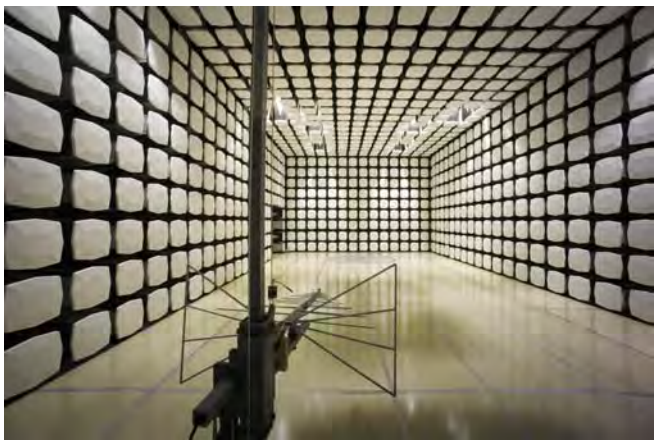
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

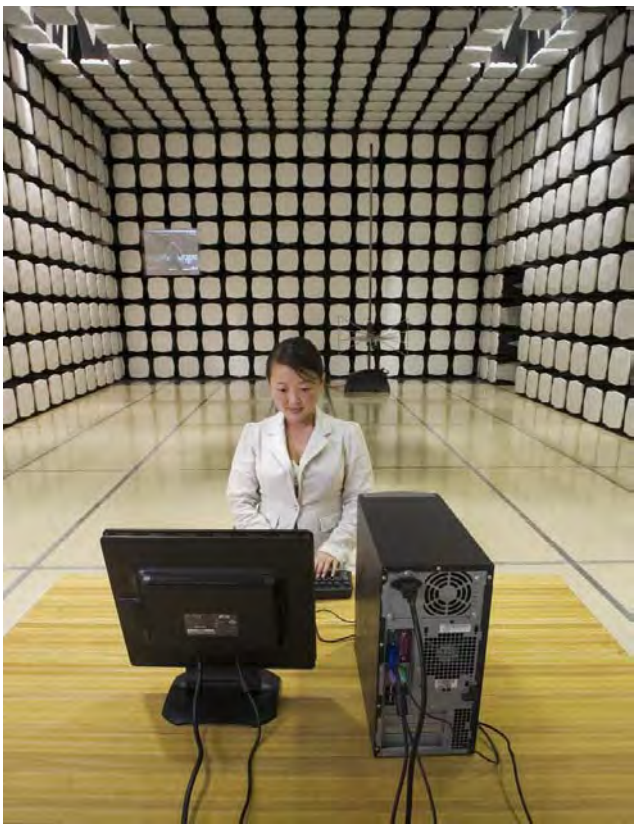
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.12	-0.01
Amplitude Accuracy (dB)	0.49	-0.49
Conducted Power (dB)	0.41	-0.41
Radiated Power via Substitution (dB)	0.69	-0.68
Temperature (degrees C)	0.81	-0.81
Humidity (% RH)	2.89	-2.89
Field Strength (dB)	3.80	-3.80
AC Powerline Conducted Emissions (dB)	2.94	-2.94

FACILITIES

REV 2013.06.28

Oregon	**California**	**New York**	**Minnesota**	**Washington**
Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 685-0796	Labs MN01-08 9349 W Broadway Ave. Brooklyn Park, MN 55445 (763) 425-2281	Labs NC01-05,SU02,SU07 19201 120th Ave. NE Bothell, WA 98011 (425) 984-6600
VCCI				
A-0108	A-0029		A-0109	A-0110
Industry Canada				
2834D-1, 2834D-*2*	2834B-1, 2834B-2, 2834B-3		2834E-1	2834F-1
NVLAP				
NVLAP Lab Code: 200630-0	NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200629-0





PRODUCT DESCRIPTION

WTD 12.5.23

Client and Equipment Under Test (EUT) Information

Company Name:	TE Connectivitiy / ADC Telecommunications
Address:	1187 Park Place
City, State, Zip:	Shakopee, MN 55379
Test Requested By:	Joshua Wittman
Model:	Prism HDM 1900 MHz / 2100 MHz SISO RF Module
First Date of Test:	July 15, 2014
Last Date of Test:	July 18, 2014
Receipt Date of Samples:	April 09, 2014
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):
Prism HDM 1900 MHz / 2100 MHz SISO RF Module. The Prism HDM is an industrial signal booster which is used to enhance wireless networks in outdoor locations and large venues.

Testing Objective:
To demonstrate compliance to FCC Part 24.

CONFIGURATIONS

Configuration TECO0013- 1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
RF Amplifier	TE Connectivity / ADC Telecommunications	FWP-84MTA4MMOD	None

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
RF Signal Generator	Aeroflex	IFR 3413	341006/252
Power Supply	Mean Well	SE-600-48	EB11101765
IO Control Device	TE Connectivity / ADC Telecommunications	SVT-GU-1011	None
30 dB attenuator	Aeroflex	57-30-43	RA434
RF Signal Generator	Aeroflex	IFR 3413	341006/056
30 dB attenuator	Aeroflex	86-30-12 DC -22 GHz	369
Laptop	Lenovo	T500	L3-AFD7K 09/04
Laptop Supply	Lenovo	42T4418	11S42T4418Z1ZGWG19659N

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power	No	> 3m	No	RF Amplifier	AC Mains
Fiber	No	> 3m	No	RF Amplifier	IO Control Device
RF	Yes	0.8m	No	RF Amplifier	30 dB attenuator
RF	Yes	1.8m	No	IO Control Device	RF Signal Generator
AC Power x2	No	1.8m	No	RF Signal Generator	AC Mains
AC Power	No	1.8m	No	Power Supply	AC Mains
DC Power	No	2.8m	Yes	IO Control Device	Power Supply
AC Power	No	1.8m	No	Laptop Supply	AC Mains
DC Power	No	1.8m	Yes	Laptop	Laptop Supply
Ethernet	No	1.5m	No	Laptop	IO Control Device
RF	Yes	0.8m	No	RF Amplifier	30 dB attenuator
RF	Yes	0.9m	No	IO Control Device	RF Signal Generator
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATIONS

Configuration TECO0013- 2

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
RF Amplifier	TE Connectivity / ADC Telecommunications	FWP-84MTA4MMOD	None

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
30 dB attenuator	Aeroflex	57-30-43	NL616
30 dB attenuator	Aeroflex	57-30-43	RA434

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
RF Signal Generator	Aeroflex	IFR 3413	341006/252
Power Supply	Mean Well	SE-600-48	EB11101765
IO Control Device	TE Connectivity / ADC Telecommunications	SVT-GU-1011	None
RF Signal Generator	Aeroflex	IFR 3413	341006/056
Laptop	Lenovo	T500	L3-AFD7K 09/04
Laptop Supply	Lenovo	42T4418	11S42T4418Z1ZGWG19659N

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Power	No	> 3m	No	RF Amplifier	AC Mains
Fiber	No	> 3m	No	RF Amplifier	IO Control Device
RF	Yes	0.8m	No	RF Amplifier	30 dB attenuator
RF	Yes	1.8m	No	IO Control Device	RF Signal Generator
AC Power x2	No	1.8m	No	RF Signal Generator	AC Mains
AC Power	No	1.8m	No	Power Supply	AC Mains
DC Power	No	2.8m	Yes	IO Control Device	Power Supply
AC Power	No	1.8m	No	Laptop Supply	AC Mains
DC Power	No	1.8m	Yes	Laptop	Laptop Supply
Ethernet	No	1.5m	No	Laptop	IO Control Device
RF	Yes	0.8m	No	RF Amplifier	30 dB attenuator
RF	Yes	0.9m	No	IO Control Device	RF Signal Generator
Ground	No	1.3m	No	RF Amplifier	Ground
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATIONS

Configuration TECO0017- 1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
RF Amplifier	TE Connectivity / ADC Telecommunications	FWP-441T841MOD	None

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Signal Generator	Tektronix	Aeroflex IFR 3413	341006/252
Laptop	Dell	Latitude D630	34562243089
IO Control Device	TE Connectivitiy / ADC Telecommunications	SVT-GU-1011	MIN-1301041310-002
Laptop AC Adapter	Dell	PA-1900-02D	CN-09T215-55R-0526
DC Power Supply	Mean Well	SE-600-48	EB11101765
30 dB Attenuator 1	Aeroflex / Weinschel	57-30-43	RA434
30 dB Attenuator 2	Aeroflex / Weinschel	40-0052	N/A

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Fiber Optic Cable	No	>3m	No	IO Control Device	RF Amplifier
AC Power Cable (Laptop)	No	85cm	No	AC Mains	Laptop AC Adapter
DC Power Cable (Laptop)	No	1.8m	No	Laptop AC Adapter	Laptop
Ethernet Cable	No	160cm	No	Laptop	IO Control Device
AC Power Cable (DC Power Supply)	No	225cm	No	AC Mains	DC Power Supply
AC Power Cable (Signal Generator)	No	180cm	No	AC Mains	Signal Generator
DC Power Cable	No	290cm	No	DC Power Supply	IO Control Device
Coaxial Cable	Yes	150cm	No	Signal Generator	IO Control Device
AC Power Cable (Prism)	No	500cm	No	RF Amplifier	AC Mains
Coaxial Cable	Yes	0.8m	No	RF Amplifier	30 dB Attenuator 1
Coaxial Cable	Yes	0.9m	No	RF Amplifier	30 dB Attenuator 2
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATIONS

Configuration TECO0017- 2

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
RF Amplifier	TE Connectivity / ADC Telecommunications	FWP-441T841MOD	None

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
30 dB Attenuator 1	Aeroflex / Weinschel	57-30-43	RA434
30 dB Attenuator 3	Aeroflex / Weinschel	57-30-43	NL616

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Signal Generator	Tektronix	Aeroflex IFR 3413	341006/252
Laptop	Dell	Latitude D630	34562243089
IO Control Device	TE Connectivitiy / ADC Telecommunications	SVT-GU-1011	MIN-1301041310-002
Laptop AC Adapter	Dell	PA-1900-02D	CN-09T215-55R-0526
DC Power Supply	Mean Well	SE-600-48	EB11101765

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Fiber Optic Cable	No	>3m	No	IO Control Device	RF Amplifier
AC Power Cable (Laptop)	No	85cm	No	AC Mains	Laptop AC Adapter
DC Power Cable (Laptop)	No	1.8m	No	Laptop AC Adapter	Laptop
Ethernet Cable	No	160cm	No	Laptop	IO Control Device
AC Power Cable (DC Power Supply)	No	225cm	No	AC Mains	DC Power Supply
AC Power Cable (Signal Generator)	No	180cm	No	AC Mains	Signal Generator
DC Power Cable	No	290cm	No	DC Power Supply	IO Control Device
Coaxial Cable	Yes	150cm	No	Signal Generator	IO Control Device
AC Power Cable (Prism)	No	500cm	No	RF Amplifier	AC Mains
Coaxial Cable	Yes	0.8m	No	RF Amplifier	30 dB Attenuator 1
Coaxial Cable	Yes	0.9m	No	RF Amplifier	30 dB Attenuator 2
GND	No	0.4m	No	RF Amplifier	GND
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

MODIFICATIONS

WTD 12.5.23

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	4/9/2014	Occupied Bandwidth	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	4/9/2014	Peak to Average Ratio	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	4/9/2014	Output Power	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	4/10/2014	Band Edge Compliance	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	4/11/2014	Intermodulation	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.
6	4/11/2014	Out of Band Emissions-Conducted	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.
7	4/14/2014	Frequency Stability	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.
8	7/15/2014	Conducted Output Power	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.
9	7/15/2014	Occupied Bandwidth (26 dB)	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.
10	7/16/2014	Peak to Average Ratio	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.
11	7/16/2014	Out of Band Emissions - Conducted	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.
12	7/16/2014	Intermodulation	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.
13	7/16/2014	Band Edge Compliance	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.
14	7/18/2014	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

DUTY CYCLE

TEST DESCRIPTION

The Duty Cycle (x) were measured for each of the EUT operating modes. The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used

The duty cycle was calculated by dividing the transmission pulse duration (T) by the total period of a single on and total off time.

The EUT operates at 100% Duty Cycle.

DUTY CYCLE

TEST DESCRIPTION

The Duty Cycle (x) were measured for each of the EUT operating modes. The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used

The duty cycle was calculated by dividing the transmission pulse duration (T) by the total period of a single on and total off time.

The EUT operates at 100% Duty Cycle.

OUTPUT POWER

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
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/3/2014	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	9/26/2013	12
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	5/15/2012	24

TEST DESCRIPTION

The Average (RMS) output power was measured with the EUT set to the parameters called out in the data sheets. The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. Prior to making the measurements the setup, including cables and attenuators were calibrated and added into the reference level offset.

OUTPUT POWER

EUT:	Prism HDM 1900 MHz / 2100 MHz SISO RF Module			**Work Order:**	TECO0013
Serial Number:	None			**Date:**	04/09/14
Customer:	TE Connectivity / ADC Telecommunications			**Temperature:**	24.2°C
Attendees:	None			**Humidity:**	21%
Project:	None			**Barometric Pres.:**	1013.5
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
FCC 24E:2014	ANSI/TIA/EIA-603-C-2004

COMMENTS

Customer provided a high wattage 30 dB attenuator that was added into the reference level offset.

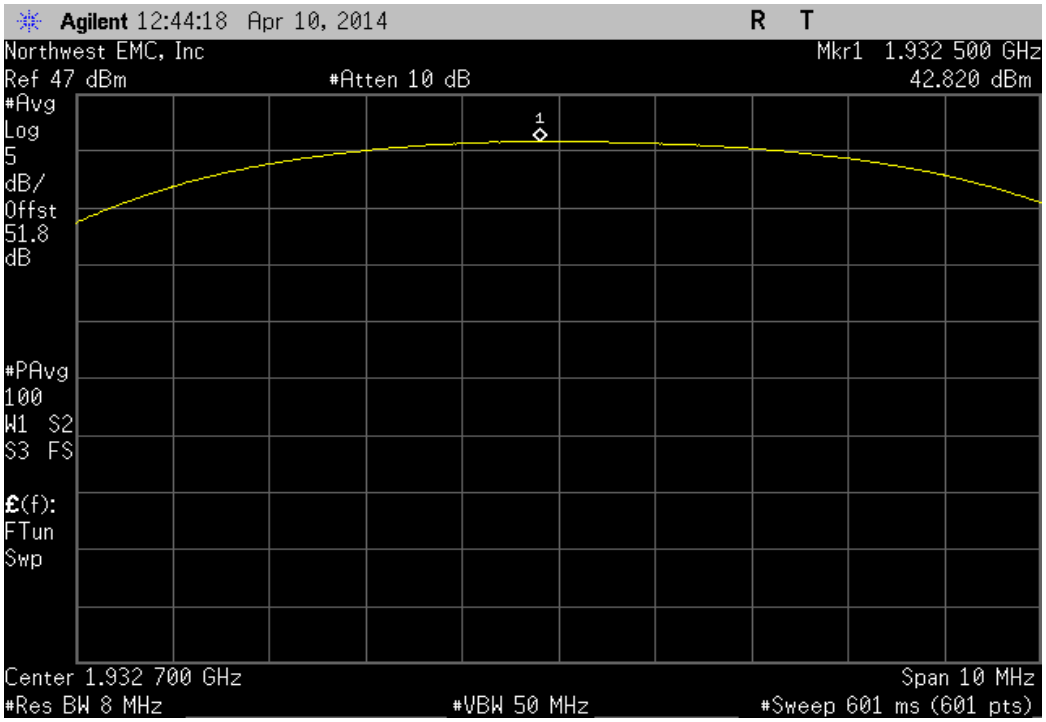
DEVIATIONS FROM TEST STANDARD

None

Configuration #	1	Signature	Trevor Buls

		Value	Limit	Result
LTE 5 MHz				
	Low Channel 1932.7 MHz	42.820 dBm	< 1640 W	Pass
	Mid Channel 1962.5 MHz	43.027 dBm	< 1640 W	Pass
	High Channel 1992.4 MHz	42.418 dBm	< 1640 W	Pass
LTE 10 MHz				
	Low Channel 1935 MHz	43.063 dBm	< 1640 W	Pass
	Mid Channel 1962.5 MHz	42.809 dBm	< 1640 W	Pass
	High Channel 1990 MHz	41.772 dBm	< 1640 W	Pass

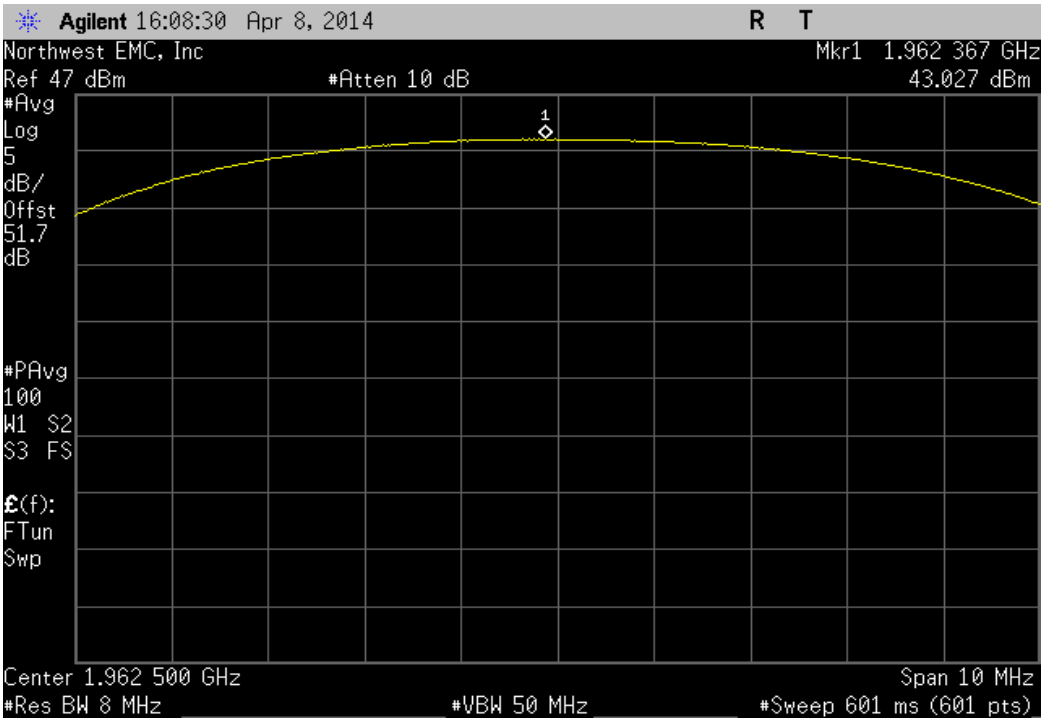
LTE 5 MHz, Low Channel 1932.7 MHz						
				Value	Limit	Result
				42.820 dBm	< 1640 W	Pass



OUTPUT POWER

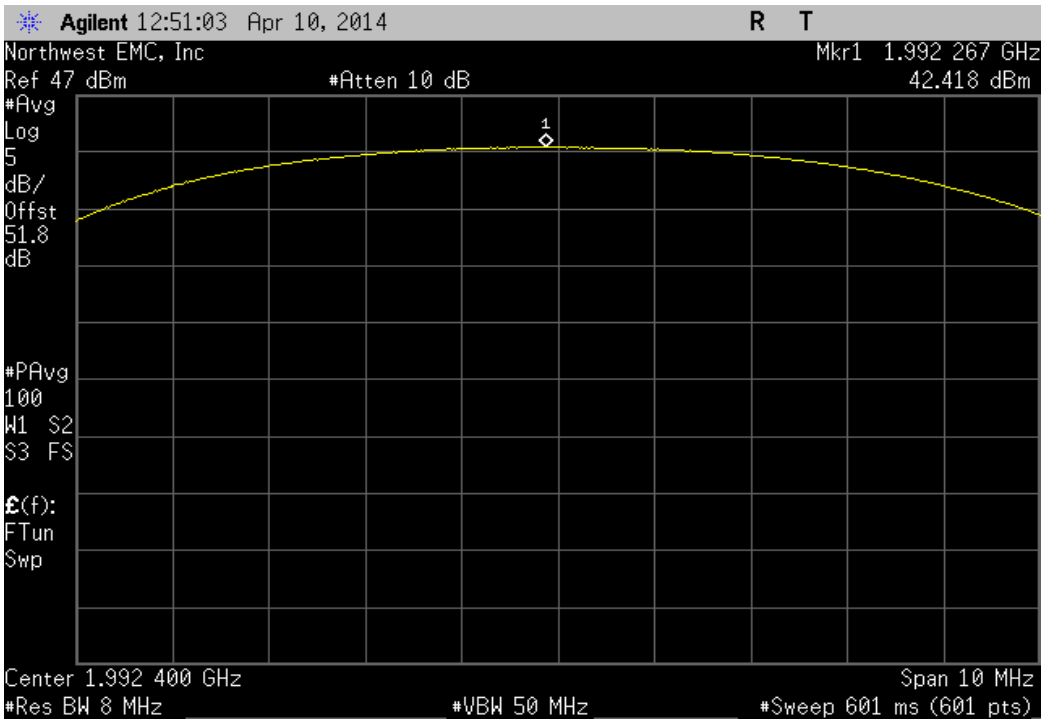
LTE 5 MHz, Mid Channel 1962.5 MHz

				Value	Limit	Result
				43.027 dBm	< 1640 W	Pass



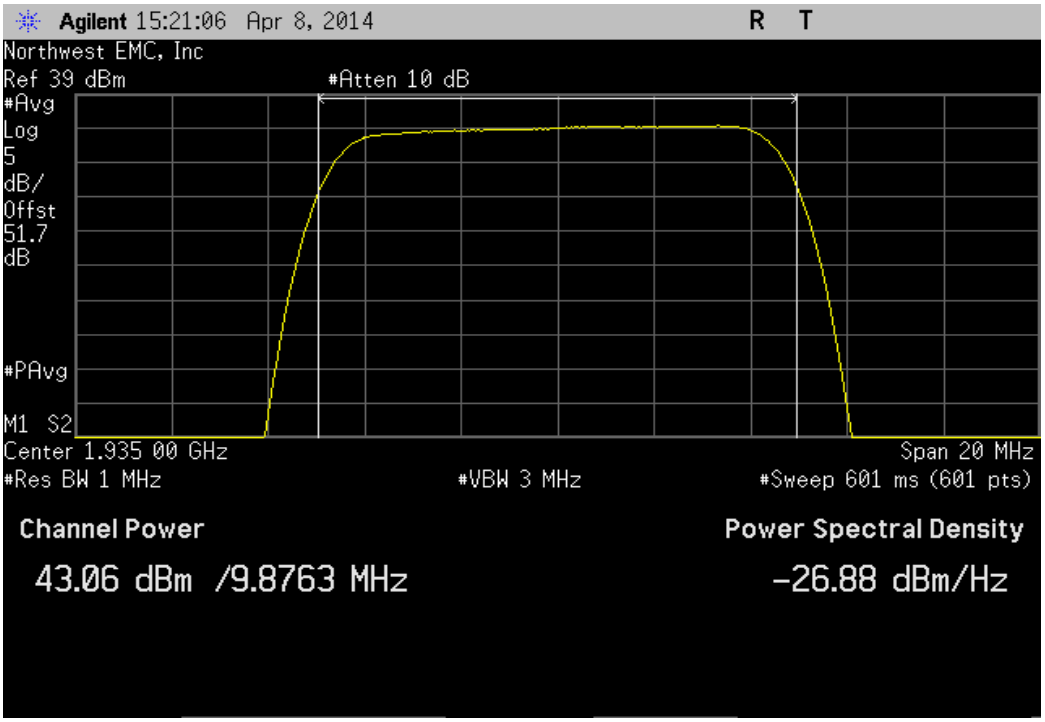
LTE 5 MHz, High Channel 1992.4 MHz

				Value	Limit	Result
				42.418 dBm	< 1640 W	Pass

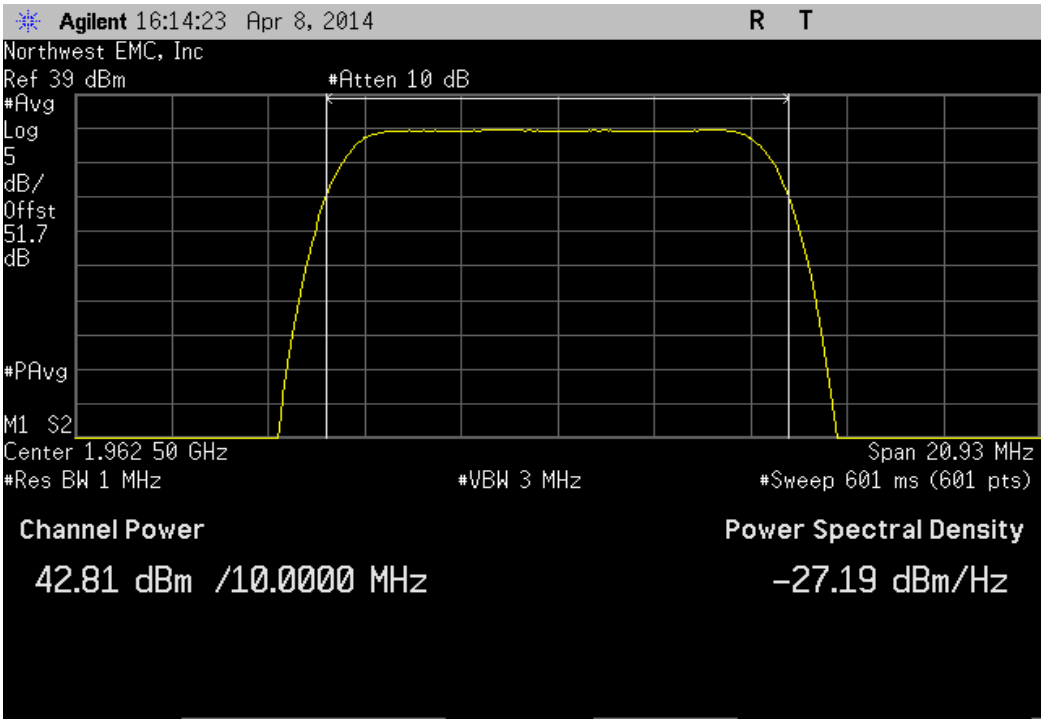


OUTPUT POWER

LTE 10 MHz, Low Channel 1935 MHz							
					Value	Limit	Result
					43.063 dBm	< 1640 W	Pass

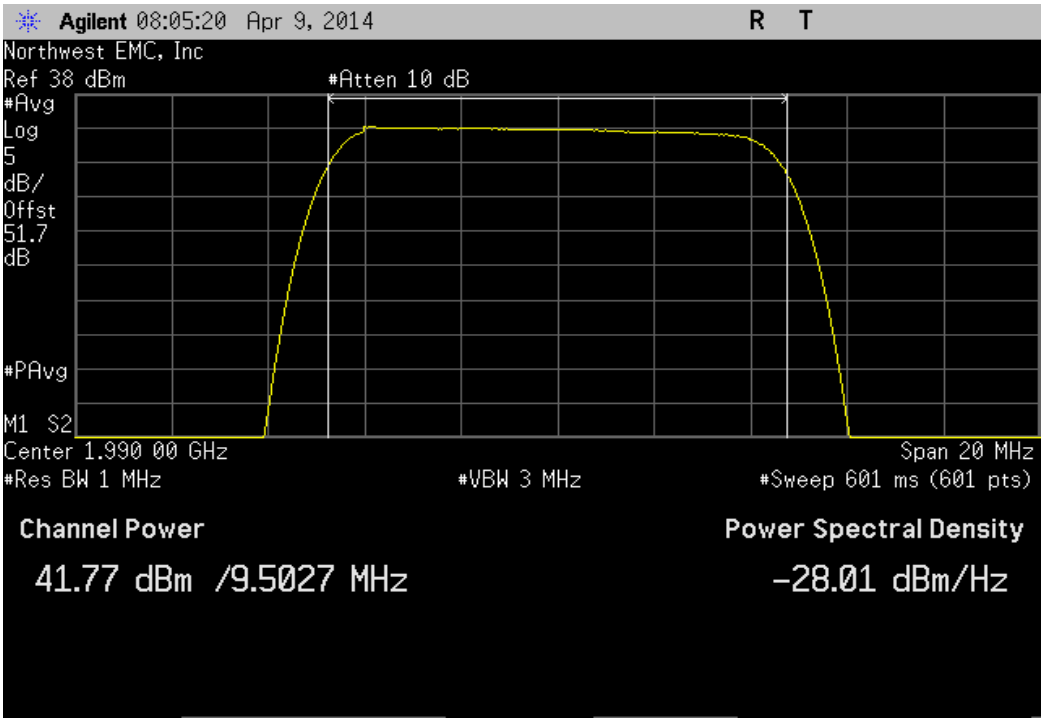


LTE 10 MHz, Mid Channel 1962.5 MHz							
					Value	Limit	Result
					42.809 dBm	< 1640 W	Pass



OUTPUT POWER

LTE 10 MHz, High Channel 1990 MHz						
				Value	Limit	Result
				41.772 dBm	< 1640 W	Pass



CONDUCTED OUTPUT POWER

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
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/3/2014	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	9/26/2013	12
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	4/28/2014	12

TEST DESCRIPTION

The Average (RMS) output power was measured with the EUT set to the Parameters called out in the data sheets. The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. Prior to making the measurements, the setup, including cables and attenuators were calibrated and added into the reference level offset.

CONDUCTED OUTPUT POWER

EUT:	Prism HDM 1900 MHz / 2100 MHz SISO RF Module			**Work Order:**	TECO0017
Serial Number:	None			**Date:**	07/15/14
Customer:	TE Connectivitiy / ADC Telecommunications			**Temperature:**	23.1°C
Attendees:	Josh Wittman			**Humidity:**	45%
Project:	None			**Barometric Pres.:**	1021.6
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
FCC 24E:2014	ANSI/TIA/EIA-603-C-2004

COMMENTS

A 30 dB high wattage attenuator was provided by the customer.

DEVIATIONS FROM TEST STANDARD

None

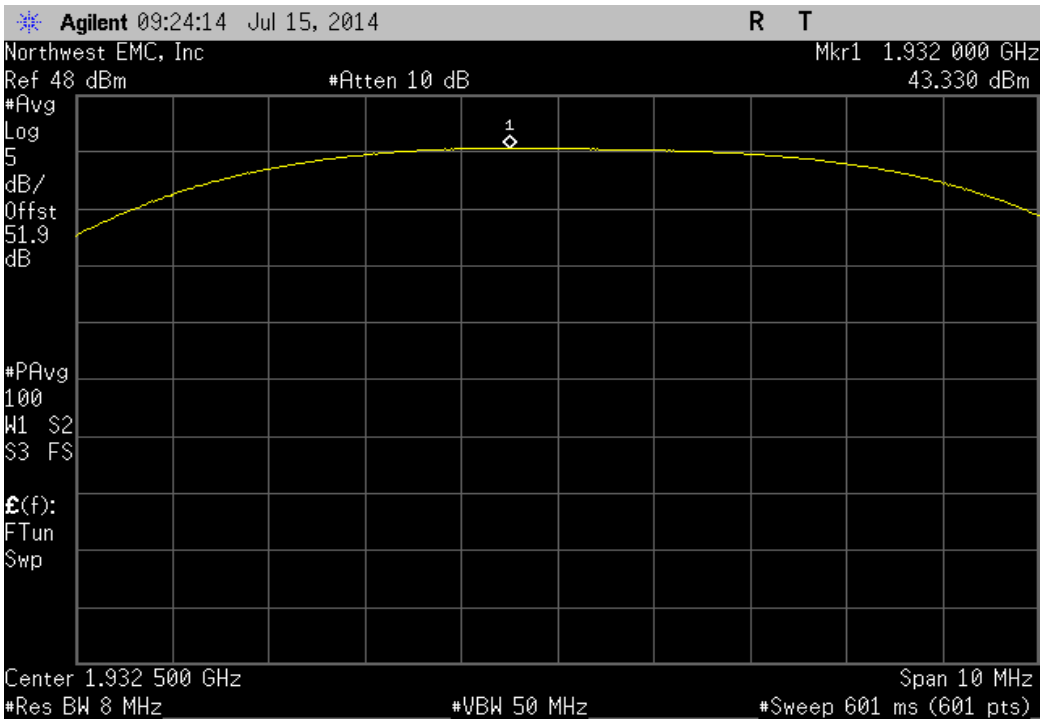
Configuration #	1	Signature	Trevor Buls

	Value	Limit	Result
WCDMA			
Low Channel 1932.5 MHz	43.33 dBm	< 1640 W	Pass
Mid Channel 1962.5 MHz	43.291 dBm	< 1640 W	Pass
High Channel 1992.5 MHz	43.165 dBm	< 1640 W	Pass

CONDUCTED OUTPUT POWER

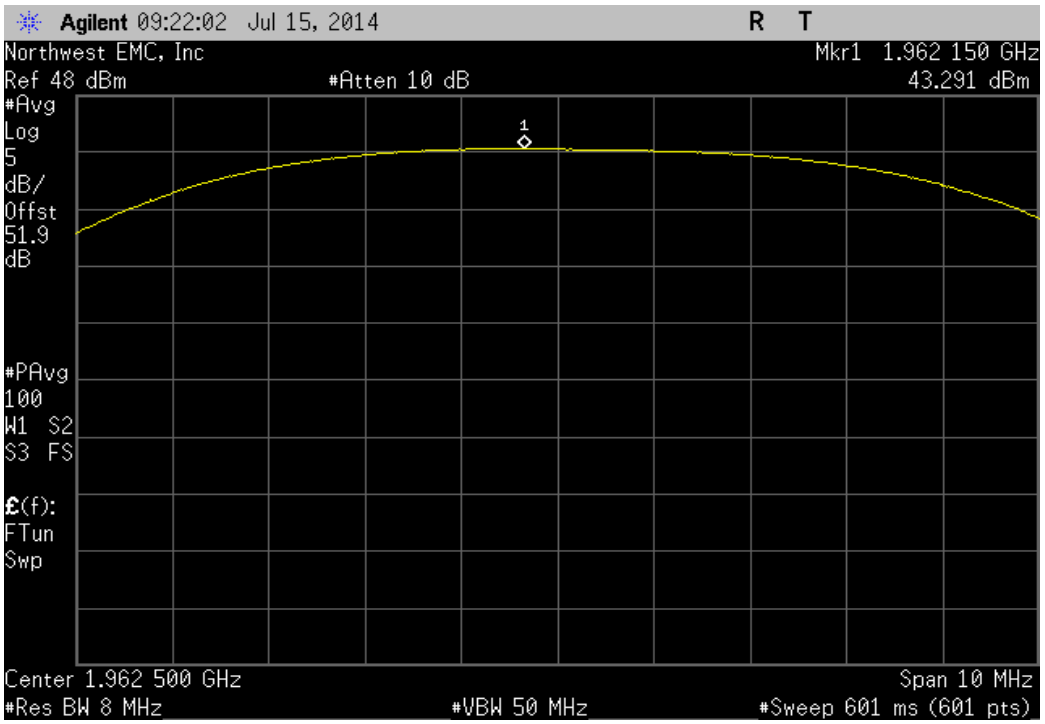
WCDMA, Low Channel 1932.5 MHz

				Value	Limit	Result
				43.33 dBm	< 1640 W	Pass



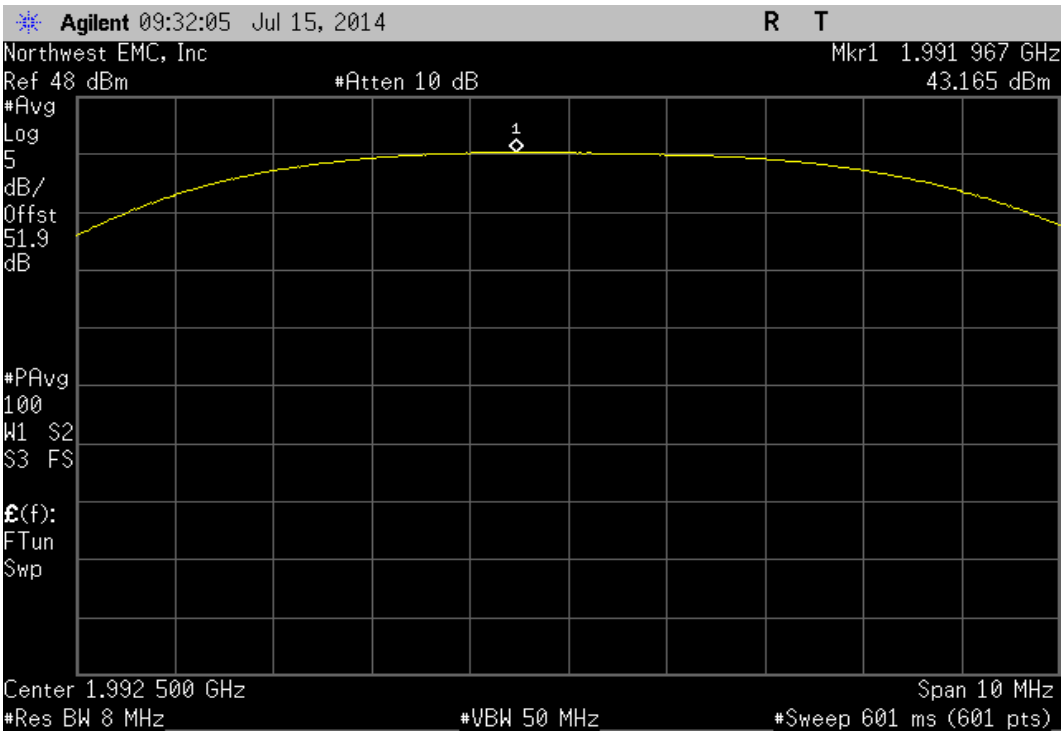
WCDMA, Mid Channel 1962.5 MHz

				Value	Limit	Result
				43.291 dBm	< 1640 W	Pass



CONDUCTED OUTPUT POWER

WCDMA, High Channel 1992.5 MHz							
					Value	**Limit**	**Result**
					43.165 dBm	< 1640 W	Pass



BAND EDGE COMPLIANCE

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
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/3/2014	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	9/26/2013	12
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	5/15/2012	24

TEST DESCRIPTION

The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in the available band. The channels closest to the band edges were selected. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge. The resolution bandwidth was set to approximately 1% of the measured emissions bandwidth. An average RMS detector was used to match the method used during Output Power. The screen capture shows the margin between the measured value and the -13 dBm limit at the band edge.

BAND EDGE COMPLIANCE

EUT:	Prism HDM 1900 MHz / 2100 MHz SISO RF Module			**Work Order:**	TECO0013
Serial Number:	None			**Date:**	04/10/14
Customer:	TE Connectivity / ADC Telecommunications			**Temperature:**	26.5°C
Attendees:	None			**Humidity:**	21%
Project:	None			**Barometric Pres.:**	1011.8
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
FCC 24E:2014	ANSI/TIA/EIA-603-C-2004

COMMENTS

Customer provided a high wattage 30 dB attenuator that was added into the reference level offset.

