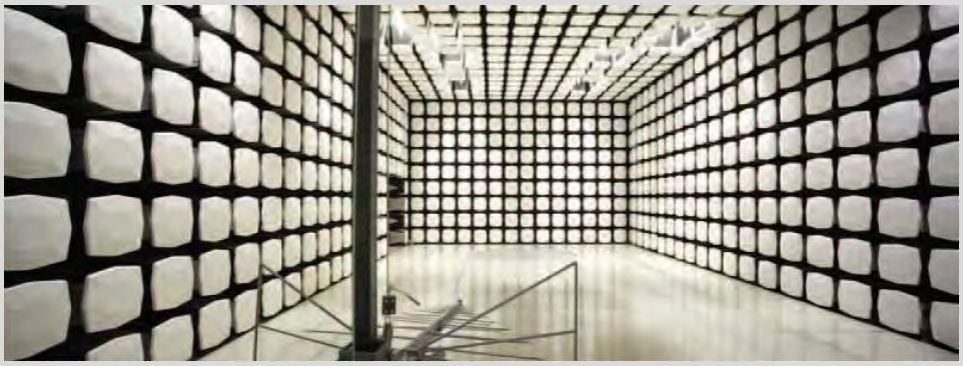
Microsoft Corporation

Model 1631

FCC 15.247:2014

FCC 15.207:2014

Report #: MCSO1698 PART 2 OF 7



Report Prepared By Northwest EMC Inc.

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

California – Minnesota – Oregon – New York – Washington

DUTY CYCLE

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 (mo.)
40GHz DC Block	Miteq	DCB4000	AMD	5/16/2013	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/30/2013	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	2/3/2014	12
MXG Analog Signal Generator	Agilent	N5181A	TIG	NCR	0
Power Meter	Gigatronics	8651A	SPM	11/26/2013	24
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	36
Spectrum Analyzer	Agilent	E4440	AFE	11/4/2013	24

TEST DESCRIPTION

The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was 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.

If the transmit duty cycle < 98 percent, burst gating was used during some of the other tests in this report to only measure during the burst duration.

DUTY CYCLE

EUT:	Model 1631	**Work Order:**	MCSO1698
Serial Number:	041148340753	**Date:**	03/22/14
Customer:	Microsoft Corporation	**Temperature:**	21.5°C
Attendees:	None	**Humidity:**	29%
Project:	1631	**Barometric Pres.:**	1007
Tested by:	Brandon Hobbs, Jared Ison	**Power:** 110VAC/60Hz	**Job Site:** EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2014	ANSI C63.10:2009

COMMENTS

Modes of operation tested were client provided.

DEVIATIONS FROM TEST STANDARD

None

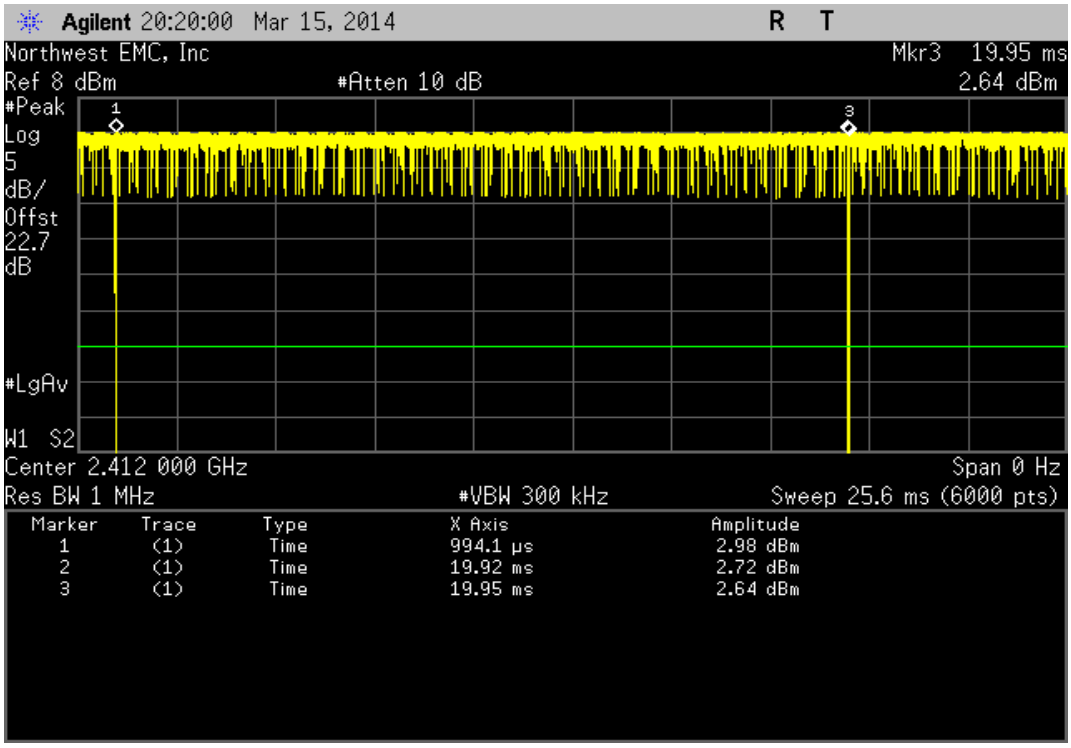
Configuration #	1	Signature

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
20 MHz						
2400 MHz - 2483.5 MHz Band						
802.11(b) 1 Mbps						
Low Channel 1, 2412 MHz	18.927 mS	18.957 mS	1	99.8	N/A	N/A
Low Channel 1, 2412 MHz	N/A	N/A	4	N/A	N/A	N/A
Mid Channel 6, 2437 MHz	18.931 mS	18.953 mS	1	99.9	N/A	N/A
Mid Channel 6, 2437 MHz	N/A	N/A	2	N/A	N/A	N/A
High Channel 11, 2462 MHz	18.931 mS	18.953 mS	1	99.9	N/A	N/A
High Channel 11, 2462 MHz	N/A	N/A	2	N/A	N/A	N/A
802.11(b) 11 Mbps						
Low Channel 1, 2412 MHz	1.798 mS	1.822 mS	1	98.7	N/A	N/A
Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz	1.798 mS	1.822 mS	1	98.7	N/A	N/A
Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MHz	1.8 mS	1.824 mS	1	98.7	N/A	N/A
High Channel 11, 2462 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(g) 6 Mbps						
Low Channel 1, 2412 MHz	3.141 mS	3.169 mS	1	99.1	N/A	N/A
Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz	3.141 mS	3.169 mS	1	99.1	N/A	N/A
Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MHz	3.139 mS	3.174 mS	1	98.9	N/A	N/A
High Channel 11, 2462 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(g) 36 Mbps						
Low Channel 1, 2412 MHz	536 uS	571 uS	1	93.9	N/A	N/A
Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz	537 uS	570 uS	1	94.2	N/A	N/A
Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MHz	536 uS	571 uS	1	93.9	N/A	N/A
High Channel 11, 2462 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(g) 54 Mbps						
Low Channel 1, 2412 MHz	360 uS	395 uS	1	91.1	N/A	N/A
Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz	361 uS	396 uS	1	91.2	N/A	N/A
Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MHz	361 uS	396 uS	1	91.2	N/A	N/A
High Channel 11, 2462 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS0						
Low Channel 1, 2412 MHz	2.916 mS	2.946 mS	1	99	N/A	N/A
Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz	2.918 mS	2.946 mS	1	99.1	N/A	N/A
Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MHz	2.916 mS	2.946 mS	1	99	N/A	N/A
High Channel 11, 2462 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS7						
Low Channel 1, 2412 MHz	320 uS	355 uS	1	90.1	N/A	N/A
Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz	320 uS	355 uS	1	90.1	N/A	N/A
Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MHz	320 uS	355 uS	1	90.1	N/A	N/A
High Channel 11, 2462 MHz	N/A	N/A	5	N/A	N/A	N/A

DUTY CYCLE

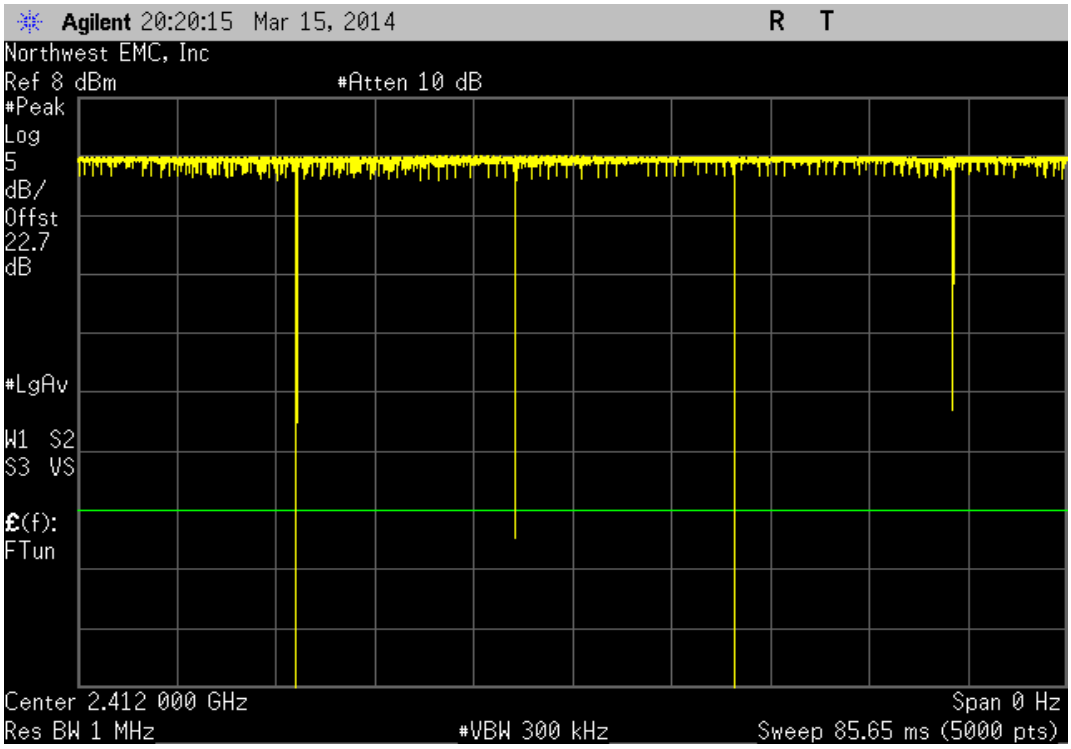
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	18.927 mS	18.957 mS	1	99.8	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz

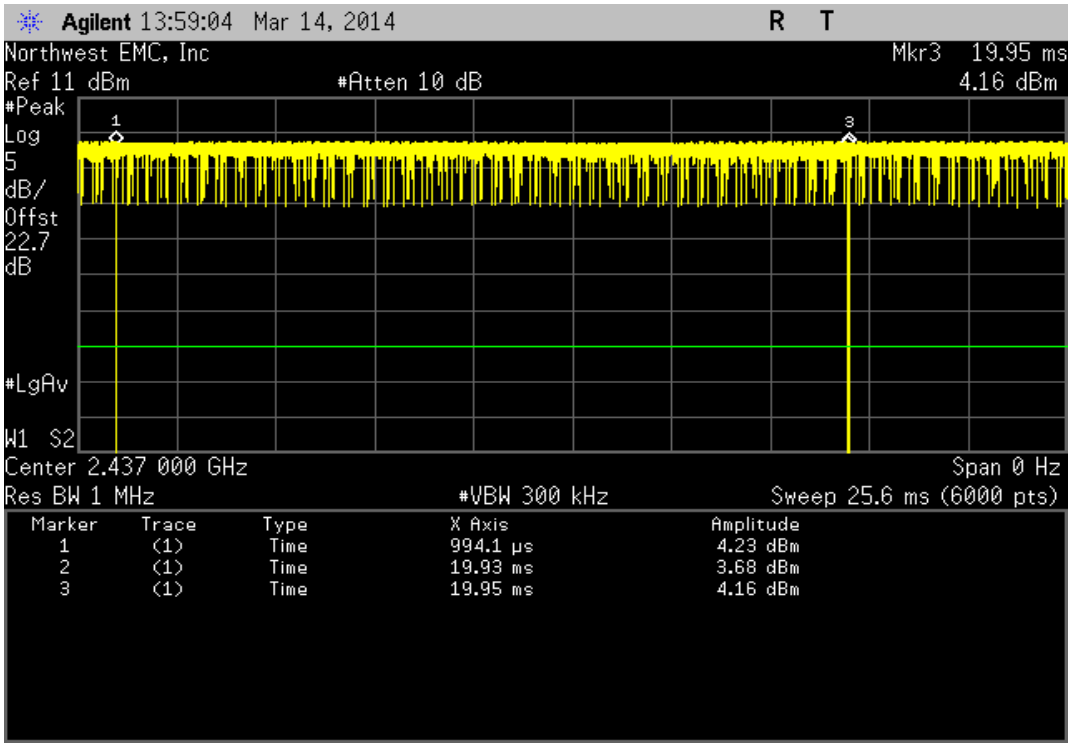
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	4	N/A	N/A	N/A



DUTY CYCLE

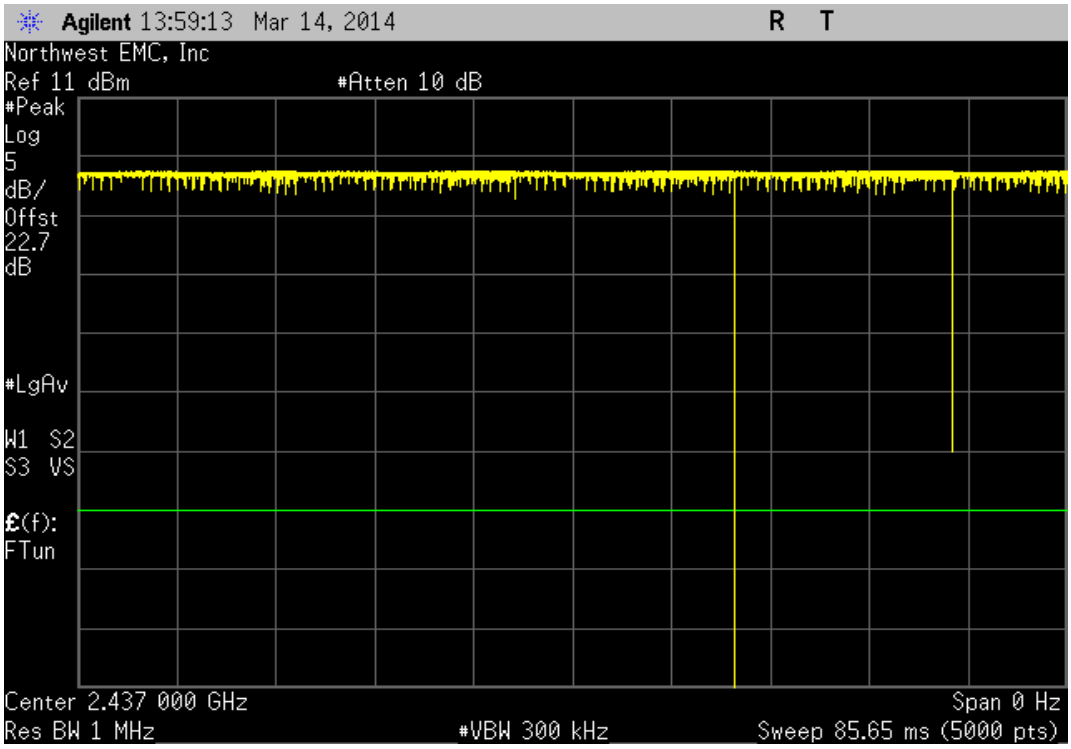
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	18.931 mS	18.953 mS	1	99.9	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz

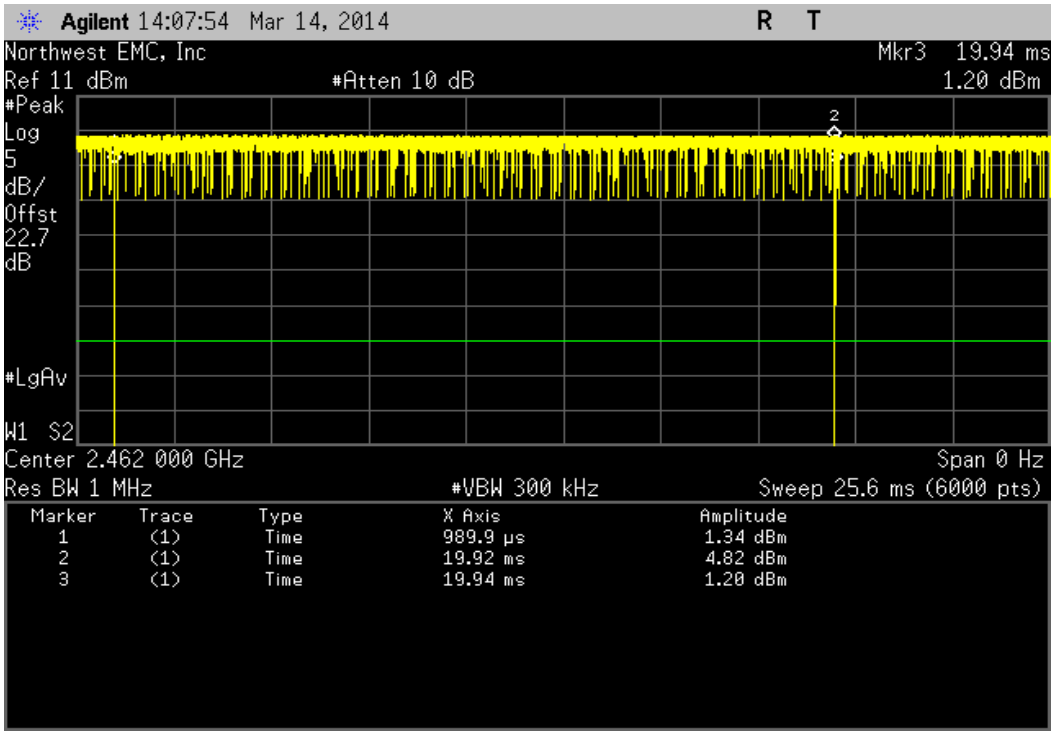
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	2	N/A	N/A	N/A



DUTY CYCLE

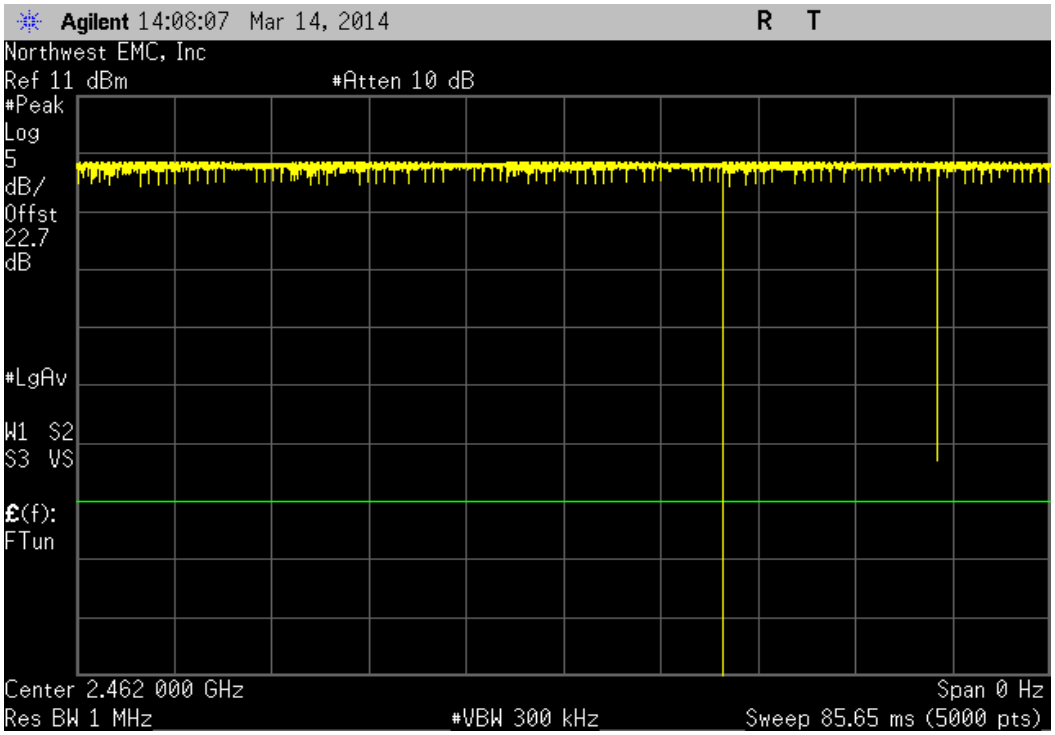
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	18.931 mS	18.953 mS	1	99.9	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz

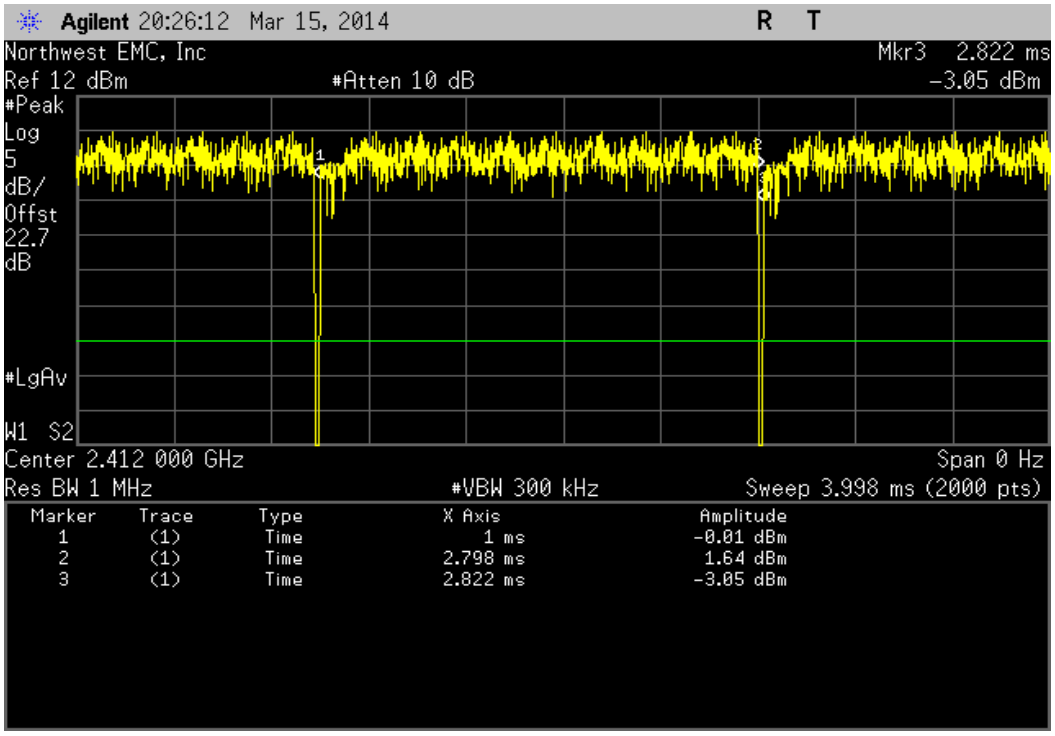
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	2	N/A	N/A	N/A



DUTY CYCLE

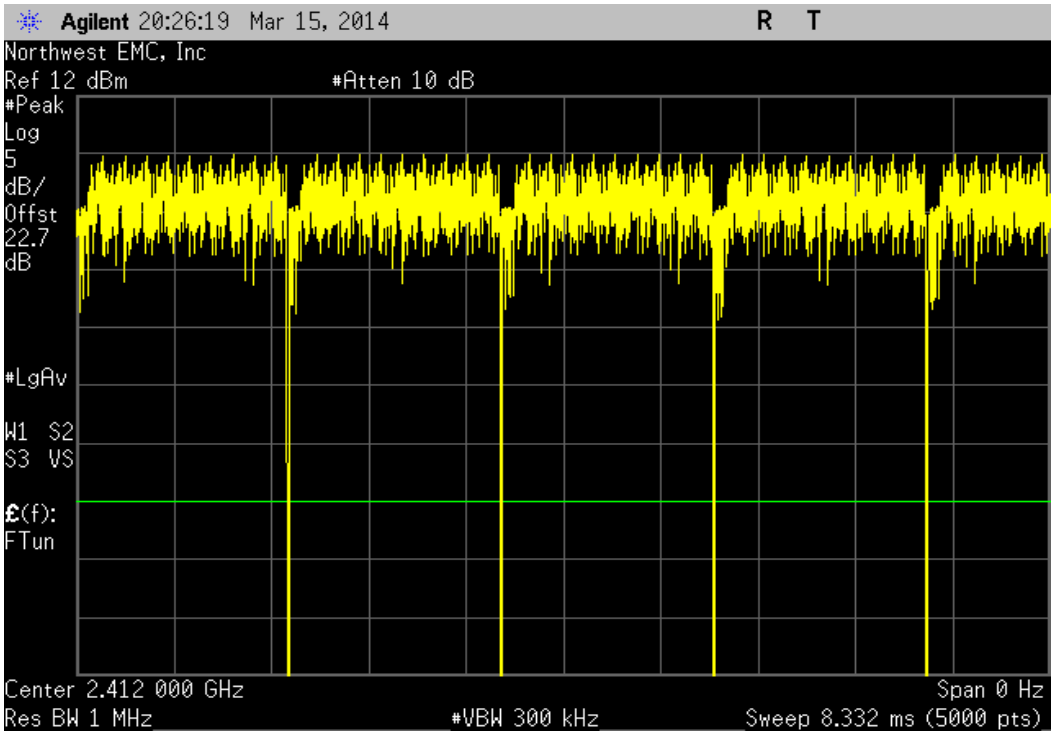
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.798 mS	1.822 mS	1	98.7	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz

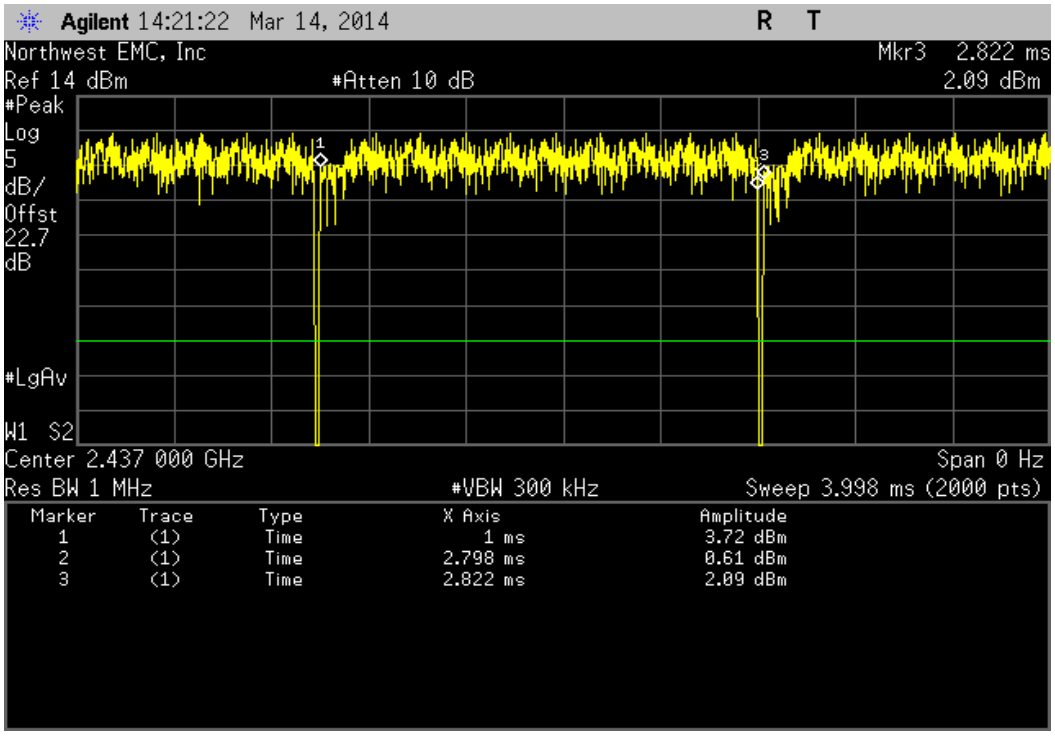
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

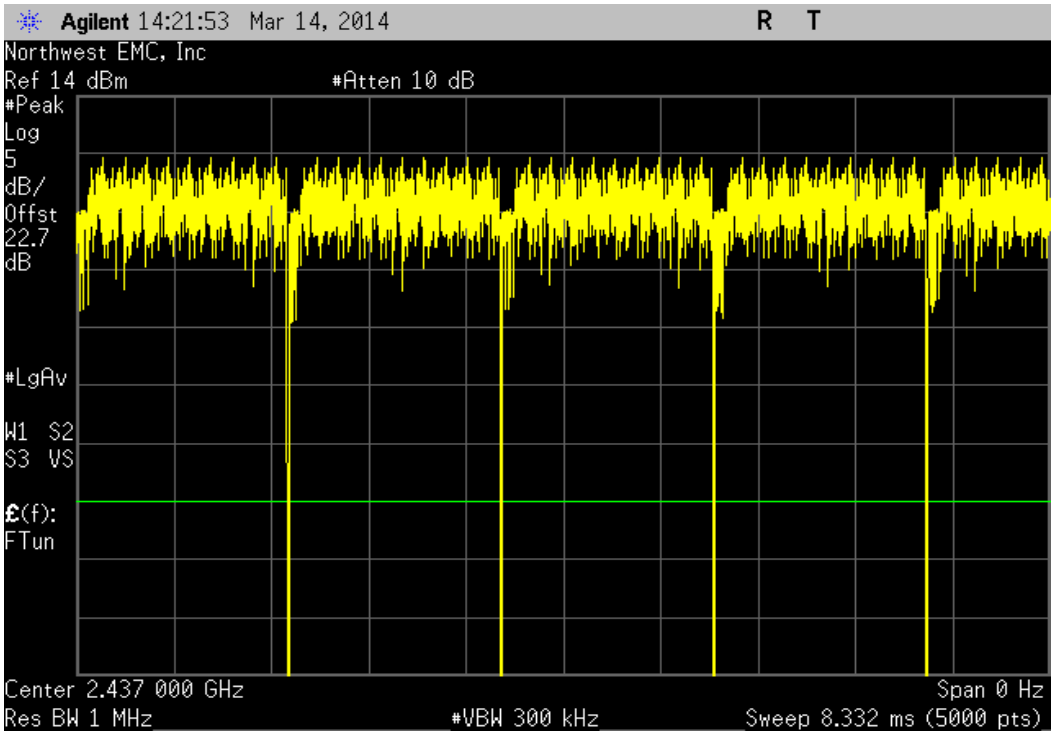
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.798 mS	1.822 mS	1	98.7	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz

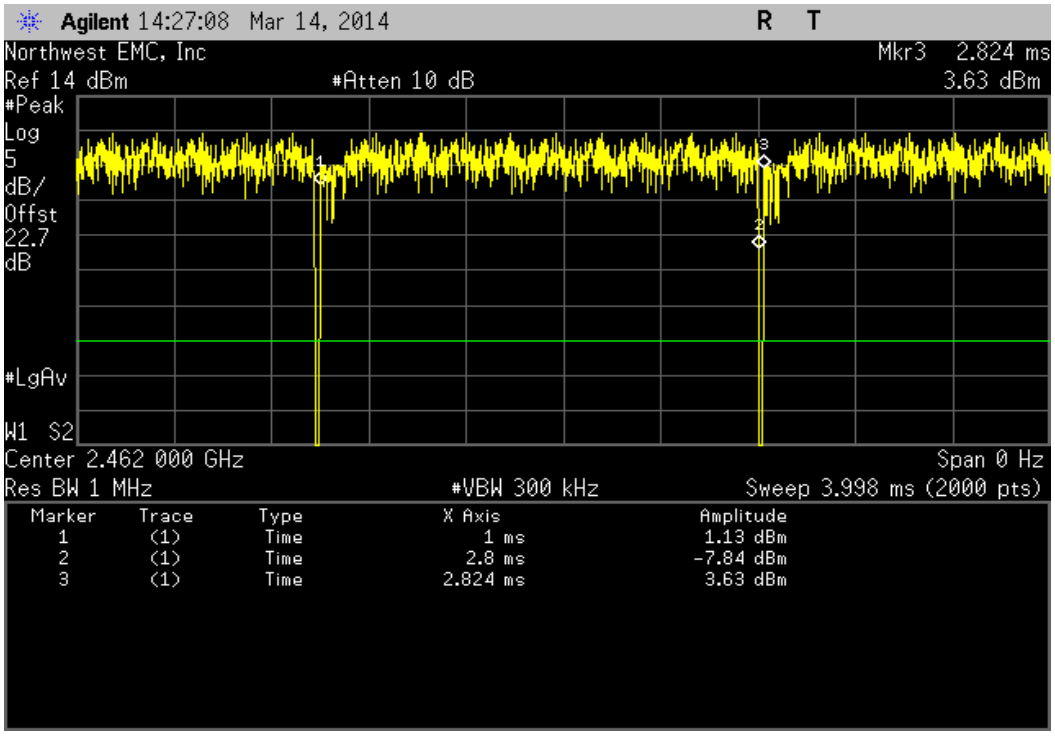
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

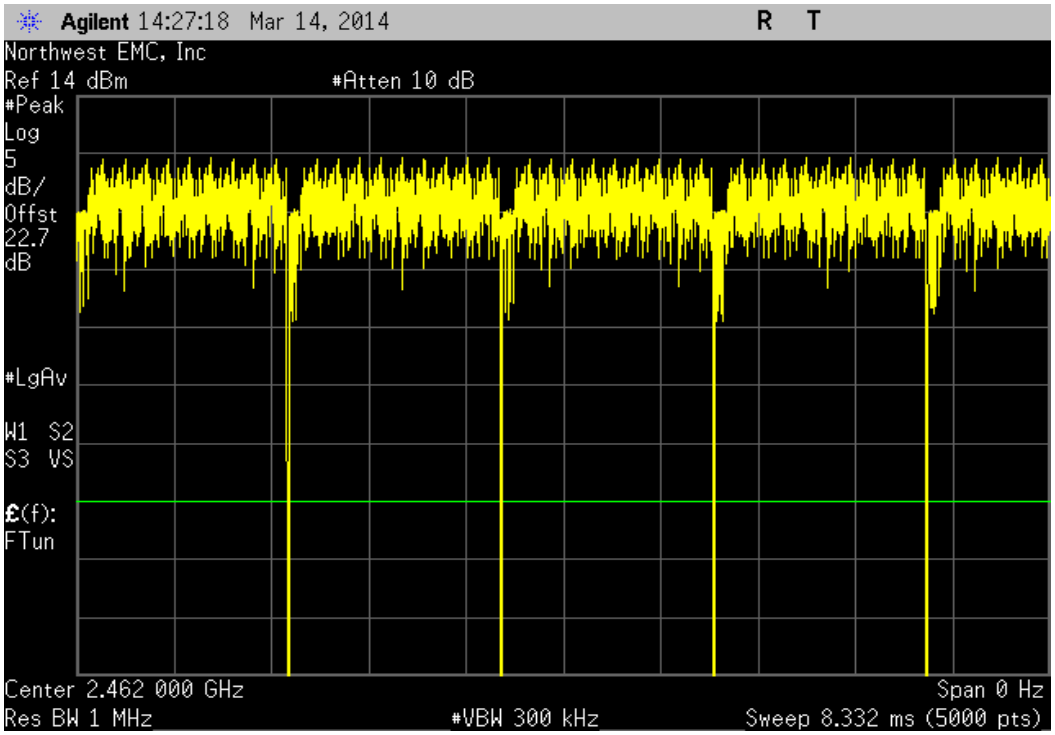
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.8 mS	1.824 mS	1	98.7	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz

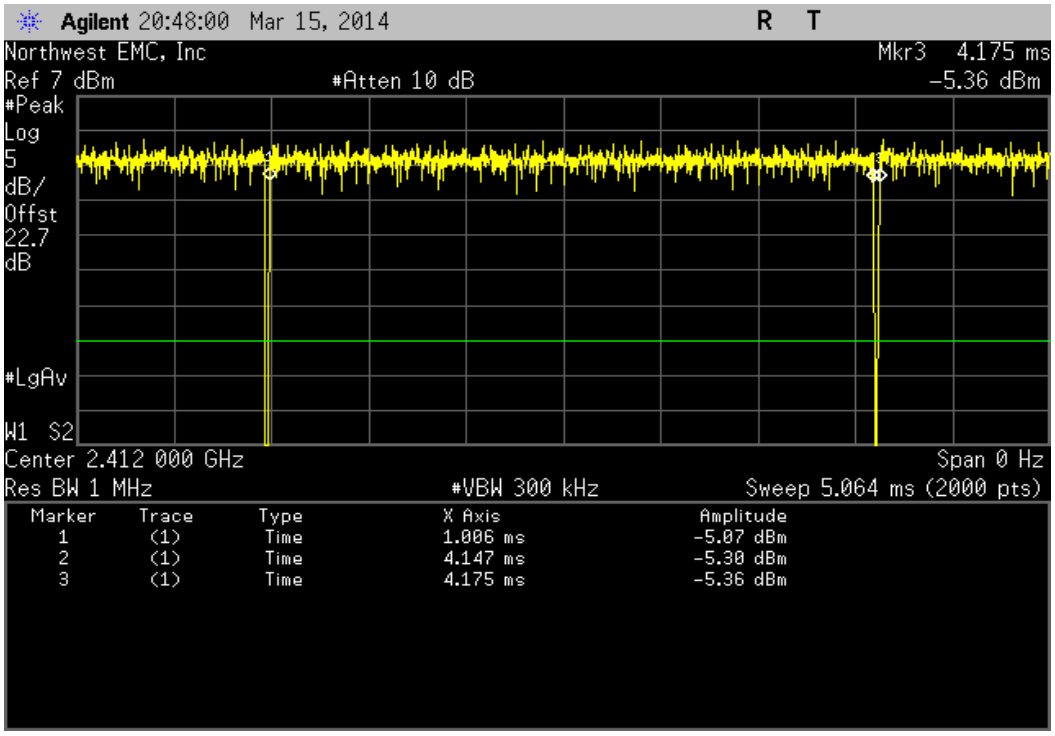
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

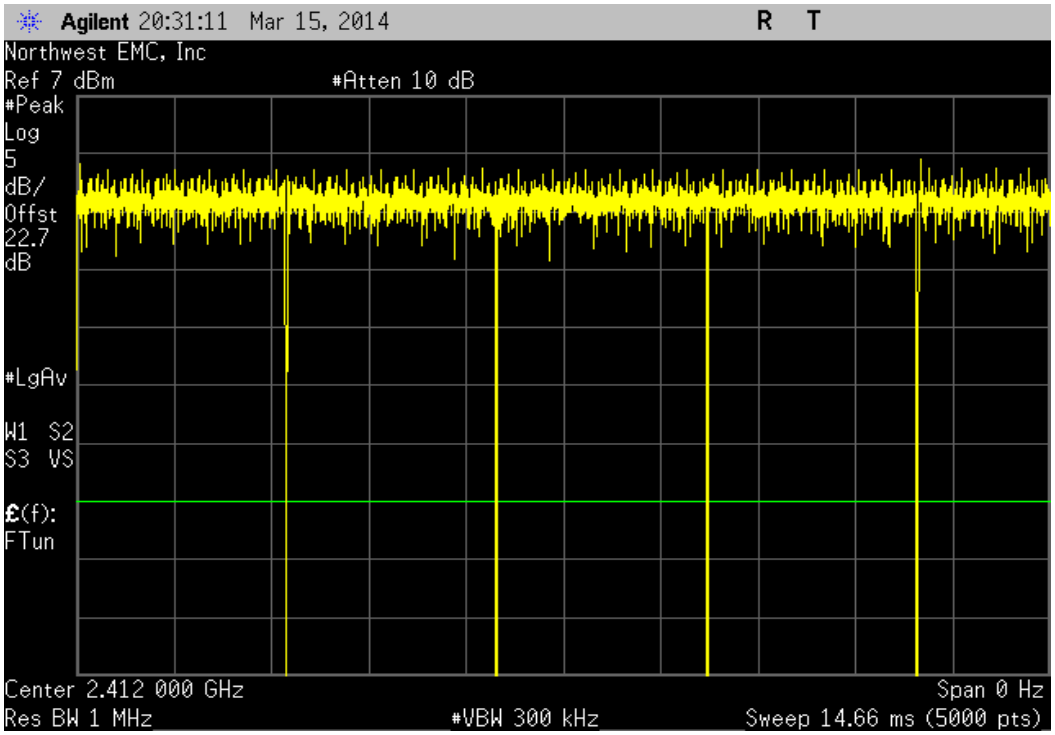
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	3.141 mS	3.169 mS	1	99.1	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz

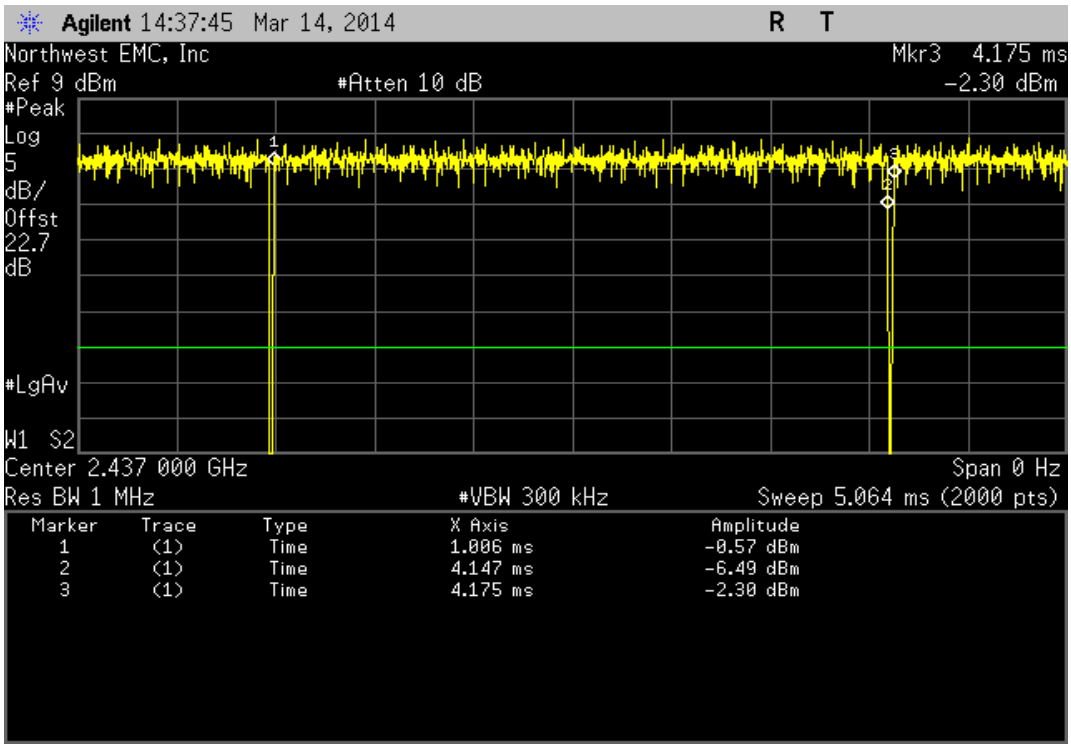
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

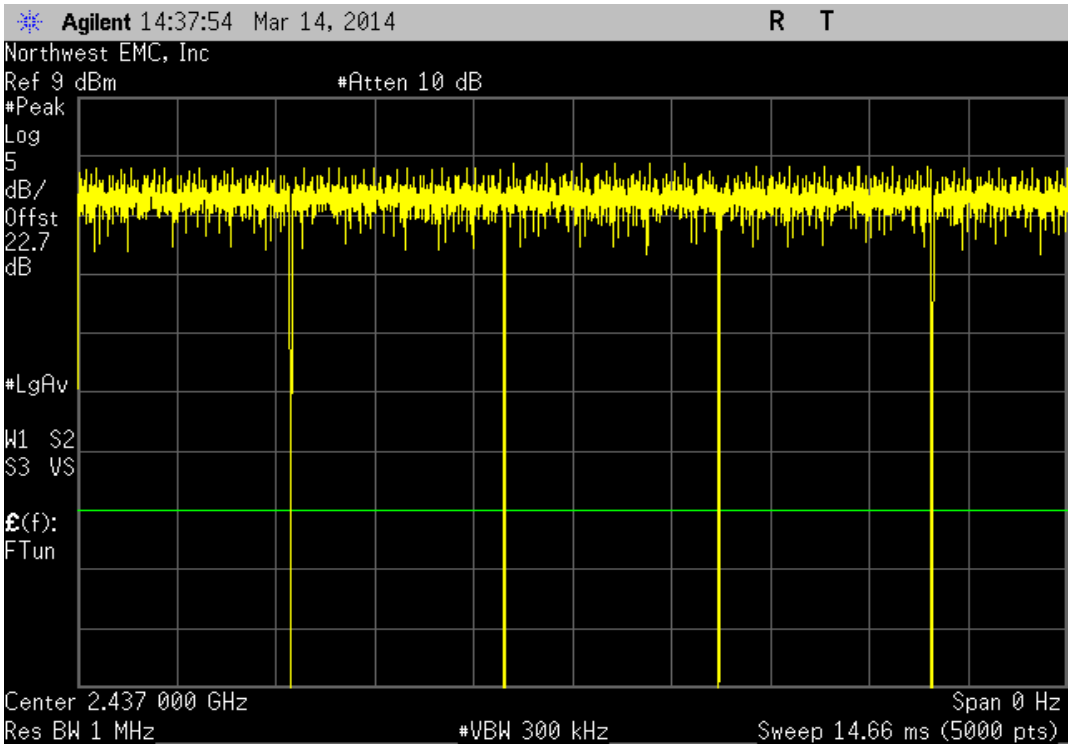
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	3.141 mS	3.169 mS	1	99.1	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz

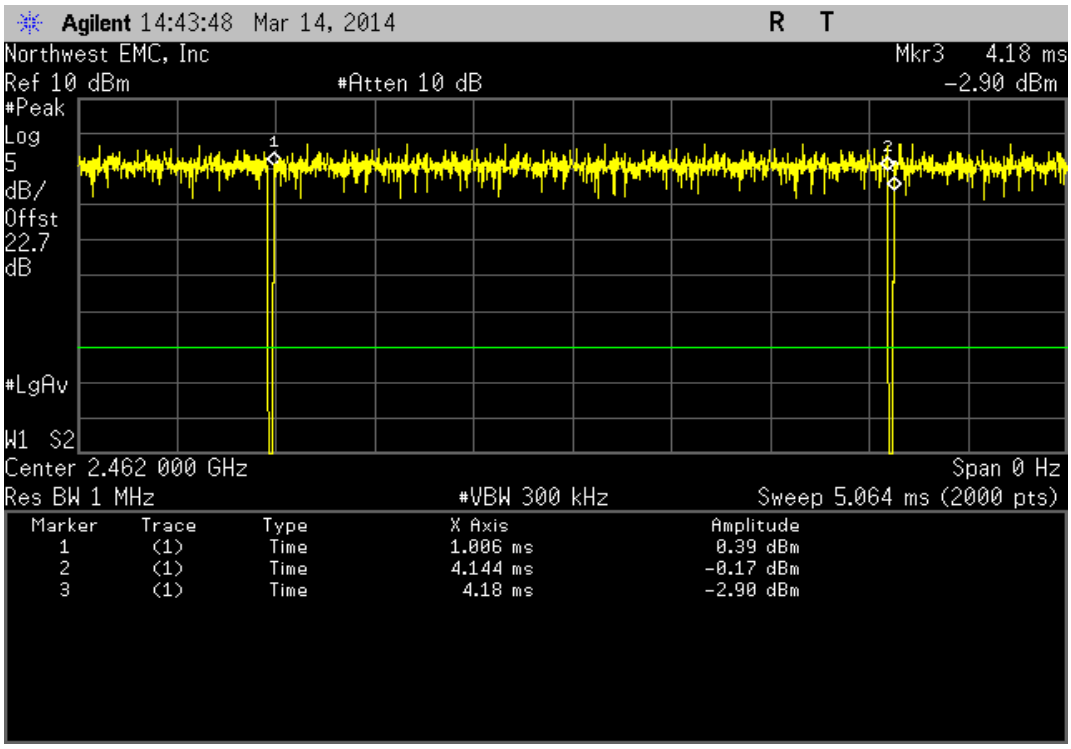
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

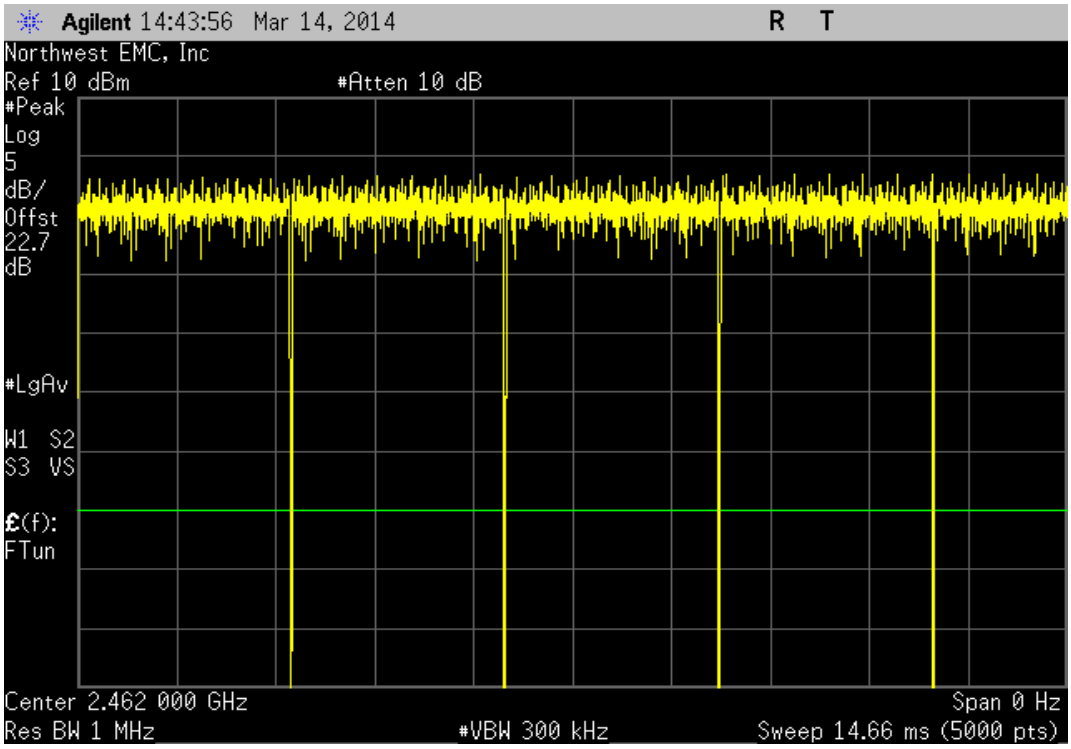
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	3.139 mS	3.174 mS	1	98.9	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz

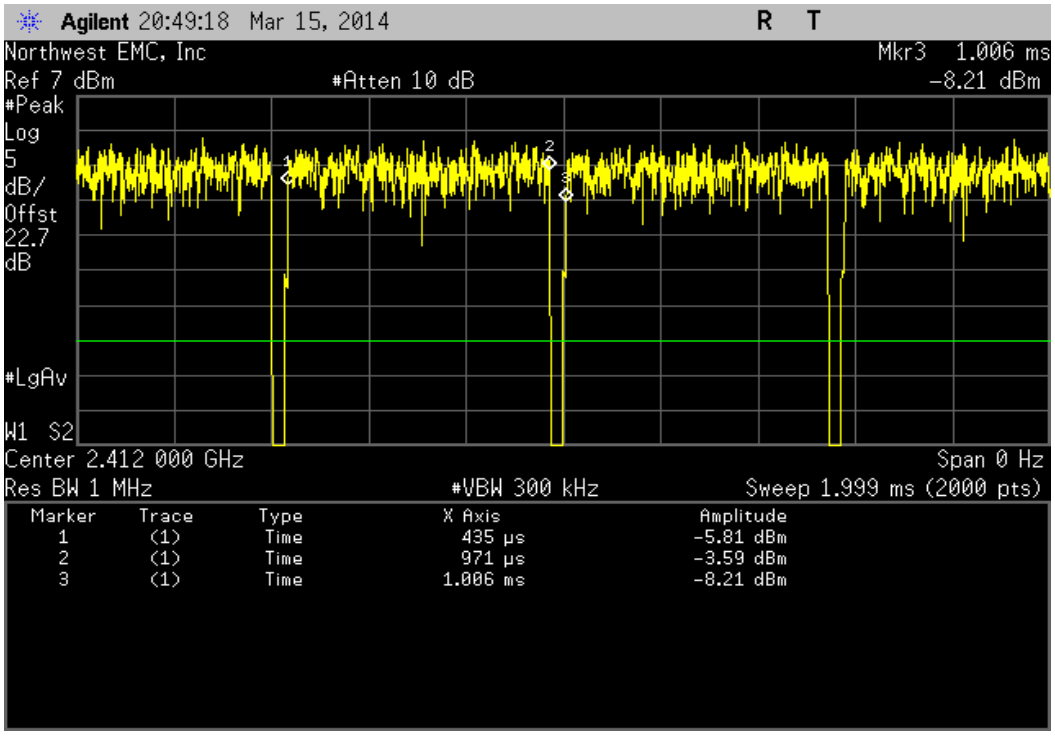
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

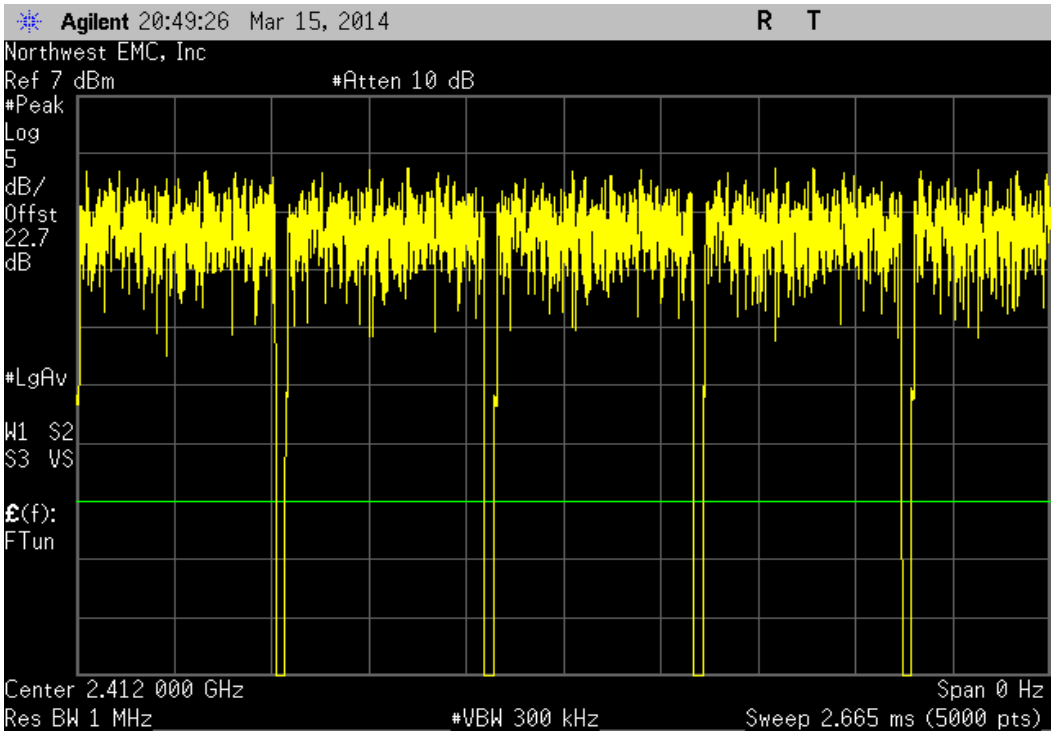
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	536 uS	571 uS	1	93.9	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz

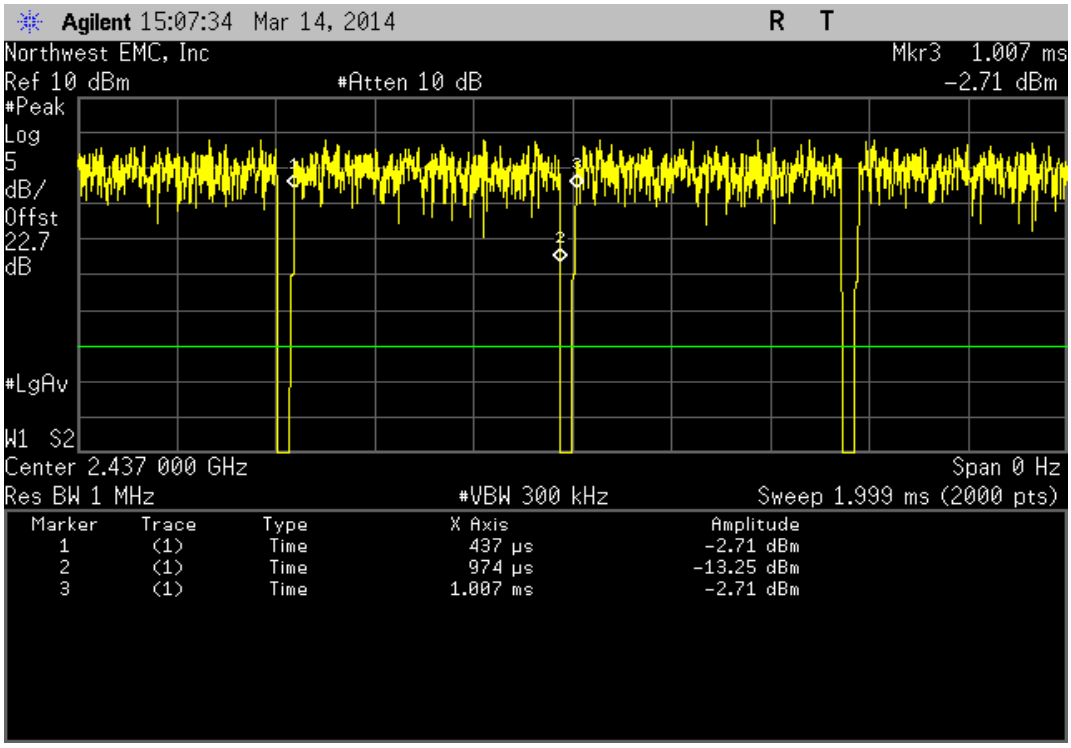
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

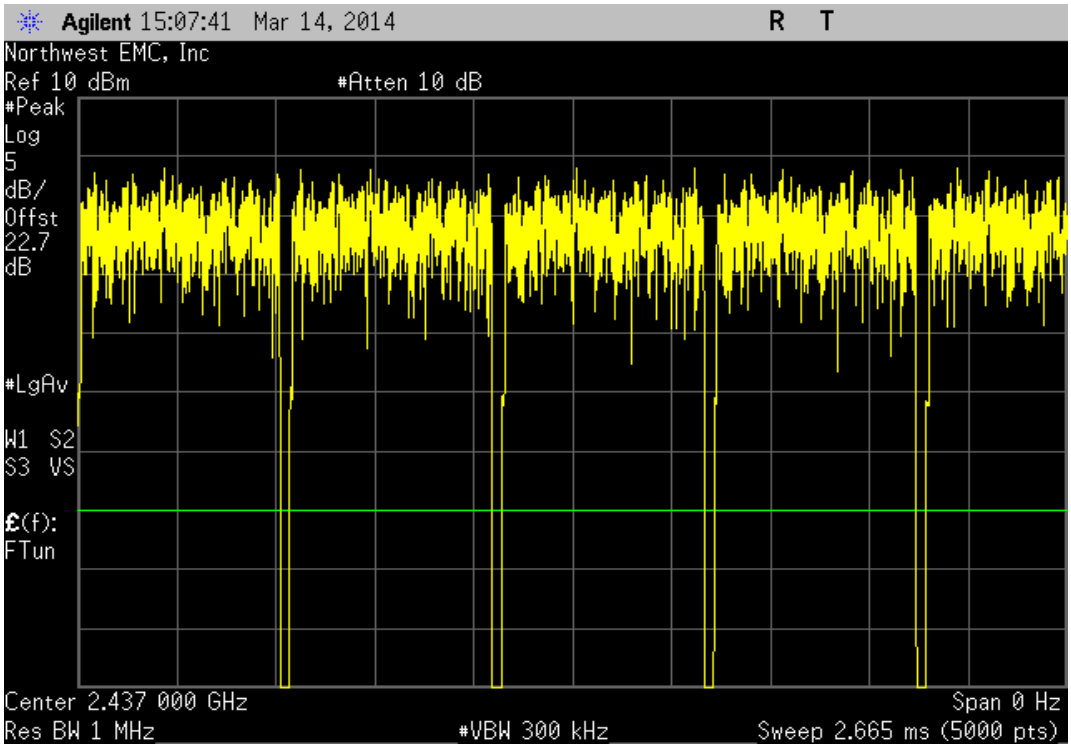
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
537 uS	570 uS	1	94.2	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz

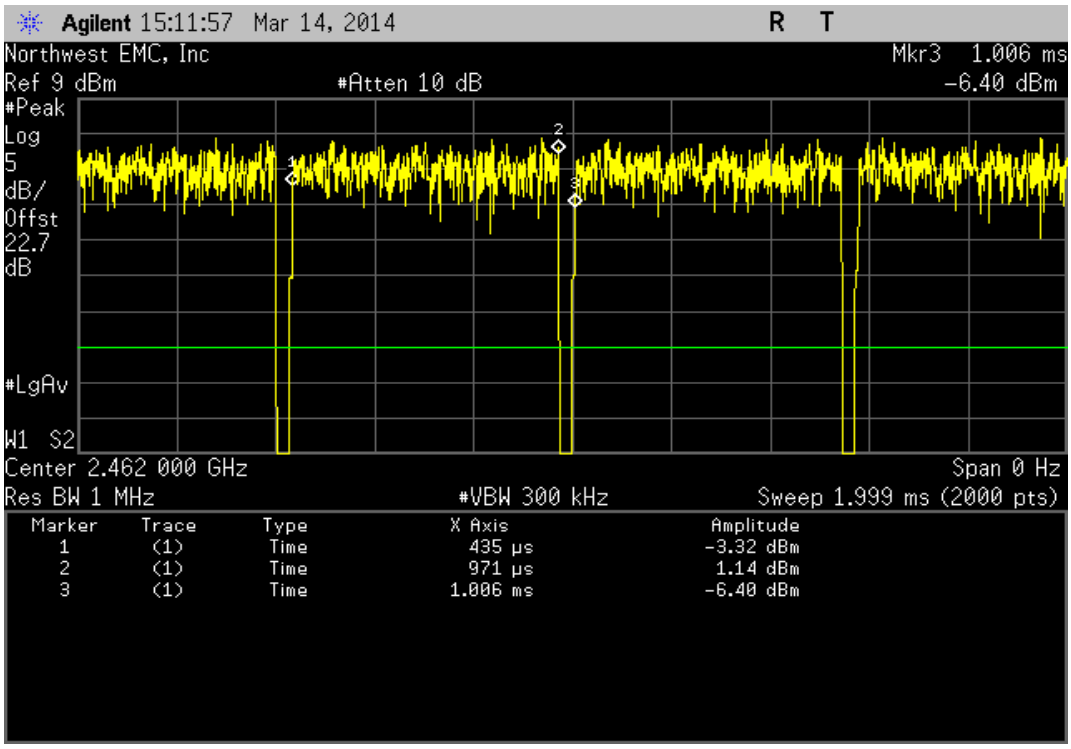
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

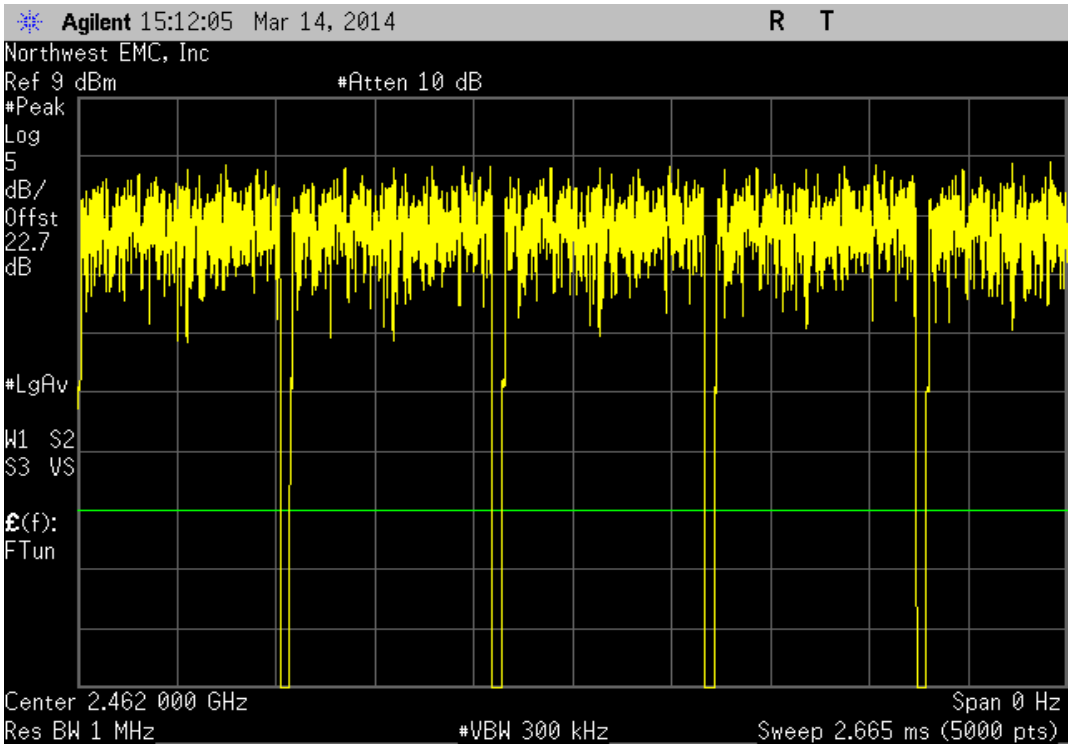
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	536 uS	571 uS	1	93.9	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz

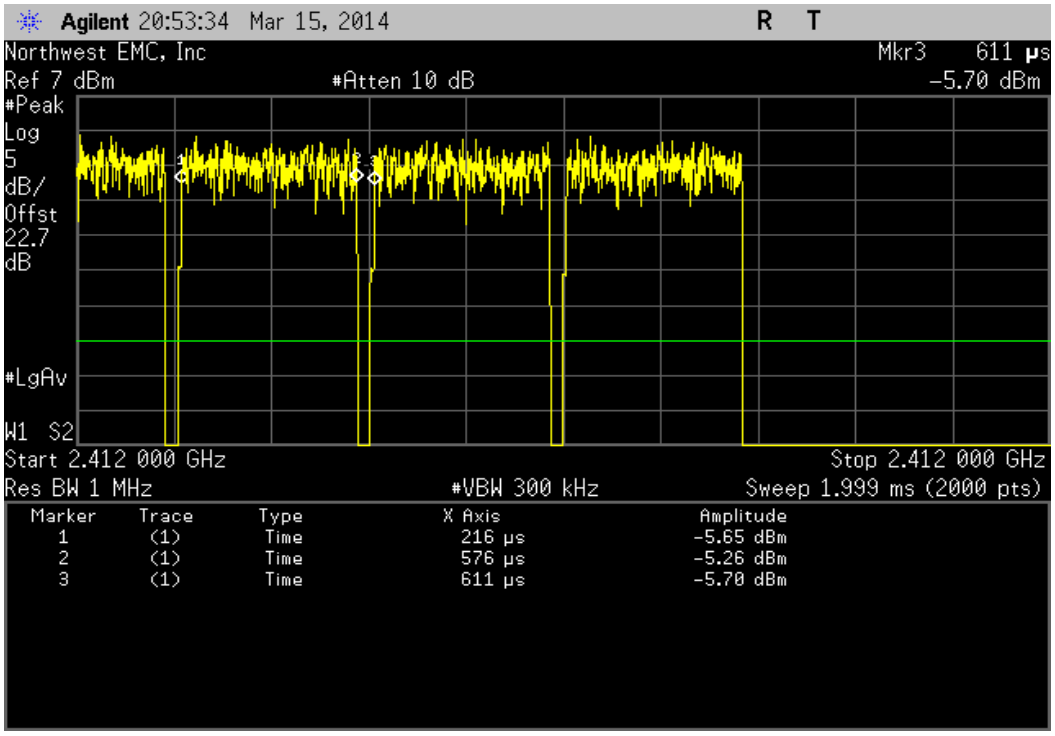
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

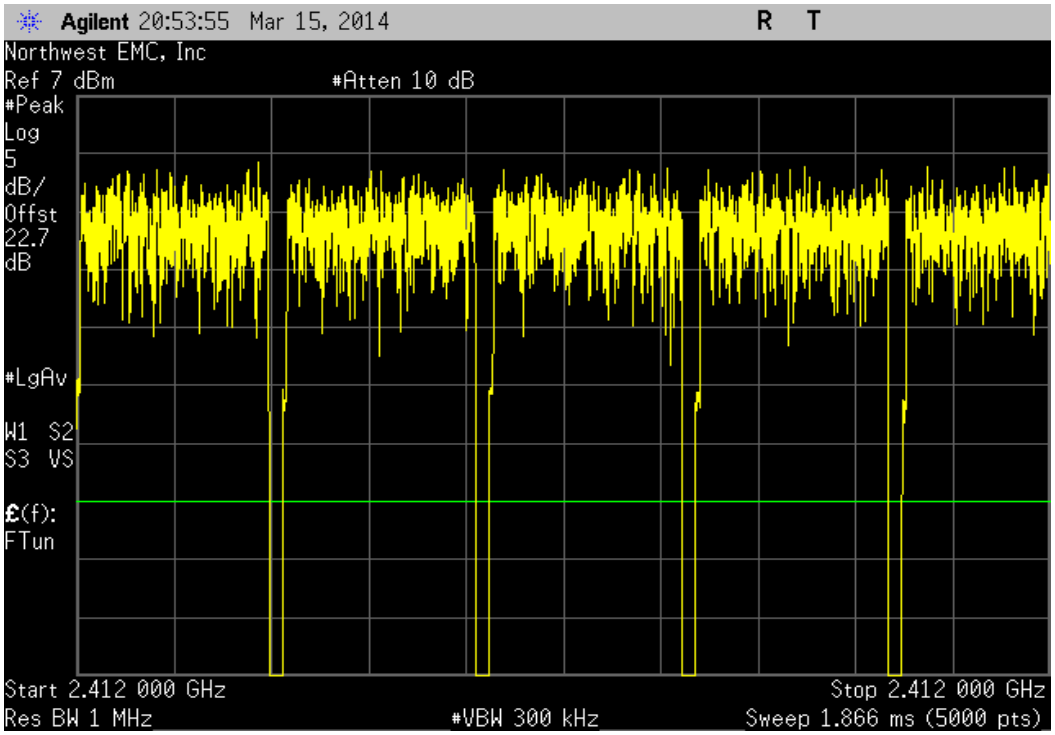
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	360 uS	395 uS	1	91.1	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz

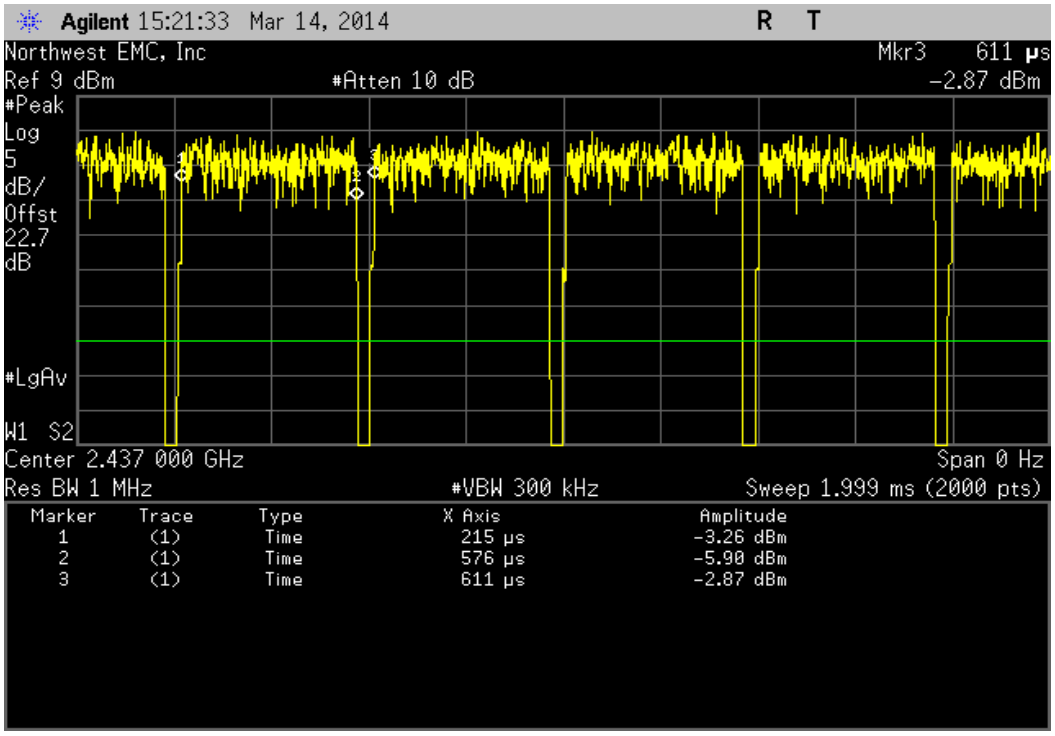
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

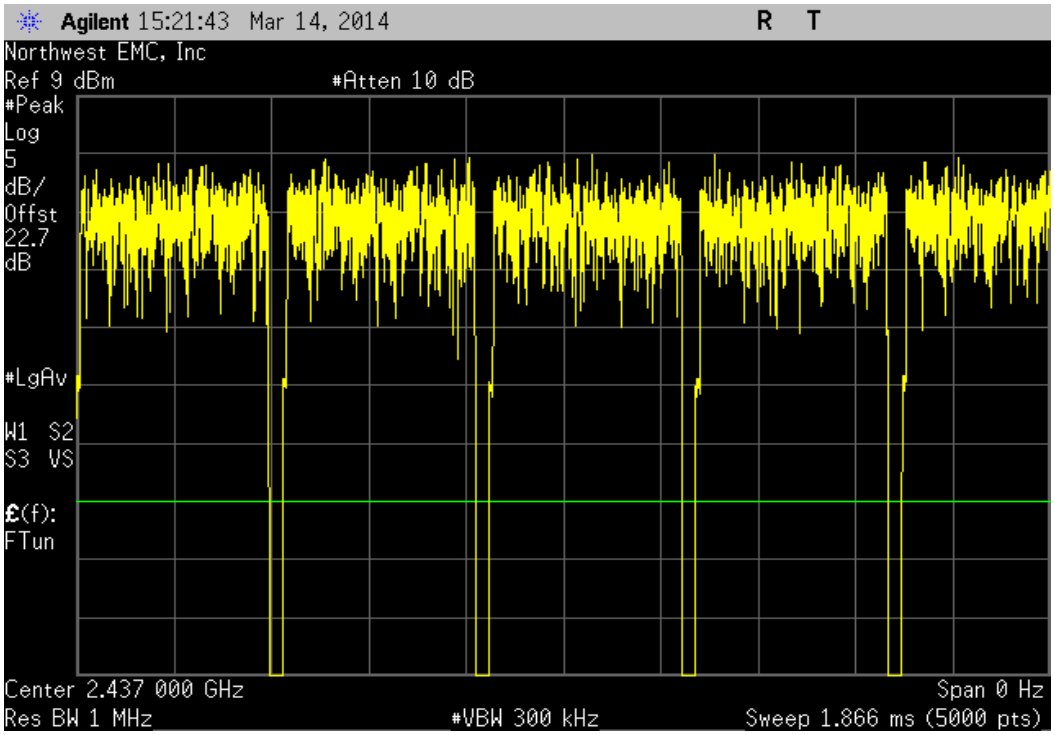
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	361 uS	396 uS	1	91.2	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz

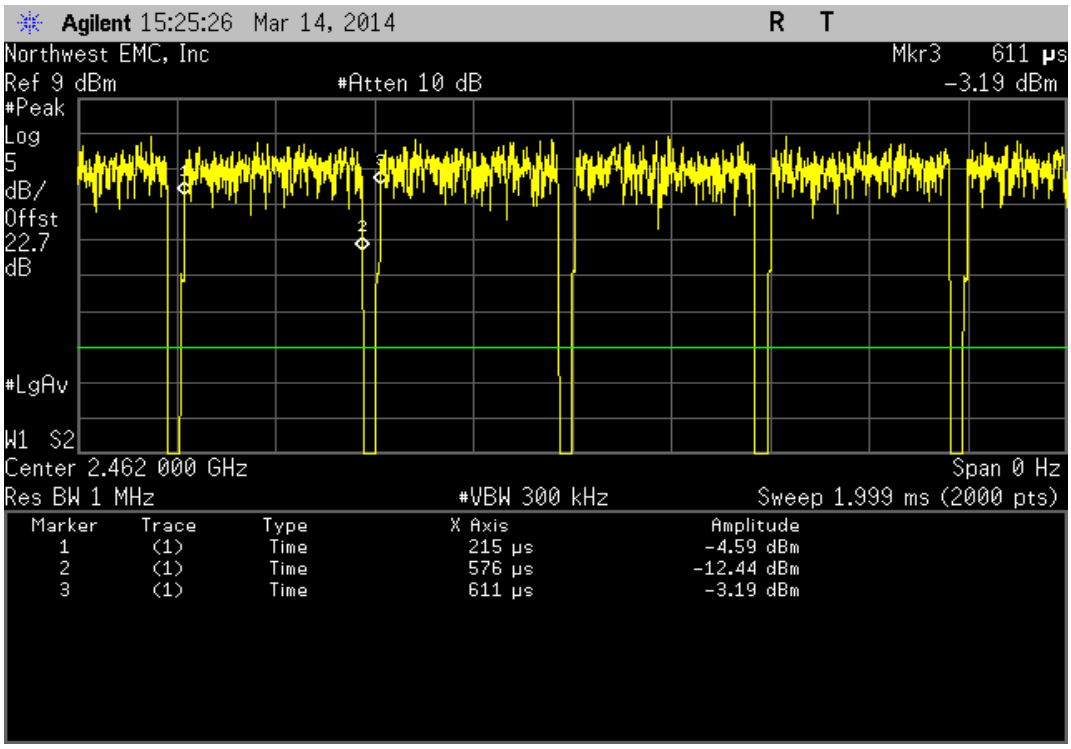
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

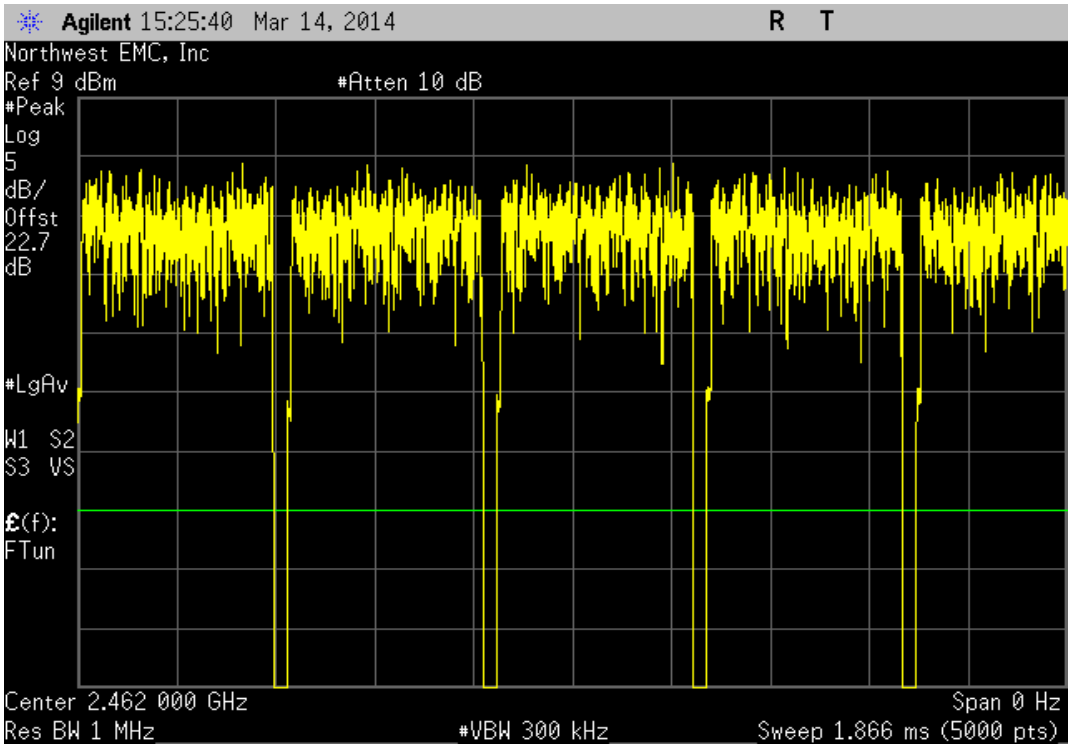
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	361 uS	396 uS	1	91.2	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz

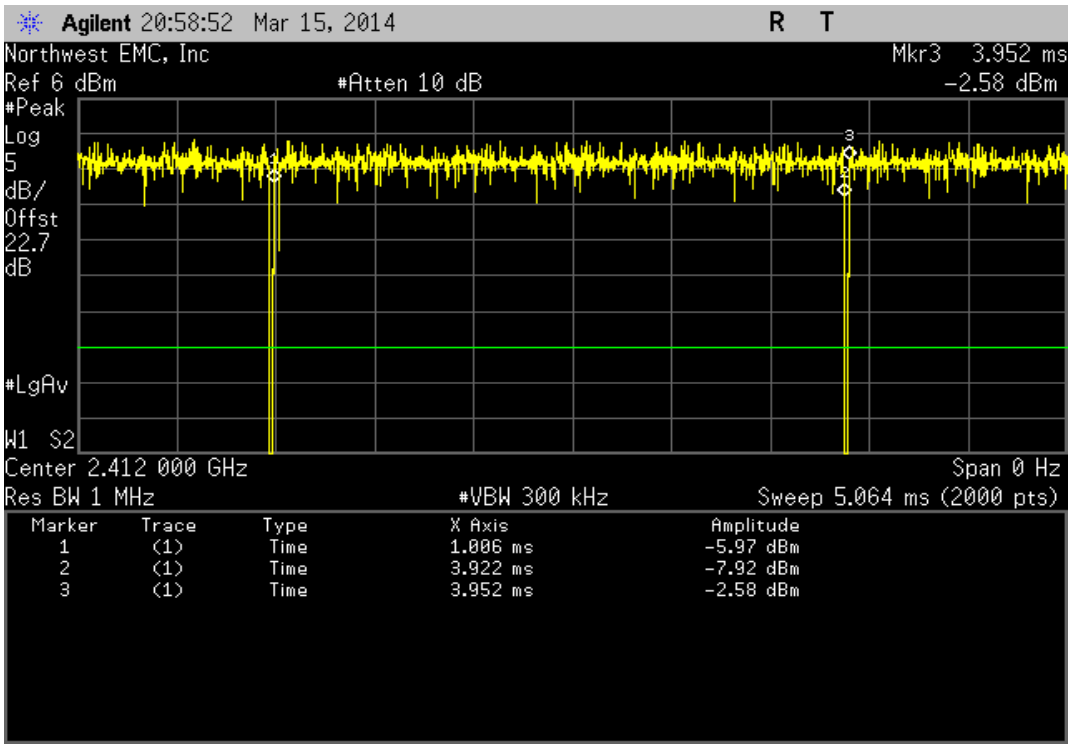
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

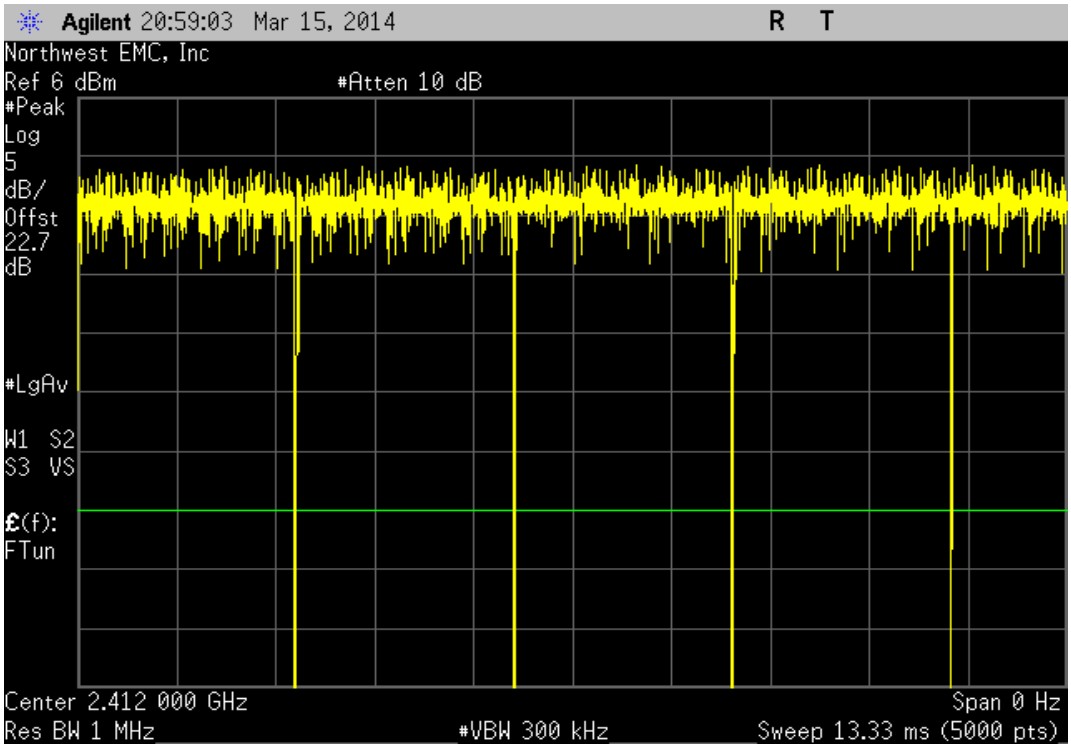
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Low Channel 1, 2412 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	2.916 mS	2.946 mS	1	99	N/A	N/A



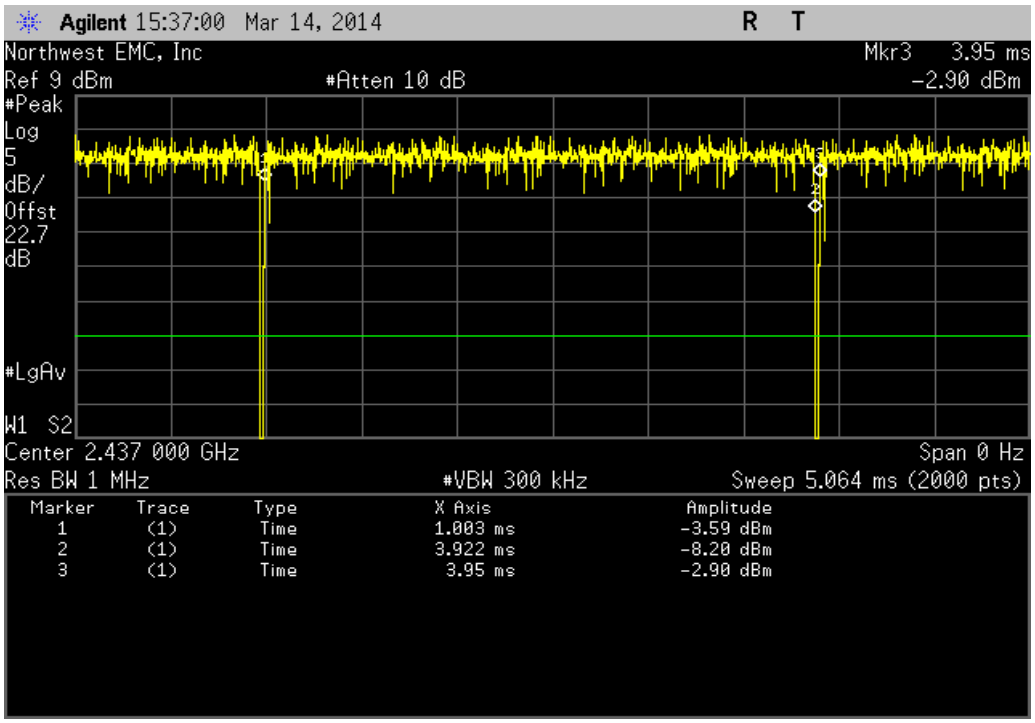
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Low Channel 1, 2412 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A

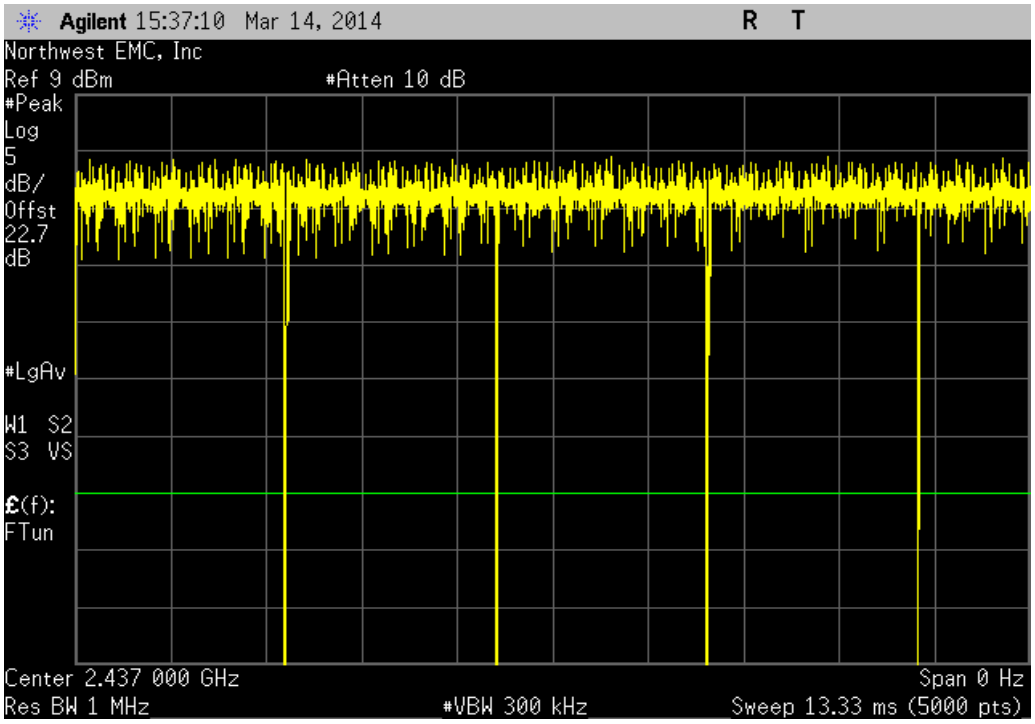


DUTY CYCLE

20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	2.918 mS	2.946 mS	1	99.1	N/A	N/A



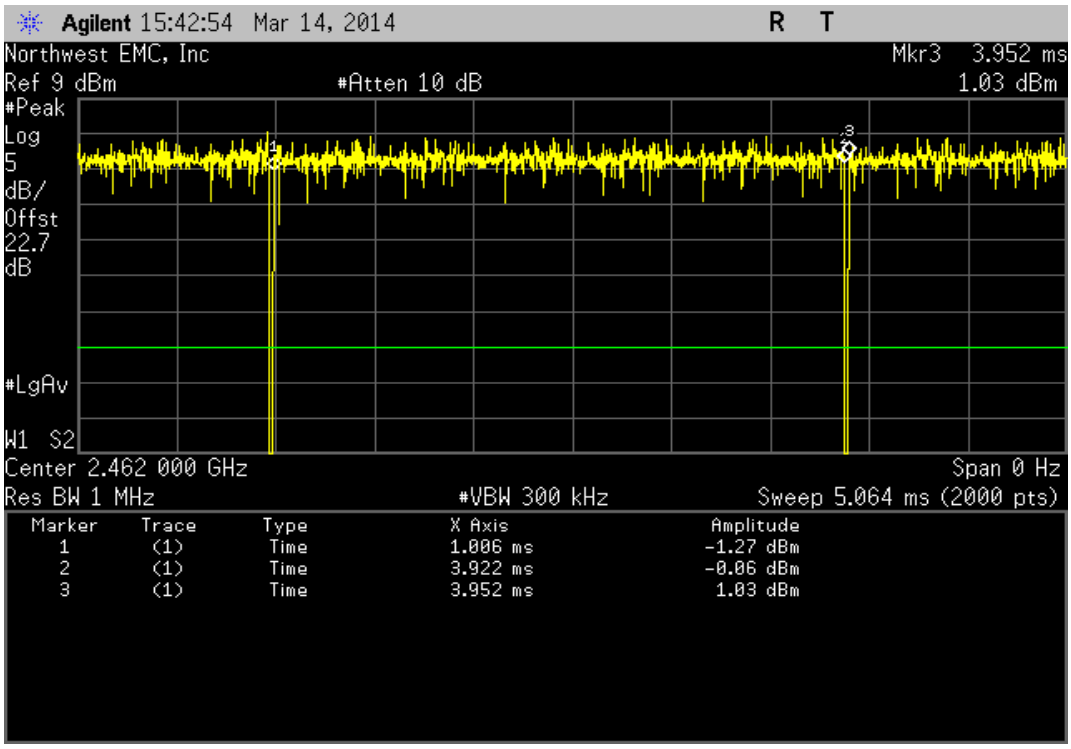
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

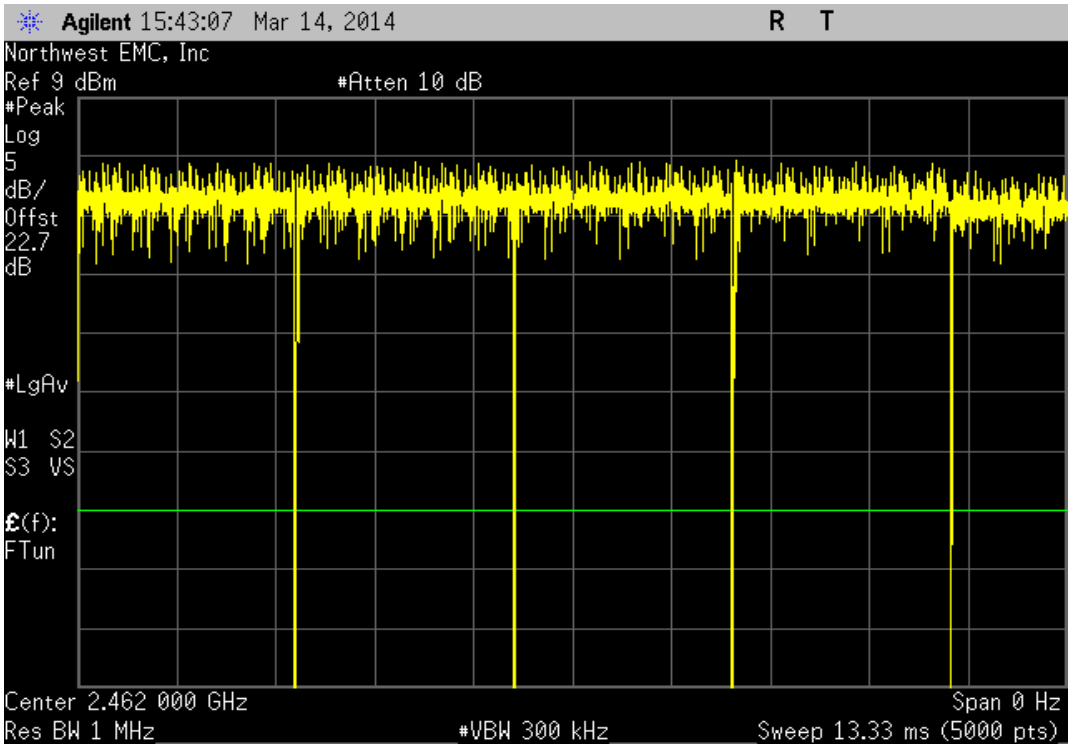
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, High Channel 11, 2462 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	2.916 mS	2.946 mS	1	99	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, High Channel 11, 2462 MHz

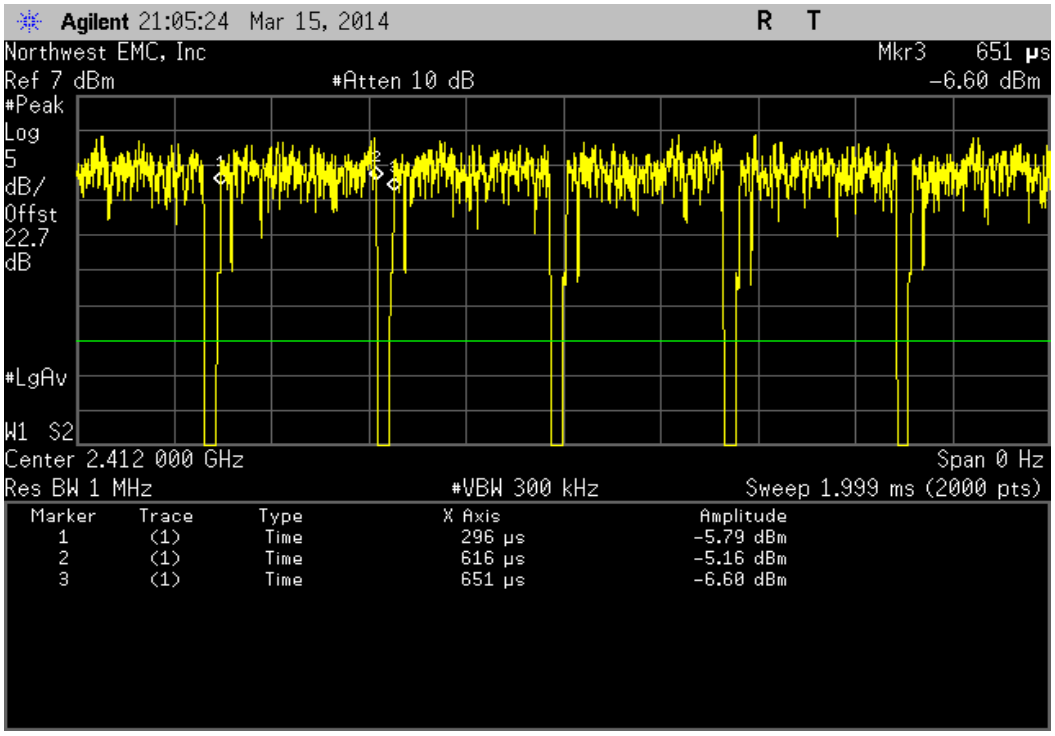
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

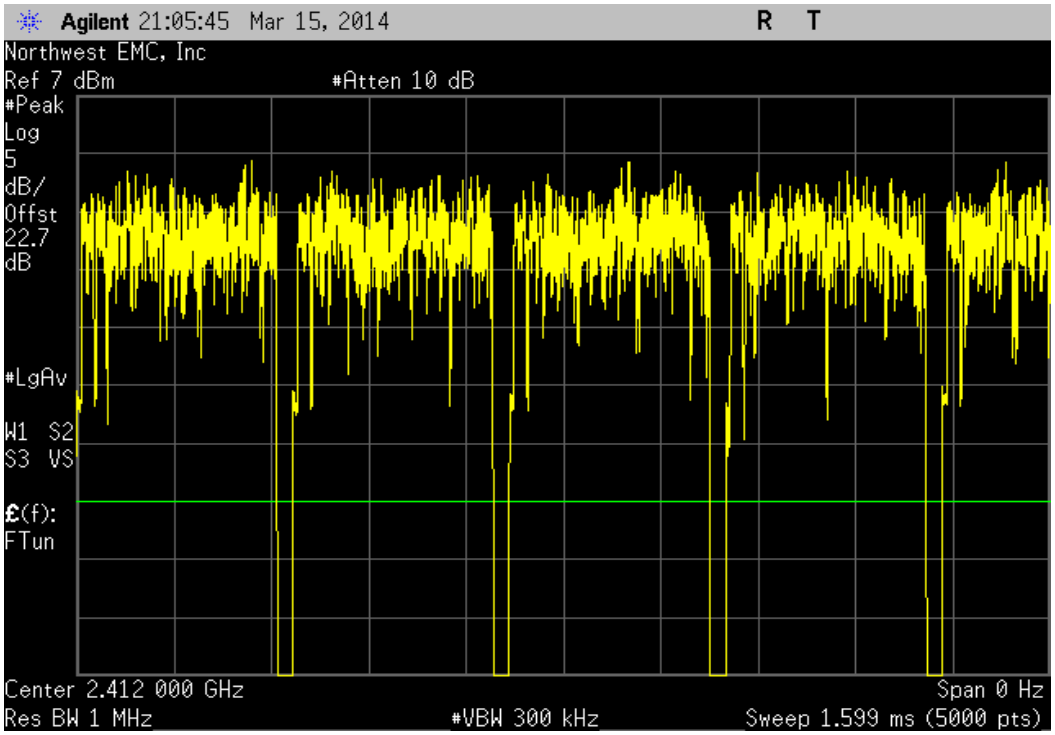
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	320 uS	355 uS	1	90.1	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz

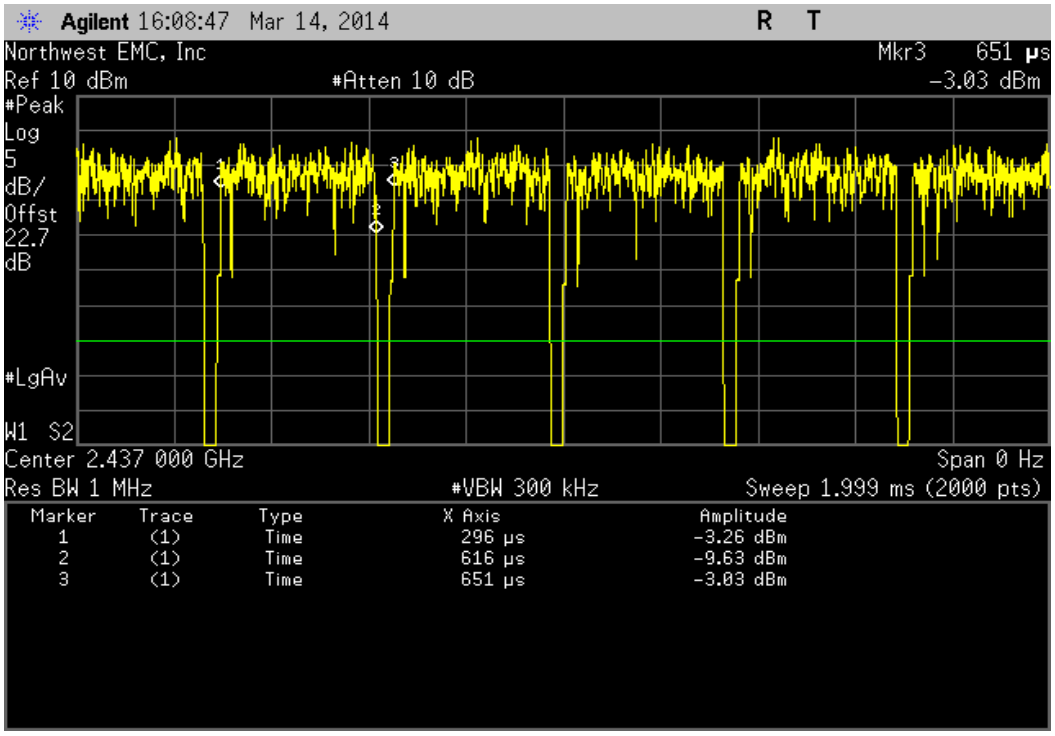
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

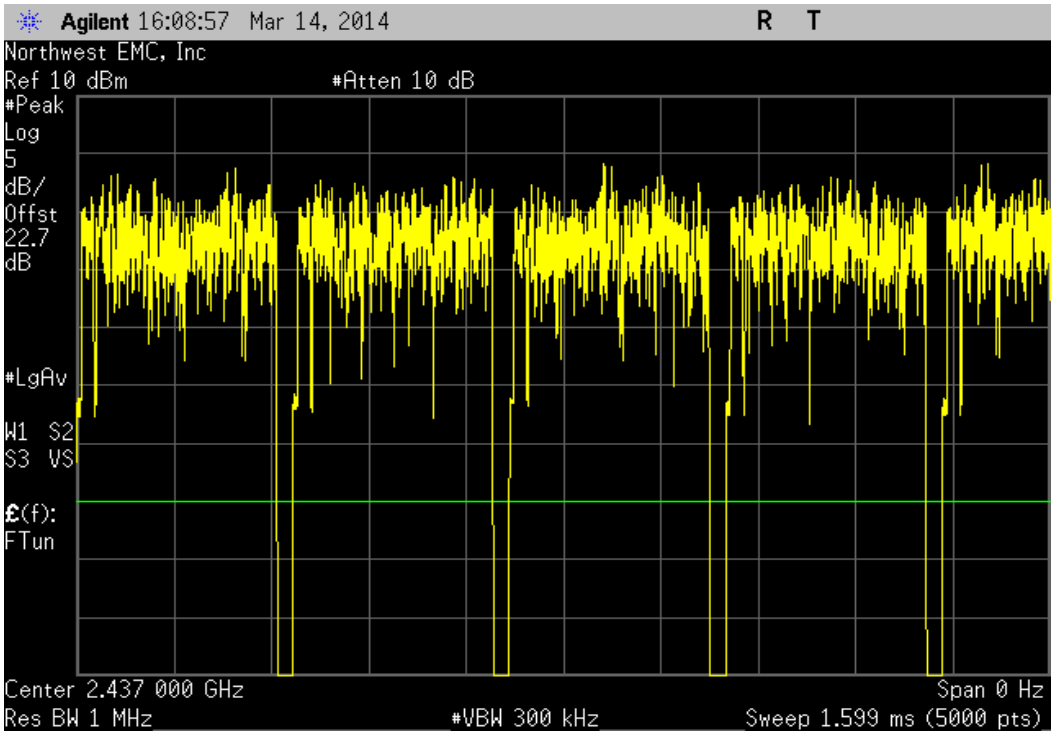
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Mid Channel 6, 2437 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	320 uS	355 uS	1	90.1	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Mid Channel 6, 2437 MHz

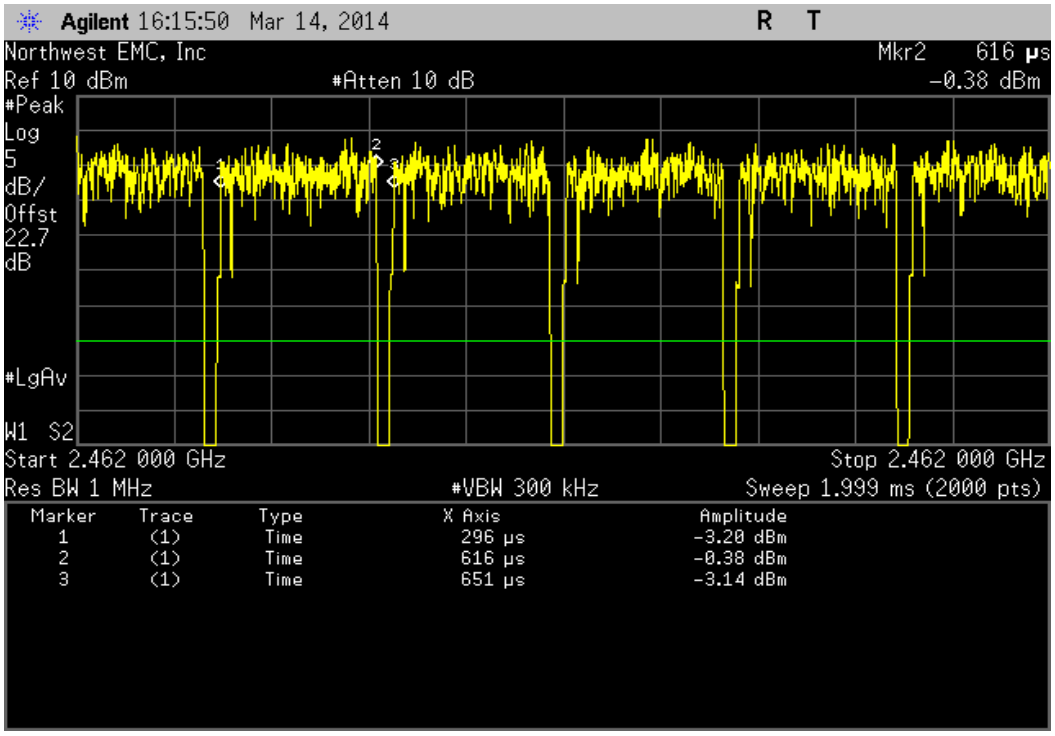
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

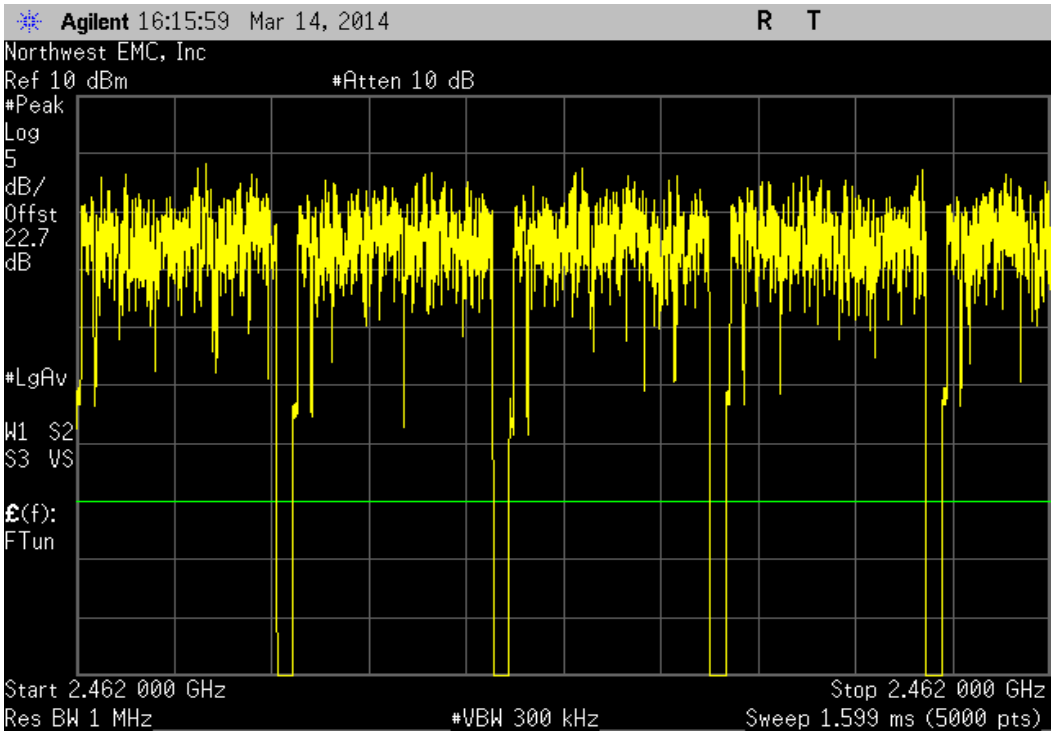
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	320 uS	355 uS	1	90.1	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

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 (mo.)
40GHz DC Block	Miteq	DCB4000	AMD	5/16/2013	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/30/2013	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Power Meter	Agilent	N1913A	SQR	4/29/2013	36
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	2/3/2014	12
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36
Spectrum Analyzer	Agilent	E4446A	AAQ	1/21/2014	24

TEST DESCRIPTION

The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was 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.

If the transmit duty cycle < 98 percent, burst gating was used during some of the other tests in this report to only measure during the burst duration.

TRANSMISSION BURST DURATION

EUT:	Model 1631			**Work Order:**	MCSO1698
Serial Number:	006840341053			**Date:**	04/16/14
Customer:	Microsoft Corporation			**Temperature:**	22.3°C
Attendees:	None			**Humidity:**	32%
Project:	None			**Barometric Pres.:**	1014
Tested by:	Jared Ison	**Power:**	110VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2014	ANSI C63.10:2009

COMMENTS

Modes of operation tested were client provided. Reference power level table for channel power setting.