DEVIATIONS FROM TEST STANDARD

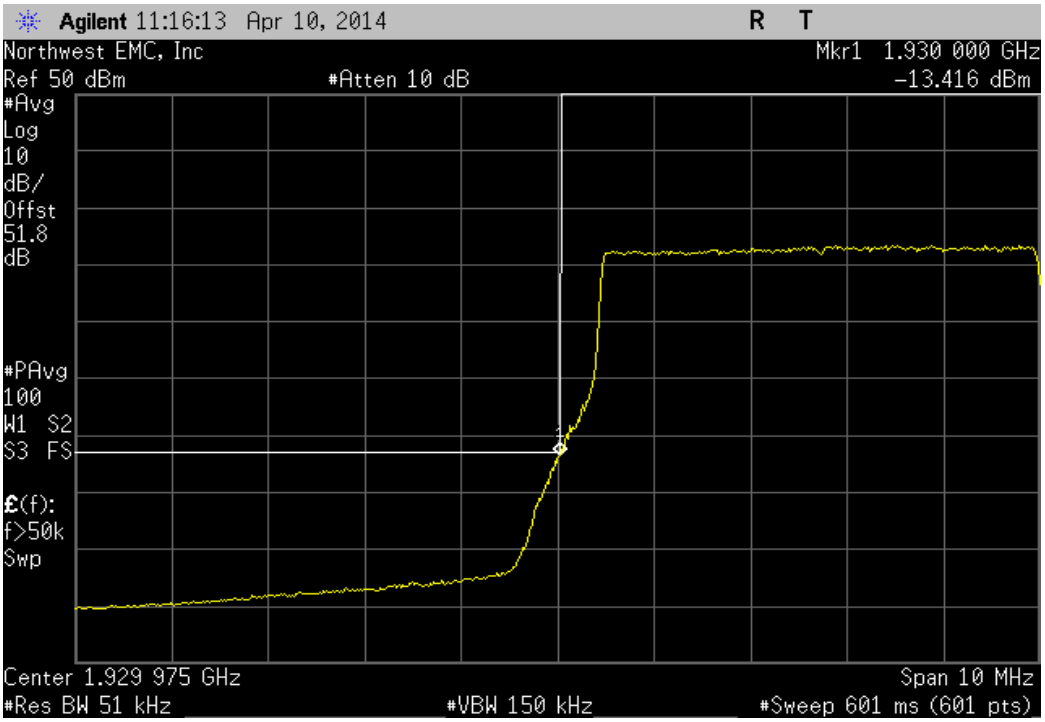
None

Configuration #	1	Signature	Trevor Buls

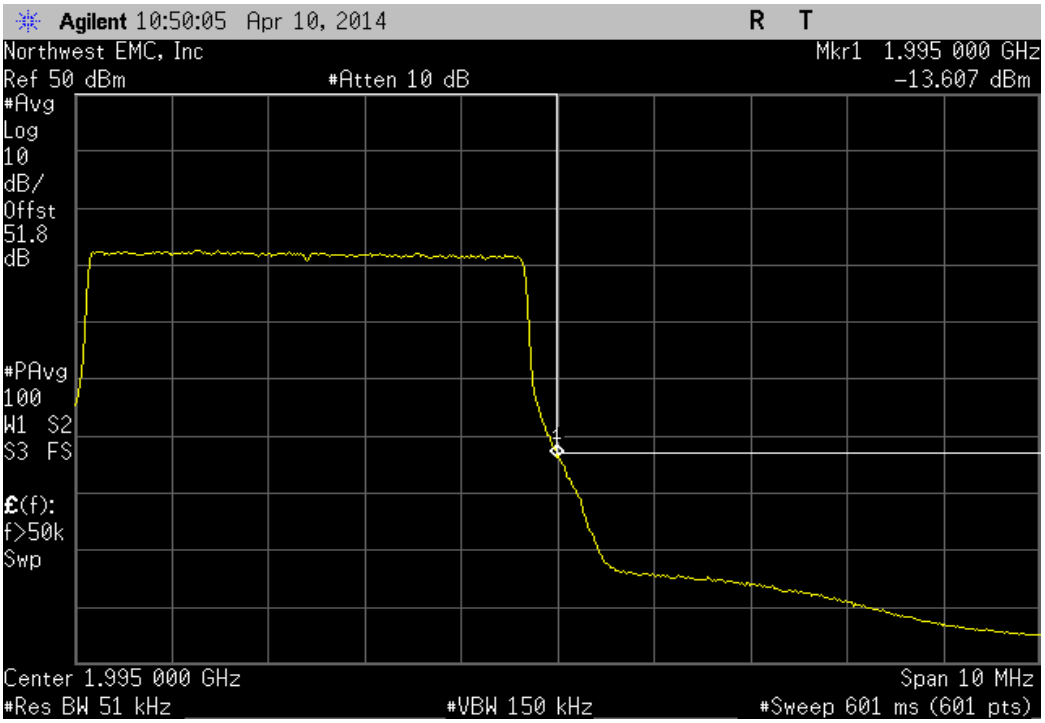
		Value (dBm)	Limit (dBm)	Result
LTE 5 MHz				
	Low Channel	-13.416	-13	Pass
	High Channel	-13.607	-13	Pass
LTE 10 MHz				
	Low Channel	-16.785	-13	Pass
	High Channel	-18.474	-13	Pass

BAND EDGE COMPLIANCE

LTE 5 MHz, Low Channel							
					Value (dBm)	Limit (dBm)	Result
					-13.416	-13	Pass

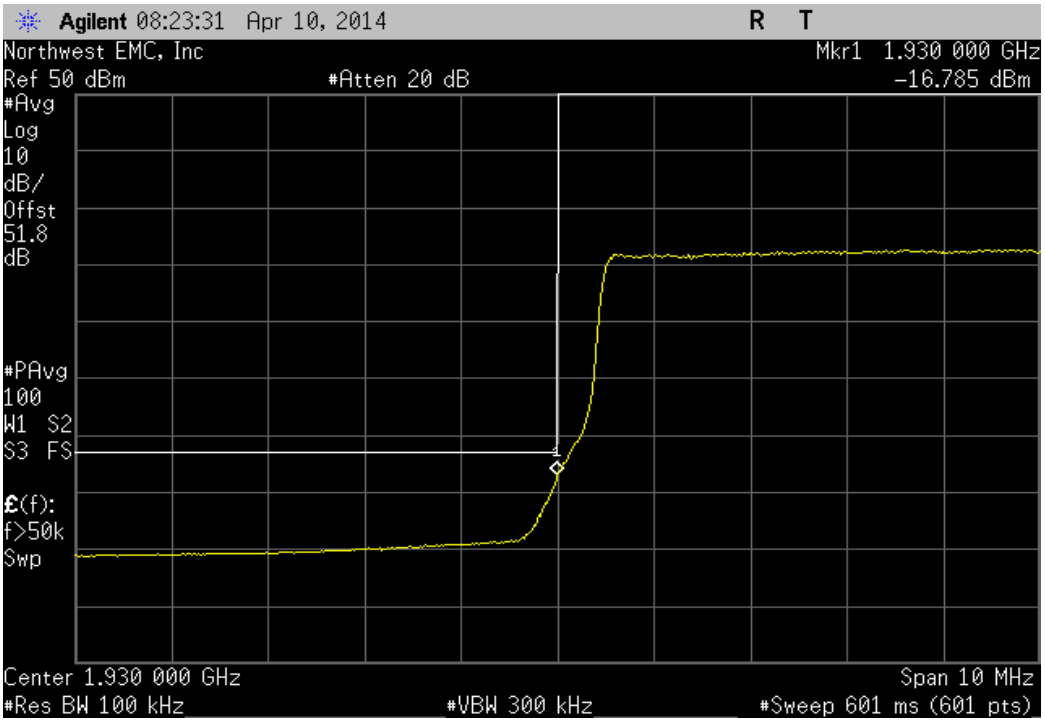


LTE 5 MHz, High Channel							
					Value (dBm)	Limit (dBm)	Result
					-13.607	-13	Pass

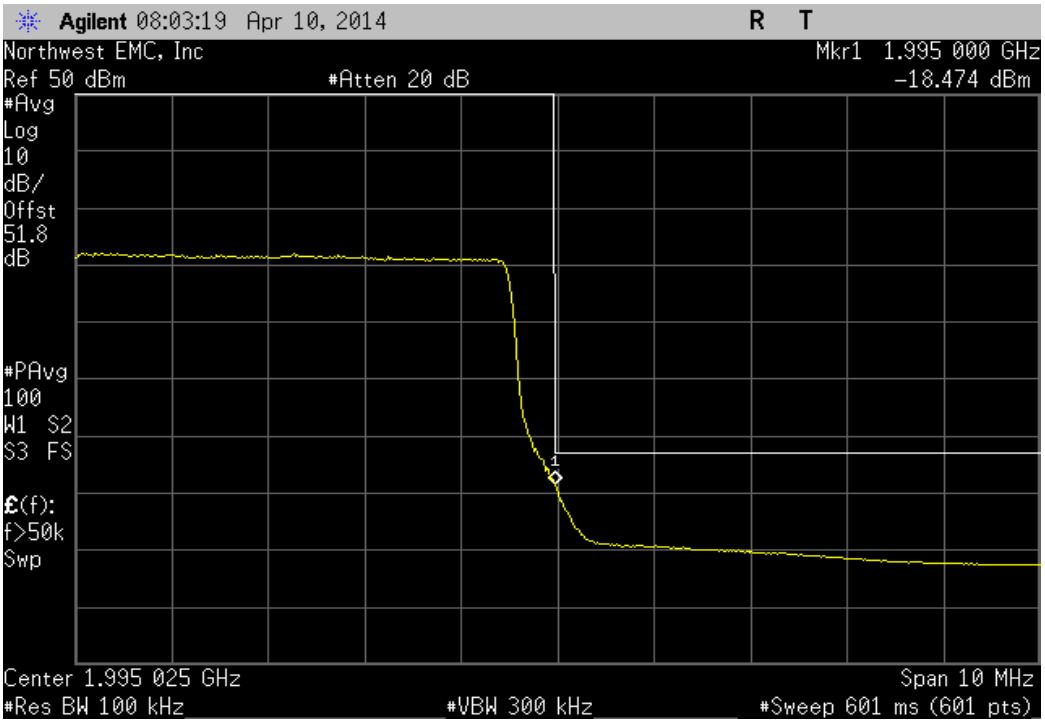


BAND EDGE COMPLIANCE

LTE 10 MHz, Low Channel							
					Value (dBm)	Limit (dBm)	Result
					-16.785	-13	Pass



LTE 10 MHz, High Channel							
					Value (dBm)	Limit (dBm)	Result
					-18.474	-13	Pass



BAND EDGE COMPLIANCE

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TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/3/2014	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	9/26/2013	12
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	4/28/2014	12

TEST DESCRIPTION

The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in the available band. The channels closest to the band edges were selected. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge. The resolution bandwidth was set to approximately 1% of the measured emissions bandwidth. An average RMS detector was used to match the method used during Output Power. The screen capture shows the margin between the measured value and the -13 dBm limit at the band edge.

BAND EDGE COMPLIANCE

EUT:	Prism HDM 1900 MHz / 2100 MHz SISO RF Module			**Work Order:**	TECO0017
Serial Number:	None			**Date:**	07/16/14
Customer:	TE Connectivitiy / ADC Telecommunications			**Temperature:**	23.3°C
Attendees:	None			**Humidity:**	43%
Project:	None			**Barometric Pres.:**	1020.6
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
FCC 24E:2014	ANSI/TIA/EIA-603-C-2004

COMMENTS

A 30 dB high wattage attenuator was provided by the customer. WCDMA.

DEVIATIONS FROM TEST STANDARD

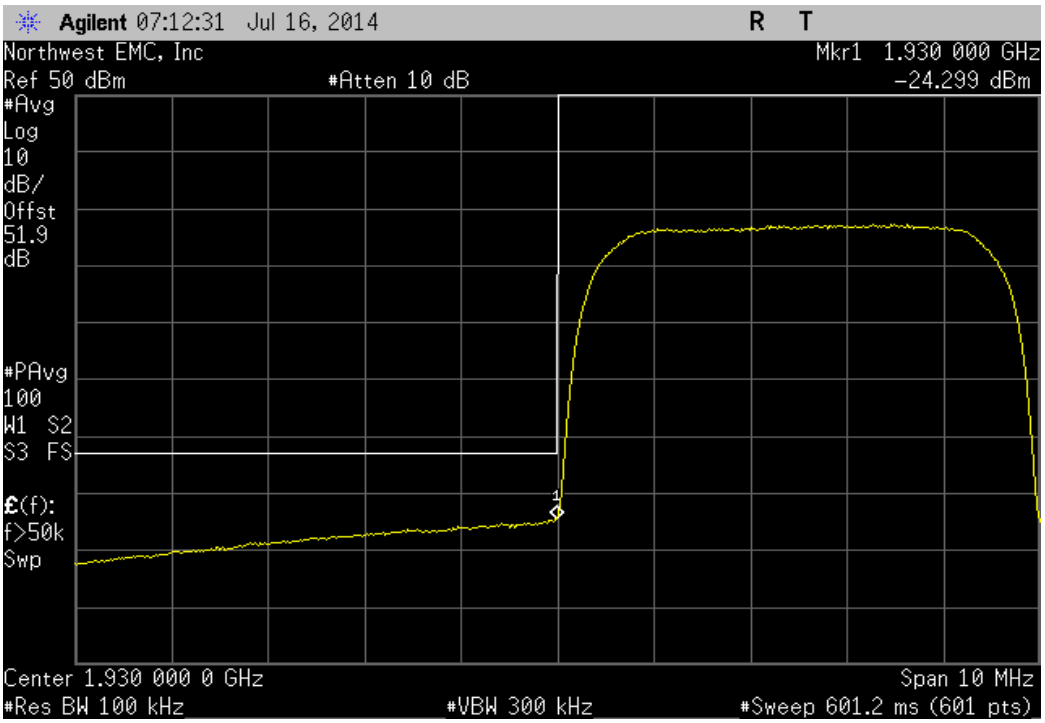
None

Configuration #	1	*Signature* Trevor Buls

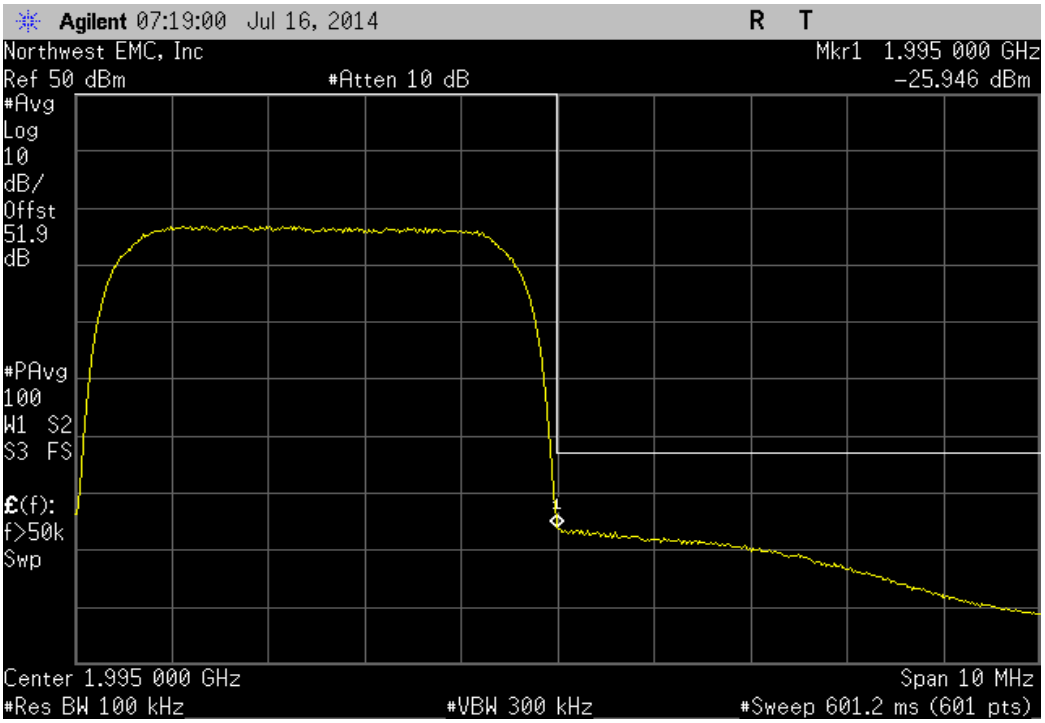
	Value (dBm)	Limit (dBm)	Result
Low Channel	-24.299	-13	Pass
High Channel	-25.946	-13	Pass

BAND EDGE COMPLIANCE

Low Channel						
				Value (dBm)	Limit (dBm)	Result
				-24.299	-13	Pass



High Channel						
				Value (dBm)	Limit (dBm)	Result
				-25.946	-13	Pass



OUT OF BAND EMISSIONS - CONDUCTED

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
Low Pass Filter 0-1000 MHz	Micro-Tronics	LPM50004	HGV	10/5/2012	24
High Pass Filter 2.8 GHz	Micro-Tronics	HPM50111	HGY	10/5/2012	24
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/3/2014	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	9/26/2013	12
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	5/15/2012	24

TEST DESCRIPTION

The antenna port spurious emissions were measured at the RF output terminal of the EUT with external attenuation on the RF input of the spectrum analyzer. Analyzer plots utilizing a 1 MHz resolution bandwidth and no video filtering were made for each modulation type from 30 MHz to 9 GHz. The peak conducted power of spurious emissions, up to the 10th harmonic of the transmit frequency, were investigated to ensure they were less than or equal to –13 dBm.

OUT OF BAND EMISSIONS -CONDUCTED

EUT:	Prism HDM 1900 MHz / 2100 MHz SISO RF Module			**Work Order:**	TECO0013
Serial Number:	None			**Date:**	04/11/14
Customer:	TE Connectivity / ADC Telecommunications			**Temperature:**	25°C
Attendees:	None			**Humidity:**	25%
Project:	None			**Barometric Pres.:**	1017.2
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
FCC 24E:2014	ANSI/TIA/EIA-603-C-2004

COMMENTS

Customer provided a high wattage 30 dB attenuator that was added into the reference level offset.

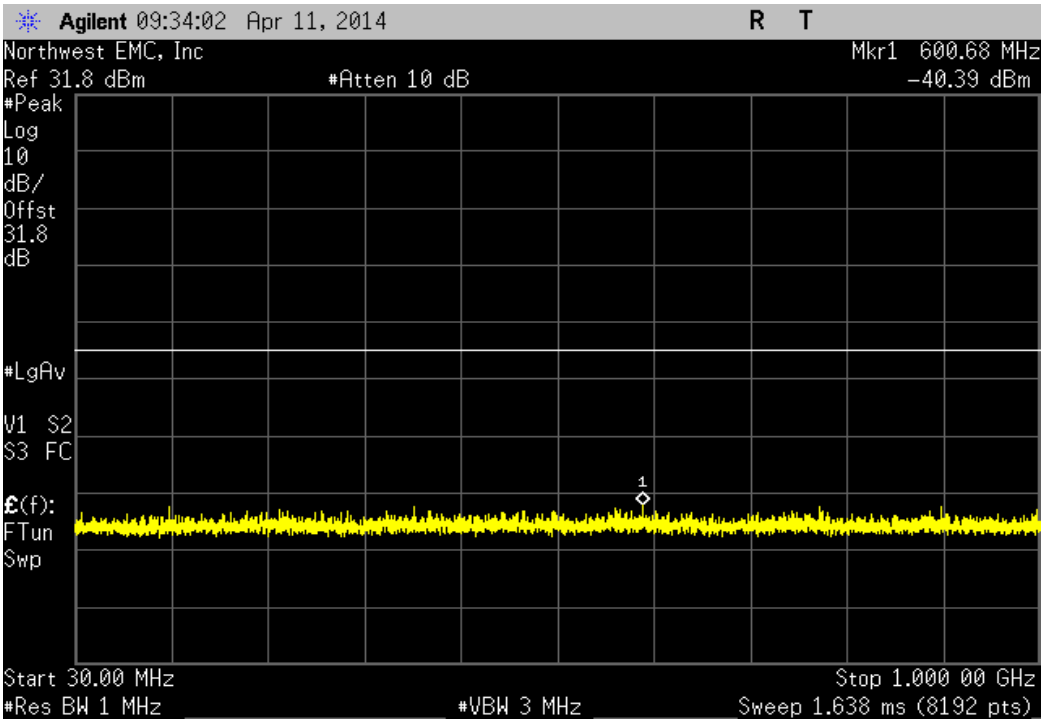
DEVIATIONS FROM TEST STANDARD

None

Configuration #	1	Signature	Trevor Buls

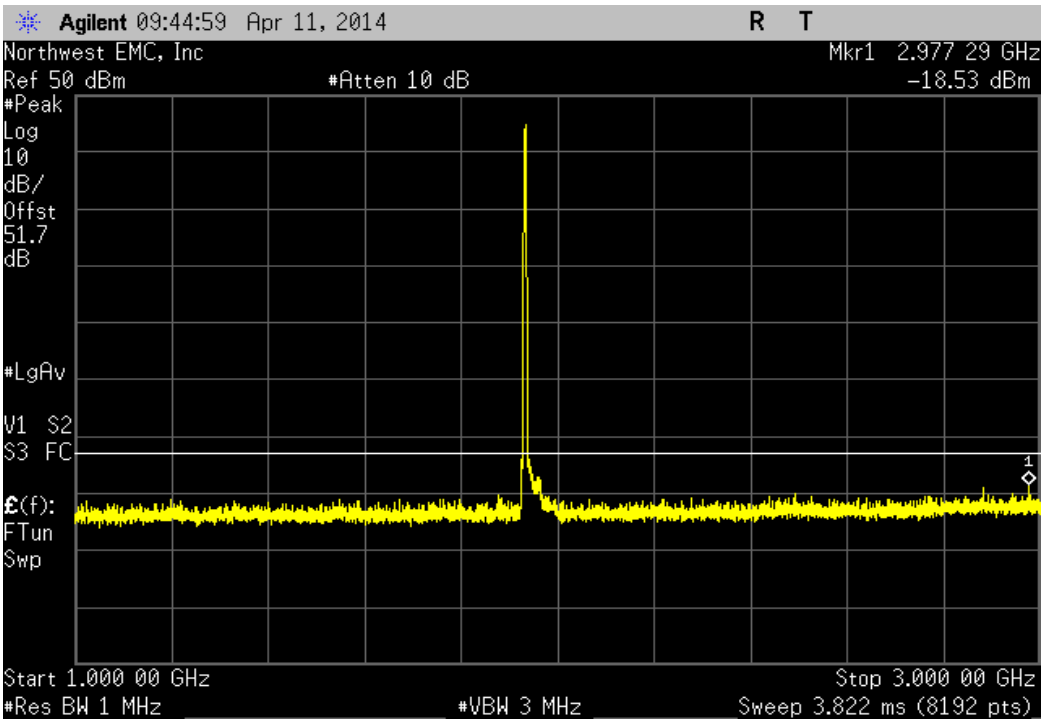
		Frequency Range	Value	Limit	Result
LTE 5 MHz					
	Mid Channel 1962.5 MHz	30 MHz - 1 GHz	-40.39 dBm	≤ -13 dBm	Pass
	Mid Channel 1962.5 MHz	1 GHz - 3 GHz	-18.53 dBm	≤ -13 dBm	Pass
	Mid Channel 1962.5 MHz	3 GHz - 20 GHz	-28.83 dBm	≤ -13 dBm	Pass
	Low Channel 1932.7 MHz	30 MHz - 1 GHz	-40.14 dBm	≤ -13 dBm	Pass
	Low Channel 1932.7 MHz	1 GHz - 3 GHz	-18.76 dBm	≤ -13 dBm	Pass
	Low Channel 1932.7 MHz	3 GHz - 20 GHz	-29.14 dBm	≤ -13 dBm	Pass
	High Channel 1992.4 MHz	30 MHz - 1 GHz	-40.33 dBm	≤ -13 dBm	Pass
	High Channel 1992.4 MHz	1 GHz - 3 GHz	-20.35 dBm	≤ -13 dBm	Pass
	High Channel 1992.4 MHz	3 GHz - 20 GHz	-28.63 dBm	≤ -13 dBm	Pass
LTE 10 MHz					
	Mid Channel 1962.5 MHz	30 MHz - 1 GHz	-39.74 dBm	≤ -13 dBm	Pass
	Mid Channel 1962.5 MHz	1 GHz - 3 GHz	-19.76 dBm	≤ -13 dBm	Pass
	Mid Channel 1962.5 MHz	3 GHz - 20 GHz	-29.45 dBm	≤ -13 dBm	Pass
	Low Channel 1935 MHz	30 MHz - 1 GHz	-39.88 dBm	≤ -13 dBm	Pass
	Low Channel 1935 MHz	1 GHz - 3 GHz	-19.51 dBm	≤ -13 dBm	Pass
	Low Channel 1935 MHz	3 GHz - 20 GHz	-29.2 dBm	≤ -13 dBm	Pass
	High Channel 1990 MHz	30 MHz - 1 GHz	-40.24 dBm	≤ -13 dBm	Pass
	High Channel 1990 MHz	1 GHz - 3 GHz	-20.45 dBm	≤ -13 dBm	Pass
	High Channel 1990 MHz	3 GHz - 20 GHz	-29.52 dBm	≤ -13 dBm	Pass

LTE 5 MHz, Mid Channel 1962.5 MHz						
	Frequency Range			Value	Limit	Result
	30 MHz - 1 GHz			-40.39 dBm	≤ -13 dBm	Pass

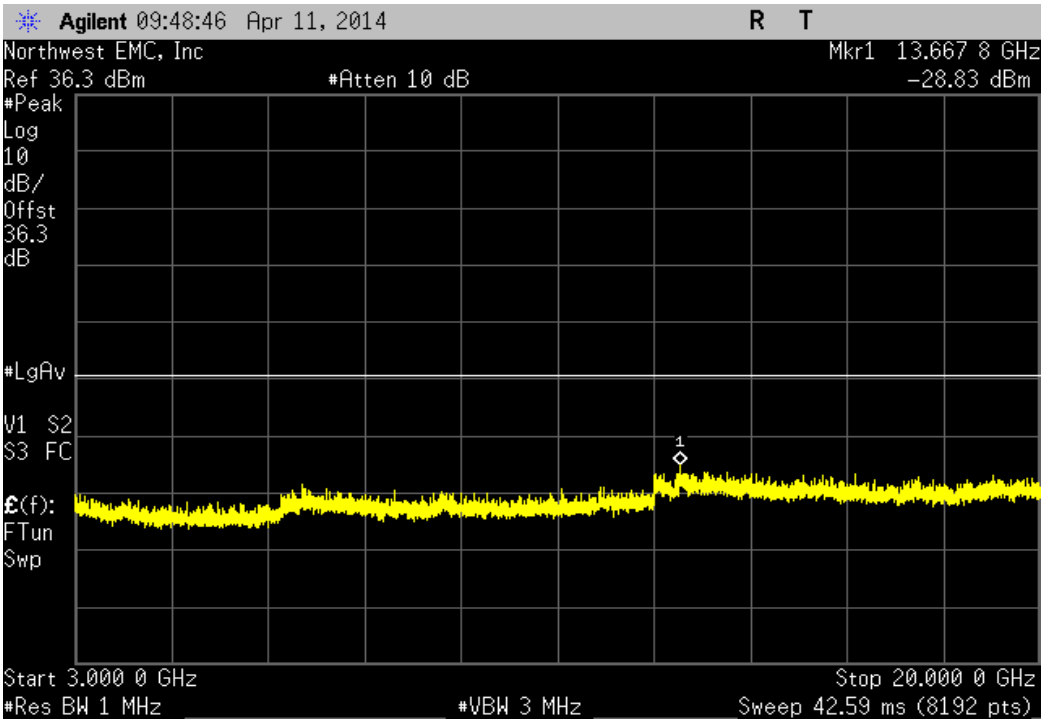


OUT OF BAND EMISSIONS -CONDUCTED

LTE 5 MHz, Mid Channel 1962.5 MHz						
	Frequency Range			Value	Limit	Result
	1 GHz - 3 GHz			-18.53 dBm	≤ -13 dBm	Pass

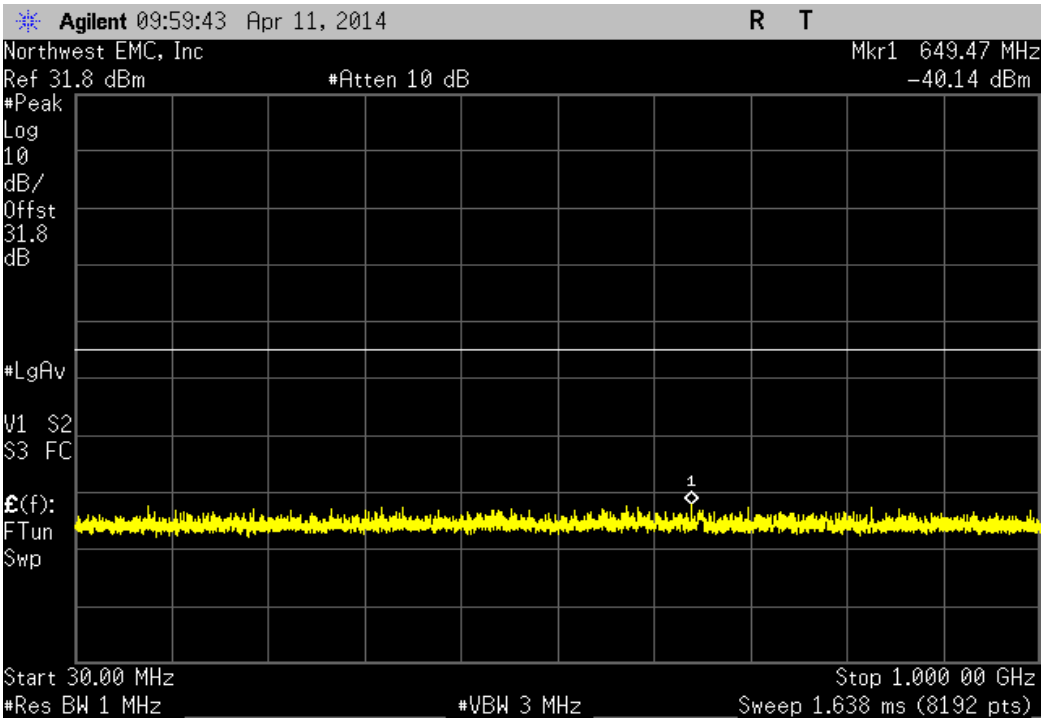


LTE 5 MHz, Mid Channel 1962.5 MHz						
	Frequency Range			Value	Limit	Result
	3 GHz - 20 GHz			-28.83 dBm	≤ -13 dBm	Pass

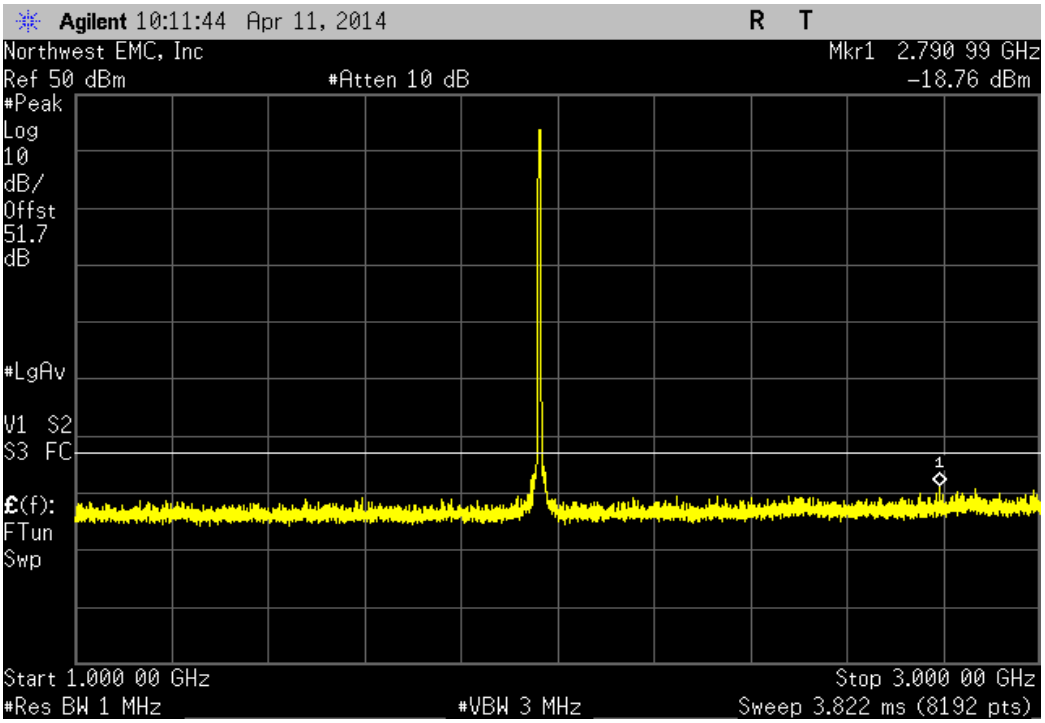


OUT OF BAND EMISSIONS -CONDUCTED

LTE 5 MHz, Low Channel 1932.7 MHz						
	Frequency Range			Value	Limit	Result
	30 MHz - 1 GHz			-40.14 dBm	≤ -13 dBm	Pass

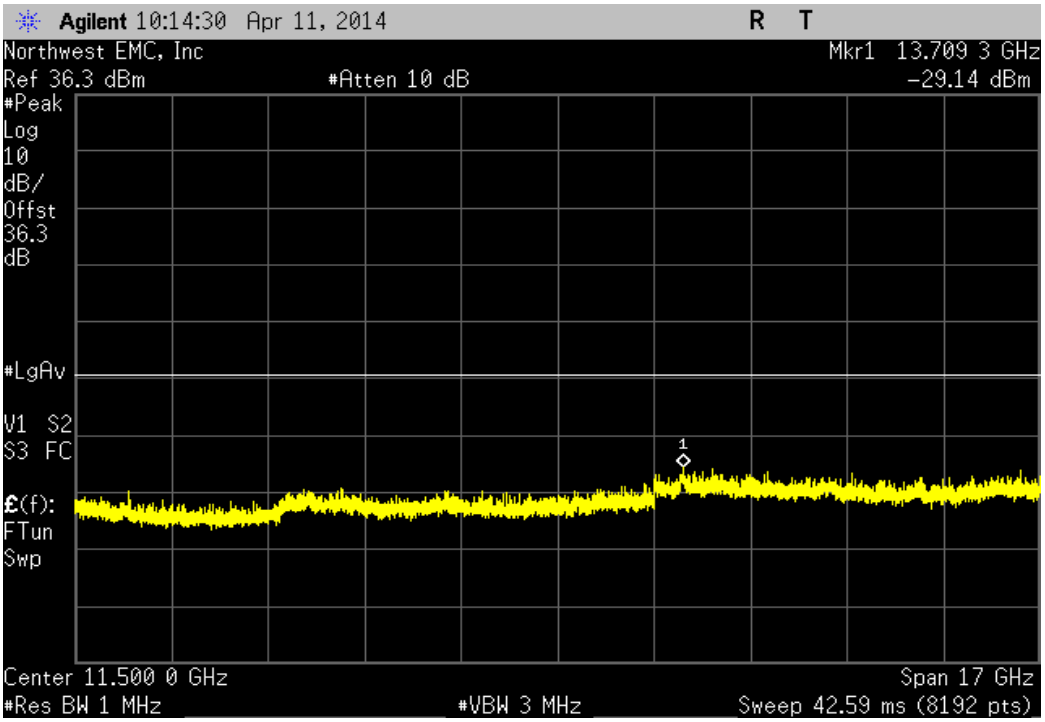


LTE 5 MHz, Low Channel 1932.7 MHz						
	Frequency Range			Value	Limit	Result
	1 GHz - 3 GHz			-18.76 dBm	≤ -13 dBm	Pass

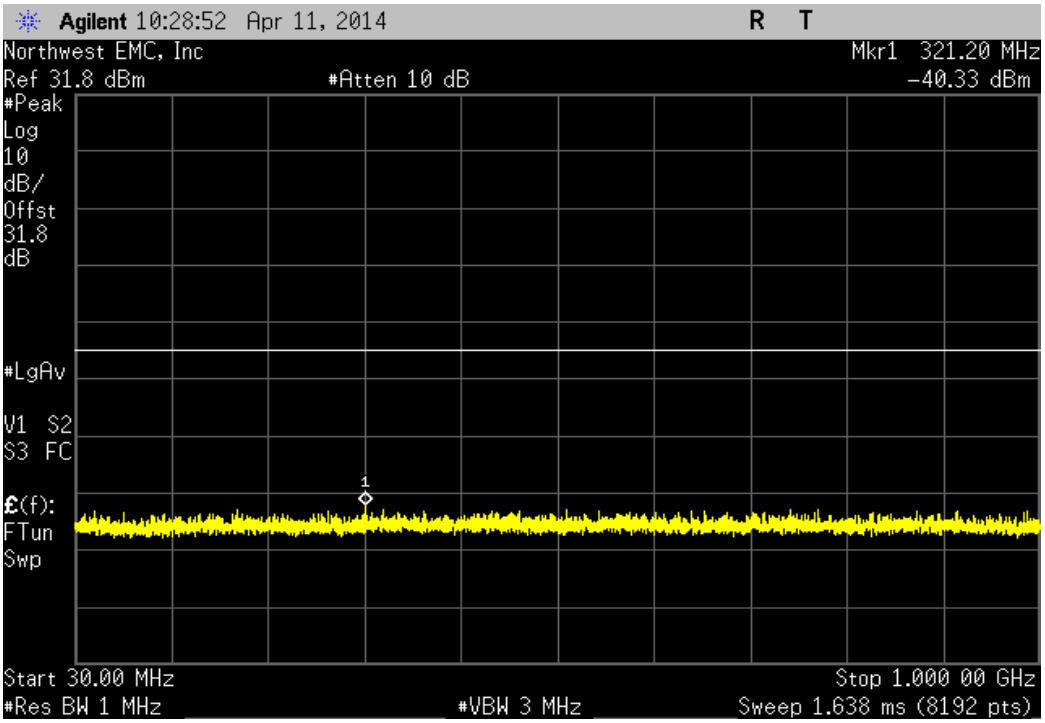


OUT OF BAND EMISSIONS -CONDUCTED

LTE 5 MHz, Low Channel 1932.7 MHz						
	Frequency Range			Value	Limit	Result
	3 GHz - 20 GHz			-29.14 dBm	≤ -13 dBm	Pass

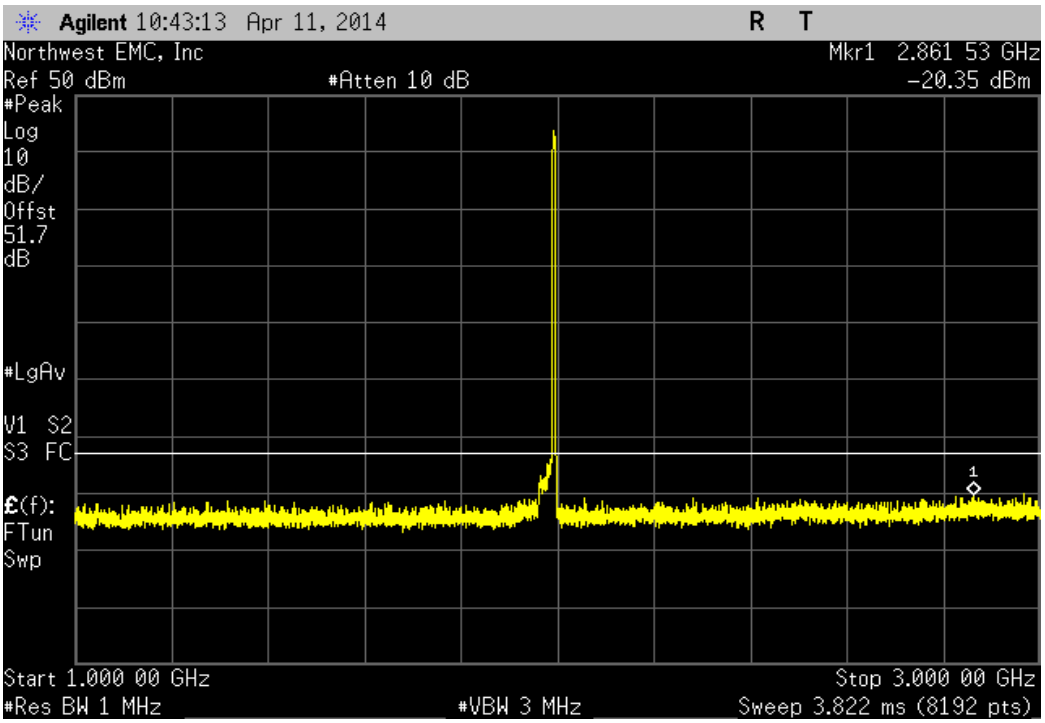


LTE 5 MHz, High Channel 1992.4 MHz						
	Frequency Range			Value	Limit	Result
	30 MHz - 1 GHz			-40.33 dBm	≤ -13 dBm	Pass

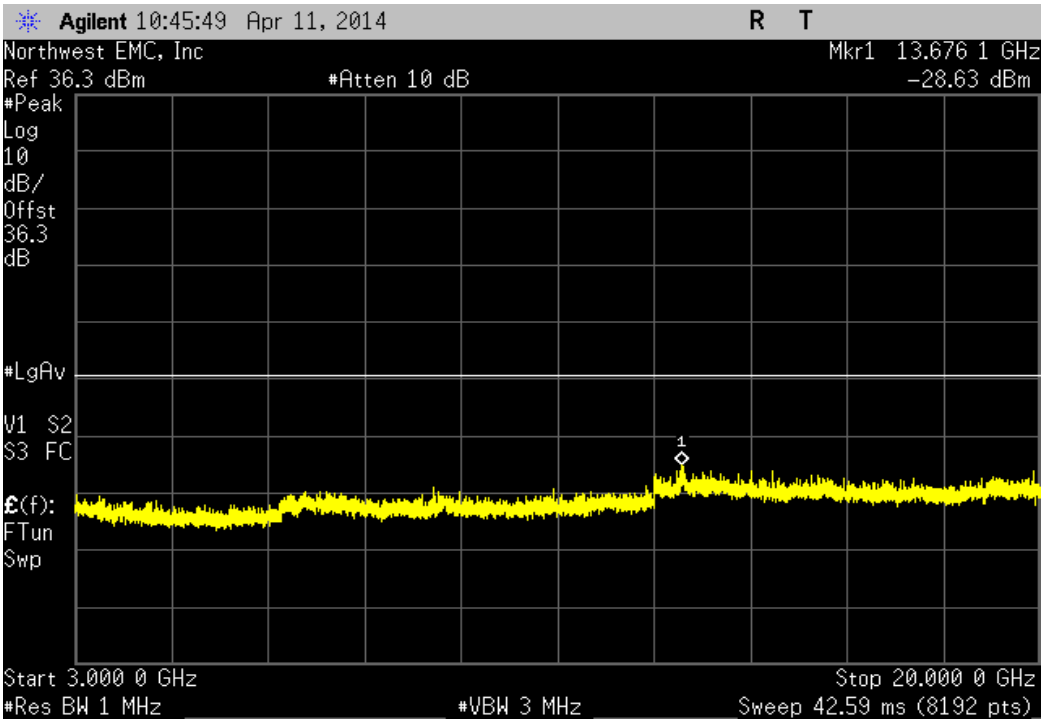


OUT OF BAND EMISSIONS -CONDUCTED

LTE 5 MHz, High Channel 1992.4 MHz						
	Frequency Range			Value	Limit	Result
	1 GHz - 3 GHz			-20.35 dBm	≤ -13 dBm	Pass

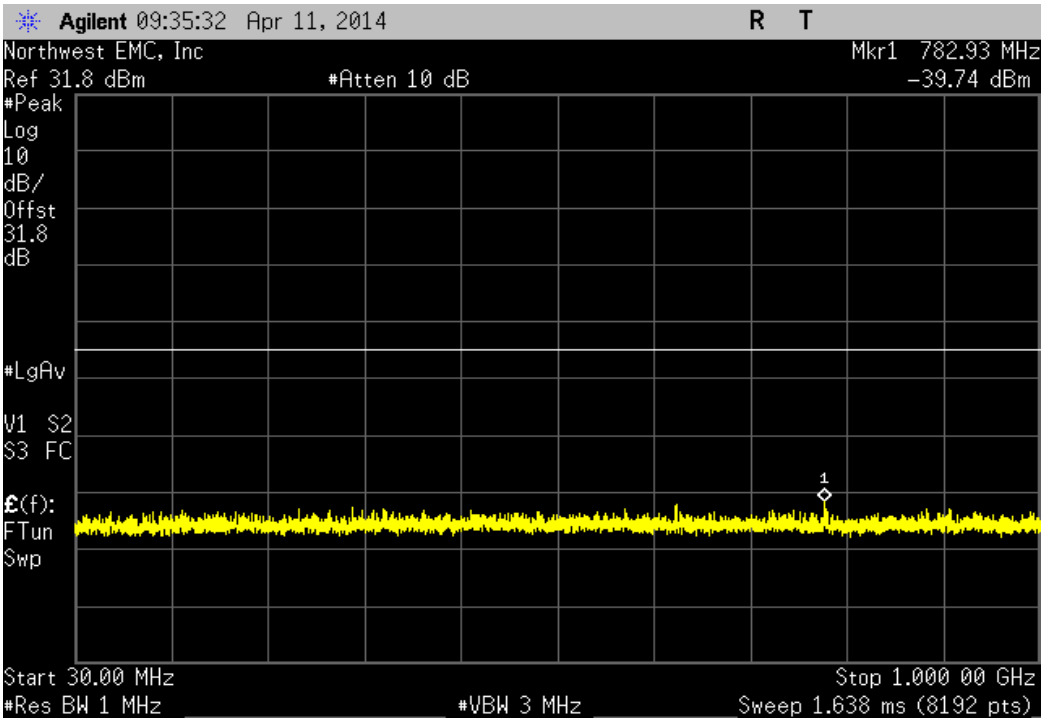


LTE 5 MHz, High Channel 1992.4 MHz						
	Frequency Range			Value	Limit	Result
	3 GHz - 20 GHz			-28.63 dBm	≤ -13 dBm	Pass

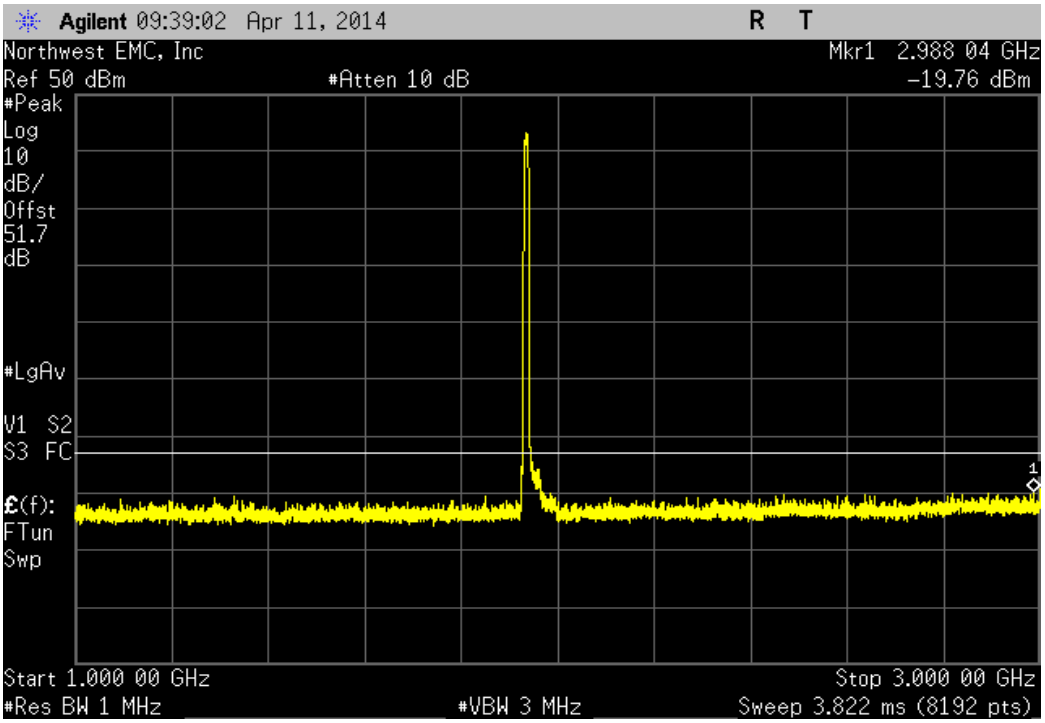


OUT OF BAND EMISSIONS -CONDUCTED

LTE 10 MHz, Mid Channel 1962.5 MHz						
	Frequency Range			Value	Limit	Result
	30 MHz - 1 GHz			-39.74 dBm	≤ -13 dBm	Pass

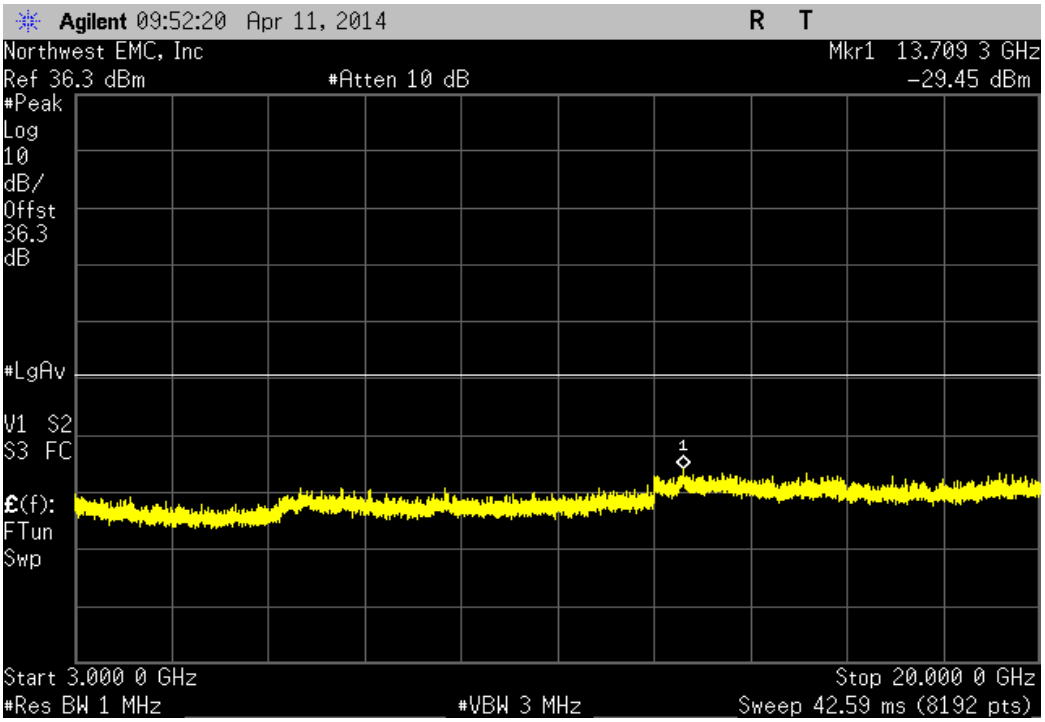


LTE 10 MHz, Mid Channel 1962.5 MHz						
	Frequency Range			Value	Limit	Result
	1 GHz - 3 GHz			-19.76 dBm	≤ -13 dBm	Pass

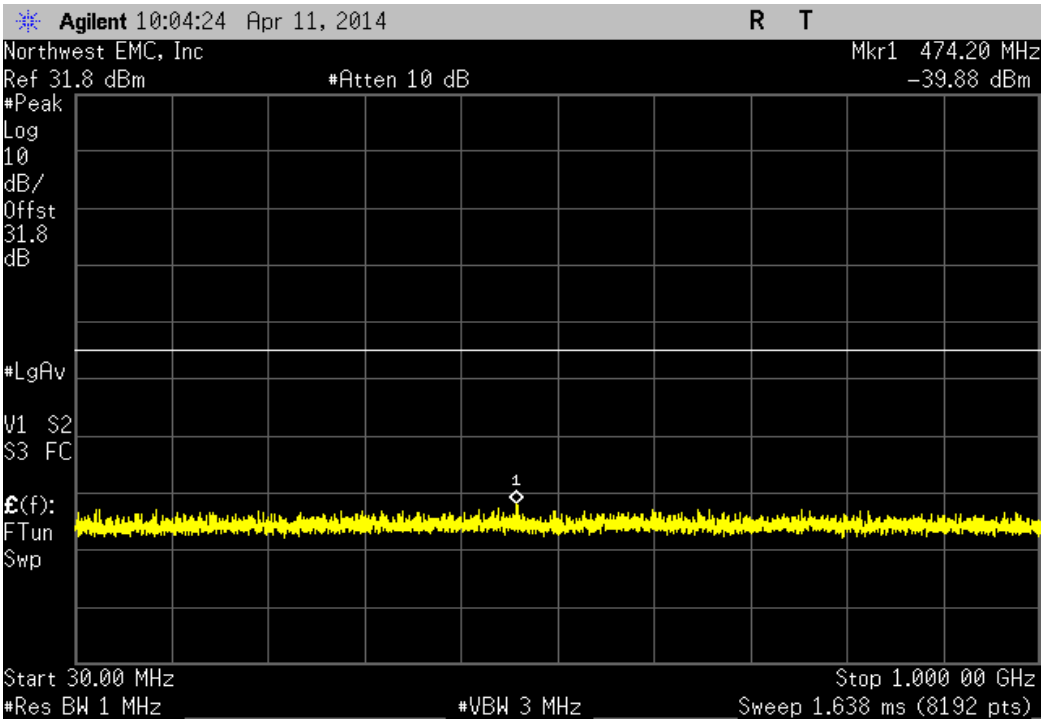


OUT OF BAND EMISSIONS -CONDUCTED

LTE 10 MHz, Mid Channel 1962.5 MHz						
	Frequency Range			Value	Limit	Result
	3 GHz - 20 GHz			-29.45 dBm	≤ -13 dBm	Pass

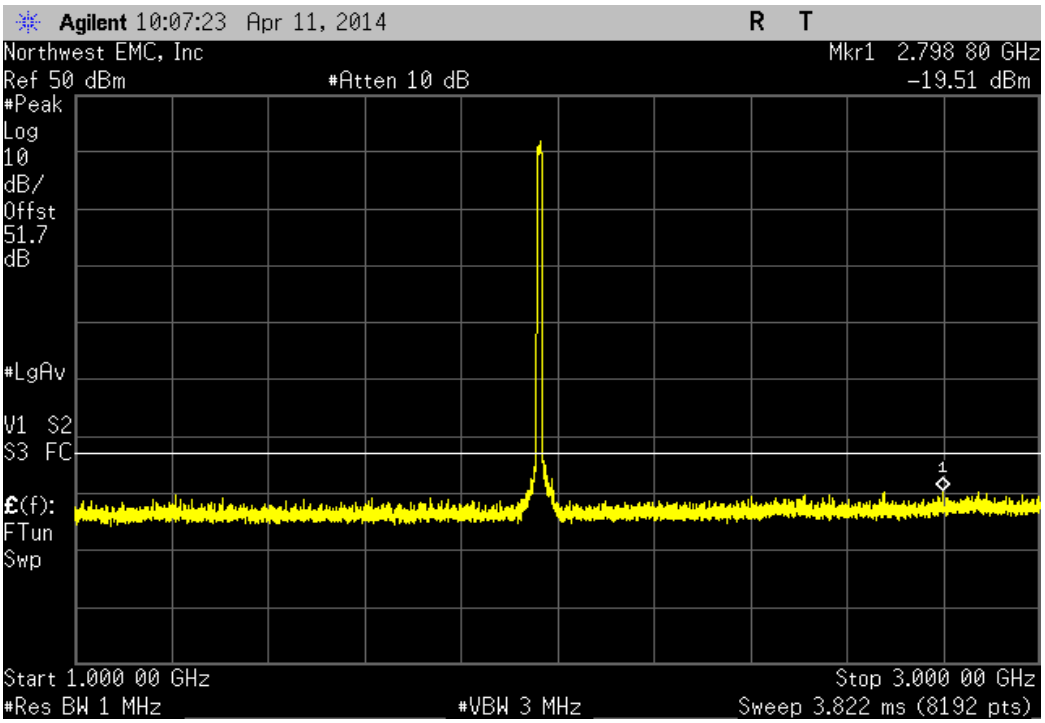


LTE 10 MHz, Low Channel 1935 MHz						
	Frequency Range			Value	Limit	Result
	30 MHz - 1 GHz			-39.88 dBm	≤ -13 dBm	Pass

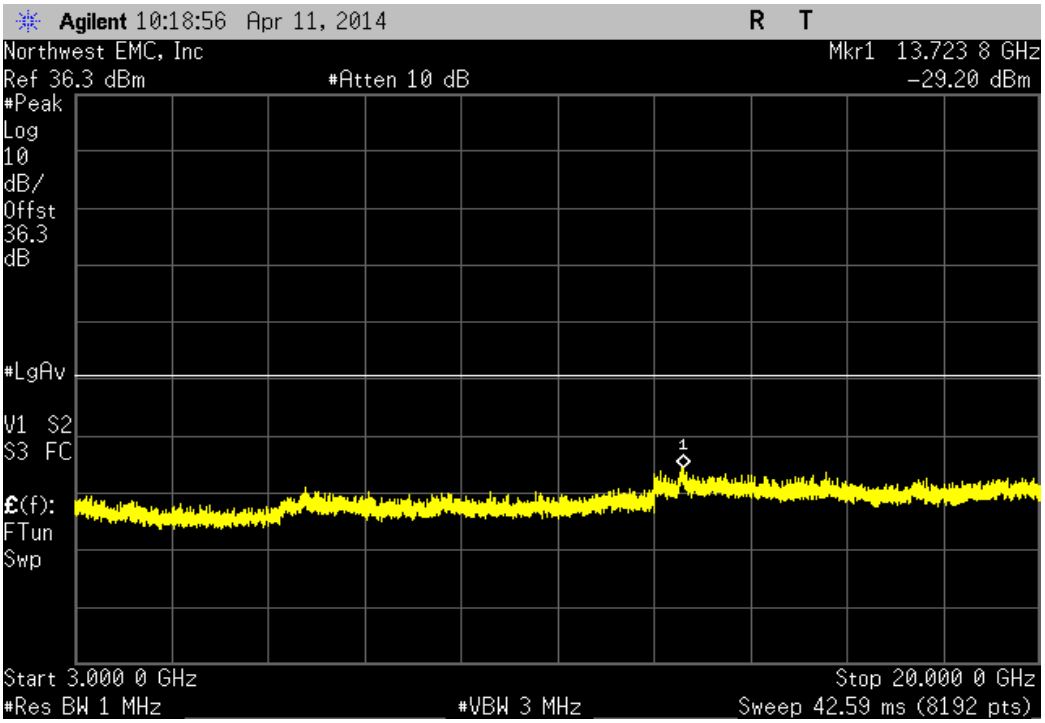


OUT OF BAND EMISSIONS -CONDUCTED

LTE 10 MHz, Low Channel 1935 MHz						
	Frequency Range			Value	Limit	Result
	1 GHz - 3 GHz			-19.51 dBm	≤ -13 dBm	Pass

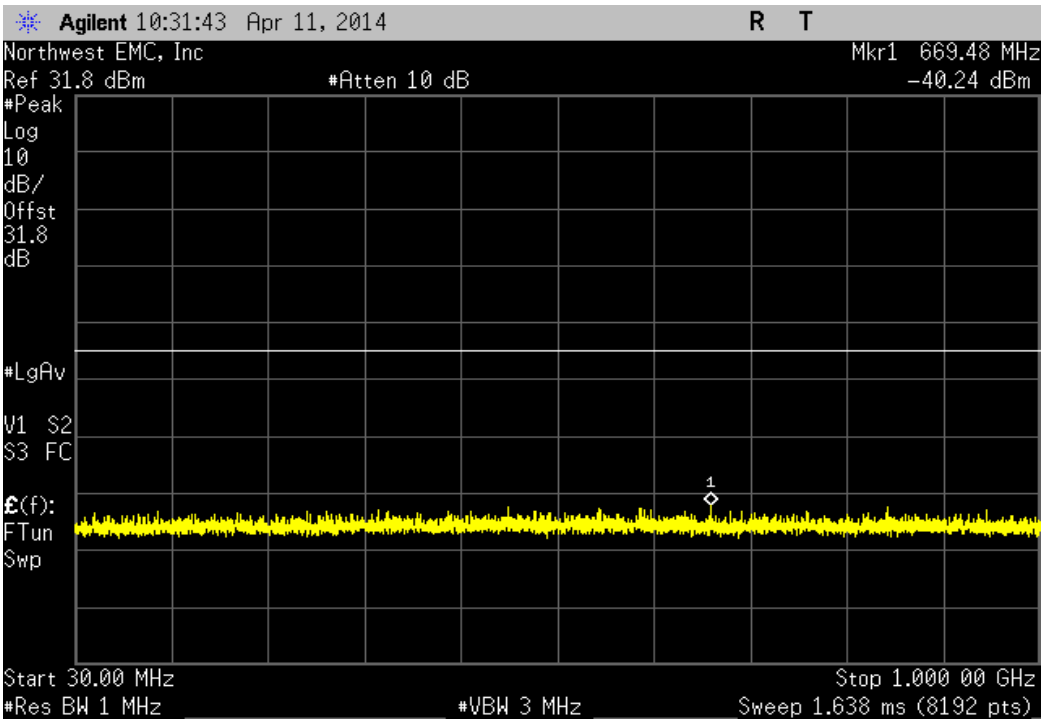


LTE 10 MHz, Low Channel 1935 MHz						
	Frequency Range			Value	Limit	Result
	3 GHz - 20 GHz			-29.2 dBm	≤ -13 dBm	Pass

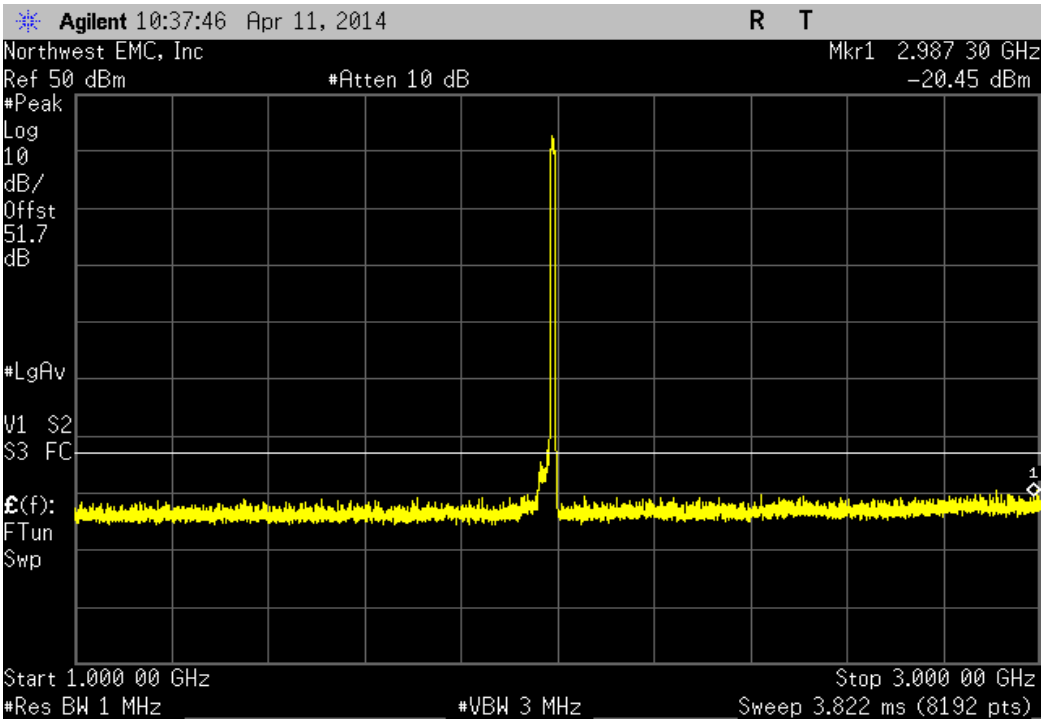


OUT OF BAND EMISSIONS -CONDUCTED

LTE 10 MHz, High Channel 1990 MHz						
	Frequency Range			Value	Limit	Result
	30 MHz - 1 GHz			-40.24 dBm	≤ -13 dBm	Pass

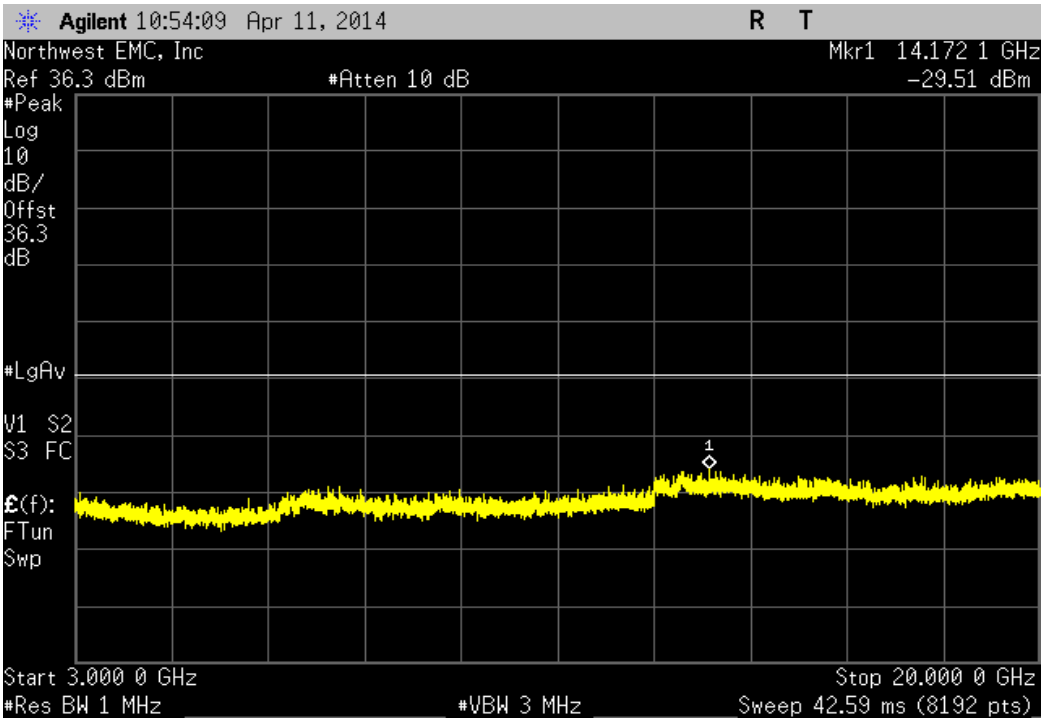


LTE 10 MHz, High Channel 1990 MHz						
	Frequency Range			Value	Limit	Result
	1 GHz - 3 GHz			-20.45 dBm	≤ -13 dBm	Pass



OUT OF BAND EMISSIONS -CONDUCTED

LTE 10 MHz, High Channel 1990 MHz						
	Frequency Range			Value	Limit	Result
	3 GHz - 20 GHz			-29.52 dBm	≤ -13 dBm	Pass



OUT OF BAND EMISSIONS - CONDUCTED

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TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Low Pass Filter 0-1000 MHz	Micro-Tronics	LPM50004	HGV	10/5/2012	24
High Pass Filter 2.8-18 GHz	Micro-Tronics	HPM50111	HGY	10/5/2012	24
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/3/2014	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	9/26/2013	12
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	4/28/2014	12

TEST DESCRIPTION

The antenna port spurious emissions were measured at the RF output terminal of the EUT with external attenuation on the RF input of the spectrum analyzer. Analyzer plots utilizing a 1 MHz resolution bandwidth and no video filtering were made for each modulation type from 30 MHz to 20 GHz. The peak conducted power of spurious emissions, up to the 10th harmonic of the transmit frequency, were investigated to ensure they were less than or equal to –13 dBm.

OUT OF BAND EMISSIONS -CONDUCTED

EUT:	Prism HDM 1900 MHz / 2100 MHz SISO RF Module			**Work Order:**	TECO0017
Serial Number:	None			**Date:**	07/16/14
Customer:	TE Connectivitiy / ADC Telecommunications			**Temperature:**	23.3°C
Attendees:	None			**Humidity:**	43%
Project:	None			**Barometric Pres.:**	1020.6
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
FCC 24E:2014	ANSI/TIA/EIA-603-C-2004

COMMENTS

A 30 dB high wattage attenuator was provided by the customer.

DEVIATIONS FROM TEST STANDARD

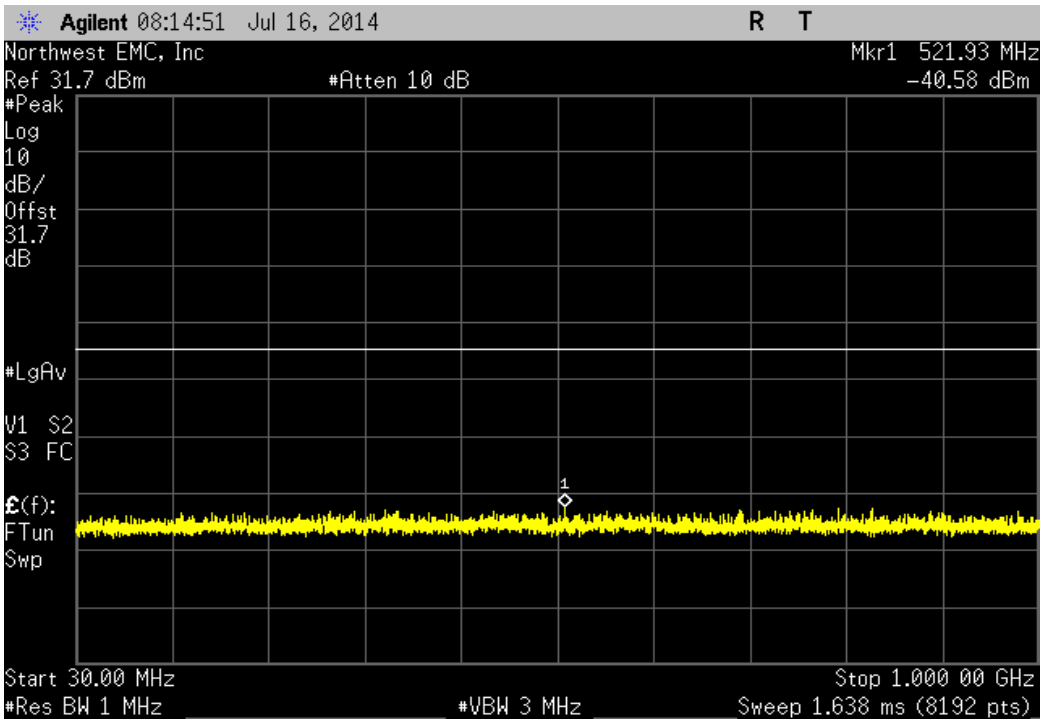
None

Configuration #	1	Signature	Trevor Buls

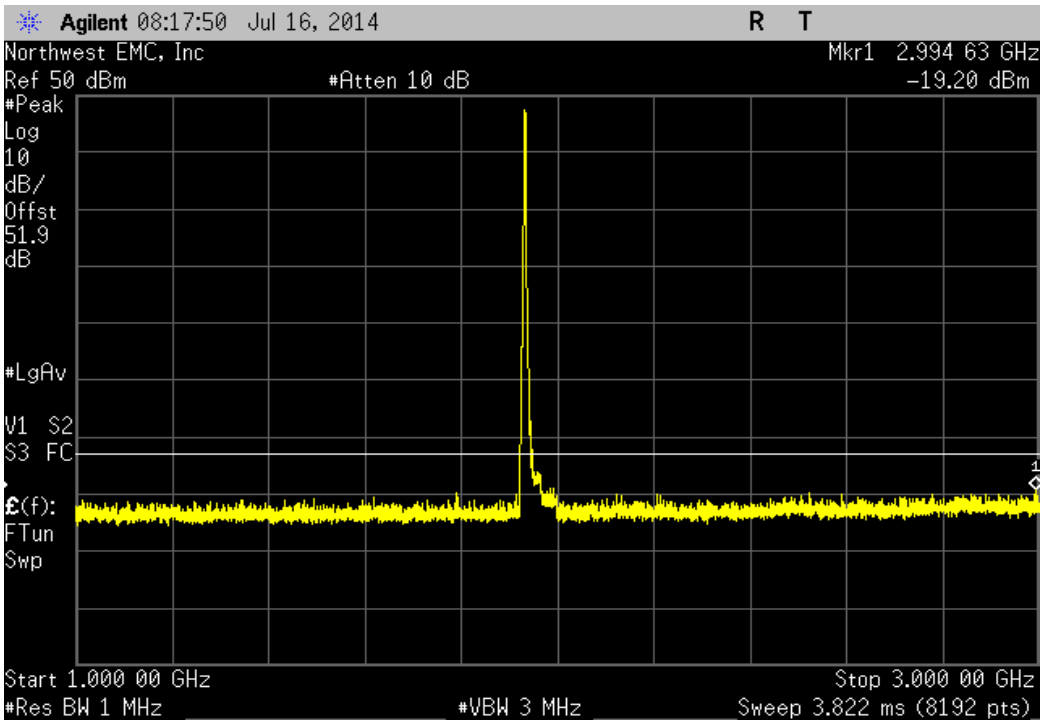
		Frequency Range	Value	Limit	Result
WCDMA					
	Low Channel 1932.5 MHz	30 MHz - 1 GHz	-40.58 dBm	≤ -13 dBm	Pass
	Low Channel 1932.5 MHz	1 GHz - 3 GHz	-19.2 dBm	≤ -13 dBm	Pass
	Low Channel 1932.5 MHz	3 GHz - 20 GHz	-32.81 dBm	≤ -13 dBm	Pass
	Mid Channel 1962.5 MHz	30 MHz - 1 GHz	-40.4 dBm	≤ -13 dBm	Pass
	Mid Channel 1962.5 MHz	1 GHz - 3 GHz	-19.12 dBm	≤ -13 dBm	Pass
	Mid Channel 1962.5 MHz	3 GHz - 20 GHz	-32.46 dBm	≤ -13 dBm	Pass
	High Channel 1992.5 MHz	30 MHz - 1 GHz	-40.2 dBm	≤ -13 dBm	Pass
	High Channel 1992.5 MHz	1 GHz - 3 GHz	-20.66 dBm	≤ -13 dBm	Pass
	High Channel 1992.5 MHz	3 GHz - 20 GHz	-32.83 dBm	≤ -13 dBm	Pass

OUT OF BAND EMISSIONS -CONDUCTED

WCDMA, Low Channel 1932.5 MHz						
	Frequency Range			Value	Limit	Result
	30 MHz - 1 GHz			-40.58 dBm	≤ -13 dBm	Pass

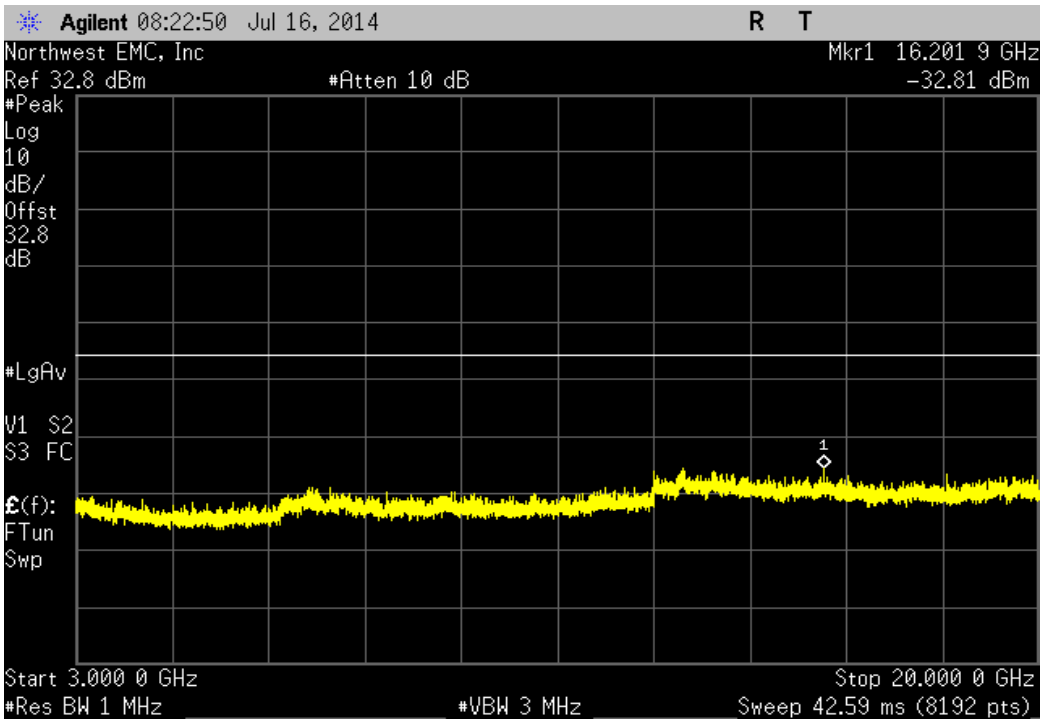


WCDMA, Low Channel 1932.5 MHz						
	Frequency Range			Value	Limit	Result
	1 GHz - 3 GHz			-19.2 dBm	≤ -13 dBm	Pass

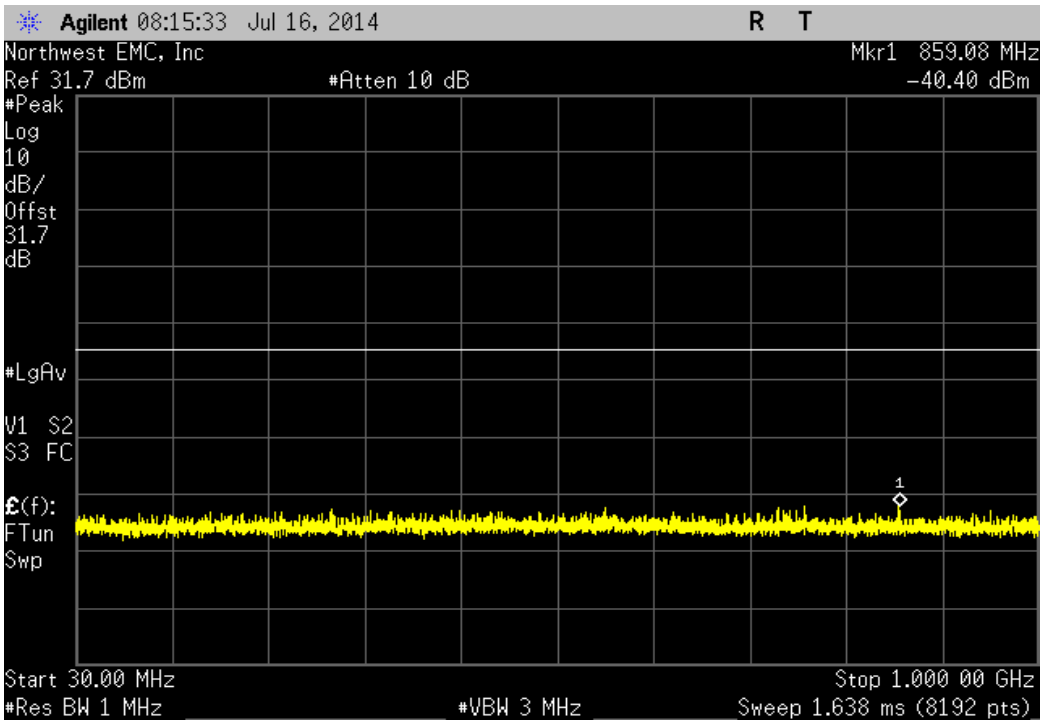


OUT OF BAND EMISSIONS -CONDUCTED

WCDMA, Low Channel 1932.5 MHz						
	Frequency Range			Value	Limit	Result
	3 GHz - 20 GHz			-32.81 dBm	≤ -13 dBm	Pass

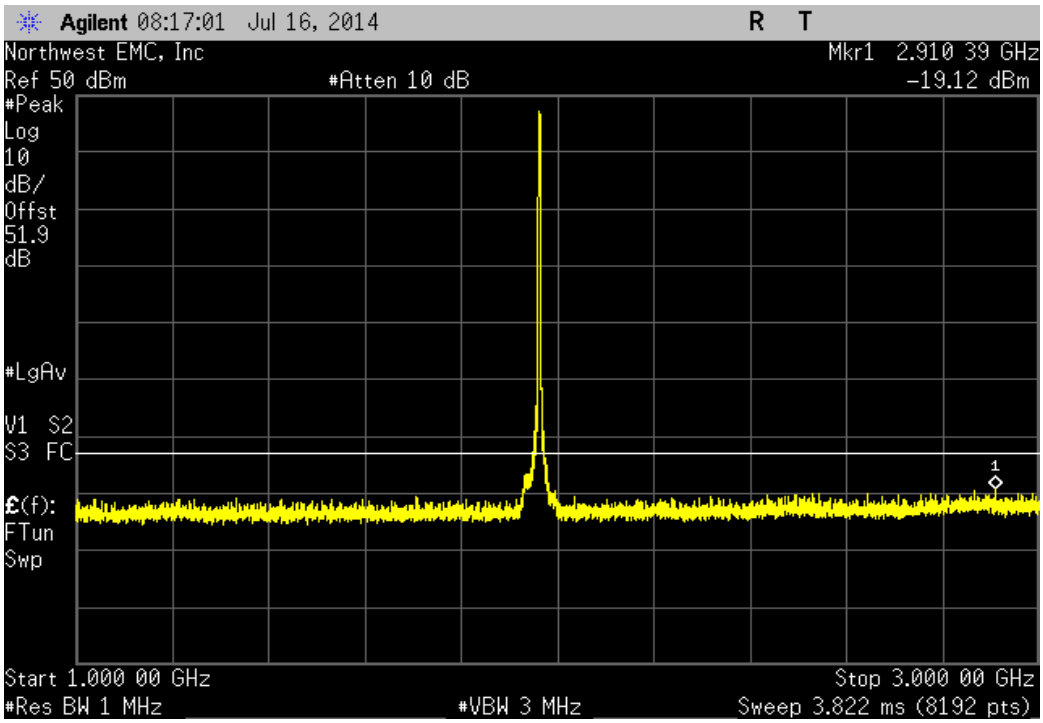


WCDMA, Mid Channel 1962.5 MHz						
	Frequency Range			Value	Limit	Result
	30 MHz - 1 GHz			-40.4 dBm	≤ -13 dBm	Pass

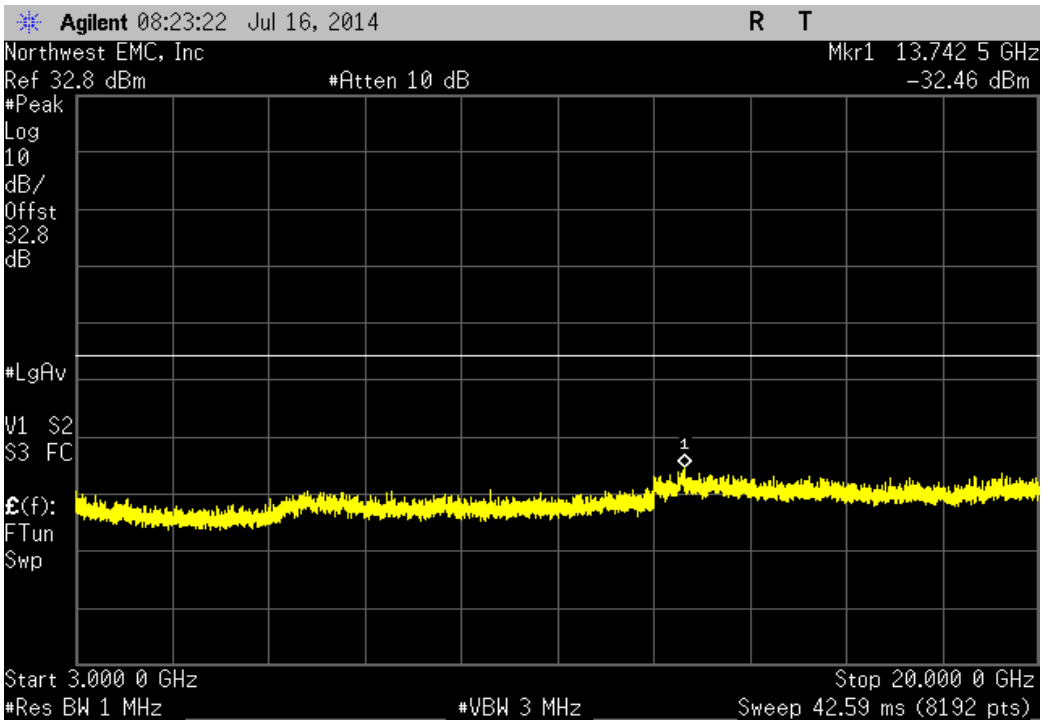


OUT OF BAND EMISSIONS -CONDUCTED

WCDMA, Mid Channel 1962.5 MHz						
	Frequency Range			Value	Limit	Result
	1 GHz - 3 GHz			-19.12 dBm	≤ -13 dBm	Pass

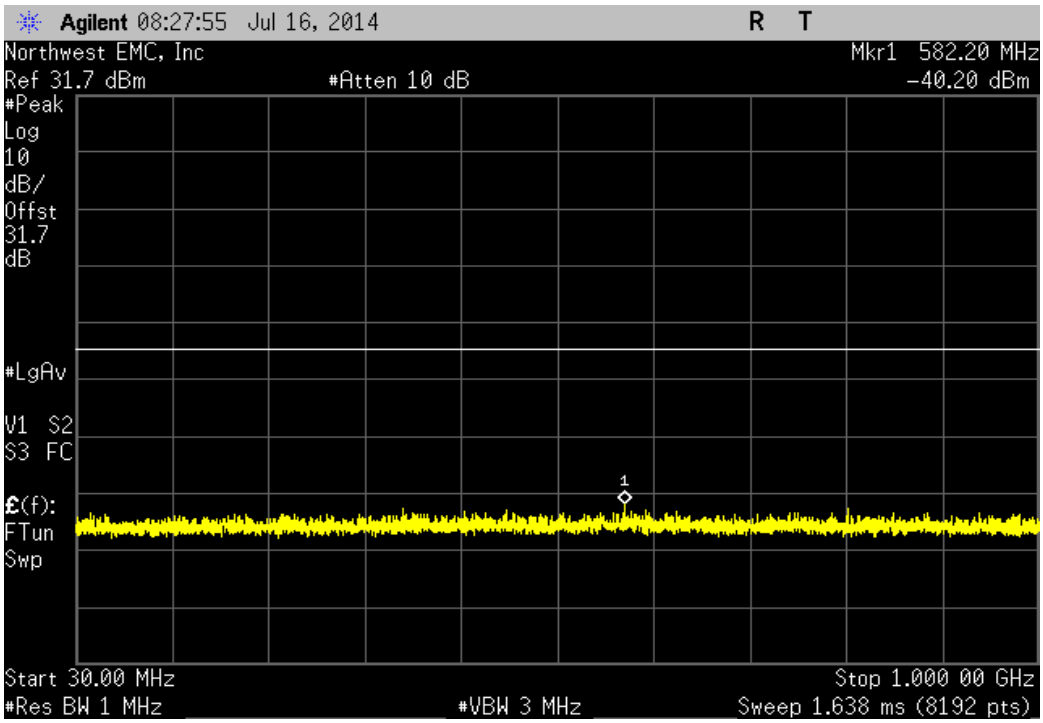


WCDMA, Mid Channel 1962.5 MHz						
	Frequency Range			Value	Limit	Result
	3 GHz - 20 GHz			-32.46 dBm	≤ -13 dBm	Pass

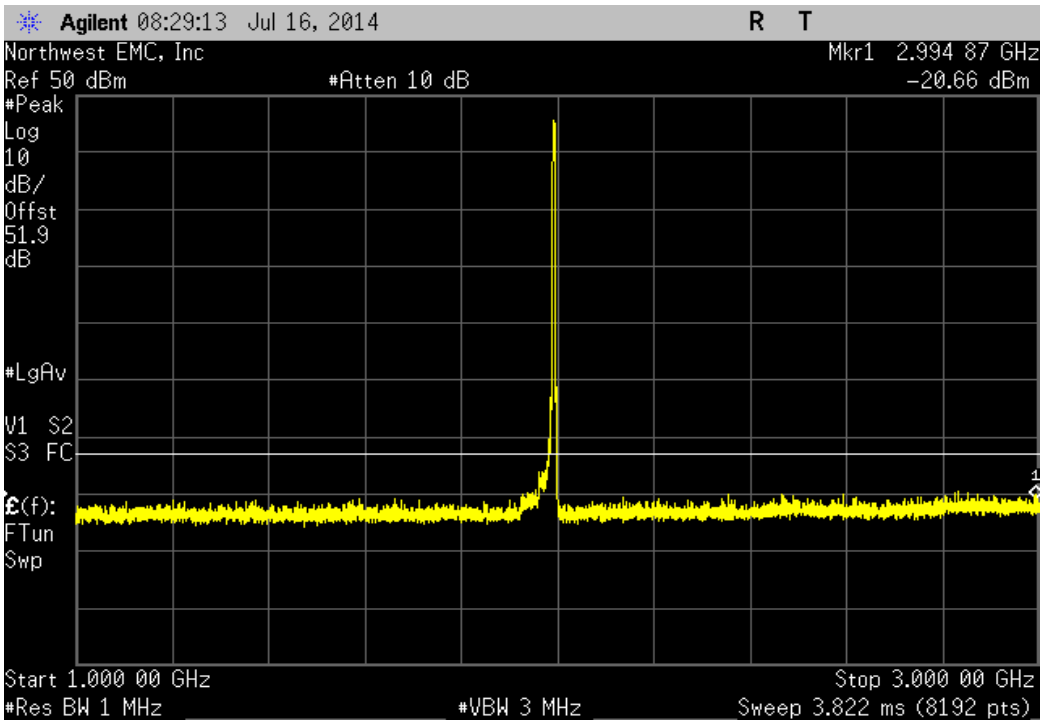


OUT OF BAND EMISSIONS -CONDUCTED

WCDMA, High Channel 1992.5 MHz						
	Frequency Range			Value	Limit	Result
	30 MHz - 1 GHz			-40.2 dBm	≤ -13 dBm	Pass

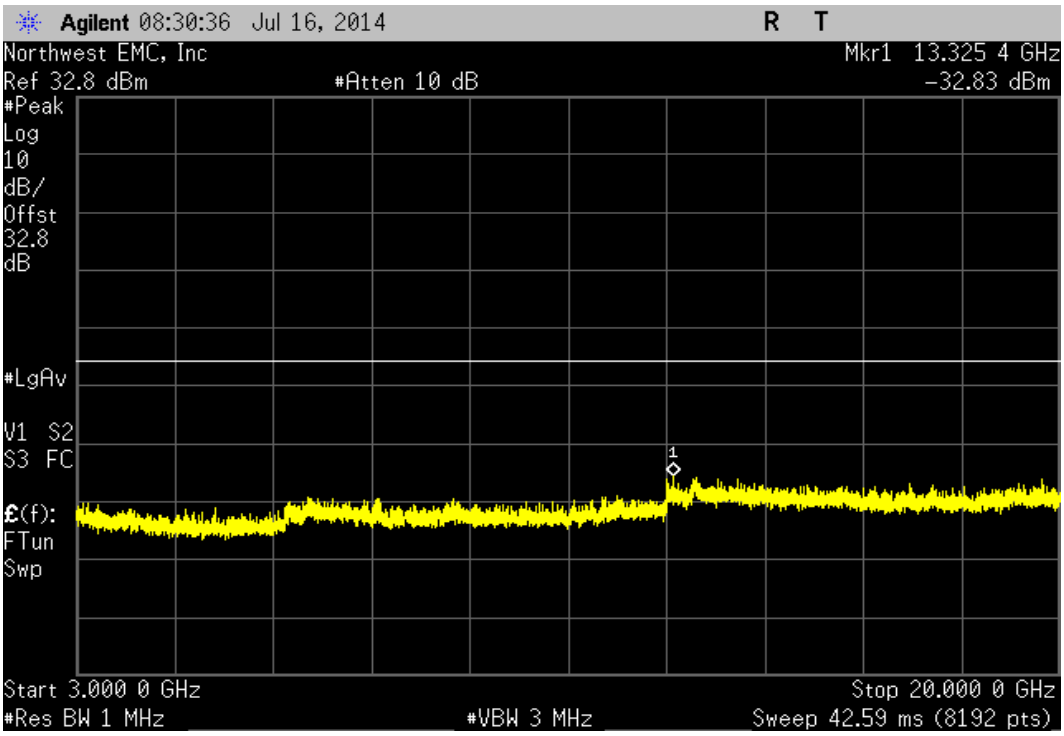


WCDMA, High Channel 1992.5 MHz						
	Frequency Range			Value	Limit	Result
	1 GHz - 3 GHz			-20.66 dBm	≤ -13 dBm	Pass



OUT OF BAND EMISSIONS -CONDUCTED

WCDMA, High Channel 1992.5 MHz						
	Frequency Range			Value	Limit	Result
	3 GHz - 20 GHz			-32.83 dBm	≤ -13 dBm	Pass



INTERMODULATION

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
Power Divider/Combiner	Fairview Microwave Inc (SM electronics)	MP8451-2	IAD	NCR	0
Power Divider/Combiner	Fairview Microwave Inc (SM electronics)	MP8451-2	IAC	NCR	0
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/3/2014	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	9/26/2013	12
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	5/15/2012	24

TEST DESCRIPTION

The EUT was configured with an input of a CW pulse at the bottom of the band, a CW pulse at the bottom of the band,and a modulated pulse near the edge of the band.