DEVIATIONS FROM TEST STANDARD

None

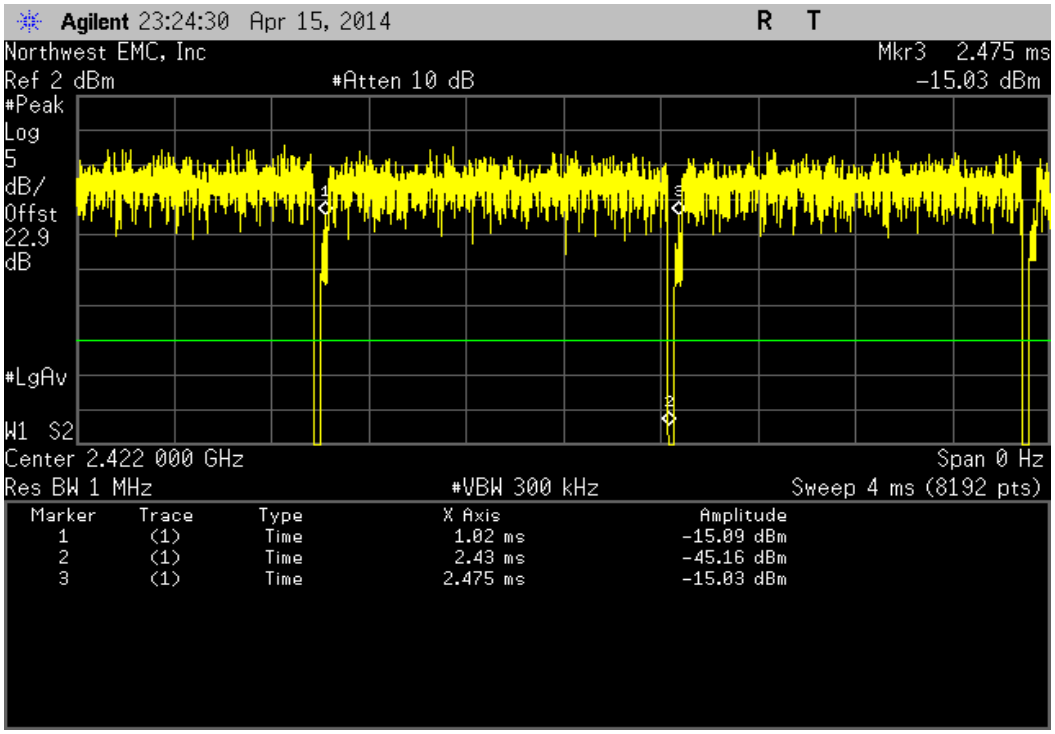
Configuration #	6	Signature

		Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
40 MHz							
	2400 MHz - 2483.5 MHz Band						
	802.11(n) MCS0						
	1/5 Low Channel, 2422 MHz	1.411 mS	1.456 mS	1	96.9	N/A	N/A
	1/5 Low Channel, 2422 MHz	N/A	N/A	5	N/A	N/A	N/A
	4/8 Mid Channel, 2437 MHz	1.397 mS	1.448 mS	1	96.5	N/A	N/A
	4/8 Mid Channel, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
	7/11 High Channel, 2452 MHz	1.397 mS	1.449 mS	1	96.4	N/A	N/A
	7/11 High Channel, 2452 MHz	N/A	N/A	5	N/A	N/A	N/A
	802.11(n) MCS7						
	1/5 Low Channel, 2422 MHz	144.6 uS	203.9 uS	1	70.9	N/A	N/A
	1/5 Low Channel, 2422 MHz	N/A	N/A	6	N/A	N/A	N/A
	4/8 Mid Channel, 2437 MHz	144.8 uS	203.9 uS	1	71	N/A	N/A
	4/8 Mid Channel, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
	7/11 High Channel, 2452 MHz	162.1 uS	221.2 uS	1	73.3	N/A	N/A
	7/11 High Channel, 2452 MHz	N/A	N/A	5	N/A	N/A	N/A

TRANSMISSION BURST DURATION

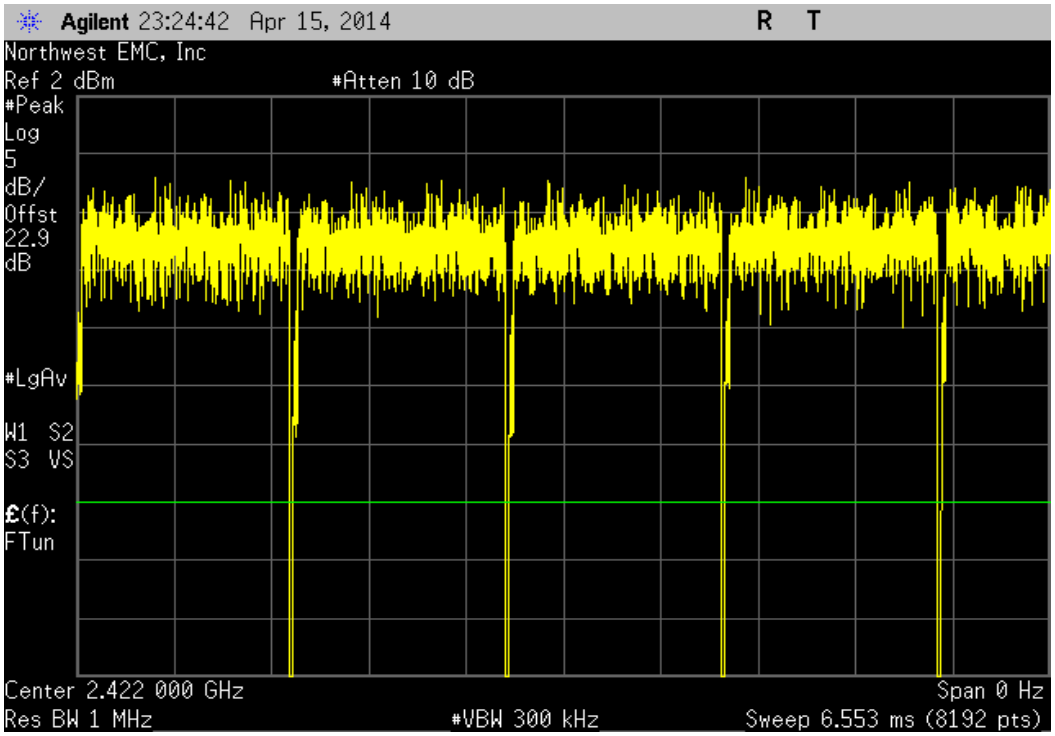
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, 1/5 Low Channel, 2422 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.411 mS	1.456 mS	1	96.9	N/A	N/A



40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, 1/5 Low Channel, 2422 MHz

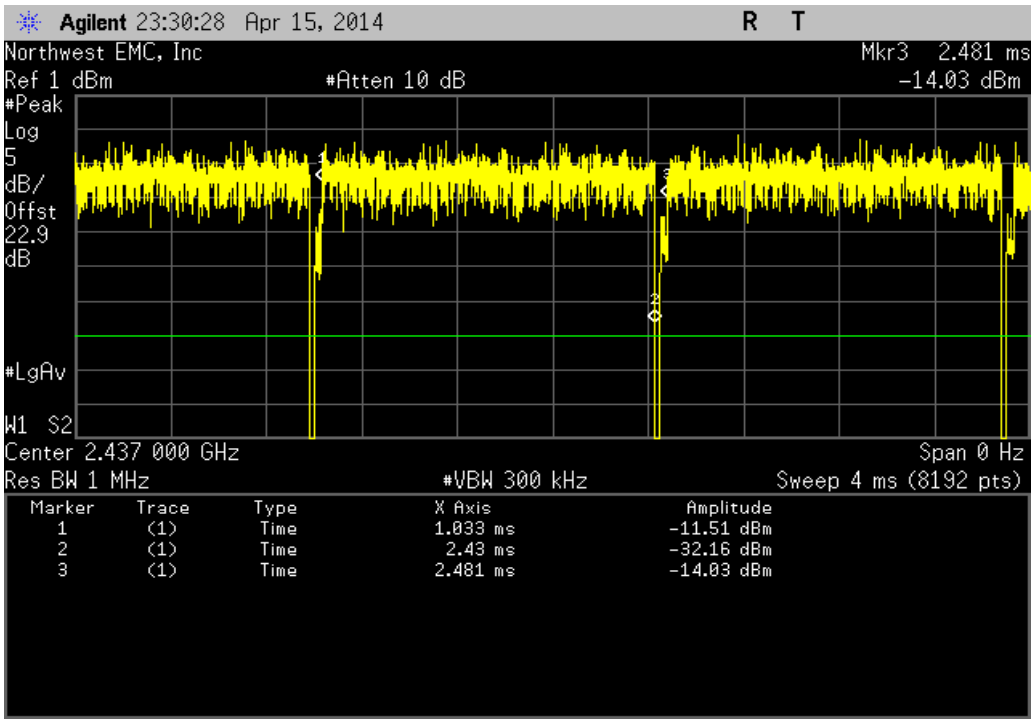
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

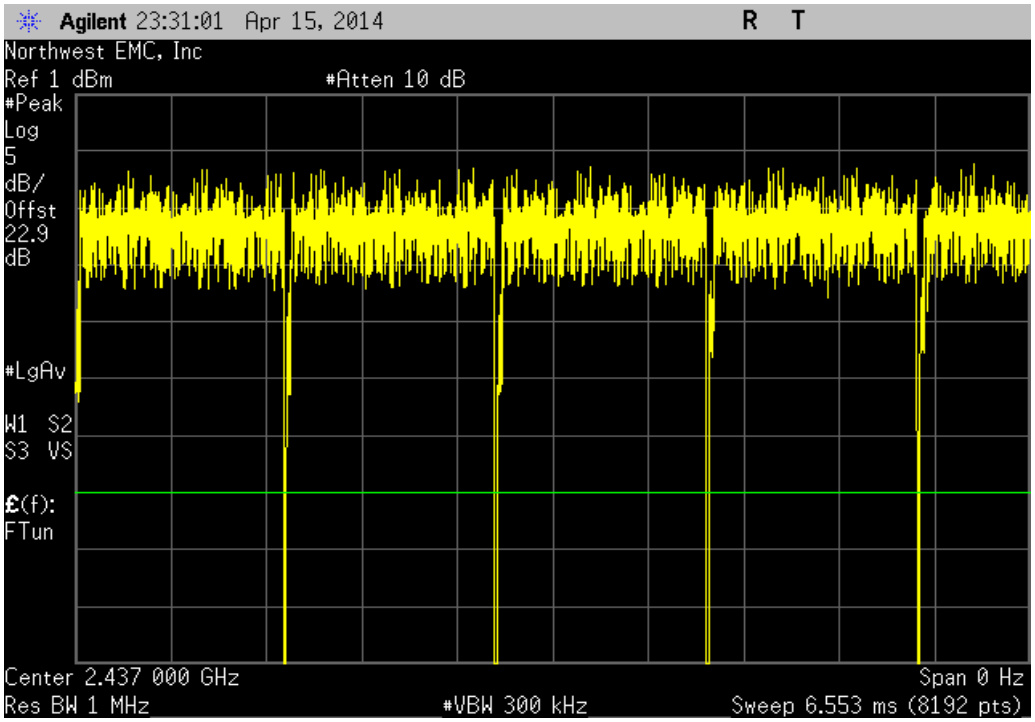
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, 4/8 Mid Channel, 2437 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.397 mS	1.448 mS	1	96.5	N/A	N/A



40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, 4/8 Mid Channel, 2437 MHz

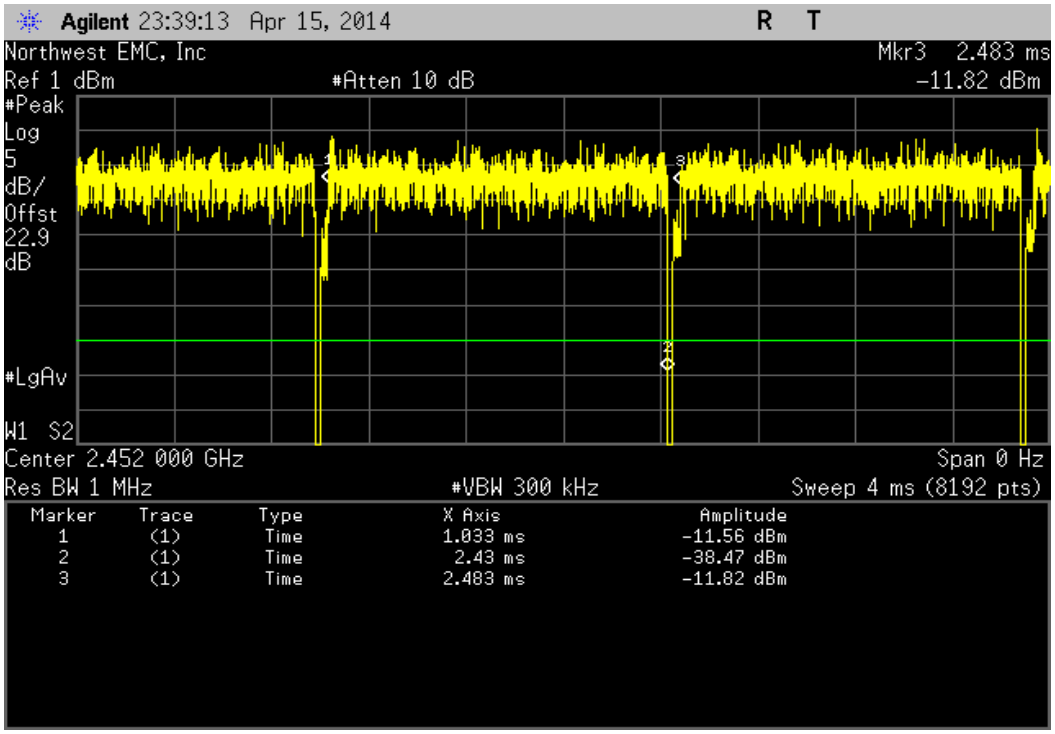
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

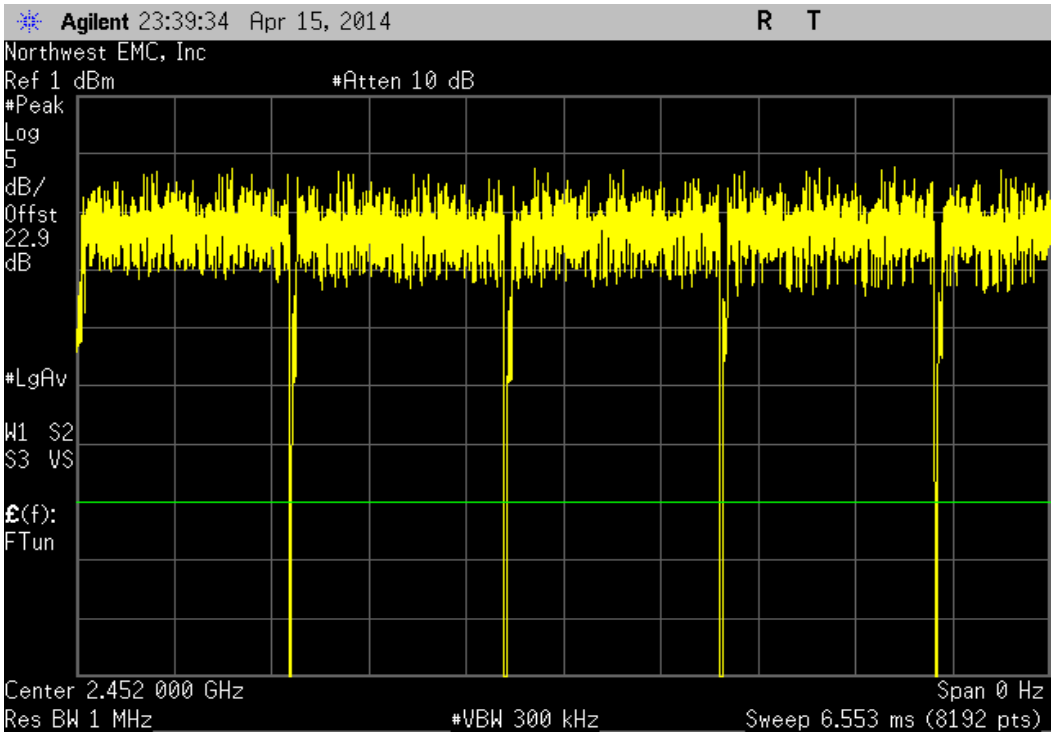
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, 7/11 High Channel, 2452 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.397 mS	1.449 mS	1	96.4	N/A	N/A



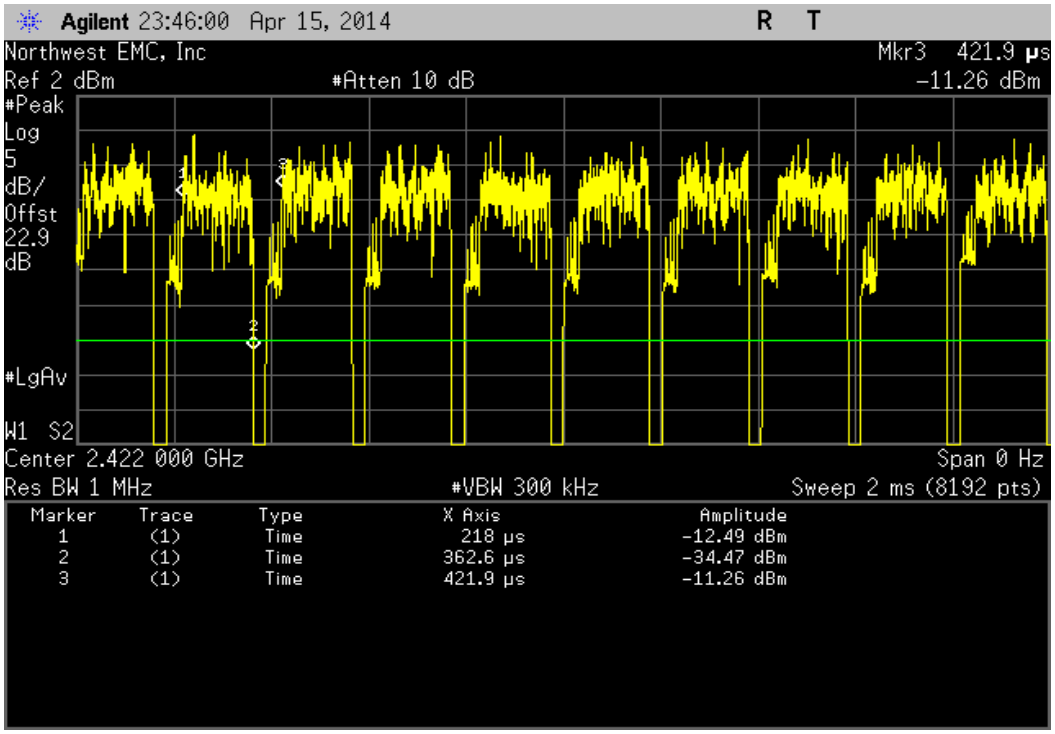
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, 7/11 High Channel, 2452 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A

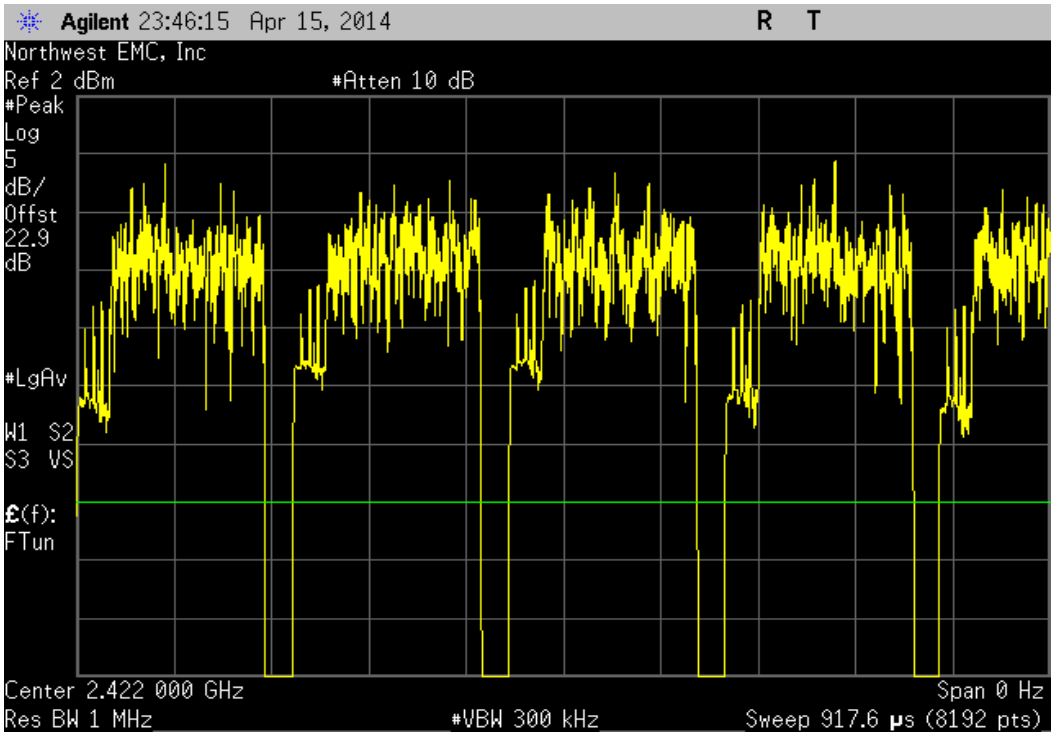


TRANSMISSION BURST DURATION

40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, 1/5 Low Channel, 2422 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	144.6 uS	203.9 uS	1	70.9	N/A	N/A



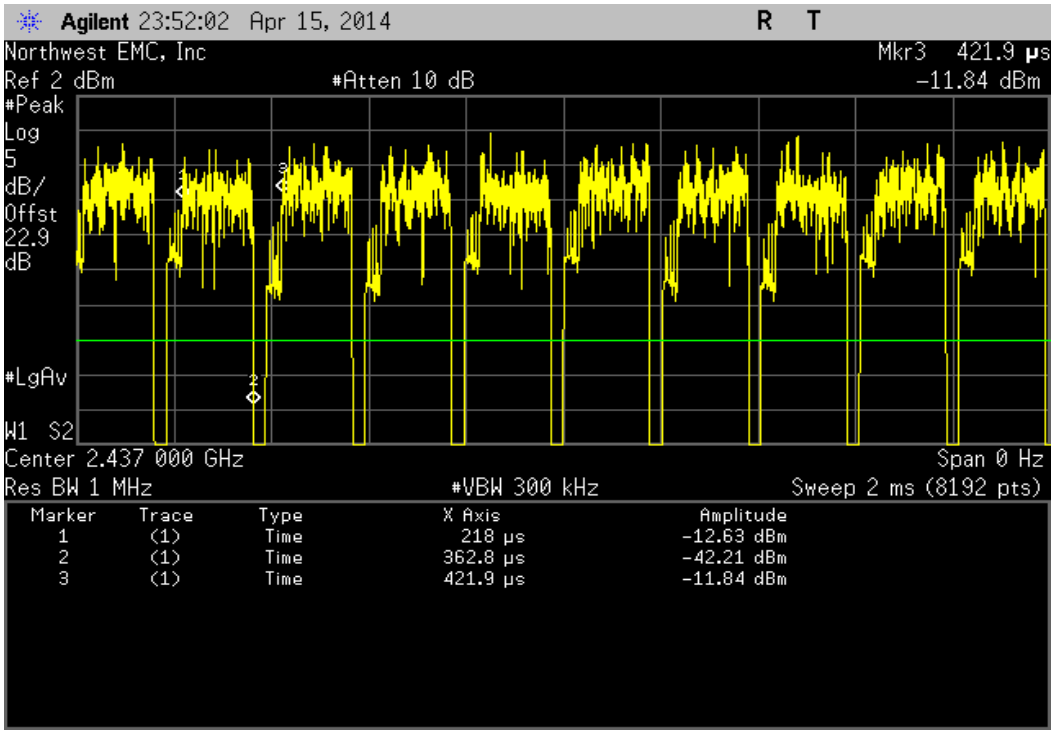
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, 1/5 Low Channel, 2422 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	6	N/A	N/A	N/A



TRANSMISSION BURST DURATION

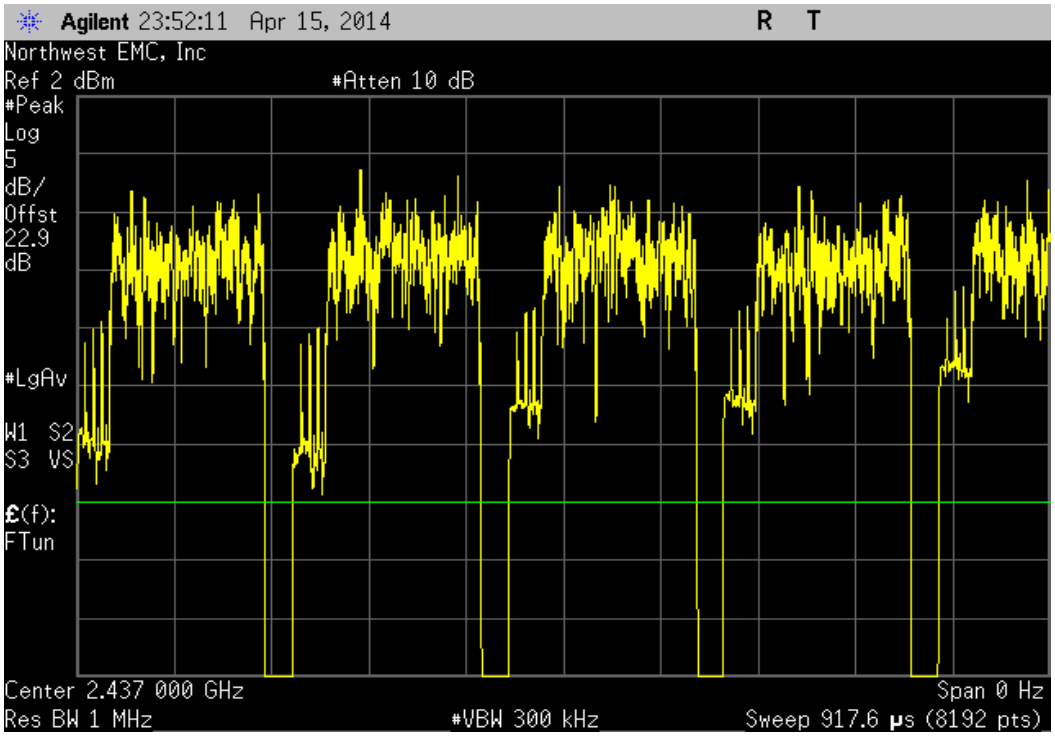
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, 4/8 Mid Channel, 2437 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	144.8 uS	203.9 uS	1	71	N/A	N/A



40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, 4/8 Mid Channel, 2437 MHz

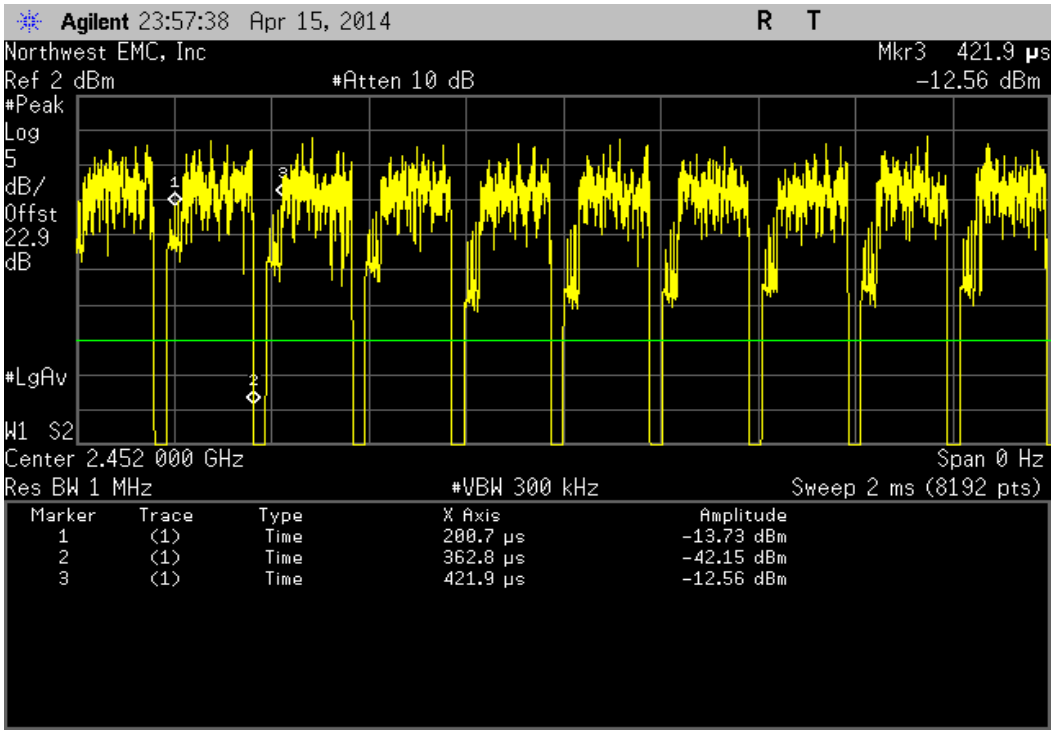
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

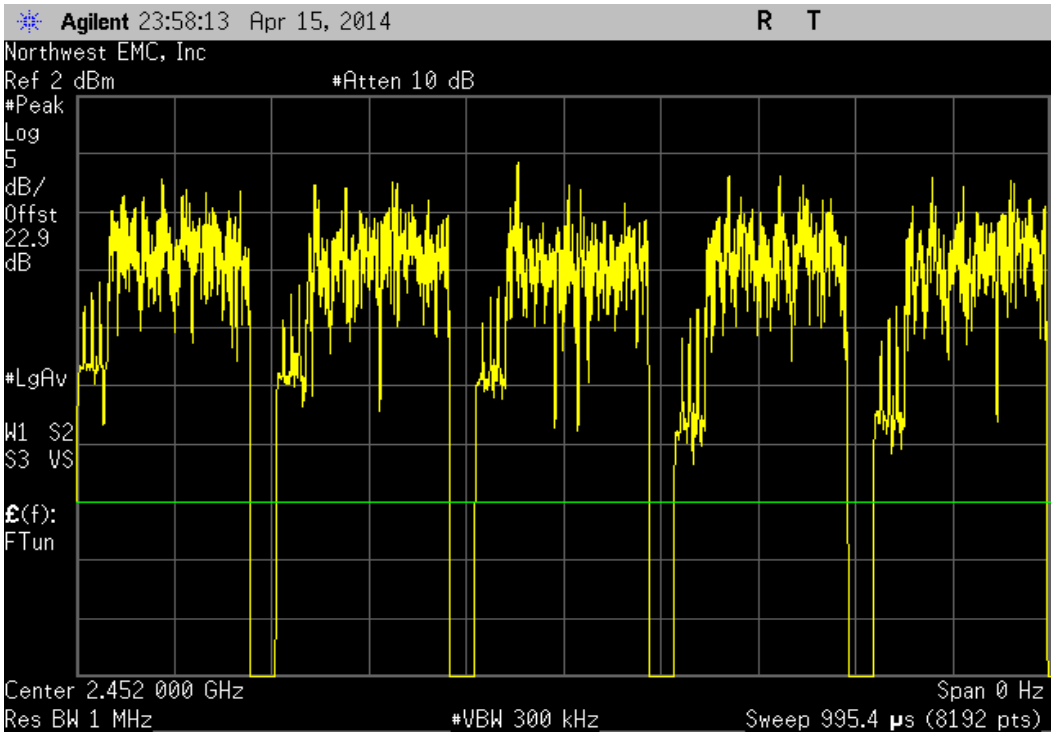
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, 7/11 High Channel, 2452 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	162.1 uS	221.2 uS	1	73.3	N/A	N/A



40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, 7/11 High Channel, 2452 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

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 (mo.)
40GHz DC Block	Miteq	DCB4000	AMD	5/16/2013	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/30/2013	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	2/3/2014	12
MXG Analog Signal Generator	Agilent	N5181A	TIG	NCR	0
Power Meter	Gigatronics	8651A	SPM	11/26/2013	24
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	36
Spectrum Analyzer	Agilent	E4440	AFE	11/4/2013	24

TEST DESCRIPTION

The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was 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.

If the transmit duty cycle < 98 percent, burst gating was used during some of the other tests in this report to only measure during the burst duration.

DUTY CYCLE

EUT:	Model 1631			**Work Order:**	MCSO1698
Serial Number:	041148340753			**Date:**	03/22/14
Customer:	Microsoft Corporation			**Temperature:**	21.5°C
Attendees:	None			**Humidity:**	29%
Project:	None			**Barometric Pres.:**	1007
Tested by:	Brandon Hobbs, Jared Ison	**Power:**	110VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2014	ANSI C63.10:2009

COMMENTS

Modes of operation testeed were client provided.

DEVIATIONS FROM TEST STANDARD

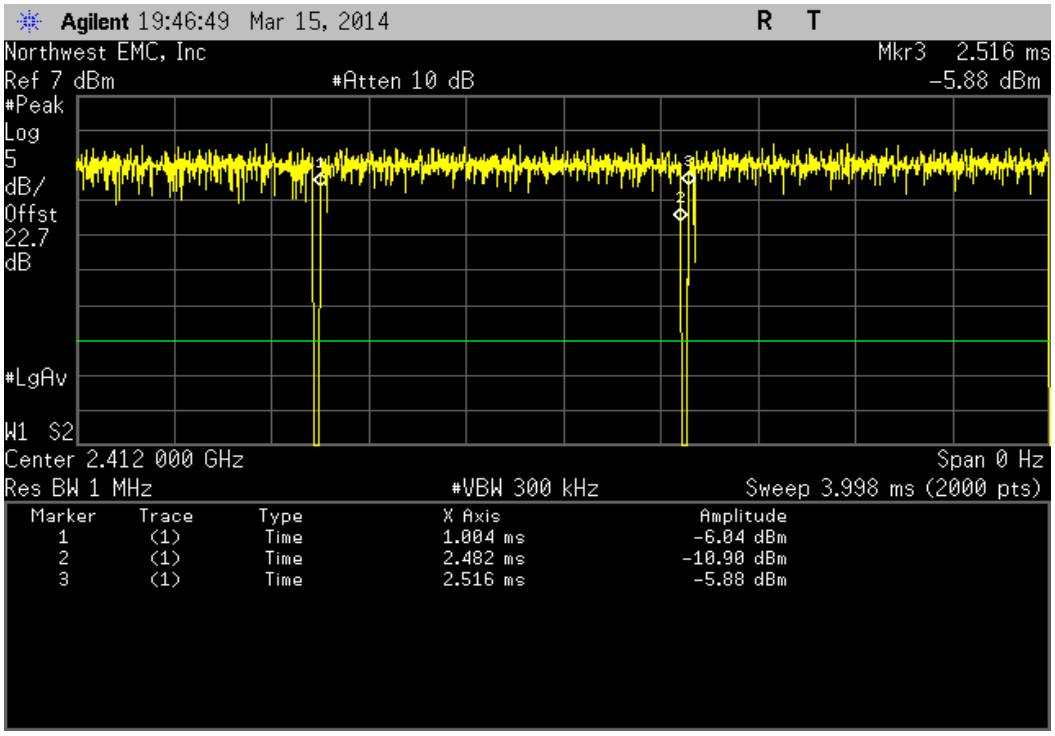
None

Configuration #	1	Signature

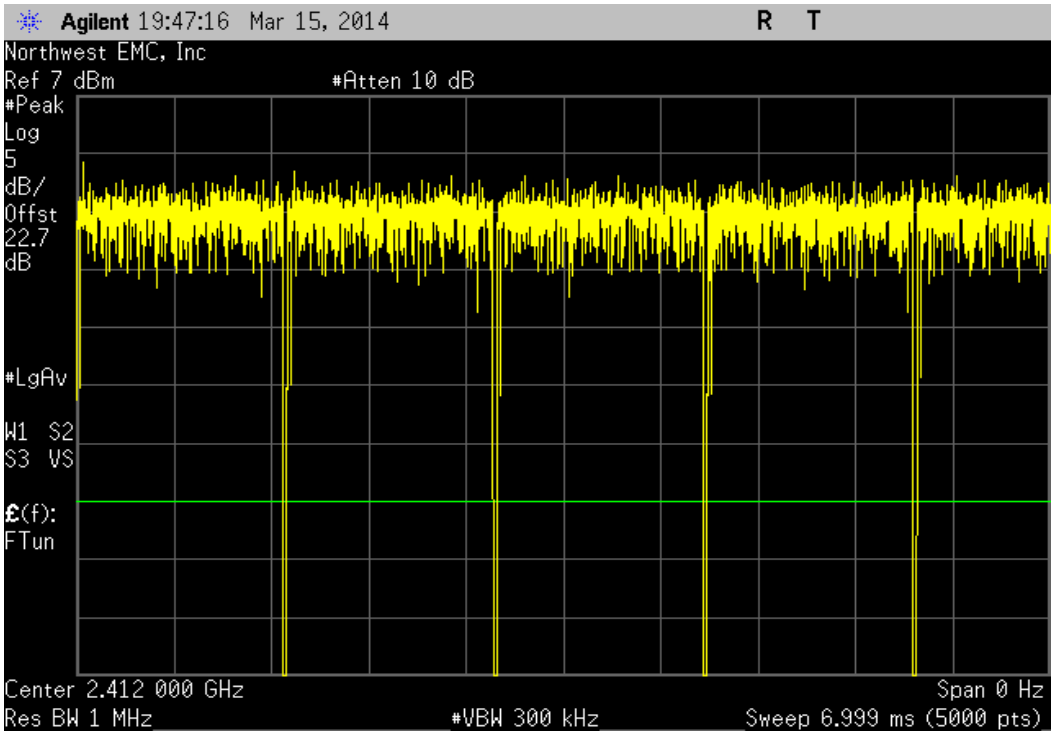
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
Chain A						
20 MHz						
2400 MHz - 2483.5 MHz Band						
802.11(n) MCS8						
Low Channel 1, 2412 MHz	1.478 mS	1.512 mS	1	97.8	N/A	N/A
Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz	1.476 mS	1.51 mS	1	97.7	N/A	N/A
Mid Channel 6, 2437 MHz	N/A	N/A	3	N/A	N/A	N/A
High Channel 11, 2462 MHz	1.476 mS	1.51 mS	1	97.7	N/A	N/A
High Channel 11, 2462 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS15						
Low Channel 1, 2412 MHz	180 uS	216 uS	1	83.3	N/A	N/A
Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz	180 uS	215 uS	1	83.7	N/A	N/A
Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MHz	181 uS	216 uS	1	83.8	N/A	N/A
High Channel 11, 2462 MHz	N/A	N/A	5	N/A	N/A	N/A
Chain B						
20 MHz						
2400 MHz - 2483.5 MHz Band						
802.11(n) MCS8						
Low Channel 1, 2412 MHz	1.474 mS	1.51 mS	1	97.6	N/A	N/A
Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz	1.476 mS	1.51 mS	1	97.7	N/A	N/A
Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MHz	1.476 mS	1.512 mS	1	97.6	N/A	N/A
High Channel 11, 2462 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS15						
Low Channel 1, 2412 MHz	180 uS	216 uS	1	83.3	N/A	N/A
Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz	180 uS	215 uS	1	83.7	N/A	N/A
Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MHz	179 uS	215 uS	1	83.3	N/A	N/A
High Channel 11, 2462 MHz	N/A	N/A	5	N/A	N/A	N/A

DUTY CYCLE

Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.478 mS	1.512 mS	1	97.8	N/A	N/A



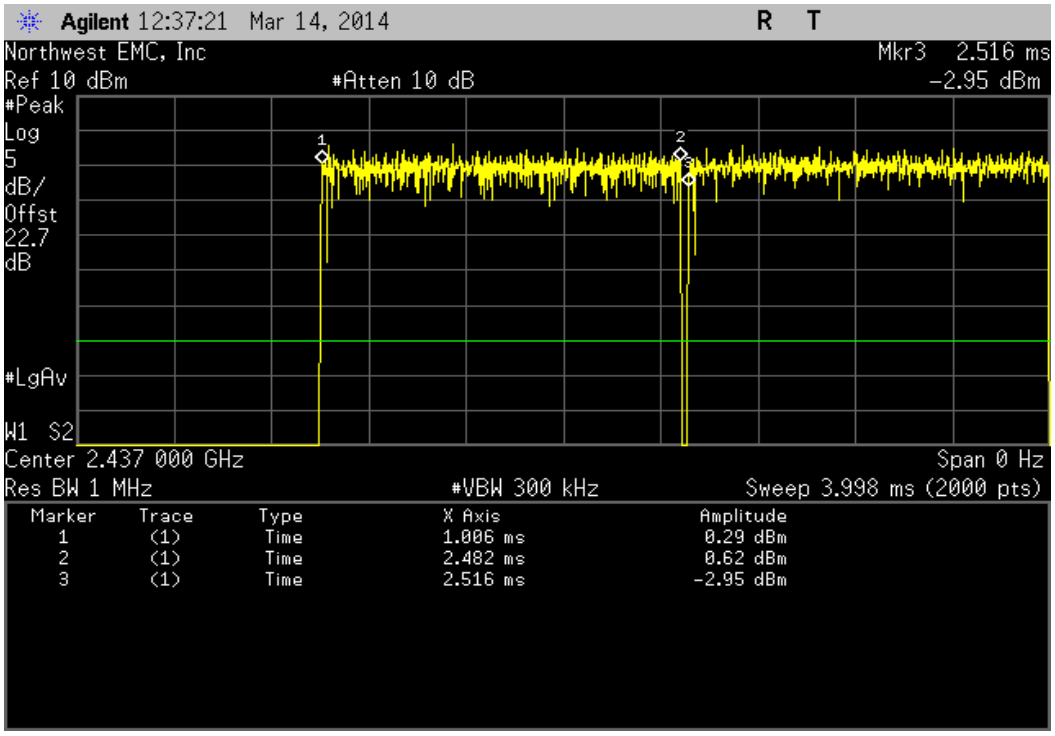
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

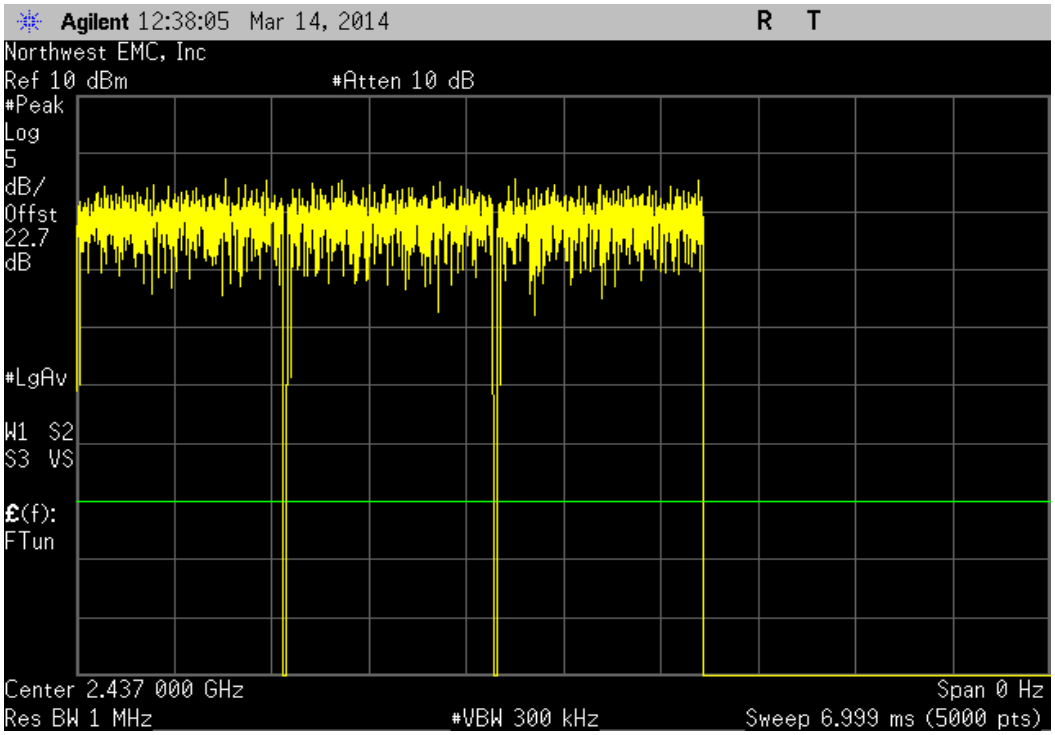
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.476 mS	1.51 mS	1	97.7	N/A	N/A



Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz

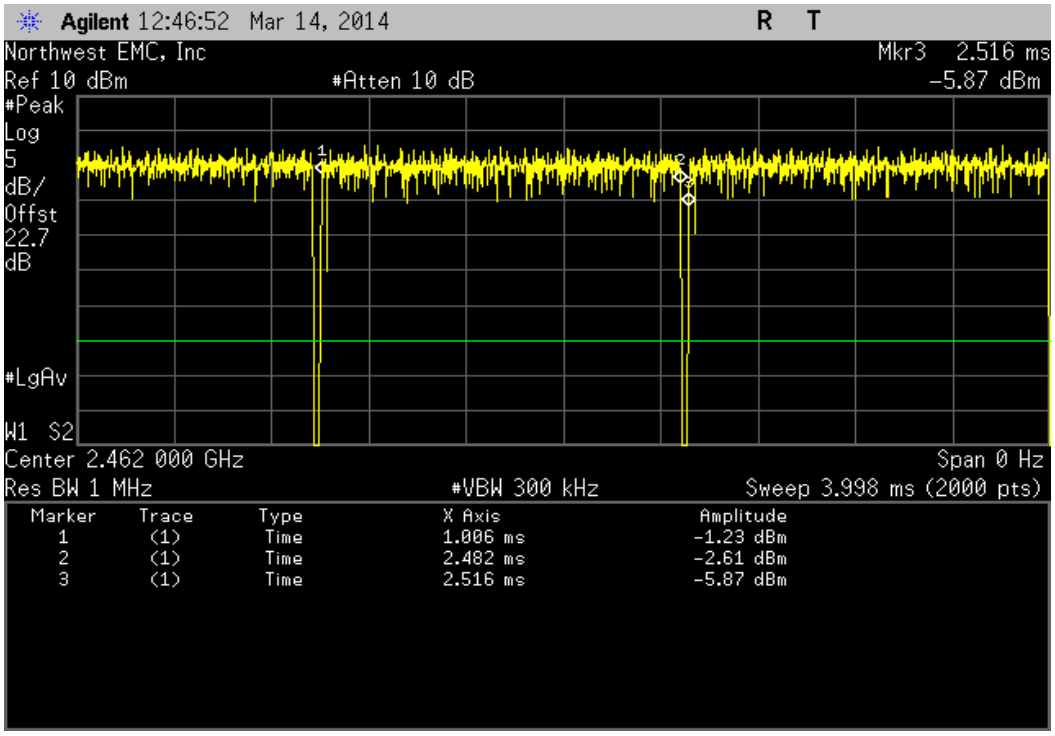
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	3	N/A	N/A	N/A



DUTY CYCLE

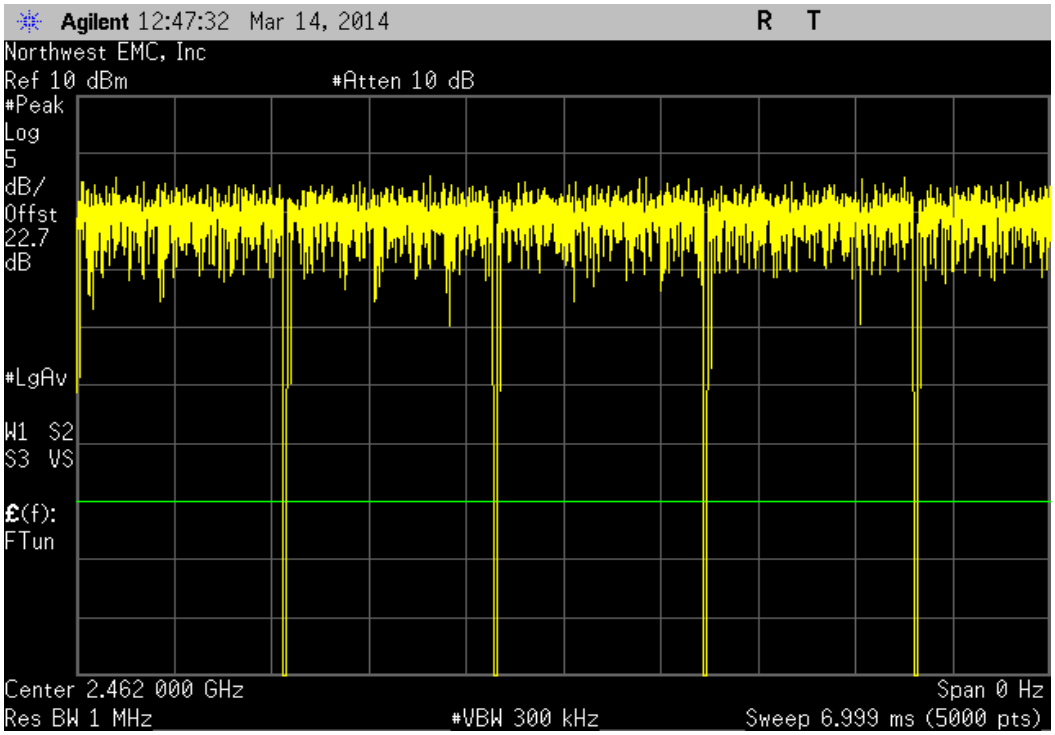
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.476 mS	1.51 mS	1	97.7	N/A	N/A



Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz

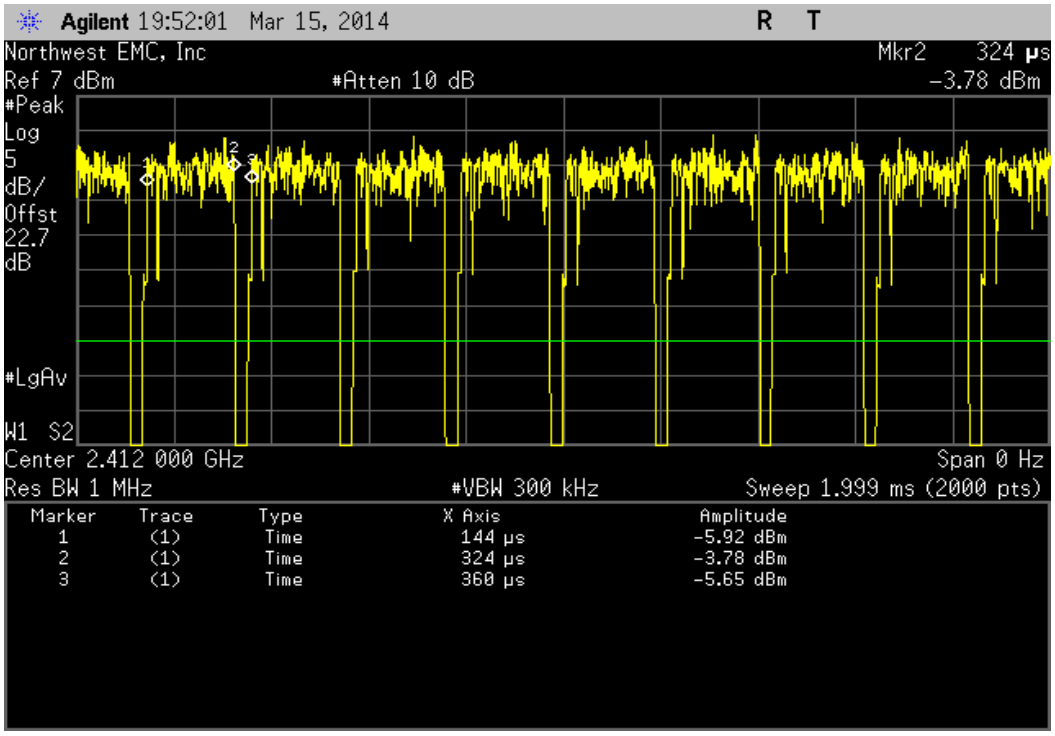
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

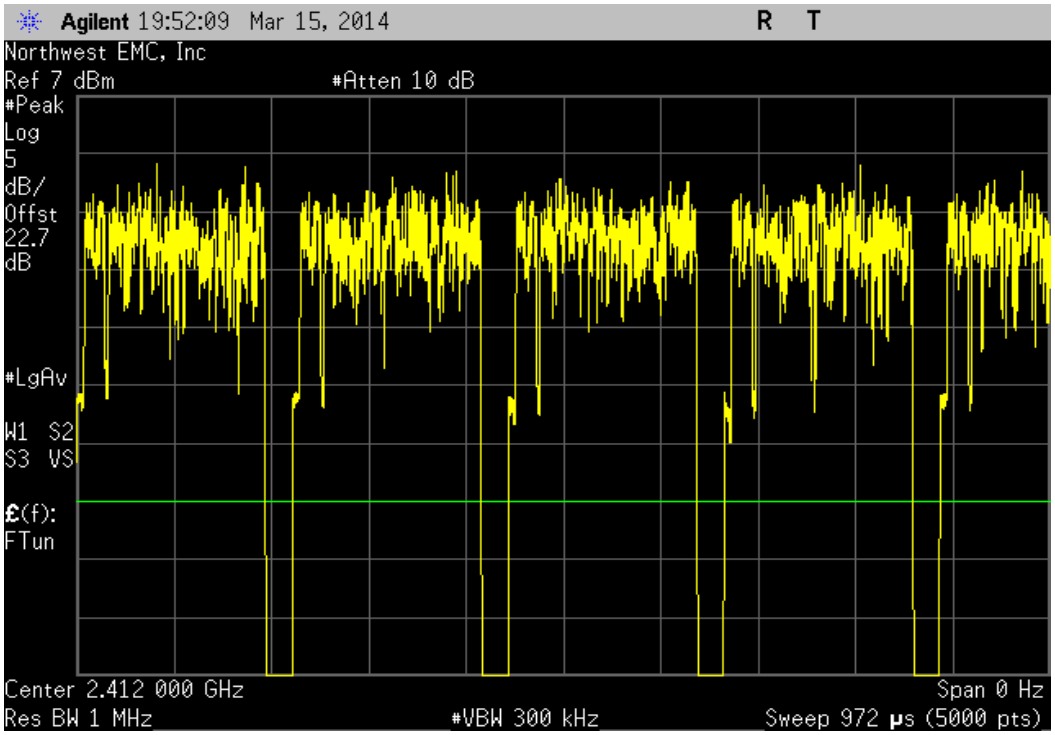
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	180 uS	216 uS	1	83.3	N/A	N/A



Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz

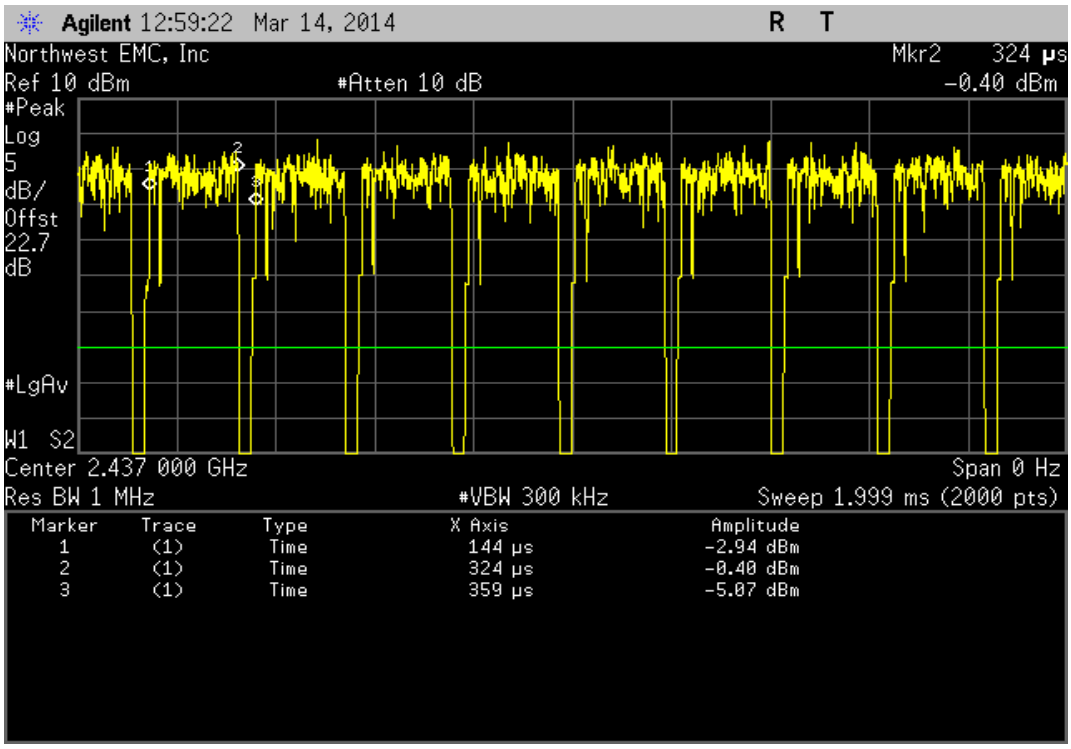
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

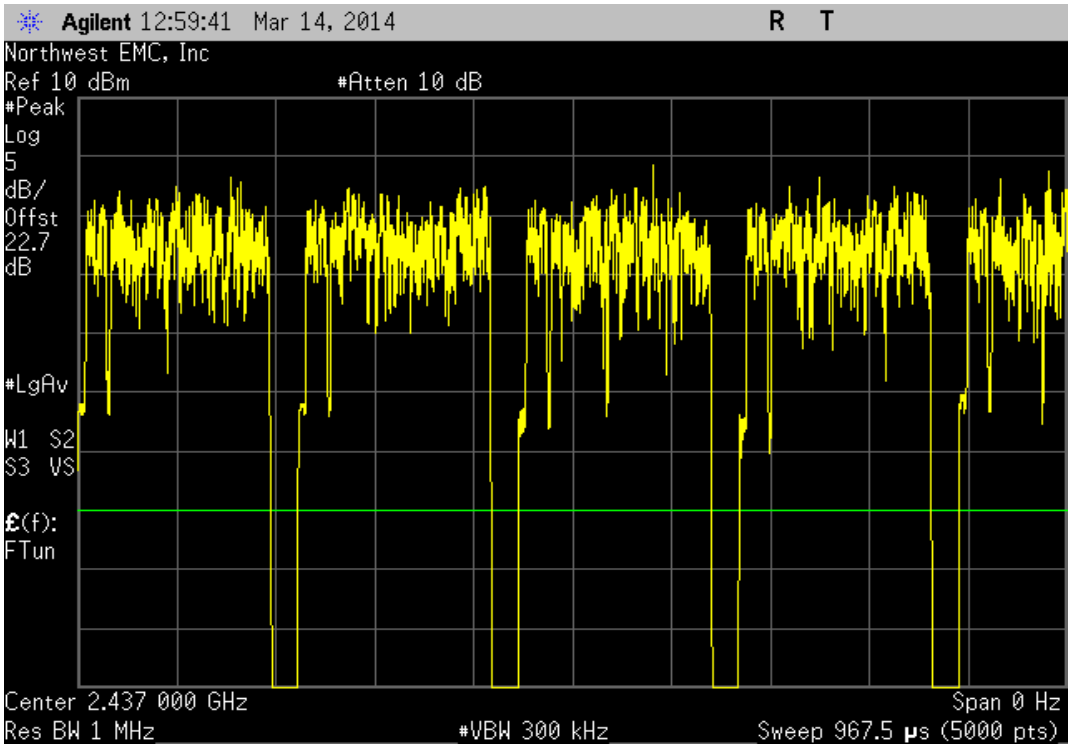
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
180 uS	215 uS	1	83.7	N/A	N/A



Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz

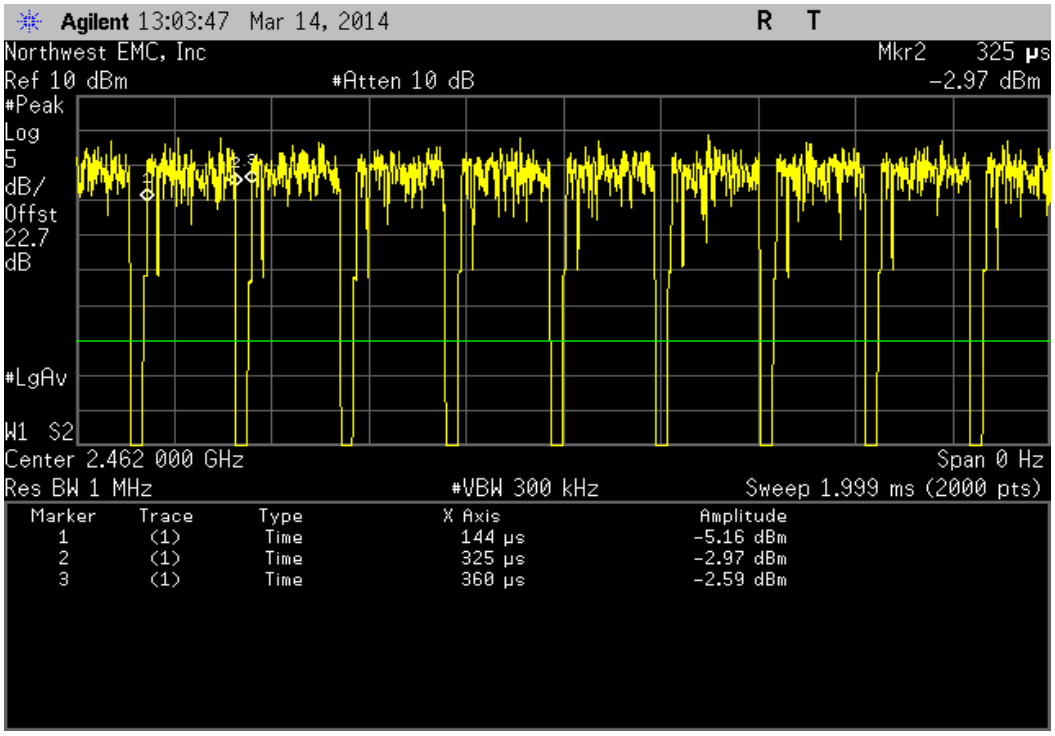
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

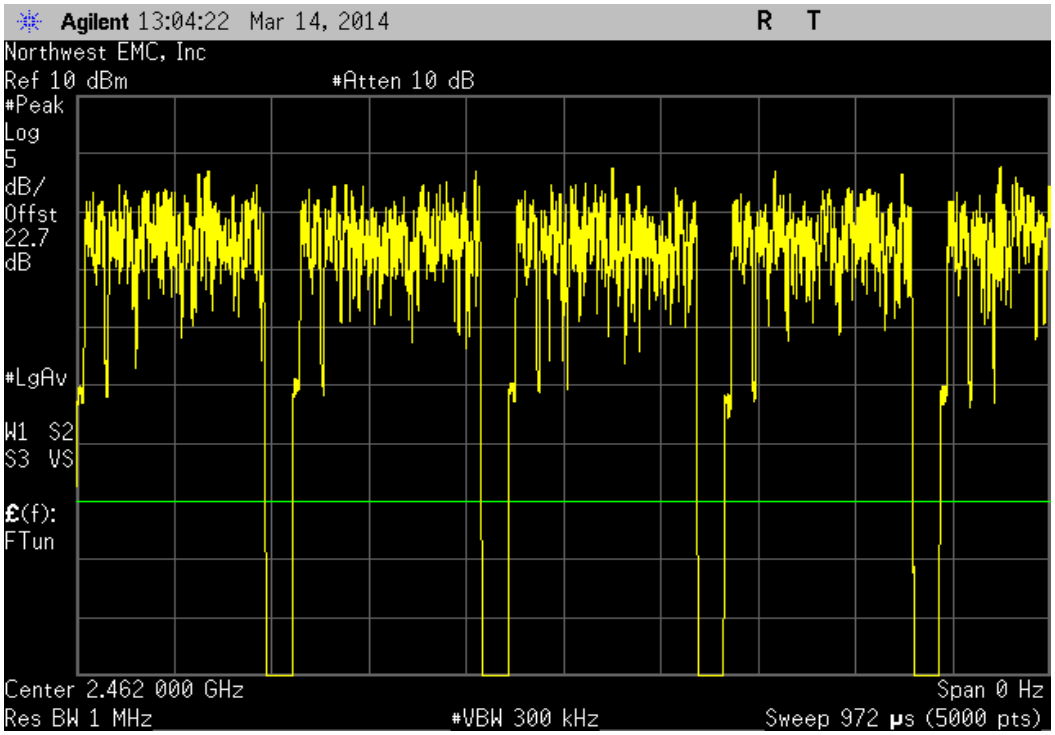
Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	181 uS	216 uS	1	83.8	N/A	N/A



Chain A, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz

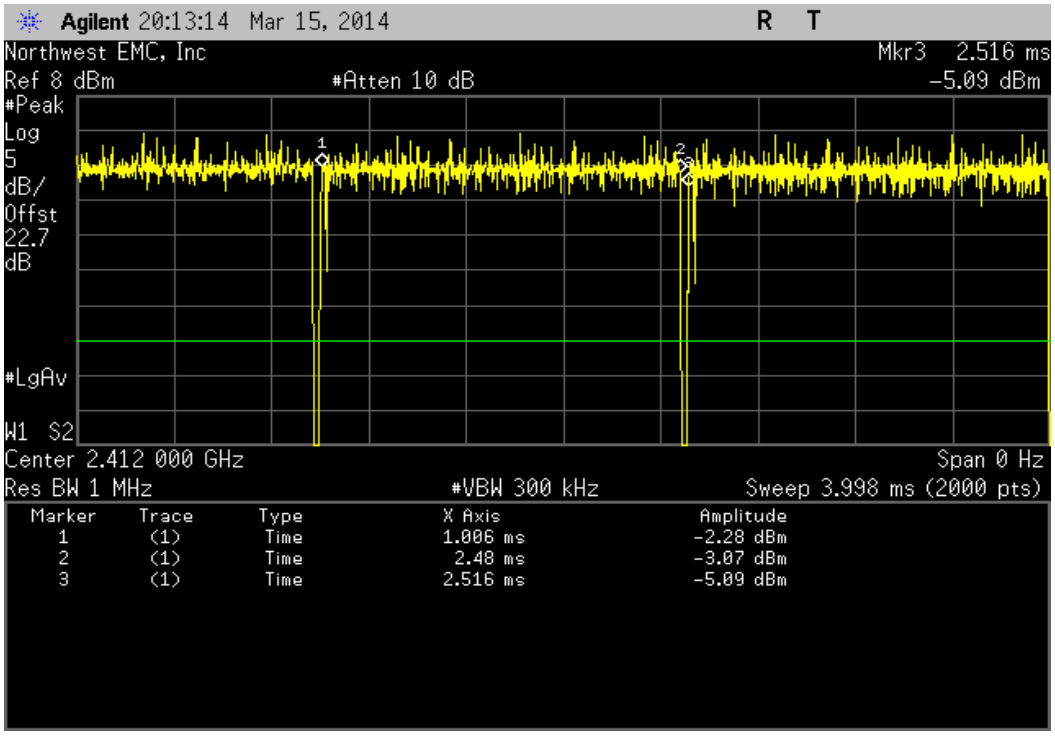
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

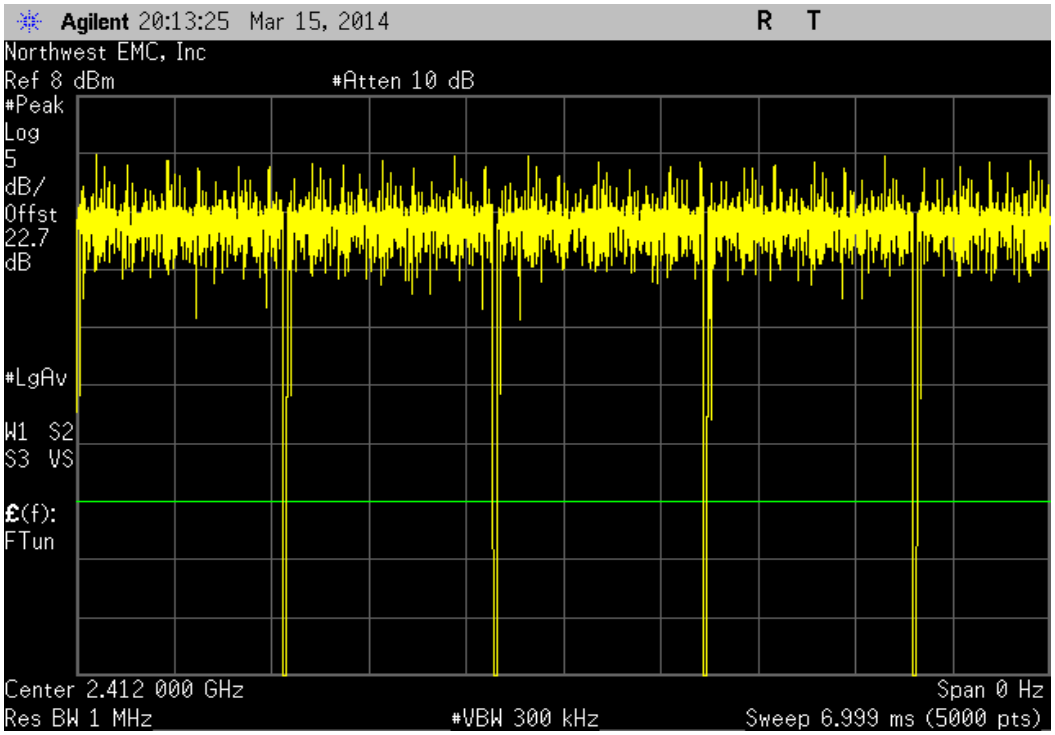
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.474 mS	1.51 mS	1	97.6	N/A	N/A



Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1, 2412 MHz

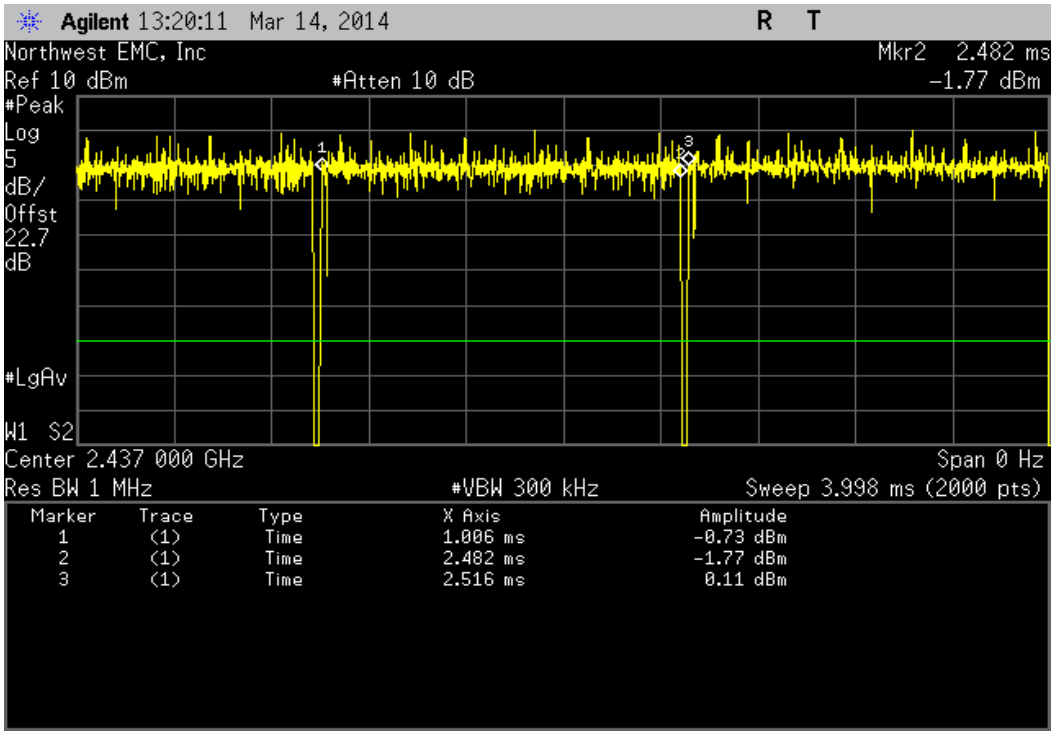
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

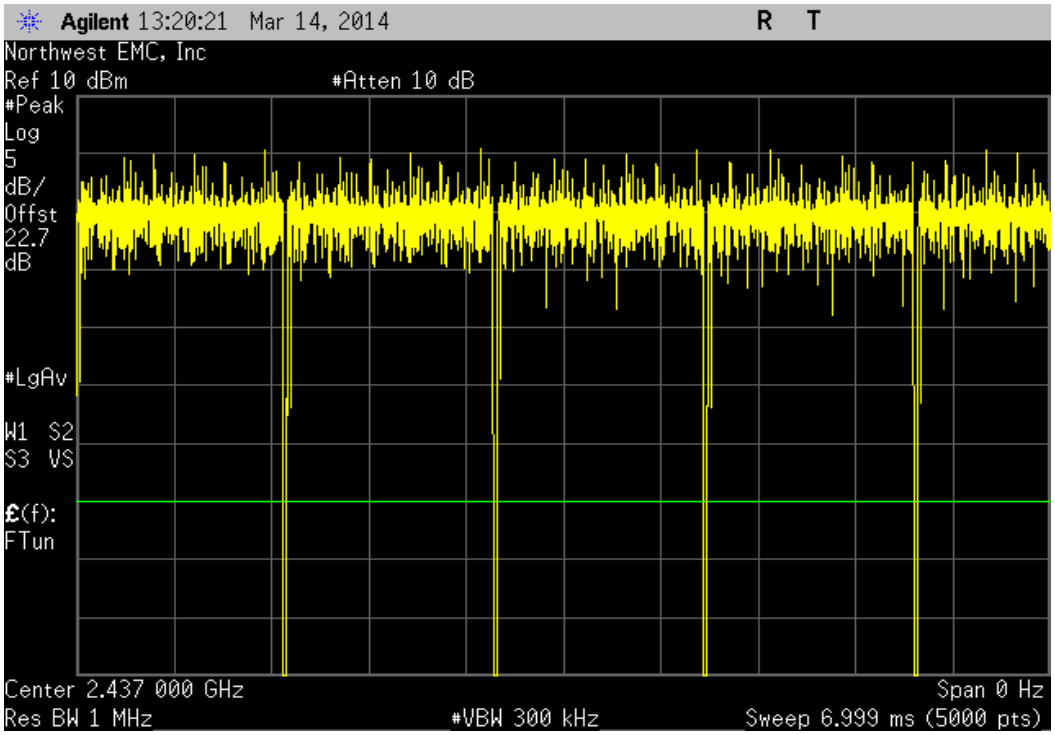
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.476 mS	1.51 mS	1	97.7	N/A	N/A



Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 6, 2437 MHz

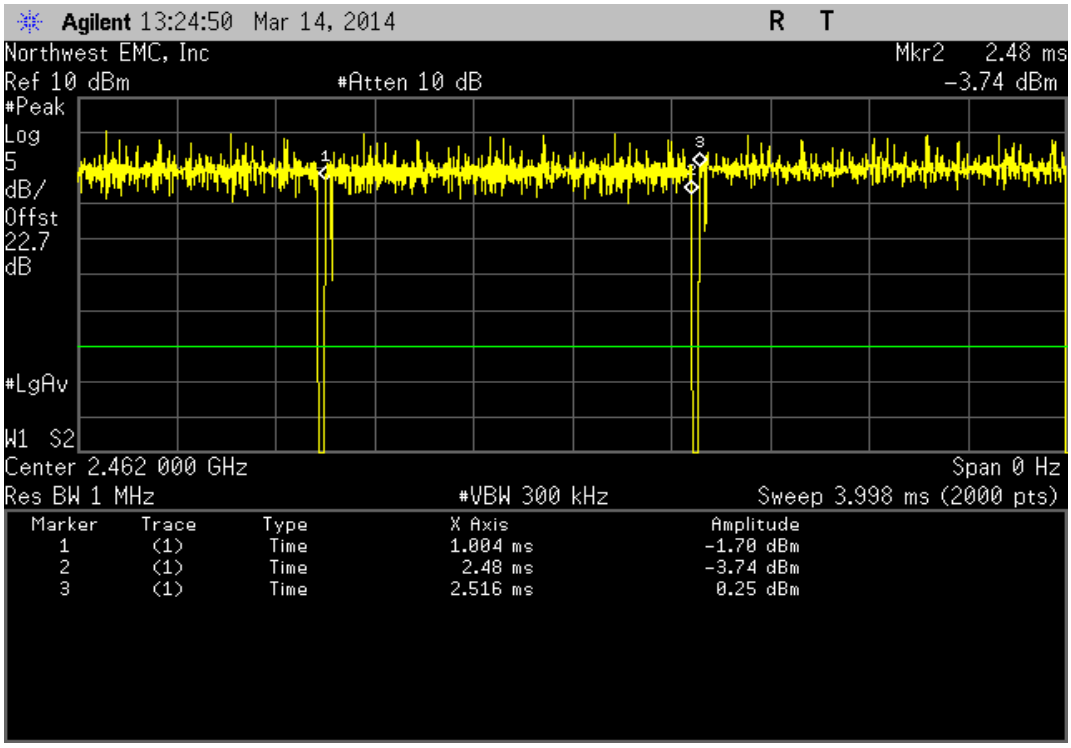
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

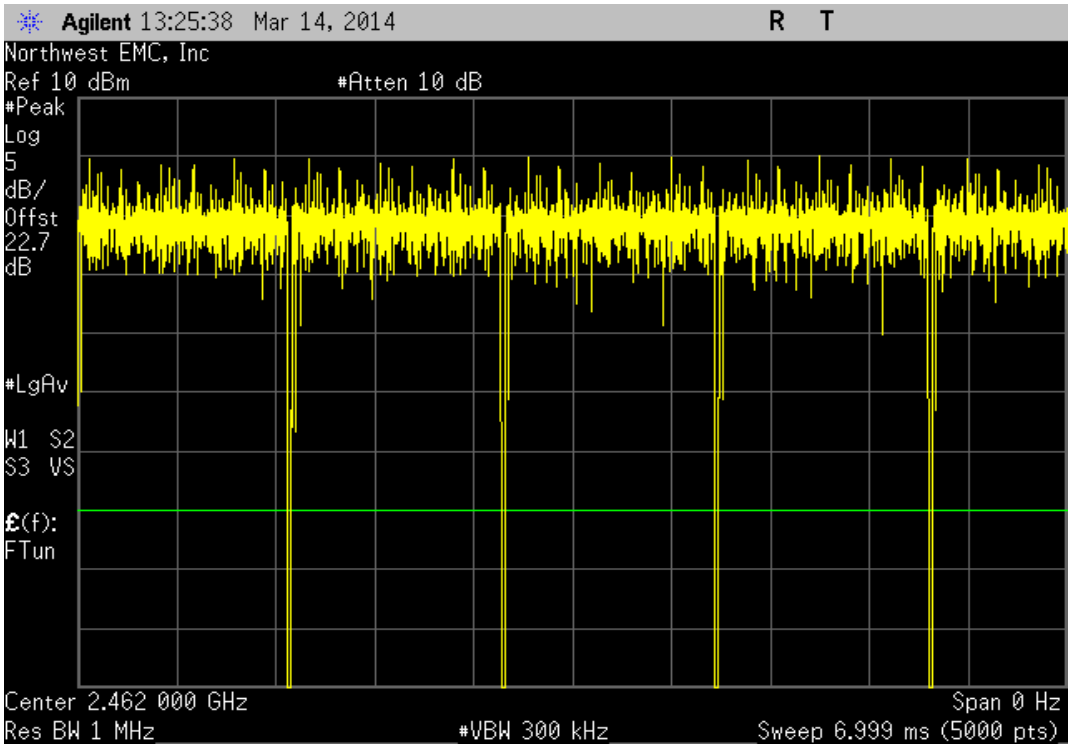
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.476 mS	1.512 mS	1	97.6	N/A	N/A



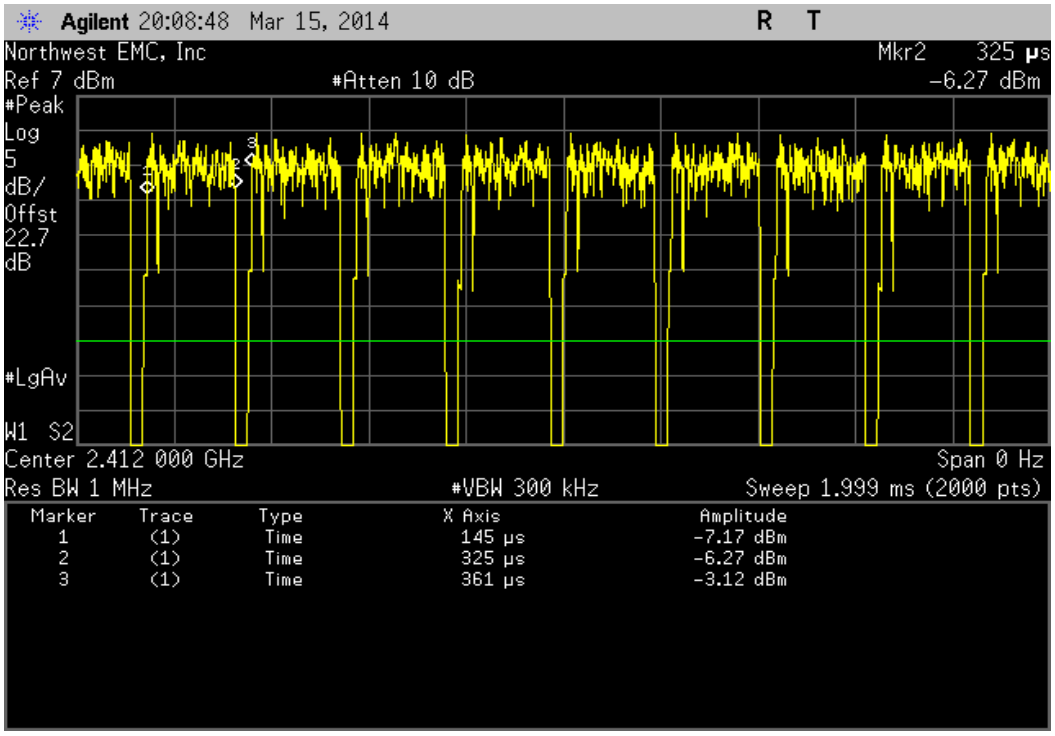
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 11, 2462 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



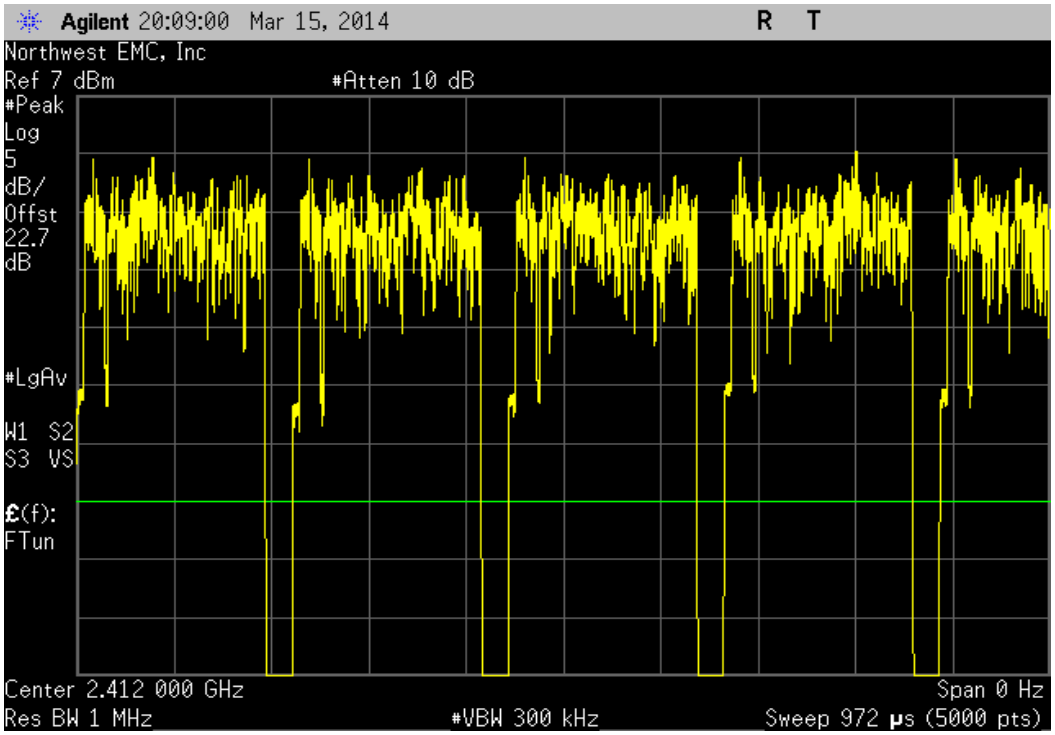
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	180 uS	216 uS	1	83.3	N/A	N/A



Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1, 2412 MHz

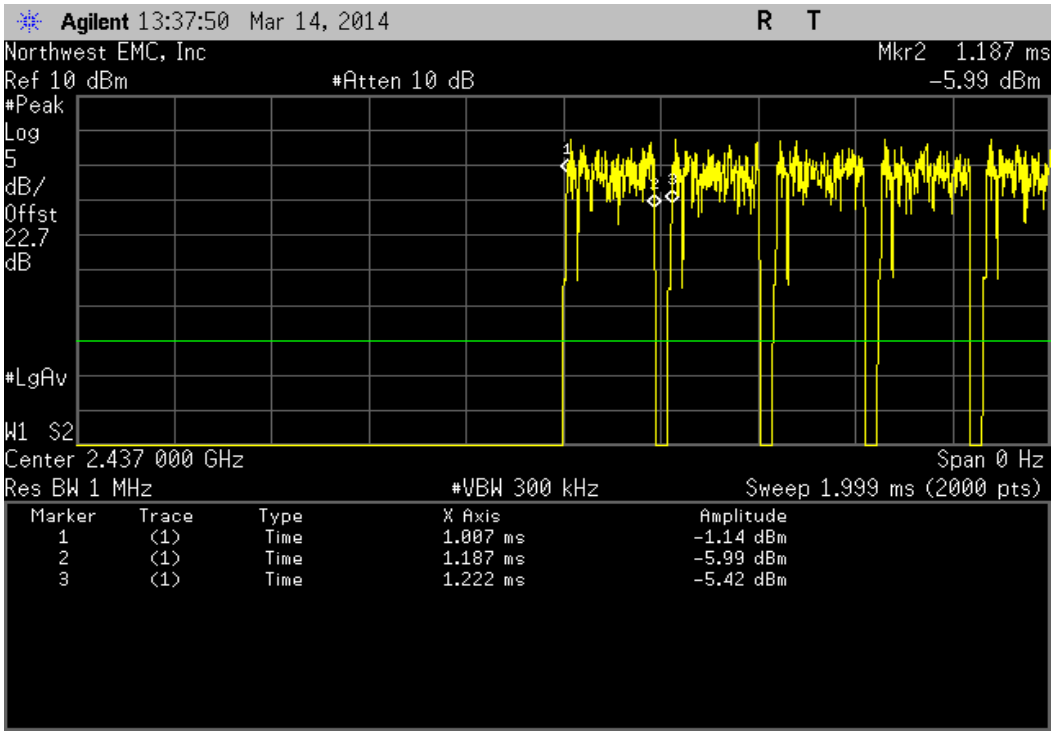
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

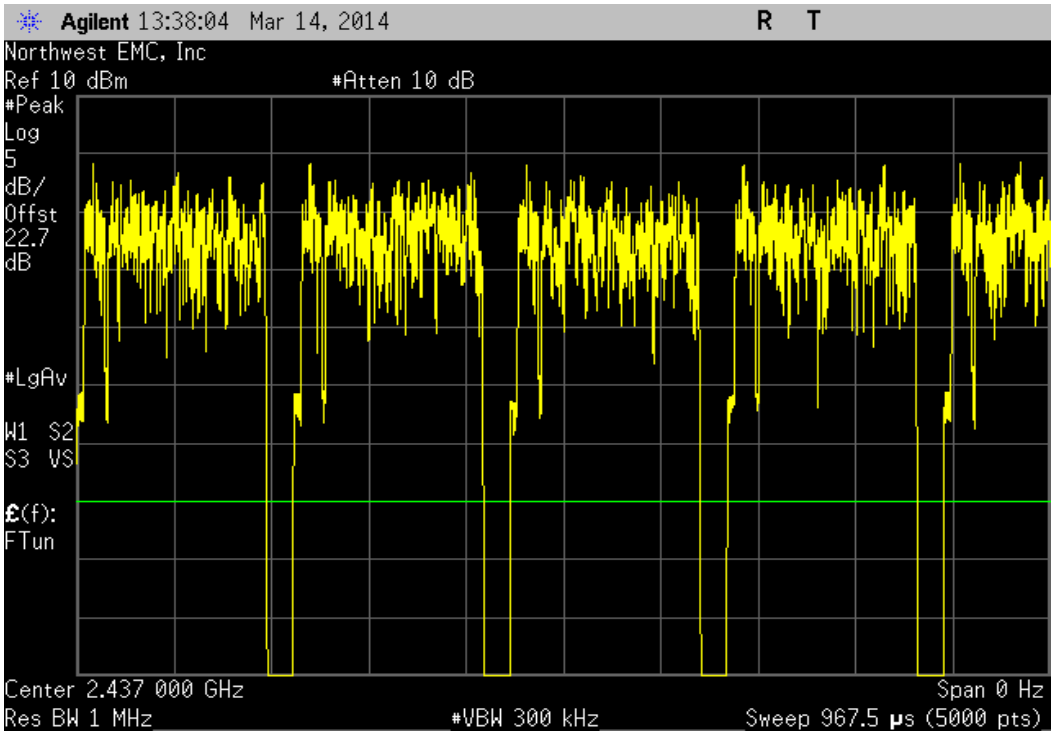
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
180 uS	215 uS	1	83.7	N/A	N/A



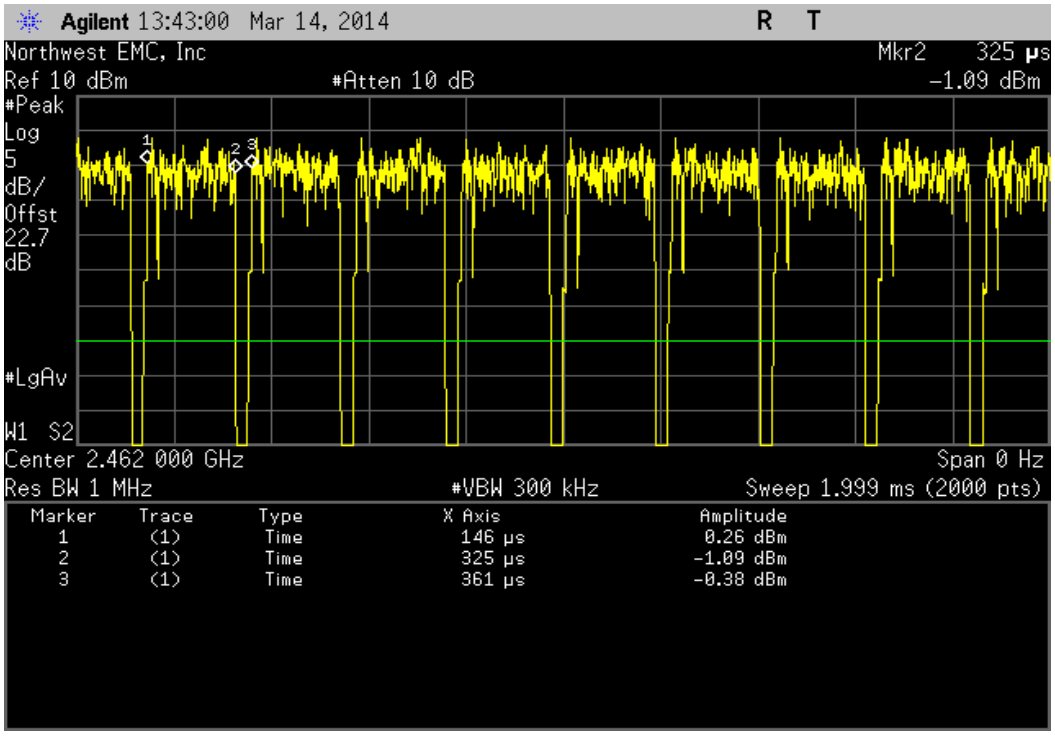
Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 6, 2437 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A

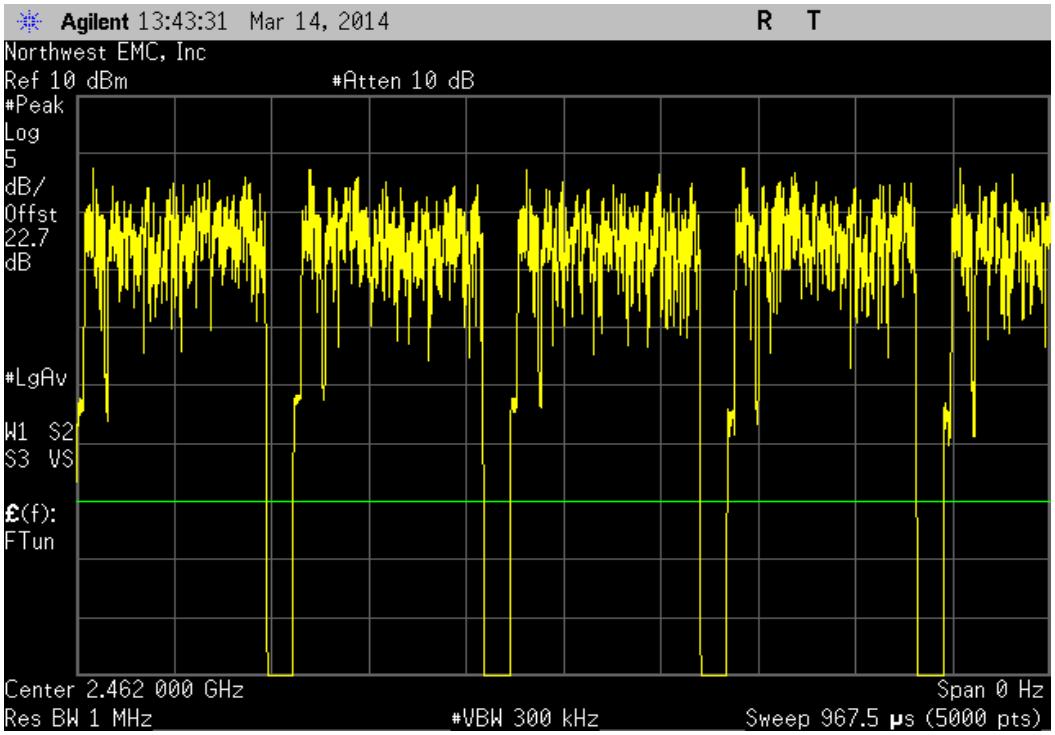


DUTY CYCLE

Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	179 uS	215 uS	1	83.3	N/A	N/A



Chain B, 20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

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 (mo.)
40GHz DC Block	Miteq	DCB4000	AMD	5/16/2013	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/30/2013	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Power Meter	Agilent	N1913A	SQR	4/29/2013	36
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	2/3/2014	12
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36
Spectrum Analyzer	Agilent	E4446A	AAQ	1/21/2014	24

TEST DESCRIPTION

The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was 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.

If the transmit duty cycle < 98 percent, burst gating was used during some of the other tests in this report to only measure during the burst duration.

TRANSMISSION BURST DURATION

EUT:	Model 1631			**Work Order:**	MCSO1698
Serial Number:	006840341053			**Date:**	04/16/14
Customer:	Microsoft Corporation			**Temperature:**	22.3°C
Attendees:	None			**Humidity:**	32%
Project:	None			**Barometric Pres.:**	1014
Tested by:	Jared Ison	**Power:**	110VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2014	ANSI C63.10:2009

COMMENTS

Modes of operation tested were client provided. Reference power level table for channel power setting.