The antenna port spurious emissions were measured at the RF output terminal of the EUT with external attenuation on the RF input of the spectrum analyzer. Analyzer plots utilizing a 1MHz resolution bandwidth and no video filtering were made for each modulation type from 30 MHz to 20 GHz. The peak conducted power of spurious emissions, up to the 10th harmonic of the transmit frequency, were investigated to ensure they were less than or equal to –13 dBm.

INTERMODULATION

EUT:	Prism HDM 1900 MHz / 2100 MHz SISO RF Module			**Work Order:**	TECO0013
Serial Number:	None			**Date:**	04/11/14
Customer:	TE Connectivity / ADC Telecommunications			**Temperature:**	25°C
Attendees:	None			**Humidity:**	25%
Project:	None			**Barometric Pres.:**	1017.2
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
FCC 24E:2014	ANSI/TIA/EIA-603-C-2004

COMMENTS

Customer provided a high wattage 30 dB attenuator that was added into the reference level offset.

DEVIATIONS FROM TEST STANDARD

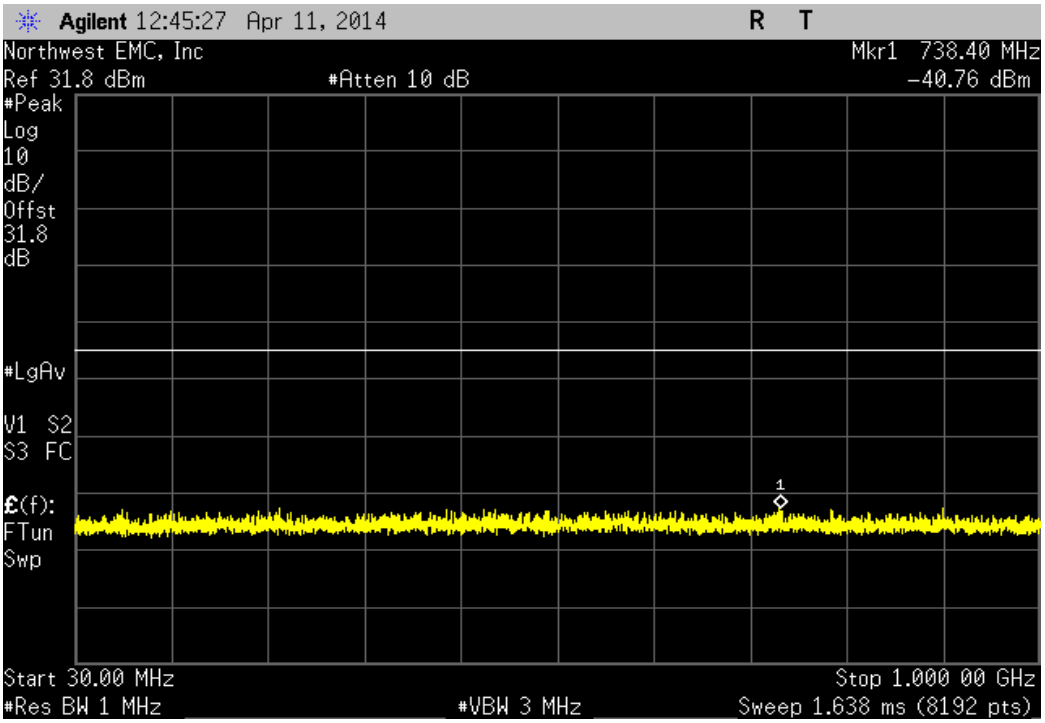
None

Configuration #	1	Signature	Trevor Buls

		Frequency Range	Value	Limit	Result
Band ABD					
	LTE 5 MHz	30 MHz - 1 GHz	-40.76 dBm	≤ -13 dBm	Pass
	LTE 5 MHz	1 GHz - 3 GHz	-18.94 dBm	≤ -13 dBm	Pass
	LTE 5 MHz	3 GHz - 20 GHz	-29.58 dBm	≤ -13 dBm	Pass
	LTE 10 MHz	30 MHz - 1 GHz	-40.54 dBm	≤ -13 dBm	Pass
	LTE 10 MHz	1 GHz - 3 GHz	-19.82 dBm	≤ -13 dBm	Pass
	LTE 10 MHz	3 GHz - 20 GHz	-29.52 dBm	≤ -13 dBm	Pass
Band CEFG					
	LTE 5 MHz	30 MHz - 1 GHz	-40.48 dBm	≤ -13 dBm	Pass
	LTE 5 MHz	1 GHz - 3 GHz	-19.51 dBm	≤ -13 dBm	Pass
	LTE 5 MHz	3 GHz - 20 GHz	-29.18 dBm	≤ -13 dBm	Pass
	LTE 10 MHz	30 MHz - 1 GHz	-40.53 dBm	≤ -13 dBm	Pass
	LTE 10 MHz	1 GHz - 3 GHz	-19.04 dBm	≤ -13 dBm	Pass
	LTE 10 MHz	3 GHz - 20 GHz	-28.86 dBm	≤ -13 dBm	Pass

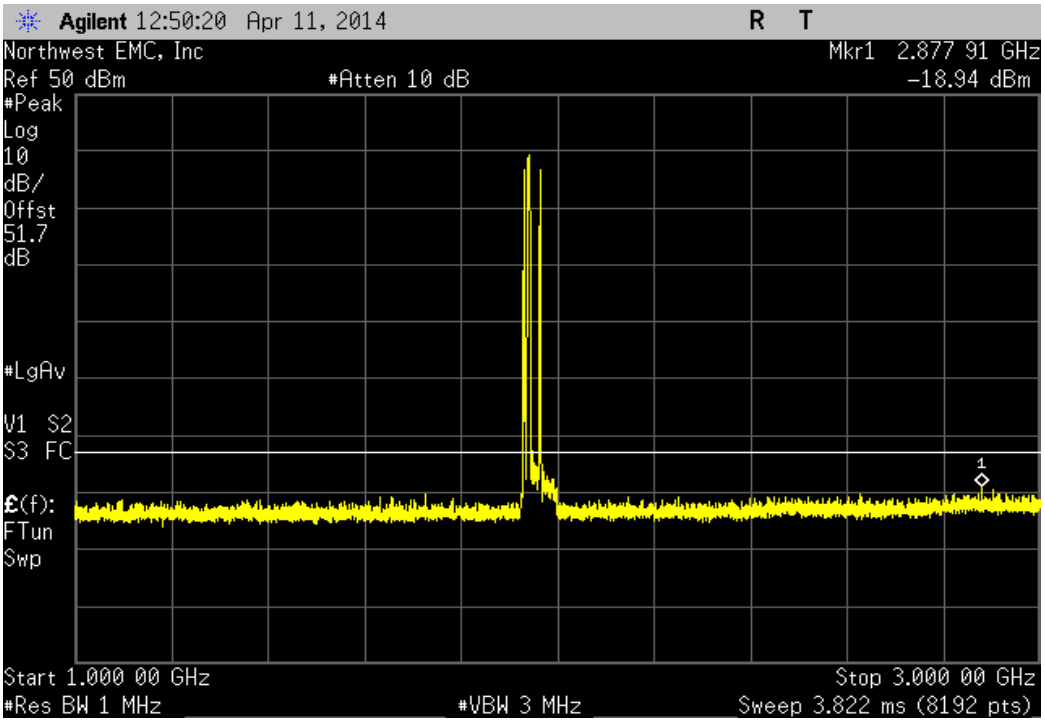
INTERMODULATION

Band ABD, LTE 5 MHz						
	Frequency Range			Value	Limit	Result
	30 MHz - 1 GHz			-40.76 dBm	≤ -13 dBm	Pass

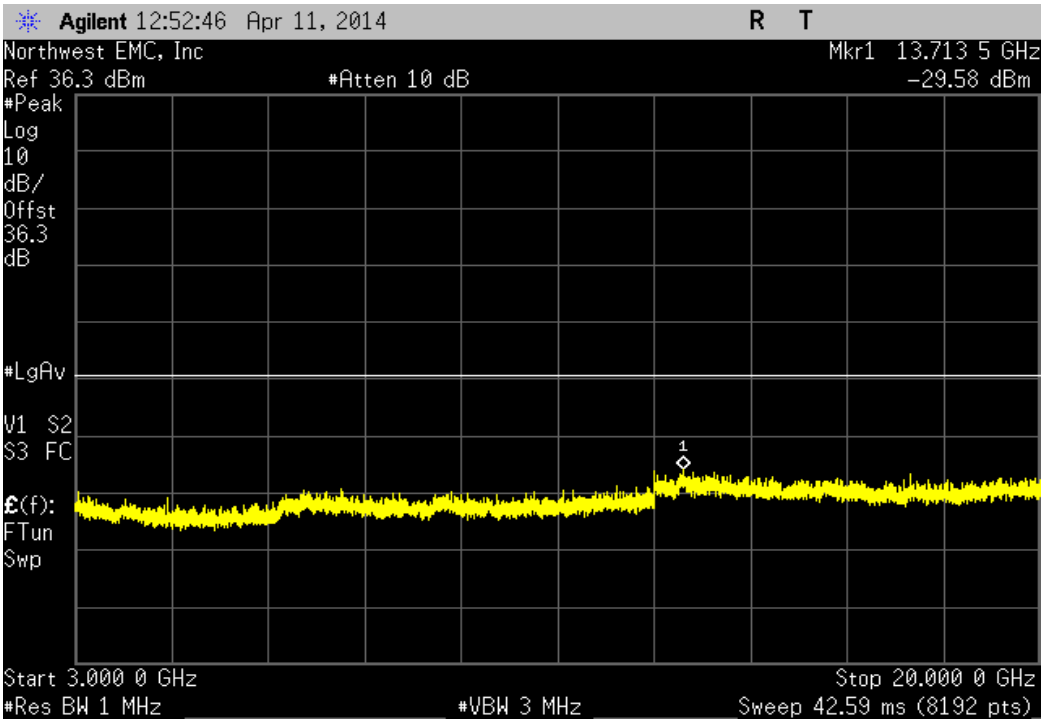


INTERMODULATION

Band ABD, LTE 5 MHz						
	Frequency Range			Value	Limit	Result
	1 GHz - 3 GHz			-18.94 dBm	≤ -13 dBm	Pass

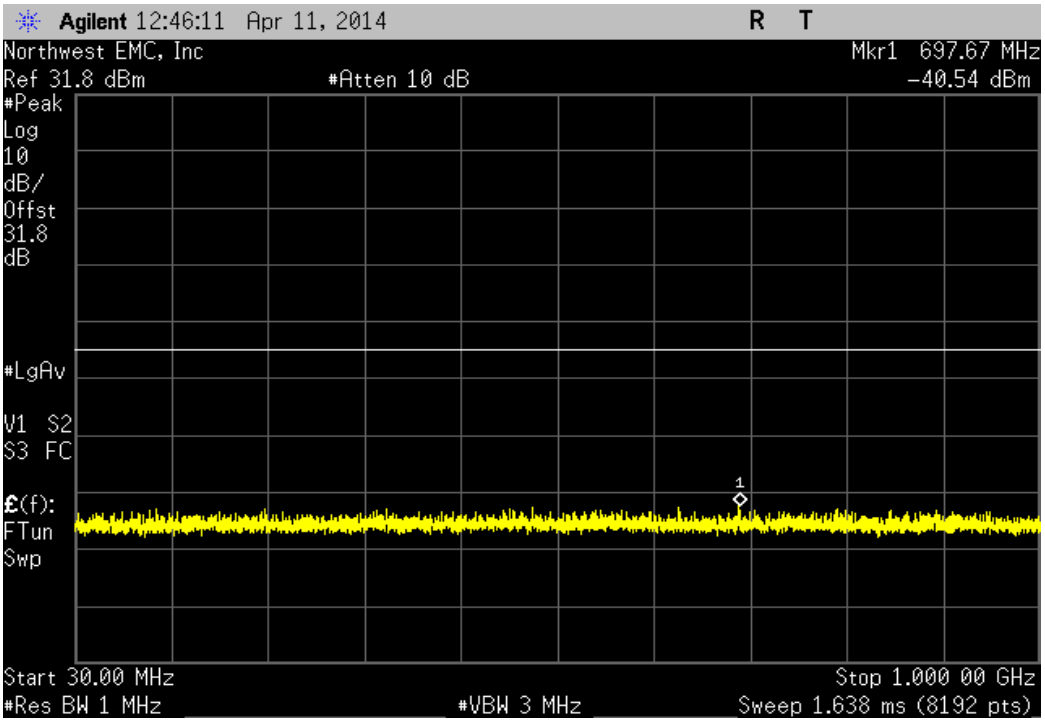


Band ABD, LTE 5 MHz						
	Frequency Range			Value	Limit	Result
	3 GHz - 20 GHz			-29.58 dBm	≤ -13 dBm	Pass

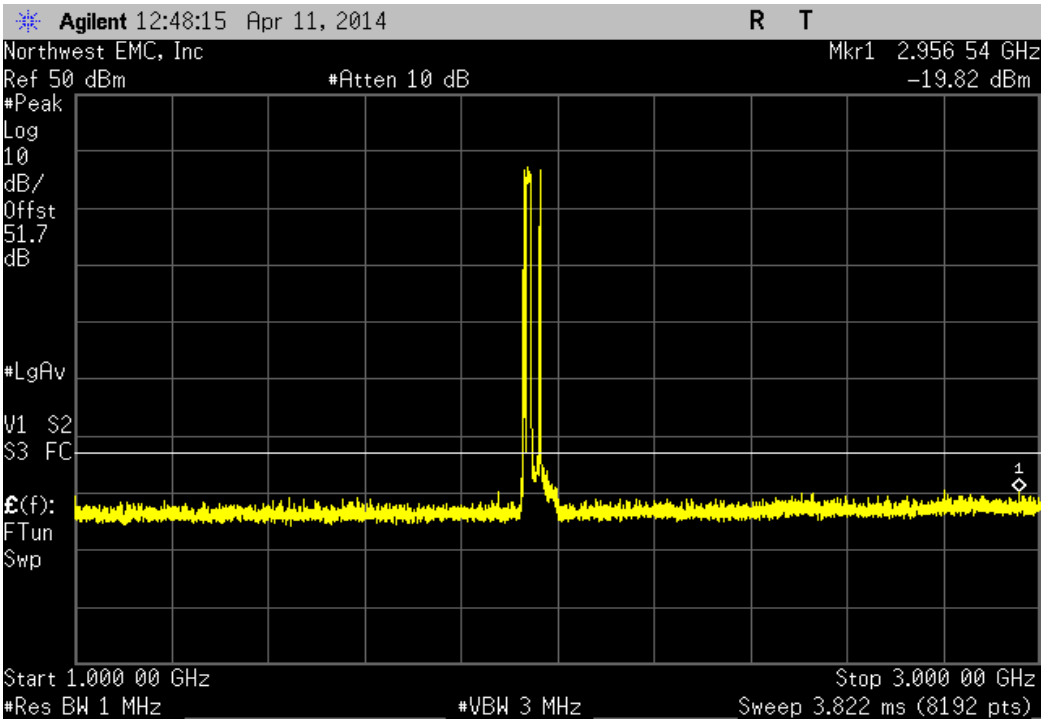


INTERMODULATION

Band ABD, LTE 10 MHz						
	Frequency Range			Value	Limit	Result
	30 MHz - 1 GHz			-40.54 dBm	≤ -13 dBm	Pass

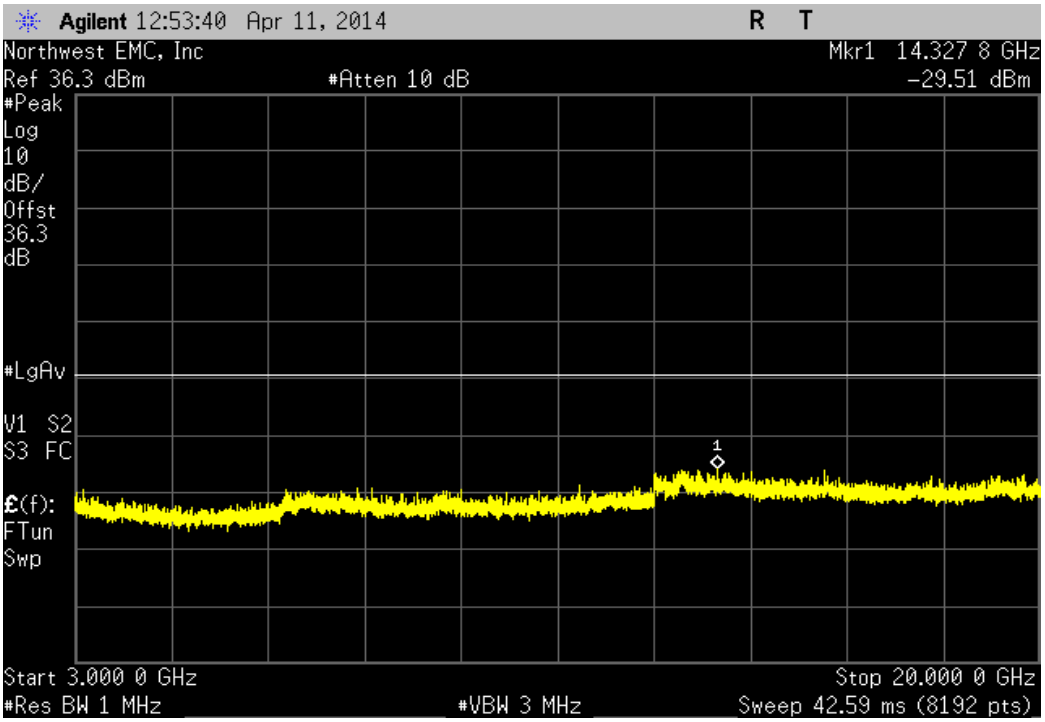


Band ABD, LTE 10 MHz						
	Frequency Range			Value	Limit	Result
	1 GHz - 3 GHz			-19.82 dBm	≤ -13 dBm	Pass



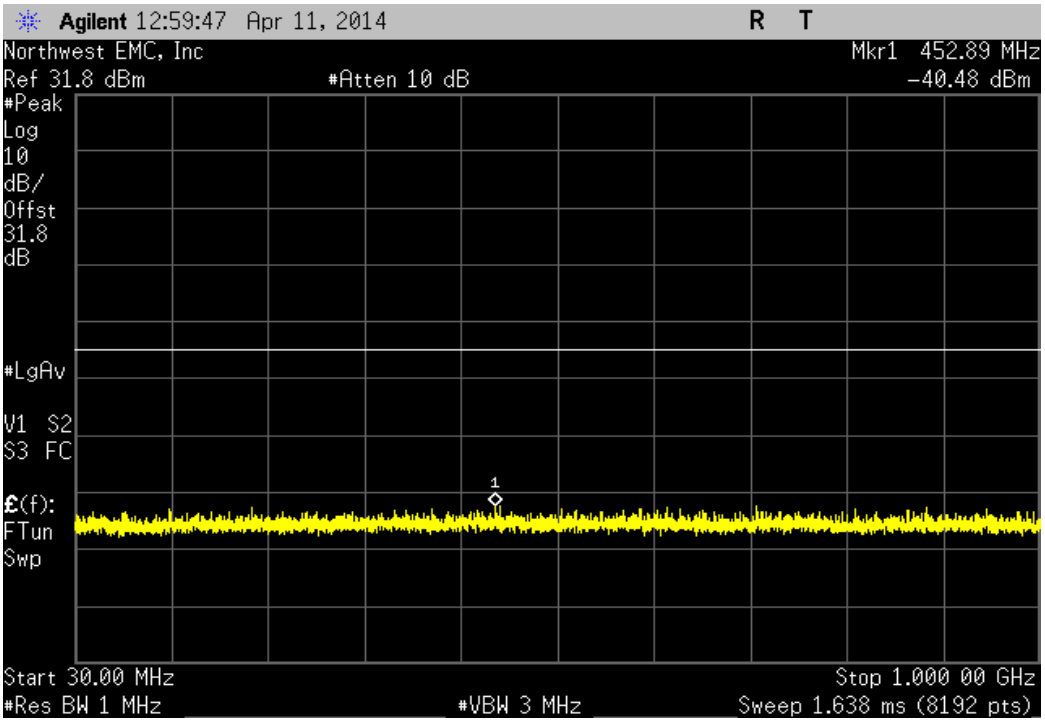
INTERMODULATION

Band ABD, LTE 10 MHz						
	Frequency Range			Value	Limit	Result
	3 GHz - 20 GHz			-29.52 dBm	≤ -13 dBm	Pass

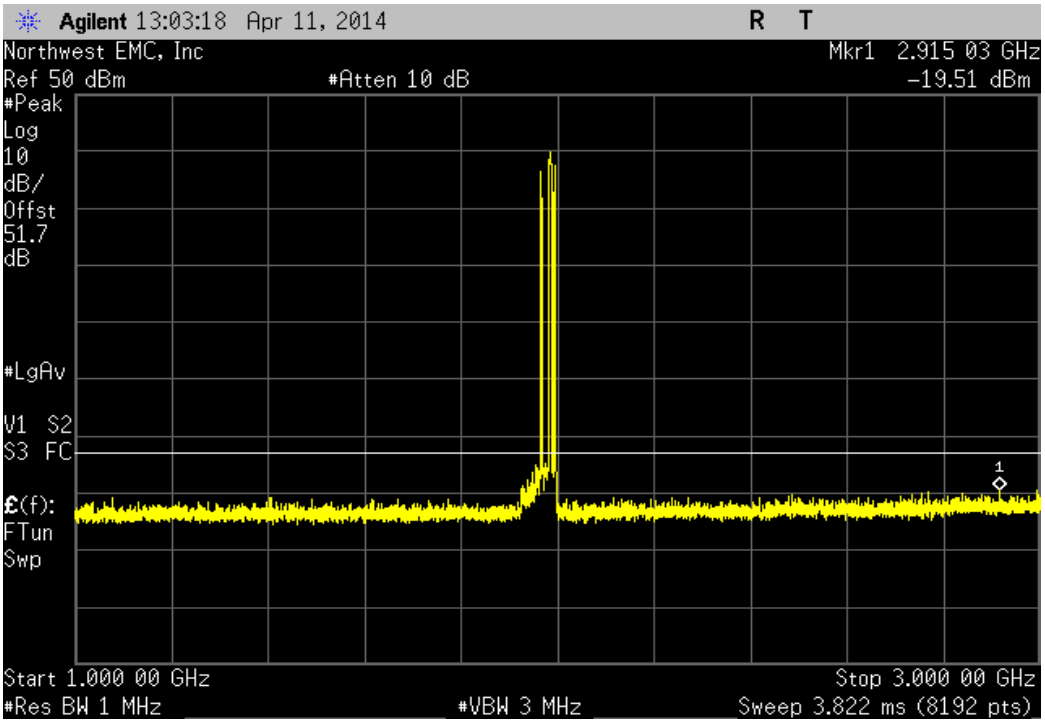


INTERMODULATION

Band CEFG, LTE 5 MHz						
	Frequency Range			Value	Limit	Result
	30 MHz - 1 GHz			-40.48 dBm	≤ -13 dBm	Pass

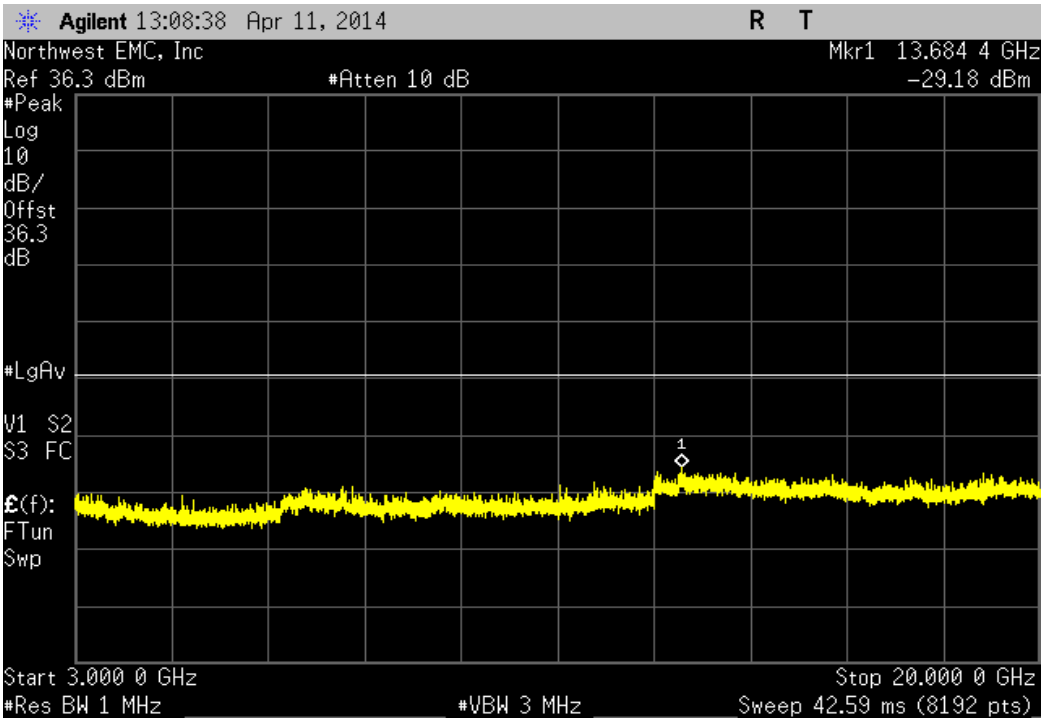


Band CEFG, LTE 5 MHz						
	Frequency Range			Value	Limit	Result
	1 GHz - 3 GHz			-19.51 dBm	≤ -13 dBm	Pass

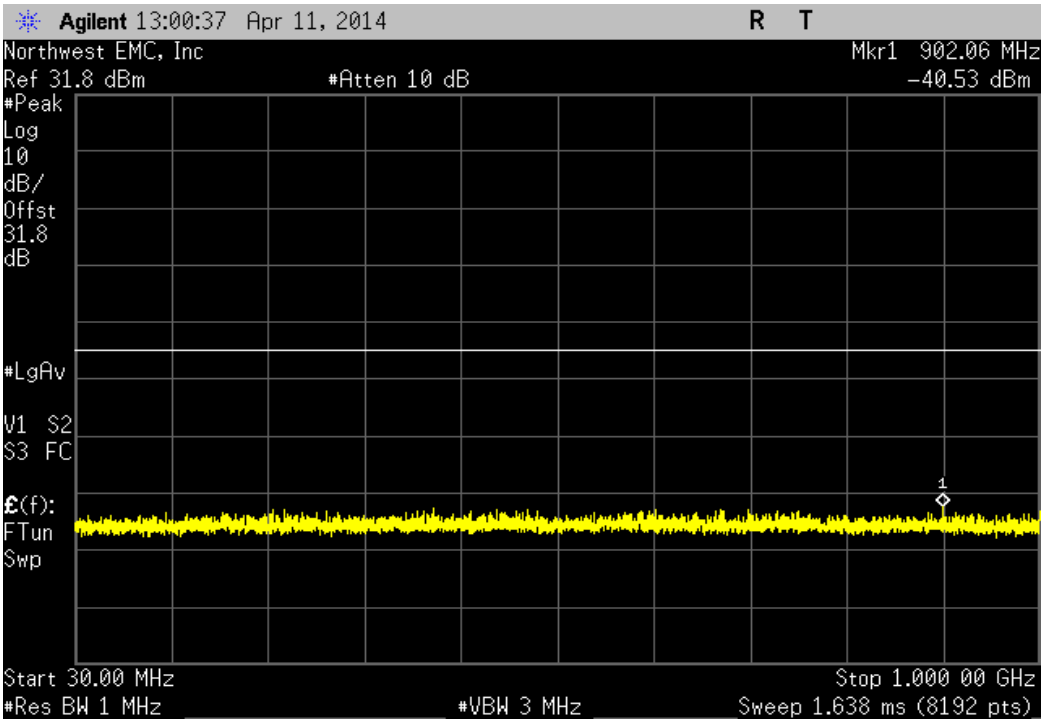


INTERMODULATION

Band CEFG, LTE 5 MHz						
	Frequency Range			Value	Limit	Result
	3 GHz - 20 GHz			-29.18 dBm	≤ -13 dBm	Pass

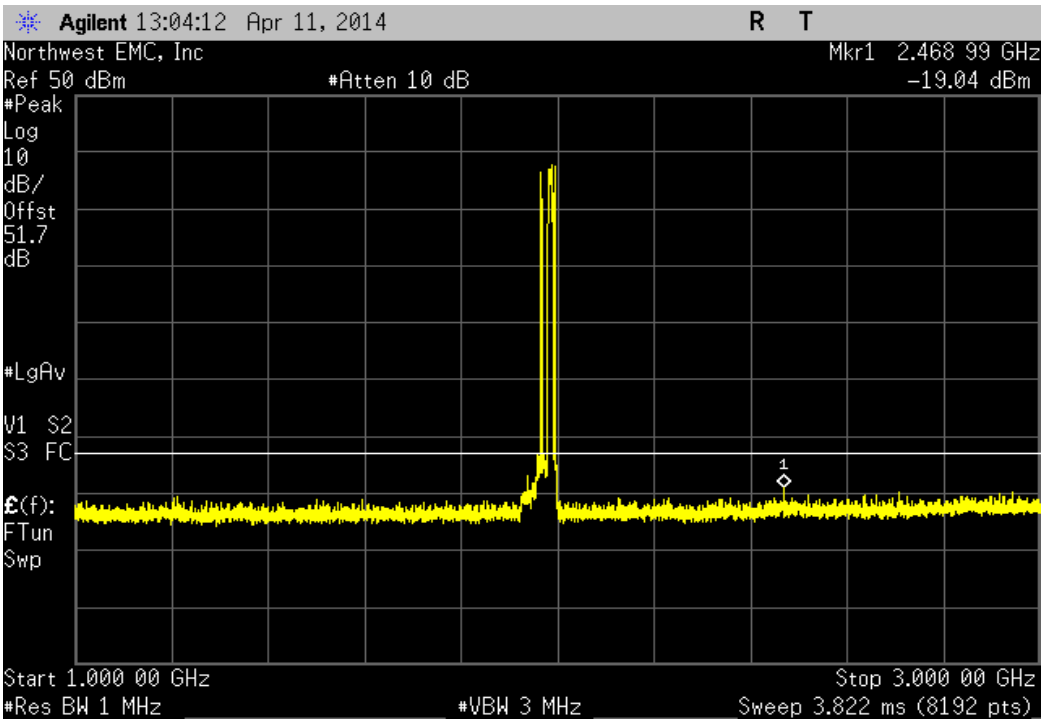


Band CEFG, LTE 10 MHz						
	Frequency Range			Value	Limit	Result
	30 MHz - 1 GHz			-40.53 dBm	≤ -13 dBm	Pass

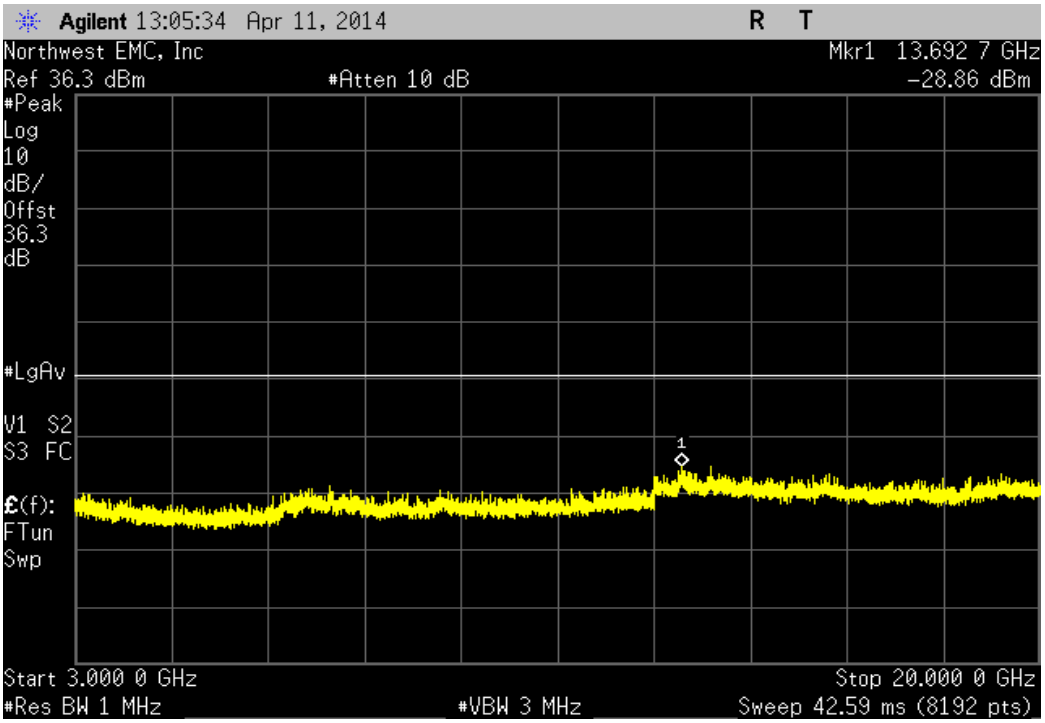


INTERMODULATION

Band CEFG, LTE 10 MHz						
	Frequency Range			Value	Limit	Result
	1 GHz - 3 GHz			-19.04 dBm	≤ -13 dBm	Pass



Band CEFG, LTE 10 MHz						
	Frequency Range			Value	Limit	Result
	3 GHz - 20 GHz			-28.86 dBm	≤ -13 dBm	Pass



INTERMODULATION

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
Power Divider/Combiner	Fairview Microwave	MP0208-2	IAE	NCR	0
Low Pass Filter 0-1000 MHz	Micro-Tronics	LPM50004	HGV	10/5/2012	24
High Pass Filter 2.8-18 GHz	Micro-Tronics	HPM50111	HGY	10/5/2012	24
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/3/2014	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	9/26/2013	12
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	4/28/2014	12

TEST DESCRIPTION

The EUT was configured with an input of a CW pulse at the bottom of the band, a CW pulse at the bottom of the band,and a modulated pulse near the edge of the band.

The antenna port spurious emissions were measured at the RF output terminal of the EUT with external attenuation on the RF input of the spectrum analyzer. Analyzer plots utilizing a 1MHz resolution bandwidth and no video filtering were made for each modulation type from 30 MHz to 20 GHz. The peak conducted power of spurious emissions, up to the 10th harmonic of the transmit frequency, were investigated to ensure they were less than or equal to –13 dBm.

INTERMODULATION

EUT:	Prism HDM 1900 MHz / 2100 MHz SISO RF Module			**Work Order:**	TECO0017
Serial Number:	None			**Date:**	07/16/14
Customer:	TE Connectivitiy / ADC Telecommunications			**Temperature:**	23.3°C
Attendees:	None			**Humidity:**	43%
Project:	None			**Barometric Pres.:**	1020.6
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
FCC 24E:2014	ANSI/TIA/EIA-603-C-2004

COMMENTS

A 30 dB high wattage attenuator was provided by the customer.

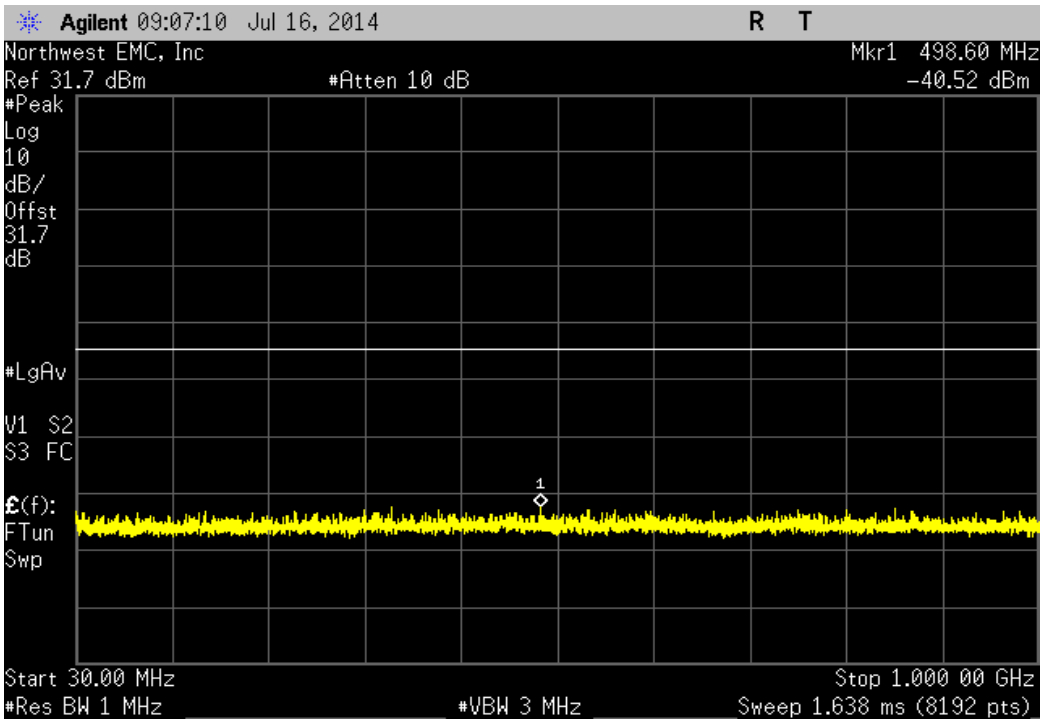
DEVIATIONS FROM TEST STANDARD

None

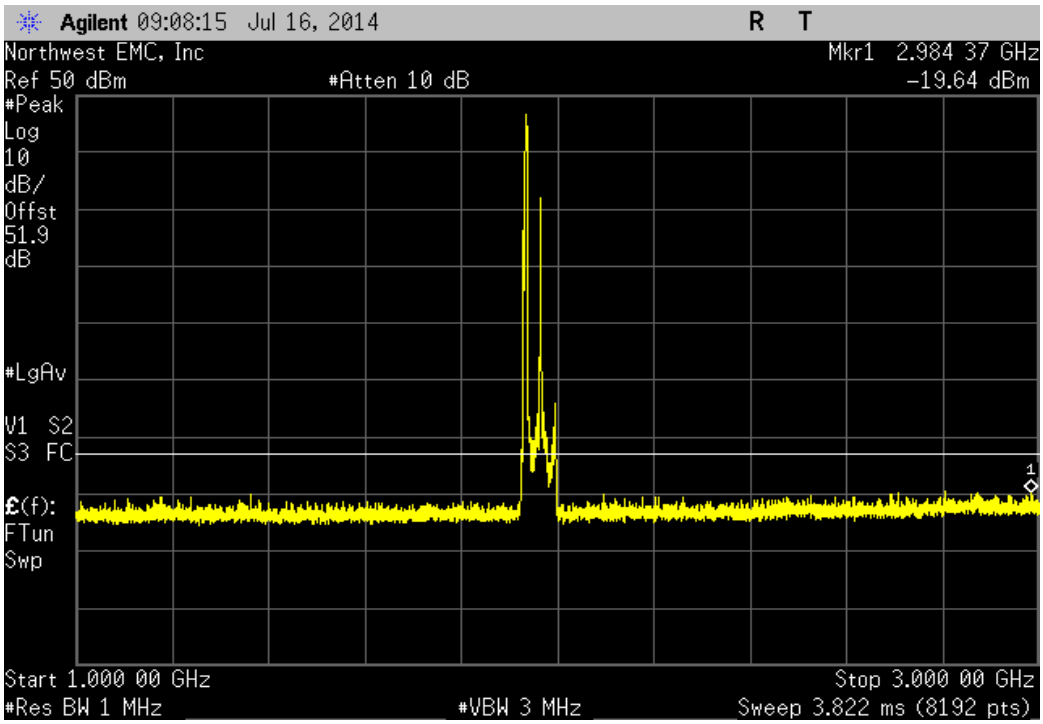
Configuration #	1	Signature	Trevor Buls

		Frequency Range	Value	Limit	Result
Band ABD					
	WCDMA	30 MHz - 1 GHz	-40.52 dBm	≤ -13 dBm	Pass
	WCDMA	1 GHz - 3 GHz	-19.64 dBm	≤ -13 dBm	Pass
	WCDMA	3 GHz - 20 GHz	-33.1 dBm	≤ -13 dBm	Pass
Band CEFG					
	WCDMA	30 MHz - 1 GHz	-40.53 dBm	≤ -13 dBm	Pass
	WCDMA	1 GHz - 3 GHz	-18.97 dBm	≤ -13 dBm	Pass
	WCDMA	3 GHz - 20 GHz	-32.69 dBm	≤ -13 dBm	Pass

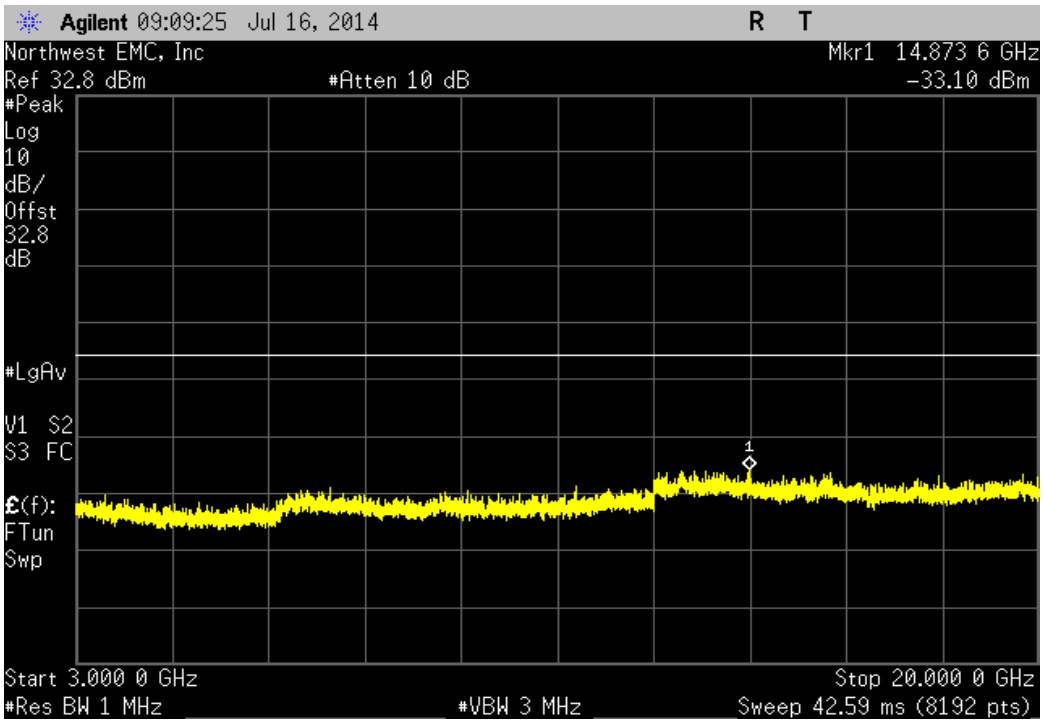
Band ABD, WCDMA						
	Frequency Range			Value	Limit	Result
	30 MHz - 1 GHz			-40.52 dBm	≤ -13 dBm	Pass



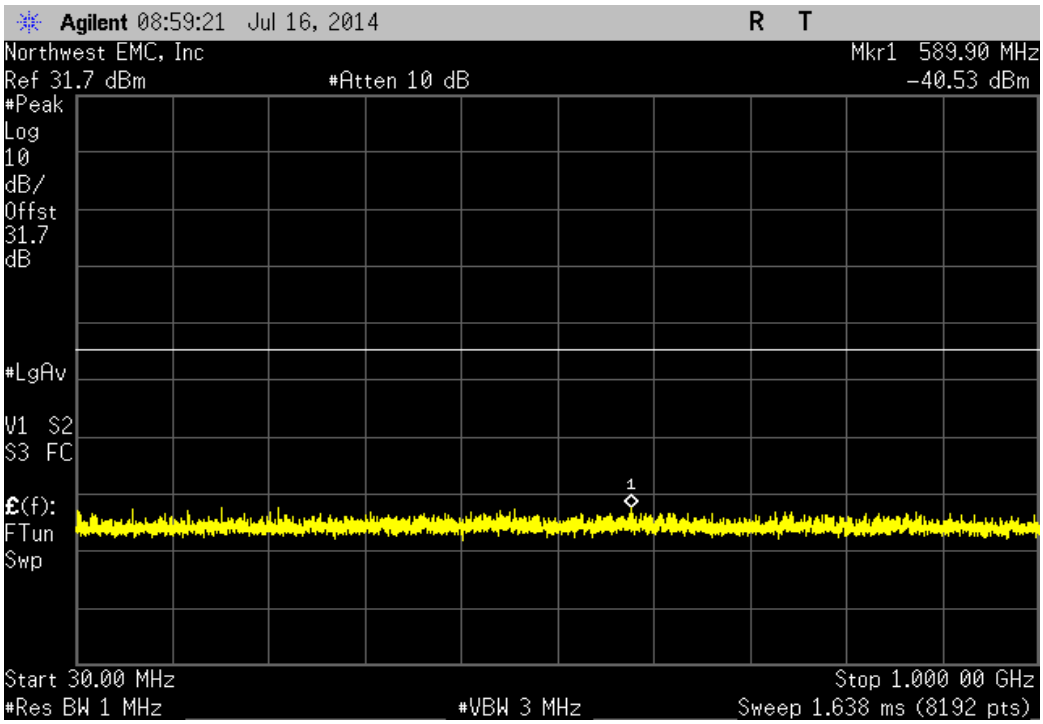
Band ABD, WCDMA						
	Frequency Range			Value	Limit	Result
	1 GHz - 3 GHz			-19.64 dBm	≤ -13 dBm	Pass



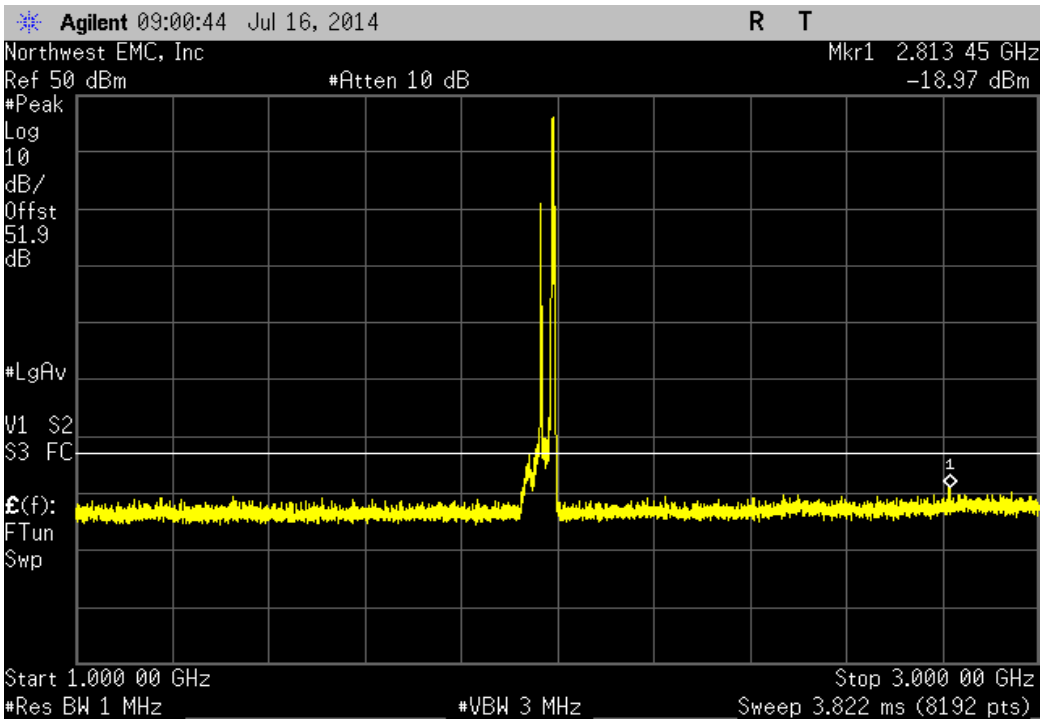
Band ABD, WCDMA						
	Frequency Range			Value	Limit	Result
	3 GHz - 20 GHz			-33.1 dBm	≤ -13 dBm	Pass



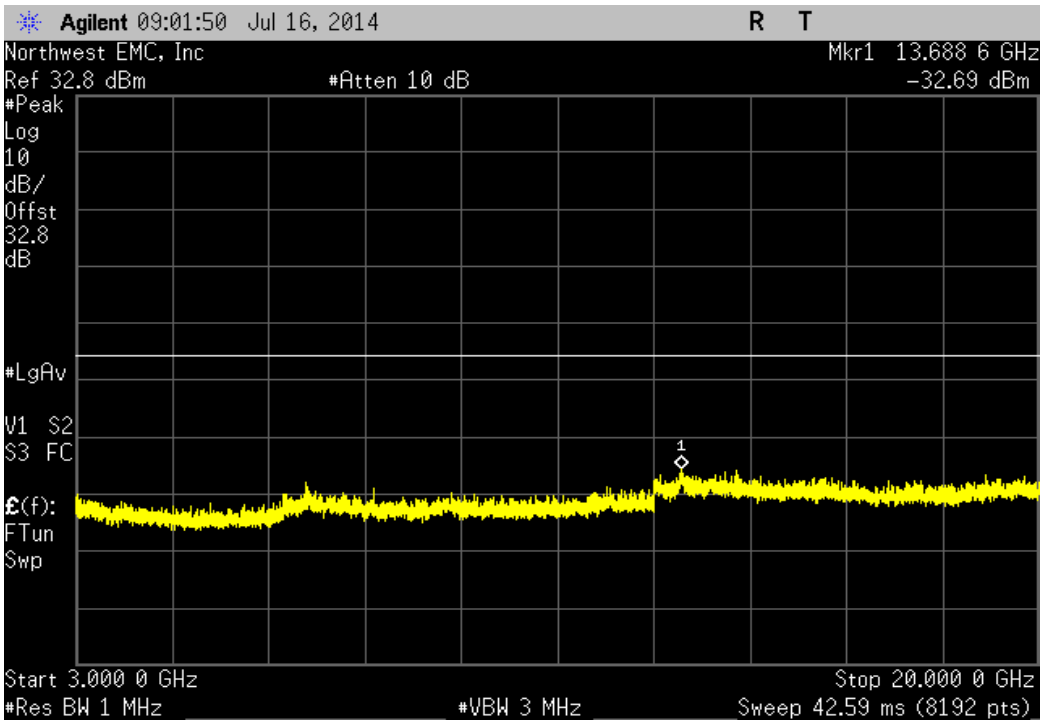
Band CEFG, WCDMA						
	Frequency Range			Value	Limit	Result
	30 MHz - 1 GHz			-40.53 dBm	≤ -13 dBm	Pass



Band CEFG, WCDMA						
	Frequency Range			Value	Limit	Result
	1 GHz - 3 GHz			-18.97 dBm	≤ -13 dBm	Pass



Band CEFG, WCDMA						
	Frequency Range			Value	Limit	Result
	3 GHz - 20 GHz			-32.69 dBm	≤ -13 dBm	Pass



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
Multimeter	Fluke	117	MNN	1/20/2014	36
Variable Transformer	Powerstat	246	XFR	NCR	0
Humidity Temperature Meter	Omega Engineering, Inc.	HH31	DUB	10/25/2011	36
Temp./Humidity Chamber	Cincinnati Sub Zero (CSZ)	ZPH-32-3.5-SCT/AC	TBF	NCR	0
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/3/2014	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	9/26/2013	12
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	5/15/2012	24

TEST DESCRIPTION

A direct connect measurement was made between the EUT's antenna cable and a spectrum analyzer. The spectrum analyzer is equipped with a precision frequency reference that exceeds the stability requirement of the EUT. Testing was done with an absence of modulation in a CW mode of operation.

The primary supply voltage was varied from 85 % to 115% of the nominal voltage Using a temperature chamber, the transmit frequency was recorded at the extremes of the specified temperature range (-30 ° to +50° C) and at 10°C intervals.

FREQUENCY STABILITY

EUT:	Prism HDM 1900 MHz / 2100 MHz SISO RF Module			**Work Order:**	TECO0013
Serial Number:	None			**Date:**	04/14/14
Customer:	TE Connectivity / ADC Telecommunications			**Temperature:**	22.8°C
Attendees:	None			**Humidity:**	16%
Project:	None			**Barometric Pres.:**	1020.6
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
FCC 24E:2014	ANSI/TIA/EIA-603-C-2004

COMMENTS

Customer provided a high wattage 30 dB attenuator. Voltage range varied from 126.5 to 93.5 VAC

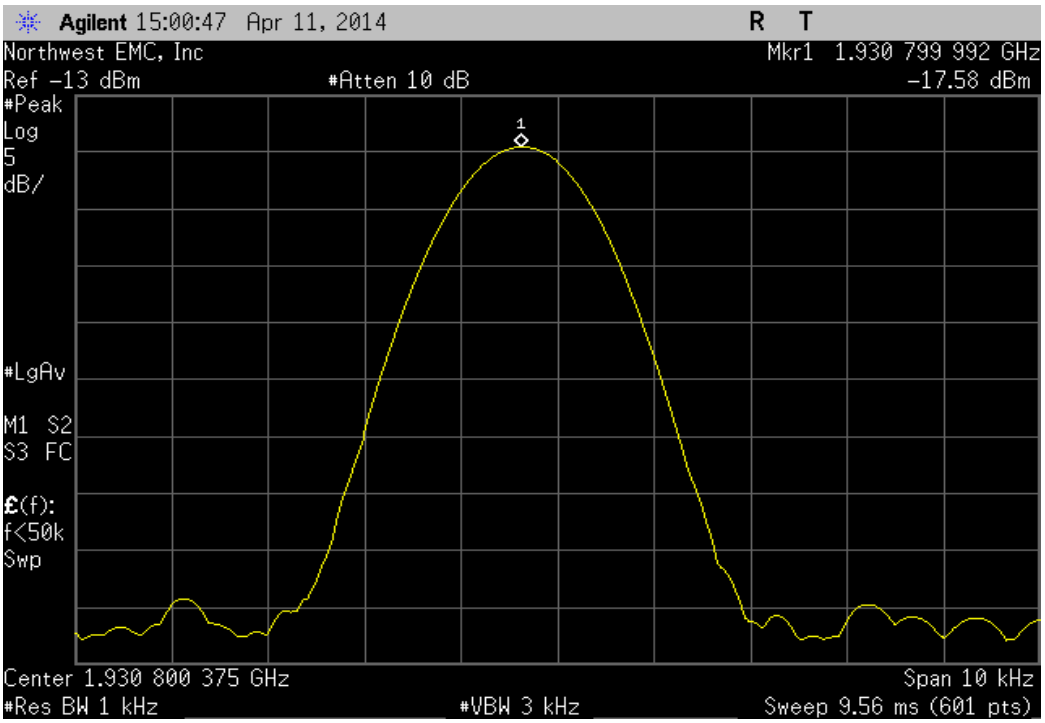
DEVIATIONS FROM TEST STANDARD

None

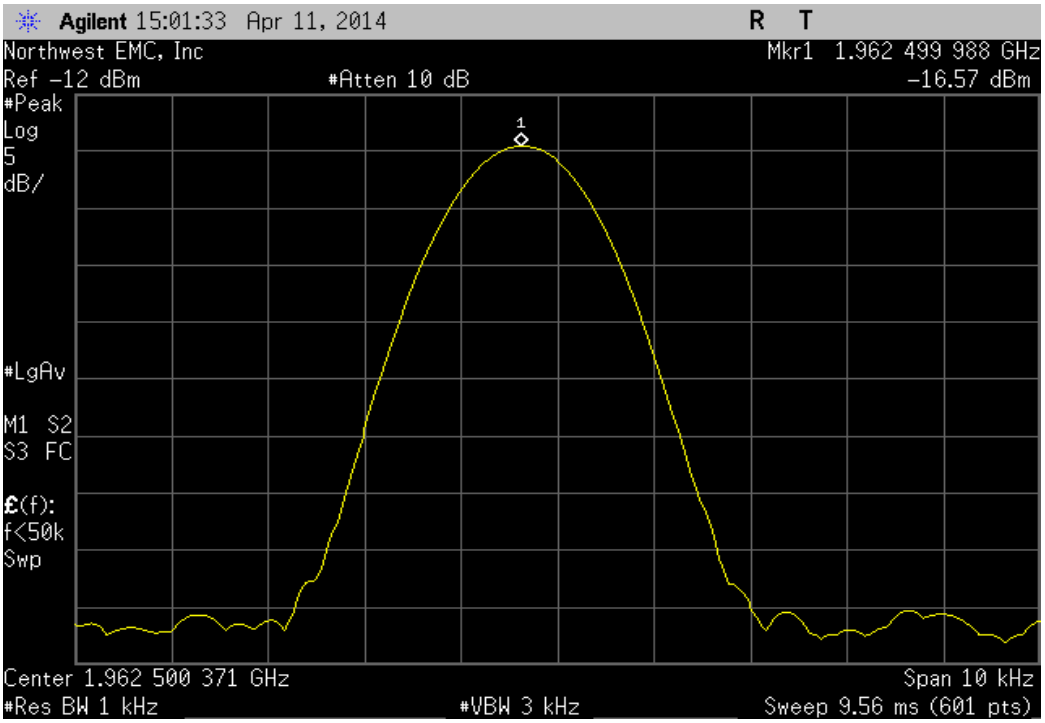
Configuration #	1	*Signature* Trevor Buls

		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
Voltage: 115%						
	Low Channel, 1930.8 MHz	1930.799992	1930.8	0.0041	1	Pass
	Mid Channel, 1962.5 MHz	1962.499988	1962.5	0.0061	1	Pass
	High Channel, 1994.2 MHz	1994.199984	1994.2	0.0080	1	Pass
Voltage: 100%						
	Low Channel, 1930.8 MHz	1930.799992	1930.8	0.0041	1	Pass
	Mid Channel, 1962.5 MHz	1962.499988	1962.5	0.0061	1	Pass
	High Channel, 1994.2 MHz	1994.199984	1994.2	0.0080	1	Pass
Voltage: 85%						
	Low Channel, 1930.8 MHz	1930.799992	1930.8	0.0041	1	Pass
	Mid Channel, 1962.5 MHz	1962.499988	1962.5	0.0061	1	Pass
	High Channel, 1994.2 MHz	1994.2	1994.2	0.0000	1	Pass
Temperature: +50°						
	Low Channel, 1930.8 MHz	1930.799992	1930.8	0.0041	1	Pass
	Mid Channel, 1962.5 MHz	1962.499988	1962.5	0.0061	1	Pass
	High Channel, 1994.2 MHz	1994.199984	1994.2	0.0080	1	Pass
Temperature: +40°						
	Low Channel, 1930.8 MHz	1930.799992	1930.8	0.0041	1	Pass
	Mid Channel, 1962.5 MHz	1962.499987	1962.5	0.0066	1	Pass
	High Channel, 1994.2 MHz	1994.199984	1994.2	0.0080	1	Pass
Temperature: +30°						
	Low Channel, 1930.8 MHz	1930.799988	1930.8	0.0062	1	Pass
	Mid Channel, 1962.5 MHz	1962.499988	1962.5	0.0061	1	Pass
	High Channel, 1994.2 MHz	1994.199984	1994.2	0.0080	1	Pass
Temperature: +20°						
	Low Channel, 1930.8 MHz	1930.799988	1930.8	0.0062	1	Pass
	Mid Channel, 1962.5 MHz	1962.500003	1962.5	0.0015	1	Pass
	High Channel, 1994.2 MHz	1994.199985	1994.2	0.0075	1	Pass
Temperature: +10°						
	Low Channel, 1930.8 MHz	1930.799989	1930.8	0.0057	1	Pass
	Mid Channel, 1962.5 MHz	1962.499988	1962.5	0.0061	1	Pass
	High Channel, 1994.2 MHz	1994.199984	1994.2	0.0080	1	Pass
Temperature: 0°						
	Low Channel, 1930.8 MHz	1930.799992	1930.8	0.0041	1	Pass
	Mid Channel, 1962.5 MHz	1962.499988	1962.5	0.0061	1	Pass
	High Channel, 1994.2 MHz	1994.2	1994.2	0.0000	1	Pass
Temperature: -10°						
	Low Channel, 1930.8 MHz	1930.799992	1930.8	0.0041	1	Pass
	Mid Channel, 1962.5 MHz	1962.499986	1962.5	0.0071	1	Pass
	High Channel, 1994.2 MHz	1994.199984	1994.2	0.0080	1	Pass
Temperature: -20°						
	Low Channel, 1930.8 MHz	1930.799992	1930.8	0.0041	1	Pass
	Mid Channel, 1962.5 MHz	1962.499988	1962.5	0.0061	1	Pass
	High Channel, 1994.2 MHz	1994.199984	1994.2	0.0080	1	Pass
Temperature: -30°						
	Low Channel, 1930.8 MHz	1930.799992	1930.8	0.0041	1	Pass
	Mid Channel, 1962.5 MHz	1962.499988	1962.5	0.0061	1	Pass
	High Channel, 1994.2 MHz	1994.199984	1994.2	0.0080	1	Pass

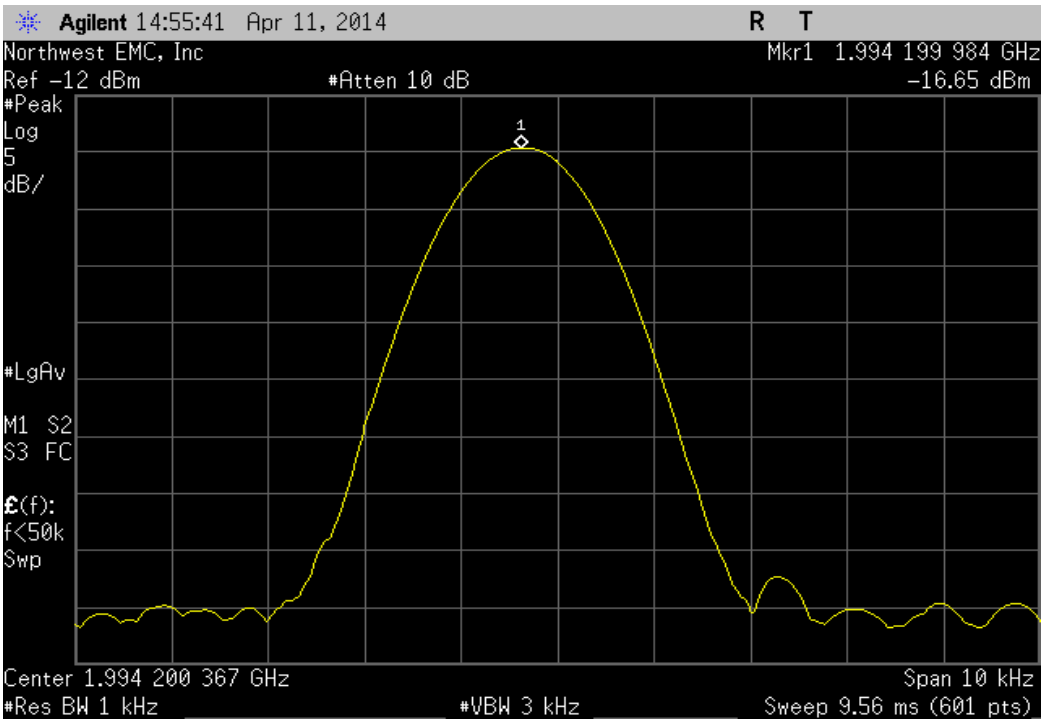
Voltage: 115%, Low Channel, 1930.8 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1930.799992	1930.8	0.0041	1	Pass



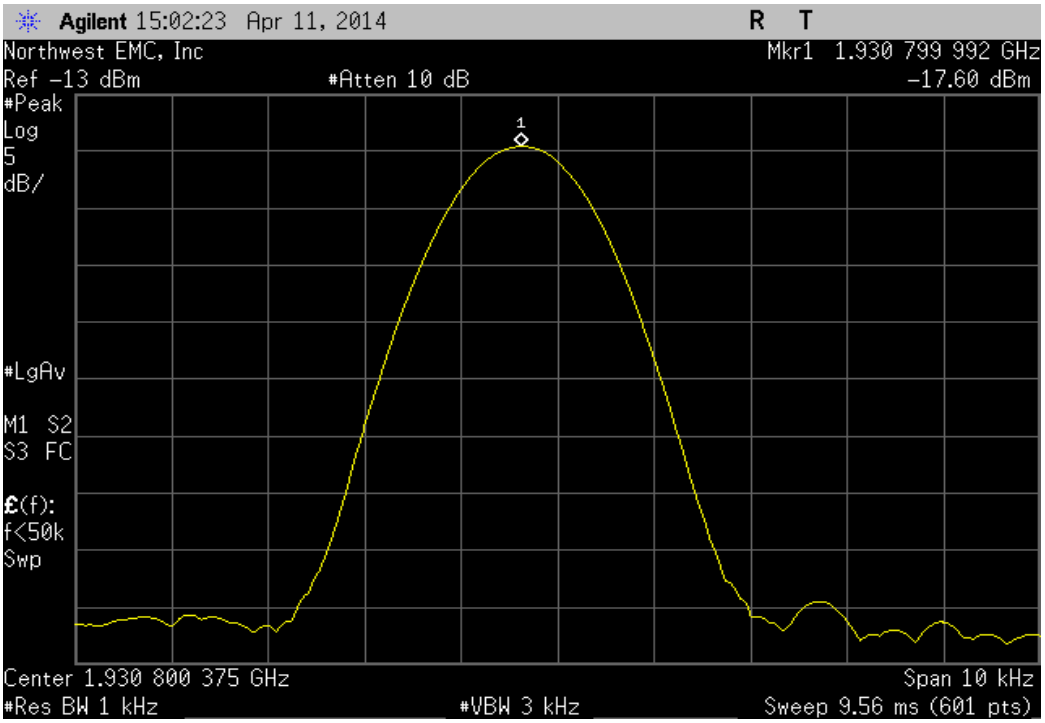
Voltage: 115%, Mid Channel, 1962.5 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1962.499988	1962.5	0.0061	1	Pass



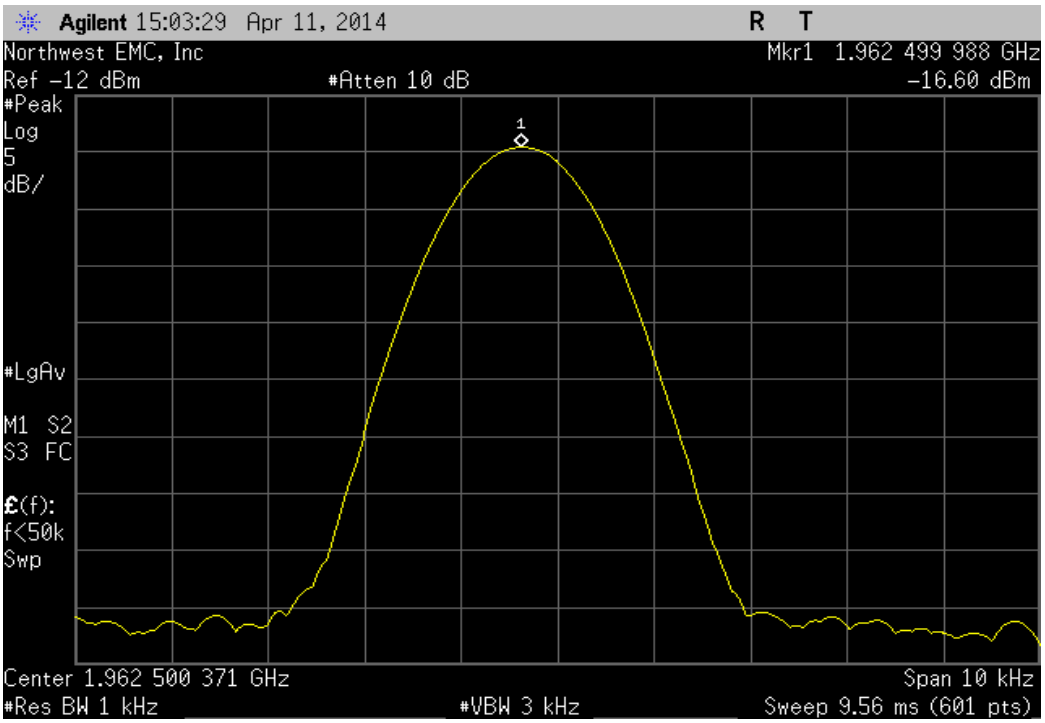
Voltage: 115%, High Channel, 1994.2 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1994.199984	1994.2	0.0080	1	Pass



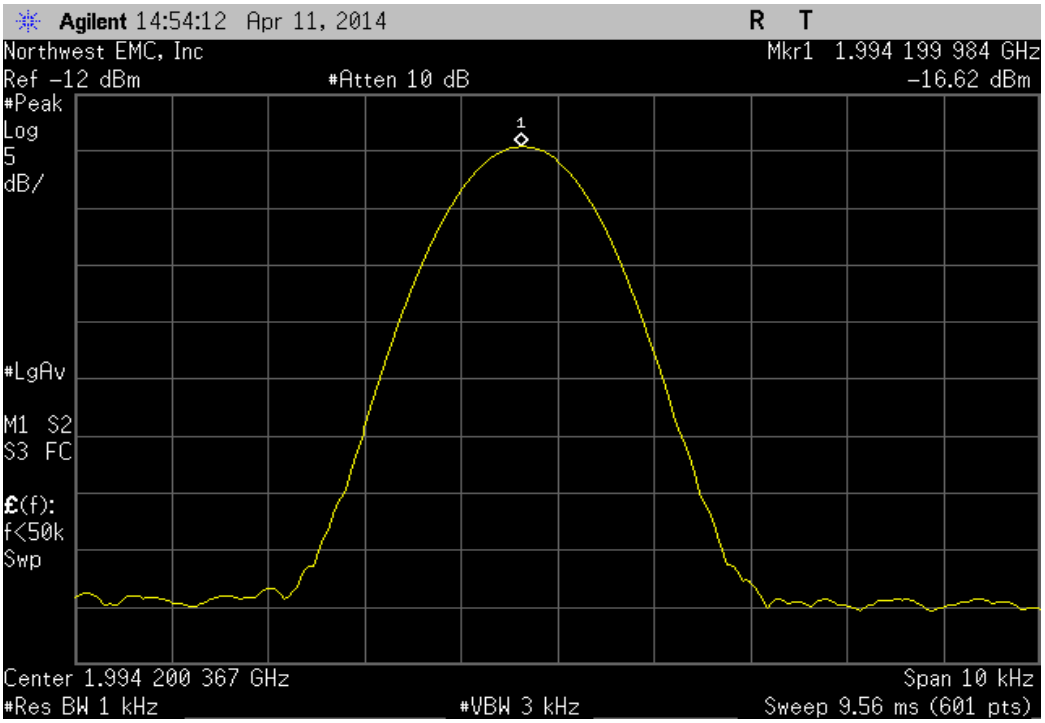
Voltage: 100%, Low Channel, 1930.8 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1930.799992	1930.8	0.0041	1	Pass



Voltage: 100%, Mid Channel, 1962.5 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1962.499988	1962.5	0.0061	1	Pass

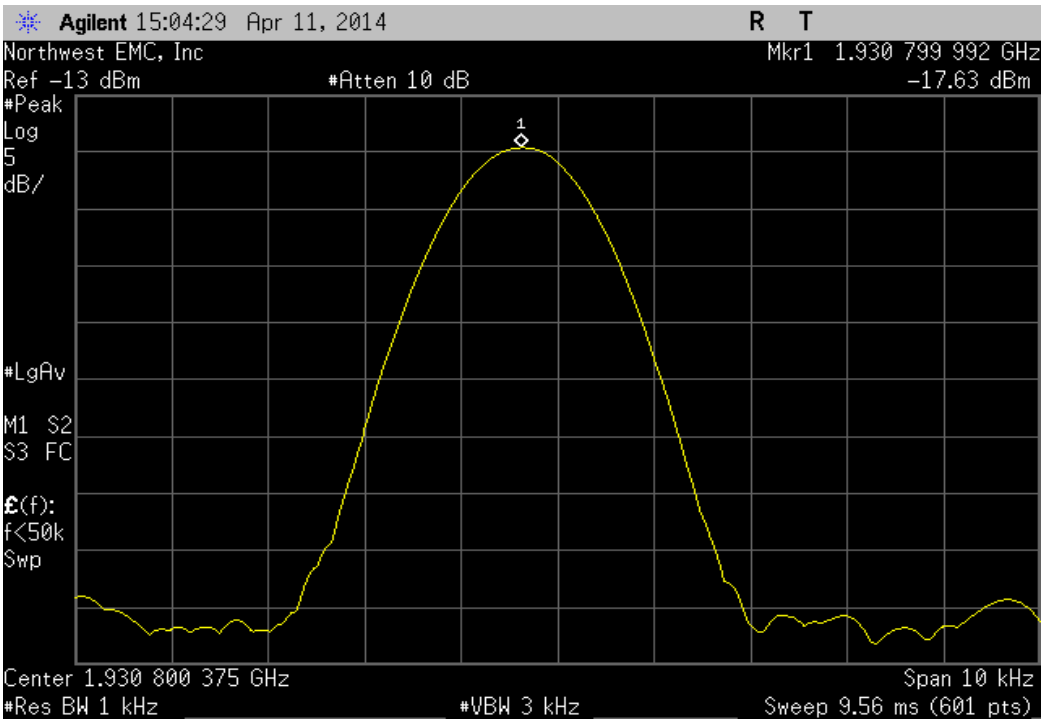


Voltage: 100%, High Channel, 1994.2 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1994.199984	1994.2	0.0080	1	Pass

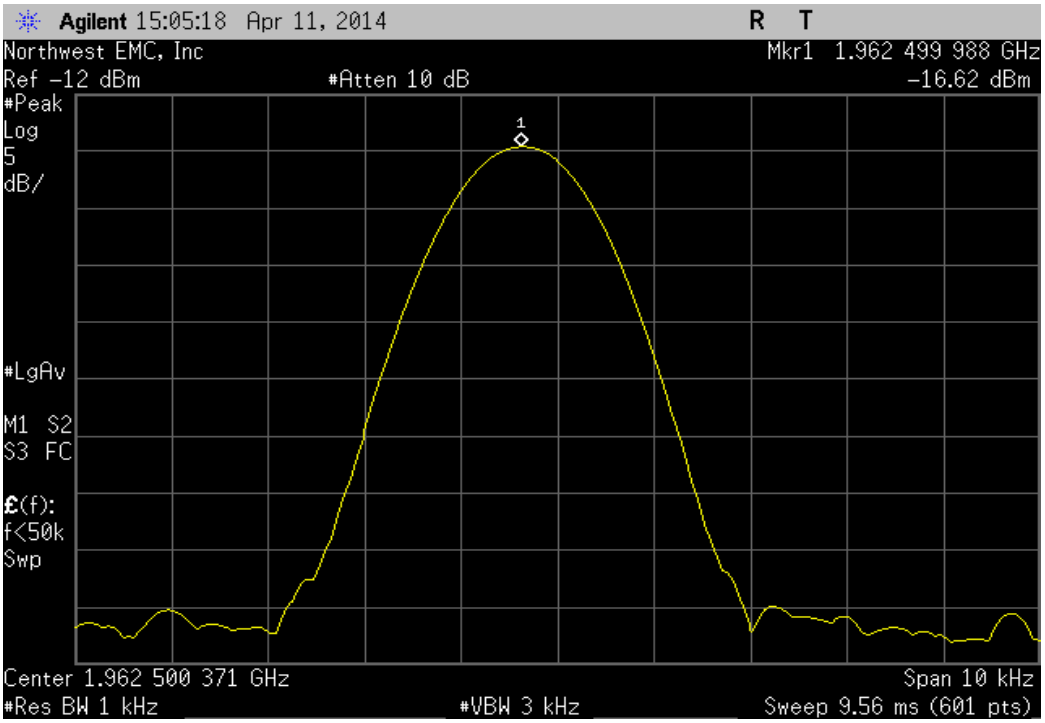


FREQUENCY STABILITY

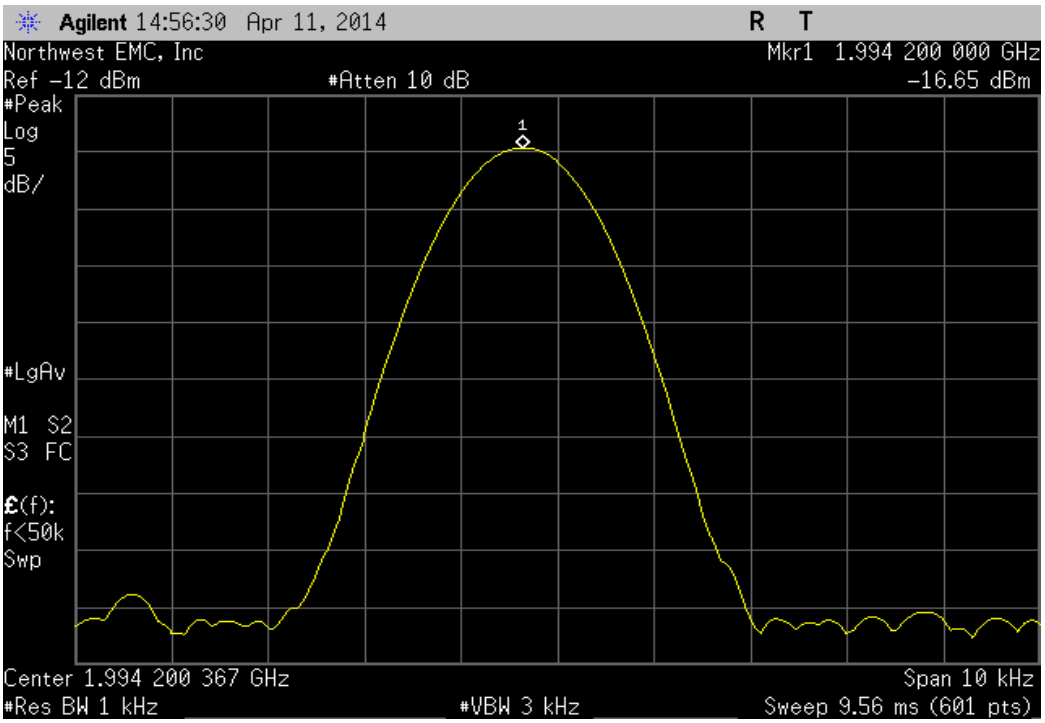
Voltage: 85%, Low Channel, 1930.8 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1930.799992	1930.8	0.0041	1	Pass