DEVIATIONS FROM TEST STANDARD

None

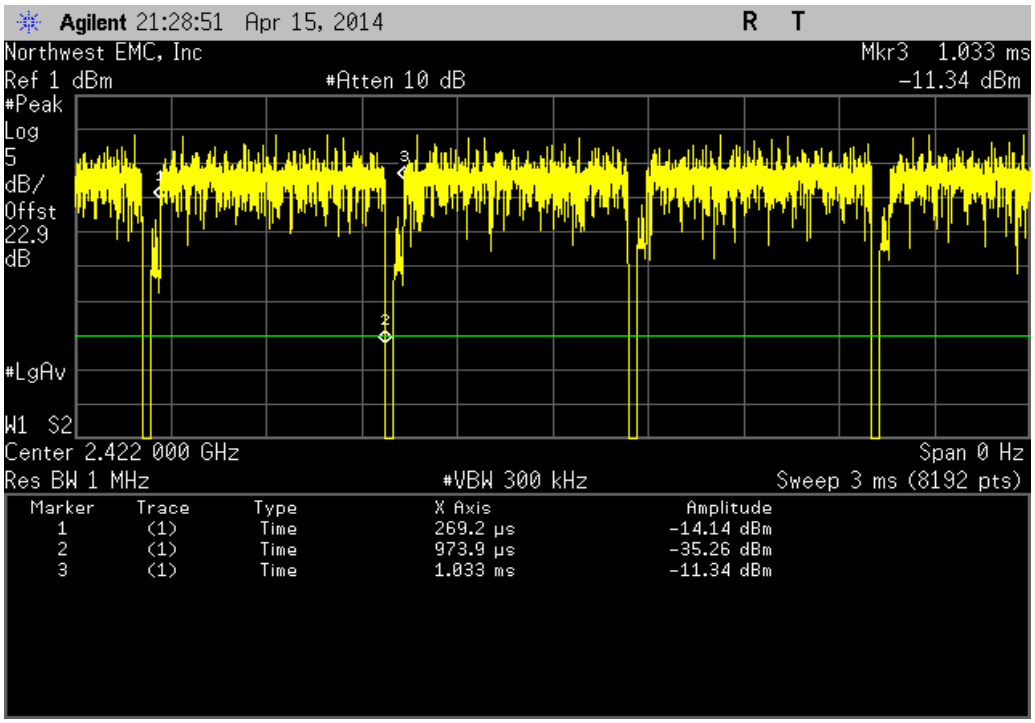
Configuration #	6	Signature

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
Chain A						
40 MHz						
2400 MHz - 2483.5 MHz Band						
802.11(n) MCS8						
Low Channel 1/5, 2422 MH	704.7 uS	764 uS	1	92.2	N/A	N/A
Low Channel 1/5, 2422 MH	N/A	N/A	5	N/A	N/A	N/A
Mid Channel 4/8, 2437 MH	704.6 uS	763.6 uS	1	92.3	N/A	N/A
Mid Channel 4/8, 2437 MH	N/A	N/A	5	N/A	N/A	N/A
High Channel 7/11, 2452 M	704.7 uS	764 uS	1	92.2	N/A	N/A
High Channel 7/11, 2452 M	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS15						
Low Channel 1/5, 2422 MH	90.4 uS	139.7 uS	1	64.7	N/A	N/A
Low Channel 1/5, 2422 MH	N/A	N/A	5	N/A	N/A	N/A
Mid Channel 4/8, 2437 MH	80.6 uS	139.7 uS	1	57.7	N/A	N/A
Mid Channel 4/8, 2437 MH	N/A	N/A	6	N/A	N/A	N/A
High Channel 7/11, 2452 M	80.6 uS	139.7 uS	1	57.7	N/A	N/A
High Channel 7/11, 2452 M	N/A	N/A	6	N/A	N/A	N/A
Chain B						
40 MHz						
2400 MHz - 2483.5 MHz Band						
802.11(n) MCS8						
Low Channel 1/5, 2422 MH	704.7 uS	763.6 uS	1	92.3	N/A	N/A
Low Channel 1/5, 2422 MH	N/A	N/A	6	N/A	N/A	N/A
Mid Channel 4/8, 2437 MH	704.7 uS	763.7 uS	1	92.3	N/A	N/A
Mid Channel 4/8, 2437 MH	N/A	N/A	6	N/A	N/A	N/A
High Channel 7/11, 2452 M	704.7 uS	761.4 uS	1	92.6	N/A	N/A
High Channel 7/11, 2452 M	N/A	N/A	6	N/A	N/A	N/A
802.11(n) MCS15						
Low Channel 1/5, 2422 MH	80.8 uS	139.4 uS	1	58	N/A	N/A
Low Channel 1/5, 2422 MH	N/A	N/A	6	N/A	N/A	N/A
Mid Channel 4/8, 2437 MH	81 uS	139.6 uS	1	58	N/A	N/A
Mid Channel 4/8, 2437 MH	N/A	N/A	6	N/A	N/A	N/A
High Channel 7/11, 2452 M	80.8 uS	139.6 uS	1	57.9	N/A	N/A
High Channel 7/11, 2452 M	N/A	N/A	6	N/A	N/A	N/A

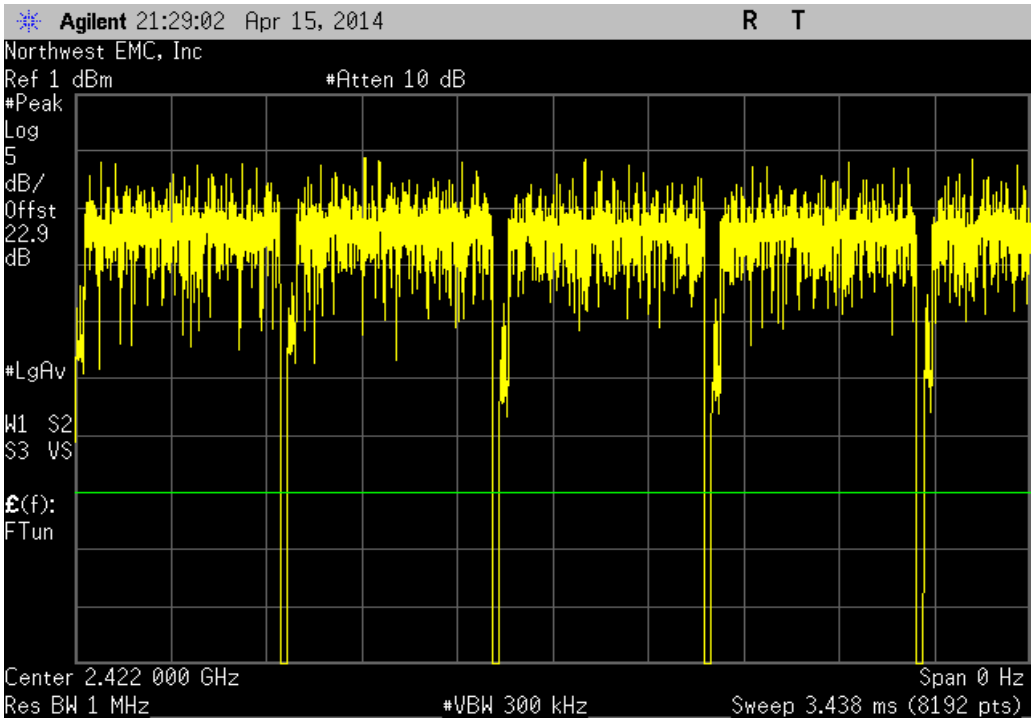
TRANSMISSION BURST DU

TRANSMISSION BURST DURATION

Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1/5, 2422 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	704.7 uS	764 uS	1	92.2	N/A	N/A

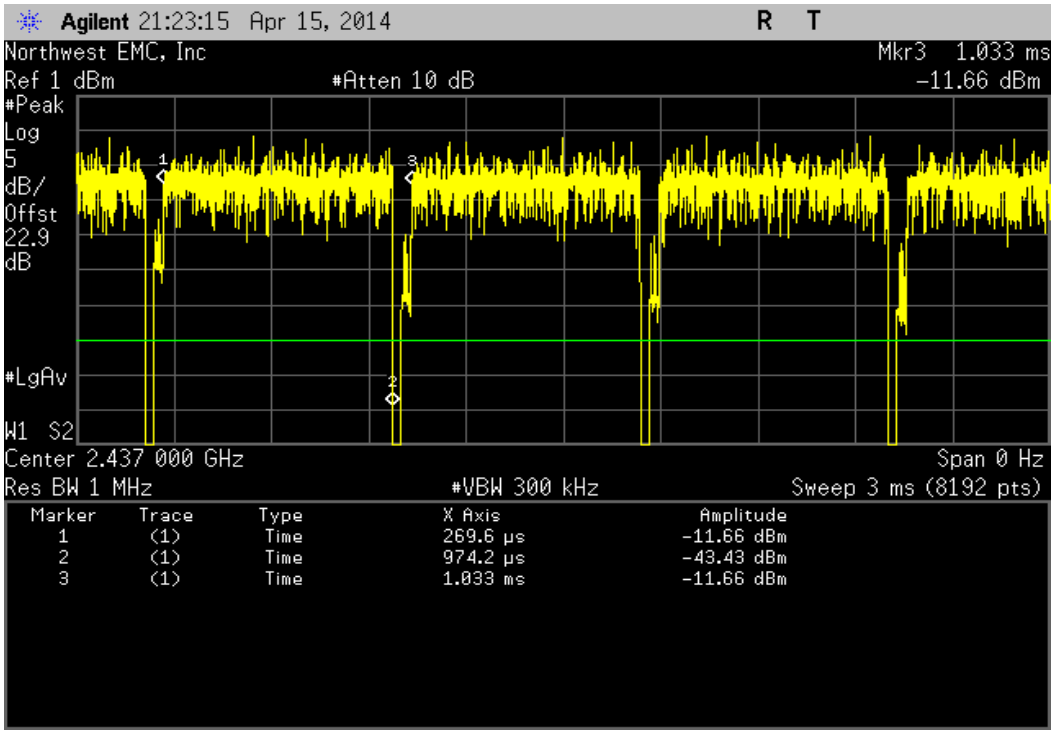


Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1/5, 2422 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



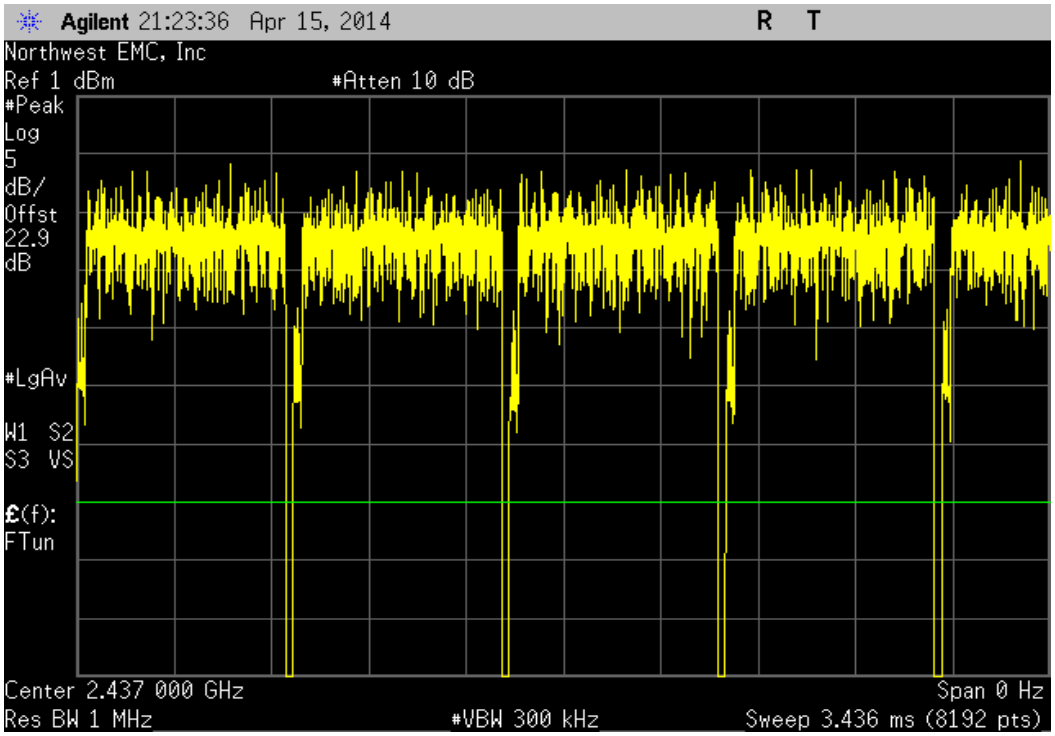
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 4/8, 2437 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	704.6 uS	763.6 uS	1	92.3	N/A	N/A



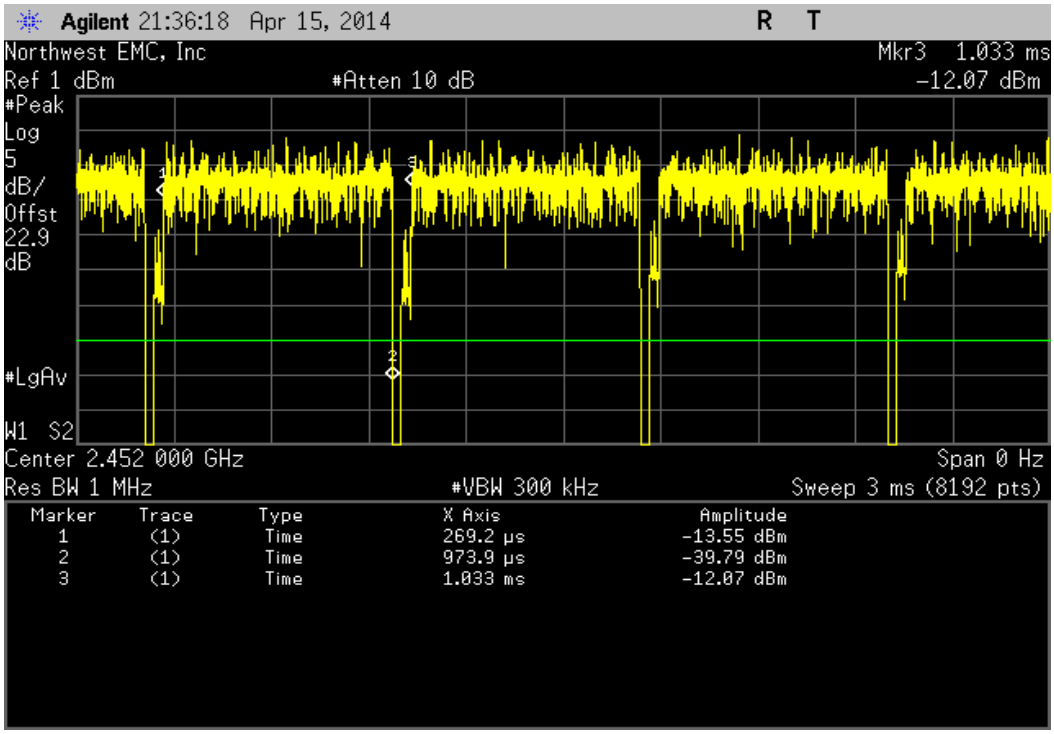
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 4/8, 2437 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



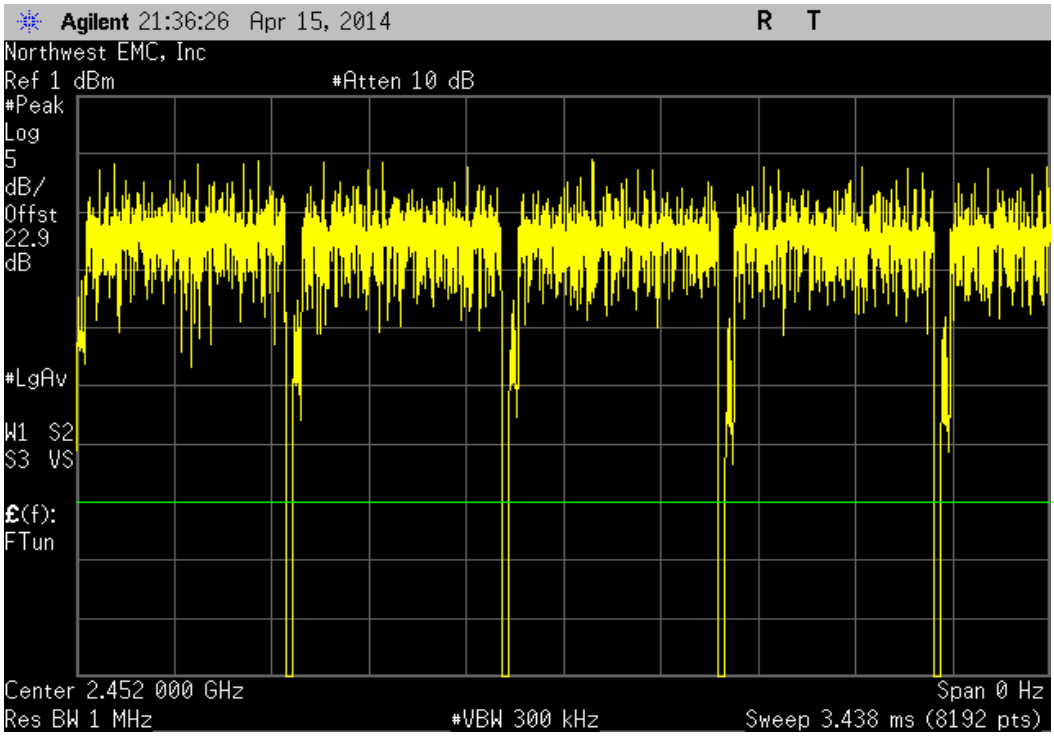
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 7/11, 2452 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	704.7 uS	764 uS	1	92.2	N/A	N/A



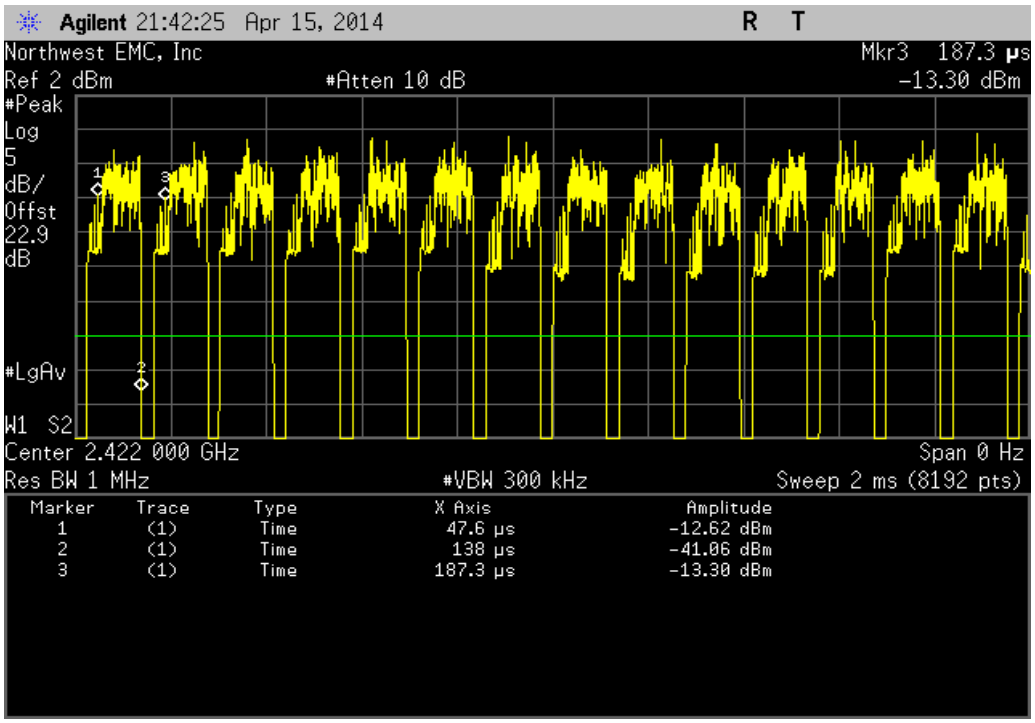
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 7/11, 2452 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A

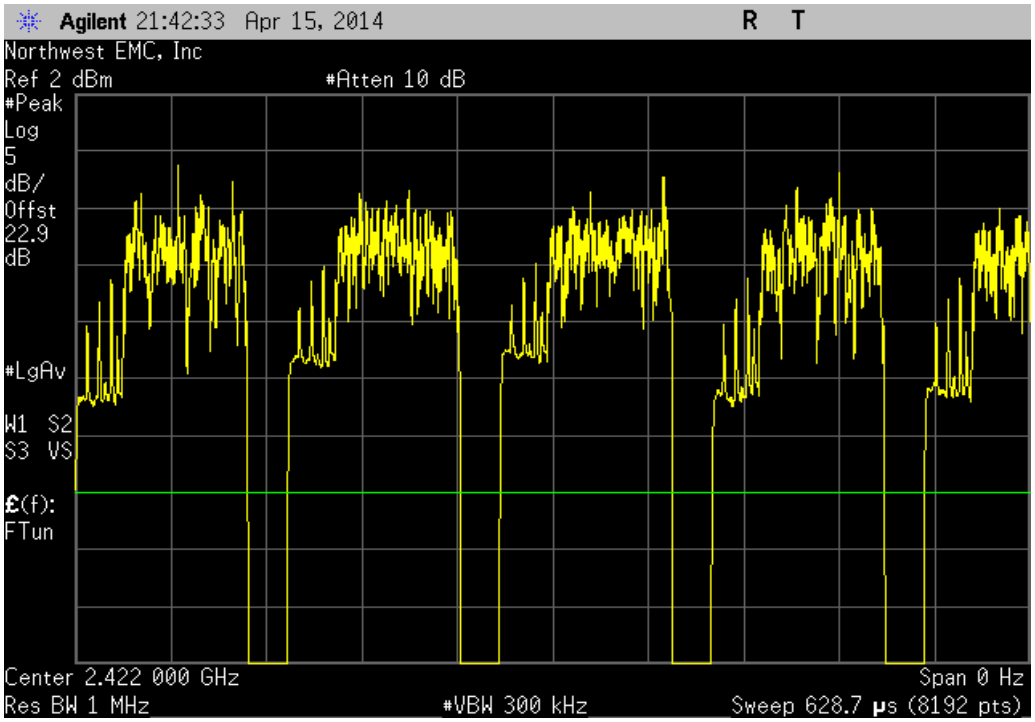


TRANSMISSION BURST DURATION

Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1/5, 2422 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	90.4 uS	139.7 uS	1	64.7	N/A	N/A

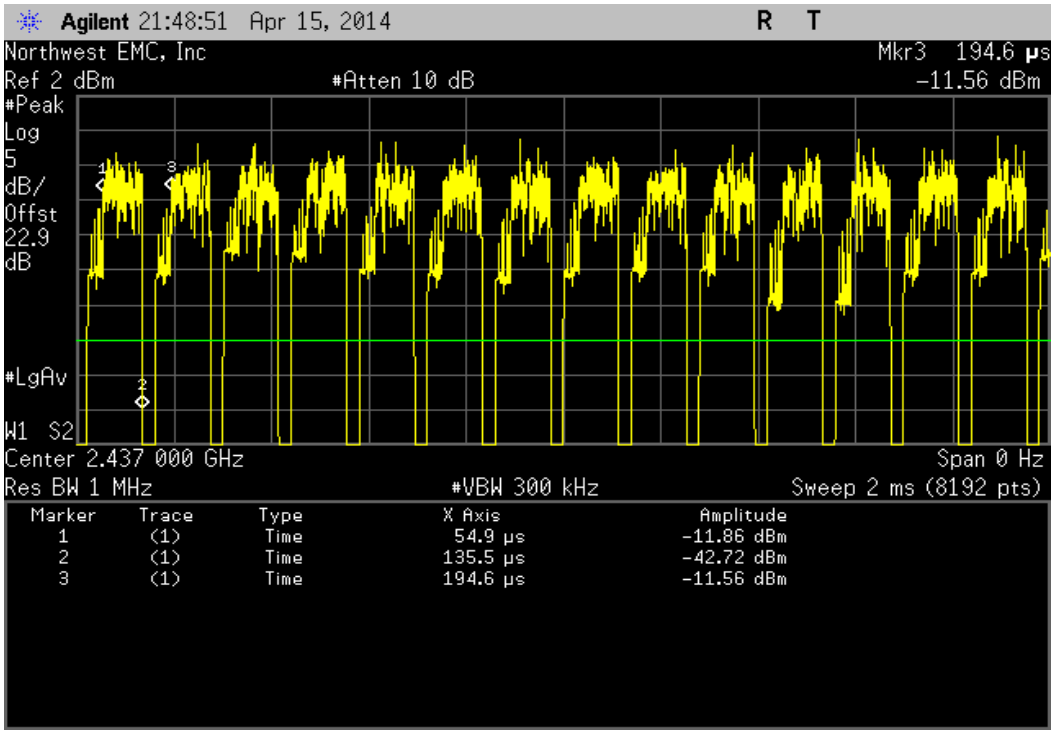


Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1/5, 2422 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A

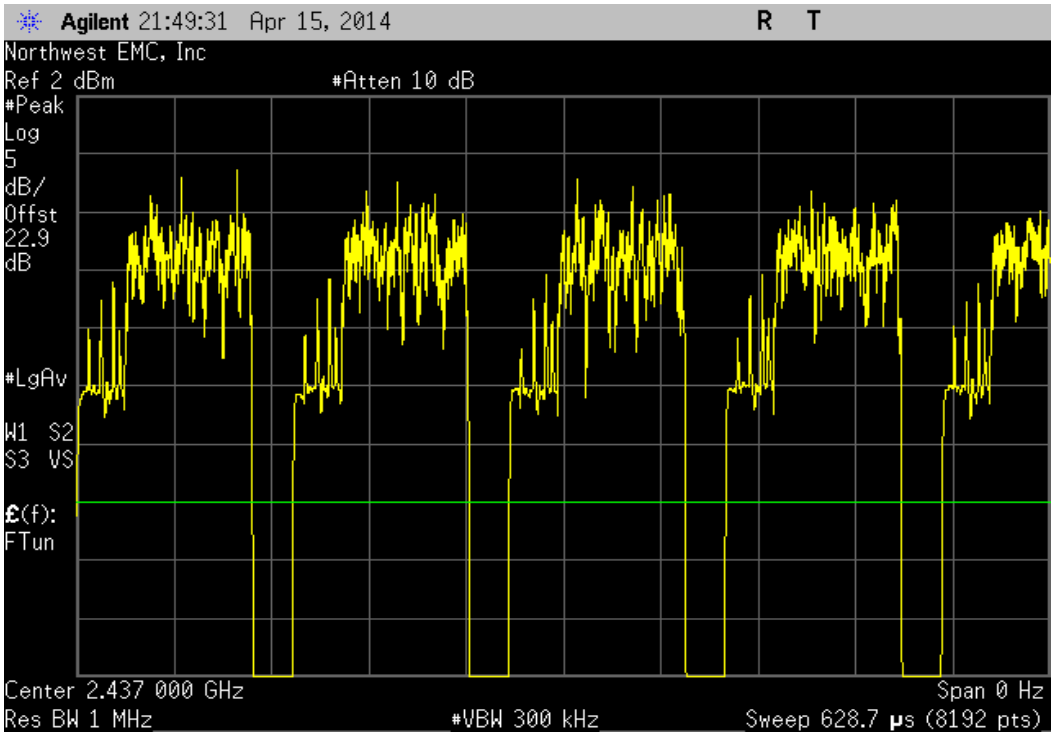


TRANSMISSION BURST DURATION

Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 4/8, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	80.6 uS	139.7 uS	1	57.7	N/A	N/A



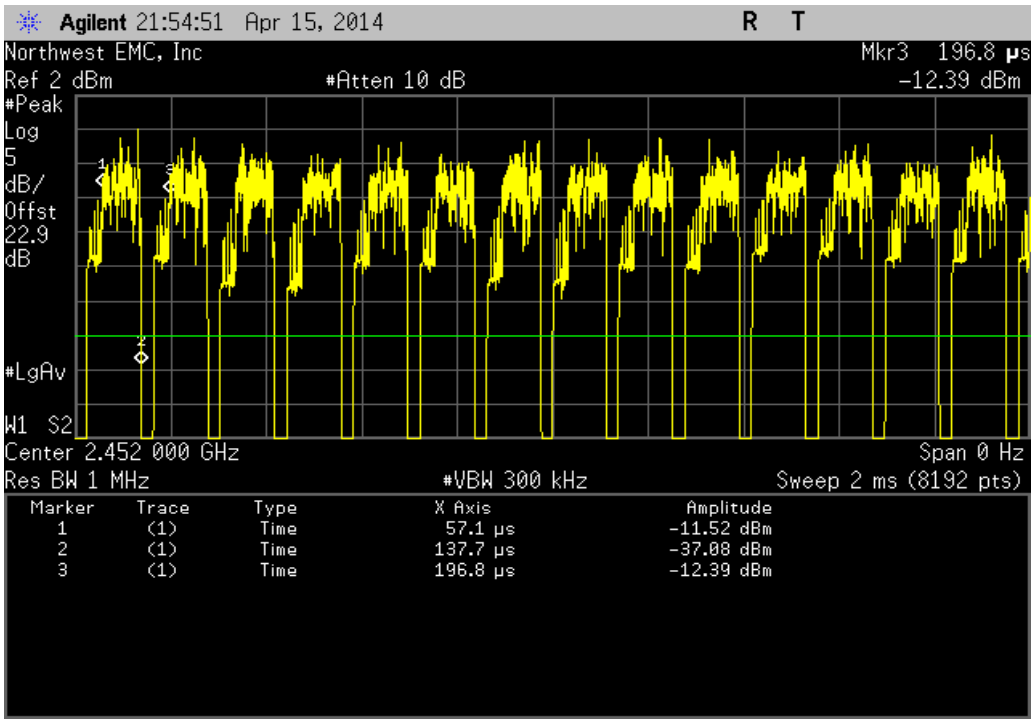
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 4/8, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	6	N/A	N/A	N/A



TRANSMISSION BURST DURATION

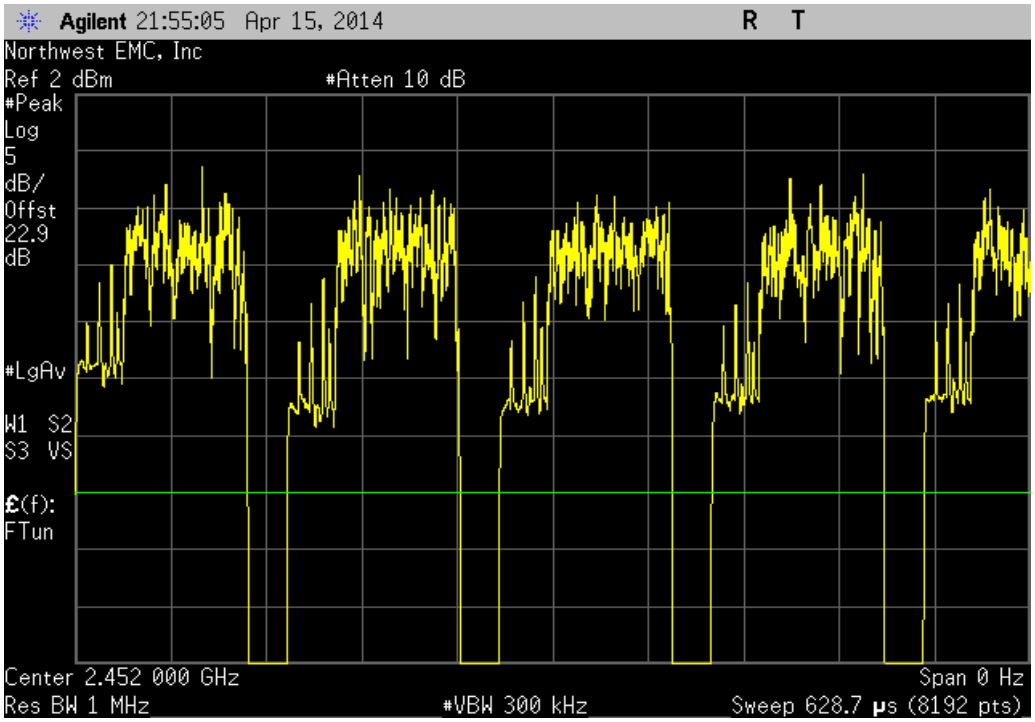
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 7/11, 2452 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
80.6 uS	139.7 uS	1	57.7	N/A	N/A



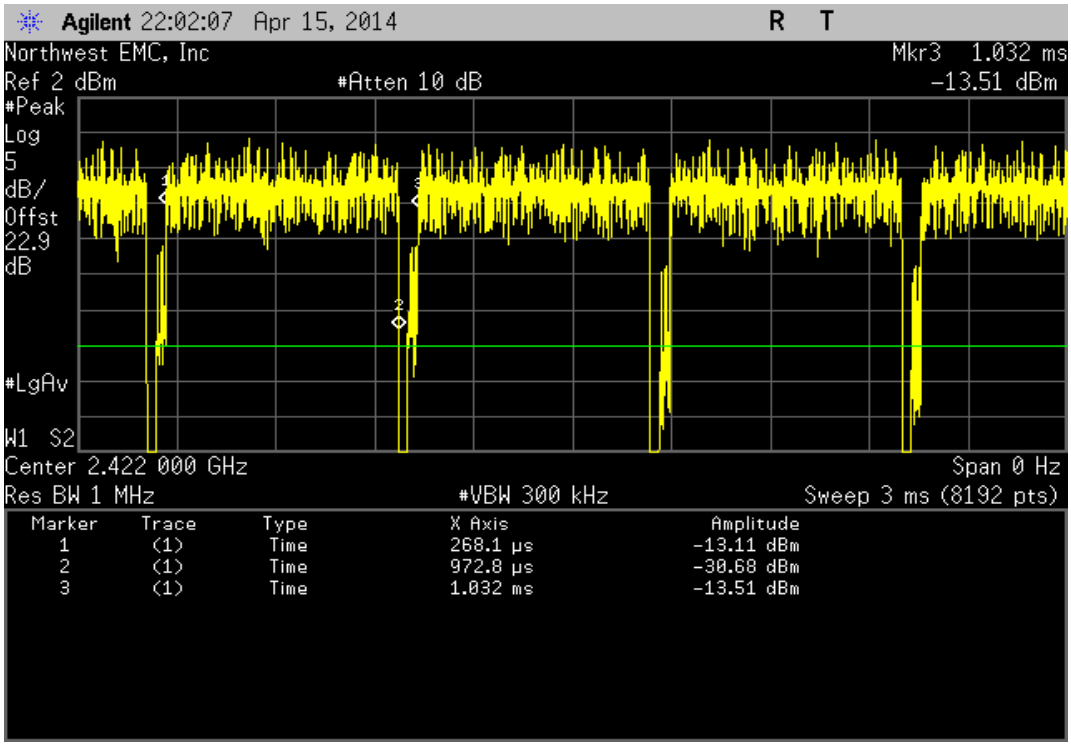
Chain A, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 7/11, 2452 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	6	N/A	N/A	N/A

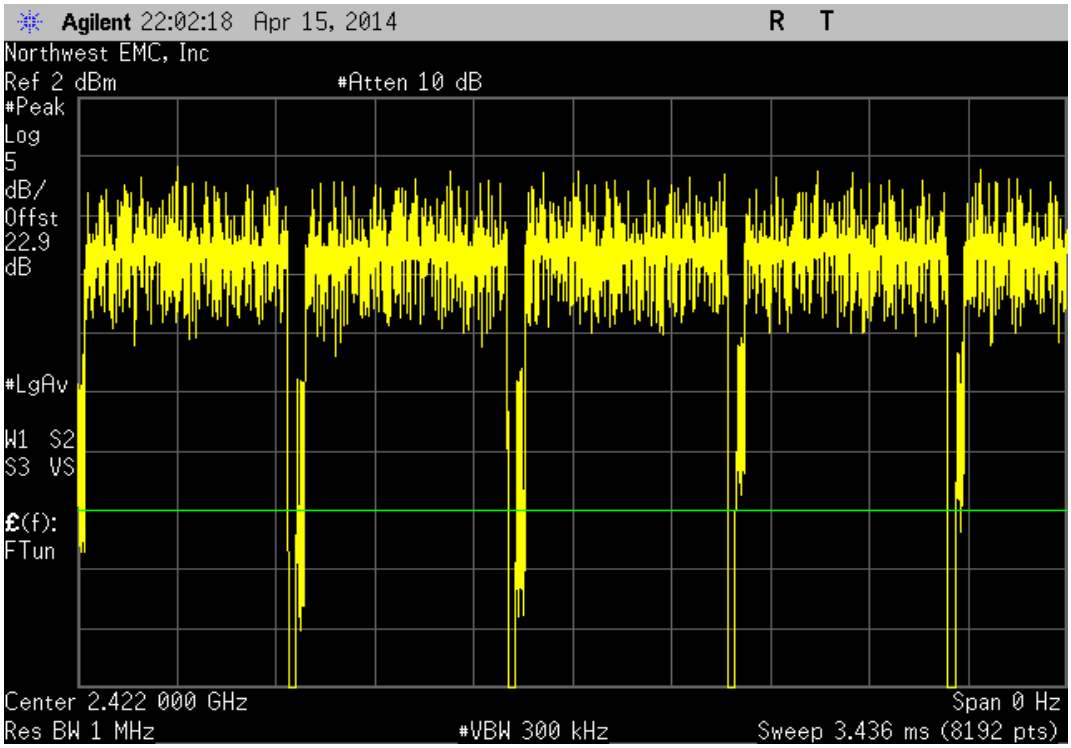


TRANSMISSION BURST DURATION

Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1/5, 2422 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	704.7 uS	763.6 uS	1	92.3	N/A	N/A

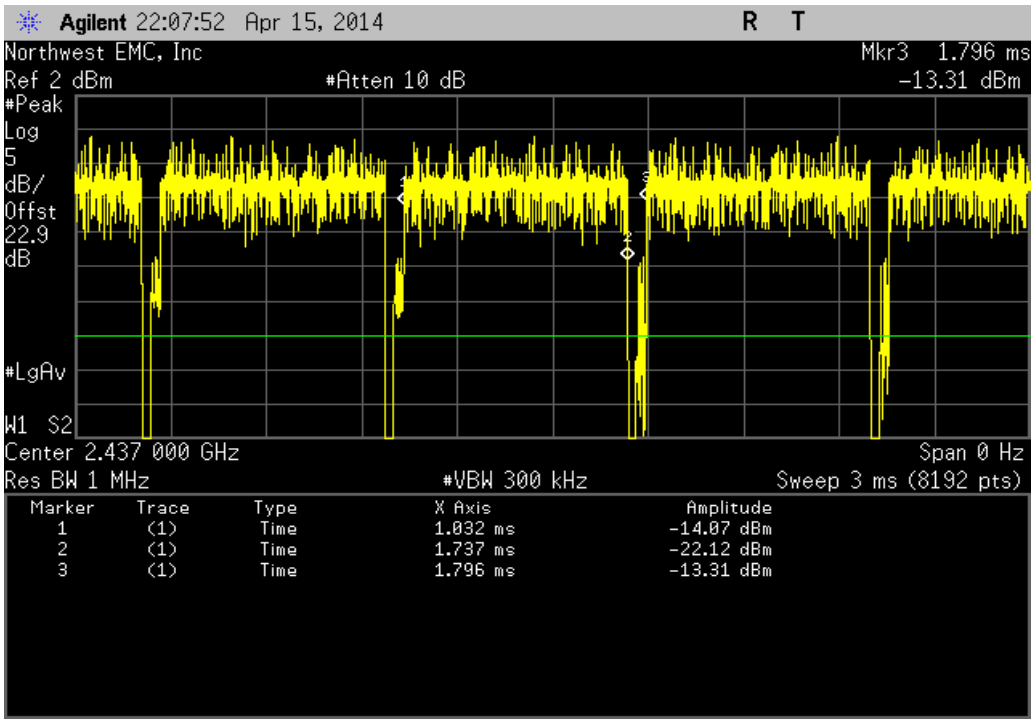


Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Low Channel 1/5, 2422 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	6	N/A	N/A	N/A

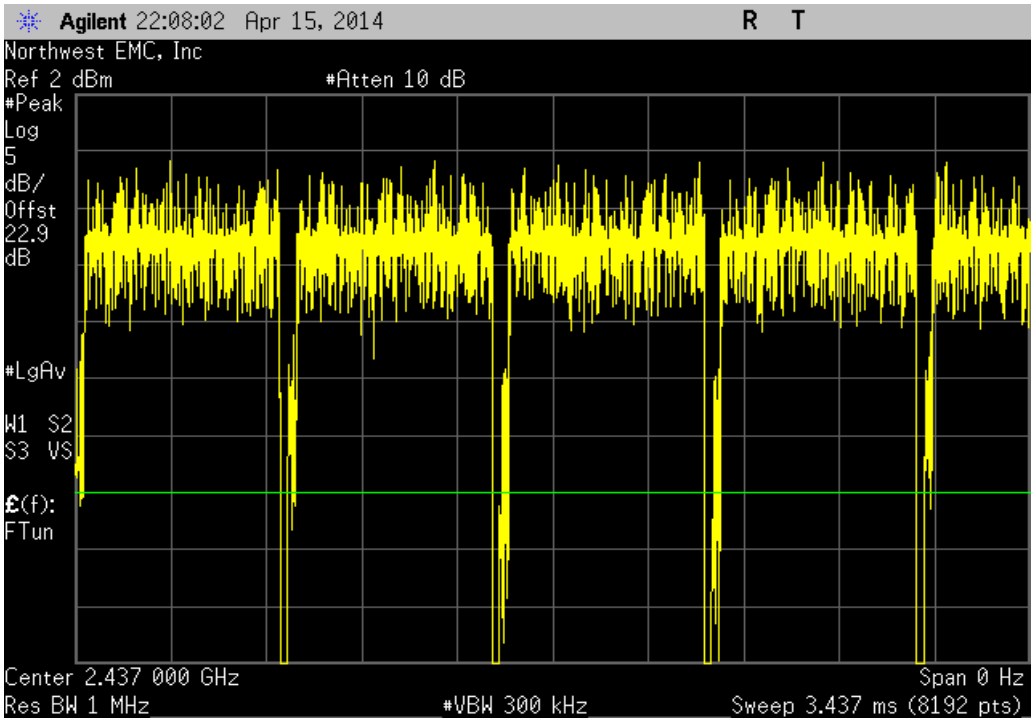


TRANSMISSION BURST DURATION

Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 4/8, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	704.7 uS	763.7 uS	1	92.3	N/A	N/A



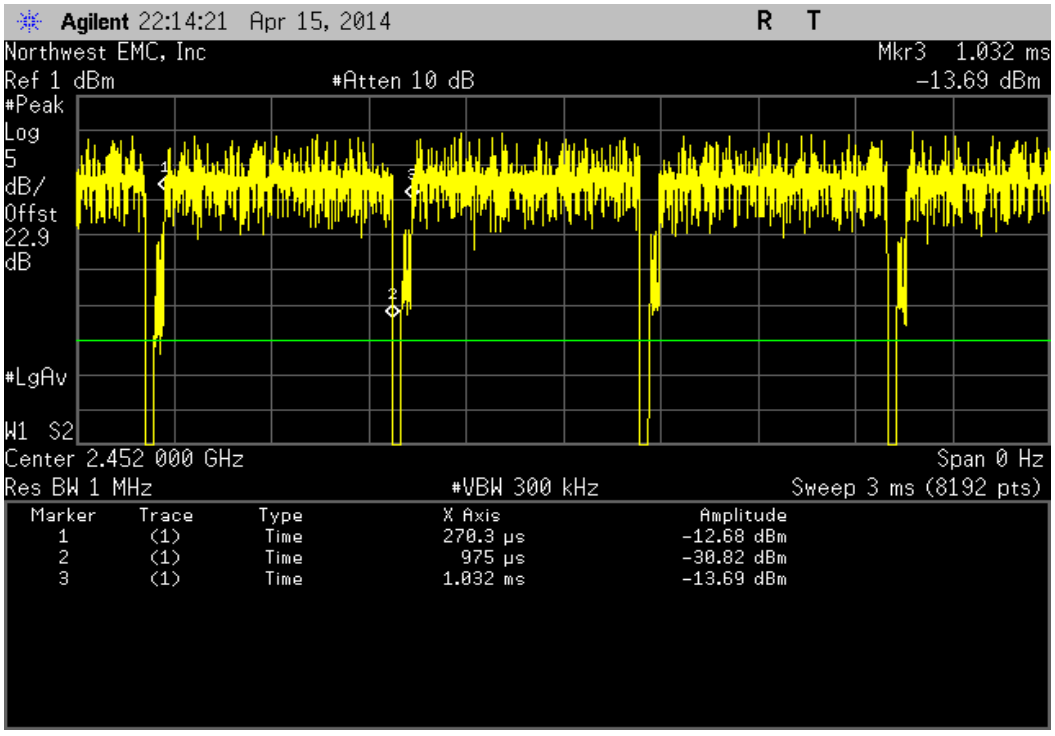
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, Mid Channel 4/8, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	6	N/A	N/A	N/A



TRANSMISSION BURST DURATION

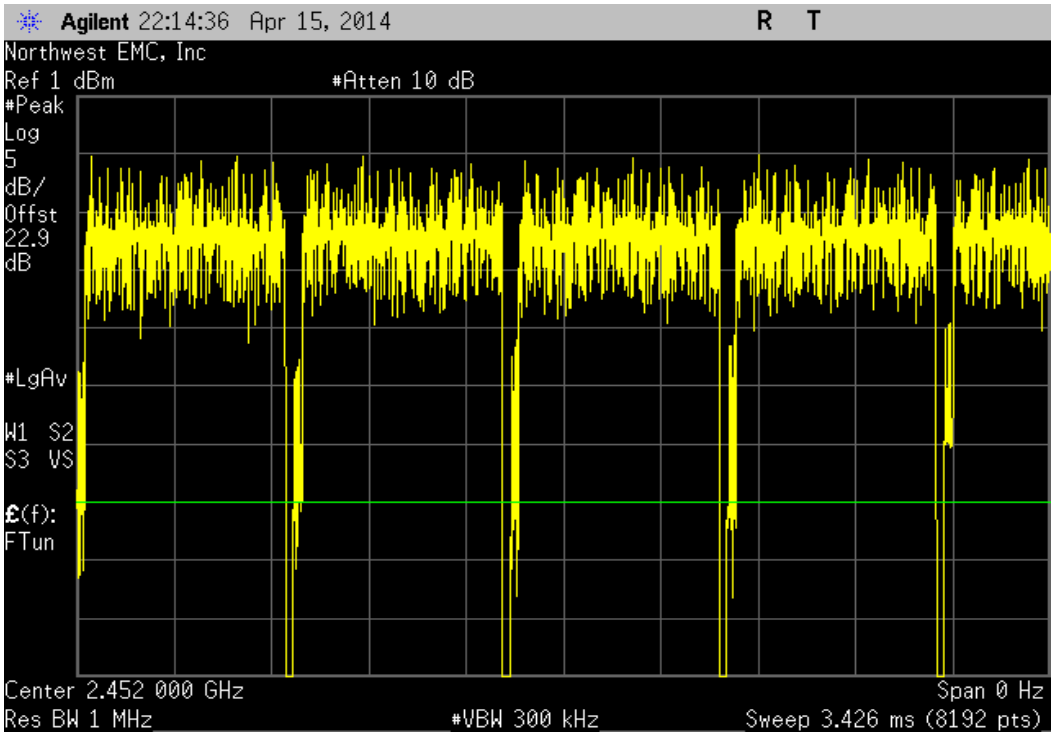
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 7/11, 2452 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	704.7 uS	761.4 uS	1	92.6	N/A	N/A



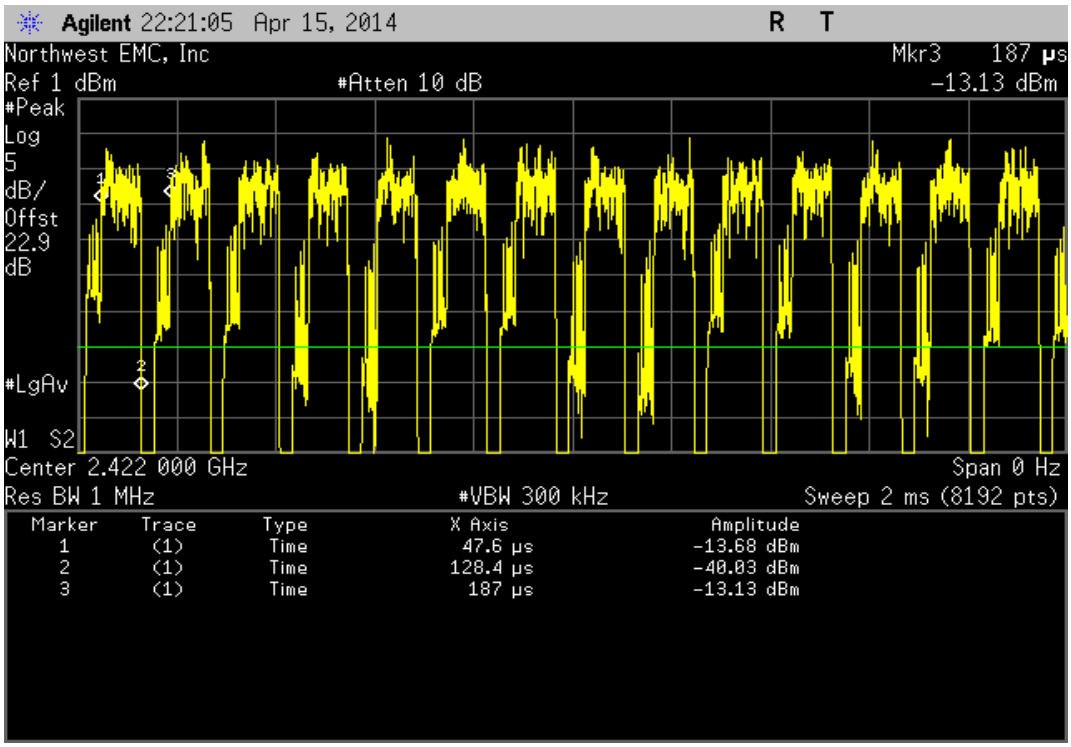
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS8, High Channel 7/11, 2452 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	6	N/A	N/A	N/A

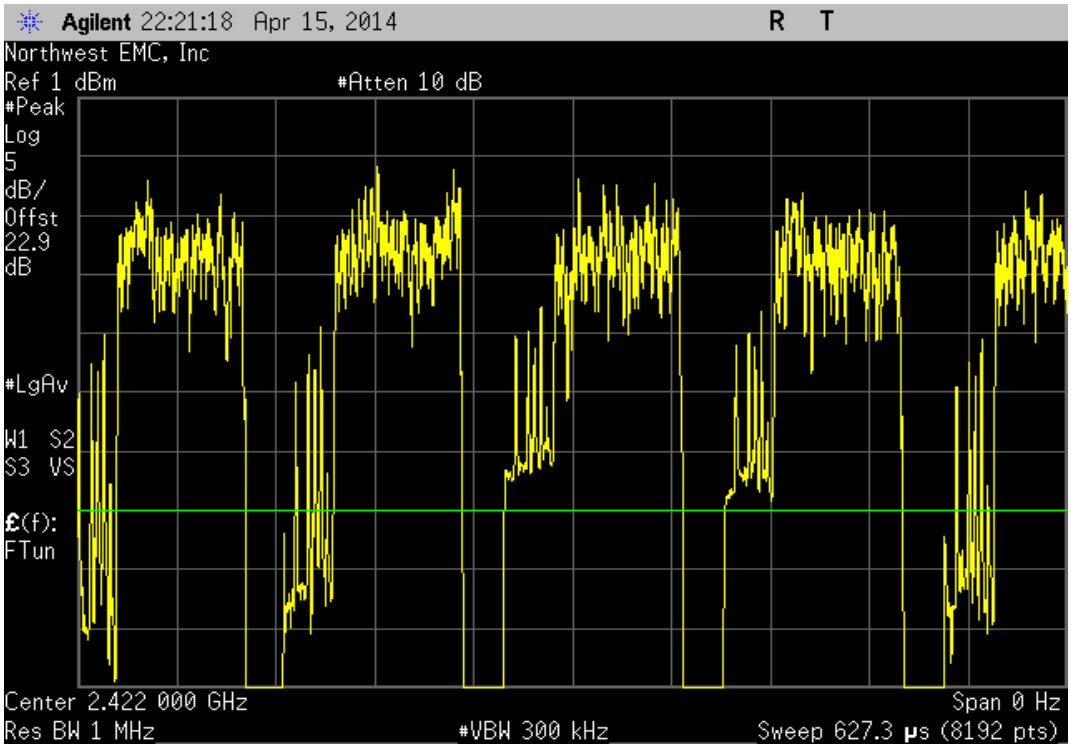


TRANSMISSION BURST DURATION

Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1/5, 2422 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	80.8 uS	139.4 uS	1	58	N/A	N/A



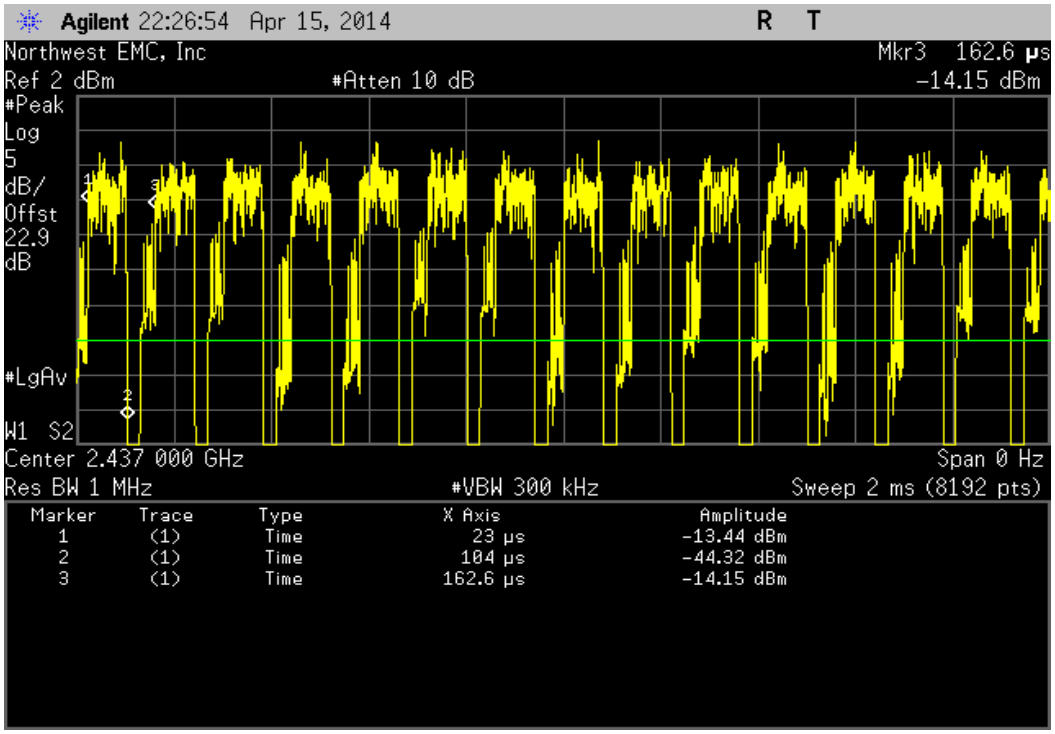
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Low Channel 1/5, 2422 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	6	N/A	N/A	N/A



TRANSMISSION BURST DURATION

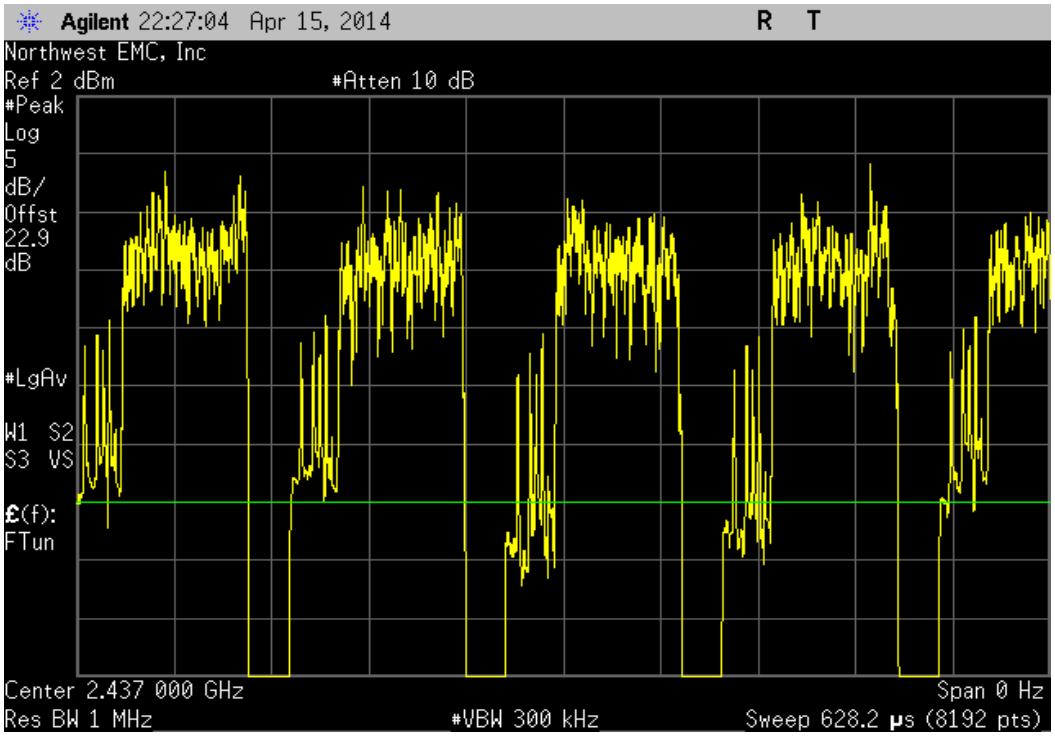
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 4/8, 2437 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	81 uS	139.6 uS	1	58	N/A	N/A



Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, Mid Channel 4/8, 2437 MHz

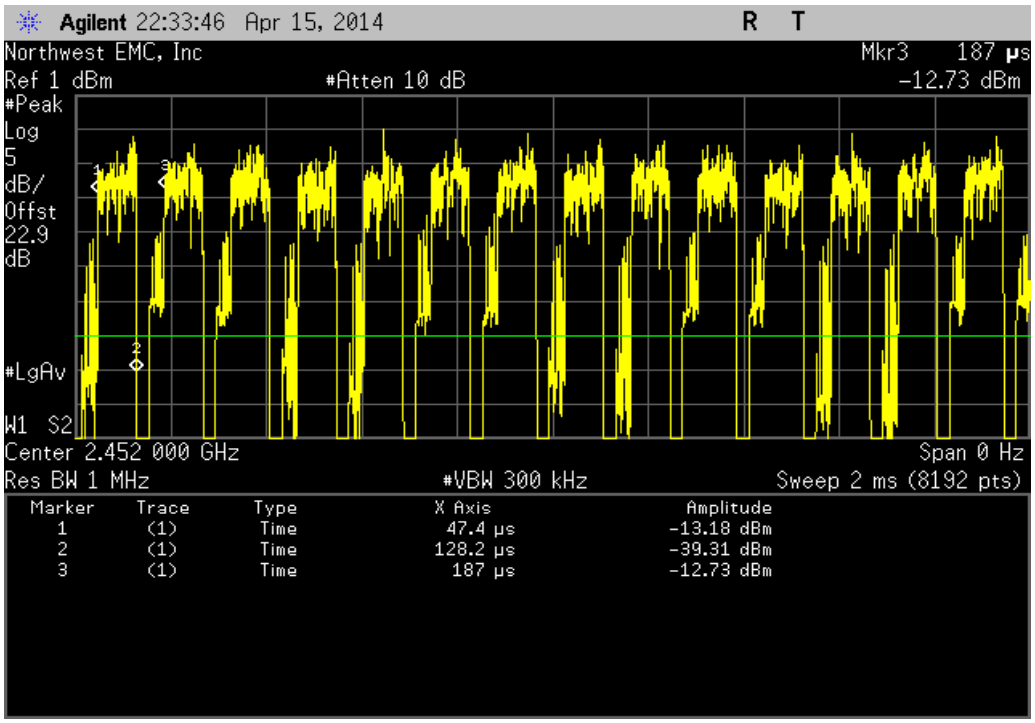
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	6	N/A	N/A	N/A



TRANSMISSION BURST DURATION

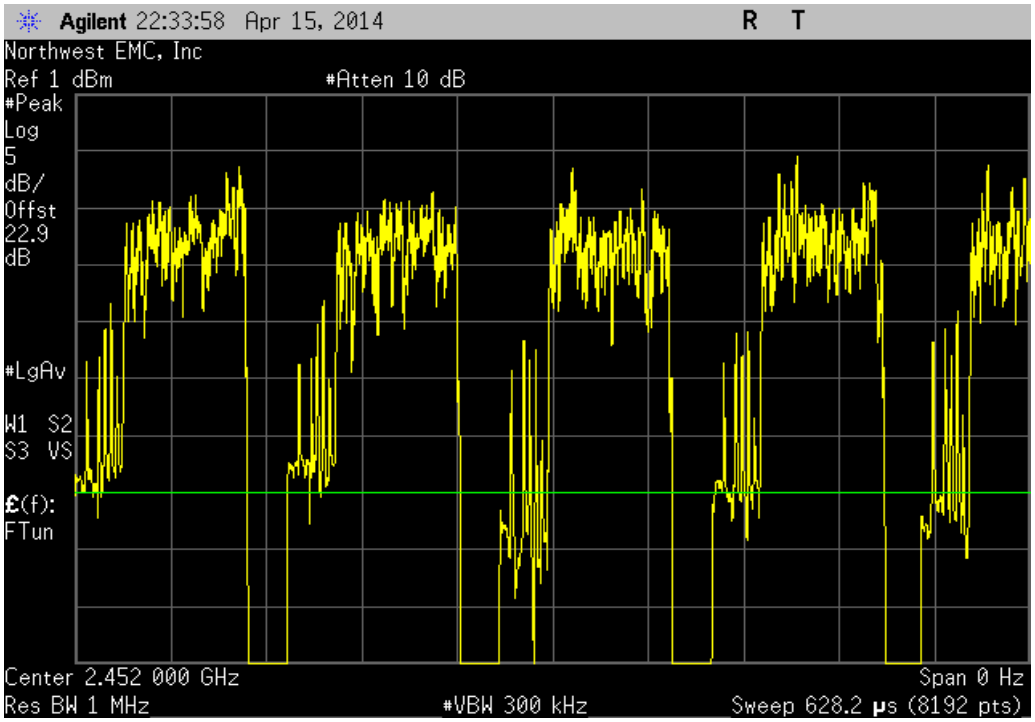
Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 7/11, 2452 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
80.8 uS	139.6 uS	1	57.9	N/A	N/A



Chain B, 40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS15, High Channel 7/11, 2452 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	6	N/A	N/A	N/A



DUTY CYCLE

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 (mo.)
40GHz DC Block	Miteq	DCB4000	AMD	5/16/2013	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/30/2013	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Power Meter	Gigatronics	8651A	SPM	11/26/2013	24
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	36
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	2/3/2014	12
MXG Analog Signal Generator	Agilent	N5181A	TIG	NCR	0
Spectrum Analyzer	Agilent	E4440	AFE	11/4/2013	24

TEST DESCRIPTION

The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was 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.

If the transmit duty cycle < 98 percent, burst gating was used during some of the other tests in this report to only measure during the burst duration.

DUTY CYCLE

EUT:	Model 1631	Work Order:	MCSO1698
Serial Number:	041148340753	Date:	03/22/14
Customer:	Microsoft Corporation	Temperature:	21.5°C
Attendees:	None	Humidity:	29%
Project:	1631	Barometric Pres.:	1007
Tested by:	Brandon Hobbs, Jared Ison	Power: 110VAC/60Hz	Job Site: EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2014	ANSI C63.10:2009

COMMENTS

Modes of operation tested were client provided.

DEVIATIONS FROM TEST STANDARD

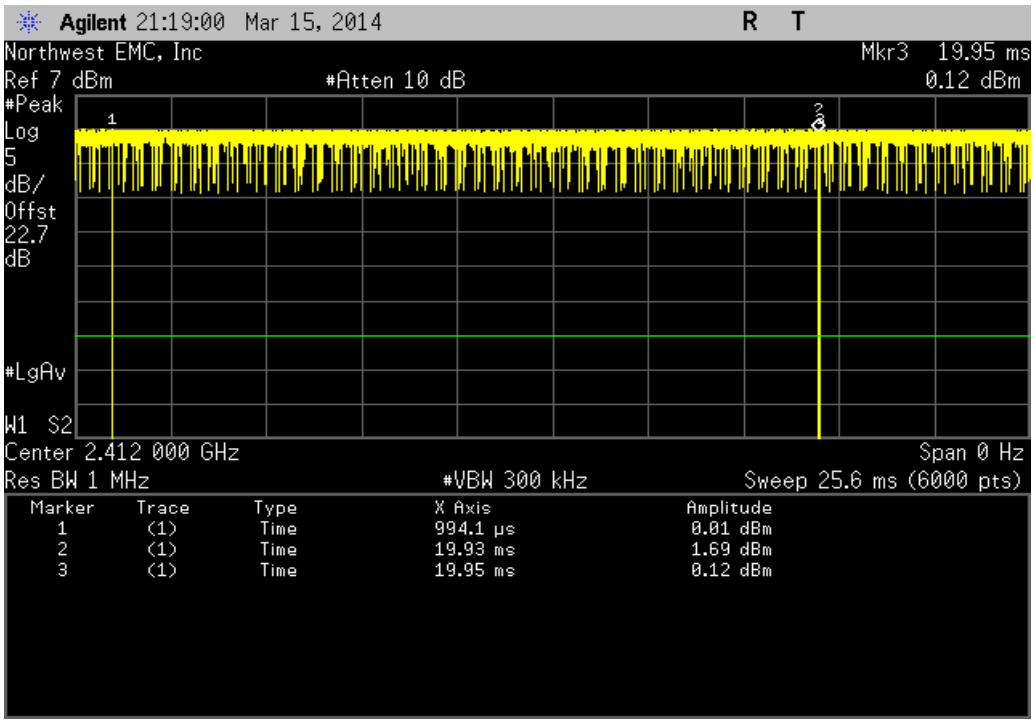
None

Configuration #	1	Signature

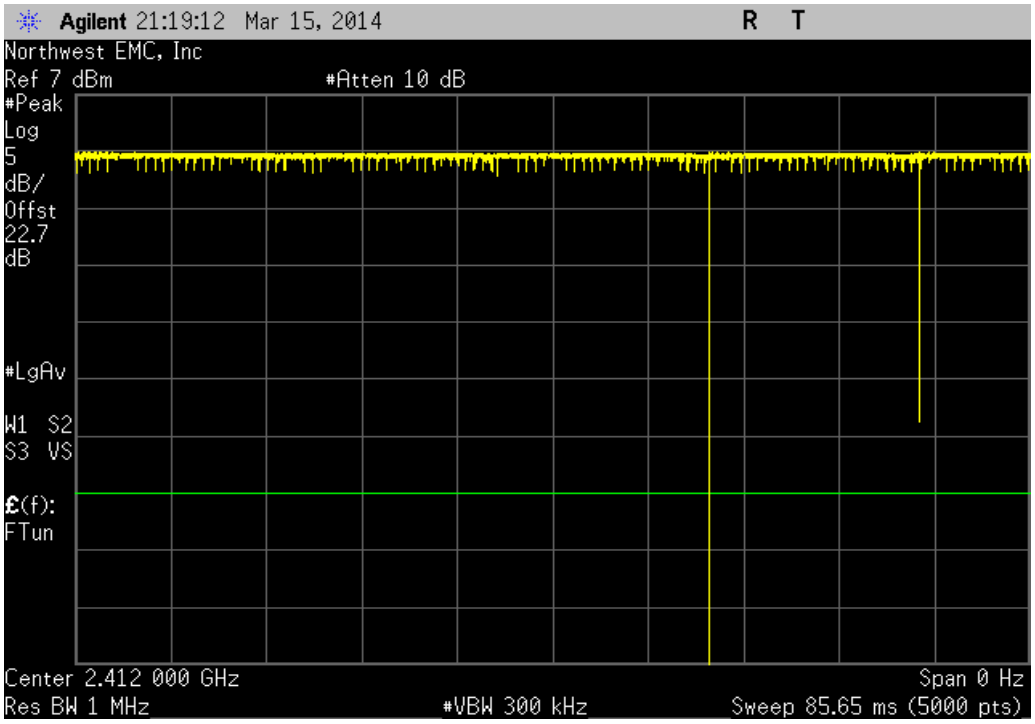
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
20 MHz						
2400 MHz - 2483.5 MHz Band						
802.11(b) 1 Mbps						
Low Channel 1, 2412 MHz	18.931 mS	18.953 mS	1	99.9	N/A	N/A
Low Channel 1, 2412 MHz	N/A	N/A	2	N/A	N/A	N/A
Mid Channel 6, 2437 MHz	18.931 mS	18.953 mS	1	99.9	N/A	N/A
Mid Channel 6, 2437 MHz	N/A	N/A	2	N/A	N/A	N/A
High Channel 11, 2462 MHz	18.931 mS	18.953 mS	1	99.9	N/A	N/A
High Channel 11, 2462 MHz	N/A	N/A	2	N/A	N/A	N/A
802.11(b) 11 Mbps						
Low Channel 1, 2412 MHz	1.798 mS	1.824 mS	1	98.6	N/A	N/A
Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz	1.798 mS	1.822 mS	1	98.7	N/A	N/A
Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MHz	1.798 mS	1.822 mS	1	98.7	N/A	N/A
High Channel 11, 2462 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(g) 6 Mbps						
Low Channel 1, 2412 MHz	3.139 mS	3.169 mS	1	99	N/A	N/A
Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz	3.141 mS	3.169 mS	1	99.1	N/A	N/A
Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MHz	3.141 mS	3.169 mS	1	99.1	N/A	N/A
High Channel 11, 2462 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(g) 36 Mbps						
Low Channel 1, 2412 MHz	537 uS	572 uS	1	93.9	N/A	N/A
Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz	537 uS	572 uS	1	93.9	N/A	N/A
Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MHz	536 uS	571 uS	1	93.9	N/A	N/A
High Channel 11, 2462 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(g) 54 Mbps						
Low Channel 1, 2412 MHz	360 uS	395 uS	1	91.1	N/A	N/A
Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz	361 uS	396 uS	1	91.2	N/A	N/A
Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MHz	361 uS	396 uS	1	91.2	N/A	N/A
High Channel 11, 2462 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS0						
Low Channel 1, 2412 MHz	2.918 mS	2.951 mS	1	98.9	N/A	N/A
Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz	2.916 mS	2.946 mS	1	99	N/A	N/A
Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MHz	2.918 mS	2.946 mS	1	99.1	N/A	N/A
High Channel 11, 2462 MHz	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS7						
Low Channel 1, 2412 MHz	320 uS	354 uS	1	90.4	N/A	N/A
Low Channel 1, 2412 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 2437 MHz	320 uS	355 uS	1	90.1	N/A	N/A
Mid Channel 6, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 2462 MHz	321 uS	356 uS	1	90.2	N/A	N/A
High Channel 11, 2462 MHz	N/A	N/A	5	N/A	N/A	N/A

DUTY CYCLE

20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	18.931 mS	18.953 mS	1	99.9	N/A	N/A



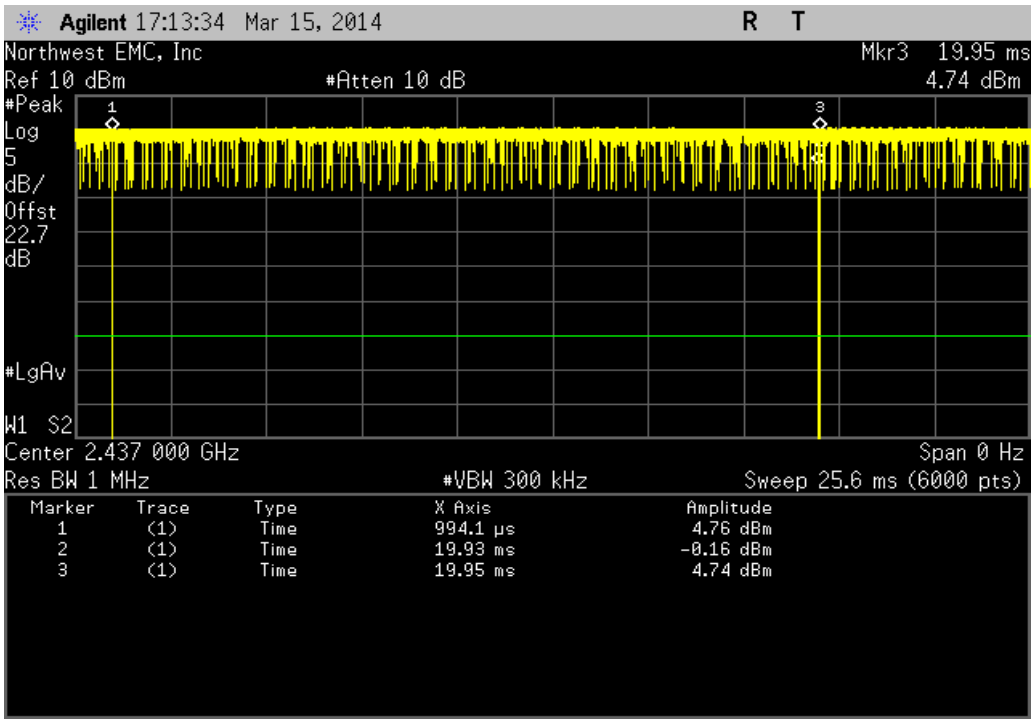
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	2	N/A	N/A	N/A



DUTY CYCLE

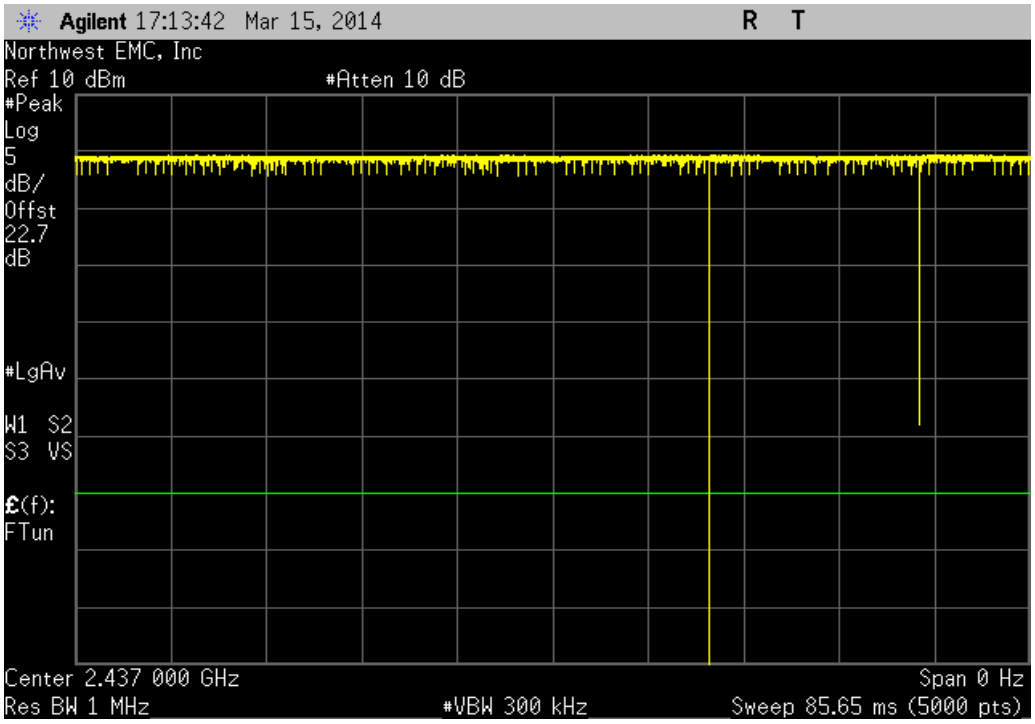
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	18.931 mS	18.953 mS	1	99.9	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz

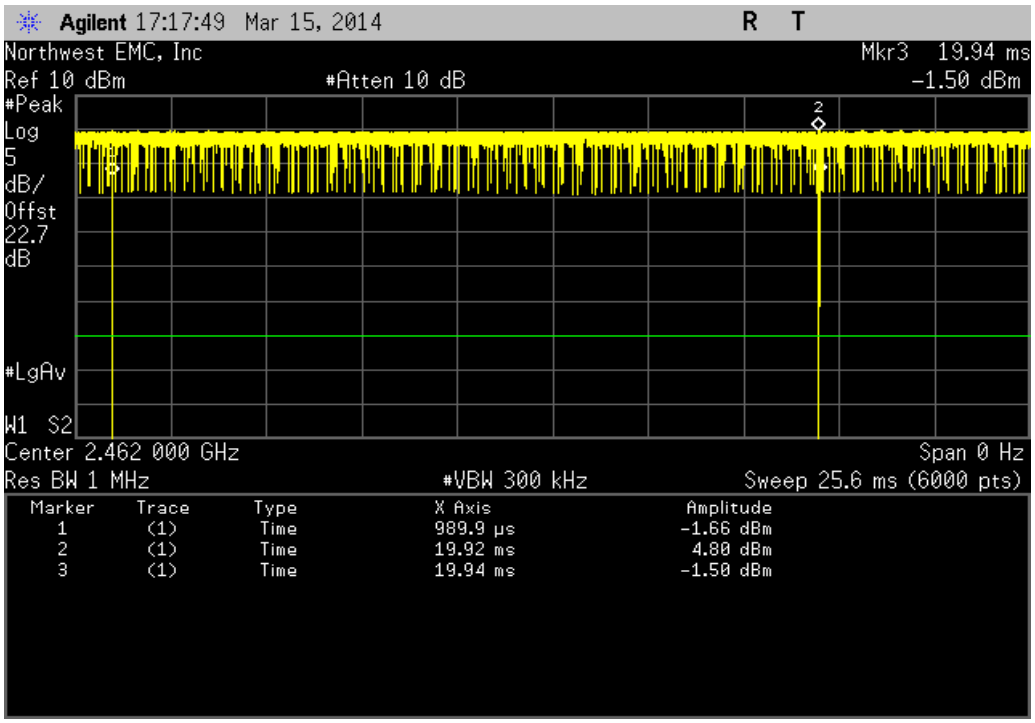
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	2	N/A	N/A	N/A



DUTY CYCLE

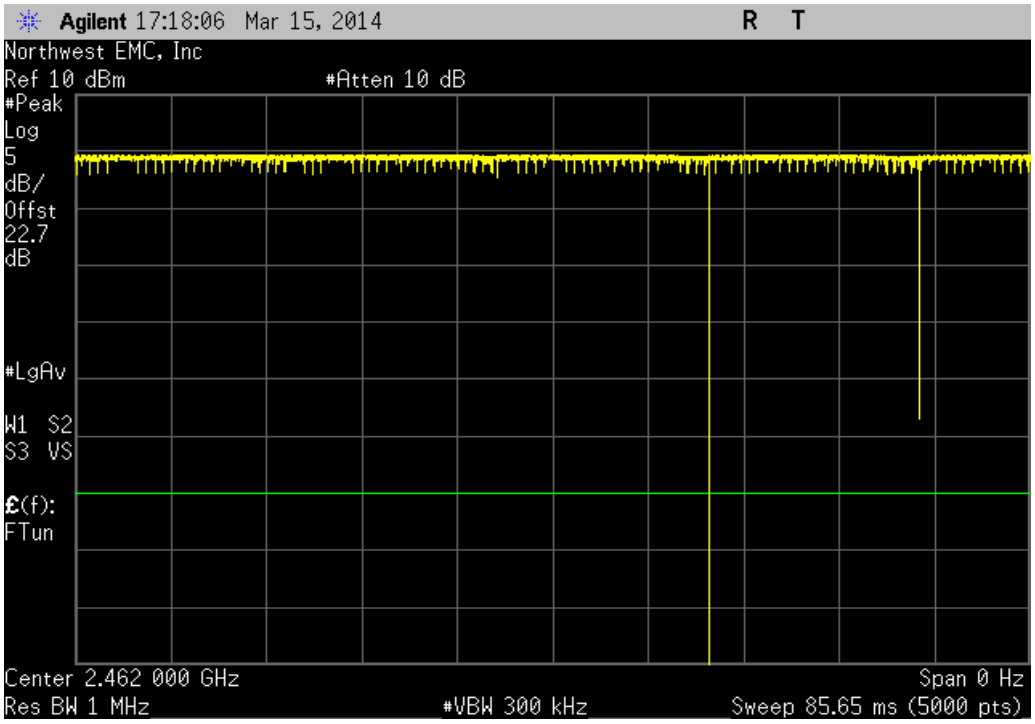
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
18.931 mS	18.953 mS	1	99.9	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz

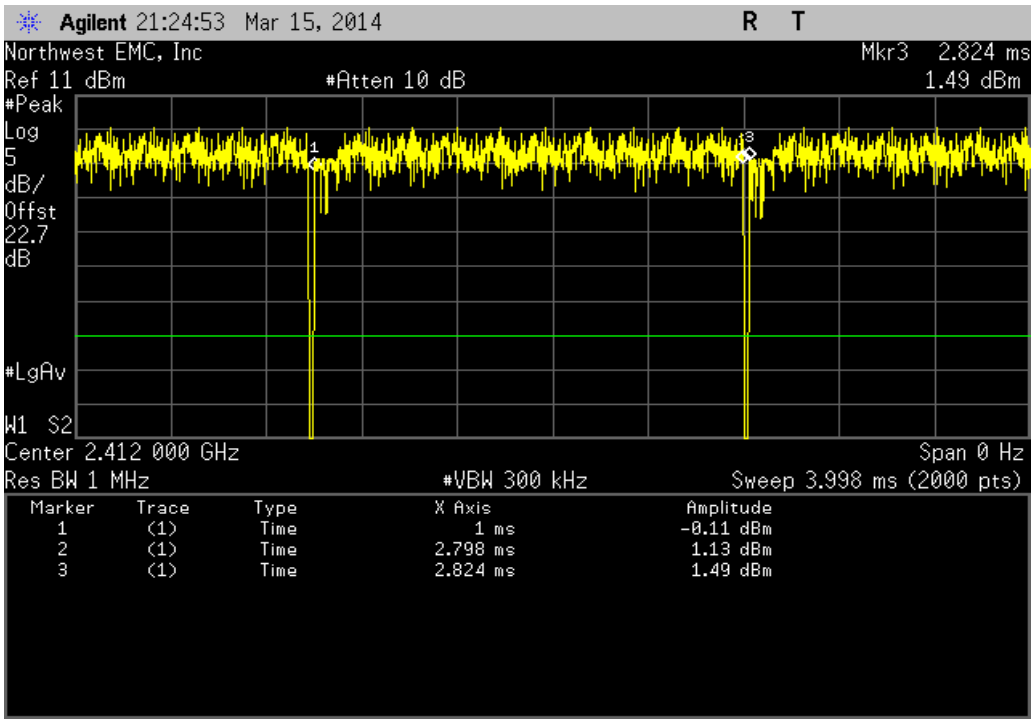
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	2	N/A	N/A	N/A



DUTY CYCLE

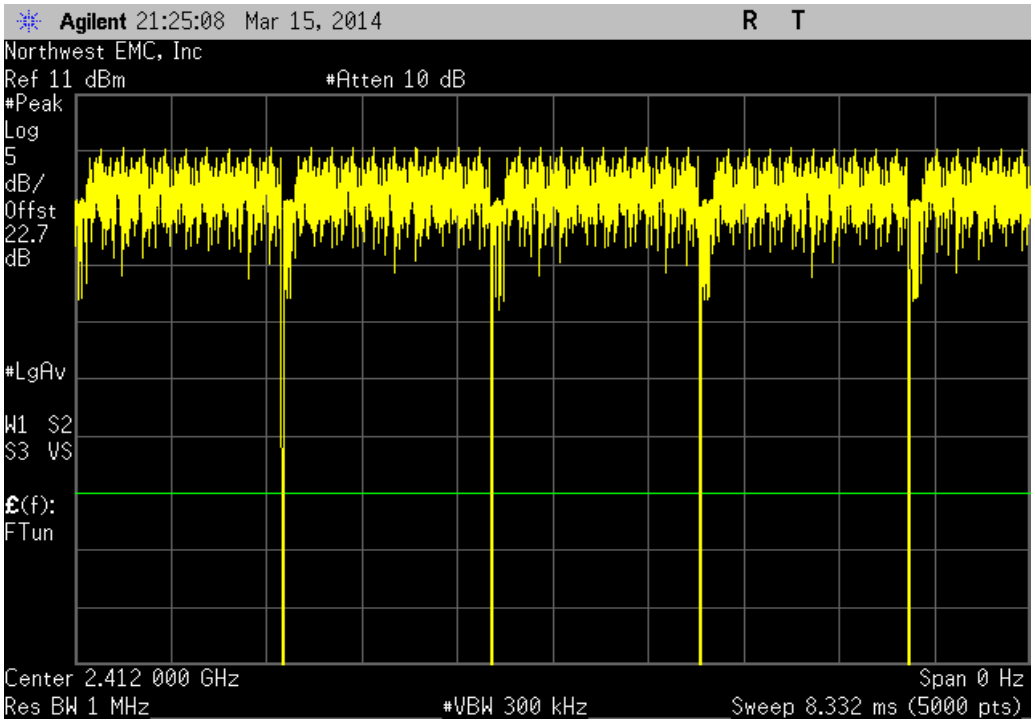
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
1.798 mS	1.824 mS	1	98.6	N/A	N/A



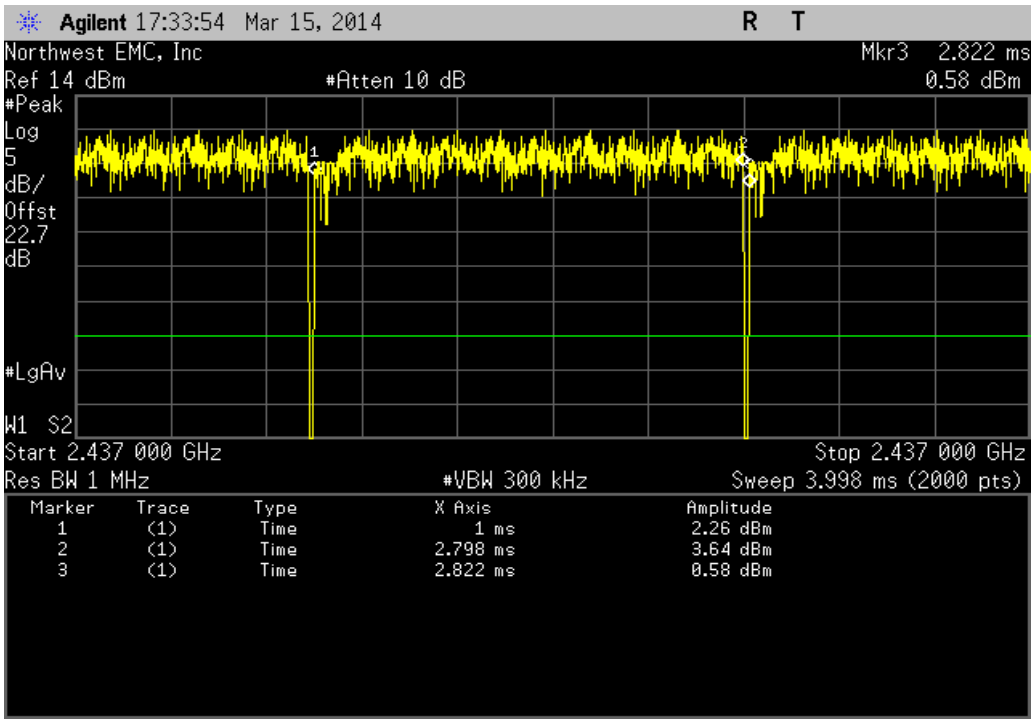
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A

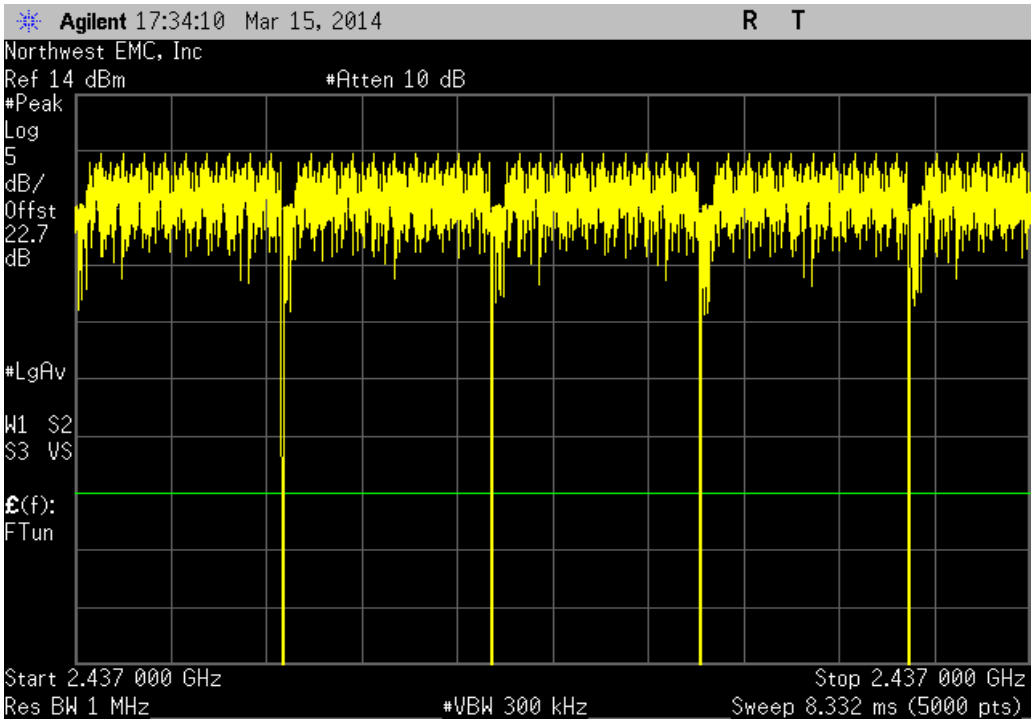


DUTY CYCLE

20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.798 mS	1.822 mS	1	98.7	N/A	N/A



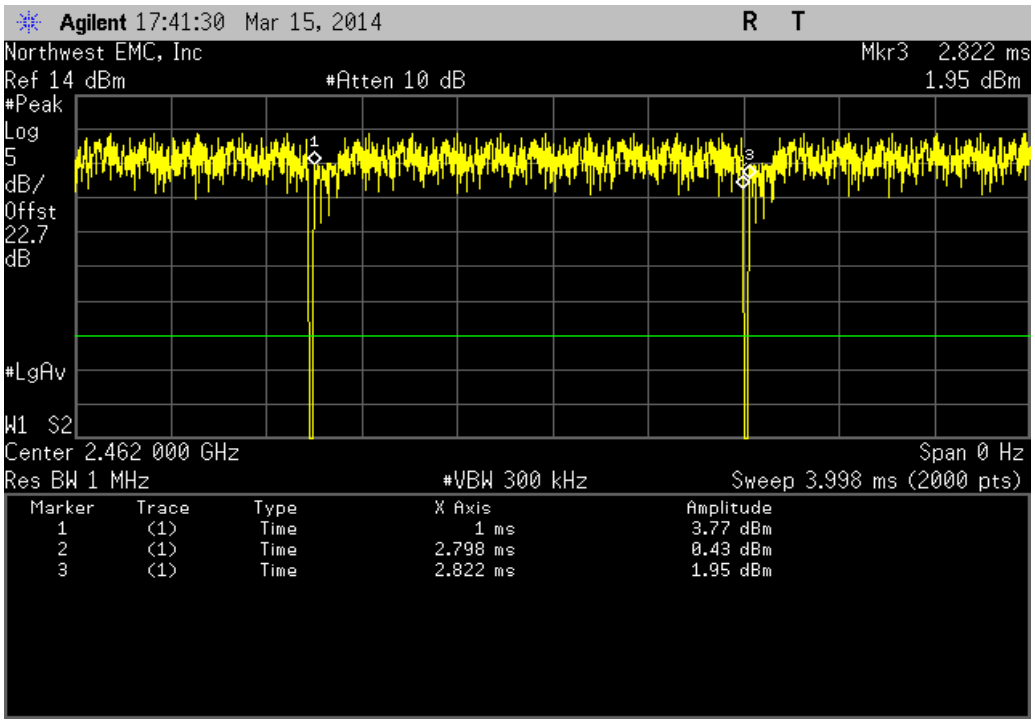
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

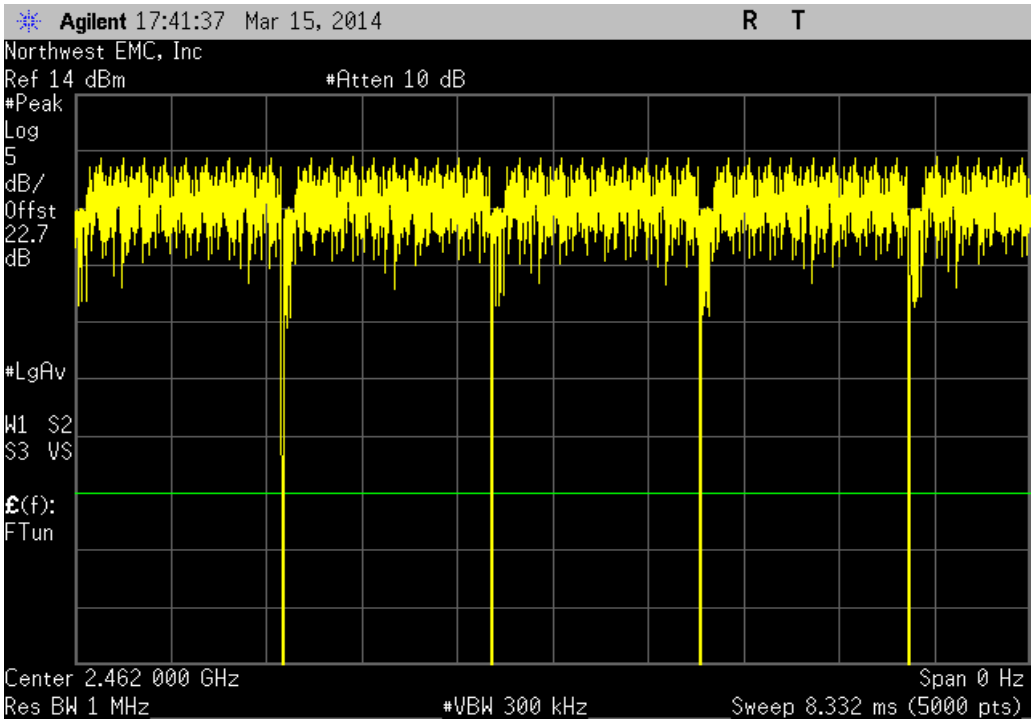
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
1.798 mS	1.822 mS	1	98.7	N/A	N/A



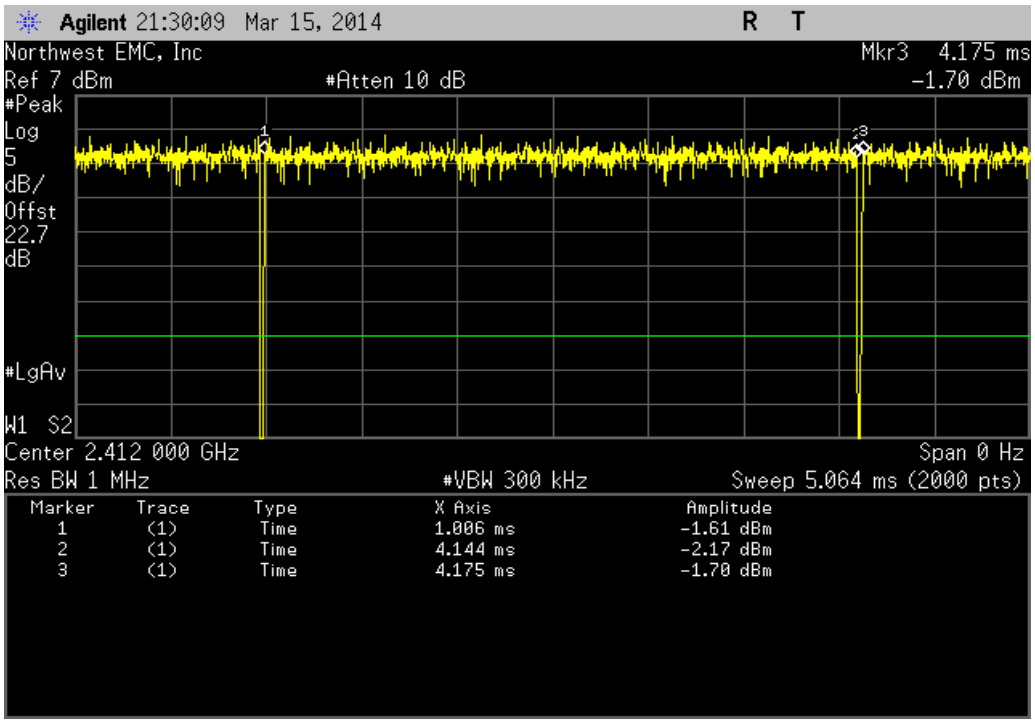
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A

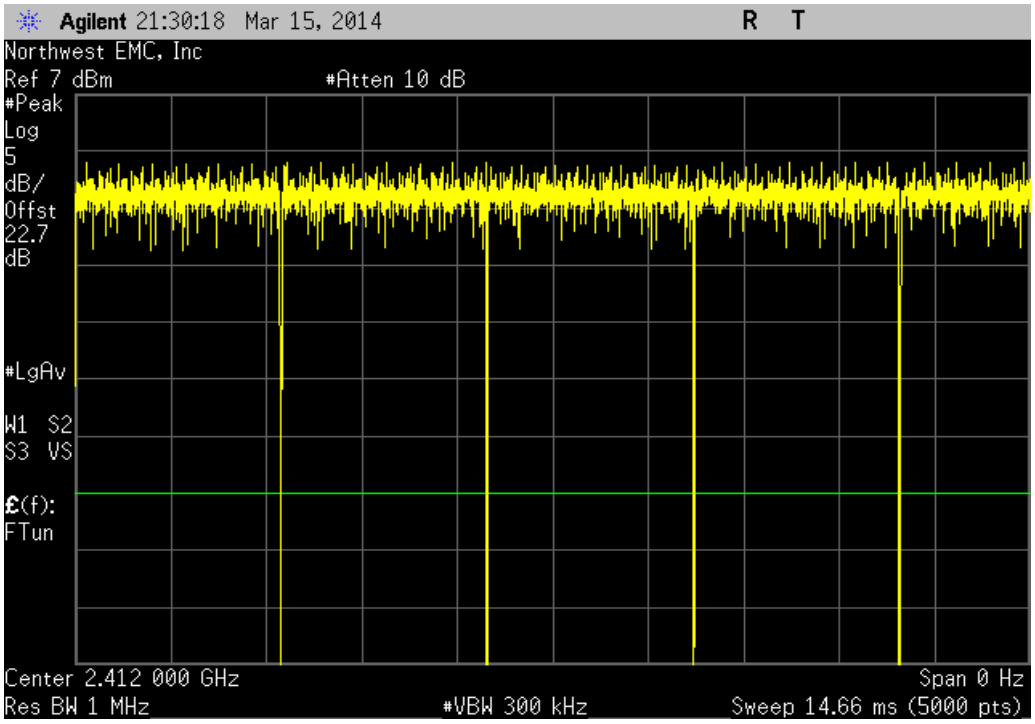


DUTY CYCLE

20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	3.139 mS	3.169 mS	1	99	N/A	N/A



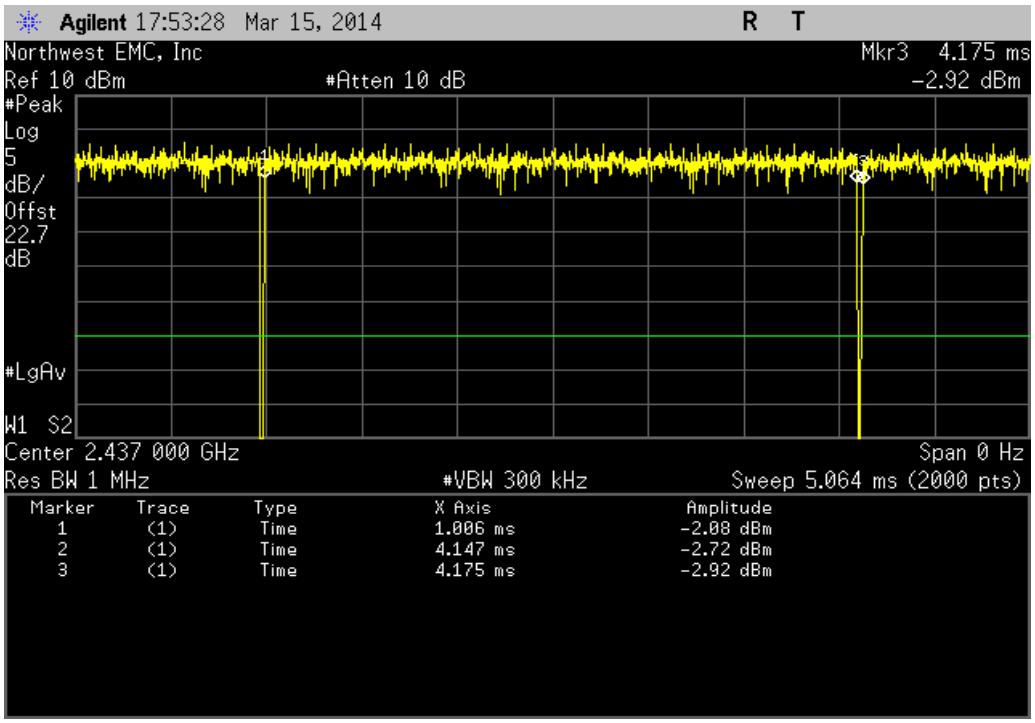
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

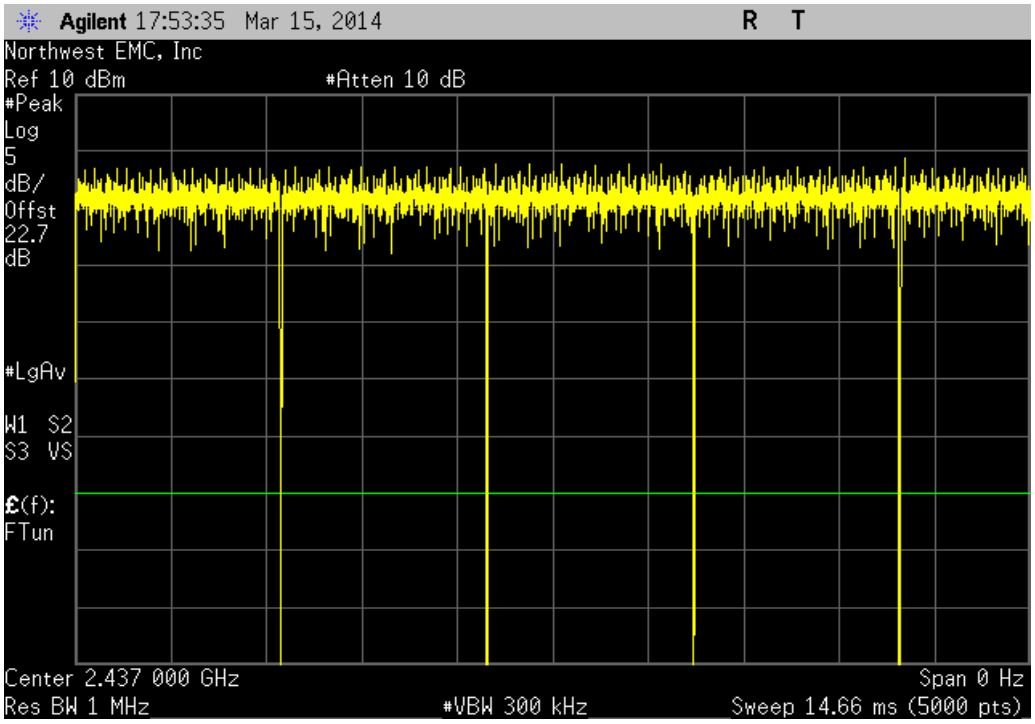
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
3.141 mS	3.169 mS	1	99.1	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz

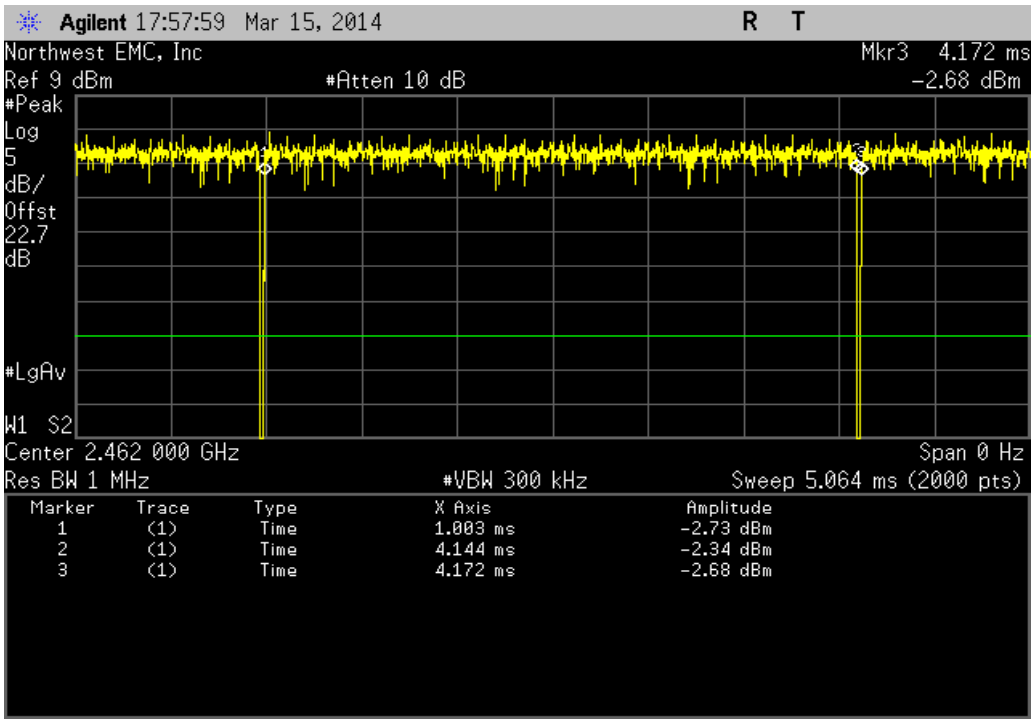
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

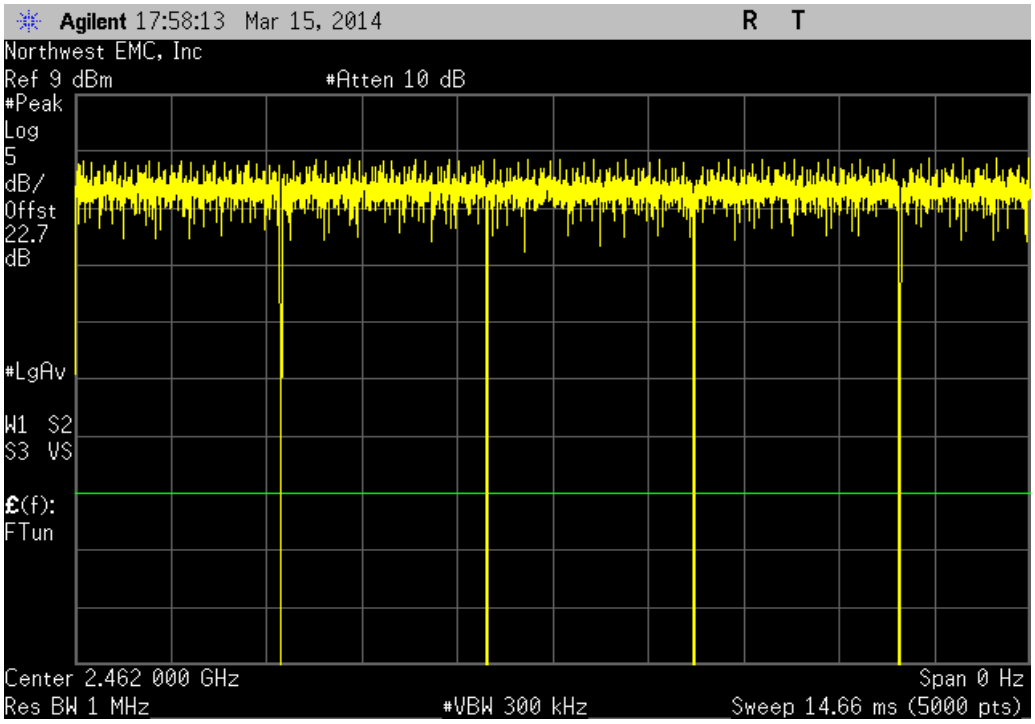
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	3.141 mS	3.169 mS	1	99.1	N/A	N/A



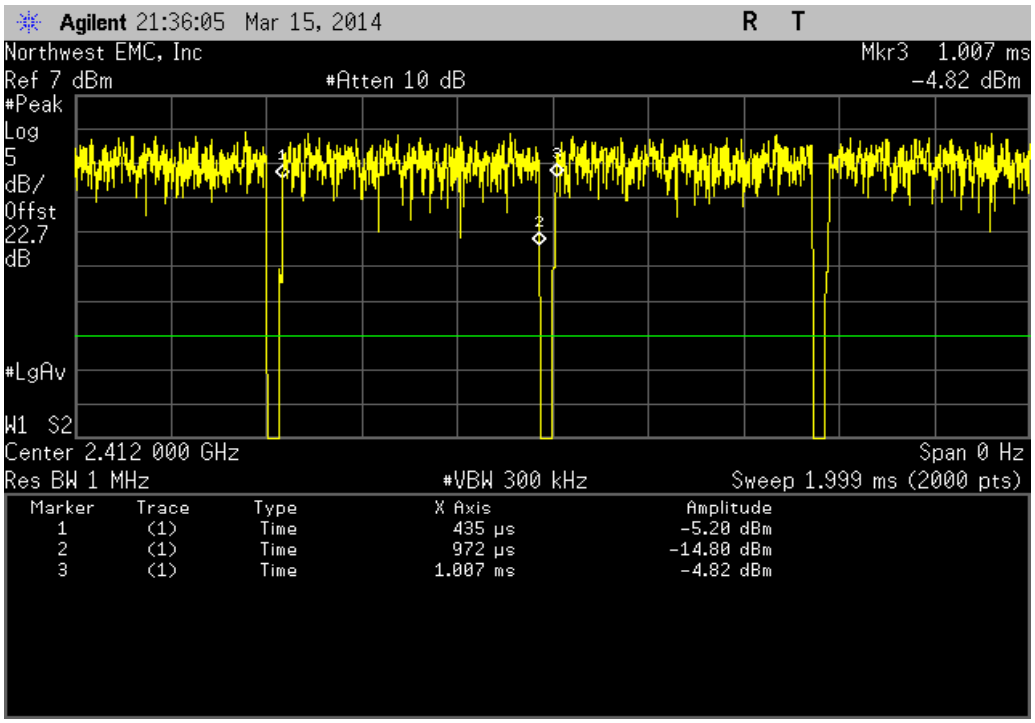
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A

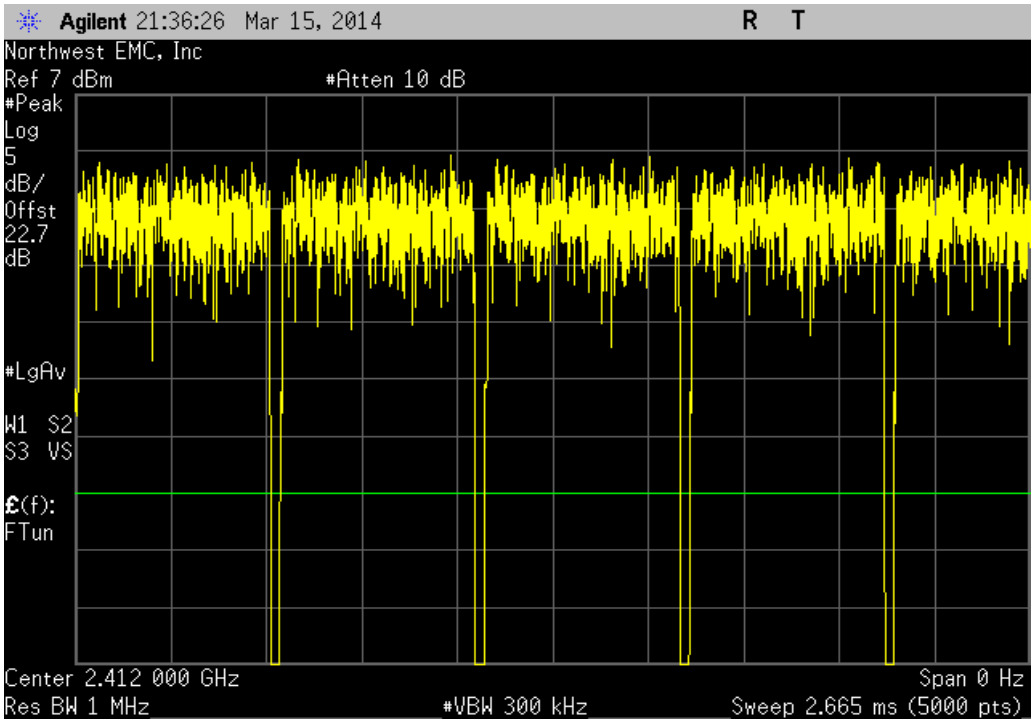


DUTY CYCLE

20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	537 uS	572 uS	1	93.9	N/A	N/A



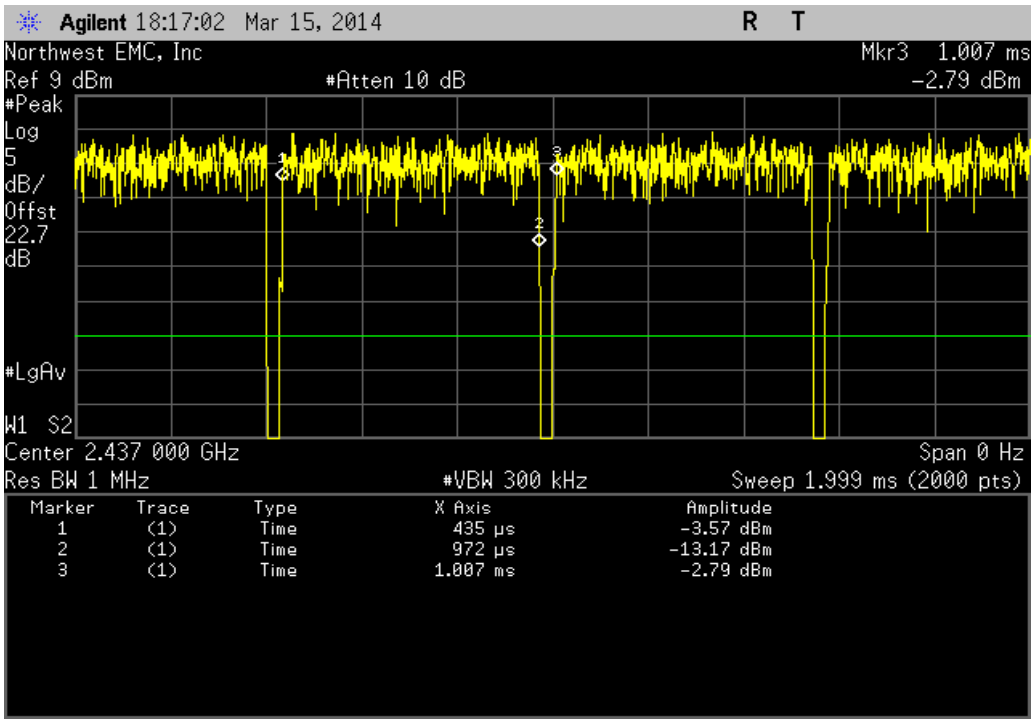
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

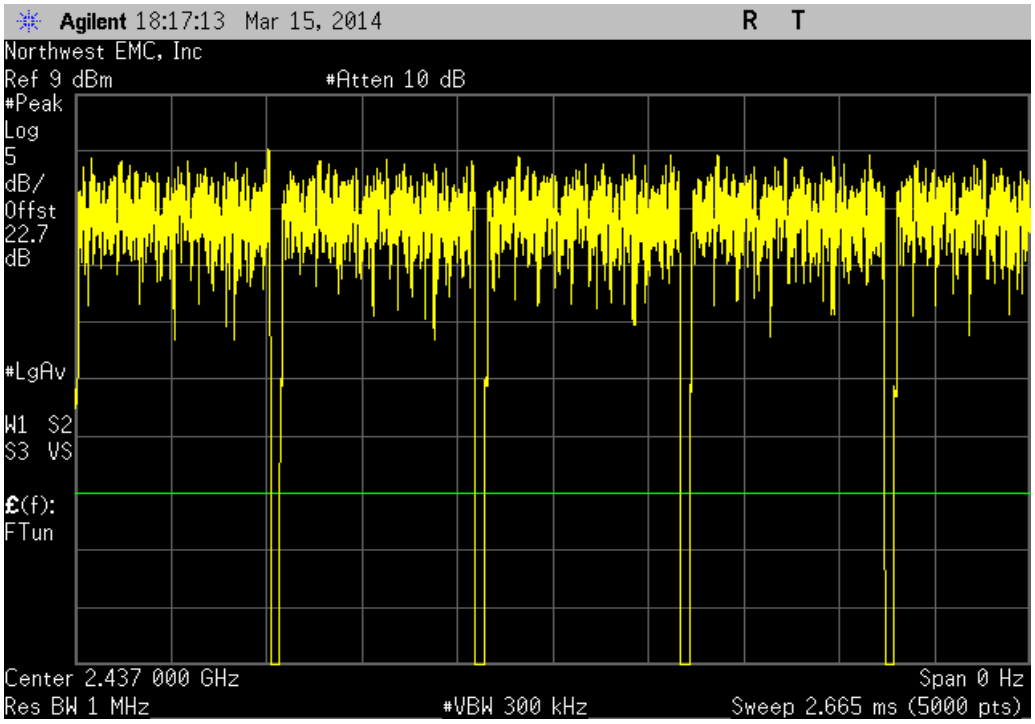
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
537 uS	572 uS	1	93.9	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz

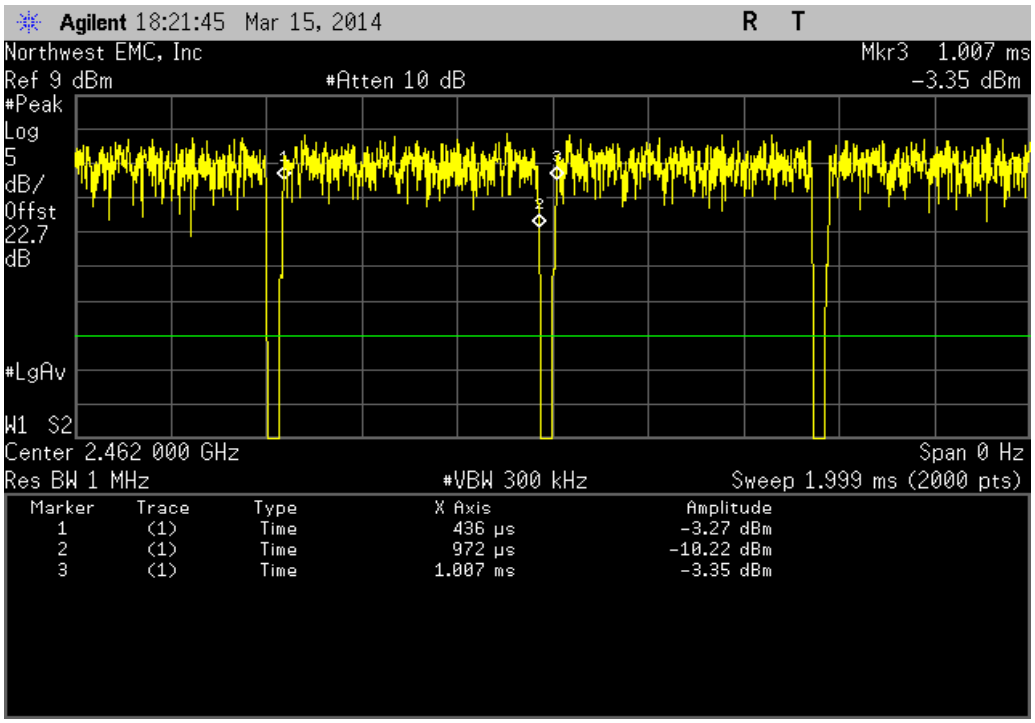
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

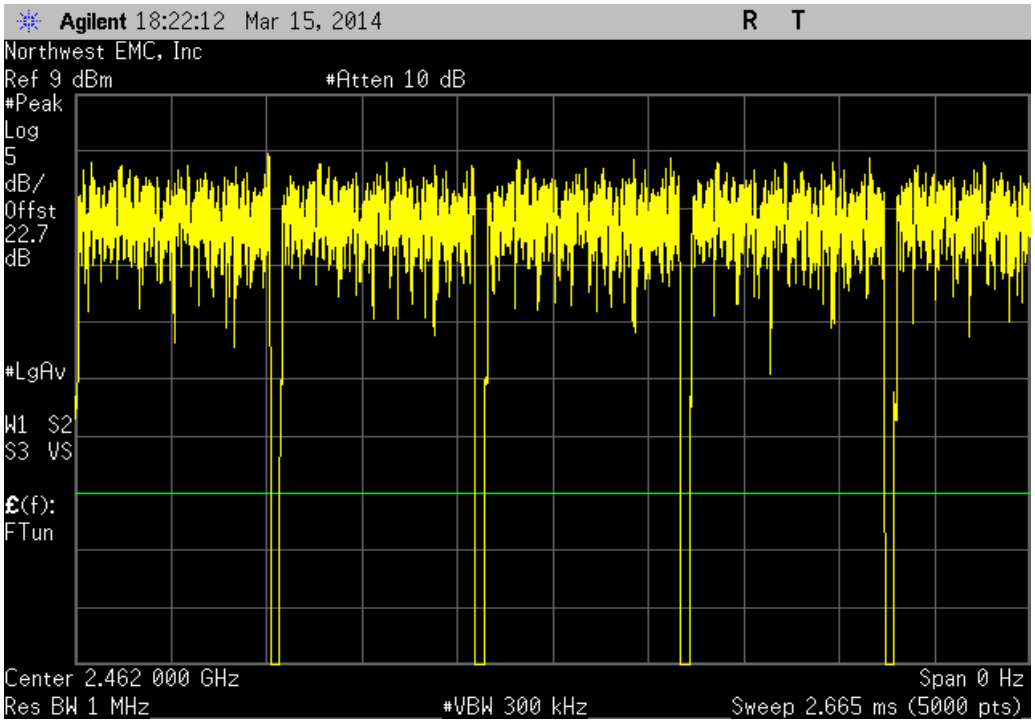
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
536 uS	571 uS	1	93.9	N/A	N/A



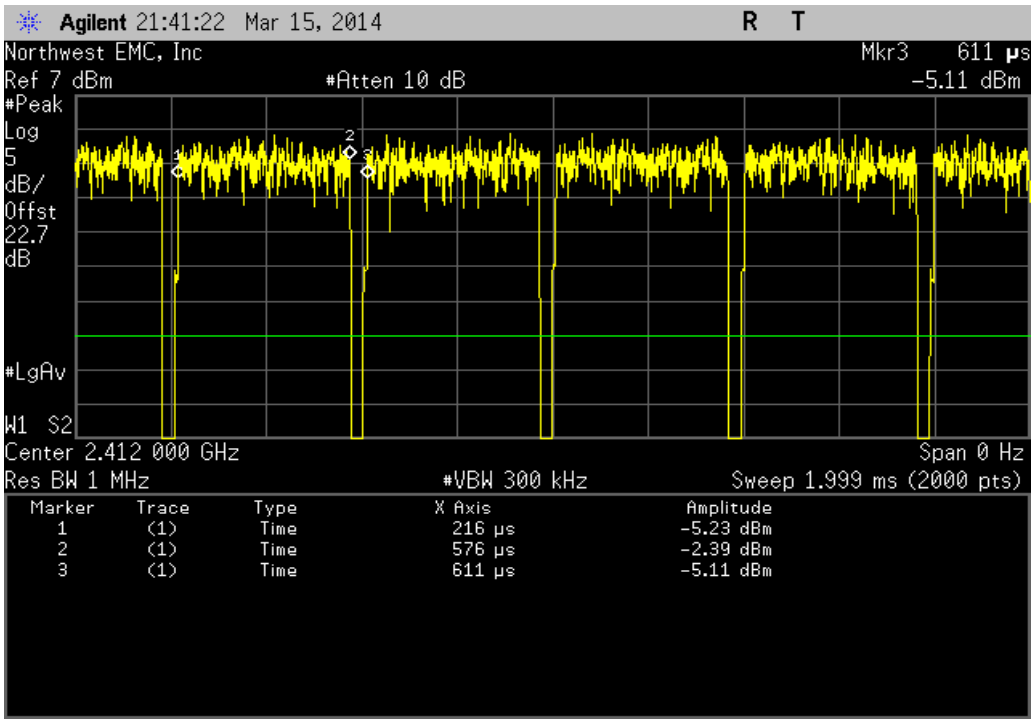
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A

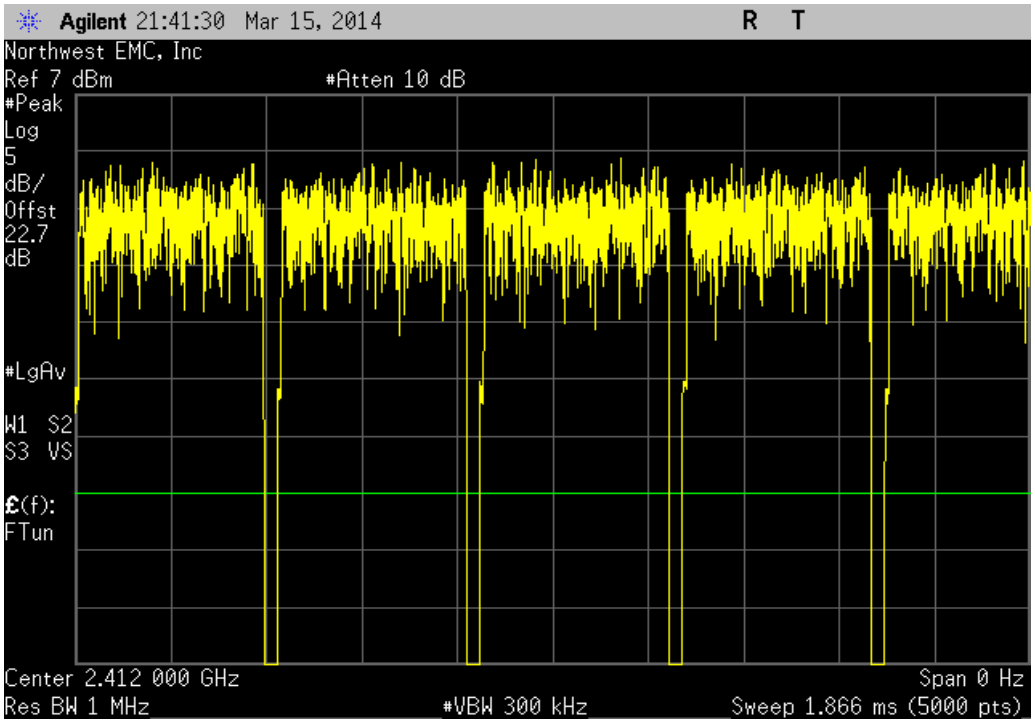


DUTY CYCLE

20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	360 uS	395 uS	1	91.1	N/A	N/A