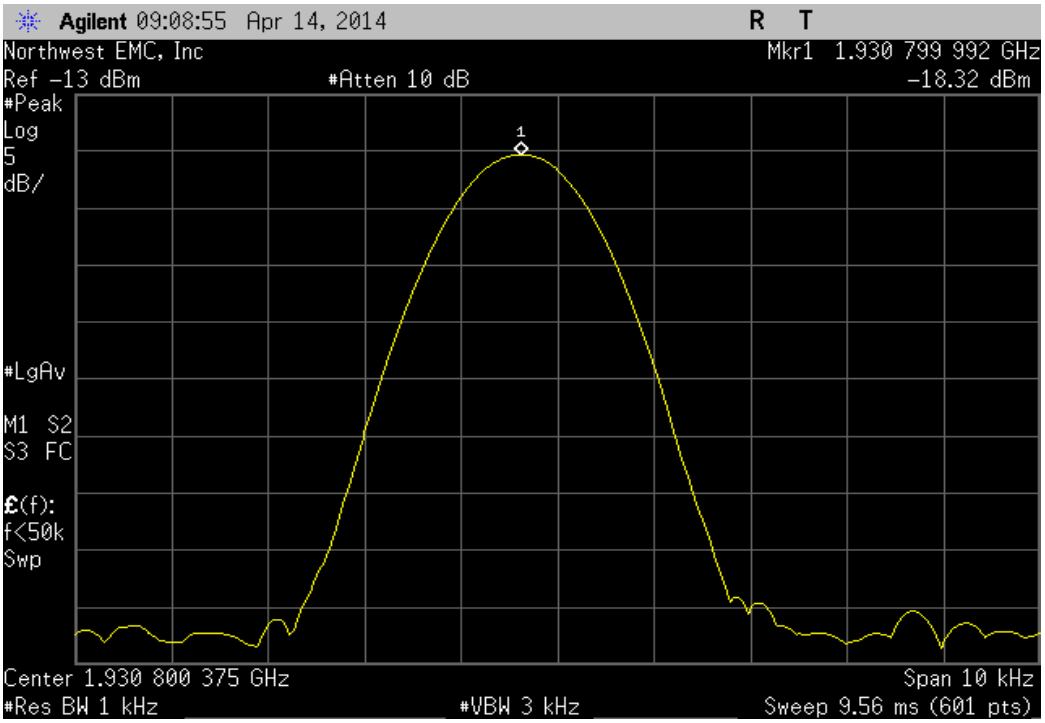
Voltage: 85%, Mid Channel, 1962.5 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1962.499988	1962.5	0.0061	1	Pass



Voltage: 85%, High Channel, 1994.2 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1994.2	1994.2	0.0000	1	Pass

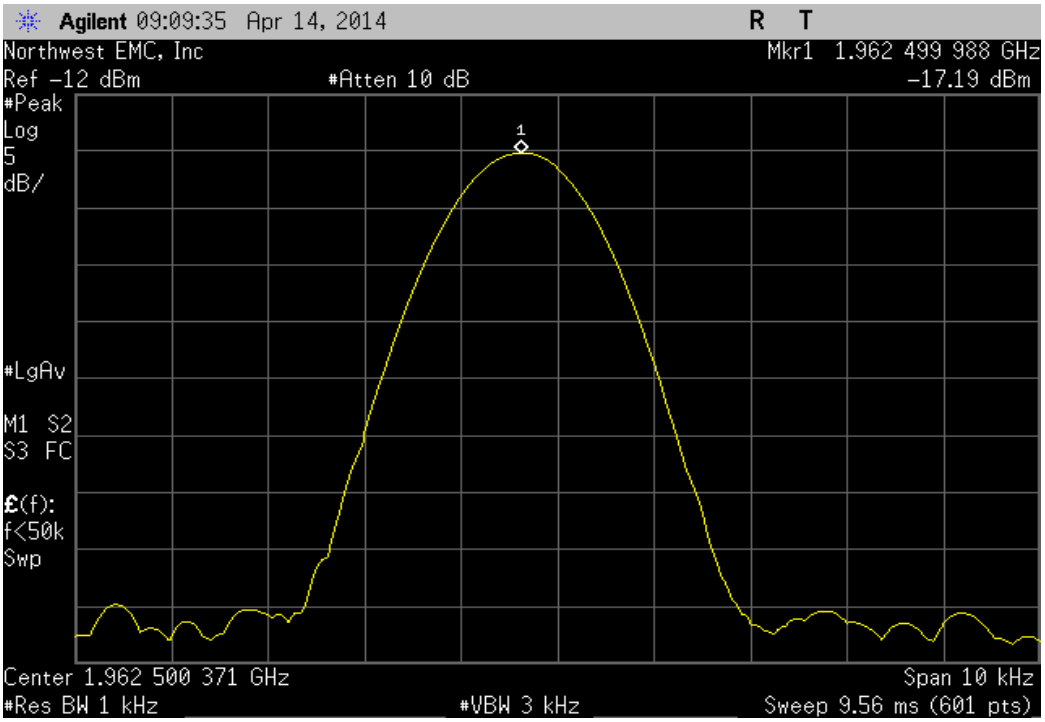


Temperature: +50°, Low Channel, 1930.8 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1930.799992	1930.8	0.0041	1	Pass

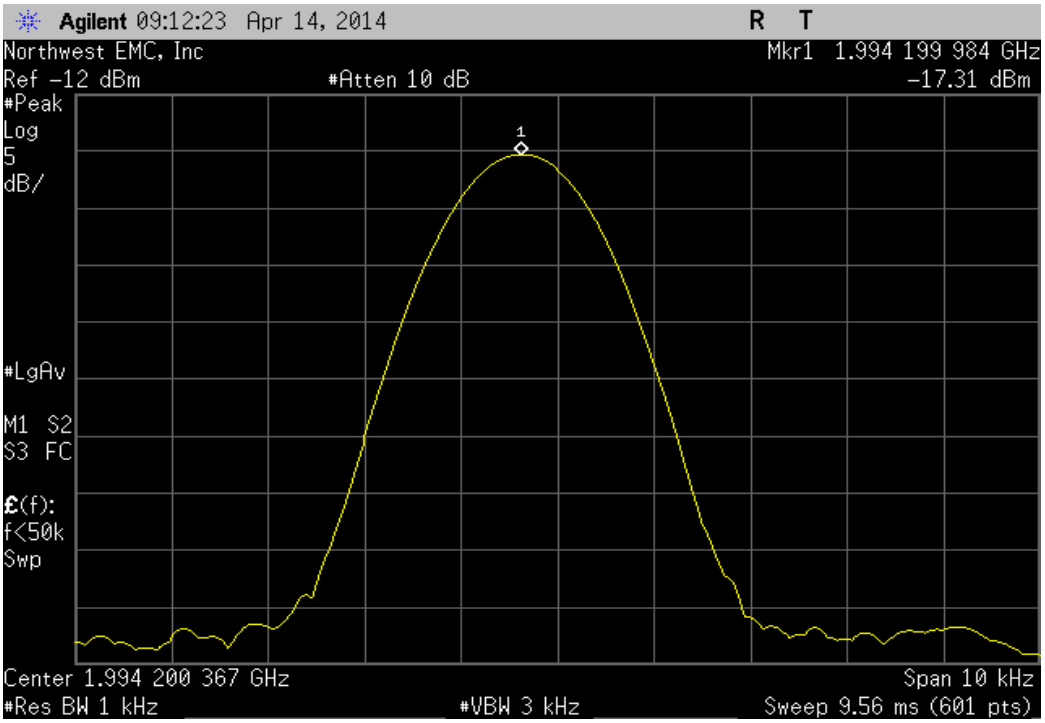


FREQUENCY STABILITY

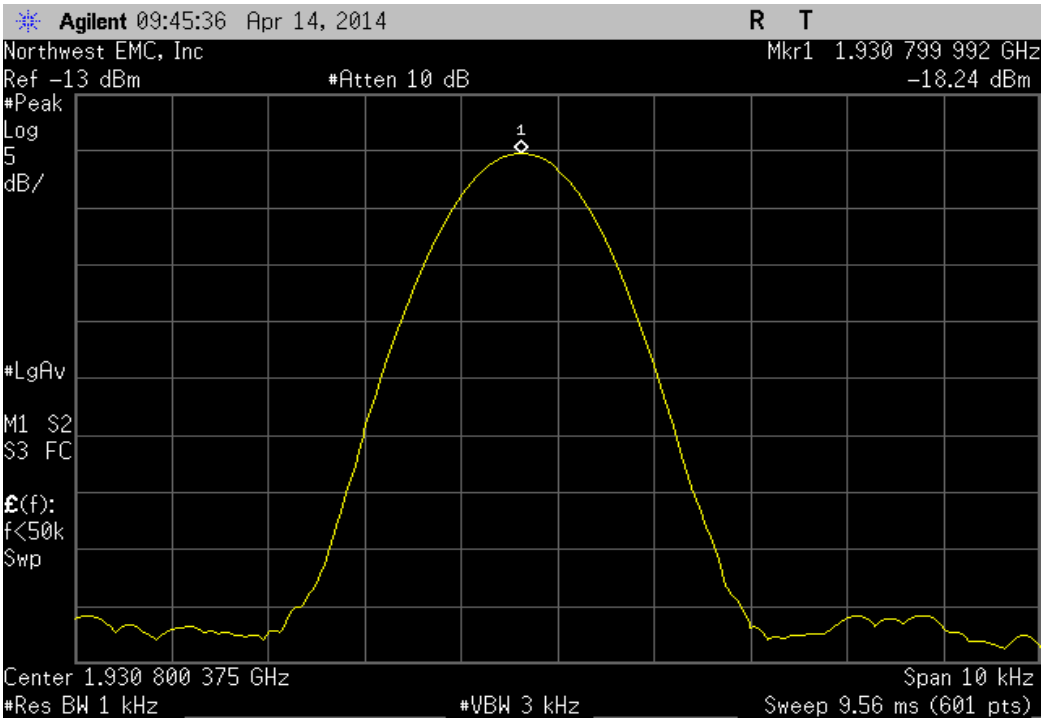
Temperature: +50°, Mid Channel, 1962.5 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1962.499988	1962.5	0.0061	1	Pass



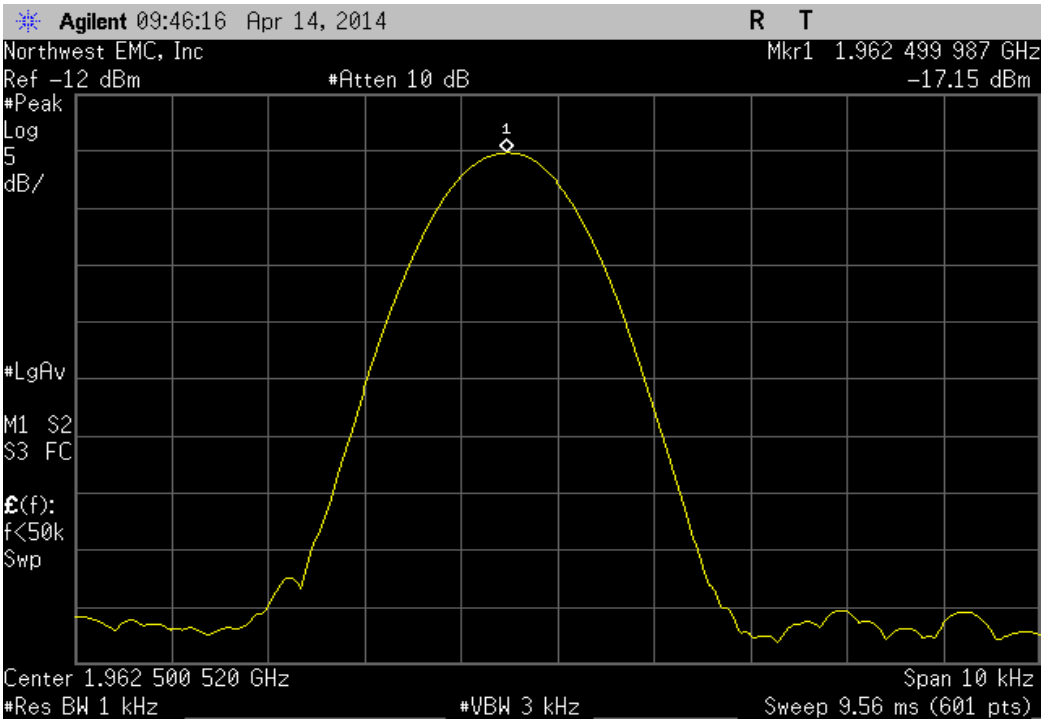
Temperature: +50°, High Channel, 1994.2 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1994.199984	1994.2	0.0080	1	Pass



Temperature: +40°, Low Channel, 1930.8 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1930.799992	1930.8	0.0041	1	Pass

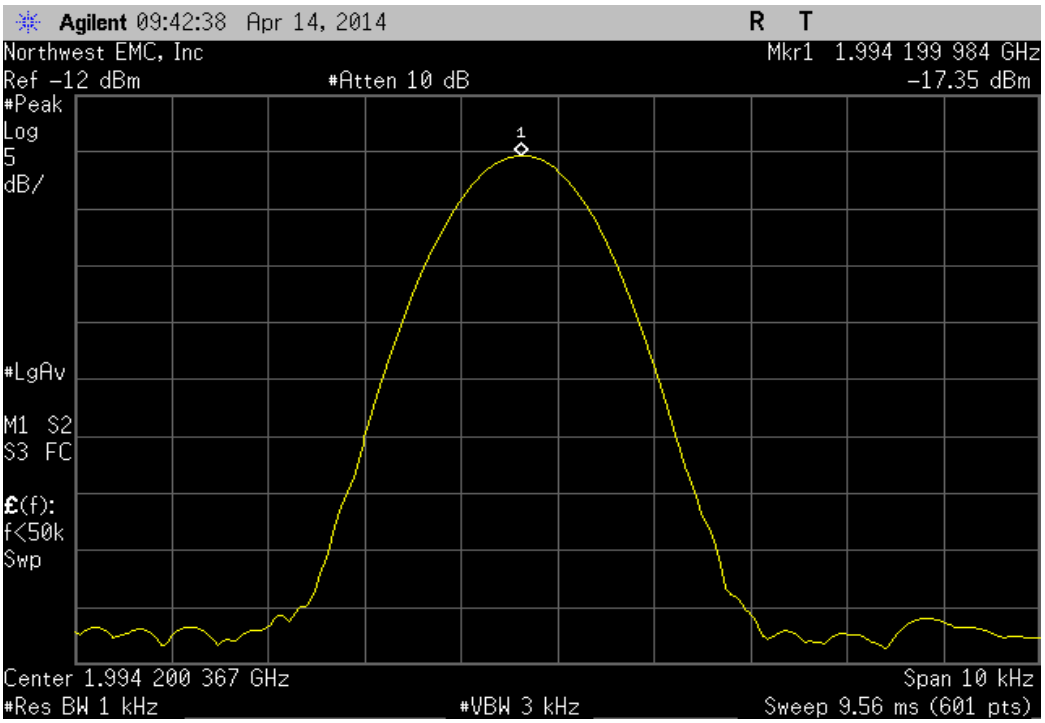


Temperature: +40°, Mid Channel, 1962.5 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1962.499987	1962.5	0.0066	1	Pass

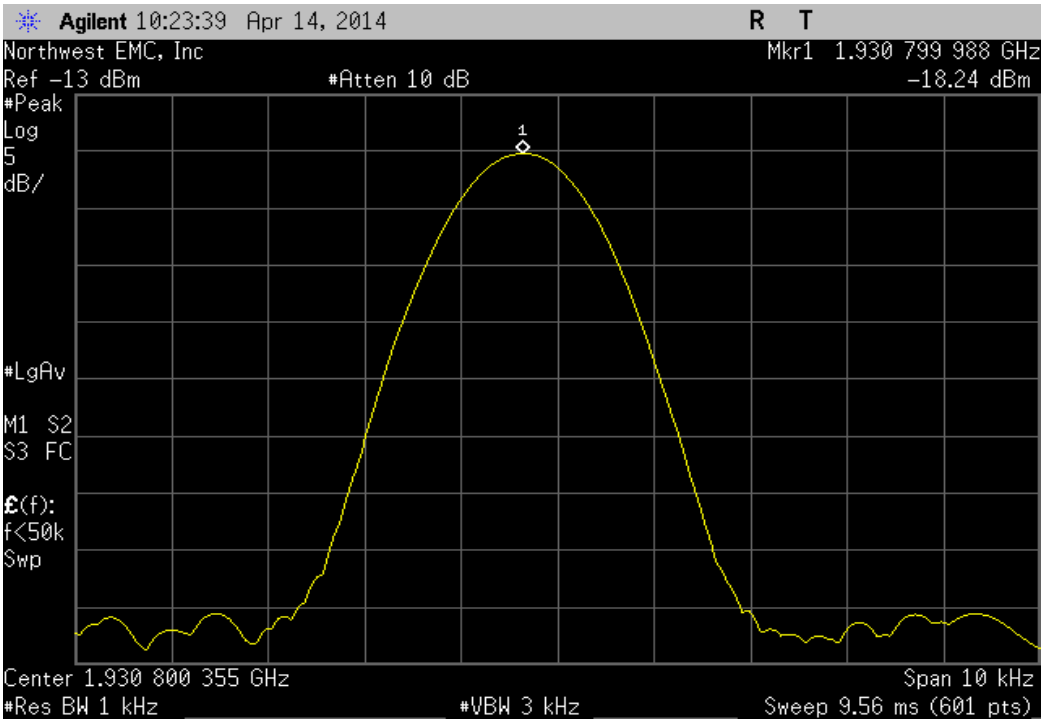


FREQUENCY STABILITY

Temperature: +40°, High Channel, 1994.2 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1994.199984	1994.2	0.0080	1	Pass

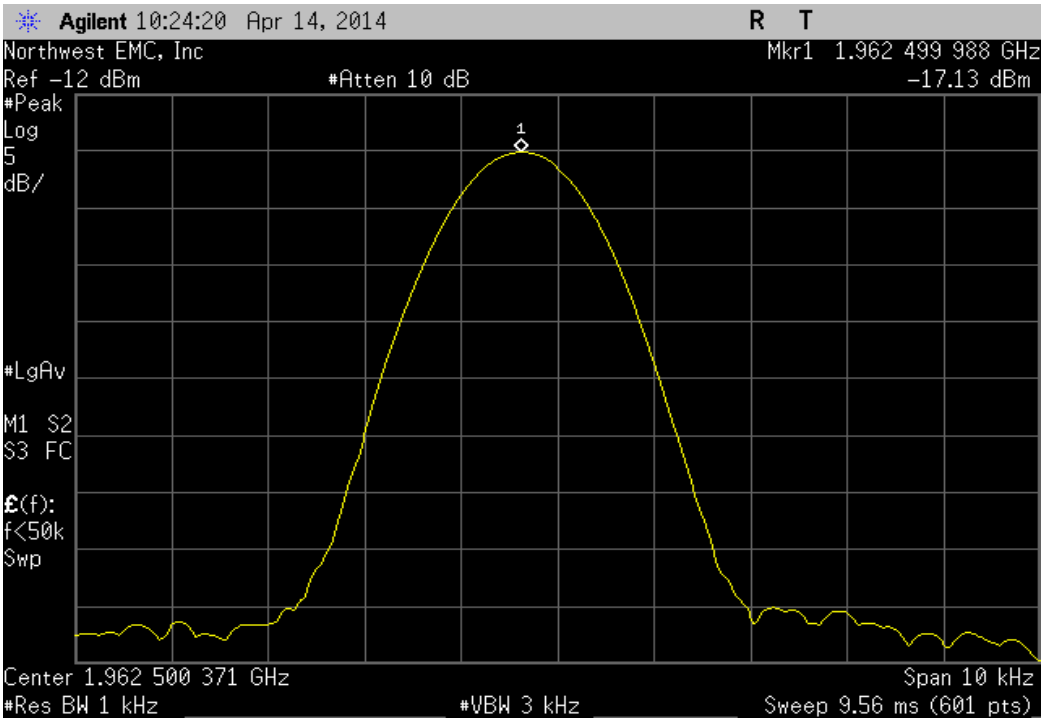


Temperature: +30°, Low Channel, 1930.8 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1930.799988	1930.8	0.0062	1	Pass

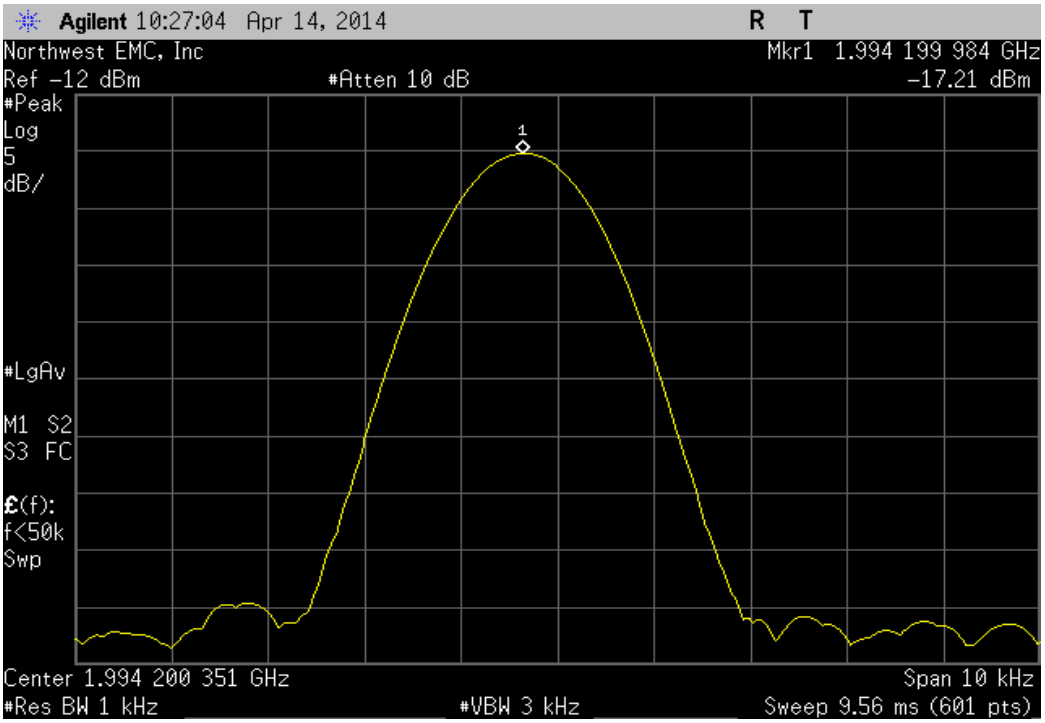


FREQUENCY STABILITY

Temperature: +30°, Mid Channel, 1962.5 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1962.499988	1962.5	0.0061	1	Pass

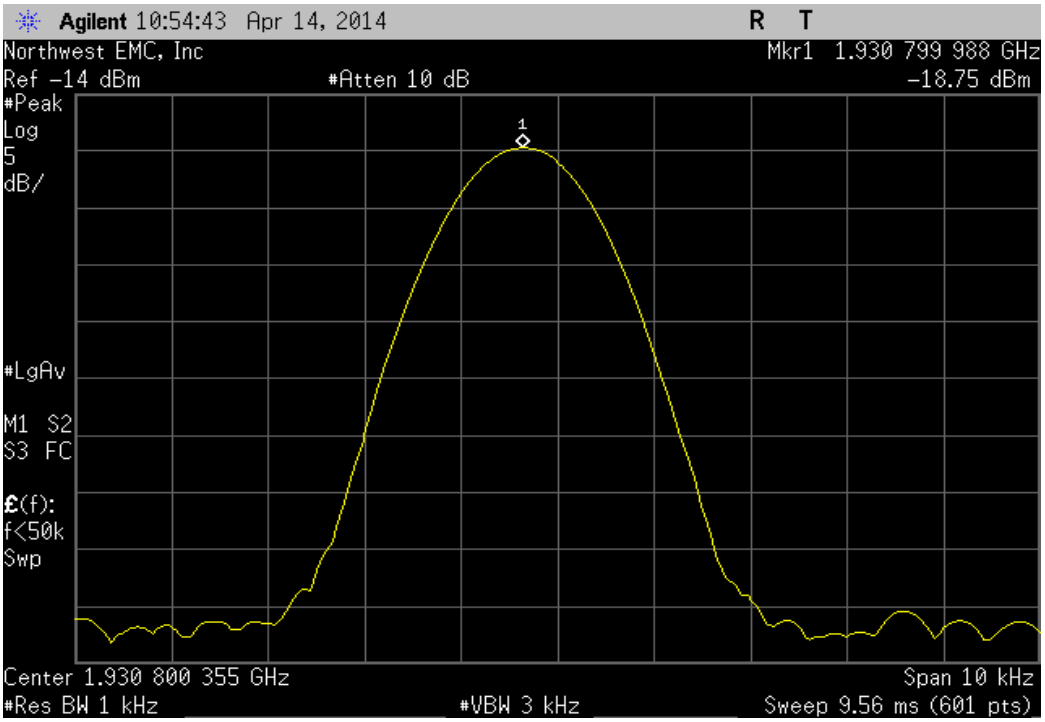


Temperature: +30°, High Channel, 1994.2 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1994.199984	1994.2	0.0080	1	Pass

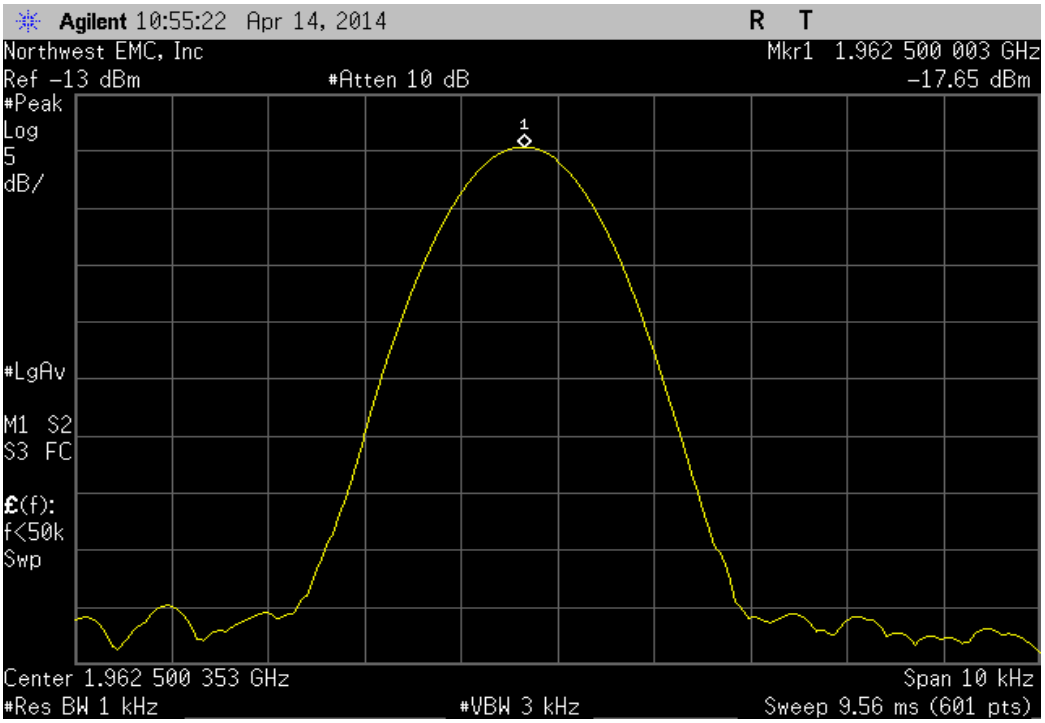


FREQUENCY STABILITY

Temperature: +20°, Low Channel, 1930.8 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1930.799988	1930.8	0.0062	1	Pass

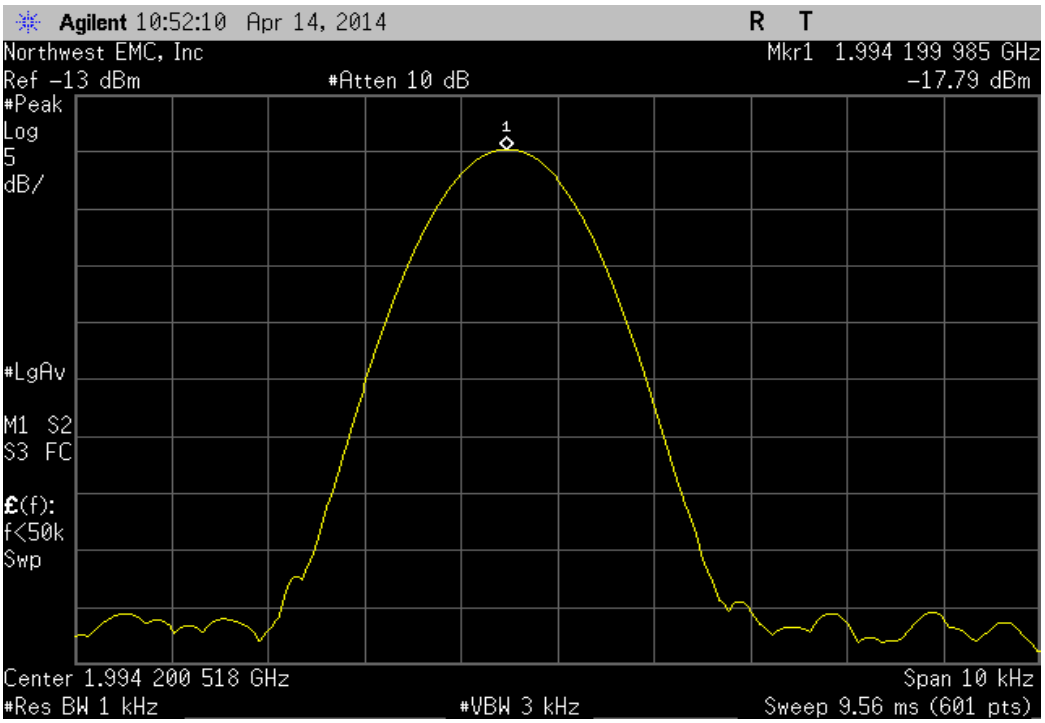


Temperature: +20°, Mid Channel, 1962.5 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1962.500003	1962.5	0.0015	1	Pass

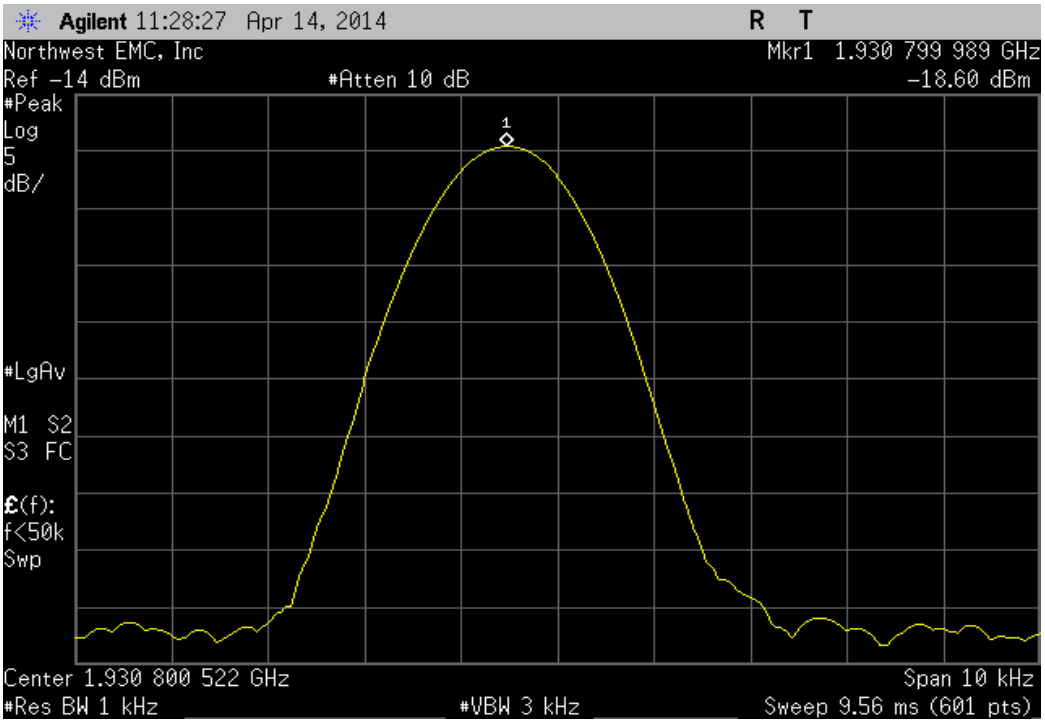


FREQUENCY STABILITY

Temperature: +20°, High Channel, 1994.2 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1994.199985	1994.2	0.0075	1	Pass

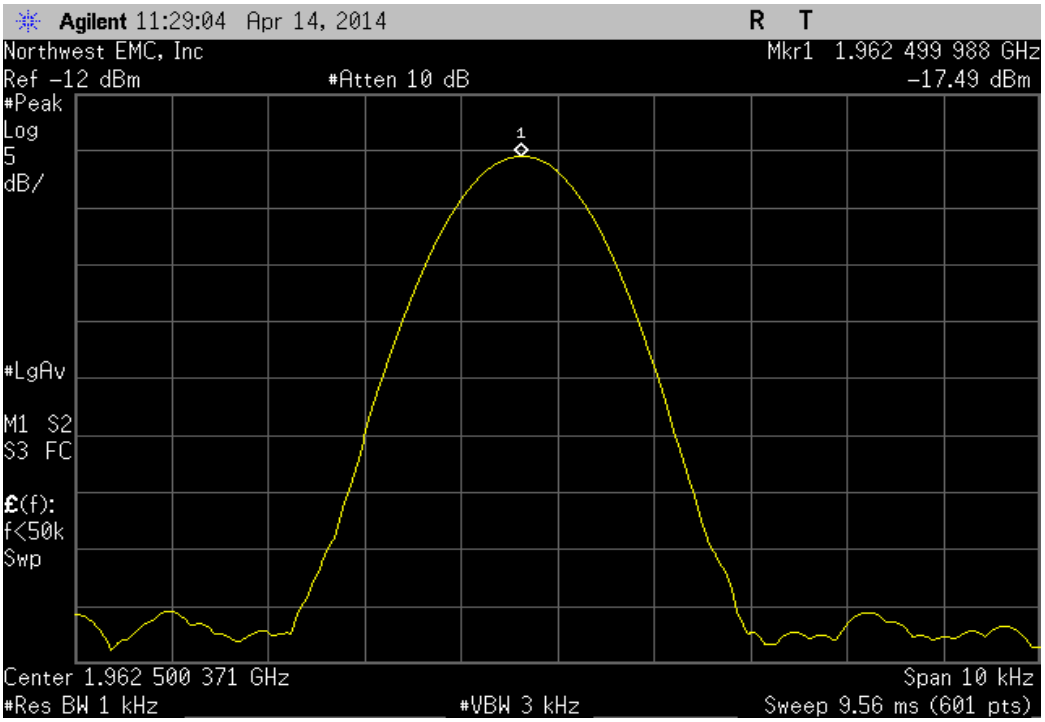


Temperature: +10°, Low Channel, 1930.8 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1930.799989	1930.8	0.0057	1	Pass

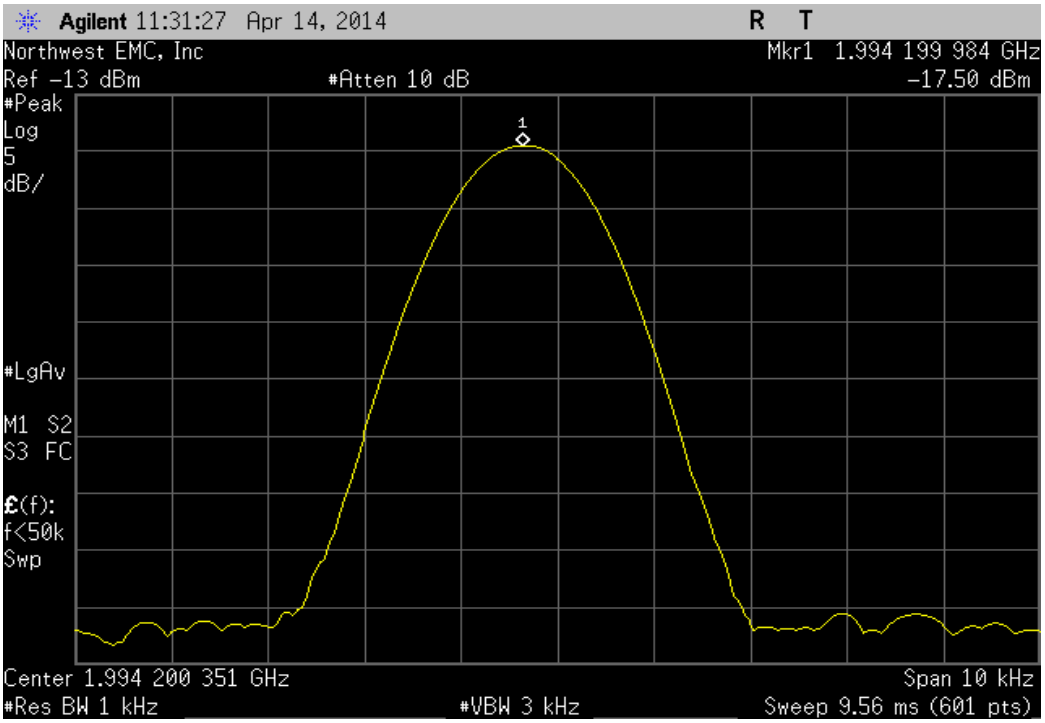


FREQUENCY STABILITY

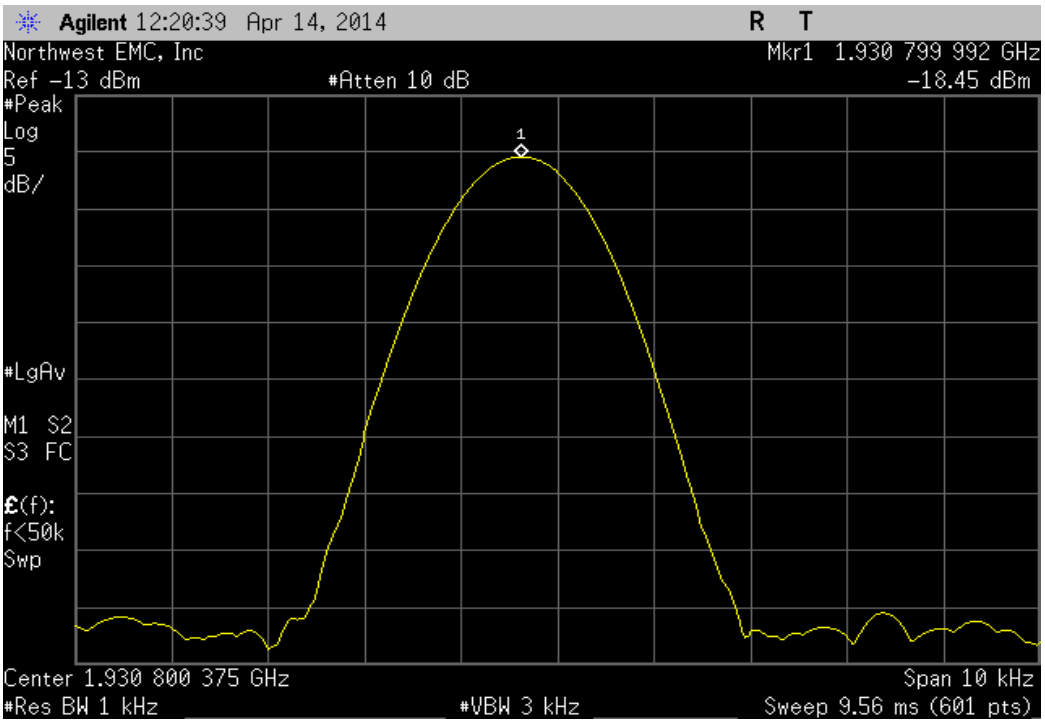
Temperature: +10°, Mid Channel, 1962.5 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1962.499988	1962.5	0.0061	1	Pass



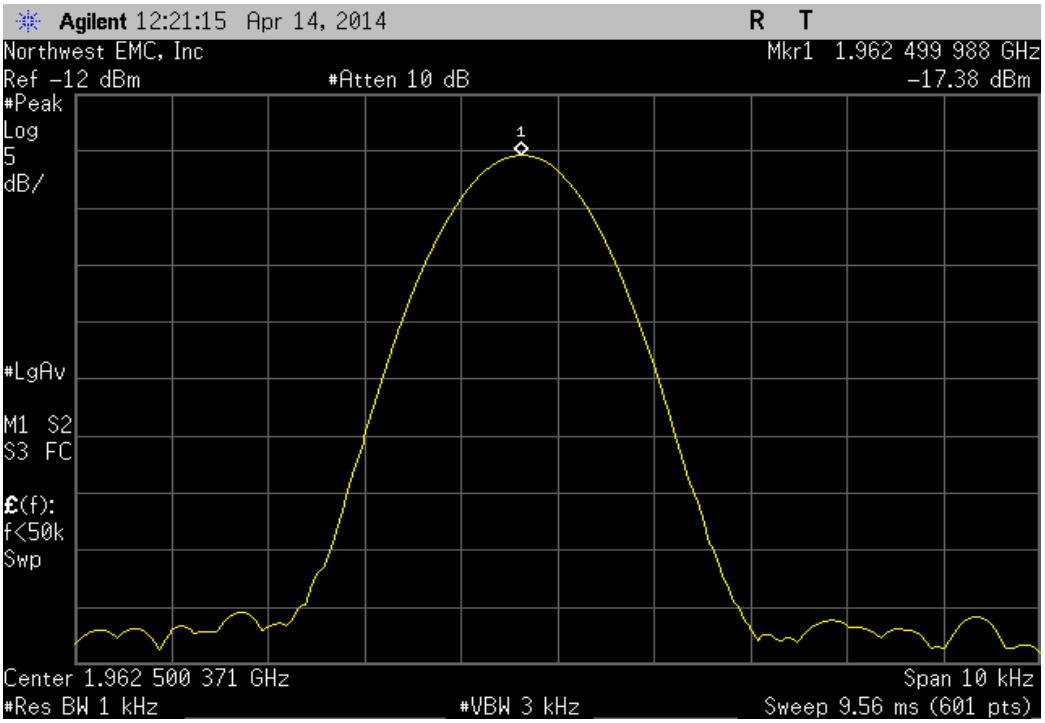
Temperature: +10°, High Channel, 1994.2 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1994.199984	1994.2	0.0080	1	Pass



Temperature: 0°, Low Channel, 1930.8 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1930.799992	1930.8	0.0041	1	Pass