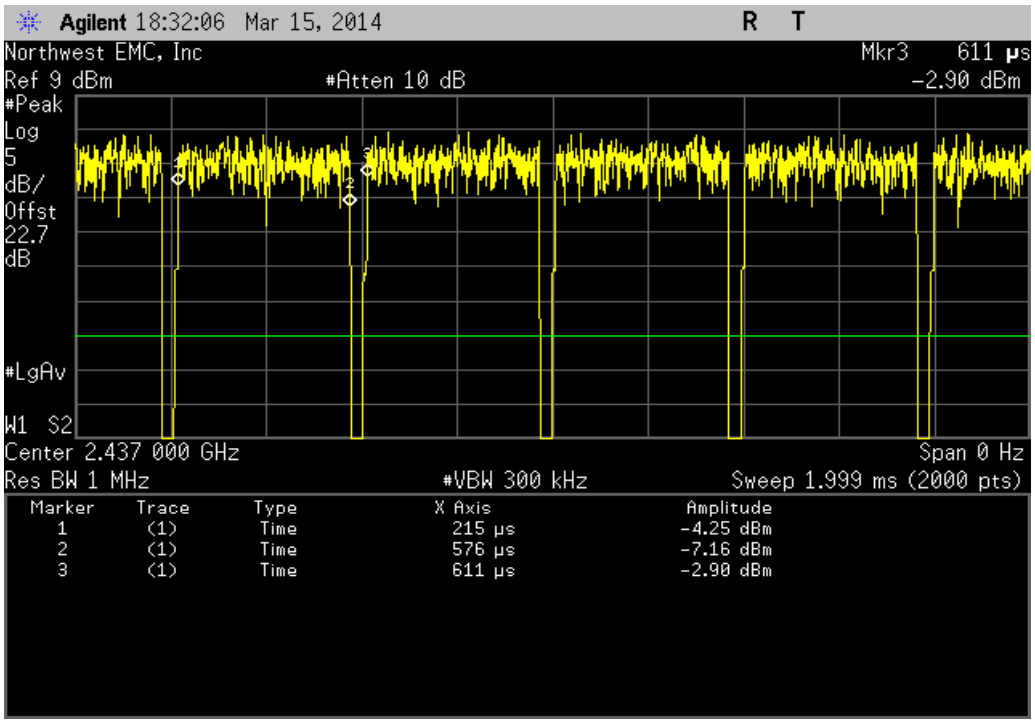
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

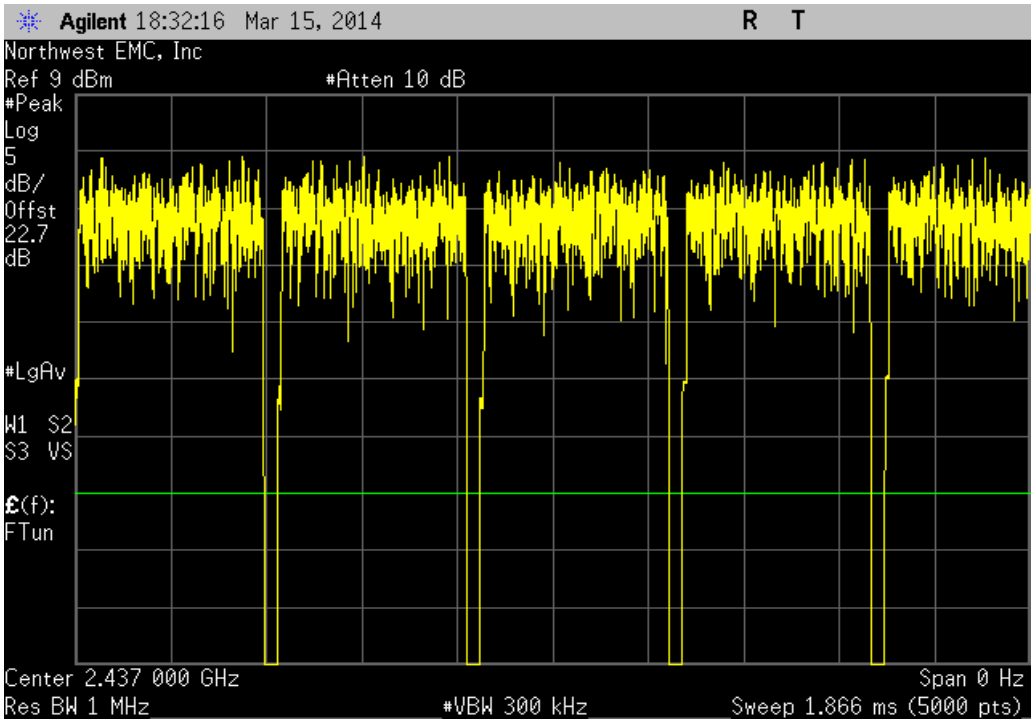
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
361 uS	396 uS	1	91.2	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz

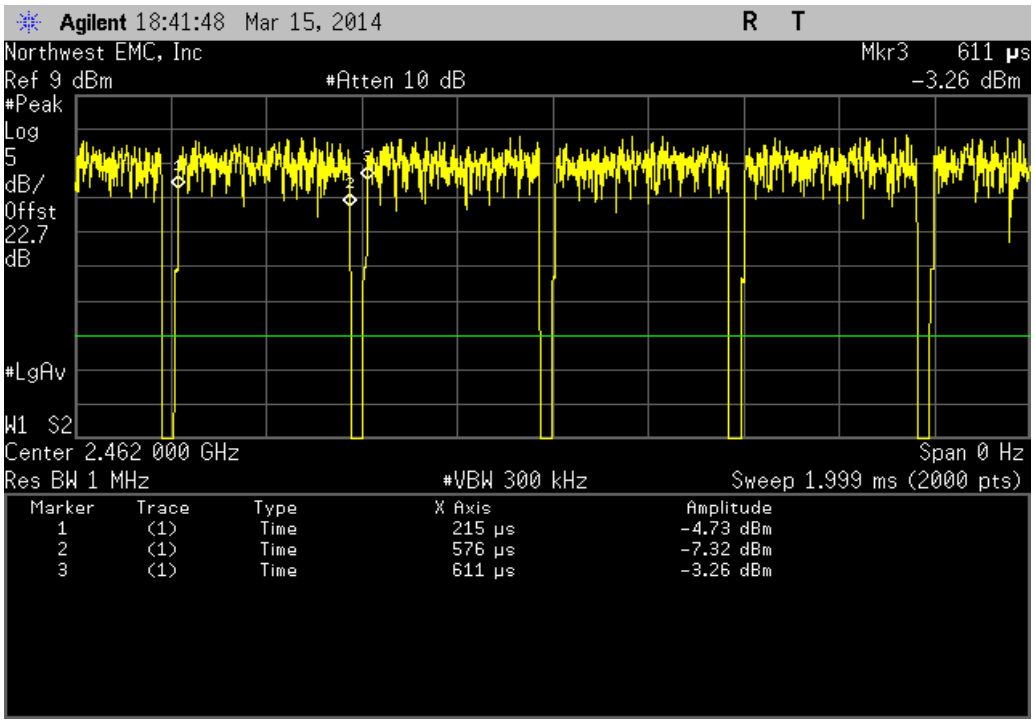
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

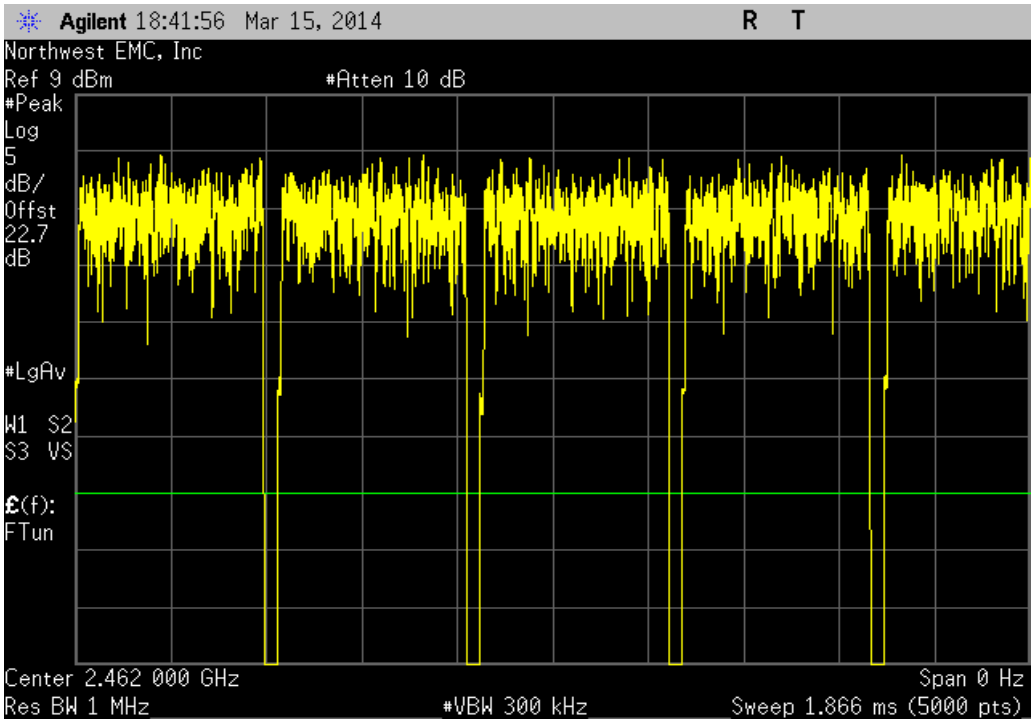
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
361 uS	396 uS	1	91.2	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz

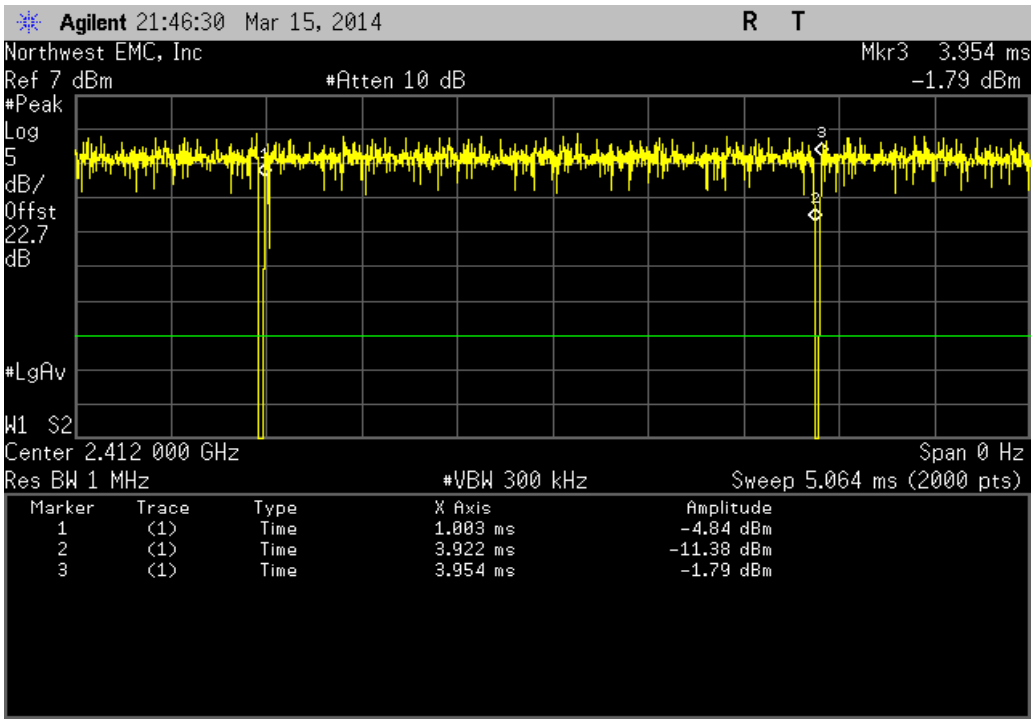
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

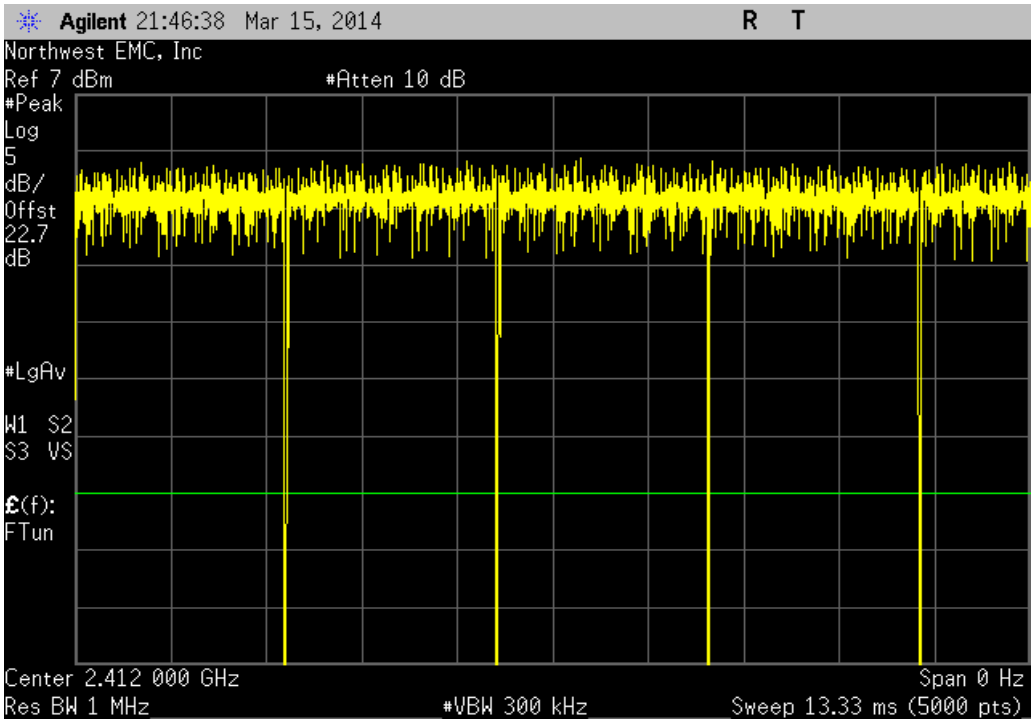
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Low Channel 1, 2412 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
2.918 mS	2.951 mS	1	98.9	N/A	N/A



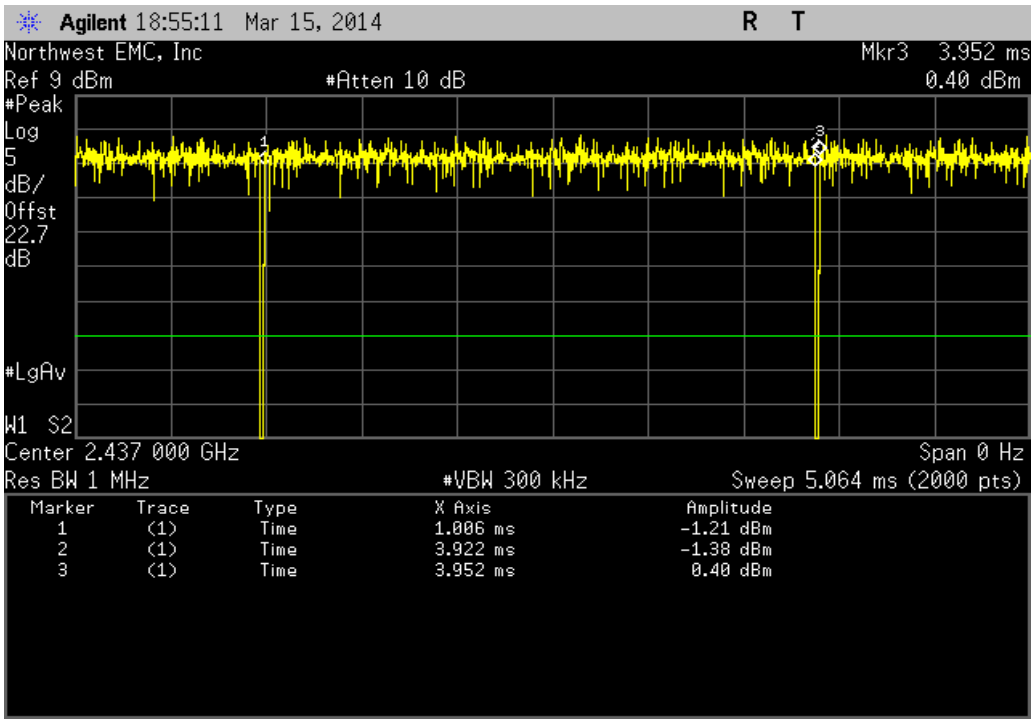
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Low Channel 1, 2412 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A

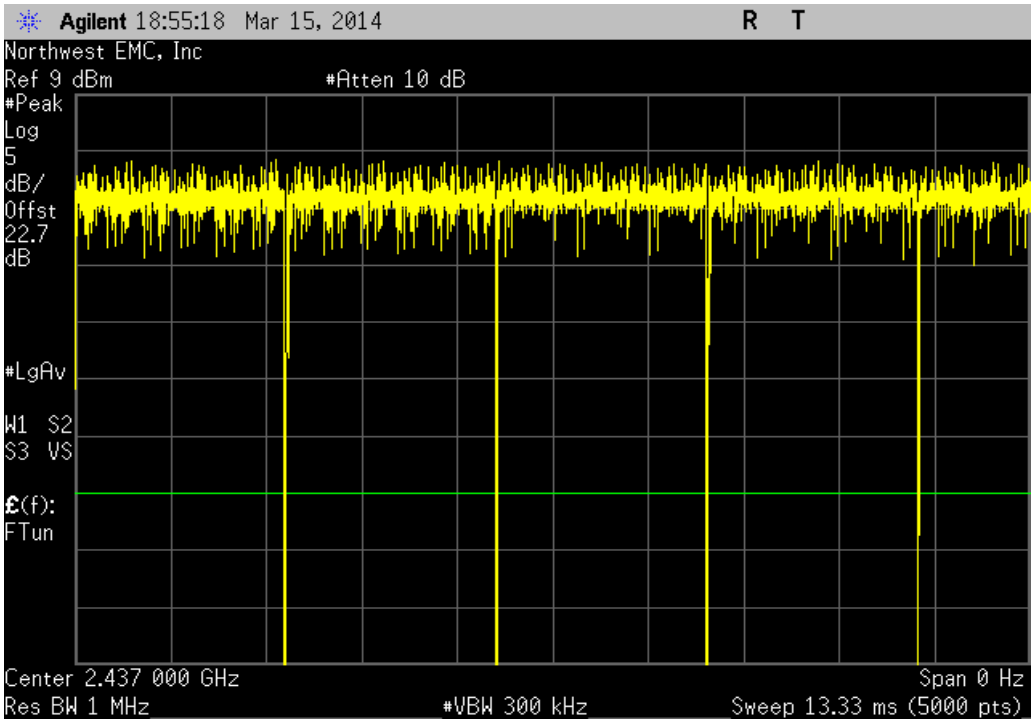


DUTY CYCLE

20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	2.916 mS	2.946 mS	1	99	N/A	N/A



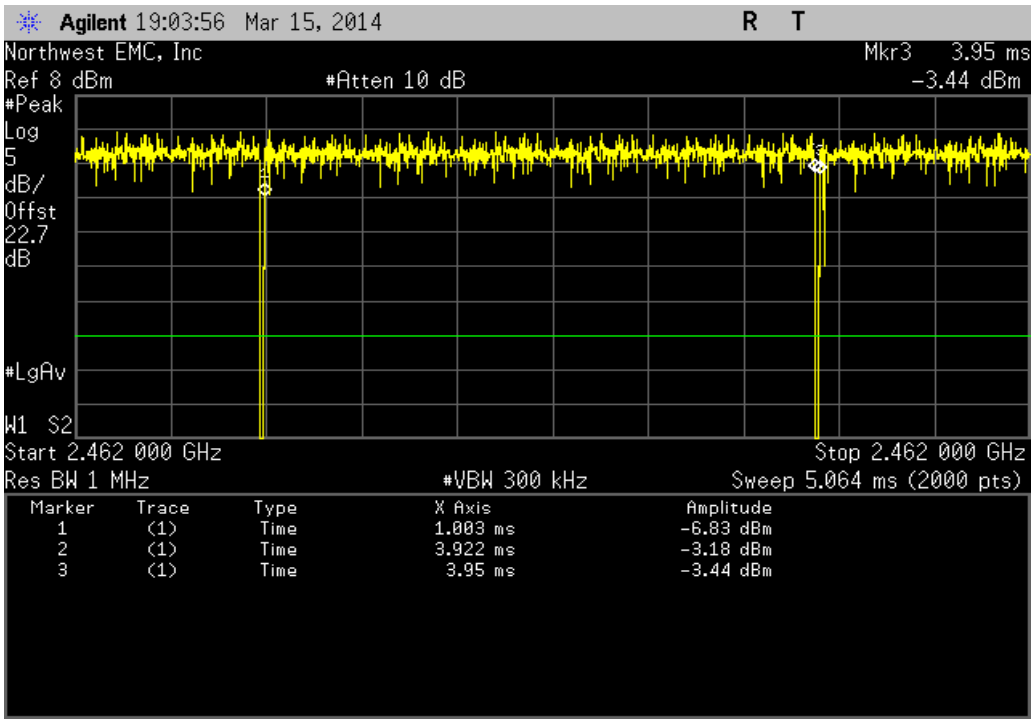
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

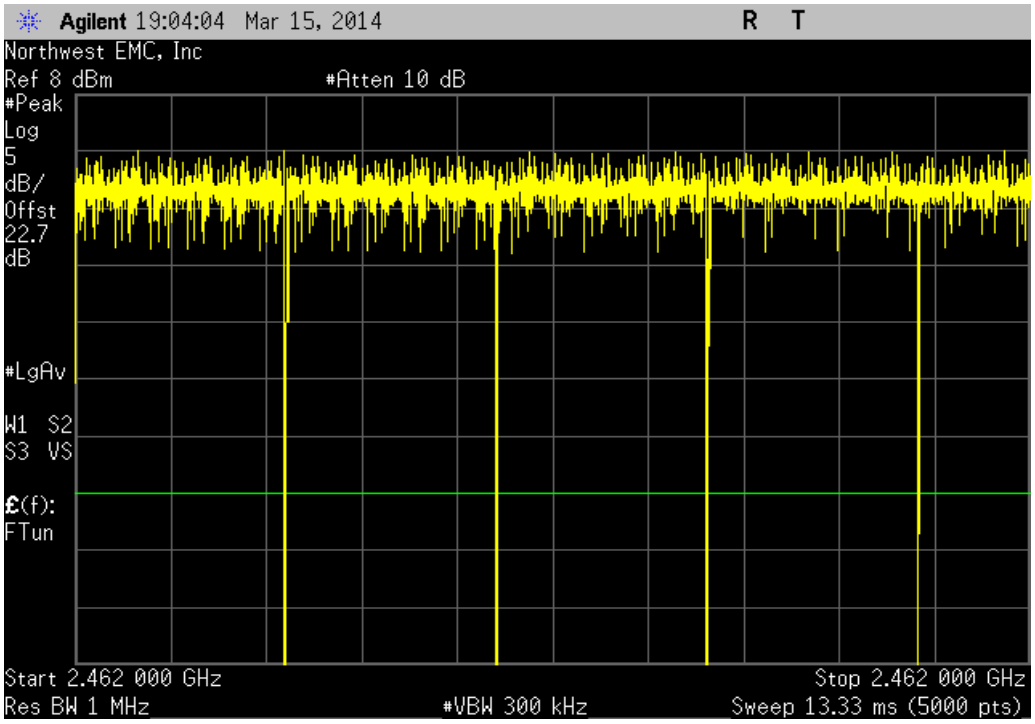
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, High Channel 11, 2462 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	2.918 mS	2.946 mS	1	99.1	N/A	N/A



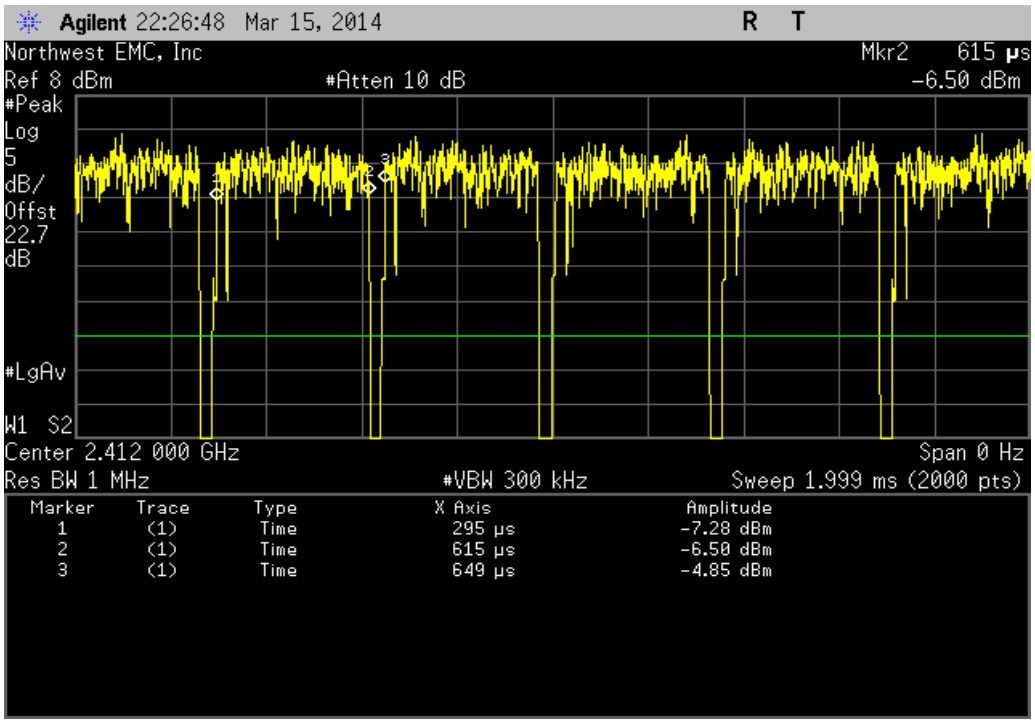
20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, High Channel 11, 2462 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A

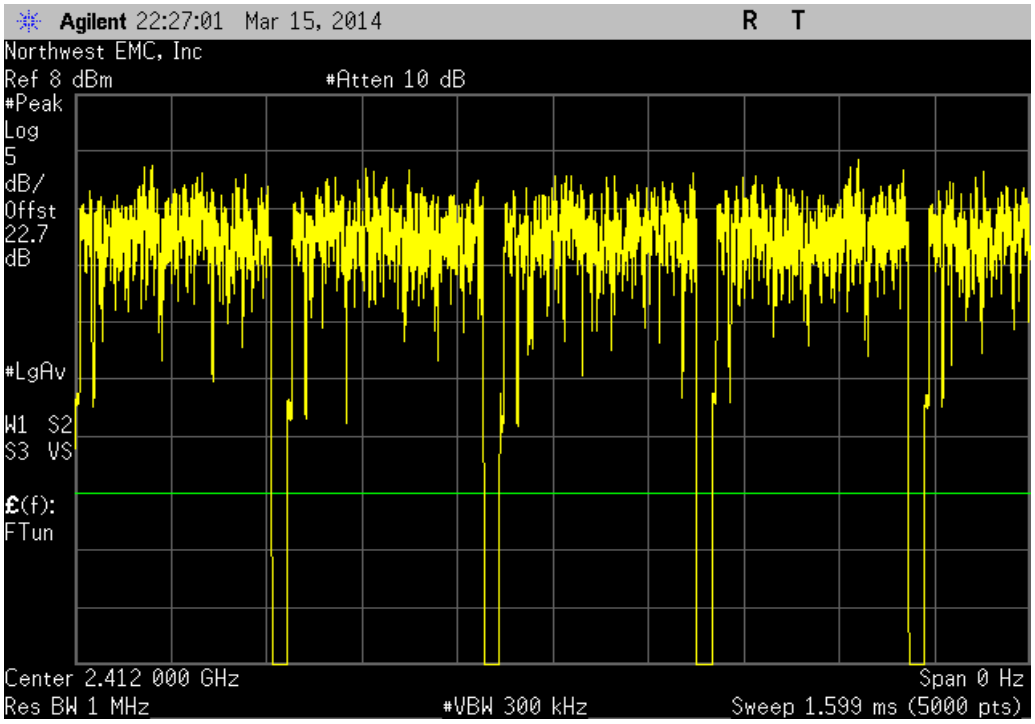


DUTY CYCLE

20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	320 uS	354 uS	1	90.4	N/A	N/A

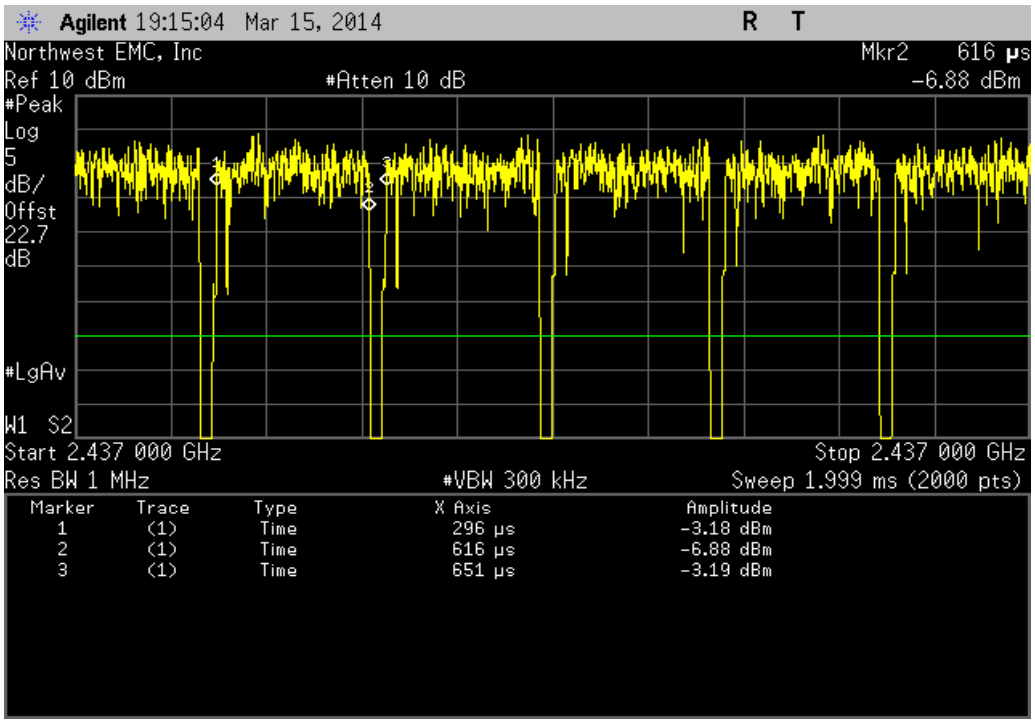


20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A

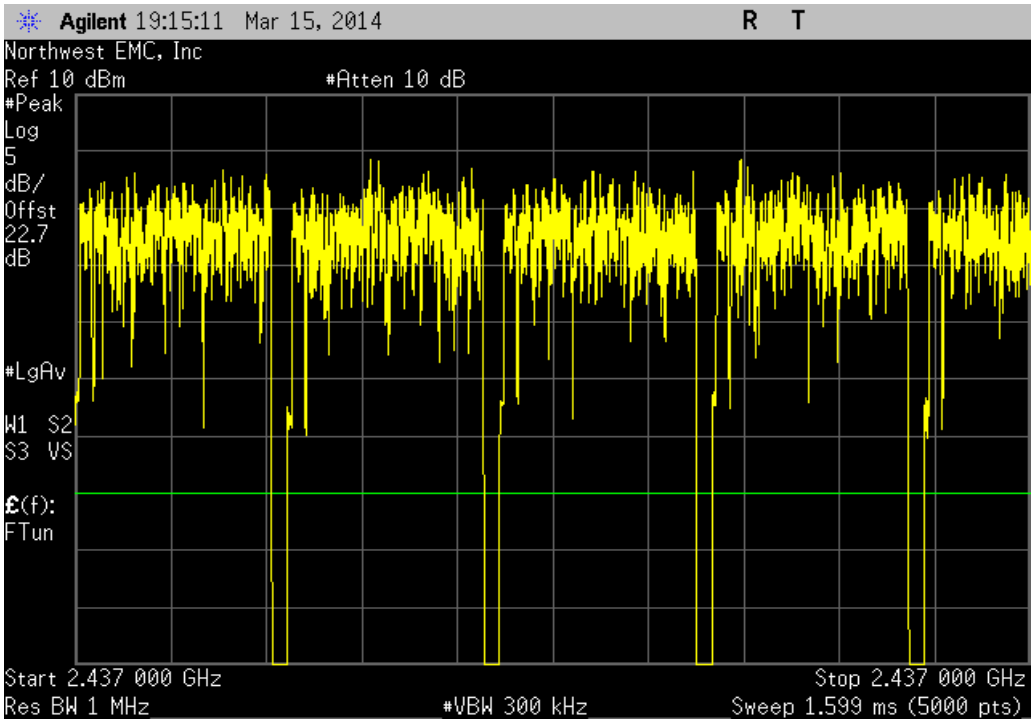


DUTY CYCLE

20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	320 uS	355 uS	1	90.1	N/A	N/A

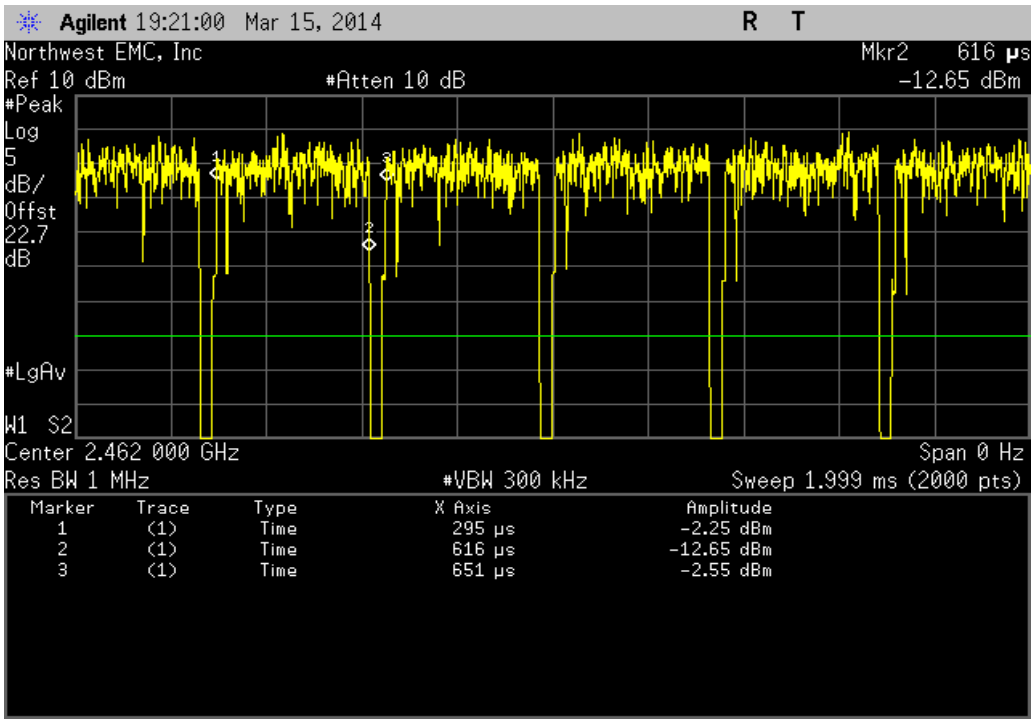


20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Mid Channel 6, 2437 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A

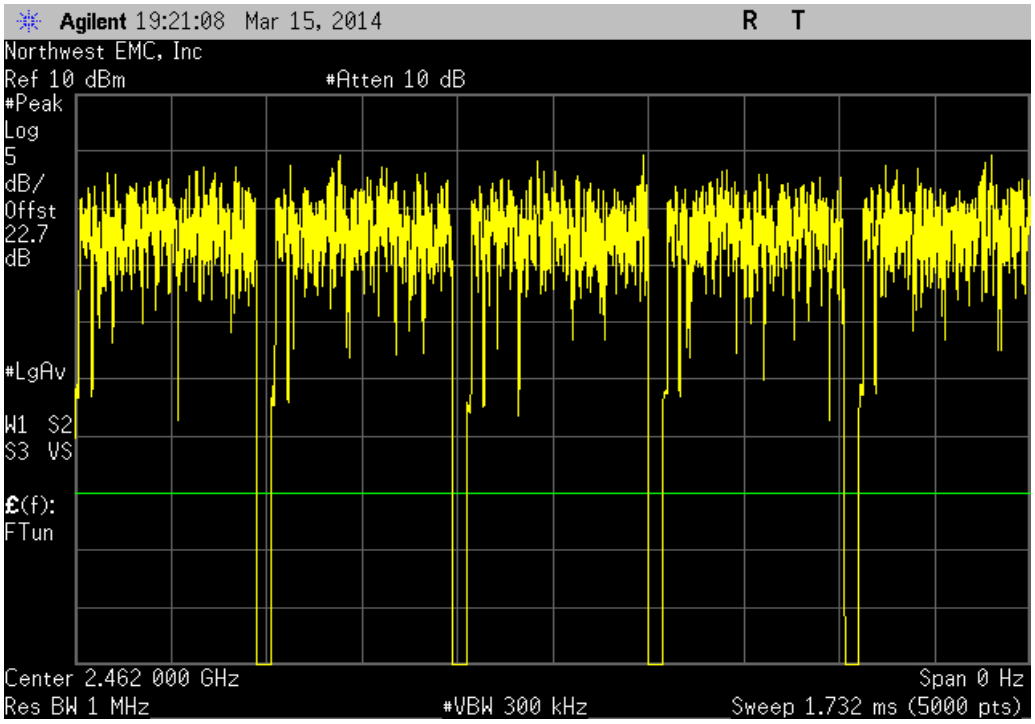


DUTY CYCLE

20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	321 uS	356 uS	1	90.2	N/A	N/A



20 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

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 (mo.)
40GHz DC Block	Miteq	DCB4000	AMD	5/16/2013	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/30/2013	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Power Meter	Agilent	N1913A	SQR	4/29/2013	36
Power Sensor	Agilent	E9300H	SQO	4/29/2013	36
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	2/3/2014	12
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36
Spectrum Analyzer	Agilent	E4446A	AAQ	1/21/2014	24

TEST DESCRIPTION

The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was 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.

If the transmit duty cycle < 98 percent, burst gating was used during some of the other tests in this report to only measure during the burst duration.

TRANSMISSION BURST DURATION

EUT:	Model 1631			**Work Order:**	MCSO1698
Serial Number:	006840341053			**Date:**	04/16/14
Customer:	Microsoft Corporation			**Temperature:**	22.3°C
Attendees:	None			**Humidity:**	32%
Project:	None			**Barometric Pres.:**	1014
Tested by:	Jared Ison	**Power:**	110VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2014	ANSI C63.10:2009

COMMENTS

Modes of operation tested were client provided. Reference power level table for channel power setting.

DEVIATIONS FROM TEST STANDARD

None

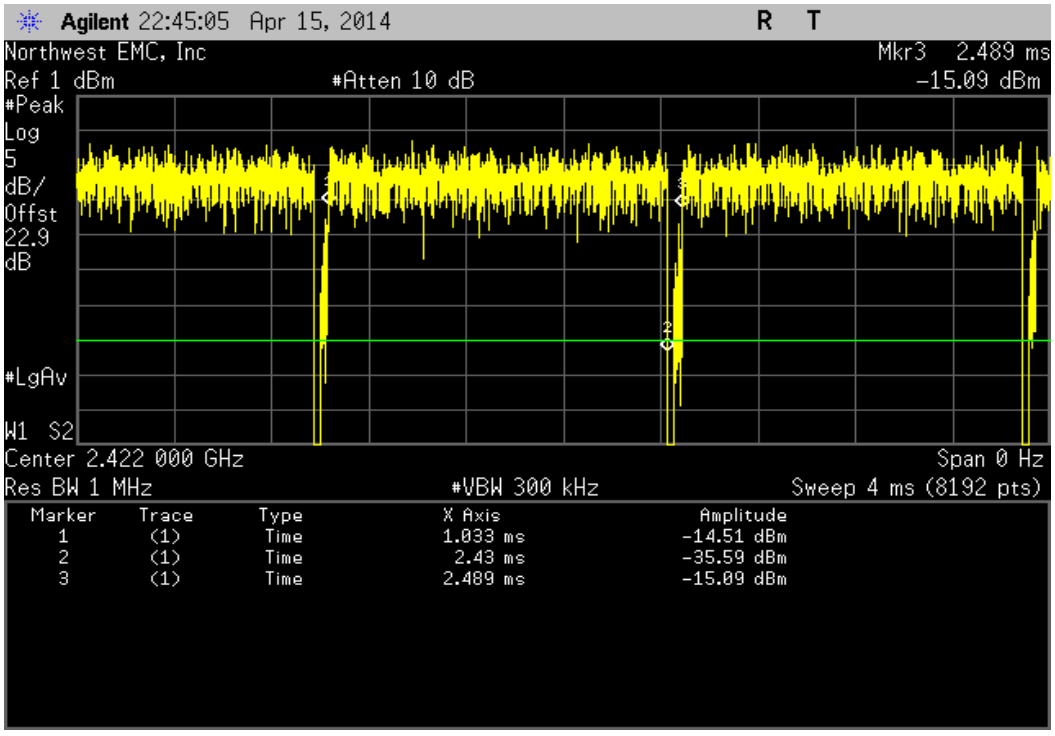
Configuration #	6	Signature

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
40 MHz						
2400 MHz - 2483.5 MHz Band						
802.11(n) MCS0						
1/5 Low Channel, 2422 MHz	1.397 mS	1.456 mS	1	96	N/A	N/A
1/5 Low Channel, 2422 MHz	N/A	N/A	6	N/A	N/A	N/A
4/8 Mid Channel, 2437 MHz	1.398 mS	1.451 mS	1	96.4	N/A	N/A
4/8 Mid Channel, 2437 MHz	N/A	N/A	5	N/A	N/A	N/A
7/11 High Channel, 2452 MHz	1.397 mS	1.456 mS	1	96	N/A	N/A
7/11 High Channel, 2452 MHz	N/A	N/A	6	N/A	N/A	N/A
802.11(n) MCS7						
1/5 Low Channel, 2422 MHz	144.3 uS	203.4 uS	1	70.9	N/A	N/A
1/5 Low Channel, 2422 MHz	N/A	N/A	6	N/A	N/A	N/A
4/8 Mid Channel, 2437 MHz	144.3 uS	203.6 uS	1	70.9	N/A	N/A
4/8 Mid Channel, 2437 MHz	N/A	N/A	6	N/A	N/A	N/A
7/11 High Channel, 2452 MHz	144.5 uS	203.9 uS	1	70.9	N/A	N/A
7/11 High Channel, 2452 MHz	N/A	N/A	6	N/A	N/A	N/A

TRANSMISSION BURST DURATION

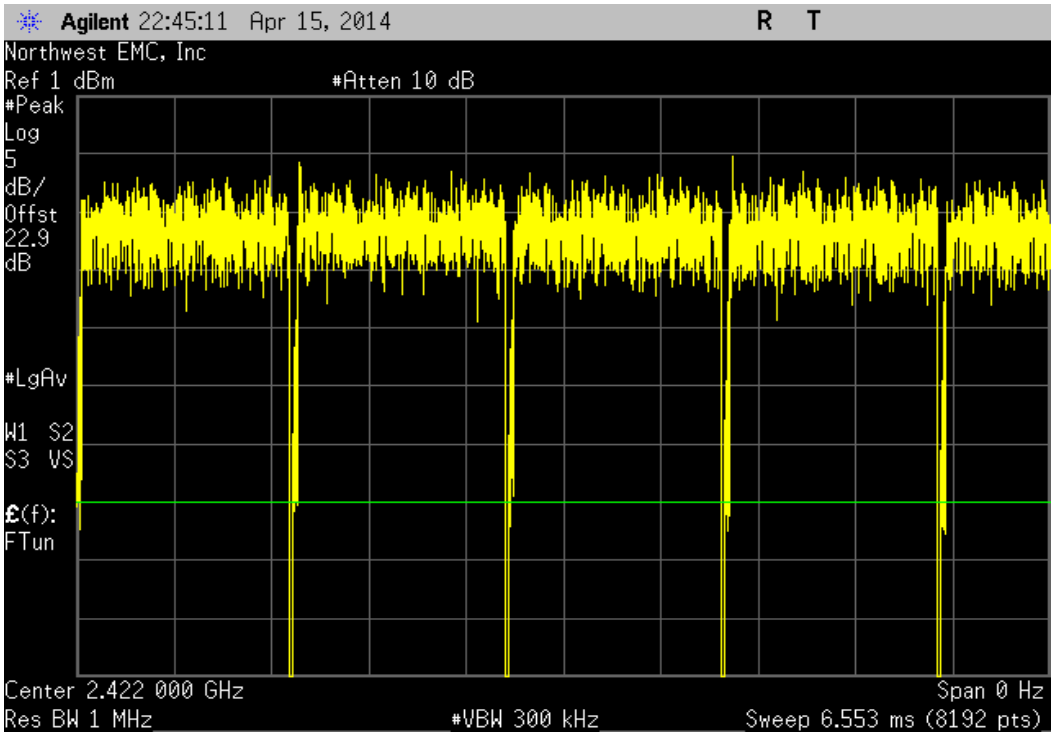
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, 1/5 Low Channel, 2422 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.397 mS	1.456 mS	1	96	N/A	N/A



40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, 1/5 Low Channel, 2422 MHz

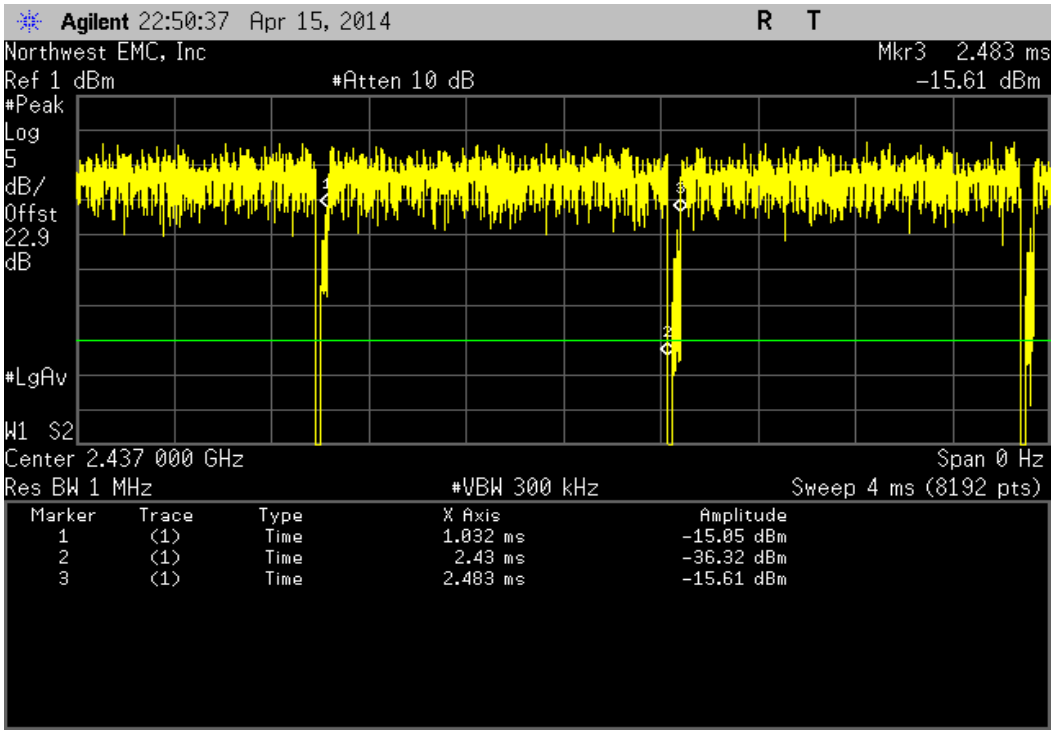
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	6	N/A	N/A	N/A



TRANSMISSION BURST DURATION

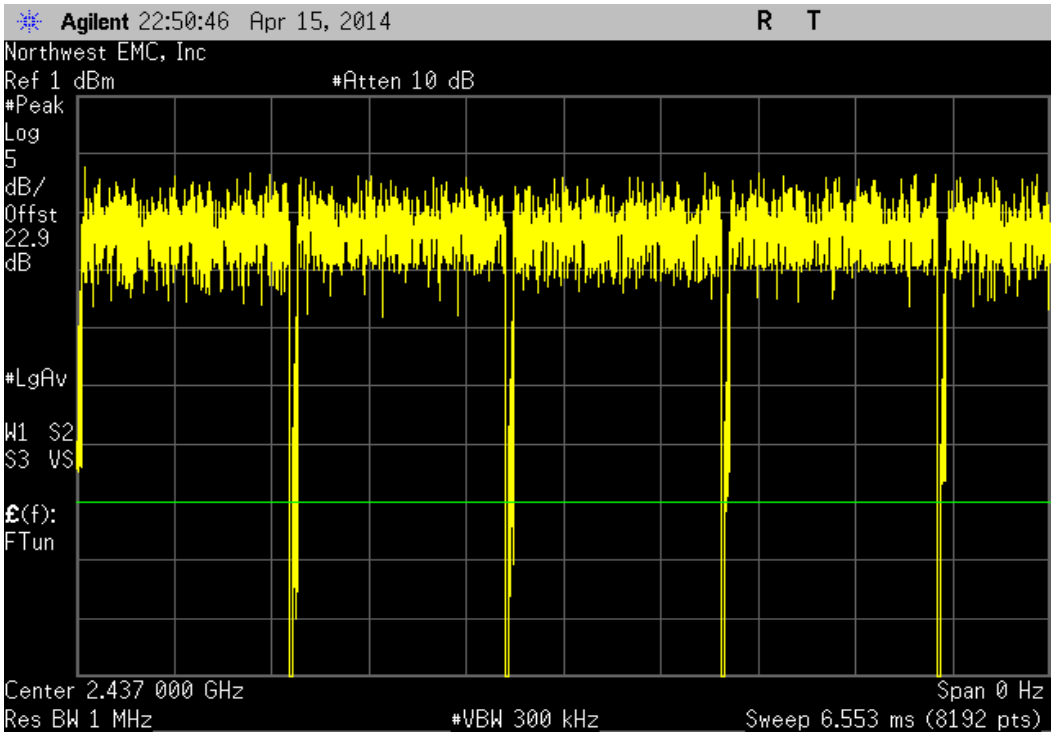
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, 4/8 Mid Channel, 2437 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.398 mS	1.451 mS	1	96.4	N/A	N/A



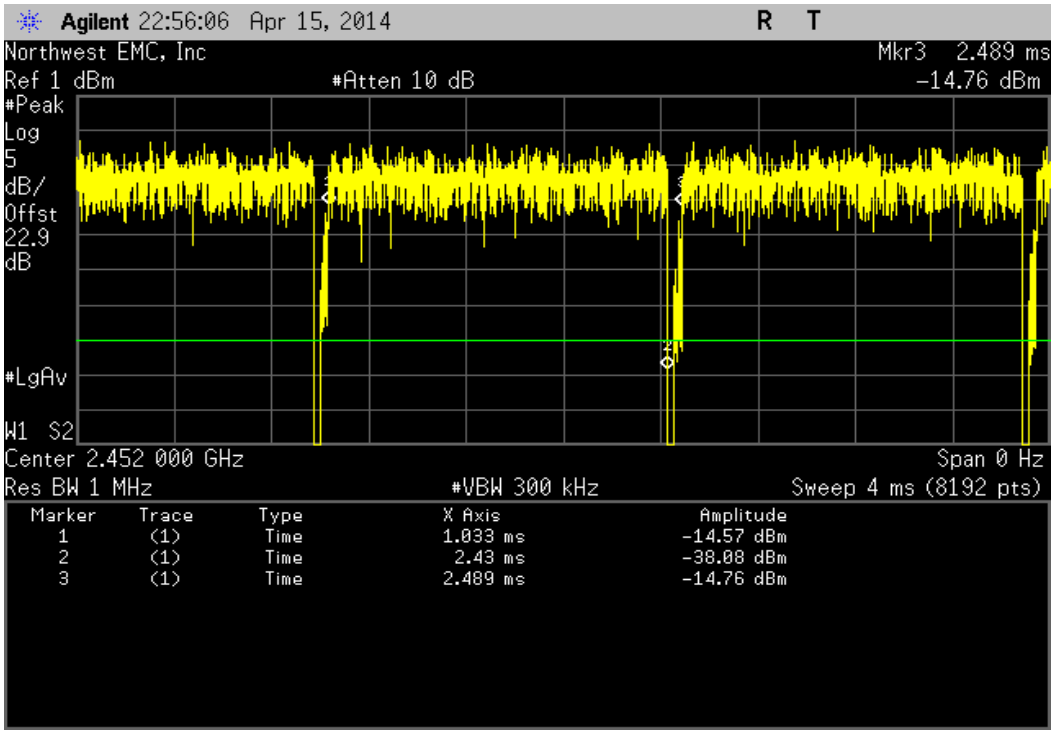
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, 4/8 Mid Channel, 2437 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



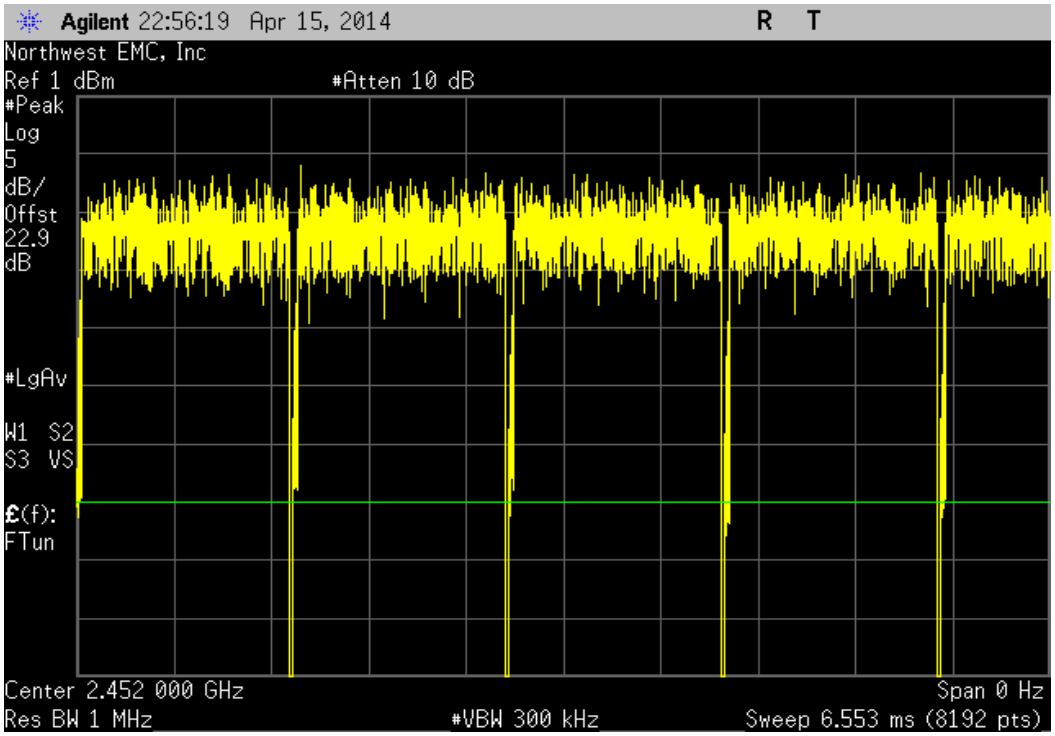
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, 7/11 High Channel, 2452 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.397 mS	1.456 mS	1	96	N/A	N/A



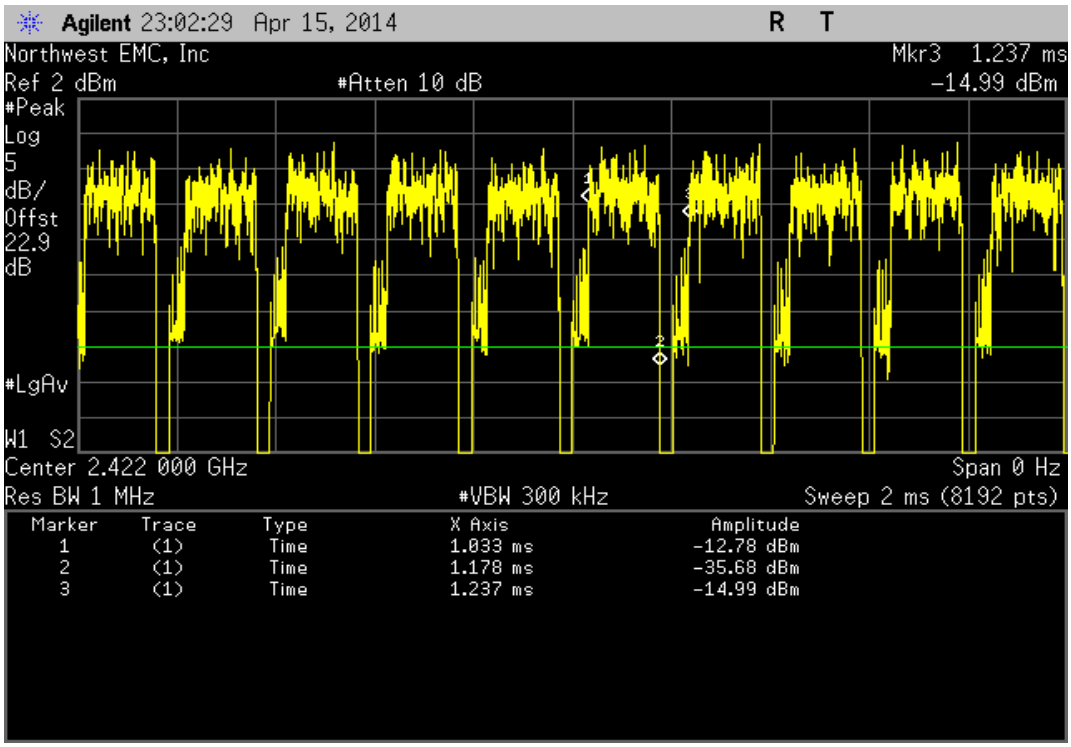
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, 7/11 High Channel, 2452 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	6	N/A	N/A	N/A

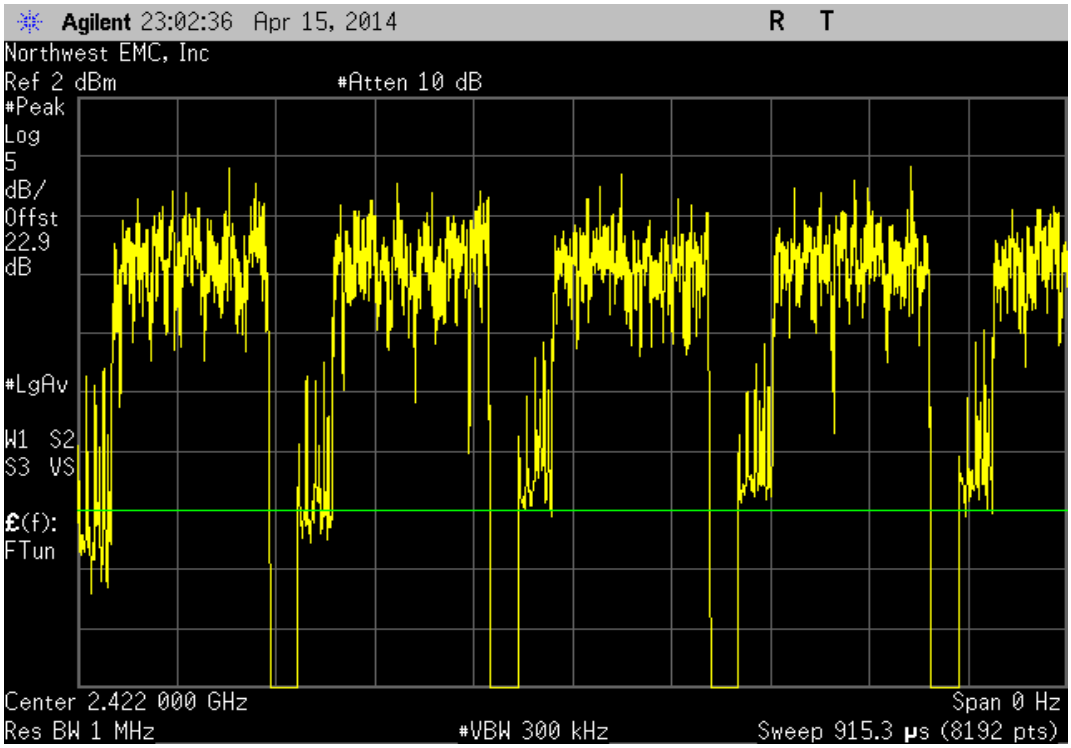


TRANSMISSION BURST DURATION

40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, 1/5 Low Channel, 2422 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	144.3 uS	203.4 uS	1	70.9	N/A	N/A



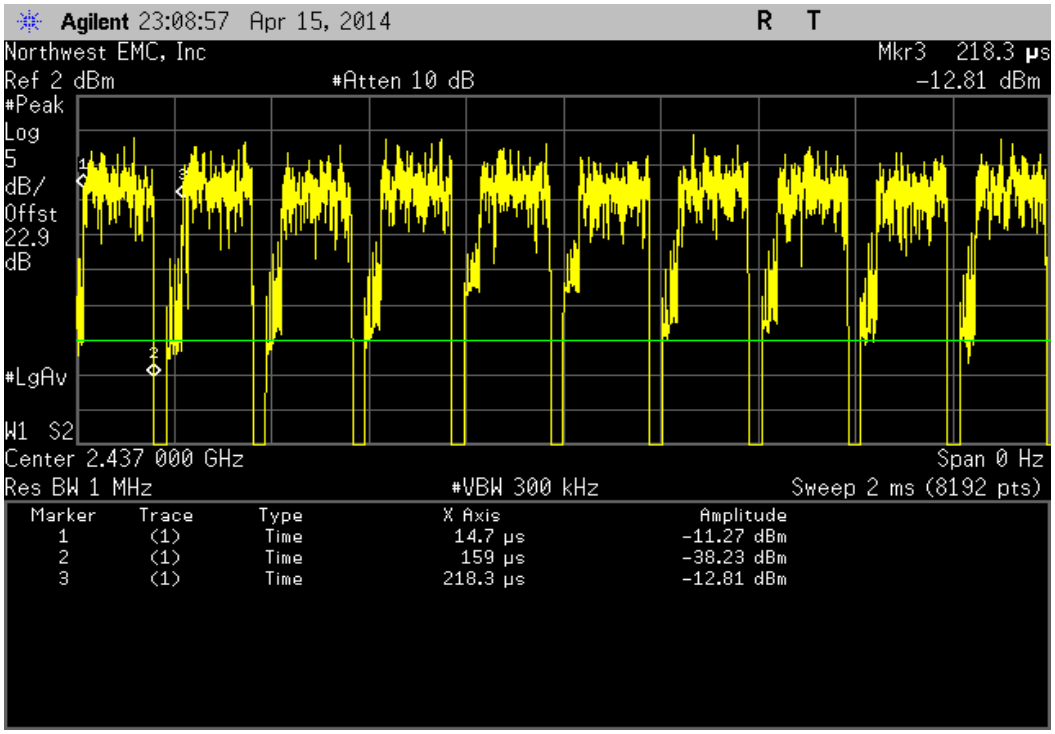
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, 1/5 Low Channel, 2422 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	6	N/A	N/A	N/A



TRANSMISSION BURST DURATION

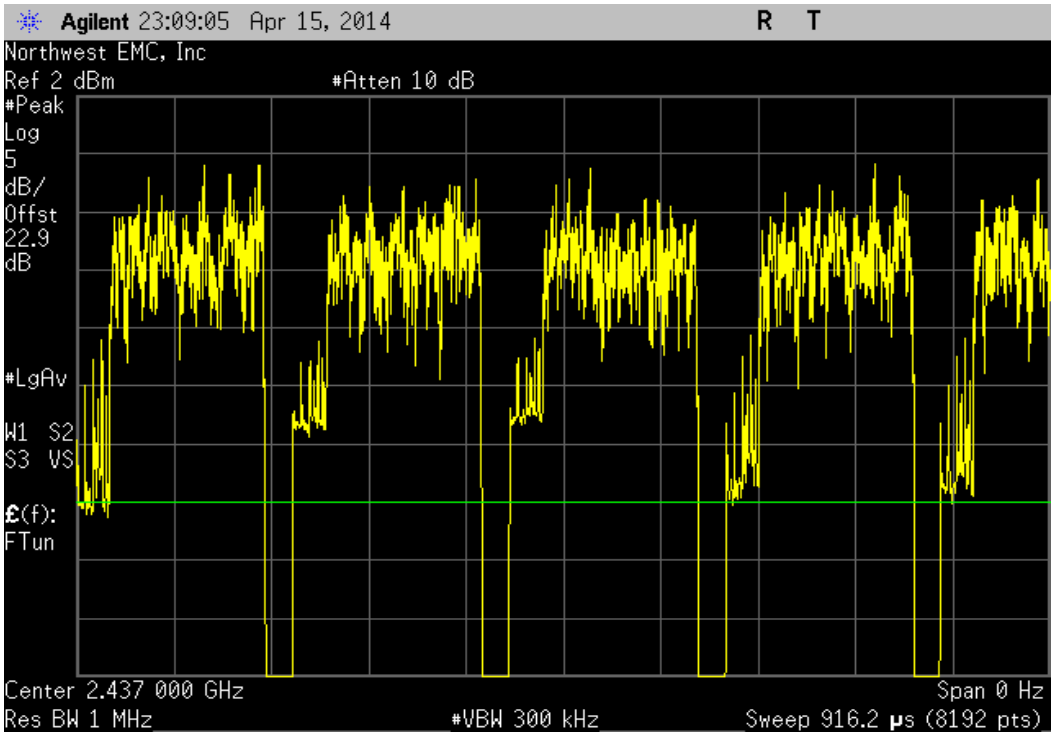
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, 4/8 Mid Channel, 2437 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	144.3 uS	203.6 uS	1	70.9	N/A	N/A



40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, 4/8 Mid Channel, 2437 MHz

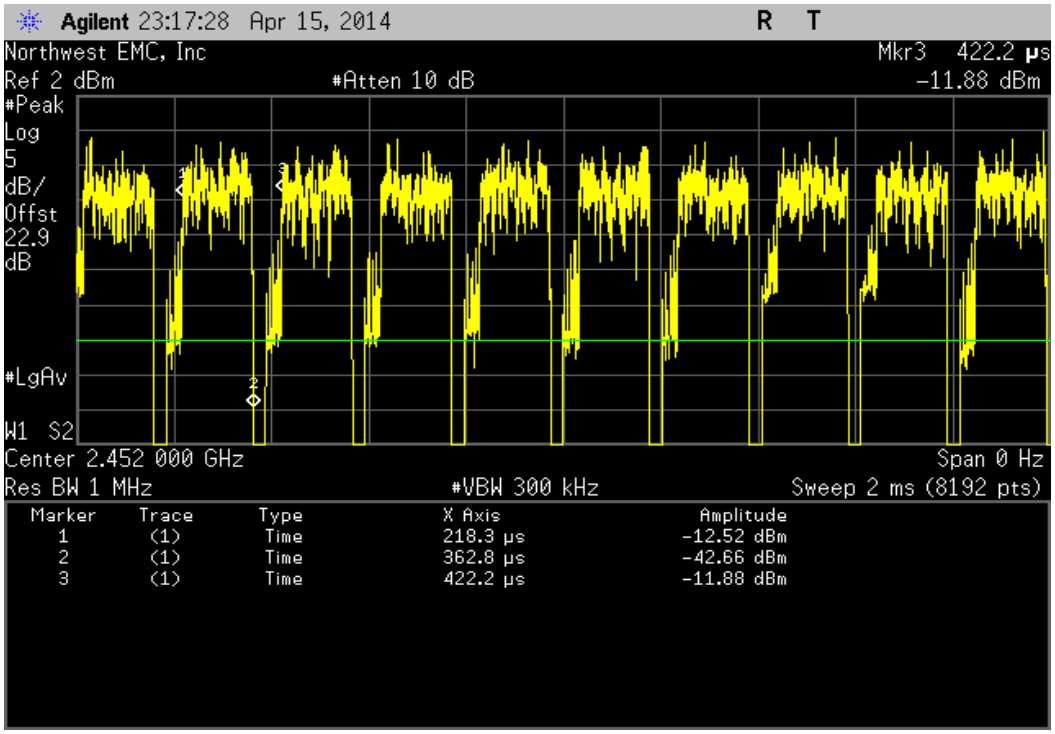
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	6	N/A	N/A	N/A



TRANSMISSION BURST DURATION

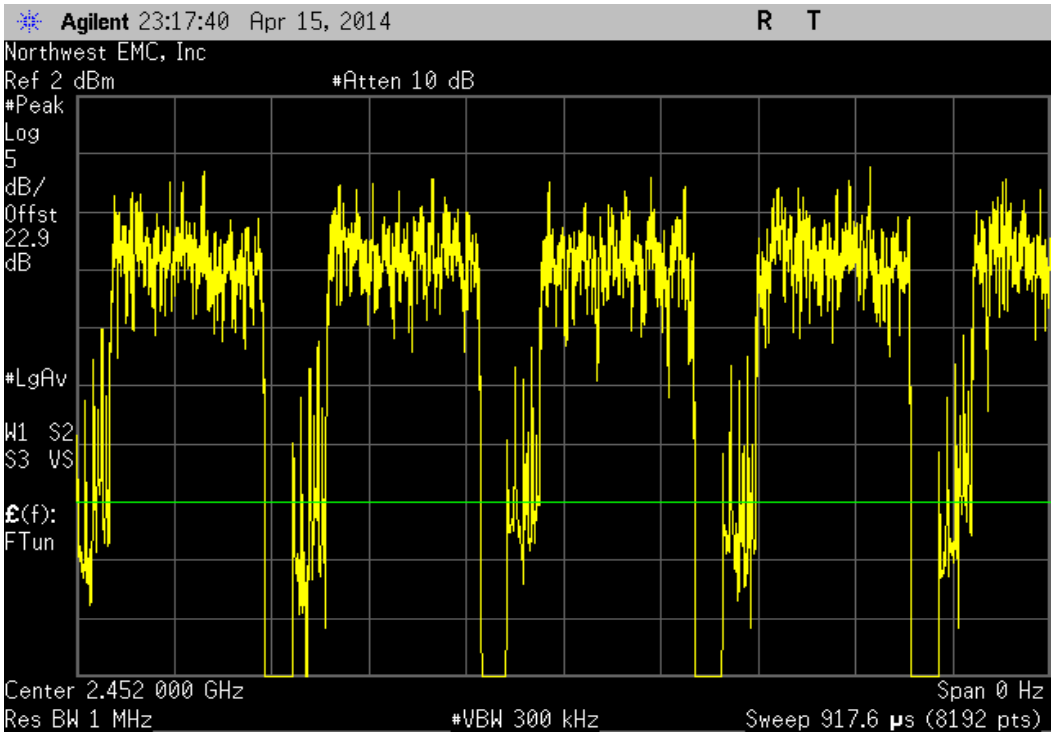
40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, 7/11 High Channel, 2452 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	144.5 uS	203.9 uS	1	70.9	N/A	N/A



40 MHz, 2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, 7/11 High Channel, 2452 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	6	N/A	N/A	N/A



DUTY CYCLE

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 (mo.)
40GHz DC Block	Miteq	DCB4000	AMD	5/16/2013	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/30/2013	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Power Meter	Gigatronics	8651A	SPM	11/26/2013	24
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	36
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	2/3/2014	12
Spectrum Analyzer	Agilent	E4446A	AAQ	1/21/2014	24

TEST DESCRIPTION

The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was 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.

If the transmit duty cycle < 98 percent, burst gating was used during some of the other tests in this report to only measure during the burst duration.

DUTY CYCLE

EUT:	Model 1631			**Work Order:**	MCSO1689
Serial Number:	006840341053			**Date:**	04/23/14
Customer:	Microsoft Corporation			**Temperature:**	22.3°C
Attendees:	None			**Humidity:**	32%
Project:	None			**Barometric Pres.:**	1014
Tested by:	Jared Ison	**Power:**	110VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2014	ANSI C63.10:2009

COMMENTS

Modes of operation tested were client provided. Reference power level table for channel power setting.

DEVIATIONS FROM TEST STANDARD

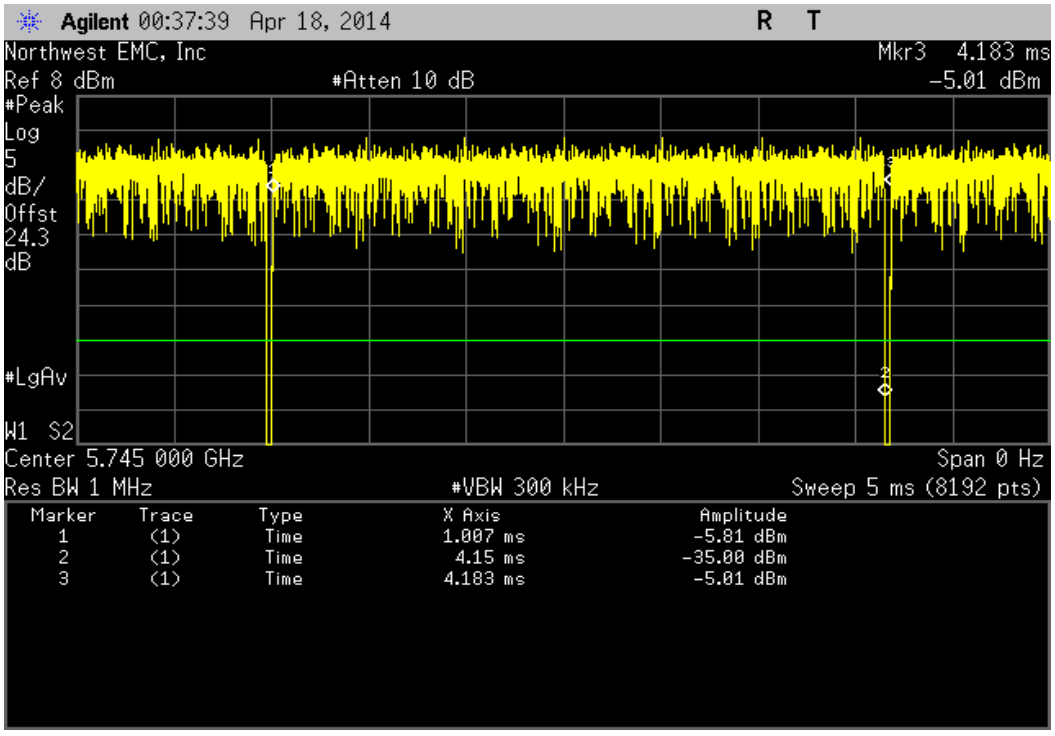
None

Configuration #	6	Signature

		Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
IEEE 802.11(a)							
20 MHz							
5725 MHz - 5850 MHz Band							
6 Mbps							
	Low Channel 149, 5745 M	3.143 mS	3.175 mS	1	99	N/A	N/A
	Low Channel 149, 5745 M	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 157, 5785 MH	3.142 mS	3.169 mS	1	99.1	N/A	N/A
	Mid Channel 157, 5785 MH	N/A	N/A	5	N/A	N/A	N/A
	High Channel 165, 5825 M	3.143 mS	3.175 mS	1	99	N/A	N/A
	High Channel 165, 5825 M	N/A	N/A	5	N/A	N/A	N/A
36 Mbps							
	Low Channel 149, 5745 M	537.9 uS	571.6 uS	1	94.1	N/A	N/A
	Low Channel 149, 5745 M	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 157, 5785 MH	537.9 uS	571.3 uS	1	94.2	N/A	N/A
	Mid Channel 157, 5785 MH	N/A	N/A	5	N/A	N/A	N/A
	High Channel 165, 5825 M	537.9 uS	571.4 uS	1	94.1	N/A	N/A
	High Channel 165, 5825 M	N/A	N/A	5	N/A	N/A	N/A
54 Mbps							
	Low Channel 149, 5745 M	361.8 uS	395.3 uS	1	91.5	N/A	N/A
	Low Channel 149, 5745 M	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 157, 5785 MH	362.1 uS	393.6 uS	1	92	N/A	N/A
	Mid Channel 157, 5785 MH	N/A	N/A	5	N/A	N/A	N/A
	High Channel 165, 5825 M	362.1 uS	395.3 uS	1	91.6	N/A	N/A
	High Channel 165, 5825 M	N/A	N/A	5	N/A	N/A	N/A
IEEE 802.11(n)							
20 MHz							
5725 MHz - 5850 MHz Band							
HT, MCS7							
	Low Channel 149, 5745 M	322 uS	355.2 uS	1	90.7	N/A	N/A
	Low Channel 149, 5745 M	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 157, 5785 MH	321.8 uS	355.2 uS	1	90.6	N/A	N/A
	Mid Channel 157, 5785 MH	N/A	N/A	5	N/A	N/A	N/A
	High Channel 165, 5825 M	321.8 uS	353.6 uS	1	91	N/A	N/A
	High Channel 165, 5825 M	N/A	N/A	6	N/A	N/A	N/A
40 MHz							
5725 MHz - 5850 MHz Band							
HT, MCS7							
	Low Channel 149/153, 575	146.5 uS	203.6 uS	1	72	N/A	N/A
	Low Channel 149/153, 575	N/A	N/A	5	N/A	N/A	N/A
	High Channel 157/161, 57	146.7 uS	179.9 uS	1	81.5	N/A	N/A
	High Channel 157/161, 57	N/A	N/A	4	N/A	N/A	N/A
IEEE 802.11(ac)							
20 MHz							
5725 MHz - 5850 MHz Band							
VHT, MCS0							
	Low Channel 149, 5745 M	2.93 mS	2.958 mS	1	99.1	N/A	N/A
	Low Channel 149, 5745 M	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 157, 5785 MH	2.93 mS	2.958 mS	1	99.1	N/A	N/A
	Mid Channel 157, 5785 MH	N/A	N/A	5	N/A	N/A	N/A
	High Channel 165, 5825 M	2.93 mS	2.958 mS	1	99.1	N/A	N/A
	High Channel 165, 5825 M	N/A	N/A	5	N/A	N/A	N/A
VHT, MCS8							
	Low Channel 149, 5745 M	278.1 uS	305.4 uS	1	91.1	N/A	N/A
	Low Channel 149, 5745 M	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 157, 5785 MH	277.8 uS	305.4 uS	1	91	N/A	N/A
	Mid Channel 157, 5785 MH	N/A	N/A	5	N/A	N/A	N/A
	High Channel 165, 5825 M	277.8 uS	305.4 uS	1	91	N/A	N/A
	High Channel 165, 5825 M	N/A	N/A	5	N/A	N/A	N/A
40 MHz							
5725 MHz - 5850 MHz Band							
VHT, MCS0							
	Low Channel 149/153, 575	1.406 mS	1.458 mS	1	96.5	N/A	N/A
	Low Channel 149/153, 575	N/A	N/A	5	N/A	N/A	N/A
	High Channel 157/161, 57	1.406 mS	1.434 mS	1	98.1	N/A	N/A
	High Channel 157/161, 57	N/A	N/A	5	N/A	N/A	N/A
VHT, MCS9							
	Low Channel 149/153, 575	118.5 uS	145.8 uS	1	81.3	N/A	N/A
	Low Channel 149/153, 575	N/A	N/A	4	N/A	N/A	N/A
	High Channel 157/161, 57	118.5 uS	169.7 uS	1	69.8	N/A	N/A
	High Channel 157/161, 57	N/A	N/A	5	N/A	N/A	N/A
80 MHz							
5725 MHz - 5850 MHz Band							
VHT, MCS0							
	Low Channel 149/153/157	658.3 uS	705.4 uS	1	93.3	N/A	N/A
	Low Channel 149/153/157	N/A	N/A	5	N/A	N/A	N/A
VHT, MCS9							
	Low Channel 149/153/157	78.6 uS	113.8 uS	1	69.1	N/A	N/A
	Low Channel 149/153/157	N/A	N/A	5	N/A	N/A	N/A

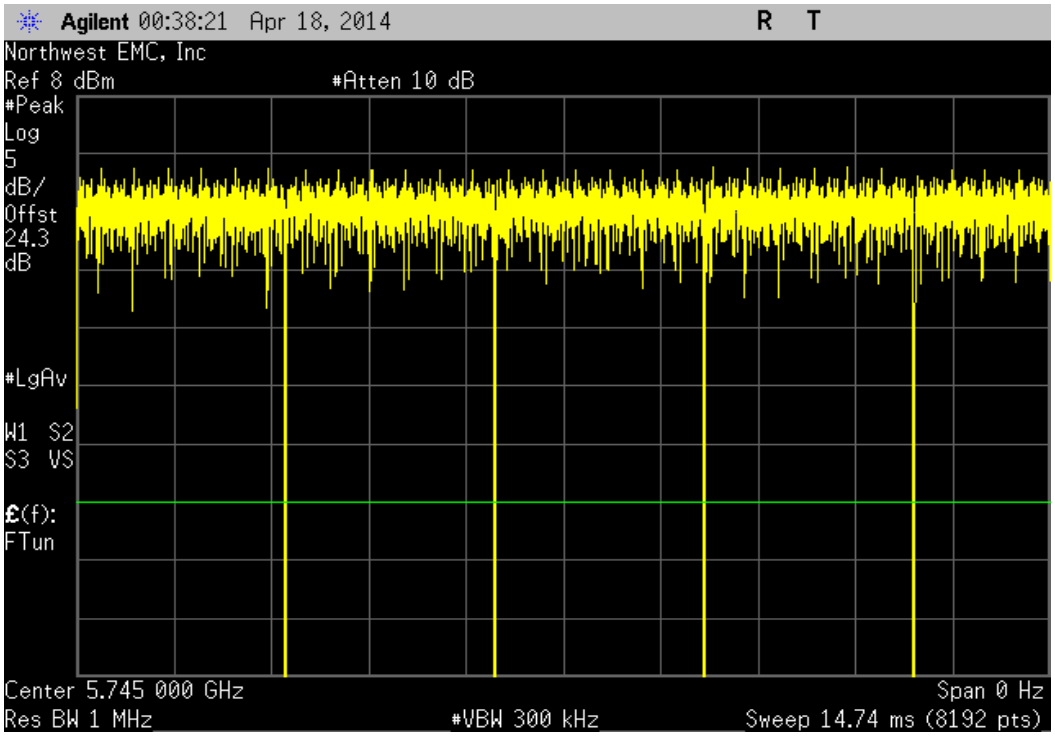
IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 6 Mbps, Low Channel 149, 5745 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	3.143 mS	3.175 mS	1	99	N/A	N/A



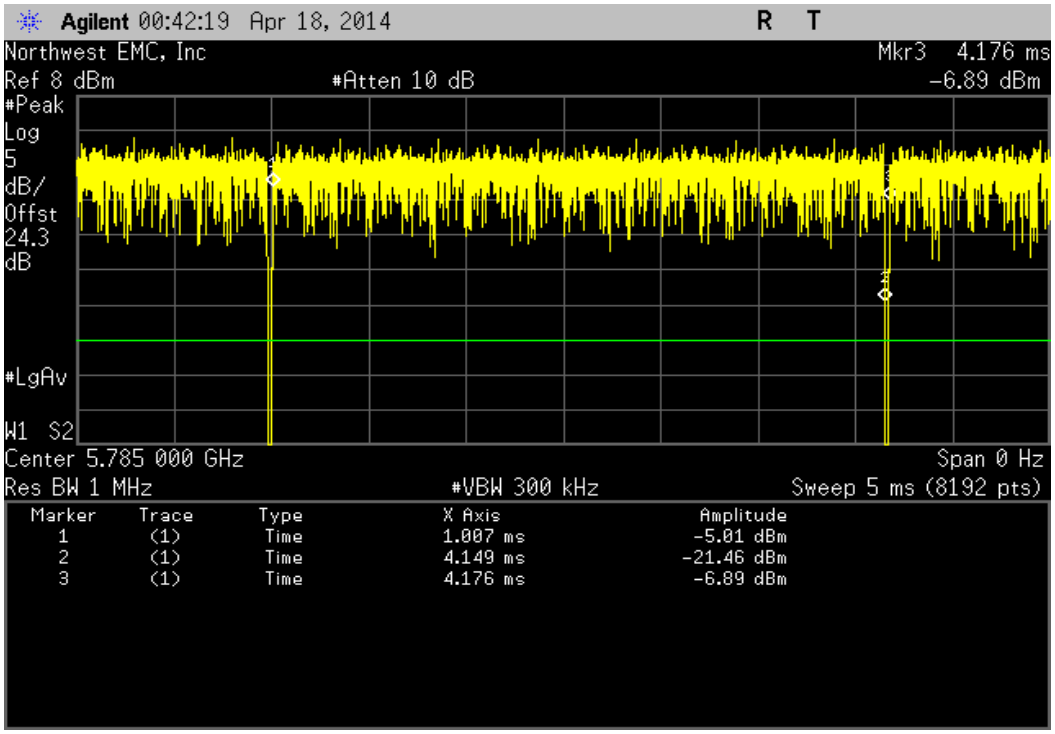
IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 6 Mbps, Low Channel 149, 5745 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



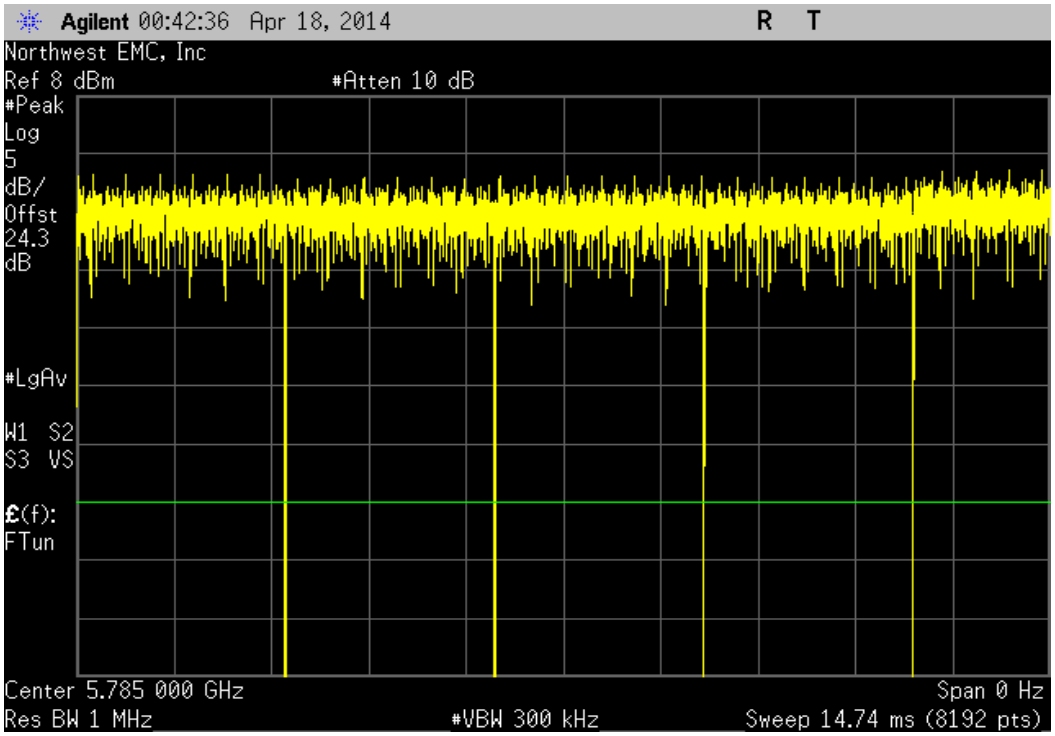
IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 6 Mbps, Mid Channel 157, 5785 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	3.142 mS	3.169 mS	1	99.1	N/A	N/A



IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 6 Mbps, Mid Channel 157, 5785 MHz

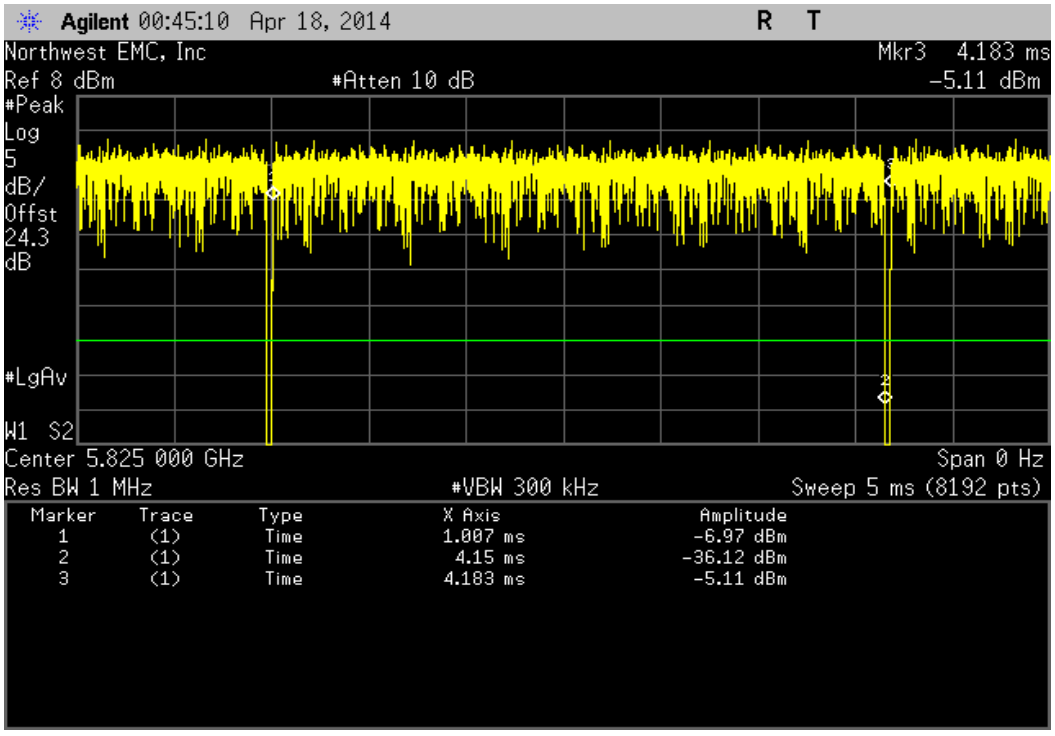
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

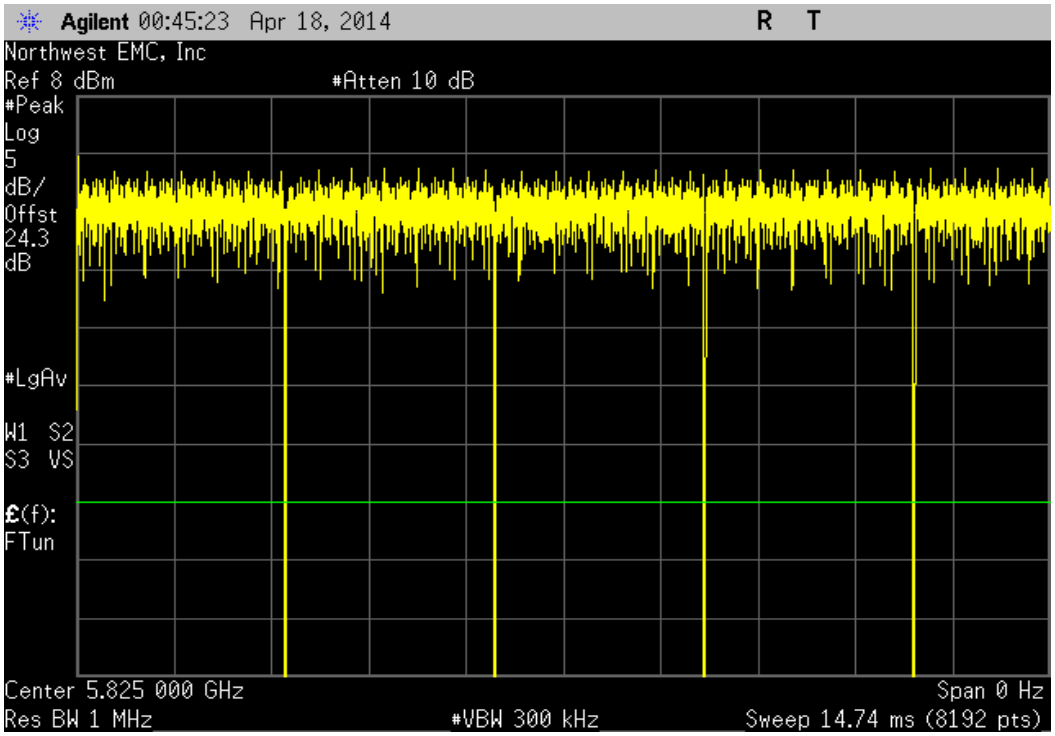
IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 6 Mbps, High Channel 165, 5825 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	3.143 mS	3.175 mS	1	99	N/A	N/A



IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 6 Mbps, High Channel 165, 5825 MHz

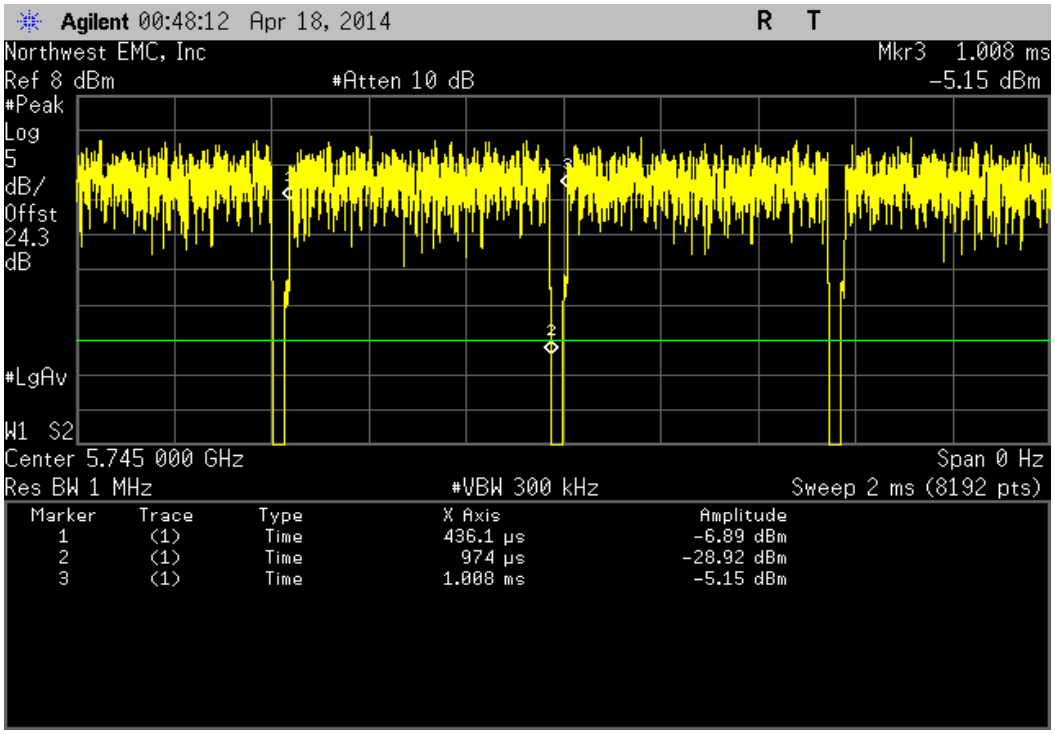
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

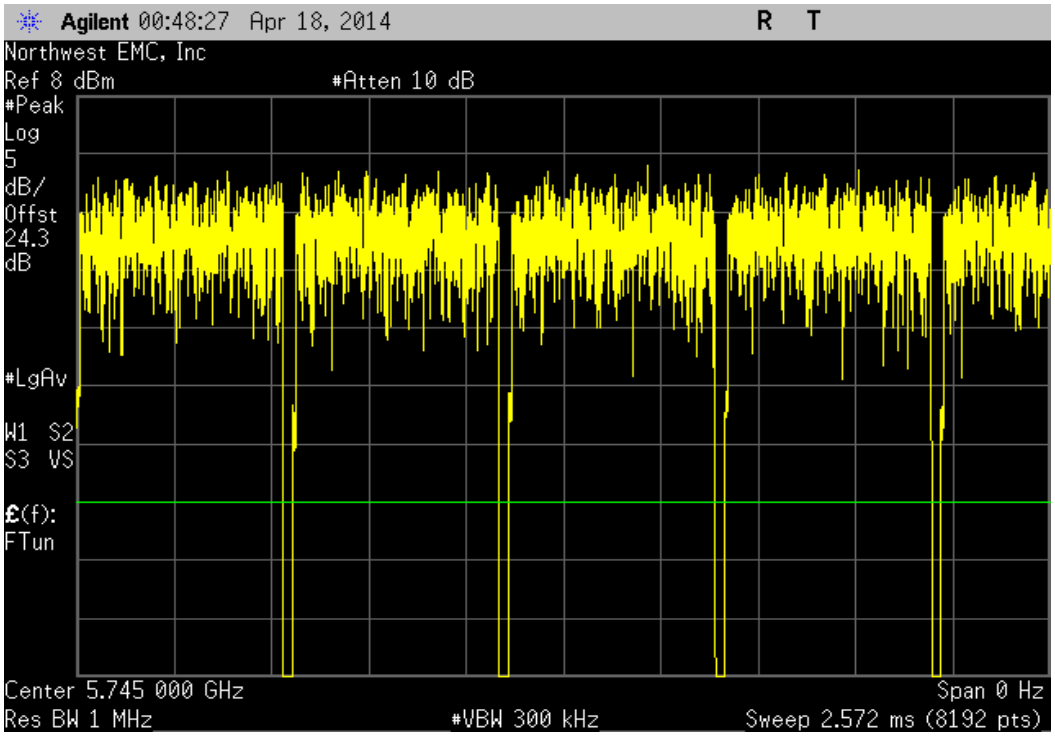
IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 36 Mbps, Low Channel 149, 5745 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	537.9 uS	571.6 uS	1	94.1	N/A	N/A



IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 36 Mbps, Low Channel 149, 5745 MHz

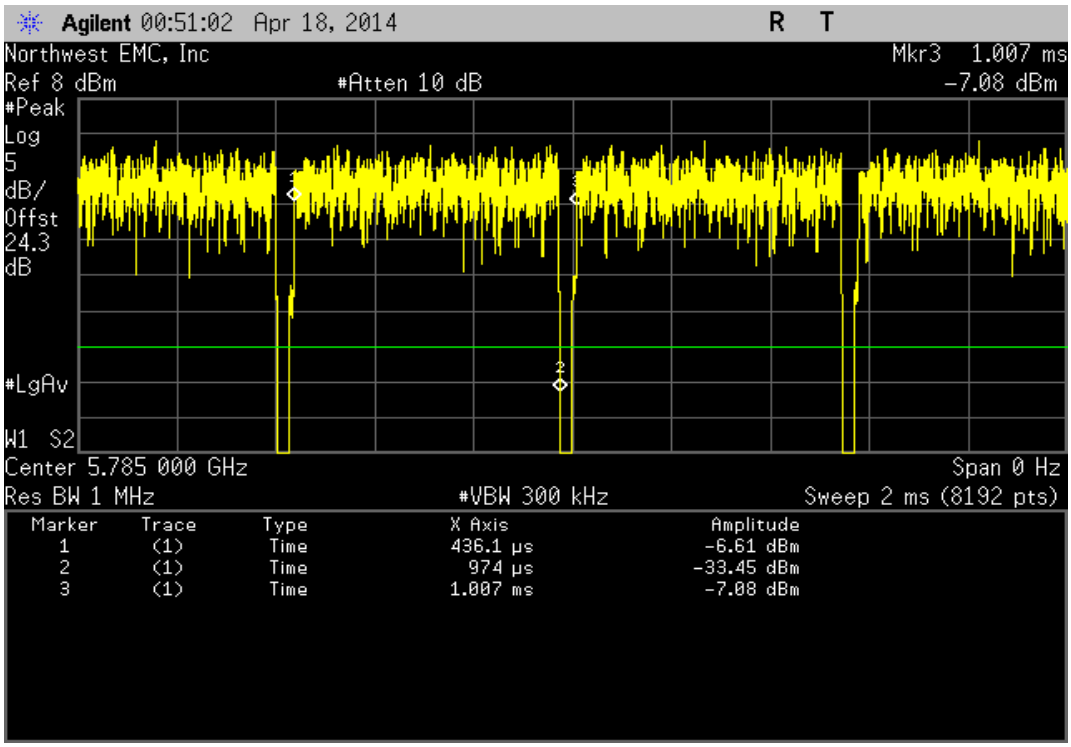
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

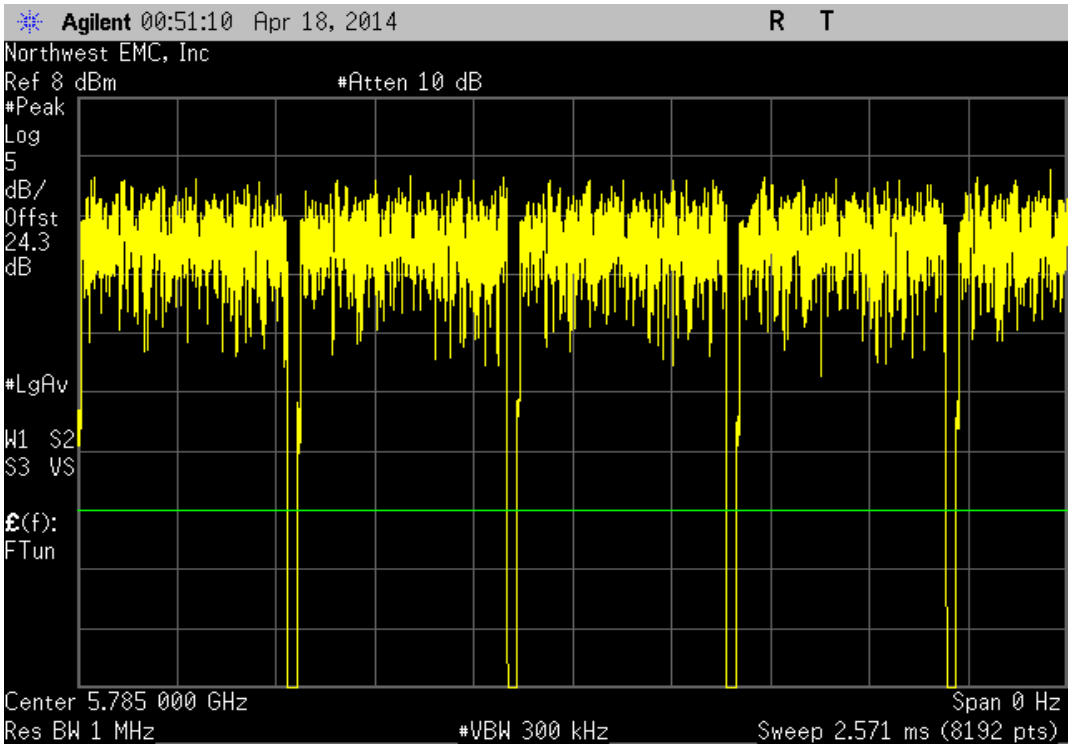
IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 36 Mbps, Mid Channel 157, 5785 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	537.9 uS	571.3 uS	1	94.2	N/A	N/A



IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 36 Mbps, Mid Channel 157, 5785 MHz

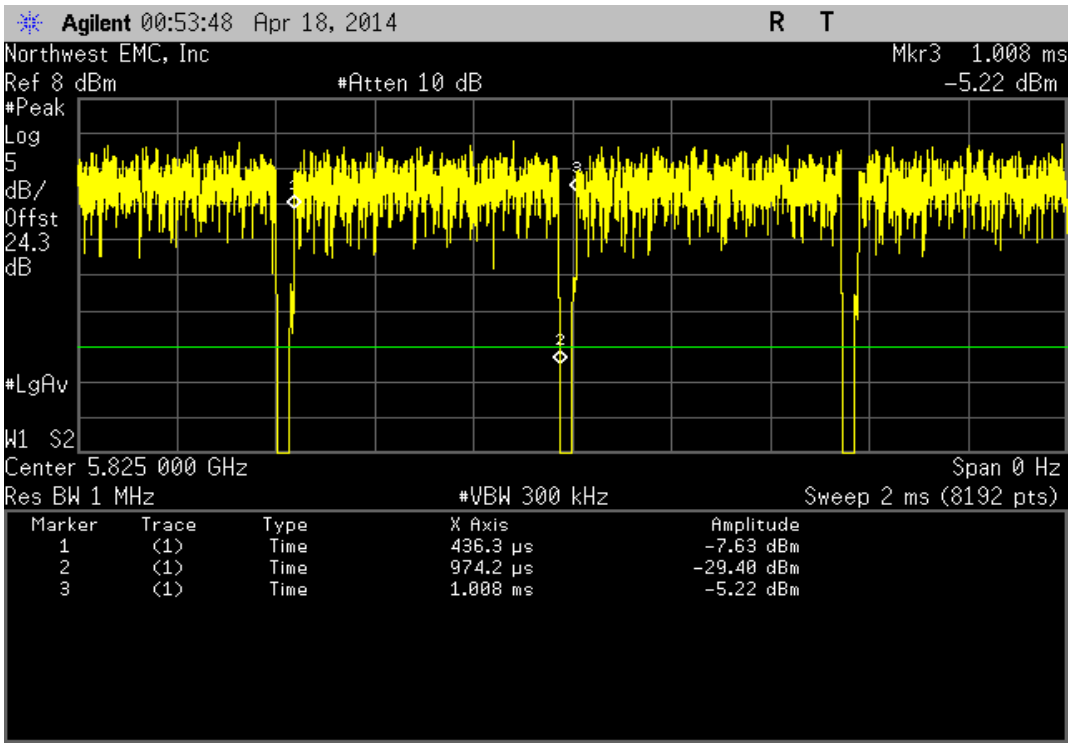
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

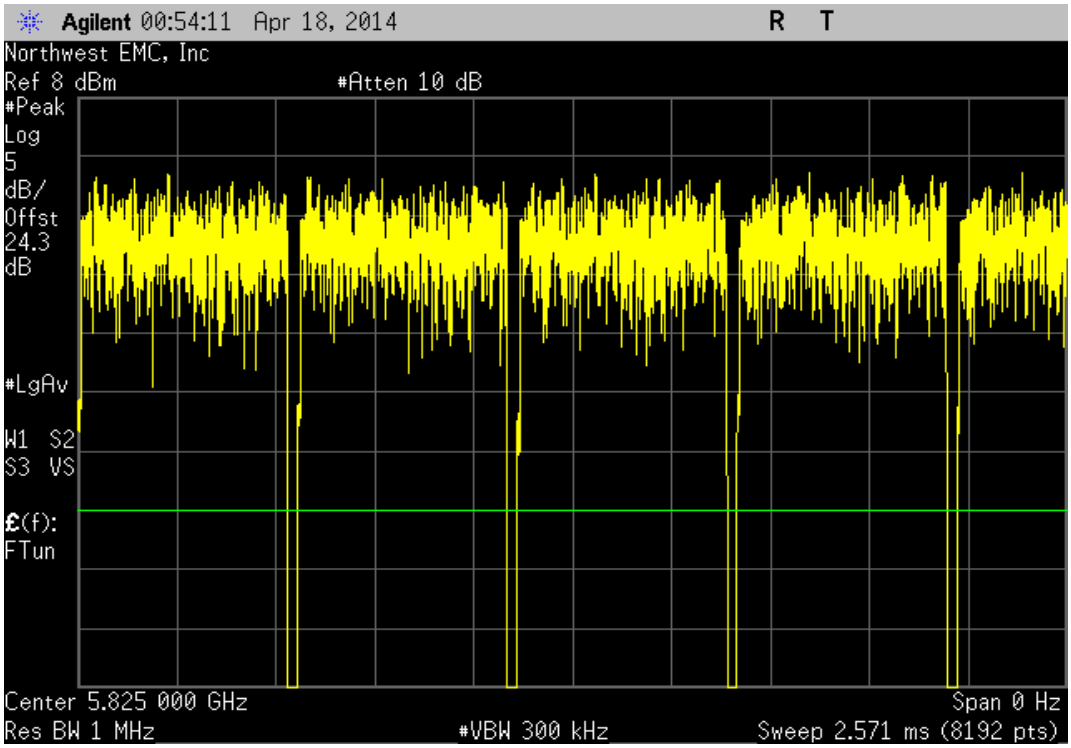
IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 36 Mbps, High Channel 165, 5825 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	537.9 uS	571.4 uS	1	94.1	N/A	N/A



IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 36 Mbps, High Channel 165, 5825 MHz

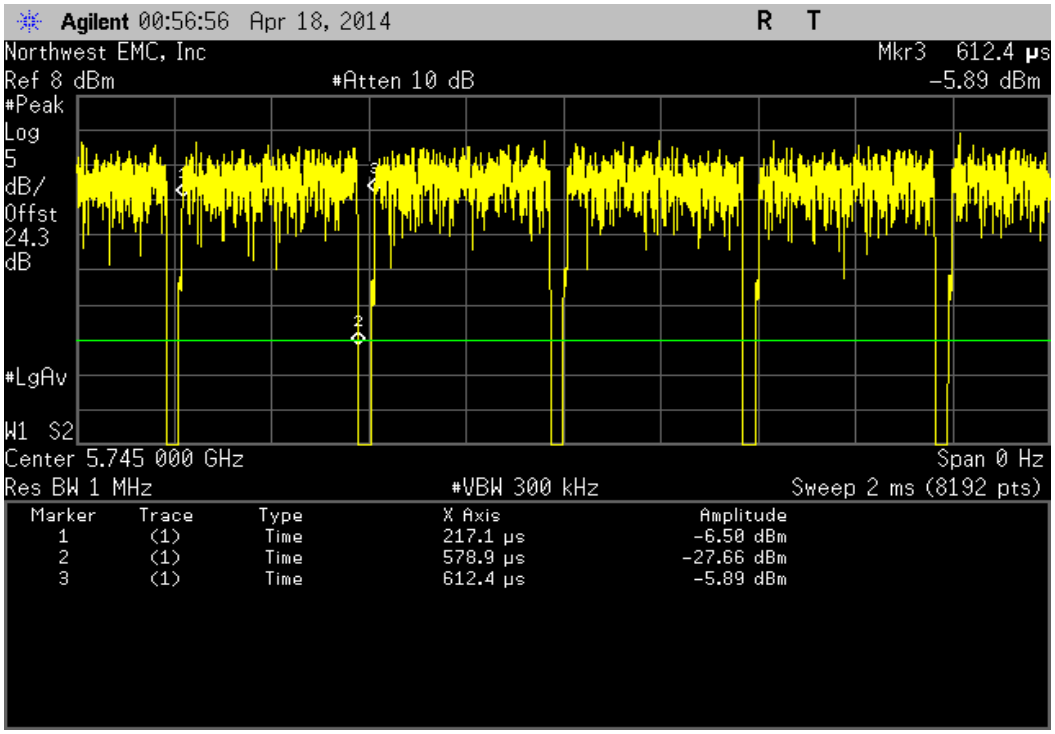
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

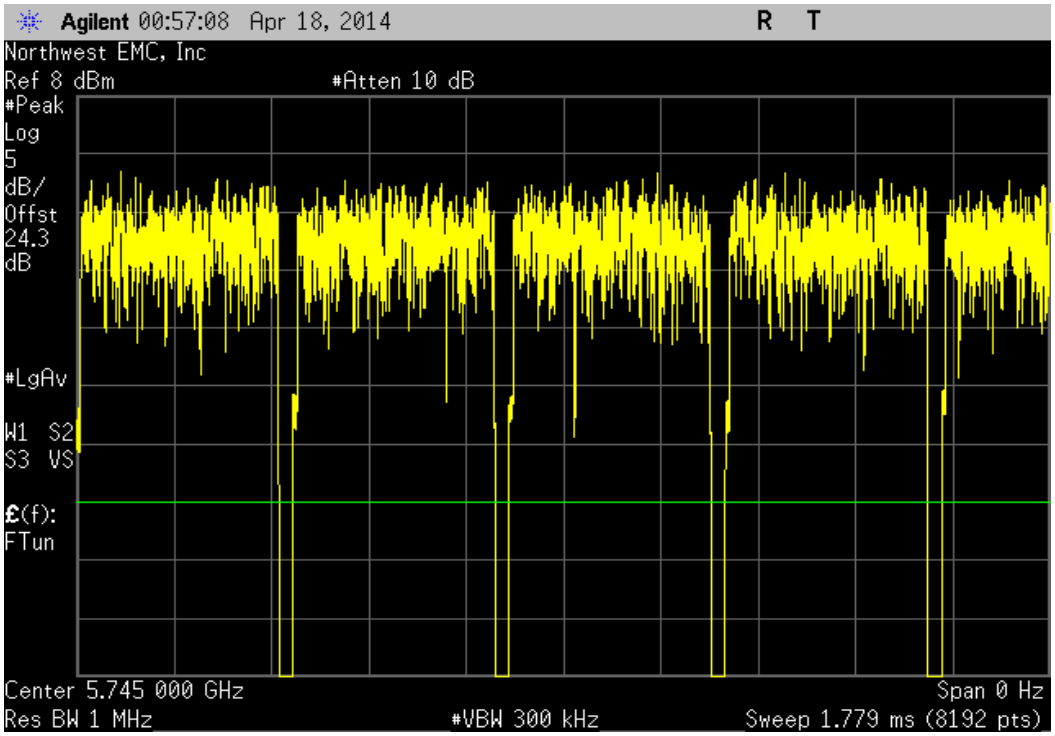
IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 54 Mbps, Low Channel 149, 5745 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	361.8 uS	395.3 uS	1	91.5	N/A	N/A



IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 54 Mbps, Low Channel 149, 5745 MHz

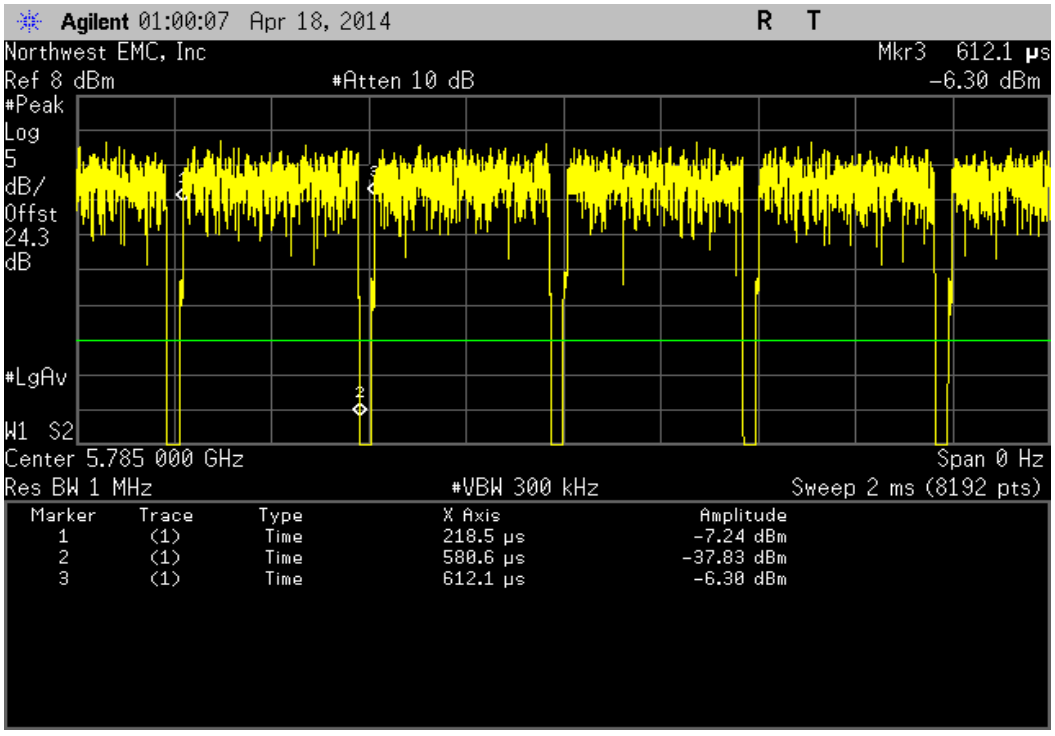
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

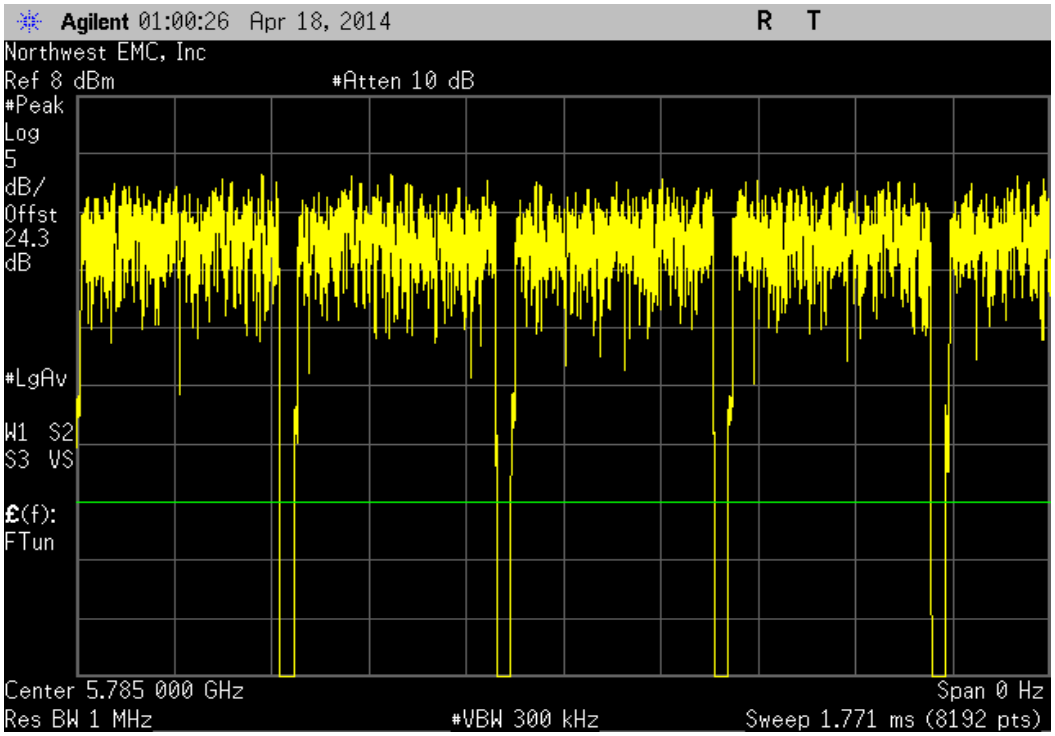
IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 54 Mbps, Mid Channel 157, 5785 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	362.1 uS	393.6 uS	1	92	N/A	N/A



IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 54 Mbps, Mid Channel 157, 5785 MHz

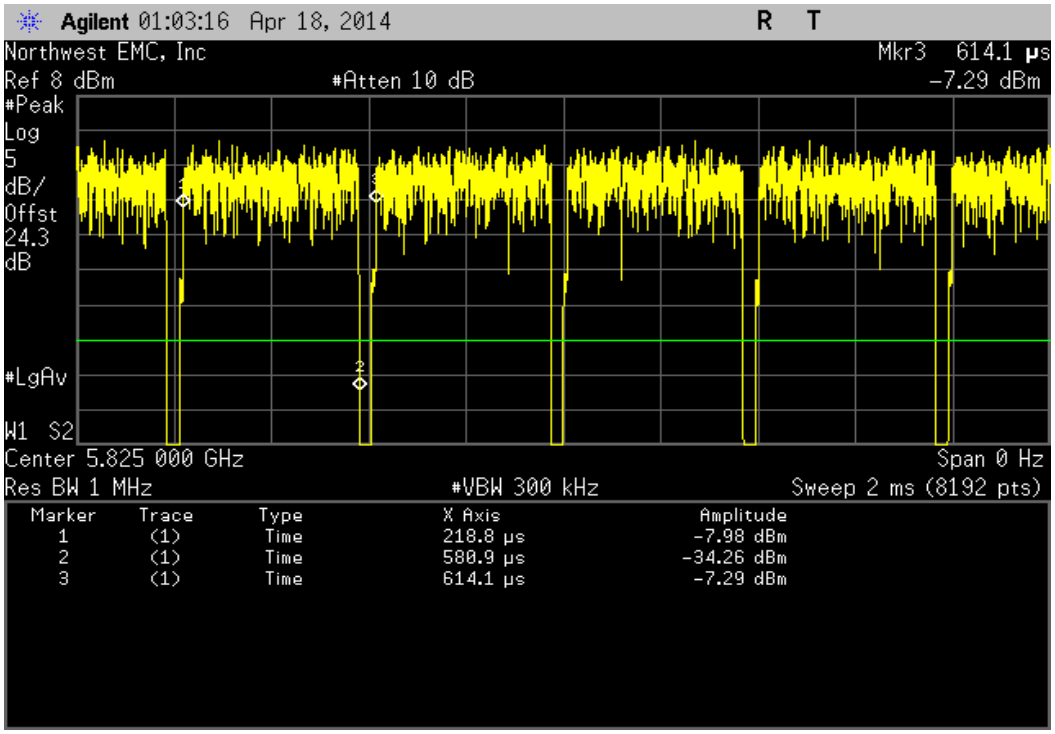
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

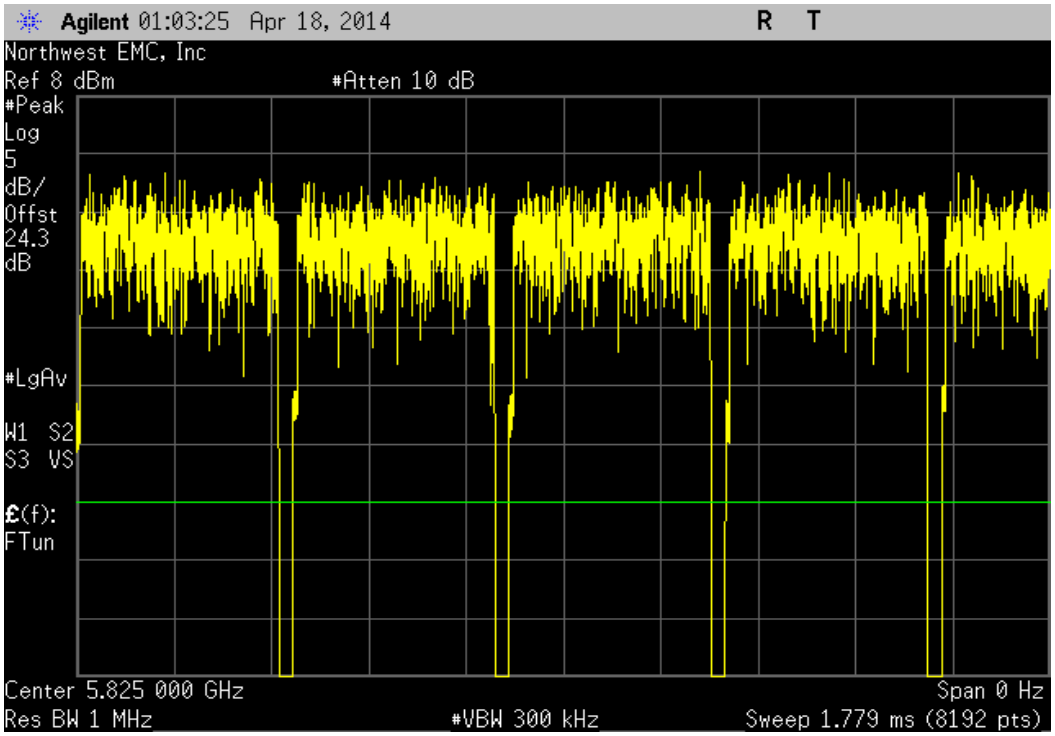
IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 54 Mbps, High Channel 165, 5825 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	362.1 uS	395.3 uS	1	91.6	N/A	N/A



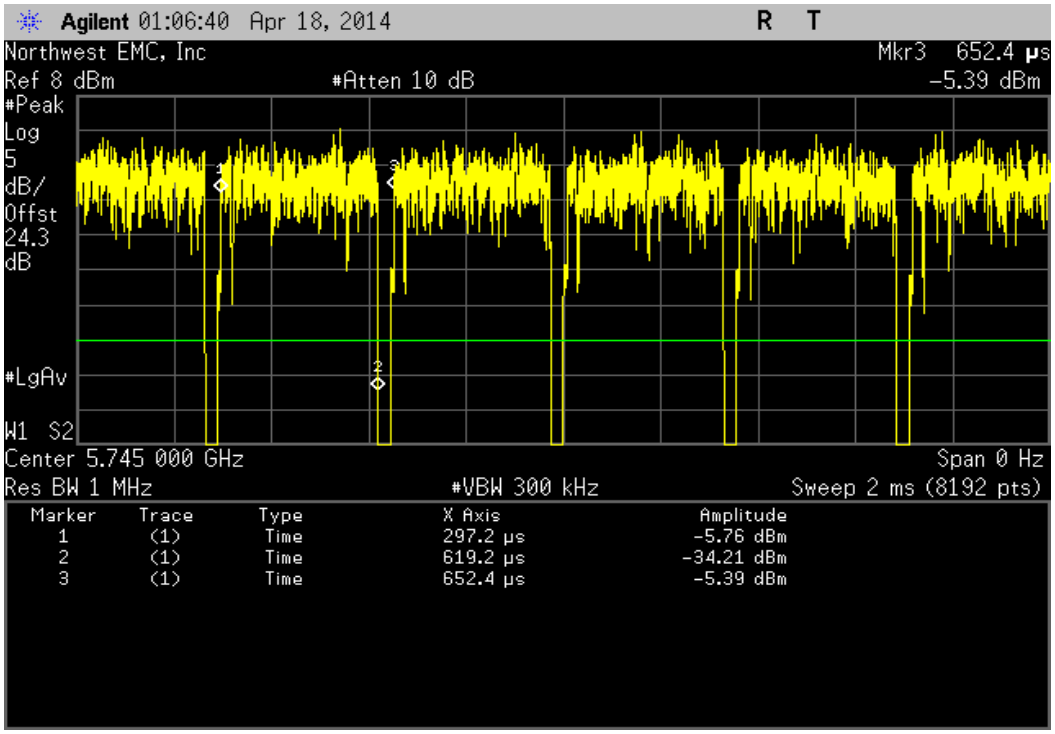
IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 54 Mbps, High Channel 165, 5825 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



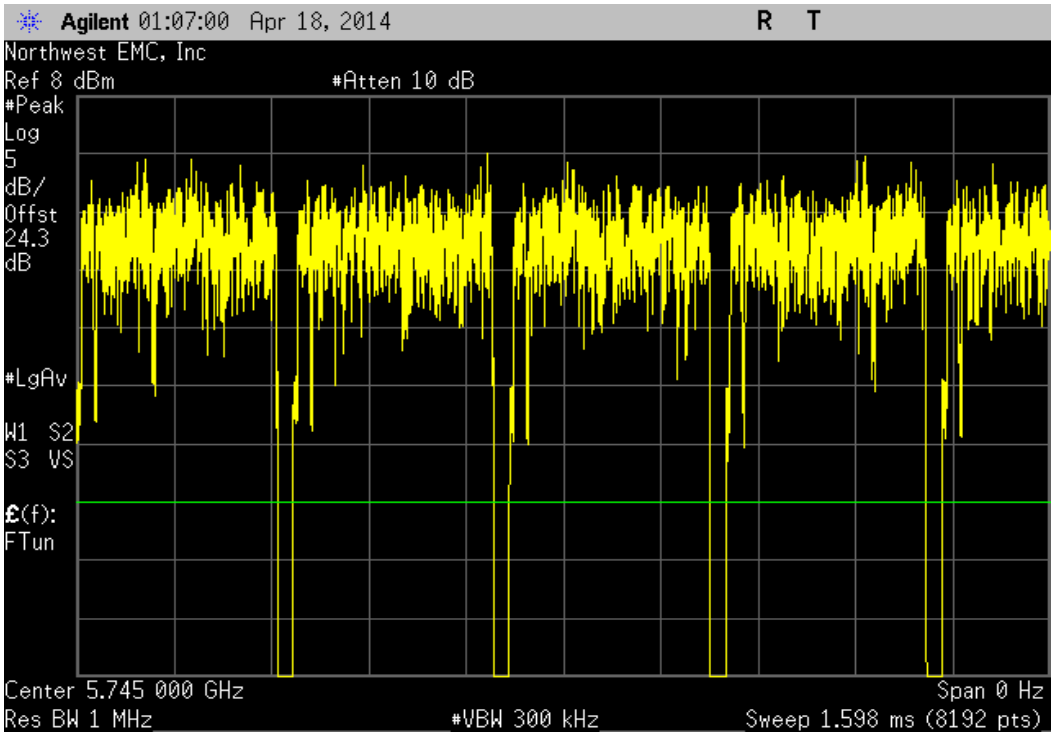
IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS7, Low Channel 149, 5745 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	322 uS	355.2 uS	1	90.7	N/A	N/A



IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS7, Low Channel 149, 5745 MHz

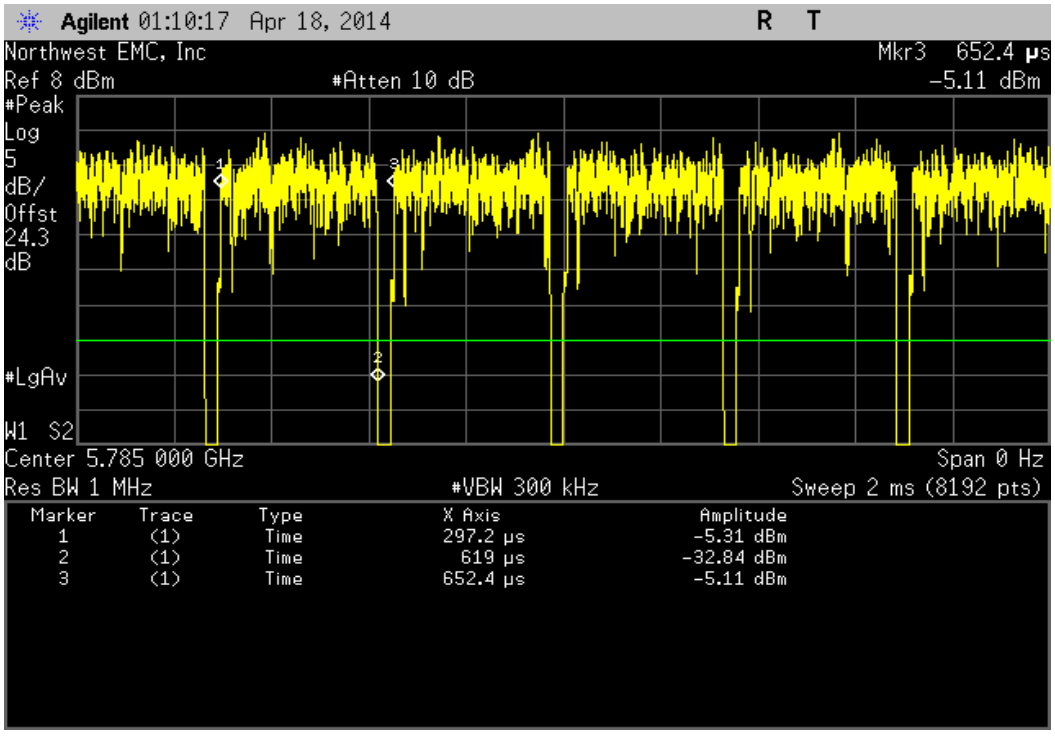
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

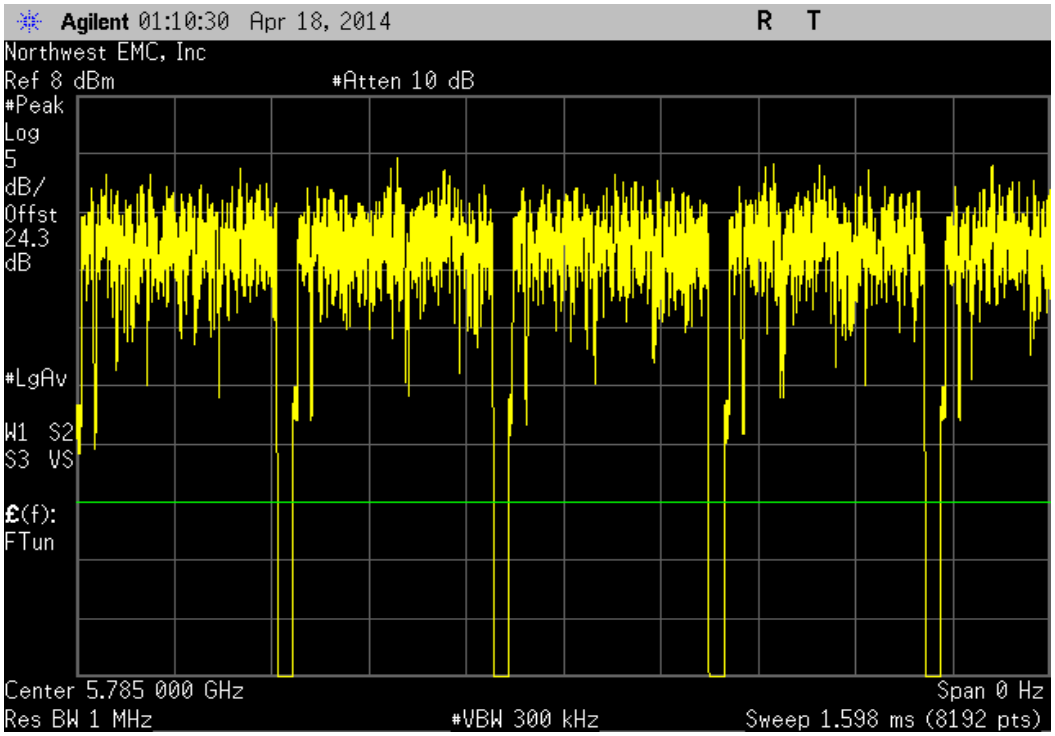
IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS7, Mid Channel 157, 5785 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	321.8 uS	355.2 uS	1	90.6	N/A	N/A



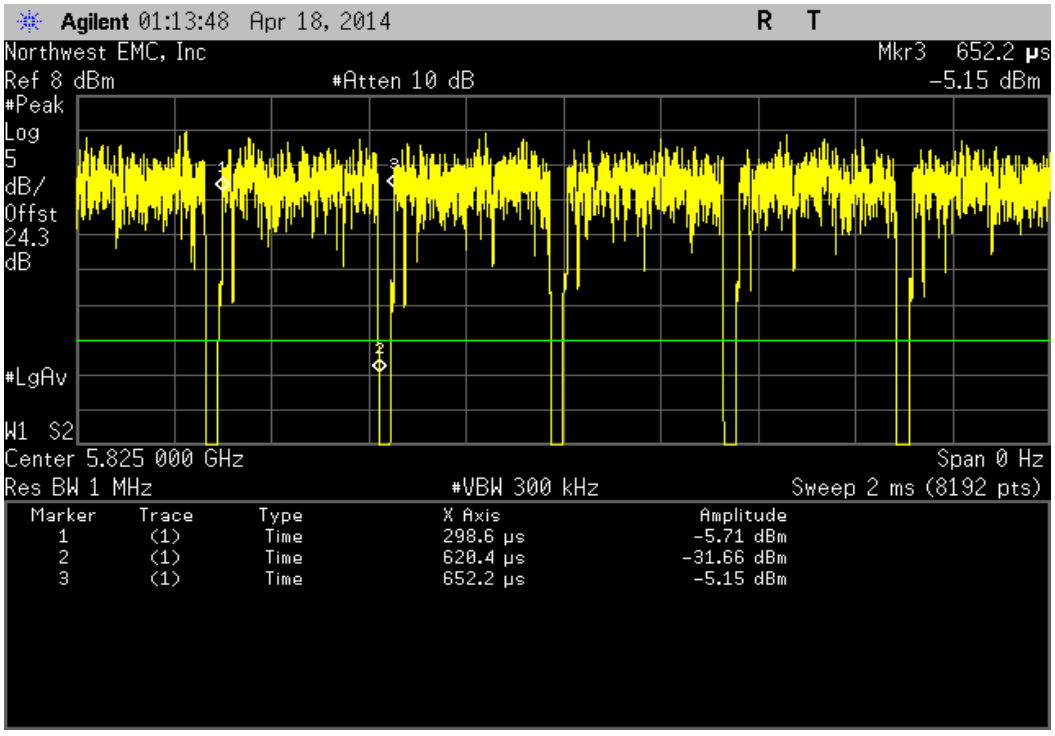
IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS7, Mid Channel 157, 5785 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



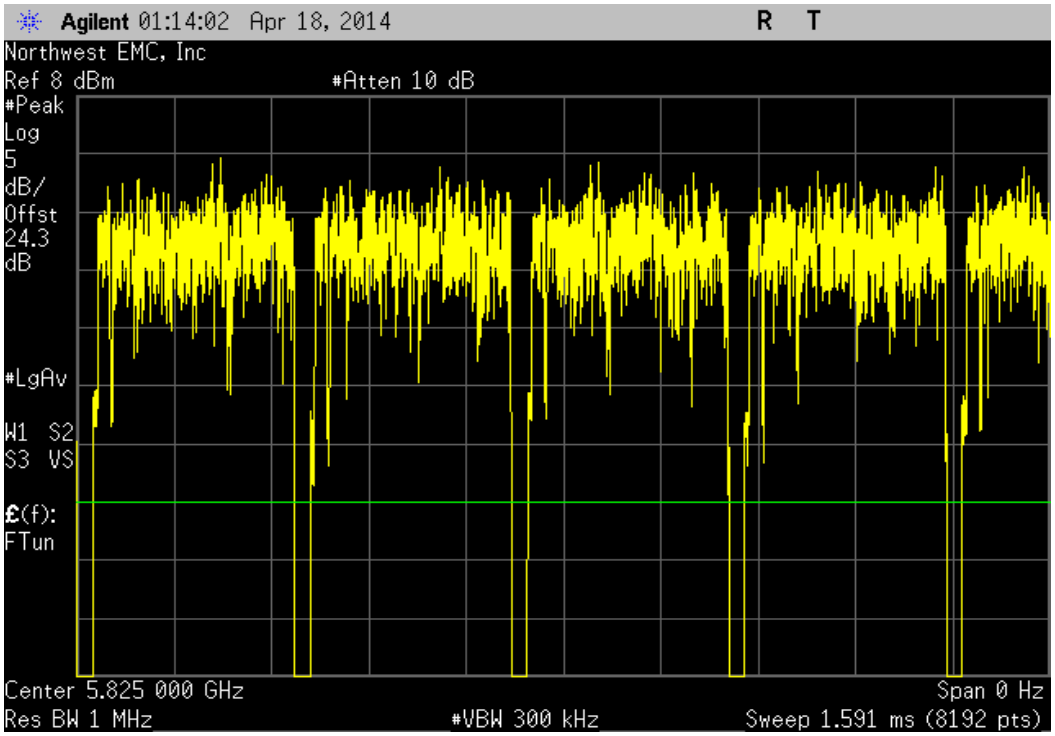
IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS7, High Channel 165, 5825 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	321.8 uS	353.6 uS	1	91	N/A	N/A



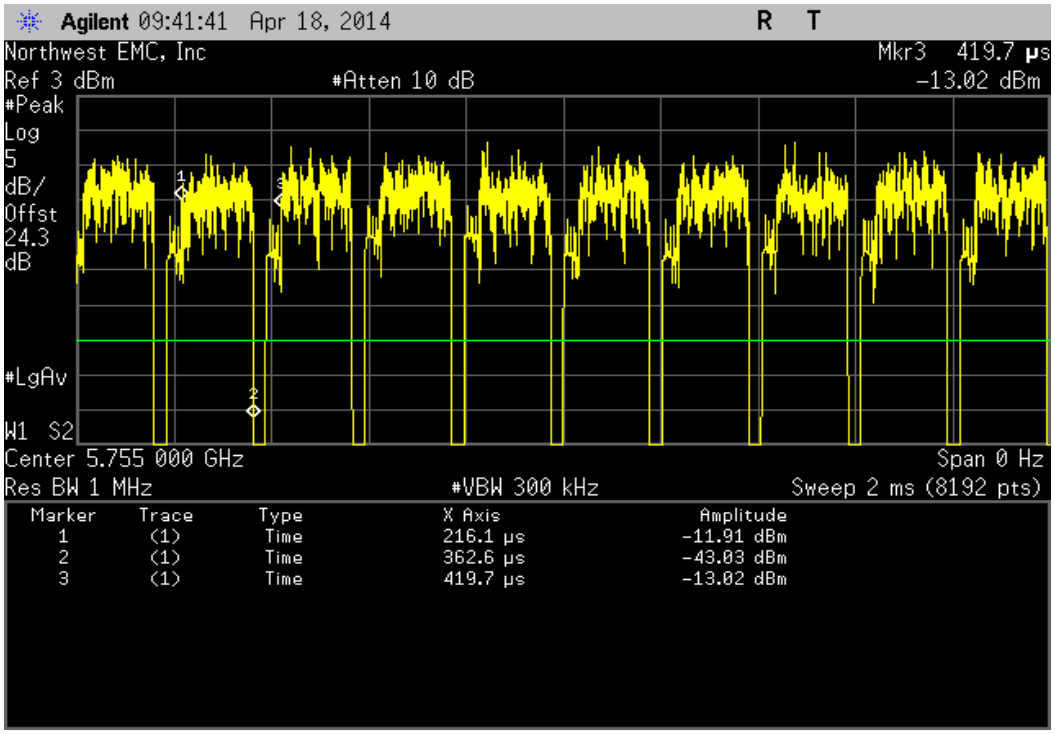
IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS7, High Channel 165, 5825 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	6	N/A	N/A	N/A



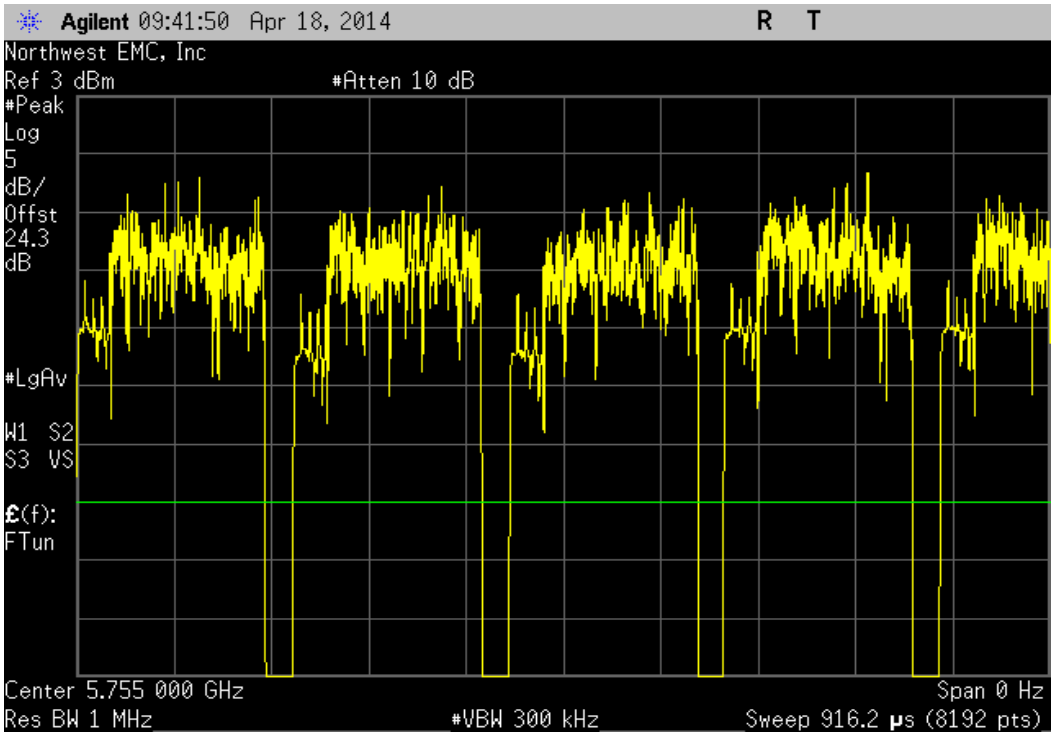
IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS7, Low Channel 149/153, 5755 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	146.5 uS	203.6 uS	1	72	N/A	N/A



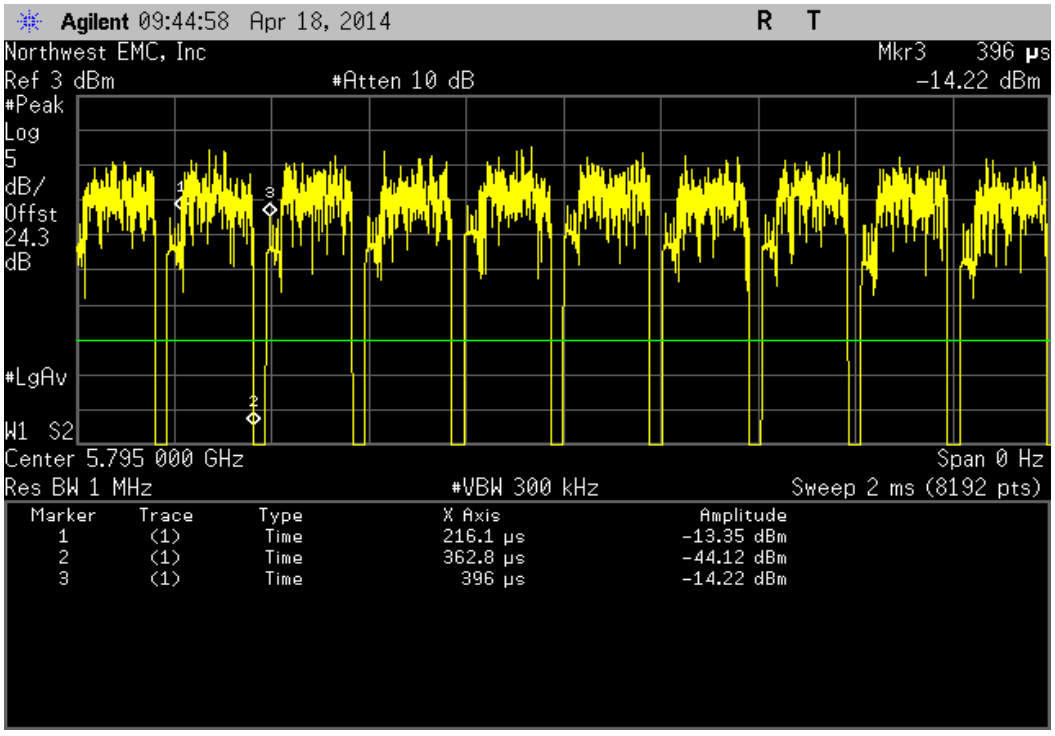
IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS7, Low Channel 149/153, 5755 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



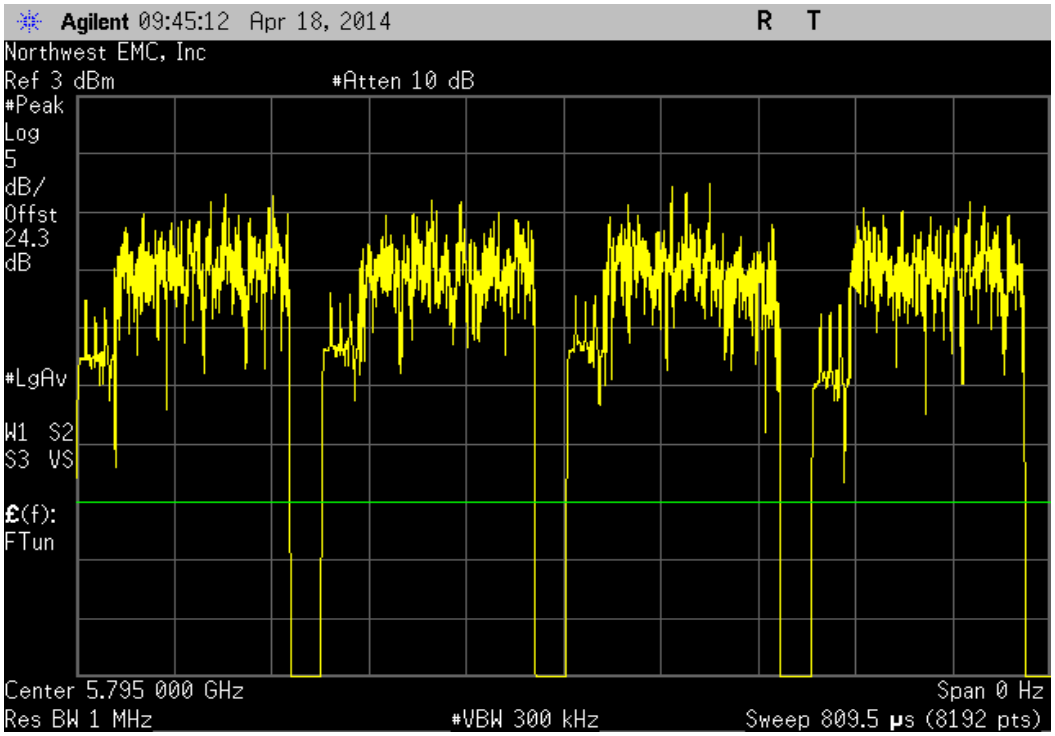
IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS7, High Channel 157/161, 5795 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	146.7 uS	179.9 uS	1	81.5	N/A	N/A



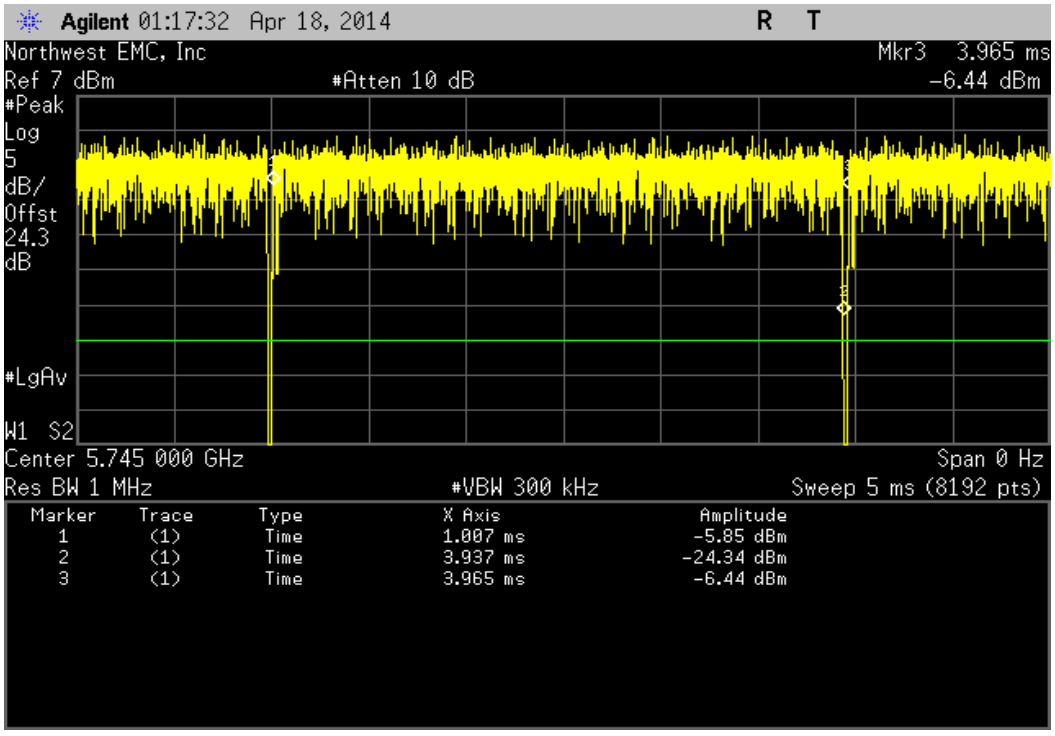
IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS7, High Channel 157/161, 5795 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	4	N/A	N/A	N/A



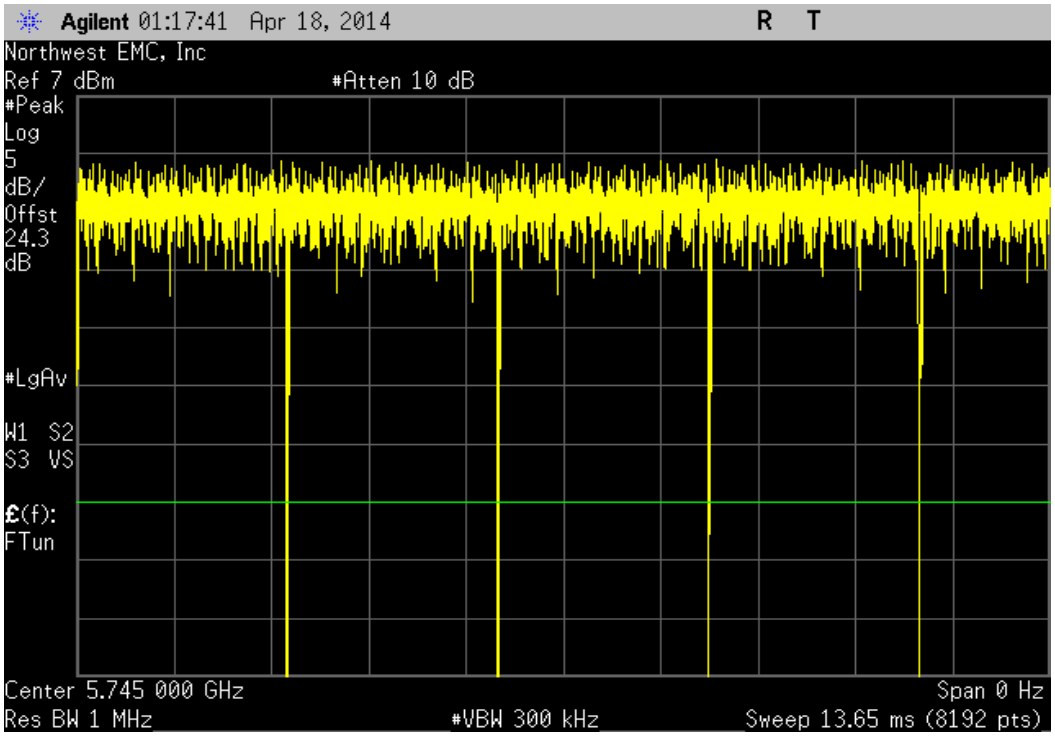
IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149, 5745 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	2.93 mS	2.958 mS	1	99.1	N/A	N/A



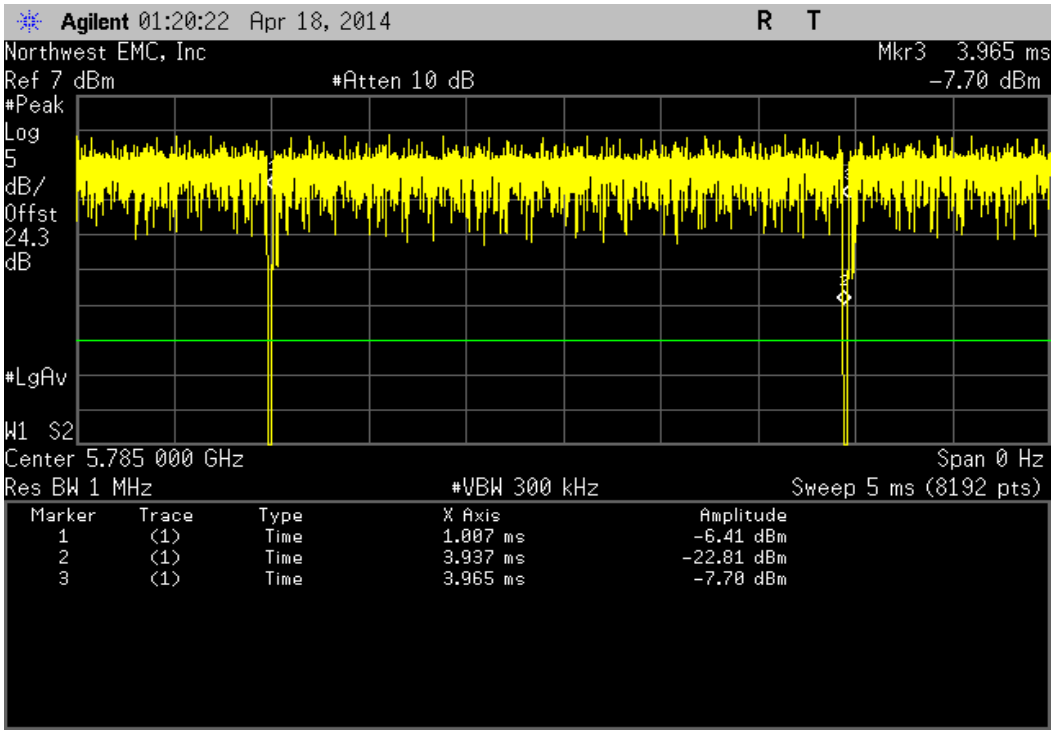
IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149, 5745 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



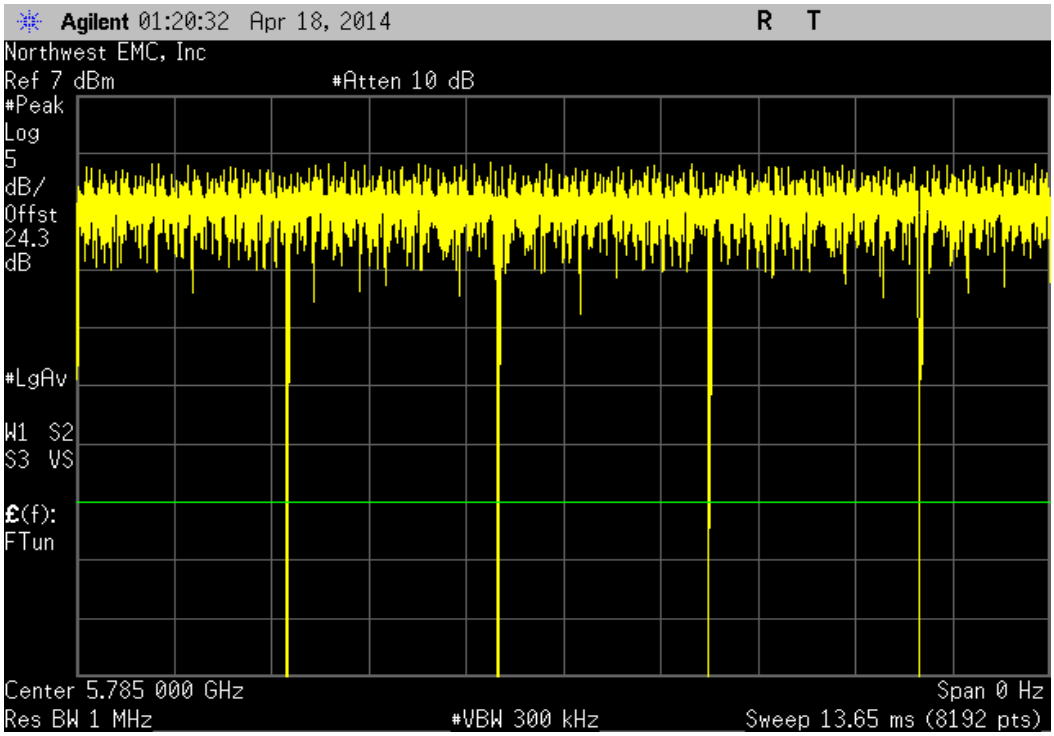
IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Mid Channel 157, 5785 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	2.93 mS	2.958 mS	1	99.1	N/A	N/A



IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Mid Channel 157, 5785 MHz

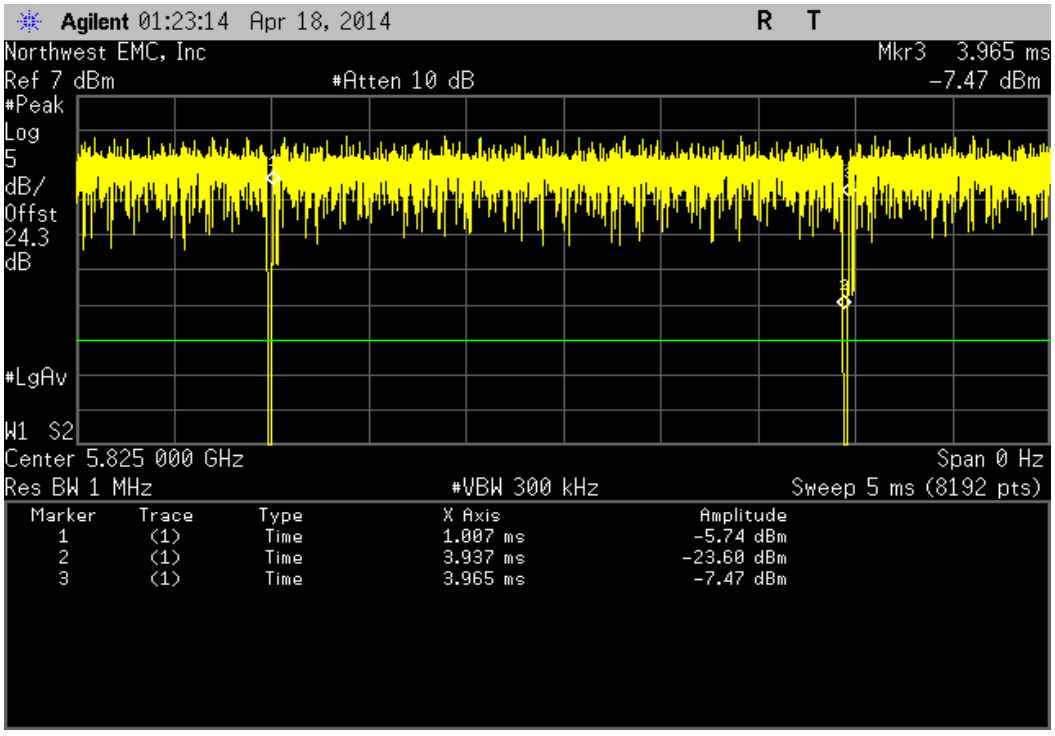
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

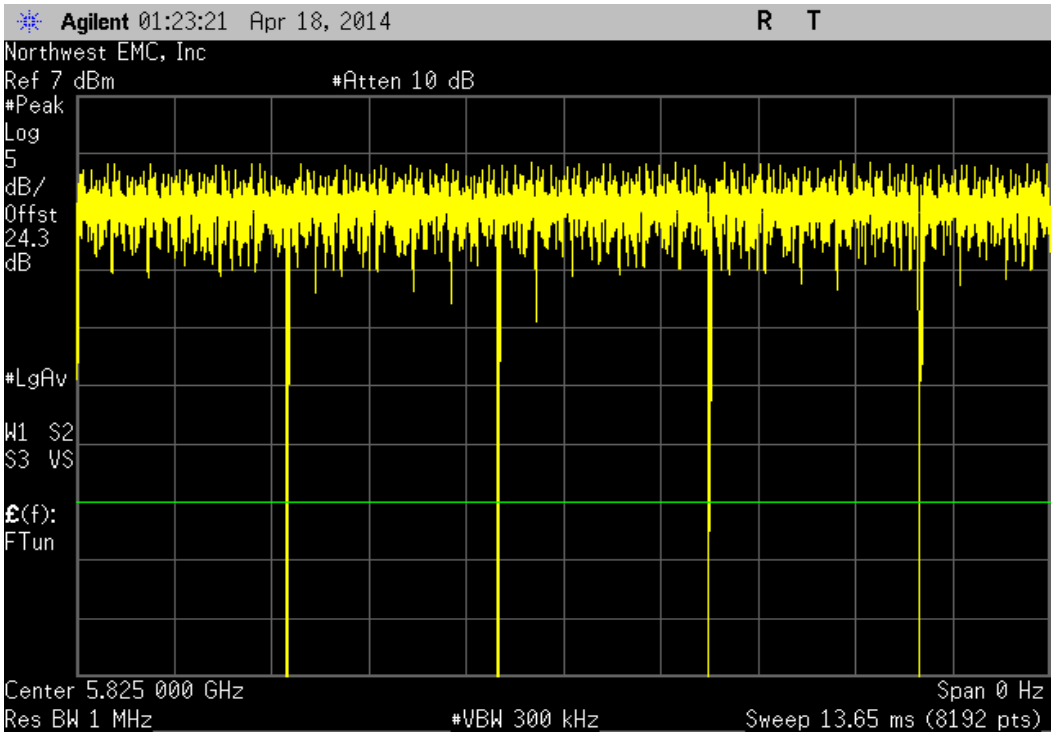
IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, High Channel 165, 5825 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	2.93 mS	2.958 mS	1	99.1	N/A	N/A



IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, High Channel 165, 5825 MHz

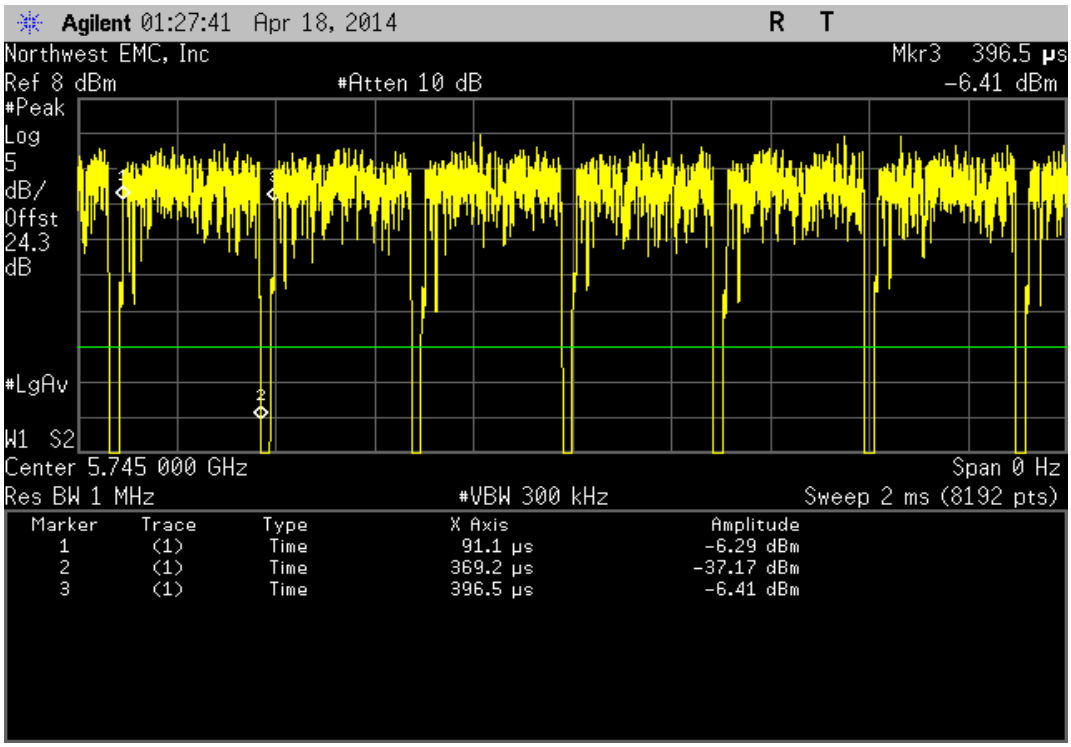
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

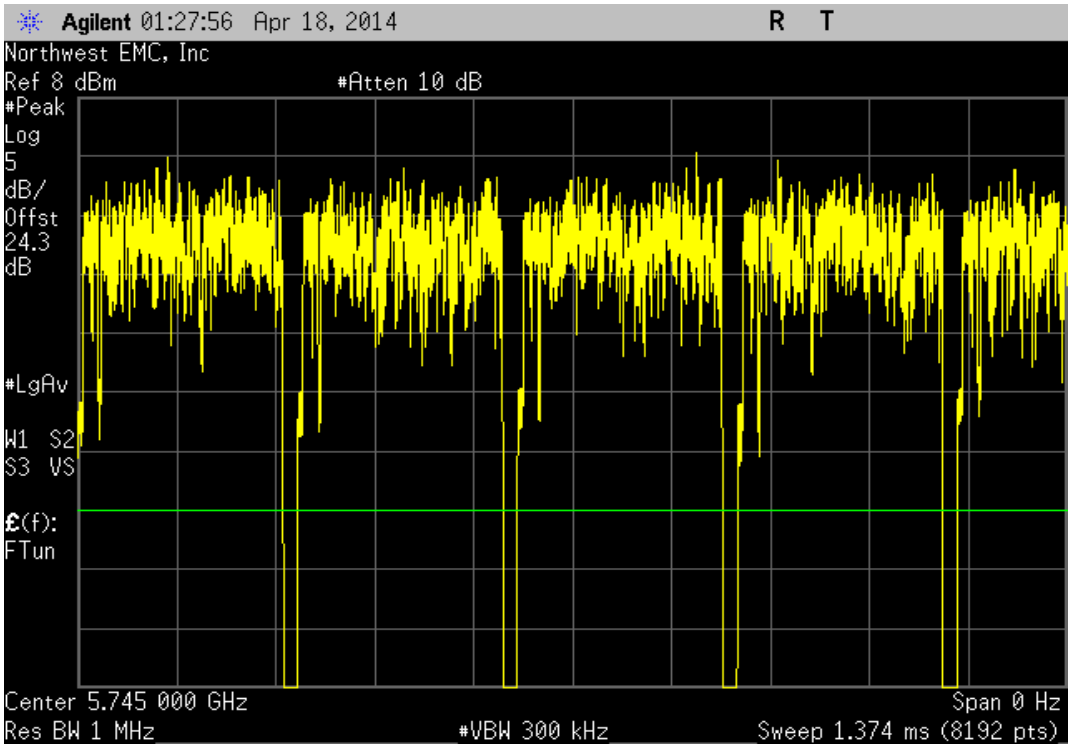
IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, Low Channel 149, 5745 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	278.1 uS	305.4 uS	1	91.1	N/A	N/A



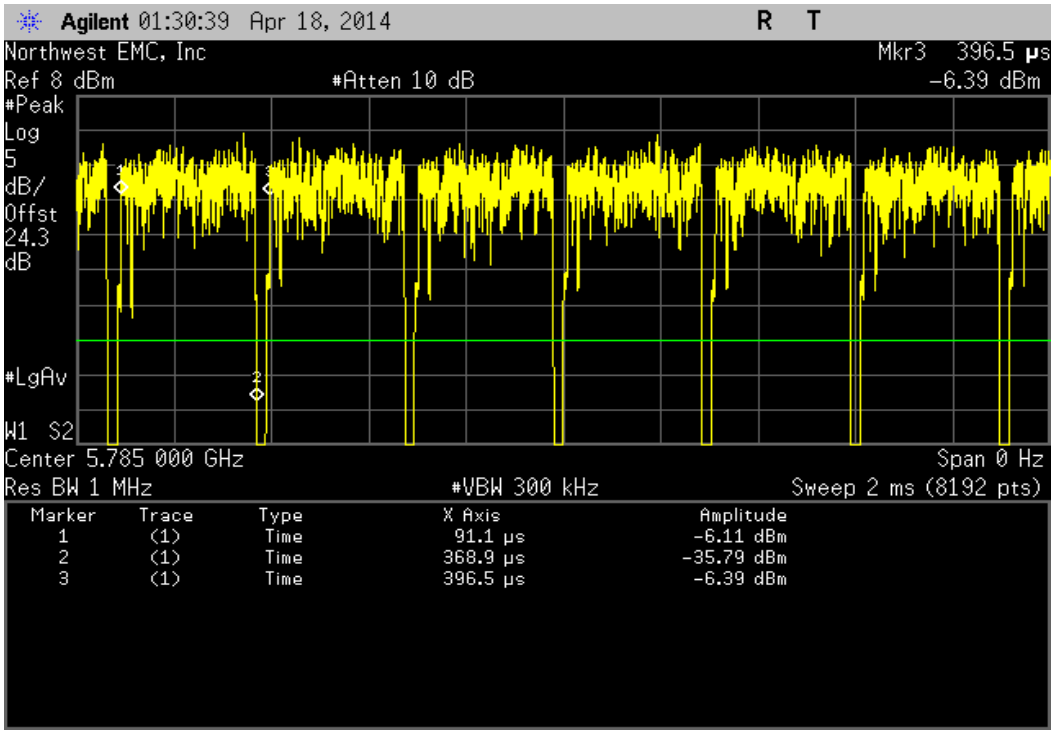
IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, Low Channel 149, 5745 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



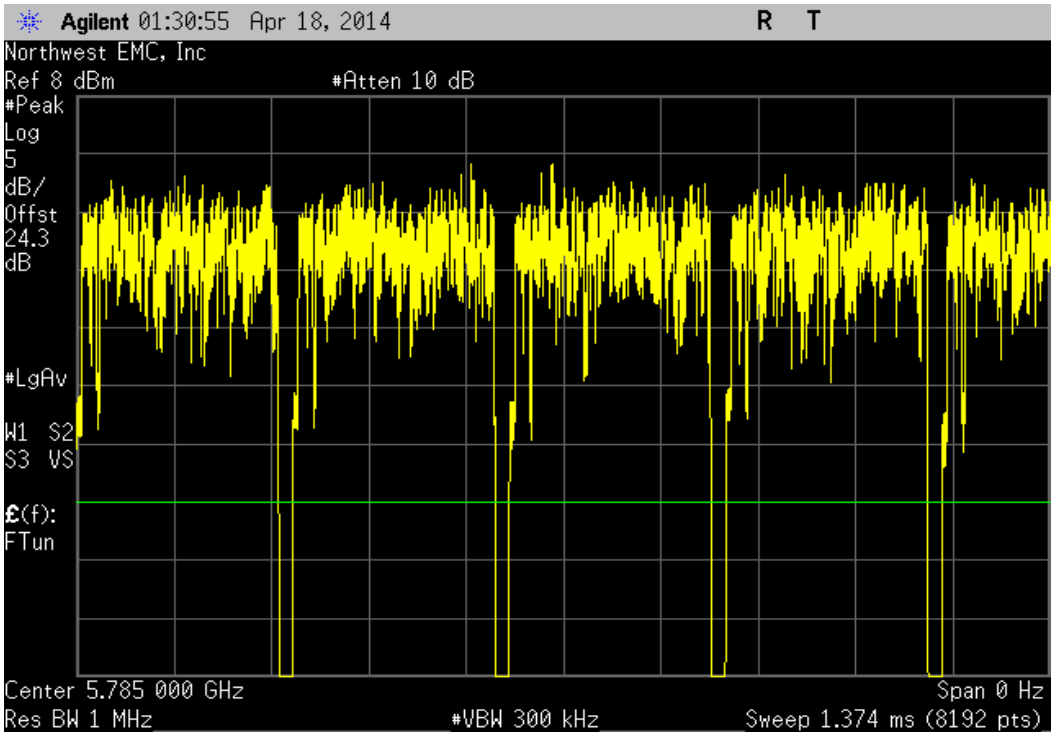
IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, Mid Channel 157, 5785 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	277.8 uS	305.4 uS	1	91	N/A	N/A



IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, Mid Channel 157, 5785 MHz

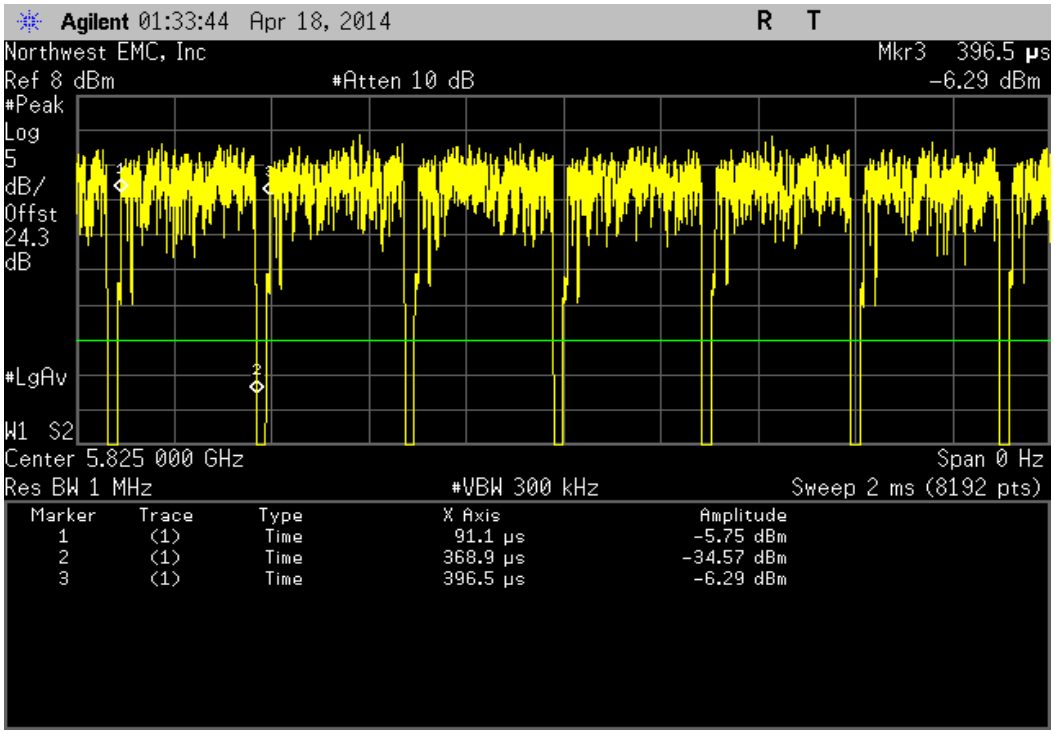
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

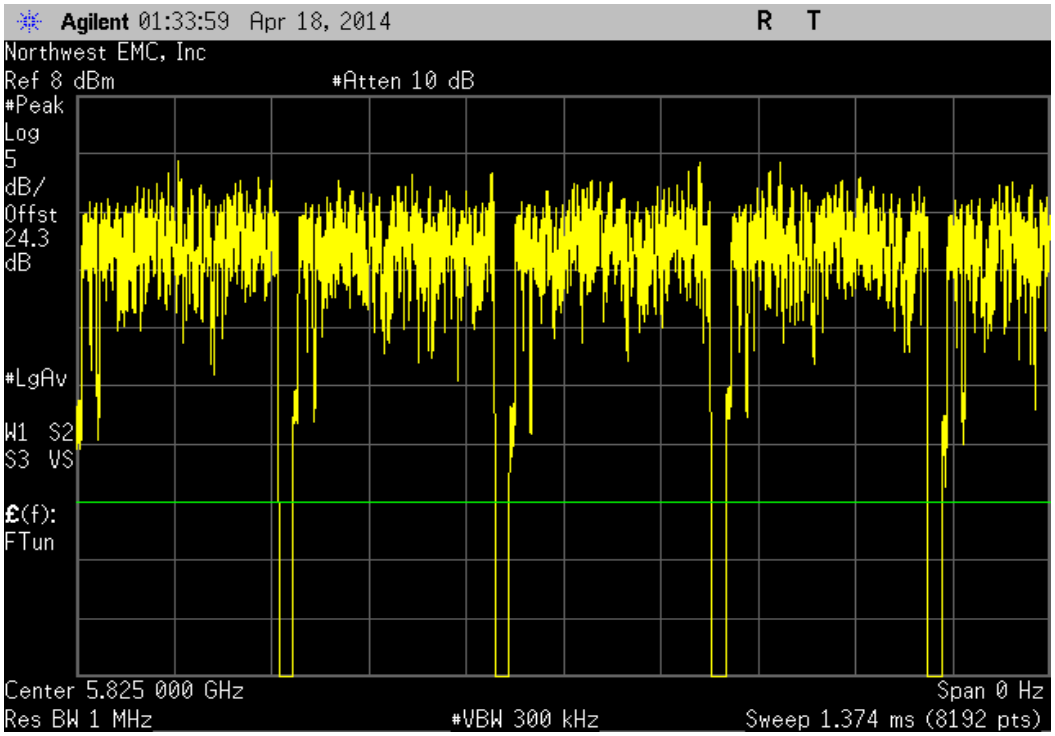
IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, High Channel 165, 5825 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	277.8 uS	305.4 uS	1	91	N/A	N/A



IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, High Channel 165, 5825 MHz

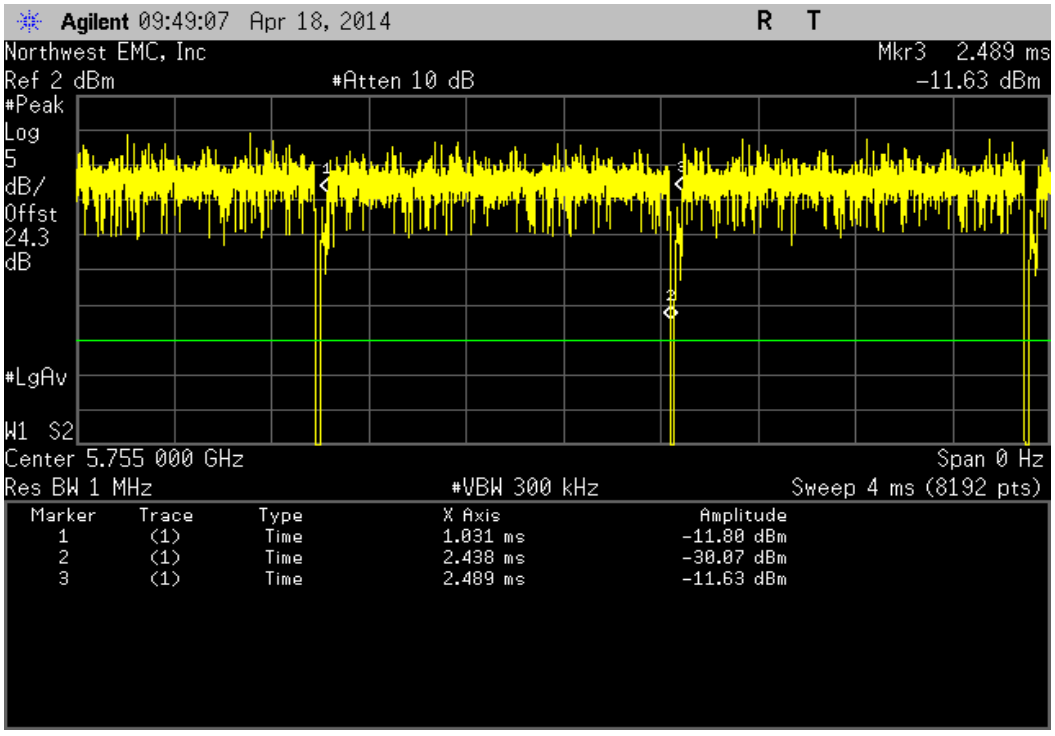
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

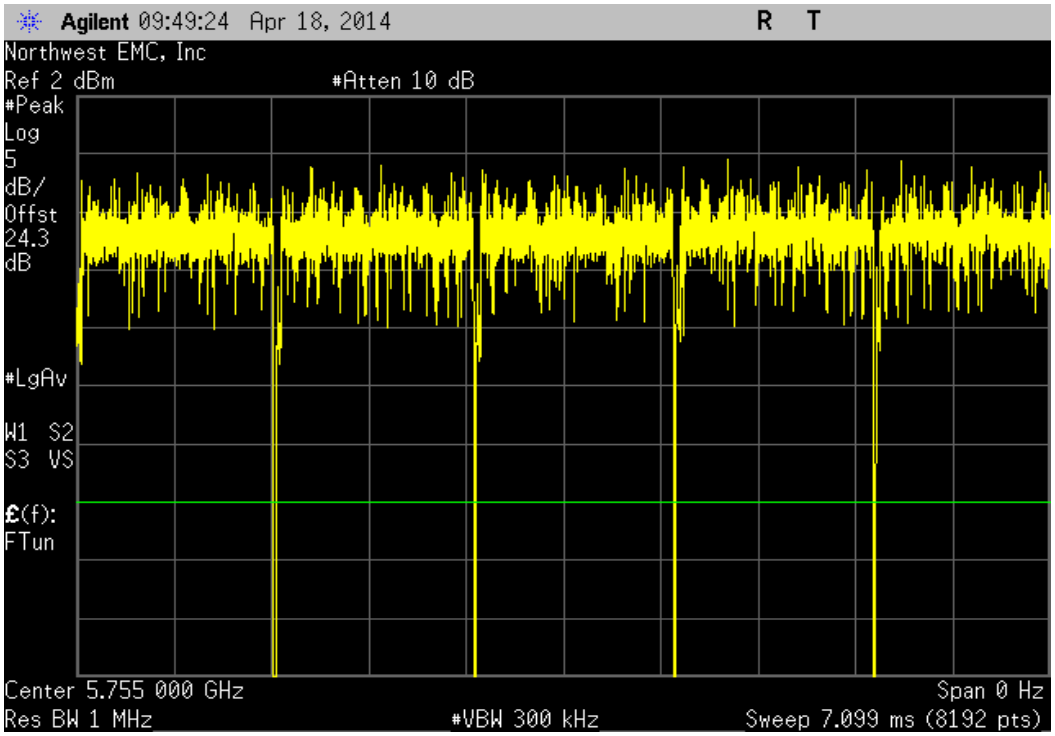
IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149/153, 5755 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.406 mS	1.458 mS	1	96.5	N/A	N/A



IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149/153, 5755 MHz

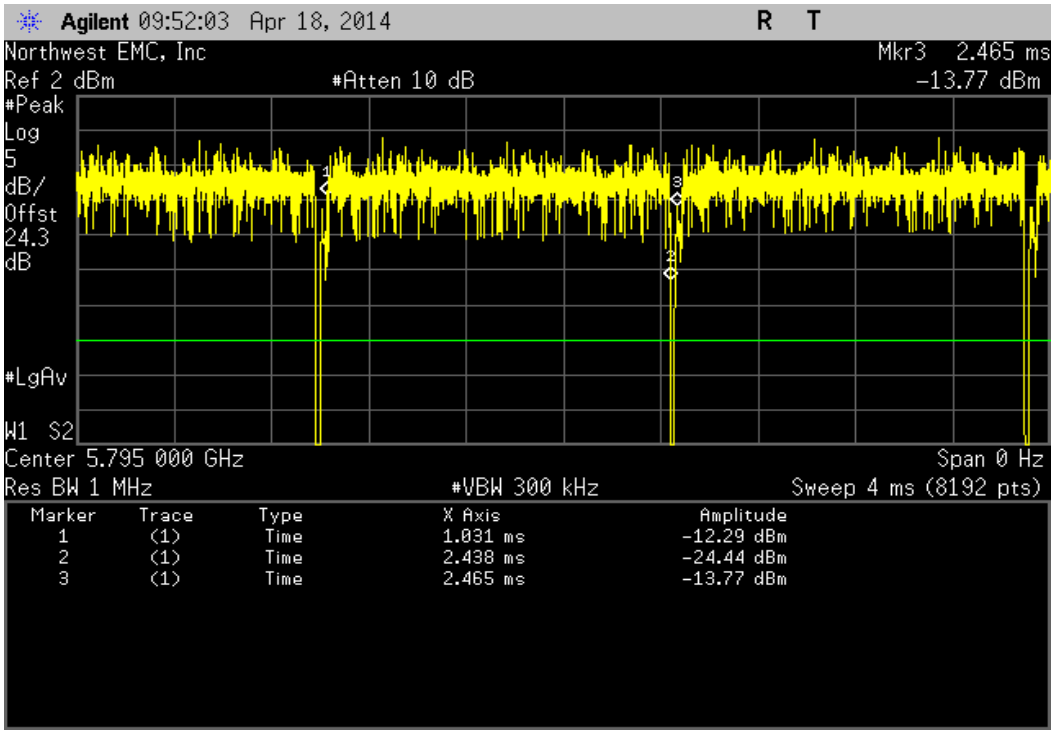
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

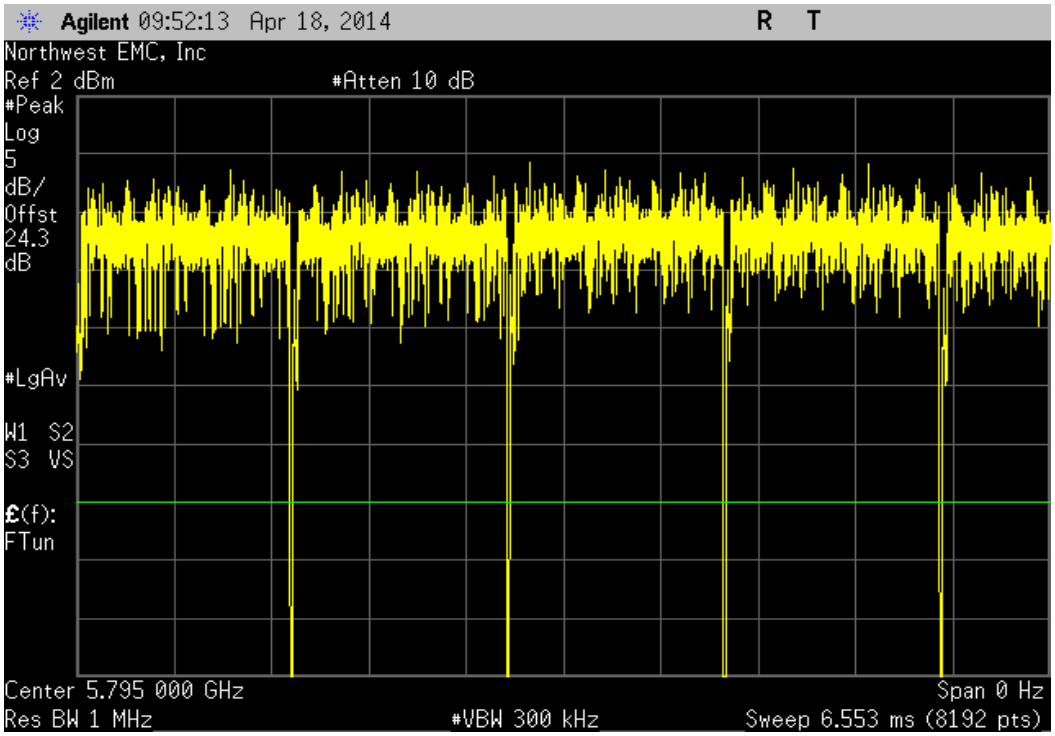
IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, High Channel 157/161, 5795 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.406 mS	1.434 mS	1	98.1	N/A	N/A



IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, High Channel 157/161, 5795 MHz

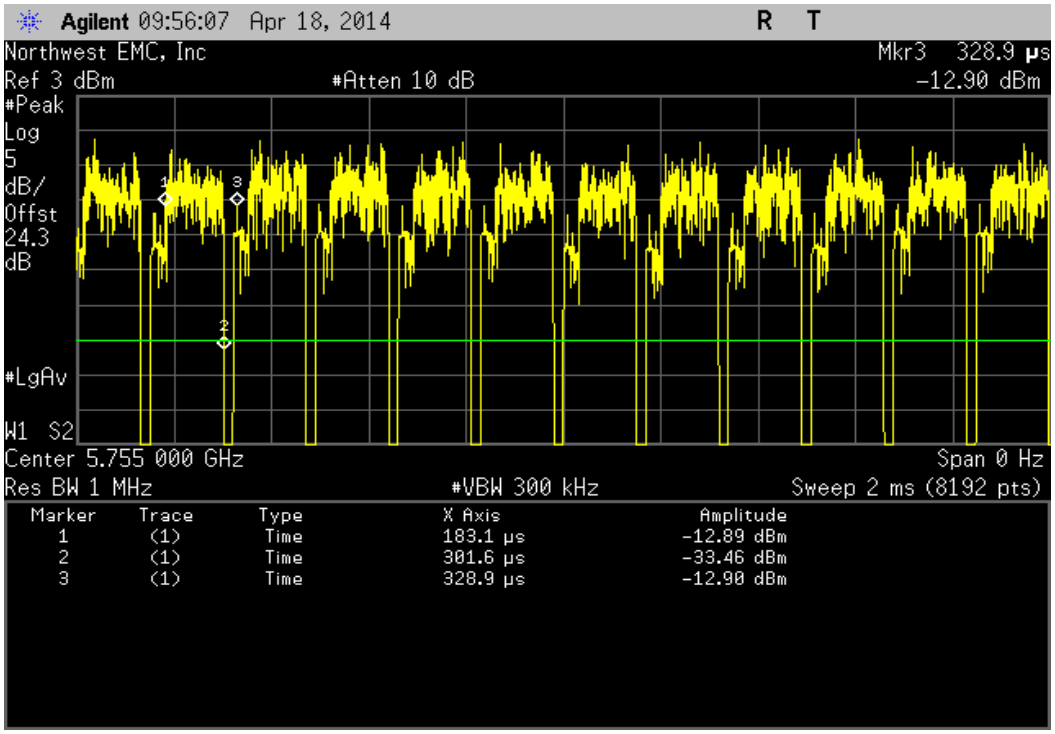
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

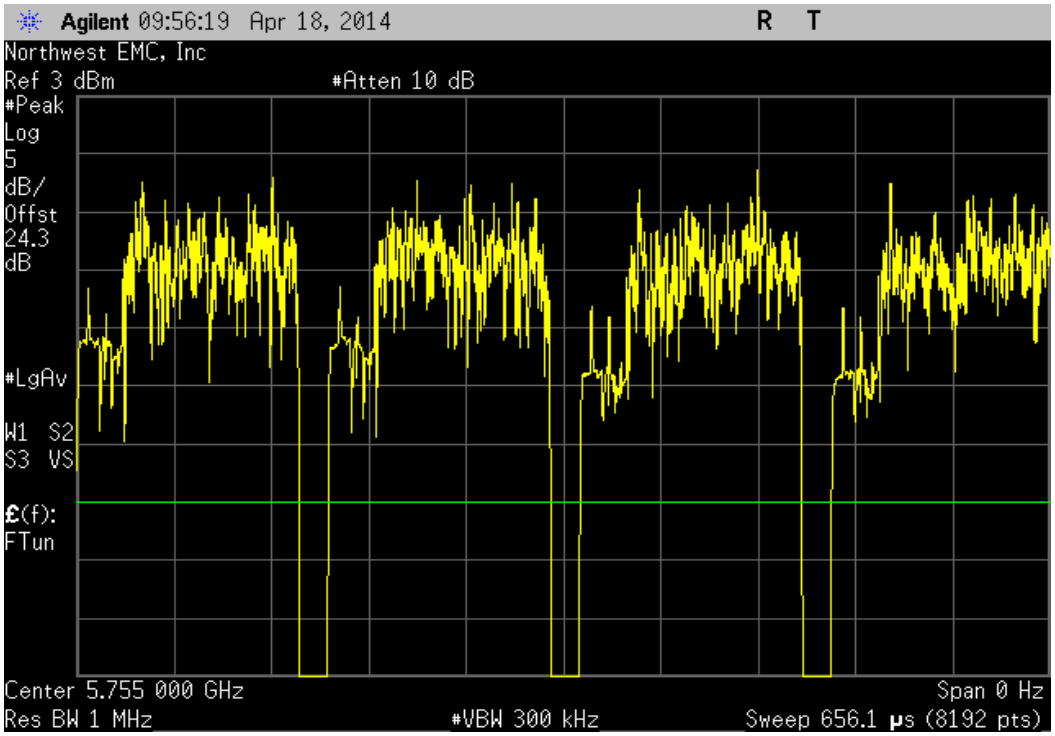
IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, Low Channel 149/153, 5755 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	118.5 uS	145.8 uS	1	81.3	N/A	N/A



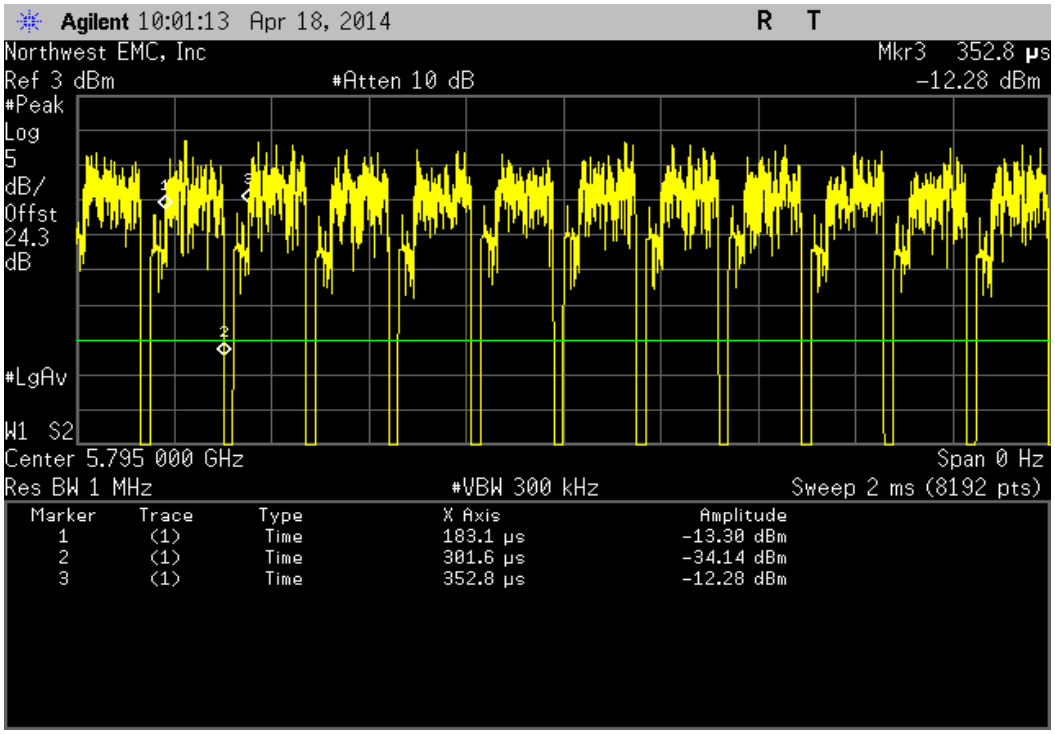
IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, Low Channel 149/153, 5755 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	4	N/A	N/A	N/A



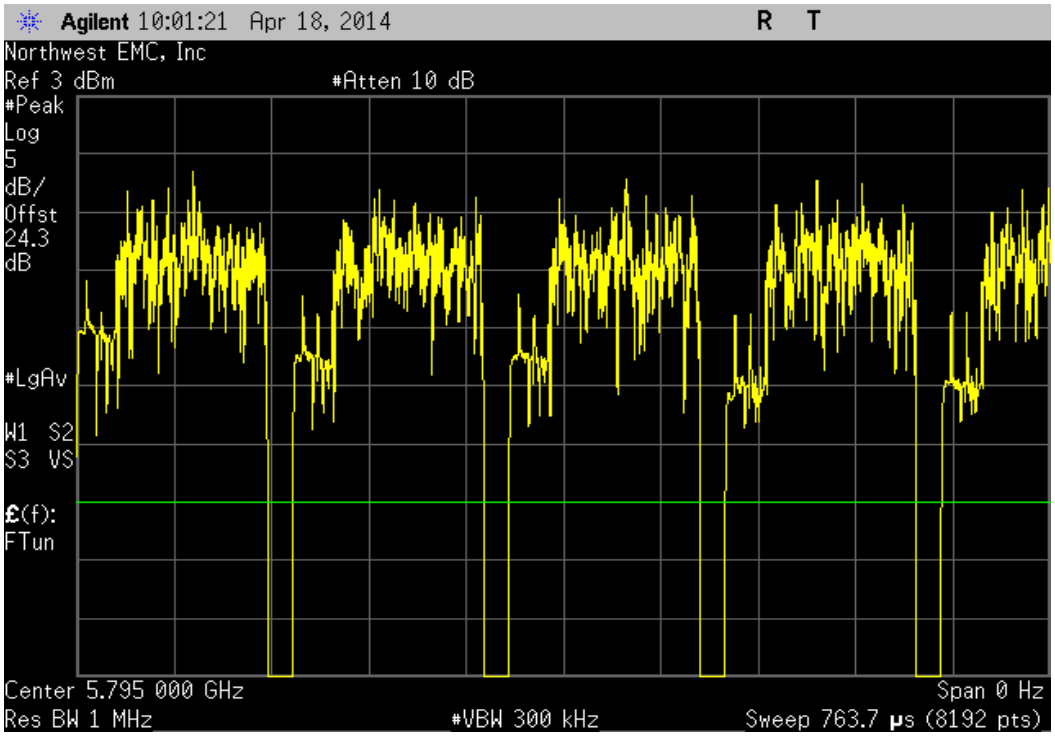
IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, High Channel 157/161, 5795 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	118.5 uS	169.7 uS	1	69.8	N/A	N/A



IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, High Channel 157/161, 5795 MHz

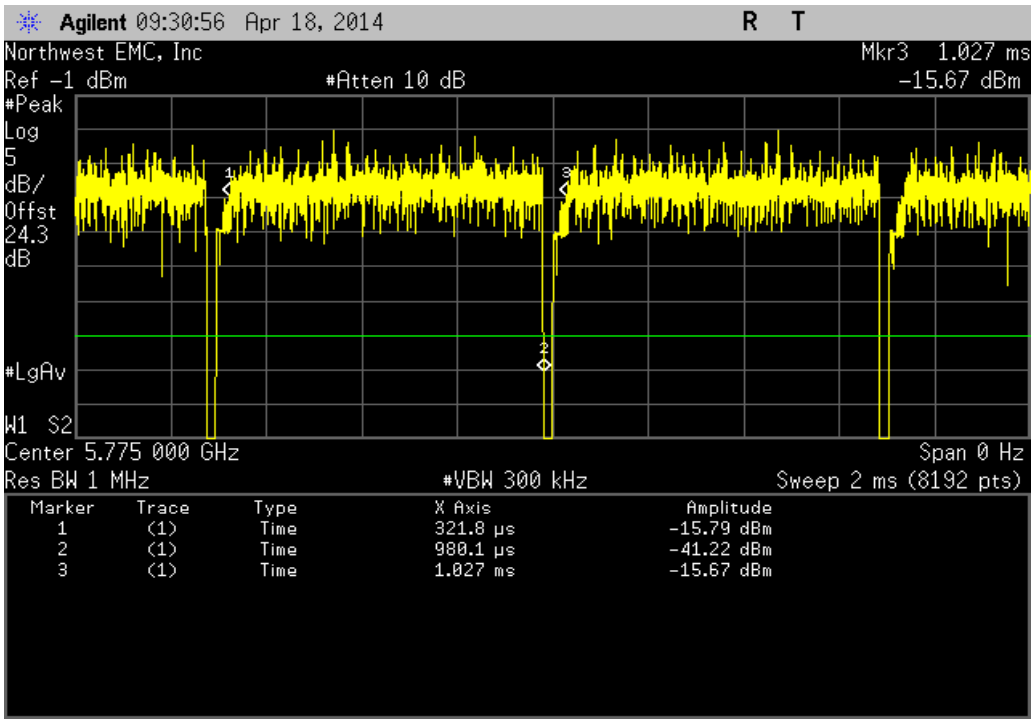
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

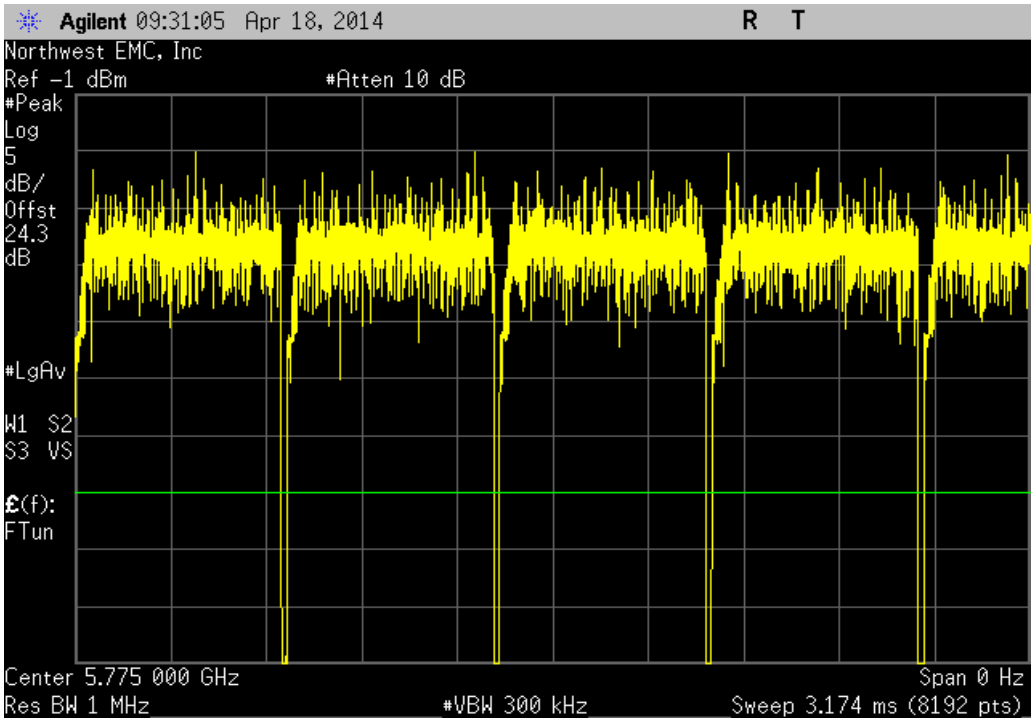
IEEE 802.11(ac), 80 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149/153/157/161, 5775 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
658.3 uS	705.4 uS	1	93.3	N/A	N/A



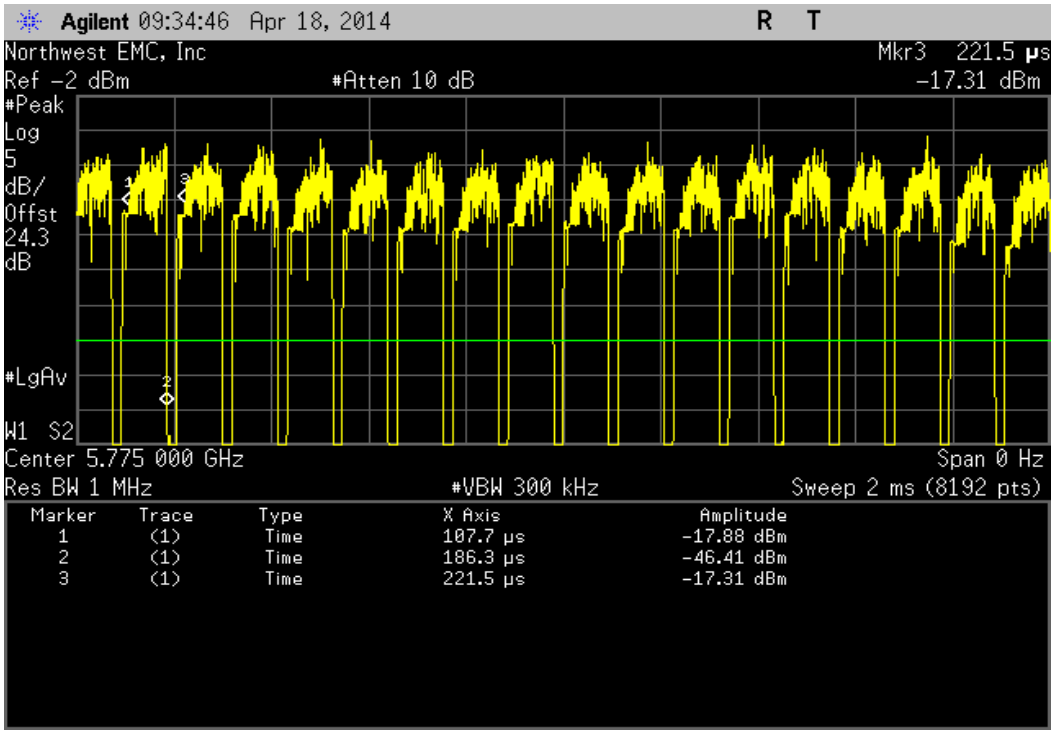
IEEE 802.11(ac), 80 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149/153/157/161, 5775 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



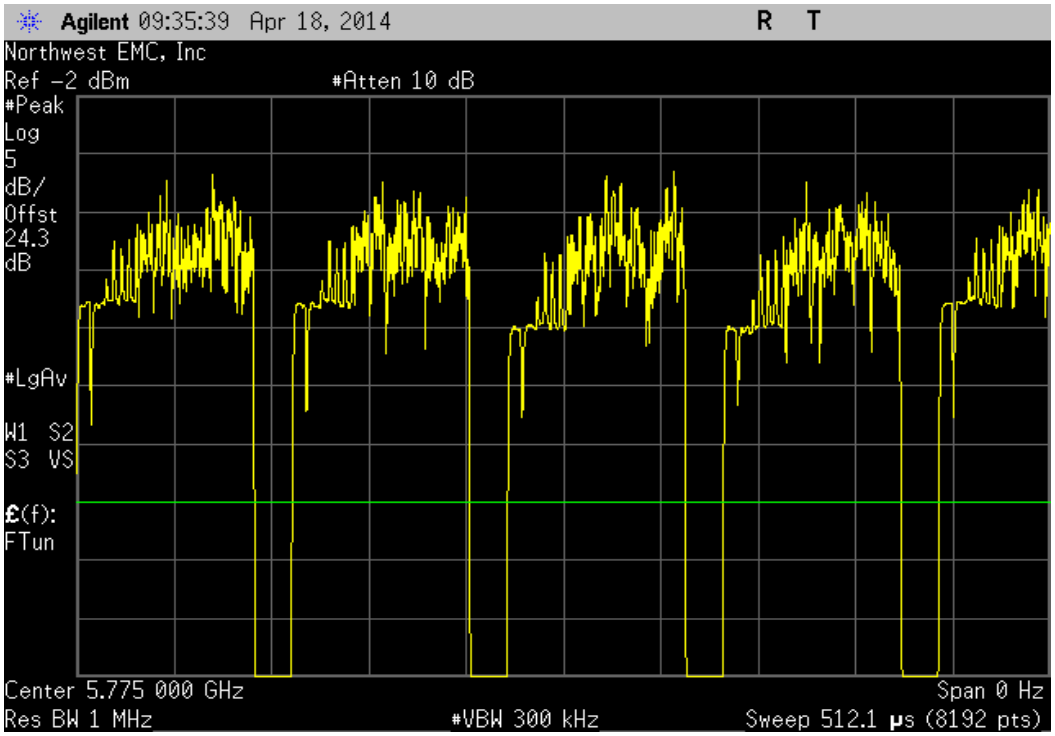
IEEE 802.11(ac), 80 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, Low Channel 149/153/157/161, 5775 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	78.6 uS	113.8 uS	1	69.1	N/A	N/A



IEEE 802.11(ac), 80 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, Low Channel 149/153/157/161, 5775 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

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 (mo.)
40GHz DC Block	Miteq	DCB4000	AMD	5/16/2013	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/30/2013	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Power Meter	Gigatronics	8651A	SPM	11/26/2013	24
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	36
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	2/3/2014	12
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36
Spectrum Analyzer	Agilent	E4446A	AAQ	1/21/2014	24

TEST DESCRIPTION

The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was 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.

If the transmit duty cycle < 98 percent, burst gating was used during some of the other tests in this report to only measure during the burst duration.

TRANSMISSION BURST DURATION

EUT:	Model 1631			**Work Order:**	MCSO1698
Serial Number:	006840341053			**Date:**	04/23/14
Customer:	Microsoft Corporation			**Temperature:**	22.3°C
Attendees:	None			**Humidity:**	32%
Project:	None			**Barometric Pres.:**	1014
Tested by:	Jared Ison	**Power:**	110VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2014	ANSI C63.10:2009

COMMENTS

Modes of operation tested were client provided. Reference power level table for channel power setting.