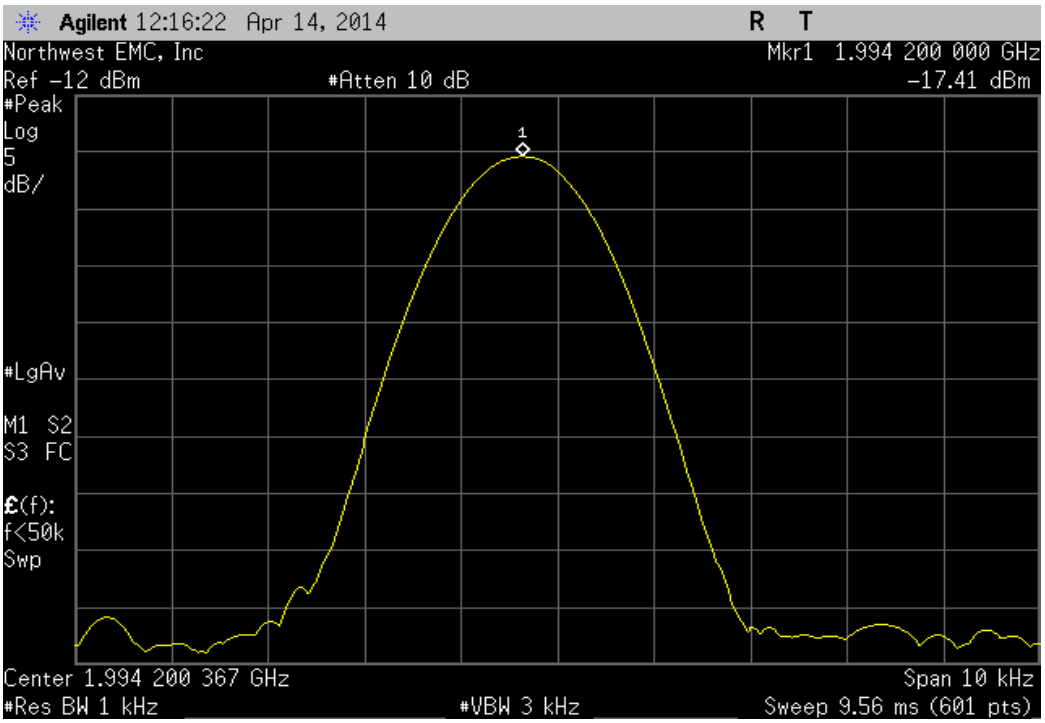


Temperature: 0°, Mid Channel, 1962.5 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1962.499988	1962.5	0.0061	1	Pass

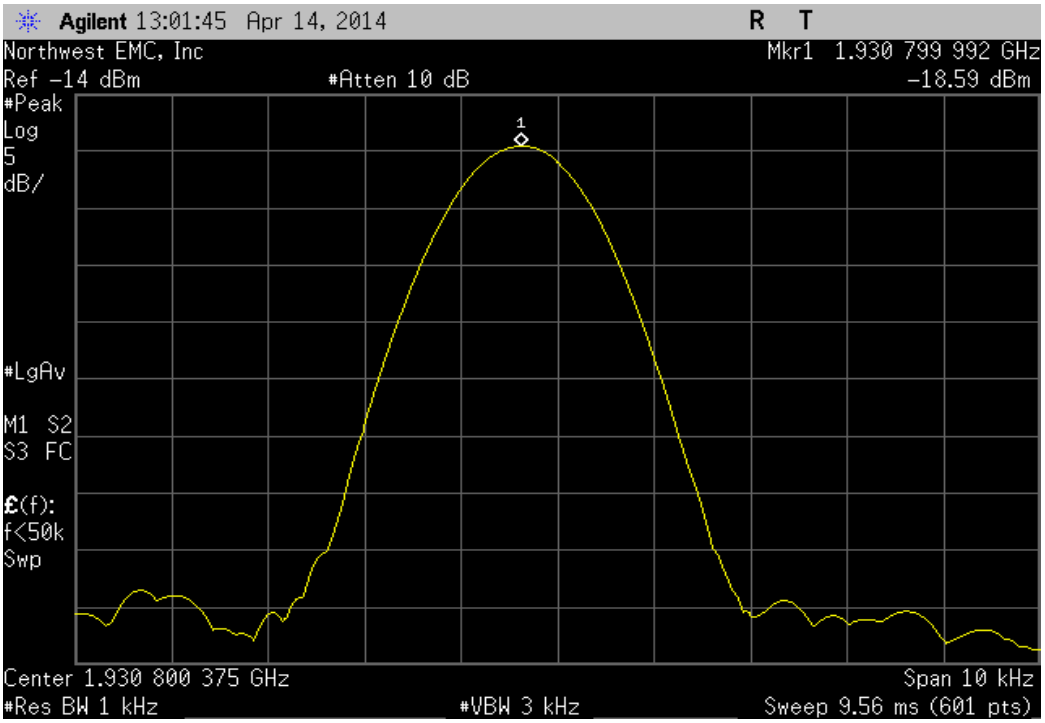


FREQUENCY STABILITY

Temperature: 0°, High Channel, 1994.2 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1994.2	1994.2	0.0000	1	Pass

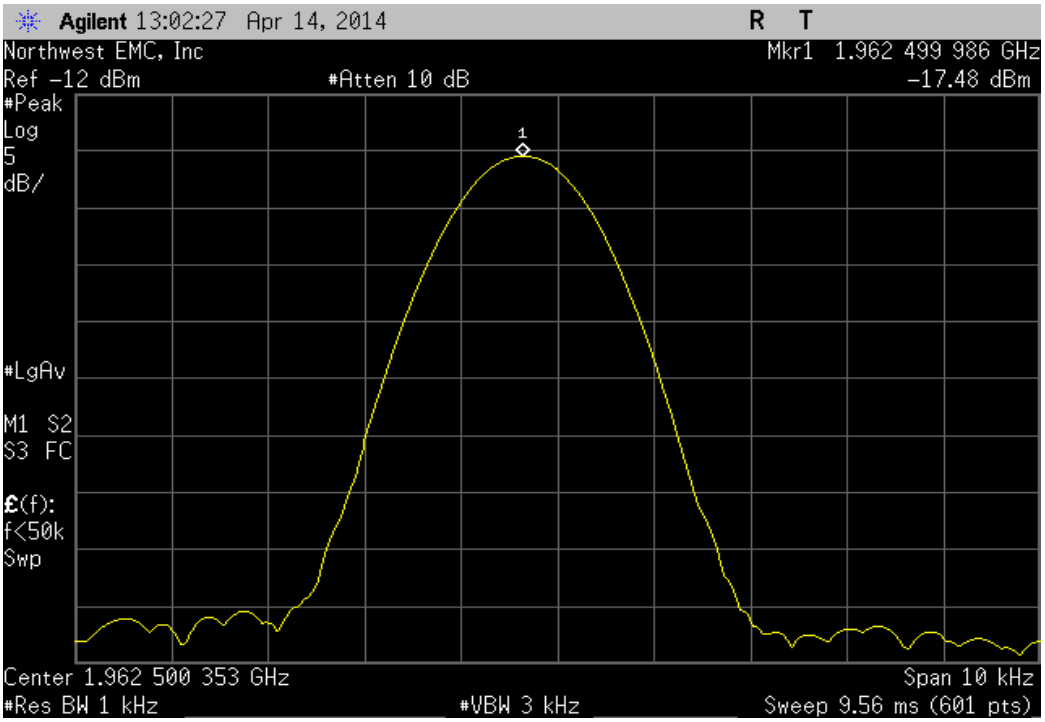


Temperature: -10°, Low Channel, 1930.8 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1930.799992	1930.8	0.0041	1	Pass

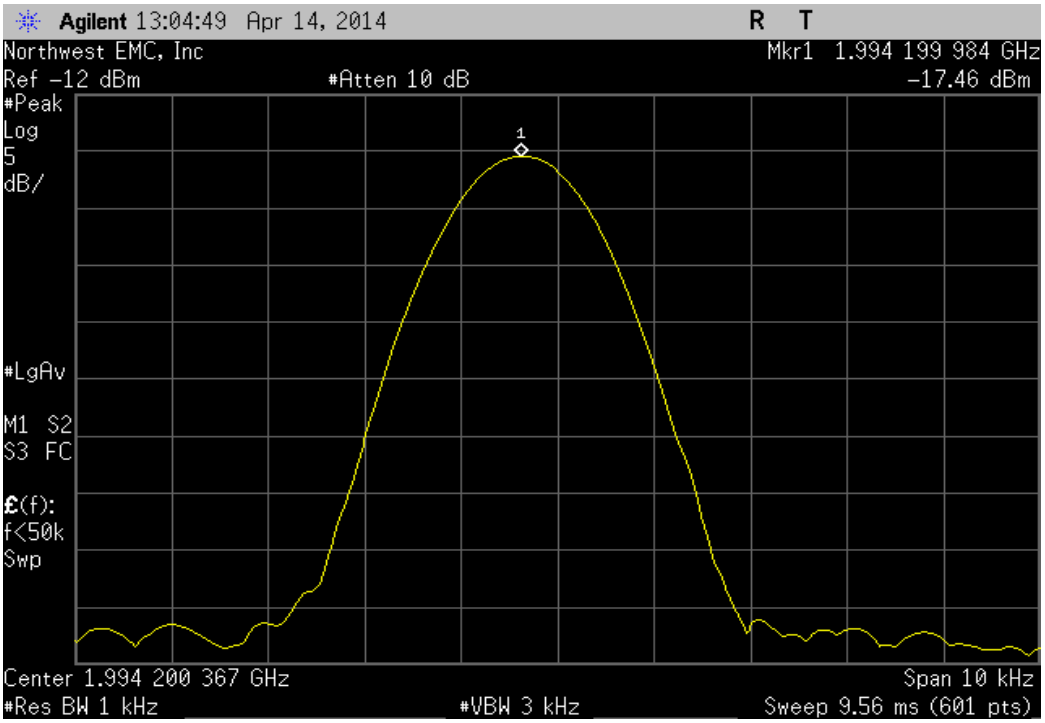


FREQUENCY STABILITY

Temperature: -10°, Mid Channel, 1962.5 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1962.499986	1962.5	0.0071	1	Pass

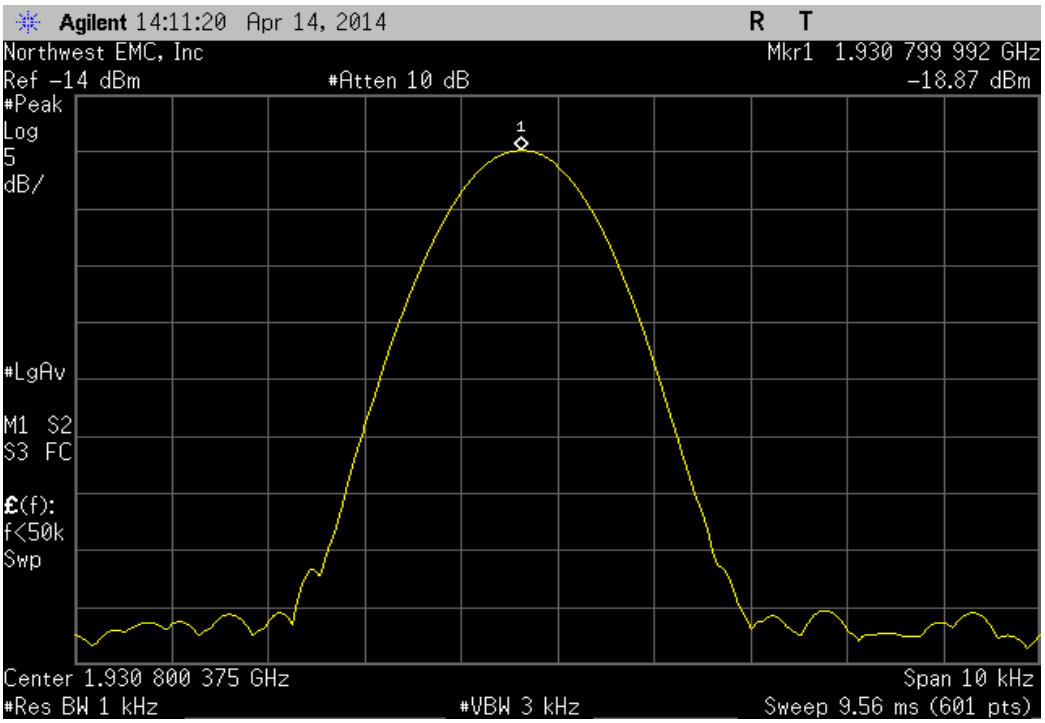


Temperature: -10°, High Channel, 1994.2 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1994.199984	1994.2	0.0080	1	Pass

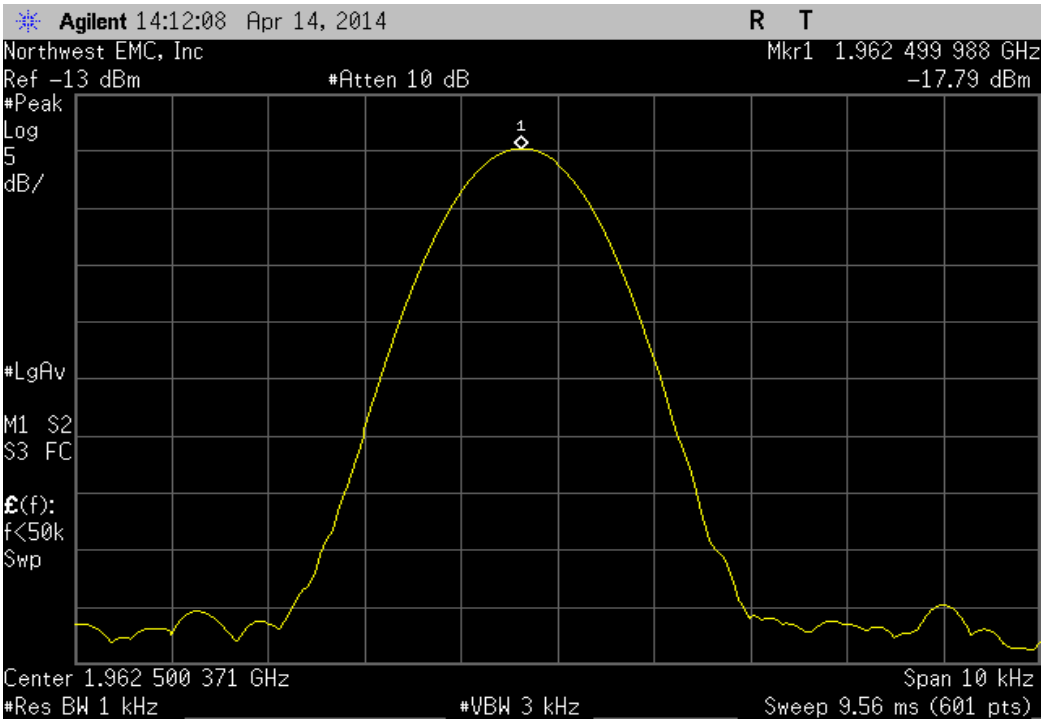


FREQUENCY STABILITY

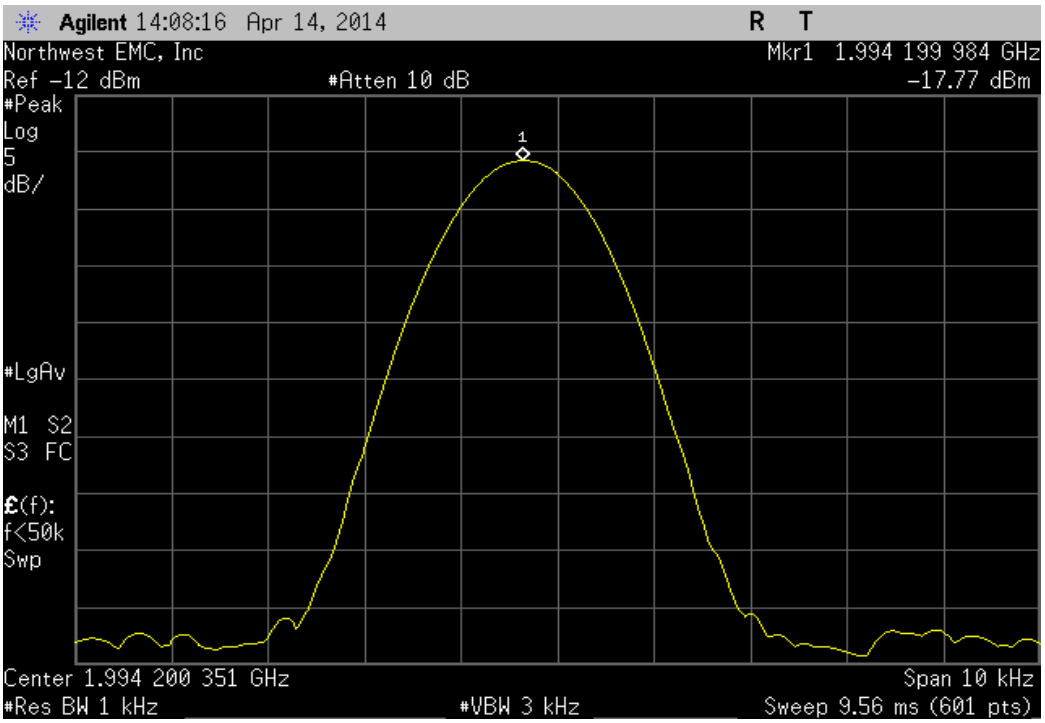
Temperature: -20°, Low Channel, 1930.8 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1930.799992	1930.8	0.0041	1	Pass



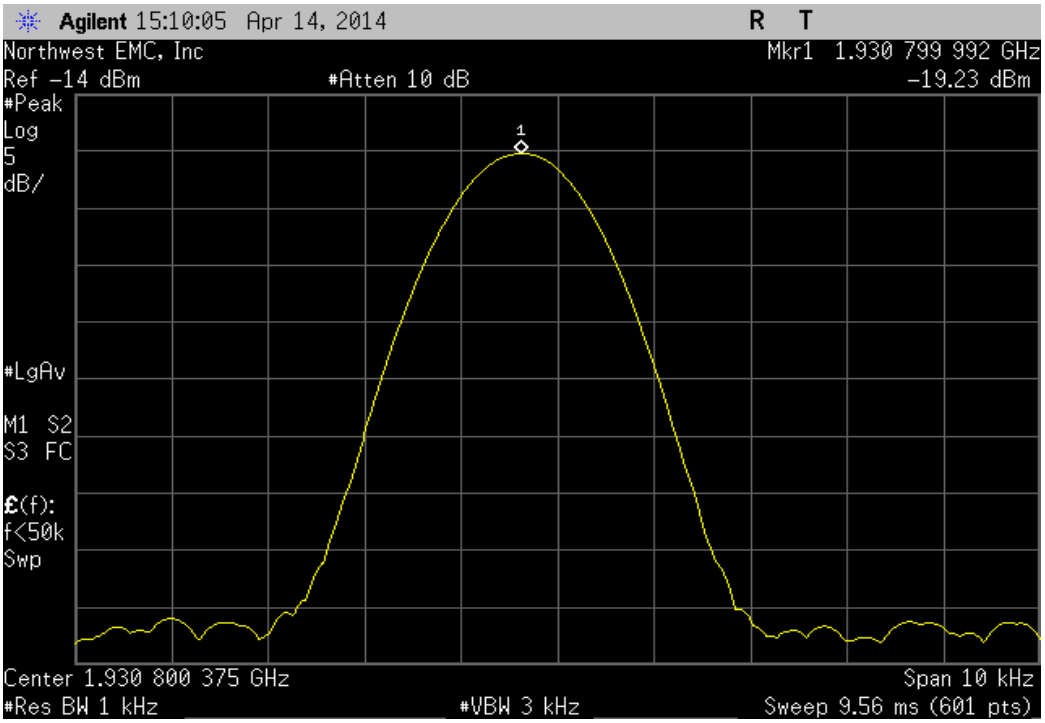
Temperature: -20°, Mid Channel, 1962.5 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1962.499988	1962.5	0.0061	1	Pass



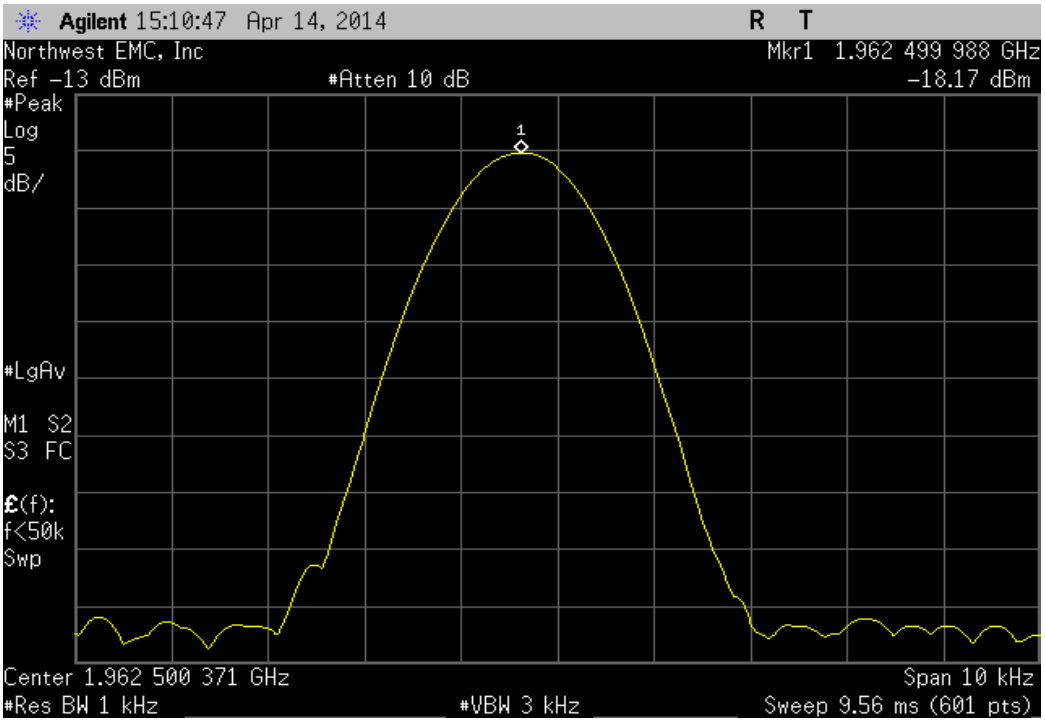
Temperature: -20°, High Channel, 1994.2 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1994.199984	1994.2	0.0080	1	Pass



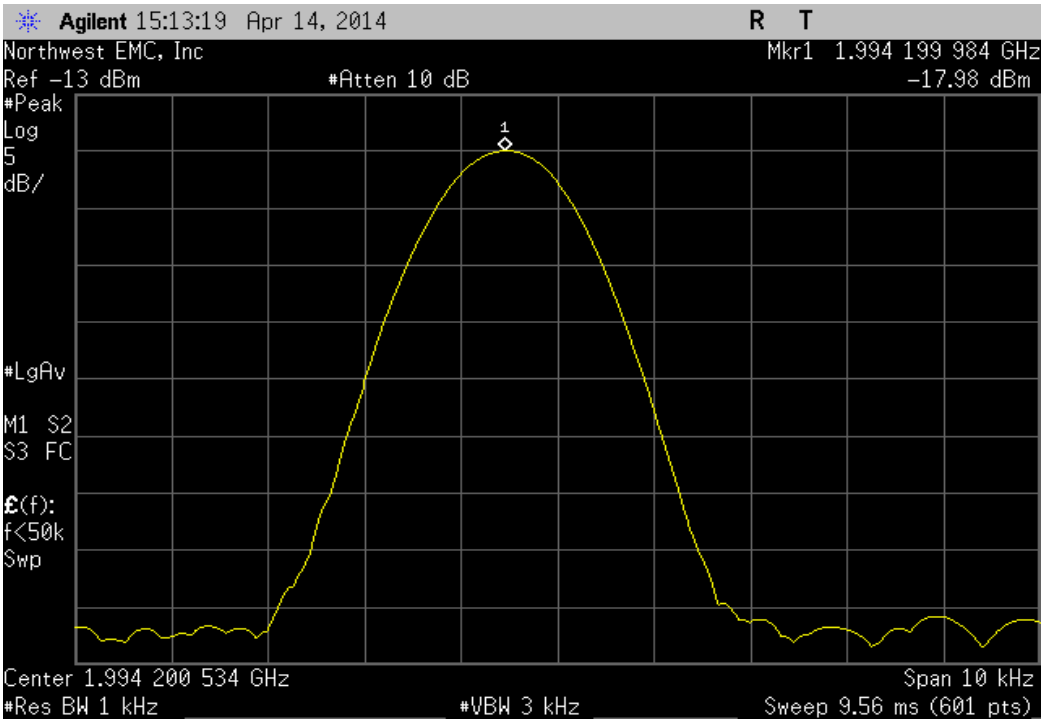
Temperature: -30°, Low Channel, 1930.8 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1930.799992	1930.8	0.0041	1	Pass



Temperature: -30°, Mid Channel, 1962.5 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1962.499988	1962.5	0.0061	1	Pass



Temperature: -30°, High Channel, 1994.2 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
		1994.199984	1994.2	0.0080	1	Pass



OCCUPIED BANDWIDTH (26 dB)

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
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/3/2014	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	9/26/2013	12
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	5/15/2012	24

TEST DESCRIPTION

The 26 dB occupied bandwidth was measured utilizing the analyzer's peak detector based on the peak output power level measured. A plot was taken to show the occupied bandwidth is contained within the allowable transmit band.

A direct connection was made between the EUT and a spectrum analyzer. The resolution bandwidth was approximately equal to 1% of the 26 dB bandwidth and the video bandwidth was greater than or equal to the resolution bandwidth.

The occupied bandwidth was measured with the EUT configured in the modes called out in the data sheets.

OCCUPIED BANDWIDTH (26 dB)

EUT:	Prism HDM 1900 MHz / 2100 MHz SISO RF Module			**Work Order:**	TECO0013
Serial Number:	None			**Date:**	04/09/14
Customer:	TE Connectivity / ADC Telecommunications			**Temperature:**	24.2°C
Attendees:	None			**Humidity:**	21%
Project:	None			**Barometric Pres.:**	1013.5
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
FCC 24E:2014	ANSI/TIA/EIA-603-C-2004

COMMENTS

Customer provided a high wattage 30 dB attenuator that was added into the reference level offset.

DEVIATIONS FROM TEST STANDARD

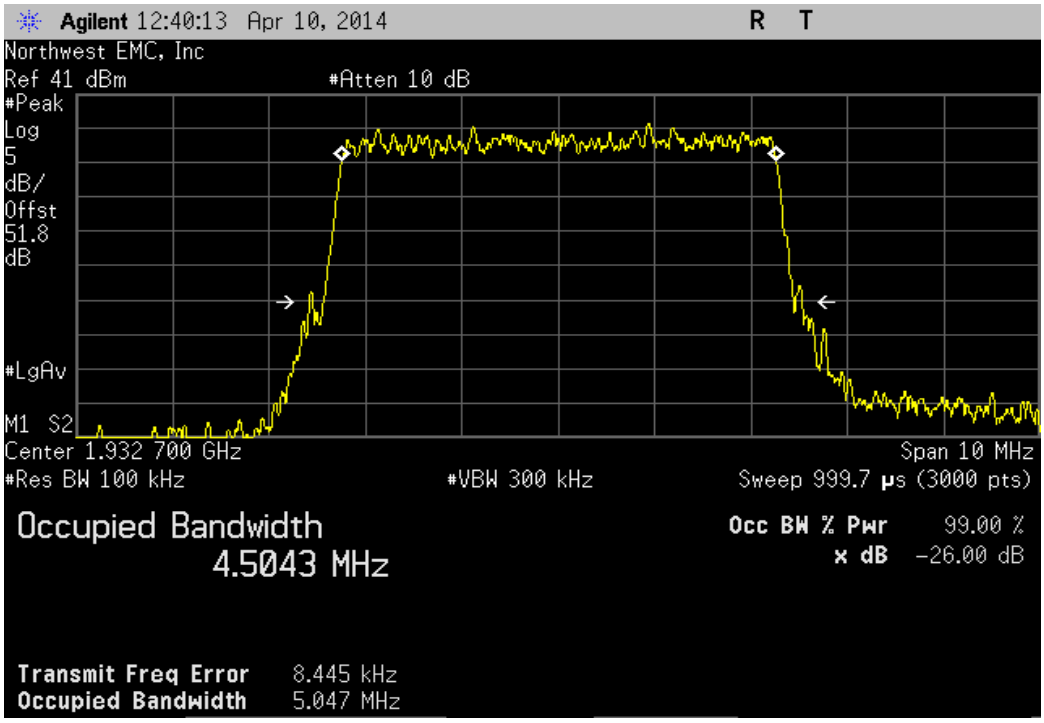
None

Configuration #	1	Signature	Trevor Buls

		Value	Limit	Result
LTE 5 MHz				
	Low Channel 1932.7 MHz	5.047 MHz	N/A	N/A
	Mid Channel 1962.5 MHz	4.885 MHz	N/A	N/A
	High Channel 1992.4 MHz	5.150 MHz	N/A	N/A
LTE 10 MHz				
	Low Channel 1935 MHz	9.876 MHz	N/A	N/A
	Mid Channel 1962.5 MHz	9.557 MHz	N/A	N/A
	High Channel 1990 MHz	9.503 MHz	N/A	N/A
Input LTE 5 MHz				
	Mid Channel 1962.5 MHz	4.852 MHz	N/A	N/A
Input LTE 10 MHz				
	Mid Channel 1962.5 MHz	9.466 MHz	N/A	N/A

OCCUPIED BANDWIDTH (26 dB)

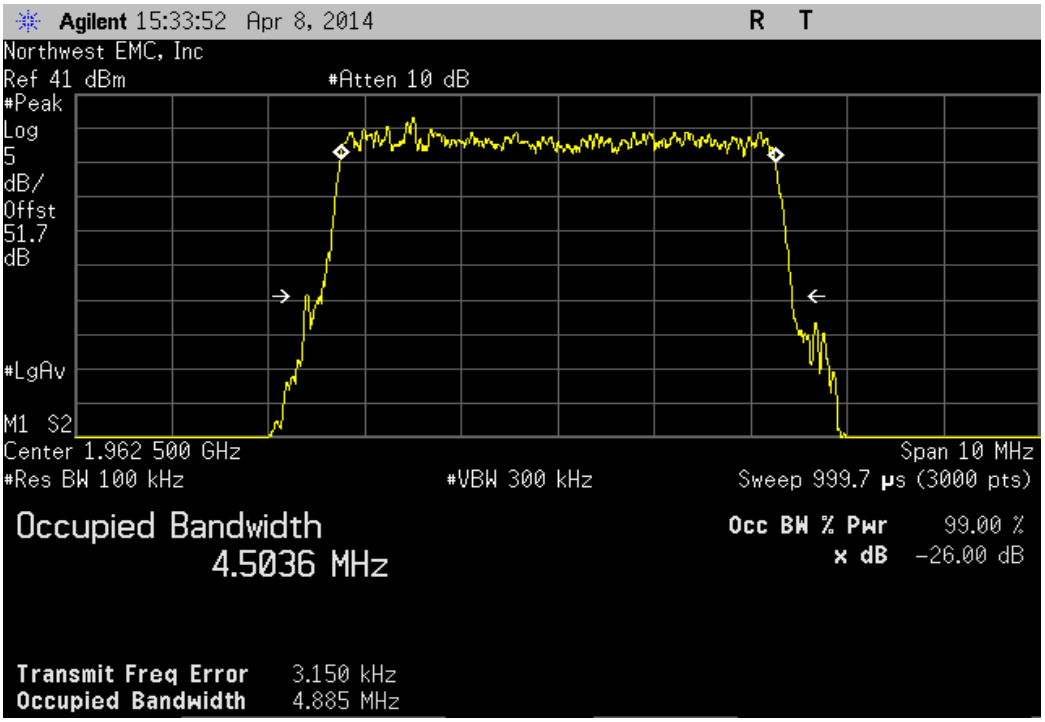
LTE 5 MHz, Low Channel 1932.7 MHz						
				Value	Limit	Result
				5.047 MHz	N/A	N/A



OCCUPIED BANDWIDTH (26 dB)

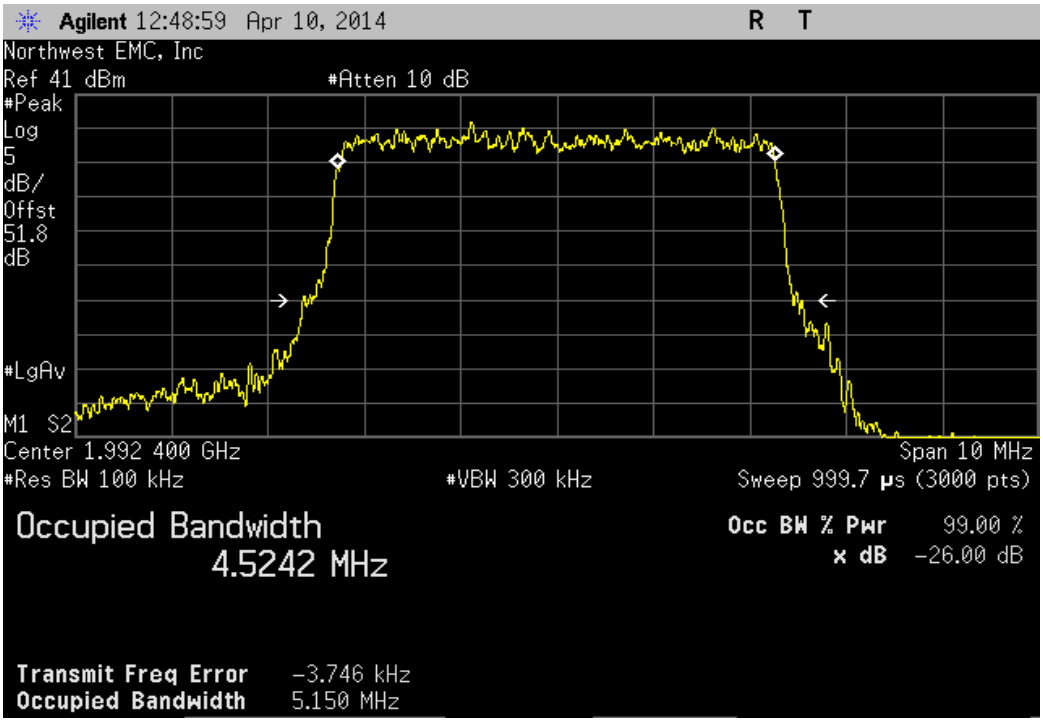
LTE 5 MHz, Mid Channel 1962.5 MHz

				Value	Limit	Result
				4.885 MHz	N/A	N/A



LTE 5 MHz, High Channel 1992.4 MHz

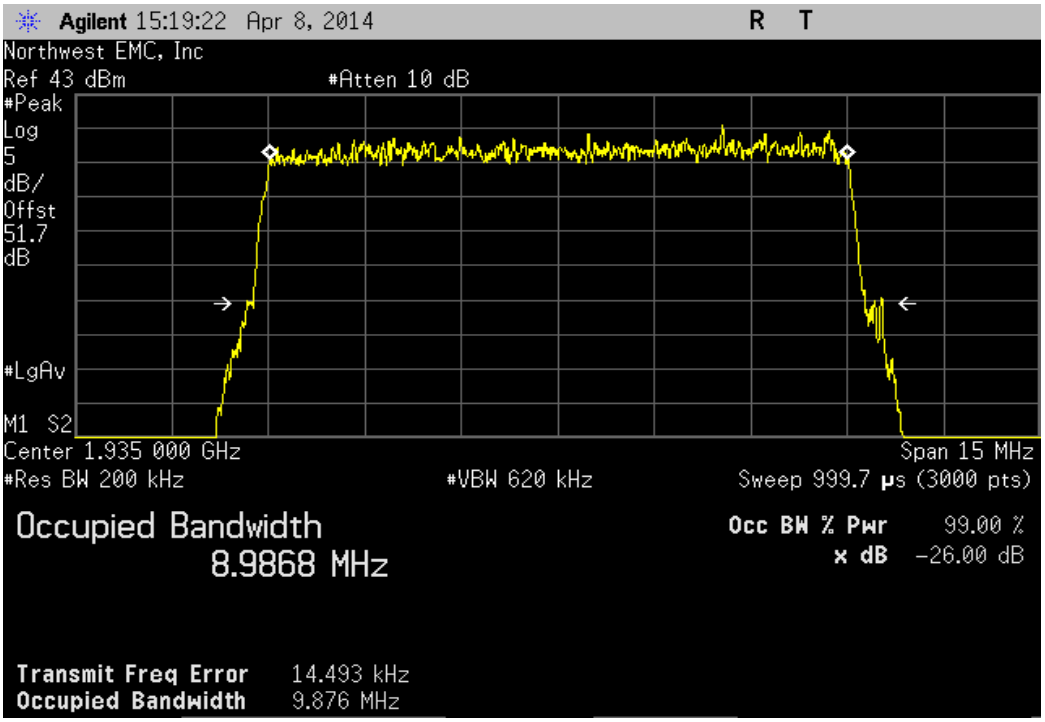
				Value	Limit	Result
				5.150 MHz	N/A	N/A



OCCUPIED BANDWIDTH (26 dB)

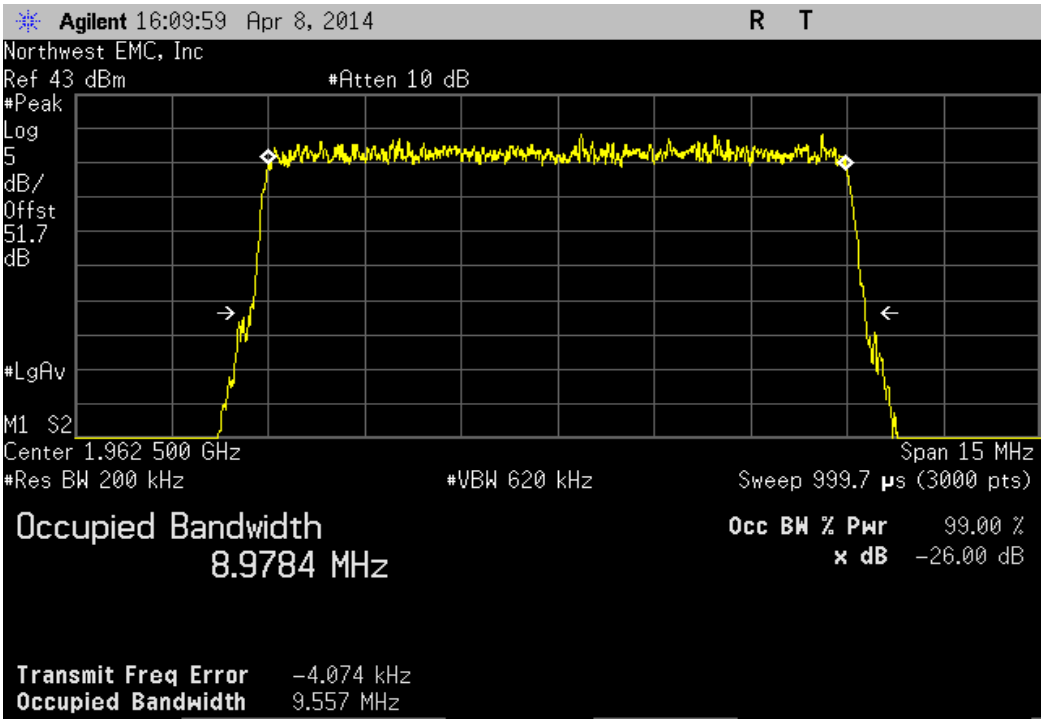
LTE 10 MHz, Low Channel 1935 MHz

				Value	Limit	Result
				9.876 MHz	N/A	N/A



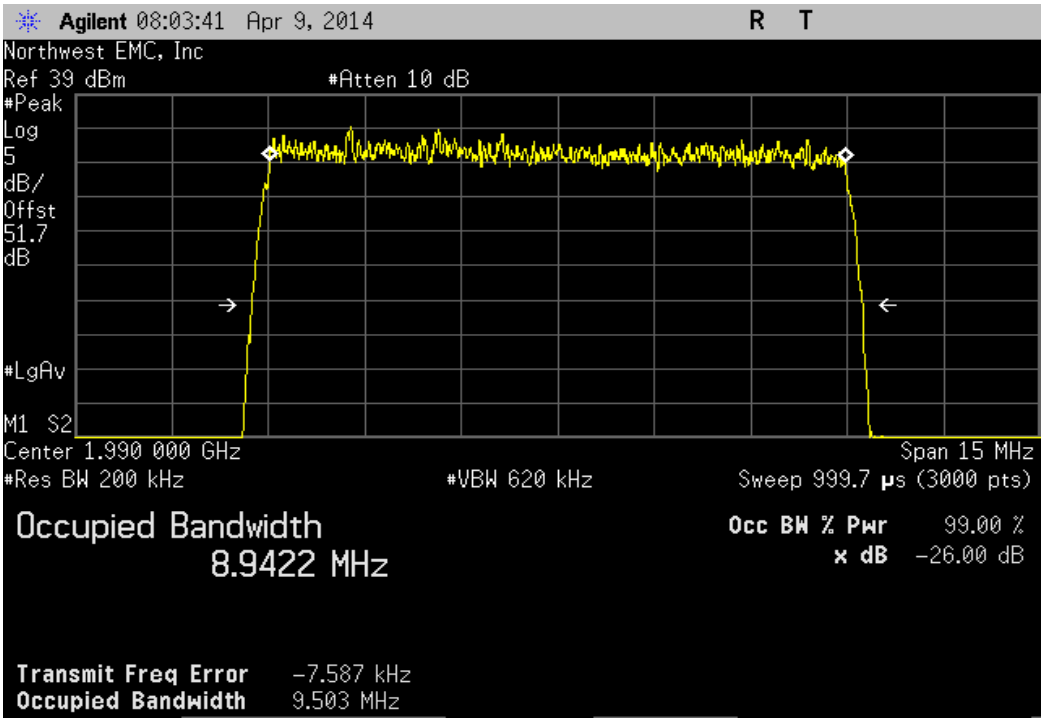
LTE 10 MHz, Mid Channel 1962.5 MHz

				Value	Limit	Result
				9.557 MHz	N/A	N/A



OCCUPIED BANDWIDTH (26 dB)

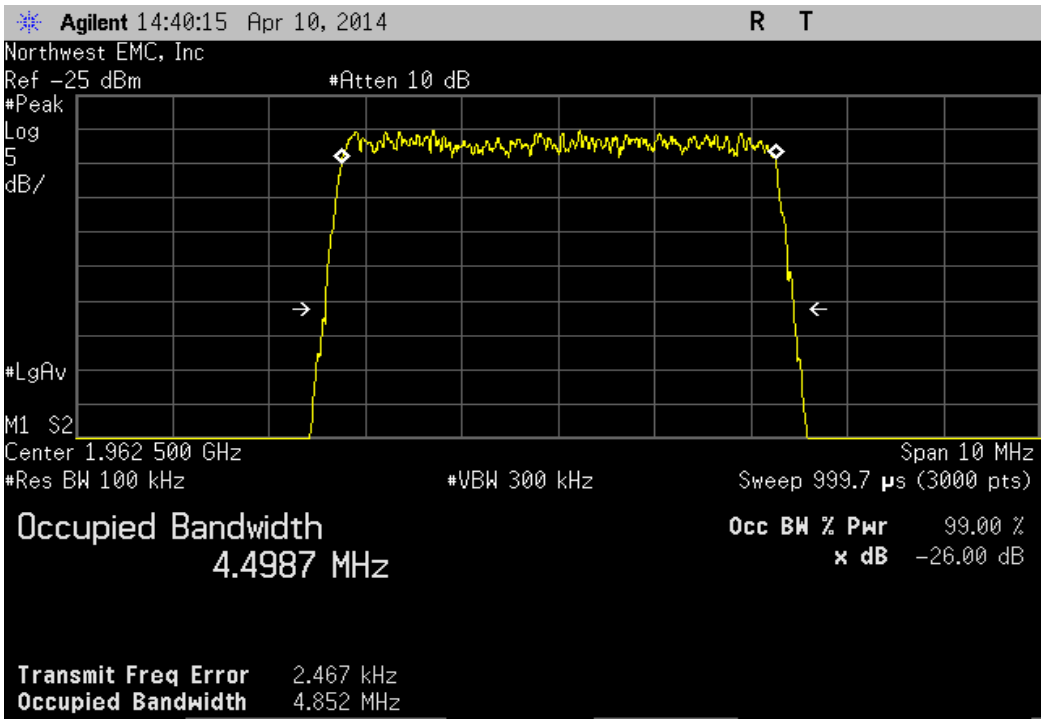
LTE 10 MHz, High Channel 1990 MHz						
				Value	Limit	Result
				9.503 MHz	N/A	N/A



OCCUPIED BANDWIDTH (26 dB)

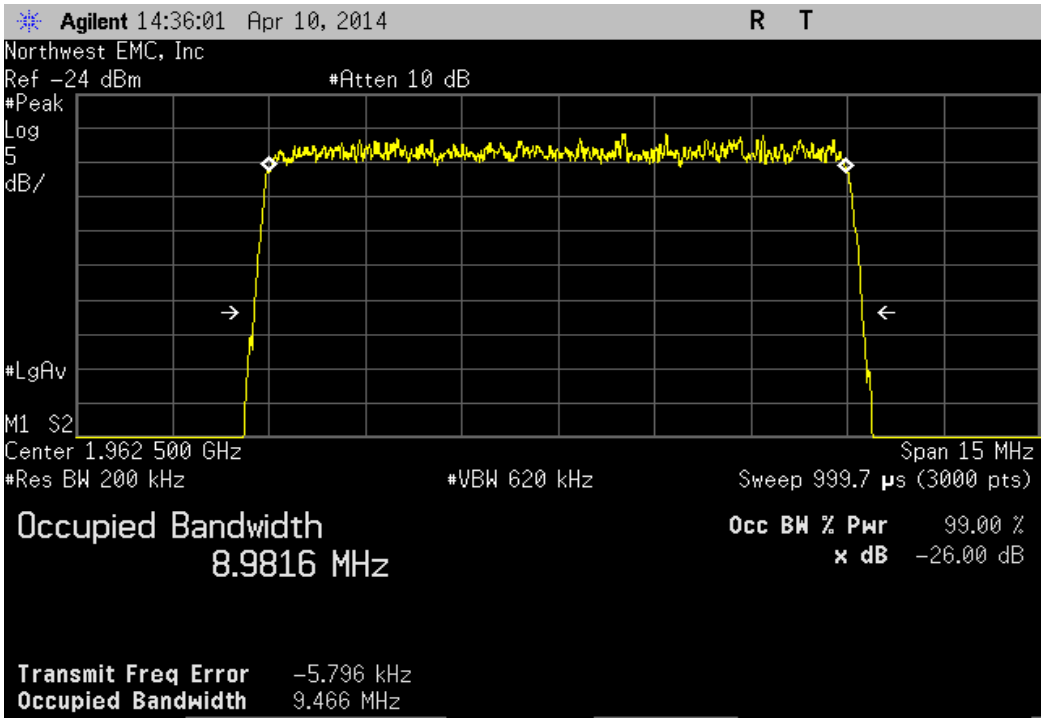
Input LTE 5 MHz, Mid Channel 1962.5 MHz

				Value	Limit	Result
				4.852 MHz	N/A	N/A



Input LTE 10 MHz, Mid Channel 1962.5 MHz

				Value	Limit	Result
				9.466 MHz	N/A	N/A



OCCUPIED BANDWIDTH (26 dB)

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
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/3/2014	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	9/26/2013	12
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	4/28/2014	12

TEST DESCRIPTION

The occupied bandwidth was measured utilizing the analyzer's peak detector and measuring the carrier's 26 dB occupied bandwidth based on the peak output power level measured. A plot was taken to show the occupied bandwidth is contained within the allowable transmit band.

A direct connection was made between the EUT and a spectrum analyzer. The resolution bandwidth was approximately equal to 1% of the 26dB bandwidth and the video bandwidth was greater than or equal to the resolution bandwidth.

The occupied bandwidth was measured with the EUT configured in the modes called out in the data sheets.

OCCUPIED BANDWIDTH (26 dB)

EUT:	Prism HDM 1900 MHz / 2100 MHz SISO RF Module			**Work Order:**	TECO0017
Serial Number:	None			**Date:**	07/15/14
Customer:	TE Connectivitiy / ADC Telecommunications			**Temperature:**	23.1°C
Attendees:	Josh Wittman			**Humidity:**	45%
Project:	None			**Barometric Pres.:**	1021.6
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
FCC 24E:2014	ANSI/TIA/EIA-603-C-2004

COMMENTS

A 30 dB high wattage attenuator was provided by the customer.

DEVIATIONS FROM TEST STANDARD

None

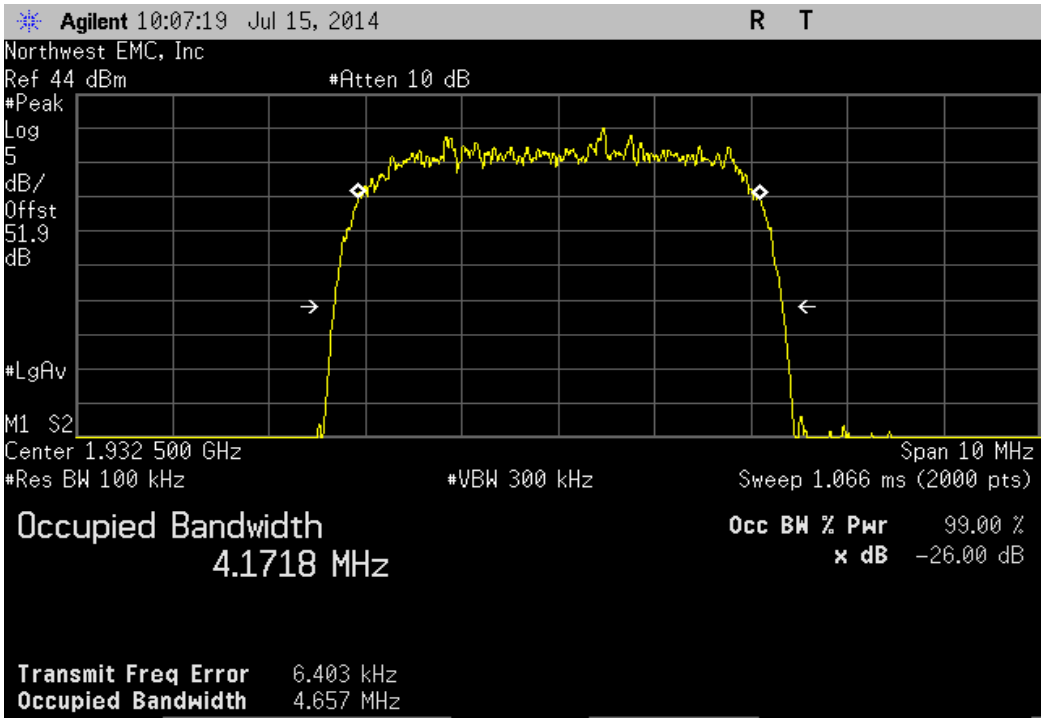
Configuration #	1	Signature	Trevor Buls

		Value	Limit	Result
WCDMA				
	Low Channel 1932.5 MHz	4.657 MHz	N/A	N/A
	Mid Channel 1962.5 MHz	4.686 MHz	N/A	N/A
	High Channel 1992.5 MHz	4.66 MHz	N/A	N/A
WCDMA Input Signal				
	Mid Channel 1962.5 MHz	4.683 MHz	N/A	N/A

OCCUPIED BANDWIDTH (26 dB)

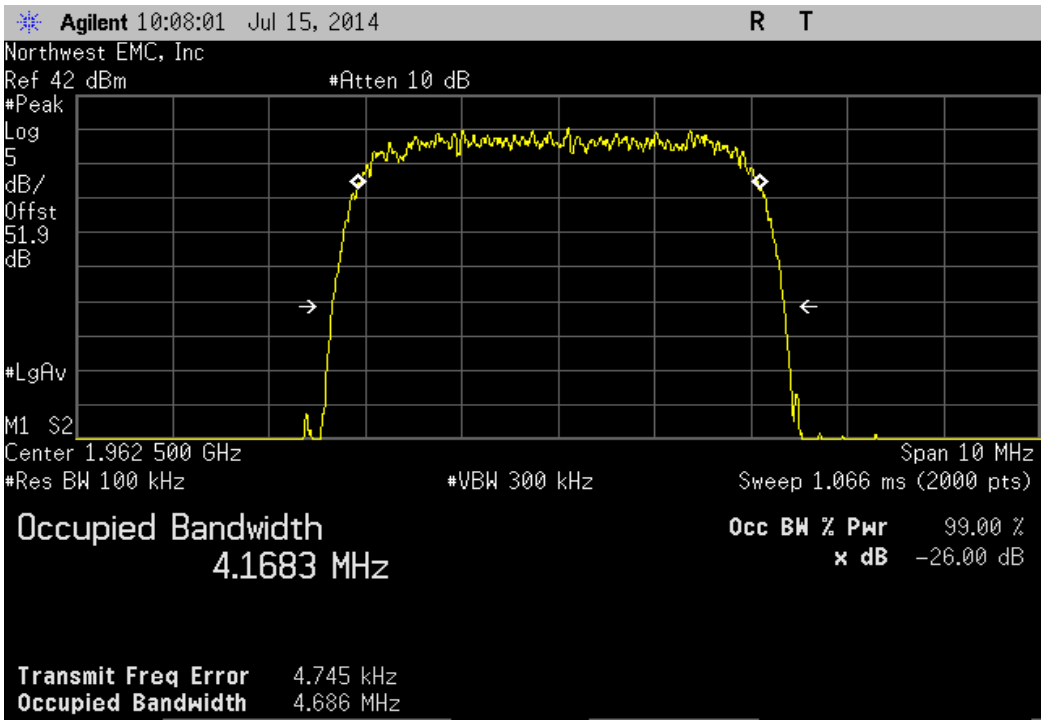
WCDMA, Low Channel 1932.5 MHz

				Value	Limit	Result
				4.657 MHz	N/A	N/A



WCDMA, Mid Channel 1962.5 MHz

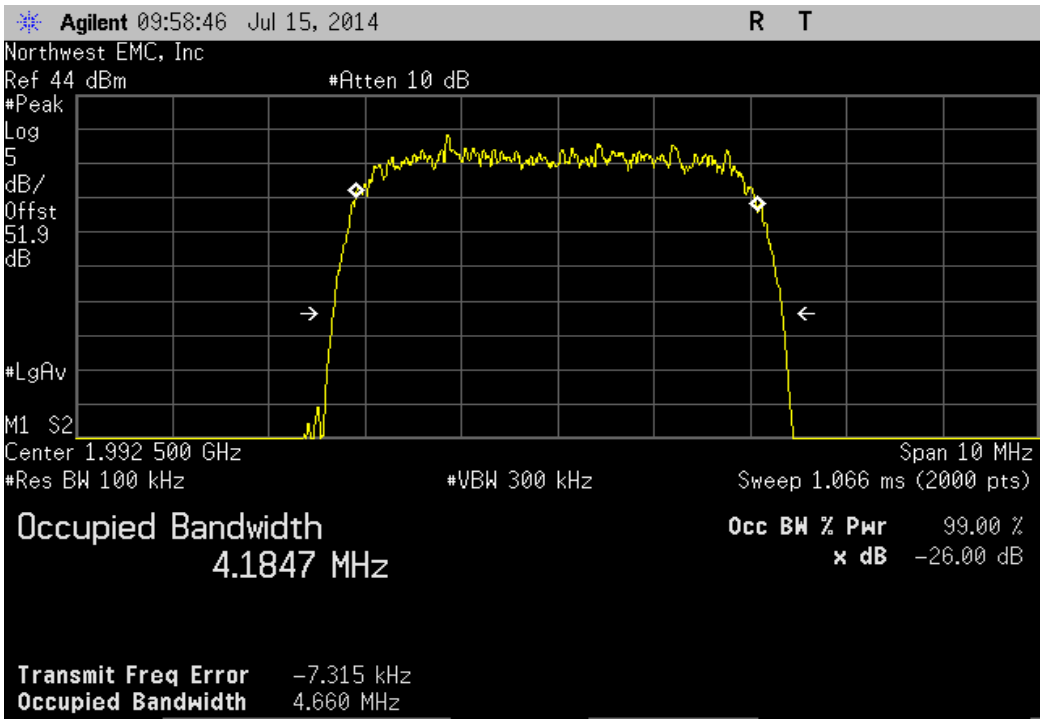
				Value	Limit	Result
				4.686 MHz	N/A	N/A



OCCUPIED BANDWIDTH (26 dB)

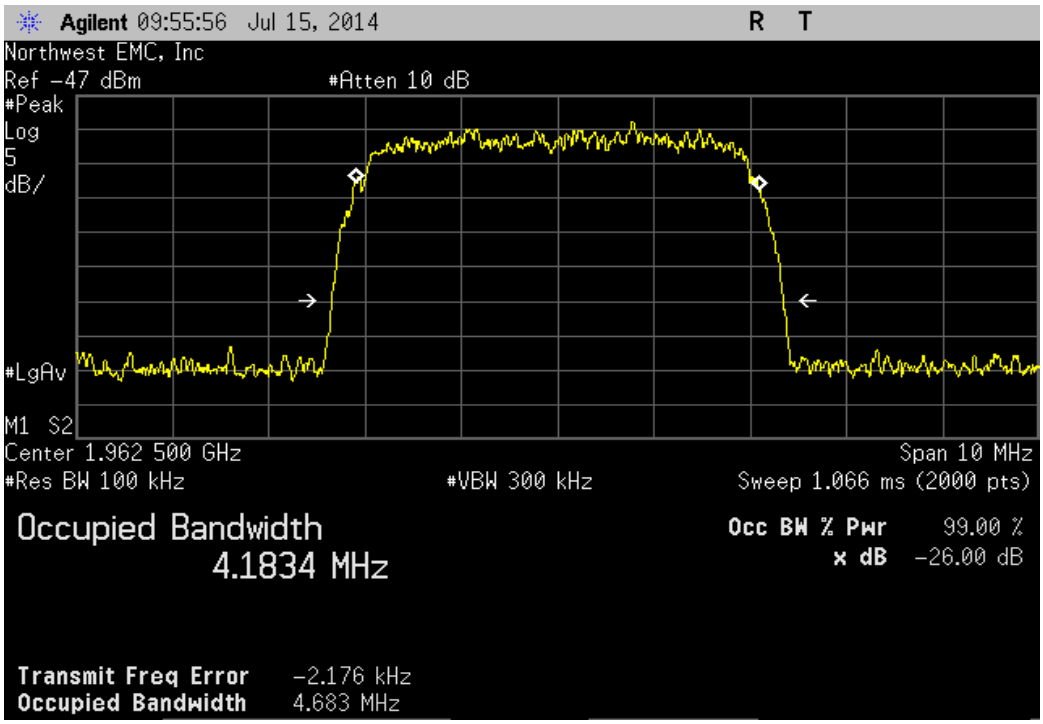
WCDMA, High Channel 1992.5 MHz

				Value	Limit	Result
				4.66 MHz	N/A	N/A



WCDMA Input Signal, Mid Channel 1962.5 MHz

				Value	Limit	Result
				4.683 MHz	N/A	N/A



SPURIOUS RADIATED EMISSIONS

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

Transmitting Low Mid High WCDMA: 1932.5, 1962.5, 1992.5 MHz; LTE 5 MHz: 1932.7, 1962.5, 1992.4 MHz; LTE 10 MHz: 1935, 1962.5, 1990 MHz (see comments)

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

TECO0017 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	20 GHz

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
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36 mo
Power Sensor	Agilent	N8481A	SQN	8/27/2012	24 mo
Power Meter	Agilent	N1913A	SQL	8/27/2012	24 mo
Antenna, Horn (DRG)	ETS Lindgren	3115	AIP	6/26/2014	36 mo
Attenuator, 20 dB, 'SMA'	SM Electronics	SA6-20	REO	5/15/2014	12 mo
Low Pass Filter	Micro-Tronics	LPM50004	HGK	5/15/2014	24 mo
High Pass Filter	Micro-Tronics	HPM50111	HGQ	5/15/2014	24 mo
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	9/26/2013	12 mo
MN05 Cables	N/A	18-26GHz Standard Gain Horn Cable	MNP	9/26/2013	12 mo
Antenna, Horn	ETS	3160-09	AHG	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVW	3/14/2014	12 mo
Antenna, Horn	ETS Lindgren	3160-08	AIQ	NCR	0 mo
MN05 Cables	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	3/14/2014	12 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	3/14/2014	12 mo
Antenna, Horn	ETS	3160-07	AXP	NCR	0 mo
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVX	3/14/2014	12 mo
MN05 Cables	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	3/14/2014	12 mo
Antenna, Horn	ETS	3115	AJA	6/3/2014	24 mo
MN05 Cables	ESM Cable Corp.	Bilog Cables	MNH	3/14/2014	12 mo
Pre-Amplifier	Miteq	AM-1616-1000	PAD	3/14/2014	12 mo
Antenna, Biconilog	Teseq	CBL 6141B	AYD	12/17/2013	24 mo
Spectrum Analyzer	Agilent	N9010A	AFI	1/27/2013	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 highest gain antenna to be used with the EUT was tested for final measurements. The EUT was configured for the lowest, a middle, and the highest transmit frequency in each operational band. For each configuration, the spectrum was scanned throughout the specified range. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization (per ANSI C63.10:2009). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

For licensed transmitters, the FCC references TIA/EIA-603 as the measurement procedure standard. TIA/EIA-603 Section 2.2.12 describes a method for measuring radiated spurious emissions that utilizes an antenna substitution method:

At an approved test site, the transmitter is place on a remotely controlled turntable, and the measurement antenna is placed 3 meters from the transmitter. The turntable azimuth is varied to maximize the level of spurious emissions. The height of the measurement antenna is also varied from 1 to 4 meters. The amplitude and frequency of the highest emissions are noted. The transmitter is then replaced with a ½ wave dipole that is successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator is connected to the dipole (horn antenna for frequencies above 1 GHz), and its output is adjusted to match the level previously noted for each frequency. The output of the signal generator is recorded, and by factoring in the cable loss to the antenna and its gain; the power (dBm) into an ideal ½ wave dipole antenna is determined for each radiated spurious emission.

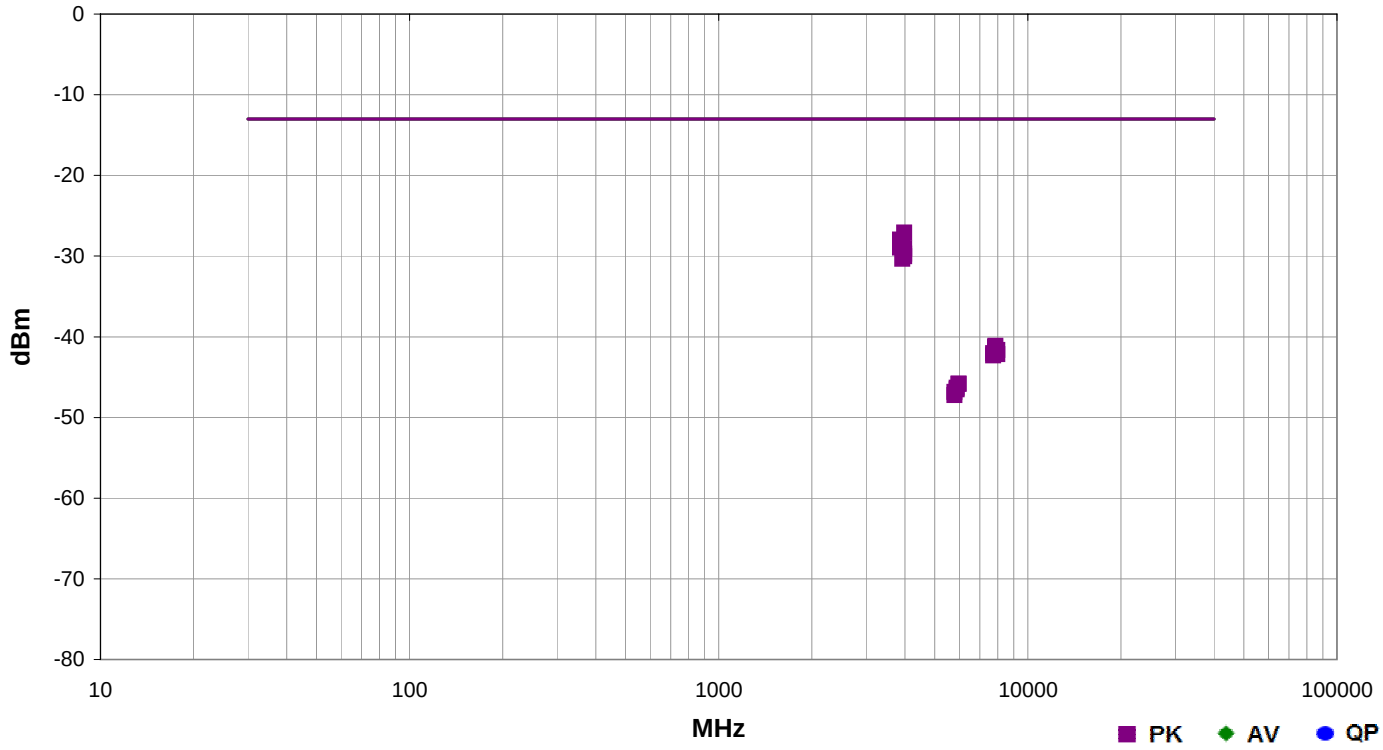
For the purposes of preliminary measurements, the field strength of the spurious emissions can be measured and compared with a 3 meter limit. The 3 meter limit was calculated to be 82.5 dBuV/m at 3 meters. The final measurements must be made utilizing the substitution method described above

SPURIOUS RADIATED EMISSIONS

Work Order:	TECO0017	**Date:**	07/18/14	Trevor Buls	
Project:	None	**Temperature:**	23.5 °C		
Job Site:	MN05	**Humidity:**	48.1% RH		
Serial Number:	None	**Barometric Pres.:**	1019.9 mbar	**Tested by:**	Trevor Buls, Dustin Sparks
EUT:	Prism HDM 1900 MHz / 2100 MHz SISO RF Module				
Configuration:	2				
Customer:	TE Connectivitiy / ADC Telecommunications				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Low Mid High WCDMA: 1932.5, 1962.5, 1992.5 MHz; LTE 5 MHz: 1932.7, 1962.5, 1992.4 MHz; LTE 10 MHz: 1935, 1962.5, 1990 MHz (see comments)				
Deviations:	None				
Comments:	A 30 dB high wattage attenuator was provided by the customer to terminate the antenna output. Tested in normal upright position as device is always a floorstanding system.				

Test Specifications	**Test Method**
FCC 24E:2014	ANSI/TIA/EIA-603-C:2004

Run #	4	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	3987.017	1.0	350.0	Vert	PK	1.95E-06	-27.1	-13.0	-14.1	High channel, WCDMA
	3867.017	1.0	318.0	Vert	PK	1.60E-06	-28.0	-13.0	-15.0	Low channel, WCDMA
	3927.142	1.0	7.0	Vert	PK	1.53E-06	-28.1	-13.0	-15.1	Mid channel, WCDMA
	3866.867	1.2	345.0	Horz	PK	1.27E-06	-29.0	-13.0	-16.0	Low channel, WCDMA
	3984.558	1.0	26.0	Vert	PK	1.25E-06	-29.0	-13.0	-16.0	High channel, LTE 5MHz
	3986.950	1.0	310.0	Horz	PK	1.07E-06	-29.7	-13.0	-16.7	High channel, WCDMA
	3980.583	1.0	326.0	Vert	PK	9.90E-07	-30.0	-13.0	-17.0	High channel, LTE 10MHz

	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	3926.917	1.0	67.0	Horz	PK	9.23E-07	-30.3	-13.0	-17.3	Mid channel, WCDMA
	7852.392	1.0	275.0	Horz	PK	7.70E-08	-41.1	-13.0	-28.1	Mid channel, WCDMA
	7848.392	1.0	296.0	Vert	PK	7.50E-08	-41.2	-13.0	-28.2	Mid channel, WCDMA
	7971.508	1.0	297.0	Horz	PK	6.82E-08	-41.7	-13.0	-28.7	High channel, WCDMA
	7729.267	1.0	60.0	Vert	PK	6.25E-08	-42.0	-13.0	-29.0	Low channel, WCDMA
	7970.875	2.0	282.0	Vert	PK	6.08E-08	-42.2	-13.0	-29.2	High channel, WCDMA
	7731.008	1.0	119.0	Horz	PK	5.85E-08	-42.3	-13.0	-29.3	Low channel, WCDMA
	5980.333	1.0	306.0	Horz	PK	2.61E-08	-45.8	-13.0	-32.8	High channel, WCDMA
	5977.058	2.0	221.0	Vert	PK	2.60E-08	-45.9	-13.0	-32.9	High channel, WCDMA
	5887.717	3.7	166.0	Vert	PK	2.33E-08	-46.3	-13.0	-33.3	Mid channel, WCDMA
	5886.733	1.0	139.0	Horz	PK	2.23E-08	-46.5	-13.0	-33.5	Mid channel, WCDMA
	5795.975	1.0	334.0	Vert	PK	2.06E-08	-46.9	-13.0	-33.9	Low channel, WCDMA
	5796.425	2.8	17.0	Horz	PK	1.88E-08	-47.3	-13.0	-34.3	Low channel, WCDMA

PEAK TO AVERAGE RATIO

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
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/3/2014	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	9/26/2013	12
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	5/15/2012	24

TEST DESCRIPTION

Because the conducted Output Power was measured using a RMS Average detector, the Peak to Average Ratio was measured to show that the maximum peak-max-hold spectrum to the maximum of the average spectrum does not exceed 13 dBm.

A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

The spectrum analyzer settings were as follows:

Span set to encompass the entire emission bandwidth, centered on the transmit channel.

The largest difference between the following two screen captures was calculated:

- 1st Screen Capture: The same procedure and settings as was used for conducted Output Power.
- 2nd Screen Capture: Same as Screen capture 1 except using a peak detector and trace max-hold.

PEAK TO AVERAGE RATIO

EUT:	Prism HDM 1900 MHz / 2100 MHz SISO RF Module			**Work Order:**	TECO0013
Serial Number:	None			**Date:**	04/09/14
Customer:	TE Connectivity / ADC Telecommunications			**Temperature:**	24.2°C
Attendees:	None			**Humidity:**	21%
Project:	None			**Barometric Pres.:**	1013.5
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
FCC 24E:2014	ANSI/TIA/EIA-603-C-2004

COMMENTS

Customer provided a high wattage 30 dB attenuator that was added into the reference level offset.

DEVIATIONS FROM TEST STANDARD

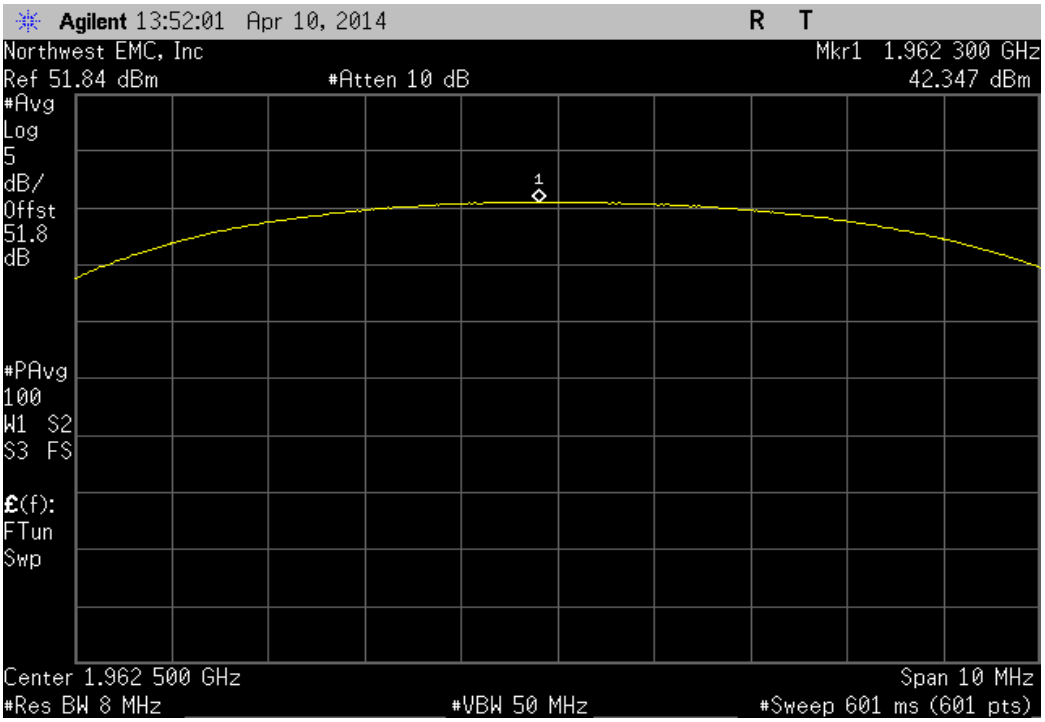
None

Configuration #	1	Signature	Trevor Buls

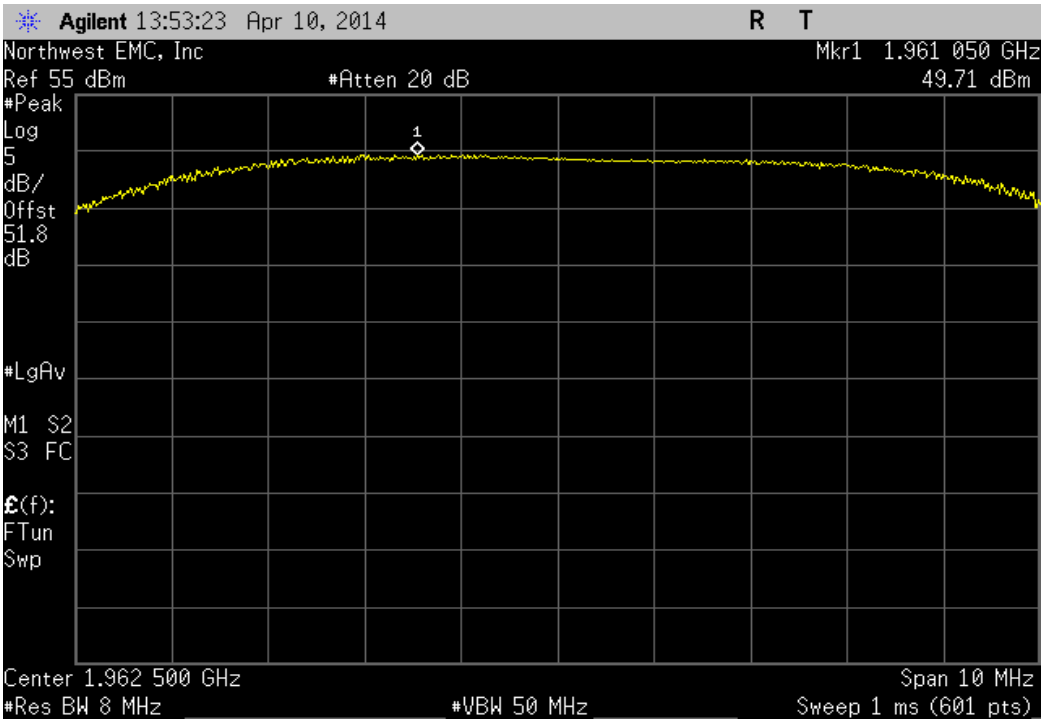
		Average Value (dBm)	Peak Value (dBm)	Delta (dB)	Limit (dB)	Result
LTE 5 MHz						
	Average (RMS)	42.347	N/A	N/A	N/A	N/A
	Peak	N/A	49.71	7.363	13	Pass
LTE 10 MHz						
	Average (RMS)	41.84	N/A	N/A	N/A	N/A
	Peak	N/A	45.22	3.38	13	Pass

PEAK TO AVERAGE RATIO

LTE 5 MHz, Average (RMS)						
	Average Value (dBm)	Peak Value (dBm)		Delta (dB)	Limit (dB)	Result
	42.347	N/A		N/A	N/A	N/A

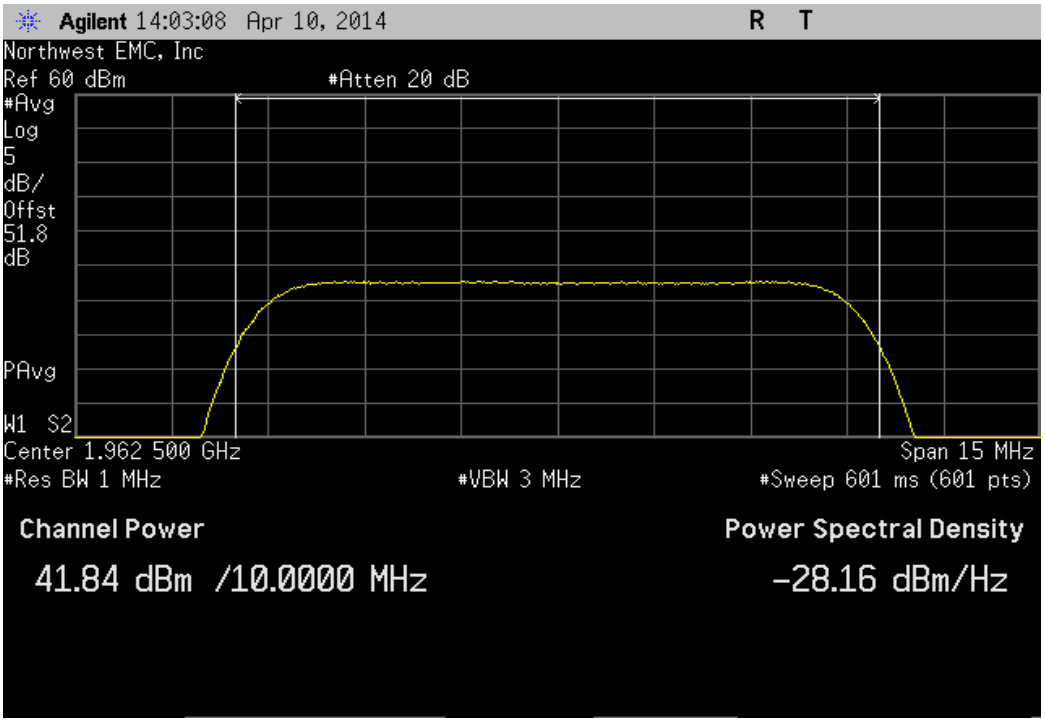


LTE 5 MHz, Peak						
	Average Value (dBm)	Peak Value (dBm)		Delta (dB)	Limit (dB)	Result
	N/A	49.71		7.363	13	Pass

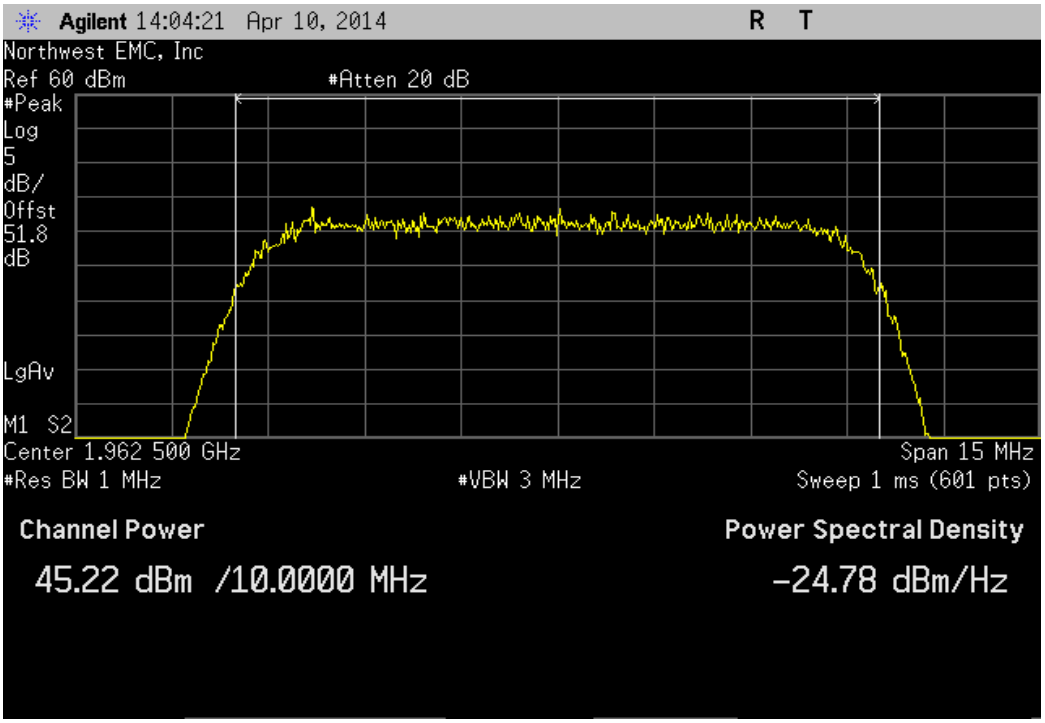


PEAK TO AVERAGE RATIO

LTE 10 MHz, Average (RMS)						
	Average Value (dBm)	Peak Value (dBm)		Delta (dB)	Limit (dB)	Result
	41.84	N/A		N/A	N/A	N/A



LTE 10 MHz, Peak						
	Average Value (dBm)	Peak Value (dBm)		Delta (dB)	Limit (dB)	Result
	N/A	45.22		3.38	13	Pass



PEAK TO AVERAGE RATIO

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
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/3/2014	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	9/26/2013	12
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	4/28/2014	12

TEST DESCRIPTION

Because the conducted Output Power was measured using a RMS Average detector, the Peak to Average Ratio was measured to show that the maximum peak-max-hold spectrum to the maximum of the average spectrum does not exceed 13 dBm.

A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

The spectrum analyzer settings were as follows:

Span set to encompass the entire emission bandwidth, centered on the transmit channel.

The largest difference between the following two screen captures was calculated:

- 1st Screen Capture: The same procedure and settings as was used for conducted Output Power.
- 2nd Screen Capture: Same as Screen capture 1 except using a peak detector and trace max-hold.

PEAK TO AVERAGE RATIO

EUT:	Prism HDM 1900 MHz / 2100 MHz SISO RF Module			**Work Order:**	TECO0017
Serial Number:	None			**Date:**	07/16/14
Customer:	TE Connectivitiy / ADC Telecommunications			**Temperature:**	23.3°C
Attendees:	None			**Humidity:**	43%
Project:	None			**Barometric Pres.:**	1020.6
Tested by:	Trevor Buls	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
FCC 24E:2014	ANSI/TIA/EIA-603-C-2004

COMMENTS

A 30 dB high wattage attenuator was provided by the customer.

DEVIATIONS FROM TEST STANDARD

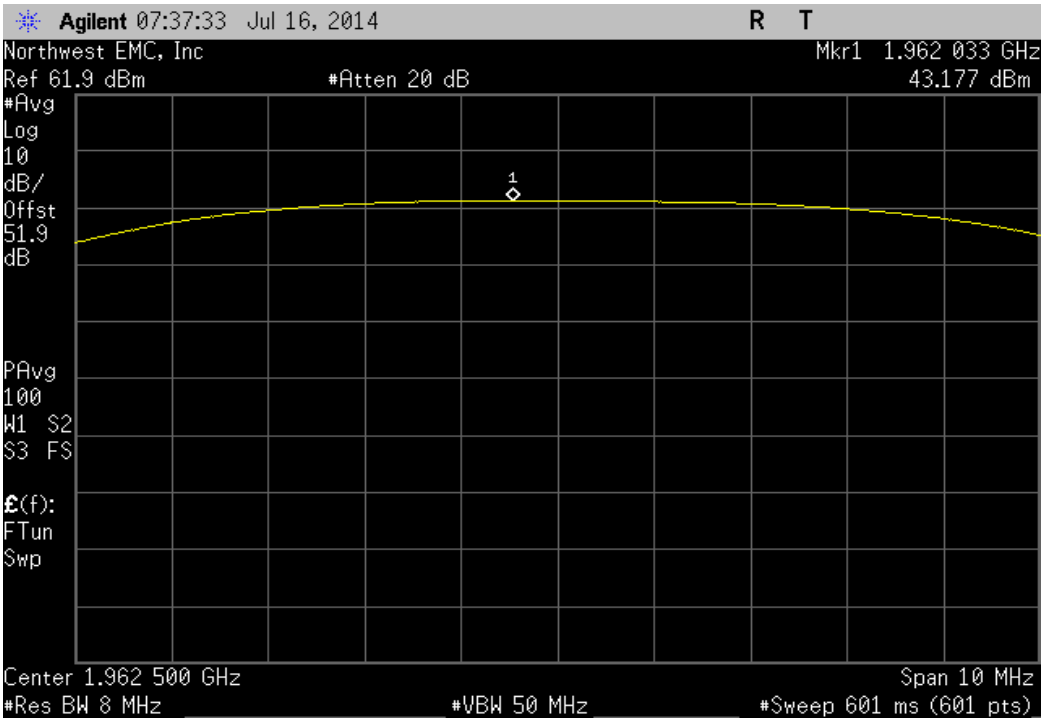
None

Configuration #	1	Signature	Trevor Buls

	Average Value (dBm)	Peak Value (dBm)	Delta (dB)	Limit (dB)	Result
WCDMA					
Average (RMS)	43.177	N/A	N/A	N/A	N/A
Peak	N/A	52.81	9.6	13	Pass

PEAK TO AVERAGE RATIO

WCDMA, Average (RMS)						
	Average Value (dBm)	Peak Value (dBm)		Delta (dB)	Limit (dB)	Result
	43.177	N/A		N/A	N/A	N/A



WCDMA, Peak						
	Average Value (dBm)	Peak Value (dBm)		Delta (dB)	Limit (dB)	Result
	N/A	52.81		9.6	13	Pass