DEVIATIONS FROM TEST STANDARD

None

Configuration #	6	Signature

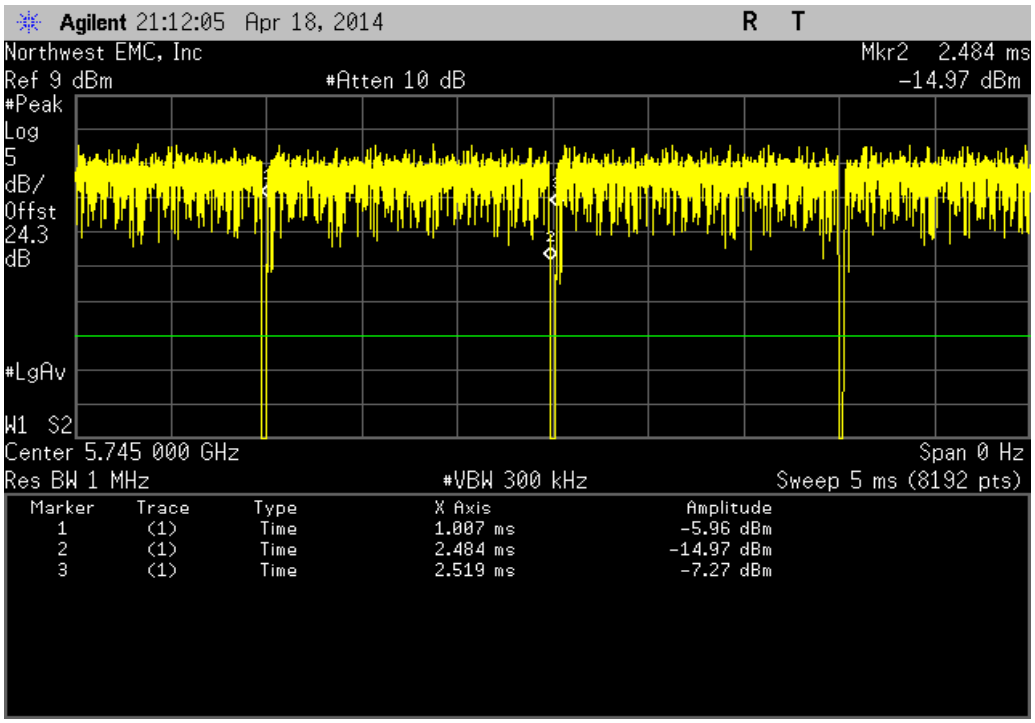
		Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
A IEEE 802.11(n)							
20 MHz							
5725 MHz - 5850 MHz Band							
HT, MCS8							
	Low Channel 149, 5745 M	1.477 mS	1.511 mS	1	97.7	N/A	N/A
	Low Channel 149, 5745 M	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 157, 5785 MH	1.478 mS	1.51 mS	1	97.9	N/A	N/A
	Mid Channel 157, 5785 MH	N/A	N/A	5	N/A	N/A	N/A
	High Channel 165, 5825 M	1.478 mS	1.512 mS	1	97.8	N/A	N/A
	High Channel 165, 5825 M	N/A	N/A	5	N/A	N/A	N/A
HT, MCS15							
	Low Channel 149, 5745 M	180.151 uS	215.214 uS	1	83.7	N/A	N/A
	Low Channel 149, 5745 M	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 157, 5785 MH	182.2 uS	215.4 uS	1	84.6	N/A	N/A
	Mid Channel 157, 5785 MH	N/A	N/A	5	N/A	N/A	N/A
	High Channel 165, 5825 M	182 uS	215.2 uS	1	84.6	N/A	N/A
	High Channel 165, 5825 M	N/A	N/A	5	N/A	N/A	N/A
40 MHz							
5725 MHz - 5850 MHz Band							
HT, MCS8							
	Low Channel 149/153, 575	706.1 uS	763.6 uS	1	92.5	N/A	N/A
	Low Channel 149/153, 575	N/A	N/A	5	N/A	N/A	N/A
	High Channel 157/161, 57	706.5 uS	763.6 uS	1	92.5	N/A	N/A
	High Channel 157/161, 57	N/A	N/A	5	N/A	N/A	N/A
HT, MCS15							
	Low Channel 149/153, 575	80.318 uS	139.669 uS	1	57.5	N/A	N/A
	Low Channel 149/153, 575	N/A	N/A	5	N/A	N/A	N/A
	High Channel 157/161, 57	80.6 uS	139.7 uS	1	57.7	N/A	N/A
	High Channel 157/161, 57	N/A	N/A	5	N/A	N/A	N/A
A IEEE 802.11(ac)							
20 MHz							
5725 MHz - 5850 MHz Band							
VHT, MCS0							
	Low Channel 149, 5745 M	2.93 mS	2.958 mS	1	99.1	N/A	N/A
	Low Channel 149, 5745 M	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 157, 5785 MH	2.93 mS	2.958 mS	1	99.1	N/A	N/A
	Mid Channel 157, 5785 MH	N/A	N/A	5	N/A	N/A	N/A
	High Channel 165, 5825 M	2.93 mS	2.958 mS	1	99.1	N/A	N/A
	High Channel 165, 5825 M	N/A	N/A	5	N/A	N/A	N/A
VHT, MCS8							
	Low Channel 149, 5745 M	277.8 uS	305.4 uS	1	91	N/A	N/A
	Low Channel 149, 5745 M	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 157, 5785 MH	278.1 uS	305.4 uS	1	91.1	N/A	N/A
	Mid Channel 157, 5785 MH	N/A	N/A	6	N/A	N/A	N/A
	High Channel 165, 5825 M	278.1 uS	305.7 uS	1	91	N/A	N/A
	High Channel 165, 5825 M	N/A	N/A	5	N/A	N/A	N/A
40 MHz							
5725 MHz - 5850 MHz Band							
VHT, MCS0							
	Low Channel 149/153, 575	1.407 mS	1.458 mS	1	96.5	N/A	N/A
	Low Channel 149/153, 575	N/A	N/A	5	N/A	N/A	N/A
	High Channel 157/161, 57	1.406 mS	1.458 mS	1	96.5	N/A	N/A
	High Channel 157/161, 57	N/A	N/A	5	N/A	N/A	N/A
VHT, MCS9							
	Low Channel 149/153, 575	118.5 uS	169.7 uS	1	69.8	N/A	N/A
	Low Channel 149/153, 575	N/A	N/A	5	N/A	N/A	N/A
	High Channel 157/161, 57	118.4 uS	169.7 uS	1	69.8	N/A	N/A
	High Channel 157/161, 57	N/A	N/A	5	N/A	N/A	N/A
80 MHz							
5725 MHz - 5850 MHz Band							
VHT, MCS0							
	Low Channel 149/153/157	666.2 uS	705.4 uS	1	94.4	N/A	N/A
	Low Channel 149/153/157	N/A	N/A	5	N/A	N/A	N/A
VHT, MCS9							
	Low Channel 149/153/157	78.6 uS	113.6 uS	1	69.2	N/A	N/A
	Low Channel 149/153/157	N/A	N/A	5	N/A	N/A	N/A
B IEEE 802.11(n)							
20 MHz							
5725 MHz - 5850 MHz Band							
HT, MCS8							
	Low Channel 149, 5745 M	1.476 mS	1.511 mS	1	97.6	N/A	N/A
	Low Channel 149, 5745 M	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 157, 5785 MH	1.476 mS	1.513 mS	1	97.5	N/A	N/A
	Mid Channel 157, 5785 MH	N/A	N/A	5	N/A	N/A	N/A
	High Channel 165, 5825 M	1.477 mS	1.512 mS	1	97.7	N/A	N/A
	High Channel 165, 5825 M	N/A	N/A	5	N/A	N/A	N/A
HT, MCS15							
	Low Channel 149, 5745 M	181.2 uS	215.3 uS	1	84.2	N/A	N/A
	Low Channel 149, 5745 M	N/A	N/A	5	N/A	N/A	N/A

			Mid Channel 157, 5785 MH	181.9 uS	215.3 uS	1	84.5	N/A	N/A
			Mid Channel 157, 5785 MH	N/A	N/A	5	N/A	N/A	N/A
			High Channel 165, 5825 M	181.2 uS	215.2 uS	1	84.2	N/A	N/A
			High Channel 165, 5825 M	N/A	N/A	5	N/A	N/A	N/A
	40 MHz								
		5725 MHz - 5850 MHz Band							
			HT, MCS8						
			Low Channel 149/153, 575	704.7 uS	763.3 uS	1	92.3	N/A	N/A
			Low Channel 149/153, 575	N/A	N/A	5	N/A	N/A	N/A
			High Channel 157/161, 57	705 uS	764 uS	1	92.3	N/A	N/A
			High Channel 157/161, 57	N/A	N/A	5	N/A	N/A	N/A
			HT, MCS15						
			Low Channel 149/153, 575	81.1 uS	139.9 uS	1	58	N/A	N/A
			Low Channel 149/153, 575	N/A	N/A	5	N/A	N/A	N/A
			High Channel 157/161, 57	81.1 uS	139.9 uS	1	58	N/A	N/A
			High Channel 157/161, 57	N/A	N/A	5	N/A	N/A	N/A
B IEEE 802.11(ac)									
	20 MHz								
		5725 MHz - 5850 MHz Band							
			VHT, MCS0						
			Low Channel 149, 5745 M	2.929 mS	2.958 mS	1	99	N/A	N/A
			Low Channel 149, 5745 M	N/A	N/A	5	N/A	N/A	N/A
			Mid Channel 157, 5785 MH	2.929 mS	2.958 mS	1	99	N/A	N/A
			Mid Channel 157, 5785 MH	N/A	N/A	5	N/A	N/A	N/A
			High Channel 165, 5825 M	2.929 mS	2.958 mS	1	99	N/A	N/A
			High Channel 165, 5825 M	N/A	N/A	5	N/A	N/A	N/A
			VHT, MCS8						
			Low Channel 149, 5745 M	277.1 uS	305.4 uS	1	90.7	N/A	N/A
			Low Channel 149, 5745 M	N/A	N/A	5	N/A	N/A	N/A
			Mid Channel 157, 5785 MH	277.7 uS	305.7 uS	1	90.8	N/A	N/A
			Mid Channel 157, 5785 MH	N/A	N/A	5	N/A	N/A	N/A
			High Channel 165, 5825 M	275.391 uS	305.7 uS	1	90.1	N/A	N/A
			High Channel 165, 5825 M	N/A	N/A	5	N/A	N/A	N/A
	40 MHz								
		5725 MHz - 5850 MHz Band							
			VHT, MCS0						
			Low Channel 149/153, 575	1.404 mS	1.458 mS	1	96.3	N/A	N/A
			Low Channel 149/153, 575	N/A	N/A	5	N/A	N/A	N/A
			High Channel 157/161, 57	1.405 mS	1.458 mS	1	96.4	N/A	N/A
			High Channel 157/161, 57	N/A	N/A	5	N/A	N/A	N/A
			VHT, MCS9						
			Low Channel 149/153, 575	116.5 uS	169.7 uS	1	68.7	N/A	N/A
			Low Channel 149/153, 575	N/A	N/A	5	N/A	N/A	N/A
			High Channel 157/161, 57	116.8 uS	169.7 uS	1	68.8	N/A	N/A
			High Channel 157/161, 57	N/A	N/A	5	N/A	N/A	N/A
	80 MHz								
		5725 MHz - 5850 MHz Band							
			VHT, MCS0						
			Low Channel 149/153/157	670.2 uS	721.5 uS	1	92.9	N/A	N/A
			Low Channel 149/153/157	N/A	N/A	5	N/A	N/A	N/A
			VHT, MCS9						
			Low Channel 149/153/157	62.3 uS	113.3 uS	1	55	N/A	N/A
			Low Channel 149/153/157	N/A	N/A	5	N/A	N/A	N/A

TRANSMISSION BURST DURATION

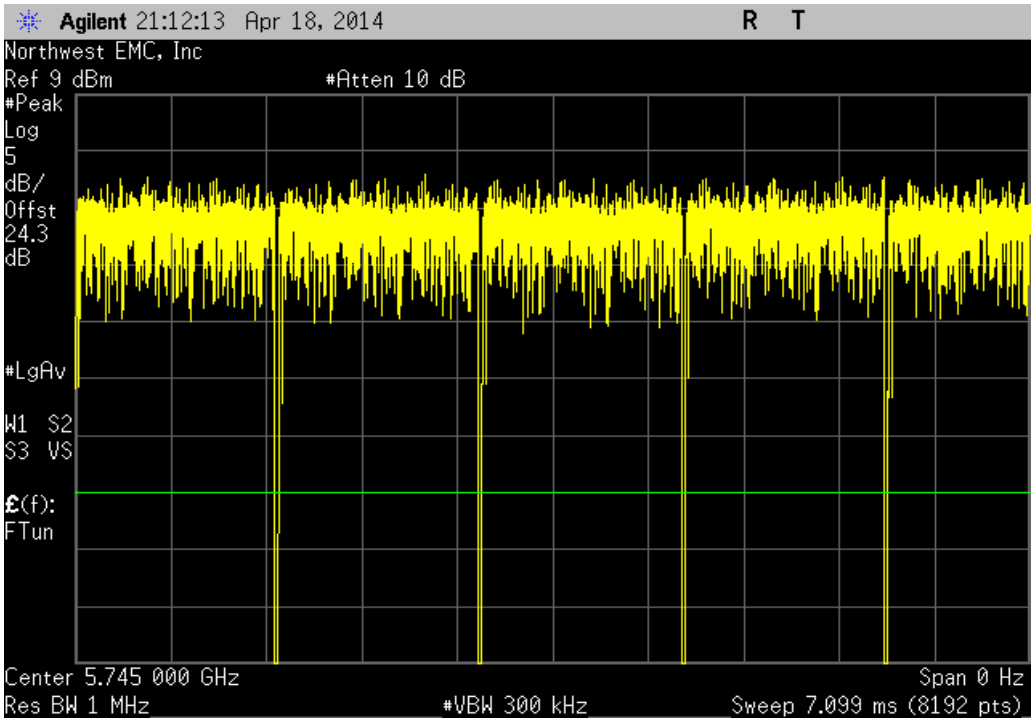
A IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS8, Low Channel 149, 5745 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
1.477 mS	1.511 mS	1	97.7	N/A	N/A



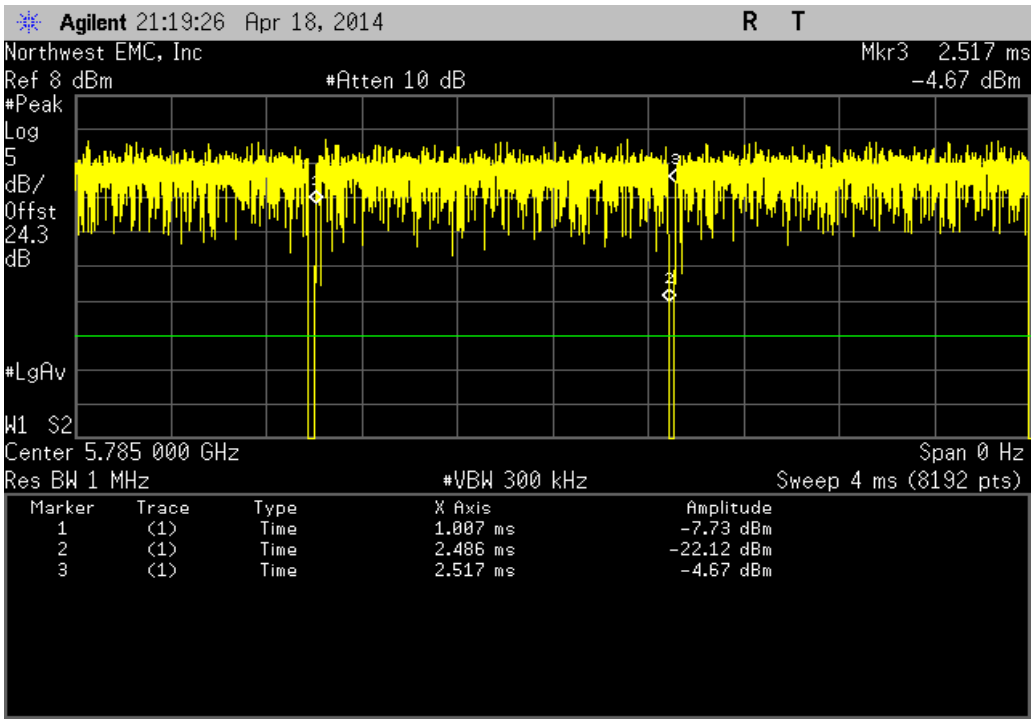
A IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS8, Low Channel 149, 5745 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A

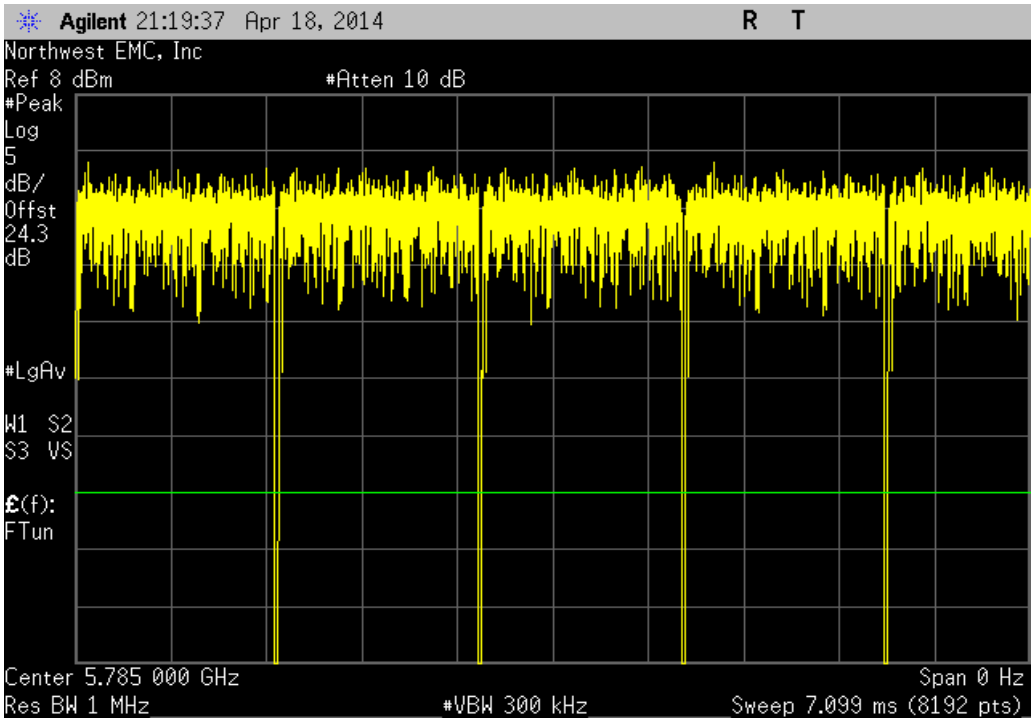


TRANSMISSION BURST DURATION

A IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS8, Mid Channel 157, 5785 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.478 mS	1.51 mS	1	97.9	N/A	N/A

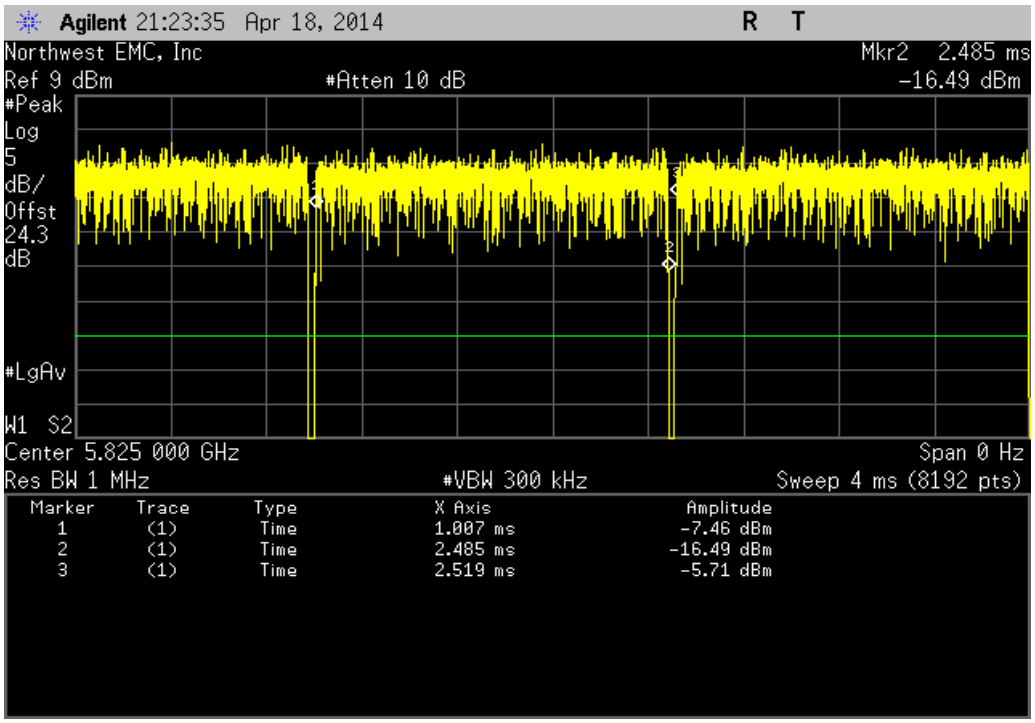


A IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS8, Mid Channel 157, 5785 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A

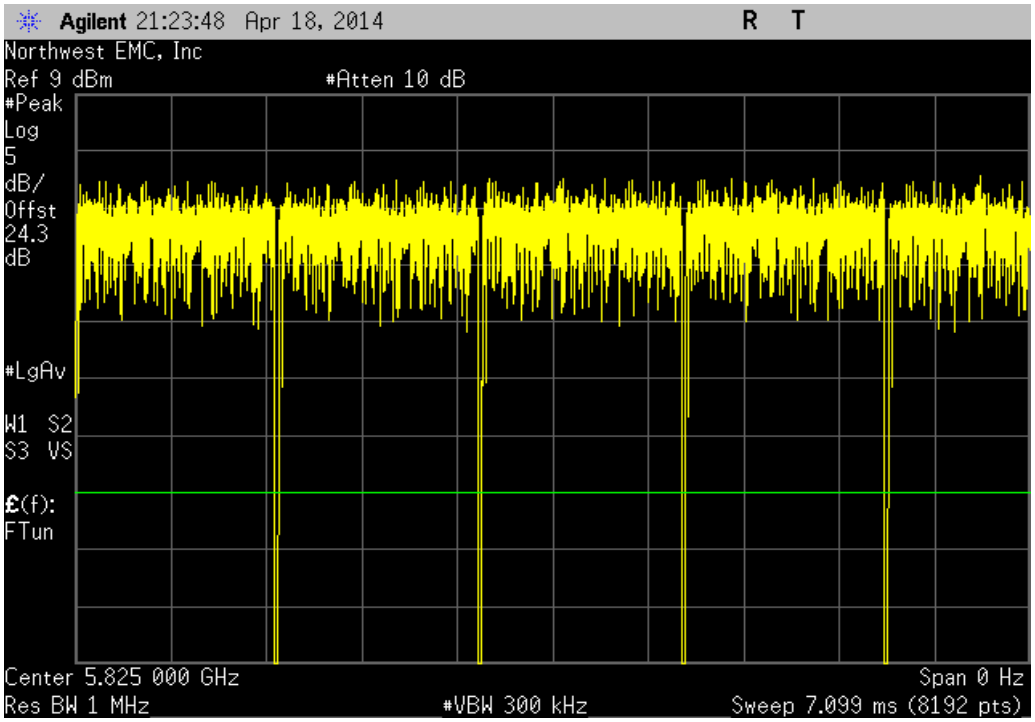


TRANSMISSION BURST DURATION

A IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS8, High Channel 165, 5825 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.478 mS	1.512 mS	1	97.8	N/A	N/A



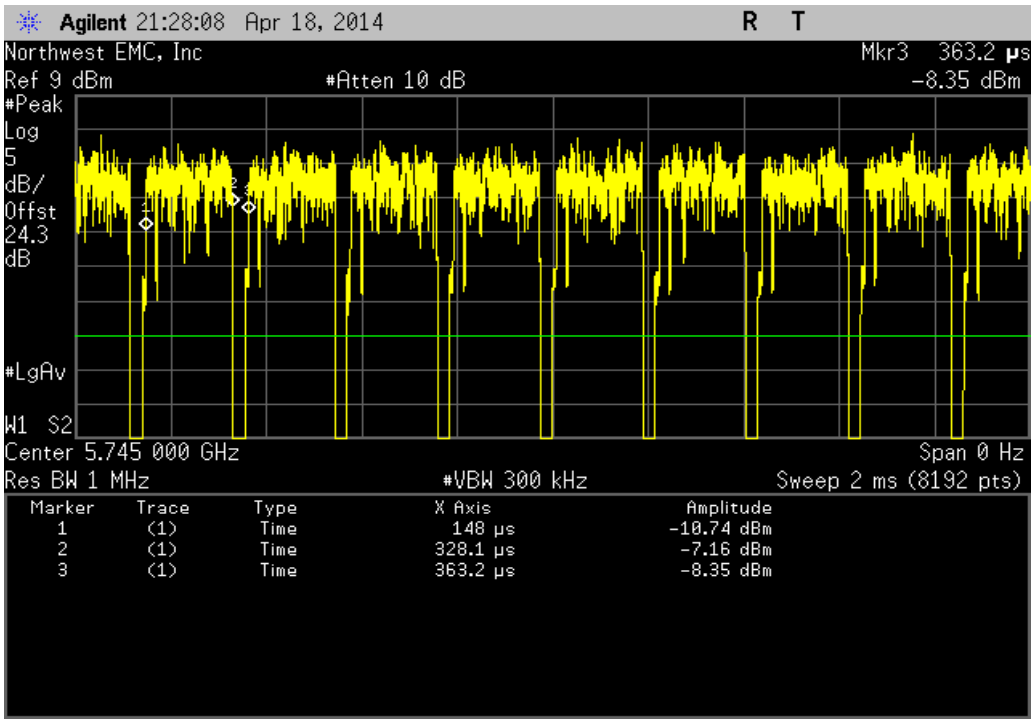
A IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS8, High Channel 165, 5825 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

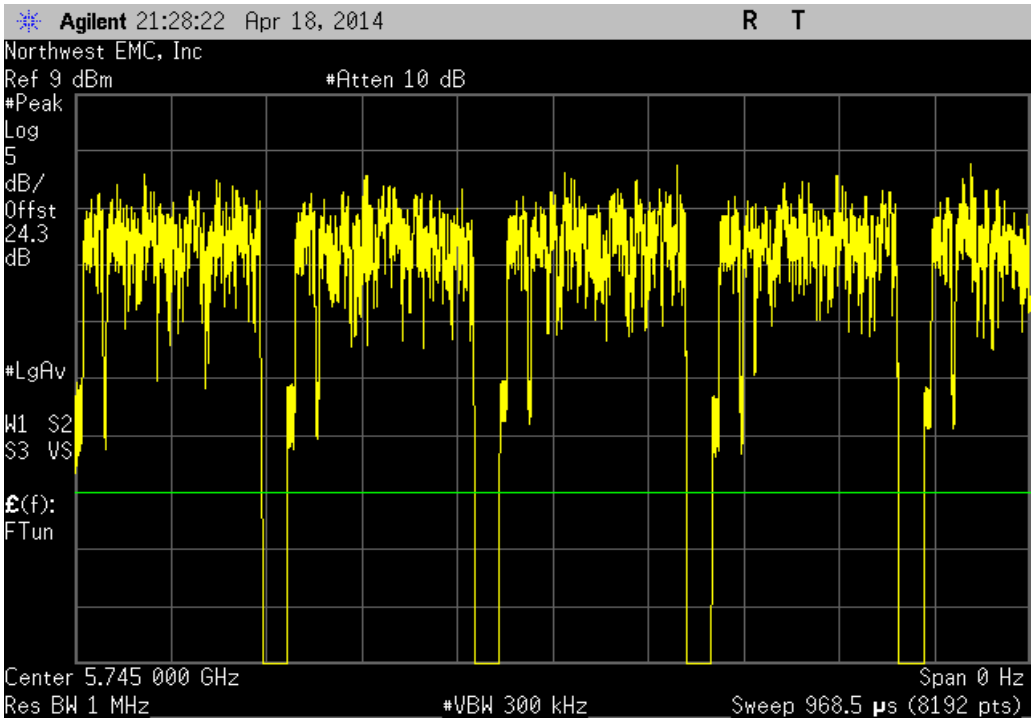
A IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS15, Low Channel 149, 5745 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	180.151 uS	215.214 uS	1	83.7	N/A	N/A



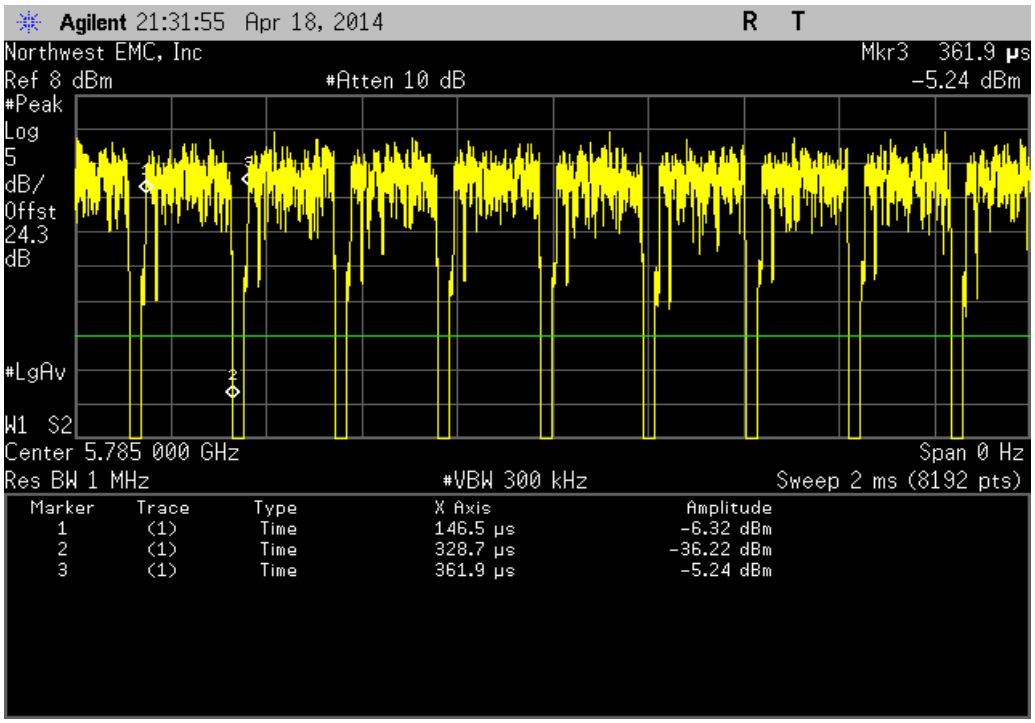
A IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS15, Low Channel 149, 5745 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A

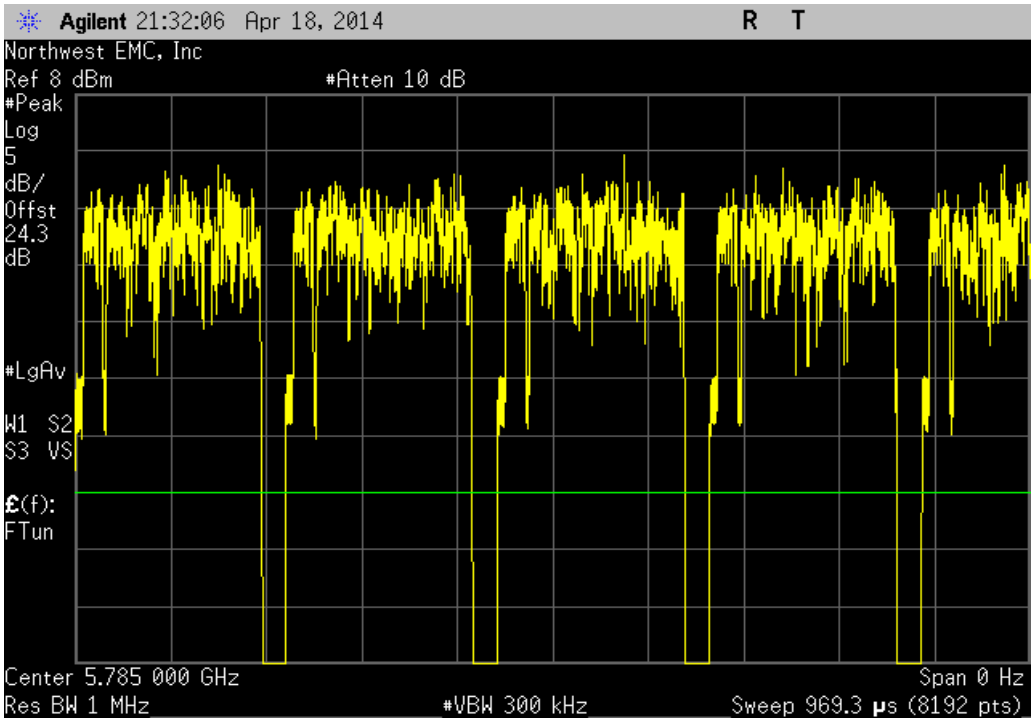


TRANSMISSION BURST DURATION

A IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS15, Mid Channel 157, 5785 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	182.2 uS	215.4 uS	1	84.6	N/A	N/A



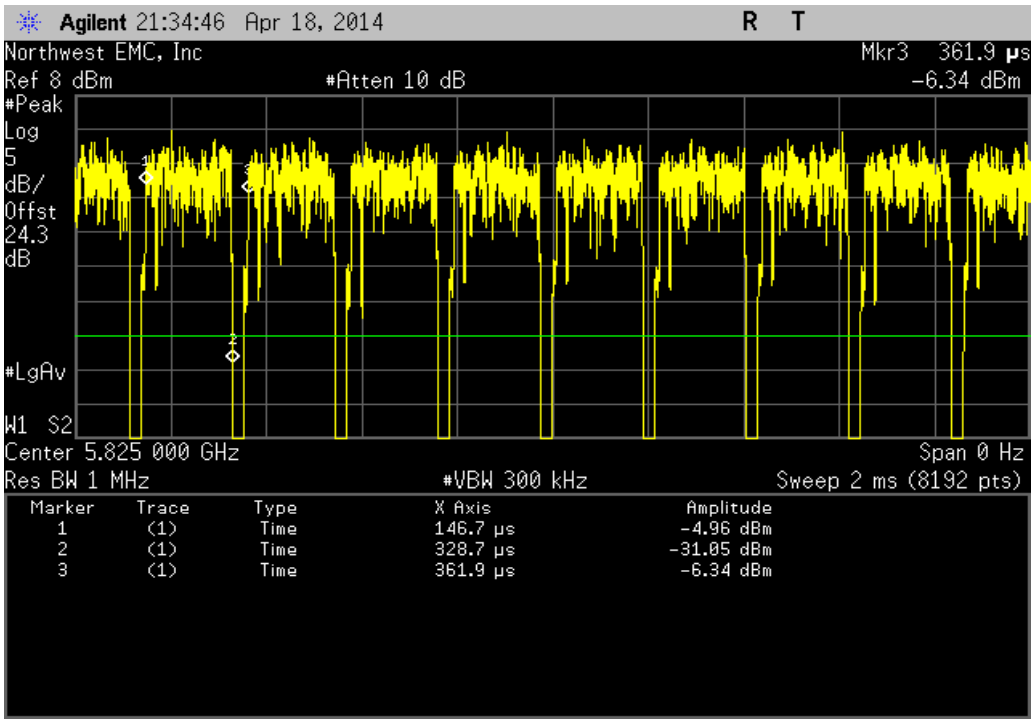
A IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS15, Mid Channel 157, 5785 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

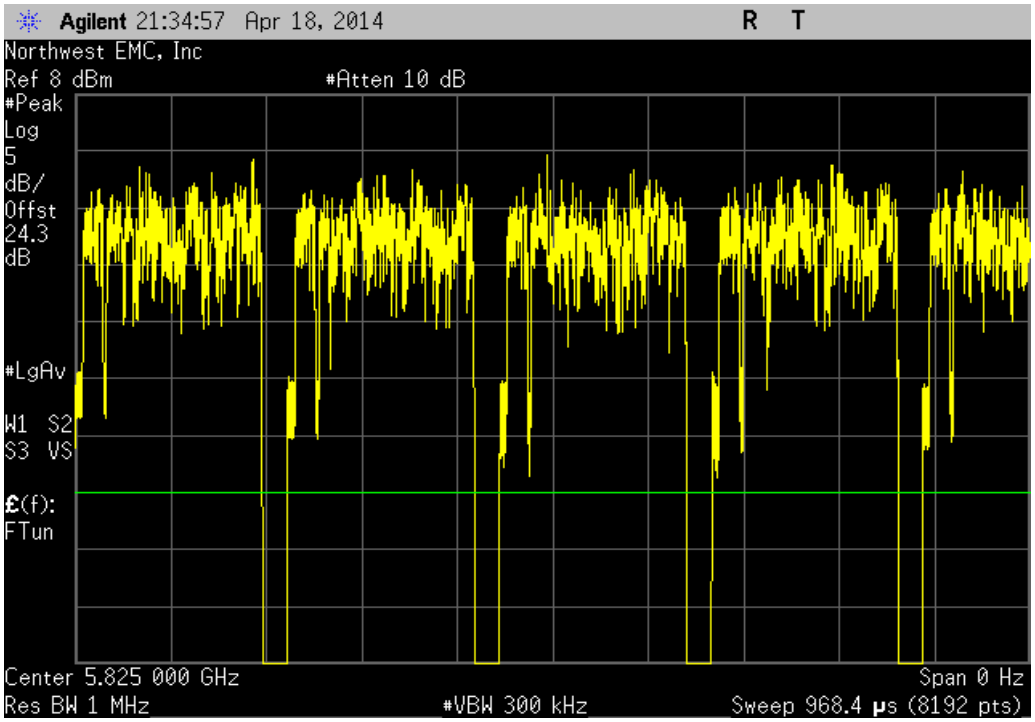
A IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS15, High Channel 165, 5825 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	182 uS	215.2 uS	1	84.6	N/A	N/A



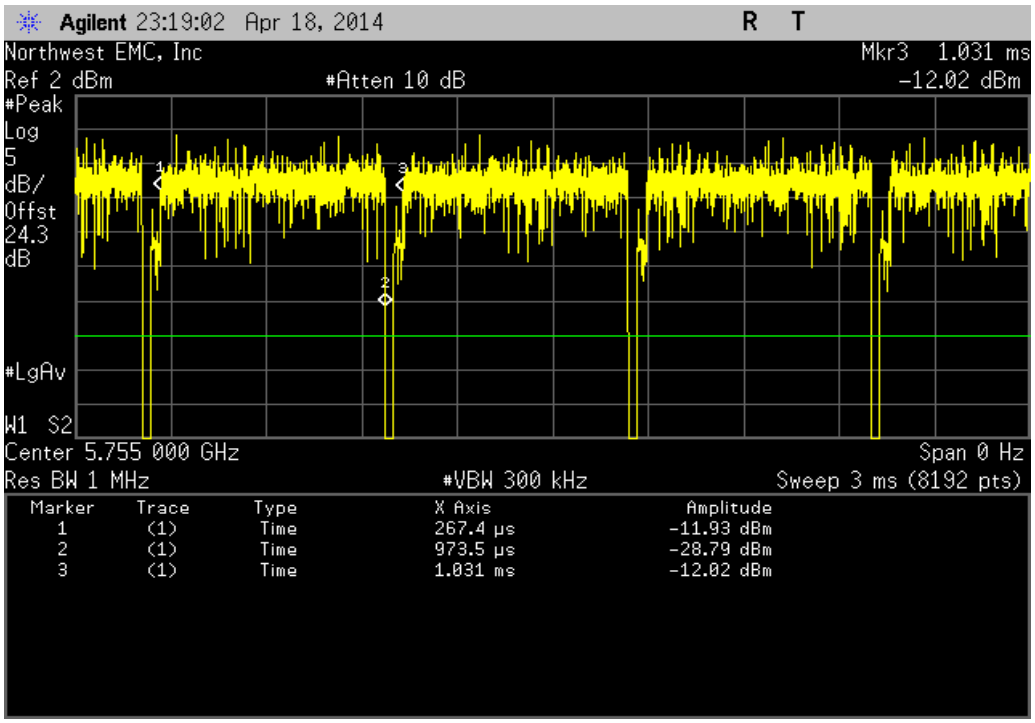
A IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS15, High Channel 165, 5825 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A

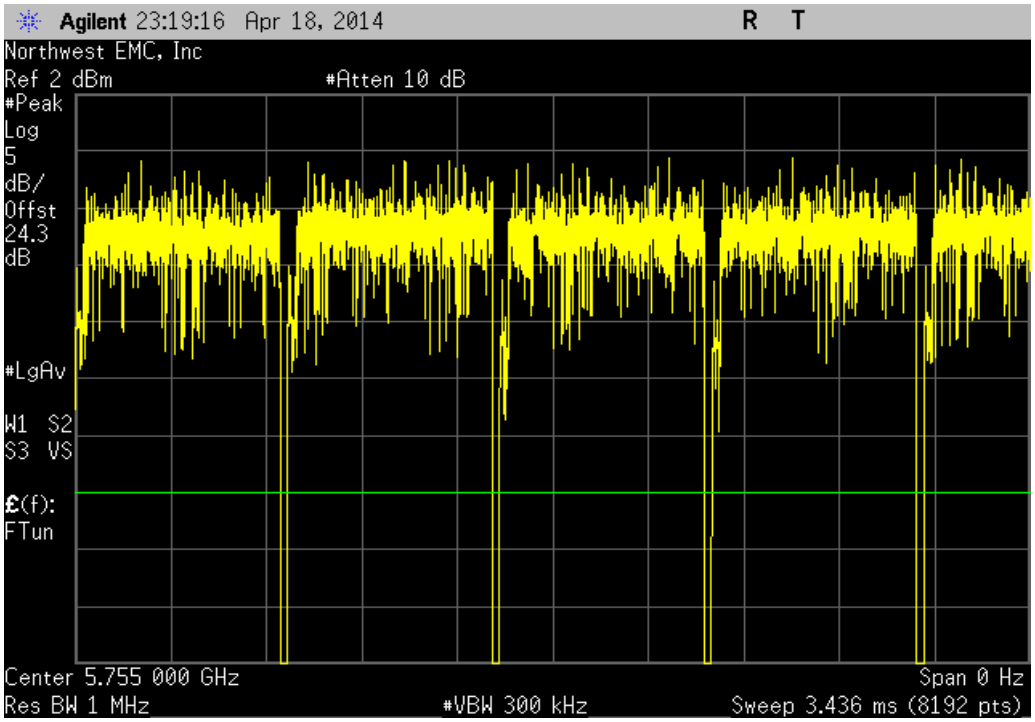


TRANSMISSION BURST DURATION

A IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS8, Low Channel 149/153, 5755 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	706.1 uS	763.6 uS	1	92.5	N/A	N/A



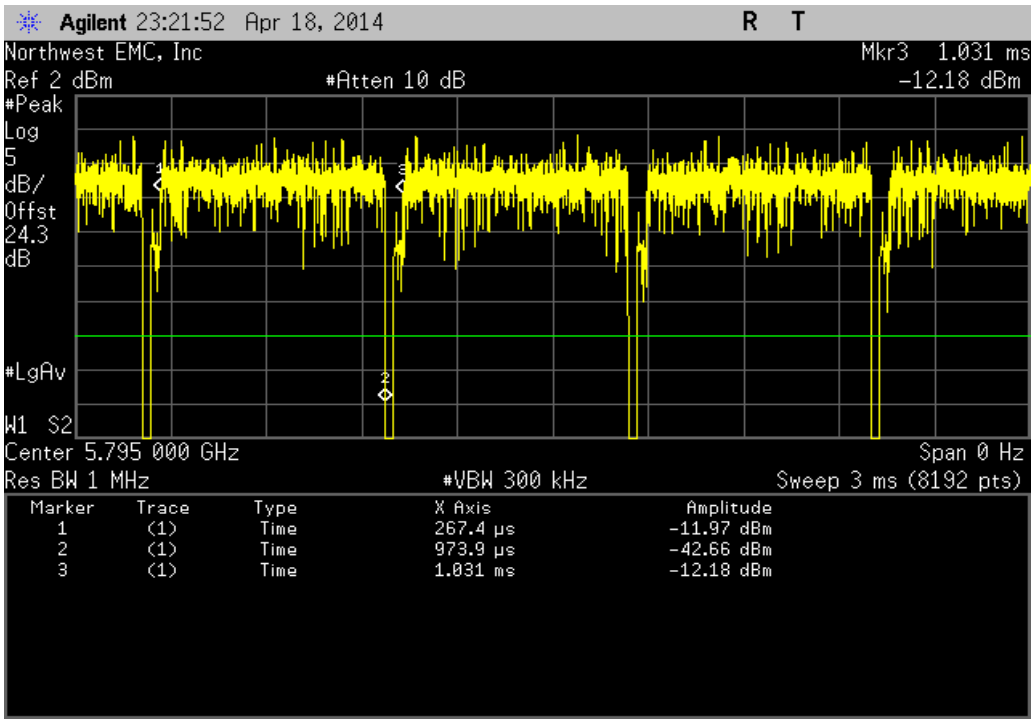
A IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS8, Low Channel 149/153, 5755 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

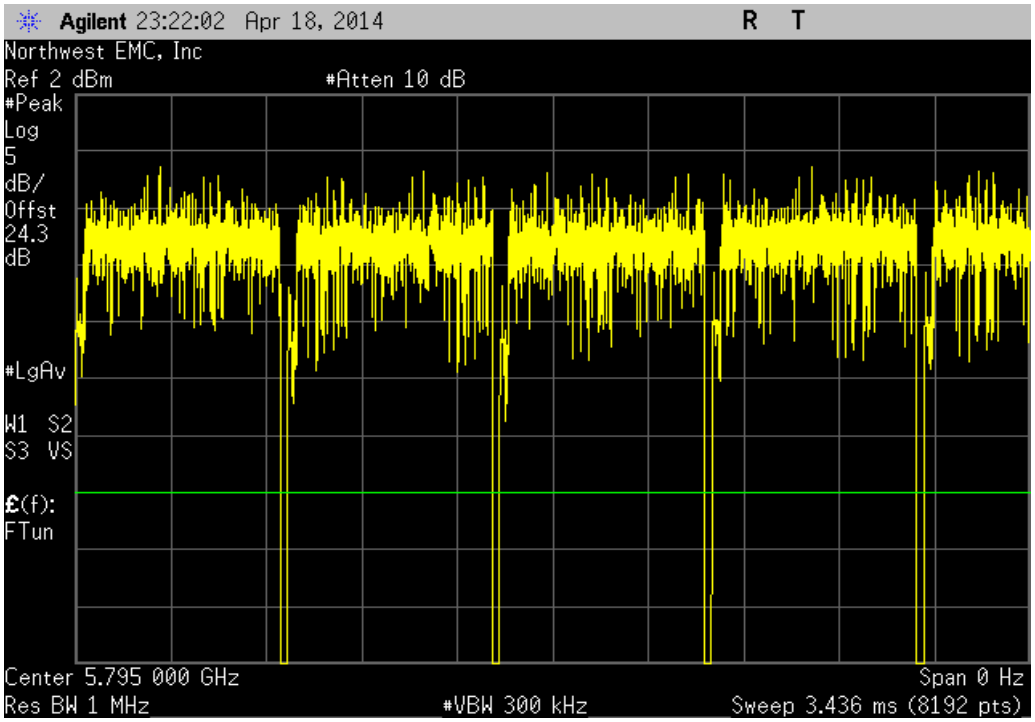
A IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS8, High Channel 157/161, 5795 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	706.5 uS	763.6 uS	1	92.5	N/A	N/A



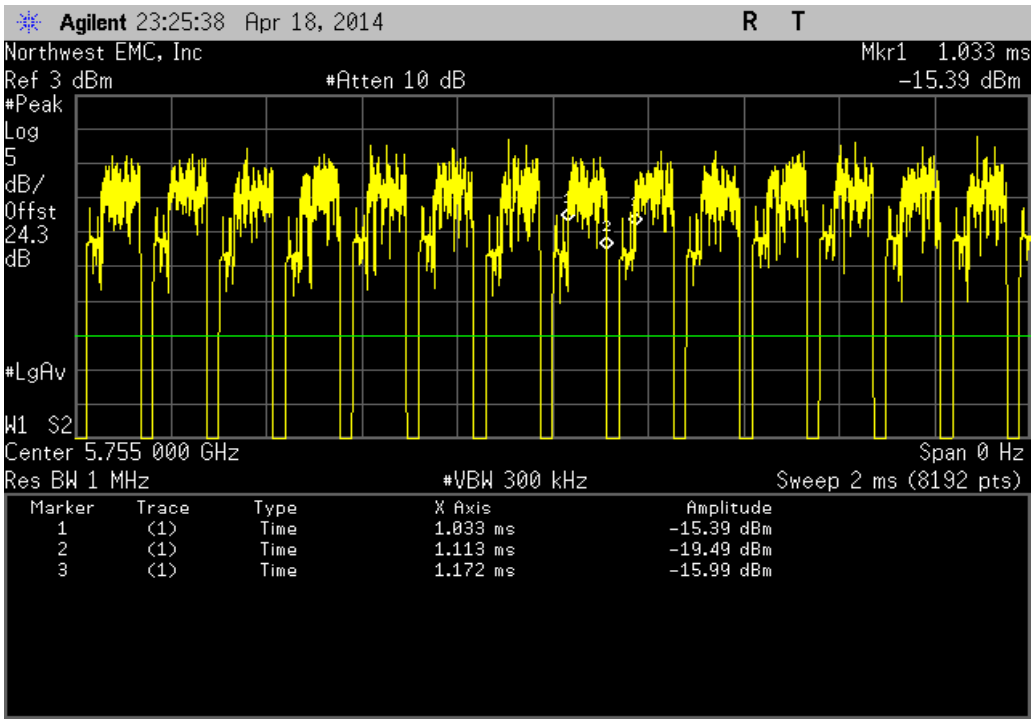
A IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS8, High Channel 157/161, 5795 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A

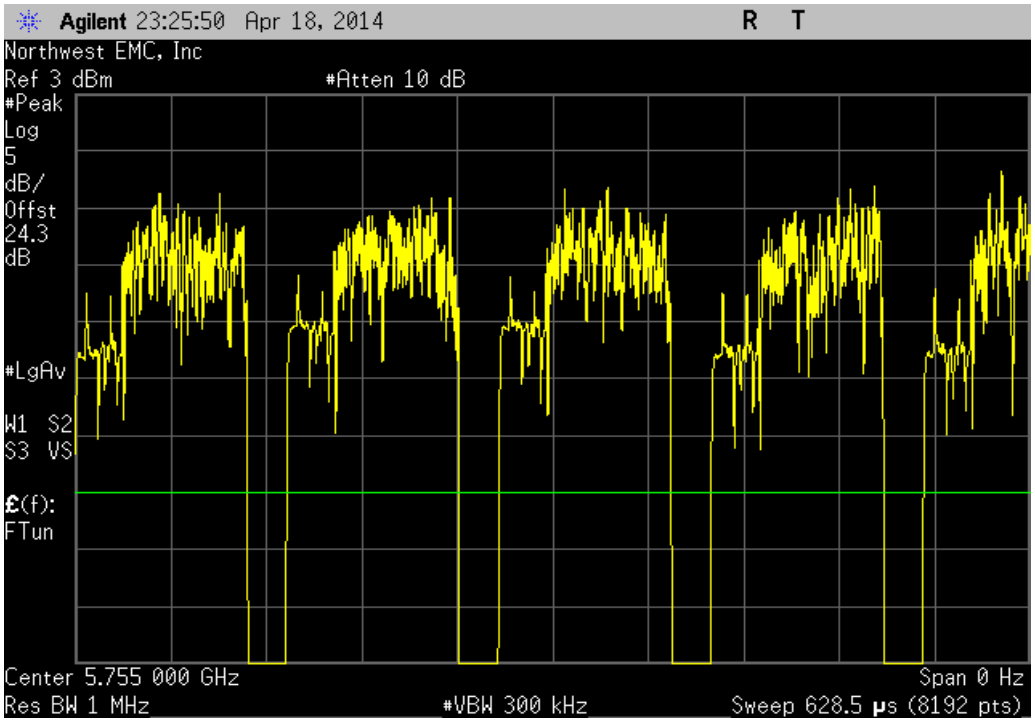


TRANSMISSION BURST DURATION

A IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS15, Low Channel 149/153, 5755 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	80.318 uS	139.669 uS	1	57.5	N/A	N/A



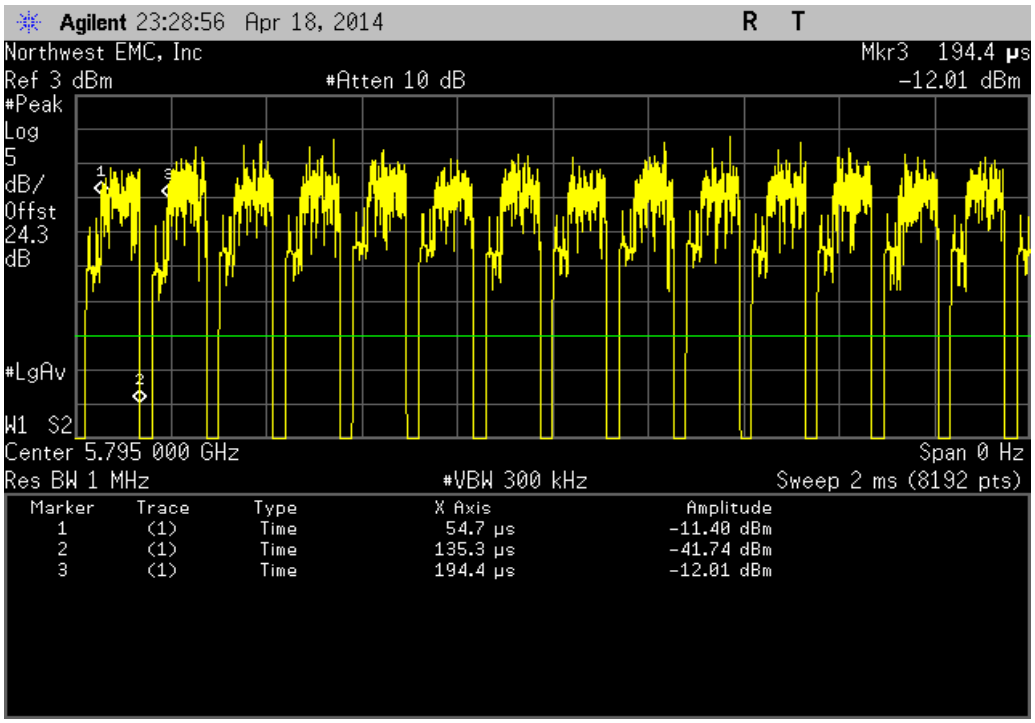
A IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS15, Low Channel 149/153, 5755 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

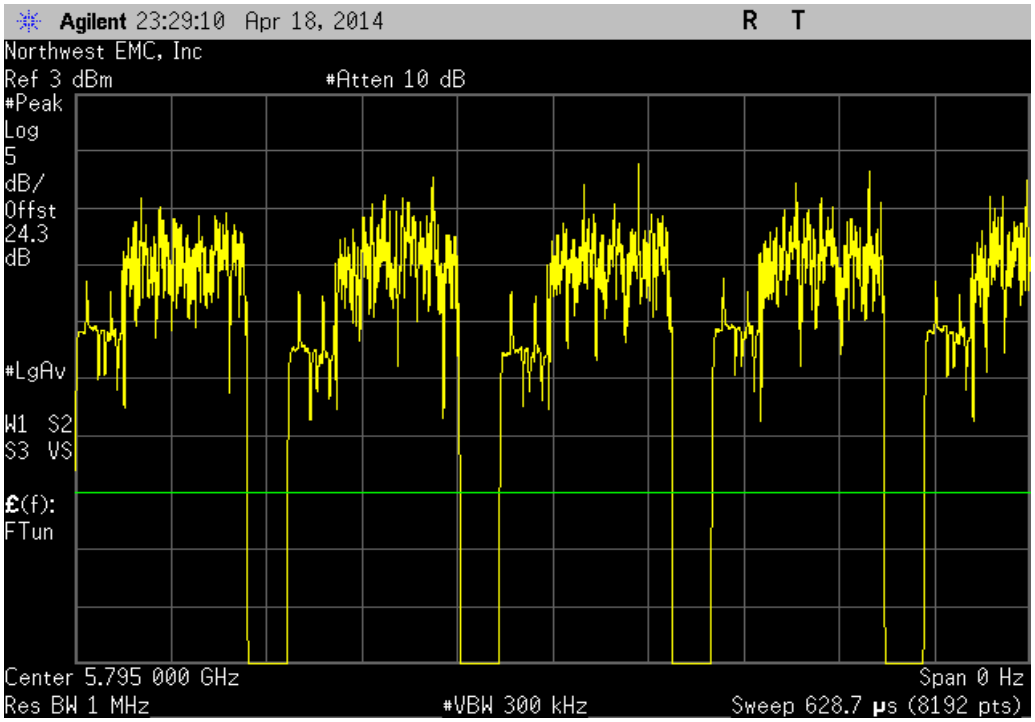
A IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS15, High Channel 157/161, 5795 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	80.6 uS	139.7 uS	1	57.7	N/A	N/A



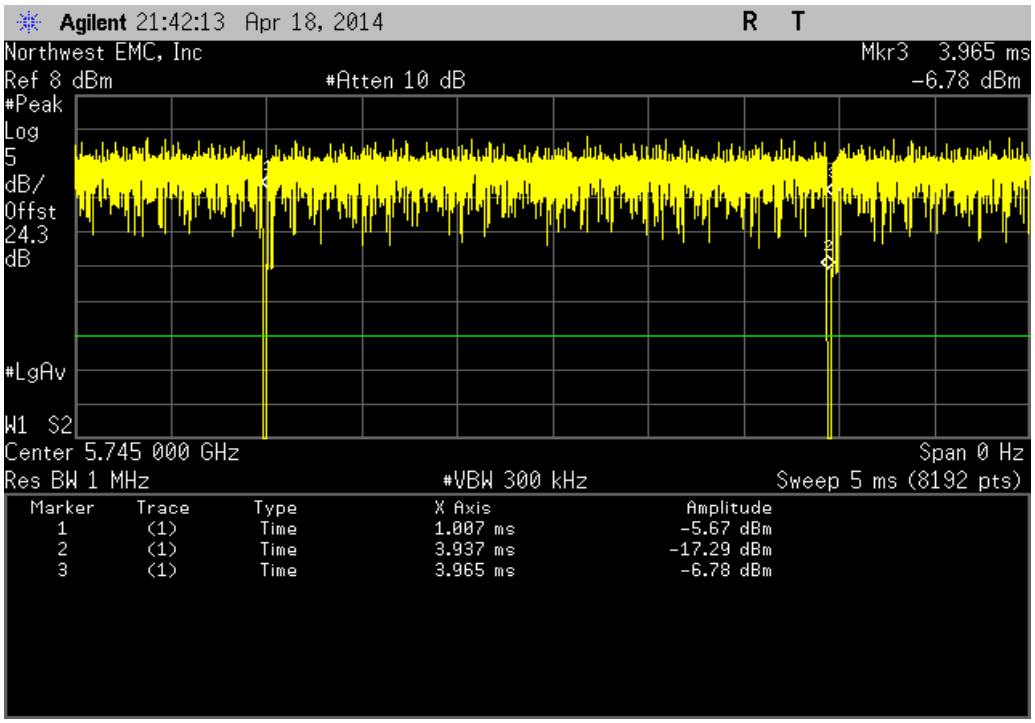
A IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS15, High Channel 157/161, 5795 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



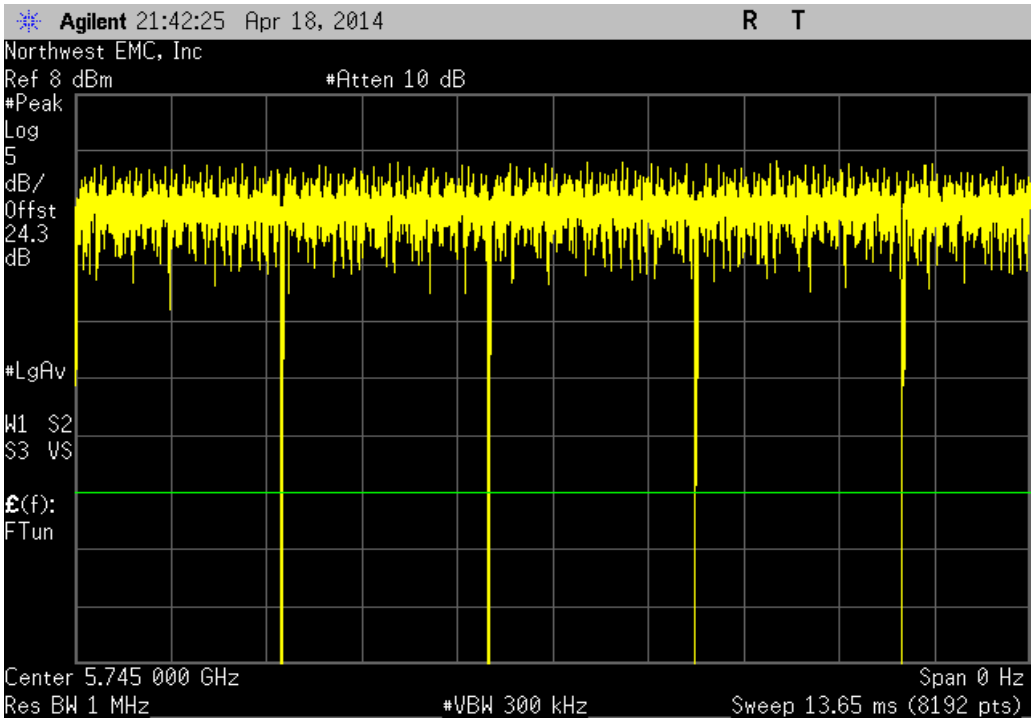
A IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149, 5745 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
2.93 mS	2.958 mS	1	99.1	N/A	N/A



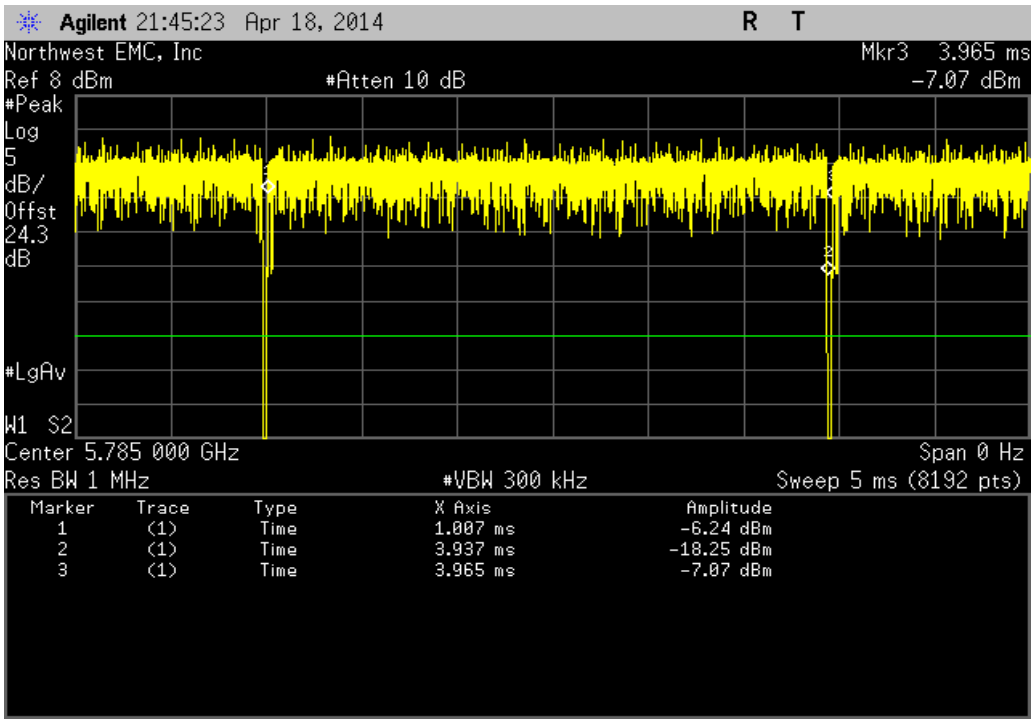
A IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149, 5745 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A

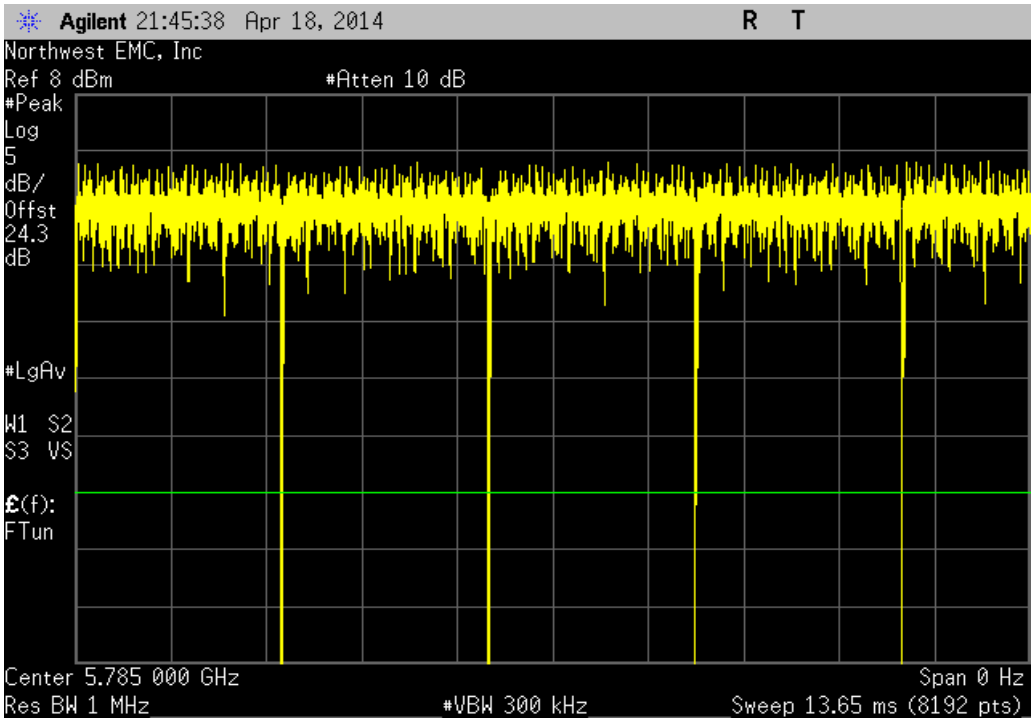


TRANSMISSION BURST DURATION

A IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Mid Channel 157, 5785 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	2.93 mS	2.958 mS	1	99.1	N/A	N/A

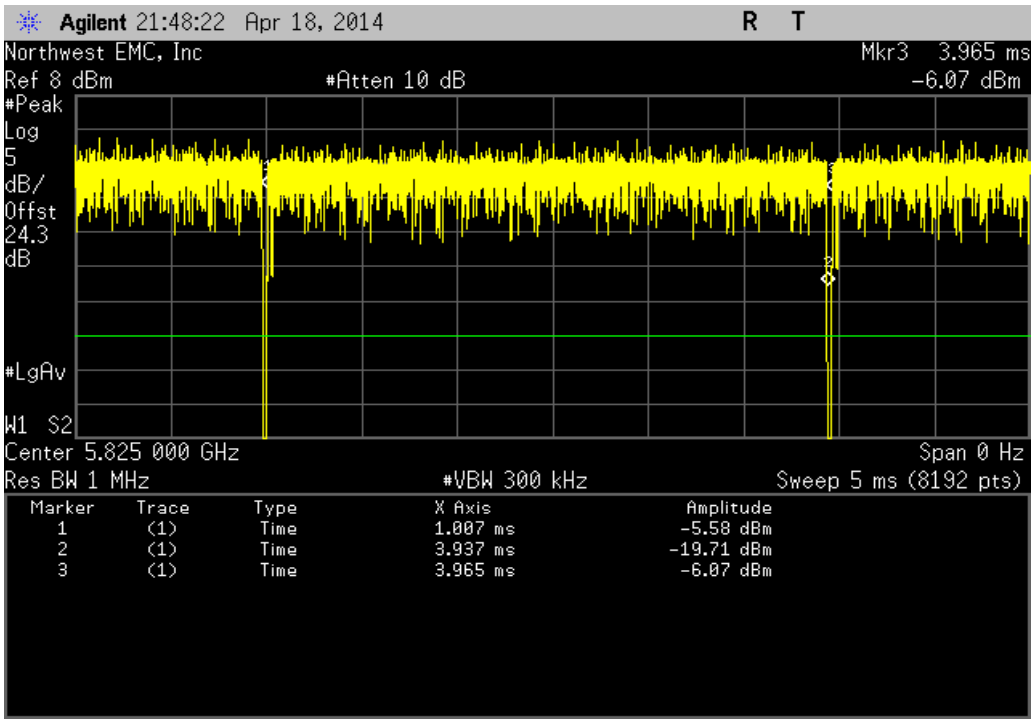


A IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Mid Channel 157, 5785 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A

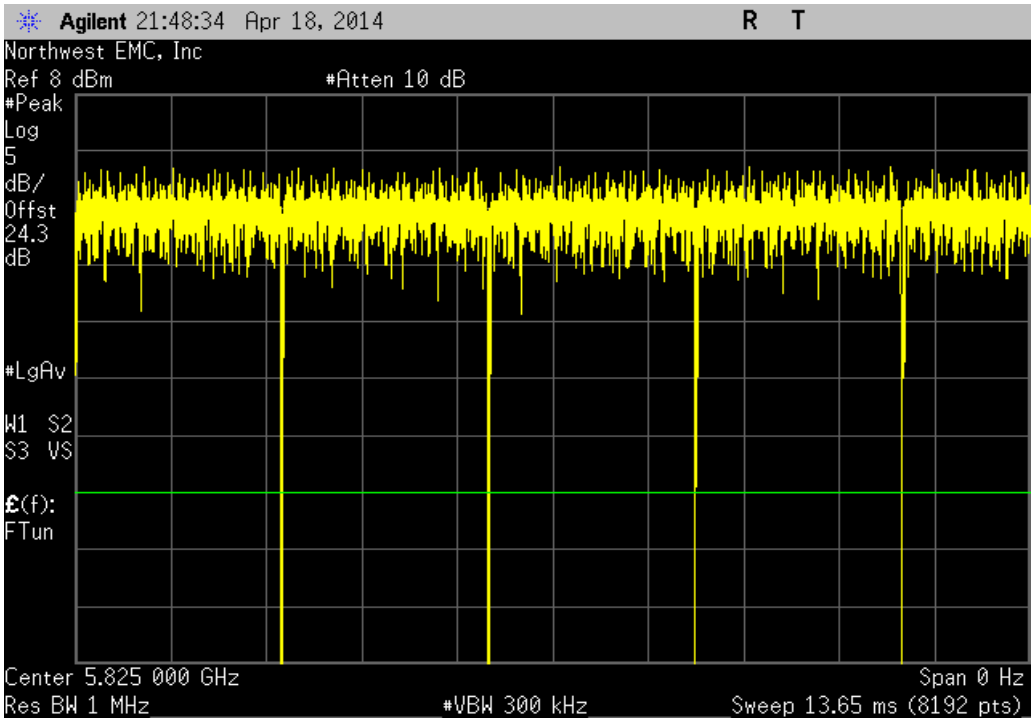


TRANSMISSION BURST DURATION

A IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, High Channel 165, 5825 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	2.93 mS	2.958 mS	1	99.1	N/A	N/A

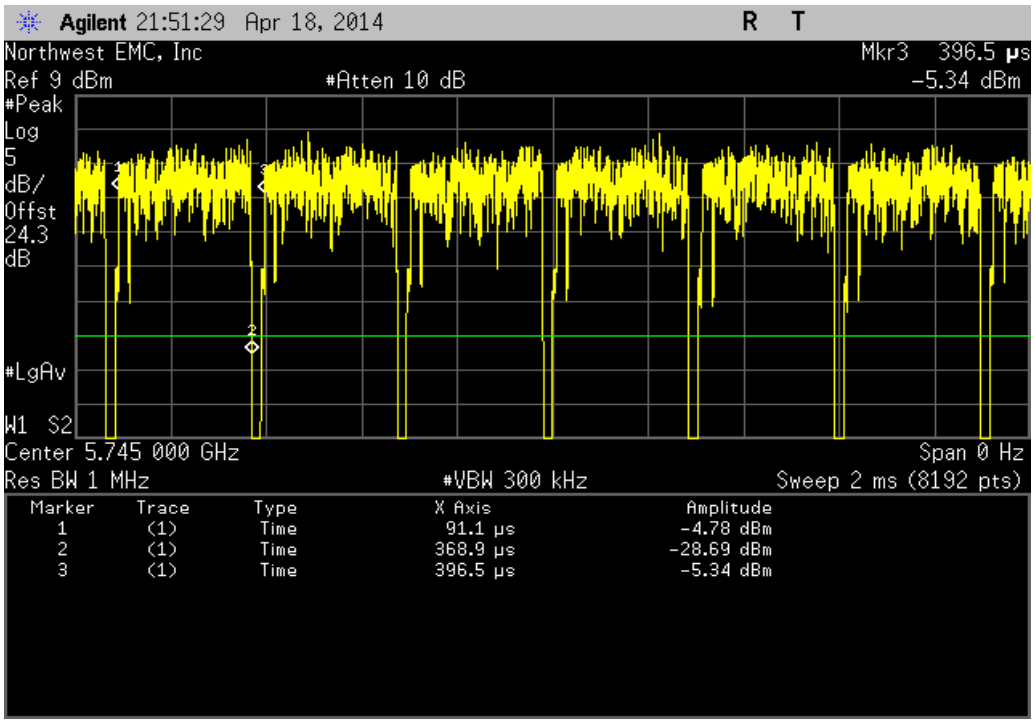


A IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, High Channel 165, 5825 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A

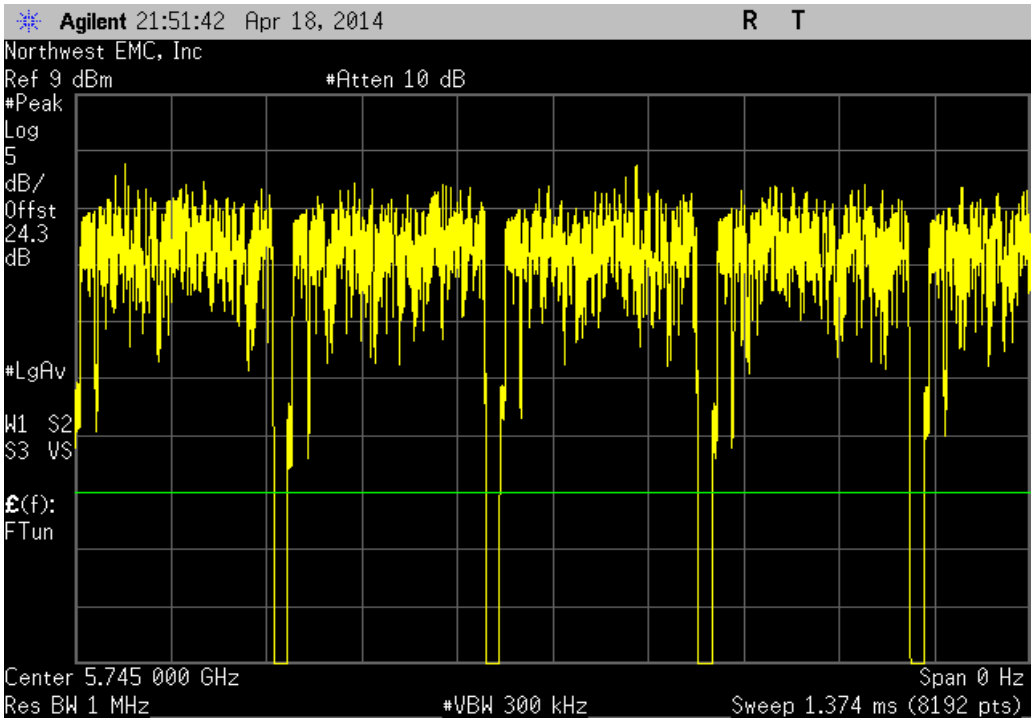


TRANSMISSION BURST DURATION

A IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, Low Channel 149, 5745 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	277.8 uS	305.4 uS	1	91	N/A	N/A

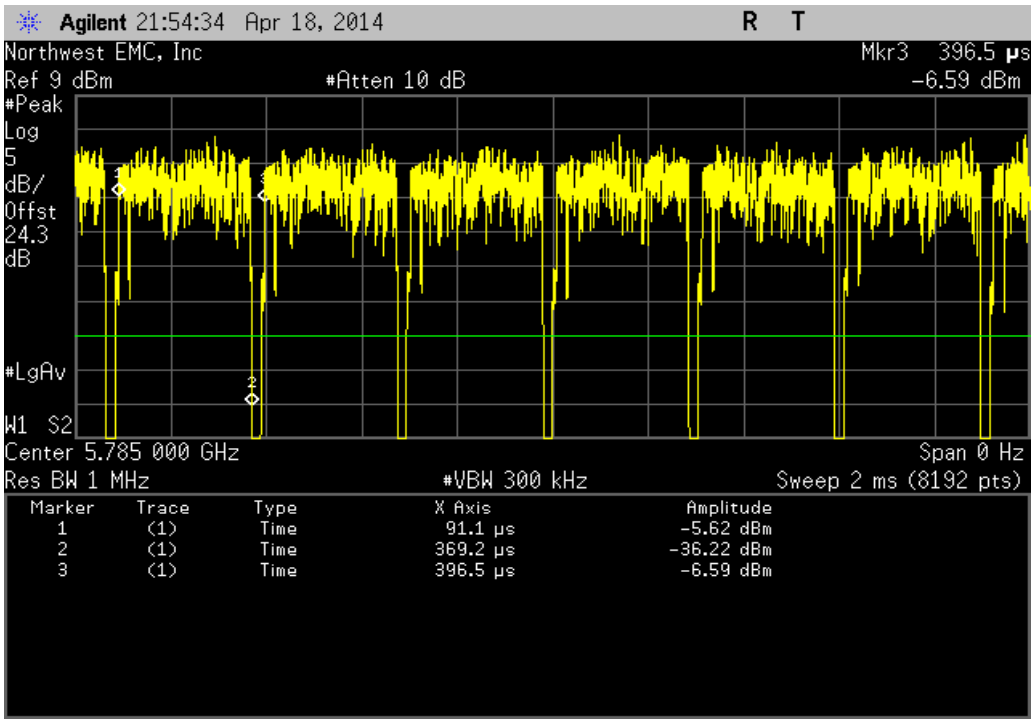


A IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, Low Channel 149, 5745 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A

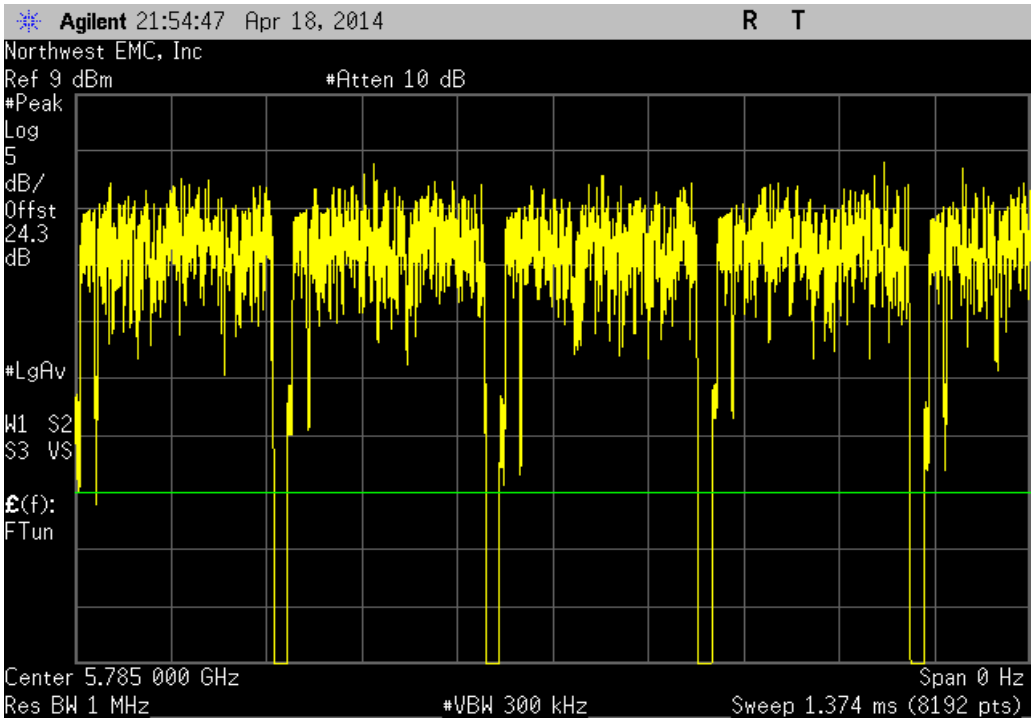


TRANSMISSION BURST DURATION

A IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, Mid Channel 157, 5785 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	278.1 uS	305.4 uS	1	91.1	N/A	N/A

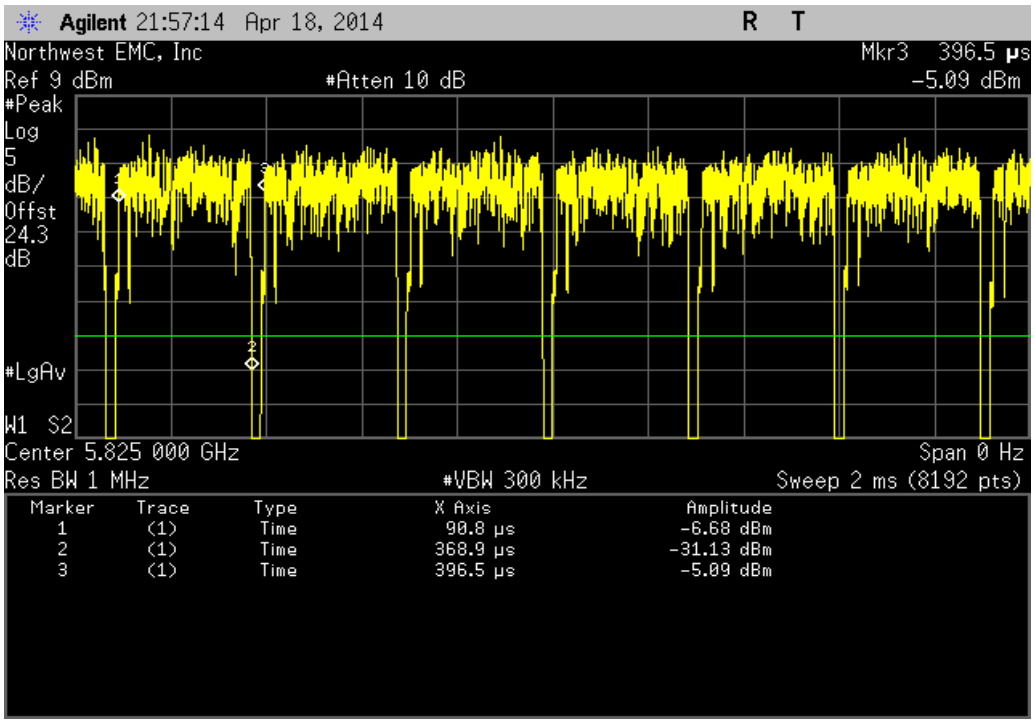


A IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, Mid Channel 157, 5785 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	6	N/A	N/A	N/A



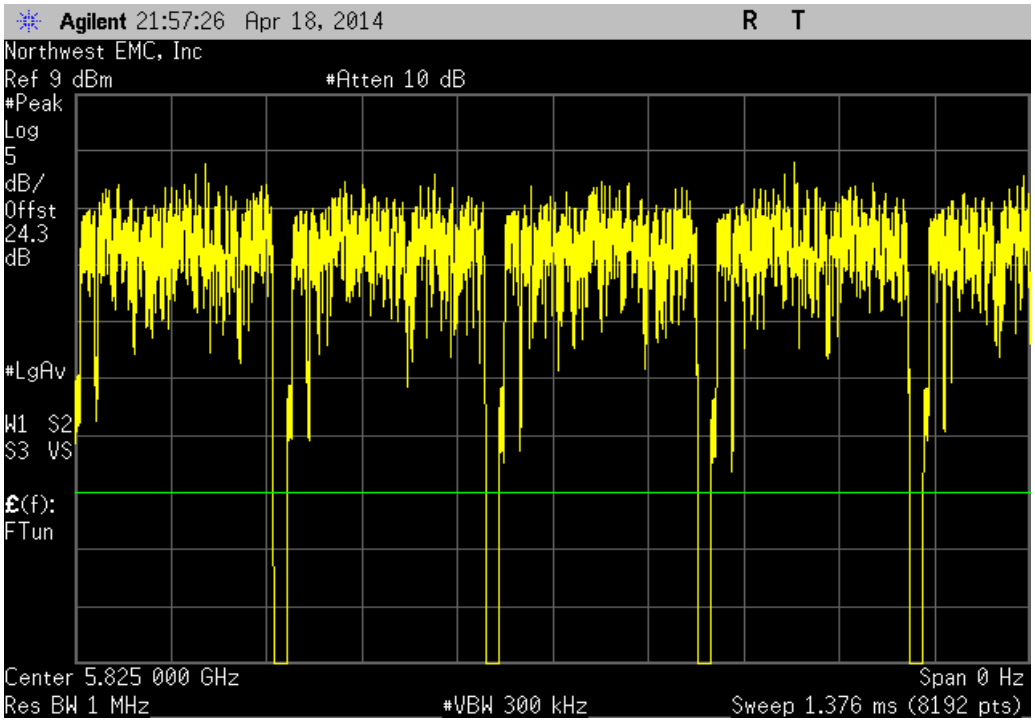
A IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, High Channel 165, 5825 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	278.1 uS	305.7 uS	1	91	N/A	N/A



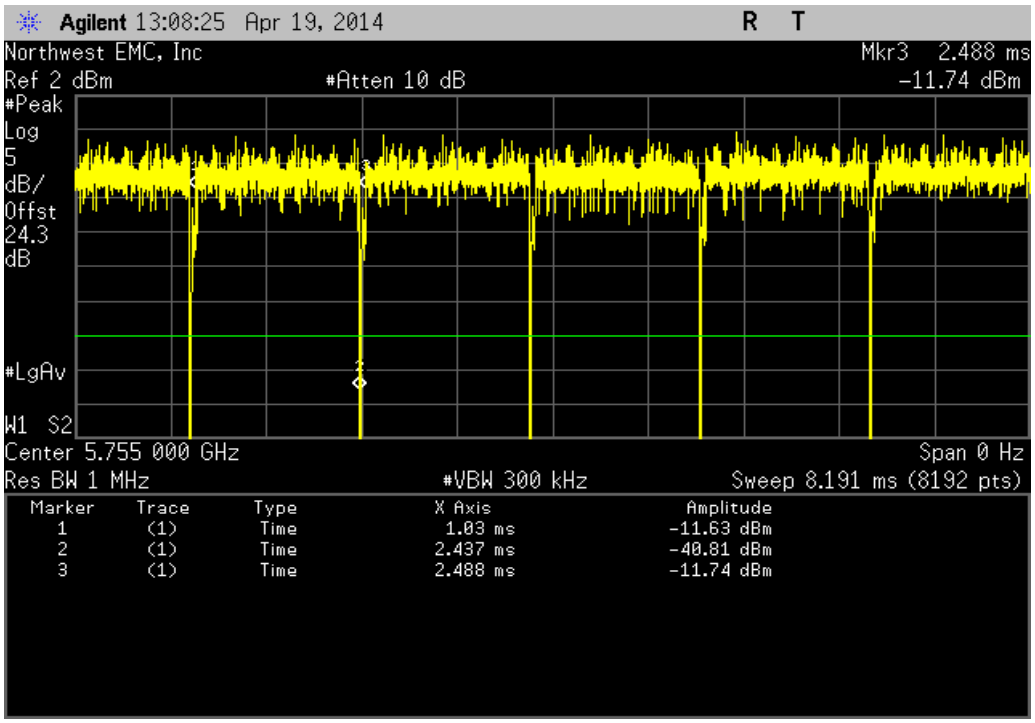
A IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, High Channel 165, 5825 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



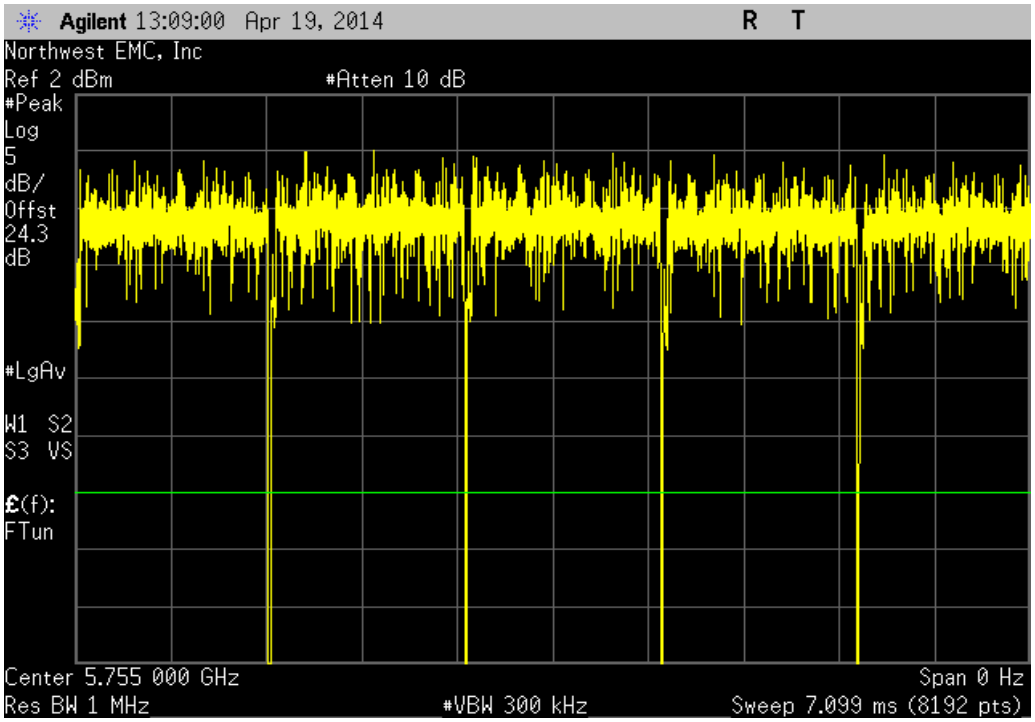
A IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149/153, 5755 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
1.407 mS	1.458 mS	1	96.5	N/A	N/A



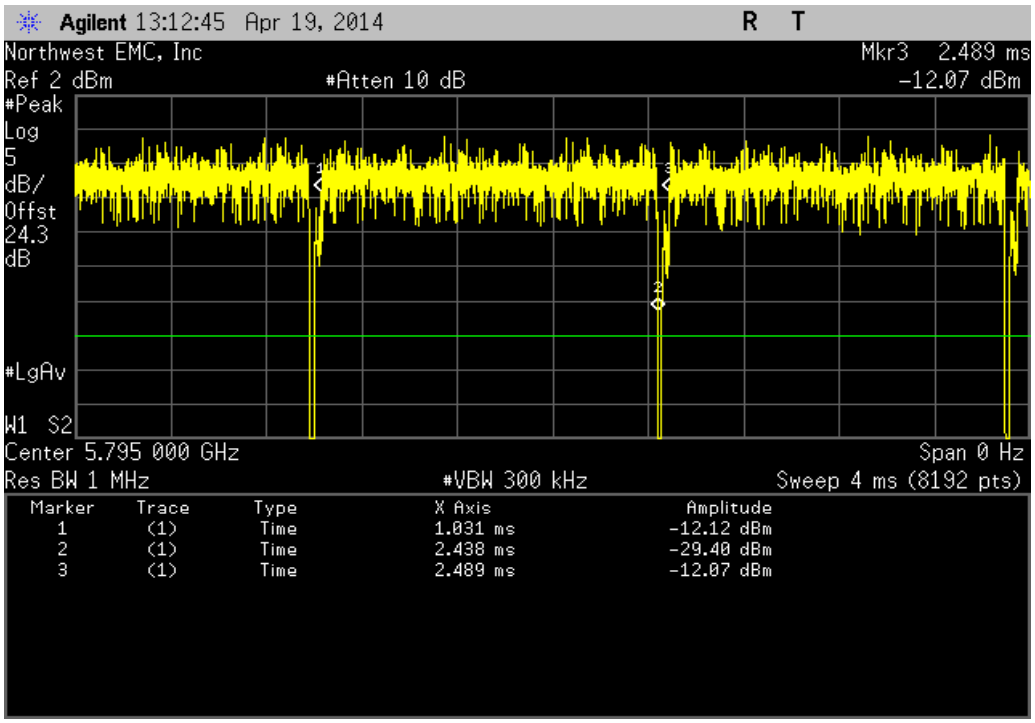
A IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149/153, 5755 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A

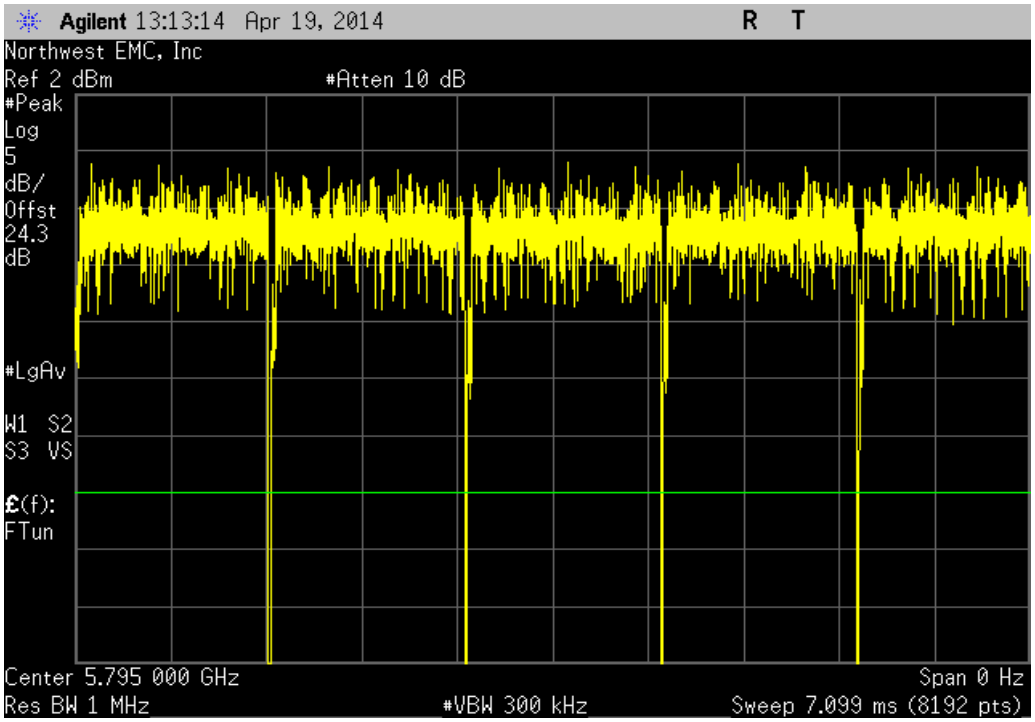


TRANSMISSION BURST DURATION

A IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, High Channel 157/161, 5795 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.406 mS	1.458 mS	1	96.5	N/A	N/A

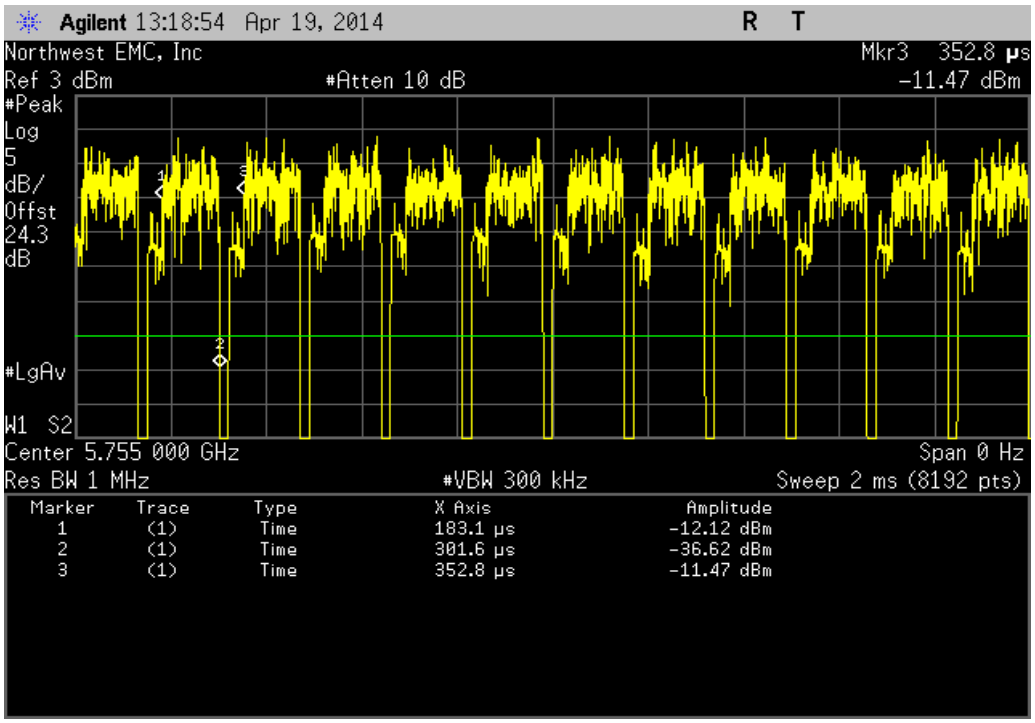


A IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, High Channel 157/161, 5795 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



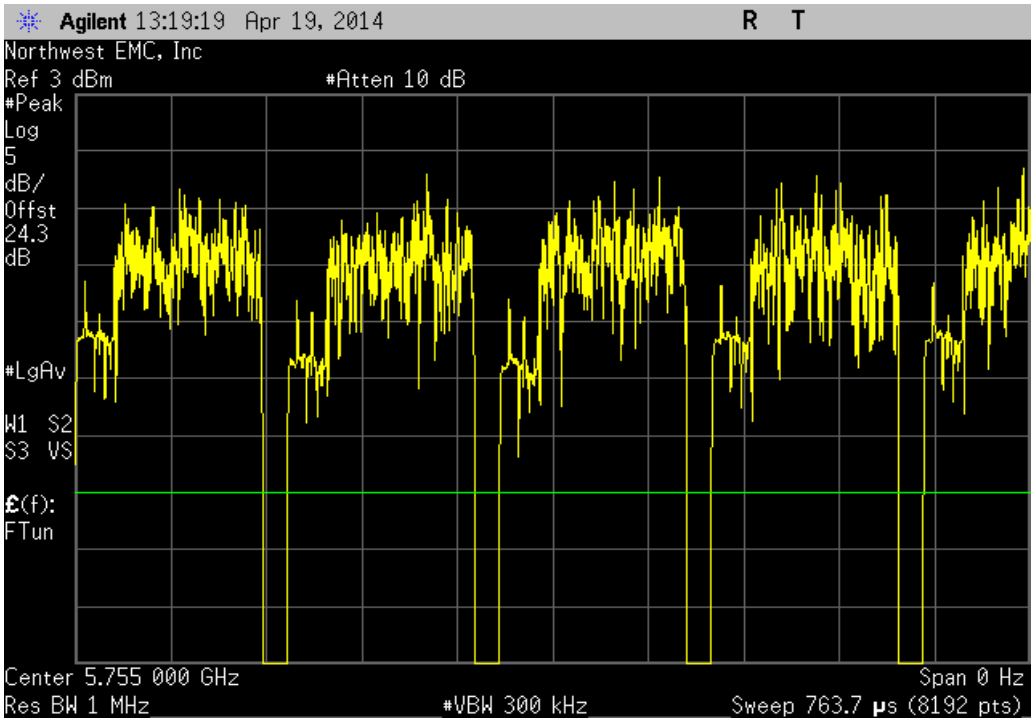
A IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, Low Channel 149/153, 5755 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
118.5 uS	169.7 uS	1	69.8	N/A	N/A



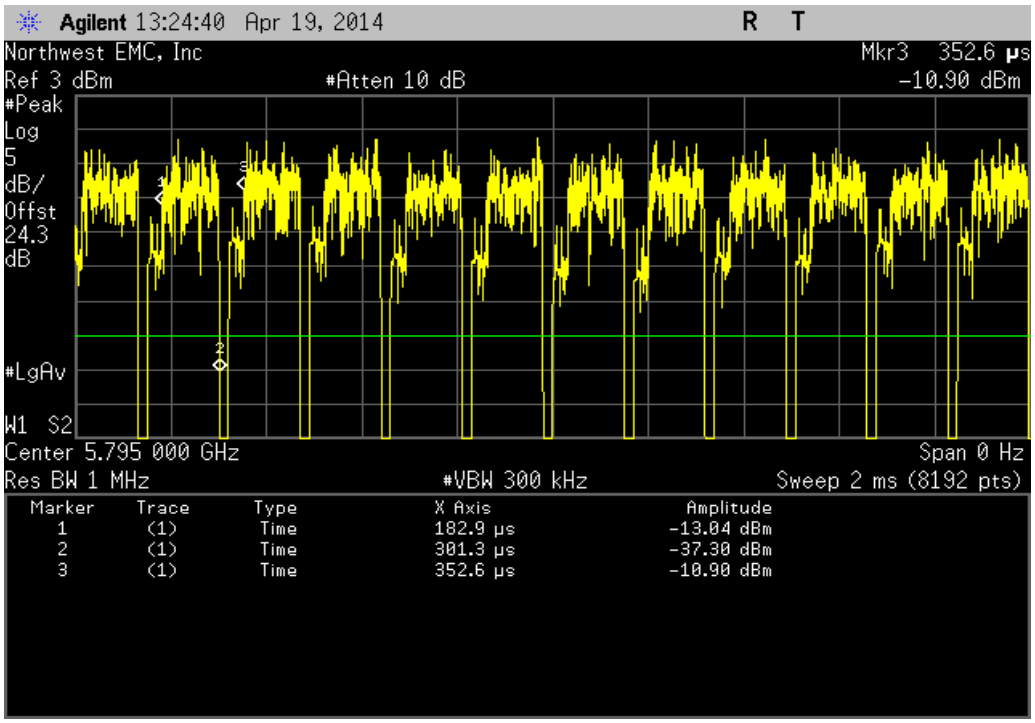
A IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, Low Channel 149/153, 5755 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



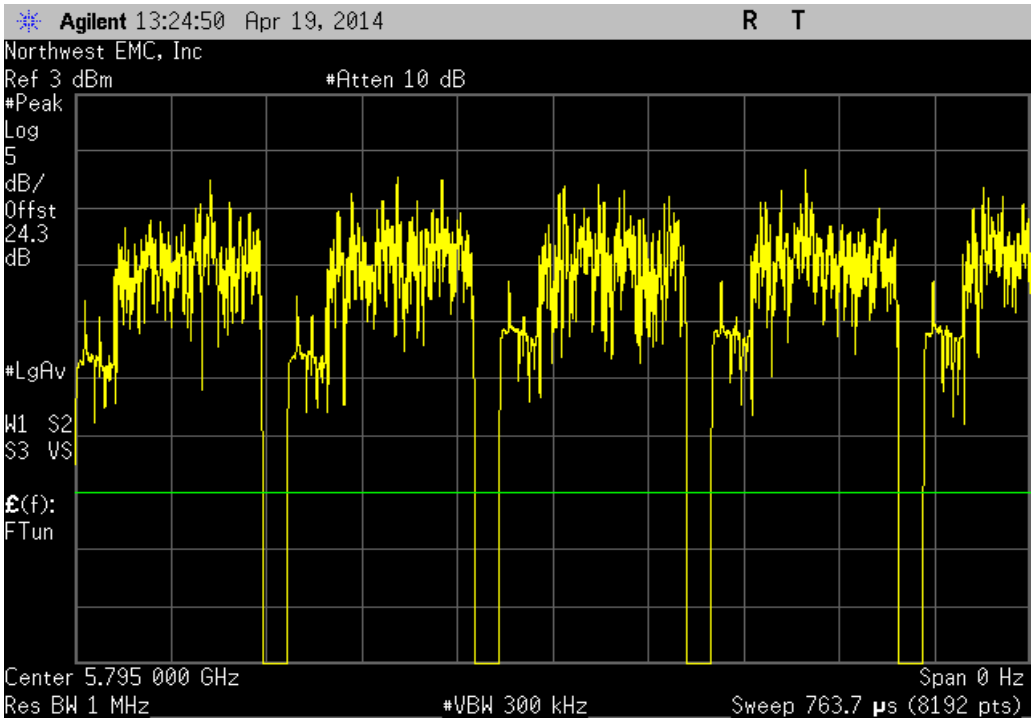
A IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, High Channel 157/161, 5795 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
118.4 uS	169.7 uS	1	69.8	N/A	N/A



A IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, High Channel 157/161, 5795 MHz

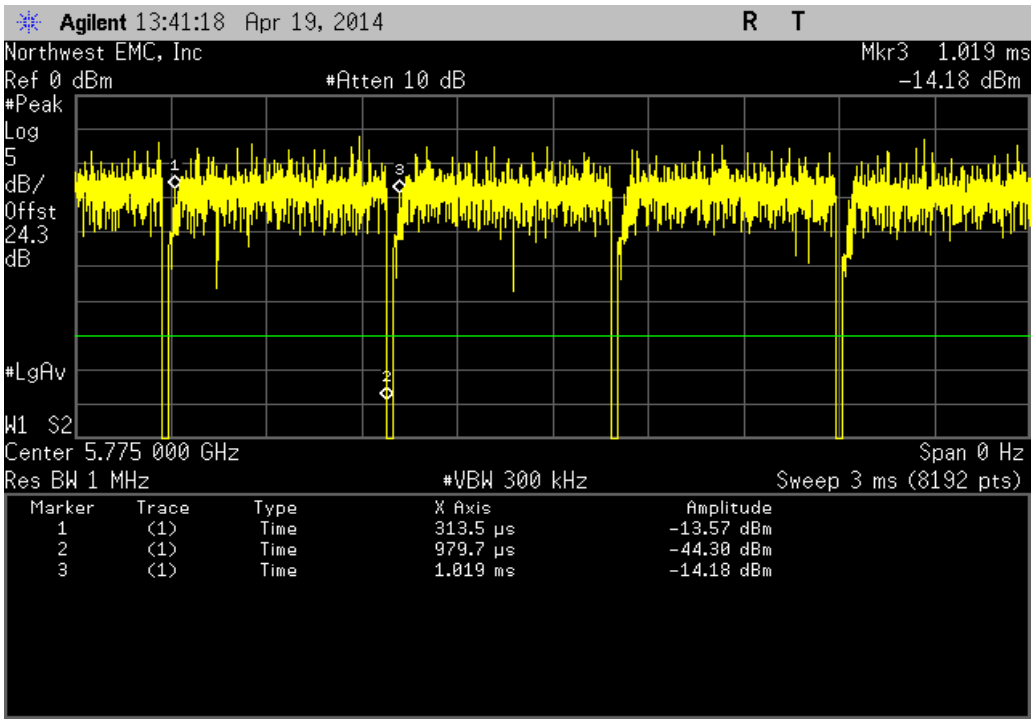
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

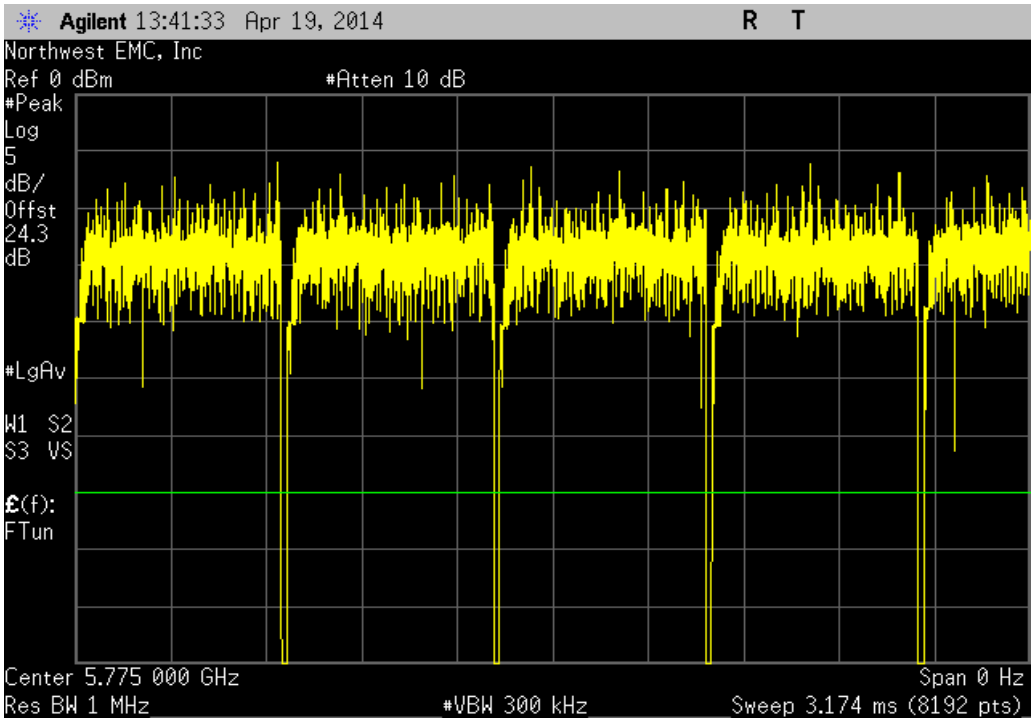
A IEEE 802.11(ac), 80 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149/153/157/161, 5775 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
666.2 uS	705.4 uS	1	94.4	N/A	N/A



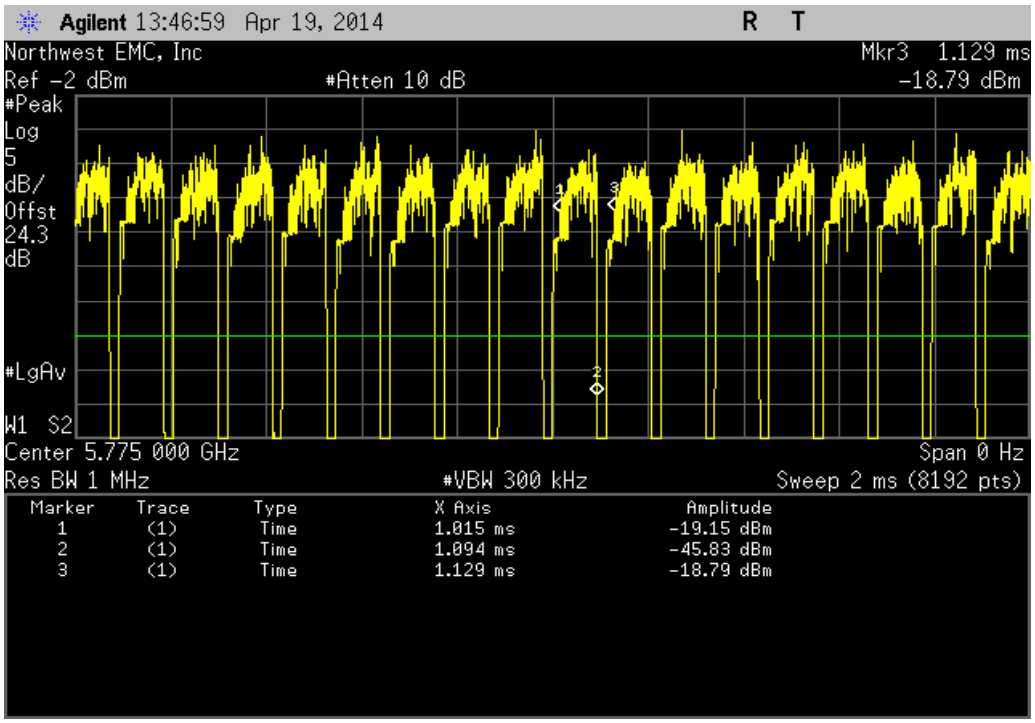
A IEEE 802.11(ac), 80 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149/153/157/161, 5775 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



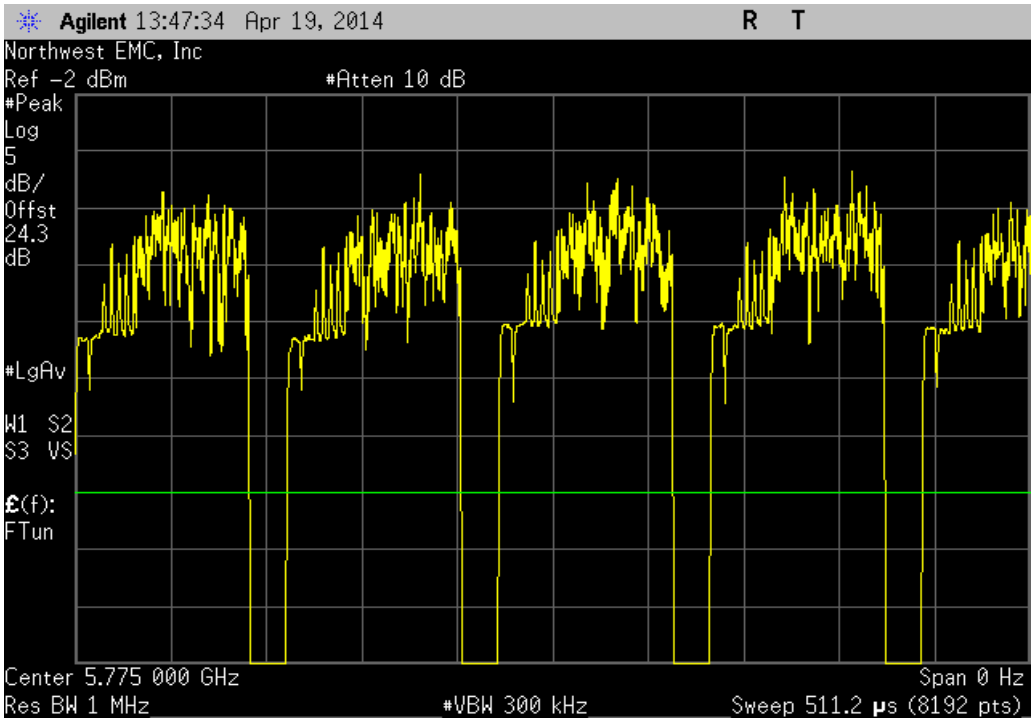
A IEEE 802.11(ac), 80 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, Low Channel 149/153/157/161, 5775 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	78.6 uS	113.6 uS	1	69.2	N/A	N/A



A IEEE 802.11(ac), 80 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, Low Channel 149/153/157/161, 5775 MHz

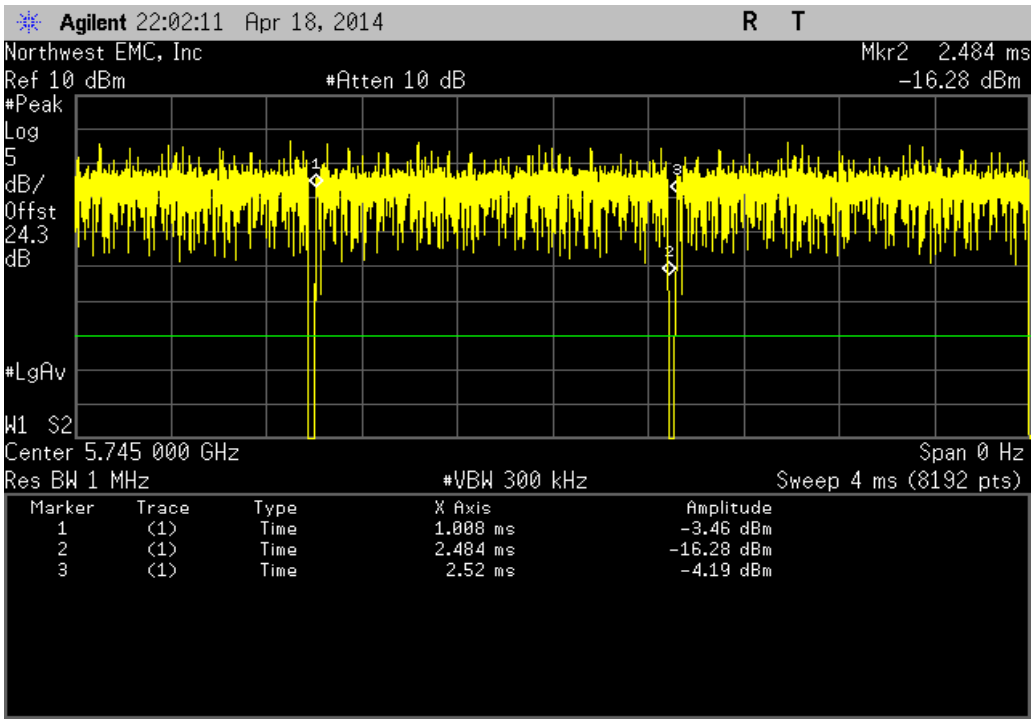
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

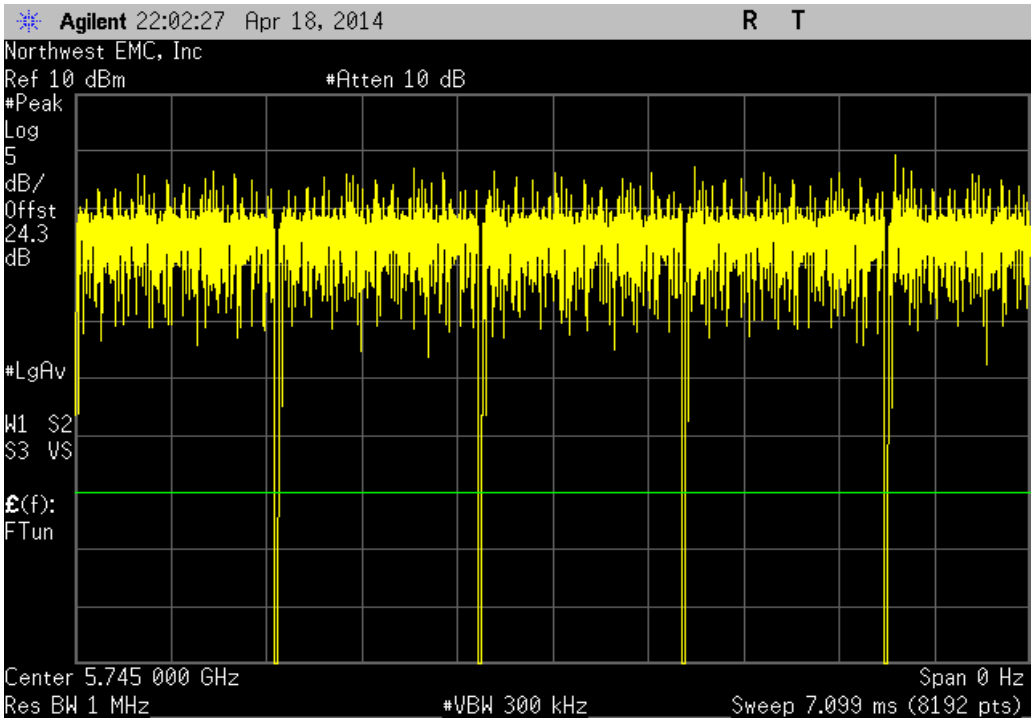
B IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS8, Low Channel 149, 5745 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
1.476 mS	1.511 mS	1	97.6	N/A	N/A



B IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS8, Low Channel 149, 5745 MHz

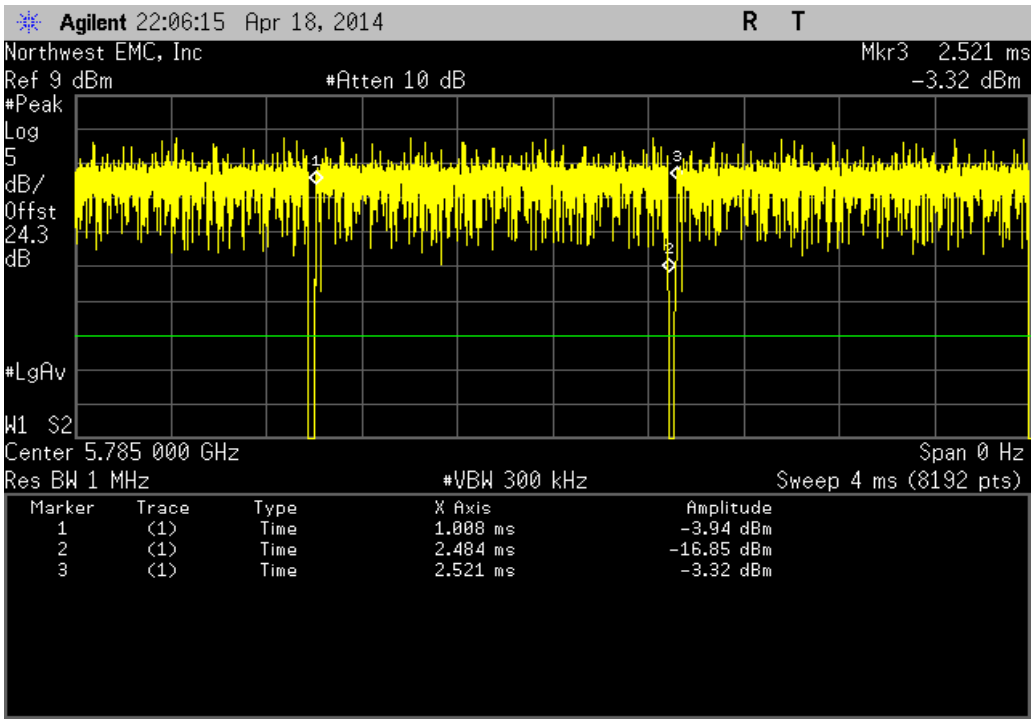
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

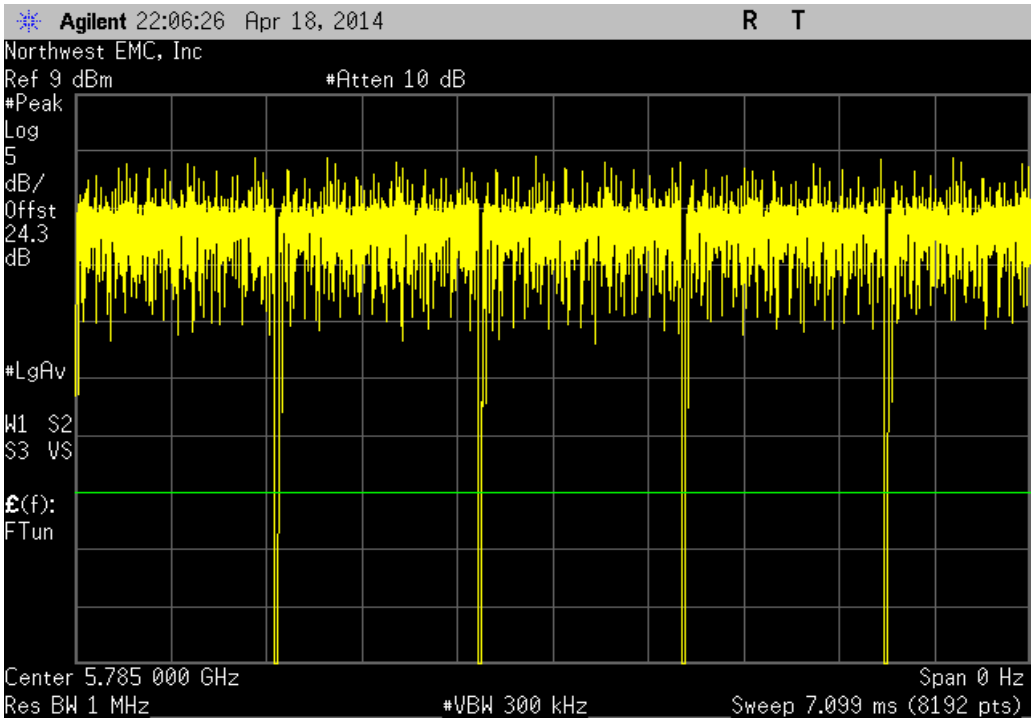
B IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS8, Mid Channel 157, 5785 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
1.476 mS	1.513 mS	1	97.5	N/A	N/A



B IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS8, Mid Channel 157, 5785 MHz

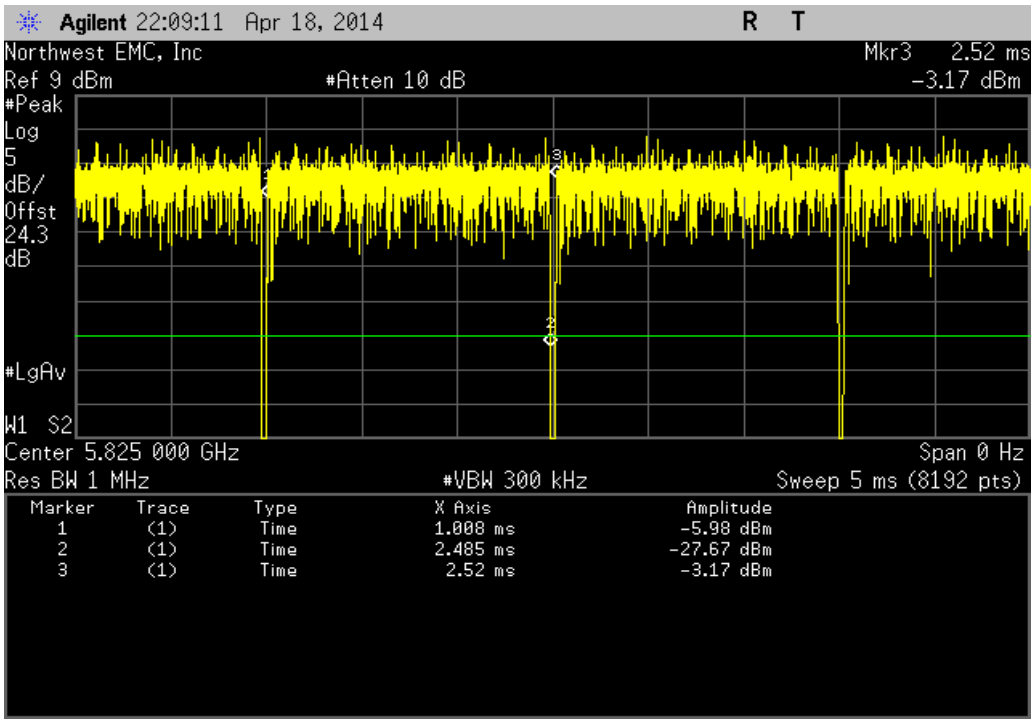
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

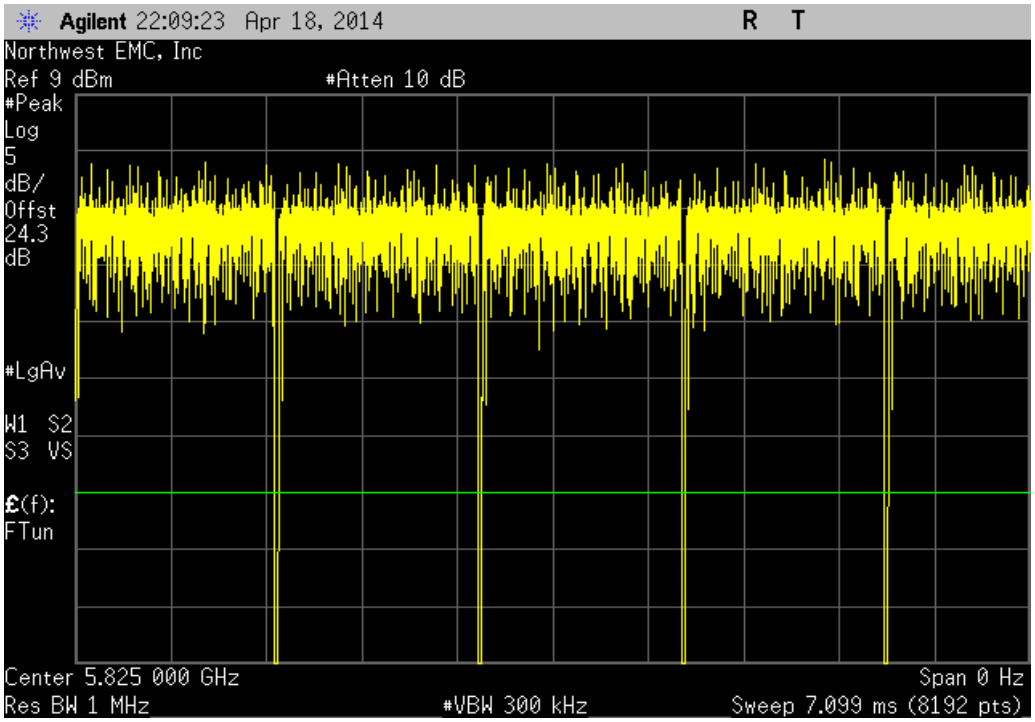
B IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS8, High Channel 165, 5825 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
1.477 mS	1.512 mS	1	97.7	N/A	N/A



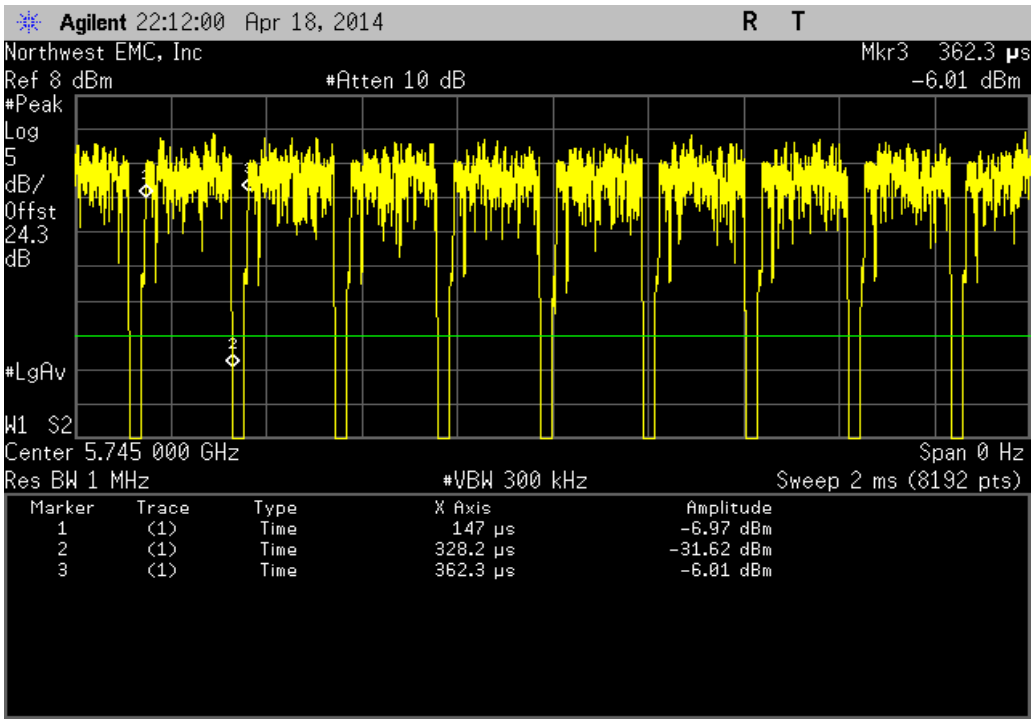
B IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS8, High Channel 165, 5825 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



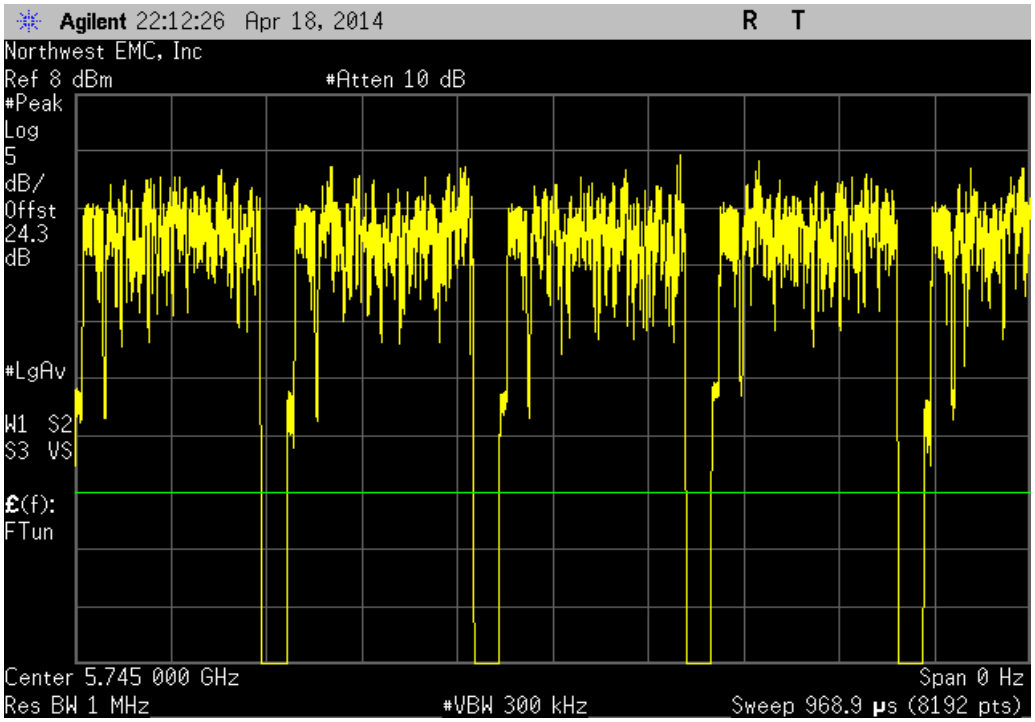
B IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS15, Low Channel 149, 5745 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	181.2 uS	215.3 uS	1	84.2	N/A	N/A



B IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS15, Low Channel 149, 5745 MHz

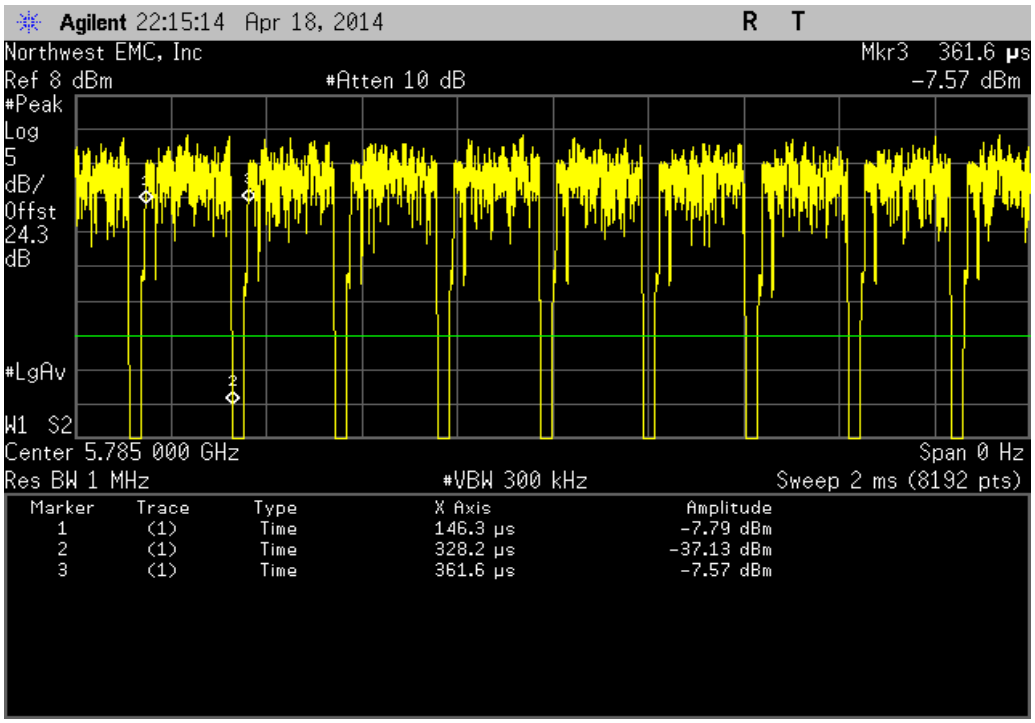
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

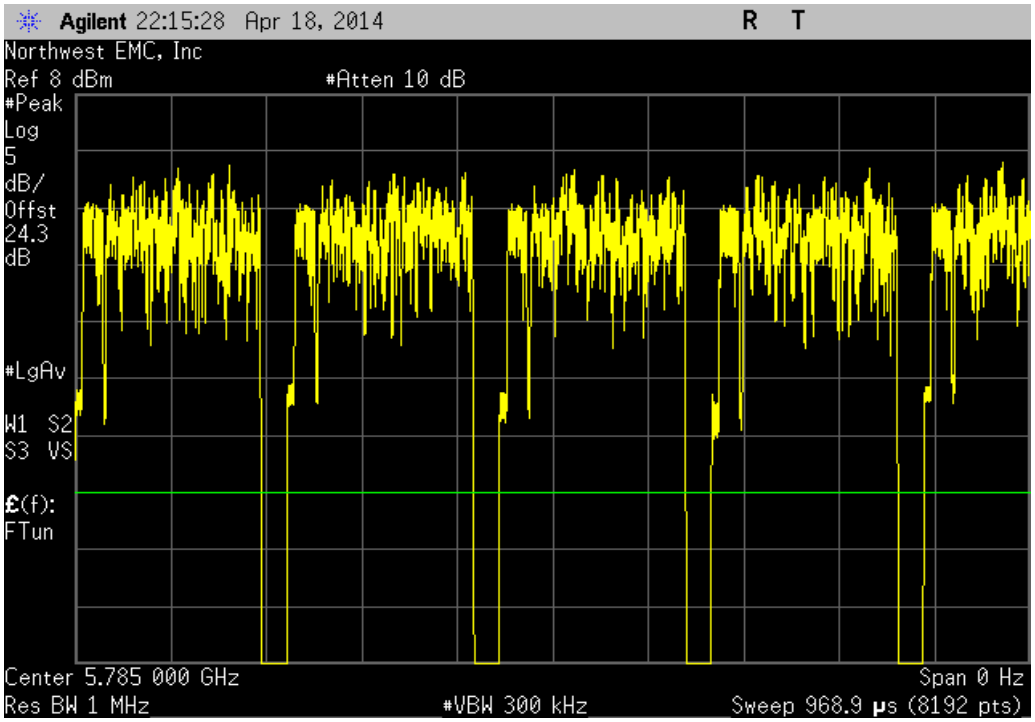
B IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS15, Mid Channel 157, 5785 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
181.9 uS	215.3 uS	1	84.5	N/A	N/A



B IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS15, Mid Channel 157, 5785 MHz

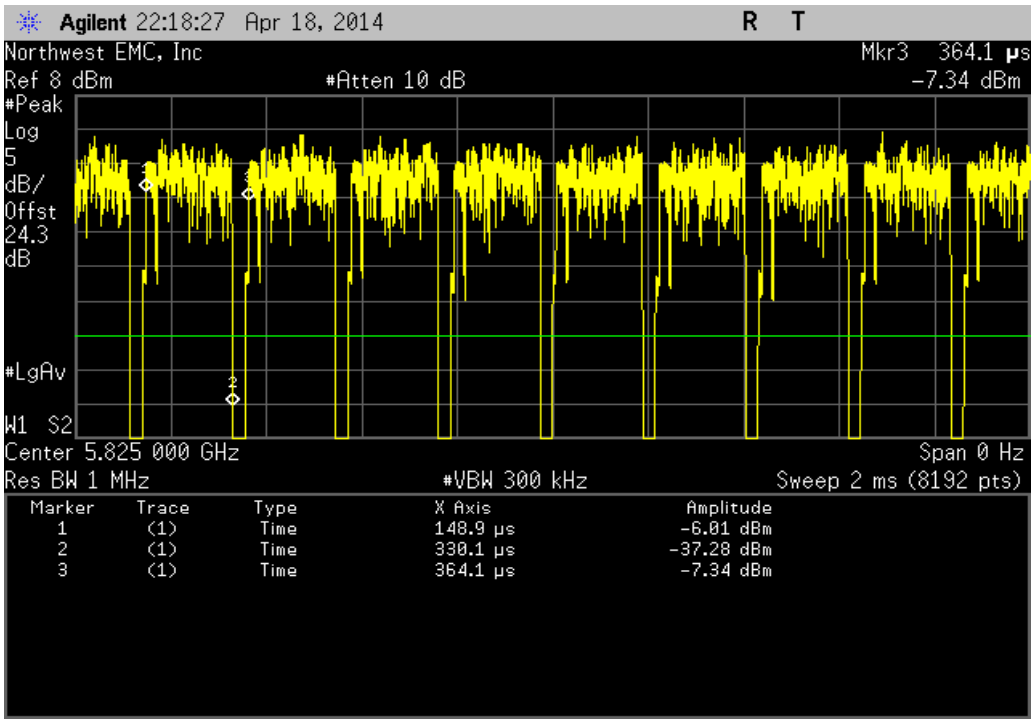
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

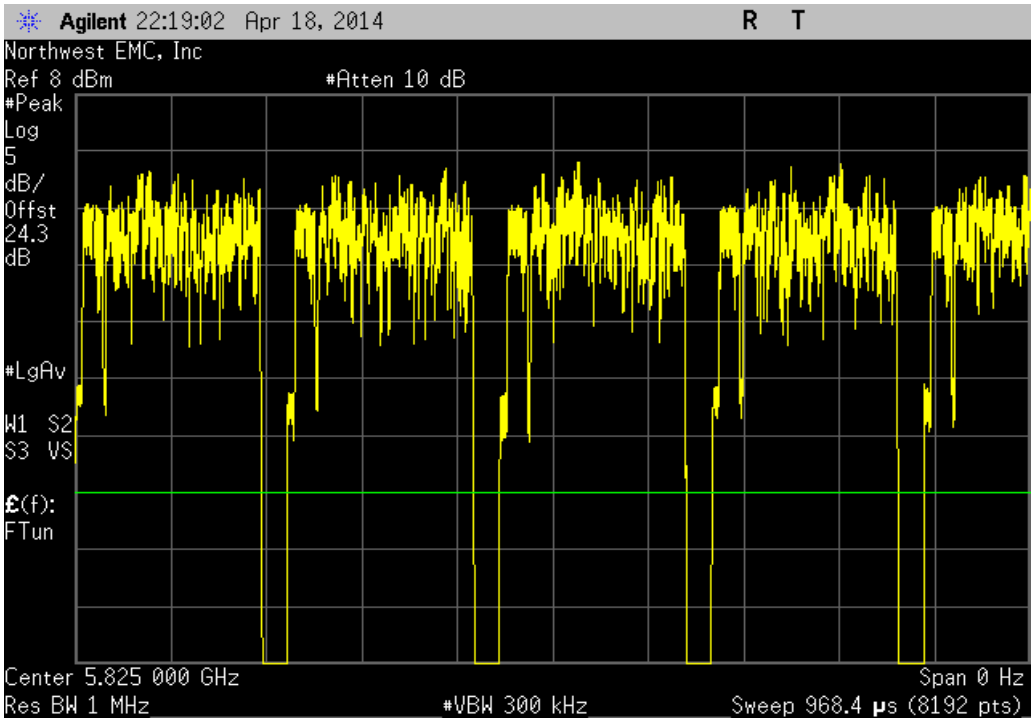
B IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS15, High Channel 165, 5825 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	181.2 uS	215.2 uS	1	84.2	N/A	N/A



B IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS15, High Channel 165, 5825 MHz

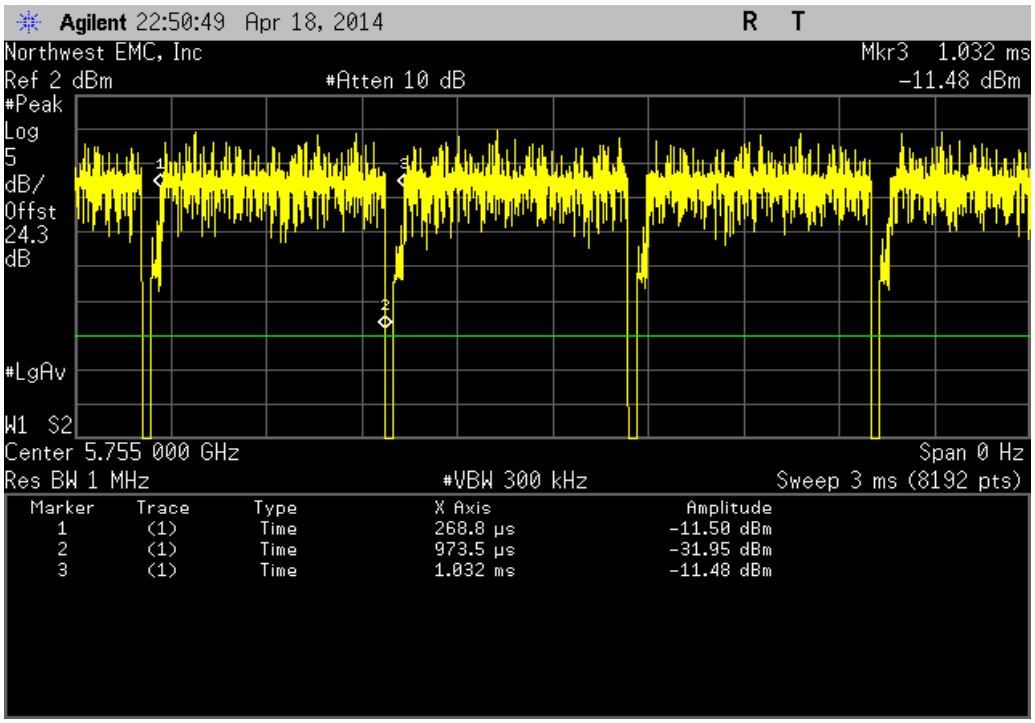
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

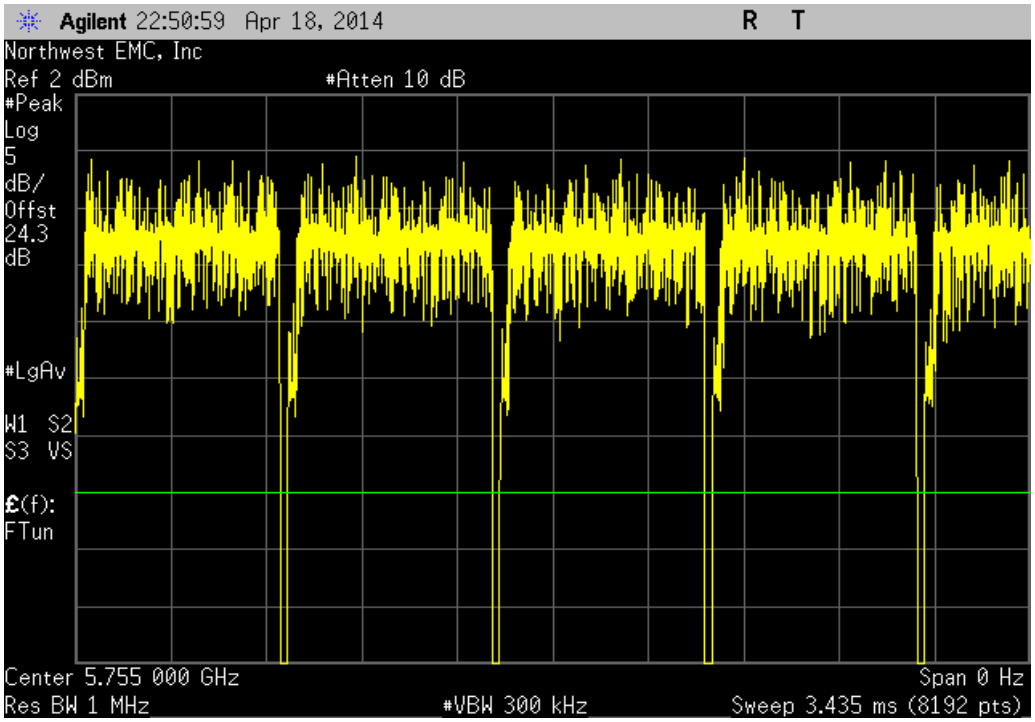
B IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS8, Low Channel 149/153, 5755 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
704.7 uS	763.3 uS	1	92.3	N/A	N/A



B IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS8, Low Channel 149/153, 5755 MHz

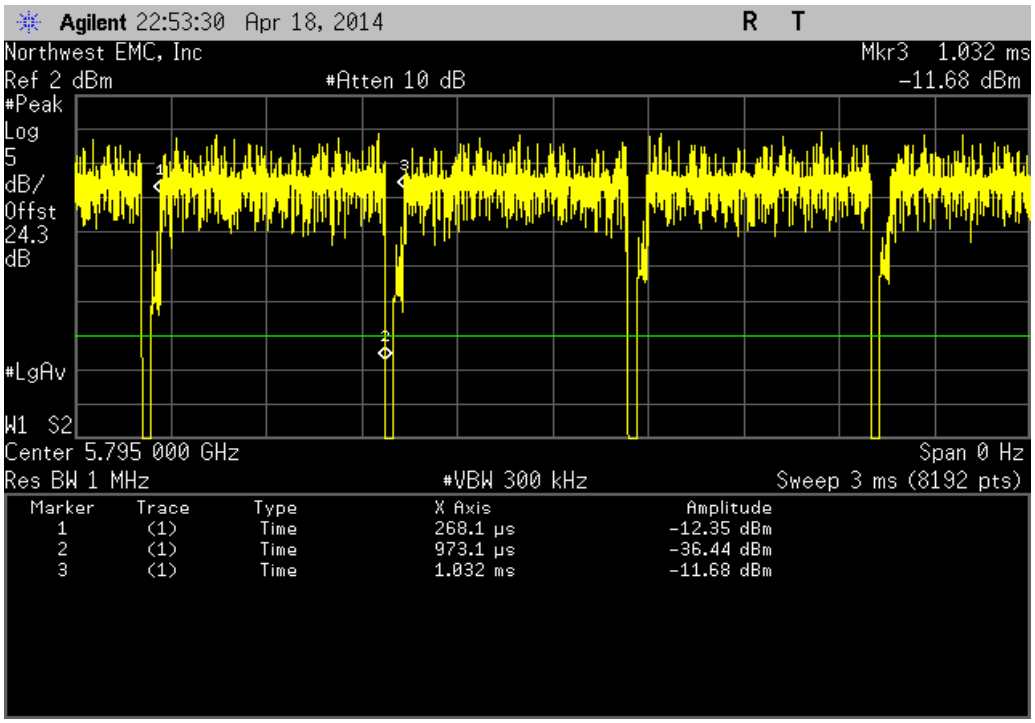
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

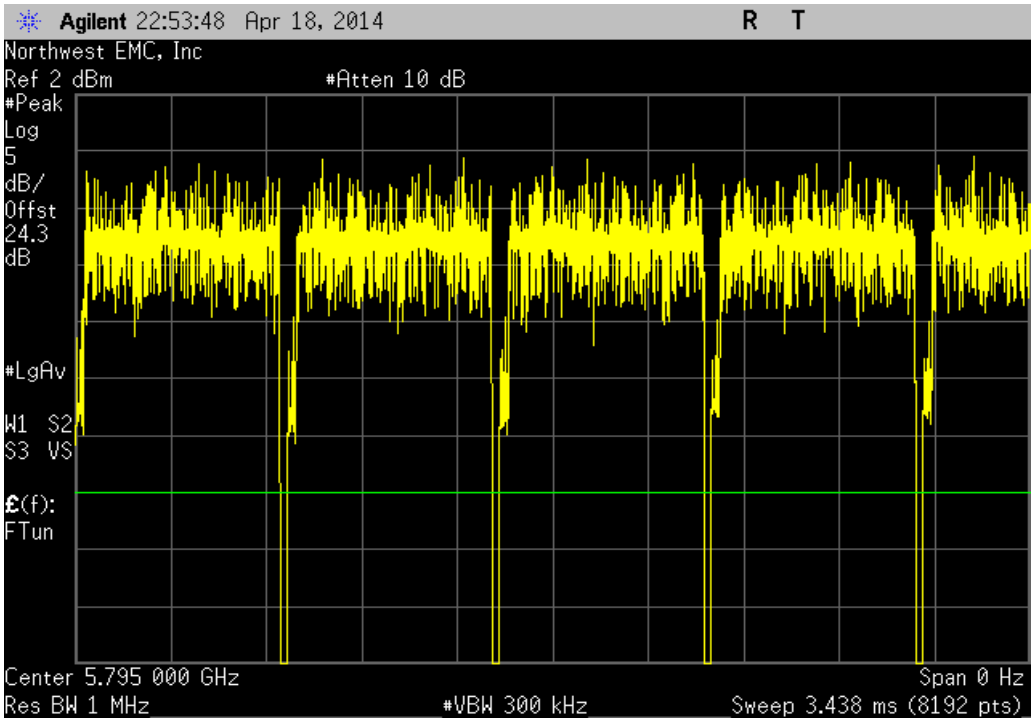
B IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS8, High Channel 157/161, 5795 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
705 uS	764 uS	1	92.3	N/A	N/A



B IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS8, High Channel 157/161, 5795 MHz

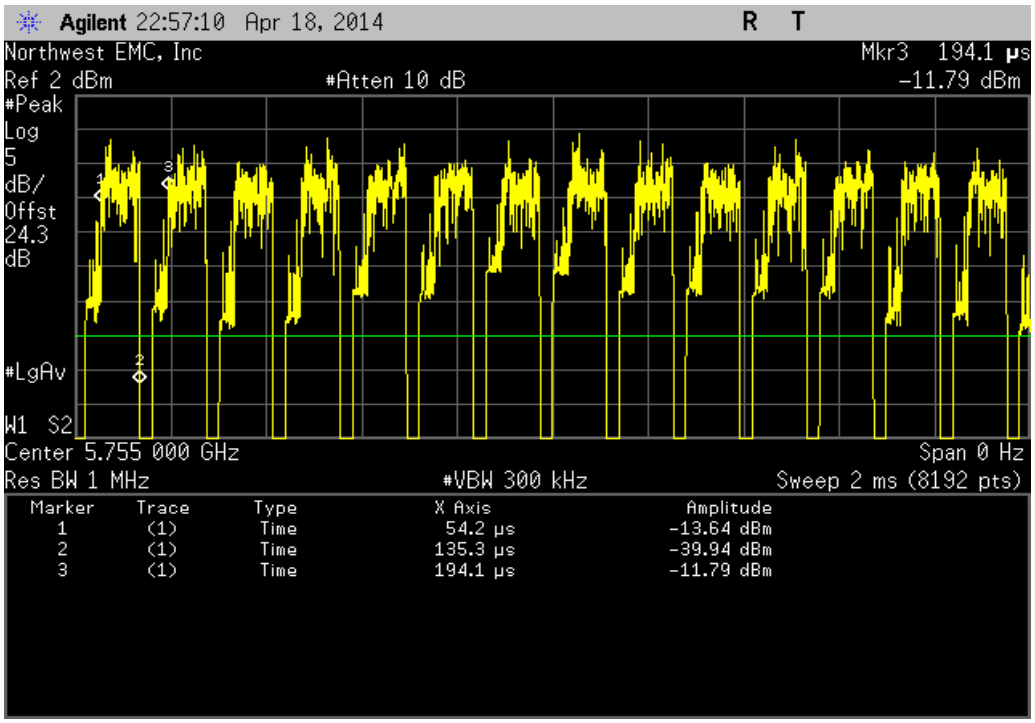
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

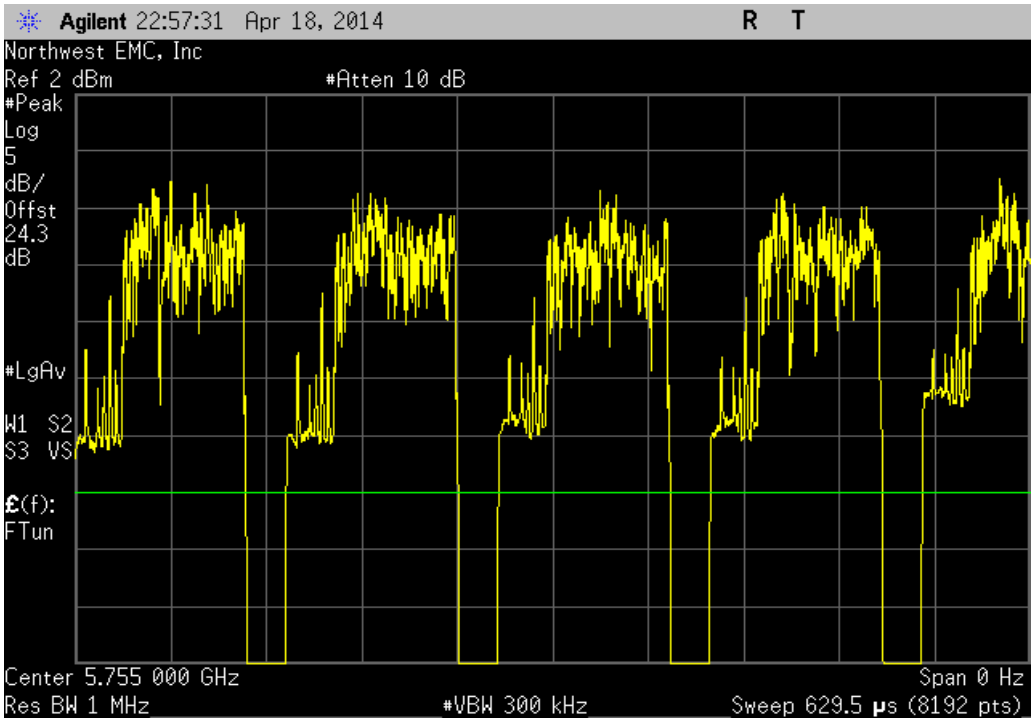
B IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS15, Low Channel 149/153, 5755 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	81.1 uS	139.9 uS	1	58	N/A	N/A



B IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS15, Low Channel 149/153, 5755 MHz

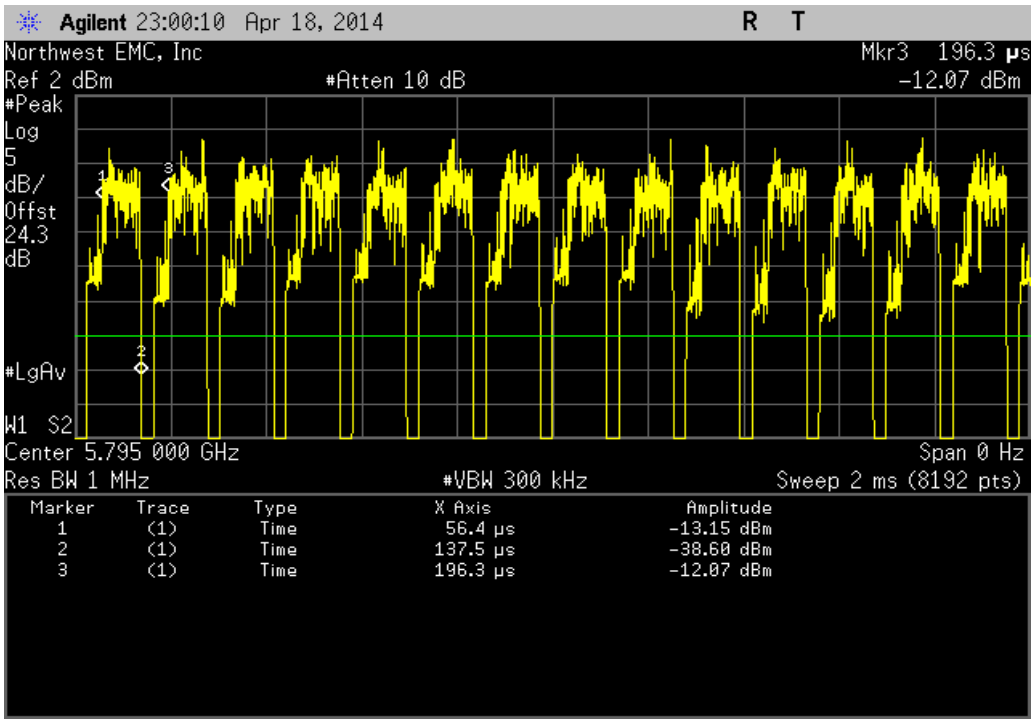
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

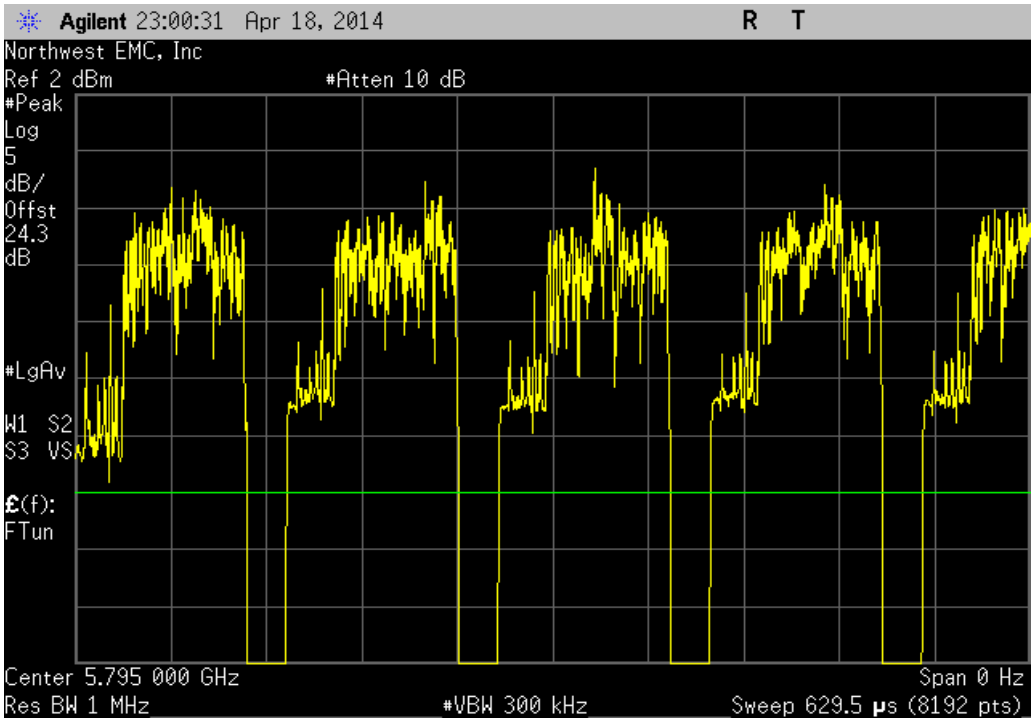
B IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS15, High Channel 157/161, 5795 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	81.1 uS	139.9 uS	1	58	N/A	N/A



B IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS15, High Channel 157/161, 5795 MHz

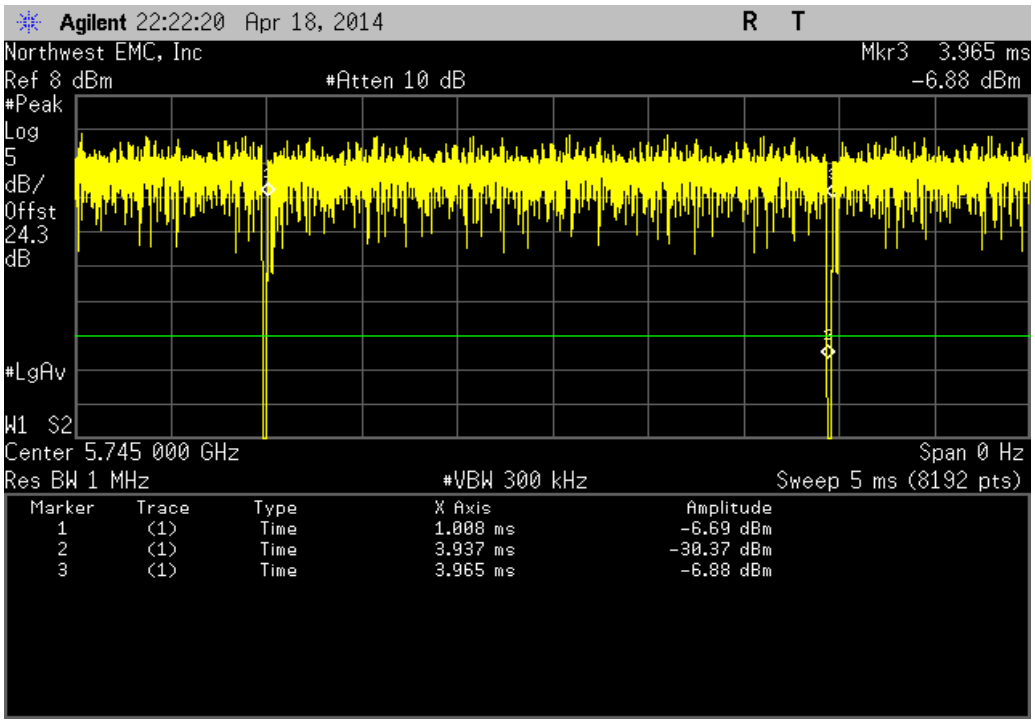
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

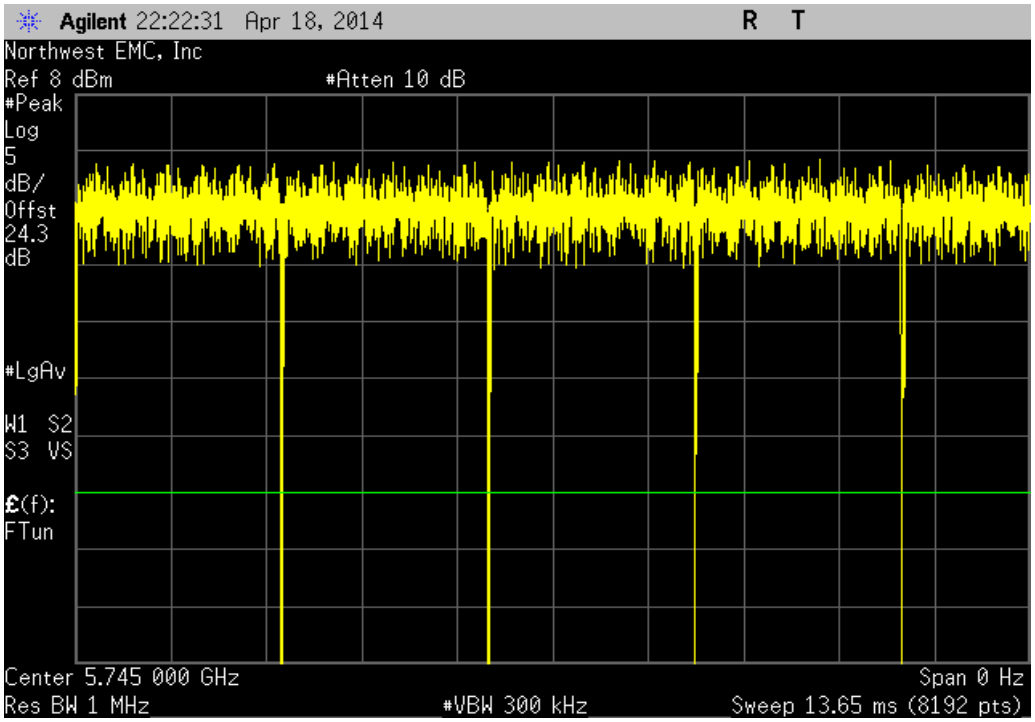
B IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149, 5745 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
2.929 mS	2.958 mS	1	99	N/A	N/A



B IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149, 5745 MHz

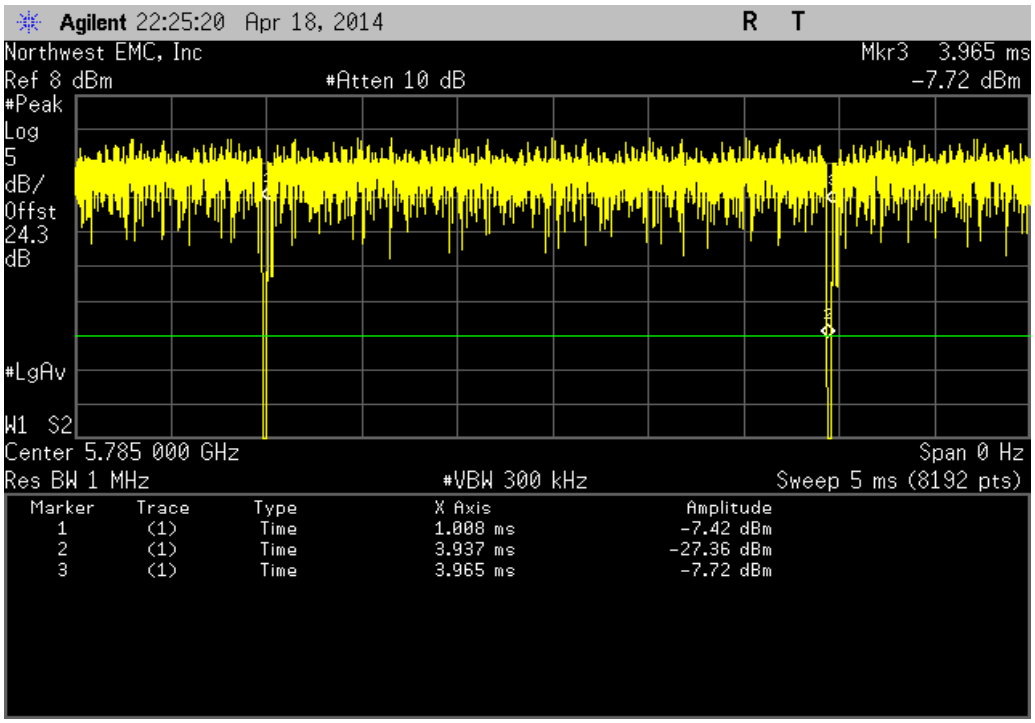
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

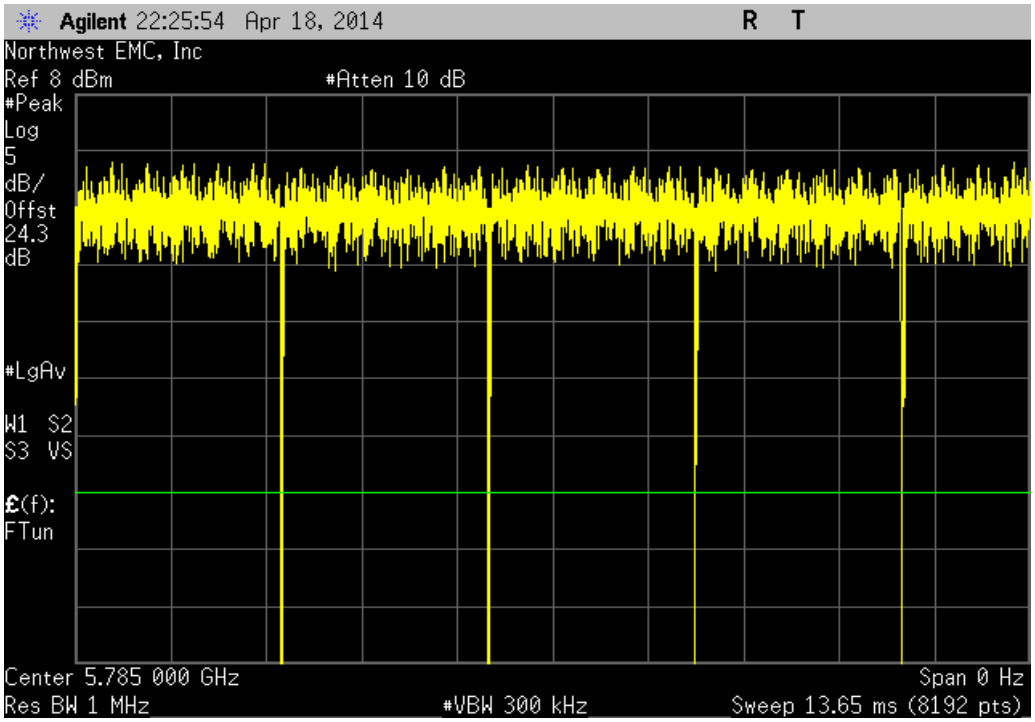
B IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Mid Channel 157, 5785 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	2.929 mS	2.958 mS	1	99	N/A	N/A



B IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Mid Channel 157, 5785 MHz

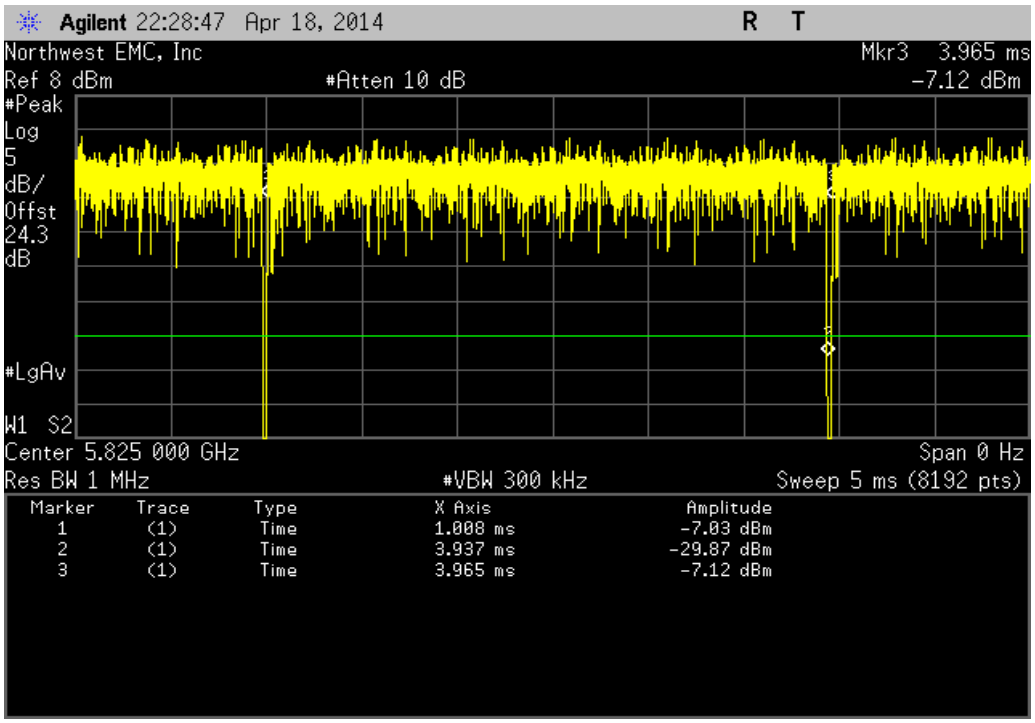
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

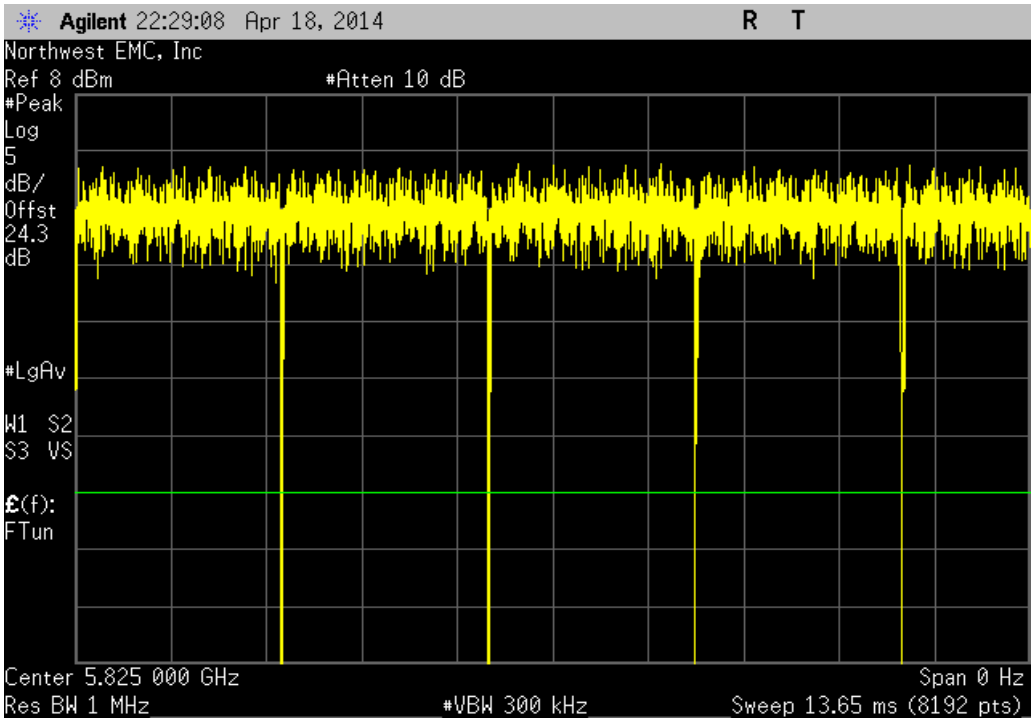
B IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, High Channel 165, 5825 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	2.929 mS	2.958 mS	1	99	N/A	N/A



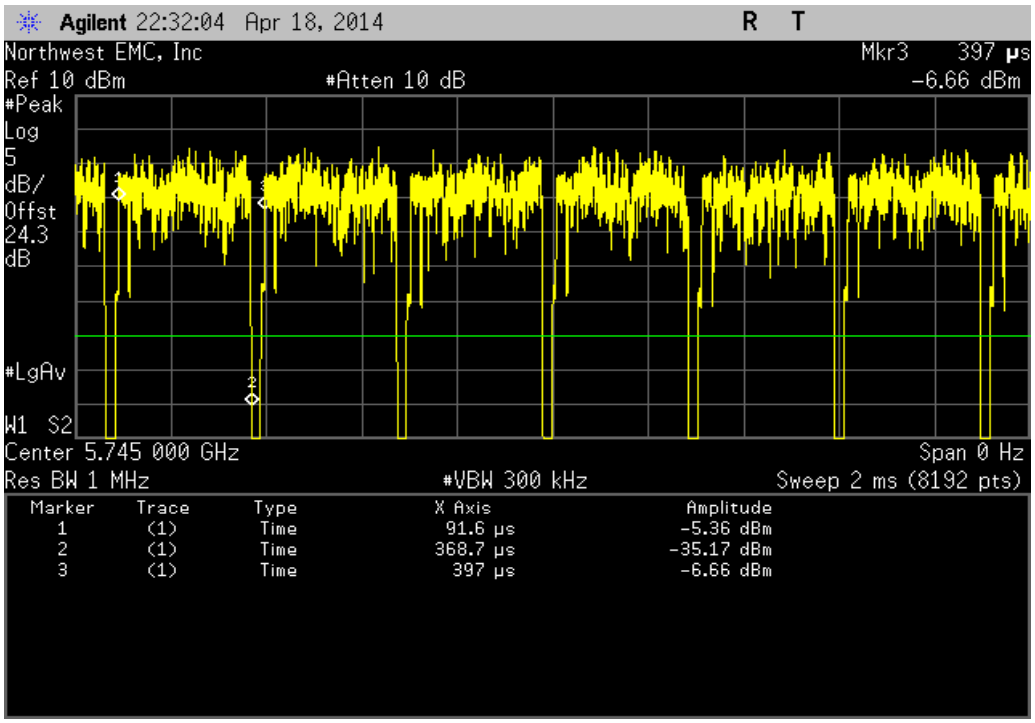
B IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, High Channel 165, 5825 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A

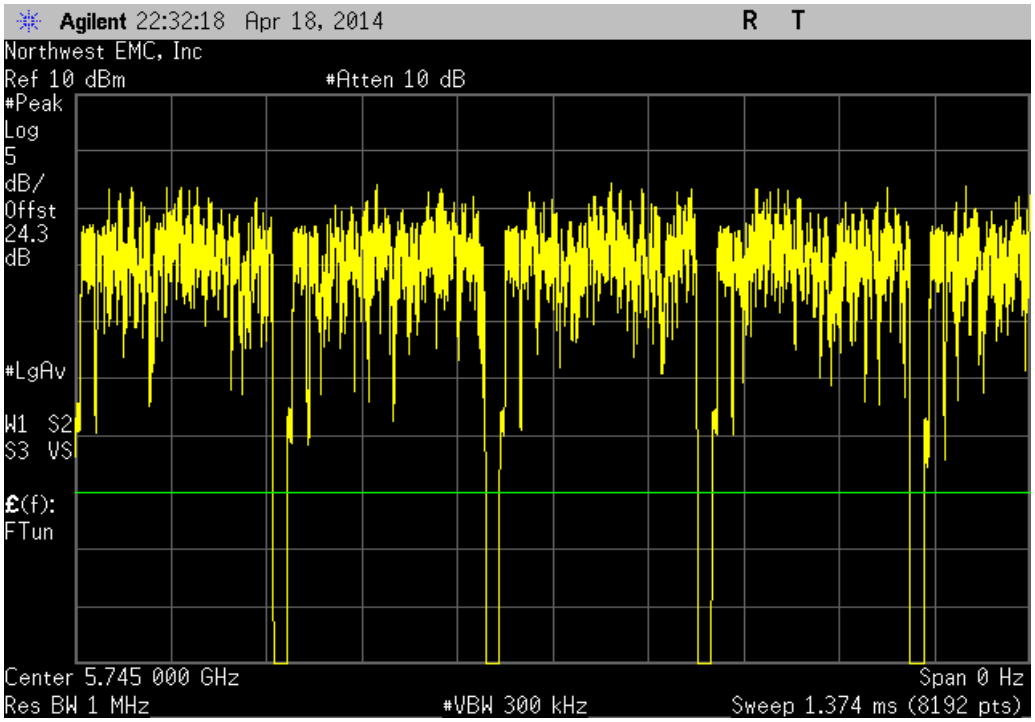


TRANSMISSION BURST DURATION

B IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, Low Channel 149, 5745 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	277.1 uS	305.4 uS	1	90.7	N/A	N/A

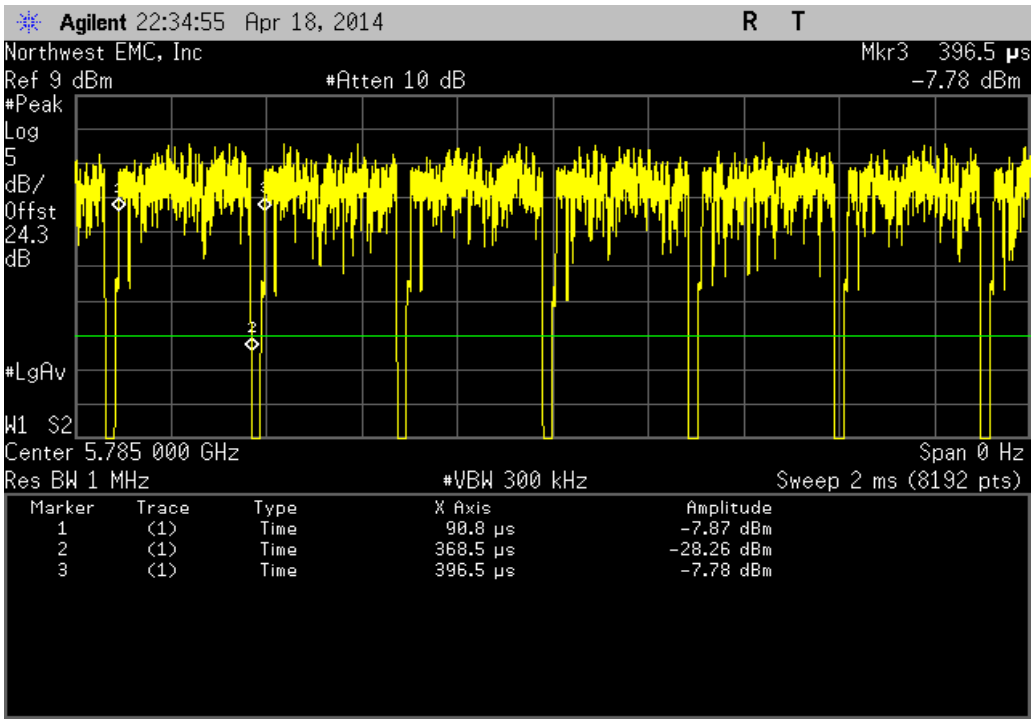


B IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, Low Channel 149, 5745 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



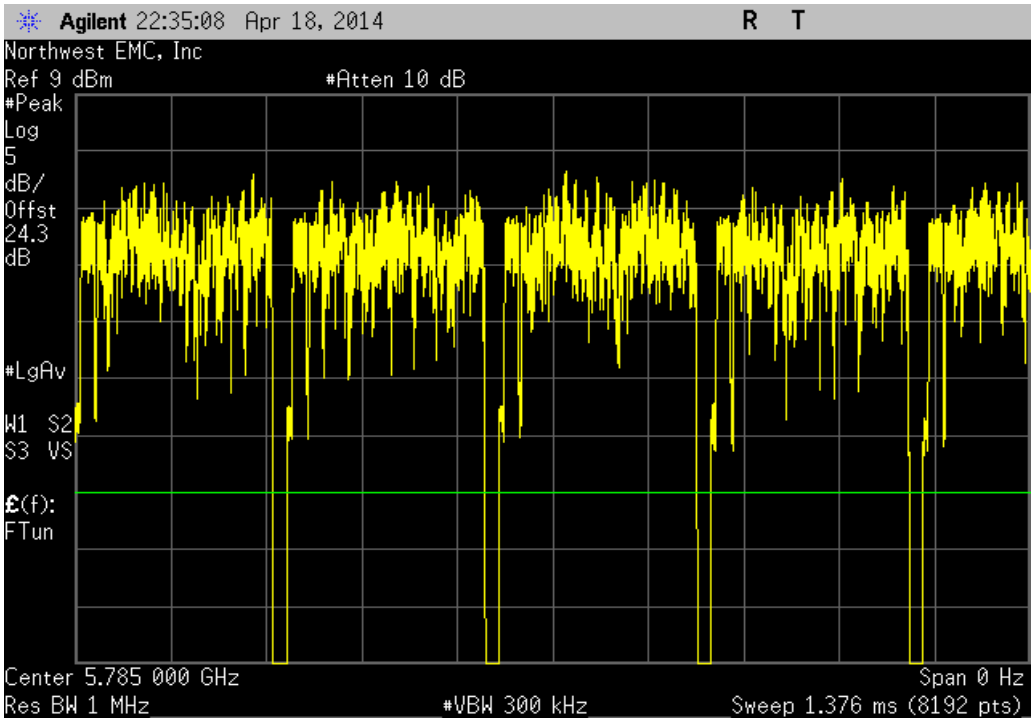
B IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, Mid Channel 157, 5785 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
277.7 uS	305.7 uS	1	90.8	N/A	N/A



B IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, Mid Channel 157, 5785 MHz

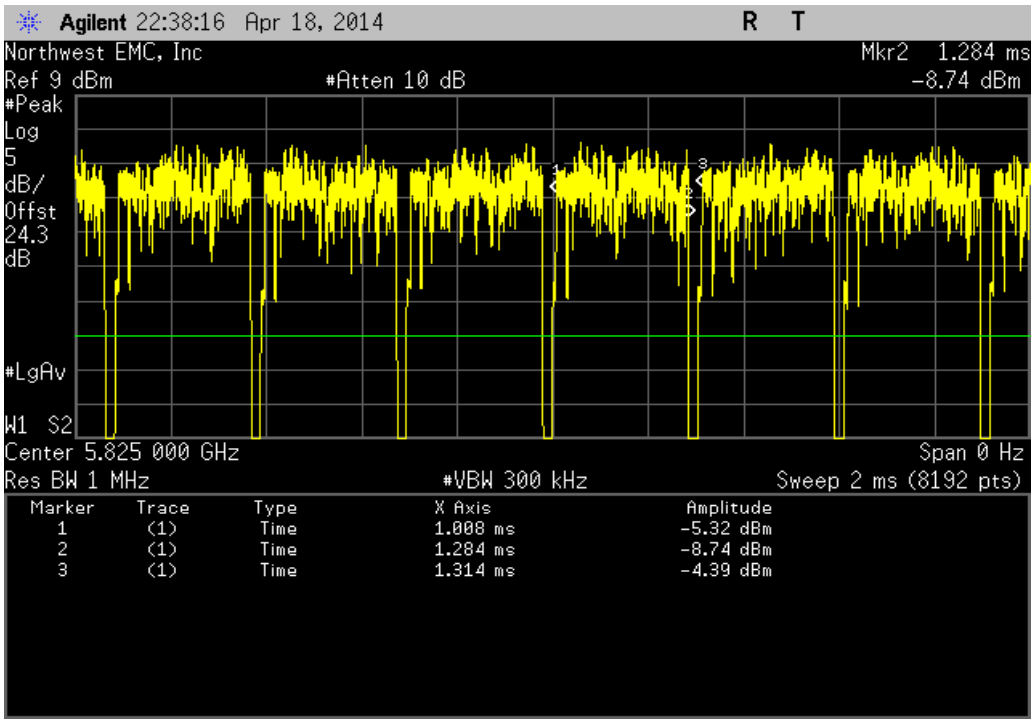
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

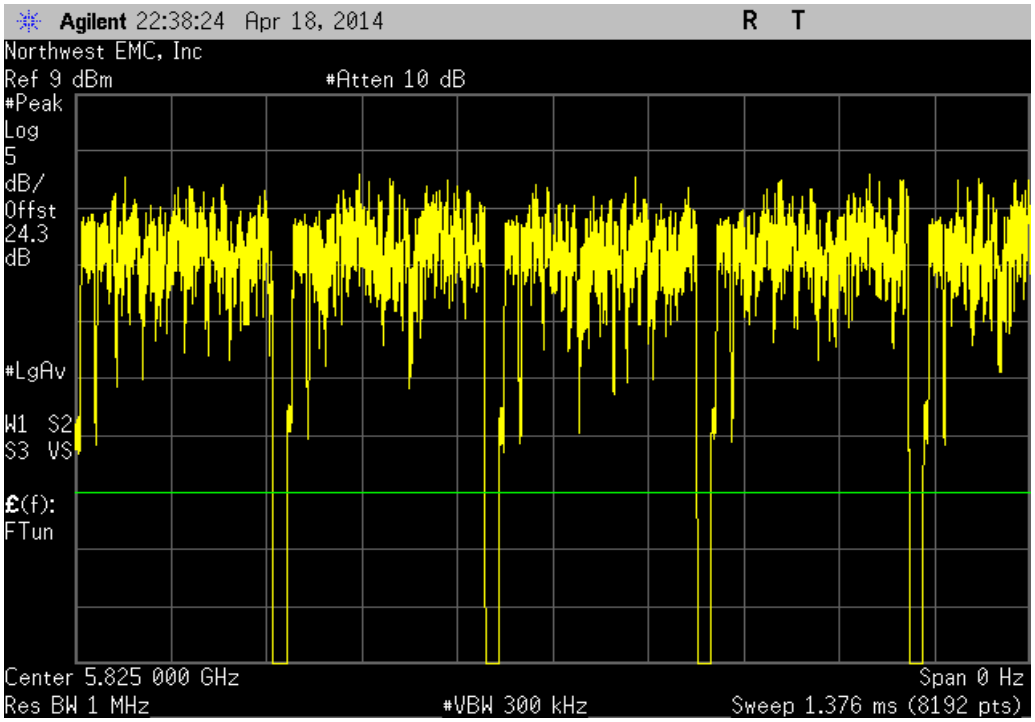
B IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, High Channel 165, 5825 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
275.391 uS	305.7 uS	1	90.1	N/A	N/A



B IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, High Channel 165, 5825 MHz

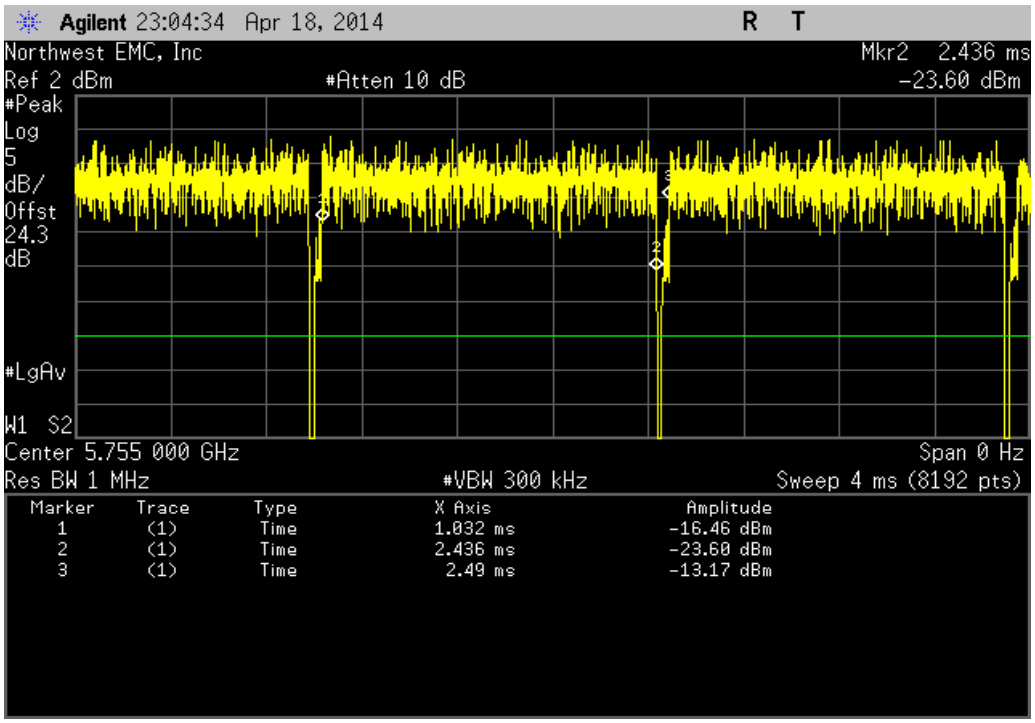
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

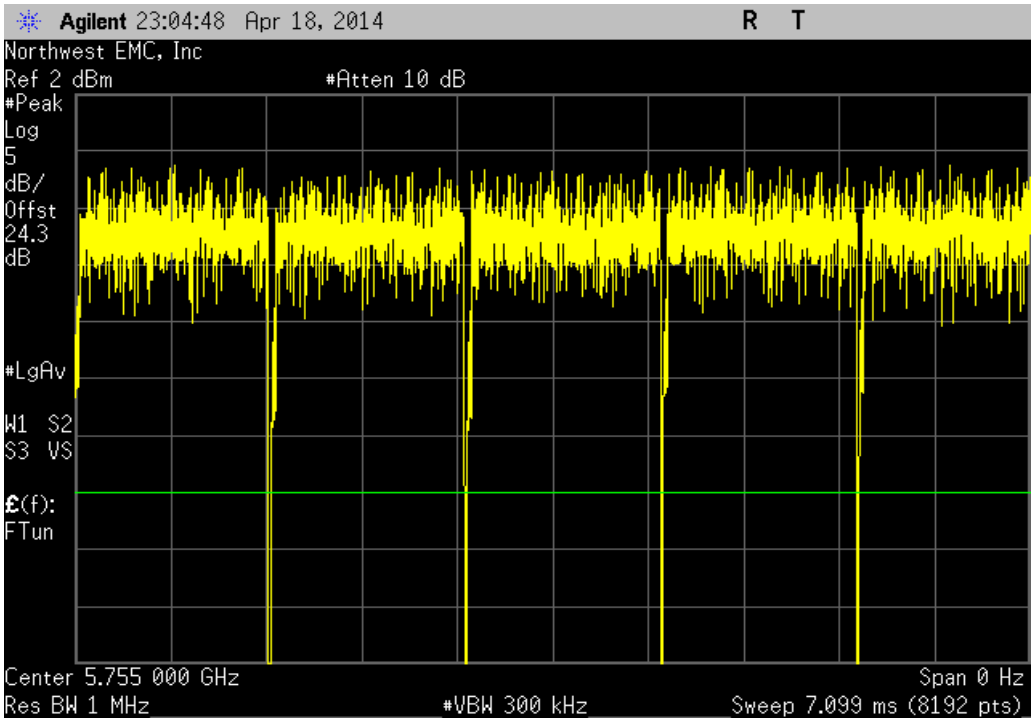
B IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149/153, 5755 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.404 mS	1.458 mS	1	96.3	N/A	N/A



B IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149/153, 5755 MHz

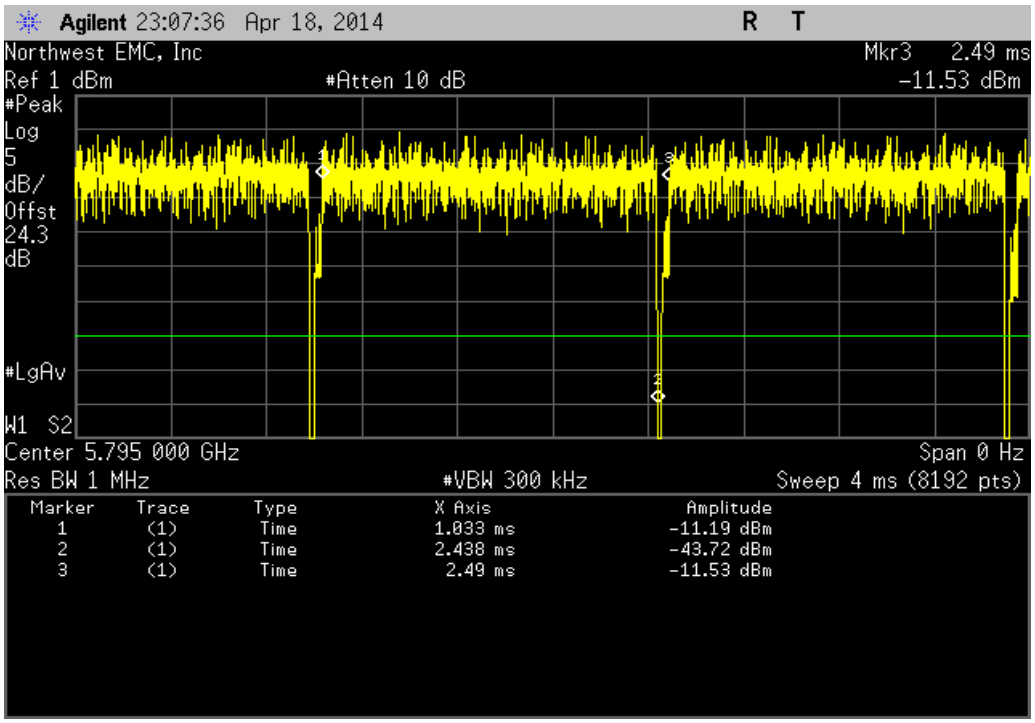
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

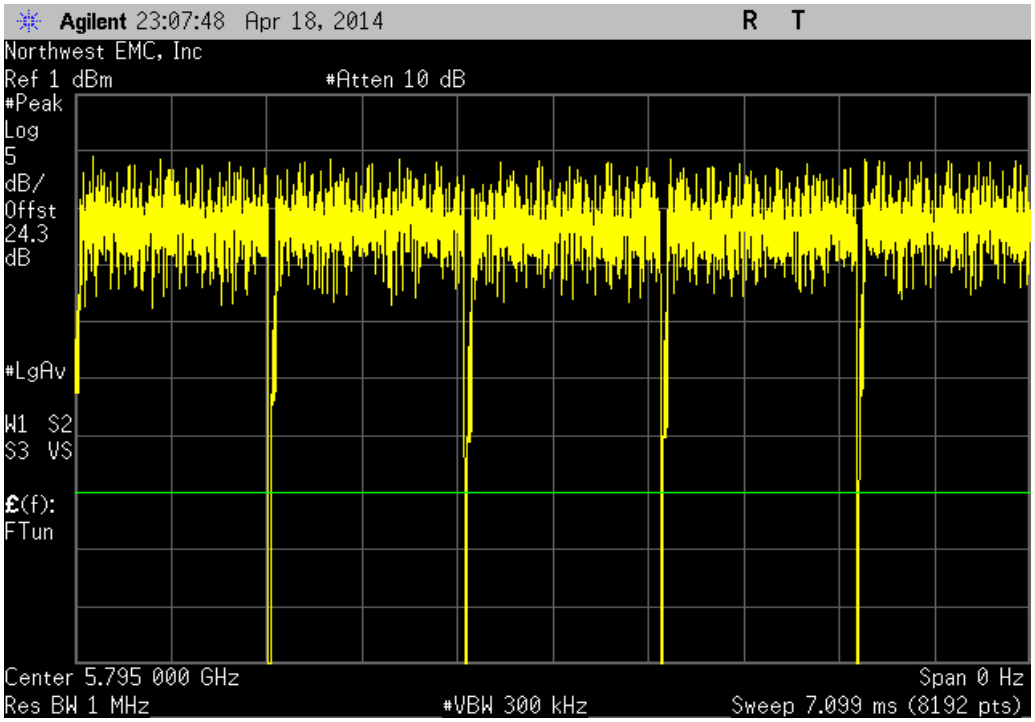
B IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, High Channel 157/161, 5795 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
1.405 mS	1.458 mS	1	96.4	N/A	N/A



B IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, High Channel 157/161, 5795 MHz

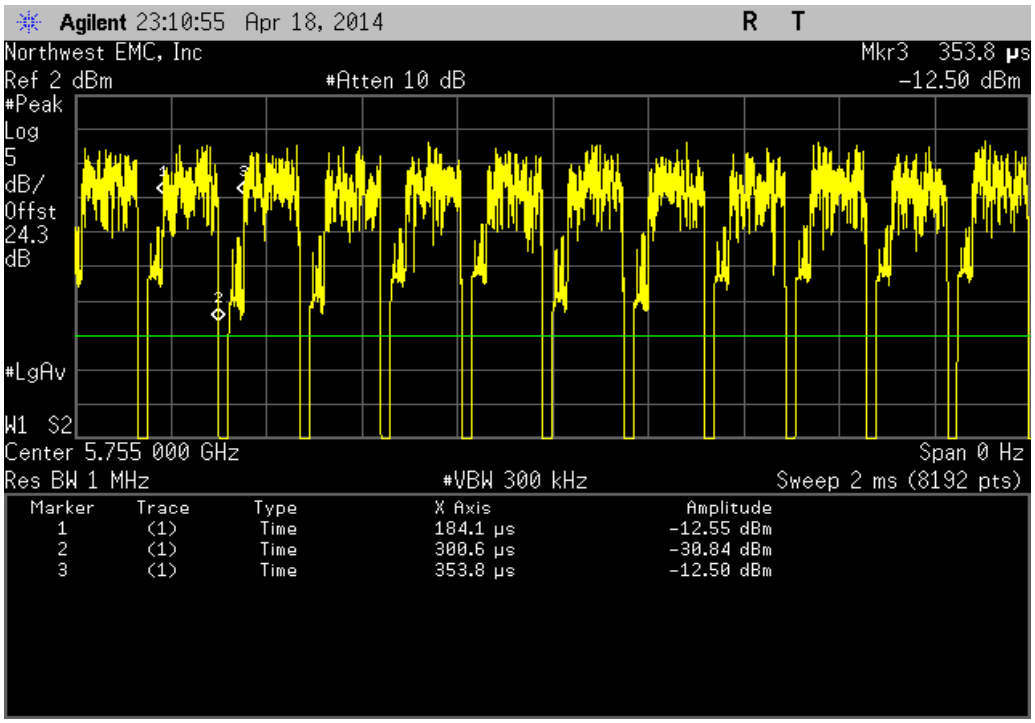
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

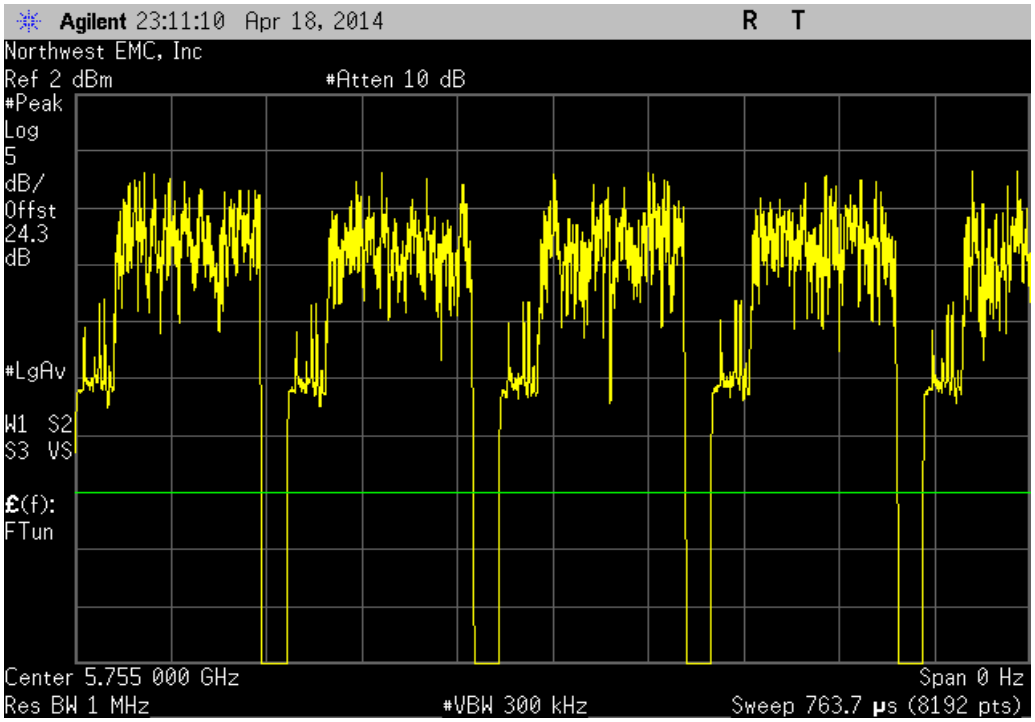
B IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, Low Channel 149/153, 5755 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	116.5 uS	169.7 uS	1	68.7	N/A	N/A



B IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, Low Channel 149/153, 5755 MHz

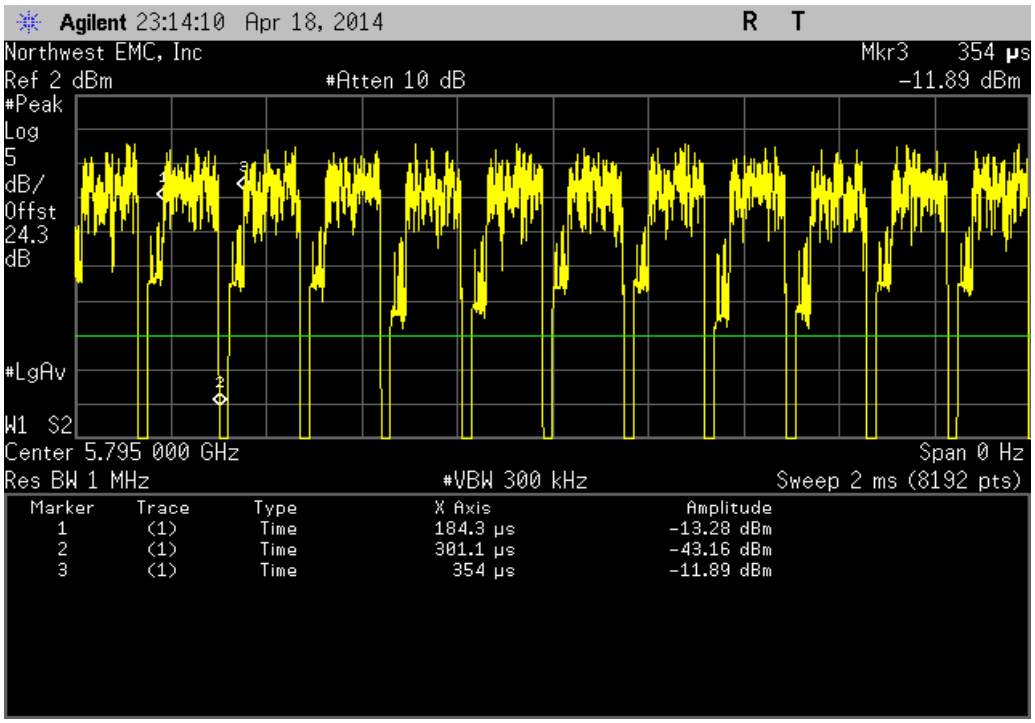
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

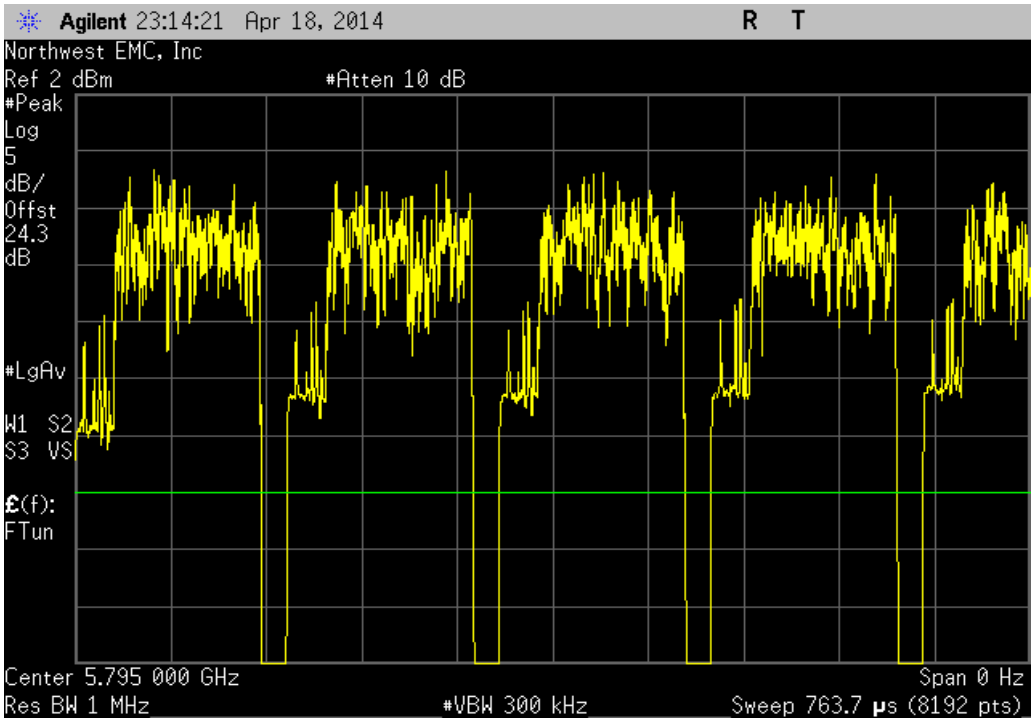
B IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, High Channel 157/161, 5795 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	116.8 uS	169.7 uS	1	68.8	N/A	N/A



B IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, High Channel 157/161, 5795 MHz

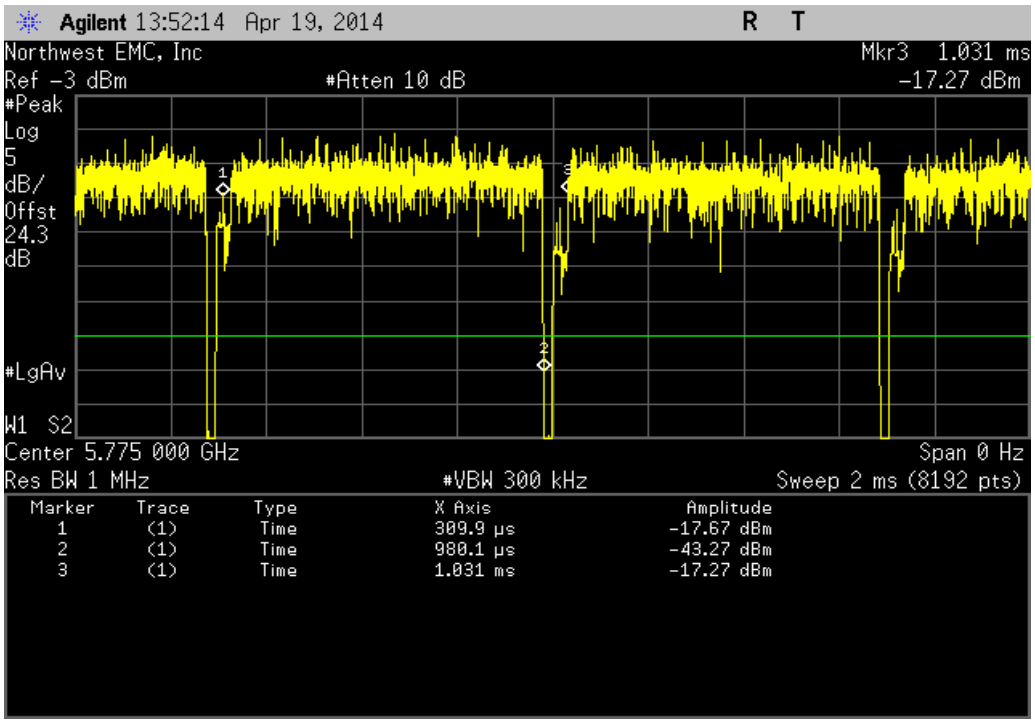
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

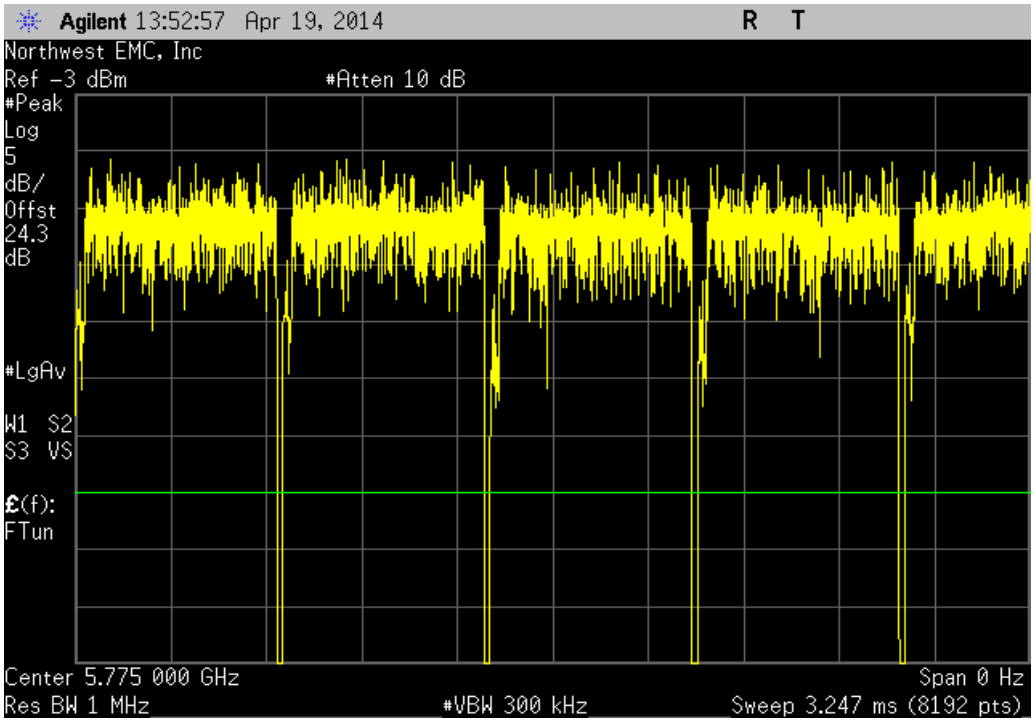
B IEEE 802.11(ac), 80 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149/153/157/161, 5775 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	670.2 uS	721.5 uS	1	92.9	N/A	N/A



B IEEE 802.11(ac), 80 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149/153/157/161, 5775 MHz

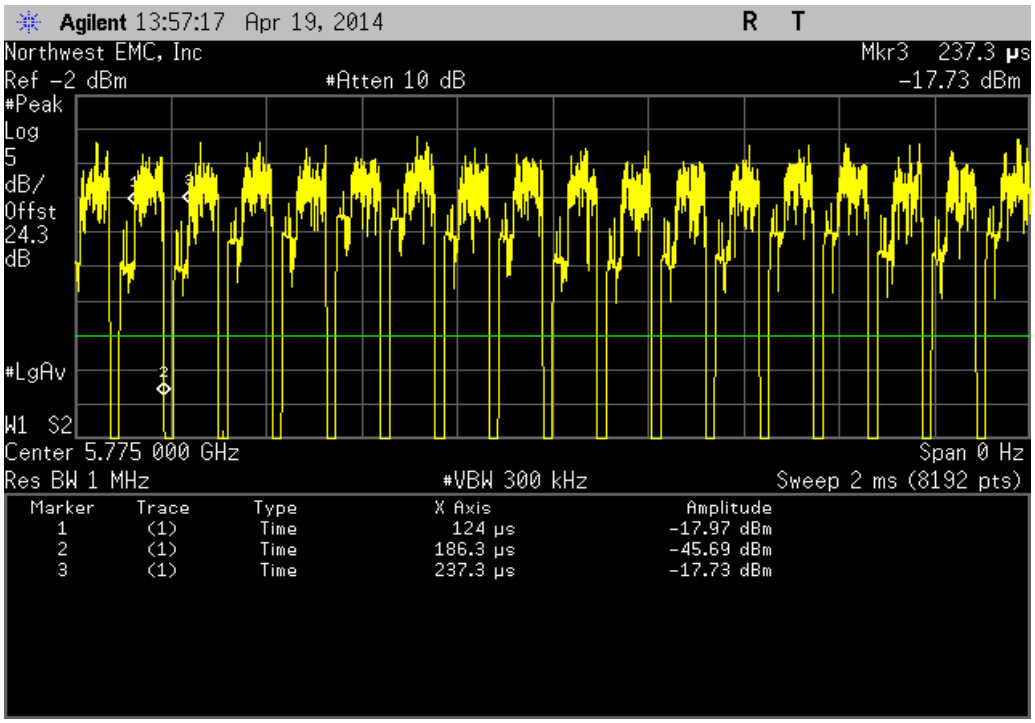
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

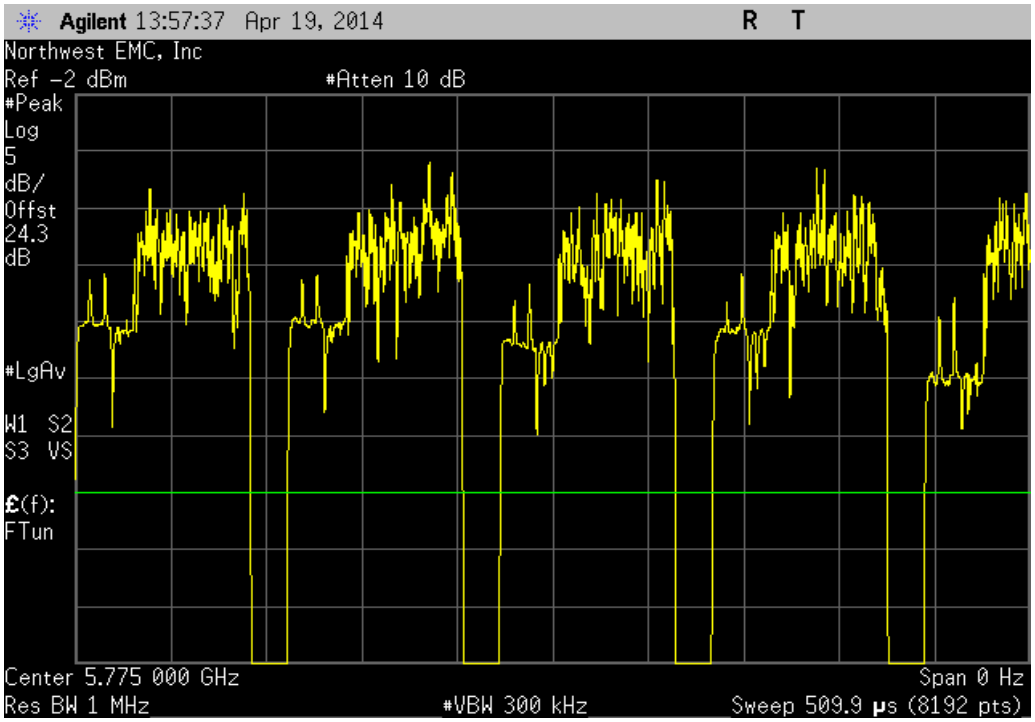
B IEEE 802.11(ac), 80 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, Low Channel 149/153/157/161, 5775 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	62.3 uS	113.3 uS	1	55	N/A	N/A



B IEEE 802.11(ac), 80 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, Low Channel 149/153/157/161, 5775 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

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 (mo.)
40GHz DC Block	Miteq	DCB4000	AMD	5/16/2013	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/30/2013	12
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Power Meter	Gigatronics	8651A	SPM	11/26/2013	24
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	36
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	2/3/2014	12
MXG Analog Signal Generator	Agilent	N5181A	TIG	3/28/2014	36
Spectrum Analyzer	Agilent	E4446A	AAQ	1/21/2014	24

TEST DESCRIPTION

The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was 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.

If the transmit duty cycle < 98 percent, burst gating was used during some of the other tests in this report to only measure during the burst duration.

TRANSMISSION BURST DURATION

EUT:	Model 1631			**Work Order:**	MCSO1698
Serial Number:	006840341053			**Date:**	04/23/14
Customer:	Microsoft Corporation			**Temperature:**	22.3°C
Attendees:	None			**Humidity:**	32%
Project:	None			**Barometric Pres.:**	1014
Tested by:	Jared Ison	**Power:**	110VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2014	ANSI C63.10:2009

COMMENTS

Modes of operation tested were client provided. Reference power level table for channel power setting.

DEVIATIONS FROM TEST STANDARD

None

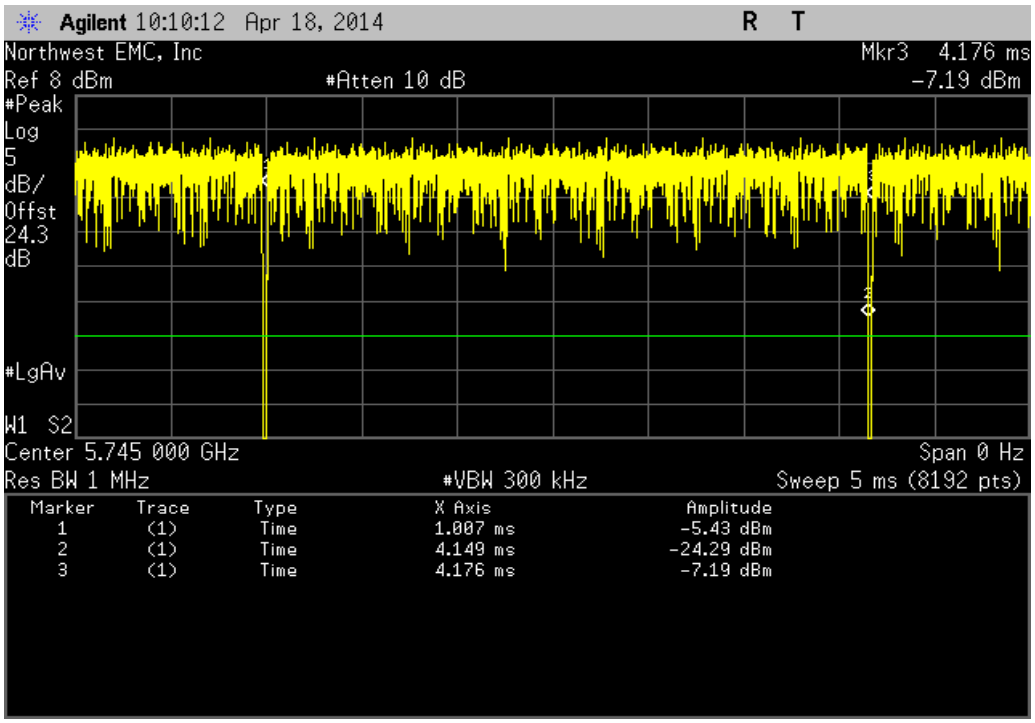
Configuration #	6	Signature

		Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
IEEE 802.11(a)							
20 MHz							
5725 MHz - 5850 MHz Band							
6 Mbps							
	Low Channel 149, 5745 M	3.142 mS	3.169 mS	1	99.1	N/A	N/A
	Low Channel 149, 5745 M	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 157, 5785 MH	3.142 mS	3.17 mS	1	99.1	N/A	N/A
	Mid Channel 157, 5785 MH	N/A	N/A	5	N/A	N/A	N/A
	High Channel 165, 5825 M	3.142 mS	3.169 mS	1	99.1	N/A	N/A
	High Channel 165, 5825 M	N/A	N/A	5	N/A	N/A	N/A
36 Mbps							
	Low Channel 149, 5745 M	537.9 uS	571.4 uS	1	94.1	N/A	N/A
	Low Channel 149, 5745 M	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 157, 5785 MH	537.9 uS	571.1 uS	1	94.2	N/A	N/A
	Mid Channel 157, 5785 MH	N/A	N/A	5	N/A	N/A	N/A
	High Channel 165, 5825 M	537.9 uS	571.1 uS	1	94.2	N/A	N/A
	High Channel 165, 5825 M	N/A	N/A	5	N/A	N/A	N/A
54 Mbps							
	Low Channel 149, 5745 M	362.1 uS	395.3 uS	1	91.6	N/A	N/A
	Low Channel 149, 5745 M	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 157, 5785 MH	361.9 uS	395.6 uS	1	91.5	N/A	N/A
	Mid Channel 157, 5785 MH	N/A	N/A	5	N/A	N/A	N/A
	High Channel 165, 5825 M	361.8 uS	395.3 uS	1	91.5	N/A	N/A
	High Channel 165, 5825 M	N/A	N/A	5	N/A	N/A	N/A
IEEE 802.11(n)							
20 MHz							
5725 MHz - 5850 MHz Band							
HT, MCS7							
	Low Channel 149, 5745 M	2.918 mS	2.946 mS	1	99	N/A	N/A
	Low Channel 149, 5745 M	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 157, 5785 MH	2.918 mS	2.946 mS	1	99	N/A	N/A
	Mid Channel 157, 5785 MH	N/A	N/A	6	N/A	N/A	N/A
	High Channel 165, 5825 M	2.918 mS	2.946 mS	1	99	N/A	N/A
	High Channel 165, 5825 M	N/A	N/A	5	N/A	N/A	N/A
40 MHz							
5725 MHz - 5850 MHz Band							
HT, MCS7							
	Low Channel 149/153, 575	144.3 uS	203.6 uS	1	70.9	N/A	N/A
	Low Channel 149/153, 575	N/A	N/A	5	N/A	N/A	N/A
	High Channel 157/161, 57	146.1 uS	205.4 uS	1	71.1	N/A	N/A
	High Channel 157/161, 57	N/A	N/A	5	N/A	N/A	N/A
IEEE 802.11(ac)							
20 MHz							
5725 MHz - 5850 MHz Band							
VHT, MCS0							
	Low Channel 149, 5745 M	2.93 mS	2.962 mS	1	98.9	N/A	N/A
	Low Channel 149, 5745 M	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 157, 5785 MH	2.93 mS	2.958 mS	1	99.1	N/A	N/A
	Mid Channel 157, 5785 MH	N/A	N/A	5	N/A	N/A	N/A
	High Channel 165, 5825 M	2.93 mS	2.958 mS	1	99.1	N/A	N/A
	High Channel 165, 5825 M	N/A	N/A	5	N/A	N/A	N/A
VHT, MCS8							
	Low Channel 149, 5745 M	277.9 uS	305.7 uS	1	90.9	N/A	N/A
	Low Channel 149, 5745 M	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel 157, 5785 MH	277.9 uS	305.7 uS	1	90.9	N/A	N/A
	Mid Channel 157, 5785 MH	N/A	N/A	6	N/A	N/A	N/A
	High Channel 165, 5825 M	277.9 uS	305.7 uS	1	90.9	N/A	N/A
	High Channel 165, 5825 M	N/A	N/A	5	N/A	N/A	N/A
40 MHz							
5725 MHz - 5850 MHz Band							
VHT, MCS0							
	Low Channel 149/153, 575	1.405 mS	1.458 mS	1	96.4	N/A	N/A
	Low Channel 149/153, 575	N/A	N/A	5	N/A	N/A	N/A
	High Channel 157/161, 57	1.406 mS	1.459 mS	1	96.4	N/A	N/A
	High Channel 157/161, 57	N/A	N/A	5	N/A	N/A	N/A
VHT, MCS9							
	Low Channel 149/153, 575	116.2 uS	169.4 uS	1	68.6	N/A	N/A
	Low Channel 149/153, 575	N/A	N/A	5	N/A	N/A	N/A
	High Channel 157/161, 57	116.3 uS	169.7 uS	1	68.5	N/A	N/A
	High Channel 157/161, 57	N/A	N/A	6	N/A	N/A	N/A
80 MHz							
5725 MHz - 5850 MHz Band							
VHT, MCS0							
	Low Channel 149/153/157	654.1 uS	705.6 uS	1	92.7	N/A	N/A
	Low Channel 149/153/157	N/A	N/A	5	N/A	N/A	N/A
VHT, MCS9							
	Low Channel 149/153/157	61.8 uS	113.3 uS	1	54.5	N/A	N/A
	Low Channel 149/153/157	N/A	N/A	5	N/A	N/A	N/A

TRANSMISSION BURST DURATION

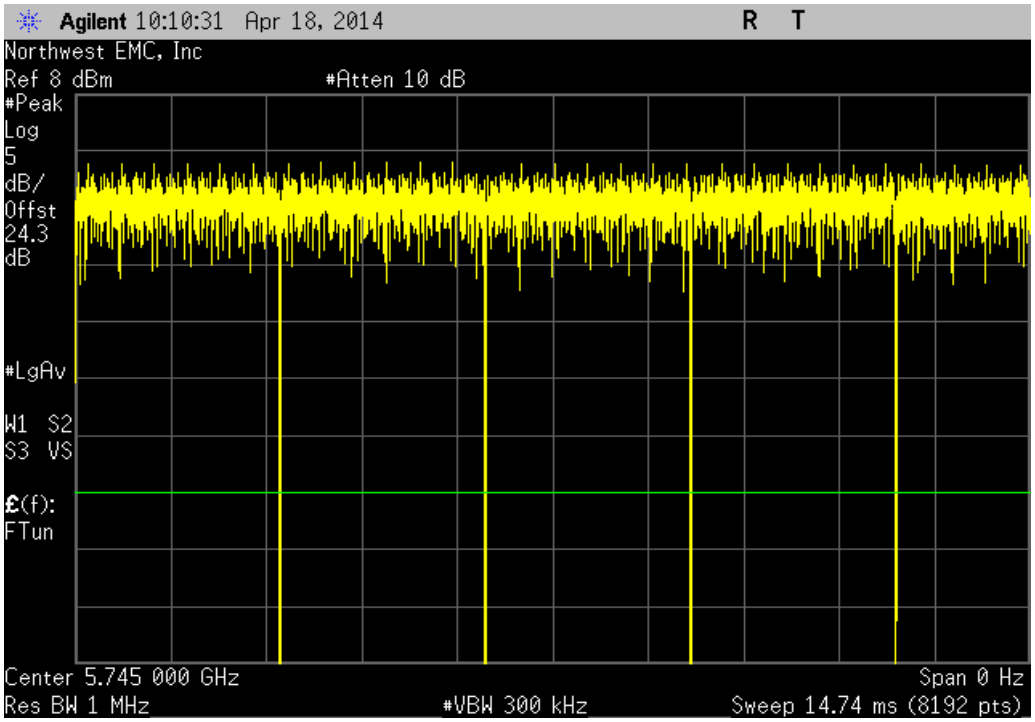
IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 6 Mbps, Low Channel 149, 5745 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	3.142 mS	3.169 mS	1	99.1	N/A	N/A



IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 6 Mbps, Low Channel 149, 5745 MHz

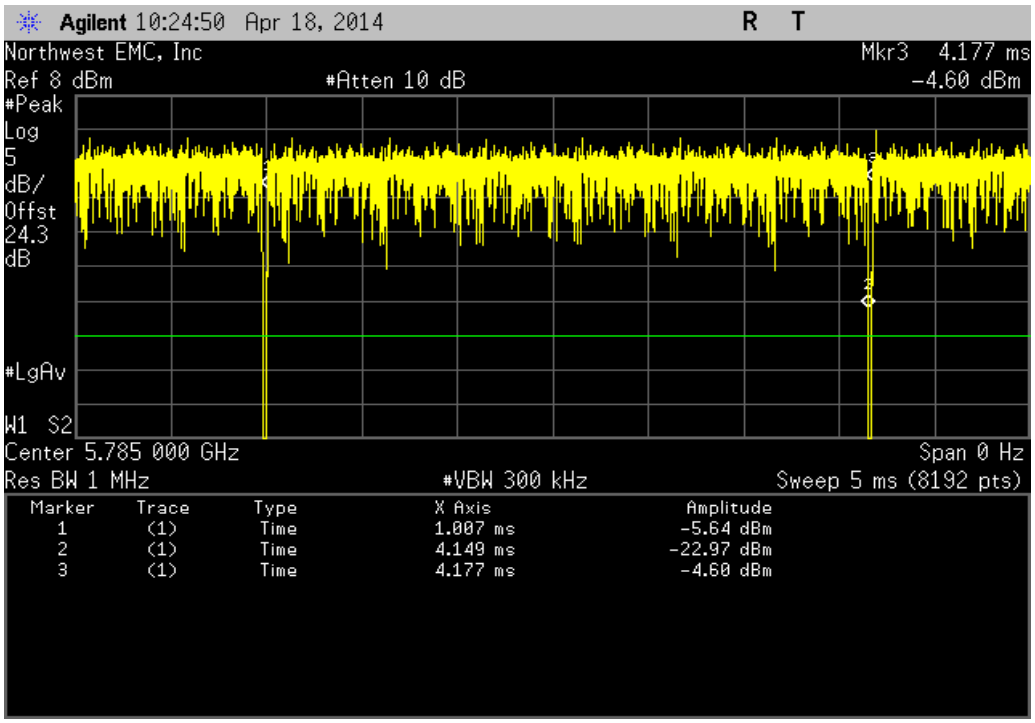
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

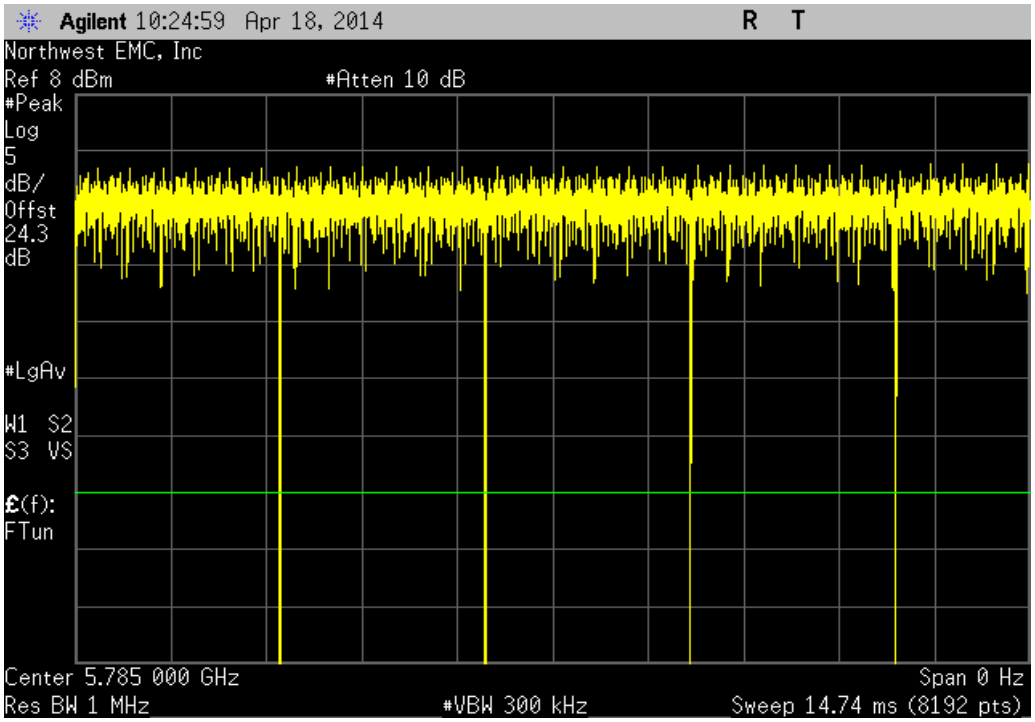
IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 6 Mbps, Mid Channel 157, 5785 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	3.142 mS	3.17 mS	1	99.1	N/A	N/A



IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 6 Mbps, Mid Channel 157, 5785 MHz

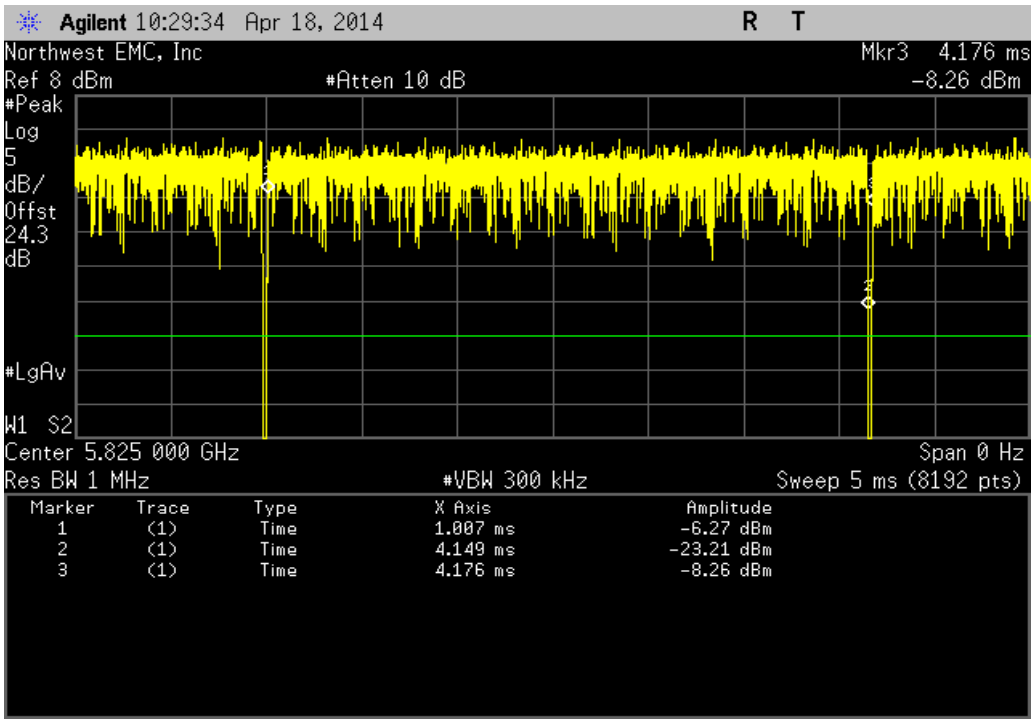
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

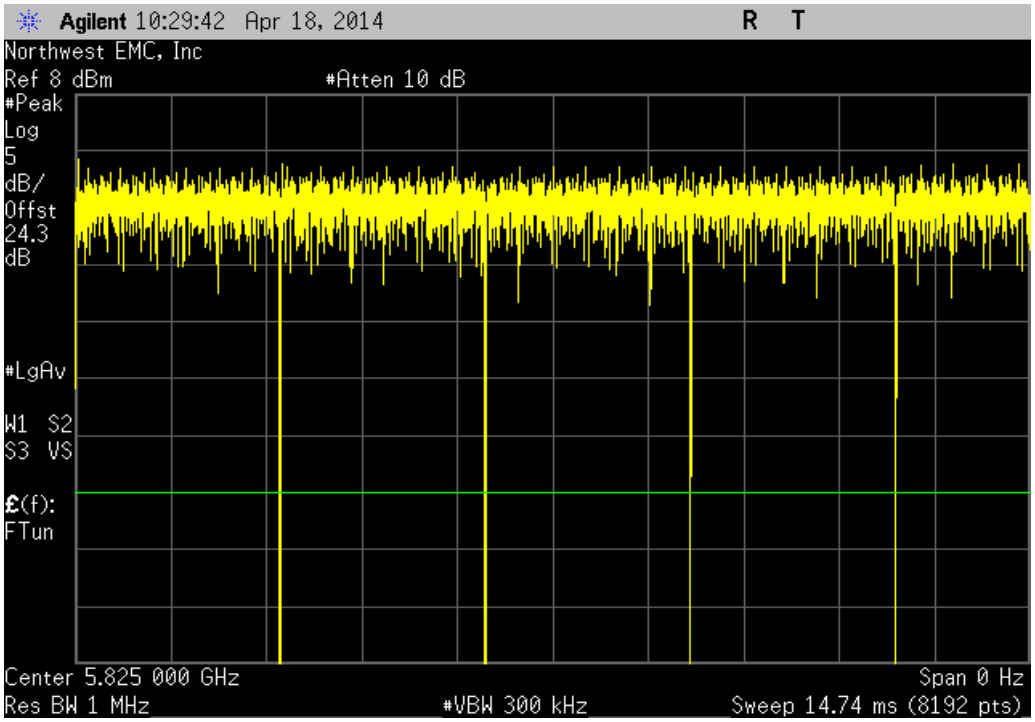
IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 6 Mbps, High Channel 165, 5825 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	3.142 mS	3.169 mS	1	99.1	N/A	N/A



IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 6 Mbps, High Channel 165, 5825 MHz

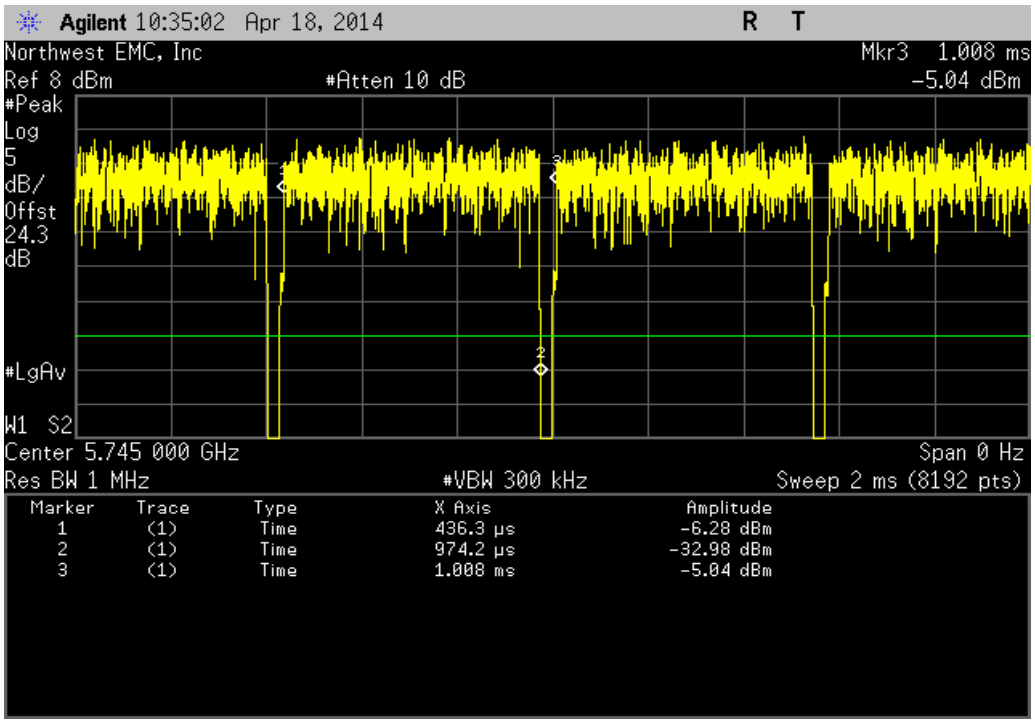
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

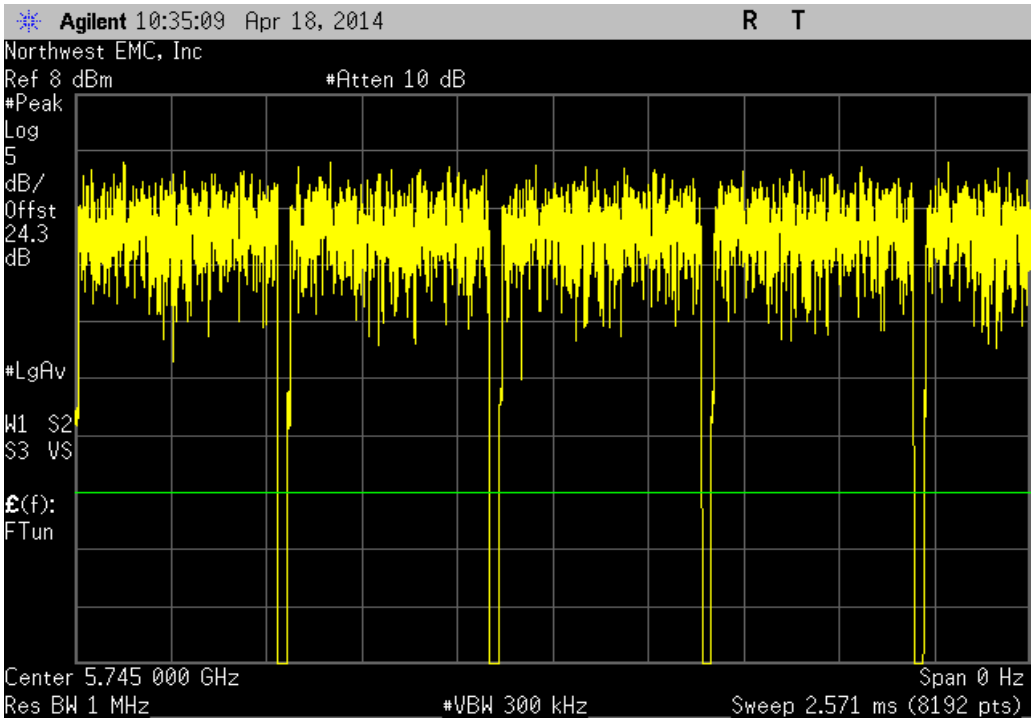
IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 36 Mbps, Low Channel 149, 5745 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	537.9 uS	571.4 uS	1	94.1	N/A	N/A



IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 36 Mbps, Low Channel 149, 5745 MHz

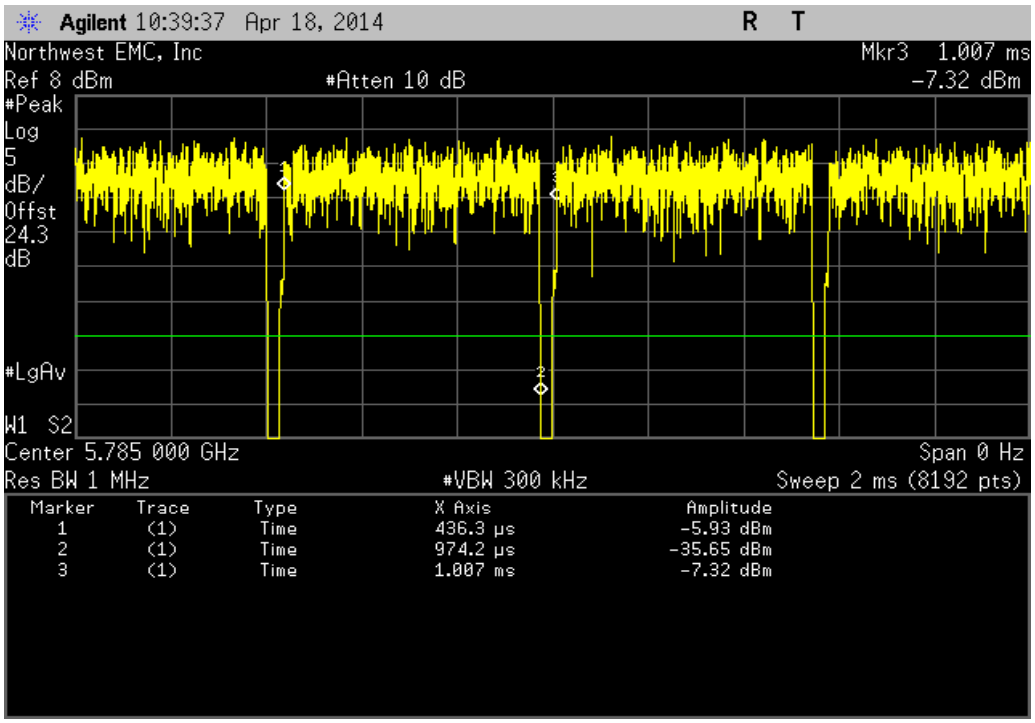
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

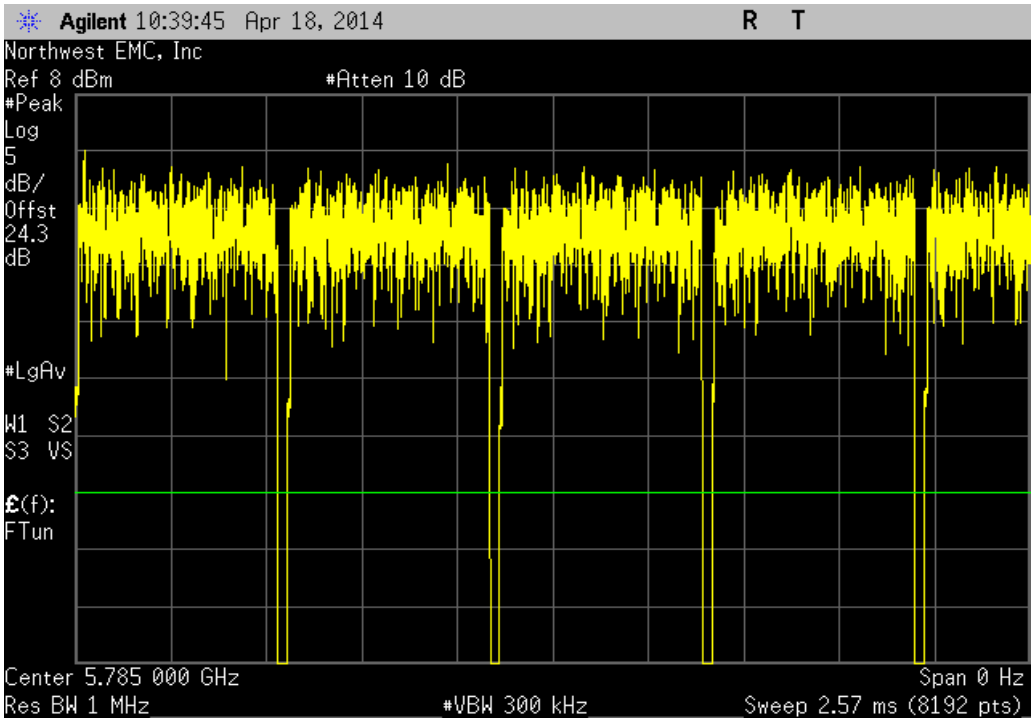
IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 36 Mbps, Mid Channel 157, 5785 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
537.9 uS	571.1 uS	1	94.2	N/A	N/A



IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 36 Mbps, Mid Channel 157, 5785 MHz

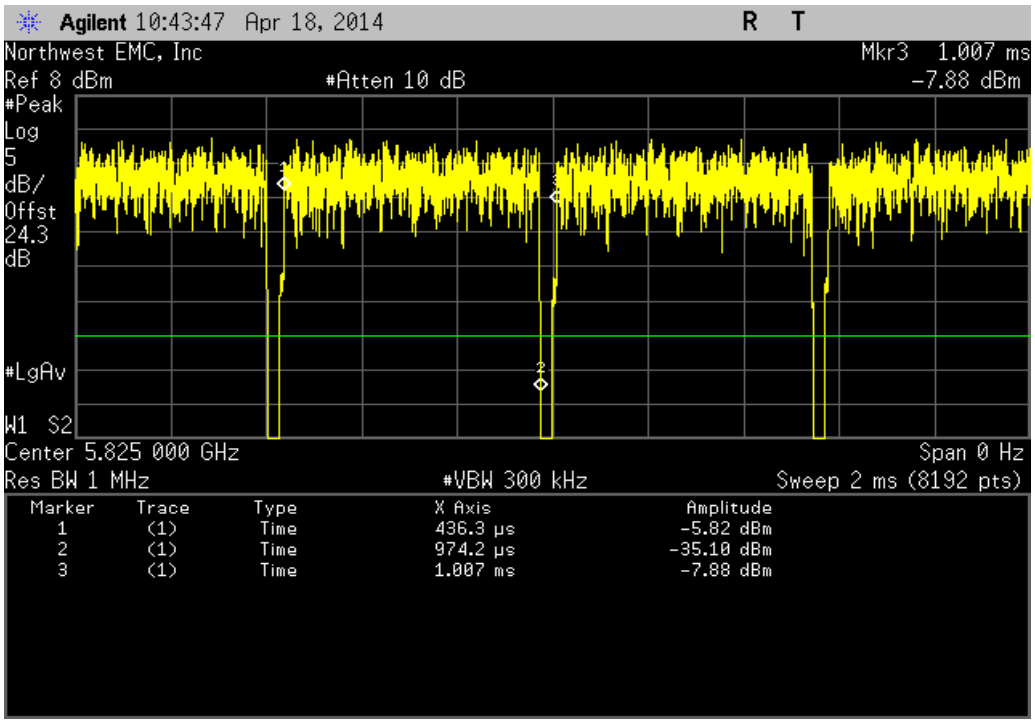
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

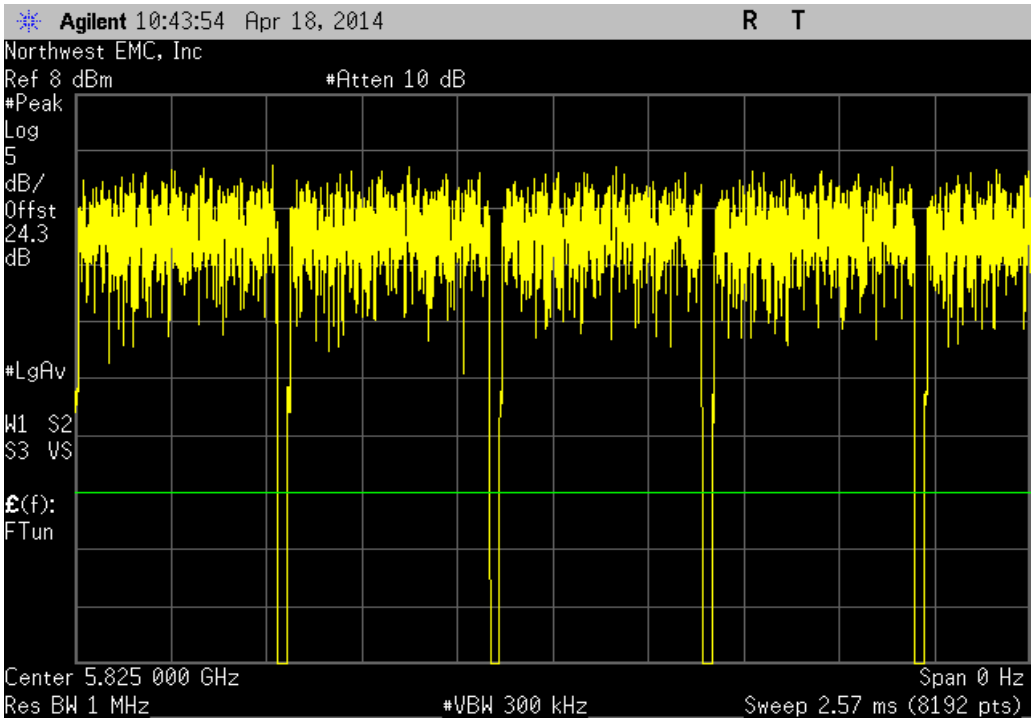
IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 36 Mbps, High Channel 165, 5825 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	537.9 uS	571.1 uS	1	94.2	N/A	N/A



IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 36 Mbps, High Channel 165, 5825 MHz

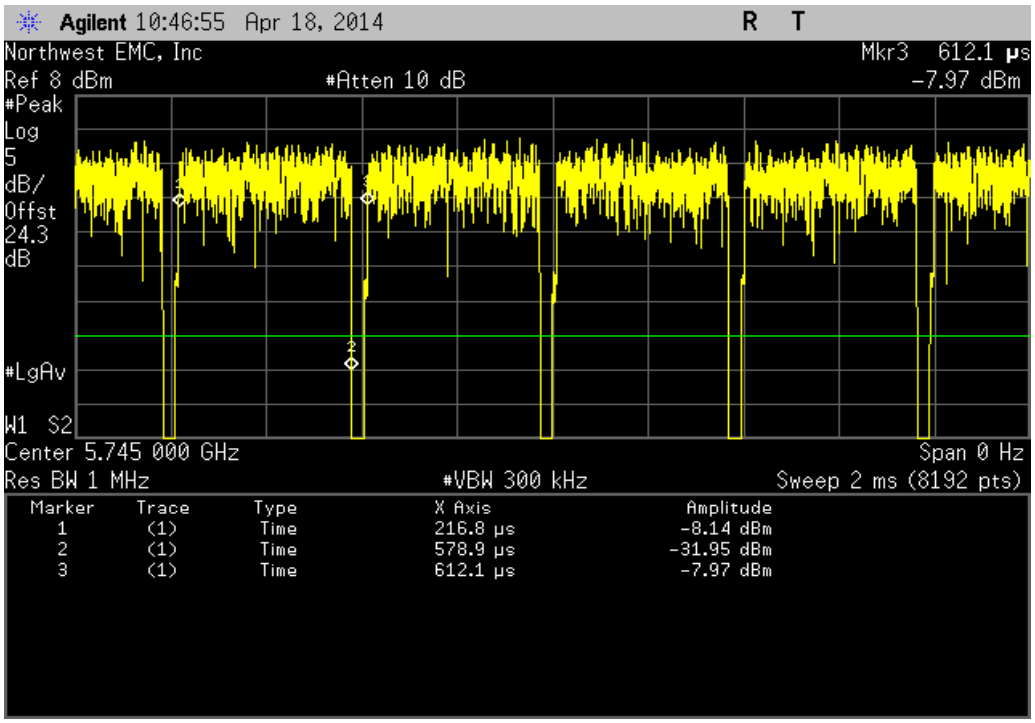
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

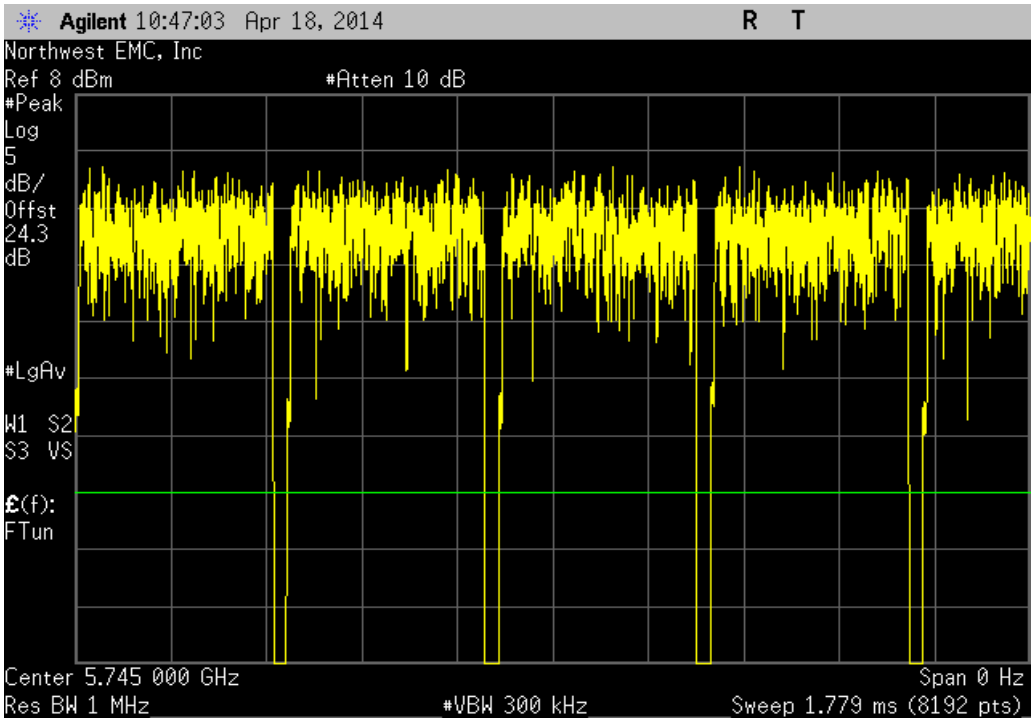
IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 54 Mbps, Low Channel 149, 5745 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
362.1 uS	395.3 uS	1	91.6	N/A	N/A



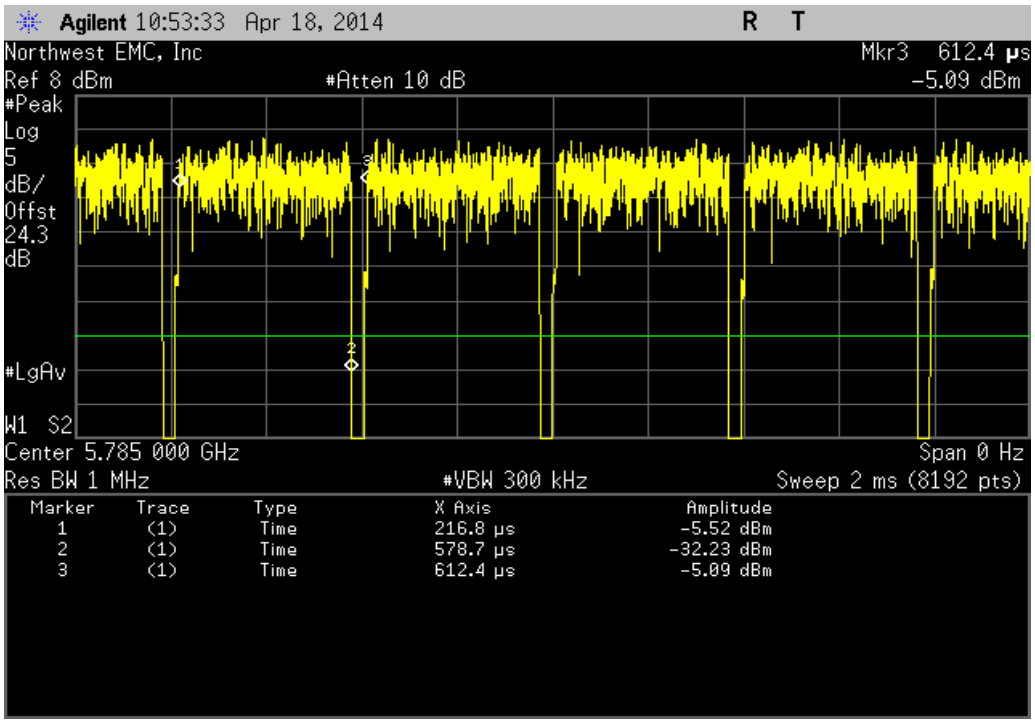
IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 54 Mbps, Low Channel 149, 5745 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



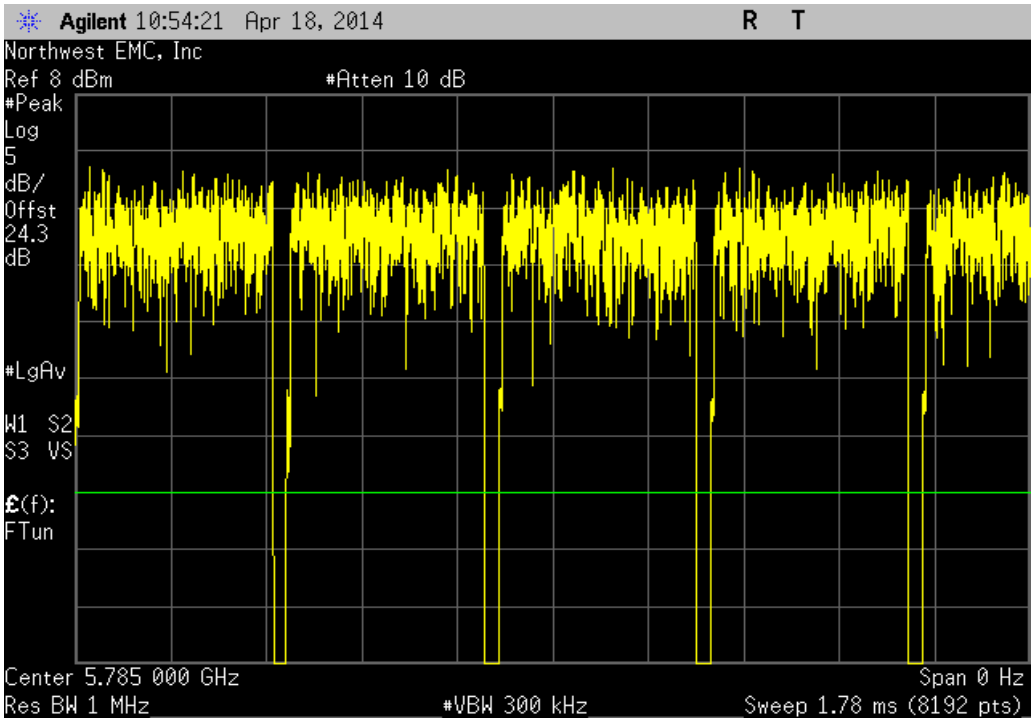
IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 54 Mbps, Mid Channel 157, 5785 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
361.9 uS	395.6 uS	1	91.5	N/A	N/A



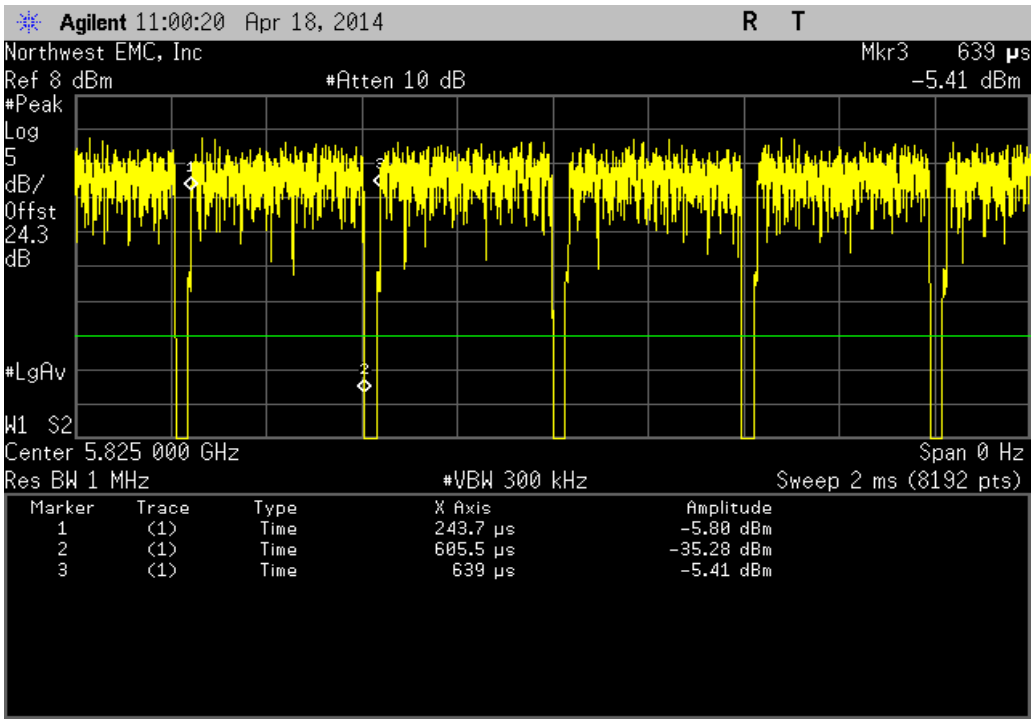
IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 54 Mbps, Mid Channel 157, 5785 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



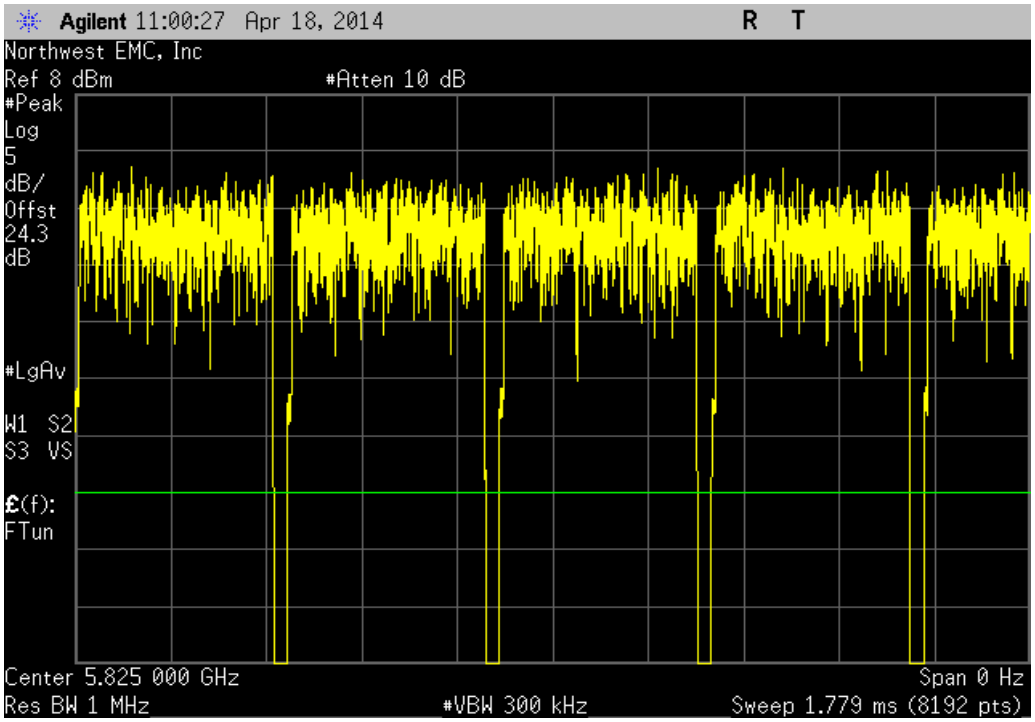
IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 54 Mbps, High Channel 165, 5825 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	361.8 uS	395.3 uS	1	91.5	N/A	N/A



IEEE 802.11(a), 20 MHz, 5725 MHz - 5850 MHz Band, 54 Mbps, High Channel 165, 5825 MHz

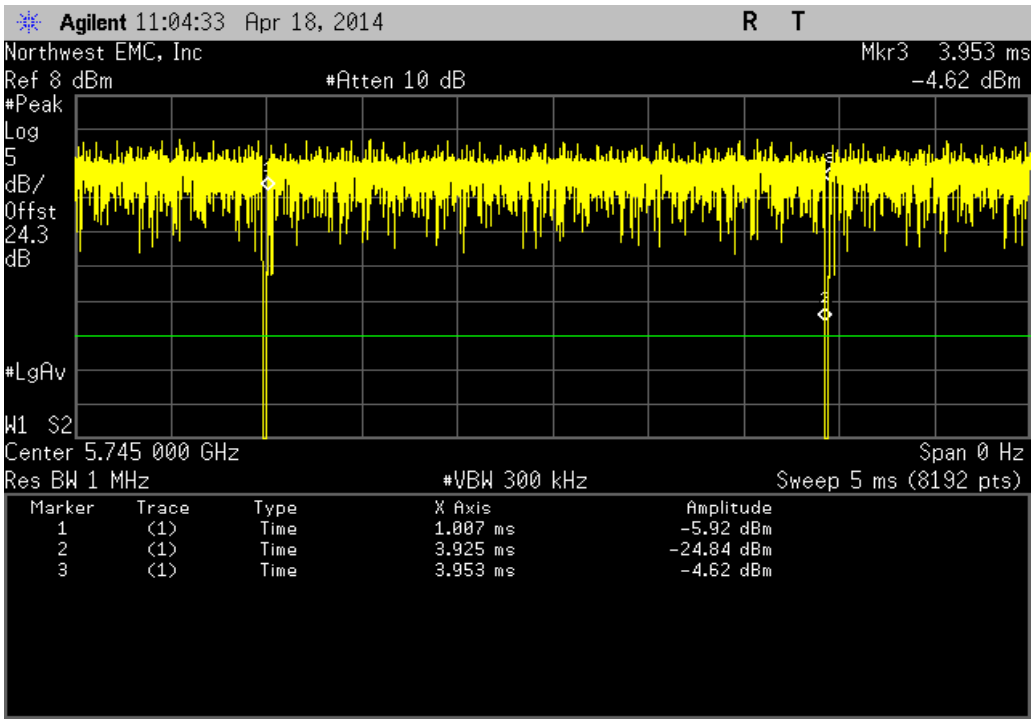
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

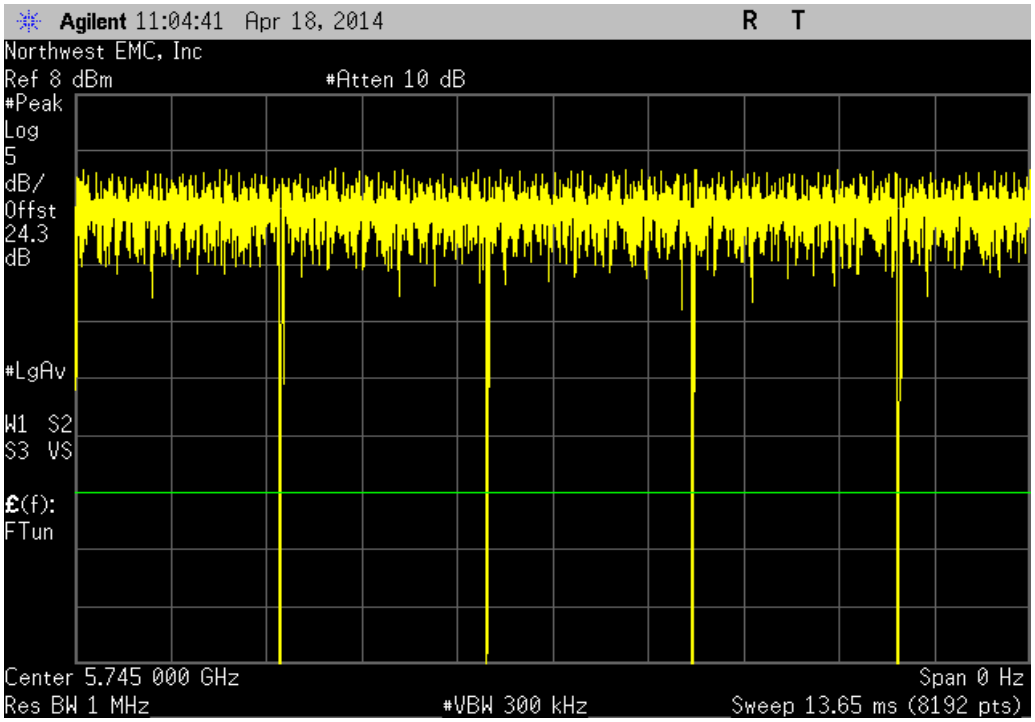
IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS7, Low Channel 149, 5745 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
2.918 mS	2.946 mS	1	99	N/A	N/A



IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS7, Low Channel 149, 5745 MHz

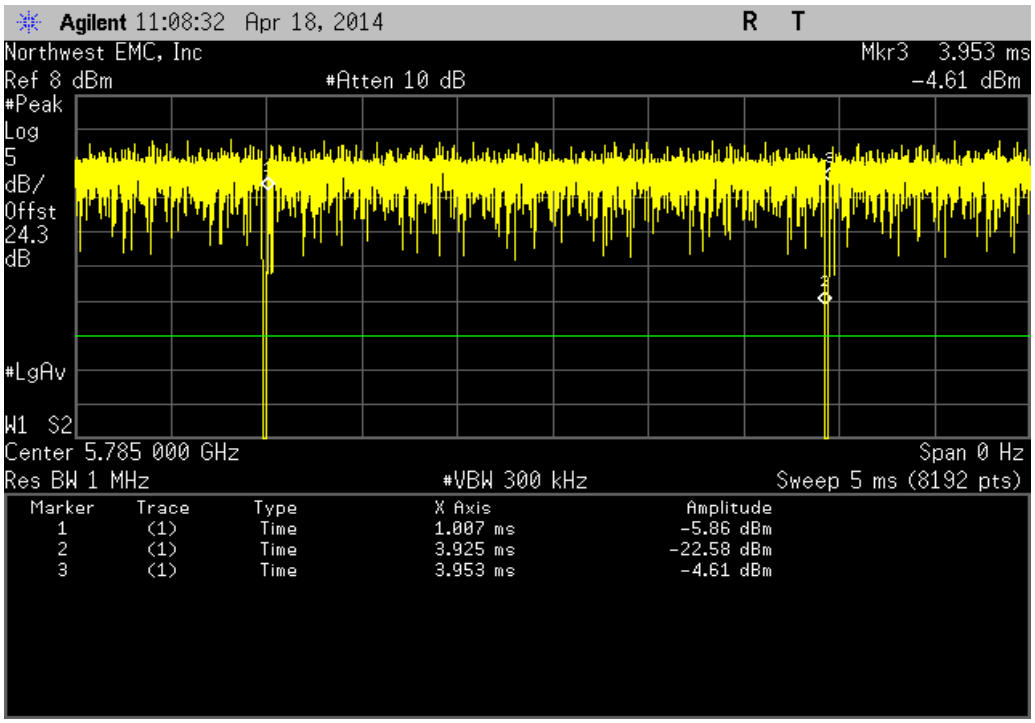
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

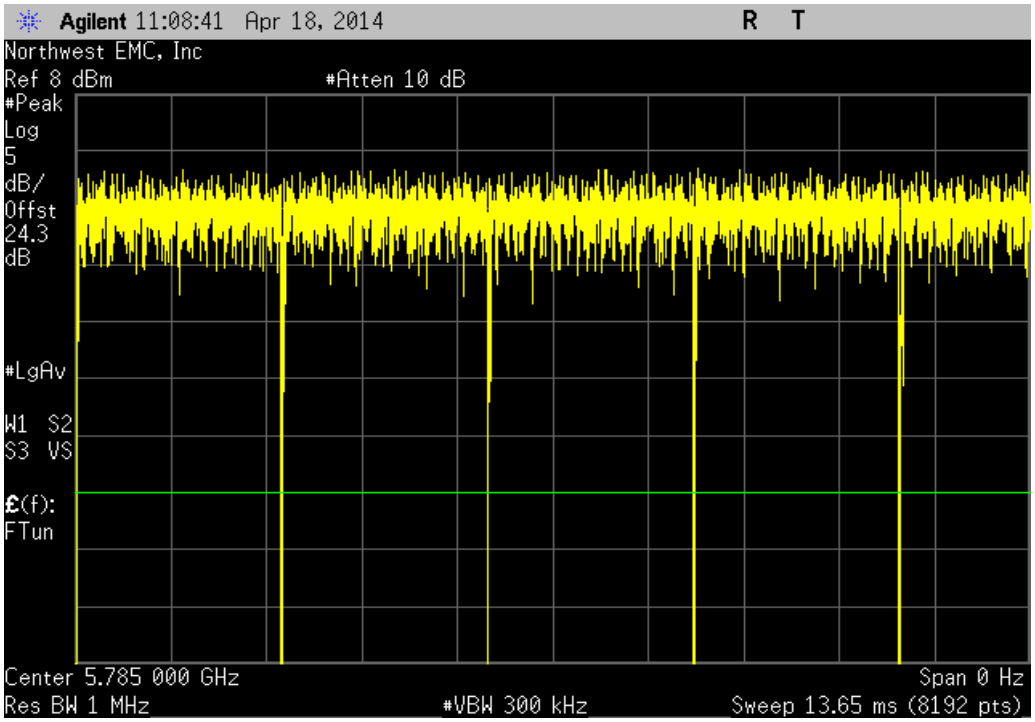
IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS7, Mid Channel 157, 5785 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	2.918 mS	2.946 mS	1	99	N/A	N/A



IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS7, Mid Channel 157, 5785 MHz

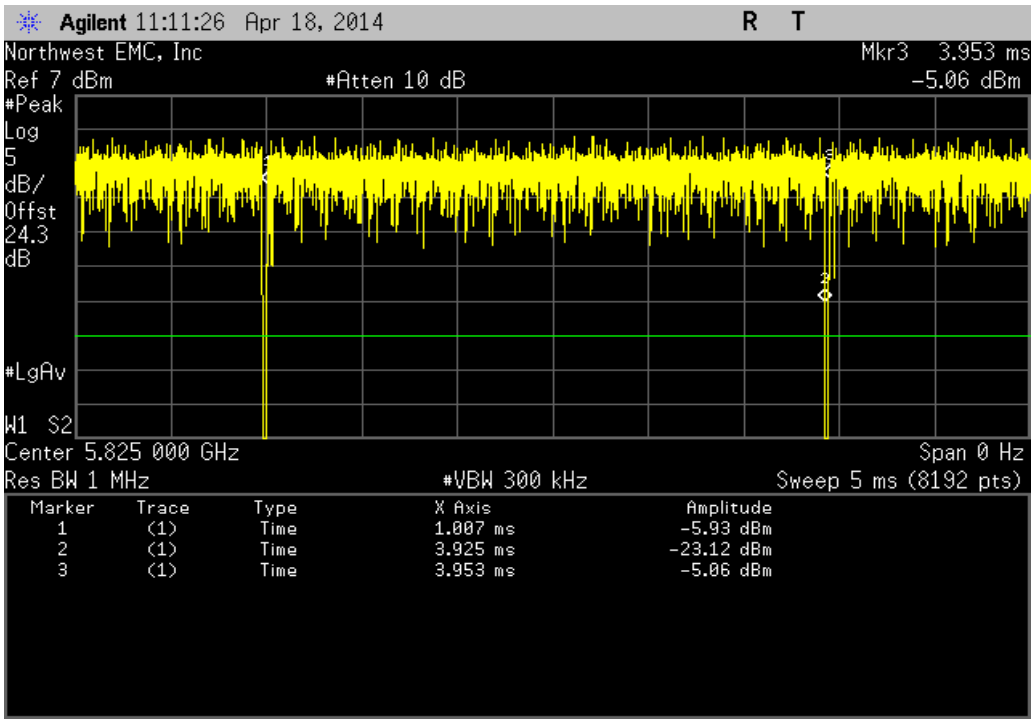
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	6	N/A	N/A	N/A



TRANSMISSION BURST DURATION

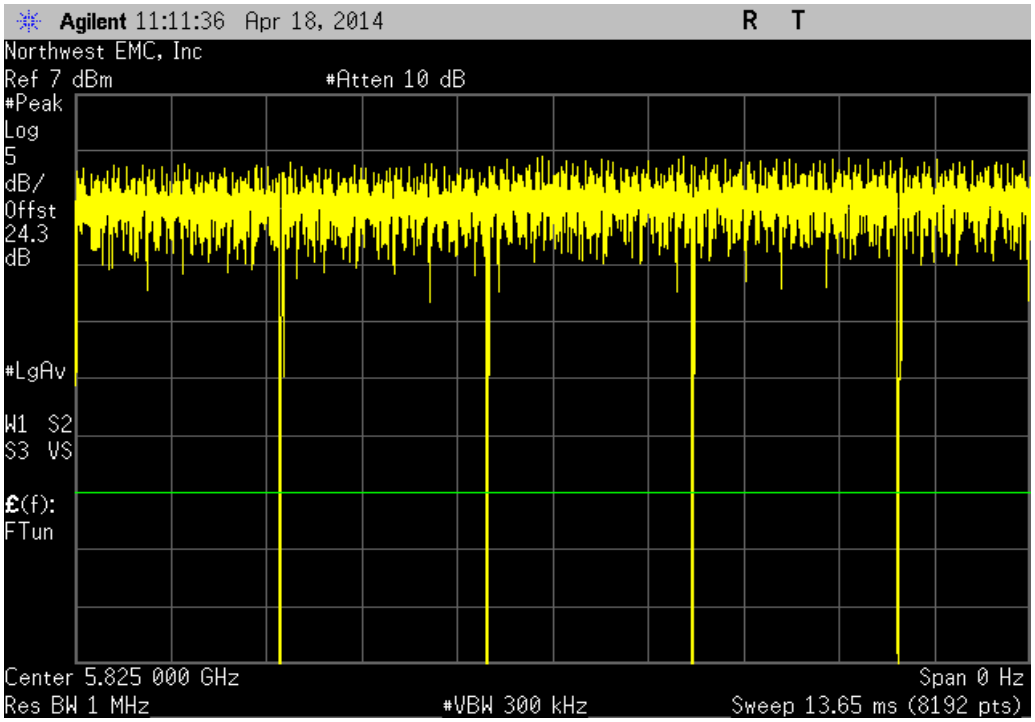
IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS7, High Channel 165, 5825 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
2.918 mS	2.946 mS	1	99	N/A	N/A



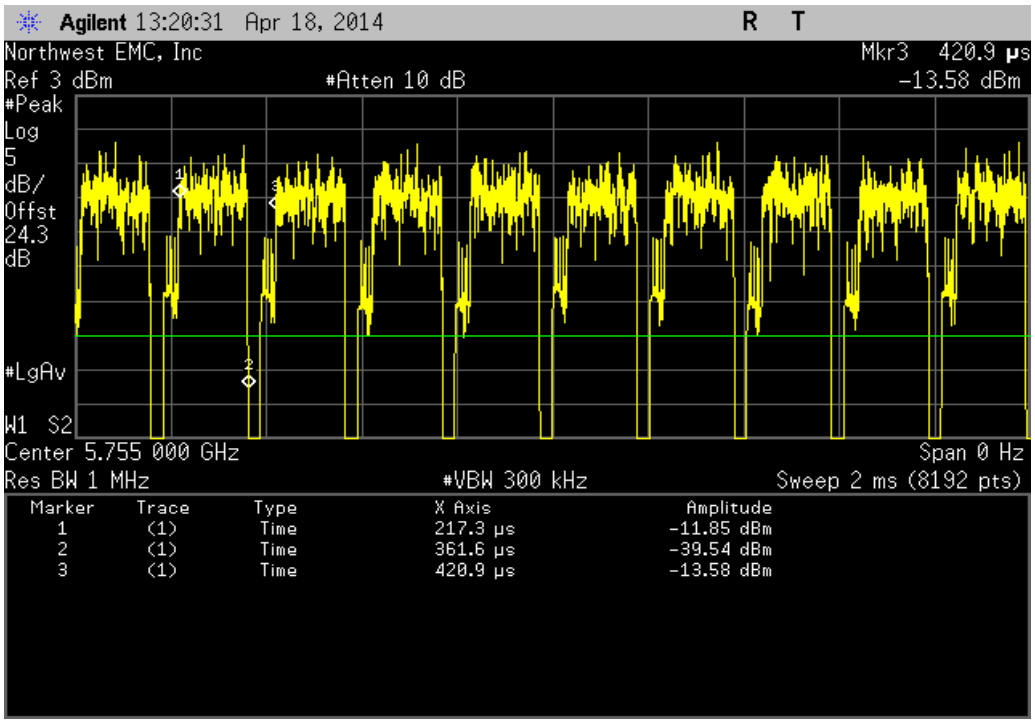
IEEE 802.11(n), 20 MHz, 5725 MHz - 5850 MHz Band, HT, MCS7, High Channel 165, 5825 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



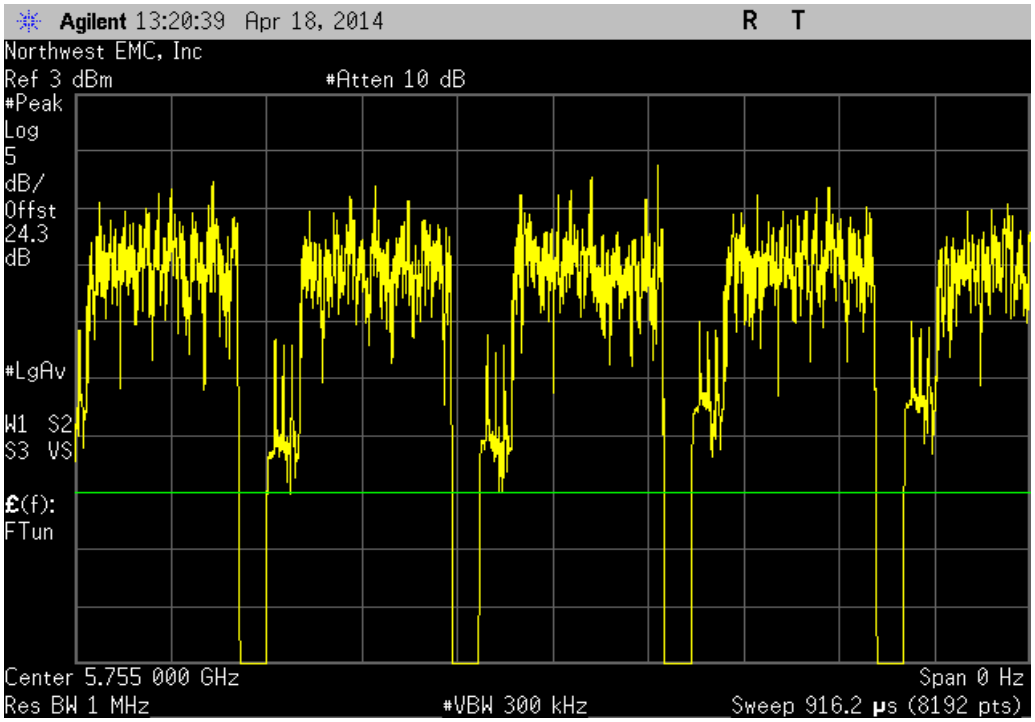
IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS7, Low Channel 149/153, 5755 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
144.3 uS	203.6 uS	1	70.9	N/A	N/A



IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS7, Low Channel 149/153, 5755 MHz

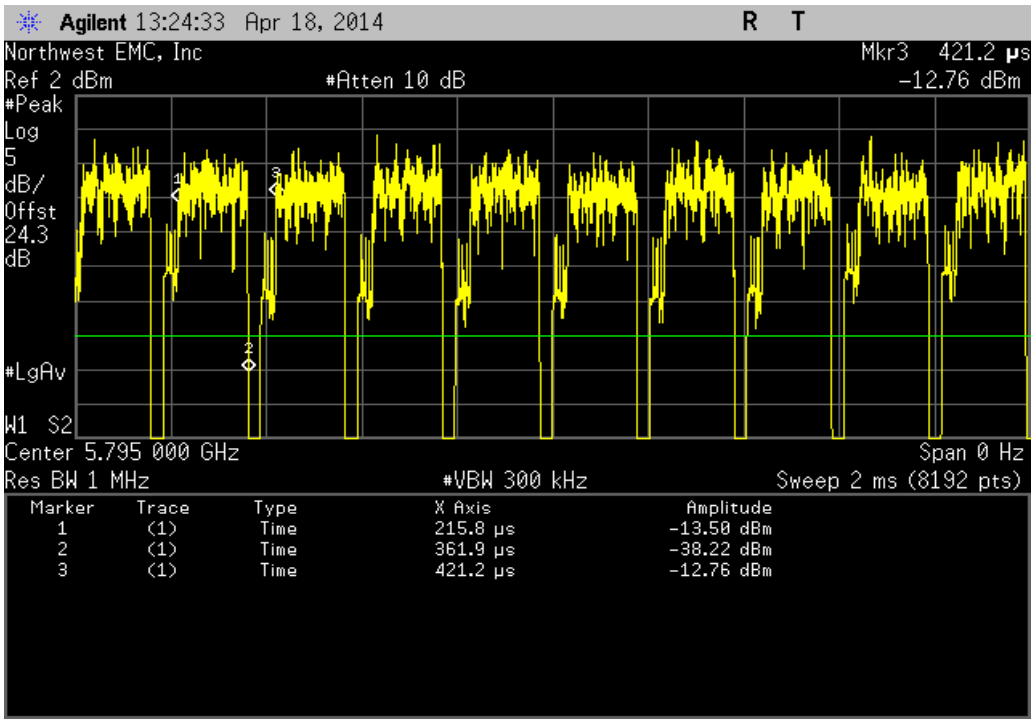
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

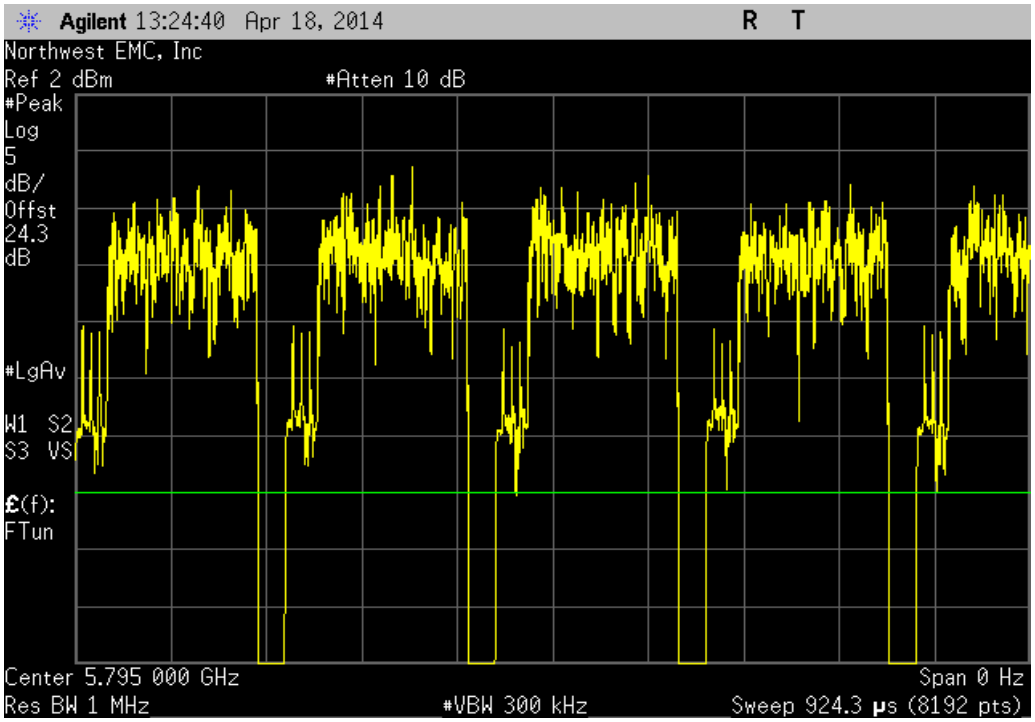
IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS7, High Channel 157/161, 5795 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
146.1 uS	205.4 uS	1	71.1	N/A	N/A



IEEE 802.11(n), 40 MHz, 5725 MHz - 5850 MHz Band, HT, MCS7, High Channel 157/161, 5795 MHz

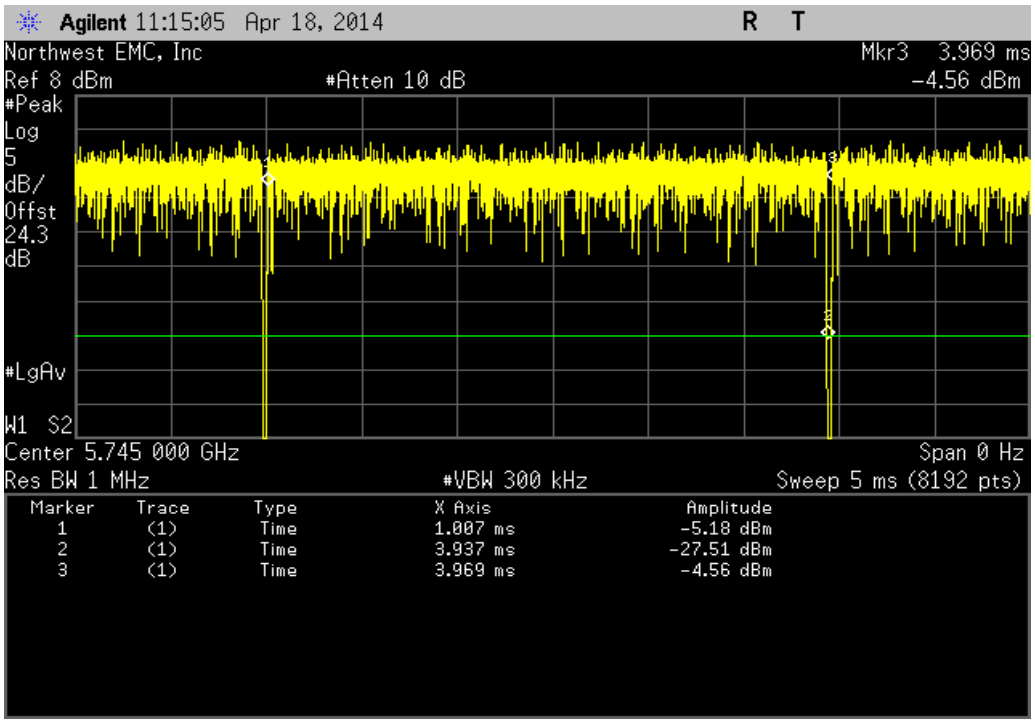
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

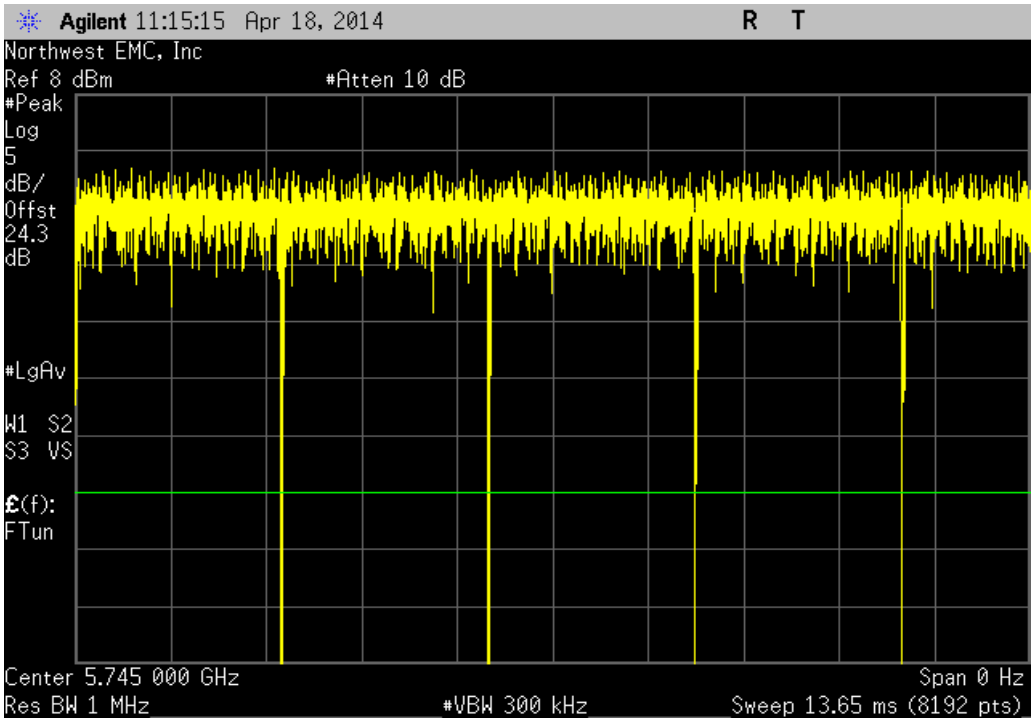
IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149, 5745 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	2.93 mS	2.962 mS	1	98.9	N/A	N/A



IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149, 5745 MHz

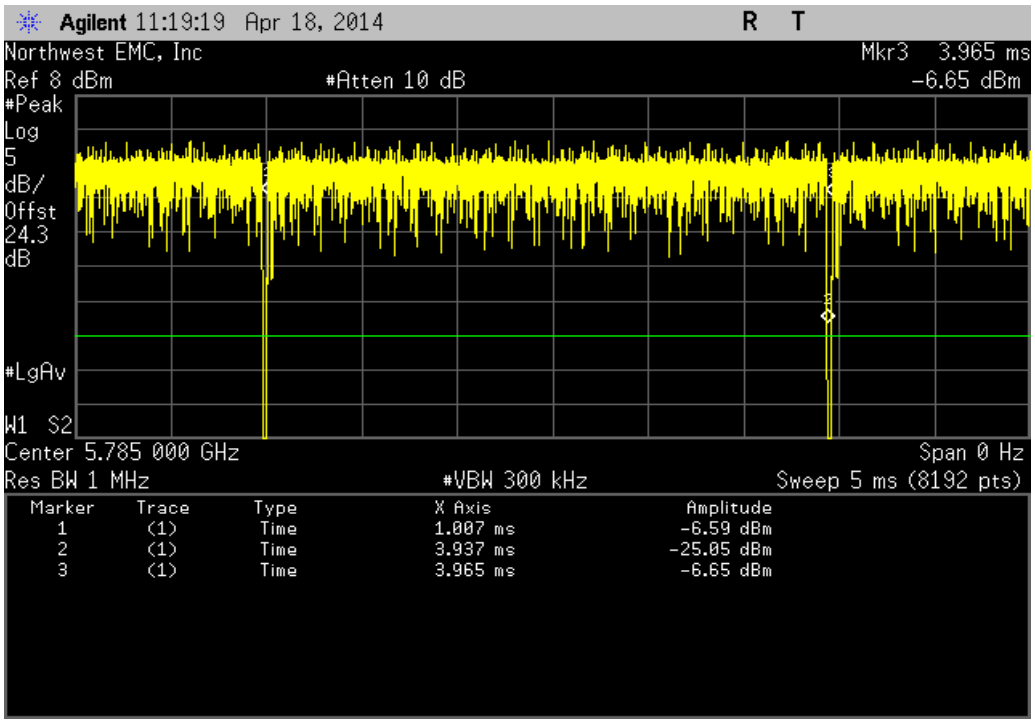
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

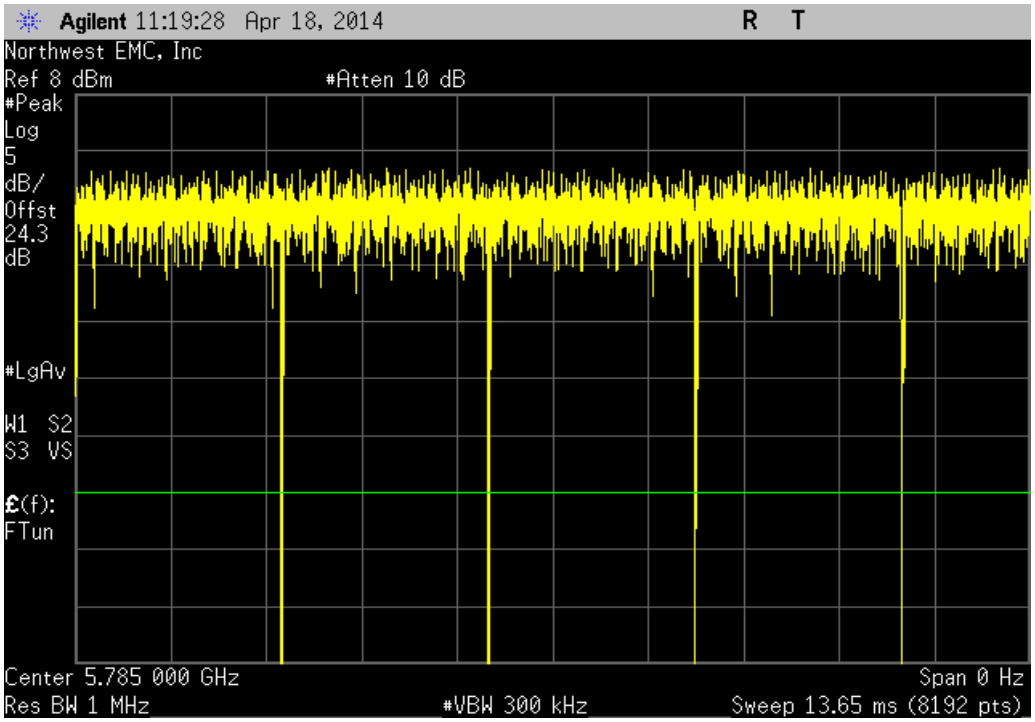
IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Mid Channel 157, 5785 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
2.93 mS	2.958 mS	1	99.1	N/A	N/A



IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Mid Channel 157, 5785 MHz

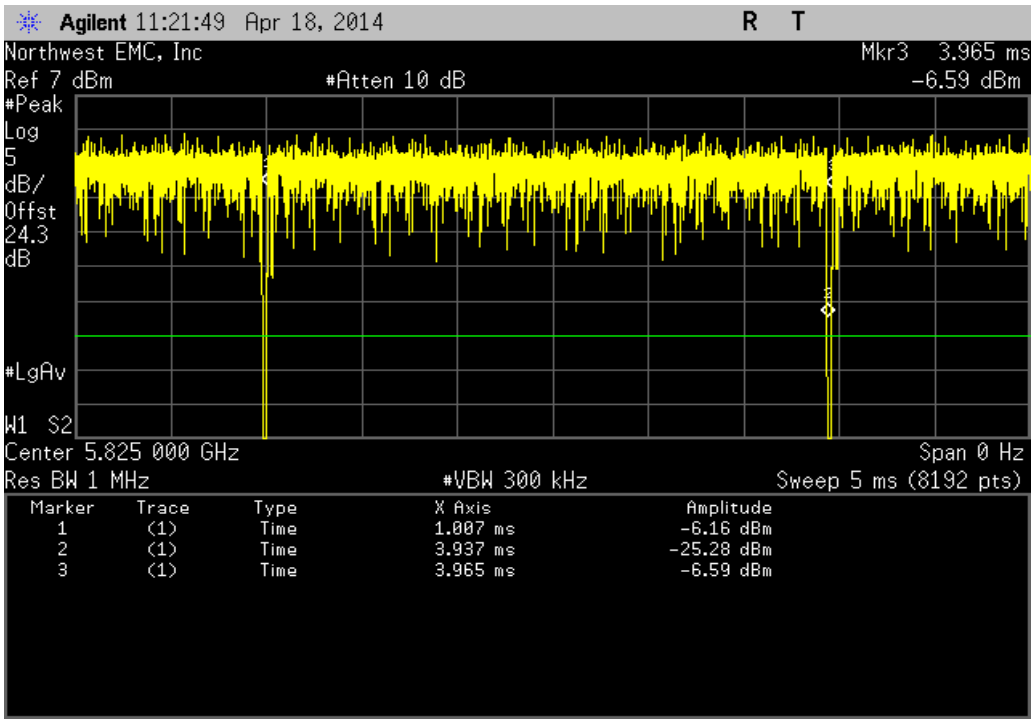
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

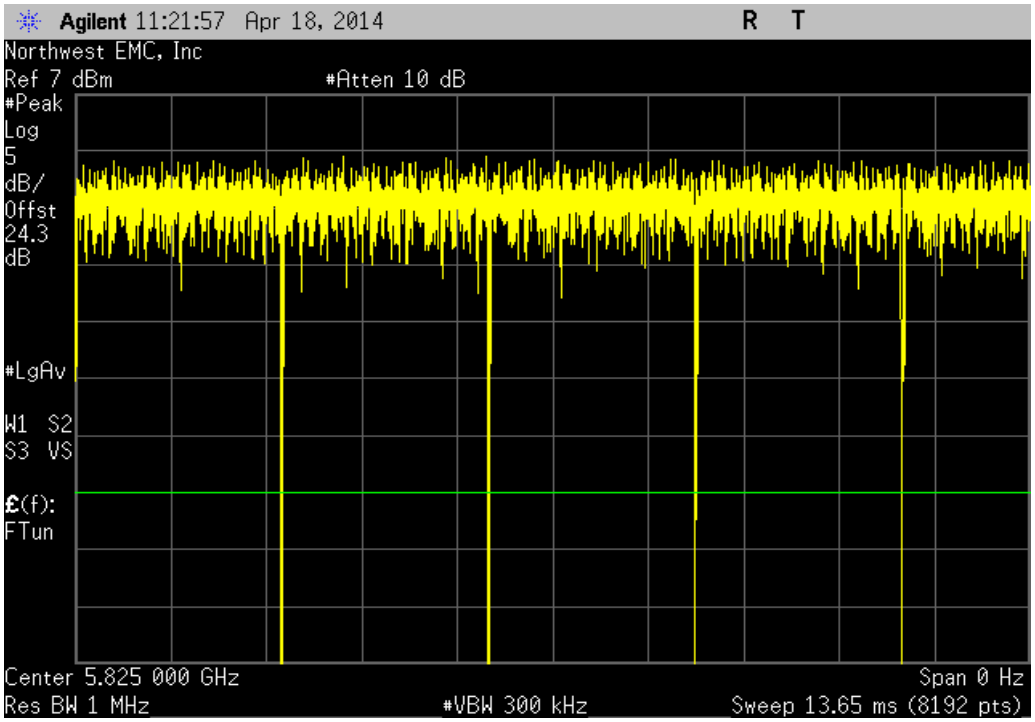
IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, High Channel 165, 5825 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	2.93 mS	2.958 mS	1	99.1	N/A	N/A



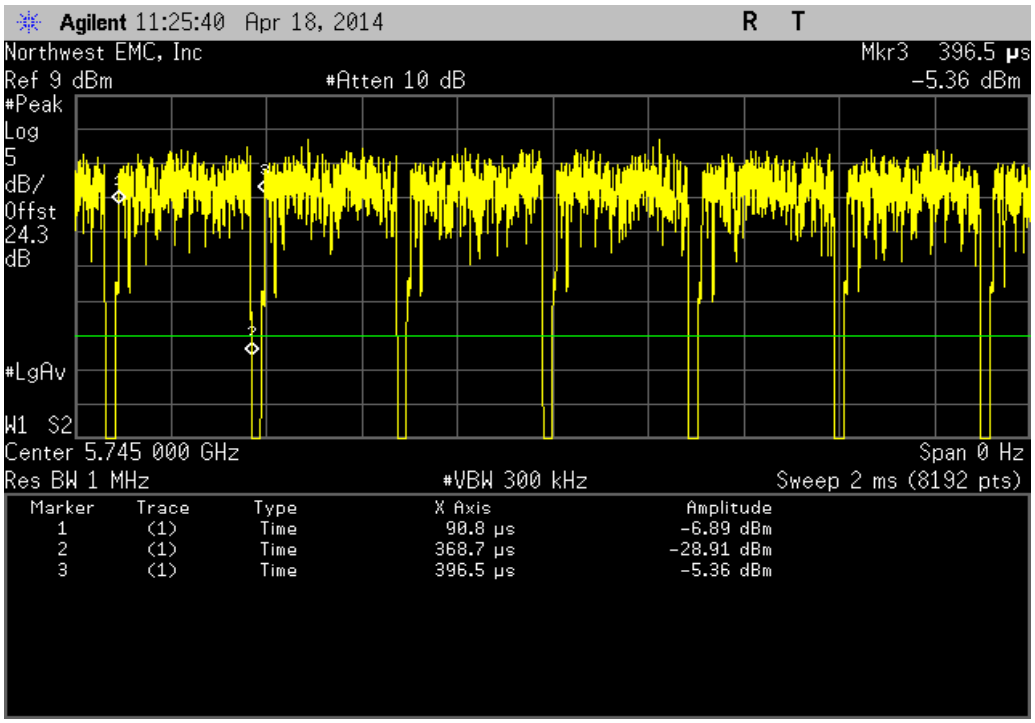
IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, High Channel 165, 5825 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



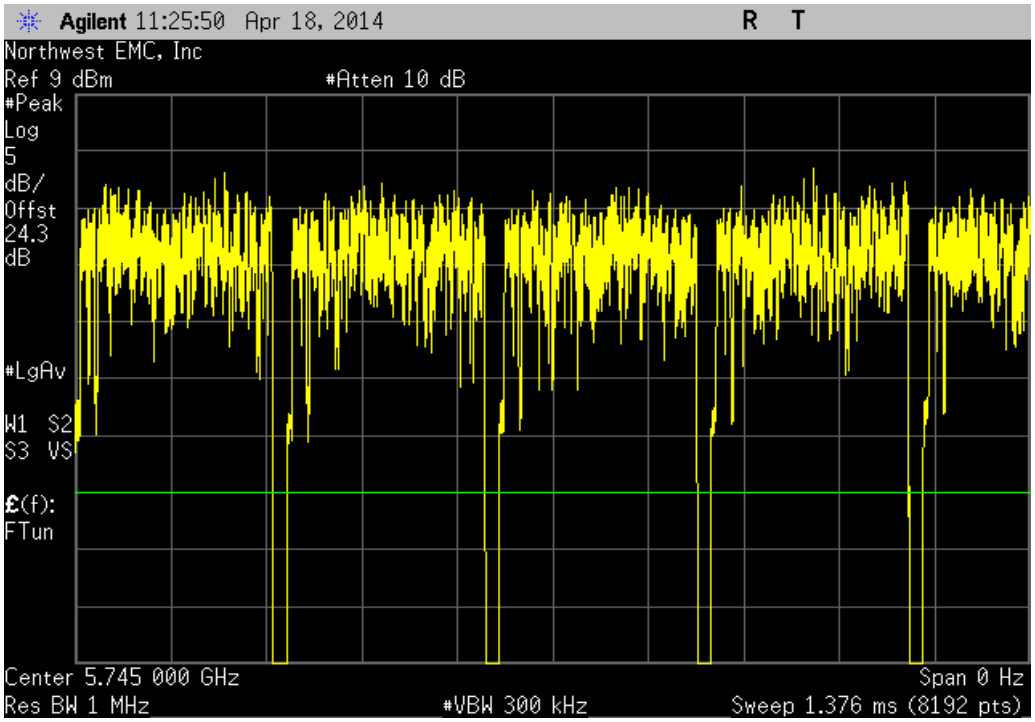
IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, Low Channel 149, 5745 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	277.9 uS	305.7 uS	1	90.9	N/A	N/A



IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, Low Channel 149, 5745 MHz

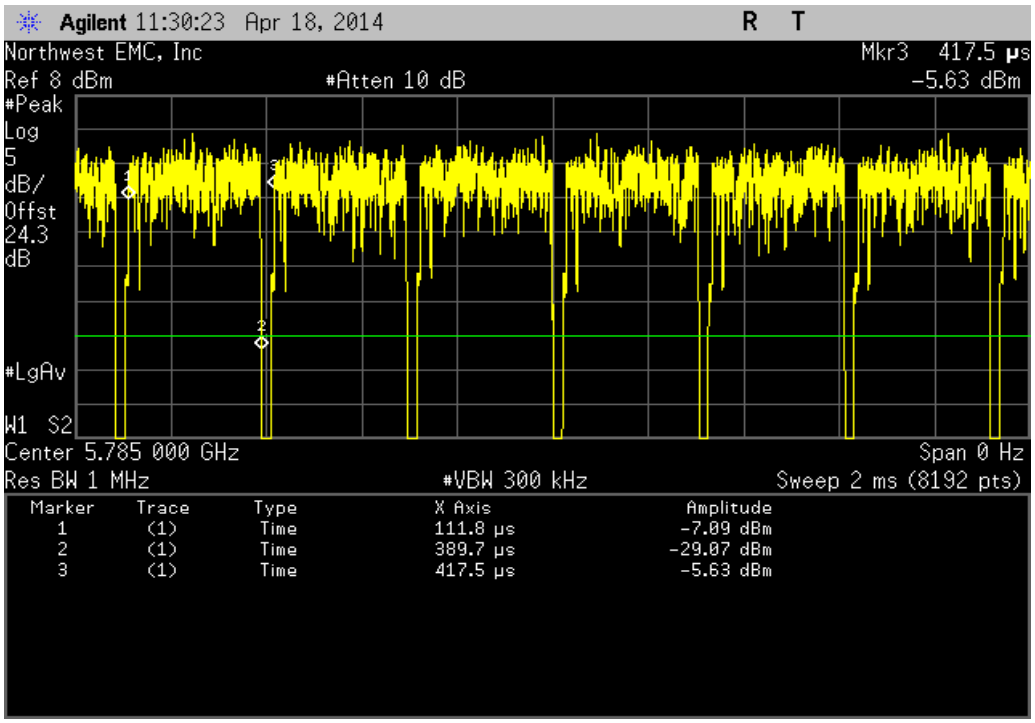
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

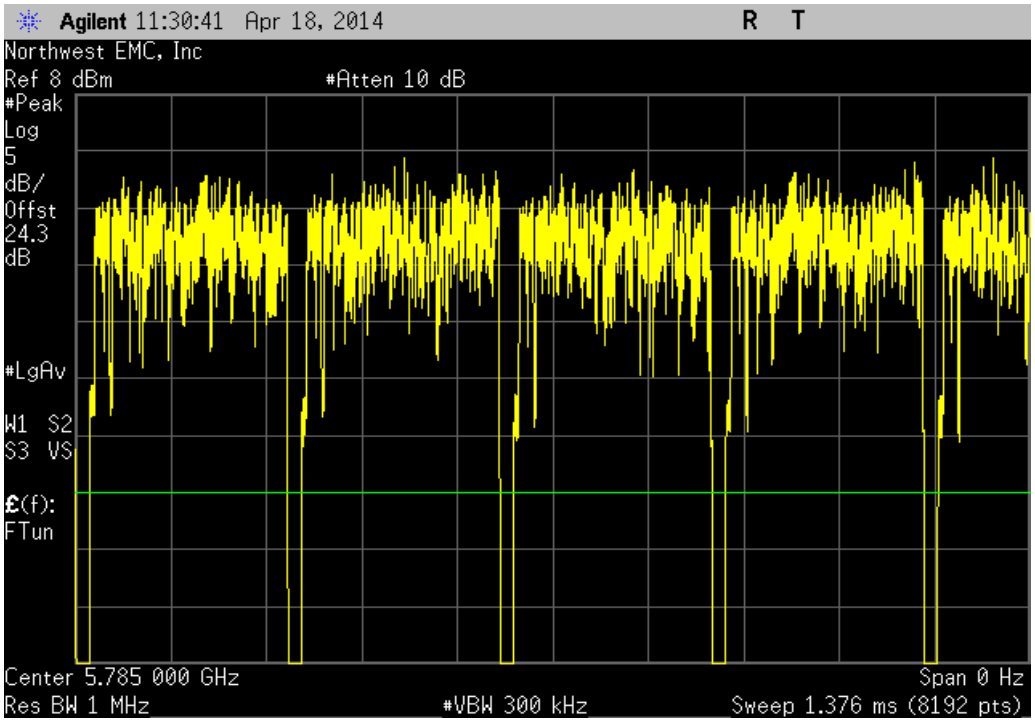
IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, Mid Channel 157, 5785 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
277.9 uS	305.7 uS	1	90.9	N/A	N/A



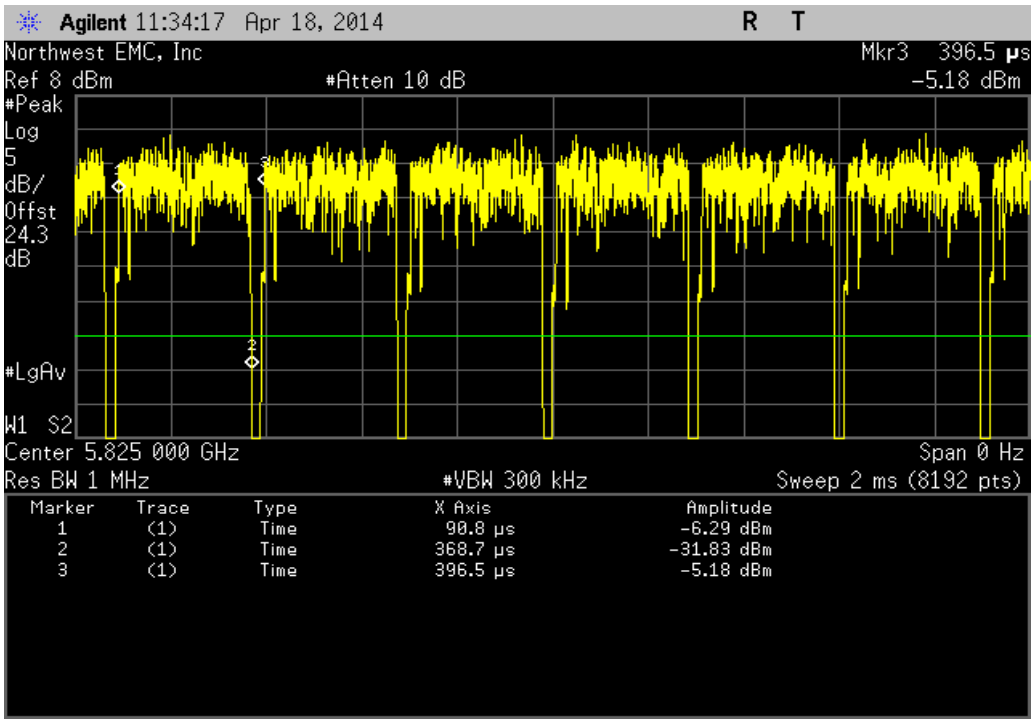
IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, Mid Channel 157, 5785 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	6	N/A	N/A	N/A



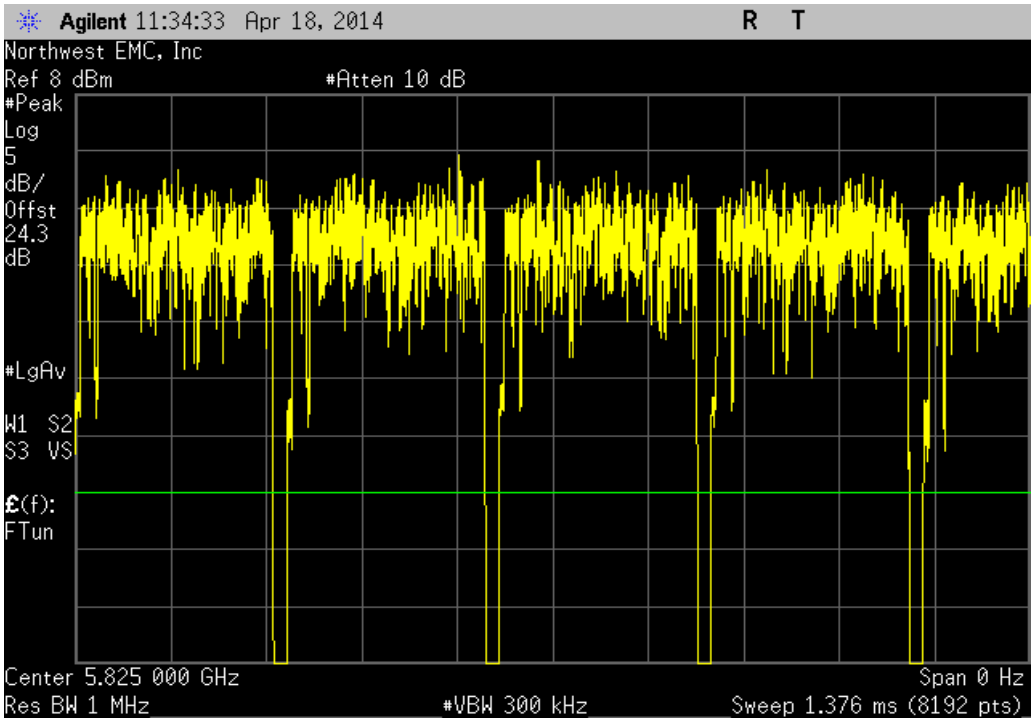
IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, High Channel 165, 5825 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
277.9 uS	305.7 uS	1	90.9	N/A	N/A



IEEE 802.11(ac), 20 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS8, High Channel 165, 5825 MHz

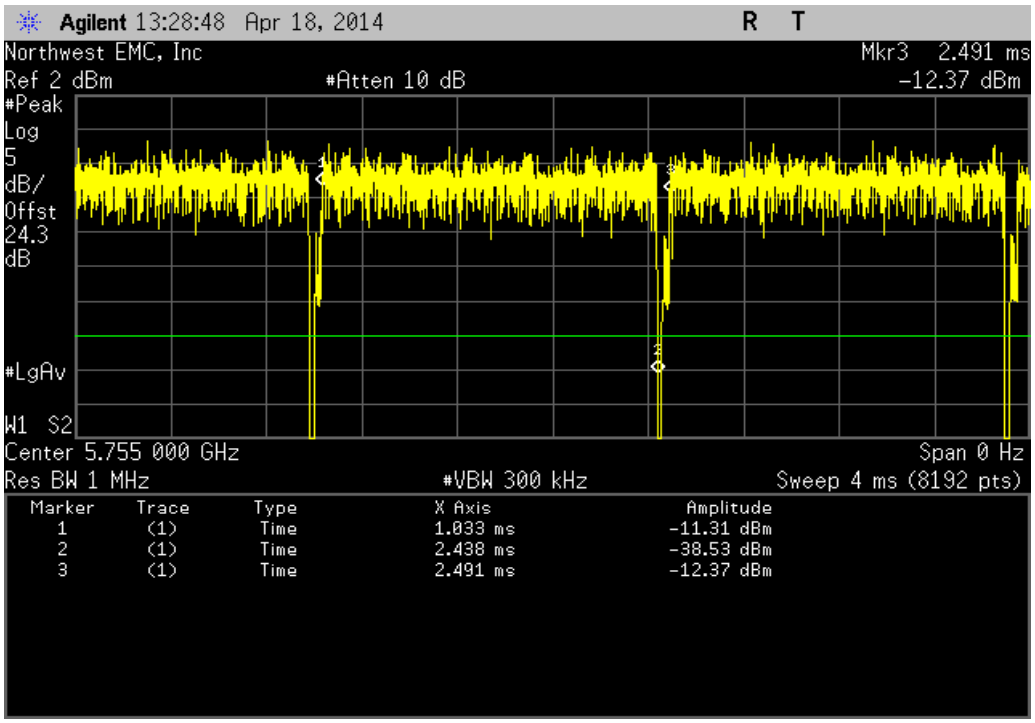
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

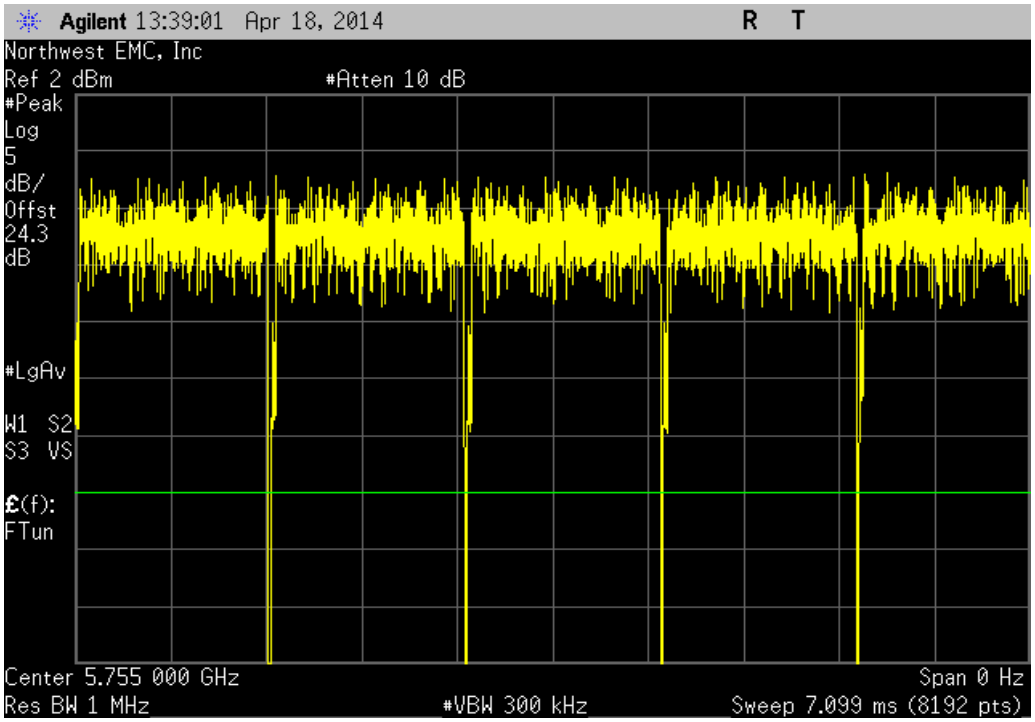
IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149/153, 5755 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.405 mS	1.458 mS	1	96.4	N/A	N/A



IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149/153, 5755 MHz

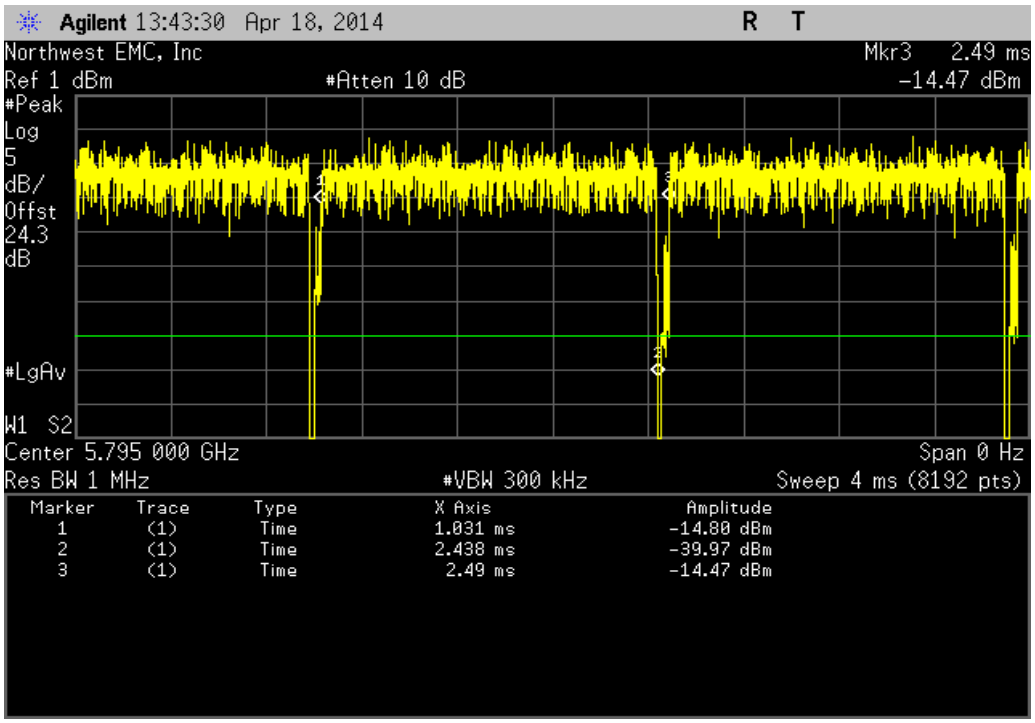
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

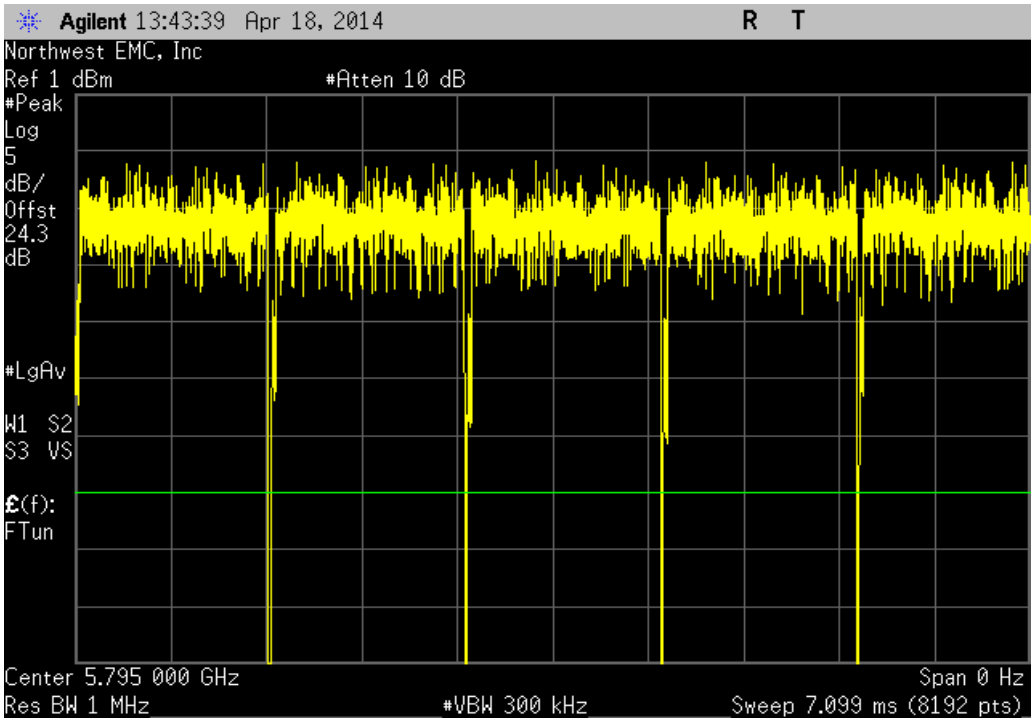
IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, High Channel 157/161, 5795 MHz

Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
1.406 mS	1.459 mS	1	96.4	N/A	N/A



IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, High Channel 157/161, 5795 MHz

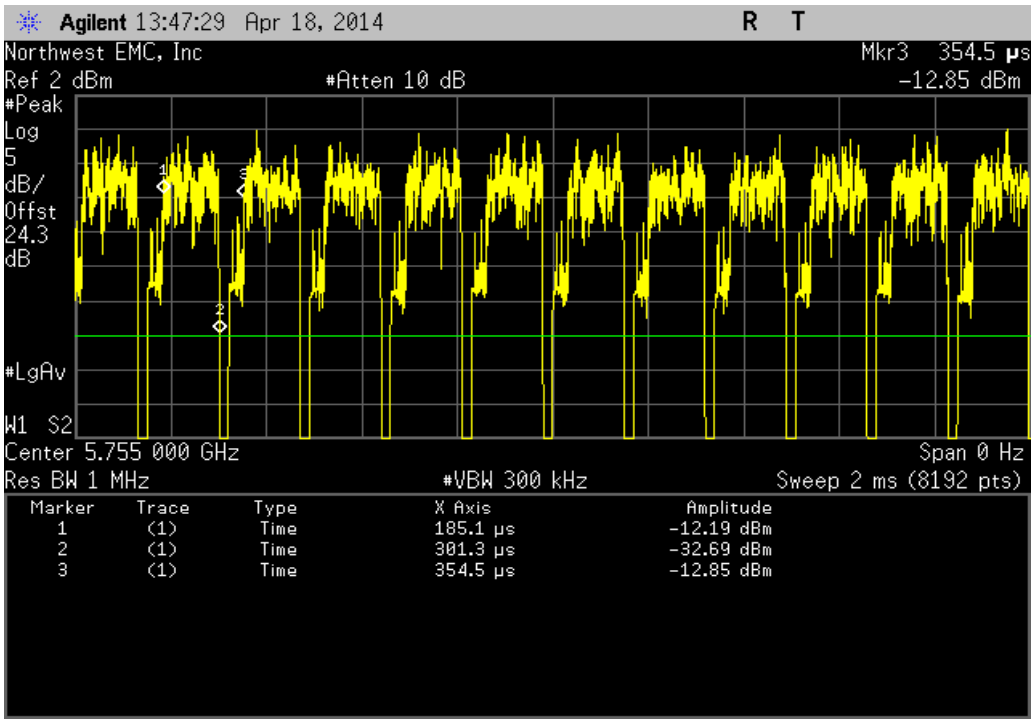
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

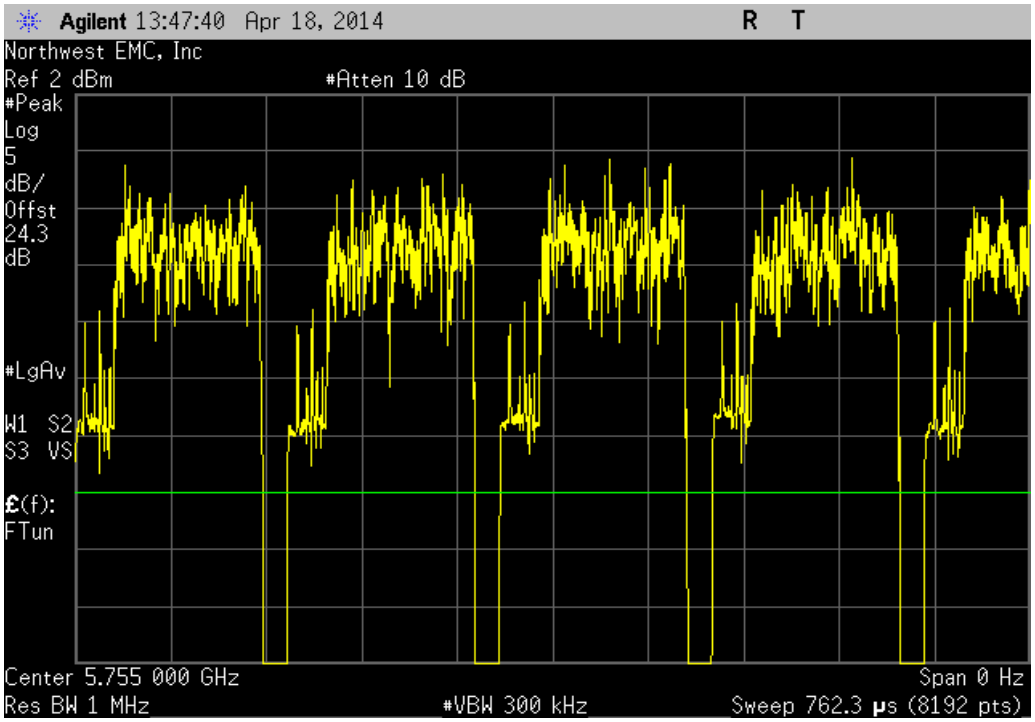
IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, Low Channel 149/153, 5755 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	116.2 uS	169.4 uS	1	68.6	N/A	N/A



IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, Low Channel 149/153, 5755 MHz

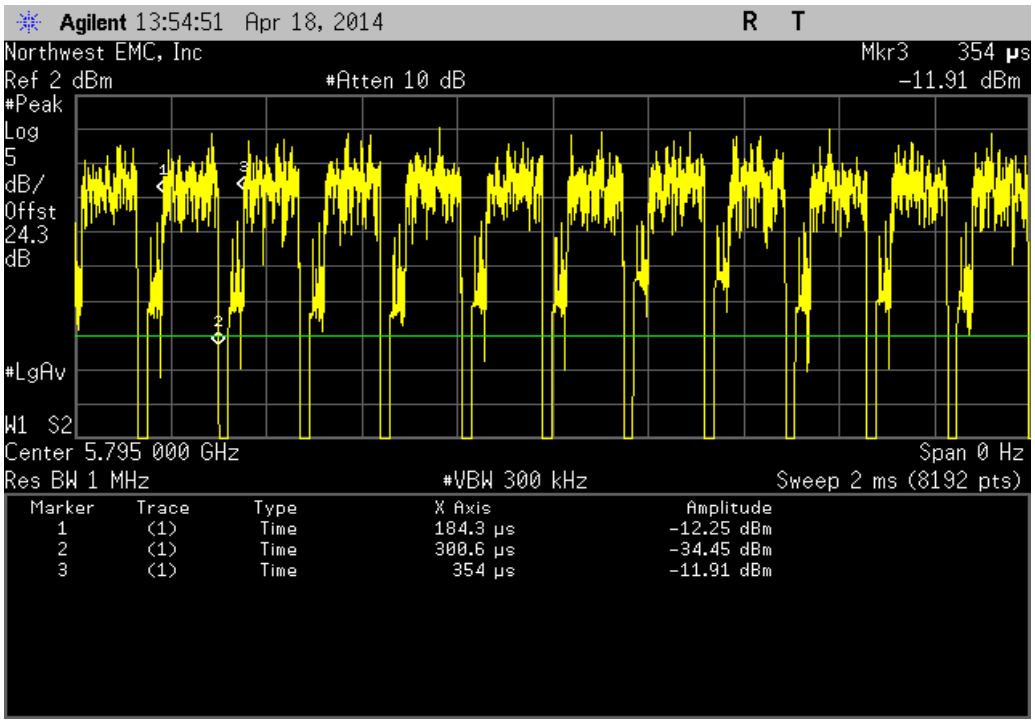
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

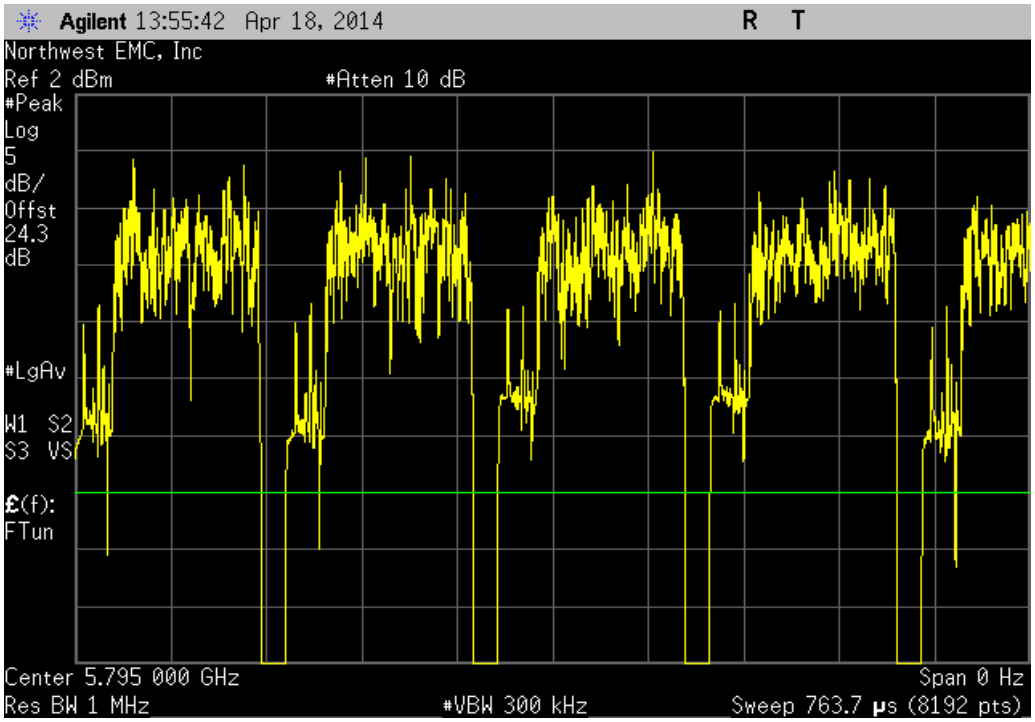
IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, High Channel 157/161, 5795 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	116.3 uS	169.7 uS	1	68.5	N/A	N/A



IEEE 802.11(ac), 40 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, High Channel 157/161, 5795 MHz

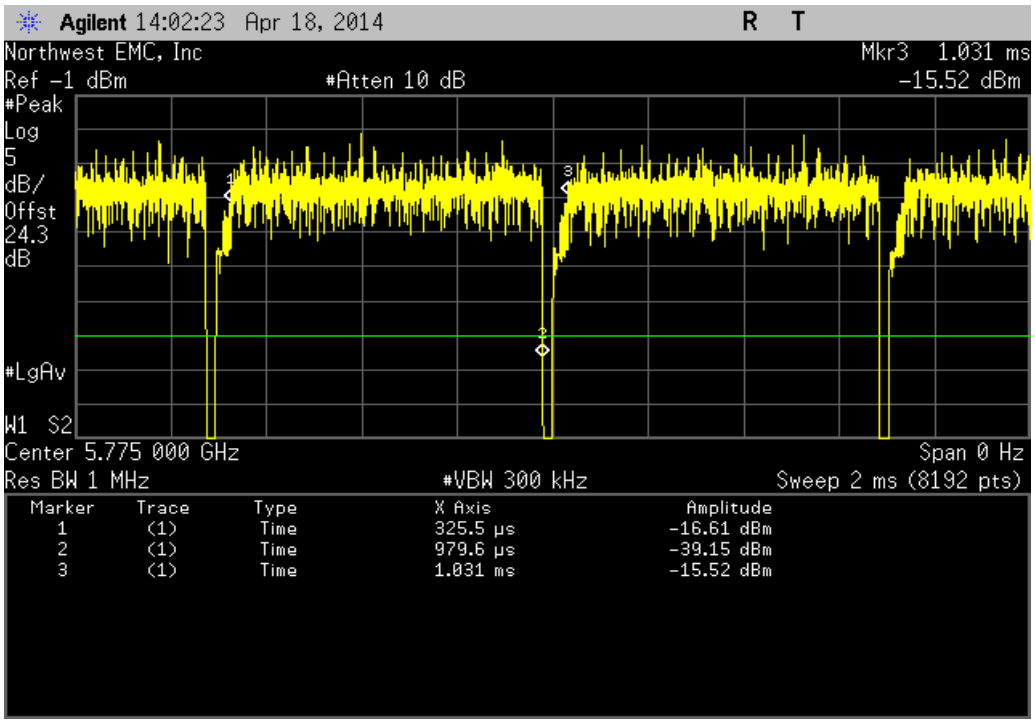
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	6	N/A	N/A	N/A



TRANSMISSION BURST DURATION

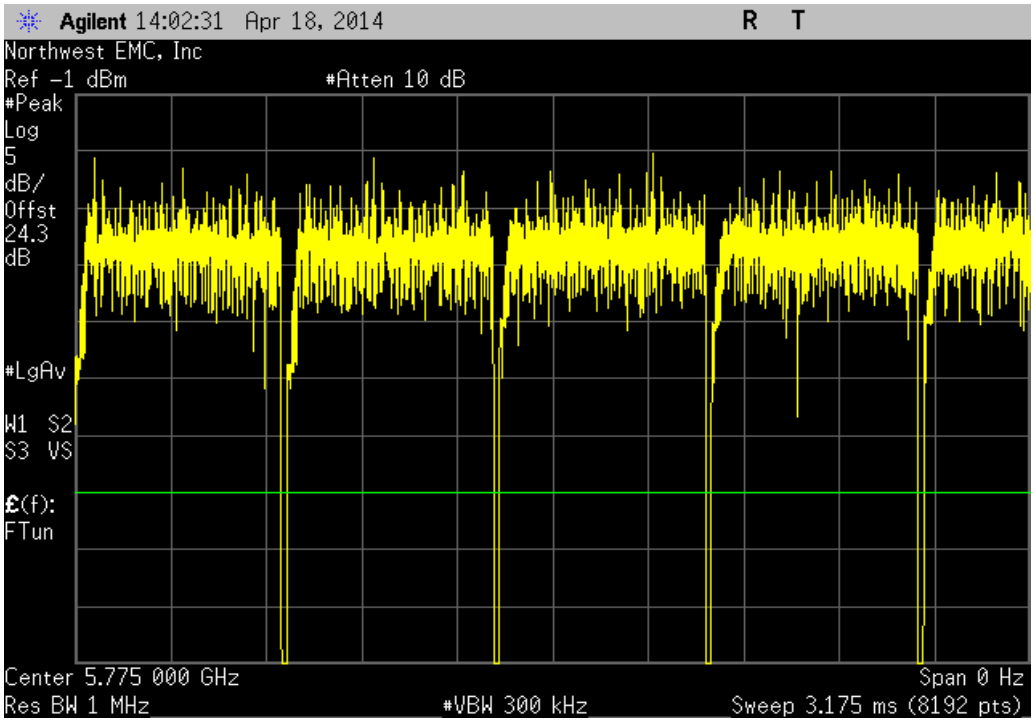
IEEE 802.11(ac), 80 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149/153/157/161, 5775 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	654.1 uS	705.6 uS	1	92.7	N/A	N/A



IEEE 802.11(ac), 80 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS0, Low Channel 149/153/157/161, 5775 MHz

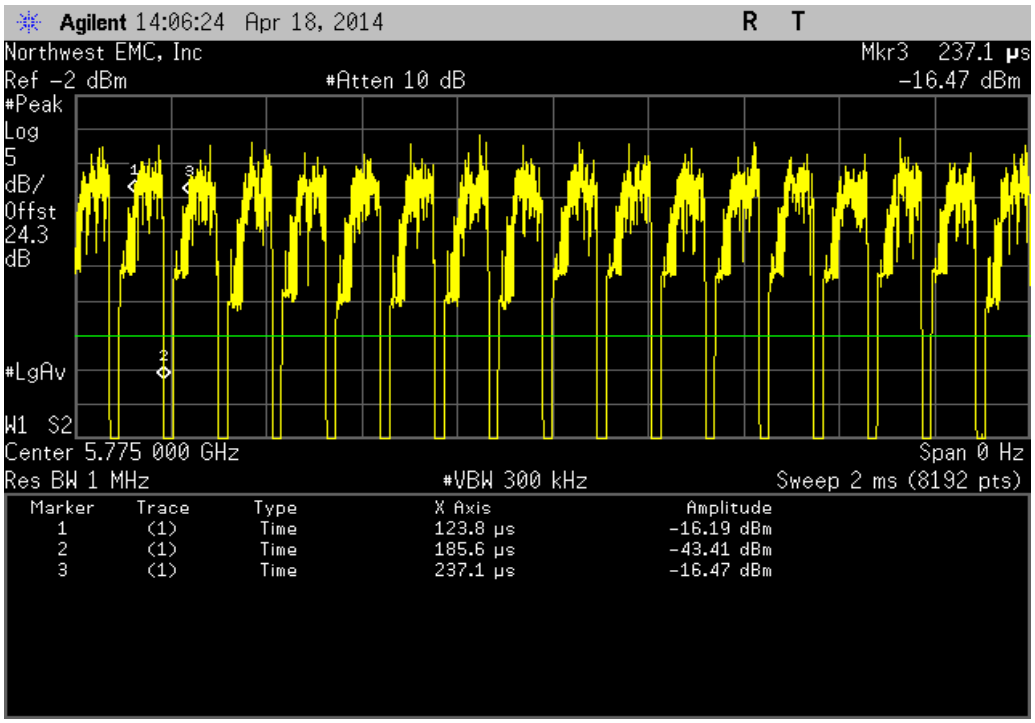
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



TRANSMISSION BURST DURATION

IEEE 802.11(ac), 80 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, Low Channel 149/153/157/161, 5775 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	61.8 uS	113.3 uS	1	54.5	N/A	N/A



IEEE 802.11(ac), 80 MHz, 5725 MHz - 5850 MHz Band, VHT, MCS9, Low Channel 149/153/157/161, 5775 MHz

	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A